July 20, 2026

Vintage Communities, Inc.
c/o Construction Management & Consulting, Inc.
1191 Applewood Drive
Colorado Springs, Colorado 80907

Attention: Ron O'Canna

Subject: Response to El Paso County Review
Peterson Road Subdivision
Colorado Springs, Colorado
CTL|T Project No. CS19836-115-L2

Cimarron Hills Southeast Mixed Use Filing No. 1

We have prepared this letter to respond to comments prepared by El Paso County for the Peterson Road Subdivision. As requested by Vintage Communities, we have produced this cover letter for the geotechnical reports prepared for Tract A, Tract B, Tract C, and Lot 1. Documentation prepared for these parcels includes:

- CTL|Thompson, Inc. (CTL|T) prepared a Geologic Hazard Evaluation and Preliminary Geotechnical Investigation, Project No. CS19836-115 revision dated September 11, 2025, which covers **Tract A** and **Tract B**. The report is included with this letter as Appendix B.
- CTL|T prepared a Response to El Paso County and CGS review comments, with a Preliminary Geotechnical Investigation and Geologic Hazard Evaluation, Peterson Road Subdivision **Tract C**, Project No. CS19836-115-L1, dated June 1, 2026. The report letter is included with this letter as Appendix A.
- We understand that the Geotechnical Investigation of **Lot 1** was commissioned separately, by someone other than our Client. **Lot 1** is covered by the ValleyShore Engineering, LLC (ValleyShore) Report "Revised Report of Geotechnical Exploration Proposed Apartment Development," ValleyShore Project No. 231348R1, dated July 16, 2026. The report is included with this letter **FOR INFORMATION ONLY** as Appendix C. We understand that this report is a revision to their previously submitted report dated October 8, 2025.

CTL|T's previous reports for Tracts A, B, and C presented our methodology, findings, and conclusions regarding the geotechnical conditions and our geotechnical recommendations. The recommendations and limitations contained in CTL|T's previous reports remain valid. We have provided a discussion of select El Paso County review comments, below.

## EL Paso County Comment:

EPC comment dated 6/1/2026 on ValleyShore Report "Report of Geotechnical Exploration Proposed Apartment Development," ValleyShore Project No. 231348R1, dated October 8, 2025:

> *"We need one Soils and Geology Report that encompasses the entire site – Lot 1 and Tracts A, B, and C. This report only discusses Lot 1. The previous submittal only discussed Tract A and B. The next submittal must be* ***one report that includes Lot 1 and Tracts A, B, and C****. We will conduct our review of that report when it is submitted." Located on cover page*

## CTL|T Response:

The project geotechnical documentation which covers Lot 1 and Tracts A, B, and C are all included with this cover letter, as Appendices.

We understand ValleyShore produced a revision of their previously submitted report. The revised ValleyShore report dated July 16, 2026 is included with this letter **FOR INFORMATION ONLY** as Appendix C. CTL|T did not produce this report and does not take responsibility for the content. CTL|T will not be addressing the review comments made on the ValleyShore report.

## EL Paso County Comment:

EPC comment dated 9/21/2025 on CTL|T Geologic Hazard Evaluation and Preliminary Geotechnical Investigation, Project No. CS19836-115 revision dated September 11, 2025:

> *"A full review of the soils and geology report will be made after the report is modified to include Lot 1 and Tract C." located on cover page*
>
> *"We need a report that covers the entire area of the plat" located on page 1 of 24*
>
> *"We need a report that covers the entire area of the plat" located on page 2 of 24*

## CTL|T Response:

The project geotechnical documentation which covers Lot 1 and Tracts A, B, and C are all included with this cover letter, as Appendices.

The referenced report, included as Appendix B, covers Tracts A and B of the subject project. Tract C is covered by CTL|T Project No. CS19836-115-L1, dated June 1, 2026, included as Appendix A. Lot 1 is covered by the ValleyShore Report which is included **FOR INFORMATION ONLY** as Appendix C. These three documents cover Tracts A, B, C, and Lot 1 of the Subdivision. They are presented as appendices with this cover letter for the convenience of the El Paso County reviewers.

The Colorado Department of Regulatory Agencies State Board of Licensure for Professional Engineers and Professional Land Surveyors Bylaws and Rules 4 CCR 730-1 Interprets the language of Sections 12-25-102(14) of the State of Colorado Revised Statutes defines the Responsible Charge of Engineering as:

"'Responsible charge' of engineering shall mean that degree of control an engineer is required to maintain over engineering decisions made personally or by others over which the engineer exercises supervisory direction and control authority."

The ValleyShore report is under the responsible charge of T. Brian Williamson, P.E., who stamped the report, just as the CTL|T reports are under the responsible charge of the engineers who stamped those reports. Because CTL|T was not in responsible charge of the ValleyShore report as defined by the State of Colorado, we do not take responsibility for the report or its content.

## Limitations

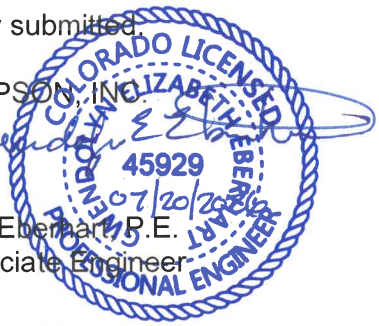
The conclusions, recommendations, and limitations presented by CTL|T in the September 2025 report and June 1, 2026 letter remain valid. We believe these investigations were conducted with that level of skill and care ordinarily used by geotechnical engineers

practicing under similar conditions in the location of the project. No warranty, express or implied, is made.

The ValleyShore report is included **FOR INFORMATION ONLY** as Appendix C. CTL|T did not produce this report and is not responsible for its content.

Respectfully submitted,

CTL|THOMPSON, INC.




Gwendolyn Eberhart, P.E.
Senior Associate Engineer

Reviewed By:

Jeffrey M. Jones, P.E.
Principal Engineer

GE:TAM:JMJ:ge

Attachments: **Appendix A** – CTL|T – Preliminary Geotechnical Investigation and Geologic Hazard Evaluation, Peterson Road Subdivision Tract C, Project No. CS19836-115-L1, dated June 1, 2026
**Appendix B** – CTL|T – Geologic Hazard Evaluation and Preliminary Geotechnical Investigation, Project No. CS19836-115 revision dated September 11, 2025
**Appendix C – FOR INFORMATION ONLY** – ValleyShore – "Revised Report of Geotechnical Exploration Proposed Apartment Development," ValleyShore Project No. 231348R1, dated July 16, 2026

Via email: rcocanna@msn.com

**APPENDIX A**

CTL|T – Preliminary Geotechnical Investigation and Geologic Hazard Evaluation, Peterson Road Subdivision Tract C, Project No. CS19836-115-L1, dated June 1, 2026

CTL|THOMPSON
Founded in 1971

June 1, 2026

Vintage Communities, Inc.
c/o Construction Management & Consulting, Inc.
1191 Applewood Drive
Colorado Springs, Colorado 80907

Attention: Ron O'Canna

Subject: Response to El Paso County and CGS Review
Preliminary Geotechnical Investigation and Geologic Hazard Evaluation
Peterson Road Subdivision, Tract C
Colorado Springs, Colorado
CTL|T Project No. CS19836-115-L1

As requested, we investigated subsurface conditions at the site of the proposed Peterson Road Subdivision in Colorado Springs, Colorado. The results of this investigation were summarized and presented in a report (CTL|T Project No. CS19836-115; revised date September 11, 2025). The additional scope of work presented herein was authorized by a contract modification CS-24-0098-CM1, dated May 1, 2026. The report was reviewed by El Paso County. The purpose of this letter is to address the comments.

*EL Paso County Comment #1:*

"We need a full report that covers the entire plat"

*CTL|T Response #1:*

The referenced report covers Tracts A and B of the subject project. As requested, we have expanded our scope to include Tract C. Tract C includes approximately 2.05 acres and is planned to be developed with a detention pond. We advanced three additional borings (TH-17 through TH-19) within Tract C. The borings were advanced to depths of 25 and 30 feet. Summary logs of the borings are presented in Appendix A. Laboratory testing associated with the additional borings is presented in Appendix B. Figures 1 through 3 of the referenced report were updated accordingly. We have attached the revised figures and appendices to the end of this response letter. We understand a report has been issued by another firm for Lot 1.

*El Paso County Comment #2:*

"Per DCM 11.3.3; A geotechnical analysis and report prepared by a Colorado Professional Engineer with recommendations for the foundation preparation and embankment construction shall be submitted to the City/County Engineer with the complete design analysis for all permanent detention facilities."

*CTL|T Response #2:*

We evaluated the area of the proposed detention basin in Tract C as discussed above. Three borings were advanced within Tract C. Groundwater was encountered in one our borings at a depth of 29 feet. We returned to the site several days following drilling and our borings were dry. Grading plans were not provided to our office at the time of this report. We recommend side slopes of the detention basin be no steeper than 3:1 (horizontal to vertical). Slopes of 4:1 (horizontal to vertical) are preferred to establish vegetation and reduce erosion.

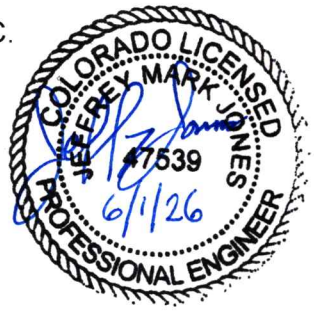
If the detention basin construction includes embankment fills, we recommend the existing ground surface be scarified to a depth of 12 inches, moisture conditioned to near optimum, and recompacted to 95 percent of the maximum modified Proctor (ASTM D 1557) dry density. Fill should be placed and compacted according to the recommendation set forth in Appendix C of the referenced report. We recommend embankment slopes be overbuilt at least 3 feet and cut back to finish grades due to the difficulty of achieving compaction at the edge of a slope.

## Limitations

The conclusions, recommendations, and limitations presented in the September 2025 report remain valid. We believe this investigation was conducted with that level of skill and care normally used by geotechnical engineers practicing under similar conditions. No warranty, express or implied, is made.

Respectfully submitted,

CTL|THOMPSON, INC.




Reviewed By:

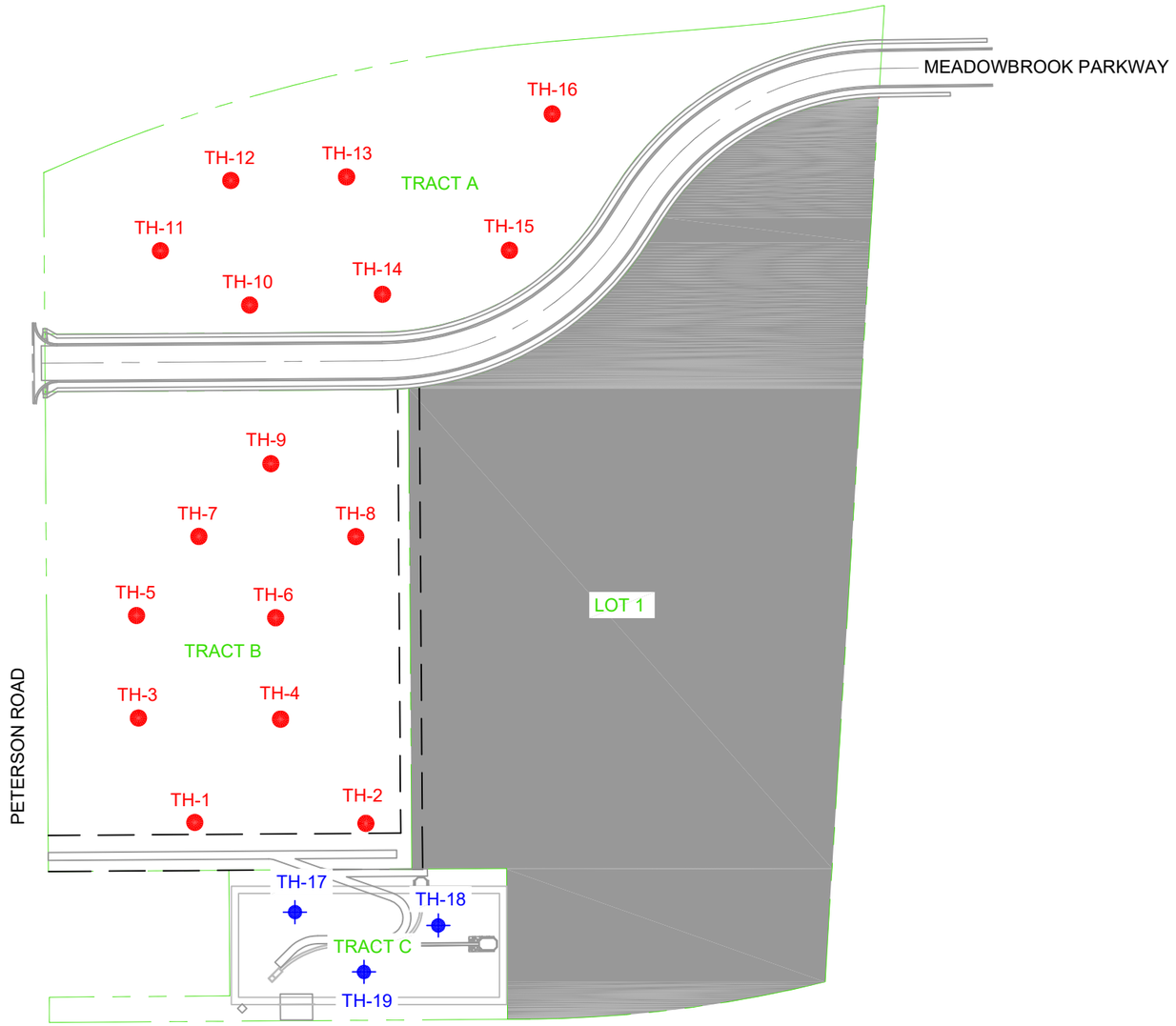
Jeffrey M. Jones, P.E.
Principal Engineer

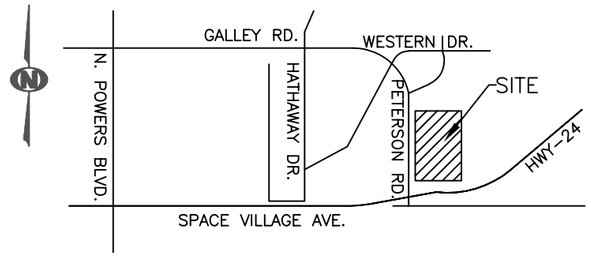
Gwendolyn Eberhart, P.E.
Senior Associate Engineer

JMJ:GE:kp

Attachments: Figure 1 – Location of Exploratory Borings
Figure 2 – Surficial Geologic Conditions
Figure 3 – Engineering Conditions
Appendix A – Summary Logs of Exploratory Borings
Appendix B – Laboratory Test Results

Via email: rcocanna@msn.com




## VICINITY MAP

(NOT TO SCALE)

LEGEND:

| | |
|---|---|
| TH-1 | APPROXIMATE LOCATION OF EXPLORATORY BORING (2024). |
| TH-17 | APPROXIMATE LOCATION OF EXPLORATORY BORING (2026). |
| | PROJECT PROPERTY LINES |
| | PARCELS EXCLUDED FROM THIS INVESTIGATION |
| | EXISTING CONTOURS |
| | PROPOSED CONTOURS |

0 100' 200'

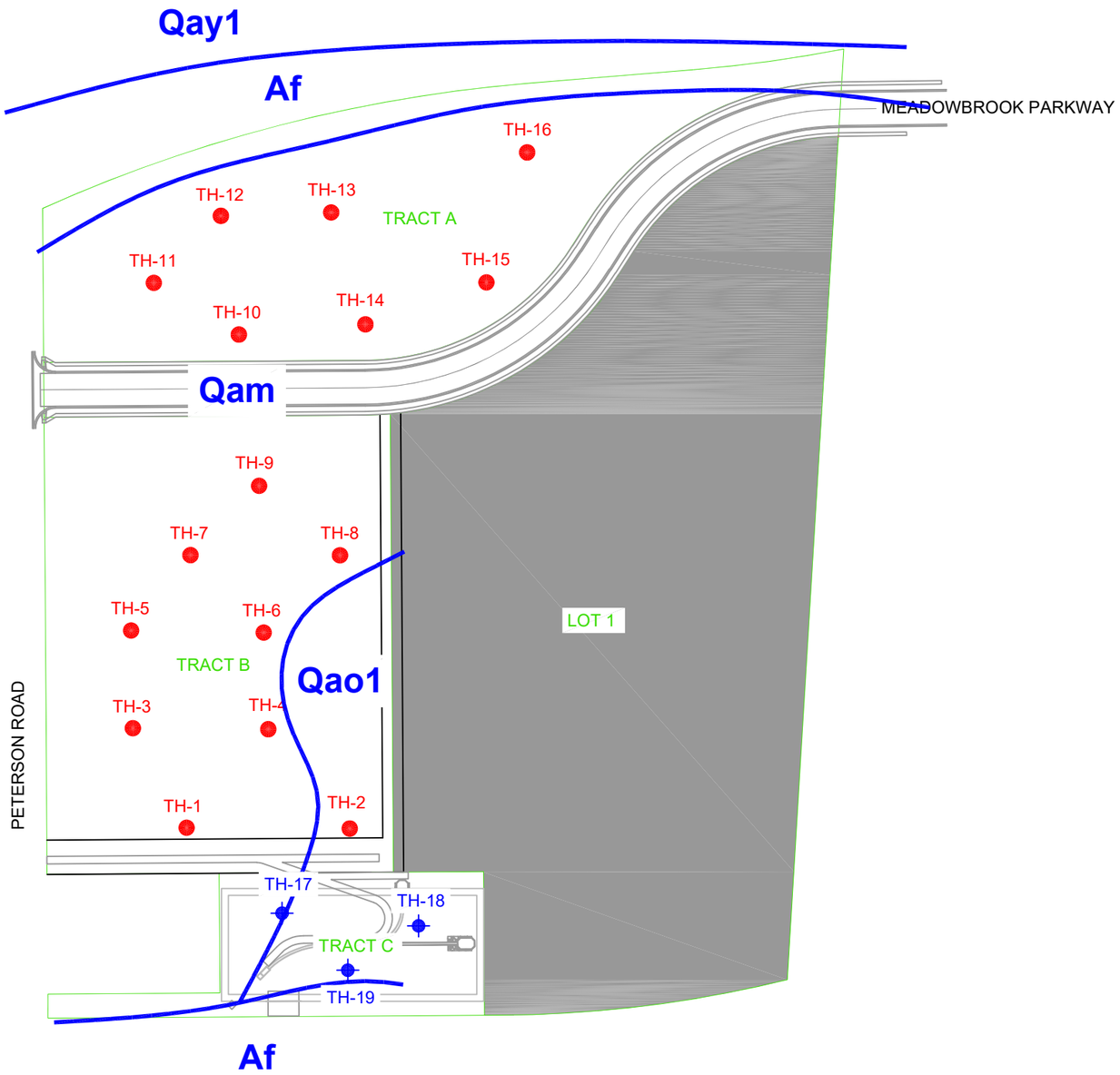
SCALE: 1" = 200'

NOTE:
REVISED GRADING WAS PROVIDED BY MATRIX DESIGN GROUP ON AUGUST 26, 2025. UPDATED BASE DRAWING WAS PROVIDED BY MATRIX DESIGN GROUP ON SEPTEMBER 3, 2025.

**Location of Exploratory Borings**

FIG. 1

**VINTAGE COMMUNITIES**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115-L1**




LEGEND:

TH-1 — APPROXIMATE LOCATION OF EXPLORATORY BORING (2024).

TH-17 — APPROXIMATE LOCATION OF EXPLORATORY BORING (2026).

PROJECT PROPERTY LINES

PARCELS EXCLUDED FROM THIS INVESTIGATION

**GEOLOGIC UNITS**

SURFICIAL GEOLOGIC CONTACTS

**Af** ARTIFICIAL FILL

**Qay1** YOUNG ALLUVIUM ONE

**Qam** MIDDLE ALLUVIUM

**Qao1** OLD ALLUVIUM ONE

N

0 100' 200'

SCALE: 1" = 200'

NOTES:

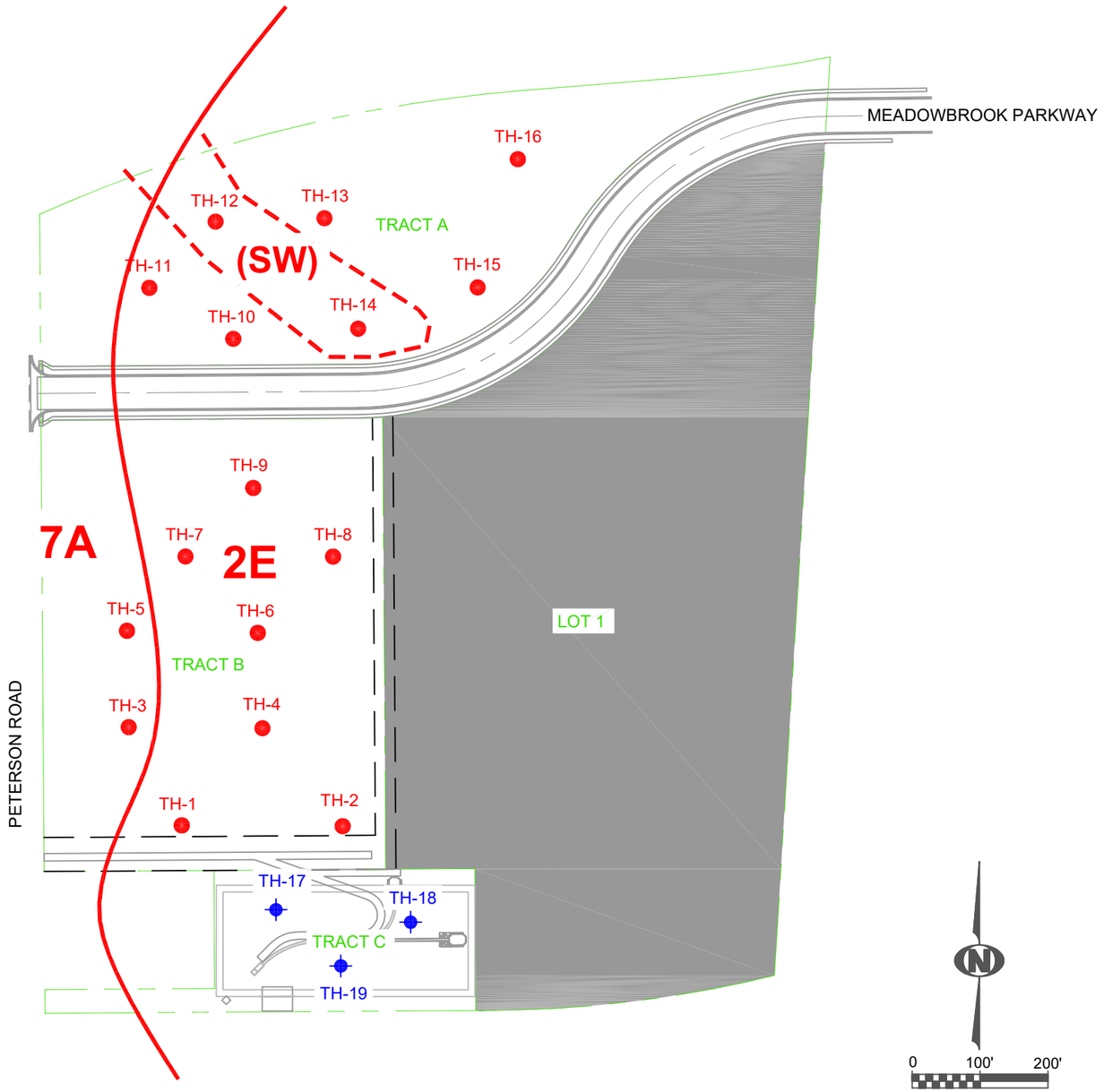
1. REVISED GRADING WAS PROVIDED BY MATRIX DESIGN GROUP ON AUGUST 26, 2025. UPDATED BASE DRAWING WAS PROVIDED BY MATRIX DESIGN GROUP ON SEPTEMBER 3, 2025.

2. ALL BOUNDARIES SHOWN SHOULD BE CONSIDERED APPROXIMATE. THEY ARE BASED UPON A SUBJECTIVE INTERPRETATION OF PUBLISHED MAPS, AERIAL PHOTOGRAPHS AND AN INITIAL FIELD RECONNAISSANCE. CHANGES IN THE MAPPED BOUNDARIES SHOWN ARE POSSIBLE AND SHOULD BE EXPECTED WITH MORE DETAILED WORK AND FURTHER INFORMATION. ALL INTERPRETATIONS AND CONDITIONS SHOWN ARE PRELIMINARY AND FOR LAND-USE PLANNING ONLY.

**VINTAGE COMMUNITIES**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115-L1**

# Surficial Geologic Conditions

FIG. 2




LEGEND:

TH-1 — APPROXIMATE LOCATION OF EXPLORATORY BORING (2024).

TH-17 — APPROXIMATE LOCATION OF EXPLORATORY BORING (2026).

PROJECT PROPERTY LINES

PARCELS EXCLUDED FROM THIS INVESTIGATION

ENGINEERING UNITS WITH MODIFIERS

ENGINEERING CONTACTS

**7A** — PHYSIOGRAPHIC FLOOD PLAN WHERE EROSION AND DEPOSITION WERE OCCURRING AT THE TIME OF ORIGINAL MAPPING (1977) AND MAY BE SUBJECT TO RECURRENT FLOODING. INCLUDES AREAS WITHIN PREVIOUSLY MAPPED FLOODPLAIN ALONG MAJOR STREAMS. THE PROJECT CIVIL ENGINEER SHOULD DETERMINE THE EXTENTS OF THE FLOOD MAPPING FOR THE SITE, THE FLOOD POTENTIAL, AND DESIGN SURFACE DRAINAGE.

**2E** — LOW TERRACES AND VALLEYS OF MINOR TRIBUTARY WHICH WERE SUBJECT TO PERIODIC HIGH FLOWS, SHEET FLOODING AND STREAM BANK EROSION AT THE TIME OF ORIGINAL MAPPING (1977). THE PROJECT CIVIL ENGINEER SHOULD DETERMINE THE EXTENTS OF THE FLOOD MAPPING FOR THE SITE, THE FLOOD POTENTIAL, AND DESIGN SURFACE DRAINAGE.

**(SW)** — SEASONALLY HIGH GROUNDWATER (APPROXIMATE). MAY INFLUENCE DEVELOPMENT AND FOUNDATION DESIGN, DEPENDING ON FINAL GRADING AND FOUNDATION DEPTHS. A DESIGN LEVEL GEOTECHNICAL INVESTIGATION SHOULD BE CONDUCTED TO CONFIRM THE PRESENCE AND DEPTHS OF GROUNDWATER AFTER GRADING OPERATIONS.

N

0 100' 200'

SCALE: 1" = 200'

NOTES:

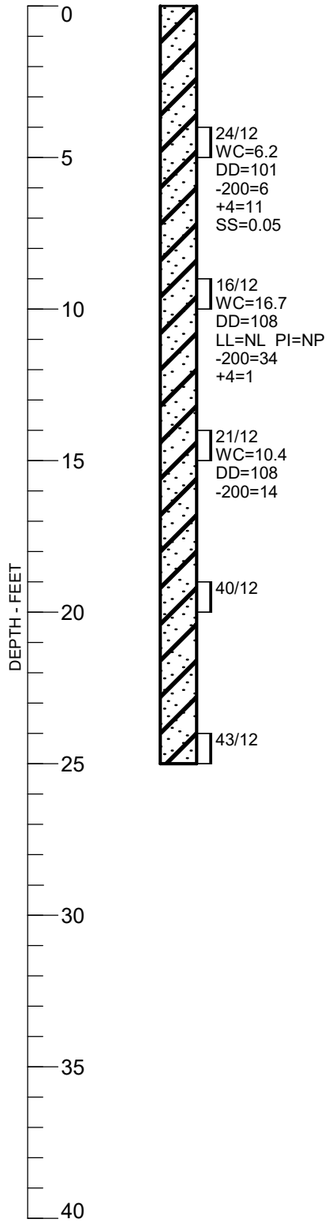
1. REVISED GRADING WAS PROVIDED BY MATRIX DESIGN GROUP ON AUGUST 26, 2025. UPDATED BASE DRAWING WAS PROVIDED BY MATRIX DESIGN GROUP ON SEPTEMBER 3, 2025.
2. ALL BOUNDARIES SHOWN SHOULD BE CONSIDERED APPROXIMATE. THEY ARE BASED UPON A SUBJECTIVE INTERPRETATION OF PUBLISHED MAPS, AERIAL PHOTOGRAPHS AND AN INITIAL FIELD RECONNAISSANCE. CHANGES IN THE MAPPED BOUNDARIES SHOWN ARE POSSIBLE AND SHOULD BE EXPECTED WITH MORE DETAILED WORK AND FURTHER INFORMATION. ALL INTERPRETATIONS AND CONDITIONS SHOWN ARE PRELIMINARY AND FOR INITIAL LAND-USE PLANNING ONLY.
3. MAP LEGEND IS MODIFIED FROM CHARLES S. ROBINSON & ASSOCIATES, INC., GOLDEN, COLORADO, DATED 1977.

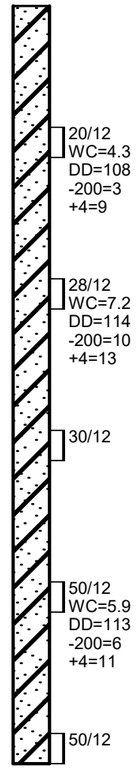
**VINTAGE COMMUNITIES**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115-L1**

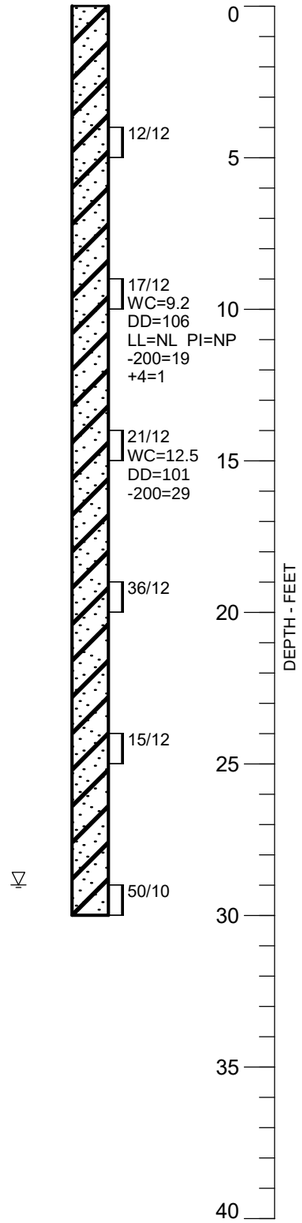
## Engineering Conditions

FIG. 3

**APPENDIX A**
SUMMARY LOGS OF EXPLORATORY BORINGS
(TH-17 THROUGH TH-19)




**LEGEND:**

SAND, SLIGHTLY SILTY TO SILTY, SOME FINE GRAVELS, MEDIUM DENSE TO DENSE, SLIGHTLY MOIST TO MOIST TO WET, LIGHT YELLOW, BROWN, LIGHT GRAY (SM, SP, SP-SM).

DRIVE SAMPLE. THE SYMBOL 24/12 INDICATES 24 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2.5-INCH O.D. SAMPLER 12 INCHES.

GROUNDWATER LEVEL MEASURED AT TIME OF DRILLING.

**NOTES:**

1. THE BORINGS WERE DRILLED MAY 12, 2026 USING A 4-INCH DIAMETER, CONTINUOUS-FLIGHT AUGER AND A TRUCK-MOUNTED CME-55 DRILL RIG.

2. WC - INDICATES MOISTURE CONTENT. (%)
   DD - INDICATES DRY DENSITY. (PCF)
   LL - INDICATES LIQUID LIMIT. (NV : NO VALUE)
   PI - INDICATES PLASTICITY INDEX. (NP : NON-PLASTIC)
   -200 - INDICATES PASSING NO. 200 SIEVE. (%)
   SS - INDICATES WATER-SOLUBLE SULFATE CONTENT. (%)

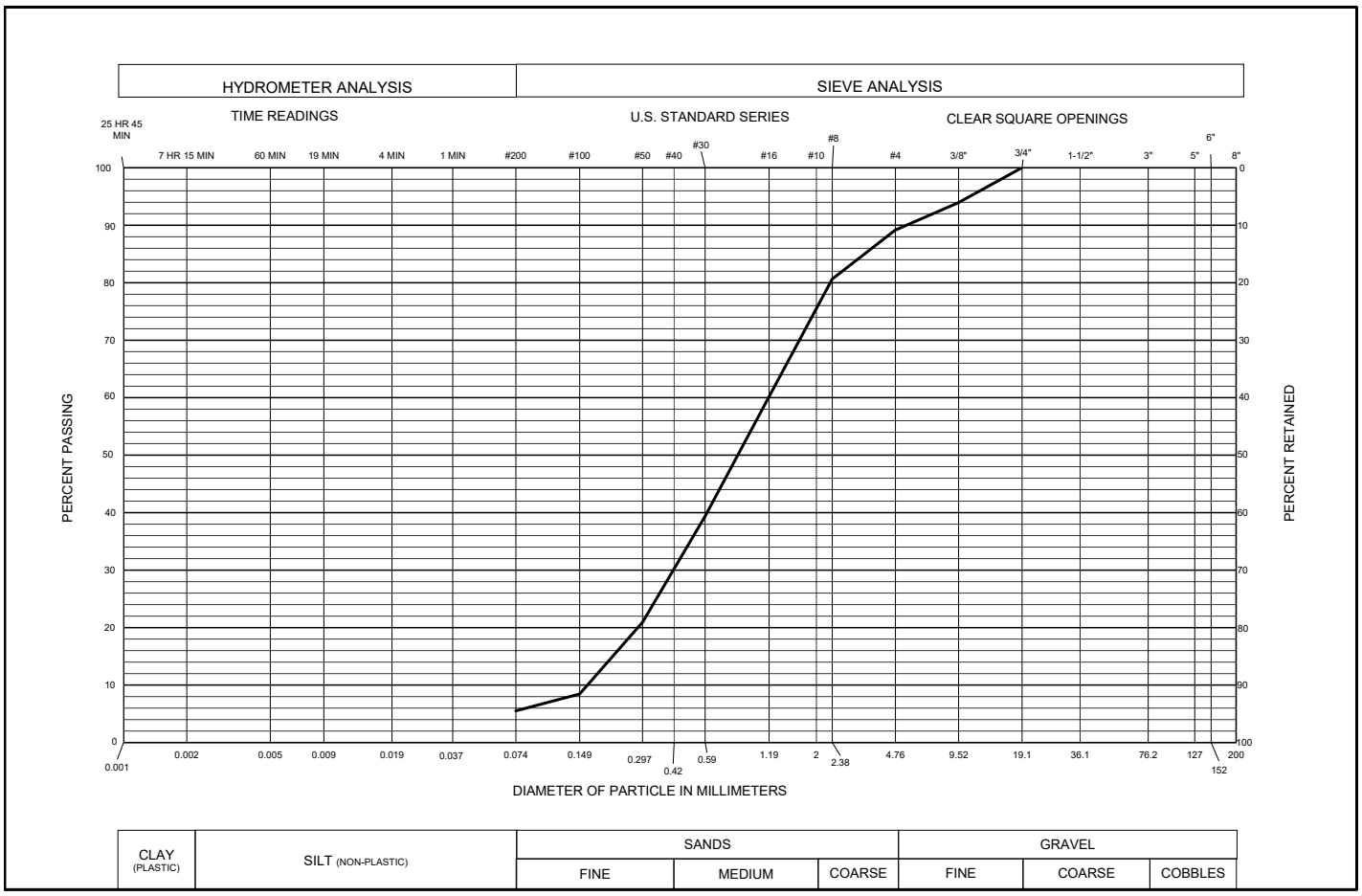
3. THESE LOGS ARE SUBJECT TO THE EXPLANATIONS, LIMITATIONS, AND CONCLUSIONS AS CONTAINED IN THIS REPORT.

**VINTAGE COMMUNITIES**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115-L1**

# Summary Logs of Exploratory Borings

FIG. A-1

**APPENDIX B**
LABORATORY TEST RESULTS (TH-17 THROUGH TH-19)
TABLE B-1 – SUMMARY OF LABORATORY TESTING




Sample of: SAND, SLIGHTLY SILTY (SP-SM)
From: TH-17 AT 4 FEET

Sand & Gravel: 94 %
Clay: - %
Plasticity Index: -

Silt: - %
Liquid Limit: -

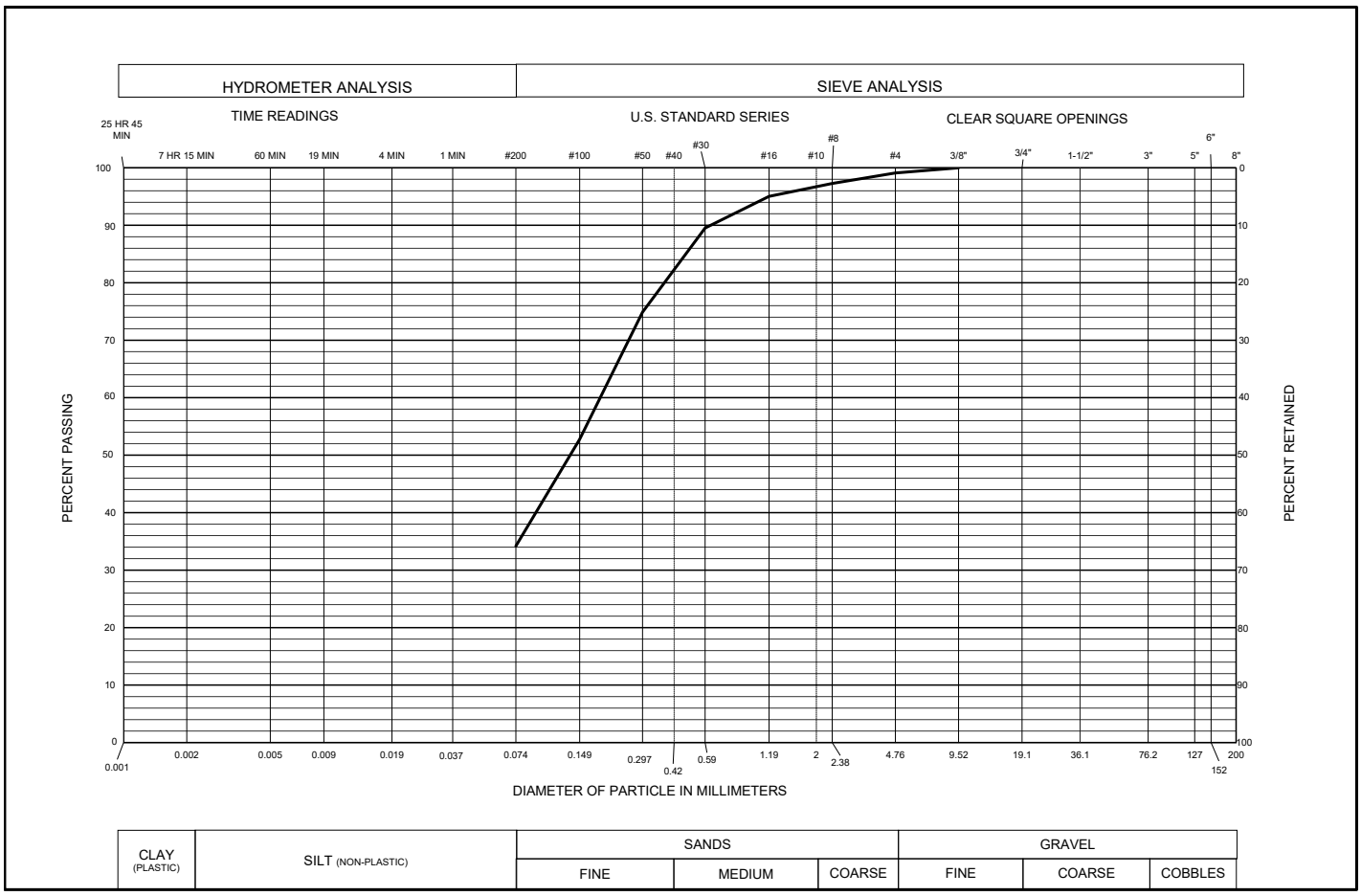
| | Sieve Analysis | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sieve Name | - | - | - | - | 3/4 in | - | 3/8 in | #4 | #8 | #16 | #30 | #50 | #100 | #200 |
| Particle Size (mm) | - | - | - | - | 19.05 | - | 9.525 | 4.75 | 2.38 | 1.19 | 0.59 | 0.297 | 0.149 | 0.074 |
| % Passing | **-** | **-** | **-** | **-** | **100** | **-** | **94** | **89** | **81** | **60** | **39** | **21** | **8** | **6** |

| | Hydrometer Analysis | | | | | | |
|---|---|---|---|---|---|---|---|
| Elapsed Time | - | - | - | - | - | - | - |
| Particle Size (mm) | - | - | - | - | - | - | - |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **-** |

# Gradation/ Hydrometer Test Results

VINTAGE COMMUNITIES
PETERSON ROAD SUBDIVISION
CTL|T PROJECT NO. CS19836-115-L1

FIG. B-1




Sample of: SAND, SILTY (SM)
From: TH-17 AT 9 FEET

Sand & Gravel: 66 %
Clay: - %
Plasticity Index: -

Silt: - %
Liquid Limit: -

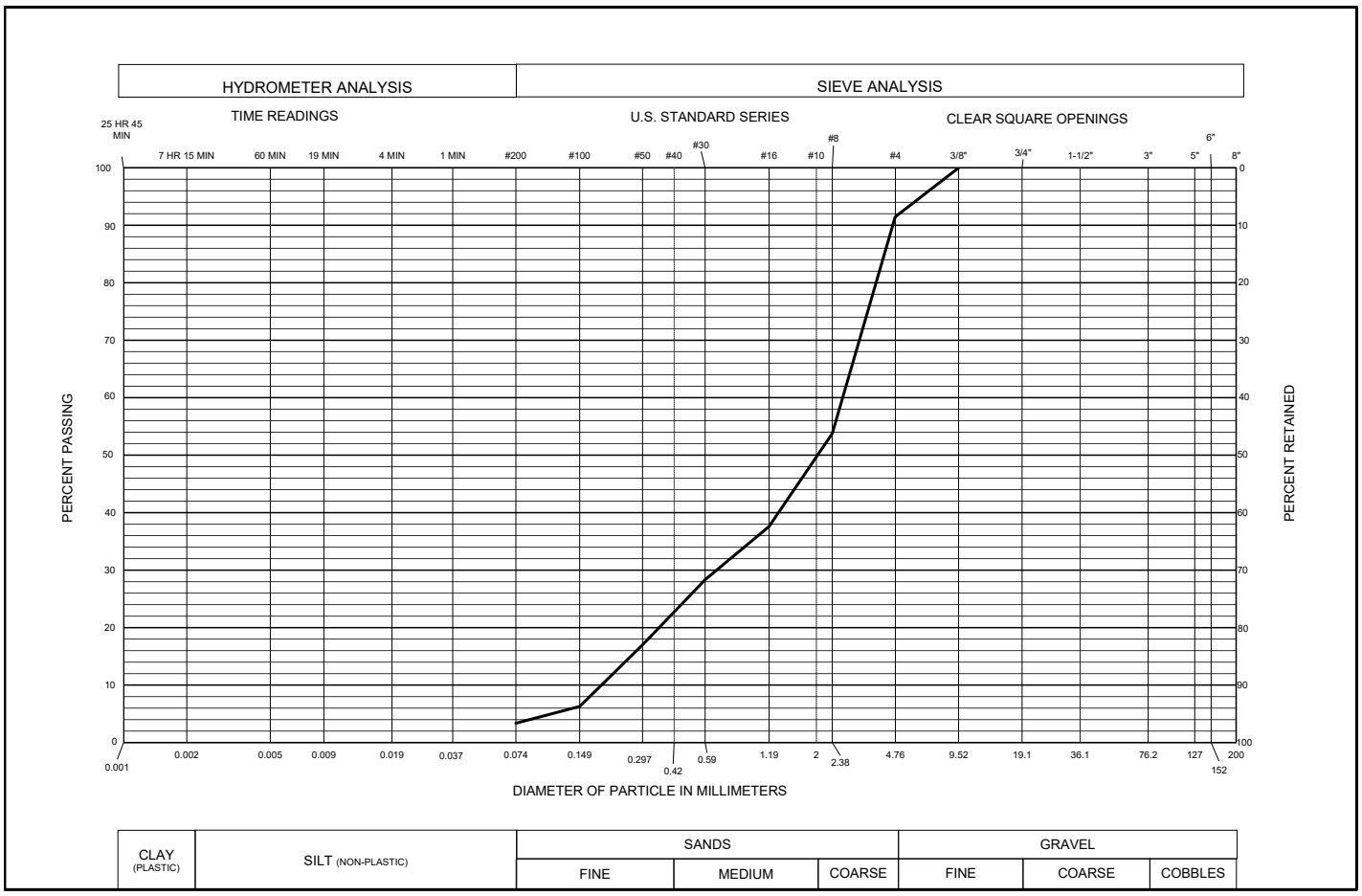
| | Sieve Analysis | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sieve Name | - | - | - | - | - | - | 3/8 in | #4 | #8 | #16 | #30 | #50 | #100 | #200 |
| Particle Size (mm) | - | - | - | - | - | - | 9.525 | 4.75 | 2.38 | 1.19 | 0.59 | 0.297 | 0.149 | 0.074 |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **100** | **99** | **97** | **95** | **90** | **75** | **53** | **34** |

| | Hydrometer Analysis | | | | | | |
|---|---|---|---|---|---|---|---|
| Elapsed Time | - | - | - | - | - | - | - |
| Particle Size (mm) | - | - | - | - | - | - | - |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **-** |

# Gradation/ Hydrometer Test Results

VINTAGE COMMUNITIES
PETERSON ROAD SUBDIVISION
CTL|T PROJECT NO. CS19836-115-L1

FIG. B-2




Sample of: SAND (SP)
From: TH-18 AT 4 FEET

Sand & Gravel: 97 %
Clay: - %
Plasticity Index: -

Silt: - %
Liquid Limit: -

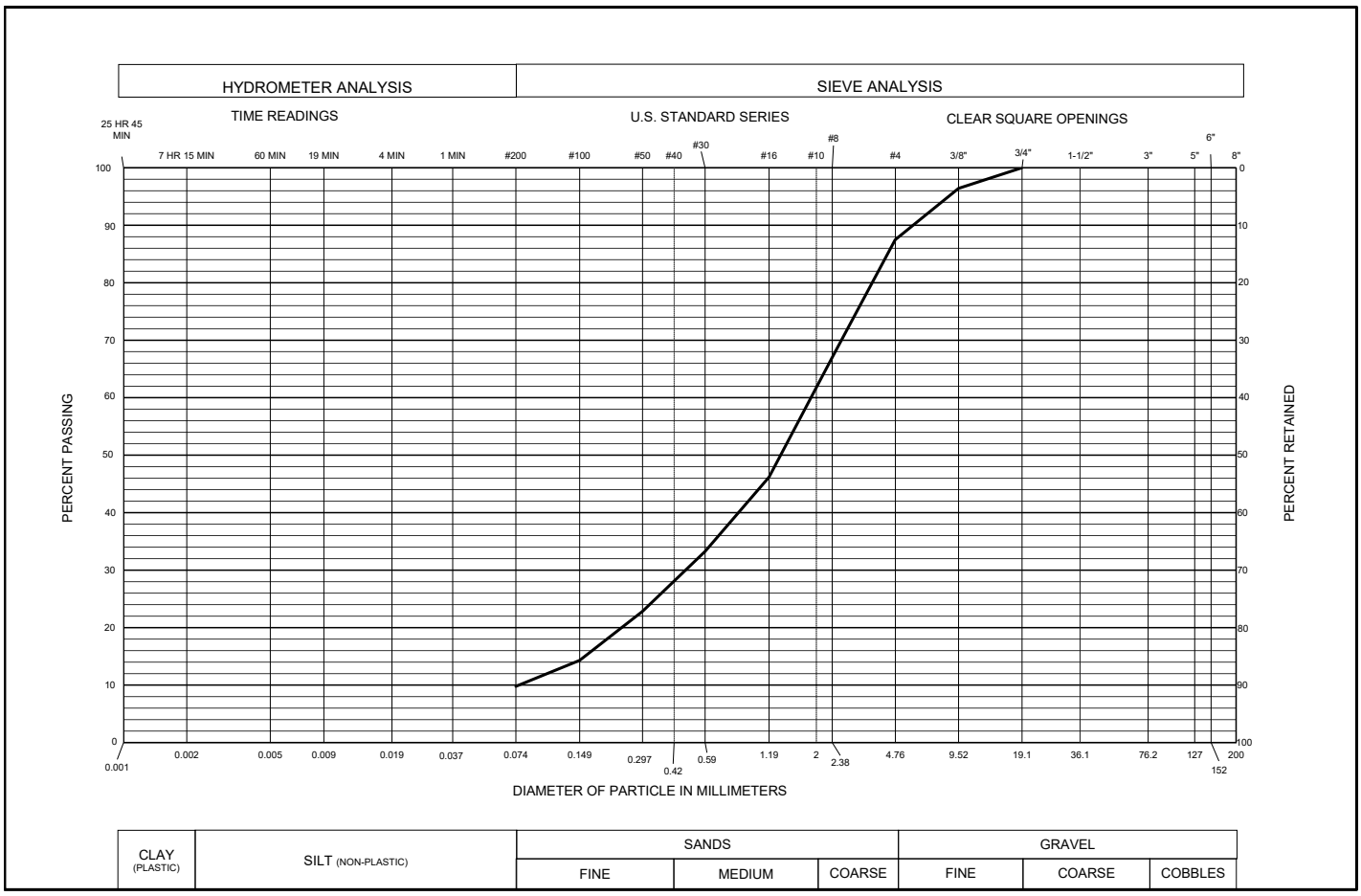
| | Sieve Analysis | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sieve Name | - | - | - | - | - | - | 3/8 in | #4 | #8 | #16 | #30 | #50 | #100 | #200 |
| Particle Size (mm) | - | - | - | - | - | - | 9.525 | 4.75 | 2.38 | 1.19 | 0.59 | 0.297 | 0.149 | 0.074 |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **100** | **91** | **54** | **38** | **28** | **17** | **6** | **3** |

| | Hydrometer Analysis | | | | | | |
|---|---|---|---|---|---|---|---|
| Elapsed Time | - | - | - | - | - | - | - |
| Particle Size (mm) | - | - | - | - | - | - | - |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **-** |

# Gradation/ Hydrometer Test Results

VINTAGE COMMUNITIES
PETERSON ROAD SUBDIVISION
CTL|T PROJECT NO. CS19836-115-L1

FIG. B-3




Sample of: SAND, SLIGHTLY SILTY (SP-SM)
From: TH-18 AT 9 FEET

Sand & Gravel: 90 %
Clay: - %
Plasticity Index: -

Silt: - %
Liquid Limit: -

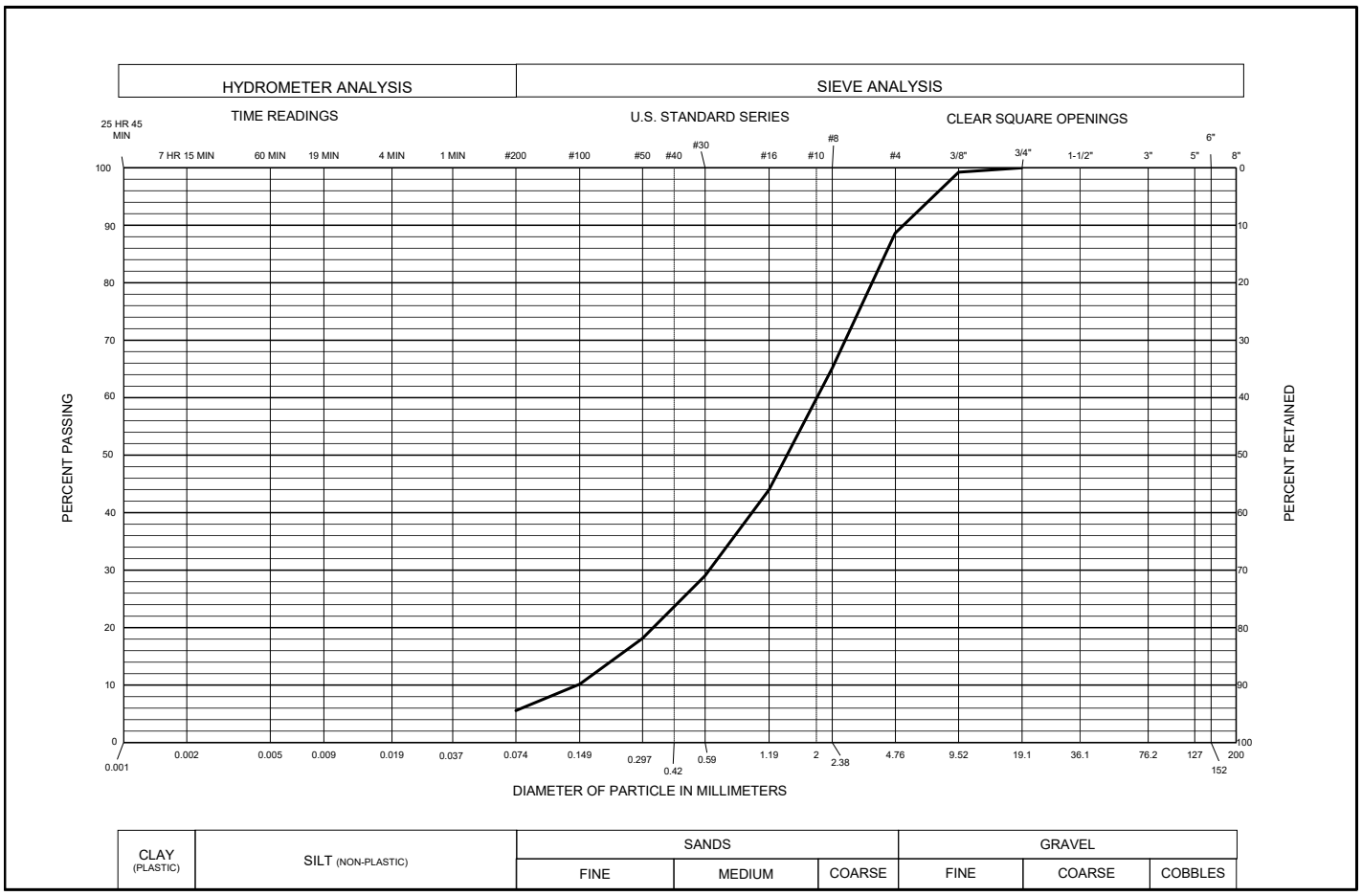
| | Sieve Analysis | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sieve Name | - | - | - | - | 3/4 in | - | 3/8 in | #4 | #8 | #16 | #30 | #50 | #100 | #200 |
| Particle Size (mm) | - | - | - | - | 19.05 | - | 9.525 | 4.75 | 2.38 | 1.19 | 0.59 | 0.297 | 0.149 | 0.074 |
| % Passing | **-** | **-** | **-** | **-** | **100** | **-** | **96** | **87** | **67** | **46** | **33** | **23** | **14** | **10** |

| | Hydrometer Analysis | | | | | | |
|---|---|---|---|---|---|---|---|
| Elapsed Time | - | - | - | - | - | - | - |
| Particle Size (mm) | - | - | - | - | - | - | - |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **-** |

# Gradation/ Hydrometer Test Results

VINTAGE COMMUNITIES
PETERSON ROAD SUBDIVISION
CTL|T PROJECT NO. CS19836-115-L1

FIG. B-4




Sample of: SAND, SLIGHTLY SILTY(SP-SM)
From: TH-18 AT 19 FEET

Sand & Gravel: 94 %
Clay: - %
Plasticity Index: -

Silt: - %
Liquid Limit: -

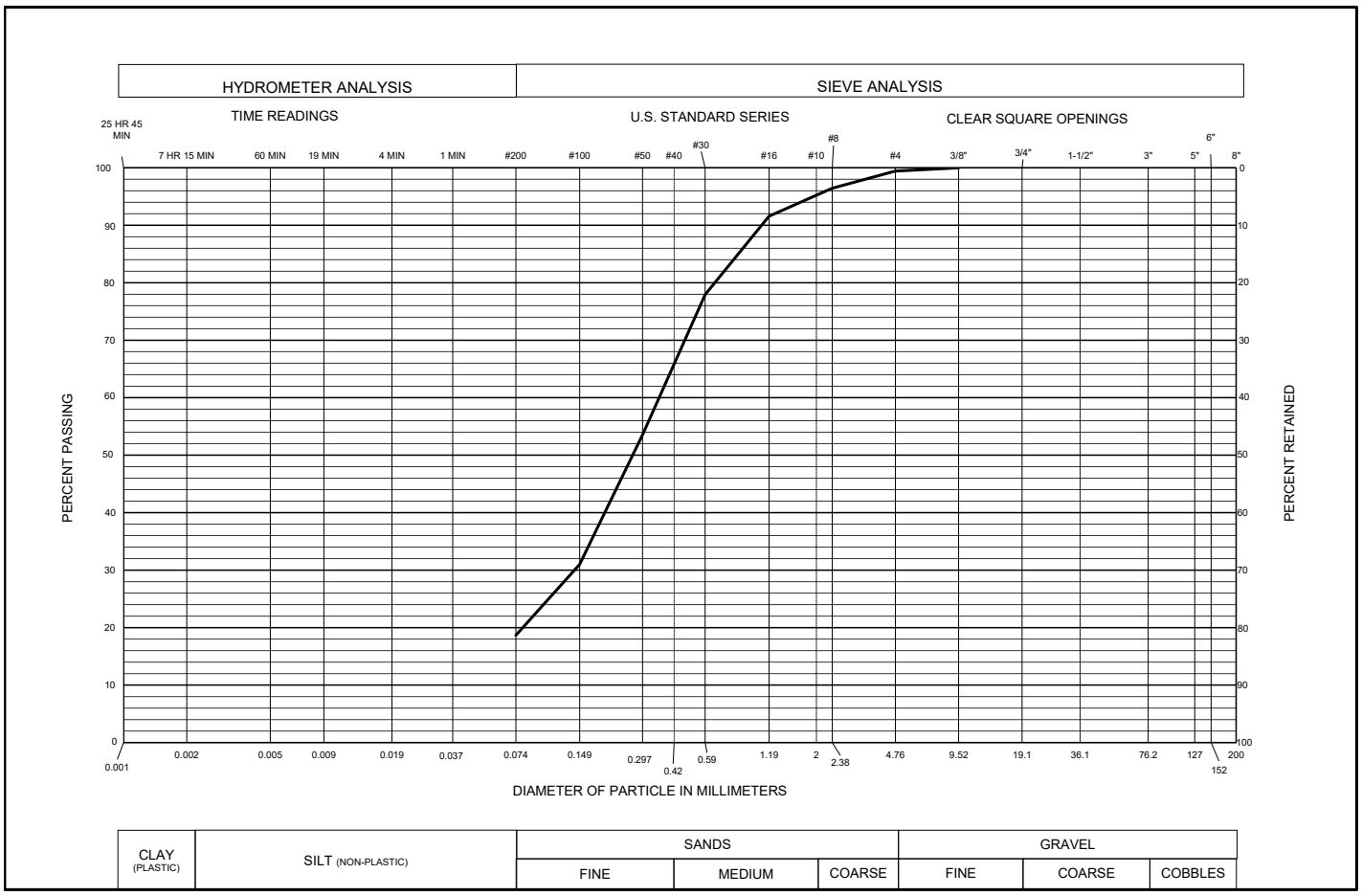
| | Sieve Analysis | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sieve Name | - | - | - | - | 3/4 in | - | 3/8 in | #4 | #8 | #16 | #30 | #50 | #100 | #200 |
| Particle Size (mm) | - | - | - | - | 19.05 | - | 9.525 | 4.75 | 2.38 | 1.19 | 0.59 | 0.297 | 0.149 | 0.074 |
| % Passing | **-** | **-** | **-** | **-** | **100** | **-** | **99** | **89** | **65** | **44** | **29** | **18** | **10** | **6** |

| | Hydrometer Analysis | | | | | | |
|---|---|---|---|---|---|---|---|
| Elapsed Time | - | - | - | - | - | - | - |
| Particle Size (mm) | - | - | - | - | - | - | - |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **-** |

# Gradation/ Hydrometer Test Results

VINTAGE COMMUNITIES
PETERSON ROAD SUBDIVISION
CTL|T PROJECT NO. CS19836-115-L1

FIG. B-5




Sample of: SAND, SILTY (SM)
From: TH-19 AT 9 FEET

Sand & Gravel: 81 %
Clay: - %
Plasticity Index: -

Silt: - %
Liquid Limit: -

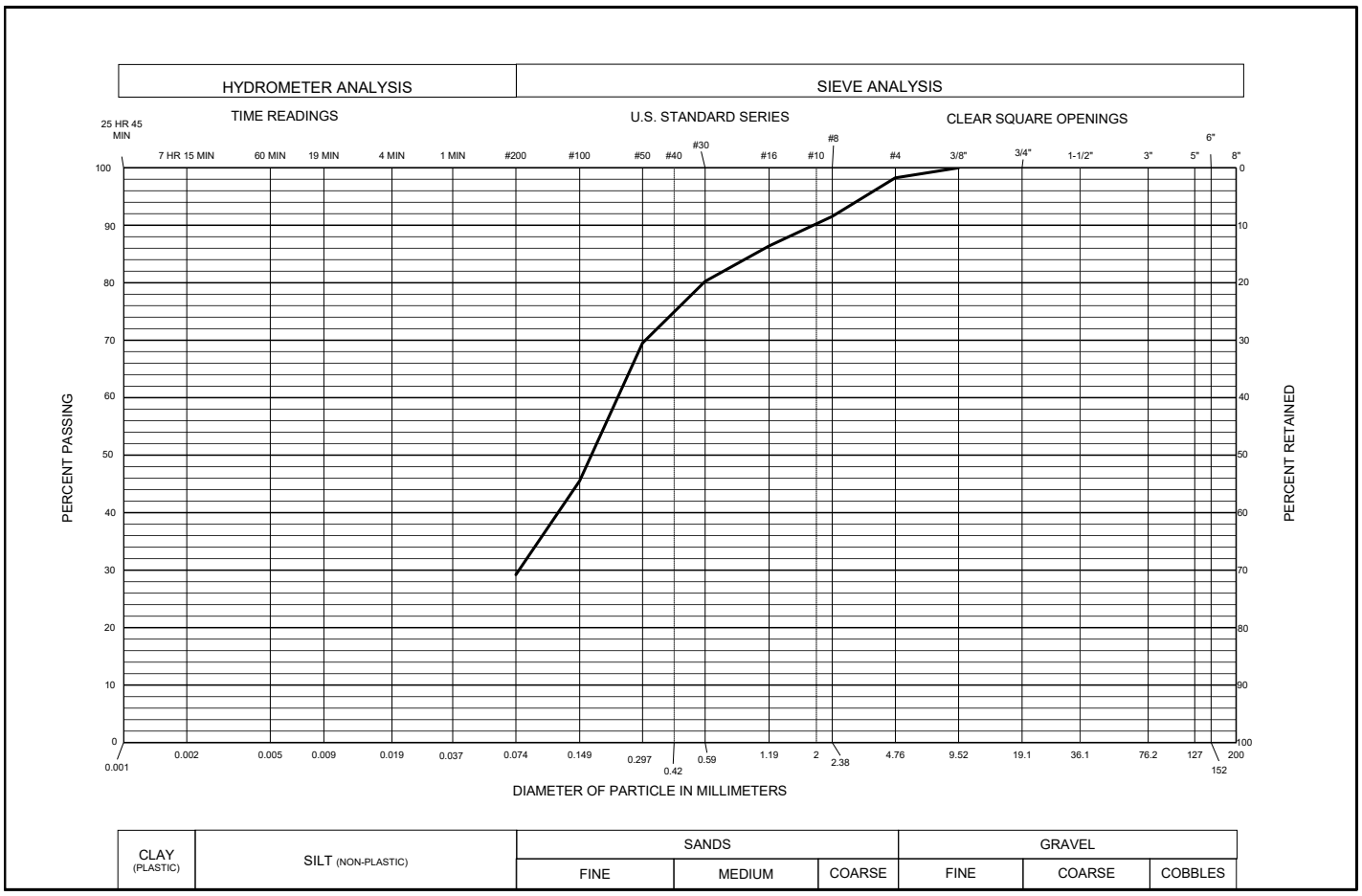
| | Sieve Analysis | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sieve Name | - | - | - | - | - | - | 3/8 in | #4 | #8 | #16 | #30 | #50 | #100 | #200 |
| Particle Size (mm) | - | - | - | - | - | - | 9.525 | 4.75 | 2.38 | 1.19 | 0.59 | 0.297 | 0.149 | 0.074 |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **100** | **99** | **96** | **92** | **78** | **54** | **31** | **19** |

| | Hydrometer Analysis | | | | | | |
|---|---|---|---|---|---|---|---|
| Elapsed Time | - | - | - | - | - | - | - |
| Particle Size (mm) | - | - | - | - | - | - | - |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **-** |

# Gradation/ Hydrometer Test Results

VINTAGE COMMUNITIES
PETERSON ROAD SUBDIVISION
CTL|T PROJECT NO. CS19836-115-L1

FIG. B-6




Sample of: SAND, SILTY (SM)
From: TH-19 AT 14 FEET

Sand & Gravel: 71 %
Clay: - %
Plasticity Index: -

Silt: - %
Liquid Limit: -

| | Sieve Analysis | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Sieve Name | - | - | - | - | - | - | 3/8 in | #4 | #8 | #16 | #30 | #50 | #100 | #200 |
| Particle Size (mm) | - | - | - | - | - | - | 9.525 | 4.75 | 2.38 | 1.19 | 0.59 | 0.297 | 0.149 | 0.074 |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **100** | **98** | **92** | **86** | **80** | **69** | **46** | **29** |

| | Hydrometer Analysis | | | | | | |
|---|---|---|---|---|---|---|---|
| Elapsed Time | - | - | - | - | - | - | - |
| Particle Size (mm) | - | - | - | - | - | - | - |
| % Passing | **-** | **-** | **-** | **-** | **-** | **-** | **-** |

# Gradation/ Hydrometer Test Results

VINTAGE COMMUNITIES
PETERSON ROAD SUBDIVISION
CTL|T PROJECT NO. CS19836-115-L1

FIG. B-7

# TABLE 1

## SUMMARY OF LABORATORY TESTING
## CTL|T PROJECT NO. CS19836-115

| BORING | DEPTH (FEET) | MOISTURE CONTENT (%) | DRY DENSITY (PCF) | ATTERBERG LIMITS | | PASSING NO. 200 SIEVE (%) | WATER SOLUBLE SULFATES (%) | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|
| | | | | LIQUID LIMIT | PLASTICITY INDEX | | | |
| TH-17 | 4 | 6.2 | 101 | | | 6 | <0.1 | SAND, SLIGHTLY SILTY (SP-SM) |
| TH-17 | 9 | 16.7 | 108 | NL | NP | 34 | | SAND, SILTY (SM) |
| TH-17 | 14 | 10.4 | 108 | | | 14 | | SAND, SILTY (SM) |
| TH-18 | 4 | 4.3 | 108 | | | 3 | | SAND (SP) |
| TH-18 | 9 | 7.2 | 114 | | | 10 | | SAND, SLIGHTLY SILTY (SP-SM) |
| TH-18 | 19 | 5.9 | 113 | | | 6 | | SAND, SLIGHTLY SILTY (SP-SM) |
| TH-19 | 9 | 9.2 | 106 | NL | NP | 19 | | SAND, SILTY (SM) |
| TH-19 | 14 | 12.5 | 101 | | | 29 | | SAND, SILTY (SM) |

* SWELL MEASURED UNDER ESTIMATED IN-SITU OVERBURDEN PRESSURE.
NEGATIVE VALUE INDICATES COMPRESSION.

**APPENDIX B**

CTL|T – Geologic Hazard Evaluation and Preliminary Geotechnical Investigation, Project No. CS19836-115 revision dated September 11, 2025

CTL|THOMPSON

Founded in 1971

# GEOLOGIC HAZARD EVALUATION AND PRELIMINARY GEOTECHNICAL INVESTIGATION

PETERSON ROAD SUBDIVISION
PETERSON ROAD AND HIGHWAY 24
COLORADO SPRINGS, COLORADO

Prepared for:

VINTAGE COMMUNITIES, INC.
c/o CONSTRUCTION MANAGEMENT & CONSULTING, INC.
1191 Applewood Drive
Colorado Springs, CO 80907
Attention: Ron O'Canna

Project No. CS19836-115

August 6, 2024
Revised: September 11, 2025

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APPENDIX D – HISTORICAL AERIALS

# SUMMARY OF REPORT REVISIONS

This report has been revised to address review comments from El Paso County. Due to the format the County provides their review comments, we do not have a date for the comments. We were provided a copy of the comments on July 28, 2025 by Matrix Design Group. **The revisions that have been made to this report have been underlined to be easily identified.**

The County review comments focused on four points:

- The Geologic Hazards/Constraints mapping
- The parcels included in our investigation, and the lot/tract numbers
- Availability of grading plans
- Request for additional groundwater information

## Geologic Hazards/Constraints Mapping

There is a review comment on the cover page of the report which states: "*this report does not include a geologic hazards/constraints map, please include this map*". The mapping of constraints was on Fig. 3 – Engineering Conditions. This Figure has been revised to include more detail of the Robinson classifications typically used in this area to describe constraints.

## Parcels Included in the CTL|T Investigation

At the time we were originally contracted for this project, the lot/tracts for this development had not been numbered/named. Matrix has provided the updated lot/tract numbers/names. Our Figures and the text in the report have been updated to reflect these changes.

Several of the review comments referred to this report only covering Tracts A and B, and that Tract C and Lot 1 were not included. Our contract for this project is for Tracts A and B, only.

## Availability of Grading Plans

At the time this report was initially issued, proposed grading plans were not available. We understand that at the time of submittal to the County, the submittal included proposed grading plans. Matrix provided us a copy of the latest revision to the proposed grading on

August 26, 2025. Our Figures and the text in the report have been updated to reflect this updated information.

### Request for Additional Groundwater Information

There is a review comment on page 2 of the report, within the Summary of Conclusions which states: "*please provide additional groundwater information and a discussion on fluctuations in groundwater levels be provided prior to the approval that covers the entire site. Due to the shallow groundwater conditions at this site, no basements should be allowed unless mitigation measures (such as raising the site grades, underdrain system, etc.) are established and noted in the plans*."

A discussion of groundwater fluctuation was provided in the Subsurface Conditions, Groundwater section on page 5. A discussion of mitigation measures was provided in the Site Development Considerations, Potential Shallow Groundwater section on page 14.

## SCOPE

This report presents the results of our Geologic Hazard Evaluation and Preliminary Geotechnical Investigation for an approximately 14-acre site. Tracts A and B are covered by this report. Should we be engaged to investigate Lot 1 and Tract C the reporting would be under separate cover. The project area is located northeast of the intersection of State Highway 24 and Peterson Road, and is south of Sand Creek East Fork, in El Paso County Colorado (Fig. 1). We understand the property lines within the project area are being changed for a proposed residential development and an extension of Meadowbrook Parkway. The purpose of our investigation was to evaluate general geologic and subsurface conditions that influence development to assist in planning and preliminary design. The scope was described in our Proposal (CS-24-0098) dated May 23, 2024. Evaluation of the property for the presence of potentially hazardous materials (Environmental Site Assessment) is outside of our scope of work.

This report is based on our understanding of the planned construction, subsurface conditions disclosed by exploratory borings, results of field and laboratory tests, engineering analysis, and our experience. It contains descriptions of the soil conditions and groundwater levels found in our exploratory borings, and preliminary design and construction criteria for foundations, floor systems, pavements, and surface drainage. The discussions of foundation, floor systems, and pavement are intended for planning purposes only. The geotechnical

exploration and laboratory testing information contained in this report can be used as a supplement for future design-level investigations. CTL|Thompson can provide additional borings and design-level geotechnical investigation services as a separate scope of work, if requested. A brief summary of our conclusions and recommendations follows, with more detailed discussion in the report.

## SUMMARY OF CONCLUSIONS

1. Strata encountered in our exploratory borings generally consisted of widespread areas of slightly clayey to clayey sand fill at the surface. Slightly silty to silty sand and slightly clayey to very clayey sand, with scattered gravels, was encountered at the surface or below the fill and extended to the maximum depths explored. Surficial fills were not identified in four of the sixteen borings. Bedrock was not encountered.
2. Groundwater was observed in three borings at depths of 6 feet (TH-12) and 6.6 feet (TH-14). Groundwater observations in all other borings were at greater depths, as discussed in the **Groundwater** section. Groundwater levels will fluctuate with seasonal precipitation and landscaping irrigation. Groundwater levels measured in TH-12 and TH-14 may influence development and foundation design, depending on final grading and foundation depths. A discussion of potential mitigation methods is included in the **Site Development Considerations, Potential Shallow Groundwater** section.
3. We recommend the preparation of design-level geotechnical investigations for the proposed buildings to develop specific foundation recommendations for the design and construction of foundations and floor systems. We expect spread footing foundations will be the preferred foundation type for the proposed development type. For preliminary planning purposes, mat or spread footing foundations with a maximum allowable soil pressure of 2,000 to 3,000 psf is anticipated.
4. The natural sand, or new, moisture conditioned, densely compacted fill should provide good support for floor slabs. The performance of slabs may be poor if existing fill is present near floor levels. Sub-excavation of existing fill and loose soil replacement with moisture conditioned fill can enhance performance of slabs.
5. We understand the project will include the extension of Meadowbrook Parkway, and residential roadways. On a preliminary basis, we suggest budgeting for section of 5 inches of HMA over 8 inches of aggregate base course. A pavement design report should be prepared in accordance with El Paso County criteria after site plans and grading plans have been completed.
6. Control of surface drainage will be critical to the performance of foundations and slabs-on-grade. Overall surface drainage should be designed to provide rapid removal of surface runoff away from the proposed residences. Conservative irrigation practices should be followed to avoid excessive wetting.

## SITE CONDITIONS

The project area is approximately 14 acres, consisting of Tracts A and B (Fig. 1), located northeast of the intersection of State Highway 24 and Peterson Road and is south of Sand Creek East Fork. Peterson Road bounds the project's west side.

The project area is relatively flat and generally slopes from the northeast down to the southwest. The Sand Creek East Fork is to the north of the project area, and the northern edge of the project area slopes toward the creek. As we understand the project boundaries, the creek bank is located outside of the project area. The project area has some grasses, small shrubs, and trees. Some of the trees appear to have been planted as windbreaks as part of the previous development of the site.

A small hotel is adjacent to the project area to the south, a strip mall, gas station, and golf course are to the west, on the other side of Peterson Road, and an apartment complex is being constructed to the east of the project (CTL|T Project Nos. CS19308-115 and -125). The Meadowbrook Crossing residential development is located to the northeast (CTL|T Project Nos. CS18620-105, CS18831-120 and CS18831.001-120). Meadowbrook Parkway runs east/west between Meadowbrook Crossing and the apartment development, ending in a cul-de-sac at the eastern edge of the project area.

The project site is currently vacant except for a small, temporary fenced construction yard along Peterson Road and is crisscrossed with two-tracks. Historic aerial images of the site are provided in Appendix D. The 1953 aerial image appears to show a small drainage crossed the site in a northeast/southwest direction. The photo we have covers a small area, and it is difficult to determine if the drainage is the result of concentrated sheet flow, or if it is the remanent of a past meander of the creek. In the 1960 image, an oval shaped track is present in the northern half of the site and is also visible in the 1975 image. In the 1983 image, the site has been redeveloped with six baseball diamonds, and it appears the remainder of the project area had been graded, likely for parking. The baseball diamonds appear to have been active and maintained in the 2004 image, but was abandoned in the 2011 image. The shapes of the baseball diamonds can still be discerned in current imagery.

## PROPOSED DEVELOPMENT

We have been provided with the Proposed Roadway Grading, Site Utilities and Concept Plan Exhibit prepared by Matrix, dated May 17, 2024. We were provided proposed grading plans on August 26, 2025 by Matrix. Areas covered by the plan only included the street, Meadowbrook Parkway, and Tract C. We were not provided proposed grading for Tracts A and B. The report figures contained herein have been updated to reflect the proposed grading and updated lot/tract numbers/names. The proposed grading appears to be limited to the extension of Meadowbrook Parkway and Tract C. We understand the property lines within the project area are being changed, and the area covered by this report consists of Tracts A and B. Tract C which will contain the proposed detention basin, and Lot 1 are outside of project area of this investigation. We understand that Meadowbrook Parkway will be extended from the eastern edge of the project area to the west, to intersect with Peterson Road. Proposed improvements are anticipated to include roadways and underground utilities.

## INVESTIGATION

Subsurface conditions at the site were investigated by drilling sixteen, widely spaced, exploratory borings to depths between 25 and 35 feet. The approximate locations of the borings are shown in Fig. 1. Our representative observed the drilling operations, logged the subsurface conditions found in the borings, and obtained samples for laboratory testing. Graphical logs of the borings, including the results of field penetration resistance tests, and some laboratory test data are presented in Appendix A. Soil samples obtained during drilling were visually classified and laboratory testing was assigned to representative samples. Swell-consolidation and gradation test results are presented in Appendix B. Laboratory test data are summarized in Table B-1.

## SUBSURFACE CONDITIONS

The soils encountered during this investigation generally consisted of widespread areas of slightly clayey to clayey sand fill at the surface. Natural, slightly silty to silty sand and slightly clayey to very clayey sand, with scattered gravels, was encountered either at the surface or beneath fill material and extended to the maximum depths explored. Surficial fills were not identified in four of the sixteen borings. Bedrock was not encountered. Some of the pertinent

engineering characteristics of the soils and bedrock encountered and groundwater conditions are discussed in the following paragraphs.

## Fill

Slightly clayey to clayey sand fill was encountered in twelve borings. The fill ranged from 0.5 to 9 feet in thickness. Due to the likely nature in which the fill was placed, it is possible that more fill exists on the site than was identified in the borings. Fill placement records were not available at the time of this investigation and the fill is considered to be undocumented. If documentation such as field observation and density testing reports is available, it should be provided to our office.

The fill was loose to medium dense based on field penetration resistance testing. Six samples of the fill contained 5 to 33 percent silt and clay-sized particles (passing the No. 200 sieve). Three samples of the fill were tested for swell and consolidation characteristics in our laboratory. The fill samples exhibited slight compression to low swell potential when wetted under estimated overburden pressure. The Liquid Limits were 20 and 25, and the Plasticity Indices were 2 and 6. The measured moisture contents of the fill ranged from 4.3 to 11.1 percent.

## Sand Soils

The natural soils encountered consisted of slightly silty to silty sand and slightly clayey to very clayey sand, with scattered gravels. The sand encountered in the borings extended to the maximum depths explored. The sand was loose to very dense based on the results of field penetration resistance tests. Samples of the sand tested in our laboratory contained 5 to 41 percent clay and silt-sized particles (passing the No. 200 sieve). The Liquid Limits were 22 and 24, and the Plasticity Indices were 5 in two samples; three samples were non-plastic. The measured moisture contents of the fill ranged from 2.2 to 21.1 percent.

Seven samples of the sand were swell tested in our laboratory. The sand samples exhibited slight compression to low swell potential when wetted under estimated overburden pressure. Several of the samples consolidated a notable amount under initial loading. We do not believe the initial consolidation is indicative of collapse-prone soils as collapse-prone soils would consolidate after the initial consolidation, when the sample is wetted. The initial consolidation is likely the result of sample disturbance due to the granular nature of the materials.

## Bedrock

Bedrock was not encountered during this investigation. The nearby mapped bedrock units can generally be described as sandstone which may have interbedded claystone.

## Groundwater

At the time of drilling, groundwater was encountered in thirteen of the sixteen borings. Depth to groundwater ranged from 13.5 to 31 feet below the existing ground surface in twelve borings, and depth to groundwater was 8 feet below the existing ground surface in boring TH-14. Due to the nature of the onsite materials, we were only able to check water levels in seven of the borings several days after the completion of drilling operations as the boring holes had collapsed. Groundwater was observed in three of the seven borings at depths of 28.5 feet (TH-9), 29 feet (TH-10), and 6 feet (TH-12). Groundwater levels will fluctuate with seasonal precipitation and landscaping irrigation. A seasonal fluctuation of 3 to 5 feet is typical for this area. Our borings were drilled in the middle of June when groundwater levels are typically rising from seasonal lows. High groundwater conditions generally occur in late September to early October. Groundwater levels measured in TH-14 and TH-12 may influence development and foundation design, depending on final grading and foundation depths.

## Seismicity

According to the USGS, Colorado's Front Range and eastern plains are considered low seismic hazard zones. The earthquake hazard exhibits higher risk in western Colorado compared to other parts of the state. The Denver Metropolitan area has experienced earthquakes within the past 100 years, shown to be related to deep drilling, liquid injection, and oil/gas extraction. Naturally occurring earthquakes along faults due to tectonic shifts are rare in this area.

The soil and bedrock at this site are not expected to respond unusually to seismic activity. The 2021 International Building Code (Section 1613.2.2) defers the estimation of Seismic Site Classification to ASCE 7-16, as outlined in the table below.

**ASCE 7-16 SITE CLASSIFICATION CRITERIA**

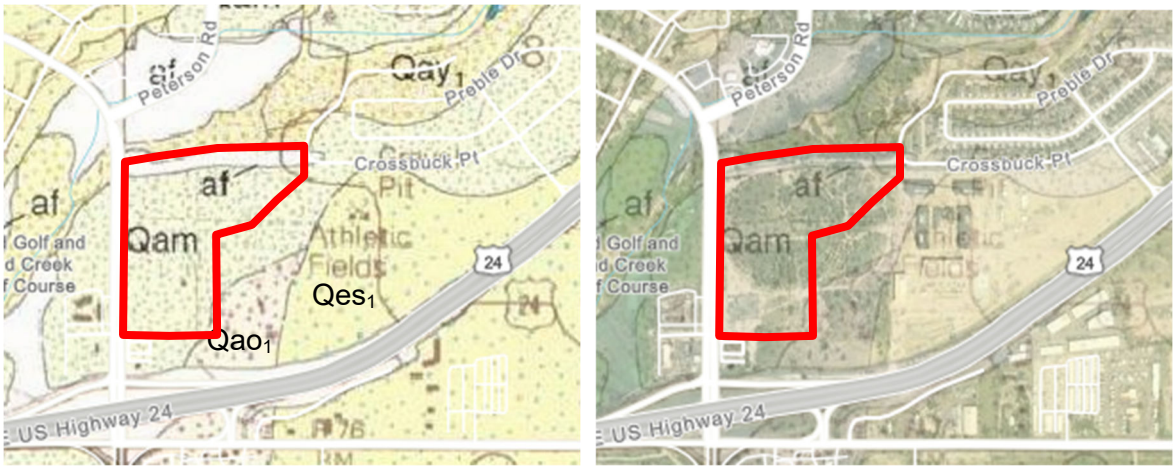
| Seismic Site Class | $\bar{s}_u$, Average Undrained Shear Strength (lb/ft$^2$) | $\bar{N}$, Average Standard Penetration Resistance (blows/ft) | $\bar{v}_s$, Average Shear Wave Velocity (ft/s) |
|---|---|---|---|
| A. Hard Rock | N/A | N/A | >5,000 |
| B. Rock | N/A | N/A | 2,500 to 5,000 |
| C. Very Dense Soil and Soft Rock | >2,000 | >50 blows/ft | 1,200 to 2,500 |
| D. Stiff Soil | 1,000 to 2,000 | 15 to 50 blows/ft | 600 to 1,200 |
| E. Very Loose Sand or Soft Clay Soil | <1,000 | <15 blows/ft | <600 |
| F. Soils requiring Site Response Analysis | See Section 20.3.1 | See Section 20.3.1 | See Section 20.3.1 |

Based on the results of our investigation, we judge the subsurface is likely Seismic Site Classification D. The subsurface conditions indicate low susceptibility to liquefaction from a materials and groundwater perspective.

## SITE GEOLOGY

The surficial geology at the site was evaluated by reviewing published geologic maps and our site reconnaissance and subsurface exploration. The Colorado Springs Quadrangle map published by the Colorado Geological Survey (CGS), by Richard F. Madole, and Jon P. Thorson, 2002[1] was reviewed for the project site. Our borings generally confirm the CGS mapping. The various deposits mapped at the site are described in more detail based on the Geologic Map descriptions in the following sections. Mapping shown was obtained from the USGS National Geologic Map Database.

[1] Madole, Richard F., and Thorson, Jon P., 2002, Geologic Map of the Elsmere Quadrangle, El Paso County, Colorado: Colorado Geological Survey Open-File Map 02-2, scale 1:24,000.




*Excerpt from the Elsmere Quadrangle with the approximate project area shown in red*

Artificial Fill (Map Unit af): Disturbed areas or artificial fill placed during construction activities.

Young alluvium one ($Qay_1$): late Holocene age, alluvial deposits transported and deposited by flowing water in channels, chiefly light brownish-gray, grayish-brown, and dark-grayish-brown, poorly sorted sand, silty sand, and minor pebble gravel. Exists on narrow flood plains and the floors of stream channels, most of which are incised. Exposed thickness generally is 2-8 feet.

Middle alluvium (Qam): late Pleistocene age, alluvial deposits transported and deposited by flowing water in channels, chiefly light-brownish-gray, pale-brown, light-yellowish-brown, and grayish-brown, poorly sorted sand and subordinate amounts of gravel. Estimated thickness is 20-50 feet.

Old alluvium one ($Qao_1$): middle Pleistocene age, alluvial deposits transported and deposited by flowing water in channels, chiefly pale-brown to strong-brown, extremely poorly sorted, fine to very coarse sand, silty and clayey sand, and gravel. Most gravel is in thin beds that consist dominantly of fine pebbles, although locally some deposits contain small amounts of large cobbles. Estimated thickness is 3-30 ft.

Mapped bedrock units: near the site include Dawson Formation Facies unit one ($TKda_1$), Dawson Formation Lower part (Kda), Laramie Formation Upper member (Klu), Fox Hills Sandstone (Kfh), and Laramie Formation (Kl), with $TKda_1$ being the unit closest in geographic proximity to the site. Bedrock was not encountered during this investigation. The mapped bedrock units can generally be described as sandstone which may have interbedded claystone.

## GEOLOGIC HAZARD DISCUSSION

Colorado is a challenging location to practice geotechnical engineering. The climate is relatively dry, and the near-surface soils are typically dry and comparatively stiff. These soils and related sedimentary bedrock formations react to changes in moisture conditions. Some of the soils swell as they increase in moisture and are referred to as expansive soils. Other soils can compress significantly upon wetting and are identified as compressible or collapsible soils. Much of the land available for development east of the Front Range is underlain by expansive clay or claystone bedrock near the surface. The soils that exhibit compressible behavior are more likely west of the Continental Divide; however, both types of soils occur throughout the state.

Covering the ground with structures, streets, parking lots, patios, etc., coupled with lawn irrigation and changing drainage patterns, leads to an increase in subsurface moisture conditions. As a result, some soil movement due to heave or settlement is inevitable. Local areas of slightly expansive soils are present at this site, which constitutes a geologic hazard. There is risk that foundations and slab-on-grade floors will experience heave or settlement and damage. It is critical that precautions are taken to increase the chances that the foundations and slabs-on-grade will perform satisfactorily. Engineered planning, design and construction of grading, pavements, foundations, slabs-on-grade, and drainage can mitigate, but not eliminate, the effects of expansive and compressible soils. Sub-excavation is a ground improvement method that can be used to reduce the impacts of swelling soils.

Based on the subsurface profiles, swell-consolidation test results and our experience, we calculated potential heave at the existing ground surface for each test hole. The analysis involves dividing the soil profile into layers and modeling the heave of each layer from representative swell tests. We calculated potential ground heave of less than 1-inch for the borings drilled during this investigation. A depth of wetting of 24 feet below existing grades was considered for the analysis. This depth of wetting is typically used for irrigated, residential sites. Variations from our estimates should be anticipated. It is not certain whether the estimated heave will occur.

Assessment of the site for: the potential for wildfire hazards; corrosive soils; erosion problems; protections against erosion, such as the design and implementation of a Stormwater Management Plan; flooding; flood protection; assessment of estimated peak flows and

physiographic flood plains of drainages; source permanence and variation in amounts of surface water; hydraulic gradients of groundwater; hazards associated with airports and major utility facilities; polluted water; problems of groundwater circulation; and excessive flow of groundwater is beyond the scope of this investigation.

The following conditions were considered in this evaluation:

- Collapse prone soils
- Shallow ground water tables
- A history of landfill, uncontrolled, or undocumented fill activity
- Flood prone areas
- Expansive soils and expansive rock
- Landslide areas or potential landslide areas
- Existing unstable or potentially unstable slopes
- Debris flow and debris fans
- Rockfall
- Subsidence and abandoned mining activity
- Groundwater springs or seeps
- Steeply dipping bedrock
- Faults
- Elevated radioactivity and Radon

It is our opinion that no geologic hazards exist at this site that preclude subdividing the site and commercial or residential development. We believe conditions that exist on-site can be mitigated with engineering design and construction methods commonly employed in the area.

## Collapse-Prone Soils

Features indicating subsidence or settlement were not observed in the project area. However, lab testing indicates collapse-prone soils may be present at this site at boring TH-2 at a depth of 4 feet. Collapse-prone soils may be susceptible to hydro-collapse, a phenomenon where soils undergo a decrease in volume upon an increase in moisture content, with or without an increase in external loads.

The presence of collapse-prone soils implies risk that slabs-on-grade and foundations will settle and be damaged. The risks associated with collapse-prone soils can be mitigated by careful design, common construction practices, including grading considerations, and maintenance procedures. We believe the recommendations in this report will help to control risk of foundation and/or slab damage; they will not eliminate that risk. The owner should understand that slabs-on-grade and, in some instances, foundations may be affected by these soils.

Maintenance will be required to control risk. We believe the collapse-prone soils at this site present a moderate to low risk without mitigation.

### Shallow Groundwater Tables, Springs, and Seeps

At the time of drilling, groundwater was encountered in thirteen of the sixteen borings. Groundwater levels measured in TH-12 and TH-14, located in north-central area of the proposed development, may influence development and foundation design, depending on final grading and foundation depths.

Groundwater levels will fluctuate with seasonal precipitation and landscaping irrigation. A seasonal fluctuation of 3 to 5 feet is typical for this area. Our borings were drilled in the middle of June when groundwater levels are typically rising from seasonal lows. High groundwater conditions generally occur in late September to early October.

The geologic mapping does not indicate the presence of groundwater springs or seeps. Areas graded to impound water may locally influence groundwater levels. We believe local variations in groundwater levels can be mitigated with engineering design.

### Landfill, Uncontrolled, or Undocumented Fill Activity

We did not identify materials in our exploratory borings indicative of landfill activities. Review of historic aerial imagery also did not indicate landfill activities on the site.

Slightly clayey to clayey sand fill was encountered in twelve borings. The fill ranged from 0.5 to 9 feet in thickness. Fill placement records were not available at the time of this investigation and the fill is considered to be undocumented. If documentation such as field observation and density testing reports is available, it should be provided to our office.

The site has been disturbed, and our borings were widely spaced. Due to the historic disturbance of the site additional fill may be identified during a design level investigation or during site earthwork activities. A design level geotechnical investigation should be conducted to confirm the extents of fill which may be present after grading operations; and whether the engineering characteristics of the remaining fill are suitable to support structures.

## Flooding

The FEMA panel covering the project site is Map Number 08041C0752G effective 12/7/2018 covering the northern end of the project, and Map Number 08041C0754G effective 12/7/2018 covering the majority of the project. The eastern side of the project area lies within the mapped Zone AE, and the northern most side of the project appears to be adjacent to Zone AE mapping, however due to the nature of the mapping the Zone AE may extend into the northern edge of the property. The project Civil Engineer should determine the extents of the flood mapping for the site, the flood potential, and design surface drainage.

Geologic Hazard mapping for El Paso County is limited in availability. While the site is outside of the City of Colorado Springs boundary, it is close to the boundary and some of the City of Colorado Springs GIS mapping data, available on the SpringsView website, covers the project site. The western side of the project area is shown within the 100-year floodplain as shown on zoning layers on the SpringsView webpage. The mapping of the 100-year floodplain is roughly equivalent to the Zone AE mapping in the FEMA panels.




*Clip from online City of Colorado SpringsView mapping, 100-year floodplain in grey, approximate project area outlined in red*

## Expansive Soils and Expansive Bedrock

Soils that exhibited low to no expansive potential were identified in the project area. Design-level, geotechnical investigations conducted for each building site should address procedures for mitigation associated with expansive soils.

## Potentially Unstable Slopes and Landslide Areas

The project site is within the study area of the CGS Landslide Inventory of El Paso County and does not have any areas mapped as having potential landslide susceptibility. We reviewed slope shaded digital elevation models (DEMs) generated from the El Paso County 2020 1m resolution LIDAR data. We did not identify landslide indicators within the project area. There is a small slope about 6 to 10 feet in height just outside of the project area to the north along the creek. Based on the slope's appearance in the DEMs, the slope has either been graded, or constructed.

Development near slopes should comply with the 2021 IBC requirements for foundation setbacks. Slopes should be revegetated to control erosion by wind and water. Concentrated water flows over slopes should be avoided. Once development plans and proposed grading plans are finalized, site specific geotechnical investigations should be conducted and should include discussion of site development considerations for construction which may affect slope stability, as necessary.

## Debris Flow, Debris Fans and Mudflow

The project is not located within areas with conditions favorable for the generation and deposition of debris flows, especially during extreme precipitation events, as mapped in the Colorado Geological Survey Open-File Report 18-11 "Debris Flow Susceptibility Map of El Paso County, Colorado" (2018) by Kevin M. McCoy, Matthew L. Morgan, and Karen A. Berry, and does not appear susceptible per our observations.

This site has been disturbed, and any surficial evidence of debris flows and mudflows has likely been erased from the site. The potential for sheetwash should be identified in a drainage report. The project Civil Engineer should design surface drainage.

## Rockfall

The project area is outside of known, local rockfall susceptibly mapping. The site topography is relatively flat, and does not appear susceptible per our observations.

## Subsidence and Abandoned Mining Activity

This project site is not covered by the "Colorado Springs Subsidence Investigation" completed by Dames & Moore of the State of Colorado, Division of Mine Reclamation, dated

April 1985, which reported areas that have been or could potentially be affected by mine subsidence activity. The subject site was not located within the investigated area. Sub-surface coal mining in, and near Colorado Springs underlie the Rockrimmon neighborhood and extend southwest, toward the County Club Golf Corse and UCCS. The project area is to the north of the projected extension of the mapped subsurface mine structure. We observed no evidence of subsurface mining at the site.

The area directly to the east of the project site has a mapped surficial, open mine, which likely extracted sand and gravel. This site has been disturbed, and any evidence of surficial pit mining has likely been erased from the site. Review of available historic aerial imagery going back to 1937 from the site do not indicate signs of surficial pit mining prior to development.

### Steeply Dipping Bedrock

We reviewed mapping of “Areas Susceptible to Differential Heave in Expansive, Steeply Dipping Bedrock, City of Colorado Springs, Colorado” (1999) by John W. Himmelreich, Jr., and David C. Noe published by the Colorado Geologic Survey. Mapping indicates the project area is outside of areas mapped as having steeply dipping bedrock.

### Faults

The geologic mapping does not indicate the presence of faulting on the project site. The nearest mapped fault is the Rampart Range Fault, which runs roughly north-south along the eastern flank of the Rocky Mountains. The Rampart Range Fault at its closest point to the project site, is about 9.2 miles to the west-southwest.

The Rampart Range Fault is dated at the middle and late Quaternary by the Colorado Geological Survey. The fault shows limited activity in recent recorded history, which makes determining an accurate recurrence interval difficult. Studies have shown no movement of the fault has occurred in the last 30,000 to 50,000 years. We are not aware of detailed studies performed on the fault that have provided fault-specific Maximum Credible Earthquake or recurrence interval. Although the fault is considered to be potentially active, the apparent large timeframe between earthquakes makes it unlikely that the fault will produce an earthquake during the design lifetime of this project that will detrimentally affect the site.

### Elevated Radioactivity and Radon

We believe no unusual hazard exists from naturally occurring sources of radioactivity on the site. However, the materials found in this area are often associated with the production of radon gas and concentrations in excess of those currently accepted by the EPA can occur. Passive and active mitigation procedures are commonly employed in this region to effectively reduce the buildup of radon gas. Measures that can be taken after a structure is enclosed during construction include installing a blower connected to the foundation drain and sealing the joints and cracks in concrete floors and foundation walls. If the occurrence of radon is a concern, we recommend structures be tested after they are enclosed. Commonly utilized mitigation techniques may minimize risk.

## SITE DEVELOPMENT CONSIDERATIONS

As the project is in the preliminary planning stage, grading plans were not available at the time of our investigation. The concept site plan provided to us is used in our Figures 1-3. Geotechnical constraints which can be mitigated by careful design, common construction practices, grading considerations, and maintenance procedures, include: potentially collapse prone soils; potential shallow groundwater; and the presence of undocumented fill.

### Potentially Collapse-Prone Soils

In the event collapse-prone soils are encountered following grading or are present within about 4 feet of proposed foundations and floor slabs, sub-excavation and reworking of these materials will be necessary. The depth of sub-excavation may increase, depending on the proposed site grading and future testing.

### Potential Shallow Groundwater

Groundwater was not encountered or measured at depths well below that which would be expected to impact design or construction in most of our borings. Groundwater was measured at 6 feet below the existing ground surface in TH-12, and 6.6 feet in TH-14. Groundwater levels will fluctuate with seasonal precipitation and landscaping irrigation. Localized shallow groundwater may influence development and foundation design, depending on final grading and foundation depths. The development of site grading plans, and proposed foundation depths should include considerations for the requirements of cuts and fills needed to achieve final grades and the relative depths of observed groundwater. A design level

geotechnical investigation should be conducted to confirm the presence and depths of groundwater after grading operations.

## Existing Fills

Slightly clayey to clayey sand fill was encountered in twelve borings. The fill ranged from 0.5 to 9 feet in thickness. The development of site grading plans should include considerations for the requirements of cuts and fills needed to achieve final grades and the relative locations of identified fills. The existing fill is unsuitable for support of structure foundations in its present condition. The fills at this site are generally relatively shallow, and the grading plan can include provisions for removal and reprocessing of the existing fills. A design level geotechnical investigation should be conducted to confirm the extents of fill which may be present after grading operations.

## Grading Considerations

We were provided grading plans on August 26, 2025 by Matrix. Our Figures have been updated to reflect the proposed grading. The proposed grading appears to be limited to the extension of Meadowbrook Parkway and the detention pond in Tract C, which is outside of the project limits covered by this report. Site grading will be necessary to achieve final design grades. We believe site grading can be accomplished using conventional heavy-duty earthmoving equipment.

Exiting fill, vegetation, topsoil, and organic materials should be removed from the ground surface of areas to be filled. Soft or loose soils, if encountered, should be stabilized or removed to expose stable material prior to placement of fill.

The onsite materials are generally suitable for use as grading fill, and excavation backfill, provided they are free of debris, vegetation/organics, and other deleterious materials. Grading fills should be properly moisture treated and processed.

The ground surface in areas to receive fill should be scarified deeply, moisture conditioned and compacted to a high density to establish a stable subgrade for fill placement. The properties of the fill will affect the performance of foundations, slabs-on-grade, and pavements. Detailed recommendations for moisture conditioning, placement, and compaction of grading fill are set forth in Appendix C. Placement and compaction of the grading fill should be periodically observed and tested by our representative during construction.

We recommend grading plans consider long-term cut and fill slopes no steeper than 3:1 (horizontal to vertical). This ratio considers that no seepage of groundwater occurs. If groundwater seepage does occur, a drain system and flatter slopes may be appropriate. Flatter slopes should be considered to reduce erosion potential. Slopes should be revegetated as soon as possible to control erosion by wind and water. Concentrated water flows over slopes should be avoided.

### Buried Utilities

Based on the subsurface conditions encountered in our exploratory borings, we anticipate the materials encountered during utility trench excavation will consist of predominantly silty and clayey sands. Utility trench excavation can likely be accomplished using heavy-duty track hoes. Localized areas of shallow groundwater may impact utility installation. Dewatering of deep utility installations in the northern portion of the site may be necessary.

Excavations for utilities should be braced or sloped to maintain stability and should meet applicable local, state, and federal safety regulations. The contractor should identify the soils and bedrock encountered in trench excavations and refer to Occupational Safety and Health Administration (OSHA) standards to determine appropriate slopes. We anticipate the near-surface sand and clay soils will classify as Type C soils. Temporary excavations in Type C materials require maximum slope inclinations of 1.5:1 (horizontal to vertical) in the absence of groundwater, unless the excavation is shored or braced. Where excavations extend into sound bedrock, these materials will classify as Type A requiring maximum slope inclinations of 0.75:1. Excavations deeper than 20 feet should be designed by a professional engineer.

Water and sewer lines are usually constructed beneath paved areas. Compaction of trench backfill will have a significant effect on the life and serviceability of pavements. We recommend trench backfill be moisture conditioned and compacted in accordance with the recommendations set forth in Appendix C. Personnel from our firm should periodically observe and test the placement and compaction of the trench backfill during construction.

## FOUNDATION AND FLOOR SYSTEM CONCEPTS

We recommend the preparation of design-level geotechnical investigations for the proposed buildings to develop specific foundation recommendations for the design and construction of foundations and floor systems. The foundation type should be chosen based on

the building type, building loads, subsurface conditions, and other factors. Selection of floor system alternatives should consider risk of movement associated with slab-on-grade floors.

We expect spread footing foundations will be the preferred foundation type for the proposed development type. For preliminary planning purposes, spread footing foundations with a maximum allowable soil pressure of 2,000 to 3,000 psf is anticipated. A post-tension slab-on-grade, where the floor slab is structurally integrated with the foundation may also be an option.

## PAVEMENTS

Slightly clayey to clayey sand and slightly silty to silty sand soils were the surficial materials identified in our borings. Pavement recommendations can be provided at the time of the design level-investigation, after grading plans have been developed.

The surficial materials will exhibit variable subgrade support for pavements. We judge the soils will predominantly exhibit good support characteristics and behave as a low swelling material. Based on our experience, we believe a preliminary Hveem stabilometer (“R”) value of 35 would be appropriate for preliminary design purposes.

We understand the project will include the extension of Meadowbrook Parkway, and residential roadways. On a preliminary basis, we suggest budgeting for section of 5 inches of HMA over 8 inches of aggregate base course for public roadways. Private roadways may use a reduced section. A pavement design report should be prepared in accordance with El Paso County criteria after site plans and grading plans have been completed.

## CONCRETE

Concrete in contact with soil can be subject to sulfate attack. We measured water-soluble sulfate concentrations of less than 0.10 percent in four samples. As indicated in our tests and ACI 318-19, the sulfate exposure class is *Not Applicable or S0*. Deviations from the exposure class may occur with additional sampling and testing performed during design-level investigations.

## SULFATE EXPOSURE CLASSES PER ACI 318-19

| Exposure Classes | | Water-Soluble Sulfate ($SO_4$) in Soil [A] (%) |
|---|---|---|
| Not Applicable | S0 | < 0.10 |
| Moderate | S1 | 0.10 to <0.20 |
| Severe | S2 | 0.20 to 2.00 |
| Very Severe | S3 | > 2.00 |

A) Percent sulfate by mass in soil determined by ASTM C1580

For severe levels of sulfate concentration, ACI 318-19, *Building Code Requirements for Structural Concrete,* indicates there are special cement type requirements for sulfate resistance as indicated in the table below.

## CONCRETE DESIGN REQUIREMENTS FOR SULFATE EXPOSURE PER ACI 318-19

| Exposure Class | | Maximum Water/ Cement Ratio | Minimum Compressive Strength (psi) | Cementitious Material Types [A] | | | Calcium Chloride Admixtures |
|---|---|---|---|---|---|---|---|
| | | | | ASTM C150/ C150M | ASTM C595/ C595M | ASTM C1157/ C1157M | |
| S0 | | N/A | 2500 | No Type Restrictions | No Type Restrictions | No Type Restrictions | No Restrictions |
| S1 | | 0.50 | 4000 | II [B] | Type with (MS) Designation | MS | No Restrictions |
| S2 | | 0.45 | 4500 | V [B] | Type with (HS) Designation | HS | Not Permitted |
| S3 | Option 1 | 0.45 | 4500 | V + Pozzolan or Slag Cement [C] | Type with (HS) Designation plus Pozzolan or Slag Cement [C] | HS + Pozzolan or Slag Cement [C] | Not Permitted |
| S3 | Option 2 | 0.4 | 5000 | V [D] | Type with (HS) Designation | HS | Not Permitted |

A) Alternate combinations of cementitious materials shall be permitted when tested for sulfate resistance meeting the criteria in section 26.4.2.2(c).
B) Other available types of cement such as Type III or Type I are permitted in Exposure Classes S1 or S2 if the C3A contents are less than 8 or 5 percent, respectively.
C) The amount of the specific source of pozzolan or slag to be used shall not be less than the amount that has been determined by service record to improve sulfate resistance when used in concrete containing Type V cement. Alternatively, the amount of the specific source of the pozzolan or slab to be used shall not be less than the amount tested in accordance with ASTM C1012 and meeting the criteria in section 26.4.2.2(c) of ACI 318.
D) If Type V cement is used as the sole cementitious material, the optional sulfate resistance requirement of 0.040 percent maximum expansion in ASTM C150 shall be specified.

Superficial damage may occur to the exposed surfaces of highly permeable concrete. To control this risk and to resist freeze-thaw deterioration, the water-to-cementitious materials ratio should not exceed 0.50 for concrete in contact with soils that are likely to stay moist due to surface drainage or high-water tables. Concrete should have a total air content of 6 percent ± 1.5 percent. We advocate damp-proofing of all foundation walls and grade beams in contact with the subsoils.

## SURFACE DRAINAGE

The performance of structures, flatwork, and pavements will be influenced by surface drainage. When developing an overall drainage scheme, consideration should be given to drainage around each structure and on pavement areas. Drainage should be planned such that surface runoff is directed away from foundations and is not allowed to pond adjacent to foundations or over pavements. The ground surface around the buildings should be sloped to provide positive drainage away from the foundations. We recommend a slope of at least 5 percent for the first 10 feet surrounding each building in landscaped areas. In flatwork areas adjacent to buildings, the slope may be reduced to grades that comply with ADA requirements. A minimum slope of 2 percent is suggested. More slope is desirable. Concrete curbs and sidewalks may “dam” surface runoff adjacent to the buildings and disrupt proper flow. Use of “chase” drains or weep holes at low points in the curb should be considered to allow proper drainage. Roof downspouts and other water collection systems should discharge beyond the limits of backfill around structures.

## RECOMMENDED FUTURE INVESTIGATIONS

Based on the results of this study, we recommend the following additional investigations and services be provided by our firm:

- Construction materials testing and observation services during site development and construction.
- Subgrade Investigation and Pavement Design for on-site pavements.
- After site development plans have been formalized, we recommend a design-level geotechnical investigation be completed. Such investigations will be required to determine the appropriate foundation and floor systems for the buildings based upon the over-lot grading and building finished floor elevations.

## GEOTECHNICAL RISK

The concept of risk is an important aspect with any geotechnical evaluation primarily because the methods used to develop geotechnical recommendations do not comprise an exact science. We never have complete knowledge of subsurface conditions. Our analysis must be tempered with engineering judgment and experience. Therefore, the recommendations presented in any geotechnical evaluation should not be considered risk-free. Our recommendations represent our judgment of those measures that are necessary to increase the chances that structures will perform satisfactorily.

## LIMITATIONS

The information, and conclusions presented herein are based upon consideration of many factors including, but not limited to, the geologic setting, and the subsurface conditions expected. The conclusions contained in the report are not valid for use by others. If the project is not constructed within about three years, we should be contacted to determine is we should update this report.

Our borings were widely spaced to provide a general picture of subsurface conditions for preliminary planning of residential construction. Variations from our borings should be anticipated. We believe this investigation was conducted in a manner consistent with that level of care and skill ordinarily used by geotechnical engineers practicing under similar conditions. No warranty, express or implied, is made.

If we can be of further service in discussing the contents of this report or analysis of the influence of subsurface conditions on the project, please call.

Respectfully submitted,

CTL|THOMPSON, INC.




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Senior Associate Engineer

Reviewed by:

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# REFERENCES

## Geologic Mapping

Madole, Richard F., and Thorson, Jon P., 2002, Geologic Map of the Elsmere Quadrangle, El Paso County, Colorado: Colorado Geological Survey Open-File Map 02-2, scale 1:24,000.

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## Previous Investigations

CTL|Thompson, Preliminary Geotechnical Investigation, Crossroads Apartments, Meadowbrook Crossing and Colorado Highway 94, Colorado Springs, Colorado (CTL|T Project No. CS19308-115, dated November 13, 2020).

CTL|Thompson, Geotechnical Investigation, Crossroads Apartments, Meadowbrook Crossing and Colorado Highway 94, Colorado Springs, Colorado (CTL|T Project No. CS19308-125, dated May 18, 2021).

CTL|Thompson, Geotechnical Investigation, Crossroads Mixed Use – Alt 2 Pad Building, West of the intersection of US Highway 24 and Colorado State Highway 94, Colorado Springs, Colorado (CTL|T Project No. CS19629-125, dated December 9, 2022).

CTL|Thompson, Geotechnical Investigation, Crossroads Mixed Use – Alt 1 Pad Building, West of the intersection of US Highway 24 and Colorado State Highway 94, Colorado Springs, Colorado (CTL|T Project No. CS19629.001-125, dated December 14, 2022).

CTL|Thompson, Geotechnical Investigation, Crossroads Mixed Use – In-Line Retail Strip Building, West of the intersection of US Highway 24 and Colorado State Highway 94, Colorado Springs, Colorado (CTL|T Project No. CS19629.002-125, dated December 16, 2022).

CTL|Thompson, Geotechnical Investigation, Cowperwood Commercial Building, South East of Peterson Road and Space Village Avenue, Colorado Springs, Colorado (CTL|T Job No. CS-15,073-125, dated January 19, 2005).

CTL|Thompson, Preliminary Geotechnical Investigation, South East of Peterson Road and Space Village Avenue, Colorado Springs, Colorado (CTL|T Job No. CS-15,073-115, dated December 29, 2004).

CTL|Thompson, Geologic Hazards Evaluation and Preliminary Geotechnical Investigation, Meadowbrook Crossing Subdivision, Meadowbrook Parkway and State Highway 94, El Paso County, Colorado (CTL|T Project No. CS18620-105, dated December 9, 2016).

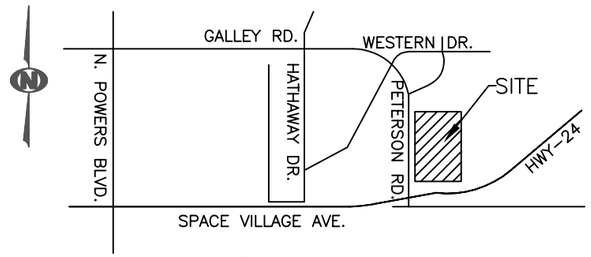
CTL|Thompson, Soils and Foundation Investigation, Meadowbrook Crossing Filing No. 1, Model Lots 1 and 2, Meadowbrook Parkway and State Highway 94, Colorado Springs, Colorado (CTL|T Project No. CS18831-120, dated April 20, 2018).

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## VICINITY MAP

(NOT TO SCALE)

LEGEND:

| | |
|---|---|
| TH-1 | APPROXIMATE LOCATION OF EXPLORATORY BORING. |
| | PROJECT PROPERTY LINES |
| | PARCELS EXCLUDED FROM THIS INVESTIGATION |
| | EXISTING CONTOURS |
| | PROPOSED CONTOURS |

0 100' 200'

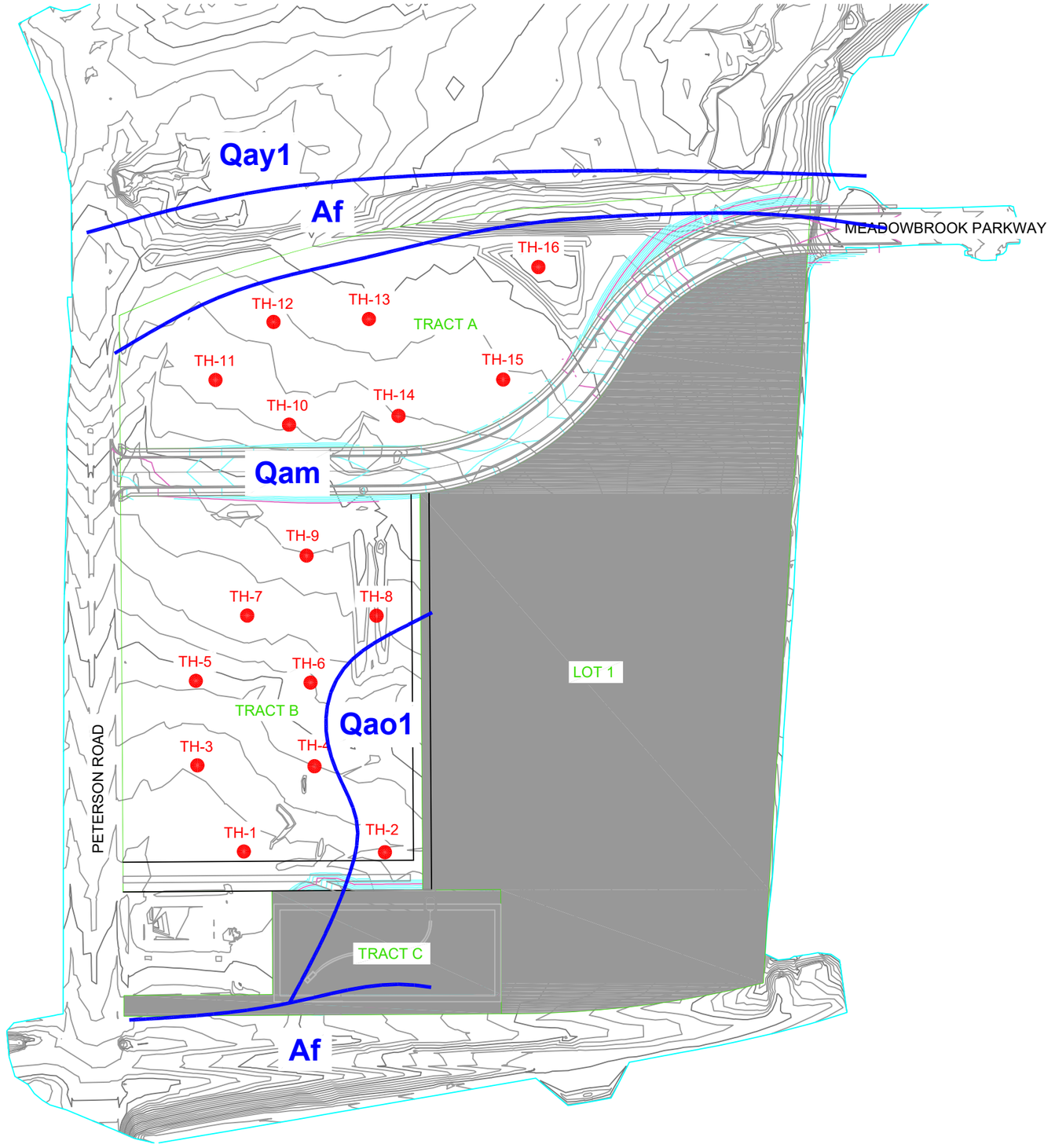
SCALE: 1" = 200'

NOTE:
REVISED GRADING WAS PROVIDED BY MATRIX DESIGN GROUP ON AUGUST 26, 2025. UPDATED BASE DRAWING WAS PROVIDED BY MATRIX DESIGN GROUP ON SEPTEMBER 3, 2025.

**Location of Exploratory Borings**

FIG. 1

**VINTAGE COMMUNITIES**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**




LEGEND:

TH-1 — APPROXIMATE LOCATION OF EXPLORATORY BORING.

PROJECT PROPERTY LINES

PARCELS EXCLUDED FROM THIS INVESTIGATION

**GEOLOGIC UNITS**

SURFICIAL GEOLOGIC CONTACTS

**Af** — ARTIFICIAL FILL

**Qay1** — YOUNG ALLUVIUM ONE

**Qam** — MIDDLE ALLUVIUM

**Qao1** — OLD ALLUVIUM ONE

N

0 100' 200'

SCALE: 1" = 200'

NOTES:

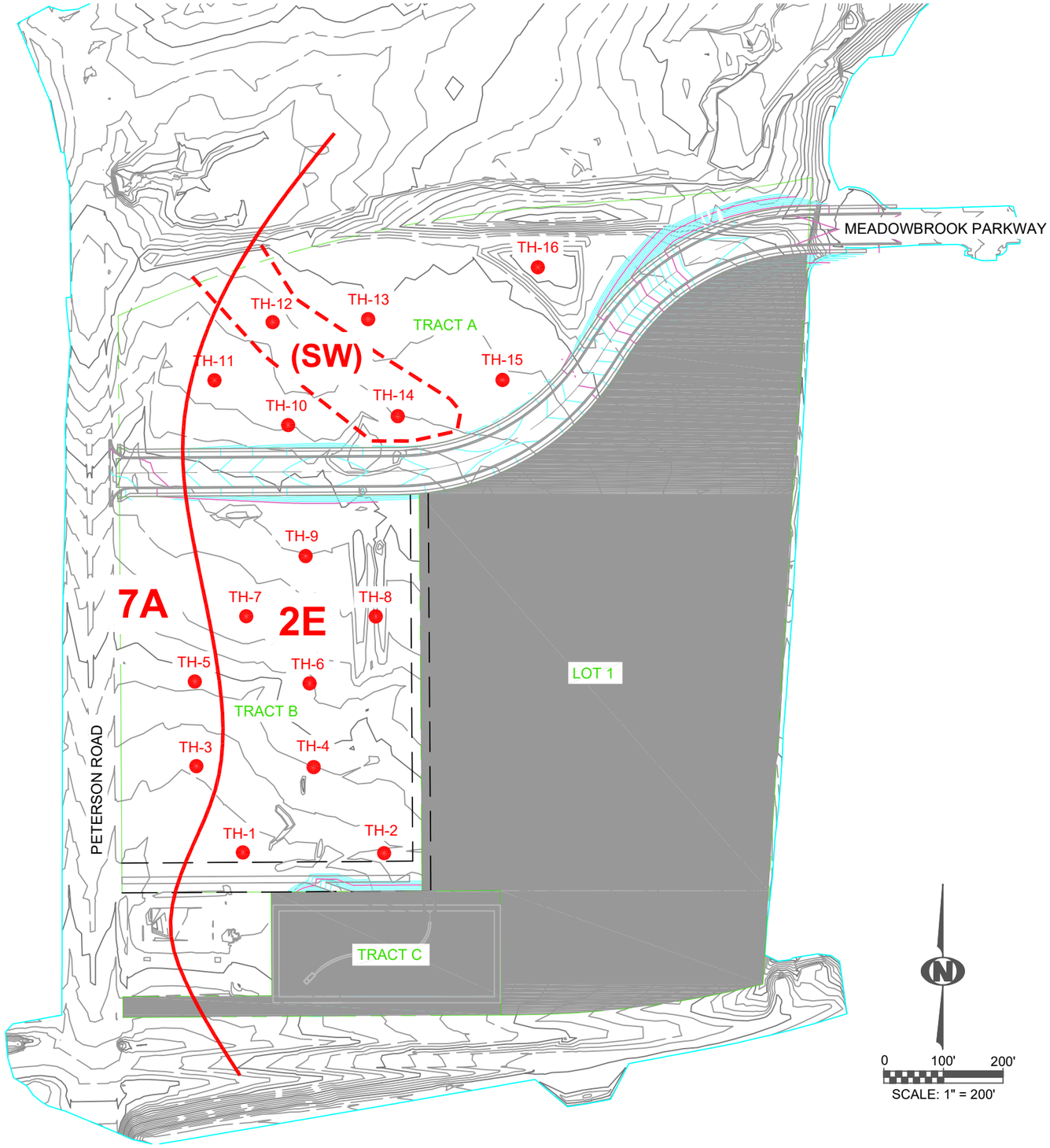
1. REVISED GRADING WAS PROVIDED BY MATRIX DESIGN GROUP ON AUGUST 26, 2025. UPDATED BASE DRAWING WAS PROVIDED BY MATRIX DESIGN GROUP ON SEPTEMBER 3, 2025.

2. ALL BOUNDARIES SHOWN SHOULD BE CONSIDERED APPROXIMATE. THEY ARE BASED UPON A SUBJECTIVE INTERPRETATION OF PUBLISHED MAPS, AERIAL PHOTOGRAPHS AND AN INITIAL FIELD RECONNAISSANCE. CHANGES IN THE MAPPED BOUNDARIES SHOWN ARE POSSIBLE AND SHOULD BE EXPECTED WITH MORE DETAILED WORK AND FURTHER INFORMATION. ALL INTERPRETATIONS AND CONDITIONS SHOWN ARE PRELIMINARY AND FOR LAND-USE PLANNING ONLY.

**VINTAGE COMMUNITIES**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

## Surficial Geologic Conditions

FIG. 2




LEGEND:

TH-1 — APPROXIMATE LOCATION OF EXPLORATORY BORING.

PROJECT PROPERTY LINES

PARCELS EXCLUDED FROM THIS INVESTIGATION

ENGINEERING UNITS WITH MODIFIERS

ENGINEERING CONTACTS

**7A** — PHYSIOGRAPHIC FLOOD PLAN WHERE EROSION AND DEPOSITION WERE OCCURRING AT THE TIME OF ORIGINAL MAPPING (1977) AND MAY BE SUBJECT TO RECURRENT FLOODING. INCLUDES AREAS WITHIN PREVIOUSLY MAPPED FLOODPLAIN ALONG MAJOR STREAMS. THE PROJECT CIVIL ENGINEER SHOULD DETERMINE THE EXTENTS OF THE FLOOD MAPPING FOR THE SITE, THE FLOOD POTENTIAL, AND DESIGN SURFACE DRAINAGE.

**2E** — LOW TERRACES AND VALLEYS OF MINOR TRIBUTARY WHICH WERE SUBJECT TO PERIODIC HIGH FLOWS, SHEET FLOODING AND STREAM BANK EROSION AT THE TIME OF ORIGINAL MAPPING (1977). THE PROJECT CIVIL ENGINEER SHOULD DETERMINE THE EXTENTS OF THE FLOOD MAPPING FOR THE SITE, THE FLOOD POTENTIAL, AND DESIGN SURFACE DRAINAGE.

**(sw)** — SEASONALLY HIGH GROUNDWATER (APPROXIMATE). MAY INFLUENCE DEVELOPMENT AND FOUNDATION DESIGN, DEPENDING ON FINAL GRADING AND FOUNDATION DEPTHS. A DESIGN LEVEL GEOTECHNICAL INVESTIGATION SHOULD BE CONDUCTED TO CONFIRM THE PRESENCE AND DEPTHS OF GROUNDWATER AFTER GRADING OPERATIONS.

NOTES:

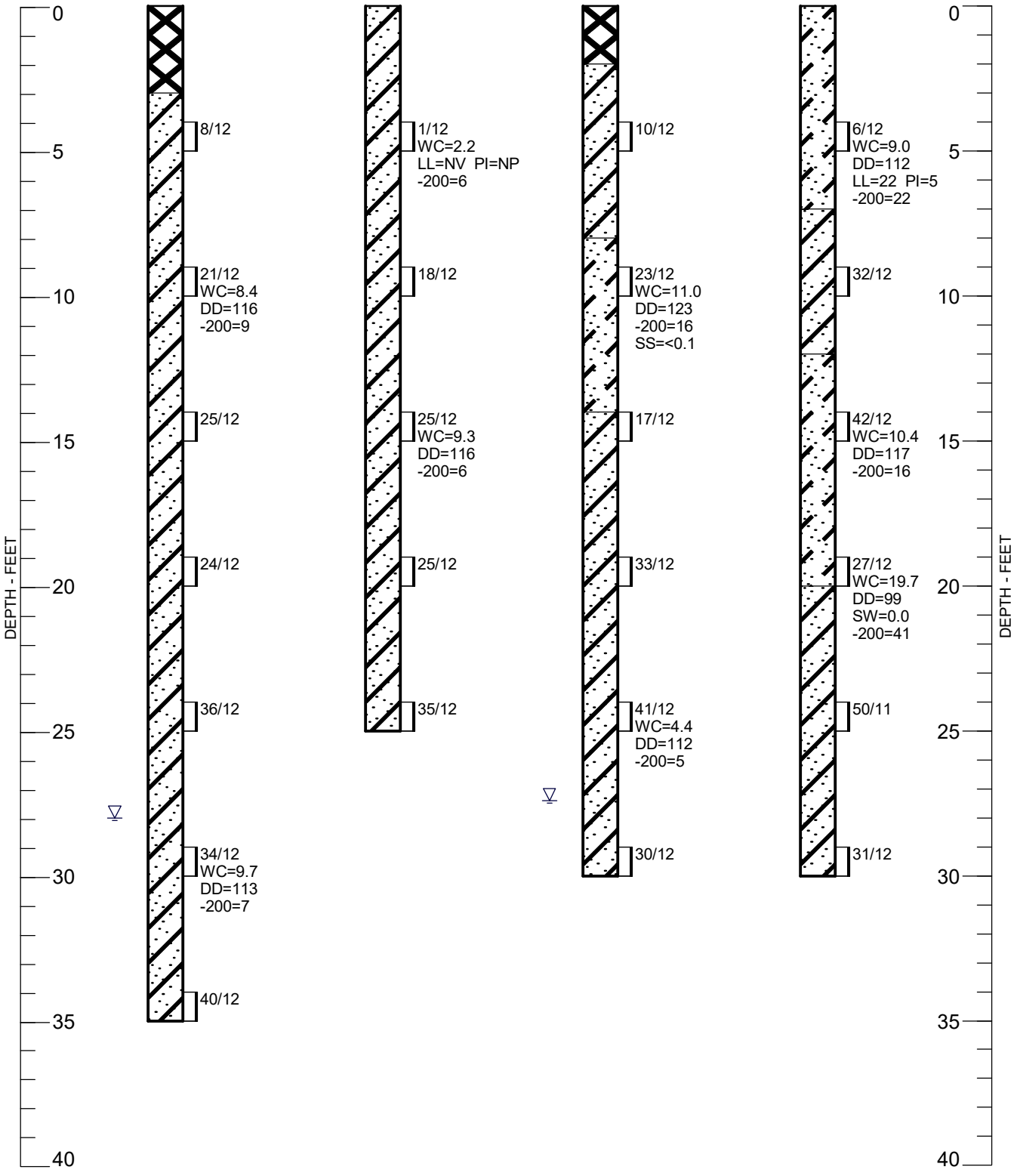
1. REVISED GRADING WAS PROVIDED BY MATRIX DESIGN GROUP ON AUGUST 26, 2025. UPDATED BASE DRAWING WAS PROVIDED BY MATRIX DESIGN GROUP ON SEPTEMBER 3, 2025.
2. ALL BOUNDARIES SHOWN SHOULD BE CONSIDERED APPROXIMATE. THEY ARE BASED UPON A SUBJECTIVE INTERPRETATION OF PUBLISHED MAPS, AERIAL PHOTOGRAPHS AND AN INITIAL FIELD RECONNAISSANCE. CHANGES IN THE MAPPED BOUNDARIES SHOWN ARE POSSIBLE AND SHOULD BE EXPECTED WITH MORE DETAILED WORK AND FURTHER INFORMATION. ALL INTERPRETATIONS AND CONDITIONS SHOWN ARE PRELIMINARY AND FOR INITIAL LAND-USE PLANNING ONLY.
3. MAP LEGEND IS MODIFIED FROM CHARLES S. ROBINSON & ASSOCIATES, INC., GOLDEN, COLORADO, DATED 1977.

**VINTAGE COMMUNITIES**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

# Engineering Conditions

FIG. 3

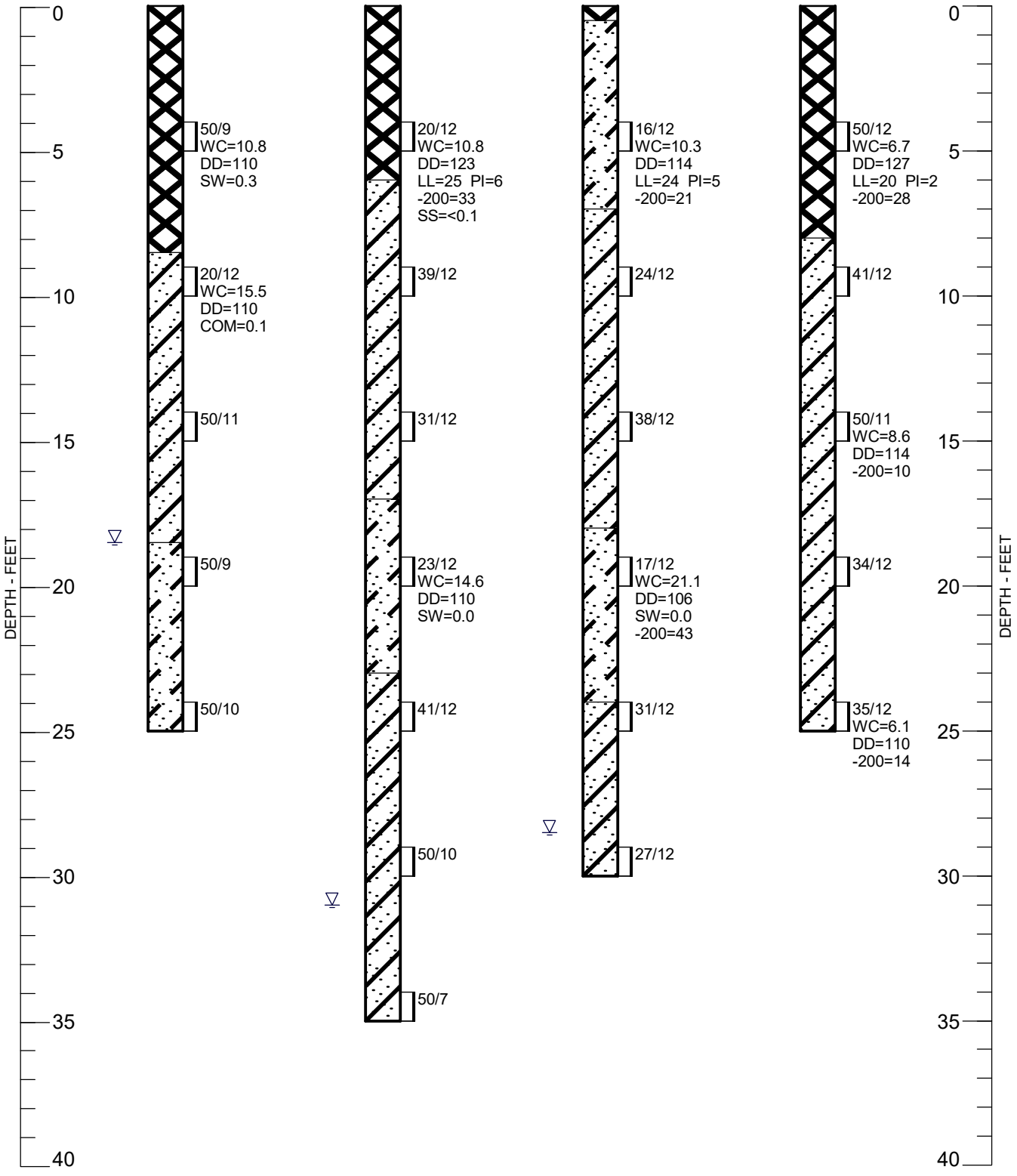
# APPENDIX A
SUMMARY LOGS OF EXPLORATORY BORINGS




**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

## Summary Logs of Exploratory Borings

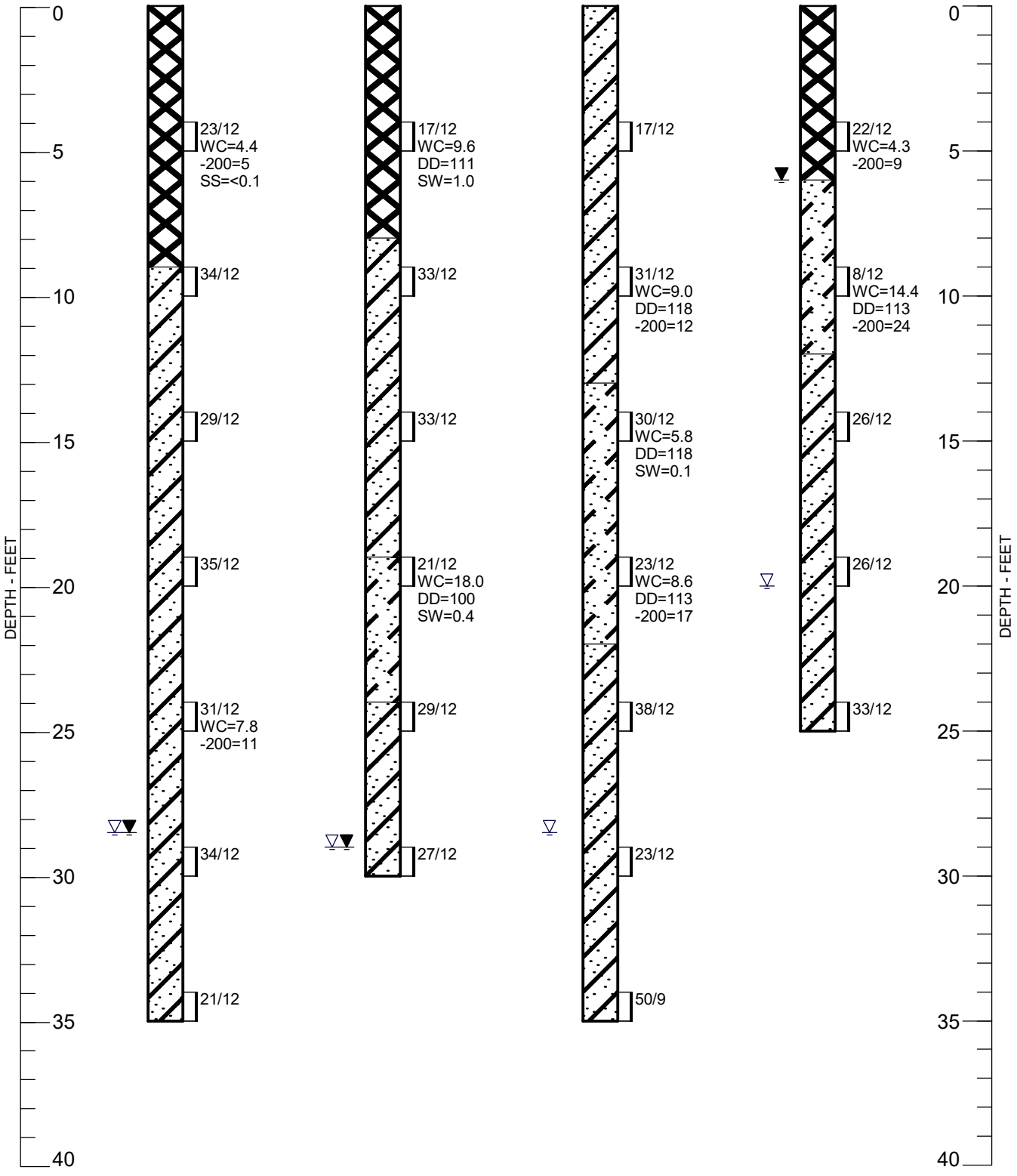
FIG. A-1




**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

## Summary Logs of Exploratory Borings

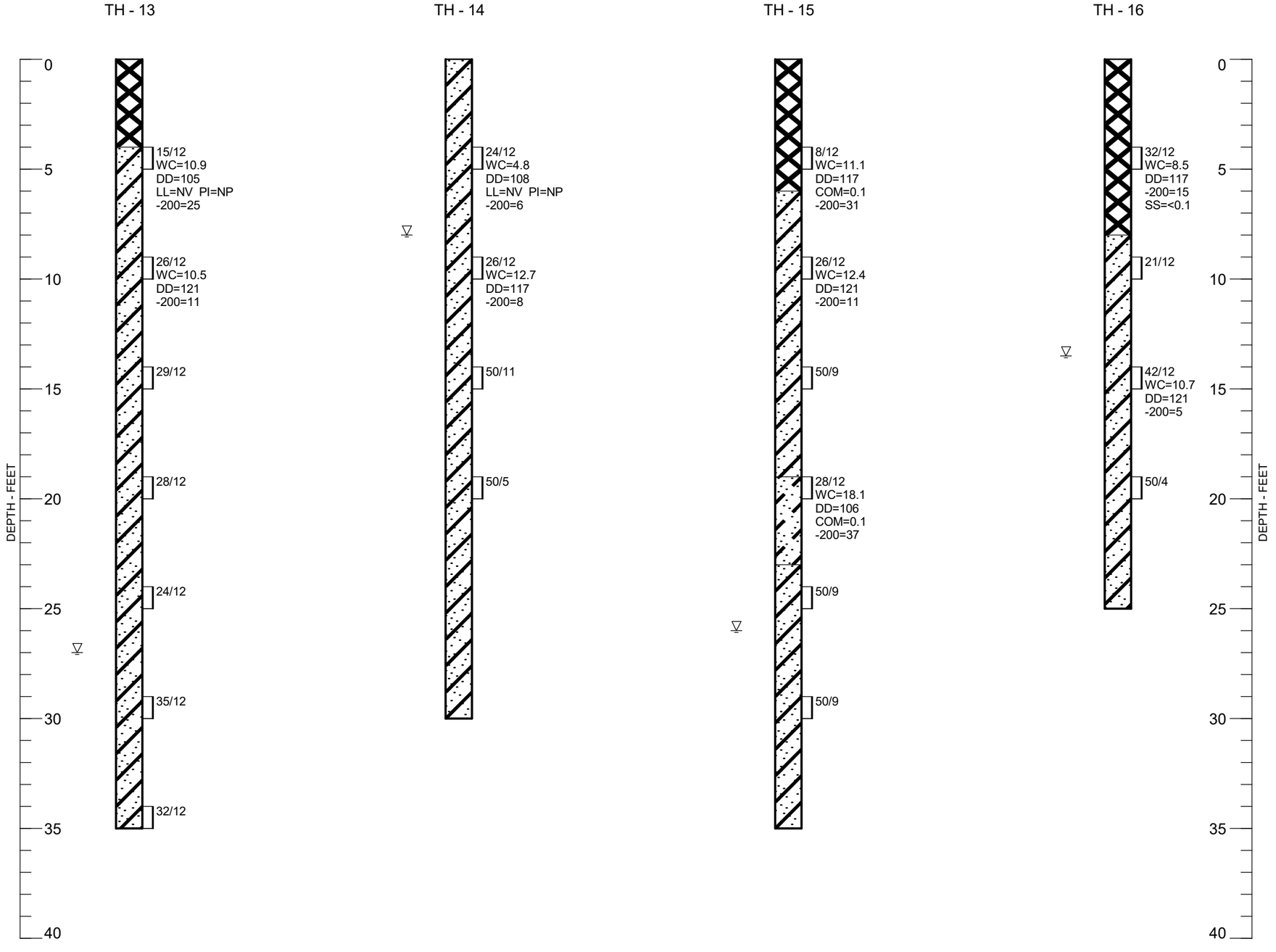
FIG. A-2




**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

## Summary Logs of Exploratory Borings

FIG. A-3




**LEGEND:**

FILL, SAND, SLIGHTLY CLAYEY TO CLAYEY AND SAND, SILTY, LOOSE TO MEDIUM DENSE, DRY TO SLIGHTLY MOIST, DARK BROWN.

SAND, CLAYEY TO VERY CLAYEY, LOOSE TO DENSE, SLIGHTLY MOIST TO MOIST, LIGHT BROWN TO BROWN (SC, SC-SM.

SAND, SLIGHTLY SILTY TO SILTY AND SAND, SLIGHTLY CLAYEY WITH OCCASIONAL GRAVEL, VERY LOOSE TO VERY DENSE, DRY TO WET, LIGHT BROWN TO BROWN (SP-SM, SP-SC, SW-SM, SW-SC, SM).

DRIVE SAMPLE. THE SYMBOL 8/12 INDICATES 8 BLOWS OF A 140-POUND HAMMER FALLING 30 INCHES WERE REQUIRED TO DRIVE A 2.5-INCH O.D. SAMPLER 12 INCHES.

GROUNDWATER LEVEL MEASURED AT TIME OF DRILLING.

GROUNDWATER LEVEL MEASURED SEVERAL DAYS AFTER DRILLING.

**NOTES:**

1. THE BORINGS WERE DRILLED JUNE 18 THROUGH 20, 2024 USING A 4-INCH DIAMETER, CONTINUOUS-FLIGHT AUGER AND A CME-55, TRUCK-MOUNTED DRILL RIG.

2. WC - INDICATES MOISTURE CONTENT. (%)
   DD - INDICATES DRY DENSITY. (PCF)
   SW - INDICATES SWELL WHEN WETTED UNDER APPROXIMATE OVERBURDEN PRESSURE. (%)
   COM - INDICATES COMPRESSION WHEN WETTED UNDER APPROXIMATE OVERBURDEN PRESSURE. (%)
   LL - INDICATES LIQUID LIMIT. (NV : NO VALUE)
   PI - INDICATES PLASTICITY INDEX. (NP : NON-PLASTIC)
   -200 - INDICATES PASSING NO. 200 SIEVE. (%)
   SS - INDICATES WATER-SOLUBLE SULFATE CONTENT. (%)

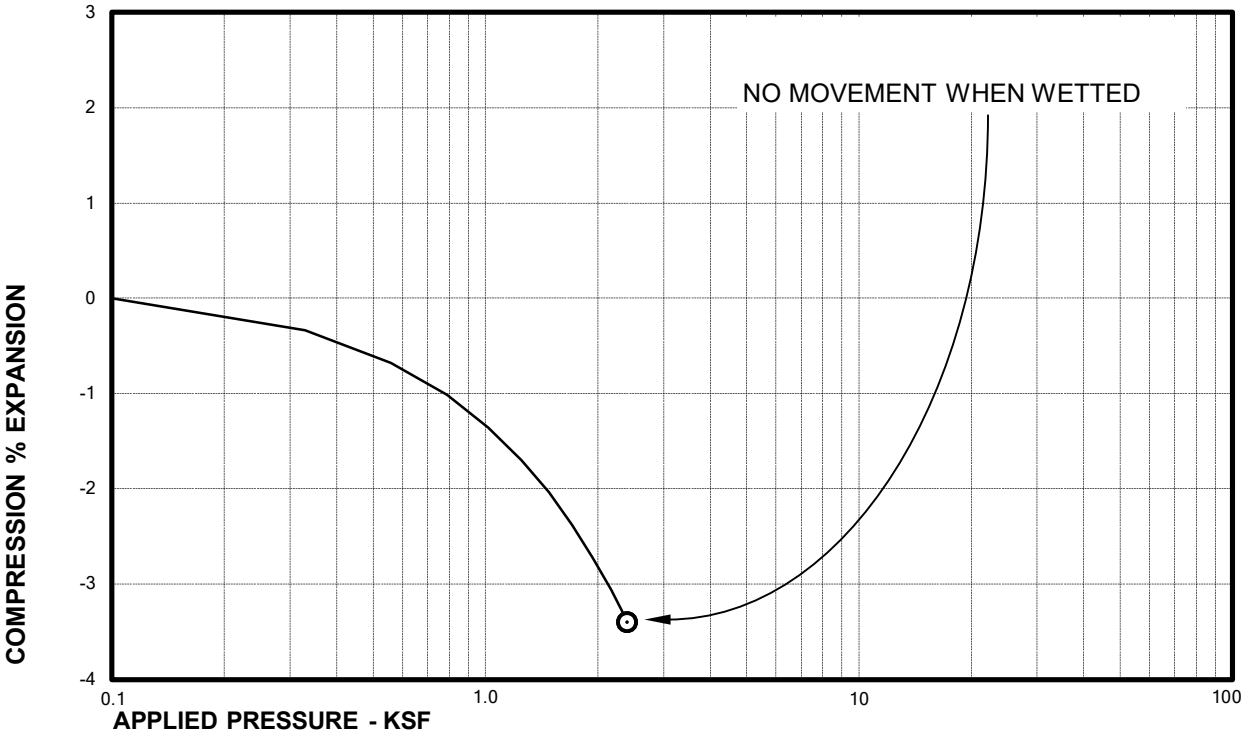
3. THESE LOGS ARE SUBJECT TO THE EXPLANATIONS, LIMITATIONS, AND CONCLUSIONS AS CONTAINED IN THIS REPORT.

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

## Summary Logs of Exploratory Borings

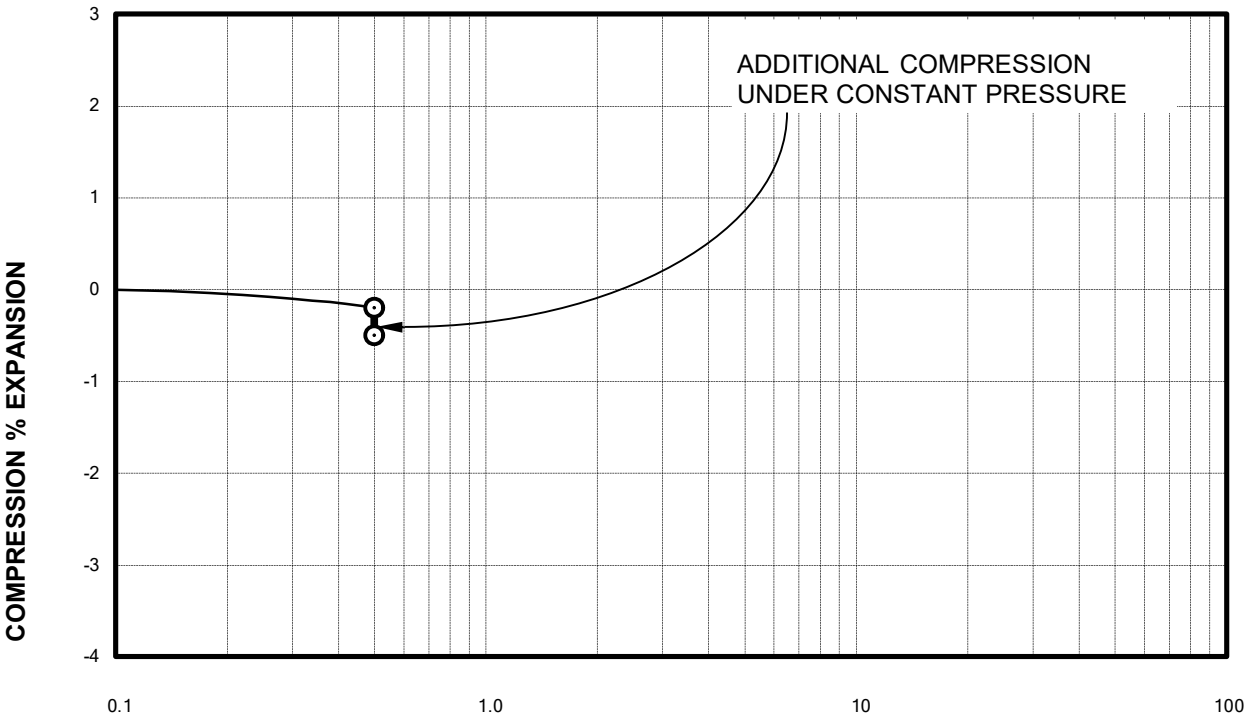
FIG. A-4

**APPENDIX B**
LABORATORY TEST RESULTS
TABLE B-1




Sample of SAND, VERY CLAYEY (SC)
From TH-4 AT 19 FEET

DRY UNIT WEIGHT= 99 PCF
MOISTURE CONTENT= 19.7 %



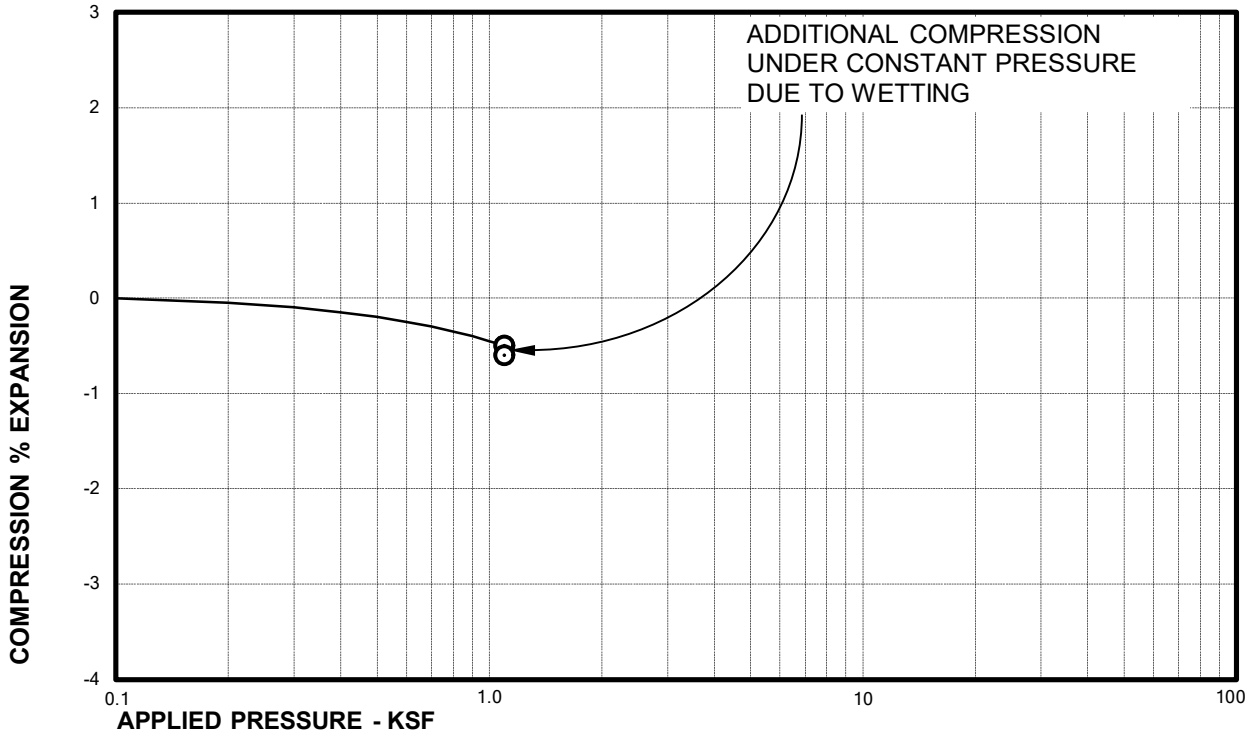

Sample of FILL, SAND, SLIGHTLY CLAYEY
From TH-5 AT 4 FEET

DRY UNIT WEIGHT= 110 PCF
MOISTURE CONTENT= 10.8 %

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

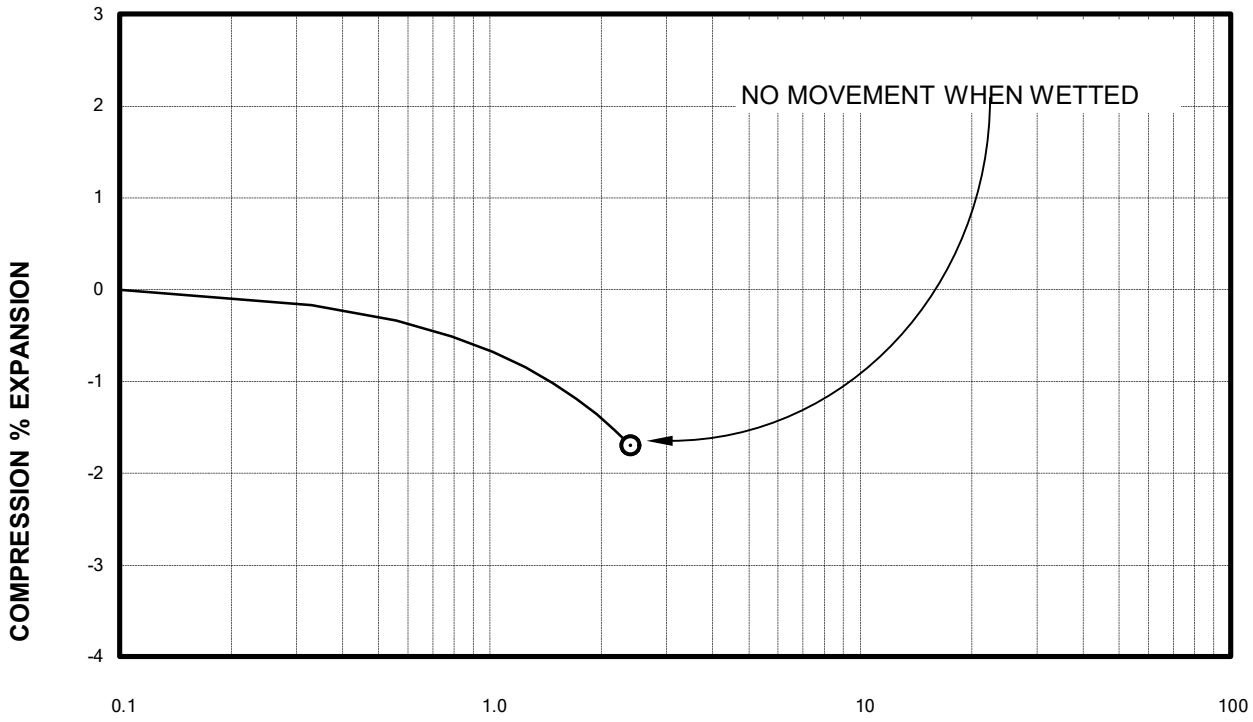
## Swell Consolidation Test Results

FIG. B-1




Sample of SAND, SLIGHTLY CLAYEY (SP-SC)
From TH-5 AT 9 FEET

DRY UNIT WEIGHT= 110 PCF
MOISTURE CONTENT= 15.5 %



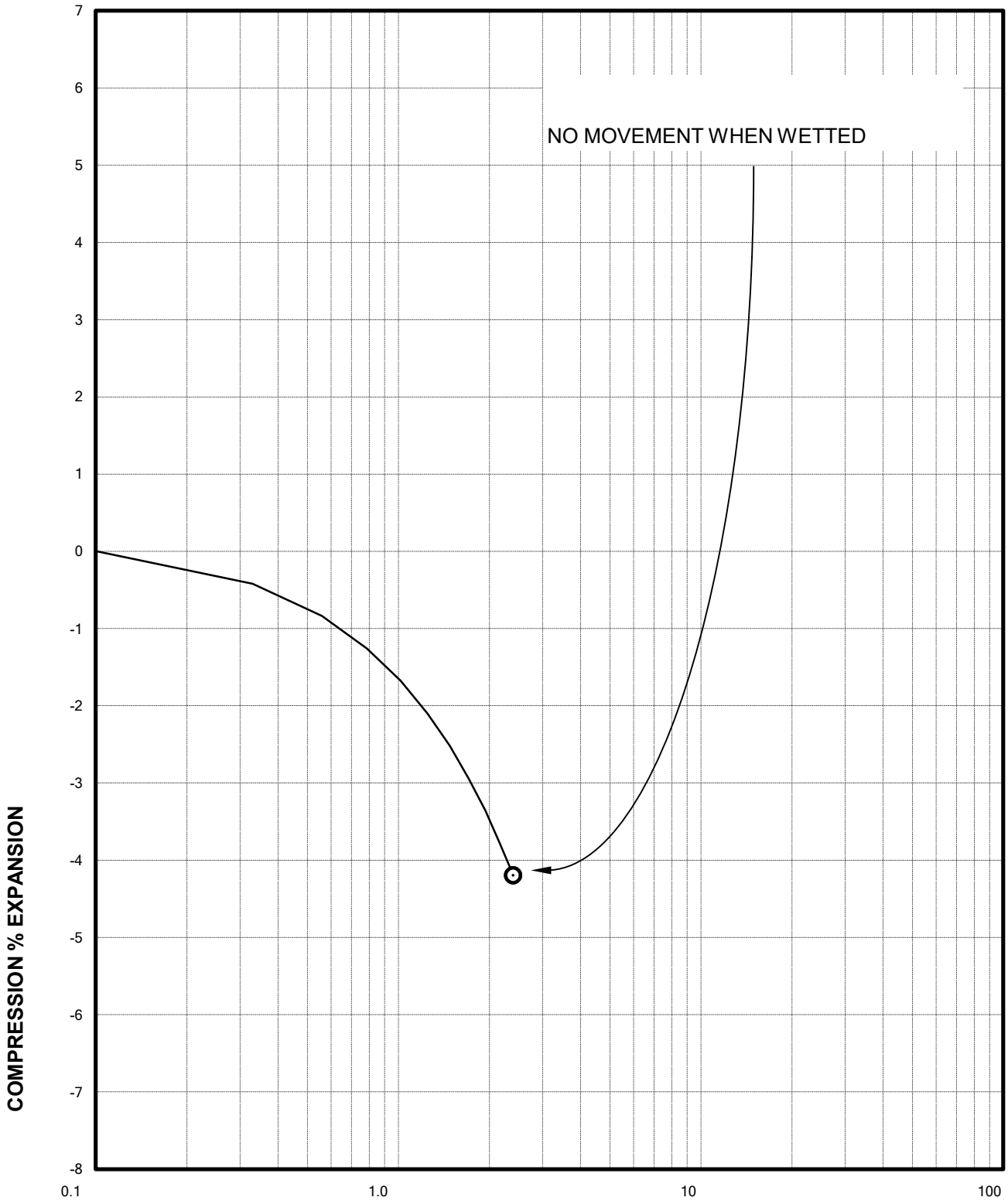

Sample of SAND, VERY CLAYEY (SC)
From TH-6 AT 19 FEET

DRY UNIT WEIGHT= 110 PCF
MOISTURE CONTENT= 14.6 %

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

## Swell Consolidation Test Results

FIG. B-2




Sample of SAND, VERY CLAYEY (SC)

From TH-7 AT 19 FEET

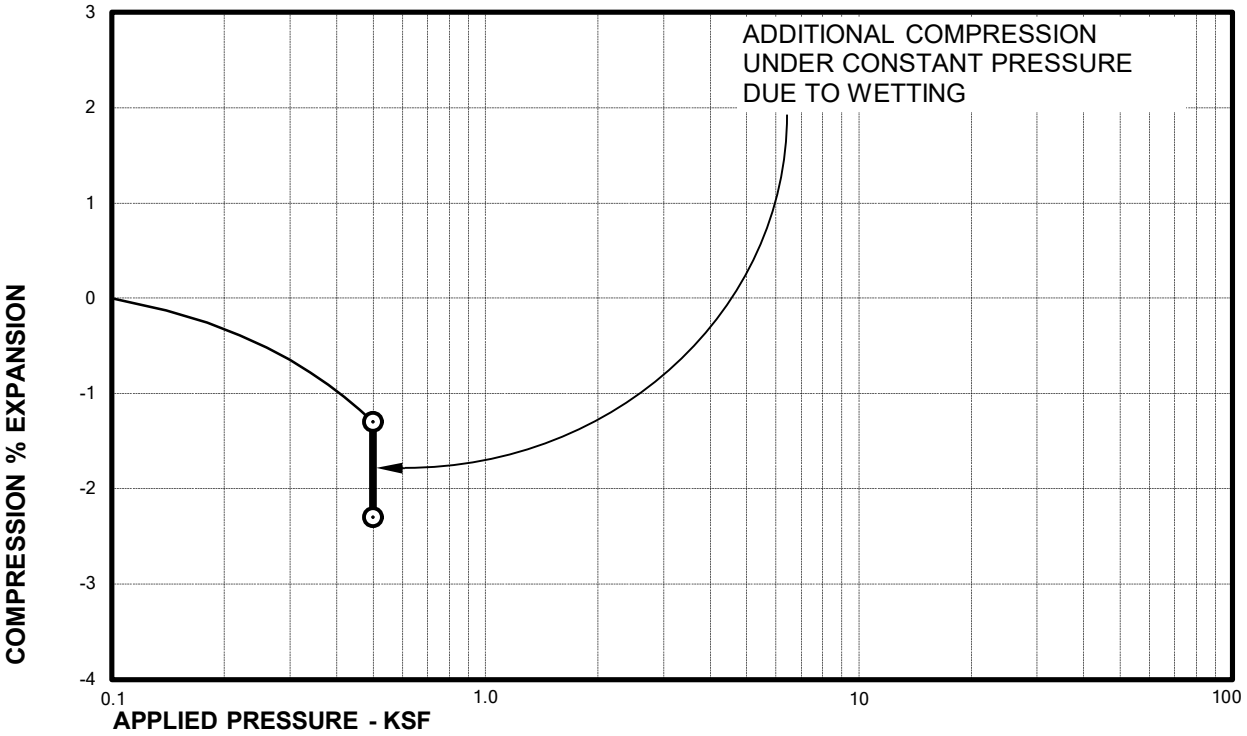
DRY UNIT WEIGHT= 106 PCF

MOISTURE CONTENT= 21.1 %

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

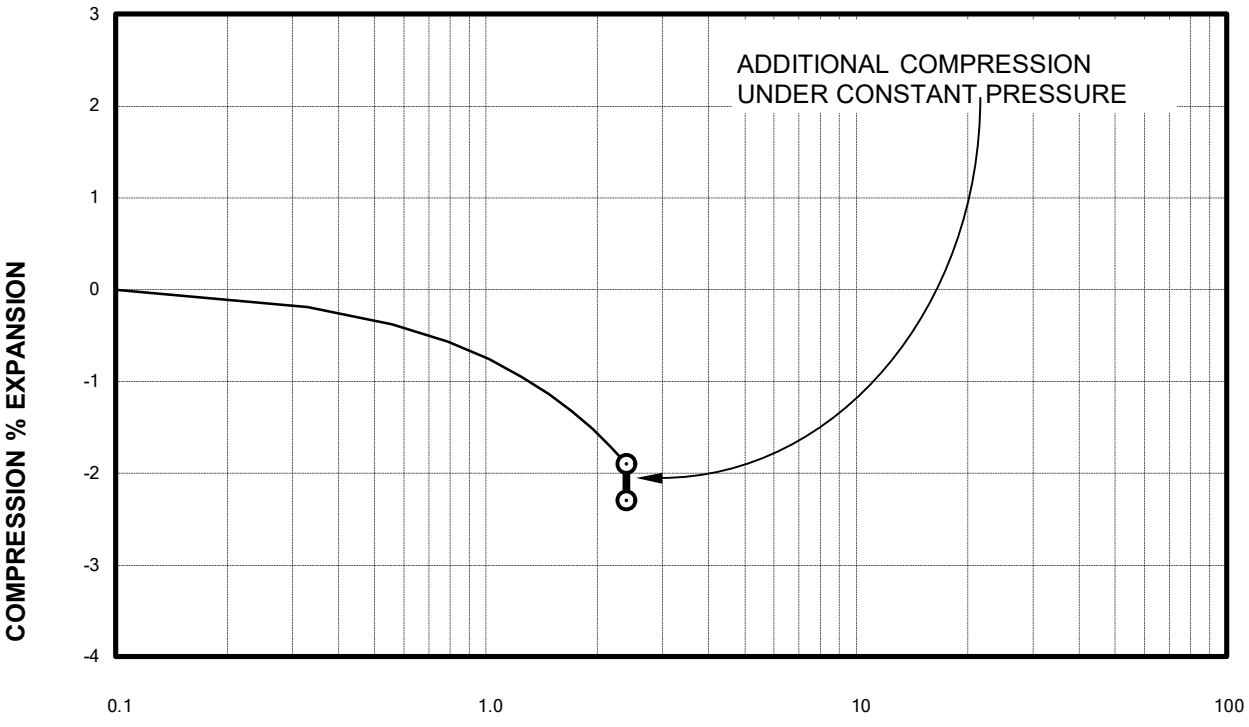
## Swell Consolidation Test Results

FIG. B-3




Sample of FILL, SAND, CLAYEY
From TH-10 AT 4 FEET

DRY UNIT WEIGHT= 111 PCF
MOISTURE CONTENT= 9.6 %



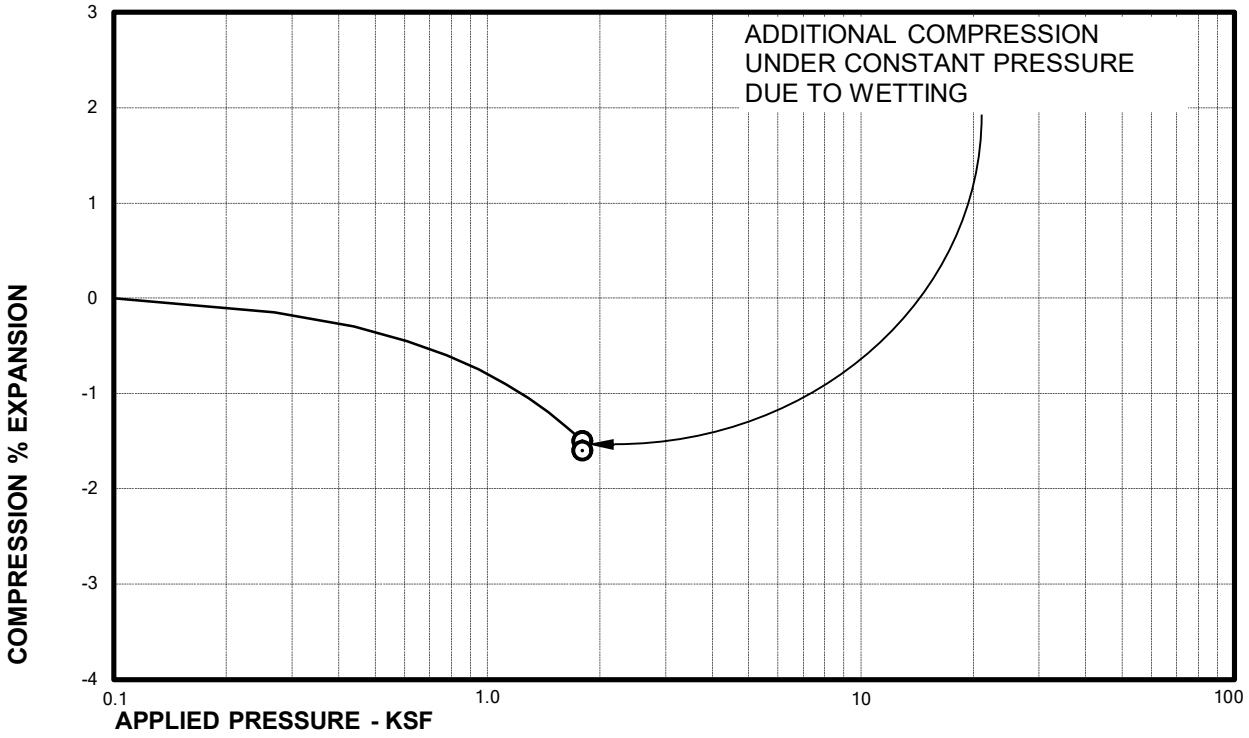

Sample of SAND, VERY CLAYEY (SC)
From TH-10 AT 19 FEET

DRY UNIT WEIGHT= 100 PCF
MOISTURE CONTENT= 18.0 %

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

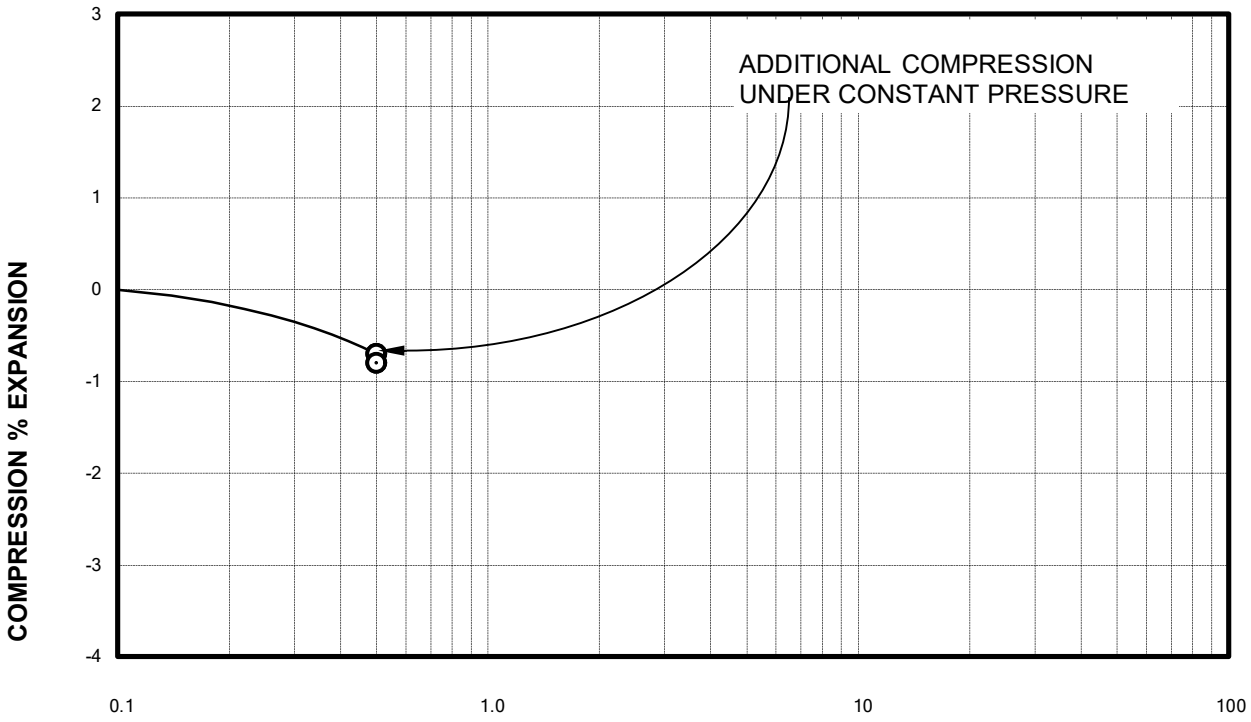
## Swell Consolidation Test Results

FIG. B-4




Sample of SAND, CLAYEY (SC)
From TH-11 AT 14 FEET

DRY UNIT WEIGHT= 116 PCF
MOISTURE CONTENT= 5.8 %



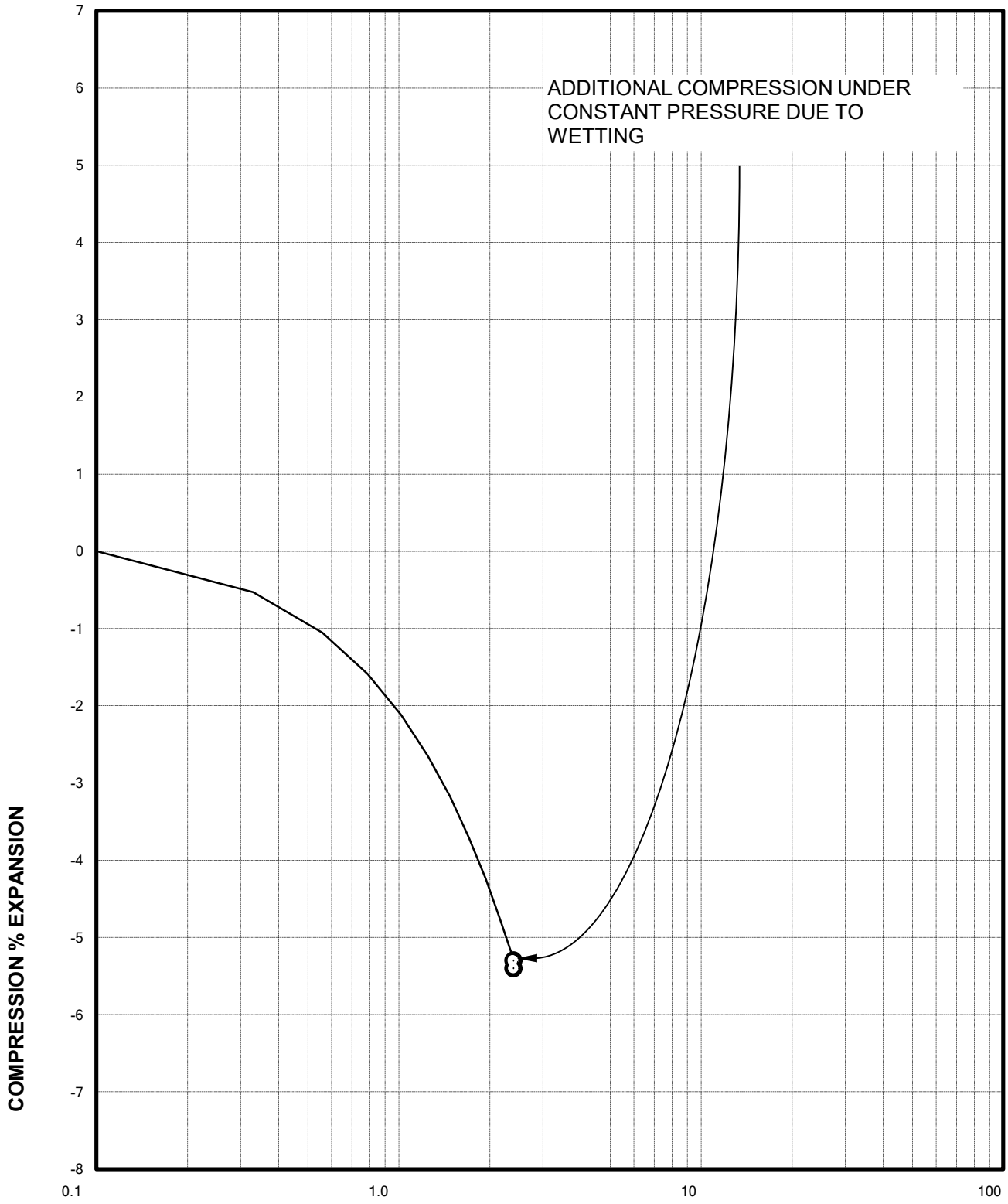

Sample of FILL, SAND, CLAYEY
From TH-15 AT 4 FEET

DRY UNIT WEIGHT= 117 PCF
MOISTURE CONTENT= 11.1 %

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

## Swell Consolidation Test Results

FIG. B-5




Sample of SAND, VERY CLAYEY (SC)

From TH-15 AT 19 FEET

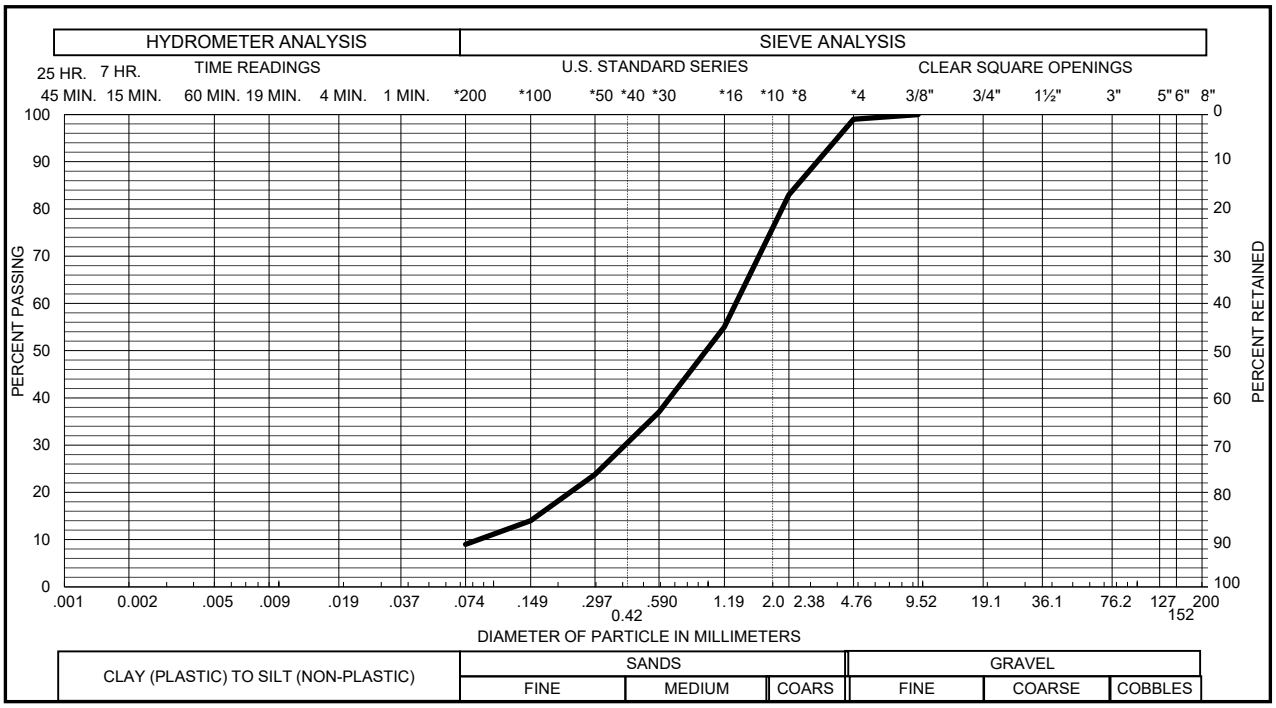
DRY UNIT WEIGHT= 106 PCF

MOISTURE CONTENT= 18.1 %

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

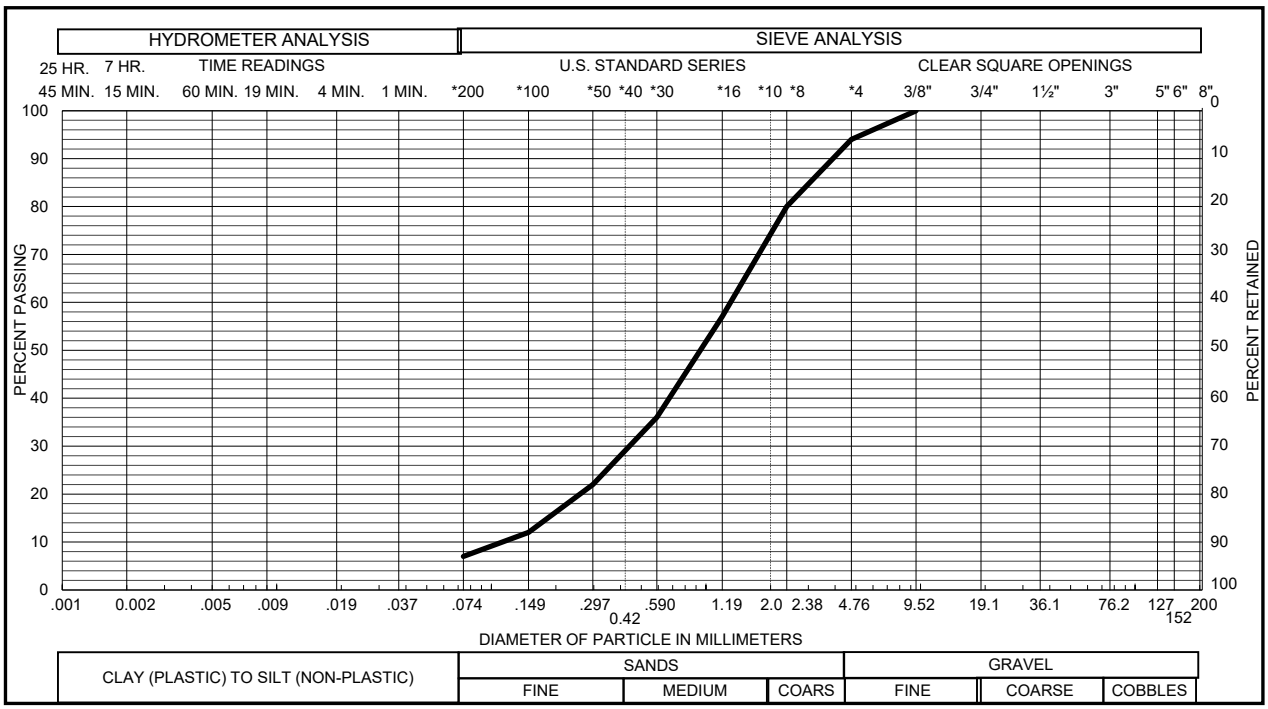
## Swell Consolidation Test Results

FIG. B-6




Sample of SAND, SLIGHTLY CLAYEY (SW-SC)
From TH - 1 AT 9 FEET

GRAVEL 1 % SAND 90 %
SILT & CLAY 9 % LIQUID LIMIT
PLASTICITY INDEX



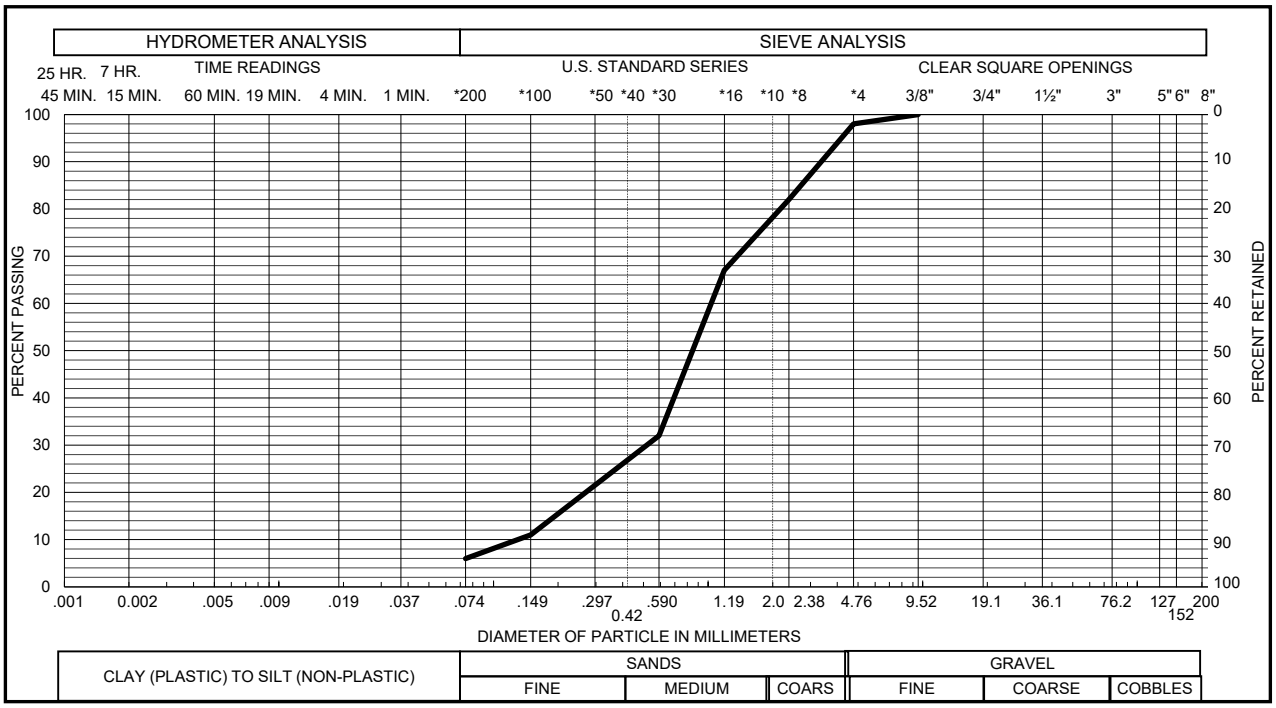

Sample of SAND, SLIGHTLY SILTY (SW-SM)
From TH - 1 AT 29 FEET

GRAVEL 6 % SAND 87 %
SILT & CLAY 7 % LIQUID LIMIT
PLASTICITY INDEX

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

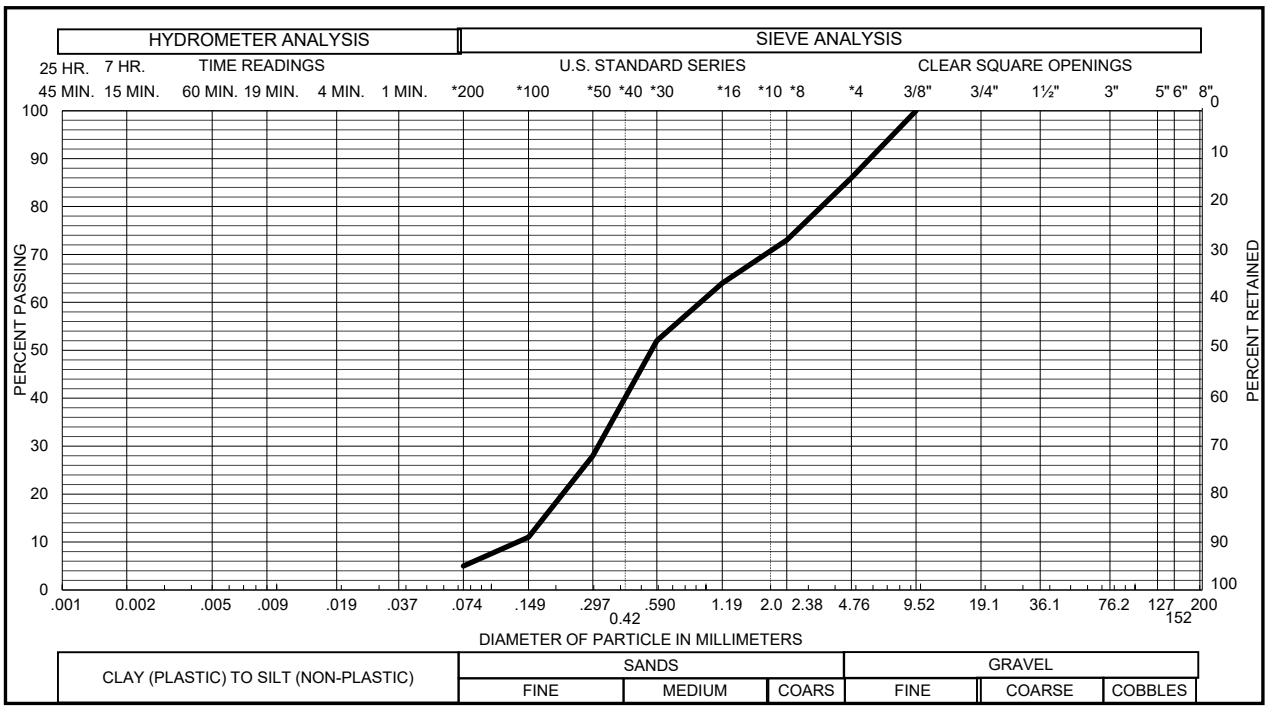
# Gradation Test Results

FIG. B-7




Sample of SAND, SLIGHTLY SILTY (SW-SM)
From TH - 2 AT 4 FEET

GRAVEL 2 % SAND 92 %
SILT & CLAY 6 % LIQUID LIMIT
PLASTICITY INDEX



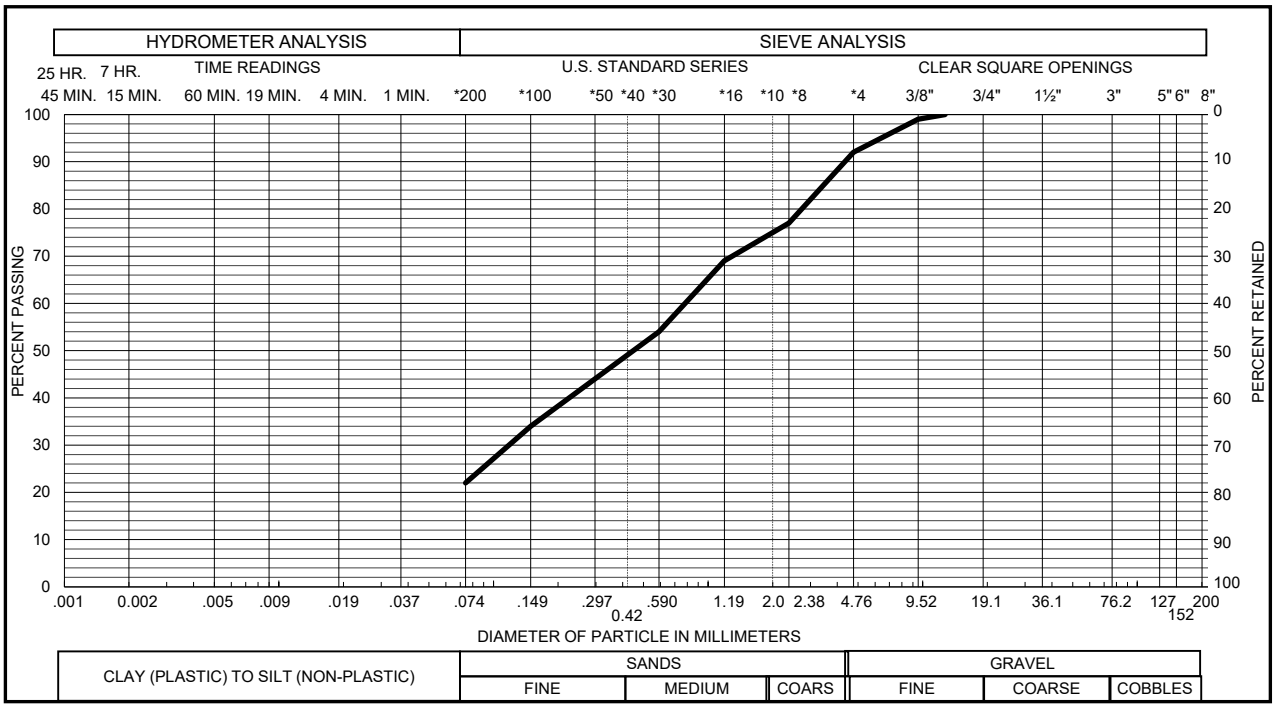

Sample of SAND, SLIGHTLY SILTY (SP-SM)
From TH - 3 AT 24 FEET

GRAVEL 14 % SAND 81 %
SILT & CLAY 5 % LIQUID LIMIT
PLASTICITY INDEX

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

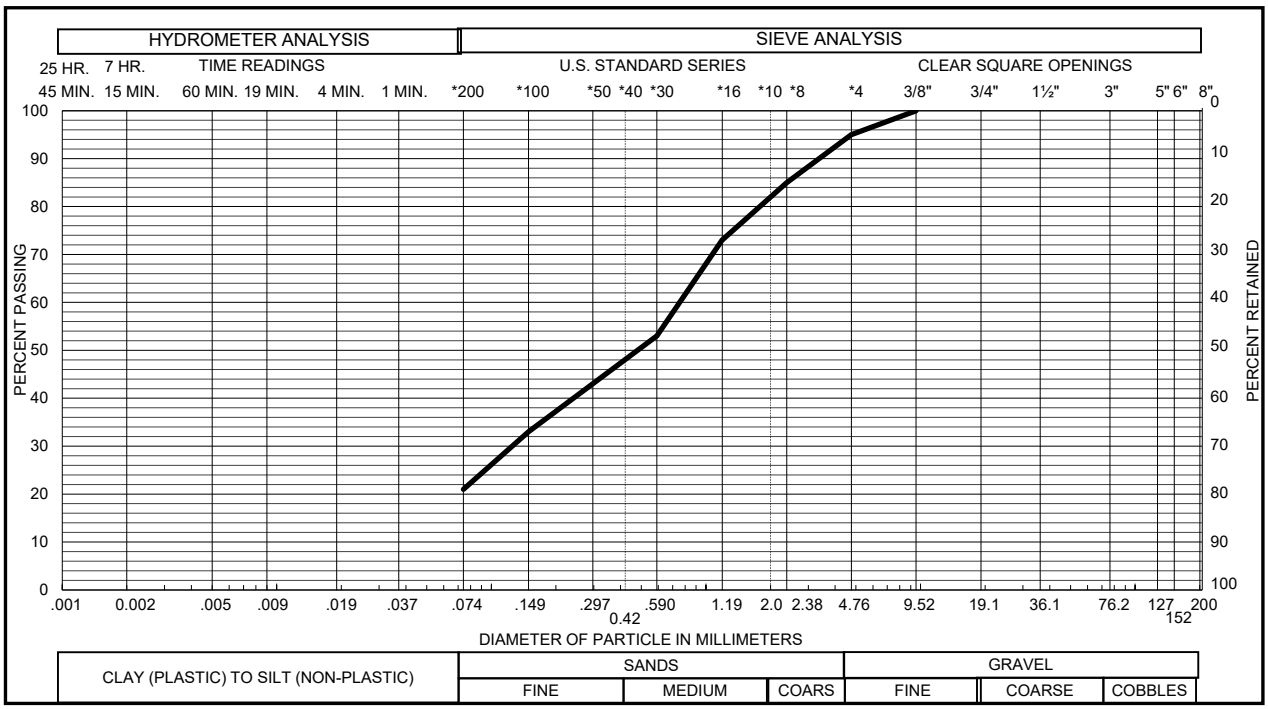
# Gradation Test Results

FIG. B-8




Sample of SAND, CLAYEY (SC)
From TH - 4 AT 4 FEET

GRAVEL 8 % SAND 70 %
SILT & CLAY 22 % LIQUID LIMIT
PLASTICITY INDEX



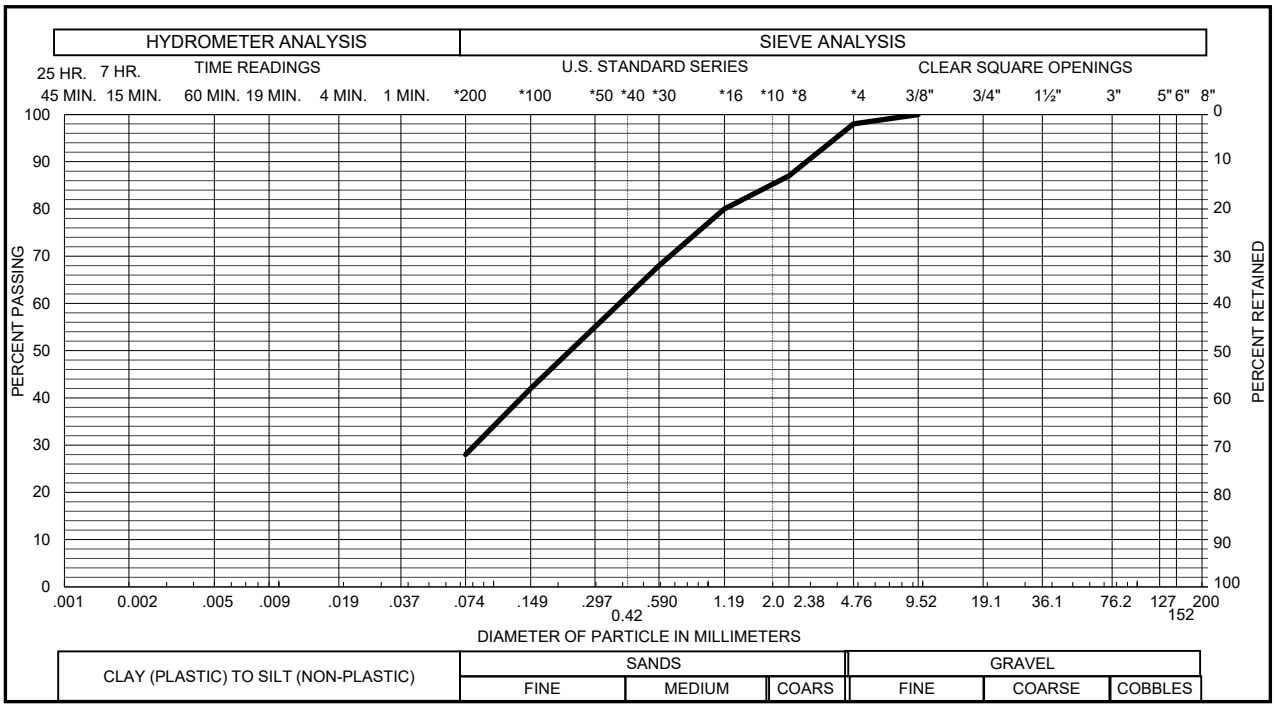

Sample of SAND, CLAYEY (SC)
From TH - 7 AT 4 FEET

GRAVEL 5 % SAND 74 %
SILT & CLAY 21 % LIQUID LIMIT
PLASTICITY INDEX

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

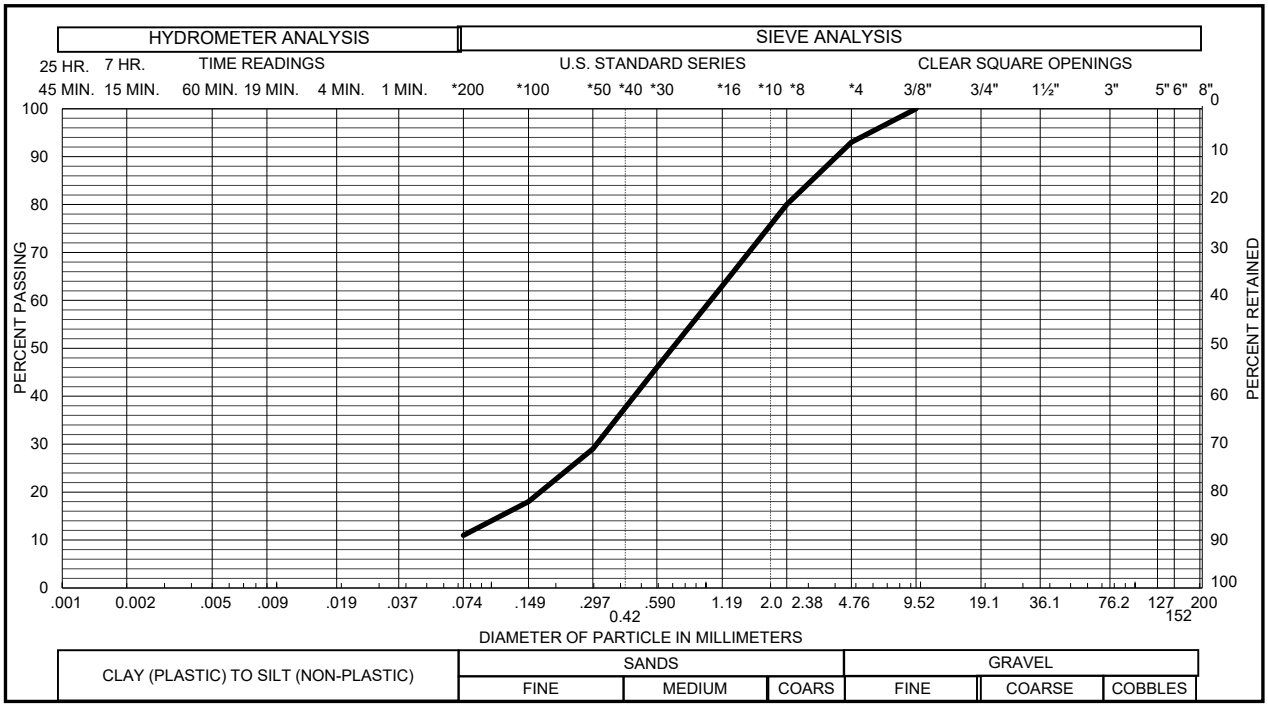
# Gradation Test Results

FIG. B-9




Sample of FILL, SAND, SILTY
From TH - 8 AT 4 FEET

GRAVEL 2 % SAND 70 %
SILT & CLAY 28 % LIQUID LIMIT
PLASTICITY INDEX



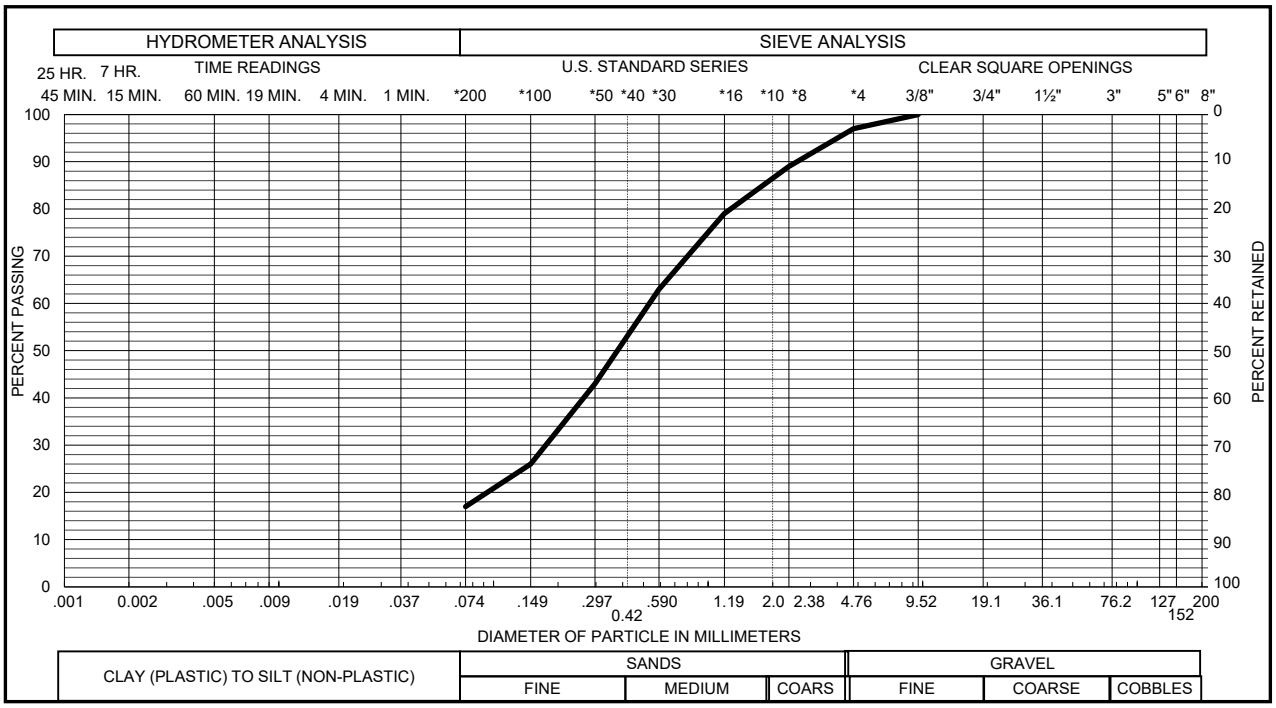

Sample of SAND, SLIGHTLY SILTY (SP-SM)
From TH - 9 AT 24 FEET

GRAVEL 7 % SAND 82 %
SILT & CLAY 11 % LIQUID LIMIT
PLASTICITY INDEX

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

# Gradation Test Results

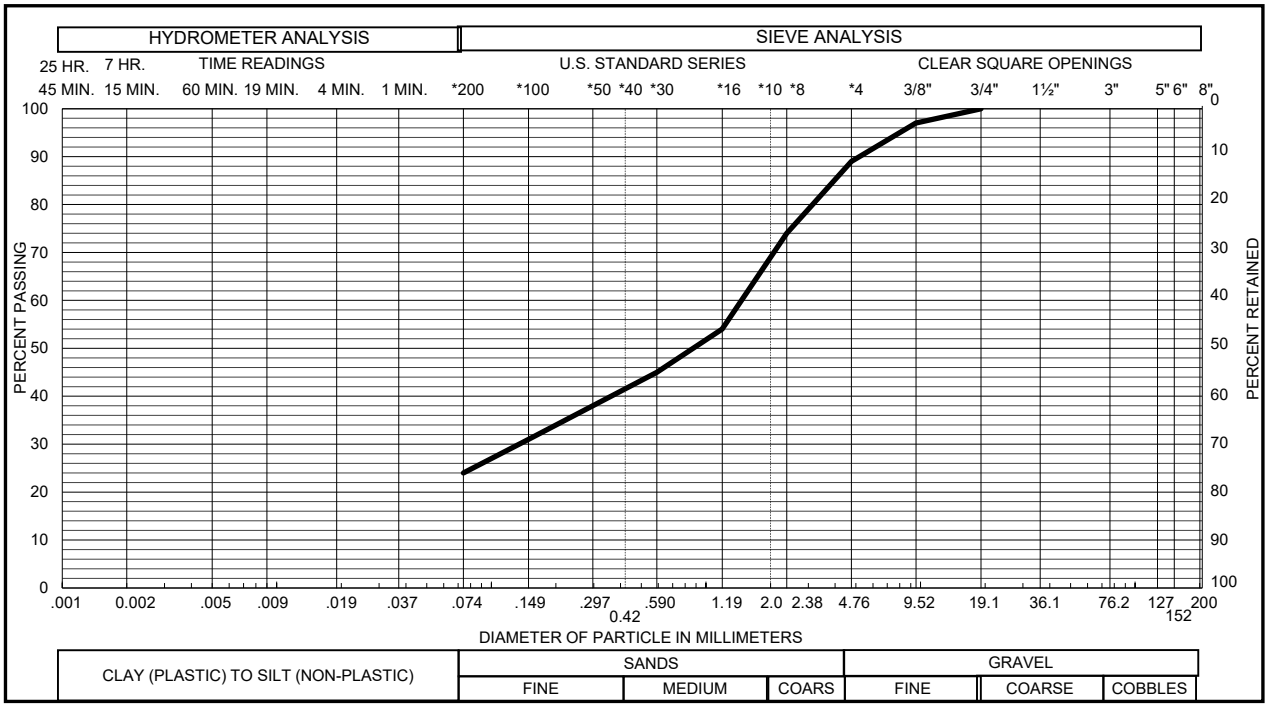
FIG. B-10




Sample of SAND, CLAYEY (SC) GRAVEL 3 % SAND 80 %

From TH - 11 AT 19 FEET SILT & CLAY 17 % LIQUID LIMIT

PLASTICITY INDEX




Sample of SAND, CLAYEY (SC) GRAVEL 11 % SAND 65 %

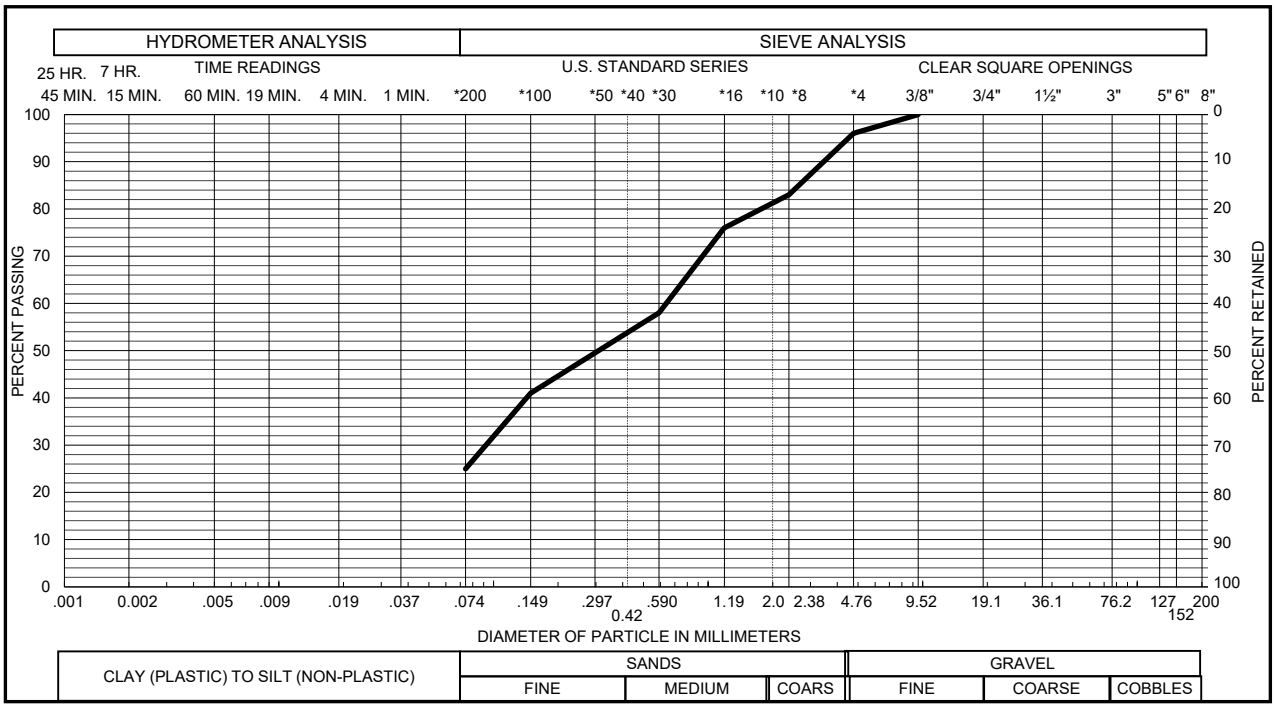
From TH - 12 AT 9 FEET SILT & CLAY 24 % LIQUID LIMIT

PLASTICITY INDEX

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

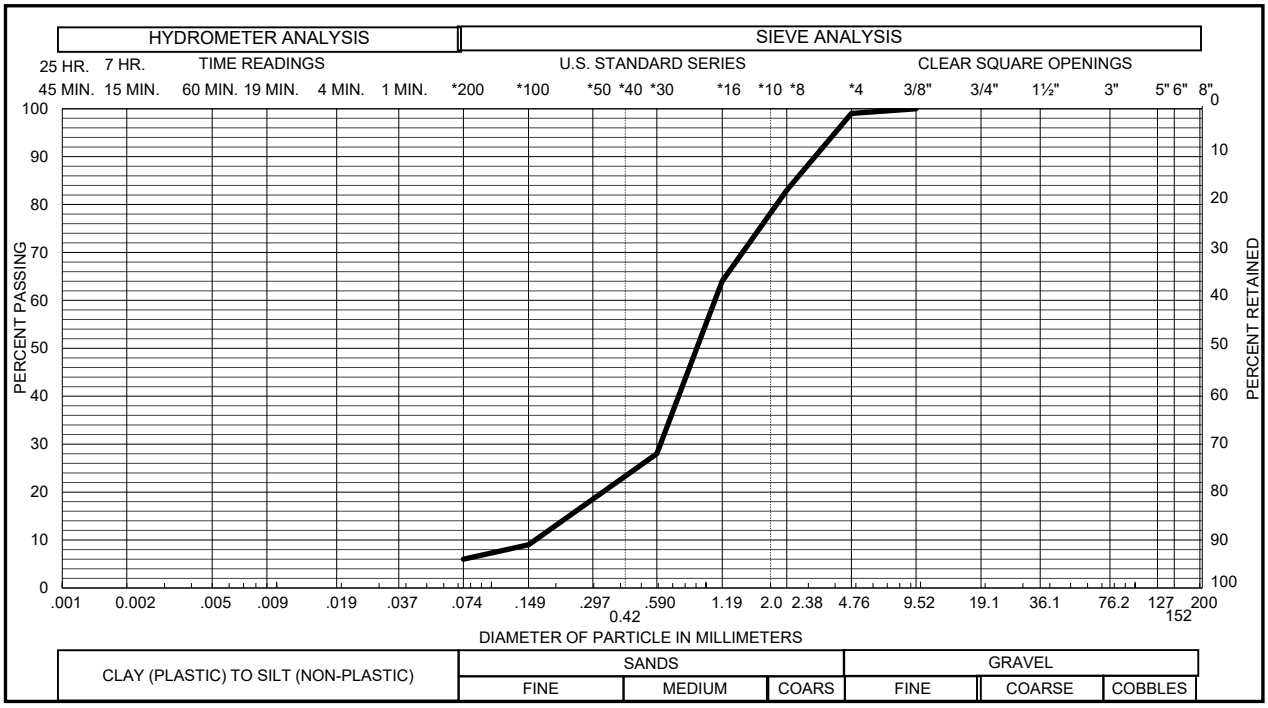
# Gradation Test Results

FIG. B-11




Sample of SAND, SILTY (SM)
From TH - 13 AT 4 FEET

GRAVEL 4 % SAND 71 %
SILT & CLAY 25 % LIQUID LIMIT
PLASTICITY INDEX




Sample of SAND, SLIGHTLY SILTY (SW-SM)
From TH - 14 AT 4 FEET

GRAVEL 1 % SAND 93 %
SILT & CLAY 6 % LIQUID LIMIT
PLASTICITY INDEX

**VINTAGE COMMUNITIES, INC.**
**PETERSON ROAD SUBDIVISION**
**CTL|T PROJECT NO. CS19836-115**

# Gradation Test Results

FIG. B-12

## TABLE B-1

### SUMMARY OF LABORATORY TESTING
### CTL|T PROJECT NO. CS19836-115

| BORING | DEPTH (FEET) | MOISTURE CONTENT (%) | DRY DENSITY (PCF) | ATTERBERG LIMITS | | SWELL TEST RESULTS* | | | PASSING NO. 200 SIEVE (%) | WATER SOLUBLE SULFATES (%) | DESCRIPTION |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | LIQUID LIMIT | PLASTICITY INDEX | SWELL (%) | APPLIED PRESSURE (PSF) | SWELL PRESSURE (PSF) | | | |
| TH-1 | 9 | 8.4 | 116 | | | | | | 9 | | SAND, SLIGHTLY CLAYEY (SW-SC) |
| TH-1 | 29 | 9.7 | 113 | | | | | | 7 | | SAND, SLIGHTLY SILTY (SW-SM) |
| TH-2 | 4 | 2.2 | | NV | NP | | | | 6 | | SAND, SLIGHTLY SILTY (SW-SM) |
| TH-2 | 14 | 9.3 | 116 | | | | | | 6 | | SAND, SLIGHTLY SILTY (SP-SM) |
| TH-3 | 9 | 11.0 | 123 | | | | | | 16 | <0.1 | SAND, CLAYEY (SC) |
| TH-3 | 24 | 4.4 | 112 | | | | | | 5 | | SAND, SLIGHTLY SILTY (SP-SM) |
| TH-4 | 4 | 9.0 | 112 | 22 | 5 | | | | 22 | | SAND, CLAYEY (SC) |
| TH-4 | 14 | 10.4 | 117 | | | | | | 16 | | SAND, CLAYEY (SC) |
| TH-4 | 19 | 19.7 | 99 | | | 0.0 | 2400 | - | 41 | | SAND, VERY CLAYEY (SC) |
| TH-5 | 4 | 10.8 | 110 | | | 0.3 | 500 | - | | | FILL, SAND, SLIGHTLY CLAYEY |
| TH-5 | 9 | 15.5 | 110 | | | -0.1 | 1100 | - | | | SAND, SLIGHTLY CLAYEY (SP-SC) |
| TH-6 | 4 | 10.8 | 123 | 25 | 6 | | | | 33 | <0.1 | FILL, SAND, CLAYEY |
| TH-6 | 19 | 14.6 | 110 | | | 0.0 | 2400 | - | | | SAND, VERY CLAYEY (SC) |
| TH-7 | 4 | 10.3 | 114 | 24 | 5 | | | | 21 | | SAND, CLAYEY (SC) |
| TH-7 | 19 | 21.1 | 106 | | | 0.0 | 2400 | - | 43 | | SAND, VERY CLAYEY (SC) |
| TH-8 | 4 | 6.7 | 127 | 20 | 2 | | | | 28 | | FILL, SAND, CLAYEY |
| TH-8 | 14 | 8.6 | 114 | | | | | | 10 | | SAND, SLIGHTLY SILTY (SP-SM) |
| TH-8 | 24 | 6.1 | 110 | | | | | | 14 | | SAND, SILTY (SM) |
| TH-9 | 4 | 4.4 | | | | | | | 5 | <0.1 | FILL, SAND, SLIGHTLY CLAYEY |
| TH-9 | 24 | 7.8 | | | | | | | 11 | | SAND, SLIGHTLY SILTY (SP-SM) |
| TH-10 | 4 | 9.6 | 111 | | | 1.0 | 500 | - | | | FILL, SAND, CLAYEY |
| TH-10 | 19 | 18.0 | 100 | | | 0.4 | 2400 | - | | | SAND, VERY CLAYEY (SC) |
| TH-11 | 9 | 9.0 | 118 | | | | | | 12 | | SAND, SLIGHTLY CLAYEY (SP-SC) |
| TH-11 | 14 | 5.8 | 118 | | | 0.1 | 1800 | - | | | SAND, CLAYEY (SC) |
| TH-11 | 19 | 8.6 | 113 | | | | | | 17 | | SAND, CLAYEY (SC) |
| TH-12 | 4 | 4.3 | | | | | | | 9 | | FILL, SAND, SLIGHTLY CLAYEY |
| TH-12 | 9 | 14.4 | 113 | | | | | | 24 | | SAND, CLAYEY (SC) |
| TH-13 | 4 | 10.9 | 105 | NV | NP | | | | 25 | | SAND, SILTY (SM) |
| TH-13 | 9 | 10.5 | 121 | | | | | | 11 | | SAND, SLIGHTLY CLAYEY (SP-SC) |
| TH-14 | 4 | 4.8 | 108 | NV | NP | | | | 6 | | SAND, SLIGHTLY SILTY (SW-SM) |
| TH-14 | 9 | 12.7 | 117 | | | | | | 8 | | SAND, SLIGHTLY SILTY (SP-SM) |
| TH-15 | 4 | 11.1 | 117 | | | -0.1 | 500 | - | 31 | | FILL, SAND, CLAYEY |
| TH-15 | 9 | 12.4 | 121 | | | | | | 11 | | SAND, SLIGHTLY CLAYEY (SP-SC) |
| TH-15 | 19 | 18.1 | 106 | | | -0.1 | 2400 | - | 37 | | SAND, VERY CLAYEY (SC) |
| TH-16 | 4 | 8.5 | 117 | | | | | | 15 | <0.1 | FILL, SAND, CLAYEY |
| TH-16 | 14 | 10.7 | 121 | | | | | | 5 | | SAND, SLIGHTLY CLAYEY (SP-SC) |

* SWELL MEASURED UNDER ESTIMATED IN-SITU OVERBURDEN PRESSURE.
NEGATIVE VALUE INDICATES COMPRESSION.

# APPENDIX C

GUIDELINE SITE GRADING SPECIFICATIONS
PETERSON ROAD SUBDIVISION
COLORADO SPRINGS, COLORADO

# GUIDELINE SITE GRADING SPECIFICATIONS

## PETERSON ROAD SUBDIVISION
## COLORADO SPRINGS, COLORADO

1. DESCRIPTION

This item consists of the excavation, transportation, placement and compaction of materials from locations indicated on the plans, or staked by the Engineer, as necessary to achieve preliminary pavement and building pad elevations. These specifications also apply to compaction of materials that may be placed outside of the project.

2. GENERAL

The Soils Engineer will be the Owner's representative. The Soils Engineer will approve fill materials, method of placement, moisture contents and percent compaction.

3. CLEARING JOB SITE

The Contractor shall remove all trees, brush and rubbish before excavation or fill placement is begun. The Contractor shall dispose of the cleared material to provide the Owner with a clean, neat appearing job site. Cleared material shall not be placed in areas to receive fill or where the material will support structures of any kind.

4. SCARIFYING AREA TO BE FILLED

All topsoil, vegetable matter, and existing fill shall be removed from the ground surface upon which fill is to be placed. The surface shall then be plowed or scarified until the surface is free from ruts, hummocks or other uneven features that would prevent uniform compaction by the equipment to be used.

5. PLACEMENT OF FILL ON NATURAL SLOPES

Where natural slopes are steeper than 20 percent (5:1, horizontal to vertical) and fill placement is required, horizontal benches shall be cut into the hillside. The benches shall be at least 12 feet wide or 1-1/2 times the width of the compaction equipment and be provided at a vertical spacing of not more than 5 feet (minimum of two benches). Larger bench widths may be required by the Engineer. Fill shall be placed on completed benches as outlined within this specification.

6. COMPACTING AREA TO BE FILLED

After the foundation for the fill has been cleared and scarified, it shall be disced or bladed until it is free from large clods, brought to a workable moisture content and compacted.

7. FILL MATERIALS

Fill soils shall be free from vegetable matter or other deleterious substances and shall not contain rocks or lumps having a diameter greater than six (6) inches. Fill materials shall be obtained from cut areas shown on the plans or staked in the field by the Engineer or imported to the site.

8. MOISTURE CONTENT

For fill material classifying as CH or CL, the fill shall be moisture treated to between 1 and 4 percent above optimum moisture content as determined by ASTM D 698, if it is to

be placed within 15 feet of the final grade. For deep cohesive fill (greater than 15 feet below final grade), it shall be moisture conditioned to within ±2 percent of optimum. Soils classifying as SM, SC, SW, SP, GP, GC and GM shall be moisture treated to within 2 percent of optimum moisture content as determined by ASTM D 1557. Sufficient laboratory compaction tests shall be made to determine the optimum moisture content for the various soils encountered in borrow areas.

The Contractor may be required to add moisture to the excavation materials in the borrow area if, in the opinion of the Soils Engineer, it is not possible to obtain uniform moisture content by adding water on the fill surface. The Contractor may be required to rake or disc the fill soils to provide uniform moisture content throughout the soils.

The application of water to embankment materials shall be made with any type of watering equipment approved by the Soils Engineer, which will give the desired results. Water jets from the spreader shall not be directed at the embankment with such force that fill materials are washed out.

Should too much water be added to any part of the fill, such that the material is too wet to permit the desired compaction to be obtained, all work on that section of the fill shall be delayed until the material has been allowed to dry to the required moisture content. The Contractor will be permitted to rework wet material in an approved manner to hasten its drying.

9. COMPACTION OF FILL AREAS

Selected fill material shall be placed and mixed in evenly spread layers. After each fill layer has been placed, it shall be uniformly compacted to not less than the specified percentage of maximum density. Granular fill placed less than 15 feet below final grade shall be compacted to at least 95 percent of maximum dry density as determined in accordance with ASTM D 1557. Cohesive fills placed less than 15 feet below final grade shall be compacted to at least 95 percent of maximum dry density as determined in accordance with ASTM D 698. For deep, cohesive fill (to be placed 15 feet or deeper below final grade), the material shall be compacted to at least 98 percent of maximum standard Proctor dry density (ASTM D 698). Granular fill placed more than 15 feet below final grade shall be compacted to at least 95 percent of maximum modified Proctor dry density (ASTM D 1557). Deep fills shall be placed within 2 percent of optimum moisture content. Fill materials shall be placed such that the thickness of loose materials does not exceed 10 inches and the compacted lift thickness does not exceed 6 inches.

Compaction, as specified above, shall be obtained by the use of sheepsfoot rollers, multiple-wheel pneumatic-tired rollers, or other equipment approved by the Soils Engineer for soils classifying as claystone, CL, CH or SC. Granular fill shall be compacted using vibratory equipment or other equipment approved by the Soils Engineer. Compaction shall be accomplished while the fill material is at the specified moisture content. Compaction of each layer shall be continuous over the entire area. Compaction equipment shall make sufficient trips to ensure that the required density is obtained.

10. COMPACTION OF SLOPES

Fill slopes shall be compacted by means of sheepsfoot rollers or other suitable equipment. Compaction operations shall be continued until slopes are stable, but not too dense for planting, and there is no appreciable amount of loose soil on the slopes. Compaction of slopes may be done progressively in increments of 3 to 5 feet in height or

after the fill is brought to its total height. Permanent fill slopes shall not exceed 3:1 (horizontal to vertical).

11. DENSITY TESTS

Field density tests will be made by the Soils Engineer at locations and depths of his/her choosing. Where sheepsfoot rollers are used, the soil may be disturbed to a depth of several inches. Density tests will be taken in compacted material below the disturbed surface. When density tests indicate the density or moisture content of any layer of fill or portion thereof is below that required, the particular layer or portion shall be reworked until the required density or moisture content has been achieved. The criteria for acceptance of fill shall be:

A. Moisture

The allowable ranges for moisture content of the fill materials specified above in "Moisture Content" are based on design considerations. The moisture shall be controlled by the Contractor so that moisture content of the compacted earth fill, as determined by tests performed by the Soils Engineer, shall be within the limits given. The Soils Engineer will inform the Contractor when the placement moisture is less than or exceeds the limits specified above and the Contractor shall immediately make adjustments in procedures as necessary to maintain placement moisture content within the specified limits.

B. Density

1. The average dry density of all material shall not be less than the dry density specified.
2. No more than 20 percent of the material represented by the samples tested shall be at dry densities less than the dry density specified.
3. Material represented by samples tested having a dry density more than 2 percent below the specified dry density will be rejected. Such rejected materials shall be reworked until a dry density equal to or greater than the specified dry density is obtained.

12. SEASONAL LIMITS

No fill material shall be placed, spread or rolled while it is frozen, thawing, or during unfavorable weather conditions. When work is interrupted by heavy precipitation, fill operations shall not be resumed until the Soils Engineer indicates the moisture content and density of previously placed materials are as specified.

13. NOTICE REGARDING START OF GRADING

The Contractor shall submit notification to the Soils Engineer and owner advising them of the start of grading operations at least three (3) days in advance of the starting date. Notification shall also be submitted at least three days in advance of any resumption dates when grading operations have been stopped for any reason other than adverse weather conditions.

14. REPORTING OF FIELD DENSITY TESTS

Density tests made by the Soils Engineer, as specified under “Density Tests” above, will be submitted progressively to the Owner. Dry density, moisture content and percent compaction will be reported for each test taken.

**APPENDIX D**
HISTORICAL AERIALS

GeoSearch

On time. On target. In touch.™

# *Historical Aerial Photographs*

*Target Property:*

***Meadowbrook Crossing***

***Colorado Springs, El Paso, Colorado 80915***

*Prepared For:*

***CTL Thompson- Colorado Springs***

***Order #: 93489***

***Job #: 204304***

***Project #: CS18831-200***

***Date: 9/22/2017***

# Target Property Summary

***Meadowbrook Crossing***

***Colorado Springs, El Paso, Colorado 80915***

*USGS Quadrangle:* ***Elsmere***
*Target Property Geometry:* ***Area***

*Target Property Longitude(s)/Latitude(s):*
***(-104.692454338, 38.844395584), (-104.693119526, 38.845080787), (-104.693312645, 38.845281333), (-104.693655968, 38.845615575), (-104.693977833, 38.845339825), (-104.696316719, 38.845331469), (-104.696863890, 38.844713118), (-104.696885347, 38.843894211), (-104.693323374, 38.843860786)***

# Aerial Research Summary

| Date | Source | Scale | Frame |
|---|---|---|---|
| 2015 | USDA | 1" = 500' | N/A |
| 2013 | USDA | 1" = 500' | N/A |
| 2011 | USDA | 1" = 500' | N/A |
| 2004 | USDA | 1" = 500' | N/A |
| 09/04/1999 | USGS | 1" = 500' | N/A |
| 06/27/1993 | USGS | 1" = 500' | 6670-27 |
| 10/25/1983 | USGS | 1" = 500' | 491-62 |
| 06/25/1975 | USGS | 1" = 500' | 14-20 |
| 10/08/1969 | USGS | 1" = 500' | 2-88 |
| 10/06/1960 | USGS | 1" = 500' | 4-135 |
| 10/28/1953 | AMS | 1" = 500' | 2012 |
| 07/24/1947 | USGS | 1" = 500' | 2-56 |
| 09/14/1937 | ASCS | 1" = 500' | 40-33 |

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***Meadowbrook Crossing***
***USDA***
***2015***

GeoSearch

JOB #: 204304 - 09/22/2017




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***Meadowbrook Crossing***
***USDA***
***2013***

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***Meadowbrook Crossing***
***USDA***
***2011***

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***USDA***
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***USGS***
***09/04/1999***

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JOB #: 204304 - 09/22/2017




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***USGS***
***06/27/1993***

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JOB #: 204304 - 09/22/2017




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***Meadowbrook Crossing***
***USGS***
***10/25/1983***

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JOB #: 204304 - 09/22/2017




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***Meadowbrook Crossing***
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***06/25/1975***

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JOB #: 204304 - 09/22/2017




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***Meadowbrook Crossing***
***USGS***
***10/08/1969***

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JOB #: 204304 - 09/22/2017




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***Meadowbrook Crossing***
***USGS***
***10/06/1960***

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***Meadowbrook Crossing***
***AMS***
***10/28/1953***

GeoSearch

JOB #: 204304 - 09/22/2017




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***Meadowbrook Crossing***
***USGS***
***07/24/1947***

GeoSearch

JOB #: 204304 - 09/22/2017




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***Meadowbrook Crossing***
***ASCS***
***09/14/1937***

GeoSearch

JOB #: 204304 - 09/22/2017

**APPENDIX C**
**FOR INFORMATION ONLY** – ValleyShore – "Revised Report of Geotechnical Exploration Proposed Apartment Development,"
ValleyShore Project No. 231348R1, dated July 16, 2026

July 16, 2026

Hillpointe, LLC
631 West Morse Boulevard, Suite 200
Winter Park, Florida 32789

Attention: Mr. Kyle Webb
KWebb@Hillpointe.com

Subject: **Revised Report of Geotechnical Exploration**
**Proposed Apartment Development**
East Highway 24 at Peterson Road
Colorado Springs, Colorado 80915
ValleyShore Project No. 231348R1

Dear Mr. Webb,

We are submitting the results of the geotechnical exploration performed for the subject project. The geotechnical exploration was performed in accordance with our email and phone correspondence with you. The following report presents our findings and recommendations for the proposed construction. Should you have any questions, please contact us at your convenience.

Sincerely,
ValleyShore Engineering, LLC

FOR INFORMATION ONLY

COLORADO LICENSED
T. BRIAN WILLIAMSON
65645
07/16/26
PROFESSIONAL ENGINEER

Saul Moslehy, PhD
Geotechnical Department Manager

T. Brian Williamson, P.E.
Principal / President
PE 65645

# Revised Report of Geotechnical Exploration

**Pointe Grand Development**

725 Peterson Road
Colorado Springs, Colorado 80915
ValleyShore Engineering Project No. 231348R1

**Submitted to:**

Hillpointe, LLC
631 West Morse Boulevard, Suite 200
Winter Park, Florida 32789

**Submitted by:**

ValleyShore Engineering, LLC
127 Grand Vista
Vonore, Tennessee 37885

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APPENDICES

**APPENDIX A** – Figures, General Notes, and Boring Logs
**APPENDIX B** – Laboratory Testing Results


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# 1.0 INTRODUCTION

## 1.1 PURPOSE

The purpose of our geotechnical exploration was to explore the subsurface conditions for the proposed apartment development to be located off East Highway 24 in Colorado Springs, Colorado, and provide geotechnical recommendations for site preparation and grading and for the design and construction of the foundation system. Additionally, recommendations for light and heavy-duty pavements are included.

## 1.2 PROJECT AND SITE DESCRIPTION

Project information was provided during email correspondence with Mr. Kyle Webb, of Hillpointe, in July of 2025. The provided information included a conceptual site plan dated March 21, 2025, as prepared by Godden Sudik Architects. Based on the provided information, we understand the project will include the construction of ten (10) three-story apartment buildings, an office and fitness center building with associated amenities, and paved driving and parking areas.

Although structural loading information has not been provided, we anticipate the apartment buildings will be three stories in height and will be constructed of wood framing with a conventional concrete slab on grade. We have assumed maximum loads of 75 kips (for columns) and 3 kips per foot (for walls). We have assumed that the loads associated with the amenity buildings will be less than 25 kips (for columns) and 2 kips per foot (for walls).

At this time, we were not provided with detailed information regarding the existing and proposed grades. Therefore, we have assumed that less than 10 feet of cut and fill will be required to facilitate the proposed construction.

The site is bordered by East Highway 24 to the south, residential properties to the east, the proposed expansion of Meadowbrook Parkway to the north, and the remainder of the subject parcels not incorporated into the proposed development at this time to the west. The approximate location of the site and the approximate site boundaries are shown in Figures 1 and 2 of Appendix A of this report, respectively.

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At the time of our exploration, the site was predominantly an open field with some woods, along with abandoned concrete pads in the southern portion of the site. Based on our review of available historical aerial imagery (Google Earth), the northern portion of the site was historically used as baseball fields, which were decommissioned sometime between 2006 and 2011. Additionally, the southern portion of the site was cleared sometime in 2023 during the development of the adjacent apartment complex to the east. The has remained relatively unchanged since then.

## 1.3 SCOPE OF STUDY

This geotechnical exploration involved a site reconnaissance, field drilling, laboratory testing, and engineering analysis. The following sections of this report present discussions of the field exploration, site conditions, and conclusions. Following the text of this report, Appendix A presents figures and test boring records.

The scope of our geotechnical services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, bedrock, surface water, groundwater, or air, on, or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

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# 2.0 EXPLORATION AND TESTING PROGRAMS

## 2.1 FIELD EXPLORATION

Our field exploration consisted of drilling thirty-eight (38) soil test borings within the proposed development. The borings were located in the field using a handheld GPS unit. The borings were drilled between September 8 and 10, 2025. Each location was advanced using 4-inch hollow stem augers and a truck-mounted drill rig. The approximate locations of the soil test borings are shown in Figure 3 of Appendix A of this report. The depths in this report reference the ground surface that existed at the time of this exploration. Detailed logs for soil test borings can also be found in Appendix A.

Standard Penetration Tests (SPT) and split-spoon sampling were performed at approximately 2½-foot intervals in the upper 10 feet and 5-foot intervals thereafter. The drill crew worked in general accordance with ASTM D6151 for Hollow Stem Auger (HSA) drilling. SPT and split spoon sampling were performed in accordance with ASTM D1586.

In split-spoon sampling, a standard 2-inch O.D. split spoon sampler is driven into the bottom of the boring with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampler the last 12 inches of the standard 18 inches of total penetration (or second and third 6-inch increments when sampling 24 inches) is recorded as the SPT resistance (N-value). These N-values are indicated on the boring logs at the test depth and provide an indication of the consistency or relative density of the soil. Additionally, bulk samples of the existing materials were also obtained from selected locations for laboratory testing.

## 2.2 LABORATORY TESTING PROGRAM

After completion of the field drilling and sampling phase of this project, the soil samples were returned to our laboratory, where they were visually-manually classified in general accordance with the Unified Soil Classification System (USCS – ASTM D2487) by a geotechnical professional. Select samples were then tested for moisture content (ASTM D2216), Atterberg limits (ASTM D4318), gradation and sieve analysis (ASTM D6913), soluble sulfates (CP-L 2103), soil resistivity (ASTM G187), pH testing (ASTM D4972), swell potential (ASTM D4546), and standard Proctor compaction testing (AASHTO T 99-22/ASTM D698).

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# 3.0 SUBSURFACE CONDITIONS

## 3.1 SITE GEOLOGY

Based on the United States Geological Survey (USGS) and Colorado Geological Survey (CGS) Databases, the northern portion of the site is underlain by Middle alluvium deposits (late Pleistocene), while the southern portion of the site is underlain by the Old alluvium deposits (middle Pleistocene). Middle alluvium deposits are chiefly composed of light-brownish-gray, pale-brown, light-yellowish-brown, and grayish-brown, poorly sorted sand and subordinate amounts of gravel. The middle alluvium deposits' estimated thickness is 20-50 ft. Old alluvium deposits mainly consist of pale-brown to strong-brown, extremely poorly sorted, fine to very coarse sand, silty and clayey sand, and gravel. The old alluvium deposits' thickness is about 3-30 ft.

Also, according to the soil survey from the United States Department of Agriculture's (USDA) soil conservation services, the predominant soil type at the site is Blakeland Loamy Sand, while the secondary soil type at the site is Blendon Sandy Loam. Soil drainage on the property ranges from "somewhat excessively drained to well-drained. Table 1 tabulates the soil survey information, and Figure 4 of Appendix A includes a map of soil types.

*Table 1 Summary of Soil Survey Information*

| Soil Type | Constituents | | Hydrologic Group | Natural Drainage |
|---|---|---|---|---|
| Blakeland Loamy Sand | 0-27"<br>27-60" | Loamy Sand<br>Sand | A | Somewhat Excessively Drained |
| Blendon Sandy Loam | 0-36"<br>36-60" | Sandy Loam<br>Gravelly Sandy Loam | B | Well Drained |

## 3.2 SITE STRATIGRAPHY

The following subsurface description is of a generalized nature to highlight the subsurface stratification features and material characteristics at the boring locations. The soil test boring logs included in the attachments of this report should be reviewed for specific information at each boring location. Information on actual subsurface conditions exists only at the specific test locations and is relevant only to the time that this exploration was performed. Variations may occur and should be expected at the site.

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*Surficial Materials*

Initially, each boring location encountered surficial topsoil varying in thickness from approximately 3 to 12 inches. We anticipate that the actual depth of surficial materials may vary significantly across the site and between our widely spaced borings. As such, we recommend the contractor evaluate the surficial material depths for bidding purposes.

*Alluvial Materials*

Underlying the surficial materials, each boring location encountered alluvial deposits extending to the termination depths. Alluvial deposits are usually brought to their current location by water. The alluvial deposits were predominantly classified as light to dark brown, reddish brown, or grayish brown, light to dark gray, tan, white, and black sands with varying amounts of silt, clay, pebbles, iron staining, and traces of roots (generally in the upper 3 to 5 feet). Additionally, four boring locations (B-8, B-9, B-21, and P-12) encountered isolated pockets of light brown, brown, reddish brown, dark gray, gray, and white lean (low plasticity) and fat (high plasticity) clays with varying amounts of silt, sand, gypsum, and iron staining.

The SPT N-values with the alluvial deposits generally ranged from 5 to 40 blows per foot (bpf), indicating loose to dense relative densities in the coarse-grained materials and firm to stiff consistencies in the fine-grained materials. The exceptions were isolated pockets of very loose materials encountered in five boring locations (B-6, B-8, B-17, B-22, and P-9), generally in the upper 5 feet.

*Auger Refusal*

Auger refusal was not encountered in the boring locations, and each boring location was extended to predetermined termination depths ranging from approximately 10 to 20 feet below the existing grade without encountering refusal materials. Auger refusal is a designation applied to materials that cannot be penetrated by the power auger. Auger refusal may indicate hard materials within the fill, rock boulders, ledges or pinnacles, or the top of continuous bedrock.

*Groundwater*

Groundwater was not encountered in the boring locations at the time of drilling. We note that stabilized water levels can sometimes be difficult to obtain. In addition, each boring was backfilled upon completion in consideration of safety, so delayed water levels were not recorded.

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It is possible for groundwater to exist within the depths explored during other times of the year, depending upon climatic and rainfall conditions. Additionally, discontinuous zones of perched water may exist within the overburden materials. The groundwater information presented in this report is the information that was collected at the time of our field activities.

### 3.3 LABORATORY TESTING RESULTS

As mentioned previously, select SPT and bulk soils samples were subjected to a laboratory program consisting of moisture content, Atterberg limits, gradation and sieve analysis, swell testing, water soluble sulfates, electrical resistivity, pH, and proctor testing. The moisture contents of the tested bulk and SPT samples typically ranged from 4 to 8 percent and from 8 to 35 percent, respectively. Atterberg limits testing was performed on four bulk and five SPTS samples from selected boring locations. The testing of the selected samples indicated liquid limits between 17 and 52, with plasticity indices between 2 and 30. A summary of testing results, as well as individual testing reports, is presented in Appendix B. Table 2 below provides the results of the testing on the bulk samples obtained from approximately 1 to 4 feet below the existing grade.

*Table 2 – Bulk Sample Soil Laboratory Results*

| Boring | Natural Moisture Content (%) | Optimum Moisture Content (%) | Max Dry Density (pcf) | Passing No. 200 Sieve (%) | Liquid Limit | Plasticity Index | Sulfates (%) | Resistivity (ohm-cm) | pH | Swell (%) |
|---|---|---|---|---|---|---|---|---|---|---|
| B-3 | 7.4 | 9.5 | 121.0 | 14 | 21 | 3 | 0.00 | 5710 | 6.73 | 0.0 |
| B-5 | 4.2 | 11.0 | 115.1 | 8 | NP | NP | 0.00 | 3530 | 7.11 | 0.0 |
| B-8 | 8.2 | 9.9 | 121.9 | 21 | 18 | 4 | 0.00 | 6560 | 6.97 | 0.1 |
| B-10 | 6.9 | 10.4 | 119.9 | 23 | 17 | 2 | 0.00 | 6980 | 7.12 | 0.0 |
| B-13 | 5.9 | 10.0 | 121.1 | 15 | NP | NP | 0.00 | 8820 | 6.68 | 0.2 |
| B-16 | 5.2 | 10.1 | 120.2 | 16 | NP | NP | 0.00 | 9100 | 6.92 | 0.0 |
| B-18 | 5.3 | 11.9 | 110.8 | 10 | 18 | 18 | 0.01 | 13800 | 7.06 | 0.0 |
| B-20 | 4.8 | 12.2 | 117.3 | 7 | NP | NP | 0.00 | 13900 | 7.03 | 0.3 |

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# 4.0 CONCLUSIONS AND RECOMMENDATIONS

## 4.1 GEOTECHNICAL CONSIDERATIONS

Based on the results of our geotechnical exploration, it is our opinion that the site is generally adaptable for the proposed construction. However, certain geotechnical challenges will likely present themselves during site development, which we have outlined herein.

While we anticipate that most of the existing soils will be suitable for subgrade support, lower consistency and density materials were encountered in twenty-four out of the thirty-eight borings at various depths. These materials are defined as firm or worse fine-grained materials or loose or worse coarse-grained materials. Some remediation of the lower consistency and density materials should be anticipated where these materials are not removed during grading.

We recommend performing close construction observations during earthwork and foundation excavation activities to observe the consistency and suitability to support the proposed construction. Any areas observed to be unsuitable for use as foundation support should be remediated accordingly. Typical remediation would consist of undercutting and replacing with properly compacted structural soil fill or compacted aggregate base course. The depth of undercutting should be determined based on observations and tests performed at the time of construction.

Subgrades for lightly loaded slabs and/or pavement areas can typically be supported on materials that proofroll successfully. Proofrolling should be observed by a geotechnical engineer or by a qualified representative in order to help identify areas requiring subgrade support correction. Where the subgrade does not pass proofrolling, measures to improve the subgrade support conditions will be required.

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In addition, boring B-21 encountered an isolated pocket of high plasticity (fat) clays at a depth of approximately 8 to 12 feet below the existing grade. Moreover, we anticipate that additional pockets of fat clays may be encountered at even shallower depths between our widely spaced boring locations. Therefore, we anticipate that these materials will likely be encountered during construction activities. Typically, these materials are not suitable for foundation or slab support and may impede site grading activities as they are susceptible to moisture changes. We have provided recommendations pertaining to the fat clayey soils in this report.

As previously mentioned, we anticipate that most of the existing soils will be suitable for reuse as structural soil fill; however, the client should understand that some variation should be expected between our widely spaced borings, and selective undercut and replacement may be necessary during construction activities. This may include the lower consistency materials, free of deleterious materials, if the soils are scarified (or undercut) and recompacted. The existing onsite fat clays may also be mixed with lower plasticity materials during earthwork grading to produce a material that meets the recommended criteria.

The swell/collapse potential for the tested existing soils on-site varied from 0 to 0.3 percent, which shows a relatively low risk of swell at this site. Thus, based on our exploration, testing, and experience in the area, we do not anticipate excessive displacement, especially differential heave, caused by the swelling of expansive soils at the site to be a major concern.

We recommend close construction observations to ensure that any fat clays encountered during the construction are undercut to a minimum of 4 feet below the foundation bearing elevations and replaced with properly placed structural soil fill or compacted aggregate base course. The onsite soils can be reused as fill, but will require moisture conditioning (wetting) given the in-situ moisture content. Additionally, pavement subgrade should consist of at least 24 inches of non-expansive, low-plasticity soil.

We encourage the client to confer with the design team and a contractor with regard to the recommendations contained in this report, in an effort to assess potential costs and schedule. Additional onsite testing during construction can further classify the existing materials' suitability for reuse as structural soil fill.

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## 4.2 EARTHWORK RECOMMENDATIONS

*4.2.1 Site Preparation*

Site stripping within the proposed construction areas (building and pavement) should include the removal of abandoned slabs, vegetation, topsoil, organic soils, rock fragments greater than 6 inches, gravel, and debris. The stripping operations should extend a minimum of 5 feet beyond the limits of proposed pavement areas and 10 feet beyond building footprints. The vegetation should be removed from the site and not utilized as fill material. However, the topsoil can be utilized in non-structural/ non-slope areas (i.e., green spaces). These areas should be observed by a geotechnical engineer upon grading to confirm that the recommendations in this report are followed.

The site also contains some large mature trees. Along with the tree, the respective root system should also be removed. Removal of trees and their root system upturns and loosens the surrounding soils. If the disturbed soils are suitable and are to remain, then they will require additional compactive effort and testing prior to proof-roll testing and fill placement. The client should budget for additional removal of these root systems and replacement with structural soil fill.

After the completion of stripping operations and excavation to reach the planned subgrade elevation, we recommend that the subgrade be proofrolled with a fully-loaded, tandem-axle dump truck or other pneumatic-tired construction equipment of similar weight. The geotechnical engineer or his representative should observe proofrolling. Areas judged to perform unsatisfactorily (e.g., pumping and/or rutting) by the engineer should be undercut and replaced with structural soil fill or remediated at the geotechnical engineer's recommendation. Areas to receive structural soil fill should also be proofrolled prior to the placement of new fill. Proofrolling operations shall be extended to a distance of 10 feet beyond the edge of the building and 5 feet beyond the edge of pavement areas.

At this time, ValleyShore is not aware of any proposed detention facilities or large embankments at the site. If the plans change to include detention facilities or any site improvement requiring embankments, ValleyShore must be allowed to perform stability analyses for the embankments.

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Isn't Tract C holding the detention facility?

*4.2.2 Excavations*

Auger refusal was not encountered at the boring locations prior to reaching the predetermined termination depths ranging from approximately 10 to 20 feet below the existing grade. Auger refusal conditions generally correspond to materials that require hoe-ramming and/or blasting for removal. Typically, soils penetrated by augers can be removed with conventional earthmoving equipment. However, excavation equipment varies, and field refusal conditions may vary. Generally, the weathering process is erratic, and variations in the rock profile can occur over small lateral distances.

Although detailed grading information has not been provided, we have assumed that less than 10 feet of cut and fill will be required to facilitate the proposed construction. At this time, we do not anticipate that difficult excavation techniques will be necessary during the grading activities for the majority of the construction activities and foundation excavations.

Temporary excavations will be required for utility construction. Typically, cohesive soils can stand vertically for a short period of time. However, the longer the excavation stays unprotected and begins to dry or is exposed to rain, the stability of the excavation could become compromised. Excavations should be sloped or shored in accordance with local, state, and federal regulations, including OSHA (29 CFR Part 1926) excavation trench safety standards. The contractor is usually solely responsible for site safety. This information is provided only as a service, and under no circumstances should ValleyShore be assumed responsible for construction site safety.

*4.2.3 Structural Soil Fill*

Material considered suitable for use as structural fill should be clean soil free of organics and other deleterious material, containing no rock fragments greater than 6 inches in dimension. Preferably, structural soil fill material should have a PI value of 25 percent or less. All material to be used as structural fill should be tested by the geotechnical engineer to confirm that it meets the project requirements before being placed.

Based on the data from this exploration, we expect that the existing on-site soils, excluding the high plasticity fat clays (free of deleterious materials), may be reused as structural fill. Further assessment of the onsite materials can be made during observation of the undercut and earthwork activities performed on-site or prior to construction using test pits. The higher plasticity materials may be mixed with lower plasticity

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materials during earthwork grading to produce a material that meets the recommended criteria, or the material may be treated using lime or cement to lower the soil plasticity.

Structural fill should be placed in loose, horizontal lifts not exceeding 8 inches in thickness. Each lift should be compacted to at least 95 percent of the soil's maximum dry density per the standard Proctor method (ASTM D 698) and within the range of minus 0 percent to plus (+) 3 percent of the optimum moisture content. Each lift should be tested by geotechnical personnel to confirm that the contractor's method is capable of achieving the project requirements before placing subsequent lifts. Areas that have become soft or frozen should be removed before any additional structural fill is placed.

*4.2.4 Aggregate Base Course*

Aggregate Base Course (ABC) may be used as a backfill in undercut excavations and in utility trench excavations. The ABC used for this section should be equivalent to a Class 6 aggregate in accordance with Section 703.03 of the Colorado Department of Transportation specifications. The ABC fill should be placed in loose, horizontal lifts not exceeding 8 inches in loose thickness. Each lift should be compacted to at least 98 percent of maximum dry density per the standard Proctor method (ASTM D698). Each lift should be compacted, tested by geotechnical personnel, and approved before placing subsequent lifts.

*4.2.5 Moisture-Sensitive Soils*

The fine-grained soils encountered at this site will be sensitive to disturbances caused by construction traffic and changes in moisture content. During wet weather periods, increases in the moisture content of the soil can cause a significant reduction in the soil's strength and support capabilities. In addition, plastic soils that become wet may be slow to dry and thus significantly retard the progress of grading.

We caution that if site grading is performed during the wet weather season, methods such as discing and allowing the material to dry will be required to meet the required compaction recommendations. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather. If grading operations are performed during the wet weather season, the owner should anticipate difficulties in achieving the proper compaction of the soil fill, as well as some remediation (undercut and replacement) of subgrade soils if exposed to inclement weather conditions.

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*4.2.6 High Plasticity Soil Considerations*

Based on our experience in this area, soils with plasticity indices (PI) less than 30 percent have a slight potential for volume changes with changes in moisture content, and soils with a PI greater than 50 percent are highly susceptible to volume changes. Between these values, we consider the soil to be moderately susceptible to volume changes.

Plastic soils have the potential to shrink or swell with significant changes in moisture content. At sites that have high-plasticity soils, certain precautions should be considered to minimize or eliminate the potential for volume changes. The most effective way to eliminate the potential for volume changes is to remove highly plastic soils and replace them with compacted fill of non-expansive material. Testing and recommendations for the required depth of removal can be provided if needed. If removal of the highly plastic soils is not desirable, then measures should be taken to protect the soils from excessive amounts of wetting or drying. In addition, modification of the soils by lime or cement treatment can be utilized to reduce the soil plasticity.

Several construction considerations may reduce the potential for volume changes in the subgrade soils. Foundations should be excavated, checked, and concreted on the same day to prevent excessive wetting or drying of the foundation soils. The floor subgrade should be protected from excessive drying and wetting by covering the subgrade prior to slab construction. The site should be graded in order to drain surface water away from the building, both during and after construction.

Installing moisture barriers around the perimeter of the slab helps limit the moisture variation of the soil and reduce the potential for shrinking or swelling. Moreover, roof drains should discharge water away from the building area and foundations. Heat sources should be isolated from foundation soils to minimize drying of the foundation soils. Trees and large shrubs can draw large amounts of moisture from the soil during dry weather and should be kept well away from the building to prevent excessive drying of the foundation soils. Lawns or landscaped areas should be watered to maintain moisture levels during dry weather.

Structural details to make the building flexible should be considered to accommodate potential volume changes in the subgrade. Floor slabs should be liberally jointed to control cracking, and the floor slab should not be structurally connected to the walls. Walls should incorporate sufficient expansion/contraction joints to allow for differential movement.

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*4.2.7 Drainage and Surface Water Concerns*

To reduce the potential for additional undercut, water should not be allowed to collect in the foundation excavations, on floor slab areas, or on prepared subgrades of the construction area, either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate the removal of collected rainwater, subsurface water, or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slab. The grades should be sloped away from the building, and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building.

Significant construction dewatering is not anticipated across the majority of the site, based on our understanding of the proposed grading. However, it is possible that water will be encountered in cut areas, near existing water features, and along the soil/rock interface or within rock seams. Therefore, the contractor should anticipate some water to be encountered in deeper cut areas or where rock is encountered. Additionally, soft bearing conditions may be encountered in this area. Therefore, it may be necessary to over-excavate the subgrade soils in this area and replace them with a compacted aggregate base course.

In addition, seasonal fluctuations and runoff from adjacent properties may occur once construction begins. If seepage or runoff is encountered at shallow depths, it is anticipated that it can be controlled by simple means such as pumping from sumps or the use of perimeter trenches to collect and discharge the water away from the work area. We recommend that all excavations where groundwater is encountered be observed on an individual basis to determine if interior drain systems are required.

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## 4.3 FOUNDATION RECOMMENDATIONS

*4.3.1 Shallow Foundations*

Upon completion of site preparation, as previously recommended, it is our opinion that the proposed buildings can be supported on conventional spread footing foundations bearing on approved, properly compacted structural soil fill or suitable existing materials in accordance with the recommendations of this report. We recommend that if lower consistency or unstable soils are encountered during footing excavations, they be undercut and backfilled with structural soil fill in the building area. Spread and continuous footings supported on properly placed and compacted structural soil fill or suitable existing soils can be designed for an allowable soil bearing capacity of 2,000 psf.

We recommend that continuous foundations be a minimum of 18 inches wide and isolated spread footings be a minimum of 24 inches wide to reduce the possibility of a localized punching shear failure. Exterior foundations should be designed to bear at least 30 inches below the finished exterior grade to develop the design bearing pressure and to protect against frost heave.

The available lateral capacity of shallow foundations includes a soil lateral pressure and coefficient of friction as described in the IBC, Section 1806. Footings will be embedded in a material similar to those described as Class 4 in Table 1806.2. Where footings are cast neat against the sides of excavations, an allowable lateral bearing pressure of 150 psf per foot depth below natural grade may be used in computations. Resistance to lateral sliding, represented by a coefficient of friction of 0.25, may be used for sands similar to those described as soil Class 4. An increase of one-third in the allowable lateral capacity may be considered for transient load combinations, including wind or earthquake, unless otherwise restricted by design code provisions.

A geotechnical representative should be retained to perform foundation subgrade tests to confirm that the recommendations provided in this report are consistent with the site conditions encountered. Some undercutting of lower-consistency fill soils, where encountered in foundation excavations, should be anticipated. A dynamic cone penetrometer (DCP) is commonly utilized to provide information that is compared to the data obtained in the geotechnical report. Where unacceptable materials are encountered, the material should be excavated to stiff, suitable soils or remediated at the geotechnical engineer's direction.

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We recommend that if lower consistency or unstable soils are encountered during footing excavations, they be undercut and backfilled with compacted structural soil fill in the building area. We anticipate the majority of the additional undercut will be in areas of minimal grading where these materials will not be removed. Areas to receive more than 5 feet of structural soil fill should be stripped and proof-rolled to determine if additional undercutting may be necessary. The undercut areas should be backfilled using structural soil fill and extend at least 10 feet laterally beyond the building footprint in areas where over-excavation is necessary. Where undercut and replacement are performed, we recommend that excavations be backfilled the same day to reduce the risk of sidewall collapse.

Foundation excavations should be opened, the subgrade evaluated, remedial work performed (if required), and concrete placed in an expeditious manner. Exposure to weather often reduces foundation support capabilities, thus necessitating remedial measures prior to concrete placement. It is also important that proper surface drainage be maintained both during construction (especially in terms of maintaining dry footing trenches) and after construction. Soil backfill for footings should be placed in accordance with the recommendations for structural fill presented herein. We note that the onsite soils could be highly susceptible to moisture changes. Therefore, if foundation excavations are to be left open for an extended period of time (i.e., overnight), we recommend that a 2-inch layer of lean concrete be placed as a mud mat in the excavation to reduce the potential for the deterioration of the foundation subgrade soils

Based on the known subsurface conditions, geology, and past experience, we estimate that foundations supported on recommended structural soil fill or other approved soils should experience maximum total and differential displacements of 1 inch and ¾ inch, respectively. The displacement information provided was with maximum column and continuous foundation loads on the order of 75 kips and 3 kips per linear foot (kpf), respectively, and an allowable bearing pressure of 2,000 psf. Additionally, this information assumes that the site is prepared in accordance with our recommendations provided in this report, including allowing the proposed fill time to consolidate under its own weight. If these parameters are determined to be incorrect, we should be notified to reevaluate the settlements for the building.

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*4.3.2 Slabs-on-Grade*

Following the recommended site preparation activities, it is our opinion that the floor slab can be grade-supported on structural soil fill materials or suitable existing soils. Observing proofrolling of the subgrade, as discussed earlier in this report, should be accomplished to identify loose or unstable soils, which should be removed from the floor slab area prior to the fill placement and/or floor slab construction. Based on our exploration, the client should anticipate and budget for some remediation of the existing materials at the foundation subgrade.

We recommend that a minimum 4-inch-thick granular mat be placed beneath the floor slab to enhance drainage and provide a capillary break. The subgrade should be proofrolled and approved prior to the placement of the crushed stone. Based on the conditions encountered on this site, we recommend that the floor slabs be designed using a subgrade modulus of 150 pounds per cubic inch (pci). This modulus is appropriate for small diameter loads (i.e., a 1ft x 1ft plate) and should be adjusted for wider loads.

## 4.4 GEOLOGIC HAZARDS & CONSTRAINTS

*4.4.1 Faulting and Seismicity*

Historically, there have been several medium-sized earthquakes reported in the Colorado Springs area. Based on a review of available public information, Colorado Earthquake and Fault Map Server, there are no known faults in the immediate area of the project site. The closest mapped faults, the Rampart Range Fault, are located approximately 9 miles west of the property near the Canon Park mountains. Given the minimal seismic activity within the last 30,000 to 50,000 years, the risk of a significant seismic event impacting the project during its design life is relatively low.

In accordance with the Pikes Peak Regional Building Code (PPRBC) 2023 and the International Building Code (IBC) 2021, we are providing the following seismic design information. After evaluating the SPT N-value data from the soil test borings and considering the changes to the site and foundation types, it was determined that the subsurface conditions at the site most closely matched the description for “Seismic Site Class D” or “Stiff Soil Profile”. Table 3 provides the spectral response accelerations for both short and 1-second periods, which may be used for design.

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*Table 3 – Seismic Design Parameters ASCE 7-16*

| Structure | $S_s$ g | $S_1$ g | $S_{DS}$ g | $S_{D1}$ g | $PGA_M$ g |
|---|---|---|---|---|---|
| Proposed Apartment Development – Colorado Springs, CO | 0.191 | 0.057 | 0.204 | 0.091 | 0.165 |

The short and 1-second period values indicate the structure should be assigned a Seismic Design Category "B" using the published information. The provided values are based on the results of our field exploration and the assumption that the structure will be designed utilizing Risk Category I, II, or III. If these assumptions are incorrect, we should be contacted to reevaluate the seismic design information.

*4.4.2 Liquefaction Potential*

Liquefaction occurs when soil, primarily saturated cohesionless soils, undergoes a loss in strength due to monotonic, transient, or repeated disturbance that commonly occurs during a seismic event (Kramer 1996). This loss of strength occurs due to increased pore water pressures caused by an undrained condition. The increase in pore water pressure decreases the effective stress in the soil, thus reducing the soil's ability to support any applied loads. For liquefaction to occur, there must be an increase in pore pressure, meaning the soil must be saturated and be able to behave in an undrained condition. According to the NHI 2011 Reference Manual on LRFD Seismic Analysis and Design of Transportation Geotechnical Features and Structural Foundations, if any of the following criteria are satisfied, then a significant liquefaction hazard does not exist:

- The geologic materials underlying the site are either bedrock or have very low liquefaction susceptibility according to the relative susceptibility ratings shown in the Estimated Susceptibility of Sedimentary Deposits to Liquefaction During Strong Ground Motion table presented by Youd and Perkins in 1978.
- The soils below the groundwater table at the site are one of the following:
    - Clayey soils which have a clay content greater than 15%, a liquid limit greater than 35%, or natural water content less than 90% of the liquid limit.
    - Sand with a minimum corrected SPT $(N_1)_{60}$ value of 30 blows/foot.
    - The water table is deeper than 50 feet below the ground surface or proposed finished grade at the site.

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We note that the borings encountered plastic soils having clay contents above 15 percent. Additionally, based on experience in this geologic region and the immediate vicinity of the site, it is our opinion that a liquefaction hazard does not exist for the subject development. As such, we do not expect significant additional total and differential settlement, lateral soil movement, reduction in bearing capacity or lateral soil reaction, permanent increase in soil lateral pressure, or flotation of buried structures in accordance with Sections 1803.5.11 and 1803.5.12 of the IBC 2021.

*4.4.3 Landslides, Unstable Slopes, Rockfalls, and Avalanches*

Our review of the Colorado Landslide Inventory and the Landslide Inventory of El Paso County databases yielded no evidence of landslide susceptibility at the site. At this time, the site is mildly sloped with some flat areas, and we are not aware of any relatively taller and steeper existing or proposed slopes at the site. Generally, slopes of 3 horizontal to 1 vertical that are placed and graded properly are stable. If steeper slopes are proposed, ValleyShore should be allowed to assess the stability of the proposed slopes. Due to the mentioned topography and general location of the site, the site is not considered susceptible to rockfall and avalanche hazards.

*4.4.4 Flooding, Mudflows, and Debris Flows*

Based on the Colorado Water Conservation Board - Colorado Hazard Mapping & Risk MAP Portal and FEMA Flood Map Panel 08041C0754G, the site is not located within a floodplain. The project civil engineer must verify these boundaries to ensure adequate surface drainage design.

The site shows no susceptibility to debris flow per the Debris-flow Susceptibility Mapping of Select Colorado Counties database and CGS Open-File Report 18-11 "Debris Flow Susceptibility Map of El Paso County, Colorado" (2018) by Kevin M. McCoy, Matthew L. Morgan, and Karen A. Berry. Moreover, prior site disturbances have likely obscured surficial evidence of mudflows and debris flows. The potential for sheetwash and surface drainage design should be performed separately by the Civil Engineer.

*4.4.5 Subsidence and Abandoned Mines or Landfills*

The project location was not included in the April 1985 "Colorado Springs Subsidence Investigation" by Dames & Moore for the State of Colorado's Division of Mine Reclamation, which mapped areas potentially impacted by mine-related subsidence. Additionally, during our review of the Colorado Historic Coal Mines database, we found no indications of subsurface mining or historical surface mining at the site. Lastly, our

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analysis of the site's historical aerial photography and the materials recovered from our test borings showed no evidence of past landfill operations.

*4.4.6 Expansive, Collapsible, and Compressible Soils and Rock*

Based on the results of the testing performed, the existing near-surface soils exhibit low expansive potential with swell potentials of less than 0.3% under a pressure of 200 psf. During our exploration, only an isolated zone of highly plastic soils was encountered in boring B-21 at a depth of approximately 8 to 12 feet below the existing grade; however, additional and shallower zones of high-plasticity soils exhibiting moderate to high expansive potential may be encountered between our widely spaced boring locations.

Compressible soils are generally described as those that undergo consolidation when exposed to new loads. Alternatively, collapsible soils are those that significantly decrease in volume with an increase in moisture. Buildings, structures, and other improvements may be subject to excessive settlement-related distress when compressible soils or collapsible soils are present. Based on the results of our subsurface exploration, the near-surface soils that are anticipated to be exposed would have low collapse potential. Based on the Collapsible Soils of Colorado database, the site may be underlain by Dune and sheet sand deposits, which are generally susceptible to collapse.

*4.4.7 Shallow (Elevated) Groundwater Table and Bedrock*

As previously mentioned, groundwater was not encountered in the boring locations at the time of drilling. Generally, seasonal fluctuations of 3 to 5 feet are typical, with peak levels generally occurring in late September or October. Based on our understanding of the project and the site's existing grades, we do not anticipate significant cuts resulting in shallow groundwater conditions. Moreover, no natural springs or seeps were observed during our limited investigation.

As previously mentioned, auger refusal, indicative of bedrock, was not encountered in the boring locations extending to predetermined termination depths ranging from approximately 10 to 20 feet below the existing grade. Additionally, per CGS mapping (Himmelreich and Noe, 1999), the property is not situated within zones of steeply dipping, differentially heaving bedrock.

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*4.4.8 Radioactivity and Radon Exposure*

While naturally occurring radioactivity is not expected to pose an unusual hazard at the site, the site's geology is conducive to radon gas accumulation. Implementing standard mitigation measures, such as sealing and/or venting foundations and slabs, can further reduce the radon gas exposure. The client may elect to perform radon concentration testing upon the completion of construction to further examine the radon exposure risks.

Figure 5 in Appendix A of this report provides a map of the investigated geological hazards and constraints. Based on the information provided in this section, our professional opinion is that the project site is not subject to any geologic hazards that preclude or significantly hinder the proposed development. Any existing geological hazards or constraints at the site can be mitigated with common engineering designs and construction methods.

## 4.5 PAVEMENT DESIGN RECOMMENDATIONS

Following site preparation as previously recommended, the pavements can be grade supported on approved existing soils or properly placed structural soil fill that has been approved by the geotechnical engineer. We have provided recommendations for both flexible and rigid pavement types for your consideration.

*4.5.1 Flexible Pavement Design*

El Paso County's Engineering Criteria Manual (ECM) minimum acceptable pavement sections and AASHTO flexible pavement design methods have been utilized for pavement recommendations. Our recommendations are based on the assumption that the subgrade has been properly prepared as described previously, which will require subgrade stabilization to improve support conditions at this site. Based on our experience with similar developments, we recommend the following pavement sections for the private roads managed by the owner and aprons connecting to public roads:

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Table 4 - Flexible Pavement Recommendations

| Pavement Materials | Private Development Roads (inches) | Aprons (inches) |
|---|---|---|
| Bituminous Asphalt Surface Mix (Asphalt mix Grading SX / Binder PG 64-22) | 1.5 | 4.0 |
| Bituminous Asphalt Base Mix (Asphalt mix Grading S / Binder PG 58-28) | 2.0 | - |
| Aggregate Base Course (ABC) | 6.0 | 8.0 |

We recommend an aggregate base course equivalent to a Class 6 aggregate in accordance with El Paso County Engineering Criteria Manual (ECM), Table D-6, Aggregate Base Course Materials. The bituminous asphalt pavement surface mix and binder mix thickness should comply with all of the El Paso County and Pikes Peak Region Asphalt Paving Specifications. Compaction requirements for the crushed aggregate base and the bituminous asphalt pavement should generally follow the El Paso County ECM.

*4.5.2 Rigid Pavement Design*

El Paso County's ECM minimum acceptable pavement sections and AASHTO rigid pavement design methods have been utilized for the rigid pavement recommendations. In areas of trash dumpster pads or areas where large trucks will traverse, we recommend the use of a concrete pavement section. Our recommendations are based on the assumption that the subgrade has been properly prepared. Based on our experience with similar developments, we recommend the following rigid pavement sections:

*Table 5 - Rigid Pavement Recommendations*

| Pavement Materials | Private Development Roads – Heavy Load Areas (inches) | Aprons (inches) |
|---|---|---|
| 4,000 psi Type I Concrete | 8.0 | 6.0 |
| Compacted Crushed Aggregate Base | 6.0 | 8.0 |

Concrete should be reinforced with welded wire fabric or reinforcing bars to assist in controlling cracking from drying shrinkage and thermal changes. Sawed or formed control joints should be included for every 225 square feet of area or less (15 feet by 15 feet). Saw cuts should not cut through the welded wire fabric or reinforcing steel, and dowels should be utilized at formed and/or cold joints.

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*4.5.3 General*

Our recommendations are based upon the assumption that the subgrade has been properly prepared as described in previous sections and that if used, off-site soil borrow to be used to backfill to the final subgrade meets the requirements of the structural fill section.

The paved areas should be constructed with positive drainage to direct water off-site and to minimize surface water seeping into the pavement subgrade. The subgrade should have a minimum slope of 1 percent. In downgrade areas, the basestone should extend through the slope to allow water entering the basestone to exit.

We understand that budgetary considerations sometimes warrant thinner pavement sections than those presented. However, the client, owner, and project designers should be aware that thinner pavement sections may result in increased maintenance costs and lower-than-anticipated pavement life. If thinner pavement sections are warranted, alternate reinforced pavement sections can be considered, including the use of geogrid reinforcement.

## 4.6 LATERAL EARTH PRESSURES

For the design of cast-in-place concrete retaining walls, we have provided equivalent fluid pressures for two backfill conditions for cantilever-type walls. These are 1) active earth pressure for granular backfill (clean sand or gravel) and 2) at-rest earth pressure for granular backfill. The equivalent fluid pressures provided have assumed a level backfill and a wall with a vertical face. The designer should confirm other aspects of the retaining wall design, including an evaluation of local and global stability with respect to the proposed walls and site design.

The provided parameters should not be used for the design of other wall types, such as walls that will retain in-situ materials. Alternative wall types, such as mechanically stabilized earth (MSE), soldier pile, or others, should be designed by a specialty contractor or proprietary wall manufacturer. No other information has been provided at this time regarding the use of retaining walls.

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Condition 1 - The active earth pressure for granular backfill will result in an equivalent fluid pressure of 35 pounds per cubic foot (pcf). If the granular backfill is to develop active earth pressure conditions, walls must be flexible and/or free to rotate or translate at the top approximately one inch laterally for every 20 feet of wall height.

Condition 2 - The at-rest earth pressure for granular backfill will result in an equivalent fluid pressure of 55 pcf. For retaining walls that will not rotate or translate, such as building walls or other walls rigidly connected to structures, at-rest conditions will develop.

In each case, forces from surcharge loading, including sloping backfill, should be added to the equivalent fluid pressures. The walls should be properly drained to remove water, or hydrostatic pressure should be added to the design pressure.

The wedge of clean aggregate backfill should have a minimum width of 1 foot at the base of the wall or the width of the footing heel, whichever is greater, and increase in width a minimum of 0.6 feet per foot of wall height. The aggregate should be fully encapsulated with a properly designed geotextile (filter fabric) to prevent the migration of the adjacent soils into the aggregate. Aggregate placed behind the retaining wall should be placed in accordance with the compaction recommendations of this report. However, we caution that operating compaction equipment directly behind the wall can create lateral earth pressures far in excess of those recommended for the design. Therefore, we recommend using hand-operated, smaller compaction equipment in non-vibratory modes within 5 feet of the front of the wall.

For rigid, cast-in-place concrete walls, an ultimate friction factor of 0.35 between foundation concrete and the bearing soils may be used when evaluating friction. Also, an ultimate passive earth pressure resistance of well-compacted soil fill can be approximated by a uniformly acting resistance of 1,000 psf. However, to limit deformation when relying on passive strength, we recommend using a minimum safety factor of 3.0 applied to the ultimate passive resistance value.

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### 4.7 CORROSION POTENTIAL

The water-soluble sulfate content of the soil samples selected for laboratory testing ranged from approximately 0.00 to 0.01, which indicates low (S0) sulfate exposure. Based on the results of our laboratory testing, a review of the Design and Control of Concrete Mixtures published by the Portland Cement Association (PCA), and our experience, Cement type I, general-use Portland cement, may be used for concrete embedded in soils similar to those tested at this site.

Resistivity testing performed on the selected samples obtained from select borings across the site resulted in values ranging between 3530 and 13900 ohm-cm. Additionally, pH values ranged between 6.68 and 7.12. Soil resistivity values below 2,000 ohm-cm generally indicate corrosive soils, while soils with resistivity values over 10,000 ohm-cm are considered non-corrosive. The soils with resistivity values between the two mentioned thresholds are generally considered mild to moderately corrosive. Non-metallic pipes (e.g., PVC or HDPE) are generally recommended for use in soils with mild to moderate corrosivity. If metallic pipes are required, an AWWA coating should be applied, and a cathodic protection system should be designed per AMPP/NACE practice. Ductile iron pipes must be encased in polyethylene encasement protection per AWWA C105, evaluated using DIPRA's DDM, and tested, including dielectric isolation and holiday testing. Moreover, pH values below 5 or above 9 indicate an acidic or alkaline environment, where generally properly coated ductile iron pipes are recommended. Additionally, non-corrosive backfill shall be used in contact with all metallic appurtenances.

## 5.0 LIMITATIONS

This report has been prepared in accordance with generally accepted geotechnical engineering practice for the specific application to this project. This report is for our geotechnical work only, and no environmental assessment efforts have been performed. The conclusions and preliminary recommendations contained in this report are based upon applicable standards of our practice in this geographic area at the time this report was prepared. No other warranty, express or implied, is made. At this time, it will be necessary to submit supplementary recommendations and perform additional explorations to provide design-level recommendations.

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The analyses and recommendations submitted herein are based, in part, upon the data obtained from the exploration. The nature and extent of variations between the borings will not become evident until construction. If variations appear evident, then we will re-evaluate the recommendations of this report. In the event that any changes in the nature, design, or location of the structures are planned, the conclusions and recommendations contained in this report will not be considered valid unless the changes are reviewed and the conclusions modified or verified in writing.

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# Appendices




VALLEYSHORE ENGINEERING

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# Appendices

## Appendix A

Figures, General Notes, & Boring Logs




VALLEYSHORE ENGINEERING

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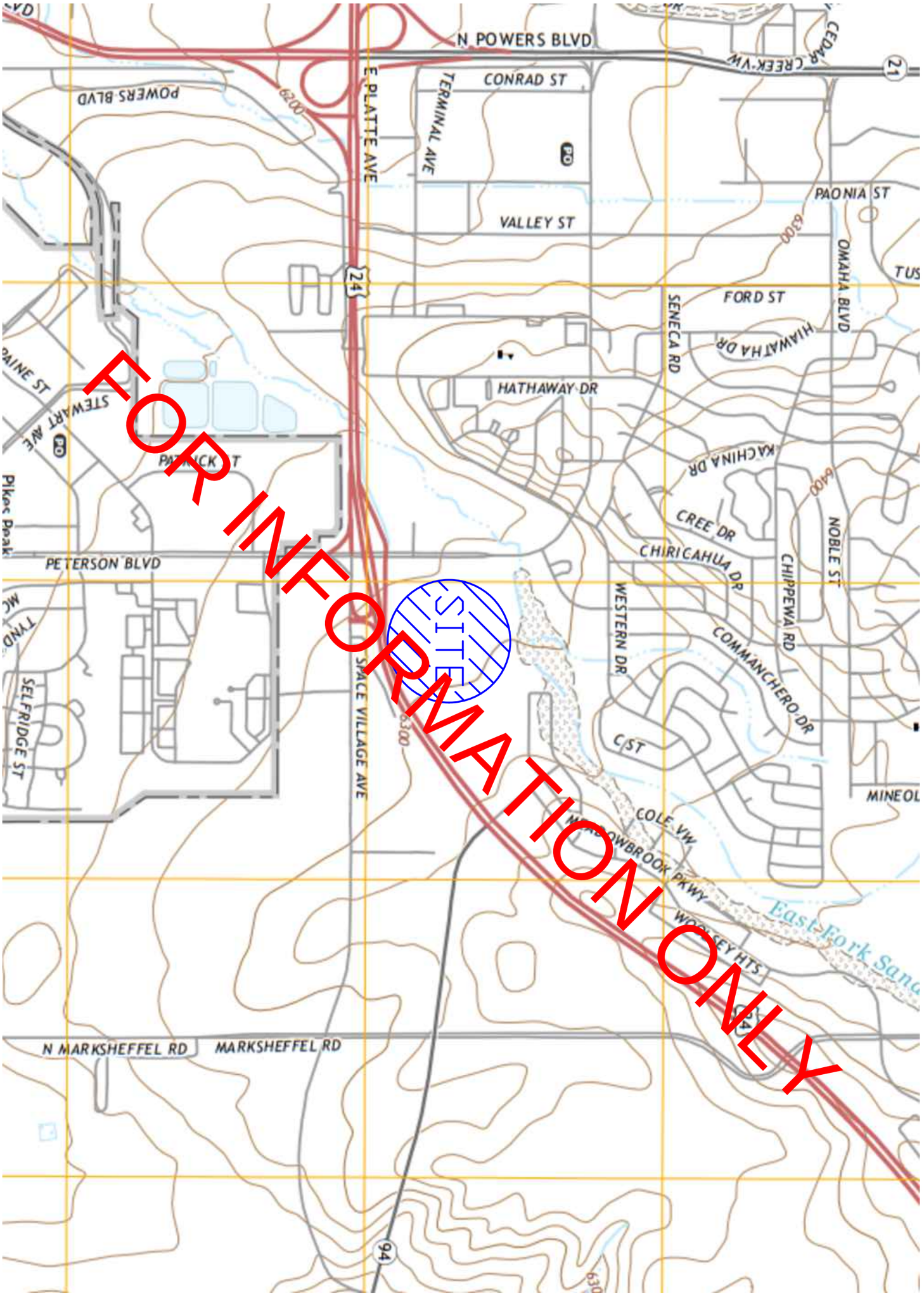



FIGURE NO.: 1

PROJECT NO.: 231348
DRAWN BY: JPA
APPROVED BY: TBW
SCALE: NTS
DATE: 10/1/2025

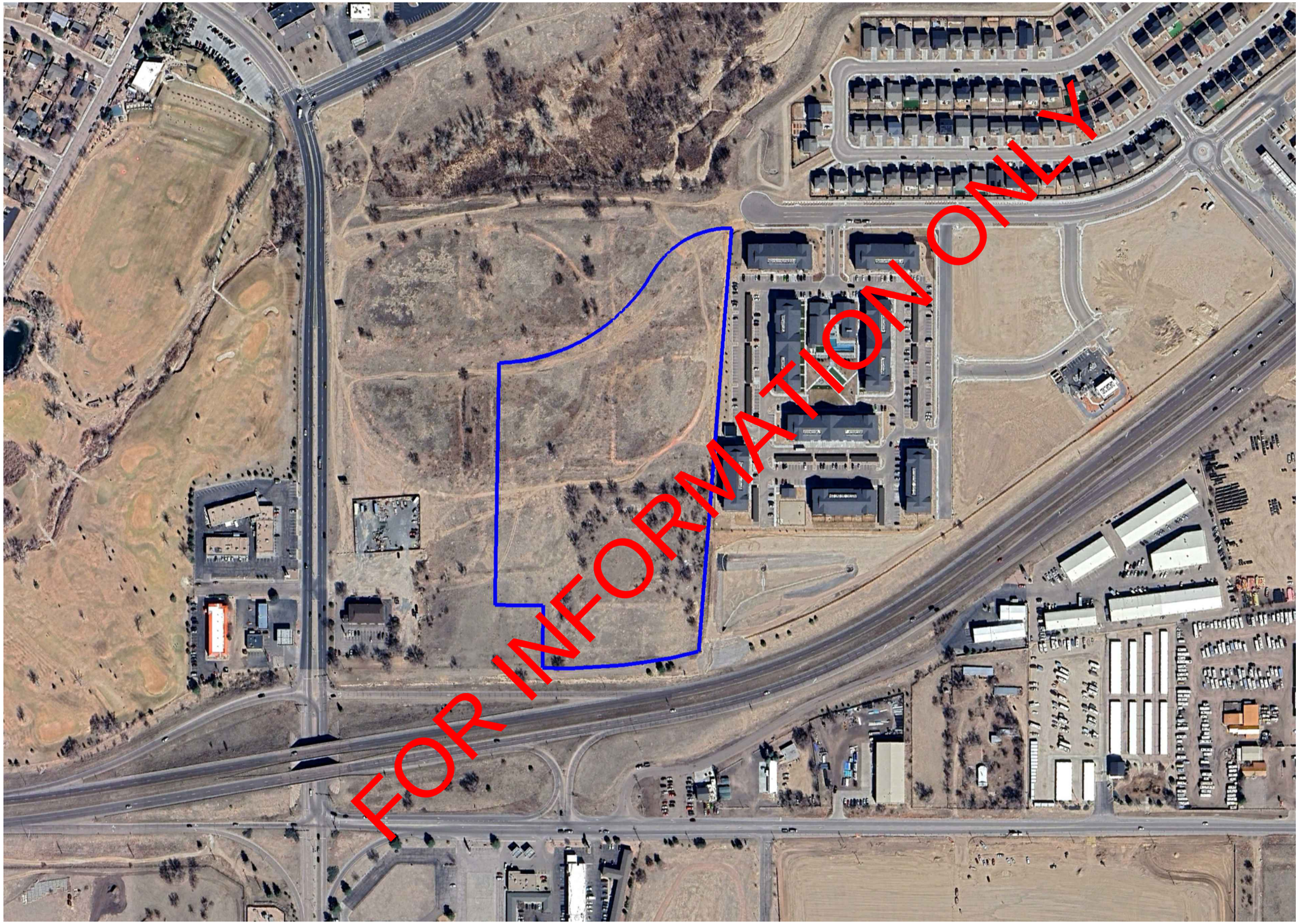
NOTES:
1) BASE MAP: USGS QUADRANGLE - 2022 ELSMERE, CO

PROJECT:
HILLPOINTE DEVELOPMENT
PETERSON ROAD
COLORADO SPRINGS, CO

SITE LOCATION PLAN

N

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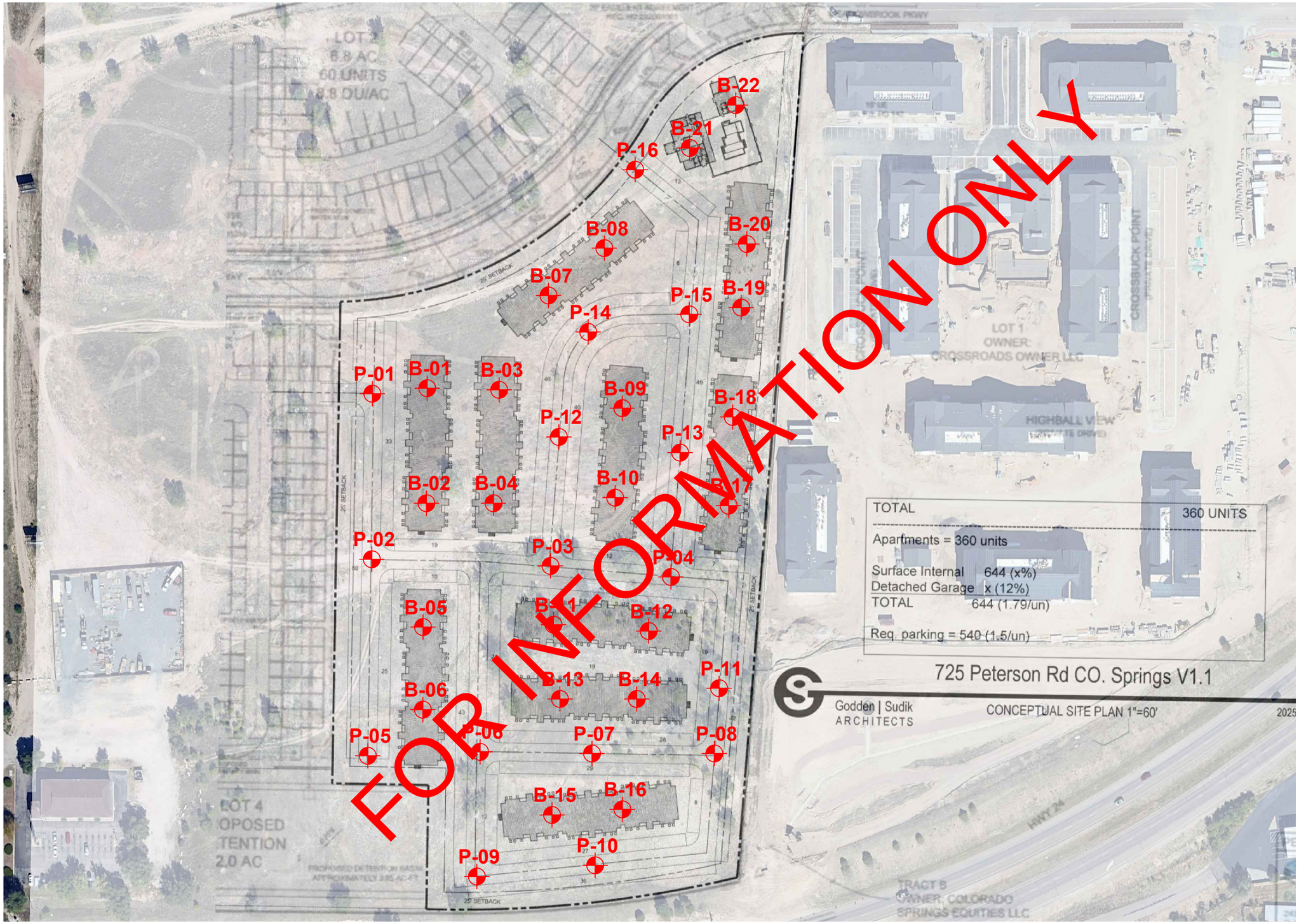
# AERIAL SITE BOUNDARY MAP

PROJECT:
HILLPOINTE DEVELOPMENT
PETERSON ROAD
COLORADO SPRINGS, CO

NOTES:
1.) BASE MAP GOOGLE EARTH: IMAGE CIRCA 2025

| | |
|---|---|
| PROJECT NO.: | 231348 |
| DRAWN BY: | JPA |
| APPROVED BY: | TBW |
| SCALE: | NTS |
| DATE: | 10/1/2025 |

FIGURE NO.: 2




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# BORING LOCATION PLAN

PROJECT:
HILLPOINTE DEVELOPMENT
PETERSON ROAD
COLORADO SPRINGS, CO

NOTES:
1.) BORING LOCATIONS ARE SHOWN IN GENERAL ARRANGEMENT.
2.) DO NOT USE BORING LOCATIONS FOR DETERMINATIONS OF DISTANCES OR QUANTITIES.
3.) BASE MAP PROVIDED BY: GODDEN–SUDIK ARCHITECTS
◆ LOCATION OF SOIL TEST BORINGS

| | |
|---|---|
| PROJECT NO.: | 231348 |
| DRAWN BY: | JPA |
| APPROVED BY: | TBW |
| SCALE: | NTS |
| DATE: | 10/1/2025 |

FIGURE NO.: 3




| Map Unit Symbol | Soil Type | Natural Drainage | Hydrologic Rating | Stratigraphy (in.) | Stratigraphy |
|---|---|---|---|---|---|
| 8 | Blakeland Loamy Sand | Somewhat Excessively Drained | A | 0-27, 27-60 | Loamy Sand, Sand |
| 10 | Blendon Sandy Loam | Well Drained | B | 0-36, 36-60 | Sandy Loam, Gravelly Sandy Loam |

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# SOIL TYPE DESCRIPTION MAP

PROJECT:
HILLPOINTE DEVELOPMENT
PETERSON ROAD
COLORADO SPRINGS, CO

NOTES:
1.) BASE MAP: NATURAL RESOURCES CONVERSATION SERVICE: IMAGE CIRCA 2023

| | |
|---|---|
| PROJECT NO.: | 231348 |
| DRAWN BY: | JPA |
| APPROVED BY: | TBW |
| SCALE: | NTS |
| DATE: | 10/1/2025 |

FIGURE NO.: 4




GEOLOGICAL HAZARDS DISCUSSION:

CLOSEST FAULT: RAMPART RANGE FAULT ~ 9 MILES WEST

LIQUEFACTION POTENTIAL: NOT PRESENT BASED ON THE RESULTS OF OUR EXPLORATION

LANDSLIDES, UNSTABLE SLOPES, ROCKFALLS, AND AVALANCHES: NONE NOTED ON THE COLORADO LANDSLIDE INVENTORY AND THE LANDSLIDE INVENTORY OF EL PASO COUNTY DATABASES. THE SITE IS NOT SUBJECT TO ROCKFALLS AND AVALANCHES DUE TO ITS DISTANCE FROM THE NEARBY MOUNTAINS.

FLOODING, MUDFLOWS, AND DEBRIS FLOWS: NOT IN FLOOD ZONE PER COLORADO WATER CONSERVATION BOARD'S COLORADO HAZARD MAPPING & RISK MAP PORTAL AND FEMA FLOOD MAP PANEL 08041C0754G (SHOWN HERE). NOT SUSCEPTIBLE TO DEBRIS FLOW OR MUDFLOW PER THE DEBRIS-FLOW SUSCEPTIBILITY MAPPING OF SELECT COLORADO COUNTIES DATABASE AND CGS OPEN-FILE REPORT 18-11 "DEBRIS FLOW SUSCEPTIBILITY MAP OF EL PASO COUNTY, COLORADO" (2018) BY KEVIN M. MCCOY, MATTHEW L. MORGAN, AND KAREN A. BERRY.

SUBSIDENCE AND ABANDONED MINES OR LANDFILLS: NONE FOUND BASED ON APRIL 1985 "COLORADO SPRINGS SUBSIDENCE INVESTIGATION" BY DAMES & MOORE FOR THE STATE OF COLORADO'S DIVISION OF MINE RECLAMATION, COLORADO HISTORIC COAL MINES DATABASE, AND THE SITE'S HISTORICAL AERIAL PHOTOGRAPHY.

EXPANSIVE, COLLAPSIBLE, AND COMPRESSIBLE SOILS AND ROCK: SITE MAY BE SUSCEPTIBLE TO COLLAPSE POTENTIAL PER THE COLLAPSIBLE SOILS OF COLORADO DATABASE. DUNE AND SHEET SAND DEPOSITS.

SHALLOW GROUNDWATER TABLE AND BEDROCK: NOT ENCOUNTERED. NOT IN STEEPLY DIPPING BEDROCK PER CGS MAPPING (HIMMELREICH AND NOE, 1999).

RADIOACTIVITY AND RADON EXPOSURE: SIMILAR TO NEARBY SITES WITH POSSIBLE EXPOSURE TO RADON.

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# GEOLOGICAL HAZARDS MAP

PROJECT:
HILLPOINTE DEVELOPMENT
PETERSON ROAD
COLORADO SPRINGS, CO

NOTES:

| | |
|---|---|
| PROJECT NO.: | 231348 |
| DRAWN BY: | SAM |
| APPROVED BY: | TBW |
| SCALE: | NTS |
| DATE: | 07/16/2026 |

FIGURE NO.: 5

# GENERAL NOTES

## FINE AND COARSE GRAINED SOIL PROPERTIES

### PARTICLE SIZE

| | |
|---|---|
| BOULDERS: | GREATER THAN 300 mm |
| COBBLES: | 75 mm to 300 mm |
| GRAVEL: | 4.74 mm to 75 mm |
| COARSE SAND: | 2 mm to 4.74 mm |
| MEDIUM SAND: | 0.425 mm to 2 mm |
| FINE SAND: | 0.075 mm to 0.425 mm |
| SILTS & CLAYS: | LESS THAN 0.075 mm |

### COARSE GRAINED SOILS (SANDS & GRAVELS)

| N-VALUE | RELATIVE DENSITY |
|---|---|
| 0 - 4 | VERY LOOSE |
| 5 - 10 | LOOSE |
| 11 - 30 | MEDIUM DENSE |
| 31 - 50 | DENSE |
| OVER 50 | VERY DENSE |

### FINE GRAINED SOILS (SILTS & CLAYS)

| N-VALUE | CONSISTENCY | Qu, PSF |
|---|---|---|
| 0 - 2 | VERY SOFT | 0 - 500 |
| 3 - 4 | SOFT | 500 - 1000 |
| 5 - 8 | FIRM | 1000 - 2000 |
| 9 - 15 | STIFF | 2000 - 4000 |
| 16 - 30 | VERY STIFF | 4000 - 8000 |
| OVER 31 | HARD | 8000 + |

## STANDARD PENETRATION TEST (ASTM D1586)

THE STANDARD PENETRATION TEST AS DEFINED BY ASTM D1586 IS A METHOD TO OBTAIN A DISTURBED SOIL SAMPLE FOR EXAMINATION AND TESTING AND TO OBTAIN RELATIVE DENSITY AND CONSISTENCY INFORMATON. THE 1.4 INCH I.D./2.0 INCH O.D. SAMPLER IS DRIVEN 3-SIX INCH INCREMENTS WITH A 140 LB. HAMMER FALLING 30 INCHES. THE BLOW COUNTS REQUIRED TO DRIVE THE SAMPLER THE FINAL 2 INCREMENTS ARE ADDED TOGETHER AND DESIGNATED THE N-VALUE. AT TIMES, THE SAMPLER CAN NOT BE DRIVEN THE FULL 18 INCHES. THE FOLLOWING REPRESENTS OUR INTERPRETATION OF THE STANDARD PENETRATION TEST WITH VARIATIONS.

| BLOWS/FOOT (N-VALUE) | DESCRIPTION |
|---|---|
| 25 | 25 BLOWS DROVE SAMPLER 12" AFTER INITIAL 6" SEATING |
| 75/10" | 75 BLOWS DROVE SAMPLER 10" AFTER INITIAL 6" SEATING |
| 50/PR | PENETRATION REFUSAL OF SAMPLER AFTER INITIAL 6" SEATING |

## SAMPLING SYMBOLS

| | |
|---|---|
| ST: | UNDISTURBED SAMPLE |
| SS: | SPLIT SPOON SAMPLE |
| CORE: | ROCK CORE SAMPLE |
| AU: | AUGER OR BAG SAMPLE |

## SOIL PROPERTY SYMBOLS

| | |
|---|---|
| N: | STANDARD PENETRATION, BPF |
| M: | MOISTURE CONTENT % |
| LL: | LIQUID LIMIT % |
| PI: | PLASTICITY INDEX % |
| Qp: | POCKET PENETROMETER VALUE, TSF |
| Qu: | UNCONFINED COMPRESSIVE STRENGTH, TSF |
| DUW: | DRY UNIT WEIGHT, PCF |

## ROCK PROPERTIES

### ROCK QUALITY DESIGNATION (RQD)

| PERCENT | QUALITY |
|---|---|
| 90 TO 100 | EXCELLENT |
| 75 TO 90 | GOOD |
| 50 TO 75 | FAIR |
| 25 TO 50 | POOR |
| 0 TO 25 | VERY POOR |

### ROCK HARDNESS

| | |
|---|---|
| VERY SOFT: | ROCK DISINTEGRATES OR EASILY COMPRESSES TO TOUCH: CAN BE HARD TO VERY HARD SOIL. |
| SOFT: | ROCK IS COHERANT BUT BREAKS EASILY TO THUMB PRESSURE AT SHARP EDGES AND CRUMBLES WITH FIRM HAND PRESSURE. |
| MODERATELY HARD: | SMALL PIECES CAN BE BROKEN OFF ALONG SHARP EDGES BY CONSIDERABLE HARD THUMB PRESSURE: CAN BE BROKEN BY LIGHT HAMMER BLOWS. |
| HARD: | ROCK CAN NOT BE BROKEN BY THUMB PRESSURE, BUT CAN BE BROKEN BY MODERATE HAMMER BLOWS. |
| VERY HARD: | ROCK CAN BE BROKEN BY HEAVY HAMMER BLOWS. |

FOR INFORMATION ONLY

VALLEYSHORE ENGINEERING

Project: **HP Peterson Road**
Project Location: **Colorado Springs, Colorado**
Project Number: **231348**

VALLEYSHORE ENGINEERING

# Boring Log Legend

**Sheet 1 of 1**

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |

## COLUMN DESCRIPTIONS

1. Depth (feet): Depth in feet below the ground surface.
2. Graphic Log: Graphic depiction of the subsurface material encountered.
3. Soil Classification: Type of material encountered.
4. MATERIAL DESCRIPTION: Description of material encountered. May include consistency, moisture, color, and other descriptive text.
5. Sample Type: Type of soil sample collected at the depth interval shown.
6. Sample Number: Sample identification number.
7. Sampling Resistance, blows/ft: Number of blows to advance driven sampler one foot (or distance shown) beyond seating interval using the hammer identified on the boring log.
8. REMARKS AND OTHER TESTS: Comments and observations regarding drilling or sampling made by driller or field personnel.

## FIELD AND LABORATORY TEST ABBREVIATIONS

ESHGWT: Estimated Seasonal High Groundwater Table
COMP: Compaction test
CONS: One-dimensional consolidation test
LL: Liquid Limit, percent
PI: Plasticity Index, percent
SA: Sieve analysis (percent passing No. 200 Sieve)
UC: Unconfined compressive strength test, Qu, in ksf
WA: Wash sieve (percent passing No. 200 Sieve)

## MATERIAL GRAPHIC SYMBOLS

- Fat CLAY, CLAY w/SAND, SANDY CLAY (CH)
- Lean CLAY, CLAY w/SAND, SANDY CLAY (CL)
- Clayey SAND (SC)
- Silty SAND (SM)
- Poorly graded SAND (SP)
- Topsoil

## TYPICAL SAMPLER GRAPHIC SYMBOLS

- 2-inch-OD unlined split spoon (SPT)

## OTHER GRAPHIC SYMBOLS

- Water level (at time of drilling, ATD)
- Water level (after waiting, AW)
- Minor change in material properties within a stratum
- Inferred/gradational contact between strata
- Queried contact between strata

## GENERAL NOTES

1: Soil classifications are based on the Unified Soil Classification System. Descriptions and stratum lines are interpretive, and actual lithologic changes may be gradual. Field descriptions may have been modified to reflect results of lab tests.
2: Descriptions on these logs apply only at the specific boring locations and at the time the borings were advanced. They are not warranted to be representative of subsurface conditions at other locations or times.

FOR INFORMATION ONLY

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-01<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with roots and clay - brown and dark brown - slightly moist - medium dense (ALLUVIAL) | | | | |
| | | | | | 1 | 6-10-9 (19) | |
| | | | | | 2 | 8-8-9 (17) | |
| 5 | | | | | 3 | 5-10-8 (18) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - light brown, tan, and brown - moist to very moist - medium dense to dense (ALLUVIAL) | | 4 | 8-6-11 (17) | |
| 10 | | | | | | | |
| 15 | | | | | 5 | 11-10-8 (18) | |
| | | | | | 6 | 14-16-19 (35) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-02<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with roots and clay - dark brown - slightly moist - medium dense (ALLUVIAL) | | 1 | 7-10-9 (19) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - light brown and tan - dry - medium dense (ALLUVIAL) | | 2 | 7-13-15 (28) | |
| 5 | | | | | 3 | 3-8-11 (19) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, light gray, dark brown, and reddish brown - slightly moist to moist - medium dense (ALLUVIAL) | | 4 | 5-10-10 (20) | |
| 10 | | | | | | | |
| 15 | | | | | 5 | 7-6-12 (18) | |
| | | | | | 6 | 9-10-12 (22) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-03<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/8/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with pebbles - brown and tan - dry - loose (ALLUVIAL) | | 1 | 5-4-4 (8) | |
| | | | | | 2 | 5-5-5 (10) | |
| 5 | | SC | Clayey Sand (SC) - with silt - light brown, light gray, and gray - dry - medium dense (ALLUVIAL) | | 3 | 4-5-9 (14) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, light gray, tan, and reddish brown - slightly moist to moist - medium dense to dense (ALLUVIAL) | | 4 | 12-12-14 (26) | |
| 10 | | | | | | | |
| 15 | | | | | 5 | 8-8-8 (16) | |
| | | | | | 6 | 14-15-16 (31) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-04<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with roots and clay - dark brown - slightly moist - medium dense (ALLUVIAL) | | 1 | 5-7-8 (15) | |
| | | SC | Clayey Sand (SC) - with silt - dark gray, dark brown, brown, and tan - dry - loose to medium dense (ALLUVIAL) | | 2 | 5-5-5 (10) | |
| 5 | | | | | 3 | 6-12-18 (30) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, light gray, tan, and orangish brown - moist - medium dense to dense (ALLUVIAL) | | 4 | 10-13-15 (28) | |
| 10 | | | | | | | |
| 15 | | | | | 5 | 8-8-10 (18) | |
| | | | | | 6 | 9-16-18 (34) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-05<br>**Sheet 1 of 1** |
|---|---|---|

| | | |
|---|---|---|
| Date(s) Drilled **9/8/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 3 inch | | | | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown and dark brown - slightly moist to moist - medium dense (ALLUVIAL) | | 1 | 5-7-8 (15) | |
| | | | | | 2 | 3-4-7 (11) | |
| 5 | | | | | 3 | 7-7-8 (15) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - light brown, tan, and brown - moist to very moist - medium dense to dense (ALLUVIAL) | | 4 | 8-11-13 (24) | |
| 10 | | | | | | | |
| | | | | | 5 | 18-20-17 (37) | |
| 15 | | | | | | | |
| | | | | | 6 | 9-10-9 (19) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-06<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 5 inch | | | | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, and tan - slightly moist to moist - medium dense to very loose (ALLUVIAL) | | 1 | 6-7-8 (15) | |
| | | | | | 2 | 0-0-1 (1) | |
| 5 | | | | | 3 | 5-8-11 (19) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, orangish brown, tan, reddish brown, white, and gray - moist to very moist - loose to medium dense (ALLUVIAL) | | 4 | 4-4-6 (10) | |
| 10 | | | | | | | |
| 15 | | | | | 5 | 6-13-16 (29) | |
| | | | | | 6 | 7-12-13 (25) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-07<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with clay and roots - dark brown - slightly moist - medium dense (ALLUVIAL) | | 1 | 7-5-8 (13) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, and tan - slightly moist to moist - loose to medium dense (ALLUVIAL) | | 2 | 3-6-3 (9) | |
| 5 | | | | | 3 | 2-3-4 (7) | |
| | | | | | 4 | 8-8-12 (20) | |
| 10 | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, orangish brown, tan, reddish brown, and gray - moist - dense (ALLUVIAL) | | 5 | 12-14-19 (33) | |
| 15 | | | | | 6 | 15-20-19 (39) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-08<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/8/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 7 inch | | | | |
| | | SM | Silty Sand (SM) - with roots and clay - dark brown - slightly moist - medium dense (ALLUVIAL) | | 1 | 5-7-6 (13) | |
| 5 | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, and tan - dry - very loose (ALLUVIAL) | | 2 | 1-2-1 (3) | |
| | | CL | Sandy Lean Clay (CL) - with silt - dark gray, gray, and brown - slightly moist - stiff (ALLUVIAL) | | 3 | 2-4-8 (12) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, light gray, and tan - moist - medium dense to dense (ALLUVIAL) | | 4 | 8-10-9 (19) | |
| 10 | | | | | | | |
| 15 | | | | | 5 | 11-13-15 (28) | |
| | | | | | 6 | 13-18-22 (40) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-09<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

FOR INFORMATION ONLY

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 1 foot | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - dry - medium dense (ALLUVIAL) | | 1 | 5-6-6 (12) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, light gray, and tan - slightly moist to moist - loose to medium dense (ALLUVIAL) | | 2 | 2-2-3 (5) | |
| 5 | | | | | 3 | 3-4-7 (11) | |
| | | | | | 4 | 6-10-13 (23) | |
| 10 | | | | | | | |
| | | | | | 5 | 11-14-13 (27) | |
| 15 | | | | | | | |
| | | CL | Lean Clay (CL) - with silt - gray, dark gray, and light brown - moist - firm (ALLUVIAL) | | 6 | 4-3-3 (6) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-10<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/8/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 6 inch | | | | |
| | | SM | Silty Sand (SM) - with clay and roots - dark brown - slightly moist - medium dense (ALLUVIAL) | | 1 | 8-7-6 (13) | |
| | | SP | Fine Sand (SP) - with silt and clay - brown - slightly moist - loose (ALLUVIAL) | | 2 | 3-4-5 (9) | |
| 5 | | SP | Fine Sand (SP) - with silt and pebbles - brown and light brown - moist - loose (ALLUVIAL) | | 3 | 4-3-5 (8) | |
| | | SM | Silty Sand (SM) - with clay, iron staining and pebbles - brown, dark brown, dark gray, and reddish brown - moist - medium dense (ALLUVIAL) | | 4 | 3-9-12 (21) | |
| 10 | | SP | Fine Sand (SP) - with silt and pebbles - light brown - moist - medium dense (ALLUVIAL) | | 5 | 13-15-15 (30) | |
| 15 | | | | | | | |
| | | | | | 6 | 11-11-14 (25) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-11<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 7 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - slightly moist - loose (ALLUVIAL) | | 1 | 3-3-3 (6) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - dark brown and dark gray - slightly moist to moist - loose to dense (ALLUVIAL) | | 2 | 3-3-3 (6) | |
| 5 | | | | | 3 | 4-7-11 (18) | |
| | | | | | 4 | 14-15-16 (31) | |
| 10 | | SP | Fine Sand (SP) - with silt and pebbles - light brown - moist - medium dense (ALLUVIAL) | | 5 | 10-11-13 (24) | |
| 15 | | | | | 6 | 8-9-13 (22) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-12<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - slightly moist - loose (ALLUVIAL) | | 1 | 3-4-3 (7) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, tan, and light gray - slightly moist to moist - loose to medium dense (ALLUVIAL) | | 2 | 4-3-2 (5) | |
| 5 | | | | | 3 | 7-10-11 (21) | |
| | | | | | 4 | 14-12-11 (23) | |
| 10 | | | | | | | |
| | | | | | 5 | 11-11-13 (24) | |
| 15 | | | | | | | |
| | | | | | 6 | 11-14-15 (29) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-13<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/8/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 6 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - slightly moist - loose (ALLUVIAL) | | 1 | 4-3-4 (7) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, tan, gray, and reddish brown - slightly moist to moist - medium dense (ALLUVIAL) | | 2 | 8-14-15 (29) | |
| 5 | | | | | 3 | 1-13-17 (30) | |
| | | | | | 4 | 10-10-14 (24) | |
| 10 | | | | | | | |
| | | | | | 5 | 8-10-12 (22) | |
| 15 | | | | | | | |
| | | | | | 6 | 11-14-15 (29) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-14<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 7 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - slightly moist - loose (ALLUVIAL) | | 1 | 3-3-4 (7) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, and tan - slightly moist to moist - loose to medium dense (ALLUVIAL) | | 2 | 3-2-5 (7) | |
| 5 | | | | | 3 | 6-5-14 (19) | |
| | | | | | 4 | 10-13-15 (28) | |
| 10 | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, tan, and gray - moist - medium dense (ALLUVIAL) | | 5 | 12-13-14 (27) | |
| 15 | | | | | | | |
| | | | | | 6 | 9-11-13 (24) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-15<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 6 inch | | | | |
| | | SM | Silty Sand (SM) - with clay and roots - dark brown, brown, and tan - slightly moist - medium dense (ALLUVIAL) | | 1 | 3-5-6 (11) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, reddish brown, and tan - slightly moist to moist - medium dense (ALLUVIAL) | | 2 | 4-5-12 (17) | |
| 5 | | | | | 3 | 11-11-14 (25) | |
| | | | | | 4 | 9-13-15 (28) | |
| 10 | | | | | | | |
| | | | | | 5 | 11-12-12 (24) | |
| 15 | | | | | | | |
| | | | | | 6 | 10-11-13 (24) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-16<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/8/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|
| 0 | Topsoil | Topsoil - 8 inch | | | | |
| | SM | Fine Sand (SP) - with silt and pebbles - brown, dark brown, tan, reddish brown, and gray - slightly moist - loose (ALLUVIAL) | | 1 | 3-3-3 (6) | |
| 5 | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, tan, reddish brown, and gray - slightly moist - loose to medium dense (ALLUVIAL) | | 2 | 3-3-4 (7) | |
| | | | | 3 | 5-7-14 (21) | |
| 10 | SP | Fine Sand (SP) - with clay, silt, and pebbles - brown, dark brown, orangish brown, tan, reddish brown, and gray - moist - medium dense (ALLUVIAL) | | 4 | 13-15-15 (30) | |
| 15 | SP | Fine Sand (SP) - with silt and pebbles - brown, tan, reddish brown, and gray - moist - dense to medium dense (ALLUVIAL) | | 5 | 12-15-16 (31) | |
| | | | | 6 | 7-13-15 (28) | |
| 20 | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-17<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - slightly moist - very loose (ALLUVIAL) | | 1 | 2-2-2 (4) | |
| | | SM | Silty Sand (SM) - light brown - dry - loose (ALLUVIAL) | | 2 | 2-2-3 (5) | |
| 5 | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, and tan - slightly moist to moist - medium dense (ALLUVIAL) | | 3 | 7-8-11 (19) | |
| | | | | | 4 | 12-13-15 (28) | |
| 10 | | | | | | | |
| 15 | | | | | 5 | 9-12-14 (26) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, tan, reddish brown, and gray - very moist - medium dense (ALLUVIAL) | | 6 | 10-12-14 (26) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-18<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/8/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 7 inch | | | | |
| | | SM | Silty Sand (SM) - light brown and tan - dry - medium dense (ALLUVIAL) | | 1 | 5-6-7 (13) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, gray, and tan - slightly moist to moist - medium dense (ALLUVIAL) | | 2 | 5-12-15 (27) | |
| 5 | | | | | 3 | 4-12-13 (25) | |
| | | | | | 4 | 12-12-14 (26) | |
| 10 | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, orangish brown, tan, reddish brown, and gray - moist to very moist - medium dense to dense (ALLUVIAL) | | 5 | 11-12-12 (24) | |
| 15 | | | | | 6 | 12-15-20 (35) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-19<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|
| 0 | Topsoil | Topsoil - 8 inch | | | | |
| | SM | Silty Sand (SM) - with clay and roots - dark brown and brown - dry - medium dense (ALLUVIAL) | | 1 | 4-4-7 (11) | |
| 5 | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, and tan - slightly moist - medium dense (ALLUVIAL) | | 2 | 9-11-12 (23) | |
| | SP | Fine Sand (SP) - with silt and pebbles - light brown, brown, and tan - slightly moist to moist - medium dense (ALLUVIAL) | | 3 | 3-15-15 (30) | |
| 10 | | | | 4 | 13-13-15 (28) | |
| 15 | | | | 5 | 5-9-12 (21) | |
| 20 | | | | 6 | 10-14-14 (28) | |
| | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-20<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/8/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 5 inch | | | | |
| | | SM | Silty Sand (SM) - with clay and roots - dark brown and brown - dry - medium dense (ALLUVIAL) | | 1 | 4-6-7 (13) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, gray, reddish brown, and tan - slightly moist - medium dense (ALLUVIAL) | | 2 | 5-7-9 (16) | |
| 5 | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, gray, reddish brown, and tan - moist - medium dense to dense (ALLUVIAL) | | 3 | 10-12-12 (24) | |
| | | | | | 4 | 10-13-18 (31) | |
| 10 | | | | | | | |
| | | | | | 5 | 11-12-14 (26) | |
| 15 | | | | | | | |
| | | | | | 6 | 11-14-16 (30) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-21<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 3 inch | | | | |
| | | SM | Silty Sand (SM) - with clay and pebbles - dark brown - slightly moist - loose (ALLUVIAL) | | 1 | 2-6-4 (10) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, and tan - moist - loose to medium dense (ALLUVIAL) | | 2 | 6-4-5 (9) | |
| 5 | | | | | 3 | 4-7-7 (14) | |
| | | CH | Fat Clay (CH) - with silt - dark gray and brown - moist - stiff (ALLUVIAL) | | 4 | 3-4-5 (9) | |
| 10 | | | | | | | |
| | | SP | Fine Sand (SP) - with silt, clay, and pebbles - dark brown, tan, and gray - very moist - medium dense (ALLUVIAL) | | 5 | 4-6-8 (14) | |
| 15 | | | | | | | |
| | | | | | 6 | 5-7-10 (17) | |
| 20 | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring B-22<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **20 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 10 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown and dark gray - slightly moist - loose (ALLUVIAL) | | 1 | 3-3-6 (9) | |
| 5 | | SM | Silty Sand (SM) - light brown and brown - slightly moist - very loose (ALLUVIAL) | | 2 | 2-2-1 (3) | |
| | | SC | Clayey Sand (SC) - with silt - dark gray and light brown - moist - medium dense (ALLUVIAL) | | 3 | 3-5-8 (13) | |
| 10 | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, tan, reddish brown and gray - moist - medium dense to dense (ALLUVIAL) | | 4 | 9-10-11 (21) | |
| 15 | | | | | 5 | 8-13-11 (24) | |
| 20 | | | | | 6 | 11-15-18 (33) | |
| | | | The borehole was terminated at 20 feet. | | | | |

FOR INFORMATION ONLY

| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-01<br>**Sheet 1 of 1** |
|---|---|---|

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 10 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown and dark gray - slightly moist - medium dense (ALLUVIAL) | | 1 | 8-11-13 (24) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - dark brown, dark gray, and tan - slightly moist - medium dense (ALLUVIAL) | | 2 | 7-6-7 (13) | |
| 5 | | SP | Fine Sand (SP) - with silt and pebbles - light brown, brown, and tan - moist - medium dense (ALLUVIAL) | | 3 | 6-6-7 (13) | |
| | | | | | 4 | 2-8-5 (13) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

FOR INFORMATION ONLY

| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-02<br>**Sheet 1 of 1** |
|---|---|---|

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 5 inch | | | | |
| | | SM | Silty Sand (SM) - with pebbles - dark brown - dry - loose (ALLUVIAL) | | 1 | 3-4-3 (7) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown and tan - slightly moist - medium dense (ALLUVIAL) | | 2 | 4-5-7 (12) | |
| 5 | | | | | 3 | 7-8-9 (17) | |
| | | SP | Fine Sand (SP) - with clay, silt, and pebbles - light brown and tan - moist - loose (ALLUVIAL) | | 4 | 2-2-3 (5) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

FOR INFORMATION ONLY

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-03<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

FOR INFORMATION ONLY

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 10 inch | | | | |
| | | SM | Silty Sand (SM) - with pebbles - dark brown - dry - loose (ALLUVIAL) | | 1 | 4-4-4 (8) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - light brown, light gray, and tan - slightly moist to moist - loose to medium dense (ALLUVIAL) | | 2 | 5-5-5 (10) | |
| 5 | | | | | 3 | 9-8-6 (14) | |
| | | | | | 4 | 11-12-16 (28) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-04<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - dry - medium dense (ALLUVIAL) | | 1 | 5-6-6 (12) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, and tan - slightly moist - medium dense (ALLUVIAL) | | 2 | 4-6-8 (14) | |
| 5 | | | | | 3 | 8-9-11 (20) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, orangish brown, tan, and reddish brown- moist - medium dense (ALLUVIAL) | | 4 | 10-11-14 (25) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

FOR INFORMATION ONLY

| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-05<br>**Sheet 1 of 1** |
|---|---|---|

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 5 inch | | | | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, gray, and tan - slightly moist to moist - medium dense (ALLUVIAL) | | 1 | 5-8-8 (16) | |
| | | | | | 2 | 8-10-10 (20) | |
| 5 | | | | | 3 | 7-6-8 (14) | |
| | | | | | 4 | 6-10-12 (22) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

FOR INFORMATION ONLY

| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-06<br>**Sheet 1 of 1** |
|---|---|---|

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 6 inch | | | | |
| | | SM | Silty Sand (SM) - with roots and pebbles - dark brown, brown, and tan - slightly moist - medium dense (ALLUVIAL) | | 1 | 6-5-8 (13) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, reddish brown, gray, and tan - slightly moist to moist - medium dense (ALLUVIAL) | | 2 | 6-8-7 (15) | |
| 5 | | | | | 3 | 7-8-6 (14) | |
| | | | | | 4 | 8-6-5 (11) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

FOR INFORMATION ONLY

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-07<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 5 inch | | | | |
| | | SM | Silty Sand (SM) - with roots and pebbles - dark brown brown, and tan - slightly moist - loose (ALLUVIAL) | | 1 | 3-3-3 (6) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, reddish brown, and tan - slightly moist to moist - loose to dense (ALLUVIAL) | | 2 | 1-3-3 (6) | |
| 5 | | | | | 3 | 3-15-19 (34) | |
| | | | | | 4 | 12-14-15 (29) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

FOR INFORMATION ONLY

| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-08<br>**Sheet 1 of 1** |
|---|---|---|

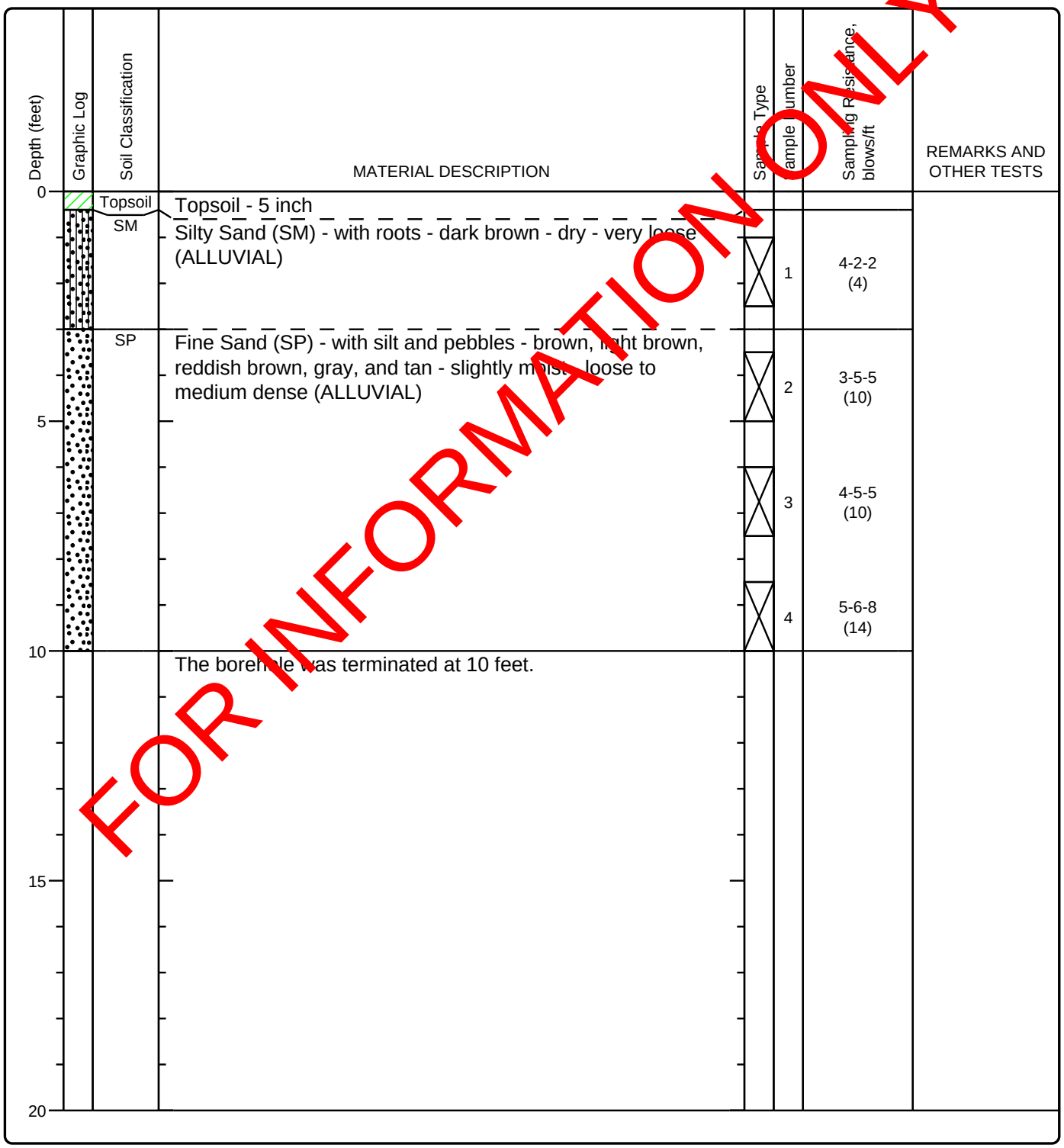
| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 3 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - brown and light brown - dry - medium dense (ALLUVIAL) | | 1 | 4-7-6 (13) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, tan, gray, and reddish brown - slightly moist to moist - dense to medium dense (ALLUVIAL) | | 2 | 6-14-18 (32) | |
| 5 | | | | | 3 | 4-13-14 (27) | |
| | | | | | 4 | 9-13-12 (25) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

FOR INFORMATION ONLY

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-09<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |




FOR INFORMATION ONLY

| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-10<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/9/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 5 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - dry - medium dense (ALLUVIAL) | | 1 | 4-12-5 (17) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, gray, reddish brown, and tan - slightly moist to moist - medium dense to dense (ALLUVIAL) | | 2 | 5-10-15 (25) | |
| 5 | | | | | 3 | 13-18-13 (31) | |
| | | | | | 4 | 12-9-9 (18) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-11<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/8/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 7 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - dry - medium dense (ALLUVIAL) | | 1 | 6-6-6 (12) | |
| | | SM | Silty Sand (SM) - light brown and tan - dry - loose (ALLUVIAL) | | 2 | 3-3-4 (7) | |
| 5 | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, orangish brown, tan, reddish brown, and gray - slightly moist - medium dense (ALLUVIAL) | | 3 | 4-8-9 (17) | |
| | | | | | 4 | 13-13-13 (26) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

FOR INFORMATION ONLY

| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-12<br>**Sheet 1 of 1** |
|---|---|---|

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 6 inch | | | | |
| | | SM | Silty Sand (SM) - with clay and roots - dark brown - dry - medium dense (ALLUVIAL) | | 1 | 7-8-6 (14) | |
| | | SM | Silty Sand (SM) - brown, dark brown, and tan - slightly moist - medium dense (ALLUVIAL) | | 2 | 4-6-7 (13) | |
| 5 | | CL | Lean Clay (CL) - with silt, gypsum, and iron staining - gray, reddish brown, and white - slightly moist - stiff (ALLUVIAL) | | 3 | 6-4-5 (9) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - light brown, orangish brown, and tan - moist - medium dense (ALLUVIAL) | | 4 | 11-13-11 (24) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

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|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-13<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 6 inch | | | | |
| | | SM | Silty Sand (SM) - with clay and roots - dark brown and brown - dry - medium dense (ALLUVIAL) | | 1 | 5-10-10 (20) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, gray, reddish brown, and tan - slightly moist to moist - medium dense (ALLUVIAL) | | 2 | 7-9-9 (18) | |
| 5 | | | | | 3 | 9-13-14 (27) | |
| | | | | | 4 | 9-13-12 (25) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

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| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-14<br>**Sheet 1 of 1** |
|---|---|---|

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with clay and roots - dark brown and black - dry - loose (ALLUVIAL) | | 1 | 3-4-4 (8) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, orangish brown, tan, reddish brown, and gray - slightly moist to moist - medium dense (ALLUVIAL) | | 2 | 5-6-8 (14) | |
| 5 | | | | | 3 | 7-11-5 (16) | |
| | | | | | 4 | 9-9-10 (19) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

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| | | |
|---|---|---|
| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-15<br>**Sheet 1 of 1** |

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - dry - medium dense (ALLUVIAL) | | 1 | 5-6-6 (12) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, gray, reddish brown, and tan - slightly moist - loose (ALLUVIAL) | | 2 | 2-3-3 (6) | |
| 5 | | | | | 3 | 3-3-4 (7) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, light brown, orangish brown, tan, reddish brown, and gray - moist - medium dense (ALLUVIAL) | | 4 | 4-10-9 (19) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

FOR INFORMATION ONLY

| Project: **HP Peterson Road**<br>Project Location: **Colorado Springs, Colorado**<br>Project Number: **231348** | VALLEYSHORE ENGINEERING | Log of Boring P-16<br>**Sheet 1 of 1** |
|---|---|---|

| | | |
|---|---|---|
| Date(s) Drilled **9/10/2025** | Logged By **JPA** | Checked By **TBW** |
| Drilling Method **Hollow Stem Auger** | Drill Bit Size/Type **4 in** | Total Depth of Borehole **10 feet bgs** |
| Drill Rig Type **CME-45C** | Drilling Contractor **Elite Drilling Services** | Approximate Surface Elevation |
| Groundwater Level and Date Measured **Not encountered.** | Sampling Method(s) **SPT** | Hammer Data **30 in, 140 lbs** |
| Borehole Backfill **Backfilled with cuttings** | Location | |

| Depth (feet) | Graphic Log | Soil Classification | MATERIAL DESCRIPTION | Sample Type | Sample Number | Sampling Resistance, blows/ft | REMARKS AND OTHER TESTS |
|---|---|---|---|---|---|---|---|
| 0 | | Topsoil | Topsoil - 8 inch | | | | |
| | | SM | Silty Sand (SM) - with roots - dark brown - dry - loose (ALLUVIAL) | | 1 | 7-5-3 (8) | |
| | | SP | Fine Sand (SP) - with silt and pebbles - brown, dark brown, gray, reddish brown, and tan - slightly moist - loose (ALLUVIAL) | | 2 | 4-4-4 (8) | |
| 5 | | | | | 3 | 3-3-4 (7) | |
| | | SM | Silty Sand (SM) - with clay and pebbles - brown, dark brown, dark gray - moist - loose (ALLUVIAL) | | 4 | 2-3-4 (7) | |
| 10 | | | The borehole was terminated at 10 feet. | | | | |
| 15 | | | | | | | |
| 20 | | | | | | | |

FOR INFORMATION ONLY

# Appendices

## Appendix B

Laboratory Test Results




FOR INFORMATION ONLY

VALLEYSHORE ENGINEERING

# SUMMARY OF LABORATORY TEST RESULTS

| | | | | | ATTERBERG LIMITS | | | | Project: HP Peterson Road Colorado Springs<br>Project Number: 231348<br>Date: October 07, 2025 |
|---|---|---|---|---|---|---|---|---|---|
| Sample Boring | Sample Type* | Depth (ft.) | Natural Moisture (%) | Dry Density (pcf) | Liquid Limit | Plasticity Index | USCS | Other Tests** | Soil Description |
| B8 | S1 | 1.0-2.5 | 10.3 | -- | nv | np | SM | S | Sand, brown |
| B8 | S3 | 6.0-7.5 | 17.8 | -- | 29 | 9 | CL | S | Sandy Clay, grayish brown & brown |
| B9 | S6 | 18.5-20.0 | 35.1 | -- | 39 | 1[illegible] | CL | S | Clay, silty, grayish brown |
| B10 | S4 | 8.5-10.0 | 7.6 | -- | nv | [illegible]p | SM | S | Sand, light brown |
| B21 | S4 | 8.5-10.0 | 27.7 | -- | [illegible]2 | 30 | CH | S | Clay, grayish brown |
| B22 | S3 | 6.0-7.5 | 15.4 | -- | 2[illegible] | 9 | SC | S | Sandy Clay, gray & brown |
| P2 | S4 | 8.5-10.0 | 18.8 | -- | nv | np | SM | S | Sand, light brown & tan |
| P12 | S3 | 6.0-7.5 | 24.3 | -- | 45 | 25 | CL | S | Clay, silty, light brown |
| P16 | S4 | 8.5-10.0 | 13.6 | -- | nv | np | SM | S | Sand, gray & brown |

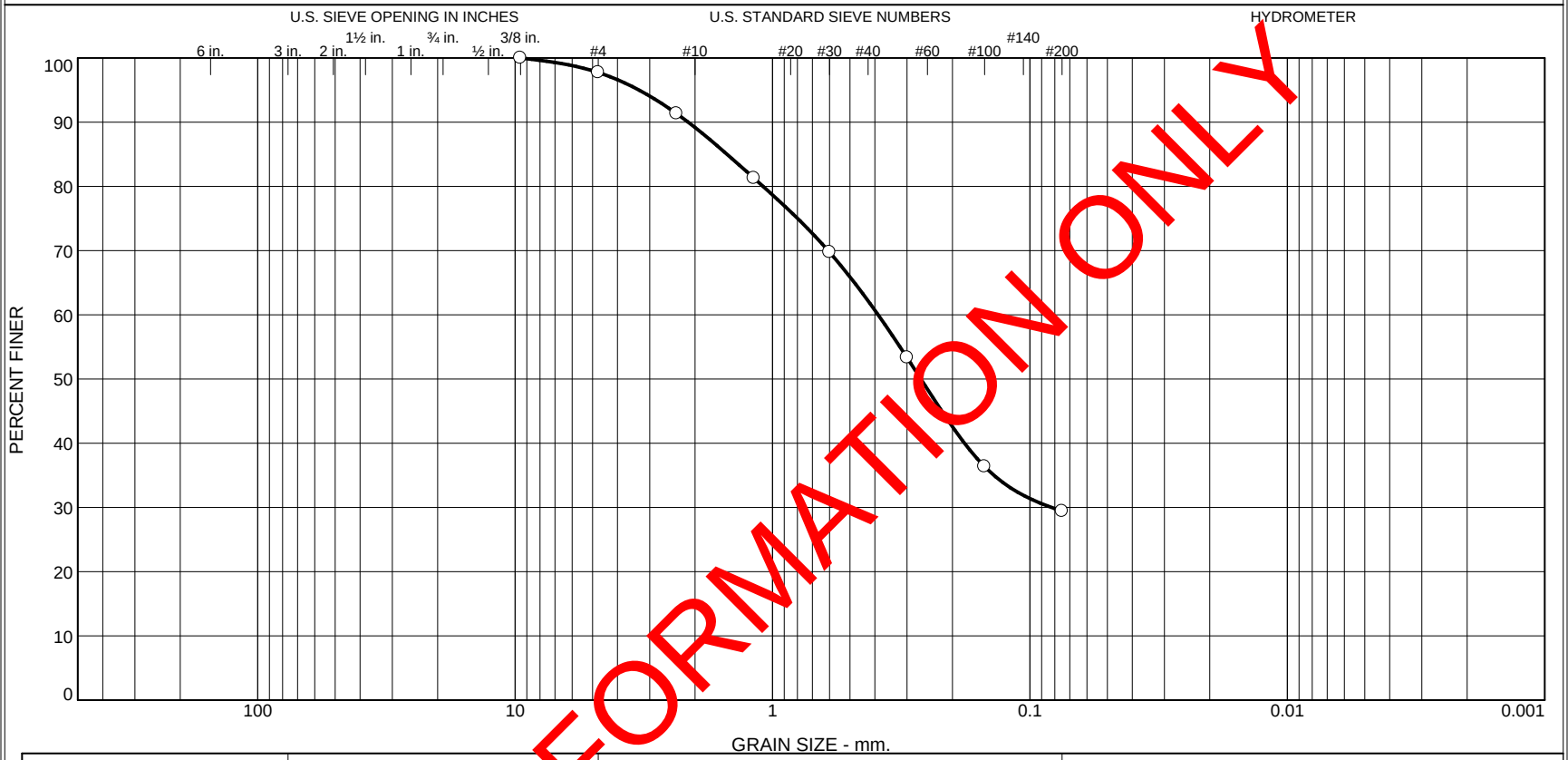
*UD-SHELBY TUBE SAMPLE, S-SPLIT SPOON SAMPLE, B-BULK SAMPLE, J-JAR SAMPLE
**TEST RESULTS REPORTED ON OTHER SHEETS

FOR INFORMATION ONLY

*SCHNABEL* **Engineering**

T-TRIAXIAL
S-SIEVE OR GRAIN SIZE ANALYSIS
U-UNCONFINED COMPRESSION
P-PROCTOR TEST
K-PERMEABILITY
C-CONSOLIDATION

# Particle Size Distribution Report




FOR INFORMATION ONLY

| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 2.3 | 8.5 | 27.0 | 32.8 | 29.4 | |

| Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|
| | B8 S1 | 0-2.5 | 10/07/25 | SM | Sand, brown | 10.3 | nv | np |

Client Valleyshore Engineering

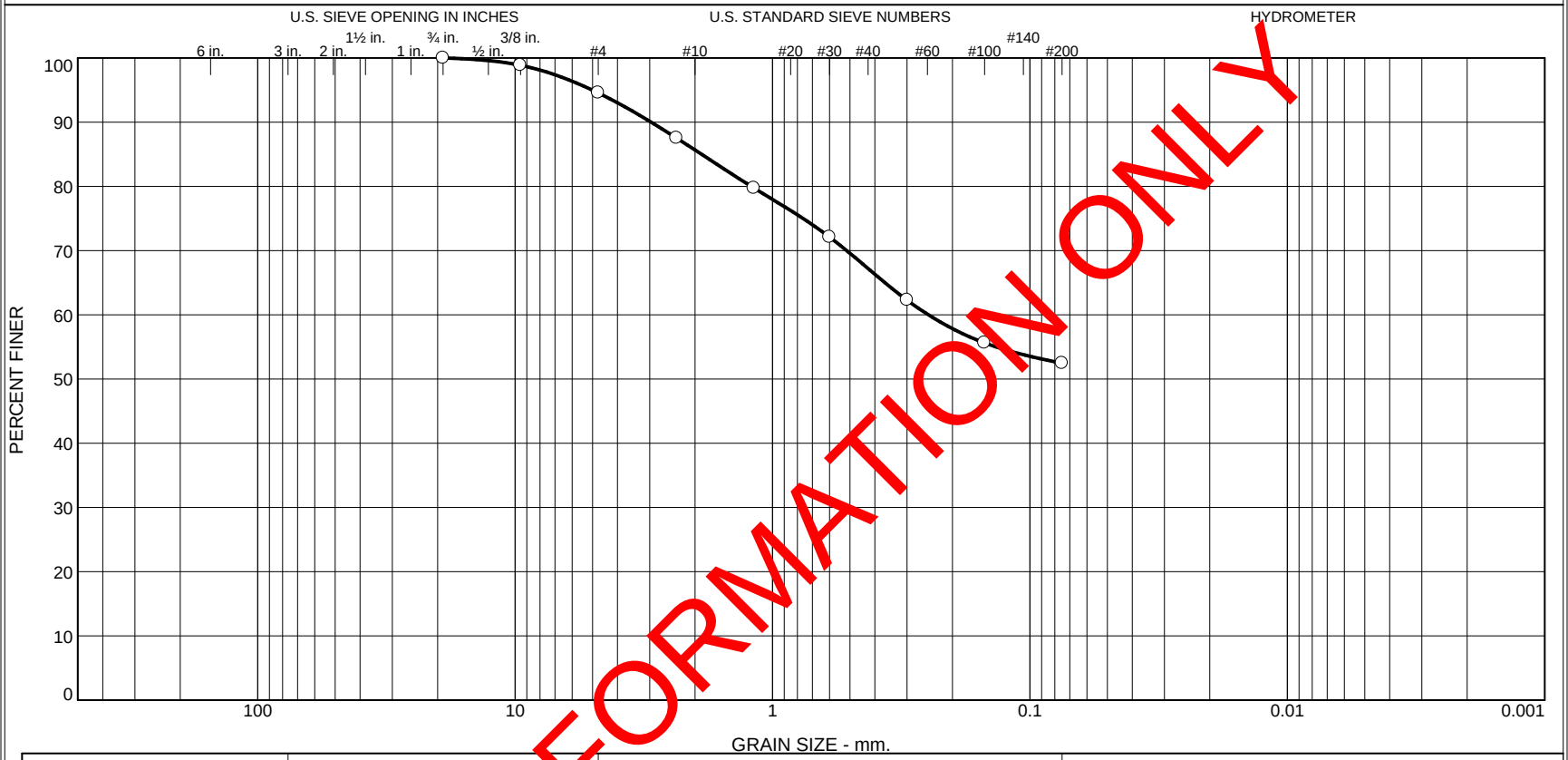
Project HP Peterson Road

Project No. 231348 Figure

**Schnabel Engineering, LLC**

**Knoxville, Tennessee**

# Particle Size Distribution Report




FOR INFORMATION ONLY

| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 5.4 | 8.9 | 18.5 | 14.7 | 52.5 | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | | B8 S3 | 0-7.5 | 10/07/25 | CL | Sandy clay, grayish brown & brown | 17.8 | 29 | 20 |

Client Valleyshore Engineering

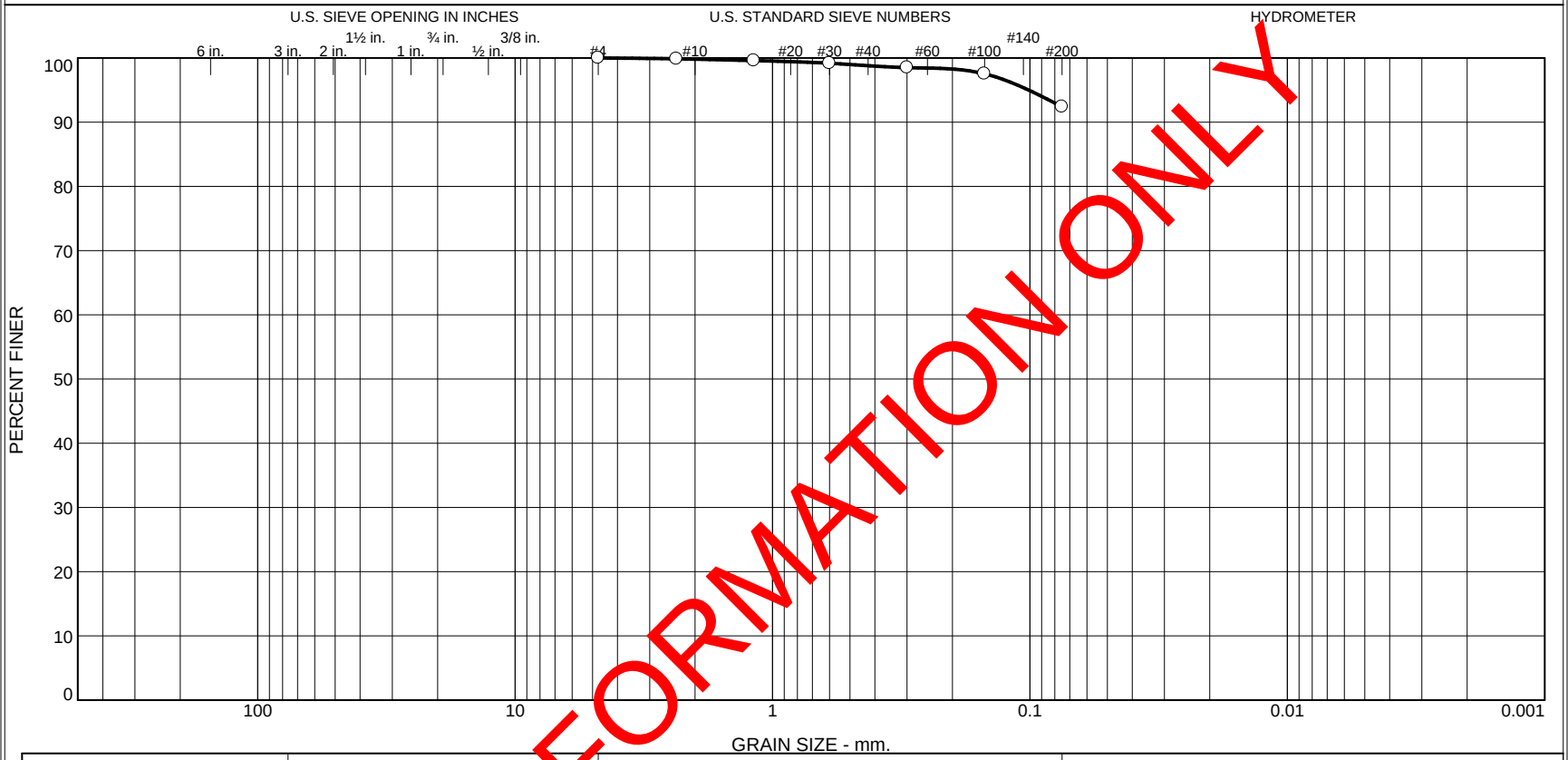
Project HP Peterson Road

Project No. 231348 Figure

**Schnabel Engineering, LLC**

**Knoxville, Tennessee**

# Particle Size Distribution Report




FOR INFORMATION ONLY

| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.2 | 1.0 | 6.4 | 92.4 | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | | B9 S6 | 15.5-20.0 | 10/07/25 | CL | Clay, silty, grayish brown | 35.1 | 39 | 21 |

Client Valleyshore Engineering

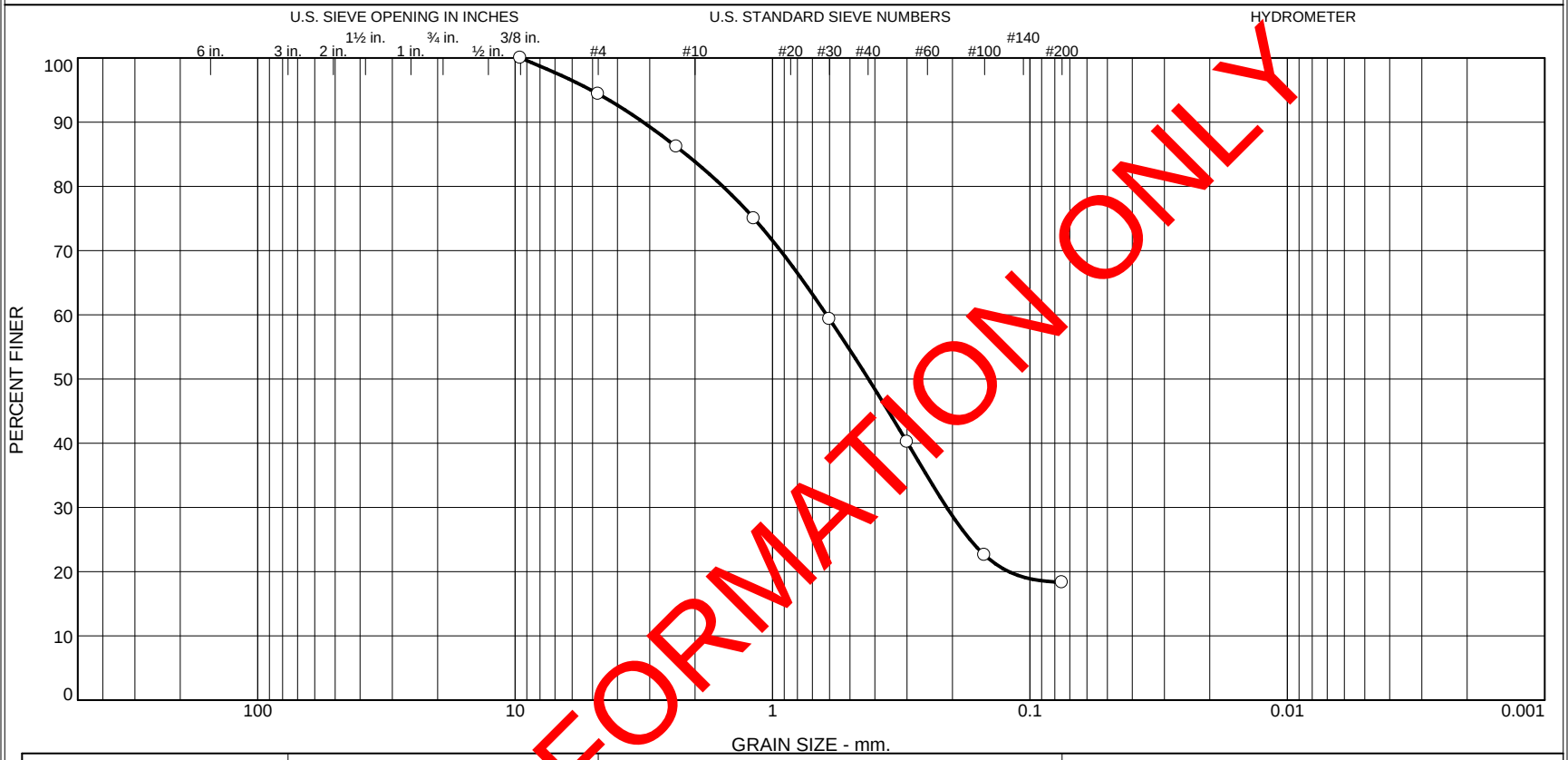
Project HP Peterson Road

Project No. 231348 Figure

**Schnabel Engineering, LLC**

**Knoxville, Tennessee**

# Particle Size Distribution Report




FOR INFORMATION ONLY

| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 5.6 | 10.6 | 33.7 | 31.8 | 18.3 | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | | B10 S4 | 5-10.0 | 10/07/25 | SM | Sand, light brown | 7.6 | nv | np |

Client Valleyshore Engineering

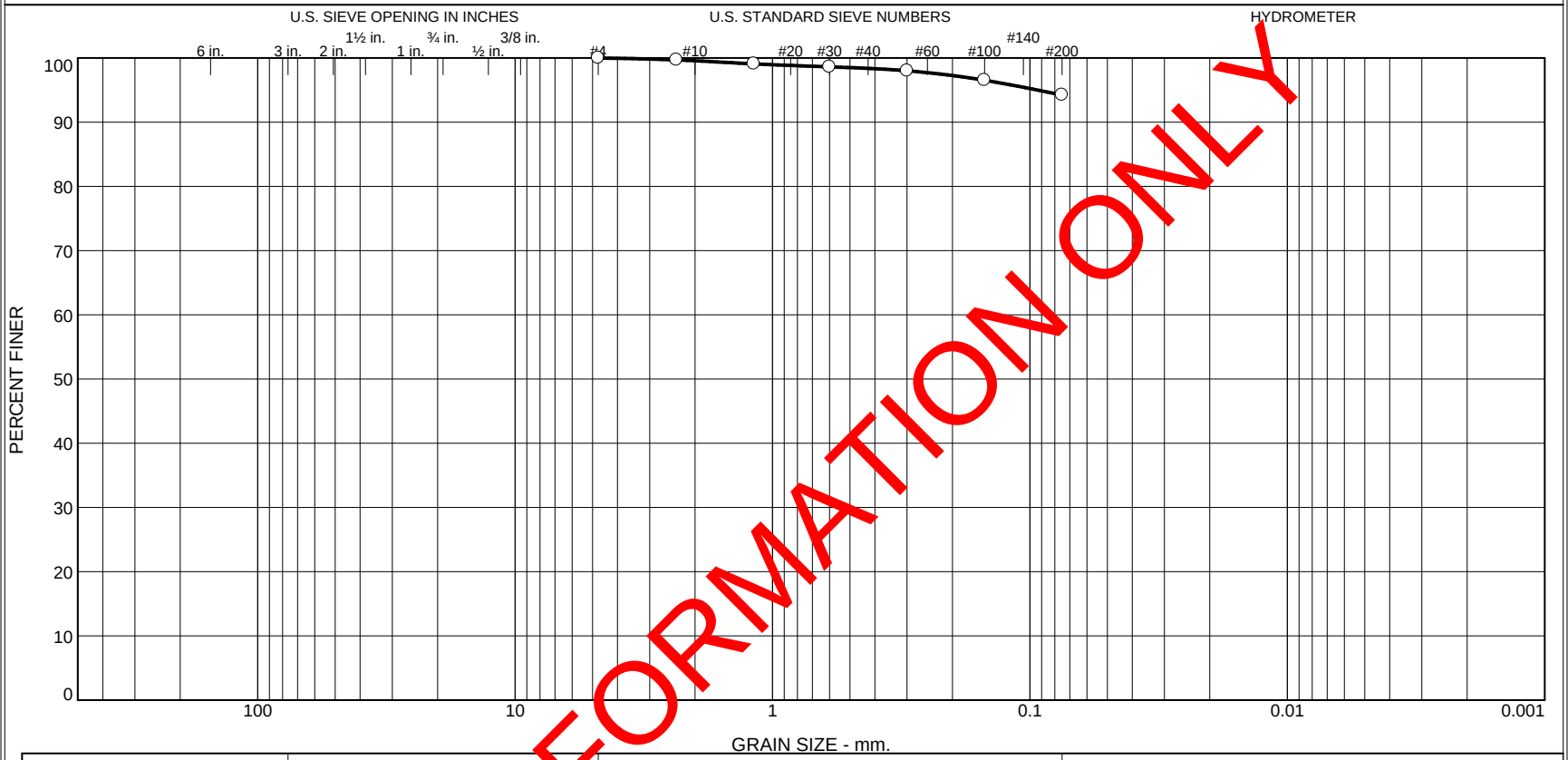
Project HP Peterson Road

Project No. 231348 Figure

**Schnabel Engineering, LLC**

**Knoxville, Tennessee**

# Particle Size Distribution Report




FOR INFORMATION ONLY

| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 0.0 | 0.4 | 1.2 | 4.2 | 94.2 | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | | B21 S4 | 5-10.0 | 10/07/25 | CH | Clay, grayish brown | 27.7 | 52 | 22 |

Client Valleyshore Engineering

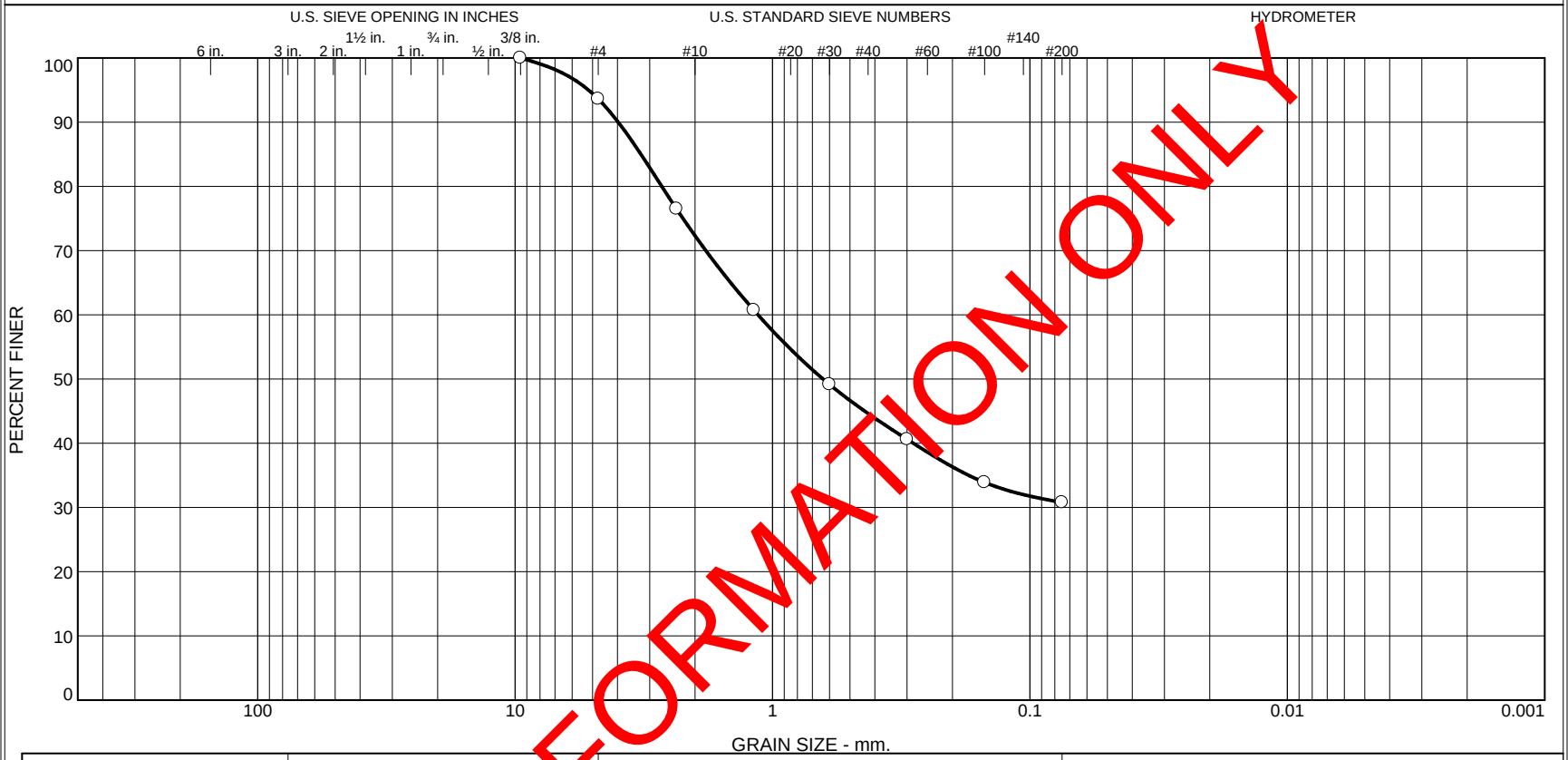
Project HP Peterson Road

Project No. 231348 Figure

**Schnabel Engineering, LLC**

**Knoxville, Tennessee**

# Particle Size Distribution Report




FOR INFORMATION ONLY

| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 6.4 | 21.3 | 27.7 | 13.8 | 30.8 | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | | B22 S3 | 0-7.5 | 10/07/25 | SC | Sandy Clay, gray & brown | 15.4 | 28 | 19 |

Client Valleyshore Engineering

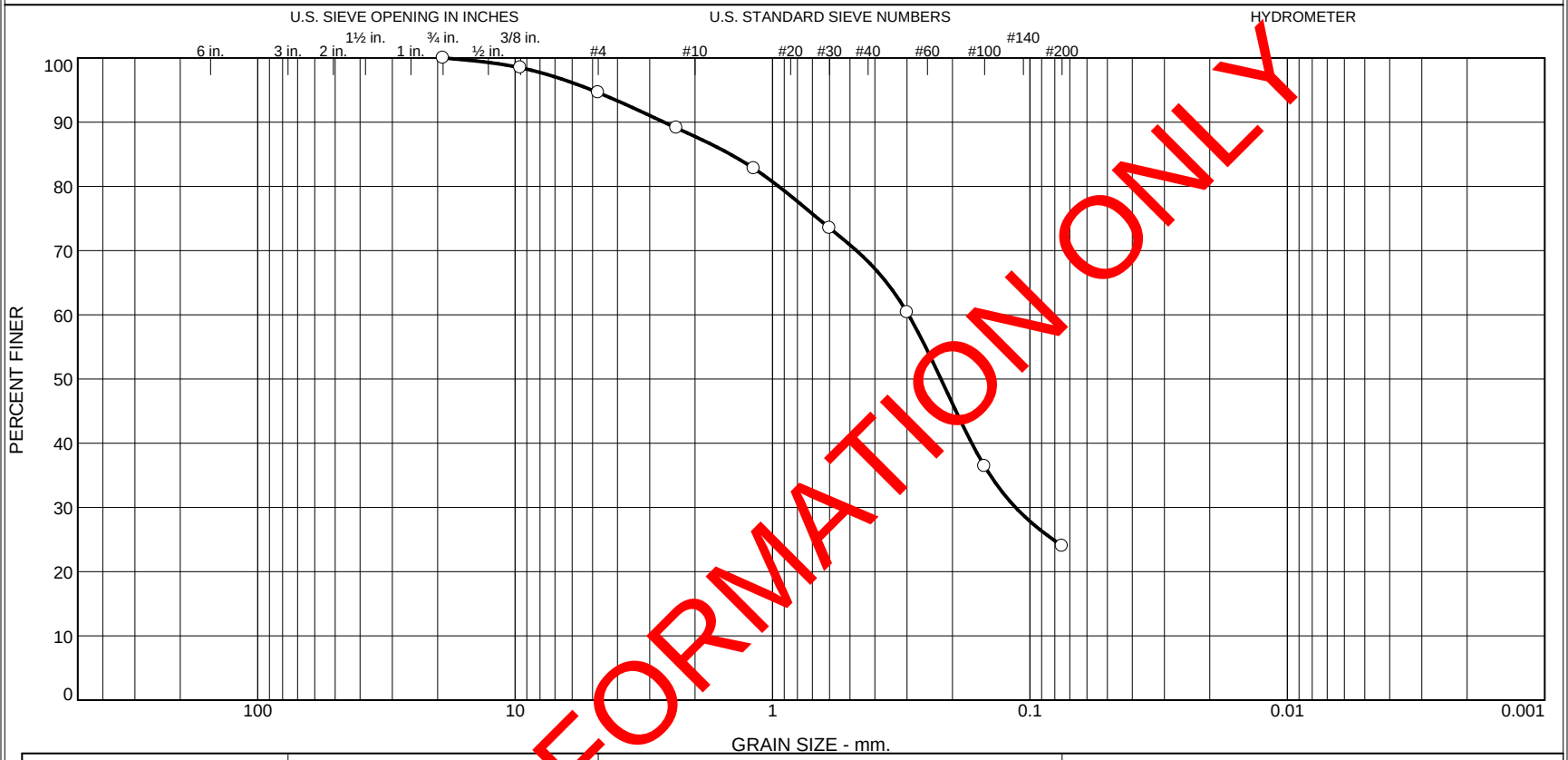
Project HP Peterson Road

Project No. 231348 Figure

**Schnabel Engineering, LLC**

**Knoxville, Tennessee**

# Particle Size Distribution Report




FOR INFORMATION ONLY

| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 5.4 | 6.8 | 19.5 | 44.3 | 24.0 | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | | P2 S4 | 5-10.0 | 10/07/25 | SM | Sand, light brown & tan | 20.7 | nv | np |

Client Valleyshore Engineering

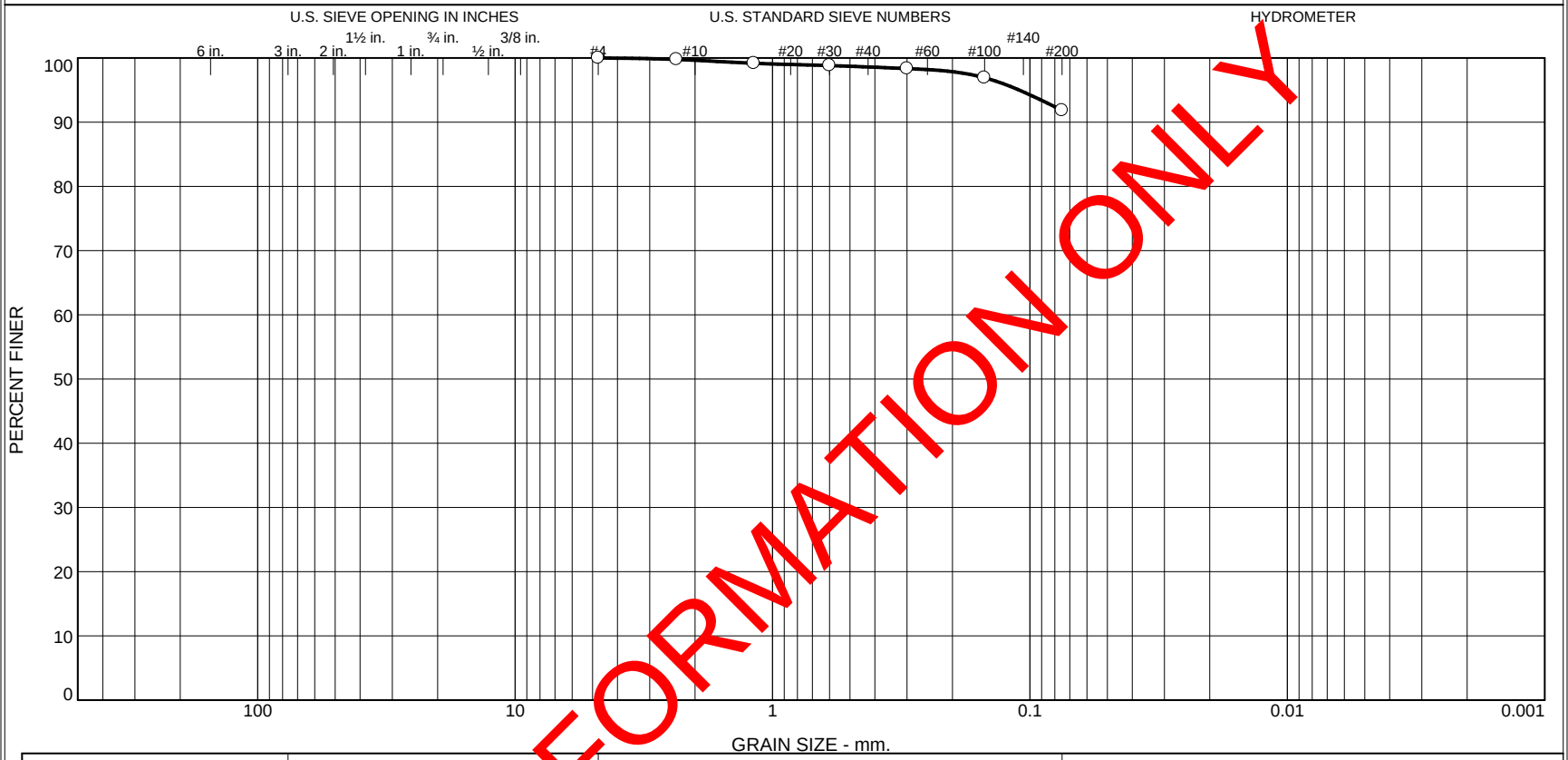
Project HP Peterson Road

Project No. 231348 Figure

**Schnabel Engineering, LLC**

**Knoxville, Tennessee**

# Particle Size Distribution Report




FOR INFORMATION ONLY

| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0.0 | 0.0 | 0.0 | 0.4 | 1.0 | 6.8 | 91.8 | |

| Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|
| | P12 S3 | 0-7.5 | 10/07/25 | CL | Clay, silty, light brown | 24.3 | 45 | 20 |

Client Valleyshore Engineering

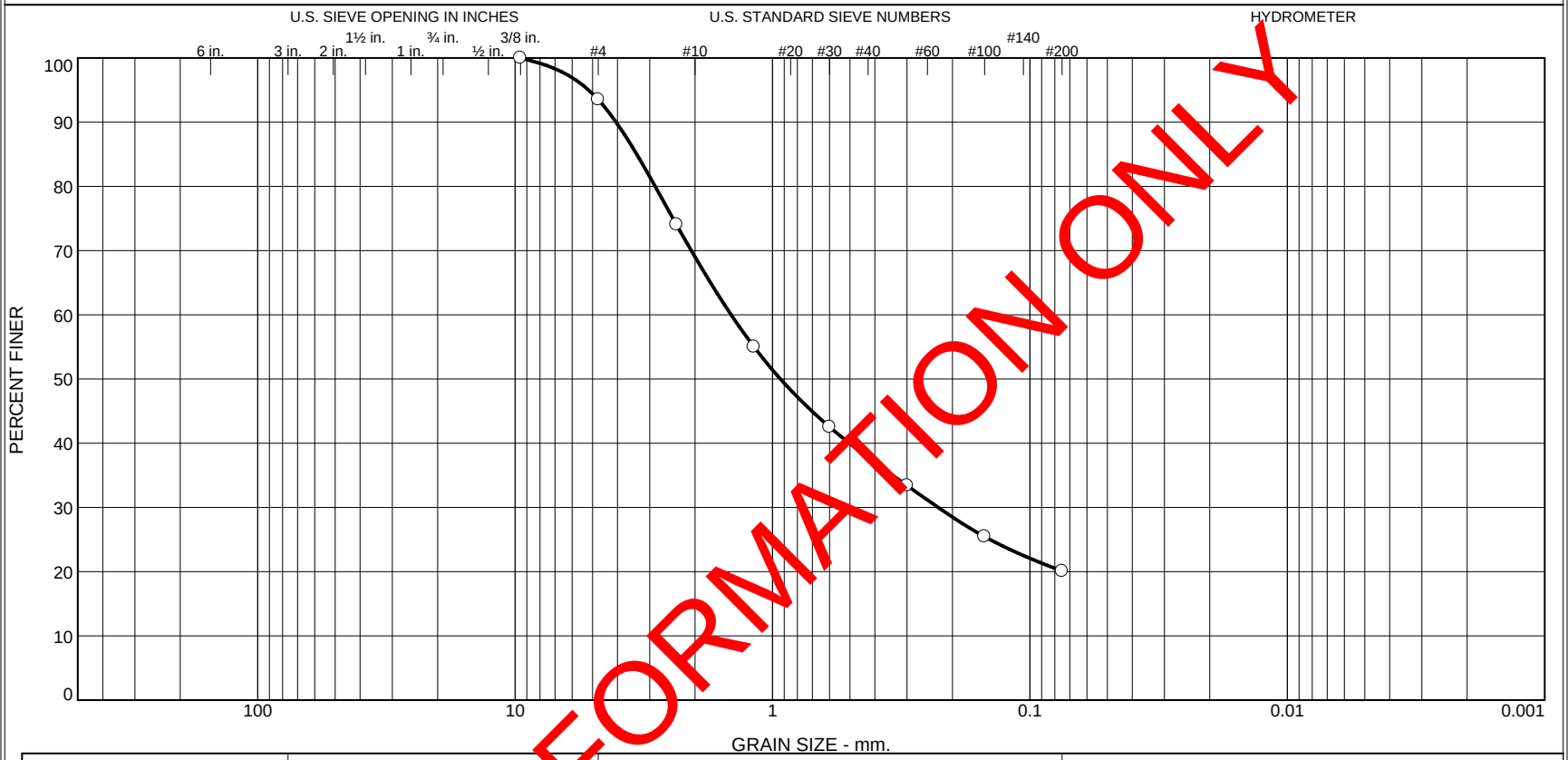
Project HP Peterson Road

Project No. 231348 Figure

**Schnabel Engineering, LLC**

**Knoxville, Tennessee**

# Particle Size Distribution Report




FOR INFORMATION ONLY

| | % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|---|
| | | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| ○ | 0.0 | 0.0 | 6.3 | 24.5 | 31.2 | 17.7 | 20.1 | |

| | Source | Sample # | Depth/Elev. | Date Sampled | USCS | Material Description | NM % | LL | PL |
|---|---|---|---|---|---|---|---|---|---|
| ○ | | P16 S4 | 5-10.0 | 10/047/25 | SM | Sand, gray & brown | 13.6 | nv | np |

Client Valleyshore Engineering

Project HP Peterson Road

Project No. 231348 Figure

**Schnabel Engineering, LLC**

**Knoxville, Tennessee**

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FOR INFORMATION ONLY

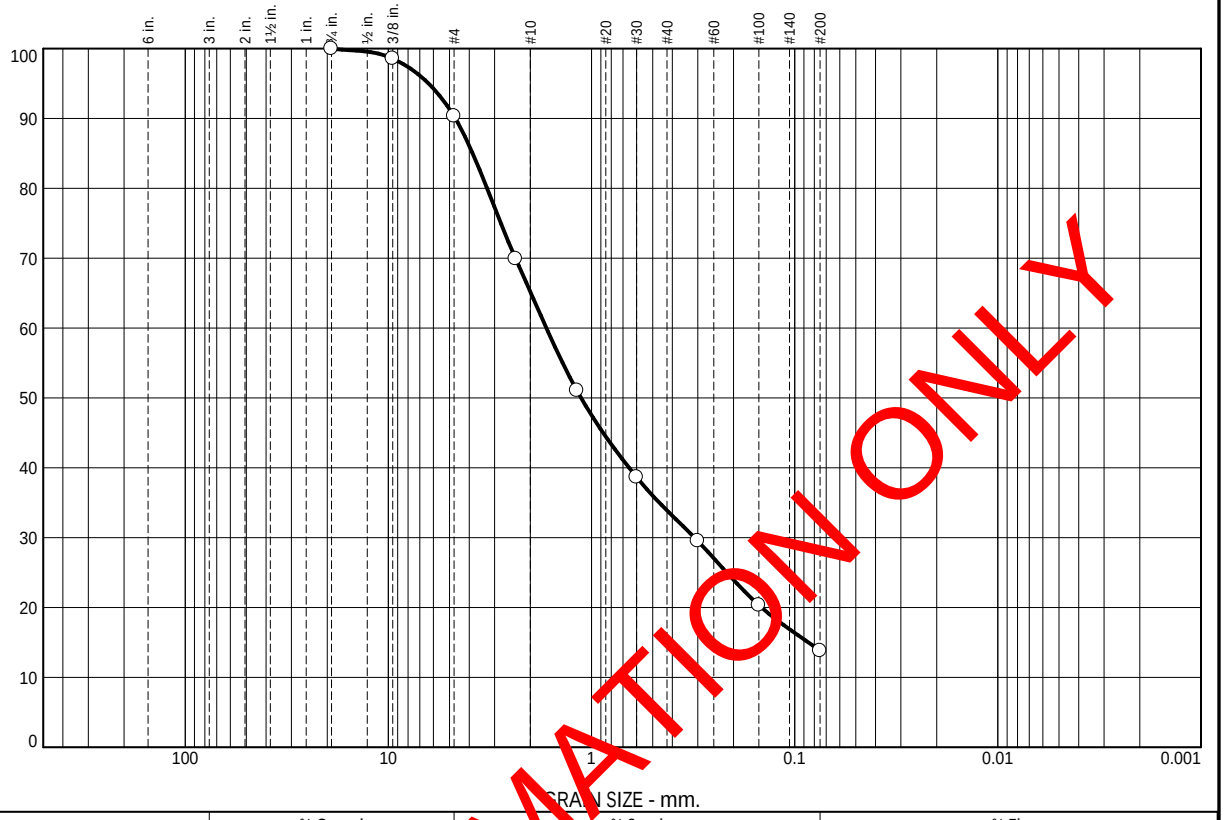
# TABLE 1
# SUMMARY OF LABORATORY TEST RESULTS

**PROJECT NO.: 25-1-302.C**
**PROJECT NAME: HP PETERSON ROAD - VALLEYSHORE ENG.**
**DATE SAMPLED: 9/9/25**
**DATE RECEIVED: 9/9/25**

| SAMPLE LOCATION | | | NATURAL MOISTURE CONTENT (%) | OPTIMUM MOISTURE CONTENT (%) | MAXIMUM DRY DENSITY (pcf) | GRADATION | | PERCENT PASSING No. 200 SIEVE | ATTERBERG LIMITS | | WATER SOLUBLE SULFATES (%) | MINIMUM ELECTRICAL RESISTIVITY (ohm-cm) | pH | SWELL (%) | SOIL OR BEDROCK TYPE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOCATION | DEPTH (ft) | DATE TESTED | | | | GRAVEL (%) | SAND (%) | | LIQUID LIMIT (%) | PLASTICITY INDEX (%) | | | | | |
| B-3 | 1-4 | 9/17/25 | 7.4 | 9.5 | 121.0 | 10 | 76 | 14 | 21 | 3 | 0.00 | 5,710 | 6.73 | 0.0 | SILTY SAND (SM) |
| B-5 | 1-4 | 9/16/25 | 4.2 | 11.0 | 115.1 | 4 | 88 | 8 | NV | NP | 0.00 | 3,530 | 7.11 | 0.0 | WELL-GRADED SAND WITH SILT (SW-SM) |
| B-8 | 1-4 | 9/18/25 | 8.2 | 9.9 | 121.9 | 4 | 75 | 21 | 18 | 4 | 0.00 | 6,560 | 6.97 | 0.1 | SILTY, CLAYEY SAND (SC-SM) |
| B-10 | 1-4 | 9/17/25 | 6.9 | 10.4 | 119.6 | 5 | 72 | 23 | 17 | 2 | 0.00 | 6,980 | 7.12 | 0.0 | SILTY SAND (SM) |
| B-13 | 1-4 | 9/17/25 | 5.9 | 10.0 | 121.1 | 4 | 81 | 15 | NV | NP | 0.00 | 8,820 | 6.68 | 0.2 | SILTY SAND (SM) |
| B-16 | 1-4 | 9/16/25 | 5.2 | 10.1 | 120.2 | 5 | 79 | 16 | NV | NP | 0.00 | 9,100 | 6.92 | 0.0 | SILTY SAND (SM) |
| B-18 | 1-4 | 9/16/25 | 5.3 | 11.9 | 110.8 | 1 | 89 | 10 | 32 | 18 | 0.01 | 13,800 | 7.06 | 0.0 | WELL-GRADED SAND WITH CLAY (SW-SC) |
| B-20 | 1-4 | 9/18/25 | 4.8 | 12.2 | 117.3 | 3 | 90 | 7 | NV | NP | 0.00 | 13,900 | 7.03 | 0.3 | WELL-GRADED SAND WITH SILT (SW-SM) |

# Particle Size Distribution Report

ASTM D6913




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 10 | 25 | 31 | 20 | 14 | |

Test Results (ASTM D6913)

| Sieve Size or Diam. (mm.) | Finer (%) | Spec.* (%) | Out of Spec. (%) | Pct. of Fines |
|---|---|---|---|---|
| 3/4" | 100 | | | |
| 3/8" | 99 | | | |
| #4 | 90 | | | |
| #8 | 70 | | | 77 |
| #16 | 51 | | | 57 |
| #30 | 39 | | | 43 |
| #50 | 30 | | | 33 |
| #100 | 20 | | | 23 |
| #200 | 14 | | | 15 |

* (no specification provided)

**Material Description**

silty sand

**Atterberg Limits**

PL= 18 LL= 21 PI= 3

**Classification**

USCS= SM AASHTO= A-1-b

**Test Remarks**

Location: Boring B-3
Sample Number: 4345 Depth: 1'-4' Sample Date: 9/9/25

Kumar & Associates, Inc.

Denver, Colorado

Client: ValleyShore Engineering, LLC
Project: HP Peterson Rd - ValleyShore Eng.

Project No: 25-1-302C Figure

Tested By: JF Checked By: JJM

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

FOR INFORMATION ONLY

# Particle Size Distribution Report

ASTM D6913




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 4 | 14 | 40 | 34 | 8 | |

Test Results (ASTM D6913)

| Sieve Size or Diam. (mm.) | Finer (%) | Spec.* (%) | Out of Spec. (%) | Pct. of Fines |
|---|---|---|---|---|
| 3/4" | 100 | | | |
| 3/8" | 99 | | | |
| #4 | 96 | | | |
| #8 | 85 | | | 89 |
| #16 | 69 | | | 72 |
| #30 | 53 | | | 55 |
| #50 | 32 | | | 33 |
| #100 | 15 | | | 16 |
| #200 | 8.0 | | | 8.4 |

* (no specification provided)

**Material Description**

well-graded sand with silt

**Atterberg Limits**

PL= NP LL= NV PI= NP

**Classification**

USCS= SW-SM AASHTO= A-1-b

**Test Remarks**

Location: Boring B-5
Sample Number: 4346 Depth: 1'-4' Sample Date: 9/9/25

Kumar & Associates, Inc.

Denver, Colorado

Client: ValleyShore Engineering, LLC
Project: HP Peterson Rd - ValleyShore Eng.

Project No: 25-1-302C Figure

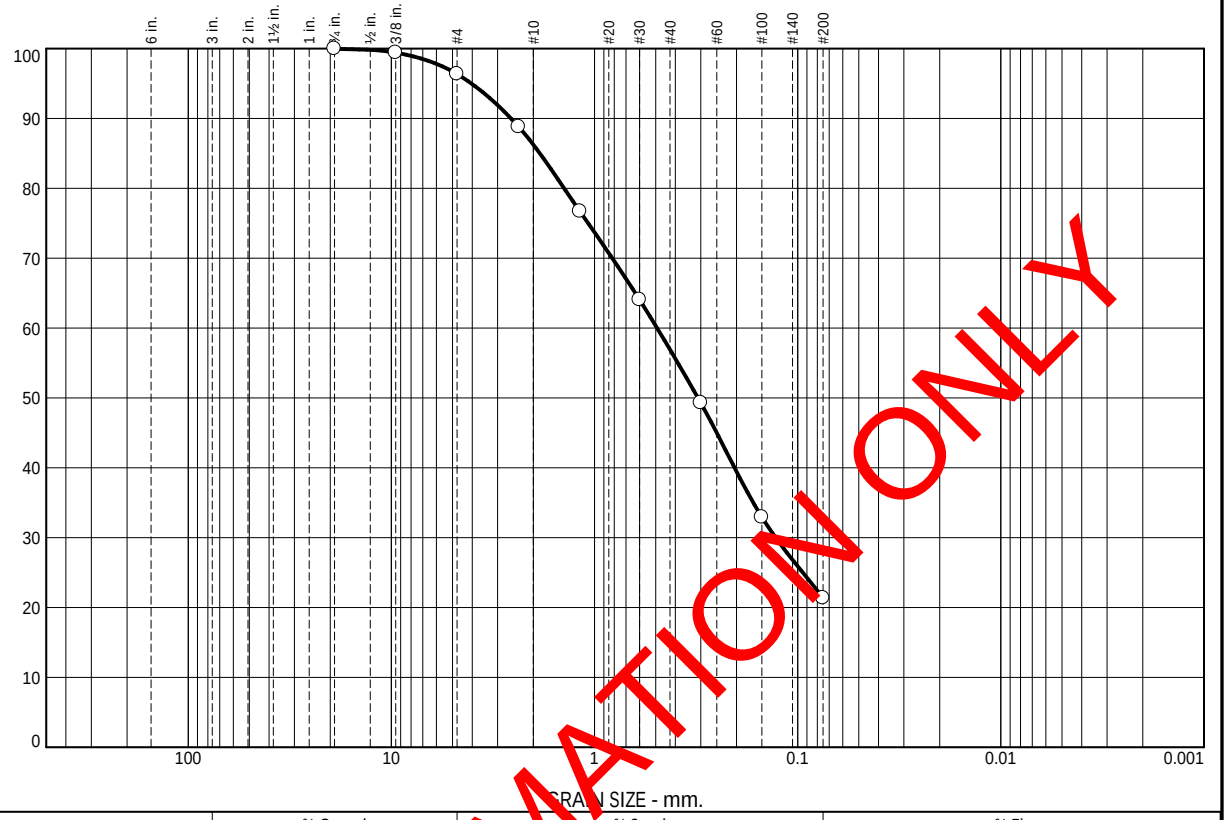
Tested By: JF Checked By: JJM

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

FOR INFORMATION ONLY

# Particle Size Distribution Report

ASTM D6913




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 4 | 10 | 29 | 36 | 21 | |

Test Results (ASTM D6913)

| Sieve Size or Diam. (mm.) | Finer (%) | Spec.* (%) | Out of Spec. (%) | Pct. of Fines |
|---|---|---|---|---|
| 3/4" | 100 | | | |
| 3/8" | 99 | | | |
| #4 | 96 | | | |
| #8 | 89 | | | 92 |
| #16 | 77 | | | 80 |
| #30 | 64 | | | 66 |
| #50 | 49 | | | 51 |
| #100 | 33 | | | 34 |
| #200 | 21 | | | 22 |

* (no specification provided)

**Material Description**

silty, clayey sand

**Atterberg Limits**

PL= 14 LL= 18 PI= 4

**Classification**

USCS= SC-SM AASHTO= A-2-4(0)

**Test Remarks**

Location: Boring B-8
Sample Number: 4347 Depth: 1'-4' Sample Date: 9/9/25

Kumar & Associates, Inc.

Denver, Colorado

Client: ValleyShore Engineering, LLC
Project: HP Peterson Rd - ValleyShore Eng.

Project No: 25-1-302C Figure

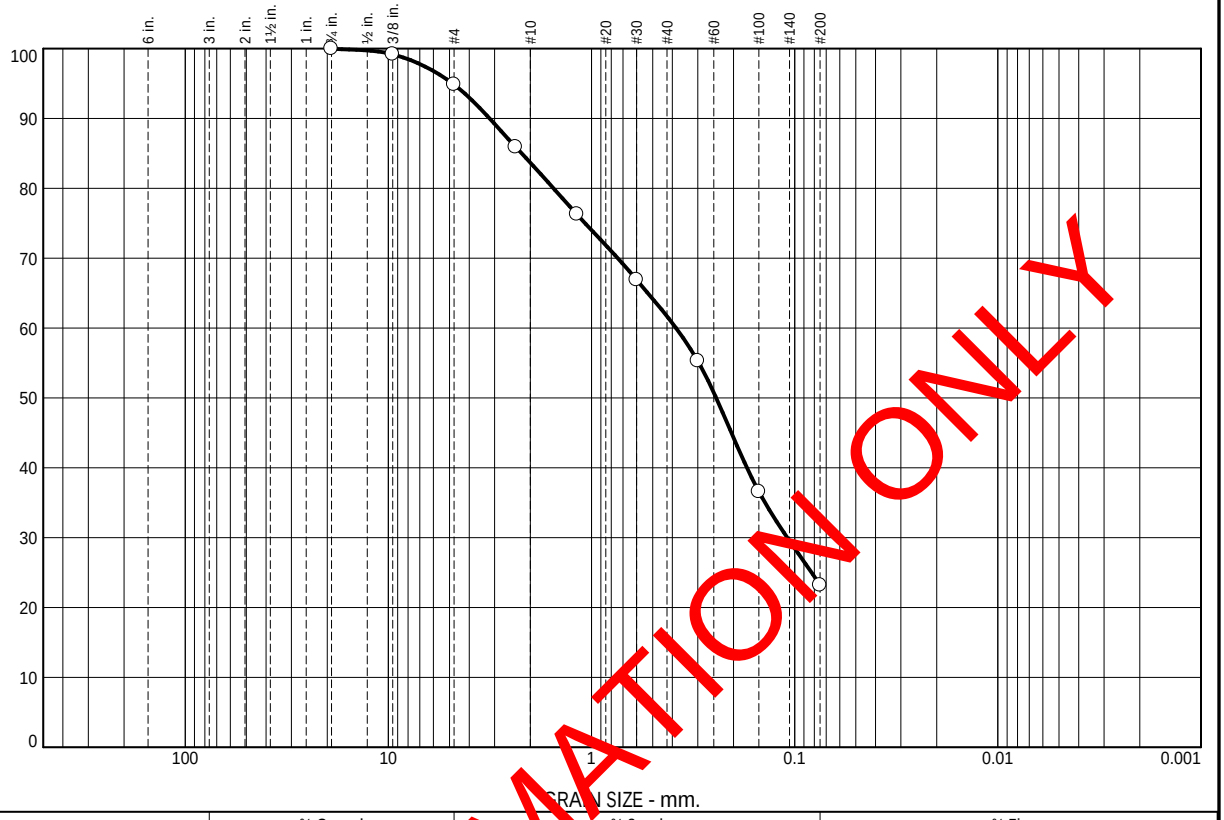
Tested By: JF Checked By: JJM

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

FOR INFORMATION ONLY

# Particle Size Distribution Report

ASTM D6913




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 5 | 11 | 22 | 39 | 23 | |

Test Results (ASTM D6913)

| Sieve Size or Diam. (mm.) | Finer (%) | Spec.* (%) | Out of Spec. (%) | Pct. of Fines |
|---|---|---|---|---|
| 3/4" | 100 | | | |
| 3/8" | 99 | | | |
| #4 | 95 | | | |
| #8 | 86 | | | 91 |
| #16 | 76 | | | 80 |
| #30 | 67 | | | 71 |
| #50 | 55 | | | 58 |
| #100 | 37 | | | 39 |
| #200 | 23 | | | 24 |

* (no specification provided)

**Material Description**

silty sand

**Atterberg Limits**

PL= 15 LL= 17 PI= 2

**Classification**

USCS= SM AASHTO= A-2-4(0)

**Test Remarks**

Location: Boring B-10
Sample Number: 4348 Depth: 1'-4' Sample Date: 9/9/25

Kumar & Associates, Inc.

Denver, Colorado

Client: ValleyShore Engineering, LLC
Project: HP Peterson Rd - ValleyShore Eng.

Project No: 25-1-302C Figure

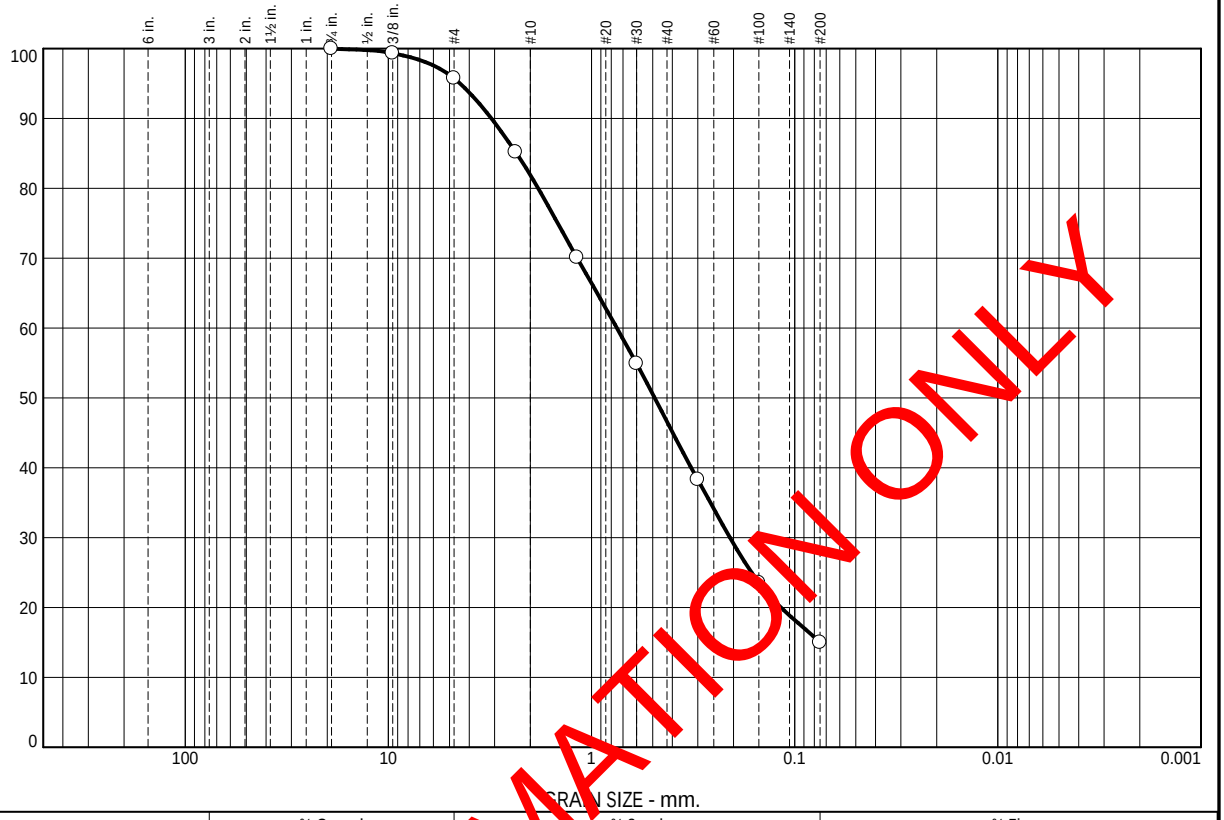
Tested By: JF Checked By: JJM

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

FOR INFORMATION ONLY

# Particle Size Distribution Report

ASTM D6913




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 4 | 14 | 35 | 32 | 15 | |

Test Results (ASTM D6913)

| Sieve Size or Diam. (mm.) | Finer (%) | Spec.* (%) | Out of Spec. (%) | Pct. of Fines |
|---|---|---|---|---|
| 3/4" | 100 | | | |
| 3/8" | 99 | | | |
| #4 | 96 | | | |
| #8 | 85 | | | 89 |
| #16 | 70 | | | 73 |
| #30 | 55 | | | 57 |
| #50 | 38 | | | 40 |
| #100 | 24 | | | 25 |
| #200 | 15 | | | 16 |

* (no specification provided)

**Material Description**

silty sand

**Atterberg Limits**

PL= NP LL= NV PI= NP

**Classification**

USCS= SM AASHTO= A-1-b

**Test Remarks**

Location: Boring B-13
Sample Number: 4349 Depth: 1'-4' Sample Date: 9/9/25

Kumar & Associates, Inc.

Denver, Colorado

Client: ValleyShore Engineering, LLC
Project: HP Peterson Rd - ValleyShore Eng.

Project No: 25-1-302C Figure

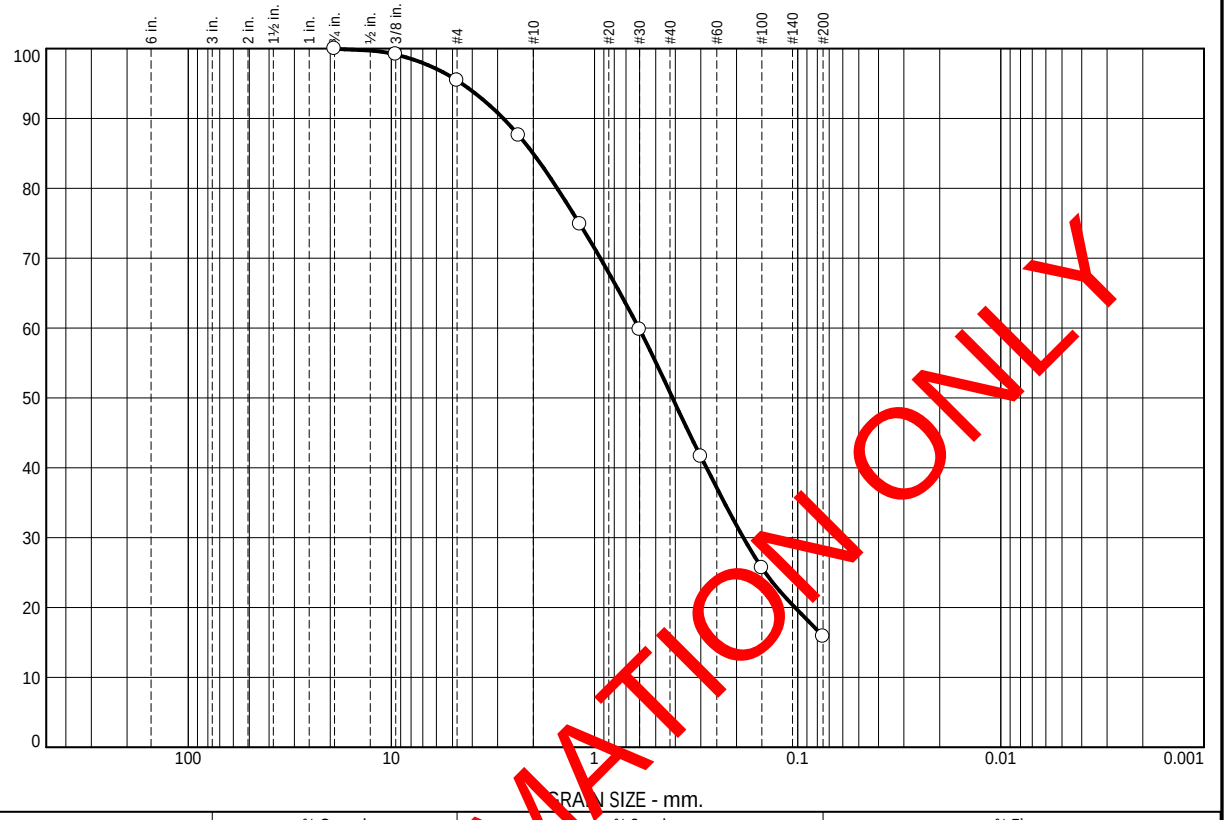
Tested By: JF Checked By: JJM

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

FOR INFORMATION ONLY

# Particle Size Distribution Report

ASTM D6913




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 5 | 10 | 34 | 35 | 16 | |

Test Results (ASTM D6913)

| Sieve Size or Diam. (mm.) | Finer (%) | Spec.* (%) | Out of Spec. (%) | Pct. of Fines |
|---|---|---|---|---|
| 3/4" | 100 | | | |
| 3/8" | 99 | | | |
| #4 | 95 | | | |
| #8 | 88 | | | 92 |
| #16 | 75 | | | 78 |
| #30 | 60 | | | 63 |
| #50 | 42 | | | 44 |
| #100 | 26 | | | 27 |
| #200 | 16 | | | 17 |

* (no specification provided)

Material Description

silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Classification

USCS= SM AASHTO= A-2-4(0)

Test Remarks

Location: Boring B-16
Sample Number: 4350 Depth: 1'-4' Sample Date: 9/9/25

Kumar & Associates, Inc.

Denver, Colorado

Client: ValleyShore Engineering, LLC
Project: HP Peterson Rd - ValleyShore Eng.

Project No: 25-1-302C Figure

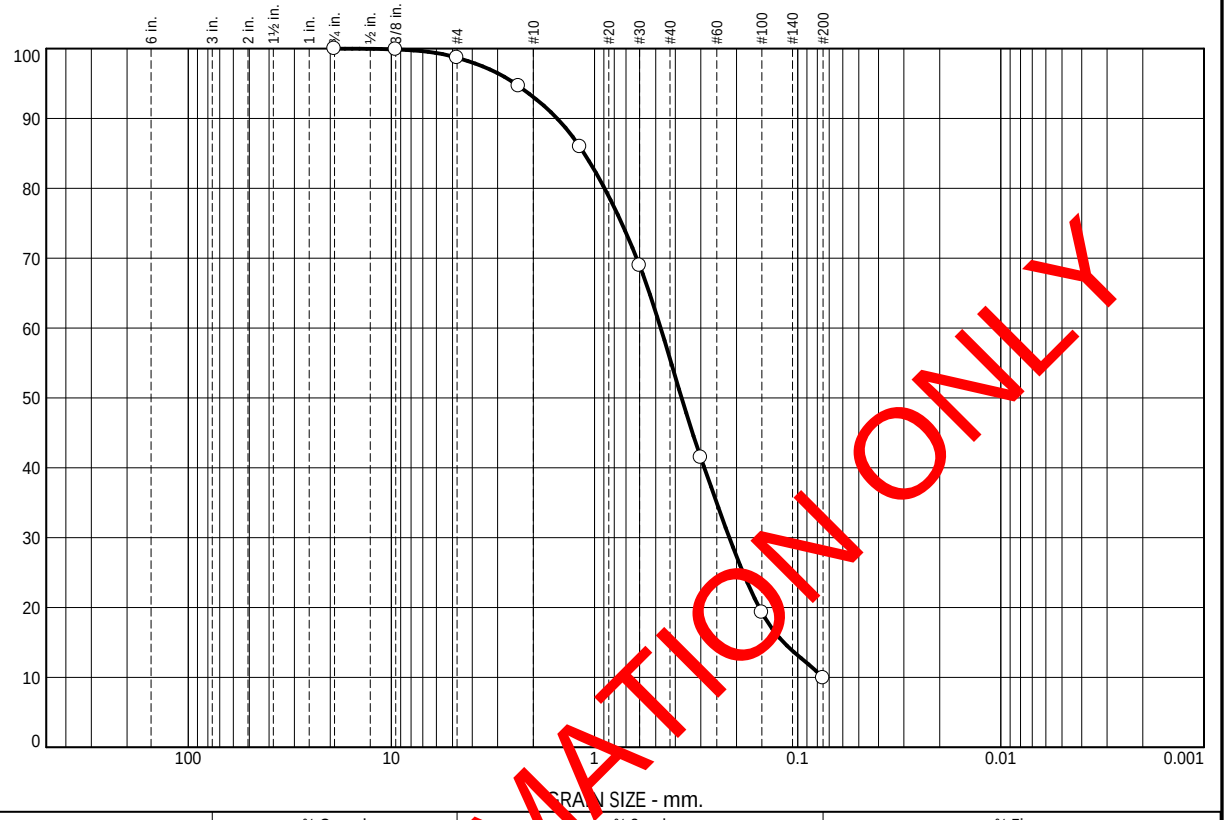
Tested By: JF Checked By: JJM

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

FOR INFORMATION ONLY

# Particle Size Distribution Report

ASTM D6913




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 1 | 6 | 37 | 46 | 10 | |

Test Results (ASTM D6913)

| Sieve Size or Diam. (mm.) | Finer (%) | Spec.* (%) | Out of Spec. (%) | Pct. of Fines |
|---|---|---|---|---|
| 3/4" | 100 | | | |
| 3/8" | 100 | | | |
| #4 | 99 | | | |
| #8 | 95 | | | 96 |
| #16 | 86 | | | 87 |
| #30 | 69 | | | 70 |
| #50 | 41 | | | 42 |
| #100 | 19 | | | 20 |
| #200 | 9.9 | | | 10 |

* (no specification provided)

**Material Description**

well-graded sand with clay

**Atterberg Limits**

PL= 14 LL= 32 PI= 18

**Classification**

USCS= SW-SC AASHTO= A-2-6(0)

**Test Remarks**

Location: Boring B-18
Sample Number: 4351 Depth: 1'-4' Sample Date: 9/9/25

Kumar & Associates, Inc.

Denver, Colorado

Client: ValleyShore Engineering, LLC
Project: HP Peterson Rd - ValleyShore Eng.

Project No: 25-1-302C Figure

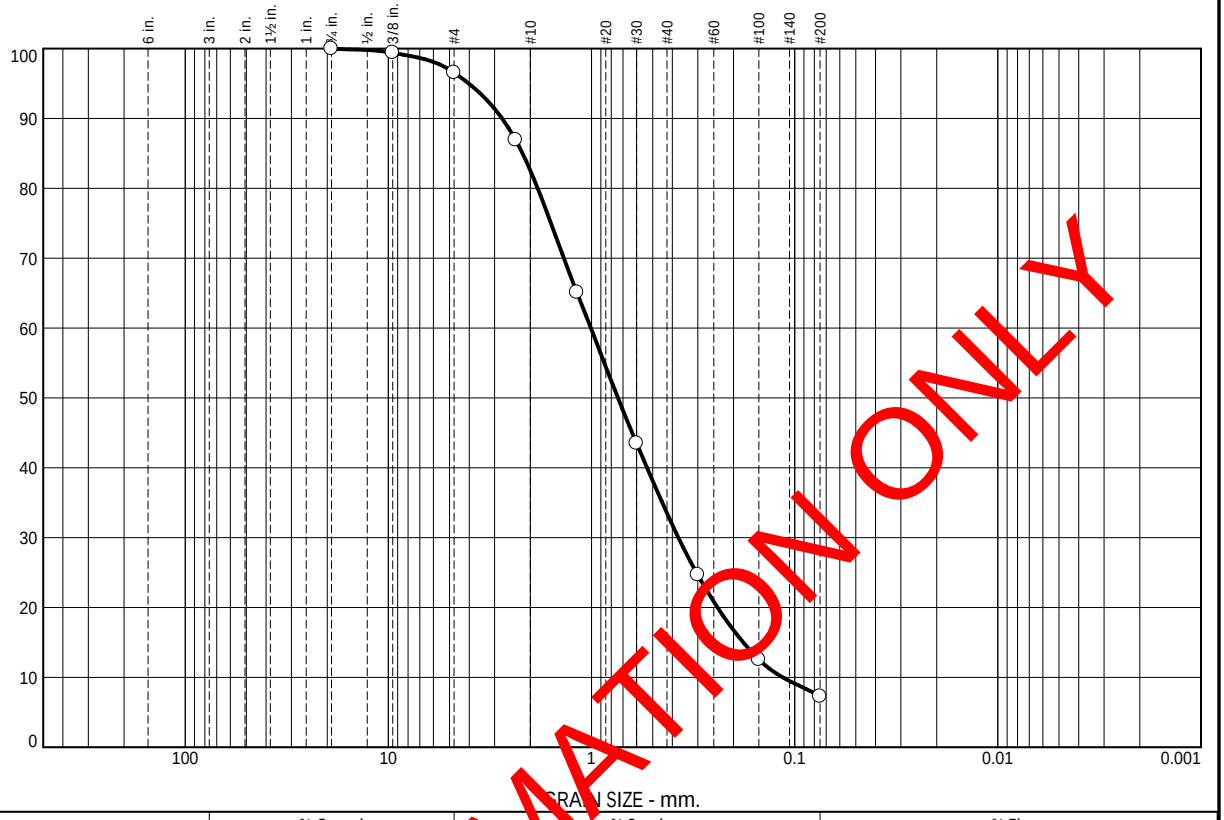
Tested By: JF Checked By: JJM

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

FOR INFORMATION ONLY

# Particle Size Distribution Report

ASTM D6913




| % +3" | % Gravel | | % Sand | | | % Fines | |
|---|---|---|---|---|---|---|---|
| | Coarse | Fine | Coarse | Medium | Fine | Silt | Clay |
| 0 | 0 | 3 | 14 | 49 | 27 | 7 | |

Test Results (ASTM D6913)

| Sieve Size or Diam. (mm.) | Finer (%) | Spec.* (%) | Out of Spec. (%) | Pct. of Fines |
|---|---|---|---|---|
| 3/4" | 100 | | | |
| 3/8" | 99 | | | |
| #4 | 97 | | | |
| #8 | 87 | | | 90 |
| #16 | 65 | | | 67 |
| #30 | 44 | | | 45 |
| #50 | 25 | | | 26 |
| #100 | 13 | | | 13 |
| #200 | 7.5 | | | 7.5 |

* (no specification provided)

**Material Description**

well-graded sand with silt

**Atterberg Limits**

PL= NP LL= NV PI= NP

**Classification**

USCS= SW-SM AASHTO= A-1-b

**Test Remarks**

Location: Boring B-20
Sample Number: 4352 Depth: 1'-4' Sample Date: 9/9/25

Kumar & Associates, Inc.

Denver, Colorado

Client: ValleyShore Engineering, LLC
Project: HP Peterson Rd - ValleyShore Eng.

Project No: 25-1-302C Figure

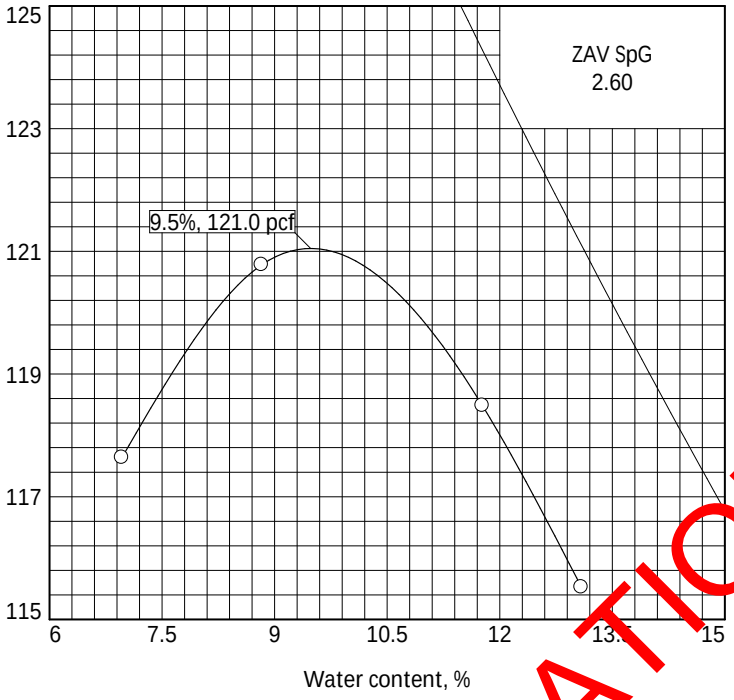
Tested By: JF Checked By: JJM

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

FOR INFORMATION ONLY

# COMPACTION TEST REPORT

Curve No. 4345




Preparation Method

Rammer: Wt. 5.5 lb. Drop 12 in.

Type Manual

Layers: No. three Blows per 25

Mold Size 0.03333 cu.

Test Performed on Materia

Passing #4 Sieve

%>#4 10 %<No.200 14

Atterberg (D 4318) LL 21 PI 3

NM (D 2216) Sp.G. (D 854) 2.6

USCS (D 2487) SM

AASHTO (M 145) A-1-b

Date: Sampled 9/9/25

Received 9/9/25

Tested 9/17/25

Tested By AS

COMPACTION TESTING DATA
AASHTO T 99-22 Method A Standard

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| WM + WS | 6253.0 | 6338.0 | 6326.0 | | | |
| WM | 4346.7 | 4346.7 | 4346.7 | 4346.7 | | |
| WW + T #1 | 410.5 | 405.3 | 460.7 | 492.7 | | |
| WD + T #1 | 393.8 | 385.0 | 428.6 | 453.5 | | |
| TARE #1 | 154.0 | 155.0 | 161.8 | 154.0 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOIST. | .0 | 8.8 | 11.8 | 13.1 | | |
| DRY DENS. | 117.6 | 120.8 | 118.5 | 115.5 | | |

SIEVE TEST RESULTS

| Opening Size | % Passing | Specs. |
|---|---|---|
| 3/4" | 100 | |
| 3/8" | 99 | |
| #4 | 90 | |
| #8 | 70 | |
| #16 | 51 | |
| #30 | 39 | |
| #50 | 30 | |
| #100 | 20 | |
| #200 | 14 | |

TEST RESULTS

Maximum dry density = 121.0 pcf

Optimum moisture = 9.5 %

Material Description

silty sand

Remarks:

Project No. 25-1-302C Client: ValleyShore Engineering, LLC

Project: HP Peterson Rd - ValleyShore Eng.

○ Location: Boring B-3 Depth: 1'-4' Sample Number: 4345

Kumar & Associates, Inc.

Denver, Colorado

Checked by: JJM

Title: Lab Manager

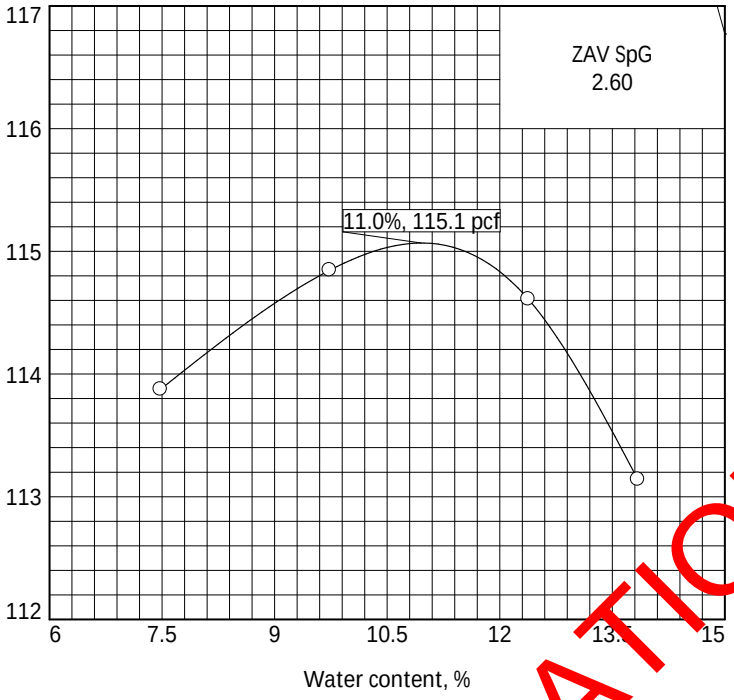
Figure

FOR INFORMATION ONLY

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# COMPACTION TEST REPORT

Curve No. 4346




Preparation Method

Rammer: Wt. 5.5 lb. Drop 12 in.

Type Manual

Layers: No. three Blows per 25

Mold Size 0.03333 cu.

Test Performed on Materia

Passing #4 Sieve

%>#4 4 %<No.200 8.0

Atterberg (D 4318) LL NV PI NP

M (D 2216) Sp.G. (D 854) 2.6

USCS (D 2487) SW-SM

AASHTO (M 145) A-1-b

Date: Sampled 9/9/25

Received 9/9/25

Tested 9/16/25

Tested By AS

COMPACTION TESTING DATA
AASHTO T 99-22 Method A Standard

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| WM + WS | 6201.0 | 6256.0 | 6298.0 | | | |
| WM | 4346.7 | 4346.7 | 4346.7 | 4346.7 | | |
| WW + T #1 | 372.3 | 550.5 | 538.7 | 733.5 | | |
| WD + T #1 | 357.0 | 521.1 | 495.8 | 681.6 | | |
| TARE #1 | 152.5 | 319.1 | 154.1 | 306.6 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOIST. | 5.5 | 9.7 | 12.4 | 13.8 | | |
| DRY DENS. | 113.9 | 114.8 | 114.6 | 113.1 | | |

SIEVE TEST RESULTS

| Opening Size | % Passing | Specs. |
|---|---|---|
| 3/4" | 100 | |
| 3/8" | 99 | |
| #4 | 96 | |
| #8 | 85 | |
| #16 | 69 | |
| #30 | 53 | |
| #50 | 32 | |
| #100 | 15 | |
| #200 | 8.0 | |

TEST RESULTS

Maximum dry density = 115.1 pcf

Optimum moisture = 11.0 %

Material Description

well-graded sand with silt

Remarks:

Project No. 25-1-302C Client: ValleyShore Engineering, LLC

Project: HP Peterson Rd - ValleyShore Eng.

○ Location: Boring B-5 Depth: 1'-4' Sample Number: 4346

Checked by: JJM

Title: Lab Manager

Kumar & Associates, Inc.

Denver, Colorado

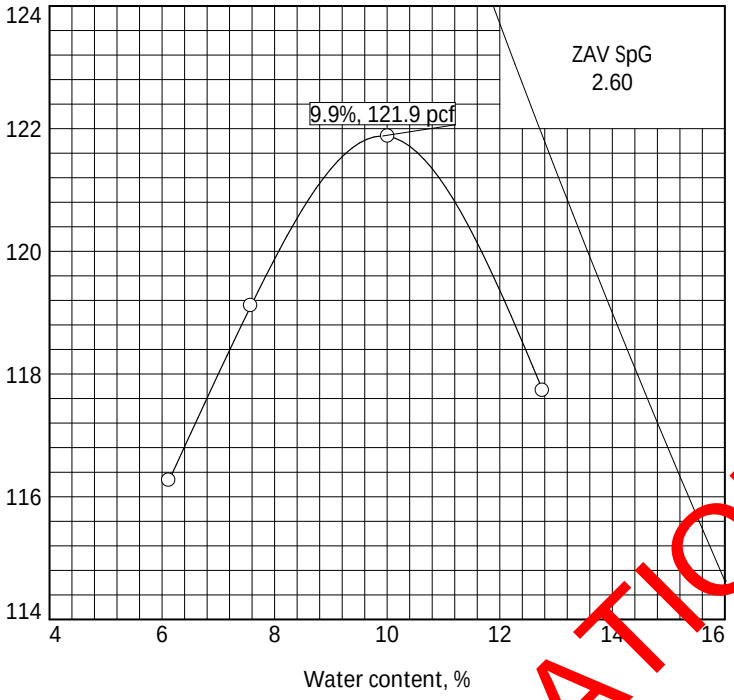
Figure

FOR INFORMATION ONLY

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# COMPACTION TEST REPORT

Curve No. 4347




Preparation Method

Rammer: Wt. 5.5 lb. Drop 12 in.

Type Manual

Layers: No. three Blows per 25

Mold Size 0.03333 cu. ft

Test Performed on Material Passing #4 Sieve

%>#4 4 %<No.200 21

Atterberg (D 4318) LL 18 PI 4

NM (D 2216) Sp.G. (D 854) 2.6

USCS (D 2487) SC-SM

AASHTO (M 145) A-2-4(0)

Date: Sampled 9/9/25

Received 9/9/25

Tested 9/18/25

Tested By AS

COMPACTION TESTING DATA
AASHTO T 99-22 Method A Standard

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| WM + WS | 6216.0 | 6288.0 | 6328.0 | 6358.0 | | |
| WM | 4346.7 | 4346.7 | 4346.7 | 4346.7 | | |
| WW + T #1 | 447.8 | 395.7 | 398.1 | 510.6 | | |
| WD + T #1 | 435.6 | 378.6 | 371.9 | 470.3 | | |
| TARE #1 | 236.4 | 153.0 | 108.3 | 154.6 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOIST. | 3.1 | 7.6 | 10.0 | 12.8 | | |
| DRY DENS. | 116.3 | 119.1 | 121.9 | 117.7 | | |

SIEVE TEST RESULTS

| Opening Size | % Passing | Specs. |
|---|---|---|
| 3/4" | 100 | |
| 3/8" | 99 | |
| #4 | 96 | |
| #8 | 89 | |
| #16 | 77 | |
| #30 | 64 | |
| #50 | 49 | |
| #100 | 33 | |
| #200 | 21 | |

TEST RESULTS

Maximum dry density = 121.9 pcf

Optimum moisture = 9.9 %

Material Description

silty, clayey sand

Remarks:

Project No. 25-1-302C Client: ValleyShore Engineering, LLC

Project: HP Peterson Rd - ValleyShore Eng.

○ Location: Boring B-8 Depth: 1'-4' Sample Number: 4347

Kumar & Associates, Inc.

Denver, Colorado

Checked by: JJM

Title: Lab Manager

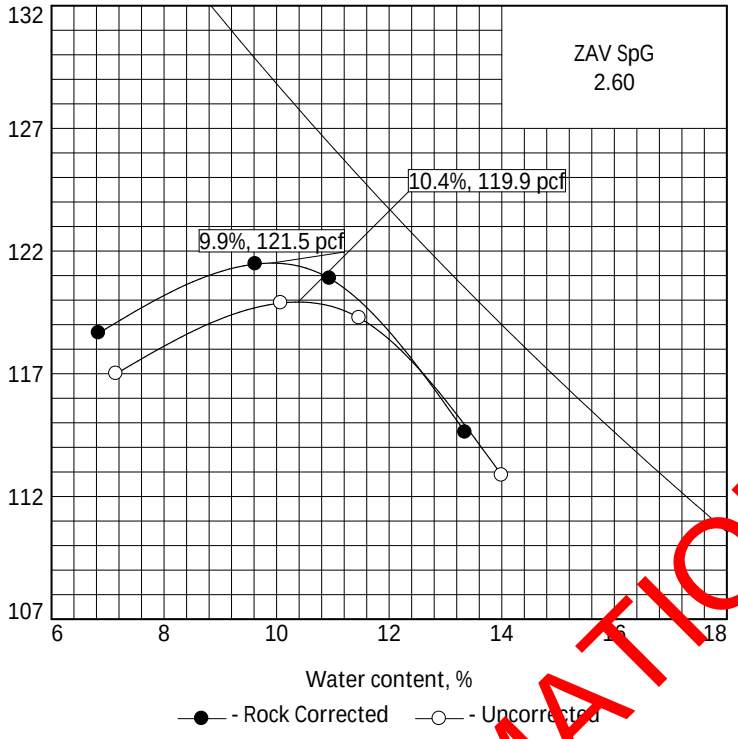
Figure

FOR INFORMATION ONLY

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# COMPACTION TEST REPORT

Curve No. 4348




| | |
|---|---|
| Preparation Method | |
| Rammer: Wt. | 5.5 lb. Drop 12 in. |
| Type | Manual |
| Layers: No. | three Blows per 25 |
| Mold Size | 0.03333 cu. ft. |
| Test Performed on Material Passing | #4 Sieve |
| %>#4 | 5 %<No.200 23 |
| Atterberg (D 4318) LL | 17 PI 2 |
| NM (D 2216) | Sp.G. (D 854) 2.6 |
| USCS (D 2487) | SM |
| AASHTO (M 145) | A-2-4(0) |
| Date: Sampled | 9/9/25 |
| Received | 9/9/25 |
| Tested | 9/17/25 |
| Tested By | AS |

COMPACTION TESTING DATA
AASHTO T 99-22 Method A Standard
AASHTO T 99/T 180 Annex A Oversize Corr. Applied to Each Test Point

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| WM + WS | 6246.0 | 6346.0 | 6301.6 | 6296.0 | | |
| WM | 4346.7 | 4346.7 | 4346.7 | 4346.7 | | |
| WW + T #1 | 568.0 | 450.1 | 451.7 | 556.1 | | |
| WD + T #1 | 550.7 | 423.4 | 421.2 | 511.1 | | |
| TARE #1 | 308.7 | 158.5 | 154.4 | 189.7 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOIST. | 1.8 | 9.6 | 10.9 | 13.4 | | |
| DRY DENS. | 118.7 | 121.5 | 120.9 | 114.6 | | |

SIEVE TEST RESULTS

| Opening Size | % Passing | Specs. |
|---|---|---|
| 3/4" | 100 | |
| 3/8" | 99 | |
| #4 | 95 | |
| #8 | 86 | |
| #16 | 76 | |
| #30 | 67 | |
| #50 | 55 | |
| #100 | 37 | |
| #200 | 23 | |

| ROCK CORRECTED TEST RESULTS | UNCORRECTED |
|---|---|
| Maximum dry density = 121.5 pcf | 119.9 pcf |
| Optimum moisture = 9.9 % | 10.4 % |

Material Description: silty sand

Remarks:

Project No. 25-1-302C Client: ValleyShore Engineering, LLC

Project: HP Peterson Rd - ValleyShore Eng.

○ Location: Boring B-10 Depth: 1'-4' Sample Number: 4348

Kumar & Associates, Inc.

Denver, Colorado

Checked by: JJM

Title: Lab Manager

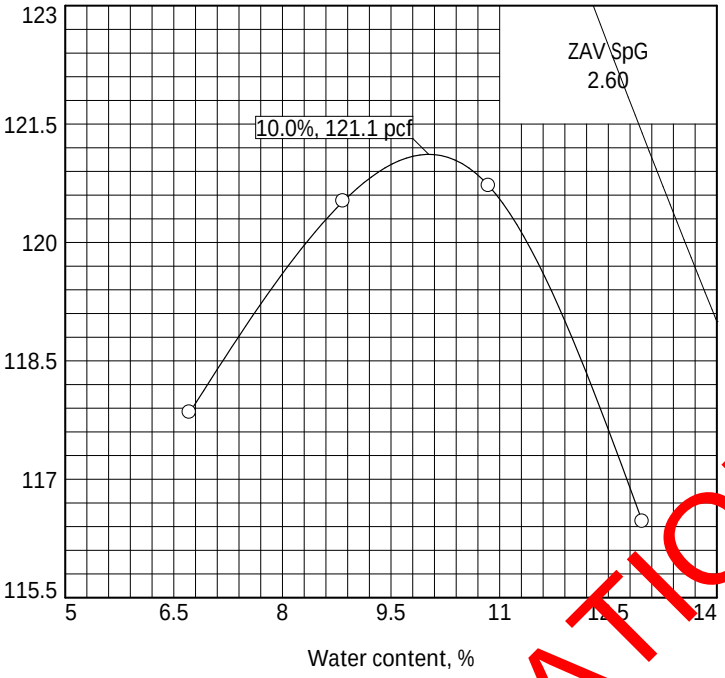
Figure

FOR INFORMATION ONLY

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

# COMPACTION TEST REPORT

Curve No. 4349




Preparation Method

Rammer: Wt. 5.5 lb. Drop 12 in.

Type Manual

Layers: No. three Blows per 25

Mold Size 0.03333 cu. ft.

Test Performed on Material Passing #4 Sieve

%>#4 4 %<No.200 15

Atterberg (D 4318) LL NV PI NP

NM (D 2216) Sp.G. (D 854) 2.6

USCS (D 2487) SM

AASHTO (M 145) A-1-b

Date: Sampled 9/9/25

Received 9/9/25

Tested 9/17/25

Tested By AS

COMPACTION TESTING DATA
AASHTO T 99-22 Method A Standard

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| WM + WS | 6252.0 | 6334.0 | 6334.0 | 6340.0 | | |
| WM | 4346.7 | 4346.7 | 4346.7 | 4346.7 | | |
| WW + T #1 | 414.5 | 423.3 | 553.1 | 497.4 | | |
| WD + T #1 | 398.1 | 401.2 | 514.4 | 457.8 | | |
| TARE #1 | 154.0 | 151.2 | 154.0 | 152.5 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOIST. | 7.7 | 8.8 | 10.8 | 13.0 | | |
| DRY DENS. | 117.8 | 120.5 | 120.7 | 116.5 | | |

SIEVE TEST RESULTS

| Opening Size | % Passing | Specs. |
|---|---|---|
| 3/4" | 100 | |
| 3/8" | 99 | |
| #4 | 96 | |
| #8 | 85 | |
| #16 | 70 | |
| #30 | 55 | |
| #50 | 38 | |
| #100 | 24 | |
| #200 | 15 | |

TEST RESULTS

Maximum dry density = 121.1 pcf

Optimum moisture = 10.0 %

Material Description

silty sand

Remarks:

Project No. 25-1-302C Client: ValleyShore Engineering, LLC

Project: HP Peterson Rd - ValleyShore Eng.

○ Location: Boring B-13 Depth: 1'-4' Sample Number: 4349

Checked by: JJM

Title: Lab Manager

Kumar & Associates, Inc.

Denver, Colorado

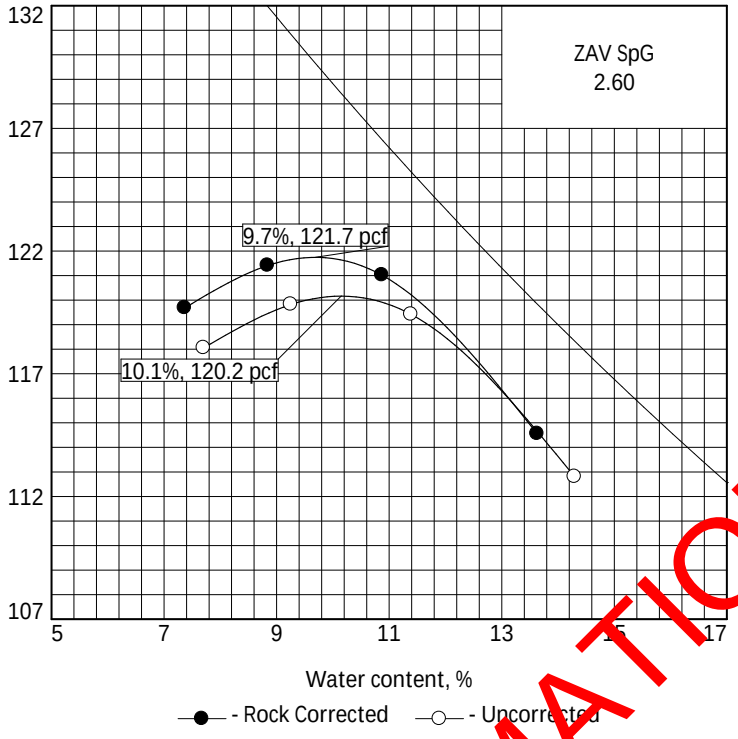
Figure

FOR INFORMATION ONLY

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# COMPACTION TEST REPORT

Curve No. 4350




Preparation Method

Rammer: Wt. 5.5 lb. Drop 12 in.

Type Manual

Layers: No. three Blows per 25

Mold Size 0.03333 cu. ft

Test Performed on Material Passing #4 Sieve

%>#4 5 %<No.200 16

Atterberg (D 4318) LL NV PI NP

NM (D 2216) Sp.G. (D 854) 2.6

USCS (D 2487) SM

AASHTO (M 145) A-2-4(0)

Date: Sampled 9/9/25

Received 9/9/25

Tested 9/16/25

Tested By AS

COMPACTION TESTING DATA
AASHTO T 99-22 Method A Standard
AASHTO T 99/T 180 Annex A Oversize Corr. Applied to Each Test Point

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| WM + WS | 6273.0 | 6330.0 | 6302.6 | 6300.0 | | |
| WM | 4346.7 | 4346.7 | 4346.7 | 4346.7 | | |
| WW + T #1 | 363.7 | 434.0 | 534.1 | 506.1 | | |
| WD + T #1 | 348.5 | 410.3 | 498.8 | 462.1 | | |
| TARE #1 | 151.2 | 154.2 | 189.8 | 154.3 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOIST. | 8.4 | 8.8 | 10.9 | 13.6 | | |
| DRY DENS. | 119.7 | 121.4 | 121.0 | 114.6 | | |

SIEVE TEST RESULTS

| Opening Size | % Passing | Specs. |
|---|---|---|
| 3/4" | 100 | |
| 3/8" | 99 | |
| #4 | 95 | |
| #8 | 88 | |
| #16 | 75 | |
| #30 | 60 | |
| #50 | 42 | |
| #100 | 26 | |
| #200 | 16 | |

| ROCK CORRECTED TEST RESULTS | UNCORRECTED |
|---|---|
| Maximum dry density = 121.7 pcf | 120.2 pcf |
| Optimum moisture = 9.7 % | 10.1 % |

Material Description: silty sand

Remarks:

Project No. 25-1-302C Client: ValleyShore Engineering, LLC

Project: HP Peterson Rd - ValleyShore Eng.

○ Location: Boring B-16 Depth: 1'-4' Sample Number: 4350

Checked by: JJM

Title: Lab Manager

Kumar & Associates, Inc.

Denver, Colorado

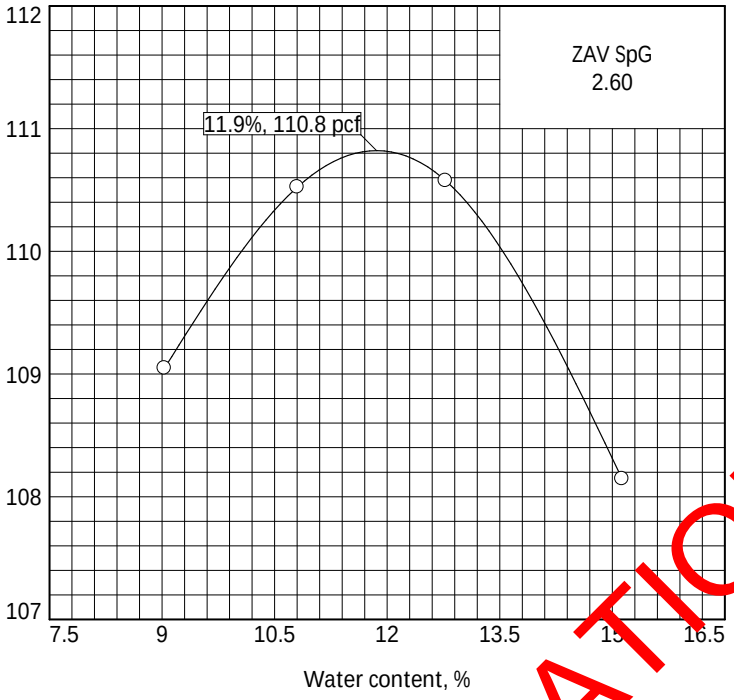
Figure

FOR INFORMATION ONLY

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# COMPACTION TEST REPORT

Curve No. 4351




Preparation Method

Rammer: Wt. 5.5 lb. Drop 12 in.

Type Manual

Layers: No. three Blows per 25

Mold Size 0.03333 cu. ft

Test Performed on Material Passing #4 Sieve

%>#4 1 %<No.200 9.9

Atterberg (D 4318) LL 32 PI 18

NM (D 2216) Sp.G. (D 854) 2.6

USCS (D 2487) SW-SC

AASHTO (M 145) A-2-6(0)

Date: Sampled 9/9/25

Received 9/9/25

Tested 9/16/25

Tested By AS

COMPACTION TESTING DATA
AASHTO T 99-22 Method A Standard

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| WM + WS | 6148.0 | 6202.0 | 6233.0 | 6233.0 | | |
| WM | 4346.7 | 4346.7 | 4346.7 | 4346.7 | | |
| WW + T #1 | 564.6 | 433.0 | 446.1 | 515.0 | | |
| WD + T #1 | 543.4 | 405.8 | 413.6 | 468.5 | | |
| TARE #1 | 308.7 | 154.0 | 158.5 | 161.2 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOIST. | 9.0 | 10.8 | 12.8 | 15.1 | | |
| DRY DENS. | 109.0 | 110.5 | 110.6 | 108.1 | | |

SIEVE TEST RESULTS

| Opening Size | % Passing | Specs. |
|---|---|---|
| 3/4" | 100 | |
| 3/8" | 100 | |
| #4 | 99 | |
| #8 | 95 | |
| #16 | 86 | |
| #30 | 69 | |
| #50 | 41 | |
| #100 | 19 | |
| #200 | 9.9 | |

TEST RESULTS

Maximum dry density = 110.8 pcf

Optimum moisture = 11.9 %

Material Description

well-graded sand with clay

Remarks:

Project No. 25-1-302C Client: ValleyShore Engineering, LLC

Project: HP Peterson Rd - ValleyShore Eng.

○ Location: Boring B-18 Depth: 1'-4' Sample Number: 4351

Checked by: JJM

Title: Lab Manager

Kumar & Associates, Inc.

Denver, Colorado

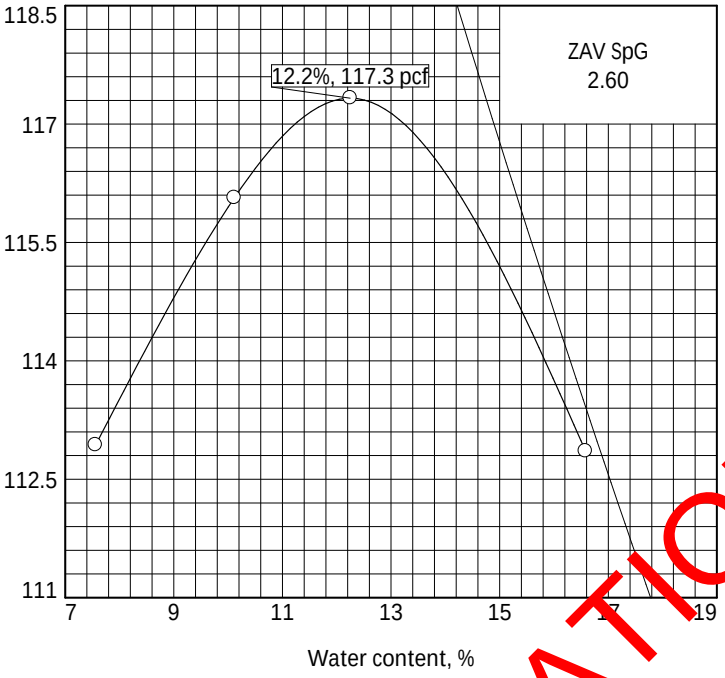
Figure

FOR INFORMATION ONLY

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

# COMPACTION TEST REPORT

Curve No. 4352




Preparation Method

Rammer: Wt. 5.5 lb. Drop 12 in.

Type Manual

Layers: No. three Blows per 25

Mold Size 0.03333 cu. ft

Test Performed on Material Passing #4 Sieve

%>#4 3 %<No.200 7.3

Atterberg (D 4318) LL NV PI NP

NM (D 2216) Sp.G. (D 854) 2.6

USCS (D 2487) SW-SM

AASHTO (M 145) A-1-b

Date: Sampled 9/9/25

Received 9/9/25

Tested 9/18/25

Tested By AS

COMPACTION TESTING DATA
AASHTO T 99-22 Method A Standard

| | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|
| WM + WS | 6187.0 | 6283.0 | 6332.6 | 6340.0 | | |
| WM | 4346.7 | 4346.7 | 4346.7 | 4346.7 | | |
| WW + T #1 | 592.1 | 523.0 | 545.1 | 729.2 | | |
| WD + T #1 | 566.0 | 492.6 | 510.7 | 652.7 | | |
| TARE #1 | 220.8 | 192.1 | 224.2 | 191.4 | | |
| WW + T #2 | | | | | | |
| WD + T #2 | | | | | | |
| TARE #2 | | | | | | |
| MOIST. | 7.6 | 10.1 | 12.3 | 16.6 | | |
| DRY DENS. | 112.9 | 116.1 | 117.3 | 112.9 | | |

SIEVE TEST RESULTS

| Opening Size | % Passing | Specs. |
|---|---|---|
| 3/4" | 100 | |
| 3/8" | 99 | |
| #4 | 97 | |
| #8 | 87 | |
| #16 | 65 | |
| #30 | 44 | |
| #50 | 25 | |
| #100 | 13 | |
| #200 | 7.3 | |

TEST RESULTS

Maximum dry density = 117.3 pcf

Optimum moisture = 12.2 %

Material Description

well-graded sand with silt

Remarks:

Project No. 25-1-302C Client: ValleyShore Engineering, LLC

Project: HP Peterson Rd - ValleyShore Eng.

○ Location: Boring B-20 Depth: 1'-4' Sample Number: 4352

Checked by: JJM

Title: Lab Manager

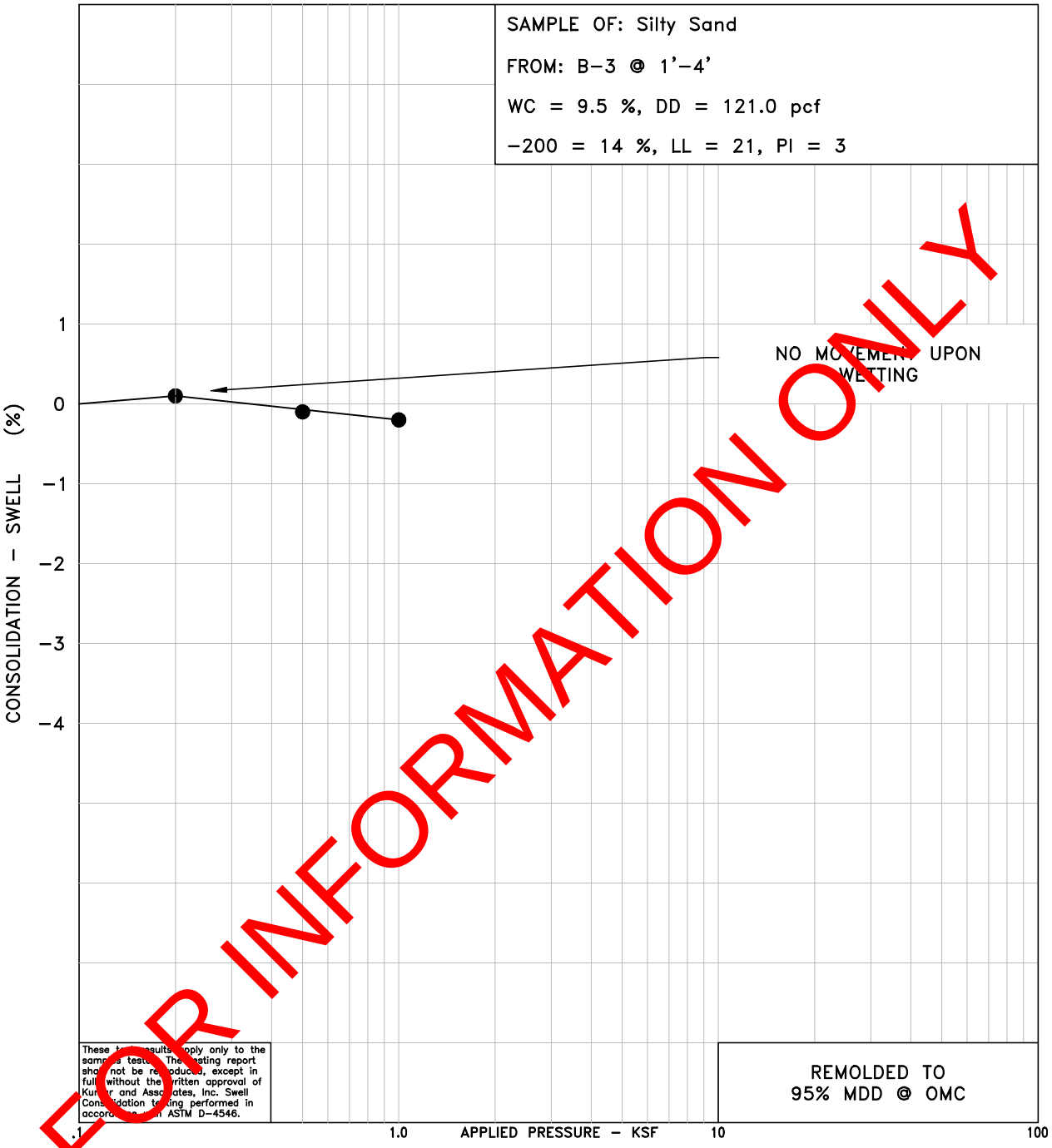
Kumar & Associates, Inc.

Denver, Colorado

Figure

These test results apply only to the samples which were tested. the testing report shall not be reproduced, except in full, without the written approval of K & A, Inc

FOR INFORMATION ONLY




FOR INFORMATION ONLY

| 25-1-302.C | Kumar & Associates | REMOLDED SWELL-CONSOLIDATION TEST RESULTS | 4345 |
|---|---|---|---|

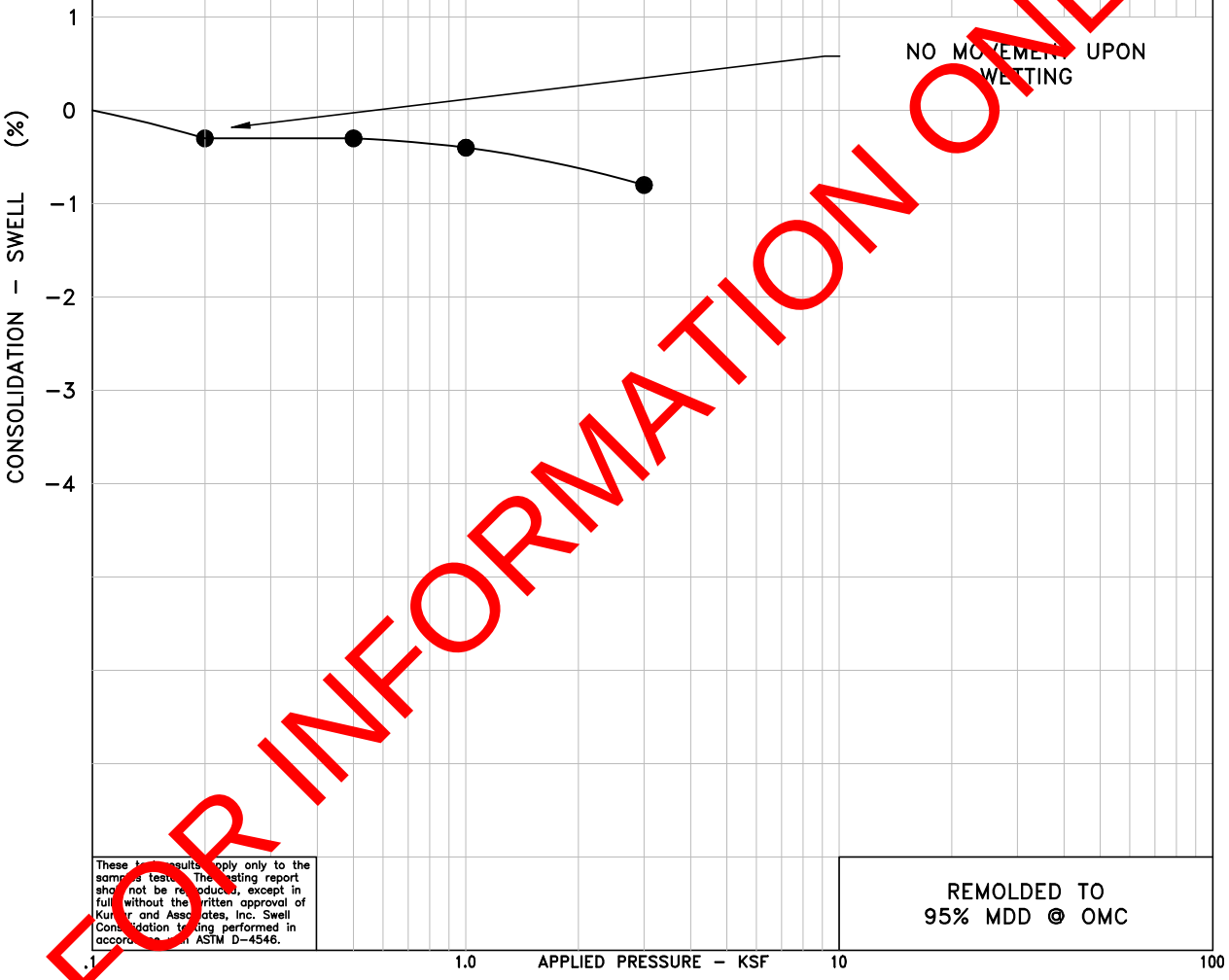
October 03, 2025 - 09:15am
C:\Users\mromero\AppData\Local\Temp\AcPublish_26928\HP Peterson Rd (25-1-302C) swells.dwg

SAMPLE OF: Well Graded Sand with Silt

FROM: B-5 @ 1'-4'

WC = 11.0 %, DD = 115.1 pcf

-200 = 8 %, NV, NP



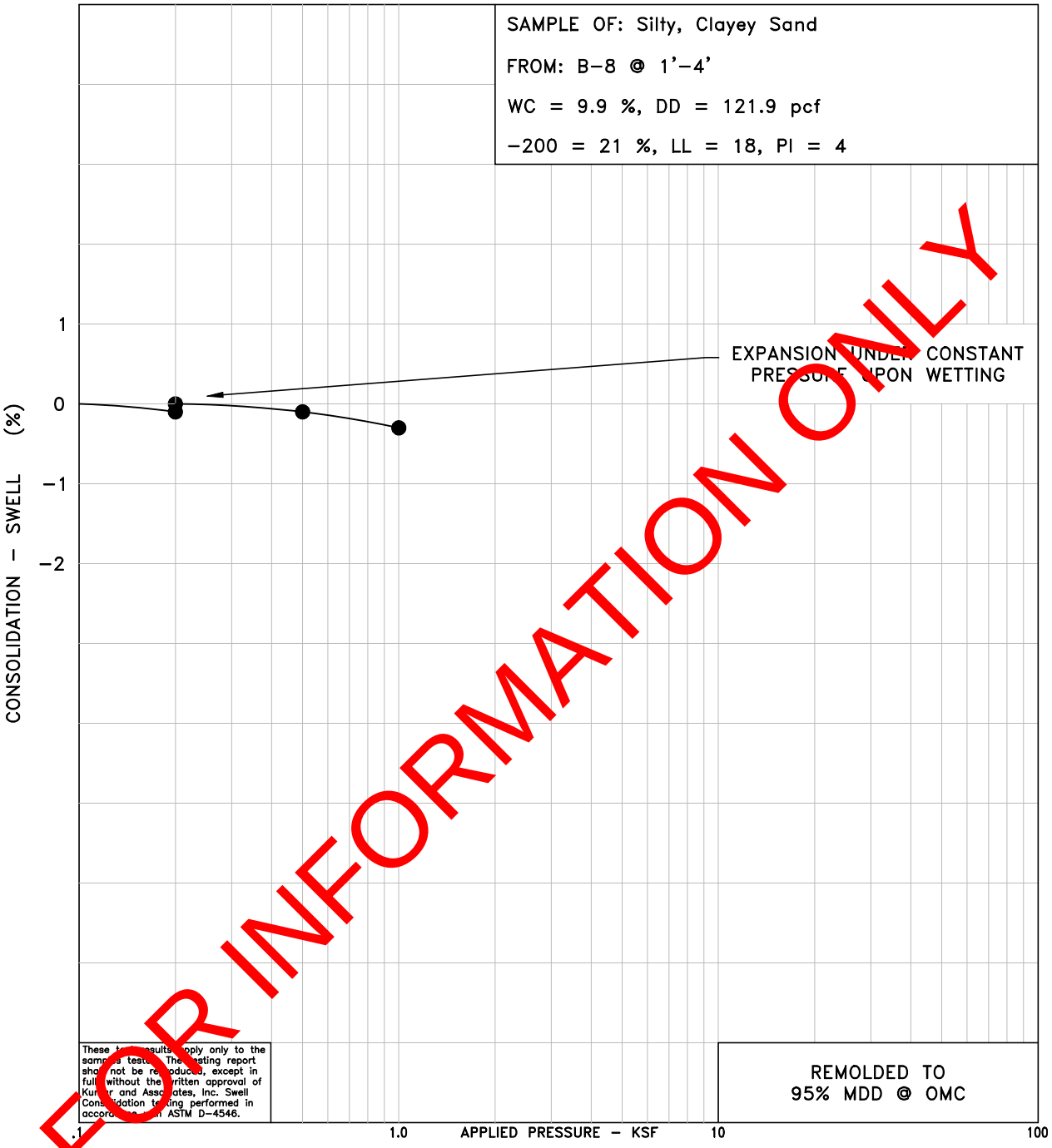

These test results apply only to the samples tested. The testing report shall not be reproduced, except in full without the written approval of Kumar and Associates, Inc. Swell Consolidation testing performed in accordance with ASTM D-4546.

REMOLDED TO
95% MDD @ OMC

FOR INFORMATION ONLY

| 25-1-302.C | Kumar & Associates | REMOLDED SWELL-CONSOLIDATION TEST RESULTS | 4346 |
|---|---|---|---|

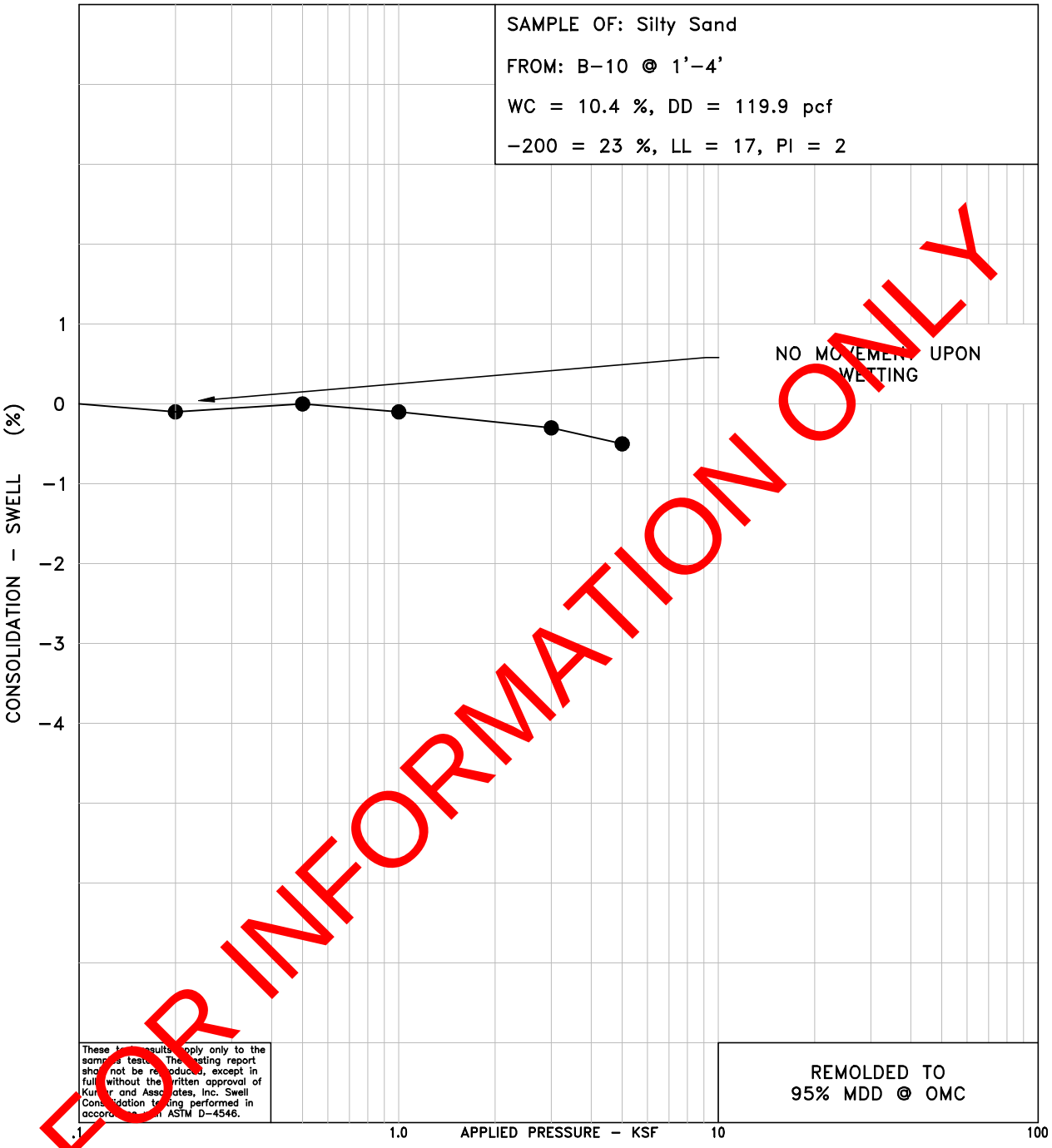
October 03, 2025 - 09:15am
C:\Users\mromero\AppData\Local\Temp\AcPublish_26928\HP Peterson Rd (25-1-302C) swells.dwg




FOR INFORMATION ONLY

| | | | |
|---|---|---|---|
| 25-1-302.C | Kumar & Associates | REMOLDED SWELL-CONSOLIDATION TEST RESULTS | 4347 |

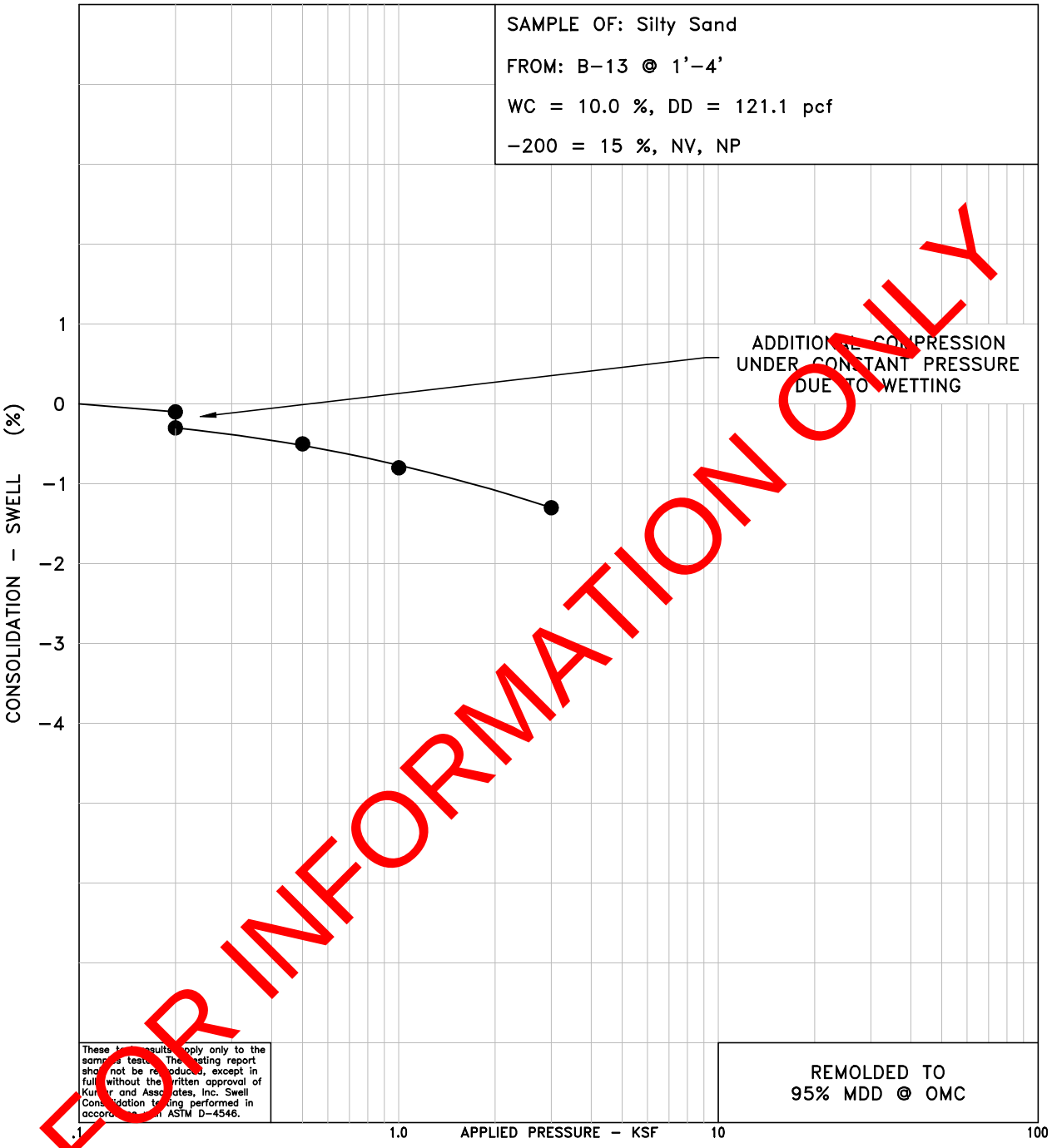
October 03, 2025 - 09:15am
C:\Users\mromero\AppData\Local\Temp\AcPublish_26928\HP Peterson Rd (25-1-302C) swells.dwg




FOR INFORMATION ONLY

| 25-1-302.C | Kumar & Associates | REMOLDED SWELL-CONSOLIDATION TEST RESULTS | 4348 |
|---|---|---|---|

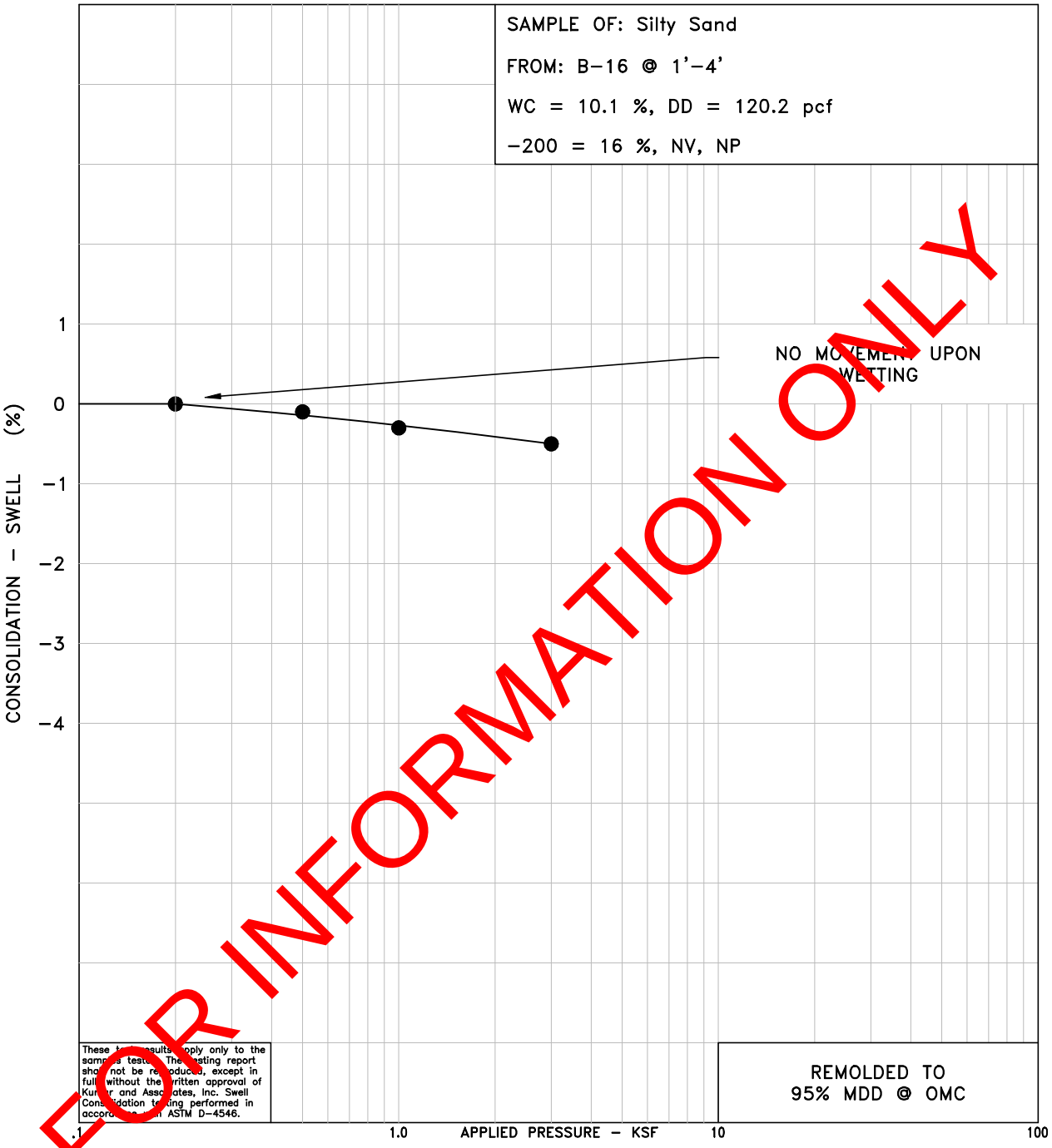
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C:\Users\mromero\AppData\Local\Temp\AcPublish_26928\HP Peterson Rd (25-1-302C) swells.dwg




FOR INFORMATION ONLY

| | | | |
|---|---|---|---|
| 25-1-302.C | Kumar & Associates | REMOLDED SWELL-CONSOLIDATION TEST RESULTS | 4349 |

October 03, 2025 - 09:15am
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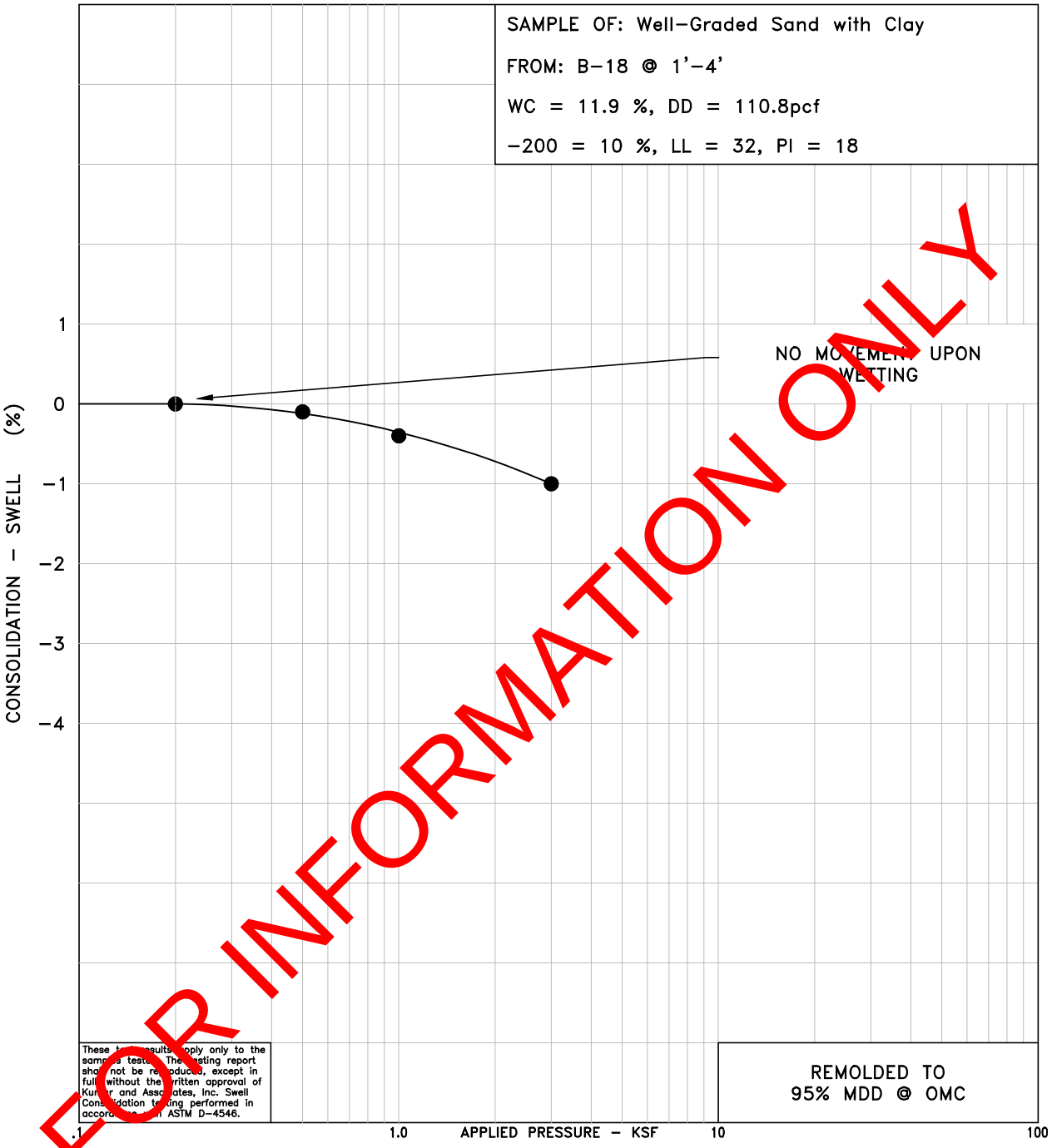



These test results apply only to the samples tested. The testing report shall not be reproduced, except in full without the written approval of Kumar and Associates, Inc. Swell Consolidation testing performed in accordance with ASTM D-4546.

FOR INFORMATION ONLY

| | | | |
|---|---|---|---|
| 25-1-302.C | Kumar & Associates | REMOLDED SWELL-CONSOLIDATION TEST RESULTS | 4350 |

October 03, 2025 - 09:15am
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These test results apply only to the samples tested. The testing report shall not be reproduced, except in full without the written approval of Kumar and Associates, Inc. Swell Consolidation testing performed in accordance with ASTM D-4546.

FOR INFORMATION ONLY

| | | | |
|---|---|---|---|
| 25-1-302.C | Kumar & Associates | REMOLDED SWELL-CONSOLIDATION TEST RESULTS | 4351 |

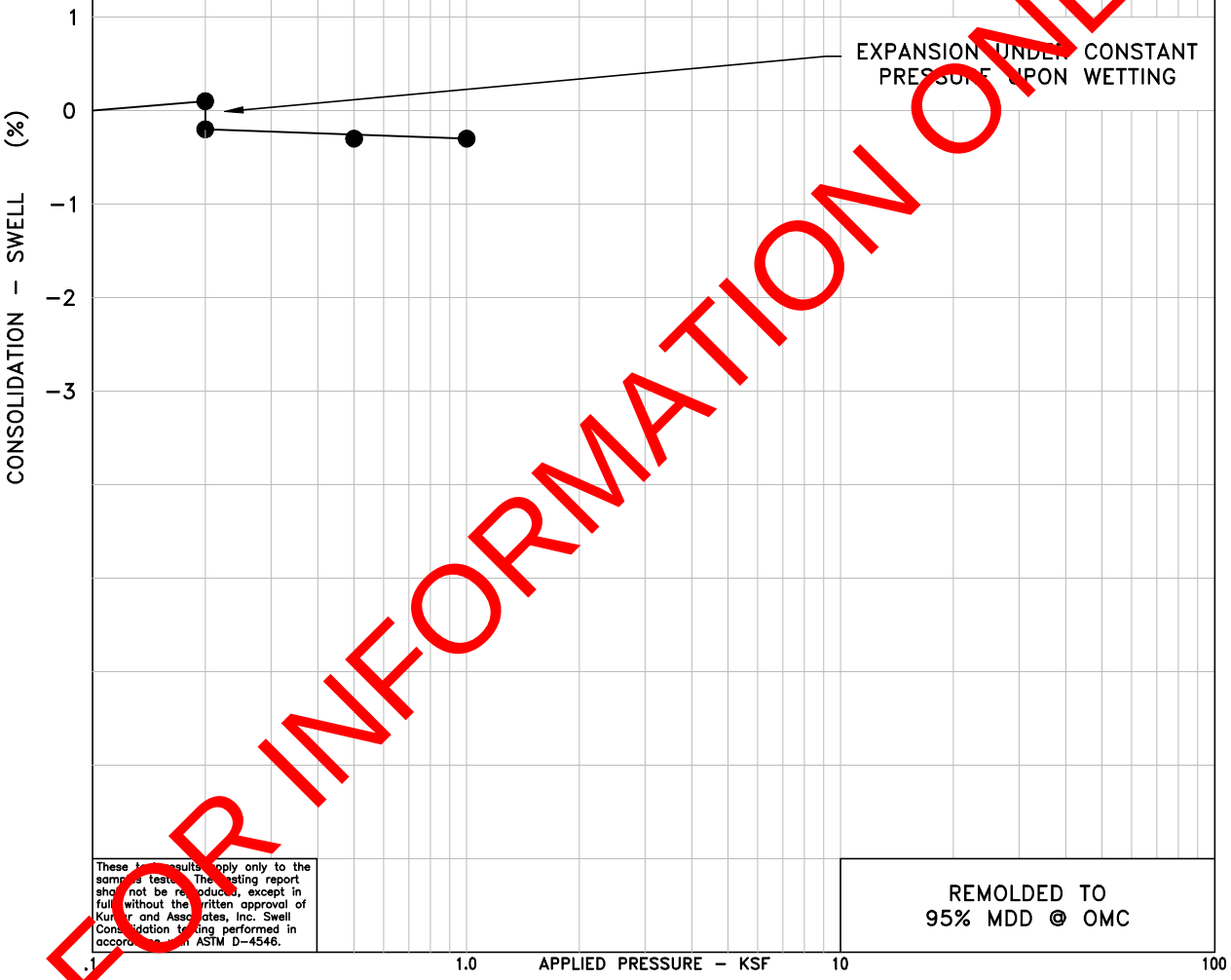
October 03, 2025 - 09:15am
C:\Users\mromero\AppData\Local\Temp\AcPublish_26928\HP Peterson Rd (25-1-302C) swells.dwg

SAMPLE OF: Well-Graded Sand with Silt

FROM: B-20 @ 1'-4'

WC = 12.2 %, DD = 117.3 pcf

-200 = 7 %, NV, NP




These test results apply only to the samples tested. The testing report shall not be reproduced, except in full without the written approval of Kumar and Associates, Inc. Swell Consolidation testing performed in accordance with ASTM D-4546.

REMOLDED TO
95% MDD @ OMC

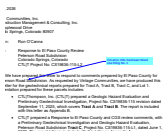
FOR INFORMATION ONLY

| 25-1-302.C | Kumar & Associates | REMOLDED SWELL-CONSOLIDATION TEST RESULTS | 4352 |
|---|---|---|---|

October 03, 2025 - 09:15am
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# V4_Soils & Geology Report.pdf Markup Summary

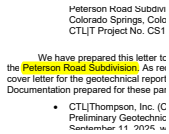
## Callout (1)



**Subject:** Callout
**Page Label:** 1
**Author:** CDurham
**Date:** 9/3/2026 5:27:16 PM
**Status:**
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Cimarron Hills Southeast Mixed Use Filing No. 1

## Highlight (1)




**Subject:** Highlight
**Page Label:** 1
**Author:** CDurham
**Date:** 9/3/2026 5:27:22 PM
**Status:**
**Color:**
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**Space:**

Peterson Road Subdivision

## Image (1)




**Subject:** Image
**Page Label:** 93
**Author:** twill
**Date:** 7/16/2026 7:32:48 PM
**Status:**
**Color:**
**Layer:**
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## Planner (1)




**Subject:** Planner
**Page Label:** 104
**Author:** Juhler
**Date:** 9/8/2026 11:14:28 AM
**Status:**
**Color:**
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**Space:**

Isn't Tract C holding the detention facility?

## Text Box (1)




**Subject:** Text Box
**Page Label:** 93
**Author:** twill
**Date:** 7/16/2026 7:32:59 PM
**Status:**
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07/16/26

(12)



**Subject:**
**Page Label:** 127
**Author:** AutoCAD SHX Text
**Date:**
**Status:**
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GEOLOGICAL HAZARDS DISCUSSION: CLOSEST FAULT: RAMPART RANGE FAULT ~ 9 MILES WEST LIQUEFACTION POTENTIAL: NOT PRESENT BASED ON THE RESULTS OF OUR EXPLORATION LANDSLIDES, UNSTABLE SLOPES, ROCKFALLS, AND AVALANCHES: NONE NOTED ON THE COLORADO LANDSLIDE INVENTORY AND THE LANDSLIDE INVENTORY OF EL PASO COUNTY DATABASES. THE SITE IS NOT SUBJECT TO ROCKFALLS AND AVALANCHES DUE TO ITS DISTANCE FROM THE NEARBY MOUNTAINS. FLOODING, MUDFLOWS, AND DEBRIS FLOWS: NOT IN FLOOD ZONE PER COLORADO WATER CONSERVATION BOARD'S COLORADO HAZARD MAPPING & RISK MAP PORTAL AND FEMA FLOOD MAP PANEL 08041C0754G (SHOWN HERE). NOT SUSCEPTIBLE TO DEBRIS FLOW OR MUDFLOW PER THE DEBRIS-FLOW SUSCEPTIBILITY MAPPING OF SELECT COLORADO COUNTIES DATABASE AND CGS OPEN-FILE REPORT 18-11 "DEBRIS FLOW SUSCEPTIBILITY MAP OF EL PASO COUNTY, COLORADO" (2018) BY KEVIN M. MCCOY, MATTHEW L. MORGAN, AND KAREN A. BERRY. SUBSIDENCE AND ABANDONED MINES OR LANDFILLS: NONE FOUND BASED ON APRIL 1985 "COLORADO SPRINGS SUBSIDENCE INVESTIGATION" BY DAMES & MOORE FOR THE STATE OF COLORADO'S DIVISION OF MINE RECLAMATION, COLORADO HISTORIC COAL MINES DATABASE, AND THE SITE'S HISTORICAL AERIAL PHOTOGRAPHY. EXPANSIVE, COLLAPSIBLE, AND COMPRESSIBLE SOILS AND ROCK: SITE MAY BE SUSCEPTIBLE TO COLLAPSE POTENTIAL PER THE COLLAPSIBLE SOILS OF COLORADO DATABASE. DUNE AND SHEET SAND DEPOSITS. SHALLOW GROUNDWATER TABLE AND BEDROCK: NOT ENCOUNTERED. NOT IN STEEPLY DIPPING BEDROCK PER CGS MAPPING (HIMMELREICH AND NOE, 1999). RADIOACTIVITY AND RADON EXPOSURE: SIMILAR TO NEARBY SITES WITH POSSIBLE EXPOSURE TO RADON.

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**Subject:**
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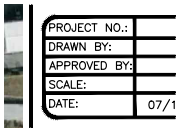
ZONE AE

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**Subject:**
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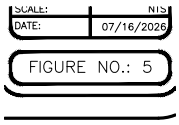
NOTES:




**Subject:**
**Page Label:** 127
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PROJECT NO.: DRAWN BY: APPROVED BY:
SCALE: DATE:

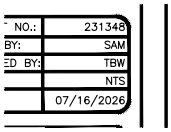
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FIGURE NO.: 5

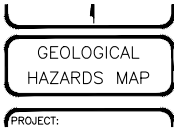
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231348 SAM TBW NTS 07/16/2026

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**Subject:**
**Page Label:** 127
**Author:** AutoCAD SHX Text
**Date:**
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GEOLOGICAL HAZARDS MAP

---




**Subject:**
**Page Label:** 127
**Author:** AutoCAD SHX Text
**Date:**
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PROJECT: HILLPOINTE DEVELOPMENT
PETERSON ROAD COLORADO SPRINGS, CO

---

~~Date~~

**Subject:**
**Page Label:** 78
**Author:**
**Date:** 9/22/2017 11:35:45 AM
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Date

*Source*

***USDA***

**Subject:**
**Page Label:** 78
**Author:**
**Date:** 9/22/2017 11:35:45 AM
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Source

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*Scale*

***1" = 500'***

**Subject:**
**Page Label:** 78
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Scale

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*Frame*

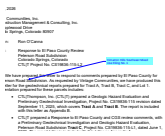
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Frame

# V4_Soils & Geology Report.pdf Markup Summary

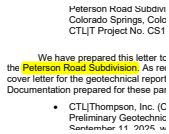
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**Subject:** Callout
**Page Label:** 1
**Author:** CDurham
**Date:** 9/3/2026 5:27:16 PM
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Cimarron Hills Southeast Mixed Use Filing No. 1

## Highlight (1)




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**Page Label:** 1
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Peterson Road Subdivision

## Image (1)




**Subject:** Image
**Page Label:** 93
**Author:** twill
**Date:** 7/16/2026 7:32:48 PM
**Status:**
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## Planner (1)




**Subject:** Planner
**Page Label:** 104
**Author:** Juhler
**Date:** 9/8/2026 11:14:28 AM
**Status:**
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**Layer:**
**Space:**

Isn't Tract C holding the detention facility?

## Text Box (1)

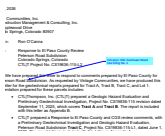



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07/16/26

# V4_Soils & Geology Report.pdf Markup Summary

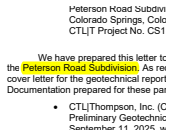
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Cimarron Hills Southeast Mixed Use Filing No. 1

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Peterson Road Subdivision

## Planner (1)




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