F I F T Y Y E A R S O F H I G H W A Y S

ALASKA DEPARTMENT OF PUBLIC WORKS

DIVISION OF HIGHWAYS

NOME

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" It was only a path in the wilderness --- "

FOREWORD

The following information has been taken from the many reports over the years of the Alaska Road Commission, Territorial Highway, Bureau of Public Roads, and other documented material and information on file in the records of the Department of Public Works, Division of Highways, of the State of Alaska.

An attempt has been made to record only those portions that will tend to enlighten and familiarize new employees with the history of transportation, general practices and methods of accomplishment. However, many details are included and considered of essential interest and knowledge to a well informed public employee.

Since a digest of these reports is in itself an overall narrative, few additional comments have been considered necessary and only those considered appropriate have been included.

The reader will soon realize the far flung activities of early days which were required in coping with the development of Alaska. The established road authorities, in addition to trails and roads, also supervised the expenditures of funds for a multitude of other activities, in the absence of other authority.

Throughout this report, one will find other duties performed, such as navigation work, ferries, harbors, canals, channels, flood control, buoys, navigation lights, radio, wireless and telephone lines, cemeteries, schools, airfields and landing floats.

Many and varied were the duties and projects of these pioneers, to whom no night was too dark, no trail too long, in their dedicated purpose of serving their fellow man. They traveled by sea, by land, by air, and they traveled everywhere.

Transportation in Alaska follows the pattern of the lower States; first by water, then trails and roads and railroads. As the horse was depended upon there in the early days, so it was in Alaska, except that Alaskans made more use of man's best friend, the dog. The Oregon Trail was not unlike, in scope and purpose, our own Richardson Trail. The transition from trails to roads and railroads took a hundred years or more in the lower States, and continuing improvements appear unending. So it has been in Alaska, over fifty years and the need for more and better roads continues until one day the system may encompass the 10,000 miles of the trail era.

Transportation by water has been the "main street" for Alaska; trails, roads and rail roads forming the extensive and necessary network thereto. Air transportation continues its service in this vast area, growing in some 40 years to serve all of Alaska down to the smallest village on the Yukon River.

ALASKA

ALASKA IS THE LARGEST geopolitical entity under the American flag.

It is one-fifth the size of continental United States; a land with half a million square miles of unbelievably rich country - rich in varied resources - and inhabited by comparatively few people. A part of the United States, it is American in language, customs, and politics.

Alaska offers opportunities - opportunities for homesteaders, businessmen, professional people, and workmen. More and more people each year are making their permanent homes in the State, investing their capital, and taking part in the development of the country's natural resources. These resources, many of which are becoming scarce in more industrialized areas, need to be developed to a greater extent. Millions of new citizens are sought to aid in developing Alaska's forest, oil, and mineral resources; to fabricate timber, furs, and non-metallic minerals; to cultivate lands; to build roads, airports, and homes; to develop hydro-electric power potentialities; and to build a tourist industry. The State's development is moving forward, but much remains to be done.

ALASKA'S SURFACE FEATURES

Alaska is the largest peninsula of the North American Continent. Surrounded on three sides by water, it is connected with Canada by a land base 600 miles wide along the 141st meridian between the Arctic and Pacific Oceans. Southeastern Alaska is not a part of this peninsula, but is, geographically, the coastal section of northern British Columbia.

Alaska is approximately 586,400 square miles (375,296,000 acres) in area, including rivers, lakes, etc., or one-fifth the size of the United States. The actual land area is 571,000 square miles.

Physiographically, Alaska may be divided into three distinct major regions, varing in geologic origin and surface expression. The three sections are the Pacific Mountain, Central Plateau, and Arctic Slope regions.

PACIFIC MOUNTAIN REGION

The Pacific Mountain region includes southeastern, south-central, and southwestern Alaska. Geologically it is a continuation of the continental Pacific Mountain system which can be traced through British Columbia into Alaska. At this point, the axis changes and sends two spurs in a southwesterly direction. One spur forms the Chugach and Kenai Mountains and reappears in Kodiak Island. The main spur forms the crescent of the Alaska Range and stretches over the Alaska Peninsula into the Aleutian Islands. The valleys between and within these parallel ranges are filled by the sea or form broad valleys and intermittent basins, such as Matanuska Valley and the Copper River Basin.

The southeastern coastal strip, consisting of many islands and a strip of narrow mainland, is sometimes called the Panhandle. It is separated from Canada by mountains that rise sharply from the water's edge to heights of 9,000 feet, or more, through which run deep fiords - sea inlets with high mountain walls. This region has many glaciers and extensive spruce, hemlock, and cedar forests. Juneau, the capital city; Sitka, formerly the Russian capital; and Ketchikan, the largest salmon packing center in the world, are in this section. One of the world's great mines, the Alaska - Juneau Gold Mine, now inactive, is in Juneau.

Other important towns are Wrangell, Petersburg, Skagway, and Haines. Haines is an important seaport town which has direct access to interior Alaska by motor road.

The south-central coastline resembles the southeast. North and parallel to the coast extends the 150-mile-wide Alaska Range. Numerous mineral deposits exist in this range and many of the mountains are more than 15,000 feet high - Mount McKinley is 20,300 feet. Two great routes to the interior, The Alaska Railroad from Seward and Whittier through Anchorage to Fairbanks, and the Richardson Highway from Valdez to Fairbanks, are in this section.

In the southwestern section for hundreds of miles along the long narrow Alaska Peninsula and the chain of Aleutian Islands are volcanoes, glaciers, and slopes with moss, grass, and brush. The principal settlements are Kodiak Island and Unalaska Island. Kodiak Island is the home of the Kodiak bear (great Alaskan brown bear), largest carnivorous animal. Pribilof Islands, about 200 miles north of Unalaska, is the breeding ground of the Alaska fur seal. The Aleutians are like chain of stepping stones leading westward toward the Komandorski Islands and the Kamchatka Peninsula of Soviet Russian Siberia. This peculiar configuration gives Alaska an unusually wide spread in longitude and latitude, between the parallels of 51 degrees and 72 degrees North, and between the meridians of 130 degrees West and 173 degrees East. Bristol Bay, a great salmon fishing area, is in this region. The lower reaches of the Yukon and Kuskokwim Rivers are rich in fur and contain deposits of gold, platinum, antimony, and other minerals. Much of the inland region is wild and little explored. The largest communities are Bethel, Dillingham, and Naknek.

CENTRAL PLATEAU REGION

North of the crescent formed by the Alaska Range lies a broad expanse of plateaus and lowlands, dotted here and there by mountain groups and drained by several large rivers, including the Yukon, Kuskokwim, Porcupine, Tanana, and Koyukuk. These rivers and other streams flow in wide valleys choked with sedimentation brought down from the higher lands north and south of the plateau region. This central plateau continues east into the Yukon Territory and west to the Bering Sea. The subsoil over most of this area is frozen the entire year, but some of the thawed top soil is relatively fertile. Tundra and wooded areas contain fur animals, game birds, and large numbers of big game - moose, caribou, and mountain sheep. Fairbanks, principal town of the interior, is the center of the gold placer mining industry and has a number of potential lode gold producers.

The Seward Peninsula is a major gold-mining area. Nome, the principal town, was the scene of the gold rush of the early 1900's. In winter, when the sea is frozen, the inhabitants rely for transportation on dogteams, planes, and tractors.

Bering Strait, which separates Alaska from Siberia, is the channel between the Bering Sea and the Arctic Ocean. The Strait is 50 miles wide. Big Diomede Island in the Strait is part of the Soviet Union, but Little Diomede Island, 2.4 miles east, is part of the United States.

ARCTIC SLOPE REGION

The land sloping gradually from the northern foothills of the Brooks Range, which extends east-west over the northern part of Alaska, to the Arctic Ocean constitutes the Arctic Slope. Some of the mountains are separated by wide valleys, but in places the range is extremely rugged. A number of mountain groups are in the area - the DeLong, Schwatka, Endicott, Baird, and Davidson Mountains. Tundra country, consisting of large areas of rolling uplands and coastal plains,

stretches northward from the Brooks Range. The principal settlements along the Arctic coast are the villages of Kotzebue, Wainwright, and Barrow. Most of the inhabitants of these villages are Eskimos.

DRAINAGE

One of the great rivers of North America is the Yukon, which rises in British Columbia, flows through part of the Yukon Territory and traverses the entire width of Alaska. Second in size to the Yukon is the Kuskokwim, which rises on the western slope of the Alaska Range and drains the southwestern portion of the central region. Both rivers empty into the Bering Sea.

Several large rivers, the Unuk, Stikine, Taku, and Alsek, also rise in Canada and flow through Alaska into the Pacific. The Copper, Matanuska, and Susitna Rivers flow into the North Pacific Ocean.

The Kobuk, Noatak, and Colville Rivers are the principal streams emptying into Arctic waters.

HISTORICAL BACKGROUND

Alaska's written history begins in Russia during the reign of Peter the Great. Czar Peter, the first Russian ruler to "open a window on Europe," commissioned Vitus Bering, a Danish sea captain in his service, to explore the northwest coast of the American continent. In 1728, Bering sailed far enough north, through what is now called Bering Strait, to establish the fact that this land was part of the North American continent. In 1741, at the age of 60, Bering returned on the St. Peter and made a landing off south-central Alaska. His lieutenant Alexei Chirikof, in command of the St. Paul, sailed along the southeastern coast and lost a landing party to hostile natives near Sitka.

Russia based her claim to the ownership of northwestern North America upon these voyages of Vitus Bering and soon after his second expedition, Russian fur traders advanced along the Aleutians, depleting the country of furs, practically exterminating the sea otter, enslaving the Aleuts, and making war on the Indians. Their activities aroused the interest of other nations, leading to Spanish expeditions in 1774 and 1775 along the southeastern coast, and in 1778, Captain James Cook, the English explorer, made extensive surveys for the British Government.

The first settlement was made by the Russians at Three Saints on Kodiak Island in 1784. In 1799, the Russian-American Company, a Russian trading corporation, took absolute domination over everything in Russian-America under a 20-year concession which was renewed periodically. Alexander Baranof was manager of the Company for approximately 20 years. In 1806, he moved the Capital from Kodiak to Sitka and for years Sitka was the most cosmopolitan town west of the Mississippi and north of Mexico City.

The progress of the Russians can be traced today by the remaining Russian Orthodox churches, wooden-framed and turnip-topped, built by the faithful Aleuts and Indians under the missionary priests. These monuments to Russian expansion are found at Unalaska, eastward along the Aleutians, in the Kodiak-Afognak group, and at Sitka - last capital of Russian-America.

AMERICAN COLONIZATION PERIOD

In 1855 during the Crimean War when it was feared that the British might seize the country, Russia tried to sell this part of North America to the United States, but the transaction was not made until later when Secretary of State, William H. Seward urged the United States Congress to purchase the area. Five dates stand out in the purchase of Alaska; On March 30, 1867, the Treaty of Purchase was signed at 4 a.m. by Baron de Stoeckl for Russia and Secretary Seward for the United States, and the purchase price established at $7,200,000; May 28, 1867, treaty was ratified by the Congress of the United States; June 20, 1867, treaty was proclaimed by President Andrew Johnson; July 14, 1867, the appropriation of funds for purchase was made by Congress; and October 18, 1867, formal transfer was made at Sitka to United States commissioner, Major General L. H. Rousseau, as the agent of the United States. The transfer was made at 3:30 p.m. by Captain Pestchouroff, Russian Commissioner as an agent for Russia.

When Alaska was purchased from Russia, little thought was given to the wealth of the land itself. There was no effort to develop the country and from 1867 to 1884 it was almost completely neglected. The United States Army was in charge for the first decade, but its jurisdiction was withdrawn in 1877. From 1877 to 1879, the Treasury Department administered Alaskan affairs through a Deputy Collector of Customs, and in turn was succeeded by the Navy Department which had charge of administration until the Congress, by act of May 17, 1884, provided for the appointment of a governor and the organization of a government in Alaska with a temporary capital located at Sitka. Under this act the Secretary of the Interior was specifically empowered to regulate the enforcement, in the Territory, of United States Laws relating to mining claims and to provide for the education of children. He was also directed to select two officers who together with the governor should constitute a commission to examine and report upon the condition of Indians residing in said Territory. The act of July 24, 1897, provided for the appointment of a surveyor general for Alaska, and by the act of May 14, 1898, the homestead laws were extended to the Territory and provisions were made for right-of-ways for railroads.

The discovery of gold on the Klondike in the Canadian Yukon in the late 1890's caused the famous gold rush and stampede to Alaska, making government activities inadequate, but the act of June 6, 1900, greatly extended and defined the organization of the government and the courts.

Under the act of May 7, 1906, Alaska was empowered to elect a Delegate to Congress, and by the Organic Act of August 24, 1912, the incorporated Territory of Alaska was created, and a bicameral legislature was established to convene biannually for 60 days at the capital, which was fixed at Juneau. The first Territorial Legislature met in 1913.

CLIMATE

ALASKA IS NOT A FROZEN WASTELAND as many people believe. The southeastern area has the same average temperature as that of Baltimore and Philadelphia, the western area climatically is similar to New England, and the Interior is comparable to Montana and the Dakotas. It is notabale that Barrow, on the Arctic Ocean coast, has a higher winter temperature record than Fairbanks, 120 miles below the Arctic Circle. Alaska's proximity to the North Pole is about that of Scotland, Norway, Finland, and Sweden.

Specifically, the southeastern area has mild winters, cool summers, with

heavy precipitation. The south-central area has moderate winters, warm summers, with heavy precipitation on the coast and light rain and snow inland. Along the Alaska Peninsula and Aleutian Islands, the winters are stormy but not exceptionally cold, the summers are cool with considerable rain and fog. Interior Alaska has very light rainfall and great extremes in winter and summer temperatures.

More rivers and harbors subject to freezing exist in the States than from the Aleutians to southeastern Alaska. Alaska has no freeze-ups east and south of Bristol Bay owing to the warm ocean currents and warm winds traveling eastward from the Asiatic coast.

Precipitation is heavy in some sections, exceeding that of many areas of the States. This is an advantage in southeastern Alaska as the rain encourages the dense forest growth of Tongass National Forest and feeds the thousands of streams in which the salmon spawn every year. At the same time, it provides the vast, unharnessed waterpower which will enable private capital to open pulp and paper mills and utilize the great forest resources. Average annual precipitation of 150 inches in the southeastern region quickly drops to 15 inches or less north of the Alaska Range and steadily decreases to 5 inches on the Arctic coast.

TRANSPORTATION

Adequate transportation to and within Alaska is recognized as one of the prime factors underlying the development of the State and the realization of its economic and other potentials. While much remains to be accomplished in this field, gratifying progress has been made in the last few years in improving all modes of transportation.

AUTOMOTIVE TRAVEL

The road system of Alaska consists of a system of main roads connecting the Kenai Peninsula, Anchorage, Fairbanks, and Valdez with each other and with the lower States and various local roads connecting isolated mining camps or other inhabited localities with each other and with other means of transportation such as the Alaska Railroad or navigable water. The connected system is joined to the lower States by the Alaska Highway through the Yukon Territory and Northwestern British Columbia in Canada. The Haines Highway is a branch connecting southeastern Alaska with the Alaska Highway. The connected system of roads consists of about 1,800 miles and the isolated roads have a total length of 1,300 miles.

Designation and mileage of the principal highways follows:

	Miles
Alaska Highway; northwestward from Alaska-Canadian border to Big Delta Junction where it joins Richardson Highway	202
Richardson Highway; due north from Valdez on Prince William Sound to Fairbanks	365
Glenn Highway; northeast from Anchorage to Tok Junction, connecting with the Alaska Highway. It connects with the Richardson Highway near Gulkana	342
Steese Highway; northeastward from Fairbanks to the town of Circle on the Yukon River	162

Sterling Highway; southwestward from the forest highway system on Kenai Peninsula to Kenai and Homer and connects the settlements on the Kenai Peninsula (includes 18 miles of forest highways)..... 120

Haines Highway; northwest from the town of Haines in southeastern Alaska and connects with the Alaska Highway in the Yukon Territory. Length of road is 154 miles but only 40 miles are in Alaska..... 40

Seward-Anchorage Highway; connects Anchorage with road system on Kenai Peninsula (includes 95 miles of forest highways)..... 127

Taylor Highway; north from near Tok Junction to Eagle..... 160

EARLY ROADS AND TRAILS

On the District Maps of the 1926 report are shown many miles of wagon roads and trails, the more prominent are listed:

WAGON ROADS: Haines-Wells-Rainy Hollow, Eagle-Liberty, Circle-Fairbanks, Valdez-Fairbanks, Strelna-Kuskulana, McCarthy-Nizina River, Beaver-Caro, Ruby-Long, Eureka-Tofty, Tolovana-Terminal, Healy-Suntrana, Roosevelt-Kantishna, Talkeetna-Cache Creek, Matanuska-Willow Creek, Wasilla-Knik, Iditarod-Flat, Ophir-Ganes, Berry's Landing-Nixon Fork Mine, Deering-Inmachuck, Candle-Candle Creek, Dimes Landing-Haycock, Nome-Council and Casadepaga, Nome-Dexter, and Marshall-Willow Creek.

TRAILS: Gulkana-Eagle, Fairbanks-Fort Yukon, Fairbanks-Fort Gibbon (Tanana) -Kotzebue, Fort Gibbon-Kaltag-Nome, Nome-Kotzebue-Barrow, Nome-Wales, Kaltag-Holy Cross-St. Michael, Kanatak-Bethel-Marshall, Anchorage-McGrath, and McGrath -Nenana.

The total mileage of roads was 1,533, sled roads 1,086 and trails 7,383.

The roads replaced old trails, so it can be seen that at this time there had been almost 10,000 miles of trails. First as trails for pedestrians and animals in summer and dog sleds in winter, later as summer pack trails and winter bob-sled roads, still later as summer wagon and auto roads and winter bob-sled and auto roads, the pattern was set for most routes to keep pace with the changing modes of travel. Very little information is available as to the traffic over these early trails and roads.

However, many of the trails had shelter cabins for dog and man, indicating the need to serve the traffic. Shelter cabins were spaced to suit the condition of the trail, the loads that were to be hauled and were placed in sheltered areas. Most of these cabins were furnished with a stove and wood.

In 1910 it is noted that 3,500 persons used the Richardson Trail and 2,500 tons of freight was moved over it. In 1912 there were 1,742 head of cattle and sheep driven over the trail.

Perhaps the most important function of the dog trails was to furnish mail and medical supplies to the inland residents.

FAIRBANKS-NOME SURVEY OF 1906

Trails were of such importance that Congress authorized a survey for a mail and pack trail from Fairbanks to Nome in 1906, and this survey was completed the same year. The survey work was divided into four sections for the 584 miles from Fairbanks to Council. The route extended west to the Yukon River, crossing at Rampart Rapids, thence down the right limit of the Yukon to the Koyukūk, thence crossing the Gisasa and Kateel to the Ungalik and Koyuk Rivers, thence over the Tubutulik summit and on to Council where it joined the established route to Nome, 75 miles away.

Of the 26 horses composing the pack train on these two sections, 10 were lost, 2 were drowned in crossing the Koyuk River and the remainder were shot when they were unable to travel farther. Without the cache of oats at the head of Norton Bay, we would undoubtedly have lost the greater number of the 16 horses that we succeeded in getting through to Council City. In all work in Alaska where horses are used and the country relied upon for their forage, the work should be completed not later than September 5, as a usual thing all grasses have been killed by frost in northern and interior portions of Alaska by that time.

It was also noted that the surveyed route saved 180 miles over the one in use at the time. One estimate shows a probable cost of $728.00 per mile for a pack trail.

Considerable thought was given to highway or railroad too. The length of a railroad route from Fairbanks to the Koyuk River, crossing Brooks Divide by way of the Kateel and Ungalik Rivers, will be about 620 miles. Aside from the crossing of the Yukon and Koyukuk Rivers, which will be costly, no engineering difficulties will be encountered.

(The Army made a survey for a railroad from Dunbar (near Fairbanks) to Teller (near Nome) in the winter of 1942-43 and followed generally the route of this 1906 trail survey.)

WAGON ROAD FROM VALDEZ TO FORT EGBERT (EAGLE) AND MILITARY TRAIL BETWEEN YUKON RIVER AND COLD FOOT (NEAR WISEMAN)

Authorized by Congress April 23, 1904, these surveys were completed on August 9, 1905.

Beginning at Valdez, the survey extended northerly to Fort Egbert, over Thompson Pass, Tonsina, Copper Center, Gokana, Chistochina, Montasta Pass, across the Tanana River, Lake Mansfield, and Forty Mile Hills.

Valdez came into being in 1897 when on November 10, 1897 passengers were landed at the place now known as Swanport, just below old Fort Liscum, or at Dayville, as we know it now. Prior to this time the Northern Trading Company had a small cabin in what was later called "Hangman's Town", but at the time of the permanent settlement by the Swanberg party the cabin had been abandoned.

Four field parties were engaged in the survey from Valdez to Egbert, two came by sea to Valdez and the other two by sea to Skagway, thence over White Pass to the Yukon and by steamboat to Fort Egbert. The Coldfoot survey crew also came by the Yukon and proceeded down river to Fort Hamlin.

To be correctly informed, telegrams of inquiry were forwarded to commanding officers at the posts of Fort Liscum (Valdez) and Fort Egbert (Eagle). It was learned that at Fort Egbert the United States maintained suitable pack animals and equipment for three parties from that point. Fort Liscum, it was learned, had 10 animals and equipment that could be spared for the season for assistance in transportation from that point.

Many snow banks were crossed along the summer trail. Crossing these banks was very fatiguing to the animals, many of them sank deep into the snow,

requiring unpacking to extricate them, while others slid and rolled down the hills. While it was fatiguing to the animals, mention must be made that the men waded the cold glacial streams and bore the unpleasantness uncomplaining. Arriving at the Tanana River July 15, the horses were taken across by swimming, the river being 500 feet across and 5 to 12 feet deep. The trail from Tanana to North Fork, while not a good one, was a fair Alaskan trail. On the way south, however, it was about as bad a one as it was possible to find. The animals mired in places, requiring assistance to extricate them. Frequently the trail usually traveled was abandoned and the horses led through the timber to avoid trouble in passing the worst places.

The animals taken to Alaska were disposed of as follows: Twenty-one were turned over to the Quartermaster, Fort Liscum, one was drowned while swimming the Taglena River, and three strayed from the herd. Those turned in to the Quartermaster were used in carrying 10,000 rations to Copper Center to be used in supporting the Indians there during the winter.

The mail leaves both Valdez and Eagle on the 1st and 16th of the month. The Contractor can refuse all over 200 pounds of mail per trip. In summer the mail is carried on a pack horse and is relayed five times in the nearly 500 miles. In winter it is carried on sleds hauled by dogs and sometimes it is hauled by men. There is also a winter mail route between Valdez and Fairbanks, which follows along this trail as far as Gulkana River. The distance between Valdez and Eagle by military trail is 412 miles, by mail route it is longer.

The country is made up of benches, more or less regular in their altitudes, directions and formations. Those near water courses are usually from 10 to 30 feet above the rivers, are usually well drained, fairly dry, covered with alder or quaking asp, and would be the ones used where practicable for any road location. The higher benches are usually covered with moss, spruce timber and swamps. The trees have roots which spread over considerable area and are quite close to the ground. This forms a combination very difficult to travel over and a trail through it is a very bad one indeed. Where moss is found the frost is just below it. In many places fire has run through the country. Where the fire has been of recent date traveling through, it is tedious on account of the mud and loose ashes; but where the burn is two or three years old the moss has disappeared, the ashes have become packed, the scrub spruce thickets have died, and the sunlight is allowed to reach, to warm up and to thaw out the ground, grass takes the place of moss, the drainage is greatly increased, evaporation is more rapid, the swamps lose their source of supply and a section of country which was formerly wet, mossy and difficult to travel through has become an easy and desirable location for trail, road or meadow. Where a trail follows through a moss country, it soon becomes a mud hole or a bog. After a pack train or two has passed over it, the moss becomes packed close to the ground and thawing begins (the insulation is destroyed). Soon the moss becomes torn up or worked into a pulp, then the thawing process becomes more rapid. The trail then becomes worn below the adjacent terrain and as the thawing continues, the water thus formed finds its way into the trail, which now becomes the drain or reservoir for this basin, and soon becomes well-nigh impassible. This is practically the condition of the military trail throughout nearly all its whole length.

At the mouth of the Klutena River is the important trading post, Copper Center. Here is located the experimental farm operated by the Government. Upward

of 20 acres have been cleared and placed under cultivation, with growing grains, grasses and vegetables. All looked thrifty and gave promise of good results. Early in August a severe frost occurred and blighted some of the grains and vegetables, but did not injure the oats or the hardy vegetables. The season was an unusual one, being cold, wet and backward with frost earlier than usual.

The survey consisted of a continuous transit line from Valdez to Eagle. The whole distance was carefully measured with steel tapes. Levels were taken at frequent intervals, usually at every 100 foot station. The topography was closely sketched, using clinometer, for a distance of from 100 to 200 feet on each side of the line. We are unable to turn over at this time complete maps, profiles and estimates as required, because of the exhaustion of funds.

Prospecting and placer mining are being carried on in various parts of the country tributary to the trail. The life of a prospector is too hard a one under present conditions for men to engage in it to any great extent. Only the strongest of men have any business in this country of long marches, few settlements, scant provisions, and short seasons. At present the miner finds it cheaper to buy his goods at Dawson or Forty Mile, pay the duty, and freight it in winter season up the Forty Mile River to where wanted.

If the country is ever opened up by the immigrant, aid must be extended in the construction of trails and roads.

Along the route whole outfits of miners' tools were found in caches, where they were abandoned on account of worn out pack trains unable to proceed farther with them.

Along the route Indians are living in settlements at Copper Center 50; Gokana 5; Chistochina 2; Mentasta 7 men, 20 women, 13 children; Tanana Crossing 50; and Ketchenstock 30, for a total of almost 200.

COLDFOOT TRAIL

This trail began at Fort Hamlin on the Yukon and extended northerly by way of the Dall River and crossed several branches of the Jim River and the south fork of the Koyukuk to Coldfoot on the middle fork of the Koyukuk River.

A continuous transit line was maintained from the Yukon to Coldfoot, distances being determined by stadia, and where densely timbered areas were to be crossed, by triangulation. Elevations were carried by vertical angles. Where possible, prominent landmarks were located by intersections and, in some cases, by estimated distances. A barometer was provided for the party, but was found to be defective. Stations along the line were marked with poles and mounds of rock. As much of the country was devoid of timber and covered only with moss, grass and stunted shrubbery, a sufficient number of poles for each day's work were carried on a mule. It is hoped that sufficient marks were left to enable the traveler to find his way where traces of the old trail cease. The length of the trail was 126 miles.

Fort Hamlin was abandoned but an Indian village and small trading post exist at the mouth of the Dall River near the Fort. Coldfoot is situated at the

confluence of Slate Creek and the Middle Fork of the Koyukuk River. The camp contains about 80 well-built cabins, in the summer quite deserted and a winter population of about 60 people. Supplies are freighted up from Bettles, 65 miles away, by boat in summer and in winter over the snow. The town was established in 1900 at the time of the gold discoveries on Slate and Myrtle Creeks. During the summer a steamboat makes a trip to this camp once a month. There are a number of wild fruits, the most common are the blueberry, red currant, red raspberry, high and low-bush cranberries, and salmon or cloud berries.

Spruce up to 24 inches in diameter and 50-80 feet high with birch on the hillsides, poplar and aspen are found on the drier ridges and knolls, with willows and alders along the water courses.

Above the timber line a number of caribou were seen and four were killed for camp meat. Ptarmigan and grouse were quite common. On the Yukon side moose and bear were seen and muskrats, squirrels and rabbits were common.

RECONNAISSANCE SURVEY - FORT GIBBON (TANANA) TO KOYUKUK AND KOBUK RIVERS TO KOTZEBUE

The purpose of this survey report in the winter of 1923-24 was to obtain information on the route for possible improvements of the trail and erection of shelter cabins. It was an old established trail, and of great use in access to the upper Koyukuk and Kotzebue area on the coast.

The trail extended north to Alkakaket, Bettles, Coldfoot, and Wiseman, a distance of 180 miles. From Alkakaket it branched off westward to Kotzebue, via the Alatna and Kobuk Rivers to Shungnak, Kiana, and Kotzebue, 280 miles.

The snowfall in the vicinity of Alatna was very light at the time of arrival at that place. The Christmas holidays brought the natives to the Mission of St. John in the Wilderness at Alkakaket on the Koyukuk, near the mouth of the Alatna River. This gave me an opportunity to select a suitable guide from among the Kobuk natives. After having all the arrangements made for the trip, taking ten days supplies and dog food, I proceeded with Napoleon, the Kobuk guide, January 7th along the Alatna River, taking advantage of the portages, to Blackjack, a Kobuk village, where we stayed at Chief Nulyook's place for the night. From Blackjack the river was used, making short cuts across the portages of the many bends in the river. A 7 x 7 tent was used for camping out as there are no cabins along this route of travel. We had already resorted to the use of snow shoes to break trail for the dog team, the snow being heavier towards the Endicott Range. A blizzard from the northeast compelled us to seek shelter in a spruce grove, where we pitched camp for the night. It snowed during the night and the wind was getting stronger. Nothing was visible for more than a half a mile, but having worked out a compass course, Napoleon and I started to break trail and mark the same to the Hogatza, locally called the Hog River. For the next two days we were breaking trail and found faint traces of old blazes but the snow had driven so hard that the bark of the trees was covered with snow. The line of blazed trees corresponded to the compass course and the same was followed for three hours, returning to camp at dusk. Only two days dog food was on hand and our own food supply was getting low; I decided to return to Marsan to replenish our supplies. On the return trip we met a Fur Warden from Nome with three dog teams and two natives as guides and trail breakers. Later in the day we met a Kobuk trapper and we camped at his tent for the night. Leaving the tent next morning, we traveled the Alatna River. The cold was severe, the nostrils and mouths of the dogs were getting iced. We made Pooto Hope's cabin, stopped for the day (63 degrees below zero). The next day we returned to Marsan and after replenishing our supplies, engaged Nictune, a native, to return with us to haul dog food. Leaving Marsan on the 28th of January, the Kobuk was reached on February 1st, made camp about two miles above Reed River (temperature-52 degrees below zero). Next day passed Reed River and Beaver Creek, at the mouth of Reed River overflow was concealed beneath the snow, got feet wet and sled runners iced. The faces of the dogs and the front of our parkas were frozen so made camp at 3 P.M. During the night Napoleon and Nictune had to make a fire in order to keep warm (69 degrees below zero). In the course of next morning's travel, both natives had their cheeks and chins frost bitten. We pulled in at a white trapper's cabin, below Selby Creek, where we had lunch. Here we learned that distemper was raging among the dogs along the Kobuk River and that many had died of the disease. Stayed over night at Pah River, where three Kobuk igloos are located. Proceeded next morning on Kobuk River, arriving at Shungnak on

February 4th at 5 P.M. We put up at the store which has a sawmill and mining enterprise also. The eight days following, the weather remained 51 to 70 degrees below zero. During this time made a trip to the native village 7½ miles below Shungnak, where the Bureau of Education maintains a school, presided over by two teachers who also look after the reindeer herds in behalf of the Government. Owing to the epidemic of distemper amongst the dogs, the scarcity of dog food and the extreme cold, I decided not to go on to Kotzebue and went to Noorvik, where I wired Fairbanks to that effect. Left Marsan February 28th over the winter trail for Nolan and arrived at Henshaw Cabin at 5 P.M. The trail was drifted in many places. Proceeded next day to Chinoko Cabin. At this place I met two Koyukuk natives who were hauling dog food for the Geological Survey. Next day I arrived at Bettles and had a meeting with the miners and residents and talked over trail matters. Proceeded on to Coldfoot and 2½ miles below Coldfoot, where Porcupine Creek flows into the Koyukuk--a heavy overflow, 18 inches deep, was encountered. Cutting a way around, I arrived at Coldfoot at 1:30 P.M. Had lunch with Mianano, a Japanese, then proceeded to Wiseman and on to Nolan, it being the center of mining activities in the district, 6 miles from Wiseman. A meeting was held there and also at Wiseman to talk over trail and road matters. There seems to be more prospecting and development on the Upper Koyukuk than there has been for some time past. On Nolan Creek, 16 men in 3 outfits, were taking out winter dumps from shafts, others were working on benches. There was considerable working ground, but the water for sluicing was and had been a drawback. Two men were sinking a shaft on Slate Creek, 2 men and 1 woman on Emma Creek, 2 men on 12 Mile Creek, 5 men and 1 woman on Porcupine Creek, 5 men on Tramway Bar, 2 men on California Creek, 1 on Bettles River, 10 on Hammond Creek and 1 on Union Gulch. Four men were mining on Wild and 3 on John River.

The question of transportation and cost of supplies was foremost. Freight from Nenana to Bettles was $90.00 per ton by boat, owned by the operating stores who handled mostly their own goods.

Leaving Wiseman on March 10th, I arrived at Nenana on March 26th, having covered 1,350 miles, of which 700 miles were traveled on snowshoes.

The money spent in former years for the improvement of trails, roads and shelter cabins north of the Yukon has been, in many cases, misapplied or wated, either by having incompetent persons directing the work or others who directed the work for selfish purposes.

TALKEETNA - IRON CREEK RECONNAISSANCE, 1921

This trip was made August 15th to August 20th. The party consisted of a packer with two horses, helper and myself. The route traveled was over the present trail.

From Talkeetna up Left Limit of Talkeetna River to Sheep Creek (15 miles), up Talkeetna River to Iron Creek (31½ miles), up Iron Creek to just above east fork of Iron Creek, where there is a foot bridge put in by the miners of the district, then up left limit of East Fork to Joe Morris's property, which consists of a group of ten claims known as the Talkeetna Group. Theme are 47 miles from Talkeetna, as measured by the pedometer.

The Talkeetna Group shows a large body of ore running a little north of east, from 200 to 300 feet wide and carries copper from 2½% to 3%, a trace of gold and about 7 ounces of silver. The work done on this property consists of a tunnel 70 feet.

The other main property in this district, as far as known, is the Copper King. This consists of a ledge 20 feet wide, traced for about 3,000 feet, carrying values from 8 to 10% copper.

There are two gold quartz showings over from the head of the East Fork, but values undetermined.

The most urgent need in this district, as I see it, would be a cable bridge across Sheep Creek (225 foot span). This would enable miners to get in and out at any time, whereas now in the early spring breakup and fall run of ice it is impossible to get in and out.

There is a cable stretched across Sheep Creek at present, but no boat, and it could not be used in early spring or late fall. The country going into Iron Creek is more or less hilly but well adapted for pack trail, there being less than a quarter mile of soft ground on the whole 47 miles.

In conclusion will say that from the present showings there would be no use for a wagon road because if the copper properties proved good, it would require a railroad to make them pay. A little work on present trail would be advisable.

SPECIAL REPORTS

Investigation and report required by the Act of Congress approved June 30, 1921
Nome-Shelton-Kugruk River-Keewalik Reconnaissance

In compliance with the following proviso contained in the Act of Congress approved June 30, 1921:

> Provided further, that not to exceed $10,000 of the foregoing amount shall be expended for a preliminary investigation and report on the feasibility, desirability, and cost of the best and most practicable connection between the Nome-Shelton system of communication and the coal deposits of the Kugruk River, Chicage Creek, and the Keewalik mining district, whether by wagon road, sled road, tramway, trail or other means.

the Commission had a preliminary reconnaissance made of existing and prospective routes of communication on the Seward Peninsula in the fall of 1921. The investigation was completed during the summer of 1922.

Report dated December 1, 1922, was transmitted to Congress and printed in House Document No. 514, Sixty-Seventh Congress, fourth session. A plan of improvement is presented to the extent of:

12 miles, at $12,500 per mile	$150,000
From Dahl to Inmachuk, improvement of winter trail to summer trail standard, including bridges, 65 miles at $3,000 per mile	$195,000
From Inmachuk to Candle Creek, construction of a tramway, 30 miles at $13,500 per mile	$405,000
Total	$750,000

Maintenance is to be provided for by the Commission with its own funds, supplemented by contributions from the Territory.

The above report was referred to the Committee on Territories on December 20, 1922. House Joint Resolution 60, authorizing the improvement of the system of overland communications on the Seward Peninsula, Alaska, in accordance with the above report was introduced by Delegate Sutherland on December 5, 1923. It was reported out of the Committee on the Territories with the recommendation that it do pass on April 18, 1924.

It passed the House of Representatives by unanimous consent in February, 1925, but failed to get out of the Senate Committee on the Territories before the close of the Session.

Delegate Sutherland reintroduced his resolution in the Sixty-Ninth Congress. It was reported out by the Committee on the Territories in April, 1926, and is now on the House calendar.

INVESTIGATION AND REPORT REQUIRED BY ACT OF CONGRESS APPROVED SEPTEMBER 22, 1922

TOLOVANA RIVER, ALASKA

Reports dated December 15, 1922, and November 5, 1923, on the preliminary examination and survey of Tolovana River, Alaska, required by the river and harbor act of September 22, 1922, were submitted, reviewed by the Board of Engineers for Rivers and Harbors, and were submitted to Congress and printed in the House Document No. 193, Sixty-eighth Congress, first session.

Recommendation is made for the improvement of this locality by the United States from the mouth of the river to the log jam by snagging, and by widening the channel at the rock slide and the beaver dam and providing at both places a depth of 4 feet at low water, at an estimated cost of $29,000, with nominal maintenance, provided the Alaska Road Commission will provide and operate a public tram from the lower end of the log jam to Livengood.

In anticipation of the authorization by Congress of the improvement as recommended, the Territorial Legislature, in its 1923 session, appropriated $8,000 for the purchase of the existing Tolovana Tramroad, provided the Alaska Road Commission would agree to rehabilitate it and operate it as a public tram. After extended negotiations, the Alaska Road Commission purchased the Tramroad, on behalf of the Territory, for $6,425.00. It has since rehabilitated and operated it.

Its extension to the log jam awaits negotiations to result from the adoption of the project by Congress. This project is included in the River and Harbor bill which passed the House near the close of the last session and is now on the Senate claendar.

INVESTIGATION AND REPORT REQUIRED BY THE ACT OF CONGRESS APPROVED MARCH 2, 1923

DOCK OR WHARF AT JUNEAU, ALASKA

In compliance with the following item contained in the Act of Congress approved March 2, 1923:

> "For cost of survey and the preparation of plans and estimates for a Government Dock at Juneau, Alaska, $600.00"

the Commission made the survey of the harbor of Juneau during the summer of 1923, selected a suitable site for a wharf, negotiated for an approach and access to the uplands, and prepared plans and estimates for construction. Its report, dated July 10, 1924, was transmitted to Congress and printed in House Document No. 561, 68th Congress, 2d Session.

Recommendation is made for the construction of a wharf 400 feet long and 40 feet wide at an estimated cost of $22,500.00. The City of Juneau has agreed to contribute to the project necessary easements covering approach from Willoughby Avenue and to put the approach in good condition.

The project was adopted by Congress in the Act of May 28, 1926. The work is to be performed by the Commission.

INFORMAL SPECIAL REPORTS

Chilkoot Barracks Water Supply

At the request of the commanding officer of the post of Chilkoot Barracks, Alaska, the President of the Commission made a special examination of the water line across Chilkat Inlet, which supplies the post and the town of Haines, Alaska, and submitted a special report on December 1, 1920, with recommendation for the repair of the line. The line had been in service for nearly twenty years and had been roughly handled due to the great tidal range, the loose and shifting bottom, and the pounding of the ice-run. Permanent repairs or reconstruction could not be accomplished at any reasonable cost.

This report was approved by the War Department and the Commission was charged with the supervision of the work. The breaks and leaks were repaired and the water service restored in the summer of 1921. $2,502.02 were expended.

During the winter of 1923-24, the line again gave trouble. At the request of the Quartermaster General, the Commission made a second report on June 5, 1924, recommending repairs, the construction of a reserve reservoir, and a survey to determine a permanent solution of the water-supply problem.

This report, except the survey to determine a permanent solution, was approved late in the fall. The pipe line was repaired and excavation for a million gallon concrete reservoir started during the fiscal year of 1925. The work was continued and practically completed at the end of the fiscal year 1926. $7,500 were expended.

Lowell Creek Survey

At the request of the Secretary of the Interior dated May 16, 1924, the Commission made a survey of Lowell Creek to determine the works necessary and adequate to protect the Government property adjacent to the town of Seward, Alaska, from floods and overflows. This survey was made during the summer and report was submitted to the Secretary of the Interior on January 19, 1925. The cost of the survey and report was $80.75, which was paid by the Alaska Railroad.

Recommendation is made for the improvement of this locality by the United States to the extent of the construction of a rockfill dam and timber flume at an estimated cost of $120,000 for construction. Maintenance is estimated at $900 per year for 14 years, at which time the work will have to be renewed, the flume to be relined at the end of 7 years at an estimated cost of $12,500.

H. J. Res. 100 to authorize the expenditure of not to exceed $125,000 for the work was passed by the House during the last session and is now on the Senate calendar.

TELLER-SHISHMARIF, 1927

On March 23rd I left Nome to investigate trail conditions and the necessity for permanently staking trail from Teller to Shishmarif.

The American River Route, 95 miles long, is traveled more or less for three quarters of the distance and willows for fuel plentiful. The Ear Mountain Route is direct, 70 miles distant, and is traveled slightly, not to exceed one quarter of the distance and traverses a rather barren and hilly country with very few small willows. The American River route, summer and winter serves the Lapp reindeer herders, the miners and prospectors on Igloo Creek, Allen Creek (where there is a dredge not operating), Budd Creek and tributaries (where there is a dredge not operating but where several thousands of dollars have been produced and where at present some very promising hydraulic diggings are being developed; also all the tributaries of the head waters of the American River, several of which are known to carry some gold). Going over the Arctic divide from Portage Creek to Bonanza Creek some very good prospects have been found there. This route would connect with Serpentine River Trail at the mouth of the Sanaguich or Arctic Rivers where a well beaten trail accomodates travel from Shishmarif to Serpentine Hot Springs and the Dick Creek placer diggings. The American River route has a good stopping place at the Lapp Igloo about 25 miles, where some one is nearly always to be found and where travelers are always welcome. There is a fairly good 14' x 16' lumber cabin (Dobson's) at about mile 35; Budd Creek miners up Budd Creek Mile 40. There is a fairly good 12' x 14' lumber cabin at the mouth of Portage Creek about mile 45. There is an Igloo on the Arctic River about mile 75, thence to Shishmarif, mile 95.

The Teller-Ear Mountain Route as far as known would serve no miners and has no igloos or cabins enroute. It would be necessary to have at least one and doubtless two cabins built to make this route safe for travel especially during the short winter days. It would cost at least $1,000.00 for cabin and dog barn. These cabins would have to be supplied with wood. All things considered the American River Route appeared much more favorable.

The trip from Teller to Shishmarif was made in four days travel but two days were lost at Portage Creek owing to a severe storm. The day we went over the summit was very stormy but owing to danger of shortage of dog food the trip was made.

Two days were spent at Shishmarif consulting with all the most enlightened natives, (there are only two white men in Shishmarif) in regards to the most favoralbe route across to Teller. As a matter of fact very little was learned. The natives prefer the coast travel except for a short time in the spring when the snow gets crusted, the days get long and the weather fine when they occasionally slip across to Teller. It was decided to return to Teller across country westerly of Ear Mountain. On April 4th we traveled along the coast forty miles or more to the mouth of Pinguk River where there is a good igloo. On April 5th we left the mouth of Pinguk River about 6 a.m. and traveled up the Pinguk River almost directly towards Teller for about twenty miles when we were compelled to turn back on account of a severe storm. We back tracked for about ten miles to the flats and made a reindeer herder's camp. Owing mainly to unsettled weather conditions and partly to the fact that I had decided that no trail was warranted across this part of the country anyway at present, I decided to strike westerly across the flats for the coast and return via Wales and Lost River. Late that night we reached an old Igloo near the head of Lopp Lagoon, having traveled about fifty miles. On April 6th the storm was still raging and at times one could not see a dog team one hundred feet away but we had the coast travel to follow. We made Wales about 1 p.m. and were hospitably

received by the Bureau of Education shcool teacher. After getting around the cape we had some protection from the north wind and pushed on through to York about forty miles. On April 7th we traveled from York to Lost River shelter cabin, eighteen miles; thence on to Teller twenty six miles. On April 8th and 9th there was one of the worst storms of the season at Teller. On April 10th we made from Teller to Woolley, forty two miles, on April 11th we made Sinuk and were again held up by storm in the p.m. and on April 12th, we returned to Nome.

At Teller extra dog teams were hired to haul stakes, the work of distributing same started at the mouth of Igloo Creek and continued on for a distance of twenty five miles toward Dobson's cabin. At this cabin sufficient stakes were left to bring trail staking from where distribution left off to cabin. The reason for staking within this short distance of Dobson's was that there is a slight question as to the proper place. The twenty five miles that were distributed will be planted this coming summer.

I would recommend the staking permanently of a combination summer and winter trail from Teller to mouth of Budd Creek on American Rivar, about forty miles. If conditions warrant, this trail could later be extended on up American River to Portage Creek, thence up Portage Creek; thence over divide and down Bonanza Creek to Aeokaok's Igloo, then down Bonanza Creek and the Sanaguich River to Serpentine trail and thence into Shismarif.

The American River Route, while having about twenty five miles greater distance than the Ear Mountain Route, is already supplied with cabins and igloos, and good willows, and in my opinion a far safer route to travel, being mostly river valleys and more removed from the mountainous regions than the Ear Mountain Route.

RECONNAISSANCE CHENA RIVER DISTRICT - 1928

1. Authority: In compliance with orders dated May 21st, 1928 from the President of the Board, the undersigned made a thorough reconnaissance of the Chena River District, including the Chena Hot Springs and the upper Chena River mining area, with regards to resources, economic development, future possibilities and road needs and possibilities.

2. Procedure: Upon arrival in Fairbanks I held conferences with mining men and others interested in the district. A party was then organized and a trip on foot made to the most important parts of the district. Four men were considered a desirable number because this permitted greater mobility through being able to divide the party, and a better distribution of loads. Proceeding from the Cassiar Road-house at mile 26 on the Chatanika-Circle Road, we proceeded direct to the Chena Hot Springs, thence to the upper Chena mining district, where we visited all the important properties thence returning to Fairbanks down the Chena River. A side trip was made to the head of Wheeler, Little Munson and Beaver Creeks to determine the proper road route over this divide, and to locate a route up the South Fork of the Chena. All important operators in the district were interviewed personally and their views obtained, either in Fairbanks or in the course of the trip, and a comprehensive knowledge of the country gained.

3. Economic Data: The Chena River watershed embraces some 2000 square miles of country, largely rolling or mountainous, lying directly east of the city of Fairbanks, The known resources of this district are placer gold deposits, lode gold deposits, the Chena Hot Springs mineral waters, furs and agricultural land. Placer gold deposits, while occurring to some extent along nearly all the streams of the district are known to occur in paying quantities in two places, the upper Chena area, and the Beaver Creek area.

The Chena Hot Springs are located on Monument Creek, about a mile above its confluence with the North Fork of the Chena River, and about fifty five miles from Fairbanks. The waters issue in quantity at a temperature of 168 degrees F., and are medicinal in quality, containing chloride, sulphate and bicarbonate of sodium. They have been pronounced by the U. S. Dept. of Agriculture to be rather different from other American hot springs and very similar in mineral composition to the waters of the Felsenquelle spring at Carlsbad, Bohemia. The Springs have been used to a limited extent as a health resort by the people of Alaska for about twenty five years. Due to decline in population and change in custom the patronage has fallen off to some extent in recent years, now averaging from fifty to eighty persons annually. The property has only been developed in a rather primitive way; however there are baths and sweat rooms and drinking facilities provided, in addition to the usual Alaska road-house accommodations. It is possible to grow and provide many fresh vegetables in the five acres of warm ground surrounding the springs. The proprietor is an elderly man who seems incapable of improving or advancing the business of the springs to any great extent, which is believed to be one reason for decline in patronage. Difficulty in transportation is also claimed as a cause and has undoubtedly been a contributing factor.

4. Transportation: The Chena River District is not at present provided with wagon roads of any description, but is served by a winter sled road, from Mile 1 on the Fairbanks-Gilmore Road, which parallels the Chena for 48 miles on its north limit, then crosses the river and follows up the left limit for 39 miles further to Shamrock Creek in the upper Chena Mining area. There is a branch from Mile 48 which runs northward up the North Fork to the Chena Hot Springs. This sled road is, in general, well located for winter travel; however it is rough and has many bad holes and short pitches which should be eliminated. Bridges in general are

satisfactory. Freight rates over this road average $2.00 per ton-mile in winter or about 8 cents per pound to Chesna's on Shamrock Creek. Travel over it is possible in summer during dry weather on foot, or with pack horses, but is usually not attempted.

There are two airplane landing fields in the district, at the Chena Hot Springs and at Palmer Creek in the upper Chena mining district. The former field is located directly adjacent to the Hot Springs road-house on Monument Creek. Its usable portion is 850 x 150 feet in size and fairly level, but is quite rough and should be smoothed off since airplanes now find difficulty in landing. The Palmer Creek landing field is actually located on a bar in the main Chena River, about 2½ miles above Palmer Creek itself and about a mile above Shamrock Creek. It is identical with the socalled Van Curler Bar Field. It is 750 x 175 feet in size, level, and in good condition. Airplane service can be secured from Fairbanks to these fields at rates of $50.00 per passenger to Chena Hot Springs and $75.00 per passenger to Palmer Creek, and this means of transportation is often used in summer rather than make the slow and arduous journey on foot.

SEPTEMBER 2, 1924

On my recent trip to Iliamna I took in Kachemak Bay farming district, situated on the southern end of Kenai peninsula and 16 miles north of the town of Seldovia.

This district was originally opened by the railroad company in 1902 with the idea of marketing coal on the Pacific Coast. A dock was built at Homer, buildings erected and several miles of railroad constructed. Some coal was actually shipped and then after a dispute with the government the project was abandoned. The buildings remain at Homer in a dilapidated condition but the track is now torn up and a part of the old grade is now used as a wagon road. The settlers come in from 1912 to the present time and contrary to the conditions prevailing at Wassilla and Matanuska most of them have remained.

There are 30 bonafide homesteaders in this community with 46 voters at the last election and 15 children. These people are engaged in fox ranching, stock raising and farming, the fox business having seen the greatest advancement up to date. However, on the 30 homesteads, there is only a total of 60 acres under cultivation for various reasons. The fox farmers and those trying stock have only enough cleared for gardens, while others depend upon cutting native grasses for feed. Then again, all of these people were poor when they arrived and with only a meager payroll in that vicinity it has been an uphill proposition as is the case in all frontier farming.

This community seems to have kept clear of the factional squabblings to a greater extent than most small places in Alaska and have worked together and contributed toward the erection of 13 miles of telephone line and a wireless station, showing a fine progressive spirit considering the size of their purses.

Though the postoffice is at Homer at the extreme end of the spit, there is no town of any kind. Supplies are secured by gas boat at irregular and non-dependable intervals. Homer offers the only place deep enough for large vessels to dock and when the town develops it will be either at Homer or in the vicinity of Cold Bay, connected by a wagon road. Last October, during the big storm which covered this section, the entire spit which is from a quarter to a half mile wide

was swept by the sea and a large amount of drift wood deposited, an occurrence heretofor unknown.

At present one can drive a wagon from Homer to Sheafer's at low tide by following the beach in places. Likewise one can drive at low tide over a siding and rocky beach for several miles in the other direction. With this means of transportation and with gas boats which land at various points off the beach, the people have somehow managed.

What these people need first is a road of communication with one another, suitable for summer or winter, and not dependable on tides; a road to a central point where the school should be located. The school house which burned last winter was located on Neilsen's place. This year it will be built at Miller's, about one mile to the south. Over a rough road, one can, when it is not too muddy, drive from Fritz Creek to Miller's, but the other direction offers no way for school children or others to get thru except the circuitous route along the beach at low tide.

These people are not only in need of roads but they are highly deserving of assistance, and it is necessary for the future development of the district. They should be given all possible encouragement.

This strip of farming country now settled is about twelve miles long and a mile wide. Back of this strip rises a bench 400 feet high, the land of which is suitable for grazing. The country is partially timbered with spruce, birch and cottonwood, Red top grass grown higher than ones head. The soil is a sandy mixture of clay with good drainage.

CIRCLE - EAGLE, 1926

The present trail going from Circle to Tacoma Bluff, a distance of 32 miles, runs through ground that is saturated with warm springs, and lakes that are slow to freeze and subject to overflow.

At certain times there is no way to get around the bluff, the mailman builds a raft and ferries himself across. There is no way by which a trail can be kept on the left limit of the river. It is suggested that enough of the bluff may be blown into the river so that a trail could be made on the waste, but that would hardly be feasible.

An alternate route is coming from the mouth of Thanksgiving Creek to the Circle Hot Springs. This could easily be made to connect with the Yukon at the mouth of Woodchopper Creek, which would eliminate thirteen additional miles of river travel.

There is no question about the merit of the proposed trail--it runs through the mining district where men are prospecting and have trails made, it connects the two mining districts where large companies are contemplating operating, it would shorten the distance the Eagle mail would have to be hauld by 37 miles, eliminates dangerous river travel below Thanksgiving Creek, and is in better country where it is not liable to overflow and be covered with debris from high water in the Yukon, but would be of no advantage unless arrangements were made to have the mail transferred at the Hot Springs instead of at Circle. Whether arrangements could be made with the present officials to have the change made is very doubtful.

A survey party will be in the Circle district this summer and will be available in case it is decided to do any work on either of these routes.

RECONNAISSANCE INTO NELCHINA DISTRICT, 1926

Left Chickaloon August 26th, 1926, and crossed the Chickaloon River and followed the bluff on the south side of Boulder Creek in a northeasterly direction approximately 7 miles to the foot of the south slope of Anthracite Ridge, all high ground through timber, then a southeasterly course was taken along the foot of the south slope of Anthracite Ridge about 12 miles to Index Lake which was passed on the south side between it and a small lake. There is about 500 feet of swamp here but a trail could be drained without much trouble. We then descended a ridge about 2 miles to Hicks Creek which was forded about 1000 feet above the junction with it and the Matanuska River. Muddy Creek flows into the Matanuska River a little less than a fourth of a mile east of Hicks Creek. Hicks Creek is very rapid and at the time of crossing it the channel was 60 feet wide. A cable tram with a 100-foot span is recommended for this crossing and it will take 250 feet of cable all told for this tram. The course from Hicks Creek went due east along the top of the north bluff of the Matanuska River 10 miles to the saddle behind Glacier Point, then the ridge was descended to Caribou Creek Crossing which was in 4 channels at the time we crossed it. It will take a 500-foot span of a cable tram to cross Caribou. The course then followed the south slope of Sheep Mountain in a northeasterly direction for approximately 15 miles to the last creek coming out of Sheep Mountain into the east fork of the Matanuska River, thence through a pass at the head of this creek in a northerly direction passing Lake Leila 2 miles on the west side, then crossing Squaw Creek and up to the summit of the watershed between the Matanuska and Copper Rivers (this pass is also the head of Crooked Creek). Just 2 miles south of this pass we stopped over night at Startup Camp, used by the miners of the Nelchina when they put up their season's supply of wood. This camp could be used in the future as a junction point with some future trail which could be made leading almost due east along the south fork of the Nelchina River, past Tazlina Lake, along the Tazlina River to Mile Post 114 of the Richardson Highway north of Copper Center.

After crossing the Pass at the head of Crooked Creek, we followed Crooked Creek on the west side a distance of 6 miles from the summit to the mouth of Albert Creek, thence due west up Albert Creek 1½ miles to Nelchina Discovery, the end of the proposed trail.

The total distance above described from Chickaloon to Nelchina Discovery is 60 miles and the character of the ground is as follows: 43 miles of timber and buck brush, 20 miles of which is burned timber and brush and 23 miles of green spruce and brush (all of this portion is on solid ground); 8 miles of swamp which can be drained off trail without much expense; and 9 miles of clear hard ground.

The return trip was made from Nelchina Discovery on Albert Creek to Chickaloon over the following route: west and up Albert Creek one mile to the south fork of Albert, thence up this creek to the summit between Albert and Alfred Creeks, thence in a southwesterly direction down the creek channel of Alfred Creek to the Pope & Reese sawmill, which is 9 miles from Nelchina Discovery, thence up a small creek to the head of Wapoo Creek, thence down Wapoo to Alfred (this avoided going through a canyon on Alfred Creek below the sawmill), thence down creek channel of Alfred to a point approximately one mile above the junction with Caribou Creek (there are some old tent frames at this place where the trail leaves Alfred), thence over a swampy hill to Caribou Creek and keeping on the north side of Caribou across the mouth of Sheep Creek

to Jack Gallivan Camp, a distance of 3 miles from the tent frames; then Caribou Creek was crossed over 3 channels and it would be necessary to construct a 250 -foot span of a cable tram here; our course then followed the south side of Caribou Creek, a distance of 4 miles to Chitna Creek which was crossed about 800 feet above its junction with Caribou Creek; from Chitna crossing a good high and dry trail was followed (Pope Trail) due west to the north fork of Chitna, thence northwest up the north fork to the divide between the north fork of Chitna and the upper south fork of Boulder Creek. The trail then follows down this fork of Boulder to the junction with the upper north fork of Boulder. The trail then was lost as the creek channel is followed down Boulder to the west end of Anthracite Ridge. Our course then went up the hill to the top of the south bluff of Boulder, connecting with the trail taken out of Chickaloon 7 miles northeast of Chickaloon, thence following this trail into Chickaloon. The total distance of the route used on the return trip is 50 miles and consists of 25 miles of creek channels along Alfred and Boulder Creek bottoms crossing and recrossing these streams, 7 miles of hard and dry timber trail, 5 miles of swampy ground and 13 miles of high and dry bench and ridge land. One 250-foot cable tram span across Caribou Creek at the Jack Gallivan Camp would be the only cable tram required on this route. This latter route would be impractical for a pack trail on account of 50% of the trail being in the creek channels and high water would put the trail out of commission during those periods.

The 60-mile trail first described from Chickaloon to Albert Creek, the Nelchina Discovery, is the one I recommend to be adopted for construction as it not only would be of use in opening up the anthracite coal fields along Anthracite Ridge, but would open up a vast territory of rich placer and quartz in the Sheep Mountains and over in the Nelchina District.

While over in the Nelchina District I inspected the Shorty Wehnke claim on Sleigh Creek a short distance north of the mouth of Albert Creek. This claim has been drilled and a shaft is now down 17 feet and within about 3 feet of bed rock. A short distance south on Poor-man Creek a $19.00 nugget was found a few years ago.

Fred Gitchell of Anchorage owns Nelchina Discovery on Albert Creek where $25,000.00 was taken out of a gravel bar which consisted of less than one-half the claim; the balance of the claim has not been touched except sufficient to cover the yearly assessment work. George Ballinger and Jack Cameron are living on Discovery claim and own half of #1 below, also #2 and #3 below Discovery and #1 and #2 above Discovery; Fred Gitchell also owns half of #1 below Discovery. Ballinger and Cameron have been working up here 8 years and are taking an ounce of coarse gold apiece out of their sluice on an average every day they work sluicing. A. C. Christoferson lives on #3 above Discovery and has been there since 1914 and although he does not work regularly, he has averaged $1,000 a year. The gold taken out of Albert Creek is very coarse and $5.00 and $8.00 nuggets are not uncommon.

I interviewed Al Dreese and old man Hall on Alfred Creek near the Pope & Reese sawmill; Hall is too old to do much mining and he has been located there for over 25 years; Al Dreese is prospecting and at the present time is sinking a shaft on his claim near the sawmill. He showed me some coarse gold and a $10.00 nugget.

Jack Gallivan is prospecting at Caribou Crossing near the mouth of Sheep Creek--no results worthy of mention.

A pack trail along the first described route could later be developed into a wagon road and is considered the most direct and serviceable route into the Nelchina country.

GRUNDLER - TANANA CROSSING RECONNAISSANCE, 1926

The main business of the people of this district is trapping and trading, there is hardly any mining going on, some of the white men do a little prospecting, but no gold has been discovered sufficient in quanitity to permit mining operations.

The present trail from Grundler to Tanana Crossing is fairly good at the present time, excepting that four bridges are required crossing streams which are fed by warm springs, and very often do not freeze at all during the winter, making travel very hazardous.

The first bridge required out of McCarty a non-freezing stream is encountered, this is very shallow in winter time but reaches a depth of three and four feet in the summer, caused by water backing up from the Tanana River.

This could be easily bridged in the winter time by a bent trestle, it is bridged at present, but the structure is very old and liable to fall down at any time.

The second stream requiring attention is the Clearwater, 12 miles from McCarty, this is about 200 feet wide, varies from three to five feet deep, with a current of four miles an hour, and is probably four feet deep for a width of a hundred feet, this stream never freezes.

A man living at the crossing operates a ferry, when he is available; if he is away travellers build a raft and cross on it. Several people have lost their outfits crossing the river this way.

The only way to bridge this would be a pile trestle, it is only 12 miles from the main road at McCarty, so that it would not be much of a job to get a horse driver on the job. It seems rather pecular to use a piledriver on a winter trail but it would probably be the cheapest in the end. This stream has been the greatest obstacle on this trail in past years.

The third stream to be crossed is situated thirty miles out of McCarty, and is known as the Big Gerstle, this is a glacier stream, with steep banks, about twenty feet from the top of the bank to the bed of the stream.

There is no trouble crossing this stream during the winter, but occasional mushers who come through in the summertime have difficulty in getting over, they either have to build a raft or swim across, and accidents are frequent.

It is suggested to build a truss out of native timber.

The remaining stream to be bridged is close to Tanana Crossing, and would connect the crossing with Mansfield Village, a native settlement from which there is considerable traffic to and from the crossing at all seasons. At present the trail crosses the "Little Tanana," a slough of the Tanana River, at a point about three miles from the crossing, where the slough is wide, but by making a diversion and crossing it about one and one half miles from Tanana Crossing it could be bridged by a span of forty feet, with local timber available. This bridge would be very beneficial to the people in the vicinity of the Crossing.

An alternate location could be obtained by travelling along the high way eight miles south of McCarty, thence going in an easterly direction until the Tanana River was reached, about half way between Healy River and the mouth of the Little Gerstle, a distance of about forty miles.

This would eliminate the first two crossings, and reduce the span across the Big Gerstle, but has the disadvantage of being ten miles from Healy, and communication with the river.

The bridge across the Little Tanana would also be used for carrying the mail from Chicken to Tanana Crossing.

A trail should be cut from Tanana Crossing to Tetlin Village, where there is a native population of 100 people and a few whites. At the present most of the freight is taken up in the winter time up the Tanana River, a distance of about sixty miles, the trail proposed would be about 40 miles, but would require one bridge of 60 feet span over the Tokio River, and 400 feet of light grading about 7 miles from Tetlin.

This district is isolated from the main trails, consequently supplies are expensive, construction is expensive, and there is no inducement for people to prospect.

RECONNAISSANCE NANCY - TYONEK TRAIL 1927

Accompanied by a driver with six dogs and a sled, the trip from Nancy to Tyonek, a distance of 70 miles, was made from December 13th to 17th, inclusive, one way. Throughout the entire trip both ways the snow fall was heavy causing us to snowshoe a trail ahead of the dogs through a depth of 12 inches to 4½ feet of snow.

The trail from Nancy to Susitna Station is now swamped out to a width of 8 feet which is sufficient for a double-ender. A crew of four men and a team are camped at Mile 10 at which place they are constructing a standard log shelter cabin. The first ten miles out of Nancy goes along Nancy Lake approximately 2 miles through a thickly wooded country crossing over a high ridge from the lake to the Alaska Road Commission Shelter cabin, thence through a flat swampy country full of alder and second growth spruce to Susitna Station.

Mile 22 - Susitna Station has a postoffice in connection with a general store and also has a roadhouse. The village is quite large, as to the number of buildings, but no more than a dozen natives are living here at this time. Susitna Station is a stopping place for trappers as well as a supply base. As the Susitna River is navigable from the Station to Cook Inlet, supplies are transported from Anchorage during the navigation season.

Leaving Susitna Station the route follows a draw a distance of one mile to a small lake on the left limit of Susitna River; this lake has tripods across it showing the route to the entrance of heavy timber and alder brush; the trees are blazed through here for approximately 3 miles to the head of an open slough which is 100 feet wide and one mile long and draining into the Susitna River. The river is then followed a distance of 5 miles to the mouth of Alexander River - Mile 32.

The route followed from Alexander to the Carter cabin traverses the Susitna River approximately 2 miles to the first slough coming in from the right, thence up this slough approximately 2 miles at which point the timber is entered and traveresd ½ mile to a swamp; this swamp is crossed in a distance of ½ mile to a fringe of spruce timber and a tall spruce, trimmed of branches from the ground almost to the top, is used as a land mark. This fringe of timber is about 200 feet wide and is the dividing line to what is called the Beluga Flats.

The Beluga Flats are the most dangerous part of the route as they are one mass of swamps with scattering second growth spruce and tundra. Beaver houses are quite common. Substantial land marks are not visible until Lewis River is approached when the traveler can identify it by a strip of willows; after crossing Lewis River, which appeared to be 100 feet in width, the location of Theodore River could be made out in the distance by the timber where the timber ends approximately 1 mile below the Carter cabin. Knowing the location of the Carter cabin in relation to the end of the timber line, one can see an eagles nest, on a clear day, in a tall tree; this is used as a landmark and the cabin is found across Theodore opposite the eagles nest.

In interviewing several white trappers who are familiar with Beluga Flats, it was found that all were in favor of a trail through the timber at the base of Mt. Susitna between Alexander and Carter cabin. This route would be sheltered from the storms sweeping across the flats and at the same time be on higher ground. A trappers cabin is situated on the upper Lewis River.

Mile 50 - Carter cabin on Theodore River is a good warm log cabin and apparently is used by all who travel this route since the death of Carter a few years ago. The cabin is approximately 14' x 16' with a loft and a small cellar.

Cottonwood, birch and spruce is abundant here.

The route of the trail then goes through ½ mile of timber to an open flat a total distance of 4 miles to Beluga; the last mile through scattering second growth spruce and brush.

Beluga, Mile 54 has 2 large buildings fromerly used as a trading post by the old A. C. Company but now deserted. It is situated near the mouth of Beluga River and the tide water extends above the station a distance of approximately 2 miles.

The route then crosses Beluga River about 300 feet above the buildings and crosses a flat which is dotted with drift wood carried up by the extreme high tides of Cook Inlet. The distance from Beluga across the flat to Cottonwood River is 5 miles.

Mile 59 - Cottonwood River is the end of the flat country connecting with Cook Inlet. The route traversed from this point to Tyonek follows the beach line or shore ice at the foot of a timber covered bluff approximately 100 feet high.

Mile 62, also known as 3 Mile Creek is called the half way point between Cottonwood and Chuit rivers.

Mile 65 is shown as Ladds and is now known as the Frank Smith place located at the mouth of Chuit River.

The route continues along the shore line 5 miles to Tyonek, Mile 70, the end of the trail.

From Cottonwood to Tyonek a distance of 11 miles, the trail could follow through the spruce and birch timber on top of the bluff paralleling the coast and make travel safer as well as affording protection from the storms off Cook Inlet. As the shore ice, which at this time is approximately 50 feet wide, is used for trail purposes, it is dangerous on account of its roughness due to large crevises between the ice chunks.

Of the thousands of miles of trail, many miles were maintained by the users, but the main trails upon which depended the delivery of mail, were generally at the cost of some government agency. Space does not permit futher detailed accounts but enough has been printed to allow the reader a grasp of the overall coverage and necessity for this means of transportation.

The trails served well in the early development of our State, when isolation was a matter of course and hardships a daily routine. The White Pass and Chilkoot Trails are among the famous because of the publicity given the Klondike gold discovery, but there are may others that were used by our settlers to a greater general benefit and without fanfare, being in many cases as essential as food itself.

That the funds expended for building, staking, shelter cabins and stoves, and telephone lines along these trails, saved thousands of lives, there can be no question, that they allowed communication with the outside world that could not have been possible without these trails, there is no argument. They saved many millions of the pioneer's dollars in the knowledge gained by forerunners that saved duplication of exploration in areas found lacking in minerals or furs.

They brought medical supplies and attention, schools and missionaries to doctor, teach, and preach so that the country would be a better place in which to live.

1926 Report

STATUTORY AUTHORITY

An act to provide for the construction and maintenance of roads * * * * * * in the District of Alaska, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That all the monies derived from and collected for liquor licenses, occupation or trade licenses, outside of the incorporated towns in the Territory of Alaska, shall be deposited in the Treasury Department of the United States, there to remain as a separate and distinct fund, to be known as the "Alaska Fund" and to be wholly devoted to the purposes hereinafter stated in the Territory of Alaska * * * * * * * * and all the residue (65% of total fund) of said fund shall be devoted to the construction of wagon roads, bridges, and trails in said Territory * * * * *.

Section 2. That there shall be a board of road commissioners in said district, to be composed of an engineer officer of the United States Army to be detailed and appointed by the Secretary of War, and two other officers of that part of the army stationed in said district and to be designated by the Secretary of War. The said engineer officer shall, during the term of his said detail and appointment, abide in said district. The board shall have the power, and it shall be their duty, upon their own motion or upon petition, to locate, lay out, construct, and maintain wagon roads and pack trails from any point on the navigable waters of said district to any town, mining or other industrial camp or settlement, or between any such towns, camps, or settlements therein, if in their judgment such roads or trails are needed and will be of permanent value for the development of the district but no such road or trail shall be constructed to any town, camp, or settlement which is wholly transitory or of no substantial value or importance for mining, trade, agriculture, or manufacturing purposes. * * * * * * * * In case no responsible and reasonable bid can be secured, then the work may be carried on with material and men procured and hired by the board. The engineer officer of the board shall in all cases supervise the work of construction and see that the same is properly performed. * * * * * * * * It shall be the duty of said board, as far as practicable, to keep in proper repair all roads and trails constructed under their supervision, and the same rules as to the manner in which the work of repair shall be done, whether by contract or otherwise, shall govern as in the case of the original construction of the road or trail. The cost and expense of laying out, constructing, and repairing such roads and trails shall be paid by the Secretary of the Treasury, through the authorized disbursing officer of the board, designated by the Secretary of War, out of the road and trail portion, of said "Alaska Fund" upon vouchers approved and certified by said board. * * * * * * (Act of January 27, 1905, as amended by Acts of May 14, 1906 and March 3, 1913.)

Provided, the hereafter the Secretary of War may, in his discretion, assign suitable officers of the Army to active duty as members of the road commissioners for Alaska. (Act of March 3, 1911).

Provided, that hereafter, so long as the construction and maintenance of "Military and Post" Roads in Alaska, and of other roads, bridges and trails in that Territory shall remain under the direction of the Secretary of War, he be authorized to submit such estimates for the consideration of Congress as are in his judgment necessary for a proper prosecution of the work. (Act of July 9, 1918). Hereafter when an appropriation for this purpose for any fiscal year shall not have been made prior to the 1st day of March preceding the beginning of such fiscal year, the Secretary of War may authorize the board of Road Commissioners to incur obligations

for this purpose of not to exceed 75 per centum of the appropriation for this purpose for the fiscal year then current, payment of these obligations to be made from the appropriation for the new fiscal year when it becomes available. (Act of February 12, 1925).

Provided, that the Secretary of War is hereby authorized to receive from the Territory of Alaska, or other sources, such funds as may be contributed by them to be expended in connection with funds appropriated by the United States for any authorized work of construction, repair, and maintenance of roads, bridges, ferries, trails, and related works in the Territory of Alaska, and to cause such funds to be deposited to the credit of the Treasurer of the United States, and to expend the same in accordance with the purpose for which it was contributed. (Act of June 30, 1921).

CURRENT APPROPRIATION

Construction and Maintenance of Roads, Bridges, and Trails, Alaska: For the construction, repair and maintenance of roads, tramways, ferries, bridges, and trails, Territory of Alaska, to be expended under the direction of the Board of Road Commissioners described in Section 2 of an Act entitled "An Act to provide for the construction and maintenance of roads, the establishment and maintenance of schools, and the care and support of insane persons in the District of Alaska, and for other purposes" approved January 27, 1905, as amended by the Act approved May 14, 1906, and to be expended conformably to the provisions of said Act as amended $900,000 to be immediately available. (Act of April 15, 1926).

The work during the fiscal year ending June 30, 1926, was executed under appropriations for "Construction and maintenance of roads, bridges, and trails, Alaska, 1925-1926, "approved February 12, 1925, and 1926-1927," approved April 15, 1926, and from receipts from the "Alaska Fund" act of Congress approved January 27, 1905, as amended by act approved May 14, 1906. Work was also done which was covered by funds contributed by the Territory of Alaska, the National Park Service and others. Act of Congress approved June 30, 1921. The work consisted chiefly of maintenance and rehabilitation of existing roads, trails and bridges. The construction of several new projects was continued mostly under cooperative agreements with the Territorial Board of Road Commissioners and the National Park Service.

The roads constructed by this Commission are in general good wagon roads. However, a more substantial type of road has now been built in many places, upon which automobiles and light trucks can be used economically. The demand for roads of this type is increasing, and effort is made in each case to provide a gravel surface for the road.

ORGANIZATION

The headquarters of the Commission are located in Juneau; a sub-office is maintained at Washington, D. C. as required. The Territory is divided into eight districts and two sub-districts with boundaries as shown on the maps accompanying the district reports herein.

Each district is in charge of a superintendent. It is the duty of each superintendent to visit his working crews and to give them necessary engineering supervision during the season. The foremen in local charge are in nearly all cases trained men who have been attached to this Commission for many years.

PROGRESS OF THE WORK

The high scale of wages and supplies in the Territory is a large element in the cost of this work. The rate paid for labor varies from $3.50 to $6.00 per day with board for common labor. The cost of subsistence and forage is also correspondingly high. Besides these high costs, the nature of the work in Alaska adds to the cost in a way to make comparisons with road work in the United States difficult. In the roads built here the cruising, clearing, grubbing and construction of the road includes all work done upon the roads in the settled parts of the United States from pioneer days. Even with this the mileage cost of our roads can be looked upon with a great deal of gratification.

In the classification of the Commission, wagon roads are any roads cleared, grubbed, ditched, graded, and drained sufficiently to accommodate wagon traffic. Light motor vehicles are now using these roads in increasing numbers. This requires a gravel surface at an increased first cost, but with an eventual saving in annual maintenance charges.

Sled roads are cleared and grubbed like wagon roads, but not graded. They are drained only sufficiently to prevent their destruction by the summer rains. Their wearing surface is of snow. Double bob-sleds, drawn by two, four or more horses haul heavy loads over these roads as well as over the wagon roads in winter time. During the past few seasons, caterpillar tractors have been successfully used during the winter time, and such traffic is expected to increase.

Trails include any construction less than above, suitable for dog-sleds or single horse-drawn double-ender in winter and pack trains in summer. Except where frozen river surfaces are used, some work is always necessary to permit the use of dog teams.

Flagged trails represent cut-offs across frozen lakes, arms of the sea, etc. The marks are necessary to prevent travelers from getting lost in bad weather.

Since assuming charge at the beginning of the 1920 working season, the present Commission has been engaged in overhauling the entire road and trail situation, rehabilitating or abandoning the projects which have fallen into des- repair or disuse, drawing up a progressive and comprehensive plan of operations covering a period of years, and extending the road and trail system to meet actual needs.

The total mileage of roads and trails constructed by the Commission during the first sixteen years of existance (1905-1920) aggregated 4,890 miles, consisting of 1,031 miles of wagon road, 636 miles of sled road and 3,223 miles of trail. In addition some 712 miles of temporary trail have been flagged as required.

Not all of this mileage has been maintained year by year; some has been in disuse or practically impassable for many years and a small mileage has been superseded by other routes or methods of transportation.

FREE SERVICE ON THE ALASKA RAILROAD

All branches of the Government service have heretofore received free regular transportation over the Government Railroad but have paid for special service such as switching, shopwork, supplies, special transportation, etc. Effective July 1, 1926, all such service must be paid at tariff rates.

COST OF MAINTENANCE

The annual cost of maintenance of routes in Alaska varies considerably with the locality, the range of climate being greater than that of the United States, and the cost of labor varying greatly. The experience of this Commission indicates that for all Alaska proper, average maintenance costs, including a fair allowance for floods, etc., are about as indicated in table below:

Classification	Mileage	Annual Maintenance per mile	Total
Wagon Roads	1,533½	$300	$460,050
Sled Roads	1,086	25	27,150
Trails	6,671½	10	66,715
Flagged Trails	712	3	2,136
Average Totals	10,003	$ 55.59	$556,051

The above does not provide for any improvements or extensions. The intermediate, or interior, sections of many of the through routes need improvement to the same standard as the rest so that the entire route may be used throughout by the same traffic without the necessity of breaking loads. A certain amount of new work on extensions must be provided for each year to keep pace with developments. This has only been possible up to the present time at the expense of needed maintenance work.

INSPECTION

The magnitude of the task and extent of territory covered by the wide-flung activities of this Commission may be realized from the fact that it would take two years of continuous traveling with the best facilities available for a single individual to make a complete inspection of the entire mileage for which the Commission is responsible.

Actually the President and the Engineering Officer spend about 80% of their time in the field. They have visited every district and have inspected most of the sub-projects a number of times. The Secretary and Disbursing Officer have been engaged in over-hauling the property, accounts and office methods and have made a tour of inspection of the district offices to standardize methods and accounts.

FEDERAL AID

The provisions of the Federal Aid Road Acts do not apply to the Territory of Alaska. The original Federal Aid Road Act was approved July 11, 1916, and was amended by the Act approved February 28, 1919. The Federal Highway Act of November 9, 1921, as supplemented and amended, is now the basic law governing federal aid road work.

The extension of the Federal Aid Road Acts to Alaska has been proposed. In view of the fact that nearly 12 years before the federal aid idea was adopted, the Alaska Road Commission had been created by Congress in 1905 to meet the special conditions in Alaska, had the work well in hand; and in view of the further fact that the theory, specifications, methods, etc., of the federal aid do not meet the conditions in the Territory, Congress has instead increased the powers and appropriations of the Alaska Road Commission.

DEPARTMENT OF AGRICULTURE

While the provisions of the Federal Aid Road Acts do not apply to the Territory, the provisions of the same acts relating to roads in the National Forests do apply to the Tongass and Chugach National Forests which constitute about 5% of the area of the Territory. As these forest funds require Territorial cooperation, the amounts accruing under the Acts of 1916 and 1919 stood idle until the passage of the Territorial Cooperative Road Act approved April 21, 1919 (Chapt. 11, Session Laws of 1919). The funds then released and subsequent funds are expended under the direction of the Secretary of Agriculture, represented locally by the U. S. Forest Service. In addition to the cooperative funds, the Act of 1921 and subsequent acts released additional forest funds for the expenditure of which cooperation is not mandatory.

Until July 1, 1920, the President of the Alaska Road Commission acted as the representative of the Department of Agriculture and supervised the performance of work and the expenditure of these cooperative funds within the National Forests, as all projects were former projects of this Commission. Until May 1, 1922, the forest funds were inadequate to take care of the projects in the National Forests already under construction under the Alaska Road Commission. The latter, therefore, continued to allot part of its own funds to these projects under a tripartite agreement to which the Territory, the Forest Service, and the Alaska Road Commission subscribed.

Since July 1, 1920, the Department of Agriculture has maintained a separate road building organization, a branch of the Bureau of Public Roads, in the Territory. Since May 1, 1922, it has assumed responsibility for all projects within or partly within the National Forests. To these projects the Territory contributes part of its funds under such cooperative agreements as may be required. The funds of the Alaska Road Commission, heretofore allotted to these projects, are thereby released for expenditure in the other 95% of the Territory.

The National Forests both lie along the sea-coast: the Tongass National Forest, including most of Southeastern Alaska; the Chugach Forest, including the Prince William Sound region, the shore line of Kenai Peninsula, and the east shore of Cook Inlet. Due to the rugged character of these sections of the Territory and to the excellent system of sheltered waterways, the main transportation will always be by water. Most of the projects in the National Forests, therefore, consist of short recreational roads in the neighborhood of principal towns, or from minor ports to agricultural or mining districts lying in the immediate hinterland. In general they do not tie into the main overland transportation system of the Territory.

LOCAL COOPERATION

Under the authority of the Territorial Cooperative Road Act, approved April 21, 1919, and the Act of Congress approved June 30, 1921, the Commission made additional cooperative agreements for the prosecution of work supported in part by federal funds and in part by funds appropriated by the Territorial Legislature. In the first and second divisions, the Southeastern and Western Alaska, respectively, no divisional chairmen were appointed during the past year, all available funds being allotted to cooperative projects. In the other two divisions, superintendents of the Commission were appointed chairmen of the respective territorial commissions.

The President of the Commission continued to serve as Director of Public Works for the Territory and supervised the work of the Divisional Chairmen as well as the work supported by appropriations of the Territorial Legislature. No Territorial road building organization has been maintained since March 1, 1921.

The $8,624.34 for shelter cabins and $2,273.92 of the funds for aviation

fields have been deposited. The balance is held subject to the call of the Federal Commission. The existing balance of $11,431.61 in the contributed funds includes a balance of $533.35 available for further work on the Nome Wharf.

The Cooperative Road Act has worked satisfactorily under the conditions imposed. Certainly, the amount of road work accomplished for the money expended has been far in excess of anything heretofore possible. Had the Territory attempted to expend its $30,000 per division under an independent organization, nearly one third of the available funds would have gone into overhead, salary and expenses of a divisional chairman and clerk, rent, light, etc. All of this service was furnished free by the Alaska Road Commission and at no additional cost to itself. In addition, the extensive plant and mechanical equipment of the Alaska Road Commission, representing a capital investment of over $500,000, were furnished where available in the Territorial work without extra charge except for fuel and ordinary running repairs. Due to the extensive organization of the Alaska Road Commission, it has also been possible to apply Territorial money to outlying projects where the maintenance of an independent organization would have been impossible or prohibitive in cost. Finally, all available money is lumped together and expended upon a comprehensive system with a continuity in plans and a consistency in operations over an extended period of years.

The Alaska Road Commission, also, is a gainer under the Cooperative Road Act. By having greater funds available, it is able to consolidate purchases and supplies and thus to secure better prices. Conflicts in plans and complications in operations are avoided. By having funds becoming available all the year round, the difficulties resulting from fiscal year appropriations beginning or terminating about the middle of the open working season are minimized, and the entire organization and conduct of operations, are rendered more flexible.

ADDITIONAL OPERATIONS OF THE COMMISSION OR OF ITS MEMBERS

The following additional duties have been imposed upon the members of the Commission by appropriate authority:

(a) By par. 3, S. O. No. 50-0, War Department, Washington, D. C., March 9, 1921, and under the provisions of Acts of Congress approved June 17, 1917, the President of the Commission, in addition to his other duties, has been detailed for consultation or to superintend the construction or repair of any aid to navigation authorized by Congress, in the Sixteenth Lighthouse District (includes the Territory of Alaska). He reported by letter to the Secretary of Commerce. In 1922 he served as a member of a special Commission, headed by the Assistant Secretary of Commerce, to investigate conditions on the Russian, Japanese, and American fur-seal rookeries of the North Pacific.

(b) Effective April 1st, 1921, the Juneau, Alaska engineer district was created by G. O. No. 1, War Department, Office of the Chief of Engineers, Washington, February 21, 1921. The President of the Commission, in addition to his other duties, was appointed District Engineer; the other two members of the Commission were placed under the immediate orders of the District Engineer and the Secretary; and the Disbursing Officer of the Commission was, in addition, designated as Disbursing Officer for the District. The Alaska District does not form a part of the Northern Pacific Division; the District Engineer reports direct to the Chief of Engineers.

(c) Effective November 14, 1921, the President of the Commission was appointed Consulting Engineer for the Territory and assumed direct charge of all Territorial public works. Effective May 10, 1923, he was appointed Director of Public Works for the Territory.

(d) By letter of the Secretary of War, dated December 6, 1921, the President of the Commission was designated as the War Department representative upon the Inter-Departmental Alaska Council. He also served until the Council was abolished in May, 1923.

(e) By informal arrangement, effective April 1, 1922, the President of the Commission agreed to act for the National Park Service, Department of the Interior, on certain matters relating to the improvement of the Sitka National Monument and the development of Mount McKinley National Park.

(f) By direction of the President, War Department and Interior Department, orders were issued on February 13, 1923, detailing the President of the Commission, in addition to his other duties, to duty with the Government railroad in Alaska under the provisions of an Act of Congress approved March 12, 1914.

He was appointed Chairman and Chief Engineer of the Alaskan Engineering Commission. He took over the management of the Alaska Railroad and allied activities of the Alaskan Engineering Commission as of March 24, 1923.

The Alaskan Engineering Commission was abolished on August 15, 1923, upon the recommendation of the Chairman thereof, and the designation "The Alaska Railroad" substituted therefor.

On October 1, 1923, the joint management of the roads and railroad was terminated. The President of the Alaska Road Commission remained Chairman of the Alaska Railroad until March 17, 1924, to handle estimates, Congressional hearings, and other matters in Washington, D. C. He had no railway operating functions or responsibilities in Alaska after October 1, 1923.

(g) At the request of the Secretary of the Interior, the Commission made a survey and submitted a special report upon the control of Lowell Creek, Seward, Alaska, to protect government property in the vicinity from damage due to floods.

(h) At the request of the Quartermaster General of the Army, the Commission has agreed to assume charge of the administration of the Sitka National Cemetery created by Executive Order of June 12, 1924.

(i) At the request of the Quartermaster General of the Army, the Commission submitted a special report upon the water supply system of Chilkoot Barracks, Alaska, and has assumed charge of the construction of a million gallon concrete reservoir and repairs to the pipe line crossing Chilkat Inlet.

CONSOLIDATED ENGINEERING ORGANIZATION

The practical result of the foregoing orders has been the development, without legislation, but through executive order or inter-departmental or inter-bureau agreement, of a practical working arrangement through which the facilities of all the services involved are used interchangeably, but a careful account is kept so that each appropriation is eventually expended for the purpose intended by Congress and no appropriation is either increased or diminished by such interchange of working funds or facilities. Separate accounts and reports are rendered to the departments under the direction of which the work is performed.

The result has been an immediate speeding up of development work upon a unified plan based upon a careful survey of the situation, a thorough knowledge of the entire Territory and its problems, and a cordination of all the various conflicting interests after full hearings before all parties at issue. Instead of interminable references between different bureaus which formerly sometimes requires papers to travel to Washington and back several times, matters are handled promptly upon the ground, or where the approval of Washington is required, such an approval has usually been obtained by a single telegram covering the various angles or the views of the bureaus concerned.

The following are the current activities under consolidated engineering direction:

The construction, repair, and maintenance of federal roads, tramways, ferries, bridges, trails, and related works now aggregating over 10,000 miles, and extending from open-all-year-round south coast ports to all inhabited parts of the Territory; Territorial roads, bridges, ferries, aviation fields, telephone lines and trails throughout the Territory, covered by cooperative agreements; shelter cabins; Nizina River Bridge; Nome-Shelton Tramway (87 miles operated by cars drawn by dogs); Tolovana Tramway; Improvement of Nome Harbor; Improvement of Wrangell Harbor; Improvement of Wrangell Narrows; the preliminary examination or survey of Tolovana River, Ketchikan Creek, Hyder Harbor, Saxman Harbor, Port Alexander, Wrangell Harbor, Seward Harbor, Yukon River at Fort Yukon, and Yukon River at Holy Cross; the investigation of port facilities; the survey and design for a Government wharf at Juneau; the issuance of permits for fish traps and other structures in the navigable waters along the Territory's 26,000 mile coast line; miscellaneous inspections, public hearings and contingencies of Rivers and Harbors; improvement of Sitka National Monument; improvement of Chilkoot Barracks water supply; administration of Sitka National Cemetery; Lowell Creek survey; and Nome-Shelton-Keewalik Reconnaissance.

ALASKA TRANSPORTATION PROBLEMS

The subsoil of the vast interior of Alaska is permanently frozen. This is a condition handed down from a preceding period when the climate of Alaska was much colder than at present. For about four months during the summer the average temperature is about 55 to 60 degrees while the temperatures above 90 degrees are not rare. The surface thaws and the warmth, together with the long hours of daylight, causes vegetation to grow very rapidly. The resultant thick layer of moss and dead vegetation prevents the ground from thawing to any great depth. Where this layer of moss and dead vegetation is removed thawing does continue to bed rock, or at least to very considerable depths.

The frozen condition of the subsoil prevents the drainage of the surface by seepage while the accumlated moss and dead vegetation greatly retards surface drainage. The result is that in proceeding across country in Alaska in its normal condition in summer one wades through a peat-like muck, water soaked and ankle to knee deep. The going is made rough by the profusion of bunches of grass root growth known locally as "niggerheads."

The above condition, varied only in degree, exists all over Alaska with the exception of the narrow fringe along the southern coast. Movement across country is further complicated except on the Seward Peninsula and on the Arctic slope, by the presence of scrub timber, much of which is fallen and which must be cleared to permit ready passage.

Movement of a wheeled vehicle without a prepared roadway, is impossible everywhere except along a sand or gravel beach or along the gravel beds of the smaller streams.

Many of Alaska's streams are of glacial origin. In these the water is very cold and heavily laden with silt and the current is very swift. Quicksand is often encountered. Such streams are always crossed at considerable risk.

Alaska is well provided with navigable streams which now serve the same purpose on the Territory as did the rivers in the states before the construction of the railroads. The Yukon, Kuskokwin, Innoko, Iditarod, Koyukuk, Tanana, Kantishna, and Tolovana Rivers, together with the Alaska Railroad, and the White Pass and Yukon Railway, and the Richardson Highway form main highways of commerce. From the seacoast or from points on these main highways freight is moved still closer to its destination on the smaller streams in light draft scows pulled by horses.

During the winter, extending on an average for the whole interior country, from November first to April tenth, the streams are frozen over and the ground covered with snow and movement is much less difficult. The stream beds generally form excellent avenues for movement by dogsled or horse-drawn sleds. Trails for dog teams and sled roads for the heavier sleds drawn by horses or tractors are constructed at relatively little expense by clearing a lane through the timber, constructing occasional bridges over gullies and open streams, and grading down the especially steep approaches to frozen streams. Winter travel on the large streams is more hazardous though, due to danger from overflows or of going through holes or thin places in the ice. The trails are gradually being relocated off the river in such places.

During the period from October tenth to November first and from April tenth to May tenth, as an average for the interior country, the streams are just freezing or thawing, movement on or across the streams is impossible on account of running ice, and travel is at a standstill except on the railroads.

The universal occupation of the interior of Alaska is mining. The product is gold. It can be transported by any available means from any point at which it is produced. Other minerals can be mined profitably at present only at localities where railroad or water transportation is immediately available. It follows that in general the problem is to transport supplies of all kinds to the point of consumption rather than from the point of production.

The average cost of transporting a ton of freight one mile by bobsled on a winter sled road is 37¢ as compared with a cost for summer movement of 50¢ by auto truck or $1.23 by wagon. It follows that for isolated mines and small mining communities in the remote interior the construction of wagon and automobile roads is not warranted.

It is the policy of this Commission to construct sled roads and summer pack trails to such localities from the nearest point on navigable water or on the railroad. If developments warrant, the summer trail can later be improved into a wagon road. Supplies for such points for use during a certain summer must be delivered at the head of navigation during the preceding summer and freighted over the snow during the preceding winter. The small amount of perishable or emergency freight can be moved during summer over pack trails.

Where the operations are of considerable magnitude and around the larger communities the construction of wagon roads is warranted and necessary on account of the increased travel. Even in such cases it is cheaper to transport the heaviest and least valuable freight by sled in winter rather than by truck in summer. In farm communities roads are of course necessary in order that the farm products may be marketed promptly.

CONSTRUCTION

Road construction is a rather slow and expensive process. After the road has been located, timber cut and removed, stumps grubbed out, moss and vegetation removed, drainage ditches dug and grading completed it requires a period of three or four years for the sub soil to thaw, the ground water level to be lowered to its new level and the subsoil to reach a stage of equilibrium. Meantime the road is unsuitable for heavy loads and maintenance charges are high. In many places it is impossible at any reasonable expense to grade and drain the roadway and corduroy must be resorted to. Fortunately the scrub timber generally available makes good corduroy. Native timber is of insufficient strength and not very durable, hence fir is imported for all improtant bridges.

Gravel for road surfacing is generally available within reasonable hauling distance. Gravelling is necessary for practically all roads which are used by automobiles. Concrete or other forms of hard-surfaced roads are nowhere warranted in the present stage of development of the Territroy.

Metal culverts are being introduced to replace the culverts of native timber heretofore used. The latter rot very rapidly and the frequent replacement required makes them quite expensive.

Sled roads are located on low ground, often swampy, and follow streams or lakes whenever this is advantageous. Clearing of timber, removal of stumps and niggerheads, construction of bridges across deep gullies and grading down of steep approaches are the general requirements in the construction of a sled road. Winter trails for dog teams are constructed on the same principles but require less in the way of bridges or grading of approaches.

Summer trails follow the driest - or the least wet - ground available. If grades are not excessive they are susceptible of later development into wagon roads.

It is the general policy on any route or within a certain district, to make gradual improvements throughout rather than to make extensive improvements on one route or portion of a route which cannot be advantageously used until the remainder or the connecting routes are so improved.

COMMERCIAL STATISTICS

A traffic census was begun by the Commission in 1911. Comparing the expenditures for freight on each route at the present rate with the cost of transportint the same amount of freight at the rates prevailing before the road was constructed, a figure is obtained which represents the economic saving to the community served by the construction of the particular route in point.

The data thus collected indicates that the annual saving in cost of transportation of freight due to the construction of roads by the Commission is in excess of $2,000,000. It is doubtful, however, if anything like that amount of freight would have been transported without the roads and trails and the indirect loss that would have been occasioned by the restriction on output and development if the roads did not exist cannot be estimated.

In the interior, the great cost of moving freight by teaming or packing, together with the difficulty and uncertainty of moving it at all, constitutes the main obstacle to the growth and development of the district.

During the opening of the new diggings in the Chisana region a few years ago, beans, coffee, sugar, hay, candles, bacon, grain, etc. were sold at $1.50 a pound. The freight charges were almost a dollar a pound, so that the original cost of the article was of relatively little importance. And even at that, the supply could not keep pace with the demand. Last summer the freight charges for transporting supplies from Dawson, in the Klondike, to some mines about 100 miles away in the American 40-mile district was greater than the original cost of the supplies plus the freight from the United States to the Klondike. (Dawson is 1,700 miles from Seattle.)

END OF TWENTY-TWO YEARS' SERVICE, 1926

At this, the completion of twenty-two years' operations of the Alaska Road Commission, an outline of the progress of the work performed is of great value. The work naturally divides into three phases or periods.

The first was that covered by the period of time during which General Wilds P. Richardson, U.S. Army, Retired, was President of the Commission and extended from 1905 to 1917. This was essentially a period of pioneering. While this period covered nearly all the stampedes into the Territory, settlements and traffic lines of communication were very unsettled. With small but increasing appropriations, the pioneer development of the Territory was followed with great intelligence through this period. By 1913 a comprehensive program of operations was drawn up calling for the expenditure of $7,500,000 during the succeeding ten years. During the last two years of General Richardson's direction, Congress appropriated $500,000 each year for the work.

The largest project of the Commission, the Richardson Highway from Valdez to Chitina to Fairbanks, was located and improved for nearly the entire distance so as to provide for wagon traffic. By 1907 it was passable throughout for dog teams, by 1910 for a light horse-drawn wagon, and by 1913 the first light automobile made the through trip from the interior to the coast. This period laid

the foundation for all future work and terminated with the opening of the so-called War Period, 1917-20.

This second period was one of general stand still for the work of the Road Commission, as well as industrial development within the Territory. Appropriations were small, expert personnel was not available for supervision, prices were high and labor scarce. The work was applied to a few projects only and much of the mileage established in the previous period went into disrepair or almost entirely passed out of existence. During the last two years of this period, appropriations were reduced to $100,000 per year. This period closed with the organization of the present Commission in 1920.

The third period, 1920 to the close of the fiscal year 1926, was characterized by increased appropriations, broader legislation, close cooperation with the Territory, procurement of mechanical equipment, reopening of old trails and roads, heavier construction to withstand motor traffic, and adjustment of lines of communication to the vast change brought in Alaska by the approaching completion of the Alaska Railroad from Seward which reached Fairbanks in 1923. Federal appropriations increased from $350,000 to $900,000 per year, and other resources were secured so that funds available for the current season's work aggregate $1,350,000.

The pioneer period of the Alaska Road Commission is largely over. All existing mileage has been opened and improved, so far as funds have permitted. The present network of roads serves as an infallible guide for the future development of overland routes through the Territory. This development only calls for additional funds for construction.

The present Commission, soon after its reorganization in 1920, prepared a new ten-year program calling for an expenditure of $10,000,000 during the succeeding ten years. Appropriations, exclusive of the Alaska Fund and Territorial contributions, for the first five years have aggregated $3,220,000. The program as now revised, in order to speed up the completion of the work, calls for the expenditure of $9,000,000 during the second five years of the ten-year period.

THE RICHARDSON HIGHWAY

The Richardson Highway is the name locally applied to the U. S. Military Wagon Road extending from Valdez, an open-all-the-year south cost port of Alaska, to Fairbanks, on the Tanana River, the main distributing point for the great Yukon Valley and other interior regions of Alaska. It was so named after its builder, General Wilds P. Richardson, U. S. Army, who was President of the Alaska Road Commission from the date of its organization in 1905, until he was called away in December, 1917 for overseas service in the Great War.

COST ANALYSIS

First as a trail for pedestrians and animals in summer and dog sleds in the winter, later as a summer pack trail and winter bob-sled road, later as a summer wagon road and winter bob-sled road, and still later as a summer automobile road

and winter motor or bob-sled road, the highway was the only practicable route by which Fairbanks and the country tributary thereto could be reached from the coast in winter and was the route over which mail and express and many of the passengers traveled in summer from 1905 until 1921.

Very meager information is now available as to the traffic over the route during this period but it was of considerable magnitude. In 1910 the movement amounted to 3,500 persons and 2,480 tons of freight. In 1912, 1,742 head of cattle and sheep were driven over the trail. From its inception until 1921, when the through mail to the interior first began to move over the then uncompleted government railroad, the highway had a vital part in the development of the interior.

The Richardson Highway is an important traffic feeder, both to the Alaska Railroad and to the Copper River and Northwestern Railroad. With these two rail systems it forms a circular route which has now become widely known on the outside as the Golden Belt Line Tour. During the current season many hundreds of tourists made this truly magnificent scenic trip without any delays or inconveniences other than are incident to motoring in any mountainous country.

During the first sixteen years of development, the Richardson Highway was the only overland means of access to the interior of Alaska. In addition to its value in aiding local travel and development, its function of bringing into the Territory new people and new money for permanent investment is of constantly growing importance. It is truly remarkable that the Federal Government should have constructed and maintained this excellent overland highway in such a remote and sparsely settled region so long before the Federal aid idea was accepted in the States. Its total cost of less than $12,000 per mile, including twenty-two years maintenance and development, coupled with the fact that it has been rendering service in the transportation of mail, express, passengers and freight, throughout its length from the very start in 1905, first by dog team, then horse sled, then wagon and since 1913 by motor, is even more remarkable. It stands as a permanent and outstanding monument to its projectors.

EXTENSION TO CIRCLE

The all-American route will not be complete until it is extended to the Upper Yukon and serves as a portage between the Yukon and the Tanana Valleys. The plans of the Commission contemplate the eventual extension of the Richardson Highway from Fairbanks to Circle, a distance of 160 miles. This will make a total distance from Valdez of 531 miles, about the distance from Boston to Richmond or from Vancouver to Banff.

About two-thirds of this extension is now passable for wagons. A regular winter mail stage service is maintained, using double bob-sleds, horse drawn. Automobiles can now travel for sixty-two miles out of Fairbanks, or thirty-two miles beyond Chatanika, during the open season. On the Circle end, fifty miles are now passable for wagons. An automobile service to Circle Hot Springs uses the twenty-four miles between Circle and Central House. This fifty miles can be improved to motor standards at a relatively small expense once the intervening gap of about fifty-five miles is complete.

JUNEAU HEADQUARTERS

The general office of the Commission is located at Juneau, the capital of the Territory. This is the headquarters for all the activities of the members of the Commission.

The field activities of the Commission extend to all inhabited parts of the Territory, but the largest projects and the bulk of its expenditures are located in the central part of the Territory tributary to the Richardson Highway and the Alaska Railroad. Close liaison is maintained with all other Federal or Territorial bureaus or officials.

The President of the Commission has general charge of the operations of the Commission, conducts hearings, investigates new projects, allots available funds, and approves and certifies, on behalf of the Commission, all vouchers and expenditures. He spends the majority of his time in the field keeping in close touch with the progress of the work and of conditions generally in the Territory.

The Engineer Officer supervises the work of construction in the field, prepares estimates, requisitions, etc. and oversees the design of major structures. He spends most of his time in the field and undertakes a great deal of pioneer reconnaissance work. The President and the Engineering Officer interchange functions in different parts of the Territory, thus expediting the handling of emergencies.

The Secretary and Disbursing Officer is in general charge of the office, handles purchases and supplies and disburses the funds of the Commission. He has a bonded Disbursing Clerk in each district who draws overdrafts on the nearest bank or commercial house to make prompt payment for labor and supplies. These overdrafts are met monthly by the Disbursing Officer and carried as "cash advanced" until the covering vouchers arrive, usually several months and frequently two years later. He visits each district office periodically to standardize methods and accounts. By means of the cable, telegraph and radio, the general office is in constant touch with each district office.

WASHINGTON, D. C., SUB-OFFICE

Routine business with the War Department is carried on through the Chief of Engineers, U. S. Army. The President of the Commission is required to defend the annual estimates of the Commission in person before the Appropriations Committees of Congress. He is also called upon to testify upon Alaskan affairs before various other committees and to confer with other bureau chiefs in Washington. To meet these conditions, he maintains a suboffice in Washington, D. C. for several weeks each winter.

SEATTLE, WASH., ENGINEER OFFICE

By informal arrangement, the District Engineer, U. S. Engineer Department, Seattle, Washington, has consented to act as a purchasing agent of the Commission.

Upon request he advertises and canvasses bids, inspects and ships supplies, answers inquiries, secures information and, in general, represents the Commission in Seattle. For this service he charges the Commission only for the actual time of such of his subordinates as may be actually engaged in this work. This accommodation results in a considerable saving to the United States, as otherwise the Commission would be compelled, during the busy season, to maintain a high-priced representative in Seattle and to provide for office space, fuel and light, clerical help, etc.

The services rendered to this Commission through such purchases and shipments are invaluable. The low prices obtained and the prompt shipments made have been an important factor in extending its work.

The supplies purchased include practically everything from bridge iron, metal culverts, forage, subsistence and heavy road machinery to small tools, office equipment and stationery. Some of the larger items during the year include the following:

Hay	473.8	tons
Oats	332.5	tons
Potatoes	47.2	tons
Sugar	26.4	tons
Flour	522.0	barrels
Lumber	1,168,730	board feet
Metal Culverts	38,312	linear feet

During the past three years, the supplies purchased and the cost of the entire transaction including advertising, acceptance, inspection and shipment, and all expenses incidental thereto were as indicated in the following table:

Fiscal Year	Cost of Supplies Purchased	Seattle Office Charge	Per Cent
1924	$183,247.50	$3,048.17	1.67
1925	192,082.70	3,933.91	2.05
1926	249,945.06	3,647.97	1.46
Totals	$625,275.26	$10,630.05	1.70

DISTRICT OPERATIONS 1926 REPORT

Following are items in the annual report as to area operations:

SOUTHEASTERN DISTRICT:

Wells - Pleasant Camp. Construction of this road was completed to the Canadian boundary, one mile of the old Dalton Trail being used with minor repairs.

Skagway. The first car in Alaska, with a one cylinder enginer (3½ horsepower), was the sensation of Skagway in 1905. (The runabout had chain-driven rear wheels, carried two passengers, and attained the then unblievable speed of 15 miles an hour. It was owned by Robert E. Sheldon and is now in the University of Alaska Museum.)

Douglas Gastineau Channel. All bridges were repaired or renewed, additional drainage provided, brush cleared from the sides, and the two miles surfaced with gravel.

Gold Creek - Salmon River. The contract to ditch and grade the road was completed. The landing float was provided with new anchor cables and a riding light. This float has proved very useful to the residents of the section.

EAGLE DISTRICT:

Chicken - Forty Mile - Liberty - Eagle. Twenty miles from Eagle south are suitable for wagon traffic, the seven miles on to Liberty is winter sled road. A current ferry was installed over the Forty Mile River at the mouth of Steel Creek.

Eagle - Circle. A cable tram for pedestrians was installed over the Seventy-mile River.

BETHEL DISTRICT:

During the past three years we have established a much needed winter trail extending from McGrath, in the upper Kuskokwim Valley, via Aniak, Bethel, Goodnews Bay, Togiak, Dillingham and Naknek to Kanatak. (850 miles). Other work included one 30 and two 50 foot bridges over Bethel Slough, shelter cabins and stoves at Ophir Creek, Portage Creek, Yuklong River, and Birch Creek. Two ferry boats were installed on the Kiselakik and Kuskluk Rivers. A sixty foot trestle bridge was built over Birch Creek Slough in cooperation with the New York Alaska Gold Dredging Company. This Company is hauling 900 tons of freight over this route.

Holy Cross - Kaltshak. This trail was well marked. Large beacons were erected at lake crossings and arrow pointers placed on the banks of sloughs to indicate the direction of travel. All timbered stretches were cut ten to twelve feet wide.

VALDEZ DISTRICT:

The principal work is the maintenance and improvement of the Richardson Highway from Valdez to Willow Creek, a distance of 92 miles. This section of the Richardson Highway, passing through Keystone Canyon and across the summmit of the Coast Range, is probably the most scenic route in Alaska and has required the most expensive construction. On this road, several miles of new road were built, Bear Creek bridge, 150 foot suspension span, 1,500 feet of pile trestle near Valdez, 125 metal and 25 timber culverts installed, and 11 miles of road surfaced. 375

feet of dike, destroyed by extreme high water in the fall of 1925, was rebuilt at the expense of the City of Valdez, $4,638. The same type of construction as in the original dike was used, consisting of a gravel fill, protected on the outside with brush and held down by wire netting covered with rock.

The section of the Richardson Highway, through this district, is now in fair condition throughout the summer months for the operation of motor vehicles not heavier than the one ton truck. From the early part of October to the latter part of June the road is closed to auto traffic by snow at Thompson Pass.

CHITINA DISTRICT:

The most important road in the district is the Richardson, extending up the Copper and Gulkana Valleys, across the Alaska Range through Isabelle Pass to Rapids on the Delta River. New bridges, consisting of 447 feet of pile trestle were built over the two crossings of the Klutina River. 30 miles of road was surfaced on the Richardson. One mile of road along the Delta River was removed from a bar and placed on new location above high water. The dike at Gun Creek was raised and widened to allow its use as a roadway.

Chitina Depot. The log barn was rebuilt and an equipment shed 18' x 142', blacksmith shop 22' x 30' and a repair shop 16' x 26' were added this year.

Nizina River Bridge. This bridge has been completed. It consists of two wooden Howe Truss spans of 180 feet resting on concrete piers and 1,680 feet of pile trestle approach.

Strelna - Kuskulana. This road leads from Strelna up the right limit of the Kuskulana River to Mile 11 where it crosses to the left limit and extends to Berg's Mill. A substantial bridge across the Kuskulana was built by the Territory.

Slana - Chisana. A reconnaissance was made of the route. Crossing the Slana River it extends over a low divide into the Nabesna River Valley. This valley and another divide are crossed into the Chisana River Valley and the Chisana Post Office. Two boats, to be used as a ferry, were placed at the crossing of the Slana River.

FAIRBANKS DISTRICT:

The most important road within this district is the Richardson from Rapids to Fairbanks and its extension to Circle, construction of which is now in progress. The maintenance and improvement of the local road system around Fairbanks, serving the mines and farms, is also of extreme importance. The Richardson Highway is supported exclusively by the Alaska Road Commission, shelter cabins and airfields exclusively by the Territory. Less important projects are supported jointly by the Alaska Road Commission and the Territory and purely local projects by the Territory alone.

Richardson Highway. The bridge over the Salcha River, 40 miles south of Fairbanks, consists of one 180 foot steel Pratt truss span and 345 feet of pile trestle approach. It replaces a ferry formerly used at this crossing. 22,602 cubic yards of gravel were placed resulting in a heavy gravel surface over 11½ miles and a lighter gravel surface over 9 miles. 1,990 cubic yards of gravel repaired 4 miles of surface. Four miles of new road (relocation) were cleared, grubbed and graded. 13 miles of road were regraded and widened in preparation for surfacing. 119 metal culverts were installed, 86 feet of frame bent trestle bridge, 120 feet of pile trestle and on 100 foot Howe truss span were constructed, all being renewals. Six 10' x 12' oil houses were erected at different points on this section for the safe storage of oil and gas for use by the Commission's vehicles. The ferry at Grundler, on the Tanana, was entirely renewed.

Summit - Chatanika. 5 miles were regraded and rewidened, 2¼ miles surfaced, 15 metal culverts installed and one 16 foot span culvert renewed.

Fairbanks - Gilmore. 20,428 cubic yards of surfacing material were placed, resulting in heavy gravel surface over 10 miles, and repairs to surface over 2 miles. The average haul for this material was 3 miles. 12 miles were regraded in preparation for surfacing and 59 metal culverts were installed.

Chatanika - Miller House. 11-3/4 miles of new road were constructed. 3,332 cubic yards of gravel were placed on 4 miles of road previously constructed, 1,566 cubic yards of gravel surfacing placed on short sections of new road, 1,000 feet of corduroy were replaced. 84 feet of natural timber stringer bridges were constructed and 111 metal culverts installed. A definite location was completed to Miller House.

Beaver - Caro. This entire route was improved. 7 miles of new road were cleared and grubbed, sufficient hand grading was done to level up the road. Stumps were grubbed from portions of the old road, 180 feet of corduroy were placed and covered and 38 timber culverts installed.

Fort Yukon Landing Field. A landing field, 300' x 1,400' was constructed. The whole area was plowed, harrowed and rolled, and grass seed will be sown. The citizens of Fort Yukon cooperated in the construction to the extent of $600 in money and labor.

Fairbanks District Headquarters. The headquarters buildings include a combination warehouse, office and warm storage 30' x 30', equipment shed 20' x 70', oil house 20' x 30', and a dog barn 20' x 30'. Heating plants were installed for the office and warm storage and for the garage and blacksmith shop. A spur track was laid from the Alaska Railroad to the oilhouse and warehouse. A well and well pump were placed under the warehouse. The entire area around the buildings was covered with gravel.

Territorial projects were the Cleary Creek, Fox - Olnes, Summit - Fairbanks Creek, College Spur, St. Patrick's Creek, Lazelle, Little Eldorado Creek, Olnes - Livengood, Farmers - Birch Hill, Isabelle Creek, Graehl Bridge, Farmers - Chena Slough, Central House, Circle Hot Springs, and Brooks Aviation Field Roads, totalling 66½ miles of road and 54 miles of trail.

The costs per mile were, for roads $176.87 and trails $9.47.

NENANA DISTRICT:

This district is well served, so far as summer transportation is concerned, by a number of navigable rivers, the most important of which are the Yukon, Tanana, Koyukuk, Tolvana and Kantishna. These rivers and the Alaska Railroad have made the construction of long roads unnecessary. A number of short roads have been built connecting important mining centers with navigable water or the Railroad. The district has an extensive system of winter sled roads and trails, the most important of which are the route from Dunbar (on the railroad) through Fort Gibbon (Tanana) to Kaltag, which carries the winter traffic to the Seward Peninsula, and the route from Kobi (on the railroad) through Roosevelt to Telida and McGrath, which carries the winter traffic to the Kuskokwim country.

Shelter cabins and aviation fiels are supported exclusively by the Territorial government, through routes by the Alaska Road Commission and lesser projects by joint cooperation.

Dunbar - Fort Gibbon. 6,200 feet of new road was cut between Duggan Creek and Baker Bluff where the old road has been washed away by the Tanana River. This route is entirely a sled road.

Rampart - Eureka. There are 8 miles of road and 19½ miles of trail.

Fort Gibbon - Kaltag. There are 257 miles of trail on this route.

Hot Springs - Sullivan Creek. 10 miles of wagon road. 146 feet of native timber trestle bridges were renewed, 15 timber culverts placed and 1,000 feet of pole corduroy laid and covered.

Fort Gibbon - Bettles. 156 miles of trail.

Bettles - Coldfoot. 52½ miles of sled road.

Hot Springs Landing - Eureka. 23 miles of wagon road. 61 feet of native timber trestle was renewed and four culverts installed. The old pile trestle over Hot Springs Slough was taken out by the ice in the spring of 1925. A new bridge was constructed consisting of one 100 foot Howe Truss span and 139 feet of trestle approaches. Timber for the span and deck of the approaches was shipped from Seattle.

Hot Springs - Tofty. 16 miles of sled road. Five bridges, totalling 101 feet, were erected.

Ruby - Long. 28½ miles of wagon road.

Long - Poorman. 39 miles of sled and wagon road. Construction of this road was extended to the Solatna Bridge, 18½ miles from Long, and included placing 2 miles of corduroy laid and partially covered, 5 bridges of native timber (218 feet) and 34 culverts. The landing field is 1,500 feet long and 500 feet wide. It was cleared, grubbed and drained, disc- harrowed and rolled. Citizens of Ruby contributed $600 in labor and money.

Kobi - Eureka. 95 miles sled road.

Roosevelt - Kantishna. 34 miles wagon road.

Lignite - Kantishna. 85 miles trail.

Nenana - Knight's Roadhouse. 42 miles trail.

Diamond - Telida. 90 miles trail. 1922 reconnaissance was for the purpose of finding a route more favorable than the present winter trail over Rainy Pass and one that would take account of the present concentration of travel to the Kantishna and the Nixon Fork Mine. This route would extend from Kobi, on the Railroad, through Diamond to Roosevelt on the Kantishna River and to Kammisgaard's Cabin at the foot of Lake Minchumina, thence to Telida and Berry's Landing on the main Kuskikwim, forty miles overland from McGrath. There are several advantages to this route over the Rainy Pass route, snow and winter conditions are uniform and excellent throughout. Also, the location of Kammisgaard's cabin, midway on the trail, is one which will offer a plentiful supply of dog food and is an excellent place to summer dogs used on the trail. In the meantime, so long as the Rainy Pass remains the chiefly traveled one, effort will be continued in keeping it open and improving it.

Leaving Lignite on January 13th we arrived at McKinley Fork March 18th, 1922, pretty well played out and short of dog food and provisions, in fact we had

barely enough dog food to run until the 25th.

Determined to reach Telida, two of us struck out early on the morning of the 19th with ten dogs and food to stay overnight. We made 22 miles that day and siwashed on the right limit of McKinley Fork. In the morning we left the stream and found a well beaten trail. This proved to be the trail used by those who travel from the Kuskikwim to the railroad via Lake Minchumina. We followed the trail into Telida. Telida consists of 3 old log buildings with evidence that there were more at one time. The only two people were two Indians who claimed they had never heard of McGrath or Fairbanks. The woman had a husband, trapping in the hills nearby, and upon asking her where she got her provisions or "much-a-much", she said she got them from her husband, but did not know where he got them. They had no fish, meat, or furs, and so far as we could determine, no food of any kind. We had hoped to procure enough provisions at Telida to complete the trip to Berry's Landing, failing in this we returned to our camp on McKinley Fork and after resting one day, started on our homeward journey.

Nenana Cemetery Road. 2½ miles wagon road. This road connects the town of Nenana with its cemetery and serves several farms enroute. It is suitable for wagon and light automobile traffic.

Kobi - Bonnifield. 45 miles sled road.

Lake Minchumina Aviation Field. This landing field is 1,500 feet long and 600 feet wide. It was cleared, grubbed and leveled. It is used as an emergency field on the route from Fairbanks to Tokotna.

Coldfoot - Wiseman. 11 miles of sled road.

Wiseman Aviation Field. This landing field is 1,400 feet by 350 feet and was cleared, grubbed, drained, and leveled. The citizens of Wiseman contributed $1,613.25 in money and labor to this work.

Dunbar - Brooks. 63 miles of sled road.

Brooks - Amy Creek. 4 miles of wagon road.

Brooks Tram. 13 miles of wagon road. This tramway was purchased by the Territory on June 11, 1924 and has since been maintained. The freight rates have been reduced from $80 per ton to $20 per ton.

Livengood Aviation Field. A cultivated field was used in part for this field and an additional area of 300' x 400' was cleared, grubbed and drained.

Ferry - Eva Creek. 11½ miles of wagon road. This road was completed to the lode properties on Eva Creek during the past season. 3 frame bent bridges of Douglas Fir (63 feet) and 37 timber culverts were constructed.

Totatlanika River. 2 shelter cabins were built at a cost of $350.00.

SOUTHWESTERN DISTRICT:

The Alaska Railroad, the Yentna River, Cook Inlet and other arms of the Gulf of Alaska provide through transportation for this region so that only short roads are required. A very excellent system of roads serving the farms and mines of that vicinity is centered about Wasilla, while a good, though less extensive

system, centers around Anchorage. A special effort has been made within the district to furnish adequate roads, sled roads or trails to all points of development in order that traffic may be developed for the Alaska Railroad.

The most important road is that now being constructed in cooperation with the National Park Service in McKinley National Park.

Susitna - Rainy Pass. 127 miles trail.

Nancy - Susitna. 25 miles trail.

Archangel Extension. 5½ miles wagon road. A trail 9 feet wide was constructed off this road, to the Fern Mine.

One half mile of road connects the workings of the Talkeetna Mining Company to this route. A 16 foot span culvert of native timber was built on this connection.

Willow Creek Extension. 11 miles of wagon road. One mile of road was surfaced and two metal culverts were installed.

Wasilla - Fishhook. 16 miles wagon road. 1.4 miles was surfaced and 4 metal culverts were installed. 236 feet of cribbing 4 feet high was constructed to hold the road through the Little Susitna Canyon.

Wasilla - Knik. 15 miles of wagon road. 3 miles were graded to standard width, 2½ miles grubbed 30 feet wide, 2 metal and 2 log culverts were installed. and 50 feet of corduroy was placed.

Wasilla Finger - Lake Palmer. 12 miles wagon road.

Wasilla - Matanuska. 8 miles wagon road. 2½ miles cleared and graded 24' wide.

Matanuska Trunk Road. 8 miles wagon road.

Houston - Willow Creek. 30 miles sled road.

Fishhook - Goldmint. 6 miles sled road.

McKinley Park Road. 22 miles wagon road and 65 miles trail. This road was extended 12 miles. The project was initiated as a cooperative project between the Alaska Road Commission and Park Service in 1922. The Alaska Road Commission has been utilizing its funds on reconnaissance, surveys, location, purchase, and freighting of supplies, accumulation of equipment, etc., so that upon National Park Funds becoming available, work may be aggressively pushed ahead. Two 60 foot pony truss spans were erected over the Savage and Sanctuary Rivers. 729 feet of trestle span bridges were constructed. 7,613 cubic yards of gravel were placed on 3.2 miles of road and 157 metal culverts were installed. Office and warehouse buildings were repainted, log cabin and storage tents were erected at the Sanctuary River, and the telephone line was extended to camp at Mile 20.

Iliamna Bay - Iliamna Lake. 12 miles trail. Heavy sidehill grading was completed on one mile and timber for bridges was landed at Iliamna Bay.

Talkeetna - Cache Creek. 23½ miles wagon road and 18 miles sled road. Six miles of new sled road were built down Windy Creek, shortening the route 1½ miles

16 native timber bridges were constructed totaling 271 feet.

Cache Creek Trail. 11½ miles trail. 4-3/4 miles were cleared 8 feet wide, 0.2 miles of sidehill graded 7 feet wide, 47 feet of native timber bridges and 38 timber culverts were constructed. This trail is suitable for pack horses. and wide enough for use by double enders.

Peters Creek. 14-3/4 miles trail. The past season's work included heavy sidehill grading over 2½ miles, partly through solid rock. 127 feet of native timber bridges and 24 timber culverts were constructed. This trail is suitable for pack horses in summer and for double enders or dog sleds in winter.

Yentna Reconnaissance. A reconnaissance was made to determine a route into the placer mining operations in the vicinity of Mills and Twin Creeks.

Spruce Creek. 7½ miles sled road.

Kenai - Russian River. 60 miles sled road. A relocation taking this route off of seven lakes, was constructed. This work included 3-¼ miles of grading 10 feet wide.

Anchorage - Eagle River. 14½ miles of wagon road. 3 miles were widened 4 to 12 feet, making a total of 32 feet on the flats and 18 feet on sidehill grades. 2,610 cubic yards of gravel were placed on 3.2 miles. One metal culvert was installed.

Anchorage - Whitney. 5 miles wagon road. 0.8 miles was widened to 32 feet and 6 metal culverts were installed.

MacDonald Branch. 1¼ miles wagon road. This road branches from Anchorage - Eagle Road, serving several farms. 20 feet of corduroy were placed and 3 metal culverts were installed.

Cantwell - Valdez Creek. 55 miles sled road.

Shelter Cabins. One cabin was built at Cold Bay at the soutwest end of the Alaska Peninsula in the vicinity of Belkofsky. This cabin is used in travel over the portage between the North Pacific Ocean and Bering Sea. Cabin is 12' x 12' of shiplap and tar paper, with stove installed. Cost - $308.25.

Chulitna Trail. 3 miles trail.

Bull River Trail. 4 miles trail. 118 feet of native timber trestle were constructed and 310 cubic yards of solid rock excavated.

Indian River Foot Bridge. This foot bridge spans Indian River one mile east of Mile 274 on the Alaska Railroad. It is for the benefit of prospectors in the district to the east, and is suitable for use by dog teams, pack animals and double enders.

Kodiak - Abberts. 5 miles trail. 1.6 miles of heavy sidehill grading, with 8 feet, was constructed. 60% of this was through solid rock. 131 feet of sawed timber trestle, average height 18 feet, were constructed and 19 metal culverts were installed.

Kanatak - Becharof Lake. 8-3/4 miles wagon road.

Review of roads and conditions, October 20, 1923.

"The wind was blowing upon arrival (by steamer) at Kanatak and the ground was covered with snow. The following morning we went to the half-way camp on Becharof Lake and returned over Kanatak Pass via the original road built by the Associated and Standard Oil Companies. There are two roads from Kanatak to the seepage where the oil companies are drilling. From Kanatak Pass the road fairly drops off the hill, with no regard for gradient, to Ruth Lake and crosses Ruth River on a post bent bridge, thence to the south end of Becharof Lake, connecting with the Alaska Road Commission road about 6 miles out of Kanatak.

To avoid the steep climb over Becharof Hill, the Standard Oil Company, this past summer, constructed a 16 foot wide road, 5 miles long, on an easy grade to Ugashik Creek where it connects with the original road.

In addition, the Standard Oil Company built a road from the seepage eastward to the foot of Mt. Peluk, a distance of five miles. There are a total of 35 miles of so called roads in this area. Of the total, 6 miles over Kanatak Hill and 5 miles over Becharof Hill are considered worthless, although they have served, at a very great expense, as a means of hauling some 1,500 tons of freight for the oil companies.

Future work depends on the oil companies. Associated ceased operations abruptly upon advice from head offices the latter part of June, after drilling one hole 600 feet and another 900 feet. Standard may do the same although they had enough casing on hand for 4,200 feet. Unless something definite is forthcoming, sufficient work has already been done.

Due to incessant rains the roads must be high and wide and properly drained. Careful maintenance is a large factor in this area. A heavy drag should be used constantly during the summer months until the road is well packed and will withstand erosion.

Chickaloon - King River. 6½ miles sled road.

Homer Spit. 3-3/4 miles wagon road. This is a project begun last year to consist of 16½ miles of wagon road when completed. It extends up Homer Spit from Kachemak Bay, serving a large area of farm lands. 3-3/4 miles were graded 20 feet wide. 37 native timber culverts were installed and 90 feet of trestle bridges constructed.

Nuka Bay Trail. 1¼ miles trail. This trail leads from Tidewater at Nuka Bay, situated 80 miles southwest of Seward, up the left limit of Nuka River to the Alaska Hills Mining Company, serving this property and other lode prospects beyond. It is suitable for pack horses and double enders. The trail was built 7 feet wide and the grading included 1,507 cubic yards of solid rock. 200 feet of corduroy were laid and 5 timber bridges were constructed.

The local roads, centering about Anchorage and Wasilla, are in fair condition for the traffic requirements. In places they should be widened and gravel surfaced to make them passable in wet weather. The completion of the road from Kodiak to Abberts Ranch and Mill Bay is very desirable as is also the Homer Spit Road. The road into McKinley Park should be extended to make the Park an attractive stopping place for tourists who are coming to Alaska in ever increasing numbers.

Territorial Projects. Also listed were Seward - Nash, Palmer - Fishhook, Palmer - Matanuska, Palmer - Springer, Moose - Palmer, Edlund Road, Bogard Road,

Anchorage - Lake Spenard and Chester Creek roads, all wagon roads and totalling 36-3/4 miles.

These territorial roads were usually feeders to the Alaska Road Commission roads, and served farming areas.

Bogard Road. 3.2 miles were graded 20 feet wide and 40 feet of native timber trestle were constructed. One timber culvert was installed.

Anchorage - Lake Spenard. 4,071 cubic yards of gravel were placed on 4 miles of road. The cut at Chester Hill was widened and 2 metal culverts were installed.

KUSKOKWIM DISTRICT:

Rainy Pass - Big Delta. 110 miles trail.

Tokotna - Ophir. 19 miles sled road.

Ophir - Dishkaket. 55 miles trail.

Tokotna - Flat. 95 miles trail.

Tokotna - Flat, via Moore Creek. 93 miles trail.

Candle Creek - Tokotna. 12 miles trail.

Iditarod - Flat. 8 miles wagon road. One mile was surfaced. Approach to Government radio station was repaired.

Iditarod - Ophir. 79 miles trail.

Flat - Crooked Creek. 62 miles trail. A 90 foot suspension bridge, suitable for pack horses and dog sleds, was constructed over Bonanza Creek.

Flat - Georgetown. 65 miles trail.

Tokotna Aviation Field. This landing field, 1,000' x 500', was cleared then plowed, harrowed and rolled.

Flat City - Flat Creek. 5 miles wagon road.

Head Flat Creek - Willow Creek. 4½ miles wagon road.

Willow Creek - Chicken Creek. 3 miles wagon road.

Flat City - Otter Discovery. 3 miles wagon road.

Candle Landing - Candle Creek. 9 miles wagon road.

Flat Aviation Field. This landing field, 1,400' x 400', was cleared, plowed, harrowed and rolled. The citizens of Flat contributed $600 in labor and money.

Flat - Holy Cross - Anvik. 80 miles trail.

Iditarod - Shageluk - Anvik. 75 miles trail. Cleared and staked this season and is suitable for dog sleds.

Poorman - Cripple. 47 miles trail.

Ophir - Cripple. 47 miles trail.

Ophir - Tokotna. 18½ miles wagon road. The road was advanced 3½ miles this season. The work included 2,620 feet of pole corduroy laid and covered, two 20 foot span bridges and 36 culverts. 1,200 cubic yards of gravel was placed on 2½ miles.

Poorman - Ophir. 125 miles trail.

Tokotna - Takotna Landing. 1½ miles wagon road.

Ganes Creek Road. 13 miles wagon road. Two miles were graded and ½ mile surfaced.

McGrath - Tokotna. 18 miles trail.

McGrath - Telida. 94 miles trail.

McGrath - Candle Creek. 11 miles trail.

Nixon Fork - Nixon Mine. 37 miles trail.

Tokotna - Twin Peaks. 12 miles trail.

Medfra - Nixon Mines. 12 miles wagon road.

Nixon Fork - Tokotna. 15½ miles trail.

Shelter Cabins:

Yankeet Creek - Built barn and repaired cabin.

Fritz Roadhouse - New stove and pipe.

Brown Creek - New stove pipe.

First Chance Cabin - New stove pipe.

Dolan Creek - Corrugated iron roof.

Bonanza Creek - Cabin, stove and bunks.

Sliver Creek - Placed iron roof.

Crooked Creek Hill - Roofing paper.

The transportation needs are reasonably served by the Kuskokwim, Yukon, Iditarod, and Innoko Rivers, the extensive system of trails and the few short roads.

NOME DISTRICT:

On account of the length and severity of the winter, the isolated location, and the lack of timber for protection and fuel, a considerable portion of the personnel spend the winter "outside", leaving on the last boat the latter part of October and returning on the first boat in the latter part of June. The bulk of the freight

is handled at the nearest port and moved to its destination either up streams in summer or over sled roads in winter.

Nome - Council. 57 miles wagon road, 25 miles trail. 3/4 of a mile of new road was built north of the Bonanza River Crossing because of damage from the waters of Solomon River.

Council - Ophir Creek. 12 miles wagon road.

Casa de Paga Road. 20 miles wagon road. One mile of corduroy was laid over Ruby Divide. Old railroad ties, delivered the previous winter, were used.

Shovel Creek. 5 miles wagon road.

Nome - Bessie - Little Creek. 9 miles wagon road. Additional surfacing was placed on the Nome - Bessie Road.

Nome - Osborne. 5½ miles wagon road.

Bessie - Buster. 5 miles wagon road.

Kaltag - Nome. 280 miles trail. Cable suspension bridges, suitable for the use of pedestrians or dog sleds, were erected as follows: 10 Mile crossing of the Kaltag River, 100' span; Old Woman River, 250' span; South River, 200' span and Soroski River, 200' span.

Bonanza - Kotzebue. 240 miles trail.

Golovin - Council. 35 miles trail.

Unalakleet - St. Michael. 60 miles trail.

Nome - Wireless. ½ mile wagon road.

Center Creek. 2 miles wagon road.

Submarine - Paystreak. 3 miles wagon road.

Anvil - Glacier. 3 miles wagon road.

Snake River Extension. 3 miles wagon road.

Nome City Wharf. This dock, located inside the jetties of Nome Harbor, was built during the summer of 1924 with funds contributed by the Town of Nome.

Nome Aviation Field. This landing field is situated 2 miles north of Nome on the Bessie Road. It has two runways each 1,400' x 200'.

Telephone Lines. The telephone lines, from Nome to Candle, Candle to Golovin, Nome to Kougarok and from Candle to Deering and Keewalik, were repaired and maintained. This work was performed under the authority of the Act of April 30, 1925 of the Territorial Legislature, which act provided funds for the purpose.

Candle - Candle Creek. 6 miles wagon road.

Bear Creek Trail. 45 miles trail.

Deering - Inmachuk. 25 miles wagon road.

Shelton - Candle. 152 miles trail.

Nome - Taylor. 135 miles trail.

Topkok - Candle. 154 miles trail.

Kiana - Cleary Creek. 12 miles trail.

Kotzebue - Shungnak. 200 miles trail.

Kotzebue - Barrow. 500 miles trail.

St. Michael - Kotlik. 70 miles trail.

Davidson's Landing - Taylor. 24 miles wagon road, 16 miles sled road.

Dime Creek. 9 miles wagon road.

Nome - Teller. 80 miles trail.

Teller - Cape Wales. 142 miles trail.

Teller - Bluestone. 18 miles trail.

Teller - Mary's Igloo. 40 miles trail.

Marshall Road. 4½ miles wagon road.

Kotlik - Marshall. 190 miles trail.

Stuyahok. 11 miles sled road.

Scammon Bay. 89 miles trail. Permanent stakes, and beacons at river crossings, were placed throughout. Fir stakes, 2" x 4" x 8', were placed between Black River and Scammon Bay, 30 miles, the remainder being staked with native timber available.

Flagging Trails. 368½ miles of temporary trails were flagged.

Seward Peninsula Railroad. 87 miles. The track from Nome to the dredge operations at Mile 5, was raised 6 inches to two feet, ballasted and realigned. The track was moved back from the river at Mile 3 and realigned. Temporary realigning and blocking up were carried out from Mile 60 to 83 to provide for light traffic.

Shelter Cabins. A stove was placed in the East Fork Solomon shelter, and wood in the Fox River Shelter. Repairs were made to shelters, and dog barns at Topkok, Moses and Cheokuk Shelters. Cabins and equipment were built and furnished at Whaleback, Walla Walla and Kaltag Mile 22. Repairs, stove and wood at Quartz Creek, Callahan's, Choris and Arctic Circle Shelters, also general repairs at the Nome River, Hunt River, Aukiluk, Kivalina, Tululuk and Choris Peninsula Shelters. Repairs were made to the shelters at Cape Douglas and Wooley. A dog barn was built at Lost River and repairs were made to the cabin and barn at Agiapuk Shelter.

The Nome local roads are all usable by automobiles in dry weather. The Nome - Council road is fair for automobiles as far as East Fork, beyond this point

it follows the river beds, in part, and is passible for horse drawn vehicles only. The Nome - Shelton tramway is passable throughout for dog cars and gasoline speeders. From Nome to Little Creek, Mile 5, it is suitable for ten ton loads, and to Sherrette Creek, Mile 60 for four ton loads.

1927 - NOME DISTRICT

Port Safety Aids to Navigation. Four 110 gallon oil drums, suitably painted, were furnished by the Alaska Road Commission and hauled to Safety by the Coast Guard vessel Hazel. Necessary soundings were taken by the Captain of the Coast Guard and all buoys placed by the Contractor at Safety. All chains and anchors were furnished by the Lighthouse Department. The buoys were removed October 28, and will be replaced next spring, if so ordered.

Nome Buoys. This work consisted of a contract for nine buoys along the coast of Seward Peninsula. The Arctic Transport Company was the only bidder to furnish and install fifty gallon tanks, galvanized chain, anchors, etc. The buoys were painted and placed during the early part of the season, and removed at the close of navigation. The Arctic Transport Company agreed to maintain these buoys gratis for the future. Buoys were placed as follows: 1 each at Cape Prince of Wales, Shishmarif and Kotzebue, 2 at Unalakleet and 4 at Kiwalik.

Telephone Lines. A new permanent line was constructed between Solomon and Bluff, 20 miles. This line will now act as an excellent trail guide through a very stormy section of country. It is intended to complete this to White Mountain, a distance of 15 miles. The wire, glass insulators and brackets are now on the ground and the poles for tripods are practically all cut. Much assistance will be given by local parties and the Bureau of Education on this section. The present improvements will make it possible to have almost uninterupted service from Nome to Golovin and way points and also make it possible for mail carriers to keep in touch with stations through a very stormy route.

Nome Streets. The City purchased a truck in 1926 and through the Alaska Road Commission loading same gratis, this made possible through operation of Spears-Wells loader, it was possible for the City to put its streets in fair condition.

January 31, 1931. Inspected, accepted and received 6 sled dogs: Mix, Sandy, Snail, Ruggles, Billy ($50.00 each) and Dick ($40.00).. 6 dog harnesses @ $5.00 = $30.00. 2/14/31, Snail had to be shot on account of badly frozen feet and mange. 3/23/31, Red had to be killed on account of a broken shoulder.

February 27, 1929

The Alaska Road Commission
Juneau, Alaska

Gentlemen:

We the undersigned officers of the Kodiak Chamber of Commerce and members of the Kodiak Good Roads Club, appointed at a public meeting held in the Village of Kodiak, Alaska, on the 19th day of February, 1929, hereby respectfully petition your commission to expend the sum of fifteen thousand dollars, ($15,000), such expenditure to be used upon the roads now in existence as well as proposed roads directly Northeast of the town of Kodiak, and in support of petitions already submitted to your honorable commission.

The road project in the vicinity and directly northeast of Kodiak consist of two sections or divisions for which separate petitions and communications have already been forwarded to your Commission, namely, the road to Mill Bay and a road or pack trail to Walker's ranch in Sycamore Bay, (Matnaska Bay.). At the recent meeting, however, it was suggested that the two sections can be merged into one road and thereby open up considerable timberland and serve more homesteaders, and also open up the beautiful chain of lakes in the woods in that section for recreational purposes. Said lakes have already been stocked with beaver and muskrat by the Alaska Game Commission and in May 1929, the Bureau of Fisheries will release about one half million young steelhead salmon in those lakes. Over a half mile road was built during the summer of 1928, at a substantial expense by interested residents to connect the Mill Bay road to the lakes above mentioned.

The old Russian Mill Bay road which is now open and in use for the town of Kodiak, has been kept up by the residents of the town of Kodiak for a period of more than fifty years at a considerable expense. This road is now in a very poor condition and should also be widened at least ten feet in order to adequately serve the many homesteaders northeast of Kodiak. Nearly every log house in the town of Kodiak, fence posts, telephone poles, firewood, etc., are built from logs cut in the woods directly northeast of the town and hauled over the Mill Bay road since the days of the Russian occupation.

Aside from the material benefit accruing to the homesteaders located along the route of this road by having it opened up and maintained in good order, it would seem that the expense would be justified, even if based upon the existent historical and sentimental reasons. This road was constructed by Russians in the early days of their colonization for the purpose of reaching the grist mill, located on Mill Bay, and operated from the water flowing from the chain of lakes above mentioned. We have no accurate record of the date of the construction of this road, but it is well over a hundred years ago, and at least a part of it was built as early as 1798, so that, undoubtedly, this road can justly be said to be the oldest highway in the Territory of Alaska. The old Russian dam, built of logs, still remains as an interesting relic of the days of Russian Tyranny.

The favorable situation of Kodiak Island, in regards to the great fishing banks of the North Pacific, portends a prosperous future, not only for the town of Kodiak, but for the entire Island. This Island is in reality the apex of the most extensive ocean bank in the world. Tempered, as it is, by the warm waters of the "Kuro Siwo" or Japanese current in its sweep eastward from the coast of Asia to the shores of our own Pacific Coast. The climate of Kodiak Island is very mild, making it adaptable to agricultural activities and particularly to stock raising. The same ocean current which tempers the climate, also induces growth of the animal

life that affords feed for the large variety of fishes native to these waters. These fisheries are now being developed, and in the course of a very short time Kodiak is destined to become the center of the largest deep sea fisheries of the Pacific Ocean, meaning, most likely, the most important, as far as quantity production is concerned, fisheries in the world.

The development of the fisheries will naturally create a great demand for such farm products as can be raised on the Island. Already there is a demand here for much more than is being produced, particularly meat and dairy products, and in order to promote this industry it is absolutely essential that suitable highways be provided to enable the farmers to assemble their products in the Centers of population. If such facilities are available all locally consumed meat might be produced in the immediate vicinity of Kodiak, which might then become a factor in supplying meat to other places in the Territory.

It would seem to the undersigned that any road construction that might be inaugurated should be with the ultimate idea of building a trunk road through the Island from northeast to southwest, connecting with such laterals as might, in time, prove necessary, and with this in mind we respectfully suggest that the Mill Bay road be extended around the so-called "Island Lake" and on to Walker's Ranch in Sycamore Bay, a total distance of about 4 miles from town, and at that place road work can be continued to the Uzinkie Narrows any time in the future if so desired. The existing old Russian road might be used as the nucleus for the projected highway, and thus its significance from the historical standpoint would be maintained.

There are a number of homesteads in the immediate vicinity of Kodiak, all of which will be materially benefited by the construction of the road project as herein prayed for, and will be the means of attracting additional settlers and rural residents.

The undersigned further respectfully requests that this petition supplant and take the place of the petitions presented to the commission, requesting the road to Mill Bay and another petition requesting a road or trail to Walker's ranch, and trust that this petition be given the earliest possible consideration at your hands, and that the result of such consideration be made known to the Kodiak Chamber of Commerce as soon as the convenience of your commission will permit.

FROM A LETTER TO THE ALASKA ROAD COMMISSION, DATED APRIL 11th, 1938

We have recently completed the delivery at Slate Creek of 120 tons of equipment and supplies. We have also delivered 75 tons of timber. This material has been moved over the winter trail which one of your crews cut out last fall, which runs out from Chistina towards Slate Creek.

This trail has reduced our freighting costs from Chistina to the Slate Creek area by 40% over the years preceeding. More important still is the fact that, for the first time in the history of the Slate Creek Camp which has produced $3,500,000.00 in its 38 years existance, it has been possible to transport freight overland without the constant danger the operator was in, of dropping his outfit into the Chistochina River. It is a fact that all freighting over the last 37 years has been on the surface of the unstable ice of the river. Besides the river ice is never even partially safe until late in the winter. It is in the late winter that the snows in the neighborhood of the camp are at their deepest and it is then that the winds start and pile up more difficulties to be overcome, and the freighting costs mount upward.

Never, in my twenty years association with that district, have I seen a single winter that we did not have to fight some difficult weather condition, due solely to late start. Very rarely was a season passed without ice difficulty. As a single instance, on one occasion we had $25,000.00 worth of equipment and supplies drop into the river when the ice gave way. I have seen the work of our crew of twenty men covering seventeen days breaking trail, destroyed in a day after the wind starts.

This year, because the trail was overland, and we could start early we have landed everything on the works at Slate Creek without meeting an obstacle of consequence.

It is moves of the sort on the part of the Road Commission that will speed up the development of Alaska, and we feel grateful to the Commission for the work done and live with the hope that those people in Washington before whom the matter of Alaskan roads comes will in the near future give you and the Commission larger power with which to do this vitally important work.

GULKANA - SLANA RIVER RELOCATION SURVEY, 1929

This relocation was done with the understanding that the road would be gravelled. Time, use, and gravel solve many things, but none to these factors eliminate bad turns and unnecessarily crooked roads. The saving in distance when gravelling is done, will very nearly offset other expense.

The soil, a glacial clay, which becomes almost impassable for automobiles even with a single summer shower, requires the application of gravel almost at once if the road is to be of dependable use in forwarding material for the advancing construction in future seasons. The line has been carried down from the bench to an elevation averaging about fifteen feet above the high water line of the Copper River. It follows along a hillside composed of heavy glacial clay. At a depth varying from 2 to 3½ feet perpetual frost is encountered, the heavy clay acting as an effectual insulator. The side hill had an average slope varying from 15 degrees to 30 degrees and is covered with a heavy growth of good sized timber almost altogether spruce, although some birch is scattered through it.

At a point some three miles from the beginning of this work a slip in the side hill was beginning to become apparent in June. A slide about forty feet wide had occurred and a small stream about one foot wide and an inch deep was trickling down the hill. At the top of the hill cave-ins were occurring. While this condition was menacing, the area affected at that time was small. The only alternatives were to put the line on the bars and low flats of the Copper River, constituting an almost equal menace, or abandon four or five miles of constructed and partially constructed road, return to the top of the hill and continue the line on the high bench to the crossing of the Chistochina. Inasmuch as apparently the work was about fifty per cent completed on the side hill line and as a new location for ten or twelve miles would consume considerable time, it was decided to allow the work to continue on the side hill location. With the heavy rains characteristic of the season of 1929 the whole hill side for 3000 feet on either side of the original slide gave way and a mass of muck, timber and debris completely destroyed the road for that distance. At other places along this line signs of weakness and saturation developed and the construction crews worked under great difficulty. It was finally decided to abandon the side hill for a distance of two miles and put the line on the flat. Whether a line can be held in the remaining three miles is still problematical.

This serious error in location involving perhaps $15,000 was due to lack of preliminary investigation. The location was made hurriedly in the winter with two feet of snow on the ground. The existance of heavy timber and light moss, usually indicative of good material was, in this instance, deceptive. The impermeable clay, dry on top, was really an effective insulator over ice. This whole situation involving heavy loss of time, work and money may be ascribed to superficial preliminary work and hurried location done in the winter time. The necessity of thorough location studies some years in advance of construction is clearly demonstrated. An attempt to shorten the crossing of the Chistochina by swinging the line to stay on the timbered bar may reduce the length of the crossing about 300 feet, making the crossing 1700 feet long instead of 2000 feet. The Chistochina is a typical glacier stream, shallow, with a wide bed covered by many shifting channels. It carries an immense amount of detritus and is constantly building up its bed with the result that the stream bed itself is higher than the surrounding country. At a point about ½ mile above the crossing and on the right limit the stream is cutting into the bank and there is a possibility of a large part of the river following down a slough or eventually taking the course of the Sinona.

The Sinona, a clear water stream about one mile west of the Chistochina, will require two 38' A-Truss spans. The same type of span with double protected bents of nine piles should be used in crossing the Chistochina.

To the east bank of the Chistochina the road had all been practically located. From this point at station 1885 to the end of the season's work the line was carried into new country.

For 1500 feet after crossing the Chistochina the line is in wet frozen ground. It then strikes the old Abercrombie Trail, which is good ground at this point and follows it to station 1925. A reconnaissance of this old Trail to Eagle River revealed so much low swampy ground, difficult to avoid or drain, that it was decided to take the side hill which paralleled the old trail at a distance northerly of about ½ mile. From station 1925 a tangent about 2 miles long was run to the side hill. This tangent with the exception of about 800 feet where it crosses a swamp that coveres the whole area between the hill side and the river was all in good ground, gravel showing in several places. The swamp itself may possibly be graded as it did not appear particularly wet.

The side hill from this point, Station 2027, to Fish Creek at Station 2129, is broken by several small openings in the main hill. These openings contain small streamlets about one foot wide and one-half inch deep after rain storms. These streamlets have formed alluvial fans with rather sharp approaches. The grade line which averages thirty to fifty feet above the swamp at the base of the hill, is broken by these fans. However, none of these alluvial fan hills are more than 20 feet high and the grades do not exceed 7 percent so that the grade line for automobile purposes may be classed as a velocity grade or equivalent to a level grade. They are, however, not seriously objectionable from a vision standpoint. Alignment is good throughout. Timber growth is light, except small patches at the creek crossings. It consists principally of small trees and brush and down timber and poles. It should be handled by the construction crews without advance work.

The ground in this section (Sta. 2027 - 2129) may be classed as good grading ground throughout with exception of short stretches near creek crossings. The side hill has been burned over several times and the ground is well thawed. Gravel showing is scanty but good gravel may be obtained within two hundred feet of the line at Fish Creek and it is possible that other pits may develop. The average slope of the side hill is about 10 degrees.

From Fish Creek (Sta. 2129) to Indian River (Sta. 2330) the situation is not so good, seven hundred feet of wet frozen ground being found near Fish Creek (2135 - 2142) and short stretches of wet ground occur in other places. Two stretches totalling 1500 feet should be corduroyed. The hill side has been burned over several times and while there is considerable down timber and poles the clearing to station 2294 may be classified from light to medium with some short patches of heavy growth. The ground in this section is fair but the whole area is low - - - lower than the bed of Indian River, a condition characteristic of all the stream beds in this section. The line crosses two high water sloughs of Indian River. These sloughs take off from Indian River at a point about ½ mile above the proposed crossing. It will be necessary to construct revetment protection for about three hundred feet. This protection should be built in such a manner as to permit the passage of flood waters into sloughs. Because of the probable passage of timber and debris through these channels 38 foot clear span construction should be used.

While the approaches on both sides of Indian River are lower than the stream bed a better condition cannot be secured without a detour upstream that would involve an additonal length of line 1500 feet and an indefinite crossing of many shifting channels, constituting a total much wider than the adopted one. In addition the side hill approaches are in wet frozen ground. The crossing of Indian River is one hundred and twenty four feet from bank to bank. The extreme high water depth is four feet, the ordinary extreme depth about 3 feet for 50 feet. The country is wet and this despite the fact that it is hilly. Slopes are light, not exceeding 10 percent. Corduroy is required in spots aggregating 1000 feet. Because this swampy wet condition persisted and was even worse along the area traversed by the old Abrecrombie Trail, a line as direct as possible was run to the mountain side where drainage and good ground could be obtained. In crossing this area, neggerhead swamps and frozen ground were encountered from station 2407 to 2500. Of this distance one and one half miles will have to be corduroyed and filled with dirt hauled from station 2510 - 2520. Corduroy might be avoided by using the following method:

Remove all niggerheads for a width six feet on either side of the center line and smooth out bumps and ground generally in the fall. In the latter part

of April place a gas shovel and thawing boiler in the proposed pit area 2510-2520. Haul over the frozen ground surface from this pit constructing a 2 foot fill eight feet wide. The standard width may then be constructed during the summer season. Ditching to any great depth in this area will necessarily result in future complications. Any ditches constructed should not attain depth to the frost line and wherever these superficial ditches are dug they should be built to merely carry off the water from summer storms and should be constructed on very light grades to prevent cutting to the frost. Wherever this system has been used it has been successful and wherever ditches to the frost has been dug in a vain effort to drain off dead glaciers, trouble has resulted until the thawing ice has again attained insulation. The result of deep ditches in frozen ground is merely a sunken road which is full of heaves. It is believed that the present moss plus a 2 foot fill will be sufficient insulation and that corduroy will not be necessary.

However, if it is decided to corduroy, the corduroy will have to be hauled an average distance of one mile. It should be cut and placed on the frozen ground and the same procedure used as outlined above.

Reconnaissance to a point some 6 miles above Slana was made because of the objectionable hill of moving gravel at the junction of the Ahtell and the Slana. A thorough investigation of the possibilities of carrying the line on the mountainside back of the gravel hill was made. Because of the difficult nature of the country which combined sliding banks, frost and glacier pot holes, this idea was abandoned and the line will ultimately run at the base of the gravel hill beyond the sliding area.

The crossing of the Slana will require an investigation of the area from the Copper River to the mountainside for seventeen miles, and may be affected by the ultimate decision as to the Platinum or Jack Creek Routes. The country on the old trail above Batzulneta consists of niggerhead swamps for five miles. The country between the Slana and Batzulneta consists of good ridges, lakes and swamps in alternating confusion and will require a rough topographic survey to establish the best line.

1929 REPORT

The most important roads upon which new construction was performed were the McCarthy-Nizina, Chatanika-Circle, Mount McKinley National Park, Gulkana-Chistochina, Long-Poorman, Wiseman-Nolan, Kodiak-Abberts, Homer Spit, and Nome-Osborne. The bridge renewal program was continued. The more important structures upon which new construction or extensive repairs were performed included bridges across Valdez Glacier Stream, Birch Creek, Gulkana River, Indian River and Tonsina River.

The important Richardson Highway was maintained open during the entire season. Improvement to new standard was continued and except for a few short sections this road is now in excellent condition for auto traffic. As a result of the rapid improvement local travel doubled during the past year and tourist travel has continued to increase. During the 1929 season tourist travel began in June.

The road from Chatanika to Circle was continued on the three-year program to open for through traffic. The preliminary grading was completed and

portions surfaced. As a result of the improvement there was a considerable amount of traffic over this route towards the close of the season. During the 1929 season travel began over this route in June.

The road from Fairbanks, the northern terminus of the Richardson Highway, to Circle on the Yukon River was named the Steese Highway in honor of General Jas. G. Steese, former president of this Commission, under whose direction this project was planned and almost entirely constructed.

Work was started early in 1928 but was somewhat retarded by more than normal precipitation during the summer.

The roads constructed by the Commission are in general, good wagon roads. However, a more substantial type of road has now been built in many places, upon which automobiles and light trucks can be used economically. The demand for roads of this type is increasing, and effort is made in each case to provide a gravel surface for the road.

PROGRESS OF THE WORK

The high scale of wages and supplies in the Territory is a large element in the cost of this work. The rate paid for labor varies from $3.50 to $6 per day with board for common labor. The cost of subsistence and forage is also correspondingly high. Besides these high costs, the nature of the work in Alaska adds to the cost in a way to make comparisions with road work in the United States difficult. In the roads built here, the cruising, clearing, grubbing and construction of the road includes all work done upon the roads in the settled parts of the United States from Pioneer days. Even with this the mileage cost of our roads can be looked upon with a great deal of gratification.

In the classification of the Commission, wagon roads are any roads cleared, grubbed, ditched, graded, and drained sufficiently to accommodate wagon traffic. Light motor vehicles are now using these roads in increasing numbers. This requires a gravel surface at an increased first cost, but with an eventual saving in annual maintenance charges.

Sled roads are cleared and grubbed like wagon roads, but not graded, They are drained only sufficiently to prevent their destruction by the summer rains. Their wearing surface is of snow. Double bob-sleds, drawn by two, four or more horses haul heavy loads over these roads as well as over the wagon roads in winter time. During the past few seasons, caterpillar tractors have been successfully used during the winter time, and such traffic is expected to increase.

Trails include any construction less than the above, suitable for dog-sleds or single horse-drawn double-enders in winter and pack trains in summer. Except where frozen river surfaces are used some work is always necessary to permit the use of dog teams.

Flagged Trails represent cut-offs across frozen lakes, arms of the sea, etc. The marks are necessary to prevent travelers from getting lost in bad weather.

COMPARATIVE STATEMENT OF TRAFFIC OVER TYPICAL ROUTES

Route	Persons		Motor Vehicles		Tonnage	
	1927	1928	1927	1928	1927	1928
Haines-Pleasant Camp	5,643	6,229	1,841	2,016	251	257
Richardson Highway:						
Valdez	18,670	15,312	5,281	4,809	527	272
Willow Creek	709	3,012	221	852	78	117
Grundler	2,181	3,033	923	1,228	247	376
Richardson	3,173	4,286	1,354	1,760	490	443
Summit-Fairbanks Creek	2,280	3,239	609	878	863	1,537
Steese Highway	1,174	2,371	1	357	100	240
Hot Springs-Tofty	455	171	1	0	107	50
Wasilla-Fishhook	2,998	4,563	1,921	2,431	982	1,090
Wasilla-Knik	2,427	3,670	592	1,387	120	120
Wasilla-Matanuska	2,956	5,300	943	2,032	170	265
Bogard Road	131	899	58	105	110	47
McKinley Park Road	2,635	4,301	1,345	1,692	475	605
Nome-Council	571	424	190	156	27	14
Totals	46,003	56,810	15,280	19,703	4,547	5,433

Sitka National Monument - (2 Mile Trail). This project includes the grounds of the National Monument at Sitka and the footpaths leading through it. The area includes an excellent selection of totem poles and a reconstructed Russian block house. It is maintained largely with funds provided by the National Park Service.

An 85-foot extension to the bulkhead along Indian River was completed. This was necessary to prevent encroachment of the river at the Witch Tree. Three totem poles were repaired and backed with cedar poles. The area along the beach was cleared of debris and footpaths maintained.

Sitka National Cemetery. - This project comprises the old post cemetery at Sitka in which are buried enlisted men of the various Federal defense forces. It has been rehabilitated and designated a National Cemetery.

An additional area 60 feet by 70 feet was cleared and grubbed, the work on the cable fence was continued, and the road along the south boundary was graded and graveled.

Seasonal maintenance of the walks and grave plots was performed.

Pioneer Cemetery Road -(½ Mile Road). This road extends from the city limits of Sitka to the Pioneer Cemetery.

It is gravel surfaced and suitable for motor traffic. Turns were widened and the surface maintained.

National Cemetery Road - (½ Mile Road). This road leads from the city limits of Sitka to the National Cemetery. It is gravel surfaced and suitable for motor traffic. General maintenance was performed and a portion of the road widened.

Seventy-one airfields, through out Alaska are listed, built and maintained by the Alaska Road Commission for the Territory of Alaska.

R E P O R T

PROPOSED ROAD LOCATION REED TO PALMER

ANCHORAGE MATANUSKA ROAD

BY
DONALD MAC DONALD
1934

AUTHORITY

Advised verbally September 1, 1934 by the District Superintendent to make a survey of the section of the Anchorage-Matanuska Project (75L) lying between Reed Station on the Alaska Railroad and the crossing of the Matanuska River near Palmer.

Itinery

Assembled Crew and camp equipment at Palmer, September 10th. The crew consisted of the Locating Engineer, Donald Mac Donald the Junior Engineer, Earl Grammer, a rodman and a chainman. For a week, operations were conducted from a Road Commission camp near the bridge on the Matanuska River. Subsequently the crew was moved to the Knik River and a cook and boatman added to the outfit.

SUMMARY OF SURVEY RESULTS

RECONNAISSANCE

A reconnaissance was made of the whole area including a thorough investigation into the possibility of crossing the Knik River below the slide zone that exists between Goat Creek and the proposed crossing of the river. (This reconnaissance and the subsequent work along the river were both seriously hampered by inadequate boating facilities. For any further work in this area a good river boat of light pliable poling type but equipped with a frame for raising and lowering an out board motor is essential. Two motors (16 horse) should be provided so that no loss of time will result from break downs).

LOCATION

A location based on a paced preliminary from the Knik River to the crossing of the Matanuska River a distance of eight miles was made. A preliminary was run from the Knik River Crossing to Reed Station, a distance of ten miles. Topography was taken along the preliminary from the railroad to Goat Creek but accumulation of ice in the river at Goat Creek compelling the moving of camp and the lateness of the season prevented this work from being completed to the river crossing. The field party was disbanded November 10, 1934.

GENERAL DESCRIPTION OF THE COUNTRY.

It is assumed that this description will apply to the line location as well as a general description of the country. For detailed localized description as affecting the location reference may be had to the profile accompanying this report.

As affecting road construction etc., the country is divided into three parts viz: That section lying between the Knik and the Matanuska Rivers; the Matanuska and the Knik Rivers; the mountain side lying on the left limit of the Knik River from the crossing to the railroad.

The section lying between the Knik and Matanuska Rivers has been formed almost entirely by the deposits of the two rivers. There are some isolated buttes of metamorphic rock that pierce these sedimentary deposits and rise about a maximum of five hundred feet from the plain. The whole area is rather heavily timbered with cottonwood in the gravel bottoms and spruce and birch on the bench lands. The only construction obstacle of importance is the heavy timber, all other conditions being favorable. Gravel is easily obtainable everywhere and a large part of the road location is on gravel. The objectionable features are largely of a maintenance nature and are a result of the action of the two rivers, a description of which follows.

DESCRIPTION OF THE KNIK & MATANUSKA RIVERS:

THE MATANUSKA

Both the Matanuska and Knik Rivers are glacial rivers, rising in warm and falling in cold weather. They both carry in flood a great burden of silt and gravel but here the similarity ends. The Matanuska River is a normal glacier stream in its action. It drops its flood load as soon as its waters begin subsiding. The result is that its stream bed is being constantly raised so that the main channel is generally at the highest point. This process of stream bed building has, within thirty years pushed the "navigable" channel down streem eight miles.

THE KNIK

Because of the phenomenal condition of a "self dumping" lake at its head, the Knik River, in contrast to the Matanuska, "ground sluices" its burden clear through to the high tide line where, when the tidal conditions are favorable, it drops its load. It is probable that the juncture of the two currents is causing a slow accretion down stream. The deposits at this juncture are very eccentric. Apparently immense loads are dropped when the stream velocities are changed, blocking channels and then cutting new ones as the tide changes and velocities are resumed. The area below the juncture is characterized by numerous channels that are constantly changing due to the condition cited. The channel above the juncture is in practical equilibrium, the river gradient is flat both above and below the juncture whereas at the juncture in the vicinity of Goat Creek there is a drop of seven feet in four thousand.

LAKE GEORGE

Lake George, the self-dumping lake at the head of the Knik and the cause of the peculiar ground sluicing, flooding conditions that prevail on this stream is located at a point about twenty-five miles above the crossing of the Knik. The lake itself is contained within a glacier that has its foot about sixteen miles above the crossing. Estimates of people that have seen the lake vary but the most reliable state that at maximum the lake is twenty miles long, four miles wide and four hundred feet deep. The nine miles separating the lake from the river include a canyon, one side of which is the glacier and the other side a perpendicular rock wall of the mountain. In the fall and winter the ice that breaks off the glacier into the lake and gorge accumulates in the gorge and, as the weather grows colder, is sealed up in a solid mass of ice completely filling the gorge. This or the glacier itself moves across the gap. Both these theories are advanced but the former seems the more probable. In the spring and summer, water from rain and melting ice and snow fills the lake until finally it starts to flow over the ice wall. Once it starts the water cuts through the ice with a constantly increasing speed carrying with it tremendous chunks of ice weighing hundreds of tons, cleaning out the canyon from end to end and completely draining the lake. The process

requires from its inception to its crest about five days, maintaining its crest from four to six days and another six days elapse before the lake is drained. The water rising in waves, completely fills the Knik River channels very rapidly rising to a height of fifteen feet above low water level. The up stream lowlands are flooded over an area ten miles wide and twelve miles long. An idea of the volume of water involved may be obtained from the fact that the normal width of the stream is about eight hundred feet where the railroad crosses it with a depth of four feet but at high water it is twelve feet deep and the railroad requires almost a mile of bridges to accomodate the flow. Of course with such a rush of water an immense amount of debris is carried. Cottonwood trees three feet thick and a hundred feet long are torn from the banks and borne at high speed. This condition has necessitated the maintenance of a crane by the Alaska Railroad near its bridges and trestles during the crest of the flood. The crane picks up the large trees and swings them over the bridge and dumps them down stream.

As a result of the constant building up of the Matanuska and the ground sluicing of the Knik, the elevation of the Matanuska is seventy five feet higher than the Knik at a point at right angles to the general trend of the Knik or a point equidistant from their junction. As this difference is elevation constantly increases and as there is no barrier of high land existing between the Matanuska and the Knik there is always the possibility that one of the shifting channels of the Matanuska will break through to the Knik River. In the past there is evidence that this has occurred. In fact there is evidence that the whole Matanuska emptied into the Knik near the proposed crossing at one time. Comparatively recently, that is within two hundred years there is evidence to show that there was a partial flow of the Matanuska to the Knik at this point. The present location of the proposed road from Mile 40.5 to Mile 43.5 is located on the delta of this channel. Trees out in the old channel are not older than one hundred years.

At the present time water has, during the extreme summer flood, splashed in shallow sheets over the low side channel banks of the Matanuska River and followed the ancient river channel between the buttes at Mile 43. Palmer or Bodenburg Creek is incapable of carrying these flood waters and for a period of a month low areas are flooded to a depth of a foot or so in Mile 43. This water action began about three years ago and apparently has not increased in volume since. However, the side channel which generates this flood is much lower than the main channel and if the whole stream swung over, it would constitute a serious menace. Assuming that this will not occur the water can be handled in the side ditches and the fill built up above the present flood line. It is possible that a brush dam three feet high and 2000 feet long and the filling of a branch of Bodenburg Creek that heads over to the side channel of the Matanuska could handle this water. An attempt to block the branch of Bodenburg Creek was made by Bodenburg. It failed, perhaps because of inadequate facilities to construct the dam.

While the situation described indicates an insecure condition for the road, it appears impossible to locate a road through the area that will avoid it.

LEFT LIMIT OF THE KNIK RIVER

The country on the left limit of the Knik River from the proposed crossing of the Knik to the Alaska Railroad, consists of one long mountainside with some narrow stretches of low bench land broken by numerous alluvial fans. The whole distance has a Northern exposure, winter comes early and stays late. The upper end for a mile near the River Crossing shows indications of heavy snow and land slides. There is nothing of economic value apparent in this stretch.

From the Crossing to Goat Creek the choice of location is limited to the

the low bench, from twenty five to two hundred feet wide, and almost identical in elevation with the High Water line and the mountain side. As the mountains rise on slopes varying from twenty degrees to sixty degrees and reach an elevation of from five to six thousance feet the strip near the foot is saturated with water and is subject to the accumulated snow and land slides of the long slope.

The narrow bench with its highest elevation near the river does not show much flood erosion. This probably because beneath the superficial silt it is reprapped with slide rock. Water appears to back up into the lower area between the river bank edge and the mountain side instead of coming over the top.

For the reasons inferred from the above, the line was run along this bank near the river. Where the bank is lower than the High Water line it is planned to fill with the heavy wash gravel from Goat Creek.

Below Goat Creek the river, deflected by the Goat Creek fan, swings away from the mountain side as the channel from here on seems to be building up, the main channel and its banks are higher than the ground at the foot of the mountain side. Water in this area backs in from a much lower elevation down stream and there is very little indication of erosion. Except where crossing the large alluvial fans the road is planned to be located generally near the base of the mountain side. It is thought that it would be cheaper to haul and make the fills at the base than to tackle the solid rock ledges in the broken slopes of the mountain side itself.

From the crossing of the Alaska Railroad to Reed's it is planned to fill and grade a roadbed paralleling the railroad and twenty-five feet distant therefrom and at a slightly lower elevation. The material can be obtained in the gravel cut at Mile 30.75 and hauled by train haul along the line to Mile 28. About 40,000 yards would be involved.

CROSSING OF THE KNIK RIVER

The crossing of the Knik River presents one of the most serious problems ever met by the Road Commission. The location chosen on this survey is at a point about eight miles up stream from the rail road crossing at mile 39 of the survey and about one quarter of a mile below the mouth of Palmer or Bodenburg Creek. This is the narrowest part of the river channel and both high and low waters are confined in one channel. The channel is about nine hundred feet wide at low and fifteen hundred feet wide at high water with an additional flooded area of seven hundred feet. It is believed that five, three hundred foot steel spans with creosoted or concrete pile piers protected with rock filled sheet piling cribs, and six hundred feet of pile trestle protected by two thousand feet of log sheer boom would span the river adequately.

THE ALTERNATIVE OF PARALLELING THE ALASKA RAILROAD

In view of the insecurity and great cost of the Knik River Location as described, it seems that serious consideration should be given the obvious alternative of paralleling the Alaska Railroad. The Knik River location denies almost every fundamental law of economic location. It parallels the existing road along the northerly side of the valley from Matanuska to Palmer. The new areas it renders accessible are confined to its upper end and could be as well served with three or four miles of easy road construction from the Matanuska Bridge. Viewing the railroad and road system as integral parts of the whole transportation system and not as competing agencies the Knik location places a heavy maintenance and capital cost on the Government by requiring in this most difficult zone separate maintenance

and construction or road bed, etc. The bridges now in place on the railroad will be scrapped in the next two years. Left in place they would serve automobile transportation for ten or fifteen years. Because of the unfortunate northern exposure the Knik Road will be closed until late in the spring. There appears no sound argument in favor of the Knik Location.

The distance to Matanuska from the point where the present survey crosses the railroad is 28,000 feet. In that distance the railroad bridges the Knik and Matanuska Rivers and their sloughs with ten one hundred and twenty three foot wooden Howe Truss spans and thirty-seven hundred feet of pile trestle. To build an embankment to carry the roadway would require about one hundred and sixty thousand yards of train hauled fill.

The cost of the road from Reed Station to Palmer would involve the construction of ten and one half miles at twenty thousand dollars a mile -

	$210,000.00
Bridge of the Knik River	300,000.00
Eight miles at $6,000	48,000.00
Total	$558,000.00

ECONOMIC SITUATION

The primary purpose of this project is to serve the agricultural community of the Matanuska Valley as well as the gold mining area in the Willow Creek and the coal mines of Moose Creek, etc. In the past over one hundred and fifty miles of road have been built. The developmental results obtained as outlined herewith are not encouraging.

Total tillable land in the Matanuska Valley	76,800 acres
Tillable land owned	43,041 "
Tillable land cultivated	1,619 "
Owned by 125 residents	25,901 "
Owned by 77 non-residents	17,140 "

Thus it appears that we have over one hundred miles of road to serve two and one half miles of cultivated ground. Apparently to date the principal effect of road construction has been to make possible the scattering of cultivation in small plots over two hundred square miles of area. The difficulty of collecting small dabs of produce over such an area to ship to Anchorage on the railroad has rendered coherent development impossible.

The same conditon exists in the Willow Creek mining field where more than five hundred claims are held, including thirty patented claims and only a scant half dozen developed. The condition is very apparent and the conclusions too obvious to require further expansion in this report. Unfortunately there exists no fourndation for engineering devices to become effective and this area presents a convincing demonstration of the fact. The attention of administrative officers of the government should be directed to this condition to the end that laws and regulations making obstructive and speculative holding impossible can be imposed.

Respectfully submitted

/s/ Donald Mac Donald, Assoc. Engr.

TRAFFIC STATISTICS

A traffic census was begun by the Commission in 1911. Comparing the expenditures for freight on each route at the present rate with the cost of transporting the same amount of freight at the rates prevailing before the road was constructed, a figure is obtained which represents the economic saving to the community served by the construction of the particular route in point.

The data thus collected indicates a considerable annual saving in cost of transportation of freight due to the construction of roads by the Commission. It is doubtful, however, if a large portion of the freight would have been transported without the roads and trails and the indirect loss that would have been occasioned by the restriction on output and development if the roads did not exist.

In the Interior the great cost of moving freight by teaming or packing, together with the difficulty and uncertainty of moving it at all, constitutes the main obstacle to the growth and development of the district.

The average cost of transportation by the usual modes of transport in Alaska is shown by the following table:

	Per ton mile
Winter:	
Bobsled, tractor (sled road)	$0.75
Double-ender (trail)	1.30
Dog team (trail)	6.30
Summer:	
Truck (road)	.30
Wagon (road)	1.50
Pack train (trail)	4.80
Man (no trail)	26.67

The table shows the actual cost and the figures are based on the costs of hauling large quantities.

The available records of traffic show a slight increase for the calendar year 1931 as compared with 1930. Travel over the Richardson Highway increased about 35%.

A location survey for a road was completed from Olnes to Livengood; 1.75 miles from Olnes were standard graded and surfaced. The next 2.25 miles were narrow graded and passable for teams and tractors. The right of way was cleared 60 feet wide to mile 18 from Olnes. One 16-foot span bridge was constructed and the bridge over the Chatanika River at Mile 2 was erected. This bridge consists of one standard 100-foot span, one 60-foot span and 140 linear feet of pile trestle approach.

SURVEYS

A reconnaissance survey was made over the area lying north and east of the Tanana River with a view to determining a practicable route for a road from the Richardson Highway at Grundler to some point on the Canadian border; 1,224 miles were covered on foot, by horse and motor boat. A map was prepared and report submitted.

National Park - McKinley

This project is cooperative with the National Park Service, that service providing the larger part of the funds for its construction. During the past season grading was completed to Mile 54.5 and 60% complete from Mile 54.5 to Mile 65.8. The grading included heavy sidehill work between Miles 46.6 and 47.25. A total of 17,027 cubic yards of earth, 9,502 cubic yards of loose rock and 17,732 cubic yards solid rock was excavated; 15,309 cubic yards of surfacing material were placed over 9 miles of road; 8 frame trestle bridges were constructed, totaling 164 linear feet. A standard pile trestle bridge of 1,176 linear feet was constructed over the Toklat River. This bridge is built in two sections joined by a fill 5 feet above bar level, requiring 4,100 cubic yards of material. Ninety-nine metal culverts were installed. Maintenance wasperformed over 43.25 miles of road.

Receiving and sending equipment was installed at Marshall and similar equipment was installed in the Signal Corps radio station at St. Michael.

TERRITORIAL HIGHWAY BOARD REPORT - 1933-34

Road building activities in the Territory of Alaska are administered under three different agencies. The Bureau of Public Roads under the Department of Agriculture, the Alaska Road Commission under the Department of the Interior and the Territorial Road Board consisting of the Governor, the Territorial Treasurer and the Highway Engineer.

In each of the four Judicial Divisions there is an individual road board consisting of two elective members without pay whose duty it is to make recommendations for road work in their respective districts.

The construction of roads, trails, bridges, aviation fields and shelter cabins in the Territory is carried on under the Territorial Board of Road Commissioners and is supported by appropriations made by the Legislature. Road funds are also derived from receipts from the sale of timer in the national forests.

Twenty-five percent of the receipts of such sales is returned to the Territory and of this 75% is allotted by law to roads and 25% to the schools. No reference is made in this report to funds received from the sale of timber for the reason that the Administrative Board created by the Eleventh Territorial Legislature prescribes the expenditures that may be made by the Board irrespective of where the monies come from.

The Bureau of Public Roads confines its road building to the National forests fo which Alaska has about 33,000 square miles. Forest road funds are apportioned among 28 states and two territories having national forests, 50% of which is allotted to any particular forest on a basis of the ratio of the value of the timber of that particular forest to the timber value of all forests and 50% on a basis of the ratio which the area of the forest bears to the total forest areas. Under that arrangement Alaska is allotted about 13% on a basis of the area and about 7.5% on a basis of the timber values.

The Alaska Road Commission carries on its road work in that part of the Territory outside of the national forests and is likewise supported by Congressional appropriations. These appropriations are supplemented by what is known as the Alaska Fund, being taxes collected outside of incorporated towns by the Federal Government.

Sixty-five percent of the receipts from this fund is allotted to the construction of roads, 25% to the schools and 10% to the relief of indigents.

H. R. 8679 introduced in Congress by Delegate Dimond provides for the extension of the Federal Highway Act to Alaska as it has been to all the states and the Territory of Hawaii. This is as it should be.

Because we have managed our road affairs during the past four years with one-half the money that we expended during the previous two years does not indicate that we have accomplished the task fully. The facts are that we have been in default as may be seen in the summary of the past four bienniums:

1927-1929 road funds expended	$500,365
1929-1931 road funds expended	407,635
1931-1933 road funds expended	129,717
1933-1935 road funds expended	101,000

TERRITORIAL ROAD FUNDS

Total appropriation for biennium	$200,000.00
Total expenditures and allotments	100,986.92
Unexpended balance	99,013.08

EMERGENCY WORK CARRIED ON BY BOARD

Salmon River Flood Control: The townsite of Hyder, comprising less than 150 acres of level ground, is the only area on the Portland Canal in American territory suitable for a townsite and convenient to the mining district.

In the early summer of 1933 the Territorial Road Board authorized an expenditure of $4,000 for protective work against the flood waters of Salmon River until such time as the plan already approved by the U.S. Army could be carried out and for which cooperation by the Territory to the amount of $7,000 had been pledged.

The work carried on by the Territory during the summer of 1933 consisted of clearing away snags and drift for a mile along the river, the construction of a lumber and gravel dam 86 feet in length at a point on the river at the extreme upper end of the townsite and the construction of 549 lineal feet of jetties at points where the current was threatening.

This work has withstood the flood waters since that time and permanent work is now assured by the War Department since the Territory was called upon for the $7,000 cooperation provided for in Chapter 122 of the Session Laws for 1933.

Candle Aviation Field: This field, located on a river bar about one-third of a mile below the town of Candle has always been too short for safe landing and

and the effect of the spring breakup had resulted in scoring the runway, making landing difficult and even dangerous. Six hundred dollars was allotted by the Road Board for smoothing and extending the runway.

Kaltag-Unalakleet Telephone Line: This section of the Tanana-Unalakleet telephone line is vitally important in the transmission of weather reports for the benefit of aviators in the Fairbanks-Nome flights and the Road Board has undertaken to keep the line open with small allotments annually.

Eklutna Road: In the summer of 1933 the Territorial Road Board allotted $2,500 toward the construction of this road which leaves the Anchorage Loop Road seven miles from the town of Anchorage. The citizens of Anchorage contributed generously toward this work and with a total fund of $4,353.45, seven miles were cleared, grubbed and graded, the terminus then being at Eagle River. During the season of 1934 the Alaska Road Commission has widened and extended this road, bringing it up to a higher standard.

Seward Aviation Field: This landing field at the head of Resurrection Bay, about one mile from the town of Seward, was extended and improved during the summer of 1933, the work consisting of grubbing and grading an area 600 feet in length by 200 feet in width and clearing an area 500 feet in length by 200 feet in width, and cutting tall trees over an area 2,000 feet in length by 300 feet in width and re-grading the entire field.

Mineral Creek Road: A revival of prospecting in the Valdez District made it necessary for the Territory to expend a small sum to clear out some slides on the Mineral Creek Road, the work being confined to those portions of the road between Miles 3 and 5 and from Mile 6 to Mile 6½ and consisting principally of clearing slides and brush from the road.

Grant Creek Road: This road serves newly developed placer mining ground on Grant Creek, a tributary of the Yukon River on the right limit and about 30 miles below Tanana. The Territorial Road Board allotted $600 during the summer of 1933 for enough grading to enable a Fordson with a trailer to be taken over the road.

Nulato-Kaltag Telephone Line: This constitutes the Fourth Division section of the portion of the Tanana-Unalakleet telephone line that is being maintained by the Road Board for the purpose of obtaining weather reports so vitally important in the Fairbanks-Nome flights and which cannot be obtained from any other source.

Nome Harbor Improvements: Chapter 61 of the Session Laws for 1925 authorizes the Territorial Road Board to pay the city of Nome the sum of $2,500 annually out of the appropriations for roads and allotted to the Second Judicial Division of Alaska, to relieve said City of Nome of its obligation and agreement with the War Department to pay annually the sum of $2,500 toward the maintenance and improvement of the harbor of said City of Nome.

The following is a summary of all appropriations for shelter cabins:-

1917	$ 20,000
1919	5,000
1921	10,000

1923	15,000
1925	20,000
1927	40,000
1929	20,000
1931	10,000
1933	2,000
TOTAL	$142,000

It will be seen that from the time that the erection and maintenance of shelter cabins was adopted as a policy until 1933, the sum of $140,000 was spent, representing an average annual expenditure of $8,750.

In 1933 the Legislature made an appropriation of $2,000 for shelter cabins for the biennium, while the 1933 requirements alone were estimated at $15,050. The argument was presented that airplanse had supplanted dog team travel and that shelter cabins were no longer necessary.

There is no question but that airplanes have diverted much winter travel from the land and it may be that in time no dog sled traveling will be done at all, but the incontestable fact remains that the Territory still has 275 shelter cabins that some mushers are still depending upon and that require repairs and replacements. In the untimbered areas of the Second Division these cabins must be supplied with fuel and a very conservative estimate of the annual upkeep charges in the Second Division alone is $1,500. The question for the Legislature to decide is whether or not it chooses to abandon the shelter cabins entirely. The appropriation of $1,000 annually amounts to abandonment.

AVIATION

Commercial aviation in Alaska was first inaugurated by Colonel C. Ben Eielson about 12 years ago with a special contract for carrying United States mail from Fairbanks to McGrath, a distance of about 300 miles. At that time the mail was being transported by dog sled and was 17 days in transit between the two points, whereas the first airmail trip was accomplished in 2 hours 45 minutes. These flights, made at a time of year when the weather conditions were least favorable, demonstrated the possibilities of the airplane as being peculiarly adapted to the difficult transportation conditions of Interior Alaska.

In 1925 the Legislature made a small sum available for the construction of landing fields and since that time more than $200,000 has been expended by the Territorial Board of Road Commissioners for such projects. Notwithstanding the fact that the effect of the depression has manifested itself in Alaska, there has been a substantial and regular increase in the volume of business in commercial aviation since it was first begun in the Territory.

There was but one disastrous accident during this period in which a new pilot on his first flight in the Territory and a single passenger were killed. There were 11 minor accidents resulting in damage to the planes but no injuries to passengers or pilots. There were 12 minor accidents with no resulting injuries to passengers or pilots and 2 fatal accidents in which 5 lives were lost.

RADIO TELEPHONE

Section 117 of the Session Laws for 1933 authorized the Territorial Board of Road Commissioners to install, maintain and operate a radio telephone system throughout the Territory, requiring communities where such radio telephones were established to contribute 25% of the cost of installation and to agree to contribute, if necessary, toward the maintenance. The sum of $20,000 was appropriated therefor to be equally divided among the four judicial divisions.

1935-36 TERRITORIAL HIGHWAY BOARD REPORT

Matanuska Trunk Road (9½ mile road): This road extends north from Matanuska Station, Mile 151 of the Alaska Railroad. It connects with the Wasilla-Matanuska Road at Mile 2, with the Wasilla-Finger Lake-Palmer Road at Mile 4½, with the Bogard Road at Mile 6 and ends at its junction with the Palmer-Fishook Road. It serves the Agriculture Experimental Farm and a number of other farms.

In 1935 a 3/4 mile branch at Mile 2½ was constructed; 1655 cubic yards of gravel was put on and 3 metal culverts installed. Maintenance was performed. In 1936 another 3/4 mile branch was constructed and all the soft spots in the road were well graveled. General maintenance was performed. This is the school bus route and is one of the chief roads in the Wasilla-Matanuska district.

Palmer-Matanuska (7½ miles road): This road parallels the branch line of the Alaska Railroad between Palmer and Matanuska, serving several farms. A part of it serves as a school bus route.

In 1935, due to the Matanuska colonization project, 3 branches totaling one mile were constructed. Five thousand seven hundred cubic yards of gravel were spread, the rock point near Palmer was removed. In 1936 the entire road was widened. Gravel was put on in the spring.

Valdez-Mineral Creek (10-3/4 miles road): This road extends from the end of McKinley Street in Valdez across the tide flats and delta of Mineral Creek for 2-3/4 miles, thence up Mineral Creek for a distance of 8 miles to an area of mining activity. In 1935 the road up the creek was widened and short grades were reduced. In 1936 the creek road was connected with the town of Valdez, including the construction of 1600 feet of pile driven trestle. The road is now passable for cars.

Valdez Aviation Field: This field, situated in the town of Valdez has two runways, 200 by 2500 and 200 by 1600 feet. In 1936 the large rocks were picked off and the low spots filled with gravel.

Anchorage Loop (19½ miles road): Starting from the railroad yards, this road extends northeast 5½ miles, thence easterly for 4½ miles where it crosses the railroad. It then follows the north side of the railroad 1½ miles again crossing the track and extends along the south side of the railroad to the railroad yards, on the north side of the City of Anchorage. The road is graded to standard width and surfaced. It is suitable for motor traffic.

Operations during the biennium consisted of additional gravel surfacing and drainage work. Nine miles of the road is kept open during the winter months as a school bus route. Several metal culverts were installed.

Anchorage-Lake Spenard (4 miles road): This road extends southwest from the south city limits of Anchorage to Lake Spenard. 1165 cubic yards of gravel was put on in 1935 and 5 metal culverts installed. General maintenance was performed in 1936, including a small amount of additional gravel surfacing. The road is kept open during the winter months with a snow plow.

The drastic curtailment of shelter cabin funds by the Eleventh Session of the Legislature was sorely felt. It is always better to have an available fund remaining unexpended at the close of the biennium than to have some one perish on the trail because no funds at all were authorized.

Hyder Walks: During the winter of 1935 and 1936 relief in Hyder was found to be necessary by the Governor's office. An investigation disclosed that the sidewalks were in such a dilapidated condition as to actually be dangerous and that the school yard covered with grass, weeds and stumps, etc. was an unfit place for the children. There were two sidewalks in particular in Hyder, the responsibility for the upkeep of which seemed to be unclaimed. The one locally known as the Neutral Zone walk crossing a strip of neutral territory adjacent to the Canadian-American boundary and the other called the All American walk leading to the boundary.

The Governor's office called upon the Board for such cooperation on the part of the Territory as would cover other items than labor, for which alone he was authorized to expend Federal funds.

Skagway River Flood Control: During the periods of flood water it has been necessary to protect the bank of the Skagway River adjacent to the aviation field. Since only small allotments have been made in the past, such work as has been done was of an emergency nature and only temporary.

During the spring of 1936, 230 lineal feet of rock and wire mattresses were placed long the river bank and two rock jetties were placed in the river at points where the current was threatening the bank. Two hundred thirty lineal feet of river bank was raised by means of sand bags.

Juneau Land Slide: On the evening of November 22, a terrific land slide swept down the mountain side on lower Franklin Street, destroying buildings and entailing the loss of 15 lives. Lower Franklin Street was buried under debris about 12 feet deep. The task of removing the slide and recovering the bodies of the victims was one that the City of Juneau was unable to bear. The Territorial Road Board promptly allotted $1,000 toward paying for the labor of clearing away the slide.

Council Aviation Field: Two aviation fields have been built at Council, neither of which is satisfactory. Increased activity in dredging operations in the Council City District made it necessary to do something about the landing facilities there.

Upon an investigation of the conditions in which aviators were consulted, it was decided that since it was hopeless to make anything out of the so-called town

field and since the hill field could not be advantageously enlarged (it was too inaccessible and was subject to downdrafts), the only other location that could be made level, hard and smooth with unobstructed approaches was a dredged area at the mouth of Ophir Creek about 2 miles up the Niukluk River from Council and served by a road from Council. The construction of the field was pleged but a breakdown of equipment occurred when the work was about 2/3 completed.

Seward Bridge: During the summer of 1935 a 60-foot span was erected across a glacial stream about 3 miles from Seward on the old cemetary road and was no sooner completed when the most terrific flood known to that section occurred, the water passing over the bridge decking and around both ends of the bridge. Temporary timber approaches were built and during the spring of 1936 the bridge was raised 20 inches and two 16-foot bents were added on each end, making the total length of the structure 124 feet.

Evak Lake Revetment: This improvement consists of a log cribbing 12 feet wide and 300 feet long, and is located on the sand spit on the west end of Eyak Lake. The cribbing is five feet high and is filled with rock and gravel. The sand spit forms a shelter for small boats and protects the inhabited shore from wave action during storms. Recent storms had removed the sand spit to such an extent that it was feared that it might be entirely wiped out. The Territory contributed toward the improvement jointly with the City of Cordova.

Kenai Dock: This small dock, built originally by the community, was carried away by the ice in the breakup. An appeal was made to the Road Board for help to replace the dock. Lumber only for the dock was supplied by the Territory and all labor, piling and use of the driver was furnished by the community.

Naknek Water Supply: The water supply of Naknek Village is known to be unsuitable for domestic use and has been condemned by physicians. In the spring of 1935 the village petitioned the Board, setting forth that the water was unwholesome and while the adults took the precaution of boiling it, the children continued to drink it as it was and resulting in sickness to them. It was pointed out that good spring water was available but that the community had no funds to purchase a necessary pump, tank and other equipment needed for a community water supply, and offered to perform all labor connected with the installation if the Territory would aid them in getting the equipment. The request being small was granted by the Board.

Cripple Landing Field: This field, 125 by 1,500 feet in the Ophir district, was built during the summer of 1935 under a verbal agreement that, unfortunately, resulted in a controversy afterwards. The Cripple Mining Company, which built the field on ground that belonged to the company and which had been mined, reserved the field for its private use, charging tolls on freight and passengers landing upon the field. Protests were made to the Board and the field was finally taken over by the Territory at a cost of $1,803.00.

Hot Springs Aviation Field: This location, while previously carried as a landing field, occupied the private homestead claim of Mr. Martin Sabin who generously allowed planes to land in his oat field. In the summer of 1928 an attempt was made to build a field in the vicinity but the particular site chosen was visited by downdrafts and was condemned by pilots.

Since this is a very important field on the Fairbanks-Nome flight course, the Board acquired for the Territory a sufficiently large tract, including Mr. Sabin's oat field, at a cost of $1,000, the same representing less than it would have cost to clear and level the tract and increased the length of the runway to 2,100 feet. The approaches were cleared of timber and the field is one of the best in the Territory, having a single runway.

Unfortunately, the Federal Government has not yet seen fit to extend any help in the matter of providing landing facilities in the Territory. Outside of one comparatively small Public Works allotment by the Federal Government, the fields have been wholly built and maintained either by the Territory or privately built.

Probably because Alaska does not have the other facilities for transport that other countries have, it excells all other countries in the amount of air traffic operations in proportion to its population.

Number of planes in service	79
Number of plane miles	2,130,929
Number of passengers carried	16,982
Number of passenger miles	3,035,018
Number of pounds of mail carried	279,730
Number of pounds of freight carried	2,138,886

Radio: These radio telephone stations have been installed at an average cost of $1,150 each. This does not, however, include the power unit in many of the installations. The Board now requires the community to furnish the current to operate the set which approximately equals 25% of the cost, the cooperation on the part of the community fixed by the Act. It is believed that since the Territory is responsible to the Federal Communications Commission for these stations the title to the telephone equipment should rest with the Territory.

It might be appropriate here to mention the very generous cooperation of the Alaska Communication System (U.S. Army Signal Corps) which has made the installations with practically no cost to the Territory. This has been somewhat of a burden upon that organization at a time when it was comparatively short handed and the Territory has been advised that this service can no longer be extended.

TELEPHONE LAND LINES

Chapter 69 of the Session Laws for 1935 authorizes the Territorial Road Board to reconstruct and maintain the abandoned U.S. Signal Corps telegraph line from Rampart to Eureka and to maintain the line from Tanana to Unalakleet, conditional upon an investigation to determine the feasibility and practicability of such rehabilitation and maintenance.

The Rampart-Eureka section, 28 miles in length, was reconstructed during the summer of 1935 but it was believed that the upkeep of the line from Tanana to Nulato was no longer warranted. From Nulato where there is an Army telegraph station the line has been maintained to Unalakleet, a distance of 135 miles.

1936 REPORT

Labor, both common and skilled, is secured entirely from local residents. Labor has been plentiful the past year. It is encouraging to note the exceptional loyalty to the organization which is manifested generally even by the lowest paid laborers. This may be attributed in part to the fact that, though work is only seasonal, many of these men have worked for the Commission continuously for 5 to 10 seasons and in part to the fact that as a whole Alaska labor is probably superior to that found elsewhere.

Although standard construction and maintenance methods are employed in Alaska so far as practicable, it is necessary to vary therefrom in some instance because of special physical and climatic conditions. The frozen condition of the subsoil and the constant thawing during summer require special precautions for drainage. Intercepting ditches on the uphill side of the road are frequently necessary and after the vegetation has been stripped from the roadway the ground must be allowed to thaw, settle, and consolidate for several months before completing the grading and applying the surfacing. Frequently one or more seasons are required for such drainage and consolidation and in order to maintain traffic during this period, corduroy must be used. Sloughing banks, due to thawing of the subsurface ice, frequently causes slides which cover and block the roads.

Special methods of revetment and stream control must be used to withstand the destructive effects of sudden and frequent freshets and washouts that result from heavy rains in the mountains or the release of impounded waters by breaks in glaciers. The most suitable type of revetment for this purpose is built of brush weighted down with stone in bundles wrapped in wire mesh to prevent its washing away.

Gravel for road surfacing is generally available within reasonable hauling distance. Surfacing is necessary for practically all roads which are used by automobiles. Concrete or other forms of hard-surfaced roads are nowhere warranted in the present stage of development of the Territory.

Bridges are built of native or imported timber or steel, depending on their importance. Fir has been found to be the most suitable material for timber bridges but local timber is used for part of these structures. Metal culverts are used to replace culverts of native timber ordinarily used on new construction.

The work in the past fiscal year was somewhat larger than usual as a result of the allocation of emergency funds by the Emergency Relief Administration in the summer of 1935, most of which were expended this fiscal year. These funds were available for the construction and surfacing of the road connecting Anchorage with Palmer and for farm roads adjacent to the Matanuska Valley Colonization Project. Work on these projects was practically complete at the end of the fiscal year. Ordinary funds were sufficient only for maintenance of the existing system with some improvement in the way of widening and surfacing as noted below.

The Richardson Highway was open from Valdez to Fairbanks from June 12 to October 12.

Surfacing of the Gulkana-Nasbena Road was completed, opening this 106-mile road for continuous summer truck traffic after a 10-year period of progressive construction.

The highway through Mt. McKinley National Park was opened for an additional distance of 4.50 miles, the constructed portion of the route now totaling 79.00 miles in length and leaving 9.00 miles to be completed. When completed the route will extend to the north park boundary, only 5½ miles from the Kantishna Mining District, a district reported to contain quantities of very valuable ores. The work on this road was hampered to some extent by loss of equipment when the "S.S. Denali" sank and by a heavy damaging rain storm.

Work toward completion of the Olnes-Livengood project was carried on with the limited funds available. Though the first 30 miles were surfaced where necessary, the road could not be used until after the freeze-up.

Work was vigorously prosecuted on the Anchorage Matanuska Road Project and carried on through the winter months. Except for two miles of grading and approximately 20 miles of surfacing, it is completed. This road will connect the town of Anchorage with the Matanuska Valley and the Willow Creek Mining Section. Important phases of the work were the completion of the 170-foot steel arch span over the Eklutna River and the steel bridge and approach on the Knik River consisting of six 250-foot spans on concrete piers with 500 feet of pile driven trestle approach. Pile driven shear dikes totaling 2,000 feet were put in on the left limit of the Matanuska River as a precaution against the river changing its course toward the road.

Twenty-six miles of new branch farm roads were constructed as designated by the Alaska Rural Rehabilitation Corporation to reach the tracts occupied by the Matanuska Valley colonists. An additional 47 miles of existing road received a gravel surface on account of the vast amount of traffic created in getting the colonists located.

Three 180-foot steel spans were constructed over the Nizina River placed on concrete piers built several years ago for this purpose. This construction eliminates to a large extent the constant threat of losing the trestle, a part of which these spans replaced.

Improvements in the way of grading and widening continued on the Lucky Shot-Willow Station Road preparatory to surfacing.

The Douglas Bridge over Gastineau Channel, connecting the town of Juneau and Douglas Island, was completed and formally dedicated on October 13, 1935.

New aviation fields were constructed at Poorman, Thompson Pass, Medfra and Big Delta.

Twelve and one-half miles of new short roads and extensions not mentioned above were built in farming and mining areas.

As air travel has become an important factor in the development of the Territory and is rapidly increasing, it is recommended that funds be appropriated for the construction and maintenance of landing facilities. Existing facilities are entirely inadequate and cause flying to be unnecessarily hazardous. The Territorial Legislature has provided funds in the past for this work and will continue to cooperate but due to the limited Territorial revenues, such appropriations are inadequate to provide safe landing facilities over such a large area.

A comprehensive program of airfield construction has been drawn up and should properly be carried out over a 4-year period. For the first year of this program, $500,000 for airfield construction is recommended. With these funds the following fields on primary air routes would be constructed or enlarged: Juneau, Boundary, Bremner, Tanana Crossing, Big Delta, Goodpaster, Fairbanks, Ruby, Nulato, Golovin, Nome, Candle, Kaltag, Anchorage, McGrath, Flat and Bethel.

The Richardson Highway, which with the Edgerton Cutoff from Chitina totals 410 miles, is now in such condition that a 2-ton truck can ordinarily travel from Valdez to Fairbanks (370 miles) in 18 hours. Actually, the first automobile went over this route in 1913, after the route had been used as a packtrail and wagon road for 8 years but due to lack of funds, improvement to a fair standard proceeded slowly.

The Steese Highway extending from Fairbanks to Circle, a distance of 162 miles, is suitable for traffic not exceeding 2-ton trucks.

The Elliott Highway, heretofore known as the Olnes-Livengood Road, branches from the Steese Highway at Mile 11 near Fox and extends to Livengood, a total length of 71 miles. At the end of the fiscal year it was passable for automobiles over the first 40 miles. The road was started as a summer wagon road from Fox to Olnes in 1906 and this section has been used as such since 1907. In 1915 the section from Olnes to Livengood was completed as a sled road, used as such for several years and then abandoned except as a summer foot trail, in favor of the less hilly route from Dunbar. In 1931 operations were begun toward completion of this section as an automobile road.

1937 REPORT

The work in the past fiscal year was somewhat larger than usual as a result of the balance of $110,000 available from the allocation of emergency funds by the Emergency Relief Administration in the summer of 1935, and the allocation of $450,000 by the Works Progress Administration. The former fund was entirely expended for the completion of the construction and surfacing of the road connecting Anchorage with Palmer and for farm roads adjacent to the Matanuska Valley Colonization Project. The expenditure of the latter fund is just getting well under way. It includes construction of new aviation fields at Bethel and Nulato and improvement to four existing fields at Tanacross, Ruby, McGrath and Takotna at a total cost of $100,000.

The highway through Mt. McKinley National Park was opened for an additional distance of 6 miles, the constructed portion of the route now totaling 85 miles in length and leaving 2 miles to be completed. In addition, a branch road 1.7 miles long was graded from Mile 84.9 to the hotel site at Wonder Lake. When the main road is completed, it will extend to the north park boundary, only 5½ miles from the Kantishna mining district, a district reported to contain quantities of very valuable ores. The advance work on this road was hampered to some extent by an abnormally wet summer. The standardization of the east end of the road, consisting of widening and placing the crushed gravel surfacing, was completed to Mile 25.0.

Work toward completion of the Elliott Highway was carried on with the limited funds available. Work consisted of surfacing the last 30 miles only where necessary; the road could not be used until just before the freeze-up.

Work was vigorously prosecuted on the Anchorage-Matanuska road project, enabling its formal opening to traffic September 4. Twenty miles of light surfacing remains to be done before it is completed. This road connects the town of Anchorage with the Matanuska Valley and the Willow Creek Mining Section. Important phases of the work were the completion of the heavy 8 mile section along the Knik River, 13 miles of gravel surfacing, completion of painting of all bridges, construction of 2-1/4 miles of branch roads and bank protection work along the Matanuska River. The road was kept open during the winter and except for a two-weeks period in the spring is passable the year round.

Eight and three-quarter miles of new branch farm roads were constructed as designated by the Alaska Rural Rehabilitation Corporation, including the Community Center road system and a road to the hay field on the Knik River flats. Several miles of road were graveled. Work was started on widening and improving of two trunk roads.

Improvements in the way of grading and widening continued on the Lucky Shot-Willow Station Road and 16-1/4 miles of gravel surfacing were placed.

The town of Valdez was connected with the Mineral Creek road by the construction of 3½ miles of road over the tide flats, including 1/3 mile of pile driven trestle.

THIRTY-THREE YEARS' SERVICE

With the period covered by this report, the Alaska Road Commission concludes its thirty-third year of service. The work accomplished consists of the construction and maintenance of 2,058-3/4 miles of road and tram road, 78% of which is suitable for automobiles in all summer weather, 1.612 miles of winter sled road, 6,940½ miles of trail, and 304 miles of flagged trail. The total costs to the end of the fiscal year are $24,014,323.71, of which $12,497,182.96 was for new work and $11,517,140.75 was for maintenance and improvement. The total expenditures to date are $24,608,799.22, of which $17,994,786.64 was derived from Federal appropriation acts. The balance, $6,614,012.58, or 27% of the total expenditures, was obtained from Alaskan sources.

All existing mileage has been maintained and improved, so far as funds have permitted. The present system of roads serves as the basis for future development of overland routes throughout the Territory. This development calls only for additional funds for construction.

1938 REPORT

The work in the past fiscal year was somewhat larger than usual as a result of the balance of $338,000 available from the allocation of emergency funds by the Works Progress Administration for the fiscal year 1937. This balance was expended in the completion of specific road and airfield projects. Ordinary funds were applied to maintenance of the existing system with some improvement in the way of widening and surfacing.

The Richardson Highway was open from Valdez to Fairbanks from June 13 to October 24.

The highway through Mt. McKinley National Park was opened to the north boundary an additional distance of 4 miles. In addition, the branch road 1.7 miles long from Mile 84.9 to the hotel site at Wonder Lake, was surfaced. The standardization of the east end of the road consisting of widening and placing crushed gravel surfacing was completed to Mile 32.4 and grading to Mile 35.2 was practically completed.

The gravel surfacing of the Elliott Highway from Fox to Livengood was completed to the extent that the road can now be used in any kind of weather. The season's work also saw the completion of all graveling on the Anchorage-Palmer Highway, a total of 21 miles of surfacing being placed.

Gravel surfacing of the Lucky Shot-Willow Station Road was completed. Grading of the Peters Creek Road was completed and 2 miles through the canyon were widened. An 11 mile branch to the Steese Highway was opened up to Porcupine Creek and a 3 mile branch from the same highway was graded up Mastadon Creek. Four miles were graded from the end of the McKinley Park Highway to the Kantishna mining district.

A 9 mile road from Mile 292 on the Alaska Railroad was built up the west fork of the Chulitna River to lode properties. The Bunker Hill-Kougarok Road was extended 5-1/4 miles. The Takotna-Nixon Fork Route, 16½ miles, was opened as a winter tractor road, all clearing and bridges being completed. One mile over corduroy was surfaced.

Seventeen and one-fourth miles of new short roads and extensions not mentioned above were built in farming and mining areas. The work accomplished during the fiscal year is summarized as follows:

New Construction: 56-3/4 miles of road of which 16-1/2 were surfaced, 54 miles of sled road, 90 linear feet of timber bridges over 30-foot span, 740 linear feet of steel bridges of 80-foot span or over, 180 linear feet of steel trestle span bridges and 3,205 linear feet of timber trestle span bridges.

Improvement: 74-1/4 miles of road regraded and widened, 127-1/2 miles of road surfaced, 871 metal culverts averaging 20 feet in length and installed principally as replacements for wooden culverts.

Maintenance: 1,915 miles of road, 80-1/4 miles of tramway, 557 miles of sled road, 2,061-1/2 miles of permanent trail and 304 miles of temporary flagged trail.

It will be noted that the mileage of trails is dropping off due to a greater use of airplanes.

1939 REPORT
MATERIALS, SUPPLIES AND EQUIPMENT

Alaskan products are preferably used in the work when the price and quality compare favorably with the cost of the same items landed at warehouses in Alaska.

All supplies not procured in Alaska are purchased for the Commission by a consolidated purchasing agency in Seattle, acting also for various other bureaus operating in the Territory. The cost of this service is shared by the individual bureaus on a pro rata basis. The share of the Alaska Road Commission is somewhat over 4 per cent of the invoice price of items thus purchased.

Work is performed by mechanical equipment to every extent deemed advantageous. Small jobs in remote sections are necessarily done by hand. The Commission is now fully equipped to handle construction and maintenance work within the present limits of appropriations except for replacement of unserviceable or obsolete equipment. During the fiscal year just closed the following pieces of mechanical equipment were purchased.

3 freight trucks	1 tractor, 60 h.p. with trailbuilder
5 pickup trucks, ½ ton	2 motor graders
23 dump trucks, 1½ yard	2 trailbuilders for 44 h.p. tractor
2 tractors, 45 h.p. with trailbuilder	2 pull graders, 8 ft.

Work was started on a new location to connect the Takotna and Ophir mining districts with steamboat navigation on the Kuskokwim River. A part of the route was cleared and preliminary grading done over 6 miles.

The Teller-Bluestone road was extended 4.75 miles toward the dredging operations on Gold Run.

The local road system at Anchorage was extended 7.25 miles to serve new settlers in the vicinity. The Mt. McKinley National Park road system was started in 1922. Progress has been slow due to limited funds but the route is now open to the north boundary as planned. The total cost per mile to date of 91 miles, including maintenance of completed sections since construction, is $15,860.

1939-40 TERRITORIAL HIGHWAY REPORT

By an Act of Congress of June 15, 1935, twenty-five per cent of the receipts derived from the Administration of the Migratory Bird Conservation Act is turned over to the Territory and is equally divided between roads and schools.

The Act likewise provides that funds so received shall be expended in the particular Territorial subdivisions in which the bird reservations are situated. Since the bird reservation in Alaska from which funds are derived consists of the Aleutian Islands, these funds are credited to the Third Judicial Division.

This office has consistently advocated the extension of the Federal Highway Act to Alaska as a means of systematic road development.

It is unlikely that Territorial appropriations for roads will ever keep pace with demands for new roads. There is nothing serious about this; it is rather a symptom of progress. Nobody is concerned about roads when the population and industrial development is on the decline.

In order to care for the most urgent demands, we are obliged to insist upon cooperation either from those who are directly interested or from some other public agency. It might be appropriate at this point to mention the fact that when there are never sufficient funds to meet all requests, some projects cannot be undertaken and someone is going to be bitterly disappointed.

The vital factor in the consideration of new projects is the urgency of the need. Manifestly a decision must be made by someone as to the relative need and importance of road projects.

A road that will serve the operations of some particular individual or concern may be more important to him or that concern than any other road in the world and may represent the difference between success or failure of the particular undertaking and yet, from a public viewpoint, it is not so important as a road that serves ten times as many enterprises.

It is not intended here to convey the impression that there are certain individuals who alone posses the knowledge to determine where roads should be built, nor that such individuals do not err in their judgment on such matters, but there is a vast difference in the viewpoint between the individual who sees the whole picture and the individual who sees only part of it.

Under the present setup the existing plan has been quite satisfactory. There are instances where we do not receive cooperation and cannot expect it, but we get cooperation where it is at all possible and justified.

Road and aviation field construction today is hopeless without the use of modern equipment to carry on such work and since this equipment is necessary, if not indispensable, in most of the mining operations of today, these concerns that seek aid in the construction of roads and aviation fields are usually prepared to some extent to provide this equipment. This makes road building exceedingly advantageous, both to the Territory and to those who require such aid. But since the mining concerns require the use of this equipment for mining for which it was primarily purchased and since the season for road building is also the season for mining, it is sometimes difficult to make this arrangement. Failure to carry out some projects, therefore, has not been due to any unwillingness on the part of the operators to cooperate nor on the part of The Territory to render assistance.

Just at this time road development in Alaska is being hampered by the lack of sufficient support on the part of the Federal Government. Apart from the activities of the Public Roads Administration which confines its road work exclusively to national forests, there are no Federal funds available for new construction and while Territorial expenditures for such purposes have been consistently increasing, the net results is about the same as it was.

Planned and systematic road construction in Alaska is only to be expected if and when the Federal Highway Act is extended to the Territory. Legislative

sessions in the past have supported this policy so there is little that can be done within the Territory further than expressions to Washington through our delegate. There is a possibility that Federal authorities wonder if Alaska actually desires the extension of this Act in view of the fact that public representations have not been made.

The example of the progress that has been made in road construction in the continental United States since the adoption of the Federal Highway Act is evidence of the advantages of planned road building over a haphazard, indifferent system or what in effect is no system at all.

Any request for Federal support for Alaska roads ought to be based upon some definite highway plan rather than a mere request for money to be expended without a plan. Any such plan should contemplate a definite mileage of trunk roads or an integrated system of trunk roads. Such a plan would justify its consideration by Congress and at once afford a basis for the extension of the Federal Highway Act to Alaska. Secondary or branch roads leading from this arterial system would, of course, be of immediate importance and follow so that Alaska would soon enjoy road expansion on a sound basis.

It is to be expected, however, that the road building expenditures must continue to increase as the Territory develops; but the proportion that the Territory would be expected to contribute under the Federal Highway Act should be no greater, if indeed it would be as great as at the present time.

While it is not believed to be necessary to include recommendations in this report for the construction of the numerous roads that are justified and necessary, it is, however, felt that some definite and coherent plan for road development in Alaska is appropriate, not because it had not been thought of before, but because the practice that has existed for the past thirty-five years has failed to produce satisfactory results.

It is not expected that Alaska can hope to escape its road building responsibilities nor has there been any tendency to do so, but it is believed that the first consideration is a sensible approach to the question of funds required, whether they be Federal or Territorial, in a definite plan.

This system would begin at Haines on sheltered inland waters navigable throughout the year and connect with the Richardson Highway from which other branches would link up the major activities and industries of the interior. While this highway would follow the earliest overland route used by whites in traveling from tidewaters to the interior, it has the disadvantage of being within Canadian territory for a distance of 260 miles, but it is believed that since Canada is sorely in need of free port facilities and access to its own territory through Skagway that some sort of trade could be made that would be mutually beneficial.

Assuming that such arrangements could be made, the construction of the highway could be undertaken on a cooperative basis between the Federal and Territorial governments similar to the Federal Highway Act; in fact, it would open the door to Alaska for participation under the Act.

HIGHWAY TOLLS

Neither the Territory nor this office has any jurisdiction in the highly controversial question of tolls that have been levied by the Federal Government on a part of a single highway within the Territory. While this office does not favor tolls at all on highways in Alaska, it believes that if this policy has been adopted as a means of collecting revenue that it should, in fairness, apply to all highways alike.

In the face of Section 9 of the Federal Highway Act, approved November 9, 1921, which prohibits the collection of tolls upon any roads built under the provisions of that Act, it is difficult to reconcile the attitude of the Federal Government with respect to the collection of tolls in Alaska.

GASOLINE TAX

The question of road construction is so inseparable from the question of taxation that Alaska might as well face the fact now that it costs money to build and maintain roads and that we are the only civilized country in the world that exacts no taxes from the motor vehicles for which the roads are built and maintained.

An annual license fee of ten dollars upon a car or truck, irrespective of its size or weight, is neither sensible nor equitable. The gasoline tax is both scientific and equitable, has been adopted everywhere else in the world and should be adopted here.

The regulation of traffic on the public highways in Alaska is a vital necessity. Congress and the Legislature alone have the power to do this.

Sooner or later steps will have to be taken to safeguard lives and property along the highways and if this is not done by the Legislature, it will be done by Congress. Such legislation is more appropriately the business of the Legislature than of Congress. There is a strong probability that any such measure passed by Congress will please us less than one we could devise ourselves.

ROAD FUNDS

This office has always believed in an advocated and inviolable road fund, into which certain tax receipts should be covered; but whether the Legislature sees fit to consider this matter necessary or not, there should be a very definite policy against the use of funds appropriated for roads and related matters for the construction of school houses, the purchase of equipment for hospitals, etc. out of funds appropriated and intended for roads.

There are some communities where aviation facilities consist of floats for sea planes rather than aviation fields, also there are communities where transportation is by boat rather than by roads and such communities require aid for floats, etc. It is believed that these aids are consistent enough and have been sanctioned by the Legislature in the past. This policy ought to be continued.

SHELTER CABINS

In a previous report of this office it was pointed out that since overland travel by dogs had been supplanted by travel by planes, the need for shelter cabins no longer existed in the sense that it formerly did, but that isolated aviation fields built in the future would still require cabins for travelers by plane who might be forced down at such fields.

Shelter cabins today are occupied and used chiefly by natives, not necessarily en route from one place to another, but using these refuge cabins for bases in their trapping operations. In the Second Division where it is necessary to provide fuel for these cabins at the public expense, natives have been reported in numerous instances to have moved in and stayed until the fuel was gone and then moved on, rendering the cabins worse than useless to the traveler who expects to find fuel. In the earlier days when travel on the trail in the winter was the only method in use, such a condition rarely arose. It constituted such a gross violation of the unwritten law of the trail that such infractions were infrequent or even unheard of, but today there is such a little overland travel that the policing of these cabins is unjustified, if not impossible.

No request for shelter cabin funds has been made by this office in the budget request since it is believed that if there is a necessity for this it becomes more properly a function of the Indian Office.

HYDER SIDEWALKS. This project, originally set up as a W.P.A. project, was transferred to the C.C.C. because the work was unfinished at the expiration of the fiscal year. Too much time would have been lost in getting the project approved for continuance by Washington and waiting for an appropriation so the work was finished by the C.C.C.

BELL ISLAND TRAIL. This project was carried on as a C.C.C. project in which the Territory contributed the nonlabor costs. Two thousand feet of this trail leaving the tidewater consists of a board walk, the purchase of lumber for which constituted the major item of expense to the Territory.

CRAIG-KLAWOCK ROAD. This project, originally in the Forest Highway system, has now been eliminated as a Forest Highway road. A contribution was made by the Territory under a contract awarded by the Public Roads Administration. Upon the completion of this contract the road was eliminated from the Forest Highway system and work is being continued as a C.C.C. project under the supervision of the U.S. Forest Service. The Territory is cooperating under this new setup. The length of this project is 6.5 miles, of which 3 miles have been completed.

SKAGWAY SCHOOL. Funds appropriated for roads were authorized by the Legislature at the Fourteenth Session for the completion of the Skagway school gymnasium. This work was carried on by the City of Skagway and reimbursement was made by the Territory.

PIONEER CEMETARY. Burial space for the pioneers at Sitka has been limited and a small area adjacent to the present graveyard was purchased with road funds. The addition of this tract to the existing burial ground should provide space for the next thirty years.

PIONEER HOME STORM SEWER. A project to reclaim additional shore space immediately adjacent to the Pioneer Home by filling was undertaken by the C.C.C. In order to do this it was necessary to extend the storm sewer and the Territory cooperated to the extent of furnishing the sewer pipe.

DOUGLAS SCHOOL GYMNASIUM. The Fourteenth Session of the Legislature authorized the expenditure of road funds for the construction of a school gymnasium at Douglas. The funds so authorized were used as the sponsor's contribution for the work as a W.P.A. project.

TENAKEE PUBLIC BATH HOUSE. This project consists of the erection of a concrete bath house to replace the old building which was in a bad state of repair. The Tenakee Springs are federally controlled and not subject to entry so improvements, if made at all, must be made at the public expense. The Territory cooperated with the C.C.C. in this project, though the community also contributed funds.

WRANGELL NARROWS FLOAT. This project consists of a float for small fishing craft about four miles south of Petersburg in the Wrangell Narrows. The Territory is cooperating with the C.C.C. in this project which is at this time underway.

UNGALIK AVIATION FIELD. This field has always been a considerable hazard, which is worse than having no field at all. During the summer of 1940 the existing runway was lengthened and improved and cross runway was added.

GOLOVIN AVIATION FIELD. This field is not only important in the matter of local aviation, but is on the flight of all planes operating between Fairbanks and Nome. An effort has been made to improve this field as far as the site will permit. A short cross runway was added during the summer of 1940 to meet an occasional cross-wind of gale velocity. Aviators usually prefer a short, favorable runway in high winds to a long runway that is contrary to the wind.

UNALASKA CEMETERY ROAD. This road, about 2,000 feet in length, leads from the village of Unalaska to the local burial ground. The work was initiated before the expiration of the previous biennium and subsequent to the publication of the last report and was, therefor, paid for partly out of funds for the previous biennium and partly out of funds of the current biennium, but all of which is shown in the expenditures in this report.

HOMER DOCK. This project consists of a dock 46 by 22 feet on Kachemak Bay at the end of the Homer Spit and about five miles from the village of Homer. Work on this project was undertaken before the expiration of the previous biennium and after the last report of this office and was carried on chiefly by the community and the C.C.C. Additional Territorial funds were contributed during the season of 1939 under the same setup. By 1940 the original structure was in such bad repair on account of toredo-infested piling that it was found necessary to replace all of the piling. Creosoted piling was purchased by the Territory through the Alaska Road Commission and its purchasing agent in Seattle, thus taking advantage of competitive bidding on the material. All of the labor in redriving the dock was performed by the community.

GRIFFIN MEMORIAL HOSPITAL. Chapter 42 of the Session Laws for 1939 authorizes the expenditure of $15,000 of the Third Division road funds for purchasing equipment

and furnishings for the Griffin Memorial Hospital at Kodiak. Upon receiving a list of the equipment required, this was submitted to the Department of Health for consideration and approval, after which all items were purchased through Mr. J. R. Ummel, Federal Purchasing Agent in Seattle, under competitive bidding.

FAIRBANKS AVIATION FIELD. The main runway of this field was considerably lengthened and improved during 1939 as a C.C.C. project. In 1940 Territorial cooperation was transferred to the City of Fairbanks but no claims for costs were received and it is not known if any further improvements were made.

CHITINA-NATIVE SCHOOL ROAD. This road was regraveled and maintained.

CHITINA AIRFIELD. This field was surveyed, improved and lengthened, making it 150 by 1850 feet. A fair standard road 0.3 mile long was constructed to it from the highway.

PALMER-MATANUSKA ROADS. Principal work on this route was the realignment at Matanuska Junction. The road formerly ran under a railroad trestle where it was necessarily confined to passing between two bents with a sharp curve each side of the trestle. The road now passes over the track south of the trestle. Part of the Springer Road was regraveled and all other roads in this system were maintained with patrol grader.

WASILLA-FINGER LAKE-PALMER ROADS. The only construction work done on this route was the new 3/4 mile connection between the Experimental Station and the Palmer-Matanuska Road via Cobbs Hill. Without this connection it was often impossible to drive from Matanuska to the Experimental Farm direct on account of flood waters of the Matanuska River. Several short sections of these roads were regraveled and regular maintenance was performed.

WASILLA-MATANUSKA. Construction on this system was confined to a new connection between the Wasilla-Finger Lake-Palmer Road and the Wasilla-Matanuska Road at Hallers Ranch. Two sharp curves, one at Mile 3 and one at Mile 10 on the main road, were flattened and surfaced.

MATANUSKA DIKE. This is a new project, done in cooperation with W.P.A. funds and Road Commission supervision. The project consists of hand driving a slab dike back from the bank of the Matanuska River above Matanuska in an attempt to keep the overbank from coming into Matanuska. 1465 linear feet of dike was put in but the job was left in an incomplete condition due to lack of W.P.A. labor.

ANCHORAGE LOOP ROAD. A new bridge 22 feet wide and 145 feet long was constructed over Ship Creek in the railroad yards. The railroad cooperated in furnishing material for the fill on the new location which involved a channel change. The old Whitney Road, as far as the powder house, was regraveled. All mileage was fully maintained in face of increased traffic.

ANCHORAGE-LAKE SPENARD ROADS. This system now consists of 13½ miles of road and 1½ miles of sled road, 3/4 mile having been constructed as a branch to Lake Hood since the last report. Some grading work was done on the Lake Otis Road but has not been taken up as new mileage due to incompletion. Several improvements in the way of alignment were made. Roads were fully maintained.

LAKE SPENARD AIRFIELD. A new airfield 100 by 1600 feet was constructed along Spenard-Hood Canal to be used as place for changing over from wheels to pontoons and vice versa. A ramp into Lake Hood at the end of the Field was constructed to facilitate changing over.

LAKE SPENARD-LAKE HOOD CANAL. This new project is a canal 175 feet wide by 2,000 feet long and 8 feet deep which connects the two lakes, providing a maximum pontoon runway 6,200 feet long. Minimum depth of water is 3½ feet when lakes are at average height. Approximately 75,000 years of material was excavated.

KARLUK RIVER SUSPENSION BRIDGE. This new 300-foot suspension bridge spans Karluk River, connecting the village with the school.

HOMER AIRFIELD. This new airfield was just recently completed. It is located along the bank of the slough near the Spit Road, a metal culvert with automatic gate having been installed under the road to keep out sea water at high tides. The field is 175 by 1500 feet.

BIG DELTA AIRFIELDS. The east-west runway was smoothed and leveled. A new north and south runway was located 1/4 mile south of Big Delta, partially on private land, now deeded to the Federal and Territorial Governments and partially on public domain. This new field is 200 by 2500 feet and can be lengthened if necessary.

BRANCHES TO THE RICHARDSON HIGHWAY. These consist of the Farmers-Chena Slough Road, the Richardson-Democrat Creek Road and the newly constructed Cushman Street extension which leads from the end of Cushman Street at Fairbanks to the bank of the Tanana River. One and three-quarters miles were graded up on this new route and surfacing was done where necessary. Two miles of the Farmers-Chena Slough Road received a light gravel surface; this and the Democrat Creek Road were maintained.

BRANCHES TO THE STEESE HIGHWAY. This designation covers all branch roads to the Steese Highway beyond Noyes Slough except the Farmers-Birch Hill Road, the Summit-Fairbanks Creek Road with its branches, the Porcupine Creek Road and excepting sled roads and trails. Construction work during the biennium consisted of extending the LaZelle Road for 1-3/4 miles to reach some farmers and the extension of the Miller House-Harrison Creek Road 3/4 mile to Johnston's placer ground on Harrison Creek. Mr. Johnston cooperated with equipment on this latter project. The Nome Creek branch was rehabilitated and all other roads were maintained with patrol grader.

FOX-LIVENGOOD AND BRANCHES. The main road has been heavily traveled during the biennium, some 5,000 tons of freight having gone over it. Occasional soft spots which developed were graveled.

The road up Livengood Creek to Amy Creek was completely rehabilitated in which the local mining company contributed in cash. The road was also extended over the Hess Divide and down Mike Hess Creek to their dam site, this work being done by the company. The one mile branch to Amy Creek was graveled in cooperation with miners whom it served. A road connecting the main road with operations in Wilbur Creek was constructed. The mining operators cooperated by laying the necessary corduroy. Length this branch--3/4 mile.

SUMMIT-FAIRBANKS CREEK AND BRANCHES. The Fish Creek Road was graveled for 2-3/4 miles in cooperation with the U.S. Smelting Refining & Mining Company. Regular maintenance performed on all other roads.

FAIRBANKS-ESTER AND BRANCHES. Improvements were made on the road down Goldstream. Other roadswere maintained.

FARMERS-BIRCH HILL ROAD AND BRANCHES. A 3/4 mile branch was constructed to the farms of Crosman and Fideler. The main road from the college to KFAR radio station was graveled. All roads regularly patroled.

RAMPART-EUREKA. The first 4-1/2 miles were regraded, bridges were repaired and several timber culverts installed.

RAMPART AIRFIELD. This field was constructed along the road, one mile from Rampart; size 200 by 2,300 feet.

STEVENS VILLAGE AIRFIELD. This field was constructed near the village; size 100 by 2,150 feet.

EAGLE AIRFIELD. This is a new airfield constructed at a point 1/2 mile from Eagle; size 150 by 2,000 feet.

CIRCLE AIRFIELD. This new airfield was partially completed. Area available for landing is 150 by 1,400 feet. Area stripped is 150 by 2,500 feet. It is located on ground purchased by the Territory.

CENTRAL AIRFIELD. This new field at Central House is on ground donated to the Territory. Its size is 150 by 2,000 feet.

CIRCLE HOT SPRINGS AIRFIELD. Field was dragged and a few holes filled.

NULATO AIRFIELD. The field was graded, after which grass was sown in an attempt to prevent soil erosion. Additional slashing was done on both approaches. Field was surveyed and mapped.

BEAVER AIRFIELD. This is a new field, size 150 by 1,650 feet, constructed near Beaver Village on the Yukon River.

MANLEY HOT SPRINGS AIRFIELD. This field was lengthened 500 feet, making it 200 by 2,600 feet.

MILLER CREEK AIRFIELD. This field was lengthened, making it 225 by 1,630 feet.

MANLEY HOT SPRINGS SYSTEM. The road to Eureka was regraded and soft sections were graveled. Improvements in cooperation with miners on Omega Creek were made to the Omega Creek branch. A large amount of work was done on the Tofty Road, completing the road to Sullivan Creek with all soft sections graveled. In addition, the road was graded down Cache Creek Valley to Tofty, 1/4 mile beyond Miller Creek airfield.

FLAT AIRFIELD. This field was lengthened, making it now 150 by 2,950 feet.

FLAT LOCAL ROADS. The Flat-Slate Creek Road was extended across Slate Creek and up the left limit to placer properties. Cooperation was given by local interests. The main road to Iditarod was heavily graveled for 2 miles. All other routes were maintained.

KUSKOKWIM LANDING-TAKOTNA. This new road, with branch to Candle Creek, was completed except for 1/8 mile of grading, construction of the Takotna River Bridge and graveling. The road has already been used for freighting from the Kuskokwim River and when finally completed will considerably reduce freight charges into the Takotna-Ophir mining district.

OPHIR-TAKOTNA ROADS.

GANES CREEK ROAD. Regular maintenance performed. Roads are greatly improved since arrival of motor grader used in surfacing maintenance.

OPHIR AIRFIELD. This field was lengthened in cooperation with a local mining concern. It is now 105 by 2,045 feet.

RUBY AIRFIELD. Grass was sown in an attempt to stop erosion. The field was surveyed and mapped.

KANTISHNA AIRFIELD. Surface maintenance was done and a road constructed to the field.

WISEMAN AIRFIELD. This is a new field built below and adjacent to Wiseman in the Koyukuk Valley. The runway for wheels is 150 by 2,000 feet. An additional area 150 by 1,170 feet has been stripped and leveled so that a length of 3,170 feet is available for ski landings.

TANANA CROSSING AIRFIELD. This field was lengthened 500 feet, making it 200 by 3,300 feet. Half of the original area was leveled. Field was surveyed and mapped.

MEDFRA AIRFIELD. A small amount of maintenance work was done in way of digging a ditch to drain off a soft spot.

FERRY-EVA CREEK AND BRANCH. Reconnaissance and location surveys were made from the end of the Eva Creek Road to the Totatlanika River for the purpose of constructing a road to serve miners in that vicinity. The distance is 10-1/4 miles from the end of the existing Eva Creek Road. Prior to the survey a mining operator had graded 2-1/4 miles of this and in the late fall of 1940 rough grading was completed over the remaining 8 miles. Mining operators furnished cooperation on this work.

NATION AIRFIELD. This new field, 150 by 1,700 feet, was constructed at the village of Nation on ground partially donated. Some slashing remains to be done to make the field serviceable.

BETHEL AIRFIELD AND ROAD. This field and road received necessary maintenance. A 700-foot branch road from Field to Indian Hospital was constructed.

KINAK-KWIGILLINGOK-KIPNEK. This is a new project at the mouth of the Kuskokwim River which involves the tripoding of 105 miles of trail to various Indian villages, ending at Kipnek on Kuskokwim Bay. The trail connects with the Johnson River-Kinak Trail, which, in turn, connects with the Bethel-Quinhagak Trail. The work is now being carried on.

The number of airfields had by now increased to 155 in number. Many of the older ones had been widened, lengthened and improved in general.

1940 REPORT

The work in the past fiscal year was mainly limited to maintenance and some improvement of the existing system. New mileage constructed consisted chiefly of short extensions or branch roads to existing routes and was financed from funds contributed by the Territory and others.

The Richardson Highway was open from Valdez to Fairbanks from June 2 to October 16.

The standardization of the highway through Mt. McKinley National Park, consisting of widening and placing crushed gravel surfacing, was completed to Mile 43.9 and grading to Mile 51.0 was practically completed. A short change was made in the road at the railroad depot.

Extension of the Bunker Hill-Kougarok Road was continued. An additional 3-3/4 miles were constructed during the season, completing the road to Mile 14.25.

The new road which will connect the Tokotna and Ophir mining districts with steamboat navigation on the Kuskokwim River was made passable to Mile 8.75 from the river as was the 1.50 miles from the Takotna Road to the Takotna River. A 1.25 mile branch road into Candle Creek was constructed.

Maintenance of 60 miles of the abandoned Copper River and Northwestern Railroad, between Chitina and McCarthy, was assumed and this track is now used as a tram bed.

Maintenance of the Eklutna Lake Road, a ten mile branch from the Anchorage-Palmer Road, was assumed.

The Eagle-Liberty Road was improved to automobile standard for 5.0 miles toward the mining activities in the Fortymile District.

Three miles of secondary farm road was constructed at Homer.

Maintenance of Sitka National Monument with two miles of trails formerly handled for the National Park Service is now handled directly by that agency.

In addition to the above, six miles of new road were constructed consisting entirely of short extensions or branches to existing roads. These projects varied from 1/4 mile to 1-1/4 miles in length.

A canal 150 feet by 2,000 feet and averaging 8 feet in depth was dug between Lakes Hood and Spenard to make a pontoon landing allowing a length of 6,100 feet for takeoff.

New airfields were constructed with funds provided by the Territory at Nation, Beaver, Stevens Village, Rampart, Wiseman and the Cliff Mine.

The work accomplished during the fiscal year is summarized as follows: New construction -- 19-1/2 miles of road of which 11-1/2 were surfaced, 53 miles of sled road, 360 linear feet of steel bridges of 60-foot span or over, 160 linear feet of steel trestle span bridges, 711 linear feet of timber trestle bridges and one 60-foot wooden truss span bridge.

Improvement -- 47 miles of road regraded and widened, 121½ miles of road surfaced, 479 metal culverts, averaging 20 feet in length, installed principally as replacements for wooden culverts.

Maintenance -- 1,932½ miles of road, 139¼ miles of tramway, 639¼ miles of sled road, 2,637 miles of permanent trail and 240 miles of temporary flagged trail.

1941 REPORT

Work was started in mid April on both ends of the Palmer-Richardson Highway road which, when completed, will connect the Anchorage and Fairbanks road systems and provide a second inlet from the coast to Anchorage. Due to late arrival of equipment, work was just getting well under way at the end of the fiscal year.

The new road, 23-1/2 miles in length, which connects the Takotna and Ophir mining districts with steamboat navigation on the Kuskokwim River, was made passable throughout in dry weather except for 1/2 mile south of the Takotna River. A 250-foot steel span for Takotna River was purchased and delivered at the Kuskokwim River Landing.

A new trail along the lower reaches of the Kuskokwim River and the Kuskokwim Bay was marked by tripods for a distance of 105 miles.

The balance of the Special Appropriation of $1,000,000 for construction of the Palmer-Richardson Highway road will be expended during the fiscal year in constructing approximately 90 miles on this route.

Grand total, all funds 1906 - 1941 ..... $33,365,463.63

1941 - 42 TERRITORIAL HIGHWAY REPORT

Because the war makes it necessary to delete much of the text that would otherwise be incorporated herein and also because a policy of economy is prudent in all matters that do not relate to the war, this is a statement of road fund disbursements rather than a report.

The usual maintenance was carried on during the biennium upon all roads where the Territory was wholly or partly responsible; some improvement and new construction was carried on with respect to aviation field facilities.

It will be noticed that the request by this office for funds for the coming biennial period represents a net decrease of $256,000 under what was authorized for the current biennium. This represents reductions to everything except the administration of the highway patrol.

The principal reason for the curtailment of road expenditures is that the gold mining industry in the Territory which accounts for the bulk of the road demands has declined to a point where requests for new construction work asked for are negligible and will probably vanish if the war continues, so that the regular road and aviation field maintenance, plus minor requests for roads connected with the development of strategic metals, will probably constitute all that can be anticipated at this time.

Moreover, the termination of the gold mining industry, together with a possible shortage of labor for the fishing industry and a possible shortage of tin cans for the salmon pack, constitutes a grave threat against revenues, all of which, in the opinion of this office, makes a curtailment of expenditures prudent.

Under a legislative act approved March 27, 1941, the Territorial Board of Road Commissioners was authorized to promulgate regulations relating to traffic upon the highways and to employ patrol officers for the purpose of enforcing compliance with such regulations and to safeguard life and property upon the highways.

Regulations within the limits prescribed were made effective July 1, 1941, and the patrol of the principal roads leading out of Ketchikan, Juneau, Anchorage and Fairbanks was undertaken.

Whether or not the conduct of drivers upon the highways has improved since the patrol was inaugurated is more or less conjectural, but the Board believes, and the opinion seems to be shared by many who drive cars, that traffic conditions have been vastly improved and there is every reason to believe that through a process of education, the inspection of equipment, etc. there will continue to be improvement.

The weak feature of our highway patrol is the lack of cooperation by the courts and there is little that this office or the Legislature can do about that.

Patrol officers are provided with first aid emergency kits, fire extinguishers, an available supply of gasoline, axes, grappling hooks and, on one route, a field telephone set.

NOME HARBOR IMPROVEMENT

This project consists briefly of two parallel jetties, the lines of which approximately conform to the channel lines of the Snake River extended at the mouth, with the revetment of the river banks and the dredging of the river itself and a basin 250 by 400 feet to a depth of 8 feet.

The total cost of the work to date has been $857,908.46, of which the Territory has contributed $45,000.

The City of Nome entered into an agreement with the War Department, pledging itself to contribute $2,500 annually toward the maintenance of this improvement but defaulted and the Territory has, during the past 18 years, contributed to this work from road funds.

While the contribution by the Territory as compared with the expenditure by the Federal Government is trifling, yet it is a considerable sum to spend on a project that is so discouraging since there is no hope of ever finishing the project and no possibility of making a harbor.

1942 REPORT

Work is performed by mechanical equipment to every extent deemed advantageous. Small jobs in remote sections are necessarily done by hand. The Commission is now fully equipped to handle construction and maintenance work within the present limits of appropriations except for replacement of unserviceable or obsolete equipment. During the fiscal year just closed the following pieces of mechanical equipment were purchased:

2 rock crushing plants	1 plough, wheeled
14 pickup trucks, 1/2 ton	10 motor graders
50 dump trucks, 1-1/2 yards	3 pull graders, 12 foot
1 truck tractor, 1-1/2 ton	2 D. D. skid hoists
2 semi-trailers	3 shovels, 1/2 cubic yard
2 freight trucks, 1-1/2 ton, 4-wheel drive	1 shovel, 3/4 cubic yard
4 freight trucks, 2-1/2 ton	4 compressors, 210 cubic feet
1 tractor, 35 h.p.	2 scrapers, revolving, 1 yard
8 tractors, 70 h.p. with trailbuilder	2 scrapers, carryall, 9 yard
8 tractors, 110 h.p. with trailbuilder	5 scrapers, carryall, 12 yard
	1 ripper, heavy duty

Labor, both common and skilled, is secured entirely from local residents. Except for common laborers, of which only a few are required, labor of the right type has not been plentiful the past season due to the increase in jobs offered by new defense projects and the higher scale of wages paid on these projects. Many former employees who achieved their skill with the organization have accepted the lure of higher wages, resulting in the necessity of breaking in many green hands for skilled jobs. Some former employees are now with the Armed Forces.

The Richardson Highway was open from Valdez to Fairbanks from May 27 to November 7. Three miles of new road was constructed from the extension of Cushman

Street at Fairbanks to connect with Mile 367 in order to avoid crossing Ladd Field Military Reservation.

The Glenn Highway to connect Palmer with the Richardson Highway was completed from the west end except for final surfacing for 50 miles; from the east end, 25 miles. All surveys were completed while advance grading operations lacked less than 30 miles of connecting. Several steel bridges were erected.

Due to shortage of funds, no standardization work on the highway through Mt. McKinley National Park was done this year. Unusually heavy maintenance and extensive repairs were necessary as a result of two severe storms approaching cloudburst proportions. Three miles of new trail was constructed from the Park Hotel toward Yanert Lakes.

The Bunker Hill-Kougarok Road was completed as a dry weather auto road except for 2-3/4 miles. This work included construction of two steel bridges.

Construction of the new Skagway-Dyea road was advanced 1/2 mile to Mile 2-1/2.

The erection of the steel bridge over the Takotna River, together with graveling operations, completed the road connecting the Kuskokwim River with the Takotna-Ophir mining district.

The balance of the Third National Defense Appropriation of $500,000 and $299,900 from the 1943 Interior Department Appropriation Act for construction of the Glenn Highway will be expended during the fiscal year toward completing this route.

The balance remaining from the $2,200,000 for construction of bridges and improvement of the Richardson Highway will be expended during the fiscal year in carrying out the proposed work.

1943 REPORT

All labor is ordinarily secured from the local residents. During the past year, for the first time in 22 years, it was necessary to ship men from Seattle. In addition, approximately 100 were shipped from Juneau to Valdez, Anchorage and Fairbanks. The class of labor, as a whole, was below average in efficiency, while at the same time wages, due to scale paid on other defense projects, were increased on an average of 37 per cent in order to secure and hold men on the job. The Armed Services have taken many competent employees.

The Richardson Highway was open from Valdez to Gulkana from May 1 to November 19; from Gulkana to Fairbanks from May 11 to December 1. New partially-constructed road consisted of 7 hills in the vicinity of Salchaket River and Lake Harding to provide a new crossing over that stream and improve alignment and 2 miles-of new road to provide access to the location of the new proposed steel bridge over the Tazlina River.

A new steel bridge consisting of two 300-foot spans was constructed over the Tanana River replacing the ferry at this crossing. One mile of new road was

constructed to reach the bridge location. New steel bridges were built at Bear Creek, Sheep Creek, Tsaina River and Stewart Creek. Steel for 11 additional bridge spans is being fabricated for delivery this season.

The Glenn Highway, connecting Palmer with the Richardson Highway, was opened for traffic November 5, and was kept open during the winter. Much work remains to be done on this road for final completion. The last two of the steel bridges were erected.

1944 REPORT

New steel bridges were built at Jarvis Creek, Shaw Creek, Salcha River, Miller Creek, Mile 22, Delta River, Castner River, Gulkana River, Tazlina River, Klutina River and Tonsina River.

FORTY YEARS SERVICE

With the period covered by this report, the Alaska Road Commission concludes its fortieth year of service. The work accomplished consists of the construction and maintenance of 2,517-3/4 miles of road and tram road, 80 per cent of which is suitable for automobiles in all summer weather; 1,250-3/4 miles of winter sled road; 4,115-3/4 miles of trail and 164 miles of flagged trail. The total cost to the end of the fiscal year is $35,041,622.92, of which $17,807,280.11 was for new work and $17,234,342.81 was for maintenance and improvement. The total expenditures to date are $36,778,696.10, of which $28,205,586.55 was derived from Federal appropriation acts. The balance, $8,573,109.55 or 23 per cent of the total expenditures, was obtained from Alaskan sources.

In the interior of Alaska the average cost for construction of a mile of 20-foot width, gravel-surfaced road, capable of continuous traffic in any kind of summer weather, is $15,000. This cost has increased by 100 per cent in the past three years due to high wages paid and high cost of materials.

Annual maintenance costs, including improvements and snow removal on a part of the mileage, are estimated as $400 per mile for roads suitable for continuous normal traffic in any kind of summer weather, $20 for sled roads, $5 for trails. Maintenance on 800 miles of roads in the vicinity of Anchorage, Fairbanks and Valdez, now carrying unusually heavy military traffic and other traffic connected with the expanded construction program in these areas, is estimated at $1,000 per mile. For the working season of 1943 the average cost of maintenance per mile, including minor improvements, was $870 for roads of the latter class mentioned above, $10 for sled roads and $6 for trails. Roads were kept open for traffic, except in unusual circumstances, but maintenance was insufficient due to lack of funds. Due to curtailment of gold mining, expenditures on sled roads and trails have been reduced to the minimum.

The Richardson Highway, which with the Edgerton Cutoff from Chitina totals 410 miles, is now in such condition that a 3-ton truck can ordinarily travel from

Valdez to Fairbanks, 370 miles, in 18 hours. The first automobile went over this route in 1913, after the route had been used as a pack trail and wagon route for 8 years, but due to lack of funds, improvement to a fair standard proceeded slowly. The average cost per mile to June 30, 1944, including all costs for construction and maintenance over the 38-year period of use for the 410 miles, is $27,071.

The Steese Highway extending from Fairbanks to Circle, a distance of 162 miles, is suitable for traffic not exceeding 3-ton trucks. Including maintenance, the total cost per mile of this road to June 30, 1944 is $14,023. This includes its life as a sled road from 1906 and partly constructed wagon road beginning in 1908.

The Elliott Highway branches from the Steese Highway at Mile 11 near Fox and extends to Livengood and up Livengood Creek, a total length of 78 miles. Sufficient surfacing has been provided to class it as an all-weather road. The total cost per mile including maintenance to June 30, 1944 is $9,864.

The Mt. McKinley National Park Road system started in 1922 is completed except for some proposed gradual improvement. The total cost per mile to date of 91 miles, including maintenance of completed sections since construction, is $17,501.

The total cost per mile of the Gulkana-Nabesna Road, total length 108 miles, including maintenance since 1934 is $9,255.

The Glenn Highway extends from Palmer to the Richardson Highway 142-1/2 miles and when completed will provide a 24-foot, crushed-gravel surface with no grades over 8 per cent and no curves over 30 degrees. Though the entire road is now passable in any kind of weather, considerable gravel surfacing remains to be done. The total cost per mile to date, including maintenance, on the section from Moose Creek to the Richardson Highway (134-3/4 miles) is $19,484.

1943 - 44 TERRITORIAL HIGHWAY REPORT

To draw a line across the map of Alaska and to establish a fixed rule that a certain percentage of the road funds shall be expended on each side of such a line might seem feasible and easy enough on paper but in practice it does not work out that way.

The theory of an equal division of the road funds between the four judicial divisions is as impracticable as it is unsound. It is obvious that a division having a population of 1,600 white people does not require as much road development as one that has more than 18,000 white people--not that the native people are not as much entitled to the use of the roads as anyone else, but simply for the reason that they do not, for the most part, live where the roads are or use them and, therefore, a comparison of the white population served as a better index to the needs.

The last Legislature made $250,000 available for roads for this biennium, or $62,500 for each division, and funds to the extent of $24,000 were held over from the previous biennium.

This office has constantly recommended the gasoline tax for motor vehicles using the highways.

Alaska is the only civilized country in the world that exacts no tax from the owners of motor vehicles for the use of the highways. Millions of dollars have been expended for the construction and maintenance of roads and yet the motor vehicles contribute nothing toward it for it is felt that an annual vehicle tax of ten dollars amounts to nothing.

Refunds in the gasoline tax for nonroad use or even to the municipalities to compensate them for the wear and tear of their streets can and are being made elsewhere but this office does not believe that aircraft operations for which fields have been built at the public expense should be exempt.

Once the highways now under control of the military establishment are thrown open for public travel, an expansion of this activity on the part of the Territory will not only become necessary but urgent. Not only will there be more travel on the highways, but the type of travelers is likely to become more troublesom.

A ten dollar license fee on a car, irrespective of its size or weight, is neither sensible or equitable. One heavily loaded truck will inflict more damage to the roads than all the pleasure cars combined and, moreover, it seems that trucks should come within the "for hire" category. Nobody drives a truck on the highways for the pleasure of it.

Fifteen or thirty days in jail will give drunken drivers plenty of time to think the matter over. We don't want the fines--we are not getting them anyhow--but we do want to get drunken drivers who endanger the lives of others, off the highways.

The existing Pioneer Home building has been more or less crowded for many years and in 1939 the Territory purchased the Goddard Hot Springs about 15 miles from Sitka with the view of taking care of the overflow. About 15 or 20 pioneers have been housed there since that time.

SHELTER CABINS

The expenditures for shelter cabins consisted entirely of the purchase and delivery of hardware, such as stoves, stove pipe, hinges, glass, etc. and was confined exclusively to the second division, there being no requests from elsewhere.

One reason for the discontinuance of shelter cabin upkeep in 1941 was on account of the fact that they are seldom used anymore by travelers, but have been preempted by trappers who, in some instances, have used up all the fuel supply and then proceeded to burn up the benches and tables before abandoning the cabins.

The situation today is so different than it was in the early days when travelers used the winter trails regularly. At that time the traveling public automatically policed the cabins. No one at that time would think of remaining in a cabin beyond the requirement of his journey and the unwritten law of the trail would have crucified any person who would burn up the last combustible article in a cabin before

vacating it. Shelter cabins in the early days afforded a worthwhile facility, but the need for them is not believed to exist today.

THE HAINES HIGHWAY

Notwithstanding the blunders that have been committed, the Haines road in time will probably be the most heavily traveled, if not the most important, highway in the North.

First of all, any thought of an overland connection with this highway or with any other inland route to serve the communities of Southeastern Alaska is too fantastic to deserve serious consideration. The great inland waterway already affords an unexcelled transportation facility but as a further aid to motor vehicle transport, this can be supplemented by ferry service that will cause little inconvenience or interruption to travel. This, it would seem, affords a simpler solution as compared with inviting ponderous and expensive engineering problems in road building that would serve no better purpose in the end.

It might be well at this time to study the possible extension of the Haines Road to the south a distance of about 55 miles to St. James Bay where good harbor facilities exist. This would bring the terminus of the road to within 20 miles of Tee Harbor, which is 19 miles from Juneau by highway.

No insuperable engineering problems are believed to be involved in this extension and it would not only have the advantage of placing the terminus of the Haines Road within a ferry distance of 20 miles, but this ferry shuttle would follow a course across Lynn Canal that is protected from storms by islands.

The extension of the existing highway from Juneau through Skagway to Haines would involve the construction of about 160 miles of road over the worst terrain to be found anywhere. It would be a colossal undertaking.

It is not believed that travel throughout the year over the Haines Road is practicable nor is there likely to be any necessity for it for a long time to come. Long overland journeys in the north in the winter are no longer necessary or desirable. For a distance of about 40 miles snow removal on this road would constitute a serious problem.

Outside of the necessity for three major line changes, this road today is one of the finest in the North. It cannot and will not be abandoned.

THE COPPER RIVER HIGHWAY

Appropriate to be included among projects that deserve attention and study is a road leading from Cordova up the Copper River Valley and connecting with the Richardson Highway.

There are three possible alternative routes, none of which have been studied to any extent but all of which are predicated upon following the abandoned Copper

River and Northwestern railway part of the way or all the way, and where bridges across the streams are already built.

The live, thundering Childs Glacier, 49 miles from Cordova on this route, affords the most spectacular scene to be found anywhere; certainly nothing in Alaska compares with it for breath-taking grandeur.

Alaska cannot afford to lose this scenic wonder by reason of the abandonment of the railway.

THE SEAL OF ALASKA

The attempt to have the Alaska seal cover everything has resulted in its depicting nothing, and when reduced to the size of a quarter dollar, such as is used on the cover of this report, it becomes little more than a smudge.

The Alaska seal should be legible enough so that what is on it can be seen when it is reduced to the size ordinarily used and it should not require the interpretation of the artist who designed it.

Other countries have their fishing, mining, lumbering and agricultural industries but few of them have a midnight sun which is distinctive and characteristic of Alaska.

It is suggested that the Seal of Alaska be changed to a scene of the sun shining in all its glory at the hour of midnight with the caption: "LAND OF THE MIDNIGHT SUN".

1945 REPORT

Heavy rains resulted in floods which were the worst experienced in forty years. This retarded construction and caused much new work to be done, including five miles of entirely new road which was not anticipated.

On July 1, 1944, maintenance of 209 miles of additional road was assumed, constituting that portion of the Alaska Military Highway from Big Delta to the boundary and a short branch to Northway Field. This, including winter maintenance, is being done on a reimbursement basis for the Alaskan Department. Since the Army abandoned the Slana-Tok Cutoff (72 miles), maintenance of this road was assumed.

Camps valuable to the work at Valdez, Gulkana, Big Delta and Circle were transferred to the Alaska Road Commission by the Northwest Service Command, U.S. Army. A considerable amount of equipment at Haines was likewise transferred by the Northwest Service Command, together with a permanent camp located at Haines. A number of buildings at Valdez, representing a temporary Army camp, were purchased direct from the Alaskan Department for a moderate sum.

New standard trestle bridges were built at miles 3, 32 and 35½ on the Richardson Highway. A temporary 134-foot trestle was built in Keystone Canyon and

a combination wood trestle and steel girder bridge 320 feet long was built at the upper Lowe River crossing on the relocation through Keystone Canyon.

Anticipating an influx of people, particularly from among veterans after the war, which means that home sites and employment must be provided, estimates have been included to cover costs of definite location surveys for new roads in order that intelligent estimates of costs can be submitted.

1945 - 46 TERRITORIAL HIGHWAY REPORT

This constitutes the first biennial report from the office of the Territorial Highway Engineer.

The end of the fighting war was not particularly noticeable where road construction is concerned. Cost of work was on the increase instead of the expected return to normal. Many mining companies, while not operating at a profit, are planning for the future and this includes plans for roads and airfields. The short roads to serve homesteaders are steadily increasing.

In Southeastern and Western Alaska the fishing industry employees are transported by planes more each year, due to lack of ships and maritime disorders. It is doubtful if the fishing industry will ever again rely on ships to transport employees to the fishing areas. This calls for additional plane facilities, both on land and water.

Road building activities are administered under three separate agencies: The Public Roads Administration builds roads only in forest reserve areas, such are of the Forest Highway System; the Forest Service also builds roads as the Forest Development Roads; and the Alaska Road Commission builds roads only outside of forest reserves and are in the Department of Interior.

The Territorial Board of Road Commissioner's work in cooperation with the above mentioned agencies or with any other governmental, municipal or private group interested in a road project. Having no road building equipment of any kind, the Territorial Road Board depends on other road building agencies for construction. In isolated cases where there is no government equipment available, the Highway Engineer may enter into an agreement with a local miner or contractor to construct a section or road. This also applies to construction of air fields.

Funds for road and airfield construction are appropriated by the Legislature for a two year period. These funds are supplemented by the drivers' license receipts. Other funds are available through the sale of timber by the Forest Service in the First and Third Divisions and must be expended in the districts from which they are derived. The percentage of such sales turned over to the Territory is 25 percent, of which 75 percent is allotted to roads and 25 percent to schools.

Another source of funds is from the Migratory Bird Act which provides that 25 percent of receipts from administration of the Act be allotted to the Territory and equally divided between roads and schools. The Third Division alone participates in this fund.

While we have application for CAA funds for airfields at Dillingham, Seward and Palmer for class two airports, we still have fields requiring Territorial help

and over one hundred fifty requests for new projects in all four divisions. In other words, from Ketchikan to Point Barrow and from Dillingham to Eagle.

Probably one of the most used and economical fields built this summer is Paxons on the Richardson Highway. With donated labor, $750.00 Territorial funds and Alaska Road Commission equipment, a 2400 foot by 200 foot field is now being steadily used. Another low cost field is May Creek, 4000 feet by 200 feet on the Chititu Road, Third Division. The Alaska Road Commission build the field at a cost of $2,500.00 to the Territory. The field at Flat was extended 800 feet; it is now suitable for DC-3 plane landings but is too narrow according to CAA standards.

Installations for float plans are fast becoming a necessity. Seven floats with ramps were built and at least six are planned for this summer. Repairs were made to six other floats.

The Territory's plan is to furnish 75 percent of the construction cost, the local city or village to provide right of way and 25 percent of the construction cost.

The Civil Aeronautics Administration has inaugurated a $10,000,000.00 program in Alaska. The object is to better serve the flying public.

The Territory can participate in the program by providing 25 percent of the cost of an airport--in some cases 50 percent is required. The project would be built to CAA specifications by the Territory or by any municipal or government agency sponsoring the project.

Building an airfield to CAA specifications is a new deal for the Territory. Of our present fields, over 150 at present, none of them is CAA standard except in length. As for the 300 foot width required, we do not come up to that standard.

The Territorial Board of Road Commissioners met with the CAA Regional Administrator and his planning engineers to study a plan of cooperation in airport development. The Highway Engineer was named Secretary of the temporary Territorial Aviation Commission with instructions to study the Act.

The Department of The Interior, in making road estimates for this working season, has in all estimates on special projects included the Territory for a 25 percent share of the costs. This would require the Legislature to appropriate $800,000.00 for the 1947 working season and $800,000.00 for 1948.

Special projects include the Kenai-Homer Road, now under construction, and the Tok-Chicken-Eagle Road, now under construction. Surveys of a road from Richardson Highway to McKinley Park, from Livengood to Wiseman, from Anchorage to Potter and from Fairbanks to Chena Hot Springs. All are worthy projects and when completed will add many miles to our road system.

The Board of Road Commissioners realizes that the amount asked by the Government as match money for the above mentioned roads will be a tough problem for the Legislature to decide. Protests from many quarters that it is unfair to burden the Territory with such a demand, especially when we have so many short service roads that should be built this coming summer. These short roads are to homesteaders,

mines and small communities and are on the increase due to attempts of new-comers trying to settle in Alaska. Without roads many would-be settlers will soon become discouraged and give up.

HIGHWAY PATROL

This Department, created in 1941 and functioning since July 1941, is well received by the Territorial residents. We now have six full-time Highway Patrolmen, each equipped with a car. Two extra men are on duty during the summer season, one at Glennallen and one at Tok. Due to the large number of cars coming in over the Alcan Highway, it seems reasonable to use one man stationed permanently at Tok and another near Glennallen, and possibly at Anchorage. In the near future the Seward section will require one man.

A Highway Patrolman made an inspection trip to Kodiak, Cordova, Seward, Nome, Haines, Skagway, Petersburg, Wrangell and Sitka during the open season.

New equipment purchases this biennium include three new automobiles and two Army snowmobiles. One car was sold at public sale.

The Seward Peninsula tram road, a narrow gauge railroad extending from Nome to Shelton, needs continual repairs. At present the first three miles out of Nome is partly torn up due to Army activities. It is hoped this section may be rebuilt soon. The line is owned by the Territory and maintained by the Alaska Road Commission.

1953 REPORT

On May 15, 1953, the Alaska Road Commission completed 48 years of service to Alaska. When the Commission was first organized, Alaska had less than a dozen miles of passable wagon road and was populated almost exclusively by gold miners and fishermen, only temporarily domiciled in the Territory. Now Alaska supports a permanent population of approximately 150,000 people and has a primary road system with feeders and farm roads reaching into the newly settled areas. At the end of the fiscal year this system totaled 3,466 miles.

	1950	1951	1952	1953	Total
1.	$26,762,000	$30,500,000	$22,940,000	$20,318,000	$100,520,000
2.	100,000	---	---	---	100,000
3.	250,000	250,000	250,000	250,000	1,000,000
4.	353,022	446,200	119,800	441,859	1,278,181
5.	35,565	604,207	62,290	9,946	712,008
	$27,500,587	$31,800,407	$23,372,090	$21,019,805	$103,692,889

For the fiscal year 1954, appropriations for the Department of the Interior provide the total amount of $17,600,000 for the construction of roads and operation and maintenance purposes of the Alaska Road Commission. This amount consists of two basic appropriations: Operation and Maintenance, $3,000,000, and Construction of Roads, $14,600,000, the latter comprising several categories of activities as follows:

Preparations of Plans	$ 550,000
Construction in Progress	13,000,000
Reconstruction	800,000
New Construction	250,000

In addition to these amounts there is a total of anticipated appropriation reimbursements and contributed funds in the amount of $1,000,000.

The 1953 report indicates that extensive paving had begun, and a new era in the improvement of Alaska's main arterials. One hundred forty-eight miles had been paved prior to 1950.

The Alaska Road Commission is now organized to efficiently handle a large volume of contract work by merely expanding the necessary engineering forces by short term employment contracts during the summer season, drawing heavily upon advanced engineering students from the colleges of the United States for this purpose.

Denali Highway. Aerial survey by contract was completed of the section between the Susitna and MacLaren Rivers, a distance of 35 miles, and topographic maps prepared for use of the location survey party. Early in the spring of 1953 a survey party was transported over the frozen surface of the Susitna River prior to breakup together with all necessary equipment, fuel and supplies, to continue this survey. At the end of the fiscal year, eight miles of the remaining route had been staked with preliminary line.

Healy River Coal Fields. Studies were continued in cooperation with the Alaska Railroad and the U. S. Geological Survey in the Healy River area and Lignite Creek for the purpose of providing additional transportation routes into these coal producing areas.

Relocation of Haines Cutoff. Soon after entering British Columbia territory, the Haines Cutoff between Haines and the Alaska Highway traverses an unstable slide area and also climbs rapidly from the valley of the Klehini River over steep grades and sharp curves to reach Chilkat Pass. Under a reimbursable agreement with the Alaska District, Corps of Engineers, the Commission made a relocation survey 5.95 miles in length to correct the situation at the slide area and to reduce grades and curvature on the section between Mile 49 and Mile 55 of the existing road, and prepared the necessary design drawings and cost estimates.

Alaska Highway, Section C-1. Surveys and plans for reconstruction and paving of this 50-mile section eastward from Tok Junction to Northway were completed by the Bureau of Public Roads under a working agreement. Construction engineering is being handled by the Alaska Road Commission.

Cantwell - Summit Airfield. Engineering location was completed for this 8.5 mile road to connect the Denali Highway and Mt. McKinley National Park with the Summit Airfield, a commercial airfield located in Broad Pass on the aerial route between Anchorage and Fairbanks.

Farm Roads. Surveys and investigations are undertaken as rapidly as funds and personnel will permit of the hundreds of petitions for new farm and industrial roads. During the year, approximately 42 miles were surveyed in the Kenai-Anchorage area and 20 miles in the Fairbanks-Richardson Highway area.

RICHARDSON HIGHWAY

Section C, Rapids (Mile 230) to Delta Junction (Mile 268).

Widening and paving was advanced from previous completion of 40 percent to 100 percent. 21.3 miles of the north end was paved and the remaining 17.2 miles left unpaved (crushed gravel base course only) until such time stabilization has been attained. Paving now extends southward from Fairbanks a distance of 118 miles on the Richardson Highway.

Section E, Big Timber (Mile 131) to Paxson (Mile 188).

This undoubtedly was the most unstable section of the old Richardson Highway and subject to heavy glaciation during the winter months in the area from Mile 184 to Mile 186. Widening and improvement was advanced from a previous 31 percent to 100 percent. Several years of stabilization under traffic will be permitted prior to attempting asphalt surfacing.

Section G, Mile 36 to Mile 82.

A contract for paving this section was awarded in the spring of 1953. Progress has been very good, advancing to 16 percent completion in the remaining few

months of the fiscal year. Reconstruction will eliminate or lessen a serious land ice problem during the winter, which has plagued this section between Mile 60 and Mile 75. Tonsina Hill near the north end of the project, which has also been a serious obstacle to vehicular traffic due to narrow, crooked road with steep grades, is being completely relocated under existing work.

Section H, Valdez (Mile 0) to Mile 36.

This section in the Thompson Pass area of the Richardson Highway contains the heaviest construction on the entire highway. Improvement and paving was advanced from 68 to 92 percent completion with only 6 miles of seal coat for asphalt paving remaining to be done. Probably nowhere in the reconstruction and paving program will results be as noticeable and appreciated by the travelling public as the improvement of this road over Thompson Pass.

Lowe River Bridge, Mile 16.

Remaining 5% was completed on the 300 feet of concrete and steel bridge which replaces a structure destroyed by a snow slide in 1949. The bridge and adjacent relocated road was opened to traffic in the fall of 1952.

Bridges on Richardson Highway, Section G.

Eight narrow and obsolete bridges on this section of road, which is now under reconstruction for paving, were included in a separate contract for replacement. Included are creosoted timber bridges with a minimum length of 17 feet to concrete and steel structures with a maximum length of 120 feet. Structures being replaced include: Tsaina River, Mile 37.8; Stewart Creek, Mile 46.5; Boulder Creek, Mile 52.0; Squaw Creek, Mile 54.8; 59-Mile; Little Tonsina River, Mile 66.0; Squirrel Creek, Mile 81.0; Willow Creek, Mile 92.7. Work has advanced to 5% completion.

ALASKA HIGHWAY

Section A, B-1, Johnson River (Mile 1275.5) to Delta Junction (Mile 1429).

Reconstruction and paving was advanced from 30% to 100% completion which, during the fiscal year, included 10 miles of grading and 51.75 miles of hot plant-mix asphalt surfacing. Completion of the section eliminates a very rough and dusty part of the main route between Fairbanks and the continental United States.

Section C-1, Northway Junction (Mile 1265) to Tok Junction (Mile 1318).

The existing contract for this section from Tok Junction eastward toward the Canadian Border includes reconstruction of the entire distance and paving 20 miles of the fully stabilized portion on the west end of the project. With work just recently initiated, 10 miles of grading has been accomplished to date, representing 7 percent of the total project.

GLENN HIGHWAY

Section A-2, Fort Richardson Arterial (6.852 Miles).

This important alternate route in the congested Anchorage area bypasses Elmendorf Air Force Base and most of Fort Richardson on the route to the Matanuska Valley and Interior Alaska. Only clearing, grading and drainage structures were included in the project, which is 100 percent completed. Asphalt surfacing will follow when the roadbed is stabilized, probably in 1954.

Section C, Big Timber Junction, (Mile 0) to Indian River (Mile 47).

Current work on this section of the Tok Cutoff of the Glenn Highway consists of grading and drainage in preparation for future paving. Work was in progress over the entire section during the year, and a completion of 55% has been attained.

Eklutna Bridge (Mile 26).

An old steel arch was widened and strengthened at this location on the Glenn Highway to meet the improved standards of a paved road. One percent of remaining work was completed to place this much needed structure into use on one of the heaviest travelled roads in the Territory.

SEWARD - ANCHORAGE HIGHWAY

Section A-1, A2-B3, A-3, A-4, B-1, B-2, Seward (Mile 0) to Mile 58.

Reconstruction of this existing forest road from its southern terminis at Seward to Mile 58 was completed during the fiscal year, representing an advance of 17 percent on this reconstruction project. The above includes replacement of a bridge at Mile 20, a concrete and steel structure having a length of 195 feet. All engineering and construction was supervised by the Bureau of Public Roads within this National Forest area with funds made available from Alaska Road Commission appropriations.

Section A-5, B-4, Paving, Seward (Mile 0) to Mile 58.

The paving contract for this section was underway with 15 percent of the work accomplished at the end of the fiscal year.

Section C-1, D-1, E-1, F-4, Mile 58 to Girdwood.

Paving of this section of road along rugged Turnagain Arm was advanced from 28 percent to 100 percent completion. The end of the construction season of 1953 will see continuous paving on this important highway between the seaport of Seward and Anchorage, largest city in Alaska, and its adjacent military installations.

CHENA RIVER BRIDGE AND APPROACHES

Progress on a new concrete and steel structure 398 feet in length across the Chena River, and a similar adjoining bridge across Noyes Slough at Minnie

Street, were advanced from 4 percent to 66 percent completion. These all-important additions to the highway system of the Fairbanks area replace a severely congested, narrow bridge at Cushman Street in Fairbanks, the oldest steel bridge in the highway system of the Territory. Completion and paving of road approaches will be covered by contract in 1954.

COPPER RIVER HIGHWAY

Section B, Mile 11 to Mile 19.

A total of 57 percent was completed on this initial 6 miles of the project to connect the City of Cordova with the highway system of Alaska, utilizing the railroad bed of the abandoned Copper River and Northwestern Railroad. The route is along the picturesque Copper River to Chitina, Mile 131, where it joins the 39-mile Edgerton Cutoff between that point and the Richardson Highway. This project will serve the Gulf of Alaska coastal area, where active prospecting for oil is now underway, as well as the entire lower Copper River and Chitina River areas, with their great potential for mineral development.

Taylor Highway. Originating at Mile 1306, twelve miles east of Tok Junction, this new highway extends northerly a distance of 160 miles to Eagle on the Yukon River. The route traverses existing and potential mining areas, and also connects with a branch road to Dawson, Yukon Territory at Mile 95.

A 300-foot steel bridge, reclaimed from the Matanuska River on the Glenn Highway, was erected across the Fortymile at Mile 112 early in the spring of 1952. This permitted construction to continue toward Liberty, Mile 131, where connection is made to an existing low standard road 29 miles long extending to Eagle on the Yukon River. Principal items of work included the erection of a 200-foot steel bridge, also reclaimed from the Glenn Highway, across O'Brien Creek at Mile 113, and a creosoted timber bridge at Alder Creek, Mile 115, length 75 feet. The 19-mile section between Fortymile and Liberty was opened up sufficiently for travel by truck and was rapidly shaping up as an all-weather road for all types of vehicular traffic.

Denali Highway. This is also a new highway, 162 miles in length, which will eventually connect the Richardson Highway at Paxson, Mile 188, with Mt. McKinley National Park at McKinley Park Station on the Alaska Railroad and a network of 100 miles of road in that recreational area. Areas of mineral potential are known to exist along the route, which will undoubtedly receive attention with the completion of this highway route to the south flank of the Alaska Range.

Abbert Road. A section of this road between the City of Kodiak and the military boundary of the Navy establishment was advertised for widening by contract construction. Excessive prices quoted for this work resulted in completion of the work by Government forces within the funds available for the purpose. Paving is desirable in the future for this 1.2 miles of important highway and may be tied in with Navy contracts in that area.

Farm Roads. Demand continues very strong for short roads to open up areas for settlement by homesteaders, as well as to serve suburban dwellers on small tracts, which are now being offered for sale by the Bureau of Land

Management. Principal areas involved are the Kenai Peninsula, the Matanuska and Susitna Valleys, the Anchorage area, the Fairbanks area and the Tanana Valley region north, south and east of Fairbanks. Present applications for such roads approximate $2,000,000 in estimated cost, with annual appropriations currently at $400,000 for this purpose. Stage construction is again employed as a method providing as many settlers as possible some type of access with subsequent improvement to a higher all-weather standard. The following summarizes mileage of roads constructed in the fiscal year 1953.

Kenai Peninsula	14.8 miles
Matanuska and Susitna Valley area	8.5 "
Anchorage area	6.2 "
Fairbanks and Tanana Valley area	7.2 "
Total	26.7 miles

Improvements such as gravel surfacing were continued on many roads previously constructed under this program to meet the needs of increased traffic under all-weather conditions.

Matanuska Valley. Five miles of principal roads were regraded and 5.1 miles resurfaced with gravel.

The Homer Area. With increased settlement in this area resulting from completion of the Sterling Highway, the local road system is being improved to handle increased traffic. Seven miles of old roads were regraded and graveled. To eliminate long haul for gravel surfacing at exorbitant costs, a gravel pit was opened up on Ohlson Mountain, which required a connecting road 5 miles in length. Four miles of this haul road was graveled and three miles of farm roads also surfaced. Reducing gravel costs will result from this development for many years to come.

Anchorage Local Roads. The Commission has been hard pressed to keep up with the continuing increase in traffic in the Anchorage suburban area. Eight miles of old roads were regraded and graveled, and 2.4 miles covered with crushed gravel surfacing and penetrated with bituminous materials to provide a dust-free wearing course.

Carbon River Bridge (Glenn Highway). A new high level bridge, two-lane, of modern concrete and steel construction was completed at Mile 106.9, Glenn Highway, by contract. This 230-foot bridge replaces a single-lane obsolete structure which, on numerous occasions, had been severely damaged by runaway traffic on the steep Caribou Hill.

Little Nelchina River Bridge (Glenn Highway). This is also a modern steel and concrete bridge, 180 feet in length, at Mile 137.5, replacing an obsolete one-lane structure. The bridge was 60 percent completed during the fiscal year by contract.

Steese Highway. This low standard highway is a heavily travelled route during the summer season from Fairbanks to Circle Hot Springs and the village of Circle on the Yukon River. 15.3 miles were regraded and 8.5 miles resurfaced with gravel on a continuing program of improving the standard of this important highway.

Tok Cutoff, Glenn Highway. This road was constructed during World War II to join the Richardson Highway with the Alaska Highway through Mentasta Pass, but has never been improved to even minimum standards. 33.8 miles were widened and improved, or relocated entirely, in a heavy reconstruction program preparatory to asphalt surfacing. This work included construction of five creosoted timber bridges having a total length of 222 feet at Tok Overflow (2), Elizabeth Creek, Ford Creek and Little Tok River.

Tok Cutoff Bridges (Glenn Highway). Concrete and steel bridges were constructed on the relocated highway at Ahtel Creek, Mile 64, length 60 feet, and Slana River, Mile 76.7, length 150 feet, by contract.

Fairbanks Local Roads. The north approach to the new Chena River bridge in the vicinity of Graehl was regraded and graveled for a distance of 0.3 miles. Five miles of Badger Road was regraded and graveled. Nine miles of weak sections on the Farmers Loop Road were resurfaced with gravel.

Alaska Highway. Bridges at Mile 1422.5, length 31 feet, and Mile 1410.4, length 50 feet, were replaced with modern creosoted timber structures. A footbridge 122 feet long was rebuilt across a slough of the Tanana River to serve Mansfield Indian Village.

Richardson Highway. Bridge replacements on this important highway included concrete and steel structures at Glacier Stream, Mile 0.8, length 195 feet, Sheep Creek, Mile 19.0, length 190 feet, and a creosoted timber bridge at Sourdough Creek, Mile 149.3, 50 feet in length. All but the Glacier Stream bridge were by contract.

Nome-Council Road. A section of this new highway from Nome to Council was located in the river bottom of Fox River and subject to inundation from the stream. 8.2 miles were relocated on higher ground and work on this section is 60 percent complete. Another section of 2.9 miles was relocated and is 80 percent complete.

Haines. A section of the Mud Bay Road, 0.25 miles in length, was reconstructed to eliminate steep grades.

Skagway. Rock points were drilled and blasted along a two and one-half mile stretch of the Skagway-Dyea Road to ease very sharp curves and to increase safety.

All through routes, which include the Richardson, Glenn, Alaska, Seward-Anchorage and Haines Highways, were kept open for travel throughout the year, with the single exception of a portion of the Richardson Highway over Isabel Pass between Big Timber Junction, Mile 130, and Big Delta Junction, Mile 268. In addition, numerous local and branch roads and several feeder roads, including the Sterling Highway from the Seward-Anchorage Highway to Homer, and the Steese Highway from Fairbanks to Chatanika, Mile 30, were maintained in service during the entire year.

The southern end of the Richardson Highway from Valdez to Mile 47 posed a unique problem in winter maintenance in that snowfall in the Thompson Pass area was recorded at 970 inches during the past winter and wind velocities exceeding 100 miles per hour were reported.

Highway centerline striping was painted on the Glenn, Seward-Anchorage and Spenard Highways in the vicinity of Anchorage where traffic is heaviest and will extend to all paved surfaces as time and funds permit. Additional guard rail installations were made at locations deemed necessary as the result of recurring accidents.

During the past fiscal year, mobile radio communications equipment was installed in several maintenance vehicles, primarily for use in winter maintenance and snow removal activities, and greatly expedited this work. In the summer months the equipment is used to equal advantage on construction and maintenance projects.

Route Costs, 1905 - 1953	$131,525,640.31
Building and Improvements, 6/30/53	5,951,536.36
Machinery and Equipment, 6/30/53	3,659,453.76
Materials and Supplies, 6/30/53	2,550,081.67
Prepayments and Advances, 6/30/53	926,091.97
Unexpended Appropriations, 6/30/53	15,168,079.00
Unexpended Funds Contributed, 6/30/53	370,000.00
National Park Service Expenditures	2,577,640.92
Total	$162,728,523.99

1955 REPORT

During the fiscal year the Alaska Road Commission completed half a century of service to Alaska. Created by Act of Congress of January 27, 1905 (33 Stat. 616, as amended) as an agency of the War Department, the Commission has administered the Territory's highway development program from its inception.

Transferred from the War Department to the Department of the Interior by Act of Congress of June 30, 1932 (47 Stat. 446), the Alaska Road Commission's activities are directed by a Commissioner of Roads for Alaska, acting under Secretarial delegation of authority dated June 19, 1948, and approved by President July 20, 1948.

Alaskans and the Alaska Road Commission have long recognized the fact that the development of the Territory is related to--indeed is dependent upon--the development of adequate overland transportation facilities. The first session of the Legislature of Alaska, convened 42 years ago in 1913, memorialized the Congress of the United States to develop a highway network. The demand for roads--and even more roads--has been continuous to this day.

By 1932, when the Commission was transferred to the Department of the Interior, the highway system consisted of some 2200 miles of low standard roads, of which only 500 miles were gravel surfaced, and 10,000 miles of trails and sled roads. Early in the Department's administration of the Alaska Road Commission, a comprehensive program for developing a Territory-wide highway system was formulated.

With the advent of the "bush pilot", the Commission constructed many small airfields in areas not yet connected to the ever expanding road system. Local access roads were constructed to connect these fields with neighboring communities. Seaplane facilities, car ferries and 90 miles of narrow gauge tramway were constructed in an effort to provide minimum transportation for everyone. Pioneer roads were driven into all inhabited areas of the Territory.

Plans for developing the Territory's then three thousand miles of isolated roads into a connected highway network--plans which included an overland connection to the continental United States believed "impossible" and "fantastic" by all but a handful of far-sighted Alaskan highway engineers--were revived in World War II. The military need for an overland route safe from enemy naval action to connect interior Alaska's military installations with the continental United States, resulted in construction of the Alaska Highway. In less than eight months, at a cost of 140 million dollars, the 1429 mile "Big Trail" was in service. Again in 1948, military necessity gave Alaska's lagging highway program a boost. Increased military preparedness in Alaska and the resultant construction of major military installations throughout the Territory, placed impossible demands on the road system. The interconnection of these military installations with paved highways became essential and urgent. The Congress of the United States authorized a six-year road program to cost in excess of $125,000,000.

This program for connecting, improving and paving the primary highway system is now nearing completion. The 130 mile Seward-Anchorage Highway, connecting Anchorage and adjacent major military installations, with Seward,

Alaska's principal seaport, has been constructed and paved. The Richardson, Glenn, Alaska and Haines Highways have been reconstructed and are approximately 80 percent paved. The secondary and local road systems have been enlarged and improved.

Much remains to be accomplished before Alaska has a reasonably adequate highway system, but the present system of all-weather roads is indeed a far cry from the dozen miles of barely passable wagon roads in existence when the Alaska Road Commission was activated on May 15, 1905.

Research

Thermal Studies

The study of road and structures foundations in permafrost areas begun in 1954 in cooperation with the Geophysics and Military Geology Branches of the U. S. Geological Survey, was continued during the period.

Preliminary data obtained by instrument observation of selected building and road foundations, geologic field work, laboratory analysis, and use of thermistor cables, has contributed much to a better understanding of permafrost.

These studies will undoubtedly result in the establishment of improved design, construction and maintenance criteria, and in substantial savings to the Government.

A paper on the subject prepared by Alaska Road Commission and Geological Survey engineers was presented to the most recent All-Alaska Science Conference of the Alaska Chapter of the American Association for the Advancement of Science.

Avalanche Control

In common with other mountainous regions, Alaska experiences literally thousands of avalanches each winter. Until recent years, when the highway network was for the most part permitted to close during the winter months, avalanches were little more than costly nuisances to be removed when the system was opened in the spring. Damage to power, telephone and pipe lines and other roadside facilities and structures occurred, but danger to life was negligible.

Now, however, with all of the primary system and much of the secondary system maintained open the year 'round, the avalanche hazard can no longer be ignored. Consequently, during the year the Alaska Road Commission inaugurated an avalanche study and control program.

Comprehensive climate analysis and field surveys were made, and as a result of these studies, active control measures were undertaken. To date, helicopter-transported hand placed demolition charges, cutting cornices with weighted wire, 76 mm tank cannon fire, and 75 mm recoilless rifle fire, have been utilized.

The project proved very successful during the short time it has been in operation, and will be continued on an expanded scale next winter to complete a full cycle of studies. This should result in greater safety to highway users.

Much of the success of this program is due to the excellent cooperation of Military, Alaska Railroad and U. S. Weather Bureau authorities.

Pioneer Surveys

In addition to the usual staff supervision of all surveys, this Branch actively directed survey work in Southeastern Alaska during the fiscal year. Instrument survey of 18.8 miles of the Juneau-Canadian Boundary route, via the Taku River; aerial and ground reconnaissance of the Stikine River route to connect Petersburg and/or Wrangell with the Alaska Highway; and preliminary aerial reconnaissance of the Unuk River route to connect Ketchikan with the highway network, were completed during the year.

Considerable research is required of the Branch in the planning of future road surveys. Reconnaissance reports of the U. S. Geological Survey are studied as well as private engineering data and reports such as records of the abandoned Copper River and Northwestern Railway. A recent cooperative arrangement, which has been developed, utilizes advance joint reconnaissance by the Alaska Road Commission and the Geologic Engineer Branch of the U. S. Geological Survey. These studies provide invaluable information to the pioneer locator who follows, and facilitates his work by narrowing down the possible routes for the final road survey.

Cadastral Surveys

The cadastral survey program, whereby precise location of the highway system in relation to the public survey grid is established, was continued throughout the year under the direction of this Branch. This program, in the past confined to the primary system, was extended during the year to cover some of the farm road system in more densely populated areas. Copies of completed plats are turned over to the Cadastral Engineer of the Bureau of Land Management, who utilizes them in his work.

Materials Engineering

During the past year the Materials Branch has systematically made preconstruction materials surveys for all major projects placed under contract. The inclusion of more complete information in contracts relative to the quality, quantity and location of building materials, has undoubtedly diminished the contractor's risk in bidding these items, and has resulted in reduced unit prices. Too, the availability of more exact information to the designers has resulted in improved bridge building and road designs.

Materials laboratories, equipped to conduct almost all standard materials tests, are maintained at Anchorage, Valdez and Fairbanks. The materials inspection program is closely coordinated with contract inspection activities, and during the winter months many of our permanent inspectors are assigned to the laboratories for materials engineering instruction.

ALASKA HIGHWAY

Section C-1, Tok Junction to Northway Junction, Mile 1318 to Mile 1265, $2,424,000. The contract on this section, which included reconstruction of the entire length and paving of 22 miles on the west end of the project, was completed September 25, 1954.

Big Gerstle River Dike, $43,500. Contract was awarded on August 23, 1954. The work was completed, and the project accepted for the Government October 20, 1954.

GLENN HIGHWAY

Section A-3, Fort Richardson Arterial and Anchorage-Elmendorf Alternate, $190,500. This contract effective May 7, 1954, included paving of these two sections, 3 miles of contiguous secondary roads, and maintenance resealing of six miles of the Glenn Highway branches in the vicinity of Anchorage. The project was completed September 15, 1954.

Knik Bridge, Mile 38.7, Section A, $203,400. This contract, dated March 23, 1954, providing for the replacement of 500 feet of pile-trestle approach and redecking of the 1500 linear feet of steel truss spans, was completed August 31, 1954.

Section D2, E, Porcupine to Tok Junction, Mile 64 to 125, $1,896,000. This project includes minor regrading and asphalt surfacing over the entire length of the section. The contract, dated July 6, 1953, was completed on September 25, 1954.

Chistochina River Bridge, $471,000. This structure at Mile 35.4 of the Tok Cutoff portion of the Glenn Highway was 92% complete at the close of the fiscal year. All concrete is in place and the superstructure is substantially complete.

Eklutna Realignment, $9,900. Contract for paving of relocated portion of the Glenn Highway in the immediate vicinity of the Eklutna Power project for a distance of approximately one-half mile was awarded on September 14, 1954. The project was completed, and was accepted for the Government on October 11, 1954. All costs were reimbursed by the Bureau of Reclamation.

Knik River Bridge Approach, $4,600. Contract was awarded on September 14, 1954, for paving the north approach trestle of the Knik River Bridge, 415 feet in length, and the first 200 feet of roadway immediately north of the end of the trestle. The project was inspected on September 26, 1954, and accepted for the Government.

SEWARD-ANCHORAGE HIGHWAY

Anchorage City Limits to Girdwood, $235,200. Contract was awarded on August 30, 1954, for slope improvement, and 4100 feet of guard rail construction. Final inspection was made on May 24, 1955, and the project was accepted for the Government May 25, 1955.

STERLING HIGHWAY

Section B1, E, Mile 86.4 to 97.4; and Soldotna Junction to 2.7 miles north of Kenai, $1,250,000. Contract was awarded on June 27, 1955, for re-grading and surfacing of this section. No work was accomplished during the fiscal year.

Moose River Bridge, Mile 29.3, $76,800. A contract was awarded March 23, 1954, for the replacement of this temporary structure with a steel bridge 160 feet long, salvaged from another highway during paving. All work was completed August 20, 1954.

DENALI HIGHWAY

Cantwell Area Bridges, $351,000. A contract was awarded April 14, 1954, for the construction of the Brushkana, Nenana No. 1, Nenana No. 2, and the Jack River Bridge. Final inspection was made June 24, 1955. Two steel bridges recovered from the Glenn and Richardson Highways during paving and improvement were effectively used on this contract.

Paving of Approaches to Chena River and Noyes Slough Bridges, $93,000. This contract became effective April 29, 1954, and was completed September 23, 1954.

Knik Bridge. The 500-foot pile trestle approach to the north end of this major stream crossing was replaced by contract during the year. The project also included replacing the original decking with laminated creosoted timber section.

PAVEMENT

Paving had increased from 148 miles in 1950 to 317 in 1951, 546 - 1952, 630 - 1953, 715 - 1954 and 756 miles in 1955.

Susitna-Willow Road. Funds have been requested to permit the completion of the final section between the Susitna River and Willow, thus providing a low-level route into the Willow Creek mining area and access to extensive timber stands and coal deposits of commercial potential. The area is presently served by a sub-standard mountain road which can be maintained open only four months of the year. Completion of this road will provide a loop highway system through the Matanuska Valley.

UNITED STATES
DEPARTMENT OF THE INTERIOR
ALASKA ROAD COMMISSION
P. O. BOX 1961
JUNEAU, ALASKA

August 31, 1956

Mr. Anthony T. Lausi
Director
Office of Territories
U. S. Department of the Interior
Washington 25, D. C.

My dear Mr. Lausi:

There is transmitted for your approval the Annual Report of the Alaska Road Commission for the fiscal year ended June 30, 1956.

The Alaska Road Commission is scheduled to be transferred to the Department of Commerce on September 16, 1956, under terms of the Federal-Aid Highway Act, Public Law 672. This, then, is the final Annual Report of the Alaska Road Commission to the Department of the Interior, and it seems appropriate to preface the Report with a brief history of the Commission and its half century of accomplishments.

Although we are all saddened by the passing of a dedicated organization, the entire staff looks forward to the long-range highway development program and the consequent development of the Territory, which may be accomplished under terms of the Federal-Aid Highway Act.

Sincerely yours,

/s/ A. F. Ghiglione
Director

Enclosure

The Territory's highway development program was initiated in 1905. Funds during the first fiscal year amounted to $28,000.

The first Annual Report of the Alaska Road Commission might well have been written today. It recognized the difficulties of road construction in permafrost and under arctic conditions, as follows:

> "A serious detriment to the making of a road in Alaska is the thawing of the ground beneath the moss. It has been the universal experience that wherever the moss is cut into, thawing immediately commences, and, the trail which was passable becomes a filthy, slimy mass of mud, roots, and broken stone, a difficult route for men on foot, a slow and tiresome road for loaded animals, and an impassable obstacle to any sort of vehicles."

It chronicled the drowning of a horse "on the road", and recommended a one million dollar appropriation for road and trail construction--a fantastic sum half a century ago--with which to plan and begin construction of a 300-mile road and 1200-mile trail network.

Although most of the roads and trails constructed during the War Department's 27-year administration were designed to serve the largely itinerant population engaged in mining and fishing, the Richardson Highway, extending from the all-weather, ice-free port of Valdez to Fairbanks was constructed first as a trail, later as a wagon road and finally improved to accommodate the first motor vehicle to make an appearance on the Alaska scene--the Model T Ford.

It is noteworthy, therefore, that in 1932 when the Department of the Interior took over the administration of the Commission, some 2,300 miles of low standard roads, of which 500 miles were improved gravel surfaced,and 10,000 miles of trails had been constructed.

Increased military preparedness and the resultant construction of major military installations throughout the Territory placed heavy demands on the road system. The interconnection of the principal military bases with paved highways became essential and urgent. From a previous average of less than a million dollars a year, the Congress made available an additional $4,000,000 for road work during fiscal year 1948. Funds were appropriated for initiating construction of a new highway, eventually to cost $28,000,000, to connect Anchorage, Alaska's largest city, and the adjacent major military installations with Seward, Alaska's principal port. In addition, the Congress authorized a six-year road program to cost in excess of $170,000,000 and appropriated $24,000,000 for its initiation in fiscal year 1949. The program for connecting, improving and paving the primary system developed suddenly with little advance notice.

The Commission was a small, efficient organization, geared to a modest program of comparatively low standard road construction. Around the small core of experienced Alaska road builders was built a modern highway organization. Specialists in highway refinements, previously unnecessary and unknown in the Alaska road building picture, were added to the staff. Even so, it was necessary for the Commission to utilize the Bureau of Public Roads' Alaska organization to meet survey, design and contract administration deadlines.

The problems of staffing, climate, terrain and construction, while formidable, did not delay inauguration of the accelerated program. Contractors' forces frequently followed the Commission's engineering crews by only a few hundred feet. Today, eight years and $170,000,000 later, the program nears completion.

The present highway system consists of a thousand-mile network of all-weather paved routes connecting the ice-free ports of Valdez, Seward and Haines with interior Alaska's principal cities and military installations, and with the continental United States via the Alaska Highway through Canada, and a secondary system connecting farming, mining and industrial areas to the primary network. In addition to the connected network, the system includes 570 miles of isolated roads connecting inhabited areas with air, rail or water transportation facilities.

In an effort to provide minimum transportation facilities for everyone, the Alaska Road Commission had in years past driven pioneer roads into every area of the Territory and had constructed small airfields, seaplane canals, ferries and narrow gauge tramways. The extent to which this effort has contributed to the development of the Territory is unknown, but it is the conviction of all Alaskans that the development of the Territory's tremendous mineral, timber and petroleum potential is dependent almost entirely upon adequate overland transportation.

The signing of the Federal-Aid Highway Act of 1956 (Public Law 627 - 84th Congress - Chapter 462 - 2nd Session - H.R. 10660) into law by the President on June 29, 1956 ushered in a new era of road building in Alaska.

Alaska will, in fiscal year 1957, participate for the first time in the Federal-Aid Highway Act to the extent of $1,932,588, which amount is in addition to the Alaska Road Commission's $11,425,000 1957 appropriation. The Territory's 1958 allocation is $13,200,000; 1959, $13,500,000, all on a 10 percent matching basis. Thus, at long last, the Territory is assured of a reasonably adequate fund over an extended period of years with which to effectively plan and economically prosecute the improvement and extension of Alaska's highway network.

The 1905 plea of the first Board of Road Commissioners for an integrated highway network--a plea repeated biannually by every Territorial Legislature since the first convened in 1913--is another step nearer reality.

During the year pioneer surveys of several important future additions to the highway system were prosecuted:

(1) A route from Seldovia to Jackalof Bay to provide access to Seldovia's port facilities for the producing chrome mines in the area.

(2) An extension of the principal artery through the Matanuska Valley to provide a low-level route which may be maintained open the year around to the mining and recreational developments in the vicinity of Willow.

(3) A route from Cordova to connect the potentially productive oil fields of the Bering River area and the port facilities of Cordova, one of the few protected ports on the Gulf of Alaska.

(4) A route from Fairbanks to the Territory's most productive coal area, the Healy River coal field, to provide an alternate overland shipping

route and to open up potentially productive agricultural acreage in the vicinity of Nenana. This route will eventually be extended to provide an alternate low-level route to Mt. McKinley National Park.

(5) A route from Livengood to Manley Hot Springs. This survey is being performed as a part of the plan to extend U.S. Highway 97 to Nome on the Seward Peninsula.

(6) A route to connect Skagway with the Alaska Highway. Preliminary construction on this route is being financed by the Territory of Alaska as an initial step in providing highway connections for Southeast Alaska's principal cities.

(7) Denali Highway - Headquarters engineering crews completed a 37.5 mile survey of the MacLaren River to Susitna River section of the Denali Highway during the year. This is the final section of the 160-mile route to connect Mt. McKinley National Park with the primary highway network. The survey was in every respect pioneer. Aerial and foot reconnaissance, aerial photographs, U.S.G.S. maps, and materials investigations were utilized in establishing a final line.

(8) Copper River Highway - Valdez District engineering personnel completed a survey of a 30-mile section of the Copper River Highway northward beyond Mile 39, the northerly end of Section "C" which is presently under contract construction. The survey, over difficult terrain generaly following the abandoned Copper River and Northwestern Railway, was hampered by the fact that many of the original railroad bridges had been destroyed and air and water transport was frequently impractical. It was, therefore, necessary for survey crews to pack in much of their equipment and supplies.

Cadastral Surveys: In recent years, as land area adjacent to the highway system has been developed by private owners, the precise location of the primary road system in relation to the public survey grid has become increasingly important. During the past three years cadastral surveys have been concentrated on the primary system in the densely populated areas adjacent to principal cities. During the past year the program was extended to cover many of the principal feeder and local roads in the heavily populated areas. Work to be accomplished in this field is limited only by the availability of funds with which to prosecute it. Plats of surveyed areas are utilized by the Bureau of Land Management with whom the Commission cooperates in programming cadastral surveys.

Design: Design work is accomplished almost entirely during the winter months in order that as many as possible of the field engineers may be gainfully employed on a year-round basis. Limited space at the Juneau Headquarters has necessitated assigning many engineers to District Offices during the winters, where preliminary design is prepared, then forwarded to the Headquarters for review and final design. Although adopted as a necessity, the procedure has definite advantages in that should additional data be required, District personnel familiar with the project or the site itself, are readily available. During the year plans and specifications for contract grading and paving projects, involving approximately 210 miles of roadway with an estimated contract value of 5½ million dollars, were completed.

Bridge and Building Design Branch

Training Program: The training program begun last year to assure uniform bridge design and construction inspection was continued throughout the year. A pronounced improvement in design and ARC-contractor relationships has been apparent.

Bridge Design: During the year 17 bridges and 5 major drainage structures were designed. In addition, preliminary design of 7 bridges was completed. Garage and warm storage facilities were designed for permanent maintenance installations at Valdez and Naknek.

Materials Engineering: Materials laboratories, equipped and staffed to conduct almost all highway construction materials tests, are maintained at Anchorage, Glennallen, Valdez and Fairbanks.

Preconstruction materials surveys have been made at all major road and bridge projects scheduled for contract construction. As a result, material quantity, quality and location data in contract specifications have been sufficiently accurate and complete to permit improved design and to eliminate much of the contractors' risk in bidding.

The Materials Branch instructs field engineers assigned to contract inspection duties on all phases of materials tests and generally supervises the testing of materials used by contractors for compliance with contract specifications.

Thermal Studies: In an effort to learn more about permafrost and related arctic subsurface materials, the Alaska Road Commission in 1954 began a study of road and structural foundations in permafrost. In cooperation with the Geophysics and Military Geology Branches of the U.S. Geological Survey, the program was continued throughout the past fiscal year. Thermistor cables--a device embedded many feet below the surface which gives temperature readings at the surface of any or all depths--together with geological field work and laboratory analysis of subsurface materials, have contributed much to a more thorough understanding of permafrost's reaction to various stimuli.

Studies to date have simply confirmed the Commission's location criteria, based upon experience, that basic construction principals must follow one of three concepts:

(a) To design and construct buildings, bridges and roads so heavily that they will remain stable despite any shifting of the foundation and will withstand any differential settlement or strain which might be imposed by the unequal thawing of permafrost. This method is extremely costly.

(b) To completely eliminate all permafrost from the construction area before construction is begun on the premise that, once eliminated, it will not return. This method is limited to small areas, such as for buildings, and to areas in which permafrost is relatively thin, temperatures are above -1.0° C, little or no ice masses are in evidence and foundation materials are relatively coarse.

(c) To utilize the permafrost as a part of the foundation, provided adequate drainage may be obtained, which has been the policy of the Commission for many years.

The present studies are scheduled for completion next year and, while the results may not immediately improve design, construction, and maintenance procedures, they will provide exact scientific techniques for evaluating tentative locations.

Real Estate Branch

During the fiscal year ending June 30, 1956, the Real Estate Branch made consistent progress in the preparation of block books, indexes and related maps and plats covering rights of way on the Through and Feeder Road System. The planning of projects is completed and the continuing job at hand is to key all instruments, plats, public laws, land orders, easements and related data to Alaska Road Commission Order No. 40, Revised, titled Highway System Routes and Mileages.

At the present rate of progress it will be another full year before the Through and Feeder Road Systems are properly documented. The planned activity for fiscal year 1957 is to accelerate the program by use of field personnel who are presently being assigned to the Branch's activities.

Administrative Division - Office of the Chief

The usual budget estimates and justifications were compiled and submitted to the Department. There were accomplished additional studies and reports in relation to current appropriations and to budget estimates for succeeding years.

Further improvement was effected in procedures for preparation of control schedules reflecting each budgetary activity of our appropriations. Continuing management activities as related to personnel, accounting and supply and property (including office services) were directed and coordinated.

Personnel Branch

Effective August 1, 1955, Federal positions in the Territory were returned to the competitive civil service; consequently, conversion of employees to the competitive service was a continuing project during the year. It was possible to reinstate 25 employees; 111 classified employees and 251 wage board employees were converted to competitive status.

With the arrival of the new Personnel Officer in late August, an intensive program of classification was undertaken. Primary emphasis was placed on positions in the Administrative Division of both the Headquarters office and the various district offices. Functional organization charts were prepared for each district and for all of the divisions of the Headquarters office.

As the anticipated need for engineering personnel was approximately double the number required for the 1955 construction season, an intensive recruitment campaign was conducted, especially among Alaskan high school graduates eligible for student engineer trainee positions. An adequate number of trainees was recruited; however, demand for qualified engineers has not been met although gains outweigh losses.

Finance and Accounts Branch

The Finance and Accounts Branch was reorganized with revised position descriptions prepared for all employees. There was a large turnover in personnel, including the Finance Officer and heads of all sections and units.

The first major changes in the Accounting Manual were prepared and forwarded to the Director, Office of Territories, for review and approval. Allotment accounting procedures are being studied to devise methods which will provide positive fund controls. Decentralization of certain functions, including payrolling and cost accounting, to the District offices is under consideration.

Supply and Property Branch

All purchase requisitions are processed through the Supply and Property Branch. Purchases exceeded $1,000,000 during the year. In addition, excess property valued at $318,000 was obtained from other Federal agencies, of which $250,000 worth was without exchange of funds. Property surveys, service and supply contracts, forms control, records disposal, and all mail and filing activities are handled by the Supply and Property Branch. A sound records management program has been initiated.

Incentive Award Program

Under terms of Title III of Public Law 763, 83rd Congress, approved September 1, 1954, 26 suggestions were processed during the fiscal year. Of these 14 were approved and were given cash awards. The estimated net first year savings of the approved suggestions amounted to $6,600.00.

Two Superior Performance Awards were also made during the year.

Other

Internal Audit Program: Major audits undertaken and completed during the fiscal year are briefly described below:

(a) Stores inventory and mess operations accounts were reviewed.
(b) A comprehensive review of ARC orders, ARC memoranda and ARC office orders, all internal control or informational devices, was made.
(c) A comprehensive audit of equipment expense and operating procedures to determine the propriety of charges to equipment expense accounts, and of equipment rental charges towork orders and clearing accounts was made.
(d) Numerous minor audits of headquarters and field procedures for compliance with applicable regulations and established policy were conducted throughout the year.

Scheduled activities for fiscal year 1957 include a comprehensive audit to determine the practicability of transferring cost accounting and payrolling of classified personnel assigned to field station from the Headquarters to district offices. Reviews will also be made to determine compliance with recently revised accounting and field manuals.

Safety Branch: Each year the Alaska Road Commission's frequency and severity rates have been progressively reduced, until last year the Commission's safety record was the best in the Department and superior to that of comparable private industry. This record is a tribute to the work of a dedicated Safety Engineer.

This past year's frequency and severity rates were substantially greater than last year's, due largely to a traffic fatality. Ironically, the victim was the Safety Engineer.

The original program is being vigorously prosecuted by the incumbent Safety Engineer and the Commission fully expects to report an enviable safety record again next year. A comparison of this and last year's accident and fire loss data is shown below:

	1955	1956
Number of disabling accidents	41	42
Lost time - days	556	7755*
Frequency rate	24.08	25.59
Severity rate	0.33	4.73*
Fire loss to Government property	$2268.28	$69.00

* 6,000 days charged to fatality - 650 days charged to permanent partial disability (severance of fingers).

Construction

Preparation of Plans: Each year the Alaska Road Commission is appropriated funds for the specific purpose of conducting preliminary reconnaissance and pioneer surveys of proposed projects not yet authorized for construction. This activity is essential in determining the economic feasibility of proposed projects and permits the timely preparation of budget estimates and justifications, and an orderly scheduling of such projects once funds have been provided by the Congress for construction.

Funds appropriated for this purpose for fiscal year 1956 totaled $300,000. Twenty-six projects were active in this category during the year, the major ones of which are detailed elsewhere in this chapter under "Pioneer Surveys".

Construction in Progress, by Contract: It is the policy of the Alaska Road Commission to perform all reconstruction work preliminary to paving, all paving, and the construction of major buildings and bridges by the contract method.

The tremendous volume of military and civil construction activity in the Territory in the past several years has encouraged a number of the Nation's largest contractors to establish organizations in Alaska. These, together with a group of Alaskan firms, have generally assured competitive bidding on large bridge and highway projects. Small projects and those located in remote areas of the Territory frequently are bid by only a single contractor and such bids are generally excessive. In such instances it is necessary to resort to force account construction in order to perform the work within available funds.

The following contract construction projects were active during the year:

Richardson Highway:

Section "D", Miles 186 to 227, $3,335,000: This contract for grading, drainage and the construction of several bridges on the Paxson to Rapids section of the route was completed during the year.

Section G-1, Miles 36 to 82, $1,150,000: The contract for paving this section was executed on April 7, 1955. At the close of the fiscal year the project was 61% complete.

Section E-1, Miles 128 to 186, $1,515,000: Contract for final grading and paving of the section was awarded on June 7, 1955. At the close of the year the contract was 38% complete.

Section D-1, Miles 186 to 227, $1,163,610: A contract for reshaping and paving this section was awarded on May 25, 1956. No work had been performed at the close of the year.

Banner Creek Bridge, Mile 297.4, $97,205: A permanent concrete and steel bridge to replace an old timber structure at this crossing was completed early in the year. Three Alaska Highway bridges were constructed under this same contract.

Gulkana and Tazlina Bridge Redecking, $64,225.00: A contract for redecking these two structures was awarded on July 19, 1955 and completed during the fiscal year. The Tazlina is located at Mile 110.4, the Gulkana at Mile 127.0 on the Richardson Highway.

Klutina and Tonsina River Bridges, $370,000: A contract was awarded on June 12, 1956 for construction of the Klutina and Tonsina River bridges, Miles 101.0 and 79.1 respectively, on the Richardson Highway. No work had been performed at the close of the year.

Tazlina and Gulkana Bridge Improvements, $55,000: A contract for constructing new approach spans and abutments and improving piers for the Tazlina River Birdge and rehabilitating abutments and constructing timber abutment protection walls for the Gulkana River Bridge, Miles 110.4 and 127.0, Richardson Highway, was awarded on April 6, 1956. No work has been performed at the close of the year.

Alaska Highway

Section C-2, Miles 1221 to 1265, $2,213,000: A contract for reconstruction, grading and drainage of the Canadian Boundary to Northway Section of this route was advanced from 9% to 47% complete during the year.

Section C-2, Bridges, $209,800: The contract for construction of the Scottie, Desper and Gardner Creek bridges, Miles 1223.5, 1224.5 and 1247.8 respectively on the Alaska Highway was completed during the year.

Alaska Highway Bridges, $319,000: A contract for construction of the Beaver Creek bridge, Mile 1268.0, the Berry C eek Bridge, Mile 1371.4, and the Little Gerstle Bridge, Mile 1388.4, was 47% complete at the close of the fiscal year.

Glenn Highway:

Section C1-D1, Miles 0 to 64, $689,000: The contract for paving this section of the Tok Cut-Off section of the Glenn Highway was advanced from 60% to 100% complete during the year.

Chickaloon River Bridge Dike, $7,000: The contract for placement of approximately 480 cubic yards of loose riprap protection for the south abutment fill of this structure at Mile 78.2 on the Glenn Highway was completed during the year.

Glenn Highway Bridges, $361,500: The contract for construction of the Chickaloon River Bridge, Mile 78.2, the Hicks Creek Bridge, Mile 96.7, the Cache Creek Bridge, Mile 147.2, and the Mendeltna River Bridge, Mile 152.7, was completed during the year.

Chistochina River Bridge, $471,000: This structure was advanced from 92% to 100% complete during the fiscal year.

Moose Creek Bridge, Mile 186.2, $40,000: A contract for construction of this bridge was awarded June 12, 1956. At the close of the fiscal year no work had been performed.

Sterling Highway

Section B1-E, Miles 86.4 to 97.4, and Soldotna Junction to 2.7 Miles North of Kenai, $1,250,000

This contract for final grading and paving of approximately 25 miles of this route in the vicinity of Kenai was 52% complete at the close of the period.

Denali Highway:

Section B, MacLaren to Susitna Rivers, $1,860,000: A contract for construction of the center 37.52 mile section of this route was awarded on May 18, 1956. At the close of the fiscal year the project was 1% complete.

Denali Highway Bridges, $156,000: The contract for construction of the Canyon Creek Bridge, Mile 41.5 east of Cantwell, and the Susitna River Bridge, Mile 58 east of Cantwell, was advanced to 99% complete during the year.

Copper River Highway:

Section "C", $3,067,000: This contract for construction of 14.3 miles of single lane highway and the construction or rehabilitation of more than 1½ miles of bridges, was 41% complete at the close of the period.

Mt. McKinley National Park Projects - Administered by Alaska Road Commission:

Teklanika River Bridge, $202,000: This contract for construction of a 300' x 24' multiple span I-beam bridge was completed during the year.

Three Park Bridges, $365,000: A contract for construction of the Sanctuary River, Upper Igloo Creek, and Toklat River (west) bridges, Miles 21.8, 36.5 and 53.3 on the McKinley Park Highway, was awarded on September 19, 1955. At the close of the fiscal year the Sanctuary was 22% complete, the Upper Igloo 8%, and the Toklat 100% complete.

Miscellaneous Road Projects:

Palmer Wasilla Surface Treatment, $35,000: The contract for surface treatment of 7.23 miles of this important Matanuska Valley route was completed during the period.

Glennallen Repeater Station, $22,800: A contract was awarded on May 14, 1956 for base course and paving a portion of the Alaska Communications System's (U.S. Army) Glennallen installation. This contract was awarded for the Army on a reimbursable basis. No work had been performed at the close of the year.

Anchorage Area Paving, $140,000: A contract for grading and bituminous surfacing approximately 4 miles of heavily traveled feeder roads in the vicinity of Anchorage was awarded on July 29, 1955 and was completed during the year.

University of Alaska Site Improvements, $65,500: A separate bid schedule for reconstruction and paving the University of Alaska entrance road was included in an Alaska Public Works contract awarded February 1, 1956. At the close of the fiscal year the project was 45% complete.

Government Hill Road, $77,500: A contract was awarded August 19, 1955 for grading and paving a 1.21 mile section of this route through the Alaska Railroad yards. This contract was administered for the Alaska Railroad on a reimbursable basis and was completed during the year.

Structures:

Soldotna Garage, $190,000: The contract for construction of a 100' x 89' timber-framed, metal-sheathed garage to serve as a permanent maintenance facility on the Kenai Peninsula was completed during the year.

Soldotna Resicence, $50,000: The contract for construction of a 32' x 38' wood frame residential structure at the Soldotna Depot was completed during the year.

Anchorage Service Shop, $72,300: The Anchorage Service shop contract was advanced from 27% to 100% of completion during the fiscal year.

Palmer General Service Building, $125,000: The contract for construction of an 80' x 80' wood and steel frame building to serve as headquarters for maintenance of the Matanuska Valley System was completed during the year.

Big Delta Depot, $140,000: The 56' x 84' garage and 40' x 34' two-story duplex residence placed under contract on June 16, 1955 was completed during the year. This installation, at the junction of the Alaska and Richardson Highways, is a standard permanent maintenance facility.

Slana Depot, $165,000: The contract for construction of facilities identical to those described above (Big Delta) was completed during the fiscal year. This facility will serve as maintenance headquarters for the Tok Cut-Off portion of the Glenn Highway and the Nabesna Road.

3. Construction in Progress - By Force Account

Pioneer road construction has in the past been accomplished entirely by Government forces by "stage" construction methods developed by the Commission. This method requires a minimum of engineering, eliminates the preparation of detailed plans and specifications and the exact measurement of quantities of work performed. The engineering savings on force account projects is estimated at 15% of the total project cost.

A $20,000 per project limitation imposed by law, and a 17½% of construction appropriation limitation contained in recent appropriation acts, has sharply curtailed the amount of work that may be performed by force account. This year, for the first time, a contract was awarded for the contruction of a pioneer road--Section B of the Denali Highway.

The following major force account projects were active during the year:

Taylor Highway: This 161-mile route from the Alaska Highway to Eagle, on the Yukon River, and Dawson, Yukon Territory, has been under stage construction for the past several years. Final improvement to Feeder Road Standards is scheduled for completion early in fiscal year 1957. Total cost of this route is estimated to be $6,480,000.

Denali Highway: This 102-mile route to connect Mt. McKinley National Park --the Nation's second largest--with the primary highway system, has also been under stage construction since 1949. Sections A, C and D, totaling 125 miles, were constructed and are being improved to Feeder Road Standards by force account. This phase of the work is scheduled for completion early next fiscal year, at an estimated total cost of $7,600,000. The 37-mile Section B, presently under contract, is scheduled for completion is 1958 and is expected to cost $2,000,000.

Reconstruction: During the year 46 roads and bridge improvements were prosecuted, costing approximately $800,000. In addition to the major projects which were accomplished by contract and are included in the preceding "Construction in Progress -- by Contract" section, many small improvements in the Anchorage, Fairbanks, Matanuska Valley and Kenai Peninsula areas were accomplished by force account.

Territorial Program: Increased Territorial revenues, derived from a 2¢ gasoline tax increase imposed by the last Territorial Legislature, have resulted in substantially more money being made available for road construction. During the year 16 projects, costing approximately $500,000, were completed by the Commission for the Territory. In addition, the Commission expended the balance of its farm road funds, totaling approximately $150,000 on this program.

Maintenance

The highway system, under the jurisdiction of the Alaska Road Commission, consists of 3,594.4 miles of roads and 445 miles of trails. Fifty-four percent of the

roads and 49% of the trails are maintained open the year around, and winter maintenance mileage is steadily increasing, as is shown in the following tabulation:

	1952	1953	1954	1955	1956
Summer Maintenance					
Through Roads (Miles)	978.1	975.9	989.1	972.3	998.5
Feeder Roads "	1,156.5	1,197.2	1,213.9	1,244.7	1,234.6
Local Roads "	1,287.3	1,288.2	1,279.4	1,326.5	1,361.3
Total (Miles)	3,421.9	3,461.3	3,482.4	3,543.5	3,594.4
All-Weather Maintenance					
Through Roads (Miles)	858.7	975.9	898.1	972.3	998.5
Feeder Roads "	298.8	305.4	306.3	299.1	318.7
Local Roads "	553.5	569.0	564.4	601.1	621.9
Total (Miles)	1,711.0	1,850.3	1,859.8	1,872.5	1,939.1

Summer maintenance procedures are much the same as those used in more temperate zones. In addition to the usual summer brush cutting, chemical weed control, culvert cleaning, surface grading, crack sealing, patching, sign, centerline, and roadside maintenance activities, it is necessary to make all possible preparation for winter maintenance. Such measures include placing culvert and snow stakes, the erection of snow and ice fences, the flattening of superrelevated curves and roadway crown on gravel surfaced roads to minimize sliding and the stockpiling of materials at strategic locations for winter surface sanding.

All roads underlain by permafrost are subject to deformation. Except that more extensive grading, crack sealing, patching and leveling applications are necessary to maintain uniform vertical alignment that would be required on similar roads in permafrost-free areas, the maintenance procedures are identical to those in use in the United States.

Winter maintenance, however, presents numerous problems peculiar to Alaska. Methods have been developed to control icing formations that endanger highways and highway structures and constitute a serious hazard to highway users. Even snow r emoval in pass areas, subject to maximums of 80-foot annual snow falls and 100 miles per hour winds, has necessitated the development of special equipment and techniques. Special winterizing of equipment to assure reliable, safe operations in temperatures ranging to 70 degrees below zero, and warm storage facilities to maintain equipment in "stand-by" condition, are essential. Specially designed heating units are utilized to keep water flowing through drainage structures, rather than freezing on the roadway and forming impassable ice barriers.

In spite of these and many other maintenance problems, maintenance costs are comparable to those of any state. Below is a tabulation, by feature of maintenance, for the 1956 construction year:

RECAPITULATION
ANNUAL SUMMARY OF MAINTENANCE COSTS
March 7, 1955 - March 4, 1956
By Sub Account

Sub. Acct.	Description	Total Amount	Percent of Total
#10	Blading & Shaping Gravel Roads	$ 509,737.93	14.91
#11	Gravel Surfacing	302,983.51	8.86
#12	Dust Control	1,309.76	.04
#13	Pavement Crack Sealing	39,563.01	1.16
#14	Pavement Repair Patching	215,561.91	6.31
#15	Pavement Resealing	8,017.44	.23
#16	Pavement Shoulder Maintenance	31,530.41	.92
#17	Pavement Centerline Striping	6,304.59	.18
#18	Snow Removal	721,907.83	21.12
#19	Blading Snow & Ice	421,111.19	12.32
#20	Land Ice Control & Culvert Thawing	252,107.28	7.38
#21	Snow Fence and Drift Control	11,119.95	.33
#22	Sanding	44,322.09	1.30
#23	Bridge Repair & Maintenance	159,135.95	4.65
#24	Erosion Control	36,456.02	1.07
#25	Culvert Maintenance	137,015.02	4.01
#26	Ditching and Ditch Cleaning	117,671.49	3.44
#27	Guard Rails	415.85	.01
#28	Brush Cutting & Disposal	22,372.18	.65
#29	Chemical Brush Control	10,480.53	.31
#30	Erection & Maint. of Signs & Markers	55,357.46	1.62
#31	Extraordinary Maintenance	95,504.50	2.76
#32	Traffic Control	5,954.95	.18
#33	Patroling and Inspecting	177,990.03	5.21
#34	Roadside Development	919.68	.03
#35	Ferry Operation	30,759.20	.90
#36	Trail Maintenance	1,916.27	.06
#37	Tram Maintenance	1,504.46	.04
	Totals	$ 3,419,030.49	100.00%

IV - THE HIGHWAY SYSTEM

During the fiscal year the highway system was increased by 50.9 miles; 16.1 miles of feeder roads and 34.8 miles of local roads; 26.2 miles of principal feeder roads were improved to through road standards and reclassified.

Following is a tabulation of the road system as of 1954, 1955 and 1956:

	1954	1955	1956
Through Roads	989.1	972.3	998.5
Feeder Roads	1,213.9	1,244.7	1,234.6
Local Roads:			
From Main Feeders	709.4	939.7	761.3
From Isolated Feeders	237.1	237.2	246.6
Isolated Feeders	332.9	349.6	353.4
Total Local Roads	1,279.4	1,326.5	1,361.3
Total - All Roads	3,482.4	3,543.5	3,594.4
Trails	248.0	248.0	445.0
Total - Roads & Trails	3,730.4	3,791.5	4,039.4

Following is a current tabulation of highway systems:

THROUGH ROADS

Route No.	Name	Length	Winter Maintenance
120	Richardson Highway (Valdez District)	227.3	227.3
130	Richardson Highway (Fairbanks District)	134.9	134.9
132	Fairbanks-International Airport	1.0	1.0
230	Alaska Highway	200.6	200.6
310	Glenn Highway (Anchorage District)	114.7	114.7
310A	Glenn Highway Alternate	7.5	7.5
311	Anchorage 4th Avenue Post Road	1.0	1.0
320	Glenn Highway (Valdez District)	162.2	162.2
330	Glenn Highway (Fairbanks District)	33.4	33.4
410	Seward-Anchorage Highway	36.9	36.9
411	Anchorage-Spenard	3.5	3.5
412	Anchorage-International Airport	3.0	3.0
510	Sterling Highway	10.9	10.9
514	Kenai Spur	14.3	14.3
630	Steese Highway (Fairbanks-Farmers Loop)	2.8	2.8
632	Steese Highway-University	3.8	3.8
950	Haines-Boundary and Spur to Haines	40.7	40.7

FEEDER ROADS

Route No.	Name	Length	Winter Maintenance
121	Edgerton Cutoff, Willow-Chitina	39.0	39.0
122	Copper River Highway	-	-
231	Northway Junction - Airfield	6.8	6.8
232	Gerstle River Test Site Road (Army)	3.6	3.6
312	Palmer-Matanuska-Wassilla	13.9	13.9
313	Palmer-Wasilla-Willow	30.7	30.7
314	Glenn-Fishook-Knik	33.6	33.6
321	Slana-Nabesna	45.6	-
331	Taylor Highway	161.0	-
511	Sterling Highway	108.4	108.4

FEEDER ROADS (Cont.)

Route No.	Name	Length	Winter Maintenance
513	North Kenai Roads	16.3	16.3
631	Steese Highway-Farmers Loop-Circle	161.0	30.0
633	University-Ester	6.7	6.7
634	Central-Circle Hot Springs	8.3	-
731	Elliott Highway-Fox to Livengood	68.4	9.0
732	Manley Hot Springs Landing-Eureka	25.7	-
811	Denali Highway (Anchorage District)	82.0	-
812	McKinley Park Primary Roads	93.6	-
813	North Park Boundary-Kantishna	4.5	-
821	Denali Highway (Valdez District)	41.9	-
011	Sterling Landing-Ophir	47.0	-
012	Ititarod-Flat	8.7	-
013	Dillingham-Wood River-Kanakanak	14.7	14.7
014	Abbert Road	0.8	0.8
031	Ruby-Long-Poorman	56.5	-
041	Nome-Council	77.1	-
042	Nome-Kougarok	20.8	5.2
043	Seward Peninsula R.R.	58.0	-
044	Nome-Teller	-	-

LOCAL ROAD SYSTEMS

	Total Miles	Winter Maintenance
Anchorage Locals	62.8	62.8
Glennallen Locals	91.7	60.6
Matanuska Valley Locals	139.1	80.3
Kenai Peninsula Locals	115.2	101.3
Kuskokwim Locals	68.2	3.0
Kodiak Locals	59.5	59.5
Alaska Railroad Feeder	94.2	19.0
Bristol Bay Locals	25.3	16.5
Iliamna Locals	28.5	-
McCarthy Locals	30.5	-
Richardson Highway Feeder System	84.8	62.9
Fairbanks Locals	37.5	35.5
Steese Highway Feeder System	136.4	35.6
Taylor Highway Feeder System	19.1	1.9
Elliott Highway Feeder System	9.5	-
Manley Hot Springs System	18.0	-
Yukon River Isolated System	31.7	-
Nome System	211.5	9.5
Haines & Skagway Locals	61.8	37.4
Southeast Alaska Roads	36.0	36.0
Totals	1,361.3	621.9

TRAILS

Route No.		Name	Lenth	Winter Maintenance
010.9	1	Goodnews Bay-Togiak	53.0	53.0
	2	Goodnews Bay-Platinum	9.5	9.5
	3	Takotna-Flat	18.5	18.5
030.7		Wiseman-Porcupine	18.0	-
040.5	1	Kotzebue-Shesholik	9.0	9.0
	2	Kotzebue-Noatak	60.0	13.0
	3	Kotzebue-Noorvik-Selawik	95.0	12.0
	4	Golovin-White Mountain	12.0	12.0
	5	Golovin-Moses Point	45.0	6.0
	6	Deering-Candle-Kiwalik	25.0	12.0
	7	St. Michael	5.0	5.0
	8	Teller-Cape Douglas	21.0	12.0
	9	Teller-Igloo Creek	22.0	6.0
	10	Teller-Misson	6.0	6.0
	11	Teller-Lagoon Channel	3.0	3.0
	12	Teller-Mary's Igloo	43.0	43.0

Traffic Statistics: Traffic density studies play an important part in the Commission's planning and programming. Data obtained at 47 permanent traffic count stations for identical periods each year are particularly useful in allocating maintenance funds and for detecting changes in traffic patterns and characteristics.

A tabulation of traffic counts for the years 1953-1956 follows:

TRAFFIC STATISTICS
1953 -- 1956
Daily Averages

Anchorage District	Aug. 1953	Aug. 1954	June 1955	June 1956
A-1 Anchorage City Limits - Glenn Highway	18,625	15,485	16,765	17,056
A-2 Scalehouse - Glenn Highway	2,901	3.068	3,196	2,431
A-3 Knik Bridge - Glenn Highway	1,281	1,404	1,709	1,331
A-4 Mile 94 - Glenn Highway	337	546	563	444
A-5 Mile 1 - Spenard Road	17,550	16,820	17.092	22,438
A-6 Anchorage City Limits, Seward-Anchorage Highway	11,825	12,132	12,531	11,253
A-7 South of Fireweed Lane, Seward-Anchorage Highway	4,785	4,443	5,243	7,206
A-8 South of Potter, Seward-Anchorage Highway	566	823	1,067	1,663
A-9 Forest Boundry - Sterling Highway	165	196	226	282
A-10 Kenai Bridge - Sterling Highway	338	270	472	351
A-11 Homer City Limits - Sterling Highway	361	599	535	481
A-12 West of Kenai Junction - Kenai Spur	411	559	1,013	1,098
A-13 North of Kenai City Limits - Salamatof Road	825	1,010	934	970
A-14 West of Park Headquarters - McKinley Park	31	34	35	37
A-15 Homer Locals (Homer ARC Garage)	-	-	520	774
A-16 Abbert Road - Kodiak	-	-	-	1,746
Valdez District				
V-1 Mile 1 - Richardson Highway (Steel Bridge)	144	457	530	268
V-2 Mile 47, Richardson Highway (Stewart Creek Bridge)	203	128	324	207
V-3 Edgerton Highway - West of Junction	82	43	32	59
V-4 South of Glenn Junction - Mile 115	278	289	257	322
V-5 Mile 186 - Glenn Highway (Moose Creek Bridge)	303	492	701	631
V-6 Mile 117 - Richardson Highway	328	431	507	563
V-7 Mile 132 - Richardson Highway	247	299	334	245
V-8 Mile 1 - Denali Highway (Gulkana Bridge)	-	59	33	79
V-9 Mile 199, Richardson Highway (Gun Creek Bridge)	-	318	168	63
V-10 Mile 3 - Tok Cutoff	267	210	182	405
V-11 Mile 75 - Tok Cutoff (Slana River Bridge)	-	478	183	126
Fairbanks District				
F-1 Mile 361 - Richardson Highway	-	6,494	4,537	4,894
F-2 Scalehouse - Richardson Highway	-	3,507	2,867	2,788
F-3 Mile 315 - Richardson Highway (Silver Fox)	-	552	432	435
F-4 Tanana River Bridge - Richardson Highway	-	658	421	499
F-5 Jarvis Creek - Richardson Highway	-	1,247	851	949
F-6 Mile 248 - Richardson Highway	-	268	219	274
F-7 Mile 1427 - Alaska Highway	-	339	202	276
F-8 Mile 1320 - Alaska Highway	118	567	419	131
F-9 Mile 1309 - Alaska Highway (Tok Bridge)	265	392	340	225
F-10 Mile 1248 - Alaska Highway (Gardner Creek Bridge)	-	316	247	170
F-11 Mile 2 - Taylor Highway	-	47	49	24
F-12 Mile 122 - Tok Cutoff (3 Miles South of Tok)	141	518	181	207
F-13 New Chena River Bridge	-	-	5,328	8,284
F-14 ARC Depot - Steese Highway	-	7,937	8,122	7,931
F-15 Mile 8 - Steese Highway (South of Fox)	-	559	539	374
F-16 Mile 1 - Elliott Highway	-	193	154	150
F-17 Mile 39 - Steese Highway (Chatanika Bridge)	-	84	116	131

Haines Sub-District	Aug. 1953	Aug. 1954	June 1955	June 1956
H-1 Mile 5 - Haines Highway	-	273	219	201
H-2 Mile 2 - Lutak Road	-	627	242	194
H-3 Mile 1 - Mud Bay Road	-	-	-	167

The Alaska Road Commission appropriation for fiscal year 1957 totaled $11,425,000, of which $7,800,000 was for construction and $3,625,000 for maintenance.

Construction in progress

Taylor Highway, $451,000: This 161-mile route from the Alaska Highway to Eagle on the Yukon River will be completed to feeder road standards during this year. Under stage construction by Government fources for the past 6 years, this route and connecting Canadian routes provide a by-pass of 381 miles of the Alaska Highway.

Richardson Highway, $1,549,000: Funds appropriated for this route will permit paving of the 42-mile Paxson to Rapids section. Upon completion of this section, the entire 362.2 miles of the Richardson Highway will be paved.

Denali Highway, $2,000,000: The final center section of this pioneer route, totaling 37 miles, will be prosecuted by contract. The balance of this 162-mile route connecting Mt. McKinley National Park with the primary network, stage constructed by force account, will be improved to feeder road standards during the year.

Sterling Highway, $2,200,000: Approximately 25 miles of this main artery serving the Kenai Peninsula will be paved during the year.

Fairbanks-Nenana, $500,000: Contract construction of this route to connect the town of Nenana with the interconnected highway network will be continued.

Reconstruction:

Funds totaling $800,000 were appropriated for the improvement of grade and alignment of portions of principal secondary roads as follows:

Steese Highway	$150,000
Fairbanks Local Roads	150,000
Anchorage Local Roads	200,000
Matanuska Valley Roads	200,000
Southeastern Alaska Roads	100,000

Maintenance:

The total cost of maintaining the highway system for the year is estimated at $4,075,000, of which $450,000 will be contributed by the Territory and by other Federal, civil and military organizations.

Other:

Under terms of the Federal-Aid Highway Act enacted subsequent to the above detailed appropriation, the Territory will be eligible for an additional allocation of $1,932,588 for fiscal 1957. Programming of these funds will not be accomplished until after the September 16, 1956 transfer of the Alaska Road Commission to the Department of Commerce.

D. COST BALANCE SHEET

January 27, 1905 through June 30, 1956

COST DISTRIBUTION

	Construction Costs	Maintenance Expense	Total
Active Routes *	$140,973,397.69	$44,878,591.93	$185,851,989.62
Inactive Routes	3,136,256.60	1,887,072.19	5,023,328.79
Buildings & Improvements	6,659,343.92	443,864.71	7,103,208.63
Surveys - Active	880,553.83	---	880,553.83
Surveys - Inactive	208,848.52	---	208,848.52
Totals	$151,858,400.56	$47,209,528.83	$199,067,929.39

COSTS INCURRED (Exclusive of refunds and reimbursements)

Total costs	1/27/05 - 11/30/50	$103,736,808.47
	11/30/50 - 6/30/56	95,331,120.92
TOTAL		$199,067,929.39

*Includes McKinley Park costs through June 30, 1952:
Construction $1,771,938.32, Maintenance $804,332.84.
Subsequent to that date receipts from the National Park Service were by reimbursement.

ANNUAL REPORT - BUREAU OF PUBLIC ROADS

FISCAL YEAR, 1957
FEDERAL AID TO ALASKA

Public Roads has been active in Alaska since 1919, but until enactment of the Federal-Aid Act of 1956 its responsibilities were limited to administration of the forest highway program within the Tongass and Chugach National Forests and to assistance with special programs of military import. From 1919 through 1956, some 400 miles of forest highways were constructed at a cost of approximately $50 million.

Under the terms of the 1956 Act, Federal aid for highways for the first time was extended to Alaska. The Alaska Road Commission, which had administered the Territory's highway program outside the National forests since 1905, became a part of the Bureau of Public Roads. Created in 1905 as an agency of the War Department, the Commission had become a part of the Department of the Interior in 1932. Administration of the 4,485-mile highway system developed by the Commission at the cost of approximately $230 million and all personnel, equipment, property and unexpended appropriations were transferred to the Department of Commerce on September 16, 1956. The organization was combined with the existing Public Roads Alaska office to form Bureau of Public Roads Region 10. The regional office was established in Juneau, the Territorial capital, with district offices at Anchorage, Valdez, Fairbanks, Nome and Juneau.

The 1956 act entitles Alaska to share in Federal-aid primary, secondary and urban funds, as have the Territories of Hawaii and Puerto Rico for some years past. It provides the use of Federal funds for either construction or maintenance of Alaskan highways. In recognition that a large part of Alaska is relatively uninhabited and to obtain an equitable apportionment of Federal funds relative to highway needs, Congress modified the formula for computation of the apportionment of Federal funds among the states and territories with respect to Alaska by using only one-third of the area of Alaska instead of its full area. The law also provides that the Territorial Government shall contribute to the highway fund an amount equal to 10% of the amount apportioned each year by the Federal Government. The net effect is that funds available for Alaskan roads under Federal aid will permit a road building program to be launched in Alaska with sufficient continuity to permit long-range planning.

Federal-aid highway systems, designated in accordance with provisions of Section 107 of the Federal-Aid Act of 1956 and totaling 5,152 miles, were established in Alaska during the year. The 1,959-mile primary system, composed principally of hard-surfaced highways, connects the Territory's principal interior cities and military establishments with one another with the all-weather, ice-free ports of Haines, Valdez and Seward and with the Continental United States via the Alaska Highway through Canada. The 3,193-mile secondary system is basically a feeder system and except for a few hard-surfaced sections in the vicinity of population centers, it consists of gravel roads. Approximately one-half of the secondary systems is connected to the primary network; the balance connects isolated communities with rail, water or air transporation facilities. The entire primary system, except for ferry connections and approximately 1,000 miles of the secondary system, are kept open on a year-round basis.

The 1957 fiscal year construction and maintenance program totaled approximately $30 million, including $23.8 million in Interior Department carry-over construction

and maintenance projects, $2.6 million in reimbursable work for other agencies and $4.6 million Federal-aid construction and maintenance. Contracts were let for the construction of the final section of the 160-mile Denali Highway to connect Mt. McKinley National Park, which contains the Continent's highest peak, with the Territory's connected highway network and for paving the final section of the 365-mile Richardson Highway which connects Valdez and Fairbanks. At the close of the year 115 Federal-aid projects totaling $16 million were programmed and remaining Interior Department projects valued at $5 million were active.

The Territory of Alaska has not as yet established a working highway organization of its own but, instead, has utilized the services formerly of the Alaska Road Commission and now of the Bureau of Public Roads to accomplish its highway program. In Alaska, consequently, Public Roads, in addition to discharging its usual administrative responsibilities, performs all of the functions of a state highway department, including local surveys, design, contract administration and highway maintenance, all utilizing Government forces and equipment. At the end of the fiscal year, 1,008 employees were on Region 10 rolls and the automotive and construction equipment fleet numbered in excess of 1,500 units.

DATES - EVENTS - INFORMATION

1725-1728	Vitus Bering explored the Diomedes and St. Lawrence Island.
1741	Bering landed on Kayak Island.
1792	Kodiak, first enduring community founded. 1804, Sitka founded.
1861	First discovery of gold in the North Country, Stikine River.
1867	Alaska purchased from Russia.
1878	First salmon cannery in Alaska.
1880	Gold discovered near Juneau.
1884	First Organic Act, permitting Governor, Federal Judges, Mining Laws and $25,000 appropriated for education.
1891	Reindeer imported from Siberia, Dr. Sheldon Jackson, Sponsor.
1896	Mt. Densmore renamed Mt. McKinley. 1896, gold discovered in Nome.
1897	Beginning of the Klondike stampede.
1900	Reindeer established on St. Lawrence Island.
1900	Alaska Communications System established - ACS.
1902	Gold discovered near Fairbanks.
1905	Alaska Road Commission established. First automobile in Alaska --at Skagway.
1906	Gold discovered along Innoko and Iditarod Rivers. First Alaska delegate to Congress authorized.
1911	First train load of copper from Kennecott Mine reached Cordova.
1912	First Territorial Legislature. Granted women right to vote, authorized home for aged at Sitka (completed 1934).
1912	Mt. Katmai erupted, deposited 10" ash on Kodiak 100 miles away. Katmai area now known as the "Valley of 10,000 Smokes".
1913	First automobile from Fairbanks to Valdez, Richardson Trail.
1914-1923	Alaska Railroad built between Seward and Fairbanks. (The Government acquired 90 miles on the Seward end and 50 miles on the Fairbanks end of existing railroad built by private companies.)
1916	First Statehood Bill introduced in Congress.
1917	Forget-me-not designated as State flower. Mt. McKinley National Park created.

1920	First airplanes in Alaska. Four DeHaviland Liberty planes landed at Wrangell on flight to Nome.
1922	First air mail, Fairbanks to McGrath, Ben Eilsen pilot.
1922	Agricultural College & School of Mines opened near Fairbanks--six students. Name changed to University in 1935.
1923	Warren G. Harding, first U.S. President to visit Alaska.
1925	Alaska Game Law and Game Commission passed and created.
1926	Air Commerce Act, Federal Aid to airways.
1927	Elk liberated on Afognak Island.
1928	Wilkins and Eilsen flew over Arctic from Barrow to Spitzbergen.
1928	Bison from Montana liberated in Big Delta area.
1929	Alaska's flag designed by Bennie Benson, 15 yr. old native boy.
1929	First air mail to lower states left Eyak Lake near Cordova.
1930	Musk Oxen from Greenland reintroduced in Alaska on Nunivak Island.
1935	Matanuska colonists arrived from lower states. First homestead in Matanuska Valley believed to have been established in 1911.
1935	Will Rogers & Wiley Post crashed and killed near Barrow.
1937	Congress lawed that only natives may own reindeer.
1940	First commercial air line established to lower states.
1942	Alaska Highway (Alcan) opened from Dawson Creek, B.C. to Big Delta, Alaska.
1942	Rural Electrification established.
1949	Motor fuel tax enacted.
1953	Eklutna power project completed.
1954	First Pulp Mill, Ketchikan.
1956	First Federal-aid highway funds to Alaska. Alaska Road Commission replaced by the Bureau of Public Roads after 51 years of service. Alaska Constitution approved by vote of the people.
1957	Oil strike on Kenai Peninsula. DEW line operational.
1958	Alaska became a state.
1960	Bureau of Public Raods replaced by Department of Public Works.
1960	Alaskans vote for President.

POPULATION

1900	63,592
1910	64,356
1920	55,036
1930	59,278
1940	72,524
1950	128,643
1960	226,167
2000	1,000,000 ??