

**GEOTECHNICAL REPORT**  
**KWIGILLINGOK AIRPORT**

**AIP 3-02-0165-01/60118**

CENTRAL REGION

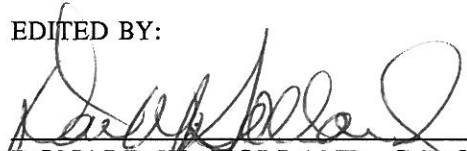
DECEMBER 1995

PREPARED BY:

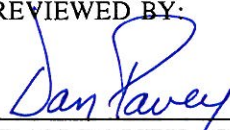
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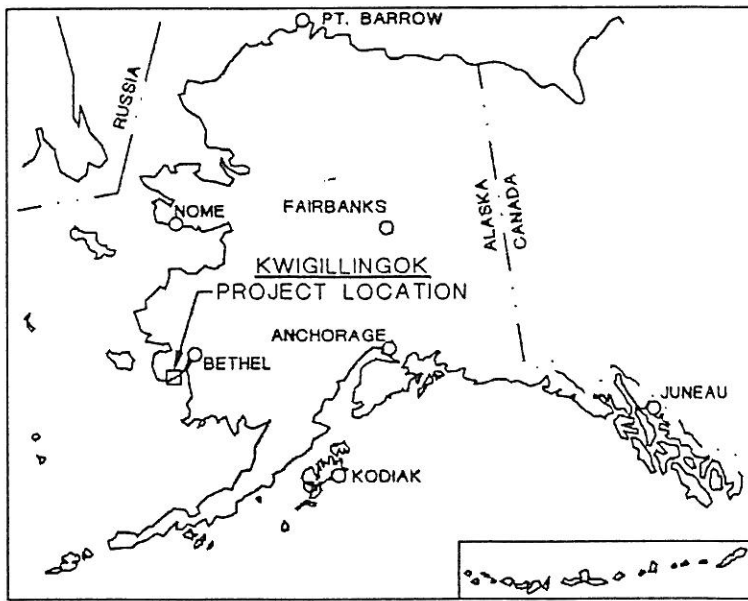
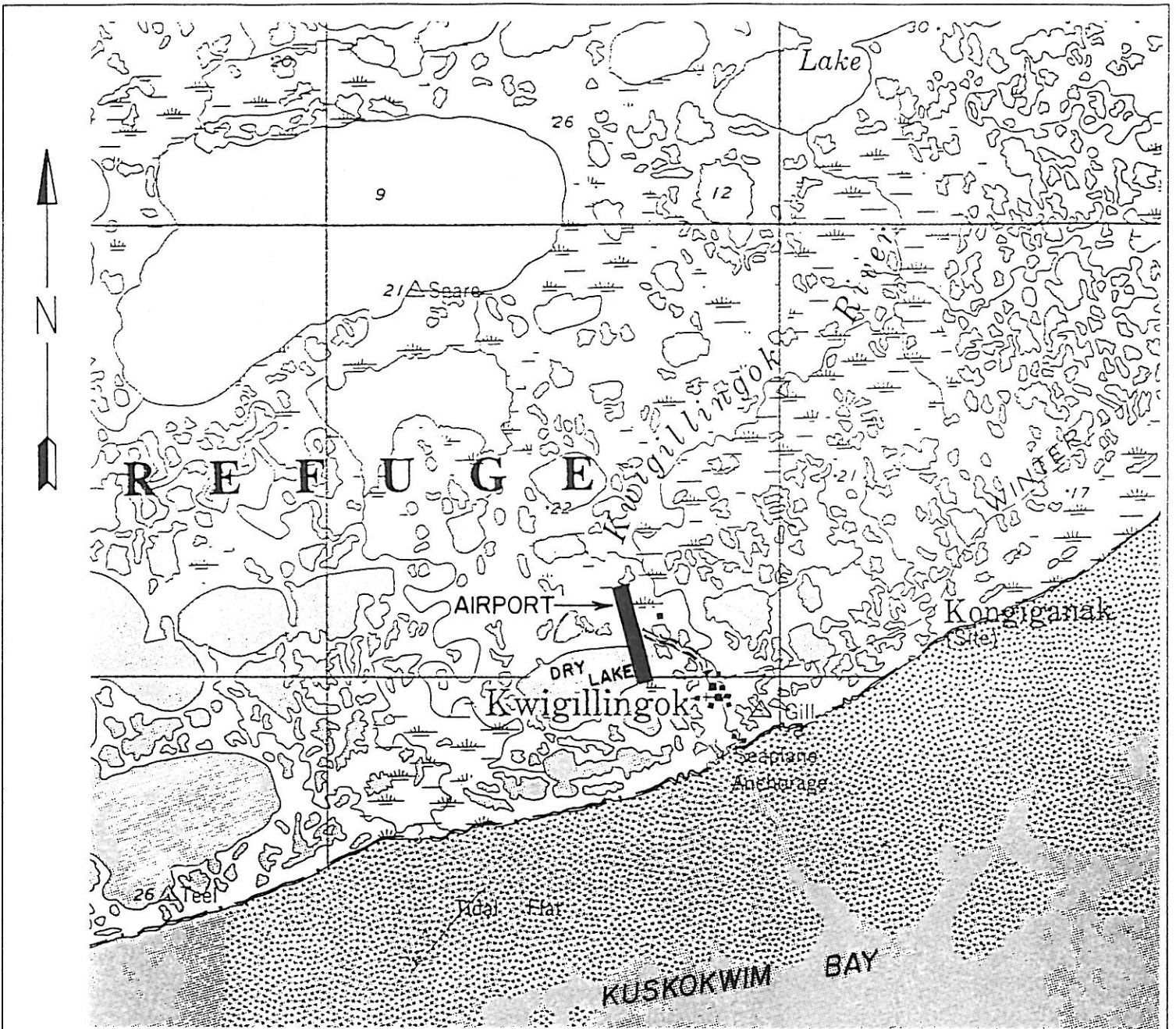
  
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STATE of ALASKA  
 DEPARTMENT of TRANSPORTATION  
 & PUBLIC FACILITIES

**KWIGILLINGOK AIRPORT  
 RECONSTRUCTION**

PROJECT NO. 60118

LOCATION MAP

SCALE: 1/2" = 1 mile      DATA: U.S.G.S.

## **INTRODUCTION**

The scope of the project involves the expansion of the existing runway from 2,500' by 50' to 3,000' by 60', the existing taxiway from 150' by 25' to 170' by 40', the existing apron from 18,000 sf to 65,000 sf, the construction of a new gravel 50' by 90' equipment storage building pad, erosion protection and development of a new borrow site.

## **FIELD INVESTIGATION**

A field investigation of the proposed Kwigillingok Airport site was conducted on July 27 through August 2, 1993 and January 10-15, 1994. Engineering geologist, Terry L. Barber, directed the subsurface exploration program and logged the test borings with the assistance of drillers Clark Abbott, Jack Buckman, John Manthey, and Jeff Nelson. Test Holes 1-13, TH-25 and TH-26 were drilled in the proposed runway alignment (from Sta. 1+00 to Sta. 37+00), TH-16 in the taxiway, TH's 17-20 and TH-22 in the apron and future lease lot area, TH-23 and TH-24 in the proposed access road, TH-14, TH-15 and TH's 28-45 in the proposed borrow area and crosswind runway, TH-21 and TH-27 in the existing apron and maintenance building area and TH's 46-48 in the proposed rechannelized slough. Hand probes at 200 foot intervals were generally made 50 feet and 75 feet left and right along the runway alignment (from Sta. 2+00 to Sta. 37+00), and along the proposed access road between the proposed apron and existing village haul road at approximate runway Sta. 31+50 and from 600 feet left to 1,400 left (see the attached test hole location plan and the test hole logs on sheets 1 thru 4).

A Haines portable drill with a three inch diameter solid flight auger was used to drill test holes in thawed and frozen soils. Grab samples were taken from the flights of the auger and from a modified split spoon sampler used in frozen soils. The test holes were located with a cloth tape from the proposed surveyed runway centerline. Seventy-five field samples were collected and 73 samples were tested at the Central Region Materials Laboratory (see laboratory test results pages 10-24).

The crosswind runway, rechannelized slough and future lease lots were later deleted from the scope of the project. TH15 and TH's 29-44 are outside construction boundaries of this project and are not shown on the test hole location plan sheet 1 but are included in the attached test hole log sheets 2 through 4.

## **GEOLOGY AND TOPOGRAPHY**

The village of Kwigillingok is located west of Kuskokwim Bay and within the Yukon-Kuskokwim Delta and 37 miles southwest of Quinhagak. The Yukon-Kuskokwim Delta region is underlain primarily by poorly drained interbedded marine and terrestrial deltaic and eolian deposits. The typical soils in the area of the project are surface organics over layered organics, organic silts and silts.



The topography is generally flat lying with numerous thaw lakes and branching slough channels that are affected by tidal action from Kuskokwim Bay. The area is discontinuously perennially frozen with thawed ground beneath lakes, sloughs and river channels. Generally the higher ground is frozen and the lower is thawed to the depths tested.

The vegetation is generally sphagnum moss over frozen ground and sedge grass in the lower thawed and drained areas.

## **CLIMATE**

For weather and climatic conditions in the Kwigillingok area contact the National Oceanic and Atmospheric Administration (NOAA) at 6930 Sand Lake Road, Anchorage, Alaska 99502-1845 or phone (907) 266-5105.

## **SURFACE WATER**

Surface water was generally encountered near the tidal slough, thawed ponds and lakes. The east side of the existing runway has ponded water in old borrow cells at the toe of the runway embankment slope. The west side and north end of the existing runway parallels a slough channel from Kuskokwim Bay. The water level in the slough is generally dependent on the changes in the tidal action and seasonal variations of precipitation. Surface water and/or ground water was encountered within 2 feet of the ground surface.

## **FROZEN GROUND DESCRIPTIONS**

Discontinuous frozen ground generally underlies the raised ground and thawed ground underlies lakes, ponds river channels and sloughs in the test holes drilled. Frozen ground was encountered 75 left and right of the existing runway centerline in TH-3 and TH-8 at seven feet in depth. The core of the existing runway and apron were frozen (see logs TH-21, TH's 25 - 27) at 3.0 - 5.0 feet in depth. Frozen ground was encountered in the proposed apron in TH-17 and TH-18, the access road in TH-23 and west of the existing runway and slough in TH-46 at 1.5 feet in depth and in the access road in TH-22 at 6.5 feet in depth.

## **TEST HOLE SOIL DESCRIPTIONS**

### **RUNWAY**

Test holes 1 - 13 were placed at 300 foot intervals alternating approximately 75 feet left and right of the runway centerline from Station 1+00 to Station 37+00. The test holes were placed at the toe or on the side slope of the runway embankment. The soil profiles of the test holes were variable (see TH-1 through TH-10 logs). The embankment side slopes were generally vegetated

with grasses underlain by 0.5 - 1.5 feet of mixed organics and silt over 0 - 4 feet of organic silt and highly organic silt over in situ slightly to highly organic silts. The side slopes were generally thawed except for frozen embankment encountered at TH-3 and TH-8 locations.

The runway embankment (see TH-25 and TH-26) was generally 5 - 5.5 feet thick over insitu organics. The typical soil profile was 1 - 1.5 feet of thawed silty gravelly sand over 3 - 4 feet of layered silt and organics over frozen organics. The active frost layer was approximately 4.5 - 5.0 feet in depth and the moisture contents in the thawed silts ranged from 29.7% to 30.5%.

The thawed soils were generally wet by 0.5 feet below the ground surface.

#### APRON, TAXIWAY and FUTURE LEASE LOTS

The proposed new apron, taxiway and lease lots were deleted from the current project. The proposed apron, taxiway and future lease lots were located east of the 600 feet runway extension between Sta. 31+50 and Sta. 34+50 and between 600 feet left and the proposed runway centerline. The apron and taxiway were located on thawed and perennially frozen ground.

The typical soil profile was 1 - 1.5 feet of frozen organic mat (sphagnum moss) or thawed organics (sedge peat) over layered slightly organic to highly organic silts and silts. The highly organic silts beneath the surface organics ranged from 25.1% to 31% organic content with 93 to 95 p200, the PI was NP, the LL was NV and the moisture contents ranged from 37.2% to 395.2%.

#### BORROW SITE DESCRIPTION

The borrow site is located in the old drained lake bottom southwest of the existing runway. The investigated borrow site lies between Sta. 31+10 and Sta. 38+60 and between 265 feet right and 1265 feet right of the runway centerline. The proposed borrow area extends between the slough and Sta. 40+60, and between 265' right and 1556' right of the runway centerline. The soils generally are thawed, wet and layered slightly organic to organic silts (see test hole logs, TH-14, TH's 42 - 44). The slightly organic to organic silts beneath the surface organics ranged from 1.4% to 6.4% organic content with 83.7 to 94 p200, the PI was NP, the LL was (NV) nonvariable and the moisture contents ranged from 33% to 57%. The two maximum dry density tests reported 100.7 lbs. per cubic foot with an optimum moisture content of 19% for FS-48 and 110 lbs. per cubic foot with an optimum moisture content of 14% for FS-63.

Test Holes 28 - 41 were drilled on a N45E bearing. The test holes alternate 75 feet left and right from runway Station 41+00 and extend approximately from 200 feet left to 3,600 feet right in an old drained lake bottom adjacent to the proposed borrow site. The typical soil profile was generally 1 foot of thawed and wet organic silts over interlayered silts and organic silts. The silts beneath the surface organics were approximately 6.4% organic content, the p200 was 94, the PI was NP, the LL ranged from 28 to 44 and the moisture contents ranged from 29.5% to 56.8% and

averaged 39.5%. TH's 29 - 44 were drilled outside the project limits and are not shown on the test hole location plan sheet 1 of 4.

#### RECHANNELIZED SLOUGH CHANNEL

Test Hole 46 through TH-48 were drilled for a proposed rechannelized slough channel west of the existing runway. The proposed rechannelized slough crosses frozen and thawed organics over slightly organic to highly organic silts and silts. The organic silts and silts tested are 97 p200, the LL=33, the PI=NP and the moisture contents ranged from 46.6% to 99%.

#### EXISTING MAINTENANCE BUILDING

The existing maintenance building, a non-insulated and unheated metal framed building (approximately 46 feet long by 24 feet wide), is located on the edge of the existing apron.

Two test holes were drilled in the area of the maintenance building. TH-21 was drilled outside of the building approximately 12 feet south of the building centerline and on the apron pad. The active layer was approximately three feet in depth with frozen soils to 15 plus feet. The soil profile was approximately one foot of silty gravelly sand over highly organic silt over silt.

TH-27 was drilled within the building approximately seven feet south of the north end building centerline. The active thawed layer was 3.5 feet in depth with frozen soils to 6.5 feet in depth. The soil profile was 3.5 feet of silt over 0.5 feet of organics over frozen silts.

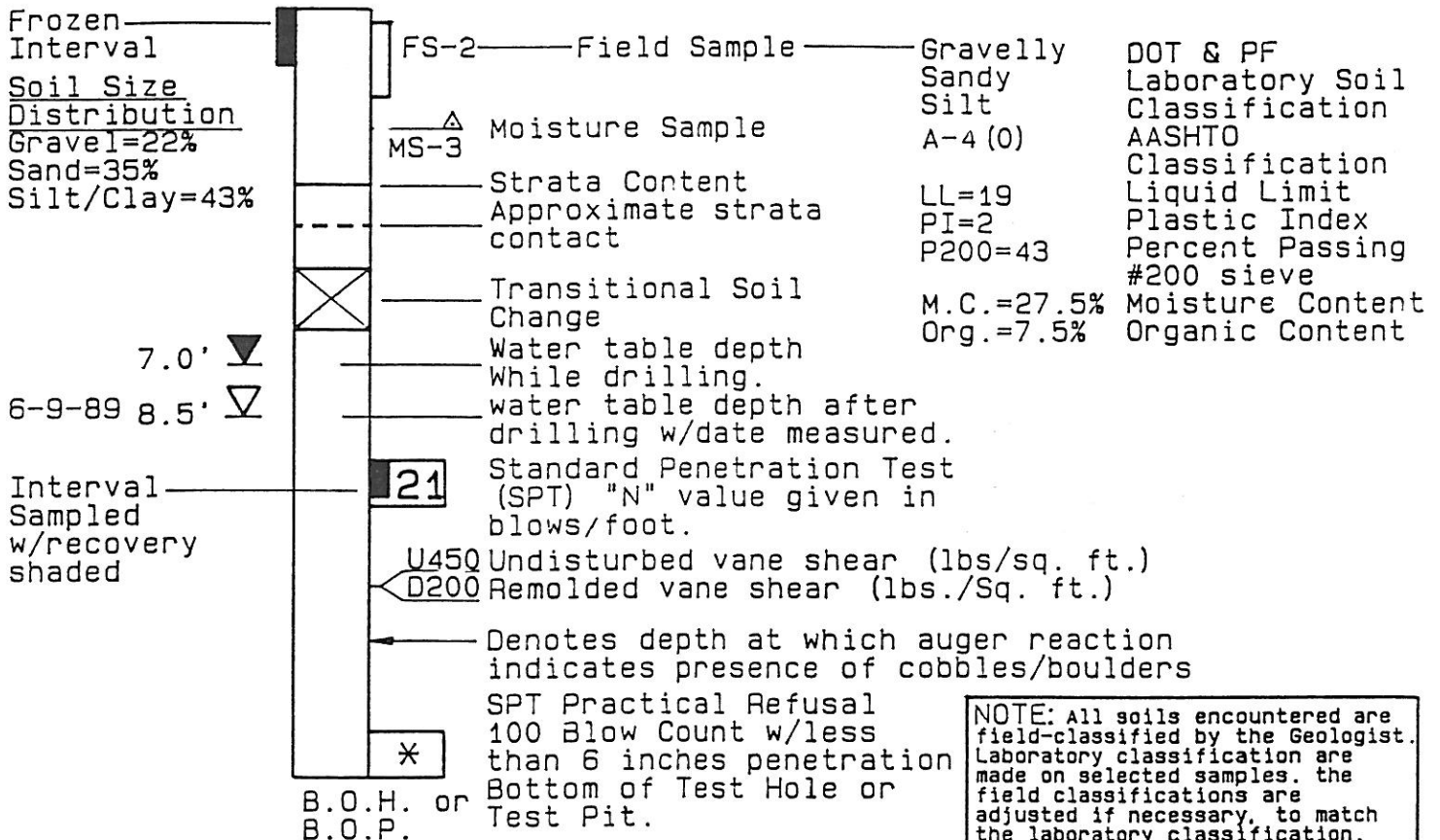
## SELECTED REFERENCES

1. Alaska Climate Center Technical Note Number 3, 1986; Alaska Climate Summaries Arctic Environmental Information and Data Center University of Alaska - Fairbanks.
2. The State of Alaska, Department of Transportation and Public Facilities, Alaska Geotechnical Procedures Manual, September 1992, Revised May 1993.
3. Department of Interior United States Geological Survey. Geological Map Index of Alaska, 5TH Edition 1967, by Edward H. Cobb and Della L. Kennedy, Washington, D.C.
4. Charles W. Hartman & Phillip R. Johnson, 1984. Environmental Atlas of Alaska, University of Alaska, Fairbanks, Alaska, Plate 9 and Plate 23.

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

6-8-89

Location ——— T.H. or T.P. \_\_\_\_\_ Test Hole or Test Pit Number  
 Sta. 15+00, 15' Rt. ——— Offset from Centerline (¢)  
 Elev. 86.5' \_\_\_\_\_ Elevation  
 6-8-89 \_\_\_\_\_ Date drilled or excavated



**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.N.T.=Sample Not Tested  
 Sa =Sand  
 Si =Silt    S.T.=Shelby Tube  
 Cl =Clay    M.S.=Modified Shelby Tube

**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  
 +<sup>4.5'</sup> Hand Probe Depth & Locations  
 □ Hand Dug Test Pit  
 ▭ Dozer/Backhoe Pit  
 x x x x 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 (Gr1)  
 ▨ Sand (Sa)  
 ▨ Silt (Si)  
 ▨ Clay (Cl)  
 ▨ Ice (Ice)  
 ▨ Bedrock (Bx)  
 ▨ Cobbles and/or Boulders

# ALASKA DEPARTMENT OF TRANSPORTATION TEXTURAL SOIL DESCRIPTIONS

Rev. Nov. 18, 1994

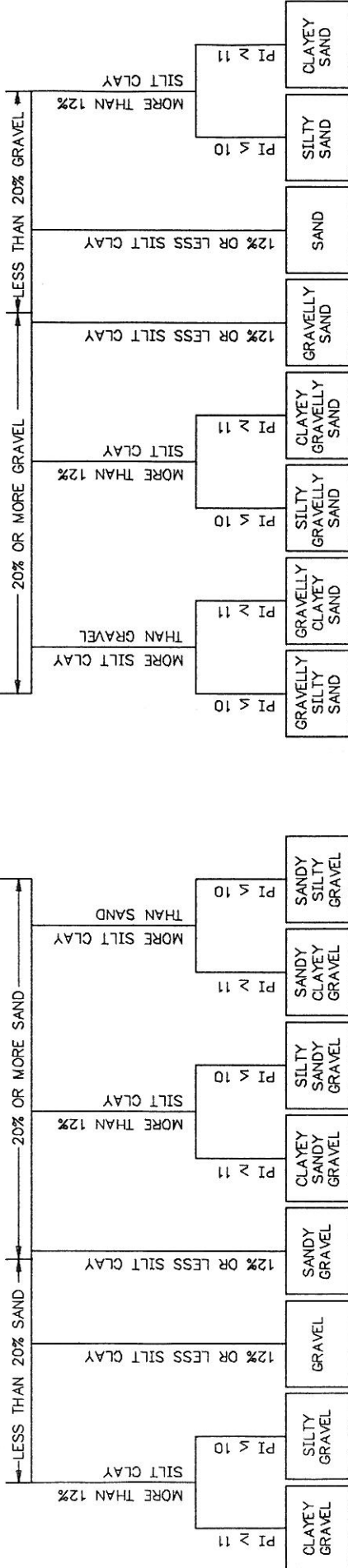
NOTES: 1) All silts with a plastic index  $> 4$  shall be termed "slightly clayey".

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.

## COARSE-GRAINED SOILS 35% OR LESS SILT/CLAY

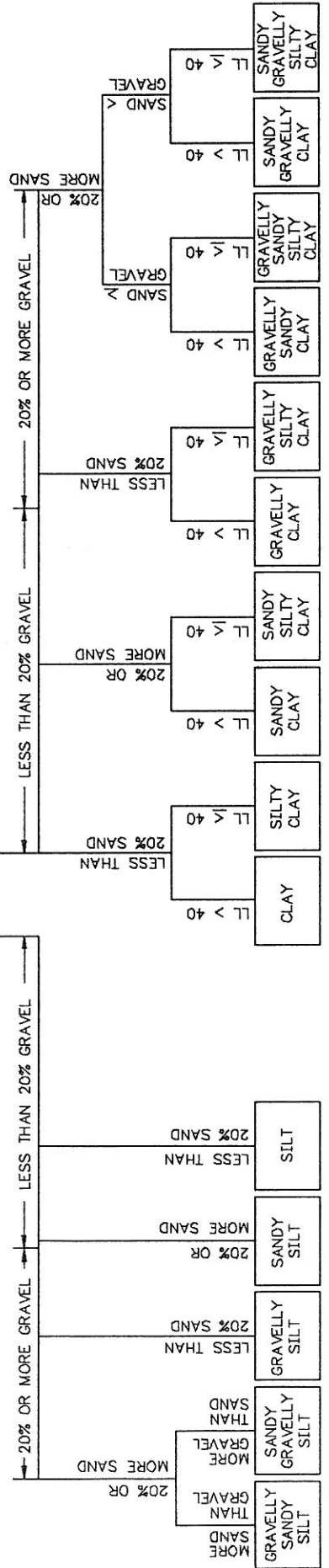
(CLAYS  $< .002$  mm)  
(SILTS  $< \#200$ )  
(SAND  $\#200$  TO  $\#10$ )  
(GRAVEL  $\#10$  TO 3" DIAMETER)  
(COBBLES 3" TO 12" DIAMETER)  
(BOULDERS +12" DIAMETER)

GRAVEL  $>$  SAND SAND  $\geq$  GRAVEL



## FINE-GRAINED SOILS 36% OR MORE SILT/CLAY

PI  $\leq 10$  PI  $> 10$



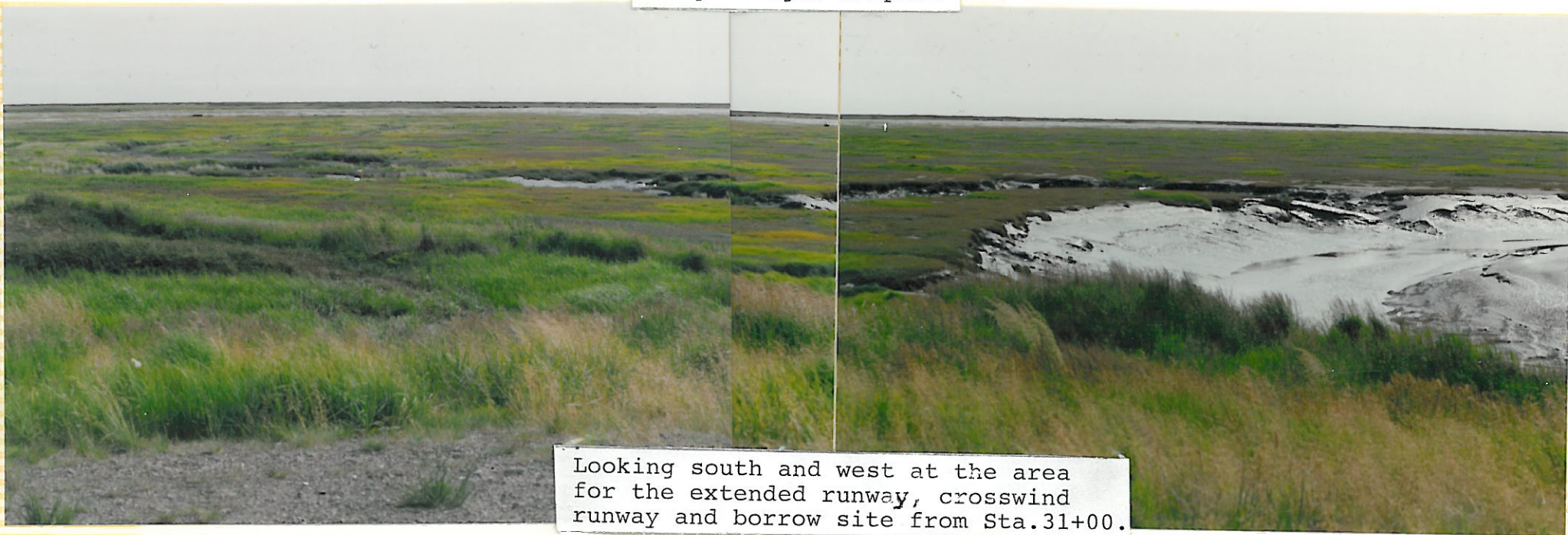




Aerial photo of Kwigillingok A/P.



Kwigillingok Airport



Looking south and west at the area for the extended runway, crosswind runway and borrow site from Sta.31+00.



Looking east along north edge of apron & access road alignment from Sta. 31+00.



Kwigillingok Airport

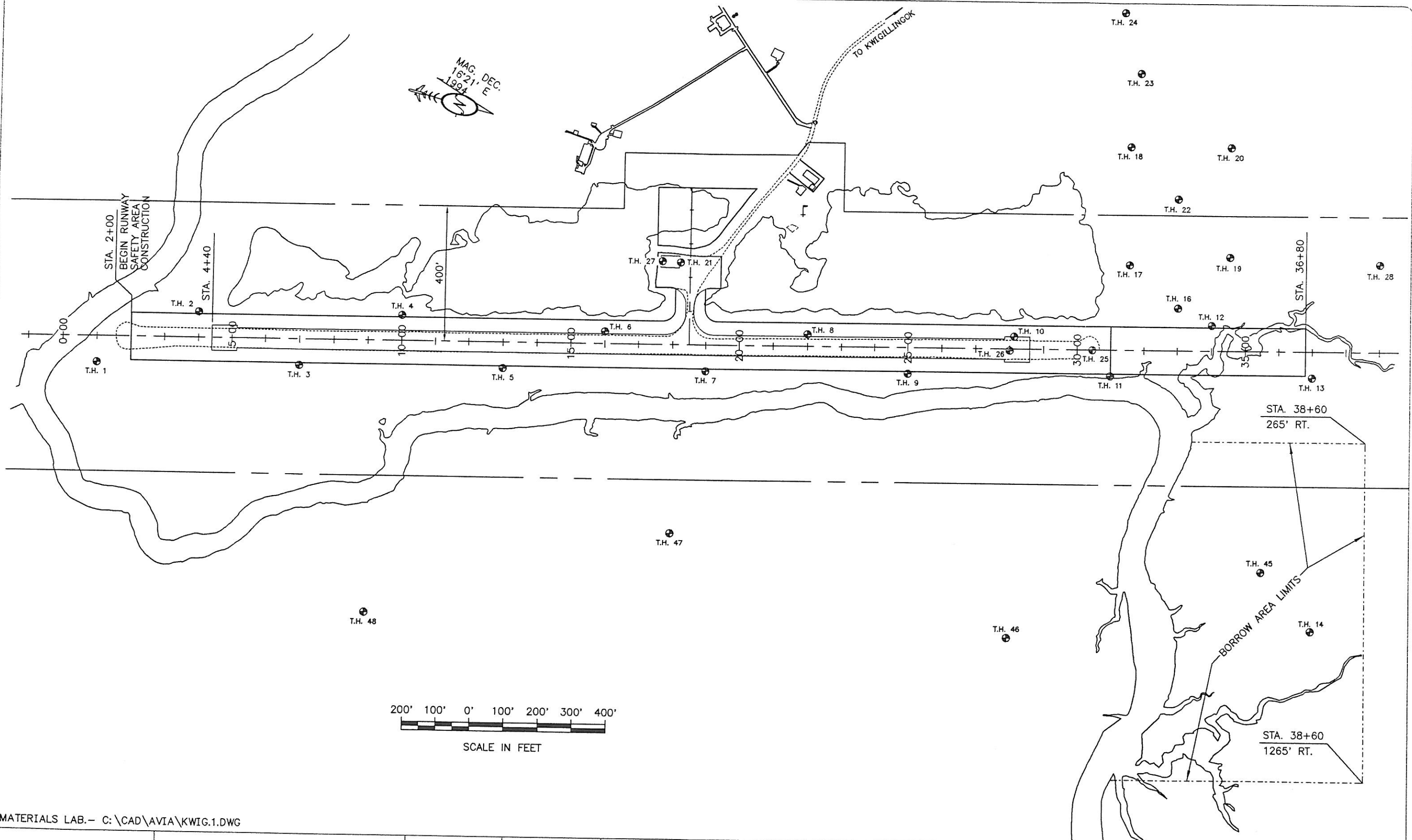


Looking southeast at old borrow cell  
and Maintenance & Operations building  
on the existing apron from Sta. 15+00.



Looking southeast along east side of  
runway, M. & O. building and old borrow  
cells.

MAG. DEC.  
16°21' E  
1994



MATERIALS LAB.- C:\CAD\AVIA\KWIG.1.DWG

**LEGEND**

⊕ — TEST HOLE LOCATION, APPROXIMATE

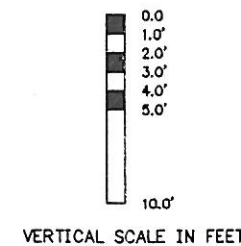
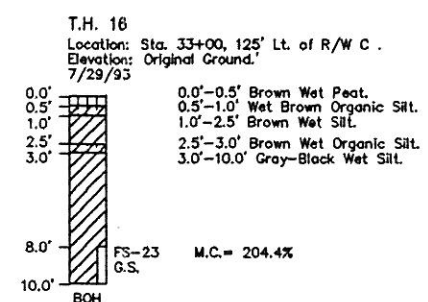
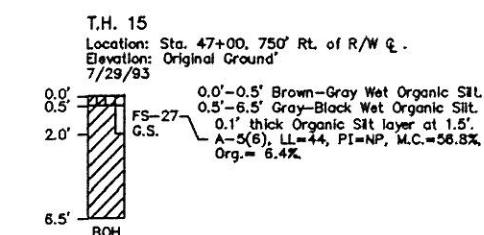
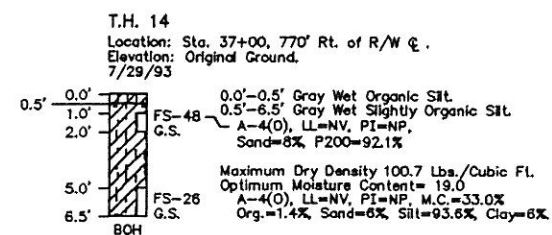
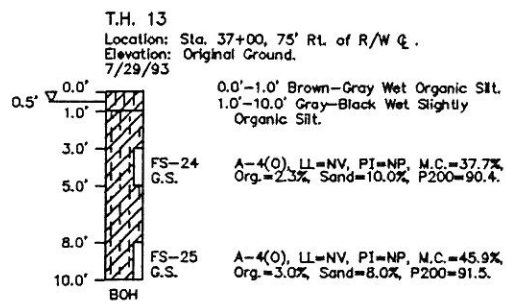
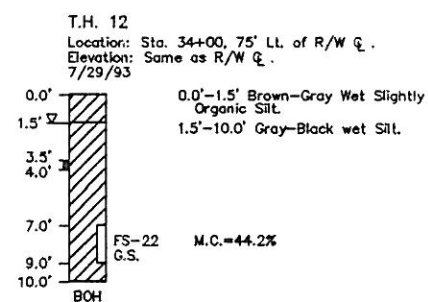
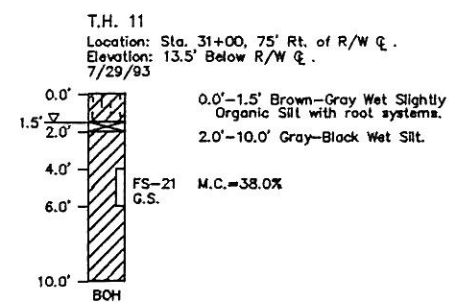
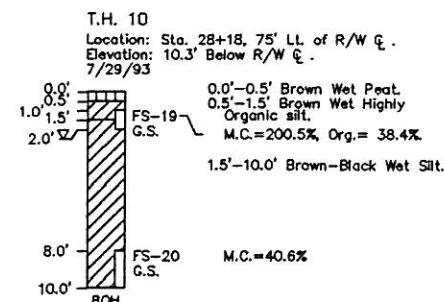
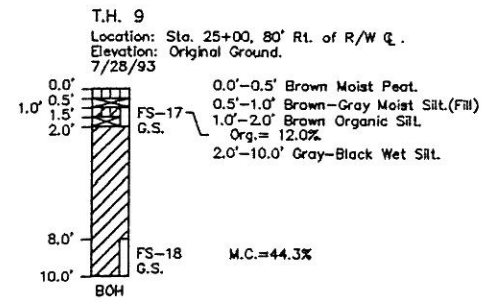
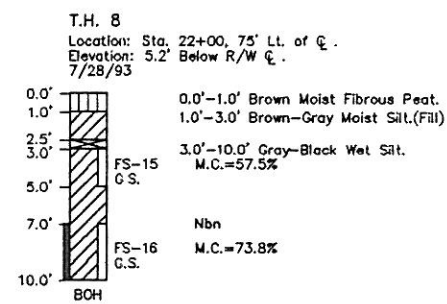
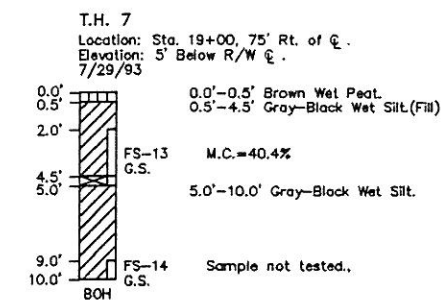
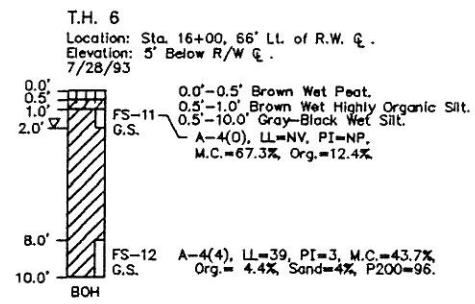
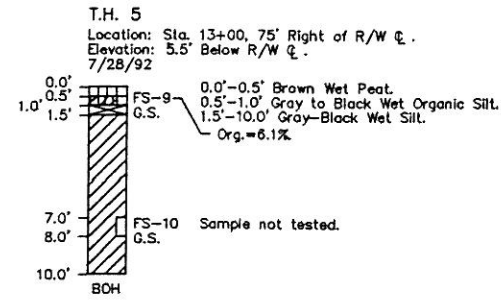
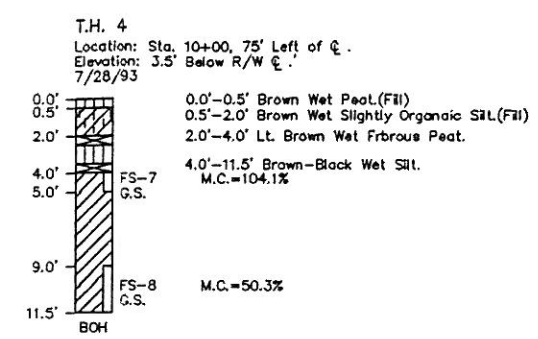
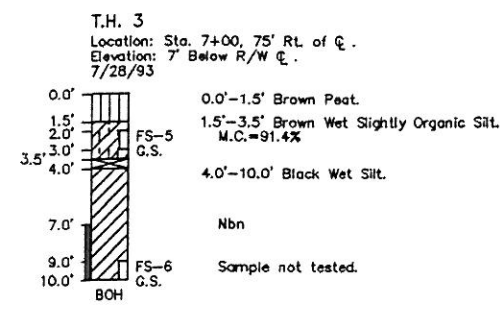
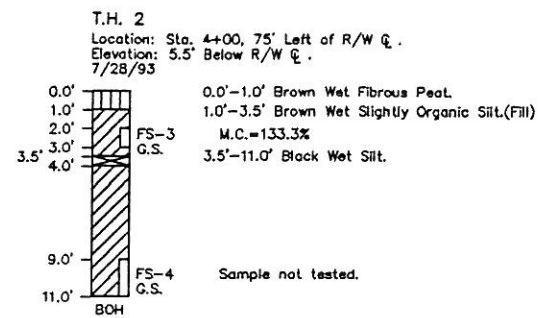
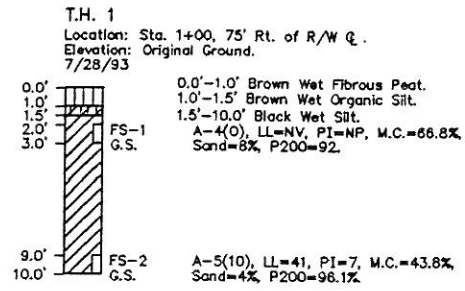
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TYPE

STATE OF ALASKA  
**DEPARTMENT OF TRANSPORTATION  
AND PUBLIC FACILITIES**  
CENTRAL REGION-DESIGN AND CONSTRUCTION

KWIGILLINGOK AIRPORT  
AIRPORT RECONSTRUCTION  
60118  
A.I.P. No.3-02-0165-01  
TEST HOLE LOCATION PLAN

SHEET  
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OF  
4



STATE OF ALASKA  
 DEPARTMENT OF TRANSPORTATION  
 AND PUBLIC FACILITIES

KWIGILLINGOK AIRPORT  
 PROJECT NO. 60118

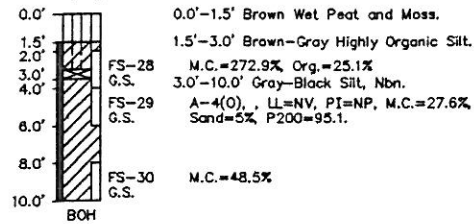
TEST HOLE LOGS

|                |                |             |              |
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| VERT: AS SHOWN | CHECKED: T.B.  | DATE: 10/96 |              |



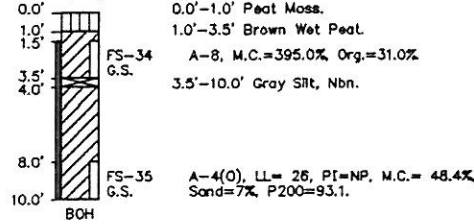
T.H. 17

Location: Sta. 31.50, 250' Lt. of R/W  $\phi$ .  
Elevation: Original Ground.  
7/29/93



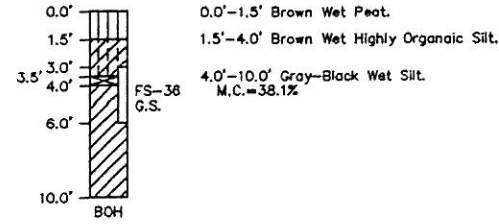
T.H. 18

Location: Sta. 31+50, 800' Lt. of R/W  $\phi$ .  
Elevation: Original Ground.  
7/30/93



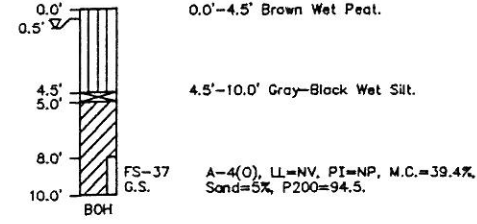
T.H. 19

Location: Sta. 34+50, 280' Lt. of R/W  $\phi$ .  
Elevation: Original Ground.  
7/30/93



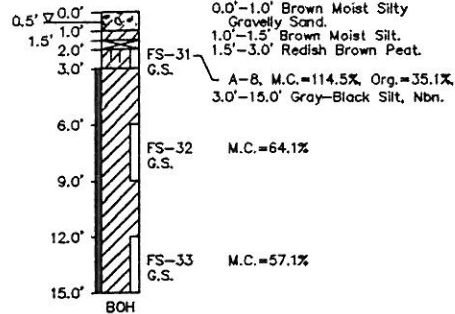
T.H. 20

Location: Sta. 34+50, 600' Lt. of R/W  $\phi$ .  
Elevation: Original Ground.  
7/30/93



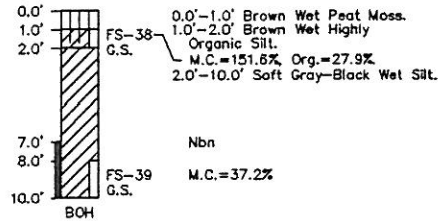
T.H. 21

Location: Sta. 18+10, 245' Lt. of R/W  $\phi$ .  
Elevation: Same as Apron Pad at Location.  
7/30/93



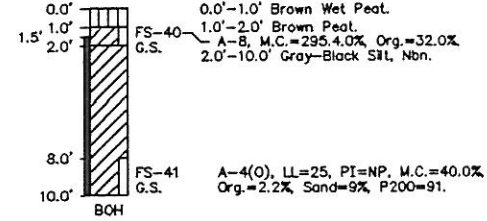
T.H. 22

Location: Sta. 33+00, 450' Lt. of R/W  $\phi$ .  
Elevation: Original Ground.  
7/30/93



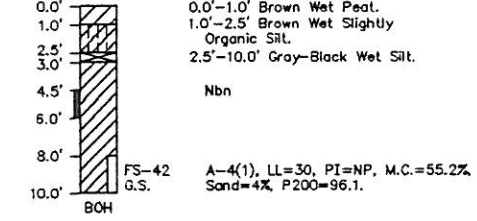
T.H. 23

Location: Sta. 31+75, 800' Lt. of R/W  $\phi$ .  
Elevation: Original Ground.  
7/30/93



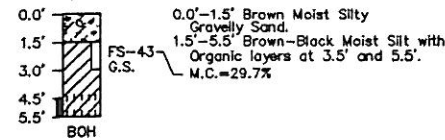
T.H. 24

Location: Sta. 31+25, 1000' Lt. of R/W  $\phi$ .  
Elevation: Original Ground.  
7/30/93



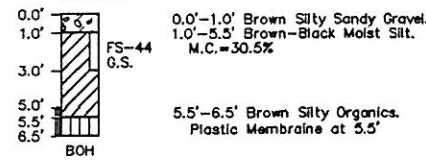
T.H. 25

Location: Sta. 30+50, On R/W  $\phi$ .  
Elevation: Same as R/W  $\phi$  at Location.  
7/30/93



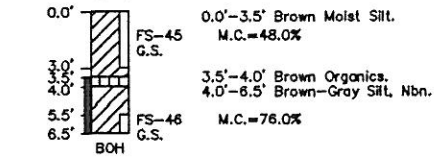
T.H. 26

Location: Sta. 28+00, 3' Rt. of R/W  $\phi$ .  
Elevation: Same as R/W  $\phi$  At Location.  
7/30/93



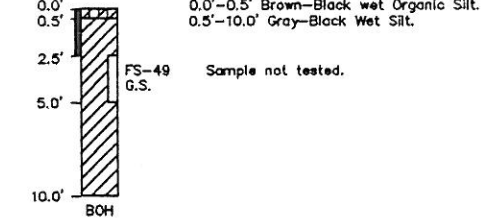
T.H. 27

Location: Sta. 17+50, 245' Lt. of R/W  $\phi$ .  
Elevation: Same as Pad Inside of Maintenance Bldg.  
7/30/93



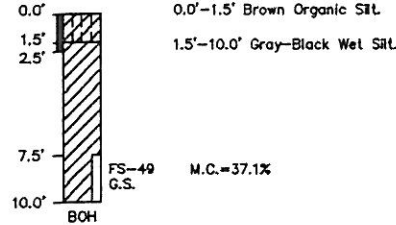
T.H. 28

Location: Sta. 39+00, 260' Lt. of R/W  $\phi$ .  
Elevation: Original Ground.  
1/13/94



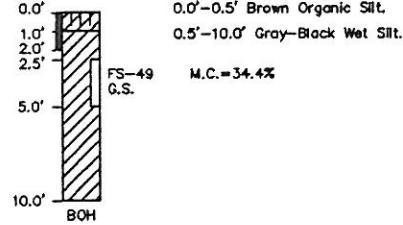
T.H. 29

Location: Sta. 41+80, 40' Lt. of R/W  $\phi$ .  
Elevation: Original Ground.  
1/13/94



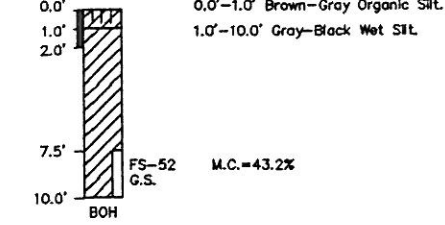
T.H. 30

Location: Sta. 41+80, 300' Rt. of R/W  $\phi$ .  
Elevation: Original Ground.  
1/13/94



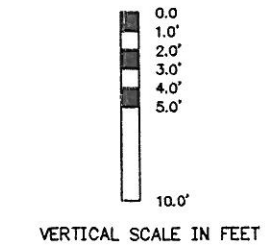
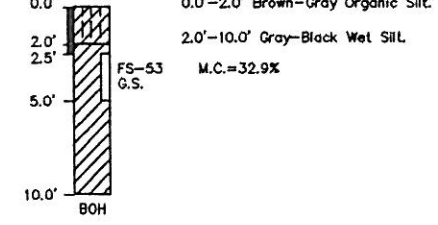
T.H. 31

Location: Sta. 44+60, 500' Rt. of R/W  $\phi$ .  
Elevation: Original Ground.  
1/13/94



T.H. 32

Location: Sta. 44+90, 880' Rt. of R/W  $\phi$ .  
Elevation: Original Ground.  
1/13/94



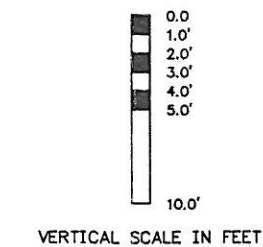
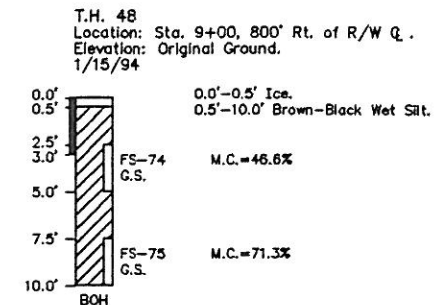
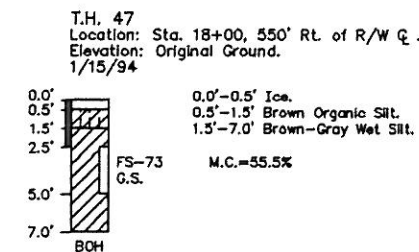
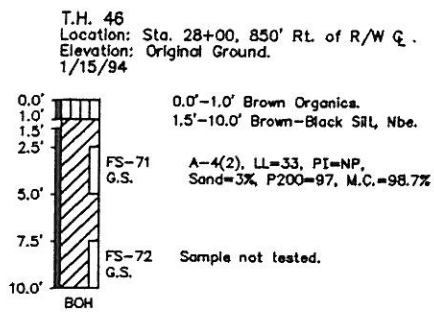
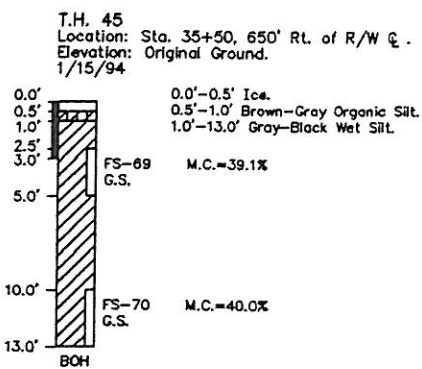
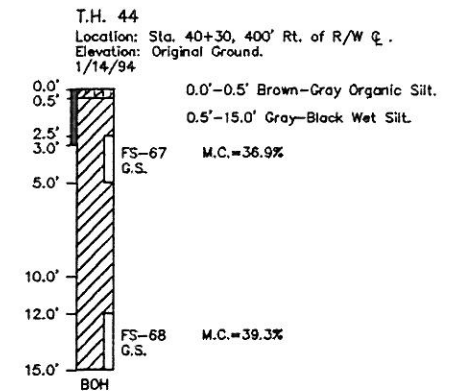
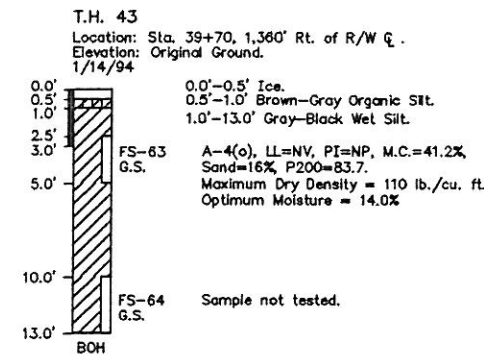
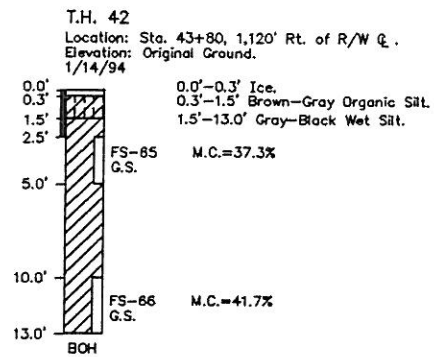
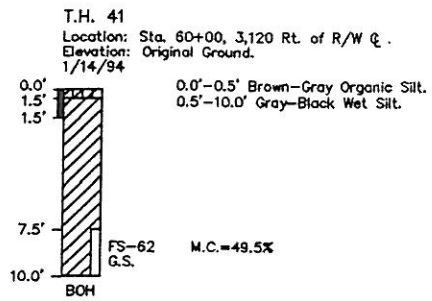
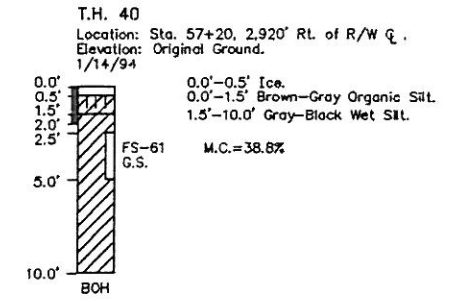
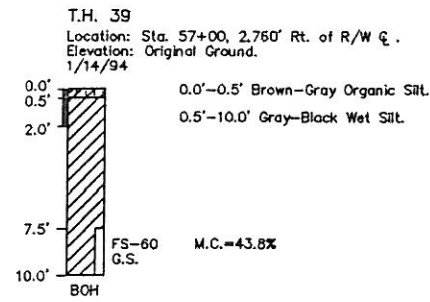
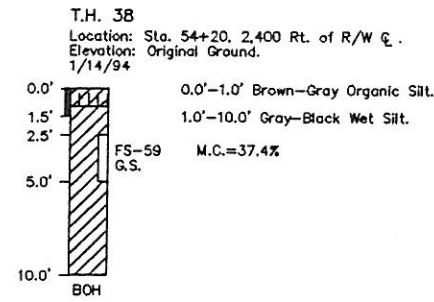
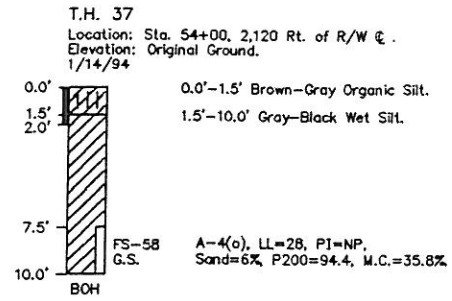
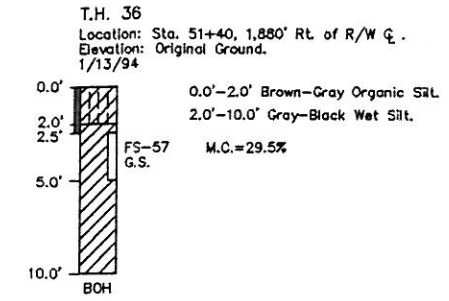
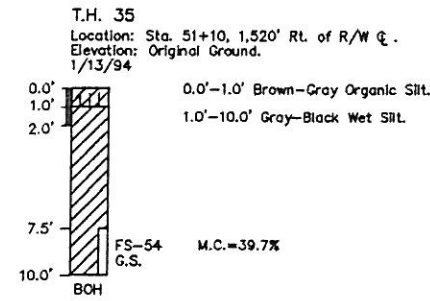
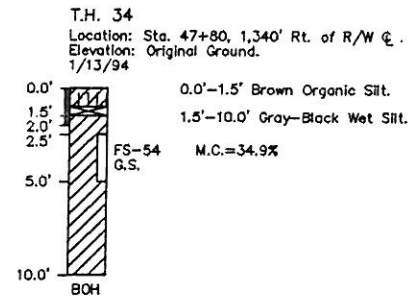
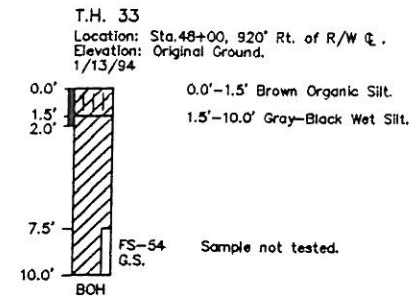
STATE OF ALASKA  
DEPARTMENT OF TRANSPORTATION  
AND PUBLIC FACILITIES

KWIGILLINGOK AIRPORT  
PROJECT NO. 60118

TEST HOLE LOGS

|                |                |             |              |
|----------------|----------------|-------------|--------------|
| SCALE: NONE    | DESIGNED: T.B. | DRAWN: M.L. | SHEET 3 OF 4 |
| VERT: AS SHOWN | CHECKED: T.B.  | DATE: 10/96 |              |





STATE OF ALASKA  
 DEPARTMENT OF TRANSPORTATION  
 AND PUBLIC FACILITIES

KWIGILLINGOK AIRPORT  
 PROJECT NO. 60118

TEST HOLE LOGS

|                       |                |             |              |
|-----------------------|----------------|-------------|--------------|
| SCALE:<br>HORIZ: NONE | DESIGNED: T.B. | DRAWN: H.I. | SHEET 4 OF 4 |
| VERT: AS SHOWN        | CHECKED: T.B.  | DATE: 10/95 |              |

PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

Project No. 60118 Sampled By T. Barber

Centerline RUNWAY

| Station            | 1+00     | 4+00      | 7+00      | 10+00     | 10+00     |
|--------------------|----------|-----------|-----------|-----------|-----------|
| Offset (feet)      | 75' Rt.  | 75' Lt.   | 75' Rt.   | 75' Lt.   | 75' Lt.   |
| Depth (feet)       | 2'-3'    | 2.0'-3.0' | 2.0'-3.0' | 4.0'-5.0' | 4.0'-5.0' |
| Test Hole No.      | TH 1     | TH-2      | TH-3      | TH-4      | TH-4      |
| Field No.          | 1        | 3         | 5         | 7         | 8         |
| Date Sampled       | 07/28/93 | 07/28/93  | 07/28/93  | 07/28/93  | 07/28/93  |
| Lab No.            | 93A-1642 | 93A-1644  | 93A-1645  | 93A-1646  | 93A-1647  |
| Percent            |          |           |           |           |           |
| Passing            |          |           |           |           |           |
| Sieve              | 100      |           |           |           |           |
| Size               | 100      |           |           |           |           |
|                    | 97       |           |           |           |           |
|                    | 91.8     |           |           |           |           |
|                    | .02mm    |           |           |           |           |
|                    | .002mm   |           |           |           |           |
| DOTSD              | SI       |           |           |           |           |
| AASHTO Class       | A-4(0)   |           |           |           |           |
| FVS Class          | NV       |           |           |           |           |
| Liquid Limit       | NP       |           |           |           |           |
| Plastic Index      | 66.8     |           |           |           |           |
| Moisture Content % | 41       |           |           |           |           |
| Organic Content %  | 7        |           |           |           |           |
| % Gravel           | 43.8     | 133.3     | 91.4      | 104.1     | 50.3      |
| % Sand             | 4        |           |           |           |           |
| % Silt & Clay      | 96       |           |           |           |           |
| 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%.

PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

Project No. 60118 Sampled By Barber

Centerline RUNWAY

| Station            | 13+00     | 16+00     | 16+00      | 18+00            | 19+00     | 22+00     |
|--------------------|-----------|-----------|------------|------------------|-----------|-----------|
| Offset (feet)      | 75' Rt.   | 66' Lt.   | 66' Lt.    | 75' Rt.          | 75' Rt.   | 75' Lt.   |
| Depth (feet)       | 0.5'-1.0' | 1.0'-2.0' | 8.0'-10.0' | 1.5'-2.0'        | 2.0'-5.0' | 3.0'-5.0' |
| Test Hole No.      | TH-5      | TH-6      | TH-6       | Collected Sample | TH-7      | TH-8      |
| Field No.          | 9         | 11        | 12         | 47               | 13        | 15        |
| Date Sampled       | 07/28/93  | 07/28/93  | 07/28/93   | 07/31/93         | 07/28/93  | 07/28/93  |
| Lab No.            | 93A-1648  | 93A-1649  | 93A-1650   | 93A-1683         | 93A-1651  | 93A-1652  |
| Percent            | 3"        |           |            |                  |           |           |
| Passing            | 2"        |           |            |                  |           |           |
| Sieve              | 1"        |           |            | 100              |           |           |
| Size               | 3/4"      |           |            | 99               |           |           |
|                    | 1/2"      |           |            | 93               |           |           |
|                    | 3/8"      |           |            | 81.0             |           |           |
|                    | #4        |           |            |                  |           |           |
|                    | #10       |           |            |                  |           |           |
|                    | #40       |           | 100        |                  |           |           |
|                    | #80       |           | 99         |                  |           |           |
|                    | #200      |           | 96.0       |                  |           |           |
|                    | .02mm     |           |            |                  |           |           |
|                    | .002mm    |           |            |                  |           |           |
| DOTSD              | Si        | Si        | Si         | Si               |           |           |
| AASHTO Class       | A-4(0)    | A-4(4)    | A-4(0)     | A-4(0)           |           |           |
| FSV Class          |           |           |            |                  |           |           |
| Liquid Limit       | NV        | 39        |            | NV               |           |           |
| Plastic Index      | NP        | 3         |            | NP               |           |           |
| Moisture Content % | 67.3      | 43.7      |            |                  |           |           |
| Organic Content %  | 12.4      | 4.4       |            |                  | 40.4      | 57.5      |
| % Gravel           |           |           |            |                  |           |           |
| % Sand             |           | 4         |            |                  |           |           |
| % Silt & Clay      |           | 96        |            |                  |           |           |
| 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%.

PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

| Project No. 60118 Sampled By Barber |            | Centerline RUNWAY |            |           |            |           |
|-------------------------------------|------------|-------------------|------------|-----------|------------|-----------|
| Station                             | 22+00      | 25+00             | 25+00      | 28+18     | 28+18      | 28+00     |
| Offset (feet)                       | 75' Lt.    | 80' Rt.           | 80' Rt.    | 75' Lt.   | 75' Lt.    | 3' Rt.    |
| Depth (feet)                        | 7.0'-10.0' | 1.0'-2.0'         | 8.0'-10.0' | 1.0'-2.0' | 8.0'-10.0' | 1.0'-3.0' |
| Test Hole No.                       | TH-8       | TH-9              | TH-9       | TH-10     | TH-10      | TH-26     |
| Field No.                           | 16         | 17                | 18         | 19        | 20         | 44        |
| Date Sampled                        | 07/28/93   | 07/28/93          | 07/28/93   | 07/29/93  | 07/29/93   | 07/30/93  |
| Lab No.                             | 93A-1653   | 93A-1654          | 93A-1655   | 93A-1656  | 93A-1657   | 93A-1682  |
| Percent                             |            |                   |            |           |            |           |
| Passing                             |            |                   |            |           |            |           |
| Sieve                               |            |                   |            |           |            |           |
| Size                                |            |                   |            |           |            |           |
|                                     | 3"         |                   |            |           |            |           |
|                                     | 2"         |                   |            |           |            |           |
|                                     | 1"         |                   |            |           |            |           |
|                                     | 3/4"       |                   |            |           |            |           |
|                                     | 1/2"       |                   |            |           |            |           |
|                                     | 3/8"       |                   |            |           |            |           |
|                                     | #4         |                   |            |           |            |           |
|                                     | #10        |                   |            |           |            |           |
|                                     | #40        |                   |            |           |            |           |
|                                     | #80        |                   |            |           |            |           |
|                                     | #200       |                   |            |           |            |           |
|                                     | .02mm      |                   |            |           |            |           |
|                                     | .002mm     |                   |            |           |            |           |
| DOTSD                               |            |                   |            |           |            |           |
| AASHTO Class                        |            |                   |            |           |            |           |
| FSV Class                           |            |                   |            |           |            |           |
| Liquid Limit                        |            |                   |            |           |            |           |
| Plastic Index                       |            |                   |            |           |            |           |
| Moisture Content %                  | 73.8       |                   |            | 200.5     | 40.6       | 30.5      |
| Organic Content %                   |            | 12.0              | 44.3       | 38.4      |            |           |
| % 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%.



PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

Project No. 60118 Sampled By Barber

Centerline RUNWAY

| Station            | 30+50       | 31+00       | 34+00       | 37+00       | 37+00        |
|--------------------|-------------|-------------|-------------|-------------|--------------|
| Offset (feet)      | CL          | 75' Rt.     | 75' Lt.     | 75' Rt.     | 75' Rt.      |
| Depth (feet)       | 1.5' - 3.0' | 4.0' - 6.0' | 7.0' - 9.0' | 3.0' - 5.0' | 8.0' - 10.0' |
| Test Hole No.      | TH-25       | TH-11       | TH-12       | TH-13       | TH-13        |
| Field No.          | 43          | 21          | 22          | 24          | 25           |
| Date Sampled       | 07/30/93    | 07/29/93    | 07/29/93    | 07/29/93    | 07/29/93     |
| Lab No.            | 93A-1681    | 93A-1658    | 93A-1659    | 93A-1660    | 93A-1661     |
| Percent            |             |             |             |             |              |
| Passing            |             |             |             |             |              |
| Sieve              |             |             |             |             |              |
| Size               |             |             |             |             |              |
|                    |             |             |             | 100         | 100          |
|                    |             |             |             | 100         | 100          |
|                    |             |             |             | 90.4        | 91.5         |
| DOTSD              |             |             |             |             |              |
| AASHTO Class       |             |             |             | Si          | Si           |
| FSV Class          |             |             |             | A-4(0)      | A-4(0)       |
| Liquid Limit       |             |             |             | NV          | NV           |
| Plastic Index      |             |             |             | NP          | NP           |
| Moisture Content % | 29.7        | 38.0        | 44.2        | 37.7        | 45.9         |
| Organic Content %  |             |             |             | 2.3         | 3.0          |
| % Gravel           |             |             |             |             |              |
| % Sand             |             |             |             | 10          | 8            |
| % Silt & Clay      |             |             |             | 90          | 92           |
| 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%.

PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

| Project No. 60118 Sampled By Barber |            | Centerline TAXIWAY and APRON |             |              |             |              |
|-------------------------------------|------------|------------------------------|-------------|--------------|-------------|--------------|
| Station                             | 33+00      | 31+50                        | 31+50       | 31+50        | 31+50       | 31+50        |
| Offset (feet)                       | 125' Lt    | 250' Lt                      | 250' Lt     | 250' Lt      | 600' Lt     | 600' Lt      |
| Depth (feet)                        | 8.0'-10.0' | 2.0' - 4.0'                  | 4.0' - 6.0' | 8.0' - 10.0' | 1.5' - 3.5' | 8.0' - 10.0' |
| Test Hole No.                       | TH-16      | TH-17                        | TH-17       | TH-17        | TH-18       | TH-18        |
| Field No.                           | 23         | 28                           | 29          | 30           | 34          | 35           |
| Date Sampled                        | 07/29/93   | 07/29/93                     | 07/29/93    | 07/29/93     | 07/30/93    | 07/30/93     |
| Lab No.                             | 93A-1664   | 93A-1665                     | 93A-1666    | 93A-1667     | 93A-1668    | 93A-1669     |
| Percent                             | 3"         |                              |             |              |             |              |
| Passing                             | 2"         |                              |             |              |             |              |
| Sieve                               | 1"         |                              |             |              |             |              |
| Size                                | 3/4"       |                              |             |              |             |              |
|                                     | 1/2"       |                              |             |              |             |              |
|                                     | 3/8"       |                              |             |              |             |              |
|                                     | #4         |                              |             |              |             |              |
|                                     | #10        |                              | 100         |              |             | 100          |
|                                     | #40        |                              | 100         |              |             | 100          |
|                                     | #80        |                              | 95.1        |              |             | 93.1         |
|                                     | #200       |                              |             |              |             |              |
|                                     | .02mm      |                              |             |              |             |              |
|                                     | .002mm     |                              |             |              |             |              |
| DOTSD                               |            |                              |             |              |             |              |
| AASHTO Class                        |            |                              | Si          |              | Pt          | Si           |
| FSV Class                           |            |                              | A-4(0)      |              | A-8         | A-4(0)       |
| Liquid Limit                        |            |                              | NV          |              |             | 26           |
| Plastic Index                       |            |                              | NP          |              |             | NP           |
| Moisture Content %                  | 204.4      | 272.9                        | 27.6        | 48.5         | 395.2       | 48.4         |
| Organic Content %                   |            | 25.1                         |             |              | 31.0        |              |
| % Gravel                            |            |                              |             |              |             |              |
| % Sand                              |            |                              | 5           |              |             | 7            |
| % Silt & Clay                       |            |                              | 95          |              |             | 93           |
| 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%.



PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

| Project No. <u>60118</u> Sampled By <u>Barber</u> |           | Centerline <u>APRON</u> |            |
|---------------------------------------------------|-----------|-------------------------|------------|
| Station                                           | 34+50     | 33+00                   | 33+00      |
| Offset (feet)                                     | 280' Lt   | 450' Lt                 | 450' Lt    |
| Depth (feet)                                      | 3.0'-6.0' | 1.0'-2.0'               | 8.0'-10.0' |
| Test Hole No.                                     | TH-19     | TH-22                   | TH-22      |
| Field No.                                         | 36        | 38                      | 39         |
| Date Sampled                                      | 07/30/93  | 07/30/93                | 07/30/93   |
| Lab No.                                           | 93A-1670  | 93A-1685                | 93A-1677   |
| Percent                                           |           |                         |            |
| Passing                                           |           |                         |            |
| Sieve                                             |           |                         |            |
| Size                                              |           |                         |            |
|                                                   | 3"        |                         |            |
|                                                   | 2"        |                         |            |
|                                                   | 1"        |                         |            |
|                                                   | 3/4"      |                         |            |
|                                                   | 1/2"      |                         |            |
|                                                   | 3/8"      |                         |            |
|                                                   | #4        |                         |            |
|                                                   | #10       |                         |            |
|                                                   | #40       |                         |            |
|                                                   | #80       |                         |            |
|                                                   | #200      |                         |            |
|                                                   | .02mm     |                         |            |
|                                                   | .002mm    |                         |            |
| DOTSD                                             |           |                         |            |
| AASHTO Class                                      | Si        |                         |            |
| FSV Class                                         | A-4(0)    |                         |            |
| Liquid Limit                                      | NV        |                         |            |
| Plastic Index                                     | NP        |                         |            |
| Moisture Content %                                | 38.1      | 151.6                   | 37.2       |
| Organic Content %                                 |           | 27.9                    |            |
| % 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%.

PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

Project No. 60118 Sampled By Barber Structure MAINTENANCE BLDG & APRON

| Station            | 18+10       | 18+10       | 18+10         | 18+10       | 17+50       | 17+50       |
|--------------------|-------------|-------------|---------------|-------------|-------------|-------------|
| Offset (feet)      | 245' Lt     | 245' Lt     | 245' Lt       | 245' Lt     | 245' Lt     | 245' Lt     |
| Depth (feet)       | 2.0' - 3.0' | 6.0' - 9.0' | 12.0' - 15.0' | 0.0' - 3.0' | 0.0' - 3.0' | 5.5' - 6.5' |
| Test Hole No.      | TH-21       | TH-21       | TH-21         | TH-21       | TH-27       | TH-27       |
| Field No.          | 31          | 32          | 33            | 45          | 46          |             |
| Date Sampled       | 07/30/93    | 07/30/93    | 07/30/93      | 07/30/93    | 07/30/93    | 07/30/93    |
| Lab No.            | 93A-1672    | 93A-1673    | 93A-1674      | 93A-1674    | 93A-1675    | 93A-1676    |
| Percent            | 3"          |             |               |             |             |             |
| Passing            | 2"          |             |               |             |             |             |
| Sieve              | 1"          |             |               |             |             |             |
| Size               | 3/4"        |             |               |             |             |             |
|                    | 1/2"        |             |               |             |             |             |
|                    | 3/8"        |             |               |             |             |             |
|                    | #4          |             |               |             |             |             |
|                    | #10         |             |               |             |             |             |
|                    | #40         |             |               |             |             |             |
|                    | #80         |             |               |             |             |             |
|                    | #200        |             |               |             |             |             |
|                    | .02mm       |             |               |             |             |             |
|                    | .002mm      |             |               |             |             |             |
| DOTSD              | Pt          |             |               |             |             |             |
| AASHTO Class       | A-8         |             |               |             |             |             |
| FSV Class          |             |             |               |             |             |             |
| Liquid Limit       |             |             |               |             |             |             |
| Plastic Index      |             |             |               |             |             |             |
| Moisture Content % | 114.5       | 64.1        | 57.1          | 48.0        | 76.0        |             |
| Organic Content %  | 35.1        |             |               |             |             |             |
| % 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%.

PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

Project No. 60118 Sampled By Barber Centerline ACCESS ROAD

| Station            | 31+75       | 31+75        | 31+25        |  |  |
|--------------------|-------------|--------------|--------------|--|--|
| Offset (feet)      | 800' Lt     | 800' Lt      | 1000 Lt      |  |  |
| Depth (feet)       | 1.0' - 2.0' | 8.0' - 10.0' | 8.0' - 10.0' |  |  |
| Test Hole No.      | TH-23       | TH-23        | TH-24        |  |  |
| Field No.          | 40          | 41           | 42           |  |  |
| Date Sampled       | 07/30/93    | 07/30/93     | 07/30/93     |  |  |
| Lab No.            | 93A-1678    | 93A-1679     | 93A-1680     |  |  |
| Percent            |             |              |              |  |  |
| Passing            |             |              |              |  |  |
| Sieve              |             |              |              |  |  |
| Size               |             |              |              |  |  |
|                    | 3"          |              |              |  |  |
|                    | 2"          |              |              |  |  |
|                    | 1"          |              |              |  |  |
|                    | 3/4"        |              |              |  |  |
|                    | 1/2"        |              |              |  |  |
|                    | 3/8"        |              |              |  |  |
|                    | #4          |              |              |  |  |
|                    | #10         |              | 100          |  |  |
|                    | #40         |              | 100          |  |  |
|                    | #80         |              | 99           |  |  |
|                    | #200        |              | 96.1         |  |  |
|                    | .02mm       |              |              |  |  |
|                    | .002mm      |              |              |  |  |
| DOTSD              | Pt          | Si           | Si           |  |  |
| AASHTO Class       | A-8         | A-4(0)       | A-4(1)       |  |  |
| FSV Class          |             |              |              |  |  |
| Liquid Limit       |             | 25           | 30           |  |  |
| Plastic Index      |             | NP           | NP           |  |  |
| Moisture Content % | 295.4       | 40.2         | 55.2         |  |  |
| Organic Content %  | 32.0        | 2.2          |              |  |  |
| % Gravel           |             |              |              |  |  |
| % Sand             |             | 9            | 4            |  |  |
| % Silt & Clay      |             | 91           | 96           |  |  |
| 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%.

PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

| Project No. 60118  |              | Sampled By Barber |             |             | Materials Site |              |  | BORROW SITE |  |
|--------------------|--------------|-------------------|-------------|-------------|----------------|--------------|--|-------------|--|
| Station            | 35+50        | 37+00             | 37+00       | 37+00       | 39+70          | 40+30        |  |             |  |
| Offset (feet)      | 650' Rt      | 770' Rt           | 770' Rt     | 770' Rt     | 1360'Rt        | 400' Rt      |  |             |  |
| Depth (feet)       | 2.5' - 5.0'  | 1.0' - 2.0'       | 1.0' - 2.0' | 5.0' - 6.5' | 2.5' - 5.0'    | 2.5' - 5.0'  |  |             |  |
| Test Hole No.      | Test Hole 45 | TH-14             | TH-14       | TH-14       | Test Hole 43   | Test Hole 44 |  |             |  |
| Field No.          | 69           | 48                | 48          | 26          | 63             | 67           |  |             |  |
| Date Sampled       | 01/15/94     | 07/31/93          | 07/31/93    | 07/29/93    | 01/14/94       | 01/14/94     |  |             |  |
| Lab No.            | 94A-0027     | 93A-1684          | 93A-1684    | 93A-1662    | 94A-0023       | 94A-0025     |  |             |  |
| Percent            |              |                   |             |             |                |              |  |             |  |
| Passing            |              |                   |             |             |                |              |  |             |  |
| Sieve              | 3"           |                   |             |             |                |              |  |             |  |
|                    | 2"           |                   |             |             |                |              |  |             |  |
|                    | 1"           |                   |             |             |                |              |  |             |  |
|                    | 3/4"         |                   |             |             |                |              |  |             |  |
|                    | 1/2"         |                   |             |             |                |              |  |             |  |
|                    | 3/8"         |                   |             |             |                |              |  |             |  |
|                    | #4           |                   |             |             |                |              |  |             |  |
|                    | #10          |                   |             |             |                |              |  |             |  |
|                    | #40          |                   |             |             |                |              |  |             |  |
|                    | #80          |                   |             |             |                |              |  |             |  |
|                    | #200         |                   |             |             |                |              |  |             |  |
|                    | .02mm        |                   |             |             |                |              |  |             |  |
|                    | .002mm       |                   |             |             |                |              |  |             |  |
| DOTSD              |              |                   |             |             |                |              |  |             |  |
| AASHTO Class       |              | Si                | Si          | Si          | Si             | Si           |  |             |  |
| FSV Class          |              | A-4(0)            | A-4(0)      | A-4(0)      | A-4(0)         | A-4(0)       |  |             |  |
| Liquid Limit       |              |                   |             |             |                |              |  |             |  |
| Plastic Index      |              |                   |             |             |                |              |  |             |  |
| Moisture Content % | 39.1         |                   |             |             |                |              |  |             |  |
| Organic Content %  | 40.0         |                   |             |             |                |              |  |             |  |
| % 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%.



PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

| Project No. 60118 Sampled By Barber |              | Materials Site |              |              |              | BORROW SITE  |
|-------------------------------------|--------------|----------------|--------------|--------------|--------------|--------------|
| Station                             | 44+90        | 47+80          | 48+00        | 51+10        | 51+40        | 54+00        |
| Offset (feet)                       | 880' Rt      | 1340'Rt        | 920' Rt      | 1520'Rt      | 1880'Rt      | 2400'Rt      |
| Depth (feet)                        | 2.5' - 5.0'  | 2.5' - 5.0'    | 0.5' - 2.0'  | 7.5' - 10.0' | 2.5' - 5.0'  | 7.5' - 10.0' |
| Test Hole No.                       | Test Hole 32 | Test Hole 34   | TH-15        | Test Hole 35 | Test Hole 36 | Test Hole 37 |
| Field No.                           | 53           | 55             | 27           | 56           | 57           | 58           |
| Date Sampled                        | 01/13/94     | 01/13/94       | 07/29/93     | 01/13/94     | 01/13/94     | 01/14/94     |
| Lab No.                             | 94A-0011     | 94A-0013       | 93A-1663     | 94A-0014     | 94A-0015     | 94A-0016     |
| Percent                             | 3"           |                |              |              |              |              |
| Passing                             | 2"           |                |              |              |              |              |
| Sieve                               | 1"           |                |              |              |              |              |
| Size                                | 3/4"         |                |              |              |              |              |
|                                     | 1/2"         |                |              |              |              |              |
|                                     | 3/8"         |                |              |              |              |              |
|                                     | #4           |                |              |              |              |              |
|                                     | #10          |                |              |              |              |              |
|                                     | #40          |                |              |              |              |              |
|                                     | #80          |                |              |              |              |              |
|                                     | #200         |                |              |              |              | 100          |
|                                     | .02mm        |                |              |              |              | 100          |
|                                     | .002mm       |                |              |              |              | 94.4         |
| DOTSD                               |              |                |              |              |              |              |
| AASHTO Class                        |              |                | Si<br>A-5(6) |              |              | Si<br>A-4(0) |
| FSV Class                           |              |                | 44<br>NP     |              |              | 28<br>NP     |
| Liquid Limit                        |              |                | 56.8<br>6.4  |              |              | 35.8         |
| Plastic Index                       |              |                |              |              |              |              |
| Moisture Content %                  | 32.9         | 34.9           |              | 39.7         | 29.5         |              |
| 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%.

PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

| Project No. 60118  |              | Sampled By Barber |              |              | Materials Site |              |  | BORROW SITE |  |
|--------------------|--------------|-------------------|--------------|--------------|----------------|--------------|--|-------------|--|
| Station            | 40+30        | 41+80             | 41+80        | 43+80        | 43+80          | 44+60        |  |             |  |
| Offset (feet)      | 400' Rt      | 40' Lt            | 300' Rt      | 1120'Rt      | 1120'Rt        | 500' Rt      |  |             |  |
| Depth (feet)       | 10.0' -13.0' | 7.5' -10.0'       | 2.5' - 5.0'  | 2.5' - 5.0'  | 10.0' -13.0'   | 7.5' -10.0'  |  |             |  |
| Test Hole No.      | Test Hole 44 | Test Hole 29      | Test Hole 30 | Test Hole 42 | Test Hole 42   | Test Hole 31 |  |             |  |
| Field No.          | 68           | 50                | 51           | 65           | 66             | 52           |  |             |  |
| Date Sampled       | 01/14/94     | 01/13/94          | 01/13/94     | 01/14/94     | 01/14/94       | 01/13/94     |  |             |  |
| Lab No.            | 94A-0026     | 94A-0008          | 94A-0009     | 94A-0021     | 94A-0022       | 94A-0010     |  |             |  |
| Percent            |              |                   |              |              |                |              |  |             |  |
| Passing            |              |                   |              |              |                |              |  |             |  |
| Sieve              |              |                   |              |              |                |              |  |             |  |
| Size               |              |                   |              |              |                |              |  |             |  |
|                    | 3"           |                   |              |              |                |              |  |             |  |
|                    | 2"           |                   |              |              |                |              |  |             |  |
|                    | 1"           |                   |              |              |                |              |  |             |  |
|                    | 3/4"         |                   |              |              |                |              |  |             |  |
|                    | 1/2"         |                   |              |              |                |              |  |             |  |
|                    | 3/8"         |                   |              |              |                |              |  |             |  |
|                    | #4           |                   |              |              |                |              |  |             |  |
|                    | #10          |                   |              |              |                |              |  |             |  |
|                    | #40          |                   |              |              |                |              |  |             |  |
|                    | #80          |                   |              |              |                |              |  |             |  |
|                    | #200         |                   |              |              |                |              |  |             |  |
|                    | .02mm        |                   |              |              |                |              |  |             |  |
|                    | .002mm       |                   |              |              |                |              |  |             |  |
| DOTSD              |              |                   |              |              |                |              |  |             |  |
| AASHTO Class       |              |                   |              |              |                |              |  |             |  |
| FSV Class          |              |                   |              |              |                |              |  |             |  |
| Liquid Limit       |              |                   |              |              |                |              |  |             |  |
| Plastic Index      |              |                   |              |              |                |              |  |             |  |
| Moisture Content % | 39.3         | 37.1              | 34.4         | 37.3         | 41.7           | 43.2         |  |             |  |
| 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%.



PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

| Project No. 60118  |              | Sampled By Barber |              | Materials Site |  | BORROW SITE |   |
|--------------------|--------------|-------------------|--------------|----------------|--|-------------|---|
| Station            | 54+20        | 57+00             | 57+20        | 60+00          |  |             |   |
| Offset (feet)      | 2400'Rt      | 2760'Rt           | 2920'Rt      | 3120'Rt        |  |             |   |
| Depth (feet)       | 2.5' - 5.0'  | 7.5' -10.0'       | 2.5' - 5.0'  | 7.5' -10.0'    |  |             |   |
| Test Hole No.      | Test Hole 38 | Test Hole 39      | Test Hole 40 | Test Hole 41   |  |             |   |
| Field No.          | 59           | 60                | 61           | 62             |  |             |   |
| Date Sampled       | 01/14/94     | 01/14/94          | 01/14/94     | 01/14/94       |  |             |   |
| Lab No.            | 94A-0017     | 94A-0018          | 94A-0019     | 94A-0020       |  |             |   |
| Percent            |              |                   |              |                |  |             |   |
| Passing            |              |                   |              |                |  |             |   |
| Sieve              |              |                   |              |                |  |             |   |
| Size               |              |                   |              |                |  |             |   |
|                    | 3"           |                   |              |                |  |             |   |
|                    | 2"           |                   |              |                |  |             |   |
|                    | 1"           |                   |              |                |  |             |   |
|                    | 3/4"         |                   |              |                |  |             |   |
|                    | 1/2"         |                   |              |                |  |             |   |
|                    | 3/8"         |                   |              |                |  |             |   |
|                    | #4           |                   |              |                |  |             |   |
|                    | #10          |                   |              |                |  |             |   |
|                    | #40          |                   |              |                |  |             |   |
|                    | #80          |                   |              |                |  |             |   |
|                    | #200         |                   |              |                |  |             |   |
|                    | .02mm        |                   |              |                |  |             |   |
|                    | .002mm       |                   |              |                |  |             |   |
| DOTSD              |              |                   |              |                |  |             |   |
| AASHTO Class       |              |                   |              |                |  |             |   |
| FSV Class          |              |                   |              |                |  |             |   |
| Liquid Limit       |              |                   |              |                |  |             |   |
| Plastic Index      |              |                   |              |                |  |             |   |
| Moisture Content % | 37.4         | 43.8              | 38.8         | 49.5           |  |             |   |
| 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%.

PRECONSTRUCTION SAMPLE SUMMARY

Project Name Kwigillingok Airport Reconstruction

Project No. 60118 Sampled By Barber Centerline PROPOSED RECHANLZD SLOUGH

| Station<br>Offset (feet)<br>Depth (feet)<br>Test Hole No.<br>Field No.<br>Date Sampled<br>Lab No.                                                                                                                                                                          | 28+00<br>850' Rt<br>2.5' - 5.0'<br>Test Hole 46<br>71<br>01/15/94<br>94A-0029                | 18+00<br>550' Rt<br>2.5' - 5.0'<br>Test Hole 47<br>73<br>01/15/94<br>94A-0031 | 9+00<br>800' Rt<br>2.5' - 5.0'<br>Test Hole 48<br>74<br>01/15/94<br>94A-0032 | 9+00<br>800' Rt<br>7.5' - 10.0'<br>Test Hole 48<br>75<br>01/15/94<br>94A-0033 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Percent                                                                                                                                                                                                                                                                    |                                                                                              |                                                                               |                                                                              |                                                                               |
| Passing                                                                                                                                                                                                                                                                    |                                                                                              |                                                                               |                                                                              |                                                                               |
| Sieve                                                                                                                                                                                                                                                                      | 3"<br>2"<br>1"<br>3/4"<br>1/2"<br>3/8"<br>#4<br>#10<br>#40<br>#80<br>#200<br>.02mm<br>.002mm |                                                                               |                                                                              |                                                                               |
| Size                                                                                                                                                                                                                                                                       | 100<br>99<br>97.0                                                                            |                                                                               |                                                                              |                                                                               |
| DOTSD<br>AASHTO Class<br>FSV Class<br>Liquid Limit<br>Plastic Index<br>Moisture Content %<br>Organic Content %<br>% Gravel<br>% Sand<br>% Silt & Clay<br>Max. Dry Density<br>Opt. Moisture %<br>Sp.G. Fine<br>Degradation Value<br>L.A. Abrasion Loss<br>Sulfate Soundness | Si<br>A-4 (2)<br><br>33<br>NP<br>98.7<br><br>3<br>97<br><br><br>/                            | 55.5                                                                          | 46.6                                                                         | 71.3<br><br><br><br><br><br><br><br>/                                         |

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

**STATE OF ALASKA**  
**Department of Transportation & Public Facilities**  
**Central Region Materials**  
 5750 EAST TUDOR RD, ANCHORAGE AK 99507  
 Phone (907)-269-6200 FAX (907) 269-6201  
**Laboratory Report**

**REVISED**  
 DATE: 11/21/95  
 PRECONSTRUCTION

PROJECT NAME: Kwigillingok Airport Reconstruction PROJECT NO. 60118  
 LABORATORY NO. 93A-1684  
 SAMPLE OF: \_\_\_\_\_ ITEM/SPECIFICATION NO.: \_\_\_\_\_  
 FIELD NO.: 48  
 SAMPLED FROM: TH-14, Sta. 37+00 770' Rt, Depth 1.0' - 2.0'  
 DATE SAMPLED: 07/31/93  
 SOURCE/SUPPLIER: \_\_\_\_\_ QUANTITY REPRESENTED \_\_\_\_\_  
 DATE RECEIVED: 08/04/93  
 LOCATION/ADDRESS: \_\_\_\_\_ SUBMITTED BY: Barber  
 DATE COMPLETED: 08/13/93  
 EXAMINED FOR: Classification & Standard Density DATE REPORTED: 08/21/93

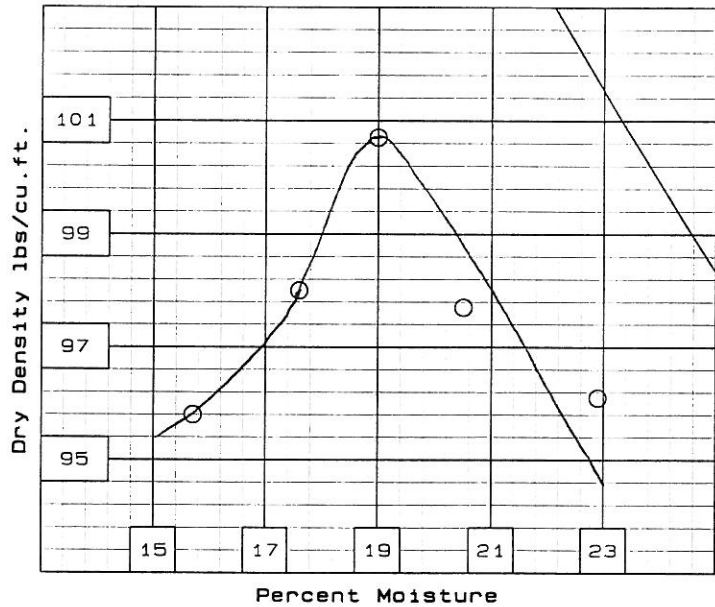
SIEVE ANALYSIS BY: ATM T-7

SAMPLE PREPARATION BY: AASHTO T 87 & T 248

| SIEVE  | %PASS | -3/4" | Specs. |
|--------|-------|-------|--------|
| 3"     |       |       |        |
| 2"     |       |       |        |
| 1 1/2" |       |       |        |
| 1"     |       |       |        |
| 3/4"   |       |       |        |
| 1/2"   |       |       |        |
| 3/8"   |       |       |        |
| 1/4"   |       |       |        |
| #4     |       |       |        |
| #8     |       |       |        |
| #10    | 100   |       |        |
| #16    |       |       |        |
| #30    |       |       |        |
| #40    | 99    |       |        |
| #50    | 99    |       |        |
| #80    |       |       |        |
| #100   |       |       |        |
| #200   | 92.1  |       |        |

MOISTURE DENSITY RELATIONSHIP BY: AASHTO T 180 Method  
 OVERSIZE CORRECTION BY AASHTO T 224

Optimum Moisture = 19 Max. Dry Density = 101



| % FRACTURE          |      | Specs. |
|---------------------|------|--------|
| LL                  | NV   |        |
| AASHTO T 89 & 90 PL | NV   |        |
| PI                  | NP   |        |
| Coarse              | Fine |        |
| SpG                 | 2.60 |        |
| Absorp.             |      |        |
| Fine SpG by:        |      |        |
| Coarse BSpG by:     |      |        |

CLASSIFICATION BY: AASHTO M 145  
 % +3" 0 FSV  
 % Gravel 0 AASHTO Class A-4(0)  
 % Sand 8 DOTSD Si  
 % Si/Cl 92 Unified Class  
 % Natural Moisture  
 % Organic 4.5

Remarks: Revised to change Sampled From stationing and offset.

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

Signature Stewart D. Worthen  
Robert F. Lewis, P.E.  
 CONSTRUCTION MATERIALS ENGINEER

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

**STATE OF ALASKA**  
**Department of Transportation & Public Facilities**  
**Central Region Materials**  
 5750 EAST TUDOR RD, ANCHORAGE AK 99507  
 Phone (907)-269-6200 FAX (907) 269-6201  
**Laboratory Report**

**REVISED**  
 DATE: 11/21/95  
 PRECONSTRUCTION

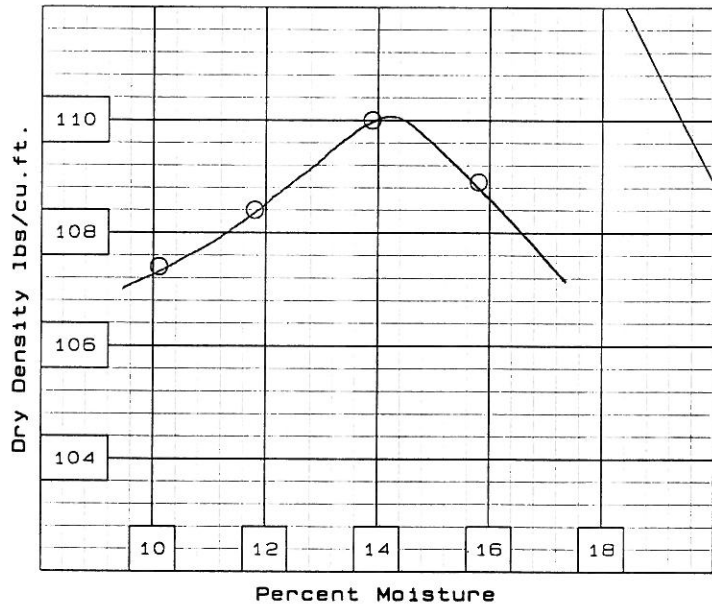
PROJECT NAME: Kwigillingok Airport Reconstruction PROJECT NO. 60118 LABORATORY NO. 94A-0023  
 SAMPLE OF: \_\_\_\_\_ ITEM/SPECIFICATION NO.: \_\_\_\_\_ FIELD NO.: 63  
 SAMPLED FROM: Test Hole 43, Sta. 39+70 1360'Rt, Depth 2.5' - 5.0' DATE SAMPLED: 01/14/94  
 SOURCE/SUPPLIER: \_\_\_\_\_ QUANTITY REPRESENTED: \_\_\_\_\_ DATE RECEIVED: 01/21/94  
 LOCATION/ADDRESS: \_\_\_\_\_ SUBMITTED BY: Barber DATE COMPLETED: 02/07/94  
 EXAMINED FOR: Classification, Proctor, Wet PI & Moisture DATE REPORTED: 02/07/94

SIEVE ANALYSIS BY: ATM T-7

SAMPLE PREPARATION BY: AASHTO T 87 & T 248

| SIEVE  | %PASS | -3/4" | Specs. |
|--------|-------|-------|--------|
| 3"     |       |       |        |
| 2"     |       |       |        |
| 1 1/2" |       |       |        |
| 1"     |       |       |        |
| 3/4"   |       |       |        |
| 1/2"   |       |       |        |
| 3/8"   |       |       |        |
| 1/4"   |       |       |        |
| #4     |       |       |        |
| #8     |       |       |        |
| #10    | 100   |       |        |
| #16    |       |       |        |
| #30    |       |       |        |
| #40    | 99    |       |        |
| #50    |       |       |        |
| #80    | 97    |       |        |
| #100   |       |       |        |
| #200   | 83.7  |       |        |

MOISTURE DENSITY RELATIONSHIP BY: AASHTO T 180 Method  
 OVERSIZE CORRECTION BY AASHTO T 224  
 Optimum Moisture = 14 Max. Dry Density = 110



| % FRACTURE      |      | Specs. |
|-----------------|------|--------|
| LL              | NV   |        |
| PL              | NV   |        |
| PI              | NP   |        |
| Coarse          | Fine |        |
| SpG             | 2.68 |        |
| Absorp.         |      |        |
| Fine SpG by:    |      |        |
| Coarse BSpG by: |      |        |

| CLASSIFICATION BY: AASHTO M 145 |        |
|---------------------------------|--------|
| % +3"                           | 0      |
| % Gravel                        | 0      |
| % Sand                          | 16     |
| % Si/Cl                         | 84     |
| % Natural Moisture              | 41.2   |
| % Organic                       | 2.6    |
| FSV                             |        |
| AASHTO Class                    | A-4(0) |
| DOTSD                           | Si     |
| Unified Class                   |        |

Remarks: Wet Prep Atterburg

Liquid Limit NV  
 Plastic Limit NV  
 Plastic Index NP

Revised to change Sampled From stationing and offset.

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

Signature Stuart D. Wathington  
Robert F. Lewis, P.E.

CONSTRUCTION MATERIALS ENGINEER

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