ENTECH
ENGINEERING, INC.

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SUBSURFACE SOIL INVESTIGATION
CASCADE METROPOLITAN DISTRICT NO. 1
WATER SYSTEM IMPROVEMENT PROJECT
CASCADE, COLORADO

Prepared for:

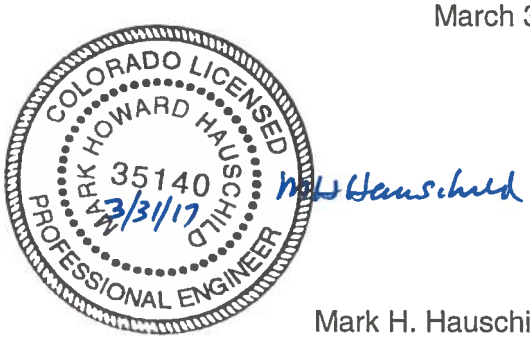
GMS, Inc.
611 North Weber Street, Suite 300
Colorado Springs, Colorado

Attn: Mr. Ken White

March 31, 2017

Respectfully Submitted,

ENTECH ENGINEERING, INC.



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AMN/amn
Encl.
Entech Job No. 162296
AAprojects/2016/162296 SSI

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SUBSURFACE SOIL INVESTIGATION
CASCADE METROPOLITAN DISTRICT NO. 1
WATER SYSTEM IMPROVEMENT PROJECT
CASCADE, COLORADO

1.0 INTRODUCTION

The project consists of the construction of new water main improvements for the Cascade Metropolitan District Number 1. The improvements are expected to include service line relocation and water main relocations/size changes for the existing water mains and water distribution system. The site is located in the vicinity of Highway 24 in the town of Cascade, Colorado. The approximate location of the project site is shown on the Vicinity Map, Figure 1. The test boring locations are shown on Figure 2, the Site Plan/Test Boring Location Map.

This report describes the subsurface investigation conducted for the site and provides recommendations for new utility design and construction. The Subsurface Soil Investigation included the drilling of sixty four (64) test borings across the site, collecting samples of soil, and conducting a geotechnical evaluation of the investigation findings. All drilling and subsurface investigation activities were performed by Entech Engineering, Inc. (Entech). The contents of this report, including the geotechnical evaluation and recommendations, are subject to the limitations and assumptions presented in Section 9.0.

2.0 PROJECT AND SITE DESCRIPTION

The project will consist of water main improvements for the Cascade Metropolitan District Number 1. Investigation was performed at predetermined locations designated based on the Water System Improvement plan provided to us by the client. At the time of drilling, the boring locations were on existing asphalt and gravel roads. Figure 2 shows the test boring locations.

3.0 SUBSURFACE EXPLORATIONS AND LABORATORY TESTING

Subsurface conditions on the site were explored by drilling sixty-four (64) test borings at the approximate locations shown on Figures 2. The borings were drilled to depths of ten (10) feet below the existing ground surface (bgs). The drilling was performed using a truck-mounted, continuous flight auger-drilling rig supplied and operated by Entech. Boring logs descriptive of the subsurface conditions encountered during drilling are presented in Appendix A. At the conclusion of drilling, observations for groundwater levels were made in each of the open boreholes.

Soil and bedrock samples were obtained from the borings utilizing the Standard Penetration Test (ASTM D-1586) using 2-inch O.D. split-barrel and California samplers. Results of the Standard Penetration Test (SPT) are included on the boring logs in terms of N-values expressed in blows per foot (bpf). Soil and bedrock samples recovered from the borings were visually classified and recorded on the boring logs. The soil and bedrock classifications were later verified utilizing laboratory testing and grouped by soil type. The soil and bedrock type numbers are included on the boring logs. It should be understood that the soil and bedrock descriptions shown on the boring logs may vary between boring location and sample depth. It should also be noted that the lines of stratigraphic separation shown on the boring logs represent approximate boundaries between soil and bedrock types and the actual stratigraphic transitions may be more gradual or variable with location.

Water content testing (ASTM D-2216) was performed on the samples recovered from the borings, and the results are shown on the boring logs. Grain-Size Analysis (ASTM D-422) and Atterberg Limits testing (ASTM D-4318) were performed on selected samples to assist in

classifying the materials encountered in the borings. Volume change testing was performed on selected samples using the Swell/Consolidation Test (ASTM D-4546) and the FHA Swell Test in order to evaluate potential expansion/compression characteristics of the soil. Soluble sulfate testing was performed on select soil samples to evaluate the potential for below grade degradation of concrete due to sulfate attack. The Laboratory Testing Results are summarized on Table 1 and are presented in Appendix B.

4.0 SUBSURFACE CONDITIONS

Two (2) soil types were encountered in the test borings drilled for the subsurface investigation: Type 1: slightly silty to silty sand (SM-SW, SM), and Type 1A: slightly silty to silty sand fill (SC, SM). Soils were classified in accordance with the Unified Soil Classification System (USCS) using the laboratory testing results and the observations made during drilling.

4.1 Soil and Bedrock

Soil Type 1 classified as a slightly silty to silty sand (SM-SW, SM). The sand was encountered in all of the test borings at the existing ground surface or below up to 21 inches of asphalt and extending to the depths explored (10 feet). Standard Penetration Testing conducted on the sand resulted in SPT N-values ranging from 3 to greater than 50 blows per foot (bpf), indicating the soil to be at loose to very dense states. Water content and grain size testing of selected soil samples resulted in a water content range from 1 to 15 percent, and 5 to 41 percent of the soil particles passing the No. 200 sieve. Atterberg limits testing resulted in liquid limits ranging from no-value to 22 and plastic indices ranging between non-plastic and 2. Swell/Consolidation testing on the sand resulted in a volume change of -0.5 percent. FHA Swell pressure of 30 psf was measured on the sand. The sand exhibit low swell and consolidation potentials. Sulfate testing on a sample of Soil Type 1 resulted in 0.00 percent to 0.04 percent soluble sulfate by weight, which indicates a low to negligible potential for below grade concrete degradation due to sulfate attack. Resistivity testing resulted in values of 8,333 to 26,596 ohm-cm and pH testing resulted in pH values of 4.0 to 6.2.

Soil Type 1A classified as a slightly silty to silty sand fill (SC, SM). The fill was encountered in seven (7) of the test borings at the existing ground surface or below up to 14" of asphalt and extending up to the depths explored (10 feet). Standard Penetration Testing conducted on the sand resulted in SPT N-values ranging from 5 to 40 blows per foot (bpf), indicating the soil to be at loose to very dense states. Water content and grain size testing of selected soil samples resulted in a water content range from 2 to 15 percent, and 22 to 49 percent of the soil particles passing the No. 200 sieve. Atterberg limits testing resulted in a liquid limit of 30 and a plastic index of 23. FHA Swell pressure of 330 psf was measured on the sand fill. Swell/Consolidation testing on the sand fill resulted in a volume change of -0.4 percent. The sand fill exhibited low swell and consolidation potentials. Sulfate testing on a sample of Soil Type 1A resulted in 0.03 percent soluble sulfate by weight, which indicates a low to negligible potential for below grade concrete degradation due to sulfate attack. Resistivity testing resulted in a value of 17,857 ohm-cm and pH testing resulted in a pH value of 6.1.

4.2 Groundwater

Depth to groundwater was measured in each of the borings at the conclusion of drilling. Due to the locations of the test borings in roadways and on right of ways, the test borings were backfilled after drilling. Groundwater was only encountered in test boring 14 at a depth of 8 feet. Groundwater is generally not expected to affect utilities construction on this site. It should be noted that groundwater levels could change due to seasonal variations, changes in land runoff characteristics and future development including nearby areas.

5.0 GEOTECHNICAL EVALUATION AND RECOMMENDATIONS

The following discussion is based on the subsurface conditions encountered in the borings drilled at the site. This investigation is for the site discussed in Section 2.0 Project and Site Description. If subsurface conditions different from those described herein are encountered during construction or if the project elements change from those described, Entech Engineering, Inc. should be notified so that the evaluation and recommendations presented can be reviewed and revised if necessary.

The project will consist of replacing the existing water system. All test borings, with the exception of TB-20, were drilled to 10 feet. Test boring 20 was terminated at 5 feet when a water line was hit. Subsurface materials encountered in the test borings drilled on the site generally classified of slightly silty to silty, gravelly sand. The exploratory operation did not encounter difficult drill conditions. The upper soil profiles were at loose to dense states. Bedrock was not encountered up to a drilled depth of 9 feet. Very dense conditions were encountered at the bottom of several of the test borings. The high "blow counts" in the upper profile was due to gravels and decomposed granite. The very hard materials encountered may be sandstone or granite. Identification of granite and very hard sandstone during drilling and in the collected samples was difficult due to disturbance during sample driving.

Fill was encountered in seven (7) of the test borings. Fill is expected to be encountered in the trench excavations that are associated with prior development/construction. Any uncontrolled fill encountered beneath the proposed improvements will require removal and recompaction according to the "Structural Fill" paragraph. Any loose soils encountered during construction should be removed and recompacted according to the "Structural Fill" paragraph. Design considerations are discussed in the following sections.

Asphalt depths in the test borings ranged from 2 to 21 inches where it was encountered. The depths of asphalt are presented in Table 2. Asphalt was not present in 13 of the test borings which were on gravel roads.

5.1 Concrete

Sulfate solubility testing was conducted on the soil samples recovered from the test borings to evaluate the potential for sulfate attack on concrete placed below surface grade. Test results indicated a range from 0.00 to 0.04 percent soluble sulfate by weight (Table 1). The test results indicate the sulfate component of the in-place soils presents a low to negligible exposure threat to concrete placed below the site grade depending. Type II cement is recommended for the soils which pose a negligible threat, which will include imported structural fill materials. If concrete is placed during periods of cold temperatures, the concrete must be kept from freezing. This may require covering the concrete with insulated blankets and adding heat to prohibit freezing.

5.2 Structural Fill

Areas to receive fill should have all topsoil, organic material or debris removed. Fill must be properly benched. The surface should be scarified and moisture conditioned to within 0 to +2 percent of its optimum moisture content and compacted to 95 percent of its maximum Modified Proctor Dry Density (ASTM D-1557) prior to placing new fill. New fill should be non-expansive and be placed in thin lifts not to exceed 6 inches after compaction while maintaining at least 95 percent of its maximum Modified Proctor Dry Density (ASTM D-1557) for granular soils. These materials should be placed at a moisture content conducive to compaction, usually ±2 percent of Proctor optimum moisture content. The placement and compaction of fill should be observed and tested by Entech Engineering, Inc. Imported soils should be approved by Entech Engineering, Inc. prior to being hauled to the site and on-site granular soils prior to placement. No water flooding techniques of any type should be used for compaction or placement of structural fill.

5.3 Underground Utility Construction

Generally, excavation is expected to be moderate to difficult. Rock buckets and rock teeth may be required where excavations extend into hard or cemented materials. Cobbles and boulders are expected to be encountered. Very hard sandstone or granite may be encountered in deeper excavations which will require specialized excavation equipment, methods and procedures.

Fill placed in utility trenches should be compacted to a minimum of 95 percent of its maximum dry density as determined by the Standard Proctor Test (ASTM D-698) for cohesive soils and 95 percent as determined by the Modified Proctor Test (ASTM D-1557) for cohesionless soils. Fill should be placed in horizontal lifts having a compacted thickness of six inches or less and at a water content conducive to adequate compaction, usually within 2 percent of the optimum water content. Mechanical methods should be used for fill placement. No water flooding techniques of any type should be used for compaction or placement of utility trench fill.

Trench backfill placement should be performed in accordance with City of Colorado Springs and/or El Paso County specifications as appropriate to specific location. Testing should be performed according to frequency and requirements of appropriate City of Colorado Springs and/or El Paso County specifications. All excavation and excavation shoring/bracing should be performed in accordance with OSHA guidelines.

6.0 EXCAVATION STABILITY

Excavation walls must be properly sloped/benched or otherwise supported in order to maintain stable conditions. All excavation openings and work execution shall conform to OSHA standards as in CFR 29, Part 1926.650-652 (Subpart D).

7.0 WINTER CONSTRUCTION

In the event construction occurs during winter, concrete and soil materials should be protected from freezing conditions. Concrete should not be placed on frozen soil and once concrete has been placed, it should not be allowed to freeze. Similarly, once exposed, the soil subgrades should not be allowed to freeze. During grading operations and subgrade preparation, care should be taken to avoid burial of snow, ice or frozen material within the planned construction area.

8.0 CONSTRUCTION OBSERVATIONS

It is recommended that Entech observe and document the following activities during construction of the building foundations.

- Placement/compaction of fill materials.
- Placement/compaction of utility bedding and trench backfill.

9.0 CLOSURE

The Subsurface Soils Investigation, geotechnical evaluation and recommendations presented in this report are intended for use by GMS, Inc. with application to the planned Water System Improvement Project for the Cascade Metropolitan District Number 1 in Cascade, Colorado. In conducting the preliminary subsurface investigation, laboratory testing, engineering evaluation and reporting, Entech Engineering, Inc. endeavored to work in accordance with generally accepted professional geotechnical and geologic practices and principles consistent with the level of care and skill ordinarily exercised by members of the geotechnical profession currently practicing in same locality and under similar conditions. No other warranty, expressed or implied is made. During final design and/or construction, if conditions are encountered which appear different from those described in this report, Entech Engineering, Inc. requests that it be notified so that the evaluation and recommendations presented herein can be reviewed and modified as appropriate.

If there are any questions regarding the information provided herein or if Entech Engineering, Inc. can be of further assistance, please do not hesitate to contact us.

TABLES

TABLE 1

SUMMARY OF LABORATORY TEST RESULTS

CLIENT GMS, INC
PROJECT CASCADE METRO
JOB NO. 162296

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT (%)	PLASTIC INDEX (%)	SULFATE (WT %)	FHA SWELL (PSF)	SWELL/ CONSOL (%)	UNIFIED CLASSIFICATION	SOIL DESCRIPTION
1A	14	2-3			49.4	30	23	0.03			SC	POSS. FILL, SAND, VERY CLAYEY
1A	19	10			21.5						SM	POSS. FILL, SAND, SILTY
1A	20	2-3			29.0						SM	POSS. FILL, SAND, SILTY
1A	49	2-3			23.4				330		SC	POSS. FILL, SAND, CLAYEY
1A	52	2-3			33.5						SC	POSS. FILL, SAND, CLAYEY
1A	1	2-3	14.8	102	15.7					-0.4	SM	POSS. FILLL, SAND, SILTY
1	2	2-3							30		SM	SAND, SILTY
1	2	5			12.8	NV	NP				SM	SAND, SILTY
1	3	10			12.5			<0.01			SM	SAND, SILTY
1	4	5			15.6						SM	SAND, SILTY
1	5	2-3			7.0						SM-SW	SAND, SLIGHTLY SILTY
1	6	5			11.3						SM-SW	SAND, SLIGHTLY SILTY
1	7	10			19.8						SM	SAND, SILTY
1	8	10			4.7						SW	SAND
1	9	2-3			11.1						SM-SW	SAND, SLIGHTLY SILTY
1	10	2-3			13.2						SM	SAND, SILTY
1	11	2-3			8.9						SM-SW	SAND, SLIGHTLY SILTY
1	12	5			9.5						SM-SW	SAND, SLIGHTLY SILTY
1	13	5			30.1			0.00			SM	SAND, SILTY
1	15	10			16.8						SM	SAND, SILTY
1	16	5			10.6	NV	NP				SM-SW	SAND, SLIGHTLY SILTY
1	17	10			33.6			<0.01			SM	SAND, SILTY
1	18	5			10.3	NV	NP	<0.01			SM-SW	SAND, SLIGHTLY SILTY
1	21	2-3	5.9	115	40.6					-0.5	SM	SAND, VERY SILTY
1	22	5			21.3	NV	NP	<0.01			SM	SAND, SILTY
1	23	10			21.7						SM	SAND, SILTY
1	24	5			28.1						SM	SAND, SILTY
1	25	2-3			11.9						SM-SW	SAND, SLIGHTLY SILTY
1	26	5			15.5						SM	SAND, SILTY
1	27	10			13.0						SM	SAND, SILTY
1	28	5			16.3	22	2				SM	SAND, SILTY
1	29	5			14.5						SM	SAND, SILTY
1	30	10			18.5						SM	SAND, SILTY
1	31	2-3			21.7						SM	SAND, SILTY
1	32	5			21.3						SM	SAND, SILTY
1	33	2-3			17.5	NV	NP				SM	SAND, SILTY

SOIL TYPE	TEST BORING NO.	DEPTH (FT)	WATER (%)	DRY DENSITY (PCF)	PASSING NO. 200 SIEVE (%)	LIQUID LIMIT (%)	PLASTIC INDEX (%)	SULFATE (WT %)	FHA SWELL (PSF)	SWELL/ CONSOL (%)	UNIFIED CLASSIFICATION	SOIL DESCRIPTION
1	34	5			29.2						SM	SAND, SILTY
1	35	2-3			19.2						SM	SAND, SILTY
1	36	5			17.2			0.00			SM	SAND, SILTY
1	37	10			15.2	NV	NP				SM	SAND, SILTY
1	38	5			19.5						SM	SAND, SILTY
1	39	2-3			20.7						SM	SAND, SILTY
1	40	5			22.4						SM	SAND, SILTY
1	41	10			21.6						SM	SAND, SILTY
1	42	5			22.4	NV	NP	<0.01			SM	SAND, SILTY
1	43	2-3			16.9						SM	SAND, SILTY
1	44	2-3			24.0						SM	SAND, SILTY
1	45	5			20.5						SM	SAND, SILTY
1	46	10			26.3						SM	SAND, SILTY
1	47	5			18.5			0.04			SM	SAND, SILTY
1	48	10			13.0						SM	SAND, SILTY
1	49	5			16.0						SM	SAND, SILTY
1	50	5			16.5						SM	SAND, SILTY
1	51	5			15.3	NV	NP				SM	SAND, SILTY
1	53	2-3			21.5						SM	SAND, SILTY
1	54	5			22.6						SM	SAND, SILTY
1	55	10			24.1						SM	SAND, SILTY
1	56	2-3			13.0						SM	SAND, SILTY
1	57	5			20.7						SM	SAND, SILTY
1	58	2-3			20.8						SM	SAND, SILTY
1	59	5			22.6						SM	SAND, SILTY
1	60	10			8.6						SM-SW	SAND, SLIGHTLY SILTY
1	61	5			13.8						SM	SAND, SILTY
1	62	10			20.4						SM	SAND, SILTY
1	63	5			7.9						SM-SW	SAND, SLIGHTLY SILTY
1	64	5			8.5						SM-SW	SAND, SLIGHTLY SILTY

TABLE 2

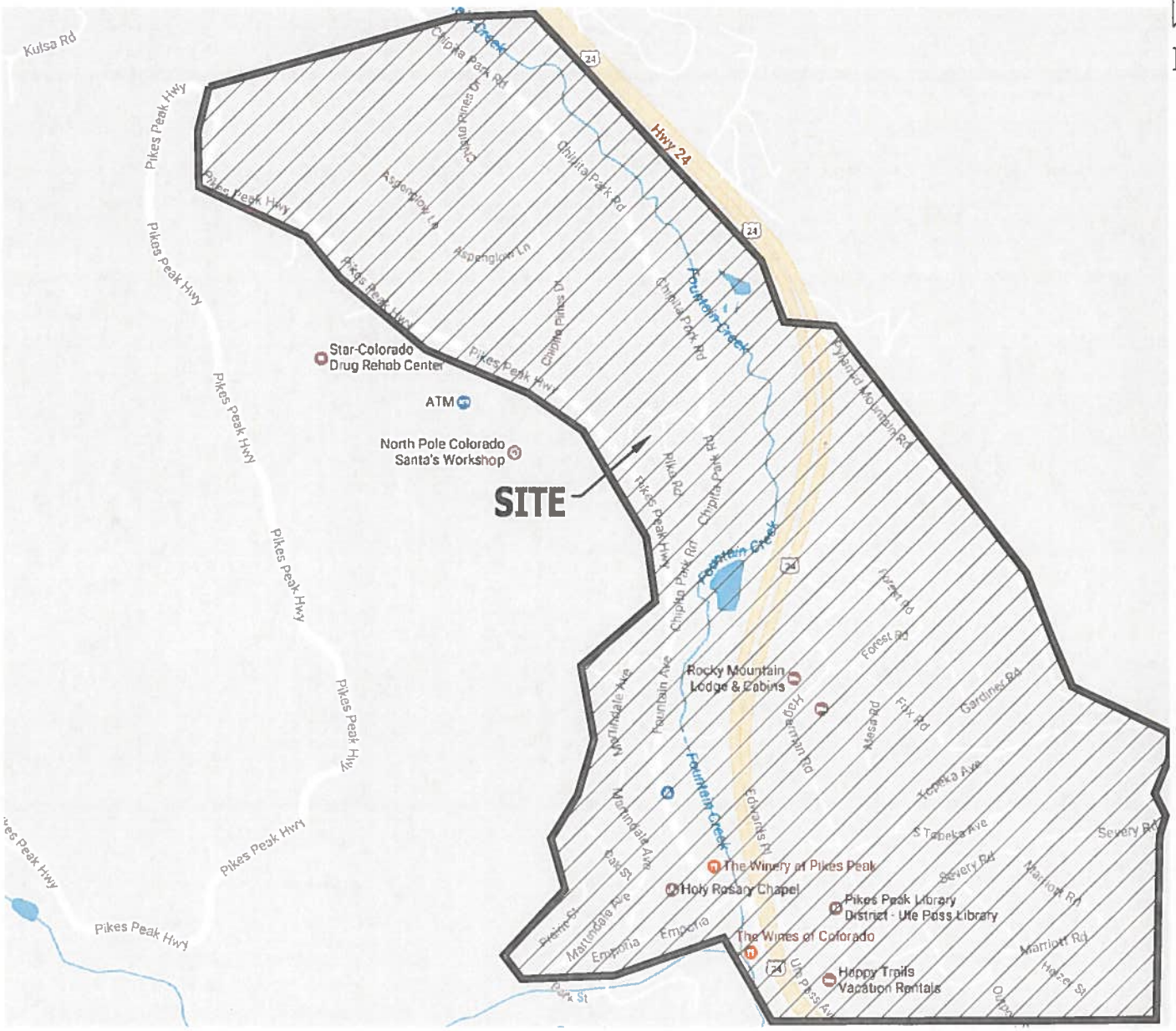
SUMMARY OF EXISTING ASPHALT DEPTHS

CLIENT GMS, INC
PROJECT CASCADE METRO
JOB NO. 162296

TEST BORING NO.	DEPTH OF ASPHALT (in.)
1	3
2	3
3	4
4	2
5	5
6	5
7	6
8	21
9	2
10	-
11	-
12	4
13	2
14	13
15	3
16	2
17	5
18	14
19	14
20	2
21	2
22	3
23	3
24	3
25	-
26	2
27	4
28	1.5
29	6
30	-
31	-
32	5.5

TEST BORING NO.	DEPTH OF ASPHALT (in.)
33	-
34	2
35	3
36	4
37	2
38	2
39	3.5
40	2
41	4
42	2.5
43	3.5
44	3.5
45	2
46	2
47	5
48	5
49	-
50	4
51	4
52	5
53	10
54	11
55	10
56	4.5
57	-
58	-
59	-
60	-
61	2
62	2
63	-
64	-

FIGURES



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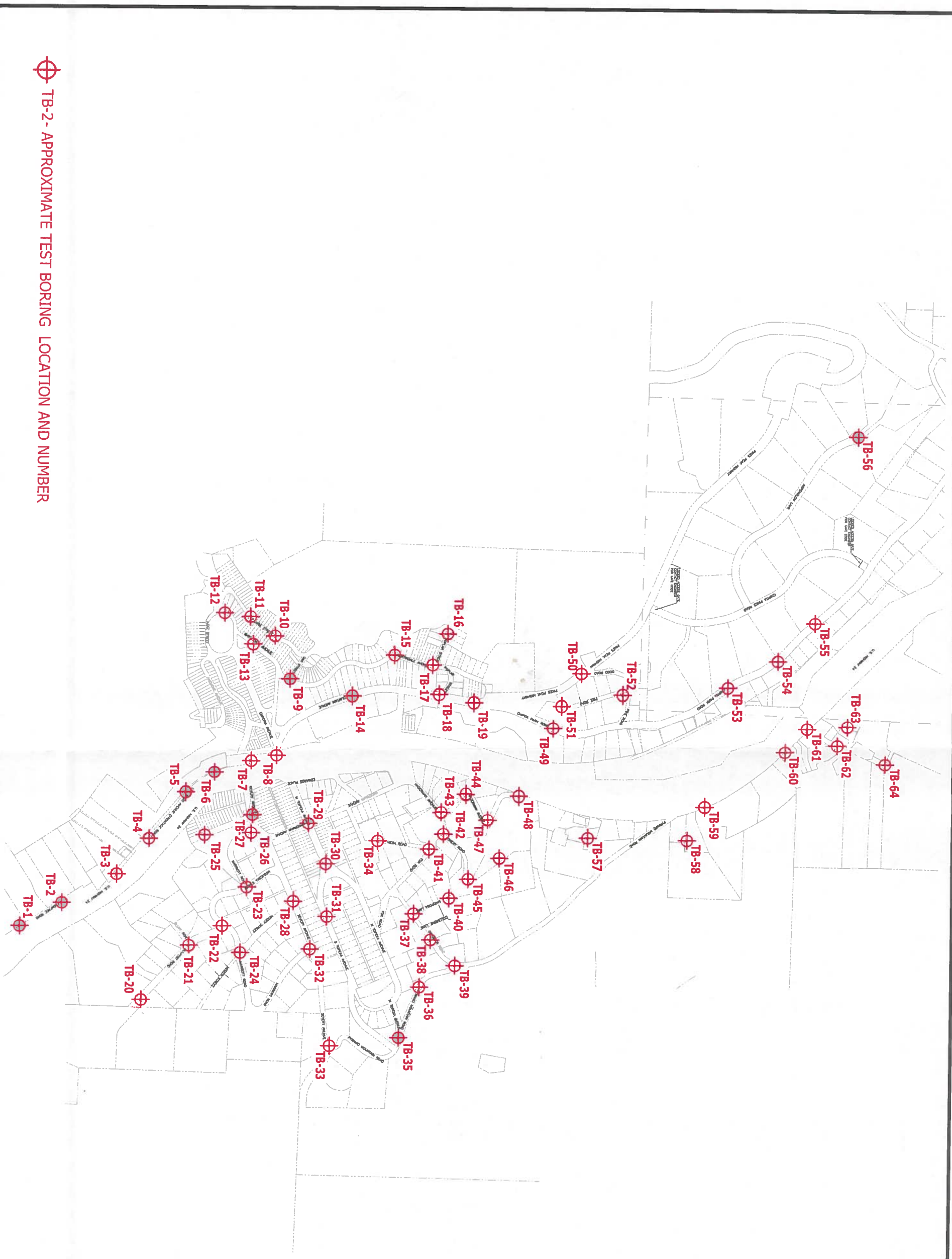
SITE LOCATION VICINITY MAP
CASCADE METRO DISTRICT NO. 1
FOR: GMS

DRAWN BY:	DATE DRAWN:	DESIGNED BY:	CHECKED:
TLC	3/27/17	AMN	AMN

JOB NO.: 162296
FIG. NO.: 1

TB-2- APPROXIMATE TEST BORING LOCATION AND NUMBER



DRAWN	TLC
CHECKED	AMN
DATE	3/27/17
SCALE	AS SHOWN
JOB NO.	162296
ISSUE NO.	2

TEST BORING LOCATION PLAN
CASCADE METRO DISTRICT NO. 1
CASCADE, CO.
FOR: GMS

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505 ELKTON DRIVE
COLORADO SPRINGS, CO. 80907 (719) 531-5599

REVISION	BY

APPENDIX A: Test Boring Logs

TEST BORING NO. 1
DATE DRILLED 3/15/2017
Job # 162296

REMARKS

DRY TO 10', 3/15/17

3" ASPHALT, POSS. FILL 0-3'
SAND, SILTY, GRAVELLY, FINE TO COARSE GRAINED, DARK BROWN, MEDIUM DENSE, MOIST
SAND, SILTY, GRAVELLY, FINE TO COARSE GRAINED, BROWN, MEDIUM DENSE TO VERY DENSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			14	8.1	1A
5			11	2.6	1
10			50*/7"	2.6	1
15					
20					

TEST BORING NO. 2
DATE DRILLED 3/15/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 3/15/17

3" ASPHALT, SAND, GRAVELLY, SILTY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE TO MEDIUM DENSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			50*/9"	1.3	1
5			50*/7"	3.4	1
10			24	5.8	1
15					
20					

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COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 1

TEST BORING NO. 3
DATE DRILLED 3/15/2017
Job # 162296

REMARKS

DRY TO 10', 3/15/17

4" ASPHALT, SAND, SILTY, GRAVELLY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE TO DENSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			50* / 6"	1.5	1
5			44	5.5	1
10			40	7.6	1
15					
20					

TEST BORING NO. 4
DATE DRILLED 3/15/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 3/15/17

2" ASPHALT, SAND, SILTY, GRAVELLY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO VERY DENSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			48	1.2	1
5			50* / 6"	1.2	1
10			50* / <1"	3.5	1
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		MN	3-31-17

JOB NO.: 162296
FIG NO.: A - 2

TEST BORING NO. 5
DATE DRILLED 3/15/2017
Job # 162296

REMARKS

DRY TO 10', 3/15/17

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			39	3.3	1
5			22	5.2	1
			24	2.4	1
10					
15					
20					

5" ASPHALT, SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO MEDIUM DENSE, MOIST

TEST BORING NO. 6
DATE DRILLED 3/15/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 3/15/17

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			32	4.3	1
5			26	3.9	1
			32	3.8	1
10					
15					
20					

5" ASPHALT, SAND, SLIGHTLY SILTY, GRAVELLY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO MEDIUM DENSE, MOIST

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COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

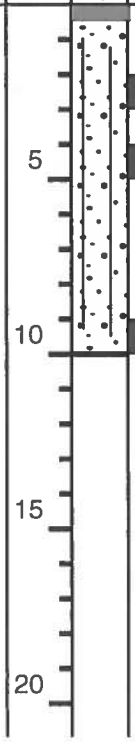
JOB NO.: 162296
FIG NO.: A - 3

TEST BORING NO. 7
DATE DRILLED 3/15/2017
Job # 162296

REMARKS

DRY TO 10', 3/15/17

6" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST



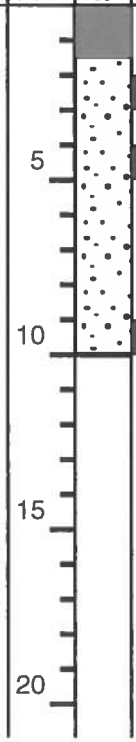
Symbol	Samples	Blows per foot	Watercontent %	Soil Type
		16	5.0	1
		13	3.7	1
		17	2.5	1

TEST BORING NO. 8
DATE DRILLED 3/15/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 3/15/17

21" ASPHALT, SAND, FINE TO TO COARSE GRAINED, BROWN TO RED BROWN, DENSE TO MEDIUM DENSE, MOIST



Symbol	Samples	Blows per foot	Watercontent %	Soil Type
		39	4.9	1
		24	5.4	1
		39	1.9	1

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 4

TEST BORING NO. 9
DATE DRILLED 1/23/2017
Job # 162296

REMARKS

DRY TO 10', 1/23/17

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
						2" ASPHALT, SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO LOOSE, MOIST
			16	6.0	1	
5			8	5.0	1	
			10	4.6	1	
10						
15						
20						

TEST BORING NO. 10
DATE DRILLED 2/8/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 2/8/17

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
						SAND, GRAVELLY, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO VERY DENSE, MOIST
			19	2.5	1	
5			50* / 6"	2.2	1	
10			50* / 6"	7.2	1	
15						* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES
20						

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		AV	3-31-17

JOB NO.: 162296
FIG NO.: A - 5

TEST BORING NO. 11
DATE DRILLED 2/9/2017
Job # 162296

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 2/9/17						
SAND, GRAVELLY, SLIGHTLY SILTY, FINE TO COARSE GRAINED, TAN, VERY DENSE, MOIST				50* / 10"	3.6	1
	5			50* / 8"	3.0	1
	10			50* / 6"	3.2	1
* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES	15					
	20					

TEST BORING NO. 12
DATE DRILLED 2/8/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 2/8/17						
4" ASPHALT, SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, BROWN TO RED BROWN, MEDIUM DENSE TO LOOSE, MOIST				20	4.1	1
	5			5	4.6	1
	10			6	6.5	1
	15					
	20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE: 3-31-17

JOB NO.: 162296
FIG NO.: A - 6

TEST BORING NO. 13
DATE DRILLED 1/23/2017
Job # 162296

REMARKS

DRY TO 10', 1/23/17

2" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, DARK BROWN, MEDIUM DENSE TO VERY DENSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			10	8.2	1
5			11	4.8	1
10			50*	7.4	1
15					
20					

TEST BORING NO. 14
DATE DRILLED 3/22/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

WATER @ 8', 3/22/17

13" ASPHALT, POSS. FILL 0-3'
SAND, VERY CLAYEY, FINE TO COARSE GRAINED, RED BROWN, LOOSE, MOIST
DENSE, MOIST
SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			8	11.6	1A
5			17	5.2	1
10			28	9.1	1
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 7

TEST BORING NO. 15
DATE DRILLED 1/23/2017
Job # 162296

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 1/23/17						
3" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, LOOSE, MOIST TO VERY MOIST				6	1.9	1
	5			5	5.7	1
	10			7	6.3	1
	15					
	20					

TEST BORING NO. 16
DATE DRILLED 1/23/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 3/15/17						
2" ASPHALT, SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, RED BROWN, LOOSE TO MEDIUM DENSE, MOIST				9	5.5	1
	5			7	9.3	1
	10			22	14.9	1
	15					
	20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 8

TEST BORING NO. 17
DATE DRILLED 2/9/2017
Job # 162296

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 2/9/17						
5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, LOOSE TO VERY DENSE, MOIST				9	4.9	1
	5			10	6.4	1
	10			50/7"	6.9	1
	15					
	20					

TEST BORING NO. 18
DATE DRILLED 3/22/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 3/22/17						
14" ASPHALT, POSS. FILL 0-3', SAND, SILTY, FINE TO COARSE GRAINED, BROWN, LOOSE, MOIST				6	9.4	1A
	5			5	7.8	1
SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, RED BROWN, LOOSE, MOIST						
	10			6	5.1	1
	15					
	20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		AN	3-31-17

JOB NO.: 162296
FIG NO.: A - 9

TEST BORING NO. 19
DATE DRILLED 3/22/2017
Job # 162296

REMARKS

DRY TO 10', 3/22/17

14" ASPHALT, POSS. FILL 0-10', SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO LOOSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			40	1.8	1A
5			24	3.5	1A
10			7	3.5	1A
15					
20					

TEST BORING NO. 20
DATE DRILLED 12/22/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 5', 12/22/16

2" ASPHALT, POSS. FILL 0-5', SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST

WATER LINE HIT AT 5'

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			26	4.5	1A
5			28	4.7	1A
10					
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:

JOB NO.: 162296
FIG NO.: A - 10

TEST BORING NO. 21
DATE DRILLED 12/27/2016
Job # 162296

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 12/27/16						
2" ASPHALT, SAND, VERY SILTY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO MEDIUM DENSE, MOIST				37	4.9	1
	5			24	5.2	1
	10			30	4.3	1
	15					
	20					

TEST BORING NO. 22
DATE DRILLED 12/22/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 12/22/16						
3" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST				18	3.7	1
	5			10	10.2	1
	10			14	5.8	1
	15					
	20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 11

TEST BORING NO. 23
DATE DRILLED 12/27/2016
Job # 162296

REMARKS

DRY TO 10', 12/27/16

3" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE TO DENSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			50*	2.5	1
5			38	2.8	1
10			30	3.8	1
15					
20					

TEST BORING NO. 24
DATE DRILLED 12/22/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 12/22/16

3" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE TO DENSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			30	2.7	1
5			50*	3.0	1
10			36	2.2	1
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 12

TEST BORING NO. 25
DATE DRILLED 12/22/2016
Job # 162296

REMARKS

DRY TO 10', 12/22/16

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
			36	2.3	1	SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO MEDIUM DENSE, MOIST
5			18	2.4	1	
10			36	1.3	1	
15						
20						

TEST BORING NO. 26
DATE DRILLED 12/27/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 12/27/16

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
			13	3.1	1	2" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST
5			13	3.7	1	
10			16	2.1	1	
15						
20						

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TEST BORING LOG

DRAWN:	DATE:	CHECKED: AW	DATE: 3-31-17

JOB NO.: 162296
FIG NO.: A - 13

TEST BORING NO. 27
DATE DRILLED 12/22/2016
Job # 162296

REMARKS

DRY TO 10', 12/22/16

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
						4" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, LOOSE TO DENSE, MOIST
			9	3.9	1	
5			15	2.6	1	
10			32	2.8	1	
15						
20						

TEST BORING NO. 28
DATE DRILLED 12/27/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 12/27/16

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
						1.5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, LOOSE TO MEDIUM DENSE, MOIST
			4	6.1	1	
5			21	5.4	1	
10			21	4.2	1	
15						
20						

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 14

TEST BORING NO. 29
DATE DRILLED 12/22/2016
Job # 162296

REMARKS

DRY TO 10', 12/22/16

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
			18	4.0	1	6" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST
5			24	6.2	1	
10			28	5.0	1	
15						
20						

TEST BORING NO. 30
DATE DRILLED 12/27/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 12/27/16

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
			19	2.8	1	SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST
5			24	2.9	1	
10			25	4.7	1	
15						
20						

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		MW	3-31-17

JOB NO.: 162296
FIG NO.: A - 15

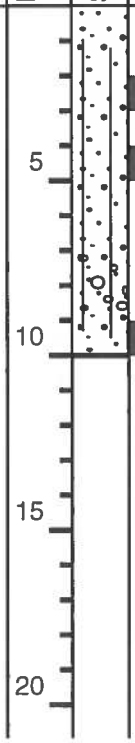
TEST BORING NO. 31
DATE DRILLED 12/28/2016
Job # 162296

REMARKS

DRY TO 10', 12/28/16

SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO DENSE, MOIST

COBBLES



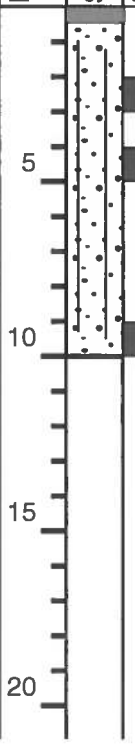
Depth (ft)	Blows per foot	Watercontent %	Soil Type
5	26	6.2	1
10	25	4.4	1
	33	5.9	1

TEST BORING NO. 32
DATE DRILLED 12/27/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 12/27/16

5.5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, LOOSE TO MEDIUM DENSE, MOIST



Depth (ft)	Blows per foot	Watercontent %	Soil Type
5	6	5.7	1
10	20	4.1	1
	28	4.2	1

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TEST BORING LOG

DRAWN:	DATE:	CHECKED: AV	DATE: 3-31-17

JOB NO.: 162296
FIG NO.: A - 16

TEST BORING NO. 33
DATE DRILLED 12/22/2016
Job # 162296

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 12/22/16						
SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO DENSE, MOIST				14	4.3	1
	5			28	4.7	1
	10			30	5.1	1
	15					
	20					

TEST BORING NO. 34
DATE DRILLED 12/28/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 12/28/16						
1.5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE TO MEDIUM DENSE, MOIST				50* / 8"	1.5	1
	5			23	3.5	1
	10			36	3.4	1
* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES	15					
	20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED: AV	DATE: 3-31-17

JOB NO.: 162296
FIG NO.: A - 17

TEST BORING NO. 35
DATE DRILLED 12/27/2016
Job # 162296

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 12/27/16						
3" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE TO MEDIUM DENSE, MOIST				35	5.6	1
	5			50* / 2"	2.9	1
	10			19	6.0	1
* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES	15					
	20					

TEST BORING NO. 36
DATE DRILLED 12/27/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 12/27/16						
4" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO DENSE, MOIST				19	2.3	1
	5			21	4.2	1
	10			31	4.0	1
	15					
	20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 18

TEST BORING NO. 37
DATE DRILLED 12/27/2016
Job # 162296

REMARKS

DRY TO 10', 12/27/16

2" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO VERY DENSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			12	4.0	1
5			15	4.9	1
10			50* / 11"	4.6	1
15					
20					

TEST BORING NO. 38
DATE DRILLED 12/27/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 12/27/16

2" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			25	3.9	1
5			28	4.4	1
10			12	5.1	1
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED: MV	DATE: 3-31-17

JOB NO.: 162296
FIG NO.: A - 19

TEST BORING NO. 39
DATE DRILLED 12/27/2016
Job # 162296

REMARKS

DRY TO 10', 12/27/16

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
3.5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO DENSE, MOIST					
			19	3.8	1
5			31	3.9	1
10			16	5.7	1
15					
20					

TEST BORING NO. 40
DATE DRILLED 12/27/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 12/27/16

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
2" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO MEDIUM DENSE, MOIST					
			33	3.4	1
5			35	8.4	1
10			29	4.8	1
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED: AW	DATE: 3-31-17

JOB NO.: 162296
FIG NO.: A - 20

TEST BORING NO. 41
DATE DRILLED 12/28/2016
Job # 162296

REMARKS

DRY TO 10', 12/28/16

4" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			25	4.8	1
5			26	3.2	1
10			41	2.8	1
15					
20					

TEST BORING NO. 42
DATE DRILLED 12/28/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 12/28/16

2.5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			30	3.7	1
5			32	2.8	1
10			33	5.4	1
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED: NV	DATE: 3-31-17

JOB NO.: 162296
FIG NO.: A - 21

TEST BORING NO. 43
DATE DRILLED 12/28/2016
Job # 162296

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 12/28/16						
3.5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO LOOSE, MOIST				19	2.7	1
	5			8	5.5	1
	10			23	6.0	1
	15					
	20					

TEST BORING NO. 44
DATE DRILLED 12/29/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 12/29/16						
3.5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO DENSE, MOIST				22	9.0	1
	5			26	3.7	1
	10			30	3.6	1
	15					
	20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		AW	3-31-17

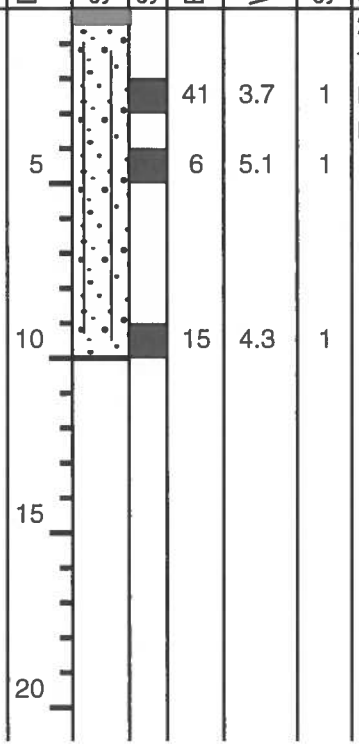
JOB NO.: 162296
FIG NO.: A - 22

TEST BORING NO. 45
DATE DRILLED 12/28/2016
Job # 162296

REMARKS

DRY TO 10', 12/28/16

2" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO LOOSE, MOIST



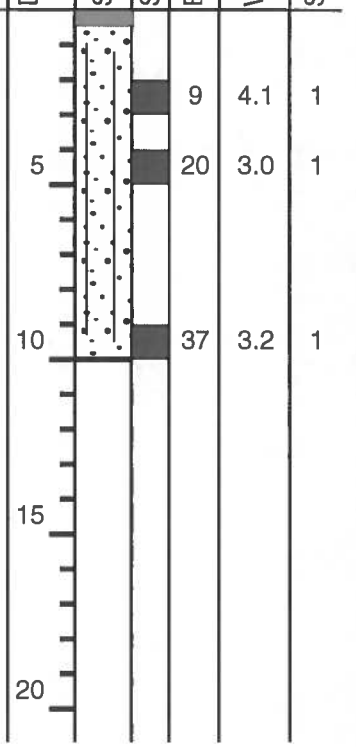
Symbol	Samples	Blows per foot	Watercontent %	Soil Type
		41	3.7	1
		6	5.1	1
		15	4.3	1

TEST BORING NO. 46
DATE DRILLED 12/28/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 12/28/16

2" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, LOOSE TO DENSE, MOIST



Symbol	Samples	Blows per foot	Watercontent %	Soil Type
		9	4.1	1
		20	3.0	1
		37	3.2	1

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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: A - 23

TEST BORING NO. 47
DATE DRILLED 12/29/2016
Job # 162296

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 12/29/16						
5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO LOOSE, MOIST				18	4.7	1
	5			8	4.3	1
	10			8	3.1	1
	15					
	20					

TEST BORING NO. 48
DATE DRILLED 12/29/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS	Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
DRY TO 10', 12/29/16						
5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST				23	4.6	1
	5			15	3.3	1
	10			13	6.8	1
	15					
	20					

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COLORADO SPRINGS, COLORADO 80907

TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		AW	3-31-17

JOB NO.: 162296
FIG NO.: A - 24

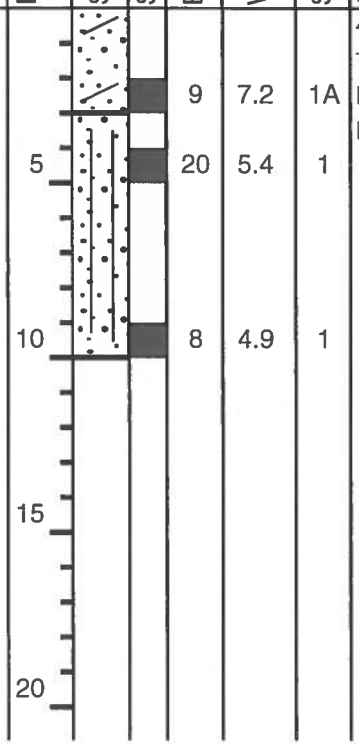
TEST BORING NO. 49
DATE DRILLED 3/22/2017
Job # 162296

REMARKS

DRY TO 10', 3/22/17

POSS. FILL 0-3', SAND, CLAYEY FINE TO COARSE GRAINED, RED BROWN, LOOSE, MOIST

SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO LOOSE, MOIST



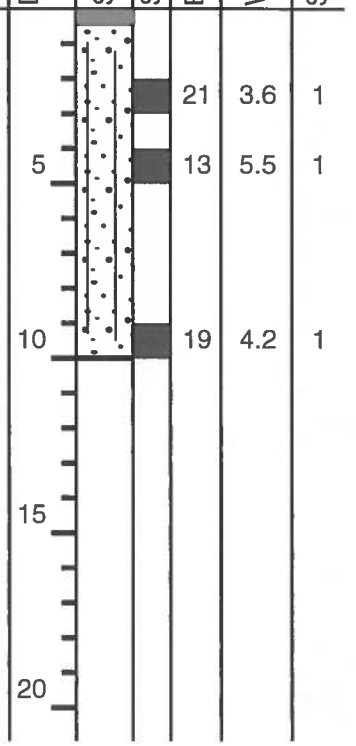
Blows per foot	Watercontent %	Soil Type
9	7.2	1A
20	5.4	1
8	4.9	1

TEST BORING NO. 50
DATE DRILLED 2/9/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 2/9/17

4" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST



Blows per foot	Watercontent %	Soil Type
21	3.6	1
13	5.5	1
19	4.2	1

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 25

TEST BORING NO. 51
DATE DRILLED 1/23/2017
Job # 162296

REMARKS

DRY TO 10', 1/23/17

4" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO MEDIUM DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			39	2.3	1
5			21	3.8	1
10			13	4.3	1
15					
20					

TEST BORING NO. 52
DATE DRILLED 2/9/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 2/9/17

5" ASPHALT, POSS. FILL 0-5'
SAND, CLAYEY, FINE TO COARSE GRAINED, BROWN, MEDIUM DENSE TO LOOSE, MOIST
SAND, SILTY, FINE TO COARSE GRAINED, TAN, LOOSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			23	15.1	1A
5			5	14.1	1A
10			9	5.9	1
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED: AN	DATE: 3-31-17

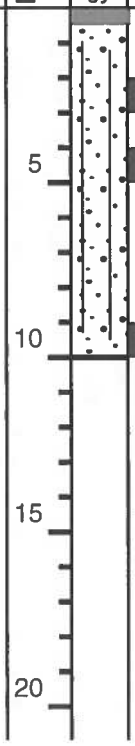
JOB NO.: 162296
FIG NO.: A - 26

TEST BORING NO. 53
DATE DRILLED 3/23/2017
Job # 162296

REMARKS

DRY TO 10', 3/23/17

10" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, BROWN, MEDIUM DENSE TO LOOSE, MOIST



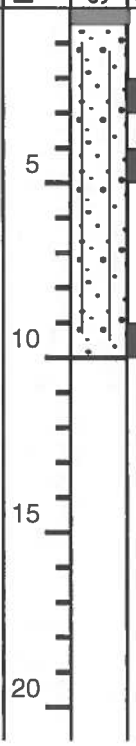
Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			17	6.8	1
5			7	8.1	1
10			3	7.4	1

TEST BORING NO. 54
DATE DRILLED 3/23/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 3/23/17

11" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, BROWN, LOOSE, MOIST



Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			8	8.5	1
5			7	10.9	1
10			5	4.0	1

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 27

TEST BORING NO. 55
DATE DRILLED 3/23/2017
Job # 162296

REMARKS

DRY TO 10', 3/23/17

10" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, BROWN, MEDIUM DENSE TO LOOSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			10	8.1	1
5			4	8.7	1
10			7	8.0	1
15					
20					

TEST BORING NO. 56
DATE DRILLED 1/23/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 1/23/17

4.5" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			50	3.6	1
5			50	4.2	1
10			50/11"	2.9	1
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 28

TEST BORING NO. 57
DATE DRILLED 12/29/2016
Job # 162296

REMARKS

DRY TO 10', 12/29/16

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
			16	5.9	1	SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST
5			22	7.8	1	CLAYEY LENSE
10			21	3.1	1	
15						
20						

TEST BORING NO. 58
DATE DRILLED 12/29/2016
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 12/29/16

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type	
			8	4.9	1	SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, LOOSE TO MEDIUM DENSE, MOIST
5			8	5.1	1	
10			28	3.5	1	
15						
20						

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
		MV	3-31-17

JOB NO.: 162296
FIG NO.: A - 29

TEST BORING NO. 59
DATE DRILLED 12/29/2016
Job # 162296

REMARKS

DRY TO 10', 12/29/16

SAND, SILTY, GRAVELLY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO VERY DENSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			20	5.3	1
5			32	4.8	1
10			50* / 2"	4.3	1
15					
20					

TEST BORING NO. 60
DATE DRILLED 2/9/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 2/9/17

SAND, GRAVELLY, SLIGHTLY SILTY, FINE TO COARSE GRAINED, RED BROWN, VERY DENSE TO LOOSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			50* / 11"	5.6	1
5			9	5.8	1
10			12	4.7	1
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED: MV	DATE: 3-31-17

JOB NO.: 162296
FIG NO.: A - 30

TEST BORING NO. 61
DATE DRILLED 1/23/2017
Job # 162296

REMARKS

DRY TO 10', 1/23/17

2" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, DENSE TO MEDIUM DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			40	3.4	1
5			24	3.0	1
10			24	4.3	1
15					
20					

TEST BORING NO. 62
DATE DRILLED 1/23/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 1/23/17

2" ASPHALT, SAND, SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE TO VERY DENSE, MOIST

* - HIGH BLOW COUNTS DUE TO GRAVEL AND COBBLES

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			31	4.3	1
5			20	4.9	1
10			50* / 9"	5.7	1
15					
20					

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TEST BORING LOG

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296
FIG NO.: A - 31

TEST BORING NO. 63
DATE DRILLED 2/9/2017
Job # 162296

REMARKS

DRY TO 10', 2/9/17

SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			11	5.0	1
5			11	3.3	1
10			17	3.6	1
15					
20					

TEST BORING NO. 64
DATE DRILLED 2/9/2017
CLIENT GMS, INC
LOCATION CASCADE METRO

REMARKS

DRY TO 10', 2/9/17

SAND, SLIGHTLY SILTY, FINE TO COARSE GRAINED, RED BROWN, MEDIUM DENSE, MOIST

Depth (ft)	Symbol	Samples	Blows per foot	Watercontent %	Soil Type
			19	3.2	1
5			14	2.9	1
10			15	4.1	1
15					
20					

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TEST BORING LOG

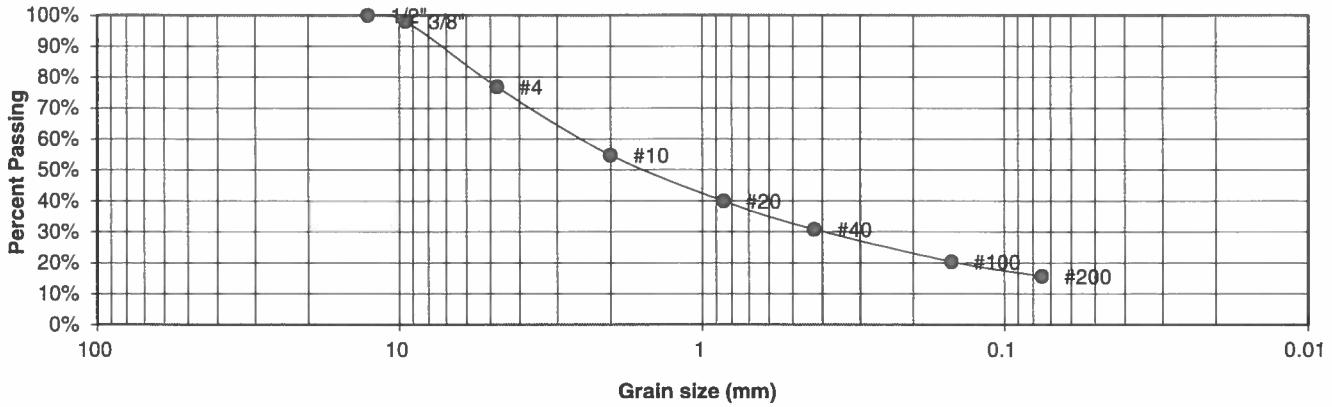
DRAWN:	DATE:	CHECKED:	DATE:
		MW	3-31-17

JOB NO.: 162296
FIG NO.: A - 32

APPENDIX B: Laboratory Test Results

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1A	PROJECT	CASCADE METRO
TEST BORING #	1	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.0%
4	76.9%
10	54.8%
20	39.9%
40	30.8%
100	20.4%
200	15.7%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

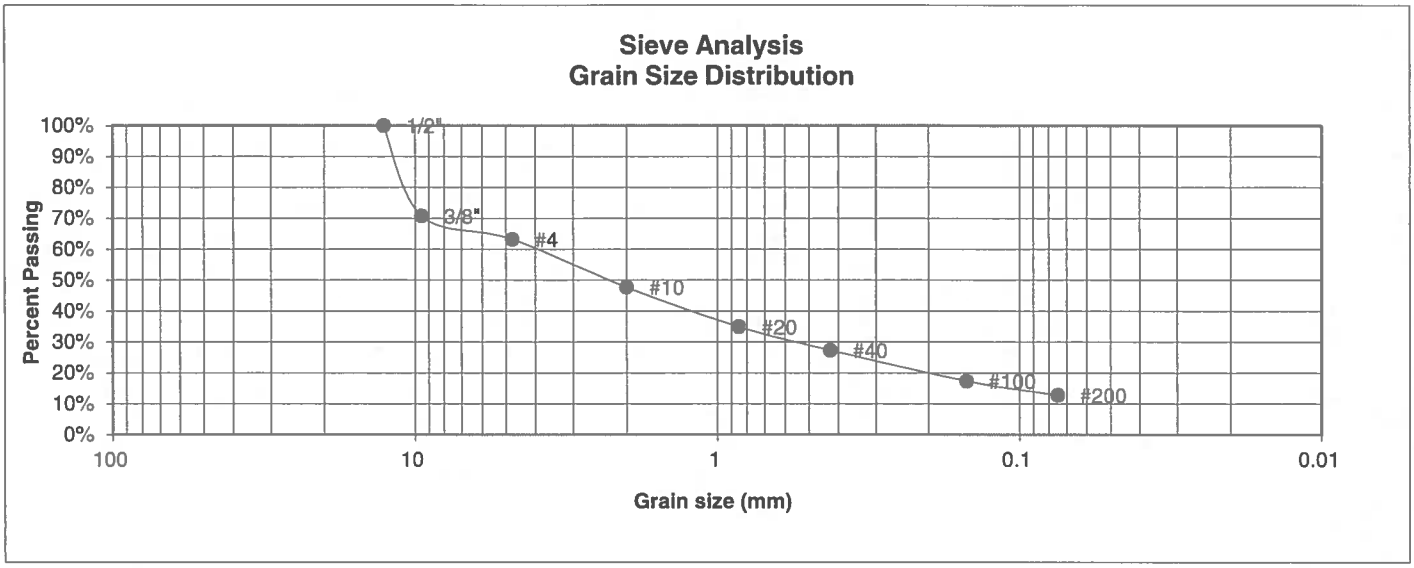
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AV	3-31-17

JOB NO.: 162296

FIG NO.: B-1

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	2	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	70.8%
4	63.2%
10	47.7%
20	34.9%
40	27.3%
100	17.4%
200	12.8%

Atterberg Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

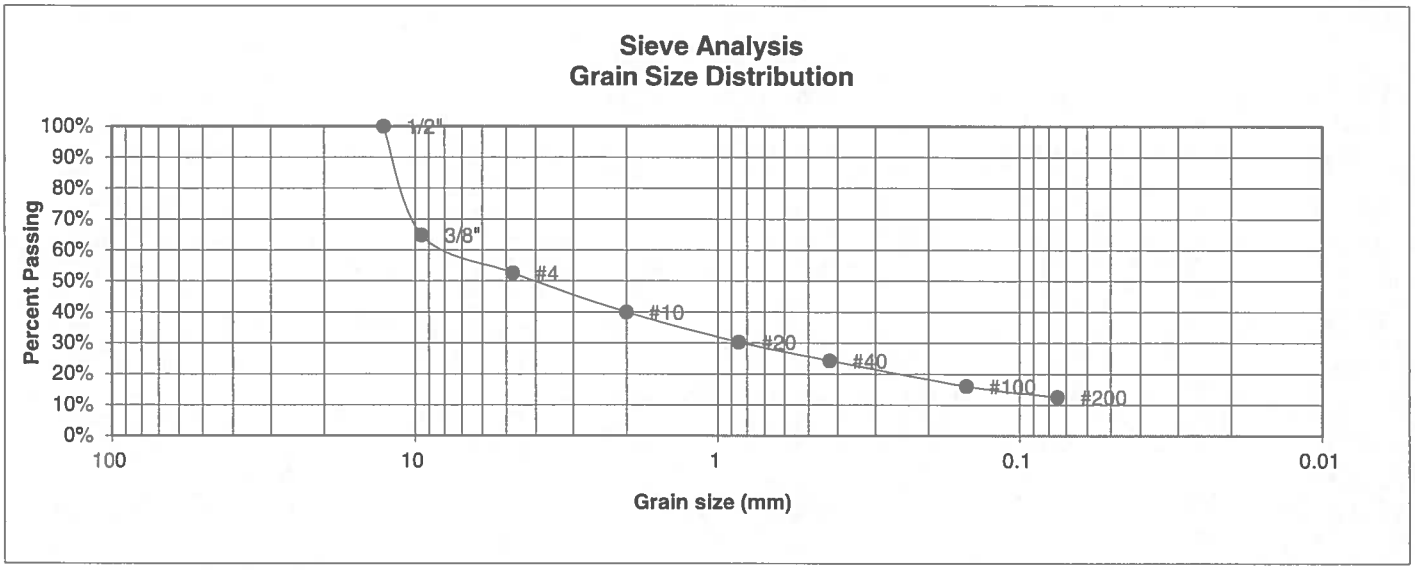
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296

FIG NO.: B-2

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	3	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	64.8%
4	52.6%
10	40.0%
20	30.3%
40	24.3%
100	16.1%
200	12.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

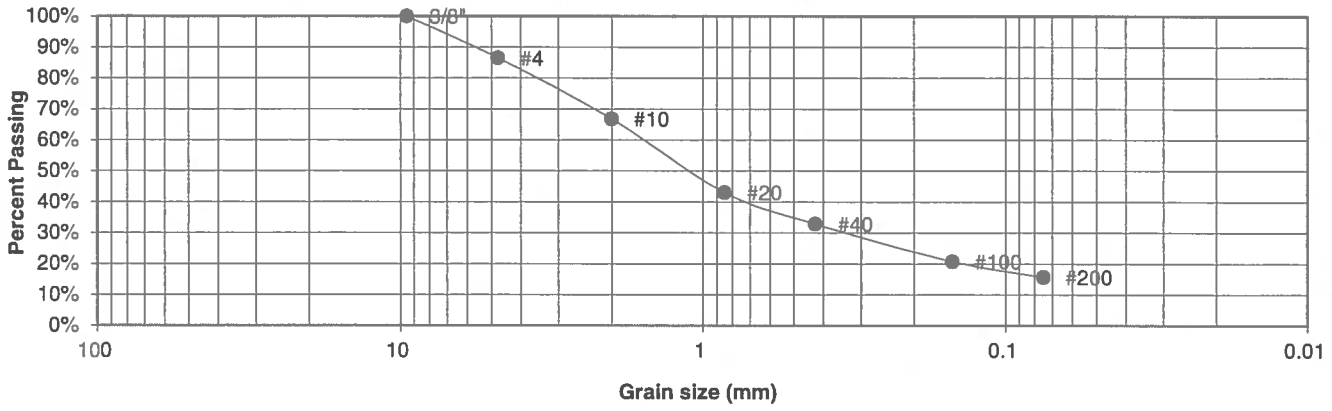
DRAWN:	DATE:	CHECKED:	DATE:
		AW	3-31-17

JOB NO.: 162296

FIG NO.: B-3

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	4	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	86.5%
10	66.8%
20	43.1%
40	32.8%
100	20.8%
200	15.6%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

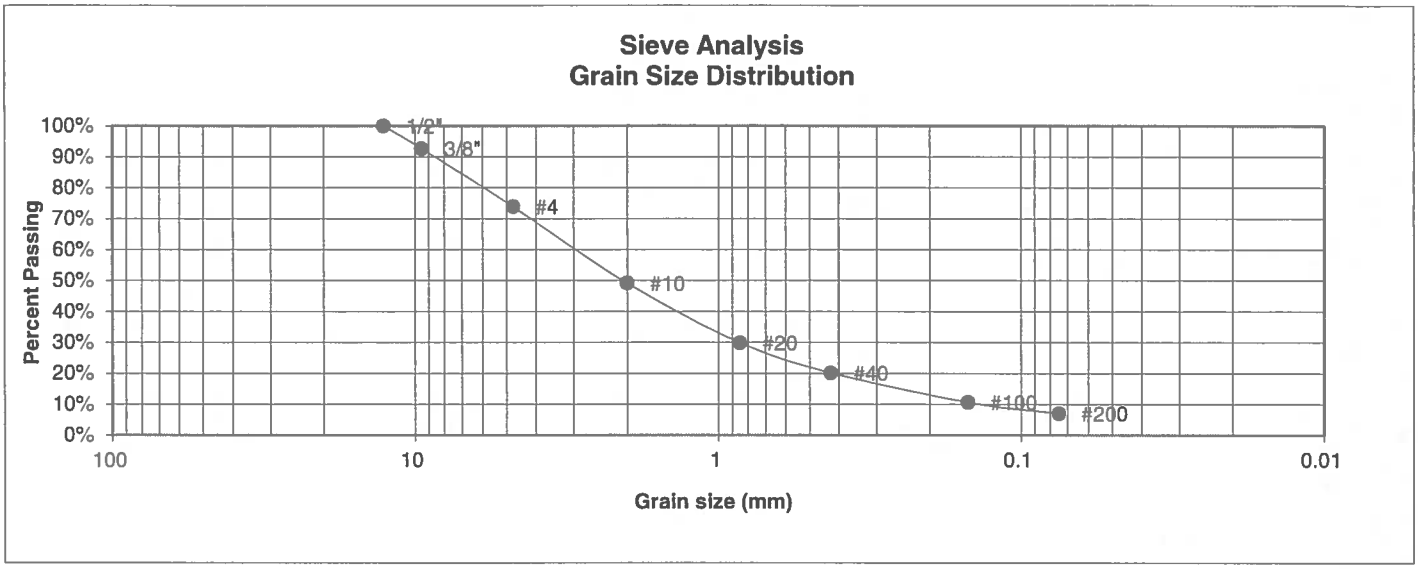
ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		MI	3-31-17

JOB NO.: 162296
FIG NO.: B-4

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	5	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	92.7%
4	73.9%
10	49.1%
20	29.9%
40	20.2%
100	10.7%
200	7.0%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
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COLORADO SPRINGS, COLORADO 80907

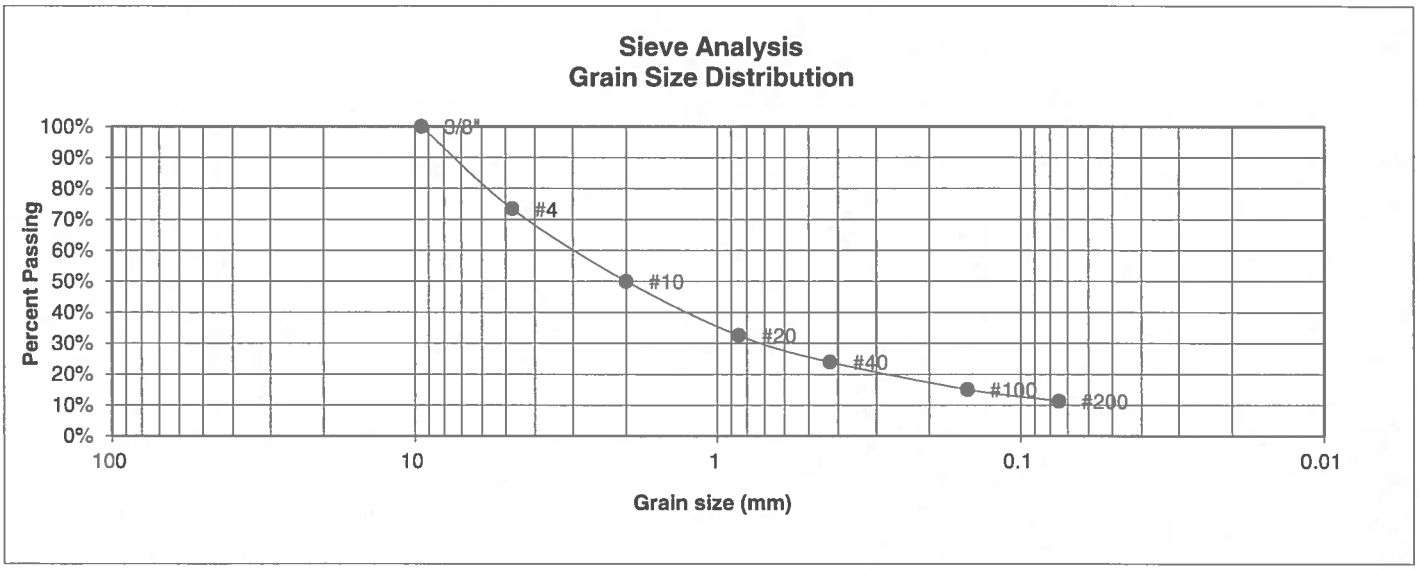
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AN	3-31-17

JOB NO.: 162296

FIG NO.: B-5

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	6	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	73.4%
10	50.0%
20	32.5%
40	23.9%
100	15.0%
200	11.3%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

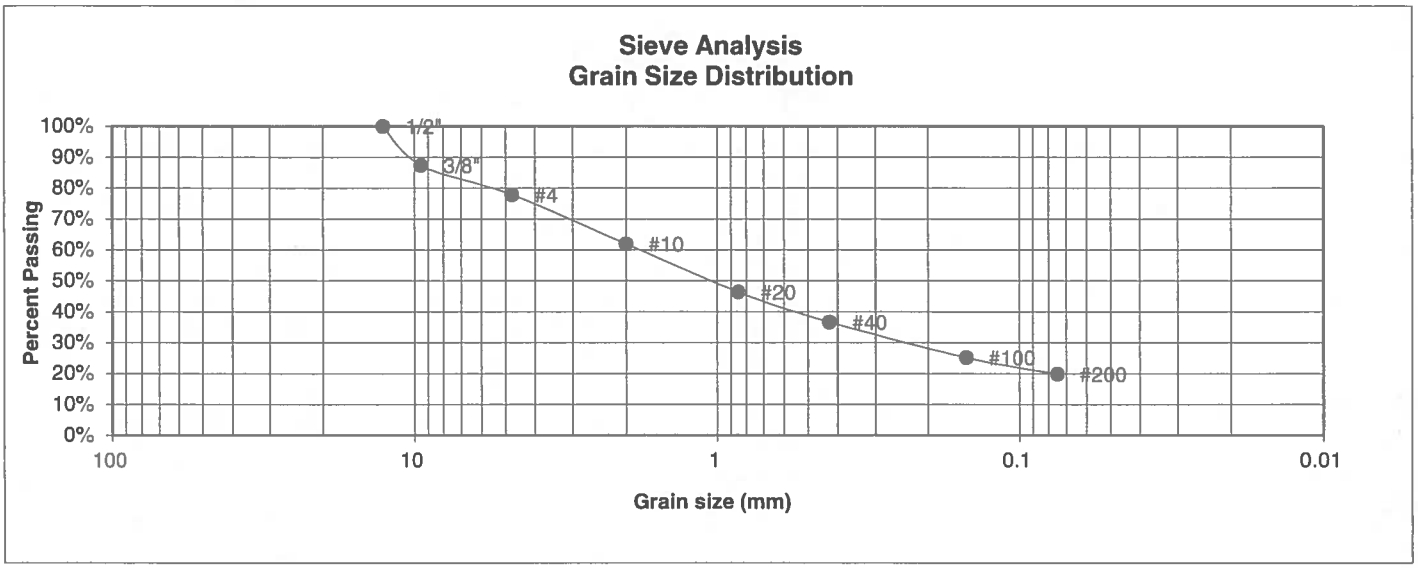
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296

FIG NO.: B-6

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	7	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	87.4%
4	77.8%
10	62.0%
20	46.4%
40	36.6%
100	25.2%
200	19.8%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

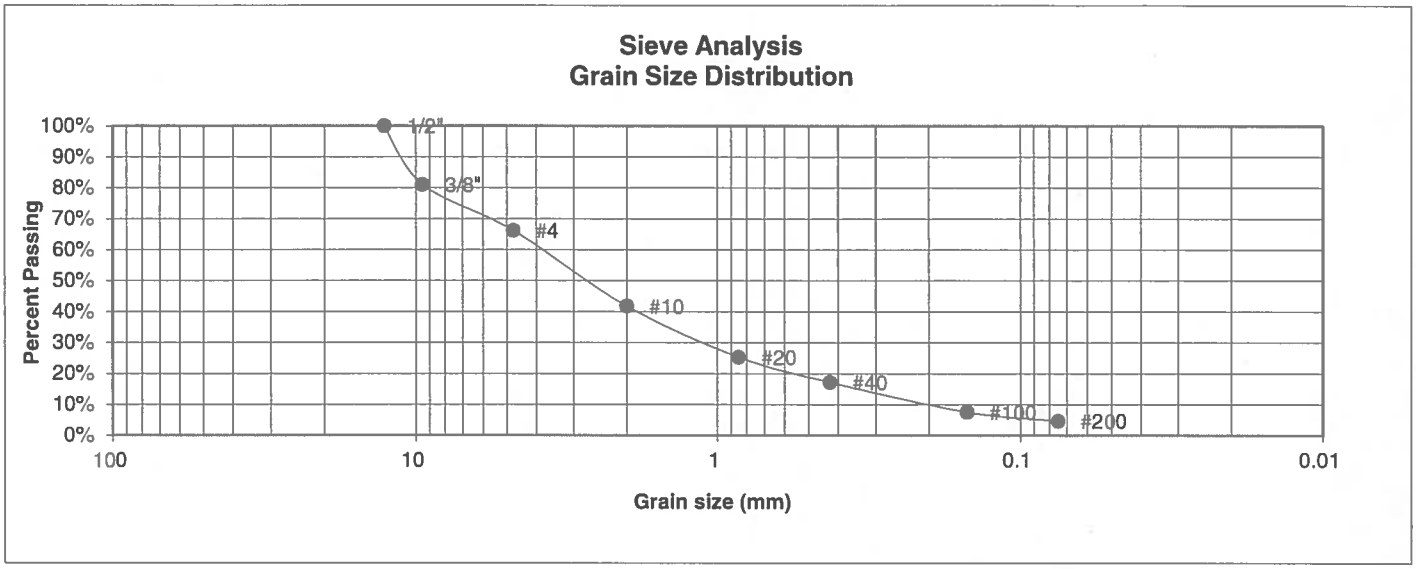
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AN	3-31-17

JOB NO.: 162296

FIG NO.: B-7

UNIFIED CLASSIFICATION	SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	8	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	81.1%
4	66.2%
10	41.8%
20	25.3%
40	17.2%
100	7.6%
200	4.7%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

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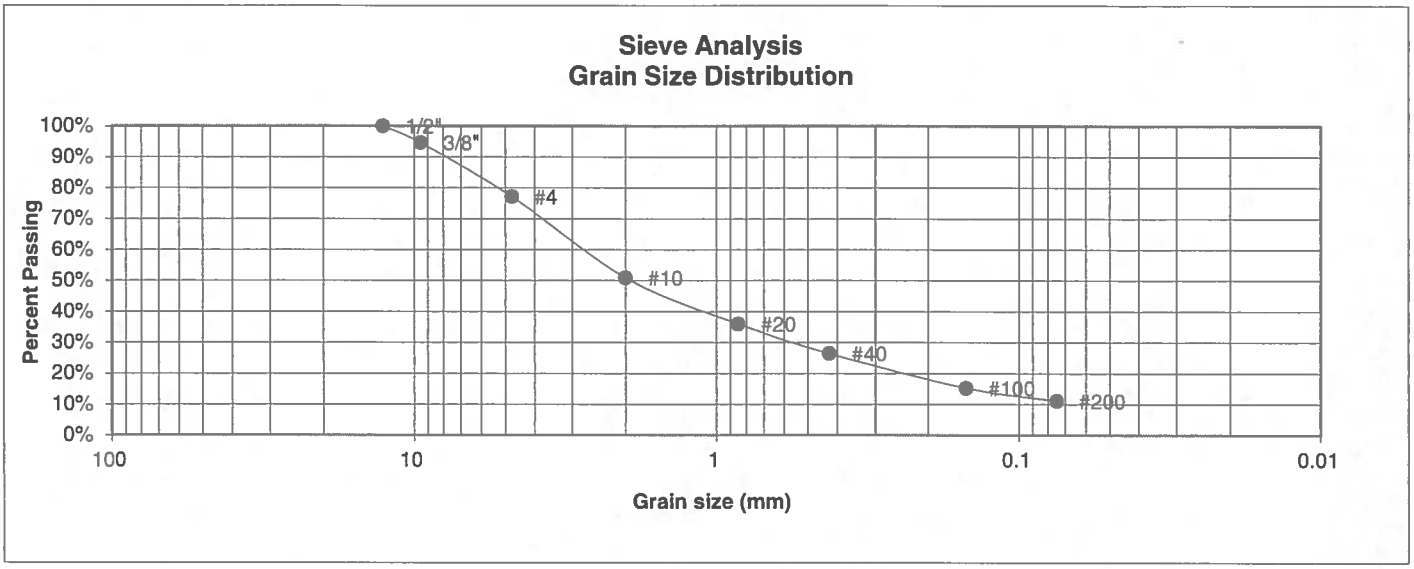
FIG NO.: B-8

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	9	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	94.6%
4	77.1%
10	51.0%
20	36.0%
40	26.4%
100	15.3%
200	11.1%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

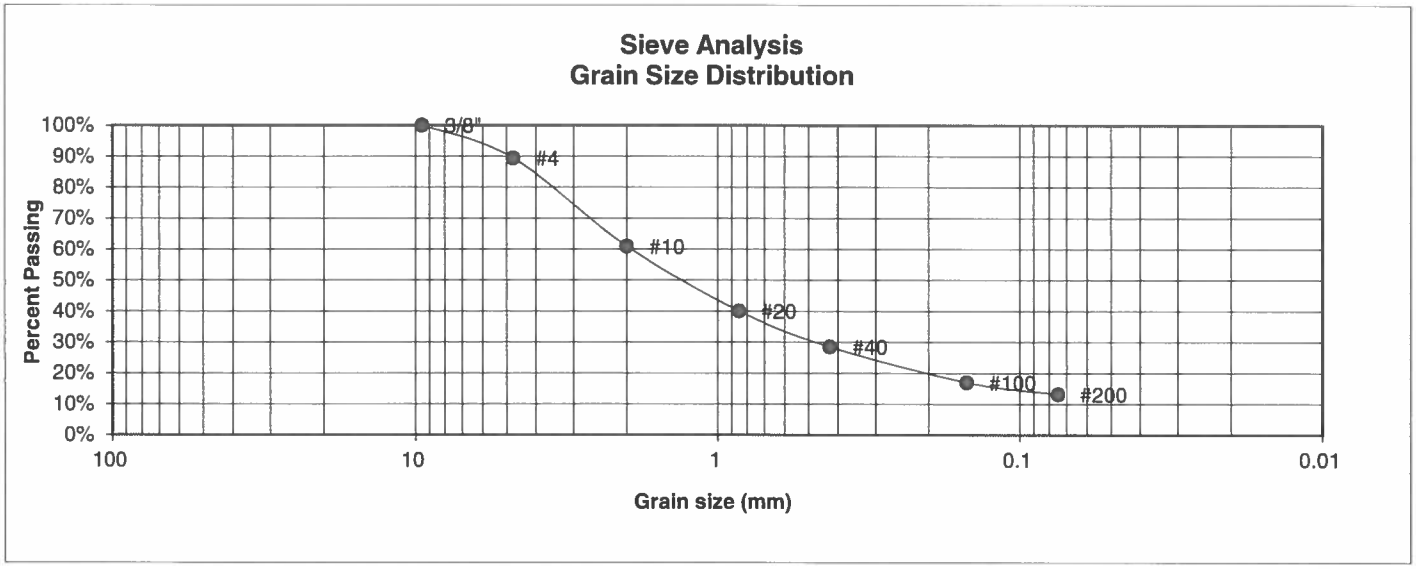
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: B-9

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	10	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	89.4%
10	60.9%
20	40.1%
40	28.5%
100	17.0%
200	13.2%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

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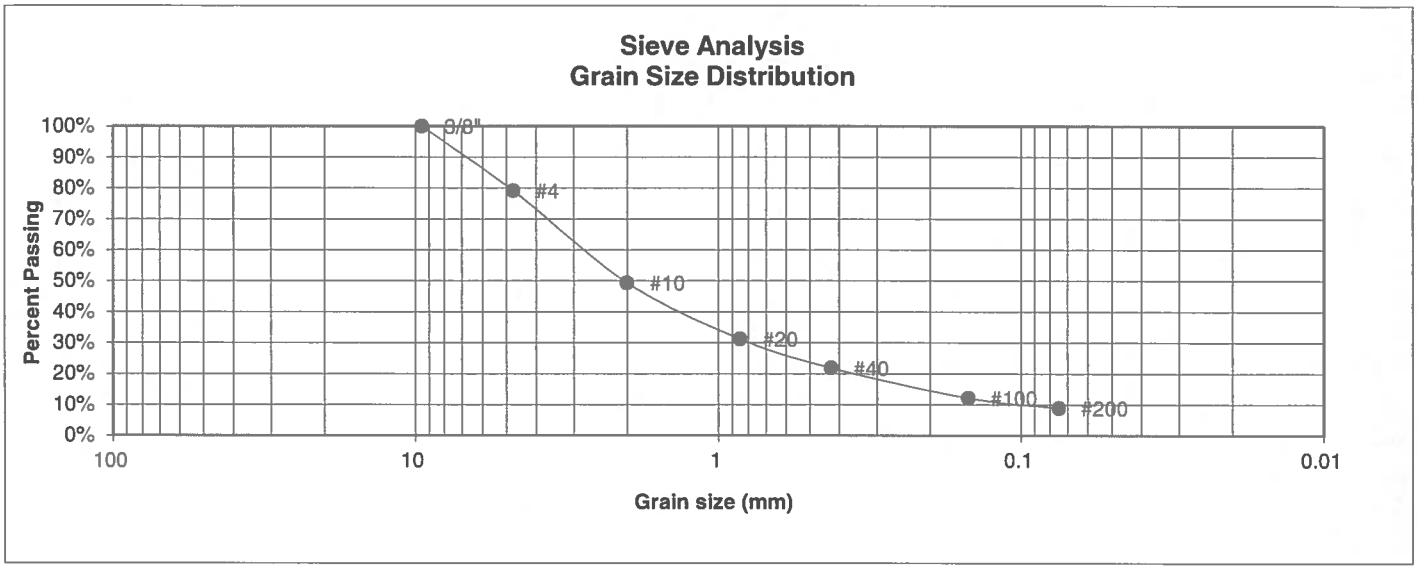
FIG NO.: B-10

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	11	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	79.2%
10	49.4%
20	31.2%
40	21.8%
100	12.1%
200	8.9%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

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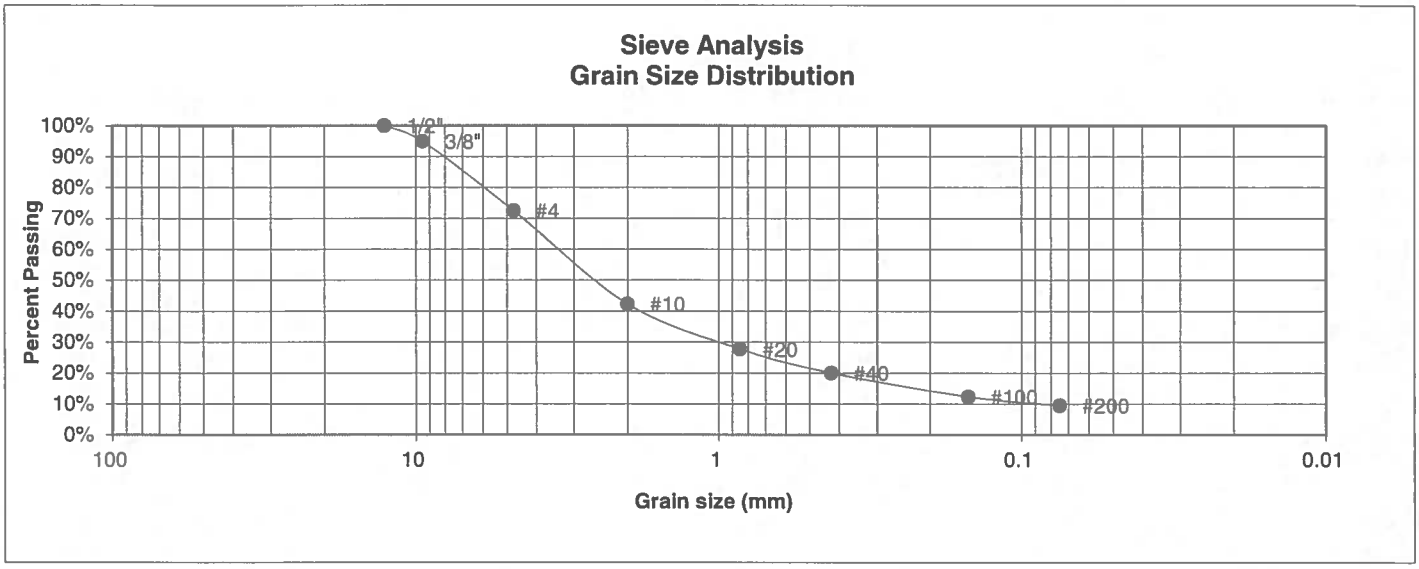
		AW	3-31-17

JOB NO.: 162296

FIG NO.: B-11

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	12	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	95.0%
4	72.6%
10	42.3%
20	27.7%
40	20.0%
100	12.3%
200	9.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

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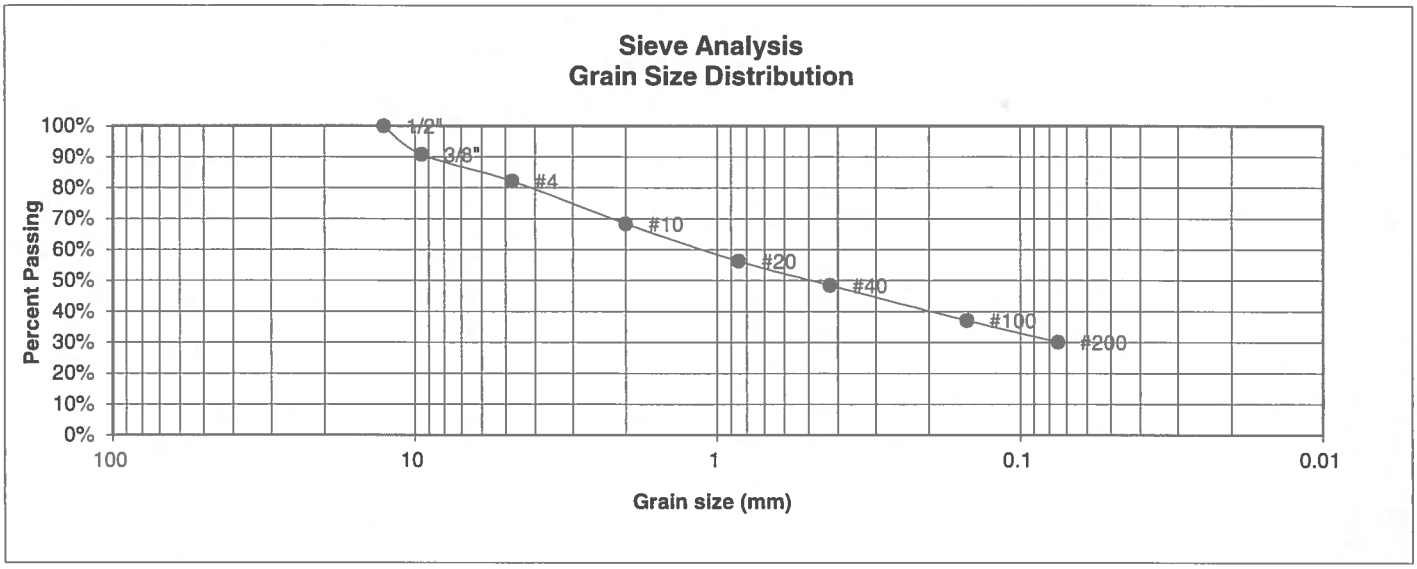
		MW	3-31-17

JOB NO.: 162296

FIG NO.: B-12

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	13	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	90.8%
4	82.1%
10	68.4%
20	56.3%
40	48.5%
100	37.1%
200	30.1%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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LABORATORY TEST RESULTS

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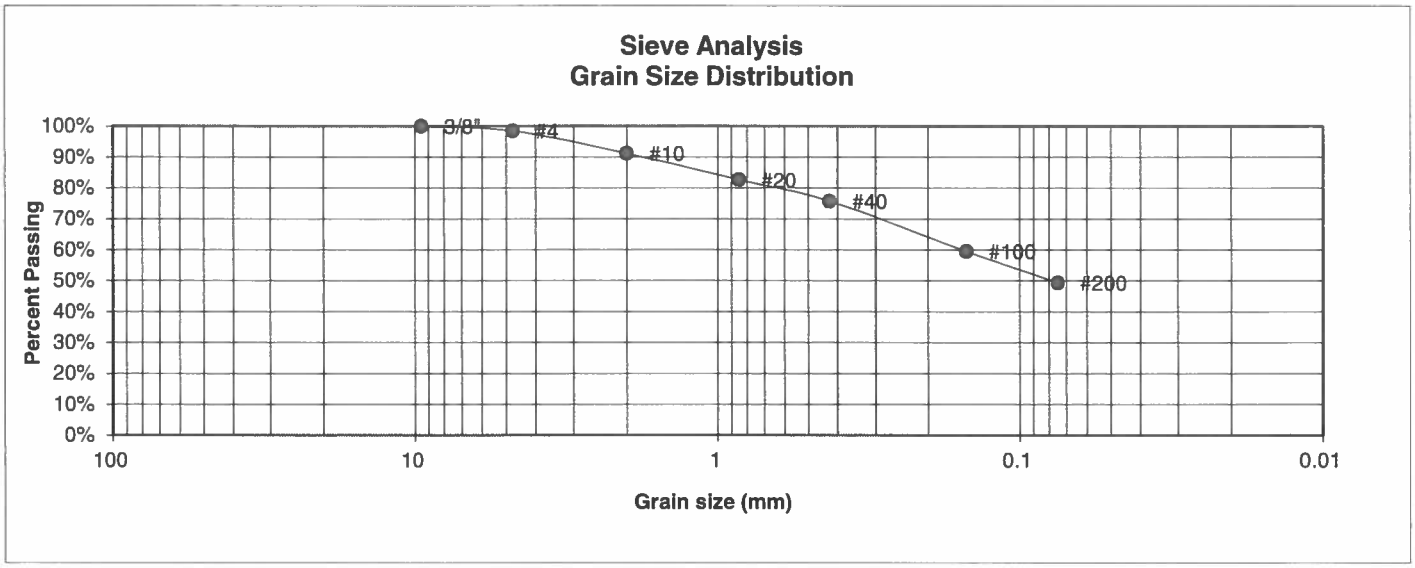
		MW	3-31-17

JOB NO.: 162296

FIG NO.: B-13

UNIFIED CLASSIFICATION	SC	CLIENT	GMS, INC
SOIL TYPE #	1A	PROJECT	CASCADE METRO
TEST BORING #	14	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.5%
10	91.2%
20	82.6%
40	75.8%
100	59.5%
200	49.4%

Atterberg Limits	
Plastic Limit	7
Liquid Limit	30
Plastic Index	23

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	

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LABORATORY TEST RESULTS

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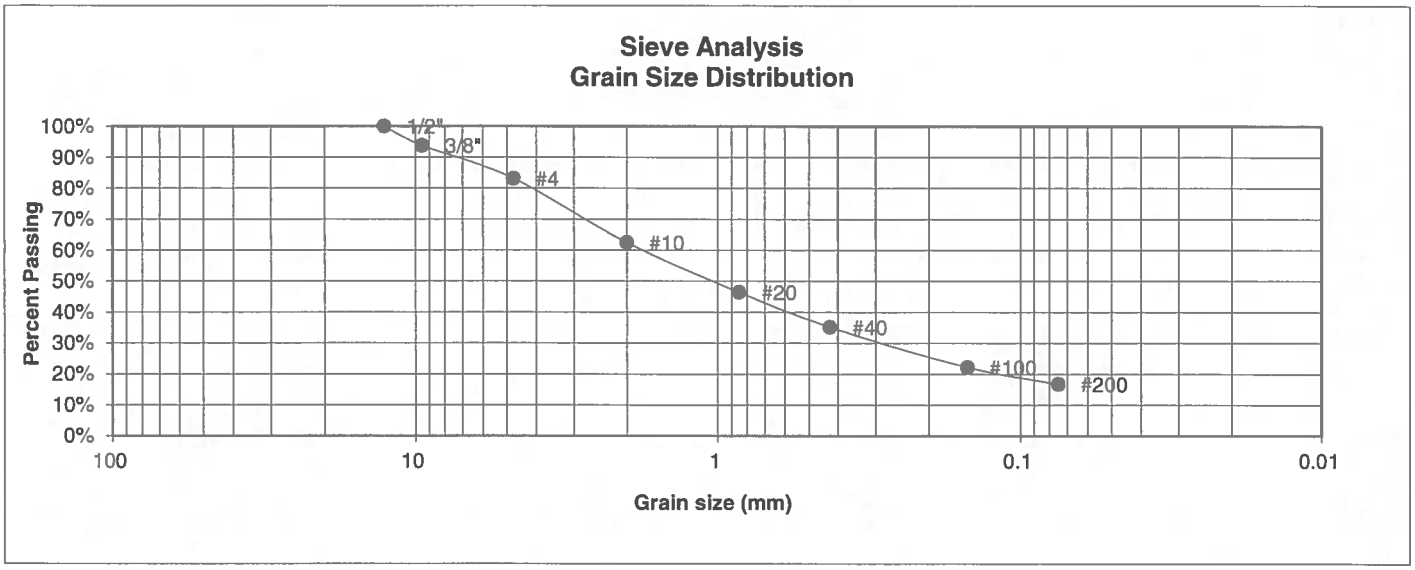
JOB NO.: 162296

FIG NO.: B-14

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	15	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	93.8%
4	83.1%
10	62.5%
20	46.4%
40	35.2%
100	22.2%
200	16.8%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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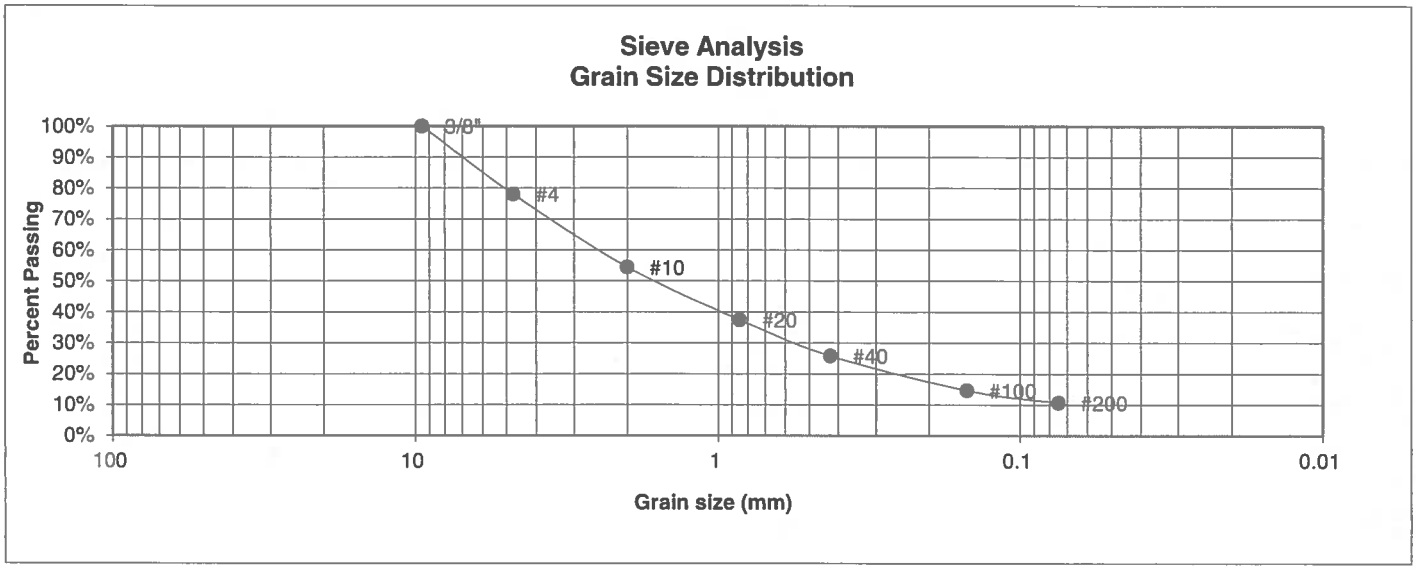
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: AW	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: B-15

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	16	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	78.0%
10	54.4%
20	37.5%
40	25.8%
100	14.7%
200	10.6%

Atterberg Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	

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LABORATORY TEST RESULTS

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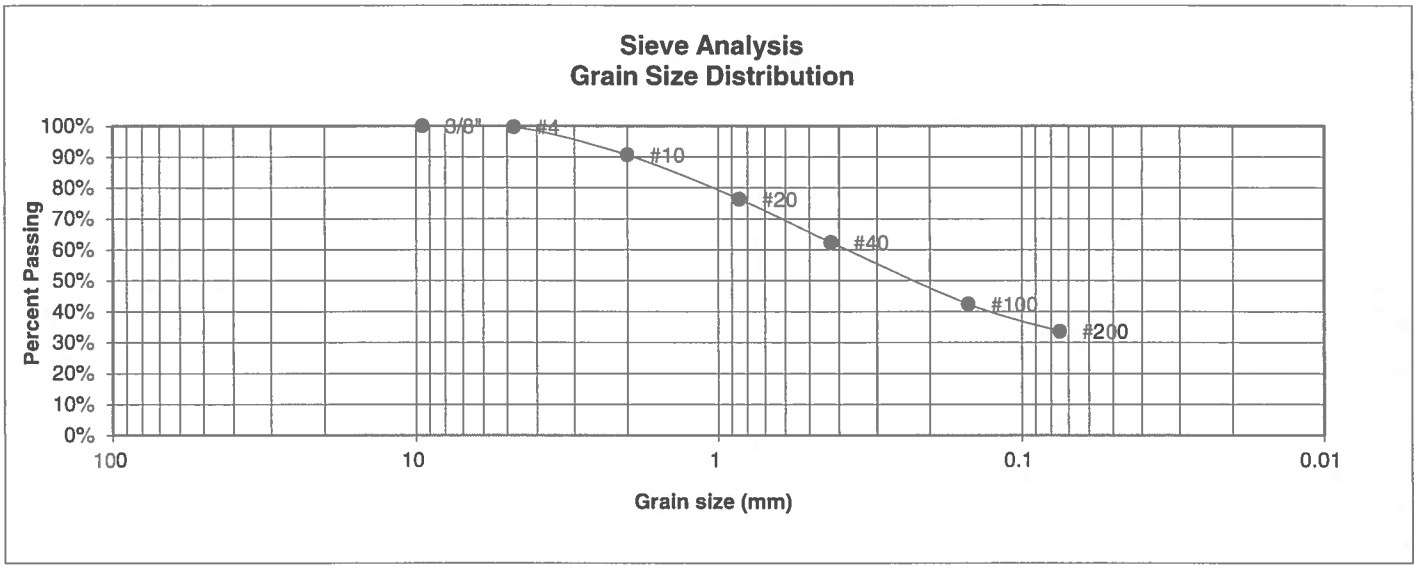
JOB NO.: 162296

FIG NO.: B-16

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	17	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	99.7%
10	90.6%
20	76.4%
40	62.4%
100	42.4%
200	33.6%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

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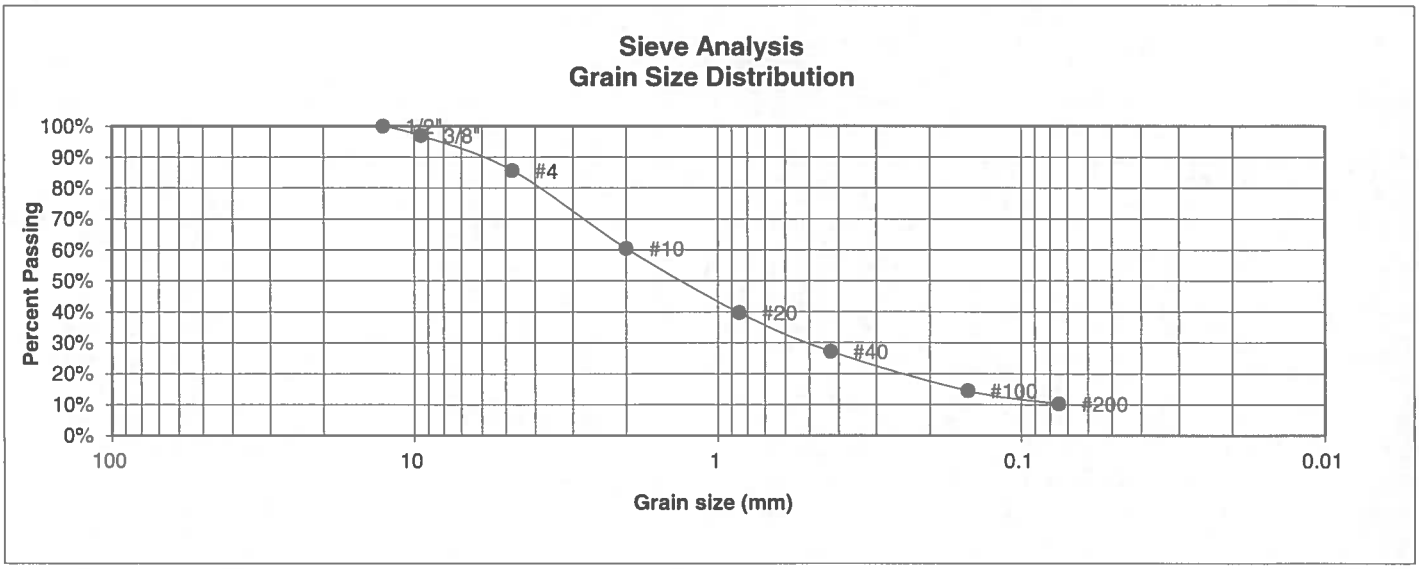
JOB NO.: 162296

FIG NO.: B-17

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	18	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.0%
4	85.7%
10	60.5%
20	39.7%
40	27.2%
100	14.5%
200	10.3%

Atterberg Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start

Moisture at finish

Moisture increase

Initial dry density (pcf)

Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

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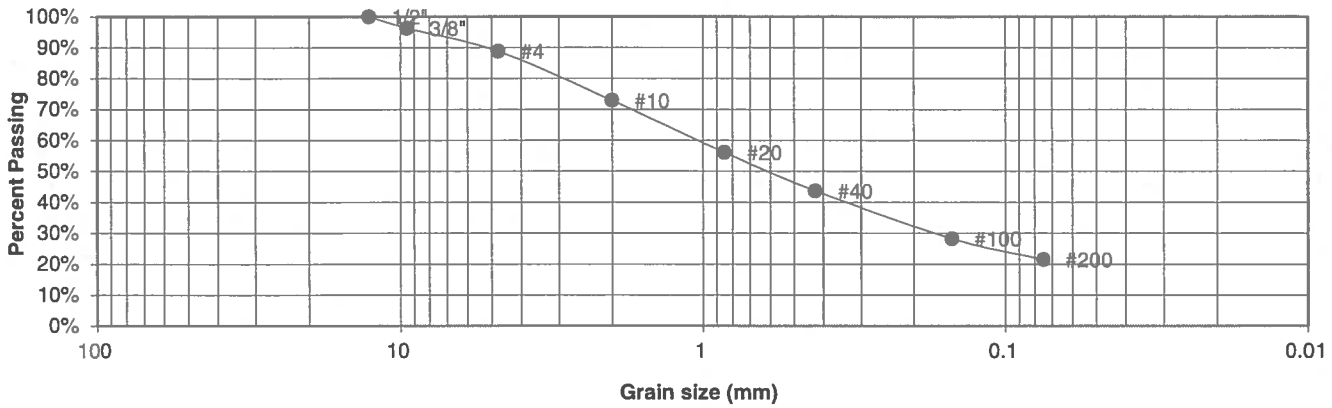
FIG NO.: B-18

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1A	PROJECT	CASCADE METRO
TEST BORING #	19	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	96.3%
4	88.8%
10	72.9%
20	56.1%
40	43.7%
100	28.2%
200	21.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: AW	DATE: 3-31-17

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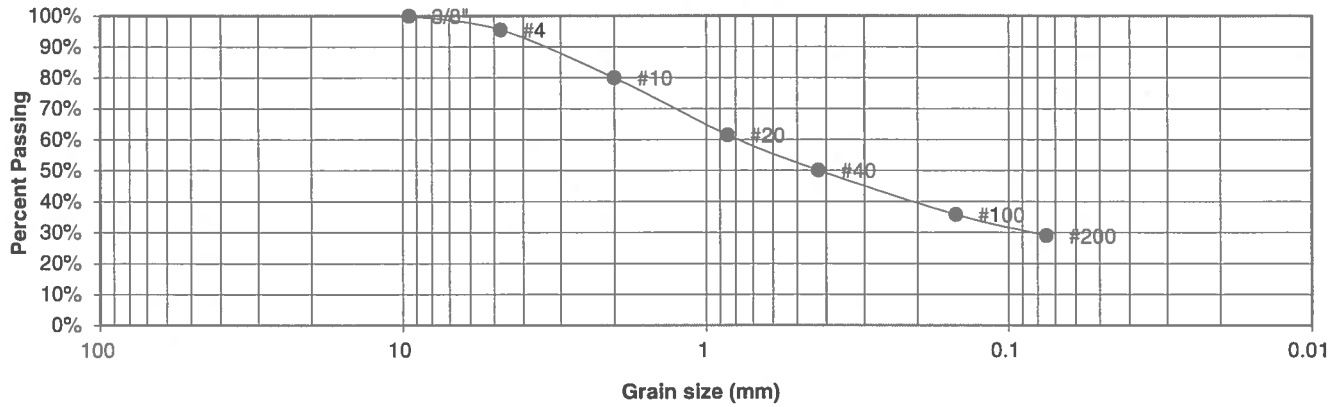
FIG NO.: B-19

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1A	PROJECT	CASCADE METRO
TEST BORING #	20	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.5%
10	80.0%
20	61.6%
40	50.1%
100	35.8%
200	29.0%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

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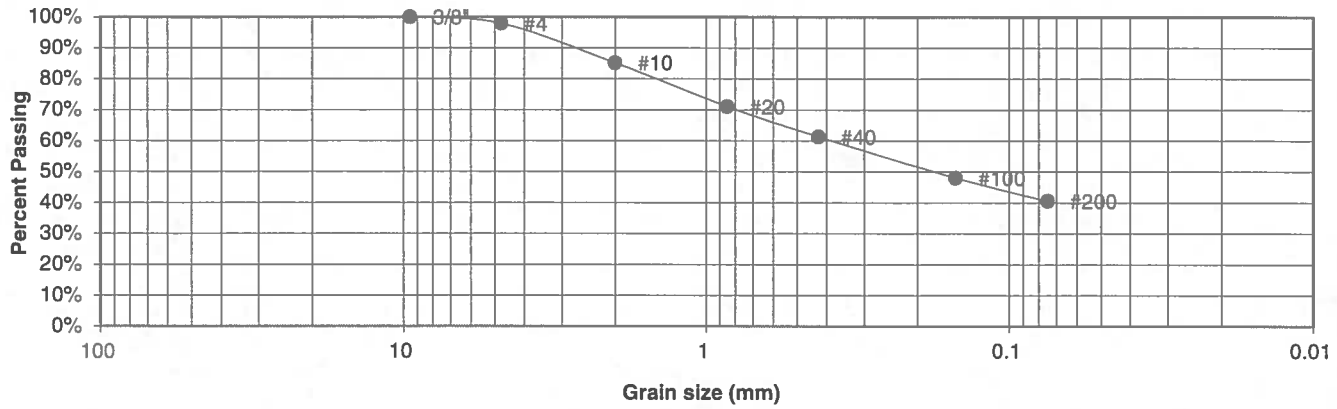
FIG NO.: B-20

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	21	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.9%
10	85.2%
20	71.1%
40	61.4%
100	48.1%
200	40.6%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

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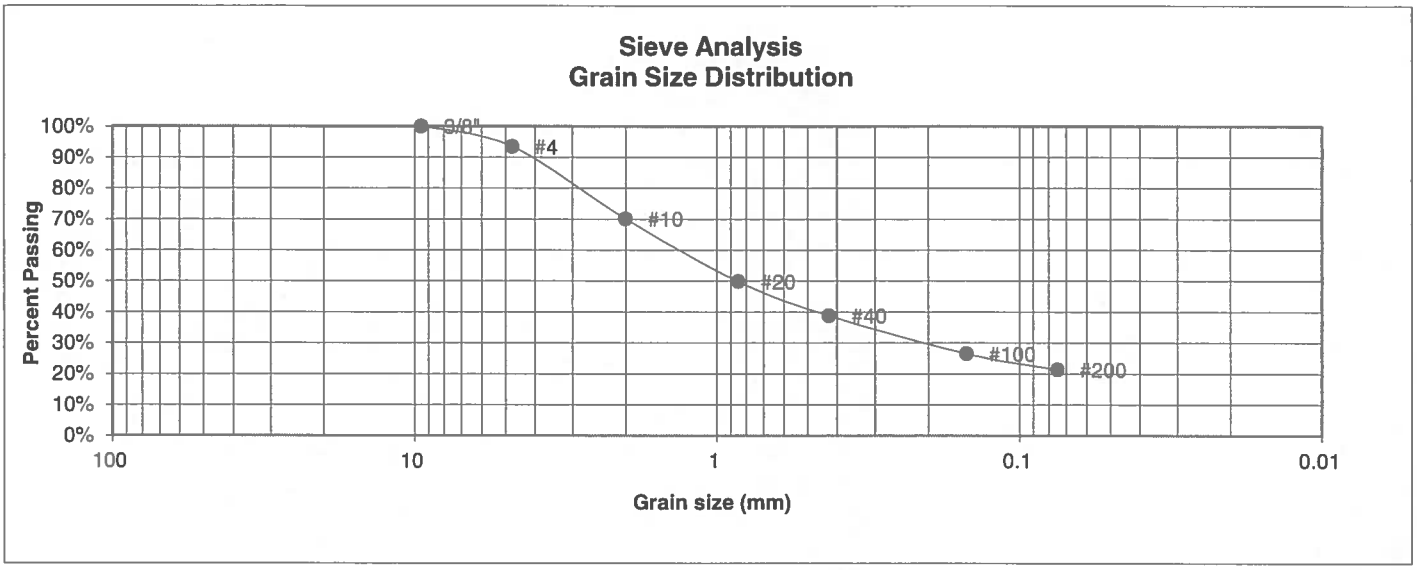
FIG NO.: B-21

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	22	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	93.5%
10	70.1%
20	49.9%
40	38.8%
100	26.5%
200	21.3%

Atterberg Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start

Moisture at finish

Moisture increase

Initial dry density (pcf)

Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

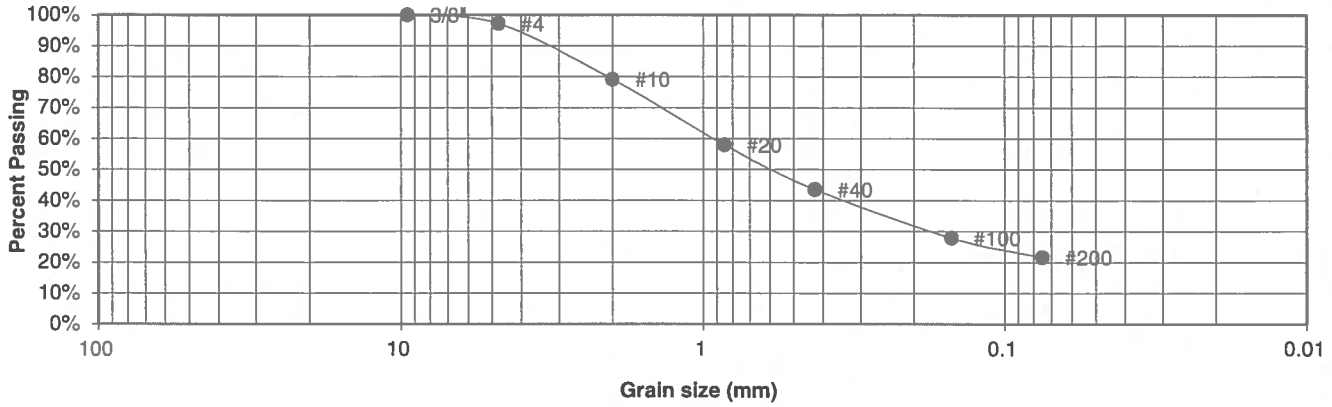
DRAWN:	DATE:	CHECKED: AN	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: B-22

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	23	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.2%
10	79.2%
20	58.0%
40	43.6%
100	27.9%
200	21.7%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

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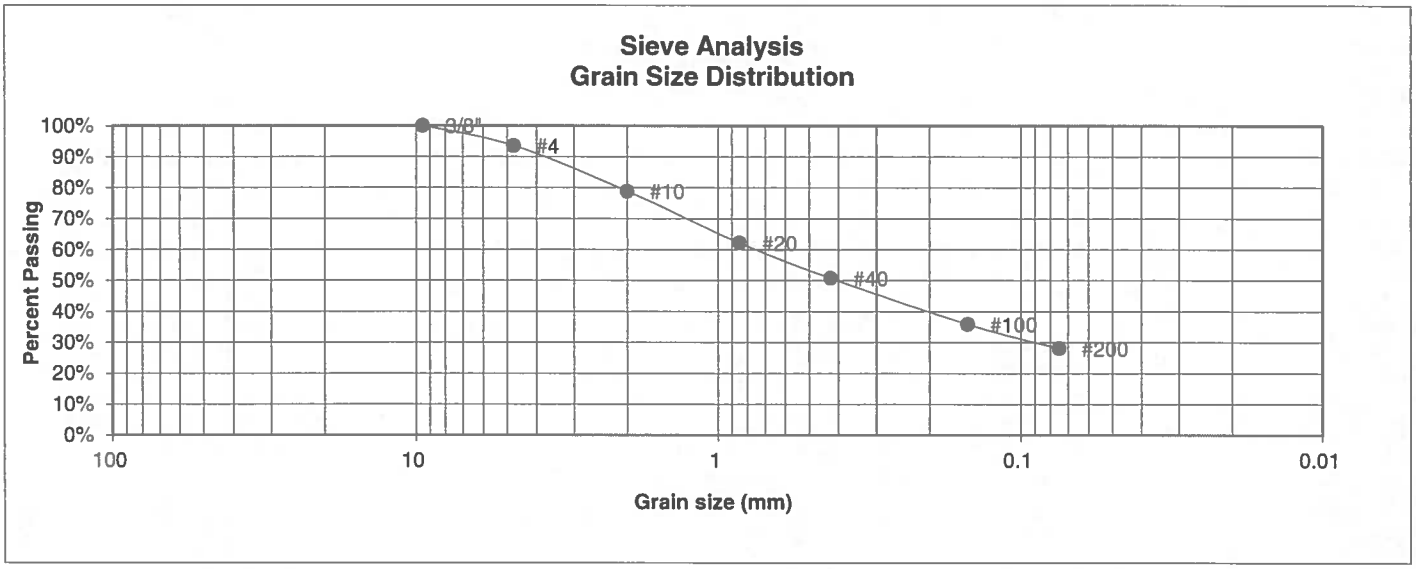
			3-31-17

JOB NO.: 162296

FIG NO.: B-23

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	24	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	93.6%
10	78.9%
20	62.2%
40	50.8%
100	35.9%
200	28.1%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

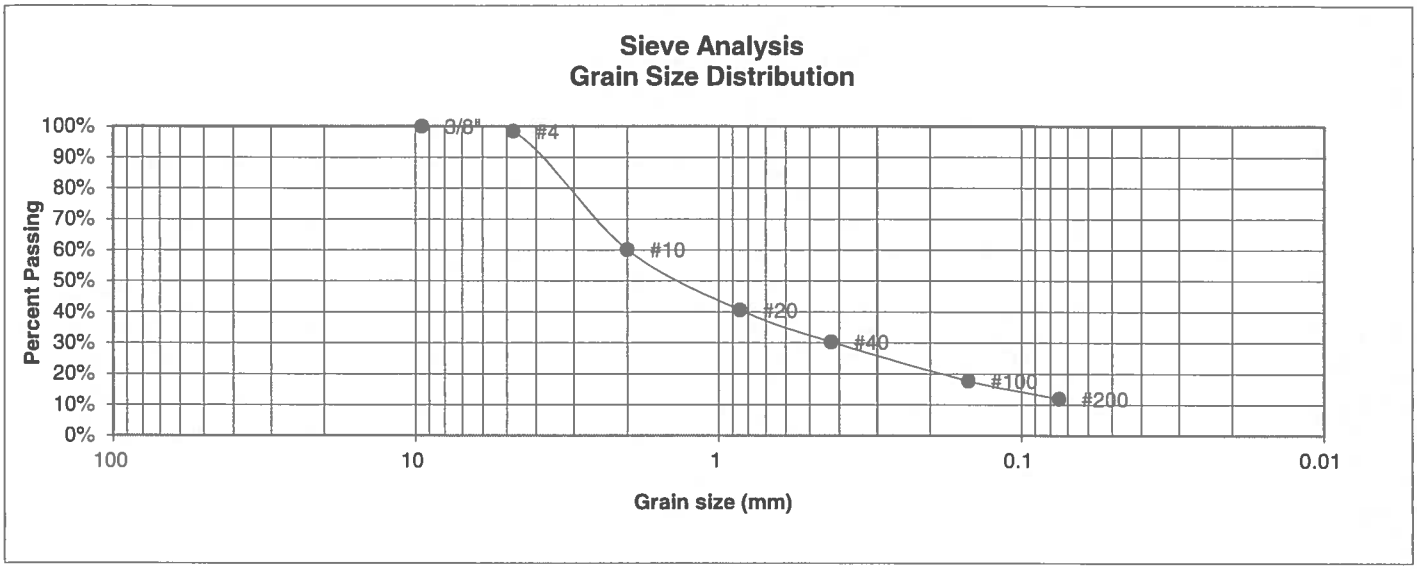
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		MV	3-31-17

JOB NO.: 162296

FIG NO.: B-24

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	25	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	98.4%
10	60.1%
20	40.6%
40	30.3%
100	17.7%
200	11.9%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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LABORATORY TEST RESULTS

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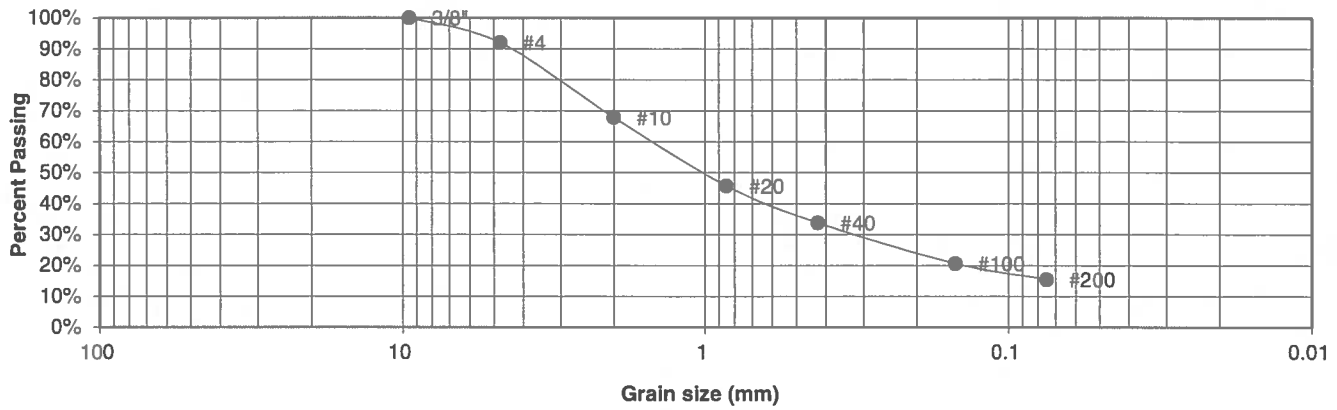
FIG NO.: B-25

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	26	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	92.0%
10	67.8%
20	45.8%
40	33.8%
100	20.7%
200	15.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

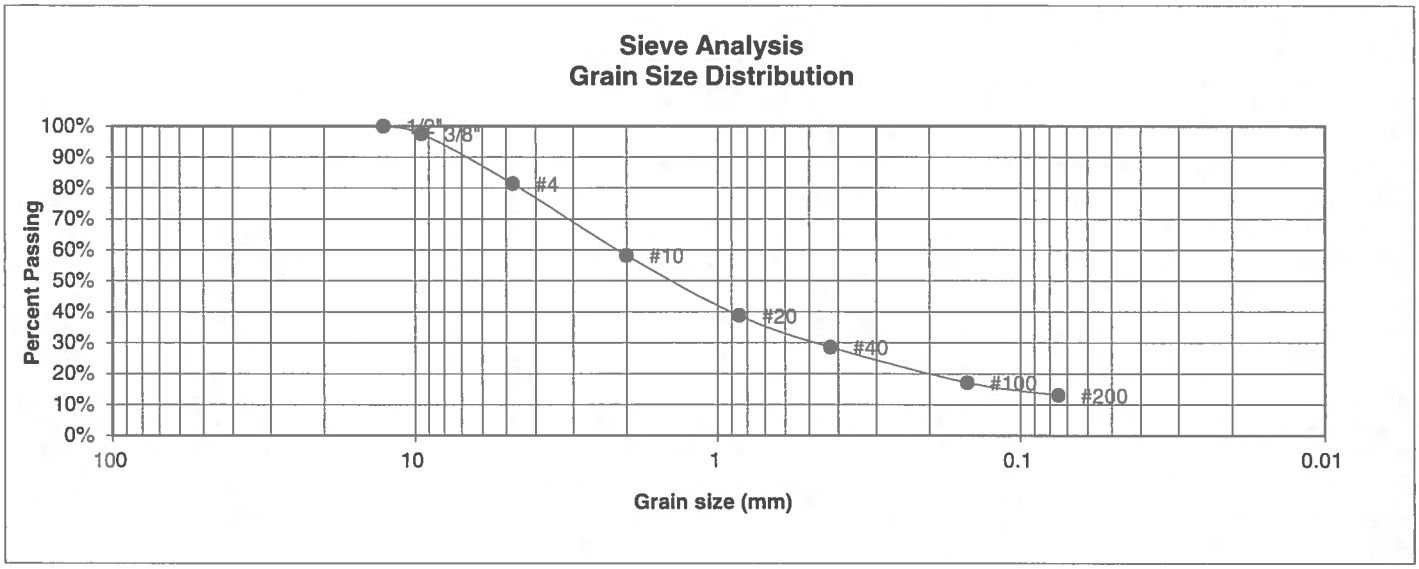
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AN	3-31-17

JOB NO.: 162296

FIG NO.: B-26

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	27	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.5%
4	81.4%
10	58.2%
20	38.7%
40	28.5%
100	17.1%
200	13.0%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

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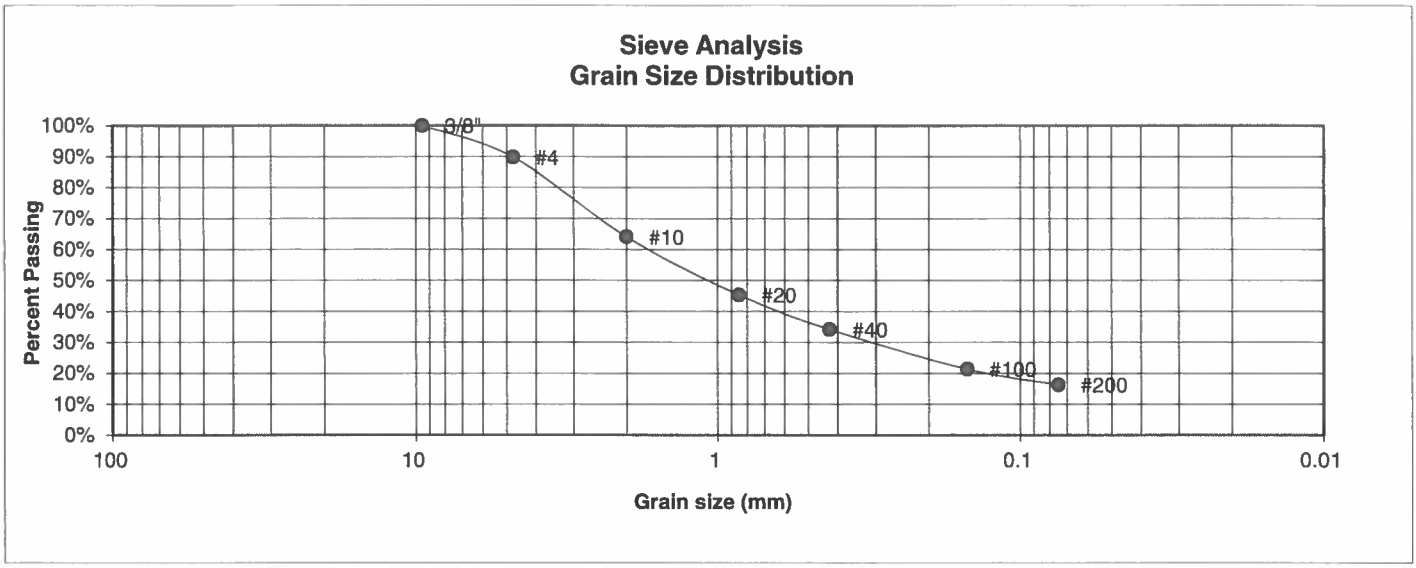
JOB NO.: 162296

FIG NO.: B-27

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	28	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	89.8%
10	64.1%
20	45.3%
40	34.2%
100	21.4%
200	16.3%

Atterberg Limits	
Plastic Limit	20
Liquid Limit	22
Plastic Index	2

Swell	
Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	

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ENGINEERING, INC.
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COLORADO SPRINGS, COLORADO 80907

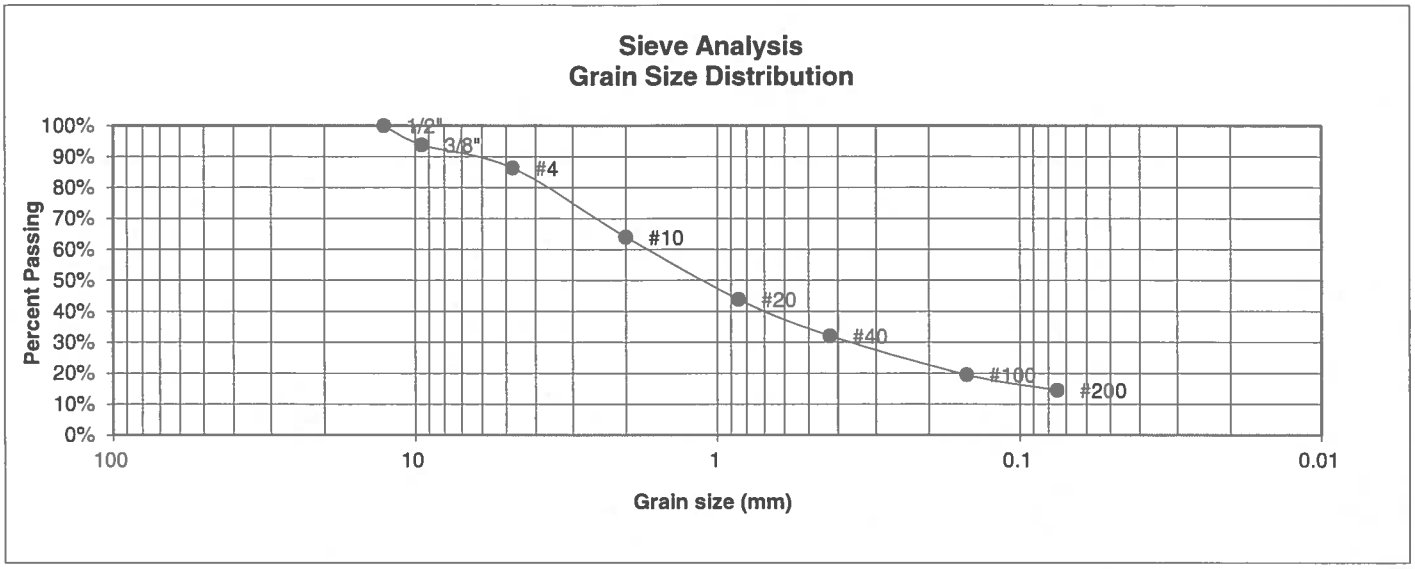
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		MW	3-31-17

JOB NO.: 162296

FIG NO.: B-28

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	29	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	93.8%
4	86.3%
10	64.1%
20	43.9%
40	32.1%
100	19.5%
200	14.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

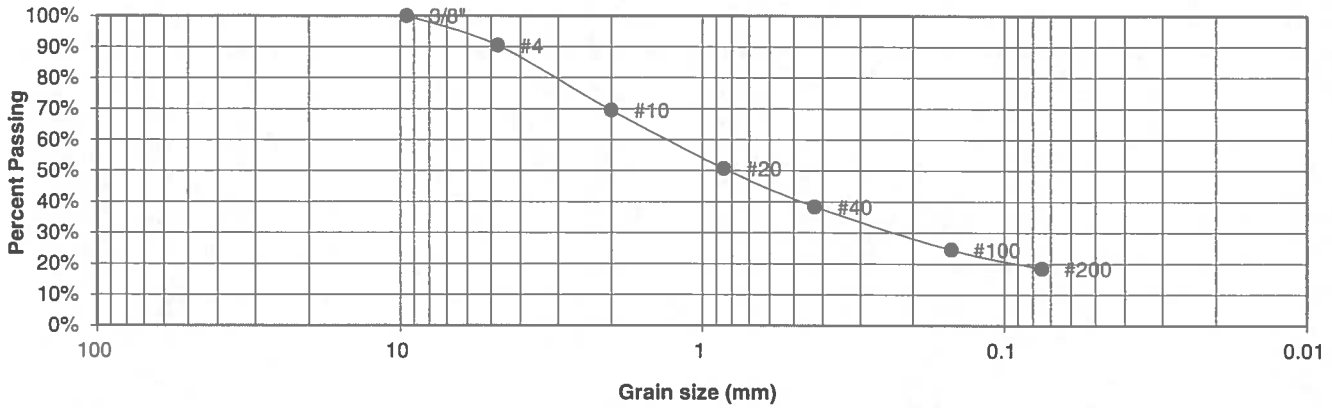
DRAWN:	DATE:	CHECKED:	DATE:
		AN	3-31-17

JOB NO.: 162296

FIG NO.: B-29

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	30	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	90.4%
10	69.5%
20	50.7%
40	38.4%
100	24.6%
200	18.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

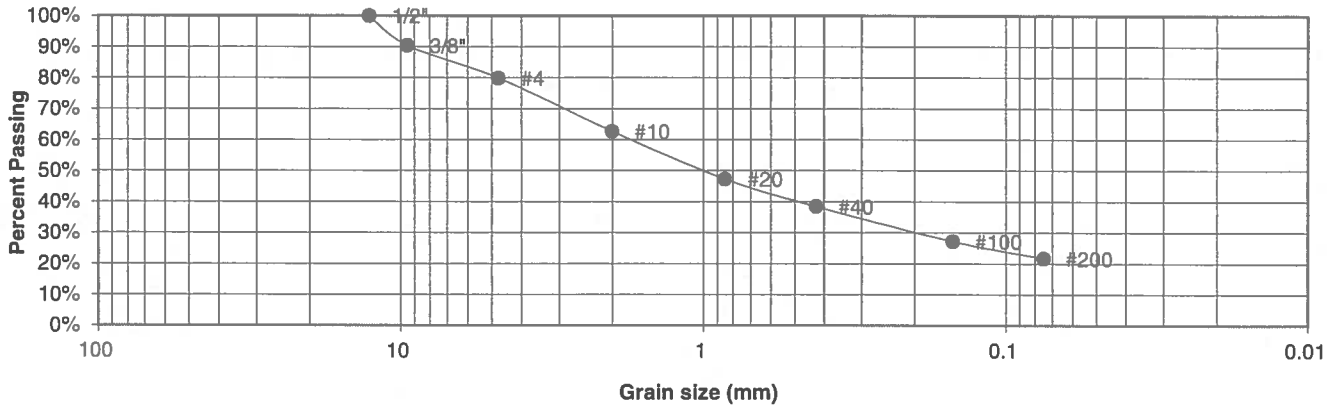
DRAWN:	DATE:	CHECKED: AN	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: B-30

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	31	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	90.4%
4	79.9%
10	62.7%
20	47.3%
40	38.4%
100	27.2%
200	21.7%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

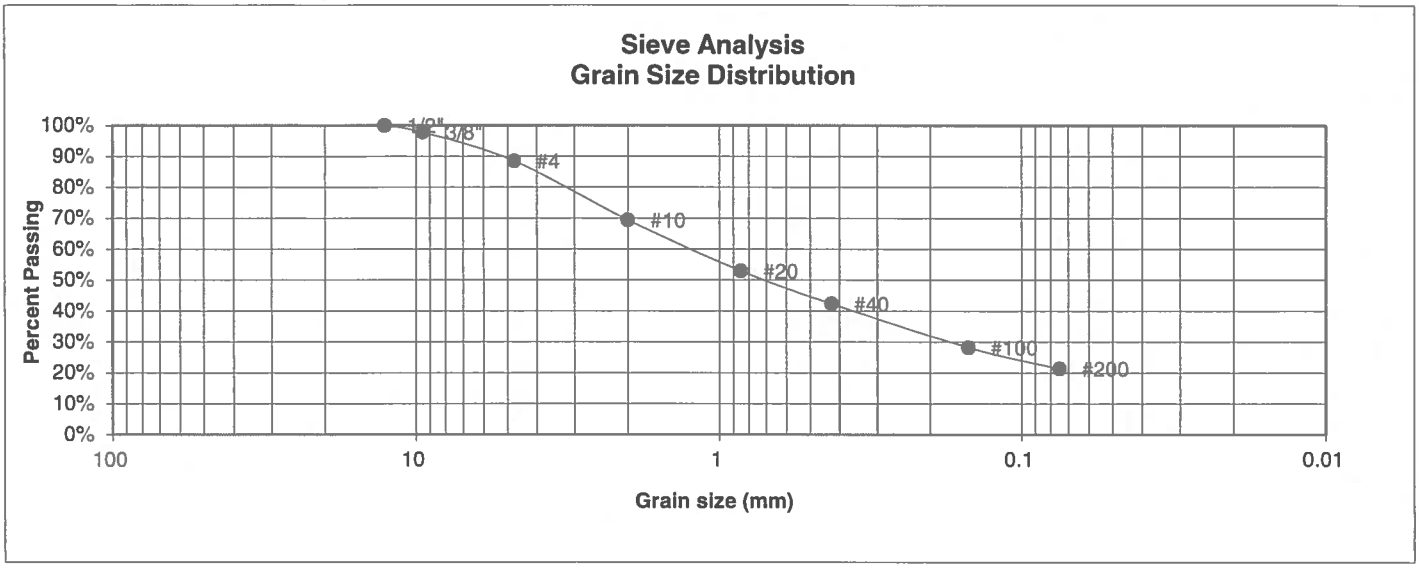
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296

FIG NO.: B-31

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	32	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.8%
4	88.5%
10	69.4%
20	52.9%
40	42.3%
100	28.3%
200	21.3%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

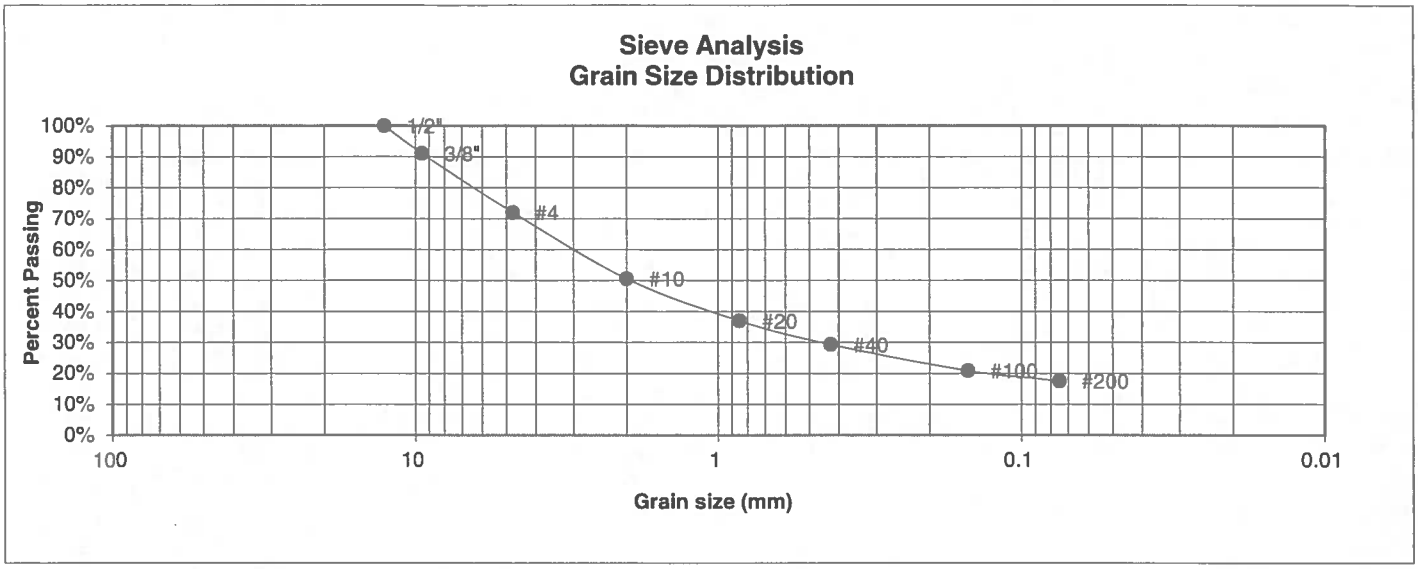
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		MN	3-31-17

JOB NO.: 162296

FIG NO.: B-32

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	33	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	91.1%
4	72.0%
10	50.6%
20	37.0%
40	29.3%
100	20.9%
200	17.5%

Atterberg Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start

Moisture at finish

Moisture increase

Initial dry density (pcf)

Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

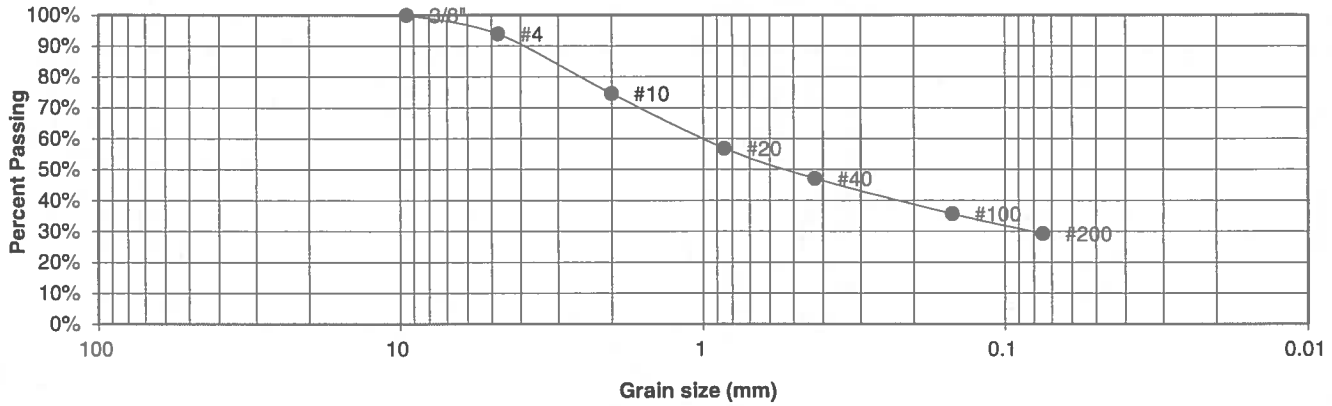
DRAWN:	DATE:	CHECKED:	DATE:
		AW	3-31-17

JOB NO.: 162296

FIG NO.: B-33

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	34	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	93.9%
10	74.6%
20	56.9%
40	47.1%
100	35.7%
200	29.2%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

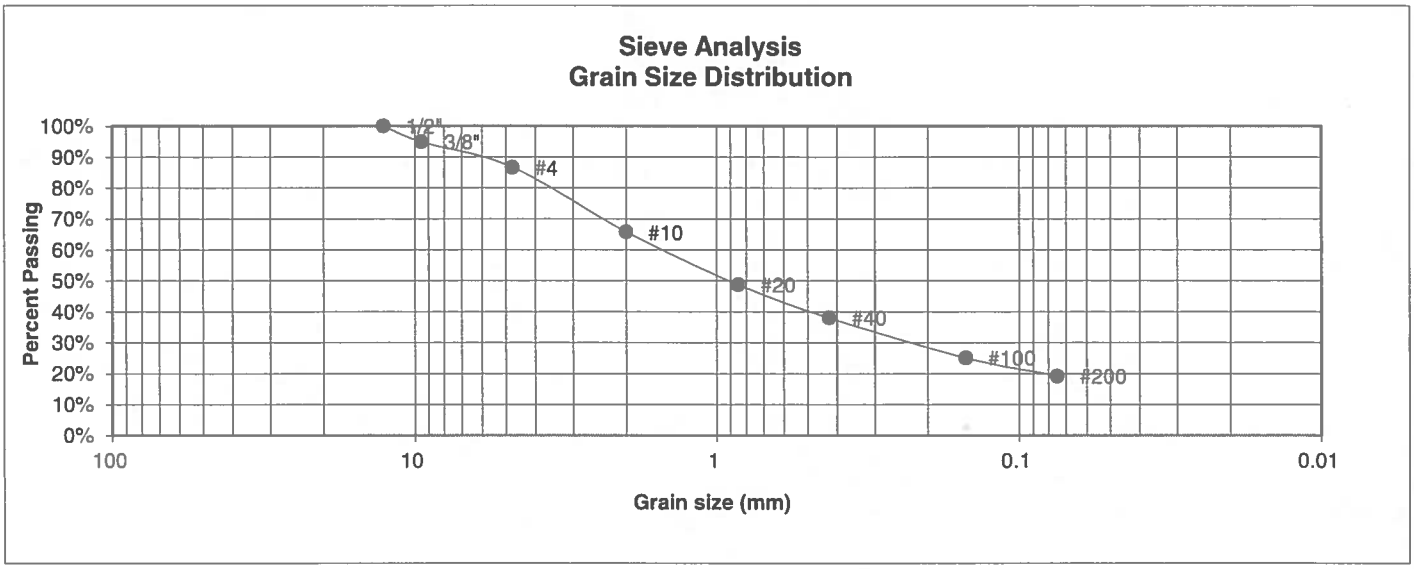
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296

FIG NO.: B-34

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	35	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	94.9%
4	86.7%
10	65.8%
20	48.8%
40	38.1%
100	25.1%
200	19.2%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

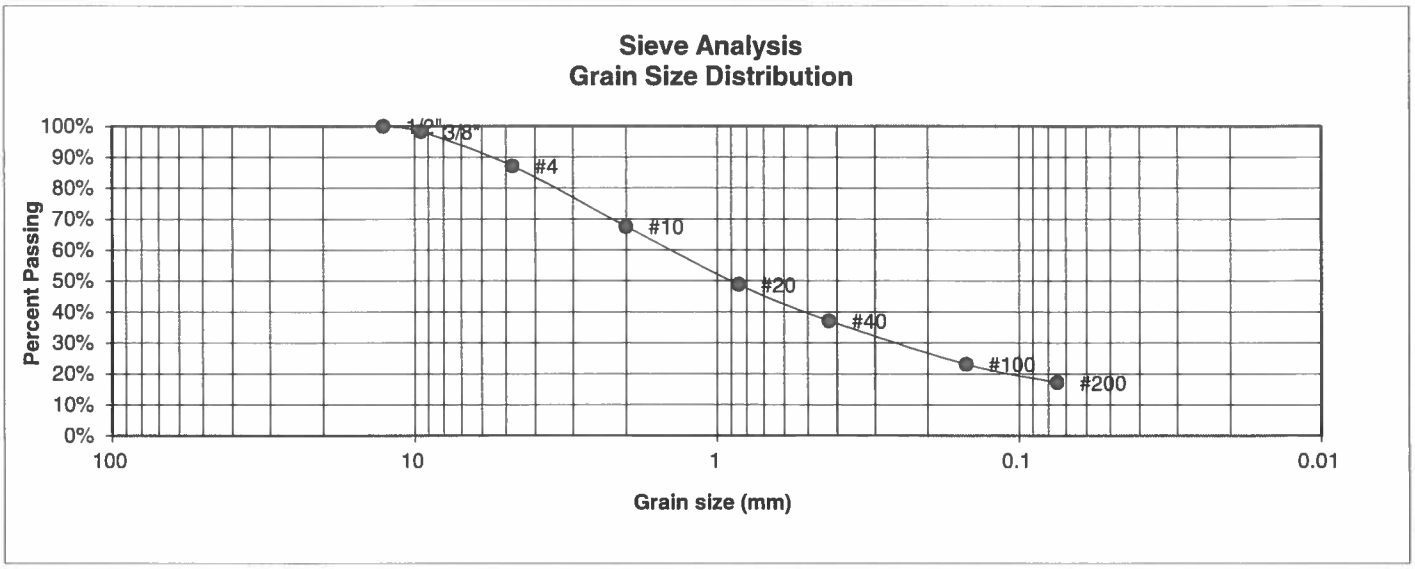
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AW	3-31-17

JOB NO.: 162296

FIG NO.: B-35

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	36	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.2%
4	87.2%
10	67.6%
20	48.8%
40	37.2%
100	23.1%
200	17.2%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

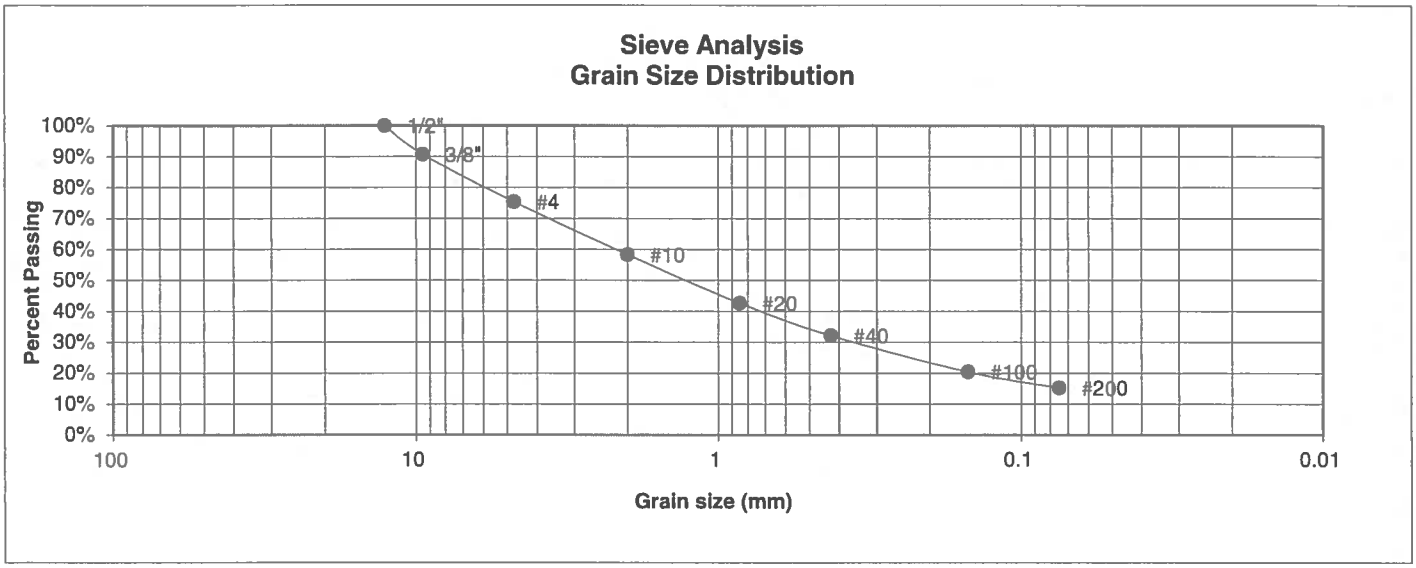
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AW	3-31-17

JOB NO.: 162296

FIG NO.: B-36

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	37	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	90.7%
4	75.4%
10	58.3%
20	42.7%
40	32.1%
100	20.4%
200	15.2%

Atterberg Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start	
Moisture at finish	
Moisture increase	
Initial dry density (pcf)	
Swell (psf)	

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
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LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
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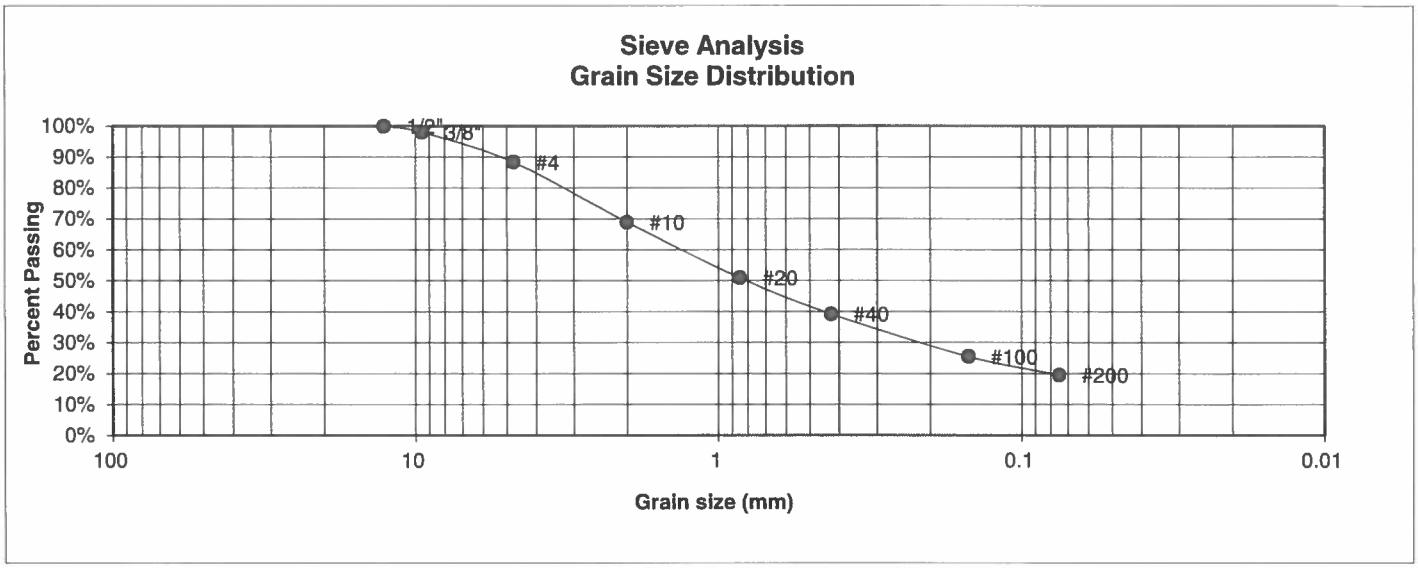
JOB NO.: 162296

FIG NO.: B-37

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	38	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.0%
4	88.4%
10	68.9%
20	50.9%
40	39.2%
100	25.5%
200	19.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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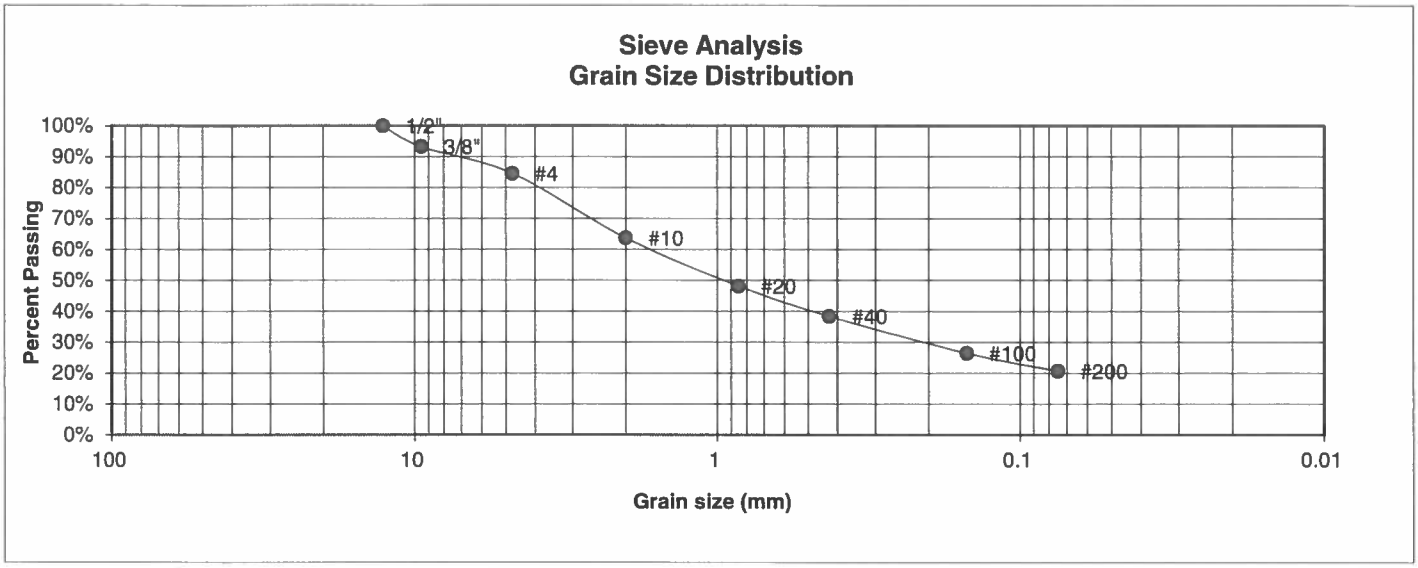
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: AN	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: B-38

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	39	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	93.2%
4	84.6%
10	63.7%
20	48.2%
40	38.3%
100	26.5%
200	20.7%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

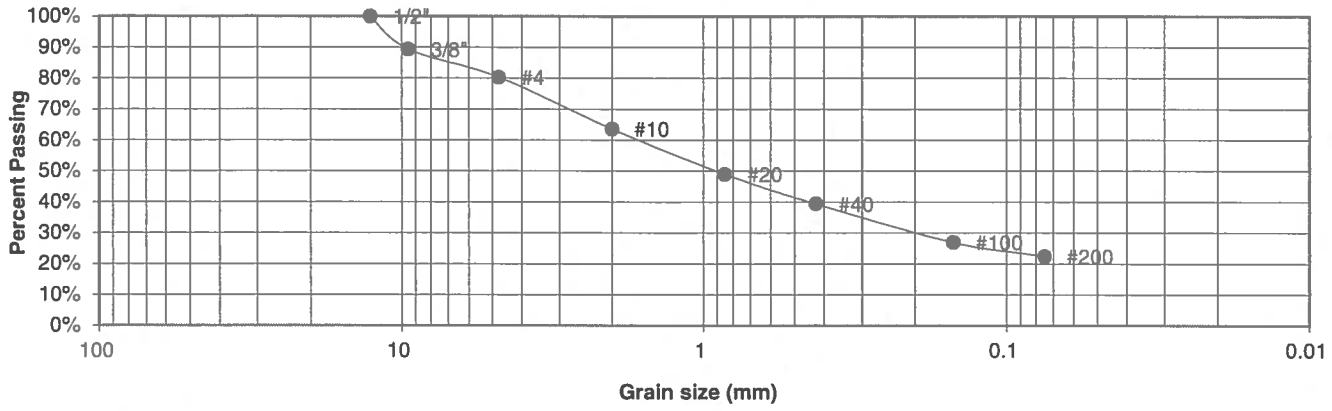
DRAWN:	DATE:	CHECKED:	DATE:
		AN	3-31-17

JOB NO.: 162296

FIG NO.: B-39

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	40	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	89.3%
4	80.3%
10	63.6%
20	49.0%
40	39.4%
100	26.9%
200	22.4%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

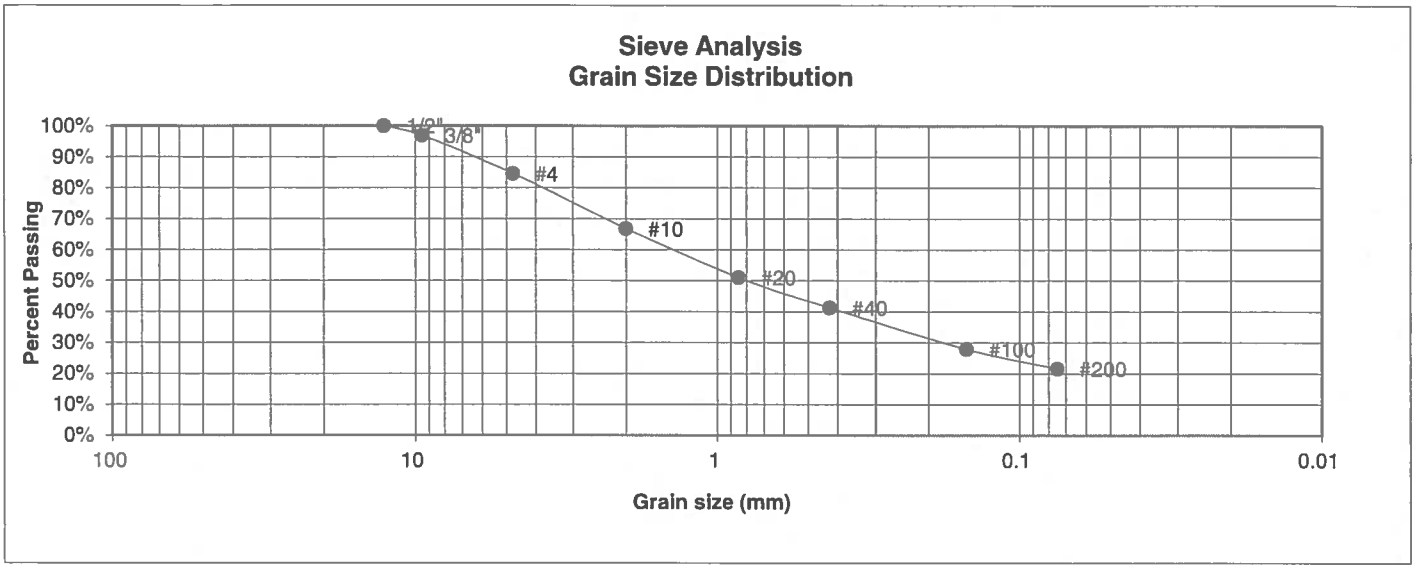
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AN	3-31-17

JOB NO.: 162296

FIG NO.: B-40

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	41	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	96.9%
4	84.6%
10	66.8%
20	51.0%
40	41.3%
100	27.9%
200	21.6%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

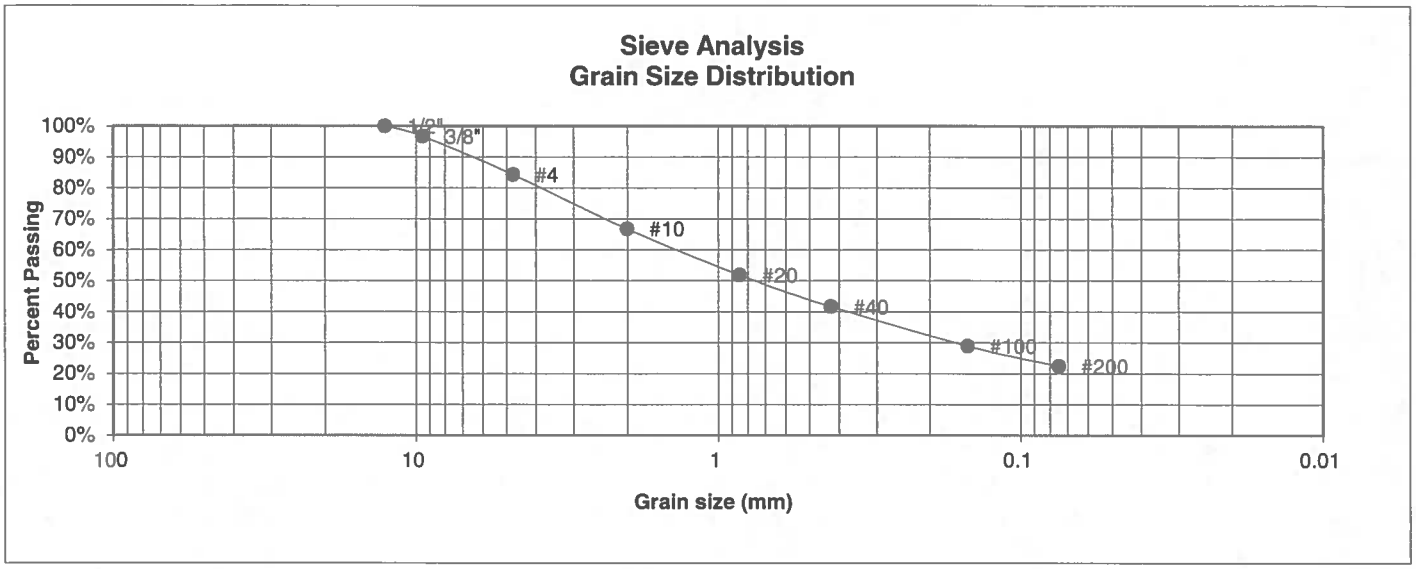
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AW	3-31-17

JOB NO.: 162296

FIG NO.: B-41

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	42	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	96.7%
4	84.3%
10	66.8%
20	51.9%
40	41.6%
100	28.9%
200	22.4%

Atterberg Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start

Moisture at finish

Moisture increase

Initial dry density (pcf)

Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

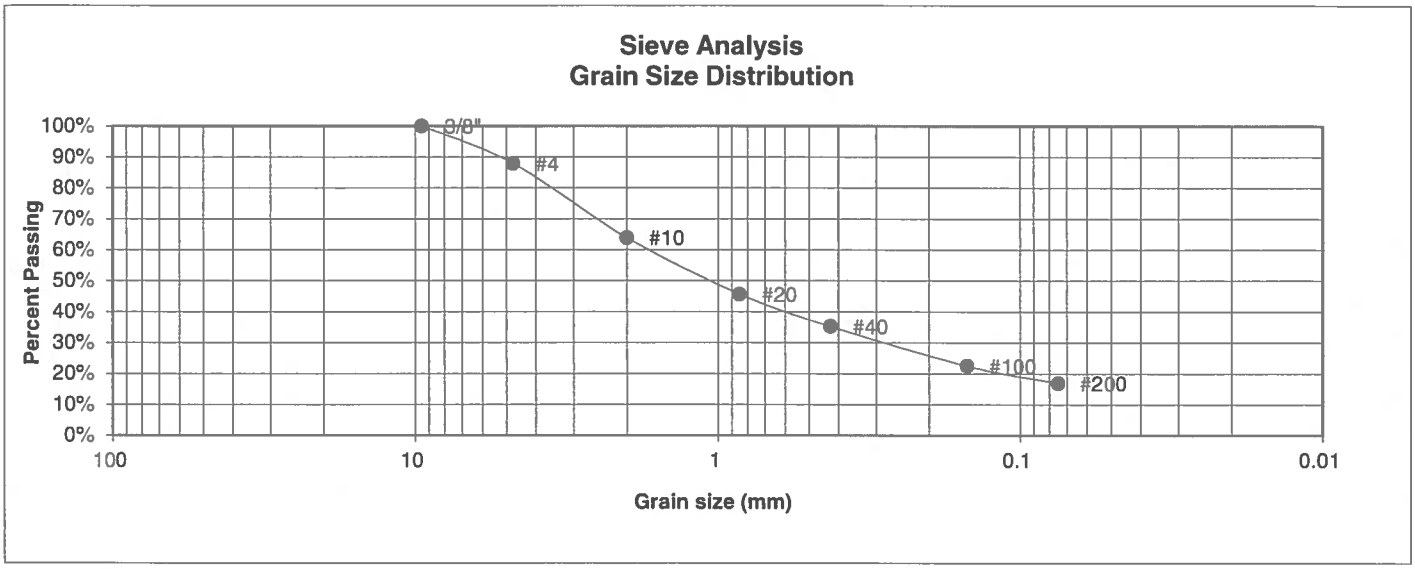
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AV	3-31-17

JOB NO.: 162296

FIG NO.: B-42

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	43	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	87.9%
10	63.9%
20	45.7%
40	35.3%
100	22.5%
200	16.9%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

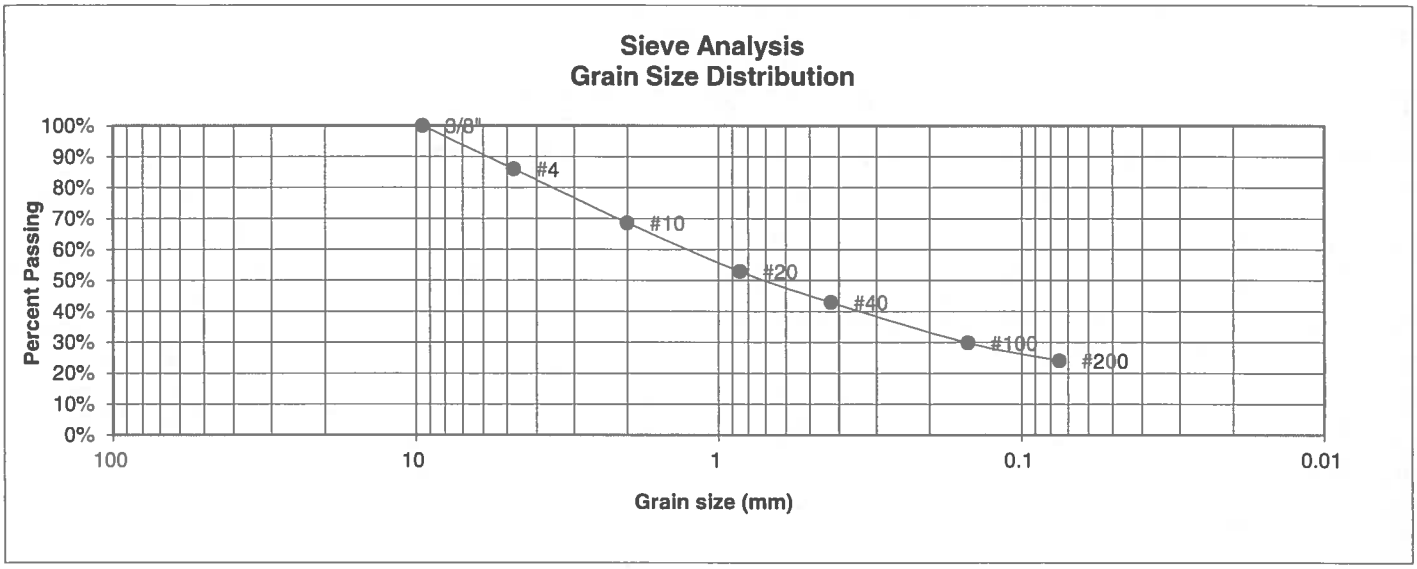
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		MI	3-31-17

JOB NO.: 162296

FIG NO.: B-43

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	44	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	86.0%
10	68.6%
20	52.9%
40	42.9%
100	29.8%
200	24.0%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

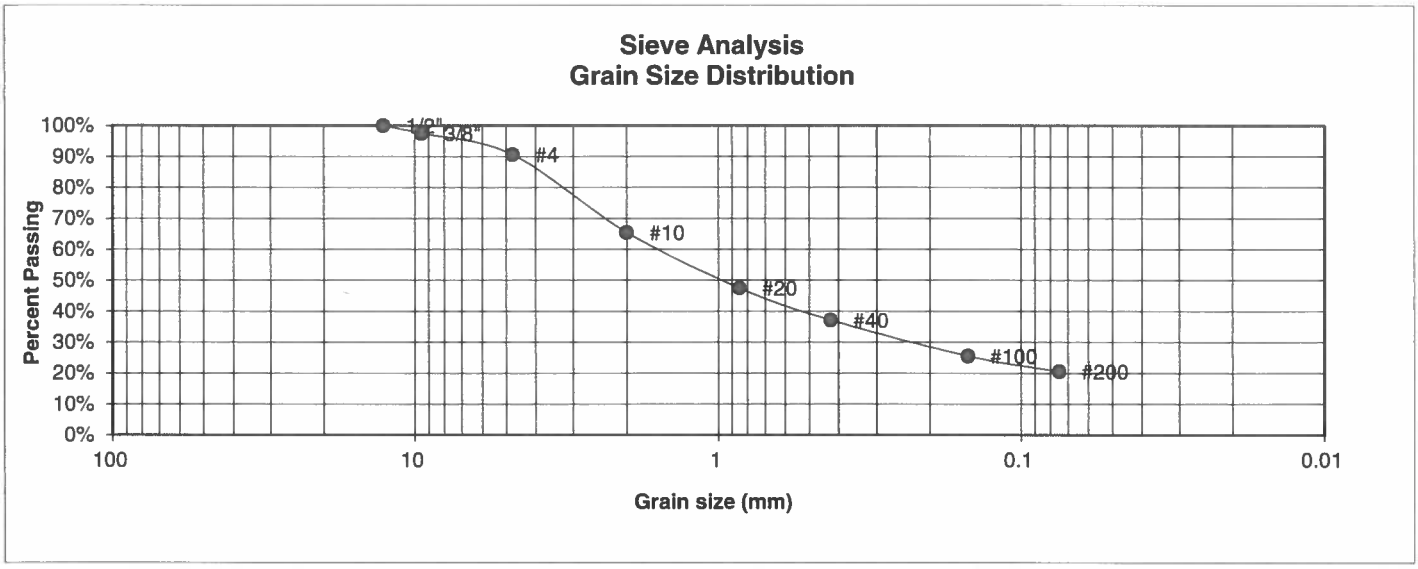
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AN	3-31-17

JOB NO.: 162296

FIG NO.: B-44

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	45	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.6%
4	90.6%
10	65.5%
20	47.5%
40	37.1%
100	25.5%
200	20.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

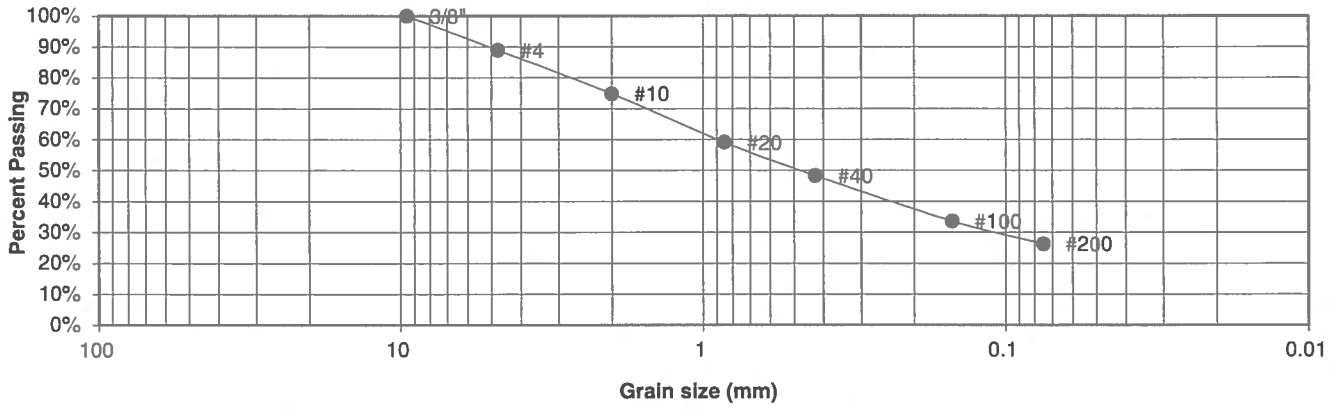
DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296

FIG NO.: B-45

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	46	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	88.9%
10	74.8%
20	59.1%
40	48.3%
100	33.6%
200	26.3%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
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LABORATORY TEST RESULTS

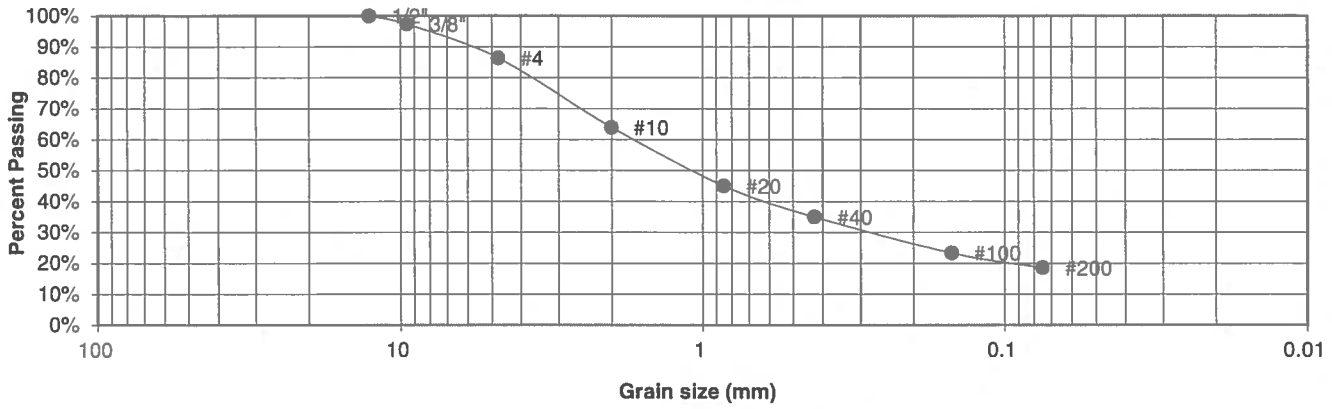
DRAWN:	DATE:	CHECKED: AW	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: B-46

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	47	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.3%
4	86.4%
10	64.0%
20	45.1%
40	35.0%
100	23.3%
200	18.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

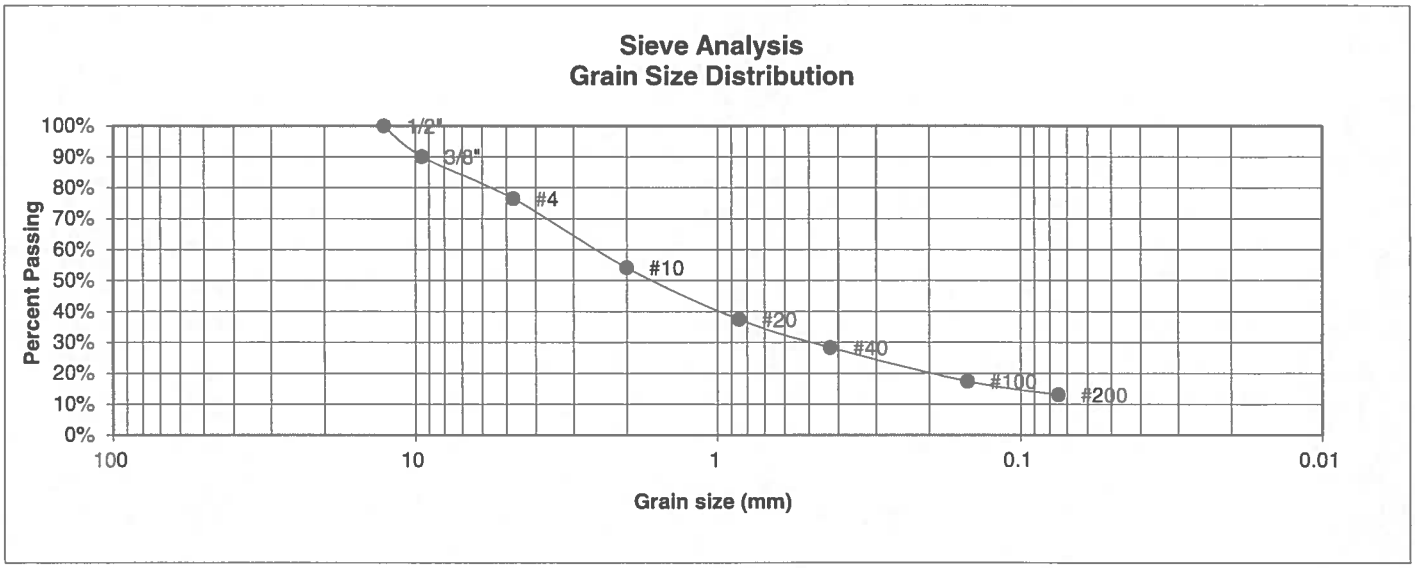
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AV	3-31-17

JOB NO.: 162296

FIG NO.: B-47

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	48	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	90.1%
4	76.5%
10	54.2%
20	37.4%
40	28.3%
100	17.4%
200	13.0%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

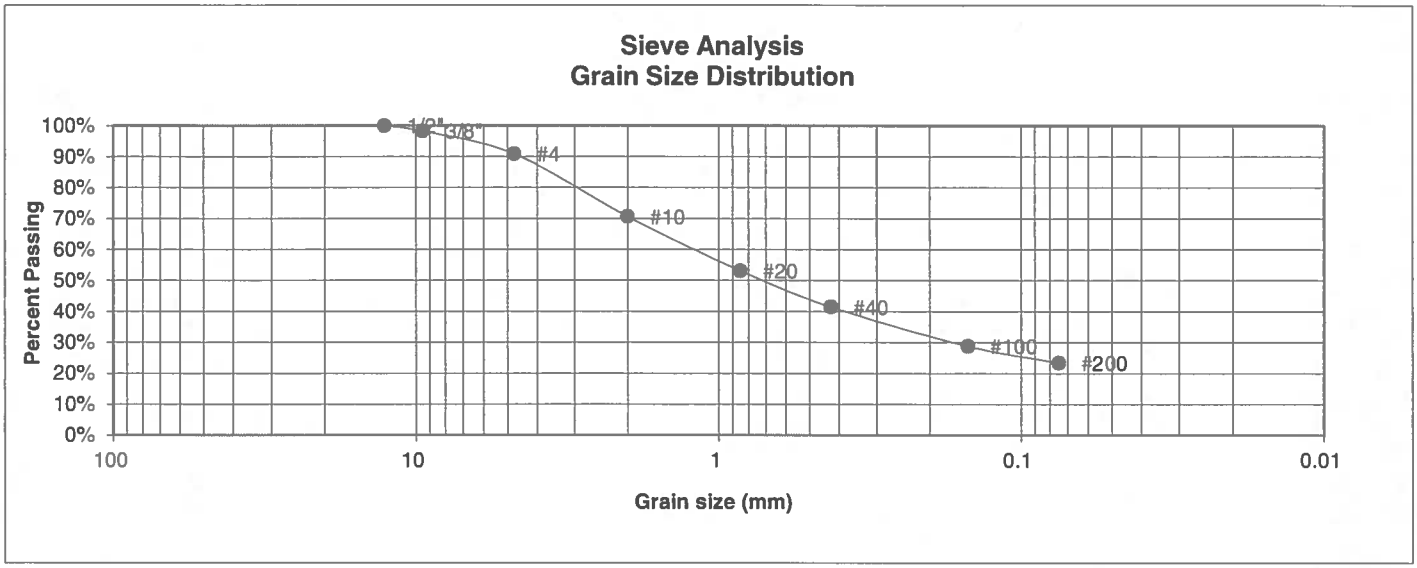
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		M	3-31-17

JOB NO.: 162296

FIG NO.: B-48

UNIFIED CLASSIFICATION	SC	CLIENT	GMS, INC
SOIL TYPE #	1A	PROJECT	CASCADE METRO
TEST BORING #	49	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	98.2%
4	90.9%
10	70.6%
20	53.1%
40	41.4%
100	28.8%
200	23.4%

Atterberg Limits	
Plastic Limit	
Liquid Limit	
Plastic Index	

Swell	
Moisture at start	10.7%
Moisture at finish	23.7%
Moisture increase	13.0%
Initial dry density (pcf)	98
Swell (psf)	330

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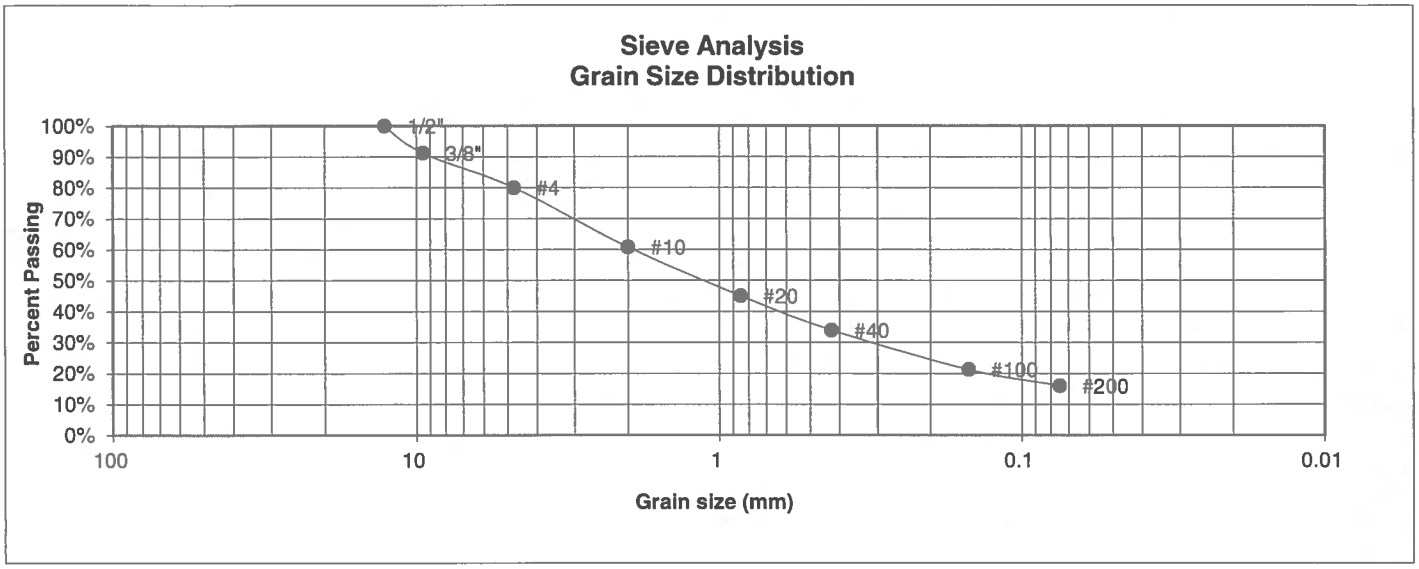
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: AN	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: B-49

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	49	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	91.2%
4	80.0%
10	60.8%
20	45.0%
40	33.9%
100	21.2%
200	16.0%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

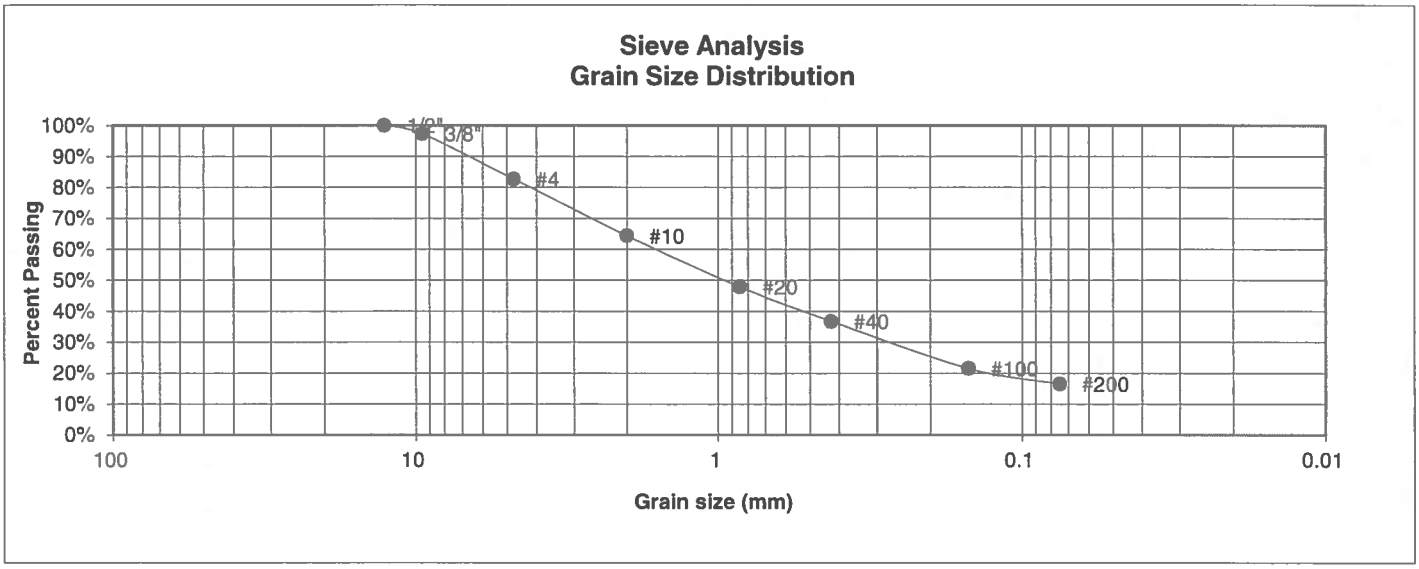
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AW	3-31-17

JOB NO.: 162296

FIG NO.: B-50

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	50	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.3%
4	82.7%
10	64.4%
20	47.9%
40	36.8%
100	21.5%
200	16.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
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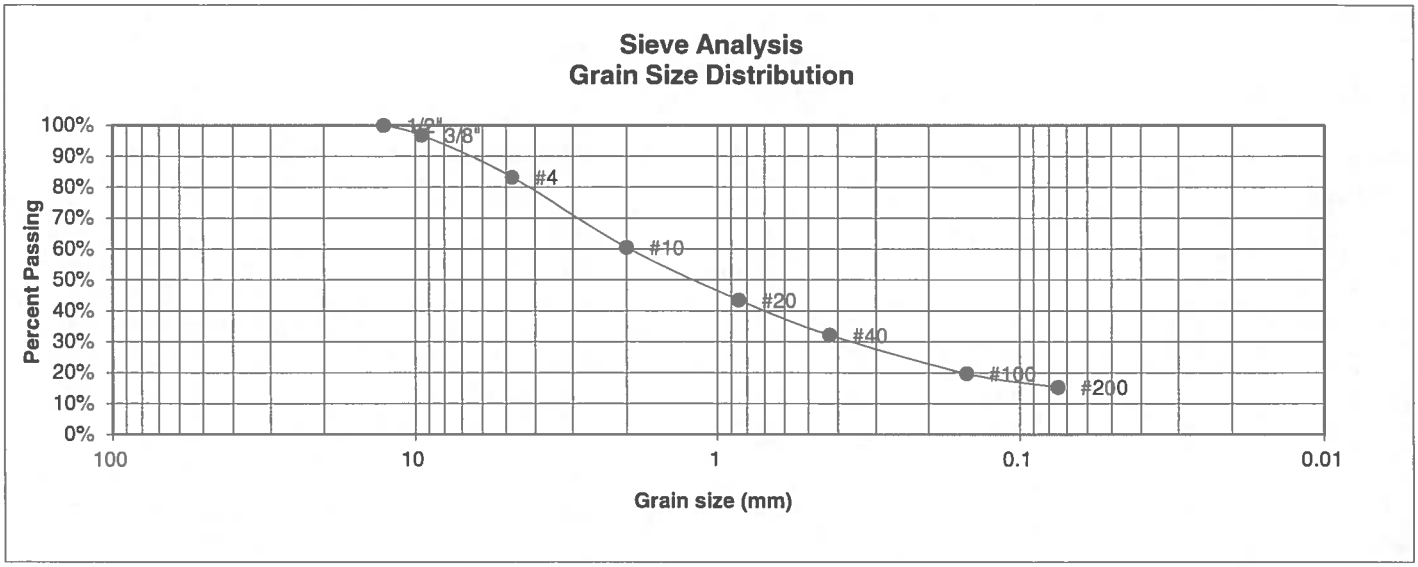
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: MV	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: B-51

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	51	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	96.8%
4	83.2%
10	60.5%
20	43.5%
40	32.2%
100	19.7%
200	15.3%

Atterberg Limits

Plastic Limit	NP
Liquid Limit	NV
Plastic Index	NP

Swell

Moisture at start

Moisture at finish

Moisture increase

Initial dry density (pcf)

Swell (psf)

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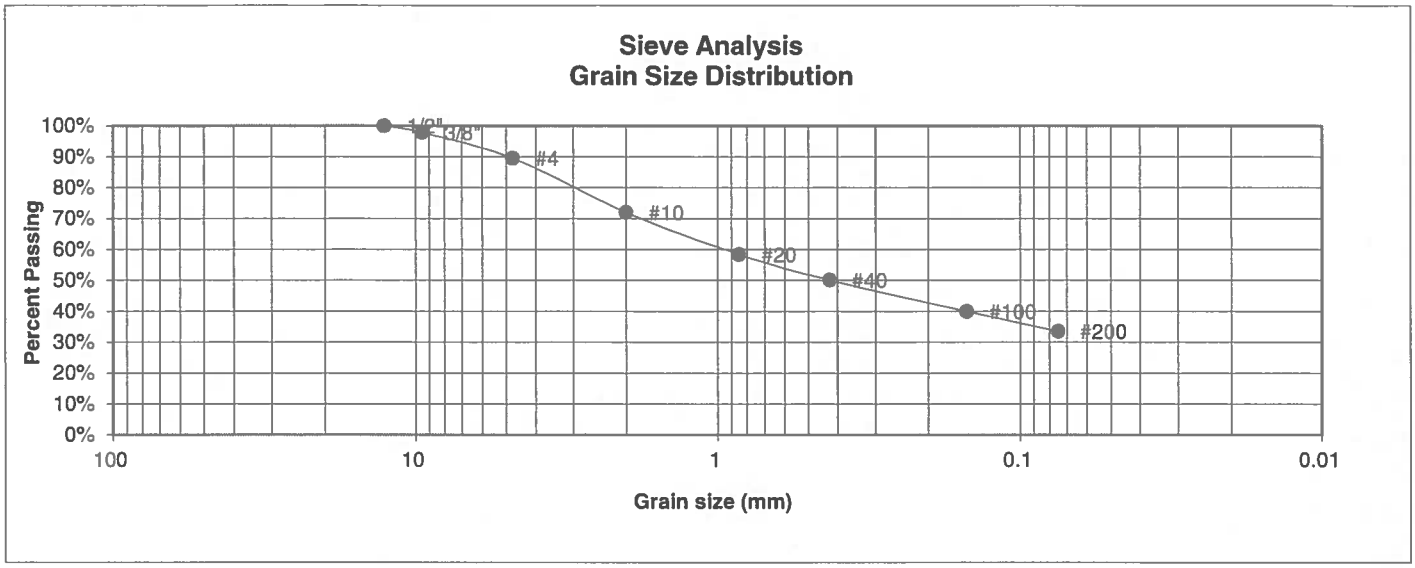
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		MV	3-31-17

JOB NO.: 162296

FIG NO.: B-52

UNIFIED CLASSIFICATION	SC	CLIENT	GMS, INC
SOIL TYPE #	1A	PROJECT	CASCADE METRO
TEST BORING #	52	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.8%
4	89.5%
10	72.0%
20	58.4%
40	50.1%
100	40.0%
200	33.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

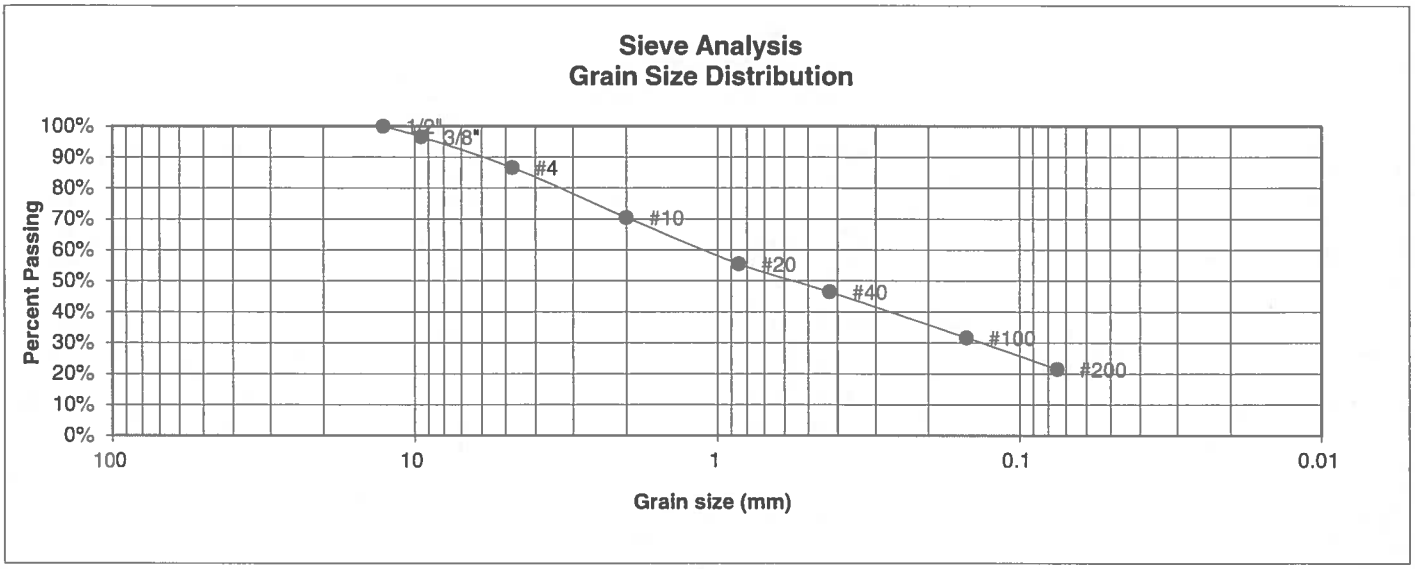
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AN	3-31-17

JOB NO.: 162296

FIG NO.: B-53

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	53	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	96.5%
4	86.6%
10	70.5%
20	55.5%
40	46.4%
100	31.7%
200	21.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
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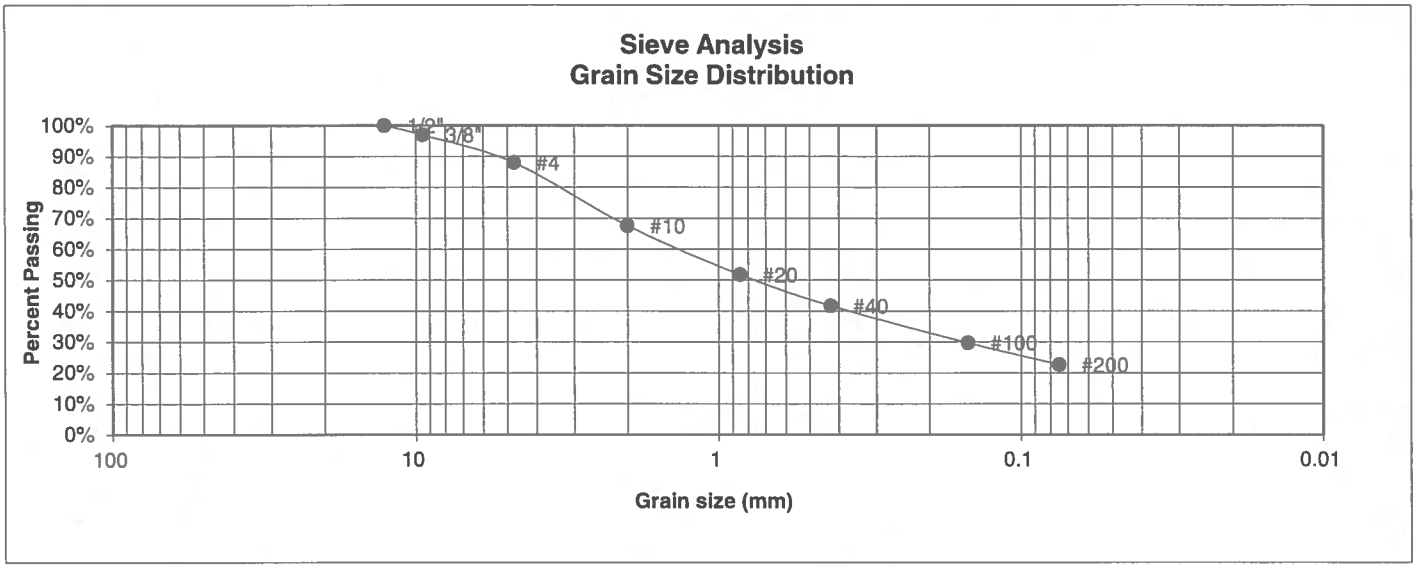
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296

FIG NO.: B-54

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	54	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.0%
4	88.0%
10	67.6%
20	51.8%
40	41.7%
100	29.7%
200	22.6%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

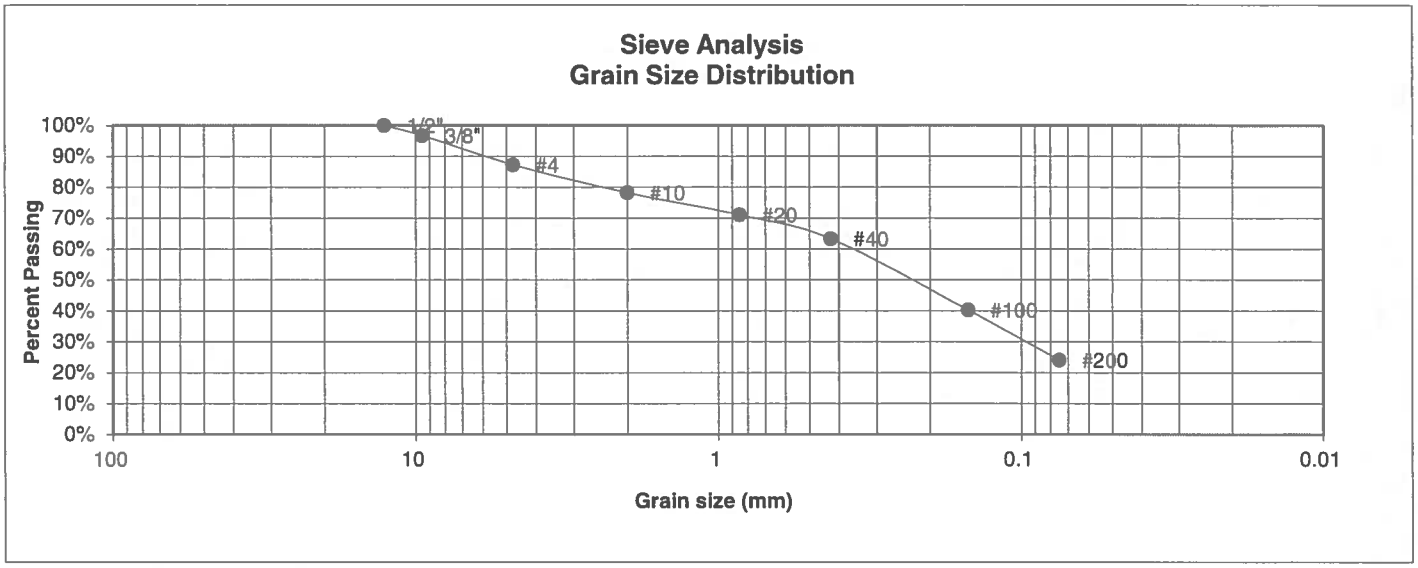
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AV	3-31-17

JOB NO.: 162296

FIG NO.: B-55

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	55	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	96.7%
4	87.3%
10	78.2%
20	71.0%
40	63.3%
100	40.3%
200	24.1%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

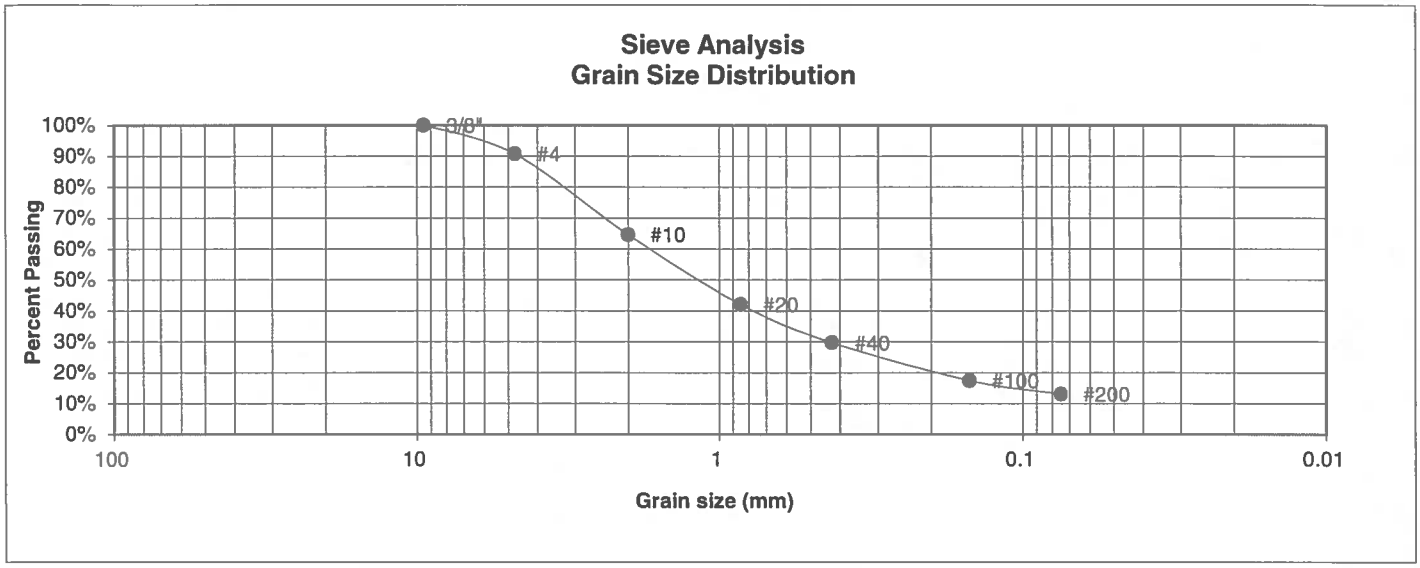
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: AN	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: B-56

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	56	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	90.7%
10	64.6%
20	42.1%
40	29.7%
100	17.4%
200	13.0%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

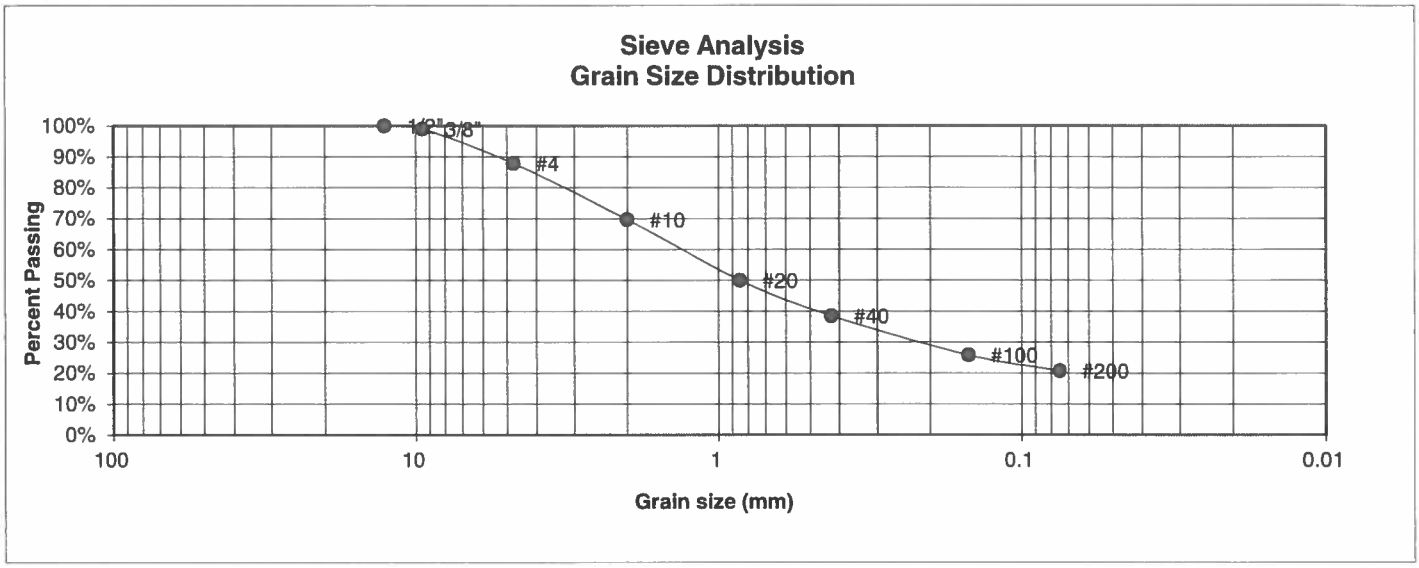
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AV	3-31-17

JOB NO.: 162296

FIG NO.: B-57

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	57	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	99.0%
4	87.8%
10	69.7%
20	50.0%
40	38.5%
100	25.8%
200	20.7%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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COLORADO SPRINGS, COLORADO 80907

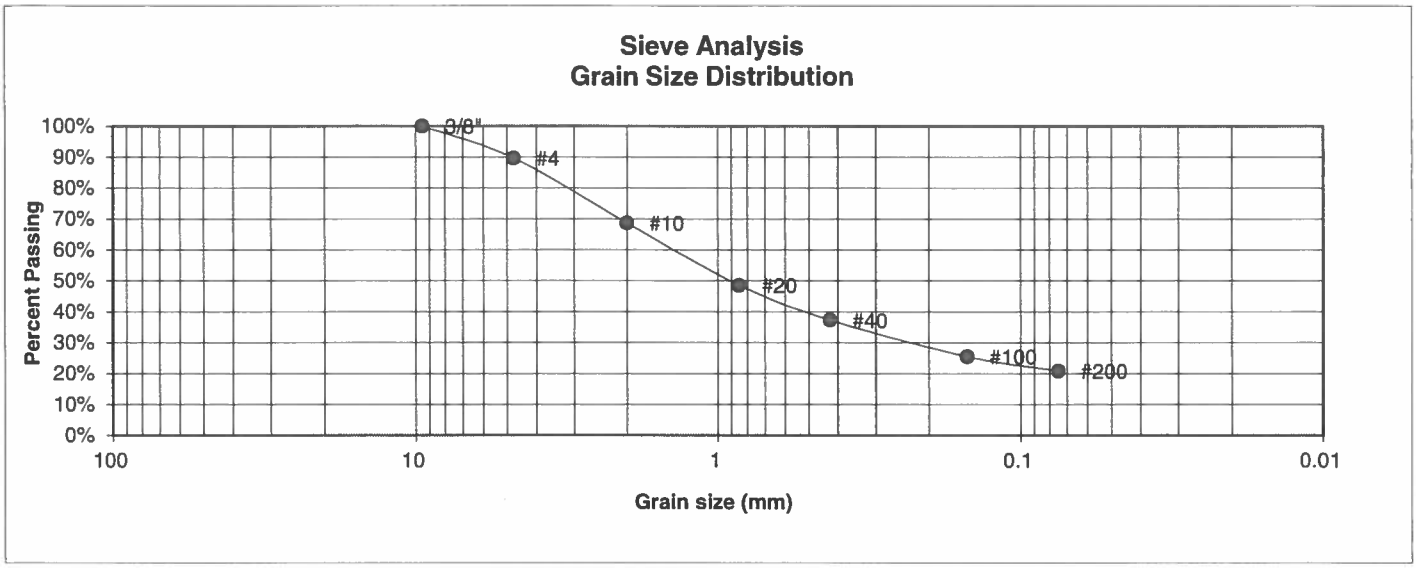
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AN	3-31-17

JOB NO.: 162296

FIG NO.: B-58

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	58	JOB NO.	162296
DEPTH (FT)	2-3	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	89.7%
10	68.7%
20	48.6%
40	37.3%
100	25.6%
200	20.8%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
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COLORADO SPRINGS, COLORADO 80907

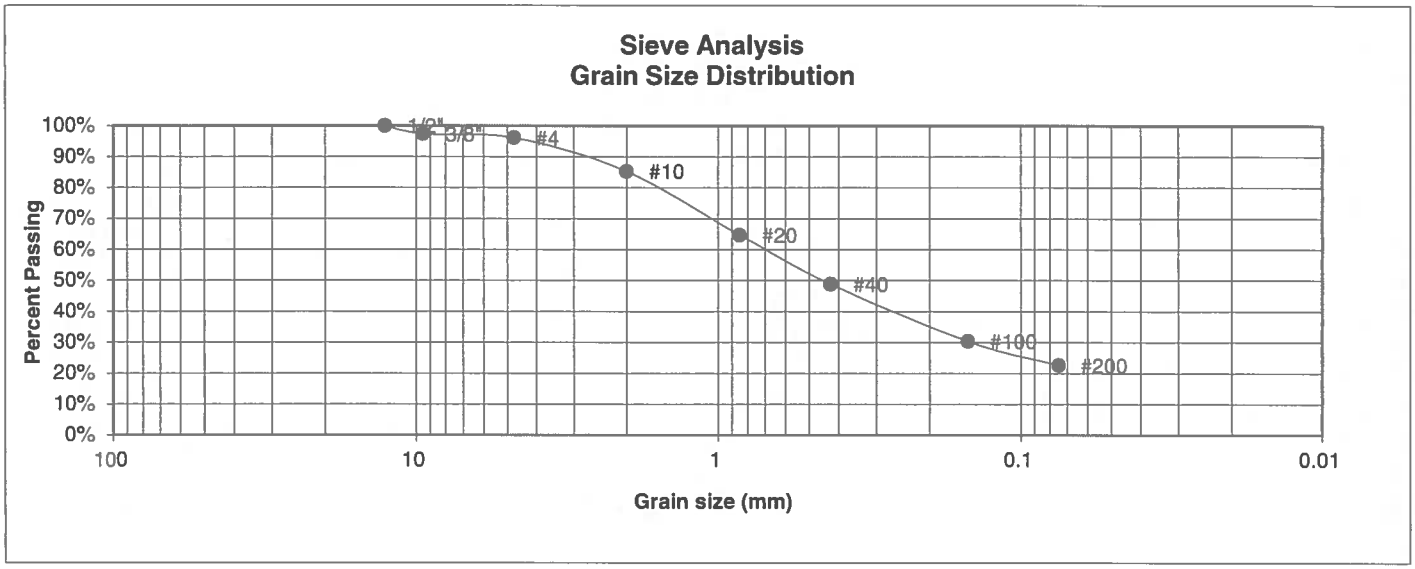
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296

FIG NO.: B-59

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	59	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	97.4%
4	96.1%
10	85.3%
20	64.8%
40	48.9%
100	30.4%
200	22.6%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

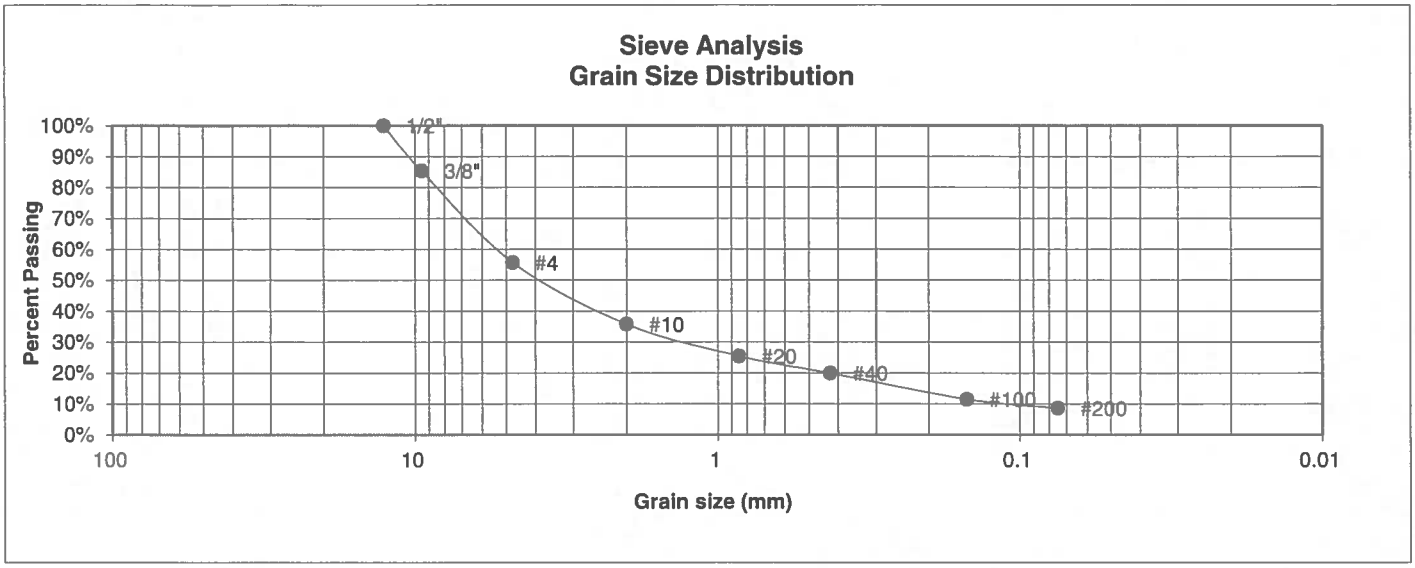
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		MC	3-31-17

JOB NO.: 162296

FIG NO.: B-60

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	60	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	85.4%
4	55.7%
10	35.8%
20	25.5%
40	19.9%
100	11.5%
200	8.6%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

LABORATORY TEST RESULTS

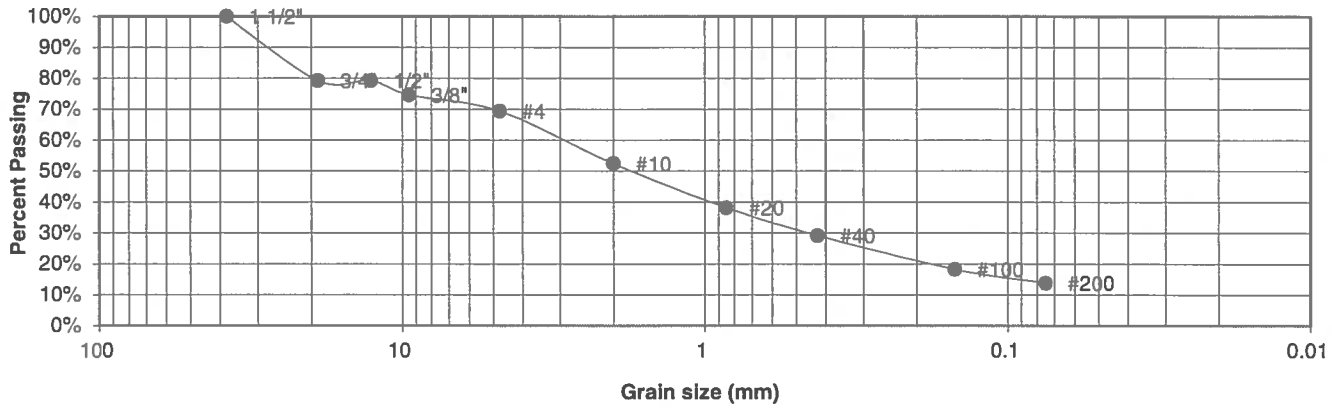
DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296

FIG NO.: B-61

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	61	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	100.0%
3/4"	79.3%
1/2"	79.3%
3/8"	74.6%
4	69.4%
10	52.4%
20	38.2%
40	29.2%
100	18.3%
200	13.8%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

ENTECH ENGINEERING, INC.
505 ELKTON DRIVE
COLORADO SPRINGS, COLORADO 80907

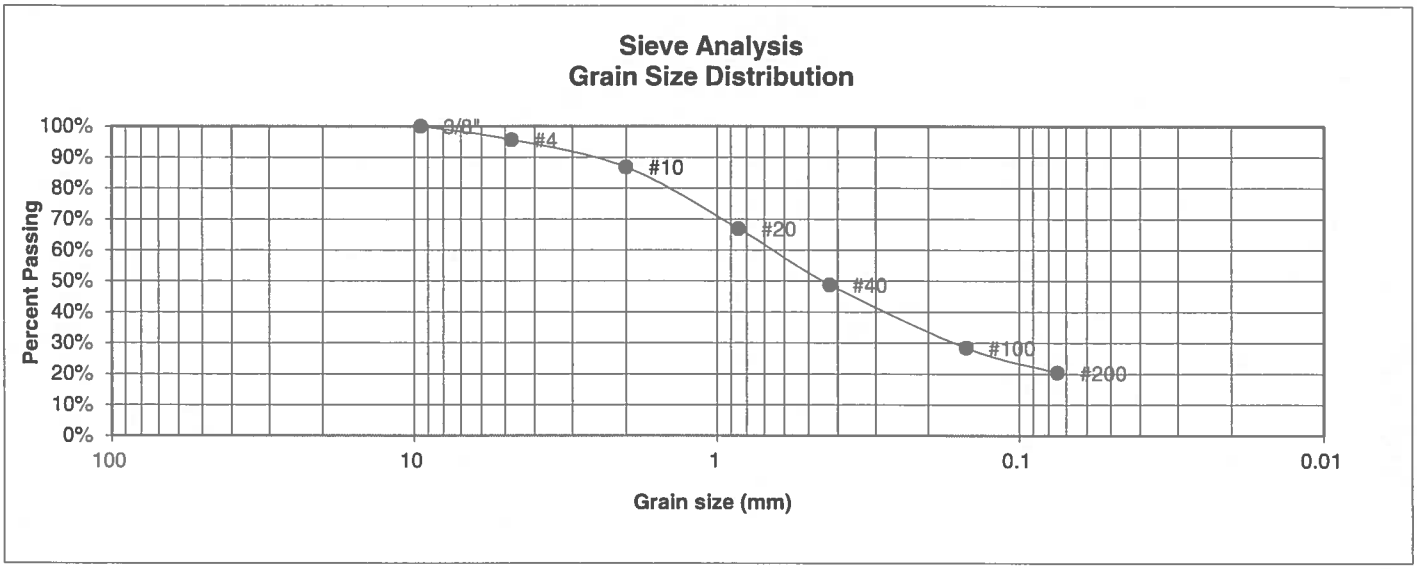
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AV	3-31-17

JOB NO.: 162296

FIG NO.: B-62

UNIFIED CLASSIFICATION	SM	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	62	JOB NO.	162296
DEPTH (FT)	10	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.7%
10	86.8%
20	66.9%
40	48.8%
100	28.4%
200	20.4%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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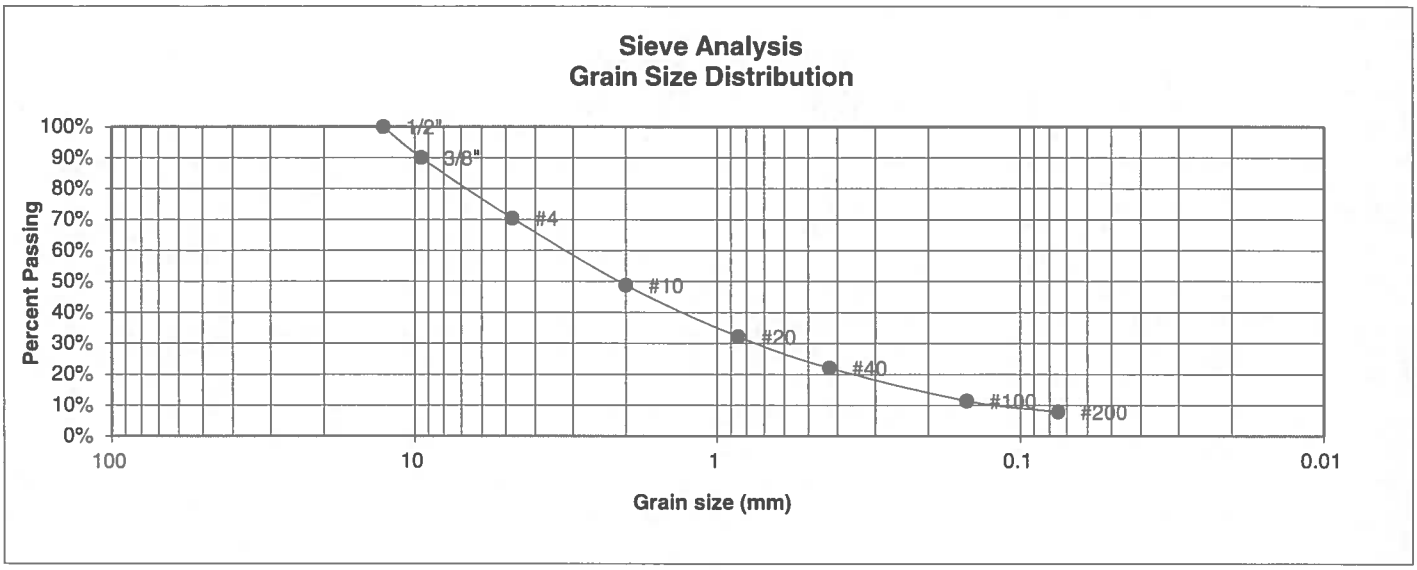
LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		AW	3-31-17

JOB NO.: 162296

FIG NO.: B-63

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	63	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	90.0%
4	70.4%
10	48.8%
20	32.2%
40	22.1%
100	11.4%
200	7.9%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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LABORATORY TEST RESULTS

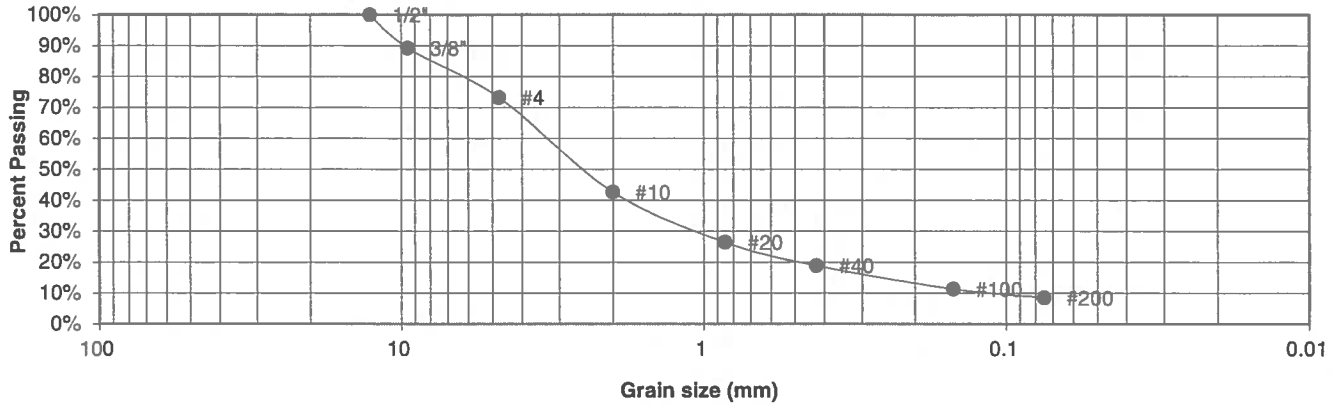
DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296

FIG NO.: B-64

UNIFIED CLASSIFICATION	SM-SW	CLIENT	GMS, INC
SOIL TYPE #	1	PROJECT	CASCADE METRO
TEST BORING #	64	JOB NO.	162296
DEPTH (FT)	5	TEST BY	BL

Sieve Analysis
Grain Size Distribution



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	89.3%
4	73.2%
10	42.6%
20	26.4%
40	18.9%
100	11.3%
200	8.5%

Atterberg Limits
Plastic Limit
Liquid Limit
Plastic Index

Swell
Moisture at start
Moisture at finish
Moisture increase
Initial dry density (pcf)
Swell (psf)

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LABORATORY TEST RESULTS

DRAWN:	DATE:	CHECKED: AN	DATE: 3-31-17

JOB NO.: 162296

FIG NO.: B-65

CLIENT	GMS, INC	JOB NO.	162296
PROJECT	CASCADE METRO	DATE	3/20/2017
LOCATION	CASCADE METRO	TEST BY	BL

BORING NUMBER	DEPTH, (ft)	SOIL TYPE NUMBER	UNIFIED CLASSIFICATION	WATER SOLUBLE SULFATE, (wt%)
TB-22	5	1	SM	<0.01
TB-36	5	1	SM	0.00
TB-47	5	1	SM	0.04
TB-42	5	1	SM	<0.01
TB-13	5	1	SM	0.00
TB-17	10	1	SM	<0.01
TB-3	10	1	SM	<0.01
TB-18	5	1	SM	<0.01
TB-14	2-3	1A	SM	0.03

QC BLANK PASS

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LABORATORY TEST
SULFATE RESULTS

DRAWN:	DATE:	CHECKED:	DATE: 3-31-17

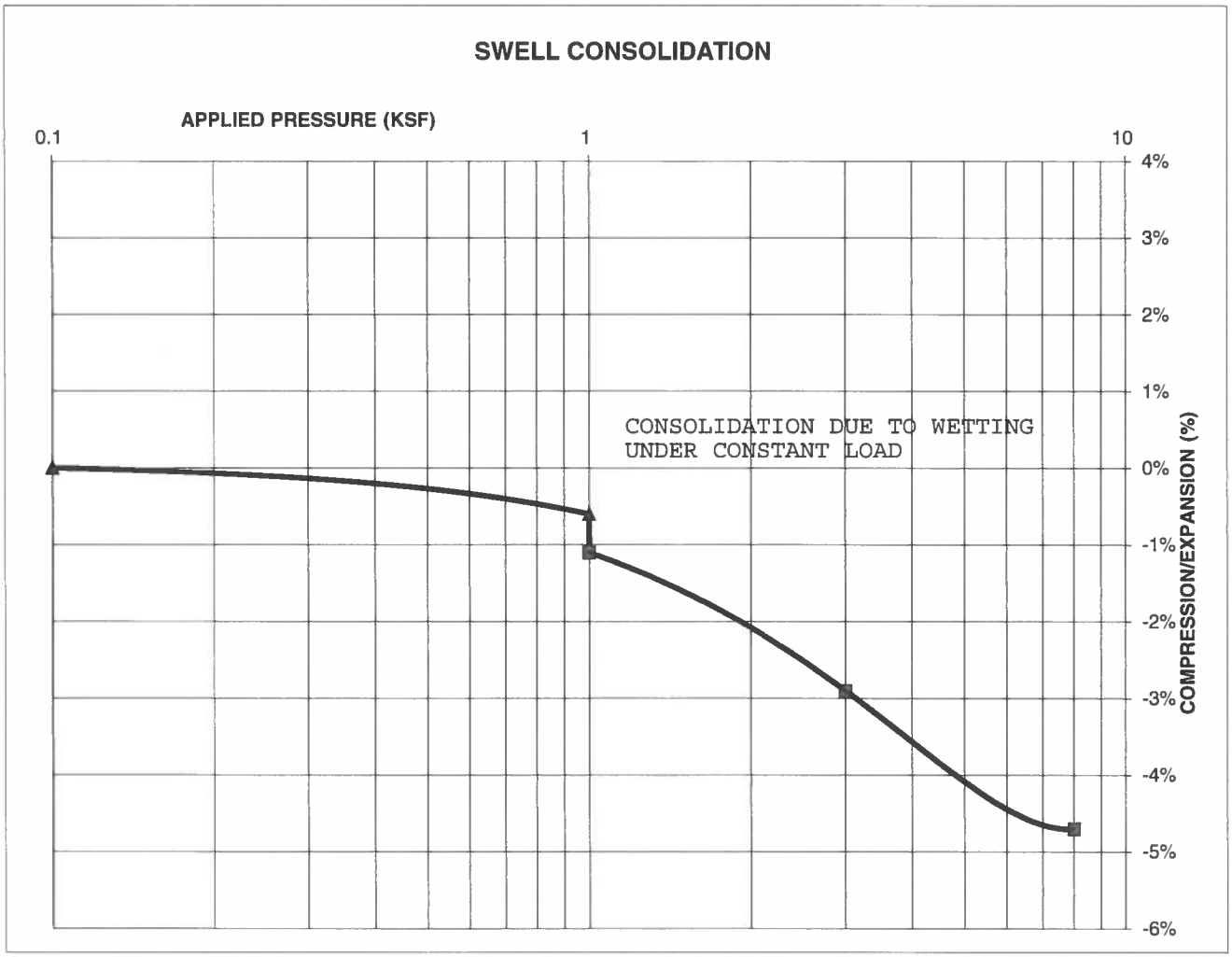
JOB NO.: 162296

FIG NO.: B-66

CONSOLIDATION TEST RESULTS

TEST BORING #	21	DEPTH(ft)	2-3
DESCRIPTION	SM	SOIL TYPE	1
NATURAL UNIT DRY WEIGHT (PCF)			115
NATURAL MOISTURE CONTENT			5.9%
SWELL/CONSOLIDATION (%)			-0.5%

JOB NO. 162296
CLIENT GMS, INC
PROJECT CASCADE METRO



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SWELL CONSOLIDATION
TEST RESULTS

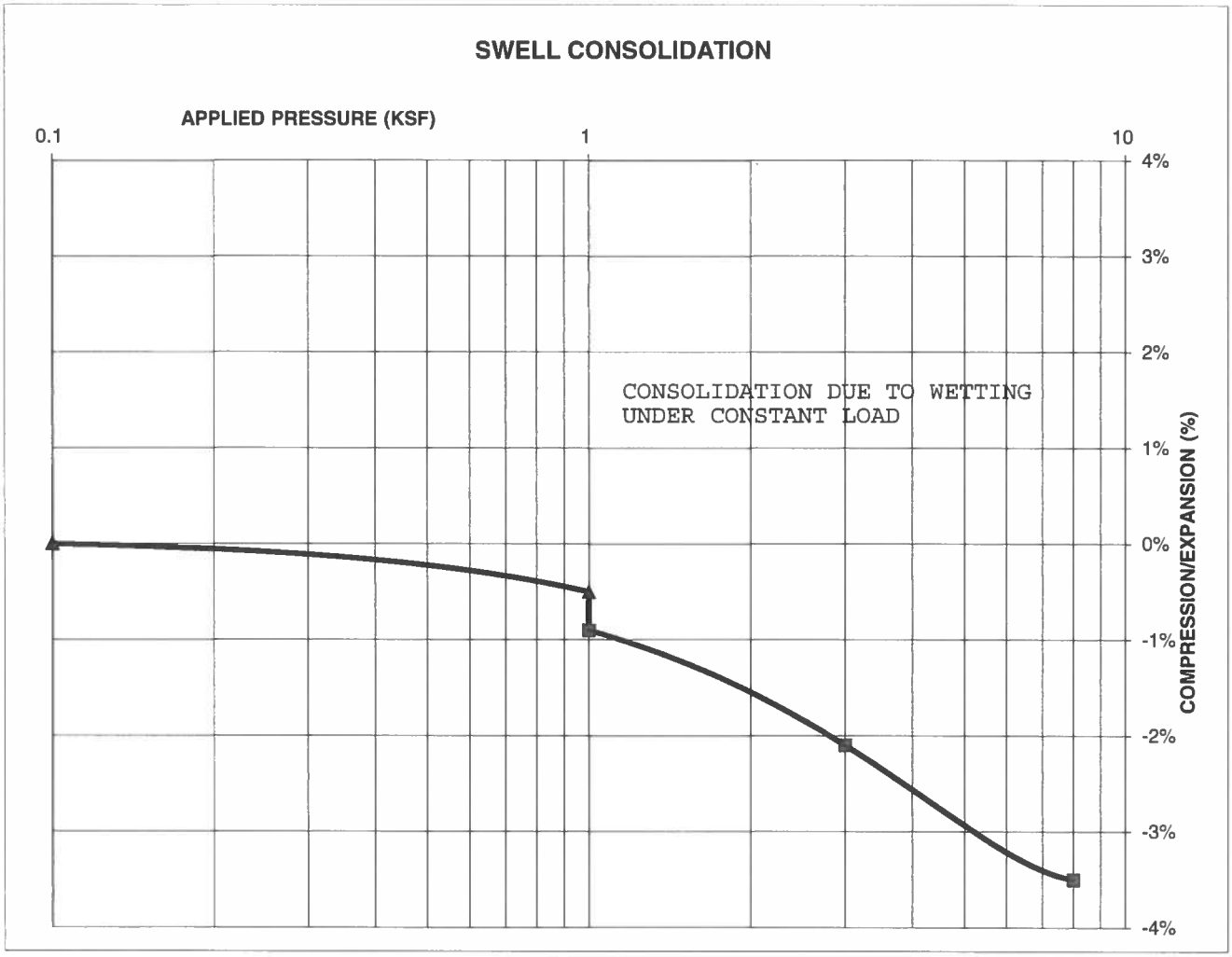
DRAWN:	DATE:	CHECKED:	DATE: 3-31-17

JOB NO.: 162296
FIG NO.: B-67

CONSOLIDATION TEST RESULTS

TEST BORING #	1	DEPTH(ft)	2-3
DESCRIPTION	SC	SOIL TYPE	1A
NATURAL UNIT DRY WEIGHT (PCF)			102
NATURAL MOISTURE CONTENT			14.8%
SWELL/CONSOLIDATION (%)			-0.4%

JOB NO. 162296
CLIENT GMS, INC
PROJECT CASCADE METRO



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SWELL CONSOLIDATION
TEST RESULTS

DRAWN:	DATE:	CHECKED:	DATE: 3-31-17

JOB NO.: 162296
FIG NO.: B-68

JOB # 162296 DATE 3/20/2017

CLIENT GMS, INC

PROJECT CASCADE METRO BY BL

LOCATION CASCADE METRO

SAMPLE LOCATION	UNIFIED CLASS.	RESISTIVITY, (ohm-cm)	pH
TB-22 @ 5'	SM	17857	4.2
TB-36 @ 5'	SM	8333	4.0
TB-47 @ 5'	SM	20833	5.8
TB-42 @ 5'	SM	22727	6.0
TB-13 @ 5'	SM	9615	5.4
TB-17 @ 10'	SM	20833	5.6
TB-3 @ 10'	SM	22727	6.2
TB-18 @ 5'	SM	26596	5.9
TB-14 @ 2-3'	SC	17857	6.1

NOTES: All analysis QC checks passed

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pH & RESISTIVITY REPORT

DRAWN:	DATE:	CHECKED:	DATE:
			3-31-17

JOB NO.: 162296

FIG NO.: B-69