

October 17, 2019

Marlena Studer
1129 Granger Avenue
Ann Arbor, Michigan 48104



ENTECH
ENGINEERING, INC.

505 ELKTON DRIVE
COLORADO SPRINGS, CO 80907
PHONE (719) 531-5599
FAX (719) 531-5238

Re: OWTS – Site Evaluation
2727 Evergreen Road
Lots 2 and 3, Studer Subdivision
El Paso County, Colorado

This report does not meet the requirements of LDC Sec. 8.4.8. At a minimum, report needs to include a map of the site, indicating locations of test pits, primary and alternate OWTS locations for each proposed lot, potential home sites, and well sites. Please review the appropriate section of the Code and resubmit.

Dear Ms. Studer:

As requested, personnel of Entech Engineering, Inc. observed and performed visual and tactile evaluation of four test pits. The test pits were located in the area of the proposed on-site wastewater treatment system (OWTS) absorption field location. This letter presents the results of our testing.

The test pits were excavated on September 23, 2019, to approximately 6 feet deep. Soils encountered in the test pits consisted of sandy loam to gravelly sandy loam overlying weathered to formational silty sandstone. Bedrock was encountered at 1.5 to 4 feet in the test pits. Signs of seasonally occurring groundwater were not observed in the test pits. The bedrock encountered is the Dawson Formation.

Visual and tactile evaluation of the soils was performed. The limiting layer encountered for both Lots 2 and 3 in the test pits is the silty sandstone, which classifies as USDA Soil Type 3A. A corresponding LTAR Value of 0.30 gallons per day per square foot is recommended for Treatment Level 1. An engineered system will be required. Installation of the system should be performed in accordance with El Paso County Health Department regulations and requirements.

We trust that this has provided you with the information you required. If you have any questions or need additional information, please do not hesitate to contact us.

Respectfully Submitted,

ENTECH ENGINEERING, INC.

Logan L. Langford, P.G.
Geologist

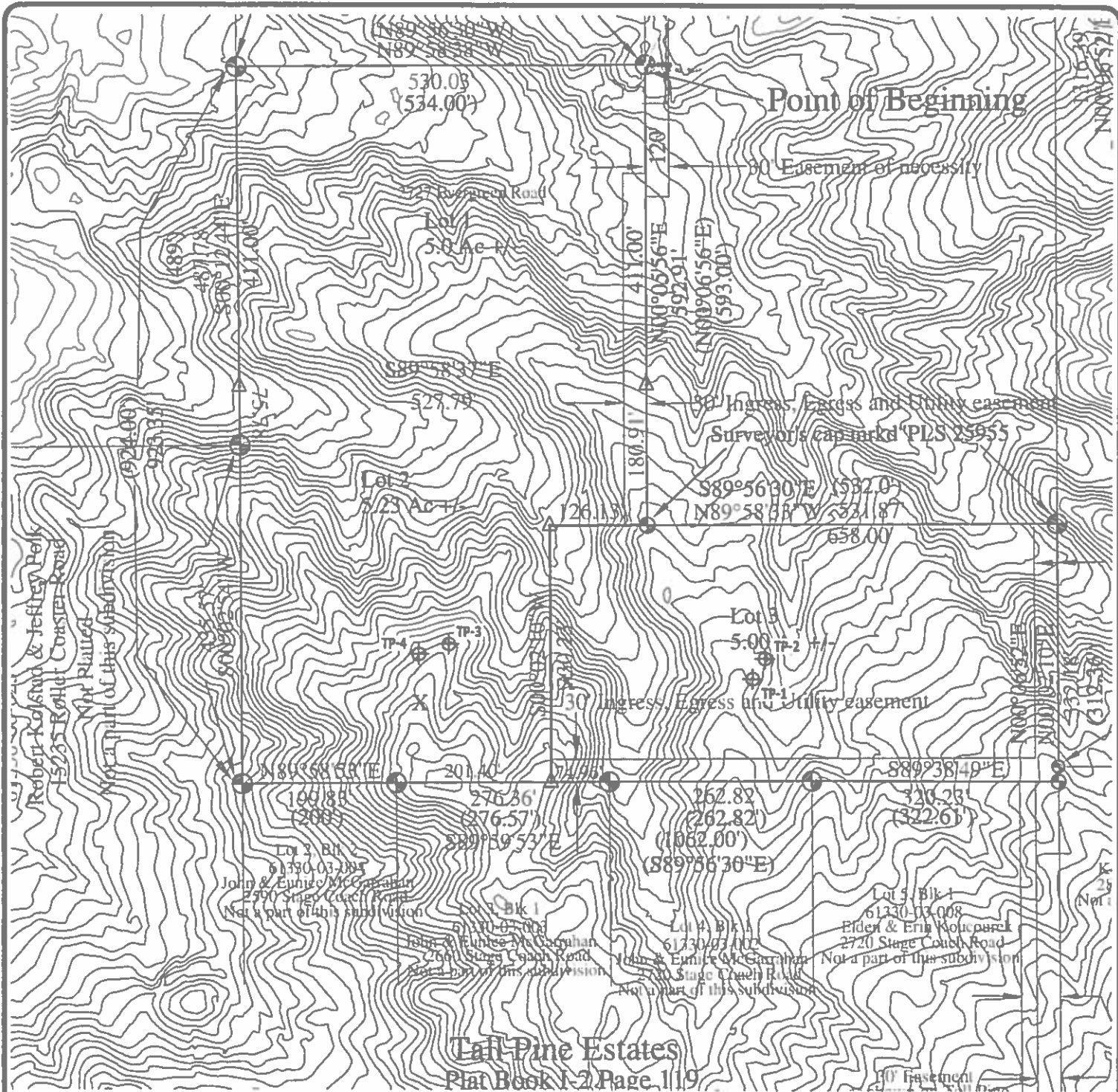
LLL/slf

Entech Job No. 191266
A\projects\2019\191266 owts-site evaluation

Reviewed by:

Jeffery A. Murray, P.E.





TP- APPROXIMATE TEST PIT LOCATION AND NUMBER



- TP-1 39.053351°, -104.776060°
- TP-2 39.053306°, -104.776163°
- TP-3 39.053126°, -104.777681°
- TP-4 39.053108°, -104.777816°



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COLORADO SPRINGS, CO. 80917 (719) 531-5599

TEST PIT LOCATION MAP
2727 EVERGREEN ROAD
LOTS 2 AND 3, STUDER SUBDIVISION
EL PASO COUNTY, COLORADO
FOR: MARLENA STUDER

JOB NO.:
191266

FIG NO.:
1

DRAWN:
LLL

DATE:
10/17/19

CHECKED:

DATE:

TEST PIT NO. 1
 DATE EXCAVATED 9/23/2019
 Job # 191266

TEST PIT NO. 2
 DATE EXCAVATED 9/23/2019
 CLIENT MARLENA STUDER
 LOCATION 2727 EVERGREEN ROAD

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type
Lot 3							Lot 3						
topsoil sandy loam, brown	1	pk					topsoil sandy loam, brown	1	pk				
gravelly sandy loam, fine to coarse grained, light brown	2			gr	w	2A	gravelly sandy loam, fine to coarse grained, light brown	2				w	2A
	3							3			ma		3A
weathered to formational silty sandstone, fine to coarse grained, light brown	4			ma		3A	weathered to formational silty sandstone, fine to coarse grained, light brown	4					
	5							5					
	6							6					
	7							7					
	8							8					
	9							9					
	10							10					

Soil Structure Shape

- granular - gr
- platy - pl
- blocky - bl
- prismatic - pr
- single grain - sg
- massive - ma

Soil Structure Grade

- weak - w
- moderate - m
- strong - s
- loose - l



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TEST PIT LOG

DRAWN:

DATE:

CHECKED:

DATE:

L.L.

9/23/19

JOB NO.:

191266

FIG NO.:

2

TEST PIT NO. 3
 DATE EXCAVATED 9/23/2019
 Job # 191266

TEST PIT NO. 4
 DATE EXCAVATED 9/23/2019
 CLIENT MARLENA STUDER
 LOCATION 2727 EVERGREEN ROAD

REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type	REMARKS	Depth (ft)	Symbol	Samples	Soil Structure Shape	Soil Structure Grade	USDA Soil Type
Lot 2							Lot 2						
topsoil sandy loam, brown	1	[Symbol]					topsoil sandy loam, brown	1	[Symbol]				
gravelly sandy loam, fine to coarse grained, light brown	2	[Symbol]		gr	w	2A	gravelly sandy loam, fine to coarse grained, light brown	2	[Symbol]		gr	w	2A
weathered to formational silty sandstone, fine to coarse grained, buff	3	[Symbol]		ma		3A	weathered to formational silty sandstone, fine to coarse grained, light brown to buff	3	[Symbol]		ma		3A
	4	[Symbol]						4	[Symbol]				
	5	[Symbol]						5	[Symbol]				
	6	[Symbol]						6	[Symbol]				
	7	[Symbol]						7	[Symbol]				
	8	[Symbol]						8	[Symbol]				
	9	[Symbol]						9	[Symbol]				
	10	[Symbol]						10	[Symbol]				

Soil Structure Shape
 granular - gr
 platy - pl
 blocky - bl
 prismatic - pr
 single grain - sg
 massive - ma

Soil Structure Grade
 weak - w
 moderate - m
 strong - s
 loose - l



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TEST PIT LOG

DRAWN:

DATE:

CHECKED:
 LLL

DATE:
 10/17/19

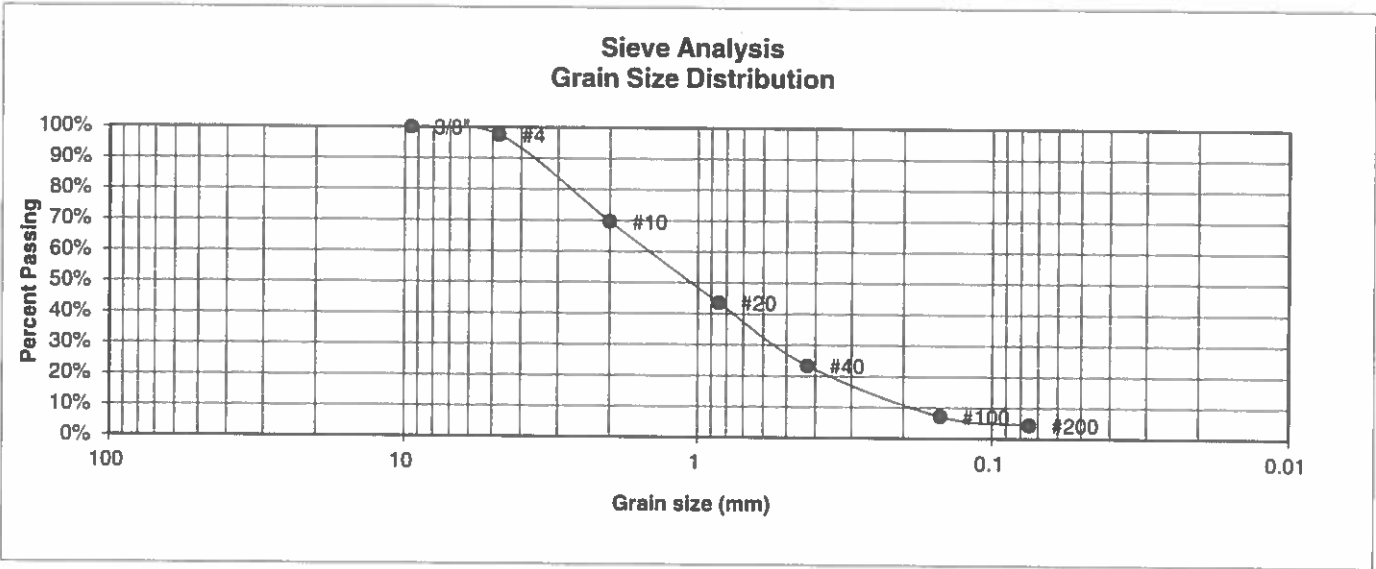
JOB NO:

191266

FIG NO.:

3

BORING NO.	TP-1, LOT 3	<u>UNIFIED CLASSIFICATION</u>	SW	<u>TEST BY</u>	BL
DEPTH(ft)	5-6	<u>AASHTO CLASSIFICATION</u>		<u>JOB NO.</u>	191266
CLIENT	MARLENA STUDER				
PROJECT	2727 EVERGREEN ROAD				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	97.5%
10	69.7%
20	43.5%
40	23.4%
100	7.2%
200	4.4%

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**

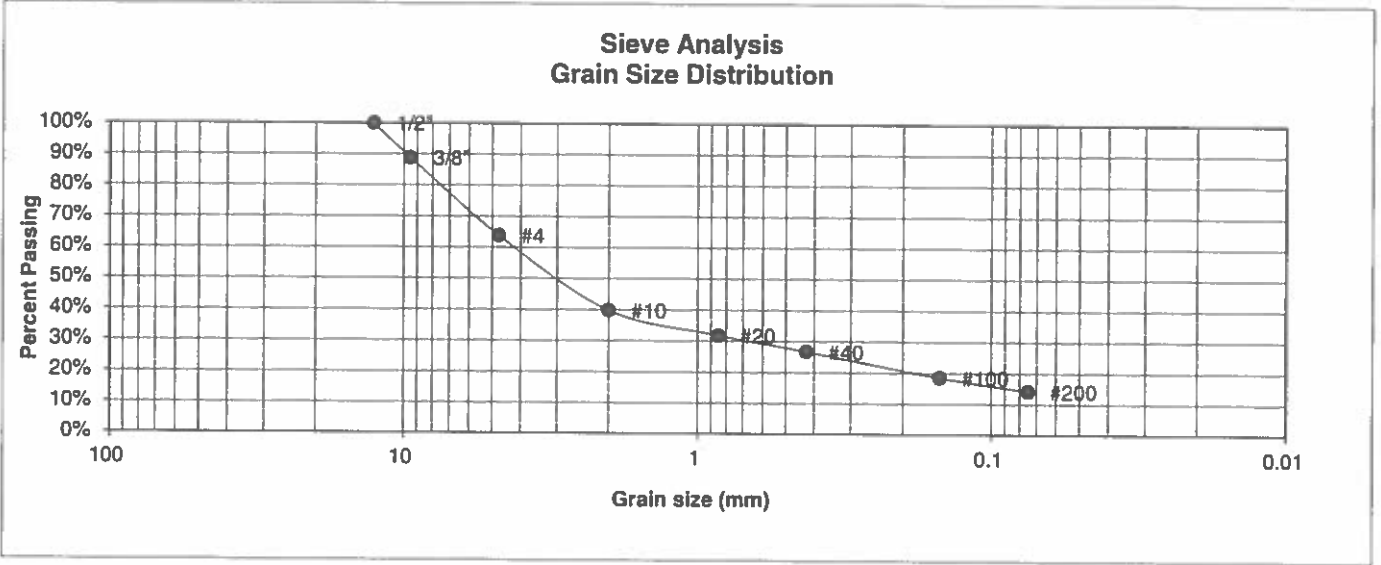
DRAWN:	DATE:	CHECKED: <i>LL</i>	DATE: <i>10/10/19</i>
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JOB NO.:
191266

FIG NO.:

4

BORING NO.	TP-2, LOT 3	<u>UNIFIED CLASSIFICATION</u>	SM	<u>TEST BY</u>	BL
DEPTH(ft)	2-3	<u>AASHTO CLASSIFICATION</u>		<u>JOB NO.</u>	191266
CLIENT	MARLENA STUDER				
PROJECT	2727 EVERGREEN ROAD				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	100.0%
3/8"	88.8%
4	63.8%
10	39.8%
20	31.9%
40	26.7%
100	18.5%
200	14.2%

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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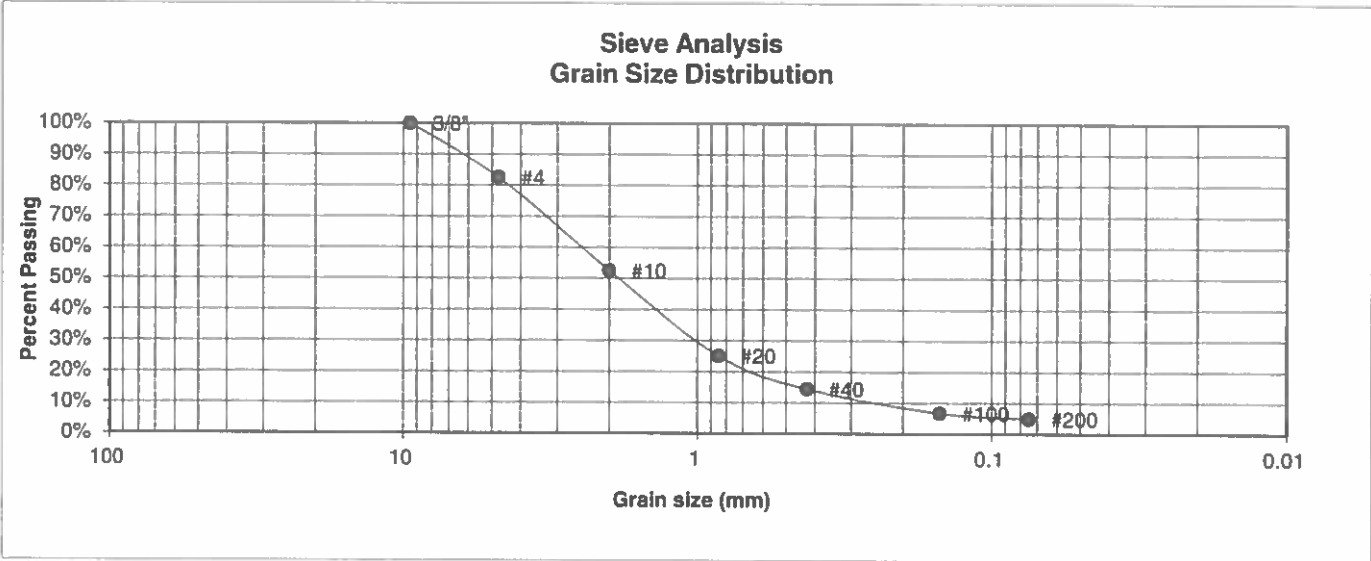
**LABORATORY TEST
RESULTS**

DRAWN:	DATE:	CHECKED:	DATE:
		LL	10/10/19

JOB NO.:
191266

FIG NO.:
5

BORING NO.	TP-3, LOT 2	UNIFIED CLASSIFICATION	SM-SW	TEST BY	BL
DEPTH(ft)	2-3	AASHTO CLASSIFICATION		JOB NO.	191266
CLIENT	MARLENA STUDER				
PROJECT	2727 EVERGREEN ROAD				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	82.5%
10	52.5%
20	25.1%
40	14.4%
100	6.8%
200	5.0%

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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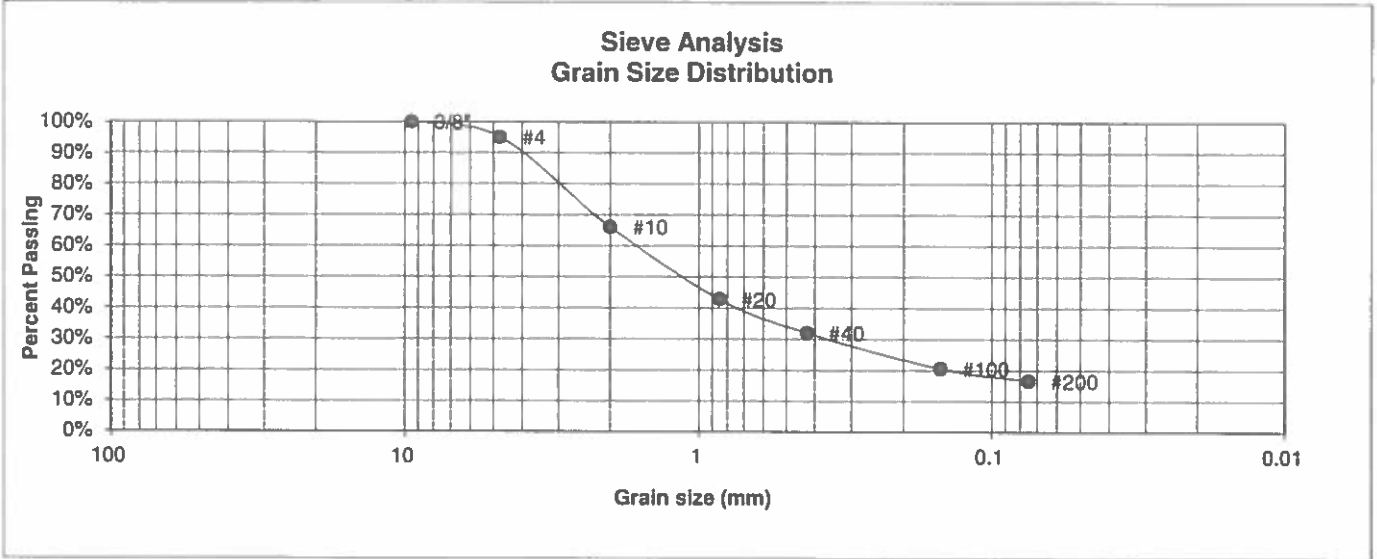
**LABORATORY TEST
RESULTS**

DRAWN:	DATE:	CHECKED: <i>LLL</i>	DATE: <i>10/16/19</i>
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JOB NO.:
191266

FIG NO:
6

BORING NO.	TP-4, LOT 2	UNIFIED CLASSIFICATION	SM	TEST BY	BL
DEPTH(ft)	5-6	AASHTO CLASSIFICATION		JOB NO.	191266
CLIENT	MARLENA STUDER				
PROJECT	2727 EVERGREEN ROAD				



U.S. Sieve #	Percent Finer
3"	
1 1/2"	
3/4"	
1/2"	
3/8"	100.0%
4	95.0%
10	66.1%
20	42.8%
40	32.1%
100	20.6%
200	16.6%

- 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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LABORATORY TEST
RESULTS

DRAWN:	DATE:	CHECKED:	DATE:
		LL	10/10/19

JOB NO.:
191266

FIG NO.:
7