Appendix B
Logs of Exploratory Borings and CPT Soundings

Geotechnical Boring Log B-1

Date :	7/23/2014 Page 1 of 2	**Drilling Company :**	Alroy Drilling
Project Name :	Westridge	**Type of Rig :**	Earthdrill Bucket Auger
Project Number :	14057-01	**Drop :** 12"	**Hole Diameter :** 28"
Elevation of Top of Hole :	~ 323 ' MSL	**Drive Weight :**	0' to 23': #2400; 24' to 43': #1550; 44' to 62': #850
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@ 0' to T.D. Quaternary San Pedro Formation (Qsp)**	
								@ 0' 3" of Asphalt Concrete over 6" of Aggregate Base	
320								@ 1' Silty fine SANDSTONE with scattered rip-up clasts of fine Sandy SILTSTONE, light orange brown and gray mottled, dry upper foot grades to slightly moist, dense, few angular rocks up to 2", oxidation stains	
	5	GB: N20E, 18NW	B-1					@ 5' B-1, Silty fine SANDSTONE to fine Sandy SILTSTONE, light brown, moist, moderately dense	EI CR
								@ 6' General bedding on Sandy laminations, vague	
315								@ 7' SILTSTONE with Clay and Sand, light blue gray, moist, very stiff to slightly hard, non planar, scattered manganese nodules, angular concretions up to 2"; color varies to greenish gray, blue gray, and some orange brown, scattered fossil shells. Variable sand and clay content, decrease in oxidation with depth.	
	10		R-1	6	101.3	21.5		@ 10' SILTSTONE with fine Sand, light blue gray, slightly moist, dense	
310									
	15							@ 15' Increase sand content	
305									
	20		R-2	9	109.6	18.2	CL	@ 20' SILTSTONE with fine SAND, light blue gray, moist, very stiff to hard, few oxidation/fine sand lenses, low angle bedding	DS
300									
	25	GB: N50E, 13N						@ 25' General bedding, vague SAND laminations and oxidation banding, non-continuous, scattered shell fossils	
295		B: N10E, 12W						@ 28' Bedding on 3" thick concretion and sand laminations, slightly undulatory, not continuous around hole, soft sediment deformation	

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Last Edited: 1/14/2015

Geotechnical Boring Log B-1

Date :	7/23/2014 Page 2 of 2	**Drilling Company :**	Alroy Drilling
Project Name :	Westridge	**Type of Rig :**	Earthdrill Bucket Auger
Project Number :	14057-01	**Drop :** 12"	**Hole Diameter :** 28"
Elevation of Top of Hole :	~ 323 ' MSL	**Drive Weight :**	0' to 23': #2400; 24' to 43': #1550; 44' to 62': #850
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30			R-3	11	104.1	21.1	CL	@ 30' SILTSTONE, blue gray, moist, very stiff to hard	DS AL
290										
	35			B-2					@ 34' Gradual increase in hardness, lacks oxidation, lacks defects, scattered manganese and few shells	
285										
	40			R-4	15	106.6	20.3	CL-ML	@ 40' SILTSTONE with trace fine Sand, moderately gray, moist, very stiff to hard, lacks structure, lacks oxidation, gradual increase in moisture with depth	DS
280									@ 42' Few fine SANDY laminations, very short, vague	
	45									
275									@ 48' End visual log.	
	50			R-5	26	106.1	19.7	CL-ML	@ 50' Same as above	
270									**Total Depth = 51.5'** **No Ground Water Encountered** **Backfilled with Cuttings and Capped with AC to 6 inches on 7/23/2014**	
	55									
265										

LGC Geotechnical, Inc.

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CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log B-2

Date :	7/23/2014 Page 1 of 2	**Drilling Company :**	Haven Geotechnical Const. Inc.
Project Name :	Westridge	**Type of Rig :**	Limited Access Bucket Auger
Project Number :	14057-01	**Drop :** N/A	**Hole Diameter :** 24"
Elevation of Top of Hole :	~ 325 ' MSL	**Drive Weight :**	N/A
Hole Location :	See Geotechnical Map		

Logged by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
325	0		J: N79E, 73N						**@ 0' to 14' Quaternary Landslide Deposit (Qls)** @ 0' Extremely weathered fine Sandy SILTSTONE, very light brown, dry, slightly stiff, roots, iron oxide, manganese oxide, blocky @ 3' Joint in fine Sandy SILTSTONE, light brown to light gray, slightly moist, stiff, Rootlets to 6'. Gradual increase in moisture and density with depth.	
320	5		B: N15W, 9W						@ 6' Bedding, thin SAND lens	
315	10		GB: N30E, 17W RS: N35W, 12W						@ 12' General bedding, broken concretion, lens @ 13' Gypsum @ 14' Rupture surface attitude, thin SAND lens, Silty CLAY, and gypsum in a 3" thick zone, very moist, continuous, planar, oxidized.	
310	15		B: N5W, 7W						**@ 14' to T.D. Quaternary San Pedro Formation (Qsp)** @14' Sandy SILTSTONE with Sand lenses, light gray, moist, very stiff @ 17' Bedding, SAND lenses, minor cross bedding, laminations, thin SILTSTONE interbeds, oxidized, abundant gypsum, all SAND is fine grained, scattered concretions	
305	20		B: N10E, 13W						@ 23' Bedding, pebble conglomerate, beach sand crossbeds, shells, pebbles (rounded), quartz rich, moist, moderately dense, zones of cementation, soft sediment deformation, minor belling	
300	25								@ 27' Grades to fine Sandy SILTSTONE, light orangish brown, moist, dense, gypsum subplanar to 1/4", manganese oxide	

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RV	R-VALUE

Last Edited: 1/14/2015

Geotechnical Boring Log B-2

Date :	7/23/2014 Page 2 of 2	**Drilling Company :**	Haven Geotechnical Const. Inc.
Project Name :	Westridge	**Type of Rig :**	Limited Access Bucket Auger
Project Number :	14057-01	**Drop :** N/A	**Hole Diameter :** 24"
Elevation of Top of Hole :	~ 325 ' MSL	**Drive Weight :**	N/A
Hole Location :	See Geotechnical Map		

Logged by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
295	30		B: N15E, 5W						@ 30' Bedding.	
			B: N12E, 14W						@ 33' Bedding, interbedded SANDSTONE and SILTSTONE, light greenish gray with orange and light brown, moist, dense/very stiff, oxidation and gypsum stringers, laminations of micas, manganese oxide	
290	35								@ 35' Lenses of fine SAND in SILTSTONE, mottled orange and gray, very moist, very stiff, soft sediment deformation, manganese oxide nodules, iron oxide nodules, non-planar fractures lined with iron oxide	
285	40									
			J: N85W, vert.						@ 43' Short joint, iron oxide lined	
280	45									
			J: N85W, vert.						@ 48' Short joint, iron oxide lined. End visual log.	
275	50								**Total Depth = 50'** **No Ground Water Encountered** **Backfilled with Cuttings on 7/23/2014**	
270	55									

LGC Geotechnical, Inc.

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RV	R-VALUE

Geotechnical Boring Log B-3

Date :	2/4/2015 Page 1 of 2	**Drilling Company :**	Haven Geotechnical Construction Inc.
Project Name :	Westridge	**Type of Rig :**	Limited Access Bucket Auger
Project Number :	14057-01	**Drop :** N/A	**Hole Diameter :** 24"
Elevation of Top of Hole :	~ 313 ' MSL	**Drive Weight :**	N/A
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by N/A

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
310	0								**@ 0' to T.D. Quaternary San Pedro Formation (Qsp)** @ 0' Sandy CLAY with scattered rounded Gravel: moderate brown, very moist, stiff; piece of wood, roots. @ 2' Pebbly SAND interfingered with SANDSTONE and SILTSTONE, CLAYSTONE rip-up clasts up to 10", light orange, brown, and light gray, very moist, dense, iron oxide, crystalline gypsum	
305	5		B: N50E, 12N						@ 8' Bedding attitude on oxidation banding. Approximately 70% fine to coarse SANDSTONE and 30% SILTSTONE/CLAYSTONE rip up clasts, gypsum crystals	
300	10		GB: N75E, 16N						@ 10' General bedding attitude on cross-bedding within pebbly sandstone	
295	15								@ 14' North half of borewall is large SILTSTONE block, tightly next to Pebbly SANDSTONE, gypsum along contact and within siltstone. SANDSTONE coarsens downward, pebbles up to 3" in diameter, rounded	
290	20								@ 19' SANDSTONE with few Pebbles, light orange and faint gray mottling, slightly moist, dense, weakly cemented	
285	25								@ 23' Gray Siltstone concretions up to 1' in diameter, scattered small shells	
									@ 26' Concretion nodule, gypsum crystals	
									@ 28' Sandy SILTSTONE with CLAY, light gray and orange mottled, very moist, very dense, iron oxide, manganese oxide	

LGC Geotechnical, Inc.

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AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Last Edited: 4/2/2015

Geotechnical Boring Log B-3

Date :	2/4/2015 Page 2 of 2	**Drilling Company :**	Haven Geotechnical Construction Inc.
Project Name :	Westridge	**Type of Rig :**	Limited Access Bucket Auger
Project Number :	14057-01	**Drop :** N/A	**Hole Diameter :** 24"
Elevation of Top of Hole :	~ 313 ' MSL	**Drive Weight :**	N/A
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by N/A

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
280	30			B-1				CL	@ 30' Bulk B-1. Fine Sandy SILTSTONE with trace CLAY, light orange and light gray mottled, very moist, dense, weakly cemented @ 33' Slight increase in clay content @ 34' End visual log. Concretion zone below as observed in tailings.	-200 AL DS MD
	35								**Total Depth = 35'** **No Ground Water Encountered** **Backfilled with Cuttings on 2/4/2015**	
275	40									
270	45									
265	50									
260	55									
255										

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B	BULK SAMPLE
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Geotechnical Boring Log B-4

Date :	2/11/2015 Page 1 of 4	**Drilling Company :**	Alroy Drilling
Project Name :	Westridge	**Type of Rig :**	EZ Bore
Project Number :	14057-01	**Drop :** 12 "	**Hole Diameter :** 28"
Elevation of Top of Hole :	~ 315 ' MSL	**Drive Weight :**	0' to 24':#4800; 25' to 58':#3350; 59' to 86':#2045; 87' to115':#1200
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0								**@ 0' to 30' Unsuitable Artificial Fill (afu)** 4" of grass over fine Sandy SILT and Silty fine SAND and Clayey SILT, light and dark brown mottled, moist, stiff/slightly dense layers, variable	
310	5									
305	10			R-1	2	111.4	16.8	SM-ML	@ 10' Fine Sandy SILT, light brown and dark gray mottled, moist, stiff, wood fragment	
300	15								Increase sand content. Scattered pebbles and rootlets.	
295	20			R-2	4	118.0	9.8	SM-ML	@ 20' Fine to medium SAND, light brown and light gray mottled, moist, dense	
290	25									

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Last Edited: 4/2/2015

Geotechnical Boring Log B-4

Date :	2/11/2015 Page 2 of 4	**Drilling Company :**	Alroy Drilling
Project Name :	Westridge	**Type of Rig :**	EZ Bore
Project Number :	14057-01	**Drop :** 12 "	**Hole Diameter :** 28"
Elevation of Top of Hole :	~ 315 ' MSL	**Drive Weight :**	0' to 24':#4800; 25' to 58':#3350; 59' to 86':#2045; 87' to115':#1200
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		C: N60W, 20NE	R-3	3	109.0	5.4	SM	**@30' to T.D. Quaternary San Pedro Formation (Qsp)** @ 30' Contact attitude, fill to bedrock contact in sample. Bedrock is SANDSTONE with Silt and some SILTSTONE, light orangish brown, slightly moist, dense. Zones of rounded cobbles and pebbles, crossbeds, moderately to highly weathered, few rootlets in upper portion	
			B: N62W, 10N to 28N							
285	35								@ 33' Bedding attitude, dip varies due to cross-bedding in sandstone	-200 AL DS MD
				B-1						
280	40			R-4	4	104.1	4.2	ML	@ 40' Fine SANDSTONE with Silt to Silty fine SANDSTONE, light orange brown and light gray mottled, slightly moist, very dense, oxidation banding, scattered nodules of white mineral.	DS AL
			B: N62E, 16NW						@ 44' Bedding attitude on Siltstone bed, 1/4" thick, planar continuous, rootlets below is fine SANDSTONE with Silt, moist, dense, mottled iron oxide staining	
275	45									
270	50			R-5	3	112.0	1.4	SM-ML	@ 50' Fine Sandy SILTSTONE to Silty fine SANDSTONE, light orange brown and light gray mottled, moist, dense	
			B: N20W, 47E						@ 52' Bedding attitude on SANDSTONE bed, soft sediment deformation, minor oxidation and shearing, scattered concretions, rounded pebbles	
265	55		F: N15W, 59E	GB-1					@ 54' Abundant soft sediment deformation and rip-ups, truncated by fault	
									@ 55' Fault attitude (top at 53, bottom at 57'), planar, clay-lined shear (small grab sample GB-1). Few rootlets, hard white mineral. Below is CLAYSTONE with trace fine SAND, gray with light orange, moist, very stiff	

LGC Geotechnical, Inc.

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B	BULK SAMPLE
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EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log B-4

Date :	2/11/2015 Page 3 of 4	**Drilling Company :**	Alroy Drilling
Project Name :	Westridge	**Type of Rig :**	EZ Bore
Project Number :	14057-01	**Drop :** 12 "	**Hole Diameter :** 28"
Elevation of Top of Hole :	~ 315 ' MSL	**Drive Weight :**	0' to 24':#4800; 25' to 58':#3350; 59' to 86':#2045; 87' to115':#1200
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	60		J: N70E, 68W	R-6	5	102.1	23.3	CL	@ 60' Clayey SILTSTONE with trace fine Sand, light gray to brownish gray, moist, slightly hard, minor oxidation, slightly weathered. @ 61' Joint attitude, rough and manganese oxide lined	DS
260	65									
255	70			R-7	5	102.4	22.9		@ 70' Clayey SILTSTONE, moderate gray and orangish brown mottled, moist, slightly hard, iron oxide staining	DS
			J: N8W, 49N; B: N5E, 9W						@ 73' Joint attitude. Bedding attitude on vague laminations within massive strata	
250	75								@ 75' Becomes unoxidized light gray SILTSTONE with CLAY and fine SAND, light gray, very moist, very stiff, scattered shells	
245	80			R-8	7	106.3	21.8	SM-ML	@ 80' SILTSTONE with fine SAND, moderate gray, most, slightly hard to hard, fossiliferous with shells and burrow traces. @ 81' Seepage from east wall.	
240	85								@ 85' Grades to fine Sandy SILTSTONE with CLAY, very moist to wet zones, dense, very stiff	

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RV	R-VALUE

Geotechnical Boring Log B-4

Date :	2/11/2015 Page 4 of 4	**Drilling Company :**	Alroy Drilling
Project Name :	Westridge	**Type of Rig :**	EZ Bore
Project Number :	14057-01	**Drop :** 12 "	**Hole Diameter :** 28"
Elevation of Top of Hole :	~ 315 ' MSL	**Drive Weight :**	0' to 24':#4800; 25' to 58':#3350; 59' to 86':#2045; 87' to115':#1200
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	90			R-9	14	107.3	20.7	SM-ML	@ 90' Sandy SILTSTONE with Clay, light gray, wet, slightly hard. Widely scattered tight, faint, non-planar fractures, few fossils, seepage	
235	95								@ 95' Increase sand content and decrease clay content. Fine Sandy SILTSTONE with trace Clay to Silty SANDSTONE, wet, hard	
230	100			R-10	16	106.1	21.4	SM-ML	@ 100' As above at 95'	
225	105								@ 105' Decrease fracturing. Bedrock generally fresh.	
220	110			R-11	15	103.8	22.8	SM-ML	@ 110' As above @ 95'	
									@ 111' End visual log.	
									@ 113' Standing water.	
215	115								**Total Depth = 115'**	
									Minor seepage @ 74' , Heavy seepage @ 85' to 113', Standing Groundwater Encountered @ 113'	
									Backfilled with Cuttings and Tamped on 2/4/2015	

LGC Geotechnical, Inc.

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AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log B-5

Date :	2/12/2015 Page 1 of 2	**Drilling Company :**	Haven Geotechnical Construction Inc.
Project Name :	Westridge	**Type of Rig :**	Limited Access Bucket Auger
Project Number :	14057-01	**Drop :** N/A	**Hole Diameter :** 24"
Elevation of Top of Hole :	~ 350 ' MSL	**Drive Weight :**	N/A
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0								**@ 0' to T.D. Quaternary San Pedro Formation (Qsp)**	
									@ 0' Sandy SILTSTONE, light yellow and light gray, dry, dense, moderately weathered, iron oxide, fossil shells to 4".	
			B: N5W, 13W						@ 3' Bedding attitude on very thin silt lens	
			B: N20E, 14W						@ 4' Bedding attitude, very thin brown sandstone lens. Scattered manganese oxide and fossils	
345	5									
			B: N10W, 15W						@ 8' Bedding attitude on very thin interbeds, weakly cemented, iron oxide stained, moist, very dense/slightly hard with zones of well cemented. Rootlets in few fractures.	
340	10									
335	15		B: N30E, 12W						@ 15' Bedding attitude on 2" sandstone interbed, orangish brown and gray fine Sandy SILTSTONE and SANDSTONE interbeds, slightly moist, very dense/ hard, weakly cemented.	
			B: N32E, 18W						@ 18' Bedding attitude, brown, friable sandbed with cross laminations, 12" thick, overlies very hard concretion, mostly continuous around borehole.	
330	20								@ 20' Very thin, Clayey SILTSTONE interbed within SANDSTONE that indicates soft sediment deformation occurred	
325	25								@ 25' Concretion, 6" thick within friable sandstone. Below is Silty SANDSTONE with SILTSTONE interbeds, moist, slightly hard and dense to very dense, manganese oxide, iron oxide, soft sediment deformation, very tight.	

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Last Edited: 2/17/2015

Geotechnical Boring Log B-5

Date :	2/12/2015 Page 2 of 2	**Drilling Company :**	Haven Geotechnical Construction Inc.
Project Name :	Westridge	**Type of Rig :**	Limited Access Bucket Auger
Project Number :	14057-01	**Drop :** N/A	**Hole Diameter :** 24"
Elevation of Top of Hole :	~ 350 ' MSL	**Drive Weight :**	N/A
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		B: N28E, 18W						@ 30' Bedding attitude. Clayey SILTSTONE with fine SAND, light gray, very moist, very stiff. Grades to fine Sandy SILTSTONE below.	
320	35		B: N10W, 10E						@ 33' Orange with mica laminations, SANDSTONE bed, 8" thick, iron oxide, moist to very moist, very dense. @ 34' Increase moisture, manganese oxide stained, fine Sandy SILTSTONE, light orange brown. @ 35' Bedding attitude, thin SILTSTONE interbed. Wet material but no visible free water	
									@ 38' Heavy seepage	
315	40								@ 41' End visual log	
310	45								**Total Depth = 45' Heavy Seepage Encountered at 38' Backfilled with Cuttings on 2/12/2015**	
305	50									
300	55									

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
G	GRAB SAMPLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE

Geotechnical Boring Log B-6

Date :	11/18/2016 Page 1 of 4	**Drilling Company :**	Alroy Drilling
Project Name :	Rancho La Habra	**Type of Rig :**	EZ Bore Bucket Auger
Project Number :	14057-01	**Drop :** 12 "	**Hole Diameter :** 26"
Elevation of Top of Hole :	~ 327 ' MSL	**Drive Weight :**	0' to 24':#4800; 25' to 58':#3350; 59' to 86':#2045; 87' to115':#1200
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
325	0								**@ 0' to 10' Quaternary Landslide Deposit (Qls):** @0' Fine SANDSTONE and fine Silty SANDSTONE: light brown, yellowish brown, and gray mottled, few shells	
			SH: N80W, 60N	GB-3					@ 3' Shear plane attitude, internal rupture surface. Rootlets, slightly sheared clay: olive gray, slightly moist, slightly stiff to stiff; iron oxide; 1/8" thick, soft moist, clay lined shear with fine sand lenses, highly weathered, fractured, iron oxide, manganese oxide. Grab Sample GB-3.	
320	5									
									@ 10' Rupture surface attitude at base of fractured/oxidized/offset material. CLAY: gray, soft to stiff, moist 1/4" thick, overlies 5" thick light yellowish sandstone bed with soft sediment deformation and siltstone lenses. Grab Sample GB-4; rupture surface clay.	
	10		RS: NS, 15W	GB-4				CH	**@10' to T.D. Quaternary San Pedro Formation (Qsp):**	AL TS
315			B: N22E, 11W						@10' Interbedded gray siltstone and yellow sandstone, very thin to moderately thick, moist, very stiff/dense; intact; slightly weathered; tight; faint soft sediment deformation. @ 11' Bedding attitude.	
	15									
310									@ 16' Thin concretion with shells within yellow SANDSTONE with laminations, slightly friable	
									@ 18' Fine Sandy SILTSTONE with sand lenses: light brown and light yellow, moist, dense to very dense. Minor gypsum lenses, soft sediment deformation, tight.	
	20		B: N28E, 11W						@ 20' Bedding attitude, fine sand lenses, gypsum.	
305										
	25		B: N15E, 10W						@ 25' Bedding attitude on sand lens, 1" thick with gypsum/ manganese oxide, tight, flame structures in fine sandy siltstone, overall affected by soft sediment deformation, moderately weathered, jointed.	
300			J: N55W, 53N						@ 29' Joint attitude with gypsum up to 1/2" wide. Decrease in gypsum, below is gray sandy siltstone with iron oxide staining	

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE
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TEST TYPES:

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EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
TS	TORSIONAL SHEAR

Last Edited: 11/28/2016

Geotechnical Boring Log B-6

Date :	11/18/2016 Page 2 of 4	**Drilling Company :**	Alroy Drilling
Project Name :	Rancho La Habra	**Type of Rig :**	EZ Bore Bucket Auger
Project Number :	14057-01	**Drop :** 12 "	**Hole Diameter :** 26"
Elevation of Top of Hole :	~ 327 ' MSL	**Drive Weight :**	0' to 24':#4800; 25' to 58':#3350; 59' to 86':#2045; 87' to115':#1200
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
295	30									
	35			GB-5					@ 35' Zone of faint spider web jointing with manganese oxide, non-continuous, sub vertical, tight @ 36' SILTSTONE with Clay: moist, very stiff; Grab Sample GB-5; siltstone with clay. Below is Sandy SILTSTONE with fine SAND lenses: gray with orange, moist, dense, very stiff to slightly hard; iron oxide; shells to 2" in diameter	
290	40		B: N5W, 8W						@ 41' Bedding attitude. Continuous SANDSTONE lenses; thinly bedded	
285	45								@ 45.5' Top of SANDSTONE: light brown, very moist to wet, dense; fine to medium sand; very weakly cemented	
280									@ 48' Base of sandstone, undulatory contact with iron oxide at base	
275	50		GB: N20E, 10N	GB-1				CL	@ 50' General bedding attitude, SILTSTONE with Sandstone lenses: mottled light brown and orange, very moist, very stiff @ 51' SILTSTONE with Clay interbedded with Sandstone lenses: orange brown, very moist, very stiff; scattered shell fragments; soft sediment deformation. Grab Sample GB-1; siltstone with clay.	AL
270	55									
			B:N20E, 12W						@ 58' Bedding attitude. SANDSTONE bed, 4" thick: reddish brown, wet, very dense @ 59' SILTSTONE with trace fine Sand: dark gray, very moist to wet, very stiff to hard; zones of iron oxide staining; scattered shells; soft sediment deformation	

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TS	TORSIONAL SHEAR

Geotechnical Boring Log B-6

Date :	11/18/2016 Page 3 of 4	**Drilling Company :**	Alroy Drilling
Project Name :	Rancho La Habra	**Type of Rig :**	EZ Bore Bucket Auger
Project Number :	14057-01	**Drop :** 12 "	**Hole Diameter :** 26"
Elevation of Top of Hole :	~ 327 ' MSL	**Drive Weight :**	0' to 24':#4800; 25' to 58':#3350; 59' to 86':#2045; 87' to115':#1200
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
265	60								@ 60' SILTSTONE with trace fine Sand: dark gray, very moist to wet, very stiff to hard; zones of iron oxide staining; scattered shells; soft sediment deformation; minor seepage on one wall	
260	65									
255	70									
250	75		J: N85W, 82N						@ 75' Attitude on iron oxide lined joint; rough; tight; small seepage	
			GB: N20E, 15W						@ 78' General bedding attitude; not representative; 1/3 of boring is sharply defined iron oxide zone around joint; prevalent soft sediment deformation	
245	80								@ 81' Active seepage from joints. SILTSTONE with fine Sand and Sand lenses: dark gray, wet, very stiff; tight	
240	85		J: N85W, 72N						@ 85' Joint attitudes on iron oxide lined joints	
			J: N65W, 58S	GB-2				CL/ML	@ 86' SILTSTONE with Clay: dark gray, very moist, few sub planar tight joints. Grab Sample GB-2.	AL TS

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Geotechnical Boring Log B-6

Date :	11/18/2016 Page 4 of 4	**Drilling Company :**	Alroy Drilling
Project Name :	Rancho La Habra	**Type of Rig :**	EZ Bore Bucket Auger
Project Number :	14057-01	**Drop :** 12 "	**Hole Diameter :** 26"
Elevation of Top of Hole :	~ 327 ' MSL	**Drive Weight :**	0' to 24':#4800; 25' to 58':#3350; 59' to 86':#2045; 87' to115':#1200
Hole Location :	See Geotechnical Map		

Logged by KTM

Sampled by KTM

Elevation (ft)	Depth (ft)	Graphic Log	Attitudes	Sample Number	Blow Count	Dry Density(pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
235	90								@ 90' Fresh, unoxidized bedrock. Increase hardness from slightly hard to hard. SILTSTONE with variable fine Sand content: dark gray, wet, hard; shells up to 1/2" diameter. Below is massive, generally lacks defects, water from seepage at 81' running down boring walls.	
230	95									
225	100									
220	105									
215	110								@ 111' End visual log.	
210	115								@ 114' Standing water.	
									Total Depth = 115'	
									Ground Water Encountered; Active Seepage at 81'	
									Backfilled with Cuttings on 11/18/2016	

LGC Geotechnical, Inc.

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CO	COLLAPSE/SWELL
RV	R-VALUE
TS	TORSIONAL SHEAR

Geotechnical Boring Log Borehole HS-1

Date: 7/14/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~274' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 25' - <u>Unsuitable Artifical Fill (afu)</u>**	
270			R-1	6 16 28	132.9	8.3	SC	@2.5' - Clayey SAND with Gravel, brownish orange, slightly moist, dense	
	5								
265									
	10		R-2	13 10 14	121.4	12.4		@10' - Clayey SAND with Gravel, orangish light brown, moist, medium dense	
260									
	15								
255									
	20		R-3	5 5 7	116.4	8.0	SM	@20' - Silty SAND with Gravel, brown, moist, loose	
250									
	25							**@25' to 33' - <u>Quaternary Alluvium (Qal)</u>**	EI, CR
		B-1							
245			R-4	7 8 11	118.3	10.7		@29' - Clayey SILT with Gravel, orangish brown, slightly moist to moist, stiff; rootlets	
	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 7/17/2014

Geotechnical Boring Log Borehole HS-1

Date: 7/14/2014	**Drilling Company:** 2R
Project Name: Westridge	**Type of Rig:** Limited Access Hollow Stem
Project Number: 14057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~274' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30							**@33' to T.D. - <u>Quaternary San Pedro Formation (Qsp)</u>**	
240	35		R-5	10 15 17	114.8	6.7	SM	@35' - Silty SAND with Gravel, orange and light brown, moist, medium dense	
235	40	B-2	R-6	12 17 18	108.2	5.6		@40' - Silty SAND, light brown to white, orange, mottled, slightly moist, medium dense	MD, DS
230	45		R-7	12 22 40	111.8	15.8		@45' - Silty SAND, orange, gray, white, mottled grading to homogeneous orange, very moist, dense	
225	50		R-8	13 20 29	99.4	24.6	CL	@50' - CLAY, light brown, very moist, hard; very thin Calcium Carbonate lens present	
220	55							Total Depth = 51.5' Groundwater Not Encountered Backfilled with Cuttings on 7/14/2014	
215	60								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
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SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

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CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-2

Date: 7/14/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~302' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
300	0							**@0' to 30' - <u>Unsuitable Artifical Fill (afu)</u>**	
			R-1	20 50/6"	118.6	12.1	SM	@2.5' - Silty SAND with Gravel, light brown, orange, mottled, slightly moist, very dense	
295	5								
	10		R-2	18 25 37	114.6	14.8	CL-ML to SP	@10' - Silty CLAY grading to SAND, brown to gray, moist, hard/dense	
290									
285	15								
	20		R-3	10 16 37	115.8	15.7	SC	@20' - Clayey SAND with Gravel, orangish light brown, moist, dense	
280									
275	25								
	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
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CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 7/17/2014

Geotechnical Boring Log Borehole HS-2

Date: 7/14/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~302' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
270	30		R-4	50/6"	106.6	10.0	SC	**@30'± to 50' - Possibly Older Artificial Fill (afo)** @30' - Clayey SAND with Gravel, moist, very dense	
265	35	B-1							
260	40		R-5	30 22 50/5"	114.6	14.5		@40' - Clayey SAND with Gravel, grayish brown with some orange, moist, very dense, dark organic clasts	
255	45							**@50' to 60' - Quaternary Alluvium (Qal)**	
250	50		R-6	26 30 50/6"	117.2	14.5		@50' Clayey SAND with Gravel, orange, moist, very dense, rootlets present	
245	55		R-7	22 50/5"	118.3	10.5	SM	@55' - Silty SAND, grayish brown, moist, very dense, rootlets present	
	60								

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SAMPLE TYPES:

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⏚	GROUNDWATER TABLE

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RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-2

Date: 7/14/2014	**Drilling Company:** 2R
Project Name: Westridge	**Type of Rig:** Limited Access Hollow Stem
Project Number: 14057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~302' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 3 of 3

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
240	60	B-2	R-8	20 40 50/5"			CL	**@60' to T.D. - <u>Quaternary San Pedro Formation (Qsp)</u>** @60' - CLAY with Sand and Gravel, light brown to black and dark gray, moist, hard	
235	65		R-9	25 50/6"				@65' - Sandy CLAY with Gravel, gray with some orange mottling, very moist, dark organic clasts, hard @67' - Cuttings very wet, potential perched groundwater	
230	70		R-10	13 20 30			SC	@70' - Clayey SAND, dark gray with white mottling, moist, dense, clasts of bluish gray clay	
225	75		R-11	16 30 50/6"			SC/ SP-SM	@75' - Clayey SAND, dark gray, moist to very moist, dense, dark organic clasts; distinct change to SAND with Silt, orange and light brown, very moist, very dense	
220	80							Total Depth = 76.5' Groundwater Not Encountered Backfilled with Cuttings on 7/14/2014	
215	85								
	90								

LGC Geotechnical, Inc.

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AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-3

Date: 7/14/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~214' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 10' - Unsuitable Artifical Fill (afu)**	
210			R-1	12 16 26	115.3	12.9	SM	@2.5' - Silty SAND, dark brown, orangish brown, gray, mottled, moist, dense	
	5		R-2	14 20 20	109.3	18.0	SC	@5' - Clayey SAND with trace Gravel, brown, moist, medium dense to dense, rootlets present	
205								**@10' to T.D. - Quaternary Alluvium (Qal)**	
	10		R-3	5 9 9	118.1	11.6	CL	@10' - CLAY with trace Gravel, dark grayish brown, moist, stiff	AL CN
200									
	15	B-1	R-4	5 6 8	115.1	9.7		@15' - Sandy CLAY with Gravel, dark yellowish brown, slightly moist, stiff	AL CN
							SM	@17' - Silty SAND with Gravel, moist	MD DS
195									
	20		R-5	15 6 11	114.0	9.9	SC	@ 20' - Clayey SAND with Gravel, orangish brown, slightly moist, medium dense	-#200
190									
	25		R-6	5 6 11	103.2	21.3	CL	@ 25' - CLAY with Gravel, dark yellowish brown with gray lenses, very moist, stiff	AL CN
								Total Depth = 26.5' Groundwater Not Encountered Backfilled with Cuttings on 7/14/2014	
185	30								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 7/17/2014

Geotechnical Boring Log Borehole HS-4

Date: 7/15/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~257' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map |

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to T.D. - <u>Quaternary San Pedro Formation (Qsp)</u>**	
255			R-1	22 40 42	115.3	12.9	ML	@2.5' - SILT with Sand, gray, light brown, orange, mottled, moist, hard	
	5		R-2	18 30 50/6"	109.3	18.0	CL-ML	@5' - Silty CLAY, gray, light brown, orange, mottled, slightly moist, hard	
250									
	10		R-3	18 37 48	105.7	20.7	CL	@10' - CLAY, dark gray, moist, hard	
245									
	15	B-1	R-4	15 30 40	106.0	21.1	ML	@15' - SILT with Sand, light brown, gray, orange, mottled, moist, hard	
240									
	20		R-5	30 50/6"	108.3	19.7	CL-ML	@20' - Silty CLAY with Sand, dark gray with some orange mottling, moist, hard	
235								Total Depth = 21.5' Groundwater Not Encountered Backfilled with Cuttings on 7/15/2014	
	25								
230									
	30								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 7/17/2014

Geotechnical Boring Log Borehole HS-5

Date: 7/15/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~233' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 30' - <u>Older Artificial Fill (afo)</u>**	
230			R-1	22 25 35	121.9	7.1	SM	@2.5' - Silty SAND with Gravel, brown and light brown, dry to slightly moist, dense	
	5								
225									
	10		R-2	17 17 27	111.4	14.2	CL	@10' - Sandy CLAY with trace Gravel, orange, light brown with a distinct change to gray and light brown half way through sample, moist, dense	-#200
220									
	15								
215									
	20			38 50/5"				@20' - No Sample Recovery	
210			R-3	8 14 19	103.4	22.8	CL	@23' -CLAY with SAND, gray and orange mottled, moist, very stiff	
	25								
205			R-4	17 27 41	121.9	11.3	SC	@28' - Clayey SAND with black organic clasts and trace Gravel, blue gray, moist, dense to very dense	
	30								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 7/17/2014

Geotechnical Boring Log Borehole HS-5

Date: 7/15/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~233' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30							**@30' to T.D. - <u>Quaternary Alluvium (Qal)</u>**	
200			R-5	6 15 23	119.4	13.7	CL	@33' - CLAY with Sand, mottled brown, orange, and gray, moist, very stiff, organic clasts	
	35								
195			R-6	25 35 50/6"	120.1	13.7		@38' - Sandy CLAY with trace Gravel and organic clasts, brownish gray, moist, hard	-#200
	40							Total Depth = 39.5' Groundwater Not Encountered Backfilled with Cuttings on 7/15/2014	
190									
	45								
185									
	50								
180									
	55								
175									
	60								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-6

Date: 7/15/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~280' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 13' - Unsuitable Artifical Fill (afu)**	
			R-1	18 24 33	110.6	18.1	ML	@2.5' - SILT with trace gravel, gray, orange, light brown, mottled, very moist, hard, organic clasts, rootlets present	
275	5								
270	10		R-2	10 17 19	120.9	10.5	SC	@10' - Clayey SAND with Gravel, orange brown, slightly moist, medium dense, tile piece present	
								@13' to 28' - Quaternary Landslide Deposit (Qls)	
			R-3	5 11 16	115.0	13.2		@13' - Clayey SAND with Gravel, orange and brown, moist, medium dense	
265	15								
			R-4	9 14 18		12.7	CL	@18' - CLAY with Gravel, brown with white patches, moist, very stiff, sample disturbed	
260	20								
		B-1	R-5	6 7 9	113.6	10.6	SC	@23' - Clayey SAND with Gravel, brown with some orange, moist, medium dense	EI, CR
255	25								
								@28' to T.D. - Quaternary San Pedro Formation (Qsp)	
			R-6	9 11 16	104.2	10.3	ML	@28' - Sandy SILT, light orange, slightly moist, very stiff, rootlets present	
	30								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 7/17/2014

Geotechnical Boring Log Borehole HS-6

Date: 7/15/2014	**Drilling Company:** 2R
Project Name: Westridge	**Type of Rig:** Limited Access Hollow Stem
Project Number: 14057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~280' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By CNJ Sampled By CNJ Checked By BTZ DESCRIPTION	Type of Test
	30								
			R-7	8 21 37	111.0	12.1	ML	@33' - Sandy SILT, light orange, slightly moist, hard	
250	35							Total Depth = 34.5' Groundwater Not Encountered Backfilled with Cuttings on 7/15/2014	
245	40								
240	45								
235	50								
230	55								
	60								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
⏚	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-7

Date: 7/15/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~260' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map |

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to T.D. - <u>Quaternary San Pedro Formation (Qsp)</u>**	
			R-1	18 38 45	117.5	8.5	SM	@2.5' - Silty SAND and fine Gravel, orangish grayish brown, moist, very dense	
255	5		R-2	22 35 50/5"	116.7	4.0		@5' - Silty SAND with Gravel, mottled orange and light brown, slightly moist, very dense	
250	10		R-3	22 50/6"	105.3	4.3	SP	@10' - SAND with Gravel, mottled orange and light brown, moist, very dense	
245	15		R-4	30 25 42	105.6	4.4		@15' - SAND, slightly moist, light brown with some mottled orange, dense to very dense, trace organic material	
240	20		R-5	25 50/4"	107.2	5.4	SM	@20' - Silty SAND, orangish light brown, slightly moist, very dense	
								Total Depth = 21.5' Groundwater Not Encountered Backfilled with Cuttings on 7/15/2014	
235	25								
	30								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 7/17/2014

Geotechnical Boring Log Borehole HS-8

Date: 7/16/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~310' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 20' - <u>Older Artificial Fill (afo)</u>**	
			R-1	50/5"	111.5	5.1	ML	@2.5' - Sandy SILT with Gravel, light brown, slightly moist, hard, roots and plant material present	
305	5								
300	10		R-2	24 26 29	114.2	12.2	CL	@10' - Sandy CLAY with Gravel, slightly moist, hard, black organic streaks	
295	15								
								@20' to T.D. - <u>Quaternary San Pedro Formation (Qsp)</u>	
290	20		R-3	11 13 15	124.1	10.2	SC	@20' - Clayey SAND with fine Gravel, bluish, brownish, gray, slightly moist, medium dense	
			R-4	10 25 50/6"	118.9	11.8		@22' - Clayey SAND with fine Gravel, bluish, greenish gray, moist, very dense, black organic streaks	
								@24' - Rig Chatter	
285	25								
			R-5	12 21 22	124.8	3.4	SP-SM	@27' - SAND with Silt and medium to coarse Gravel, orange and light brown, slightly moist, dense	
	30							@28' - Significant Rig Chatter and gravel encountered in cuttings	

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 7/17/2014

Geotechnical Boring Log Borehole HS-8

Date: 7/16/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~310' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		SPT-1	23 12 9		9.5	SM	@30' - Silty SAND with Gravel, dark gray, moist, medium dense	
280	35							Total Depth = 31.5' (Auger Refusal) Groundwater Not Encountered Backfilled with Cuttings on 7/16/2014	
275	40								
270	45								
265	50								
260	55								
	60								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-9

Date: 7/16/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~330' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map |

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to T.D. - <u>Quaternary San Pedro Formation (Qsp)</u>**	
			R-1	17 17 18	104.4	10.2	SM	@2.5' - Silty SAND with Gravel, light brown, orange, mottled, moist, medium dense	
325	5		R-2	17 50/5"	112.7	3.5		@5' - Silty SAND with Gravel, light brown grades to brown, slightly moist, very dense, roots present in finer material	
320	10		R-3	50/6"	94.8	13.4	SP-SM	@10' - SAND with Silt and trace Gravel, light brown and orange mottled, very moist, very dense	
315	15			50/4"				@15' - No sample recovery	
								@18' - Rig Chatter	
310	20		R-4	18 26 30	102.7	12.6	CL	@20' - CLAY, light brown and light orange mottled, moist, hard	
								Total Depth = 21.5' Groundwater Not Encountered Backfilled with Cuttings on 7/16/2014	
305	25								
	30								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 7/17/2014

Geotechnical Boring Log Borehole HS-10

Date: 7/16/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~330' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 25' - <u>Unsuitable Artifical Fill (afu)</u>**	
			R-1	20 22 50/5"	117.9	11.3	SM	@2.5' - Silty SAND with little Gravel, brown, very dense, rootlets present	
325	5								
320	10		R-2	18 28 30	118.6	10.9	CL	@10' - Sandy CLAY with Gravel, brown, slightly moist, hard	
315	15								
310	20		R-3	14 28 48	125.2	8.3	SC	@20' - Clayey SAND with little Gravel, dark brown, black organic streaks, slightly moist, very dense	
305	25							**@25' to 48' - <u>Quaternary Alluvium (Qal)</u>**	
	30								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 7/17/2014

Geotechnical Boring Log Borehole HS-10

Date: 7/16/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~330' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		R-4	10 17 21	123.1	12.0	CL	@30' - CLAY with Gravel, brown, slightly moist, very stiff	
			R-5	10 15 20	122.1	12.3		@33' - Same as above	
300	35								
			R-6	12 23 27	121.1	12.5		@38' - Sandy CLAY with fine Gravel, mottled light brown and brown, slightly moist, hard	
295	40								
			R-7	6 10 15	118.4	12.5		@43' - Sandy CLAY with Gravel, brown, slightly moist, very stiff	
290	45							**@48' to T.D. - <u>Quaternary San Pedro Formation (Qsp)</u>**	
			R-8	10 13 16	117.9	12.8	SC	@48' - Clayey SAND, mottled orange and light brown, Sand and Clay mottled, moist, medium dense	
285	50								
			R-9	13 15 10	109.6	4.3	SP-SM	@53' - SAND with Silt, mottled orange, light brown, slightly moist, medium dense	
280	55							Total Depth = 54.5' Groundwater Not Encountered Backfilled with Cuttings on 7/16/2014	
	60								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-11

Date: 7/31/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~249' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
245	0							**@0' to 35' - Unsuitable Artificial Fill (afu)**	
240	5								
235	10		R-1	12 26 25	126.4	9.3	CL	@10' - Sandy CLAY with Gravel, orangish brown, slightly moist to moist, hard	
230	15								
225	20		R-2	7 18 47	116.8	15.1	ML	@20' - Sandy SILT with Gravel, gray with brown and orange mottling present, moist, hard, dark organic streaks present	
220	25								
	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
⏚	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
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AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 8/5/2014

Geotechnical Boring Log Borehole HS-11

Date: 7/31/2014	**Drilling Company:** 2R
Project Name: Westridge	**Type of Rig:** Limited Access Hollow Stem
Project Number: 14057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~249' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By CNJ Sampled By CNJ Checked By BTZ DESCRIPTION	Type of Test
	30		R-3	20 20 50	122.6	4.2	SM	@30' - Silty SAND with Gravel, dark brown, slightly moist, very dense	
215									
	35		R-4	8 8 11	116.2	6.2	SM	**@35' to T.D. - <u>Quaternary Alluvium (Qal)</u>** @35' - Silty SAND with Gravel, brown, slightly moist, medium dense	-200
210									
	40		R-5	8 11 15	119.2	4.6	SC-SM	@40' - Silty Clayey SAND with trace Gravel, orangish brown, slightly moist, medium dense, white rootlet casts present	AL -200
205									
	45		R-6	8 12 16	119.9	6.5	SC	@45' - Clayey SAND with trace Gravel, orangish brown, slightly moist, medium dense, white rootlet casts present	
200									
	50		R-7	8 12 22	124.9	3.9		@50' - Clayey SAND with trace Gravel, orangish brown, slightly moist, medium dense, white rootlet casts present	
195								Total Depth = 51.5' Groundwater Not Encountered Backfilled with Cuttings on 7/31/2014	
	55								
190									
	60								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-12

Date: 7/31/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~230' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 35' - Older Artificial Fill (afo)**	
225	5								
220	10		R-1	12 20 34	114.7	12.4	SC to CL	@10' - Clayey SAND grading to Sandy CLAY, gray brown, moist, dense/hard, trace plant matter present	
215	15								
210	20		R-2	17 24 30	117.1	11.4	SM	@20' - Silty SAND, orange brown, slightly moist, dense	#200
205	25								
	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 8/5/2014

Geotechnical Boring Log Borehole HS-12

Date: 7/31/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~230' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		R-3	16 36 46	124.6	9.6	SC to CL	@30' - Clayey SAND with Gravel grading to Sandy CLAY with Gravel, orangish grayish brown, slightly moist, very dense/hard	
200	35							**@35' to T.D. - <u>Quaternary Alluvium (Qal)</u>**	
195	40		R-4	5 11 16	115.7	14.8	CL	@40' - CLAY with Sand, dark brown to grayish brown, moist, very stiff	AL CN
190	45		R-5	5 9 12	109.3	18.7		@45' CLAY with Sand, yellowish brown, very moist, stiff to very stiff	
185	50		R-6	5 8 14	97.5	25.7		@ 50' - Lean CLAY with trace Gravel, olive gray with orange to red oxidation mottling, very moist, very stiff	AL CN
180	55		R-7	5 10 14	100.2	23.9		@55' - Same as above but lacks gravel	
	60							Total Depth = 56.5' Groundwater Not Encountered Backfilled with Cuttings on 7/31/2014	

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-13

Date: 7/31/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~234' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 14' - Unsuitable Artificial Fill (afu)**	
230	5								
225	10		R-1	12 21 30	114.6	15.1	CL	@10' - Sandy CLAY, orangish brown, moist, hard	
220								**@14' to 46' - Quaternary Alluvium (Qal)**	
	15		R-2	5 5 4	105.3	6.7	SM	@15' - Silty SAND with trace Gravel, brown, slightly moist, loose	AL -200
215	20		R-3	9 15 20	122.9	7.6	SC	@20' - Clayey SAND with some Gravel, brown, slightly moist, medium dense	
210	25		R-4	7 7 8	111.7	6.9	SM	@25' - Silty SAND with Gravel, light brown to brown, slightly moist, medium dense	-200
205	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 8/5/2014

Geotechnical Boring Log Borehole HS-13

Date: 7/31/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~234' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
200	30		R-5	7 11 14	118.7	6.8	ML	@30' - Sandy SILT with trace Gravel, brown, slightly moist, very stiff	
	35		R-6	4 6 7	106.9	9.8	SM-SC	@35' - Silty Clayey SAND with some fine Gravel, brown, slightly moist, loose, white rootlet casts present	AL -200
195	40		R-7	7 11 28	116.4	9.0		@40' - Medium dense	-200
190	45		R-8	8 12 15	117.3	9.3	SM	@45' - Silty SAND with trace Gravel, light brown to brown, moist, medium dense, white rootlet casts **@46' to T.D. - Quaternary San Pedro Formation (Qsp)**	
185	50		R-9	12 35 50	115.8	10.7		@50' - SAND with trace Gravel, light brown to brown with orange oxidation nodules, moist, very dense	
180	55							Total Depth = 51.5' Groundwater Not Encountered Backfilled with Cuttings on 7/31/2014	
175	60								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
⏚	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-14

Date: 7/31/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~234' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							Approximately 4" of Asphalt Concrete over 5" of Aggregate Base **@0' to 15' - <u>Unsuitable Artificial Fill (afu)</u>**	
230	5		R-1	10 10 12	111.6	11.7	CL	@5' - Sandy Clay, orangish light brown to gray brown, moist, very stiff	
225	10		R-2	9 13 17	107.5	21.4		@10' - CLAY, dark olive gray with orange iron oxidation nodules, moist, very stiff	AL CN
220	15		R-3	13 23 25	122.7	8.5	SC	**@15' to T.D. - <u>Quaternary Alluvium (Qal)</u>** @15' - Clayey SAND with some Gravel, brown, moist, dense, iron oxidation nodules	
215	20		R-4	4 5 7	115.3	9.1	SC	@20' - Clayey SAND with trace Gravel, olive brown, moist, loose	AL CN
210	25		R-5	4 5 10	116.8	8.6		@25' - Clayey SAND with trace Gravel, brown to yellow brown, moist, medium dense, root traces and calcium carbonate present	
205	30								

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
⏚	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 8/5/2014

Geotechnical Boring Log Borehole HS-14

Date: 7/31/2014 | **Drilling Company:** 2R

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~234' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		R-6	7 8 10	122.7	8.5	SC	@30' - Clayey SAND with trace Gravel, brown, slightly moist, medium dense, calcium carbonate present	
200									
	35		R-7	6 9 10	116.1	8.7		@35' - Rootlets present	-#200
195									
	40		R-8	11 21 27	129.0	10.1	CL	@40' - Sandy CLAY with trace Gravel, brown, slightly moist, hard	
190									
	45		R-9	12 20 20	126.7	8.2	SC	@45' - Clayey SAND with trace fine Gravel, brown, slightly moist, dense	-#200
185									
	50		R-10	11 16 20	119.3	12.3	CL	@50' - Sandy CLAY with trace Gravel, brown, moist, very stiff	
								Total Depth = 51.5' Groundwater Not Encountered Backfilled with Cuttings and Capped with Asphalt Concrete Cold Patch on 7/31/2014	
180	55								
175	60								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

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EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-15

Date: 2/3/2015 | **Drilling Company:** 2R Drilling

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~263' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	B-1						**@0' to 20' - Older Artificial Fill (afo)**	
260									
	5		R-1	12 26 50/3"	118.0	14.4	SC	@5' - Clayey SAND with some very fine Gravel, brown with dark brown and orange blebs, moist, very dense	
255									
	10		R-2	12 20 20	116.3	12.6	SP-SC	@10' - SAND with Clay and medium Gravel, yellow orange brown with gray clayey blebs, very moist to wet, medium dense	
250									
	15		R-3	12 16 25	102.8	22.0	SC	@15' - Clayey SAND with fine Gravels, medium brown with dark organic blebs and gray clayey blebs, very moist, dense	
245									
	20		R-4	16 33 45	124.2	7.6		**@20' to 26.5' - Quaternary Alluvium (Qal)** @20' - Clayey SAND with very fine to fine Gravel, orange and yellow matrix, moist to very moist, very dense; iron oxide nodules, rounded gravel	AL -200
240									
	25		R-5	16 25 31	119.2	13.4		@25' - Clayey SAND, medium brown with colorful clasts, moist to very moist, dense, iron oxide nodules	AL CN
235								**@26.5' to T.D. - Quaternary San Pedro Formation (Qsp)** @26.5' - Silty fine SAND, gray and orange mottling, micaceous	
	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
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EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 2/19/2015

Geotechnical Boring Log Borehole HS-15

Date: 2/3/2015	**Drilling Company:** 2R Drilling
Project Name: Westridge	**Type of Rig:** Limited Access Hollow Stem
Project Number: 14057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~263' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By CNJ Sampled By CNJ Checked By BTZ DESCRIPTION	Type of Test
	30		R-6	36 50/4"	100.2	12.6	SM	@30' - Silty SAND, gray and orange mottling, slightly moist to moist, very dense, micaceous	
230	35							Total Depth = 31.5' Groundwater Not Encountered Backfilled with Cuttings on 2/3/2015	
225	40								
220	45								
215	50								
210	55								
205	60								

LGC Geotechnical, Inc.

THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
⏚	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-16

Date: 2/3/2015 | **Drilling Company:** 2R Drilling

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~215' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 10' - Older Artificial Fill (afo)**	
210	5		R-1	19 25 27	121.9	9.6	SC	@5' - Clayey SAND with some Gravel, medium brown, moist, dense to very dense, blebs or sand, clay, and dark brown material	
205	10		R-2	6 7 10	110.7	12.6	SM	**@10' to 27' - Quaternary Alluvium (Qal)** @10' - Fine Silty SAND, brown to dark brown, moist, medium dense, homogeneous texture and rounded colorful sand	
200	15		R-3	12 14 18	109.8	11.0	CL	@15' - Sandy CLAY, orange brown, moist, dense, root cast	-200
195	20		R-4	7 9 15	111.7	16.4		@20' - CLAY, orange brown to medium dark brown, moist, trace gravel	CN AL
190	25		R-5	11 18 28	104.3	22.1		@25' - CLAY with Sand, reddish brown, moist, rounded clasts that coarsen with sample depth, white mineralization around clasts, iron oxide nodules	-200
	30							**@27' to T.D. - Quaternary San Pedro Formation** @27' - Clayey SILT, gray and orange mottling, iron oxide	

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SAMPLE TYPES:

B	BULK SAMPLE
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SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

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CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 2/19/2015

Geotechnical Boring Log Borehole HS-16

Date: 2/3/2015	**Drilling Company:** 2R Drilling
Project Name: Westridge	**Type of Rig:** Limited Access Hollow Stem
Project Number: 14057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~215' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Logged By CNJ
Sampled By CNJ
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		R-6	17 32 45	106.3	19.9	ML	@30' - SILT with Sand, dark orange and gray brown mottling, moist, hard, micaceous, iron oxide	
185	35		R-7	24 34 46	104.1	21.7		@35' - SILT with Sand, orange and gray brown mottling, moist to very moist, hard, micaceous, trace fossils, iron oxide	AL -200
180	40		R-8	20 40 45	98.2	26.2	ML-CL	@40' - Silty CLAY with fine Sand, orange and gray and brown mottling, very moist, hard, shells, micaceous	
175	45		R-9	38 50-5"		20.6		@45' - Silty CLAY, dark gray, moist to very moist, hard	
170	50		R-10	50/3"			ML	@50' - SILT with Sand, dark gray, hard, partial recovery	
								Total Depth = 51.5' Groundwater Not Encountered Backfilled with Cuttings on 2/3/2015	
165	55								
	60								

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AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-17

Date: 2/4/2015 | **Drilling Company:** 2R Drilling

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~208' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By ASR
Sampled By ASR
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0							**@0' to 10' - Older Artificial Fill (afo)**	
205									
	5	B-1	R-1	12 19 35	112.3	19.0	CL	@5' - Sandy CLAY, light brown, moist, hard	AL DS -200 MD
200									
	10		R-2	12 24 22	114.8	9.7	ML	**@10' to 48' - Quaternary Alluvium (Qal)** @10' Sandy SILT, reddish light brown, moist, hard	
195									
	15		R-3	8 13 19	105.1	9.1	SM	@15' - Silty SAND, light brown, moist, medium dense	-200
190									
	20		R-4	4 6 7	99.0	26.3	CL	@20' - CLAY, yellowish brown, very moist, medium stiff	CN AL
185									
	25		R-5	5 8 14	110.4	18.2		@25' - CLAY, dark yellowish brown, moist, very stiff	CN AL
180		▽							
	30								

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▽	GROUNDWATER TABLE

TEST TYPES:

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AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 2/19/2015

Geotechnical Boring Log Borehole HS-17

Date: 2/4/2015 | **Drilling Company:** 2R Drilling

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~208' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By ASR
Sampled By ASR
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	30		R-6	5 13 22	107.4	21.2	SM	@30' - Silty SAND, light brown, very moist, medium dense	-200
175									
	35		R-7	16 33 50/5"	112.7	18.6		@35' - Silty SAND, light brown, wet, very dense	
170									
	40		R-8	11 15 20		18.5	SP-SM	@40' - SAND with Silt, light brown, wet, medium dense	-200
165									
	45		R-9	7 14 46	107.2	21.5	SC	@45' - Clayey SAND, light gray, wet, dense	
160								**@48' to T.D.' - <u>Quaternary San Pedro Formation (Qsp)</u>**	
	50		R-10	15 50/5"	111.9	18.2		@50' - Clayey SAND, light gray, wet, very dense	
155									
	55		R-11	17 50/5"	109.5	19.6	SM	@55' - Silty SAND, light gray, wet, very dense	
150									
	60								

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AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-17

Date: 2/4/2015 | **Drilling Company:** 2R Drilling

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~208' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By ASR
Sampled By ASR
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
145	60		R-12	21 29 36	128.1	9.8	SP-SM	@60' - SAND with Silt, wet, dense	
140	65		R-13	10 50/5"	133.7	7.7		@65' - SAND with Silt, wet, very dense, very rounded, shell fragment present	
	70		SPT-1	32 50/3"		5.4		@70' - SAND with Silt, slightly moist, very dense	
135	75							Total Depth = 71' Groundwater Encountered at Approximately 29' Backfilled with Cuttings on 2/4/2015	
130	80								
125	85								
120	90								

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SAMPLE TYPES:

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▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
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EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-18

Date: 2/4/2015 | **Drilling Company:** 2R Drilling

Project Name: Westridge | **Type of Rig:** Limited Access Hollow Stem

Project Number: 14057-01 | **Drop:** 30" | **Hole Diameter:** 8"

Elevation of Top of Hole: ~290' MSL | **Drive Weight:** 140 pounds

Hole Location: See Geotechnical Map

Logged By ASR
Sampled By ASR
Checked By BTZ

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	DESCRIPTION	Type of Test
	0	B-1						**@0' to 40' - Unsuitable Artificial Fill (afu)**	
285	5		R-1	11 17 12			SM	@5' - Silty SAND, dark gray, slight moist, stiff, dense	
280	10		R-2	7 10 12			CL	@10' - CLAY, dark gray, slightly moist, very stiff	
275	15		R-3	11 13 17				@15' - CLAY, dark gray, slightly moist to moist, very stiff	
270	20		R-4	11 13 14				@20' - CLAY with Sand, dark gray, slightly moist to moist, stiff	
265	25		R-5	19 24 33			SM	@25' - Silty SAND, dark gray, slightly moist to moist, dense	
	30								

LGC Geotechnical, Inc.

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SAMPLE TYPES:

B	BULK SAMPLE
R	RING SAMPLE (CA Modified Sampler)
G	GRAB SAMPLE
SPT	STANDARD PENETRATION TEST SAMPLE
▽	GROUNDWATER TABLE

TEST TYPES:

DS	DIRECT SHEAR
MD	MAXIMUM DENSITY
SA	SIEVE ANALYSIS
S&H	SIEVE AND HYDROMETER
EI	EXPANSION INDEX
CN	CONSOLIDATION
CR	CORROSION
AL	ATTERBERG LIMITS
CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Last Edited: 2/19/2015

Geotechnical Boring Log Borehole HS-18

Date: 2/4/2015	**Drilling Company:** 2R Drilling
Project Name: Westridge	**Type of Rig:** Limited Access Hollow Stem
Project Number: 14057-01	**Drop:** 30" **Hole Diameter:** 8"
Elevation of Top of Hole: ~290' MSL	**Drive Weight:** 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By ASR Sampled By ASR Checked By BTZ DESCRIPTION	Type of Test
	30		R-6	8 12 17			SM	@30' - Silty SAND, dark gray, slightly moist to moist, medium dense	
260	35		R-7	18 38 44				@35' - Silty SAND, light gray, slight moist, dense to very dense	
255	40		R-8	26 50/5"	106.3	21.2	CL	**@40' to T.D. - <u>Quaternary Landslide Deposit/Quaternary San Pedro Formation Undifferentiated (Qls/Qsp)</u>** @40' - Silty fine SAND, light gray and brown, slightly moist, very dense, iron oxide staining	
250	45		R-9	38 50/5"	104.5	22.6	ML	@45' - SILT with Sand, light gray and brown, moist, very dense, iron oxide	
245	50		R-10	32 50/5"	100.3	25.0		@50' - SILT with Sand, light brown, moist, very dense	
240	55							Total Depth = 51.5' Groundwater Not Encountered Backfilled with Cuttings on 2/4/2015	
	60								

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CO	COLLAPSE/SWELL
RV	R-VALUE
-#200	% PASSING # 200 SIEVE

Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
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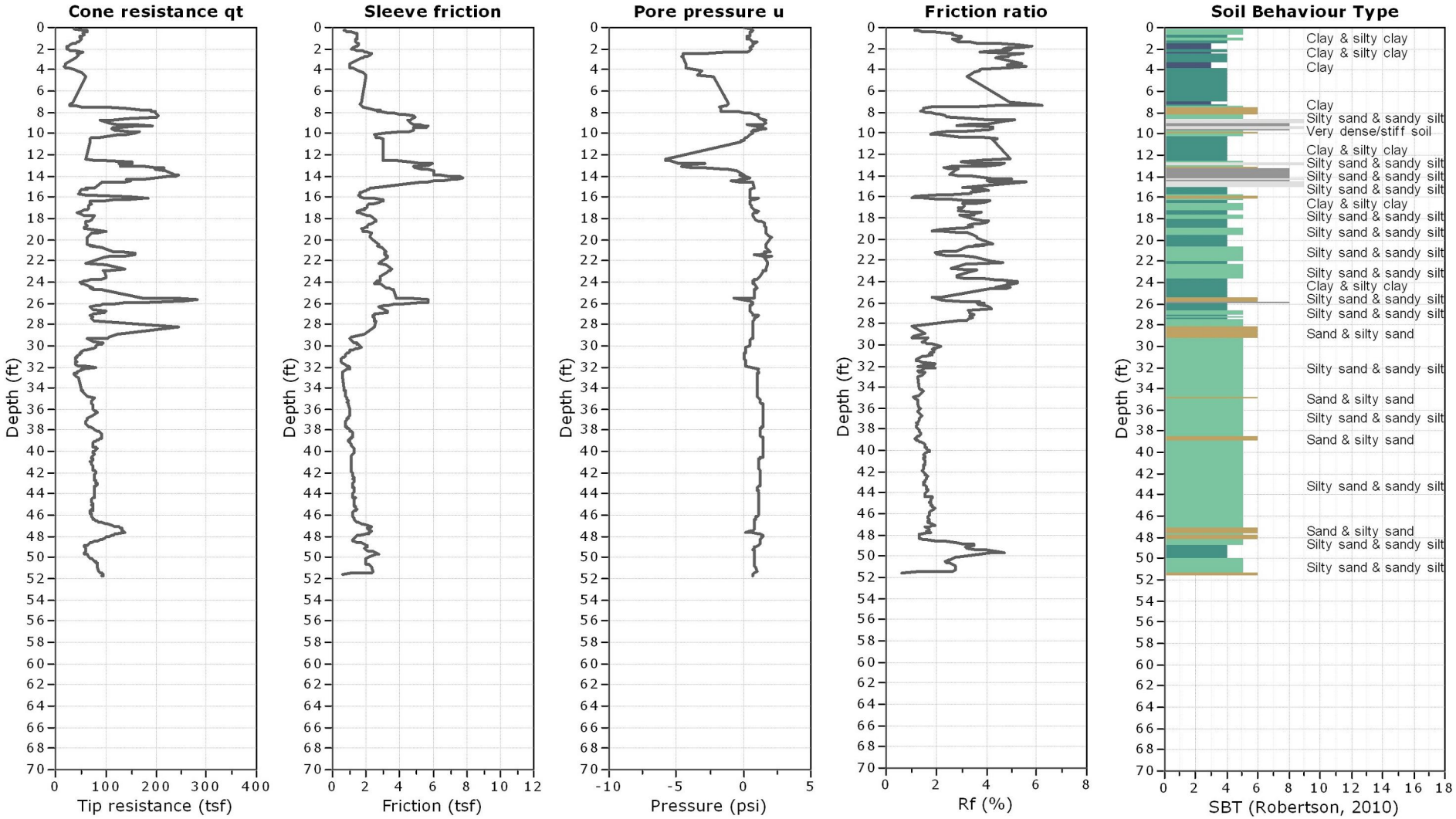
CPT: CPT-1A

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 51.74 ft, Date: 7/22/2014
Cone Type: Vertek



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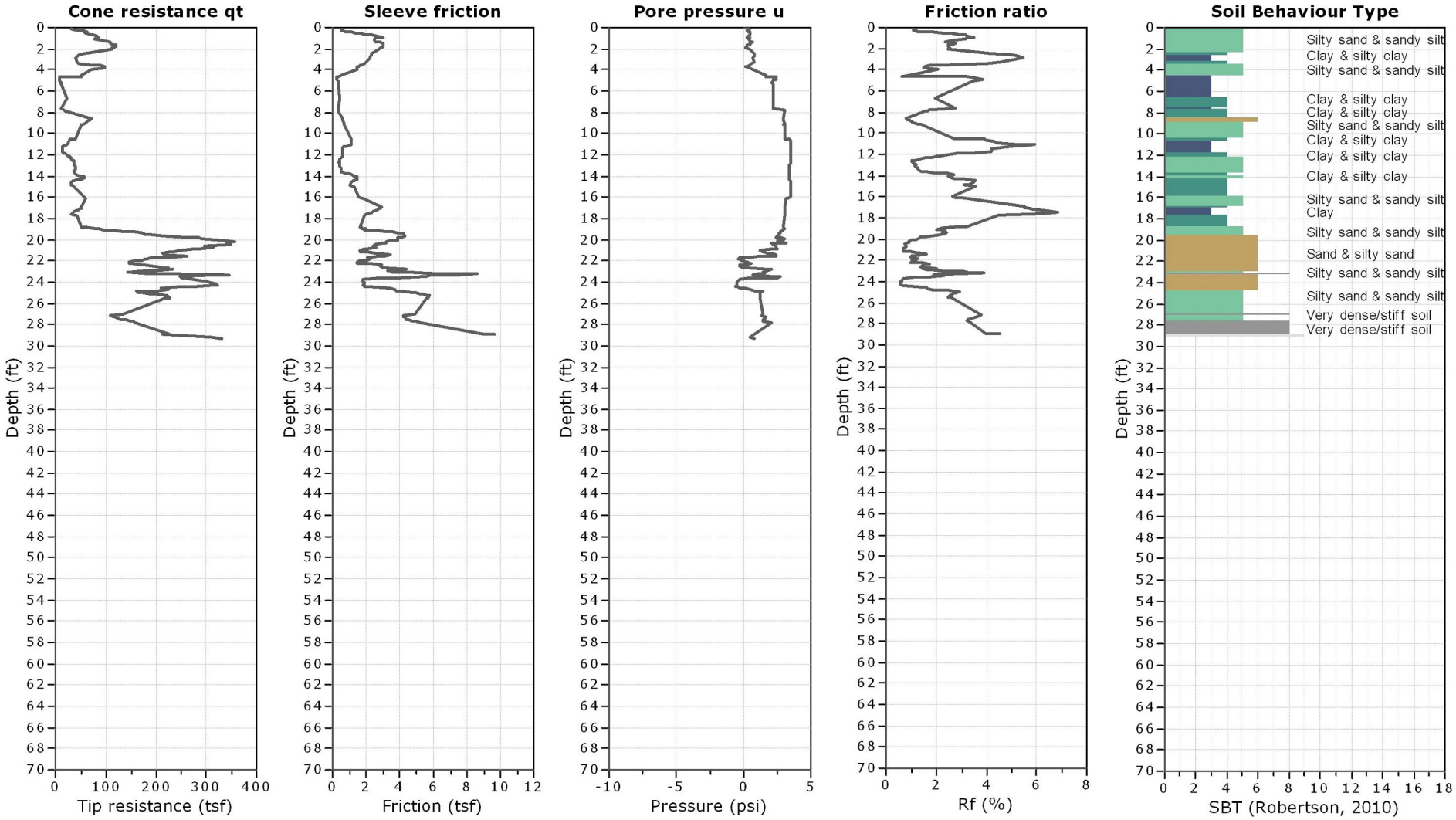
www.kehoetesting.com

CPT: CPT-2

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 29.28 ft, Date: 7/22/2014
Cone Type: Vertek



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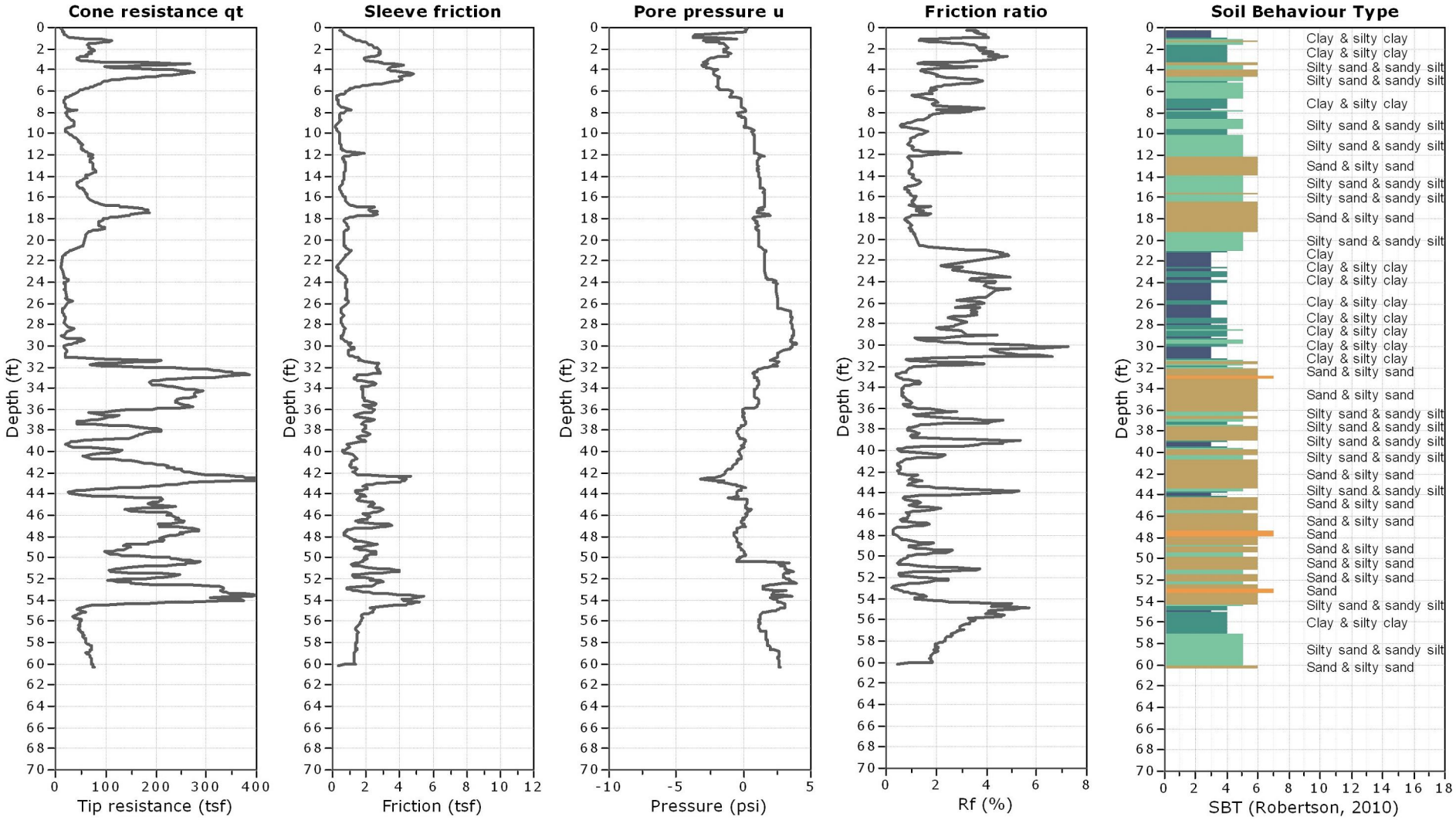
CPT: CPT-3

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 60.34 ft, Date: 7/22/2014
Cone Type: Vertek



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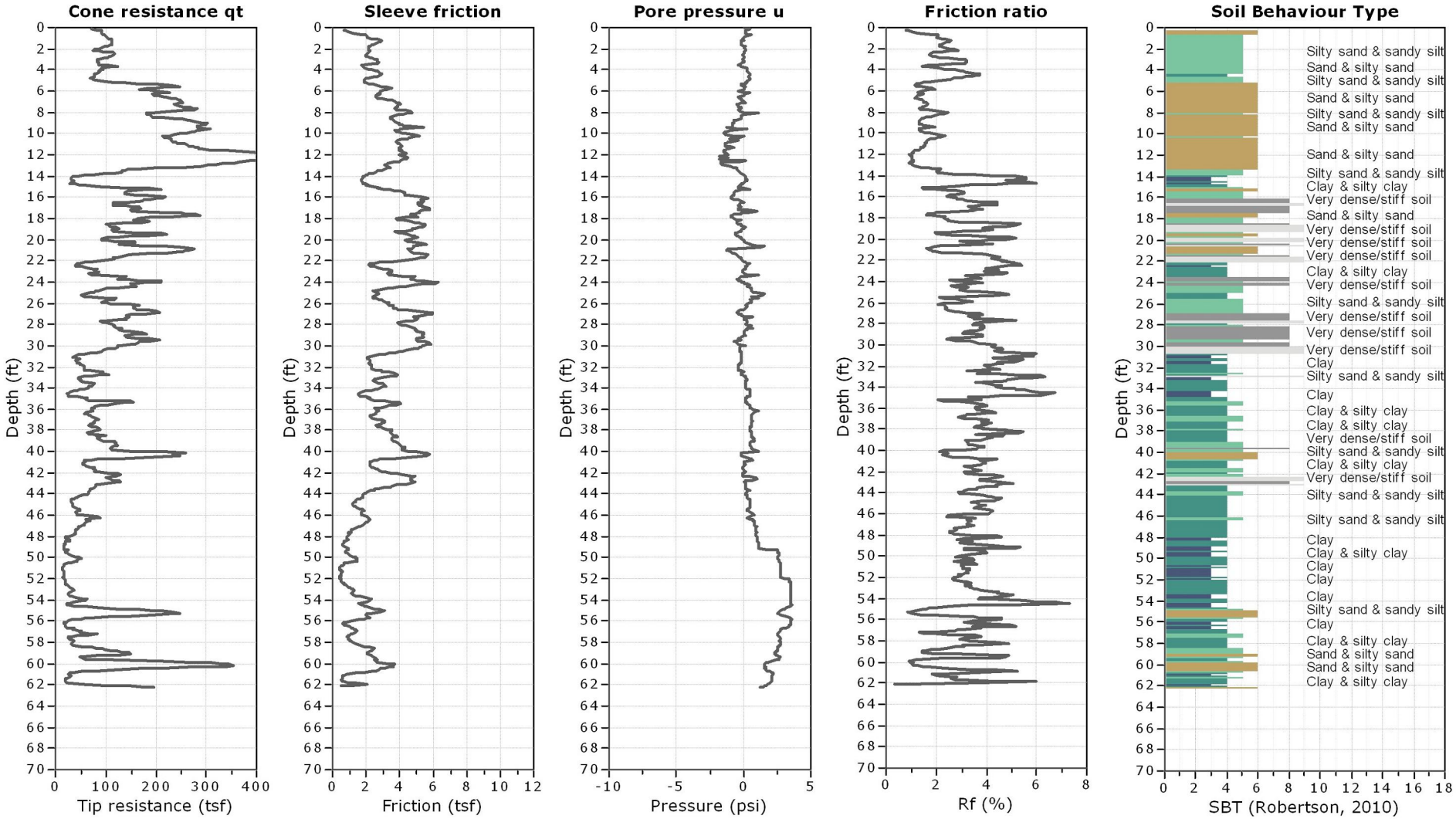
CPT: CPT-4

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 62.25 ft, Date: 7/22/2014
Cone Type: Vertek



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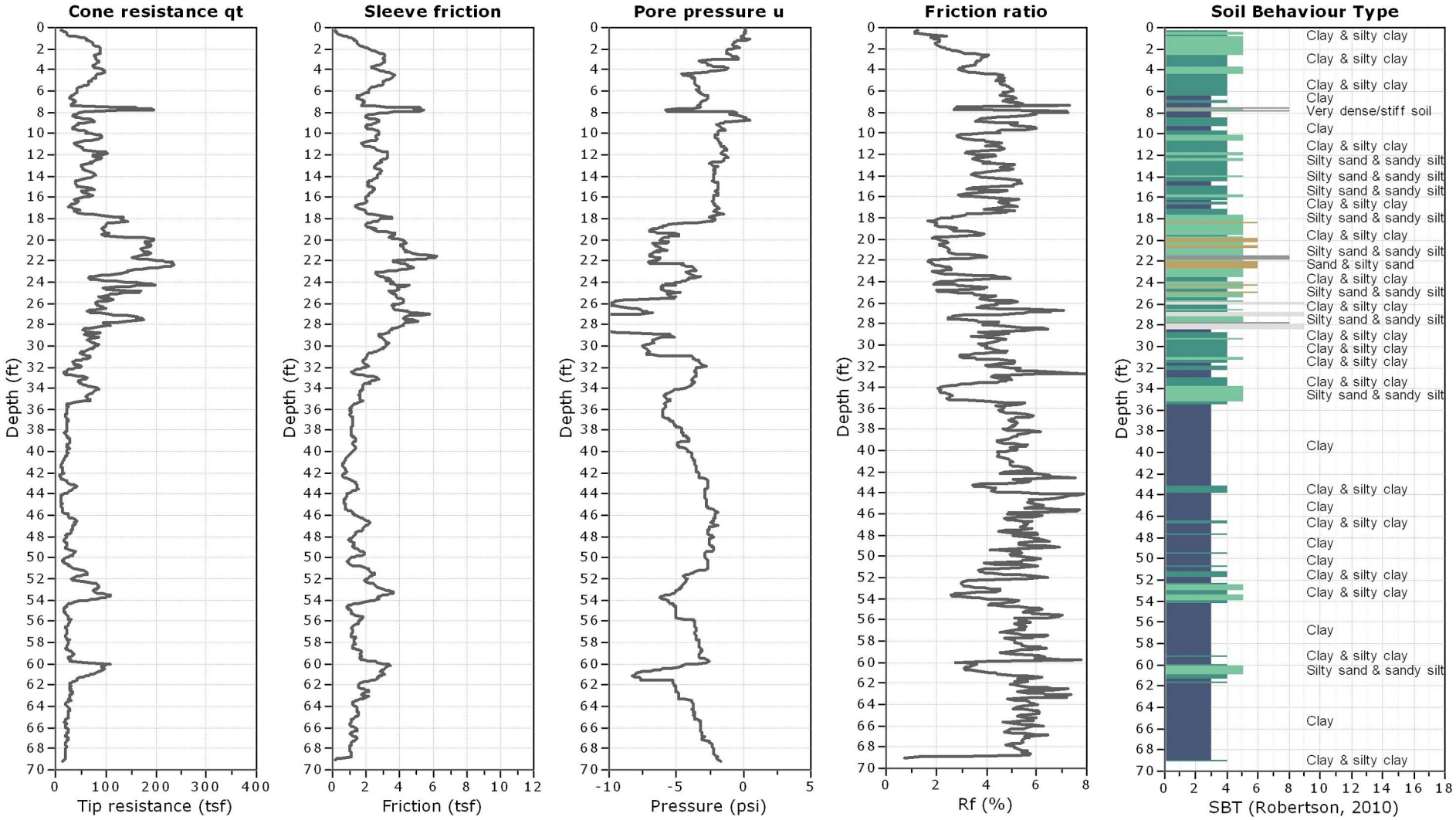
CPT: CPT-5

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 69.17 ft, Date: 7/22/2014
Cone Type: Vertek



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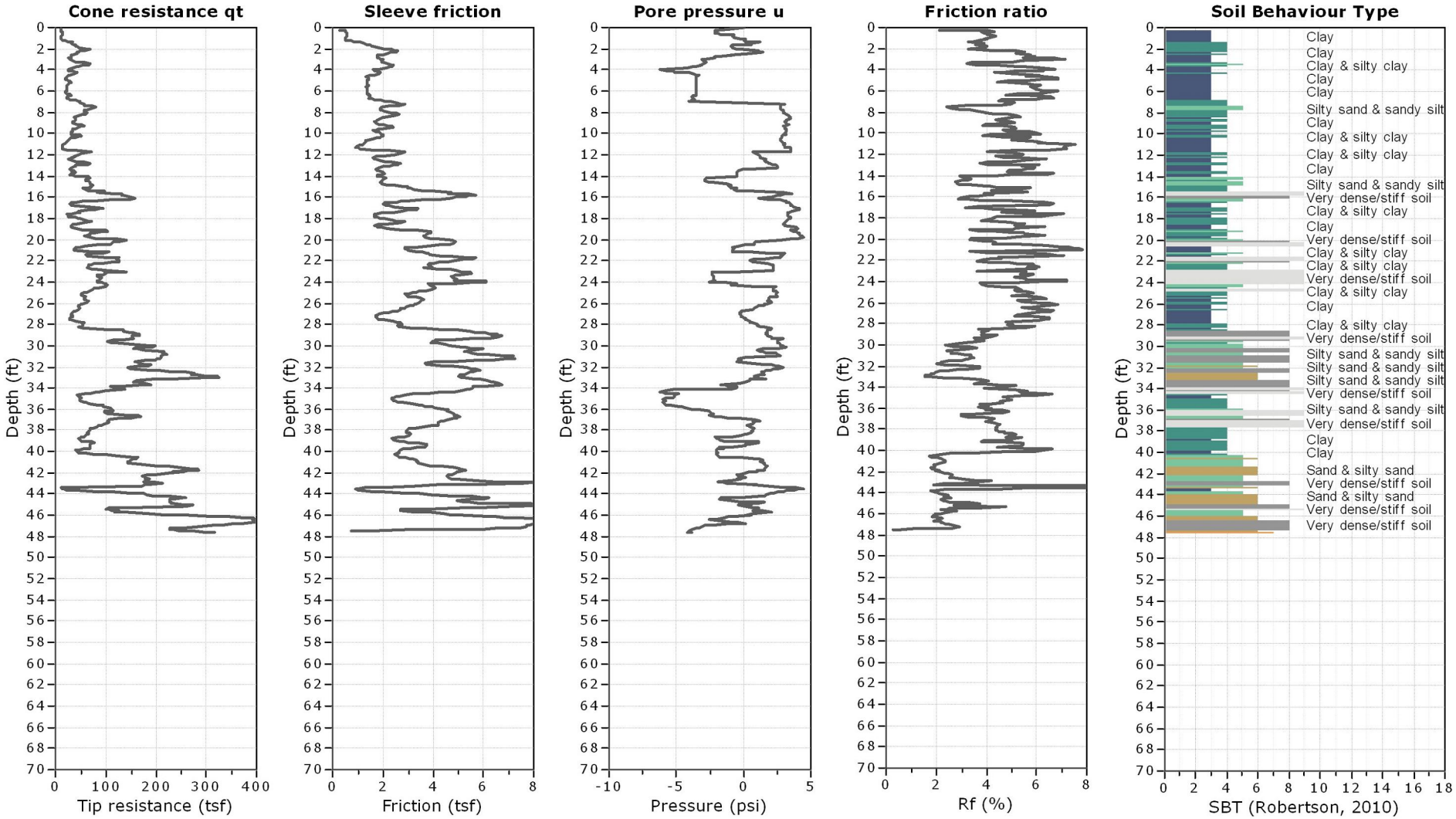
CPT: CPT-6

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 47.65 ft, Date: 7/22/2014
Cone Type: Vertek



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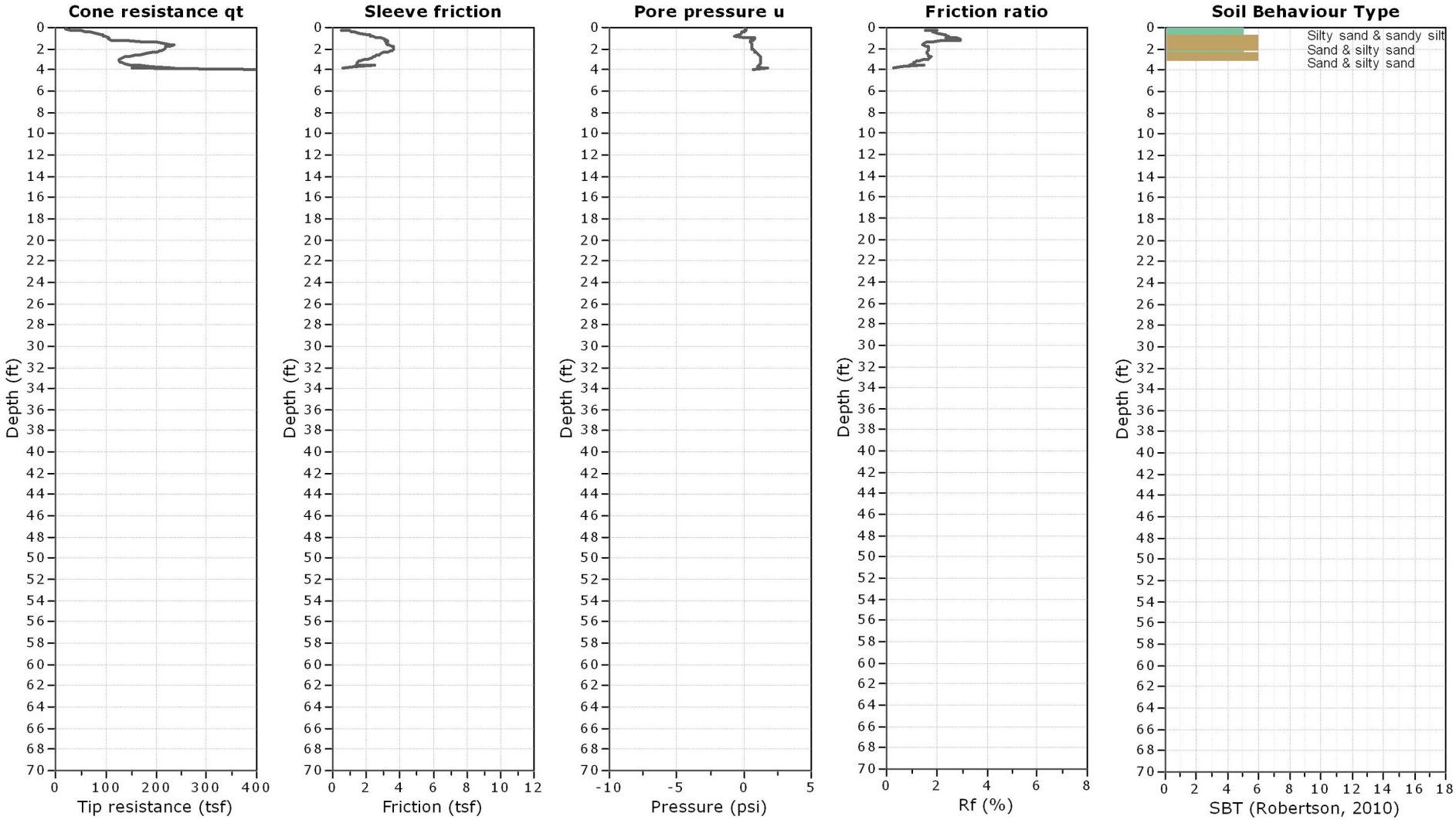
CPT: CPT-7

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 3.90 ft, Date: 7/22/2014
Cone Type: Vertek



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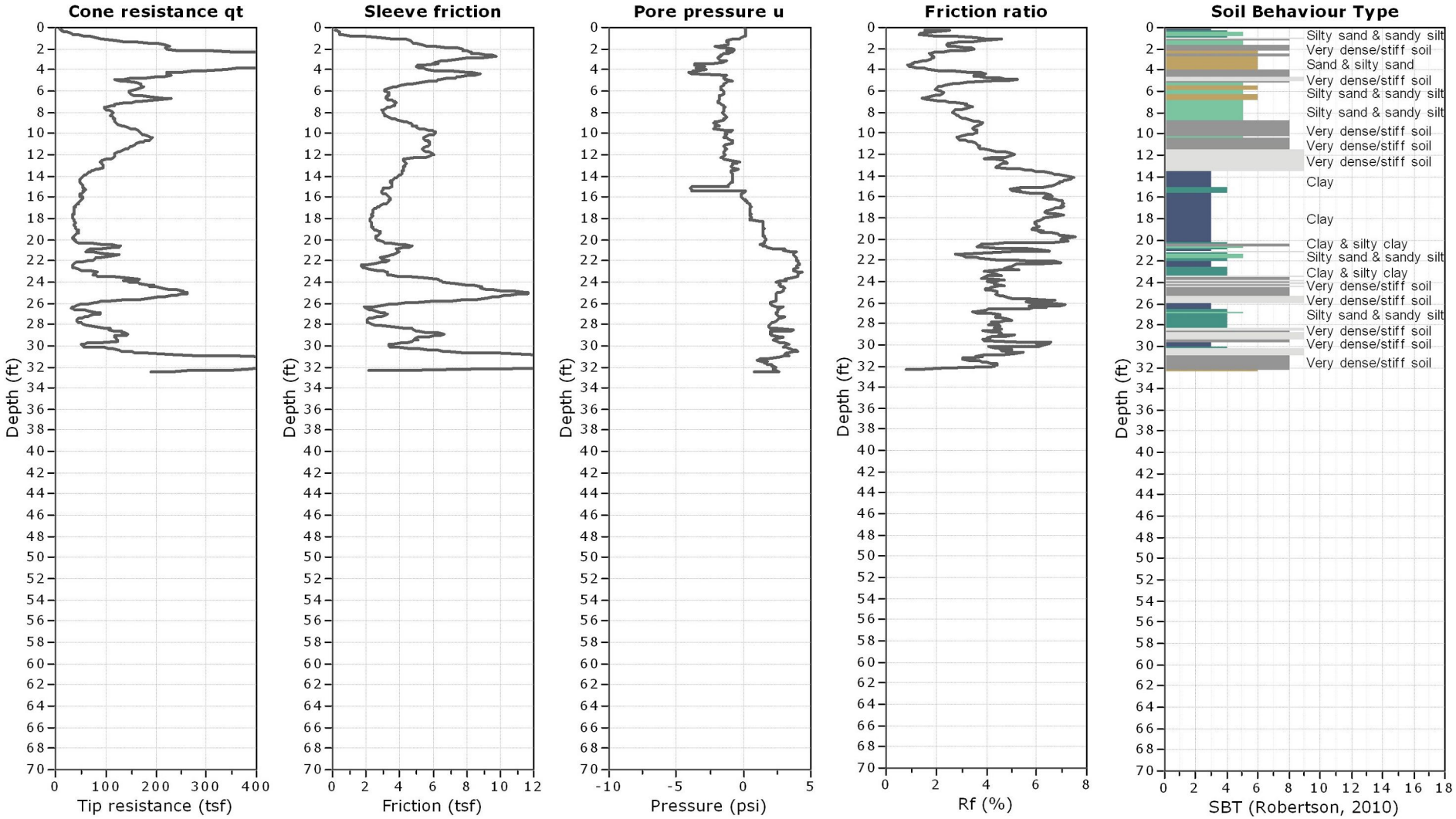
CPT: CPT-8

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 32.50 ft, Date: 7/23/2014
Cone Type: Vertek



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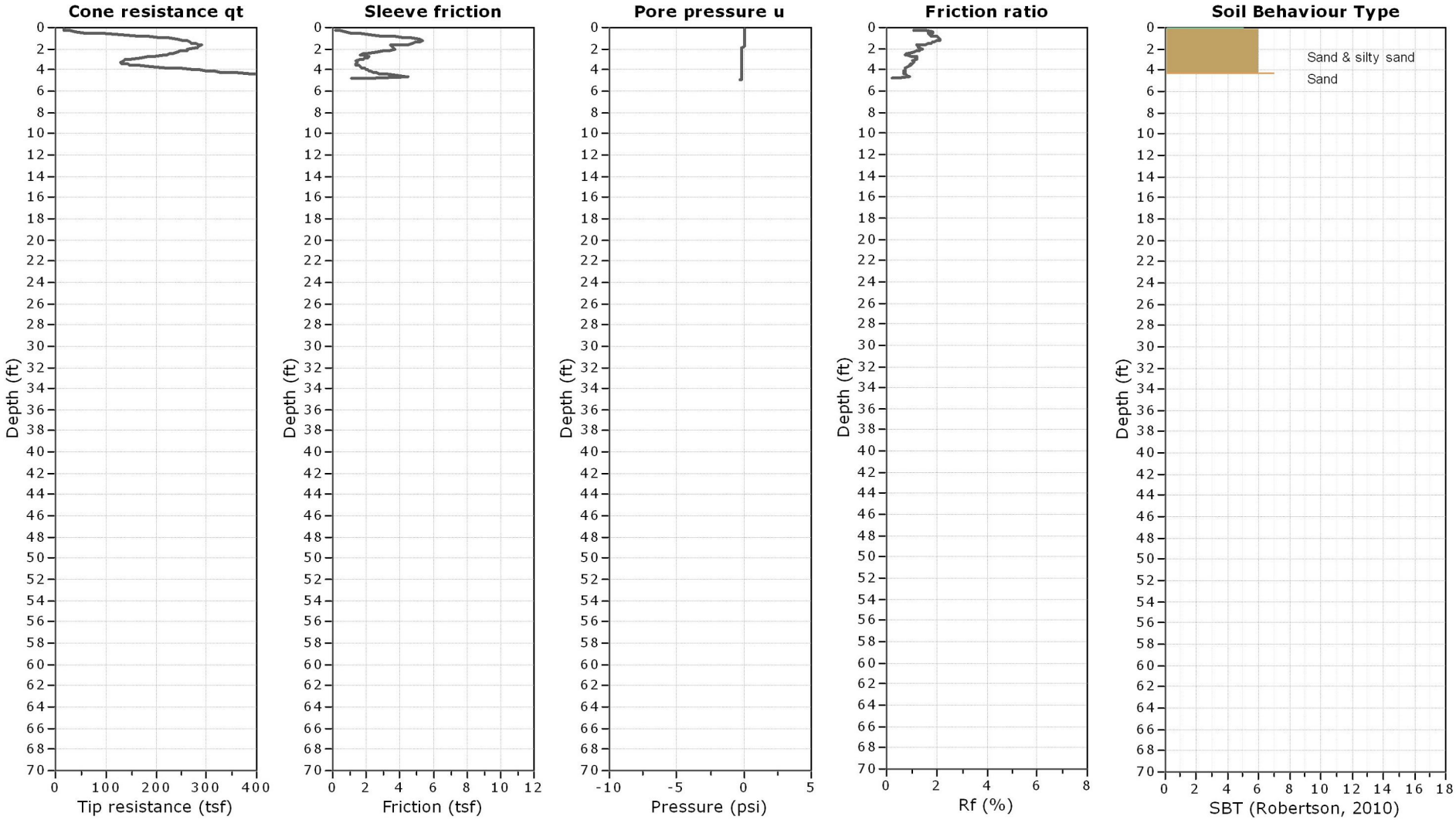
www.kehoetesting.com

CPT: CPT-9A

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 4.96 ft, Date: 7/24/2014
Cone Type: Vertek



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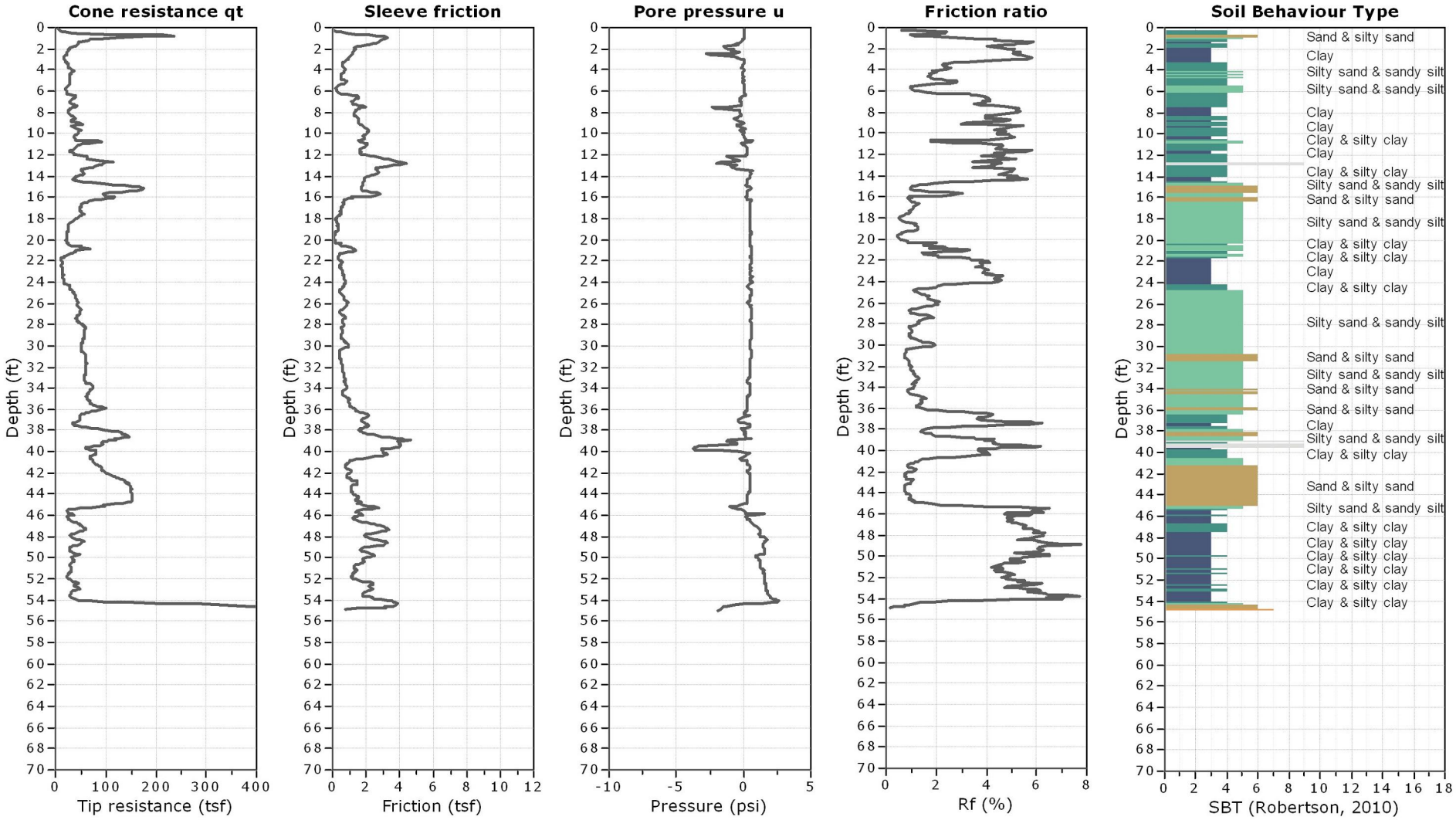
www.kehoetesting.com

CPT: CPT-10

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 54.96 ft, Date: 7/24/2014
Cone Type: Vertek

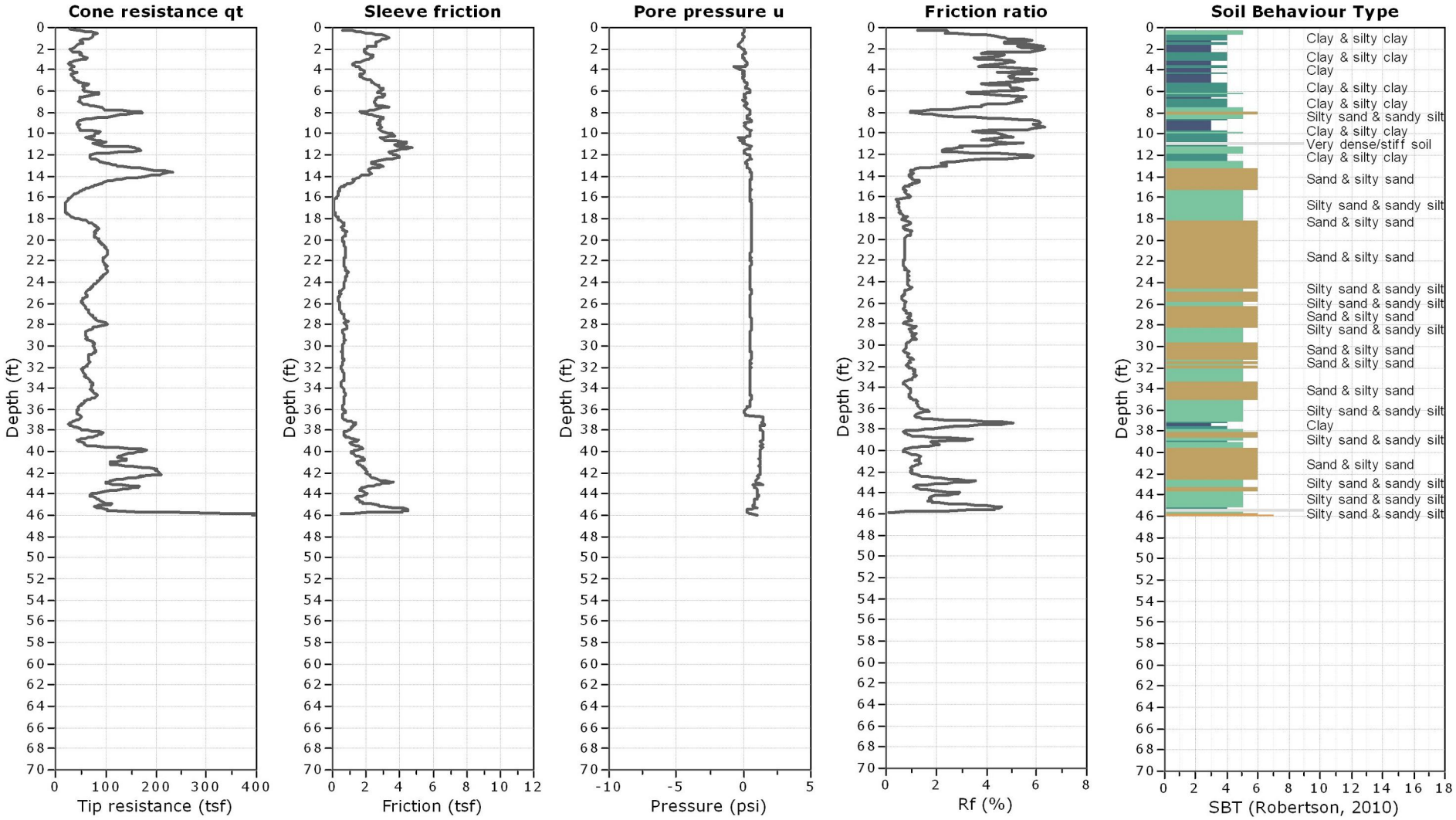


Kehoe Testing and Engineering
714-901-7270
rich@kehoetesting.com
www.kehoetesting.com

CPT: CPT-11B

Project: **LGC Geotechnical, Inc./Westridge Golf Course**
Location: **1400 La Habra Hills Dr. La Habra Heights, CA**

Total depth: 46.03 ft, Date: 7/24/2014
Cone Type: Vertek



From GMU, 1996

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 257±FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary Bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 41 FEET DIAMETER(S) OF HOLE 24 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 1/30/96

REMARKS

Bottom at 41 feet
No caving or water
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
	COLLUVIUM/OLDER ALLUVIUM, (Qcol/Qoal)	SILTY SAND (SM), fine, light brown, dry to damp, loose;	255									
5		becoming very fine below 3 feet;		5			P	2400	5	101		
		becoming tan to light brown below 5 feet;	250									
10		rounded, medium gravel at 8 feet.		10			5	2400	4	110		CN
		WELL GRADED SAND (SW), with gravel, light brown, damp, medium dense.	245									
15		SILTY SAND (SM), fine, tan to light brown, damp, medium dense;		15			3	2400	7	111		
			240									
20		with very fine sand at 20 feet;		20			3	2400	8	107		CN
			235									
25				25			2	1550	12	104		
		damp to moist below 28 feet.	230									
30		SILT (ML), with very fine sand, light brown, damp to moist, stiff, slightly porous; becoming mottled olive gray to light brown below 30 feet.		30			6	1550	17	103		
			225									
35				35			7	1550	23	99		
			220									
	SAN PEDRO FM, (Qsp), siltstone	SILT (ML), mottled olive gray to light brown, moist, stiff.										

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 1

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.1

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA			TEST DATA			ADDITIONAL TESTS
						SAMPLE	NUMBER OF BLOWS	DRIVING WEIGHT (pounds)	MOISTURE CONTENT	DRY DENSITY (pcf)	RELATIVE COMPACT.	
						■	8	1550	24	97		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 1

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.1

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 295± FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 56 FEET DIAMETER(S) OF HOLE 24 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 2/7/96

REMARKS

Bottom at 56 feet
No water or caving
Hole backfilled with native soils

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	NUMBER OF BLOWS	DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	DRY DENSITY (pcf)	RELATIVE COMPACT.	ADDITIONAL TESTS
	FILL (Af), very fine grained sand	SILTY SAND (SM), light brown, damp, loose to medium dense; becoming light olive brown in color below 3 feet.	295									
5		SILT (ML) with fine sand, light olive brown, damp, firm,	290	5			1	2400	14	101		
10		becoming moist below 9 feet.	285	10			1	2400	16	99		
15		SILTY SAND (SM), fine, light brown, damp to moist, loose to medium dense.	280	15			1	2400	10	110		
	COLLUVIUM/ALLUVIUM (Qcol/Qoal)	SILTY SAND (SM), fine, olive brown, moist, medium dense;										
20			275	20			3	2400	11	114		
25		less fines at 25 feet.	270	25			4	1550	12	81		
		LEAN CLAY (CL), olive, moist, stiff.										
30			265	30			6	1550	19	106		
		SILTY SAND (SM) with small gravel, olive brown, moist, medium dense.										
35		LEAN CLAY (CL) with silt, olive, wet, firm;	260	35			3	1550	21	102		
			255									

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 4

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.4

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
		with some fine sand at 41 feet.	255				P	1550	25	100		
45			250	45			9	1550	25	98		
	SAN PEDRO FM (Qsp), siltstone	SILT (ML), olive gray, moist, stiff, slightly micaceous;										
50		becoming gray below 50 feet.	245	50			50	850	23	106		
55			240	55			35	850	22	105		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 4

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.4

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 275±FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rovary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 60 FEET DIAMETER(S) OF HOLE 24 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 2/7/96

REMARKS

Bottom at 56 feet
No water or caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
0	FILL (Af)	SILTY SAND (SM), fine brown, damp, loose;	275	0								
5		becoming light brown below 4 feet;	270	5			2	2400	5	110		
		becoming brown in color below 8 feet.										
10	COLLUVIUM/OLDER ALLUVIUM (Qcol/Qoal)	SILTY SAND (SM), fine, brown, damp, medium dense;										
		with medium to coarse sand at 10 feet;	265	10			3	2400	6	114		
15		with some small gravel at 13 feet;	260	15			2	2400	5	112		
		moist at 16 feet;										
20		damp below 20 feet;	255	20			4	2400	4	113		
	large rounded gravel at 21 feet											
25		fine to medium sand at 26 feet.	250	25			3	1550	6	110		CN
30			245	30			7	1550	5	116		
		WELL GRADED SAND (SW), light brown, damp, medium dense;										
35		small gravel at 33 feet;	240	35			8	1550	3	119		
			230									

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 5

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.5

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
		becoming damp to moist below 40 feet.	235				8	1550	7	117		CN
		SILTY SAND (SM), light brown, damp to moist, medium dense.										
45		WELL GRADED SAND (SW) with gravel, light brown, damp, medium dense.	230	45			10	1550	8	115		
	SAN PEDRO FM (Qsp), siltstone	SILT (ML), olive, moist, stiff;										
50			225	50			16	850	26	98		
		becoming olive-gray in color below 53 feet.										
55			220	55			21	850	28	95		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 5

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.5

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 410±FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 61 FEET DIAMETER(S) OF HOLE 24 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 2/13/96

REMARKS

Bottom at 61 feet
No water or caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	NUMBER OF BLOWS	DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	DRY DENSITY (pcf)	RELATIVE COMPACT.	ADDITIONAL TESTS
	FILL (Af)	SILT (ML), light brown, dry to damp, firm.	410									
	LANDSLIDE DEBRIS (Qls), light brown silt with fine sand, highly fractured with rootlets to 8 feet.	SILT (ML), light brown, damp, firm;										
5		becoming orange brown below 5 feet.	405	5								
10	sharp contact with fine grained sand, B-N85E, 28SE, at 9 feet	POORLY GRADED SAND (SP), fine, light brown, damp.	400	10			4	2400	3	101		
15	contact with coarse grain sand, B-N15E, 50SW at 14 feet		395	15								
	3" clay bed highly sheared, B-N30W, 45SW, at 17 feet, becoming a gray silt below 17 feet	SILT (ML), olive, damp to moist, firm to stiff;										
20	stiff below 21 feet	becoming olive gray below 20 feet.	390	20			6	2400	18	105		
25	slightly micaceous below 25 feet		385	25								
	bedding within slide, B-N40W, 12NE at 29 feet											
30	1/2" thick fine sand layer, B-N40E, 15NW at 34 feet, 2" thick clay shear, rupture surface, RS-N10W, 20SW, at 35 feet		380	30			10	1550	23	102		
35	SAN PEDRO FM (Qsp), olive siltstone with very fine sand	SILT (ML), olive gray, damp to moist, firm to stiff;	375	35								
			370									

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 17

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.17

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	TEST DATA: ADDITIONAL TESTS
		slightly micaceous with fine sand below 40 feet.	370				12	1550	21	103		
	bedding break, B-N70E, 9NW, at 42 feet, gray siltstone, slightly fractured below 42 feet											
45	J-N50W, 55NE		365	45								
	thinnly bedded siltstone, B-N25E, 8NW at 47 feet											
50			360	50			50	850	25	102		
	J-N40W, 60NE, at 51 feet											
55	shear, S-N30W, 42NE, at 55 feet		355	55								
60			350	60			33/8"	850	21	98		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 17

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.17

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 270±FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH 41.0 ELEVATION 229.0
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 61 FEET DIAMETER(S) OF HOLE 24 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 2/14/96

REMARKS

Bottom at 61 feet
Seepage at 41 feet, no caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	NUMBER OF BLOWS	DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	DRY DENSITY (pcf)	RELATIVE COMPACT.	ADDITIONAL TESTS
	ASPHALT, 2" thick asphalt FILL (Af), with 2" diameter, well rounded gravel	SILTY SAND (SW), fine, tan to light brown, dry to damp, loose.	270									
	LANDSLIDE DEBRIS (Qls), light brown, fine sandy silt, soft to 17 feet	SILT (ML) with small gravel, light brown, damp, firm.										
5			265	5								
10			260	10			2	2400	7	103		
15			255	15								
	silty, fine grained sand, below 17 feet	SILTY SAND (SM), fine to medium, reddish light brown, damp, medium dense;										
20	abundant well rounded pebbles, gradational contact to a fine grained yellow brown, friable sand below, 20 feet	with some gravel and small cobbles below 20 feet.	250	20			8	2400	5	114		
		POORLY GRADED SAND (SP), reddish light brown, damp, medium dense;										
25	silty fine sand, moderatly dense below 24 feet	change to tan light brown below 25 feet.	245	25								
	gradational change to a silt with very fine sand below 28 feet	SILTY SAND (SM), fine, tan to light brown, damp, medium dense.										
30			240	30			20	1550	13	100		
		SILT (ML) with fine sand, tan to light brown, damp to moist, stiff;										
35	olive color silt, stiff, slightly, micaceous below 35 feet orange rust staining between fractures at 37 feet 4" thick fine moist to wet sand layer, B-N50W, 35NE, at	becoming light olive in color below 37 feet.	235	35								
			230									

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 19

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.19

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
	39 feet rupture surface, clay shear with seepage, RS-N45W, 50NE at 41 feet		230				10	1550	23	102		
45	SAN PEDRO FM (Qsp), gray color siltstone, highly fractured to 45 feet	SILT (ML), gray, moist, firm becoming gray in color below 44 feet; micaceous below 45 feet.	225	45								
	bedding break, N10E, 14NW, at 48 feet											
50			220	50			30	850	25	101		
	very stiff below 54 feet											
55	bedding break, B-N50W, 6SW, at 55 feet		215	55								
60	1" thick hard silicious layer with slight seepage, N-S, 12SW at 59 feet		210	60			35	850	24	102		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 19

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.19

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 485±FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 66 FEET DIAMETER(S) OF HOLE 24 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 2/16/96

REMARKS

Bottom at 66 feet
No water or caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
	TOPSOIL, dark brown clay with rootlets	LEAN CLAY (CL), brown, damp to moist, firm to stiff, with rootlets.	485									
5	SAN PEDRO FM (Qsp), olive gray siltstone with orange staining, weathered to 6 feet 3" thick gray clay layer, B-N55W, 14NE, at 5 feet gradational change to fine grained sand at 6 feet change back to siltstone below 7 feet caliche streaking at 8.5 feet	SILT (ML), light gray, moist, firm to stiff; becoming olive color below 8 feet;	480	5								
10	becoming thinnly bedded at 10 feet, with interbedded fine sand layers approx. 2" thick 1/4" thick gypsum bed, B-N70W, 15NE, at 11 feet B-N60W, 18NE, at 13 feet	becoming stiff below 10 feet;	475	10			8	2400	11	102		
15	12" thick dark gray clay bed at 15 feet shear with hairline roots, S-N20W, 44SW, at 16 feet	becoming olive gray in color below 15 feet;	470	15								
20	Approx. B-N-S, 12E, at 18 feet olive color, very fine grained sand below 19 feet fine sand at 21 feet	change to light gray below 18 feet, with fine sand;	465	20			6	2400	8	99		
25	olive silt below 23 feet B-N40W, 18NE, at 24 feet		460	25								
30	becoming very stiff below 27 feet very fine sand at 28 feet gypsum lined joint, J-E-W, vertical at 29 feet		455	30			14	1550	20	103		
35	1 foot layer fine sand at 33 feet 1 foot layer olive gray silt, very stiff at 34 feet light gray silty sandstone below 36 feet		450	35								

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 21

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.21

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
		with very fine sand at 40 feet.	445				17	1550	11	119		
	5" thick layer of silty fine sandstone at 42 feet fine grained sandstone below 44 feet 4" thick sandy gravel offset by fault, S-N20W, 50SW, at 45 feet 6" thick olive siltstone bed at 45.5 feet well graded friable sandstone below 46 feet	SILTY SAND (SP), fine, light gray, damp, dense; moist at 45 feet.	440	45								
50	abundant pebbles and gravel, well rounded below 47 feet 4" thick clay shear, gypsum within clay, S-N50E, 38NW, at 50 feet	WELL GRADED SAND (SW) with gravel, light gray, damp, dense.	435	50			30/10"	850	6	110		
55	18" thick gravel bed, approximate bedding, B-N70E, 30NW, at 55 feet fine grained sandstone, light gray below 55 feet dark gray siltstone at 58 feet		430	55								
		POORLY GRADED SAND (SP), fine, light gray, damp, dense.										
60	2" thick, very moist clay bed, B-N50E, 18NW, at 59 feet 4", well cemented, sandy conglomerate at 60 feet, shear S-N85, 50NW	SILTY GRAVEL (GM), medium, light brown to gray, damp to moist, dense.	425	60								
65		WELL GRADED SAND (SW), light gray, damp, dense.	420	65			40/9"	850	2	132		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 21

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.21

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 485± FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 51 FEET DIAMETER(S) OF HOLE 24 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 2/16/96

REMARKS

Bottom at 50.5 feet
No water or caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
0	SAN PEDRO FM (Qsp), brown color fine sandstone with rootlets light brown silt at 1 foot 1/4" thick clay bed, B-N20W, 8NE, at 1.5 feet 2" thick fine to medium grained sand layer at 2 feet thinnly bedded siltstone below 2.5 feet 1" thick gypsum layer, rust stained, B-N10E, 15SE, at 4 feet massive olive siltstone below 5 feet becoming a fine sandy siltstone below 9 feet dense olive gray silty fine sandstone, moderatly bedded, below 10 feet fine grained friable sandstone below 15 feet becoming fine to medium grained below 18 feet 6" thick well graded sand layer at 20 feet 2" thick clay bed, B-N80W, 16NE, at 20.5 feet 6" thick gravel layer at 22 feet fine sandstone below 22.5 feet gravel layer between 24 and 27 feet 6" thick siltstone blebs within gravel, clay shear seperating small and larger gravel, S-E-W, 55N, at 24 feet coarse sand with gravel below 27 feet B-N80E, 14NW, at 29 feet 6" thick claybed, B-N55W, 11NE, at 32 feet friable fine sand at 33 feet well graded sand below 33 feet 3" thick gravel layer, B-N55W, 18NE, at 38 feet massive fine sandstone below	SILTY SAND (SW), fine, light brown, damp, loose.	485	0								
5			480	5								
		SILT (ML), olive gray, moist, stiff.										
10			475	10			10	2400	15	105		
15		SILTY SAND (SW), fine, light brown, damp to moist, dense.	470	15								
20			465	20			15	2400	4	109		
25			460	25								
30		POORLY GRADED GRAVEL (GP), tan to light brown, damp, dense.	455	30								
		SILTY SAND (SW), fine, light brown, damp, dense.										
35			450	35			20/10"	1550	4	103	85	CP,CS,HY,AL,EI,CH,DS(R)
		POORLY GRADED SAND (SP), fine, light gray, damp, dense.										
			445									

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 22

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.22

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
	39 feet		445									
45			440	45			30/10"	1550	7	99		
50			435	50			40/5"	850	3	106		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 22

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.22

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills,
GROUND SURFACE ELEVATION 425± FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 61 FEET DIAMETER(S) OF HOLE 24 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 2/19/96

REMARKS
Bottom at 61 feet
No water or caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
	TOPSOIL, slightly porous brown clay	LEAN CLAY (CL), brown, damp to moist, firm.	425									
	SAN PEDRO FM (Qsp), alternating layers of fine sands and silts to 8 feet, hairline rootlets along joint/fractures to 10 feet B-N65W, 5NE, at 5 feet	POORLY GRADED SAND (SP), very fine, olive brown, damp to moist, loose.	420	5								
10	B-N25E, 15SE, at 9 feet 4" thick fine sand layer, gray silt with fine sand below 9.5 feet becoming stiffer below 11 feet	LEAN CLAY (CL) with fine sand, olive, moist, stiff.	415	10			4	2400	22	98		
15	light gray fine grained friable sand below 14 feet, approx. bedding, B-N65W, 15NE, at 14 feet olive gray silt below 17 feet, B-N60W, 20NE, at 17 feet	POORLY GRADED SAND (SP), fine, olive, moist, medium dense.	410	15								
		SILTY SAND (SM), fine, olive, moist, stiff, medium dense.										
20	siltstone highly fractured below 20 feet	LEAN CLAY (CL) with fine sand, olive, moist, stiff with orange rust staining.	405	20			4	2400	21	103		
	shear with polished surface, S-N80E, 55NW, at 23 feet	SILT (ML), olive gray, moist, stiff.										
25	B-N60E, 20NW, at 25 feet 1 foot layer fine sand at 27 feet olive gray silt below 28 feet		400	25								
30	silty fine sandstone below 30 feet		395	30			8	1550	20	100		
35	dense fine grained sand below 34 feet	SILTY SAND (SM), fine, olive, damp to moist, medium dense.	390	35								
	2" thick silt bed, B-N50W, 15NE, at 37 feet shear, S-N35E, 18SE, at 38 feet		380									

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 24

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.24

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
			385									
	B-N30E, 20SE, at 43 feet						12	1550	19	100		
45	fine to medium sand below 44.5 feet		380	45								
	dark gray siltstone, B-N70W, 14NE, at 46 feet											
	gradational change to silty fine grained sand below 47 feet	POORLY GRADED SAND (SP), fine, light gray, dense.										
50			375	50			25	850	16	99		
	gray silt with fine sand below 51 feet	LEAN CLAY (CL), gray, moist, stiff.										
	dark gray clay stone, very stiff and moist below 53 feet	SILT (ML), olive gray, moist, stiff.										
55	end visual log at 53 feet		370	55								
60			365	60			24	850	20	105		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 24

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.24

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 222± FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rovary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 61 FEET DIAMETER(S) OF HOLE 18 INCHES

SAMPLING INFORMATION
SAMPLER(S) Oen drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 3/4/96

REMARKS
No water or caving
Hole tamped while backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	NUMBER OF BLOWS	DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	DRY DENSITY (pcf)	RELATIVE COMPACT.	ADDITIONAL TESTS
	ASPHALT, 3"	SILTY SAND (SW), fine to medium, dark gray, damp to moist, medium dense;										
	FILL (Af), red brick pieces	becoming brown in color below 2 feet;	220									
		petroleum odor at 4 feet; becoming very fine grained below 5 feet		5								
5	COLLUVIUM/OLDER ALLUVIUM (Qcol/Qoal)	SILT (ML) with fine sand, olive, moist, firm to stiff;					1	2400	10	108		
			215									
10				10			1	2400	12	104		
			210									
15		becoming light olive color below 15 feet.		15			2	2400	9	111		
			205									
20		SILTY SAND (SW), fine to medium, with small gravel, olive, moist, medium dense.		20			3	2400	8	113		
			200									
25		SILT (ML) with small gravel, olive, moist, firm to stiff;		25			3	1550	13	109		
			195									
30		with some fine sand at 30 feet.		30			5	1550	11	115		
			190									
35		CLAYEY SAND (SC), fine, brown, moist, medium dense.		35			6	1550	15	116		
			185									

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 25

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.25

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
45		SILTY SAND (SM), fine, brown, moist, medium dense.	180	45			5	1550				
							14	1550				
			175									
50		LEAN CLAY (CL), grayish-brown, moist to wet, firm.		50			10	850				
			170									
55	SAN PEDRO FM (Qsp), siltstone	SILT (ML), olive, moist, stiff; becoming gray in color below 57 feet.		55			25	850				
			165									
60				60			35	850				

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 25

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.25

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 230±FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH 50.0 ELEVATION 180.0
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 56 FEET DIAMETER(S) OF HOLE 18 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 3/4/96

REMARKS

Bottom at 56 feet
Water at 50 feet, no caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	NUMBER OF BLOWS	DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	DRY DENSITY (pcf)	RELATIVE COMPACT.	ADDITIONAL TESTS
0	COLLUVIUM/OLDER ALLUVIUM (Qclo/Qoal)	SILTY SAND (SW), fine, light brown, damp, loose.	230									
5			225	5			2	2400	5	101		
10		SILT (ML), with fine sand, light brown, damp, firm.	220	10			2	2400	8	106		
15			215	15			2	2400	9	105		
20		SILTY SAND (SW), fine, with small to medium gravel, light brown, damp, medium dense.	210	20			2	2400	8	107		
25		SILT (ML) with fine sand, light brown, damp, firm; becoming stiff below 25 feet.	205	25			4	1550	7	108		
30			200	30			5	1550	4	114		
35		SILTY SAND (SW), fine, light brown, damp, medium dense.	195	35			7	1550	8	111		
			190									

LEGEND ON PLATE A-3

LOG OF DRILL HOLE

DH 26

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
		LEAN CLAY (CL) with fine sand, brown, moist, firm to stiff.	190				4	1550	16	105		
45		SILTY SAND (SM), fine, light brown, damp, medium dense; becoming moist below 46 feet; seepage at 50 feet.	185	45			11	1550	10	97		
50	SAN PEDRO FM (Qsp), siltstone	SILT (ML) with fine sand, olive brown, wet, stiff; mottled olive-grey below 52 feet	180	50			20	850	26	97		
55			175	55			11	850	25	98		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 26

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.26

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 205± FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH 20.0 ELEVATION 185.0
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 41 FEET DIAMETER(S) OF HOLE 18 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 3/18/96

REMARKS

Bottom at 41 feet
Seepage at 20 feet, caving below 20 feet
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	NUMBER OF BLOWS	DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	DRY DENSITY (pcf)	RELATIVE COMPACT.	ADDITIONAL TESTS
	FILL (Qaf)	SILTY SAND (SM), fine, damp to moist, loose to medium dense.	205				4	1550				
5	COLLUVIUM/OLDER ALLUVIUM (Qccol/Qoal)	FAT CLAY (CH), dark brown, moist, firm;	200	5			P	2400	17	99		CN
		light yellow brown at 7 feet.										
10		SILT (ML), light brown, moist, firm;	195	10			1	2400	17	102		CN
		very moist, yellow brown at 12 feet;										
15		becoming brown in color at 15 feet;	190	15			1	2400	17	107		
20		moist to wet below 20 feet, seepage at 20 feet.	185	20			1	2400	22	99		
25		LEAN CLAY (CL), yellowish brown, wet, stiff.	180	25					20	108		
30			175	30			1	1550	19	109		
		LEAN CLAY (CL), yellowish brown, wet, stiff.										
35			170	35			2	1550	25	98		
			165									

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 27

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.27

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA			TEST DATA			ADDITIONAL TESTS
						SAMPLE	NUMBER OF BLOWS	DRIVING WEIGHT (pounds)	MOISTURE CONTENT	DRY DENSITY (pcf)	RELATIVE COMPACT.	
			165			■	3	1550	20	107		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 27

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.27

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 295± FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 31 FEET DIAMETER(S) OF HOLE 18 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 3/18/96

REMARKS

Bottom at 31 feet
No water or caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
	FILL (Qaf)	SILT (ML) with fine sand, light brown, dry to damp, loose;	295									
5		with some coarse grain sand at 5 feet;	290	5			P	2400	7	98		
10		roots and organic debris at 9 feet.	285	10								
15	COLLUVIUM/OLDER ALLUVIUM (Qcol/Qoal)	SILT (ML) with clay, olive brown, moist, firm;	280	15			P	2400	15	102		
20	SAN PEDRO FM (Qsp), siltstone	SILT (ML), olive, moist, stiff;	275	20			5	2400	20	106		
25		becoming olive gray below 28 feet.	270	25								
30			265	30			12	1550	24	102		

LEGEND ON PLATE A-3

SHEET 1 OF 1

LOG OF DRILL HOLE

DH 29

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.29

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 265± FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 51 FEET DIAMETER(S) OF HOLE 18 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 3/19/96

REMARKS

Bottom at 51 feet
No water or caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
	TOPSOIL, brown, very moist clay, soft to firm	FAT CLAY (CH), dark brown, moist, firm.	265									
5	LANDSLIDE DEBRIS (Qls), highly weathered, slightly porous silt	SILT (ML) with clay, light brown, moist, firm.	260	5								
10	rootlets to 10 feet	SILTY SAND (SM), fine, olive, damp, medium dense.	255	10			5	2400	16	98		
15	silt with fine sand, no discernable bedding at 14 feet 1 foot thick dark gray clay shear with slicken sides, S-N60W, 22NE, at 18 feet	LEAN CLAY (CL), olive, moist, firm.	250	15			3	2400	25	96		
20	SAN PEDRO FM (Qsp), ~~siltstone, massive bedding~~	SILT (ML) with clay, olive-gray, moist, stiff.	245	20			5	2400	24	99		
25	light gray, medium grained sand, slightly friable, B-N35W, 20NE at 26 feet	WELL GRADED SAND (SW), orange-brown, damp to moist, dense.	240	25			17	1550	24	98		
30			235	30			9	1550	10	111		
35	gray, fine sand B-N25W, 20NE, at 32 feet orange-brown, silty fine sand below 37 feet	POORLY GRADED SAND (SP), fine, gray, damp, dense.	230	35								

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 32

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.32

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
		SILTY SAND (SM), fine, orange-brown, damp, dense.	225				17	1550	10	108		
45			220	45								
50			215	50					11	98		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 32

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.32

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 247± FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 51 FEET DIAMETER(S) OF HOLE 18 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 3/20/96

REMARKS

Bottom at 51 feet
No water or caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
	FILL (Qaf), asphalt at surface, dark brown clay	SILTY SAND (SW), very fine, light brown, damp to moist, loose.	245									
5	SAN PEDRO FM (Qsp), or LANDSLIDE DEBRIS (Qls), olive siltstone firm, massive bedding becoming firmer at 7 feet	SILT (ML) with fine sand, light brown, damp, firm; becoming light olive in color below 8 feet; becoming stiff below 10 feet.	240	5								
10				10			8	2400	15	104		
	B-N55E, 8NW, at 12 feet thinnly bedded below 12 feet		235									
15	B-N45E, 30NW, at 15 feet		230	15								
20	possible rupture surface, 4" thick clay shear, S-N40E, 30NW			20			5	2400	25	99		
	SAN PEDRO FM (Qsp), siltstone, becoming stiffer below 22 feet		225									
25			220	25								
30		LEAN CLAY (CL), olive, moist, stiff.	215	30			14	1550	23	103		
35		SILT (ML), olive, moist, stiff.	210	35								

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 34

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.34

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
		LEAN CLAY (CL), olive, moist, stiff.	205				12	1550	22	104		
45	slightly friable sand below 44 feet, B-N20E, 20NW, at 44 feet	SILTY SAND (SM), fine, light olive, damp to moist, dense.		45								
	large rounded gravel at 48 feet silty clay at 49 feet	POORLY GRADED SAND (SP), fine, light olive, damp, dense.	200									
50		LEAN CLAY (CL), dark olive, moist, very stiff.		50			40	850	23	102		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 34

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.34

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 245± FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 51 FEET DIAMETER(S) OF HOLE 18 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD Kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 3/20/96

REMARKS

Bottom at 51 feet
No water or caving
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	NUMBER OF BLOWS	DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	DRY DENSITY (pcf)	RELATIVE COMPACT.	ADDITIONAL TESTS
	FILL (Qaf), loose, silty sand with rootlets, wood, wire, and asphalt debris dispersed thru-out fill	SILTY SAND (SM), fine, brown, moist, loose.	245									
	1	SILT (ML), light olive, damp to moist, firm.										
5	SAN PEDRO FM (Qsp), olive color very fine grained sandstone, massively bedded to 12 feet	SILT (ML), light olive, damp to moist, firm; with fine sand at 8 feet.	240	5								
10	thinnly beded siltstone, B-N10E, 10SE, at 12 feet very fine grained sandstone below 13 feet	SILTY SAND (SM), fine, tan to light brown, damp, medium dense.	235	10			8	2400	6	104		
15	friable fine sand below 15 feet	POORLY GRADED SAND (SP), fine, orange-brown, damp to moist, medium dense.	230	15								
	well graded sand with rounded gravel at 17 feet sharp contact with olive gray silt at 18 feet	SILT (ML), olive, moist, stiff.										
20	F-N15W, 75SW, at 19 feet, 1 foot seperation of upper sand and lower silt		225	20			6	2400	3	108		
		WELL GRADED SAND (SW), orange-brown, damp, medium dense.										
25	silt becoming very stiff below 23 feet	LEAN CLAY (CL), olive-gray, moist, stiff with rust staining.	220	25								
30			215	30			10	1550	23	101		
35	seepage along 2" thick clay gouge zone, F-N35W, 75SW, at 34 feet	SILT (ML), olive-gray, moist, stiff.	210	35								
			205									

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 35

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.35

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
		LEAN CLAY (CL), olive-gray, moist, stiff;	205				10	1550	25	99		
45		becoming gray in color below 46 feet.	200	45								
50			195	50			30/10"	850	23	101		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 35

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.35

PROJECT Pacfic Coast Homes
LOCATION West Coyote Hills.
GROUND SURFACE ELEVATION 250±FEET
DATUM Mean Sea Level
GROUNDWATER DEPTH _____ ELEVATION _____
DRILLING METHOD Rotary bucket
CONTRACTOR Al-Roy Drilling Inc.
TOTAL DEPTH OF HOLE 41 FEET DIAMETER(S) OF HOLE 24 INCHES

SAMPLING INFORMATION
SAMPLER(S) Open drive sampler with 8-inch sleeve
DRIVING METHOD kelly DROP 12 inches

LOGGED BY EDL
DATE DRILLED 3/20/96

REMARKS

Bottom at 41 feet
No water or caving
Petroleum odor at 29 feet
Hole backfilled

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA: SAMPLE	SAMPLE DATA: NUMBER OF BLOWS	SAMPLE DATA: DRIVING WEIGHT (pounds)	TEST DATA: MOISTURE CONTENT	TEST DATA: DRY DENSITY (pcf)	TEST DATA: RELATIVE COMPACT.	ADDITIONAL TESTS
0	FILL (Gaf)	SILTY SAND (SM), fine, brown, moist, loose.	250									
		SILT (ML), light olive, moist, firm;										
5			245	5								
	COLLUVIUM/OLDER ALLUVIUM (Qcol/Qoal), no visual log due to petroleum fumes	SILT (ML), light olive, moist, firm.										
10			240	10			P	2400	19	106		
15			235	15								
		SILT (ML) with fine sand, olive, moist, firm;										
20		with some clay at 20 feet;	230	20			P	2400	19	100		
	SAN PEDRO FM (Qsp)	becoming very moist at 24 feet.										
25		LEAN CLAY (CL), gray, moist, firm;	225	25								
30		with some dark gray fine sand, and petroleum odor at 29 feet; stiff below 30 feet.	220	30			8	1550	26	98		
35			215	35								
			210									

LEGEND ON PLATE A-3

SHEET 1 OF 2

LOG OF DRILL HOLE

DH 36

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.36

DEPTH	GEOLOGICAL CLASSIFICATION DESCRIPTION	ENGINEERING CLASSIFICATION AND DESCRIPTION	ELEVATION	DEPTH	SOIL SYMBOL	SAMPLE DATA			TEST DATA			ADDITIONAL TESTS
						SAMPLE	NUMBER OF BLOWS	DRIVING WEIGHT (pounds)	MOISTURE CONTENT	DRY DENSITY (pcf)	RELATIVE COMPACT.	
			210			■	12	1550	24	101		

LEGEND ON PLATE A-3

SHEET 2 OF 2

LOG OF DRILL HOLE

DH 36

PROJECT 96-01

Goffman, McCormick & Urban, Inc.

PLATE A-1.36