UNITED STATES
DEPARTMENT OF THE INTERIOR
ALASKA ROAD COMMISSION
Juneau, Alaska.

January 1, 1949.

A.R.C. MEMORANDUM NO. 2

SUBJECT: Road Standards

	Through Roads	Feeder Roads	Local Roads
R/w Width	300'	200'	100'
Width of Roadbed	28'	24'	20'
Width of Paving	20'	none	none
Clear widths of new bridges	24'	20'	20'
Design Load, new bridges	H20	H15	H15
New bridges, vertical clearance	15'	14'	14'
Bridges to remain, clear width	20'	14'	14'
Bridges to remain, safe load, posted, tons	H15	H10	H10

	Through Roads		Feeder Roads		Local Roads	
	min.	desirable	min.	desirable	min.	desirable
Sharpest curve, °						
Flat topography	11	7	14	7	14	--
Rolling "	18	11	25	11	25	--
Mountainous "	36	18	56	18	56	--
Maximum Grade, %						
Flat topography	5	--	5	--	8	--
Rolling "	7	--	7	--	10	--
Mountainous "	9	--	9	--	12	--
Non-Passing Sight Distance						
Flat topography	315	415	315	415	--	--
Rolling "	240	315	240	315	--	--
Mountainous "	165	240	165	240	--	--

Exceptions hereto will be considered and must be authorized by the Juneau Office.

John R. Noyes.
John R. Noyes,
Commissioner of Roads for Alaska.

COPY x 18

UNITED STATES
DEPARTMENT OF THE INTERIOR
ALASKA ROAD COMMISSION
Juneau, Alaska

December 3, 1952

A.R.C. MEMORANDUM NO. 2 - Revised

SUBJECT: Road Standards

The following standards shall apply to all roads except arterials or other roads having a high traffic density. Such exceptions shall be as designed and approved by the Headquarters Office.

	Through Roads	Feeder Roads	Local Roads
R/w Width	300'	200'	100'
Width of Top Surface	24' 1/	24' 1/	20' 1/
Width of Paving	20' 2/	none	none
Width of Subgrade	28' 1/3/	24' 1/4/	20' 1/4/
Clear widths of new bridges	24'	20'	20'
Design Load, new bridges	H20	H15	H15
New bridges, vertical clearance	15'	15' 5/	15' 5/

1/ Width may be increased for widening of high embankments and curves of 10^{0} or over, as specified on Dwgs. J-GEN-1, 2 and 3.

2/ Width may be increased for widening of curves of 10^{0} or over.

3/ Provides for addition of 6" of surfacing material including paving.

4/ Does not provide for any addition of special surfacing material. If such addition is to be made, the subgrade width shall be increased so that the resulting top surface width is not decreased.

5/ New design only.

The following vehicle speeds shall be used in design of the various types of road:

	Through Roads	Feeder Roads	Local Roads
Very Heavy Construction	35	30	20
Heavy Construction	40	35	25
Medium Construction	45	40	30
Light Construction	50-60	50-60	40-50

The following minimum standards for the various design speeds shall be observed:

Design Speed	Degree of Curve	Non-Passing Sight Distance	Minimum Tangent between Reverse Curves
20	56	125	30
25	36	165	50
30	25	200	75
35	18	240	100
40	14	275	150
45	11	315	200
50	9	350	200
55	7	415	300
60	6	475	400

The following maximum grades shall not be exceeded. Grades less than maximum shall be used wherever economical construction will permit.

Through Roads	7%
Feeder Roads	8%
Local Roads	12%

Design speeds for new construction or reconstruction will be established by Headquarters based on recommendations of District Engineers. Different sections of the same road may be expected to require different design speeds. After construction, it shall be the District Engineer's responsibility to sign the road in accordance with the approved design speeds for the safety of the public.

Exceptions to the standards outlined above will be considered. Request for exceptions must be submitted to the Headquarters Office for approval.

A. F. Ghiglione
Commissioner of Roads
for Alaska

Distribution: E

Interior - ARC - Juneau

March 25, 1949

A.R.C. ORDER NO. 4

TO: ARC - Anchorage, Fairbanks, Nome, Valdez

SUBJECT: Anchorage District

The Alaska Road Commission district heretofore designated as the Southwestern District is hereby designated the Anchorage District.

JOHN R. NOYES
Commissioner of Roads for Alaska

GHS:rf

DEPARTMENT OF THE INTERIOR
ALASKA ROAD COMMISSION
Juneau, Alaska

August 30, 1950

A.R.C. MEMORANDUM NO. 86

SUBJECT: Policy regarding abandonment of roads.

It shall be the policy of the Alaska Road Commission that roads within Alaska previously built or maintained by the Alaska Road Commission, will be abandoned only through the following procedure.

1. Formal written request for abandonment of any particular section of road must be received from the parties recommending such action or from the District Engineer of the Alaska Road Commission District concerned.

2. Formal concurrence in the recommended abandonment will be obtained from the Territorial Board of Road Commissioners.

3. The public will be notified of the proposed abandonment by advertisement in the local papers and by notices posted on public bulletin boards, specifically in the areas to be affected by such abandonment. All such notices will request formal objections from any parties interested in the continued use of the road in question and will provide a period of not less than 30 days for the submission of such objections.

4. Upon the completion of the above three requirements, formal abandonment of the road will be authorized by the Commissioner of Roads for Alaska by an Alaska Road Commission Order.

John R. Noyes

John R. Noyes,
Commissioner of
Roads for Alaska

Miller

UNITED STATES
DEPARTMENT OF THE INTERIOR
ALASKA ROAD COMMISSION
Juneau, Alaska

August 8, 1951

A.R.C. MEMORANDUM NO. 102

SUBJECT: Tetlin Junction-Eagle Road (Forty Mile Road), Route 331, Designated "Taylor Highway"

The Tetlin Junction-Eagle Road, Route 331, has been formally named "Taylor Highway" in honor of Ike P. Taylor who for sixteen years served as head of the Alaska Road Commission.

The "Taylor Highway" extends from Tetlin Junction on the Alaska Highway through the Forty Mile mining district to Eagle on the Yukon River, with a branch road to the Canadian boundary where it connects with a road leading to Dawson, Y.T.

This action was approved by the Secretary of the Interior Oscar L. Chapman on June 12, 1951.

A. F. Ghiglione
Commissioner of Roads
for Alaska

Interior - ARC - Juneau, Alaska

UNITED STATES
DEPARTMENT OF THE INTERIOR
ALASKA ROAD COMMISSION
Juneau, Alaska

April 13, 1953

A.R.C. MEMORANDUM NO. 130

SUBJECT: Farm Road Surveys

Under the provisions of Secretarial Order No. 2665, dated October 16, 1951, it is necessary to submit plans and specifications for all farm roads to the Bureau of Land Management for right-of-way purposes.

Alignment surveys must be made to a precision of at least one part in five thousand for all future farm road construction, and in no case inferior to the limits of closure required during the survey of the land closed upon. As the alignment survey is run, complete ties must be made to all adjacent Bureau of Land Management survey monuments and all private property corners. In making ties to Bureau of Land Management survey corners, it is essential that the exact intersection of the road center-line with the section line or other B.L.M. survey line be obtained. Ties are also to be made to available U. S. Coast and Geodetic Survey and U. S. Geological Survey monuments to aid in checking positions and bearings. If alignment surveys of the above precision have not been made for farm roads previously constructed, such surveys should be made as soon as possible. Surveys of the same order should be made for all farm roads to be built during the 1953 season and thereafter.

As soon as necessary surveys covering previously constructed farm roads are made, the alignment shall be plotted to a scale of 1 inch = 400 feet and forwarded, with the original field notes, to Headquarters for review and transmittal to the proper land office of the Bureau of Land Management. In plotting, it is essential that all ties to Bureau of Land Management, private property, and other survey monuments be shown.

At the end of the 1953 and succeeding construction seasons, alignment maps and original survey notes for all farm roads constructed during the season shall be forwarded to Headquarters for review and filing of maps as above.

Wm. J. Niemi
Chief Engineer

Distribution: A

Interior-ARC-Juneau

COPY x 12

UNITED STATES
DEPARTMENT OF THE INTERIOR
ALASKA ROAD COMMISSION
Juneau, Alaska

January 25, 1956

A.R.C. MEMORANDUM NO. 130 (Revised)

Subject: Farm Road Surveys

The purpose of this revision of A.R.C. Memorandum No. 130 is to set forth the newer concept of these surveys as discussed at the 1955 Resident Engineers' Conference; to incorporate various pertinent instructions issued by the Survey and Road Design Branch under the general heading of Cadastral Work; and to establish new standards. This is intended as an interim memorandum pending completion of a combined Engineering Manual, and will be revoked when the Manual is published.

The accurate survey of farm roads and preparation of as-built plans has a dual purpose. The first is to provide the Alaska Road Commission with record plans of alignment, grade, structures and adjacent property. These should be brought up to date annually, recording revisions and improvements made during the year. The second purpose is for filing definite location of each road with the Bureau of Land Management, as required in Secretarial Order No. 2665, dated October 16, 1951. Under this Order we have a clear obligation to complete plans for every road and to record them.

Previous requirement for accuracy of survey was a precision of one part in five thousand. Analysis of this requirement reveals that it is neither realistic nor necessary to demand such precise work. The new required order of accuracy will be that termed Class 2, with angular error of closure not to exceed 1 minute times the square root of the number of angles turned, and linear error of closure not to exceed 1 in 3,000. This order fits the middle of the allowable range of accuracy required by the Bureau of Land Management for Class C surveys, which include the public survey of agricultural lands and small tracts.

Even with this lowered degree of accuracy, all chains used must be compared to standard, and the temperature at the time of survey taken into consideration. If the combined linear error from these two sources approaches or exceeds the allowable linear error of 1 in 3,000, correction must be made for either or both, depending upon the circumstances.

An accurate determination of true bearing must be made for every survey, either by means of triangulation ties to two U.S.C. & G.S. monuments of known geographic position, or by astronomical observation. The derivation of bearing must be shown on the first sheet of plans for each specific road. The data should include the determined true bearing taken to the nearest second, but bearings shown thereafter on the plans or used in traverse computation may be taken to the nearest 30 seconds.

When the survey is a retracement of an existing road, every effort shall be made to exactly duplicate the centerline by splitting width on tangents and computing curves that fit. All curve data shall be computed by Lefax curve tables utilizing the Harger and Bonney curve.

Accurate ties must be made to B.L.M. section and quarter section corners adjacent to the road. In general, such ties should be made each mile, but if corners are difficult to recover, this distance may be extended up to five or six miles. If ties are being made each mile, they may be made on one side or the other and not necessarily on both sides of the road. Wherever possible, ties should be made by triangulation from two points, using the centerline as a true base, or, if from different tangents, a computed base. The transit work should be carefully performed. If obscured vision prevents this method, angle and chain ties will be necessary. All ties made must be indicated on the plans.

The station at which each section and quarter-section line crosses the centerline of the road must be established. This will usually be accomplished by computation of coordinates based on our survey, combined with B.L.M. record bearings and distances where required, and solving for intersection by either north-unknown or triangle calculation. If there is not too much field work involved the point of crossing may be established by transit and chain. The station and angle of crossing shall be indicated on the plans, and the distance to the adjacent corner shall be followed by "(calc.)" or "(ch.)" to indicate method of tie.

Office calculation of closures, based on a combination of our survey and B.L.M. record bearings and distances, must be performed immediately after making the survey in order to detect errors and recheck closures exceeding the allowable amounts. Such calculations must be made on our standard traverse form, using 7-place natural tables, and all calculations must be checked by a second engineer. The point of beginning will ordinarily have zero-zero coordinates, and all four quadrants may be used in the latitude and departure columns. Chainage and computed distances may be taken to the nearest tenth of a foot, provided this does not introduce error exceeding the allowable. If a recheck fails to establish the error in our survey, it will be assumed that the error lies in the B.L.M. layout of the sections. It will not be necessary to resurvey the section lines, but the error of closure and the fact that our work was rechecked must be noted on the plans.

All survey parties making ties to section and quarter-section corners shall be supplied with a tablet of blank forms issued by the Bureau of Land Management entitled, "Report on Corners of Cadastral Survey Grid". A form shall be completed in duplicate for each corner encountered by our party, indicating condition and other pertinent information. Upon the conclusion of a particular survey the originals of this form shall be transmitted by the District to the nearest office of the Bureau of Land Management. The transmittal shall state the name of the road being surveyed and shall include a tabulation of the corners by position, section, township, range, and meridian; and a copy of the transmittal shall be forwarded to the Survey and Road Design Branch at Juneau. The duplicates of the form shall be filed with the field notes in the District office.

The as-built plans for each road shall be prepared in the same general manner as our design plans for contract construction.

A standard master title sheet, similar to our standard contract title sheet, should be drawn up for use on each of the roads in a given area. This should be at the scale 1":1/2 mile and cover as large an area as the sheet permits, showing the whole road system. Cloth reproducibles should then be made, one for each road. The name of the specific road will be inked in heavily in the upper center of the sheet, the road heavied up with ink on the map, and an arrow brought from this point to a box in the lower center. This box will carry a summary showing length in feet and miles, type, and year of construction. Space should be provided for future addition to this information. The regular approval box should be shown in the lower right-hand corner. The Chief Engineer will approve all plans subsequent to final checking in Juneau and prior to filing prints with the Bureau of Land Management. Additions by later construction to an approved set of plans may be noted by date on the Index of Sheets, and such additions will be initialed for approval by the Chief Engineer.

A standard typical-section sheet should be prepared, showing a skeleton typical section with all dimensions left blank. A cloth reproducible will be made for each road, and the specific dimensions for that road inked in. The skeleton section and dimension lines should be rather open to leave ample room for addition of specific information. There will be room on this sheet for any special details peculiar to the road in question.

The plan sheets shall be standard Federal Aid cloth single plan and profile sheets, plotted to a scale of 1":100' horizontally and 1":10' vertically. The point of beginning should be from 10" to 12" right of the left-hand edge of the sheet, allowing space for noting the details of derivation of true bearing, and any other pertinent data. Section corner symbols shall be the same as shown on B.L.M. form "Report on Corners of Cadastral Grid". Whenever it is possible for the District to determine the right-of-way widths, these should be shown on the plans. Use a thin solid line on each side of centerline, positioned accurately by scale, and note by dimension and arrow the distance from centerline to each R/W line. Dimensions must be shown at the beginning and end of each sheet and at all changes in R/W width. The balance of the detail shall conform with all requirements for preparation of contract plan and profile sheets, except for the omission of quantities. All drainage structures should be shown.

It is realized that until we are current with this program, the plan details may often be completed before much information has been placed on the profile. As soon as the plan portion is complete for any specific road, reproducible copies should be forwarded to Juneau for review, approval and filing with the B.L.M. This work should be expedited by the Districts since we are constantly falling behind in our requirements to make record filing.

The cadastral form J-GEN-110, Centerline Location, will no longer be used except in very special cases. This was developed for use on the through system in specific areas where there was a need for cooperative work for the Bureau of Land Management. This particular phase of our as-built work is now complete.

As-built plans for contract construction on all roads shall carry the required plan information specified herein for farm road surveys. This particularly includes derivation of bearing and tieing of corners. In addition, on jobs of any appreciable length, bearings shall be adjusted at appropriate intervals for convergency, and the point and amount of adjustment shall be shown on the plans.

All location surveys in the future, whether for force account or for contract construction, shall adopt the same methods as outlined above. This will enable us to make our preliminary filing with the B.L.M. at the time of initiating construction, which is the most desirable procedure. A final filing will be made when as-built plans for the project are finished.

It will still be necessary to prepare special plats for all roads crossing School Sections as outlined in the memorandum to District Engineers from the Chief of the Engineering Division, dated January 18, 1955. The requirements of this memorandum should be reviewed from time to time, and the program of plat preparation kept current.

Wm. J. Niemi
Chief Engineer

Distribution: A

Interior - ARC - Juneau
January 25, 1956

Balis

UNITED STATES
DEPARTMENT OF THE INTERIOR
Juneau, Alaska

October 21, 1953

A.R.C. MEMORANDUM NO. 137

SUBJECT: Overhead Utility Lines Across and Along Roads and Highways

1. Purpose: The purpose of this memorandum is to establish minimum heights at which overhead telephone and power lines may be constructed and maintained over and across roads and highways and within rights-of-way under the jurisdiction of the Alaska Road Commission if and when such installation and maintenance is authorized by the Alaska Road Commission.

2. The requirements for the above installations are as follows:

	Wire Type	Crossing, Min. Height	Within Right-of-Way But Not Crossing, Min. Height
(1)	Telephone and other communication wires; insulated guy wires; grounded continuous-metal-sheath cables of all voltages	18'	16'
(2)	Open Supply Line wires and service drops, 0 to 750 volts	20'	18'
(3)	Same as 2, 750 to 15,000 volts	22'	20'
(4)	Same as 2, 15,000 to 50,000 volts	24'	22'
(5)	Same as 2, over 50,000 volts	26'	24'

(6) The above clearances will apply for spans of 250' or less. For spans over 250' the clearance specified shall be increased by 0.1' for each additional 10' of span.

(7) Minimum height of crossing shall be measured from the wire at its lowest point above any portion of the finished road from shoulder to shoulder.

3. The above clearances are based upon the recommendations of the National Electrical Safety Code. The minimum recommended crossing heights for supply lines have been increased by 2' to provide a margin for heavier loading, extreme temperatures and future additions to our surfacing.

4. Poles carrying telephone and/or power lines within the highway right-of-way shall be located within the outer 5-foot limits of such highway right-of-way, topography and other surface conditions permitting.

5. Subject to valid existing rights and to existing surveys and withdrawals for other than highway purposes, the established legal width of Alaska Road Commission through roads is 300 feet, being 150 feet on each side of their centerline; the legal width of feeder roads is 200 feet, being 100 feet on each side of the centerline; and the legal width of local roads is 100 feet, being 50 feet on each side of the centerline. (ARC memorandum No. 2).

6. The rights, privileges and authorities granted by the Alaska Road Commission are for full use and enjoyment by the Permittee for any and all purposes deemed necessary or desirable in connection with the control, management and administration of electric transmission and pole lines, and, insofar as compatible with our Permits of Use, the privileges and authorities granted by the Alaska Road Commission shall continue so long as used for the purposes granted.

7. However, if for any period of three years the Permittee shall cease to use the rights, privileges and authorities for the purposes granted or shall abandon the use of the granted permit, then the Alaska Road Commission may terminate said permit and all rights thereunder will revert to the Alaska Road Commission.

8. Further, the Alaska Road Commission's rights-of-way continue only so long as the said rights-of-way are used for highway purposes and, should the Alaska Road Commission abandon any or all of the rights-of-way on which permits have been granted, such permits shall become null and void as to such abandoned rights-of-way.

9. In the event that any relocation of said electric transmission and telephone lines is necessitated by a subsequent highway realignment or construction within the Alaska Road Commission's right-of-way, said relocation will be done at the expense of the Permittee and at no cost to the Alaska Road Commission.

B. D. Stewart, Jr.
Chief, Operations Division

Distribution: A

Interior - ARC - Juneau