ALASKA LEGISLATURE COMMITTEE FILES 1983 1984 8672

3154 HT HB 72

3154

TOTCHAKET ROAD

B-9 B-8 B-7 B-6 B-5 B-4 B-3 B-6A B-41 B-42 B-43 B-44 B-2 B-1 B-45

10 MI. 7 MI. 5 MI. 4 MI. 3 MI. 2 MI. 1 MI.

300' R.O.W.

R.O.W.

U.S. SEISMIC LINE

POTENTIAL MATERIAL SITE

5-10 TESTHOLES (OLD STREAM CHANNEL)

85' Bank to Bank

75' Bank to Bank

3 TESTHOLES, 50'-100' IN INT.

NORTH COMMISSION LINE

CATERPILLAR TRAIL

TANANA RIVER

MIDDLE RIVER

LITTLE RIVER

NENANA

PARKS HIGHWAY

EVIA EASEMENT

ALASKA R.R.

LOT B

BRIDGE SITE

25th STREET

APPROACH ROADS BY THE CITY OF NENANA

T.3 S. T.4 S.

SHT. 1 of 2

NOTE

— SOILS TEST HOLE LOCATIONS PROVIDED BY ALASKA ARCHITECTURAL AND ENGINEERING, INC. —

LEGEND

- Existing Section Corner
- Section Corner To Be Set This Survey
- Proposed Road Route
- Future Road Extension
- Soils Testhole Location
- B-33 AG-107
- AS-106 Caterpillar Trails

SOILS DESCRIPTION

SOILS SUITABLE FOR ROADS

A 6, 11, 12, 14, 15, 21, 22 & 30 are Class II soils
B 6, 7, 13, 16, 17, 18, 19, 23, 28 & 31 are Class III soils
C 1, 2, & 20 are Class IV, with no drainage problems.
D 24, 25, 26, & 27 are Class V (fine sand dunes
E 8 is Class VI(a) with no drainage problems

POOR FOUNDATION IMPORTED FILL REQUIRED

F 3, 5 & 29 are Class VI (a), with severe drainage problems.
G 4, 9, 10 are old stream channels, Class V (w) and Class VII (w), potential material sources.

NOTE: FOR SOILS CLASSIFICATIONS, SEE U.S.D.A. / U. OF A. SOIL SURVEY OF TOTCHAKET AREA. ALSO, RECLASSIFICATION OF SOILS ALONG ROAD NEAR BRIDGE SITE FROM FIELD VERIFICATION.

- PREPARED FOR -

THE CITY OF NENANA

(PROJECT AG. 108 & 109)

DETAIL SOIL MAP

PREPARED BY: KALJENCO., INC. / A.T.C.
S.R. 10113
FAIRBANKS, AK 99701

DRAWN BY:	SCALE:	DATE:	FILE NO
G. HOFFMAN	1/20,000 (1"= 1667') (1 mi.= 3.156")	2/19/81	81-30

EXHIBIT "B"

TOTCHAKET ROUTE SURVEY

NOTE
— SOILS TEST HOLE LOCATIONS PROVIDED BY ALASKA ARCHITECTURAL AND ENGINEERING, INC. —

CUTLINE ROAD EXTENSION
(TO KANTISHNA RIVER)
20.8 MI
20 MI
19.8 MI
19 MI
18 MI
300' R.O.W.
17 MI
G.S.I. SEISMIC LINE
16 MI
15 MI
14 MI
13 MI
12.8 MI — 0 MI BEGIN SECONDARY ROAD PART II
12 MI
11 MI
LANDING STRIP
CATERPILLAR TRAIL
TOTCHAKET ROAD
B-29
B-28
B-27
B-26
B-25
B-24
B-23
B-22
B-21
B-20
B-19
B-18
B-17
B-16
B-15
B-14
B-13
B-12
B-11
B-10
B-39
B-30
B-31
B-32
B-33
B-34
B-35
B-36
B-37
B-38
FUTURE SECONDARY ROADS
FUTURE SECONDARY ROAD
2 MI END SECONDARY ROAD PART II
G.S.I. SEISMIC LINES
PART III ADDITIVE ALTERNATE
TEST AREA
ADDITIONAL TRAVERSE REQUIRED
FUTURE ROAD EXTENSION
R.11W.
R.10W.
T.3S.
T.4S.
SEC 4 SEC 5
SEC 9 SEC 8
SEC 4 SEC 3
SEC 9 SEC 10

LEGEND

- Existing Section Corner
- Section Corner To Be Set This Survey
- Proposed Road Route
- Future Road Extension
- Soils Testhole Location
- B-33 AG-107
- AG-108 Caterpillar Trail

SOILS DESCRIPTION

SOILS SUITABLE FOR ROADS

B-1, 11, 12, 14, 15, 21, 28 & 30 are Class III soils
B-7, 13, 16, 17, 18, 19, 23, 26 & 31 are Class III soils
B-20 are Class IV, with no drainage problems
B-22, 25, 29, & 37 are Class VI (s) soils and dense
B-24 is Class VII (s) with no drainage problems

POOR FOUNDATION, IMPORTED FILL REQUIRED

B-2, 3, 4 & 8 are Class VI (s) with severe drainage problems
B-5, 6 & 10 are ice wedge channels, Class VI (s) and Class VII (s), potential thermal karsts.

NOTE: FOR SOILS CLASSIFICATIONS, SEE U.S.D.A./U.O.F.A. SOIL SURVEY OF TOTCHAKET AREA. ALSO RECLASSIFICATION OF SOILS ALONG ROAD NEAR BRIDGE SITE FROM FIELD VERIFICATION

SHT. 2 of 2

— PREPARED FOR —
THE CITY OF NENANA
(PROJECT AG. 108 & 109)
DETAIL SOIL MAP

PREPARED BY: KALJENCO, INC. / (A.J.C.)
S.R. 10113
FAIRBANKS, AK 99701

DRAWN BY:	SCALE	DATE:	FILE NO.
G. HOFFMAN	1/20,000 (1"=1667') (1 mi.=3.168")	8/17/81	81-30

TOTCHAKET ROUTE SURVEY

EXHIBIT "B"

Aerial Photograph - Sept 8, 1981

NO.	DATE	REVISION	BY
OVERALL MAP			82-001 1" = 300' Feb 17, 1982
NENANA RIVER EAST			Ackermann
ALASKA TRANSPORTATION CONSULTANTS, INC. 212 Wedgewood Drive Suite "C" FAIRBANKS, ALASKA 99701			2

HB 72

HOUSE BILL NO. 72 by Shultz, entitled:

> "An Act making a special appropriation to the Department of Transportation and Public Facilities for various construction projects; and providing for an effective date."

was read the first time and referred to the Transportation and Finance Committees.

2340 acres - Township acreage
strike from Bill Section 2-
replace with longway 35-15-

what do we have for Monday -
I received a note from my
desk that mark will be out of
town Friday but can make it
Monday —

Feds - The federal highway administrator to speak
about federal funds
Can we talk to her?

STATE OF ALASKA
PRELIMINARY STATEMENT OF FISCAL IMPACT

Bill No: CSHB 72 Date on Bill: February 17, 1983
Title: Special Appropriation to DOT/PF for Various Construction Projects
Sponsor: Shultz
Requestor: House Transportation (Rhonda)

1: Estimated fiscal impacts on:

a. Expenditures:

(Thousands of Dollars)

			FY 83	FY 84	FY 85	FY 86		
Capital				17,100.0				
Operating				-0-	-0-	-0-		
Total				17,100.0	-0-	-0-		

b. Revenues:

Revenue								

2. Source of funds to offset fiscal impact of bill:

Not identified by the Sponsor.

3. Assumptions: As the Nenana River bridge will have to be constructed before the other work is begun, the appropriation for FY 84 could be reduced to $3,800,000. The Department concurs with the $17,100,000 price. We would transfer the funds to Nenana after funding is approved. As this project is assumed to be ready for bid this year, all costs are based on 1983 dollars. If not ready until later years, the amount would increase by 10% per year.

4. Disclaimer:
This statement has not been reviewed by the OMB in the Office of the Governor. not represent the policy of the Sheffield Administration or the final estimate o impact.

Prepared By: Wayne Weeks Phone: 465-4060
Division: DOT/PF Planning and Programming Date: Feb 17, 1983

Approved by Commissioner: [signature] Date: 2-17-83
Department: Department of Transportation and Public Facilities

5. Distribution:
Original to Legislative Finance
Copy to OMB
Copy to Sponsor
Copy to Requestor

2/8/83

STATE OF ALASKA
FISCAL NOTE

Revision Date March 18, 1983

I. REQUEST

Bill/Resolution No.: CSHB 72
Title: Spec. Appro. to DOT&PF for development of Totchaket Resource Area
Sponsor: Re. Shultz
Requestor: Transportation Committee

II. FISCAL DETAIL

Agency Affected: DOT&PF
Program Category Affected: Highway D&C

BRU, Program of Subprogram(s) Affected: Interior Region

EXPENDITURES/REVENUES: (Thousands of Dollars)

	FY 83	FY 84	FY 85	FY 86	FY 87	FY 88
OPERATING						
100 PERSONAL SERVICES						
200 TRAVEL						
300 CONTRACTUAL		263.6	290.0	319.0	351.0	386.1
400 COMMODITIES						
500 EQUIPMENT						
600 LAND & STRUCTURES						
700 GRANTS, CLAIMS, ETC.						
TOTAL OPERATING		263.6	290.0	319.0	351.0	386.1
CAPITAL		17,100.0				
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUND		17,363.6				
FEDERAL FUNDS						
OTHER (Specify Source)						

POSITIONS:

FULL-TIME						
PART-TIME						
TEMPORARY						

III. SOURCE OF FUNDS TO OFFSET FISCAL IMPACT OF BILL:
Offsetting funds not identified in bill.

IV. ANALYSIS: Attach a separate page for any Analysis

Prepared By: David W. Truax Phone: 479-4281
Division: Planning and Programming Date: 3/18/83

Approved by Commissioner: Grant J. Logan, Deputy Date: 3/23/83
Department: Transportation and Public Facilities

Distribution:
Original to Legislative Finance
Copy to Office of Management and Budget (for Legislature introduced bills)
Copy to Department (for Governor intorduced bills)
Copy to Sponsor
Copy to Requestor (if different from Sponsor)

ANALYSIS ATTACHMENT TO CSHB 72 FISCAL NOTE

ROADS

22.8 miles of 28' wide gravel road consisting of 2.5' of borrow on usable excavation, 6" subbase grading "C" with drainage as required.

BRIDGES

Consist of one bridge across the Nenana River at 381' in length and 28' wide and three bridges across the Little Nenena River, two of which would be 140' in length, for each, and one bridge at 101' in length. All three would be 28' wide.

TRIPLE PHASE POWER

Provide 22.8 miles of power line along roadside referenced under "roads" above.

NOTE:

As this project is assumed to be ready for bid this year, all capital costs are based on 1983 dollars. If not ready until 1984, amounts would need to be increased by 10%.

OPERATING COSTS

M&O cost estimate based on 1980 cost provided in draft Interior Region Transportation Study, inflated to FY84 dollars, then inflated for each fiscal year thereafter by 1.1.

GOLDEN VALLEY ELECTRIC ASSOCIATION INC. Box 1249, Fairbanks, Alaska 99707 Phone 907-452-1151

November 4, 1982

Mr. Steve Bainbridge
City of Nenana
Box 177
Nenana AK 99760

RE: Nenana Ag Power

Dear Steve,

As promised, attached is a cost estimate for one mile of 1 ϕ and 3 ϕ powerline.

Please keep in touch with Dave Johnson as this project develops.

Best wishes,

Michael P. Kelly
Assistant General Manager

Encl

FROM: GVEA Engineering DATE: Sept. 27, 1982

TO: Joe Killion

COST ESTIMATE for one typical mile of distribution line to serve the Nenana Ag. Project

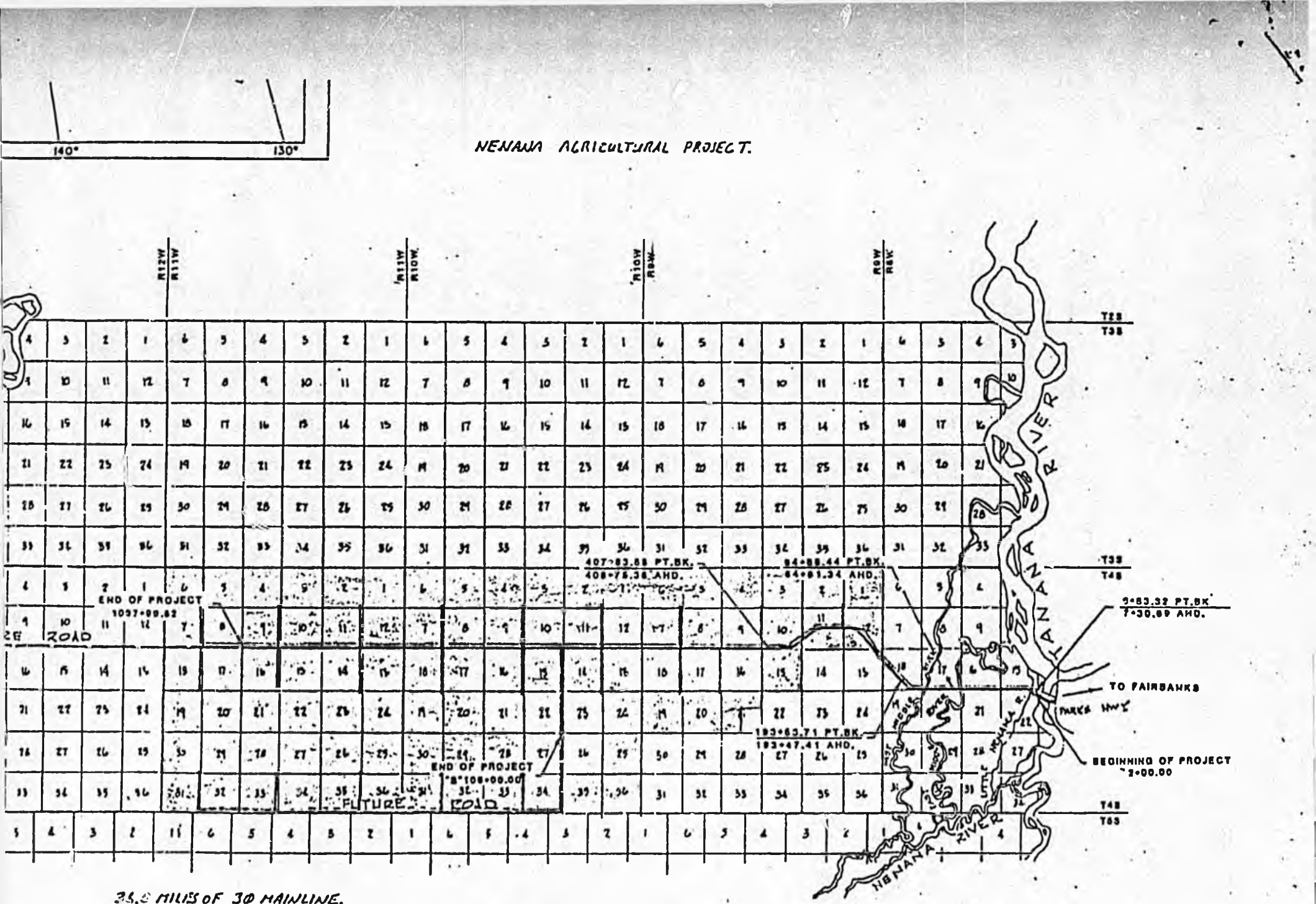
	14.4/24.9kV 3Ø	14.4kV 1Ø
Construction Labor & Material	$52,644.87	$37,096.50
R.O.W. Clearing	$ 5,723.00	$ 5,723.00
Engineering and Design	$12,180.00	$11,680.00
Total	$70,547.87	$54,499.50
Contingencies @ 10%	$ 7,054.79	$ 5,449.95
Total	$77,602.66	$59,949.45

This estimate based on construction being completed within one year.

*Engineering and design includes: staking, design, R.O.W. Aquisition, contracting, administrative labor, inspection, room & board, travel and applicable overheads.

The mainline portion located along the road should be 3Ø 14.4/24.9kV to provide the nescessary power for the distances required. The installation of 1Ø 14.4kV lines should be limited to short taps designated to serve small single phase loads.

The assumption that each tract will receive power at the center of the tract may not be valid. A large cost savings would be realized by requiring service to be received from the mainline and deleting the individual taps.



38.0 MILES OF 30 MAINLINE.
21.5 MILES OF TAPS
59.5 TOTAL MILES

NENANA — TOTCHAKET

UNLOCKING THE AGRICULTURAL POTENTIAL OF WESTERN ALASKA

A Report on A Seminar and Workshop on Agricultural Development.
Sponsored by THE CITY OF NENANA
December 20, 1980

JANUARY, 1981

Office of the City Clerk
332-5441
Incorporated November 17,

City of Nenana

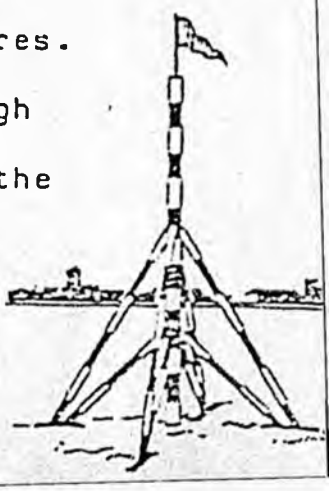
State of Alaska

OVERVIEW OF THE NENANA-TOTCHAKET PROJECT

Date: March 2, 1981
From: John B. Coghill, Mayor

In 1968, during route survey and soil testing work associated with the North Commission west of Nenana, Alaska, field crews found relatively deep top soil covering a broad plateau lying between the Tanana and Nenana rivers to the east and the Kantishna river on the west. More extensive analysis of these soils showed that they possessed excellent agricultural potential. A more extensive and detailed soil survey conducted between 1975 and 1977 by the Soil Conservation Service of the U.S. Department of Agriculture defined the extent of the agricultural soils in what SCS has called the "Totchaket Area", at least 175,000 acres of Class II and Class III soils...soils which, for Alaska, show the highest potential for agricultural productivity. Thousands of acres of Class IV soils with lesser potential are also extensive on the plateau, and preliminary reconnaisance of areas west of the Kantishna show lands with agricultural potential numbering in the millions of acres.

That these lands are capable of producing both High quantity and high quality yields has been accepted by the



State's agricultural community for several years. The more important discussion in recent years has not been whether Totchaket should be developed for agriculture, but what kind of agricultural development would better satisfy the multiple and diverse needs of individual Alaskans and Alaskan families on the one hand, and on the other, what kind of agriculture can best meet the State's urgent need to invest its' short term oil wealth in long term renewable resource industries which can sustain themselves economically far into the future.

Even in view of these urgent concerns, however, planning for eventual development of Totchaket by City, State, University and Federal agricultural interests proceeded slowly during the 1970s as Native Claims in the area were resolved according to the provisions of the Alaska Native Claims Settlement Act of 1971. With final conveyance of land title to Native corporations in the area in late 1979 the last of the major concerns affecting the future of Totchaket were resolved, and the City of Nenana initiated the necessary financing and studies required for the design and long term development of what we are now calling Nenana-Totchaket.

With the support of our delegation to the legislature and the encouragement and assistance of many people around the State, these reports are now either complete or nearly complete and are being presented to the legislature for consideration. It

is important to emphasize again that these studies were not designed by the City to figure out whether or not to develop agriculture. They were designed to determine what kind of agriculture will respond to the real needs of Alaska's people for food, access to land, and increased self-sufficiency; what kind of agriculture can be developed in Nenana-Totchaket which will help the State's new agricultural industry become economically self-sustaining in a reasonably short period of time; and, finally, what will it all cost.

We are pleased with the reports, and we believe they offer a well thought out and detailed plan for initial development of Nenana-Totchaket. The transportation proposal includes both the initial design, and cost estimates for overland access from Nenana to the first two townships which the City and the Department of Natural Resources have scheduled for disposal in February 1982...less than one year from today. The livestock report lays out a detailed and comprehensive plan for the development of a red meat industry that will involve all the State's farming regions. The composite Planning, Development, and Production Schedule from 1980 through 1990 shows our best estimates of the annual financing required and the annual production and employment associated with development in the area. Clearly the amounts of money involved are not insignificant even when compared with the multi-billion annual revenues of the State of Alaska. More importantly, financing decisions this

year will be followed by financing decisions as large, or larger, in subsequent years throughout the decade.

The transportation system should fall into our highest priority for without that access, the proposed clearing, wood fiber harvest, and land disposal programs are meaningless.

AGRICULTURAL PROJECT

Composite Planning, Development and Production Schedule: 1980 through 1990.

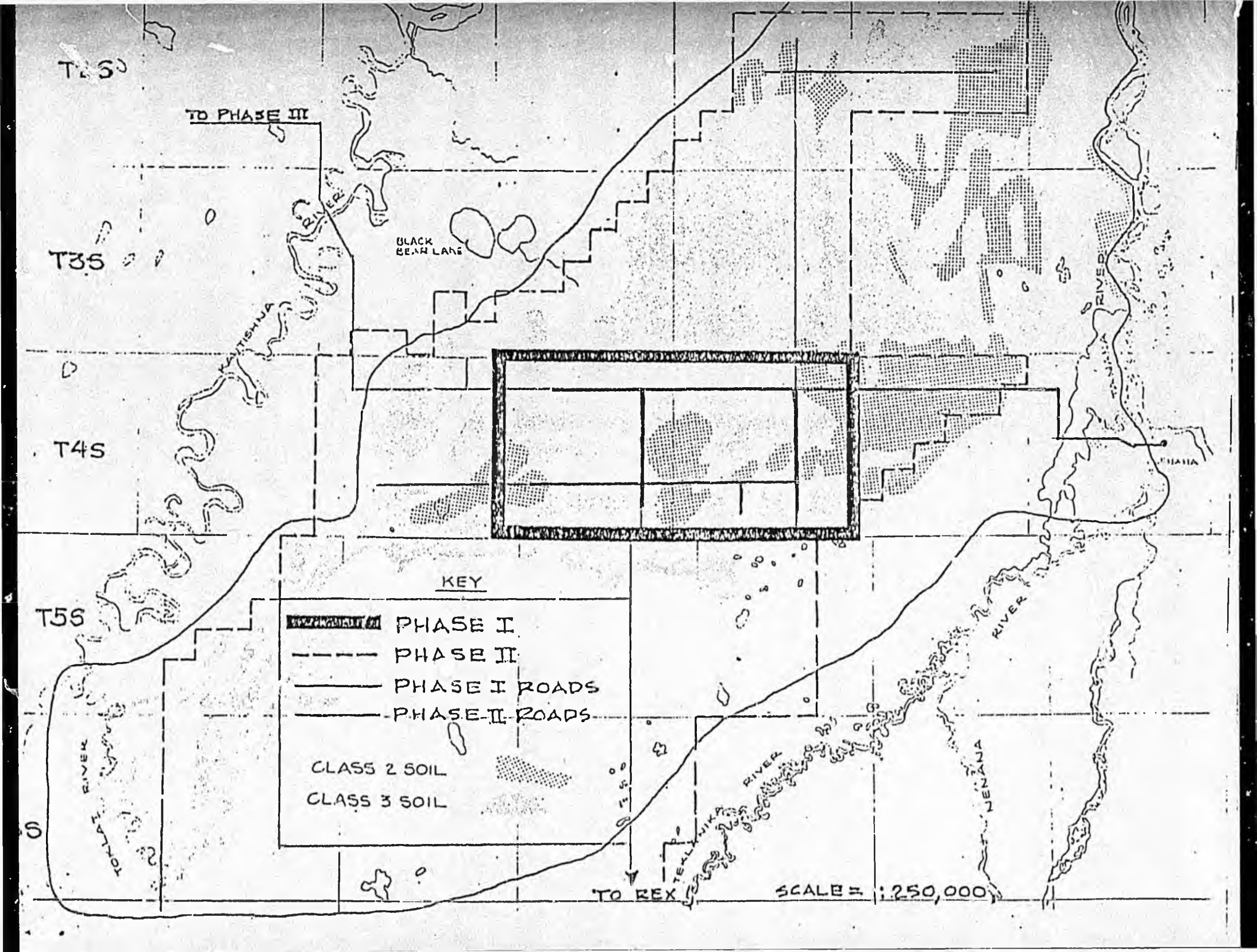
Calendar year.	81	82	83	84	85	86	87	88	89	90
Planning										
1. Research, Development	Phase I			Phase II					Phase III	
2. Project	——	——	——	——	——	——			——	
3. Lot Survey	—	—	—	—	—	—			—	
costs per year (000's)	1600	1600	1600	1600	1600	500	500	500	1600	
Development Programs										
1. Clearing	Phase I			Phase II				Phase III		
2. Farm support	Phase I			Phase II				Phase III		
3. Marketing	Phase I			Phase II				Phase III		
4. Livestock	Purchase			Production						
costs per year(000's)	15450	15450	19561	12561	8450	150	150	150	8450	
Capital Projects										
1. Roads and bridges	Phase I			Phase II				Phase III		
2. Storage, transfer and support facilities	——									
3. Processing facilities	Livestock					Vegetables				
4. Research Facilities	—									
costs per year(000's)	11000	15000	13000	15000	12500	13000	15000	7000	7000	
Land Disposals (# of townships)	(2)	(2)	(3)	(3)	(2)				(2)	

Fiscal year	81	82	83	84	85	86	87	88	89	90
Total Costs Per Year (000's) (1980 dollars)		31050	32050	34161	29161	22550	13650	15650	7650	17050
Total Costs Per Year (000's) (12% inflation)		35087	40704	48850	46949	41041	27983	36175	19850	49616
Disposed Acreage		46080	92160	161280	230400	276480	276480	276480	276480	322560
Cultivatable		41472	82944	145152	207936	248832	248832	248832	248832	290304
In Cultivation		13686	34422	69051	107205	142041	159666	166716	166716	180402
# of Farms		24	48	84	120	144	144	144	144	168
Employment; Farm Production										
1. Direct (on farm)		150	378	758	1176	1558	1752	1829	1829	1979
2. Secondary (marketing)		3	7	13	20	26	30	31	31	33
3. Tertiary (support)		42	105	210	326	432	485	506	506	547
Production Value, Barley										
1. Tons per year			15465	38897	76028	121142	160506	180423	188389	188389
2. Price, F.O.B. Port			150	195	210	225	240	255	270	285
3. Total (000's)			2784	7585	14356	27257	38521	46008	50565	53691

Revised: 2/23/81

by: Northern Development Associates
Fairbanks, Alaska

* Preliminary calculations.


T2S
TO PHASE III
T3S
BLACK BEAR LAKE
KAKITSHNA RIVER
T4S
KEY
PHASE I
PHASE II
PHASE I ROADS
PHASE II ROADS
CLASS 2 SOIL
CLASS 3 SOIL
T5S
TO REX
SCALE = 1:250,000

result of a formally advertised or negotiated contract. The determination of the commissioner shall be supported by findings of fact which shall set out enough facts and circumstances to clearly justify the determination. The determinations and findings shall be maintained as a permanent record of the department.

(c) In this section, "professional services" means architectural, engineering, or land surveying services. (§ 1 art III title IV ch 152 SLA 1957; am § 5 ch 277 SLA 1976; am § 1 ch 143 SLA 1977; am § 4 ch 104 SLA 1978; am § 2 ch 144 SLA 1982)

Effect of amendments. — The 1982 amendment, effective July 22, 1982, inserted "AS 36.98 and" in the first sentence of subsection (a).

Editor's notes. — This section was redrafted by the revisor of statutes to remove personal pronouns in conformity with AS 01.05.031(c) and § 4, Chapter 58, SLA 1982.

Sec. 35.15.080. Local control of state public works projects. (a) A municipality may, by resolution of its governing body, request the assumption of all or part of the department's responsibilities relating to the planning, design, and construction of a public works project of the state that is to be located within the boundaries of the municipality and that would otherwise be constructed in the manner provided in AS 35.15.010. After receipt of the request, the department may provide by agreement for transfer to and assumption by the municipality of the department's responsibilities relating to the project, unless the commissioner determines that assumption of responsibilities by the municipality is not practicable or not in the best interests of the state.

(b) If the commissioner of transportation and public facilities determines that assumption of responsibilities by a municipality under (a) of this section is not practicable or not in the best interests of the state, he shall notify the governing body of the municipality of his finding and specify reasons for it. If the governing body requests reconsideration of the decision, he shall hold a hearing in the municipality within 30 days following mailing of the request. Following the hearing, he may affirm, modify or reverse his initial decision and shall specify in writing the reasons.

(c) A municipality may request joint assumption of responsibilities with the department relating to the planning, design, and construction of a public works project. Two or more municipalities may by agreement provide for cooperative assumption of responsibilities relating to the planning, design, and construction of a public works project. If two or more municipalities request assumption of responsibilities for a project and meet the standard of practicability set out in (a) of this section, the commissioner shall determine which municipality is best able to direct planning, design, and construction of the project and enter into an agreement with that municipality or provide for joint or cooperative administration, as the parties may

agree or the commissioner may determine. Decisions of the commissioner under this subsection are final.

(d) Provisions of this title governing planning, design, and construction of public works by the department, and regulations adopted under the provisions, govern the administration of projects assumed by a municipality or regional educational attendance area under this section. For that purpose the provisions supersede any conflicting provisions of ordinance or charter of a municipality.

(e) An organized borough may plan and construct public works under this section and make an agreement with the department for that purpose irrespective of restrictions of other provisions of law on the acquisition and exercise of borough powers. Borough exercise of the power conferred under this subsection does not preclude exercise by a city of the borough of the same power within the city.

(f) To carry out the purpose of this section, the commissioner of transportation and public facilities shall adopt regulations relating to the application for and the making and the conditions of agreements and the local assumption of responsibilities for the planning, design and construction of public works under this section. He shall include in grant contracts terms and conditions requiring a regional school board and its contractors to adhere to the provisions of AS 36.05.010 with respect to the payment of wage rates on construction projects, and AS 36.10.010 with respect to employment preference, and may require different terms in agreements for different projects to meet local conditions and unique requirements and to assure compliance with the public facilities procurement policies developed by the department under AS 35.10.160 — 35.10.200. If necessary, the commissioner may require as a condition of an agreement approval of the agreement by the federal government. Regulations adopted, amended or repealed by the department under this section which relate to educational facilities shall be developed in conjunction with the Alaska Association of School Boards and the Alaska Association of School Administrators and reviewed by those associations before final action on the regulations is taken by the department. (§ 1 ch 57 SLA 1976; am §§ 6, 7 ch 147 SLA 1978; am §§ 5, 6 ch 92 SLA 1982)

Effect of amendments. — The 1982 amendment, effective July 1, 1982, in the first sentence of subsection (a), deleted "or, if the public work is an educational facility, a regional educational attendance area established under AS 14.08" following "A municipality," "or operating area" following "located within the boundaries," and "or regional educational attendance area" following "of the municipality," inserted "or part" and "design," and substituted "that" for "which" in two places. In the second sentence of that subsection, the amendment deleted the paragraph designations, deleted the provisions of former paragraph (1), which read "shall provide for the assumption by the municipality or regional education attendance area of all of the department's responsibilities relating to the planning, design and construction of an educational facility" and deleted "planning, design, and construction of a public works" preceding "project, unless the commissioner determines." In subsection (c), the amendment deleted the former second sentence, which read "A regional educational attendance

area may request joint assumption of responsibilities with the department relating to the planning, design and construction of an educational facility," substituted "municipalities may by agreement" for "municipalities or regional educational attendance areas may by mutual agreement" and inserted "design" in the present second sentence, deleted "or regional educational attendance areas" following "municipalities" in one place and "or regional educational attendance area" following "municipality" in two places in the next-to-last sentence, and substituted "in (a) of this section" for "in (a)(2) of this section" in the next-to-last sentence.

Sec. 35.15.090. Use of appropriated funds. Upon execution of an agreement under AS 35.15.080(a), state funds appropriated for a public works project which is the subject of the agreement shall be transferred to a special account in the state treasury. A municipality administering the project under the agreement may draw on the account for costs of the project, under fiscal control of the department. If an agreement provides for joint or cooperative administration of the project, payment of costs shall be made to the party incurring the costs. (§ 1 ch 57 SLA 1976; am § 8 ch 147 SLA 1978; am § 7 ch 92 SLA 1982)

Effect of amendments. — The 1982 amendment, effective July 1, 1982, deleted "assumption by a municipality or regional educational attendance area of the department's responsibilities under AS 35.15.080(a)(1), or upon" preceding "execution of an agreement" and "assumption or the" preceding "agreement shall be transferred" and substituted "AS 35.15.080(a)" for "AS 35.15.080(a)(2)" in the first sentence and deleted "or regional educational attendance area" preceding "administering the project" and "assumption or" preceding "agreement may draw" in the second sentence.

Chapter 25. General Provisions.

Sec. 35.25.020. Definitions.

Cross references. — For the responsibility and authority of the supreme court over state court facilities, see AS 22.05.025.

Chapter 27. Art Works in Public Buildings and Facilities.

Cross references. — As to the applicability of AS 35.27.010 — 35.27.030 to memorials to Alaska veterans, see AS 44.35.030.

Chapter 40. Names of Public Works.

Sec. 35.40.001. Reeve Boulevard. The Elmendorf By-Pass Highway is named the Bob Reeve Boulevard. (§ 2 ch 52 SLA 1982)

Original sponsor: Shultz

Funding Information

General Fund	$17,100,000
Other Funds	-0-
	$17,100,000

IN THE HOUSE BY THE TRANSPORTATION COMMITTEE

CS FOR HOUSE BILL NO. 72 (Transportation)

IN THE LEGISLATURE OF THE STATE OF ALASKA

THIRTEENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act making a special appropriation to the Department of Transportation and Public Facilities for development of the Totchaket Resource area; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $17,100,000 is appropriated from the general fund to the Department of Transportation and Public Facilities for the following construction projects in the Totchaket resource area:

Nenana River bridge	$ 3,800,000
bridges across the Little Nenana River	1,900,000
22.8 miles of roadway	10,100,000
three phase electrical power	1,300,000

* Sec. 2. The appropriation made by this Act shall be disbursed in accordance with AS 35.15.080 and 35.15.090.

* Sec. 3. The appropriation made by this Act is for capital projects and is subject to AS 37.25.020.

* Sec. 4. This Act takes effect July 1, 1983.

NEED FISCAL NOTE

Introduced: 1/18/83
Referred: Transportation and Finance

Funding Information
General Fund $18,500,000
Other Funds -0-
$18,500,000

IN THE HOUSE BY SHULTZ

HOUSE BILL NO. 72

IN THE LEGISLATURE OF THE STATE OF ALASKA

THIRTEENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act making a special appropriation to the Department of Transportation and Public Facilities for various construction projects; and providing for an effective date."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

* Section 1. The sum of $17,100,000 is appropriated from the general fund to the Department of Transportation and Public Facilities for the following construction projects in the Totchaket resource area:

Nenana River bridge	$ 3,800,000
bridges across the Little Nenana River	1,900,000
22.8 miles of roadway	10,100,000
triple phase electrical power	1,300,000

3 Smaller Structures

* Sec. 2. The sum of $1,400,000 is appropriated from the general fund to the Department of Transportation and Public Facilities for construction of a fire fighting center near Nenana to serve the Interior Region of the state.

* Sec. 3. The appropriations made by this Act are for capital projects and are subject to AS 37.25.020.

Shall conform w/ 35.15.080 + AK 35.15.090

* Sec. 4. This Act takes effect July 1, 1983.

(9)

COMMITTEE REPORT

HOUSE

FURTHER: FINANCE

1/13/83

Date: 2-17-83

Mr. Speaker:

The Committee on TRANSPORTATION has had HB 72

"An Act making a special appropriation to the Department of Transportation and Public Facilities for various construction projects; and providing for an effective date."

under consideration and reports it back as follows:

[ ] do pass [ ] do not pass

[ ] do pass with attached amendments(s)

[X] replace with CS for Transportation [X] same title [ ] new title

and recommends _____

[ ] AND attaches a "Letter of Intent" [ ] New Fiscal Note

[ ] Zero Fiscal Note Attached

[ ] reports it back without recommendation

[ ] referred to the _____ Committee

MEMBERS SIGNING
DO PASS

MEMBERS HAVING
OTHER RECOMMENDATIONS:

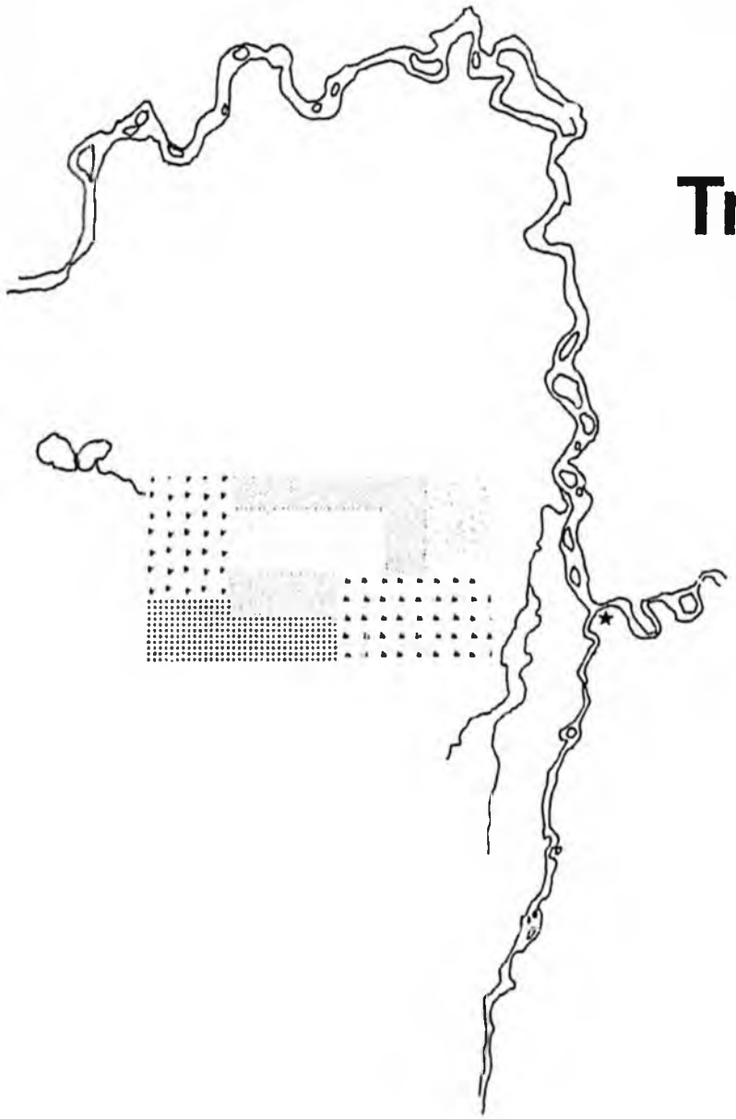
CHAIRMAN

H 60

NENANA AGRICULTURAL TRANSPORTATION SYSTEMS. February, 1981

NENANA

Agricultural Transportation Systems



Project No. AG101

FEBRUARY, 1981

HDR ATC

Henningson, Durham, & Richardson, Inc.
Alaska Transportation Consultants, Inc.

NENANA AGRICULTURAL TRANSPORTATION SYSTEMS

Prepared By

Henningson, Durham & Richardson
1100 Eastlake Avenue East
Seattle, WA 98109

and

Alaska Transportation Consultants, Inc.
212 Wedgewood Drive, Suite C
Fairbanks, Alaska 99701

February 1981

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CHAPTER I
INTRODUCTION

Transportation is an important aspect in rural development. To quote current research:

> "If rural development is to proceed in an orderly and efficient manner, adequate performance of the transportation infrastructure and regulatory structure is mandatory. Highway, water, rail, and air transportation investments should be closely coordinated with those state and federal agencies directing the various rural development programs."[1]

Efficient and competitive routing of goods to and from a rural center is the key in providing social and economic benefits to that area. A well designed and constructed farm to market road network is essential in any agricultural development as it will be servicing the aggregation of grain, machinery, fertilizer, feed, seed and chemical hauling.

This report provides a proposed roadway network in the Nenana agricultural area starting with an initial phase of two townships expanding to several townships in future phases. Commodity routing systems in the Nenana area were examined to maintain a flexible, multi-modal system in the area. Alternative processing site locations are compared in relation to the City of Nenana, the initial phase of the project, and existing commodity routing systems. Cost analyses were done on alternate access routes to the initial area and the farm to market transport system.

Roadway development and construction includes an examination of soils, land ownership, parcelization and climatic conditions. Alternative roadway section designs are based upon the location of gravel, and wet or permafrost areas. A roadway layout is proposed that takes advantage of section line easements and allows for flexibility in final parcelization. Estimated costs for construction and maintenance of this layout are also presented.

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[1] Richard K. Hart, Transportation and Rural Development: Some Policy Considerations.

It is our understanding that the project development schedule is for land disposal in 1981 or early 1982 at the latest. In order for the transportation system to be in place, construction must occur in the 1981 construction season. For this to happen, the project planning and design must be fast tracked. Because of this, the consultant team has initiated permit procedure for field work this winter and early spring. This includes bridge-borings, site surveys and borings, plus material site investigations.

Below is a list of total costs for the Nenana Phase I access road. These costs include engineering and construction costs, and are reasonable order-of-magnitude costs for work as of Spring 1981. When more thorough soil testing is complete, costs may be actually lower.

**Three (3) bridges, 23 miles of primary access road (secondary standards) and 14 miles of secondary and tertiary roads connecting farm lots:	$ 15,319,700.00
**Right-of-way Aquisition:	$ 30,300.00
**Contingency:	$ 1,840,000.00
**First Year Maintenance:	$ 115,255.00
T O T A L	$ 17,305,255.00

CHAPTER II
OVERVIEW OF COMMODITY ROUTING SYSTEMS

There are three potential commodities being considered for the Nenana Agricultural Area. Studies to determine the viability of livestock raising and vegetable production are presently being undertaken. However, with the imminent success of the Delta Barley Project in mind, grain production must be given the major consideration. Thus, of the three (3) alternatives, grain production will be considered in this report as the primary user of any routing system established. This is due in part to the information available concerning grain production in Alaska (Delta Junction); the predominance of Class III soils in the project area, which are well suited to grain production; and the present lack of information regarding vegetable and livestock production.

This section will provide an overview of the routing systems that exist in the Nenana area. To remain within the scope of the overall report, no analysis of routing economics will be undertaken here. Rather, the focus will be on how the roadway network and processing area within the project might impact the various routing systems. It should be noted however, that the agricultural industry relies on economically competitive transportation modes. Thus, every effort should be made to maintain maximum flexibility of the routing systems available to various agricultural areas in Alaska. Figure 1 illustrates the commodity routing systems available to various agricultural areas in Alaska. Nenana has a distinct advantage in being on all four modes of routing. This, coupled with its central location within the state, makes it a focal point for the distribution of agricultural goods both within the state and for export.

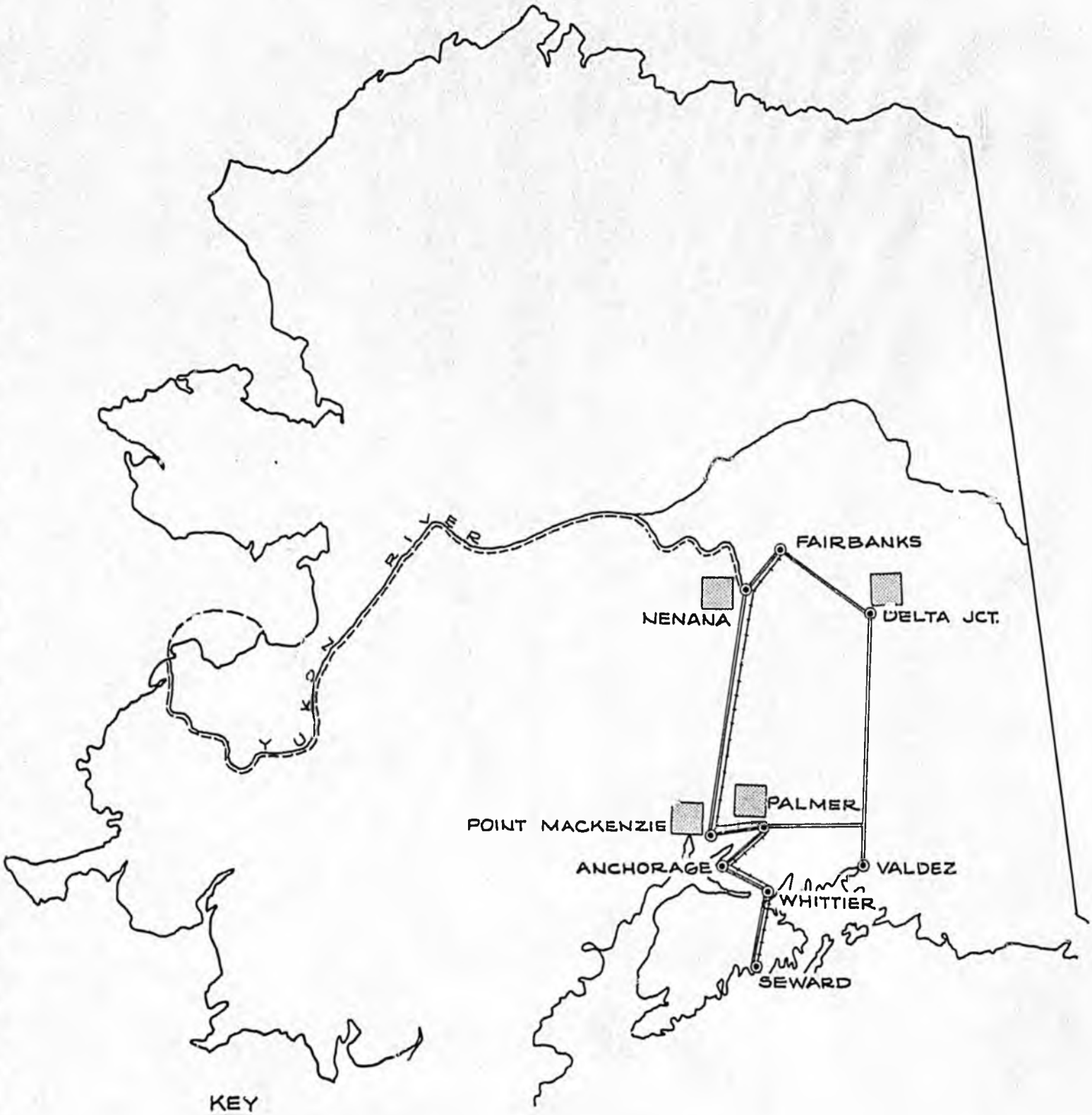
Though there are four systems available for use (air, truck, rail, and barge), raw agricultural goods generally move using the bulk facilities, low operating costs, and proximity to markets available on truck and rail modes.

1. Truck Routing

Routing agricultural commodities by truck is most efficient over short hauls and when backhaul possibilities are definite. Thus, truck routing

FIGURE 1

COMMODITY ROUTING SYSTEMS



would most likely be used in local/intra-state distribution of vegetables grown in Nenana and livestock processed there, having Fairbanks and Anchorage as the two major points of transfer. The hauling of grain by truck, while possible, is not likely due to the large number of trucks needed to haul the grain and the more economical use of rail in hauling such bulk quantities.

Starter herds for livestock would be most effectively transported by truck up the Alaskan highway. Ultimately, red meat for export would be transported by truck to Fairbanks International Airport and flown to foreign markets.

2. Rail Routing

Routing of agricultural commodities by rail is most efficient in bulk handling and long hauls due to its low operating costs and established routes. Currently, problems exist in the availability of equipment to handle grain. As agriculture continues to develop in Alaska basic routing necessities such as these will become economically viable and therefore these are seen as only initial or short term problems.

If fertilizer is to be brought to Nenana from plants on the Kenai, the use of truck routing is most efficient. There is only one transfer required in this mode while there would be three in the rail mode. Rail would be most effective in bringing fertilizer produced in the Lower 48 to Nenana as there is a direct rail link between most ports and Nenana.

Due to high construction costs involved in establishing new rail lines, ($1.4 million/mile) no additional routes are seen in the immediate future and short spurs into the agricultural area seem unlikely at this time.

3. Barge Routing

Though barge routing has low operating costs and relatively large bulk handling capacities, certain restrictions make the use of this mode unlikely in the routing of grain for export. There is potential local

routing of fresh and processed vegetables, processed red meat, and some grain.

Three restrictions to barge routing of export grain are the short season available to both barge operation and agriculture, which often times are not compatible, the more feasible routing of grain by rail, and the difficulty in establishing a scheduled shipping route into the St. Michaels area.

4. Local Air Routing

At the present time, Nenana Air Service, Inc., is the only scheduled air service based in Nenana. They fly supplies to Tanana, and offer charter services to other communities in the bush. Alaska Central Airways, Inc., uses Nenana as a flag stop on flights to Galena and Tanana. It is possible that air service could provide various bush communities with the agricultural commodities grown and processed in the Nenana area (primarily vegetable and red meat).

5. Port Facilities

Currently, the Alaska Agricultural Action Council has Requests for Proposal out to various ports in Alaska with the intention of establishing a permanent facility for the exploration of Alaskan produced grains. Appendix 1 is a copy of the RFP sent to Anchorage, Palmer, Seward, Valdez, and Whittier. Seward was to be utilized for the 1980 barley crop from Delta Junction, though due to a shortened harvest season, no grain was exported this year.

CHAPTER III
PROCESSING AREA LOCATION

Any project area impacts on the routing systems center on the location of a processing area as this is where the major unloading, loading and any processing and packing would take place. To maintain the flexibility desired, this processing area should be located where all routing systems are readily available, or to somehow allow for efficient routing of commodities. The end three locational concepts were developed for the processing area and presented below. Advantages and disadvantages for each concept are identified and impacts on existing routing systems discussed. These should be addressed in making a decision on the location of the area.

1. Concept 1 - Processing Area in City

Figure 2 illustrates a possible processing area in, or adjacent to, Nenana. This location is ideal from a transportation standpoint as all modes of routing are available within a corridor, meaning virtually no capital improvements to reach the area, the area is close to the residences of people who would be working in the processing area; and a source of water is close at hand for processing purposes. Impact from possible noise, smell, and air output could pollute the surrounding area and cause ice fog problems for the airport, though wind data indicates that the direction of prevailing winds might mitigate any air pollution problems within the community boundaries. A potential flood hazard exists due to the areas' proximity to the rivers; and soils maps indicate heavy permafrost in some areas.

2. Concept II - Processing Area Centered in Project Area

In this concept, the processing area would be located along a rail spur in the center of the project (Figure 2). This would cut down the distance between the field and the processing area; reduce the area's impact on the community of Nenana; and, if the spur were to connect Nenana and Tanana, it would create another access to the Tanana area and reduce travel time for

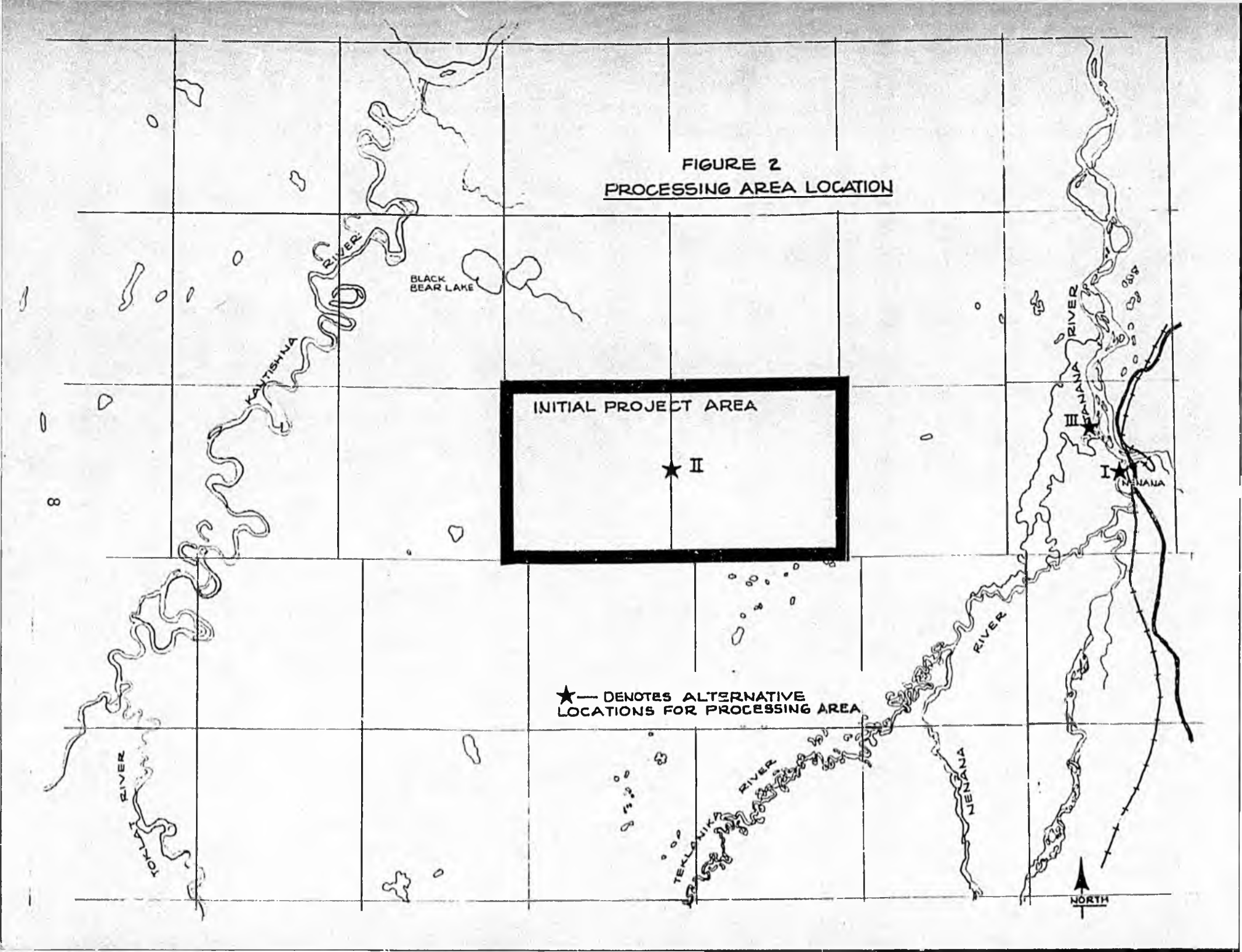


FIGURE 2
PROCESSING AREA LOCATION
BLACK BEAR LAKE
KANTISHNA RIVER
INITIAL PROJECT AREA
II
III
I
NENANA
NENANA RIVER
TOKLAT RIVER
TEKLANIKA RIVER
★— DENOTES ALTERNATIVE LOCATIONS FOR PROCESSING AREA
NORTH

commodities traveling by barge. However, this concept would entail considerable capital expense in terms of a transportation corridor linking the processing area with the existing modes; water would not be as readily available for industrial use; commodities, if shipped by barge to the final destination, would have to be handled twice (load rail/load barge); and locating the area in the center of the project would take up a considerable amount of valuable agricultural land. Workers driving to the area pose potential traffic congestion problems on the bridge and main roads, and the commuting cost is the largest as this location is the furthest from Nenana.

3. Concept III - Processing Area Downstream from Nenana (Figure 2)

In this concept the processing area would be located approximately a mile down the Tanana River from Nenana. Being a distance from the community would alleviate possible incompatability and pollution problems associated with being near other activities. Locating the area here would allow for only a moderate capital investment in terms of a transportation corridor. All modes of routing could still be available; though, as the major expense in linking the areas with the main rail system would be a railroad bridge across the Nenana River, an expenditure of this magnitude is unwarranted unless the spur continued on to the community of Tanana.

CHAPTER IV
PRELIMINARY ROADWAY NETWORK

Before establishing a roadway network for the project area, several factors were reviewed which affect its layout. Soil in the area was reviewed for its agricultural capability and the location of permafrost and bogs. Land ownership was reviewed to determine location of state-patent lands and boundaries of other ownership which might affect roadway layout, (easements and rights-of-way are discussed in Chapter VII). A parcelization scheme was put together based on agricultural capability of the soil and present land ownership.

Various phases of road development are proposed linking the project area with Nenana and the Parks Highway at Rex. The initial phase would provide access from the project area to a central processing point and loading point in Nenana (as discussed in Chapter III). Other phases would continue expansion into areas adjacent to Phase I and would include the development of a road to Rex. Layout, design and estimated costs of this development are discussed in this section.

1. Soils and Parcelization

Figure 3 indicates the soil characteristics in the project area. Class II and III soils are highlighted and are the only soils considered adequate for agricultural production. Class IV and below are being considered for grazing purposes. Areas of permafrost and bog are also identified, as these areas must be avoided both in agricultural activities and roadway construction.

It has been recommended that Class II soils be put into parcels of 640 acres and under for purposes of vegetable production and Class III soils into parcels of 2,560 acres and over for purposes of grain production.[1]

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[1]Interview with Bob Pollock, Agricultural Action Council, October 8, 1980.

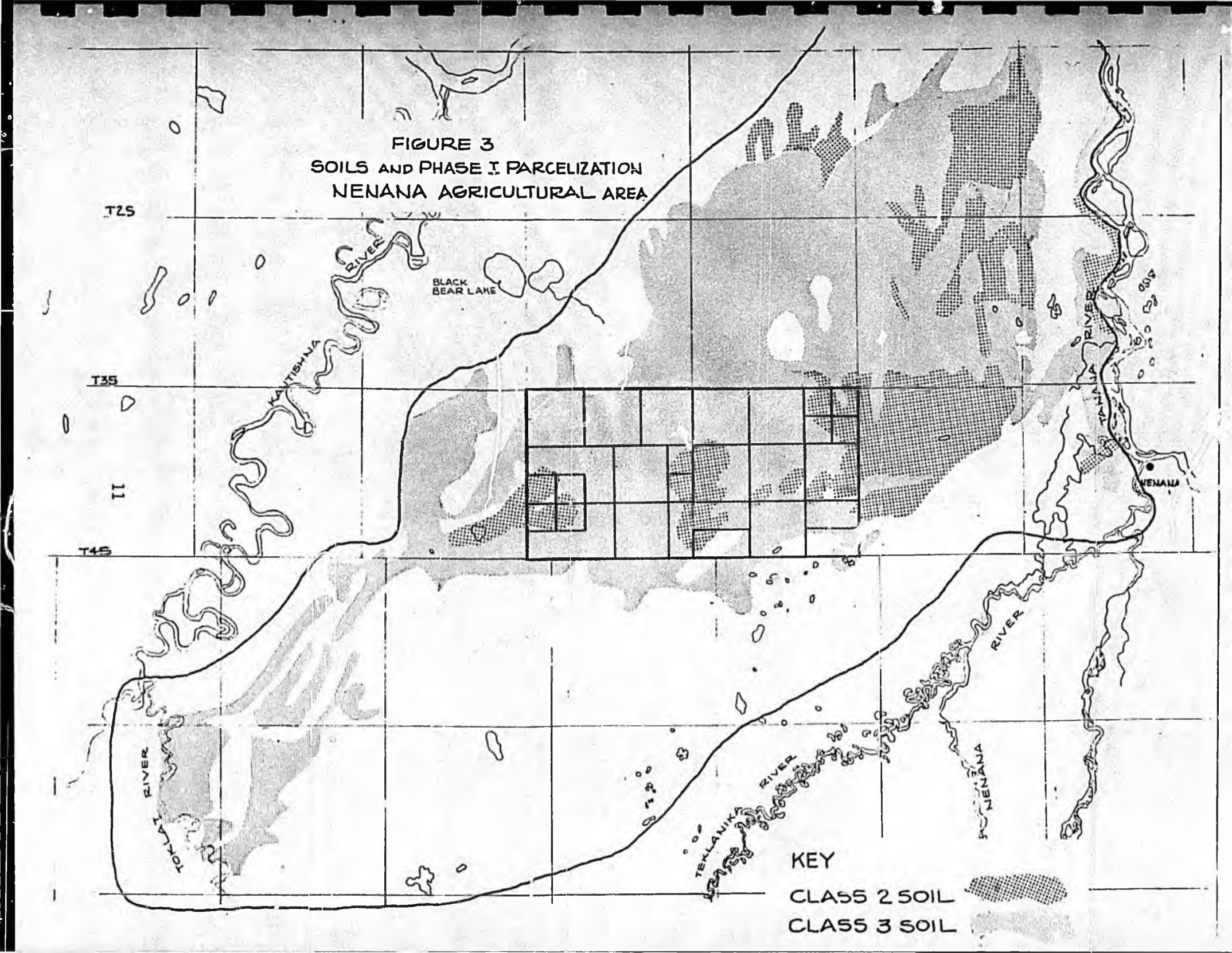


FIGURE 3
SOILS AND PHASE I PARCELIZATION
NENANA AGRICULTURAL AREA
T2S
T3S
T4S
11
BLACK BEAR LAKE
KANTISHNA RIVER
TOLAT RIVER
TEKLANIKA RIVER
NENANA RIVER
TANANA RIVER
NENANA
KEY
CLASS 2 SOIL
CLASS 3 SOIL

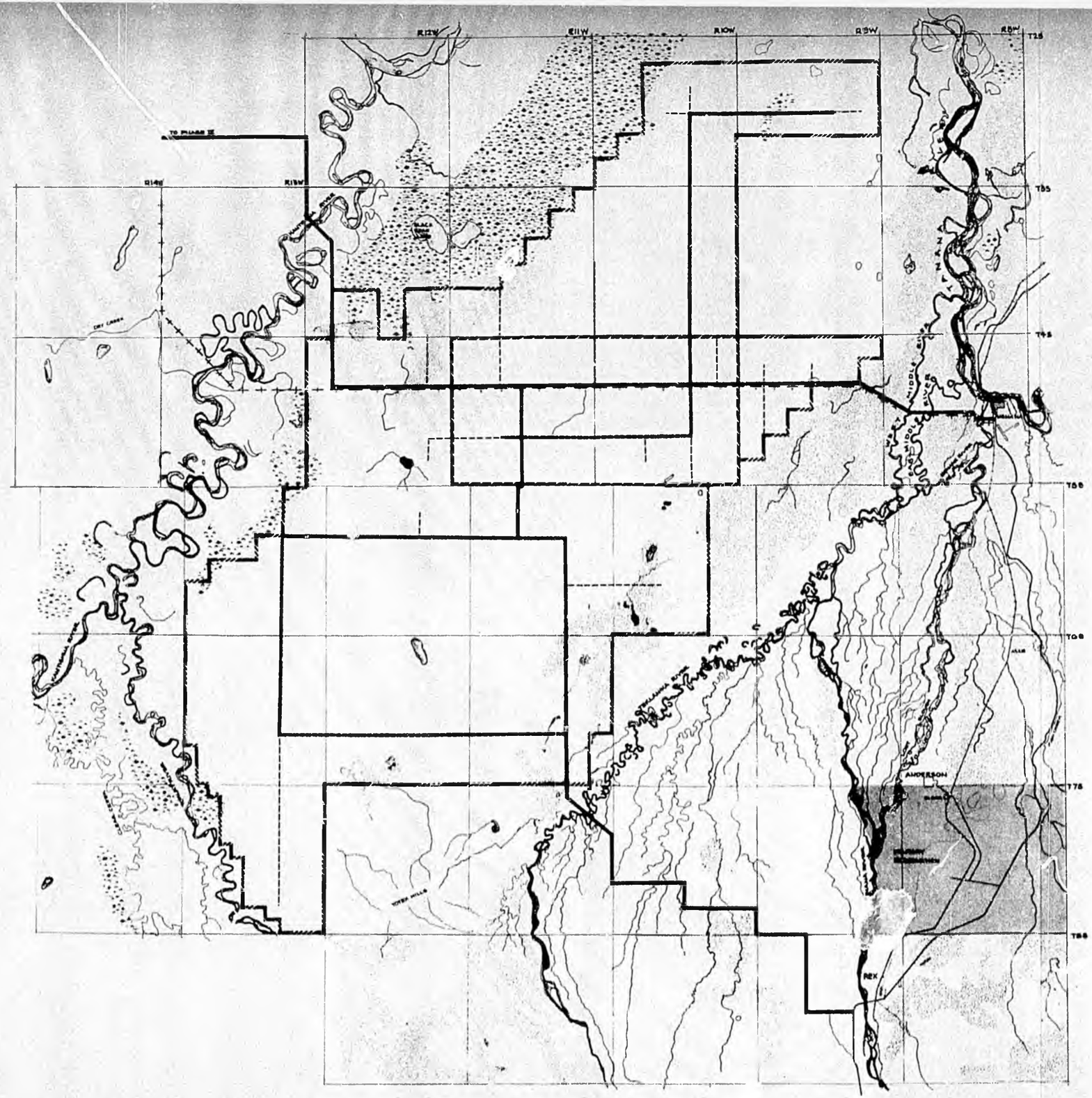
It was also assumed that several small lots (5-10 acres) would be made available to increase the population base and reduce utility costs. Figure 3 illustrates a possible parcelization of the initial project area based on the above information.

2. Layout

Figures 4 and 5 illustrate the proposed roadway network providing access to the initial phase of the project. This network attempted to follow section lines for two reasons: First, to take advantage of section line easements; and second, parcelization will most likely be in aliquot parts. This roadway layout is flexible in that it can be modified fairly easily once the final parcelization is made. This network also lends itself to future branching out from the initial phase in a wheel and spoke manner. Collector and feeder roads were laid out to provide access to parcels and where traffic was estimated to be primarily local.

3. Roadway Design and Estimated Costs

Preliminary soils studies indicate a more economical alternative than the standard pit borrow method of building roads may be utilized for the Nenana Agricultural Project. The combination of minimal overburden with suitable structural material directly beneath lends itself to the roadside borrow concept of construction. This method utilizes the structural material from within the right-of-way to build the road, eliminating the more expensive remote borrow-haul method. The organic overburden is stripped and stockpiled at the edge of the right-of-way for use as backfill to bring the sideslopes and ditches to grade. This method of construction will require rights-of-way in excess of the 100 foot section line easements that may be available. In areas where adequate right-of-way is not available or where pockets of unsuitable structural material exist, the pit borrow method will have to be utilized as an alternate construction method. Tables A and B show estimated 1981 cost comparisons indicating that approximately $35,000.00 per mile may be saved by utilizing the roadside borrow method of construction. Figure 6 illustrates typical roadway sections for all types of roads in the project using both alternatives



LEGEND

PHASE I - 46,080 ACRES
PHASE II - 556,000 ACRES

ROADS
ARTERIAL
COLLECTOR
FEEDER
RAILROAD

AREAS OF LOW RELIEF AS INTERPRETED FROM AERIAL PHOTOGRAPHS - POSSIBLE ICS LENSES.

SWAMPS AS PORTRAYED, INDICATE ONLY THE WETTER AREAS, AS INTERPRETED FROM AERIAL PHOTOGRAPHS - POSSIBLE ICS LENSES.

0 5 MILES

FIGURE Nº 4
FEBRUARY 1981

LAYOUT DRAWING
OVERALL PROJECT ROADWAY
INDIANA

SCALE: 1" = 5 MILES	APPROVED BY:	DRAWN BY: WILKEY
DATE: 2-10-81		REVISED 2-10-81

Alaska Transportation Consultants, Inc.

DRAWING NUMBER SHT 1 of 5

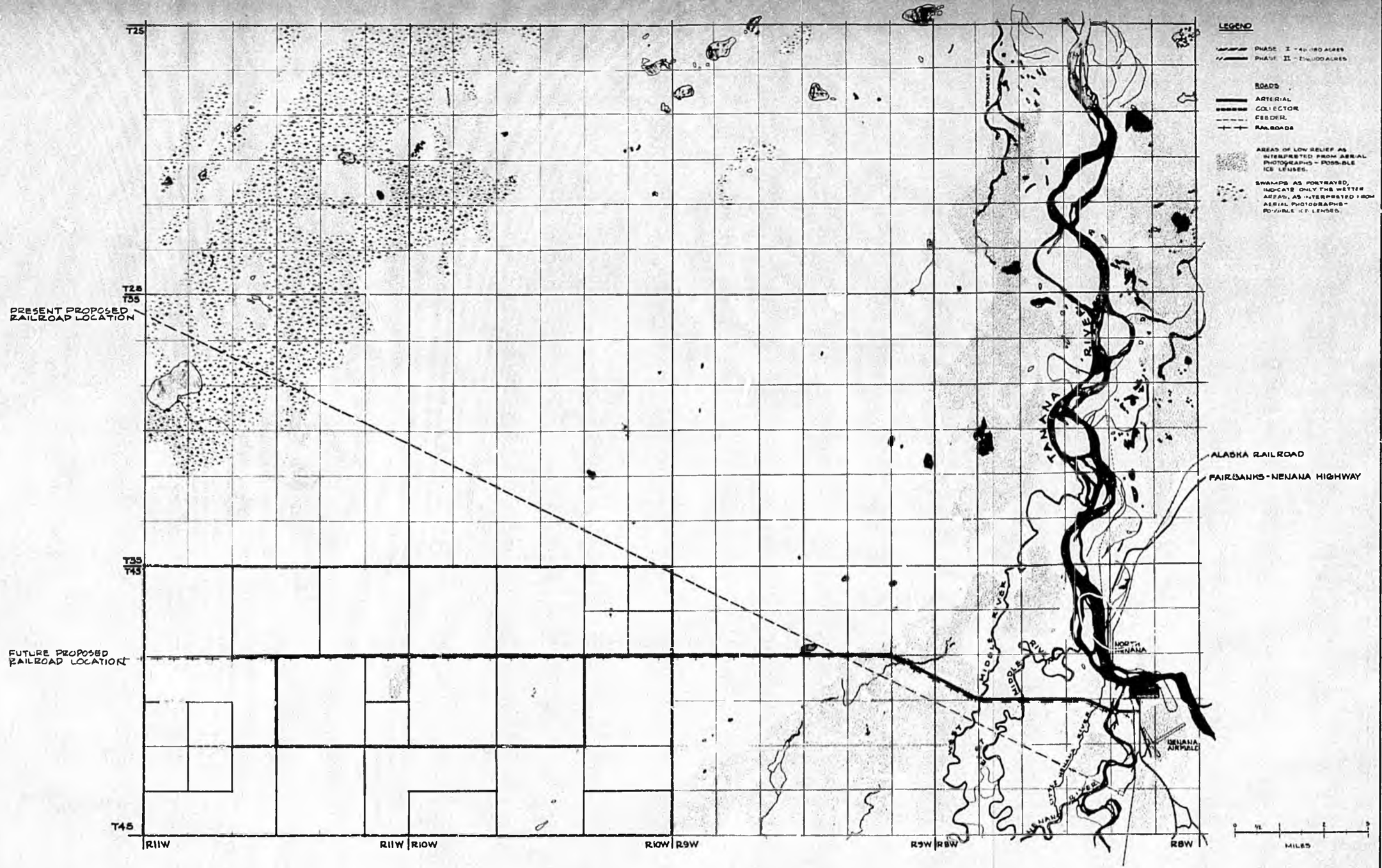


FIGURE Nº 5

FEBRUARY 1981

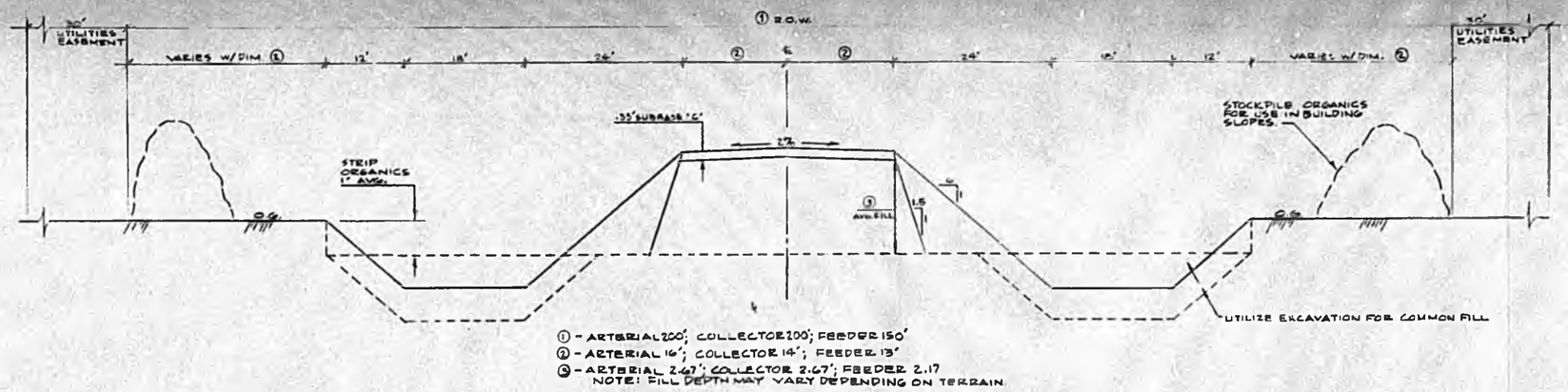
LAYOUT DRAWING
INITIAL PHASE ROADWAY SYSTEM
NENANA

SCALE 1" = 1 MILE | APPROVED BY: | DRAWN BY WHALEY
DATE 2-10-81 | REVISED 1-19-81

Alaska Transportation Consultants, Inc.

DRAWING NUMBER S-11, 2 of 3

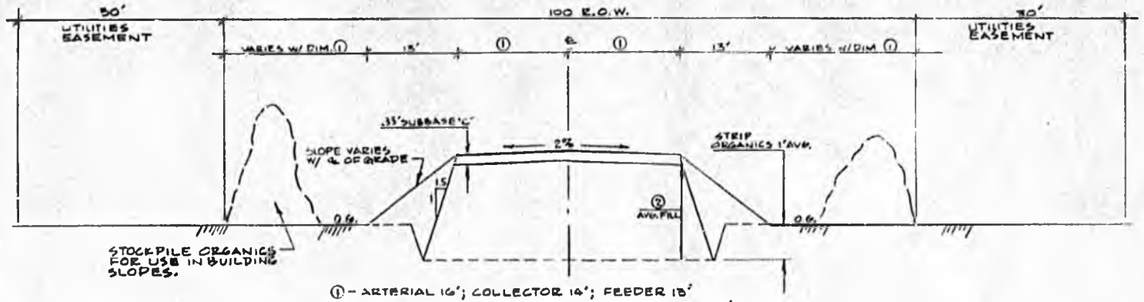
GENERAL NOTES



① - ARTERIAL 200'; COLLECTOR 200'; FEEDER 150'
② - ARTERIAL 16'; COLLECTOR 14'; FEEDER 13'
③ - ARTERIAL 2.67'; COLLECTOR 2.67'; FEEDER 2.17'
NOTE: FILL DEPTH MAY VARY DEPENDING ON TERRAIN

TYPICAL FARM ROADSIDE BORROW

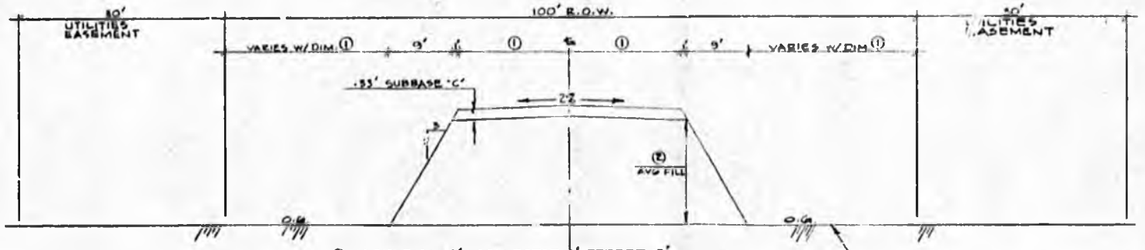
SCALE: HORIZ. 1"=10'; VERT. 1"=2'



① - ARTERIAL 16'; COLLECTOR 14'; FEEDER 13'
② - ARTERIAL 2.67'; COLLECTOR 2.67'; FEEDER 2.17'
NOTE: FILL DEPTH MAY VARY DEPENDING ON TERRAIN.

TYPICAL FARM PIT BORROW

SCALE: HORIZ. 1"=10'; VERT. 1"=2'



① - ARTERIAL 16'; COLLECTOR 14'; FEEDER 13'
② - ARTERIAL 3' AVG.; COLLECTOR 3' AVG.; FEEDER 3' AVG.
NOTE: FILL DEPTH MAY VARY DEPENDING ON ROADBED SOILS CLASSIFICATION.

0 1' 2' 3'

TYPICAL FARM UNSTABLE ROADBED PIT BORROW

SCALE: HORIZ. 1"=10'; VERT. 1"=2'

FIGURE Nº. 6

FEBRUARY 1981

SECTION DRAWING
TYPICAL ROADWAYS
NENANA

SCALE: AS NOTED	APPROVED BY:	DRAWN BY: STATION
DATE: 2-10-81		REVISED: 1-19-81

Alaska Transportation Consultants, Inc.

SHT. 3 OF 3

as well as a typical section for roadway through unstable areas or permafrost. The proposed gravel road system within the Nenana Agricultural Project will be quite similar to the existing gravel roads that service the Delta Barley Project with respect to usage and climatic influences. State Department of Transportation figures indicate that the Fiscal Year of 1979-1980 average maintenance cost per mile per year for 41.36 miles of gravel road near Delta was $2,490.00. Assuming a 25% inflation factor from 1980 to 1982, surface maintenance and snow removal costs for gravel roads in the Nenana Agricultural Project should average approximately $3,115.00 per mile for the Fiscal Year of 1982.

TABLE A

TYPICAL CROSS SECTION QUANTITIES - PIT BORROW

			UNIT PRICE	COST/MILE
Cleared Grub	100 LF		$2,000/acre	$ 24,242.42
Unclassified Exc.	41.5 sq.ft.		$2.50/yd.	$ 20,288.89
Borrow	104.1 sq.ft.		$3.75/yd.	$ 76.340.00
Subbase "C"	10.83 sq.ft.		$19.75/yd.	$ 1,827.27
Side slopes	35.28 sq.ft.		$2.50/yd.	$ 17,248.00
Seeding	68 LF		$11.75/1,000 sq.ft.	$ 4,218.72
18" Culverts (82 LF)	1 pr. 2500 ft.		$35.00/LF	$ 6,061.44
Culvert markers	2 pr. 2500 ft.		$50.00/EA	$ 211.20
Monument cases	4/miles		$200.00/EA	$ 800.00
Open borrow pits	1 pr. 2 miles		$64.60/EA	$ 3,230.00
Road Signs	10 sq.ft/mile		$40.00/sq.ft.	$ 400.00
		Subtotal		$ 194,868.55
Dust control			$7.50/1,000 gal.	$ 550.00
Equal Employment Opportunity			N/A	$ 100.00
		Subtotal		$ 194,868.55
Contractor Engineering (5%)				$ 9,775.93
Contractor Costs		Total		$ 205,294.48
Consultant Engineering (20%)				$ 41,058.90
		Total		$ 246,353.38
Assume 25% inflation 1979-1981				$ 307,941.72
		Use		$ 310,000.00

* rounded numbers

TABLE B

TYPICAL CROSS SECTION QUANTITIES - ROADSIDE BORROW

			UNIT PRICE	COST/MILE
Cleared grub	200 LF		$2,000/acre	$ 48,484.85
Unclassified exc.	132 sq.ft.		$2.50/cu.yd.	$ 64,533.33
Subbase "C"	10.83 sq.ft.		$19.75/cu.yd.	$ 41,827.27
Seeding	168 LF		$11.75/1,000 sq.ft.	$ 10,422.72
18" Culvert (92 LF)	1 pr. 2500 ft.		$35.00/LF	$ 6,800.64
Culvert markers	2 pr. 2500 ft.		$50.00/EA	$ 211.20
Monument cases	4/miles		$200.00/EA	$ 800.00
Road signs	10 sq.ft./mile		$40.00/sq.ft.	$ 400.00
		Subtotal		$ 173,480.01
Dust control			$7.50/1,000 gal.	$ 550.00
Equal Employment Opportunity (EEO)			N/A	$ 100.00
		Subtotal		$ 174,130.01
Contractor Engineering (5%)				$ 8,706.50
Contractor Costs		Total		$ 182,836.51
Consultant Engineering (20%)				$ 36,567.30
		Total		$ 219,403.81
Assume 25% inflation 1979-1981				$ 274,254.76
		Use		$ 275,000.00*

* rounded numbers

CHAPTER V
STREAM CROSSINGS

The roadway network which will serve the agricultural development in the Tanana Valley will originate in Nenana. Nenana has rail, highway, and river transportation facilities, and is the logical focal point for this transportation link.

Direct access to Nenana does require a major river crossing structure over the Nenana River, as well as several other smaller structures for the West Middle and East Middle Rivers and for the Little Nenana River. Since Nenana will be the origin and destination for much of the traffic generated in this valley, the optimum cost benefit ratio for users would dictate that the river crossing be placed in close proximity to Nenana.

A reconnaissance of the Nenana River Valley upstream from its junction with the Tanana River was made by air. The general mapping of the region was reviewed and using the air reconnaissance and the mapping, it is possible to determine the general characteristics of the river in this area. For an extended distance upstream from the river junction, the Nenana River flows through a broad, flat flood plain. Generally, the stream is highly braided, with evidence of a shifting stream occuring through the years. There is evidence that the erodable nature of the river valley, coupled with periods of high stream flow, due to the source of the stream in mountainous terrain, results in frequent shifts in the river course and in general instability of the river channel.

Although it is not clear cut, there appears to be some higher degree of stability of the river in the vicinity of its junction with the Tanana River. Because of the general development in this region, some minor bank control has been done in the past. Future development of this area would warrant additional stabilization measures in the vicinity of Nenana, and these measures would not only benefit the community, but could also serve to protect the roadway link to the Tanana Valley.

Limited geological information is available for the area. It is assumed that the river is of sufficient size for a thaw bulb to exit in the

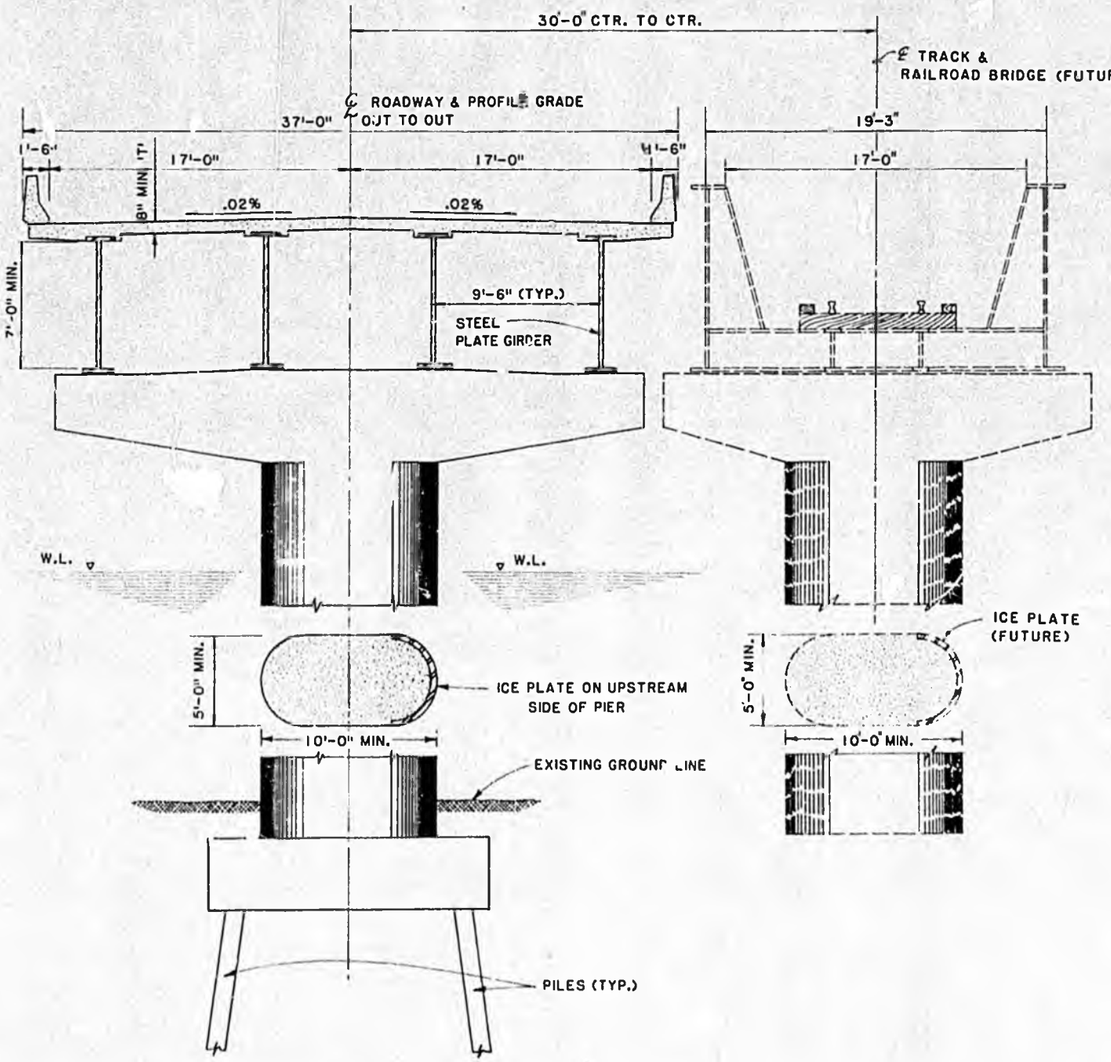
general vicinity of the river. Generally, it is understood that unconsolidated gravels and sands which are an outwash from the mountains prevail through the area. Since these underlying materials are unconsolidated, it is anticipated that piles will be required for the foundation support. In accordance with local practice and also as a general appropriate application, it is anticipated that steel H piles will be used for all foundations. Soil borings will be required at the location of the substructure units along with a geotechnical report to more accurately identify actual insitu conditions.

At the West Middle and East Middle River and at the Little Nenana River, it appears that the stream flow is minimal. Thus, there is a possibility that permafrost does exist in these locations. The presence of permafrost would be determined by future soil borings.

There is not a gaging station in the vicinity of Nenana on the Nenana River and as a result, there is limited hydrological information available. Generally, the approximate ground elevation of Nenana is 351.0 feet. A high water elevation on the Tanana River at the railroad bridge is 358 feet for a 50 year flood. The proximity of the bridge crossing to the railroad bridge justifies the use of this elevation for the high water elevation in the development of the bridge concept plan.

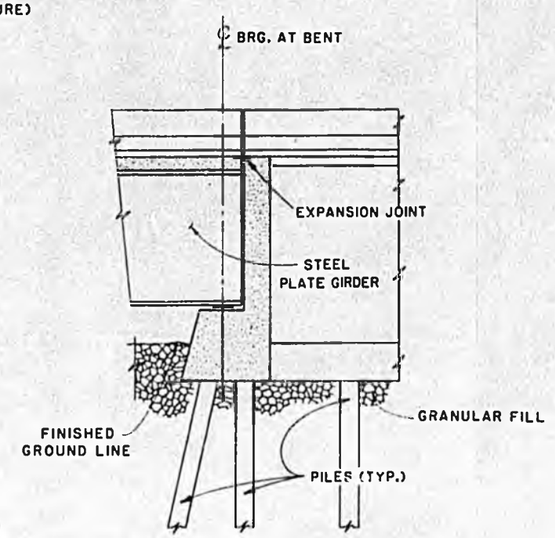
A tentative location for the river crossing has been set at a location approximately 3,000 feet upstream from the Tanana River. This location will permit the roadway to connect with Tenth Street, which has been extended by the City across the railroad. At this location, the river channel is relatively well defined and a crossing can be made without skewing the structure, which will optimize the structural length and result in minimum costs.

The proposed structure is a three span stucture with a length of 560 feet having spans of 172'-6". 215"-0". 172'-6". (Figure 7,8) The superstructure consists of four steel girders using composite action with a concrete deck. The concrete deck has a clear roadway width of 34'-0" with concrete barrier curbs.



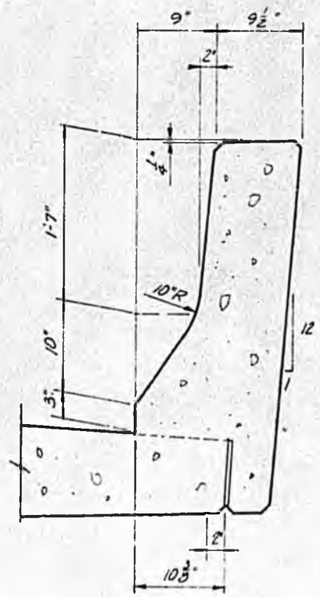
TYPICAL PIER ELEVATION

SCALE: 1/4"=1'-0"



TYPICAL BENT SECTION

SCALE: 1/4"=1'-0"

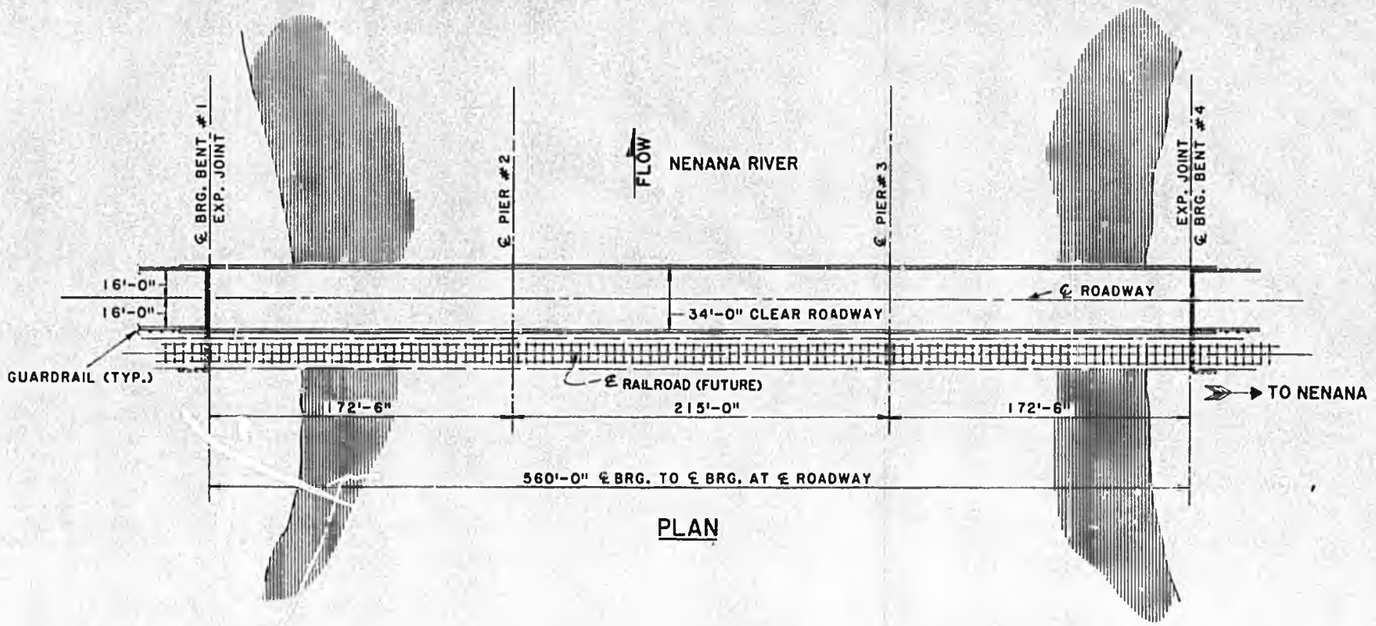


BARRIER DETAIL

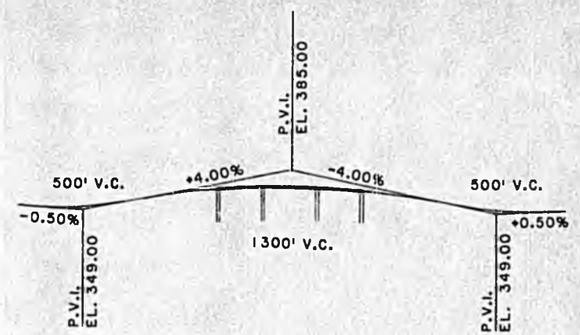
SCALE: 1 1/2"=1'-0"

FEBRUARY 1981

NENANA RIVER BRIDGE		
SCALE: AS SHOWN	APPROVED BY	DRAWN BY: SB/RC
DATE: 11/12/80		REVISED
HDR ALASKA TRANSPORTATION CONSULTANTS, INC.		
		DRAWING NUMBER 2 OF 3

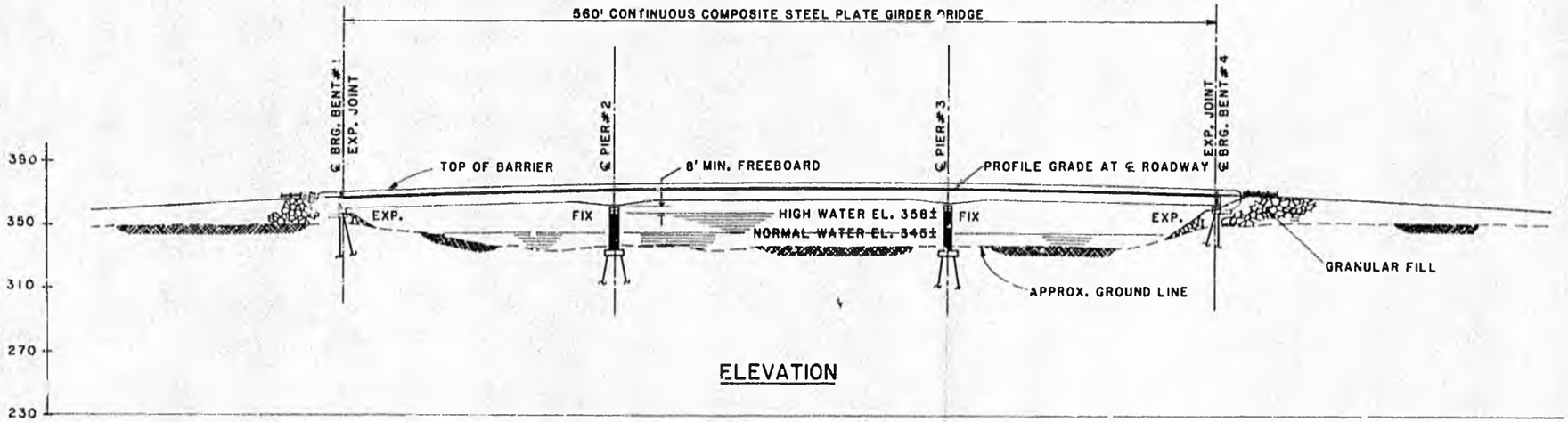


PLAN



PROFILE GRADE

NO SCALE



ELEVATION

NOTES:

LIVE LOADS: HS20-44
COOPER E80
DESIGN SPEED: 60 MPH
STREAM DATA: ASSUMED

FIGURE Nº 7

FEBRUARY 1981

NENANA RIVER BRIDGE

SCALE: 1"=40'-0" | APPROVED BY | DRAWN BY SB/RC
DATE 11/12/80 | DESIGNED

HDR
ALASKA TRANSPORTATION CONSULTANTS, INC.

1 OF 3

Using a high water elevation of 358 feet, a minimum clearance of 8'-0" is indicated above high water to low steel, which exceeds the suggested 6'-0" clearance by AASHTO Bridge Specifications. The necessary clearance over high water, and the depth of the superstructure will elevate the roadway above the approach roadways. The roadway elevation will be achieved by using a gradient on the approach roadways from each direction, and with a vertical curve on the structure with its apex near the center of the structure. The vertical curve will be designed for a speed of 60 mph.

A three span bridge will require the placement of two piers in the stream flow. The velocity of the stream, heavy water volumes, and thick ice will require large massive piers. Presently, it is contemplated that these will be single shaft concrete piers with steel ice plates. Footings will be located below the stream bed sufficiently to be below anticipated scour depths, and will be supported on steel H piles.

The abutments would be concrete stub abutments supported on steel H piles. These abutments will be located on embankment and the material for the embankment in the vicinity of these abutments should be non-frost susceptible soils to prevent frost heave.

Without specific information on water volumes, it has not been ascertained that the indicated waterway opening is sufficient to accomodate the flows. However, with low profile approach roadways, the approach roadways would be inundated during periods of flooding with flow crossing over the roadway.

Initially, it was contemplated that rail service to the area was a consideration. There presently does not exist justification for rail service to the study region based on cost-benefit ratios. However, should the ultimate development of the area occur with the addition of agri-processing plants, there may well be the economic need and demand for rail service to the area. This rail link would logically tie to the existing rail line at Nenana. To avoid the establishment of an additional and independent transportation corridor, the future rail line would closely parallel the roadway corridor. As a result, the river crossing of the Nenana would be

parallel and adjacent to the highway crossing.

The railroad bridge would preferably be a through girder steel bridge structure on the upstream side of the highway bridge. The superstructure and substructure would be independent of the highway bridge. Some overall cost savings would be achieved if the substructure for the railroad bridge was constructed with that of the highway bridge, but this would require a substantial investment for a structure which may not be constructed at any time in the near future.

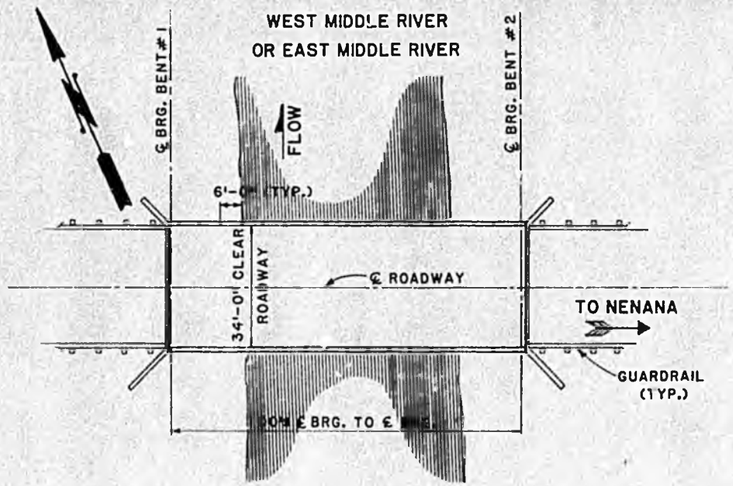
In recognition of the severe lateral forces imposed on the substructure, the railroad would have an identical span arrangement with that of the highway bridge. This is also necessary to avoid impeding the flow of water and ice which would occur if non-aligned piers for the two structures were used. The superstructure would be designed for a Cooper's E-80 loading. It is assumed that the rail line would be a low speed operation and that the structure could be a non-ballasted deck.

The approach grades to the railroad structure would have gradients not exceeding 2% and would be somewhat longer than the roadway approaches.

With some inherent instability of the stream, stabilization of the river banks may be required upstream from the structure. It is not expected to be a major undertaking, but it will be necessary to inspect the upstream banks in the vicinity of the proposed structure to ascertain if any revetments are required.

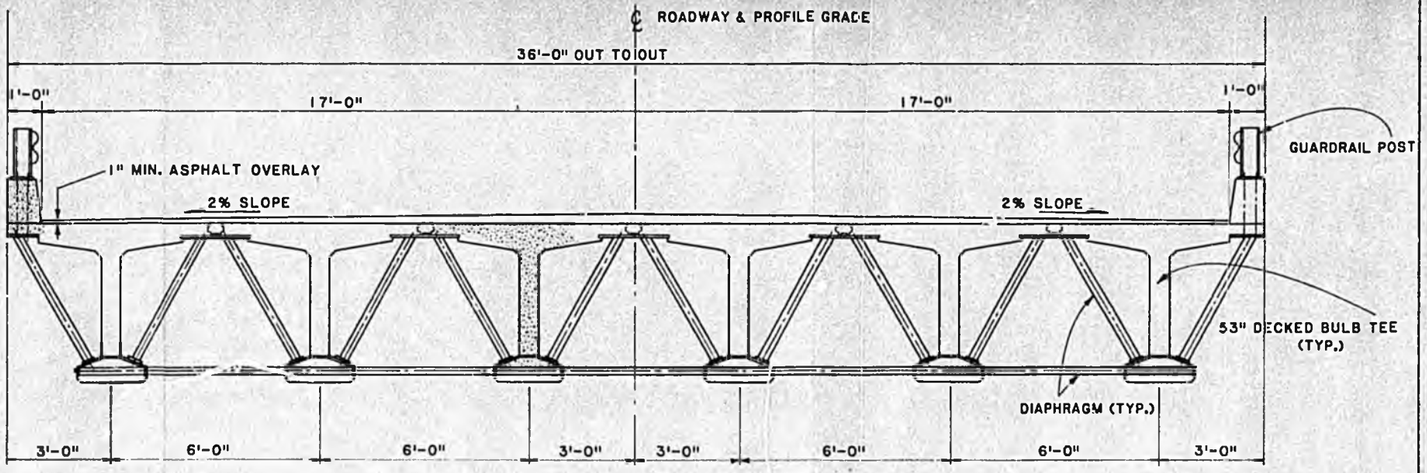
For purposes of development of a concept, a clear span of 100 feet was assumed for the West Middle and East Middle River. (Figure 9) These structures would consist of concrete bulb T superstructures, supported on concrete stub abutment with steel H piles. For the Little Menana River Bridge, it was assumed that a large culvert could be used to contain the flow in this stream.

No site specific information was available in the form of surveys, geological information, or hydrological data, and these concepts for the



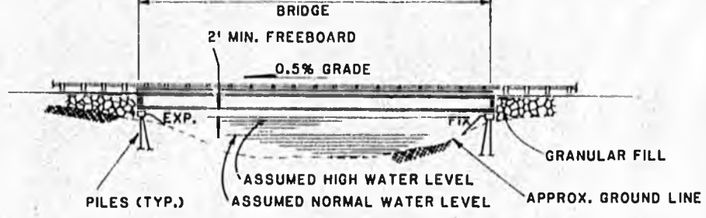
PLAN

SCALE: 1"=20'-0"



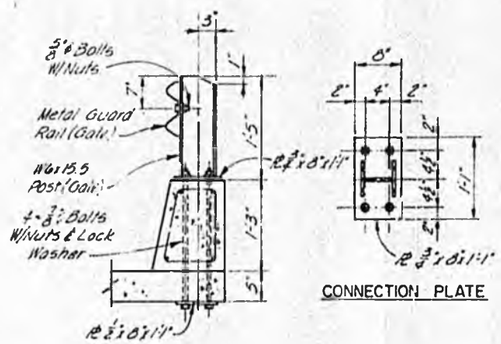
SECTION

SCALE: 1/2"=1'-0"



ELEVATION

SCALE: 1"=20'-0"



GUARD RAIL POST CONNECTION DETAIL

SCALE: 1"=1'-0"

NOTES:

LIVE LOADS: HS20-44
DESIGN SPEED: 60 MPH
STREAM DATA: ASSUMED

FIGURE Nº 9

WEST MIDDLE RIVER BRIDGE EAST MIDDLE RIVER BRIDGE	
SCALE: AS SHOWN	DRAWN BY: SB/MP
DATE: 11/12/80	REVISED:
HDR ALASKA TRANSPORTATION CONSULTANTS, INC.	
	DRAWING NUMBER: 3 OF 3

structures were developed using aerial photographs and other undocumented data. As more specific knowledge is gained, the proposed structures may change in concept and size.

Other minor structures will be required to provide flow for drainage areas lying in the path of the proposed roadway. Presently, it is contemplated that round culverts will be adequate for this purpose.

The following is a list of total costs, including soil exploration, engineering, construction inspection, and construction cost for each of the bridges over Nenana River and its tributaries. Costs related to various items such as right-of-way, utilities, bridge embankments and inflation factors are not included in the estimate. Costs presented are to be reasonable order-of-magnitude costs for work as of Spring 1981.

	NAME	TOTAL COST
A.	Nenana River Bridge	$ 4,040,400
B.	Little Nenana River Bridge	$ 97,500
C.	East Middle River Bridge	$ 608,400
D.	West Middle River Bridge	$ 608,400
	TOTAL	$ 5,354,700

CHAPTER VI
PERMITS

Permits are required from both state and federal agencies. Use of land and environmental concerns will involve the state in all stages of the project; construction stages will also require federal permits. The application process has been divided into four (4) stages, based on anticipated work progress. A separate application for state permits will be made for each of the four (4) stages, which are:

1. Survey and Boring-Bridges
2. Survey and Boring-Road (Phase I)
3. Bridge Construction
4. Road Construction

For state permits, Master Applications will be used (as detailed below); and, the staged application procedure will more effectively identify required state permits. Federal agencies are easier to identify, as fewer are directly involved; however processing time is six (6) months or longer. The federal government is now in the process of making a wetlands determination, the outcome of which would identify the need for any federal permits.

State Permits

A Master Application has been made to the Alaska Permit Information Center in Fairbanks. The Master Application serves as a notice of intent to the state of a proposed project. The Center notifies state agencies (about 200), and they have fifteen (15) days to respond. All responses including necessary individual department permit applications are returned to the center. The process is outlined in the attached Master Application Information Sheet, (See Appendix 2). The applicant is responsible for completion of all applications and payment of fees.

Key state departments are Fish & Game, and the Department of Environmental Conservation (DEC). State Division of Lands will be concerned about right-of-way. Fish & Game is primarily concerned with stream crossing and will issue a Title 16 Permit; first stage boring work will be

subject to Fish & Game requirements. DEC requires Water Qaulity Certification under Section 401 of Public Law 92500. The Master Application process will identify all state agencies requiring permits for the individual stages. Agencies not responding to the Master Application within fifteen (15) days, may not later require a permit.[1]

With the state agencies, as with federal departments, preliminary review of the application prior to submission will expedite approval.

Federal Permits

Application to the Corps of Engineers is the principle step in the federal process. The Corps assures public notice of a proposed project; other agencies then respond to the Corps. Statutes that apply are:

1. "River and Harbor Act of 1899", Section 10.
2. "Clean Water Act", Section 404, covers use of fill material.
3. Permits required for use of areas defined as Wetlands and Floodplains.

A key agency that should review applications prior to filing is the U.S. Department of Fish & Wildlife Service. The Fairbanks office will work closely with the applicant; recommendations will be made so that proposed project will be within Fish & Wildlife guidelines. An important part of the review will be definition of Wetlands, if any in the project area. Time frame for the review will be 3-4 weeks and is now in progress.

The Environmental Protection Agency (EPA) and National Marine Fisheries Service will be concerned; but, individual contact at present does not appear to be needed prior to Corps application. Their reaction and progress concerning the Corps application, should be monitored however.

The Coast Guard grants permits to cross navigable rivers under Section 9 of the "River and Harbor Act of 1899".[2]

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[1] Section 46.35.030, Water, Etc., Conservation (See Appendix 3).

[2] Interview with Mark Millea, Aids to Navigation Section, U.S. Coast Guard, Juneau, Alaska.

The Nenana River is classified in the Advanced Approval Category and requires no permit. The East and West Middle Rivers were determined to be distributaries of the Nenana River, thus being classified in the Advance Approval category as well, (Appendix 4).

No federal permits are required for preliminary survey and geotechnical work along the proposed roadway routing.

Additionally, a permit is needed to cross Alaska Railroad Terminal Reserve on the east bank of the Nenana River. The process to obtain this permit has been initiated though final results are still pending.

CHAPTER VII

LAND ACQUISITION FOR RIGHTS-OF-WAY

There are various methods available to acquire land for the roadway and utility rights-of-way in this project. The most straightforward of these methods is the use of section line easements granted through both state and federal statutes.[1] For the most part, the proposed roadway network follows section lines to take advantage of this easement. Other methods of acquiring land are included in the power of eminent domain. The use of eminent domain and section line easements, project rights-of-way requirements, and recommendations pursuant to the acquisition of those rights-of-way are detailed below.

1. Eminent Domain

According to Title 9, Article 4, Section 9.55.240, the power of eminent domain is available for use in acquiring land for the building of the roads, telephone lines, and power lines in this project. Proceedings instituted under the power of eminent domain are accompanied by a declaration of taking. This declaration must contain items describing the authority under which the property is taken, the public use for which it is taken, a description of the property, an estimate of just compensation, etc.[2] It has been stressed that the most important item to be contained in the declaration of taking is "a statement that the property is taken by necessity for a project located in a manner which is most compatible with the greatest public good and the least private injury."[3]

---

[1] Basis for section line easements: Act of July 26, 1866, (RS 2477), (43 CFR 2822, 43 USC 932); Chapter 19 SLA, April 6, 1923; Chapter 123 SLA, March 26, 1951; Chapter 35 SLA, March 21, 1953; Taken from workbook on Section Line Easements put together by Bill Newman, Fairbanks North Star Borough, Planning Department, 1978.

[2] A.S. 09.55.430.

[3] Ibid; Interview with Bill Satterberg, Department of Law, Highways Section, October 28, 1980.

The power of eminent domain could be utilized where section line easements are not already established and in the acquisition of land required beyond that granted in section line easements. This power is granted to both the state and first class cities such as Nenana.[1]

2. Section Line Easements

As detailed in Chapter IV, the roadway network has been laid out to take full advantage of section line easements. Following is a brief outline of the federal and state laws concerning section line easements and a method for determining which laws might apply to a certain piece of property.

(A) History[2]

The Mining Law of 1866 made an offer of free right-of-way over unreserved public land for highway purposes. This offer became effective on April 6, 1923, when the territorial legislature passed Chapter 19. Any lands in Alaska appropriated and patented after April 6, 1923 were subject to an easement along all sections, 4 rods (66 feet) wide.

The section line easements law remained in effect until January 18, 1949. On this date, the legislature accepted the compilation of Alaska law which also repealed all laws not included. The section line easement law was repealed.

On March 26, 1951, the legislature passed an easement law which dedicated a section line easement 100 feet wide along all section lines on land owned by or acquired from the territory. This was modified on March 21, 1953, to include an easement 4 rods wide along all other section lines in the territory.

To have an easement on a section line means that the section line must be surveyed under the normal rectangular system. On large areas such as State or Native selections, only the exterior boundaries are surveyed

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[1]A.S. 09.55.420 (a).

[2]Taken from Workbook on Section Line Easements put together by Bill Newman, 1978.

hence, there are no section line easements in these areas (until further subdivisional surveys are carried out).

Since all federal land is reserved in Alaska at this time and since the section line easement will have any applicability on any finalized D-2 land since the land will be reserved at the time of any survey.

Land surveyed by special survey or mineral survey are not affected by section line easements since such surveys are not a part of the rectangular net.

Section line easements relate solely to highway or road use by the public. They cannot be used for powerlines or restricted private access. The date of survey and appropriation of the land must be considered in determining the presence of a section line easement.

(B) Methodology[1]

Using the date of entry and the date of survey plat approval, an analysis of section line easements would proceed as follows:

A. If date of entry predated survey plat approval there is no easement.

B. If entry predated April 6, 1923 (date of enabling lagislation for section line easements) there is no section line easement.

C. If survey plat approval predated April 6, 1923, but date of entry is after April 6, 1923, but before January 18, 1949, there is a section line easement.

D. If survey plat approval is during the period of January 18, 1949 and March 21, 1953, and date of entry falls within this period, there is no section line easement.

E. If survey plat approval is during the period of January 18, 1949 and March 21, 1953, and date of entry falls after March 21, 1953, there is a section line easement.

F. If the land is in state ownership, there is a section line easement.

G. If the land was disposed of by the state or territory during the period of January 18, 1949 and March 26, 1951, there is no section line easement.

H. United States Surveys (U.S.S. and Number) and Mineral Surveys (M.S. and Number) are not a part of the rectangular new of survey. If the rectangular new is later extended, it is established around these surveys. There are no section lines through a U.S.S. or M.S., therefore, no section line easements can exist on such areas.

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[1]Taken from "Section Line Easement Research Technique" put together by the Fairbanks North Star Borough, Planning Department, 1979.

There may be many other situations which would require evaluation and decision on a case by case basis.

3. Project Right-of-Way Requirements

Figure 4 presents existing land ownership in the project area. Land in the initial phase of the project was chosen because it is state patented. The proposed roadway traverses a township which has been tentatively approved for state patent and a township including both state patent land and private property. The bridge crossing the Nenana River crosses private land along the river's west bank. Property along the east bank is currently classified as railroad terminal reserve. The entire township in which Nenana lies is being claimed for private use under the Alaska Native Claims Act. Thus, rights-of-way will have to be acquired from state, federal, and private ownership.

As discussed in Chapter IV, a right-of-way 200 feet wide is required for the main and collector roads in addition to a 30 foot utility easement on either side of the roadway easement. Within the roadway easement are 32' and 28' of traffic lanes for the main and collector roads respectively; 52-54 feet of ditch on either side of the traffic lanes; and 30-34 feet of space for storage of organic to be used in the building of slopes. Feeder roads require 150 feet of roadway easement with a 30 foot utility easement on either side. (See Figure 6).

4. Conclusions and Recommendations

Acquiring rights-of-way can become a complex issue with the potential to slow-up or even stop a project. In the foregoing sections it was found that the proposed roadway would traverse state, federal and private property. It was also found that required rights-of-way were greater than easements available along section lines. It has been recommended that use of "blanket condemnation" for necessary right-of-way might be a way of avoiding many problems.[1]

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[1]Interview with Bill Satterberg, Department of Law, Highways Section, October 28, 1980.

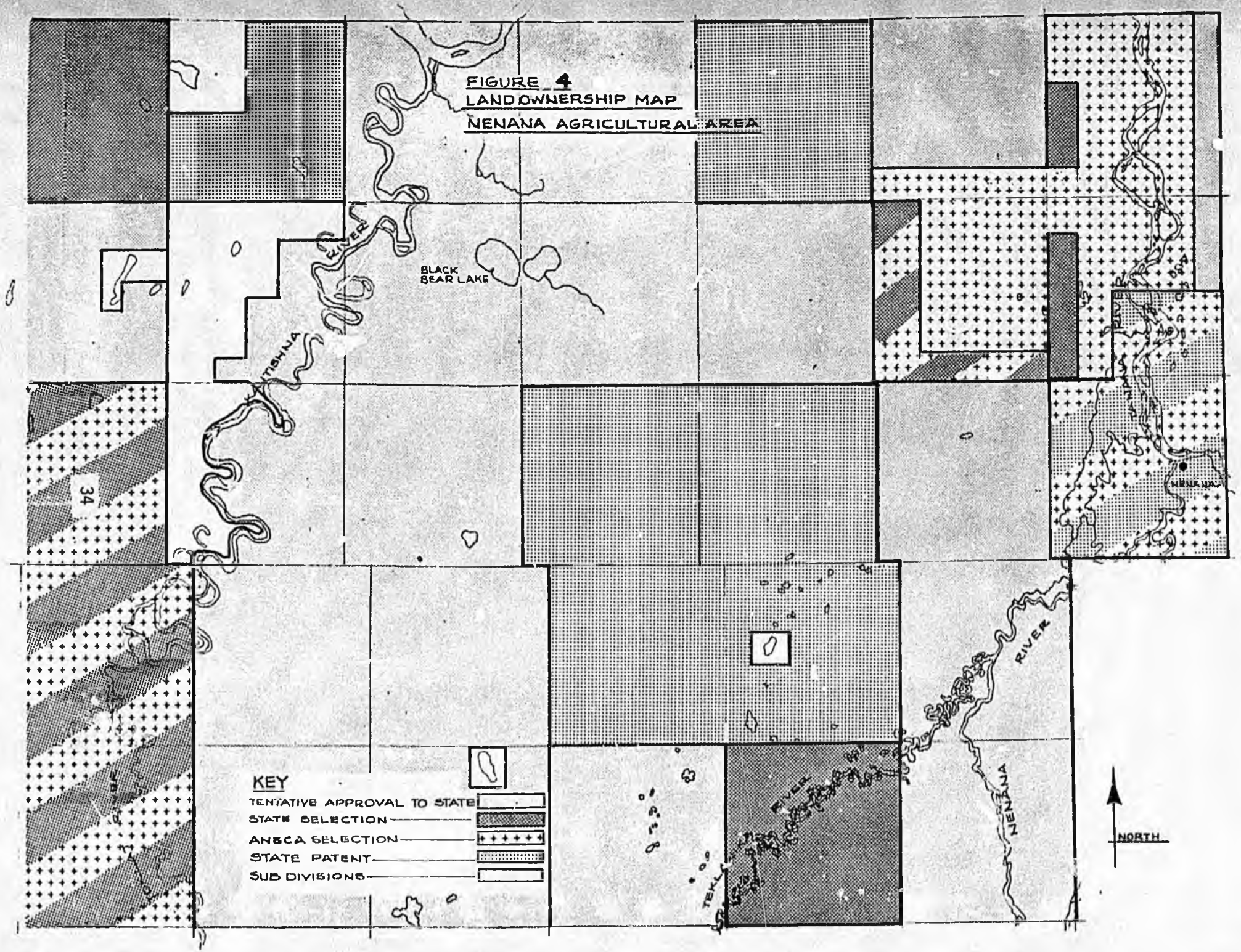
FIGURE 4
LANDOWNERSHIP MAP
NENANA AGRICULTURAL AREA
BLACK BEAR LAKE
RIVER
34
NENANA
RIVER
NENANA
NORTH
KEY
TENTATIVE APPROVAL TO STATE
STATE SELECTION
ANSCA SELECTION
STATE PATENT
SUB DIVISIONS

Though this is an area which definitely requires legal expertise, current Judicial practice is that an Engineers' expertise will not be substituted for Judiciary opinion if it is clear that the Engineer has exercised his or her judgement in roadway layout.[1] This expertise and many other resources could be made available should the road be built under the umbrella of the Local Service Roads and Trails Act (LSR&T).

Development and construction of the roadway network under LSR&T appears to be the most expedient approach to the acquisition of rights-of-way and many other developmental requirements discussed in this section. Under LSR&T the state can use its mechanisms and powers to acquire necessary right-of-way in accordance with AS 19.05.080-.9.05.120.[2] The current revision of the act would provide funds for purchase of rights-of-way and gravel. However, this revision is yet unsigned by the governor and there remains some controversy in the legislature regarding the specific provisions for the purchase of right-of-way.[3] Until the issue is resolved however, funding for the purchase of right-of-way will have to come through some other legislative vehicle.

Construction of the roads under LSR&T would also guarantee maintenance either through the Department of Transportation and Public Facilities or local government by way of revenue sharing.[4]

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[1]Interview with Bill Satterberg, Department of Law, Highways Section, October 28, 1980.

[2]AS 19.30.171.

[3]Interview with Donovan Ronkin, LSR&T Engineer, Department of Transportation and Public Facilities, November 13, 1980.

[4]AS 19.30.211.

CHAPTER VIII

Cost-Benefit Study of Phase I Access Routes

Two options are availalbe for the access road to Phase I of the Nenana Agricultural Project. Option One is a 22.2 mile route from Nenana to the Center of Phase One that requires four bridges to be built. Option Two is a 34.7 mile route from near the Rex siding that requires one bridge across the Teklanika River. A cost analysis, reduced to a per-year basis, indicates that the Nenana route will cost $1,472,913.12 per year while the Rex route will cost $1,517,365.48 (Tables C - G). User costs are estimated to be $3,218,713.50 for the Nenana route and $9,167,753.50 for the Rex route. These figures indicate that the Nenana route will result in a net savings to the general tax payer of approximately $44,500.00 per year and a net savings to the user of approximately $5,949.000.00 per year for a total savings of $5,993,500.00 per year.

A cursory review indicated that freight costs per metric ton from the center of Phase I to the siding will be $3.66 per ton (utilizing rail from Nenana) for the Nenana route and $4.15 per ton for the Rex route resulting in a net savings of $0.49 per metric ton from the Nenana route.

Table C

Capital Costs Projected to 1981

Estimated project center: 1/4 corner common to sections 13 and 14, T4S, R11W, F.M.

Planned road life - 20 years, structures - 40 years, Right-of-Way - 60 years

Estimated Right-of-Way Costs - $5,000/Acre

Estimated Road Costs - $275,000/mile - Type "RB", $310,000/mile - Type "PB"

Estimated Maintenance Costs - $3,115/mile

Estimated Bridge Costs - Nenana Route - $5,354,700, Rex Route - $608,400

Estimated Interest Rate - 10%

	Nenana Route	Rex Route
	22.2 Miles Gravel 0 Miles Paved	34.7 Miles Gravel 28.9 Miles Paved
Right-of-Way Costs	$1,345,454.55	$2,254,545.46 0
Capital Recovery Cost	134,989.45	226,198.55 0
Construction Costs	$6,140,000.00	$9,542,500.00 0
Capital Recovery Cost	721,204.40	1,120,862.05 0
Bridge Costs	$5,354,700.00	$ 608,400.00 0
Capital Recovery Cost	547,566.27	62,214.38 0
Maintenance Cost/Year	$ 69,153.00	$ 108,090.50[1]
Total Costs/Year	$1,472,913.12	$1,517,365.48 0

[1] Traffic from the Nenana Agricultural Project would approximately double the average daily traffic on the paved section of the George Parks Highway from Rex to Nen-ana. Current maintenance costs are primarily climate-related with negligible traffic-related costs. For this reason it is assumed that project-related traffic would not appreciably affect maintenance costs for this section of highway.

Table D

User Cost: Dollars-Per-Year

	Nenana Route	Rex Route	
	22.2 Miles Gravel	34.7 Miles Gravel	23.9 Miles Paved
Operating Costs:			
76,405/Yr/Mi Gravel	1,696,191	2,651,253.50	
50,940/Yr/Mi Paved			1,472,166
29,100/Yr-1 Stop	29,100	29,100	
Travel Costs:			
25,385/Ry/Mi	563,547	880,859.50	733,626.50
8,155/Yr-1 Stop	8,155	8,155	
Fuel Consumption:			
27,730/Yr/Mi	615,606	962,231	801,397
9,455/Yr-1 Stop	9,455	9,455	
Comfort and Convenience:			
11,635/Yr/Mi Gravel	258,297	403,734.50	
3,880/Yr/Mi Paved			112,132
Accident Costs:			
1,705/Yr/Mi Gravel	38,367.50	59,163.50	
1,044,480/Yr Paved			1,044,480
Sub Total	$3,218,713.50	$5,003,952.00	$4,163,801.50
Total	3,218,713.50	9,167,753.00	

Table E

Roadway Operating Cost Comparisons

A. Operating Costs: Assume level grade - 55 MPH - 1 Stop

$$\frac{(76.23)(1.723)(850)(365)(1.25)}{1000} = \$50,936.96 \text{ use } \$50,940/\text{Yr/Mi (Paved)}$$
gravel (1.5)(50,936.96) = 76,405.44
use 76,405/Yr/Mi

$$\frac{(30.75)(1.627)(850)(365)(1.25)}{1000} = \$19,402.36/\text{Yr use } \$19,400/\text{Yr (Paved)}$$
gravel (1.5)(19,402.36) = 29,103.53
use $29,100/Yr

B. Travel Time:

$$\frac{(850)(365)(3.60 \text{ average wage})(1.25/\text{NF})}{55} = \$25,384.09 \text{ use } \$25,385/\text{Yr/Mi}$$

$$\frac{(5.84)(850)(365)(1)(3.60)(1.25)}{1000} = \$8,153.37 \text{ Use } \$8,155/\text{Yr}$$

C. Fuel Consumption: Assume $1.30/Gal - $1.25 Inflation

$$\frac{(55)(850)(365)(1.30)(1.25)}{1000} = \$27,728.59 \text{ use } \$27,730/\text{Yr/Mi}$$

$$\frac{(18.75)(850)(365)(1.30)(1.25)}{1000} = \$9,452.93 \text{ use } \$9,455/\text{Yr}$$

D. Comfort and Convenience: $.03/vehicle mile for gravel $.01 for pavement

Gravel (.03)(850)(365)(1.25) = 11,634.38 use $11,635/Yr/Mi

Paving (.01)(850)(365)(1.25) = 3,878.13 use $ 3,880/Yr/Mi

Table F

Traffic Data

Accident Data: (Use 13.2 Mile Delta Clearwater Road for similar comparison) DOT/PF monetary equivalents: injury - $9,490; fatality - $260,000.

Gravel Roads

	Fatalities	Injuries	Property Damage/$
1977	0	3	7,775
1978	0	0	2,350
1979	0	1	6,150
3 Year Total	0	4	16,275
Total Costs	0	$37,960	$16,275

Cost/Yr/Mi (37,960+16,275)/(3)(13.25) = 1364.4 x 25% Inflation = $1705.50 use $1705

George Parks Highway Rex to Nenana

	Fatalities	Injuries	Property Damage/$
1977	1	16	90,095
1978	1	8	44,250
1979	1	8	35,350
3 Year Total	3	32	169,695
Total Costs	$780,000	$303,680	$169,695

Cost/Yr (780,000+303,680+169,695)/3 Year = $417,791.67 x 25% Inflation = $522,239.58 x 2 for approximately doubling traffic = $1,044,479.17 use $1,044,480.00

Note:

Design Speed	55 MPH
Volume	850 ADT
Stops	1
Slowdowns and Idling	N/A

Table G

Freight Costs

Projected to 1981: $(.035)^1$(1.25% Inflation) = $0 44/metric ton mile rail
$(.046)^2$(2)(1.25% Inflation) = $.115/metric ton mile

Railroad miles Rex to Nenana	25% (approximate)
Road miles Nenana Railroad to Project	22 (approximate)
Road miles Rex to Project	36.1 (approximate)

Nenana Route		Rex Route
RR	Road	Road
1.13	+ 2.53 - $3.66/ton	$4.15/ton

[1]Rail $035/metric ton mile (based on Delta Barley Project Costs).

[2]Commercial Truck $046/metric ton mile (one-way) (based on Delta Barley Project Costs).

CHAPTER IX

COMMERCIAL VIABILITY OF THE AGRICULTURAL TRANSPORTATION SYSTEM

Commercial viability of a roadway network can be defined as how the system lends itself to an increase in benefits to the primary commercial user. In this case the grain producers will be considered the primary users initially; and it is assumed that, while the other agricultural industries may have different transportation needs, costs and analytical approach would be similar.

As stated in the introduction to this report, transportation is an important aspect in rural development. A commercially viable transport system is a major cog in the success of agricultural development in Alaska. The Final Report of the Rural Transportation Advisory Task Force states that it is vital to assure the efficient movement of agricultural products and farm inputs, "both because of the geographic dispersion of farming, and because of export of agricultural products has become essential to the nation's balance of payments."[1] This statement holds true in Alaska especially when considering the present marketing plans for Alaskan barley and the transportation problems unique to Alaska's emerging agricultural industry.

This section presents an analysis of alternative methods for the transport of grain between the initial project area and Nenana. The purpose of this analysis is to provide a flexible range of options by which the transportation system can be made commercially viable.

A roadway is commercially viable if commercial user costs are low enough to provide for a competitive profit margin. This is accomplished through the design of a system which most effectively reduces costs essential to the transport of a commodity from farm to market.

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[1] "Agricultural Transportation Services: Needs, Problems, Opportunities", The Final Report of the Rural Transportation Advisory Task Force, January, 1980., p. 11.

Four transport schemes were evaluated for transportation of grain from farm to market:

I. Home Storage, farmer hauls to Nenana
II. Home Storage, transfer point other entity transports to Nenana
III. No Home Storage, transfer point
IV. No Home Storage, no transfer point

To analyze the various alternatives for transferring the grain from farm to market, several assumptions of conditions and calculations of costs were made for the initial project area. The following is a brief description of estimated project area activity along with an outline of assumptions used to determine costs of the transportation system.

Project Area Activity

The initial project area is two townships in size lying 13 miles west of the City of Nenana. There are seventeen (17) grain farms and ten (10) smaller farms within the project under proposed parcelization. Additional 5 acre home sites are being recommended to increase the population base in the area. An estimate of grain production is based on a 1/3 fallow system and 42 bushels/acre, average harvest of barley. There are 39, 680 acres within the 17 grain farms. This would put 26,450 acres into barley at any one time. At 42 bushels/acre there would be approximately 1,111,000 bushels per harvest. This grain would be transferred to the railhead in Nenana and shipped from there to port. Additional transportation would be required by commodities originating on the smaller farms.

Assumptions

Several assumptions were applied to the analysis of the grain transport system. These assumptions, which should be modified to fit individual farm situations, were:

1. Average Farm Size: 2560 acre
2. Combine Capacity: 2,000 bushels/day
3. Combine bin capacity: 65 bushels requiring unloading every twenty (20) minutes
4. Truck capacities: 250 bushels, 700 bushels, 1,050 bushels
5. Average Speed of Trucks: 35 mph

6. Ten (10) hour workday
7. Average Harvest on 2560 acres = 71,680 bushels

Following the conclusion of Chapter VIII, it was also assumed that the proposed roadway between the initial project and Nenana would be the road used by the farmers in the initial project area.

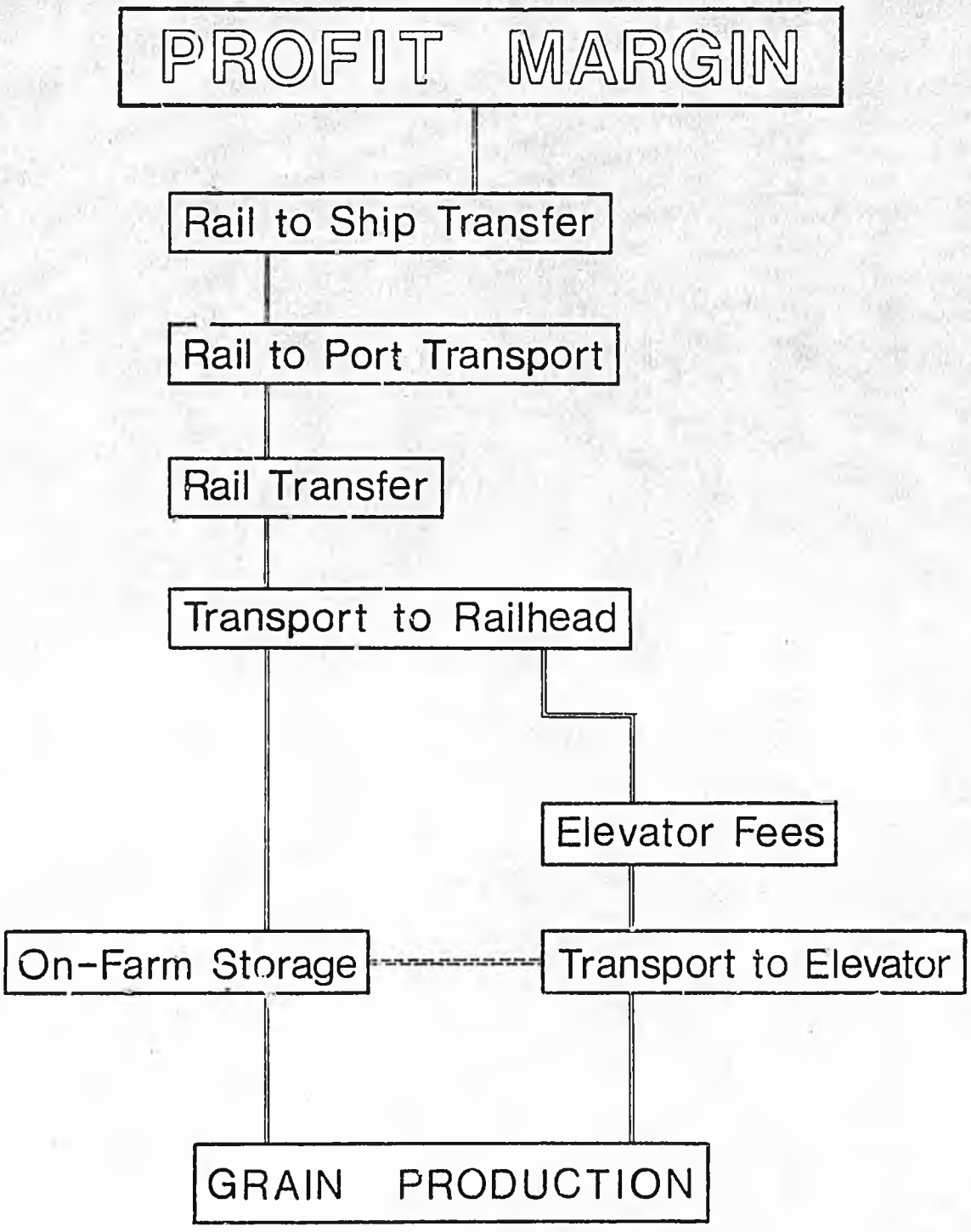
Essential costs for Nenana grain transport were determined to center in the areas outlined in Figure 11. This report focuses on costs involved in transporting grain from on-farm storage to railhead. Roadway quality, location of possible transfer facilities, choice in method of transport are factors which affect essential costs. An examination of the relationship between these factors and essential costs is used in determining a framework for a commercially viable road. These will be discussed following an analysis of the essential cost components.

Essential Cost Components

On-farm storage offers flexibility to the grain producers in a number of ways. First, it allows them to hold their crops until they can sell at the best price. Second, storing the grain on the farm allows the farmer to transfer the grain to the railhead using the mode most economical to him. Third, on-farm storage reduces or eliminates storage costs elsewhere.

It was estimated from experiences in Delta Junction that grain storage in Alaska costs about $0.25/bushel/year.[1] While agriculture is in its developmental stages in Alaska grain receives certain price supports which nullify the advantages of on-farm storage. As Alaskan grain becomes subject to world market prices the advantages of on-farm storage will increase considerably. As a result, it is assumed that the majority of the farmers in the Nenana area will have on-farm storage for a large portion, if not all of their harvest. Costs involved in on-farm storage are made up in

[1]Agricultural Action Council, December 1, 1980.



ESSENTIAL COST COMPONENTS-GRAIN MARKETING

Figure 11

savings resulting from increased flexibility; though the rate of savings depends on distance between farm and elevator, labor costs, elevator fees, etc.

If the farmer does not have on-farm storage, or if the time is right to market the harvest; it is possible that a transfer site could be located between 1 and 7 miles of his farm. One such transfer site would be adequate for the initial project area, though others might be necessary as agriculture expands outward from there. Once the grain is transported to this site it would be loaded onto larger trucks and taken to the railhead in Nenana.

Grain would be transported either from a centralized transfer site or directly from on-farm storage to the railhead in Nenana. Once the grain reached the main elevator there would be additional handling and storage fees.

Evaluation of Alternatives

The alternative transport schemes were analyzed in terms of the costs of their essential components. Thus, Scheme I - home storage of grain, hauled directly to the elevator in Nenana; was evaluated on a cost per bushel basis using the following formula:

H + A + E = Scheme I Costs

H + B + E = Scheme I Costs

H + C + E = Scheme I Costs

where:

H = Home Storage Costs

A = Costs of 300 bushel truck hauling direct to Nenana (Calculated with and without labor)

B = Costs of 700 bushel truck hauling direct to Nenana (Calculated with and without labor)

C = Costs of tractor/semi-trailer (Both commercial costs and with/without labor)

E = Costs of storage and handling at elevator.

Scheme II was evaluated using the following formula:

H + A + T + C + E = II

H + B + T + C + E = II

Where 'T' equals costs of handling at transfer point. Scheme II also compares 2.5 ton truck and 5 ton truck haul costs to transfer point.

Scheme III was evaluated using the following formula:

A + T + C + E = III

B + T + C + E = III

Scheme IV was evaluated using the following formula:

A + E = IV

B + E = IV

C + E = IV

Operating Costs

Costs involved owning and operating the three alternative trucks were obtained from local sources and are presented in Table H. For the 2.5 ton and 5 ton trucks, 25% of the annual fixed costs were assigned to the hauling of grain. As the larger 10 ton truck is not as versatile as the 2 smaller trucks might be, 69% of its fixed costs were assigned to grain hauling. Home storage costs were utilized from a recent study in Washington state.[1] These costs were adjusted for inflation and higher costs in Alaska and were approximated at 13¢/bushel. Elevator handling costs are currently 12¢/bushel in the Delta project the elevator costs and costs at the possible transfer site in the initial project area.

Formulas listed in Figure 12 were utilized in determining the various transport costs of the four alternative schemes. These formulas were obtained from a similar study done in Washington state.[2]

Findings

It was found that while Scheme IV had the lowest costs of all the alternatives, Scheme I offered the most flexibility at the least costs to the

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[1] Hately, Rogers, Casavant. "Evaluating Transportation and Storage Alternatives Available to Whitman County Grain Growers". Washington State University, College of Agricultural Resources Center, May, 1976.

[2] IBID.

Table H

Operating Costs/Mile - Alternative Grain Hauling Vehicles

	A 2.5 Ton (300/Bu)	B Ton (700/Bu)	C 10 Ton Tractor/Semi (1,500/Bu)
Fixed Costs			
Interest on Investment	708	1654	4536
Depreciation	1583	3325	9120
Insurance	600	1050	1350
License and Fees	30	30	240
Total Fixed Costs	2921	6059	15,246
25% assigned to Grain	730.25	1514.75	
65% assigned to Grain——C			9,909.90
Variable Costs			
Gas	0.108	0.185	.29
Repairs	0.131	0.131	.80 (includes tires)
Tires	0.030	0.050	---
Total Variable Costs	0.269	0.366	1.09

- License Costs:
  Alaska Motor Vehicles Dept.
- Insurance:
  Butch Stein, Alaska 100
- Repairs:
  U.S.D.O.T. formula and local interviews
- Gasoline:
  Price/Gal: ÷ MPG

New Cost

Tires:
6 @ 200.00
÷ 40,000 mile

New Cost-35,000
Salvage value 1,750

Alaska Sales
in Anchorage

Tires:
10 @ 200.00
÷ 40,000

New Cost-96,000

Gene Javette, K&W Trucking