

Excerpt from
The Alaskan Railroad: Probing the Interior
C. M. Brown, Oct. 1975

TABLE IV

Railroad Tunnels in the Placer River Valley, Alaska

<u>Number</u>	<u>Milepost</u>	<u>Length (in feet)</u>	<u>Date Completed</u>
1	48.2	699	October 1906
2	51.9	310	May 1906
3	52.1	955	July 1906
4	52.3	401	November 1906
5	52.4	307	May 1906
6	52.5	197	November 1906
7	52.7	584	November 1906

*"Methods..." 1909: 276-77.

Railroad Tunnels in the "Loop District"

Constructed during the winter of 1905 and summer of 1906, these seven tunnels were important features of the "Loop District" between Mile 48 and Mile 52, the most expensive and difficult piece of construction undertaken by the Alaska Central Railway Company. The only structures remaining of the "Loop District," the tunnels should be included on the National Register of Historic Places in recognition of an outstanding achievement in the history of Alaska railroad engineering.

During the summer of 1905 Alaska Central engineers studied various routes to Turnagain Arm. The problem confronting the engineers was how to build a railroad from a 1,050-foot elevation at Mile 45 to sea level at Mile 62 without exceeding a three percent grade and a twelve degree limit of curvature. Several routes were available. One of the most attractive routes, surveyed by engineers of the original Alaska Central Company, followed the westerly mountain sides of the upper Placer Valley. Another possibility was to build the road from Sunrise Station (Mile 34) to the mining town of Sunrise, and then construct a bridge across Turnagain Arm to Bird Point. During the summer of 1905, however, chief engineer W. P. Poland and locating engineer W. A. Kyle ran seven preliminary lines in the upper Placer Valley, finally locating an alternative route shorter in distance. This route was later known as the "Loop District."

In the approach to the upper Placer Valley, the road was constructed on the westerly side of the mountains. At Mile 48.2, the line passed through a 700-foot tunnel on a fourteen-degree curve to the right, with a total curvature of 238°. Much of this turn was made on a 1,600-foot trestle on a steep side hill. The line was then reversed to the left on another fourteen degree curve with a total curvature of 213°, thereby bringing the line to the easterly mountain sides. Near Mile 49 the line passed close to Barlett Glacier, and then made a complete loop, the road passing under itself in Mile 50 and Mile 51. Then line then followed the mountain side, crossed the Placer River for the fourth time, and then passed through six short tunnels, aggregating 2,700 feet, in Mile 52. By passing through these tunnels, the road avoided a precipitous canyon from 150 to 200 feet above the river. Near Mile 54 the line left the side hill, crossing Placer River on a high bridge, 1,580 feet in length, to reach the Placer River Valley. The line then descended the valley on an easy grade. (Atwood 1907: 199; US AEC 1916: 29-30)

Alaska Central forces began work on tunnel 1 on January 16, 1906. As a snowslide blocked the south end, the tunnel was driven entirely on the north end with stream power and drills. Later, due to excessive heat in the tunnel, the company utilized an air compressor with a capa-

city of three to four drills. Although the company found it difficult in keeping the force up to standard number on account of the dangerous character of the rock, it encountered no problems in driving the tunnel. "The character of rock in all these tunnels was practically the same, being a hard blocky slate with fractures at right angles to the axis of tunnels. The rock drilled and broke easily and almost to the theoretical lines of the tunnel." ("Methods..." 1909: 231) The tunnel was widened to give a minimum clearance of eighteen inches for the maximum length of passenger car. The size of the tunnel was seventeen feet wide between timbers, and twenty-one feet from the top of rail to clearance at the top of the tunnel. Timber was used for about 400 feet in the north end. The balance was left untimbered. Later, however, it had to be lined nearly its whole length. Completed on October 8, 1906, tunnel 1 was estimated to have cost the Alaska Central about \$97,000. ("Methods..." 1909: 277)

For the construction of tunnels 2 through 7 in Mile 52, the Alaska Central employed Rich and Harris, a leading construction firm in the Pacific Northwest. According to the terms of the contract, the tunnels and grading were to be completed by April 1906. Beginning work in late October 1905, Richard Harris established a large camp at the north end of the canyon (the present site of Tunnel Section) and worked on the approach cuts and cuts adjoining tunnels 2, 3, and 7. On December 1905 the contractors began drilling by hand the north heading of tunnel 2, and the south heading of tunnel 3. Only about twenty-feet was driven on tunnel 2, and fifty-feet on tunnel 3, before the contracting company abandoned the project. The contractors discovered that the work was too costly and that it was too difficult to attract and retain laborers on the project. ("Methods..." 1909: 276)

In early spring, 1906, Alaska Central forces resumed minor work on the tunnels in Mile 52. Contracts were let for drilling by hand tunnels 4 and 5. Work on tunnel 5 began on December 24, 1905; the tunnel was completed on May 16, 1906 at a cost of about \$18,000. Contractors began work on tunnel 4 on June 21, 1906 and completed the project on November 30, 1906 at an expense of about \$22,600. These tunnels were the least expensive to construct among the seven.

In the meantime, G. A. Kyle, the locating engineer, was sent to Seattle in order to arrange for the purchase of additional equipment to operate six drills in tunnels 2, 3, 6, and 7. It was decided that work should be done in two headings at once. ("Methods..." 1909: 276, 281) With the construction of a 130-foot suspension bridge across the gully to the north portal of tunnel 2, and the laying of a pipeline from the compressors across the bridge, Alaska Central forces resumed intensive work on tunnels 2 and 3 under the direction of general superintendent, Martin Moran. Tunnel 2 was completed on May 12, 1906 with the use of air drills. Company forces working on both ends simultaneously, tunnel 3 was finished on July 11, 1906. As most of the air drills were used on both ends of tunnel 7, work on tunnel 6 was relatively slow, although it was one of the shortest tunnels in the system. Nearly 140 days were necessary to complete tunnel 6 on November 7, 1906. Tunnel 7 was completed on November 4, 1906. ("Methods..." 1909: 276-77)

achievement in railroad engineering. The district did not of course escape criticism. Some critics, namely John E. Ballaine, who founded the original Alaska Central Railway Company, regarded the district as a waste of money. Ballaine argued that the road should have been constructed along the westerly mountain sides of the Placer River Valley to the head of Turnagain Arm. This route gained additional support in 1912 in the Alaska Railway Commission, which was appointed by President Taft to investigate railway routes in Alaska. In 1914, however, the Alaska Engineering Commission confirmed the "Loop District" as the least expensive route through the Placer River Valley. Thus, in 1915, when ordered to construct a trans-Alaska railroad from Seward to interior Alaska, and to purchase the property of the Alaska Northern Railway (the successor to the Alaska Central), the Alaska Engineering Commission decided to incorporate the "Loop District" in the Government-constructed, and -owned railway system.

Since the failure of the Alaska Central in 1908, the bridges in the "Loop District" were not maintained. By 1916, when the Government began active construction on the trans-Alaska railroad, only gasoline cars and light trains were able to pass through the "Loop District" without danger. Alaska Engineering Commission forces thus spent the years 1917 and 1918 rehabilitating, and in some instances, entirely reconstructing the bridges. In 1919, the Alaska Engineering Commission forces enlarged the tunnels in accordance with the specifications of the Interstate Commerce Commission. The enlargement of tunnels 2 through 7 was completed in November 1919. At the same time, timber portals were erected for several tunnels, and a snowshed was constructed at the south end of tunnel 1. This work continued until 1920, when tunnel 6 was finally timbered. (Alaska Railroad Record September 30, 1919: 369; October 21, 1919: 393; March 16, 1920: 145)

Through the years the tunnels in the "Loop District" have been periodically retimbered. However, the "Loop District" is no longer in existence. In 1950-51, the Alaska Railroad altered the line between Mile 47.5 and Mile 50.8, thereby reducing the distance between Seward and Anchorage by 1.1 miles. Completed at a cost of about \$1 million, the new line was opened to traffic on November 1, 1951. The new line sacrificed the former 2.2 percent grade (compensated) for a 3 percent grade (compensated), and eliminated five "Loop" bridges, one snowshed, and tunnel 1. Tunnel 1 is reportedly in fair condition. Tunnels 2 through 7 are in good condition. (Prince 1964: 802, 810-12)