CENTERLINE SOILS AND MATERIAL SITE INVESTIGATION

SOLDOTNA URBAN

PROJECT NUMBER F-021-1(13) AND F-021-2(4)

CENTRAL DISTRICT

AUGUST 1970

Approved:

Dan W. Herman

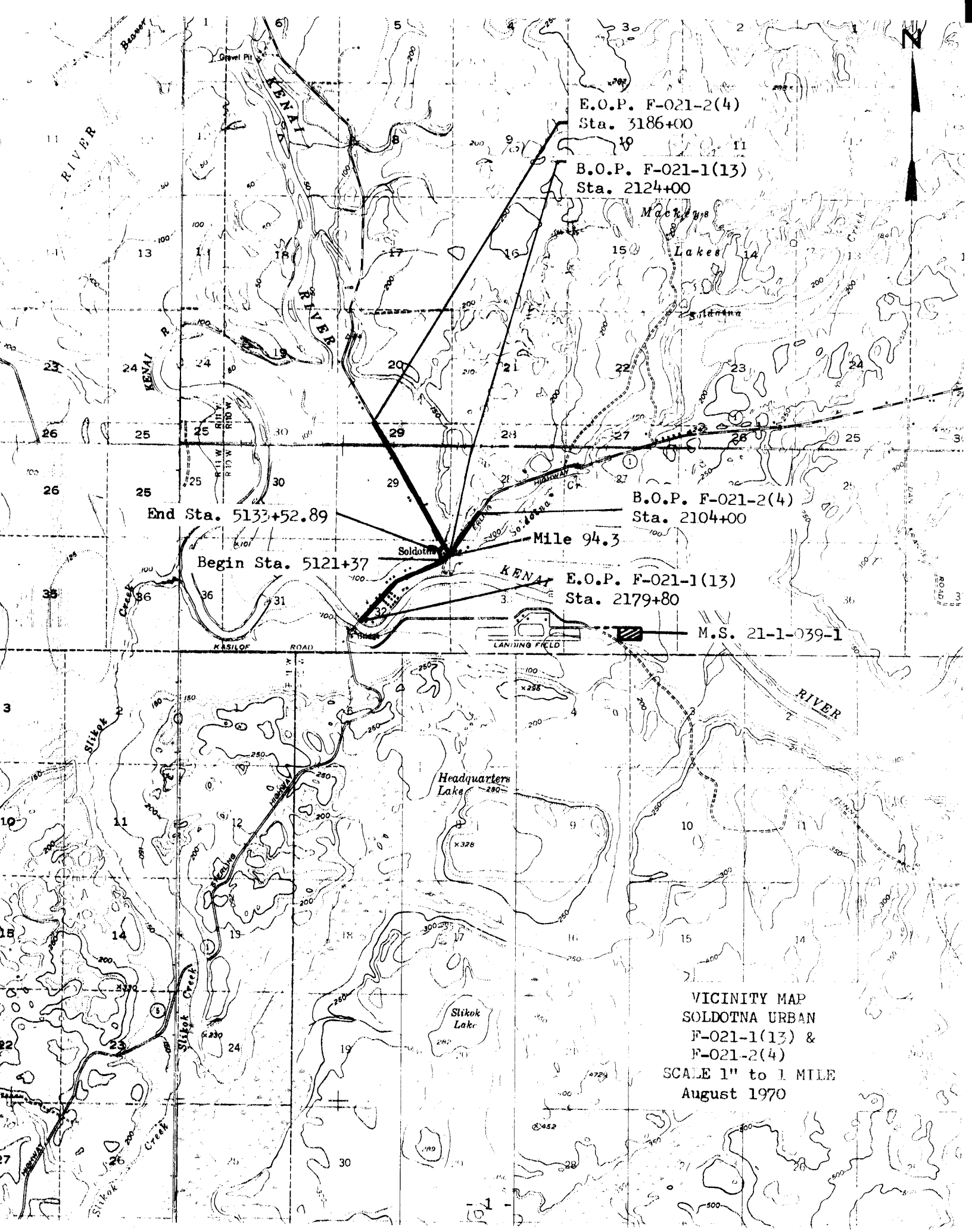
District Materials Engineer

Monte D. Wilson

Chief Geologist

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E.O.P. F-021-2(4)
Sta. 3186+00
B.O.P. F-021-1(13)
Sta. 2124+00
B.O.P. F-021-2(4)
Sta. 2104+00
Mile 94.3
E.O.P. F-021-1(13)
Sta. 2179+80
M.S. 21-1-039-1
End Sta. 5133+52.89
Begin Sta. 5121+37
KENAI RIVER
KASILOF ROAD
LANDING FIELD
Headquarters Lake
Slikok Lake
Slikok Creek
Mackey Lakes
Soldotna
VICINITY MAP
SOLDOTNA URBAN
F-021-1(13) &
F-021-2(4)
SCALE 1" to 1 MILE
August 1970

INTRODUCTION

This report contains the centerline and material site investigation of the Soldotna Urban project. The centerline soils investigation was initiated May 14, 1968, and completed May 21, 1968, by Engineering Geologist John C. Moores, Jr.. The material site investigation was initiated July 30, 1969, and completed August 11, 1969, by Engineering Geologist W. T. Phillips, Jr.. Soils analyses were performed by the Central District Materials Laboratory. A quality test has been conducted by the State Materials Laboratory at College, Alaska.

Editorial assistance was provided by T. A. Sexton, Jr., Engineering Geologist I.

LOCATION

Project number F-021-1(13) begins at Station 2124+00 (Mile 94.3± of the Sterling Highway at the proposed reconstructed intersection with the Kenai Spur) and extends approximately 1 mile to the southwest, ending at Station 2179+80 at the Kenai River Bridge. Project F-021-2(4) begins at Station 2104+00 (Mile 93.9± of the Sterling Highway) and extends to the southwest to Station 2124+00 at Mile 94.3±. From this point it extends to the northwest from Station 3123+37.67 of the Kenai Spur for approximately 1.2 miles to the end of the project at Station 3186+00. Beginning at Mile 94.4 of the Sterling Highway, a short frontage road is planned west of the main intersection (see vicinity map and soils plan and profile).

The alignments of both projects, except for short segments of the intersection, generally follow the existing constructed routes. The projects are located within the city of Soldotna.

METHOD OF INVESTIGATION

A Bombardier B-38 Mobil Drill utilizing six inch diameter continuous flight auger was used to investigate the centerline soil conditions on this project. Test holes were generally spaced three hundred feet apart throughout its length. In order to avoid placing test holes through the pavement, test holes along the centerline were frequently augered through the shoulders of the existing road prism. Additional test holes were drilled in berm piles, the side hill cuts left and right of Station 2102+00 through 2109+00, and in the vicinity of a frost heave between Stations 2103+00 and 2106+00.

Material site exploration was performed utilizing an Allis-Chalmers HD-11 dozer with backhoe.

GEOLOGY AND TOPOGRAPHY

This project lies within the Nikishka Lowland which is a portion of the Kenai Lowland subdivision of the Cook Inlet Lowland physiographic province. The Kenai Lowland is bordered on the west by Cook Inlet, on the east by the coastal Kenai Mountains and on the north by Turnagain Arm. The topography generally consists of well drained flat to gently sloping areas including river terraces and flood plains.** Karlstrom (1964) reports that there is a coastal bench extending from Kenai to Kasilof. This bench, which grades inland to a terrace level of approximately 125 feet, can be traced up the Kenai River valley. The soils of this terrace are gravel and sand that have been derived from reworking of an interlobate moraine

of the Eklutna glaciation. The northeast approach to the Soldotna Urban intersection begins on the edge of a terraced moraine of Eklutna age. The glacial soils and reworked glacial soils are all covered by a thin (up to 2 1/2 feet thick) mantle of windblown brown silt, which is peaty in the lower drainage areas.

** Karlstrom, Thor, N.V., 1964, Quaternary Geology of the Kenai Lowland and Glacial History of the Cook Inlet Region, Alaska: U.S. Geological Survey Professional Paper 443, P. 12.

CLIMATOLOGICAL DATA

Mean Temperature, Precipitation and Snowfall; Kenai, Alaska

Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept	Oct.	Nov.	Dec.	Year.
Temp. °F.	12.7	16.5	21.3	32.7	42.9	49.5	53.5	53.1	46.8	35.0	21.3	12.1	33.1
Precip. Inches	1.12	1.10	1.14	0.95	0.83	1.34	2.23	2.79	3.62	2.24	1.27	1.28	19.91
Snow Inches	13.4	11.2	11.6	5.7	0.3	0.0	0.0	0.0	T*	3.4	9.0	14.1	68.7

* T - Trace

Climatological data recorded at Kenai, Alaska, was provided by Mr. William Serby, Regional Climatologist, U. S. Department of Commerce, Weather Bureau. The Kenai weather station is located approximately 11 miles northwest of this project.

GENERAL MATERIAL SOURCE INFORMATION

The vicinity map illustrates the location of M.S. 21-1-039-1 which lies north of the Funny River Road, approximately 2 1/2 miles east of the Kenai River Bridge. Material in the site consists of glacial outwash sand and gravel with occasional cobbles to 5 inches in diameter noted in the test excavations (see sketch and log sheets). An existing material site located between the Funny River Road and the west leg of the Soldotna Airstrip in Section 33, and also a previously tested parcel of city property lying south of and adjacent to the west leg of the airstrip, were relinquished (at the request of the city) in exchange for M.S. 21-1-039-1.

GENERAL RECOMMENDATIONS

1. Design Data

	Sterling Highway (Kenai River Bridge to Spur Highway)	Sterling Highway (Spur Highway Northeasterly 0.5 Miles)	Spur Highway (Sterling Hwy Northwesterly one mile)
A.D.T. 1965	2,000	1,250	1,850
A.D.T. 1985	6,760	4,225	7,715
D.H.V. 11%	744	465	796
D	45-55	45-55	45-55
T	5%	5%	5%

Subgrade width - Rural		44 feet
Subgrade width - Urban		60 feet curb to curb
Driving lanes		11'- 12' wide
Terrain classification		flat

2. General Overlay Requirements

Both the Sterling Highway (Kenai River Bridge to Spur Highway) and Spur Highway (Sterling Highway Northwesterly one Mile) are class A roads based on the A.D.T. for 1985. The Sterling Highway (Spur Highway Northeasterly 0.5 miles) is a class B road based on A.D.T. for 1985. However, all three segments are category IV with a design index of 6 which results in the following requirements:

Frost Class	Minimum Overlay Requirements	Minimum Recommended Overlay
NFS	9"	9"
F1	16"	16"
F2	19"	19"
F3	30"	30"
F4	30"	36"

3. Table of Overlay Requirements

Station to Station		Remarks	Minimum Required	Minimum Recommended
2104+00 to 2106+00	F1	sa/grl	16"	16"
2106+00 to 2117+00	F4	sa/si	30"	36"
2117+00 to 2126+00	F1	sa/grl	16"	16"
2126+00 to 2130+50	F4	sa/si	30"	36"
2130+50 to 2143+00	F1	sa/grl	16"	16"
2143+00 to 2147+00	F4	sa/si	30"	36"
2147+00 to 2180+00	F1	sa/grl	16"	16"
3123+37.67-3158+00	F1	sa/grl & F4 sa/si	16"	*16"
3158+00 to 3167+00	F4	sa/si & F3 si/sa	30"	*30"
3167+00 to 3186+00	F1	sa/grl, F1 & F2 si/sa/grl	16"	*16"
5121+37 to 5133+52.89	F1	sa/grl & F3 si/sa	16	*16"

*Silts encountered at any location beneath the proposed embankment should be excavated to 36 inches in depth below the planned finished pavement grade.

4. Shrinkage for different classes of earth (from Field Soils Manual, Page 35)

Materials (In Place)	Approximate Compacted % Shrinkage
clean dry sand or gravel	12
clean wet sand or gravel	14
sand, silt, clay, mixture	17
common earth	20
dense clay	25

5. A perforated under drain system (with cross drains) is proposed for the frost heave problem area between Stations 2103+00 and 2108+00. Installation depth should be at least 8 feet below finished grade. An alternate to under drain installation would be the use of 3 inches of "Styrofoam HI" insulation board with 48 foot 1 inch thick transitions on each end. However, this method would require coverage from Station 2104+00 to 2117+00 to allow for a possible rise in the water table and the subsequent moisture increase in the underlying shallow sandy silt between Stations 2108+00 and 2117+00. To date, no serious frost heave problem has been reported for this segment (2108+00 to 2117+00).

Therefore, lowering of the water table appears to be a logical method to control heaving in this instance.

6. Berm piles occur most extensively right of the alignment along the Kenai Spur. Testing indicates that the material consists of logs, organics, and sandy silt. This material should be wasted.

7. For this project selected material shall meet the requirements of the State of Alaska Standard Specification 703.17 except that it should consist of not more than 12% by weight of particles that pass the No. 200 sieve as determined by Alaska Test Method T-7, instead of 18% as stated.

8. Where the proposed prism will exceed the existing prism in width, it will be necessary to determine the frost class of the embankment or foundation material and select the minimum overlay requirement based on the frost class of the material emplaced or encountered. A minimum overlay of 36 inches should be required over silt.

STATION TO STATION DESCRIPTION

Testing indicates that the foundation material throughout most of this alignment is fairly uniform. The major exception occurs between Stations 2104+00 and 2113+50.

Station 2104+00 to Station 2113+50

The Sterling Highway between these station limits passes through a cut section of glacial till. The existing grade will be lowered and the existing cut will require widening. Embankment material in the cuts left and right of the centerline consists generally of gravelly sandy silt, silty gravelly sand, sandy silt and silty sand. The natural moisture content of the material tested varied between 10 and 19 percent.

Borings indicate that the existing pavement is underlain by a brown sandy gravel fill which varies from 4 to 16 feet in thickness. This material is underlain by sandy silt and silty sand similar to that in the cuts described above. The only frost heave noted on these projects occurs between Stations 2103+00 and 2108+00. The water table in this frost heave section varied from 3 to 10 feet in depth below the existing pavement, with an average depth of 7 feet. The water appears to have its source in a small bog about 0.3 mile north of the beginning of this alignment.

Station 2113+50 to Station 2180+00

The alignment in this section slopes gradually toward Station 2180+00 and the Kenai River. The full length of this section consists of a lowering of the existing grade by cutting into the brown sandy gravel of the present embankment. Topographic expression and test hole logs indicate that most of this gravel is fill material. Testing indicates the presence of brown sandy gravel in and beneath the embankment at depths to 13 feet. A few of the test hole logs indicate that all of the wind deposited top soil was not removed prior to previous construction. This top soil consists of brown, sandy silt varying from 1/2 to 2 1/2 feet in thickness where encountered beneath the existing embankment.

Station 3123+37.67 to Station 3186+00
(Including the intersection of the Kenai Spur with the Sterling Highway)

After rising from the proposed intersection at the Sterling Highway, the grade in this section slopes gradually toward Station 3186+00 E.O.P.. Nearly the full length of this section consists of a cut into the existing embankment which is composed of brown sandy gravel. As in the previously described section, the topography and test hole logs indicate that most of the existing prism consists of sandy gravel fill material over 1/2 to 2 feet of windblown brown sandy silt. This windblown brown silt is underlain by brown and gray silty sandy gravel. During widening of the roadway it is to be expected that silt will be encountered; also, organic debris where old berms are present.

Station 5121+37 to Station 5133+52.89
This frontage road (see sheet 6 of soils plan and profile) lies almost entirely on an existing embankment composed of sandy gravel placed upon silty sand and the natural wind blown silt soil cover. Drainage and frost heaves have not been significant problems in this segment.

Submitted by:

Central District Geologist

Engineering Geologist I

APPENDIX A

Centerline Soils Analyses

DH-215
(2-69)

SOILS TESTING REPORT

PROJECT NAME SOLDOTNA URBAN CENTERLINE PROJECT NO. F-021-1(13) SAMPLED BY J.C. MOORES, JR.

STATION	2100+00	2103+00	2103+80	2104+00	2104+00	2105+00	2106+00	2106+00
OFFSET (FEET)	13 1/2 R ℄	50 L ℄	20 L ℄	70 R ℄	70 R ℄	50 L ℄	11-1/2 L℄	11-1/2 L℄
DEPTH (FEET)	5-8	4-8	13-16	2-5	14-18	9 1/2-13	0-3	6-16
TEST HOLE NO.	26	58	62	59	59	56	1	1
FIELD NO.	5JM	14JM	18JM	15JM	16JM	13JM	1JM	2 JM
LAB. NO. 68A-	280	1502	1506	1503	1504	1501	277	278
ESTIMATED %+10"								
ESTIMATED % + 3"								
PERCENT PASSING 3"							100	
2"						100	97	
1"	100		100	100	100	85	89	100
3 4"	100		99	99	99	81	84	98
1/2"	99		98	99	97	79	73	97
3,8"	98		97	99	96	77	64	96
4	96	100	93	97	90	76	53	94
10	93	99	88	96	83	75	40	93
40	86	94	78	92	69	69	23	89
200	21	25	55	47	43	22	8.5	54.2
.02mm	12.2	14.5	40.8	27.1	28.8	10.4	4.5	38
005mm								17.5
LIQUID LIMIT	NV	NV	NV	NV	NV	NV	NV	NV
PLASTIC INDEX	NP	NP	NP	NP	NP	NP	NP	NP
AASHO CLASS	A-2-4(o)	A-2-4(o)	A-4(4)	A-4(1)	A-4(2)	A-2-4(o)	A-1-a(o)	A-4(4)
F. S. V.	F-3	F-3	F-4	F-4	F-4	F-3	F-1	F-4
Sp. G., FINE	2.69	2.69	2.69	2.69	2.69	2.69	2.65	2.67
NAT. MOISTURE			15.8	18.8	10.3			
Soil Description	Si Sa	Si Sa	Sa Si	Sa Si	Grl Sa Si	Si Grl Sa	Sa Grl	Sa Si
Date Tested	5/20/68	5/23/68	5/23/68	5/23/68	5/23/68	5/23/68	5/20/68	5/20/68

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(2-69)

SOILS TESTING REPORT

PROJECT NAME SOLDOTNA URBAN CENTERLINE PROJECT NO. F-021-1(13) SAMPLED BY J.C. MOORES, JR.

STATION		2106+00	2109+00	2122+00	2148+00	2149+00			
OFFSET (FEET)		64 R ℄	14 R ℄	15 R ℄	15 L ℄	16 R ℄			
DEPTH (FEET)		5-8	8-13	5-8	5-8	6-11			
TEST HOLE NO.		60	24	28	8	53			
FIELD NO.		17JM	4JM	6JM	3JM	12JM			
LAB. NO.	68A-	1505	279	281	276	287			
ESTIMATED %+10"									
ESTIMATED % + 3"									
PERCENT PASSING	3"			100					
	2"			97	100	100			
	1"	100		85	77	95			
	3/4"	98		77	66	87			
	1/2"	96		70	52	70			
	3/8"	95		68	42	59			
	4	94	100	64	29	42			
	10	93	99	61	21	32			
	40	88	97	55	11	22			
	200	63	78.4	22.4	3.2	4.2			
	.02mm	47.0	38.0	8.0					
	.005mm		13.8						
LIQUID LIMIT		NV	33.6	NV	NV	NV			
PLASTIC INDEX		NP	NP	NP	NP	NP			
AASHO CLASS		A-4(6)	A-4(8)	A-2-4(o)	A-1-a(o)	A-1-a(o)			
F. S. V.		F-4	F-4	F-3	NFS	NFS			
Sp. G., FINE		2.69	2.52	2.67					
NAT. MOISTURE		18.8	46.1						
Soil Description		Sa Si	SA Si	Si Grl Sa	Sa Grl	Sa Grl			
Date Tested		5/23/68	5/20/68	5/20/68	5/20/68	5/20/68			

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(2-69)

SOILS TESTING REPORT

PROJECT NAME SOLDOTNA URBAN CENTERLINE PROJECT NO. F-021-2(4) SAMPLED BY J.C. MOORES, JR.

STATION		3139+90	3151+00	3160+00	3163+00	3175+00			
OFFSET (FEET)		16 R ℄	16 R ℄	13 L ℄	12 R ℄	12 R ℄			
DEPTH (FEET)		6-8	0-4	4-6	6-8	9-13			
TEST HOLE NO.		32	34	47	36	38			
FIELD NO.		7JM	8JM	11JM	9JM	10Jm			
LAB. NO. 68A-		282	283	286	284	285			
ESTIMATED %+10"									
ESTIMATED % + 3"									
PERCENT PASSING	3"		100						
	2"	100	97			100			
	1"	92	83			88			
	3/4"	87	75		100	76			
	1/2"	78	65	100	99	61			
	3/8"	73	58	99	99	54			
	4	66	46	98	98	41			
	10	61	35	97	98	34			
	40	54	18	93	94	27			
	200	34	6.4	74.5	27.2	17.2			
	.02mm	12	3.8	34.5	6.8	8.2			
	.005mm			13.7					
LIQUID LIMIT		NV	NV	33.7	NV	NV			
PLASTIC INDEX		NP	NP	NP	NP	NP			
AASHO CLASS		A-2-4(o)	A-1-a(o)	A-4(8)	A-2-4(o)	A-1-b(o)			
F. S. V.		F-2	F-1	F-4	F-3	F-1			
Sp. G., FINE		2.69	2.68	2.52	2.67	2.63			
NAT. MOISTURE									
Soil Description		Si Sa Grl	Sa Grl	Sa Si	Si Sa	Si Sa Grl			
Date Tested		5/20/68	5/20/68	5/20/68	5/20/68	5/20/68			

APPENDIX B

M.S. 21-1-039-1
Description and analyses sheets, sketch, legend, and test trench logs.

Material Site No.: 21-1-039-1

Legal Description: A portion of the N^{2} SW^{4} SE^{4} Section 34, T5N, R10W; S.M.

Apparent Owner: City of Soldotna

Date Investigated: July and August 1969

Total Acres: 12(±) Acres to be Worked: *6 to 9(±)

Average Stripping Thickness: 2.2 feet

Investigated By: W. T. Phillips, Jr.

Location, Access, and Geology: This material site is located east of the Soldotna Airport on the Funny River Road, approximately 2 1/2 miles from the Soldotna urban project (the north end of the Kenai River Bridge). A homestead road along the north boundary of the site can provide access.

The City of Soldotna has requested that only one haul road (extending to the south from the homestead road) be constructed. This haul road should be restricted to the 1/4 section line along the west boundary of the site.

Material in the site consists of glacial outwash sand and gravel (cobbles to approximately 5 inches in diameter noted) blanketed by an average of 2.2 feet of brown windblown silt, volcanic ash and organic material. The terrain is relatively flat. Vegetation consists of an open forest of aspen and spruce (2 to 8 inches in diameter) with moss and grass undergrowth. A water table was not detected in any of the test holes in August 1969.

There is a 20 ton load limit on the Kenai River Bridge, which must be crossed to haul material from this site to the Soldotna urban project. Axel load limits will vary with the vehicle utilized (see the current State of Alaska Department of Highways vehicle load chart available at most State Maintenance Stations).

*Remarks: Stripping can be placed as indicated on the sketch, or placed in worked out portions of the site.

DH-215
(2-69)

SOILS TESTING REPORT

PROJECT NAME Soldotna Urban PROJECT NO. F-021-2(4) SAMPLED BY Phillips

MATERIAL SITE 21-1-039-1

STATION								
OFFSET (FEET)								
DEPTH (FEET)	0.5-1.5	1.5-2	2.3-2.5	3.5-4	10-11	10-11	10.5-11.5	3-4
TEST HOLE NO.	1	1	1	1	1	3	4	5
FIELD NO.	1WP	2WP	3WP	4WP	5WP	7WP	8WP	9WP
LAB. NO. 69A-	1408	1409	1410	1411	1412	1413	1414	1415
ESTIMATED % +10"								
ESTIMATED % + 3"						0	0	
PERCENT PASSING 3"						100	100	
2"					100	97	99	100
1"					91	85	82	91
3/4"					82	77	70	79
1/2"					67	68	56	59
3/8"				100	56	61	48	45
4				98	39	44	31	28
10	100	100	100	97	29	32	20	23
40	99	99	99	66	21	16	14	17
200	59	40	78	1	2	1	3	1
.02mm	24.6	11.5	50.2					
.005mm								
LIQUID LIMIT	22.3	NV	NV	NV	NV	NV	NV	NV
PLASTIC INDEX	NP	NP	NP	NP	NP	NP	NP	NP
AASHO CLASS	A-4(5)	A-4(1)	A-4(8)	A-3(o)	A-1-a(o)	A-1-a(o)	A-1-a(o)	A-1-a(o)
F. S. V.	F4	F3	F4	NFs	NFS	NFS	NFS	NFS
Sp. G., FINE	2.58	2.67	2.69	2.69	2.69	2.69	2.69	2.68
NAT. MOISTURE								
SOIL DESCRIPTION	sa si	sa si	sa si	sa	sa grl	sa grl	sa grl	sa grl
DATE TESTED	8/69	8/69	8/69	8/69	8/69	8/69	8/69	8/69

DH-215
(2-69)

SOILS TESTING REPORT

PROJECT NAME Soldotna Urban PROJECT NO. F-021-2(4) SAMPLED BY Phillips

MATERIAL SITE 21-1-039-1

STATION									
OFFSET (FEET)									
DEPTH (FEET)		3-4	7.5-8.5	12-13	8-9	4-6	5-6	6-7	
TEST HOLE NO.		6	6	7	8	9	10	11	
FIELD NO.		10WP	11WP	12WP	13WP	14WP	15WP	16WP	
LAB. NO. 69A-		1416	1417	1418	1419	1420	1421	1422	
ESTIMATED % +10"			0			0		0	
ESTIMATED % + 3"		0	1		0	1	0	1	
PERCENT PASSING	3"	100	100		100	100	100	100	
	2"	96	93	100	98	99	99	99	
	1"	68	70	86	89	75	92	81	
	3/4"	59	64	76	84	64	85	70	
	1/2"	49	56	62	75	48	76	59	
	3/8"	41	50	53	69	38	69	52	
	4	28	36	38	56	23	50	37	
	10	20	22	29	44	16	31	27	
	40	16	7	18	13	8	15	16	
	200	1	1	2	1	1	1	2	
	.02mm								
	.005mm								
LIQUID LIMIT		NV	NV	NV	NV	NV	NV	NV	
PLASTIC INDEX		NP	NP	NP	NP	NP	NP	NP	
AASHO CLASS		A-1-a(o)	A-1-a(o)	A-1-a(o)	A-1-a(o)	A-1-a(o)	A-1-a(o)	A-1-a(o)	
F. S. V.		NFS	NFS	NFS	NFS	NFS	NFS	NFS	
Sp. G., FINE		2.68	2.69	2.69	2.68	2.69	2.69	2.69	
NAT. MOISTURE									
SOIL DESCRIPTION		sa grl	sa grl	sa grl	sa grl	sa grl	sa grl	sa grl	
DATE TESTED		8/69	8/69	8/69	8/69	8/69	8/69	8/69	

R 9-68

CHIEF MATERIALS ENGINEER

STATE OF ALASKA
DEPARTMENT OF HIGHWAYS

LAB REPORT

THE RESULTS OF THIS TESTING ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED

PRECONSTRUCTION ☐ CONSTRUCTION ☒
FIELD CONTROL ☐ QUALITY ☒
CHECK ☐ PROG. RECORD ☐
INFORMATION ☐ FINAL RECORD ☐

TEST OF Aggregate Source ITEM NO.

PROJECT NO. F-021-2(4) PROJECT NAME Soldotna Urban
SAMPLED FROM TH-9 SUBMITTED BY Phillips (Hwys)
SOURCE MS 21-1-039-1 QUANTITY REPRESENTED
LOCATION (RDWY.) DEPTH 4.0-6.0
EXAMINED FOR quality SPECIFICATION ADOH

LABORATORY NO. 69F-1381
FIELD NO. 69A-1420 (14WP)
DATE 11/7/69
DATE SAMPLED 8/5/69
DATE RECEIVED 8/8/69

% PASSING SIEVE	AS RECEIVED		SPEC.
4"			
3"	100		
2"	98		
1½"	90		
1"	74		
¾"	58		
½"	44		
⅜"	36		
# 4	22		
# 8	17		
# 10	16		
# 16	14		
# 20			
# 30	11		
# 40	8		
# 50	5		
# 80			
# 100	2		
# 200	1		
.02MM			
.005MM			
DUST RATIO:			

		SPEC
OPTIMUM MOISTURE		
MAX. DRY DENSITY		
MAX. DENSITY NUMBER		
CORR. MAX. DRY DENSITY		
FIELD DENSITY		
FIELD MOISTURE		
% COMPACTION		
% + ¾"		
% + NO. 4		
AASHO T180D ☐	ALASKA T-12 ☐	
% FRACTURE		
DEGRADATION VALUE	77	
NATURAL DENSITY		
NATURAL MOISTURE		
WEIGHT LOOSE		
WEIGHT RODDED		

MISCELLANEOUS
swell .003

STATIC IMMERSION AC-20 / 300
BRAND Kling 0% 75 ½% 95
1% 95 1½% 2%

	SPEC
% + 10"	
% + 3"	
% GRAVEL	
% SAND	
% SILT	
% CLAY	
FSV	NFS
LL	NV
PL	
PI	NP
SOIL CLASS	A-1-a(o)

DELETERIOUS MATERIALS:

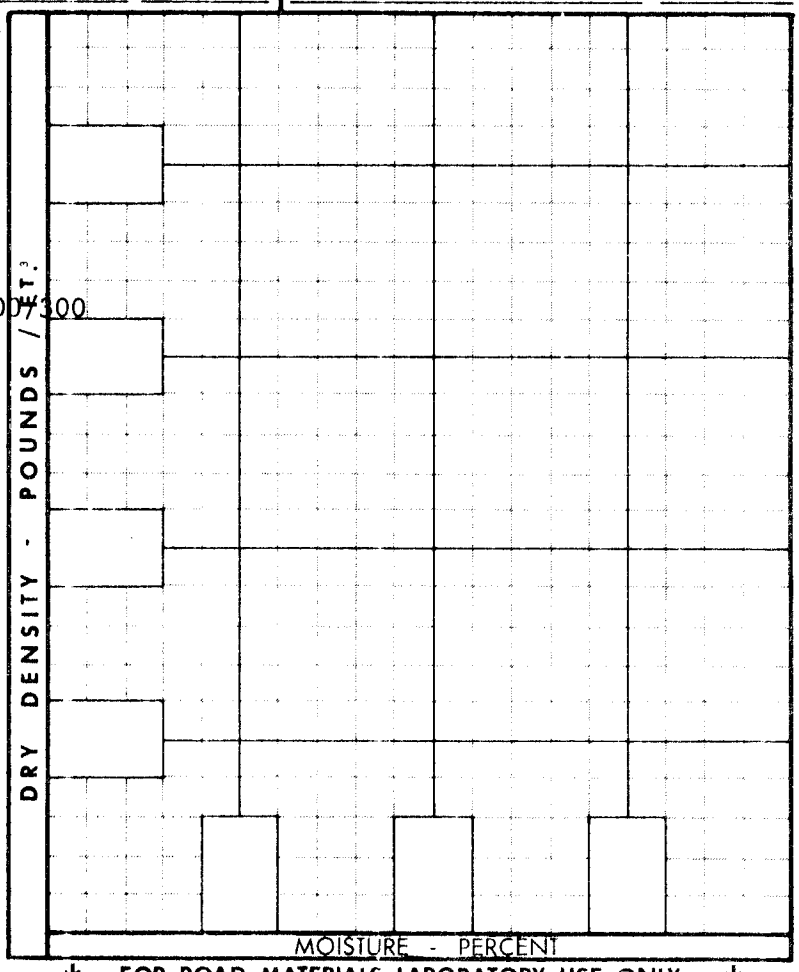
	COARSE	SPEC	FINE	SPEC
MINUS #200 MESH			4.4	
SOFT FRAGMENTS				
COAL & LIG. OR LT. WT. PART.	0.6		0.0	
CLAY LUMPS	0.0		0.0	
STICKS & ROOTS	0.0		0.0	
FRIABLE PARTICLES				
SPECIFIC GRAVITY(SSD)	2.69		2.68	
ABSORPTION				
FINENESS MODULUS				
SULFATE SOUNDNESS Sod.	0.43		2.43	
FREEZE THAW RATIO				

L.A. ABRASION LOSS 15 GRADE A
THIN-ELONGATED
ORGANIC COLOR THAN 500 PPM

MORTAR COMPRESSION STRENGTH:

	STANDARD	SAMPLE	RATIO	SPEC
DAY, PSI				
DAY, PSI				

DESCRIPTION OF MATERIALS: graywacke, granite, diorite, quartzite.
REMARKS:



FOR ROAD MATERIALS LABORATORY USE ONLY

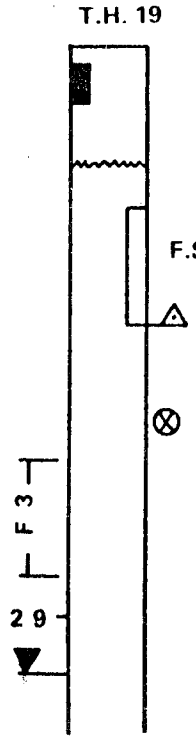
CONFORMS TO SPECIFICATIONS:
YES ☐ NO ☐ N.A. ☐

SIGNATURE D. W. Herman, C.D.M.E.
TITLE

BORING LOG SYMBOLS



A-1	Gravel
A-1	Sandy Gravel
A-1	Gravelly Sand
A-3	Sand
A-2	Silty Sand
A-2	Silty Gravel
A-2	Clayey Sand
A-2	Clayey Gravel
A-4	Gravelly or Sandy Silt
A-4	Silt
A-5	Silt
A-6	Clay
A-7	Clay
	Organic Soil
	Bedrock (undiff.)
	Broken Rock



T.H. 19 — Test Hole Number

Frozen Material

Ice Lens

F.S. Field Sample

9% Moisture Sample
w/% Moisture

SFS6 Similar to Field Sample: X

F 3 — Frost Class

2 9 — Depth in Feet

Water Table

Note: No water encountered at time of boring unless indicated.

NOTE:
DESCRIPTIONS, SOIL CLASSIFICATIONS AND FROST CLASSIFICATIONS SHOWN ON TEST BORING LOGS, WHERE NOT SUPPORTED BY FIELD SAMPLES, ARE VISUAL ESTIMATES ONLY.

MATERIALS DESCRIPTION EXPLANATION

grl	= gravel	grn	= green
sa	= sand	bl	= blue
si	= silt	gr	= gray
cl	= clay	blk	= black
pt	= peat	br	= brown
fib	= fibrous	y	= yellow
coa	= coarse	wh	= white
fi	= fine	wt	= water table
cob	= cobble	bkn	= broken
peb	= pebble	rk	= rock
bld	= boulder	org	= organic

PLAN VIEW SYMBOLS


Power Auger or Drill


Hand Auger


Exposed Material


Probe


Hand Dug Test Pit


Blasted Test Pit


Dozer Trench

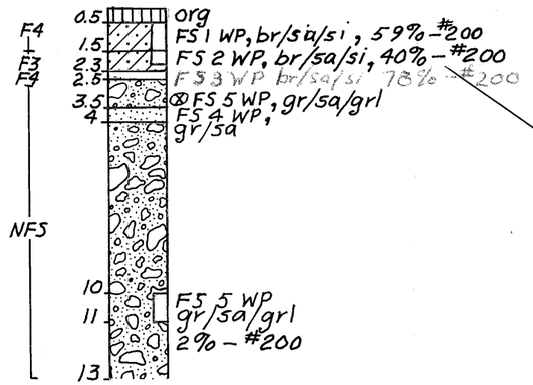
XXXXX Berm

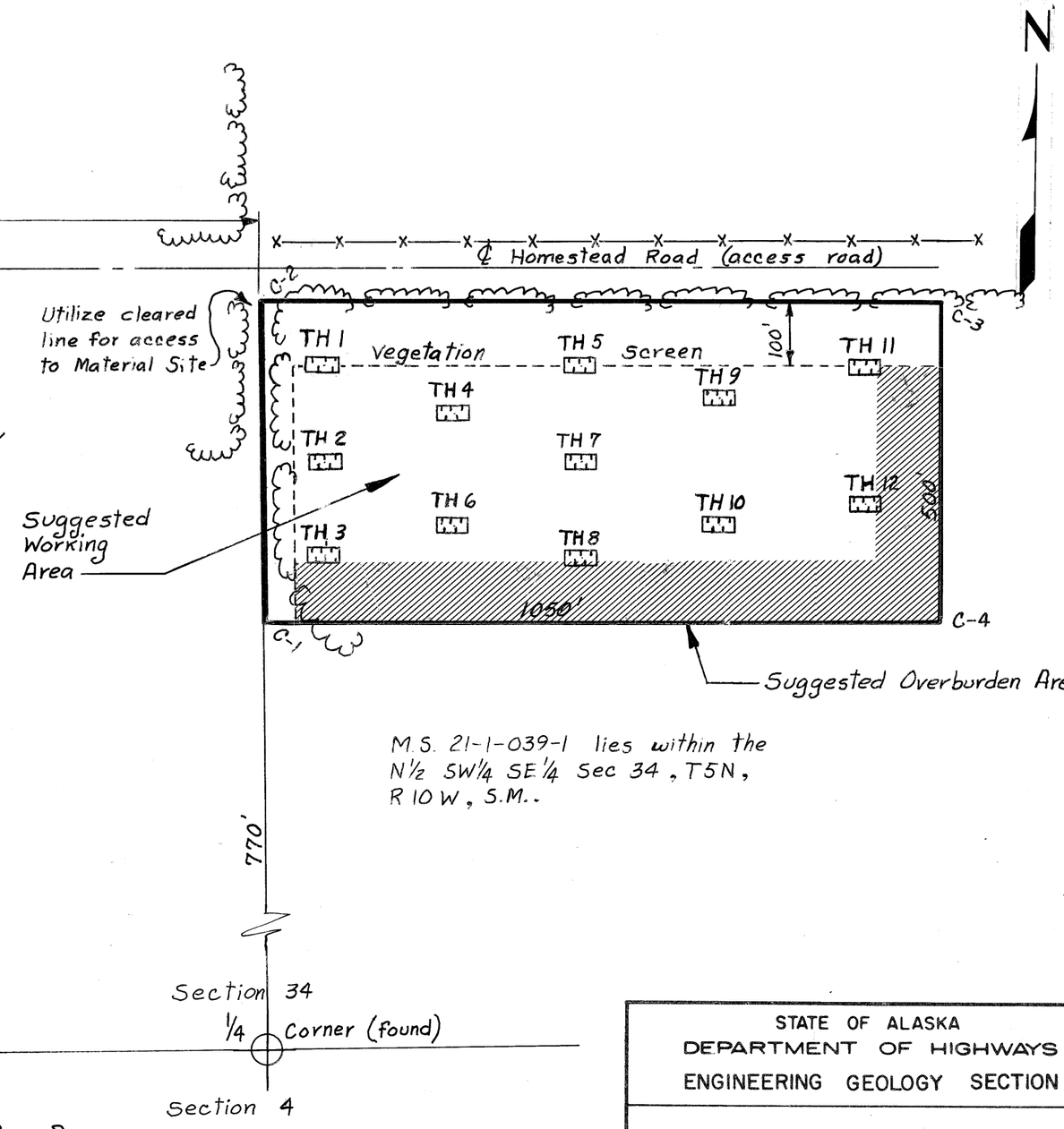

Terrace or Bank


Swamp

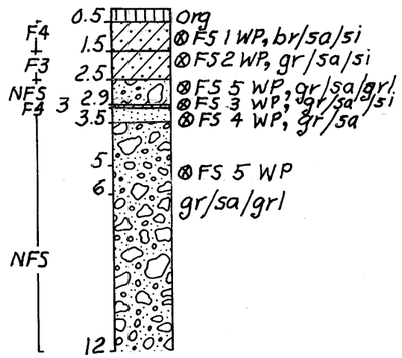

Treeline

TH 1
8/5/69

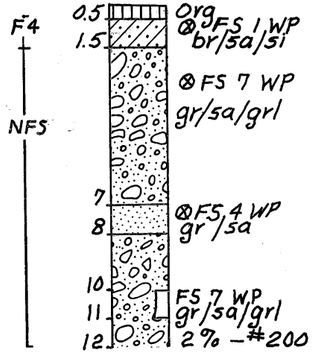


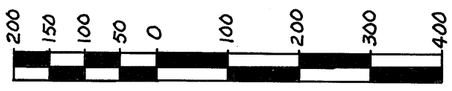


TH 2
8/5/69



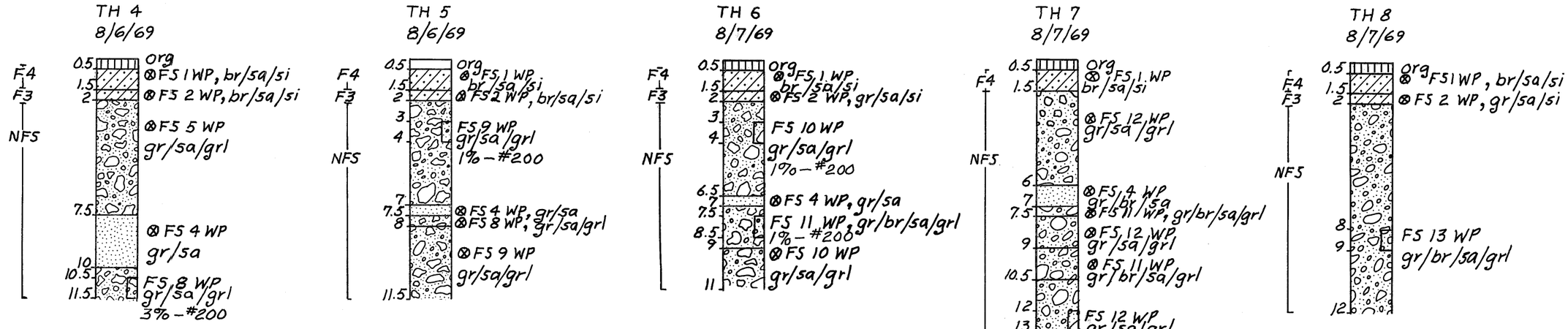
TH 3
8/5/69





M.S. 21-1-039-1 lies within the N½ SW¼ SE¼ Sec 34, T5N, R10W, S.M..

STATE OF ALASKA DEPARTMENT OF HIGHWAYS ENGINEERING GEOLOGY SECTION			
Soldatna Urban F-021-1 (13) & F-021-2 (4)			
U.S.G.S. QUAD: Kenai B-3			
GEOLOGIST: Phillips			
JWS	Sketch Scale: 1"=200' horiz. Log Scale: 1"=5' vert	SHEET 1 OF 2	M.S. NO.: 21-1-039-1



STATE OF ALASKA
DEPARTMENT OF HIGHWAYS
ENGINEERING GEOLOGY SECTION

Soldatna Urban
F-021-1 (13) & F-021-2 (4)

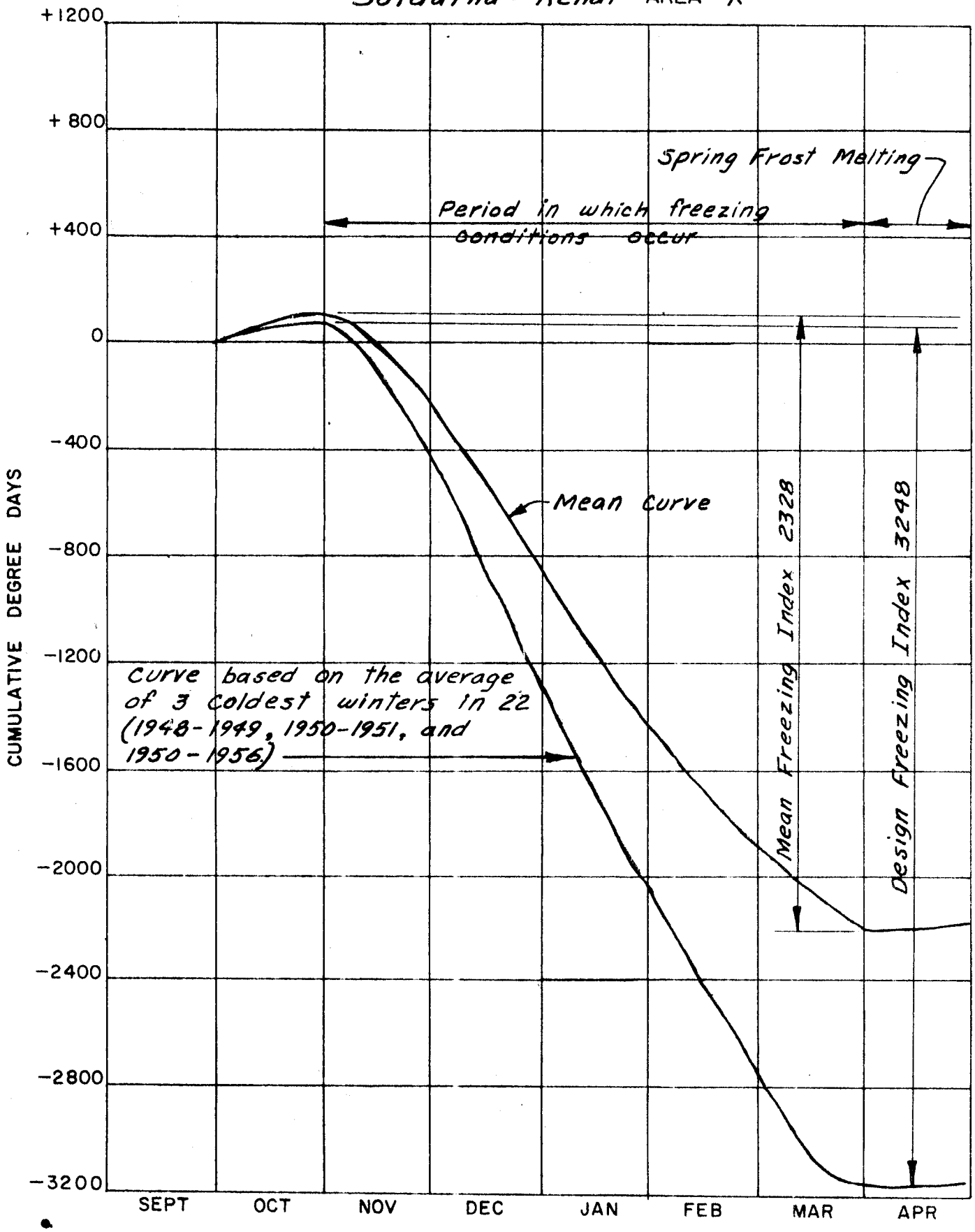
U.S.G.S. QUAD: Kenai B-3			
GEOLOGIST: Phillips			
JWS	Log Scale: 1" = 5' vert.	SHEET 2 OF 2	M.S. NO.: 21-1-039-1

APPENDIX C

Freezing Index

DETERMINATION OF FREEZING INDEX

Soldatna – Kenai AREA *



* Based on period of record 1944 – 1965.

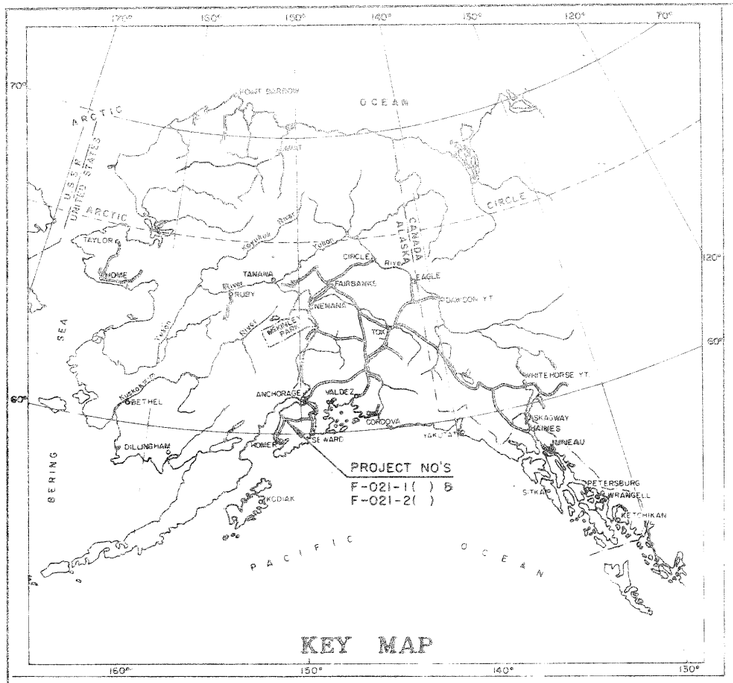
STATE	PROJECT	SHEET NO.	TOTAL SHEETS
ALASKA	F-021-1(13) F-021-2(4)	1	8

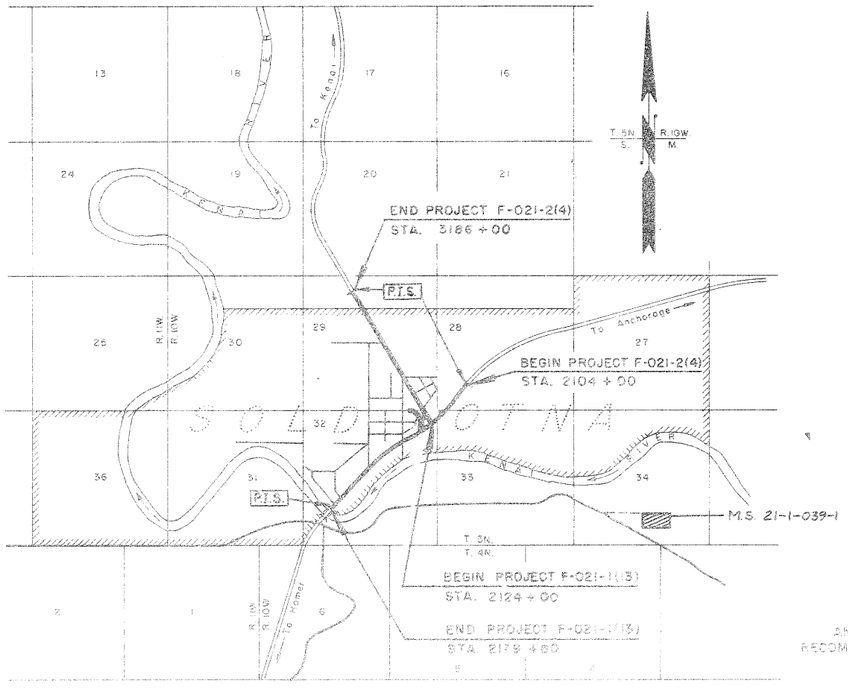
STATE OF ALASKA
DEPARTMENT OF HIGHWAYS

PROPOSED HIGHWAY PROJECT
F-021-1(13) & F-021-2(4)
SOLDOTNA URBAN
SOILS PLAN AND PROFILE

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	Title Sheet and Legend
2	Typical Section
3 - 8	Soils Plan and Profile





CONVENTIONAL SIGNS

- PROPOSED CONSTRUCTION CENTERLINE
- PRELIMINARY SURVEY LINE
- TOWNSHIP LINE
- SECTION LINE
- PROPERTY LINE
- RIGHT-OF-WAY LINE
- EASEMENT LINE
- CORPORATED OR CITY LIMITS
- POWER LINE
- TELEPHONE OR TELEGRAPH LINE
- POLE ANCHOR
- LIGHT POLE
- WATER LINE
- SEWER LINE
- VALVE BOX
- CATCH BASIN
- DROP INLET
- MANHOLE
- CULVERT PROPOSED
- CULVERT EXISTING
- FIRE HYDRANT
- TRAVELED WAY
- SWAMP
- FENCE
- GUIDE CATE
- LIGHTING STANDARD
- TRAFFIC SIGNAL STANDARD

BORING LOG SYMBOLS

T.H. 15	Test Hole Number
	Frozen Material
	Ice Lens
F.S.	Field Sample
9%	Moisture Sample w/% Moisture
SP#5	Similar to Field Sample: X
	Frost Clam
29	Depth in Feet
	Water Table

Note: No water encountered at time of boring unless otherwise noted.

A-1 Gravel
A-1 Sandy Gravel
A-1 Gravelly Sand
A-3 Sand
A-2 Silty Sand
A-2 Silty Gravel
A-2 Clayey Sand
A-2 Clayey Gravel
A-4 Gravelly or Sandy Silt
A-4 Silt
A-5 Silt
A-6 Clay
Clay

PLAN VIEW SYMBOLS

- Power Auger or Dozer
- Hand Auger
- Exposed Bedrock
- Probe
- Hand Dug Test Pit
- Dozed Test Pit
- Open Trench
- Berm
- Terrace or Bench
- Rock
- Test Hole

ANY / MOST CLASSIFICATIONS OF SOILS FROM BORING LOGS, WHERE NOT SUPPORTED BY FIELD SAMPLES, ARE VISUAL ESTIMATES ONLY.

MATERIALS DESCRIPTION EXPLANATION

grl = gravel		grn = green	
sa = sand		bl = blue	
si = silt		gy = gray	
cl = clay		blk = black	
pt = peat		br = brown	
fib = fibrous		y = yellow	
cos = coarse		wh = white	
fn = fine		wt = water table	

ANY / MOST CLASSIFICATIONS OF SOILS FROM BORING LOGS, WHERE NOT SUPPORTED BY FIELD SAMPLES, ARE VISUAL ESTIMATES ONLY.

ANCHORAGE DISTRICT
RECOMMENDED FOR APPROVAL

DISTRICT HIGHWAY ENGINEER Date

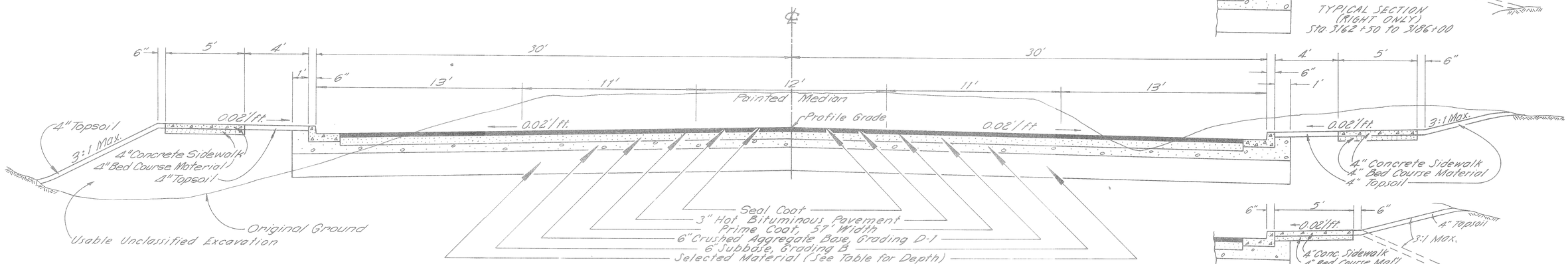
STATE OF ALASKA
DEPARTMENT OF HIGHWAYS

APPROVED

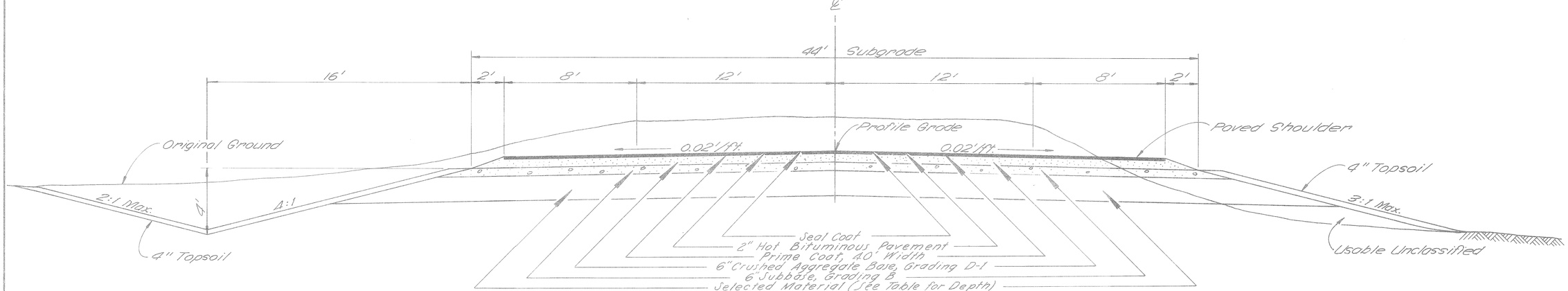
COMMISSIONER OF HIGHWAYS Date

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	F-021-1(13) F-021-2(4)		2	8

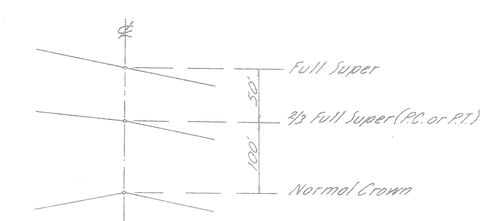


TYPICAL URBAN SECTION



TYPICAL RURAL SECTION

SELECTED MATERIAL DEPTH TABLE			
STATION	TO	STATION	DEPTH
2102+00	to	2117+00	24"
2117+00	to	2180+00	6"
5122+00	to	5133+52	6"
3124+00	to	3158+00	6"
3158+00	to	3167+00	18"
3167+00	to	3190+00	6"



SUPERELEVATION DIAGRAM - RIGHT CURVE
(reverse tilt for left curve)

All Surfacing Depths are Nominal

STATE OF ALASKA
DEPARTMENT OF HIGHWAYS

TYPICAL SECTIONS

REVISIONS		
No	Date	Description

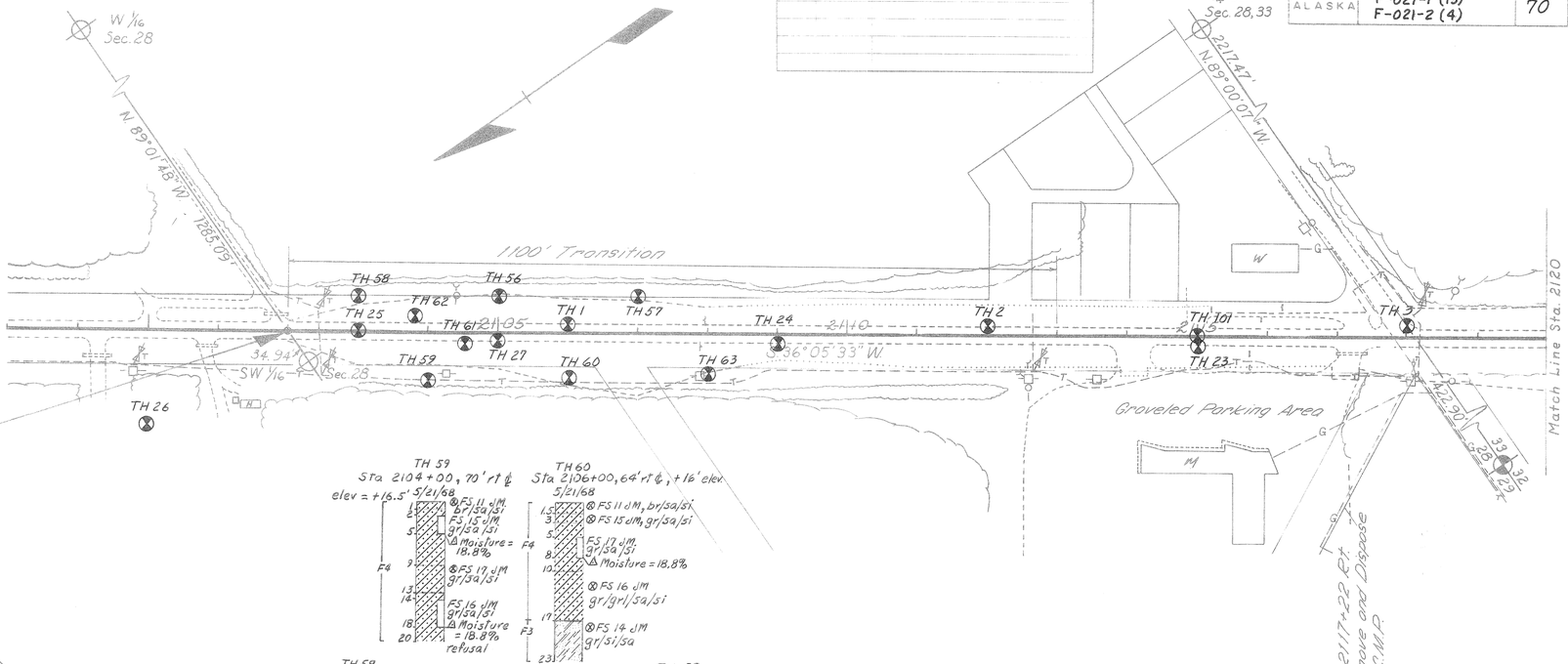
STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	F-021-1 (13) F-021-2 (4)	70	3	8

PLAN

PROFILE

BEGIN PROJECT F-021-1( )
STA. 2102+00

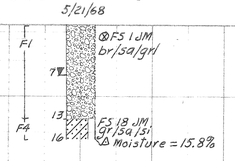
Note: B.O.P. revised to Sta 2104+00.



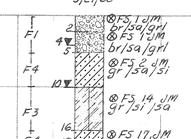
TH 59
Sta 2104+00, 70' rt ℄
elev = +16.5' 5/21/68

TH 60
Sta 2106+00, 64' rt ℄, +16' elev
5/21/68

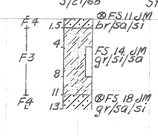
TH 62
Sta 2103+80 20' lt ℄
5/21/68



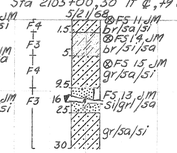
TH 61
Sta 2104+52, 17' rt ℄, (-1' elev)
5/21/68



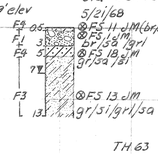
TH 58
Sta 2103+00, 50' lt ℄ (+55 elev)
5/21/68



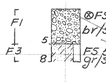
TH 56
Sta 2105+00, 50' lt ℄, +9' elev
5/21/68



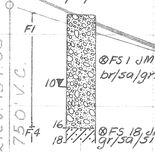
TH 57
Sta 2107+00, 50' lt ℄ (+5.5 elev)
5/21/68



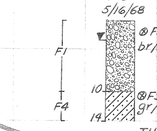
TH 26
Sta 2100+00, 13.5' rt ℄
5/16/68



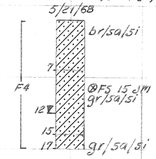
TH 25
Sta 2103+00 ℄
5/16/68



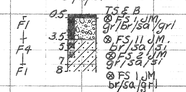
TH 27
Sta 2105+50 13.5' rt ℄
5/16/68



TH 63
Sta 2108+00, 61' rt ℄, +8' elev
5/21/68

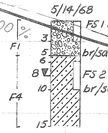


TH 101
Sta 2115+00 ℄
2/11/69

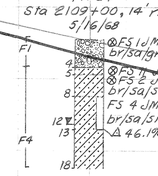


VPI 2102+00
Elev. 134.00
750' V.C.
-3.000%

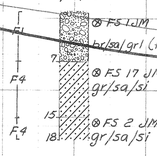
TH 1
Sta 2106+00 11.5' lt ℄
5/14/68



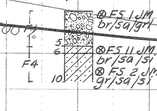
TH 24
Sta 2109+00, 14' rt ℄
5/16/68



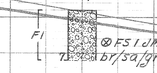
TH 2
Sta 2112+00 11.5' lt ℄
5/14/68



TH 23
Sta 2115+00, 13' rt ℄
5/15/68



TH 3
Sta 2118+00 15' lt ℄
5/14/68



Finished Grade Profile (top of pavement)

Embankment = (Excavation - Waste) x (Shrinkage)
+ (Selected Material) x (Shrinkage)

Vertical Control:

Based on U.S.C. & G.S. Brass Cap No. A 79, 1964 El. 74.50 Approximately 75 feet South & 70 feet East of South End of Kenai River Bridge in Soldotna and U.S.C. & G.S. Brass Cap Marked No. T 80 1964 El. 90.36 Approximately 35 feet left of Sta. 3212+50

Horizontal Control:

Based on State Plane Coordinates

BM No. 1 El. 143.36
Spike in 7" White Birch
95' Lt. Sta. 2100+00

BM No. 2 El. 105.79
Spike in 9" Aspen
110' Lt. Sta. 2113+00

160
150
140
130
120
110
100
90

2098 2100 5 2110 15 2120

K&E

REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	Date	Description	ALASKA	F-021-1 (13) F-021-2 (4)	70	4	8

PLAN
NOTE BOOK
NO.

WCMC
Sec. 32,33

Sta 2120+34 Lt.
Remove and Dispose
32' C.M.P.

N 00°55'09" E.
794.95'

Sta 2130+58
Remove & Dispose
48' C.M.P.

N 89°01'00" W.

Sta 2137+77 Lt.
Remove and Dispose
62' C.M.P.

Sta 2138+34 Lt.
Remove and Dispose
101' C.M.P.

Sta 2140+05
Remove and Dispose
50' C.M.P.

CE 1/16
Sec. 32

S 00°53'15" W.

"L" 2151+02.16
Δ = 28°07'23" Lt.
D = 3°
R = 1,909.859'
T = 478.36'
L = 937.435'
SE = 3%

TH 55
TH 4
TH 102
TH 21
TH 5
TH 20
TH 103
TH 6
TH 19
TH 7
TH 104
TH 18
TH 8
TH 53
TH 22
TH 28

S 36°05'33" W.

Match Line Sta 2120

600.63'

28.33
29.32

PC 2117+82.03

PT Sta 2132+79.99

2135

2140

760.35'

160.2'

NE 1/16
Sec. 32

Buried Cable 200/24

PC 2146+23.80

Match Line Sta 2150

"L" PI 2130+38.99
Δ = 34°51'27" Rt.
D = 7°
R = 818.511
T = 256.96
L = 497.964
SE = 5% (Special Case - Rotated Inside Lip)

PROFILE
NOTE BOOK
NO.

TH 28
Sta 2122+00, 15' rt ℄
5/16/68
FS 1 JM br/sa/grl
FS 5 JM br/si/sa
FS 6 JM br/si/grl/sa

TH 55
Sta 2122+00, 75' rt ℄ (-3' elev.)
5/21/68
FS 11 JM br/sa/si
log
FS 19 JM gr/si/sa
FS 18 JM sa/si

TH 103
Sta 2135+00 ℄
2/11/69
TS & B
FS 1 JM gr/br/sa/grl

TH 104
Sta 2145+00 ℄
2/11/69
TS & B
FS 1 JM gr/br/sa/grl
FS 11 JM br/sa/si
FS 1 JM sa/grl

TH 53
Sta 2149+50 16' rt ℄
5/17/68
FS 1 JM br/sa/grl
FS 12 JM br/sa/grl

Revised Profile

TH 22
Sta 2121+00, 17' rt ℄
5/15/68
TS & B
FS 1 JM br/sa/grl

TH 4
Sta 2124+60, 15' lt ℄
5/14/68
FS 1 JM br/sa/grl
FS 2 JM gr/sa/si

TH 21
Sta 2127+25, 20' rt ℄
5/15/68
FS 1 JM br/sa/grl
FS 11 JM br/sa/si
FS 1 JM br/sa/grl

TH 5
Sta 2130+00, 13' lt ℄
5/15/68
FS 1 JM br/sa/grl
FS 11 JM br/sa/si
FS 1 JM br/sa/grl

TH 20
Sta 2133+00, 20' rt ℄
5/15/68
FS 1 JM br/sa/grl

TH 6
Sta 2136+00, 13.5' lt ℄
5/15/68
FS 1 JM br/sa/grl

- 0.5455%

TH 19
Sta 2139+00, 16' rt ℄
5/15/68
FS 1 JM br/sa/grl

Revised Profile

TH 7
TH 2142+00, 15' lt ℄
5/15/68
FS 1 JM br/sa/grl

- 0.400%

TH 18
Sta 2145+00 16' rt ℄
5/15/68
FS 1 JM br/sa/grl
FS 11 JM br/sa/si
FS 1 JM br/sa/grl

TH 8
Sta 2148+00 15' lt
5/15/68
FS 3 JM br/sa/grl

TH 102
Sta 2125+00 ℄
2/11/69
TS & B
FS 1 JM br/sa/grl
refusal

100
90
80
70

BM No. 3 El. 93.38
Spike in 8" Aspen
100' Lt. Sta. 2121+40

BM No. 4 El. 86.97
Spike in 8" Cottonwood
80' Lt. Sta. 2131+65

BM No. 5 El. 84.30
Spike in 8" Cottonwood
115' Lt. Sta. 2140+85

2120 25 2130 35 2140 45 2150

PLATE 1, PLAN-PROFILE

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	F-021-1 (13) F-021-2 (4)	70	5	8

"L" PI 2151+02.10
Δ = 28°07'23" Lt.
D = 3°
R = 1,909.859'
T = 478.36'
L = 937.435'
SE = 3%

Sta 2150+85 Lt.
Remove and Dispose
24', C.M.P.

Sta 2155+29 Lt.
Remove and Dispose
44', C.M.P.

Sta 2157+99 Lt.
Remove and Dispose
40', C.M.P.

Sta 2160+06 Lt.
Remove and Dispose
26', C.M.P.

Sta 2162+67 Lt.
Remove and Dispose
36', C.M.P.

Sta 2172+21 Lt.
Remove and
Dispose
40', C.M.P.

Sta 2177+11 Lt.
Remove and Dispose
45', C.M.P.

Sta 2179+40 Lt. to
2179+65 Lt.
Remove and Dispose
Guardrail

Guardrail 25' Lt. to

Sta 2153+28
Remove and Dispose
59', C.M.P.

Sta 2173+46 Rt.
Remove and Dispose
26', C.M.P.

Sta 2175+24 Lt.
Remove and Dispose
51', C.M.P.

Sta 2177+03 Rt.
Remove and Dispose
28', C.M.P.

Sta 2177+95 Rt.
Remove and Dispose
45', C.M.P.

Sta 2179+65 Rt. to
2179+95 Rt.
Remove and Dispose
Guardrail

Guardrail 25' Lt. to

Match Line Sta 2150

PT 2155+61.23

C ¼ Sec. 32

N 00°53'27" E.
479.59'

TH 17 · TH 9 · TH 105 · TH 16 · TH 10 · TH 54 · TH 15 · TH 106 · TH 11 · TH 14 · TH 12 · TH 13

Buried Cable 200/24

S. 42°49'37" W.

750' Transition

841.00

TH 105
Sta 2155+00 ℄
2/11/69
TS & B.
0.5 F1 6
⊗FS 1 JM
gr/br/sa/grl
refusal

TH 54
Sta 2161+50 16' rt ℄
5/17/68
F1 4 NFS 12
⊗FS 1 JM
br/sa/grl
⊗FS 12 JM
br/sa/grl

TH 106
Sta 2166+00 ℄
2/11/67
TS & B.
0.5 F1 6
⊗FS 1 JM
gr/br/sa/grl

TH 17
Sta 2151+00 16' rt ℄
5/15/68
F1 5 8
⊗FS 1 JM
br/sa/grl (coal)
(fine)

TH 9
Sta 2154+00 14.5' lt ℄
5/15/68
F1 5 F4 6.5 F1 9
⊗FS 1 JM
br/sa/grl
⊗FS 11 JM
br/sa/sl
⊗FS 1 JM
br/sa/grl

TH 16
Sta 2157+00 15' rt ℄
5/15/68
F1 8
⊗FS 1 JM
br/sa/grl

-0.50%

TH 10
Sta 2160+00 15' lt ℄
5/15/68
F1 4 NFS 8
⊗FS 1 JM
br/sa/grl
⊗FS 3 JM
sa/grl

TH 15
Sta 2163+00 15' rt ℄
5/15/68
11
⊗FS 1 JM
br/sa/grl

TH 11
Sta 2166+00 15' lt ℄
5/15/68
F1 9
⊗FS 1 JM
br/sa/grl

TH 14
Sta 2169+00 15' rt ℄
5/15/68
F1 8
⊗FS 1 JM
br/sa/grl

-1.20%

TH 12
Sta 2172+05 15' lt ℄
5/15/68
F1 8
⊗FS 1 JM
br/sa/grl

TH 13
Sta 2175+00 15' rt ℄
5/15/68
F1 7
⊗FS 1 JM
br/sa/grl

+0.4080%

V.P.I. 2176+00
Elev. 70.00
400' V.C.

Elev. 71.55

90 · 80 · 70 · 60

2150 · 55 · 2160 · 65 · 2170 · 75 · 2180

BM No. 6 El. 79.31
Spike in Power Pole
145' RA Sta. 2152+00

BM No. 7 El. 76.32
Spike in 8" White Birch
120' Lt. Sta. 2164+05

BM No. 8 El 76.16
Spike in Power Pole
225 Rt Sta 2176+30

BM No 9 El 74.50 Brass Cap
U.S.C.&G.S. A79 1964 75' South
& 70' East of South End Kenai River Bridge

PLAN
DRAWN
TRACED
CHECKED
QUANTITIES
NOTE BOOK
NO.

PROFILE
DRAWN
TRACED
CHECKED
QUANTITIES
NOTE BOOK
NO.

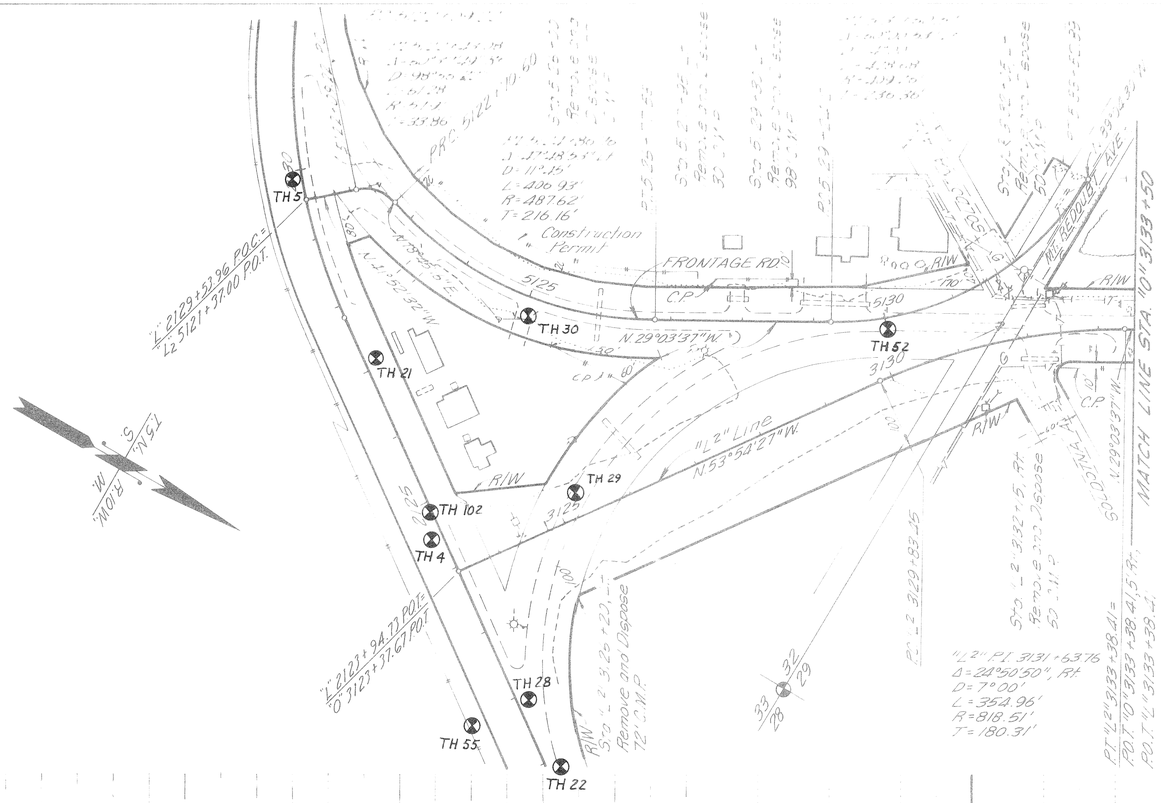
K-E PLATE 1. PLAN-PROFILE

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	F-021-1 (13) F-021-2 (4)	70	6	8

PLAN

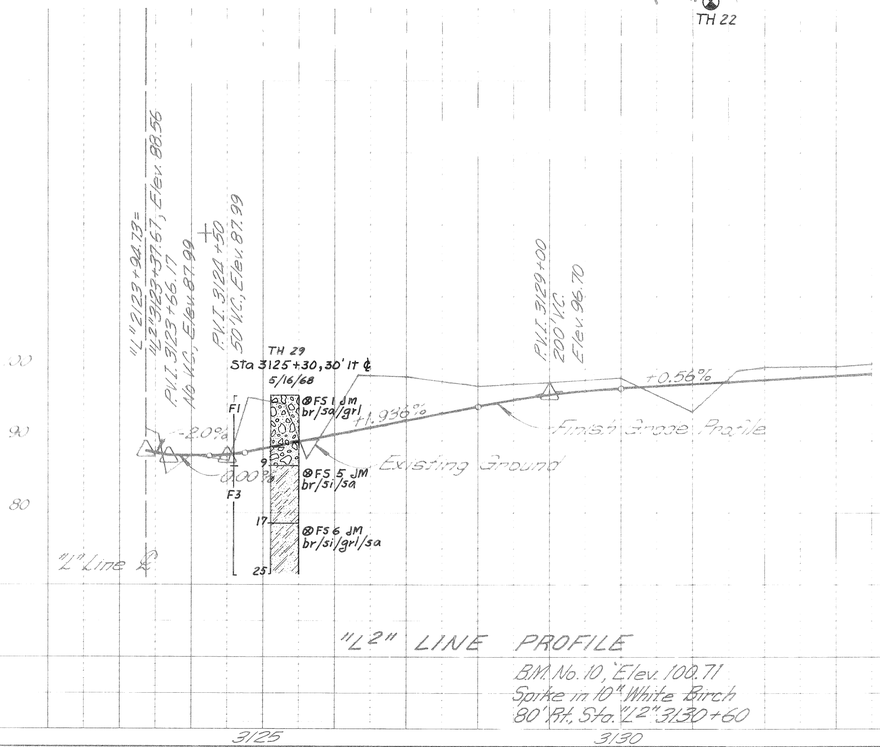
CORRECTED			BY
PLOTTED			
NOTE BOOK	ALIGNMENT CHECKED		
NO.	RT. OF WAY CHECKED		

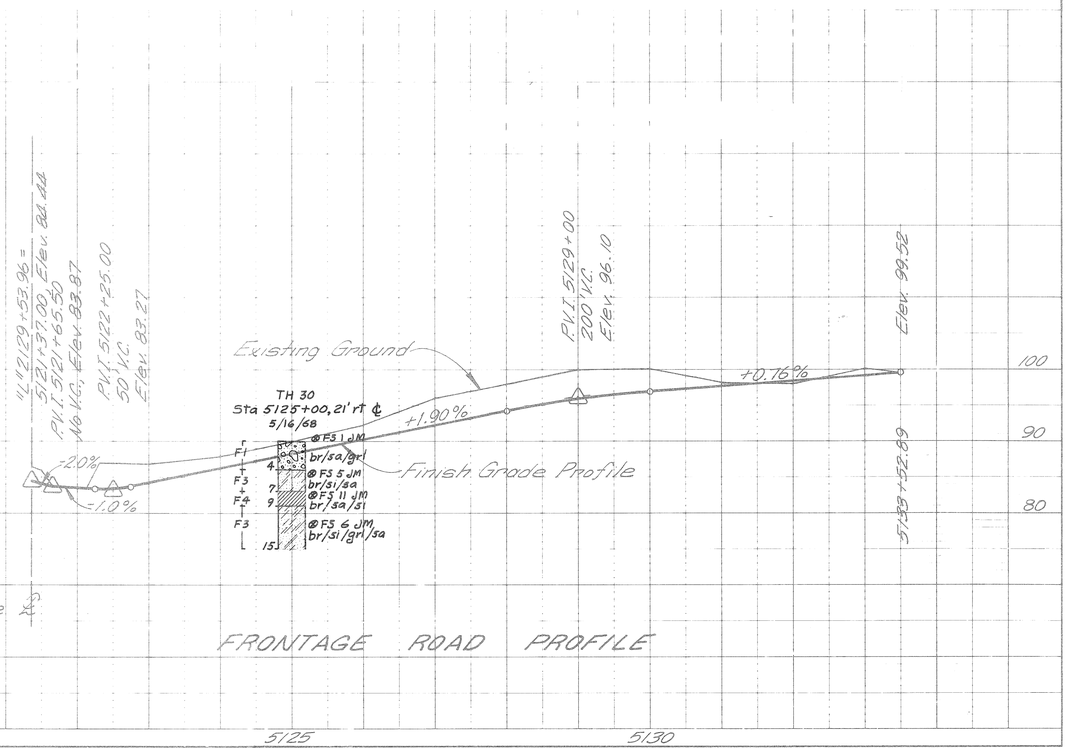


NOTE:

SEE SHEET 4 FOR BORING LOGS OTHER THAN TH 29 & TH 30. SEE SHEET 7 FOR TH 52 LOG.

PROFILE





REVISIONS			STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
No.	Date	Description	ALASKA	F-021-1 (13) F-021-2 (4)	70	7	8

PLAN

"O" Line parallels "L" Line at a 5' perpendicular offset Rt.

Buried Comm Cable 2 Lines - 100/24 and 150/24

Sta. 3131+94 Lt. Remove and Dispose 50' C.M.P.

E 1/16 Sec. 29,32

733.51

N 89°04'30" W.

S. 00°49'45" W. 1275.04

Sta 3147+95 Lt. Remove and Dispose 62' C.M.P.

SC 1/16 Sec. 29

N 89°02'21" W.

Sta 3150+18 Lt. Remove and Dispose 30' C.M.P.

Sta 3153+16 Lt. Remove and Dispose 30' C.M.P.

Sta 3157+61 Lt. Remove and Dispose 40' C.M.P.

Sta 3159+34 Lt. Remove and Dispose 29' C.M.P.

Well — Trees — Gas Meter — Post Off. — Berm — Bank — Gas Meter — Trailer — Well — Gas Meters — Buried Cable 150/24 — 75/24

Match Line Sta "O" 3130 — Match Line Sta "O" 3160

TH 52 — TH 31 — TH 107 — TH 51 — TH 32 — TH 50 — TH 108 — TH 33 — TH 49 — TH 34 — TH 48 — TH 109 — TH 35 — TH 47

3135 — 3140 — 3145 — 3150

N 29°03'37" W. 45.88 — 26.43

Buried Comm. Cable 100/22

Sta 3132+08 Rt. Remove and Dispose 50' C.M.P.

Sta 3136+36 Rt. Remove and Dispose 30' C.M.P.

Sta 3139+23 Rt. Remove and Dispose 40' C.M.P.

Sta 3140+37 Rt. Remove and Dispose 112' C.M.P.

Sta 3146+37 Rt. Remove and Dispose 40' C.M.P.

Sta 3146+97 Rt. Remove and Dispose 50' C.M.P.

Sta 3148+48 Rt. Remove and Dispose 65' C.M.P.

Sta 3150+91 Rt. Remove and Dispose 40' C.M.P.

Sta 3151+90 Rt. Remove and Dispose 61' C.M.P.

Sta 3154+13 Rt. Remove and Dispose 28' C.M.P.

Sta 3155+83 Rt. Remove and Dispose 41' C.M.P.

Sta 3156+43 Rt. Remove and Dispose 39' C.M.P.

PROFILE

TH 107 Sta 3135+00 ℄ 2/11/69 — TS & B — @FS 1 JM gr/br/sa/grl — @FS 11 JM br/sa/si — @FS 1 JM sa/grl

TH 108 Sta 3145+00 ℄ 2/11/69 — TS & B — @FS 1 JM gr/br/sa/grl — @FS 11 JM br/sa/si — @FS 1 JM gr/si/sa/grl

TH 109 Sta 3155+00 ℄ 2/13/69 — TS & B — @FS 1 JM gr/sa/grl — @FS 11 JM br/sa/si — @FS 9 JM br/si/sa

Revised Profile

P.I. 3133+00 Elev. 100.27

V.P.I. 3158+50 Elev. 97.30 No V.C.

TH 52 Sta 3130+00 ℄ 5/17/68 — @FS 8 JM br/sa/grl — 6.58% — 10

TH 31 Sta 3133+20 19' rt ℄ 5/16/68 — @FS 1 JM br/sa/grl — 1.6 — 2.6 — 9.6.9

TH 51 Sta 3136+00 16' lt ℄ 5/17/68 — @FS 8 JM br/sa/grl — @FS 10 JM br/si/sa/grl — 4 — 10

TH 32 Sta 3139+80 16' rt ℄ 5/16/68 — @FS 1 JM br/sa/grl — @FS 7 JM gr/si/sa/grl — 6 — 8

TH 50 Sta 3142+00 16' lt ℄ 5/17/68 — @FS 8 JM br/sa/grl — @FS 11 JM br/si/sa/grl — @FS 10 JM br/si/sa/grl — 4.5 — 12

TH 33 Sta 3145+00 19' rt ℄ 5/16/68 — @FS 1 JM br/sa/grl — @FS 11 JM br/si/sa — @FS 7 JM br/si/sa/grl — 4 — 5 — 13

TH 49 Sta 3148+00 16' lt ℄ 5/17/68 — @FS 8 JM br/sa/grl — @FS 11 JM br/si/sa — @FS 10 JM br/si/sa/grl — 5.5 — 8

TH 34 Sta 3151+00 16' rt ℄ 5/16/68 — FS 8 JM br/sa/grl — @FS 11 JM br/sa/si — @FS 7 JM gr/si/sa/grl — 4 — 5 — 8

TH 48 Sta 3154+00 13' lt ℄ 5/17/68 — @FS 8 JM br/sa/grl — @FS 7 JM br/si/sa/grl — 3 — 8

TH 35 Sta 3157+00 13' rt ℄ 5/16/68 — @FS 8 JM br/sa/grl — @FS 11 JM br/sa/si — @FS 10 JM br/si/sa/grl — @FS 8 JM br/sa/grl — 3 — 10 — 13

TH 47 Sta 3160+00 13' lt ℄ 5/17/68 — @FS 8 JM br/sa/grl — @FS 11 JM br/sa/si — @FS 9 JM br/si/sa — 4 — 6 — 8

Special Ditch 18.0' Rt ℄ 1.31' Below Flowline — Special Ditch Lt

BM No. 10 El. 100.71
Spike in 10" White Birch
120' Rt. Sta 3130+98

BM No. 11 El. 99.99
Spike in 10" White Birch
85" Lt. Sta. 3145+52

110 — 100 — 90 — 80 — 70

3130 — 35 — 3140 — 45 — 3150 — 55 — 3160

PROFILE

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	F-021-1 (13) F-021-2 (4)	70	8	8

PLAN
NOTE BOOK
NO.

"O" Line parallels "L" Line at a 5' perpendicular offset Rt.

C 1/4 Sec. 29

Sta 3162+33 Lt. Remove and Dispose 49' C.M.P.

N 89°04'07" W. 536.29'

S 00°49'06" W. 932.78'

Sta. 3176+00 Install 18" x 60' Pipe Conduit, 52' Lt.

NW 1/16 Sec. 29

N 89°04'39" W. 1096.42'

Sta 3187+00 Remove and Dispose 60' C.M.P.

Install 24" x 70' C.M.P.

Gas Meter

Well

Sewer Tank

Trees

Berm

Buried Cable 75, 29

Buried Cable 38, 32

Trailer

Match Line Sta 0+00 3160

TH 47 TH 36 TH 110 TH 46 TH 37 TH 68 TH 45 TH 111 TH 38 TH 44 TH 39 TH 93 TH 118 TH 65 TH 64 TH 40 TH 42

3160 3165 3170 3175 3180 3185

N 0°03'37" W.

784.94

CE 1/16 Sec. 29

ROW Lee/Gerhart

Sta 3165+01 Rt. Remove and Dispose 18' C.M.P.

389.42'

224.05'

CN 1/16 Sec. 29

12.75' Transition

END OF PROJECT
STA 3190+25.00

Note:
E.O.P revised to Sta. 3186+00.

PROFILE
NOTE BOOK
NO.

TH 47 Sta 3160+00 13' lt ℄ 5/11/68
F1 F4 F3 F2 F1 — 4 6 8 — @FS 8 JM br/sa/grl; @FS 11 JM br/sa/si; @FS 9 JM br/si/sa

TH 36 Sta 3163+00 12' rt ℄ 5/16/68
F1 F4 F3 F2 F1 — 4.5 6 8 — @FS 11 JM br/sa/si; @FS 9 JM br/si/sa

92.8

-0.26%

Special Ditch Rt.

TH 110 Sta 3165+00 ℄ 2/13/69
F1 F4 F3 F2 — 0.5 3.5 6 8 — TS & B; @FS 1 JM gr/br/sa/grl; @FS 11 JM br/sa/si; @FS 9 JM br/si/sa

Pl. 3167.0

TH 46 Sta 3166+00 14' lt ℄ 5/17/68
F1 F3 F2 F1 — 3 8 13 — @FS 8 JM br/sa/grl; @FS 5 JM br/si/sa; @FS 7 JM br/si/sa/grl

93.6

TH 37 Sta 3169+00 12' rt ℄ 5/16/68
F1 F4 F1 — 4 4.5 8 — br/sa/grl; @FS 8 JM; @FS 11 JM br/sa/si; @FS 10 JM br/si/sa/grl

TH 68 Sta 3173+00 60' rt ℄ 5/22/68
F4 — 5 — si/℄/org

TH 45 Sta 3172+00 14' lt ℄ 5/17/68
F1 — 3.5 6.5 8 — @FS 8 JM br/sa/grl; @FS 10 JM br/si/sa/grl; @FS 8 JM br/sa/grl

TH 111 Sta 3175+00 ℄ 2/13/69
F1 F4 F2 F2 — 0.5 5 7 11 13.1 — TS & B; @FS 1 JM gr/br/sa/grl; @FS 11 JM br/sa/si; @FS 7 JM br/si/sa/grl; @FS 9 JM br/si/sa

TH 38 Sta 3175+00 12' rt ℄ 5/16/68
F1 F4 F1 — 4 7 9 13 — @FS 8 JM br/sa/grl; @FS 11 JM br/sa/si; FS 10 JM br/si/sa/grl

TH 44 Sta 3177+50 16' lt ℄ 5/17/68
F1 — 4 6 8 — @FS 8 JM br/sa/grl; @FS 10 JM br/si/sa/grl; @FS 8 JM br/sa/grl

TH 39 Sta 3181+00 12.5' rt ℄ 5/16/68
F1 F4 F2 — 4 5 8 — @FS 8 JM br/sa/grl; @FS 7 JM br/si/sa/grl

TH 43 Sta 3184+00 16' lt ℄ 5/17/68
F1 — 2.5 5 8 — @FS 8 JM br/sa/grl; @FS 10 JM br/si/sa/grl; @FS 8 JM br/sa/grl

TH 65 Sta 3185+50 60' rt ℄ 5/22/68
4 — gr/si

TH 64 Sta 3185+50 150' lt ℄ (-3' elev) 5/22/68
F4 F1 — 2 14 — br/sa/si; @FS 8 JM gr/sa/grl

TH 112 Sta 3185+00 ℄ 2/13/69
F1 F4 F1 — 0.5 3 5 7 — TS & B; @FS 1 JM gr/br/sa/grl; @FS 11 JM br/sa/si; @FS 10 JM si/sa/grl refusal

TH 40 Sta 3187+00 13' rt ℄ 5/16/68
F1 F4 F1 — 4 5 13 — @FS 8 JM br/sa/grl; br/org/si; @FS 10 JM br/si/sa/grl

TH 42 Sta 3189+75 16' lt ℄ 5/17/68
F1 — 8 — @FS 8 JM br/sa/grl

Revised Profile

Elev 91.55

100 90 80 70

BM No. 12 El. 98.41
Spike in 12" Spruce
175' Rt. Sta. 3161+35

BM No. 13 El. 93.04
Spike in 5" Cottonwood
55' Rt. Sta. 3175+15

BM No. 14 El. 89.55
Spike in 8" Spruce
100' Rt. Sta. 3191+40

3160 65 3170 75 3180 85 3190

K·E PLATE 1 PLAN-PROFILE