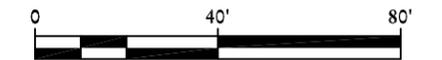


**CWE LEGEND**

- CPT-5 APPROXIMATE CONE PENETRATION TEST LOCATION
- B-5 APPROXIMATE BORING TEST LOCATION
- T-12 APPROXIMATE TEST TRENCH LOCATION  
(SCST) (SOUTHERN CALIFORNIA SOIL AND TESTING, 2006)
- B-4 APPROXIMATE BORING TEST LOCATION  
(SCST) (SOUTHERN CALIFORNIA SOIL AND TESTING, 2006)
- APPROXIMATE GEOLOGIC CONTACT
- Qcol* COLLUVIUM
- KJms* JURASSIC AND CRETACEOUS METAMORPHIC ROCK



SCALE: 1" = 40'

**GEOLOGIC CROSS SECTION B - B'**

LAKE JENNINGS MARKETPLACE  
LAKE JENNINGS PARK ROAD AND OLDE HIGHWAY 80  
SAN DIEGO COUNTY, CALIFORNIA

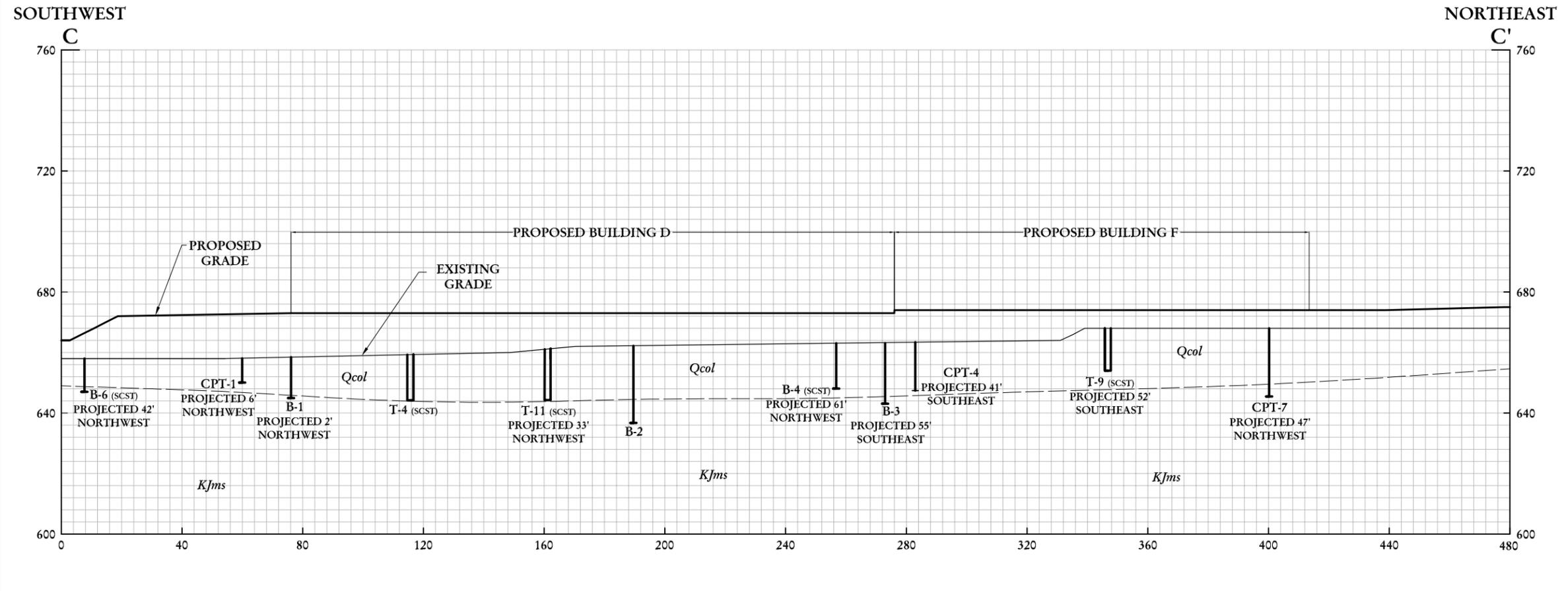
DATE: JUNE 2014

JOB NO.: 2140061.02

BY: MLM

PLATE NO.: 3





**CWE LEGEND**

-  CPT-7 APPROXIMATE CONE PENETRATION TEST LOCATION
-  B-3 APPROXIMATE BORING TEST LOCATION
-  T-9 APPROXIMATE TEST TRENCH LOCATION  
(scst) (SOUTHERN CALIFORNIA SOIL AND TESTING, 2006)
-  B-6 APPROXIMATE BORING TEST LOCATION  
(scst) (SOUTHERN CALIFORNIA SOIL AND TESTING, 2006)
-  APPROXIMATE GEOLOGIC CONTACT
-  Qcol COLLUVIUM
-  Kjms JURASSIC AND CRETACEOUS METAMORPHIC ROCK



SCALE: 1" = 40'

**GEOLOGIC CROSS SECTION C - C'**

LAKE JENNINGS MARKETPLACE  
LAKE JENNINGS PARK ROAD AND OLDE HIGHWAY 80  
SAN DIEGO COUNTY, CALIFORNIA

DATE: JUNE 2014

JOB NO.: 2140061.02

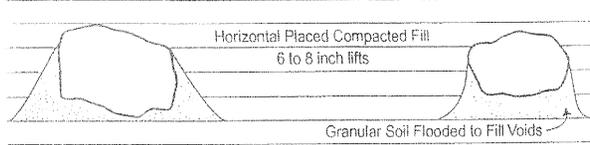
BY: MLM

PLATE NO.: 4

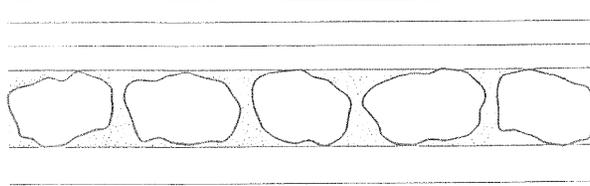


CHRISTIAN WHEELER  
ENGINEERING

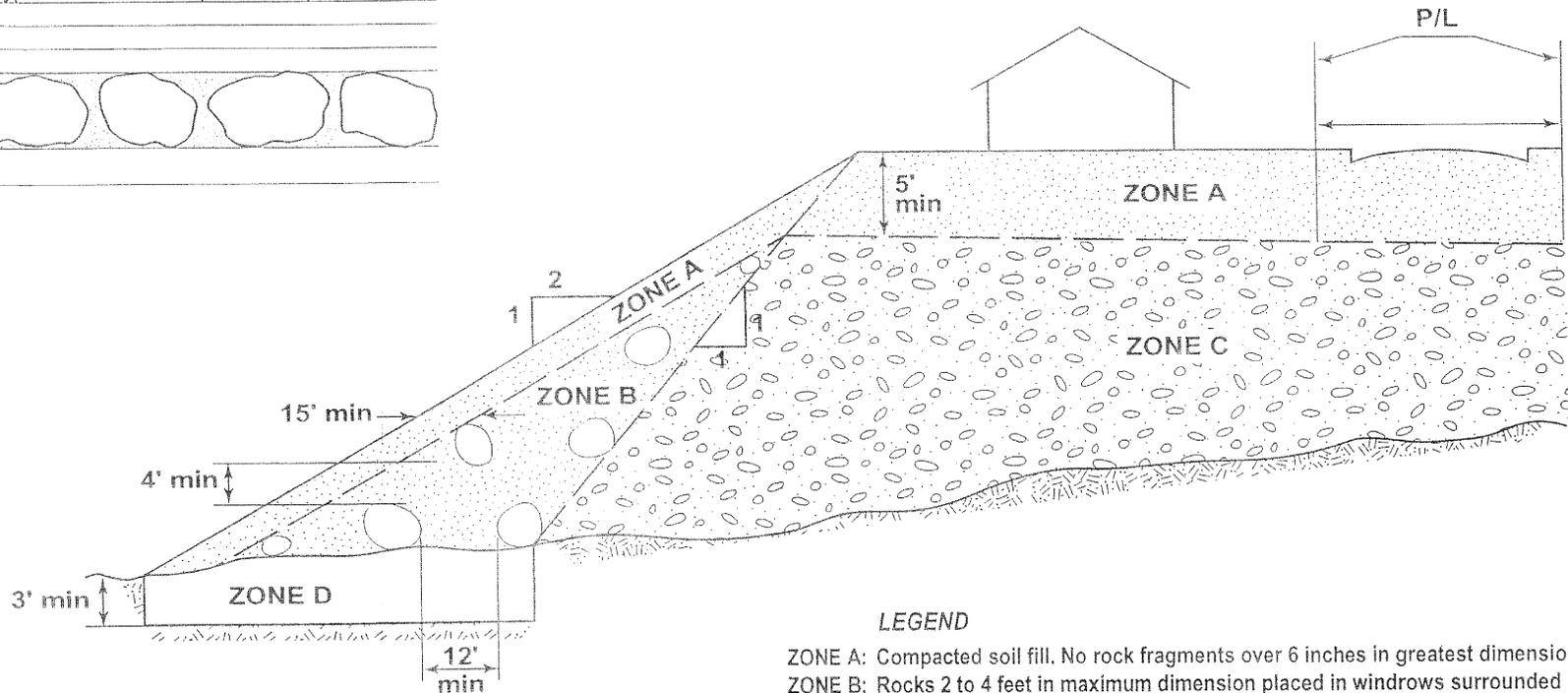
Typical Windrow Detail (End View)



Typical Windrow Detail (Profile View)



## OVERSIZE ROCK DISPOSAL (Structural Soil - Rock Fill)



### LEGEND

- ZONE A: Compacted soil fill. No rock fragments over 6 inches in greatest dimension.
- ZONE B: Rocks 2 to 4 feet in maximum dimension placed in windrows surrounded by compacted soil fill conforming to ZONE A.
- ZONE C: Rocks 6 inches to 2 feet in maximum dimension uniformly distributed and well spaced in compacted soil fill conforming to ZONE A.
- ZONE D: Required for all existing slopes 6:1 and steeper, 90% minimum compaction. ZONE A, or C material may be used for ZONE D.

### NOTES

1. Compacted soil fill shall contain at least 40 percent soil sizes passing 3/4 inch sieve, (by weight), and be compacted in accordance with specifications for structural fill.
2. Rocks over 4 feet in maximum dimension not permitted in fill.

## OVERSIZED ROCK DISPOSAL

LAKE JENNINGS MARKETPLACE  
LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
SAN DIEGO COUNTY, CALIFORNIA

DATE: JUNE 2014

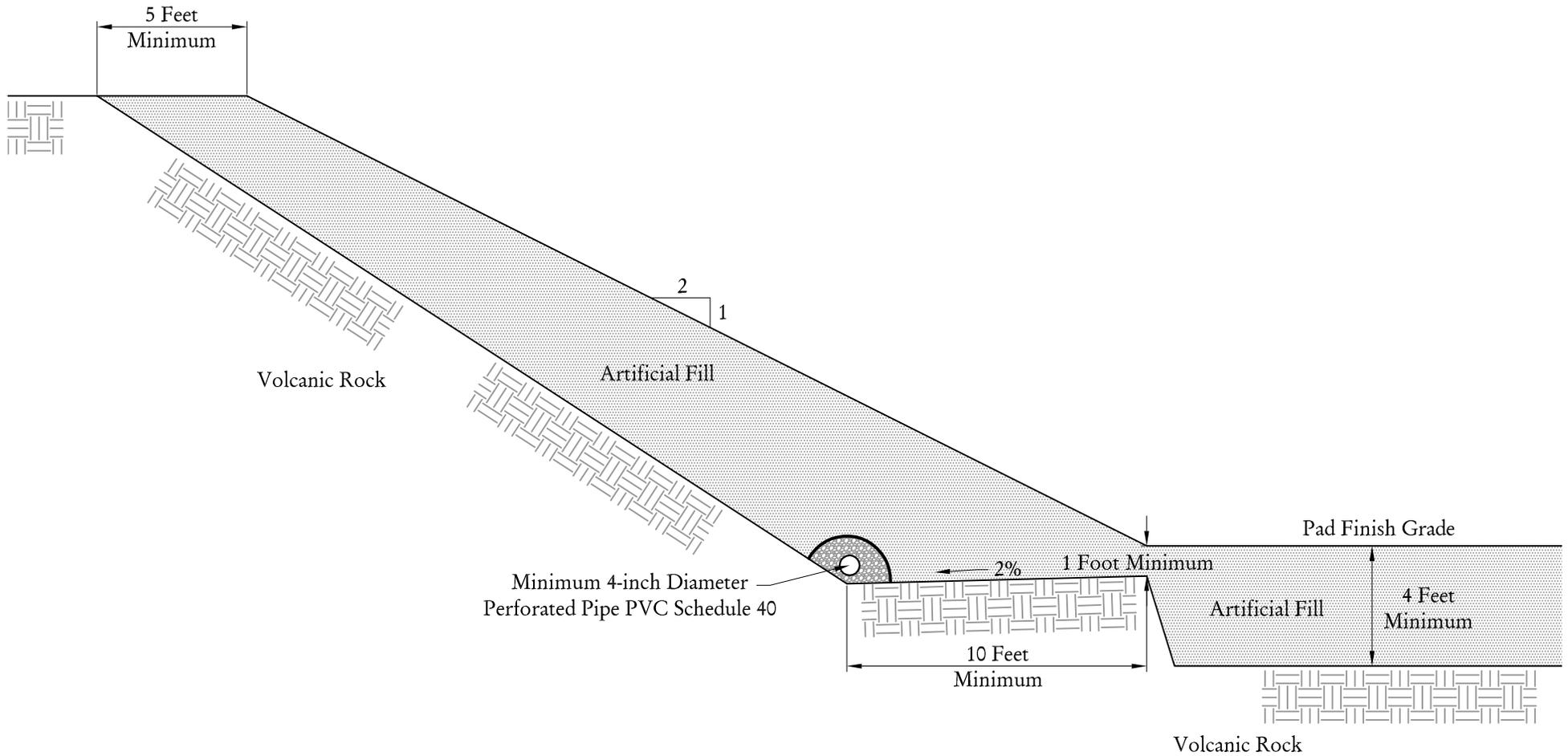
JOB NO.: 2140061.02

BY: DBA/MLM

PLATE NO.: 5



CHRISTIAN WHEELER  
ENGINEERING



NO SCALE

**CUT SLOPE  
BUTTRESS DETAIL**

LAKE JENNINGS MARKETPLACE  
LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
SAN DIEGO COUNTY, CALIFORNIA

DATE: JUNE 2014

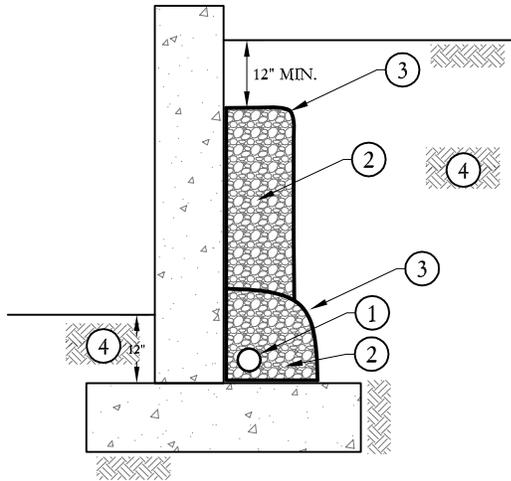
JOB NO.: 2140061.02

BY: DBA/MLM

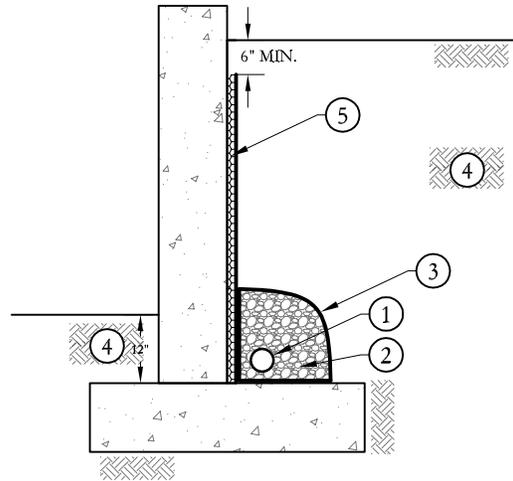
PLATE NO.: 6



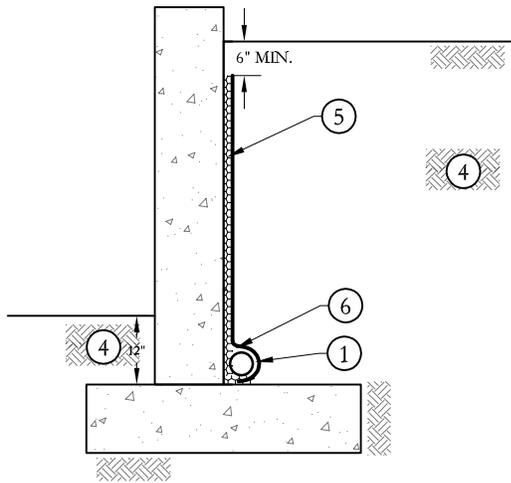
CHRISTIAN WHEELER  
ENGINEERING



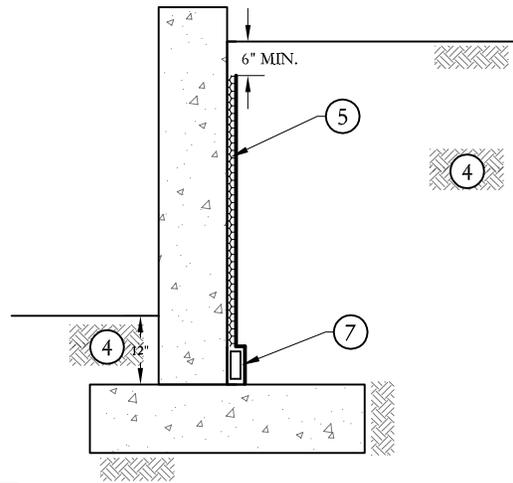
**1** DETAIL



**2** DETAIL



**3** DETAIL



**4** DETAIL

**NOTES AND DETAILS**

**GENERAL NOTES:**

- 1) THE NEED FOR WATERPROOFING SHOULD BE EVALUATED BY OTHERS.
- 2) WATERPROOFING TO BE DESIGNED BY OTHERS (CWE CAN PROVIDE A DESIGN IF REQUESTED).
- 3) EXTEND DRAIN TO SUITABLE DISCHARGE POINT PER CIVIL ENGINEER.
- 4) DO NOT CONNECT SURFACE DRAINS TO SUBDRAIN SYSTEM.

**DETAILS:**

- ① 4-INCH PERFORATED PVC PIPE ON TOP OF FOOTING, HOLES POSITIONED DOWNWARD (SDR 35, SCHEDULE 40, OR EQUIVALENT).
- ② ¼ INCH OPEN-GRADED CRUSHED AGGREGATE.
- ③ GEOFABRIC WRAPPED COMPLETELY AROUND ROCK.
- ④ PROPERLY COMPACTED BACKFILL SOIL.
- ⑤ WALL DRAINAGE PANELS (MIRADRAIN OR EQUIVALENT) PLACED PER MANUFACTURER'S REC'S.
- ⑥ UNDERLAY SUBDRAIN WITH AND CUT FABRIC BACK FROM DRAINAGE PANELS AND WRAP FABRIC AROUND PIPE.
- ⑦ COLLECTION DRAIN (TOTAL DRAIN OR EQUIVALENT) LOCATED AT BASE OF WALL DRAINAGE PANEL PER MANUFACTURER'S RECOMMENDATIONS.

**CANTILEVER RETAINING WALL  
DRAINAGE SYSTEMS**

LAKE JENNINGS MARKETPLACE  
LAKE JENNINGS PARK ROAD AND OLD HIGHWAY 80  
SAN DIEGO COUNTY, CALIFORNIA

DATE: JUNE 2014

JOB NO.: 2140061.02

BY: MLM

PLATE NO.: 7



CHRISTIAN WHEELER  
ENGINEERING

# LABORATORY TEST RESULTS

LAKE JENNINGS MARKETPLACE  
LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
SAN DIEGO COUNTY, CALIFORNIA

## GRAIN SIZE DISTRIBUTION (ASTM D422)

<b>Sample Location</b>	<b>Boring B-1 @ 0-6'</b>	<b>Boring B-3 @ 0-5'</b>
<i>Sieve Size</i>	<i>Percent Passing</i>	<i>Percent Passing</i>
#4	100	100
#8	96	97
#16	92	93
#30	88	88
#50	84	79
#100	74	64
#200	44	41

## COLLAPSE POTENTIAL (ASTM D 5333)

<b>Sample Location</b>	<b>Boring B-2 @ 6½'</b>	<b>Boring B-4 @ 6½'</b>	<b>Boring B-5 @ 6½'</b>
Initial Moisture Content	10.8 %	7.2 %	5.7 %
Initial Density	91.2 pcf	108.2 pcf	110.8 %
Consolidation Before Water Added	8.0 %	3.0 %	2.9 %
Consolidation After Water Added	17.3 %	4.4 %	4.3 %
Final Moisture	22.5 %	19.3 %	17.6 %

# APPENDIX A

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## BORING AND TRENCH LOGS

# LOG OF TEST TRENCH T-1

## Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

Date Drilled: 3/19/14      Equipment: Case 580L Backhoe  
 Logged By: TSW      Bucket Size: 18 inch  
 Existing Elevation: 702.0 feet      Drive Type: N/A  
 Finish Elevation: 695.0 feet      Depth to Water: N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	702		SM	<b>Topsoil:</b> Grayish brown, damp, loose, fine- grained, SILTY SAND with gravel to cobble-sized rock.							
1											
2											
3			SM	<b>Decomposed Metamorphic Rock (KJms):</b> Light reddish brown, damp, very dense, SILTY SAND with cobble-sized rock.							
4				Practical refusal at 3.5 feet.. No groundwater or seepage encountered.							
5	697										
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

Notes:

**Symbol Legend**

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- No Sample Recovery
- Erroneous Blow Count (rocks present)

LAKE JENNINGS MARKETPLACE  
 LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
 SAN DIEGO COUNTY, CALIFORNIA

DATE:	JUNE 2014	JOB NO.:	2140061.02
BY:	MWL	APPENDIX NO.:	A-1



CHRISTIAN WHEELER  
 ENGINEERING

# LOG OF TEST TRENCH T-2

## Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

Date Drilled: 3/24/14      Equipment: Case 580L Backhoe  
 Logged By: TSW      Bucket Size: 18 inch  
 Existing Elevation: 651.0 feet      Drive Type: N/A  
 Finish Elevation: 652.0 feet      Depth to Water: N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	651		SM	<b>Topsoil:</b> Gray to brown, damp, loose, fine- grained, SILTY SAND with gravel to cobble-sized rock.							
1											
2			SC	<b>Subsoil:</b> Dark brown, damp, medium dense, fine- grained, CLAYEY SAND.							
3			SM	<b>Decomposed Metamorphic Rock (Kjms):</b> Light gray to light brown, damp, very dense, SILTY SAND with cobble-sized rock.							
4				Practical refusal at 3.5 feet.. No groundwater or seepage encountered.							
5	646										
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

### Notes:

### Symbol Legend

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- No Sample Recovery
- Erroneous Blow Count (rocks present)

LAKE JENNINGS MARKETPLACE  
 LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
 SAN DIEGO COUNTY, CALIFORNIA

DATE:	JUNE 2014	JOB NO.:	2140061.02
BY:	MWL	APPENDIX NO.:	A-2



CHRISTIAN WHEELER  
 ENGINEERING

# LOG OF TEST TRENCH T-3

## Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

Date Drilled: 3/24/14      Equipment: Case 580L Backhoe  
 Logged By: TSW      Bucket Size: 18 inch  
 Existing Elevation: 650.0 feet      Drive Type: N/A  
 Finish Elevation: 650.0 feet      Depth to Water: N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	650		SM	<b>Topsoil:</b> Gray to brown, damp, loose, fine- grained, SILTY SAND with gravel to cobble-sized rock.							
1											
2			SC	<b>Subsoil:</b> Dark brown, damp, medium stiff, fine- grained, CLAYEY SAND.							
3			SM	<b>Decomposed Metamorphic Rock (Kjms):</b> Light gray to light brown, damp, very dense, SILTY SAND with cobble-sized rock.							
4				Practical refusal at 3.5 feet.. No groundwater or seepage encountered.							
5	645										
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

**Notes:**

**Symbol Legend**

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- No Sample Recovery
- Erroneous Blow Count (rocks present)

LAKE JENNINGS MARKETPLACE  
 LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
 SAN DIEGO COUNTY, CALIFORNIA

DATE: JUNE 2014

JOB NO.: 2140061.02

BY: MWL

APPENDIX NO.: A-3



CHRISTIAN WHEELER  
 ENGINEERING

# LOG OF TEST TRENCH T-4

## Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

Date Drilled: 3/19/14      Equipment: Case 580L Backhoe  
 Logged By: TSW      Bucket Size: 18 inch  
 Existing Elevation: 675.0 feet      Drive Type: N/A  
 Finish Elevation: 670.0 feet      Depth to Water: N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	675		SM	<b>Topsoil:</b> Light to medium brown, damp, loose, fine- grained, SILTY SAND.							
1											
2			SM	<b>Decomposed Metamorphic Rock (Kjms):</b> Light gray to light brown, damp, very dense, SILTY SAND with gravel to cobble-sized rock.							
3											
4				Practical refusal at 3.5 feet.. No groundwater or seepage encountered.							
5	670										
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

**Notes:**

**Symbol Legend**

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- No Sample Recovery
- Erroneous Blow Count (rocks present)

LAKE JENNINGS MARKETPLACE  
 LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
 SAN DIEGO COUNTY, CALIFORNIA

DATE: JUNE 2014      JOB NO.: 2140061.02  
 BY: MWL      APPENDIX NO.: A-4



CHRISTIAN WHEELER  
 ENGINEERING

# LOG OF TEST TRENCH T-5

## Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

Date Drilled: 3/19/14      Equipment: Case 580L Backhoe  
 Logged By: TSW      Bucket Size: 18 inch  
 Existing Elevation: 686.0 feet      Drive Type: N/A  
 Finish Elevation: 682.0 feet      Depth to Water: N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	686		SM	<b>Topsoil:</b> Gray to brown, damp, loose, fine- grained, SILTY SAND with gravel to cobble-sized rock.							
1											
2			SC	<b>Subsoil:</b> Dark brown, damp, medium stiff, fine- grained, CLAYEY SAND.		CK					
3			SM	<b>Decomposed Metamorphic Rock (KJms):</b> Medium gray to reddish brown, damp, very dense, very fine to fine grained, SILTY SAND with cobble-sized rock.							
4											
5	681			Practical refusal at 3.5 feet.. No groundwater or seepage encountered.							
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

**Notes:**

**Symbol Legend**

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- No Sample Recovery
- Erroneous Blow Count (rocks present)

LAKE JENNINGS MARKETPLACE  
 LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
 SAN DIEGO COUNTY, CALIFORNIA

DATE: JUNE 2014

JOB NO.: 2140061.02

BY: MWL

APPENDIX NO.: A-5



CHRISTIAN WHEELER  
 ENGINEERING

# LOG OF TEST TRENCH T-6

## Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Sieve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

Date Drilled: 3/19/14      Equipment: Case 580L Backhoe  
 Logged By: TSW      Bucket Size: 18 inch  
 Existing Elevation: 688.0 feet      Drive Type: N/A  
 Finish Elevation: 682.0 feet      Depth to Water: N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	688		SM	<b>Topsoil:</b> Medium brown, damp, loose, fine- grained, SILTY SAND							
1											
2											
3			SM	<b>Decomposed Metamorphic Rock (KJms):</b> Light gray to light brown, damp, very dense, very fine to fine grained, SILTY SAND with gravel to cobble-sized rock.							
4				Practical refusal at 3.5 feet.. No groundwater or seepage encountered.							
5	682										
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

Notes:

**Symbol Legend**

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- No Sample Recovery
- Erroneous Blow Count (rocks present)

LAKE JENNINGS MARKETPLACE  
 LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
 SAN DIEGO COUNTY, CALIFORNIA

DATE:	JUNE 2014	JOB NO.:	2140061.02
BY:	MWL	APPENDIX NO.:	A-6



CHRISTIAN WHEELER  
 ENGINEERING

# LOG OF TEST BORING B-1

## Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Steve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

Date Drilled: 3/28/14      Equipment: Diedrich D-50  
 Logged By: TSW      Auger Type: 3 1/4 inch Hollow Stem  
 Existing Elevation: 658.0 feet      Drive Type: 140 lbs/ 30 inches  
 Proposed Elevation: 675.0 feet      Depth to Water: N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	658		SM	<b>Colluvium (Qcol):</b> Brown, damp, loose, fine- grained, very SILTY SAND with CLAY.							SA
5	653				50/6"	Cal**					
					50/5"	Cal**		8.9	111.5		
10	648		SM	<b>Decomposed Metamorphic Rock (Kjms):</b> Light gray to light brown, damp, very dense, SILTY SAND with gravel to cobble-sized rock. Grades to fractured rock.	50/2"	Cal*					
					50/3"	SPT					
15	642			Practical drill refusal @ 13.5'. No seepage or groundwater encountered.							
20	638										
25	632										
30	628										

### Notes:

### Symbol Legend

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- No Sample Recovery
- Erroneous Blow Count (rocks present)

LAKE JENNINGS MARKETPLACE  
 LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
 SAN DIEGO COUNTY, CALIFORNIA

DATE:	JUNE 2014	JOB NO.:	2140061.02
BY:	MWL	APPENDIX NO.:	A-7



CHRISTIAN WHEELER  
 ENGINEERING

# LOG OF TEST BORING B-2

## Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Steve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

Date Drilled: 3/28/14      Equipment: Diedrich D-50  
 Logged By: TSW      Auger Type: 3 1/4 inch Hollow Stem  
 Existing Elevation: 668.0 feet      Drive Type: 140 lbs/ 30 inches  
 Proposed Elevation: 675.0 feet      Depth to Water: N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	668		SM	<b>Colluvium (Qcol):</b> Brown, damp, loose to medium dense, fine-grained, very SILTY SAND with clay.							
					12	Cal		7.0	91.5		
5	663			Slightly porous; with precipitate staining.	37	Cal		10.8	91.2		CP
10	658			Slightly porous.	26	Cal		12.3	119.4		
15	653				50/3"	Cal**					
20	648		SM	<b>Decomposed Metamorphic Rock (K[ms]):</b> Olive gray, damp, very dense, SILTY SAND with gravel to cobble-sized rock.	50/2"	SPT					
25	643				50/1"	SPT					
				Terminated @ 25.5'. No seepage or groundwater encountered.							
30	638										

### Notes:

### Symbol Legend

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- \* No Sample Recovery
- \*\* Erroneous Blow Count (rocks present)

LAKE JENNINGS MARKETPLACE  
 LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
 SAN DIEGO COUNTY, CALIFORNIA

DATE: JUNE 2014      JOB NO.: 2140061.02  
 BY: MWL      APPENDIX NO.: A-8



CHRISTIAN WHEELER  
 ENGINEERING

# LOG OF TEST BORING B-3

## Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Steve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

Date Drilled: 3/28/14      Equipment: Diedrich D-50  
 Logged By: TSW      Auger Type: 3 1/4 inch Hollow Stem  
 Existing Elevation: 663.0 feet      Drive Type: 140 lbs/ 30 inches  
 Proposed Elevation: 675.0 feet      Depth to Water: N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	663		SM	<b>Colluvium (Qcol):</b> Grayish brown, damp, loose to medium dense, fine to medium-grained, very SILTY SAND with clay, slightly to moderately porous with precipitate staining.	21	Cal	11.9	104.5		SA
5	658		SP	Light grayish brown, damp, loose to medium dense, fine-grained, POORLY GRADED SAND.	17/6"	Cal	3.5	104.5		
10	653		SC	Brown, damp to moist, medium dense, fine-grained, CLAYEY SAND.	26	Cal	8.0	119.8		
15	648		SM	<b>Decomposed Metamorphic Rock (Kjms):</b> Olive gray, damp, very dense, SILTY SAND with gravel to cobble-sized rock.	50/3"	Cal				
20	643			Terminated @ 20'. No seepage or groundwater encountered.	50/2"	SPT				
25	638									
30	633									

### Notes:

### Symbol Legend

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- No Sample Recovery
- Erroneous Blow Count (rocks present)

LAKE JENNINGS MARKETPLACE  
 LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
 SAN DIEGO COUNTY, CALIFORNIA

DATE: JUNE 2014      JOB NO.: 2140061.02  
 BY: MWL      APPENDIX NO.: A-9



CHRISTIAN WHEELER  
 ENGINEERING

# LOG OF TEST BORING B-4

## Sample Type and Laboratory Test Legend

Cal	Modified California Sampler	CK	Chunk Density
SPT	Standard Penetration Test	DR	Density Ring
ST	Shelby Tube	NG	Nuclear Gauge Test
MD	Max Density	DS	Direct Shear
SO4	Soluble Sulfates	Con	Consolidation
SA	Steve Analysis	EI	Expansion Index
HA	Hydrometer	R-Val	Resistance Value
SE	Sand Equivalent	Chl	Soluble Chlorides
PI	Plasticity Index	Res	pH & Resistivity
CP	Collapse Potential		

Date Drilled: 3/28/14      Equipment: Diedrich D-50  
 Logged By: TSW      Auger Type: 3 1/4 inch Hollow Stem  
 Existing Elevation: 668.0 feet      Drive Type: 140 lbs/ 30 inches  
 Proposed Elevation: 675.0 feet      Depth to Water: N/A

DEPTH (ft)	ELEVATION (ft)	GRAPHIC LOG	USCS SYMBOL	SUMMARY OF SUBSURFACE CONDITIONS (based on Unified Soil Classification System)	PENETRATION (blows per foot)	SAMPLE TYPE	BULK	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	RELATIVE COMPACTION (%)	LABORATORY TESTS
0	668		SM	<b>Colluvium (Qcol):</b> Brown, damp, loose to medium dense, fine-grained, SILTY SAND with CLAY.							
					17	Cal		6.9	107.1		
5											
	663			Fine-grained SILTY SAND with gravel.	29	Cal		7.2	108.2		CP
10	658				50/6"	Cal		8.8	102.9		
			SM	<b>Decomposed Metamorphic Rock (Kjms):</b> Olive gray, damp, very dense, SILTY SAND with gravel to cobble-sized rock.							
					50/3"	SPT					
15	653			Terminated @ 15'. No seepage or groundwater encountered.							
20	648										
25	643										
30	638										

### Notes:

### Symbol Legend

- Groundwater Level During Drilling
- Groundwater Level After Drilling
- Apparent Seepage
- No Sample Recovery
- Erroneous Blow Count (rocks present)

LAKE JENNINGS MARKETPLACE  
 LAKE JENNINGS PARK ROAD AND OLDE HWY 80  
 SAN DIEGO COUNTY, CALIFORNIA

DATE:	JUNE 2014	JOB NO.:	2140061.02
BY:	MWL	APPENDIX NO.:	A-10



CHRISTIAN WHEELER  
 ENGINEERING