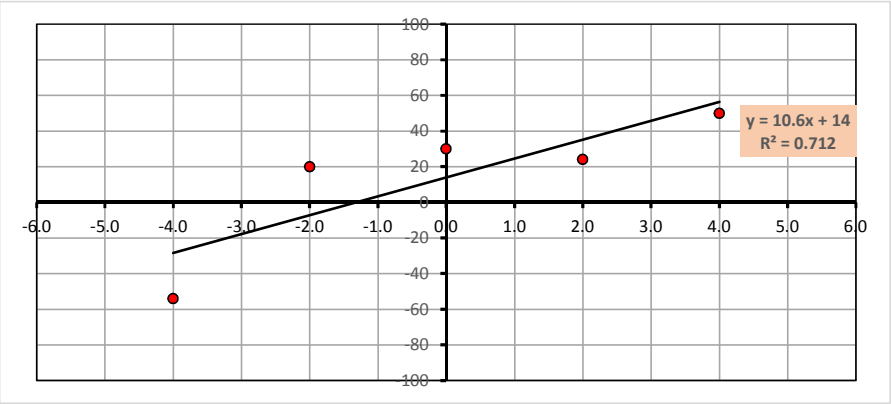
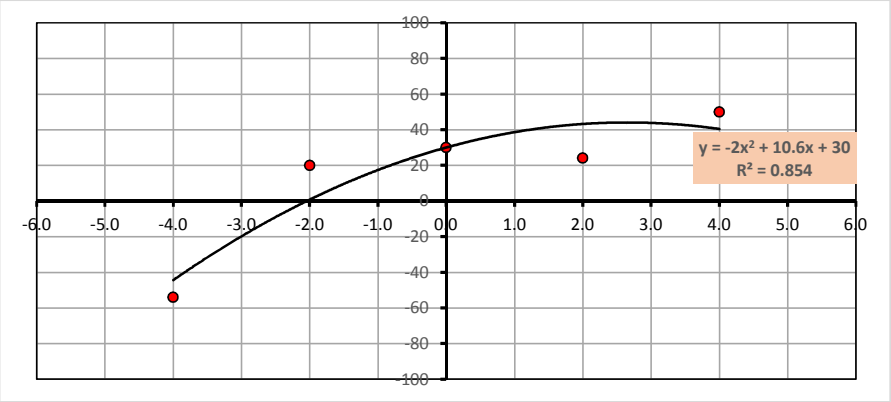
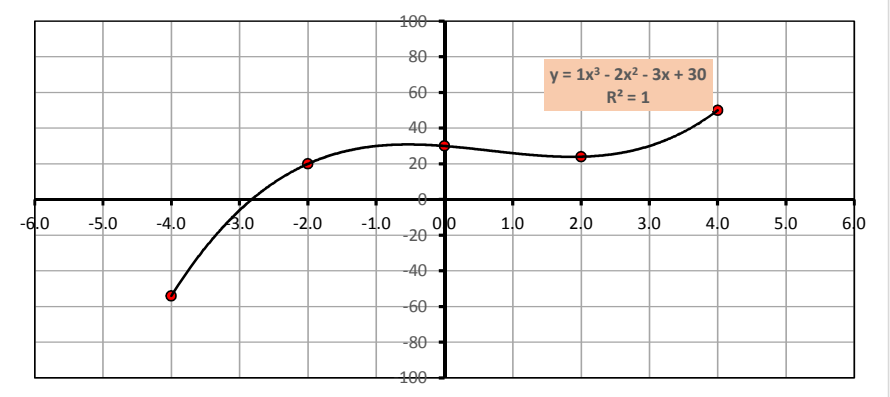
Example No. 3.1

CURVE FITTING EXAMPLE & GOAL SEEK FUNCTION

X	Y
-4	-54
-2	20
0	30
2	24
4	50







$$Y = 1X^3 - 2X^2 - 3X + 30$$

	x	F (x)
By Goal Seek	-2.82	0.00

Tested By:
Senior Lab Technician

Checked By:
Lab Manager

Example No. 3.2

SOLUTION OF EQUATIONS BY SOLVER AND GOAL SEEK

$y = x^2 - 4x + 4$

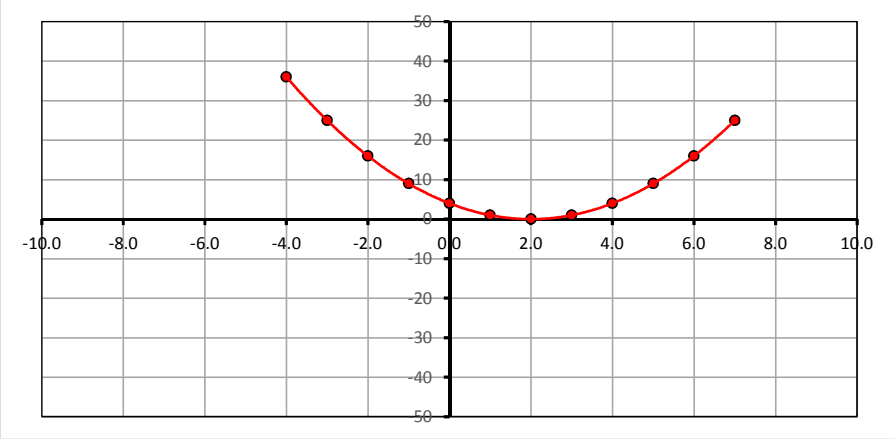
x	2.0
F(x)	0.000

$y = 2x^2 + 3x - 4$

x	0.85
F(x)	0.000

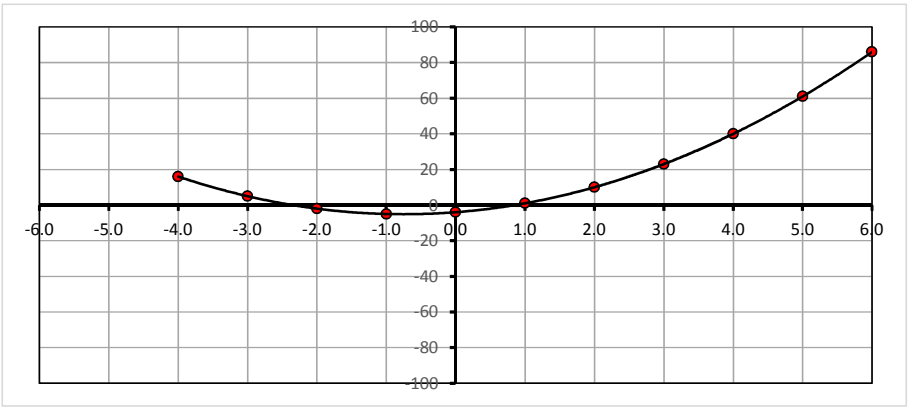
$y = e^x - 4x$

x	0.4
F(x)	0.000



$y = x^2 - 4x + 4$

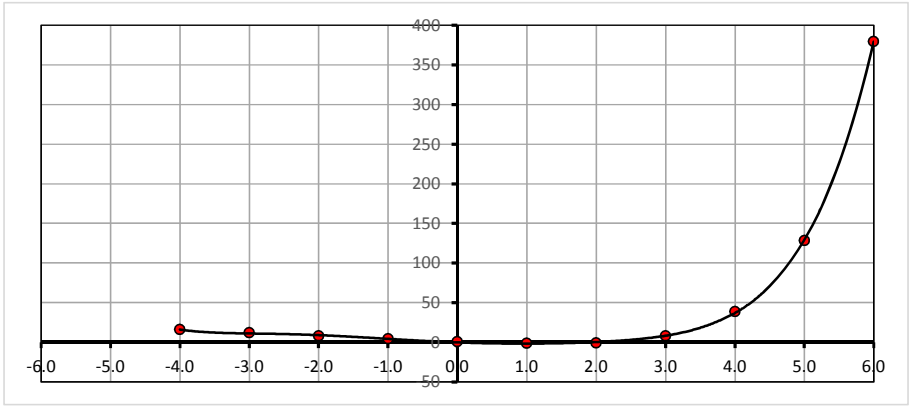
X	Y
-4	36
-3	25
-2	16
-1	9
0	4
1	1
2	0
3	1
4	4
5	9
6	16
7	25



$y = 2x^2 + 3x - 4$

X	Y
-4	16
-3	5
-2	-2
-1	-5
0	-4
1	1
2	10
3	23
4	40
5	61
6	86
7	115

	mini.
X	0
FX	-4



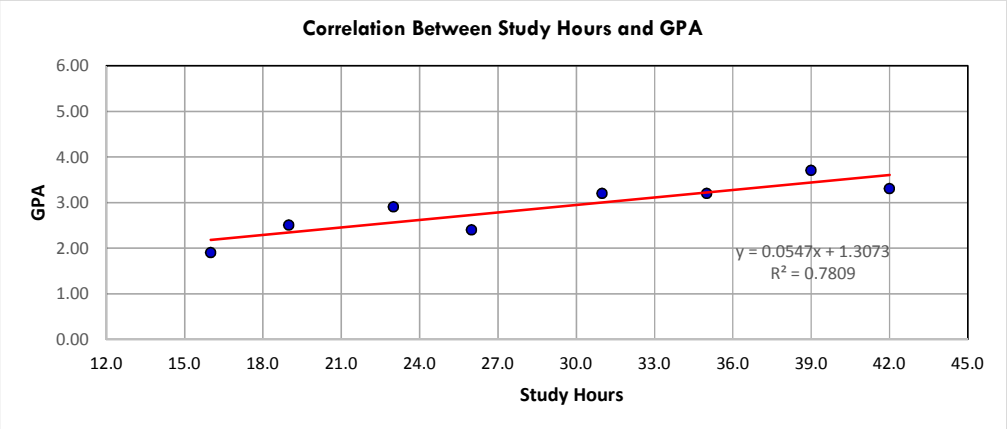
$y = e^x - 4x$

X	Y
-4	16.02
-3	12.05
-2	8.135
-1	4.368
0	1
1	-1.282
2	-0.611
3	8.086
4	38.6
5	128.4
6	379.4

Example No. **3.4 & 3.5.**

CORRELATION AND PEARSON FUNCTION

Student	Study Hours	GPA
1	42	3.3
2	23	2.9
3	31	3.2
4	35	3.2
5	16	1.9
6	26	2.4
7	39	3.7
8	19	2.5
R^2 (By Pearson Function)		**0.884**
R^2 (By Curve)		**0.781**



R^2 Value Determination by PEARSON Function	**0.884**
R^2 Value Determination from Curve	**0.781**

REMARKS:

Tested By:
Senior Lab Technician

Checked By:
Lab Manager

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Example No. 3.6. 3.7.

VERTICAL AND HORIZONTAL LOOK UP FUNCTIONS
DROP DOWN LIST

HORIZONTAL LOOK UP FUNCTION

Student IDs and Names

Student ID#	12	16	54	15	67
Name of Student	Tamim	Sayed	Noor	Tahir	Zahid
Exam Marks	70	90	65	90	80

Marks and Grade Specification

Marks	*0*	*60*	*70*	*80*	*90*
Grade	*F*	*D*	*C*	*B*	*A*

ID#	Name of Student	Grade
12	Tamim	*70*
15	Tahir	*90*
54	Noor	*65*
16	Sayed	*90*
67	Zahid	*80*

Mark	Name	Grade
70	Tamim	*C*
90	Sayed	*A*
65	Noor	*D*
90	Tahir	*A*
80	Zahid	*B*

VERTICAL LOOK UP FUNCTION

Item ID#	Price Per 1000 Kg
FRT-001	$ 20.00
FRT-002	$ 30.00
FRT-003	$ 12.00
VGT-001	$ 16.00
VGT-002	$ 60.00
VGT-003	$ 23.00
BVR-001	$ 41.00
BVR-002	$ 25.00
BVR-003	$ 30.00

Item	Price
FRT-003	$ 12.00

Employ ID#	DEPARTMENT	Full Name
35	Sales	Yossi
36	Production	Nicole
37	Sales	Aik Chen
38	Operation	Axel
39	Sales	Halim
40	Production	Gerhard
41	Sales	Hauser
42	Operation	Nattorn
43	Production	Jim

39	Halim

REMARKS:

Tested By:
Senior Lab Technician

Checked By:
Lab Manager

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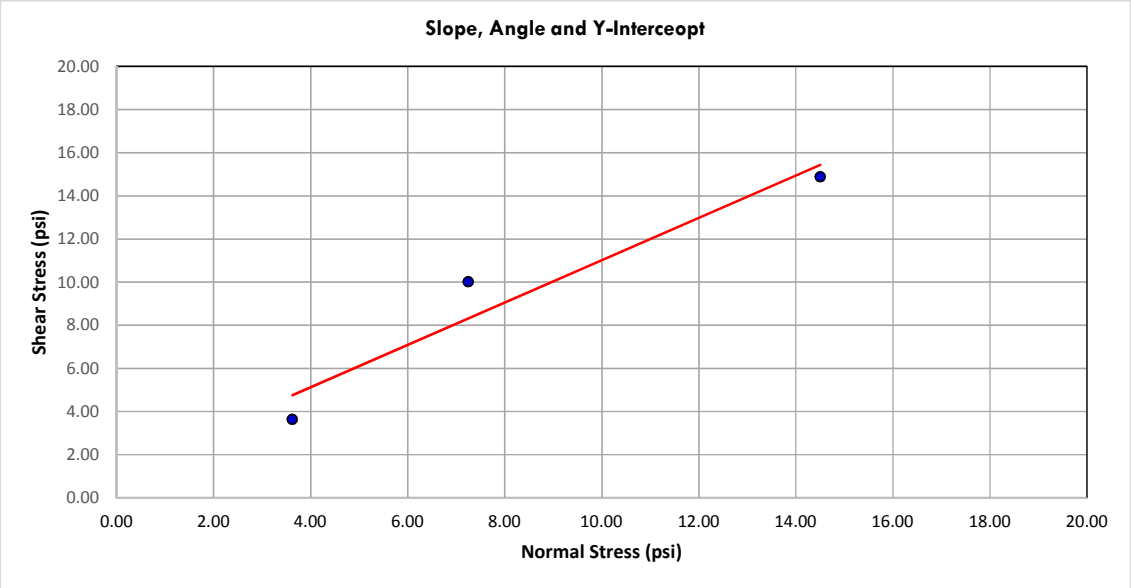
Example No. 3.8. **SLOPE, ANGLE AND Y-INTERCEPT DETERMINATION**

Project Name:		**Client:**	
Sampled by:		**Source:**	**Date of Sample:**
Location:		**Proposed Use:**	**Date of Test:**

Direct Shear Test Result (ASTM D 3080)

Shear Stress (psi)	3.63	10.01	14.87
Normal Stress (psi)	3.63	7.25	14.50



Slope (m)	0.982	
or tan of (ϕ)	0.982	
Angle of (ϕ)	0.776	rad
Angle of (ϕ)	44.5	deg

Y-Intercept	1.19662	psi
or c (Cohesion)	1.19662	psi

Direct "ϕ" Determination in degree

Angle of (ϕ)	44.5	deg

REMARKS:

Tested By:
Senior Lab Technician

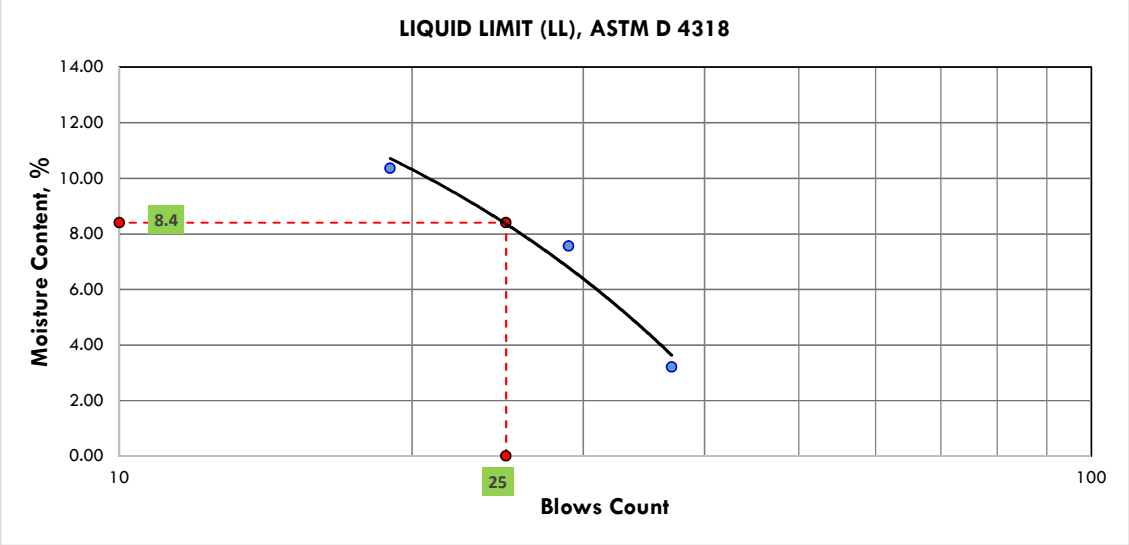
Checked By:
Lab Manager

Example No. 3.9. **PREDICT A VALUE BY CURVE & FORECAST FUNCTION**

Project Name:		**Client:**	
Sampled by:		**Source:**	**Date of Sample:**
Location:		**Proposed Use:**	**Date of Test:**

Liquid Limit Test Result (ASTM D 4318)

Blows Count	37	29	19
Moisture Content	3.20	7.56	10.36



LL is a Moisture Content (%), at 25 Standard Blows Count), it is one of Fine-Grained Soil Test

LL (By Forecast Function), %	8.35	%
LL (Determination from Curve), %	8.40	%

REMARKS:

Tested By:
Senior Lab Technician

Checked By:
Lab Manager

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Laboratory Compaction Characteristics of Soil Using Modified Effort

ASTM D 1557

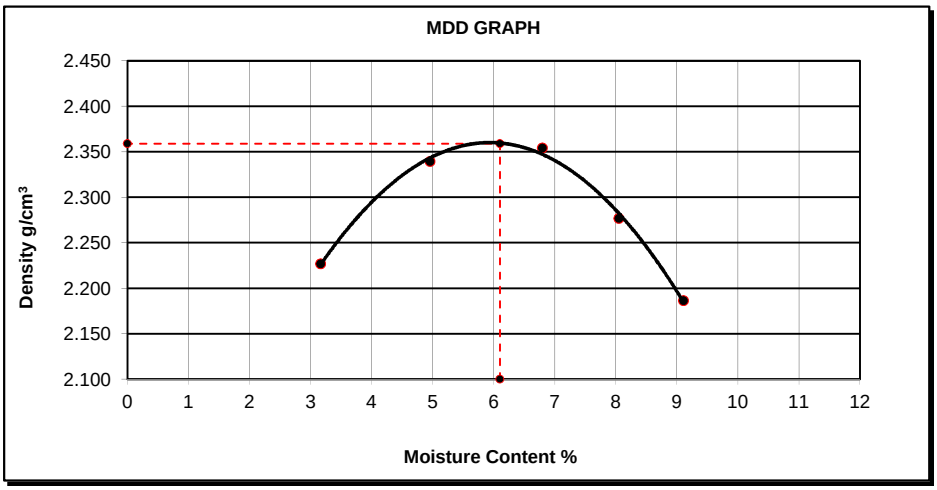
Project Name:	Afghan National Police General Directorate Police Special Unit (GDPSU) W912ER-13-C-00250			**Location:**	Deh Sabz District, Kabul Province, Afghanistan
Client	USACE / TRANSATLANTIC AFGHANISTAN DISTRICT		**Prime Contractor:**	Road & Roof Construction Company (RRCC)	
Borehole No.:	N/A	**Proposed to be Used:**	Subgrade Backfilling	**Sample Depth (m)**	Mixed
Sampled by:	Eng. M. Ayub and Adam Khan		**Sampling Method:**	Disturbed Mixed Sample from the site	
Visual Classification:	*Mixed of : Gravel: 54%, Sand 35% and Fines 11% (NP)*		**Date of Sample**	17-Dec-13	**Date of Test:** 17-Dec-13

Density Determination:

Test No		1	2	3	4	5	
Weight of Mold (g)	A	7946.0	7946.0	7946.0	7946.0	7946.0	
Volume of Mold (cm^3)	V	2058	2058	2058	2058	2058	
Weight of [Mold + Wet Soil (g)]	C	12674.0	12999.0	13120.0	13009.0	12855.0	
Weight of Wet Soil (g)	C-A	4728.0	5053.0	5174.0	5063.0	4909.0	
Wet Density of Soil (g/cm^3)	D = (C-A)/V	2.297	2.455	2.514	2.460	2.385	

Water Content Determination of Soil:

Cane No.		1	2	3	4	5	
Wt. of Container (grm)	**B**	0.00	0.00	0.00	0.00	0.00	
Wt. of Container + Wet Soil (grm)	**E**	212.0	190.5	220.0	208.0	218.0	
Wt. of Container + Dry Soil (grm)	**F**	205.5	181.5	206.0	192.5	199.8	
Weight of Water (grm)	**G = E - F**	6.5	9.0	14.0	15.5	18.2	
Weight of Dry Soil (grm)	**H = F - B**	205.5	181.5	206.0	192.5	199.8	
Water Content %	**100*G/H**	**3.2**	**5.0**	**6.8**	**8.1**	**9.1**	
Dry Density of Soil (g/cm^3)	**100*D/(100+w)**	**2.227**	**2.339**	**2.354**	**2.277**	**2.186**	



Weight of Hammer : ○ 2.5 Kg ◉ 4.5 Kg

Mold Volume (cm^3) :	**2058**
MDD (g/cm^3) :	**2.359**
OMC (%)	**6.1**

Tested By:
Sr. Lab Technician

Witnessed/Verified By:
Client Representative

Checked By:
Lab Manager

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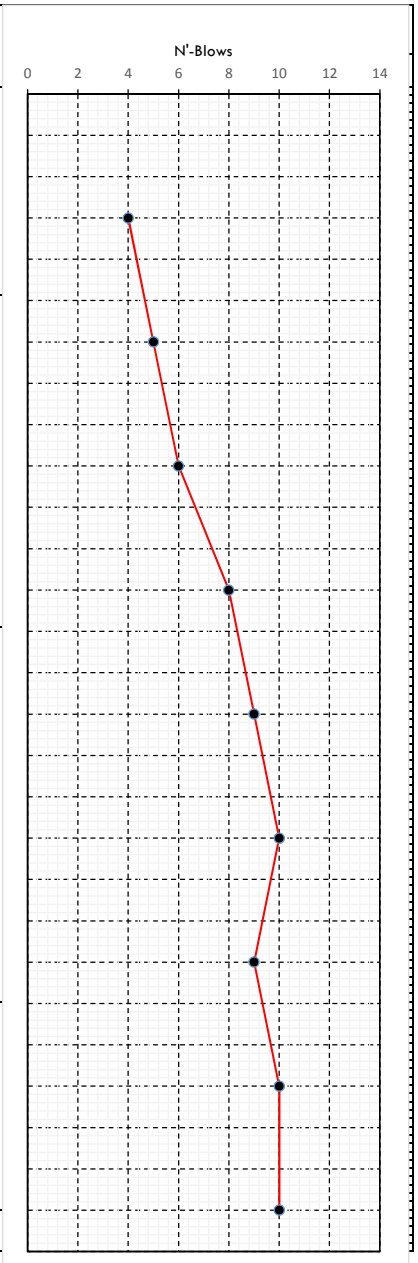
BORE HOLE NO.02

Standard Guide for Field Logging of Subsurface Exploration of Soil and Rock

ASTM D 5434

Project Name:	XXXXXX			**Client:**	XXXXX		
Address: **Province:**	XXXXXX	**Bore Hole No.**	2	**Project No.:**	23	**Started Date:**	31-Oct-13
District:	XXXXXX	**Drilling Method**	Rotary Drilling			**Completed Date:**	31-Oct-13
City/Area	XXXXXX	**Logged By:**	xxxxx			**Total Depth (m):**	3.00
Easting:	xxx	**Northing**	xxx	**Elevation (m):**	xxx	**GWT from Existing Ground Level :**	5.75 m

Depth (meter) from EGL	SAMPLES: Depth in (m)	Sample No.	Sample Type	Soil Legend	Lithology: **Soil Group Name:** modifier, color, moisture, density/consistency, grain size, other descriptors / **Rock Description:** modifier color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
0.25 – 0.75	0.75	1	☒		ML (SILT)
1.00 – 1.50	1.50	2	☒		SM (SAND)
1.75 – 2.25	2.25	3	☒		SM (SAND)
2.50 – 3.00	3.00		☒		SM (SAND)
3.25 – 3.75	3.75				SANDY GRAVEL (GM)
4.00 – 4.50	4.50				SANDY GRAVEL (GM)
4.75 – 5.25	5.25				SANDY GRAVEL (GM)
5.50 – 6.00	6.00				SILTY SAND (SM-ML)
6.25 – 6.75	6.75				SILTY SAND (SM-ML) — **END OF BORING**
7.00					



◪ Standard Penetration Slit Spoon Sampler (SPT)
▼ Stabilized Ground water
☒ Bulk/ Bag Sample
▥ Shelby Tube

Logged By:	**Witnessed/Verified By:**	**Checked By:**
Sr. Technician	Client Representative	Lab Manager