Report Form: LADOTD - ENGLISH Project File: P:\2014\GEOTECHNICAL\APS1406-G040 HWY 318 AND HWY 90\APS 1406 G040 HWY 318 AND HWY 90 14 OCTOBER.GPJ 10/14/14 12:31

DRILL RIG AND EQUIPMENT: DRILL RIG MODEL: SIMCO 2800 | DRILLING METHOD: WET METHOD | HOLE DIAMETER: 31/8" | SPT HAMMER / ETR: AUTO

DEPTH (Feet)	SOIL TYPE AND COLOR ⊗	WET DENSITY	MOISTURE CONTENT	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200	SPT or UU	FAILURE MODE/ SPT TERMINATION	SAMPLE TYPE NUMBER	ELEVATION
0										10.4
	Stiff, gray, FAT CLAY, (CH)	119	21	54	25		1.64⊕0.80	M.S.	C1	
	Medium stiff, gray, LEAN CLAY, (CL)		25		--				C2	
		124	28	45	20		0.77⊕2.40	M.S.	C3	
	Medium stiff, gray, SILT, (ML) with clay,	124	32	35	7		0.53⊕3.20	M.S.	C4	
10	-soft	121	36	36	10		0.30⊕4.00	M.S.	C5	0.4
		118	34	36	9		0.35⊕4.80	M.S.	C6	
	-very soft	126	34	36	9		0.15⊕5.60	M.S.	C7	
		112	35	35	9		0.14⊕6.40	M.S.	C8	
		111	37	36	9		0.14⊕7.20	M.S.	C9	
20			35		--				C10	-9.6
	Stiff, gray, LEAN CLAY, (CL)	130	24	39	18		1.65⊕9.20	M.S.	C11	
30			19		--				C12	-19.6
	-very stiff	128	20	33	12		2.55⊕14.00	M.S.	C13	
40			31		--				C14	-29.6
	Stiff, gray, FAT CLAY, (CH)	116	37	86	46		1.15⊕18.00	M.S.	C15	
50			28		--				C16	-39.6
		114	37	86	55				C17	
60			33		--	92.1			C18	-49.6
	Stiff, gray, SILT, (ML) with clay	126	29	30	7	85.2	1.34⊕26.00	M.S.	C19	
70			25		--				C20	-59.6
	Very stiff, gray, FAT CLAY, (CH)	131	23	51	32		2.93⊕30.00	M.S.	C21	
80			26		--				C22	-69.6
	Stiff, gray, LEAN CLAY, (CL)	128	32	40	15		1.31⊕34.00	S/S	C23	
90			25	45	27				C24	-79.6
			27	33	13				C25	
100			35		--				C26	-89.6
	Stiff, gray, FAT CLAY, (CH)	130	30	61	34		1.50⊕42.00	S/S	C27	
110			25		--				C28	-99.6
	Stiff, gray, SILT, (ML) with clay		25	36	11	87.5			C29	
120	Very stiff, gray, FAT CLAY, (CH)	124	37	61	35		2.52⊕48.00	S/S	C30	-109.6
	Bottom of hole at 120 feet. Backfilled with grout upon completion.									

BORING NO. BR-10	STA.:	WATER LEVEL:
LATITUDE: 29.86748	OFFSET:	N/A DUE TO WET DRILLING METHOD
LONGITUDE: -91.63548	DATE TAKEN: 6/23/2014	BACKFILL METHOD: GROUT
LRS ID:	STR. NO.:	SQD. LDR.: VG

DRILL RIG AND EQUIPMENT: DRILL RIG MODEL: SIMCO 2800 | DRILLING METHOD: WET METHOD | HOLE DIAMETER: 31/8" | SPT HAMMER / ETR: AUTO

DEPTH (Feet)	SOIL TYPE AND COLOR ⊗	WET DENSITY	MOISTURE CONTENT	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200	SPT or UU	FAILURE MODE/ SPT TERMINATION	SAMPLE TYPE NUMBER	ELEVATION
0										10.7
	Stiff, gray, LEAN CLAY, (CL)		18	47	24				C1	
		122	26	44	20		1.07⊕1.60	M.S.	C2	
	Medium stiff, gray, FAT CLAY, (CH)	121	28	57	35		0.95⊕2.40	M.S.	C3	
			34		--				C4	
	Medium stiff, gray, LEAN CLAY, (CL)	122	31	43	20		0.86⊕4.00	M.S.	C5	0.7
10	-soft		44	42	17	96.9			C6	
			39	38	14				C7	
	Very soft, gray, SILT, (ML) with clay	122	38	37	11		0.24⊕6.40	M.S.	C8	
	Very soft, gray, LEAN CLAY, (CL)	118	33	38	13		0.20⊕7.20	M.S.	C9	
20		118	40	38	15		0.11⊕8.00	M.S.	C10	-9.4
	-medium stiff	126	25	42	23		0.84⊕10.00	M.S.	C11	
30	Very stiff, gray, FAT CLAY, (CH)	130	20	66	46		2.22⊕12.00	M.S.	C12	-19.4
			26		--				C13	
40	-stiff	125	25	64	43		1.87⊕16.00	S/S	C14	-29.4
			30		--				C15	
50	Stiff, gray, SILT, (ML) with clay	122	31	33	9		1.50⊕20.00	S/S	C16	-39.4
			31		--				C17	
60		126	30	36	11		1.79⊕24.00	M.S.	C18	-49.4
			28		--				C19	
70	Stiff, gray, FAT CLAY, (CH)	121	38	60	41		1.81⊕28.00	S/S	C20	-59.4
			22		--				C21	
80	-hard	127	28	71	48		4.35⊕32.00	M.S.	C22	-69.4
			27		--				C23	
90	-very stiff		27	71	48		2.61⊕36.00	S/S	C24	-79.4
			30		--				C25	
100		118	30	71	45		2.01⊕40.00	S/S	C26	-89.4
		123	27	61	44		2.17⊕42.00	M.S.	C27	
110	Stiff, gray, LEAN CLAY, (CL)		25	45	24				C28	-99.4
	Stiff, gray, FAT CLAY, (CH)	119	31	84	56		1.80⊕46.00	S/S	C29	
120	Medium dense, gray, CLAYEY SAND, (SC)		22		--		7-9-9 (18)	4	D30	-109.4
	Bottom of hole at 120 feet. Backfilled with grout upon completion.									

BORING NO. BR-11	STA.:	WATER LEVEL:
LATITUDE: 29.86775	OFFSET:	N/A DUE TO WET DRILLING METHOD
LONGITUDE: -91.63603	DATE TAKEN: 6/24/2014	BACKFILL METHOD: GROUT
LRS ID:	STR. NO.:	SQD. LDR.: VG

DRILL RIG AND EQUIPMENT: DRILL RIG MODEL: SIMCO 2800 | DRILLING METHOD: WET METHOD | HOLE DIAMETER: 31/8" | SPT HAMMER / ETR: AUTO

DEPTH (Feet)	SOIL TYPE AND COLOR ⊗	WET DENSITY	MOISTURE CONTENT	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200	SPT or UU	FAILURE MODE/ SPT TERMINATION	SAMPLE TYPE NUMBER	ELEVATION
0										10.9
	Stiff, gray, LEAN CLAY, (CL)	123	24	35	11		1.49⊕0.80	M.S.	C1	
	Stiff, gray, FAT CLAY, (CH)	115	32	55	32		1.33⊕1.60	S/S	C2	
		122	29	52	29		1.16⊕2.40	M.S.	C3	
	Medium stiff, gray, LEAN CLAY, (CL)		26		--				D4	
10	-soft	120	34	38	12		0.39⊕4.00	M.S.	C5	0.9
			37	39	13				C6	
	Soft, gray, SILT, (ML) with clay,		36	35	7				C7	
	-No recovery with Shelby Tube		38		--				D8	
	Recovered sample with Split-Spoon		39	37	12				D9	
20	-medium stiff	118	34	40	12		0.50⊕8.00	M.S.	C10	-9.1
	Stiff, gray, LEAN CLAY, (CL)		27		--				C11	
30	-very stiff	131	20	47	29		2.44⊕12.00	M.S.	C12	-19.1
			22		--				C13	
40	Stiff, gray, SILT, (ML) with clay,	126	28	29	6		1.73⊕16.00	M.S.	C14	-29.1
			29		--				C15	
50	-medium stiff	121	32	35	10		0.85⊕20.00	M.S.	C16	-39.1
	Medium stiff, gray, FAT CLAY, (CH)		43	81	54				C17	
60	Stiff, gray, SILT, (ML) with clay	121	31	30	5	22.6	1.14⊕24.00	M.S.	C18	-49.1
			30		--				C19	
70	Very stiff, gray, FAT CLAY, (CH)	126	29	71	52		2.13⊕28.00	M.S.	C20	-59.1
			23		--				C21	
80	-hard	133	24	53	33		4.11⊕32.00	S/S	C22	-69.1
			24		--				C23	
90	Very stiff, gray, LEAN CLAY, (CL) -with sand	125	29	46	24		2.02⊕36.00	M.S.	C24	-79.1
			32		--				C25	
100	Stiff, gray, FAT CLAY, (CH)	114	42	75	48		1.34⊕40.00	S/S	C26	-89.1
			26	61	44				C27	
110	Medium stiff, gray, LEAN CLAY, (CL)	121	26	44	22		0.81⊕44.00	M.S.	C28	-99.1
			29	45	27				C29	
120	Stiff, gray, FAT CLAY, (CH)	112	38	66	38		1.82⊕48.00	S/S	C30	-109.1
	Bottom of hole at 120 feet. Backfilled with grout upon completion.									

BORING NO. BR-12	STA.:	WATER LEVEL:
LATITUDE: 29.86789	OFFSET:	N/A DUE TO WET DRILLING METHOD
LONGITUDE: -91.63631	DATE TAKEN: 6/26/2014	BACKFILL METHOD: GROUT
LRS ID:	STR. NO.:	SQD. LDR.: VG

STANDARD ABBREVIATIONS & DEFINITIONS

CH CL ML

N.P. = Non-Plastic
ORG. = Organic

FAILURE MODE:
M.S. = Multiple Shear SL. = Slump
S/S = Slickensides YLD. = Yield
V.S. = Vertical Shear 60 S. = Shear Angle

SPT TERMINATION, AASHTO T 206
1 = 7.2.1 – 50 Blows Within A 6" Interval
2 = 7.2.2 – 100 Blows Total
3 = 7.2.3 – No Advancement for 10 Blows
4 = 7.2.4 – Sampler Driven the Entire 18"
5 = Non-standard

SOIL PROPERTIES

⊗ = SOIL TYPE nomenclature is based on ASTM D 2487
WET DENSITY = Wet density of in-place soil, (pounds per cu. ft.) determined by AASHTO T 208.
MOISTURE CONTENT = Moisture Content of in-place soil, expressed as a percentage of the dry weight of the soil, (%), determined by DOTD TR 403, Method B.
LIQUID LIMIT & PLASTICITY INDEX = Atterberg limits and indices, DOTD TR 428
SPT = Standard Penetration Test, AASHTO T 206, number of blows per each 6 inch increment, unless amount of penetration is shown
UU = Unconsolidated Undrained triaxial test, AASHTO T 296, compressive strength (tons per sq. ft.), of one specimen confined at noted pressure (pounds per sq. in.)
C = Soil cohesion (tons per sq. ft.)
◦ = Soil angle of internal friction (degrees)
△ = Unconsolidated Undrained triaxial test, AASHTO T 296, three specimens, (c – ◦).
+ = Consolidated drained direct shear test, AASHTO T 236, (c – ◦).
* = Hydrometer test performed

MISCELLANEOUS:

c-3 = Location and Identification of thin-walled tube sample, AASHTO T 207
(c-3) = Location and Identification of thin-walled tube sample, AASHTO T 207, with a portion of the sample saved for consolidation testing
b-3 = Location and Identification of SPT sample, AASHTO T 206
NO RECV. = No Recovery, unable to recover sample for testing or classification.
DIST. = Disturbed sample recovered with thin-walled tube sampler.
▽ 24 HRS = Water Table depth below ground surface recorded at noted time after completion of bore hole.
ETR = = Energy Transfer Ratio determined according to ASTM D4633

CORRELATION OF PENETRATION RESISTANCE AND SOIL PROPERTIES

SOIL	DESIGNATION		"N" (blows per ft.)
SAND AND SILT	RELATIVE DENSITY	VERY LOOSE	LESS THAN 4
		LOOSE	4 – 10
		MEDIUM DENSE	10 – 30
		DENSE	30 – 50
		VERY DENSE	OVER 50
CLAY	CONSISTENCY	VERY SOFT	LESS THAN 2
		SOFT	2 – 4
		MEDIUM STIFF	4 – 8
		STIFF	8 – 15
		VERY STIFF	15 – 30
		HARD	OVER 30

STATE OF LOUISIANA — SERGIO AVILES, License No. 33571, PROFESSIONAL ENGINEER IN CIVIL ENGINEERING — 10/14/14

STATE OF LOUISIANA — SAIRAM ERDANAPUDI, License No. 35129, PROFESSIONAL ENGINEER IN CIVIL ENGINEERING — 10/14/14

THIS SIGNATURE AND SEAL IS AFFIXED TO THIS DRAWING AS CERTIFICATION THAT THE LABORATORY TESTING AND ANALYSIS WAS PERFORMED ACCORDING TO THE LISTED PROCEDURES. NO DESIGN COMPUTATIONS WERE PERFORMED OR REVIEWED BY ME.

SHEET NUMBER 4

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REVISION DESCRIPTION | DATE | NO. | BY

US 90/LA 318 Alternative E

LOGS OF SOIL BORINGS

Field Book No.

DOTD — TRANSPORTATION & DEVELOPMENT

APS DESIGN & TESTING