09021

# MEMORANDUM

**To:** Steve Sawyer, P.E.
Project Manager

**From:** Ken Recker, P.E.
Geotechnical Engineering Manager

**Date:** November 10, 2010

**Subject:** General Subsurface Conditions
Bayview Road
Saco, Maine

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This memorandum presents the general subsurface conditions for the reconstruction of Bayview Road in Saco, Maine.

## Introduction

Bayview Road is located between Ferry Road and Seaside Avenue in Saco and includes an entrance to Ferry Beach State Park. The proposed project consists of adding a sidewalk on the north side and paved shoulders (for bikes) from the entrance to Ferry Beach State Park to Seaside Avenue, a distance of about 1,900 feet. Full depth reconstruction and drainage improvements on the north side are also part of the project. Bedrock is exposed on the north and south sides of the roadway for about 50 feet just east of Bay View Terrace. Sidewalk and drainage construction will require excavation of bedrock in this area.

## Subsurface Explorations

On August 20, 2010, Geologic-Earth Exploration, Inc. (Geologic) of Norfolk, Massachusetts drilled 17 probes, P1 to P13 and P3A, P5A and P13A and 13B, along the roadway and entrance to Bay View Terrace. Geologic drilled the probes to depths below ground surface varying from 0.7 foot to 13.5 feet. Sebago Technics, Inc. (Sebago Technics) monitored the probes and prepared the logs included as Appendix A. Table I summarizes the results of probes. Geologic backfilled the probes with the drilled soil and placed a bituminous concrete patch at the surface at probes in the roadway.

Probes were drilled using a 1.625-inch diameter geoprobe using direct push to advance the geoprobe. Continuous soil samples were recovered for identification and classification.

Sebago Technics estimated the locations of test probes by correlation with field conditions.

The test probe logs and related information depict subsurface conditions and water levels only at their specific locations at the time indicated on the logs. Soil conditions at other locations may differ from conditions at these locations. Also, the passage of time may result in a change in groundwater conditions at exploration locations.

**Subsurface Conditions**

The test probes encountered five principal soil units overlying bedrock at the site: fill, marine sand, marine clay, glacial till and weathered bedrock. Encountered thickness and generalized descriptions of the soil units are presented below in order of increasing depth below ground surface. Due to the complexity of the deposition process, strata thickness will vary and may be absent at specific locations. Bituminous concrete in the roadway varied in thickness from 5 inches to 7 inches.

**Fill** – Fill consists of brown to dark brown well-graded SAND with gravel (SW); to tan silty SAND with gravel (SM) in the roadway and brown silty SAND with gravel (SM); to brown to tan poorly-graded SAND (SP) at the Bay View Terrace entrance and the vicinity of the rock exposure. Encountered thickness varies from 0.6 foot to 3.0 feet.

**Marine Sand -** The marine sand deposit consists of gray brown to gray to rust brown to tan poorly-graded SAND (SP). Encountered thickness varies from 0.5 foot to greater than 7.0 feet.

**Marine Clay** – Marine clay consists of gray to gray brown mottled lean CLAY (CL). Probes penetrated up to 4.8 feet into clay.

**Glacial Till** – Glacial till consists of brown to gray silty SAND with gravel (SM); to brown well-graded SAND with gravel (SW); to gray brown sandy SILT (ML). Encountered thickness varies from 0.3 foot to 7.0 feet.

**Weathered Bedrock** – Weathered bedrock consists of bedrock that has been weathered to sand and gravel size pieces of rock. Encountered thickness varies from 0.1 foot to 1.5 feet.

Sound bedrock was encountered in the probes at depths below ground surface varying from 0.7 foot to 13.5 feet.

We mapped the exposed bedrock face approximately between Sta. 119+50 and Sta. 120+00. There is a major joint set with a strike that is approximately parallel to Bayview Road that dips into the rock face at 60 degrees to 85 degrees. The bedrock consists of fine grained, gray PHYLLITE (with muscovite-chlorite-quartz-plagioclase) interbedded with dark gray crenulated muscovite-chlorite PHYLLITE with traces of calcite and relict quartz grains.

Groundwater was encountered in the probes at depths below ground surface varying from 3.3 feet to 7.5 feet. Observations of water were made over a relatively short period of time and may not reflect the stabilized groundwater level. In addition, water levels will vary with precipitation, season, temperature and construction activity in the area. Therefore, water levels during and following construction will vary from those observed in the probes.

## Geotechnical Considerations

Pavement Section

In our opinion, the existing fill and naturally deposited, inorganic soils encountered below the roadway are suitable for support of the reconstructed roadway, sidewalk and drainage improvements.

We understand that on August 12, 2010, the MaineDOT recommended a pavement section consisting of:

4 inches of hot mix asphalt placed in two layers (1.5 inches top and 2.5 inches base)
16 inches of gravel subbase, MaineDOT, Section 703.06b, Type D

We concur with this recommended pavement section.

We recommend that the sidewalk section consist of:

2 inches of hot mix asphalt
12 inches of gravel subbase, MaineDOT, Section 703.06b, Type D

Subbase course material should be placed in maximum 8-inch thick loose lifts and compacted at approximately optimum moisture content to a dry density of at least 95 percent of maximum dry density, as determined in accordance with AASHTO Test Designation T180.

Rock Excavation

Based on our observation of the exposed bedrock, it is our opinion that rock excavation will require systematic drilling and blasting for rock removal. Based on the observed strike and dip of the bedrock in the exposed face between Sta. 119+50 and 120+00, we anticipate that bedrock will break along joints that are approximately parallel to Bayview Road and dip into the excavation at relatively high angles. This will likely create unacceptable overhangs in the rock face. We recommend the rock be excavated using controlled blasting techniques such as line drilling the rock to be removed at an angle of 1 horizontal to 4 vertical back from the roadway. We anticipate that drill holes should be spaced at 12 inches to 18 inches on center. We recommend that the contractor prepare a blasting plan for rock excavation and submit to the MaineDOT for review and comment prior to the start of blasting.

The contractor should conduct all blasting activities in accordance with Section 105.2.6 of the Standard Specifications. In addition, the contractor should conduct all blasting activities in such a manner that the peak particle velocity of ground vibration measured at the location of the nearest structures to the blast does not exceed the “safe limits” recommended by the U.S. Bureau of Mines as presented in Figure B-1 in Appendix B of BUMINES RI 8507 and the peak airblast overpressure measured at the location of the nearest aboveground occupied structures to the blast (considering wind direction) does not exceed 0.014 pounds per square inch. The contractor should control flyrock with the use of blasting mats.

If you have questions or need more information, please contact me.

# APPENDIX A

Logs of Test Probes

**TABLE I**
**SUMMARY OF PROBES**
**BAYVIEW ROAD**
**SACO, MAINE**

| Probe No. | Location | | Depth (Ft) | GS El. (Ft) | Depth to Water (Ft) | Strata Thickness (Ft) | | | | | | | Approx. El. Top of Rock (Ft) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Station | Offset | | | | Bit. Concrete | Fill | Sand | Clay | Glacial Till | Weathered Bedrock | Bedrock | |
| P1 | 102+28 | 5 LT | 4.8 | 21.5 | NE | 0.4 | 2.6 | -- | -- | 0.3 | 1.5 | 0.0* | 16.7 |
| P2 | 105+12 | 5 LT | 10.0 | 19.8 | 3.3 | 0.6 | 1.4 | 6.8 | 1.2* | -- | -- | -- | -- |
| P3 | 108+32 | 5 LT | 3.9 | 21.8 | NE | 0.4 | 2.1 | 1.4* | -- | -- | -- | -- | -- |
| P3A | 108+32 | 6.5 LT | 6.1 | 21.8 | NE | 0.4 | 2.1 | 3.2 | -- | 0.4* | -- | -- | -- |
| P4 | 111+27 | 5 LT | 10.0 | 21.5 | 6.0 | 0.5 | 2.0 | 5.5 | 2.0* | -- | -- | -- | -- |
| P5 | 114+07 | 7 LT | 3.5 | 18.2 | NE | 0.4 | 2.6 | 0.5* | -- | -- | -- | -- | -- |
| P5A | 114+07 | 9 LT | 10.0 | 18.7 | 4.0 | 0.4 | 2.6 | 7.0* | -- | -- | -- | -- | -- |
| P6 | 117+13 | 7 LT | 13.5 | 18.7 | 7.5 | 0.4 | 0.4 | 5.7 | -- | 7.0 | -- | 0.0* | 5.2 |
| P7 | 120+25 | 5 LT | 9.8 | 14.0 | NE | 0.5 | 2.5 | 2.0 | 4.8* | -- | -- | -- | -- |
| P8 | 122+84 | 5 LT | 3.3 | 10.7 | NE | 0.4 | 2.2 | 0.7* | -- | -- | -- | -- | -- |
| P9 | 118+64 | 29 LT | 4.0 | 18.5 | NE | -- | 3.0 | 1.0* | -- | -- | -- | -- | -- |
| P10 | 118+87 | 27 LT | 8.5 | 19.0 | NE | -- | 3.0 | 1.0 | -- | 4.5* | -- | -- | -- |
| P11 | 119+17 | 24 LT | 8.1 | 18.0 | NE | -- | 3.0 | 5.0 | -- | -- | 0.1 | 0.0* | 9.9 |
| P12 | 119+37 | 25 LT | 2.6 | 18.0 | NE | -- | 0.6 | 2.0* | -- | -- | -- | -- | -- |
| P13 | 119+98 | 22 LT | 0.7 | 15.0 | NE | -- | 0.7 | -- | -- | -- | -- | 0.0* | 14.3 |
| P13A | 119+98 | 20 LT | 1.5 | 15.0 | NE | -- | 1.0 | 0.5 | -- | -- | -- | 0.0* | 13.5 |
| P13B | 119+95 | 21 LT | 1.5 | 15.0 | NE | -- | 1.0 | 0.5 | -- | -- | -- | 0.0* | 13.5 |

NOTES:

1. NE INDICATES GROUNDWATER NOT ENCOUNTERED WITHIN DEPTH OF PROBE.
2. -- INDICATES STRATUM NOT ENCOUNTERED WITHIN DEPTH OF PROBE.
3. * INDICATES DEPTH OF PENETRATION INTO STRATUM.

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P1

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 21.5 ft. **Datum** **Boring Location** Sta. 102+28, 5 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/4.8

**Drilling Notes:**

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.4 | | -BITUMINOUS CONCRETE- | | | | | | | | | | |
| | | | | | | SM | Tan silty SAND with gravel (SM), mps = 1.5 in., dry | 15 | 15 | 25 | 10 | 15 | 20 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 3.0 | | | | | | | | | | | | |
| | | | | | 3.3 | SM | Brown silty SAND (SM), mps = 0.3 in., damp -GLACIAL TILL- | | 10 | 20 | 15 | 40 | 15 | | | | |
| | | | | | 3.9 | | Gray rock fragments, some silty sand, damp -W. BEDROCK- | | | | | | | | | | |
| | | | | | | | Gray weathered rock fragments, dry | | | | | | | | | | |
| 5 | | | | | 4.8 | | -WEATHERED BEDROCK- | | | | | | | | | | |
| | | | | | | | Geoprobe refusal at 4.8 ft. likely on bedrock. | | | | | | | | | | |
| | | | | | | | Bottom of exploration at 4.8 ft. below ground surface | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | -- | 3.5 | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 3.3 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P1

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P2

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 19.8 ft. **Datum** **Boring Location** Sta. 105+12, 5 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/10.0

**Drilling Notes:**

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.6 | | -BITUMINOUS CONCRETE- | | | | | | | | | | |
| | | | | | | SW | Brown and gray-brown well-graded SAND with gravel (SW), bituminous concrete fragments, mps = 1.5 in., dry | 10 | 5 | 35 | 20 | 25 | 5 | | | | |
| | | | | | 2.0 | | -FILL- | | | | | | | | | | |
| | | | | | | SP | Gray-brown poorly-graded SAND (SP), mps = 0.1 in., damp | | | | 10 | 90 | | | | | |
| | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | 3.8 | | | | | | | | | | | | |
| | | | | | | SP | Gray poorly-graded SAND (SP), mps = 0.1 in., trace organics, wet, occasional clay varves to seams from 5.0 to 7.5 ft. | | | | 5 | 90 | 5 | | | | |
| 5 | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | 7.7 | | | | | | | | | | | | |
| | | | | | | SP | Rust-brown poorly-graded SAND (SP), mps = 0.1 in., wet | | | | 5 | 95 | | | | | |
| | | | | | 8.8 | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | | CL | Gray lean CLAY (CL), wet | | | | | | 100 | N | M | M | |
| | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| 10 | | | | | | | Bottom of exploration at 10.0 ft. below ground surface<br>No refusal | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | -- | 3.5 | 3.3 |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 10.0 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P2

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P3

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 21.8 ft. **Datum** **Boring Location** Sta. 108+32, 5 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/3.9

**Drilling Notes:**

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.4 | | -BITUMINOUS CONCRETE- | | | | | | | | | | |
| | | | | | | SW | Brown well-graded SAND with gravel (SW), mps = 1.0 in., dry | 10 | 5 | 35 | 20 | 25 | 5 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 2.5 | | | | | | | | | | | | |
| | | | | | | SP | Rust-brown to red-brown poorly-graded SAND (SP), mps = 0.1 in., dry | | | | 10 | 90 | | | | | |
| | | | | | 3.9 | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | | | Geoprobe refusal at 3.9 ft. possibly on boulder. | | | | | | | | | | |
| 5 | | | | | | | Bottom of exploration at 3.9 ft. below ground surface | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 3.9 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P3

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P3A

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 21.8 ft. **Datum** **Boring Location** Sta. 108+32, 6.5 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/6.1

**Drilling Notes:** 1.5 ft. north of P3

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.4 | | -BITUMINOUS CONCRETE- | | | | | | | | | | |
| | | | | | | SW | Brown well-graded SAND with gravel (SW), mps = 1.0 in., dry | 10 | 5 | 35 | 20 | 25 | 5 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 2.5 | | | | | | | | | | | | |
| | | | | | | SP | Rust-brown to red-brown poorly-graded SAND (SP), mps = 0.1 in., dry | | | | 10 | 90 | | | | | |
| | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | 4.0 | | | | | | | | | | | | |
| | | | | | | SP | Brown poorly-graded SAND (SP), slight organic odor, mps = 0.1 in., | | | | 10 | 90 | | | | | |
| | | | | | 5.0 | | damp -MARINE DEPOSITS- | | | | | | | | | | |
| 5 | | | | | 5.7 | SP | Gray-brown poorly-graded SAND (SP), mps = 0.1 in., damp | | | | 5 | 95 | | | | | |
| | | | | | | SW | Brown well-graded SAND with gravel (SW), mps = 1.5 in., wet | 10 | 5 | 10 | 10 | 65 | | | | | |
| | | | | | 6.1 | | -GLACIAL TILL DEPOSITS- | | | | | | | | | | |
| | | | | | | | Geoprobe refusal at 6.1 ft. possibly on boulder. | | | | | | | | | | |
| | | | | | | | Bottom of exploration at 6.1 ft. below ground surface | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | -- | 5.8 | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 6.1 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P3A

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P4

Page 1 of 1

| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 21.5 ft. **Datum** **Boring Location** Sta. 111+27, 5 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/10.0

**Drilling Notes:**

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.5 | | -BITUMINOUS CONCRETE- | | | | | | | | | | |
| | | | | | 1.0 | SW | Black well-graded SAND with gravel (SW), bituminous concrete fragments, mps = 1.5 in., dry -FILL- | 10 | 5 | 25 | 25 | 30 | 5 | | | | |
| | | | | | | SW | Brown well-graded SAND (SW), bituminous concrete fragments, mps = 1.0 in., dry -FILL- | 5 | 5 | 30 | 25 | 30 | 5 | | | | |
| | | | | | 2.5 | SP | Tan poorly-graded SAND (SP), mps = 0.1 in., rusty discolorations from 2.5 to 3.0 ft., dry | | | | 5 | 95 | | | | | |
| 5 | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | 6.0 | SP | Light gray poorly-graded SAND (SP), mps = 0.1 in., damp | | | | 5 | 95 | | | | | |
| | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | 8.0 | CL | Gray lean CLAY (CL), occasional sand seams and silt varves, mps = 0.02 in., wet | | | | | 10 | 90 | N | M | M | |
| | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| 10 | | | | | | | Bottom of exploration at 10.0 ft. below ground surface<br>No refusal | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | -- | 8.0 | 6.0 |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 10.0 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P4

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P5

Page 1 of 1

| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 18.2 ft. **Datum** **Boring Location** Sta. 114+07, 7 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

- ☐ Truck ☐ Tripod ☐ Cat-Head
- ☐ ATV ☑ Geoprobe ☐ Winch
- ☐ Track ☐ Air Track ☐ Roller Bit
- ☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/3.5

**Drilling Notes:**

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.4 | | -BITUMINOUS CONCRETE- | | | | | | | | | | |
| | | | | | 0.8 | SW | Black well-graded SAND (SW), mps = 0.4 in., dry -FILL- | | 10 | 30 | 15 | 55 | | | | | |
| | | | | | | SW | Gray-brown well-graded SAND with gravel (SW), mps = 1.5 in., trace | 15 | 15 | 30 | 10 | 20 | 10 | | | | |
| | | | | | | | bituminous concrete, dry | | | | | | | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 3.0 | | | | | | | | | | | | |
| | | | | | 3.5 | SP | Gray-brown poorly-graded SAND (SP), mps = 0.1 in., organic seam | | | | 5 | 95 | | | | | |
| | | | | | | | from 3.4 to 3.5 ft., organic odor, wet -MARINE DEPOSITS- | | | | | | | | | | |
| 5 | | | | | | | Geoprobe refusal at 3.5 ft. possibly on boulder. | | | | | | | | | | |
| | | | | | | | Bottom of exploration at 3.5 ft. below ground surface | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

**Sample ID**

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon Sample
- G Geoprobe

**Well Diagram**

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 3.5 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P5

**Field Tests**

Dilatancy: R - Rapid S - Slow N - None

Toughness: L - Low M - Medium H - High

Plasticity: N - Nonplastic L - Low M - Medium H - High

Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P5A

Page 1 of 1

| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 18.7 ft. **Datum** **Boring Location** Sta. 114+07, 9 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/10.0

**Drilling Notes:** 2.0 ft. north of P5

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.4 | | -BITUMINOUS CONCRETE- | | | | | | | | | | |
| | | | | | 0.8 | SW | Black well-graded SAND (SW), mps = 0.4 in., dry -FILL- | | 10 | 30 | 15 | 55 | | | | | |
| | | | | | | SW | Gray-brown well-graded SAND with gravel (SW), mps = 1.5 in., trace bituminous concrete, dry | 15 | 15 | 30 | 10 | 20 | 10 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 3.0 | | | | | | | | | | | | |
| | | | | | | SP | Gray-brown poorly-graded SAND (SP), mps = 0.1 in., black organic seam | | | | 5 | 95 | | | | | |
| | | | | | 4.0 | | from 3.4 to 3.9 ft., wet -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | | SP | Brown poorly-graded SAND (SP), mps = 0.1 in., wet | | | | 5 | 95 | | | | | |
| 5 | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | 8.5 | | | | | | | | | | | | |
| | | | | | | SW | Gray-brown well-graded SAND with gravel (SW), mps = 1.0 in., wet | 5 | 10 | 25 | 20 | 40 | | | | | |
| | | | | | | | -GLACIAL TILL DEPOSITS- | | | | | | | | | | |
| 10 | | | | | | | Bottom of exploration at 10.0 ft. below ground surface | | | | | | | | | | |
| | | | | | | | No refusal | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | -- | 8.0 | 4.0 |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 10.0 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P5A

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P6

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 18.7 ft. **Datum** **Boring Location** Sta. 117+13, 7 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/13.5

**Drilling Notes:**

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.4 | | -BITUMINOUS CONCRETE- | | | | | | | | | | |
| | | | | | 0.8 | SW | Dark brown to black well-graded SAND (SW), bituminous concrete, dry, | | 15 | 30 | 20 | 25 | 10 | | | | |
| | | | | | | | mps = 0.4 in. -FILL- | | | | | | | | | | |
| | | | | | | SP | Tan poorly-graded SAND (SP), mps = 0.1 in., dry | | | | 10 | 90 | | | | | | |
| | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| 5 | | | | | 6.5 | | | | | | | | | | | | |
| | | | | | | ML | Gray-brown sandy SILT (ML), trace clay, coarse sand seam 6.5 to 6.7 | | | 5 | | 35 | 60 | | | | |
| | | | | | | | ft., trace clay, mps = 0.2 in., damp | | | | | | | | | | |
| | | | | | | | -GLACIAL TILL DEPOSITS- | | | | | | | | | | |
| 10 | | | | | 12.0 | | | | | | | | | | | | |
| | | | | | | SM | Gray silty SAND with gravel (SM), bonded, mps = 1.5 in., wet | 15 | 10 | 20 | 10 | 30 | 15 | | | | |
| | | | | | | | -GLACIAL TILL DEPOSITS- | | | | | | | | | | |
| | | | | | 13.5 | | | | | | | | | | | | |
| | | | | | | | Geoprobe refusal at 13.5 ft. | | | | | | | | | | |
| 15 | | | | | | | Bottom of exploration at 13.5 ft. below ground surface | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | -- | 13.5 | 7.5 |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 13.5 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P6

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P7

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 14.0 ft. **Datum** **Boring Location** 120+25, 5 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/9.8

**Drilling Notes:**

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.5 | | -BITUMINOUS CONCRETE- | | | | | | | | | | |
| | | | | | 1.0 | SW | Gray well-graded SAND with gravel (SW), mps = 0.75 in., dry -FILL- | | | | | | | | | | |
| | | | | | | SW | Brown well-graded SAND with gravel (SW), mps = 1.5 in., dry | 10 | 5 | 15 | 20 | 40 | 10 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 3.0 | | | | | | | | | | | | |
| | | | | | | SP | Tan poorly-graded SAND (SP), mps = 0.1 in., dry | | | | 10 | 90 | | | | | |
| 5 | | | | | 5.0 | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | | CL | Gray-brown mottled lean CLAY (CL), frequent sand seams, mps = 0.02 in., wet from 9.5 to 9.8 ft., trace rock fragments at 9.8 ft. | | | | | 10 | 90 | N | M | M | |
| | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| 10 | | | | | 9.8 | | | | | | | | | | | | |
| | | | | | | | Geoprobe refusal at 9.8 ft. | | | | | | | | | | |
| | | | | | | | Bottom of exploration at 9.8 ft. below ground surface | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | -- | 9.0 | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 9.8 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P7

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P8

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 10.7 ft. **Datum** **Boring Location** Sta. 122+84, 5 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/3.3

**Drilling Notes:**

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.4 | | -BITUMINOUS CONCRETE- | | | | | | | | | | |
| | | | | | 0.8 | GW | Gray well-graded GRAVEL with sand (GW), mps = 1.5 in., dry -FILL- | | | | | | | | | | |
| | | | | | | SW | Brown well-graded SAND with gravel (SW), mps = 1.5 in., dry | 10 | 10 | 30 | 15 | 30 | 5 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 2.6 | | | | | | | | | | | | |
| | | | | | | SP | Tan to rust-brown poorly-graded SAND (SP), mps = 0.1 in., damp | | | | 10 | 90 | | | | | |
| | | | | | 3.3 | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | | | Geoprobe refusal at 3.3 ft. possibly on boulder. | | | | | | | | | | |
| 5 | | | | | | | Bottom of exploration at 3.3 ft. below ground surface | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 3.3 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P8

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P9

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 18.5 ft. **Datum** **Boring Location** Sta. 118+64, 29 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☑ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/4.0

**Drilling Notes:** in island

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | SM | Brown silty SAND (SM), roots, mps = 0.2 in., dry | | | 5 | 15 | 65 | 15 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 3.0 | | | | | | | | | | | | |
| | | | | | | SP | Brown poorly-graded SAND (SP), mps = 0.1 in., dry | | | | 10 | 90 | | | | | |
| | | | | | 4.0 | | -MARINE DEPOSITS- | | | | | | | | | | |
| 5 | | | | | | | Geoprobe refusal at 4.0 ft. possibly on boulder or blasted rock pieces. | | | | | | | | | | |
| | | | | | | | Bottom of exploration at 4.0 ft. below ground surface | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 4.0 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P9

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P10

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 19.0 ft. **Datum** **Boring Location** Sta. 118+87, 27 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

- ☑ Truck ☐ Tripod ☐ Cat-Head
- ☐ ATV ☑ Geoprobe ☐ Winch
- ☐ Track ☐ Air Track ☐ Roller Bit
- ☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/8.5

**Drilling Notes:** in island

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | SM | Brown silty SAND (SM), roots, mps = 0.1 in., dry | | | | 5 | 80 | 15 | | | | |
| | | | | | 1.0 | | -TOPSOIL/FILL- | | | | | | | | | | |
| | | | | | | SP | Brown poorly-graded SAND (SP), trace silt, brick fragments, mps = | | | | 10 | 90 | | | | | |
| | | | | | | | 0.1 in., dry | | | | | | | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 3.0 | | | | | | | | | | | | |
| | | | | | | SP | Brown poorly-graded SAND (SP), mps = 0.1 in., dry | | | | 10 | 90 | | | | | |
| | | | | | 4.0 | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | | SM | Brown silty SAND with gravel (SM), mps = 1.5 in., dry | 10 | 10 | 20 | 10 | 35 | 15 | | | | |
| 5 | | | | | | | -GLACIAL TILL DEPOSITS- | | | | | | | | | | |
| | | | | | 8.5 | | | | | | | | | | | | |
| | | | | | | | Geoprobe refusal at 8.5 ft. | | | | | | | | | | |
| 10 | | | | | | | Bottom of exploration at 8.5 ft. below ground surface | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon Sample
- G Geoprobe

**Well Diagram**

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 8.5 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P10

**Field Tests**

Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P11

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 18.0 ft. **Datum** **Boring Location** Sta. 119+17, 24 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

| | | | |
|---|---|---|---|
| ☑ Truck | ☐ Tripod | ☐ Cat-Head | |
| ☐ ATV | ☑ Geoprobe | ☐ Winch | |
| ☐ Track | ☐ Air Track | ☐ Roller Bit | |
| ☐ Skid | ☐ _____ | ☐ Cutting Head | |

**Hammer Type**: ☐ Safety ☐ Doughnut ☑ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance** — Type Method Depth: Direct push/8.1

**Drilling Notes:**

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.6 | SM | Brown silty SAND (SM), roots, mps = 0.1 in., dry -TOPSOIL/FILL- | | | | 5 | 80 | 15 | | | | |
| | | | | | | SM | Brown silty SAND with gravel (SM), mps = 1.0 in., dry | 10 | 10 | 20 | 15 | 30 | 15 | | | | |
| | | | | | | | -FILL- | | | | | | | | | | |
| | | | | | 3.0 | | | | | | | | | | | | |
| | | | | | | SP | Brown poorly-graded SAND (SP), mps = 0.1 in., dry | | | | 5 | 95 | | | | | |
| | | | | | 4.0 | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | | SM | Gray-brown silty SAND with gravel (SM), mps = 1.5 in., clayey sandy | 10 | 10 | 30 | 5 | 25 | 20 | | | | |
| 5 | | | | | | | seam from 7.2 to 8.0 ft., damp | | | | | | | | | | |
| | | | | | | | -GLACIAL TILL DEPOSITS- | | | | | | | | | | |
| | | | | | 8.0 | | | | | | | | | | | | |
| | | | | | 8.1 | | -WEATHERED BEDROCK- | | | | | | | | | | |
| | | | | | | | Geoprobe refusal at 8.1 ft. | | | | | | | | | | |
| 10 | | | | | | | Bottom of exploration at 8.1 ft. below ground surface | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

| | |
|---|---|
| | Riser Pipe |
| | Screen |
| | Filter Sand |
| | Cuttings |
| | Grout |
| | Concrete |
| | Bentonite Seal |

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 8.0 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P11

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P12

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 18.0 ft. **Datum** **Boring Location** Sta. 119+37, 25 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☑ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/2.6

**Drilling Notes:** 12.0 ft. north of north edge of pavement

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | 0.6 | SM | Brown silty SAND (SM), roots, mps = 0.1 in., dry -TOPSOIL/FILL- | | | | 5 | 80 | 15 | | | | |
| | | | | | | SP | Tan poorly-graded SAND (SP), mps = 0.02 in., dry, rusty discolorations | | | | | 90 | 10 | | | | |
| | | | | | | | from 2.4 to 2.6 ft. | | | | | | | | | | |
| | | | | | | | -MARINE DEPOSITS- | | | | | | | | | | |
| | | | | | 2.6 | | | | | | | | | | | | |
| | | | | | | | Geoprobe refusal at 2.6 ft. | | | | | | | | | | |
| | | | | | | | Bottom of exploration at 2.6 ft. below ground surface | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 2.6 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P12

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** P13

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 15.0 ft. **Datum** **Boring Location** Sta. 119+98, 22 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

- ☐ Truck ☐ Tripod ☐ Cat-Head
- ☐ ATV ☑ Geoprobe ☐ Winch
- ☐ Track ☐ Air Track ☐ Roller Bit
- ☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/0.7

**Drilling Notes:**

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | SM | Brown silty SAND with gravel (SM), roots, mps = 1.0 in., dry | 10 | 10 | 10 | 5 | 50 | 15 | | | | |
| | | | | | 0.7 | | -FILL- | | | | | | | | | | |
| | | | | | | | Geoprobe refusal at 0.7 ft. likely on bedrock. | | | | | | | | | | |
| | | | | | | | Bottom of exploration at 0.7 ft. below ground surface | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

- O Open End Rod
- T Thin Wall Tube
- U Undisturbed Sample
- S Split Spoon Sample
- G Geoprobe

**Well Diagram**

- Riser Pipe
- Screen
- Filter Sand
- Cuttings
- Grout
- Concrete
- Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 0.7 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P13

**Field Tests**

Dilatancy: R - Rapid S - Slow N - None

Toughness: L - Low M - Medium H - High

Plasticity: N - Nonplastic L - Low M - Medium H - High

Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** **P13A**

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 15.0 ft. **Datum** **Boring Location** Sta. 119+98, 20 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/1.5

**Drilling Notes:** 10.5 ft. north of north edge of pavement

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | SM | Brown silty SAND with gravel (SM), roots, mps = 1.0 in., dry | 10 | 10 | 10 | 5 | 50 | 15 | | | | |
| | | | | | 1.0 | | -FILL- | | | | | | | | | | |
| | | | | | 1.5 | SP | Brown poorly-graded SAND (SP), mps = 0.1 in., dry -MARINE DEP.- | | | | 10 | 90 | | | | | |
| | | | | | | | Geoprobe refusal at 1.5 ft. likely on bedrock. | | | | | | | | | | |
| | | | | | | | Bottom of exploration at 1.5 ft. below ground surface | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

O Open End Rod
T Thin Wall Tube
U Undisturbed Sample
S Split Spoon Sample
G Geoprobe

**Well Diagram**

Riser Pipe
Screen
Filter Sand
Cuttings
Grout
Concrete
Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 1.5 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P13A

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**

**SEBAGO TECHNICS, INC.**

# PROBE REPORT

**PROBE NO.** **P13B**

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| | | | |
|---|---|---|---|
| **PROJECT** | BAYVIEW ROAD | **STI JOB NO.** | 09021 |
| **LOCATION** | SACO, MAINE | **PROJECT MGR.** | K. RECKER |
| **CLIENT** | MAINE DEPARTMENT OF TRANSPORTATION | **FIELD REP.** | K. B. STEPHENSON |
| **CONTRACTOR** | GEOLOGIC-EARTH EXPLORATION, INC. | **DATE STARTED** | 8/20/2010 |
| **DRILLER** | J. FERREIRA | **DATE FINISHED** | 8/20/2010 |

**Elevation** 15.0 ft. **Datum** **Boring Location** Sta. 119+95, 21 LT

| Item | Casing | Sampler | Core Barrel |
|---|---|---|---|
| Type | | G | |
| Inside Diameter (in.) | | 1.625 | |
| Hammer Weight (lb.) | | | |
| Hammer Fall (in.) | | | |

**Rig Make & Model** Geoprobe GH-41

☐ Truck ☐ Tripod ☐ Cat-Head
☐ ATV ☑ Geoprobe ☐ Winch
☐ Track ☐ Air Track ☐ Roller Bit
☐ Skid ☐ _____ ☐ Cutting Head

**Hammer Type**: ☐ Safety ☐ Doughnut ☐ Automatic

**Drilling Mud**: ☐ Bentonite ☐ Polymer ☑ None

**Casing Advance**: Type Method Depth — Direct push/1.45

**Drilling Notes:** 12.0 ft. north of north edge of pavement

| Depth (ft.) | Sampler Blows per 6 in. | Sample No. & Recovery (in.) | Sample Depth (ft.) | Well Diagram | Stratum Change (ft.) | USCS Symbol | Visual-Manual Identification & Description (density/consistency, color, GROUP NAME & SYMBOL, maximum particle size*, structure, odor, moisture, optional descriptions, geologic interpretation) | Gravel % Coarse | Gravel % Fine | Sand % Coarse | Sand % Medium | Sand % Fine | % Fines | Field Test Dilatancy | Field Test Toughness | Field Test Plasticity | Field Test Strength |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | | | | | SM | Brown silty SAND with gravel (SM), roots, mps = 1.0 in., dry | 10 | 10 | 10 | 5 | 50 | 15 | | | | |
| | | | | | 1.0 | | -FILL- | | | | | | | | | | |
| | | | | | 1.5 | SP | Brown poorly-graded SAND (SP), mps = 0.1 in., dry -MARINE DEP.- | | | | 10 | 90 | | | | | |
| | | | | | | | Geoprobe refusal at 1.5 ft. likely on bedrock. | | | | | | | | | | |
| | | | | | | | Bottom of exploration at 1.5 ft. below ground surface | | | | | | | | | | |
| | | | | | | | Note: rock fragments 1.4 to 1.5 ft. | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | |
| 20 | | | | | | | | | | | | | | | | | |
| 25 | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | |

**Water Level Data**

| Date | Time | Elapsed Time (hr.) | Depth in feet to: Bottom of Casing | Bottom of Hole | Water |
|---|---|---|---|---|---|
| | | | | | Dry |
| | | | | | |
| | | | | | |

**Sample ID**

| | |
|---|---|
| O | Open End Rod |
| T | Thin Wall Tube |
| U | Undisturbed Sample |
| S | Split Spoon Sample |
| G | Geoprobe |

**Well Diagram**

Riser Pipe, Screen, Filter Sand, Cuttings, Grout, Concrete, Bentonite Seal

**Summary**

| | |
|---|---|
| Overburden (Linear ft.) | 1.45 |
| Rock Cored (Linear ft.) | -- |
| Number of Samples | -- |

**PROBE NO.** P13B

**Field Tests**
Dilatancy: R - Rapid S - Slow N - None
Toughness: L - Low M - Medium H - High
Plasticity: N - Nonplastic L - Low M - Medium H - High
Dry Strength: N - None L - Low M - Medium H - High V - Very High

***NOTE: Maximum Particle Size is determined by direct observation within the limitations of sampler size.**

**NOTE: Soil identifications based on visual-manual methods of the USCS system as practiced by Sebago Technics, Inc.**