GEOTECHNICAL REPORT

STERLING HIGHWAY (MILE 82-94)

IR-OA3(3)/56375

CENTRAL REGION

MAY 1991

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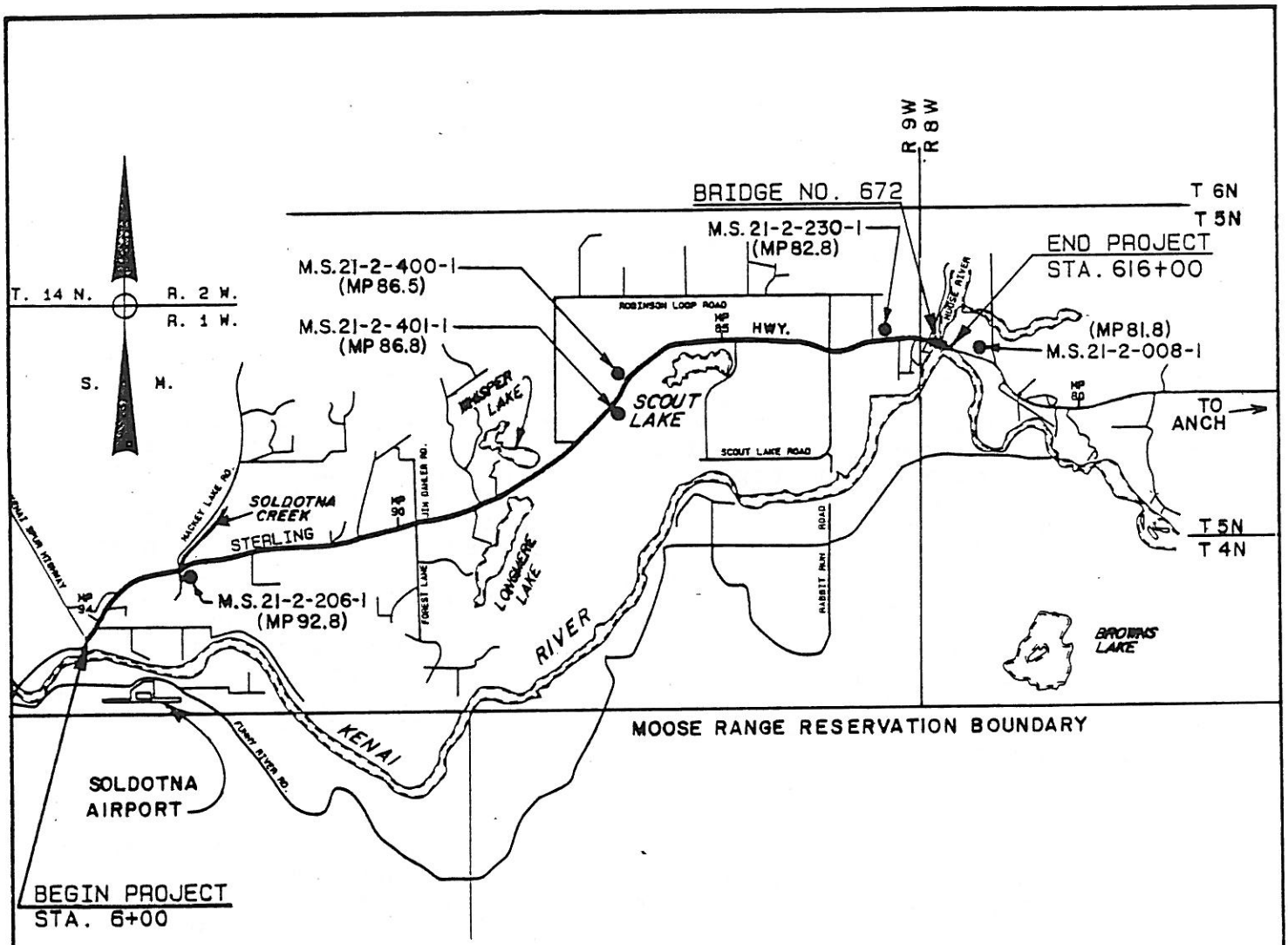
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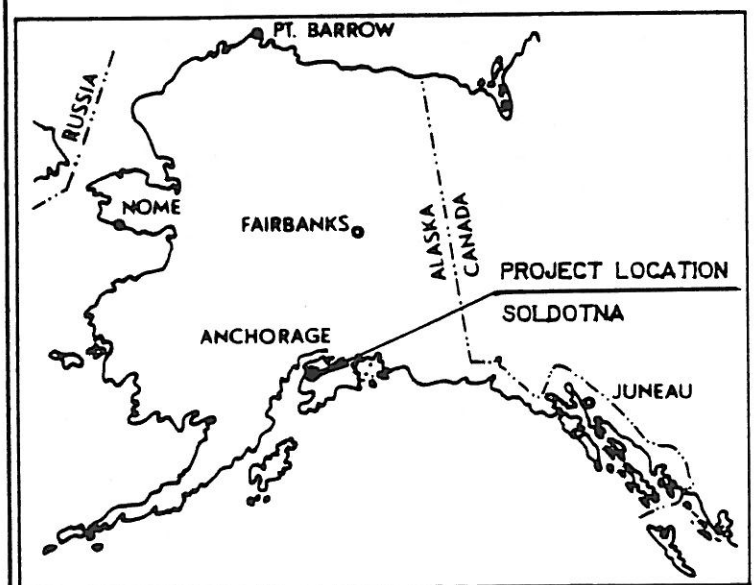
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STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
& PUBLIC FACILITIES

STERLING HIGHWAY
MILE 82 - 94
(SOLDOTNA TO MOOSE RIVER)

LOCATION MAP

Scale NTS Data D.O.T. & P.F.

Geotechnical Report

Sterling Highway Mile 82 to Mile 94

INTRODUCTION

The Alaska Department of Transportation and Public Facilities proposes to reconstruct the Sterling Highway from MP 82 to MP 94 in Soldotna. The geotechnical staff of the Central Region Materials Section conducted field investigations for foundation soils conditions along the existing roadway and proposed realignment sections. Preliminary investigations were conducted during the months of July and August 1989 under the supervision of Thomas Ottley, Engineering Goelogist II. Test holes were drilled with a track-mounted CME 850 Drill. Six inch solid flight auger was used and field samples were taken directly off the auger. Investigation of various muskeg sections was conducted during November/December 1989 using the CME 850 drill to advance 8" hollow stem auger. Shelby tubes and shear vane data was obtained in the peat swamps. Five material sites were investigated in conjunction with this project. Material sites information as well as foundation data taken at Soldotna Creek and specific geotechnical recommendations are included with this report.

PROJECT LOCATION

The Sterling Highway is the major ground transportation route linking Anchorage and Seward with Soldotna, Kenai and Homer. That portion of the Sterling Highway under investigation in this report also serves the local residential communities of Soldotna, Sterling and Naptowne.

The project begins at the northerly end of the urban section through Soldotna at approximately Mile Post 94, and extends northward crossing Soldotna Creek to just north of Moose River ending at Mile Post 82.

EXISTING ROADWAY HISTORY

The Sterling Highway was built in several stages between approximately 1950 to 1960. The average width of the existing road section is 24 feet from shoulder to shoulder. The road was resurfaced and some highly deteriorated areas were excavated and backfilled late in the summer of 1980 from M.P. 94 to approximately M.P. 82.1 (Station 10+00 to Station 615+00).

The asphalt surfacing averages 22 feet wide and was in fair condition at the time of this report. Field information from Department of Transportation and Public Facility Maintenance Section in Soldotna indicates distressed areas still exist between the following Stations: 31+00 to 33+50, 40+50 to 56+00, 74+50 to 77+50, 100+00 to 112+50, 138+00 to 142+50, 262+00 to 275+50, 367+00 to 381+00, 386+00 to 391+50, 509+00 to 529+00, 563+00 to 565+00, 579+00 to 582+00, 582+00 to 590+00, 590+00 to 600+60.

CONSULTANT INVESTIGATION

A subsurface soils investigation was performed by DOWL Engineers along the Sterling Highway alignment from the City of Sterling westward, to the City of Soldotna - a distance of approximately 12 miles. The drilling was accomplished in two phases. In Phase I test borings were drilled during the period of November 11-17, 1980, at intervals of approximately 500 feet along the highway alignment. Phase II test borings, drilled from March 31 to April 4, 1981, were located between Phase I borings to better define the soil interfaces.

The DOWL drilling program began at Station 15+00 within the Soldotna City limits and extended to Station 600+00 just west of the Moose River bridge abutment. The test borings were located approximately six to seven feet right of centerline or, when possible, just off the pavement edge.

Information and recommendations from the DOWL report are included and were used in compiling this report.

GEOLOGY AND TOPOGRAPHY

The Sterling Highway project lies within the confines of the Nikishka Lowlands which is part of the Kenai Lowlands, the physiographic subprovince that borders Cook Inlet in Southcentral Alaska. The entire area has undergone glaciation in the past, leaving a lowland which is poorly integrated, with numerous lakes, marshes and muskeg areas. The area is generally well-drained with irregular topography having strong linear elements, including end, lateral and interlobate moraines.

The granular material of the project area are alluvial, fluvial and aeolian, originating during the various glacial activities common to this lowland. As the glaciers retreated sands and gravels were carried and deposited by streams and rivers throughout the area. Rock flour and glacial till was covered by these deposits but meandering streams often removed the sands and gravels and exposed the till. In addition windblown silts were deposited over the entire area by strong winds blowing down off the retreating glaciers.

No permafrost was observed during the various soils investigations; however, it is possible that isolated, discontinous pockets may exist.

CLIMATOLOGICAL DATA

Seasons are well defined in the proposed project area. Winters typically extend from mid-October to mid-April and are characterized by cloudy mild weather alternating with clear cold weather. Clear cold days frequently are accompanied by significant occurrences of ground fog due to moisture from Cook Inlet. Temperatures occasionally reach -25 degrees F to -40 degrees F at Soldotna. At these extreme temperatures, ice fog can occur. Normally, the depth of snow cover on the ground does not exceed 15 inches.

Spring typically occurs from mid-April to June. During this period, ice break-up occurs on the major streams. This season is characterized by warm days and chilly nights with little precipitation. Summer typically occurs from June to early September with the latter half of the season accounting for approximately 50 percent of the annual precipitation. Autumn is brief, beginning shortly after mid-September and lasting until mid-October. Precipitation is light and may occur as snow or rain. Some of the stronger southerly winds occur in late summer or fall.

The prevailing wind pattern throughout the Cook Inlet Basin is predominantly from the southwest up the inlet in the summer, and from the northeast down the inlet in the fall, winter and spring. The average wind speed is 6 to 7 mph.

Specific climatic data for all areas of the proposed project is not readily available. Topography greatly influences precipitation and wind patterns in the area.

The following table is provided as somewhat representative of the project area.

The data presented here was taken at the Old Sterling weather station.

Mean Temp., Snowfall and Precip. Sterling, AK, 1954-61; 66-68

Month	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Year
Temp. Deg. F	45.3	31.9	19.4	6.7	9.7	14.4	19.6	32.8	43.8	51.3	54.5	53.7	31.9
Precip. Inches	2.40	1.43	1.42	1.45	1.04	1.14	0.58	1.00	0.86	1.21	2.54	2.98	18.04
Snowfall Inches	0	4.4	10.5	13.9	8.7	15.5	5.7	4.2	0	0	0	0	63.0

Arctic Environmental Information and Data Center, University of Alaska, Climatological Summary.

SELECTED REFERENCES

1. Dickenson, Oswald, Walch, Lee; Location and Design Study Report Sterling Highway M.P. 94 to M.P. 81; 1981.

2. DOWL Engineers; Environmental Report for Sterling Highway Soldotna to Mile Post 81; August 1981.

3. State of Alaska DOT/PF; Sterling Highway Design Study Report Reassessment; January 1989.

4. DOWL Engineers; Subsurface Investigation for Sterling Highway Mile 84 to Soldotna; June 1981.

5. Fritz, J.E. and Holland, D.W.; Sterling Highway M.P. 37-60 Project No. F-021-2 (15); August 1989.

6. Ottley, T.O. and Harp, M.G.; Materials Site Report Sterling Highway, Mile 60-84 Project No. RF-021-2-2(16); June 1977.

7. Holland, D.W. and Ottley, T.O.; Centerline Soils Investigation Sterling Highway M.P. 72-84; May 1980.

8. Harp, M.G. and Holland, D.W.; Sterling Highway East Junction Skilak Lake Road 12 Miles Westerly; June 1977.

9. Fritz, J.E. and Harp, M.G.; Centerline Soils Scout Lake Road Extension; July 1981.

10. Lewis, R.F.and Harp, M.G.; Materials Site Report M.S. 21-2-400-1 Sterling Highway; February 1982.

11. Lewis, R.F. and Harp, M.G.; Materials Site Report M.S. 21-2-401-1 Sterling Highway; February 1982.

UTILITIES

The following underground utilities are located in various areas as shown on the plans.

Electric - Homer Electric Association
Telephone - Glacier State Telephone Utility
Gas - Anchorage Natural Gas Utility

Station to Station Descriptions

General Information -

Because of the differences in surficial geology in the relatively large area covered, the subgrade soils are highly variable. They vary from peat and organic topsoil to NFS gravels.

A survey of the observable topsoils along the road cuts from Sterling to Soldotna was conducted by DOWL. Characteristically the topsoil is primarily a sandy silt with a thin organic mat and root systems. The topsoil appears to vary from 2 to 4 feet near Soldotna to a few inches thick toward Sterling.

In general, the soils along the Sterling Highway are well drained where vegetation is dominated by birch and large black spruce trees. The poorly drained soils are usually found where small black spruce and muskeg areas are present. (Taken from DOWL report).

Phase I Station to Station Descriptions

* All Stationing is approximate.

Stations 6+00 (B.O.P.) to 19+00

This is a section of essentially flat to gently rolling topography where the proposed road closely follows the existing alignment. The section generally consists of a fill over mostly "sandy gravel" subgrade soils (based on DOWL Report).

Stations 19+00 to 69+00

The topography through this section consists predominantly of rolling hills interspaced with low wet areas. A shallow lake (Loren Lake) and muskeg section lies just left of the proposed alignment from approximately Stations 51+00 to 55+50 (see peat probes).

This section consists mainly of shallow to deep cuts (16'+) and fills (20'±) through both the existing and proposed new alignment sections. Where tested the foundation soils consisted mostly of saturated silts and clayey sandy silts with some silty sands.

A water table was not encountered in any of the test holes (except in the peat probes located adjacent to Loren Lake) through this section. DOT/PF Maintenance in Soldotna indicated that a spring exists at approximately Station 20+50, 100' right existing centerline.

Stations 69+00 to 80+50

This section consists of a deep fill (40'±) which crosses Soldotna Creek.

Where tested the foundations soils consisted primarily of sand, gravel and sandy gravel. Test probes indicated a shallow (0.5' -3') peat section lies left of the existing road adjacent to Soldotna Creek (approximately Station 74+00 to 77+00).

DOT/PF Maintenance indicated that major erosion and gullying of the embankment side slopes occurs during spring breakup between approximately Stations 70+50 and 75+50, left of the existing road.

Stations 80+50 to 100+00

This section generally consists of low rolling terrain with shallow cut (5'±) to fill (15'±).

Where tested the foundation soils consisted mostly of gravel, sandy gravel and slightly silty gravelly sand.

Stations 100+00 to 128+00

This section continues through low rolling hills with proposed shallow cut/fill (max. 7′).
The soils encountered consisted mainly of wet to saturated sandy silt and gravelly silt. Where not previously stripped, up to 1.5′ of organic and organic silt topsoil overlies the silty foundation soils.

DOT/PF Maintenance indicated both frost heave and icing problems occur along the existing road between approximate Stations 105+00 and 107+00. An existing berm measuring approximately 1-2′ high by 10′ wide parallels the right side of the existing road through much of this section.

Stations 128+00 to 247+00

The proposed roadway continues through gently rolling hills interspersed with short sections of low poorly drained areas. Two short muskeg sections occur between approximate Stations 228+00 and 230+00 (left side existing road) and between approximate Stations 141+00 and 142+50 (right side existing road). Please refer to the appropriate test hole logs and peat probe data on the attached P&P sheets. This section contains mostly shallow cut/fill with occasional cuts to 15′.

Except for the above described swamp sections the subsurface soils generally consisted of wet to saturated silts and sandy gravelly silts with some sandy silt and silty sand.

Except for the swamp sections a water table was not encountered to maximum drilled depths of 25′.

An occasional low waste berm parallels the right side of the existing road. Various sized glacial erratics (boulders) occur along both sides of the existing road through this section.

Stations 247+00 to 252+00

The proposed alignment cross a peat bog (see T.H.'s 30 and 104 to 115, and peat probe data).

Proposed fill heights through this short section are up to 20′.
The water table through this section is at or near the surface of the peat.

Stations 252+00 to 300+00

The topography through this section is gently rolling.

The proposed road is mostly in shallow cut/fill sections.

Where tested the subsurface soils generally consisted of 0′-5.5′ of organic silt over silty sand and sand to the maximum drilled depth of 15′. No water table was observed.

Low waste berms from the original construction continue along the sides of the existing road, but mostly along the right side, and many large glacial erratics were observed along the right side of the existing road. The berm commonly consists of mixed organic material, and silt.

Stations 300+00 to 310+00

Conditions through this section are very similar to the previous mentioned section except that (where tested) the subsurface soils mostly consisted of 0'-5' of organic silt over gravelly silt and sandy gravel to the maximum drilled depth of 10'.

Stations 310+00 to 319+00

The proposed/existing roadway cross a ravine with proposed fills up to 30'.

Test Hole 39 was drilled in the bottom of this ravine and indicated that the subsurface soil consisted mostly of wet to saturated silt and gravelly silt. A water table was encountered in Test Hole 39 at a depth of 13'.

The "old" road berm continues along both the left and right sides of the existing road through this section.

Stations 319+00 to 359+00

The topography is generally flat to gently rolling.

The proposed/existing roadway encounters mostly shallow cut/fill.

Where tested the subsurface soils generally consisted of 0'-5' of organic silt over sand and silty sand with some silt and gravelly silt to the maximum drilled depth of 15'.

Stations 359+00 to 458+00

The topography continues to be flat to gently rolling.

The proposed alignment is mostly a shallow cut/fill with the exceptions of a deep ravine between 359+00 to 365+00 and up to a 26' cut between 365+00 to 372+00.

Where tested the subsurface soils generally consisted of 0'-5' of organic silt over sand and silty sand. A water table was not observed.

Stations 458+00 to 505+00

The topography is flat to gently rolling.

The proposed alignment is up to 60' right of the existing alignment and will consist mostly of shallow fills.

Where tested the subsurface soils generally consisted of 0'-4' of organic and organic silt over sandy gravel and silty sandy gravel. A water table was not observed.

Road berms continue both left and right of the existing road.

Stations 505+00 to 532+50

The topography is gently rolling.

The proposed alignment continues approximately 60' right of the existing road and will encounter shallow cut/fill.

The subsurface soils consisted mostly of 0'-4' of organic silt over wet to saturated and dilatant silt and silt clay. A water table was not observed.

Road berms continue left and right of the existing road.

Stations 532+50 to 570+00

Gently rolling topography continues.

The proposed embankment is located approximately 40' right of the existing road and will continue through shallow cut/fill.

Where tested the subsurface soils generally consisted of 0'-6.5' of silt and sandy silt over mostly clean sand and sandy gravel. A water table was not observed.

A large spring is located at approximately Station 536+20, approximately 7.5' right of the proposed centerline. Road berms continue left and right of the existing alignment.

Stations 570+00 to 574+50

The topography consists of a low swampy section.

The proposed and existing alignments overlap through their fill section.

The subsurface soils consist entirely of 1'-10' of saturated peat over sandy silt (see T.H.'s 70 and 94-103 and swamp probes). The water table is at or near the surface.

Stations 574+50 to 601+00

The topography gently drops towards the Moose River.

Both the existing and proposed alignments are through a shallow fill along this section.

Where tested the subsurface soils consisted mostly of 0'-2' of organic and organic silt over clay, silt and sandy silt. The clays and silts

were visually logged as damp to saturated and dilatant (see individual test results). A water table was not observed.

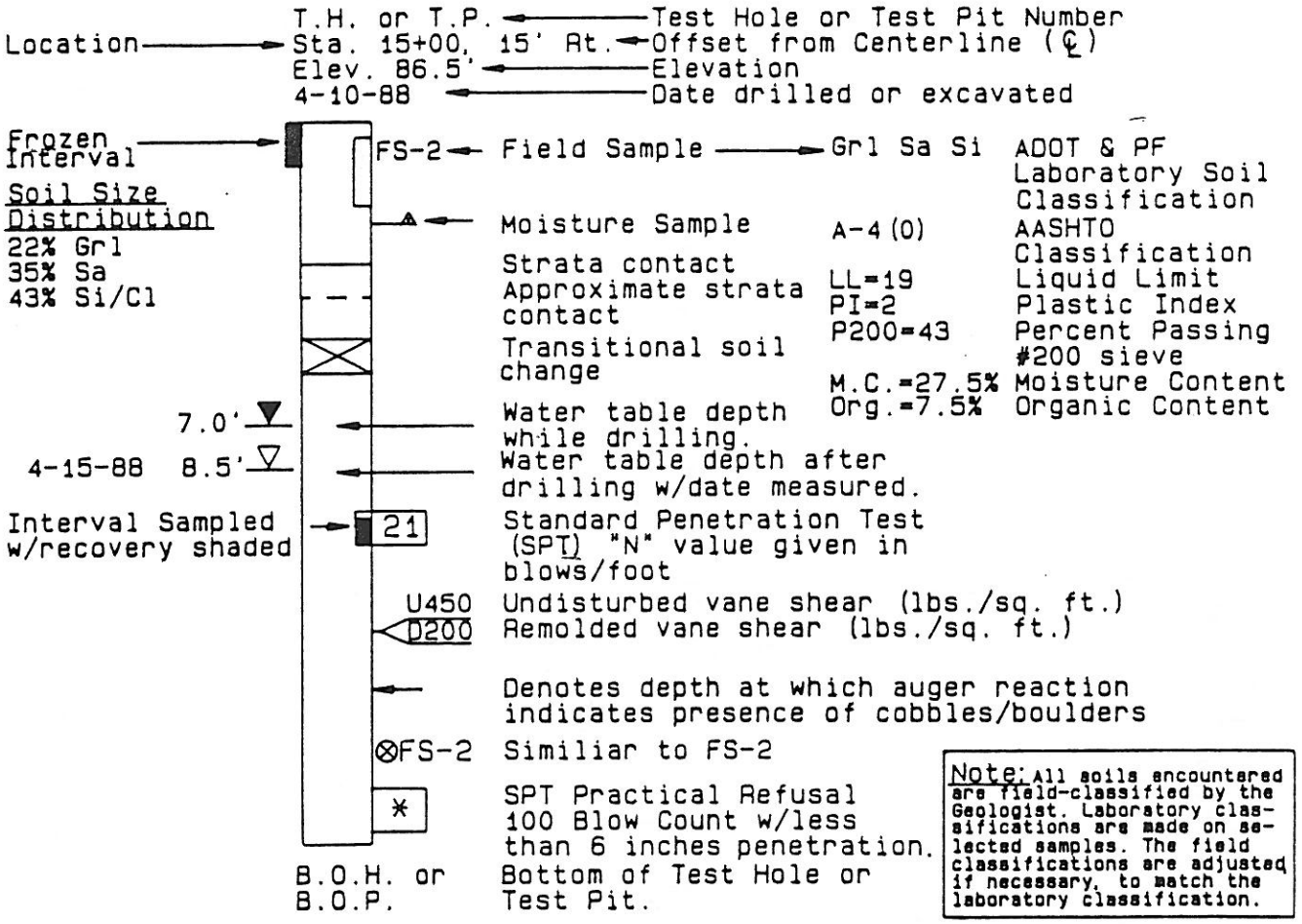
Stations 601+00 to 616+00 (E.O.P.)

The topography gently rises out of the Moose River and then is mostly flat through the town of Sterling. The existing and proposed roadway are the same as this section consists of much of the business district through the town of Sterling. This section consists of a shallow cut as the road climbs from the Moose River up to the E.O.P.

Where tested the subsurface soils generally consisted of 0'-2' of organics and silt over slightly silty sand and gravel.

TEST PIT AND TEST HOLE LOG EXPLANATION
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
MATERIALS SECTION

6-2-88



Note: All soils encountered are field-classified by the Geologist. Laboratory classifications are made on selected samples. The field classifications are adjusted if necessary, to match the laboratory classification.

Abbreviations

Blk	=Black	Org	=Organic(s)
Bn	=Brown	Grl	=Gravel
Bl	=Blue	w/	=with
Gn	=Green	tr.	=trace
Gr	=Gray	sl.	=slightly
Or	=Orange	G.S.	=Grab Sample
Rd	=Red	S.S.	=Split spoon
Tn	=Tan	S.T.	=Shelby Tube
Sa	=Sand	M.S.	=Modified Shelby Tube
Si	=Silt		
Cl	=Clay		

Soil Size Distribution

Based on U.S. Standard Sieve Sizes:

Boulders	=>10"
Cobbles	=3"-10"
Gravel	=#10-3"
Sand	=#200-#10
Silt/Clay	=<#200

Plan View Symbols

- Power Auger Test Hole
- Hand Auger Test Hole
- Surface Sample
- 4.5' Hand Probe Depth & Location
- Hand Dug Test Pit
- Dozer/Backhoe Pit
- ×××× Berm
- Terrace or Bank
- Swamp

Graphic Symbols (Two or more soil symbols may be used together to indicate a combination of soil types.)

- Organics (Org)
- Gravel (Grl)
- Sand (Sa)
- Silt (Si)
- Clay (Cl)
- Ice (Ice)
- Bedrock (Bx)
- Cobbles and/or Boulders

ALASKA DEPARTMENT OF TRANSPORTATION TEXTURAL SOIL DESCRIPTIONS

Rev. Dec. 8, 1989

NOTES: 1) All silts with a plastic index > 4 shall be termed "slightly clayey".

2) Sands and gravels with 7% thru 12% silt and/or clay (#200) shall be termed slightly silty or if plastic, (PI > 4), slightly clayey sand or gravel.

(CLAYS < .002 mm)
(SILTS < #200)
(SAND #200 TO #10)
(GRAVEL #10 TO 3" DIAMETER)
(COBBLES 3" TO 10" DIAMETER)
(BOULDERS +10" DIAMETER)

COARSE-GRAINED SOILS
35% OR LESS SILT/CLAY

- GRAVEL > SAND
  - LESS THAN 20% SAND
    - MORE THAN 12% SILT CLAY
      - PI ≥ 11 → CLAYEY GRAVEL
      - PI ≤ 10 → SILTY GRAVEL
    - 12% OR LESS SILT CLAY → GRAVEL
  - 20% OR MORE SAND
    - 12% OR LESS SILT CLAY → SANDY GRAVEL
    - MORE THAN 12% SILT CLAY
      - PI ≥ 11 → CLAYEY SANDY GRAVEL
      - PI ≤ 10 → SILTY SANDY GRAVEL
    - MORE SILT CLAY THAN SAND
      - PI ≥ 11 → SANDY CLAYEY GRAVEL
      - PI ≤ 10 → SANDY SILTY GRAVEL
- SAND ≥ GRAVEL
  - 20% OR MORE GRAVEL
    - MORE SILT CLAY THAN SAND
      - PI ≤ 10 → GRAVELLY SILTY SAND
      - PI ≥ 11 → GRAVELLY CLAYEY SAND
    - MORE THAN 12% SILT CLAY
      - PI ≤ 10 → SILTY GRAVELLY SAND
      - PI ≥ 11 → CLAYEY GRAVELLY SAND
    - 12% OR LESS SILT CLAY → GRAVELLY SAND
  - LESS THAN 20% GRAVEL
    - 12% OR LESS SILT CLAY → SAND
    - MORE THAN 12% SILT CLAY
      - PI ≤ 10 → SILTY SAND
      - PI ≥ 11 → CLAYEY SAND

FINE-GRAINED SOILS
36% OR MORE SILT/CLAY

- PI ≤ 10
  - 20% OR MORE GRAVEL
    - 20% OR MORE SAND
      - MORE SAND THAN GRAVEL → GRAVELLY SANDY SILT
      - MORE GRAVEL THAN SAND → SANDY GRAVELLY SILT
    - LESS THAN 20% SAND → GRAVELLY SILT
  - LESS THAN 20% GRAVEL
    - 20% OR MORE SAND → SANDY SILT
    - LESS THAN 20% SAND → SILT
- PI > 10
  - LESS THAN 20% GRAVEL
    - LESS THAN 20% SAND
      - LL > 40 → CLAY
      - LL ≤ 40 → SILTY CLAY
    - 20% OR MORE SAND
      - LL > 40 → SANDY CLAY
      - LL ≤ 40 → SANDY SILTY CLAY
  - 20% OR MORE GRAVEL
    - LESS THAN 20% SAND
      - LL > 40 → GRAVELLY CLAY
      - LL ≤ 40 → GRAVELLY SILTY CLAY
    - 20% OR MORE SAND
      - SAND ≥ GRAVEL
        - LL > 40 → GRAVELLY SANDY CLAY
        - LL ≤ 40 → GRAVELLY SANDY SILTY CLAY
      - SAND < GRAVEL
        - LL > 40 → SANDY GRAVELLY CLAY
        - LL ≤ 40 → SANDY GRAVELLY SILTY CLAY

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

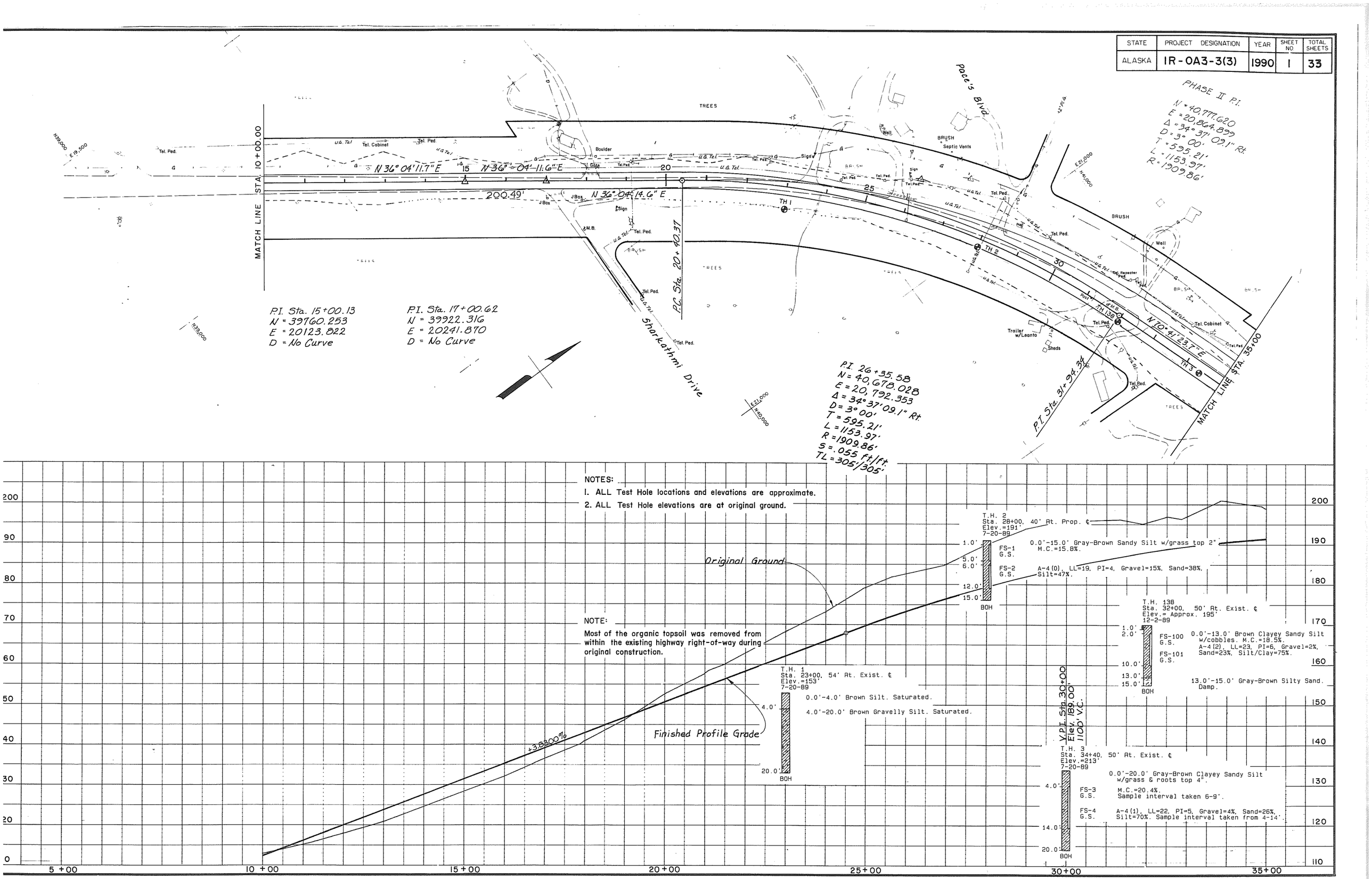
[X] Centerline _____
[ ] Materials Site _____
[ ] Structure _____

Project No. 56375 Sampled By Ottley

Station		28+00	28+00	34+40	34+40	32+00	32+00
Offset (feet)		40' R.	40' R.	50' R.	50' R.	50' R.	50' R.
Depth (feet)		1.0'-5.0'	6.0'-12.0'	6.0'-9.0'	4.0'-14.0'	2.0'-5.0'	2.0'-10.0'
Test Hole No.		TH 2	TH 2	TH 3	TH 3	TH 138	TH 138
Field No.		FS-1	FS-2	FS-3	FS-4	FS-100	FS-101
Date Sampled		07/20/89	07/20/89	07/20/89	07/20/89	12/02/89	12/02/89
Lab No.		89A-1348	89A-1349	89A-1350	89A-1351	89A-2223	89A-2224
	3"						
	2"		100				
	1"		98		100		
Percent	3/4"		97		98		
	1/2"		95		97		
Passing	3/8"		94		96		100
	#4		89		96		100
Sieve	#10		85		96		98
	#40		75		93		95
Size	#50		69				92
	#200		47		70		75
	.02mm						
	.002mm						
DOTTSD		Si	Si	Si	Si	Grl Si	Grl Si
AASHTO Class			A-4(0)		A-4(1)		A-4(2)
FSV Class							
Liquid Limit			19		22		23
Plastic Index			4		5		6
Moisture Content %		15.8		20.4		18.5	
Organic Content %							
% Gravel			15		4		2
% Sand			38		26		23
% Silt & Clay			47		70		75
Max. Dry Density							128.5
Opt. Moisture %							10.2
Sp.G. Fine							2.67
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	1	33



ared by NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline

[ ] Materials Site

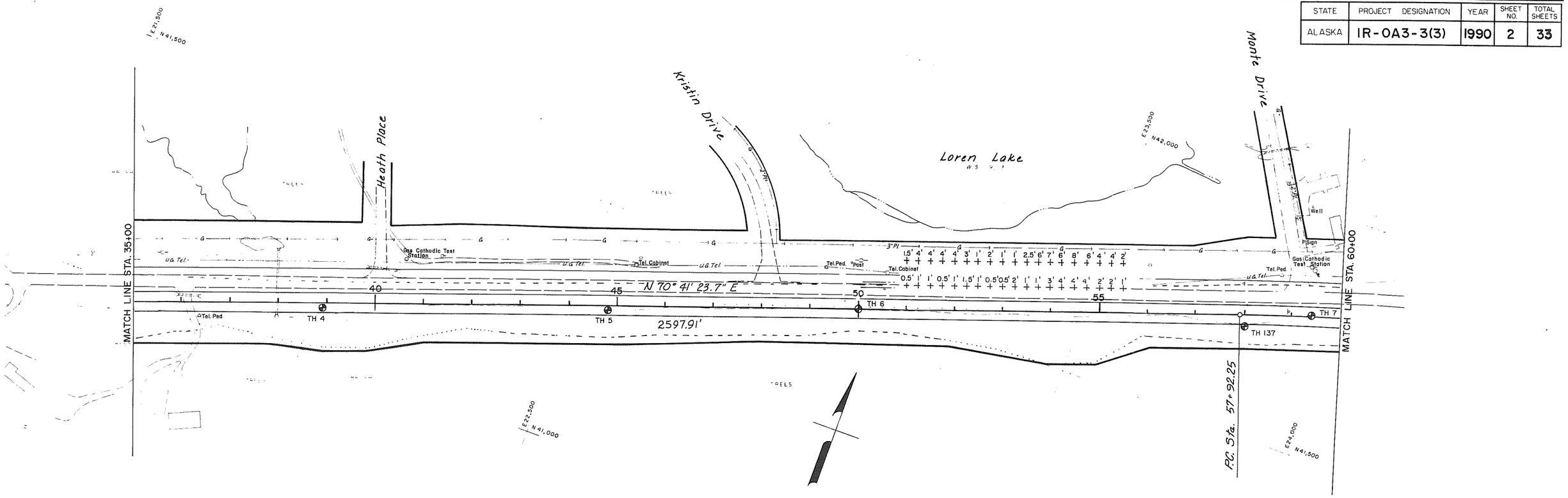
Project No. 56375 Sampled By Ottley

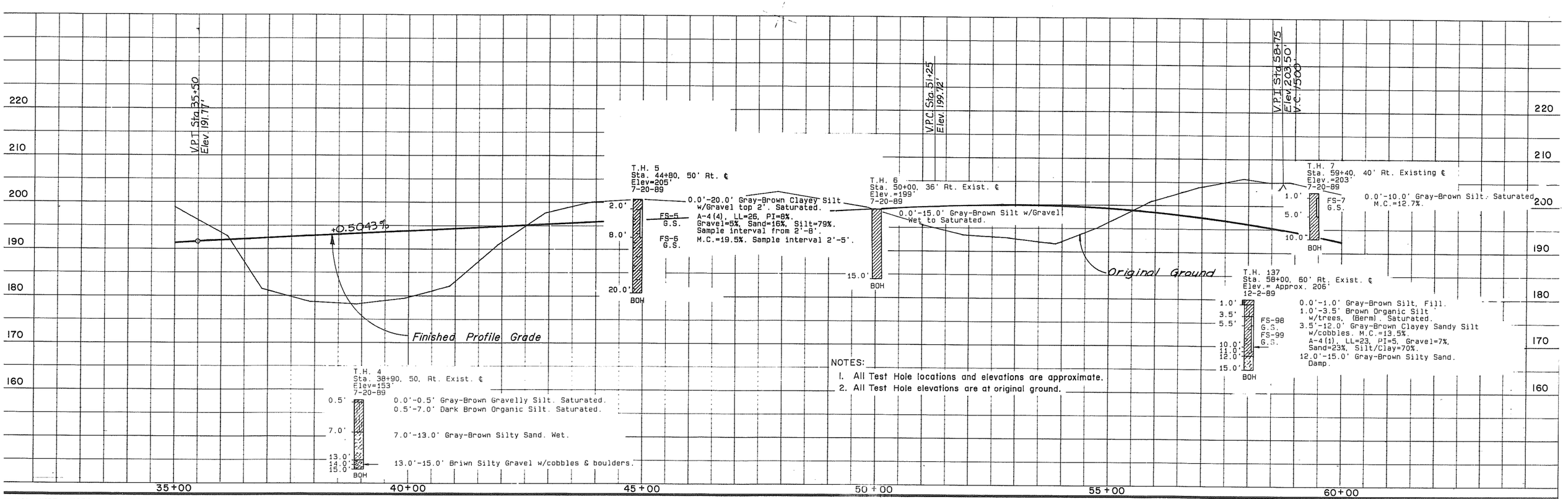
[ ] Structure

Station		44+80	44+80	58+00	58+00	59+40	
Offset (feet)		50' R.	50' R.	60' R.	60' R.	40' R.	
Depth (feet)		2.0'-8.0'	2.0'-5.0'	3.5'-5.5'	5.5'-16.0'	1.0'-5.0'	
Test Hole No.		TH 5	TH 5	TH 137	TH 137	TH 7	
Field No.		FS-5	FS-6	FS-98	FS-99	FS-7	
Date Sampled		07/20/89	07/20/89	12/02/89	12/02/89	07/20/89	
Lab No.		89A-1352	89A-1353	89A-2221	89A-2222	89A-1354	
	3"						
	2"				100		
	1"				98		
Percent	3/4"				98		
	1/2"	100			98		
Passing	3/8"	98			97		
	#4	97			97		
Sieve	#10	95			93		
	#40	92			87		
Size	#50				83		
	#200	79			70		
	.02mm						
	.002mm						
DOTTSD		Si	Si	Grl Si	Grl Si	Si	
AASHTO Class		A-4(4)			A-4(1)		
FSV Class							
Liquid Limit		26			23		
Plastic Index		8			5		
Moisture Content %			19.5	13.5		12.7	
Organic Content %							
% Gravel		5			7		
% Sand		16			23		
% Silt & Clay		79			70		
Max. Dry Density					127.5		
Opt. Moisture %					10.4		
Sp.G. Fine					2.69		
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	2	33





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ANCHORAGE ALASKA

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

Project No. 56375 Sampled By Ottley

[X] Centerline
[ ] Materials Site
[ ] Structure

Station		70+20	82+00				
Offset (feet)		36' R.	55' R.				
Depth (feet)		0-6.0'	3.0'-8.0'				
Test Hole No.		TH 8	TH 123				
Field No.		FS-8	FS-69				
Date Sampled		07/20/89	11/30/89				
Lab No.		89A-1355	89A-2192				
	3"		100				
	2"		98				
	1"	100	84				
Percent	3/4"	100	70				
	1/2"	99	55				
Passing	3/8"	99	43				
	#4	98	25				
Sieve	#10	97	16				
	#40	88	10				
Size	#50	53	8				
	#200	3	5				
	.02mm						
	.002mm						
DOTTSD		Sa	Sl Si Sa Grl				
AASHTO Class		A-3(0)	A-1-a(0)				
FSV Class							
Liquid Limit		NV	NV				
Plastic Index		NP	NP				
Moisture Content %							
Organic Content %							
% Gravel		3	84				
% Sand		94	11				
% Silt & Clay		3	5				
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	3	33

PHASE II P.I.

N=41,965.550
E=24,255.181
Δ=9° 52' 04.5" Rt
D=1° 00'
T=494.62'
L=986.79'
R=5729.58'

E 24,500
N 42,500

Mackeye Lake Road

P.C. Sta. 75+82.91

P.T. Sta. 82+94.95

P.I Sta. 79+39.39
N=42,168.990
E=25,905.170
Δ=7° 07' 13.3" Lt.
D=1° 00'
T=356.48'
L=712.04'
R=5729.58'
S=.027 ft./ft.
T.L.=175'/175'

Septic Vents
Well
Sign
Gas Cathodic Test Station
Tel. Ped.
N 42,000
12" PI
3" PI
G
U.G. Tel.
Elec. Meter on Conc. Pad
Utility Pole
Sign
Box
N 42,500
MATCH LINE STA. 60+00
MATCH LINE STA. 87+00
65
70
75
80
85
N 80° 33' 28.3" E
803.87'
N 73°26' 15" E
TH 8
TH 9
TH 10
TH 123
OH Tel.
Retaining Wall
Rocks
Ornamental Trees
LAWN
Gate
GRAVEL
E 24,000
N 41,500
E 26,500
N 42,000

P.I. Sta. 62+86.87
N=41,857.490
E=24,272.626
Δ=9° 52' 04.6" Rt.
D=1° 00'
T=494.62'
L=986.79'
R=5729.58'
S=.027 ft./ft.
T.L.=175'/175'

P.I. Sta. 67+79.04

PHASE II P.I.
N=42,237.494
E=25,890.393
Δ=7° 07' 13.3" Lt.
D=1° 00'
T=356.48'
L=712.04'
R=5729.58'

V.P.I. Sta. 66+25
Elev. 173.50'

V.P.C. Sta. 70+15
Elev. 155.50'

-4.000%

+2.349%

Finished Profile Grade

Original Ground

T.H. 9
Sta. 75+20, 64' Rt. Exist. ℄
Elev.=115'
7-25-89

7-25-89

0.0'-2.0' Brown Sandy Gravel Fill. Damp.
2.0'-4.0' Brown Sandy Silt to Silty Sand, Fill. Damp.
4.0'-6.0' Brown Silty Sandy Gravel, Fill. Damp.
6.0'-10.0' Gray-Brown Sandy Silty Gravel to Silty Gravel, Fill. Saturated.
10.0'-15.0' Gray-Brown Organic Silt. Saturated. Soft.
15.0'-20.0' Gray Silty Sandy Gravel. Saturated.

2.0'
4.0'
6.0'
10.0'
15.0'
16.0'
20.0'
BOH

T.H. 123
Sta. 82+00, 55' Rt. Exist. ℄
Elev. = Approx. 155'
11-30-89

FS-59
G.S.

0.5'
2.0'
3.0'
8.0'
10.0'
15.0'
BOH

0.0'-0.5' Brown Organic Silt.
0.5'-10.0' Brown Gravel w/cobbles. Dry. A-1-a(0), LL=NV, PI=NP, Gravel=84%, Sand=11%, Silt=5%.
10.0'-15.0' Brown Sandy Gravel. Mostly 2" minus. Loose, dry.

T.H. 8
Sta. 70+20, 36' Rt. Existing ℄
Elev.=155'
7-20-89

FS-8
G.S.

6.0'
15.0'
BOH

0.0'-15.0' Brown Sand w/Gravel, loose. Dry to damp, A-3(0), LL=NV, PI=NP, Gravel=3%, Sand=94%, Silt=3%.

T.H. 10
Sta. 80+00, 22' Rt. Exist. ℄
Elev.=135'
7-25-89

8.0'
10.0'
BOH

0.0'-8.0' Brown Sandy Gravel Fill. Damp to wet. Mostly 2"minus. Can't distinguish between Fill and Subgrade.
8.0'-10.0' Gray-Brown Silty Sandy Gravel w/cobbles. Damp.

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

200 190 180 170 160 150 140 130 120 110

60+00 65+00 70+00 75+00 80+00 85+00 87

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ANCHORAGE ALASKA

SOILS TESTING REPORT

Page 1 of 1 for Plan Sheet 4

Project Name Sterling Hwy. MP 79-94

[X] Centerline _____

[ ] Materials Site _____

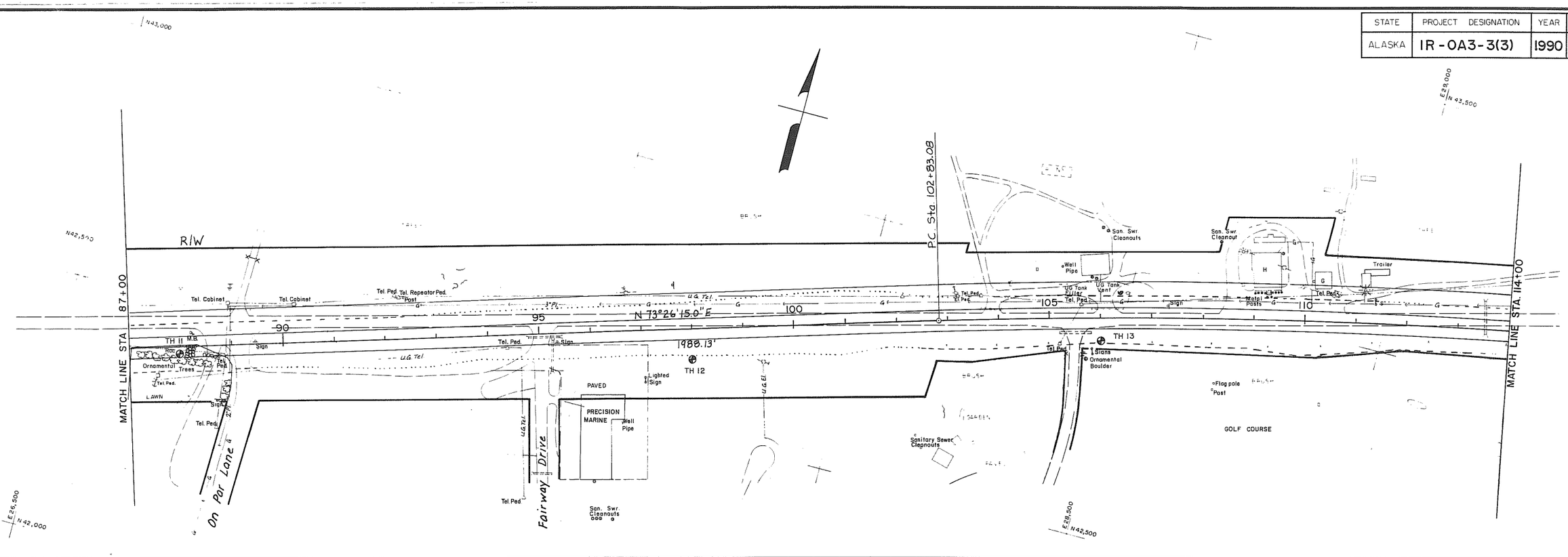
Project No. 56375 Sampled By Ottley

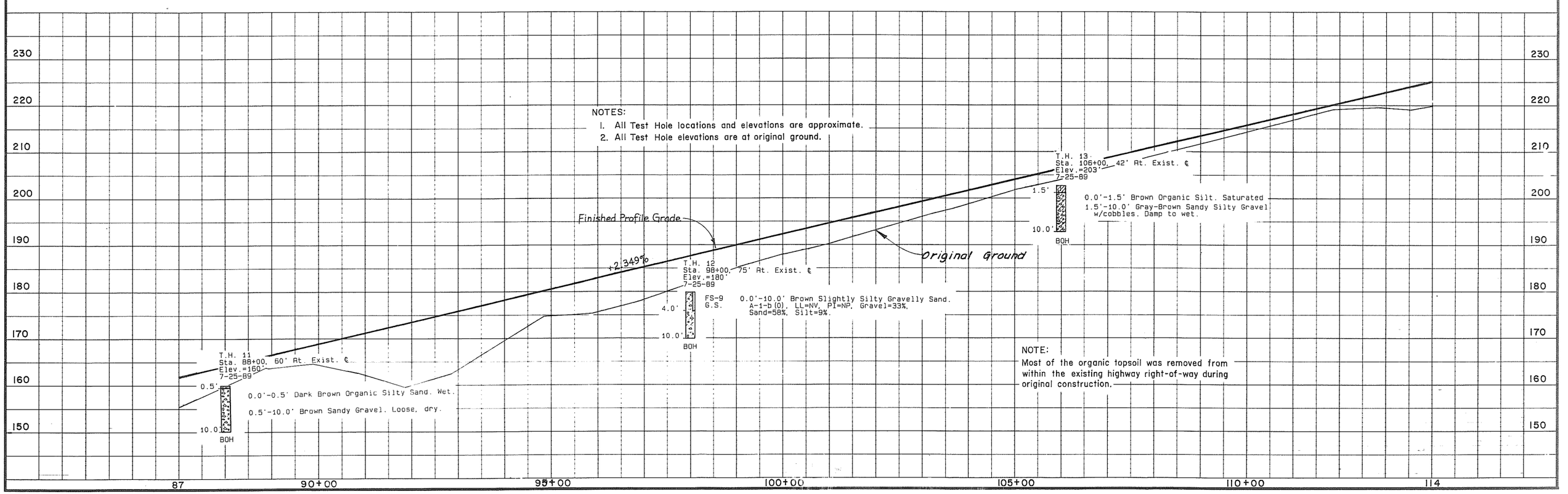
[ ] Structure _____

Station		98+00					
Offset (feet)		75' R.					
Depth (feet)		0-4.0'					
Test Hole No.		TH 12					
Field No.		FS-9					
Date Sampled		07/25/89					
Lab No.		89A-1356					
	3"						
	2"	100					
	1"	98					
Percent	3/4"	96					
	1/2"	92					
Passing	3/8"	87					
	#4	77					
Sieve	#10	67					
	#40	45					
Size	#50	29					
	#200	9					
	.02mm						
	.002mm						
DOTTSD		Grl Sa					
AASHTO Class		A-1-b(0)					
FSV Class							
Liquid Limit		NV					
Plastic Index		NP					
Moisture Content %							
Organic Content %							
% Gravel		33					
% Sand		58					
% Silt & Clay		9					
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	4	33





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SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline _____
[ ] Materials Site _____
[ ] Structure _____

Project No. 56375 Sampled By Ottley

Station		134+00	134+00				
Offset (feet)		50' R.	50' R.				
Depth (feet)		1.0'-7.0'	2.0'-5.0'				
Test Hole No.		TH 16	TH 16				
Field No.		FS-10	FS-11				
Date Sampled		07/25/89	07/25/89				
Lab No.		89A-1357	89A-1358				
Percent Passing Sieve Size	3"						
	2"						
	1"						
	3/4"	100					
	1/2"	97					
	3/8"	97					
	#4	96					
	#10	94					
	#40	88					
	#50						
	#200	74					
	.02mm						
	.002mm						
DOTTSD		Si	Si				
AASHTO Class		A-4(0)					
FSV Class							
Liquid Limit		22					
Plastic Index		NP					
Moisture Content %			31.9				
Organic Content %							
% Gravel		6					
% Sand		20					
% Silt & Clay		74					
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	5	33

PHASE II P.I.
N = 43,244.500
E = 29,276.421
Δ = 11° 48' 46.9" RT.
D = 0° 30' 00"
T = 1185.51'
L = 2362.61'
R = 11,459.16'

E 29,000 N 43,500

Boundary St.

MATCH LINE STA. 114+00

Sanitary Sewer C.O.

San. Sewer C.O.

Sanitary Sewer Cleanouts

Shady Lane

Well Pipe

Ornamental Garden

Ornamental Rocks

Lighted Sign

R/W

Tel. Ped.

Post

Posts

TH 14

TH 15

TH 16

115 120 125 130 135 140

N 85° 75' 01.8" E

1619.15'

P.I. Sta. 114+68.59
N = 43, 175.289
E = 29, 288.820
Δ = 11° 48' 46.9" RT.
D = 0° 30' 00"
T = 1185.51'
L = 2362.61'
R = 11,459.16'
S = 044 ft/ft
T.L. = 180'/180'

P.T. Sta. 126+45.69

South Shady St.

Gravel Lot

Bldg.

Wooden Posts

Trees

Rocks

Metal Posts

Tele. Booth

THE COUNTRY VILLA

San. Swr. C.O.

Sanitary Sewer C.O.

Well

MATCH LINE STA. 141+00

E 32,000 N 43,500

E 32,000 N 43,000

V.P.C. Sta. 119+00
Elev. 237.08'

V.P.I. Sta. 124+50
Elev. 250.00'
1100' V.C.

V.P.T. Sta. 130+00
Elev. 245.19'

V.P.C. Sta. 137+00
Elev. 239.06'

V.P.T. Sta. 140+50
Elev. 236.00'
700' V.C.

Finish Profile Grade

Original Ground

+2.349%

-0.875%

T.H. 14
Sta. 115+00, 45' Rt. Exist. ℄
Elev.=221'
7-25-89

1.5'
3.0'
6.0'
10.0'
BOH

0.0'-1.5' Organic Silt. Wet to saturated.
1.5'-3.0' Gray-Brown Sandy Silt. Wet.
3.0'-6.0' Gray-Brown Silty Sand. Loose. Damp.
6.0'-10.0' Gray-Brown Sandy Gravelly Silt. Wet to saturated.

T.H. 15
Sta. 125+00, 36' Rt. Exist. ℄
Elev.=243
7-25-89

2.5'
10.0'
BOH

0.0'-2.5' Brown Sandy Silt. Saturated.
2.5'-10.0' Brown Gravelly Sandy Silt to Gravelly Silty Sand. Wet to saturated.

T.H. 16
Sta. 134+00, 50' Rt. Exist. ℄
Elev.=234'
7-25-89

1.0'
7.0'
10.0'
BOH

FS-10 G.S.
FS-11 G.S.

0.0'-10.0' Gray-Brown Sandy Silt. Saturated.
A-4(0). LL=22. PI=NP. Gravel=6%. Sand=20%. Silt=74%. Sample interval 1-7'.
M.C.=31.9%. Sample interval 2-5'.

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

260 250 240 230 220 210 200

114 115+00 120+00 125+00 130+00 135+00 140+00 141

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SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline _____

[ ] Materials Site _____

Project No. 56375 Sampled By Ottley

[ ] Structure _____

Station		144+00					
Offset (feet)		60' R.					
Depth (feet)		2.0'-6.0'					
Test Hole No.		TH 17					
Field No.		FS-12					
Date Sampled		07/25/89					
Lab No.		89A-1359					
	3"						
	2"						
	1"						
Percent	3/4"						
	1/2"						
Passing	3/8"						
	#4						
Sieve	#10						
	#40						
Size	#50						
	#200						
	.02mm						
	.002mm						
DOTTSD		Grl Si					
AASHTO Class							
FSV Class							
Liquid Limit							
Plastic Index							
Moisture Content %		12.5					
Organic Content %							
% Gravel							
% Sand							
% Silt & Clay							
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	6	33

PHASE II P.I.
N 43,477.218
E 32,077.403
Δ = 1° 02' 51.4" LT.
NO CURVE

P.I. Sta. 160+22.47
N = 43,586.419
E = 33,032.350
Δ = 5° 57' 29.5" LT.
D = 0° 45'
T = 397.57'
L = 794.43'
R = 7639.44
S = .022 ft/ft
T.L: 175'/175'

PHASE II P.I.
N = 43,722.522
E = 34,493.597
Δ = 6° 00' 11.9" LT.
D = 0° 45'
T = 400.59'
L = 800.44'
R 7639.44

P.C. Sta. 156+24.90

PT Sta. 164+19.33

MATCH LINE STA. 141+00

MATCH LINE STA. 168+00

N 85° 15' 01.8" E

N 84° 09' 28.1" E

N 78° 11' 58.6" E

1360.06'

P.I. Sta. 142+64.84
N 43,407.511
E 32,083.842
Δ = 1° 05' 33.8" LT.
NO CURVE

BIG JOHN'S TEXACO

TESORO

Pine Street

Jawle Street

Southern Bluff St.

Harris Enterprises

Electric Transformer Box

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

T.H. 117
Sta. 141+60, 100' Rt. Exist. ℄
Elev. = Approx. 233'
11-28-89
0.0'-23.0' Brown Organic. Fibrous Peat. Saturated. Bottomed on Gray Silt.
U=498+ D=226
U=498+ D=195
U=498+ D=235
U=498+ D=276
BOH

T.H. 118
Sta. 141+63, 100' Rt. Exist. ℄
Elev. = Approx. 233'
11-28-89
0.0'-21.0' Brown Organic. Fibrous Peat.
U=1036 D=466
U=648 D=324
U=1295 D=518
U=777 D=363
BOH

T.H. 121
Sta. 142+03, 100' Rt. Exist. ℄
Elev. = Approx. 233'
11-29-89
0.0'-3.0' Gray Sandy Silt. Fill.
3.0'-16.0' Brown Organic. Medium fibrous Peat. Saturated.
U=1425+ D=712
U=1295 D=518
U=1425+ D=673
BOH

V.P.T. Sta. 144+00 Elev. 238.72'

V.P.C. Sta. 155+50 Elev. 247.67'

V.P.T. Sta. 161+50 Elev. 261.80'

V.P.C. Sta. 164+25 Elev. 272.62'

+3.93%

Original Ground

Finished Profile Grade

T.H. 17
Sta. 144+00, 60' Rt. Exist. ℄
Elev.=245'
7-25-89
0.0'-0.5' Brown Silty Organic fill, w/flowers.
0.5'-10.5' Gray-Brown Sandy Gravelly Silt. M.C.=12.5%.
FS-12 G.S.

T.H. 18
Sta. 153+00, 40' Rt. Exist. ℄
Elev.=245'
7-25-89
0.0'-10.0' Gray-Brown Sandy Gravelly Silt. w/cobbles. Wet.
BOH

T.H. 19
Sta. 160+00, 40' Rt. ℄
Elev.=242'
7-25-89
0.0'-10.0' Gray-Brown Sandy Gravelly Silt to Sandy Silty Gravel w/cobbles. Wet.
BOH

141 | 145+00 | 150+00 | 155+00 | 160+00 | 165+00 | 168

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SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

Project No. 56375 Sampled By Ottley

[X] Centerline
[ ] Materials Site
[ ] Structure

Station		147+60	147+60				
Offset (feet)		65' R.	65' R.				
Depth (feet)		3.0'-8.0'	3.0'-5.0'				
Test Hole No.		T.H. 116	T.H. 116				
Field No.		FS-67	FS-68				
Date Sampled		11/14/89	11/14/89				
Lab No.		89A-2184	89A-2185				
	3"						
	2"	100					
	1"	98					
Percent	3/4"	98					
	1/2"	95					
Passing	3/8"	92					
	#4	90					
Sieve	#10	85					
	#40	75					
Size	#50	68					
	#200	46					
	.02mm						
	.002mm						
DOTTSD		Silt	Silt				
AASHTO Class		A-4(0)					
FSV Class							
Liquid Limit		20					
Plastic Index		4					
Moisture Content %			14.6				
Organic Content %							
% Gravel		15					
% Sand		39					
% Silt & Clay		46					
Max. Dry Density		134.7					
Opt. Moisture %		8.0					
Sp.G. Fine		2.65					
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	6A	33

Phase II P.I.
N= 43,477.218
E= 32,077.403
Δ= 1° 02' 51.4" Lt.
No Curve

P.I. Sta. 160 + 22.47
N.= 43,586.419
E.= 33,832.350
Δ.= 5° 57' 29.5" Lt.
D.= 0° 45' 00"
T.= 397.57'
L.= 794.43'
R.= 7639.44'
S.= .022 ft./ft.
TL.= 175' / 175'

P.C. Sta. 156 + 24.90

P.T. Sta. 164 + 19.33

E 32,000 N 44,000

E 34,500 N 44,000

E 34,500 N 43,500

Section Line Easement

Pine Street

Innoninate St.

Jawle Street

South Bluff St.

MATCH LINE STA. 141+00

MATCH LINE STA. 168+00

TESORO Gas Pump Island

Bldg.

Gas Meter

Well Pipe

Gravel Lot

San. Swr. C.O.

San. Swr. Fuel Tk Kill Spout for Fuel Valve Box Water Faucet

Lighted Sign

Gravel Lot

Harris Enterprises

Posts

Dirt

Boulder

Tel. Ped.

Tel

U.G. Tel

Sign

TREES

BRUSH

Shrubs

Gravel Lot

Well Pipe

M.B.

Above Ground Fuel Tanks

U.S. Fuel Tank

Boulders

3" P.L.G.

"D" ℄

N 84° 09' 28.1" E.

1360.06'

N 85° 15' 01.8" E.

N 78° 11' 58.6" E

TH116

TH119

TH120

TH122

3' 2 5' 6' 11' 2' 6' 1'

3' 5' 7' 16' 16' 4' 1'

145 150 155 160 165

P.I. Sta. 142 + 64.84
N 43,407.511
E 32,083.842
Δ= 1° 05' 33.8" LT.
NO CURVE

Sta. 149+50

Sta. 153+40

Sta. 165+50

R1-1 STOP

STERLING HWY

SOUTH JAWLE ST

2(D3-1)

SOUTHERN BLUFF ST

STERLING HWY PINE ST

Post Well

Gas Pumps Concrete Pad

Grocery

BIG JOHN'S TEXACO

Electric Transformer Box

R/W

Trees

W2-2L

Phase II P.I.
N.= 43,722.522
E.= 34,493.597
Δ.= 6° 00' 11.9" Lt.
D.= 0° 45' 00"
T.= 400.59'
L.= 800.44'
R.= 7639.44'

Embankment	24,782	C.Y.
Common Excavation	30,928	C.Y.
Borrow Type A	6,616	Tons
Borrow Type B	13,432	Tons
Muck Excavation		
Waste		

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

T.H. 119
Sta. 141+66, 100' Rt. Exist. ℄
Elev.= Approx. 233'
11-28-89
0.0'-17.5' Brown Organic. Medium fibrous Peat. Saturated.
5.0' ST-15
7.5'
10.0' ST-16
12.5'
15.0' ST-17
17.5'
BOH

V.P.T. Sta. 144+00
Elev. 238.72'

T.H. 120
Sta. 142+00, 100' Rt. Exist. ℄
Elev.= Approx. 233'
11-28-89
0.0'-3.0' Gray Sandy Silt, Fill.
3.0'-20.0' Brown Organic. Medium fibrous Peat. Saturated.
3.0' U=498+ D=362
5.0'
10.0' U=498+ D=213
15.0' U=498+ D=226
20.0'
21.0' BOH
20.0'-21.0' Brown Silt.

V.P.C. Sta. 155+50
Elev. 247.67

V.P.I. Sta. 158+50
Elev. 250.00
600' V.C.

V.P.T. Sta. 161+50
Elev. 261.80

V.P.C. Sta. 164+25
Elev. 272.62

+3.934 %

Original Ground

Finished Profile Grade

T.H. 116
Sta. 147+60, 65' Rt. Exist. ℄
Elev.= Approx. 240'
11-16-89
0.0'-1.0' Brown Silt. Backfill.
1.0'-2.5' Brown Organic
2.5'-15.0' Brown Sandy Silt w/Gravel
FS-67 & FS-68
A-4(0), LL=20, PI=4, Gravel=15%, Sand=39%, Silt=45%, M.C.=14.6%.
8.0'
15.0' BOH

T.H. 122
Sta. 142+00, 97' Rt. Exist. ℄
Elev.= Approx. 233'
11-29-89
0.0'-2.0' Gray Sandy Silt, Fill.
2.0'-12.0' Brown Organic. Medium fibrous Peat. Saturated.
2.0'
5.0' ST-18
7.5'
10.0' ST-19
12.0'
12.5' BOH
12.0'-12.5' Brown Silt.

300 290 280 270 260 250 240 230

141 145+00 150+00 155+00 160+00 165+00 168

Prepared by NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline

[ ] Materials Site

Project No. 56375 Sampled By Ottley

[ ] Structure

Station		170+00	170+00	170+00	172+00	172+00	176+00
Offset (feet)		45' L.	45' L.	45' L.	80' L.	80' L.	35' L.
Depth (feet)		0.0'-5.0'	5.0'-8.0'	12.0'-20.0'	4.0'-7.0'	7.0'-14.0'	1.0'-4.0'
Test Hole No.		TH 20	TH 20	TH 20	TH 136	TH 136	TH 21
Field No.		FS-13	FS-14	FS-15	FS-96	FS-97	FS-16
Date Sampled		07/25/89	07/25/89	07/25/89	12/02/89	12/02/89	07/25/89
Lab No.		89A-1360	89A-1361	89A-1362	89A-2219	89A-2220	89A-1363
	3"						
	2"		100			100	
	1"		100			100	
Percent	3/4"		99			99	
	1/2"		99			96	
Passing	3/8"		98			94	
	#4		96	100		86	
Sieve	#10		94	100		81	
	#40		78	84		70	
Size	#50		73	60		64	
	#200		42	20		40	
	.02mm						
	.002mm						
DOTTSD		Sa Grl Si	Sa Grl Si	Sa	Grl Si	Sa Si	Si
AASHTO Class			A-4(0)	A-2-4(0)		A-4(0)	
FSV Class							
Liquid Limit			NV	NV		15	
Plastic Index			NP	NP		NP	
Moisture Content %		12.4			21.1		24.3
Organic Content %							5.9
% Gravel			6	0		19	
% Sand			52	80		41	
% Silt & Clay			42	20		40	
Max. Dry Density						135.6	
Opt. Moisture %						6.5	
Sp.G. Fine						2.73	
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline

[ ] Materials Site

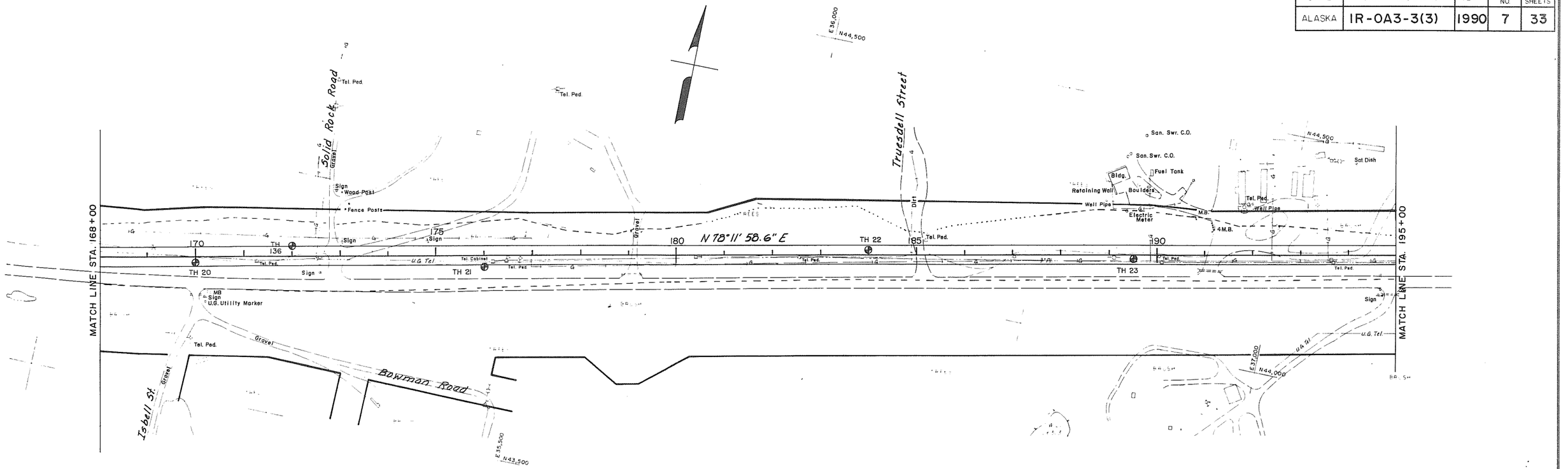
Project No. 56375 Sampled By Ottley

[ ] Structure

Station		176+00	189+50	189+50			
Offset (feet)		35' L.	50' L.	50' L.			
Depth (feet)		5.5'-12.0'	10.0'-12.0'	10.0'-15.0'			
Test Hole No.		TH 21	TH 23	TH 23			
Field No.		FS-17	FS-18	FS-19			
Date Sampled		07/25/89	07/31/89	07/31/89			
Lab No.		89A-1364	89A-1365	89A-1366			
	3"						
	2"	100					
	1"	98					
Percent	3/4"	97					
	1/2"	94					
Passing	3/8"	93					
	#4	89					
Sieve	#10	85		100			
	#40	78		99			
Size	#50	72		92			
	#200	47		28			
	.02mm						
	.002mm						
DOTTSD		Sa Si	Sl Si Sa	Sl Si Sa			
AASHTO Class		A-4(0)		A-2-4(0)			
FSV Class							
Liquid Limit		15		MV			
Plastic Index		NP		NP			
Moisture Content %			3.2				
Organic Content %							
% Gravel		15		0			
% Sand		38		72			
% Silt & Clay		47		28			
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

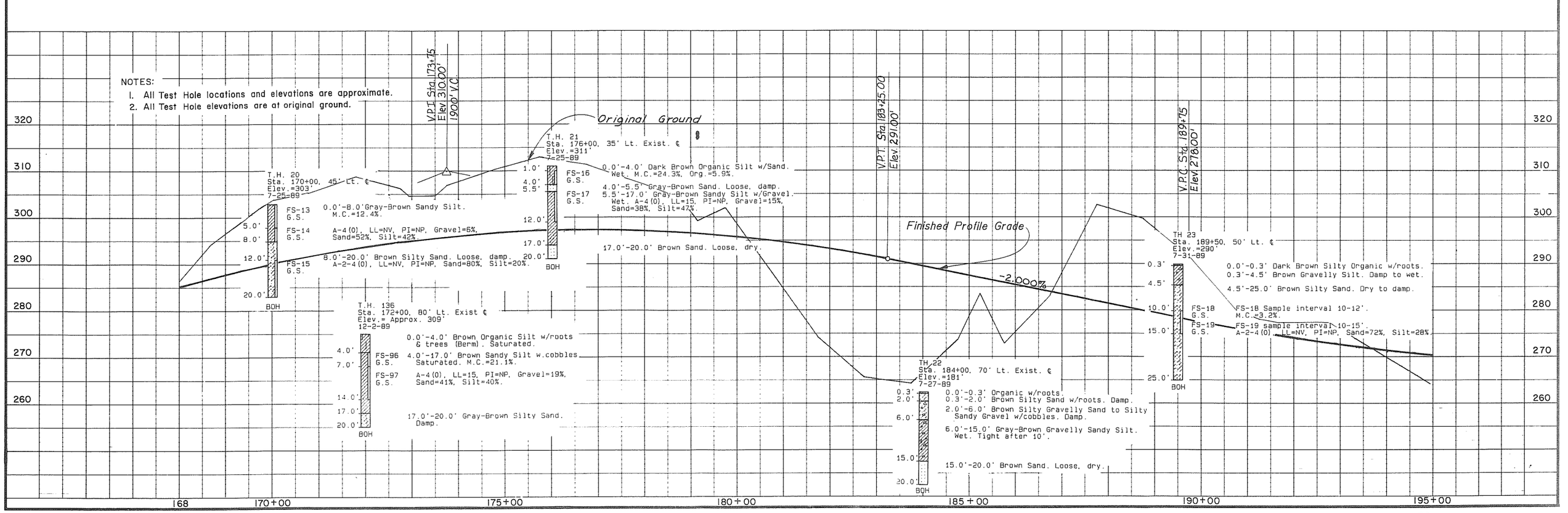
NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	7	33



NOTES:

1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.



Prepared by NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

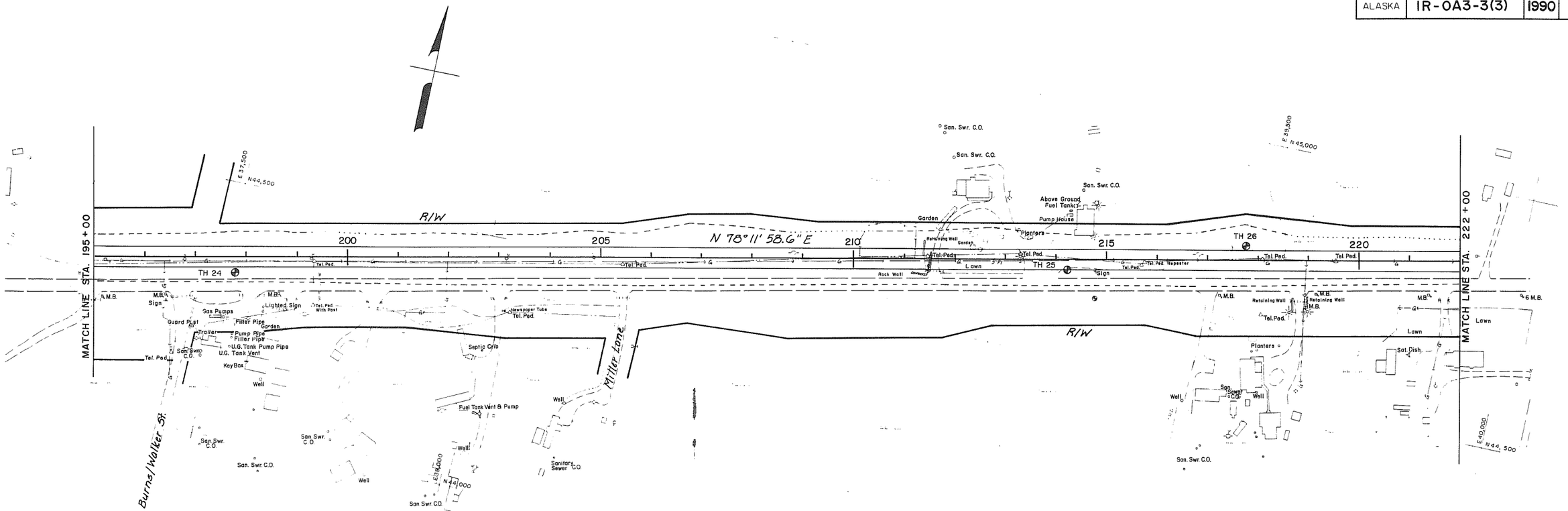
Project No. 56375 Sampled By Ottley

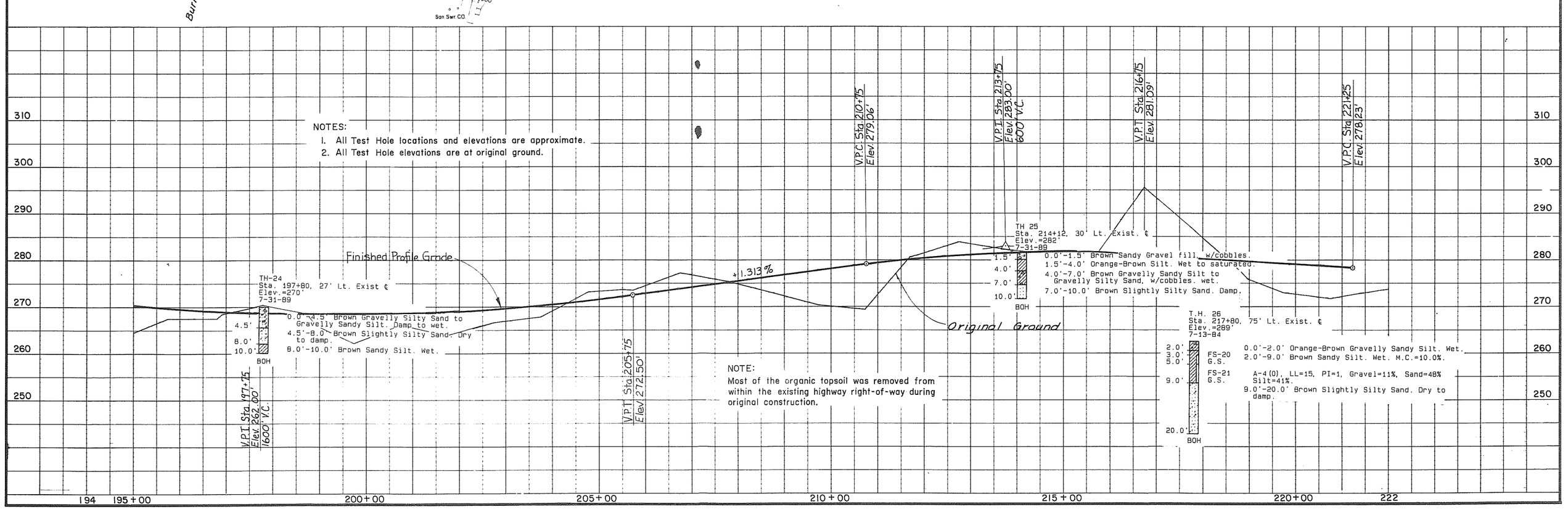
[X] Centerline
[ ] Materials Site
[ ] Structure

Station		217+80	217+80				
Offset (feet)		75' L.	75' L.				
Depth (feet)		3.0'-5.0'	5.0'-9.0'				
Test Hole No.		TH 26	TH 26				
Field No.		FS-20	FS-21				
Date Sampled		07/31/89	07/31/89				
Lab No.		89A-1367	89A-1368				
	3"						
	2"		100				
	1"		99				
Percent	3/4"		98				
	1/2"		96				
Passing	3/8"		95				
	#4		91				
Sieve	#10		89				
	#40		80				
Size	#50		69				
	#200		41				
	.02mm						
	.002mm						
DOTTSD		Grl Sa Si	Grl Sa Si				
AASHTO Class			A-4(0)				
FSV Class							
Liquid Limit			15				
Plastic Index			1				
Moisture Content %		10.0					
Organic Content %							
% Gravel			11				
% Sand			48				
% Silt & Clay			41				
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	8	33





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SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline _____

[ ] Materials Site _____

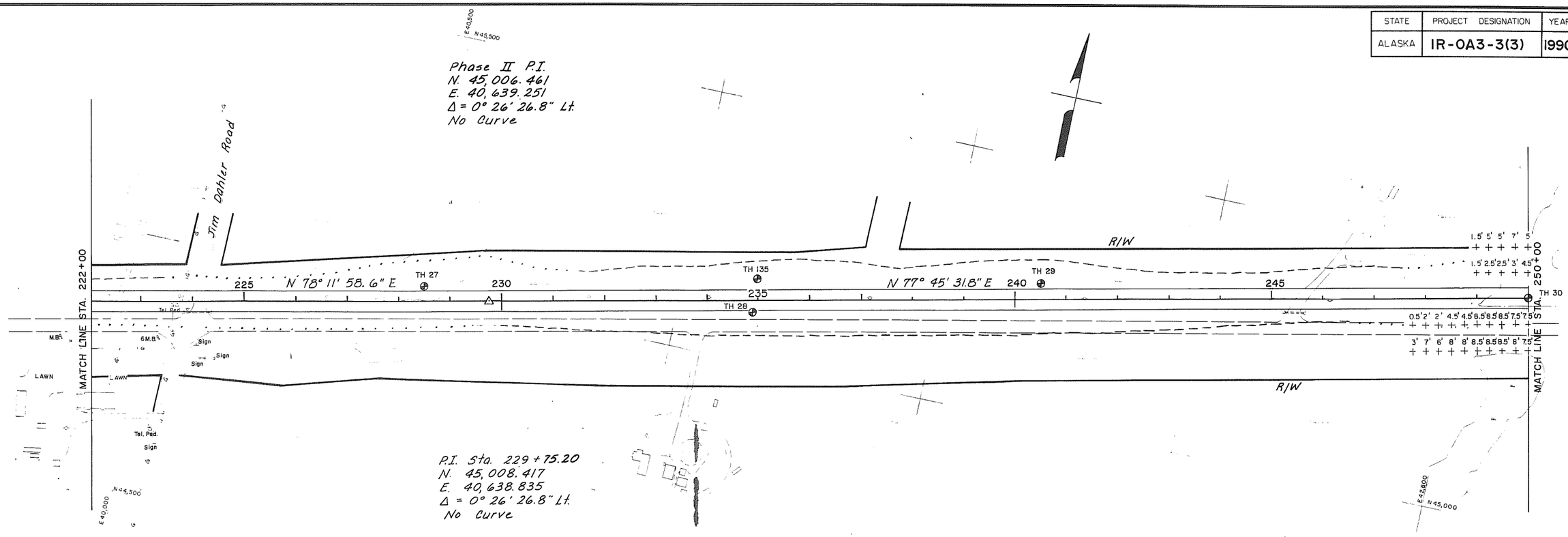
Project No. 56375 Sampled By Ottley

[ ] Structure _____

Station		235+00	235+00	240+50	240+50	250+00	
Offset (feet)		90' L.	90' L.	65' L.	65' L.	60' L.	
Depth (feet)		1.0'-6.0'	1.0'-5.0'	1.5'-4.0'	9.0'-14.0'	2.0'-5.0'	
Test Hole No.		TH 135	TH 135	TH 29	TH 29	TH 30	
Field No.		FS-94	FS-95	FS-22	FS-23	FS-24	
Date Sampled		12/01/89	12/01/89	07/31/89	07/31/89	07/31/89	
Lab No.		89A-2217	89A-2218	89A-1369	89A-1370	89A-1371	
	3"						
	2"	100					
	1"	99					
Percent	3/4"	98					
	1/2"	97					
Passing	3/8"	97					
	#4	96					
Sieve	#10	92			100		
	#40	84			98		
Size	#50	78			87		
	#200	52			12		
	.02mm						
	.002mm						
DOTTSD		Si	Si	Sa Grl Si	Sl Si Sa	Peat	
AASHTO Class		A-4(0)			A-2-4(0)		
FSV Class							
Liquid Limit		16			NV		
Plastic Index		1			NP		
Moisture Content %			12.6	15.8		617.0	
Organic Content %							
% Gravel		8			0		
% Sand		40			88		
% Silt & Clay		52			12		
Max. Dry Density		130.4					
Opt. Moisture %		9.6					
Sp.G. Fine		2.71					
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	9	33



NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

V.P.I. Sta. 224+75
Elev. 276.00
700' V.C.

V.P.T. Sta. 228+25
Elev. 284.88

V.P.C. Sta. 229+50
Elev. 280.06

V.P.I. Sta. 237+75
Elev. 309.00'
1650' V.C.

V.P.T. Sta. 246+00
Elev. 287.00

V.P.C. Sta. 246+50
Elev. 285.67

Original Ground

Finished Profile Grade

+2.54%

-2.61%

T.H. 28
Sta. 234+90, 39' Lt. Exist. ℄
Elev.=310'
7-31-89

0.0'-8.0' Gray-Brown Gravelly Sandy Silt. Wet.

8.0'-10.0' Brown Slightly Silty Sand. Damp.

8.0'
10.0'
BOH

T.H. 29
Sta. 240+50, 65' Lt. Exist. ℄
Elev.=309'
7-30-89

0.5'
1.5'
4.0'
FS-22
G.S.

0.0'-0.5' Brown Organic Silt w/roots.
0.5'-8.0' Gray-Brown Sandy Gravelly Silt w/cobbles & boulders. Wet. Blouders seen on surface. M.C.=15.8%.

8.0'
9.0'
FS-23
G.S.

8.0'-15.0' Brown Slightly Silty Sand. Loose. Dry to damp. A-2-4(0), LL=NV. PI=NP, Sand=88%, Silt=12%.

14.0'
15.0'
BOH

T.H. 135
Sta. 235+00, 90' Lt. Exist. ℄
Elev.= Approx. 310'
12-1-89

0.5'
1.0'
FS-94
G.S.

0.0'-0.5' Brown Organic w/roots.
0.5'-6.0' Gray-Brown Sandy Silt. Tight. Wet to saturated. A-4(0), LL=16, PI=1.
M.C.=12.6%, Gravel=8%, Sand=40%, Silt=52%.

6.0'
FS-95
G.S.

6.0'-10.0' Brown Sand. Loose. Dry.

10.0'
BOH

T.H. 27
Sta. 228+45, 75' Lt. ℄
Elev.=264'
7-31-89

0.0'-3.5' Brown Peat. Fibrous. Saturated.

3.5'-9.5' Gray Silt. Plastic. Saturated.

9.5'-15.0' Gray Gravelly Silt. Plastic. Saturated.

3.5'
9.5'
15.0'
BOH

T.H. 30
Sta. 250+00, 60' Lt. Exist. ℄
Elev.=259'
7-31-89

0.5'
1.5'
2.0'
5.0'
7.0'
FS-24
G.S.

0.0'-7.0' Organic, (Peat). Fibrous. Saturated. Coarse fibrous to 3'. Fine fibrous 3-7'. M.C.=617.0%.

7.0'-15.0' Gray Sandy Silt. Saturated.

15.0'
BOH

320
310
300
290
280
270
260

222
225+00
230+00
235+00
240+00
245+00
250+00

Prepared by NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

Project No. 56375 Sampled By Ottley

[X] Centerline
[ ] Materials Site
[ ] Structure

Station		261+00					
Offset (feet)		30' R.					
Depth (feet)		3.0'-8.0'					
Test Hole No.		TH 32					
Field No.		FS-25					
Date Sampled		08/01/89					
Lab No.		89A-1372					
Percent Passing Sieve Size	3"						
	2"						
	1"						
	3/4"						
	1/2"						
	3/8"	100					
	#4	100					
	#10	99					
	#40	83					
	#50	39					
	#200	2					
	.02mm						
	.002mm						
DOTTSD		Sa					
AASHTO Class		A-3(0)					
FSV Class							
Liquid Limit		NV					
Plastic Index		NP					
Moisture Content %							
Organic Content %							
% Gravel		1					
% Sand		97					
% Silt & Clay		2					
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	10	33

P.I. Sta. 259+94.74
N = 45,648.641
E = 43,589.721
Δ = 13° 41' 24.2" Lt.
D = 1° 00'
T = 687.78'
L = 1369.01'
R = 5729.58'
S = .027 ft/ft.
T.L. = 175'/175'

P.C. Sta. 253+06.96

P.T. Sta. 266+75.96

MATCH LINE STA. 250+00

MATCH LINE STA. 277+00

N 77° 45' 31.8" E

N 64° 04' 07.6" E

R/W

PHASE II P.I.
N = 45,582.234
E = 43,293.075
Δ = 13° 41' 24.2" Lt.
D = 1° 00'
T = 687.78'
L = 1369.01'
R = 5729.58'

TH 109

TH 31

TH 32

TH 33

TH 34

Murray Lane

Penny Lane

Devilla Rd.

Longmere Lake Dr.

Finished Profile Grade

+8.439%

V.P.C. Sta. 259+25
Elev. 295.93'

V.P.T. Sta. 257+50
Elev. 289.92'

V.P.C. Sta. 266+25
Elev. 320.00
400' V.C.

V.P.T. Sta. 273+25
Elev. 314.40'

Original Ground

T.H. 109
Sta. 250+73, 50' Rt. Exist. ℄
Elev. = Approx. 260'
11-14-89

0.5' 0.0'-7.8' Brown Organic Fine fibrous Peat. Saturated.
2.5'
5.0' ST-9
5.5'
7.8' ST-10
8.0' BOH

7.8'-8.0' Brown Silty Sand. Wet.

T.H. 31
Sta. 256+30, 60' Lt. Exist. ℄
Elev. = 276'
7-31-89

5.0' 0.0'-5.0' Brown Silty Sand w/cobbles & boulders. Damp.
10.0' BOH 5.0'-10.0' Gray-Brown Slightly Silty Sand Dry to damp.

T.H. 32
Sta. 261+00, 3' Rt. Exist. ℄
Elev. = 303'
8-1-89

3.0' FS-25 G.S. 0.0'-15.0' Brown Sand w/Gravel. Loose. Dry.
8.0' A-3(0), LL=NV, PI=NP, Gravel=1%, Sand=97%, Silt=2%.
15.0' BOH

T.H. 33
Sta. 265+00, 48' Rt. Exist. ℄
Elev. = 314'
8-1-89

0.5' 0.0'-0.5' Brown Organic Silt w/roots.
5.5' 0.5'-5.5' Gray-Brown Silty Sand. Wet.
10.0' BOH 5.5'-10.0' Brown Sand. Loose. Dry.

T.H. 34
Sta. 275+00, 42' Rt. Exist. ℄
Elev. = 309'
8-1-89

0.5' 0.0'-0.5' Brown Organic Silt w/roots. Saturated.
5.0' 0.5'-5.0' Brown Sandy Silt w/Gravel. Wet to saturated.
7.0' 5.0'-7.0' Gray-Brown Silt w/Gravel. Saturated.
10.0' BOH 7.0'-10.0' Brown Sand. Loose. Damp.

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

330 320 310 300 290 280 270 260

250+00 255+00 260+00 265+00 270+00 275+00 277

Prepared by NORTH PACIFIC AERIAL SURVEYS, INC. ANCHORAGE ALASKA

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	10A	33

P.I. Sta. 259+94.74
N = 45,648.641
E = 43,589.721
Δ = 13° 41' 24.2" Lt.
D = 1° 00'
T = 687.78'
L = 1369.01'
R = 5729.58'
S = .027 ft/ft.
T.L. = 175'/175'

P.C. Sta. 253+06.96

P.T. Sta. 266+75.96

MATCH LINE STA. 250+00

N 77° 45' 31.8" E

R/W "D" ℄

TH105
TH104

Phase II P.I.
N. = 45,582.234
E. = 43,293.075
Δ = 13° 41' 24.2" Lt.
D. = 1° 00' 00"
T. = 687.78'
L. = 1369.01'
R. = 5729.58'

Sta. 261+50

Sta. 265+00

Sta. 269+60

MATCH LINE STA. 277+00

N. 64° 04' 07.6" E.

Murray Lane

Penny Lane

Deville Rd.

STERLING HWY
DEVILLE RD
2(D3-1)

STOP
RI-1

STERLING HWY
MURRAY LN
2(D3-1)

STERLING HWY
PENNY LN
2(D3-1)

M2-1

D1-2
PENNY LN. — DEVILLE RD.

Sta. 268+85

Embankment	30,454	C.Y.
Common Excavation	34,447	C.Y.
Borrow, Type A	6,501	Tons
Borrow, Type B	13,199	Tons
Muck Excavation		
Waste		

T.H. 105
Sta. 250+22, 50' Rt. Exist. ℄
Elev.= Approx. 260'
11-14-89

0.5' ▼
3.0' U=452.5 D=226.25
6.0' U=498 D=181
BOH

0.0'-6.0' Brown Organic. Medium fibrous to 5'. Fine fibrous to Amorphous after 5'.

T.H. 104
Sta. 250+25, 50' Rt. Exist. ℄
Elev.= Approx. 260'
11-14-89

0.5' ▼
1.5'
3.0' U=543.9 D=259
6.0' U=388.5 D=220.15
8.5'
BOH

0.0'-8.5' Brown Organic. Medium fibrous to 4'. Saturated. Fine fibrous to Amorphous after 4'.

V.P.T. Sta. 252+00
Elev. 271.00
1100' V.C.

V.P.I. Sta. 257+50
Elev. 289.92'

V.P.C. Sta. 255+25
Elev. 295.93

+3.439%

-0.800%

Original Ground

Finished Profile Grade

V.P.I. Sta. 264+25
Elev. 320.00
1400' V.C.

V.P.T. Sta. 273+25
Elev. 314.40

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

RADIUS POINTS

POINT	RADIUS	STATION	OFFSET
(A)	20'		

250+00 255+00 260+00 265+00 270+00 275+00 277

Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC.
ANCHORAGE ALASKA

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	10B	33

P.I. Sta. 259+94.74
N = 45,698.641
E = 43,589.721
Δ = 13° 41' 24.2" Lt.
D = 1° 00'
T = 687.78'
L = 1369.01'
R = 5729.58'
S = .027 ft./ft.
T.L. = 175'/175'

P.C. Sta. 253+06.96

P.T. Sta. 266+75.96

MATCH LINE STA. 250+00

MATCH LINE STA. 277+00

N 77° 45' 31.8" E

N. 64° 04' 07.6" E.

R/W "D" ℄

R/W

TH106
TH107
TH108

Phase II P.I.
N. = 45,582.234
E. = 43,293.075
Δ = 13° 41' 24.2" Lt.
D. = 1° 00' 00"
T. = 687.78'
L. = 1369.01'
R. = 5729.58'

Deville Rd.

Penny Lane

Murray Lane

STERLING HWY
DEVILLE RD
2(D3-1)

R1-1

STOP

Sta. 268+85

Sta. 269+60

STERLING HWY
PENNY LN
2(D3-1)

Sta. 265+00
STERLING HWY
DEVILLE RD
D1-2

Sta. 261+50
W2-1

STERLING HWY
MURRAY LN
2(D3-1)

T.H. 107
Sta. 250+70, 50' Rt. Exist. ℄
Elev.= Approx. 260'
11-14-89

0.5' 2.5' 6.0' 7.5' 9.5' 10.5' BOH
U=498+ D=225
U=498+ D=226
0.0'-7.5' Brown Organic. Fine fibrous Peat. Saturated.
7.5'-9.5' Brown Silty Sand. Wet.
9.5'-10.5' Gray Silt. Saturated.

V.P.T. Sta. 252+00
Elev. 271.00
1100' V.C.

V.P.T. Sta. 257+50
Elev. 289.92'

V.P.C. Sta. 259+25
Elev. 295.93

+3.439%

Finished Profile Grade

Original Ground

-0.800%

V.P.I. Sta. 264+25
Elev. 320.00
1400' V.C.

V.P.T. Sta. 278+25
Elev. 314.40

T.H. 106
Sta. 250+28, 50' Rt. Exist. ℄
Elev.= Approx. 250'
11-14-89

0.5' 3.0' 5.5' 6.0' 8.5' BOH
ST-7
ST-8
0.0'-8.5' Brown Organic. Fibrous Peat. Coarse fibrous in bottom of ST-8.

T.H. 108
Sta. 250+67, 50' Rt. Exist. ℄
Elev.= Approx. 260'
11-14-89

0.5' 2.5' 6.0' BOH
U=518 D=363
U=1425+ D=414
0.0'-6.0' Brown Organic. Fine fibrous Peat. Saturated.

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

RADIUS POINTS			
POINT	RADIUS	STATION	OFFSET
Ⓐ	20'		

330 320 310 300 290 280 270 260

250+00 255+00 260+00 265+00 270+00 275+00 277

Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC.
ANCHORAGE ALASKA

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline _____
[ ] Materials Site _____
[ ] Structure _____

Project No. 56375 Sampled By Ottley

Station		264+00	264+00				
Offset (feet)		30' R.	30' R.				
Depth (feet)		2.0'-5.0'	6.0'-11.0'				
Test Hole No.		TH 124	TH 124				
Field No.		FS-70	FS-71				
Date Sampled		11/30/89	11/30/89				
Lab No.		89A-2193	89A-2194				
	3"						
	2"						
	1"	100					
Percent	3/4"	99					
	1/2"	96					
Passing	3/8"	94					
	#4	85					
Sieve	#10	78	100				
	#40	61	87				
Size	#50	51	48				
	#200	30	3				
	.02mm						
	.002mm						
DOTTSD		Si Sa/Sa Si	Sa				
AASHTO Class			A-3(0)				
FSV Class							
Liquid Limit			NV				
Plastic Index			NP				
Moisture Content %		10.7					
Organic Content %							
% Gravel		22	0				
% Sand		48	97				
% Silt & Clay		30	3				
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	10C	33

P.I. Sta. 259+94.74
N = 45,648.641
E = 43,589.721
Δ = 13° 41' 24.2" Lt.
D = 1° 00'
T = 687.78'
L = 1369.01'
R = 5729.58'
S = .027 ft/ft
TL. = 175'/175'

P.C. Sta. 253+06.96

P.T. Sta. 266+75.96

MATCH LINE STA. 250+00

MATCH LINE STA. 277+00

R/W "D" ℄

R/W

N. 64° 04' 07.6" E.

Phase II P.I.
N. = 45,582.234
E. = 43,293.075
Δ = 13° 41' 24.2" Lt.
D. = 1° 00' 00"
T. = 687.78'
L. = 1369.01'
R. = 5729.58'

Deville Rd.

Penny Lane

Murray Lane

Sta. 261+50

Sta. 265+00

Sta. 269+60

STOP R1-1 — STERLING HWY — MURRAY LN — 2(D3-1)

STOP R1-1 — STERLING HWY — PENNY LN — 2(D3-1)

STOP R1-1 — STERLING HWY — DEVILLE RD — 2(D3-1)

STOP R1-1 Sta. 268+85 — STERLING HWY — DEVILLE RD — 2(D3-1)

W2-1

D1-2 DEVILLE RD PENNY LN

Embankment	30,454	C.Y.
Common Excavation	34,447	C.Y.
Borrow, Type A	6,501	Tons
Borrow, Type B	13,199	Tons
Muck Excavation		
Waste		

T.H. 111
Sta. 250+53, 75' Lt. Exist. ℄
Elev.= Approx. 260'
11-15-89

3.0' U=362 D=226
6.0' U=339 D=136
9.0' U=498 D=407
10.5' BOH

0.0'-9.0' Brown Organic, Medium to fine fibrous Peat, Saturated.

9.0'-10.5' Gray Clayey Silt.

T.H. 110
Sta. 250+50, 75' Lt. Exist. ℄
Elev.= Approx. 260'
11-15-89

0.5' 2.0' U=414 D=285
5.0' U=363 D=207
12.5'
15.0' BOH

0.0'-12.5' Brown Organic, Medium fibrous Peat, Saturated.

With thin Silt Lenses after 6'.

12.5'-15.0' Gray Silt.

T.H. 124
Sta. 264+00, 30' Rt. Exist. ℄
Elev.= Approx. 310'
11-30-89

2.0' 2.5' 5.0' 6.0' 11.0' 15.0' BOH

FS-70 G.S.
FS-71 G.S.

0.0'-5.0' Brown Gravelly Silty Sand w/Gravel top 2'. M.C.=10.7%. Gravel=22%, Sand=48%, Silt=30%.

5.0'-15.0' Brown Sand, Loose, Dry to damp, A-3(0), LL=NV, PI=NP. Sand=97%, Silt=3%.

V.P.T. Sta. 252+00 Elev. 271.00 1100' V.C.

V.P.T. Sta. 257+50 Elev. 289.92'

V.P.C. Sta. 259+25 Elev. 295.93

+3.429%

Finished Profile Grade

Original Ground

-0.800%

V.P.I. Sta. 266+25 Elev. 320.00 1400' V.C.

V.P.T. Sta. 273+25 Elev. 314.40

RADIUS POINTS			
POINT	RADIUS	STATION	OFFSET
Ⓐ	20'		

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

330 320 310 300 290 280 270 260

250+00 255+00 260+00 265+00 270+00 275+00 277

Reported by: NORTH PACIFIC AERIAL SURVEYS, INC.

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	10D	33

P.I. Sta. 259+94.74
N = 45,698.641
E = 43,589.721
Δ = 13°41'24.2" Lt.
D = 1°00'
T = 687.78'
L = 1369.01'
R = 5729.58'
S = .027 ft/ft
T.L. = 175'/175'

P.C. Sta. 253+06.96

P.T. Sta. 266+75.96

MATCH LINE STA. 250+00

MATCH LINE STA. 277+00

R/W "D" ℄

TH113

TH112, 5°31'18" E

N 45,500

N 46,000

E 43,000

E 44,000

Phase II P.I.
N. = 45,582.234
E. = 43,293.075
Δ = 13° 41' 24.2" Lt.
D. = 1° 00' 00"
T. = 687.78'
L. = 1369.01'
R. = 5729.58'

N. 64° 04' 07.6" E.

Murray Lane

Deville Rd.

Penny Lane

Sta. 261+50

Sta. 265+00

Sta. 269+60

Sta. 268+85

STOP
R1-1

STERLING HWY
MURRAY LN
2(D3-1)

STERLING HWY
PENNY LN
2(D3-1)

DEVILLE RD
2(D3-1)

W2-1

D1-2

Embankment	30,454	C.Y.
Common Excavation	34,447	C.Y.
Borrow, Type A	6,501	Tons
Borrow, Type B	13,199	Tons
Muck Excavation		
Waste		

T.H. 112
Sta. 250+47, 75' Lt. Exist. ℄
Elev.= Approx. 260'
11-15-89

0.5'
2.0'
4.5'
5.0'
7.5'
ST-11
ST-12
BOH

0.0'-7.5' Brown Organic. Fine to coarse fibrous Peat. Saturated.

T.H. 113
Sta. 250+20, 75' Lt. Exist. ℄
Elev.= Approx. 260'
11-15-89

0.5'
2.5'
5.0'
8.0'
8.5'
10.5'
U=259
D=181
U=596
D=246
BOH

0.0'-8.0' Brown Organic. Fine to medium fibrous Peat. Saturated.
8.0'-8.5' Gray Silt.
8.5'-10.5' Brown Silty Sand. Saturated.

V.P.T. Sta. 252+00
Elev. 271.00
1100' V.C.

V.P.T. Sta. 252+50
Elev. 289.92'

V.P.C. Sta. 259+25
Elev. 295.93

+3.439%

-0.800%

Original Ground

Finished Profile Grade

V.P.T. Sta. 266+25
Elev. 320.00
1400' V.C.

V.P.T. Sta. 273+25
Elev. 314.40

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

RADIUS POINTS			
POINT	RADIUS	STATION	OFFSET
(A)	20'		

250+00 255+00 260+00 265+00 270+00 275+00 277

330 320 310 300 290 280 270 260

reported by: NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

Project No. 56375 Sampled By Ottley

[X] Centerline
[ ] Materials Site
[ ] Structure

Station		260+00	260+00				
Offset (feet)		30' R.	30' R.				
Depth (feet)		2.5'-9.0'	2.5'-5.5'				
Test Hole No.		TH 125	TH 125				
Field No.		FS-72	FS-73				
Date Sampled		11/30/89	11/30/89				
Lab No.		89A-2195	89A-2196				
Percent Passing Sieve Size	3"						
	2"						
	1"						
	3/4"						
	1/2"	100					
	3/8"	99					
	#4	99					
	#10	98					
	#40	62					
	#50	33					
	#200	3					
	.02mm						
	.002mm						
DOTTSD		Sa	Sa				
AASHTO Class		A-3(0)					
FSV Class							
Liquid Limit		NV					
Plastic Index		NP					
Moisture Content %			3.8				
Organic Content %							
% Gravel		2					
% Sand		95					
% Silt & Clay		3					
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	10E	33

P.I. Sta. 259+94.74
N = 45,648.641
E = 43,589.721
Δ = 13° 41' 24.2" Lt.
D = 1° 00'
T = 687.78'
L = 1369.01'
R = 5729.58'
S = .027 ft/ft
T.L. = 175'/175'

P.C. Sta. 253+06.96

P.T. Sta. 266+75.96

MATCH LINE STA. 250+00

MATCH LINE STA. 277+00

R/W "D" ℄

THI15 ⋔ THI14 N 45° 31' 18" E

Phase II P.I.
N. = 45,582.234
E. = 43,293.075
Δ = 13° 41' 24.2" Lt.
D. = 1° 00' 00"
T. = 687.78'
L. = 1369.01'
R. = 5729.58'

Murray Lane

Penny Lane

Dewville Rd.

STERLING HWY
DEVILLE RD
2(D3-1)

R1-1 STOP Sta. 268+85

Sta. 265+00

Sta. 269+60

STOP R1-1 STERLING HWY MURRAY LN 2(D3-1)

STOP R1-1 STERLING HWY PENNY LN 2(D3-1)

W2-1

N. 64° 04' 07.6" E.

Embankment	30,454	C.Y.
Common Excavation	34,447	C.Y.
Borrow, Type A	6,501	Tons
Borrow, Type B	13,199	Tons
Muck Excavation		
Waste		

T.H. 115
Sta. 250+17, 75' Lt. Exist. ℄
Elev. = Approx. 260'
11-16-89

0.0'-8.5' Brown Organic, Fine to medium fibrous Peat. Saturated.

ST-13
ST-14
BOH

T.H. 114
Sta. 250+23, 75' Lt. Exist. ℄
Elev. = Approx. 260'
11-15-89/11-16-89

0.0'-6.0' Brown Organic, Fine to medium fibrous Peat. Saturated. Mostly water, w/Organic top 3'.

U=113 D=81 U=498+ D=235 U=498 D=249
BOH

T.H. 125
Sta. 260+00, 30' Rt. Exist ℄
Elev. = Approx. 298'
11-30-89

0.0'-2.0' Brown Silty Sand w/Gravel. Fill.
2.0'-10.0' Brown Sand. Loose.
A-3(0), LL=NV, PI=NP,
M.C.=3.8%, Gravel=2%, Sand=95%,
Silt=3%.

FS-72 G.S.
FS-73 G.S.
BOH

V.P.T. Sta. 252+00
Elev. 271.00
1100' V.C.

V.P.T. Sta. 257+50
Elev. 289.92'

V.P.C. Sta. 259+25
Elev. 295.93

+3.43%

V.P.T. Sta. 264+25
Elev. 320.60
1400' V.C.

-0.800%

V.P.T. Sta. 273+25
Elev. 314.40

Finished Profile Grade

Original Ground

RADIUS POINTS			
POINT	RADIUS	STATION	OFFSET
(A)	20'		

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

330 320 310 300 290 280 270 260

250+00 255+00 260+00 265+00 270+00 275+00 277

Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline

[ ] Materials Site

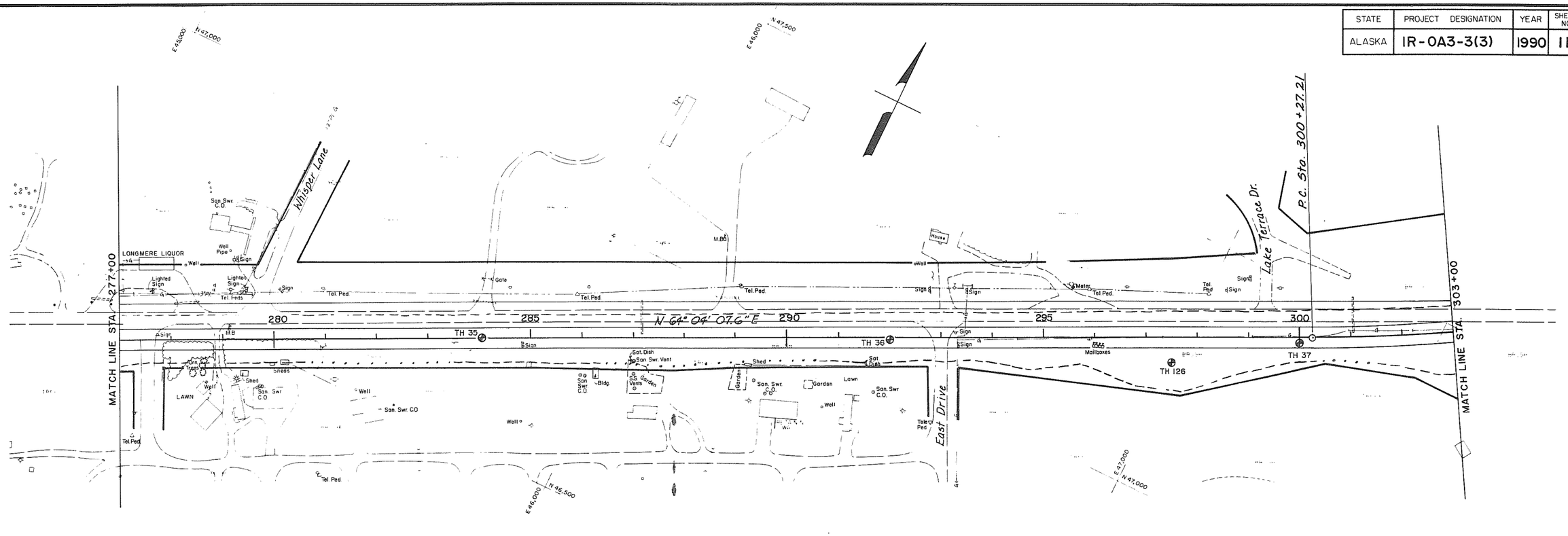
Project No. 56375 Sampled By Ottley

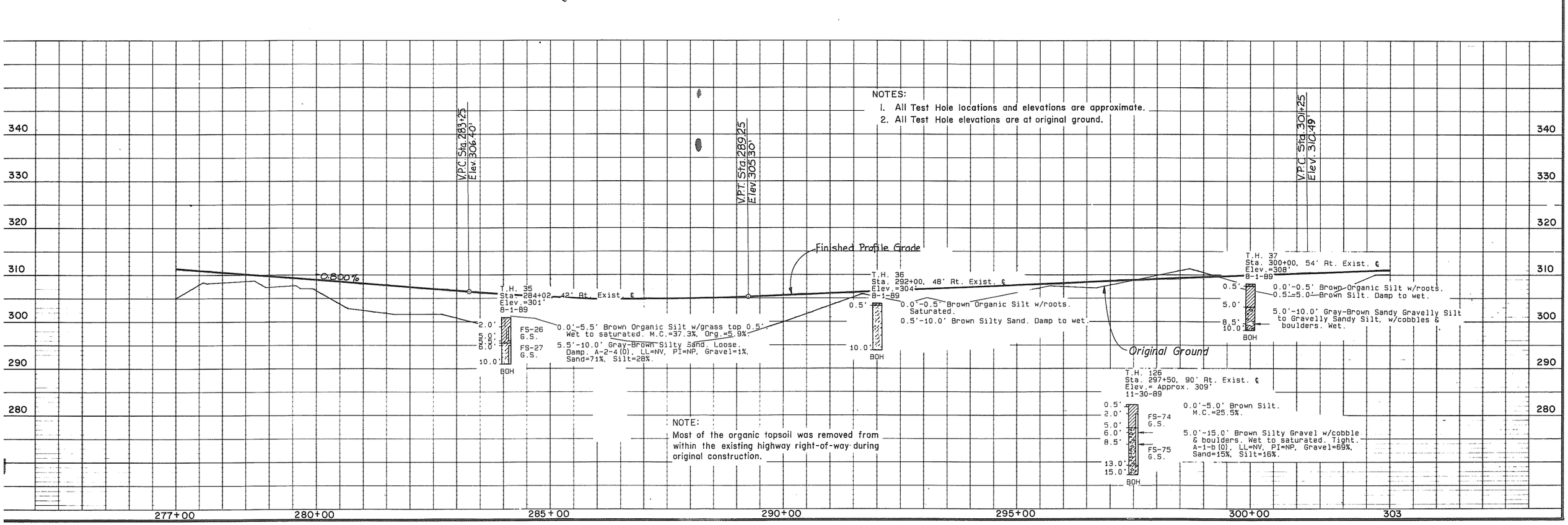
[ ] Structure

Station		284+02	284+02	297+50	297+50		
Offset (feet)		42' R.	42' R.	90' R.	90' R.		
Depth (feet)		2.0'-5.0'	6.0'-10.0'	2.0'-5.0'	5.0'-13.0'		
Test Hole No.		TH 35	TH 35	TH 126	TH 126		
Field No.		FS-26	FS-27	FS-74	FS-75		
Date Sampled		08/01/89	08/01/89	11/30/89	11/30/89		
Lab No.		89A-1373	89A-1374	89A-2197	89A-2198		
	3"						
	2"		100		100		
	1"		100		79		
Percent	3/4"		100		68		
	1/2"		99		52		
Passing	3/8"		99		44		
	#4		99		33		
Sieve	#10		99		31		
	#40		94		27		
Size	#50		82		25		
	#200		28		16		
	.02mm						
	.002mm						
DOTTSD		Si	Sl Si Sa	Si	Si Grl		
AASHTO Class			A-2-4(0)		A-1-b(0)		
FSV Class							
Liquid Limit			NV		NV		
Plastic Index			NP		NP		
Moisture Content %		37.3		25.5			
Organic Content %		5.9					
% Gravel			1		69		
% Sand			71		15		
% Silt & Clay			28		16		
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	11	33





SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline _____

[ ] Materials Site _____

Project No. 56375 Sampled By Ottley

[ ] Structure _____

Station		303+00	303+00	307+00	307+00	327+00	328+00
Offset (feet)		90' R.	90' R.	45' L.	45' L.	21' L.	100' L.
Depth (feet)		3.5'-6.0'	3.5'-9.0'	1.0'-3.0'	3.0'-8.0'	0.0'-2.0'	3.0'-6.0'
Test Hole No.		TH 127	TH 127	TH 38	TH 38	TH 40	TH 128
Field No.		FS-76	FS-77	FS-28	FS-29	FS-30	FS-78
Date Sampled		11/30/89	11/30/89	08/01/89	08/01/89	08/01/89	11/30/89
Lab No.		89A-2199	89A-2200	89A-1375	89A-1376	89A-1377	89A-2201
	3"		100		100		
	2"		98		97	100	
	1"		71		90	95	
Percent	3/4"		51		85	92	
	1/2"		32		74	88	
Passing	3/8"		26		67	85	
	#4		19		55	76	
Sieve	#10		16		46	67	
	#40		13		23	40	
Size	#50		11		15	26	
	#200		7		3	7	
	.02mm						
	.002mm						
DOTTSD		Si Sa Grl	Si Sa Grl	Sa Grl	Sa Grl	Sa Grl	Si Sa Grl
AASHTO Class			A-1-a(0)		A-1-a(0)	A-1-b(0)	
FSV Class							
Liquid Limit			NV		NV	NV	
Plastic Index			NP		NP	NP	
Moisture Content %		4.0		2.1			10.0
Organic Content %							
% Gravel			84		54	33	
% Sand			9		43	60	
% Silt & Clay			7		3	7	
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	12	33

P.I. Sta. 306+14.88
N = 47,671.855
E = 47,750.594
Δ = 17° 29' 33.6" Lt.
D = 1° 30'
T = 587.66'
L = 1166.18'
R = 3819.72
S = .038 ft/ft
T.L. = 175'/175'

P.T. Sta. 311+93.39

PHASE II P.I.
N = 47,834.844
E = 47,925.716
Δ = 17° 29' 33.6" Lt.
D = 1° 30'
T = 587.66'
L = 1166.18'
R = 3819.72

N 46°34'34.0" E

MATCH LINE STA. 303+00

MATCH LINE STA. 330+00

R/W

TREES

TH 127

TH 38

TH 39

TH 40

TH 128

Panoramic Drive

St. Teresa Rd.

Tel. Ped.

Sign

Gate

Mailboxes

4 Signs

Well

Lawn

Shed

Garage

House

Wood Fence

San. Swr. Cleanouts

2 Tel. Peds.

E 47,500 N 49,000

E 48,000 N 47,500

E 49,000 N 49,500

E 48,500 N 49,000

V.P.I. Sta. 304+75
Elev. 312.00'
100' V.C.

V.P.I. Sta. 308+25
Elev. 300.81'

V.P.C. Sta. 312+00
Elev. 305.40'

V.P.T./V.P.C. Sta. 320+00
Elev. 317.65'

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

T.H. 38
Sta 307+00, 45' Lt. Exist. ℄
Elev.=313'
8-1-89

1.0'
3.0'
8.0'
9.0'
10.0'
BOH

FS-28 G.S.
FS-29 G.S.

0.0'-8.0' Brown Sandy Gravel w/cobbles & boulders. Loose. Damp. M.C.=2.1%. A-1-a (0) LL=NV, PI=NP, Gravel=54%, Sand=43%, Silt=3%.

9.0'-10.0' Brown Sand. Loose. Dry.

T.H. 127
Sta. 303+00, 90' Rt. Exist ℄
Elev.= Approx. 315'
11-30-89

0.5'
1.5'
9.0'
15.0'
BOH

FS-76 G.S.
FS-77 G.S.

0.0'-1.5' Brown Organic w/roots.
1.5'-2.5' Brown Silt w/Organic. Saturated.
2.5'-3.5' Gray-Brown Silty Gravel. Wet to saturated.
3.5'-15.0' Brown Slightly Silty Gravel w/cobbles. Damp to wet. A-1-a (0), LL=NV, PI=NP, Gravel=84%, Sand=9%, Silt=7%, M.C.=4.0%.

T.H. 39
Sta. 316+30, 60' Lt. Exist. ℄
Elev.=281'
8-1-89

7.0'
12.0'
13.0'
15.0'
BOH

0.0'-7.0' Brown Silt w/roots, w/Organic top 0.5'. Damp.
7.0'-12.0' Brown Gravelly Silt w/cobbles Saturated.
12.0'-15.0' Brown Sand. Saturated.

T.H. 40
Sta. 327+00, 21' Lt. Exist. ℄
Elev.=340
8-1-89

2.0'
3.0'
4.5'
5.5'
7.0'
9.0'
10.0'
BOH

FS-30 G.S.

0.0'-4.5' Brown Slightly Silty Gravelly Sand, Fill. w/cobbles & boulders. Damp. LL=NV, PI=NP, Gravel=33%, Sand=60%, Silt=7%.
4.5'-10.0' Gray-Brown Silty Sandy Gravel w/cobbles & boulders. Wet.

Finished Profile Grade

T.H. 128
Sta. 328+00, 100' Lt. Exist. ℄
Elev.= Approx. 345'
11-30-89

0.5'
1.5'
6.0'
12.0'
15.0'
BOH

FS-78 GS
FS-79 G.S.

0.0'-1.5' Brown Organic w/roots.
1.5'-2.5' Gray-Brown Silt.
2.5'-15.0' Gray-Brown Silty Sandy Gravel w/cobbles. M.C.=10.0%. A-2-4 (0), LL=14, PI=NP, Gravel=45%, Sand=27%, Silt=28%.

Original Ground

360 350 340 330 320 310 300 290 280 270

303 305+00 310+00 315+00 320+00 325+00 330+00

Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline

[ ] Materials Site

Project No. 56375 Sampled By Ottley

[ ] Structure

Station		328+00					
Offset (feet)		100' L.					
Depth (feet)		6.0'-12.0'					
Test Hole No.		TH 128					
Field No.		FS-79					
Date Sampled		11/30/89					
Lab No.		89A-2202					
	3"						
	2"	100					
	1"	96					
Percent	3/4"	90					
	1/2"	81					
Passing	3/8"	75					
	#4	64					
Sieve	#10	55					
	#40	47					
Size	#50	43					
	#200	28					
	.02mm						
	.002mm						
DOTTSD		Si Sa Grl					
AASHTO Class		A-2-4(0)					
FSV Class							
Liquid Limit		14					
Plastic Index		NP					
Moisture Content %							
Organic Content %							
% Gravel		45					
% Sand		27					
% Silt & Clay		28					
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline

[ ] Materials Site

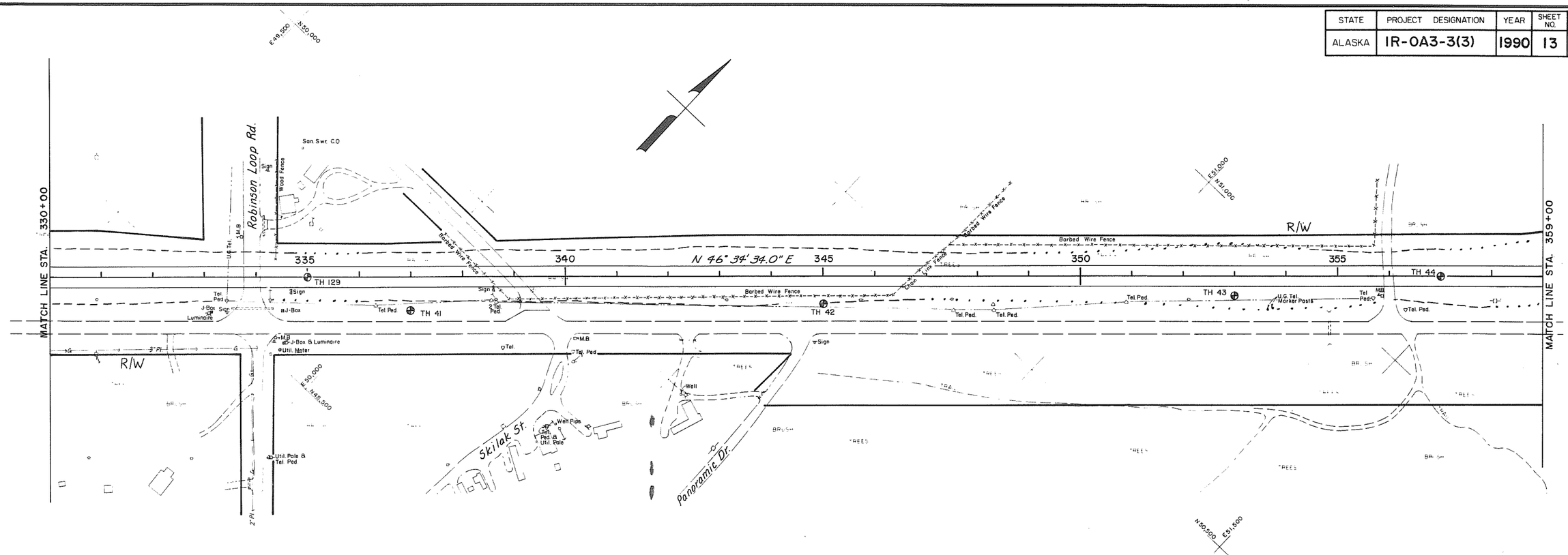
Project No. 56375 Sampled By Ottley

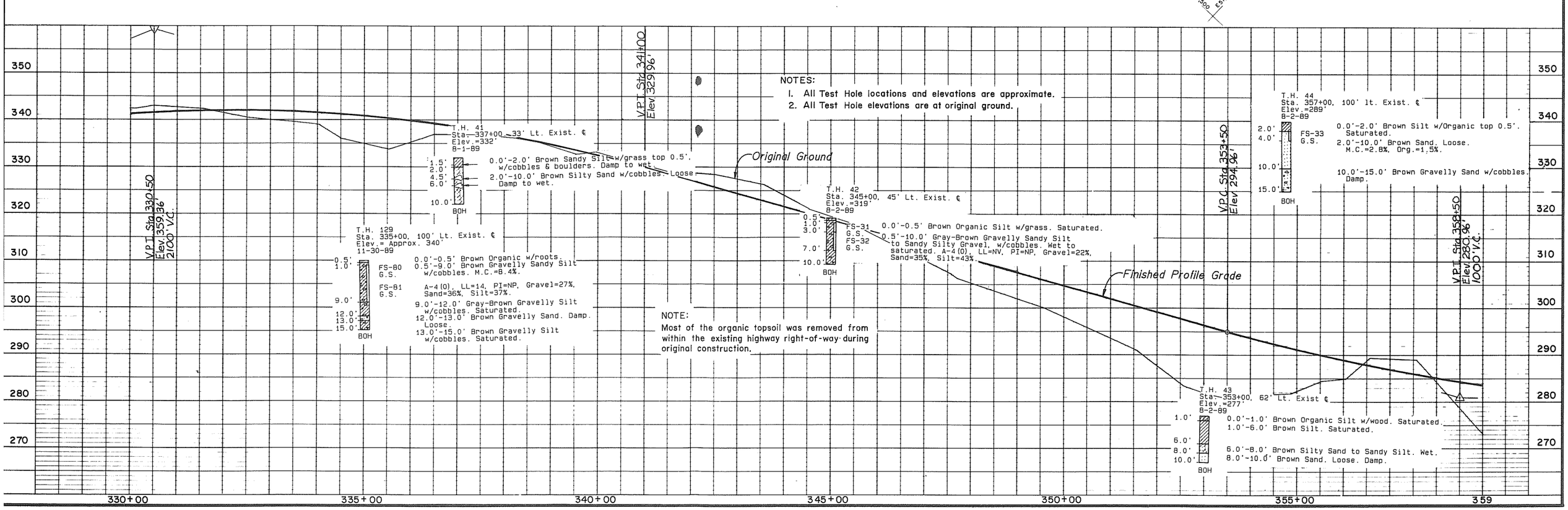
[ ] Structure

Station		335+00	335+00	345+00	345+00	357+00	
Offset (feet)		100' L.	100' L.	45' L.	45' L.	100' L.	
Depth (feet)		1.0'-5.0'	1.0'-9.0'	1.0'-3.0'	3.0'-7.0'	2.0'-4.0'	
Test Hole No.		TH 129	TH 129	TH 42	TH 42	TH 44	
Field No.		FS-80	FS-81	FS-31	FS-32	FS-33	
Date Sampled		11/30/89	11/30/89	08/02/89	08/02/89	08/02/89	
Lab No.		89A-2203	89A-2204	89A-1378	89A-1379	89A-1380	
	3"						
	2"		100		100		
	1"		99		97		
Percent	3/4"		97		94		
	1/2"		92		91		
Passing	3/8"		89		88		
	#4		79		82		
Sieve	#10		73		78		
	#40		62		70		
Size	#50		58		64		
	#200		37		43		
	.02mm						
	.002mm						
DOTTSD		Si Sa Grl	Si Sa Grl	Sa Si Grl	Sa Si Grl	Sa	
AASHTO Class			A-4(0)		A-4(0)		
FSV Class							
Liquid Limit			14		18		
Plastic Index			NP		NP		
Moisture Content %		8.4		13.0		2.8	
Organic Content %						1.5	
% Gravel			27		22		
% Sand			36		35		
% Silt & Clay			37		43		
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	13	33





Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline

[ ] Materials Site

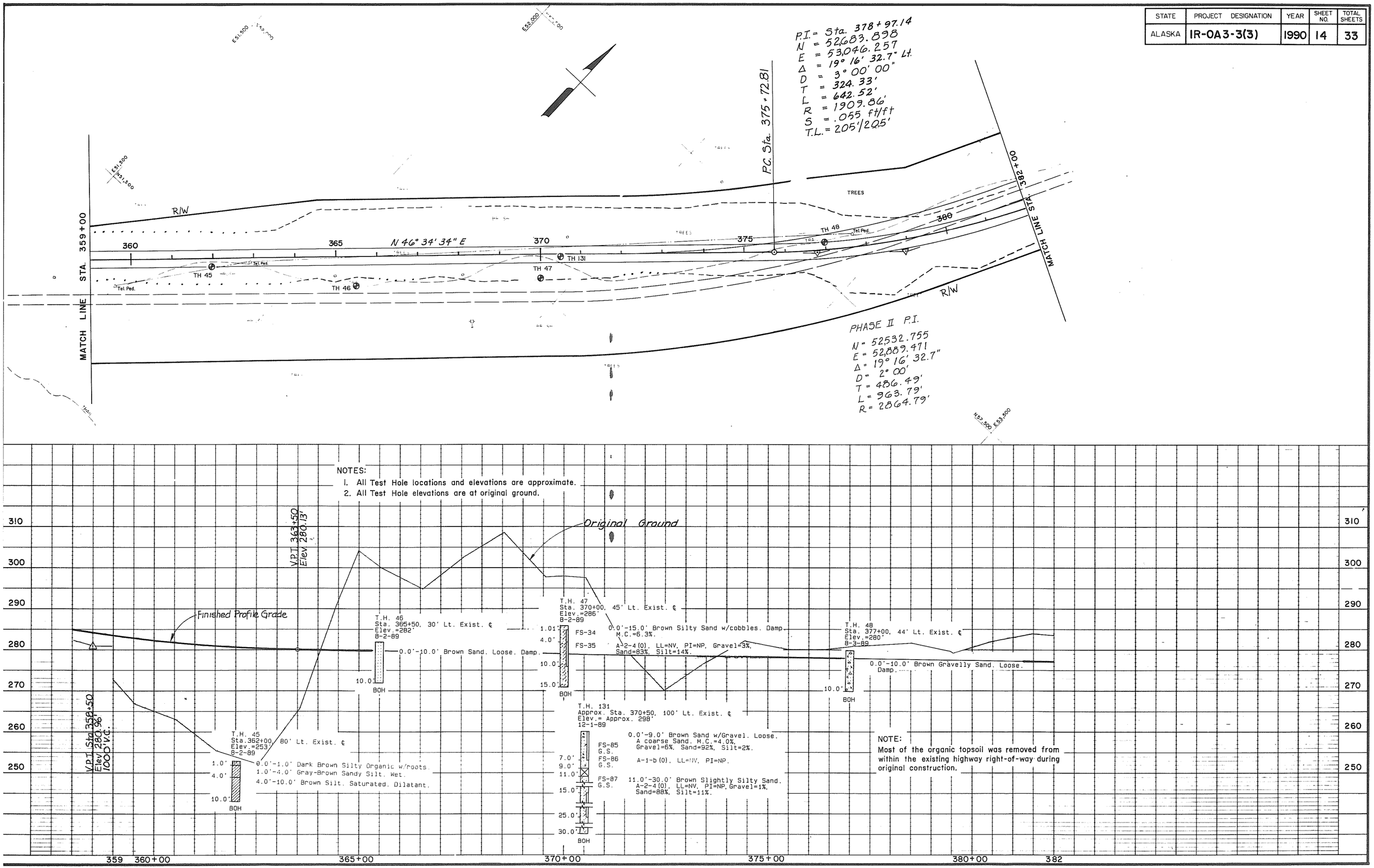
Project No. 56375 Sampled By Ottley

[ ] Structure

Station		370+00	370+00	370+50	370+50	370+50	
Offset (feet)		45' L.	45' L.	100' L.	100' L.	100' L.	
Depth (feet)		1.0'-4.0'	4.0'-10.0'	0.0'-7.0'	0.0'-7.0'	15.0'-25.0'	
Test Hole No.		TH 47	TH 47	TH 131	TH 131	TH 131	
Field No.		FS-34	FS-35	FS-85	FS-86	FS-87	
Date Sampled		08/02/89	08/02/89	12/01/89	12/01/89	12/01/89	
Lab No.		89A-1381	89A-1382	89A-2208	89A-2209	89A-2210	
	3"						
	2"						
	1"						
Percent	3/4"						
	1/2"		100		100		
Passing	3/8"		100		99	100	
	#4		98		98	100	
Sieve	#10		97		94	99	
	#40		94		50	91	
Size	#50		88		22	81	
	#200		14		2	11	
	.02mm						
	.002mm						
DOTTSD		Grl Sa	Grl Sa	Sa	Sa	Sa	
AASHTO Class			A-2-4(0)		A-1-b(0)	A-2-4(0)	
FSV Class							
Liquid Limit			NV		NV	NV	
Plastic Index			NP		NP	NP	
Moisture Content %		6.3		4.0			
Organic Content %							
% Gravel			3		6	1	
% Sand			83		92	88	
% Silt & Clay			14		2	11	
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	14	33



Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

Project No. 56375 Sampled By Ottley

[X] Centerline
[ ] Materials Site
[ ] Structure

Station		398+00	398+00	398+00	410+75	410+75	
Offset (feet)		40' R.	40' R.	40' R.	42' R.	42' R.	
Depth (feet)		2.0'-6.0'	2.0'-6.0'	6.0'-12.0'	5.0'-9.0'	0.0'-3.0'	
Test Hole No.		TH 130	TH 130	TH 130	TH 52	TH 52	
Field No.		FS-82	FS-83	FS-84	FS-38	FS-39	
Date Sampled		12/01/89	12/01/89	12/01/89	08/03/89	08/03/89	
Lab No.		89A-2205	89A-2206	89A-2207	89A-1385	89A-1386	
	3"						
	2"			100	100		
	1"			95	91		
Percent	3/4"			91	84		
	1/2"			85	75		
Passing	3/8"		100	80	69		
	#4		99	72	60		
Sieve	#10		97	67	53		
	#40		78	41	29		
Size	#50		38	26	22		
	#200		4	8	10		
	.02mm						
	.002mm						
DOTTSD		Sa	Sa	Grl Sa	Sa Grl	Si	
AASHTO Class			A-3(0)	A-1-b(0)	A-1-b(0)		
FSV Class							
Liquid Limit			NV	NV	NV		
Plastic Index			NP	NP	NP		
Moisture Content %		4.3				21.4	
Organic Content %						3.3	
% Gravel			3	33	47		
% Sand			93	59	43		
% Silt & Clay			4	8	10		
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	15	33

PHASE II P.I.
N = 53,672.813
E = 53,477.908
Δ = 19° 02' 31.8" Rt.
D = 2° 00'
T = 480.49'
L = 952.11'
R = 2864.79'

P.T. 382+15.34

STA. 382+00

MATCH LINE

N 27° 18' 01.3" E

P.C. Sta. 384+75.53

P.I. Sta. 389+56.01
N = 53,630.274
E = 53,534.726
Δ = 19° 02' 31.8" Rt.
D = 2° 00'
T = 480.49'
L = 952.11'
R = 2864.79'
S = .044 ft./ft.
T.L. = 180'/180'

P.T. Sta. 394+27.63

N 96° 20' 33.1" E

MATCH LINE STA. 412+00

Evergreen Drive

Tom Hoefle

TH 49 · TH 50 · TH 51 · TH 52 · TH 130

Guard Post · 5 Mailboxes · Mailbox · Well · Well Pipe · Wood Ref. Wall · Orn Tree · Wall Pipe · Chain Link Fence · Wood Fence · B. Sign · Gate · Lawn · Util. Pole, Tel. Ped. U.G. Tel. Marker Post · Tel. Ped. · Sam. Swr. CO.

TREES · BRUSH · TRAIL

E 53,000 N 53,500 · E 53,500 N 53,000 · E 54,500 N 55,000 · E 55,000 N 54,500

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

V.P.C. Sta. 392+50
Elev. 290.82

V.P.I. Sta. 388+50.00
Elev. 276.00'
V.C. 750'

V.P.I. Sta. 401+25.00
Elev. 323.25'
V.C. 1750'

V.P.T. Sta. 410+00.00
Elev. 307.26'

+3.705%

Original Ground

Finished Profile Grade

T.H. 49
Sta. 385+00, 45' Rt. Exist. ℄
Elev. = 284'
8-3-89

FS-36 G.S. 3.0'
FS-37 G.S. 4.0'
8.0'
15.0' BOH

0.0'-3.0' Brown Silty Gravelly Sand w/roots. M.C. = 7.7%.
3.0'-15.0' Brown Silty Sandy Gravel w/cobbles. Loose. damp. A-1-b (0). LL=NV, PI=NP, Gravel=46%, Sand=41%, Silt=13%.

T.H. 50
Sta. 389+90, 44' Rt. ℄
Elev. = 279'
8-3-89

2.0'
4.5'
10.0' BOH

0.0'-2.0' Brown Slightly Silty Sandy Gravel Fill, w/cobbles. Loose. Damp.
2.0'-4.5' Brown Organic Silt. Wet.
4.5'-10.0' Brown Slightly Silty Sandy Gravel w/cobbles. Damp.

T.H. 51
Sta. 399+85, 42' Rt. Exist. ℄
Elev. = 314'
8-3-89

5.5'
10.0' BOH

0.0'-5.5' Brown Sand w/Gravel. Loose. Damp
5.5'-10.0' Brown Gravelly Sand w/cobbles. Loose.

T.H. 130
Sta. 398+00, 40' Rt. Exist. ℄
Elev. = Approx. 315'
12-1-89

1.0'
2.0'
6.0'
12.0'
15.0' BOH

FS-82 G.S.
FS-83 G.S.
FS-84 G.S.

0.0'-2.0' Brown Silt. Wet to saturated.
2.0'-6.0' Brown Sand. Loose. A-3 (0). LL=NV, PI=NP, M.C.=4.3%, Gravel=3%, Sand=93%, Silt=4%.
6.0'-15.0' Brown Slightly Silty Gravelly Sand. Loose Damp. A-1-b (0). LL=NV, PI=NP, Gravel=33%, Sand=59%, Silt=8%.

T.H. 52
Sta. 410+75, 42' Rt. Exist. ℄
Elev. = 307'
8-3-89

3.0'
5.0'
9.0'
10.0' BOH

FS-39 G.S.
FS-38 G.S.

0.0'-3.0' Brown Silt. M.C. = 21.4%, Org. = 3.3%.
3.0'-5.0' Brown Sandy Silt. Damp to wet.
5.0'-10.0' Brown Slightly Silty Sandy Gravel w/cobbles. Loose. A-1-b (0). LL=NV, PI=NP, Gravel=47%, Sand=43%, Silt=10%.

320 · 310 · 300 · 290 · 280 · 270 · 260

382 · 385+00 · 390+00 · 395+00 · 400+00 · 405+00 · 410+00 · 412

Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

Project No. 56375 Sampled By Ottley

[X] Centerline
[ ] Materials Site
[ ] Structure

Station		435+00	435+00				
Offset (feet)		90' L.	90' L.				
Depth (feet)		3.0'-5.0'	3.0'-10.0'				
Test Hole No.		TH 132	TH 132				
Field No.		FS-88	FS-89				
Date Sampled		12/01/89	12/01/89				
Lab No.		89A-2211	89A-2212				
	3"						
	2"						
	1"		100				
Percent	3/4"		98				
	1/2"		92				
Passing	3/8"		89				
	#4		81				
Sieve	#10		70				
	#40		32				
Size	#50		19				
	#200		3				
	.02mm						
	.002mm						
DOTTSD		Sa	Sa				
AASHTO Class			A-1-b(0)				
FSV Class							
Liquid Limit			NV				
Plastic Index			NP				
Moisture Content %		3.6					
Organic Content %							
% Gravel			30				
% Sand			67				
% Silt & Clay			3				
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	16	33

PHASE II P.I.
N = 55,834.071
E = 55,742.90
Δ = 34° 04' 56.9" Rt.
D = 3° 00'
T = 585.41'
L = 1136.08'
R = 1909.86'

N56,000
E 55,300
E55,000
N 55,500
TREES
Tel. Ped.
Water Pump & Well
San. Swr. C.O.
Sign
GRAVEL PIT
CUT LINE
TH 53
TH 54
TH 132
Tel Ped
N 46° 20' 33.7" E
MATCH LINE STA. 412+00
MATCH LINE STA. 436+00
P.C. Sta. 415+78.72
P.I. Sta. 421+73.13
N = 55,857.313
E = 55,868.656
Δ = 34° 04' 57.0 Rt.
D = 3° 00'
T = 585.41'
L = 1136.08'
R = 1909.86'
S = .055 ft./ft.
T.L. = 205/205'
P.T. Sta. 427+23.80
P.C. Sta. 435+59.91
E 43,000
N55,300
N55,500

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

Finished Profile Grade
-18269%
V.P.C. Sta 426+00
Elev. 278.03'
V.P.I. Sta 431+00
Elev 268.90'
V.C. 1000'
V.P.I. Sta 436+00
Elev. 267.41'

T.H. 53
Sta. 420+00, 45' Rt. ℄
Elev.=288'
8-3-89
0.0'-9.0' Brown Silty Sand. Damp.
9.0'-9.5' Brown Silt. Wet to saturated.
9.5'-10.0' Brown Silty Sandy Gravel w/cobbles. Damp.
9.5
9.0'
10.0
BOH

T.H. 54
Sta. 427+80, 33' Lt. Exist. ℄
Elev.=271'
8-3-89
0.0'-10.0' Brown Sand. Loose. Dry. w/Gravel 5-10'.
10.0'
BOH
Original Ground

T.H. 132
Sta. 435+00, 90' Lt. Exist. ℄
Elev.= Approx. 275'
12-1-89
0.5'
1.0'
2.5'
14.0'
FS-88 G.S.
FS-89 G.S.
10.0'
14.0'
15.5'
BOH
0.0'-1.0' Brown Organic w/roots.
1.0'-2.5' Brown Silt. Saturated & dilatant.
2.5'-14.0' Brown Gravelly Sand. Loose. A-1-b(0), LL=NV, PI=NP, Gravel=30%, Sand=67%, Silt=3%, M.C.=3.6%.
14.0'-15.5' Brown Sandy Silt. Saturated.

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

310
300
290
280
270
260
250

412
415+00
420+00
425+00
430+00
435+00

Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

Project No. 56375 Sampled By Ottley

[X] Centerline _____
[ ] Materials Site _____
[ ] Structure _____

Station		437+00					
Offset (feet)		39' L.					
Depth (feet)		3.0'-6.0'					
Test Hole No.		TH 55					
Field No.		FS-40					
Date Sampled		08/03/89					
Lab No.		89A-1387					
Percent Passing Sieve Size	3"						
	2"	100					
	1"	99					
	3/4"	98					
	1/2"	95					
	3/8"	92					
	#4	83					
	#10	71					
	#40	29					
	#50	15					
	#200	3					
	.02mm						
	.002mm						
DOTTSD		Sa					
AASHTO Class		A-1-b(0)					
FSV Class							
Liquid Limit		NV					
Plastic Index		NP					
Moisture Content %							
Organic Content %							
% Gravel		29					
% Sand		68					
% Silt & Clay		3					
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	17	33

PHASE II P.I.
N = 56,188.515
E = 57,844.076
Δ = 10° 03' 31.2" Rt.
D = 3° 00'
T = 168.08'
L = 335.29
R = 1909.86

P.I. Sta. 438+96.54

P.I. Sta. 437+29.33
N = 56,121.945
E = 57,437.422
Δ = 10° 03' 31.1" Rt.
D = 3° 00'
T = 168.08
L = 335.29
R = 1909.86
S = .055ft/ft
T.L. = 205/205

E 57,000 E 57,500 N 56,500 N 56,000 E 59,500 E 60,000

TREES

Ryan Street Gravel

Driveway Pederson's Gravel

San. Swr. C.O.

Sign

Cory Street Gravel

Tel. Ped. Tel. Repeater Ped. Tel. Pad.

M.B.

Traffic Sign with Wood Guardposts

TH 55 TH 56 TH 57 TH 58

MATCH LINE STA. 436+00

MATCH LINE STA. 464+00

440 445 450 455 460

S 89° 30' 58.8" E

R/W

T.H. 56
Sta. 442+50, 42' Rt. Exist. ℄
Elev.=268'
8-3-89

2.0' 0.0'-2.0' Brown Silt. Wet.
2.0'-9.0' Brown Sand. Damp. Loose.
9.0'
10.0' 9.0'-10.0' Brown Silty Sand. Damp.
BOH

T.H. 55
Sta. 437+00, 39' Lt. Exist. ℄
Elev.=268
8-3-89

3.0'
6.0'
9.0'
10.0'
BOH
FS-40
G.S.

0.0'-6.0' Brown Gravelly Sand Damp. Loose.
A-1-b (0), LL=NV, PI=NP, Gravel=29%, Sand=68%, Silt=3%.
6.0'-9.0' Brown Silty Sand. Loose. Damp.
9.0'-10.0' Brown Slightly Silty Sand. Loose. Damp.

Finished Profile Grade

Original Ground

T.H. 57
Sta. 447+00, 45' Rt. Exist. ℄
Elev.=267'
8-3-89

0.3'
2.0'
6.0'
10.0'
BOH

0.0'-0.3' Dark Brown Organic Silt.
0.3'-2.0' Brown Silt. Wet.
2.0'-6.0' Brown Sand. Dry. Loose.
6.0'-10.0' Brown Silty Sand. Damp. Loose

V.P.C. Sta 456+00 Elev 264.45'

V.P.T. Sta 450+00 Elev 260.56' V.C. 600'

V.P.T. Sta 462+00 Elev 267.15'

T.H. 58
Sta. 460+00, 39' Rt. Exist. ℄
Elev.=251'
8-4-89

1.0'
4.0'
10.0'
BOH

0.0'-1.0' Brown Silty Sandy Gravel fill w/cobbles.
1.0'-4.0' Brown Organic Sandy Silt w/wood. Wet.
4.0'-10.0' Brown Silty Sandy Gravel w/cobbles. Loose. Damp.

280 270 260 250 240

435+00 440+00 445+00 450+00 455+00 460+00

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

epared by: NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline _____
[ ] Materials Site _____
[ ] Structure _____

Project No. 56375 Sampled By Ottley

Station		470+00	470+00				
Offset (feet)		39' R.	39' R.				
Depth (feet)		0.0'-2.0'	4.0'-9.0'				
Test Hole No.		TH 59	TH 59				
Field No.		FS-41	FS-42				
Date Sampled		08/04/89	08/04/89				
Lab No.		89A-1388	89A-1389				
	3"						
	2"		100				
	1"		94				
Percent	3/4"		90				
	1/2"		83				
Passing	3/8"		80				
	#4		72				
Sieve	#10		67				
	#40		50				
Size	#50		41				
	#200		22				
	.02mm						
	.002mm						
DOTTSD		Si Sa	Sl Si Grl Sa				
AASHTO Class			A-1-b(0)				
FSV Class							
Liquid Limit			NV				
Plastic Index			NP				
Moisture Content %		11.7					
Organic Content %		2.5					
% Gravel			33				
% Sand			45				
% Silt & Clay			22				
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	18	33

E 60,000 N 56,500 E 60,500 E 61,000 E 61,500 E 62,000 E 62,500 E 63,000

N 56,000

MATCH LINE STA. 464+00

MATCH LINE STA. 490+00

R/W

TREES

Tel. Ped.

2 Tel. Ped.

Guardpost

M.B.

Sign

465 470 TH 59 475 480 TH 60 485 TH 61

S 89°30'58.8"E

House

Well

Tunnel

Gravel

CHUMLEYS

Con. Pad

U.G. Fuel Tank Pump, Filler, & Vent

Above Ground Fuel Tanks

Garage

San. Swr. C.O.

Deck

Lois Street

Scout Lake Loop Road (West)

V.P.C. Sta 462+00 Elev. 267.15'

V.P.T. Sta 467+00 Elev. 278.14' 1000' V.C.

V.P.T. Sta 472+00 Elev. 275.81'

V.P.C. Sta 483+00 Elev. 270.70'

V.P.T. Sta 484+50 Elev. 270.00' 300' V.C.

V.P.T. Sta 486+00 Elev. 268.40'

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

T.H. 59
Sta. 470+00, 39' At. Exist. ℄
Elev.=283'
8-4-89

2.0' FS-41 G.S. 0.0'-4.0' Brown Silty Sand w/Gravel. M.C.=11.7%, Org.=2.5%.
4.0' FS-42 G.S. 4.0'-10.0' Brown Silty Gravelly Sand w/cobbles—Damp—A-1-b (0), LL=NV, PI=NP, Gravel=33%, Sand=45%, Silt=22%.
9.0
10.0 10.0'-15.0' Brown Sandy Gravel w/cobbles. Dry. Loose.
15.0 BOH

Finished Profile Grade

-4.65 %

Original Ground

T.H. 60
Sta. 480+00, 36' At. Exist. ℄
Elev.=272'
8-4-89

2.0' 0.0'-2.0' Brown Sandy Silty Gravel w/cobbles. Wet.
2.0'-10.0' Brown Sandy Gravel w/cobbles. Loose.
10.0' BOH

T.H. 61
Sta. 490+00, 36' At. Exist. ℄
Elev.=260'
8-4-89

4.0' 0.0'-4.0' Dark Brown Organic Silt. Wet to saturated.
8.0' 4.0'-8.0' Brown Sandy Gravel w/cobbles. Loose. Damp to wet.
10.0' 8.0'-10.0' Brown Gravelly Sand. Loose. Wet.
BOH

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

280 270 260 250 240

465+00 470+00 475+00 480+00 485+00 490+00

ared by: NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

Project No. 56375 Sampled By Ottley

[X] Centerline
[ ] Materials Site
[ ] Structure

Station		512+00	512+00				
Offset (feet)		50' R.	50' R.				
Depth (feet)		1.0'-5.0'	1.0'-8.0'				
Test Hole No.		TH 134	TH 134				
Field No.		FS-92	FS-93				
Date Sampled		12/01/89	12/01/89				
Lab No.		89A-2215	89A-2216				
	3"						
	2"						
	1"						
Percent	3/4"						
	1/2"						
Passing	3/8"		0				
	#4		100				
Sieve	#10		100				
	#40		99				
Size	#50		98				
	#200		87				
	.02mm						
	.002mm						
DOTTSD		Si	Si				
AASHTO Class			A-4(0)				
FSV Class							
Liquid Limit			21				
Plastic Index			1				
Moisture Content %		28.2					
Organic Content %							
% Gravel			0				
% Sand			13				
% Silt & Clay			87				
Max. Dry Density			121.0				
Opt. Moisture %			12.7				
Sp.G. Fine			2.68				
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	19	33

E 62,500 | N 56,500 | E 63,000 | E 63,500 | E 64,000 | E 64,500 | E 65,000 | E 65,500 | N 56,000

PHASE II P.I.
N = 56,133.923
E = 64,310.958
Δ = 12° 59' 02.7" Rt.
D = 2° 00'
T = 326.00'
L = 649.20'
R = 2864.79

PHASE II P.I.
N = 55,908.273
E = 65,253.193
Δ = 01° 36' 42.4"
NO CURVE

P.I. Sta. 515 + 52.79
N. 55,482.178
E. 66,942.177
Δ = 01° 36' 42.4" Lt.
No Curve

SCOUT LAKE RESTAURANT & MOTEL

Well | Sign | Lighted Sign | TREES | BRUSH | R/W | MATCH LINE STA. 490+00

495 S 89° 30' 58.8" E

500 | TH 62 | 505 | TH 63 | 510 | S 76° 31' 56.1" E | TH 134 | 515 S 78° 00' 38.5" E | 518+00

Pump House | M.B. | Tel. Pad. | Well | Tel. Pad. | Handly Street | MATCH LINE STA. 518+00

P.C. Sta. 502 + 67.69

P.I. Sta. 505+93.69
N. = 56,063.993
E. = 64,302.402
Δ = 12° 59' 02.7" Rt.
D = 2° 00'
T = 326.00'
L = 649.20'
R = 2864.79
S = .044 ft./ft.
TL = 180'/180'

P.T. Sta. 509 + 16.89

V.P.C. Sta. 515+25
Elev.

V.P.I. Sta. 517+25
Elev. 325.00
V.C. 400'

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

Finished Profile Grade

Original Ground

T.H. 62
Sta. 500+0, 39' At Exist. ℄
Elev.=247'
8-8-89

3.0' | 5.0' | 10.0' | BOH

0.0'-3.0' Orange-Brown Gravelly Silty Sand w/Organics to 3'.
3.0'-5.0' Brown Silty Sandy Gravel to Silty Gravelly Sand. Damp.
5.0'-10.0' Brown Slightly Silty Sandy Gravel w/cobbles & boulders. Dry.

T.H. 63
Sta. 510+00, 45' Rt. Exist. ℄
Elev.=243'
8-8-89

0.5' | 5.0' | 10.0' | BOH

0.0'-0.5' Dark Brown Organic Silt w/roots. Saturated.
0.5'-5.0' Brown Sandy Silt. Wet.
5.0'-10.0' Brown Silt w/Clay. Saturated. Dilatant.

T.H. 134
Sta. 512+00, 50' At. Exist. ℄
Elev.= Approx. 245'
12-1-89

0.5' | 1.0' | 8.0' | 10.0' | BOH

FS-92 G.S.
FS-93 G.S.

0.0'-0.5' Brown Organic w/roots.
0.5'-10.0' Brown Silt. Dilatant.
M.C.=28.2%, A-4(0), LL=21, PI=1, Sand=13%, Silt=87%.

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

270 | 260 | 250 | 240 | 230 | 220 | 210

490+00 | 495+00 | 500+00 | 505+00 | 510+00 | 515+00 | 518+00

Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

Project No. 56375 Sampled By Ottley

[X] Centerline
[ ] Materials Site
[ ] Structure

Station		527+00	527+00				
Offset (feet)		64' R.	64' R.				
Depth (feet)		5.0'-9.0'	1.0'-3.0'				
Test Hole No.		TH 65	TH 65				
Field No.		FS-43	FS-44				
Date Sampled		08/08/89	08/08/89				
Lab No.		89A-1390	89A-1391				
Percent Passing Sieve Size	3"						
	2"						
	1"						
	3/4"						
	1/2"						
	3/8"						
	#4						
	#10						
	#40	100					
	#50						
	#200	98					
	.02mm						
	.002mm						
DOTTSD		Cl Si	Org Si				
AASHTO Class		A-6(15)					
FSV Class							
Liquid Limit		37					
Plastic Index		14					
Moisture Content %			22.9				
Organic Content %			5.0				
% Gravel		0					
% Sand		2					
% Silt & Clay		98					
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	20	33

P.I. Sta. 532+94.27
N. 55,482.178
E. 66,942.177
Δ = 21° 30' 06.3" Lt.
D = 1° 30'
T = 725.26'
L = 1433.45'
R = 3819.72'
S = .038 Ft./Ft.
TL = 175'/175'

P.C. Sta. 525+69.02

P.I. Sta. 540+02.47

MATCH LINE STA. 518+00

MATCH LINE STA. 541+00

Scout Lake Loop Road (East)

STERLING BAPTIST CHURCH

FIRE STATION

Basketball Court

FARM RENTAL

R/W

S 78°08'38.5" E

N 80°21'15.2" E

TH 64

TH 65

TH 66

TH 140

E 67,000 N 56,000

E 65,000 N 55,500

PHASE II P.I.
N = 55,553.415
E = 66,943.551
Δ = 21° 30' 06.3" Lt.
D = 1° 30' 00"
R = 725.26'
L = 1433.45'
R = 3819.72'

V.P.T. Sta. 519+25
Elev. 236.17'

V.P.C. Sta. 524+50
Elev. 239.24'

V.P.T. Sta. 527+50
Elev. 241.00'
600' V.C.

V.P.T. Sta. 530+50
Elev. 237.23'

V.P.C. Sta. 538+50
Elev. 227.17'

V.P.T. Sta. 540+50
Elev. 224.65'
400' V.C.

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

Finished Profile Grade

+0.585%

Original Ground

T.H. 64
Sta. 520+00, 33' Rt. Exist. ℄
Elev.=228'
8-8-89

0.0'-1.5' Brown Silt w/Organics & Sand. Saturated.
1.5'-5.0' Brown Sandy Silty Gravel w/cobbles & boulders. Wet to saturated.
5.0'-10.0' Brown Silty Sandy Gravel w/cobbles & boulders. Wet.

T.H. 65
Sta. 527+00, 64' Rt. Exist. ℄
Elev.=240'
8-8-89

FS-44 G.S.
FS-43 G.S.

0.0'-4.0' Brown Organic Silt w/wood. M.C.=22.9%, Org.=5.0%.
4.0'-10.0' Gray Silty Clay. Wet to saturated. A-6(15), LL=3, PI=14, Sand=2%, Silt=98%.

T.H. 66
Sta. 534+00, 50' Rt. Exist. ℄
Elev.=230'
8-8-89

0.0'-3.0' Brown Sandy Silt w/Organic top 0.5'. Loose. Damp.
3.0'-6.5' Gray-Brown Silt. Wet.
6.5'-10.0' Brown Sand. Loose. Dry.

T.H. 140
Sta. 536+94, 93' Rt. Exist. ℄
Elev. = Approx. 220'
12-27-89

0.0'-1.8' Brown Organic. Fibrous.
1.8'-2.3' Brown Sand.
2.3'-3.8' Brown Silt.
3.8'-5.5' Brown to Gray Sand w/Trace Gravel.
3.8'-5.5' Brown to Gray Gravelly Sand.

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

260 250 240 230 220 210

518+00 520+00 525+00 530+00 535+00 540+00 541+00

Surveyed by: NORTH PACIFIC AERIAL SURVEYS, INC.
ANCHORAGE ALASKA

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline

[ ] Materials Site

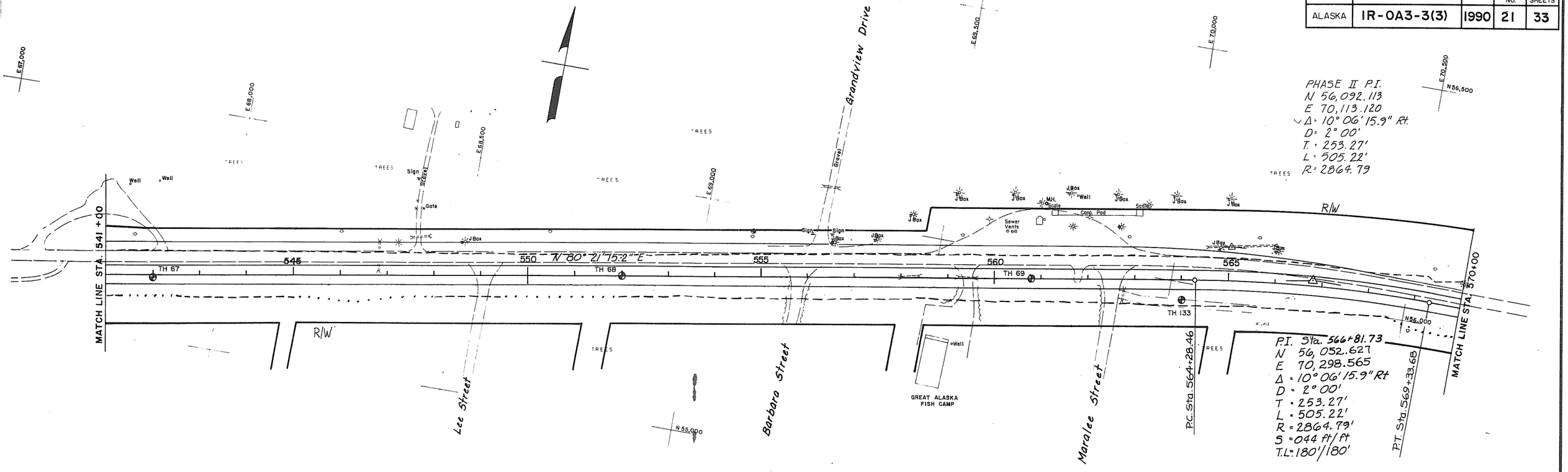
Project No. 56375 Sampled By Ottley

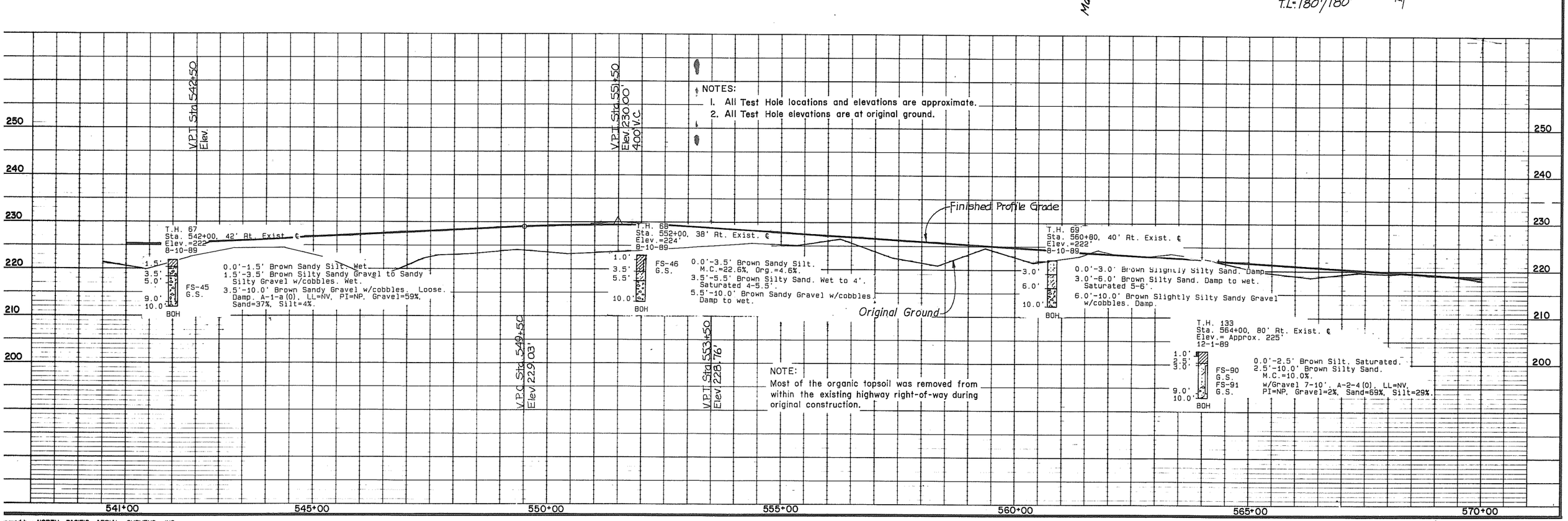
[ ] Structure

Station		542+00	552+00	564+00	564+00		
Offset (feet)		42' R.	38' R.	80' R.	80' R.		
Depth (feet)		5.0'-9.0'	1.0'-3.5'	3.0'-5.5'	3.0'-9.0'		
Test Hole No.		TH 67	TH 68	TH 133	TH 133		
Field No.		FS-45	FS-46	FS-90	FS-91		
Date Sampled		08/10/89	08/10/89	12/01/89	12/01/89		
Lab No.		89A-1392	89A-1393	89A-2213	89A-2214		
	3"						
	2"	100					
	1"	91					
Percent	3/4"	82					
	1/2"	71			100		
Passing	3/8"	62			100		
	#4	49			99		
Sieve	#10	41			98		
	#40	23			88		
Size	#50	13			75		
	#200	4			29		
	.02mm						
	.002mm						
DOTTSD		Sa Grl	Sa Si	Sa	Sa		
AASHTO Class		A-1-a(0)			A-2-4(0)		
FSV Class							
Liquid Limit		NV			NV		
Plastic Index		NP			NP		
Moisture Content %			22.6	10.0			
Organic Content %			4.6				
% Gravel		59			2		
% Sand		37			69		
% Silt & Clay		4			29		
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	21	33





SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[X] Centerline _____
[ ] Materials Site _____
[ ] Structure _____

Project No. 56375 Sampled By Ottley

Station		572+00	581+40	581+40			
Offset (feet)		80' L.	75' L.	75' L.			
Depth (feet)		1.5'-4.0'	3.0'-8.0'	3.0'-5.0'			
Test Hole No.		TH 70	TH 71	TH 71			
Field No.		FS-47	FS-48	FS-49			
Date Sampled		08/10/89	08/10/89	08/10/89			
Lab No.		89A-1394	89A-1395	89A-1396			
	3"						
	2"						
	1"						
Percent	3/4"						
	1/2"						
Passing	3/8"						
	#4						
Sieve	#10						
	#40		100				
Size	#50						
	#200		97				
	.02mm						
	.002mm						
DOTTSD		Peat	Cl Si	Cl Si			
AASHTO Class			A-7-6(20)				
FSV Class							
Liquid Limit			42				
Plastic Index			18				
Moisture Content %		328.0		34.5			
Organic Content %							
% Gravel			0				
% Sand			3				
% Silt & Clay			97				
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	22	33

PHASE II P.I.
N 56,072.117
E 12,611.028
Δ = 16° 36' 07.5" Rt.
D = 1° 30'
T = 557.31'
L = 1106.81'
R = 3819.72

N 56,500 E 71,000
N 56,500 E 73,000
N 55,500 E 71,000
N 55,500 E 73,000

R/W
MATCH LINE STA. 570+00
TH 70
JBar
575+00
S 89° 32' 28.9" E
580+00
585+00
590+00
TH 71
TH 72
Well House
Tel. Ped.
Lighted Sign
Pedersen Loop
San. Swr. C.O.
Well
Moose River Drive
BRUSH Well
Ref. Wall
595+00
S 72° 56' 21.4" E
MATCH LINE STA. 597+00
AIR STRIP
Keystone St.
P.C. Sta. 584+08.80
TREES
BRUSH
GOLF COURSE
P.I. Sta. 589+66.10
N = 56,034.331
E = 72,584.181
Δ = 16° 36' 07.5" Rt.
D = 1° 30'
T = 557.31'
L = 1106.81'
R = 3819.72'
S = .038 ft/ft
T.L. = 205'/205'
P.T. Sta. 595+15.60

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

Finished Profile Grade
Original Ground

T.H. 70
Sta. 572+00, 80' Lt. Exist. ℄
Elev.=200'
8-10-89
1.5'
4.0'
6.0'
8-10-89 8.0'
10.0'
BOH
FS-47
G.S.
0.0'-6.0' Dark Brown Organic, (Peat). Fibrous. Saturated. M.C.=328.0%.
6.0'-10.0' Gray-Brown Sandy Silt. Saturated. Plastic?

T.H. 71
Sta. 581+40, 75' Lt. Exist. ℄
Elev.=216'
8-10-89
3.0'
5.0'
8.0'
10.0'
20.0'
BOH
FS-48
G.S.
FS-49
G.S.
0.0'-3.0' Brown Silty Sand. Damp.
3.0'-8.0' Gray Clay. Damp. A-7-6(20), LL=42, PI=18, Sand=3%, Silt=97%. M.C.=34.5%
8.0'-10.0' Brown Silty Sand. Damp.
10.0'-20.0' Brown Silt w/Sand. Saturated.

V.P.C. Sta. 582+00
Elev. 211.10'
V.P.I. Sta. 587+00
Elev. 208.00'
1000' V.C.

T.H. 72
Sta. 592+00, 32' Lt. Exist. ℄
Elev.=188'
8-10-89
5.0'
10.0'
BOH
0.0'-5.0' Brown Sandy Silt. Saturated.
5.0'-10.0' Brown Silty Sand w/Gravel. Saturated. Dilatant.

V.P.T. Sta. 592+00
Elev. 189.99'

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.

220 210 200 190 180 170 160

570 575+00 580+00 585+00 590+00 595+00 597

Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC.
ANCHORAGE ALASKA

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	22A	33

Phase II P.I.
N. 56,072.117
E. 72,611.028
Δ = 16° 36' 07.5" Rt.
D = 1° 30' 00"
T = 557.31'
L = 1106.81'
R = 3819.72'

Section Line Easement

Sta. 570+00 WEIGHT STATION

Sta. 571+38 Begin Taper, 28' Lt.

Sta. 575+00 WEIGHT STATION RIGHT LANE OPEN CLOSED

Sta. 576+18 End Taper, 20' Lt.

N 56,500 E 71,000 E 73,000 N 55,500 E 71,000 N 55,500

MATCH LINE STA. 570+00

575+00 S89°32'28.9"E 580+00 585+00 590+00 595+00

1496.12

TH 94 TH 95 TH 98

Tel. Cabin JBox Tel. Cabinet Guardposts Sign Well House Well Tel. Ped. Tel. Ped. w/Wood Post Lighted Sign A Sign Lighted Sign Satellite Dish Above Ground Sanitary Sewer Line San. Swr. C.O. San Swr. C.O. San Swr. % C.O. Well Tel. Ped. BRUSH TREES TANK AIR STRIP

Aircraft Landing Area

Keystone St.

Sta. 582+80 STOP RI-1 STERLING HWY KEYSTONE ST 2(D3-1)

P.C. Sta. 584+2980

Sta. 589+10 STOP RI-1 PEDERSON RD STERLING HWY 2(D3-1)

Sta. 594+80 STOP RI-1 MOOSE RIVER DR STERLING HWY 2(D3-1)

R/W

Pederson Loop

U.S. Fuel Tank Filler & Vent Antenna San Swr. C.O. Well

Moose River Drive

Well Rel. Well Tel. Ped. w/wood post GOLF COURSE

P.I. Sta. 589+87.10
N = 56,034.163
E = 72,605.180
Δ = 16° 36' 07.5" Rt.
D = 1° 30° 00"
T = 557.31'
L = 1106.81'
R = 3819.72'
S = .038 ft/ft.
T.L. = 205' P.C. Only

P.T. Sta. 595+36.60

MATCH LINE STA. 597+00

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

Finished Profile Grade

Original Ground

0.609%

-3.652%

V.P.T. Sta. 587+00 Elev. 208.40 1000' V.C.

V.P.C. Sta. 582+00 Elev. 211.44

V.P.T. Sta. 592+00 Elev. 190.14

V.P.C. Sta. 595+50 Elev. 177.36

T.H. 94
Sta. 572+25, 50' Lt. Exist. ℄
Elev.= Approx. 200'
11-7-89
0.5' U=583
2.0' D=285
4.0' U=648
5.5' D=285
6.0' BOH
0.0'-5.5' Dark Brown Organic. Fine fibrous Peat. Saturated.
5.5'-6.0' Gray Sandy Silt. Saturated.

T.H. 95
Sta. 572+28, 50' Lt. Exist. ℄
Elev.= Approx. 200'
11-7-89
3.0' ST-1
5.5' BOH
0.0'-5.5' Dark Brown Organic. Fine fibrous Peat. Saturated. Coarse, fibrous Approx. 5-5.5'.

T.H. 98
Sta. 572+75, 70' Rt. Exist. ℄
Elev.= Approx. 200'
11-8-89
1.0' U=648
3.0' D=298
5.5' U=583
7.0' D=246
8.0' U=522
BOH D=259
0.0'-8.0' Dark Brown Organic. Fine fibrous Peat. Saturated.

RADIUS POINTS			
POINT	RADIUS	STATION	OFFSET
Ⓐ	15'		

220 210 200 190 180 170 160

570 575+00 580+00 585+00 590+00 595+00 597

Prepared by: NORTH PACIFIC AERIAL SURVEYS, INC. ANCHORAGE ALASKA

REVISIONS			N 56,500
No.	Date	Description	E 73,000

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	22B	33

Phase II P.I.
N. 56,072.117
E. 72,611.028
Δ = 16° 36' 07.5" Rt.
D = 1° 30' 00"
T = 557.31'
L = 1106.81'
R = 3819.72'

P.I. Sta. 589 + 87.10
N = 56,034.163
E = 72,605.180
Δ = 16° 36' 07.5" Rt.
D = 1° 30' 00"
T = 557.31'
L = 1106.81'
R = 3819.72'
S = .038 ft./ft.
T.L. = 205' P.C. Only

Sta. 570+00 WEIGHT STATION
Sta. 571+38 Begin Taper, 28' Lt.
Sta. 575+00 WEIGHT STATION RIGHT LANE OPEN CLOSED
Sta. 576+18 End Taper, 20' Lt.
Section Line Easement
MATCH LINE STA. 570+00
"D" ℄
TH 96 TH 97 TH 139
575+00
S 89° 32' 28.9" E
- 1496.12
580+00
585+00
590+00
595+00
MATCH LINE STA. 597+00
R/W
Tel. Cabinet
J Box
Power Pole
Tel. Ped.
Tel. Ped. w/Wood Post
Lighted Sign
Sign
Guardposts
Well House
Well
Satellite Dish
Above Ground Sanitary Sewer Line
San. Swr. C.O.
San. Swr. ℄ C.O.
TREES
BRUSH
AIR STRIP
Aircraft Landing Area
Keystone St.
Sta. 582+80 STOP RI-1 BRUSH STERLING HWY KEYSTONE ST 2(D3-1)
P.C. Sta. 584 + 29.80
Sta. 589+10 STOP RI-1 PEDERSON RD STERLING HWY 2(D3-1) TREES
Pederson Loop
U.G. Fuel Tank Filler & Vent
Antenna
Sta. 594+80 STOP RI-1 STERLING HWY MOOSE RIVER DR 2(D3-1)
Moose River Drive
GOLF COURSE
P.T. Sta. 595+36.60
E 71,000 N 56,500
E 71,000 N 55,500
E 73,000 N 55,500

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

Finished Profile Grade
Original Ground
0.609%
-3.652%

T.H. 139
Sta. 573+00, 24' Lt. Exist. ℄
Elev. = Approx. 214'
12-2-89
-0.125'
3.5'
10.0'
13.0' ▽
16.0'
25.0'
BOH
Asphalt, (1.5")
0.125'-3.5' Brown Sandy Gravel. Fill.
3.5'-10.0' Brown Gravelly Sand w/cobbles. Fill. Loose. Damp.
10.0'-16.0' Gray-Brown Silty Gravelly Sand, w/cobbles. Fill. Damp to wet. Saturated after 13'.
16.0'-25.0' Gray-Brown Sandy Silt Saturated. W/trace Organic at 16'.

T.H. 96
Sta. 573+00, 70' Lt. Exist. ℄
Elev. = Approx. 200'
11-7-89
2.5'
5.0'
5.5'
6.0'
U=648
D=298
U=648
D=272
BOH
0.0'-5.5' Dark Brown Organic. Fine fibrous Peat. Saturated.
5.5'-6.0' Gray Sandy Silt. Saturated.

T.H. 97
Sta. 573+03, 70' Lt. Exist. ℄
Elev. = Approx. 200'
11-7-89
3.0'
5.0'
5.5'
ST-2
BOH
0.0'-5.0' Dark Brown Organic. Fine fibrous Peat. Saturated.
5.0'-5.5' Gray Sandy Silt. Saturated.

V.P.C. Sta. 582+00 Elev 211.44
V.P.T. Sta. 587+100 Elev. 208.40 1000' V.C.
V.P.T. Sta. 592+00 Elev. 190.14
V.P.C. Sta. 595+50 Elev. 177.36

RADIUS POINTS			
POINT	RADIUS	STATION	OFFSET
Ⓐ	15'		

220 210 200 190 180 170 160
570 575+00 580+00 585+00 590+00 595+00 597

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REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	22C	33

Phase II P.I.
N. 56,072.117
E. 72,611.028
Δ = 16° 36' 07.5" Rt.
D = 1° 30' 00"
T = 557.31'
L = 1106.81'
R = 3819.72'

Section Line Easement

Sta. 570+00 WEIGHT STATION

Sta. 571+38 Begin Taper, 28' Lt.

Sta. 575+00 WEIGHT STATION RIGHT LANE OPEN CLOSED

Sta. 576+18 End Taper, 20' Lt.

MATCH LINE STA. 570+00

"D" ℄

575+00

589°32'28.9"E

580+00

1496.12

585+00

590+00

595+00

R/W

Tel. Cabinet

JBox

TH100

TH99

Tel. Ped. w/ Wood Post

Lighted Sign

Sign

Tel. Ped.

Well

Well House

Guardposts

San. Swr. C.O.

Satellite Dish

Above Ground Sanitary Sewer Line

TANK

AIR STRIP

Aircraft Landing Area

Keystone St.

Sta. 582+80 STOP R1-1 STERLING HWY KEYSTONE ST 2(D3-1)

P.C. Sta. 584+29.80

Sta. 589+10 STOP R1-1 PEDERSON RD STERLING HWY 2(D3-1)

Pederson Loop

U.G. Fuel Tank Filler & Vent

Antenna

Sta. 594+80 STOP R1-1 MOOSE RIVER DR STERLING HWY 2(D3-1)

Moose River Drive

Ref. Well

GOLF COURSE

P.I. Sta. 589+87.10
N = 56,034.163
E = 72,605.180
Δ = 16° 36' 07.5" Rt.
D = 1° 30' 00"
T = 557.31'
L = 1106.81'
R = 3819.72'
S = .038 Ft./Ft.
T.L. = 205' P.C. Only

P.T. Sta. 595+36.60

MATCH LINE STA. 597+00

N 56,500 E 71,000 E 73,000 N 55,500

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

Finished Profile Grade

Original Ground

0.609%

-3.654%

V.P.C. Sta. 582+00 Elev. 211.44

V.P.T. Sta. 587+00 Elev. 208.40 1000' V.C.

V.P.C. Sta. 592+00 Elev. 190.14

V.P.C. Sta. 595+50 Elev. 177.36

T.H. 100
Sta. 572+00, 75' Rt. Exist. ℄
Elev.= Approx. 200'
11-8-89

0.5' ▽
3.0' U=389 D=233
6.5' U=557 D=363
8.0' U=516 D=207
10.0' BOH

0.0'-10.0' Dark Brown Organic. Fine fibrous Peat. Saturated. A Gray Sandy Silt below Peat.

T.H. 99
Sta. 572+75, 73' Rt. Exist. ℄
Elev.= Approx. 200'
11-8-89

1.0' ▽
2.0'
4.5' ST-3
5.5'
8.0' BOH

0.0'-8.0' Dark Brown Organic. Varying between, fine fibrous to coarse fibrous w/depth. Saturated.

RADIUS POINTS			
POINT	RADIUS	STATION	OFFSET
Ⓐ	15'		

220 210 200 190 180 170 160

570 575+00 580+00 585+00 590+00 595+00 597

Prepared by NORTH PACIFIC AERIAL SURVEYS, INC. ANCHORAGE ALASKA

REVISIONS		
No.	Date	Description

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	22D	33

Phase II P.I.
N. 56,072.117
E. 72,611.028
Δ = 16° 36' 07.5" Rt.
D = 1° 30' 00"
T = 557.31'
L = 1106.81'
R = 3819.72'

Sta. 570+00 WEIGHT STATION

Sta. 571+38 Begin Taper, 28' Lt.

Sta. 575+00 WEIGHT STATION RIGHT LANE OPEN CLOSED

Sta. 576+18 End Taper, 20' Lt.

Section Line Easement

N 56,500

E 71,000

E 73,000

MATCH LINE STA. 570+00

"D" ℄

575+00

589°32'28.9"E

580+00

1496.12

585+00

590+00

595+00

R/W

TH102
TH103
TH101

Tel. Cabinet
JBox
Tel. Ped. w/ Wood Post
Lighted Sign
Sign
Tel. Ped.
Guardposts
Well House
Lighted Sign
Satellite Dish
Above Ground Sanitary Sewer Line
San. Swr. C.O.
Well
Tel. Ped.
TANK
AIR STRIP
TREES
BRUSH

Aircraft Landing Area

Keystone St.

Sta. 582+80
STOP
RI-1
STERLING HWY
KEYSTONE ST
2(D3-1)

P.C. Sta. 584+29.80

P.I. Sta. 589+87.10
N = 56,034.163
E = 72,605.180
Δ = 16° 36' 07.5" Rt.
D = 1° 30' 00"
T = 557.31'
L = 1106.81'
R = 3819.72'
S = .038 Ft./Ft.
T.L. = 205' P.C. Only

Sta. 589+10
STOP
RI-1
STERLING HWY
PEDERSON RD
2(D3-1)

Pederson Loop

U.G. Fuel Tank Filler & Vent
Antenna
Well
San. Swr. C.O.

Sta. 594+80
STOP
RI-1
STERLING HWY
MOOSE RIVER DR
2(D3-1)

Moose River Drive

Ref. Well
Tel. Ped. w/ Wood Post
GOLF COURSE

P.T. Sta. 595+36.60

MATCH LINE STA. 597+00

NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

Finished Profile Grade

Original Ground

0.609%

-3.652%

V.P.T. Sta. 587+00
Elev. 208.40
1000' V.C.

V.P.C. Sta. 595+50
Elev. 177.36

V.P.T. Sta. 592+00
Elev. 190.14

T.H. 102
Sta. 571+00, 50' Rt. Exist. ℄
Elev.= Approx. 200'
11-9-89
0.5' 3.0' 5.0' 7.0' 9.0' 10.0' BOH
U=673 D=389 U=583 D=285 U=531 D=259
0.0'-9.0' Dark Brown Organic. Fine fibrous Peat. Saturated. Coarse, fibrous last 2'.
9.0'-10.0' Gray Sandy Silt.

T.H. 103
Sta. 571+03, 50' Rt. Exist. ℄
Elev.= Approx. 200'
11-9-89
0.5' 3.0' 5.5' 7.0' 9.0' 9.5' BOH
ST-7 ST-6
0.0'-9.0' Dark Brown Organic. Fibrous Peat.
9.0'-9.5' Gray Sandy Silt. Saturated.

T.H. 101
Sta. 572+00, 78' Rt. Exist. ℄
Elev.= Approx. 200'
11-8-89
0.5' 3.0' 5.5' 7.8' 10.0' 10.2' BOH
ST-5 ST-4
0.0'-10.0' Dark Brown Organic. Fine fibrous Peat. Saturated.
10.0'-1.5' Gray Sandy Silt. Saturated.

RADIUS POINTS			
POINT	RADIUS	STATION	OFFSET
Ⓐ	15'		

220 210 200 190 180 170 160

570 575+00 580+00 585+00 590+00 595+00 597

pared by: NORTH PACIFIC AERIAL SURVEYS, INC.
ANCHORAGE ALASKA

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

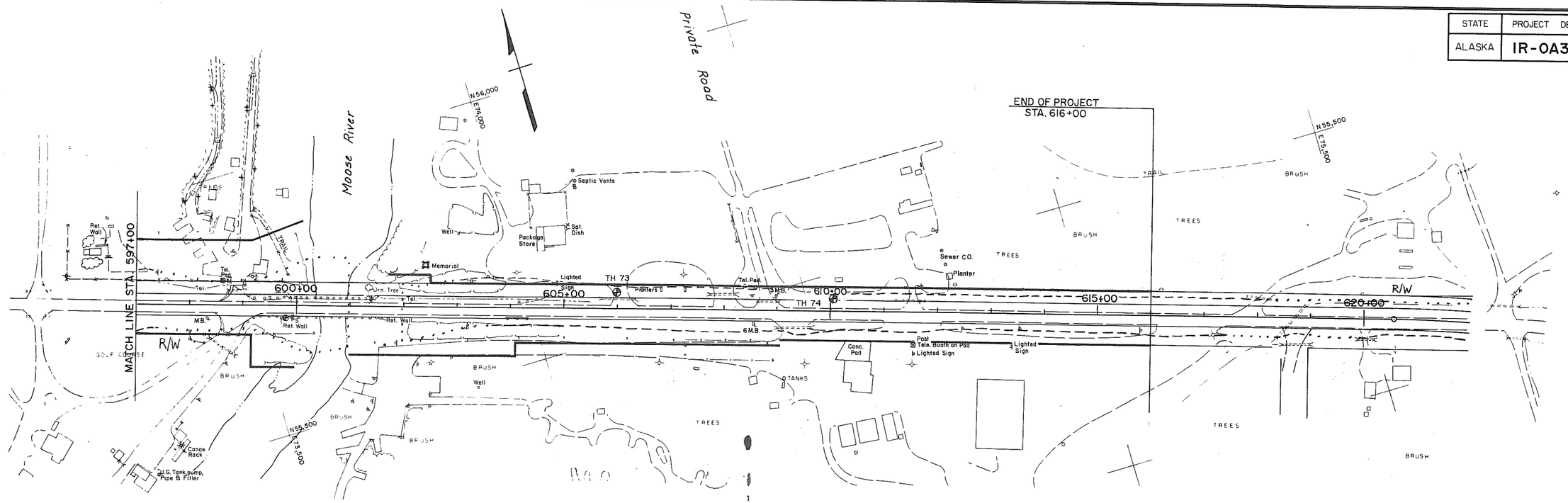
Project No. 56375 Sampled By Ottley

[X] Centerline _____
[ ] Materials Site _____
[ ] Structure _____

Station		606+00	610+05				
Offset (feet)		39' L.	30' L.				
Depth (feet)		5.0'-10.0'	1.0'-3.0'				
Test Hole No.		TH 73	TH 74				
Field No.		FS-50	FS-51				
Date Sampled		08/15/89	08/15/89				
Lab No.		89A-1397	89A-1398				
	3"						
	2"	100					
	1"	87					
Percent	3/4"	78					
	1/2"	65					
Passing	3/8"	58					
	#4	46					
Sieve	#10	40					
	#40	32					
Size	#50	29					
	#200	16					
	.02mm						
	.002mm						
DOTTSD		Si Sa Grl	Sl Si Sa				
AASHTO Class		A-1-b(0)					
FSV Class							
Liquid Limit		NV					
Plastic Index		NP					
Moisture Content %			15.9				
Organic Content %							
% Gravel		60					
% Sand		24					
% Silt & Clay		16					
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

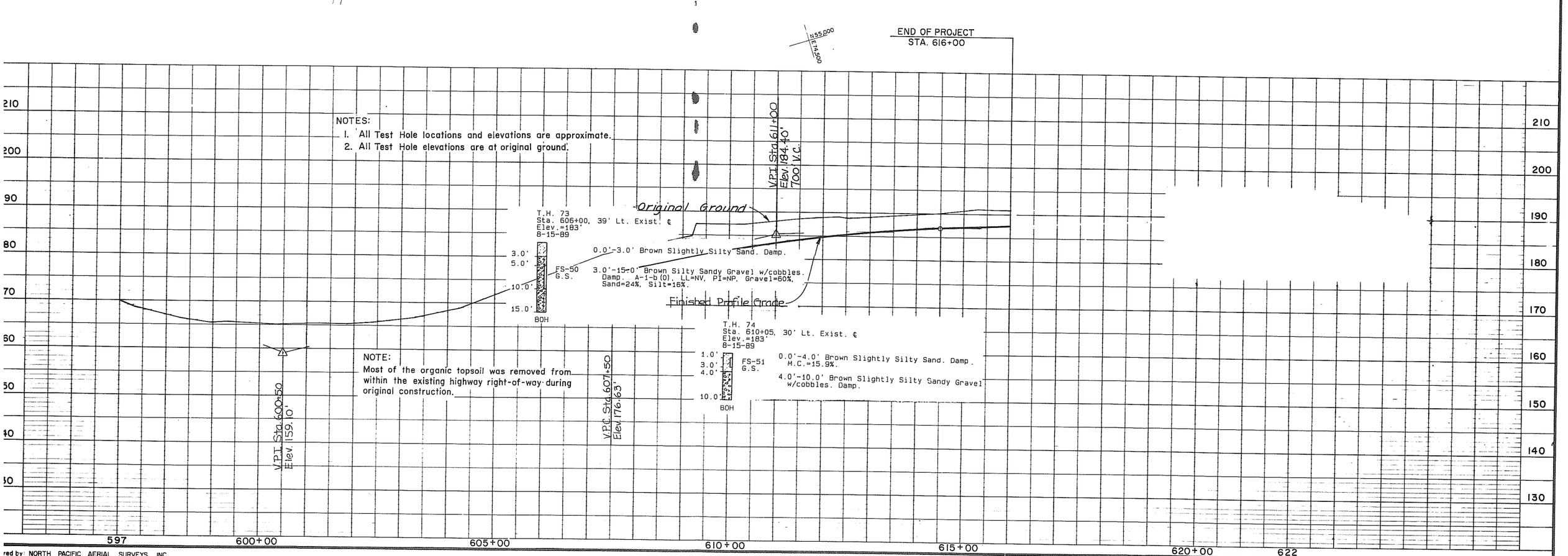
NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3(3)	1990	23	33



NOTES:
1. All Test Hole locations and elevations are approximate.
2. All Test Hole elevations are at original ground.

NOTE:
Most of the organic topsoil was removed from within the existing highway right-of-way during original construction.



ed by: NORTH PACIFIC AERIAL SURVEYS, INC.
ANCHORAGE ALASKA

APPENDIX A

(Geotechnical Recommendations)

GEOTECHNICAL RECOMMENDATIONS

STERLING HIGHWAY MP 82-94

1) The structural section shall consist of:

Hot Asphalt Pavement (HAP)
6" Base Course (P200 ≤ 6%)
14" Select Type "A" (P200 ≤ 6%)
22" Select Type "B" (P200 ≤ 10%)

The thickness of the HAP should be:

10 Year Design

Section	EAL's	HAP Thickness
Sta. 10+00 to 72+60	1,721,666	2"
Sta. 72+60 to 224+25	1,451,507	2"
Sta. 224+25 to 340+42	1,172,470	2"
Sta. 340+42 to 529+00	948,150	2"
Sta. 529+00 to 616+00	920,846	2"

20 Year Design

Section	EAL's	HAP Thickness
Sta. 10+00 to 72+60	4,181,000	4.5"
Sta. 72+60 o 224+25	3,819,000	4.5"
Sta. 224+25 to 340+42	3,155,000	4.0"
Sta. 340+42 to 529+00	2,597,000	3.5"
Sta. 529+00 to 616+00	2,434,000	3.5"

The pavement design is based on the procedure outlined in the "Alaska Guide for Flexible Pavement Design." The sections in excess of 3 million EAL's were verified with mechanistic design procedure using MECHOD 1.2 which uses ELYSM 5 to calculate pavement strains and the AASHTO fatigue curves to determine pavement thickness. The summer modulus values for the structural sections were assumed values based on measured deflections from Kenai Spur Road.

2) From Sta. 10+00 to Sta. 19+25 remove existing pavement and base course and replace with the recommended structural section. The existing base course is approximately 6" thick. This is primarily a fill section.

3) Construct the following sections by stripping the organics, excavating to full width and constructing the recommended typical section. A portion of the existing embankment is useable as select Type "A", "B" or "C". The remaining material to be excavated is primarily a saturated silt and should be wasted or used as slope flattening material. The stripping should be wasted. A separation geotextile should be placed at the bottom of the excavation at the following locations.

Section	Average Thickness of Salvagable Existing Embankment	Salvagable Existing Embankment	Average Stripping Depth	Separation Geotextile
19+25 to 66+10	2.5′	Select Type "B"	P.S.	Yes
84+40 to 117+30	3.0′	Select Type "B"	P.S.	No
117+30 to 141+00	3.0′	Select Type "B"	P.S.	Yes
142+60 to 154+40	3.5′	Select Type "B"	2.5′	Yes
161+00 to 167+80	2.5′	Select Type "B"	P.S.	No
193+70 to 215+75	2.5′	Select Type "B"	P.S.	Yes
218+55 to 223+00	1.0′	Select Type "B"	P.S.	Yes
243+20 to 247+50	1.0′	Select Type "B"	0.5′	Yes
266+70 to 275+00	1.5′	Select Type "B"	0.5′	Yes
280+00 to 291+70	2.0′	Select Type "B"	P.S.	Yes
299+30 to 302+70	3.0′	Select Type "C"	0.5′	Yes
417+80 to 433+50	3.0′	Select Type "C"	P.S.	No
490+00 to 499+90	3.0′	Select Type "B"	P.S.	No
504+50 to 517+00	3.0′	Select Type "B"	1.0′	Yes
522+00 to 558+50	1.5′	Select Type "B"	0.5′	Yes
575+00 to 581+50	1.5′	Select Type "B"	P.S.	Yes
591+50 to 616+00 (E.O.P.)	5.0+′	Select Type "C"	1.0	Yes

P.S. = Previously Stripped

4) Construct the following sections by excavating to the bottom of Select Type "A" and construct recommended structural section. A portion of the excavated material meets Select Type "A" or Select Type "B" specification. The stripping material should be wasted.

The waste material may be used as slope flattening.

Section	Average Stripping Depth	Average Waste Depth	Excavated Material
80+60 to 84+40	0.5′	0′	Select Type "A"
258+60 to 266+70	0.5′	4′	Select Type "A"
302+70 to 309+20	1.5′	2.5′	Select Type "B"
433+50 to 437+75	1.0′	1.5′	Select Type "A"

5) Construct the following Sections by excavating full width and constructing recommended structural section. A portion of the existing embankment is useable as Select Type "A", "B", or "C" and a portion of the remaining excavation is useable as Select Type "C". A separation geotextile will be needed at some of the following locations.

Section	Average Thickness of Salvageable Emb.	Average Stripping Depth	Average Waste Depth	Separation Geotextile
167+80 to 180+20	2.5′ Type "B"	0.5′	16.0′	Sta. 179+00-180+00
186+75 to 193+70	1.5′ Type "B"	0.5′	4.0′	Sta. 191+25-193+50
215+75 to 218+55	1.0′ Type "B"	0′	9.0′	No
231+40 to 243+20	1.0′ Type "B"	0.5′	7.5′	No
291+70 to 299+30	2.5′ Type "C"	0.5′	5.0′	No
318+50 to 356+40^	N/A Type "C"	1.0′	2.0′	Sta. 340+00-345+70
356+40 to 357+90	N/A Type "C"	0.5′	2.0′	No
363+00 to 412+80*	1.0′ Type "A"	0.0′	4.0′	No
437+75 to 452+50	0.0′ Type "C"	1.0′	2.0′	No
463+70 to 469+70	10.0′ Type "B"	0′	4.0′	No
477+00 to 486+00	3.0′ Type "B"	0′	2.0′	No
558+50 to 570+00	3.0′ Type "B"	0′	3.0′	No

^ Moisture Sensitive - Rainy weather may saturate this material and cause it to be unuseable.

* Pockets of Select Type "A" and/or "B", however this section should be designed as Select Type "C".

6) Construct the following sections by either excavating the peat (the peat below the existing embankment between Sta. 570+00 and Sta. 575+25 was excavated) or surcharging the peat with the following construction procedures.

   a) Disconnect and abandon underground utilities.

   b) Hand clear all vegetation.

   c) Place geotextile from Sta. 249+00 to 252+00 Left side and 247+50 to 251+00 Right.

   d) Place settlement platforms every 50′ along centerline. Settlement platforms should be 4′x4′x1" plywood with 5 ft. sections of 1" black iron pipe.

   e) Place initial lift of Select Type "A" not to exceed 4 ft. thick as measured by the settlement platforms. The initial lift shall be placed by end dumping with trucks and spread dozers not to exceed 50,000 lbs.

   f) Wait two weeks.

   g) From Sta. 570+00 to 575+00 Right and 571+00 to 575+00 Left and Sta. 141+00 to 142+60 construct embankment to the top of surcharge at a rate not to exceed 2 ft. per week. The first lift should be Select Type "A". The remaining portion of the embankment should be constructed to recommended structural

section.

From Sta. 247+50 to 252+00 construct embankment to the top of surcharge at a rate not to exceed 2 ft. per 2 weeks (or 1 ft. per week). The first four lifts should be Select Type "A". The remaining portion of the embankment should be constructed to the recommended structural section.

h) The surcharge heights should be:

Sta. 141+00 to Sta. 142+60

1.0 ft.	180 days
2.0 ft.	60 days
3.0 ft.	30 days
4.0 ft.	20 days
5.0 ft.	10 days

Sta. 247+50 to Sta. 252+00

2.0 ft.	180 days
3.0 ft.	60 days
4.0 ft.	30 days
5.0 ft.	20 days
6.5 ft.	10 days

Sta. 570+00 to Sta. 575+00

4.5 ft.	180 days
5.0 ft.	60 days
6.0 ft.	30 days
7.0 ft.	20 days
8.5 ft.	10 days

i) The estimated settlement for each section is:

	Consolidation (Percent)	Average Settlement (Feet)	Maximum Settlement (Feet)	Utilities
Sta. 141+00 to Sta. 142+60	34	2.8	7.8	G,T
Sta. 247+50 to Sta. 252+00	72	3.7	9.0	G,T
Sta. 570+00 to Sta. 575+00	51	3.5	5.1	G

Utilities

G = Gas

T = Telephone

7) Construct the following sections by excavating to the bottom of the structural section. A portion of the existing embankment is useable as Select Type "B" or Select Type "C". The remaining portion of the embankment is a fill section.

Section	Average Salvageable Existing Emb. Thickness	Existing Embankment Type	Average Stripping Depth	Separation Geotextile
180+20 to 186+75	3.5′	Select Type "B"	0.5′	No
452+50 to 463+70	5.0′	Select Type "B"	P.S.	No
469+70 to 477+00	2.5′	Select Type "B"	P.S.	No
486+00 to 490+00	2.5′	Select Type "B"	P.S.	No
499+90 to 504+50	3.0′	Select Type "B"	P.S.	No
581+50 to 584+00	3.0′	Select Type "B"	P.S.	No
584+00 to 591+50	2.5′	Select Type "C"	1.0′	No

8) To eliminate frost heaves the Select Type "B" should be increased from 22" to 52" at the following locations:

Sta.		Sta.
42+50	to	50+00
105+00	to	107+00
197+25	to	198+75
204+25	to	210+00
297+50	to	299+30
464+00	to	465+00
590+25	to	599+00
602+00	to	606+00

There will be a 10 foot transition from the 42" to 72" typical section.

9) Most of the cut slopes in the project area are in silts, silty sands or sandy silts, containing some clay, which acts as a binder. It is recommended that these slopes be cut at 2:1 and vegetated. A steeper cut such as 1 1/2:1 may be used but the slopes should be stabilized by the placement of a suitable soil slope stabilization product such as jute mesh. The following cut sections are in excess of 10′ and will require slope stabilization by placement of jute mesh:

Sta. 258+60 to 266+70
Sta. 304+10 to 309+20
Sta. 364+10 to 371+60

A suitable soils slope stabilization product such as jute mesh may be placed on slopes between Sta. 318+50 and 345+70 to promote growth of vegetation.

10) The following sections are deep fills and therefore have no special geotechnical requirements.

66+10 to 80+60
154+40 to 161+00
223+00 to 231+40
252+00 to 258+60
275+00 to 280+00
309+20 to 318+50
357+90 to 363+00
412+80 to 417+80
517+00 to 522+00

APPENDIX B

(Material Site Investigations)

MATERIAL SITE

(M.S. 21-2-400-1)

MATERIAL SITE INVESTIGATION
M.S. 21-2-400-1

Location & Access: This material site is located at approximately mile 86.5 of the Sterling Highway. More specifically it is located in the NW 1/4, NE 1/4, Sec. 16, T5N, R9W, S.M.

Acreage: Total acreage 40±, only about 14.5± acres contain potential construction material.

Ownership: D.N.R., the DOT/PF is currently negotiating use of this site.

Geology & Topography: The material site is located within the geological province known as the Nikiska Lowland. This area is characterized by poorly drained swamps, with associated dwaft trees, commonly underlain by peat and/or organic silt; and higher, generally well-drained, forested areas consisting of material ranging from fine sand to coarse gravel. This terrain was produced by the deposition and/or reworking of glacial, and associated proglacial deposits by streams, rivers and lakes of the late Pleistocene and early Recent geological time periods.

The topography of the immediate material site is considered to be gently rolling to hummocky, while for the provincial Nikiska Lowland, the topography is considered to be flat to gently rolling.

Vegetation in the material site consists of a dense, second growth of small spruce and birch trees approximately 0.2-0.3 feet in diameter. Occasional larger spruce, birch, and cottonwood trees up to approximately 1.5 feet in diameter are also present. This second growth is the result of a forest fire some years ago that swept the area. Numerous downed trees and logs, remanents of the first growth, criss-cross the forest floor creating a maze for men and equipment.

Field Investigations: This site has been investigated by three different DOT/PF geologists: 1) D. Rasmussen, March 1979, 2) R. Lewis, September, 1981 (see seperate published material site report), 3) T. Ottley, May 1990 (information gathered from the 1990 investigation is included in this report). Seven test pits (T.P.'s 1A-7A) were dug using a rented JD790D-LC Excavator to maximum depth of 23' during the May 1990 field investigation.

The majority of Material Site 21-2-400-1 appears to consist of sand, generally medium grained and slightly moist.

MATERIAL SITE INVESTIGATION
M.S. 21-2-400-1
CONTINUED

However, there also appears to be sandy gravel and gravelly sand present within the site. (See attached test pit logs and laboratory summary sheets.)

A water table was not encountered in any of the test pits. As a result of the hummocky terrain, there does not appear to be a defined surface drainage pattern. Excess surface water appears to collect in the low swampy areas.

Lab Analysis: Eleven samples tested: P200 ranged from 1% to 7% (averaged 3% for 7 samples). The moisture content ranged from 2.8% to 14.2% (4 samples). See attached Proctor tests which reflect the field densities for the sand and gravelly sand/sandy gravel material tested.

Usage Constraints: Vegetation screen must be left along the Sterling Highway, and along the section lines. Awaiting permit from D.N.R. for use of this site.

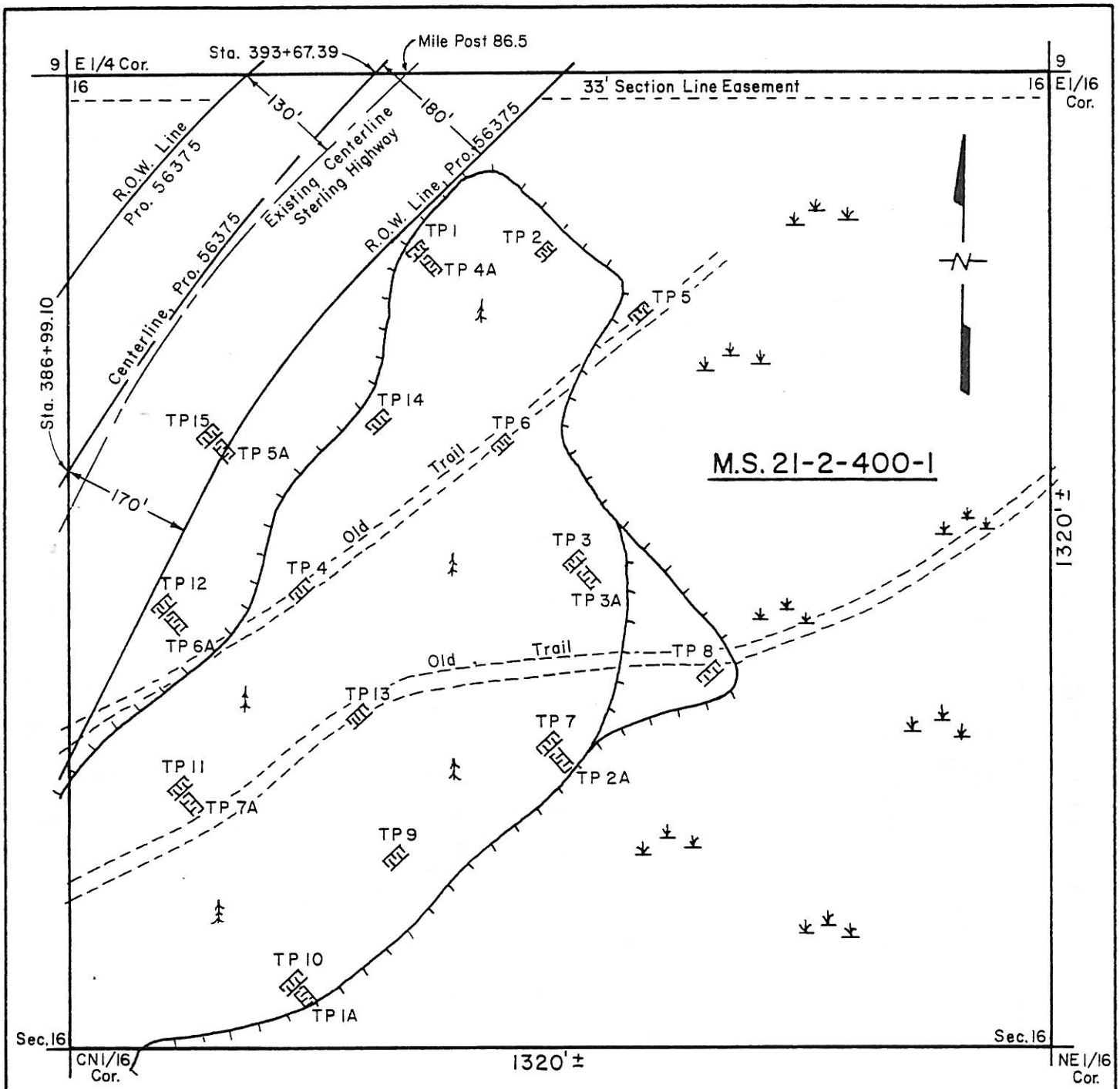
Comments:

1. The material site is overlain with an average 2.3 feet of overburden generally comprised of approximately six inches of organic debris and roots, one foot of brown organic silt, with the remainder consisting of gray sandy silt to silty sand.

2. This site was extensively tested both in 1981 and 1990; the reason for the 1990 investigation was to describe and sample the soils to a greater depth than was possible during the 1981 investigation.

3. It appears to be a good borrow source, and with limited potential for crushed aggregate. There is no developed access into the site, although it is directly adjacent to the Sterling Highway.

4. Near the intersection of the northern boundary of the site and the Sterling Highway is a small area where material has previously been removed. This area is directly adjacent to the highway (no vegetation screen), and presently serves as a pull-off. However, because of the loose sand in the floor of the area, it is not frequently used and vegetation (small brush) is re-establishing itself.



LEGEND:

T.P. — Approximate Test Pit Location Dug By Backhoe.

Approximate Boundary Of High Ground.

Low / Wet, Muskeg

0 50 100 200'
SCALE

NOTES:

1. Right Of Way And Centerline Locations Are Plotted From D.O.T. And P.F. Right Of Way Maps For Project No. 56375, Sterling Highway Mile 79–94, Dated 12/88.
2. Test Pit Locations Are Approximate.

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

MATERIALS

TEST PIT LOCATION MAP FOR: M.S. 21-2-400-1			LOCATION: NW1/4 NE1/4, Sec. 16, T5N, R9W, S.M.
DESIGNED: T.O.	DRAWN: N.I.	SCALE: 1" = 200'	SHEET: 1 of 1

ALASKA DEPARTMENT OF TRANSPORTATION TEXTURAL SOIL DESCRIPTIONS

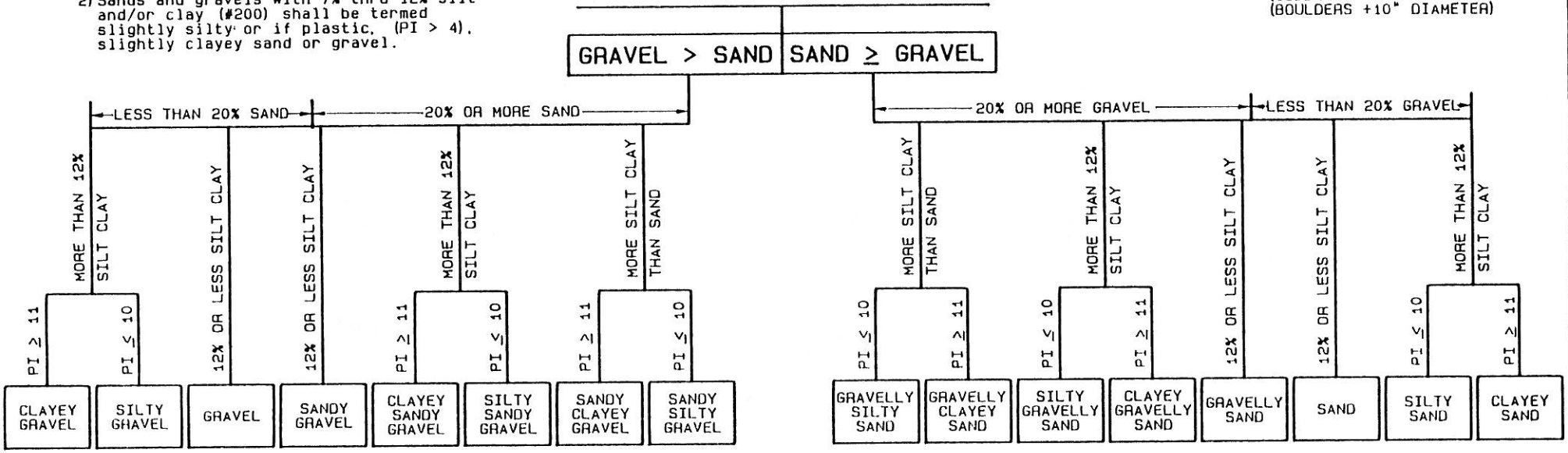
Rev. Dec. 8, 1989

NOTES: 1) All silts with a plastic index > 4 shall be termed "slightly clayey".

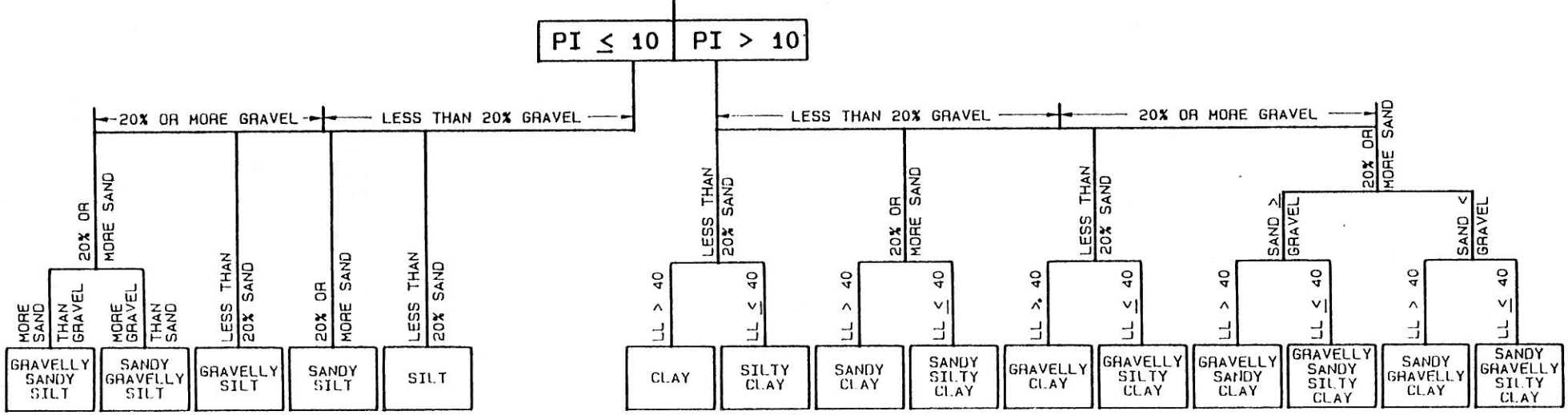
2) Sands and gravels with 7% thru 12% silt and/or clay (#200) shall be termed slightly silty or if plastic, (PI > 4), slightly clayey sand or gravel.

(CLAYS < .002 mm)
(SILTS < #200)
(SAND #200 TO #10)
(GRAVEL #10 TO 3" DIAMETER)
(COBBLES 3" TO 10" DIAMETER)
(BOULDERS +10" DIAMETER)

COARSE-GRAINED SOILS
35% OR LESS SILT/CLAY



FINE-GRAINED SOILS
36% OR MORE SILT/CLAY



SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

Project No. 56375 Sampled By Ottley

[ ] Centerline

[X] Materials Site MS 21-2-400-1

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		15.0'-17.0'	16.0'-18.0'	17.0'-18.0'	17.0'-19.0'	14.5'-16.5'	15.5'-16.5'
Test Hole No.		TP-1A	TP-2A	TP-2A	TP-3A	TP-4A	TP-4A
Field No.		FS-1A	FS-2A	FS-3A	FS-4A	FS-5A	FS-6A
Date Sampled		05/22/90	05/22/90	05/22/90	05/22/90	05/22/90	05/22/90
Lab No.		90A-0620	90A-0621	90A-0622	90A-0623	90A-0624	90A-0625
	3"		100				
	2"	100	97		100	100	
	1"	99	92		97	89	
Percent	3/4"	98	89		95	85	
	1/2"	97	86		93	82	
Passing	3/8"	97	83		92	80	
	#4	96	79		88	76	
Sieve	#10	94	76		86	72	
	#40	63	53		43	32	
Size	#50	32	33		15	13	
	#200	2	5		1	2	
	.02mm						
	.002mm						
DOTTSD		Sa	Grl Sa	Grl Sa	Sa	Grl Sa	Grl Sa
AASHTO Class		A-3(0)	A-3(0)		A-1-b(0)	A-1-b(0)	
FSV Class							
Liquid Limit		NV	NV		NV	NV	
Plastic Index		NP	NP		NP	NP	
Moisture Content %				14.2			4.5
Organic Content %							
% Gravel		6	24		14	28	
% Sand		92	71		85	70	
% Silt & Clay		2	5		1	2	
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

SOILS TESTING REPORT

Project Name Sterling Hwy. Mp 79-94

[ ] Centerline

[X] Materials Site MS 21-2-400-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		13.0'-17.0'	15.0'-18.0'	17.0'-18.0'	14.0'-15.0'	14.0'-17.0'	
Test Hole No.		TP-5A	TP-6A	TP-6A	TP-7A	TP-7A	
Field No.		FS-7A	FS-8A	FS-9A	FS-10A	FS-11A	
Date Sampled		05/23/90	05/23/90	05/23/90	05/23/90	05/23/90	
Lab No.		90A-0626	90A-0627	90A-0628	90A-0629	90A-0630	
	3"					100	
	2"	100				97	
	1"	99				95	
Percent	3/4"	99				93	
	1/2"	99				90	
Passing	3/8"	98				89	
	#4	98	100			85	
Sieve	#10	97	100			83	
	#40	87	87			38	
Size	#50	61	57			12	
	#200	7	4			1	
	.02mm						
	.002mm						
DOTTSD		Sl Si Sa	Sa	Sa	Sa	Sa	
AASHTO Class		A-3(0)	A-3(0)			A-1-b(0)	
FSV Class							
Liquid Limit		NV	NV			NV	
Plastic Index		NP	NP			NP	
Moisture Content %				2.8	4.3		
Organic Content %							
% Gravel		3	0			17	
% Sand		90	96			82	
% Silt & Clay		7	4			1	
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

250-208
5-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 06/15/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0631

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination

SAMPLED FROM FS-2A & 7A SUBMITTED BY Ottley DATE SAMPLED / /

LOCATION _____ DEPTH _____ DATE RECEIVED 05/29/90

SOURCE MS-21-2-400-1 QUANTITY REPRESENTED _____ TEST COMPLETED 06/12/90

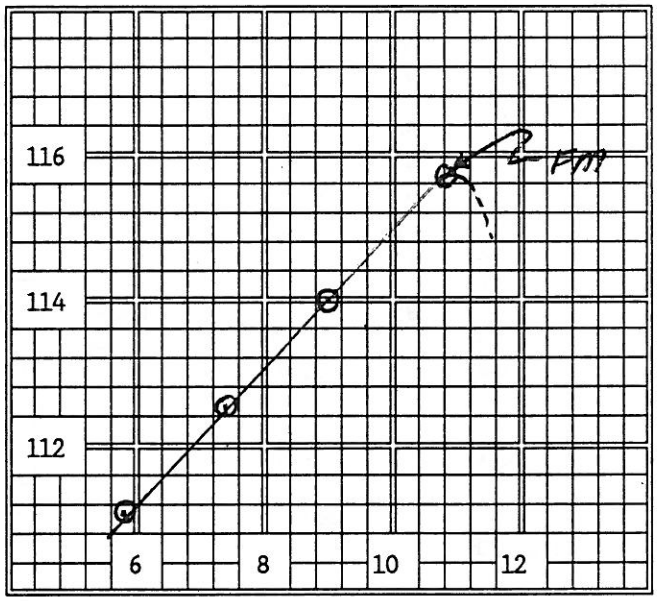
EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	-3/4"	Specs.
3"	100		
2"	99		
1 1/2"	98		
1"	97		
3/4"	95	100	
1/2"	94	99	
3/8"	93	98	
#4	91	96	
#8			
#10	88	93	
#16			
#40	71	75	
#50	48	51	
#100			
#200	6	6	

	Specs.
% FRACTURE	
LL	
PL	
PI	

	Coarse	Fine
SPG	2.75	2.73

Optimum Moisture = 10.8 Max. Dry Density = 115.7



% +3"	0	FSV
% Gravel	12	AASHTO Class
% Sand	82	DOTTSD
% Si/Cl	6	Unified Class

% Natural Moisture

Remarks:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Ralph W Zeek
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

25D-208
5-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 06/15/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

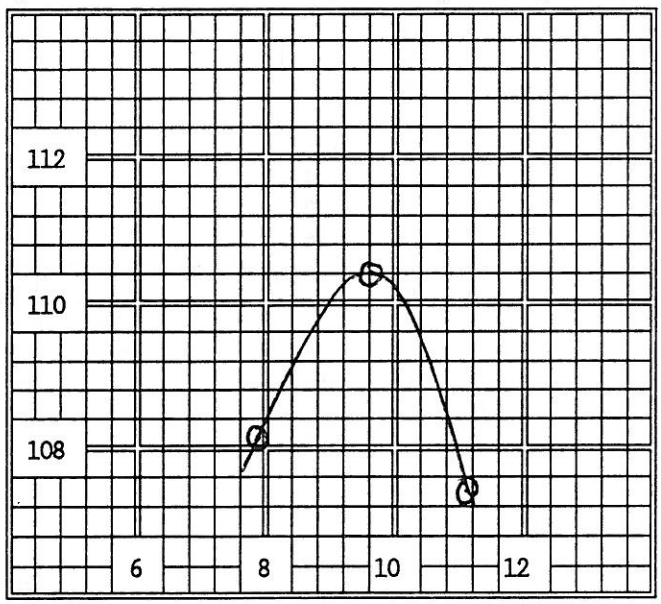
LABORATORY NO. 90A-0632
PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination
SAMPLED FROM FS-5A, 8A & 11A SUBMITTED BY Ottley DATE SAMPLED / /
LOCATION DEPTH DATE RECEIVED 05/29/90
SOURCE MS-21-2-400-1 QUANTITY REPRESENTED TEST COMPLETED 06/08/90
EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	-3/4"	Specs.
3"	100		
2"	99		
1 1/2"	97		
1"	95		
3/4"	93	100	
1/2"	91	98	
3/8"	90	97	
#4	87	94	
#8			
#10	85	91	
#16			
#40	52	56	
#50	27	29	
#100			
#200	2	2	

	Specs.
% FRACTURE	
LL	
PL	
PI	

	Coarse	Fine
SPG	2.72	2.71

Optimum Moisture = 9.6 Max. Dry Density = 110.4



% +3"	0	FSV
% Gravel	15	AASHTO Class
% Sand	83	DOTTSD
% Si/Cl	2	Unified Class

% Natural Moisture

Remarks:

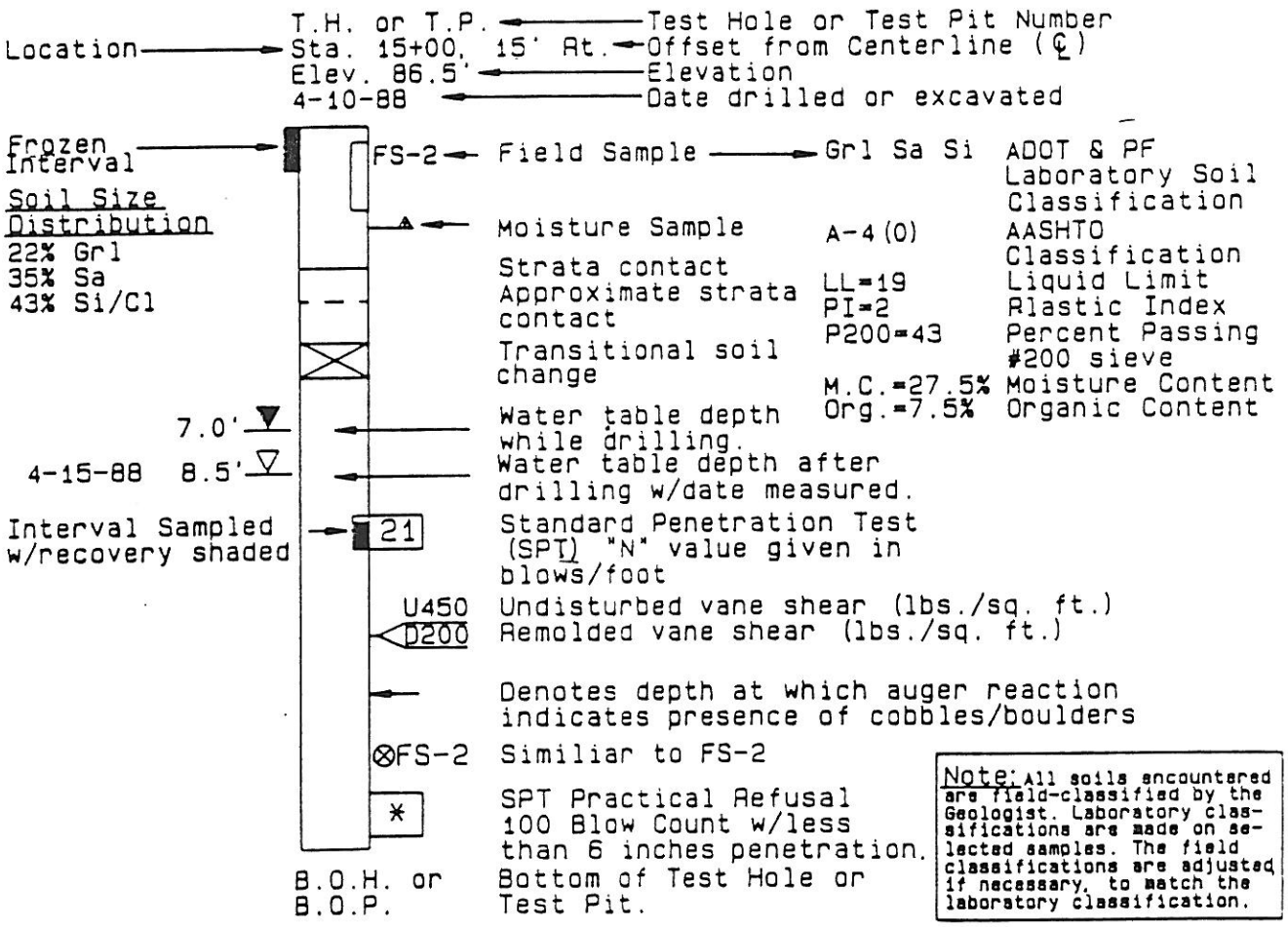
The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Ralph W Lear
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

TEST PIT AND TEST HOLE LOG EXPLANATION
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
MATERIALS SECTION

6-2-88



Note: All soils encountered are field-classified by the Geologist. Laboratory classifications are made on selected samples. The field classifications are adjusted if necessary, to match the laboratory classification.

Abbreviations

Blk	=Black	Org	=Organic(s)
Bn	=Brown	Grl	=Gravel
Bl	=Blue	w/	=with
Gn	=Green	tr.	=trace
Gr	=Gray	sl.	=slightly
Or	=Orange	G.S.	=Grab Sample
Rd	=Red	S.S.	=Split spoon
Tn	=Tan	S.T.	=Shelby Tube
Sa	=Sand	M.S.	=Modified Shelby Tube
Si	=Silt		
Cl	=Clay		

Soil Size Distribution

Based on U.S. Standard Sieve Sizes:

Boulders	=>10"
Cobbles	=3"-10"
Gravel	=#10-3"
Sand	=#200-#10
Silt/Clay	=<#200

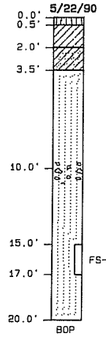
Plan View Symbols

- Power Auger Test Hole
- Hand Auger Test Hole
- Surface Sample
- 4.5' Hand Probe Depth & Location
- Hand Dug Test Pit
- Dozer/Backhoe Pit
- ×××× Berm
- Terrace or Bank
- Swamp

Graphic Symbols (Two or more soil symbols may be used together to indicate a combination of soil types.)

- Organics (Org)
- Gravel (Grl)
- Sand (Sa)
- Silt (Si)
- Clay (Cl)
- Ice (Ice)
- Bedrock (Bx)
- Cobbles and/or Boulders

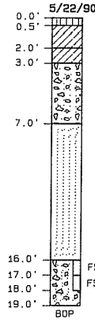
T.P. 1A Located within Material Site 21-2-400-1 (see sketch).
5/22/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-2.0' Dark Brown Silt, with roots, saturated.
2.0'-3.5' Gray Brown Silty Sand to Sandy Silt. Wet to saturated.
3.5'-20.0' Brown Sand, a fine sand, damp. With Gravelly Sand lenses between 9.5' and 11.0'.

FS-1A A-3(0), LL=NV, PI=NP, 6% Gravel, 92% Sand, 2% silt.

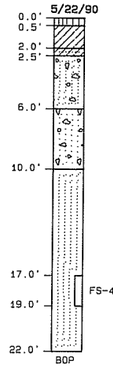
T.P. 2A Located within Material Site 21-2-400-1, Mi. 86.6 Sterling Hwy.
5/22/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-2.0' Dark Brown Silt, with roots, saturated.
2.0'-3.0' Gray Brown Silt, saturated.
3.0'-7.0' Brown Sandy Gravel, loose, damp. Max. seen 6", <5%+ 3".
7.0'-16.0' Brown Sand, loose, dry.
16.0'-19.0' Gravelly Sand, wet.

FS-2A LL=NV, PI=NP, 24% Gravel, 71% Sand, 5% Silt.
FS-3A MC=14.2%

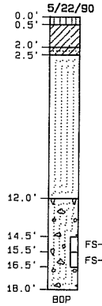
T.P. 3A Located within Material Site 21-2-400-1, (see sketch).
5/22/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-2.0' Dark Brown Silt, with roots, saturated.
2.0'-2.5' Gray Brown Sandy Silt, saturated.
2.5'-6.0' Brown Gravelly Sand, loose, damp.
6.0'-10.0' Brown Sandy Gravel, loose, damp. With Gravelly Sand and Sand lenses.
10.0'-22.0' Brown Sand, loose, dry to damp.

FS-4A A-1-b(0), LL=NV, PI=NP, 14% Gravel, 85% Sand, 1% Silt.

T.P. 4A Located within Material Site 21-2-400-1 (see sketch).
5/22/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-2.0' Dark Brown Silt, with roots.
2.0'-2.5' Gray Brown Sandy Silt.
2.5'-12.0' Brown Sand, loose damp.
12.0'-18.0' Brown Gravelly Sand, loose, damp.

FS-5A LL=NV, PI=NP, 28% Gravel, 70% Sand, 2% Silt.
FS-6A M.C.=4.6%.

Refusal at 18' due to cave ins.

T.P. 5A Locsated within Material Site 21-2-400-1 (see sketch).
5/23/90

0.0'-0.5' Dark Brown Organic, with roots.
0.5'-2.0' Dark Brown Silt, with roots.
2.0'-23.0' Gray Brown Slightly Silty Sand. With Gravel after 15'.

FS-7A A-3(0), LL=NV, PI=NP, 3% Gravel, 90% Sand, 7% Silt.

T.P. 6A Located within Material Site 21-2-400-1 (see sketch).
5/23/90

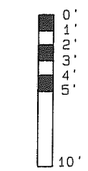
0.0'-0.5' Dark Brown Organic, with roots.
0.5'-1.5' Dark Brown Organic Silt, with roots, saturated.
1.5'-21.0' Brown Sand, loose, dry to damp. With some Gravelly Sand lenses.

FS-8A A-3(0), LL=NV, PI=NP.
FS-9A 95% Sand, 4% Silt, M.C.= 2.8%.

T.P. 7A Located within Material Site 21-2-400-1 (see sketch).
5/23/90

0.0'-0.5' Dark Brown Organics, with roots.
0.5'-1.0' Dark Brown Organic Silt, with roots.
1.0'-3.5' Brown Sandy Gravel. 5%-15%+ 3", <1%+ 10".
3.5'-20.0' Gray Brown Sand, with Gravelly Sand and Sandy Gravel lenses.

FS-10A M.C.=4.3%.
FS-11A A-1-b(0), LL=-NV, PI=NP, 17% Gravel, 82% Sand, 1% Silt.



BAR SCALE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

MATERIAL SITE 21-2-400-1
TEST PITS
LOCATED M.P. 86.6 STERLING HWY.

Scale: Vert. 1"= 5' Horz.	Designed: T.O.	Drawn: N.J.I.	SHEET 1 OF 1
	Checked:	Date:	

MATERIAL SITE

(M.S. 21-2-401-1)

MATERIAL SITE INVESTIGATION
M.S. 21-2-401-1

Location & Access: Located at approximately MP 86.8 of the Sterling Highway. S.E. 1/4, N.W. 1/4, Sec. 16, T5N, R9W, S.M. (excluding the right of way for the Sterling Highway, and the section and power lines). This site is undeveloped.

Acreage: Approximately 20.5 acres could be worked.

Ownership: D.N.R., the DOT/PF is currently negotiating for use of this site.

Geology and Topography: The material site is located within the geological province known as the Nikiska Lowland. This area is characterized by poorly drained swamps, with associated dwarf trees, commonly underlain by peat and/or organic silt; and higher, generally well-drained, forested areas consisting of material ranging from fine sand to coarse gravel. This terrain was produced by the deposition and/or reworking of glacial, and associated proglacial deposits by streams, rivers and lakes of the late Pleistocene and early Recent geological time periods.

The topography of the immediate material site is considered to be gently rolling to hummocky, while for the provincial Nikiska Lowland, the topography is considered to be flat to gently rolling.

Vegetation in the material site consists of a dense, second growth of small spruce and birch trees approximately 0.2-0.3 feet in diameter. Occasional larger spruce, birch, and cottonwood trees up to approximately 1.5 feet in diameter are also present. This second growth is the result of a forest fire some years ago that swept the area. Numerous downed trees and logs, remanents of the first growth, criss-cross the forest floor creating a maze for men and equipment.

Field Investigations: This site has been investigated by three different DOT/PF geologists: 1) D. Rasmussen, March 1979, 2) R. Lewis, September, 1981 (see seperate published material site report) 3) T. Ottley, May 1990 (information gathered from the 1990 investigation is included in this report). Twelve test pits (T.P.'s 1A-12A) were dug using a rented JD790D-LC Excavator to maximum depth of 22' during the May 1990 field investigation.

The majority of Material Site 21-2-401-1 appears to consist of sand, generally medium grained and slightly moist.

MATERIAL SITE INVESTIGATION
M.S. 21-2-401-1
CONTINUED

However, there also appears to be sandy gravel and gravelly sand present within the site. (See attached test pit logs and laboratory summary sheets for material analysis).

A water table was not encountered in the test pits. As a result of the hummocky terrain, there does not appear to be a defined surface drainage pattern. Excess surface water appears to collect in the low swampy areas. Test pits were not placed in the low areas.

Lab Analysis: Eighteen samples tested: P200 ranged from 1% to 19% (averaged 4.2% for 15 samples); The moisture content ranged from 4.2% to 10.4% (4 samples). See attached Proctor tests which reflect the field densities for the sand and gravelly sand/sandy gravel material tested.

Usage Constraints: Vegetation screen must be left along the Sterling Highway, and along the section lines. Awaiting permit from D.N.R. for use of this site.

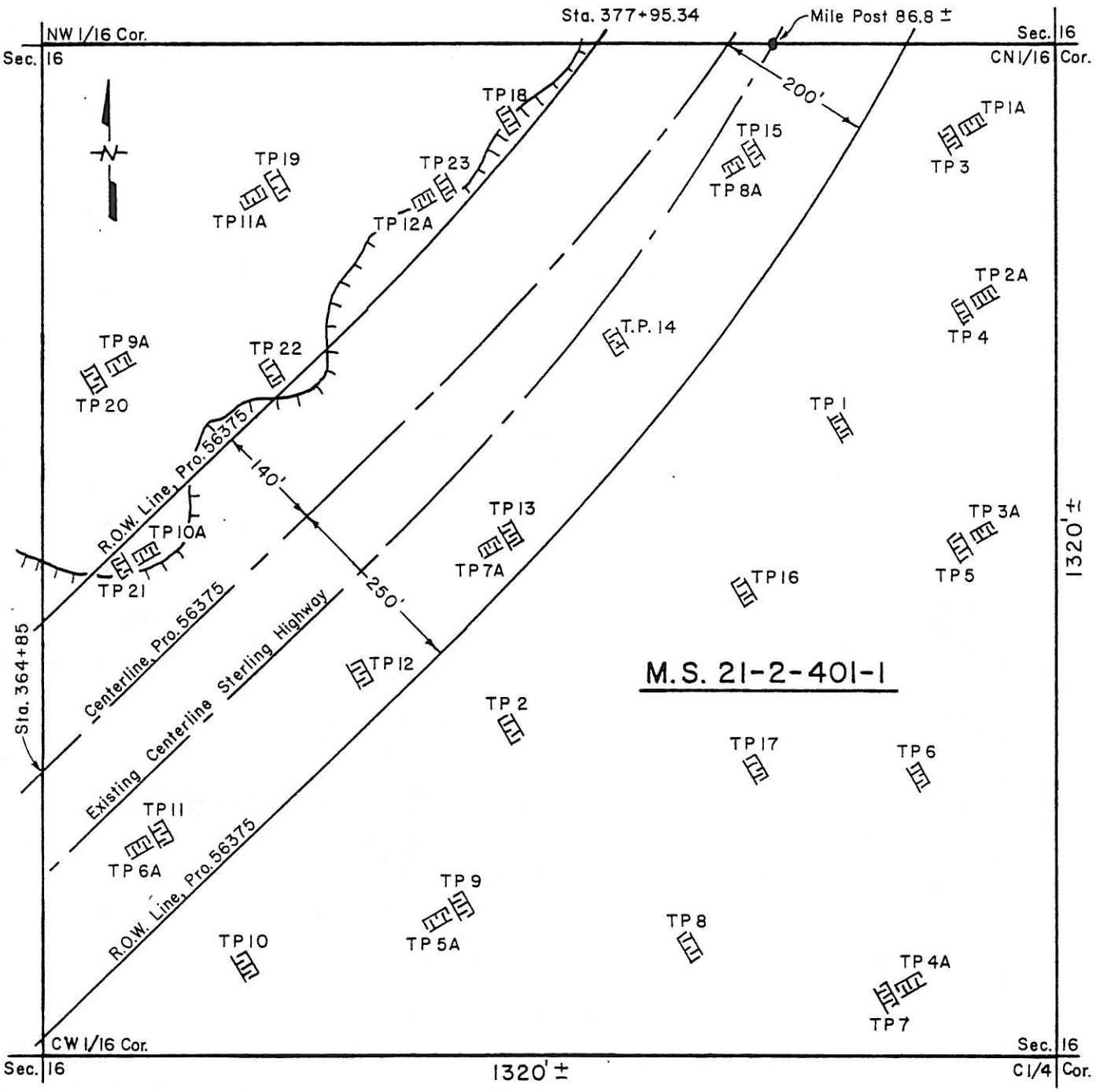
Comments:

1. The material site is overlain with an average 2.4 feet of overburden generally comprised of approximatley six inches of organic debris and roots, one foot of brown organic silt, with the remainder consisting of gray sandy silt to silty sand.

2. This site was extensively tested both in 1981 and 1990; the reason for the 1990 investigation was to describe and sample the soils to a greater depth than was possible during the 1981 investigation.

3. It appears to be a good borrow source, with very little potential for crushed aggregate. There is no developed access into the site, although it is directly adjacent to the Sterling Highway.

4. Where tested, the average P200 of the sand/gravelly sand/sandy gravel material was 4.2%.



LEGEND:

T.P. – Approximate Test Pit Location Dug By Backhoe.

– Approximate Boundary Of Existing Material Removal.

0 50 100 200'
SCALE

NOTES:

1. Right Of Way And Centerline Locations Are Plotted From D.O.T. And P.F. Right Of Way Maps For Project No. 56375, Sterling Highway Mile 79–94, Dated 12/88.
2. Test Pit Locations Are Approximate.
3. Existing Pit Boundaries Are Approximate.

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

MATERIALS

TEST PIT LOCATION MAP FOR: M.S. 21-2-401-1		LOCATION:	SE1/4 NW1/4, Sec.16 T5N, R9W, S.M.
DESIGNED: T.O.	DRAWN: N. I.	SCALE: 1" = 200'	SHEET: 1 of 1

ALASKA DEPARTMENT OF TRANSPORTATION TEXTURAL SOIL DESCRIPTIONS

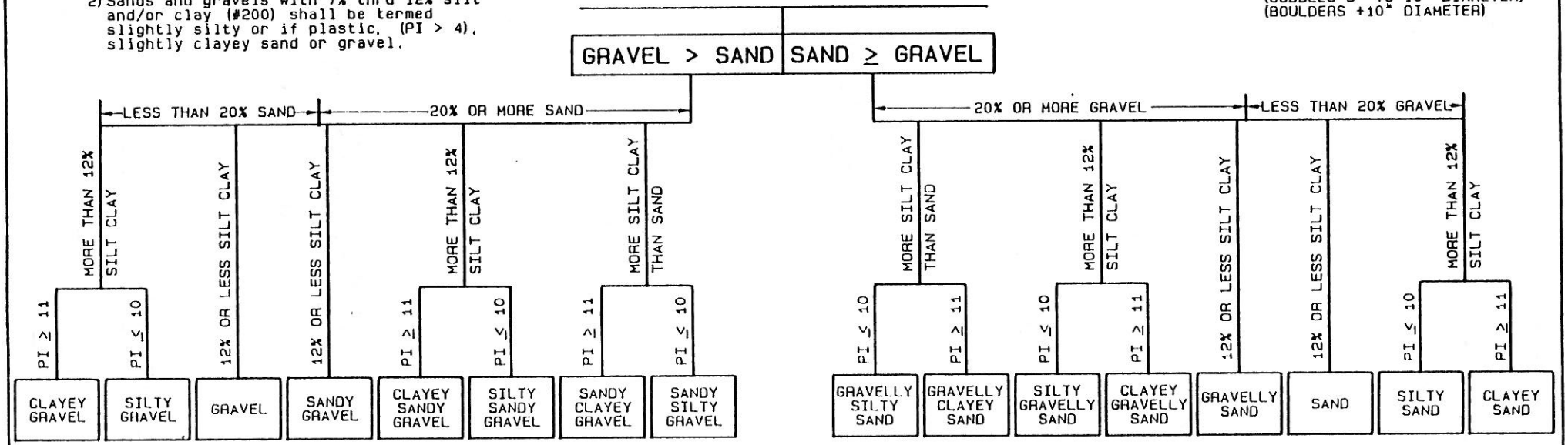
Rev. Dec. 8, 1989

NOTES: 1) All silts with a plastic index > 4 shall be termed "slightly clayey".

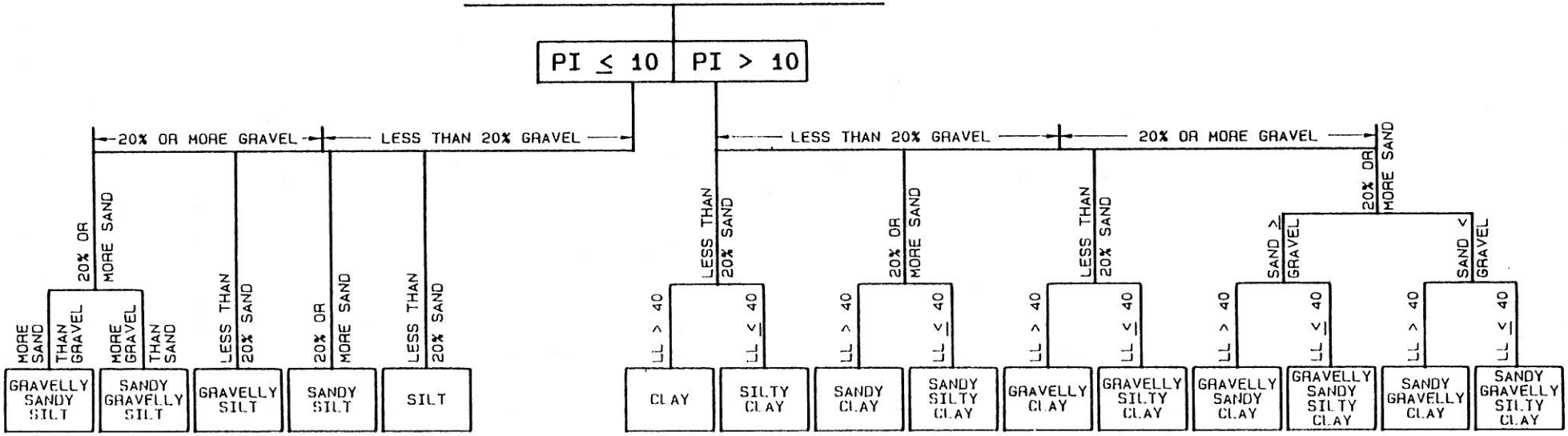
2) Sands and gravels with 7% thru 12% silt and/or clay (#200) shall be termed slightly silty or if plastic, (PI > 4), slightly clayey sand or gravel.

(CLAYS < .002 mm)
(SILTS < #200)
(SAND #200 TO #10)
(GRAVEL #10 TO 3" DIAMETER)
(COBBLES 3" TO 10" DIAMETER)
(BOULDERS +10" DIAMETER)

COARSE-GRAINED SOILS
35% OR LESS SILT/CLAY



FINE-GRAINED SOILS
36% OR MORE SILT/CLAY



SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[ ] Centerline

[X] Materials Site MS 21-2-401-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		10.0'-12.0'	16.0'-19.0'	4.0'-6.0'	14.0'-17.0'	13.0'-15.0'	2.0'-3.0'
Test Hole No.		TP-1A	TP-1A	TP-2A	TP-2A	TP-3A	TP-3A
Field No.		FS-1A	FS-2A	FS-3A	FS-4A	FS-5A	FS-6A
Date Sampled		05/17/90	05/17/90	05/17/90	05/17/90	05/18/90	05/18/90
Lab No.		90A-0566	90A-0567	90A-0568	90A-0569	90A-0570	90A-0571
	3"	100					
	2"	90	100	100	100	100	
	1"	81	97	97	96	98	
Percent	3/4"	75	96	95	93	98	
	1/2"	67	94	94	91	96	
Passing	3/8"	59	93	93	89	96	
	#4	46	90	91	85	94	
Sieve	#10	36	88	90	80	92	100
	#40	17	74	52	52	73	86
Size	#50	9	40	17	26	34	59
	#200	3	7	1	5	2	19
	.02mm						
	.002mm						
DOTTSD		Sa Grl	Sl Si Sa	Sa	Grl Sa	Sa	Si Sa
AASHTO Class		A-1-a(0)	A-3(0)	A-3(0)	A-3(0)	A-3(0)	
FSV Class							
Liquid Limit		NV	NV	NV	NV	NV	
Plastic Index		NP	NP	NP	NP	NP	
Moisture Content %							10.4
Organic Content %							
% Gravel		64	12	10	20	8	0
% Sand		33	81	89	75	90	81
% Silt & Clay		3	7	1	5	2	19
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

SOILS TESTING REPORT

Project Name Sterling Hwy. Mp 79-94

[ ] Centerline

[X] Materials Site MS 21-2-401-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		18.0'-19.0'	18.0'-21.0'	15.0'-17.0'	14.0'-17.0'	12.0'-14.0'	15.0'-18.0'
Test Hole No.		TP-4A	TP-4A	TP-5A	TP-6A	TP-7A	TP-8A
Field No.		FS-7A	FS-8A	FS-9A	FS-10A	FS-11A	FS-12A
Date Sampled		05/18/90	05/18/90	05/18/90	05/18/90	05/19/90	05/19/90
Lab No.		90A-0572	90A-0573	90A-0574	90A-0575	90A-0576	90A-0577
	3"						
	2"		100	100	100	100	100
	1"		100	96	95	97	96
Percent	3/4"		100	93	92	97	93
	1/2"		99	90	88	96	90
Passing	3/8"		99	88	86	94	87
	#4		99	84	80	92	81
Sieve	#10		98	81	79	89	76
	#40		88	51	72	39	43
Size	#50		51	28	58	17	25
	#200		4	8	4	4	2
	.02mm						
	.002mm						
DOTTSD		Sa	Sa	Sl Si Sa	Grl Sa	Sa	Grl Sa
AASHTO Class			A-3(0)	A-3(0)	A-3(0)	A-1-b(0)	A-1-b(0)
FSV Class							
Liquid Limit			NV	NV	NV	NV	NV
Plastic Index			NP	NP	NP	NP	NP
Moisture Content %		8.0					
Organic Content %							
% Gravel			2	19	21	11	24
% Sand			94	73	75	85	74
% Silt & Clay			4	8	4	4	2
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

SOILS TESTING REPORT

Project Name Sterling Hwy. Mp 79-94

[ ] Centerline

[X] Materials Site MS 21-2-401-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		16.0'-17.0'	19.0'-20.0'	19.0'-21.0'	16.0'-19.0'	15.0'-18.0'	14.0'-16.0'
Test Hole No.		TP-8A	TP-9A	TP-9A	TP-10A	TP-11A	TP-12A
Field No.		FS-13A	FS-14A	FS-15A	FS-16A	FS-17A	FS-18A
Date Sampled		05/19/90	05/24/90	05/24/90	05/24/90	05/24/90	05/24/90
Lab No.		90A-0578	90A-0633	90A-0634	90A-0635	90A-0636	90A-0637
	3"				100	100	100
	2"			100	96	98	97
	1"			95	83	92	88
Percent	3/4"			92	79	89	86
	1/2"			88	77	86	77
Passing	3/8"			85	74	83	72
	#4			78	71	77	60
Sieve	#10			69	66	69	50
	#40			27	23	23	15
Size	#50			9	9	11	6
	#200			2	1	3	1
	.02mm						
	.002mm						
DOTTSD		Grl Sa	Grl Sa	Grl Sa	Grl Sa	Grl Sa	Sa Grl
AASHTO Class				A-1-b(0)	A-1-b(0)	A-1-b(0)	A-1-a(0)
FSV Class							
Liquid Limit				NV	NV	NV	NV
Plastic Index				NP	NP	NP	NP
Moisture Content %		6.8	4.2				
Organic Content %							
% Gravel				31	34	31	50
% Sand				67	65	66	49
% Silt & Clay				2	1	3	1
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

25D-208
5-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 06/14/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0579

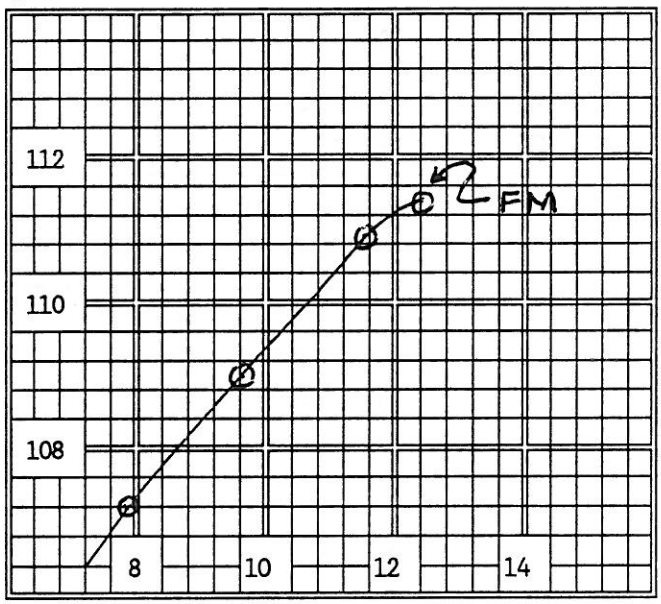
PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination
SAMPLED FROM FS-2A thru 4A SUBMITTED BY Ottley DATE SAMPLED / /
LOCATION _____ DEPTH _____ DATE RECEIVED 05/22/90
SOURCE _____ QUANTITY REPRESENTED _____ TEST COMPLETED 05/31/90
EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	-3/4"	Specs.
3"			
2"	100		
1 1/2"	99		
1"	97		
3/4"	95	100	
1/2"	93	98	
3/8"	92	97	
#4	89	94	
#8			
#10	86	91	
#16			
#40	59	62	
#50	28	29	
#100			
#200	5	5	

		Specs.
% FRACTURE		
LL		
PL		
PI		

	Coarse	Fine
SPG	2.73	2.71

Optimum Moisture = 12.4 Max. Dry Density = 111.4



% +3"	0	FSV
% Gravel	14	AASHTO Class
% Sand	81	DOTTSD
% Si/Cl	5	Unified Class

% Natural Moisture

Remarks:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature _____
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

25D-209
6-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 06/17/90

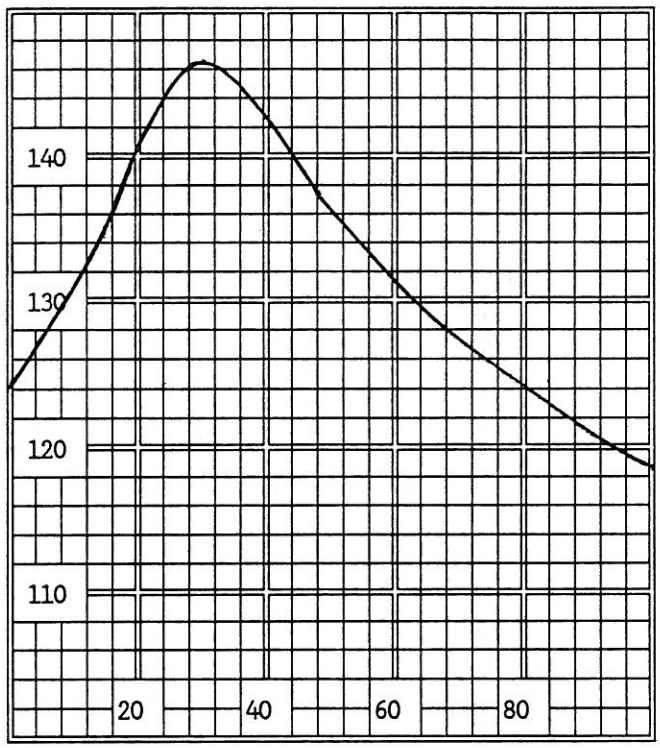
TEST OF _____ SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0641
PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination
SAMPLED FROM FS-15A thru 18A SUBMITTED BY Ottley DATE SAMPLED / /
LOCATION DEPTH DATE RECEIVED 05/30/90
SOURCE MS-21-2-401-1 QUANTITY REPRESENTED TEST COMPLETED 06/12/90
EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	Specs.
3"	100	
2"	98	
1 1/2"	94	
1"	90	
3/4"	86	
1/2"	82	
3/8"	79	
#4	72	
#8		
#10	64	
#16		
#40	22	
#50	9	
#100		
#200	2	

	Specs.
% FRACTURE	
LL	
PL	
PI	

	Coarse	Fine
SPG	2.72	2.70



INSTRUCTIONS FOR FIELD USE

1. Determine the percent passing #4 sieve of the field density test.
2. The intersection of the % passing #4 with the density curve above yields maximum dry density for that test.

NO +3/4" CORRECTION IS REQUIRED.

Remarks:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Richard Head
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

25D-208
5-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 06/14/90

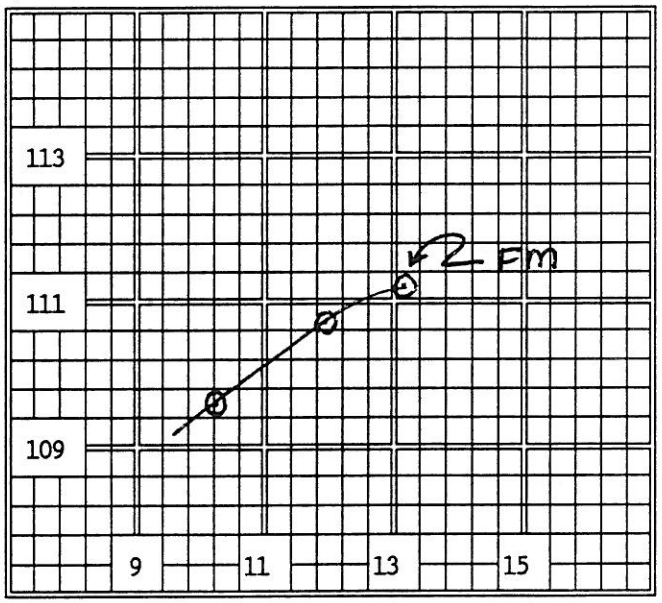
TEST OF _____ SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0580

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination
SAMPLED FROM FS-5A, 8A, 9A & 11A SUBMITTED BY Ottley DATE SAMPLED / /
LOCATION _____ DEPTH _____ DATE RECEIVED 05/22/90
SOURCE _____ QUANTITY REPRESENTED _____ TEST COMPLETED 05/31/90
EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	-3/4"	Specs.
3"			
2"	100		
1 1/2"	99		
1"	97		
3/4"	96	100	
1/2"	95	99	
3/8"	93	97	
#4	91	95	
#8			
#10	89	93	
#16			
#40	61	64	
#50	32	33	
#100			
#200	4	4	

Optimum Moisture = 13.0 Max. Dry Density = 111.2



	Specs.
% FRACTURE	
LL	
PL	
PI	

	Coarse	Fine
SPG	2.72	2.71

% +3"	0	FSV
% Gravel	11	AASHTO Class
% Sand	85	DOTTSD
% Si/Cl	4	Unified Class

% Natural Moisture

Remarks:

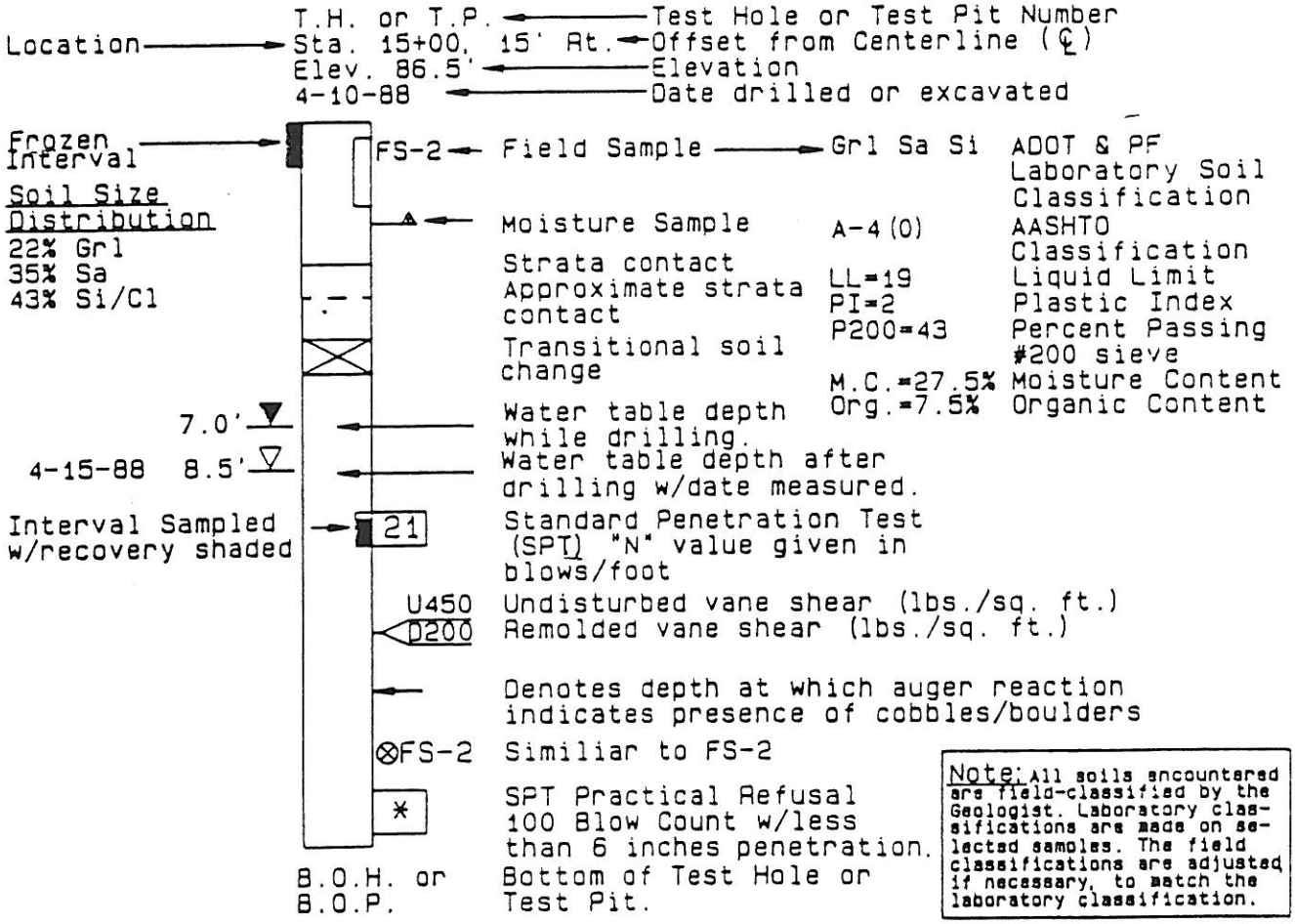
The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature _____
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

TEST PIT AND TEST HOLE LOG EXPLANATION
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
MATERIALS SECTION

6-2-88



Note: All soils encountered are field-classified by the Geologist. Laboratory classifications are made on selected samples. The field classifications are adjusted if necessary, to match the laboratory classification.

Abbreviations

Blk=Black Org=Organic(s)
Bn=Brown Grl=Gravel
Bl=Blue w/=with
Gn=Green tr.=trace
Gr=Gray sl.=slightly
Or=Orange G.S.=Grab Sample
Rd=Red S.S.=Split spoon
Tn=Tan S.T.=Shelby Tube
Sa=Sand M.S.=Modified Shelby Tube
Si=Silt
Cl=Clay

Soil Size Distribution

Based on U.S. Standard Sieve Sizes:

Boulders	=>10"
Cobbles	=3"-10"
Gravel	=#10-3"
Sand	=#200-#10
Silt/Clay	=<#200

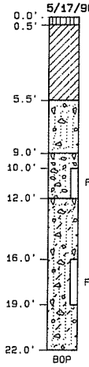
Plan View Symbols

- Power Auger Test Hole
- Hand Auger Test Hole
- Surface Sample
- 4.5' Hand Probe Depth & Location
- Hand Dug Test Pit
- Dozer/Backhoe Pit
- ×××× Berm
- Terrace or Bank
- Swamp

Graphic Symbols (Two or more soil symbols may be used together to indicate a combination of soil types.)

- Organics (Org)
- Gravel (Grl)
- Sand (Sa)
- Silt (Si)
- Clay (Cl)
- Ice (Ice)
- Bedrock (Bx)
- Cobbles and/or Boulders

T.P. 1A Located within Material Site 21-2-401-1 (see sketch).
5/17/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-5.5' Orange Brown Silt, saturated, with roots to 1.5'.

5.5'-9.0' Brown Sand, with gravel, loose, damp.

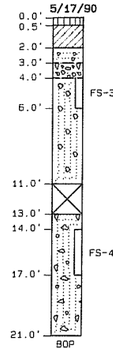
9.0'-12.0' Brown Sandy Gravel, loose, damp.
<10%+ 3", Max. seen 7".

FS-1A A-1-a(0), LL=NV, PI=NP, 64% Gravel, 33% Sand, 3% Silt.

12.0'-22.0' Brown Slightly Silty Sand, with gravel, loose, damp.

FS-2A A-3(0), LL=NV, PI=NP, 12% Gravel, 81% Sand, 7% Silt.

T.P. 2A Located within Material Site 21-2-401-1 (see sketch).
5/17/90



0.0'-0.5' Dark Brown Organinc, with roots.
0.5'-2.0' Brown Silt, with roots. Wet to saturated.

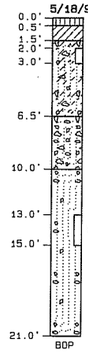
2.0'-21.0' Brown Sand, with gravel. Loose, damp.
With sandy gravel lense 3'-4'.

FS-3A A-3(0), LL=NV, PI=NP, 10% Gravel, 89% Sand, 1% Silt.

13.0'-21.0' Brown Gravelly Sand.

FS-4A A-3(0), LL=-NV, PI=NP, 20% Gravel, 75% Sand, 5% Silt.

T.P. 3A Located within Material Site 21-2-401-1 (see sketch).
5/18/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-1.5' Dark Brown Silt, with roots. Wet.
1.5'-6.5' Brown Silty Gravelly Sand. Wet.

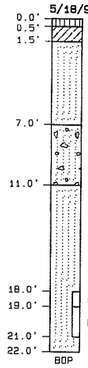
FS-6A M.C.=10.4%, 81% Sand, 19% Silt.

6.5'-10.0' Brown Gravelly Sand to Sandy Gravel. Damp.

10.0' 21.0' Brown Sand with Gravel. Damp.

FS-5A A-3(0), LL=NV, PI=NP, 8% Gravel, 90% Sand, 2% Silt.

T.P. 4A Located within Material Site 21-2-401-1 (see sketch).
5/18/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-1.5' Dark Brown Silt, with roots. Saturated.
1.5'-7.0' Brown Sand. Loose, damp.

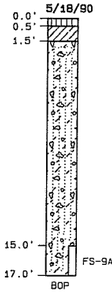
7.0'-11.0' Brown Gravelly Sand. Loose, damp.

11.0'-22.0' Brown Sand. Loose, damp.

FS-7A M.C.= 8.0%.

FS-8A A-3(0), LL=NV, PI=NP.

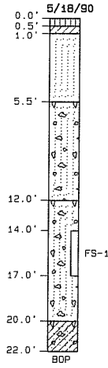
T.P. 5A Located within Material Site 21-2-401-1 (see sketch).
5/18/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-1.5' Dark Brown Silt, with roots.
1.5'-17.0' Brown Slightly Silty Sand, with gravel. Loose, damp.

FS-9A A-3-(a), LL=NV, PI=NP, 19% Gravel, 73% Sand, 8% Silt.
Refusal at 17' due to cave ins.

T.P. 6A Located within Material Site 21-2-401-1 (see sketch).
5/18/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-1.0' Brown Silt, with roots.
1.0'-5.5' Brown Sand. Loose, damp.

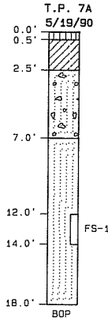
5.5'-12.0' Brown Gravelly Sand. Loose, damp.

12.0'-20.0' Gray Brown Gravelly Sand. Damp to wet.

FS-10A A-3(0), LL=NV, PI=NP, 21% Gravel, 75% Sand, 4% Silt.

20.0'-22.0' Gray Sandy Gravelly Silt. Wet to saturated.

T.P. 7A Located within Material Site 21-2-401-1 (see sketch).
5/19/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-2.5' Brown Silt. Saturated.

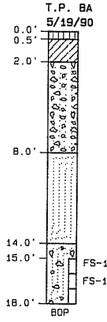
2.5'-7.0' Brown Gravelly Sand. Loose, damp.

7.0'-18.0' Brown Sand. Loose, dry to damp.

FS-11A A-1-b(0), LL=NV, PI=NP, 11% Gravel, 85% Sand, 4% Silt.

Refusal at 18' due to cave ins.

T.P. 8A Located within Material Site 21-2-401-2 (see sketch).
5/19/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-2.0' Brown Silt with roots. Saturated.

2.0'-8.0' Brown Sandy Gravel. Loose.

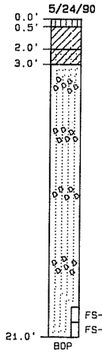
8.0'-14.0' Brown Sand. Loose, dry to damp.

14.0'-15.0' Brown Gravelly Sand, Dry to damp.

FS-12A 15.0'-18.0' A-1-b(0), LL=NV, PI=NP, 24% Gravel, 74% Sand, 2% Silt.

FS-13A 16.0'-17.0' M.C.= 6.8%.

T.P. 9A Located within Material Site 21-2-401-1 (see sketch).
5/24/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-2.0' Brown Silt, with roots.

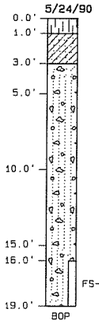
2.0'-3.0' Gray Brown Sandy Silt. Saturated.

3.0'-21.0' Brown Gravelly Sand, with Sandy Gravel and Sand lenses. Dry to damp.

FS-14A 19.0'-20.0' M.C.= 4.2%.

FS-15A 19.0'-21.0' A-1-b(0), LL=NV, PI=NP, 31% Gravel, 67% Sand, 2% Silt.

T.P. 10A Located within Material Site 21-2-401-1 (see sketch).
5/24/90

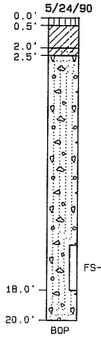


0.0'-1.0' Dark Brown Organic, with roots.
1.0'-3.0' Gray Brown Sandy Silt, with roots. Saturated

3.0'-19.0' Gray Brown Gravelly Sand.

FS-16A A-1-b(0), LL=NV, PI=NP, 34% Gravel, 65% Sand, 1% Silt.

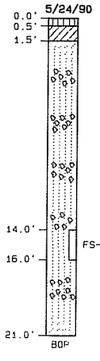
T.P. 11A Located within Material Site 21-2-401-1 (see sketch).
5/24/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-2.0' Dark Brown Silt, with roots. Saturated.
2.0'-2.5' Gray Brown Sandy Silt. Saturated.
2.5'-20.0' Gray Brown Gravelly Sand.

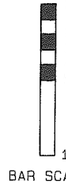
FS-11A A-1-b(0), LL=NV, PI=NP, 31% Gravel, 66% Sand, 3% Silt.

T.P. 12A Located within Material Site 21-2-401-1 (see sketch).
5/24/90



0.0'-0.5' Dark Brown Organic, with roots.
0.5'-1.5' Dark Brown Silt, with roots. Saturated.
1.5'-21.0' Gray Brown Sand, with sandy Gravel and Gravelly Sand lenses. Loose, dry to damp.

FS-18A A-1-a(0), LL=NV, PI=NP, 50% Gravel, 49 % Sand, 1% Silt.



STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

MATERIAL SITE 21-2-401-1
TEST PITS

LOCATED M.P. 86.8 STERLING HWY.

Scale: Horz. 1"= 5' Vert.	Designed: T.O.	Drawn: N.I.	SHEET 1 OF 1
	Checked:	Date:	

MATERIAL SITE

(M.S. 21-2-008-1)

MATERIAL SITE INVESTIGATION

M.S. 21-2-008-1

Location & Access: Located at approximately M.P. 81.8 of the Sterling Highway. More specifically a portion of the NW 1/4, NW 1/4, Sec. 17, T5N, R8W, S.M.

Acreage: Approximately 8.9 acres of which approximately 2 acres remain undeveloped.

Ownership: DOT/PF through quit claim deed.

Geology & Topography: The material site is located within the geologic province known as the Nikiska Lowland. This area is characterized by poorly drained swamps, with associated dwarf trees, commonly underlain by peat and/or organic silt; and higher, generally well-drained, forested areas consisting of material ranging from fine sand to coarse gravel. This terrain was produced by the deposition and/or reworking of glacial, and associated proglacial deposits by streams, rivers and lakes of the late Pleistocene and early Recent geologic time periods.

The topography of the immediate material site is considered to be gently rolling to hummocky, while for the provincial Nikiska Lowland, the topography is considered to be nearly flat to gently rolling.

Field Investigations: The soils investigation for this site was conducted by the DOT/PF geotechnical field crew between May 15th and 16th, 1990.

The field investigation was conducted by Tom Ottley, Engineering Geologist, and Roy Briggs, equipment operator. A rented JD 790D-LC excavator was used to advance 7 test pits (T.P.'s 1-7). Five test pits (T.P.'s 1-4 and 7) were dug within the existing pit while T.P.'s 5 and 6 were dug in the northeast portion of the site which is undeveloped, (see the attached test pit logs, test pit location drawing and lab results for specific information).

Lab Analysis: Ten samples were tested: The gravel and sandy gravel material (nine samples had a P200 which ranged from 1% to 5% (averaged 1.6%). Two quality tests were run on these 9 samples: degradation = 52% and 62%, L.A. Abrasion Loss = 13% and 14% and sulfate soundness: coarse 0/1, fine 7/11.

MATERIAL SITE INVESTIGATION

M.S. 21-2-008-1

CONTINUED

Usage Constraints: A 100' vegetation screen should be left along the Sterling Highway and section line. Much of this site has been mined to near the water table.

COMMENTS:

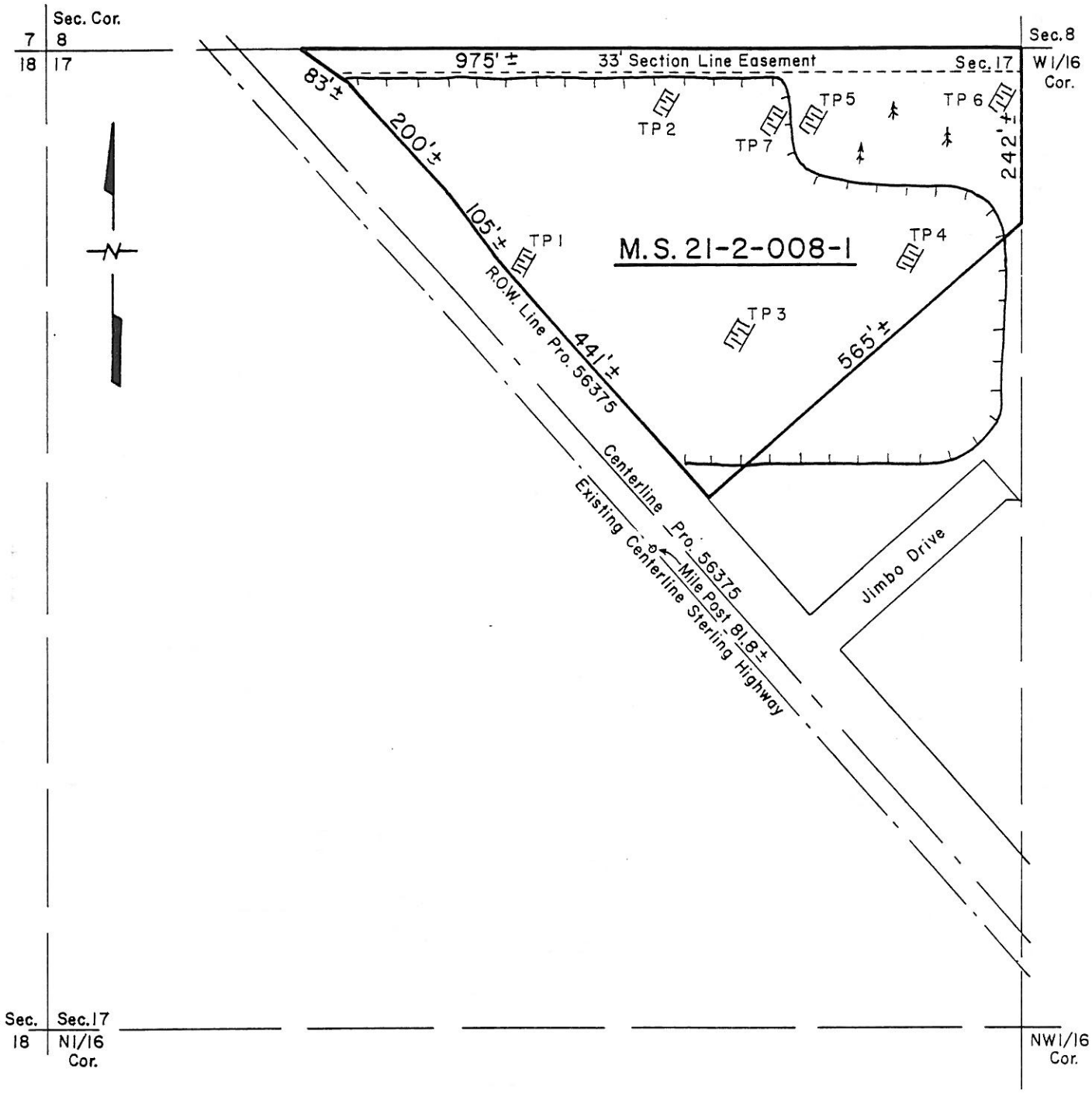
1. This site has been used for various Sterling Highway projects in the past. It produced material which was used for both borrow and aggregate. A limited quantity of the "cleaner" gravel and sandy gravel remains, much of that quantity lying below the water table (see individual test pit logs).

2. Waste material consisting predominantly of organic and silt material has been dumped onto a portion of the existing pit floor (see T.P.'s 2 & 3).

3. Based on T.P.'s 5 & 6 the undeveloped portion of this site appears to contain a very limited quantity of useable construction materials.

4. Due to the limited quantity of suitable construction material remaining in this site; this site might best be used as a waste site.

5. An acceptable mining plan shall be submitted to the State of Alaska, Department of Transportation.



LEGEND:

T.P. TP – Approximate Test Pit Location Dug By Backhoe.

– Approximate Boundary Of Existing Material Removal.

0 50 100 200'
SCALE

NOTES:

1. Right Of Way And Centerline Locations Are Plotted From D.O.T. And P.F. Right Of Way Maps For Project No. 56375, Sterling Highway Mile 79–94, Dated 12/88.
2. Test Pit Locations Are Approximate.
3. Existing Pit Boundaries Are Approximate.

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

MATERIALS

TEST PIT LOCATION MAP FOR: M.S. 21-2-008-1		LOCATION: NW1/4, NW1/4, Sec. 17 T5N, R8W, S.M.	
DESIGNED: T.O.	DRAWN: N.I.	SCALE: 1" = 200'	SHEET: 1 of 1

ALASKA DEPARTMENT OF TRANSPORTATION TEXTURAL SOIL DESCRIPTIONS

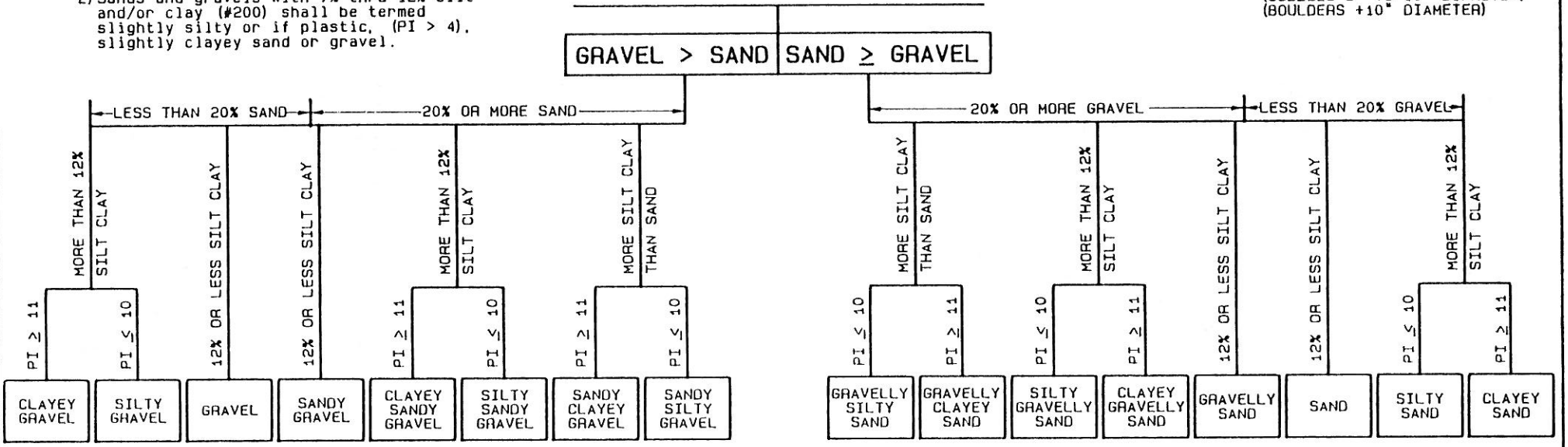
Rev. Dec. 8, 1989

NOTES: 1) All silts with a plastic index > 4 shall be termed "slightly clayey".

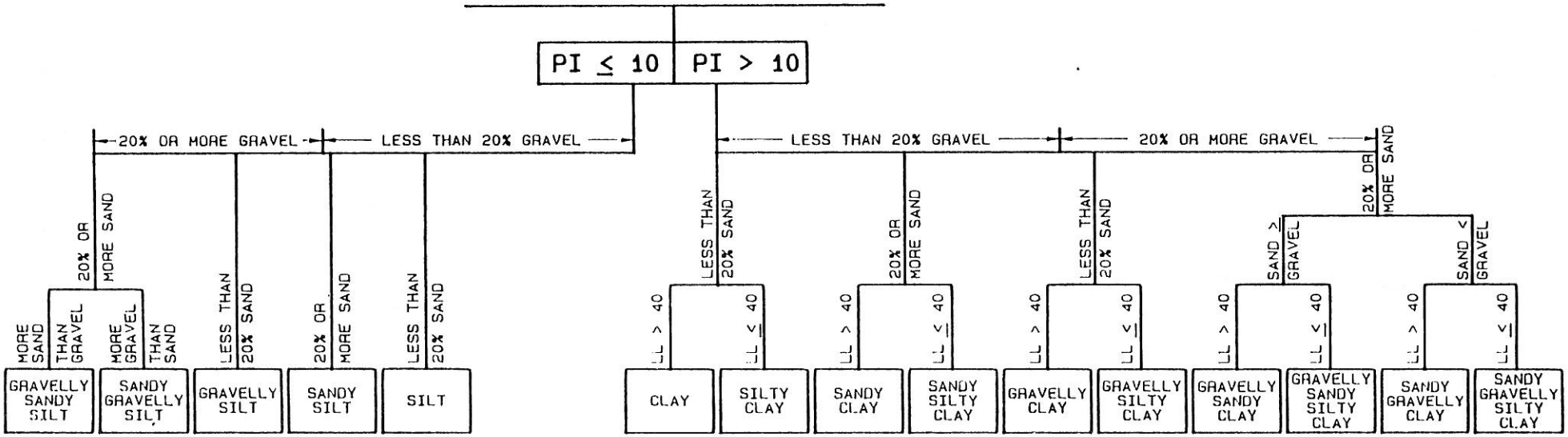
2) Sands and gravels with 7% thru 12% silt and/or clay (#200) shall be termed slightly silty or if plastic, (PI > 4), slightly clayey sand or gravel.

(CLAYS < .002 mm)
(SILTS < #200)
(SAND #200 TO #10)
(GRAVEL #10 TO 3" DIAMETER)
(COBBLES 3" TO 10" DIAMETER)
(BOULDERS +10" DIAMETER)

COARSE-GRAINED SOILS
35% OR LESS SILT/CLAY



FINE-GRAINED SOILS
36% OR MORE SILT/CLAY



SOILS TESTING REPORT

Page 1 of 2 for Plan Sheet

Project Name Sterling Hwy. MP 79-94

[ ] Centerline

Project No. 56375 Sampled By Ottley

[X] Materials Site MS 21-2-008-1

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		2.5'-4.5'	8.0'-10.0'	6.5'-8.5'	16.0'-19.0'	0-2.0'	9.0'-11.0'
Test Hole No.		TP-1	TP-2	TP-3	TP-3	TP-4	TP-4
Field No.		FS-1	FS-2	FS-3	FS-4	FS-5	FS-6
Date Sampled		05/15/90	05/15/90	05/15/90	05/15/90	05/15/90	05/15/90
Lab No.		90A-0581	90A-0582	90A-0583	90A-0584	90A-0585	90A-0586
	3"	100	100	100	100	100	100
	2"	94	93	99	95	97	88
	1"	70	68	87	71	93	67
Percent	3/4"	61	58	78	61	92	57
	1/2"	53	48	67	49	89	48
Passing	3/8"	45	41	61	42	80	41
	#4	34	29	49	29	57	27
Sieve	#10	26	21	40	20	39	17
	#40	8	8	10	6	16	5
Size	#50	5	5	4	4	11	3
	#200	2	2	1	2	5	0
	.02mm						
	.002mm						
DOTTSD		Sa Grl	Grl	Sa Grl	Grl	Sa Grl	Grl
AASHTO Class		A-1-a(0)	A-1-a(0)	A-1-a(0)	A-1-a(0)	A-1-a(0)	A-1-a(0)
FSV Class							
Liquid Limit		NV	NV	NV	NV	NV	NV
Plastic Index		NP	NP	NP	NP	NP	NP
Moisture Content %							
Organic Content %							
% Gravel		74	79	60	80	61	83
% Sand		24	19	39	18	34	17
% Silt & Clay		2	2	1	2	5	0
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[ ] Centerline

[X] Materials Site MS 21-2-008-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		6.5'-9.0'	14.5'-16.5'	12.0'-14.5'	1.0'-3.5'		
Test Hole No.		TP-5	TP-5	TP-6	TP-7		
Field No.		FS-7	FS-8	FS-9	FS-10		
Date Sampled		05/16/90	05/16/90	05/16/90	05/16/90		
Lab No.		90A-0587	90A-0588	90A-0589	90A-0590		
	3"	100	100	100	100		
	2"	92	87	98	91		
	1"	71	60	93	71		
Percent	3/4"	63	51	88	63		
	1/2"	54	42	83	49		
Passing	3/8"	48	37	80	41		
	#4	38	27	75	30		
Sieve	#10	27	20	68	24		
	#40	3	7	57	6		
Size	#50	1	4	51	3		
	#200	0	1	30	1		
	.02mm						
	.002mm						
DOTTSD		Sa Grl	Grl	Si Grl Sa	Sa Grl		
AASHTO Class		A-1-a(0)	A-1-a(0)	A-2-4(0)	A-1-a(0)		
FSV Class							
Liquid Limit		NV	NV	15	NV		
Plastic Index		NP	NP	NP	NP		
Moisture Content %							
Organic Content %							
% Gravel		73	80	32	76		
% Sand		27	19	38	23		
% Silt & Clay		0	1	30	1		
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

25-229K
5-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 07/10/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0592

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination
SAMPLED FROM 5 thru 8 & 10 SUBMITTED BY Ottley DATE SAMPLED / /
LOCATION _____ DEPTH _____ DATE RECEIVED 05/22/90
SOURCE MS-21-2-008-1 QUANTITY REPRESENTED _____ TEST COMPLETED 06/25/90
EXAMINED FOR Quality PROJECT NOTIFIED / /

Sieve Analysis, %Pass

SIEVE	Lab	Specs.
4"	100	
3"	95	
2"	86	
1 1/2"	79	
1"	69	
3/4"	62	
1/2"	54	
3/8"	47	
#4	34	
#8		
#10	24	
#16		
#30		
#40	7	
#50	4	
#100		
#200	1	
.02mm		
.002mm		

Fineness Modulus

	Lab	Specs
LL		
PL		
PI		
Dry Unt. Wt.		

	Coarse	Specs	Fine	Specs
Specific Gravity,SSD				
% Absorption				
Lightweight Part., %				
Friable Particles, %				
Sulfate Sound, % Loss	0		11	
L.A. Abrasion, % Loss	13			
Degradation	62			
Sticks & Roots				
Thin Elongated				

MORTAR MAKING PROPERTIES OF SAND
Organic Impurities [ ]Less [ ]More than 500 PPM
Compressive Strength, psi (if More than....)

	Control	Sample	Ratio	Spec.
7 Day				
28 Day				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Ralph W Lead
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

25-229K
5-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 07/10/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0591

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination
SAMPLED FROM 1 thru 4 SUBMITTED BY Ottley DATE SAMPLED / /
LOCATION _____ DEPTH _____ DATE RECEIVED 05/22/90
SOURCE MS-21-2-008-1 QUANTITY REPRESENTED _____ TEST COMPLETED 06/25/90
EXAMINED FOR Quality PROJECT NOTIFIED / /

Sieve Analysis, %Pass

SIEVE	Lab	Specs.
4"		
3"	100	
2"	95	
1 1/2"	87	
1"	74	
3/4"	65	
1/2"	54	
3/8"	47	
#4	35	
#8		
#10	27	
#16		
#30		
#40	8	
#50	5	
#100		
#200	2	
.02mm		
.002mm		

Fineness Modulus

	Lab	Specs
LL		
PL		
PI		
Dry Unt. Wt.		

	Coarse	Specs	Fine	Specs
Specific Gravity, SSD				
% Absorption				
Lightweight Part., %				
Friable Particles, %				
Sulfate Sound, % Loss	1		7	
L.A. Abrasion, % Loss	14			
Degradation	52			
Sticks & Roots				
Thin Elongated				

MORTAR MAKING PROPERTIES OF SAND
Organic Impurities [ ]Less [ ]More than 500 PPM
Compressive Strength, psi (if More than....)

	Control	Sample	Ratio	Spec.
7 Day				
28 Day				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Ralph W Read
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

25D-209
6-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 07/10/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

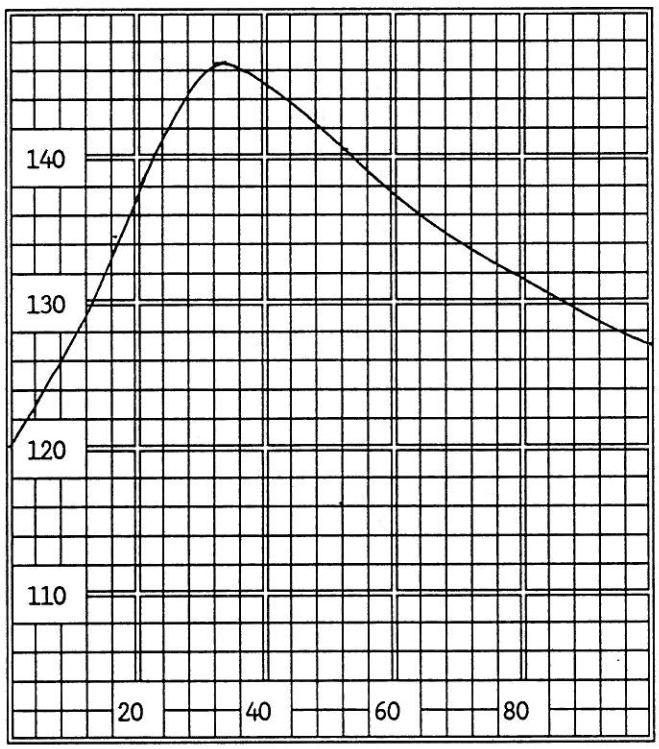
LABORATORY NO. 90A-0856

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination
SAMPLED FROM 5 thru 8 & 10 SUBMITTED BY Ottley DATE SAMPLED / /
LOCATION _____ DEPTH _____ DATE RECEIVED 05/22/90
SOURCE MS-21-2-008-1 QUANTITY REPRESENTED _____ TEST COMPLETED 06/16/90
EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	Specs.
4"	100	
3"	95	
2"	86	
1 1/2"	79	
1"	69	
3/4"	62	
1/2"	54	
3/8"	47	
#4	34	
#8		
#10	24	
#16		
#40	7	
#50	4	
#100		
#200	1	

	Specs.
% FRACTURE	
LL	
PL	
PI	

	Coarse	Fine
SPG	2.71	2.74



INSTRUCTIONS FOR FIELD USE

1. Determine the percent passing #4 sieve of the field density test.
2. The intersection of the % passing #4 with the density curve above yields maximum dry density for that test.

NO +3/4" CORRECTION IS REQUIRED.

Remarks:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Gabriel Head
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

25D-209
6-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 07/10/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

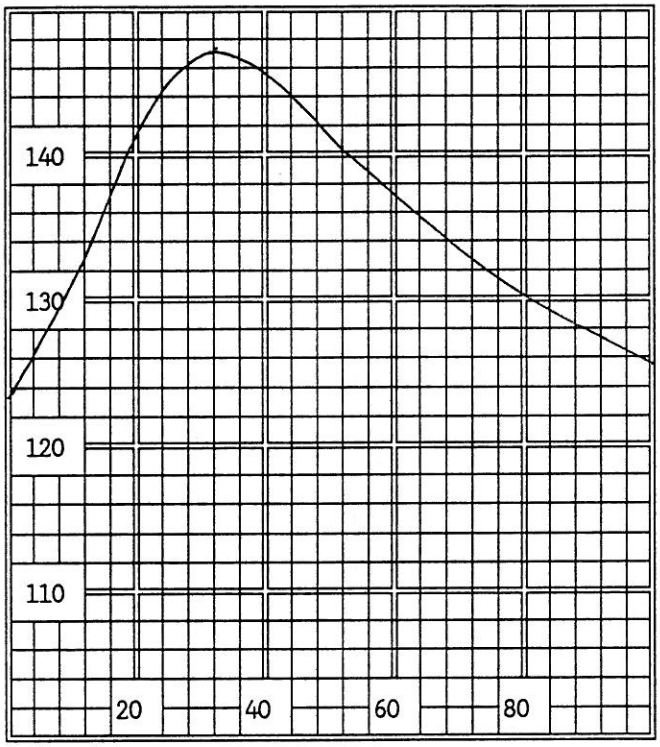
LABORATORY NO. 90A-0855

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination
SAMPLED FROM 1 thru 4 SUBMITTED BY Ottley DATE SAMPLED / /
LOCATION _____ DEPTH _____ DATE RECEIVED 05/22/90
SOURCE MS-21-2-008-1 QUANTITY REPRESENTED _____ TEST COMPLETED 06/20/90
EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	Specs.
3"	100	
2"	95	
1 1/2"	87	
1"	74	
3/4"	65	
1/2"	54	
3/8"	47	
#4	35	
#8		
#10	27	
#16		
#40	8	
#50	5	
#100		
#200	2	

	Specs.
% FRACTURE	
LL	
PL	
PI	

	Coarse	Fine
SPG	2.72	2.73



INSTRUCTIONS FOR FIELD USE
1. Determine the percent passing #4 sieve of the field density test.
2. The intersection of the % passing #4 with the density curve above yields maximum dry density for that test.

NO +3/4" CORRECTION IS REQUIRED.

Remarks:

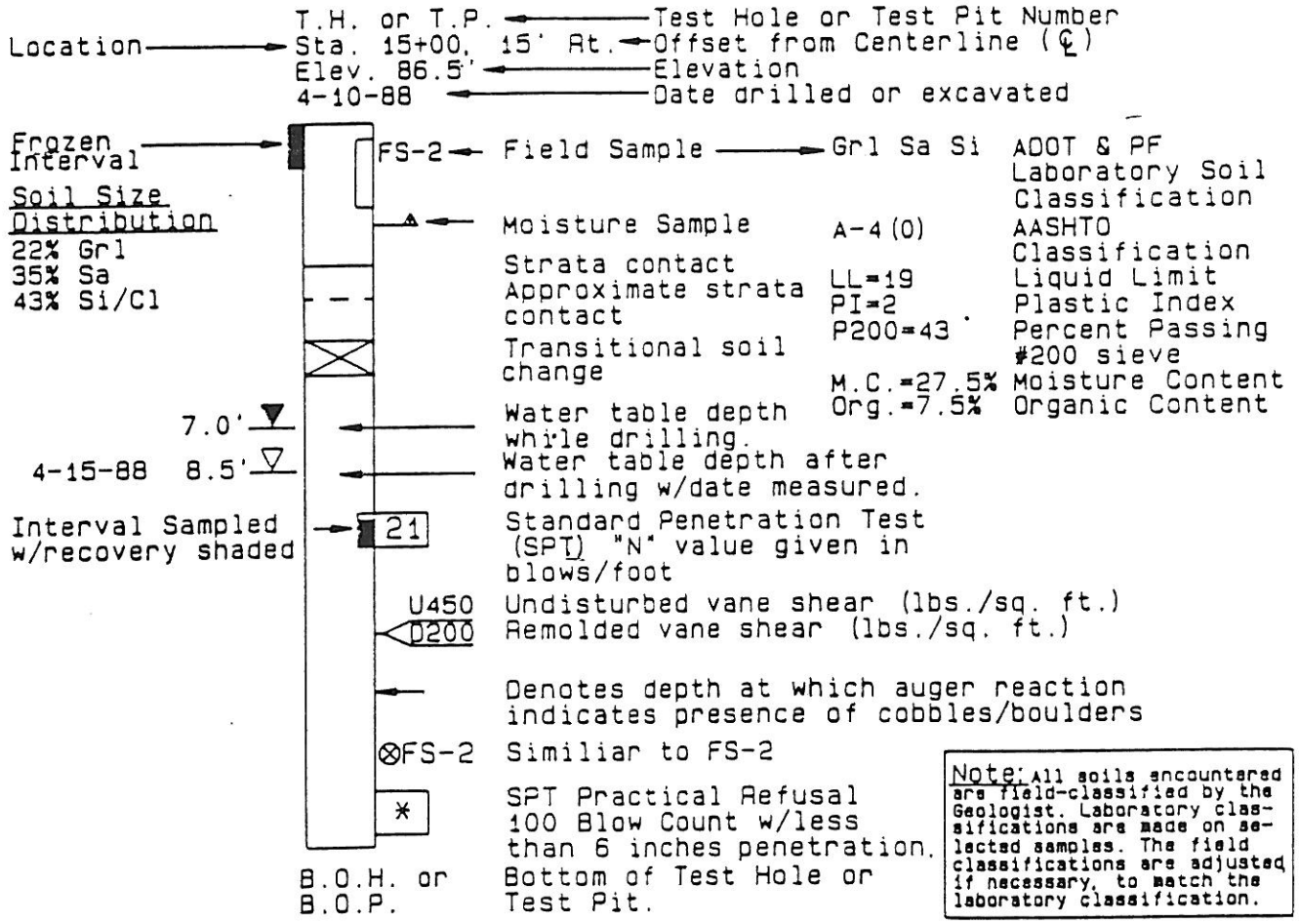
The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Rafael Leon
Title Construction Materials Engineer

D2. THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

TEST PIT AND TEST HOLE LOG EXPLANATION
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
MATERIALS SECTION

6-2-88



Note: All soils encountered are field-classified by the Geologist. Laboratory classifications are made on selected samples. The field classifications are adjusted if necessary, to match the laboratory classification.

Abbreviations

Blk	=Black	Org	=Organic(s)
Bn	=Brown	Grl	=Gravel
Bl	=Blue	w/	=with
Gn	=Green	tr.	=trace
Gr	=Gray	sl.	=slightly
Or	=Orange	G.S.	=Grab Sample
Rd	=Red	S.S.	=Split spoon
Tn	=Tan	S.T.	=Shelby Tube
Sa	=Sand	M.S.	=Modified Shelby Tube
Si	=Silt		
Cl	=Clay		

Soil Size Distribution

Based on U.S. Standard Sieve Sizes:

Boulders	=>10"
Cobbles	=3"-10"
Gravel	=#10-3"
Sand	=#200-#10
Silt/Clay	=<#200

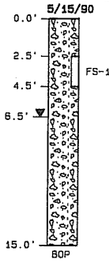
Plan View Symbols

- Power Auger Test Hole
- Hand Auger Test Hole
- Surface Sample
- 4.5' Hand Probe Depth & Location
- Hand Dug Test Pit
- Dozer/Backhoe Pit
- ×××× Berm
- Terrace or Bank
- Swamp

Graphic Symbols (Two or more soil symbols may be used together to indicate a combination of soil types.)

Organics	(Org)
Gravel	(Grl)
Sand	(Sa)
Silt	(Si)
Clay	(Cl)
Ice	(Ice)
Bedrock	(Bx)
Cobbles and/or Boulders	

T.P. 1 Located within Material Site 21-2-008-1 (see sketch).
5/15/90



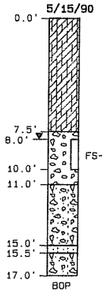
0.0' Existing pit floor.
0.0'-15.0' Brown Sandy Gravel. Damp to 6.5.
Approx. 25%+ 3", 1%-4%+ 10", Max. seen 16".

FS-1 A-1-a(0), LL=NV, PI=NP, 74% Gravel, 24% Sand, 2% Silt.

Water running into pit at 6.5'.

Refusal at 15' due to cave ins.

T.P. 2 Located within Material Site 21-2-008-1 (see sketch).
5/15/90



0.0' Existing pit floor.
0.0'-7.5' Gray Brown Organic Silt, with trees.
Waste material and overburden. Wet to saturated.

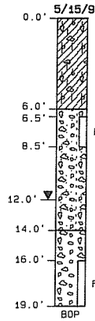
7.5'-11.0' Brown Gravel. Saturated.
Approx. 25%-35%+ 3", <5%+ 10"

FS-2 A-1-a(0), LL=NV, PI=NP, 79% Gravel, 19% Sand, 2% Silt.

11.0'-15.0' Blue Gray Sandy Gravel. Saturated.
Approx. 15%-25%+ 3", <5%+ 10".

15.0'-15.5' Gray Slightly Silty Sand. Saturated.
15.5'-17.0' Dark Brown Silty Sandy Gravel, with cobbles.
Moderately tight.

T.P. 3 Located within Material Site 21-2-008-1 (see sketch).
5/15/90



0.0' Existing pit floor.
0.0'-6.0' Brown Organic Gravelly Silt, waste material, wet.

6.0'-14.0' Brown Sandy Gravel. Dry to 12'.
Approx. 10%-20%+ 3", <5%+ 10.0".

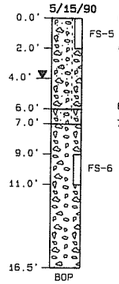
FS-3 A-1-a(0), LL=NV, PI=NP, 60% Gravel, 39% Sand, 1% Silt.

14.0'-19.0' Brown Gravel. Saturated from 12'.
Approx. 25%-35%+ 3", <5%+ 10".

FS-4 A-1-a(0), LL=NV, PI=NP, 80% Gravel, 18% Sand, 2% Silt.

Refusal at 19' due to cave ins.

T.P. 4 Located within Material Site 21-2-008-1 (see sketch).
5/15/90



0.0' Existing pit floor.

FS-5 A-1-a(0), LL=NV, PI=NP, 61% Gravel, 34% Sand, 5% Silt.

0.0'-6.0' Brown Sandy Gravel to Gravelly Sand.
A "pea" gravel sized processed material.

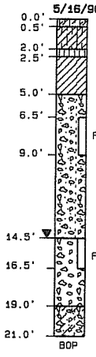
6.0'-7.0' Orange Brown Sandy Gravel. Oxidized.

7.0'-16.5' Blue Gray Gravel. Saturated.
Approx. %5-15%+ 10", Approx. 25%-40%+ 3", Max. seen 16".
With gray sandy silt balls up to cobble and boulder size after 11'.

FS-6 A-1-a(0), LL=NV, PI=NP, 83% Gravel, 17% Sand.

Refusal at 16.5' due to cave ins.

T.P. 5 Located within Material Site 21-2-008-1 (see sketch).
5/16/90



0.0'-0.5' Dark Brown Organic Silt, with roots.
0.5'-2.0' Brown Organic Silt, With wood. Old berm.

2.0'-2.5' Dark Brown Organic. Old soils horizon.
2.5'-5.0' Brown Silt. Saturated.

5.0'-14.5' Brown Sandy Gravel. Damp to wet.
Approx. 15%-30%+ 3", <5%+ 10", one large bolder 1'x2'x3'.

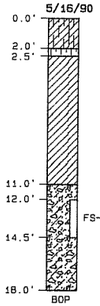
FS-7 A-1-a(0), LL=NV, PI=NP, 73% Gravel, 27% Sand.

14.5'-19.0' Blue Gray Gravel. Saturated.
Approx. 40%-60%+ 3", Approx. 5%-10%+ 10".

FS-8 A-1-a(0), LL=NV, PI=NP, 80% Gravel, 19% Sand, 1% Silt.

19.0'-21.0' Gray Silty Sandy Gravel. Saturated.
With cobbles and bolders.

T.P. 6 Located within Material Site 21-2-008-1 (see sketch).
5/16/90



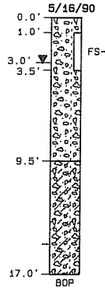
0.0'-2.0' Brown Silt, with organic.

2.0'-2.5' Dark Brown Organic, with roots.
2.5'-11.0' Brown Silt. Saturated.

11.0'-18.0' Brown Silty Gravelly Sand. Saturated.
With cobbles and bolders.

FS-9 A-2-4(0), LL=NV, PI=NP, 32% Gravel, 38% Sand, 30% Silt.

T.P. 7 Located within Material Site 21-2-008-1 (see sketch).
5/16/90

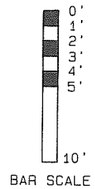


0.0' Existing pit floor.
0.0'-9.5' Brown Sandy Gravel. Wet to 3', saturated from 3'.
Approx. 15%-25%+ 3" to 6.5'.

FS-10 A-1-a(0), LL=NV, PI=NP, 76% Gravel, 23% Sand, 1% Silt.

0.0'-6.5' <5%= 10", max. seen 20"x30"x36".
6.5'-9.5' 25%-40%+ 3", 10%-15%+ 10".

9.5'-17.0' Blue Gray Silty Sandy Gravel to Sandy Silty Gravel.
With cobbles and bolders.



BAR SCALE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

MATERIAL SITE 21-2-008-1
TEST PITS
LOCATED M.P. 81.0 STERLING HWY.

Scale: Vert. 1"=5' Horz.	Designed: T.O.	Drawn: N.I.	SHEET 1 OF 1
	Checked:	Date:	

MATERIAL SITE

(M.S. 21-2-260-1)

MATERIAL SITE INVESTIGATION

M.S. 21-2-260-1

Location & Access: Adjacent to approximate mile 92.8 Sterling Highway (approximately Station 78+00). An existing access road connects the site with the Sterling Highway.

Acreage: 28.8 acres.

Ownership: ILMT to DOT&PF from DNR, no expiration date.

Geology & Topography: Most of the existing site consists of an existing borrow pit, no more than two acres remain undeveloped. An existing drainage ditch carries water to the south and east towards Soldotna Creek.

Field Investigations: The site investigation was conducted by the DOT&PF geotechnical crew between the 8th and the 12th of May, 1990.

The field investigation was conducted by Tom Ottley, Engineering Geologist, and Roy Briggs, equipment operator. A rented JD 790D-LC excavator was used to advance 7 test pits (T.P.'s 1-7) in the bottom of the existing pit floor to maximum depths of 15' (see the attached test pit logs and test pit location drawing for specific information).

The soils encountered within the seven test pits dug in the existing pit floor typically consisted of a top layer/s of sand, gravelly sand and sandy gravel which generally overlaid silty soils consisting of silty sand, silty gravelly sand, gravelly sandy silt and silty sandy gravel. The range in depth of the "cleaner" material ranged from 0' (T.P. 3) to 15'+ (T.P. 6) and averaged 8'.

A water table was encountered in all seven test pits at depths ranging from 0.5' to 11' (averaged 5.8'). The water table depth will vary with the season of the year and precipitation.

Several large glacial "erratics" (boulders) have been stock piled on the pit floor (the largest measured 7'x9'x17'). The DOT&PF Maintenance Section have stock piled various materials such as cold mix, street sweeper spoils, railroad ties, etc. on portions of the site.

Lab Analysis: Ten samples tested. The "cleaner" sand, gravelly sand and sandy gravel contained a P200 which ranged from 1% to 4% (6 samples). Three proctor tests were run (see attached).

Usage Constraints:

1. A high water table will require either drainage of the site, use of dredging equipment, or some other accommodation. Materials may have to be drained prior to use.

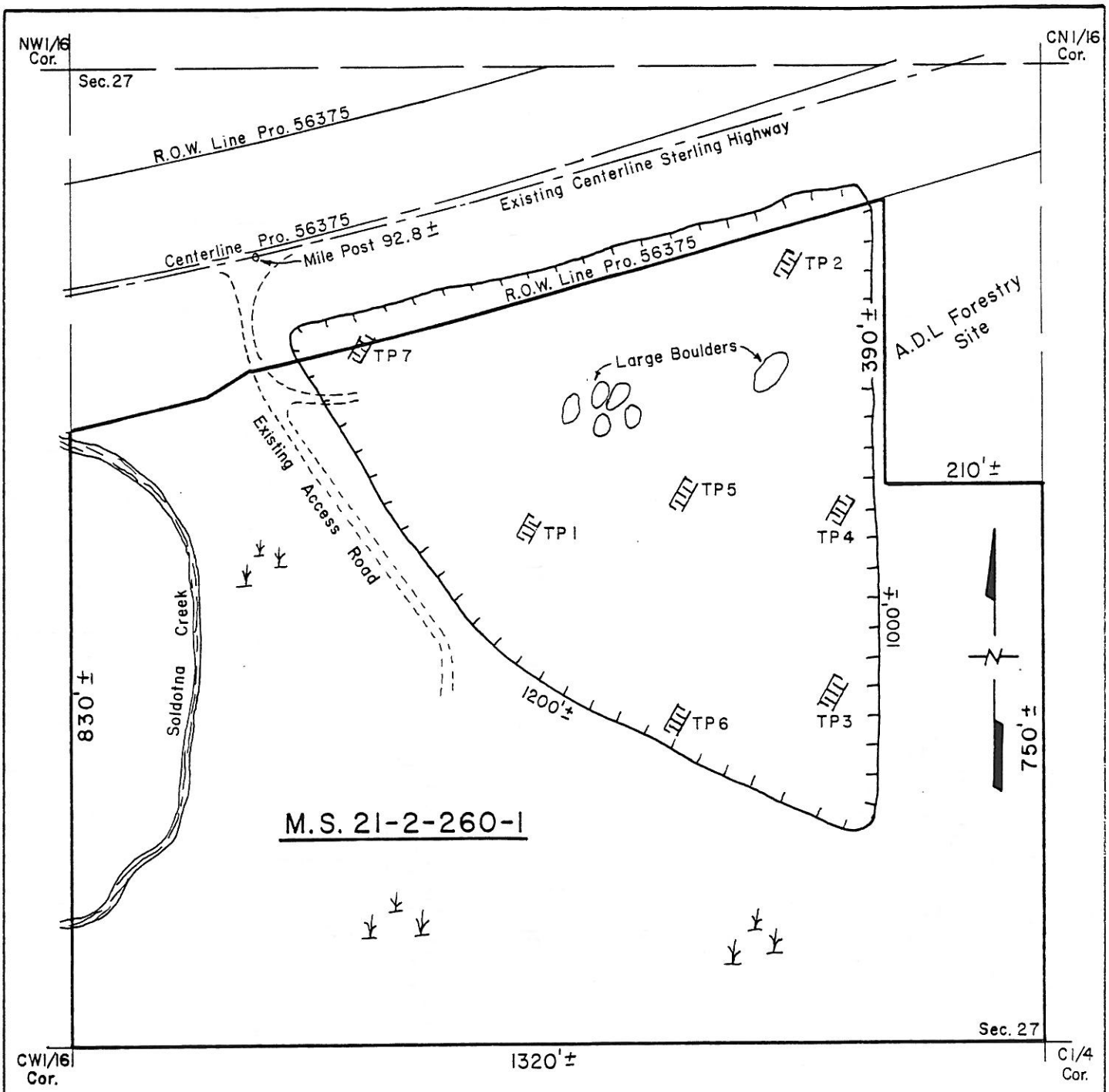
2. The presence of large glacial erratics and various stockpiled materials, may limit operation within the existing pit floor.

Comments:

1. A limited quantity of the "cleaner" material remains within this site. This site is a major source of materials for Soldotna Maintenance and Operations. Due to the limited quantity of remaining better material this site might better be used for maintenance purposes.

2. This site contains material suitable for borrow. Aggregate production is not recommended due to insufficient material in the +3/4" range.

3. The existing pit has potential as a waste area. The Alaska Division of Lands, Forestry Section occupies approximately 2 acres in the northeast postion of this site and they have expressed interest in expanding into our site. This site could be exhausted of the remaining suitable material, used as a waste area and then turned over to A.D.L. Forestry for their use.



LEGEND:

T.P. III – Approximate Test Pit Location Dug By Backhoe.

Approximate Boundary Of Existing Material Removal.

Low/ Wet.

0 50 100 200'
SCALE

NOTES:

1. Right Of Way And Centerline Locations Are Plotted From D.O.T. And P.F. Right Of Way Maps For Project No. 56375, Sterling Highway Mile 79–94, Dated 12/88.
2. Test Pit Locations Are Approximate.
3. Existing Pit Boundaries Are Approximate.

STATE OF ALASKA

DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

MATERIALS

TEST PIT LOCATION MAP FOR: M.S. 21-2-260-1			LOCATION: SE1/4, NW1/4, Sec. 27 T5N, R10W, S.M.
DESIGNED: T.O.	DRAWN: N.I.	SCALE: 1" = 200'	SHEET: 1 of 1

ALASKA DEPARTMENT OF TRANSPORTATION TEXTURAL SOIL DESCRIPTIONS

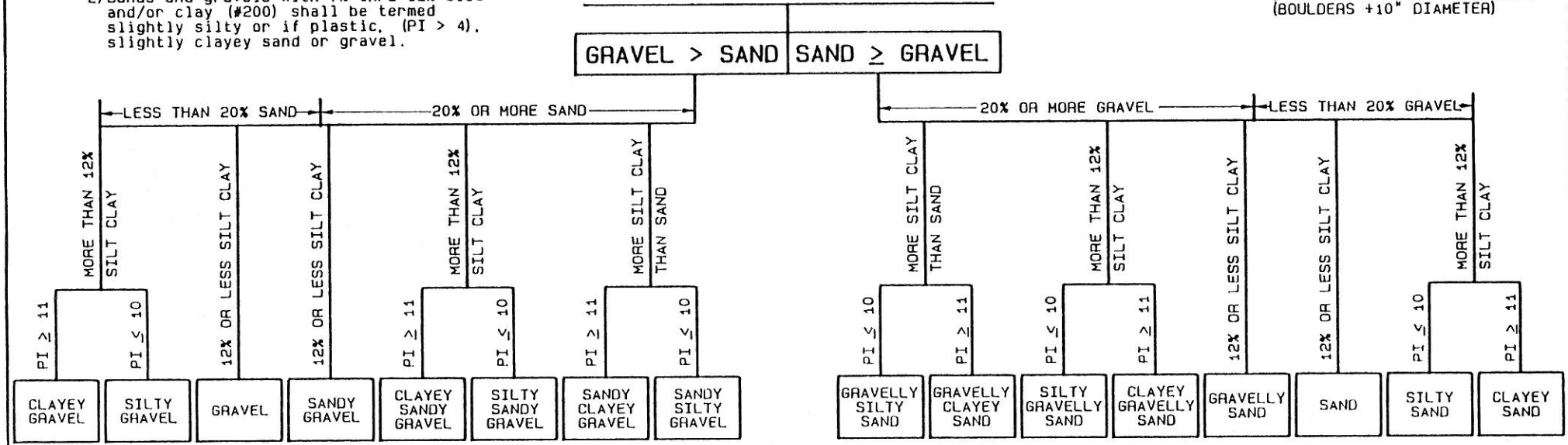
Rev. Dec. 8, 1989

NOTES: 1) All silts with a plastic index > 4 shall be termed "slightly clayey".

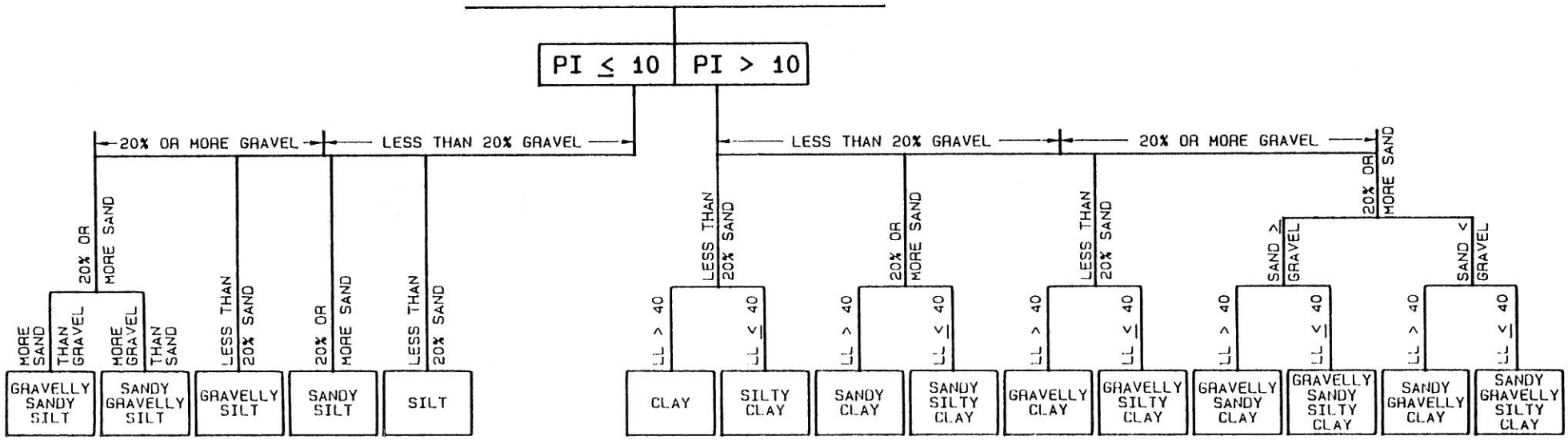
2) Sands and gravels with 7% thru 12% silt and/or clay (#200) shall be termed slightly silty or if plastic, (PI > 4), slightly clayey sand or gravel.

(CLAYS < .002 mm)
(SILTS < #200)
(SAND #200 TO #10)
(GRAVEL #10 TO 3" DIAMETER)
(COBBLES 3" TO 10" DIAMETER)
(BOULDERS +10" DIAMETER)

COARSE-GRAINED SOILS
35% OR LESS SILT/CLAY



FINE-GRAINED SOILS
36% OR MORE SILT/CLAY



SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[ ] Centerline

[X] Materials Site MS 21-1-260-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		5.0'-9.0'	13.0'-15.5'	2.0'-5.0'	7.0'-9.0'	2.0'-5.0'	3.5'-5.0'
Test Hole No.		TP-1	TP-1	TP-2	TP-2	TP-3	TP-4
Field No.		FS-1	FS-2	FS-3	FS-4	FS-5	FS-6
Date Sampled		05/08/90	05/08/90	05/08/90	05/08/90	05/08/90	05/09/90
Lab No.		90A-0443	90A-0444	90A-0445	90A-0446	90A-0447	90A-0448
	3"	100		100	100	100	100
	2"	93	100	99	98	94	99
	1"	84	98	94	92	89	92
Percent	3/4"	77	97	91	86	87	88
	1/2"	68	95	88	80	83	85
Passing	3/8"	61	93	85	75	80	81
	#4	45	88	78	66	76	74
Sieve	#10	33	85	70	57	71	69
	#40	11	71	44	33	60	49
Size	#50	6	61	26	18	52	26
	#200	1	31	2	4	23	4
	.02mm						
	.002mm						
DOTTSD		Sa Grl	Si Sa	Grl Sa	Grl Sa	Si Grl Sa	Grl Sa
AASHTO Class		A-1-a(0)	A-2-4(0)	A-1-b(0)	A-1-b(0)	A-2-4(0)	A-1-b(0)
FSV Class							
Liquid Limit		NV	NV	NV	NV	NV	NV
Plastic Index		NP	NP	NP	NP	NP	NP
Moisture Content %							
Organic Content %							
% Gravel		67	15	30	43	29	31
% Sand		32	54	68	53	48	65
% Silt & Clay		1	31	2	4	23	4
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

SOILS TESTING REPORT

Page 2 of 2 for Plan Sheet

Project Name Sterling Hwy. MP 79-94

[ ] Centerline

[X] Materials Site MS 21-1-260-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		7.0'-9.0'	3.0'-5.0'	1.0'-4.0'	2.0'-4.5'		
Test Hole No.		TP-4	TP-5	TP-6	TP-7		
Field No.		FS-7	FS-8	FS-9	FS-10		
Date Sampled		05/09/90	05/09/90	05/09/90	05/09/90		
Lab No.		90A-0449	90A-0450	90A-0451	90A-0452		
	3"	100	100		100		
	2"	92	98	100	93		
	1"	87	93	100	81		
Percent	3/4"	82	91	99	75		
	1/2"	79	88	98	69		
Passing	3/8"	75	84	97	64		
	#4	67	78	94	54		
Sieve	#10	62	70	89	47		
	#40	48	33	26	10		
Size	#50	42	19	8	4		
	#200	22	2	1	1		
	.02mm						
	.002mm						
DOTTSD		Si Grl Sa	Grl Sa	Sa	Sa Grl		
AASHTO Class		A-1-b(0)	A-1-b(0)	A-1-b(0)	A-1-a(0)		
FSV Class							
Liquid Limit		16	NV	NV	NV		
Plastic Index		NP	NP	NP	NP		
Moisture Content %							
Organic Content %							
% Gravel		38	30	11	53		
% Sand		40	68	88	46		
% Silt & Clay		22	2	1	1		
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

25D-209
6-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 06/09/90

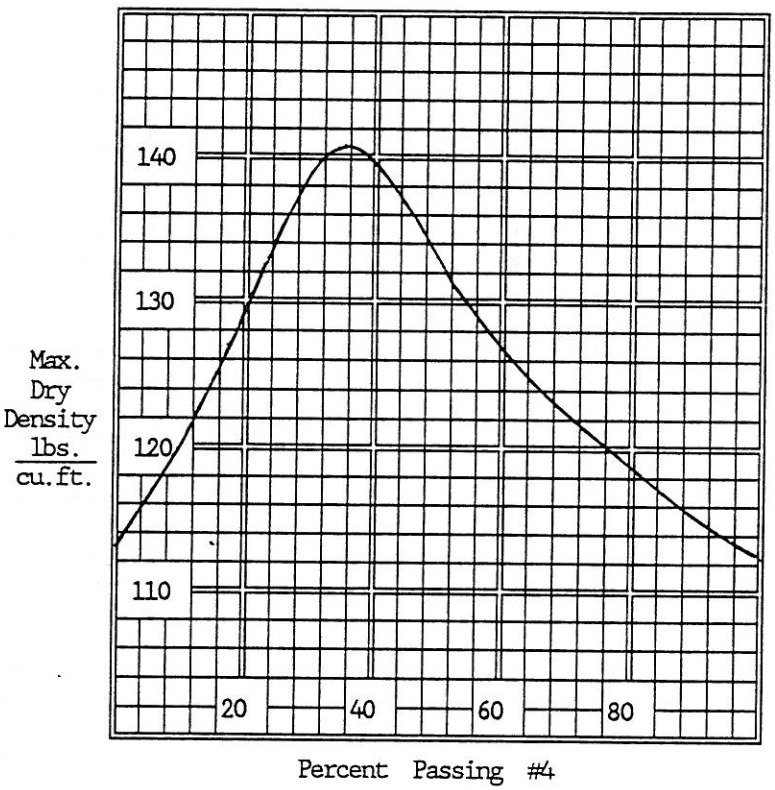
TEST OF _____ SPECIFICATION/ITEM NO. _____

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 LABORATORY NO. 90A-0455
SAMPLED FROM FS-3, 6, 8 & 9 SUBMITTED BY Ottley FIELD NO. Combination
LOCATION _____ DEPTH _____ DATE SAMPLED / /
SOURCE _____ QUANTITY REPRESENTED _____ DATE RECEIVED 05/14/90
EXAMINED FOR Standard Density TEST COMPLETED 06/04/90
PROJECT NOTIFIED / /

SIEVE	%PASS	Specs.
3"	100	
2"	99	
1 1/2"	98	
1"	95	
3/4"	93	
1/2"	90	
3/8"	87	
#4	82	
#8		
#10	75	
#16		
#40	39	
#50	21	
#100		
#200	2	

% FRACTURE	Specs.
LL	
PL	
PI	

	Coarse	Fine
SPG	2.74	2.72



INSTRUCTIONS FOR FIELD USE
1. Determine the percent passing #4 sieve of the field density test.
2. The intersection of the % passing #4 with the density curve above yields maximum dry density for that test.

NO +3/4" CORRECTION IS REQUIRED.

Remarks:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature _____
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

25D-209
6-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 06/09/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0453

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination

SAMPLED FROM FS-1, 4 & 10 SUBMITTED BY Ottley DATE SAMPLED / /

LOCATION _____ DEPTH _____ DATE RECEIVED 05/14/90

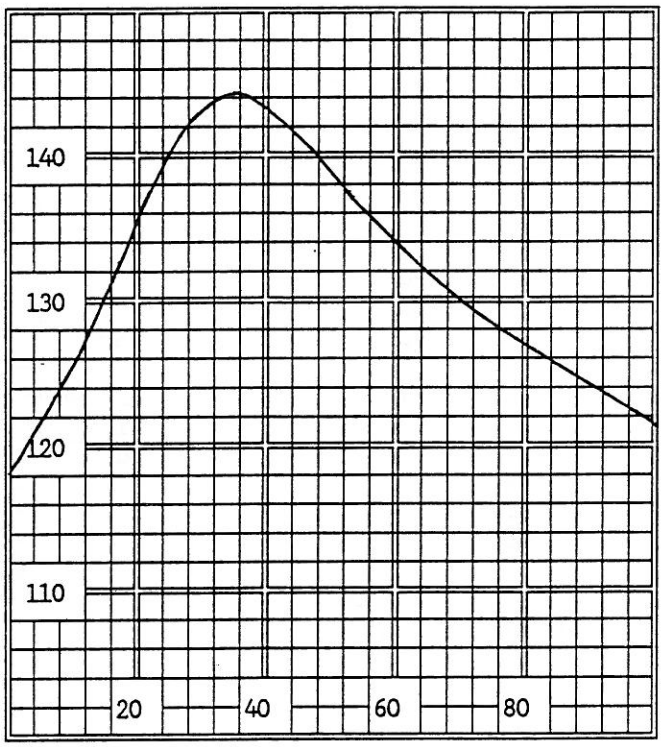
SOURCE _____ QUANTITY REPRESENTED _____ TEST COMPLETED 06/04/90

EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	Specs.
3"	100	
2"	94	
1 1/2"	91	
1"	85	
3/4"	78	
1/2"	71	
3/8"	65	
#4	52	
#8		
#10	43	
#16		
#40	16	
#50	8	
#100		
#200	2	

	Specs.
% FRACTURE	
LL	
PL	
PI	

	Coarse	Fine
SPG	2.77	2.71



INSTRUCTIONS FOR FIELD USE

1. Determine the percent passing #4 sieve of the field density test.
2. The intersection of the % passing #4 with the density curve above yields maximum dry density for that test.

NO +3/4" CORRECTION IS REQUIRED.

Remarks:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Rachel Head
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

25D-208
5-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 06/09/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0454

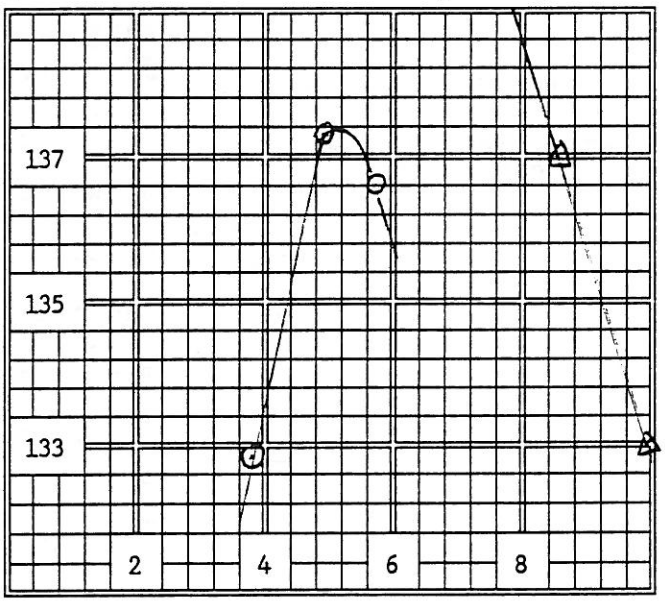
PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination
SAMPLED FROM FS-2, 5 & 7 SUBMITTED BY Ottley DATE SAMPLED / /
LOCATION _____ DEPTH _____ DATE RECEIVED 05/14/90
SOURCE _____ QUANTITY REPRESENTED _____ TEST COMPLETED 06/04/90
EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	-3/4"	Specs.
3"	96		
2"	91		
1 1/2"	90		
1"			
3/4"	84	100	
1/2"	81	96	
3/8"	79	94	
#4	73	87	
#8			
#10	69	82	
#16			
#40	57	68	
#50	49	58	
#100			
#200	24	29	

	Specs.
% FRACTURE	
LL	
PL	
PI	

	Coarse	Fine
SPG	2.73	2.70

Optimum Moisture = 5.2 Max. Dry Density = 137.3



% +3"	4	FSV
% Gravel	28	AASHTO Class
% Sand	47	DOTTSD
% Si/Cl	25	Unified Class

% Natural Moisture

Remarks:

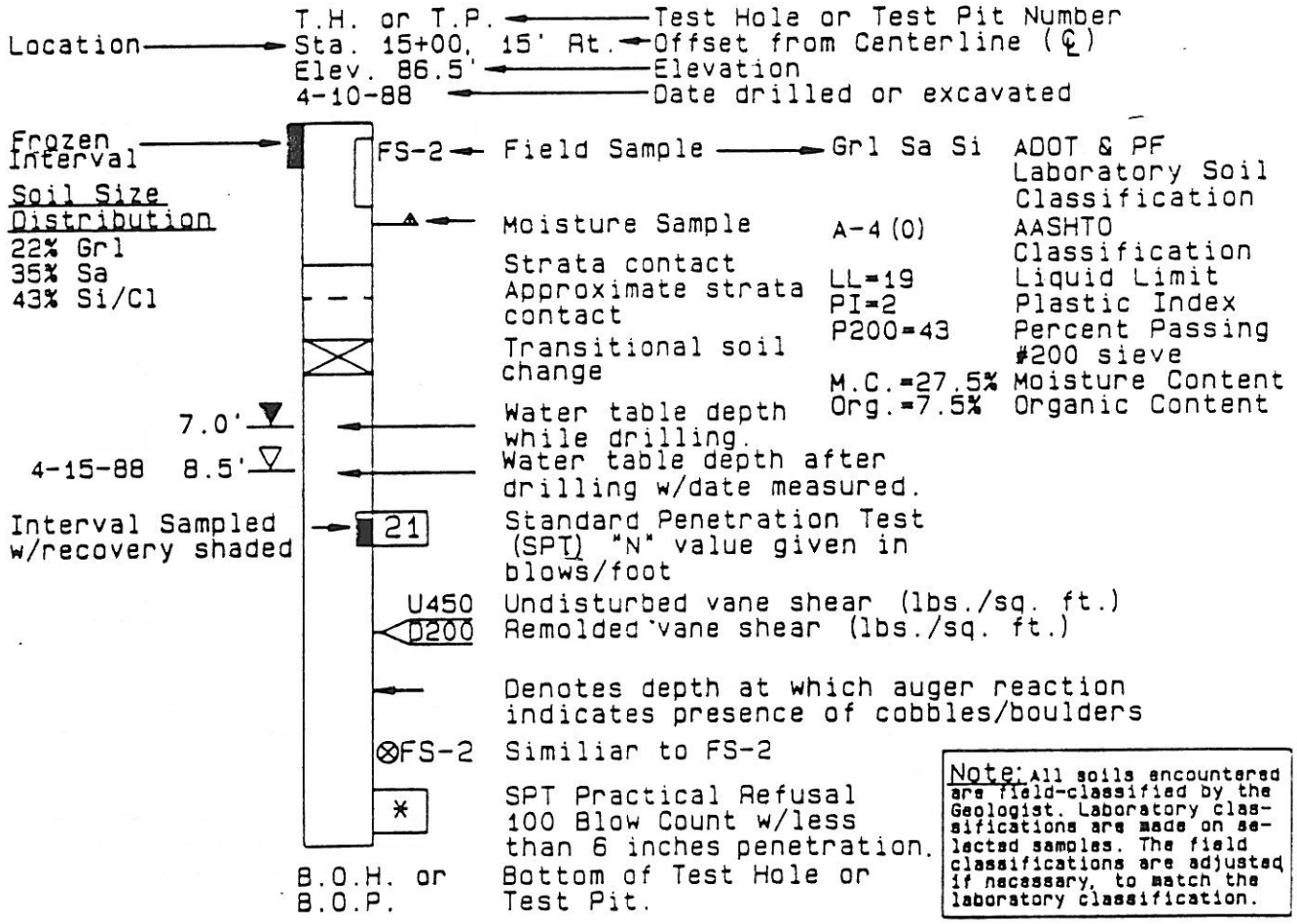
The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature _____
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

TEST PIT AND TEST HOLE LOG EXPLANATION
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
MATERIALS SECTION

6-2-88



Note: All soils encountered are field-classified by the Geologist. Laboratory classifications are made on selected samples. The field classifications are adjusted if necessary, to match the laboratory classification.

Abbreviations

Blk	=Black	Org	=Organic (s)
Bn	=Brown	Grl	=Gravel
Bl	=Blue	w/	=with
Gn	=Green	tr.	=trace
Gr	=Gray	sl.	=slightly
Or	=Orange	G.S.	=Grab Sample
Rd	=Red	S.S.	=Split spoon
Tn	=Tan	S.T.	=Shelby Tube
Sa	=Sand	M.S.	=Modified Shelby Tube
Si	=Silt		
Cl	=Clay		

Soil Size Distribution

Based on U.S. Standard Sieve Sizes:

Boulders	=>10"
Cobbles	=3"-10"
Gravel	=#10-3"
Sand	=#200-#10
Silt/Clay	=<#200

Plan View Symbols

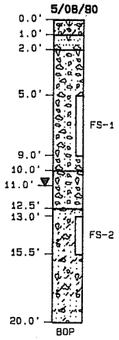
- Power Auger Test Hole
- Hand Auger Test Hole
- Surface Sample
- 14.5' Hand Probe Depth & Location
- Hand Dug Test Pit
- Dozer/Backhoe Pit
- ×××× Berm
- Terrace or Bank
- Swamp

Graphic Symbols (Two or more soil symbols may be used together to indicate a combination of soil types.)

Organics	(Org)
Gravel	(Grl)
Sand	(Sa)
Silt	(Si)
Clay	(Cl)
Ice	(Ice)
Bedrock	(Bx)
Cobbles and/or Boulders	

T.P. 1 Located in South West corner of Material Site 21-2-260-1.

5/08/90



0.0' Existing pit floor.
0.0'-1.0' Brown Slightly Silty Sandy Gravel.
1.0'-2.0' Brown Gravelly Sand, damp.
2.0'-10.0' Brown Sandy Gravel, damp.

FS-1 A-1-a(0), LL=NV, PI=NP, 67% Gravel, 32% Sand, 1% Silt.
1%+ 10", >5%+ 3", with Gravel and Sand lenses

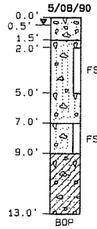
10.0'-12.5' Brown Sandy Gravel, wet to saturated.
>18%+ 3", 10%-15%+ 10"
Water running into pit at 11.0'.

12.5'-20.0' Brown Silty Sand with Gravel, a Till.
Cobbles & Bolders <3%. Wet to Saturated. Moderately tight.

FS-2 A-2-4(0), LL=NV, PI=NP.
15% Gravel, 54% Sand, 31% Silt.

T.P. 2 Located in North East corner of Material Site 21-2-260-1.

5/08/90



0.0' Existing pit floor.
0.0'-1.5' Brown Sandy Gravel. Saturated.
<1%+ 10", 3.5%+ 3"
1.5'-7.0' Brown Gravelly Sand W/ Sandy Gravel lenses. Saturated.

FS-3 A-1-b(0), LL=NV, PI=NP.
30% Gravel, 68% Sand, 2% Silt.

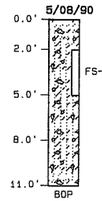
7.0'-9.0' Brown Gravelly Sand. Saturated.
2 large Erratics, <15%+ 3".

FS-4 A-1-b(0), LL=NV, PI=NP.
43% Gravel, 53% Sand, 4% Silt.

9.0'-13.0' Gray Brown Gravelly Sandy Silt. Very tight.

T.P. 3 Located in South East corner of Material Site 21-2-260-1.

5/08/90



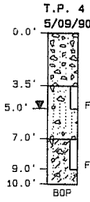
0.0' Existing pit floor.
0.0'-11.0' Brown Silty Gravelly Sand. Tight to very tight.
<1%+ 10", 2%-5%+ 3", A Till material.

FS-5 A-2-4(0), LL=NV, PI=NP.
29% Gravel, 48% Sand, 23% Silt.

Water seeping into pit at 8'.

T.P. 4 Located at center near East side of Material Site 21-2-260-1.

5/09/90



0.0' Existing pit floor.
0.0'-3.5' Brown Sandy Gravel. Damp to wet.
5%-10%+ 3", 2%-4%+ 10".

3.5'-7.0' Gray Brown Gravelly Sand. Wet to Saturated.
With Sand and Gravel lenses and some Cobbles and Bolders.

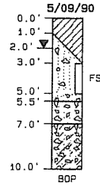
FS-6 A-1-b(0), LL=NV, PI=NP. 31% Gravel, 65% Sand, 4% Silt.
Water running into pit at 5'.

7.0'-10.0' Gray Brown Silty Gravelly Sand. Tight to very tight.
20%-30%+ 3", 10%+ 10".

FS-7 A-1-b(0), LL=16, PI=NP.
38% Gravel, 40% Sand, 22% Silt.

T.P. 5 Located in center of Material Site 21-2-260-1.

5/09/90



0.0' Existing pit floor.
0.0'-3.0' Brown Silt. Saturated.
Varies 1'~ 3' thick within Test Pit.

3.0'-5.5' Brown Gravelly Sand. Loose, saturated.

FS-8 A-1-b(0), LL=NV, PI=NP.
30% Gravel, 68% Sand, 2% Silt.

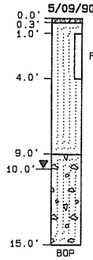
5.5'-7.0' Brown Sandy Gravel. With Cobbles and Bolders.

7.0'-10.0' Brown Silty Sandy Gravel. With Cobbles and Bolders.
Tight to very tight. A Till.

Pit refusal at 10' due to water caving in sides.

T.P. 6 Located in center near southern edge of Material Site 21-2-260-1.

5/09/90



0.0' Existing pit floor.
0.0'-0.3' Brown Organic Silt. With roots and Gravel.
0.3'-9.0' Gray Brown Sand. Loose.

FS-9 A-1-b(0), LL=NV, PI=NP.
11% Gravel, 88% Sand, 1% Silt.

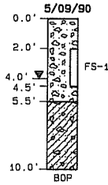
Dry to 9'.

9.0'-15.0' Gray Brown Gravelly Sand. Loose.
Saturated after 10'.

Pit refusal at 15' due to cave ins.

T.P. 7 Located in North West corner of Material Site 21-2-260-1.

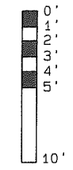
5/09/90



0.0' Existing pit floor.
0.0'-5.5' Brown Sandy Gravel. Loose.

FS-10 A-1-a(0), LL=NV, PI=NP, 53% Gravel, 46% Sand, 1% Silt.
Damp to wet to 4', saturated from 4.5'.
Water running into pit at 4.5'.

5.5'-10.0' Brown Sandy Gravelly Silt to Sandy Silty Gravel.
Tight, a Till.



BAR SCALE

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

MATERIAL SITE 21-2-260-1
TEST PITS

LOCATED M.P. 92.8 STERLING HWY.

Scale: Vert. 1"= 5' Horz.	Designed: T.O.	Drawn: N.I.	SHEET 1 OF 1
	Checked:	Date:	

MATERIAL SITE

(M.S. 21-2-230-1)

MATERIALS SITE INVESTIGATION
M.S. 21-2-230-1

Location & Access: Adjacent to the State Weigh Station at approximately Mile 83.0 Sterling Highway. An existing unimproved dirt access road connects the existing pit with Grand View Drive.

Acreage: 11.8 acres, approximately 90% undeveloped.

Ownership: F.U.P. to DOT&PF from DNR, no expiration date.

Geology & Topography: The topography is mostly flat to gently rolling. Most of the site is covered by second growth small spruce, birch and aspen. The existing soils probably were derived as a result of pro-glacial stream activity.

Field Investigations: The soils investigation for this site was conducted by the DOT&PF geotechnical field crew between May 8th & 9th, 1990.

The field investigation was conducted by Tom Ottley, Engineering Geologist, and Roy Briggs, equipment operator. A rented JD 790D-LC excavator was used to advance 8 test pits (T.P.'s 1-8) in the bottom of the existing pit floor to maximum depths of 15' (see the attached test pit logs and test pit location drawing for specific information). The soils encountered in the eight test pits typically consisted of 0.5' to 2.5' (avg. 1.4') of organic silt overburden overlying mostly silty sand and sand to the maximum tested depth of 22'.

Lab Analysis: Twenty field samples tested: The sand and silty sand had P200's which ranged from 3% to 34% (avg. 13% for 14 samples). Their moisture contents ranged from 2.4% to 20.3% and averaged 9.0% for 5 samples. A proctor test on the sand had an optimum moist of 14.0%, max. dry density of 108.7%; the silty sand soils had an optimum moist of 13.6%, and a max. dry density = 112.2%.

Usage Constraints: Adjacent residences, proximity to highway and narrow shape of site may constitute development restraints. A requirement of a 100 foot vegetation screen could effectively eliminate this site.

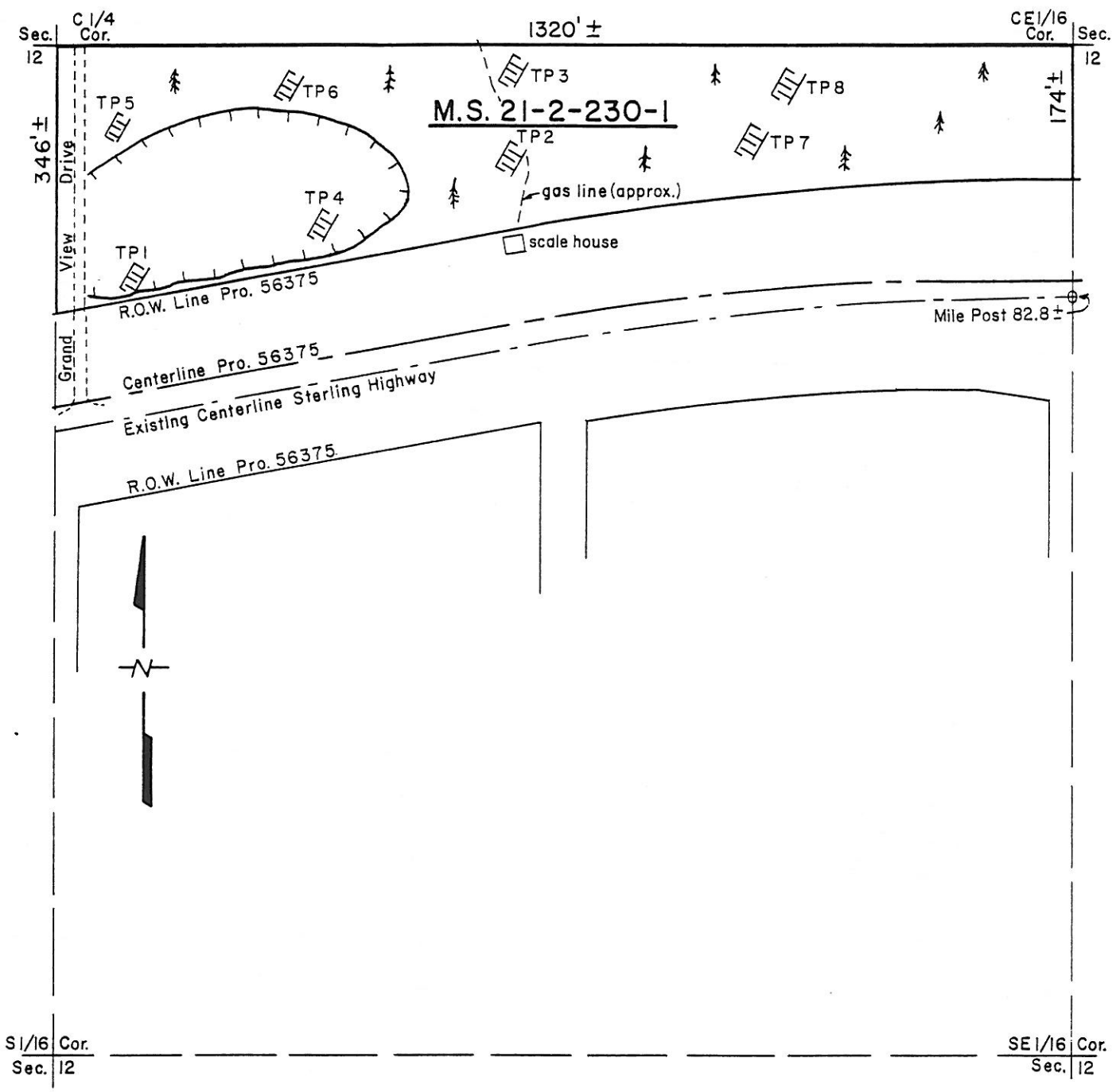
MATERIAL SITE INVESTIGATION
M.S. 21-2-230-1
CONTINUED

Comments:

1. The mixture of sand and silty sand in this site makes the material suitable only for borrow.

2. A natural gas line runs through the approximate middle of this site connecting to the scale house.

3. An existing berm surrounds the small pit located in the southwest corner of this site. This existing pit could be used as a waste site for overburden soils.



LEGEND:

T.P. – Approximate Test Pit Location Dug By Backhoe.

– Approximate Boundary Of Existing Material Removal.

0 50 100 200'
SCALE

NOTES:

1. Right Of Way And Centerline Locations Are Plotted From D.O.T. And P.F. Right Of Way Maps For Project No. 56375, Sterling Highway Mile 79–94, Dated 12/88.
2. Test Pit Locations Are Approximate.
3. Existing Pit Boundaries Are Approximate.

STATE OF ALASKA — DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES — MATERIALS

TEST PIT LOCATION MAP FOR: M.S. 21-2-230-1		LOCATION:	SE1/4, SE1/4, Sec. 12 T5N, R9W, S.M.
DESIGNED: T.O.	DRAWN: N.I.	SCALE: 1" = 200'	SHEET: 1 of 1

ALASKA DEPARTMENT OF TRANSPORTATION TEXTURAL SOIL DESCRIPTIONS

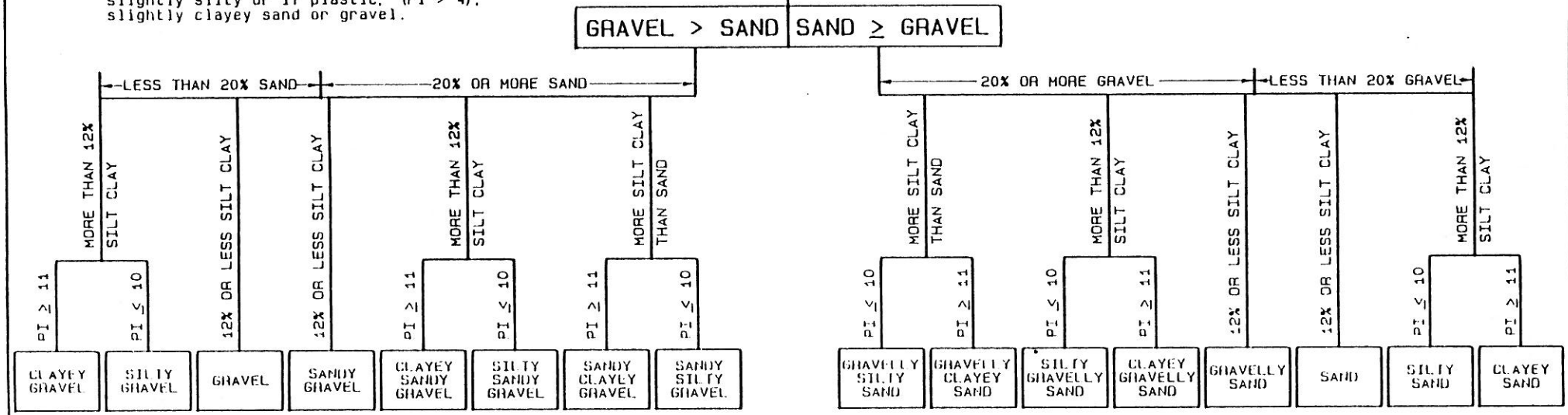
Rev. Dec. 8, 1989

NOTES: 1) All silts with a plastic index > 4 shall be termed "slightly clayey".

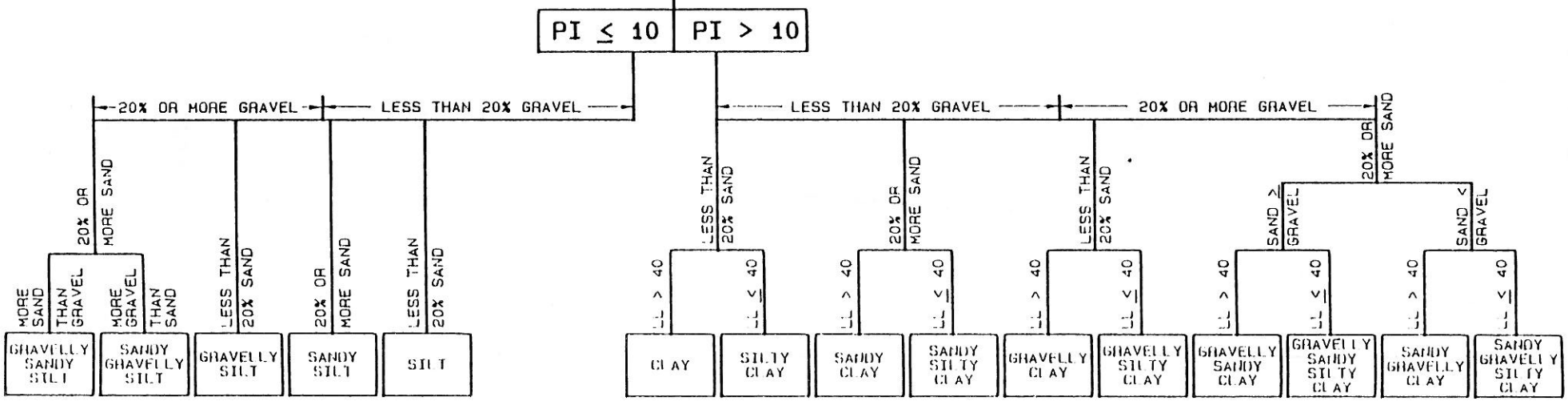
2) Sands and gravels with 7% thru 12% silt and/or clay (#200) shall be termed slightly silty or if plastic, (PI > 4), slightly clayey sand or gravel.

(CLAYS < .002 mm)
(SILTS < #200)
(SAND #200 TO #10)
(GRAVEL #10 TO 3" DIAMETER)
(COBBLES 3" TO 10" DIAMETER)
(BOULDERS +10" DIAMETER)

COARSE-GRAINED SOILS
35% OR LESS SILT/CLAY



FINE-GRAINED SOILS
36% OR MORE SILT/CLAY



SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[ ] Centerline

[X] Materials Site MS 21-1-230-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		3.0'-6.0'	13.0'-15.0'	5.0'-7.5'	2.5'-5.0'	12.0'-14.0'	6.0'-8.0'
Test Hole No.		TP-1	TP-1	TP-2	TP-3	TP-3	TP-4
Field No.		FS-1	FS-2	FS-3	FS-4	FS-5	FS-6
Date Sampled		05/10/90	05/10/90	05/10/90	05/10/90	05/10/90	05/10/90
Lab No.		90A-0456	90A-0457	90A-0458	90A-0459	90A-0460	90A-0461
	3"						
	2"						
	1"						
Percent	3/4"		100				
	1/2"	100	99				
Passing	3/8"	99	99			100	
	#4	98	98		100	100	
Sieve	#10	98	98	100	100	99	100
	#40	87	80	96	93	97	94
Size	#50	63	54	82	75	71	85
	#200	3	13	18	4	3	30
	.02mm						
	.002mm						
DOTTSD		Sa	Si Sa	Si Sa	Sa	Sa	Si Sa
AASHTO Class		A-3(0)	A-2-4(0)	A-2-4(0)	A-3(0)	A-3(0)	A-2-4(0)
FSV Class							
Liquid Limit		NV	NV	NV	NV	NV	NV
Plastic Index		NP	NP	NP	NP	NP	NP
Moisture Content %							
Organic Content %							
% Gravel		2	2	0	0	1	0
% Sand		95	85	82	96	96	70
% Silt & Clay		3	13	18	4	3	30
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[ ] Centerline

[X] Materials Site MS 21-1-230-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		15.0'-17.0'	16.0'-17.0'	2.5'-5.0'	2.5'-3.5'	13.0'-15.5'	13.0'-14.0'
Test Hole No.		TP-4	TP-4	TP-5	TP-5	TP-5	TP-5
Field No.		FS-7	FS-8	FS-9	FS-10	FS-11	FS-12
Date Sampled		05/10/90	05/10/90	05/11/90	05/11/90	05/11/90	05/11/90
Lab No.		90A-0462	90A-0463	90A-0464	90A-0465	90A-0466	90A-0467
	3"						
	2"						
	1"						
Percent	3/4"	100					
	1/2"	100					
Passing	3/8"	99				100	
	#4	99				100	
Sieve	#10	98		100		99	
	#40	78		94		94	
Size	#50	52		81		64	
	#200	3		34		3	
	.02mm						
	.002mm						
DOTTSD		Sa	Sa	Si Sa	Si Sa	Sa	Sa
AASHTO Class		A-3(0)		A-2-4(0)		A-3(0)	
FSV Class							
Liquid Limit		NV		NV		NV	
Plastic Index		NP		NP		NP	
Moisture Content %			2.4		8.2		4.8
Organic Content %							
% Gravel		2		0		1	
% Sand		95		66		96	
% Silt & Clay		3		34		3	
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

SOILS TESTING REPORT

Project Name Sterling Hwy. Mp 79-94

[ ] Centerline

[X] Materials Site MS 21-1-230-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		4.0'-7.0'	4.0'-5.0'	13.5'-15.0'	4.0'-5.0'	4.0'-6.5'	9.0'-12.0'
Test Hole No.		TP-6	TP-6	TP-6	TP-7	TP-7	TP-7
Field No.		FS-13	FS-14	FS-15	FS-16	FS-17	FS-18
Date Sampled		05/11/90	05/11/90	05/11/90	05/11/90	05/11/90	05/11/90
Lab No.		90A-0468	90A-0469	90A-0470	90A-0471	90A-0472	90A-0473
	3"						
	2"			100		100	
	1"			96		98	
Percent	3/4"			89		97	
	1/2"			79		96	
Passing	3/8"			67		96	
	#4			39		95	100
Sieve	#10	100		23		95	100
	#40	95		11		91	98
Size	#50	76		8		71	88
	#200	5		1		22	24
	.02mm						
	.002mm						
DOTTSD		Sa	Sa	Sa Grl	Si Sa	Si Sa	Si Sa
AASHTO Class		A-3(0)		A-1-a(0)		A-2-4(0)	A-2-4(0)
FSV Class							
Liquid Limit		NV		NV		NV	NV
Plastic Index		NP		NP		NP	NP
Moisture Content %			20.3		10.3		
Organic Content %							
% Gravel		0		77		5	0
% Sand		95		22		73	76
% Silt & Clay		5		1		22	24
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

SOILS TESTING REPORT

Project Name Sterling Hwy. MP 79-94

[ ] Centerline

[X] Materials Site MS 21-1-230-1

Project No. 56375 Sampled By Ottley

[ ] Structure

Station							
Offset (feet)							
Depth (feet)		2.5'-5.0'	14.0'-17.0'				
Test Hole No.		TP-8	TP-8				
Field No.		FS-19	FS-20				
Date Sampled		05/11/90	05/11/90				
Lab No.		90A-0474	90A-0475				
	3"						
	2"		100				
	1"		97				
Percent	3/4"		96				
	1/2"		95				
Passing	3/8"		94				
	#4		92				
Sieve	#10	100	91				
	#40	96	82				
Size	#50	83	70				
	#200	15	15				
	.02mm						
	.002mm						
DOTTSD		Si Sa	Si Sa				
AASHTO Class		A-2-4(0)	A-2-4(0)				
FSV Class							
Liquid Limit		NV	NV				
Plastic Index		NP	NP				
Moisture Content %							
Organic Content %							
% Gravel		0	9				
% Sand		85	76				
% Silt & Clay		15	15				
Max. Dry Density							
Opt. Moisture %							
Sp.G. Fine							
Degradation Value							
L.A. Abrasion Loss							
Sulfate Soundness		/	/	/	/	/	/

NOTE: Gradation Tests Based on Minus 3" Material. AASHTO class may be inappropriate if Organic Content > 5%.

25D-208
5-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 06/14/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0477

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination

SAMPLED FROM FS-6, 9, 13 & 17-19 SUBMITTED BY Ottley DATE SAMPLED / /

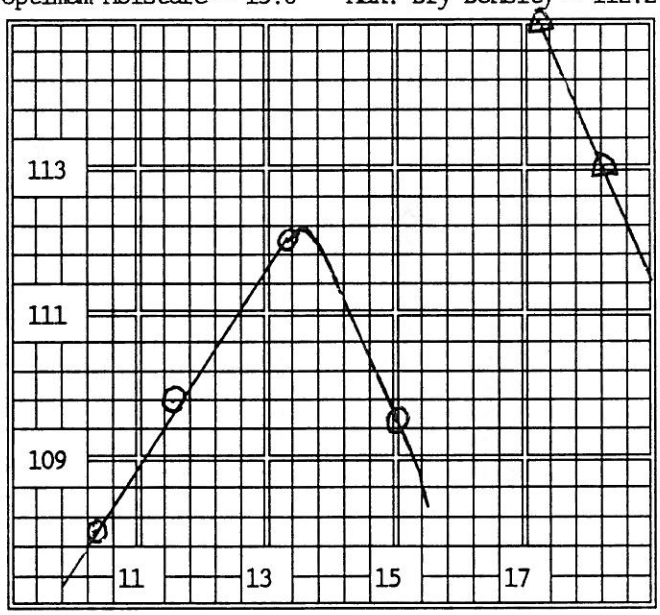
LOCATION _____ DEPTH _____ DATE RECEIVED 05/14/90

SOURCE MS-21-1-230-1 QUANTITY REPRESENTED _____ TEST COMPLETED 06/04/90

EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	-3/4"	Specs.
3"			
2"	100		
1 1/2"	99		
1"	99		
3/4"	98	100	
1/2"	97	99	
3/8"	97	99	
#4	96	98	
#8			
#10	96	98	
#16			
#40	92	94	
#50	78	80	
#100			
#200	20	20	

Optimum Moisture = 13.6 Max. Dry Density = 112.2



	Specs.
% FRACTURE	
LL	
PL	
PI	
Coarse / Fine	
SPG 2.70	

% +3"	0	FSV
% Gravel	4	AASHTO Class
% Sand	76	DOTTSD
% Si/Cl	20	Unified Class

% Natural Moisture _____

Remarks:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Richard Stead
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

25D-208
5-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 06/14/90

TEST OF _____ SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0476

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. Combination

SAMPLED FROM FS-1 thru 5 SUBMITTED BY Ottley DATE SAMPLED / /

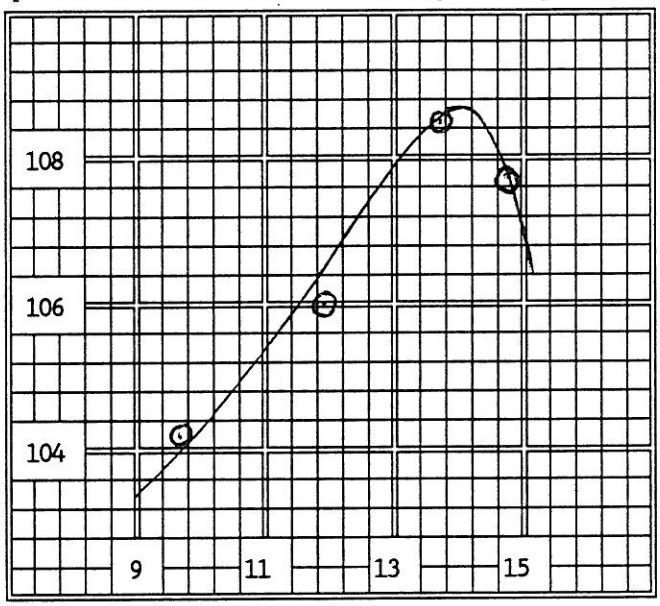
LOCATION _____ DEPTH _____ DATE RECEIVED 05/14/90

SOURCE MS-21-1-230-1 QUANTITY REPRESENTED _____ TEST COMPLETED 06/04/90

EXAMINED FOR Standard Density PROJECT NOTIFIED / /

SIEVE	%PASS	-3/4"	Specs.
3"			
2"			
1 1/2"			
1"			
3/4"	100		
1/2"	100		
3/8"	100		
#4	99		
#8			
#10	99		
#16			
#40	90		
#50	68		
#100			
#200	8		

Optimum Moisture = 14.0 Max. Dry Density = 108.7



	Specs.
% FRACTURE	
LL	
PL	
PI	

Coarse	Fine
SPG	2.72

% +3"	0	FSV
% Gravel	1	AASHTO Class
% Sand	91	DOTTSD
% Si/Cl	8	Unified Class

% Natural Moisture _____

Remarks:

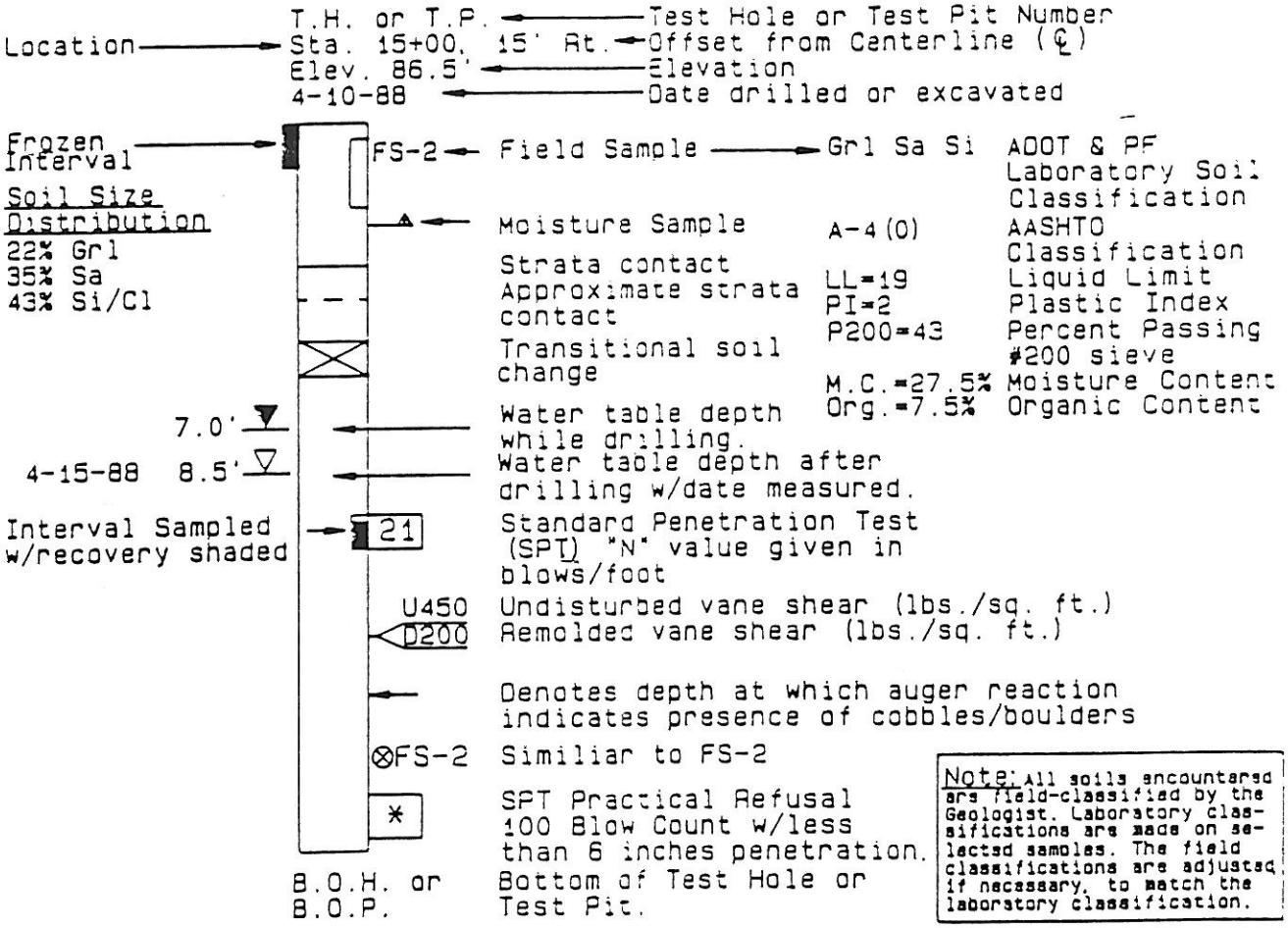
The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature _____
Title Construction Materials Engineer

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

TEST PIT AND TEST HOLE LOG EXPLANATION
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
MATERIALS SECTION

6-2-88



Note: All soils encountered are field-classified by the Geologist. Laboratory classifications are made on selected samples. The field classifications are adjusted, if necessary, to match the laboratory classification.

Abbreviations

Blk	=Black	Org	=Organic(s)
Bn	=Brown	Grl	=Gravel
Bl	=Blue	w/	=with
Gn	=Green	tr.	=trace
Gr	=Gray	sl.	=slightly
Or	=Orange	G.S.	=Grab Sample
Rd	=Red	S.S.	=Split spoon
Tn	=Tan	S.T.	=Shelby Tube
Sa	=Sand	M.S.	=Modified Shelby Tube
Si	=Silt		
Cl	=Clay		

Soil Size Distribution

Based on U.S. Standard Sieve Sizes:

Boulders	=>10"
Cobbles	=3"-10"
Gravel	=#10-3"
Sand	=#200-#10
Silt/Clay	=<#200

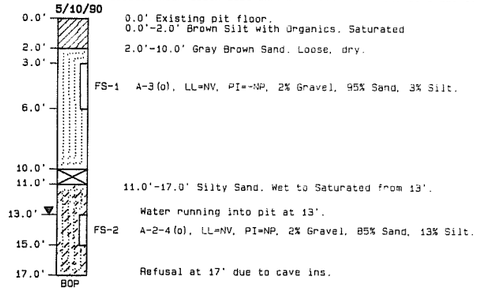
Plan View Symbols

- Power Auger Test Hole
- Hand Auger Test Hole
- Surface Sample
- 14.5' Hand Probe Depth & Location
- Hand Dug Test Pit
- Dozer/Backhoe Pit
- xxxx Berm
- Terrace or Bank
- Swamp

Graphic Symbols (Two or more soil symbols may be used together to indicate a combination of soil types.)

- Organics (Org)
- Gravel (Grl)
- Sand (Sa)
- Silt (Si)
- Clay (Cl)
- Ice (Ice)
- Bedrock (Bx)
- Cobbles and/or Boulders

T.P. 1 Located near South East corner of Material Site 21-2-230-1.



0.0'-0.5' Existing pit floor.
0.0'-2.0' Brown Silt with Organics. Saturated
2.0'-10.0' Gray Brown Sand. Loose, dry.

FS-1 A-3(0), LL=NV, PI=NP, 2% Gravel, 95% Sand, 3% Silt.

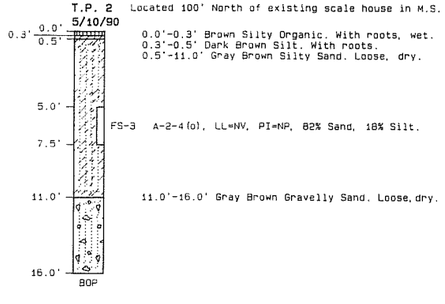
11.0'-17.0' Silty Sand. Wet to Saturated from 13'.

Water running into pit at 13'.

FS-2 A-2-4(0), LL=NV, PI=NP, 2% Gravel, 85% Sand, 13% Silt.

Refusal at 17' due to cave ins.

T.P. 2 Located 100' North of existing scale house in M.S. 21-2-230-1.

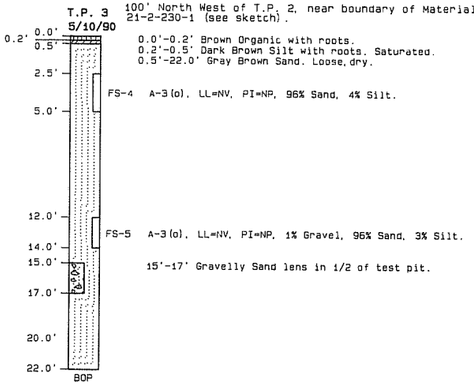


0.0'-0.3' Brown Silty Organic. With roots, wet.
0.3'-0.5' Dark Brown Silt. With roots.
0.5'-11.0' Gray Brown Silty Sand. Loose, dry.

FS-3 A-2-4(0), LL=NV, PI=NP, 82% Sand, 18% Silt.

11.0'-16.0' Gray Brown Gravelly Sand. Loose, dry.

T.P. 3 100' North West of T.P. 2, near boundary of Material Site 21-2-230-1 (see sketch).



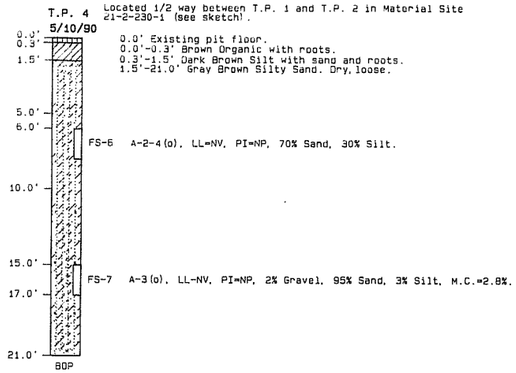
0.0'-0.2' Brown Organic with roots.
0.2'-0.5' Dark Brown Silt with roots. Saturated.
0.5'-22.0' Gray Brown Sand. Loose, dry.

FS-4 A-3(0), LL=NV, PI=NP, 96% Sand, 4% Silt.

FS-5 A-3(0), LL=NV, PI=NP, 1% Gravel, 96% Sand, 3% Silt.

15'-17' Gravelly Sand lens in 1/2 of test pit.

T.P. 4 Located 1/2 way between T.P. 1 and T.P. 2 in Material Site 21-2-230-1 (see sketch).



0.0' Existing pit floor.
0.0'-0.3' Brown Organic with roots.
0.3'-1.5' Dark Brown Silt with sand and roots.
1.5'-21.0' Gray Brown Silty Sand. Dry, loose.

FS-6 A-2-4(0), LL=NV, PI=NP, 70% Sand, 30% Silt.

FS-7 A-3(0), LL=NV, PI=NP, 2% Gravel, 95% Sand, 3% Silt, M.C.=2.8%.

T.P. 5 Located in Material Site 21-2-230-1 (see pit sketch).

0.0'-0.5' Dark Brown Organic, with roots.
0.5'-1.0' Dark Brown Sandy Silt, with roots.
1.0'-8.0' Gray Brown Silty Sand. Loose.

FS-10 2.5'-3.5' 66% Sand, 34% Silt, M.C.= 8.2%.

FS-9 2.5'-5.0' A-2-4(0), LL=NV, PI=NP.

8.0'-17.0' Sand, with gravel lens at 11'-12'.

11.0'-12.0' Gravel lense.

FS-12 13.0'-14.0' M.C.= 4.8%.

FS-11 13.0'-15.5' A-3(0), LL=NV, PI=NP, 1% Gravel, 96% Sand, 3% Silt.

Refusal at 17' due to cave ins.

T.P. 6 Located within Material Site 21-2-230-1 (see sketch).

0.0'-1.0' Dark Brown Organic, with roots.
1.0'-2.5' Dark Brown Organic Sandy Silt, with roots. Slightly frozen, saturated.
2.5'-13.0' Gray Brown Sand.

FS-14 4.0'-5.0' M.C.= 20.3%.

FS-13 4.0'-7.0' A-3(0), LL=NV, PI=NP, 95% Sand, 5% Silt.

13.0'-15.0' Brown Sandy Gravel. Loose, saturated.
<5%+ 3".

FS-15 A-1-a(0), LL=NV, PI=NP, 77% Gravel, 22% Sand, 1% Silt.

15.0'-17.0' Dark Brown Silty Sand to Sandy Silt.

Refusal at 17' due to water table/cave ins.

T.P. 7 Located within Material Site 21-2-230-1 (see sketch).

0.0'-0.5' Dark Brown Organic, with roots.
0.5'-1.5' Dark Brown Organic Sandy Silt, with roots. Frozen.
1.5'-6.5' Gray Brown Silty Sand.

FS-16 M.C.= 10.3%, 5% Gravel, 73% Sand, 22% Silt.

FS-17 4.0'-6.5' A-2-4(0), LL=NV, PI=NP.

6.5'-8.0' Gray Brown Gravelly Sand. Loose, damp.

8.0'-20.0' Gray Brown Silty Sand. Loose, damp.

FS-18 A-2-4(0), LL=NV, PI=NP, 76% Sand, 24% Silt.

T.P. 8 Located in Material Site 21-2-230-1 (see sketch).

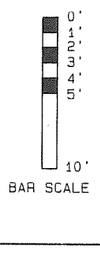
0.0'-0.5' Dark Brown Organic.
0.5'-1.5' Dark Brown Sandy Silt, with organic and roots. Saturated, partially frozen.
1.5'-19.0' Gray Brown Silty Sand, with Gravelly Sand Lenses. Loose, dry.

FS-19 A-2-4(0), LL=NV, PI=NP, 85% Sand, 15% Silt.

7.5'-9.0' Gravelly Sand lenses.

FS-20 A-2-4(0), LL=NV, PI=NP, 9% Gravel, 76% Sand, 15% Silt.

Refusal at 19.0' due to pit cave ins.



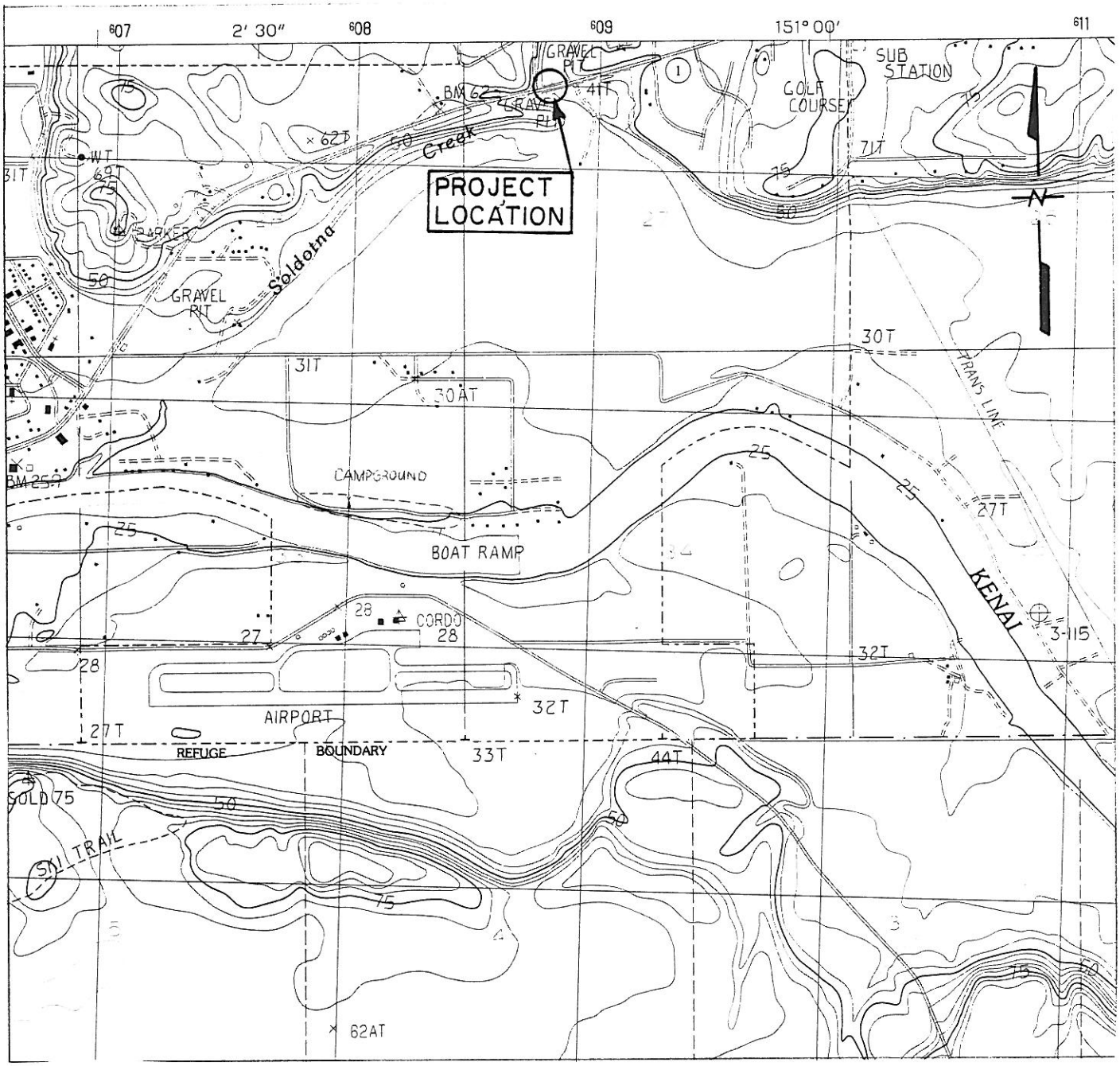
STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND
PUBLIC FACILITIES

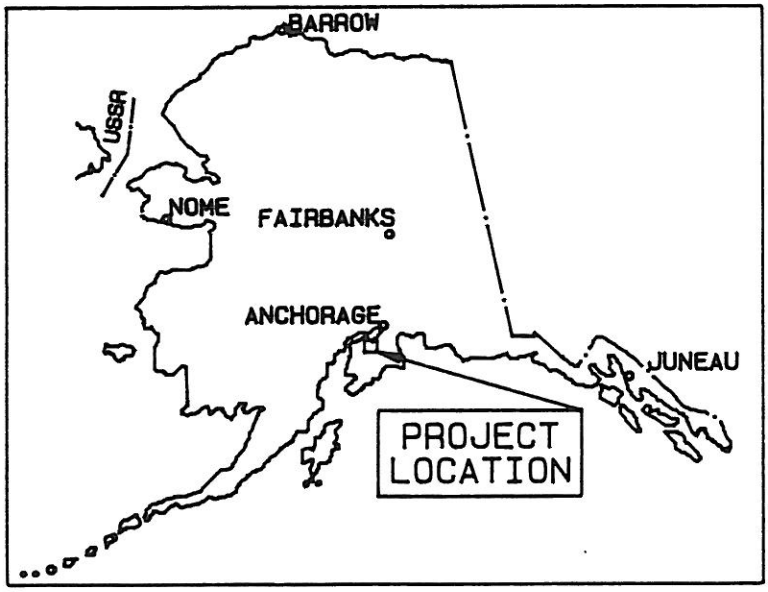
MATERIAL SITE 21-2-230-1
TEST PITS
LOCATED APPROX. M.P.83.0 STERLING HWY.

Scale: Vert. 1"= 5' Horz.	Designed: T.O.	Drawn: N.I.	SHEET 1 OF 1
	Checked:	Date:	

APPENDIX C

(Foundation Investigation Soldotna Creek)





STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES

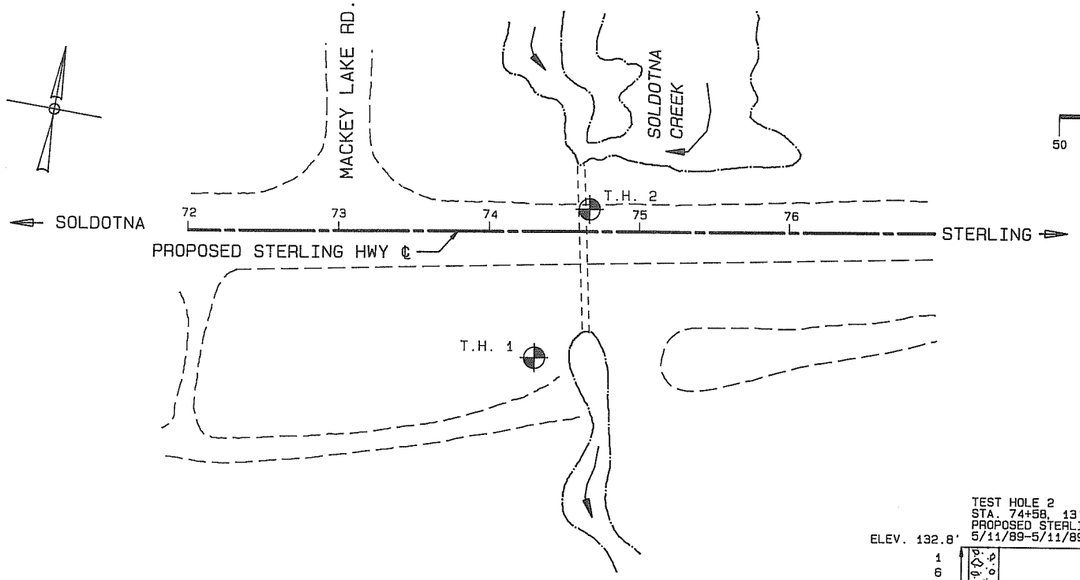
SOLDOTNA CREEK CULVERT REPLACEMENT

Project No. IR-0A3-3(3)

LOCATION MAP

SCALE 2.5" = 1 Mi, DATA U.S.G.S.

STATE	PROJECT DESIGNATION	YEAR	SHEET NO.	TOTAL SHEETS
ALASKA	IR-0A3-3 (3)	1990	1	1



SCALE

50 25 0 50

FEET

BASIC MATERIALS SYMBOLS

Organic

Silt

Cobbles; Boulders

Clay

Gravel

Sand

NOTE: Significant soil mixtures are shown by combining soil symbols

TYPICAL TEST HOLE SYMBOLS

Plan View

Location of any hole

Section View

Rotary

Auger

Diamond Core

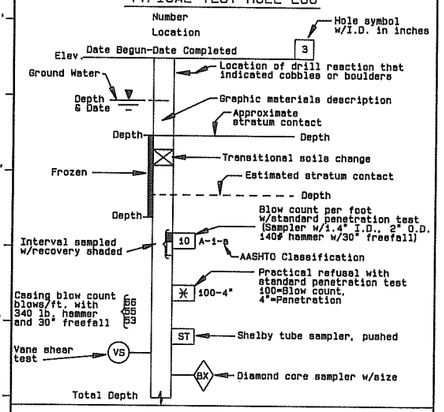
Penetrometer

RELATIVE DENSITY AND CONSISTENCY CLASSIFICATION

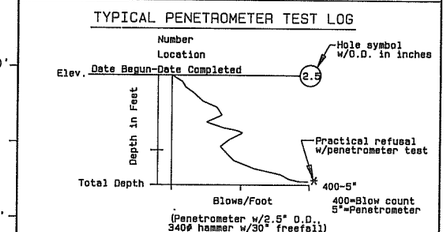
Based on Standard Penetration Test

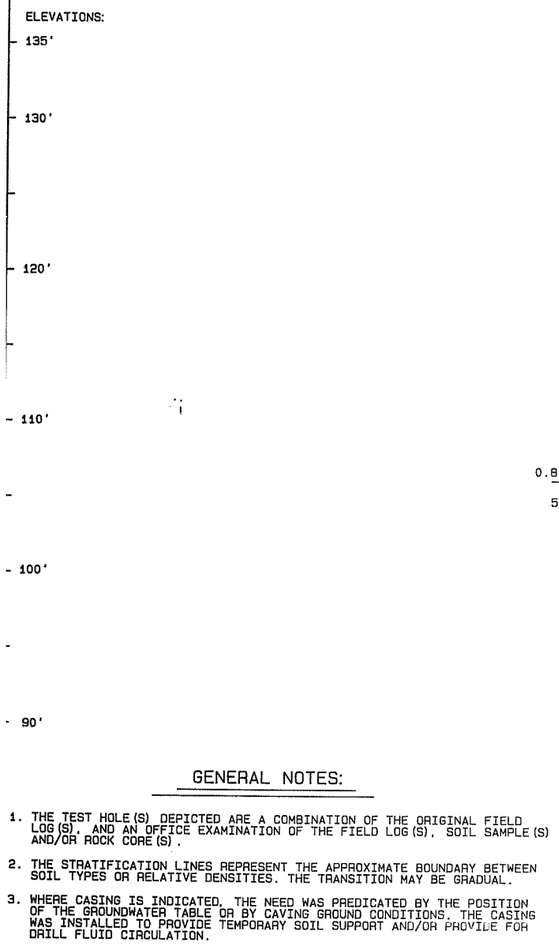
GRANULAR		COHESIVE	
Blows/ft	Rel. Density	Blows/ft	Consistency
0-5	Very Loose	2	Very Soft
6-10	Loose	2-4	Soft
11-20	Firm	5-8	Medium
21-35	Compact	9-15	Stiff
36-50	Dense	16-30	Very Stiff
51-70	Very Dense	31-60	Hard
71+	V. Very Dense	61+	Very Hard

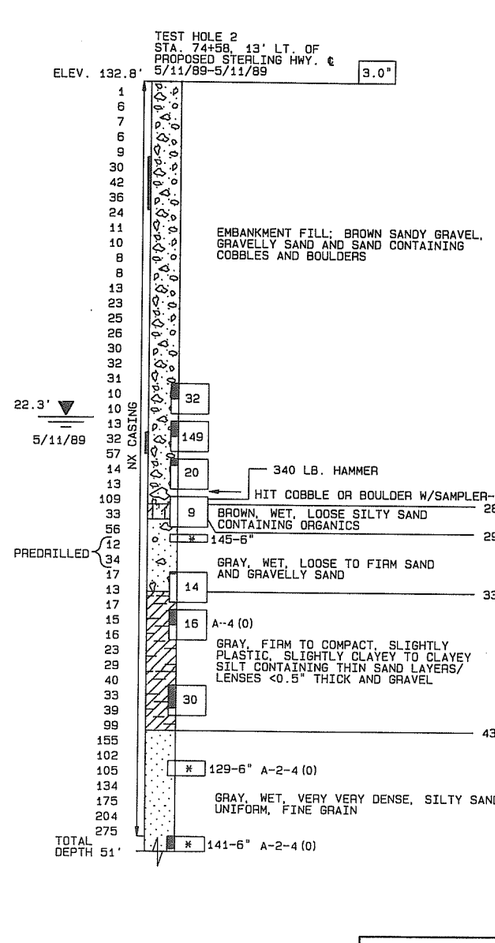
TYPICAL TEST HOLE LOG

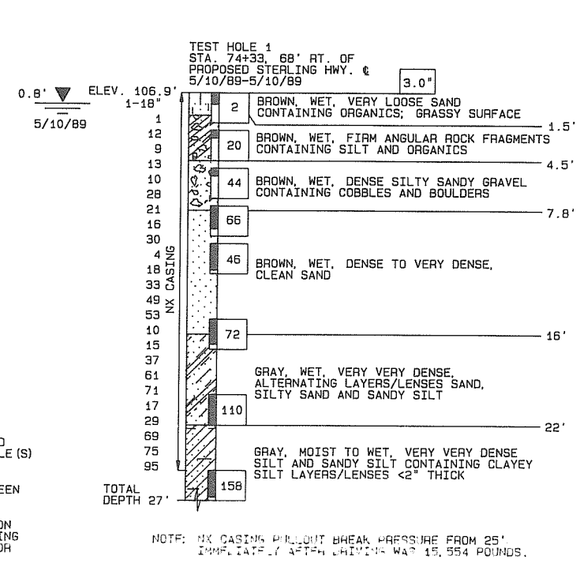


TYPICAL PENETROMETER TEST LOG









NOTE: NX CASING PULLOUT BREAK PRESSURE FROM 25' IMMEDIATELY AFTER DRIVING WAS 15,554 POUNDS.

GENERAL NOTES:

1. THE TEST HOLE(S) DEPICTED ARE A COMBINATION OF THE ORIGINAL FIELD LOG(S), AND AN OFFICE EXAMINATION OF THE FIELD LOG(S), SOIL SAMPLE(S) AND/OR ROCK CORE(S).
2. THE STRATIFICATION LINES REPRESENT THE APPROXIMATE BOUNDARY BETWEEN SOIL TYPES OR RELATIVE DENSITIES. THE TRANSITION MAY BE GRADUAL.
3. WHERE CASING IS INDICATED, THE NEED WAS PREDICATED BY THE POSITION OF THE GROUNDWATER TABLE OR BY CAVING GROUND CONDITIONS. THE CASING WAS INSTALLED TO PROVIDE TEMPORARY SOIL SUPPORT AND/OR PROVILE FOR DRILL FLUID CIRCULATION.
4. FIELD MOISTURE DESCRIPTIONS (DRY, MOIST, AND WET) ARE BASED ON THE FOLLOWING FIELD OBSERVATIONS:
   - A. DRY - A SOIL WITH NO VISIBLE MOISTURE, FEELS DRY WHEN HELD IN THE HAND, WILL NOT FORM A CAST.
   - B. MOIST - A SOIL WITH VISIBLE MOISTURE, FEELS MOIST IN THE HAND, WILL FORM A CAST.
   - C. WET - A SOIL WITH VISIBLE WATER, WETS THE HAND WHEN HELD, HAS FREE WATER WHEN SHAKEN.

   A COMBINATION OF THESE TERMS MAY BE USED TO DESCRIBE THE SOIL MOISTURE CONDITION.

TEST HOLE LOGS AND LOCATIONS

SOLDOTNA CREEK

SOIL GRAIN SIZE DEFINITIONS

Boulder (rounded)	>10" Diameter
Cobble (rounded)	3"- 10" Diameter
Broken rock (angular)	>3" Diameter
Gravel (rounded); Stone (angular)	#10 Sieve-3" Dia.
Sand	#200 Sieve- #10
Silt/Clay	<#200 Sieve

NOTE: Soil classifications are visual only unless AASHTO soil class is shown on the log.

State of Alaska

DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES

Juneau, Alaska

Date: 6-27-90

Approved:

BRIDGE NO. ——

DWNG. NO.

25-229J
3-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 02/22/90

TEST OF Sl Cly to Cly Si SPECIFICATION/ITEM NO. _____

PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94
SAMPLED FROM TH 2 SUBMITTED BY Pavey
LOCATION Sta. 74+58 13' Lt. QUANTITY REPRESENTED _____
SOURCE Soldotna Creek DEPTH 35'-37'
EXAMINED FOR Moisture Content & Classification

LABORATORY NO. 90A-0104
FIELD NO. 2035
DATE SAMPLED 05/11/89
DATE RECEIVED 02/13/90
TEST COMPLETED 02/22/90
PROJECT NOTIFIED / /

Sieve Analysis, % Passing

SIZE	Lab		Specs.
4"			
3"			
2"			
1 1/2"			
1"	100		
3/4"	89		
1/2"	84		
3/8"	81		
#4	78		
#8			
#10	73		
#16			
#30			
#40	65		
#50	60		
#80			
#100			
#200	42		
.02mm			
.002mm			

	Lab	Field	Specs
LL	21		
PL	15		
PI	6		
% Organic			
pH			
% Nat. Moisture	12.2		
Dry Unit Wt.,pcf			
% +3"			
% Gravel	27		
% Sand	31		
% Silt	42		
% Clay			
FSV			
AASHTO Class	A-4(0)		
DOTTSD	Cl Grl Sa Si		
Unified Class			

% Fracture		
Thin Elongated		
Fineness Modulus		

	Coarse	Specs	Fine	Specs
Friable Particles				
Sulfate Soundness, % Loss				
L.A. Abrasion, % Loss				
Degradation				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Ralph W. Head
Title Ralph W. Head, CME

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

25-229J
3-88

STATE OF ALASKA
Department of Transportation & Public Facilities
Laboratory Report

PRECONSTRUCTION
DATE 03/05/90

TEST OF Sa SPECIFICATION/ITEM NO. _____

LABORATORY NO. 90A-0105
PROJECT NO. 56375 PROJECT NAME Sterling Hwy. MP 79-94 FIELD NO. 2045 and 2050
SAMPLED FROM TH 2 SUBMITTED BY Pavey DATE SAMPLED 05/11/89
LOCATION Sta. 74+58 13' Lt. QUANTITY REPRESENTED _____ DATE RECEIVED 02/13/90
SOURCE Soldotna Creek DEPTH 45'-46'&50'-51' TEST COMPLETED 02/28/90
EXAMINED FOR Classification & Direct Shear PROJECT NOTIFIED / /

Sieve Analysis, % Passing

SIZE	Lab		Specs.
4"			
3"			
2"			
1 1/2"			
1"			
3/4"			
1/2"			
3/8"	100		
#4	100		
#8			
#10	99		
#16			
#30			
#40	98		
#50	88		
#80			
#100			
#200	16		
.02mm			
.002mm			

	Lab	Field	Specs
LL	NV		
PL	NV		
PI	NP		
% Organic			
pH			
% Nat. Moisture			
Dry Unit Wt., pcf			
% +3"			
% Gravel	1		
% Sand	83		
% Silt	16		
% Clay			
FSV			
AASHTO Class	A-2-4(0)		
DOTTSD	Si Sa		
Unified Class			

% Fracture				
Thin Elongated				
Fineness Modulus				

	Coarse	Specs	Fine	Specs
Friable Particles				
Sulfate Soundness, % Loss				
L.A. Abrasion, % Loss				
Degradation				

RECEIVED
MAR 13 1990
DEPT. OF TRANSPORTATION/P.
MATERIALS HEADQUARTERS
ANCHORAGE, ALASKA 99503

Remarks: For Direct Shear results see attached.

When Processed to conform to grading requirements, this material is satisfactory for:

The Material as Submitted Conforms to Specifications
Yes[ ] No[ ] NA[X]

Signature Ralph W. Head
Title Ralph W. Head, CME

D2 THE TEST RESULTS ARE ONLY REPRESENTATIVE OF THE MATERIAL AS SUBMITTED.

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90A-105

Shear Box		To top of Block	1.58
Length,cm	6.00	Soil Thickness	1.90
Depth,cm	3.30	Volume,cc	68
Block	2.98	Load,kg [redacted] 2	lbs/ft2 1,138.06

Time minutes	Shear Dial	Shear Disp.	Normal Dial	Normal Disp.	Proving Ring	Stress Force	τ/σ	$\phi\mu$
0	2500		128					
1	2478	.005	133	-.005	2449	5.63	.128	7.29
2	2454	.010	142	-.014	2395	15.51	.353	19.46
3	2428	.017	149	-.021	2357	22.47	.513	27.17
4	2403	.024	151	-.023	2321	29.06	.666	33.65
5	2378	.032	150	-.022	2291	34.55	.794	38.45
6	2352	.040	145	-.017	2265	39.31	.907	42.20
7	2326	.048	135	-.007	2244	43.15	.999	44.97
8	2301	.057	122	.006	2226	46.44	1.079	47.18
9	2275	.066	104	.024	2213	48.82	1.139	48.72
10	2250	.075	83	.045	2204	50.47	1.182	49.77
11	2224	.085	62	.066	2197	51.75	1.217	50.60
12	2200	.094	39	.089	2193	52.48	1.239	51.11
13	2175	.103	18	.110	2189	53.22	1.262	51.61
14	2150	.113	-2	.130	2188	53.40	1.272	51.83
15	2125	.123	-22	.150	2187	53.58	1.282	52.04
16	2100	.133	-44	.172	2193	52.48	1.261	51.59
17	2074	.145	-64	.192	2206	50.10	1.210	50.44
18	2049	.156	-77	.205	2220	47.54	1.154	49.09
19	2022	.168	-86	.214	2242	43.52	1.062	46.73
20	1996	.180	-85	.213	2272	38.03	.934	43.04
21	1970	.192	-79	.207	2288	35.10	.866	40.90
22	1943	.203	-74	.202	2290	34.73	.861	40.75
23	1917	.213	-69	.197	2288	35.10	.875	41.18

904-105

Shear Box		To top of Block	1.76		
Length,cm	6.00	Soil Thickness	2.08		
Depth,cm	3.30	Volume,cc	75		
Block	2.98	Load,kg	6	lbs/ft2	3,414.19

Time minutes	Shear Dial	Shear Disp.	Normal Dial	Normal Disp.	Proving Ring	Stress Force	τ/σ	$\phi\mu$
0	2500		199					
1	2477	.001	204	-.005	2398	14.97	.113	6.46
2	2454	.003	211	-.012	2305	31.99	.242	13.61
3	2429	.006	218	-.019	2227	46.26	.351	19.32
4	2404	.011	225	-.026	2157	59.07	.449	24.16
5	2377	.016	229	-.030	2091	71.15	.542	28.44
6	2354	.020	232	-.033	2027	82.86	.632	32.28
7	2328	.026	232	-.033	1975	92.38	.706	35.23
8	2303	.032	232	-.033	1927	101.17	.775	37.79
9	2278	.039	229	-.030	1884	109.04	.838	39.96
10	2253	.046	223	-.024	1849	115.44	.890	41.67
11	2228	.053	214	-.015	1815	121.66	.941	43.26
12	2203	.061	203	-.004	1787	126.79	.984	44.53
13	2178	.069	190	.009	1763	131.18	1.021	45.61
14	2153	.077	177	.022	1749	133.74	1.045	46.27
15	2128	.086	161	.038	1727	137.77	1.080	47.22
16	2104	.094	145	.054	1716	139.78	1.100	47.74
17	2078	.104	127	.072	1712	140.51	1.111	48.01
18	2053	.114	108	.091	1717	139.60	1.109	47.96
19	2027	.125	90	.109	1727	137.77	1.100	47.72
20	2001	.136	74	.125	1735	136.30	1.093	47.56
21	1975	.147	62	.137	1740	135.39	1.091	47.50
22	1948	.158	51	.148	1742	135.02	1.094	47.56
23	1923	.168	41	.158	1749	133.74	1.088	47.43
24	1896	.181	29	.170	1776	128.80	1.054	46.52
25	1870	.194	21	.178	1812	122.21	1.006	45.18

90A-105

Shear Box		To top of Block	1.57		
Length,cm	6.00	Soil Thickness	1.89		
Depth,cm	3.30	Volume,cc	68		
Block	2.98	Load,kg	4	lbs/ft2	2,276.12

Time minutes	Shear Dial	Shear Disp.	Normal Dial	Normal Disp.	Proving Ring	Stress Force	τ/σ	$\phi\mu$
0	2500		205					
1	2480	.002	210	-.005	2429	9.29	.105	6.02
2	2456	.007	220	-.015	2367	20.64	.235	13.21
3	2431	.011	230	-.025	2301	32.72	.373	20.45
4	2407	.017	238	-.033	2253	41.50	.474	25.36
5	2390	.020	243	-.038	2206	50.10	.573	29.81
6	2255	.070	246	-.041	2163	57.97	.677	34.11
7	2229	.077	246	-.041	2124	65.11	.763	37.35
8	2204	.084	244	-.039	2091	71.15	.837	39.92
9	2179	.092	239	-.034	2065	75.91	.896	41.85
10	2154	.100	231	-.026	2041	80.30	.951	43.56
11	2129	.109	221	-.016	2023	83.60	.993	44.81
12	2104	.117	210	-.005	2008	86.34	1.030	45.85
13	2079	.126	197	.008	1994	88.90	1.065	46.80
14	2054	.134	184	.021	1974	92.56	1.113	48.06
15	2029	.144	172	.033	1976	92.20	1.113	48.07
16	2004	.154	159	.046	1970	93.30	1.131	48.53
17	1979	.163	146	.059	1966	94.03	1.145	48.87
18	1953	.173	136	.069	1964	94.39	1.155	49.11
19	1928	.183	123	.082	1966	94.03	1.156	49.13
20	1902	.194	111	.094	1970	93.30	1.152	49.05
21	1876	.204	102	.103	1972	92.93	1.153	49.08
22	1849	.215	96	.109	1974	92.56	1.154	49.11
23	1823	.225	92	.113	1977	92.01	1.153	49.08
24	1797	.236	86	.119	1984	90.73	1.143	48.82
25	1772	.247	78	.127	2002	87.44	1.107	47.92

MEMORANDUM State of Alaska

TO: John J. Burkholder, P.E.
Design Project Manager
Design Group III

DATE: Mar. 28, 1990

FILE NO:

TELEPHONE NO: 338-2121

THRU: Kenneth C. Lowney, P.E.
State Materials Engineer
Statewide Materials

SUBJECT: IR-0A3(3)/56375
Sterling Hwy, 79-94
Soldotna Creek Pipe
Foundation

FROM: Earl Ellis, P.E.
Geotechnical Engineer
Statewide Materials

&

Keith Korri, P.E.
Foundation Engineer
Statewide Materials

This is in answer to your memo, subject as above dated January 8, 1990.

A preliminary design for a structural pipe arch was prepared as follows:

Dimensions: 14'-5" wide X 10'-0" high.

Plate Thickness: 5 gauge

Construction Requirements:

1. Excavate overburden (brown sand or silty sand with organics) to approximate Elevation 104 - 105 and a minimum of 1.5 feet below the invert of the pipe arch.

2. Compact subgrade to 95% maximum (Alaska T-12) density.

3. Place 1.5 feet of bedding material and backfill to a minimum of 2 feet above the top of the pipe arch with Select Material Type A compacted to a minimum of 95% Alaska T-12 density. The width of the Type A backfill on either side of the pipe arch at and below the spring line must be a minimum of 4 feet. No soil cement - lean concrete buttress will be required if the specified material and compaction requirements are met.

According to discussions with Keith Korri, no consideration would be given to a concrete structure if a straight forward pipe arch design was found to be adequate.