

Memo To: Aaron Banks, C.P.G. 2925-5.3
R&M Consultants, Inc.

From: Ben George, P.E., C.E.G.
Landslide Technology

Date: September 1, 2021

**Subject: Phase 2 Test Pit and Laboratory Testing Results
Haines Beach Road Landslide – NTP2 Task 5.3
PSA Agreement No. 25213018, IRIS No. SDRER00317**

This memo has been prepared to provide results of test pit explorations and associated laboratory testing conducted as part of the Haines Beach Road Landslide project Notice-to-Proceed (NTP) 2 Task 5.3 Subsurface Investigations. We have included some background information, test pit results and summary logs, and laboratory testing results. This is an interim deliverable. These results will be compiled into an updated Findings Report that will be prepared as part of Task 5.5.

BACKGROUND

A Senior Associate Engineer from Landslide Technology (LT) was on-site from June 23 to 29, 2021 to coordinate the second phase (Task 5.3) test pit explorations, log subsurface materials, and collect representative samples. Test pits were completed at locations adjacent to the interim alignment of Beach Road, at locations on the landslide at higher elevations, and at locations east and west of the slide limits. Test pits were conducted by Southeast Road Builders with use of a CAT 320L excavator. They also provided a spotter during all exploration activities. Grab samples were collected from a majority of the test pits and laboratory testing was conducted on a portion of the samples. Laboratory testing was conducted by R&M Consultants, Inc. in their Anchorage, Alaska office.

Note, test pits completed during the first phase (winter reconnaissance, Task 2) are not discussed herein. Details of TP-1 through TP-4 can be found in the *Winter Reconnaissance – Preliminary Findings Report* dated April 8, 2021.

TEST PIT RESULTS

A total of 23 test pits were conducted in June 2021. Seven pits were located adjacent to the upslope (south) side of the interim Beach Road alignment (TP-5 through TP-11) and one pit was located downslope (north) of the road (TP-25). Thirteen pits were located on the slide mass further upslope of Beach Road (TP-12 through TP-24) and two pits were located outside of the slide extents approximately midway up the landslide (TP-26 and TP-27). Test pit locations are shown on Figure 1 and summary logs are provided in Attachment A. A summary of encountered conditions and sampling locations is provided in Table 1. Details of the test pits are provided below.



Test Pits Adjacent to the Interim Road

The test pits immediately upslope (south) of the road included TP-5 through TP-11. These pits encountered a range of slide debris from 2 to 12 feet in depth with the thicker deposits located near the west central side of the landslide. Slide debris consisted of loose to medium dense, silty (micaceous) sand with varying levels of gravel- to boulder-sized rock fragments and woody debris. Generally loose organic topsoil materials were encountered below the slide debris. At some locations a stiff to very stiff, gray, slightly sandy, slightly clayey silt was encountered below the slide debris and organic topsoil horizon. At other locations a dark gray silty sand was encountered. These materials are interpreted as either glaciolacustrine/marine sediments or weathered in-place ultramafics. Interpreted in-place bedrock was encountered in all of the pits upslope of the interim road. When observable, bedrock was hard (R4), gray to black, slightly weathered ultramafics. Groundwater was encountered in all of the pits upslope except for TP-9 and TP-11. Groundwater varied from a depth of 5 feet below ground surface to surficial flow.

TP-25 was conducted downslope (north) of the road near the middle of the slide. This pit encountered 5 feet of slide debris, 1-foot of dense gravel driveway surfacing material underlain by 4 feet of fill and an old layer of corduroy woody debris.

Landslide Body Test Pits

Test pits TP-12 to TP-24 were conducted on the slide body from elevation 170 to 400 feet. Slide debris thickness generally averaged approximately 5 feet, with several locations on the order of 12 to 16 feet thick. Slide debris materials were consistent with those described above. Interpreted in-place bedrock consisted of hard (R4), moderately weathered ultramafics. Groundwater was encountered in several of the pits from 2 to 9 feet in depth. Surficial water flow was occurring at several locations as well. Table 1 details the locations of groundwater and surficial water flow.

Test Pits East and West of the Landslide

The test pits off of the slide body did not meet refusal, but were excavated to the full reach of the CAT 320L excavator. In general, the two test pits encountered a thin layer (1-2 feet) of organic topsoil underlain by medium dense, brown silty sand with occasional boulders and scattered cobble-sized rock blocks. TP-27 (west of the landslide) encountered an organic clayey silt layer approximately 12 feet below ground surface. This was interpreted to have been a paleo soil horizon.

LABORATORY TESTING RESULTS

Several representative samples were tested for moisture content, Atterberg limits, and gradations including select hydrometers. A summary of the testing results is provided in Table 2. Detailed results are provided in Attachment B. Moisture content testing was conducted in general accordance with ASTM D 2216. Atterberg limits were conducted in general accordance with ASTM D 4318. Gradations including hydrometer testing were conducted in general accordance with ASTM D 422.



Table 1: Summary of Test Pit Observations

| Test Pit No. | Depth to Bottom of Slide Debris (ft bgs) | Depth to Refusal / Top of Rock (ft bgs) | Depth to Seep / Water flow (ft bgs) | Flow Rate Estimate (gpm) | Sample Location (ft bgs) |
|--------------|--|---|-------------------------------------|--------------------------|--------------------------|
| TP-5 | 8 | 10 | 2 | | 0-8, 9 |
| TP-6 | 12 | 13 | 3 | | |
| TP-7 | 12 | 17 | 4 | < 1 | 12 |
| TP-8 | 5 | 5 | 5 | | 5 |
| TP-9 | 3.5 | 8 | - | | 3, 8 |
| TP-10 | 2 | 5 | Surface inflow | | |
| TP-11 | 2 | 9 | - | | 2 |
| TP-12 | 1 | 4 | - | | 2 |
| TP-13 | 2 | 3 | - | | |
| TP-14 | 3 | 9 | - | | 3-9 |
| TP-15 | 3 | 9 | 2 | < 1 | |
| TP-16 | 2 | 9 | 9 | < 1 | 6 |
| TP-17 | 7 | 12 | Surface inflow | 10-15 | |
| TP-18 | 5 | 8 | - | | 5 |
| TP-19 | 5 | 12 | - | | 5-12 |
| TP-20 | 6 | 18 (max reach) | Surface inflow | 3 | |
| TP-21 | 16 | 16 (caving hole) | 2 | < 1 | |
| TP-22 | 12 | 16 | 5 | 1-2 | 0-5 |
| TP-23 | 3 | 7 | - | | 5 |
| TP-24 | 3 | 12 | Surface inflow | 2 | 5 |
| TP-25 | 5 | 12 (stopped) | - | | |
| TP-26 | Off slide | 18 (max reach) | - | | 7, 12 |
| TP-27 | Off slide | 18 (max reach) | 18 | < 1 | 5, 10, 12-12.5, 13 |



Table 2: Summary of Laboratory Testing

| Test Pit No. | Sample Depth (ft) | Moisture Content (%) | Gradation | Gradation with Hydrometer | Atterberg Limits (%) | | |
|--------------|-------------------|----------------------|-----------|---------------------------|----------------------|----|----|
| | | | | | LL | PL | PI |
| TP-5 | 0-8 | 20 | | | | | |
| | 9 | 19.1 | | * | 21 | 16 | 5 |
| TP-7 | 12 | 14.8 | * | | | | |
| TP-8 | 5 | 24.1 | * | | | | |
| TP-9 | 3 | 14.1 | | * | 21 | 16 | 5 |
| | 8 | 13.8 | | * | 17 | 16 | 1 |
| TP-11 | 2 | 15.3 | | | | | |
| TP-12 | 2 | 9.9 | | | | | |
| TP-14 | 3-9 | 9.5 | * | | | | |
| TP-16 | 6 | 8.8 | * | | | | |
| TP-18 | 5 | 10.9 | * | | | | |
| TP-19 | 5-12 | 9.8 | * | | | | |
| TP-22 | 0-5 | 15.9 | * | | | | |
| TP-23 | 5 | 11.4 | * | | | | |
| TP-24 | 5 | 12.1 | * | | | | |
| TP-26 | 7 | 10.4 | | | | | |
| | 12 | 12.8 | * | | | | |
| TP-27 | 5 | 6.0 | | | | | |
| | 10 | 17.7 | * | | | | |
| | 12-12.5 | 69.7 | | * | N/A | NP | NP |
| | 13 | 13.8 | * | | | | |

* See Attachment B for gradation and hydrometer results.



LIMITATIONS IN THE USE AND INTERPRETATION OF THIS GEOTECHNICAL REPORT

Our professional services were performed, our findings obtained, and our recommendations prepared in accordance with generally accepted engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

The geotechnical report was prepared for the use of the Owner in the design of the subject facility and should be made available to potential contractors and/or the Contractor for information on factual data only. This report should not be used for contractual purposes as a warranty of interpreted subsurface conditions such as those indicated by the interpretive boring and test pit logs, cross-sections, or discussion of subsurface conditions contained herein.

The analyses, conclusions and recommendations contained in the report are based on site conditions as they presently exist and assume that the exploratory borings, test pits, and/or probes are representative of the subsurface conditions of the site. If, during construction, subsurface conditions are found which are significantly different from those observed in the exploratory borings and test pits, or assumed to exist in the excavations, we should be advised at once so that we can review these conditions and reconsider our recommendations where necessary. If there is a substantial lapse of time between the submission of this report and the start of work at the site, or if conditions have changed due to natural causes or construction operations at or adjacent to the site, this report should be reviewed to determine the applicability of the conclusions and recommendations considering the changed conditions and time lapse.

The Summary Boring Logs are our opinion of the subsurface conditions revealed by periodic sampling of the ground as the borings progressed. The soil descriptions and interfaces between strata are interpretive and actual changes may be gradual.

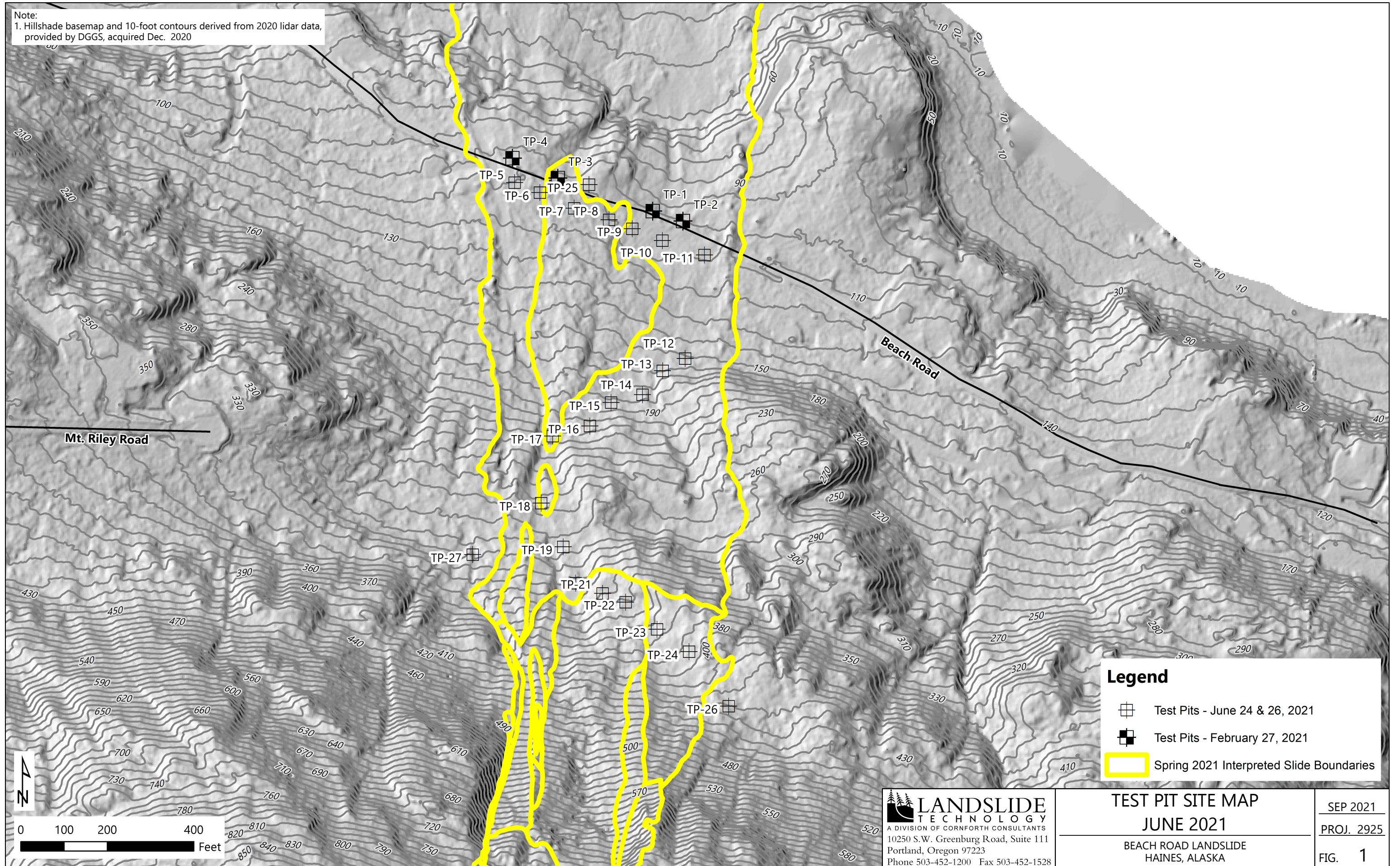
The boring logs and related information depict subsurface conditions only at these specific locations and at the particular time designated on the logs. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the soil conditions at these boring locations.

Groundwater levels often vary seasonally. Groundwater levels reported on the boring logs or in the body of the report are factual data only for the dates shown.

Unanticipated soil conditions are commonly encountered on construction sites and cannot be fully anticipated by merely taking soil samples, borings or test pits. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project. It is recommended that the Owner consider providing a contingency fund to accommodate such potential extra costs.

This firm cannot be responsible for any deviation from the intent of this report including, but not restricted to, any changes to the scheduled time of construction, the nature of the project or the specific construction methods or means indicated in this report; nor can our firm be responsible for any construction activity on sites other than the specific site referred to in this report.

Note:
1. Hillshade basemap and 10-foot contours derived from 2020 lidar data, provided by DGGs, acquired Dec. 2020



Legend

- ☒ Test Pits - June 24 & 26, 2021
- Test Pits - February 27, 2021
- ▭ Spring 2021 Interpreted Slide Boundaries

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TEST PIT SITE MAP
JUNE 2021
BEACH ROAD LANDSLIDE
HAINES, ALASKA

SEP 2021
PROJ. 2925
FIG. 1



ATTACHMENT A
Test Pit Summary Logs

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: ~Sta. 17+90, 24 ft Right
 SAMPLING METHODS:
 Grab
 WATER LEVEL: Seep at 2 feet

TEST PIT NO.: TP-5
 START TIME: 0600 FINISH TIME: 0630
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 Downed trees intermixed with Slide Debris.



0
2
4
6
8
10
12
14
16
18
20
22
24
26
28

0-8 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to boulder-sized rock fragments up to 8 feet, scattered woody debris and roots, wet (SLIDE DEBRIS)

8 - 9 feet: LOOSE, dark brown, ORGANICS; wet (ORIGINAL GROUND)

9-10 feet: VERY STIFF, gray, slightly sandy, slightly clayey to clayey SILT; moist (GLASCIOLACUSTRINE/MARINE SEDIMENTS)

10-11 feet: HARD (R4), dark gray, moderately weathered, Ultramafic Rock

Notes:
 - Refusal assumed to be on bedrock.
 - Water was flowing into the pit at approximately 2 feet.
 - Water was flowing on the surface approximately 10 feet to the west at a flow rate of approximately 20 gpm.
 - Sample from 0-8 feet and at 9 feet.

FIG.

Photo not to scale

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LOCATION OF TEST PIT
Beach Road, Haines, AK
DATUM:
ELEVATION:

BY: BAG DATE: 6/24/21
CK: DATE:
EQUIPMENT & CONTRACTOR:
Cat 320L, SE Road Builders
WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
LOCATION: ~Sta. 18+60, 25 ft Right
SAMPLING METHODS:
None
WATER LEVEL: Seep at 2 feet

TEST PIT NO.: TP-6
START TIME: 0635
FINISH TIME: 0655
DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
ELEV. IN FEET

SURFACE CONDITIONS:
Scattered tree limbs, numerous boulders up to 6 feet max dimension.



0-12 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to boulder-sized rock fragments up to 8 feet, scattered woody debris and roots, wet (SLIDE DEBRIS)

11-12 feet: LOOSE, dark brown, ORGANICS; wet (ORIGINAL GROUND)

12-13 feet: VERY STIFF, gray, slightly sandy, slightly clayey to clayey SILT; moist (GLASCIOLACUSTRINE/MARINE SEDIMENTS)

13 feet: HARD (R4), dark gray, moderately weathered, Ultramafic Rock

Notes:
- Refusal assumed to be on bedrock.
- Water was flowing into the pit at approximately 2 feet.

FIG.

Photo not to scale

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LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: ~Sta. 19+43, 32 ft Right
 SAMPLING METHODS:
 Grab
 WATER LEVEL: Seep at 4 feet

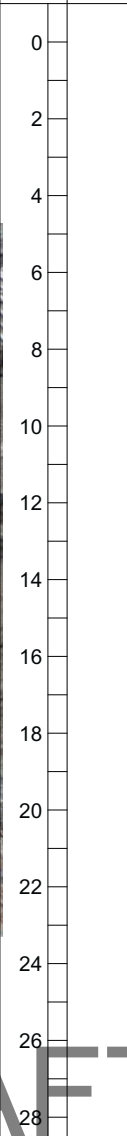
TEST PIT NO.: TP-7
 START TIME: 0700 FINISH TIME: 0722
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 Scattered tree limbs, numerous boulders up to 3 feet max dimension.



0-12 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to boulder-sized rock fragments up to 8 feet, scattered woody debris and roots, wet (SLIDE DEBRIS)

12-17 feet: LOOSE, dark gray, silty SAND; micaceous (biotite) grains, (WEATHERED ULTRAMAFICS)

17 feet: HARD (R4), dark gray, moderately weathered, Ultramafic Rock

Notes:
 - Refusal assumed to be on bedrock.
 - Water seeping into the pit at approximately 4 feet.
 - Sample at 12 feet.

Photo not to scale

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FIG.

LOCATION OF TEST PIT
Beach Road, Haines, AK
DATUM:
ELEVATION:

BY: BAG DATE: 6/24/21
CK: DATE:
EQUIPMENT & CONTRACTOR:
Cat 320L, SE Road Builders
WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
LOCATION: ~Sta. 20+30, 32 ft Right
SAMPLING METHODS:
Grab
WATER LEVEL: Seep at 5 feet

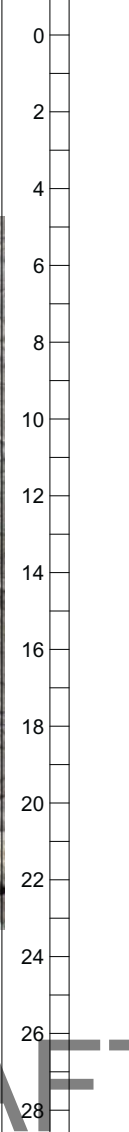
TEST PIT NO.: TP-8
START TIME: 0733
FINISH TIME: 0745
DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
ELEV. IN FEET

SURFACE CONDITIONS:
Numerous boulders up to 3 feet max dimension.



0-5 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments; scattered woody debris and roots, moist (SLIDE DEBRIS)

5 feet: HARD (R4), dark gray, moderately weathered, Ultramafic Rock; biotite rich

- Notes:
- Refusal assumed to be on bedrock.
 - Water seeping into the pit at approximately 5 feet.
 - Sample at 5 feet.

Photo not to scale

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FIG.

LOCATION OF TEST PIT
Beach Road, Haines, AK
DATUM:
ELEVATION:

BY: BAG DATE: 6/24/21
CK: DATE:
EQUIPMENT & CONTRACTOR:
Cat 320L, SE Road Builders
WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
LOCATION: ~Sta. 20+82, 32 ft Right
SAMPLING METHODS:
Grab
WATER LEVEL:

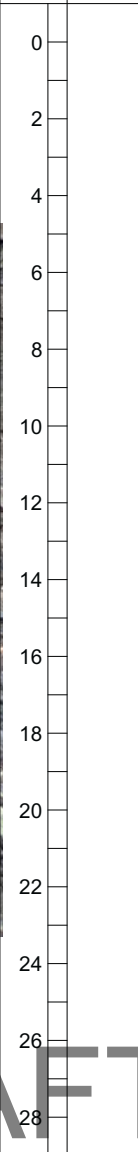
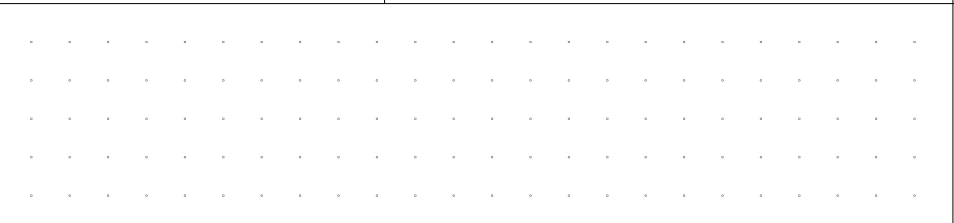
TEST PIT NO.: TP-9
START TIME: 0750
FINISH TIME: 0803
DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
ELEV. IN FEET

SURFACE CONDITIONS:
Numerous boulders up to 3 feet max dimension.



0-3.5 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to boulder-sized rock fragments, scattered woody debris and roots, wet (SLIDE DEBRIS)

3.5-8 feet: VERY STIFF, gray, slightly sandy, slightly clayey to clayey SILT; moist (GLASCIOLACUSTRINE/MARINE SEDIMENTS)

8 feet: HARD (R4), dark gray, moderately weathered, Ultramafic Rock

Notes:
- Refusal assumed to be on bedrock.
- Samples at 3 and 8 feet.

FIG.

Photo not to scale

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LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: ~Sta. 21+55, 34 ft Right
 SAMPLING METHODS:
 None
 WATER LEVEL:

TEST PIT NO.: TP-10
 START TIME: 0810
 FINISH TIME: 0818
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 Standing water, silty SAND with scattered gravel- and cobble-sized



rock fragments
 0-2 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, scattered woody debris and roots, wet (SLIDE DEBRIS)
 2-4 feet: VERY STIFF, gray, slightly sandy, slightly clayey to clayey SILT; moist (GLASCIOLACUSTRINE/MARINE SEDIMENTS)
 4-5 feet: HARD (R4), dark gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
 - Refusal assumed to be on bedrock.
 - Water flowing into pit from the surface.

Photo not to scale

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FIG.

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: ~Sta. 22+67, 27 ft Right
 SAMPLING METHODS:
 Grab
 WATER LEVEL:

TEST PIT NO.: TP-11
 START TIME: 0825 FINISH TIME: 0836
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 5-6 foot thick layer of 2-3 foot diameter downed trees, standing water



0
 2
 4
 6
 8
 10
 12
 14
 16
 18
 20
 22
 24
 26
 28

Notes:
 - Refusal assumed to be on bedrock.
 - Sample at 2 feet.

FIG.

Photo not to scale

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LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Slide Mass
 SAMPLING METHODS:
 Grab
 WATER LEVEL:

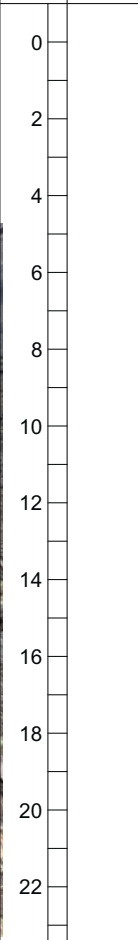
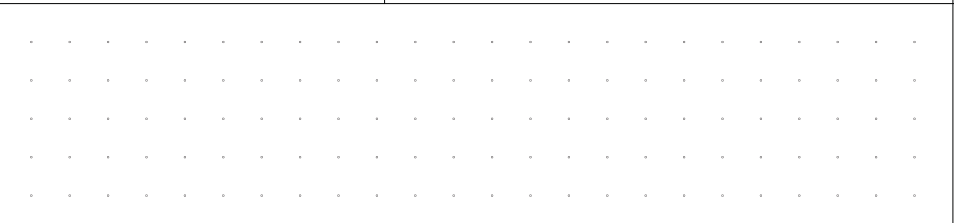
TEST PIT NO.: TP-12
 START TIME: 0852
 DATE: 6/24/21
 FINISH TIME: 0900
 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 Numerous woody debris with logs up to 2 foot in diameter



0-2 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, moist (SLIDE DEBRIS)

2-4 feet: LOOSE, brown and gray, silty SAND; micaceous (WEATHERED TOP OF ROCK)

4 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
 - Refusal assumed to be on bedrock.
 - Sample at 2 feet.



Photo not to scale

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FIG.

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Slide Mass
 SAMPLING METHODS:
 None
 WATER LEVEL: Surface

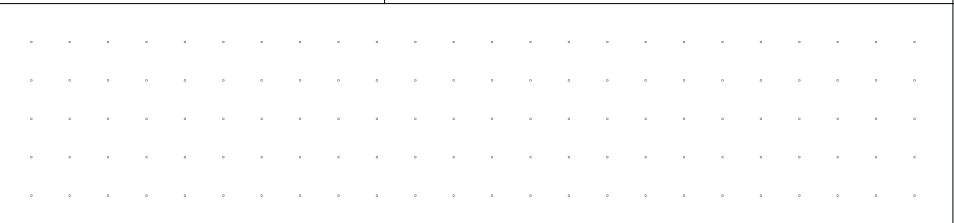
TEST PIT NO.: TP-13
 START TIME: 0904
 FINISH TIME: 0910
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 LOOSE, brown, silty SAND with numerous cobbles (SLIDE DEBRIS)



0
2
4
6
8
10
12
14
16
18
20
22
24
26
28

0-2 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, moist (SLIDE DEBRIS)

2-5 feet: LOOSE, brown and gray, silty SAND; micaceous (WEATHERED TOP OF ROCK)

5 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
 - Refusal assumed to be on bedrock.
 - Water running into pit from the surface.

FIG.

Photo not to scale

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LOCATION OF TEST PIT
Beach Road, Haines, AK
DATUM:
ELEVATION:

BY: BAG DATE: 6/24/21
CK: DATE:
EQUIPMENT & CONTRACTOR:
Cat 320L, SE Road Builders
WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
LOCATION: Slide Mass
SAMPLING METHODS:
Grab
WATER LEVEL:

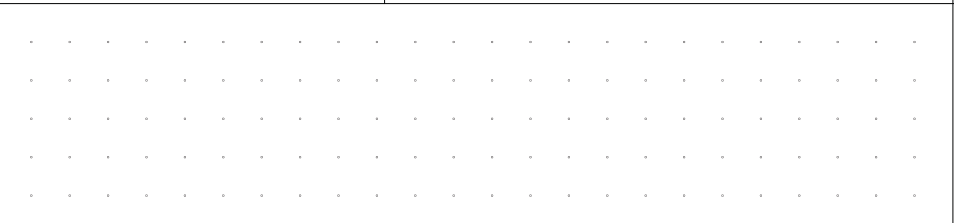
TEST PIT NO.: TP-14
START TIME: 0911
FINISH TIME: 0916
DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
ELEV. IN FEET

SURFACE CONDITIONS:
LOOSE, brown, silty SAND with scattered woody debris (SLIDE DEBRIS)



0
2
4
6
8
10
12
14
16
18
20
22
24
26
28

(DEBRIS)
0-3 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, moist (SLIDE DEBRIS)
3-9 feet: DENSE, brown and gray, silty SAND; micaceous (WEATHERED TOP OF ROCK)
9 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
- Refusal assumed to be on bedrock.
- Sample from 3 to 9 feet.



Photo not to scale

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FIG.

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Slide Mass
 SAMPLING METHODS:
 None
 WATER LEVEL: Seepage at 2 feet.

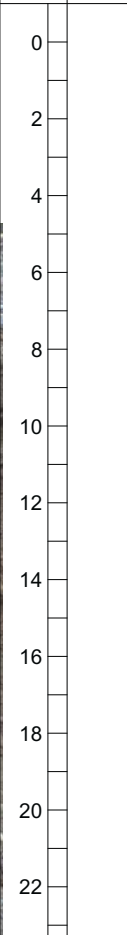
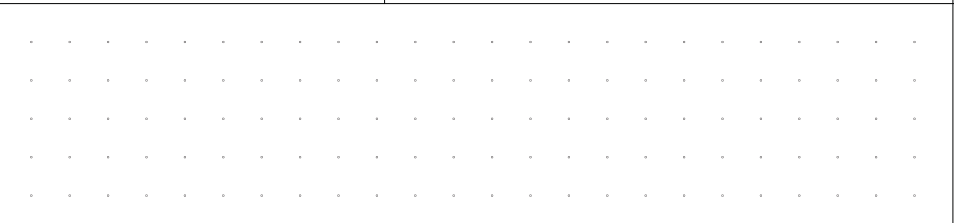
TEST PIT NO.: TP-15
 START TIME: 0920 FINISH TIME: 0930
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 LOOSE, brown, silty SAND (SLIDE DEBRIS)



0-3 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, moist (SLIDE DEBRIS)

3-9 feet: DENSE, brown grading into gray, silty SAND; micaceous (WEATHERED TOP OF ROCK)

9 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
 - Refusal assumed to be on bedrock.
 - Water flowing < 1 gpm at 2 feet.

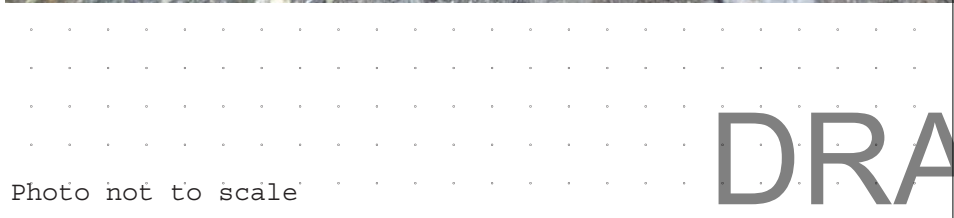


Photo not to scale

DRAFT

FIG.

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Slide Mass
 SAMPLING METHODS:
 Grab
 WATER LEVEL: Seepage at 9 feet.

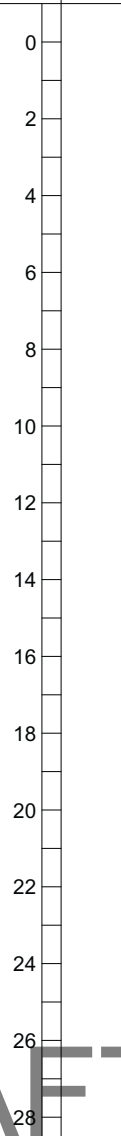
TEST PIT NO.: TP-16
 START TIME: 0936 FINISH TIME: 0950
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 LOOSE, silty SAND with boulders up to 2 feet (SLIDE DEBRIS)



20 foot boulder adjacent to test pit

0-2 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, moist (SLIDE DEBRIS)

2-10 feet: DENSE, brown and gray, silty SAND; micaceous (WEATHERED TOP OF ROCK)

10 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
 - Refusal assumed to be on bedrock.
 - Water inflow at 9 feet at < 1 gpm.
 - Sampled at 6 feet.

FIG.

Photo not to scale

DRAFT

LOCATION OF TEST PIT
Beach Road, Haines, AK
DATUM:
ELEVATION:

BY: BAG DATE: 6/24/21
CK: DATE:
EQUIPMENT & CONTRACTOR:
Cat 320L, SE Road Builders
WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
LOCATION: Slide Mass
SAMPLING METHODS:
None
WATER LEVEL: Flow from the surface

TEST PIT NO.: TP-17
START TIME: 0955
FINISH TIME: 1006
DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
ELEV. IN FEET

SURFACE CONDITIONS:
LOOSE, silty SAND with boulders up to 10 feet (SLIDE DEBRIS)



0
2
4
6
8
10
12
14
16
18
20
22
24
26
28

Water flowing on the surface at 10-15 gpm adjacent to pit.

0-7 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, wet (SLIDE DEBRIS)

7-12 feet: DENSE, brown and gray, silty SAND; wet, micaceous (WEATHERED TOP OF ROCK)

12 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
- Refusal assumed to be on bedrock.

FIG.

Photo not to scale

DRAFT

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Slide Mass
 SAMPLING METHODS:
 Grab
 WATER LEVEL: None

TEST PIT NO.: TP-18
 START TIME: 1010
 FINISH TIME: 1025
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 LOOSE, silty SAND with boulders up to 5 feet (SLIDE DEBRIS)



0
2
4
6
8
10
12
14
16
18
20
22
24
26
28

0-5 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, wet (SLIDE DEBRIS)

5-8 feet: DENSE, brown and gray, silty SAND; moist, micaceous (WEATHERED TOP OF ROCK)

8 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
 - Refusal assumed to be on bedrock.
 - Sample at 5 feet.

Photo not to scale

DRAFT

FIG.

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Slide Mass
 SAMPLING METHODS:
 Grab
 WATER LEVEL: None

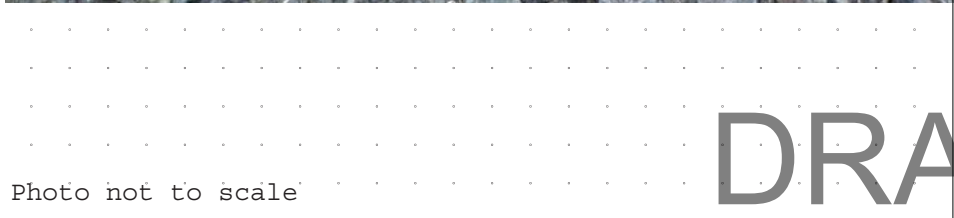
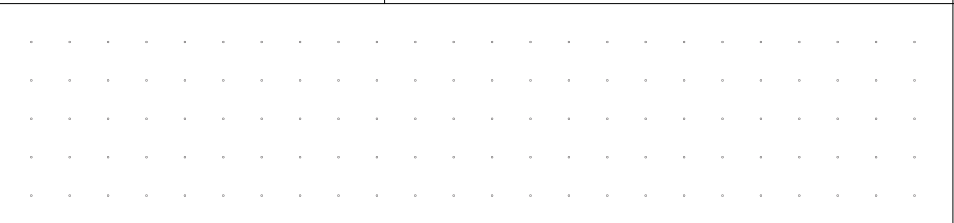
TEST PIT NO.: TP-19
 START TIME: 1030
 FINISH TIME: 1040
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 LOOSE, silty SAND with boulders up to 5 feet (SLIDE DEBRIS)



0-5 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, moist (SLIDE DEBRIS)

5-12 feet: DENSE, brown and gray, silty SAND; moist, micaceous (WEATHERED TOP OF ROCK)

12 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
 - Refusal assumed to be on bedrock.
 - Sample at 5-12 feet.

FIG.

Photo not to scale

DRAFT

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Slide Mass
 SAMPLING METHODS:
 None
 WATER LEVEL: Surface flow

TEST PIT NO.: TP-20
 START TIME: 1049
 FINISH TIME: 1105
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 LOOSE, silty SAND with running water on surface (SLIDE DEBRIS)



0
 2
 4
 6
 8
 10
 12
 14
 16
 18
 20
 22
 24
 26
 28

0-6 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, wet (SLIDE DEBRIS)

6-18 feet: DENSE, brown and gray, silty SAND; moist, micaceous (WEATHERED TOP OF ROCK)
 ... numerous cobble-sized rock fragments starting at 10 feet

Notes:
 - Maximum reach of excavator at 18 feet.
 - Water flowing at ~3 gpm.

FIG.

Photo not to scale

DRAFT

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Slide Mass
 SAMPLING METHODS:
 None
 WATER LEVEL: Seep at 2 feet.

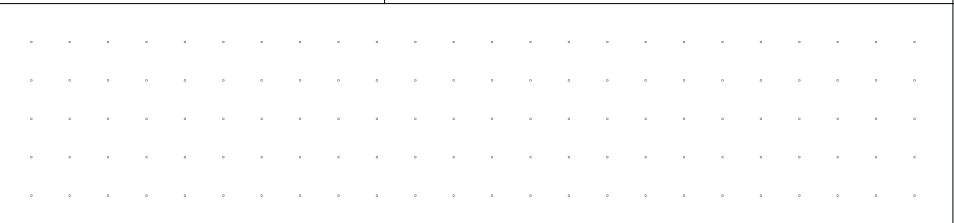
TEST PIT NO.: TP-21
 START TIME: 1115
 FINISH TIME: 1131
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 LOOSE, silty SAND with boulders up to 10 feet (SLIDE DEBRIS)



0
2
4
6
8
10
12
14
16
18
20
22
24
26
28

0-16 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, wet (SLIDE DEBRIS)

Notes:
 - Abandoned hole due to caving.
 - Water flow ~ 1 gpm.

FIG.

Photo not to scale

DRAFT

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Slide Mass
 SAMPLING METHODS:
 Grab
 WATER LEVEL: Seepage at 5 feet

TEST PIT NO.: TP-22
 START TIME: 1148
 FINISH TIME: 1207
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE POCKET PENETROMETER
 THIN WALL SAMPLE TORVANE

DEPTH IN FEET ELEV. IN FEET

SURFACE CONDITIONS:
 LOOSE, silty SAND with boulders up to 15 feet and logs up to 3 feet



0
 2
 4
 6
 8
 10
 12
 14
 16
 18
 20
 22
 24
 26
 28

(SLIDE DEBRIS)
 0-5 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, moist (SLIDE DEBRIS)
 12-16 feet: DENSE, brown and gray, silty SAND; moist, woody debris at 12 feet, micaceous (WEATHERED TOP OF ROCK)
 16 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
 - Refusal assumed to be on bedrock.
 - Sample at 0-5 feet.
 - Water flow ~1-2 gpm.



Photo not to scale

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FIG.

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Slide Mass
 SAMPLING METHODS:
 Grab
 WATER LEVEL: None

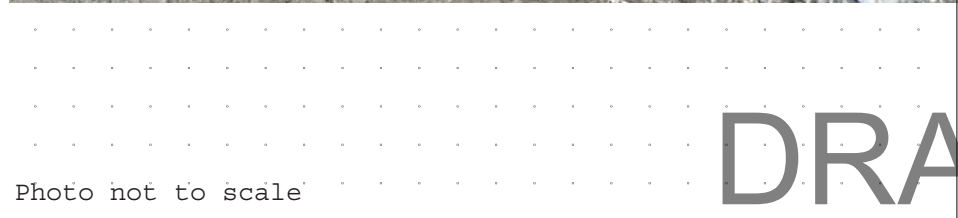
TEST PIT NO.: TP-23
 START TIME: 1220
 FINISH TIME: 1231
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 LOOSE, silty SAND with logs up to 3 feet (SLIDE DEBRIS)



0
 2
 4
 6
 8
 10
 12
 14
 16
 18
 20
 22
 24
 26
 28

0-3 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, moist (SLIDE DEBRIS)
 3-7 feet: DENSE, brown and gray, silty SAND; moist, micaceous, roots at 3 feet (WEATHERED TOP OF ROCK)
 7 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
 - Refusal assumed to be on bedrock.
 - Sample at 5 feet.
 - Water flow ~1-2 gpm.

FIG.

Photo not to scale

DRAFT

LOCATION OF TEST PIT
Beach Road, Haines, AK
DATUM:
ELEVATION:

BY: BAG DATE: 6/24/21
CK: DATE:
EQUIPMENT & CONTRACTOR:
Cat 320L, SE Road Builders
WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
LOCATION: Slide Mass
SAMPLING METHODS:
Grab
WATER LEVEL: Surface water flow

TEST PIT NO.: TP-24
START TIME: 1240
FINISH TIME: 1250
DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
ELEV. IN FEET

SURFACE CONDITIONS:
LOOSE, silty SAND with boulders up to 6 feet (SLIDE DEBRIS)



0
2
4
6
8
10
12
14
16
18
20
22
24
26
28

0-3 feet: LOOSE, brown, silty SAND; numerous angular, gravel- to cobble-sized rock fragments, moist (SLIDE DEBRIS)

3-12 feet: DENSE, brown grading to gray, silty SAND; moist, micaceous (WEATHERED TOP OF ROCK)

12 feet: HARD (R4), gray, moderately weathered, Ultramafic Rock; biotite rich

Notes:
- Refusal assumed to be on bedrock.
- Sample at 5 feet.
- Water flow ~2 gpm.

FIG.

Photo not to scale

DRAFT

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/24/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: Sta. 19+55, 28 feet Left
 SAMPLING METHODS:
 None
 WATER LEVEL: None

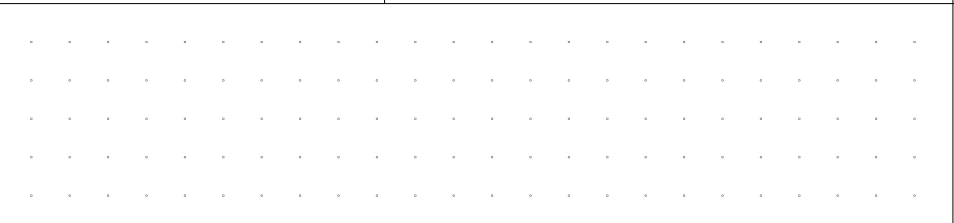
TEST PIT NO.: TP-25
 START TIME: 1330
 FINISH TIME: 1340
 DATE: 6/24/21 DATE: 6/24/21

PHOTO OF TEST PIT

- GRAB SAMPLE POCKET PENETROMETER
 THIN WALL SAMPLE TORVANE

DEPTH IN FEET ELEV. IN FEET

SURFACE CONDITIONS:
 LOOSE, silty SAND with boulders up to 2 feet (SLIDE DEBRIS)



0
 2
 4
 5-6 feet: DENSE, gray, sandy, GRAVEL; moist (DRIVEWAY SURFACING MATERIAL)
 6-10 feet: DENSE, brown, silty, SAND AND GRAVEL; moist (FILL)
 10-12 feet: Woody debris (CORDUROY)

Notes:
 - Halted excavation at 12 feet.
 - Exposed utilities at 10 feet.

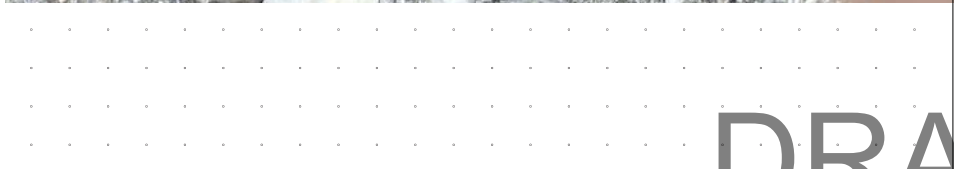


Photo not to scale

DRAFT

FIG.

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/26/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: East of the Slide
 SAMPLING METHODS:
 Grab
 WATER LEVEL: Seep at 9 feet and 18 feet

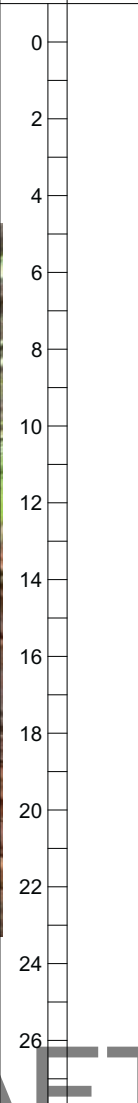
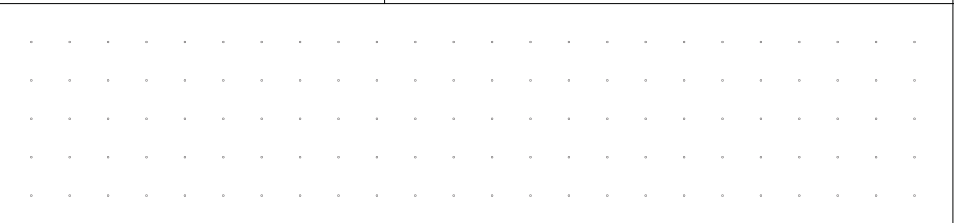
TEST PIT NO.: TP-26
 START TIME: 0700
 FINISH TIME: 0737
 DATE: 6/26/21 DATE: 6/26/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 Thick vegetation (ferns and devil's club), trees up to 6 foot diameter



0-1 feet: SOFT, brown, sandy, SILT; moist, numerous roots (TOP SOIL)

1-18 feet: MEDIUM DENSE, brown, silty SAND; moist, scattered angular cobbles and boulders up to 3 feet (COLLUVIUM)

... at 9 feet becomes wet

... at 12 feet becomes silty, gravely, SAND

... at 15 feet boulders decrease to occasional

Notes:

- 20 foot boulder adjacent to test pit.
- Maximum reach of excavator.
- Samples at 7 and 12 feet.

Photo not to scale

DRAFT

FIG.

LOCATION OF TEST PIT
 Beach Road, Haines, AK
 DATUM:
 ELEVATION:

BY: BAG DATE: 6/26/21
 CK: DATE:
 EQUIPMENT & CONTRACTOR:
 Cat 320L, SE Road Builders
 WEATHER: Slight Rain, 50'sF

JOB NO.: 2925
 LOCATION: East of the Slide
 SAMPLING METHODS:
 Grab
 WATER LEVEL: Seep at 14 feet

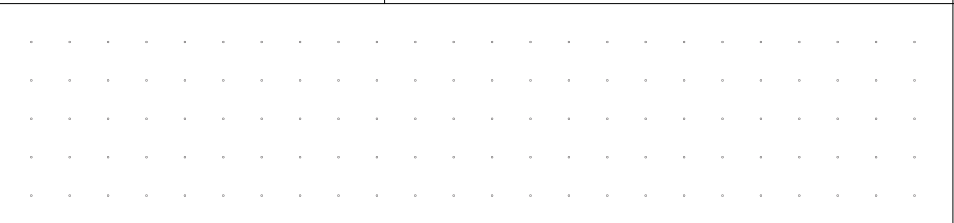
TEST PIT NO.: TP-27
 START TIME: 0800
 FINISH TIME: 0840
 DATE: 6/26/21 DATE: 6/26/21

PHOTO OF TEST PIT

- GRAB SAMPLE
- THIN WALL SAMPLE
- POCKET PENETROMETER
- TORVANE

DEPTH IN FEET
 ELEV. IN FEET

SURFACE CONDITIONS:
 Thick vegetation (ferns and devil's club), trees up to 6 foot diameter



0-1.5 feet: SOFT, brown, slightly clayey, sandy, SILT; moist, numerous roots (TOP SOIL)

1.5-12 feet: MEDIUM DENSE, brown, silty SAND; moist, occasional boulders up to 2 feet, scattered cobbles (COLLUVIUM)

12-12.5 feet: STIFF to VERY STIFF, black, clayey, SILT; organic ordor, moist (PALEO TOP SOIL)

12.5-18 feet: MEDIUM DENSE, gray, silty, SAND; moist becoming wet, scattered cobbles to coarse gravel sized angular rock fragments (COLLUVIUM)

- Notes:
- 8 foot diameter spruce adjacent to test pit.
 - Maximum reach of excavator.
 - Seepage < 1 gpm.
 - Samples at 5, 10, 12-12.5, and 13 feet.



Photo not to scale

DRAFT

FIG.



ATTACHMENT B
Laboratory Testing Results



9101 Vanguard Drive
Anchorage, AK 99507
T: 907.522.1707
F: 907.522.3403
www.rmconsult.com

Material Test Report


Report No: MAT:ANC-W1815-S1

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S1'.

Client: Alaska DOT&PF, Southcoast Region CC:

Project: DOT_SC Haines Beach Road Landslide

 Accreditation is granted by AAP and this accreditation is limited to the laboratory and the standards for which the laboratory is accredited. The results within this report relate only to the items inspected or tested.
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The results within this report are in compliance with approved project plans and specifications.

Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
Date of Issue: 7/22/2021

Sample Details

Sample ID ANC-W1815-S1
Field Sample ID TP-5
Date Sampled 7/1/2021
Source R&M Earth Sciences Field Work
Material Drilling Samples
Specification Project Specific
Sampling Method R&M Earth Sciences Sampling
Sampling Location See Boring Logs
Bore Hole TP-5
Depth 0-8

Particle Size Distribution

Other Test Results

| Description | Method | Result | Limits |
|-------------------|-------------|-----------|--------|
| Water Content (%) | ASTM D 2216 | 20.0 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |

Chart

Comments

N/A

Material Test Report


Report No: MAT:ANC-W1815-S2

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S2'.

Client: Alaska DOT&PF, Southcoast Region CC:

Project: DOT_SC Haines Beach Road Landslide



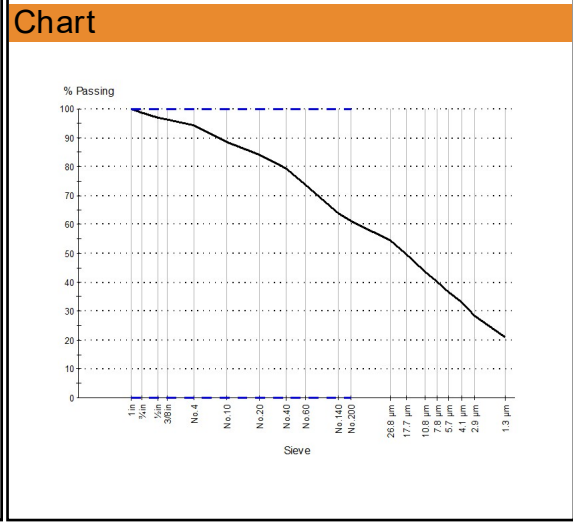
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The results within this report are in compliance with approved project plans and specifications.

Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1815-S2 |
| Field Sample ID | TP-5 |
| Date Sampled | 7/1/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves with Hydro |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-5 |
| Depth | 9 |

| Particle Size Distribution | | |
|----------------------------|------------|---------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1in | 100 | 0≤α≤100 |
| 3/4in | 99 | 0≤α≤100 |
| 1/2in | 97 | 0≤α≤100 |
| 3/8in | 96 | 0≤α≤100 |
| No.4 | 94 | 0≤α≤100 |
| No.10 | 89 | 0≤α≤100 |
| No.20 | 84 | 0≤α≤100 |
| No.40 | 79 | 0≤α≤100 |
| No.60 | 74 | 0≤α≤100 |
| No.140 | 64 | 0≤α≤100 |
| No.200 | 61 | 0≤α≤100 |
| 26.8 μm | 54.4 | |
| 17.7 μm | 49.7 | |
| 10.8 μm | 43.7 | |
| 7.8 μm | 40.2 | |
| 5.7 μm | 36.6 | |
| 4.1 μm | 33.1 | |
| 2.9 μm | 28.3 | |
| 1.3 μm | 21.1 | |

| Other Test Results | | | |
|---|-------------|----------------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 19.1 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | mechanical | |
| Dispersion time (min) | | 1 | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | N/A | |
| Cc | | N/A | |
| CuS | | 3.46 | |
| CcS | | 0.78 | |
| Dm (mm) | | N/A | |
| U-Number | | 45 | |
| D50S (mm) | | 0.282 | |
| D50G (mm) | | 4.741 | |
| Approximate maximum grain size | ASTM D 4318 | N/A | |
| Material retained on 425μm (No. 40) (%) | | 20.6 | |
| Method of Removal | | N/A | |
| Grooving Tool Type | | Metal | |
| Specimen preparation method | | Wet | |
| Drying Method | | Air | |
| Special selection process | | N/A | |
| Rolling Method for PL | | Hand | |
| As Received Water Content (%) | | 19.1 | |
| Liquid Limit Device Type | | Manual | |
| Liquid Limit | | 21 | |
| Plastic Limit | | 16 | |
| Plasticity Index | | 5 | |
| Liquid Limit Procedure | | Multipoint (A) | |



Comments
Percent Finer than .02mm interpolated to be 50.9% based on Hydrometer calculations
Percent Finer than .002mm interpolated to be 24.3% based on Hydrometer calculations

Material Test Report


Report No: MAT:ANC-W1815-S2

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S2'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



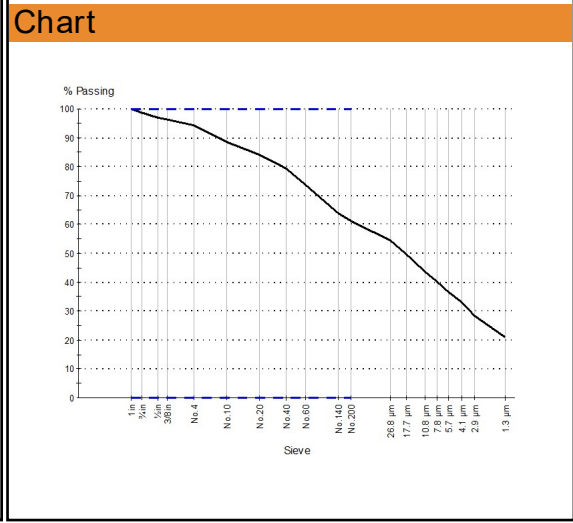
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 The results within this report are in compliance with approved project plans and specifications.

Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1815-S2 |
| Field Sample ID | TP-5 |
| Date Sampled | 7/1/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves with Hydro |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-5 |
| Depth | 9 |

| Particle Size Distribution | | |
|----------------------------|------------|---------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1in | 100 | 0≤α≤100 |
| 3/4in | 99 | 0≤α≤100 |
| 1/2in | 97 | 0≤α≤100 |
| 3/8in | 96 | 0≤α≤100 |
| No.4 | 94 | 0≤α≤100 |
| No.10 | 89 | 0≤α≤100 |
| No.20 | 84 | 0≤α≤100 |
| No.40 | 79 | 0≤α≤100 |
| No.60 | 74 | 0≤α≤100 |
| No.140 | 64 | 0≤α≤100 |
| No.200 | 61 | 0≤α≤100 |
| 26.8 μm | 54.4 | |
| 17.7 μm | 49.7 | |
| 10.8 μm | 43.7 | |
| 7.8 μm | 40.2 | |
| 5.7 μm | 36.6 | |
| 4.1 μm | 33.1 | |
| 2.9 μm | 28.3 | |
| 1.3 μm | 21.1 | |

| Other Test Results | | | |
|--------------------|--------|-----------|--------|
| Description | Method | Result | Limits |
| Date Tested | | 7/12/2021 | |



Comments
 Percent Finer than .02mm interpolated to be 50.9% based on Hydrometer calculations
 Percent Finer than .002mm interpolated to be 24.3% based on Hydrometer calculations

Material Test Report


Report No: MAT:ANC-W1815-S3

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S3'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



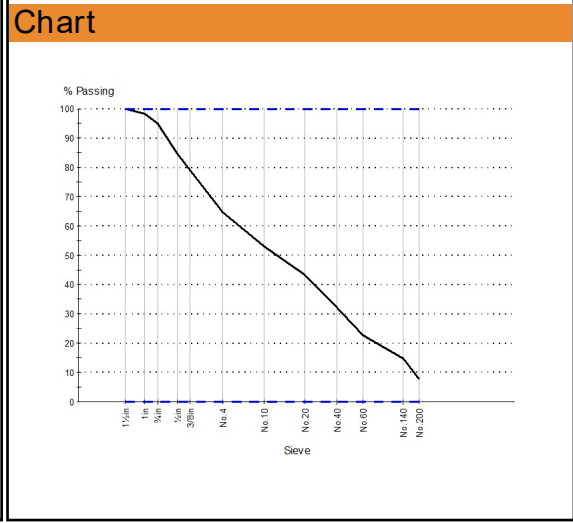
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 The results within this report are in compliance with approved project plans and specifications.

Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1815-S3 |
| Field Sample ID | TP-7 |
| Date Sampled | 7/1/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-7 |
| Depth | 12 |

| Particle Size Distribution | | |
|----------------------------|------------|---------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1½in | 100 | 0≤α≤100 |
| 1in | 98 | 0≤α≤100 |
| ¾in | 95 | 0≤α≤100 |
| ½in | 85 | 0≤α≤100 |
| 3/8in | 79 | 0≤α≤100 |
| No.4 | 65 | 0≤α≤100 |
| No.10 | 53 | 0≤α≤100 |
| No.20 | 43 | 0≤α≤100 |
| No.40 | 32 | 0≤α≤100 |
| No.60 | 23 | 0≤α≤100 |
| No.140 | 15 | 0≤α≤100 |
| No.200 | 7.7 | 0≤α≤100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 14.8 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 39.55 | |
| Cc | | 0.51 | |
| CuS | | 5.39 | |
| CcS | | 0.97 | |
| Dm (mm) | | 4.199 | |
| U-Number | | 41 | |
| D50S (mm) | | 0.387 | |
| D50G (mm) | | 8.448 | |



Comments

N/A

Material Test Report


Report No: MAT:ANC-W1815-S4

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S4'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



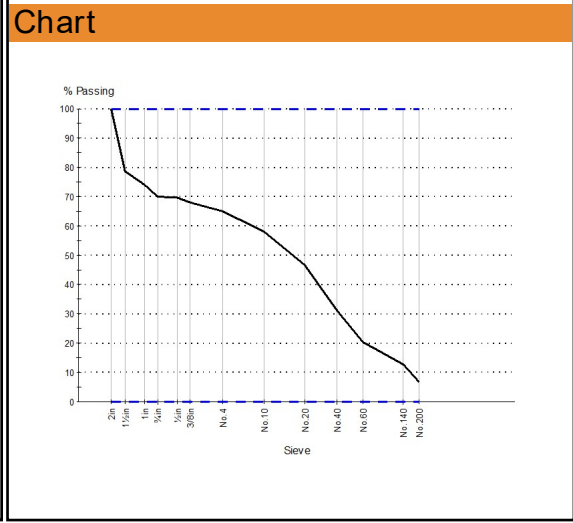
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1815-S4 |
| Field Sample ID | TP-8 |
| Date Sampled | 7/1/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-8 |
| Depth | 5 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 2in | 100 | 0 ≤ α ≤ 100 |
| 1½in | 79 | 0 ≤ α ≤ 100 |
| 1in | 74 | 0 ≤ α ≤ 100 |
| ¾in | 70 | 0 ≤ α ≤ 100 |
| ½in | 70 | 0 ≤ α ≤ 100 |
| 3/8in | 68 | 0 ≤ α ≤ 100 |
| No.4 | 65 | 0 ≤ α ≤ 100 |
| No.10 | 58 | 0 ≤ α ≤ 100 |
| No.20 | 47 | 0 ≤ α ≤ 100 |
| No.40 | 31 | 0 ≤ α ≤ 100 |
| No.60 | 20 | 0 ≤ α ≤ 100 |
| No.140 | 13 | 0 ≤ α ≤ 100 |
| No.200 | 6.5 | 0 ≤ α ≤ 100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 24.1 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 27.53 | |
| Cc | | 0.70 | |
| CuS | | 5.60 | |
| CcS | | 1.29 | |
| Dm (mm) | | 11.618 | |
| U-Number | | 36 | |
| D50S (mm) | | 0.449 | |
| D50G (mm) | | 37.709 | |



Comments
 N/A

Material Test Report


Report No: MAT:ANC-W1815-S5

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S5'.

Client: Alaska DOT&PF, Southcoast Region CC:

Project: DOT_SC Haines Beach Road Landslide



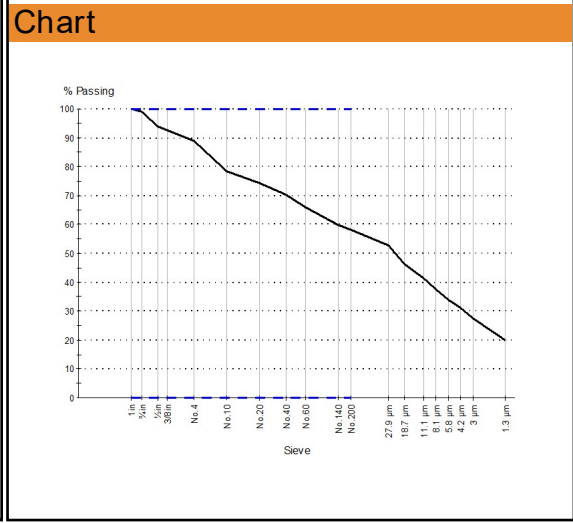
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The results within this report are in compliance with approved project plans and specifications.

Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1815-S5 |
| Field Sample ID | TP-9 |
| Date Sampled | 7/1/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves with Hydro |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-9 |
| Depth | 3 |

| Particle Size Distribution | | |
|----------------------------|------------|---------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1in | 100 | 0≤α≤100 |
| 3/4in | 99 | 0≤α≤100 |
| 1/2in | 94 | 0≤α≤100 |
| 3/8in | 92 | 0≤α≤100 |
| No.4 | 89 | 0≤α≤100 |
| No.10 | 78 | 0≤α≤100 |
| No.20 | 74 | 0≤α≤100 |
| No.40 | 70 | 0≤α≤100 |
| No.60 | 66 | 0≤α≤100 |
| No.140 | 60 | 0≤α≤100 |
| No.200 | 58 | 0≤α≤100 |
| 27.9 μm | 52.6 | |
| 18.7 μm | 46.3 | |
| 11.1 μm | 41.2 | |
| 8.1 μm | 37.6 | |
| 5.8 μm | 33.8 | |
| 4.2 μm | 31.2 | |
| 3.0 μm | 27.5 | |
| 1.3 μm | 19.9 | |

| Other Test Results | | | |
|---|-------------|----------------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 14.1 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | Mechanical | |
| Dispersion time (min) | | 1 | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | N/A | |
| Cc | | N/A | |
| CuS | | 3.88 | |
| CcS | | 0.83 | |
| Dm (mm) | | N/A | |
| U-Number | | 40 | |
| D50S (mm) | | 0.339 | |
| D50G (mm) | | 5.091 | |
| Approximate maximum grain size | ASTM D 4318 | N/A | |
| Material retained on 425μm (No. 40) (%) | | 29.8 | |
| Method of Removal | | N/A | |
| Grooving Tool Type | | Metal | |
| Specimen preparation method | | Wet | |
| Drying Method | | Air | |
| Special selection process | | N/A | |
| Rolling Method for PL | | Hand | |
| As Received Water Content (%) | | 14.1 | |
| Liquid Limit Device Type | | Manual | |
| Liquid Limit | | 21 | |
| Plastic Limit | | 16 | |
| Plasticity Index | | 5 | |
| Liquid Limit Procedure | | Multipoint (A) | |



Comments
Percent Finer than .02mm interpolated to be 47.2% based on Hydrometer
Percent Finer than .002mm interpolated to be 23.0% based on Hydrometer

Material Test Report


Report No: MAT:ANC-W1815-S5

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S5'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

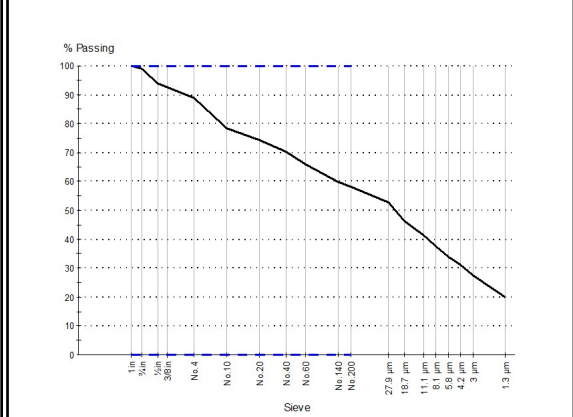
| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1815-S5 |
| Field Sample ID | TP-9 |
| Date Sampled | 7/1/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves with Hydro |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-9 |
| Depth | 3 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1in | 100 | 0 ≤ α ≤ 100 |
| 3/4in | 99 | 0 ≤ α ≤ 100 |
| 1/2in | 94 | 0 ≤ α ≤ 100 |
| 3/8in | 92 | 0 ≤ α ≤ 100 |
| No.4 | 89 | 0 ≤ α ≤ 100 |
| No.10 | 78 | 0 ≤ α ≤ 100 |
| No.20 | 74 | 0 ≤ α ≤ 100 |
| No.40 | 70 | 0 ≤ α ≤ 100 |
| No.60 | 66 | 0 ≤ α ≤ 100 |
| No.140 | 60 | 0 ≤ α ≤ 100 |
| No.200 | 58 | 0 ≤ α ≤ 100 |
| 27.9 μm | 52.6 | |
| 18.7 μm | 46.3 | |
| 11.1 μm | 41.2 | |
| 8.1 μm | 37.6 | |
| 5.8 μm | 33.8 | |
| 4.2 μm | 31.2 | |
| 3.0 μm | 27.5 | |
| 1.3 μm | 19.9 | |

Other Test Results

| Description | Method | Result | Limits |
|-------------|--------|-----------|--------|
| Date Tested | | 7/12/2021 | |

Chart



Comments

Percent Finer than .02mm interpolated to be 47.2% based on Hydrometer
 Percent Finer than .002mm interpolated to be 23.0% based on Hydrometer

Material Test Report

Report No: MAT:ANC-W1815-S6

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S6'.

Client: Alaska DOT&PF, Southcoast Region CC:

Project: DOT_SC Haines Beach Road Landslide

AAP
AASHTO R18

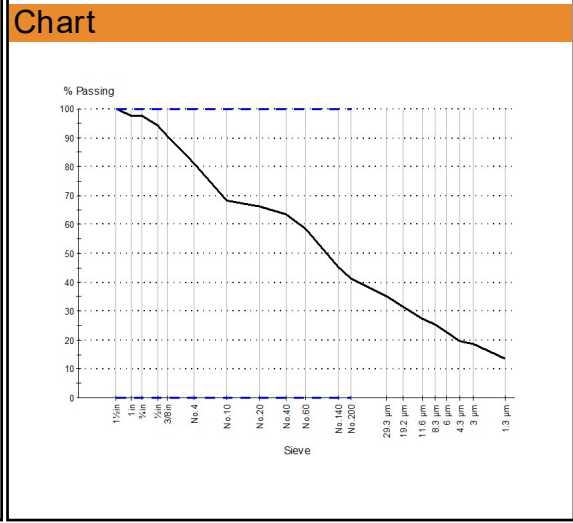
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The results within this report are in compliance with approved project plans and specifications.

Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1815-S6 |
| Field Sample ID | TP-9 |
| Date Sampled | 7/1/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves with Hydro |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-9 |
| Depth | 8 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1 1/2 in | 100 | 0 ≤ α ≤ 100 |
| 1 in | 98 | 0 ≤ α ≤ 100 |
| 3/4 in | 98 | 0 ≤ α ≤ 100 |
| 1/2 in | 94 | 0 ≤ α ≤ 100 |
| 3/8 in | 91 | 0 ≤ α ≤ 100 |
| No. 4 | 81 | 0 ≤ α ≤ 100 |
| No. 10 | 68 | 0 ≤ α ≤ 100 |
| No. 20 | 66 | 0 ≤ α ≤ 100 |
| No. 40 | 63 | 0 ≤ α ≤ 100 |
| No. 60 | 58 | 0 ≤ α ≤ 100 |
| No. 140 | 45 | 0 ≤ α ≤ 100 |
| No. 200 | 41 | 0 ≤ α ≤ 100 |
| 29.3 μm | 35.3 | |
| 19.2 μm | 31.3 | |
| 11.6 μm | 27.4 | |
| 8.3 μm | 25.4 | |
| 6.0 μm | 22.5 | |
| 4.3 μm | 19.5 | |
| 3.0 μm | 18.5 | |
| 1.3 μm | 13.6 | |

| Other Test Results | | | |
|---|-------------|----------------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 13.8 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | Mechanical | |
| Dispersion time (min) | | 1 | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | N/A | |
| Cc | | N/A | |
| CuS | | 2.49 | |
| CcS | | 0.86 | |
| Dm (mm) | | N/A | |
| U-Number | | 56 | |
| D50S (mm) | | 0.197 | |
| D50G (mm) | | 5.908 | |
| Approximate maximum grain size | ASTM D 4318 | N/A | |
| Material retained on 425μm (No. 40) (%) | | 32.4 | |
| Method of Removal | | N/A | |
| Grooving Tool Type | | Metal | |
| Specimen preparation method | | Wet | |
| Drying Method | | Air | |
| Special selection process | | N/A | |
| Rolling Method for PL | | Hand | |
| As Received Water Content (%) | | 13.8 | |
| Liquid Limit Device Type | | Manual | |
| Liquid Limit | | 17 | |
| Plastic Limit | | 16 | |
| Plasticity Index | | 1 | |
| Liquid Limit Procedure | | Multipoint (A) | |



Comments

Percent Finer than .02mm interpolated to be 31.6% based on Hydrometer
Percent Finer than .002mm interpolated to be 15.6% based on Hydrometer

Material Test Report


Report No: MAT:ANC-W1815-S6

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S6'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



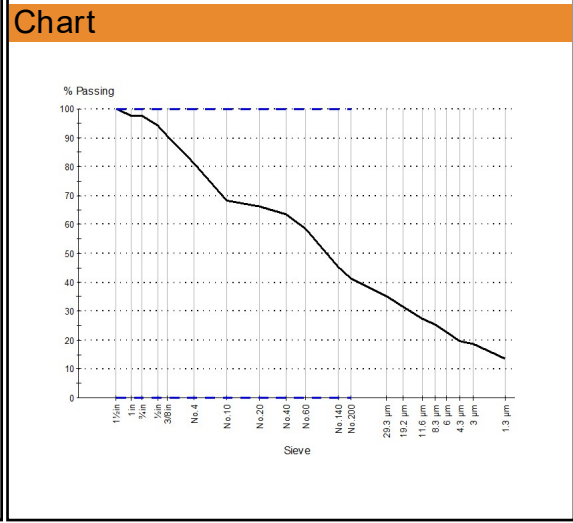
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1815-S6 |
| Field Sample ID | TP-9 |
| Date Sampled | 7/1/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves with Hydro |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-9 |
| Depth | 8 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1 1/2 in | 100 | 0 ≤ α ≤ 100 |
| 1 in | 98 | 0 ≤ α ≤ 100 |
| 3/4 in | 98 | 0 ≤ α ≤ 100 |
| 1/2 in | 94 | 0 ≤ α ≤ 100 |
| 3/8 in | 91 | 0 ≤ α ≤ 100 |
| No. 4 | 81 | 0 ≤ α ≤ 100 |
| No. 10 | 68 | 0 ≤ α ≤ 100 |
| No. 20 | 66 | 0 ≤ α ≤ 100 |
| No. 40 | 63 | 0 ≤ α ≤ 100 |
| No. 60 | 58 | 0 ≤ α ≤ 100 |
| No. 140 | 45 | 0 ≤ α ≤ 100 |
| No. 200 | 41 | 0 ≤ α ≤ 100 |
| 29.3 μm | 35.3 | |
| 19.2 μm | 31.3 | |
| 11.6 μm | 27.4 | |
| 8.3 μm | 25.4 | |
| 6.0 μm | 22.5 | |
| 4.3 μm | 19.5 | |
| 3.0 μm | 18.5 | |
| 1.3 μm | 13.6 | |

| Other Test Results | | | |
|--------------------|--------|-----------|--------|
| Description | Method | Result | Limits |
| Date Tested | | 7/12/2021 | |



Comments
 Percent Finer than .02mm interpolated to be 31.6% based on Hydrometer
 Percent Finer than .002mm interpolated to be 15.6% based on Hydrometer



9101 Vanguard Drive
 Anchorage, AK 99507
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 F: 907.522.3403
 www.rmconsult.com

Material Test Report

Report No: MAT:ANC-W1815-S7

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S7'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide

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 AASHTO R18

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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

Sample Details

Particle Size Distribution

Sample ID ANC-W1815-S7
 Field Sample ID TP-11
 Date Sampled 7/1/2021
 Source R&M Earth Sciences Field Work
 Material Drilling Samples
 Specification Project Specific
 Sampling Method R&M Earth Sciences Sampling
 Sampling Location See Boring Logs
 Bore Hole TP-11
 Depth 2

(This area is currently blank for the Particle Size Distribution data.)

Other Test Results

| Description | Method | Result | Limits |
|-------------------|-------------|-----------|--------|
| Water Content (%) | ASTM D 2216 | 15.3 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |

Chart

(This area is currently blank for the Chart.)

Comments

N/A

Material Test Report


Report No: MAT:ANC-W1815-S8

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S8'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

Sample Details

Particle Size Distribution

Sample ID ANC-W1815-S8
 Field Sample ID TP-12
 Date Sampled 7/1/2021
 Source R&M Earth Sciences Field Work
 Material Drilling Samples
 Specification Project Specific
 Sampling Method R&M Earth Sciences Sampling
 Sampling Location See Boring Logs
 Bore Hole TP-12
 Depth 2

(This area is currently blank in the report)

Other Test Results

| Description | Method | Result | Limits |
|-------------------|-------------|-----------|--------|
| Water Content (%) | ASTM D 2216 | 9.9 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |

Chart

(This area is currently blank in the report)

Comments

N/A

Material Test Report


Report No: MAT:ANC-W1815-S9

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1815-S9'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



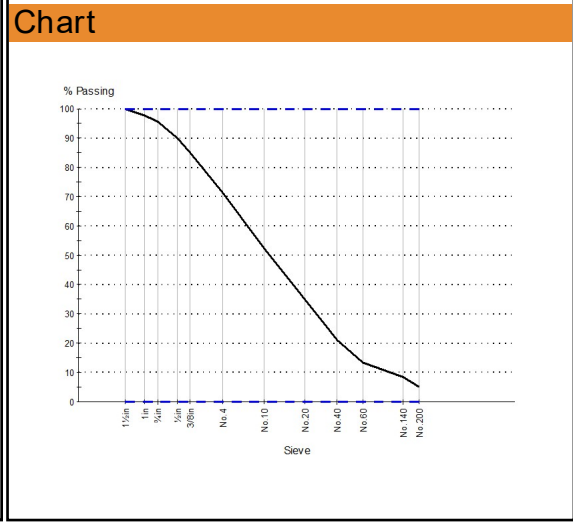
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1815-S9 |
| Field Sample ID | TP-14 |
| Date Sampled | 7/1/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-14 |
| Depth | 3-9 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1½in | 100 | 0 ≤ α ≤ 100 |
| 1in | 98 | 0 ≤ α ≤ 100 |
| ¾in | 96 | 0 ≤ α ≤ 100 |
| ½in | 90 | 0 ≤ α ≤ 100 |
| 3/8in | 85 | 0 ≤ α ≤ 100 |
| No.4 | 71 | 0 ≤ α ≤ 100 |
| No.10 | 52 | 0 ≤ α ≤ 100 |
| No.20 | 35 | 0 ≤ α ≤ 100 |
| No.40 | 21 | 0 ≤ α ≤ 100 |
| No.60 | 13 | 0 ≤ α ≤ 100 |
| No.140 | 8 | 0 ≤ α ≤ 100 |
| No.200 | 5.0 | 0 ≤ α ≤ 100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 9.5 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 20.27 | |
| Cc | | 1.10 | |
| CuS | | 5.88 | |
| CcS | | 1.35 | |
| Dm (mm) | | 3.480 | |
| U-Number | | 28 | |
| D50S (mm) | | 0.616 | |
| D50G (mm) | | 6.038 | |



Comments
 N/A

Material Test Report


Report No: MAT:ANC-W1816-S1

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1816-S1'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



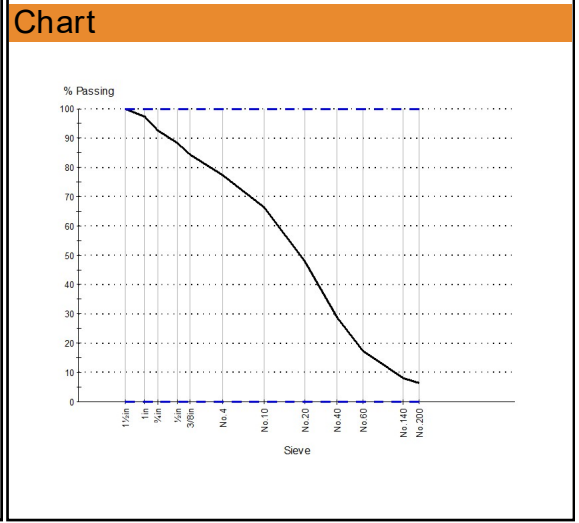
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 The results within this report are in compliance with approved project plans and specifications.

Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1816-S1 |
| Field Sample ID | TP-16 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-16 |
| Depth | 6 |

| Particle Size Distribution | | |
|----------------------------|------------|---------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1½in | 100 | 0≤α≤100 |
| 1in | 97 | 0≤α≤100 |
| ¾in | 93 | 0≤α≤100 |
| ½in | 88 | 0≤α≤100 |
| 3/8in | 84 | 0≤α≤100 |
| No.4 | 77 | 0≤α≤100 |
| No.10 | 66 | 0≤α≤100 |
| No.20 | 48 | 0≤α≤100 |
| No.40 | 29 | 0≤α≤100 |
| No.60 | 17 | 0≤α≤100 |
| No.140 | 8 | 0≤α≤100 |
| No.200 | 6.3 | 0≤α≤100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 8.8 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 11.76 | |
| Cc | | 1.07 | |
| CuS | | 4.45 | |
| CcS | | 1.11 | |
| Dm (mm) | | 3.049 | |
| U-Number | | 27 | |
| D50S (mm) | | 0.561 | |
| D50G (mm) | | 8.490 | |



Comments
 N/A

Material Test Report


Report No: MAT:ANC-W1816-S2

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1816-S2'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



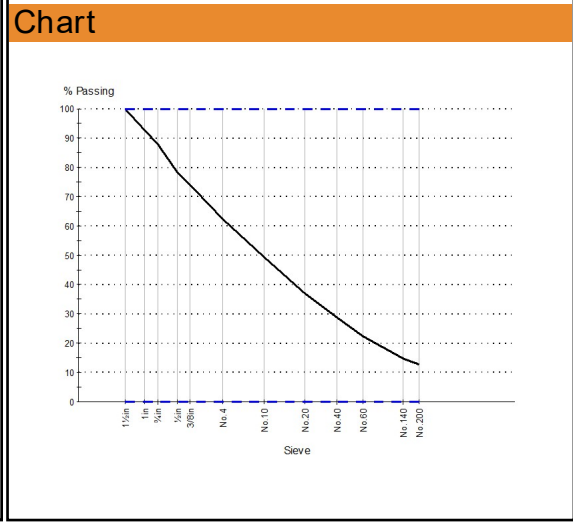
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1816-S2 |
| Field Sample ID | TP-18 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-18 |
| Depth | 5 |

| Particle Size Distribution | | |
|----------------------------|------------|---------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1½in | 100 | 0≤α≤100 |
| 1in | 93 | 0≤α≤100 |
| ¾in | 88 | 0≤α≤100 |
| ½in | 78 | 0≤α≤100 |
| 3/8in | 74 | 0≤α≤100 |
| No.4 | 62 | 0≤α≤100 |
| No.10 | 49 | 0≤α≤100 |
| No.20 | 37 | 0≤α≤100 |
| No.40 | 29 | 0≤α≤100 |
| No.60 | 22 | 0≤α≤100 |
| No.140 | 15 | 0≤α≤100 |
| No.200 | 13 | 0≤α≤100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 10.9 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | N/A | |
| Cc | | N/A | |
| CuS | | 5.65 | |
| CcS | | 0.88 | |
| Dm (mm) | | N/A | |
| U-Number | | 32 | |
| D50S (mm) | | 0.516 | |
| D50G (mm) | | 9.974 | |



Comments
 N/A

Material Test Report


Report No: MAT:ANC-W1816-S3

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1816-S3'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



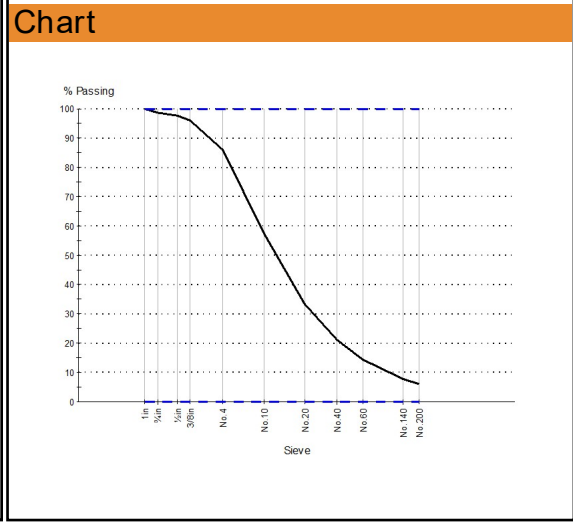
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1816-S3 |
| Field Sample ID | TP-19 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-19 |
| Depth | 5-12 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1in | 100 | 0 ≤ α ≤ 100 |
| 3/4in | 99 | 0 ≤ α ≤ 100 |
| 1/2in | 98 | 0 ≤ α ≤ 100 |
| 3/8in | 96 | 0 ≤ α ≤ 100 |
| No. 4 | 86 | 0 ≤ α ≤ 100 |
| No. 10 | 57 | 0 ≤ α ≤ 100 |
| No. 20 | 33 | 0 ≤ α ≤ 100 |
| No. 40 | 21 | 0 ≤ α ≤ 100 |
| No. 60 | 14 | 0 ≤ α ≤ 100 |
| No. 140 | 8 | 0 ≤ α ≤ 100 |
| No. 200 | 6.0 | 0 ≤ α ≤ 100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 9.8 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 15.10 | |
| Cc | | 1.61 | |
| CuS | | 5.84 | |
| CcS | | 1.19 | |
| Dm (mm) | | 2.129 | |
| U-Number | | 24 | |
| D50S (mm) | | 0.776 | |
| D50G (mm) | | 3.807 | |



Comments
 N/A

Material Test Report


Report No: MAT:ANC-W1816-S4

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1816-S4'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



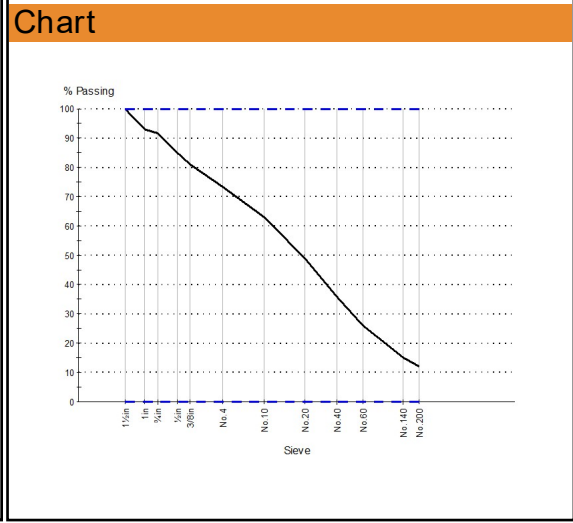
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1816-S4 |
| Field Sample ID | TP-22 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-22 |
| Depth | 0-5 |

| Particle Size Distribution | | |
|----------------------------|------------|---------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1½in | 100 | 0≤α≤100 |
| 1in | 93 | 0≤α≤100 |
| ¾in | 92 | 0≤α≤100 |
| ½in | 85 | 0≤α≤100 |
| 3/8in | 81 | 0≤α≤100 |
| No.4 | 73 | 0≤α≤100 |
| No.10 | 63 | 0≤α≤100 |
| No.20 | 49 | 0≤α≤100 |
| No.40 | 36 | 0≤α≤100 |
| No.60 | 26 | 0≤α≤100 |
| No.140 | 15 | 0≤α≤100 |
| No.200 | 12 | 0≤α≤100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 15.9 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 28.11 | |
| Cc | | 0.95 | |
| CuS | | 4.86 | |
| CcS | | 0.93 | |
| Dm (mm) | | 3.673 | |
| U-Number | | 33 | |
| D50S (mm) | | 0.464 | |
| D50G (mm) | | 9.744 | |



Comments
 N/A

Material Test Report


Report No: MAT:ANC-W1816-S5

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1816-S5'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



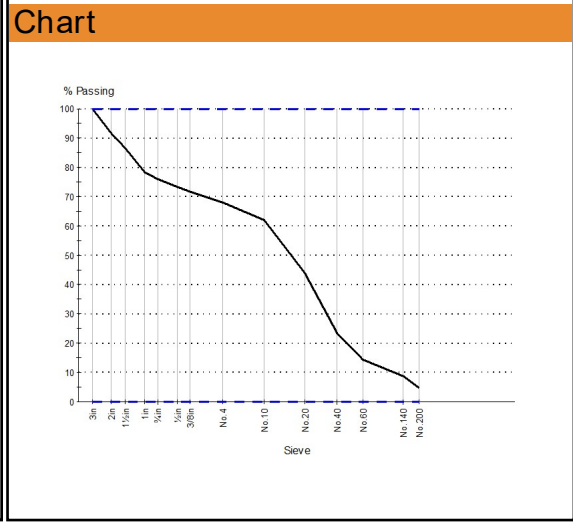
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1816-S5 |
| Field Sample ID | TP-23 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-23 |
| Depth | 5 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 3in | 100 | 0 ≤ α ≤ 100 |
| 2in | 92 | 0 ≤ α ≤ 100 |
| 1½in | 87 | 0 ≤ α ≤ 100 |
| 1in | 78 | 0 ≤ α ≤ 100 |
| ¾in | 76 | 0 ≤ α ≤ 100 |
| ½in | 73 | 0 ≤ α ≤ 100 |
| 3/8in | 72 | 0 ≤ α ≤ 100 |
| No.4 | 68 | 0 ≤ α ≤ 100 |
| No.10 | 62 | 0 ≤ α ≤ 100 |
| No.20 | 44 | 0 ≤ α ≤ 100 |
| No.40 | 23 | 0 ≤ α ≤ 100 |
| No.60 | 14 | 0 ≤ α ≤ 100 |
| No.140 | 9 | 0 ≤ α ≤ 100 |
| No.200 | 4.6 | 0 ≤ α ≤ 100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 11.4 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 14.37 | |
| Cc | | 1.23 | |
| CuS | | 5.37 | |
| CcS | | 1.58 | |
| Dm (mm) | | 9.320 | |
| U-Number | | 28 | |
| D50S (mm) | | 0.595 | |
| D50G (mm) | | 28.342 | |



Comments
 N/A

Material Test Report


Report No: MAT:ANC-W1816-S6

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1816-S6'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



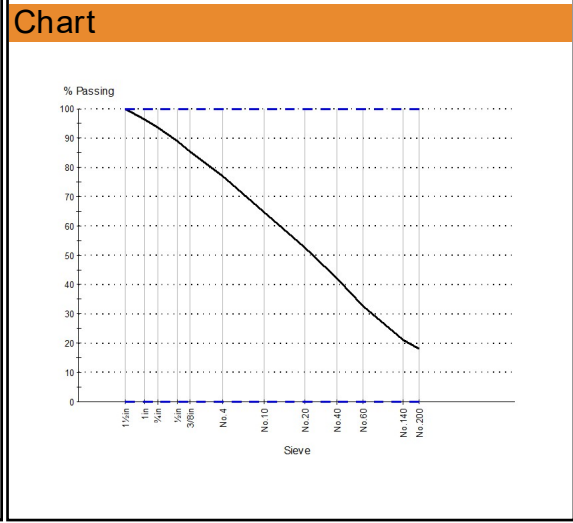
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1816-S6 |
| Field Sample ID | TP-24 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-24 |
| Depth | 5 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 1½in | 100 | 0 ≤ α ≤ 100 |
| 1in | 96 | 0 ≤ α ≤ 100 |
| ¾in | 94 | 0 ≤ α ≤ 100 |
| ½in | 89 | 0 ≤ α ≤ 100 |
| 3/8in | 85 | 0 ≤ α ≤ 100 |
| No.4 | 77 | 0 ≤ α ≤ 100 |
| No.10 | 65 | 0 ≤ α ≤ 100 |
| No.20 | 53 | 0 ≤ α ≤ 100 |
| No.40 | 42 | 0 ≤ α ≤ 100 |
| No.60 | 33 | 0 ≤ α ≤ 100 |
| No.140 | 21 | 0 ≤ α ≤ 100 |
| No.200 | 18 | 0 ≤ α ≤ 100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 12.1 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | N/A | |
| Cc | | N/A | |
| CuS | | 4.63 | |
| CcS | | 0.86 | |
| Dm (mm) | | N/A | |
| U-Number | | 35 | |
| D50S (mm) | | 0.412 | |
| D50G (mm) | | 7.415 | |



Comments
 N/A



9101 Vanguard Drive
 Anchorage, AK 99507
 T: 907.522.1707
 F: 907.522.3403
 www.rmconsult.com

Material Test Report

Report No: MAT:ANC-W1816-S7

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide

The laboratory is not accredited for the test indicated.
 Contact the laboratory for more information.

Sample Details

Particle Size Distribution

Sample ID ANC-W1816-S7
 Field Sample ID TP-26
 Date Sampled 7/12/2021
 Source R&M Earth Sciences Field Work
 Material Drilling Samples
 Specification ENG Sieves
 Sampling Method R&M Earth Sciences Sampling
 Sampling Location See Boring Logs
 Bore Hole TP-26
 Depth 7

(This area is currently blank for the Particle Size Distribution results.)

Other Test Results

| Description | Method | Result | Limits |
|-------------------|-------------|-----------|--------|
| Water Content (%) | ASTM D 2216 | 10.4 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |

Chart

(This area is currently blank for the Chart.)

Comments

N/A

Material Test Report


Report No: MAT:ANC-W1816-S8

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1816-S8'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



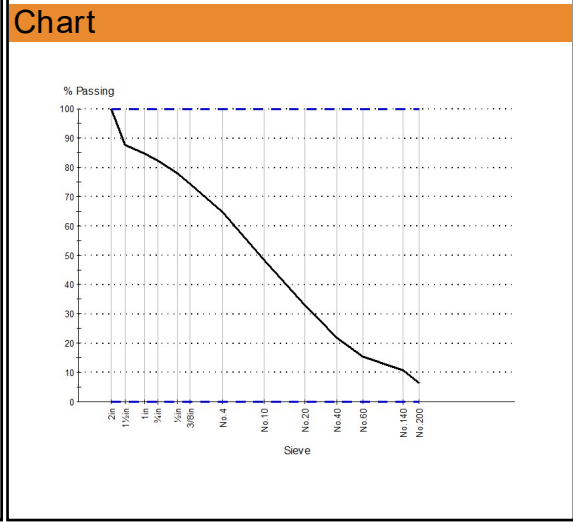
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1816-S8 |
| Field Sample ID | TP-26 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-26 |
| Depth | 12 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 2in | 100 | 0 ≤ α ≤ 100 |
| 1½in | 88 | 0 ≤ α ≤ 100 |
| 1in | 85 | 0 ≤ α ≤ 100 |
| ¾in | 82 | 0 ≤ α ≤ 100 |
| ½in | 78 | 0 ≤ α ≤ 100 |
| 3/8in | 74 | 0 ≤ α ≤ 100 |
| No.4 | 65 | 0 ≤ α ≤ 100 |
| No.10 | 48 | 0 ≤ α ≤ 100 |
| No.20 | 33 | 0 ≤ α ≤ 100 |
| No.40 | 22 | 0 ≤ α ≤ 100 |
| No.60 | 15 | 0 ≤ α ≤ 100 |
| No.140 | 11 | 0 ≤ α ≤ 100 |
| No.200 | 6.4 | 0 ≤ α ≤ 100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 12.8 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 36.74 | |
| Cc | | 1.31 | |
| CuS | | 7.23 | |
| CcS | | 1.40 | |
| Dm (mm) | | 7.802 | |
| U-Number | | 30 | |
| D50S (mm) | | 0.600 | |
| D50G (mm) | | 9.452 | |



Comments
 N/A

Material Test Report


Report No: MAT:ANC-W1817-S1

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1817-S1'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1817-S1 |
| Field Sample ID | TP-27 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | Project Specific |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-27 |
| Depth | 5 |

| Particle Size Distribution |
|----------------------------|
| |

| Other Test Results | | | |
|--------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 6.0 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |

| Chart |
|-------|
| |

Comments
 N/A

Material Test Report


Report No: MAT:ANC-W1817-S2

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1817-S2'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



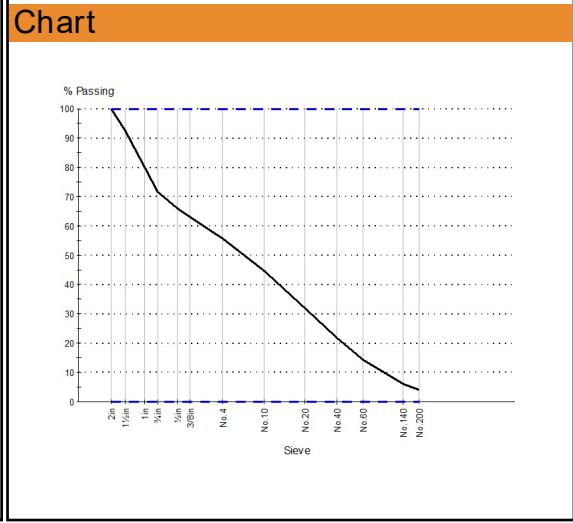
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1817-S2 |
| Field Sample ID | TP-27 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-27 |
| Depth | 10 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 2in | 100 | 0 ≤ α ≤ 100 |
| 1½in | 93 | 0 ≤ α ≤ 100 |
| 1in | 80 | 0 ≤ α ≤ 100 |
| ¾in | 72 | 0 ≤ α ≤ 100 |
| ½in | 66 | 0 ≤ α ≤ 100 |
| 3/8in | 63 | 0 ≤ α ≤ 100 |
| No.4 | 56 | 0 ≤ α ≤ 100 |
| No.10 | 45 | 0 ≤ α ≤ 100 |
| No.20 | 32 | 0 ≤ α ≤ 100 |
| No.40 | 22 | 0 ≤ α ≤ 100 |
| No.60 | 14 | 0 ≤ α ≤ 100 |
| No.140 | 6 | 0 ≤ α ≤ 100 |
| No.200 | 4.1 | 0 ≤ α ≤ 100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 17.7 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 44.68 | |
| Cc | | 0.50 | |
| CuS | | 5.14 | |
| CcS | | 0.92 | |
| Dm (mm) | | 9.915 | |
| U-Number | | 31 | |
| D50S (mm) | | 0.512 | |
| D50G (mm) | | 19.429 | |



Comments
 N/A

Material Test Report


Report No: MAT:ANC-W1817-S3

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1817-S3'.

Client: Alaska DOT&PF, Southcoast Region CC:

Project: DOT_SC Haines Beach Road Landslide



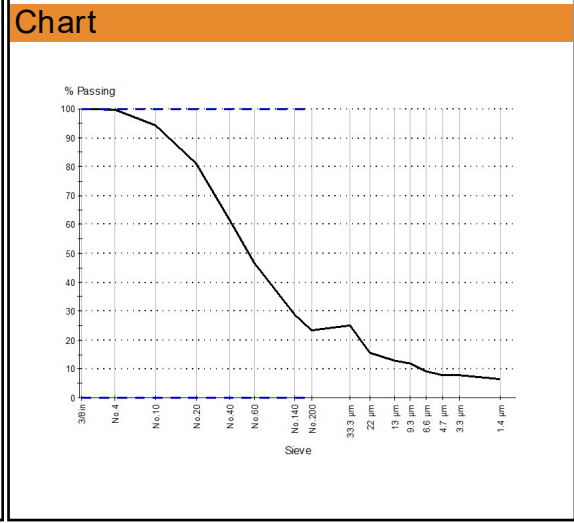
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The results within this report are in compliance with approved project plans and specifications.

Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1817-S3 |
| Field Sample ID | TP-27 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves with Hydro |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-27 |
| Depth | 12-12.5 |

| Particle Size Distribution | | |
|----------------------------|------------|---------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 3/8in | 100 | 0≤α≤100 |
| No.4 | 100 | 0≤α≤100 |
| No.10 | 94 | 0≤α≤100 |
| No.20 | 81 | 0≤α≤100 |
| No.40 | 61 | 0≤α≤100 |
| No.60 | 47 | 0≤α≤100 |
| No.140 | 29 | 0≤α≤100 |
| No.200 | 23 | 0≤α≤100 |
| 33.3 μm | 25.0 | |
| 22.0 μm | 15.6 | |
| 13.0 μm | 12.9 | |
| 9.3 μm | 11.7 | |
| 6.6 μm | 9.0 | |
| 4.7 μm | 7.7 | |
| 3.3 μm | 7.7 | |
| 1.4 μm | 6.3 | |

| Other Test Results | | | |
|---|-------------|----------------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 69.7 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | Machanical | |
| Dispersion time (min) | | 1 | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 53.88 | |
| Cc | | 4.19 | |
| CuS | | 4.33 | |
| CcS | | 0.91 | |
| Dm (mm) | | 0.435 | |
| U-Number | | 37 | |
| D50S (mm) | | 0.388 | |
| D50G (mm) | | 3.158 | |
| Approximate maximum grain size | ASTM D 4318 | N/A | |
| Material retained on 425μm (No. 40) (%) | | 38.6 | |
| Method of Removal | | N/A | |
| Grooving Tool Type | | Metal | |
| Specimen preparation method | | Wet | |
| Drying Method | | Air | |
| Special selection process | | N/A | |
| Rolling Method for PL | | Hand | |
| As Received Water Content (%) | | 69.7 | |
| Liquid Limit Device Type | | Manual | |
| Liquid Limit | | N/A | |
| Plastic Limit | | NP | |
| Plasticity Index | | NP | |
| Liquid Limit Procedure | | Multipoint (A) | |



Comments
 NP = Non Plastic
 Percent Finer than .02mm interpolated to be 13.9% based on Hydrometer
 Percent Finer than .002mm interpolated to be 6.7% based on Hydrometer

Material Test Report


Report No: MAT:ANC-W1817-S3

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1817-S3'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

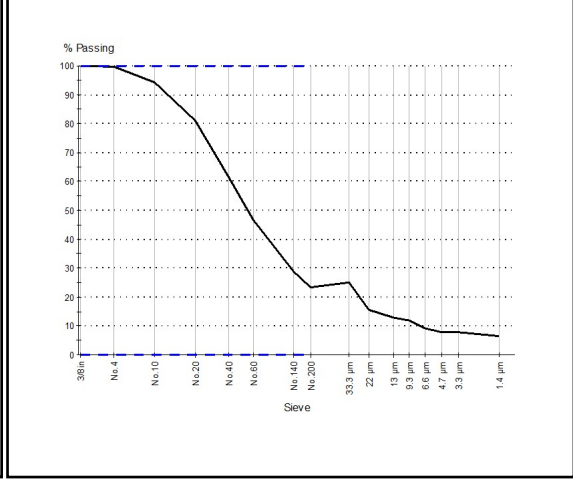
| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1817-S3 |
| Field Sample ID | TP-27 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves with Hydro |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-27 |
| Depth | 12-12.5 |

| Particle Size Distribution | | |
|----------------------------|------------|---------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 3/8in | 100 | 0≤α≤100 |
| No.4 | 100 | 0≤α≤100 |
| No.10 | 94 | 0≤α≤100 |
| No.20 | 81 | 0≤α≤100 |
| No.40 | 61 | 0≤α≤100 |
| No.60 | 47 | 0≤α≤100 |
| No.140 | 29 | 0≤α≤100 |
| No.200 | 23 | 0≤α≤100 |
| 33.3 μm | 25.0 | |
| 22.0 μm | 15.6 | |
| 13.0 μm | 12.9 | |
| 9.3 μm | 11.7 | |
| 6.6 μm | 9.0 | |
| 4.7 μm | 7.7 | |
| 3.3 μm | 7.7 | |
| 1.4 μm | 6.3 | |

Other Test Results

| Description | Method | Result | Limits |
|-------------|--------|-----------|--------|
| Date Tested | | 7/12/2021 | |

Chart



Comments

NP = Non Plastic
 Percent Finer than .02mm interpolated to be 13.9% based on Hydrometer
 Percent Finer than .002mm interpolated to be 6.7% based on Hydrometer

Material Test Report


Report No: MAT:ANC-W1817-S4

Issue No: 1

This report replaces all previous issues of report no 'MAT:ANC-W1817-S4'.

Client: Alaska DOT&PF, Southcoast Region CC:

 Project: DOT_SC Haines Beach Road Landslide



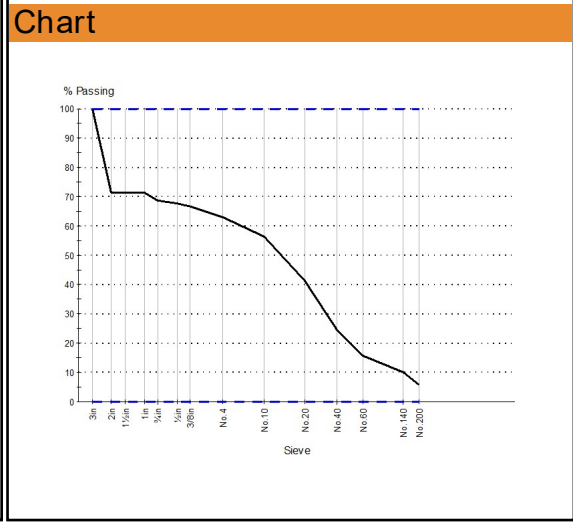
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Reviewed By: Ryan McCormick (Supervising Laboratory Technician)
 Date of Issue: 7/22/2021

| Sample Details | |
|-------------------|-------------------------------|
| Sample ID | ANC-W1817-S4 |
| Field Sample ID | TP-27 |
| Date Sampled | 7/12/2021 |
| Source | R&M Earth Sciences Field Work |
| Material | Drilling Samples |
| Specification | ENG Sieves |
| Sampling Method | R&M Earth Sciences Sampling |
| Sampling Location | See Boring Logs |
| Bore Hole | TP-27 |
| Depth | 13 |

| Particle Size Distribution | | |
|----------------------------|------------|-------------|
| Method: | ASTM D 422 | |
| Date Tested: | 7/12/2021 | |
| Sieve Size | % Passing | Limits |
| 3in | 100 | 0 ≤ α ≤ 100 |
| 2in | 71 | 0 ≤ α ≤ 100 |
| 1½in | 71 | 0 ≤ α ≤ 100 |
| 1in | 71 | 0 ≤ α ≤ 100 |
| ¾in | 69 | 0 ≤ α ≤ 100 |
| ½in | 68 | 0 ≤ α ≤ 100 |
| 3/8in | 67 | 0 ≤ α ≤ 100 |
| No.4 | 63 | 0 ≤ α ≤ 100 |
| No.10 | 56 | 0 ≤ α ≤ 100 |
| No.20 | 41 | 0 ≤ α ≤ 100 |
| No.40 | 24 | 0 ≤ α ≤ 100 |
| No.60 | 16 | 0 ≤ α ≤ 100 |
| No.140 | 10 | 0 ≤ α ≤ 100 |
| No.200 | 5.6 | 0 ≤ α ≤ 100 |

| Other Test Results | | | |
|-----------------------|-------------|-----------|--------|
| Description | Method | Result | Limits |
| Water Content (%) | ASTM D 2216 | 13.8 | |
| Method | | B | |
| Date Tested | | 7/12/2021 | |
| Dispersion device | ASTM D 422 | N/A | |
| Dispersion time (min) | | N/A | |
| Shape | | N/A | |
| Hardness | | N/A | |
| Fm | | N/A | |
| Cu | | 30.56 | |
| Cc | | 0.84 | |
| CuS | | 5.91 | |
| CcS | | 1.46 | |
| Dm (mm) | | 16.605 | |
| U-Number | | 30 | |
| D50S (mm) | | 0.558 | |
| D50G (mm) | | 55.042 | |



Comments
 N/A