## HIEF OF ENGINEERS, U. S. ARMY, 1918.

APPROPRIATIONS.	
Act.	Construction and mainte- nance military and post roads, bridges, and trails, Alaska
casury, United States, account "Alaska fund."	$\begin{array}{c} \$150,000,0\\ 250,000,0\\ 350,000,0\\ 350,000,0\\ 100,000,0\\ 100,000,0\\ 123,000,0\\ 125,000,0\\ 125,000,0\\ 125,000,0\\ 000,000,0\\ 000,000,0\\ 000,000,0\\ 2,820,000,0\\ \end{array}$
7, 1905, as amended by an act approved May 14, 1906.	Wagon road, bridges, and trails, Alaska fund.
	$\begin{array}{c} \$2\$, 000, 00\\ \$0, 500, 00\\ 128, 584, 09\\ 145, 200, 01\\ 145, 200, 01\\ 152, 000, 10\\ 152, 000, 10\\ 152, 000, 10\\ 152, 000, 10\\ 153, 200, 10\\ 154, 302, 302, 30\\ 154, 302, 30\\ 154, 302, 30\\ 154, 302, 30\\ 154, 302, 30\\ 154, $
	1, 968, 576, 93

## PREVIOUS PROJECTS.

n the Annual Reports of the board.

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ANNUAL REPORT OF THE CHIEF OF ENGINEERS, 1919 EXTRACT

CONSTRUCTION AND MAINTENANCE OF MILITARY AND POST ROADS, BRIDGES, AND TRAILS, ALASKA

> BOARD OF ROAD COMMISSIONERS FOR ALASKA IN CHARGE



WASHINGTON GOVERNMENT PRINTING OFFICE 1920 cooperative basis July 1. Alaska Road Commission allotment \$5,000, Department of Agriculture \$10,000, with \$5,000 from Territorial funds.

Route 44. Skagway Valley Road (2.5 miles).—All expenditures on this route were in repairs to bridge over Skagway River. This bridge was seriously damaged by high water, and on account of shortage of funds the city of Skagway contributed one-half of the cost of repairs. Maintenance cost, \$242.

Route 45. Silver Bow Basin Road (4 miles).—This road, on account of its location along the mountain side, is very susceptible to damage, and was badly washed out during the fall. Damage amounted to approximately \$5,000. Slides and swift mountain streams completely destroyed several sections of the road, and on account of the very heavy cost of repairs, necessitating almost new construction of a part of the route, the road was only opened as far as the Ebner mine, about 14 miles from Juneau. To do this it was necessary to construct about 200 feet of trestle work and remove several rock slides. Late in June of this year a crew was started in opening the remainder of the road. The entire road will be open for traffic about August 15. The repair work on this road is being done in cooperation with the Territory. Alaska Road Commission allotment \$1,000, Territorial allotment \$2,000.

Expenditure for maintenance during year. \$2,734.89.

 $\overline{Ketchikan}$ -Wards ('ove Lighthouse Station-Ketchikan Creek Road (7 miles).—This is a very worthy project and has not been built owing to limited funds. It is now under construction in cooperation with the Department of Agriculture, Territory of Alaska, and the Alaskan Road Commission, the allotments being, respectively, as follows: \$39,000, \$13,000, and \$5,000.

The Wards Cove section is 4 miles in length and connects Ketchikan with the rapidly developing manufacturing section between the town and Wards Cove. The lighthouse section connects Ketchikan with the lighthouse station, and the Ketchikan Creek section leads from the town to the city park, which is being improved by substantial voluntary popular subscriptions by the local people.

All of the work is fairly heavy construction. Work was started in June. Expenditures, all charged to construction, amounted to \$1,582,76.

All of the cooperative work is being done under the direction of Maj. W. H. Waugh, who, in addition to his duties with the Alaska Road Commission, acts as representative of the Department of Agriculture.

#### VALDEZ DISTRICT.

#### C. G. MORRISON, C. E., DISTRICT ENGINEER.

Route 4.4. Donnelly-Washburn sled road (55 miles).—The channels of the Big Delta River at Donnelly were bridged with 359 feet of temporary structure, at a contract price of \$2.25 per linear foot. Total maintenance, \$807.75.

Route 4B. Valdez-Ernestine Road (63 miles).—Three crews were engaged on this route throughout the entire season. During July and August the stream from Valdez glacier destroyed one pile bridge in the vicinity of Valdez and threatened several others in addition

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to the intervening road; the road on the alder flat, at the head of Keystone Canyon, was inundated and partially destroyed, necessitating a new location on the hillside. Bear Creek, in mile 18, filled in its channel with 20 feet of bowlders, gravel, and débris, washed out one of the bridge trusses, and destroyed both approaches, and at Beaver Dam the Tsaina River inundated all of mile 42, including the sites of the road house and telegraph station. These destructive in-roads by the rivers necessitated new locations at a time when the crews were already busily engaged in important maintenance and river control. Due to the great scarcity of labor, the commanding officer at Fort Liscum detailed some 20 men for work on the washout in mile 18 and others for duty on the pile driver at Valdez.

In the fall a section of road in mile 8 was destroyed and a detour was constructed on the flat a short distance to the north. In all there was a considerable amount of new construction necessitated by washouts. As these sections of new road are all short and were built hurriedly with the object of keeping the road open, the location was not in all cases of the best. In fact, only a small portion of the summer's work can be considered of permanent value.

At the end of the fiscal year the summary of the work accomplished was as follows:

Clearing and grubbing, 30 feet wide	miles	4.2
Sidehill grading, 12 feet over all	linear feet	2,100
34 culverts constructed	do	167
37 culverts repaired	do	177
11 bridges constructed	do	273
26 bridges repaired	do	120
Gravel surfacing	do	23,000
Snowslides removed	cubic_vards	900
River control, dikes and spurs	linear feet	8,210
River hank reverments	do	1,910
New road completed (replacement)	- do	3, 300
Solid rock moved in maintenance, Keystone Canyon	cubic yards	3, 620

In addition to the above the entire 63 miles was maintained in very good condition throughout the year, and in spite of the torren; tial glacier streams the route was kept open for the greater part of the summer. Maintenance, \$23,323.06; construction, \$8,722; total, \$32,045.06.

This is the most difficult and expensive section of road the commission has to maintain. For some years the average expenditure has been \$36,700 per year. Of this amount probably 80 per cent was used between Valdez and mile 18. It is believed that about 10 miles of this section should be relocated as soon as funds will permit its construction. Two years' maintenance expense would cover cost of change. Future maintenance of the new section should not exceed a yearly average of \$500 per mile. Unfortunately much work of a temporary nature has been necessary to open up roads for traffic as soon as possible, and funds have always been so limited that the best line could not be adopted. From miles 18 to 63 it is estimated  $$^{350}$ per mile yearly will allow maintenance with some slight improvement of the road.

Route 4C. Ernestine-Willow Creek Road (29.3 miles).-In addition to general maintenance, consisting of rebuilding culverts, clean ing ditches, and miscellaneous road repairs, there was constructed

## BOARD OF ROAD COMMISSIONERS

11 miles of new road with the grader. For construction of 10 bridges having an aggre in addition to the regular replacement of we cubic yards of mud slides were removed. construction, \$6,268; total, \$15,671.41.

Route 4D. Willow Creek-Gulkana Roa grader was used in constructing 81 miles of 1 ing and raising 61 miles of old road. A tl tractor was used in dragging this route in th 1919. Maintenance, \$10,138.93; construction 138.93.

Route 4E. Gulkana-Sourdough Road (2) mile of road was graded by a grading macl nance was carried on. On this route the ma heavy on account of the very poor soil on w A number of old broken culverts were replac

The cost of culverts and bridge replacem the past year on this route has been unusual ment, as well as individuals, have begun tl bile trucks, and the timber in the structure placed. Maintenance, \$5,032.49; construction

Route 4F. Sourdough-168 Mile Road (18. ber of culverts were constructed to replace aged by heavy trucks, road was dragged by were cleaned and enlarged, and 14 miles of g

On June 1 the entire force of self-dun started surfacing at 152 mile, with the gravel the section between the 152 and 160 in the fall, became nearly impassable on a heavy rains during the month, about 20 p One mile of road was surfaced with 1,420 Maintenance, \$5,000; construction, \$5,076.4 Route 4G. 168 Mile-Delta River Road (

of road were graded by grading machine, ( was surfaced with gravel, and four new cu length of 26 feet were placed. In additio maintained throughout the year, the follow

bragging the
Dragging throughout average depth, o rect/
Dragging throughout season over
Dialpon
Drainage ditches         41 culverts rebuilt         28 culverts rebuilt
28 mb rebuilt
ulverts rengined

Maintenance, \$8,922.52; construction, \$8,9 Route 4H. Delta River-McCarty Road (7 unusually fine weather during the summer provements were made on this route. Eigh of new grade were thrown up with the ro:  $2\times 10^{-1}$  grade were thrown up with the ro: 28 culverts, with an aggregate length of 28 ing a total. Gr ing a total length of 69 feet, were built. Gr on 33 miles of road.

In the control of the Delta River and the 2.293 linear feet of dike and 982 linear fee

## ENGINEERS, U. S. ARMY, 1919.

road on the alder flat, at the head of ated and partially destroyed, necessitat. llside. Bear Creek, in mile 18, filled in owlders, gravel, and débris, washed out ind destroyed both approaches, and at r inundated all of mile 42, including the telegraph station. These destructive inated new locations at a time when the engaged in important maintenance and engageu in imposed and great scarcity of labor, the commanding ted some 20 men for work on the washout ty on the pile driver at Valdez.

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ear the summary of the work accomplished

wide	miles	4, 2
wideall	linear feet	2, 100
all	do	167
	do	177
	do	273
	do	120
	do	23,000
	cubic yards	908
`S	linear feet	8,270
'S	do	1, 975
ment)	do	3,300
ance, Keystone Canyon	cubic yards	3, 620
ance, Keystone Oung on	intoi	nod in

ove the entire 63 miles was maintained in ughout the year, and in spite of the torrenroute was kept open for the greater part of nce, \$23,323.06; construction, \$8,722; total,

ult\_and expensive section of road the com-1. For some years the average expenditure ear. Of this amount probably 80 per cent ez and mile 18. It is believed that about 10 ould be relocated as soon as funds will permit years' maintenance expense would cover cost ntenance of the new section should not exceed 00 per mile. Unfortunately much work of a been necessary to open up roads for traffic as nds have always been so limited that the best ed. From miles 18 to 63 it is estimated \$350 llow maintenance with some slight improve-

Willow Creek Road (29.3 miles).-In addinance, consisting of rebuilding culverts, cleanellaneous road repairs, there was constructed

11 miles of new road with the grader. Forest fires necessitated the <sup>1</sup> struction of 10 bridges having an aggregate length of 200 feet considered and alider replacement of worn-out structures; 1,775 in autor of mud slides were removed. Maintenance, \$9,403.41; construction, \$6,268; total, \$15,671.41.

Route 4D. Willow Creek-Gulkana Road (36 miles).-A road rader was used in constructing 8½ miles of new grade and in regradand raising 61 miles of old road. A three-way drag with Case ing and used in dragging this route in the spring and summer of Maintenance, \$10,138.93; construction, \$10,000; total, \$20,-1919. 138.93.

Route 4E. Gulkana-Sourdough Road (21.5 miles).-One-quarter mile of road was graded by a grading machine. The usual maintenance was carried on. On this route the maintenance is at all times heavy on account of the very poor soil on which the road is located. A number of old broken culverts were replaced.

The cost of culverts and bridge replacements and repairs during the past year on this route has been unusually heavy, as the Government, as well as individuals, have begun the use of heavy automobile trucks, and the timber in the structures is old and must be replaced. Maintenance, \$5,032.49; construction, \$1,700; total, \$6,732.49.

Route 4F. Sourdough-168 Mile Road (18.2 miles).-A large number of culverts were constructed to replace those worn out or damaged by heavy trucks, road was dragged by the use of teams, ditches were cleaned and enlarged, and 14 miles of grade were repaired.

On June 1 the entire force of self-dumping automobile trucks started surfacing at 152 mile, with the object of covering with gravel the section between the 152 and 160 posts, which, heretofore in the fall, became nearly impassable on account of mud. Due to heavy rains during the month, about 20 per cent of time was lost. One mile of road was surfaced with 1,420 cubic yards of gravel. Maintenance, \$5,000; construction, \$5,076.48; total, \$10,076.48.

Route 4G. 168 Mile-Delta River Road (38.8 miles).—Five miles of road were graded by grading machine, one-half mile of old road was surfaced with gravel, and four new culverts with an aggregate length of 26 feet were placed. In addition, the entire section was maintained throughout the year, the following work being done:

Glaciers removed (average depth, 3 feet)linear feet_	4, 365
Dragging throughout season overmiles_	_ 15
Corduroy placedlinear feet_	. 86
Drainage ditchesdodo	_ 200
41 culverts rebuiltdo	- 261
28 culverts repaireddo	. 147

Maintenance, \$8,922.52; construction, \$8,922.52; total, \$17,845.04. Route 4H. Delta River-McCarty Road (73.4 miles).—Owing to the unusually fine weather during the summer of 1918, considerable improvements were made on this route. Eight and three-quarters miles of new grade were thrown up with the road grader. On this work 28 culverts, with an aggregate length of 288 feet, and 2 bridges havng a total length of 69 feet, were built. Gravel surfacing was placed • 34 miles of road.

In the control of the Delta River and the tributary glacier streams 2.93 linear feet of dike and 982 linear feet of bank revetment were placed.

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In addition to the above construction, 27 miles of road were dragged throughout the season: 1,000 cubic yards of snow, 1,000 cubic yards of ice, and 620 cubic yards of mud slides were removed. Five culverts were rebuilt, 13 culverts and 2 bridges repaired; a total aggregate length of 391 feet. The entire route was kept in excel. lent condition for traffic. Maintenance, \$15,956.61: construction \$10,637.60; total, \$26,594.21. Route 41. McCarty-Richardson Road (20.6 miles).-There were

no improvements on this route except what should be considered maintenance. Twelve culverts were constructed, 64 rebuilt, and repaired; aggregate length, 440 feet. One bridge with a span of 24 feet was constructed and 2 with a total span of 76 feet were repaired 355 linear feet of corduroy was placed.

A Case tractor with three-way drag was operated on this section throughout the season with most satisfactory results. Total for maintenance, \$7,261.57.

Route 4J. Richardson-Salchaket Road (30 miles).—Only general maintenance was attempted on this route during the spring and summer of 1919. During this period the following work was accomplished:

Widening fillscubic yards	75
Side ditches enlargeddo	2,785
Side ditches cleaneddo	14,070
General repairs to 5 miles of roaddodo	24,67
Mud slides removed (88 cubic yards)do	$2,29^{\circ}$
1 cuvert repaired       linear feet         Side ditches enlarged	$1, 23^{1}$

### Total for maintenance, \$14,836.44.

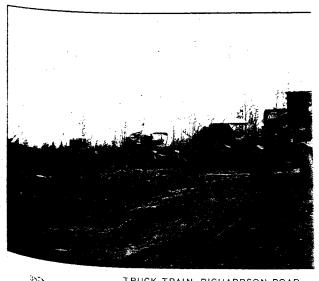
Route 4K. Salchaket-Fairbanks Road (40 miles) .-- The mainte nance during the spring and summer of 1919 was taken care of solel by the use of a three-way drag drawn by a Case 12-25 tractor. The outfit proved even more successful than the one on the McCarty Richardson Road. New bridge built during the fall over branch of Piledriver Creek. No construction was attempted during the latter half of the fiscal year. Maintenance, \$9,887.03; construction, \$1. 124.70; total, \$11,011.73.

Route 6A. Willow Creek-Tonsina Road (24 miles).-The only construction, or rather improvement, was 1,600 linear feet of grading just above Tonsina and the placing of 500 linear feet of surfacing Other than the maintenance through the use of the three-way drag and a Case tractor, there was little expense incurred. Maintenance, \$2,072.09; construction, \$1,700; total, \$3,772.09.

Route 6B. Tonsing-Chiting Road (15 miles).—At the beginning the season of 1918 the dike controlling the Tonsina River Was paired, strengthened, and increased in length, but masses of dring brought down by the floods in July caused the water to back up, and the dike was again broken. This break was repaired, but it is fear that there will be much trouble at this was repaired, but it is fear that there will be much trouble at this point for some time to come. Three hundred fact of dive Three hundred feet of dike were constructed there. As a result of it portion of the road having been destroyed last summer in mile to by the flood, which broke through the dike, it became necessary place 250 linear feet of bank revetment to prevent further encroaction ments. ments.



PLACING SURFACING NEAR CHITINA, RICHARD



TRUCK TRAIN, RICHARDSON ROAD.

### YUKON DISTRICT.

#### C. G. MORRISON, C. E., DISTRICT ENGINEER.

Route 5, Fairbanks-Fort Gibbon Sled Road (148 miles).-General repairs were made in November and December, 1918. Several new bridges were built over the smaller creeks and gulches, approaches to stream crossings were graded, earth and rock slides removed, and the trail across the Yukon staked. Maintenance, \$1,200.26; construction, \$1,090; total, \$2,290.26.

Route 7D. Fairbanks-Ester Road (51 miles road).-Work consisted of the completion of the bridge over Noyes Slough, commenced during the previous fiscal year and reported heretofore. The work was completed July 9, 1918. Total expenditures, maintenance. \$1,703.58.

Route 9. Rampart-Eureka Road ( $6\frac{1}{2}$  miles road,  $21\frac{1}{2}$  miles sled road).-No work done during the year. Repairs were made to the main wagon road section extending 64 miles out of Rampart in June. 1918, but not reported until after the close of the last fiscal year. Additional work was authorized June 9, 1919, but no report has yet

been received. Expenditures for maintenance, \$499.25. Route 11A. Eagle-O'Brien Creek Road (17 miles road, 30 miles sled road).—Work on this route covered maintenance of the 12-mile section between the town of Eagle and Gravel Gulch. This is the only portion of the Eagle-Fortymile Road, of which the Eagle-O'Brien Creek Road forms a section, available for summer traffic The work done consisted of grading, ditching, clearing slides, and putting in new culverts. Operations were carried on between July 10 and September 15, 1918, but were not continuous. Additional work was authorized June 16, 1919, and is now in progress. Expenditures, for maintenance, \$998.

Route 15. Circle-Miller House Road (49 miles road).—General repairs were made during the month of July, 1918. A carrier for foot passengers was installed at the Birch Creek Ferry, 14 mile from Circle. The section from the 6-mile post to the 13-mile pod was widened and regraded. A number of old culverts were repaired or replaced. A new bridge, aggregating, with its approaches. feet in length, was constructed over a slough near Central House In May, 1919, the ferry scow at Birch Creek was overhauled, the paired, and recalked, and in June, 1919, repairs were made to the bridge near the 15-mile post. Additional work was authorized June 9, 1919, and is now in progress. Maintenance, \$1,527.92; construc-tion, \$1,500; total, \$3,027.92.

Route 16. Chatanika-Miller House Road (81 miles sled road) General repairs were made covering the section from Chatanika Faith Creek. Earth and rock slides were removed, three new bridgs were constructed, and short sections of the road were relocated. penditures, for maintenance, \$589.41.

Route 17. Fort Gibbon-Kaltag Trail (257 miles trail).—This route which follows the surface of the Yukon River, was staked in order uary, 1919. This is work that is not that that is not that is not that is not that is not that the not that is not that the not the uary, 1919. This is work that is necessary to mark the trail in order to follow the shortest and safect arrive to mark the trail in restto follow the shortest and safest course. Work is done each  $re^{ar}$  by the mail carriers on the neutron Tby the mail carriers on the route. Expenditures, for maintenane \$300.

BOARD OF ROAD COMMISSIONERS F(

Fairbanks Bridge.-Work on this project of pairs and tightening sway braces. The sout] forced and the approach lowered. Expenditu \$303.02.

Route 30. Hot Springs Landing-Eureka Re was confined to repair of the road from Ho the town of Hot Springs, which had been ba flow from the Tanana River. This section of important, as the chief traffic is between the A new bridge was built over the Hot Spring structure is placed at an elevation 3 feet one, and rests on pile bents 14 feet apart. It bridge was also built over the slough near I The work was done between August 7 and Maintenance, \$2,427.73.

Route 38A. Ruby-Long Creek Road (28.25 n repaired and maintained throughout the summe was of a general nature, consisting of grading ing ditches, and surfacing soft spots with gr built over Bear Pup, a shallow tributary of town of Long. This pup or creek had been wide gulch, which, though almost dry in sum ble in spring, owing to the accumulation of ice flows. This bridge is 48 feet in length and 1 bed. A new section of road, aggregating 1,50 built to connect the bridge with the town. authorized June 9, 1919, and is now in pros \$3.508.23; construction, \$3,000; total, \$6,508.23

#### SOUTHWESTERN DISTRICT.

ANTON EIDE, SUPERINTENDENT.

Route 10. Seward-Kenai Lake Road (8.25 m grade on hill, mile 1, and put in a 20-foot bride

Widened road, straightened and cleaned di mile 32, at a cost of \$391, and graded new road

74: cost. \$4,738.37.

Rebuilt 1 mile of road destroyed by flood placed a 50-foot A truss near mile 5, a 70-foot Martin Startin Charter and the start a

Martin Slough, and repaired bridge near mile 6. Graded 450 feet to mile 81, new work; cost Since 121 feet to mile 84, new month, \$1 Since 741; construction, \$6,049.47; total, \$1 Since June 13 this has been a cooperative

Road Commission allotting \$1,000, the Terri Department of Agriculture \$10,000. , Route 104 Erric Vanci Take Trail.—Cut : Noute 10A. Kenai-Kenai Lake Trail.—Cut :

Lower Landing, on Kenai River, to Skilak Lal Route 12. Mile 34-Hope Road (31 miles way). General 34-Hope Road (31 miles way)

roud). General maintenance at a cost of \$443.

HIEF OF ENGINEERS, U. S. ARMY, 1919.

## YUKON DISTRICT.

MORRISON, C. E., DISTRICT ENGINEER.

s-Fort Gibbon Sled Road (148 miles).-General n November and December, 1918. Several new over the smaller creeks and gulches, approaches over graded, earth and rock slides removed, and were graded, earth and rock slides removed, and y Yukon staked. Maintenance, \$1,200.26; con-

tal, \$2,290.26. anks-Ester Road (5½ miles road).—Work con. tion of the bridge over Noyes Slough, commenced fiscal year and reported heretofore. The work is fiscal year and reported heretofore, maintenance, ly 9, 1918. Total expenditures, maintenance,

rt-Eureka Road ( $6\frac{1}{2}$  miles road,  $21\frac{1}{2}$  miles sled lone during the year. Repairs were made to the ection extending  $6\frac{1}{2}$  miles out of Rampart in June, rted until after the close of the last fiscal year, rted until after the close of the last fiscal year, vas authorized June 9, 1919, but no report has yet vas authorized June 9, 1919, but no report has yet

penditures for maintenance, \$499.25. *ile-O'Brien Creek Road (17 miles road, 30 miles* k on this route covered maintenance of the 12. een the town of Eagle and Gravel Gulch. This of the Eagle-Fortymile Road, of which the Eagle of the Eagle-Fortymile Road, of which the Eagle oad forms a section, available for summer traffic onsisted of grading, ditching, clearing slides, and ulverts. Operations were carried on between July ulverts. Joner and is now in progress. Exized June 16, 1919, and is now in progress.

aintenance, \$998. cle-Miller House Road (49 miles road).—General cle-Miller House Road (49 miles road).—General was installed at the Birch Creek Ferry, 14 miles was installed at the Birch Creek Ferry, 14 miles he section from the 6-mile post to the 13-mile post he section from the 6-mile post to the 13-mile post i regraded. A number of old culverts were repaired new bridge, aggregating, with its approaches, 68 was constructed over a slough near Central House the ferry scow at Birch Creek was overhauled, realked, and in June, 1919, repairs were made to the 15-mile post. Additional work was authorized June now in progress. Maintenance, \$1,527.92; construenow or 200

tal, \$3,027.92. *atanika-Miller House Road* (81 miles sled road). *atanika-Miller House Road* (81 miles sled road). *s* were made covering the section from Chatanika to *s* were made covering the section from Chatanika to *s* and short sections of the road were relocated. Exd, and short sections of the road were relocated.

maintenance, \$589.41. *rtt Gibbon-Kaltag Trail* (257 miles trail).—This rout. the surface of the Yukon River, was staked in Janthis is work that is necessary to mark the trail in order shortest and safest course. Work is done each verarriers on the route. Expenditures, for maintenance Fairbanks Bridge.—Work on this project consisted of minor repairs and tightening sway braces. The south abutment was reinforced and the approach lowered. Expenditures, for maintenance,  $f^{303.02}$ .

<sup>500</sup>*Route 30. Hot Springs Landing-Eureka Road (32 miles).*—Work was confined to repair of the road from Hot Springs Landing to the town of Hot Springs, which had been badly damaged by overflow from the Tanana River. This section of the road is the most important, as the chief traffic is between the landing and the town. A new bridge was built over the Hot Springs Slough. The superstructure is placed at an elevation 3 feet higher than the old one, and rests on pile bents 14 feet apart. It is 174 feet long. A bridge was also built over the slough near Hot Springs Landing. The work was done between August 7 and September 15, 1918.

Maintenance, Ruby-Long Creek Road (28.35 miles).—This road was repaired and maintained throughout the summer of 1918. The work was of a general nature, consisting of grading, clearing and widening ditches, and surfacing soft spots with gravel. A bridge was built over Bear Pup, a shallow tributary of Long Creek, near the town of Long. This pup or creek had been mined out, leaving a wide gulch, which, though almost dry in summer, became impassable in spring, owing to the accumulation of ice and consequent overflows. This bridge is 48 feet in length and 15 feet above the creek bed. A new section of road, aggregating 1,500 feet in length, was built to connect the bridge with the town. Additional work was authorized June 9, 1919, and is now in progress. Maintenance, s3,508.23; construction, \$3,000; total, \$6,508.23.

#### SOUTHWESTERN DISTRICT.

#### ANTON EIDE, SUPERINTENDENT.

Route 10. Seward-Kenai Lake Road (8.25 miles).—Cut out heavy grade on hill, mile 1, and put in a 20-foot bridge over slough. Cost, \$405.

Widened road, straightened and cleaned ditches from mile 2 to mile  $3\frac{1}{2}$ , at a cost of \$391, and graded new road from mile 7 to mile  $7\frac{1}{4}$ , cost, \$4,738.37.

Rebuilt 1 mile of road destroyed by flood last September; replaced a 50-foot A truss near mile 5, a 70-foot Howe truss over Ole Martin Slough, and repaired bridge near mile 6. Cleared and opened river channel and general repairs. Cost, \$5,945.

Graded 450 feet to mile 81, new work; cost, \$1,311.10. Mainte-Lince, \$6,741; construction, \$6,049.47; total, \$12,790.47. Since June 13 this has been a cooperative project, the Alaska

Since June 13 this has been a cooperative project, the Alaska Road Commission allotting \$1,000, the Territory \$5,000, and the Department of Agriculture \$10,000.

Route 10A. Kenai-Kenai Lake Trail.—Cut a dog-sled trail from Lower Landing, on Kenai River, to Skilak Lake, 17 miles, at a cost of \$18.44 per mile. Total, \$313.58.

Route 12. Mile 34-Hope Road (31 miles wagon road, 9 miles sled  $r^{oud}$ ).—General maintenance at a cost of \$443.

Route 24. Moose Pass Road (29.5 miles).—Mainly removing earth slides and fallen timber, fixing mud holes, culverts, and general upkeep. Maintenance, \$754.71.

*Route 35. Knik-Willow Creek Road (34 miles).*—Work consisted of grading, ditching, and cutting down hills from Wasilla, mile 15 to mile 25. Repaired washouts, corduroy, and culverts from mile 25 to mile 34, 19 miles, at \$334.92 per mile. Maintenance, \$4,127.19; construction, \$2,236.40; total, \$6,363.59.

*Route 35A. Archangel extension (3 miles).*—Work performed consisted of general maintenance, as opening and fixing ditches, repairing culverts and washouts, also putting in a 35-foot bridge over Archangel Creek. Maintenance, \$641.54; construction, \$500; total, \$1,141.54.

Palmer-Mile  $26\frac{1}{2}$  Road (8 miles).—Work consisted as follows:

Laid 2,500 linear feet of corduroy, at 55 cents per foot	\$1, 375.00
Three 30-foot bridges. at \$150 each	450.04
Slashed 21 miles R/W, 6 acres, at \$42.98 per acre	257.88

Total expended for construction\_\_\_\_\_ 2,082.92

Matanuska Bridge (over Palmer Canyon).—The main pier of this bridge was damaged by flood during July, which undermined and carried away the rock filling. This was repaired at a cost of \$875. Later built new pier of larger dimensions, filling it with heavy rock and brush, also dumped a lot of heavy rock around the outside, at a cost of \$1,015.40. Total for maintenance, \$1,890.40.

Talkeetna-Cache Creek Road (42 miles sled road and summet trail).—From point on United States Government railroad location at Talkeetna to the Cache Creek mining district. A good winter road, which is also passable for pack animals in summer, was constructed during summer of 1917. The Cache Creek district is one of large area and promises to be very productive. The production justifies improving the route for wagon traffic, and it is hoped to start this improvement within the next two years.

A footbridge was constructed over Peters Creek at a cost of  $$^{135}$ . Seward-Radio Road (11 miles).—Four bridges, total length  $4^{74}$  feet, at \$6.20 per foot, cost as follows:

3,891 linear feet piling, at 16 cents per foot Driving 3,941 feet piling (70 piles), at 28 cents 25,095 feet b. m. native lumber, at \$30 per M Bolts, spikes, etc Putting on decking and handrails	1, 103. 48 752. 85 67 61		9()
50 feet bridging, at \$3 per foot3 culverts, at \$24		150. 72.	00 60
180 feet corduroy, at 72 cents Clearing, grubbing, and stripping 3½ acres, at \$360 Creding and ditching 11 million		1,260. 1,321.	(f) 31 92
Grading and ditching 1.1 miles Graveling. 4,836 linear feet, at 12 cents Freight		1, 580. 19.	8
Total cost		6, 471.	<i>(</i> )6

This road was constructed at the request of the Secretary of the Navy, to serve the radio station near Seward, and the entire cost was reimbursed by the Navy Department.





#### DANIEL A. JONES, SUPERINTENDENT.

Route 8. Nome-Council Road (total length of route 82 miles)— Nome-Fort Davis section (34 miles).—Connects Nome with Fort Davis. Serves to supply Fort Davis and all mining operations east of Nome. Estimated tonnage is 500 tons during open season; cost of section is \$6 in summer and \$2.50 in winter. Mail service over this route is weekly in summer and twice weekly in winter. Work consisted of general maintenance. Four hundred yards of gravel were hauled at a cost of \$1 per yard; 2 culverts 2 by 2 by 18 feet were constructed at a cost of \$25 each. The total cost of maintenance, which includes the protection of the road and bridges during the spring break-up, was \$212 per mile.

break-up, was play per line. Fort Davis-Cape Nome section (9 miles).—Connects Fort Davis with Cape Nome. No work done on this section by the Alaska Road Commission between the dates of this report. This section was turned over to the Territorial Road Commission, who have constructed 41 miles of new road. Approximately 300 tons of freight hauled over this route during year. The rate to Hastings Creek, which is approximately 10 miles from Nome, is \$15 per ton, and on completion of the road will be reduced to \$10 per ton. Mail over this route is weekly in summer.

Cape Nome Road section (2 miles).—Road is built around Cape Nome, and was constructed three years ago by moneys appropriated by the Territory from the forest reserve fund. The sum of \$113 was expended on it during the last year. Work consisted in opening up the culverts and ditches during the spring break-up and the removal of slide from the road. Approximately 100 tons of freight were hauled during year. Mail service is weekly in summer.

Safety Ferry.—Total expenditure \$419.75, which consisted of the purchase of a new \*-inch plow steel cable, 1,300 feet long, the salary of the ferryman, and paint for painting scow. On account of the ice no boats were able to run, so that the cable had to be hauled from Nome to Safety by horse team. This cost \$50.

Bonanza Ferry.—Ferry service maintained during year and scow was repainted.

Solomon-East Fork section (15 miles).—Road connects the Bonanza Ferry, which is the landing place for all boats, with East Fork-Council Road. Serves to supply all of Solomon River and tributaries. Tonnage over this route is approximately 8 tons daily during the open season. Approximately 2,000 tons will be hauled over this road this season; freight rate is about \$1 per ton per mile. Work on this route consisted of general maintenance. One thousand one hundred and sixty yards of gravel were hauled and spread at a cost of 98 cents per yard, the work being done by contract. Total cost of maintenance, \$107.18 per mile. Mail is carried over this road weekly during open season.

East Fork-Fox River section (25 miles).—Road connects Solomon-East Fork with Council-Corduroy. Mail service is weekly, by stage, during the summer. Approximately 200 tons hauled over road during year. This is a combination road and trail. No expenditure.

Council-Corduroy section (51 miles).-Road connects Fox River with Council City. Mail service is weekly, by stage, during summer season. The work on this route consisted of general maintenance. repairing culverts, replacing broken poles and stringers, cleaning out ditches, etc. Cost per mile for maintenance, \$113.19.

Total expenditures for maintenance by Alaska Road Commission, route 8, \$5,752.79.

Route 13A. Nome-Bessie Road (3.3 miles) .-- Road connects Nome with the Third Beach line. Serves to supply all business north of Nome. Estimated that 20 tons daily are hauled over this road throughout the year. Road is in excellent condition, and the only work done on it was the maintenance during the spring break-up. which cost \$140.

Route 13B. Bessie-Banner Road (3.46 miles).-Road connects the Third Beach line with Anvil Creek. It supplies Anvil and Glacier Creeks and all up Snake River points. Estimated that 10 tons daily hauled over this route during open season. Work consisted of general maintenance. Cost, \$231.55.

Route 13C. Bessie-Little Creek Road (1.25 miles).-Connects Nome-Bessie Road with Little Creek. Serves to supply the Third Beach line west of Bessie and Little Creek. Estimated that  $7\frac{1}{2}$  tons daily are hauled over this road. The rate is \$7.50 per ton. Work daily are hauled over this road. The rate is \$7.50 per ton. consisted of general maintenance, costing \$238.

Route 13D. Bessie-Dry Creek Road (1.25 miles).—This road connects the Nome-Dexter Road with the Nome-Osborne Road. Serves to supply all camps on the Third Beach line between the Bessie and Dry Creeks. Estimated that 100 tons of freight hauled during past year. Maintenance, \$40.

Route 13F. Nome-Osborne Road (4 miles).-Connects the Dry Creek-Newton Road with Osborne Creek. It supplies Osborne Creek and vicinity. Estimated 100 tons freight hauled during the open season. Work consisted of general maintenance, costing \$200.75.

Route 13G. Grass Gulch Road (1.75 miles).—This road connects the Nome-Bessie Road with King Mountain. Supplies mines of Grass and Deer Gulches and King Mountain. Three hundred tons of freight a year are hauled over this route. No expenditures during last fiscal year.

Route j31. Nome River Extension (5 miles).-Connects Dester Creek with upper Nome River camps. It supplies Nome River and tributaries. Estimated 10 tons per month hauled over this road. work done last fiscal year. This road will be the main trunk line into the interior, and follows the bars of Nome River from the end of its construction to the head.

Route 13J. Wonder-Flat Creek Road (2 miles).-Connects the Bessie-Little Creek Road with Wonder and Flat Creeks. It supplies the camps on Wonder and Flat Creeks and lower Little Creek. timated that 5 tons daily are hauled during open season. Cost per ton is \$7.50 No control it

ton is \$7.50. No expenditures during year. Route 13K. Bessie-Buster Road (5 miles).—Connects the Bessie with Dexter and Buster Creeks. It supplies Buster, Dexter, and upper Nome River and vicinity. Forty tons per month are hauled during the open season. The cost per ton is \$15. Work consisted of general maintenance, the cost here of open seasons. general maintenance, the cost being \$1,008.09.

Route 25. Sinrock Ferry.-Cost of maintainin of the salary of the ferryman who was employe a salary of \$50 per month.

Route 25A. Cripple River Road (12 miles). the coast with Cripple River. No expenditures A dredge has been constructed on Arctic Creel will be hauled over this route. Estimated th bauled, the rate being \$18 per ton. Work should in the near future.

Route 25D. Mouth of Center Creek Road (2.2. nects Nome with the mouth of Center Creek. Su River and Lower Center Creek camps. There tons a day hauled. A total of \$888.19 was spent the road was lightly surfaced with gravel for its

Route 25E. Snake River Bridge.-The work sisted of building rock revetment around the west abutment; the cost of the work was \$982. hauled with an auto truck, 50 cubic feet being ha trips in an hour were made, average haul bei round trip. Contract was let for the filling or placing of the rock at \$1.47 per load, and cost proximately 25 cents per cubic yard. Total co \$1.170.85.

Route 25F. Anvil-Glacier Road (3 miles),-Ro sie-Banner Road with the Snake River Road. Su and tributaries and all Snake River points. Esti were hauled over this road during the year; the r is \$13 per ton. Work consisted of general ma being \$162.91 per mile.

Route 25G. Snake River Extension (3 miles).-Anvil-Glacier Road with Snake River and its tril that 3 tons per day are hauled over this road. during past year.

Route 26. Candle Creek Road (9 miles).-Co Candle Creek camps. It is estimated that 500 to this road during the summer months and the s No expenditures by the Alaskan Road Commissi The Tourist tools over and The Territorial road commission took over and

route during the past year. Route 27. Deering-Imnachuck River Road (2. Daniel 27. Deering-Imnachuck River Road (2. Deering with Imnachuck River points. It supp River and its tributaries. Estimated 800 tons of ing the past year. Road was turned over to the Tomission Road Co mission and no work done by the Alaska Road Co Flagging trails.—A total of \$3,056.63 was expendent of trails with lath and the maintaining of permai but the district. A summary of the staked tra seasonal, follows:

BOARD OF ROAD COMMISSIONERS FOI

ion (51 miles) -Road connects Fox River service is weekly, by stage, during summer his route consisted of general maintenance, acing broken poles and stringers, cleaning er mile for maintenance, \$113.19.

r maintenance by Alaska Road Commission.

ssie Road (3.3 miles).-Road connects Nome line. Serves to supply all business north of t 20 tons daily are hauled over this road Road is in excellent condition, and the only he maintenance during the spring break-up,

anner Road (3.46 miles).-Road connects the Anvil Creek. It supplies Anvil and Glacier ke River points. Estimated that 10 tons daily during open season. Work consisted of gen-

Little Creek Road (1.25 miles).—Connects st, \$231.55. ith Little Creek. Serves to supply the Third ssie and Little Creek. Estimated that 7½ tons this road. The rate is \$7.50 per ton. Work

naintenance, costing \$238. Dry Creek Road (1.25 miles).-This road coner Road with the Nome-Osborne Road. Serves on the Third Beach line between the Bessie and ited that 100 tons of freight hauled during past

*Osborne Road* (4 miles).—Connects the Dry with Osborne Creek. It supplies Osborne Creek nated 100 tons freight hauled during the open

isted of general maintenance, costing \$200.75. <sup>3</sup> Gulch Road (1.75 miles).—This road connects <sup>3</sup> ioad with King Mountain. Supplies mines on ches and King Mountain. Three hundred tons of hauled over this route. No expenditures during

e River Extension (5 miles).-Connects Dexter Nome River camps. It supplies Nome River and ated 10 tons per month hauled over this road. No al year. This road will be the main trunk line into ollows the bars of Nome River from the end of its

nder-Flat Creek Road (2 miles).-Connects the k Road with Wonder and Flat Creeks. It supplies nder and Flat Creeks and lower Little Creek. Es as daily are hauled during open season. Cost per

ssie-Buster Road (5 miles).—Connects the Bessie Buster Creeks. It supplies Buster, Dexter, and expenditures during year. er and vicinity. Forty tons per month are hauled season. The cost per ton is \$15. Work consisted of ince, the cost being \$1,008.09.

Route 25. Sinrock Ferry.-Cost of maintaining this ferry consisted of the salary of the ferryman who was employed for five months at a salary of \$50 per month.

Route 25A. Cripple River Road (12 miles).-This road connects the coast with Cripple River. No expenditures during the past year. dredge has been constructed on Arctic Creek, supplies for which will be hauled over this route. Estimated that 100 tons will be bauled, the rate being \$18 per ton. Work should be done on this road in the near future.

Route 25D. Mouth of Center Creek Road (2.25 miles).-Road conneets Nome with the mouth of Center Creek. Supplies Lower Snake necus and Lower Center Creek camps. There was an average of 2 River aday hauled. A total of \$888.19 was spent for maintenance and tons a day hauled. the road was lightly surfaced with gravel for its entire length.

Route 25E. Snake River Bridge.—The work on this bridge consisted of building rock revenuent around the center pier and the west abutment; the cost of the work was \$982.75. The rocks were hauled with an auto truck, 50 cubic feet being hauled at a load, three trips in an hour were made, average haul being 3 miles for the round trip. Contract was let for the filling of the truck and the round of the rock at \$1.47 per load, and cost of hauling was ap-proximately 25 cents per cubic yard. Total cost for maintenance, \$1,170.85.

Route 25F. Anvil-Glacier Road (3 miles) .-- Road connects the Bessie-Banner Road with the Snake River Road. Supplies Glacier Creek and tributaries and all Snake River points. Estimated that 500 tons were hauled over this road during the year; the rate to Glacier Creek is \$13 per ton. Work consisted of general maintenance, the cost being \$162.91 per mile.

Route 25G. Snake River Extension (3 miles) .- This road connects Invil-Glacier Road with Snake River and its tributaries. Estimated that 3 tons per day are hauled over this road. No work was done during past year.

Route 26. Candle Creek Road (9 miles) .- Connects Candle with Candle Creek camps. It is estimated that 500 tons were hauled over this road during the summer months and the same in the winter. No expenditures by the Alaskan Road Commission during the year. The Territorial road commission took over and has maintained the route during the past year.

Route 27. Deering-Imnachuck River Road (25 miles).—Connects Deering with Imnachuck River points. It supplies the Imnachuck River and its tributaries. Estimated 800 tons of freight hauled during the past year. Road was turned over to the Territorial road commission and no work done by the Alaska Road Commission.

Flagging trails.-A total of \$3,056.63 was expended on the staking of trails with lath and the maintaining of permanent trails throughout the district. A summary of the staked trails, permanent and **masonal**, follows:

Name.	Distance.	Permanent.	Seasonal.
· · · · · · · · · · · · · · · · · · ·	Milcs.	Miles,	Miles,
Nome to Unalakleet	251	175	76
Dahl Creek to Candle	140	140	
Jnalakleet to Kaltag	90	90	
Inalakleet to St. Michael	60	40	20
t. Michael to Kotlik	60	35	25
opkok to Candle	154	154	
ome to Taylor	140	115	25
aylor to Arctic Hot Springs	17	10	1
lome to Teller	90	90	
eller to Mary's Igloo	52	20	32
andle to Deering	40	40	
andle to Keewalik	8		8
Leewalik to Nazurik Channel (mouth of Kobuk River)	45		45
lotzebue to Riley Channel.	17		L.
liana to Klery Creek	18	18	
olomon to Casadepaga	50	16	34
saacs Point to Dime Creek.	50	34	16
eewalik to Mainland by Chamois Island	35		35
Dime Creek to Snyder's Cabin on Keewalik River		35	
Total	1,352	1,012	340

In addition to these trails there are approximately 100 miles of trail staked from Nome to different camps and creeks in the district. each year. These trails vary each year according to the work going on in the different localities. It has been customary for the freighters and parties interested to stake these trails themselves with flagged

lath furnished by the Commission. Fortuna Ledge, or Marshall City Road (41 miles).-Freight is landed from river steamers at Fortuna Ledge and transferred by boats of lighter draft a distance of 12 miles to the upper landing, and the road is constructed from the Landing to Willow Creek, the scene of mining operations in the district. It is estimated that 300 tons were hauled over this road during the past year. No work done by the Alaska Road Commission.

Route 49. Davidsons Landing-Taylor Creek Road (40 miles, 24 constructed).—This road runs from Davidsons Landing, the end-ing of water navigation, to Taylor Creek. It is estimated that 1.000 the tons are hauled over this road yearly. No expenditures between the dates of this report. It is impossible to do any work upon this road without a very substantial allotment.

#### STATEMENT OF RECEIPTS AND DISBURSEMENTS.

This report covers vouchers received and placed in the account in cluding June 30, 1919: 185.65

Balance on hand July 1. 1918	\$19. <sup>080</sup>
Received from the Treasurer of the United States:	
Appropriation "Construction and maintenance of military and post roads, bridges and trails," Alaska fund, 1918–19 Appropriation "Construction and maintenance of military and	- o o 6. 19
post roads, bridges and trails," Alaska fund, 1918-19	178, 910
Appropriation "Construction and maintenance of military and	000.00
post roads, bridges, and trails," Alaska, 1919	
Alaska fund	35,0
Alaska fund Correction of vouchers: Alaska fund Special appropriation Sales of property, Alaska Fund Total Disbursed as per tabulated statement below	803. 17
Alaska fund	4.5
Special appropriation	o 420.
Sales of property, Alaska Fund	
· · · · · · ·	011 290. 26
Sales of property, Alaska Fund Total Disbursed as per tabulated statement below Release on hand	311, 024
Disbursed as per tabulated statement below	290, 22
Disbursed as per tabulated statement below Balance on hand	12, 266.
Balance on hand	141

#### BOARD OF ROAD COMMISSIONERS

## EXPENDITURES IN DETAIL

· · · · · · · · · · · · · · · · · · ·
Offices
Route 1
Route 2 Route 2A
Route 2A
Route 4B. 1st section
Route 4B, 20 Section
Route 4B, 3d section Route 4B, 4th section
Route 4B, 5th section.
Route 4B 6th section
Route 4C.
Route 4D, 1st section Route 4D, 2d section Route 4E.
Route 4E.
Route 4H 1st section
Route 4G. Route 4H, 1st section. Route 4H, 2d section. Route 4H, 2d section.
Route 4I
Route 4J. Route 4K. Route 5
Route 6B
Route 8
Doute 9
Route 10A Route 11A Route 112
Route 10
Route 13A. Route 13B
Route 130
A0010 10T
Route 1
Route 15.
Route 16.
Route 21
Rolling optimistics
Route or o
Sintoni
Route 35 Route 35 Route 35
Rinte on the
Aunto on the second s
E
Flagshanks Bridge
Fairbanks Bridge Flagging trails Mile 263 Road Marshall Road Marshall Road
Houte 35 A
Houte 35A and Marshall Road Hiamna Road Talkeet radiuska Bridge.
Matanush Road
Tarshall Road Tianna Road Matanuska Bridge. Swward.p.C.ache Creek Troit
ward-Radio Roed Trail
Tatanus Road Matanuska Bridge Talkeena-Cache Creek Trail Seward-Radio Road Total

## 3886

# OF ENGINEERS, U. S. ARMY, 1919.

	Distance.	Permanent.	Seasonal.
	Miles.	Miles.	Miles.
	251	175	
	140	140	76
	90	90	
		40	*****
	60		20
	60	35	25
	154	154	- 40
	140	115	
	17	10	25
	90	90	7
		20	
	52		32
	40		
	8		
	45		
uk River)	17		45
	1 18		1
	50		
	50		1
	3.	5	
	. 3	5 3.	5
ver			
	1,35	2 1,01	2 34

rails there are approximately 100 miles of to different camps and creeks in the district, vary each year according to the work going ities. It has been customary for the freight. I to stake these trails themselves with flagged ommission.

*Tarshall City Road*  $(4\frac{1}{4} miles)$ .—Freight is mers at Fortuna Ledge and transferred by distance of 12 miles to the upper landing, and from the Landing to Willow Creek, the scene n the district. It is estimated that 300 tons oad during the past year. No work done by

institut. s Landing-Taylor Creek Road (40 miles, 24 pad runs from Davidsons Landing, the endin, to Taylor Creek. It is estimated that 1,000 his road yearly. No expenditures between the It is impossible to do any work upon this road ntial allotment.

# T OF RECEIPTS AND DISBURSEMENTS.

vouchers received and placed in the account in-

1:	\$19.085.68
1918urer of the United States: struction and maintenance of military and s and trails," Alaska fund, 1918–19 struction and maintenance of military and s, and trails," Alaska, 1919	178, 976. 19 75, 000. 09
	0.00 10
· · · · · · · · · · · · · · · · · · ·	4.74 2, 420. @
ion	2, 420. 34
ka runu	. 311, 290, 4
	_ 299, 024.2
ka Fund	12, 266. 2
lated statement below	

## BOARD OF ROAD COMMISSIONERS FOR ALASKA.

EXPENDITURES IN DETAIL.

	Construc- tion.	Mainte- nance.	Total.
Offices Route 1	\$3,481.98	\$5,222.98	\$8,704.90 5,263.67
Offices Route 1 Route 2 Route 2	••	5,263.67	5, 263. 6
Route 1 Route 2	18, 323. 63	0,470.00	18, 323. 63
ROLLO	3.906.58		3,906.58 10,116.26
Route in 1st section	· · h		10, 116. 26
Route p 2d section			9,144.44
Route 4B, 3d section Route 4B, 4th section. Route 4B, 5th section.	** 8,722.00	23, 323.06	1, 432.76 1, 626.16
Route 4B, 4th section			6, 168. 32
Route 4D, 4th section. Route 4B, 5th section. Route 4B, 6th section. Route 4B, 6th section.			3, 557. 12
Route 4D, our	. 6,268.00	9,403.41	15,671.41
Route 4D, 1st section	4,000.00	6,138.93 4,000.00	10, 138. 93
Route 4D, Sich section. Route 4D, Sich section. Route 4D, 1st section. Route 4D, 2d section. Route 4D, 2d section. Route 4E. Route 4E.	6,000.00 1,700.00	5 032 49	$\begin{array}{c} 10, 138, 90\\ 10, 000, 00\\ 6, 732, 49\\ 10, 076, 48\\ 17, 845, 04\\ 13, 637, 60\\ 12, 956, 61\\ 7, 261, 57\\ 14, 836, 44\\ 11, 011, 73\end{array}$
Route 4E		5,000,00	10,076.48
Route	8,922.52	8,922.52	17, 845. 04
Route 4H. Route 4H. 1st section. Route 4H. 2d section. Route 4H. 2d section.	5,637.60	8,000.00	13,637.60
Route 4H, 2d section	5,000.00	7,956.61 7,261.57	12,956.61
Route 41. Route 41. Route 41. Route 41.	•• ••••••••••••	1 14, 836, 44	14, 836, 44
Route 41	1, 124. 70	9,887.03	11,011.10
Roule	1,090.00	1,200.26	2,290.26
$\begin{array}{c} \operatorname{Route}_{4B} = 4B \\ \operatorname{Route}_{6A} = 6A \\ \operatorname{Route}_{4B} = R \end{array}$	. 1,700.00	2,072.09	3,772.09 17,589.06
		5,888.01 1,703.58	1, 703. 58
Route		5, 752, 79	5, 752. 79
Route 8 Route 9 Route 9 Route 10 Route 10A Route 11A Route 13A Route 13A		499.25	499.25
Route 9	3, 731. 84	6,741.00	10, 472. 84
Route 10A	•• ••••••	313.58	313.58 998.00
Route 11A		998.00 393.65	393.65
Route 12		880.05	880.05
Route 13A Route 13B Route 13B		231.55	231.55
Route 13C		238.00	238.00
Poute 13D		$     40.00 \\     74.43 $	40.00 74.43
Poute 13F		227.00	227.00
Route 13G Route 13K.		1,008.09	1,008.09
Daute 4		374.96	374.96
Route 14 Route 15	1, 500.00	1,527.92	3,027.92
Route 16		589.41 300.00	589.41 300.00
Route 17.		354.00	354.00
Route 18 Route 21		97.00	97.00
Route 21 Route 24		751.21	751.21
Route 24. Route 25D		888.19 1,170.85	888.19
		1,170.85	1,170.85 60.00
		. 50.00	50.00
		206.50	206.50
		2,432.25	2, 432. 25
Route 35 Route 3SA	$\begin{array}{c} 2,346.59\\ 3,000.00\end{array}$	4,127.19 3,508.23	6,473.78 6,508.23
		2,200.42	2,200.42
D 1 10		259.35	259.35
Ranta 11		266.50	266.50
Route 44		242.00	242.00
Route 45. Fairbanks Bridge		2,734.89 303.02	2,734.89 303.02
Flogging trails.		2,053.02	2,053.02
Mile 264 Road	2,427.92		2,053.02 2,427.92 1,127.74
Route 35A	. 500.00	627.74	1, 127. 74
Marshall Road		65.00	65.00 27.75
Niamna Road Matanuska Bridge		1,890.40	4,060.83
Tilkeetna-Cache Creek Trail	2, 170. 40	135.00	135.00
Seward-Radio Road	. 6,470.04		6,470.04
T. t. 1			
Total	. 114, 829.11	184, 195. 15	299,024.26