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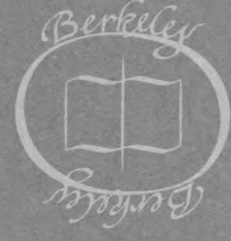
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Annual Report

United States.
Alaska Road
Commission





MAY 23 1925

ANNUAL REPORT OF THE
Board of Road Commissioners
for Alaska

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LETTER OF SUBMITTAL.

BOARD OF ROAD COMMISSIONERS FOR ALASKA,
Valdez, Alaska, October 20, 1916.

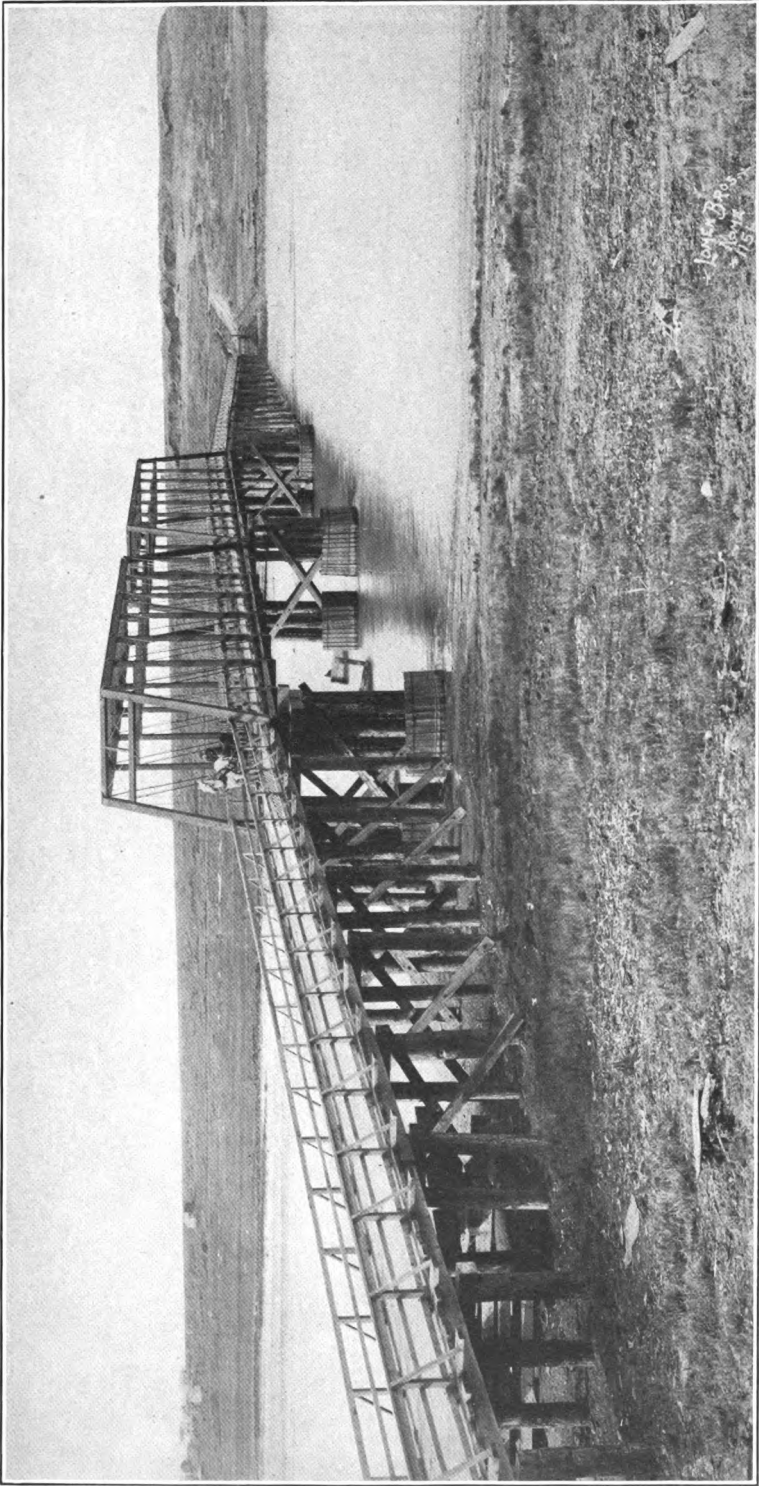
From: The president of the board.
To: The Adjutant General, United States Army.
Subject: Road and trail work in Alaska.

1. The annual report of the Board of Road Commissioners for Alaska is submitted herewith.

2. The following changes in the personnel of the board have been made since the date of the last annual report: Maj. P. W. Davison, Infantry, has been assigned to duty with the board as secretary and disbursing officer, and First Lieut. (now Capt.) J. C. Mehaffey, Corps of Engineers, as engineer officer of the board; relieving First Lieut. L. A. Kunzig, Infantry, and Capt. Glen E. Edgerton, Corps of Engineers, respectively.

3. The annual report of the board for the year 1913 summarized the work of the board from its beginning in a form to show concisely what had been accomplished up to that time and under what conditions and limitations, together with the benefit to the Territory of such work; and in a hearing before the Military Committee of the House April 11, 1916, upon the estimate for "military and post" roads in Alaska for the fiscal year 1917, a brief history was again given of the organization of the work and of the conditions existing prior to the time when the board came into existence. It is thought proper, therefore, to limit the present report to a brief introductory statement and to a description of the season's work, with only such references to those already well known conditions as seem pertinent, or to new phases of the work developed during the year.

W. P. RICHARDSON,
Colonel of Infantry.



SNAKE RIVER BRIDGE, NOME, ALASKA.

REPORT
OF THE
BOARD OF ROAD COMMISSIONERS FOR ALASKA.

INTRODUCTORY STATEMENT.

The Board of Road Commissioners for Alaska is engaged in the construction of wagon roads, bridges, and trails, and of "military and post" roads, bridges, and trails in the Territory, under the direction of the Secretary of War, and in conformity with an act of Congress approved January 27, 1905, and subsequent acts amendatory thereto. The board was formally organized on May 15, 1905, and has been in continuous existence since that date.

The road and trail mileage constructed and maintained to date is in round numbers as follows: Wagon roads, 920 miles; winter sled road, 629 miles; trail, 2,210 miles. As stated in a former report, the wagon roads may be classified as good country highways, intended to meet an all-year-round traffic of considerable tonnage. The winter sled road is an inexpensive form of construction, intended to meet the requirements of winter travel only in certain portions of the winter. The trail differs from the winter sled road only in being narrower and with less attention given to grade and surface inequalities.

There has been expended upon the work up to the close of the fiscal year 1916 a total of \$3,390,122.72, of which \$1,765,000 has been appropriated by Congress in varying amounts beginning with the fiscal year 1907, and \$1,625,122.72 derived from the Alaska fund. The average total cost of the wagon roads has been \$3,144 per mile; of winter sled road, \$345 per mile; of trail, \$106 per mile. The above figures embrace location, construction, and maintenance, and all expenditures by the board.

The Congress at its last session made an appropriation of \$500,000, which is the largest that has been made for any single year; principally for the further improvement of the Valdez-Fairbanks military and post road. This, however, being for the fiscal year 1917, is not embraced in the operations covered by the present report.

In respect to the territorial tax for road and other purposes, or the "Alaska fund," the Legislature of the Territory of Alaska at its last session in a joint memorial prayed Congress for authority to alter, amend, modify, or repeal the laws relating to taxes on business and trades in the Territory, and that the legislature be given authority over the "Alaska fund." The Delegate from Alaska, after reciting the above-named memorial as a preamble to a bill, H. R. 4648, introduced a provision that the legislature be "empowered and authorized to alter, amend, modify, or repeal the act of Congress" which brought

the board of road commissioners into existence, approved January 27, 1905.

The memorial had relation merely to the control and distribution of the tax fund, but the effect of the provision immediately following, in the first section of the bill above referred to, would be something quite different and is sufficiently manifest to need no comment from our board in the pages of this report. The board quotes, however, the following statement of the president of the board made public recently in this connection:

No member of the road commission, I may say here, and no person in the War Department, was in any way whatsoever responsible for the passage of the original law creating the road commission, and no one in the War Department will, in my opinion, make an effort now to have the law continued if it is considered undesirable or objectionable to the people of Alaska, but so long as the responsibility is upon the department every effort will be made by the officers in charge of the work to get substantial results, and every thoughtful person acquainted with the present conditions in Alaska and interested in a proper development of the Territory knows that some form of Federal aid, which means Federal direction, is necessary to get such results.

The task of building roads throughout this vast wilderness of Alaska to meet the rapidly growing demands and aid in a systematic development of its resources can not be adequately described by any less comprehensive term than colossal, and our board can not hope to make more than a beginning during the official lifetime of its present members.

As far back as 1908, in the annual report of the board for that year, the suggestion was made that the time was approaching, it was thought, when some local or territorial machinery should be organized to take charge of the local roads, such as, for instance, an elective board of three supervisors for each district or commissioner's precinct; and although in the annual report of the following year it was stated that the developments of the year had not given further encouragement to the adoption of that idea, it is believed that the subject might now be taken up with advantage by the legislature.

There exists already an elective commissioner provided for by the legislature for each judicial division, empowered to expend certain money derived from sales of timber in the forest reserves; but it would be expecting far too much of these commissioners to properly supervise local road work throughout their divisions. Such an organization as first mentioned, of supervisors, elective, for each precinct, who would receive and account for the moneys allotted to their precincts and supervise the expenditures therein would aid very greatly in working out the problem as it now exists.

In last year's report it was stated that while the board did not class any of the roads constructed as "automobile roads," nor did the board feel justified in encouraging the use of automobiles on them, there were, however, over 100 motor trucks and passenger cars so used. There are now more than 250 motor trucks and passenger cars used on roads constructed, and a regular automobile mail and passenger service was maintained between Valdez and Fairbanks during the present summer. As the roads improve, the traffic increases and it is expected that there will be a large increase in automobile traffic in the coming year.

Much damage has been done to the roads by the use of heavy, narrow-tired trucks, the operation of which, due to the absence of



MILE POST 10½, DEERING-INMACHUCK ROAD.

10

appropriate laws, the board is powerless to regulate. Roads recently graded, which would prove satisfactory for light traffic, are plowed up by heavy trucks before surfacing is completed, and expensive repairs become necessary.

The legislature was appealed to through the governor for some suitable law to protect the roads of the Territory, but so far no action has been taken. Roads constructed and maintained by the board should be protected by a law similar to that passed by Congress for the protection of telegraph lines. (Sec. 60, act approved Mar. 4, 1909, and published in G. O. 22, War Department, 1910.)

A single instance will show the necessity for some protective law. On September 14, 1916, the superintendent at Nome reported, in regard to a completed road, that:

This road for 500 feet was destroyed by being worked out by ——— Mining & Dredge Co. The district attorney would not give us protection and I had the piece of road rebuilt. Inside of two weeks after it was reconstructed they destroyed it again.

It is hoped some action may be taken to protect roads and bridges, etc., built by Federal appropriations. A good deal of undeserved criticism and even abuse has been heaped upon the board in the past and especially upon its presiding officer, some of which, at least, was due to this condition. One source of this criticism is well known to the War Department.

It may be remarked that Alaska abounds in mineral wealth, fish, and road-commission critics. There are also other varieties of this last named product, most of whom appear to be endowed with a degree of captiousness unusual even in this pestiferous breed.

This is not intended in any sense to apply to the very large number of people in the Territory who are earnestly endeavoring to aid in upbuilding the country, who give all possible support and encouragement to the work, and whose recommendations and criticisms fairly made are welcomed by the board, but rather to a class aptly described by the distinguished author of a recent publication as “* * * more or less irresponsible individuals whose hands were filled with mud and who were actuated by a fixed desire to throw it at something * * *.”

That “something” is usually a public officer.

A detailed description of the work in the several districts follows. The total amounts expended on the different routes will be found in the detailed statement of expenditures on a later page. Any differences between the amounts there stated and those given in the description of the work arise from the wide distribution of routes and the slow mail service, by reason of which reports of indebtedness and disbursements from outlying districts arrive after the disbursing account for the year has been closed, and are, therefore, included in the report for the following fiscal year.

SOUTHEASTERN DISTRICT.

(Mr. J. C. HAYES, Superintendent.)

Route 1—Prince of Wales Island Road (4.1 miles road, 6.8 miles trail).—In addition to extensive repairs to the wagon road section of this route, a portion of the trail section on each side of the island was improved to wagon road standards, to enable boats to transfer mail and freight directly to the wagon road. Approximately 1,000

feet of plank road was built in making these extensions. The total cost of repairs and new construction was \$5,170.53.

Route 2—Juneau-Eagle River Road (16 miles road, 14 miles trail).—The work of surfacing this route was continued during the working season, and the wagon road section is now graveled throughout its entire length. In addition, new planks were placed in bridges, and some work was done in protecting the road from high water in Lemon Creek.

A bridge consisting of a 50-foot truss span and 208 feet of pile approaches was constructed over the Mendenhall River near its mouth, for the benefit of farmers and school children living north of the river. It was built by contract, at a cost of \$1,525.50. The work of constructing the one-half mile of road to connect this bridge with route 2 is now in progress. An extension of this branch road to the mining district at Auk Bay is contemplated as soon as funds can be made available.

Route 3—Haines-Pleasant Camp Road (47.5 miles).—Ordinary maintenance on this route, by the patrol system, embraced the removal of slides, replanking small bridges, and placing gravel surfacing on about 3 miles of the road between Haines and Wells. Additional work was required to repair damages caused by high water in the Klehini River. Three small bridges were rebuilt, and a 60-foot king-post span of native timber was constructed to replace temporarily a portion of the Chilkat Bridge approach which had been washed out.

The total expenditure on this route averaged \$117.70 per mile.

Route 14—Sitka-Indian River Park Road (2.8 miles).—This road was graveled throughout its entire length during the year. A total of approximately 100 linear feet of log and gravel bank protection was constructed to insure the safety of the west pier of the suspension bridge over Indian River, and minor repairs were made to the bridge.

Route 39—Juneau-Sheep Creek Road (3 miles).—The work of the past year on this route comprised general maintenance, increasing the thickness of the gravel surfacing, and widening the road in places to accommodate the increased automobile travel. The cost of the work averaged \$617.61 per mile. This route sustains a heavier automobile traffic than any other road in Alaska (approximately 100 automobiles daily), and the cost of maintenance is, therefore, relatively high.

Route 40—Douglas-Gastineau Channel Road (2 miles).—No work was done on this route during the year.

Route 43—Petersburg-Scow Bay Road (1 mile trail, planked).—In 1915 a project was adopted for a wagon road from Petersburg to Scow Bay, a distance of 3 miles. The work done under this project during the year comprised clearing 2 miles of the right of way to a width of 20 feet, and constructing 1 mile of plank trail 2 feet wide. The plank trail was built by contract at a cost of \$550; the remainder of the work cost \$1,638.09.

Route 44—Skagway Valley Road.—The present project for this route contemplates approximately 5 miles of wagon road from Skagway up the valley of the Skagway River, following the location made in 1914. (See annual report, 1914, p. 8.)



MILE POST 367½, ROUTE 4K, VALDEZ-FAIRBANKS ROAD.

The work of the past year was confined to the construction by contract of a bridge over the Skagway River, consisting of a 50-foot truss span with 208 feet of pile approaches. The total cost of this work was \$2,190.48. The work of constructing the road is now in progress.

Gastineau Channel Bridge.—There has been for several years a growing demand for a bridge from Juneau across the Gastineau channel to Douglas Island, where it would connect with route 40 and thus with the communities of Douglas and Treadwell. The available sites have been investigated, and plans are now being prepared for a bridge having a 501-foot steel central span, with wooden trestle approaches. The construction of this bridge, however, is contingent upon the provision of sufficient funds in the future.

VALDEZ DISTRICT.

(Mr. J. H. INGRAM, Superintendent.)

Route 4A—Donnelly-Washburn Sled Road (55 miles).—Temporary winter bridges over the Big Delta and Little Delta Rivers, aggregating 410 feet in length, were again constructed by Mr. J. E. Sullivan, at a contract price of \$2.50 per linear foot. In addition, minor bridge repairs were made and approaches graded to streams not bridged, at a total cost of \$40.

Unusually high water during November carried away one of the temporary bridges, 90 feet in length, over the Big Delta River; this was replaced by the Northern Commercial Co., operating the mail and stage line, for \$251.10, the actual cost of labor and materials.

Route 4B—Valdez-Ernestine Road (63 miles).—High water in Lowe River and the Valdez glacier stream again gave much trouble, and the greater part of the year's work was devoted to the repair of damage done by these streams and the protection of threatened points.

In August, 1915, a portion of the grade over the glacial moraine near Valdez was washed out by the glacier stream, requiring the construction of approximately 345 feet of pile trestle extensions to existing bridges. During the same month the road through Keystone Canyon was damaged by a flood of Lowe River, making necessary the reconstruction of cribbing, resurfacing washed-out sections, and placing additional bank protection.

Seventeen hundred and seventy-one linear feet of the road between Valdez and milepost 3 was raised during the year by amounts of elevation varying from 0.5 foot to 2 feet, and a total of 6,110 linear feet of brush mattress of the usual type was constructed for the protection of the road.

The bursting of a glacial reservoir on the headwaters of the Saina River in September, 1915, caused a flood of unprecedented magnitude, which carried away the 60-foot span forming part of the bridge over that stream. This was replaced by a 75-foot span at a labor cost of \$588.81. Most of the material was already on hand.

The remainder of the work on this route consisted of general maintenance and improvement. A stringer bridge on mile 7 was replaced by a 36-foot truss bridge. Thirty-six hundred and seventy-seven linear feet of road was given a light gravel surfacing. One man was

employed between Keystone Canyon and Ptarmigan Drop from May 1 to June 30 of this year to keep ditches and culverts open during the spring melting and remove slides from side hill cuts.

The total cost of all work on this route averaged \$458.86 per mile.

Route 4C—Ernestine-Willow Creek Road (29.3 miles).—Extensive damage to corduroy and culverts on this route resulted from forest fires during 1915. The work of the year embraced the repair of this damage, and general maintenance, including the removal of slides and fallen trees, cleaning out ditches, and surfacing soft sections with gravel. The average cost of the work was \$194.65 per mile.

Route 4D—Willow Creek-Gulkana Road (36 miles).—General repairs to the entire route and the improvement of sections on which no elaborate work had previously been done constituted the work of the year. The usual repairs included improvements to the drainage system, building new culverts, and repairing those damaged by forest fires, dragging and rolling the road, and minor repairs to the Gulkana bridge. In addition, 7½ miles of road was straightened, widened, and graded with a road machine. The total expenditures on this route was \$12,511.01.

Route 4E—Gulkana-Sourdough Road (21.5 miles).—The work of the year on this route consisted of ordinary maintenance, including enlarging ditches, putting additional surfacing on corduroy, repairing and constructing culverts, and dragging and rolling the road. The average cost of the work was \$143.72 per mile.

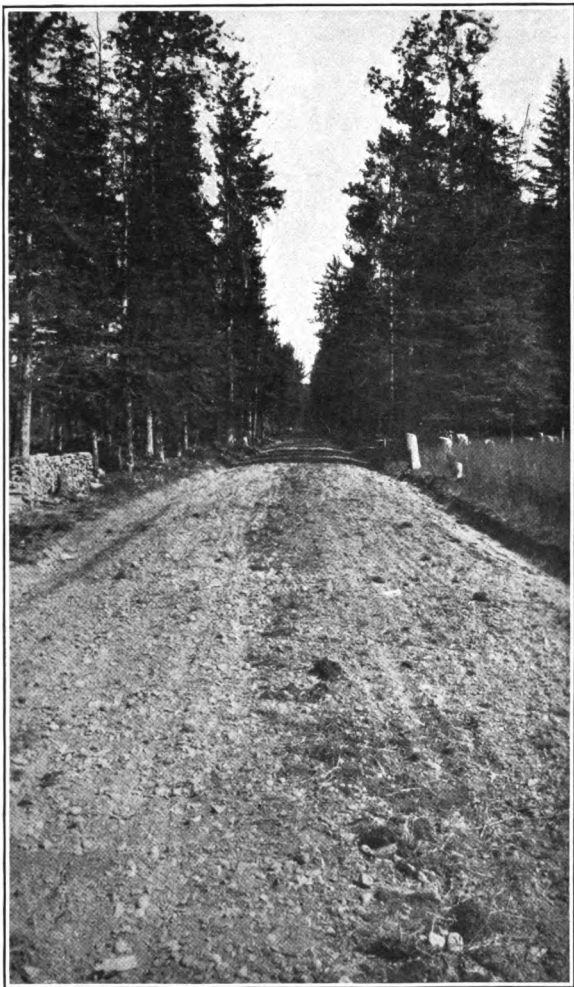
Route 4F—Sourdough-168 Milepost Road (18.2 miles).—The work on this route during the year embraced laying 1,335 linear feet of corduroy, enlarging ditches, repairing culverts, and surfacing 2,125 linear feet of road with gravel. In addition, 19 new culverts, with a total length of 101 linear feet, were constructed at an average cost of \$1.84 per linear foot. Corduroy in place cost 25 cents per linear foot. The total expenditure on this route averaged \$469.01 per mile.

Route 4G—168 Milepost-Delta River Road (38.3 miles).—Maintenance and repair work of the usual nature was carried on in 1915. In addition, 38 new culverts, aggregating 230 feet in length, were constructed at an average cost of \$1.64 per linear foot.

For the protection of the road across Gun Creek Flat, there was constructed a low dike 1,160 feet in length, and averaging 5 feet in height, protected against erosion by a brush mattress of the type used on route 4B.

Route 4H—Delta River-McCarty Road (73.4 miles).—General maintenance of the entire route, together with some improvements, constituted the work of the year on this route. Work not classified as usual repairs included building 34 new culverts, total length 204 feet, at an average cost of \$1.70 per linear foot, and widening 5 miles of road and grading with a road machine, at an average cost of \$530.32 per mile. The protection and repair of the 60-foot truss bridge on mile 221 cost \$850.41

Route 4I—McCarty-Richardson Road (20.6 miles).—The work of maintenance and improvement on this route included widening turns on Shaw Creek Hill, repairing bridges and culverts, surfacing with broken rock 2,200 linear feet of road near Richardson, and widening and grading 5 miles of the road with a road machine. The total cost of the work on this route was \$18,203.34.



LOOKING NORTH FROM OLE MARTIN BRIDGE, ROUTE
10, SEWARD-KENAI LAKE ROAD.

Route 6A—Willow Creek-Tonsina Road (24 miles).—General repairs and maintenance constituted the chief work of the year on this route, and embraced filling ruts and leveling road with a road machine, removing windfalls and rebuilding culverts which had been destroyed by fire. In addition, 190 linear feet of log cribbing was constructed, on the grade 1 mile from the Tonsina River, to protect the road from drifting sand; the cost of this work was \$462.

The total cost of work on this route averaged \$61.96 per mile.

Route 6B—Tonsina-Chitina Road (15 miles).—The usual maintenance and repair work was performed on this section in 1915, and in addition the following improvements were made:

A substantial surfacing of gravel and broken rock, 6 to 10 inches in depth and 9½ to 12 feet wide, was laid on 6,705 linear feet of road at an average cost of \$719.24 per mile. Twenty-four culverts, with a total length of 149 feet, were constructed, at a cost of \$2.03 per linear foot. Two miles of side hill cut was widened 4 feet, at a cost of \$486.50.

A low brush and gravel dike, 272 feet in length, was constructed across the head of a slough of the Tonsina River, above the bridge, to divert into the main channel a flow which was threatening the road. This dike cost \$675.50.

The total cost of all work on this route was \$8,040.29.

SOUTHWESTERN DISTRICT.

(Mr. ANTON EIDE, Superintendent.)

Route 10—Seward-Kenai Lake Road (14 miles).—Maintenance work by the board on this route was confined to the early part of the year, and included minor repairs to bridges, removing driftwood from bridges, and repairing corduroy.

During October and November, 1915, \$3,400 was expended on this route by the Territorial road commissioner for the third judicial division, under the immediate supervision of Mr. Eide. The work was done by contract, and embraced relocating on the right of way of the Government railroad, approximately 1.8 miles of the road between mileposts 1 and 3, and straightening, widening, and repairing the old road between mileposts 3 and 5.

In May of this year the work of reconstructing the pile bridge over Resurrection River was commenced. Three 75-foot truss spans were erected over the main stream, and the south pile trestle approach was extended 200 feet. The cost of this work to June 30 was \$2,616.10. The bridge was completed in August at a total cost of approximately \$4,700.

*Route 12—Mile 34 A. N. R. R.—Hope Road (31 miles road, 9 miles sled road).*¹—The year's work on this route was entirely maintenance, and comprised the removal of fallen trees, repairing culverts and corduroy, and cleaning out cuts.

Route 19—Kern Creek-Knik Trail (86 miles).—About 13 miles of this trail, following the steep slopes of the mountains along Turnagain Arm, through heavy vegetation, was seriously damaged during the summer of 1915 by forest fires, which destroyed the greater part of

¹The mileage of this route has been erroneously carried in previous reports as 40 miles road.

the retaining walls and bridges. The work of repair was carried on during September and October, 1915, at an average cost of \$178.26 per mile for the 13 miles covered.

Travel over this route during the past winter was unusually heavy, owing to increases in the mail service and in the activities of the Alaskan Engineering Commission, making some additional work necessary to improve the trail, and keep it free from snowslides and dangerous ice formations. This work covered 34 miles and cost \$30.41 per mile.

Route 20A—Knik-Susitna Trail (30 miles).—The work done on this route covered 15 miles and comprised the removal of windfalls and a small amount of grading. The total expense for the section worked over averaged \$13.35 per mile.

Route 20B—Susitna-Rainy Pass Trail (127 miles).—The only work done on this route during the year was the relocation of about 1 mile of trail between Happy River and Rainy Pass to eliminate several severe grades.

Route 20C—Rainy Pass-Tacotna Trail (130 miles).

Route 20D—Tacotna-Kaltag Trail (145 miles).

No work was undertaken on these routes during the year.

Route 24—Mile 29 A. N. R.-Moose Pass Road (15 miles road, 14.5 miles sled road).—The work of the year was devoted to the improvement of the first 15 miles of this route to wagon road standards, at a cost of \$520.76 per mile. The average unit costs were:

Clearing and grubbing, per acre.....	\$150.00
Excavation, rock, per cubic yard.....	1.50
Corduroy, per linear foot.....	.42
Culverts, each.....	6.00

Route 32A—Tacotna-Flat Creek Trail (87 miles).—No work was done on this route during the year.

Route 35—Knik-Willow Creek Road (34 miles road, 1½ miles sled road).—The work on this route during the year was limited to necessary maintenance, including cleaning out ditches, constructing new culverts, and laying 1,167 linear feet of corduroy.

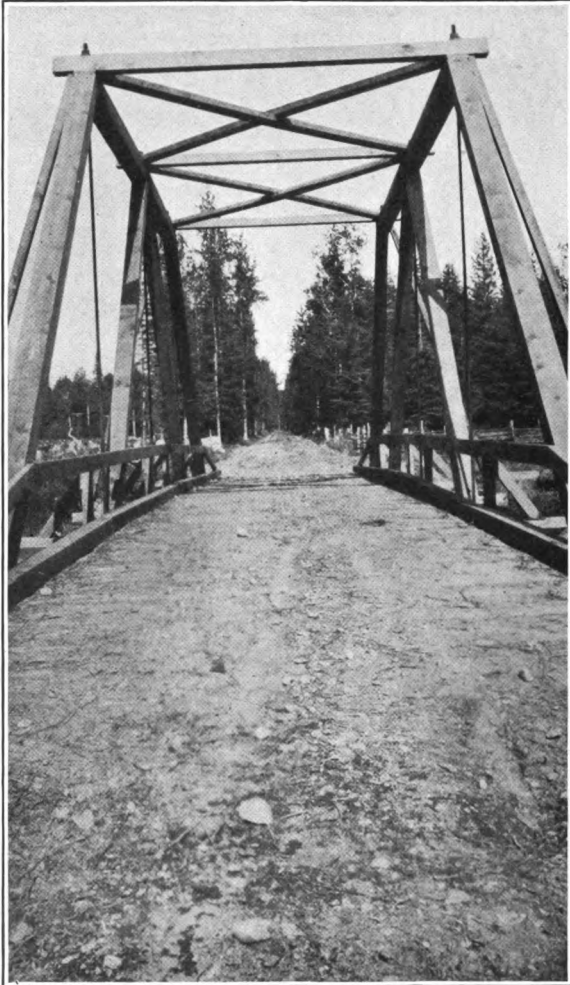
An expenditure of \$300 was made in constructing a branch sled road, 1.5 miles long, from mile 32 up the Little Susitna Valley, to serve a number of mines and prospects in process of development in the Archangel Creek Valley.

YUKON DISTRICT.

(Mr. R. J. SOMMERS, Superintendent.)

Route 4J—Richardson-Salchaket Road (30 miles).—The work on this route during the year was chiefly maintenance, including repairing and rebuilding culverts, cleaning out drainage ditches, and filling ruts. Between mileposts 301 and 302 a portion of the road was relocated in order to place it on higher ground and to eliminate a steep grade in sandy soil which had given much trouble. This relocation necessitated 4,400 feet of new construction, which cost \$2,116.35. Unit costs of the new work were:

Clearing and grubbing, per acre.....	\$90.00
Ditching and grading, per linear foot.....	.37
Corduroy, per linear foot.....	.50
Pole culverts, each.....	10.00



OLE MARTIN BRIDGE, ROUTE 10, SEWARD-KENAI LAKE ROAD.

The cost of maintenance on the remainder of the road averaged \$396.07 per mile.

Route 4K—Salchaket-Fairbanks Road (40 miles).—The work of the year consisted chiefly of general repairs and maintenance covering the entire route, particular attention being devoted to culverts, bridges, and drainage ditches. A new ferry scow, 36 by 16 by 3 feet, was built at Salchaket at a cost of \$907.62, and an approach 16 feet wide and 100 feet long, built of logs and filled with brush and gravel, was constructed at a cost of \$218.50. During March of this year, a bridge was built over a slough at milepost 347 to replace an old bridge which had become unsafe. It consists of two 40-foot spans, with a central gravel-filled pier, and cost \$1,693.59.

The average expenditure for maintenance on this route was \$325.38 per mile.

Route 5—Ester-Fort Gibbon Sled Road (148 miles).—The work of the past year on this route consisted of removing windfalls, grading approaches to streams not bridged, and the construction of 8 new bridges from 15 to 102 feet in length. The cost of the work averaged \$18.30 per mile.

Route 7A—Summit-Cleary Road (11 miles).

Route 7B—Fox-Olnes Road (13 miles).

Route 7C—Summit-Fairbanks Creek Road (11 miles).

Route 7D—Ester Creek Road (13 miles).

Route 7E—Vault Creek Road (2 miles).

Route 7F—Vault Creek-Treasure Creek Road (1.5 miles).

Route 7G—Fairbanks-Gilmore Road (13 miles).

Route 7H—Little Eldorado Creek Road (1.5 miles).

Route 7I—Gilmore-Summit Road (6 miles).

By an agreement with the Territorial road commissioner for the fourth judicial division, these routes, which, with 7J and 7K, comprise the local road system around Fairbanks, were turned over to him for maintenance. The expenditures by the board on these routes were for inspection trips by members and employees of the board and for the settlement of a claim for timber furnished in 1914 for rebuilding the Newcomb Slough Bridge.

Route 7J—Fairbanks-Chena Hot Springs Sled Trail (64 miles).—The work of the year covered the entire route and comprised the repair of bridges and culverts, and the removal of windfalls, slides, and other obstacles.

Route 7K—Olnes-Livengood Sled Road (54 miles).—Promising developments in the Tolovana mining district in 1914 and 1915 gave rise to a demand for better transportation facilities, and in response to this demand, a project was adopted for a sled road connecting Livengood with Fairbanks. After a preliminary reconnaissance of the available routes, that from Olnes, on route 7B, to Livengood was chosen. A location survey was made by Mr. R. A. Jackson in July and August, at a field cost of \$1,781.12, or \$33.10 per mile. Construction work was started in August and completed December 31. Permanent bridges were built over all streams except the Tolovana River. The total cost of the work, including the preliminary reconnaissance and the location, was \$17,056.30, of which \$4,997.50 was contributed by local interests through the Fairbanks Commercial Club. It is estimated that approximately 1,000 tons of freight passed over this road during the winter of 1915-16.

Route 9—Rampart-Eureka Road (6.5 miles road, 21.5 miles sled road).—Annual maintenance of the wagon-road section constituted the year's work on this route. Six hundred linear feet of corduroy was laid, bridges and culverts were repaired, and additional ditching was done where necessary. The average cost of the work was \$146.86 per mile for the 6.5 miles covered.

Route 11—Eagle-Fortymile road (19.5 miles road, 60 miles sled road).—Work done on this route during the year comprised ditching, filling ruts, repairs to bridges and culverts, and slight relocations of the road between mileposts 1-2 and 9-10, which resulted in a material reduction of grade.

Route 15—Circle-Miller House Road (49 miles).—Annual maintenance on this route was performed in July and August and included laying 1,350 feet of corduroy and the construction of 124 culverts and 11 bridges, with an aggregate length of 380 feet. Corduroy in place cost 60 cents per linear foot. The average cost of the work was \$125 per mile.

Route 16—Chatanika-Miller House Sled Road (81 miles).—The work of maintenance on this route was done during September and embraced the removal of slides and fallen timber and minor repairs to bridges. In addition, the Eagle and 12-mile summits were permanently staked with tripods at 100-foot intervals.

Route 17—Fort Gibbon-Kaltaq Trail (257 miles).—Work done on this route was confined to temporary staking for the guidance of winter travel. It was done by contract at a cost of \$300.

Route 17A—Lewis Landing-Dishkaket Trail (108 miles).

Route 17B—Nulato-Dishkaket Trail (90 miles).

No work was done on these routes during the year.

Route 22—Hot Springs-Sullivan Creek Road (9 miles wagon road, 6 miles trail).—The work of the year on this route was entirely maintenance and consisted chiefly of repairs to bridges, culverts, and corduroy.

Route 23A—Chatanika-Beaver Trail (120 miles).

Route 23B—Beaver-Chandler Sled Road (75 miles).

No work was undertaken on these routes during the year.

Route 29—Fort Gibbon-Koyukuk Trail (100 miles).—The new construction from Fort Gibbon to milepost 38 constituted the year's work on this route. All timbered sections were cleared to a width of 8 feet, and all open country was staked at intervals of 100 feet. Stumps, niggerheads, and other obstacles to traffic were removed, and permanent bridges were built over all streams. Clearing and staking cost \$27.73 per mile, and the total expenditure averaged \$50.70 per mile.

Route 30—Hot Springs Landing-Eureka Road (32 miles).—The greater portion of the year's work was performed on the section from the steamboat landing to Hot Springs and embraced cleaning ditches and filling ruts, replacing corduroy, and repairing bridges and culverts. On the remainder of the road a small amount of work was done, consisting principally of repairs to bridges and culverts.

Route 31—Salchaket-Caribou Creek Sled Road (46 miles).—No work was done on this route during the year.

Route 32B—Iditarod-Flat Creek Road (8 miles).

Route 33A—Otter Creek Towpath (22 miles).

Route 33B—Summit-Otter Creek Road (6 miles).

The work of the year on these routes comprised general maintenance of the main Iditarod-Flat Creek Road. Bridges and culverts were repaired, 4,005 linear feet of corduroy was laid, and 2,885 feet of road graveled. The work was done under the supervision of United States Commissioner G. G. Geraghty. The total expenditure was \$3,970.88, including local donations of money and team hire to the extent of \$956.

Route 38—Ruby-Long-Cripple Trail (6 miles road, 24 miles sled road, 60 miles trail).—Annual maintenance work on the wagon road section embraced repairing and cleaning out culverts, opening drains, and filling all low places in the roadbed. Work on the sled-road section covered 13 miles between mileposts 6 and 19 and comprised the repair of side-hill cuts, which had been badly damaged by the spring break-up and summer rains. A small amount of work was done in removing windfalls from the Long-Poorman Trail.

The development of the mining districts tributary to Ruby has been accompanied by a constantly increasing necessity for better facilities for transportation. To meet this necessity, the work is now in progress of improving to wagon-road standards the sled road from milepost 6 to Long.

Bridge over Chena Slough, Fairbanks.—Early in 1915 work was commenced on plans for a 300-foot-span steel bridge, with Petit trusses, to be constructed over Chena Slough at Fairbanks, connecting the Valdez-Fairbanks Road with the Fairbanks local roads and the various mail routes leading out of Fairbanks. The decision to construct a steel bridge of this length was reached only after careful study of local conditions. The possibility of building piers in the channel, allowing the use of wooden or combination spans of shorter length, was considered, but it was rejected because of the difficulty of constructing piers to withstand the extremely heavy ice run, and more particularly because of the necessity for leaving the channel free in order to prevent the formation of ice jams and the consequent flooding of the city of Fairbanks.

The services of Mr. O. A. Hall as designing engineer were secured, and the work of designing was started in June, 1915. In July, when the plans were more than 50 per cent completed, they were burned in the fire which destroyed the offices of the board at Valdez, and as a result they were not finally completed until November.

In March of this year a contract for the fabrication of the structural steel was let to the Penn Bridge Co., Beaver Falls, Pa. The steel called for by this contract, together with all other necessary material, has been delivered in Fairbanks, and the work of constructing the piers is now in progress. The bridge will be erected by hired labor during the coming winter.

NOME DISTRICT.

(Mr. DANIEL A. JONES, Superintendent.)

Route 8—Nome-Council Road (approximately 82 miles; 57 constructed).—The work of the season on the Nome-Fort Davis section was maintenance, and consisted of cleaning out ditches and culverts

and graveling some of the softer sections of the road. The average cost of the work on this section was \$128.34 per mile.

No work was done on the Fort Davis-Cape Nome section (9 miles) during the year. This section is in bad condition, having been practically destroyed by the storm of October, 1913, and its complete repair would require a greater expenditure than the board has considered advisable with the funds at its disposal in the past. It is probable that relocation of this section along the second beach line will be necessary.

The Cape Nome section was improved during the year by the territorial road commissioner for the second judicial division, under whose supervision 1.6 miles of new road were constructed over Cape Nome (see annual report, 1914, p. 19, and 1915, p. 14) at a cost of approximately \$10,000. The work was done by contract. Short approaches to this new road were built by the board at a cost of \$416.50.

The year's work on the Solomon-East Fork section included general maintenance and the construction of 12,775 linear feet of new road, consisting of willow corduroy covered with gravel. The total expenditure on this section, amounting to \$4,705.81, was chiefly for the new construction; the cost of maintenance has not been separately reported, but it was small.

The operation and maintenance of the Port Safety Ferry cost \$520.10, and the Bonanza Ferry \$328.40.

Usual repairs to the corduroy section connecting Fox River with Council cost \$206.38 per mile.

Route 13A—Nome-Bessie Road (3.3 miles).—The work of the past season on this route was devoted to maintenance, and cost \$212.25 per mile. This is considered a very low maintenance cost in view of the fact that this route sustains a heavier traffic than any other road in Alaska. This traffic for the past year is conservatively estimated at 7,500 tons, 4,500 tons of which were transported during the summer, giving an average freight movement in summer of approximately 30 tons daily.

Route 13B—Bessie-Banner Road (3.5 miles).—The cost of general repairs and maintenance averaged \$8,405 per mile.

Route 13C—Bessie-Little Creek Road (1.25 miles).—General repairs and maintenance on this route cost \$296.58 per mile.

Route 13D—Bessie-Dry Creek Road (1.25 miles).—The cost of general maintenance work on this route averaged \$123.40 per mile.

Route 13E—Dry Creek-Newton Road (0.3 mile).—No work was undertaken on this route during the year.

Route 13F—Nome-Osborne Road (8 miles).—The work on this route was limited to absolutely necessary repairs, and cost \$15.75 per mile. This expenditure will have to be considerably increased in the future if the road is to be kept up to standard.

Route 13G—Grass Gulch Road (1.75 miles).

Route 13H—Center Creek Road (1.6 miles).

No work was done on these routes during the year.

Route 13I—Nome River Road (5 miles).—The work of the year on this route was devoted to maintenance and improvement. Thirteen new culverts were built, 9,400 linear feet of ditch dug, and 2,785 feet of willow corduroy was laid and surfaced with gravel. The total expenditure for maintenance and improvement was \$2,253.85.



THE SUMMIT, JULY 1, 1916.

Route 13J—Wonder-Flat Creek Road (2 miles).—Maintenance and improvement on this route included the construction of 925 linear feet of ditch and surfacing 3,050 linear feet with gravel. The total expenditure was \$641.

Route 13K—Bessie-Buster Road (7.6 miles).—In addition to general maintenance work, five new culverts were constructed and 500 feet of gravel-surfaced willow corduroy was laid. The total cost was \$425.95.

Route 18—Kaltag-Solomon Trail (248 miles).—The work of the year included general maintenance of the entire route, in addition to staking 38 miles of new trail, widening 12 miles of clearing through timber, and grading 1,080 feet of trail around the bluff east of Walla Walla. The total cost of the work averaged \$9.20 per mile.

Route 21—Unalaklik-St. Michael Trail (approximately 65 miles).—Eighteen miles of this trail was temporarily staked on the ice, and the permanent stakes on the remainder of the trail were repaired and replaced where necessary. A cable carrying a bos'n's chair was placed across the Klickatarick River at an expense of \$60, to afford a safe crossing for the mail in the early fall and late spring.

Route 25A—Cripple River Road (13.5 miles, total A and B).

Route 25B—Penny River Road.

Route 25C—Nome-Wireless Road (0.25 mile).

No work was done on these routes during the year.

Route 25D—Mouth of Center Creek (2 miles).—The work of the year on this route was general maintenance including resurfacing 1,650 linear feet with gravel and cleaning and widening 1,545 linear feet of ditches. The total expenditure was \$602.84.

Route 25E—Submarine-Paystreak Road (1 mile).—No work was done on this route during the year.

Route 25F—Anvil-Glacier Road (3 miles).—Maintenance and repair work on $1\frac{1}{2}$ miles averaged \$61.67 per mile in cost.

Route 25G—Snake River Extension Road (3 miles).—The work of the year on this route was devoted to general maintenance. The total expenditure was \$248.

The suspension footbridge over Snake River at the mouth of Boulder Creek was destroyed by ice during the spring; it will be replaced this year.

Route 25H—Otter-Creek Road (1.25 miles).—No work was undertaken on this route during the year.

Route 25—Sinrock Ferry.—The total cost of maintaining and operating this ferry was \$257.36.

Route 26—Candle-Candle Creek Road (5 miles).—This road is built on a hillside on the left bank of Candle Creek, over tundra which covers a glacial formation. A cross section exposed by the hydraulic operations of a mining company near the road shows 2 feet of moss and tundra, 40 feet of clear ice, and 6 feet of gravel overlying the bedrock. The only practicable construction on such a formation involves the use of willow corduroy with gravel surfacing. A portion of the road has been so constructed, and willows are now being cut for the continuance of the work. These willows will be hauled during the winter and the work of laying and surfacing will be undertaken next spring.

Route 27—Deering-Inmachuck Road (25 miles).—The original work on this route was very light, and for economy of construction the Inmachuck River was crossed and recrossed many times at fords which become impassable during high water. The work of the past year was devoted to the construction of short sections of road on the left bank to eliminate some of these crossings. One fill 625 feet long and averaging 2 feet in height was made, 1,235 linear feet of willow corduroy was laid, and 2,514 cubic yards of gravel was hauled for surfacing this corduroy and resurfacing other sections.

Route 28—Dahl Creek-Candle Trail (140 miles).—The work done on this route is included under flagging trails.

Route 37—Topkok-Candle Trail (141 miles).—One hundred and thirty-two miles of this route were covered in maintenance during the year. All broken permanent stakes were replaced, 16 miles of new trail was staked, 6½ miles of new trail cut through timber, and 3 miles of old trail cleared of willows. The expense averaged \$6.82 per mile for the distance covered.

Route 41—Klery Creek Road (0.75 mile).—No work was done on this route during the year.

Route 42—St. Michael-Kotlik Trail (approximately 70 miles).—Temporary staking of portions of this route which are on the ice and not permanently staked, and inspection of the route cost \$504.30.

Taylor Creek Bridge.—The 160-foot suspension footbridge across Taylor Creek was taken out by the ice in the spring of 1916. It was replaced in June at a cost of \$214.49.

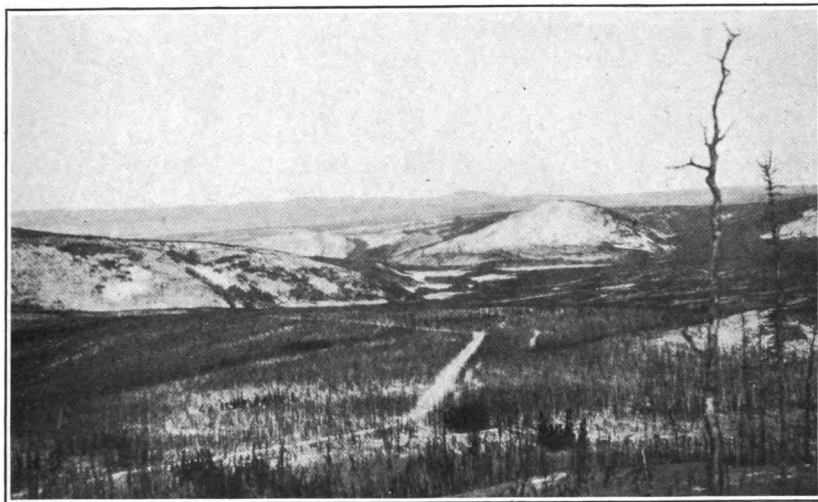
Snake River Bridge.—In 1915 a project was adopted for a bridge over Snake River at Nome, consisting of two 100-foot combination Pratt truss spans, with 360 feet of pile trestle approaches. Construction was started in June, 1916, and the expenditure to the close of the fiscal year was \$2,357.82. The bridge has been completed, but no report has yet been received of the total cost.

Flagging Trails.—For the guidance of travelers during the winter months, the principal routes of travel in the Seward Peninsula which are not permanently marked are temporarily staked or flagged. The necessity for this work and the methods employed have been described in previous reports. During the past winter 540 miles of trail were flagged, at an average cost of \$6.04 per mile.

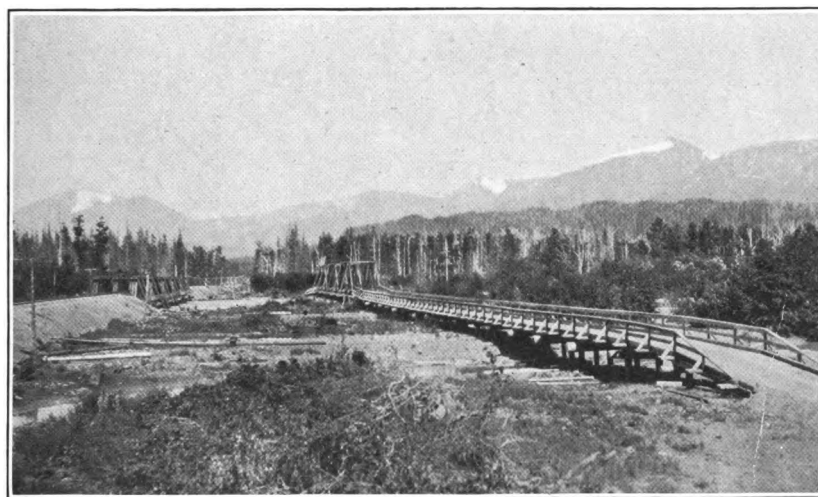
STATEMENT OF RECEIPTS AND DISBURSEMENTS.

This report covers vouchers received and placed in the account, including June 30, 1916.

Balance on hand July 1, 1915.....	\$19,303.26
Received from the Treasurer of the United States:	
Appropriation "Military and post roads, bridges, and trails" (act Mar. 4, 1915).....	165,000.00
Alaska fund.....	164,402.30
Corrections of vouchers:	
Alaska fund.....	.36
Special appropriation.....	11.73
Sales of property, Alaska fund.....	6,140.25
<hr/>	
Total.....	354,857.90
Disbursed as per tabulated statement below.....	300,720.62
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Balance on hand.....	54,137.28



OLNES-LIVENGOOD SLED ROAD.



RESURRECTION BRIDGE, ROUTE 10, SEWARD-KENAI LAKE ROAD.

Expenditures in detail.

Routes, etc.	Wagon roads, bridges, and trails, Alaska fund.	Construction and maintenance of military and post roads, bridges, etc., Alaska.	Total.
Offices.....	\$8,578.27	\$9,800.02	\$18,378.29
Route 1.....	217.75	4,952.78	5,170.53
Route 2.....	4,582.37	4,099.40	8,681.77
Route 3.....	1,715.77	3,774.97	5,490.74
Route 4A.....	2,359.50	.....	2,359.50
Route 4B, first section.....	5,000.00	12,523.05	17,523.05
Route 4B, second section.....	2,384.80	9,000.78	11,385.58
Route 4C.....	2,147.75	3,555.55	5,703.30
Route 4D.....	7,392.69	5,118.32	12,511.01
Route 4E.....	2,925.75	104.25	3,030.00
Route 4F.....	2,878.52	5,658.78	8,537.30
Route 4G.....	4,102.88	1,672.15	5,775.03
Route 4H, first section.....	6,255.17	11,677.30	17,932.47
Route 4H, second section.....	17,044.04	2,631.58	19,675.62
Route 4I.....	15,223.11	2,980.23	18,203.34
Route 4J.....	1,997.82	8,704.93	10,702.75
Route 4K.....	6,558.26	9,058.16	15,616.42
Valdez office addition.....	154.63	737.68	892.31
Route 5.....	2,200.67	675.87	2,876.54
Route 6A.....	1,252.00	235.05	1,487.05
Route 6B.....	4,599.78	3,440.51	8,040.29
Route 7A.....	1,742.41	113.50	1,855.91
Route 7B.....	1,499.27	2.00	1,501.27
Route 7C.....	.....	12.50	12.50
Route 7D.....	5.00	12.50	17.50
Route 7G.....	205.01	14.50	219.51
Route 7J.....	64.25	99.00	163.25
Route 7K.....	4,332.14	7,726.66	12,058.80
Route 8.....	1,795.20	6,284.41	8,079.61
Route 9.....	109.08	845.53	954.61
Route 10.....	1,431.39	426.73	1,858.12
Route 11A.....	223.00	1,078.25	1,301.25
Route 12.....	858.67	1,735.58	2,594.25
Route 13.....	14.00	.....	14.00
Route 13A.....	439.62	123.90	563.52
Route 13B.....	125.00	231.75	356.75
Route 13C.....	185.00	363.00	548.00
Route 13D.....	8.50	145.75	154.25
Route 13F.....	53.50	49.93	103.43
Route 13H.....	68.00	.....	68.00
Route 13I.....	53.00	2,162.85	2,215.85
Route 13J.....	46.75	633.50	680.25
Route 13K.....	85.75	420.95	506.70
Route 14.....	70.08	1,447.52	1,517.60
Route 15.....	562.90	5,561.45	6,124.35
Route 16.....	304.50	170.56	475.06
Route 17.....	737.10	.....	737.10
Route 18.....	1,267.82	1,014.50	2,282.32
Route 19.....	1,173.04	2,304.45	3,477.49
Route 20A.....	63.90	192.10	256.00
Route 20B.....	178.30	17.60	195.90
Route 20C.....	136.50	17.60	154.10
Route 20D.....	21.00	17.60	38.60
Route 21.....	188.49	27.00	215.49
Route 22.....	36.87	2,283.33	2,320.20
Route 24.....	332.88	7,478.38	7,811.46
Route 25C.....	7.73	.....	7.73
Route 25D.....	677.16	386.68	1,063.84
Route 25F.....	12.93	52.00	64.93
Route 25G.....	98.56	248.00	346.56
Route 25, Sinrock Ferry.....	50.00	204.00	254.00
Bull Creek Bridge.....	70.50	.....	70.50
Snake River Bridge.....	624.40	157.90	782.30
Route 26.....	298.00	70.00	368.00
Route 27.....	95.50	3,607.55	3,703.05
Route 29.....	1,920.76	6.00	1,926.76
Route 30.....	176.27	823.73	1,000.00
Route 31.....	50.00	.....	50.00
Route 32A.....	91.35	.....	91.35
Route 32B.....	2,969.92	53.36	3,023.28
Route 35.....	145.38	2,656.89	2,802.27
Route 38A.....	591.04	3,291.16	3,882.20
Route 38B.....	99.70	80.00	179.70
Route 39.....	1,239.84	612.99	1,852.83
Route 40.....	92.50	102.45	194.95
Route 42.....	298.80	.....	298.80
Flagging trails.....	2,484.98	2,229.82	4,714.80

Expenditures in detail—Continued.

Routes, etc.	Wagon roads, bridges, and trails, Alaska fund.	Construction and maintenance of military and post roads, bridges, etc., Alaska.	Total.
Route 43.....	\$30.00	\$2,158.09	\$2,188.09
Route 44.....	97.10	2,093.38	2,190.48
Route 45.....	447.50	1,213.85	1,661.35
Seward warehouse.....	367.06	328.58	695.64
Chisana trail.....		500.00	500.00
Taylor Creek Bridge.....	30.00		30.00
Auto trucks.....	1,804.20	658.86	2,463.06
Fairbanks Bridge.....	1,178.11		1,178.11
Gastineau Channel Bridge investigation.....	1,670.15		1,670.15
Total.....	135,708.89	165,011.73	300,720.62

Distribution of expenditures.

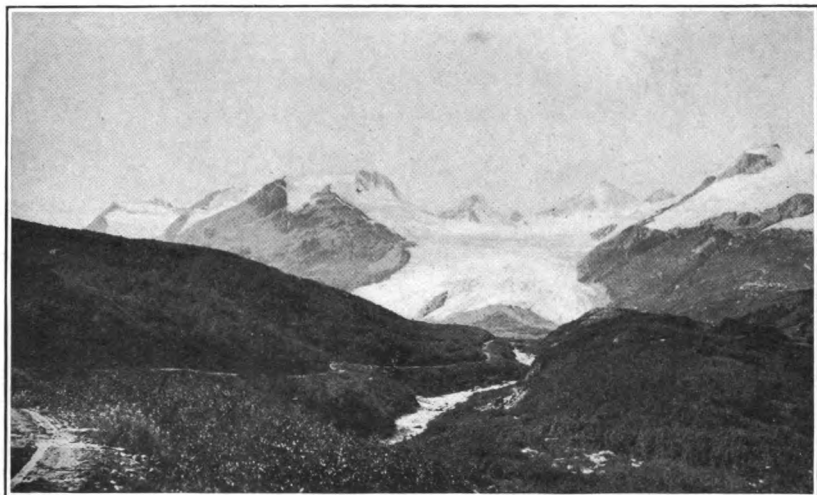
I. Construction, repairs, and maintenance of roads, etc.:		
Salaries, wages of laborers on road work, and other compensation, personal service.....		\$173,995.40
Compensation for services other than personal—		
Transportation of persons.....		2,408.40
Subsistence of persons in traveling status.....		2,434.83
Subsistence of persons not in traveling status.....		8,533.17
Transportation of things, freight, etc.....		18,931.39
Subsistence and care of animals.....		499.52
Communication service (telegraph, telephone, and postage).....		462.62
Printing, maps, etc.....		319.19
Furnishing electric light.....		193.43
Other nonpersonal service (hire of horses and dogs).....		14,626.60
Material for bridges, culverts, etc.....		11,898.64
Supplies—		
Stationery and drafting supplies.....		1,756.66
Fuel (coal and wood).....		1,281.19
Cleaning and toilet supplies.....		159.53
Forage and other supplies for animals.....		19,601.54
Provisions.....		24,816.85
II. Repair of property and equipment used:		
Salaries, wages, and other compensation, personal services.....		36.80
Services, nonpersonal.....		625.67
Materials.....		475.32
Supplies.....		709.89
III. Purchase of property and equipment:		
Equipment (horses, camp equipment, wagons, harness, etc).....		14,447.22
Rents (offices, post-office boxes, and barns).....		2,031.78
Miscellaneous.....		474.98
Total.....		300,720.62

W. P. RICHARDSON,
Colonel of Infantry, President.

P. W. DAVISON,
- Major, Infantry, Disbursing Officer.

J. C. MEHAFFEY,
Captain, Corps of Engineers, Engineer Officer.

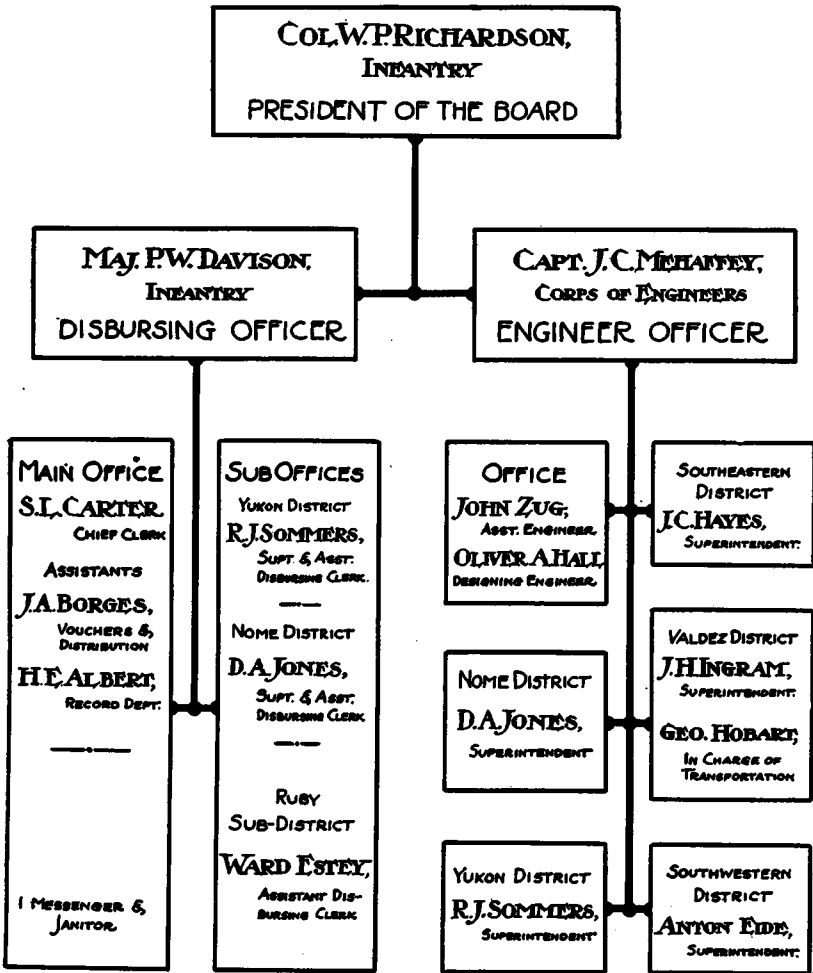
VALDEZ, ALASKA, October 13, 1916.



ROUTE 4B, BETWEEN THOMPSON PASS AND PTARMIGAN DROP.



ROAD OVER CAPE NOME.



ORGANIZATION AS OF JUNE 30, 1916.

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