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GOLDENVIEW DRIVE PARCEL

GEOTECHNICAL MEMORANDUM

To:	Municipality of Anchorage (MOA) Project Management and Engineering (PM&E)
From:	Lauren Southerland, P.E. R&M Geotechnical Engineer
Subject:	Goldenview Drive Parcel Geotechnical Information
Project Number:	R&M No. 3272.01
Date:	28 October 2025

1. Introduction

The Municipality of Anchorage (MOA) Project Management and Engineering (PM&E) Department retained R&M Consultants, Inc. (R&M) on behalf of the Anchorage Heritage Land Bank (HLB) to perform a geotechnical subsurface investigation at the Goldenview Drive parcel 02018168000 located in Anchorage, Alaska. The property is located on the Anchorage hillside, approximately 1-mile south of Goldenview Middle School and across from Moen Park on Goldenview Drive. Vicinity and investigation locations maps are presented in **Drawing A-01** and **Drawing A-02,** respectively.

2. Project Background

MOA HLB is evaluating suitability of parcel 02018168000, legally described at Tract B-2 Legacy Point Subdivision, for use as a cemetery to aid possible sale of the property to Alaska Natural Burial an organization in Anchorage, Alaska. We understand that the natural burial sites require a minimum of 4 feet depth of burial into material that is workable with standard excavation equipment. Traditional burial depth is 6 feet when the deceased is within a casket. Existing data surrounding the project site is summarized in the following subsection and locations are provided on **Drawing A-02**.

2.1 Existing Geotechnical Information

An investigation was conducted in 1977 by Alaska Test Labs to evaluate suitability of the parcel directly south of the project for sewage disposal for a proposed subdivision. Two borings approximately 100 to 400 feet away from the south edge of the project parcel were explored to depths of 15.0 to 18.0 feet below ground surface (bgs). Both borings encountered organic deposits to depths of 1.0 feet bgs, generally overlying granular material over probable bedrock. Depths to weathered bedrock were between 9.0 and 15.0 feet bgs (Alaska Test Labs, 1978).

MOA investigated conditions along Goldenview Drive in 1983, with three test holes being previously located along the eastern edge of the project parcel. Test holes were explored to depths between 5.0 to 7.5 bgs and generally encountered granular material that did not terminate into bedrock (MOA Construction Division, 1983).

3. Site Regional Setting

The site is located on Golden View Dr. in Anchorage, Alaska in Township 11 North, Range 3 West, and Section 10 of the Seward Meridian. The property is located in Anchorage, Alaska on the Anchorage hillside approximately 1-mile directly south of Goldenview Middle School and directly west from Moen Park on Goldenview Drive. Site details are provided below on **Table 1**.

Table 1: Goldenview parcel project site information.

Category	Description and Location
Site Name	MOA HLB Golden View Property
MOA Parcel ID	02018168000
Plat No.	130018
Current land Use / Parcel Size	Undeveloped Vacant land / 419,431 square feet (sq ft)
Legal Description	Legacy Pointe Track B-2

Notes

1. Property information accessed from MOA GIS (MOA, 2025).

3.1 General Geology

The project is located in the southeast portion of the Anchorage bowl in a zone of transition between the Cook Inlet-Susitna Lowland physiographic province to the west, and the Kenai-Chugach Mountains physiographic province to the east. The Susitna Lowland is characterized by relatively flat, low ground containing areas of glacial moraine, ice-contact, and outwash features. The Kenai-Chugach Mountains are terrain characterized by moderately high and rugged mountains (Wahrhaftig, 1965). The Anchorage bowl was last covered with glacial ice during middle to late Pleistocene age (Coulter et al., 1965).

Surficial geology in the project site vicinity is reported to include late Pleistocene lateral and ground moraines and glacial drift overlying metamorphosed sedimentary and igneous bedrock of the McHugh Complex (Miller & Dobrovolny, 1959) (Winkler, 1992). The McHugh complex is a bedrock mélange that is generally comprised of metaclastic (siltstone, graywacke, arkose, and conglomeratic sandstone) and metavolcanic rocks (metachert and argillite) (Clark, 1973).

The shallow soil profile in undisturbed areas around the project area generally consists of several inches of slightly to moderately decomposed plant matter and peat; overlying one to two feet of non-plastic silt with very fine sand; overlying variable sand and gravel with some silt and cobbles and boulders (USDA, 2001). This region is generally free of permafrost except for potential isolated permafrost at higher mountain elevations (Jorgenson et al., 2008).

3.2 Climate

Anchorage lies within the gulf coast transitional climate zone (Ballinger, et al., 2023). Local climate is controlled by the marine and mountainous setting; characterized by a semi-arid atmosphere, long, cold winters, and mild summers. A summary of local climatological data is presented in **Table 2**.

Table 2: Climatic Conditions for Anchorage, Alaska.

Weather Station Parameter and Source	Anchorage, Alaska (UAF SNAP)[1]
Period of Record	1985 to 2015
Mean Annual Temperature (°F)	37.4
Mean Max. Monthly Temperature (°F)	66.5 (July)
Mean Min. Monthly Temperature (°F)	11.0 (January)
Mean Annual Precipitation (in.)	16.5
Mean Annual Snowfall (in.)[2]	3.3
Average Annual Air Freezing Index (AFI, °F-days)	1,615
Average Annual Air Thawing Index (ATI, °F-days)	3,850
Design Annual Air Freezing Index (AFI, °F-days)[3]	2,473
Design Annual Air Thawing Index (ATI, °F-days)[3]	4,306

Notes:

1. University of Alaska Fairbanks, Scenarios Network for Alaska + Arctic Planning (UAF, 2025)
2. Snowfall data is total annual snowfall water equivalent values.
3. Design AFI and ATI reflect the average of the three coldest and three warmest seasons, respectively, over the three-decade period.

4. Geotechnical Investigation Methods

Test pit locations were established using a non-survey grade global positioning system (GPS) device considered accurate to approximately 10 feet by the equipment manufacturers and operated by personnel trained on the equipment. Horizontal coordinates are referenced to Alaska State Plan, Zone 4, NAD83, in U.S. survey feet. Chosen locations were based on excavator equipment access and to maximize spatial layout of the property. A locate request was filed with 811 Alaska Digline and coordinated site visits were conducted to locate buried utilities prior to beginning subsurface investigation.

Test pit locations excavated during this investigation are presented on **Drawing A-02**. Coordinate location information for test pits completed during this investigation are presented in **Table 3** and on test boring logs provided in **Appendix B**.

Table 3: Summary of R&M Test Pit Locations and Depths

Test Pit Name	Location Coordinates[1]		Total Depth (feet bgs)
	Latitude (degrees)	Longitude (degrees)	
RM25-TP-01	61.05972	-149.77639	5.5
RM25-TP-02	61.05938	-149.77508	4.5
RM25-TP-03	61.05917	-149.77694	5.5
RM25-TP-04	61.05833	-149.77722	8.0
RM25-TP-05	61.05833	-149.77722	2.5
RM25-TP-06	61.05861	-149.77583	4.5
RM25-TP-07	61.05943	-149.77613	2.0
RM25-TP-08	61.05873	-149.77676	3.5

Notes

1. Horizontal coordinate reference World Geodetic System 1984 (WGS 84) State Plane Zone 4.

4.1 Test Pits Methodology

R&M completed eight test pits on 9 September, 2025. Geotechnical test pit completion depths ranged from 2.0 to 8.0 feet bgs and were all terminated at bedrock. The field program was conducted under the direct guidance of an experienced R&M engineering technician who maintained detailed logs of the materials encountered and the samples collected. Each test pit was logged in accordance with MOA and R&M standard procedures. Data obtained from test borings were utilized for geologic interpretations. Excavating and sampling operations were performed by Pioneer Earthworks of Anchorage, utilizing a Kubota U55-4 compact excavator as shown in **Figure 1**. Samples were collected using grab samples from each excavation site. After visual and tactile classification in the field, soil samples were returned to R&M's Materials Laboratory in Anchorage. Representative samples were selected for further examination and analysis. Test pit log general notes and an example of a typical log are illustrated in **Appendix B** on **Drawings B-01**. The test boring logs are provided as **Drawings B-02 through B-09**.

Figure 1: Photo of Kubota U55-4 Compact Excavator

4.2 Test Pit Completion and Backfilling

Upon completion of excavation, test pits were backfilled with excavated material generated from excavation activities and compacted at the surface with the excavator bucket to the extent practicable. Any excess soil and vegetation were distributed on the ground surface in the vicinity of the test pit locations.

5. Geotechnical Laboratory Testing Program

The laboratory testing program was developed and executed to provide data on soil characteristics necessary for surface and subsurface characterization and define material properties of the site. These tests verified or modified the field descriptions, improving the database for engineering application and geotechnical interpretation of site conditions. Laboratory testing was performed in accordance with the following ASTM procedures in **Table 4** (ASTM 2023).

Table 4: Laboratory testing methods.

ASTM Test Designation	Description
ASTM D 6913	Particle size analysis of soils (sieve and hydrometer)
ASTM D 2216	Laboratory determination of water content of soil and rock by mass
ASTM D 2487	Classification of soils for engineering purposes
ASTM D 2488	Description and identification of soils (visual-manual procedure)

5.1 Index Tests and Soil Classification

Each soil sample with gradation or plasticity testing was assigned a Unified Soil Classification System (USCS) classification. The Classification of Soils for Engineering Purposes (ASTM D 2487) is presented in **Appendix C** as **Drawing C-01.** A summary of surface and subsurface soil laboratory index test results (Soil Classification, Moisture Content, Particle Size, Organic Content, Frost Class, and Plasticity) is provided on **Drawings C-02**. Gradation curves are provided on **Drawings C-03 through C-10.**

6. Site Conditions

Information regarding soil, groundwater, thermal and other site conditions is presented in the following subsections.

6.1 Surface Conditions

The project site was undulating and encompasses many walking trails used by residents within the parcel. The elevation of the site ranged from approximately 750 to 850 feet, relative to NAVD88 vertical datum. The site was surfaced with tall grasses, spruce trees, alder trees, berry bushes, and tundra moss.

6.2 Subsurface Conditions

Subsurface soils at the project site generally consisted of three distinct soil units: (I) surficial organic deposits, (II) colluvium, and (III) bedrock. A summary of interpreted depth and extent of the subsurface units is provided in **Table 5.** The two generalized soil units interpreted at the project site are described in the following subsections.

Table 5: Extents of generalized subsurface units encountered at project site.

Test Pit Name	Completion Depth	UNIT I Surficial Organic Deposits	UNIT II Colluvium	UNIT III Bedrock	Groundwater Depth
	(feet bgs)				
RM25-TP-01	5.5	0.0 – 1.5	1.5 – 5.5	5.5	N.E.
RM25-TP-02	4.5	0.0 – 1.5	1.5 – 4.5	4.5	N.E.
RM25-TP-03	5.5	0.0 – 1.5	1.5 – 5.5	5.5	5.5
RM25-TP-04	8.0	0.0 – 2.0	2.0 – 8.0	8.0	8.0
RM25-TP-05	2.5	0.0 – 2.0	2.0 – 2.5	2.5	N.E.
RM25-TP-06	4.5	0.0 – 1.5	1.5 – 4.5	4.5	N.E.
RM25-TP-07	2.0	0.0 – 1.0	1.0 – 2.0	2.0	N.E.
RM25-TP-08	3.5	0.0 – 1.5	1.5 – 3.5	3.4	N.E.

Notes
N.E. = Not Encountered
All test pits were terminated at bedrock.

6.2.1 Unit I – Surficial Organic Deposits

Surficial organic deposits were encountered in all test pits from ground surface to depths up to 2.0 feet. The organic layer generally consisted of lean silt with organics (USCS = oML). Organic material included peat, rootlets, decayed vegetative matter and was moist to wet.

6.2.2 Unit II – Colluvium

Colluvium deposits were interpreted directly underlying the surficial organic deposits and extended to completion depths at all test pits. Colluvium is described as material that can mobilized from a higher elevation to a lower elevation. The colluvium deposits were generally classified as poorly-graded sand with silt and gravel, silty sand, and silt sand with gravel containing cobbles and boulders (USCS = SP-SM, SM). Gravels were generally angular to rounded, sand was fine to coarse, and the fines were estimated to be non-plastic.

6.2.3 Unit III – Bedrock

Each test pit was terminated on bedrock. Bedrock was also exposed in sporadic outcrops around the property. Based on visual inspection during field activities, the bedrock generally appeared to be comprised of moderately to slightly weathered, medium to moderately hard metasiltstone.

6.3 Groundwater

Groundwater was encountered in test pits RM25-TP-03 and RM25-TP-04 at 5.5 and 8.0 feet bgs, respectively. Water was observed as seepage into the bottom of the test pits during excavation.

7. Site Development Suitability

We understand that the main objective of the project is to report subsurface conditions as it pertains to natural burial site excavations of up to 4 feet bgs. Excavation zones were categorized into two descriptions (easy and hard) based on observations made in the field and Kirsten's ripping index for rock materials. Kirsten's ripping index provides necessary horsepower required to excavate rock materials based on hardness (Kirsten 1982). Intact rock was generally estimated as very hard rock, requiring at least 350 horsepower (HP) to excavate applying Kirsten's ripping index. This energy equivalency is based on flywheel HP, assumed to be heavy-duty machines like that of track-mounted backhoes or tractor equipment with single tooth and rear-mounted rippers. For reference, the Kubota U55-4 maximum gross HP is approximately 45 HP. **Table 6** provides a summary of excavation categories, general observed test pit trench stability, and observed general groundwater flow conditions.

Table 6. Test pit characterization summary.

Test Pit Location	Easy Excavation Zone (feet bgs)	Hard Excavation Zone (feet bgs)	Trench Stability and groundwater flow conditions
RM25-TP-01	0 – 5.5	>5.5	• Pit excavation stayed open during excavation. No collapse was observed during fieldwork. • Groundwater encountered in RM25-TP-03 and RM25-TP-04 was observed to be slowly seeping into the bottom of the pit at the soil/rock interface.
RM25-TP-02	0 – 4.5	>4.5	
RM25-TP-03	0 – 5.5	>5.5	
RM25-TP-04	0 – 8.0	>8.0	
RM25-TP-05	0 – 2.5	>2.5	
RM25-TP-06	0 – 4.5	>4.5	
RM25-TP-07	0 – 2.0	>2.0	
RM25-TP-08	0 – 3.5	>3.5	

For natural burial sites requiring at least 4 feet excavation the site is partially usable in areas where bedrock is deeper than 4 feet, which was encountered in five of the eight test pits. These areas would require a similar type of equipment that was used for the test pitting effort.

Seven of the eight test pit locations encountered competent bedrock shallower than 6 feet bgs. Based on the results of this investigation the usability of this site for traditional burials would require significant excavation power. Excavation equipment for this purpose would at least require a large excavator, however alternative methods may be required to reach 6 foot depths.

8. CLOSURE

This Geotechnical Memorandum was prepared for the exclusive use of the Municipality of Anchorage Project Management and Engineering Department (MOA PM&E) and their representatives in the study of this site. R&M performed this work in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No warranty, express or implied, beyond exercise of reasonable care and professional diligence, is made. R&M's services for the project were performed by, or under the responsible charge of the individuals listed below.

This document is designed to be representative of a site at a particular moment in time and the result of services performed within the scope, limitations, and cost of the work requested. Changes in site conditions may occur with passage of time, natural processes, or works of humans. In addition, changes in typical industry practice, State or Federal laws, codes, or regulations may occur. Such changes are beyond our control and observations, interpretations, and recommendations for this site may need to be revised wholly or in part.

R&M CONSULTANTS, INC.

Lauren Southerland, PE
Geotechnical Engineer

Reviewed By:

Christopher Fell, CPG
Geosciences Group Manager

LIST OF APPENDICES

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Appendix A – Maps

ALL LOCATIONS ARE APPROXIMATE

0 1 2 4

APPROXIMATE SCALE IN MILES

Notes:
Coordinate System: NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet
Base map from ESRI World Imagery

N

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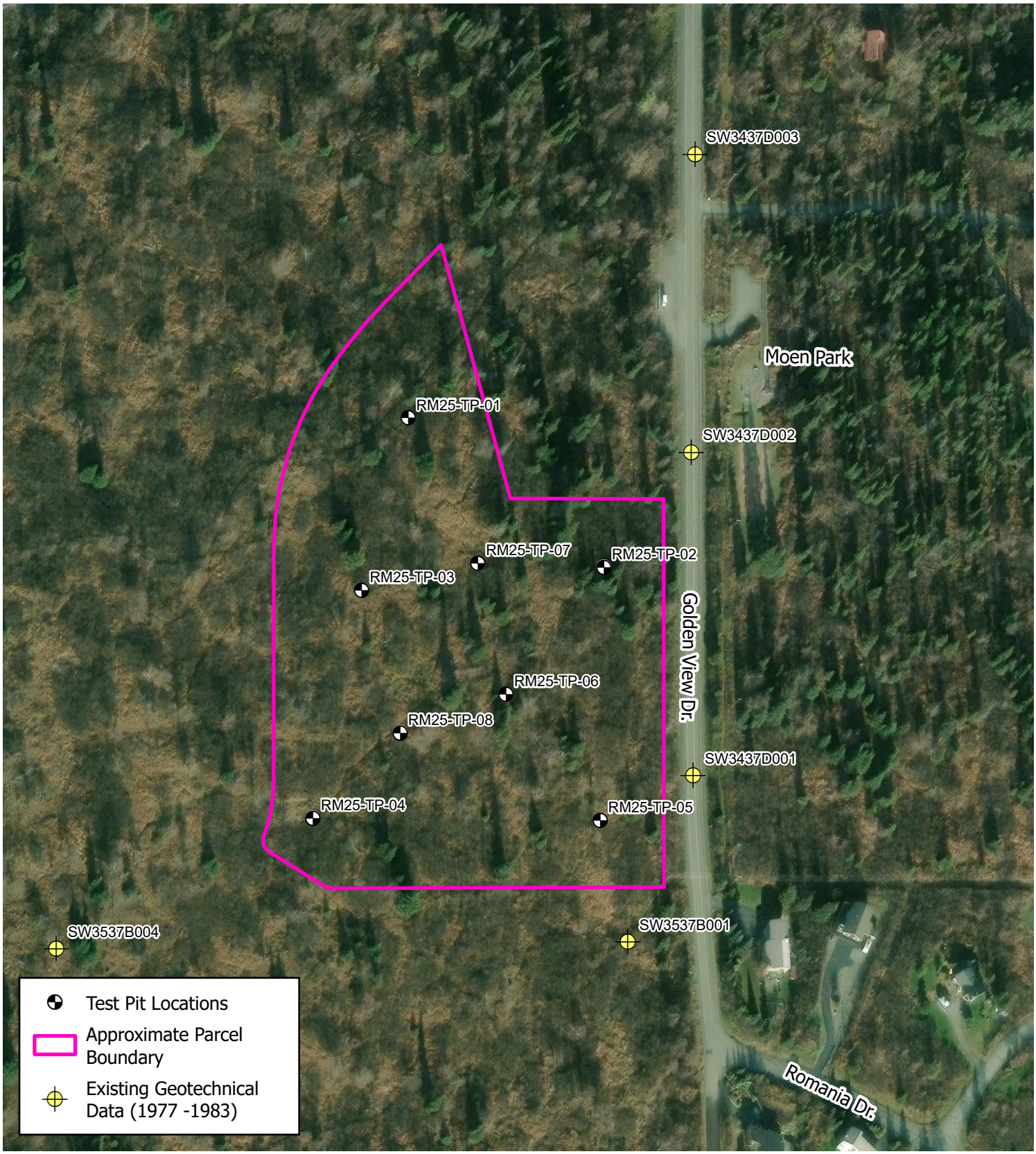
R&M CONSULTANTS, INC.

MOA PM&E GOLDEN VIEW PARCEL
GEOTECHNICAL INVESTIGATION

VICINITY MAP

PROJ.NO:	3272.01
DATE:	OCT 2025
REF:	GEOTECH RPT
DRAWING NO:	A-01



ALL LOCATIONS ARE APPROXIMATE

0 75 150 300

FEET

Notes:
Coordinate System: NAD 1983 StatePlane Alaska 4 FIPS 5004 Feet
Base map from ESRI World Topographic
Parcel boundary from MOAGIS
Existing geotechnical boring locations provided by MOA Soil Boring database

N

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R&M CONSULTANTS, INC.

MOA PM&E GOLDEN VIEW PARCEL
GEOTECHNICAL INVESTIGATION

INVESTIGATION LOCATION MAP

PROJ.NO:	3272.01
DATE:	OCT 2025
REF:	GEOTECH RPT
DRAWING NO:	A-02

Appendix B – Test Pit Logs

GRAPHIC SYMBOLS

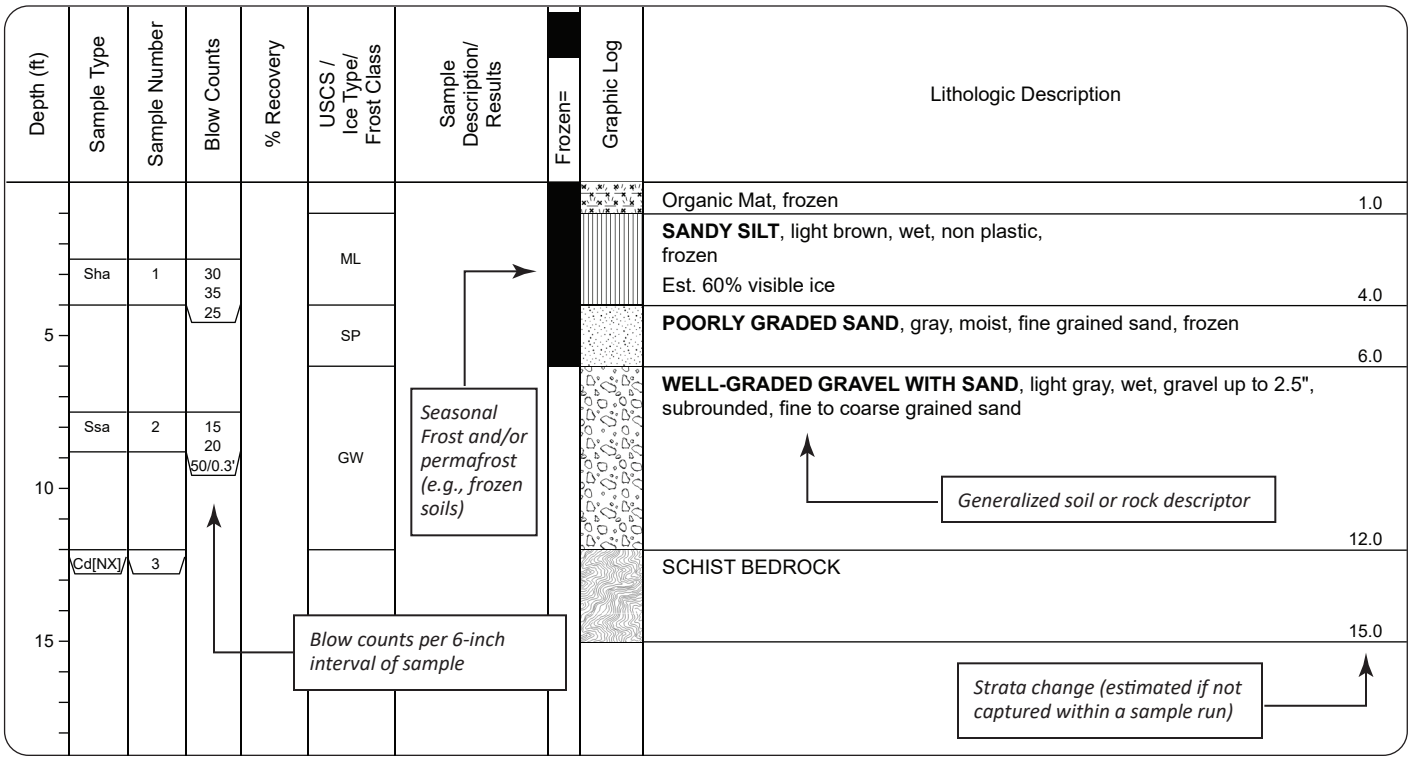
SYMBOL	NAME	PARTICLE SIZE
	CLAY (Cl)	< 0.002mm
	SILT (Si)	0.002mm to #200
	SAND (Sa)	#200 to #4
	GRAVEL (Gr)	#4 to 3"
	ORGANICS	

SAMPLER TYPE SYMBOLS

A	Auger Sample	Cd	Double Tube Core Barrel
C	Cuttings Sample	Sc	Single Tube or Auger Core
Grab	Grab Sample	Ct	Triple Tube Core Barrel
Tm	Modified Shelby Tube	BX	Rock Core - 1-5/8 in. core diameter
Ts	3.0 In. Shelby Tube	NX	Rock Core - 2-1/8 in. core diameter
MC5	1.5 In. I.D. Macro-core	NQ	Rock Core - 1-7/8 in. core diameter
MC7	3.0 In. I.D. Macro-core	HQ	Rock Core - 2-1/2 in. core diameter

Sh	2.5 In. Split Spoon w/340 lb. Manual Hammer (LPT)
Sha	2.5 In. Split Spoon w/340 lb. Auto Hammer (LPT)
Ss	1.4 In. Split Spoon w/340 lb. Manual Hammer (SPT)
Ssa	1.4 In. Split Spoon w/140 lb. Auto Hammer (SPT)

TYPICAL TEST BORING AND TEST PIT LOG



BLOW COUNTS: Blow counts for each 6-inch drive interval presented on test boring logs are direct field values (i.e., they have not been corrected).

CLASSIFICATION: Soils identification and classification follow ASTM D 2487 (Classification of soils for Engineering Purposes) and ATSM D 2488 (Visual-Manual Procedure).

DD	Dry Density	Gr	% Gravel
LL	Liquic Limit	Sa	% Sand
MC	Moisture Content	Fn	% Passing No. 200 Screen
Org	Organic Content	P.02	% Passing 0.02 mm
PI	Plastic Index	P.005	% Passing 0.005 mm
PL	Plastic Limit	P.002	% Passing 0.002 mm
TV	Torvane	Gs	Specific Gravity
PP	Pocket Penetrometer	Cs	Chemical Sample Identification
Sal	Salinity		

GENERAL NOTES

R&M CONSULTANTS, INC.

Drawing Number B-01

TEST PIT NUMBER: RM25-TP-01

DRILLING DATE(S) 09/09/2025 - 09/09/2025
RIG TYPE Kubota u55-4
LOGGED BY A. Pasikowski
METHOD Track-Mounted Mini Excavator
DRILLING FIRM Pioneer Earthworks & Restoration
SURFACE ELEVATION N/A
DRILLER E. Wilson
LATITUDE / LONGITUDE 61.059722, -149.776389
WHILE DRILLING N/A
AFTER DRILLING N/A

Depth (ft)	Sample Type	Sample Number	% Recovery	USCS / Ice Type	Frost Classification	Sample Description/ Results	Frozen=	Graphic Log	Lithologic Description
				oML					**LEAN SILT WITH ORGANICS**, dark brown, moist to wet
	Grab	1		SP-SM					**POORLY GRADED SAND WITH SILT AND GRAVEL**, moist to wet, fine to coarse grained sand, with cobbles and boulders
5	Grab	2							**TERMINATED AT BEDROCK 5.5'**

1.5
5.5
5.5

PROJECT NUMBER:	3272.01
DATE:	Sep 2025
PROJECT TYPE:	Geotechnical
FIGURE NUMBER:	B-02

MOA PM&E Goldenview Parcel
17761 Golden View Dr, Anchorage, AK

TEST PIT NUMBER: RM25-TP-02

DRILLING DATE(S) 09/09/2025 - 09/09/2025
RIG TYPE Kubota u55-4
LOGGED BY A. Pasikowski
METHOD Track-Mounted Mini Excavator
DRILLING FIRM Pioneer Earthworks & Restoration
SURFACE ELEVATION N/A
DRILLER E. Wilson
LATITUDE / LONGITUDE 61.059377, -149.775079
WHILE DRILLING N/A
AFTER DRILLING N/A

Depth (ft)	Sample Type	Sample Number	% Recovery	USCS / Ice Type	Frost Classification	Sample Description/ Results	Frozen=	Graphic Log	Lithologic Description
	Grab	1		oML					**LEAN SILT WITH ORGANICS**, dark brown, moist to wet
									1.5
									SILTY SAND, brown to tan, dry, containing plant material and roots, fine to coarse grained sand
	Grab	2		SM		MC: 4%			
	Grab	3							
									4.5
5									**TERMINATED AT BEDROCK 3.5'** 4.5

PROJECT NUMBER:	3272.01
DATE:	Sep 2025
PROJECT TYPE:	Geotechnical
FIGURE NUMBER:	B-03

MOA PM&E Goldenview Parcel
17761 Golden View Dr, Anchorage, AK

TEST PIT NUMBER: RM25-TP-03

DRILLING DATE(S) 09/09/2025 - 09/09/2025
RIG TYPE Kubota u55-4
LOGGED BY A. Pasikowski
METHOD Track-Mounted Mini Excavator
DRILLING FIRM Pioneer Earthworks & Restoration
SURFACE ELEVATION N/A
DRILLER E. Wilson
LATITUDE / LONGITUDE 61.059285, -149.777133
WHILE DRILLING 5.5'
AFTER DRILLING N/A

Depth (ft)	Sample Type	Sample Number	% Recovery	USCS / Ice Type	Frost Classification	Sample Description/ Results	Frozen=	Graphic Log	Lithologic Description
	Grab	1		oML					**LEAN SILT WITH ORGANICS**, dark brown, moist to wet
									1.5
				SM					**SILTY SAND**, brown, dry, fine to coarse grained sand
									3.5
	Grab	2		SP-SM					**POORLY GRADED SAND WITH SILT AND GRAVEL**, brown, moist to wet, gravel up to 2", subangular to rounded, fine to coarse grained sand, with cobbles and boulders
5	Grab	3							
									5.5
									TERMINATED AT BEDROCK 5.5' [WATER ENCOUNTERED AT 5.5'] 5.5

PROJECT NUMBER:	3272.01
DATE:	Sep 2025
PROJECT TYPE:	Geotechnical
FIGURE NUMBER:	B-04

MOA PM&E Goldenview Parcel
17761 Golden View Dr, Anchorage, AK

TEST PIT NUMBER: RM25-TP-04

DRILLING DATE(S) 09/09/2025 - 09/09/2025
RIG TYPE Kubota u55-4
LOGGED BY A. Pasikowski
METHOD Track-Mounted Mini Excavator
DRILLING FIRM Pioneer Earthworks & Restoration
SURFACE ELEVATION N/A
DRILLER E. Wilson
LATITUDE / LONGITUDE 61.058350, -149.777555
WHILE DRILLING 8'
AFTER DRILLING N/A

Depth (ft)	Sample Type	Sample Number	% Recovery	USCS / Ice Type	Frost Classification	Sample Description/ Results	Frozen=	Graphic Log	Lithologic Description
	Grab	1		oML					**LEAN SILT WITH ORGANICS**, dark brown, moist to wet
									2.0
	Grab	2		SM					**SILTY SAND WITH GRAVEL**, gray, moist, gravel up to 1", subangular to subrounded, fine to coarse grained sand
5									
	Grab	3				MC: 14% Gr: 30% Sa: 56% Fns: 14%			Orangish brown staining from 6' to 8'
	Grab	4							
									8.0
									TERMINATED AT BEDROCK 8.0' [WATER ENCOUNTERED AT 8.0'] 8.0

PROJECT NUMBER:	3272.01
DATE:	Sep 2025
PROJECT TYPE:	Geotechnical
FIGURE NUMBER:	B-05

MOA PM&E Goldenview Parcel
17761 Golden View Dr, Anchorage, AK

TEST PIT NUMBER: RM25-TP-05

DRILLING DATE(S) 09/09/2025 - 09/09/2025
RIG TYPE Kubota u55-4
LOGGED BY A. Pasikowski
METHOD Track-Mounted Mini Excavator
DRILLING FIRM Pioneer Earthworks & Restoration
SURFACE ELEVATION N/A
DRILLER E. Wilson
LATITUDE / LONGITUDE 61.058336, -149.775117
WHILE DRILLING N/A
AFTER DRILLING N/A

Depth (ft)	Sample Type	Sample Number	% Recovery	USCS / Ice Type	Frost Classification	Sample Description/ Results	Frozen=	Graphic Log	Lithologic Description
	Grab	1		oML		MC: 27%			**LEAN SILT WITH ORGANICS**, dark brown, moist to wet
									2.0
	Grab	2		SM					**SILTY SAND WITH GRAVEL**, tan to orangish brown, moist, gravel up to 1", subangular to subrounded, fine to coarse grained sand
									2.5
									TERMINATED AT BEDROCK 2.5'
									2.5
5									

PROJECT NUMBER:	3272.01
DATE:	Sep 2025
PROJECT TYPE:	Geotechnical
FIGURE NUMBER:	B-06

MOA PM&E Goldenview Parcel
17761 Golden View Dr, Anchorage, AK

TEST PIT NUMBER: RM25-TP-06

DRILLING DATE(S) 09/09/2025 - 09/09/2025
RIG TYPE Kubota u55-4
LOGGED BY A. Pasikowski
METHOD Track-Mounted Mini Excavator
DRILLING FIRM Pioneer Earthworks & Restoration
SURFACE ELEVATION N/A
DRILLER E. Wilson
LATITUDE / LONGITUDE 61.058856, -149.775912
WHILE DRILLING N/A
AFTER DRILLING N/A

Depth (ft)	Sample Type	Sample Number	% Recovery	USCS / Ice Type	Frost Classification	Sample Description/ Results	Frozen=	Graphic Log	Lithologic Description
				oML					**LEAN SILT WITH ORGANICS**, dark brown, moist to wet
									1.5
	Grab	1		SM		Fns: 29%			**SILTY SAND**, moist to wet, fine to coarse grained sand, with cobbles and boulders
	Grab	2							4.5
5									**TERMINATED AT BEDROCK 4.5'** 4.5

PROJECT NUMBER:	3272.01
DATE:	Sep 2025
PROJECT TYPE:	Geotechnical
FIGURE NUMBER:	B-07

MOA PM&E Goldenview Parcel
17761 Golden View Dr, Anchorage, AK

TEST PIT NUMBER: RM25-TP-07

DRILLING DATE(S) 09/09/2025 - 09/09/2025
RIG TYPE Kubota u55-4
LOGGED BY A. Pasikowski
METHOD Track-Mounted Mini Excavator
DRILLING FIRM Pioneer Earthworks & Restoration
SURFACE ELEVATION N/A
DRILLER E. Wilson
LATITUDE / LONGITUDE 61.059426, -149.776131
WHILE DRILLING N/A
AFTER DRILLING N/A

Depth (ft)	Sample Type	Sample Number	% Recovery	USCS / Ice Type	Frost Classification	Sample Description/ Results	Frozen=	Graphic Log	Lithologic Description
	Grab	1		oML					**LEAN SILT WITH ORGANICS**, dark brown, moist to wet 1.0
	Grab	2		SM					**SILTY SAND**, brown, moist, fine to medium grained sand 2.0
									TERMINATED AT BEDROCK 2.0' 2.0
5									

PROJECT NUMBER:	3272.01
DATE:	Sep 2025
PROJECT TYPE:	Geotechnical
FIGURE NUMBER:	B-08

MOA PM&E Goldenview Parcel
17761 Golden View Dr, Anchorage, AK

TEST PIT NUMBER: RM25-TP-08

DRILLING DATE(S) 09/09/2025 - 09/09/2025
RIG TYPE Kubota u55-4
LOGGED BY A. Pasikowski
METHOD Track-Mounted Mini Excavator
DRILLING FIRM Pioneer Earthworks & Restoration
SURFACE ELEVATION N/A
DRILLER E. Wilson
LATITUDE / LONGITUDE 61.058725, -149.776758
WHILE DRILLING N/A
AFTER DRILLING N/A

Depth (ft)	Sample Type	Sample Number	% Recovery	USCS / Ice Type	Frost Classification	Sample Description/ Results	Frozen=	Graphic Log	Lithologic Description	
	Grab	1		oML					**LEAN SILT WITH ORGANICS**, dark brown, moist to wet	1.5
	Grab	2		ML		Gr: 10% Sa: 35% Fns: 55%			**SANDY SILT WITH GRAVEL**, brown, dry, containing plant material and roots, gravel up to 1", subangular to rounded, fine to coarse grained sand	2.0
	Grab	3		SP-SM		MC: 11% Fns: 11%			**POORLY GRADED SAND WITH SILT AND GRAVEL**, moist to wet, gravel up to 2", subangular to rounded, fine to coarse grained sand	3.5
	Grab	4							**TERMINATED AT BEDROCK 3.5'**	3.5
5										

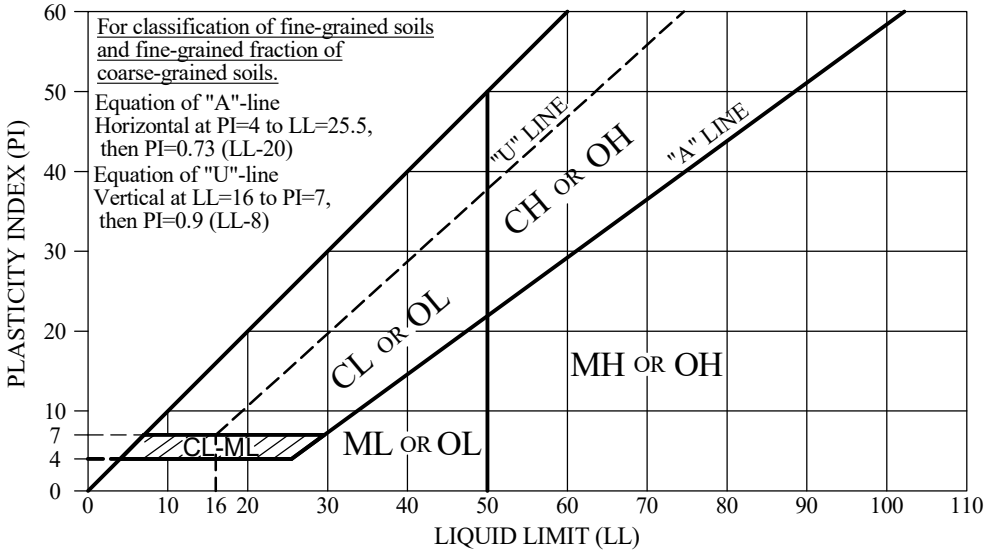
PROJECT NUMBER:	3272.01
DATE:	Sep 2025
PROJECT TYPE:	Geotechnical
FIGURE NUMBER:	B-09

MOA PM&E Goldenview Parcel
17761 Golden View Dr, Anchorage, AK

Appendix C – Laboratory Testing Results

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]				Soil Classification	
				Group Symbol	Group Name [B]
Coarse-grained Soils More than 50% retained on the No. 200 sieve	Gravels More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]	GW	Well-graded gravel [F]
			$Cu < 4$ and/or $1 > Cc > 3$ [E]	GP	Poorly-graded gravel [F]
		Gravels with Fines More than 12% fines [C]	Fines classify as ML or MH	GM	Silty gravel [F,G,H]
			Fines classify as CL or CH	GC	Clayey gravel [F,G,H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5 % fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]	SW	Well-graded sand [I]
			$Cu < 6$ and/or $1 > Cc > 3$ [E]	SP	Poorly-graded sand [I]
		Sands with Fines More than 12 % fines [D]	Fines classify as ML or MH	SM	Silty sand [G,H,I]
			Fines classify as CL or CH	SC	Clayey sand [G,H,I]
Fine-grained Soils 50% or more passes the No. 200 sieve	Silts and Clays Liquid Limit less than 50	inorganic	PI > 7 and plots on or above "A" line [J]	CL	Lean clay [K,L,M]
			PI < 4 and plots below "A" line [J]	ML	Silt [K,L,M]
		organic	Liquid limit - oven dried / Liquid limit - not dried < 0.75	OL	Organic Clay [K,L,M,N] / Organic Silt [K,L,M,O]
	Silts and Clays Liquid Limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay [K,L,M]
			PI plots below "A" line	MH	Elastic silt [K,L,M]
		organic	Liquid limit - oven dried / Liquid limit - not dried < 0.75	OH	Organic Clay [K,L,M,P] / Organic Silt [K,L,M,Q]
Highly organic soils	Primarily organic matter, dark in color, and organic odor			PT	Peat

[A] Based on the material passing the 3-in. (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravel with 5 to 12 % fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly-graded gravel with silt
GP-GC poorly-graded gravel with clay
[D] Sands with 5 to 12 % fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly-graded sand with silt
SP-SC poorly-graded sand with clay
[E] $Cu = D_{60} / D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand " to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in hatched area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200, predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 and plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.



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CLASSIFICATION OF SOILS FOR ENGINEERING PURPOSES ASTM D 2487

PROJ.NO:	GENERAL
DATE:	N/A
REF:	N/A
DWG.NO:	C-01

Sample Identification			Particle Size Analysis (% FINER)																Atterberg Limits			Moist Cont. (%)	USCS Class	Frost Class
			Standard Sieve Size													(mm)								
Test Boring	NO.	Depth (FT)	3"	2"	1 1/2"	1"	3/4"	1/2"	3/8"	#4	#10	#20	#40	#60	#140	#200	0.02	0.005	0.002	LL	PL	PI			
RMTP-02	2	2.5 - 3																					4		
RMTP-04	3	6 - 7	100	100	100	100	97	90	85	70	53	39	30	24	17	14							14	SM	
RMTP-05	1	0 - 1.0																					27		
RMTP-06	1	1.5 - 2.5														29									
RMTP-08	2	1.5 - 2	100	100	100	98	98	95	93	90	84	79	75	70	60	55									
RMTP-08	3	2 - 2.5														11							11		

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Anchorage, AK 99507
907.522.1707

Material Test Report

Project Details

Client: Municipality of Anchorage, PM&E **cc:**

Project: MOA&PM&E Professional Geotechnical and Environmental Engineering: Golden View Parcel Geotech HLB
3272.01.TSK 02

Report Details

Report ID: MAT:25-00317-04 **Issue No:** 1
Report Date: 9/26/2025
Submitted By: Michael K. Wariner, PE

Sample Details

Sample ID	25-00317-04
Field Sample ID	RM25-TP-02-2
Date Sampled	9/9/2025
Source	R&M Earth Sciences Sampling
Material	R&M Earth Sciences Samples
Specification	General Geotech
Sampling Method	Earth Sciences G - Grab Sample
General Location	MOA Goldenview Parcel
Location	RMTP-02
Test Elev/Depth	2.0' - 3.0' BGS

Test Results

Description	Method	Result	Limits
Water Content (%)	ASTM D2216	4.2	
Date Tested		9/15/2025	

Comments

N/A

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Material Test Report

Project Details

Client: Municipality of Anchorage, PM&E **cc:**

Project: MOA&PM&E Professional Geotechnical and Environmental Engineering: Goldenview Parcel Geotech HLB
3272.01.TSK 02

Report Details

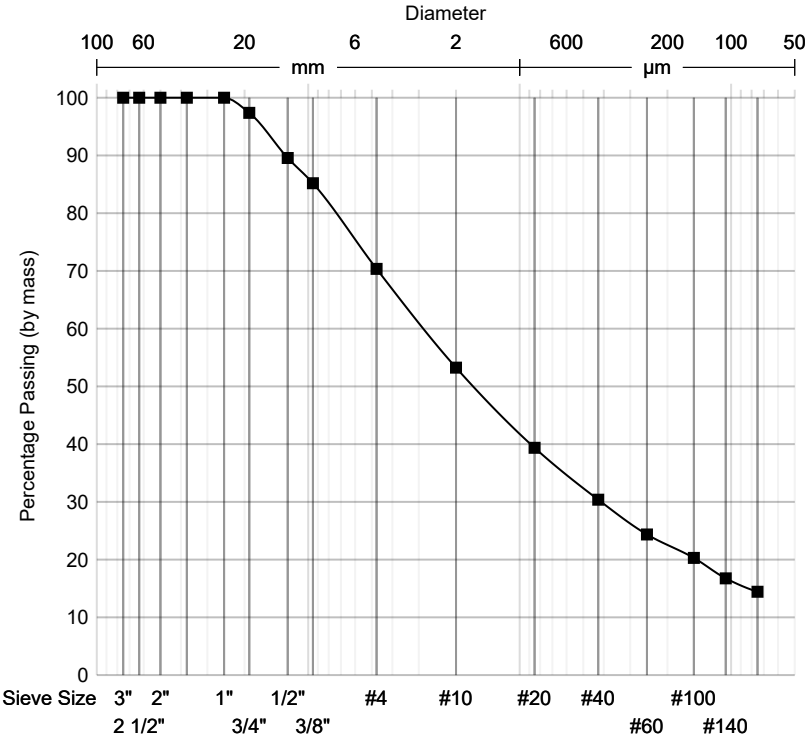
Report ID: MAT:25-00317-10 **Issue No:** 2
Report Date: 10/22/2025 This issue replaces all previous issues of this report.
Submitted By: Michael K. Wariner, PE

Sample Details

Sample ID	25-00317-10
Field Sample ID	RM25-TP-04-3
Date Sampled	9/9/2025
Source	R&M Earth Sciences Sampling
Material	R&M Earth Sciences Samples
Specification	General Geotech
Sampling Method	Earth Sciences G - Grab Sample
General Location	MOA Goldenview Parcel
Location	RM25TP-04
Test Elev/Depth	6.0' - 8.0' BGS

Sample Description:

Particle Size Distribution



COBBLES	GRAVEL (30%)		SAND (56%)			SILT/CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
0%	2.6%	27.0%	17.1%	22.9%	15.9%	14%

Grading: ASTM D6913

Drying By: Oven
Date Tested: 9/18/2025
Tested By: Ryan McCormick

Sieve Size	% Passing	Limits
3in	100	
2½in	100	
2in	100	
1½in	100	
1in	100	
¾in	97	
½in	90	
3/8in	85.2	
No.4	70	
No.10	53	
No.20	39	
No.40	30	
No.60	24	
No.100	20	
No.140	17	
No.200	14	

D85: 9.4000 **D60:** 2.8582 **D50:** 1.6614
D30: 0.4119 **D15:** 0.0831 **D10:** N/A
Cu: N/A **Cc:** N/A

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Material Test Report

Project Details

Client: Municipality of Anchorage, PM&E **cc:**

Project: MOA&PM&E Professional Geotechnical and Environmental Engineering: Goldenview Parcel Geotech HLB
3272.01.TSK 02

Report Details

Report ID: MAT:25-00317-10 **Issue No:** 2
Report Date: 10/22/2025 This issue replaces all previous issues of this report.
Submitted By: Michael K. Wariner, PE

Sample Details

Sample ID	25-00317-10
Field Sample ID	RM25-TP-04-3
Date Sampled	9/9/2025
Source	R&M Earth Sciences Sampling
Material	R&M Earth Sciences Samples
Specification	General Geotech
Sampling Method	Earth Sciences G - Grab Sample
General Location	MOA Goldenview Parcel
Location	RM25TP-04
Test Elev/Depth	6.0' - 8.0' BGS

Other Test Results

Description	Method	Result	Limits
Water Content (%)	ASTM D2216	13.8	
Date Tested		9/15/2025	
Group Code	ASTM D2487	SM	
Group Name		Silty sand with gravel	
Atterberg Limits Estimated		Yes	
Date Tested		9/26/2025	
Method	ASTM D6913	A	
Preparation Method		Oven Dry	
Composite Sieving?		Yes	
Separating Sieve(s)		3/8″	
Fractional Mass Retained (%)		0.00	
Cu	ASTM D2487		
Cc	ASTM D6913		
Remarks	Hand sieving was utilized to minimize degradation.		

Comments

Material appeared to break down in sieve. Hand sieving was utilized to minimize degradation.

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Material Test Report

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Project: MOA&PM&E Professional Geotechnical and Environmental Engineering: Golden View Parcel Geotech HLB
3272.01.TSK 02

Report Details

Report ID: MAT:25-00317-12 **Issue No:** 1
Report Date: 9/26/2025
Submitted By: Michael K. Wariner, PE

Sample Details

Sample ID	25-00317-12
Field Sample ID	RM25-TP-05-1
Date Sampled	9/9/2025
Source	R&M Earth Sciences Sampling
Material	R&M Earth Sciences Samples
Specification	General Geotech
Sampling Method	Earth Sciences G - Grab Sample
General Location	MOA Goldenview Parcel
Location	RM25TP-05
Test Elev/Depth	0.0' - 2.5' BGS

Test Results

Description	Method	Result	Limits
Water Content (%)	ASTM D2216	27.3	
Date Tested		9/15/2025	

Comments

N/A

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Material Test Report

Project Details

Client: Municipality of Anchorage, PM&E **cc:**

Project: MOA&PM&E Professional Geotechnical and Environmental Engineering: Golden View Parcel Geotech HLB
3272.01.TSK 02

Report Details

Report ID: MAT:25-00317-14 **Issue No:** 1
Report Date: 9/26/2025
Submitted By: Michael K. Wariner, PE

Sample Details

Sample ID	25-00317-14
Field Sample ID	RM25-TP-06-1
Date Sampled	9/9/2025
Source	R&M Earth Sciences Sampling
Material	R&M Earth Sciences Samples
Specification	General Geotech
Sampling Method	Earth Sciences G - Grab Sample
General Location	MOA Goldenview Parcel
Location	RM25TP-06
Test Elev/Depth	1.5' - 4.5' BGS

Test Results

Description	Method	Result	Limits
Passing No. 200 (75 µm) (%)	ASTM D1140	29	
Procedure		A	
Soaking Period (min)		180	
Initial Dry Mass (g)		1463	
Date Tested		9/17/2025	

Comments

N/A

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Material Test Report

Project Details

Client: Municipality of Anchorage, PM&E **cc:**

Project: MOA&PM&E Professional Geotechnical and Environmental Engineering: Goldenview Parcel Geotech HLB
3272.01.TSK 02

Report Details

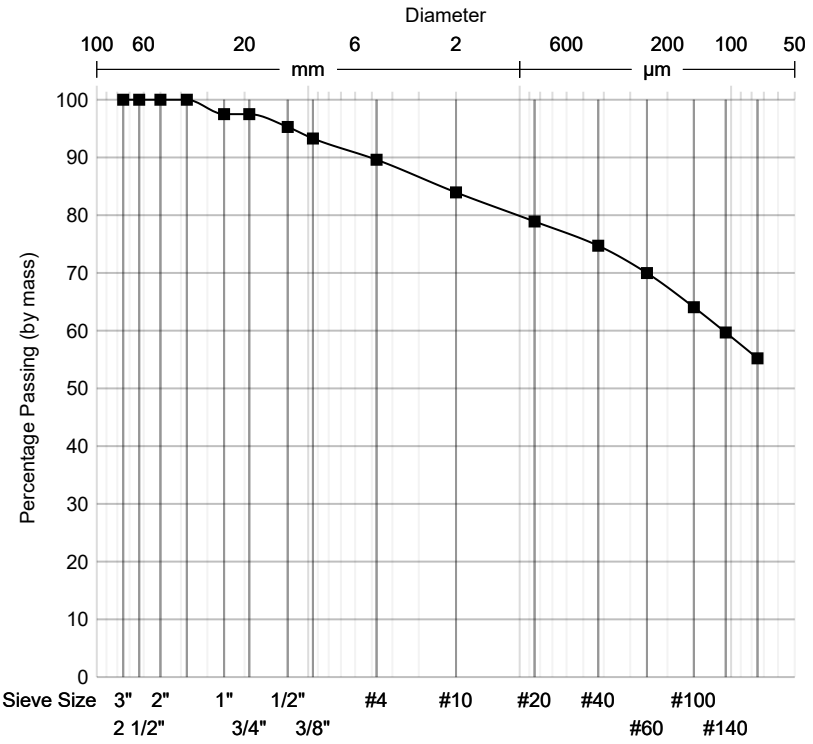
Report ID: MAT:25-00317-19 **Issue No:** 1
Report Date: 10/22/2025
Submitted By: Michael K. Wariner, PE

Sample Details

Sample ID	25-00317-19
Field Sample ID	RM25-TP-08-2
Date Sampled	9/9/2025
Source	R&M Earth Sciences Sampling
Material	R&M Earth Sciences Samples
Specification	General Geotech
Sampling Method	Earth Sciences G - Grab Sample
General Location	MOA Goldenview Parcel
Location	RM25TP-08
Test Elev/Depth	1.5' - 2.0' BGS

Sample Description:

Particle Size Distribution



COBBLES	GRAVEL (10%)		SAND (34%)			SILT/CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	
0%	2.5%	7.9%	5.7%	9.2%	19.5%	55%

Grading: ASTM D6913

Drying By: Oven
Date Tested: 9/18/2025
Tested By: Ryan McCormick

Sieve Size	% Passing	Limits
3in	100	
2½in	100	
2in	100	
1½in	100	
1in	98	
¾in	98	
½in	95	
3/8in	93.3	
No.4	90	
No.10	84	
No.20	79	
No.40	75	
No.60	70	
No.100	64	
No.140	60	
No.200	55	

D85: 2.3557 **D60:** 0.1087 **D50:** N/A
D30: N/A **D15:** N/A **D10:** N/A
Cu: N/A **Cc:** N/A

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Material Test Report

Project Details

Client: Municipality of Anchorage, PM&E **cc:**

Project: MOA&PM&E Professional Geotechnical and Environmental Engineering: Goldenview Parcel Geotech HLB
3272.01.TSK 02

Report Details

Report ID: MAT:25-00317-19 **Issue No:** 1
Report Date: 10/22/2025
Submitted By: Michael K. Wariner, PE

Sample Details

Sample ID	25-00317-19
Field Sample ID	RM25-TP-08-2
Date Sampled	9/9/2025
Source	R&M Earth Sciences Sampling
Material	R&M Earth Sciences Samples
Specification	General Geotech
Sampling Method	Earth Sciences G - Grab Sample
General Location	MOA Goldenview Parcel
Location	RM25TP-08
Test Elev/Depth	1.5' - 2.0' BGS

Other Test Results

Description	Method	Result	Limits
Group Code	ASTM D2487		
Group Name			
Remarks		Lab is unable to provide classification with data available from testing requested.	
Date Tested		9/18/2025	
Method	ASTM D6913	A	
Preparation Method		Oven Dry	
Composite Sieving?		Yes	
Separating Sieve(s)		3/8″	
Fractional Mass Retained (%)		0.00	
Cu	ASTM D2487		
Cc			

Comments

According to ASTM D2487, Atterberg Limits cannot be assumed if there is greater than 15% of material passing the #200 Sieve. Lab is unable to provide classification with data available from testing requested.

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Material Test Report

Project Details

Client: Municipality of Anchorage, PM&E **cc:**

Project: MOA&PM&E Professional Geotechnical and Environmental Engineering: Golden View Parcel Geotech HLB
3272.01.TSK 02

Report Details

Report ID: MAT:25-00317-20 **Issue No:** 1
Report Date: 9/26/2025
Submitted By: Michael K. Wariner, PE

Sample Details

Sample ID	25-00317-20
Field Sample ID	RM25-TP-08-3
Date Sampled	9/9/2025
Source	R&M Earth Sciences Sampling
Material	R&M Earth Sciences Samples
Specification	General Geotech
Sampling Method	Earth Sciences G - Grab Sample
General Location	MOA Goldenview Parcel
Location	RM25TP-08
Test Elev/Depth	2.0' - 3.5' BGS

Test Results

Description	Method	Result	Limits
Passing No. 200 (75 µm) (%)	ASTM D1140	11	
Procedure		A	
Soaking Period (min)		200	
Initial Dry Mass (g)		1139	
Water Content (%)		10.7	
Date Tested		9/26/2025	
Water Content (%)	ASTM D2216	10.7	
Date Tested		9/15/2025	

Comments

N/A

Appendix D – Photograph Log

Photo 1

Typical test pit excavation showing surficial organic soils (Unit I) overlying colluvium (Unit II) in test pit RM25-TP-05.

Photo 2

Poorly-graded sand with silt and gravel (SP-SM) encountered in RM25-TP-08.

Photo 3

View into test pit RM25-TP-03 showing seeping groundwater at bottom of pit.

Photo 4

Typical cobble, approximately 10 inch in diameter, encountered during excavation.

Photo 5

Exposure of bedrock at bottom of test pit RM25-TP-06.

Photo 6

Evidence of hard rock ripability leaving one bucket tooth left at end of the project.