Part 1 of 2

ALASKA
Department of Transportation
And Public Facilities

RECONNAISSANCE GEOTECHNICAL INVESTIGATION

Williamsport to Pile Bay Road Spot Repairs - MP 3 to MP 9

SEPTEMBER 2005

Project# 51651

ALASKA
Department of Transportation
And Public Facilities

RECONNAISSANCE GEOTECHNICAL INVESTIGATION

WILLIAMSPORT TO PILE BAY ROAD SPOT REPAIRS – MP 3 TO MP 9

Project # 51651

September 2005

Prepared By:

Craig Boeckman, C.P.G.
Regional Geologist, Central Region Materials

Reviewed By:

Angela Parsons, P.E.
Engineering Associate II, Central Region Materials

Approved By:

Newton Bingham, P.E.
Regional Materials Engineer, Central Region

STATE OF ALASKA
49 TH
Angela Parsons
No. CE - 11248
REGISTERED PROFESSIONAL ENGINEER
11/2/05

TABLE OF CONTENTS

SITE LOCATION MAP iv

SCOPE OF WORK AND SITE DESCRIPTION 1

GEOLOGY AND TOPOGRAPHY 1

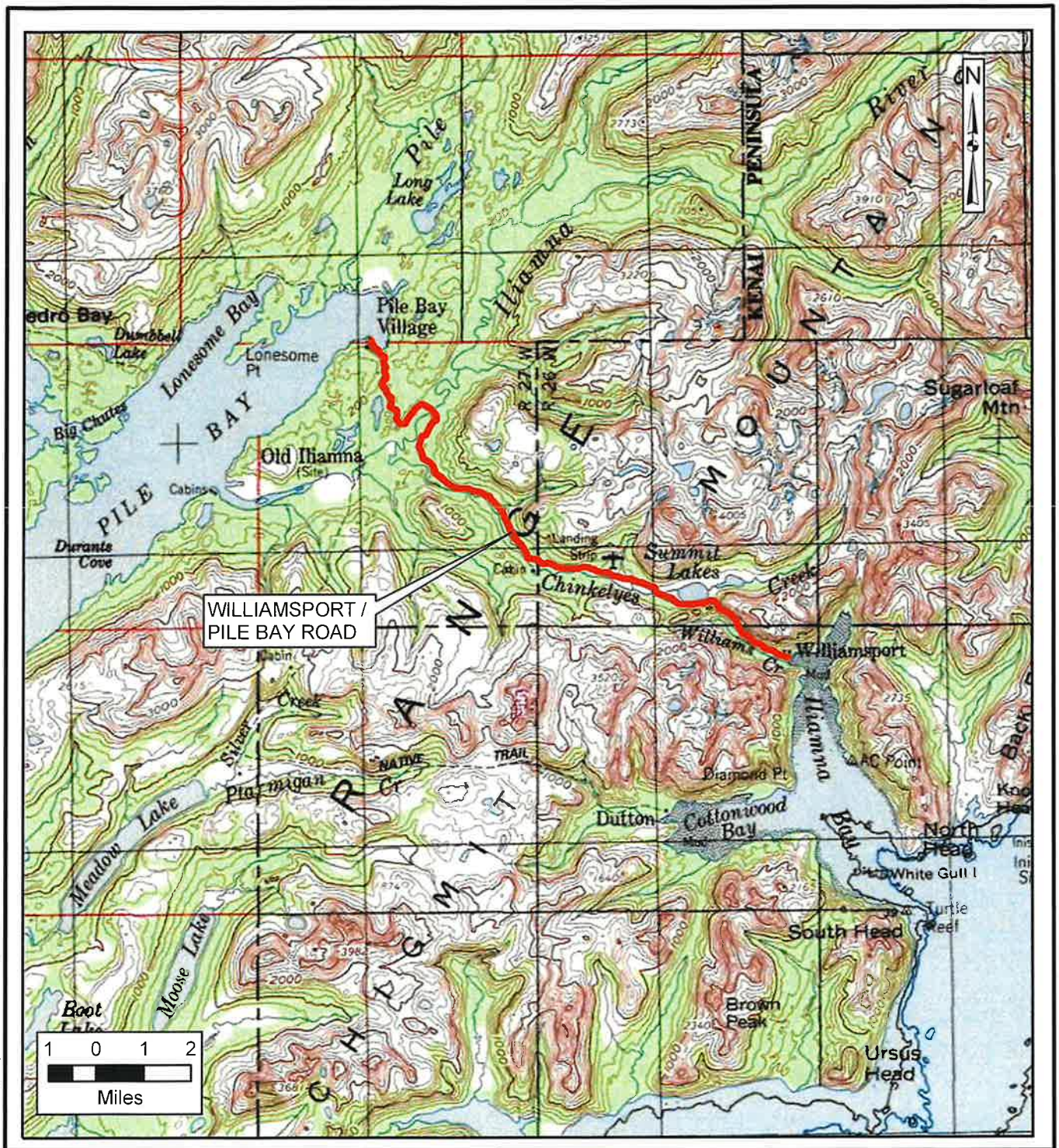
GENERAL OBSERVATIONS 2
- Road Surface Soil Samples – MP 10.5, MP 10.7, and MP 12 2
- Soil Probes – MP 9 to MP 13 2
- Rock Cut Samples – MP 1, MP 11.6, and MP 13.4 3
- Existing Material Sites – MP 4, MP 6, and MP 10.4 3
- Rock Slopes – MP 0 to 3 3

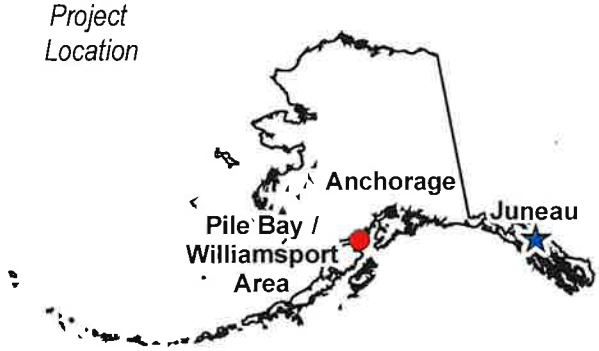
REFERENCES. 5

APPENDICES

Appendix A -
Aerial Photographs – Showing road alignment, soil sample, rock sample, and soil probe locations

Appendix B -
Soil and Rock Sample Laboratory Reports
Photo Log





State of Alaska
Department of Transportation and Public Facilities

WILLIAMSPORT-PILE BAY ROAD

PROJECT No. 51651

FIGURE 1: VICINITY MAP

Map Document: (H:\Prj CReg\Hwy\williamsport to pile bay\Data\GIS\VICINITY.mxd) 7/29/2005 -- 1:33:02 PM

WILLIAMSPORT TO PILE BAY ROAD
SPOT REPAIRS MP 3 TO MP 9
Project No. 51651

SCOPE OF WORK AND SITE DESCRIPTION

Central Region and Statewide Materials performed a reconnaissance-level geotechnical investigation of the approximate 14-mile long gravel road from Williamsport to Pile Bay (Figure 1). The scope of the project is to provide road repairs at selected locations between mile 3 and mile 9, with work including drainage repairs, culvert installation and replacement, erosion protection, structural repairs with select grade raises and widening, and gravel surfacing repairs. Although the scope of this project is limited to work from mile 3 to mile 9, this materials reconnaissance evaluation covered the entire road due to the uncertainty of the final project scope.

The reconnaissance investigation included the following elements.

1. Reviewed the maintenance history of the road with the local maintenance contractor.
2. Advanced soil probes beyond the ditch line of the road to determine thickness of soft soil.
3. Collected soil samples from the existing road surface and from existing material sites.
4. Collected rock samples from bedrock cuts along the road corridor.

The one-lane gravel road is a link for barge-transported materials from Cook Inlet to the communities surrounding Lake Iliamna. It is also a link used by fishermen to haul their boats from Cook Inlet over to Pile Bay. It is situated in challenging terrain ranging from steep mountains, glaciated valleys, and alternating ridge and valley type terrain.

GEOLOGY AND TOPOGRAPHY

The road starts at Williamsport (MP 0) where there is a landing that is reached by boats and barges only during some higher tides. From Williamsport the road climbs up and over mountainous terrain to Chinkelyes Creek (MP 3.5). The road crosses Chinkelyes Creek on a one lane single span bridge and then travels northwest along a wide glacial carved valley for the next 5.5 miles. The road crosses many high flow creeks though this section. From about MP 9 to the Pile Bay (about MP 14) the road winds through ridge and valley type terrain that is forested. The valley lowlands consist of marshes or low flow drainages. The road crosses the Iliamna River at about MP 11 on a one lane single-span bridge that is occasionally overtopped by floodwater from the Iliamna River.

The road can be grouped into three separate physiographic areas with each area presenting different problems for road maintenance. The groups are outlined below.

1. MP 0 to MP 3 – Steep mountainous terrain. Rock fall problems are common. Narrow

one lane road and steep grades.

2. MP 3 to MP 9 – Glacial carved valley. Drainage problems are common. The road has frequently been washed out at the bridges and culverts that cross the high flow creeks in this area.
3. MP 9 to MP 14 – Ridge and valley terrain. Soft spots in the road are common during breakup and rainfall. The quality of the existing road fill, drainage, and soft compressible soils in the valley bottoms are all issues in this section. Periodic flooding of the Iliamna River at the bridge (MP 11) and landslides between MP 11.5 and MP 11.9 are also problems areas.

The soil types along the road are generally glacial, alluvial, or colluvium type deposits that consist of varying amounts of silt with sand, gravel, cobbles, and boulders. The bedrock generally consists of granodiorite that is occasional cut by tertiary volcanic dikes. The ridges are either glacial till or bedrock that is covered by organic soil and silty soil overburden.

GENERAL OBSERVATIONS

The following are general field observations and sample results of the recon investigation. For the soil probe locations, rock and soil sample locations, and location of the material sites see the attached figures in Appendix A.

Road Surface Soil Samples - MP 10.5, MP 10.7, and MP 12

Three soil samples were collected from the road surface in soft spot areas as indicated by the local maintenance contractor. The road was rutted, the embankment material appeared to be of poor quality (high percentage of fines), and the soft spots were generally located near drainages and/or culverts. A summary of the three samples indicated the following.

- The P200 ranged from 19 to 25.
- Organic content ranged from 4 to 4.7%.
- The moisture content for the June 2005 samples ranged from 11.9 to 17.8%.

The Laboratory Reports for these soil samples are included in Appendix B.

There were buried timbers in the road (corduroy) that had been placed to support the soft areas. These were generally observed from about MP 10 to MP 13.

Soil Probes - MP 9 to MP 13

Soil probes were advanced in drainage areas or at culvert crossings to determine the approximate depth of soft soil beneath the road. The soil probes were ½-inch steel rods that were advanced by hand. The probe data only gives an approximate depth of either organic and/or soft silty soil. A summary of the soil probe data is below.

- Soil probes in the valley lowlands indicated about 2 to 4 ft of soft organic soil and/or silt.

- Soil probes in the marsh north of the bridge that crosses the Iliamna River indicated more than 12 ft of soft organic soil and/or silt.

Rock Cut Samples - MP 1, MP 11.6, and MP 13.4

Rock samples were collected from the existing rock cuts. The rock type at all three sampled locations was granodiorite. At MP 1 the rock contained zones of weakness in the rock mass from alteration of the feldspar minerals and weathering. Some of the fractures and joints were clay filled. At MP 11.6 the rock contained many quartz and calcite veins that have altered and weathered the host rock around these veins. At MP 13.4 the rock is relatively massive with widely spaced joints and fractures.

The bedrock is covered by relatively thick overburden at MP 11.6 and MP 13.4. A summary of the rock quality sample results is shown below.

- Specific Gravity (Bulk) ranged from 2.65 to 2.79.
- LA Abrasion values ranged from 24 to 33% loss.
- Degradation values ranged from 68 to 82.
- Rock type for all three was granodiorite.

The Laboratory Reports for these soil samples are included in Appendix B.

These values indicate that the rock will break down relatively quickly if processed for construction materials. But it will break down to clean sand and gravel with relatively little fines.

Existing Material Sites - MP 4, MP 6, and MP 10.4

Soil samples were collected from these material sites to generally determine if these might be of use for construction. The attached figures show the location of the existing material sites.

The table below summarizes the results of the soil samples that were collected from stockpiles at each of these sites. See Appendix B for the Laboratory Reports of these samples.

Site Location	Area Sample Collected	P200	LA Abrasion	Degradation
MP 4	~ 30 CY Stockpile	0.3	41	71
MP 6	~ 4 CY Stockpile	1.4	34	81
MP 10.4	~ 50 CY Stockpile	2.1	--	--

Note:

- These grab samples were collected from stockpiles at each site.
- No comprehensive material site investigation was performed to determine volumes or how consistent the quality of the material at each of these sites might be.

- At MP 4 and MP 6 sites the material had been mined from below the water table resulting in a pond/lake at the site. Groundwater was about 2 ft below surface at the time of our investigation.
- The material sites are owned by Tyonek (surface) and CIRI (subsurface) Native Corporation.

Rock Slopes - MP 0 to MP 3

Overall the road through this section ranges from about 12 to 15 ft wide and has only a few pullouts (one at about MP 1.45 and one at the top of the pass at MP 2.1). Generally there are no defined ditches along the slope between MP 0.3 and MP 3 to capture rock fall or provide drainage. The grade of the road ranged from about 2.5 to 10%. Short stretches of the road were as much as 18%. Rock fall has been a frequent source of problems for the local maintenance contractor between MP 0.3 and 3.0.

The rock type in the area is granodiorite that is slightly to moderately weathered (some of the rock grains are altered to clay minerals) and has multiple joints and fractures. The joints are open and some contain clay and breccia that have resulted from movement along these joints. Exfoliation (a weathering process that occurs in some igneous rocks) also contributes to forming failure surfaces along these slopes.

The local maintenance contractor indicated several areas between MP 0.3 and MP 3 where they have had rock fall problems. These areas are outlined below.

- MP 0.90 to MP 1.2 – Consists of a steep rock cut above the road (see the attached Photo Log) that has had frequent rockfall. The rock cut contains multiple joints that form large tabular blocks that topple or slide from the slope after precipitation and/or in the spring. The road narrows to as little as 12 ft wide in this area and has presented the local maintenance contractor with the most rock fall problems for this area.
- MP 1.9 - The rock above and below the road in this area is of poor quality and is cut by faults (as indicated in a USGS geologic map of the area).
- MP 2.2 - Consists of an approximate 70 ft high rock cut. The road is about 21 ft wide. There has been a construction related fatality at this location. During blasting in the 1950s an overhanging ledge came loose after blasting and pushed a dozer and it's operator over the side of the mountain.
- MP 2.2 to 2.6 - The most prominent failure surfaces appeared to be along weathered planes (from the exfoliation weathering process) that dip toward the road at about 45 to 63 degrees.
- MP 2.6 - Large rounded boulders from a ridge consisting of glacial till are rolling out of the cut and onto the road.

REFERENCES

1. Detterman, R. L., and Reed, B. L., *"Preliminary Map of the Geology of the Iliamna Quadrangle, Alaska"*, U.S. Geological Survey Map #I-407. 1964.

2. State of Alaska DOT&PF, "*Alaska Geotechnical Procedures Manual"*, October 2003.

APPENDIX A

AERIAL PHOTOGRAPHS – SHOWING ROAD ALIGNMENT, SOIL SAMPLE, ROCK SAMPLE, AND SOIL PROBE LOCATIONS

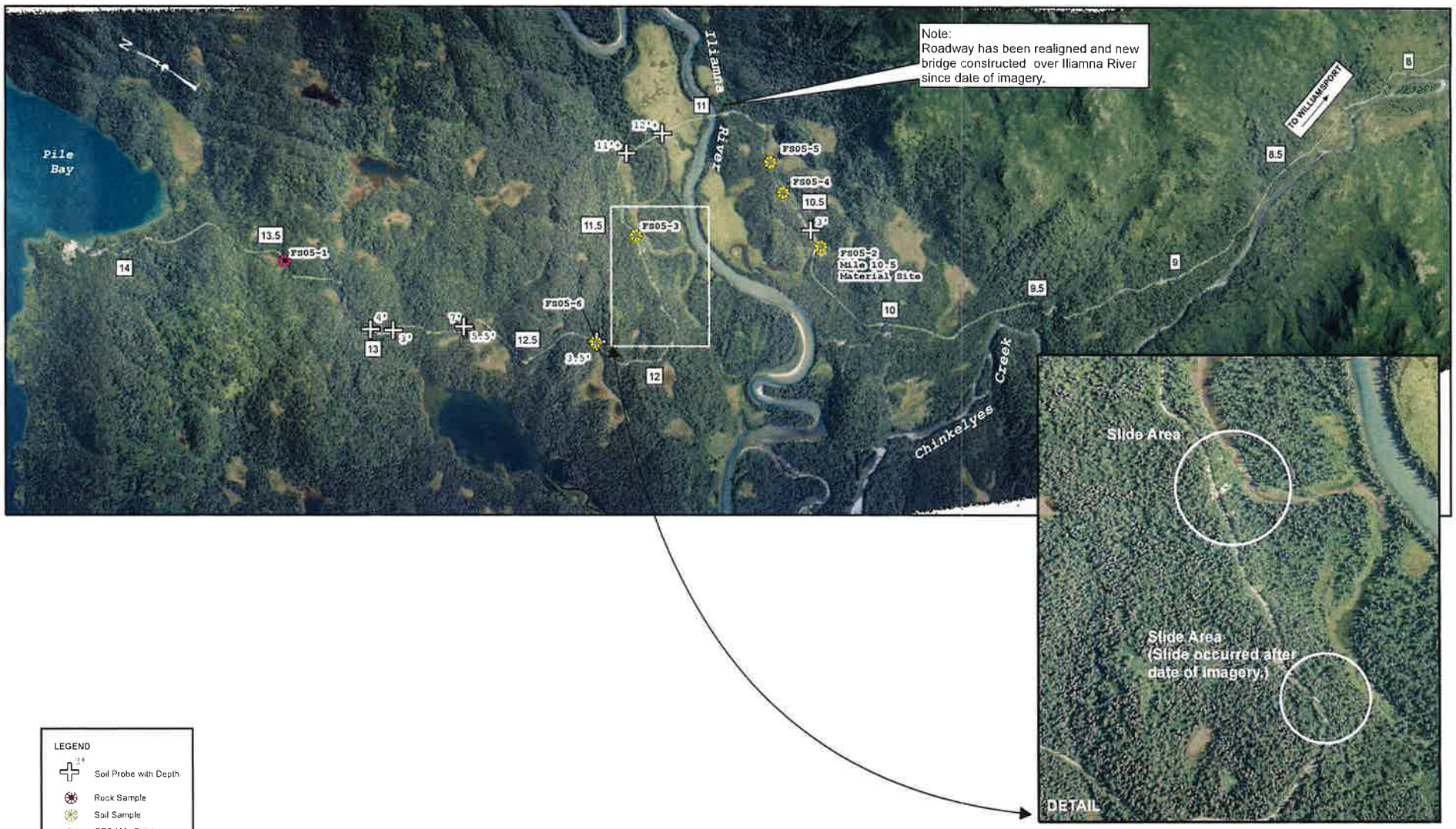


Image by AeroMap US; Date of Photography: 8/17/2002. Geologic field investigation was conducted in June, 2005. Mile Points along road alignment were created from data collected with a TrimbleGeoXT GPS unit with ArcPad software.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
CENTRAL REGION MATERIALS

WILLIAMSPORT-PILE BAY ROAD
PROJECT No. 51651

PRINT DATE
SEPT. 26, 2005

M.P. 8 TO PILE BAY

Map Document: (H:\Prj CReg\Hwy\williamsport to pile bay\Data\GIS\Williamport_Geology.mxd) 9/26/2005 -- 11:30:17 AM ASP

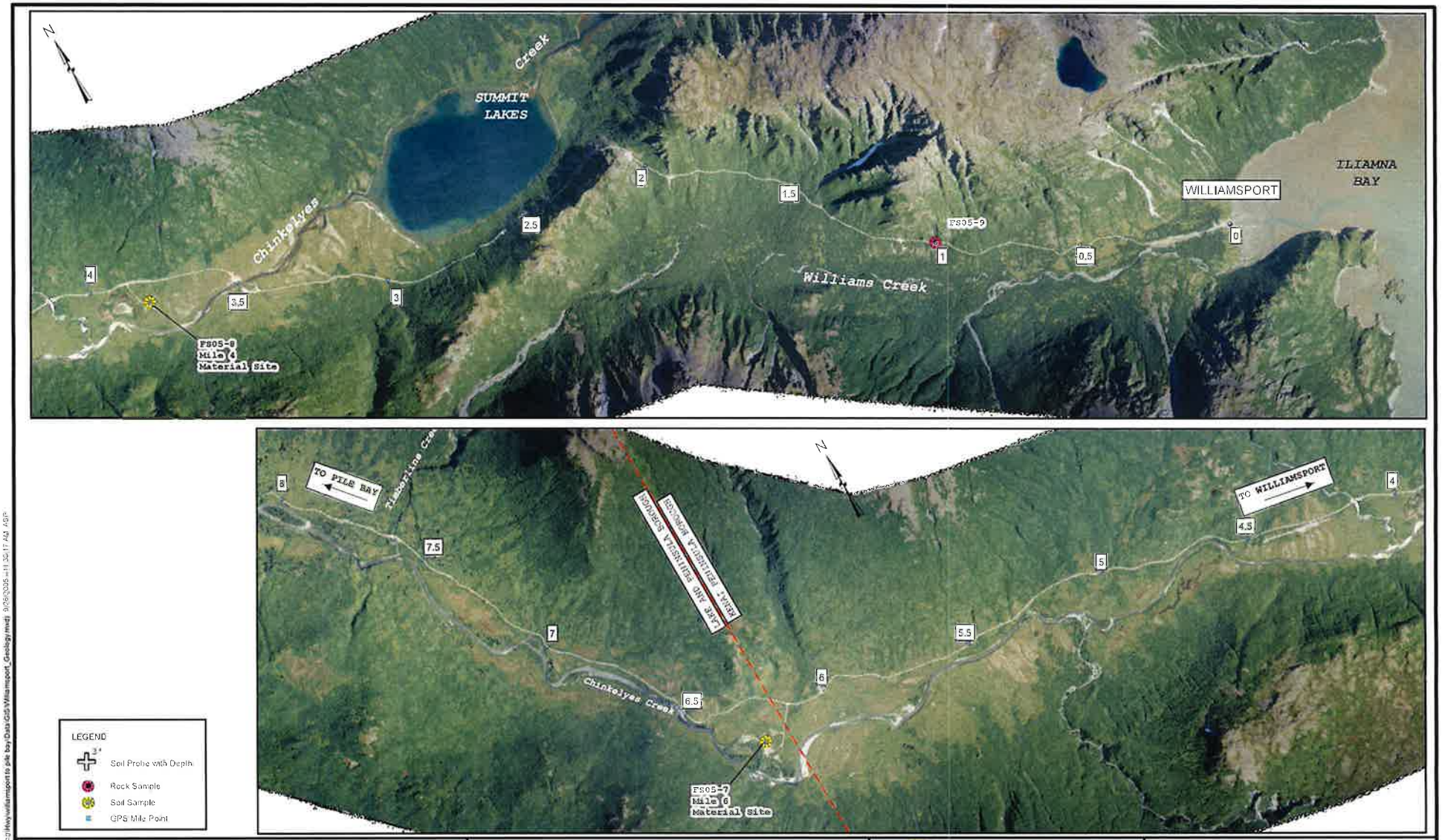


Image by AeroMap US; Date of Photography: 8/17/2002. Geologic field investigation was conducted in June, 2005. Mile Points along road alignment were created from data collected with a TrimbleGeoXT GPS unit with ArcPad software.

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION & PUBLIC FACILITIES
CENTRAL REGION MATERIALS

WILLIAMSPORT-PILE BAY ROAD
PROJECT No. 51651

PRINT DATE: SEPT. 26, 2005

M.P. 8 TO PILE BAY

Map Document: (H:\Proj\CReg\Hwy\williamsport to pile bay\Data\GIS\Williamsport_Geology.mxd) 9/26/2005 -- 11:30:17 AM -- ASP

APPENDIX B

ROCK SAMPLE LABORATORY REPORTS
SOIL SAMPLE LABORATORY REPORTS
PHOTO LOG

25-229K
9-97

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials Lab

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Williamsport to Pile Bay Rd. Repair PROJECT NO. 51651

SAMPLE OF: ITEM/SPECIFICATION NO.:
SAMPLED FROM: Rock Cut , Depth Surface
SOURCE/SUPPLIER: Centerline QUANTITY REPRESENTED
LOCATION/ADDRESS: SUBMITTED BY: C. Boeckman
EXAMINED FOR: LA, Deg & SpG

LABORATORY NO. 05A-0966
FIELD NO.: FS05-1
DATE SAMPLED: 06/22/2005
DATE RECEIVED: 06/24/2005
DATE COMPLETED: 06/27/2005
DATE REPORTED: 07/18/2005

Sieve Analysis

SIEVE	Lab	Specs.
4"		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
1/4"		
#4		
#8		
#10		
#16		
#30		
#40		
#50		
#80		
#100		
#200		
.02mm		
.002mm		

Fineness Modulus

LL		
PL		
PI		

	% Fracture	Lab	Specs
	Single Face		
	Double Face		
	Flat Elongated, 1:3		
	1:5		
	Uncompacted Voids of FA		
	Dry Unt. Wt. pcf		

		Coarse	Specs	Fine	Specs
	Specific Gravity, Bulk	2.65			
	Specific Gravity, SSD	2.67			
	Specific Gravity, App.	2.70			
AASHTO T 85	% Absorption	0.6			
	Lightweight Part., %				
	Friable Particles, %				
	Sulfate Sound, % Loss				
AASHTO T 96	L.A. Abrasion, % Loss	32			
	% Loss @ 100 revs				
	Nordic Abrasion				
ATM 313	Degradation	82			
	Sticks & Roots, %				
	Sand Equivalent				
	% Organic				

MORTAR MAKING PROPERTIES OF SAND
Organic Impurities [ ] Less [ ] More than 500 PPM
Compressive Strength, psi (if More than....)

	Control	Sample	Ratio	Spec.
7 Day				
28 Day				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

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

Signature Newton Bingham
Newton J. Bingham, PE
Regional Materials Engineer

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

25-229J
1-04

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials Lab

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Williamsport to Pile Bay Rd. Repair PROJECT NO. 51651

LABORATORY NO. 05A-0967

SAMPLE OF: _____ ITEM/SPECIFICATION NO.: _____

FIELD NO.: FS05-2

SAMPLED FROM: Stockpile "Sand Pit"

DATE SAMPLED: 06/22/2005

SOURCE/SUPPLIER: Centerline QUANTITY REPRESENTED _____

DATE RECEIVED: 06/24/2005

LOCATION/ADDRESS: _____ SUBMITTED BY: C. Boeckman

DATE COMPLETED: 07/05/2005

EXAMINED FOR: Gradation

DATE REPORTED: 07/18/2005

Sieve Analysis AASHTO T 27 & T 11

SIZE	Lab		Specs.
4"			
3"			
2"			
1 1/2"			
1"			
3/4"			
1/2"	100		
3/8"	99		
1/4"			
#4	96		
#8			
#10	83		
#16			
#30			
#40	23		
#50			
#80			
#100	4		
#200	2.1		
.02mm			
.002mm			

	Dry Prep	Wet Prep	Specs
LL			
PL			
PI			
% Fracture			
Single Face			
Double Face			
Flat Elongated, 1:3			
1:5			
% Organic			
pH			
% Nat. Moisture			
% Sticks & Roots			
Dry Unit Wt., pcf			

% +3"	
% Gravel	4
% Sand	94
% Silt	2
% Clay	
FSV	
AASHTO Class	
Unified Class	

Fineness Modulus
Sand Equivalent

	Coarse	Specs	Fine	Specs
Friable Particles				
Sulfate Soundness, % Loss				
L.A. Abrasion, Total % Loss				
% Loss @ 100 revs				
Degradation				
Nordic Abrasion, % Loss				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

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

Signature Newton Bingham
Newton J. Bingham, PE
Regional Materials Engineer

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

25-229K
9-97

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials Lab

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Williamsport to Pile Bay Rd. Repair PROJECT NO. 51651

SAMPLE OF: ITEM/SPECIFICATION NO.:
SAMPLED FROM: Rock Cut , Depth Surface
SOURCE/SUPPLIER: Centerline QUANTITY REPRESENTED
LOCATION/ADDRESS: SUBMITTED BY: C. Boeckman
EXAMINED FOR: LA, Deg, Sulfate Soundness & SpG

LABORATORY NO. 05A-0968
FIELD NO.: FS05-3
DATE SAMPLED: 06/22/2005
DATE RECEIVED: 06/24/2005
DATE COMPLETED: 07/15/2005
DATE REPORTED: 07/18/2005

Sieve Analysis

SIEVE	Lab	Specs.
4"		
3"		
2"		
1 1/2"		
1"		
3/4"		
1/2"		
3/8"		
1/4"		
#4		
#8		
#10		
#16		
#30		
#40		
#50		
#80		
#100		
#200		
.02mm		
.002mm		

Fineness Modulus

LL		
PL		
PI		

	% Fracture	Lab	Specs
	Single Face		
	Double Face		
	Flat Elongated, 1:3		
	1:5		
	Uncompacted Voids of FA		

Dry Unt. Wt ,pcf

		Coarse	Specs	Fine	Specs
	Specific Gravity, Bulk	2.68			
	Specific Gravity, SSD	2.70			
	Specific Gravity, App.	2.74			
AASHTO T 85	% Absorption	0.8			
	Lightweight Part., %				
	Friable Particles, %				
AASHTO T 104	Sulfate Sound, % Loss	0			
AASHTO T 96	L.A. Abrasion, % Loss	24			
	% Loss @ 100 revs				
	Nordic Abrasion				
ATM 313	Degradation	79			
	Sticks & Roots, %				
	Sand Equivalent				
	% Organic				

MORTAR MAKING PROPERTIES OF SAND
Organic Impurities [ ]Less [ ]More than 500 PPM
Compressive Strength, psi (if More than....)

	Control	Sample	Ratio	Spec.
7 Day				
28 Day				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

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

Signature Newton Bingham
Newton J. Bingham, PE
Regional Materials Engineer

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

25-229J
1-04

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials Lab

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Williamsport to Pile Bay Rd. Repair PROJECT NO. 51651

SAMPLE OF: _____ ITEM/SPECIFICATION NO.: _____
SAMPLED FROM: Road Surface MP 10.5 , Depth 0.0'-0.5'
SOURCE/SUPPLIER: Centerline QUANTITY REPRESENTED _____
LOCATION/ADDRESS: _____ SUBMITTED BY: C. Boeckman
EXAMINED FOR: Gradation, Organic & Moisture Content

LABORATORY NO. 05A-0969
FIELD NO.: FS05-4
DATE SAMPLED: 06/22/2005
DATE RECEIVED: 06/24/2005
DATE COMPLETED: 07/07/2005
DATE REPORTED: 07/18/2005

Sieve Analysis AASHTO T 27 & T 11

SIZE	Lab		Specs.
4"			
3"			
2"			
1 1/2"			
1"	100		
3/4"	98		
1/2"	93		
3/8"	89		
1/4"			
#4	78		
#8			
#10	65		
#16			
#30			
#40	41		
#50			
#80			
#100	25		
#200	19.0		
.02mm			
.002mm			

	Dry Prep	Wet Prep	Specs
LL			
PL			
PI			
% Fracture			
Single Face			
Double Face			
Flat Elongated, 1:3			
1:5			
% Organic (ATM 203)	4.7		
pH			
% Nat. Moisture (AASHTO T 265)	12.0		
% Sticks & Roots			
Dry Unit Wt, pcf			

% +3"	
% Gravel	22
% Sand	59
% Silt	19
% Clay	
FSV	
AASHTO Class	
Unified Class	

	Fineness Modulus	Sand Equivalent

	Coarse	Specs	Fine	Specs
Friable Particles				
Sulfate Soundness, % Loss				
L.A. Abrasion, Total % Loss				
% Loss @ 100 revs				
Degradation				
Nordic Abrasion, % Loss				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

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

Signature Newton Bingham
Newton J. Bingham, PE
Regional Materials Engineer

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

25-229I
1-04

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials Lab

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Williamsport to Pile Bay Rd. Repair PROJECT NO. 51651

SAMPLE OF: _____ ITEM/SPECIFICATION NO.: _____
SAMPLED FROM: Road Surface MP 10.7 , Depth 0.0'-0.5'
SOURCE/SUPPLIER: Centerline QUANTITY REPRESENTED _____
LOCATION/ADDRESS: _____ SUBMITTED BY: C. Boeckman
EXAMINED FOR: Classification & Moisture Content

LABORATORY NO. 05A-0970
FIELD NO.: FS05-5
DATE SAMPLED: 06/22/2005
DATE RECEIVED: 06/24/2005
DATE COMPLETED: 07/05/2005
DATE REPORTED: 07/18/2005

Sieve Analysis AASHTO T 27 & T 11

SIZE	Lab	Specs.
4"		
3"		
2"		
1 1/2"		
1"	100	
3/4"	99	
1/2"	97	
3/8"	95	
1/4"		
#4	86	
#8	77	
#10	75	
#16	66	
#30	55	
#40	47	
#50	40	
#80		
#100	29	
#200	21.8	
.02mm		
.002mm		
Fineness Modulus		
Sand Equivalent		

SAMPLE PREPARATION BY: AASHTO T 87 & T 248

		Dry Prep	Wet Prep	Specs
LL	ASTM D 4318	NV		
PL		NV		
PI		NP		
% Fracture				
Single Face				
Double Face				
Flat Elongated, 1:3				
1:5				
% Organic	ATM 203	4.0		
pH				
% Nat. Moisture	AASHTO T 265	11.9		
% Sticks & Roots				
Dry Unit Wt. pcf				
% +3"				
% Gravel		14		
% Sand		64		
% Silt		22		
% Clay				
FSV				
AASHTO Class		A-1-b(0)		
Unified Class	ASTM D 2487	SM		

Silty sand

	Coarse	Specs	Fine	Specs
Friable Particles				
Sulfate Soundness, % Loss				
L.A. Abrasion, Total % Loss				
% Loss @ 100 revs				
Degradation				
Nordic Abrasion, % Loss				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

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

Signature Newton Bingham
Newton J. Bingham, PE
Regional Materials Engineer

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

25-229J
1-04

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials Lab

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Williamsport to Pile Bay Rd. Repair PROJECT NO. 51651

SAMPLE OF: ITEM/SPECIFICATION NO.:
SAMPLED FROM: Road Surface MP 12.0 , Depth 0.0'-0.5'
SOURCE/SUPPLIER: Centerline QUANTITY REPRESENTED
LOCATION/ADDRESS: SUBMITTED BY: C. Boeckman
EXAMINED FOR: Gradation, Organic & Moisture Content

LABORATORY NO. 05A-0971
FIELD NO.: FS05-6
DATE SAMPLED: 06/22/2005
DATE RECEIVED: 06/24/2005
DATE COMPLETED: 07/05/2005
DATE REPORTED: 07/18/2005

Sieve Analysis AASHTO T 27 & T 11

SIZE	Lab		Specs.
4"			
3"			
2"			
1 1/2"			
1"	100		
3/4"	97		
1/2"	94		
3/8"	92		
1/4"			
#4	84		
#8			
#10	74		
#16			
#30			
#40	51		
#50			
#80			
#100	32		
#200	24.7		
.02mm			
.002mm			
Fineness Modulus			
Sand Equivalent			

		Dry Prep	Wet Prep	Specs
	LL			
	PL			
	PI			
	% Fracture			
	Single Face			
	Double Face			
	Flat Elongated, 1:3			
	1:5			
ATM 203	% Organic	4.3		
	pH			
AASHTO T 265	% Nat. Moisture	17.8		
	% Sticks & Roots			
	Dry Unit Wt. pcf			

% +3"	
% Gravel	16
% Sand	59
% Silt	25
% Clay	
FSV	
AASHTO Class	
Unified Class	

	Coarse	Specs	Fine	Specs
Friable Particles				
Sulfate Soundness, % Loss				
L.A. Abrasion, Total % Loss				
% Loss @ 100 revs				
Degradation				
Nordic Abrasion, % Loss				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

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

Signature Newton Bingham
Newton J. Bingham, PE
Regional Materials Engineer

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

25-229K
9-97

STATE OF ALASKA
Department of Transportation & Public Facilities
Central Materials Lab

5750 EAST TUDOR RD, ANCHORAGE AK 99507
Phone (907)-269-6200 FAX (907) 269-6201

Laboratory Report

PRECONSTRUCTION

PROJECT NAME: Williamsport to Pile Bay Rd. Repair PROJECT NO. 51651

SAMPLE OF: ITEM/SPECIFICATION NO.:
SAMPLED FROM: Stockpile @ Pit, MP 6.0
SOURCE/SUPPLIER: Centerline QUANTITY REPRESENTED
LOCATION/ADDRESS: SUBMITTED BY: C. Boeckman
EXAMINED FOR: Gradation, LA, Deg & SpG

LABORATORY NO. 05A-0972
FIELD NO.: FS05-7
DATE SAMPLED: 06/22/2005
DATE RECEIVED: 06/24/2005
DATE COMPLETED: 07/07/2005
DATE REPORTED: 07/18/2005

Sieve Analysis AASHTO T 27 & T 11

SIEVE	Lab	Specs.
4"	100	
3"	69	
2"	57	
1 1/2"	51	
1"	43	
3/4"	40	
1/2"	36	
3/8"	33	
1/4"	29	
#4	26	
#8	21	
#10	20	
#16	15	
#30	10	
#40	8	
#50	5	
#80		
#100	2	
#200	1.4	
.02mm		
.002mm		

Fineness Modulus

LL	
PL	
PI	

% Fracture	Lab	Specs
Single Face		
Double Face		
Flat Elongated, 1:3		
1:5		
Uncompacted Voids of FA		

Dry Unt. Wt ,pcf

		Coarse	Specs	Fine	Specs
Specific Gravity, Bulk		2.81			
Specific Gravity, SSD		2.84			
Specific Gravity, App.		2.87			
% Absorption	AASHTO T 85	0.7			
Lightweight Part., %					
Friable Particles, %					
Sulfate Sound, % Loss					
L.A. Abrasion, % Loss	AASHTO T 96	34			
% Loss @ 100 revs					
Nordic Abrasion					
Degradation	ATM 313	81			
Sticks & Roots, %					
Sand Equivalent					
% Organic					

MORTAR MAKING PROPERTIES OF SAND
Organic Impurities [ ]less [ ]More than 500 PPM
Compressive Strength, psi (if More than....)

	Control	Sample	Ratio	Spec.
7 Day				
28 Day				

Remarks:

When Processed to conform to grading requirements, this material is satisfactory for:

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

Signature Newton Bingham
Newton J. Bingham, PE
Regional Materials Engineer

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