



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
ALASKA ROAD COMMISSION  
Fairbanks District,  
JUNEAU, ALASKA

December 29, 1952

#29.1

✓	Comm. of Rds.	WJM
✓	Chf. Engr.	WJM
	Admin.	
✓	Op'ns.	BOS
✓	Engrs.	H.B.S.
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Mr. William J. Niemi  
Chief Engineer  
Alaska Road Commission  
Juneau, Alaska

Dear Mr. Niemi:

Annual Report

Reported herein is a report of the general engineering and construction operations within the Fairbanks District of the Alaska Road Commission during the 1952 season.

The District under the direction of Mr. Milton C. Zimmerman, District Engineer, has maintained normal operations throughout the winter and summer seasons of the year, meeting all the conditions of road repair, snow removal, drainage, culvert installation, summer surfacing, bridge repair and incidental work related to road and highway maintenance. In addition to keeping maintenance at a standard level, minor and major construction projects by both Alaska Road Commission forces and by contract arrangement have been completed on schedule and estimate during the year.

There has been little change in the permanent personnel other than some changes of a supervisory nature, not effecting the general and basic business conditions of the organization. Vacation requests have been few and such vacation periods as have been granted will not effect the 1952-1953 winter work and planning schedule as most of the leave periods will be completed by the first of the new year.

Considerable headway has been made towards improving and making more permanent such records as engineering field notes, plans, office data and general information and reference files. The records made by Resident Engineers on both force account and contract work especially are worthy of comment, wherein complete and comprehensive records of work under their supervision has been recorded.

*Good*

An effort has been made to approach the several problems of road and highway engineering and construction on a more technical and scientific basis than heretofore. Soils investigations and recommendations based upon sampling and laboratory test results, plus a minor effort to inspect and criticize bridge and road construction being done by our own forces as well as on contract work has resulted,

*W. J. Niemi*

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we believe, in a higher standard of construction than heretofore. Much credit for this condition is due the construction supervisory personnel who have in most cases shown a willingness to cooperate in bringing about a closer relationship between engineer and constructor to the end that some control of construction materials and methods have been possible, if in some cases only of an elementary nature.

The following pages outline the overall maintenance, construction, reconstruction, and repair work completed during the 1952 season. The report will be narrative in style for the reason that other statistical reports have been made, and this report is intended to be descriptive of work accomplished as well as supplying certain pertinent data related to the several projects.

## I. MAINTENANCE

### A. ROADS AND DEPOTS

#### THROUGH ROADS

Route 130 - Richardson Highway - 137.6 miles  
Route 131 - Ladd Field Spur - 0.4 "

Winter maintenance, consisting of snow removal, surface planing, culvert clearance and any and all services related to providing safe driving conditions have been maintained from Fairbanks to the vicinity of Donnelly Dome, a distance of 115 miles. From this point on to Black Rapids, the highway remains closed to traffic during the winter season.

Summer maintenance work consisted of shoulder realignment and shoulder build-up, bituminous patching of surface failures, bridge repairs, reconstruction and miscellaneous ditching and culvert repair.

A slide at the north end of the Tanana River Bridge, Mile 277.1, brought down 3800 cu. yds. of material on the highway. Most of the material was moved to the south end of the bridge and dumped on the upstream approach fill to lessen the scouring action of the river on that embankment. Some of the slide material was moved to Mile 280.6 where two dykes were built on the north bank of the Tanana River to prevent the river from further erosion which at that point was endangering the highway support. In addition to the material placed on the south approach to the Tanana River taken from slide material, 450 cu. yds. of borrow was placed on this same fill section.

At Mile 331, approximately 1200 cu. yds. of fill and rip rap was placed at a point where the river was cutting into the bank and endangering the highway support.

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Route 130 - Richardson Highway - 137.6 miles Continued  
Route 131 - Ladd Field Spur - 0.4 "

Winter Maintained - 115 miles  
Summer " 137.6 miles

Route 230 - Alaska Highway - 203 miles

Summer and winter maintenance has been kept to standard although the section from Delta Junction to Sears Creek was under contract reconstruction during the summer of 1952. This condition relieved somewhat the maintenance requirements of the Alaska Road Commission forces.

A considerable amount of frost heave damage to the bituminous surface was had during April and May between Tok Junction and Johnson River, although the damage was not as heavy as during the spring breakup the preceeding year. The road was closed from Tok Junction to Big Delta to heavy truck traffic from April 18th to May 17th. Fifty percent of truck capacity was permitted and the speed limit was established at 35 miles per hour.

Winter Maintained - 203 miles  
Summer " 203 miles

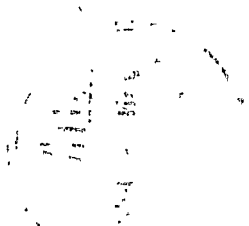
Route 330 - Glenn Highway - 33.8 miles

Section "E" of the Glenn Highway, extending from Tok Junction to the Little Tok River Bridge was maintained on an all season basis. During the summer months a portion of the Old Valdez Road had to be maintained to provide a by-pass route for road and bridge construction. Normal and continuous maintenance was not possible nor necessary from Clearwater Creek to the Little Tok River as this section was under reconstruction and such maintenance as was provided was mostly tied in with construction grading.

At the Little Tok River Bridge shear piling was driven in front of the pier piling to protect the bents from ice damage. The same protective piling arrangement was driven in front of the piers at the Tok River Bridge.

*Pier piles were to be sheathed also*

Winter Maintained - 33.8 miles  
Summer " 33.8 miles  
Grading 105004 C.Y.  
Gravel Borrow 27625 C.Y. mile  
(Haul)



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Route 630 - Steese Highway (To North Camp) - 1.4 miles  
Route 632 - Steese Highway (To University) - 3.8 miles

Winter and summer maintenance was accomplished on these heavily traveled routes. On College Hill some bituminous patching was done to correct breaks in the surface. These routes have given good service since they were built and bituminous surfaced during the 1950 season. There are three sections on Route 632 that show some settlement and both routes should receive a seal coat treatment at an early date.

Winter Maintained - 5.2 miles  
Summer Maintained - 5.2 miles

International Airport Road (CAA Road) - 4.5 miles

This paved road leading from South Cushman and Gaffney Streets in Fairbanks to the International Airport was placed during the 1950 season, and was maintained during the winter and summer seasons. There are two or three short sections that have settled but at this time it is believed the road has become stable and it is recommended that at least two sections be brought to grade and that the entire route be seal coated.

Winter Maintained - 4.5 miles  
Summer Maintained - 4.5 miles

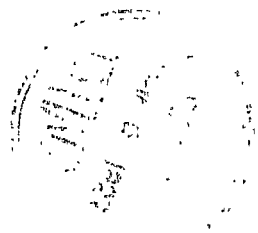
FEEDER ROADS

Route 331 - Taylor Highway - 158 miles

Summer maintenance combined with reconstruction resulted in bringing the Taylor Highway from Tetlin Junction to Polly Creek to a higher standard. Sections of the roadbed was widened, rolling sections were smoothed, side road ditches were widened and surfaces planned and graded to provide a smooth riding surface.

No winter maintenance was attempted but the route from Tetlin Junction to the Fortymile River Bridge was opened during the last week of February. Supplies and workmen were brought in over the route and the camp at Fortymile was activated. *for bridge construction on ice*

Winter Maintained - None  
Summer Maintained - 158 miles



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Route 231 - Northway Junction-Airfield - 6.8 miles

Normal winter and summer maintenance was accomplished on this road keeping it open to the public at all times.

Winter Maintained - 6.8 miles

Summer Maintained - 6.8 miles

Steese Highway - Route 631 - 162 miles

" 633 - University to Ester - 6.7 miles

" 634 - Central to Circle Hot Springs - 8.3 miles

31 miles of the Steese Highway out of Fairbanks was winter maintained and the entire route was opened up to traffic on May 30th.

Summer maintenance, while tied up with reconstruction in some instances, did involve a separate program wherein grading, culvert repair, ditching and widening was completed. 4.15 acres of clearing, grubbing and stripping along the right-of-way was also completed.

Grader maintenance was provided for the University to Ester and Central to Circle Hot Springs routes.

Winter Maintained - 31 miles

Summer Maintained - 177 miles

Clearing, grading & stripping - 4.15 miles

Grading - 89,840 C.Y.

Gravel Borrow - 4,515 C.Y.

Route 731 - Elliott Highway - 68.4 miles

This highway was maintained in good condition throughout the summer season.

A washout at Globe Creek was repaired, a culvert was reseated and the road adjacent was repaired.

The road was kept open during the winter months from Fox to Olnes.

Winter Maintained - 9 miles

Summer Maintained - 68.4 miles

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Route 732 - Manley Hot Springs-Eureka - 25.7 miles

Surfacing work was quite extensive producing an excellent riding surface. A considerable amount of ditching to improve the overall road drainage system was done. An all-weather road was constructed for a distance of 3 miles from Manley Hot Springs to the river landing.

Winter Maintained - None  
Summer Maintained - 25.7 miles  
Brush Control - 4.5 miles

Route 031 - Ruby-Long-Poorman - 56.5 miles

A 1½ ton Ford dump truck was shipped from Ruby to Marshall to supplement the road maintenance equipment for this area. The Territorial Highway Engineer supports the maintenance program by allotting the work to residents of the district.

A program of brush control produced 8 miles of brushed right-of-way. The work was done along the right-of-way where it was needed most.

Four timber bridges scheduled for construction this season were abandoned and the funds were used to improve the road structure which was in such condition as to become impassable if not built up, drained and surfaced.

Winter Maintained - None  
Summer Maintained - 56.5 miles

LOCAL ROADS

Route 130.1 - Cushman St. Extension	1.9 Miles
" 130.2 - Badger Farm Road Loop	12.1 "
Dennis Road	0.6 "
Greiman Road	0.7 "
Peede Road	4.0 "
Nordale-Tonseth-Freeman Road	1.2 "
Thirtymile Slough Road	2.2 "
Keeling Road	0.4 "
Route 130.3 - Old Richardson Highway	14.5 "
" 130.4 - Lake Harding Branch	2.8 "
Birch Lake Branch	1.7 "
" 130.5 - Richardson Highway - Democrat Creek	4.0 "
" 132.1 - Alston Road	0.5 "
Bjeermark Road	1.3 "
Becker-Dale-Conn Road	2.1 "
Davis Road	1.0 "
Peger Road	2.6 "
Van Horn Road	0.5 "
Moore-Cartwright Road	1.0 "

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LOCAL ROADS Continued

These local roads were summer and winter maintained except the Nordale-Tonseth-Freeman Road which was just constructed this season and which will not be winter maintained. No winter maintenance was done on the Birch Lake Branch, Keeling Road nor the Richardson Highway-Democrat Creek Road but all the other roads were kept open for winter traffic for their entire length except that only 7 miles of the Old Richardson Highway and 1.5 miles of the Lake Harding Branch required winter maintenance.

Winter Maintained - 40.2 miles  
Summer Maintained - 55.1 miles

Route 630.1 - Minnie Street - Third Street Branch	1.8 miles
Graehl Branch	0.4 miles
Trainer Gate Road	0.8 miles
Route 631.1 - Farmers Loop Road	9.0 miles
Isabelle Creek Road	3.1 miles
Crossman-Fideler	0.7 miles
Ballaine-Rickert	2.5 miles
Yankovich Road	2.1 miles
Grenac Road	1.2 miles
Country Club Extension	0.7 miles
Route 631.2 - Steele Creek Branch	9.7 miles
Chena Hot Springs Road	3.8 miles
Route 631.3 - Gilmore-Pearl Creek	8.8 miles
Fish Creek Road	8.7 miles
Fairbanks Creek Road	10.2 miles
Little Eldorado Creek Road	2.1 miles
Old Chatinika Road	2.0 miles
Route 631.4 - United States Creek Road	11.0 miles
Sourdough Creek Road	4.8 miles
Faith Creek Road	1.5 miles
Route 631.4 - Eagle Creek Road	1.2 miles
Miller House-Harrison-Mastodon Miller Cr's	15.2 miles
Porcupine Creek Road	11.0 miles
Route 632.1 - University Way	1.3 miles
Geist Road	1.7 miles
University of Alaska Campus	2.1 miles
Route 633.1 - Chena Pump Station	4.8 miles
Ester Dome Road	4.0 miles
St. Patrick's - Goldstream	3.8 miles
Ester-Beegler	3.2 miles
Ready Bullion Creek Road	2.5 miles
Route 634.1 - Deadwood Creek Road	3.4 miles
Ketchum Creek Road	2.8 miles

This group of local roads in and around Fairbanks was mainly maintained during the summer months. Winter maintenance consisted of keeping roads free of snow on routes where winter residence was maintained.

Winter Maintained - 46.1 miles  
Summer Maintained - 144.7 miles



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Route 731.1 - Brooks-Livengood - 7.0 miles  
 Amey Creek Road - 1.0 miles  
 Wilbur Creek Road - 1.2 miles

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These are Elliott Highway feeder roads contingent to Livengood. Summer maintenance only was supplied these routes.

Winter Maintenance - None  
 Summer Maintenance - 9.5 miles

Route 732.1 - Manley Hot Springs-Tofty - 18. miles

Spring breakup damage made it necessary to rebuild three-quarters of a mile of road. Summer maintenance consisted of surfacing and a ditching and drainage program.

Winter maintained - None  
 Summer maintained - 18 miles

Route 130.6 - Meadows Road - 17.1 miles

During the 1951 season, this road was built for the army and we make winter and summer maintenance on reimburseable basis.

ISOLATED LOCAL ROADS

Route 030.1 - Coal Creek Road - 7.0 miles  
 030.2 - Rampart-Little Minook Creek - 4.5 miles

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A dump truck was shipped to Rampart and one to Coal Creek, to provide maintenance equipment. The cost of shipping was borne by the Alaska Road Commission but the maintenance cost was borne by the Territorial Highway Engineer, who assigned the road work to interested parties.

Route 331.1 - Jack Wade-Boundary - 13.9 miles  
 Eagle-Mission on Yukon River - 3.3 miles  
 Eagle - 70 Mile River - 4.0 miles

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A minimum of summer maintenance work was performed on these roads, except for an effort to keep the road to the Boundary in good riding condition. These roads are not kept open for winter traffic.

Winter Maintained - None  
 Summer Maintained - 21.3 miles

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Route 030.3 - Wiseman Locals - 18.0 miles

The Nolan Branch of 5.5 miles and 12 $\frac{1}{2}$  miles of the Wiseman-Hammond River Road make up the 18 miles of Wiseman Local Roads. This season a little more than 4 miles of roadway was added to the Wiseman-Hammond River Road. Summer maintenance was also carried on which included 5.7 miles of brush control.

Winter Maintained - None  
Summer Maintained - 18 miles  
Brush Control - 5.7 miles

Route 030.4 - Ruby Airfield Road - 1.2 miles

Summer maintenance only was supplied this isolated road. Some ditching and routine maintenance was done from ARC funds.

Winter Maintained - None  
Summer Maintained - 1.2 miles

Route 030.5 - Nulato Airfield Road - 1.0 miles  
" 030.6 - Nenana - Cemetery - 2.5 "  
Ferry-Eva Creek - 21.8 "

A pull grader was shipped by rail to Nenana to provide surfacing equipment for the Nenana Cemetery Road. \$1000.00 was expended for equipment rental and labor costs for summer maintenance on the Ferry-Eva-Moose Creek Road.

Winter Maintained - None  
Summer Maintained - 24.3 miles

DEPOTS

Fairbanks Depot - Route 301

Improvements at the Depot this year include the construction of a security fence around the perimeter of the four acre plot of ground leased from the Alaska Railroad and serving ARC as an equipment yard.

Building No. 33 was altered to provide additional warm storage space for cars and trucks used in snow removal work.

The contractor completed the warehouse construction and all elements of the property section are now housed in the building.

Miscellaneous repair work to doors, windows and fencing in the area was done throughout the year.

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Route 311 - Fairbanks Apartment

Considerable work was done on the apartments to make them more weatherproof. Casings around the windows and doors were removed and openings were packed with rock wool and felt. Certain sections of the outside walls were checked for insulation and found to be adequate. Storm windows were installed on the first floor and to the large windows on the second floor. Outside weather stripping was replaced with new material and the construction joint between the plate and the concrete foundation wall was caulked. The interior walls were repainted and miscellaneous repairs to doors, locks and latches was completed.

Route 302 - Tok Depot

The main feature of construction at the depot was the beginning of construction of the service garage on a contract basis. Hopper and Company were the successful bidders. Construction was discontinued for the season on October 15th but work had progressed to where the concrete floor slab was being laid when cold weather prohibited further work.

New flooring was placed during the year in the mess hall, kitchen and the office building and adjacent sleeping rooms were refloored.

All rooms in Building No. 313 were painted and new beds were placed in rooms 5, 7 and 9.

Silver Fox Camp

During the year three buildings were moved from the old camp at 66 Mile and erected as one barracks building at the winter maintenance camp adjacent to the Silver Fox Lodge at Mile 315.6 on the Richardson Highway. The camp now contains a barracks structure, two warm storage buildings of first class construction.

Gardiner Creek Camp

The Gardiner Creek maintenance camp, operating under the immediate supervision of the Tok office, while maintaining normal bridge and road conditions on the Alaska Highway and the Northway Feeder Road, kept camp facilities in good repair.

Tok Airport

A landing field was cleared, stripped and graded adjacent to the intersection of the Alaska and Glenn Highways at Tok Junction.

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II. RECONSTRUCTION

Route 331 - Taylor Highway - 158 miles

Considerable graveling was done on Jack Wade Hill on to the Boundary road intersection with the Taylor Highway. The rock work between the Polly Creek Camp and Fortymile River Camp will be mentioned under the heading of construction.

Route 330 - Glenn Highway Section "E" - 33.8 miles

The 34 mile section of Glenn Highway from Tok Junction to the Little Tok River Bridge was under reconstruction during the 1952 season wherein ARC forces laid select borrow to the designed grade and alignment established the previous season. Particular attention was given to side road ditching and road shoulder slopes and the select borrow material obtained from road side pits was kept under inspection to eliminate the indiscriminate dumping of any and all pit material in the road bed. Material containing fines in excess of 10 percent was rejected and as near as possible, material containing large oversize rock was not considered as select borrow. Traffic compaction resulted in a reasonably firm road-bed. A considerable number of soft, unstable sections were removed and replaced with more satisfactory material. A number of culverts were removed and replaced on firmer foundation material or relocated to better drain the areas.

This project was built in conformance with standards set up by the Materials Section wherein the 34 miles of roadway built during 1950 and 1951 was sampled and from laboratory test results the thickness of select borrow required as coverage was determined. Of major importance was the selection of select borrow of a quality that would be unaffected by frost action.

Clearing, grubbing & stripping	8 acres
Grading	266,085 C.Y.
Clearing & stripping	11 acres
Gravel borrow (load)	3859 C.Y.
Drainage	364 L.F.
Dikes	100 L.F.

Route 631 - Steese Highway to Circle - 162 miles

Route 633 - University to Ester - 6.7 miles

Route 634 - Central to Circle Hot Springs-8.3 miles

A considerable amount of reconstruction was done on this route wherein graveling, grading, widening and ditching was completed between Mile 51 and 57 and from Mile 141.7 to 151.0. 8.5 miles of this construction was also gravel surfaced. Constant rains hampered the work but the program was/ regardless, although it required that the route be kept under met

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almost constant maintenance.

Clearing, grubbing & stripping	4.15 acres
Grading	89840 C.Y.
Gravel Borrow	4515 C.Y.

Route 631.1 - Farmers Loop - 9 miles

This route, of considerable importance to Fairbanks, was not too much damaged by the wet season and most of the work performed on the route was confined to resurfacing the weak sections.

Gravel Borrow	3175 C.Y.
Gravel Borrow (Haul)	27588 C.Y. mile

Route 130 - Richardson Highway - 137.6 miles

Route 131 - Ladd Field Spur - 0.4 miles

The Fairbanks section of the Richardson Highway extending from the Valdez-Fairbanks District boundary at Black Rapids, junctioning with the Alaska Highway at Delta Junction and continuing through to Fairbanks is now bituminous surfaced for 120.3 miles of the 137.6 mile route. The section beginning on the south side of Donnelly Dome, and extending to Black Rapids, while realigned and reconstructed, remains to be hard surfaced. The project was engineered and supervised by the Bureau of Public Roads.

Unusual flood conditions prevailed during the <sup>Summer</sup> spring period that resulted in severe damage to four concrete-steel I-beam bridges just completed on a contract basis. These bridges were located at Mile 230.4, 233.0, 235.3 and 236.8. The first named bridge at Mile 230.4 received no structural damage but a small amount of channel erosion was noticed. The approach fills to the structure remained stable. The bridges at Mile 233 and 235.3 were greatly damaged when the approach fills were swept away, exposing the abutment and wing wall piling and planking. Some piling and a considerable amount of planking was swept downstream, however, the structures remained stable and in position. The bridge at Mile 236.8 was not damaged but the north approach fill was swept away.

Repair work on these bridges consisted of the replacement of steel piling, driven to refusal, excavation around base of all piling to a depth of 5 feet to form a trench which was filled to the surface with concrete and all wing and abutment planks were replaced.

An asphalt repair crew continued patching broken surfaces on the paved section of the Richardson Highway throughout the summer period. Considerable effort was made to repair some of the large sections that had

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resided due to either permafrost deformation and/or lack of compaction effort during the embankment construction period. As we have not, up to date established a means of determining soil compaction requirements during construction to densify the soil so that it will not deform either through additional compaction or consolidation under load, we are of the opinion that perhaps some of the deformation experienced on our paved highways may not be entirely due to permafrost recession, wherein the frozen undisturbed road foundation material ceases to support the road embankment as it gradually melts, but may be due in part to embankment soil consolidation after the pavement is placed.

Rip rap	200 tons
H-Piling	100 L.F.
Planking	2000 M.Fbm
Concrete	75 C.Y.

Route 630.1 - Graehl Branch

Third Street in Graehl was graveled for four blocks to improve the approach road to the Chena River and Noyes Slough Bridges under Work Order No. 343 and in the same operation but under Work Order No. 345, two blocks on Dawson Street was graveled to provide an approach road to the Bentley Island Homes.

Graehl - Gravel Borrow (Load)	1716 C.Y.
Graehl - Gravel Borrow (Haul)	1487 C.Y. mile
Bentley - Gravel Borrow (Load)	1485 C.Y.

Route 130.2 - Badger Farm Loop Road

Approximately 5 miles of this route was regraded and resurfaced this season in addition to the normal maintenance work the route required.

Gravel Borrow - 13951 C.Y.

III. CONSTRUCTION

(A) By Contract

I-arc-4274 - The Shaw Creek Bridge was declared complete and the Munter Construction Company were allowed final payment on their contract.

I-arc-4298 - Section A & B1 of Alaska Highway, under the engineering and construction control of the Bureau of Public Roads was completed except for the bituminous seal coat and final cleanup work which is to be done next season by Babler Bros. & Rogers, the contractors.

*about 15 miles*

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I-arc-4299 - Noyes Slough Bridge at Illinois Street in Fairbanks was declared complete and the Munter Construction Company was released from further responsibility.

I-arc-4303 - Section "C" of the Richardson Highway was completed by Lytle & Green Contractors and the project was inspected and accepted October 3, 1952.

I-arc-4339 - Richardson "C" Bridges. The four steel and concrete bridges contained in this contract were completed July 15, 1952, 15 days beyond the contract period. The Munter Construction Company was released from further responsibility but were assessed for the overtime performance.

I-arc-4352 - Fairbanks Warehouse. The A. E. Waxberg Construction Company was allowed an extension of time on their contract to build the Fairbanks warehouse due to non-delivery of the overhead doors. These doors were received and installed this season which terminated the contractor's responsibility and final payment was made.

I-arc-4413 - The Chena River and Noyes Slough Bridges under contract to Boen-Sealand Constructors completed a reasonably successful season, finishing all substructure work before closing operations for the winter.

The work of placing the seals and foundations of Piers Nos. 2 and 3 and the foundations for Piers Nos. 1 and 4 of the Chena River Bridge was considerably hampered by high water which prevailed in the Chena River throughout the summer. These builders were very ably supervised at all times, however, and surmounted the high water conditions by exercising proven methods of construction and operation adapted to the changing conditions. Adequate equipment and experienced personnel together with sound planning resulted in all construction schedules being met.

The status of the construction at the end of the 1952 construction season was such that schedules were met for both structures wherein all substructure construction was complete up to the bridge seats.

In addition to the approach fills made by ARC forces before contract construction commenced, additional embankment was placed during the fall period to bring the approach fill on the Chena River Bridge to within 9 inches of the finished grade.

I-arc-4428 - The Tok Garage construction was closed down for the winter on October 15, 1952, by the Hopper Company but they were given credit for 27 percent completion on that date. The project was maintained on schedule and no unusual conditions prevailed to make any major changes necessary. Workmanship has been good and the builders cooperation was commendable during the period of construction. Supplies and materials have been adequately covered and should be in good condition when spring work is resumed.

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(B) FORCE ACCOUNT

Route 331 - Taylor Highway - 158 miles

A bridge crew was placed at the Forty Mile Bridge location in March after the route had been cleared of snow from Tetlin Junction to the Fortymile River Camp. Work was rushed throughout March and April to complete the erection of bridge steel before high water which would dislodge the falsework from which the steel structure was assembled. This was accomplished and the bridge was ready for traffic at the end of April.

*Falsework  
on rock bottom  
held in place  
by river ice  
11/27*

The completion of this bridge permitted bringing supplies and equipment forward for provisioning camps at Uoper O'Brien Creek and Columbia Creek besides supplying fuel oil and supplies for the vicinity of Liberty.

Construction crews under the foremanship of Wyman Fritsch and James Dennocenzo and under the general foremanship of first, Edward Peyton; and later Frank Johnson, worked separate sections of the road all the way to Liberty, with rock crews drilling and blasting rock barriers between sections.

A considerable amount of road widening and grade improvement was accomplished on the section of road between the Polly Creek Camp and the Fortymile river bridge wherein rock points were drilled and blasting and frozen muck was removed as it thawed.

This fall 23,214 gallons of diesel oil supplies were freighted to the Fortymile River Camp and distributed between the Fortymile River and Liberty Camps and a cache was made at Dime Creek. There will be about 2000 gallons of gasoline in the area next spring in addition to the diesel fuel.

Clearing (By hand)	7-3/8 acres
Grading (By Scraper)	122,173 C.Y.
Grading (By Power Shovel)	925 C.Y.
Excavation - Rock (Drill & shoot)	31,287 C.Y.
Excavation - Rock (Load)	5,302 C.Y.
Excavation - Rock (Haul)	2,615 C.Y.
Corduroying	4,250 L.F.
Gravel borrow (load)	28,428 C.Y.
Gravel borrow (haul)	1,684 C.Y. mile
Drainage (Culvert - metal)	2,308 L.F.
Drainage (Ditching)	70 L.F.
Bridges (Piling)	955 L.F.
Bridges (Timber abutments)	1972 M.FBM
Bridges (Timber superstructure)	68,277 M.FBM
Steel Construction (Bearing Pile)	240 L.F.
Steel Construction (Struct. Steel)	270,137 pounds



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Route 230 - Alaska Highway

Two timber bridges were erected on this route, one at Mile 1422.5 and the other at Sawmill Creek. The material was creosoted Douglas Fir having an 8 pound empty cell treatment.

The Tok Bridge crew erected the bridges during the reconstruction of the Alaska Highway. Detours around the bridge sites were provided by the contractor for the Alaska Highway reconstruction.

Timber Piling	-	555 L.F.
Timber Abutments	-	3 MFBM
Timber Super-structure	-	7 MFBM

Route 330 - Glenn Highway - Section "E"

New construction on this route consisted of the building of five timber bridges to provide a total of seven timber bridges between Tok Junction and the Little Tok River, a distance of 33.8 miles. Bridges at Clearwater Creek and Tok River were constructed during the 1951 season. The bridges constructed this season are as follows:

1. Tok River Overflow No. 1
2. Tok River Overflow No. 2
3. Elizabeth Creek
4. Ford Creek
5. Little Tok River

All of these structures were constructed of Douglas Fir which had been treated with an 8 pound empty cell creosote treatment.

The construction work was ably directed by Jeff Davis, foreman, stationed at the Tok Depot.

Timber piling	1140 L.F.
Timber abutments	3997 MFBM
Timber superstructure	52,847 MFBM

Work Order No. 333 - Chena River and Noyes Slough Bridges

Before the contractor began work on these structures A.R.C. forces constructed four embankment approaches up to the abutment elevations. This fall after the contractor had completed his summer work, the approaches were built up to within 9 inches of the finished approach road grade at the Chena River Bridge site. No additional material was added to the approach fills for the Noyes Slough Bridge as at that time the City of Fairbanks was in controversy relative to the approach road right of way.

Gravel Borrow (Load)	15,835 C.Y.
Gravel Borrow (Haul)	54,422 C.Y. mile

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Farm and Industrial Roads

Farm roads constructed this year were as follows:

Route 130.1 - Bjerremark Road. One mile and one quarter of roadway was constructed to give this subdivision access to 19th Street in Fairbanks. The construction on the Bjerremark Road proper amounted to only one mile but one-quarter mile of road was built to connect the road with 19th Street across City of Fairbanks property.

*Approx  
mileage  
1.25*

Route 130.2 - Keeling Road. Three-eighths of a mile of road was built to connect with the Thirtymile Slough Road. This project is complete.

*0.38*

Route 130.2 - Nordale-Freeman-Tonseth Road. One and one half miles of this 3 mile project are cleared and one and one-quarter miles of the construction have been graded.

*1.75*

Route 130.4 - Johnson Road. Three-quarters of a mile of road was constructed of which one-quarter mile was finish graded.

*0.50*

Route 130.5 - Shaw Creek Road. This project was started late in the season and two miles of roadway was roughed out and a reasonably good road was produced. Some widening and grading remains to be done, together with culvert installation and surfacing.

*1.25*

Route 132.1 - Moore-Cartwright-Conn Road. Two miles of road was built and grading work was completed. The project is about 85% complete.

*2.00*

Route 631.1 Wolff Run Road. This construction is 0.6 mile long and work included building the road and grading. Additional construction of approximately three-quarters mile is required to complete this project.

*0.60*

Quantities involved in construction of Farm Roads are as follows:

*7.2*

Work Order No. 363

Clearing, grubbing & stripping	6.13 acres
Grading	23930 C.Y.
Gravel Borrow (Load)	9404 C.Y.
Gravel Borrow (Haul)	980 C.Y. mile

Work Order No. 364

Clearing, grubbing & stripping	4.82 acres.
Grading	20,700 C.Y.

Route 132.1 Becker-Dale-Conn Road

In addition to reconstruction on portions of this route, a 25' x 20' bridge was constructed of creosoted timber and piling over a slough that drains a portion of the district.

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Route 132.1 Becker-Dale-Conn Road (Continued)

Quantities involved in construction of bridge are as follows:

Creosoted Timber	9095 M. Fbm
Piling	376 lin. ft.

Route 330 - Richardson Highway

A weighing station was constructed at Mile 14. Approach roads and gravel fill was made to provide a stable foundation. The station has not been placed in operation but will be activated after the first of the year.

IV. SURVEYS & PLANS

The Rampart Survey was started out of Rampart; its mission being to find and locate a route through to Livengood.

A party of 7 engineers, 2 dozer operators and a cook made up the party. Throughout the season, bad weather hampered the work and the inexperienced survey party was another condition affecting progress. The short season was closed, however, with a considerable amount of data wherein a route was established to Station 550 + 00. This preliminary line was continued this fall down the east slope of Chicago Creek to effect a crossing over the ridge to Alder Creek. There the work was discontinued for the season. Equipment was cached at Rampart where it will be in readiness for the work next spring. The Rampart work was supervised by T. Hugh Wilson.

The Taylor Highway Survey under the direction of Richard Stack completed a considerable amount of alignment work, bridge location and general engineering work together with inspection of culvert installation and bridge construction. The considerable amount of rock work encountered made a continuous and progressive survey impossible, to the end that the work was divided into sections to be connected at such time as bridges were built and rock obstructions were removed.

The Glenn Highway, Section "E", was under engineering control throughout the construction season under the direction of Robert Templeton. A re-survey was made of the entire route from Tok Junction to the Little Tok River Bridge, a distance of 33.4 miles. In addition to the regular survey staking to establish grades, shoulders and slopes, a considerable amount of culvert and drainage survey was completed. The final grading was made to "Blue Top" grades.

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A start was made to establish the final location of the Taylor Highway by an "As Built" survey beginning from Tetlin Junction. About three miles of the route was completed by taking advantage of slack periods in the Glenn Highway Work.

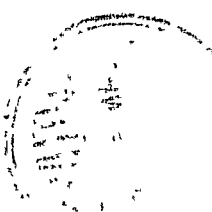
Farm Roads surveying was hampered early in the season by lack of survey personnel. Later in the season the engineering party was supplemented by help transferred from the Anchorage District and under the direction of Robert Smith. A very creditable showing was made to provide alignments and grades for farm road construction. Surveys were also made of all road petitions and these petitions were submitted to Headquarters in prescribed manner.

In addition to the aforementioned road surveys considerable engineering work was involved in bridge location and approach road construction. Such projects as the Chena River Bridge and the Noyes Slough (Minnie St.) Bridge received a considerable amount of alignment and grade surveying. Work was done on the Graehl and Minnie St. approach roads to these bridges, much of the work being due to the City of Fairbanks' confusion as to right-of-way concessions. Bridge surveys and inspection was provided for such structures as the steel bridges at the Fortymile River and O'Brien Creek and the wood bridge at Alder Creek, all on the Taylor Highway, together with four wood bridges on the Glenn Highway, Section "E", and two wood bridges on the Alaska Highway. Engineering and inspection was also provided for a timber bridge on the Becker-Dale-Conn Farm Road. A bridge site survey was made at Jarvis Creek on the Richardson Highway.

The perimeter of the 4 acre plot leased from the Alaska Railroad and used by ARC for a storage and equipment yard was established and the fence erection work was inspected.

Donald Durnell acted as Resident Engineer and James Moody was the Inspector on the contract construction of the Chena River and Noyes Slough Bridges. Their field and record work was entirely satisfactory.

Various design assignments were completed such as the lavatory addition to the new warehouse and the cold storage addition to the same building.



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The Construction Section under the general foremanship of George Morton at Fairbanks and Claude Rogers at Tok have maintained their respective stations in a very creditable manner. The summer and winter road maintenance, road and bridge construction, reconstruction and repair completed by them has been done with dispatch and at minimum expense.

Worthy of comment is the work accomplished by the Engineering Section wherein the several residencies have been ably directed by Robert Templeton, Richard Stack, Donald Durnell and Robert Smith. Reconnaissance, preliminary and location surveys, road, bridge and building engineering and inspection together with a certain amount of design and plan work has been very ably completed.

Of particular worth has been the soils engineering work under the direction of James Anderson. The field and laboratory control afforded by this section has been a definite step toward a higher standard of road construction.


The turnover in office help has decreased considerably and while not staffed for summer operation, very little change is expected and the 1953 season should be entered with the present experienced and able personnel.

Administration under direction of Brad Gunderson, assisted by Floyd Nebel completed a successful year although accounting systems were changed during the period. All business is current in this section.

The Supply Section under the supervision of Harry Quest has completed a year in their new office and much headway has been made in supply accounting and requisitioning.

The Shop Section under the direction of John Savelle has maintained normal repair of equipment without expanding the regular repair crew and in addition they have made several equipment conversions wherein a crane has been developed from an old  $\frac{1}{2}$  yard shovel and a truck tractor, a 34 foot highboy was constructed from an old Army surplus special service trailer and two mobile oil and grease service trucks were assembled from old equipment and spare parts. This season there was a minimum of breakdown time.

Very truly yours,

  
*M. C. Zimmerman*  
M. C. Zimmerman  
District Engineer

December 29, 1952

Mr. William J. Niemi  
Chief Engineer  
Alaska Road Commission  
Juneau, Alaska

Dear Mr. Niemi:

Annual Report

Reported herein is a report of the general engineering and construction operations within the Fairbanks District of the Alaska Road Commission during the 1952 season.

The District under the direction of Mr. Milton C. Zimmerman, District Engineer, has maintained normal operations throughout the winter and summer seasons of the year, meeting all the conditions of road repair, snow removal, drainage, culvert installation, summer surfacing, bridge repair and incidental work related to road and highway maintenance. In addition to keeping maintenance at a standard level, minor and major construction projects by both Alaska Road Commission forces and by contract arrangement have been completed on schedule and estimate during the year.

There has been little change in the permanent personnel other than some changes of a supervisory nature, not effecting the general and basic business conditions of the organization. Vacation requests have been few and such vacation periods as have been granted will not effect the 1952-1953 winter work and planning schedule as most of the leave periods will be completed by the first of the new year.

Considerable headway has been made towards improving and making more permanent such records as engineering field notes, plans, office data and general information and reference files. The records made by Resident Engineers on both force account and contract work especially are worthy of comment, wherein complete and comprehensive records of work under their supervision has been recorded.

An effort has been made to approach the several problems of road and highway engineering and construction on a more technical and scientific basis than heretofore. Soils investigations and recommendations based upon sampling and laboratory test results, plus a minor effort to inspect and criticize bridge and road construction being done by our own forces as well as on contract work has resulted,

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we believe, in a higher standard of construction than heretofore. Much credit for this condition is due the construction supervisory personnel who have in most cases shown a willingness to cooperate in bringing about a closer relationship between engineer and constructor to the end that some control of construction materials and methods have been possible, if in some cases only of an elementary nature.

The following pages outline the overall maintenance, construction, reconstruction, and repair work completed during the 1952 season. The report will be narrative in style for the reason that other statistical reports have been made, and this report is intended to be descriptive of work accomplished as well as supplying certain pertinent data related to the several projects.

## I. MAINTENANCE

### A. ROADS AND DEPOTS

#### THROUGH ROADS

Route 130 - Richardson Highway - 137.6 miles  
Route 131 - Ladd Field Sour - 0.4 "

Winter maintenance, consisting of snow removal, surface planing, culvert clearance and any and all services related to providing safe driving conditions have been maintained from Fairbanks to the vicinity of Donnelly Dome, a distance of 115 miles. From this point on to Black Rapids, the highway remains closed to traffic during the winter season.

Summer maintenance work consisted of shoulder realignment and shoulder build-up, bituminous patching of surface failures, bridge repairs, reconstruction and miscellaneous ditching and culvert repair.

A slide at the north end of the Tanana River Bridge, Mile 277.1, brought down 3800 cu. yds. of material on the highway. Most of the material was moved to the south end of the bridge and dumped on the upstream approach fill to lessen the scouring action of the river on that embankment. Some of the slide material was moved to Mile 280.6 where two dykes were built on the north bank of the Tanana River to prevent the river from further erosion which at that point was endangering the highway support. In addition to the material placed on the south approach to the Tanana River taken from slide material, 450 cu. yds. of borrow was placed on this same fill section.

At Mile 331, approximately 1200 cu. yds. of fill and rip rap was placed at a point where the river was cutting into the bank and endangering the highway support.

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Route 130 - Richardson Highway - 137.6 miles Continued  
Route 131 - Ladd Field Spur - 0.4 "

Winter Maintained - 115 miles  
 Summer " 137.6 miles

Route 230 - Alaska Highway - 203 miles

Summer and winter maintenance has been kept to standard although the section from Delta Junction to Sears Creek was under contract reconstruction during the summer of 1952. This condition relieved somewhat the maintenance requirements of the Alaska Road Commission forces.

A considerable amount of frost heave damage to the bituminous surface was had during April and May between Tok Junction and Johnson River, although the damage was not as heavy as during the spring breakup the preceeding year. The road was closed from Tok Junction to Big Delta to heavy truck traffic from April 18th to May 17th. Fifty percent of truck capacity was permitted and the speed limit was established at 35 miles per hour.

Winter Maintained - 203 miles  
 Summer " 203 miles

Route 330 - Glenn Highway - 33.8 miles

Section "E" of the Glenn Highway, extending from Tok Junction to the Little Tok River Bridge was maintained on an all season basis. During the summer months a portion of the Old Valdez Road had to be maintained to provide a by-pass route for road and bridge construction. Normal and continuous maintenance was not possible nor necessary from Clearwater Creek to the Little Tok River as this section was under reconstruction and such maintenance as was provided was mostly tied in with construction grading.

At the Little Tok River Bridge shear piling was driven in front of the pier piling to protect the bents from ice damage. The same protective piling arrangement was driven in front of the piers at the Tok River Bridge.

Winter Maintained - 33.8 miles  
 Summer " 33.8 miles  
 Grading 105004 C.Y.  
 Gravel Borrow 27625 C.Y. mile  
 (Haul)



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Route 630 - Steese Highway (To North Camp) - 1.4 miles  
Route 632 - Steese Highway (To University) - 3.8 miles

Winter and summer maintenance was accomplished on these heavily traveled routes. On College Hill some bituminous patching was done to correct breaks in the surface. These routes have given good service since they were built and bituminous surfaced during the 1950 season. There are three sections on Route 632 that show some settlement and both routes should receive a seal coat treatment at an early date.

Winter Maintained - 5.2 miles  
Summer Maintained - 5.2 miles

International Airport Road (CAA Road) - 4.5 miles

This paved road leading from South Cushman and Gaffney Streets in Fairbanks to the International Airport was placed during the 1950 season, and was maintained during the winter and summer seasons. There are two or three short sections that have settled but at this time it is believed the road has become stable and it is recommended that at least two sections be brought to grade and that the entire route be seal coated.

Winter Maintained - 4.5 miles  
Summer Maintained - 4.5 miles

FEEDER ROADS

Route 331 - Taylor Highway - 158 miles

Summer maintenance combined with reconstruction resulted in bringing the Taylor Highway from Tetlin Junction to Polly Creek to a higher standard. Sections of the roadbed was widened, rolling sections were smoothed, side road ditches were widened and surfaces planned and graded to provide a smooth riding surface.

No winter maintenance was attempted but the route from Tetlin Junction to the Fortymile River Bridge was opened during the last week of February. Supplies and workmen were brought in over the route and the camp at Fortymile was activated.

Winter Maintained - None  
Summer Maintained - 158 miles

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Route 231 - Northway Junction-Airfield - 6.8 miles

Normal winter and summer maintenance was accomplished on this road keeping it open to the public at all times.

Winter Maintained - 6.8 miles

Summer Maintained - 6.8 miles

Steese Highway - Route 631 - 162 miles

" 633 - University to Ester - 6.7 miles

" 634 - Central to Circle Hot Springs - 8.3 miles

31 miles of the Steese Highway out of Fairbanks was winter maintained and the entire route was opened up to traffic on May 30th.

Summer maintenance, while tied up with reconstruction in some instances, did involve a separate program wherein grading, culvert repair, ditching and widening was completed. 4.15 acres of clearing, grubbing and stripping along the right-of-way was also completed.

Grader maintenance was provided for the University to Ester and Central to Circle Hot Springs routes.

Winter Maintained - 31 miles

Summer Maintained - 177 miles

Clearing, grading & stripping - 4.15 miles

Grading - 89,840 C.Y.

Gravel Borrow - 4,515 C.Y.

Route 731 - Elliott Highway - 68.4 miles

This highway was maintained in good condition throughout the summer season.

A washout at Globe Creek was repaired, a culvert was reseated and the road adjacent was repaired.

The road was kept open during the winter months from Fox to Olnes.

Winter Maintained - 9 miles

Summer Maintained - 68.4 miles

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Route 732 - Manley Hot Springs-Eureka - 25.7 miles

Surfacing work was quite extensive producing an excellent riding surface. A considerable amount of ditching to improve the overall road drainage system was done. An all-weather road was constructed for a distance of 3 miles from Manley Hot Springs to the river landing.

Winter Maintained - None  
Summer Maintained - 25.7 miles  
Brush Control - 4.5 miles

Route 031 - Ruby-Long-Poorman - 56.5 miles

A 1½ ton Ford dump truck was shipped from Ruby to Marshall to supplement the road maintenance equipment for this area. The Territorial Highway Engineer supports the maintenance program by allotting the work to residents of the district.

A program of brush control produced 8 miles of brushed right-of-way. The work was done along the right-of-way where it was needed most.

Four timber bridges scheduled for construction this season were abandoned and the funds were used to improve the road structure which was in such condition as to become impassable if not built up, drained and surfaced.

Winter Maintained - None  
Summer Maintained - 56.5 miles

LOCAL ROADS

Route 130.1 - Cushman St. Extension	1.9 Miles
" 130.2 - Badger Farm Road Loop	12.1 "
Dennis Road	0.6 "
Greiman Road	0.7 "
Peede Road	4.0 "
Nordale-Tonseth-Freeman Road	1.2 "
Thirtymile Slough Road	2.2 "
Keeling Road	0.4 "
Route 130.3 - Old Richardson Highway	14.5 "
" 130.4 - Lake Harding Branch	2.8 "
Birch Lake Branch	1.7 "
" 130.5 - Richardson Highway - Democrat Creek	4.0 "
" 132.1 - Alston Road	0.5 "
Bjeermark Road	1.3 "
Becker-Dale-Conn Road	2.1 "
Davis Road	1.0 "
Peger Road	2.6 "
Van Horn Road	0.5 "
Moore-Cartwright Road	1.0 "

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LOCAL ROADS Continued

These local roads were summer and winter maintained except the Nordale-Tonseth-Freeman Road which was just constructed this season and which will not be winter maintained. No winter maintenance was done on the Birch Lake Branch, Keeling Road nor the Richardson Highway-Democrat Creek Road but all the other roads were kept open for winter traffic for their entire length except that only 7 miles of the Old Richardson Highway and 1.5 miles of the Lake Harding Branch required winter maintenance.

Winter Maintained - 40.2 miles

Summer Maintained - 55.1 miles

Route 630.1 - Minnie Street - Third Street Branch	1.8 miles
Graehl Branch	0.4 miles
Trainer Gate Road	0.8 miles
Route 631.1 - Farmers Loop Road	9.0 miles
Isabelle Creek Road	3.1 miles
Crossman-Fideler	0.7 miles
Ballaine-Rickert	2.5 miles
Yankovich Road	2.1 miles
Grenac Road	1.2 miles
Country Club Extension	0.7 miles
Route 631.2 - Steele Creek Branch	9.7 miles
Chena Hot Springs Road	3.8 miles
Route 631.3 - Gilmore-Pearl Creek	8.8 miles
Fish Creek Road	8.7 miles
Fairbanks Creek Road	10.2 miles
Little Eldorado Creek Road	2.1 miles
Old Chatinika Road	2.0 miles
Route 631.4 - United States Creek Road	11.0 miles
Sourdough Creek Road	4.8 miles
Faith Creek Road	1.5 miles
Route 631.4 - Eagle Creek Road	1.2 miles
Miller House-Harrison-Mastodon Miller Cr's	15.2 miles
Porcupine Creek Road	11.0 miles
Route 632.1 - University Way	1.3 miles
Geist Road	1.7 miles
University of Alaska Campus	2.1 miles
Route 633.1 - Chena Pump Station	4.8 miles
Ester Dome Road	4.0 miles
St. Patrick's - Goldstream	3.8 miles
Ester-Beegler	3.2 miles
Ready Bullion Creek Road	2.5 miles
Route 634.1 - Deadwood Creek Road	3.4 miles
Ketchum Creek Road	2.8 miles

This group of local roads in and around Fairbanks was mainly maintained during the summer months. Winter maintenance consisted of keeping roads free of snow on routes where winter residence was maintained.

Winter Maintained - 46.1 miles

Summer Maintained - 144.7 miles

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Route 731.1 - Brooks-Livengood - 7.0 miles  
Amey Creek Road - 1.0 miles  
Wilbur Creek Road - 1.2 miles

These are Elliott Highway feeder roads contingent to Livengood. Summer maintenance only was supplied these routes.

Winter Maintenance - None  
Summer Maintenance - 9.5 miles

Route 732.1 - Manley Hot Springs-Tofty - 18. miles

Spring breakup damage made it necessary to rebuild three-quarters of a mile of road. Summer maintenance consisted of surfacing and a ditching and drainage program.

Winter maintained - None  
Summer maintained - 18 miles

Route 130.6 - Meadows Road - 17.1 miles

During the 1951 season, this road was built for the army and we make winter and summer maintenance on reimburseable basis.

ISOLATED LOCAL ROADS

Route 030.1 - Coal Creek Road - 7.0 miles  
030.2 - Rampart-Little Minook Creek - 4.5 miles

A dump truck was shipped to Rampart and one to Coal Creek, to provide maintenance equipment. The cost of shipping was borne by the Alaska Road Commission but the maintenance cost was borne by the Territorial Highway Engineer, who assigned the road work to interested parties.

Route 331.1 - Jack Wade-Boundary - 13.9 miles  
Eagle-Mission on Yukon River - 3.3 miles  
Eagle - 70 Mile River - 4.0 miles

A minimum of summer maintenance work was performed on these roads, except for an effort to keep the road to the Boundary in good riding condition. These roads are not kept open for winter traffic.

Winter Maintained - None  
Summer Maintained - 21.3 miles

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Route 311 - Fairbanks Apartment

Considerable work was done on the apartments to make them more weatherproof. Casings around the windows and doors were removed and openings were packed with rock wool and felt. Certain sections of the outside walls were checked for insulation and found to be adequate. Storm windows were installed on the first floor and to the large windows on the second floor. Outside weather stripping was replaced with new material and the construction joint between the plate and the concrete foundation wall was caulked. The interior walls were repainted and miscellaneous repairs to doors, locks and latches was completed.

Route 302 - Tok Depot

The main feature of construction at the depot was the beginning of construction of the service garage on a contract basis. Hopper and Company were the successful bidders. Construction was discontinued for the season on October 15th but work had progressed to where the concrete floor slab was being laid when cold weather prohibited further work.

New flooring was placed during the year in the mess hall, kitchen and the office building and adjacent sleeping rooms were refloored.

All rooms in Building No. 313 were painted and new beds were placed in rooms 5, 7 and 9.

Silver Fox Camp

During the year three buildings were moved from the old camp at 66 Mile and erected as one barracks building at the winter maintenance camp adjacent to the Silver Fox Lodge at Mile 315.6 on the Richardson Highway. The camp now contains a barracks structure, two warm storage buildings of first class construction.

Gardiner Creek Camp

The Gardiner Creek maintenance camp, operating under the immediate supervision of the Tok office, while maintaining normal bridge and road conditions on the Alaska Highway and the Northway Feeder Road, kept camp facilities in good repair.

Tok Airport

A landing field was cleared, stripped and graded adjacent to the intersection of the Alaska and Glenn Highways at Tok Junction.

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Route 030.3 - Wiseman Locals - 18.0 miles

The Nolan Branch of 5.5 miles and 12 $\frac{1}{2}$  miles of the Wiseman-Hammond River Road make up the 18 miles of Wiseman Local Roads. This season a little more than 4 miles of roadway was added to the Wiseman-Hammond River Road. Summer maintenance was also carried on which included 5.7 miles of brush control.

Winter Maintained - None  
Summer Maintained - 18 miles  
Brush Control - 5.7 miles

Route 030.4 - Ruby Airfield Road - 1.2 miles

Summer maintenance only was supplied this isolated road. Some ditching and routine maintenance was done from ARC funds.

Winter Maintained - None  
Summer Maintained - 1.2 miles

Route 030.5 - Nulato Airfield Road - 1.0 miles  
" 030.6 - Nenana - Cemetery - 2.5 "  
Ferry-Eva Creek - 21.8 "

A pull grader was shipped by rail to Nenana to provide surfacing equipment for the Nenana Cemetery Road. \$1000.00 was expended for equipment rental and labor costs for summer maintenance on the Ferry-Eva-Moose Creek Road.

Winter Maintained - None  
Summer Maintained - 24.3 miles

DEPOTS

Fairbanks Depot - Route 301

Improvements at the Depot this year include the construction of a security fence around the perimeter of the four acre plot of ground leased from the Alaska Railroad and serving ARC as an equipment yard.

Building No. 33 was altered to provide additional warm storage space for cars and trucks used in snow removal work.

The contractor completed the warehouse construction and all elements of the property section are now housed in the building.

Miscellaneous repair work to doors, windows and fencing in the area was done throughout the year.

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Route 311 - Weirbanks Apartment

Considerable work was done on the apartments to make them more weatherproof. Casings around the windows and doors were removed and openings were packed with rock wool and felt. Certain sections of the outside walls were checked for insulation and found to be adequate. Storm windows were installed on the first floor and to the large windows on the second floor. Outside weather stripping was replaced with new material and the construction joint between the plate and the concrete foundation wall was caulked. The interior walls were repainted and miscellaneous repairs to doors, locks and latches was completed.

Route 302 - Tok Depot

The main feature of construction at the depot was the beginning of construction of the service garage on a contract basis. Hopper and Company were the successful bidders. Construction was discontinued for the season on October 15th but work had progressed to where the concrete floor slab was being laid when cold weather prohibited further work.

New flooring was placed during the year in the mess hall, kitchen and the office building and adjacent sleeping rooms were refloored.

All rooms in Building No. 313 were painted and new beds were placed in rooms 5, 7 and 9.

Silver Fox Camp

During the year three buildings were moved from the old camp at 66 Mile and erected as one barracks building at the winter maintenance camp adjacent to the Silver Fox Lodge at Mile 315.6 on the Richardson Highway. The camp now contains a barracks structure, two warm storage buildings of first class construction.

Gardiner Creek Camp

The Gardiner Creek maintenance camp, operating under the immediate supervision of the Tok office, while maintaining normal bridge and road conditions on the Alaska Highway and the Northway Feeder Road, kept camp facilities in good repair.

Tok Airport

A landing field was cleared, stripped and graded adjacent to the intersection of the Alaska and Glenn Highways at Tok Junction.



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II. RECONSTRUCTION

Route 331 - Taylor Highway - 158 miles

Considerable graveling was done on Jack Wade Hill on to the Boundary road intersection with the Taylor Highway. The rock work between the Polly Creek Camp and Fortymile River Camp will be mentioned under the heading of construction.

Route 330 - Glenn Highway Section "E" - 33.8 miles

The 34 mile section of Glenn Highway from Tok Junction to the Little Tok River Bridge was under reconstruction during the 1952 season wherein ARC forces laid select borrow to the designed grade and alignment established the previous season. Particular attention was given to side road ditching and road shoulder slopes and the select borrow material obtained from road side pits was kept under inspection to eliminate the indiscriminate dumping of any and all pit material in the road bed. Material containing fines in excess of 10 percent was rejected and as near as possible, material containing large oversize rock was not considered as select borrow. Traffic compaction resulted in a reasonably firm road-bed. A considerable number of soft, unstable sections were removed and replaced with more satisfactory material. A number of culverts were removed and replaced on firmer foundation material or relocated to better drain the areas.

This project was built in conformance with standards set up by the Materials Section wherein the 34 miles of roadway built during 1950 and 1951 was sampled and from laboratory test results the thickness of select borrow required as coverage was determined. Of major importance was the selection of select borrow of a quality that would be unaffected by frost action.

Clearing, grubbing & stripping	8 acres
Grading	266,085 C.Y.
Clearing & stripping	11 acres
Gravel borrow (load)	3859 C.Y.
Drainage	364 L.F.
Dikes	100 L.F.

Route 631 - Steese Highway to Circle - 162 miles

Route 633 - University to Ester - 6.7 miles

Route 634 - Central to Circle Hot Springs-8.3 miles

A considerable amount of reconstruction was done on this route wherein graveling, grading, widening and ditching was completed between Mile 51 and 57 and from Mile 141.7 to 151.0. 8.5 miles of this construction was also gravel surfaced. Constant rains hampered the work but the program was/ regardless, although it required that the route be kept under met

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almost constant maintenance.

Clearing, grubbing & stripping	4.15 acres
Grading	89840 C.Y.
Gravel Borrow	4515 C.Y.

Route 631.1 - Farmers Loop - 9 miles

This route, of considerable importance to Fairbanks, was not too much damaged by the wet season and most of the work performed on the route was confined to resurfacing the weak sections.

Gravel Borrow	3175 C.Y.
Gravel Borrow (Haul)	27588 C.Y. mile

Route 130 - Richardson Highway - 137.6 miles  
Route 131 - Ladd Field Spur - 0.4 miles

The Fairbanks section of the Richardson Highway extending from the Valdez-Fairbanks District boundary at Black Rapids, junctioning with the Alaska Highway at Delta Junction and continuing through to Fairbanks is now bituminous surfaced for 120.3 miles of the 137.6 mile route. The section beginning on the south side of Donnelly Dome, and extending to Black Rapids, while realigned and reconstructed, remains to be hard surfaced. The project was engineered and supervised by the Bureau of Public Roads.

Unusual flood conditions prevailed during the spring period that resulted in severe damage to four concrete-steel I-beam bridges just completed on a contract basis. These bridges were located at Mile 230.4, 233.0, 235.3 and 236.8. The first named bridge at Mile 230.4 received no structural damage but a small amount of channel erosion was noticed. The approach fills to the structure remained stable. The bridges at Mile 233 and 235.3 were greatly damaged when the approach fills were swept away, exposing the abutment and wing wall piling and planking. Some piling and a considerable amount of planking was swept downstream, however, the structures remained stable and in position. The bridge at Mile 236.8 was not damaged but the north approach fill was swept away.

Repair work on these bridges consisted of the replacement of steel piling, driven to refusal, excavation around base of all piling to a depth of 5 feet to form a trench which was filled to the surface with concrete and all wing and abutment planks were replaced.

An asphalt repair crew continued patching broken surfaces on the paved section of the Richardson Highway throughout the summer period. Considerable effort was made to repair some of the large sections that had

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resided due to either permafrost deformation and/or lack of compaction effort during the embankment construction period. As we have not, up to date established a means of determining soil compaction requirements during construction to densify the soil so that it will not deform either through additional compaction or consolidation under load, we are of the opinion that perhaps some of the deformation experienced on our paved highways may not be entirely due to permafrost recession, wherein the frozen undisturbed road foundation material ceases to support the road embankment as it gradually melts, but may be due in part to embankment soil consolidation after the pavement is placed.

Rip rap	200 tons
H-Piling	100 L.F.
Planking	2000 M. Fbm
Concrete	75 C.Y.

Route 630.1 - Graehl Branch

Third Street in Graehl was graveled for four blocks to improve the approach road to the Chena River and Noyes Slough Bridges under Work Order No. 343 and in the same operation but under Work Order No. 345, two blocks on Dawson Street was graveled to provide an approach road to the Bentley Island Homes.

Graehl - Gravel Borrow (Load)	1716 C.Y.
Graehl - Gravel Borrow (Haul)	1487 C.Y. mile
Bentley - Gravel Borrow (Load)	1485 C.Y.

Route 130.2 - Badger Farm Loop Road

Approximately 5 miles of this route was regraded and resurfaced this season in addition to the normal maintenance work the route required.

Gravel Borrow - 13951 C.Y.

III. CONSTRUCTION

(A) By Contract

I-arc-4274 - The Shaw Creek Bridge was declared complete and the Munter Construction Company were allowed final payment on their contract.

I-arc-4298 - Section A & B1 of Alaska Highway, under the engineering and construction control of the Bureau of Public Roads was completed except for the bituminous seal coat and final cleanup work which is to be done next season by Babler Bros. & Rogers, the contractors.

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I-arc-4299 - Noyes Slough Bridge at Illinois Street in Fairbanks was declared complete and the Munter Construction Company was released from further responsibility.

I-arc-4303 - Section "C" of the Richardson Highway was completed by Lytle & Green Contractors and the project was inspected and accepted October 3, 1952.

I-arc-4339 - Richardson "C" Bridges. The four steel and concrete bridges contained in this contract were completed July 15, 1952, 15 days beyond the contract period. The Munter Construction Company was released from further responsibility but were assessed for the overtime performance.

I-arc-4352 - Fairbanks Warehouse. The A. E. Waxberg Construction Company was allowed an extension of time on their contract to build the Fairbanks warehouse due to non-delivery of the overhead doors. These doors were received and installed this season which terminated the contractor's responsibility and final payment was made.

I-arc-4413 - The Chena River and Noyes Slough Bridges under contract to Boen-Sealand Constructors completed a reasonably successful season, finishing all substructure work before closing operations for the winter.

The work of placing the seals and foundations of Piers Nos. 2 and 3 and the foundations for Piers Nos. 1 and 4 of the Chena River Bridge was considerably hampered by high water which prevailed in the Chena River throughout the summer. These builders were very ably supervised at all times, however, and surmounted the high water conditions by exercising proven methods of construction and operation adapted to the changing conditions. Adequate equipment and experienced personnel together with sound planning resulted in all construction schedules being met.

The status of the construction at the end of the 1952 construction season was such that schedules were met for both structures wherein all substructure construction was complete up to the bridge seats.

In addition to the approach fills made by ARC forces before contract construction commenced, additional embankment was placed during the fall period to bring the approach fill on the Chena River Bridge to within 9 inches of the finished grade.

I-arc-4428 - The Tok Garage construction was closed down for the winter on October 15, 1952, by the Hopper Company but they were given credit for 27 percent completion on that date. The project was maintained on schedule and no unusual conditions prevailed to make any major changes necessary. Workmanship has been good and the builders cooperation was commendable during the period of construction. Supplies and materials have been adequately covered and should be in good condition when spring work is resumed.

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(B) FORCE ACCOUNT

Route 331 - Taylor Highway - 158 miles

A bridge crew was placed at the Forty Mile Bridge location in March after the route had been cleared of snow from Tetlin Junction to the Fortymile River Camp. Work was rushed throughout March and April to complete the erection of bridge steel before high water which would dislodge the falsework from which the steel structure was assembled. This was accomplished and the bridge was ready for traffic at the end of April.

The completion of this bridge permitted bringing supplies and equipment forward for provisioning camps at Upper O'Brien Creek and Columbia Creek besides supplying fuel oil and supplies for the vicinity of Liberty.

Construction crews under the foremanship of Wyman Fritsch and James Dennocenzo and under the general foremanship of first, Edward Peyton; and later Frank Johnson, worked separate sections of the road all the way to Liberty, with rock crews drilling and blasting rock barriers between sections.

A considerable amount of road widening and grade improvement was accomplished on the section of road between the Polly Creek Camp and the Fortymile river bridge wherein rock points were drilled and blasting and frozen muck was removed as it thawed.

This fall 23,214 gallons of diesel oil supplies were freighted to the Fortymile River Camp and distributed between the Fortymile River and Liberty Camps and a cache was made at Dime Creek. There will be about 2000 gallons of gasoline in the area next spring in addition to the diesel fuel.

Clearing (By hand)	7-3/8 acres
Grading (By Scraper)	122,173 C.Y.
Grading (By Power Shovel)	925 C.Y.
Excavation - Rock (Drill & shoot)	31,287 C.Y.
Excavation - Rock (Load)	5,302 C.Y.
Excavation - Rock (Haul)	2,615 C.Y.
Corduroying	4,250 L.F.
Gravel borrow (load)	28,428 C.Y.
Gravel borrow (haul)	1,684 C.Y. mile
Drainage (Culvert - metal)	2,308 L.F.
Drainage (Ditching)	70 L.F.
Bridges (Piling)	955 L.F.
Bridges (Timber abutments)	1972 M.FBM
Bridges (Timber superstructure)	68,277 M.FBM
Steel Construction (Bearing Pile)	240 L.F.
Steel Construction (Struct. Steel)	270,137 pounds

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Route 230 - Alaska Highway

Two timber bridges were erected on this route, one at Mile 1422.5 and the other at Sawmill Creek. The material was creosoted Douglas Fir having an 8 pound empty cell treatment.

The Tok Bridge crew erected the bridges during the reconstruction of the Alaska Highway. Detours around the bridge sites were provided by the contractor for the Alaska Highway reconstruction.

Timber Piling	-	555 L.F.
Timber Abutments	-	3 MFBM
Timber Super-structure	-	7 MFBM

Route 330 - Glenn Highway - Section "E"

New construction on this route consisted of the building of five timber bridges to provide a total of seven timber bridges between Tok Junction and the Little Tok River, a distance of 33.8 miles. Bridges at Clearwater Creek and Tok River were constructed during the 1951 season. The bridges constructed this season are as follows:

1. Tok River Overflow No. 1
2. Tok River Overflow No. 2
3. Elizabeth Creek
4. Ford Creek
5. Little Tok River

All of these structures were constructed of Douglas Fir which had been treated with an 8 pound empty cell creosote treatment.

The construction work was ably directed by Jeff Davis, foreman, stationed at the Tok Depot.

Timber piling	1140 L.F.
Timber abutments	3997 MFBM
Timber superstructure	52,847 MFBM

Work Order No. 333 - Chena River and Noyes Slough Bridges

Before the contractor began work on these structures A.R.C. forces constructed four embankment approaches up to the abutment elevations. This fall after the contractor had completed his summer work, the approaches were built up to within 9 inches of the finished approach road grade at the Chena River Bridge site. No additional material was added to the approach fills for the Noyes Slough Bridge as at that time the City of Fairbanks was in controversy relative to the approach road right of way.

Gravel Borrow (Load)	15,835 C.Y.
Gravel Borrow (Haul)	54,422 C.Y. mile

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Farm and Industrial Roads

Farm roads constructed this year were as follows:

Route 130.1 - Bjerremark Road. One mile and one quarter of roadway was constructed to give this subdivision access to 19th Street in Fairbanks. The construction on the Bjerremark Road proper amounted to only one mile but one-quarter mile of road was built to connect the road with 19th Street across City of Fairbanks property.

Route 130.2 - Keeling Road. Three-eighths of a mile of road was built to connect with the Thirtymile Slough Road. This project is complete.

Route 130.2 - Nordale-Freeman-Tonseth Road. One and one half miles of this 3 mile project are cleared and one and one-quarter miles of the construction have been graded.

Route 130.4 - Johnson Road. Three-quarters of a mile of road was constructed of which one-quarter mile was finish graded.

Route 130.5 - Shaw Creek Road. This project was started late in the season and two miles of roadway was roughed out and a reasonably good road was produced. Some widening and grading remains to be done, together with culvert installation and surfacing.

Route 132.1 - Moore-Cartwright-Conn Road. Two miles of road was built and grading work was completed. The project is about 85% complete.

Route 631.1 Wolff Run Road. This construction is 0.6 mile long and work included building the road and grading. Additional construction of approximately three-quarters mile is required to complete this project.

Quantities involved in construction of Farm Roads are as follows:

Work Order No. 363

Clearing, grubbing & stripping	6.13 acres
Grading	23930 C.Y.
Gravel Borrow (Load)	9404 C.Y.
Gravel Borrow (Haul)	980 C.Y. mile

Work Order No. 364

Clearing, grubbing & stripping	4.82 acres
Grading	20,700 C.Y.

Route 132.1 Becker-Tale-Conn Road

In addition to reconstruction on portions of this route, a 25' x 20' bridge was constructed of creosoted timber and piling over a slough that drains a portion of the district.

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Route 132.1 Becker-Dale-Conn Road (Continued)

Quantities involved in construction of bridge are as follows:

Cresoted Timber	9095 M. Fbm
Piling	376 lin. ft.

Route 330 - Richardson Highway

A weighing station was constructed at Mile 14. Approach roads and gravel fill was made to provide a stable foundation. The station has not been placed in operation but will be activated after the first of the year.

IV. SURVEYS & PLANS

The Rampart Survey was started out of Rampart; its mission being to find and locate a route through to Livengood.

A party of 7 engineers, 2 dozer operators and a cook made up the party. Throughout the season, bad weather hampered the work and the inexperienced survey party was another condition affecting progress. The short season was closed, however, with a considerable amount of data wherein a route was established to Station 550 + 00. This preliminary line was continued this fall down the east slope of Chicago Creek to effect a crossing over the ridge to Alder Creek. There the work was discontinued for the season. Equipment was cached at Rampart where it will be in readiness for the work next spring. The Rampart work was supervised by T. Hugh Wilson.

The Taylor Highway Survey under the direction of Richard Stack completed a considerable amount of alignment work, bridge location and general engineering work together with inspection of culvert installation and bridge construction. The considerable amount of rock work encountered made a continuous and progressive survey impossible, to the end that the work was divided into sections to be connected at such time as bridges were built and rock obstructions were removed.

The Glenn Highway, Section "E", was under engineering control throughout the construction season under the direction of Robert Templeton. A re-survey was made of the entire route from Tok Junction to the Little Tok River Bridge, a distance of 33.4 miles. In addition to the regular survey staking to establish grades, shoulders and slopes, a considerable amount of culvert and drainage survey was completed. The final grading was made to "Blue Top" grades.



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A start was made to establish the final location of the Taylor Highway by an "As Built" survey beginning from Tetlin Junction. About three miles of the route was completed by taking advantage of slack periods in the Glenn Highway Work.

Farm Roads surveying was hampered early in the season by lack of survey personnel. Later in the season the engineering party was supplemented by help transferred from the Anchorage District and under the direction of Robert Smith. A very creditable showing was made to provide alignments and grades for farm road construction. Surveys were also made of all road petitions and these petitions were submitted to Headquarters in prescribed manner.

In addition to the aforementioned road surveys considerable engineering work was involved in bridge location and approach road construction. Such projects as the Chena River Bridge and the Noyes Slough (Minnie St.) Bridge received a considerable amount of alignment and grade surveying. Work was done on the Graehl and Minnie St. approach roads to these bridges, much of the work being due to the City of Fairbanks' confusion as to right-of-way concessions. Bridge surveys and inspection was provided for such structures as the steel bridges at the Fortymile River and O'Brien Creek and the wood bridge at Alder Creek, all on the Taylor Highway, together with four wood bridges on the Glenn Highway, Section "E", and two wood bridges on the Alaska Highway. Engineering and inspection was also provided for a timber bridge on the Becker-Tale-Conn Farm Road. A bridge site survey was made at Jarvis Creek on the Richardson Highway.

The perimeter of the 4 acre plot leased from the Alaska Railroad and used by ARC for a storage and equipment yard was established and the fence erection work was inspected.

Donald Durnell acted as Resident Engineer and James Moody was the Inspector on the contract construction of the Chena River and Noyes Slough Bridges. Their field and record work was entirely satisfactory.

Various design assignments were completed such as the lavatory addition to the new warehouse and the cold storage addition to the same building.

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The Construction Section under the general foremanship of George Morton at Fairbanks and Claude Rogers at Tok have maintained their respective stations in a very creditable manner. The summer and winter road maintenance, road and bridge construction, reconstruction and repair completed by them has been done with dispatch and at minimum expense.

Worthy of comment is the work accomplished by the Engineering Section wherein the several residencies have been ably directed by Robert Templeton, Richard Stack, Donald Durnell and Robert Smith. Reconnaissance, preliminary and location surveys, road, bridge and building engineering and inspection together with a certain amount of design and plan work has been very ably completed.

Of particular worth has been the soils engineering work under the direction of James Anderson. The field and laboratory control afforded by this section has been a definite step toward a higher standard of road construction.

The turnover in office help has decreased considerably and while not staffed for summer operation, very little change is expected and the 1953 season should be entered with the present experienced and able personnel.

Administration under direction of Brad Gunderson, assisted by Floyd Nebel completed a successful year although accounting systems were changed during the period. All business is current in this section.

The Supply Section under the supervision of Harry Quest has completed a year in their new office and much headway has been made in supply accounting and requisitioning.

The Shop Section under the direction of John Savela has maintained normal repair of equipment without expanding the regular repair crew and in addition they have made several equipment conversions wherein a crane has been developed from an old  $\frac{1}{2}$  yard shovel and a truck tractor, a 34 foot highboy was constructed from an old Army surplus special service trailer and two mobile oil and grease service trucks were assembled from old equipment and spare parts. This season there was a minimum of breakdown time.

Very truly yours,

M. C. Zimmerman  
District Engineer