Schnabel Engineering

Project Name: Constellation Generation Group C[illegible] Project
Calvert Cliffs Nuclear Power Plant (CCNPP)
Calvert County, Maryland

Project Number: 06120048.00

SUMMARY OF SOIL LABORATORY TEST RESULTS[1]

Boring / Test Pit No.	Sample Top Depth (ft.)	Sample Type[2]	USCS Sample Class. (D 2487)[3]	Sieve Results (D 422)		Atterberg Limits[4] (D 4318)				Organic Content (%)	Natural Moisture (%) (D 2216)	Moist Unit Weight (PCF)	Specific Gravity (D 854)	Moisture-Density Relationship (D 1557)		Bearing Ratio (D 1883)		Specimen		Shear Strength						Consolidation (D 2435)			
																					Total		Effective						
				Percent Passing No. 200	Percent Retained No. 4	LL	PL	PI	Oven Dried LL					Dry Unit Wt. (PCF)	Optium Moisture (%)	Dry	Soaked	Intact	Compacted	Test Type[3]	f deg.	C psi	f' deg.	C' psi	Failure Criterion[5]	Ccr	Cec	eo	Pp' tsf
B-425	70.0	SPT	MH			77	42	35			38.4																		
B-425	75.0	UD	SC	45.1	0.1	41	20	21			21.8	125.36	2.69																
B-425	80.0	SPT	SC								31.7																		
B-425	85.0	SPT	SP								19.0																		
B-425	90.0	SPT	SP								20.5																		
B-425	95.0	SPT	SP								17.9																		
B-427	2.5	SPT	SM	30.6	0.0						9.4																		
B-427	7.5	SPT	SP-SM								7.9																		
B-427	18.5	SPT	SM	12.5	1.1						8.2																		
B-427	28.5	SPT	SP-SM	8.4	0.2						12.2																		
B-427	38.5	SPT	SP								13.6																		
B-427	48.5	SPT	SP-SM	6.3	0.1						18.6																		
B-427	63.5	UD	OH	61.3	38.7	56	18	38	36		32.8	116	2.74					X	-	Qu	NA	25	NA	NA	Dev				
																		X	-	UU	NA	10.6	NA	NA	Dev	0.030	0.260	1.02	8.7
																		X	-	DS	NA	NA	29.2	6.1	NA				
B-427	78.5	SPT	SM								23.1																		
B-427	93.5	SPT	SM	34.8	24.7						12.0																		
B-427	103.5	SPT	SP-SM	11.2	4.1						24.8																		
B-427	118.5	SPT	SM	24.2	0.0						29.2																		
B-427	128.5	SPT	SM								31.4																		
B-427	138.5	SPT	SM	29.8	0.0						38.5																		
B-427	148.5	SPT	SM	33.1	0.0						44.3																		
B-428	60.0	UD	CH	92.6	0.0	61	17	44	46		37	120	2.78					X	-	Qu	NA	33.9	NA	NA	Dev				
																		X	-	UU	NA	10.3	NA	NA	Dev				
B-428	63.0	UD	CH							0.1																			
B-429	45.0	UD	Not yet available (Fugro)																										
B-433	5.0	SPT	ML								27.0																		
B-433	10.5	SPT	SW-SM	10.2	0.1						5.8																		
B-433	23.5	SPT	SW-SM								14.4																		
B-433	33.5	SPT	MH								23.3																		
B-433	38.5	UD	CH	91.0	0.0	61	14	47			33.5	113	2.77					X	-	Qu	NA	26.4	NA	NA	Dev				
																		X	-	UU	NA	22.5	NA	NA	Dev	0.040	0.280	1.00	8.3
																		X	-	DS	NA	NA	20.2	9.4	NA				
B-433	43.5	SPT	CH			59	22	37			33.50																		
B-433	48.5	UD	CH	94.5	0.0	64	23	41			33.6	121	2.66					X	-	Qu	NA	6.6	NA	NA	Dev				
																		X	-	CIU-bar	8.3	6.14	19.3	4.22	PSR	0.030	0.310	1.16	10
B-433	53.5	SPT	CL			45	18	27			21.0																		
B-433	58.5	SPT	SM	48.2	0.0	44	35	9			29.3																		

Schnabel Engineering

Project Name: Constellation Generation Group COLA Project
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Calvert County, Maryland

Project Number: 06120048.00

SUMMARY OF SOIL LABORATORY TEST RESULTS[1]

Boring / Test Pit No.	Sample Top Depth (ft.)	Sample Type[2]	USCS Sample Class. (D 2487)[3]	Sieve Results (D 422)		Atterberg Limits[4] (D 4318)				Organic Content (%)	Natural Moisture (%) (D 2216)	Moist Unit Weight (PCF)	Specific Gravity (D 854)	Moisture-Density Relationship (D 1557)		Bearing Ratio (D 1883)		Specimen		Shear Strength						Consolidation (D 2435)			
				Percent Passing No. 200	Percent Retained No. 4	LL	PL	PI	Oven Dried LL					Dry Unit Wt. (PCF)	Optimum Moisture (%)	Dry	Soaked	Intact	Compacted	Test Type[5]	Total f deg.	Total C psi	Effective f' deg.	Effective C' psi	Failure Criterion[6]	Cer	Cec	eo	Pp' tsf
B-433	73.5	SPT	SW-SM	11.6	7.8						23.7																		
B-433	93.5	SPT	ML	12.1	1.1						31.5																		
B-434	7.5	SPT	SP-SM								11.8																		
B-434	13.5	SPT	SM	13.9	0.8						7.0																		
B-434	18.5	SPT	SP-SM								10.6																		
B-434	28.5	SPT	SM	27.2	0.1						21.9																		
B-434	33.5	SPT	SM								26.6																		
B-434	38.5	SPT	SM			NP	NP	NP			27.4																		
B-434	48.5	SPT	CH			73	24	49			38.2																		
B-434	53.5	UD	CH	94.9	0.0	56	23	32			87.8	118	2.84					X	-	Qu	NA	28.5	NA	NA	Dev	0.010	0.368	1.09	14
																		X	-	UU	NA	25.4	NA	NA	Dev				
B-434	58.5	SPT	CH	94.7	0.0	86	22	64			36.6																		
B-434	63.5	UD	SM	36.9	0.0	---	---	NP			23.7	100.5	2.72					X	-	DS	Test Not Performed					0.004	0.111	0.72	11.8
																		X	-	CIU-bar	Test Not Performed								
B-434	68.5	SPT	SM								25.0																		
B-434	73.5	SPT	SM								22.6																		
B-434	78.5	SPT	SM								15.6																		
B-434	83.5	SPT	CL			30	22	8			19.8																		
B-434	88.5	SPT	SM								15.6																		
B-434	93.5	SPT	SP			NP	NP	NP			31.2																		
B-434	98.5	SPT	SM								25.6																		
B-436	7.5	SPT	SP-SM	4.9	0.5						3.3																		
B-436	23.5	SPT	SP-SM	8.1	3.1						11.1																		
B-436	33.5	SPT	SM	26.3	0.0						25.2																		
B-437	13.5	UD	Not yet available (Fugro)																										
B-437	98.5	UD	Not yet available (Fugro)																										
B-440	2.5	SPT	SM	33.2	0.1						8.6																		
B-440	7.5	SPT	Test Not Performed																										
B-440	13.5	SPT	SM	19.7	11.8						16.1																		
B-440	23.5	SPT	SP-SM	8.4	0.0						22.1																		
B-440	33.5	SPT	SM	28.4	10.8						20.1																		
B-440	43.5	SPT	SM	17.6	5.3						27.1																		
B-440	51.0	UD	SC	18.0	0.0	30	21	9			30.0	116	2.75					X	-	Qu	NA	5.1	NA	NA	Dev				
																		X	-	DS	NA	NA	30.3	5.5	NA				
B-440	63.5	SPT	SM	19.5	16.8						19.4																		
B-440	78.5	SPT	SM	28.7	0.0						41.0																		
B-701	7.5	SPT	SM	27.9	0.9						15.9																		

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Boring / Test Pit No.	Sample Top Depth (ft.)	Sample Type[2]	USCS Sample Class. (D 2487)[3]	Sieve Results (D 422)		Atterberg Limits[4] (D 4318)				Organic Content (%)	Natural Moisture (%) (D 2216)	Moist Unit Weight (PCF)	Specific Gravity (D 854)	Moisture-Density Relationship (D 1557)		Bearing Ratio (D 1883)		Specimen		Shear Strength						Consolidation (D 2435)			
																					Total		Effective						
				Percent Passing No. 200	Percent Retained No. 4	LL	PL	PI	Oven Dried LL					Dry Unit Wt. (PCF)	Optium Moisture (%)	Dry	Soaked	Intact	Compacted	Test Type[5]	f deg.	C psi	f' deg.	C' psi	Failure Criterion[6]	Cer	Cec	eo	Pp tsf
B-701	10.5	SPT	SW-SM	6.3	45.7						12.4																		
B-701	18.5	SPT	SM	21.3	2.8						28.2																		
B-701	28.5	SPT	SM	34.3	1.7						37.3																		
B-701	43.5	UD	MH	64.1	0.0	54	33	21			37.3	116	2.64					X	-	UU	NA	24.6	NA	NA	Dev				
B-701	48.5	SPT	SM	17.5	3.9						33.1																		
B-701	53.5	SPT	ML								42.5																		
B-701	58.5	SPT	MH								55.7																		
B-701	63.5	SPT	ML								40.4																		
B-701	68.5	SPT	MH								48.0																		
B-703	18.5	SPT	OH	83.4	0.0	69	25	44	39	0.9	45.1	106	2.70					X	-	Qu	Test Not Performed					0.003	0.300	1.31	9
B-707	2.5	SPT	CH								27.3																		
B-707	7.5	SPT	CH	74.6	0.0	59	21	38			32.8																		
B-707	13.5	SPT	CH								32.7																		
B-707	23.5	SPT	SC								29.5																		
B-707	33.5	SPT	MH	70.8	21.0	59	45	14			45.5																		
B-707	48.5	SPT	SP-SM								27.0																		
B-709	7.5	SPT	SC								27.3																		
B-709	13.5	SPT	SM								29.1																		
B-709	23.5	SPT	SC								30.4																		
B-709	33.5	SPT	ML								33.8																		
B-709	48.5	SPT	CL								23.0																		
B-722	3.0	SPT	SP								3.5																		
B-722	13.5	SPT	SP								12.4																		
B-722	23.5	SPT	ML								21.1																		
B-722	33.5	UD	SM	20.1	0.0	NP	NP	NP			26.8	120	2.76					X	-	Qu	NA	4.1	NA	NA	Dev	0.010	0.040	0.78	6
																		X	-	UU	NA	8.5	NA	NA	Dev				
B-722	43.5	SPT	CH								37.1																		
B-722	53.5	SPT	CH								41.9																		
B-722	63.5	SPT	CH								47.5																		
B-722	73.5	SPT	SM								18.8																		
B-723	28.5	UD	CH	89.7	0.0	56	15	41			31.9	120	2.71					X	-	Qu	NA	5.8	NA	NA	Dev	0.010	0.500	0.83	10.5
																		X	-	UU	NA	16.7	NA	NA	Dev				
B-723	38.5	UD	CH	95.2	0.0	64	19	45			33.9	112	2.73					X	-	UU	NA	11.7	NA	NA	Dev	0.030	0.240	1.15	6.4
B-724	73.5	UD	OL	60.1	0.1	45	24	21	32	3.2	31.9	103	2.7					X	-	DS	NA	NA	27.5	8.2	NA				
B-726	23.5	UD	CH	96.0	0.0	69	22	47			35.7	117	2.7					X	-	UU	NA	11.8	NA	NA	Dev	0.040	0.290	1.16	10.3
B-729	2.5	SPT	SC								16.0																		

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Boring / Test Pit No.	Sample Top Depth (ft.)	Sample Type[2]	USCS Sample Class. (D 2487)[3]	Sieve Results (D 422)		Atterberg Limits[4] (D 4318)				Organic Content (%)	Natural Moisture (%) (D 2216)	Moist Unit Weight (PCF)	Specific Gravity (D 854)	Moisture-Density Relationship (D 1557)		Bearing Ratio (D 1883)		Specimen		Shear Strength						Consolidation (D 2435)			
																					Total		Effective						
				Percent Passing No. 200	Percent Retained No. 4	LL	PL	PI	Oven Dried LL					Dry Unit Wt. (PCF)	Optium Moisture (%)	Dry	Soaked	Intact	Compacted	Test Type[5]	f deg.	C psi	f deg.	C' psi	Failure Criterion[6]	Ccr	Cec	eo	Pp' tsf
B-729	7.5	SPT	SP-SM								13.5																		
B-729	18.5	SPT	SP-SM								14.2																		
B-729	28.5	SPT	SP-SM								12.5																		
B-729	38.5	SPT	SM								18.4																		
B-729	48.5	SPT	ML								28.2																		
B-729	58.5	SPT	SM								28.8																		
B-729	68.5	UD	OH	92.7	0.0	56	18	38	40	1.4	32.8	118	2.79					X	-	UU	NA	19.2	NA	NA	Dev	0.040	0.290	1.05	12
B-732	15.0	UD	SC	32.0	2.7	26	19	7			23.1	124	2.75					X	-	Qu	NA	6.9	NA	NA	Dev	0.010	0.080	0.82	4
																		X	-	UU	NA	3.3	NA	NA	Dev				
B-733	23.5	UD	CH	78.0	22.0	51	15	36			33.2	119	2.73					X	-	Qu	NA	6	NA	NA	Dev	0.020	0.180	1.00	5.7
																		X	-	UU	NA	8.1	NA	NA	Dev				
B-735	2.5	SPT	SP-SM	6.2	3.8						7.6																		
B-735	10.5	SPT	SM	27.8	0.0						13.5																		
B-735	18.5	SPT	SM	28.1	0.0	NP	NP	NP			28.7																		
B-735	28.0	UD	CH	87.1	12.9	51	16	35			32.3	119						X	-	UU	NA	17.5	NA	NA	Dev	0.030	0.250	1.01	7.5
																		X	-	DS	NA	NA	27.2	4.9	NA				
B-735	43.5	SPT	CH	98.5	0.0	85	30	55			39.6																		
B-735	58.5	SPT	SP-SM	5.8	0.0						20.9																		
B-735	73.5	SPT	SM	14.3	14.7						24.5																		
B-737	10.5	UD	CH	92.9	0.0	75	23	52			37.6	113	2.63					X	-	UU	NA	8.6	NA	NA	Dev	0.030	0.200	1.13	6.1
																		X	-	DS	NA	NA	22.7	5.2	NA				
B-738	5.0	SPT	SM								9.0																		
B-738	10.5	SPT	SP								12.3																		
B-738	18.5	SPT	CH								24.2																		
B-738	28.5	SPT	MH								28.4																		
B-738	35.0	UD	SC-SM	25.1	0.0	26	22	4			26.4	118	2.67					X	-	Qu	NA	5.7	NA	NA	Dev	0.010	0.040	0.78	8
																		X	-	UU	NA	15.9	NA	NA	Dev				
B-738	48.5	SPT	CH								32.1																		
B-738	58.5	SPT	SC								28.7																		
B-738	68.5	SPT	CL								30.9																		
B-743	23.5	UD	CL	57.2	0.0	38	13	25			21.1	115	2.69					X	-	DS	NA	NA	29.2	3.7	NA				
B-746	2.5	SPT	ML								14.4																		
B-746	7.5	SPT	SM	27.3	0.0						25.1																		
B-746	13.5	UD	SC-SM	28.8	0.0	25	21	4			27.2	121	2.76					X	-	UU	NA	7.1	NA	NA	Dev	0.010	0.060	0.83	10.8
B-746	23.5	SPT	CH	86.5	0.0	52	17	35			30.8																		
B-746	33.5	SPT	CH	93.6	0.0	64	24	40			34.8																		
B-746	43.5	SPT	ML			40	34	6			29.2																		

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SUMMARY OF SOIL LABORATORY TEST RESULTS[1]

Boring / Test Pit No.	Sample Top Depth (ft.)	Sample Type[2]	USCS Sample Class. (D 2487)[3]	Sieve Results (D 422)		Atterberg Limits[4] (D 4318)				Organic Content (%)	Natural Moisture (%) (D 2216)	Moist Unit Weight (PCF)	Specific Gravity (D 854)	Moisture-Density Relationship (D 1557)		Bearing Ratio (D 1883)		Specimen		Shear Strength						Consolidation (D 2435)			
																					Total		Effective						
				Percent Passing No. 200	Percent Retained No. 4	LL	PL	PI	Oven Dried LL					Dry Unit Wt. (PCF)	Optium Moisture (%)	Dry	Soaked	Intact	Compacted	Test Type[5]	f deg.	C psi	f deg.	C' psi	Failure Crieteron[6]	Cer	Cec	eo	Pp' tsf
B-746	58.5	SPT	SM								17.9																		
B-746	68.5	SPT	SM								24.8																		
B-747	2.5	SPT	SM	36.2	0.0						7.5																		
B-747	5.0	SPT	ML	71.2	0.0						12.7																		
B-747	10.5	SPT	SP-SM	4.8	0.0						20.3																		
B-747	13.5	SPT	SM	20.4	0.0						26.6																		
B-747	18.5	SPT	SM	15.0	0.1						23.9																		
B-747	23.5	SPT	ML	66.3	0.0						28.2																		
B-747	28.5	SPT	ML								32.6																		
B-747	33.5	SPT	CH	77.5	0.0						34.2																		
B-747	38.5	SPT	CH	81.5	0.1						32.6																		
B-747	43.5	SPT	CH								27.5																		
B-747	48.5	SPT	CH								39.4																		
B-747	53.5	SPT	MH	76.1	0.0	78	47	31			48.6																		
B-747	58.0	UD	CH			53	16	37			35.0	108	2.73					X	-	UU	NA	23.6	NA	NA	Dev	0.020	0.260	1.09	11.3
B-747	63.5	SPT	SC	38.0	18.3	43	20	23			27.6																		
B-747	68.5	SPT	SM			NP	NP	NP			30.3																		
B-747	73.5	SPT	SP-SM			NP	NP	NP			28.1																		
B-752	2.5	SPT	SP-SM	10.0	0.5						5.9																		
B-752	10.5	SPT	SW-SM	10.2	0.4						6.7																		
B-752	18.5	SPT	SW-SM	13.2	6.7						12.7																		
B-752	28.5	SPT	SM	36.9	0.0						29.0																		
B-752	33.5	SPT	CH	67.0	0.0	52	23	29			29.1																		
B-752	38.5	SPT	MH	80.4	0.0	63	31	32			33.1																		
B-752	43.5	SPT	MH			71	36	10			37.1																		
B-752	48.5	SPT	CH			68	24	44			40.3																		
B-752	53.5	SPT	SM	44.9	0.0	40	29	11			27.7																		
B-752	58.0	UD	OH	97.9	0.0	65	17	48	46	0.6	45.3	110	2.79					X	-	UU	NA	21.8	NA	NA	Dev	0.050	0.400	1.73	10.3
B-752	63.5	SPT	MH			64	43	21			37.0																		
B-752	68.5	SPT	ML	60.5	0.0						34.6																		
B-752	83.5	SPT	SP-SM	10.9	8.3						28.0																		
B-752	98.5	SPT	SC	27.2	6.2						31.6																		
B-765	100.0	UD	SM	Not yet available (Fugro)																									
TP-B307	4.5	Bulk	SP-SM	5.8	0.0						2.3			109.3	10.5	14.8	4.4												
TP-B314	4.0	Bulk	CH	93.1	0.0	71	24	47			37.0			114.6	15.5														
TP-B315	6.0	Bulk	SP-SM	9.7	0.2						5.4			114.9	11.4	11.6	18.9												
TP-B334	3.0	Bulk	SM	13.9	0.0						7.4			116.3	9.3														

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																					Total		Effective						
				Percent Passing No. 200	Percent Retained No. 4	LL	PL	PI	Oven Dried LL					Dry Unit Wt. (PCF)	Optum Moisture (%)	Dry	Soaked	Intact	Compacted	Test Type[5]	f deg.	C psi	f' deg.	C' psi	Failure Criterion[6]	Cer	Cec	eo	Pp' tsf
TP-B334	6.0	Bulk	SM	13.2	0.0						14.5			129.8	8.0														
TP-B335	3.0	Bulk	CL	65.3	0.0	30	20	10			19.0			128.8	9.9														
TP-B335	5.0	Bulk	SM	24.6	0.0						8.9			130.5	7.6	36.2	18.0												
TP-B407	4.5	Bulk	SW-SM	9.0	2.2						7.1			118.9	8.8	14.8	17.0												
TP-B414	6.0	Bulk	SP-SM	6.4	0.0						6.0			105.4	11.9														
TP-B415	3.0	Bulk	SP	3.5	0.2						10.2			116.7	9.8	11.1	4.7												
TP-B423	5.0	Bulk	CL	51.1	0.0	24	16	8			16.0			123.4	10.8														
TP-B434	2.0	Bulk	CL	59.8	0.2	25	18	7			21.0			127.1	10.1	9.3	3.2												
TP-B435	5.0	Bulk	SM	13.2	0.0						6.0			119.1	8.9														
TP-B435	7.0	Bulk	SP-SM	8.3	0.8						4.6			123.9	8.9	26.8	33.7												
TP-B435	9.0	Bulk	SC	14.1	0.0	34	17	17			6.7			130.2	7.3	34.4	41.8												
TP-B715	5.5	Bulk	SP-SM	11.0	0.9						4.8			110.7	11.8														
TP-B716	6.0	Bulk	SP-SM	6.0	1.0						3.8			116.3	9.4														
TP-B717	7.0	Bulk	SP-SM	6.4	2.6						3.4			123.8	10.2	17.2	23.1												
TP-B719	0.5	Bulk	CL	84.5	0.0	35	22	13			23.9			118.4	13.5														
TP-B719	2.0	Bulk	SM	44.3	0.0						26.7			119.6	10.0	41.3	29.0												
TP-B727	6.0	Bulk	SM	30.1	0.0						10.3			130.5	6.8														
TP-B744	1.5	Bulk	CL	64.2	0.0	25	17	8			18.0			131.2	8.0														
TP-B758	2.0	Bulk	SP-SM	8.4	0.8						6.0			121.0	8.8														
TP-B758	7.5	Bulk	SM	34.1	2.6						11.8			127.3	8.9	11.3	4.4												
TP-C309	2.0	Bulk	SP	3.7	1.2						4.3			111.2	13.9														
TP-C309	7.0	Bulk	SP-SM	7.8	0.0						8.7			112.5	9.8														
TP-C723	2.5	Bulk	SC	39.5	0.0	30	15	15			12.0			132.8	7.5	26.8	17.2												
TP-C723	6.0	Bulk	SP-SM	7.5	1.2						4.6			113.8	6.8														

NOTES:

1. Tests are in accordance with applicable ASTM standards
2. Sample type: SPT = sample obtained from split spoon, UD = undisturbed sample in thin walled sampler
3. Visual-manual procedures (ASTM D 2488) used as appropriate.
4. Key: LL = Liquid Limit; PL = Plastic Limit; PI = Plasticity Index; NP = Nonplastic
5. Test Type: Qu - unconfined compression, UU - Triaxial Unconsolidated, Undrained; CIU-bar - Triaxial Consolidated Undrained; CD - Triaxial Consolidated Drained; DS - Drained Direct Shear
6. Failure Criterion: Dev. - maximum deviator stress; PSR - maximum principal stress ratio; Strain - defined level of axial strain