US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-1	CL	264+96	1.0-2.5	A-7-6(15)	42	15	4.5	6.9	42.0	46.6	99	96	90	-	-	L
SS-2	CL	264+96	4.0-5.5	A-7-6(17)	46	17	5.9	7.7	39.8	46.6	97	93	86	-	-	L
SS-3	CL	264+96	9.0-10.5	A-4(9)	38	7	1.4	3.0	67.2	28.4	98	97	95	-	-	L
SS-4	15 RT	296+15	1.0-2.5	A-7-5(20)	55	25	7.1	3.2	30.9	58.8	82	78	74	-	-	L
SS-5	15 RT	296+15	4.0-5.5	A-7-5(30)	63	32	6.1	4.1	35.2	54.7	91	87	83	-	-	L
SS-6	15 RT	296+15	9.0-10.5	A-7-5(28)	54	24	1.6	2.8	40.8	54.7	100	99	97	-	-	L
SS-7	15 RT	296+15	14.0-15.5	A-5(15)	48	10	0.6	2.2	54.6	42.6	100	100	98	-	-	L
SS-8	15 RT	296+15	19.0-20.5	A-7-5(16)	47	13	2.0	6.7	54.8	36.5	100	99	94	-	-	L
SS-9	15 RT	296+15	24.0-25.5	A-7-5(17)	48	12	0.4	3.2	63.9	32.4	100	100	98	-	-	L
SS-10	CL	300+00	1.0-2.5	A-4(7)	29	8	2.6	4.9	56.0	36.5	100	99	94	-	-	L
SS-11	CL	300+00	4.1-5.6	A-7-5(34)	70	26	1.0	5.5	24.6	68.9	100	100	95	-	-	L
SS-12	CL	300+00	9.1-10.6	A-7-5(31)	66	25	1.8	8.3	31.1	58.8	100	100	93	-	-	L
SS-13	CL	302+00	1.0-2.5	A-7-5(9)	42	12	16.4	7.9	39.2	36.5	95	82	74	-	-	L
SS-14	CL	302+00	4.0-5.5	A-7-5(11)	52	15	21.9	14.0	31.7	32.4	99	83	67	-	-	L
SS-15	CL	302+00	9.0-10.5	A-7-5(17)	48	15	4.1	10.7	44.7	40.5	100	98	89	-	-	L
SS-16	75 RT	302+00	4.0-5.5	A-7-5(20)	52	19	7.5	6.5	45.5	40.5	100	95	88	-	-	L
SS-17	75 RT	302+00	9.0-10.5	A-7-5(19)	49	15	2.0	2.4	46.9	48.6	100	98	96	-	-	L
SS-18	75 RT	302+00	14.0-15.5	A-7-5(19)	52	15	0.4	1.8	55.2	42.6	94	94	92	-	-	L
SS-19	75 RT	302+00	19.0-20.5	A-5(7)	43	4	8.9	9.7	61.1	20.3	100	94	85	-	-	L
SS-20	75 RT	302+00	24.0-25.5	A-5(12)	51	7	3.0	11.6	65.1	20.3	100	99	90	-	-	L
SS-21	75 RT	302+00	29.0-30.5	A-7-5(19)	52	16	1.8	9.1	42.5	46.6	100	99	92	-	-	L
SS-22	75 RT	302+00	34.0-35.5	A-4(4)	37	4	2.8	17.4	55.4	24.3	93	91	80	-	-	L
SS-23	CL	267+00	1.0-1.5	A-7-5(27)	60	28	7.3	8.9	33.1	50.7	97	91	84	-	-	L
SS-24	CL	267+00	3.5-5.0	A-7-5(26)	64	22	2.6	12.4	30.3	54.7	100	99	89	-	-	L
SS-25	CL	267+00	8.5-10.0	A-7-5(12)	55	15	10.7	25.9	28.9	34.4	100	95	70	-	-	L
SS-26	CL	267+00	13.5-15.0	A-4(0)	38	NP	20.7	37.1	32.1	10.1	100	92	49	-	-	L
SS-27	CL	267+00	18.5-20.5	A-4(3)	40	4	10.3	32.8	40.6	16.2	100	96	66	-	-	L
SS-28	CL	267+00	23.5-25.0	A-5(5)	41	5	7.7	24.9	45.1	22.3	100	96	76	-	-	L
SS-29	CL	267+00	28.5-30.0	A-4(3)	35	3	7.5	23.3	46.9	22.3	100	96	77	-	-	L
SS-30	80 LT	269+00	3.8-5.3	A-7-5(17)	45	14	0.6	4.4	54.5	40.4	100	100	97	-	-	L
SS-31	80 LT	269+00	8.8-10.3	A-5(10)	41	7	0.6	9.9	61.2	28.3	100	100	94	-	-	L
SS-32	80 LT	269+00	13.8-15.3	A-7-5(18)	55	15	2.2	15.8	53.7	28.3	100	99	87	-	-	L
SS-33	80 LT	269+00	18.8-20.3	A-5(13)	46	9	3.0	5.7	63.0	28.3	100	99	93	-	-	L
SS-34	80 LT	269+00	23.8-25.3	A-5(13)	44	10	1.8	4.4	59.4	34.4	100	99	95	-	-	L
SS-35	80 LT	269+00	28.8-30.3	A-4(9)	38	7	0.8	4.2	68.7	26.3	100	100	98	-	-	L
SS-36	85 RT	269+00	18.5-20.0	A-5(12)	42	8	0.6	1.2	75.9	22.2	100	100	99	-	-	L
SS-37	85 RT	269+00	28.5-30.0	A-4(7)	36	5	0.8	2.6	80.4	16.2	100	100	98	-	-	L
SS-38	85 RT	269+00	38.5-40.0	A-4(11)	40	8	0.6	5.1	80.2	14.2	100	100	97	-	-	L
SS-39	CL	11+05	1.0-2.5	A-7-6(32)	56	29	2.6	3.2	37.5	56.6	100	100	96	28	-	RPC
SS-40	CL	11+05	4.1-5.6	A-7-6(20)	47	20	2.8	10.3	38.3	48.5	98	97	89	-	-	RPC
SS-41	CL	11+05	9.1-10.6	A-4(5)	32	5	2.2	13.1	66.4	18.2	100	99	91	-	-	RPC
SS-42	CL	10+50	1.0-2.5	A-7-5(35)	62	32	2.4	6.3	32.7	58.6	98	96	92	-	-	RPB
SS-43	CL	10+50	4.8-6.3	A-7-5(31)	63	25	0.2	7.1	40.1	52.6	100	100	96	-	-	RPB
SS-44	CL	10+50	9.8-10.3	A-7-5(31)	61	28	0.4	14.8	38.3	46.5	100	100	91	-	-	RPB
S-45	CL	275+65	0.0-3.5	A-7-5(46)	75	36	0.4	1.6	25.0	72.9	100	100	99	33	-	L
SS-46	CL	275+65	3.5-5.0	A-7-5(25)	51	21	0.2	5.9	51.4	42.6	100	100	97	-	-	L
SS-47	CL	275+65	8.5-10.0	A-7-6(16)	41	14	0.2	5.9	61.5	32.4	100	100	97	-	-	L
SS-48	CL	15+53	4.0-5.5	A-7-5(26)	52	21	0.2	3.0	52.2	44.6	100	100	98	-	-	RPB
SS-49	CL	15+53	9.0-10.5	A-7-5(18)	45	15	0.2	3.4	74.1	22.3	100	100	98	-	-	RPB
SS-50	CL	15+53	19.0-20.5	A-5(12)	44	8	0.2	5.9	73.7	20.3	100	100	97	-	-	RPB
SS-51	CL	15+53	29.0-30.5	A-5(12)	45	8	0.4	7.9	71.4	20.3	100	100	96	-	-	RPB
SS-52	CL	17+50	3.5-5.0	A-7-5(52)	84	43	1.2	5.3	22.6	70.9	100	99	95	-	-	RPB
SS-53	CL	17+50	4.0-5.5	A-7-6(25)	51	27	2.0	17.8	39.6	40.6	100	99	86	-	-	RPC
SS-54	CL	19+50	1.0-2.5	A-7-6(20)	46	24	7.1	14.0	40.4	38.5	98	94	82	-	-	RPC

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-55	CL	19+50	4.0-5.5	A-7-6(16)	42	19	6.3	14.2	36.9	42.6	99	95	83	-	-	RPC
SS-56	CL	19+50	9.0-10.5	A-7-6(16)	42	18	4.3	16.4	46.9	32.5	97	95	83	-	-	RPC
SS-57	CL	19+50	14.0-15.5	A-4(6)	36	7	6.5	24.9	40.2	28.4	100	97	77	-	-	RPC
SS-58	CL	19+50	19.0-20.5	A-4(6)	36	8	8.1	27.2	40.4	24.3	100	96	73	-	-	RPC
SS-59	CL	19+50	24.0-25.5	A-4(7)	37	8	6.1	25.4	34.1	34.5	100	97	77	-	-	RPC
SS-60	CL	19+50	29.0-30.5	A-4(7)	38	8	6.3	25.4	37.9	30.4	100	97	77	-	-	RPC
SS-61	CL	19+50	34.0-35.5	A-4(6)	37	7	5.7	23.1	36.7	34.5	100	97	78	-	-	RPC
SS-62	CL	19+50	39.0-40.5	A-4(6)	36	7	6.9	23.7	38.9	30.4	100	97	78	-	-	RPC
SS-63	CL	19+50	44.0-45.0	A-4(6)	34	8	10.0	20.1	45.5	24.4	98	93	75	-	-	RPC
SS-64	CL	19+50	54.0-55.5	A-5(8)	42	10	3.4	35.7	42.6	18.3	100	99	72	-	-	RPC
SS-65	CL	19+50	64.0-65.5	A-4(2)	40	4	11.4	43.9	36.5	8.1	100	96	56	-	-	RPC
SS-66	CL	281+50	4.0-5.5	A-7-6(17)	44	20	4.3	15.5	39.6	40.7	98	96	83	-	-	L
SS-67	CL	281+50	9.0-10.5	A-4(3)	33	3	3.9	21.4	72.7	2.0	100	99	82	-	-	L
SS-68	CL	281+50	19.0-21.5	A-4(2)	30	5	8.7	31.9	45.1	14.2	100	98	67	-	-	L
SS-69	CL	281+50	24.0-25.5	A-4(3)	32	5	9.0	30.3	44.5	16.3	100	97	68	-	-	L
SS-70	CL	281+50	34.0-35.5	A-4(2)	30	4	9.8	32.8	45.3	12.2	100	97	66	-	-	L
SS-71	25 LT	10+00	1.0-2.5	A-7-5(57)	85	47	1.0	2.5	28.5	68.0	100	99	98	41	-	YI
SS-72	25 LT	10+00	4.1-5.6	A-7-5(45)	76	36	0.4	5.2	26.4	68.0	100	100	97	-	-	YI
SS-73	25 LT	10+00	9.1-10.6	A-7-5(30)	73	21	0.4	9.7	36.3	53.6	100	100	94	-	-	YI
SS-74	25 LT	10+00	14.1-15.6	A-7-5(17)	47	13	0.6	8.9	53.4	37.1	100	100	96	-	-	YI
SS-75	CL	13+50	3.5-5.0	A-4(4)	35	6	10.1	26.4	47.0	16.5	100	95	72	22	-	YI
SS-76	CL	13+50	8.5-10.0	A-4(5)	33	7	12.8	19.8	48.9	18.6	100	94	73	-	-	YI
SS-77	CL	13+50	13.5-15.0	A-4(9)	40	9	6.4	19.4	55.7	18.6	100	97	82	-	-	YI
SS-78	CL	23+50	3.8-5.3	A-7-5(38)	75	32	1.4	10.9	25.8	61.9	100	99	92	-	-	RPB
SS-79	CL	23+50	8.8-10.3	A-7-5(28)	58	27	0.8	19.4	34.4	45.4	100	100	88	46	-	RPB
SS-80	CL	23+50	13.8-15.3	A-7-5(13)	51	15	3.5	34.4	39.4	22.7	100	99	73	-	-	RPB
SS-81	CL	23+50	18.8-20.3	A-5(4)	44	6	4.5	46.6	40.6	8.2	100	99	62	-	-	RPB
SS-82	CL	19+15	3.7-5.2	A-7-5(30)	67	23	0.8	10.3	29.1	59.8	100	100	93	-	-	YI
SS-83	CL	19+15	8.7-10.2	A-5(9)	56	8	5.6	31.8	42.1	20.6	100	99	71	-	-	YI
SS-84	CL	19+15	13.7-15.2	A-5(3)	51	3	8.0	40.6	41.0	10.3	100	99	61	-	-	YI
SS-85	CL	19+15	18.7-20.2	A-5(3)	43	6	12.8	39.8	39.2	8.2	100	99	56	-	-	YI
SS-86	CL	20+50	1.0-2.5	A-7-6(18)	44	21	5.3	14.0	50.4	30.4	98	94	84	-	-	YI
SS-87	CL	20+50	3.7-5.2	A-7-5(40)	67	37	2.4	8.9	25.8	62.8	100	99	93	-	-	YI
SS-88	CL	20+50	8.7-10.2	A-7-5(19)	54	18	2.0	22.1	57.6	18.2	100	100	84	-	-	YI
SS-89	CL	20+50	13.7-15.2	A-4(5)	39	7	13.2	32.6	44.1	10.1	100	93	66	-	-	YI
SS-90	CL	21+25	3.7-5.2	A-6(10)	36	14	6.5	21.3	47.9	24.3	98	95	78	-	-	YI
SS-91	CL	21+25	8.7-10.2	A-4(5)	32	8	7.3	29.4	45.1	18.2	100	97	73	-	-	YI
SS-92	CL	23+25	3.7-5.2	A-7-5(34)	61	31	4.7	3.9	40.8	50.7	100	96	93	-	-	YI
SS-93	CL	23+25	8.7-10.2	A-7-5(31)	69	26	2.0	10.5	38.8	48.6	100	99	91	-	-	YI
SS-94	25 RT	19+50	3.5-5.0	A-4(8)	31	9	2.4	9.2	64.2	24.1	100	99	92	-	-	RPB
SS-95	25 RT	19+50	8.5-10.0	A-4(6)	34	6	4.4	16.3	59.2	20.1	100	98	85	-	-	RPB
SS-96	25 RT	19+50	13.5-15.0	A-4(6)	36	9	7.4	24.7	47.7	20.1	94	92	70	-	-	RPB
SS-97	25 RT	19+50	18.5-20.0	A-4(3)	31	5	10.1	25.9	45.9	18.1	100	96	71	-	-	RPB
SS-98	25 RT	19+50	23.5-25.0	A-4(0)	30	5	15.1	25.7	45.1	14.1	73	68	48	-	-	RPB
SS-99	CL	21+50	3.7-5.2	A-7-5(46)	86	44	5.6	11.5	28.6	54.3	99	95	86	-	-	RPB
SS-100	CL	21+50	8.7-10.2	A-7-5(20)	61	18	2.4	22.9	40.5	34.2	100	99	83	-	-	RPB
SS-101	CL	21+50	13.7-15.2	A-7-5(14)	64	14	7.8	30.2	35.9	26.1	100	96	72	-	-	RPB
SS-102	CL	21+50	18.7-20.2	A-7-5(11)	58	12	6.2	36.6	41.1	16.1	99	97	68	-	-	RPB
SS-103	CL	21+50	3.6-5.1	A-7-5(31)	64	27	1.2	11.8	30.3	56.7	100	100	91	-	-	RPC
SS-104	CL	21+50	13.6-15.1	A-7-5(29)	73	20	1.8	8.5	39.0	50.7	100	99	93	-	-	RPC
SS-105	CL	21+50	23.6-25.1	A-7-5(23)	71	24	5.3	24.5	25.6	44.6	100	99	76	-	-	RPC
SS-106	CL	21+50	33.6-35.1	A-7-5(18)	62	17	2.8	25.5	27.1	44.6	100	100	79	-	-	RPC
SS-107	85 LT	283+50	18.4-19.9	A-7-5(32)	69	27	1.8	15.0	36.6	46.6	100	99	90	-	-	L
SS-110	CL	283+50	3.7-5.2	A-7-5(50)	80	41	0.8	4.5	17.7	77.0	99	99	96	-	-	L

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SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-111	CL	283+50	8.7-10.2	A-7-5(29)	65	22	0.2	9.7	21.2	68.9	100	100	94	-	-	L
SS-112	CL	283+50	13.7-15.2	A-7-5(27)	63	22	0.6	12.2	26.4	60.8	100	100	92	-	-	L
SS-113	CL	283+50	18.7-20.2	A-7-5(18)	66	12	1.2	22.5	27.7	48.6	100	100	84	-	-	L
SS-114	CL	283+50	23.7-25.2	A-7-5(25)	69	21	2.0	17.6	27.7	52.7	100	99	86	-	-	L
SS-115	C	41+50	4.0-5.5	A-7-6(18)	46	21	6.1	6.1	43.0	44.8	89	85	80	-	-	FLYA
SS-116	CL	41+50	9.0-10.5	A-6(10)	37	14	5.1	10.2	54.2	30.5	86	83	76	-	-	FLYA
SS-117	CL	39+50	3.5-5.0	A-7-6(39)	64	35	1.8	7.5	41.8	48.8	100	99	94	-	-	FLYA
SS-118	CL	39+50	8.5-10.0	A-7-5(41)	72	34	1.2	6.3	49.8	42.7	100	99	95	-	-	FLYA
SS-119	CL	39+50	13.5-15.0	A-7-6(27)	52	27	3.0	9.3	34.8	52.8	100	98	90	-	-	FLYA
SS-120	CL	39+50	18.5-20.0	A-7-5(18)	49	16	3.0	8.9	59.6	28.5	100	99	91	-	-	FLYA
SS-121	10 LT	25+50	3.7-5.2	A-7-5(24)	55	19	0.8	5.5	47.0	46.7	100	100	96	-	-	Y1
SS-122	10 LT	25+50	8.7-10.2	A-7-6(21)	47	25	7.3	9.8	36.2	46.7	95	90	82	-	-	Y1
SS-123	10 LT	25+50	13.7-15.2	A-7-6(13)	43	17	9.3	19.9	40.2	30.5	100	95	77	-	-	Y1
SS-124	CL	15+50	3.7-5.2	A-7-5(17)	47	13	1.0	7.3	55.1	36.6	100	99	95	-	-	LPC
SS-125	CL	15+50	8.7-10.2	A-5(13)	46	9	1.4	10.2	66.1	22.4	100	99	93	-	-	LPC
SS-126	CL	15+50	13.7-15.2	A-5(13)	42	10	1.2	6.7	63.6	28.5	100	99	96	-	-	LPC
SS-127	CL	15+50	18.7-20.2	A-5(11)	43	7	2.0	8.7	62.8	26.4	100	99	95	-	-	LPC
SS-128	CL	15+50	23.7-25.2	A-7-5(16)	64	12	13.8	16.7	51.2	18.3	99	93	81	-	-	LPC
SS-129	CL	15+50	28.7-30.2	A-5(12)	45	8	1.0	3.0	65.4	30.5	99	98	97	-	-	LPC
SS-130	CL	15+50	33.7-35.2	A-4(12)	40	10	2.0	7.9	65.7	24.4	100	99	93	-	-	LPC
SS-131	CL	25+00	3.8-5.2	A-7-5(18)	45	15	1.4	3.0	58.9	36.6	100	99	97	-	-	RPC
SS-132	CL	25+00	8.8-13.8	A-7-6(3)	49	20	14.8	10.8	35.8	38.6	50	45	38	-	-	RPC
SS-133	CL	25+00	13.8-15.3	A-5(9)	41	7	2.8	9.8	69.1	18.3	100	98	92	-	-	RPC
SS-134	CL	25+00	18.8-20.3	A-5(11)	45	9	3.7	13.4	60.6	22.4	100	98	89	-	-	RPC
SS-135	CL	25+00	28.8-30.3	A-7-5(9)	51	11	17.9	18.7	45.1	18.3	100	88	69	-	-	RPC
SS-136	CL	17+50	3.9-5.4	A-7-6(17)	44	16	4.1	4.7	38.4	52.8	100	98	92	-	-	LPC
SS-137	CL	17+50	13.9-15.4	A-5(11)	46	10	4.9	3.9	56.7	34.6	91	88	84	-	-	LPC
SS-138	CL	17+50	18.9-20.4	A-5(12)	46	7	0.6	2.8	66.1	30.5	100	100	98	-	-	LPC
SS-139	CL	17+50	23.9-25.4	A-7-5(15)	50	11	2.0	3.3	60.2	34.6	97	96	93	-	-	LPC
SS-140	CL	17+50	28.9-30.4	A-5(13)	42	10	0.8	5.3	69.5	24.4	100	100	97	-	-	LPC
SS-141	CL	17+50	33.9-35.4	A-4(12)	38	10	1.0	5.3	65.2	28.5	100	99	97	-	-	LPC
SS-142	CL	17+50	38.9-40.4	A-4(5)	33	5	4.7	13.2	65.9	16.3	100	97	88	-	-	LPC
SS-143	CL	17+50	43.9-45.4	A-4(11)	40	8	0.8	1.2	61.4	36.6	100	99	99	-	-	LPC
SS-144	CL	19+50	3.7-5.2	A-7-5(32)	61	25	0.6	1.6	38.8	58.9	100	100	99	-	-	LPC
SS-145	CL	13+50	4.0-5.5	A-7-5(27)	55	24	2.6	4.3	38.2	54.9	100	99	94	-	-	LPA
SS-146	CL	13+50	9.0-10.5	A-7-5(16)	47	11	0.6	2.0	66.9	30.5	100	100	99	-	-	LPA
SS-147	CL	13+50	14.0-15.5	A-5(10)	43	6	0.8	2.2	68.5	28.5	100	100	99	-	-	LPA
SS-148	CL	13+50	19.0-20.5	A-5(10)	42	6	1.0	4.5	74.2	20.3	100	99	97	-	-	LPA
SS-149	CL	13+50	24.0-25.5	A-5(9)	42	5	0.4	3.0	70.1	26.4	100	100	98	-	-	LPA
SS-150	CL	13+50	29.0-30.5	A-5(9)	42	5	0.2	4.5	70.9	24.4	100	100	98	-	-	LPA
SS-152	55 RT	22+00	9.0-10.5	A-7-5(23)	57	27	7.7	13.5	26.3	52.5	96	92	79	-	-	RPA
SS-153	55 RT	22+00	14.0-15.5	A-7-5(16)	54	13	3.2	16.5	45.9	34.3	100	99	86	-	-	RPA
SS-154	55 RT	22+00	19.0-20.5	A-5(11)	50	10	5.7	21.2	48.9	24.2	100	98	80	-	-	RPA
SS-155	10 RT	20+50	1.0-2.5	A-7-6(14)	48	19	11.5	21.4	28.8	38.3	100	94	73	30	-	RPA
SS-156	10 RT	20+50	3.8-5.3	A-7-6(43)	65	37	0.8	2.0	32.6	64.6	100	99	98	33	-	RPA
SS-157	10 RT	20+50	8.8-10.3	A-7-5(19)	46	15	0.8	1.6	53.2	44.4	99	98	98	43	-	RPA
SS-158	CL	12+85	8.8-10.3	A-7-5(15)	54	11	1.2	12.5	52.0	34.3	99	98	89	-	-	RPA
SS-159	CL	12+85	13.8-15.3	A-4(6)	33	10	13.5	17.0	33.2	36.3	100	95	73	-	-	RPA
SS-160	10 LT	28+00	3.4-5.9	A-4(1)	26	5	9.7	24.0	38.0	28.3	87	84	62	-	-	FLY A
SS-161	10 LT	28+00	8.4-9.9	A-7-6(19)	45	16	0.2	2.0	53.4	44.4	100	100	99	-	-	FLY A
SS-162	CL	27+00	1.0-2.5	A-4(6)	37	3	0.2	4.2	61.3	34.3	100	100	98	-	-	FLY A
SS-163	CL	27+00	3.4-4.4	A-4(5)	27	7	2.6	5.9	57.2	34.3	97	96	91	-	-	FLY A
SS-164	CL	25+00	1.0-2.5	A-4(6)	31	7	4.0	12.7	44.9	38.3	96	94	84	-	-	FLY A
SS-165	CL	25+00	4.0-5.5	A-4(2)	25	3	5.4	8.5	57.8	28.3	100	97	88	-	-	FLY A

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-166	CL	25+00	9.0-10.5	A-4(1)	23	4	16.3	15.1	44.3	24.2	95	85	68	-	-	FLY A
SS-167	CL	25+00	14.0-15.5	A-7-6(24)	53	32	8.3	15.1	30.2	46.4	93	90	75	-	-	FLY A
SS-168	CL	25+00	19.0-20.5	A-7-6(10)	45	18	14.9	27.4	31.4	26.2	100	95	62	-	-	FLY A
SS-169	CL	12+10	3.6-5.1	A-4(1)	36	5	20.8	36.5	28.6	14.1	96	90	49	-	-	LPD
SS-170	CL	12+10	8.6-10.1	A-7-6(17)	44	15	1.4	4.2	39.9	54.5	100	99	96	-	-	LPD
SS-171	CL	12+10	13.6-15.1	A-7-5(14)	49	14	5.2	14.9	41.5	38.3	94	90	81	-	-	LPD
SS-172	CL	12+10	18.6-20.1	A-4(5)	34	5	5.9	17.4	58.6	18.2	100	98	83	-	-	LPD
SS-173	CL	12+10	23.6-25.1	A-5(10)	41	8	1.8	14.7	57.2	26.2	100	99	90	-	-	LPD
SS-174	CL	12+10	28.6-30.1	A-4(7)	39	5	1.4	9.1	67.3	22.2	100	99	93	-	-	LPD
SS-175	CL	12+10	33.6-35.1	A-4(6)	37	3	1.0	5.4	61.3	32.3	100	100	96	-	-	LPD
SS-151	55 RT	22+00	4.0-5.5	A-4(5)	35	3	1.2	10.3	60.2	28.3	100	100	93	-	-	RPA
SS-176	CL	14+00	4.0-5.5	A-7-5(18)	48	18	5.9	8.1	45.3	40.7	97	93	86	-	-	LPD
SS-177	CL	14+00	9.0-10.5	A-7-5(33)	67	28	2.8	7.1	33.1	56.9	100	99	92	-	-	LPD
SS-178	CL	14+00	14.0-15.5	A-7-5(24)	59	21	4.7	10.4	38.2	46.7	100	98	88	-	-	LPD
SS-179	CL	14+50	13.9-15.4	A-7-5(27)	60	25	3.3	11.6	40.4	44.7	100	99	88	-	-	LPD
SS-180	CL	16+00	3.3-4.8	A-6(16)	40	20	9.8	9.3	42.3	38.6	98	91	81	-	-	LPD
SS-181	CL	16+50	3.0-4.5	A-7-6(20)	52	26	8.7	6.9	37.6	46.7	88	82	76	-	-	LPD
SS-182	CL	16+50	8.0-9.5	A-7-6(31)	62	33	5.9	13.2	32.1	48.8	100	97	84	-	-	LPD
SS-183	CL	18+00	3.7-5.2	A-6(11)	36	12	5.7	7.3	54.5	32.5	97	93	87	-	-	LPD
SS-184	CL	18+00	8.7-10.2	A-7-5(16)	44	14	2.4	5.7	59.3	32.5	100	99	94	-	-	LPD
S-185	CL	20+00	5.7-7.7	A-7-5(22)	49	17	0.2	1.4	57.7	40.7	100	100	99	-	-	LPD
S-186	CL	39+35	1.0-3.0	A-7-5(28)	54	24	1.6	3.7	33.7	61.0	100	99	96	-	-	CD
SS-187	CL	23+50	3.5-5.0	A-4(2)	31	4	8.3	38.0	43.5	10.2	100	98	65	-	-	RPD
SS-188	CL	304+00	0.0-1.5	A-4(5)	28	9	14.2	11.8	49.6	24.4	98	88	75	-	-	L
SS-189	CL	304+00	3.2-4.7	A-7-6(25)	51	34	4.7	17.3	39.4	38.6	90	87	76	-	-	L
SS-190	CL	304+00	8.2-9.7	A-4(1)	30	6	21.7	33.3	32.7	12.2	100	86	53	-	-	L
SS-191	CL	21+50	3.6-5.1	A-7-6(17)	43	14	1.4	2.0	62.0	34.6	100	99	98	-	-	RPD
SS-192	CL	21+50	13.6-15.1	A-4(0)	28	3	31.3	28.5	30.1	10.2	93	74	42	-	-	RPD
SS-193	CL	17+50	3.1-4.6	A-7-5(33)	63	32	4.5	6.7	38.0	50.8	98	95	89	-	-	RPD
SS-194	CL	17+50	8.1-9.6	A-7-5(29)	67	20	0.4	6.7	38.0	54.9	100	100	96	-	-	RPD
SS-195	CL	17+50	18.1-19.6	A-5(3)	52	7	23.8	26.2	33.7	16.3	96	84	52	-	-	RPD
SS-196	CL	15+50	3.6-5.4	A-7-6(18)	44	17	4.5	6.1	48.8	40.7	100	98	91	-	-	RPD
SS-197	CL	15+50	28.6-30.1	A-5(7)	44	8	6.3	33.7	47.8	12.2	100	98	70	-	-	RPD
S-198	15 RT	13+27	1.0-3.0	A-7-5(49)	73	40	0.4	1.6	32.9	65.0	100	100	99	-	-	RPD
S-199	CL	17+50	0.5-2.5	A-7-5(27)	56	26	3.6	9.0	35.2	52.2	98	96	89	-	-	LPA
SS-200	CL	19+50	3.6-5.1	A-7-5(30)	60	23	0.2	4.4	49.2	46.1	100	100	98	-	-	LPA
SS-201	CL	19+50	8.6-10.1	A-7-5(21)	53	15	0.2	1.6	66.0	32.2	100	100	99	-	-	LPA
SS-202	CL	19+50	13.6-15.1	A-7-5(12)	50	11	7.6	12.4	59.9	20.1	96	91	81	-	-	LPA
SS-203	CL	19+50	23.6-25.1	A-5(11)	43	7	0.8	4.4	82.7	12.0	100	100	98	-	-	LPA
SS-204	CL	23+00	4.0-5.5	A-6(7)	40	11	10.2	29.3	44.4	16.0	100	96	69	-	-	FLYA
SS-205	CL	21+00	9.0-10.5	A-4(0)	29	4	35.7	29.5	28.8	6.0	100	77	41	-	-	FLYA
SS-206	70 LT	306+00	0.0-1.5	A-4(4)	27	7	7.0	12.2	58.7	22.1	97	93	82	-	-	L
SS-207	70 LT	306+00	3.9-5.4	A-6(7)	37	21	17.3	19.1	35.6	28.1	73	65	50	-	-	L
SS-208	70 LT	306+00	8.9-10.4	A-7-6(8)	50	30	18.1	22.7	25.2	34.1	65	57	43	-	-	L
SS-209	CL	306+00	0.0-1.5	A-7-6(21)	44	29	6.0	24.3	31.6	38.1	100	96	78	-	-	L
SS-210	100 RT	306+00	4.0-5.5	A-4(0)	24	6	16.4	21.1	46.4	16.0	73	65	50	-	-	L
SS-211	CL	27+50	9.3-10.8	A-4(2)	29	6	23.1	9.0	43.8	24.1	91	74	64	-	-	RPD
SS-212	CL	37+00	3.9-5.4	A-7-5(42)	75	37	1.2	11.2	25.4	62.2	100	100	92	-	-	Y5
SS-213	CL	37+00	8.9-10.4	A-7-5(21)	68	17	2.8	21.9	35.2	40.1	100	99	82	-	-	Y5
SS-214	CL	37+00	13.9-15.4	A-5(7)	61	7	13.2	28.7	34.0	24.1	100	95	64	-	-	Y5
SS-215	CL	37+00	28.9-30.4	A-4(1)	34	7	30.9	25.9	33.2	10.0	100	79	49	-	-	Y5
SS-216	CL	37+00	33.9-35.4	A-2-4(0)	27	5	51.8	18.3	24.0	6.0	98	55	34	-	-	Y5
SS-217	CL	39+00	3.8-5.3	A-5(3)	44	9	22.8	33.9	21.0	22.2	100	88	50	-	-	Y5
SS-218	CL	39+00	8.8-10.3	A-7-5(23)	66	24	6.7	19.4	31.5	42.4	100	97	79	-	-	Y5

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-219	CL	39+00	23.8-25.3	A-4(0)	28	4	22.8	26.1	37.0	14.1	94	81	55	-	-	Y5
SS-220	CL	41+00	4.0-5.5	A-6(7)	29	15	10.3	21.4	38.0	30.3	90	86	66	-	-	Y5
S-221	CL	56+00	1.0-3.0	A-7-5(30)	64	28	4.0	12.1	35.4	48.5	100	98	88	-	-	Y5
S-222	CL	53+50	0.5-2.5	A-7-5(48)	80	38	0.8	3.6	20.8	74.7	100	100	97	-	-	Y5
S-223	CL	53+50	4.0-6.0	A-7-5(38)	68	30	0.2	4.0	27.1	68.7	100	100	98	-	-	Y5
S-224	CL	53+50	12.0-14.5	A-7-5(18)	52	15	0.6	13.9	34.9	50.5	100	100	91	-	-	Y5
SS-225	CL	51+50	4.1-5.6	A-4(4)	35	6	4.2	33.7	33.7	28.3	100	99	71	-	-	Y5
SS-226	CL	51+50	4.1-5.6	A-4(0)	25	NP	13.9	33.3	38.6	14.1	96	88	64	-	-	Y5
S-227	38 LT	28+00	0.5-2.5	A-7-5(49)	81	38	0.4	1.8	19.0	78.8	100	100	99	-	-	Y6
S-228	38 LT	28+00	10.5-12.5	A-7-6(15)	43	15	5.5	7.9	40.2	46.5	97	93	87	-	-	Y6
SS-229	CL	27+00	4.0-5.5	A-7-5(44)	70	38	1.2	4.1	31.4	63.3	100	99	96	-	-	RPC
SS-230	CL	27+00	9.0-10.5	A-7-5(18)	47	15	1.2	5.5	70.8	22.4	100	99	96	-	-	RPC
SS-231	CL	27+00	14.0-15.5	A-7-5(16)	46	13	1.8	6.5	71.2	20.4	100	99	94	-	-	RPC
SS-232	CL	27+00	24.0-25.5	A-6(10)	40	12	13.3	11.6	54.7	20.4	100	91	79	-	-	RPC
SS-233	10 RT	21+00	3.8-5.3	A-7-5(15)	43	12	0.4	5.1	72.0	22.4	100	100	97	-	-	Y5
SS-234	10 RT	21+00	13.8-15.3	A-7-6(11)	43	15	14.9	18.4	46.3	20.4	100	89	74	-	-	Y5
SS-235	10 RT	21+00	23.8-25.3	A-4(9)	38	9	4.7	15.1	68.0	12.2	100	97	87	-	-	Y5
S-236	CL	27+00	1.0-3.0	A-7-5(33)	71	33	5.1	8.4	23.3	63.3	96	94	84	-	-	Y5
S-237	CL	27+00	10.5-12.5	A-4(9)	40	10	7.8	14.7	46.9	30.6	100	99	80	-	-	Y5
SS-238	CL	29+00	3.5-5.0	A-7-6(37)	59	32	0.2	1.6	45.1	53.1	100	100	99	-	-	Y5
S-239	CL	29+00	8.5-10.0	A-4(8)	36	6	0.2	2.4	64.7	32.7	100	100	99	-	-	Y5
SS-240	CL	60+00	4.0-5.5	A-7-6(20)	48	22	8.6	9.2	39.4	42.9	100	94	85	-	-	FLY A
SS-241	CL	60+00	9.0-10.5	A-4(3)	33	6	17.8	15.5	46.3	20.4	96	83	69	-	-	FLY A
S-242	CL	62+50	0.5-2.5	A-7-5(42)	74	36	2.0	4.3	22.2	71.4	99	98	94	-	-	FLY A
S-243	CL	62+50	5.5-7.5	A-7-5(47)	81	38	0.8	5.9	21.8	71.4	100	100	96	-	-	FLY A
S-244	CL	57+75	0.5-2.5	A-7-5(22)	50	17	0.2	1.6	49.2	49.0	100	100	99	-	-	FLY A
S-245	CL	32+17	0.5-2.5	A-6(13)	36	14	3.1	5.1	51.0	40.8	95	93	89	-	-	RPC
S-246	CL	32+17	7.5-9.5	A-7-5(23)	53	17	0.4	3.9	54.9	40.8	100	100	98	-	-	RPC
S-247	CL	55+00	0.5-2.5	A-7-6(28)	52	28	2.9	4.7	43.5	49.0	95	93	90	-	-	FLYA
S-248	25 LT	53+00	0.5-2.5	A-6(12)	37	18	5.5	6.1	45.5	42.9	80	77	73	-	-	FLYA
S-249	25 LT	53+00	3.0-6.0	A-7-5(34)	62	27	0.2	1.4	39.2	59.2	100	100	99	-	-	FLYA
S-250	CL	16+00	0.5-2.5	A-7-5(52)	82	43	1.6	3.3	17.6	77.6	100	99	96	-	-	Y5
SS-251	CL	17+25	4.1-5.6	A-4(8)	38	10	11.2	20.2	50.2	18.4	97	89	76	-	-	Y5
S-252	CL	11+30	0.5-2.5	A-7-6(30)	53	26	1.0	2.7	33.1	63.3	99	98	97	-	-	Y5A
S-253	CL	11+30	5.0-7.0	A-7-5(21)	47	17	0.8	2.4	45.7	51.0	100	99	98	-	-	Y5A
S-254	40 LT	18+50	0.5-2.5	A-6(13)	40	18	7.3	5.7	42.6	44.4	84	79	75	-	-	Y5
S-255	40 LT	18+50	4.0-6.0	A-7-5(28)	58	26	1.6	4.6	37.2	56.6	95	94	91	-	-	Y5
S-256	40 RT	18+50	10.0-12.0	A-7-6(7)	43	17	20.6	9.3	31.7	38.4	74	62	53	-	-	Y5
S-257	15 RT	37+58	0.5-2.5	A-7-5(23)	64	30	15.2	9.5	32.9	42.4	92	82	71	-	-	Y6 DET
S-258	15 RT	37+58	6.0-8.0	A-7-6(23)	45	21	0.2	3.4	47.9	48.5	100	100	98	-	-	Y6 DET
S-259	15 LT	35+50	1.0-3.0	A-7-6(25)	49	26	1.0	6.5	50.1	42.4	95	94	90	-	-	Y6 DET
SS-260	CL	324+00	3.4-4.9	A-5(13)	43	10	1.2	5.3	59.2	34.3	100	99	96	-	-	L
SS-261	CL	324+00	8.4-9.9	A-6(13)	39	11	0.4	8.9	52.3	38.4	100	100	95	-	-	L
SS-262	CL	324+00	18.4-19.9	A-5(14)	43	10	0.2	2.8	66.7	30.3	100	100	99	-	-	L
SS-263	40 RT	22+50	4.0-5.5	A-4(12)	40	10	0.6	6.9	44.0	48.5	98	98	94	-	-	Y6
SS-264	40 RT	22+50	9.0-10.5	A-4(6)	37	6	3.0	12.3	64.4	20.2	94	92	84	-	-	Y6
SS-265	40 RT	22+50	14.0-15.5	A-4(6)	35	4	0.4	7.9	69.5	22.2	100	100	96	-	-	Y6
S-266	27 RT	11+00	0.5-2.5	A-7-5(42)	69	39	1.8	10.8	30.6	56.8	100	99	92	-	-	Y6DET
S-267	27 RT	11+00	5.5-7.5	A-7-5(28)	55	25	0.8	12.0	40.6	46.7	100	100	93	-	-	Y6DET
SS-268	90 RT	330+35	3.4-4.9	A-7-5(18)	48	15	0.4	14.0	45.0	40.6	100	100	92	-	-	L
SS-269	90 RT	330+35	8.4-9.9	A-7-5(15)	44	14	1.6	14.8	47.1	36.5	100	99	88	-	-	L
SS-270	90 RT	330+35	13.4-14.9	A-5(9)	42	9	5.9	15.0	54.8	24.3	97	93	83	-	-	L
SS-271	90 RT	330+35	23.4-24.5	A-4(5)	36	4	3.4	12.6	49.5	34.5	100	98	90	-	-	L
SS-272	CL	332+00	3.5-5.0	A-7-5(24)	50	20	0.2	3.9	37.1	58.8	100	100	98	-	-	L

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-273	CL	332+00	8.5-10.0	A-7-5(16)	43	13	0.2	8.7	46.5	44.6	100	100	96	-	-	L
SS-274	CL	332+00	18.5-20.0	A-4(10)	38	9	1.0	13.6	46.9	38.5	100	100	92	-	-	L
SS-275	CL	332+00	28.5-30.0	A-4(4)	32	4	1.2	14.8	59.6	24.3	100	99	90	-	-	L
SS-276	CL	334+13	3.7-5.2	A-7-5(46)	71	39	0.4	2.8	27.8	69.0	100	100	98	31	-	L
SS-277	CL	334+13	8.7-10.2	A-4(12)	40	9	0.8	2.2	56.4	40.6	100	100	98	-	-	L
SS-278	CL	334+13	18.7-20.2	A-4(11)	38	9	1.0	7.7	50.7	40.6	100	100	95	-	-	L
SS-279	CL	334+13	28.7-30.2	A-4(6)	36	5	1.2	15.6	54.8	28.4	100	99	86	-	-	L
SS-280	CL	336+00	3.5-5.0	A-7-5(28)	57	23	1.2	5.8	44.8	48.1	100	99	95	30	-	L
SS-281	CL	336+00	8.5-10.0	A-7-5(17)	50	12	0.6	4.6	56.7	38.1	100	100	96	-	-	L
SS-282	CL	336+00	18.5-20.0	A-7-5(20)	54	16	1.0	10.8	56.1	32.1	100	100	93	-	-	L
SS-283	CL	336+00	28.5-30.0	A-7-5(14)	48	11	2.4	9.8	61.7	26.1	96	94	89	-	-	L
S-284	CL	337+75	0.5-2.5	A-7-5(44)	76	38	0.4	1.2	21.6	76.8	94	94	93	36	-	L
S-285	CL	337+75	9.0-10.0	A-7-5(40)	71	31	0.2	1.6	38.0	60.2	100	100	99	-	-	L
SS-286	12 LT	339+18	0.5-1.5	A-4(0)	22	2	6.0	9.8	66.1	18.1	92	88	82	-	-	L
SS-287	CL	339+18	3.7-5.2	A-7-5(27)	58	24	2.8	10.2	46.8	40.1	100	99	91	-	-	L
SS-288	CL	344+00	4.2-5.7	A-4(9)	38	7	0.2	11.2	60.5	28.1	100	100	95	-	-	L
SS-289	CL	344+00	9.2-10.7	A-4(6)	35	5	1.6	16.4	57.9	24.1	100	100	90	-	-	L
SS-290	CL	344+00	19.2-20.7	A-4(6)	37	5	1.8	17.3	62.9	18.1	100	100	89	-	-	L
S-291	90 LT	345+00	28.0-30.0	A-6(11)	40	13	2.6	15.4	53.9	28.1	99	97	82	-	-	L
S-292	CL	345+50	1.5-3.5	A-7-6(12)	41	14	7.6	12.8	49.4	30.1	95	91	79	-	-	L
S-293	CL	345+50	29.5-31.5	A-6(12)	39	11	3.8	5.2	54.9	36.1	98	96	91	-	-	L
S-294	CL	344+50	30.0-32.0	A-4(11)	38	10	1.6	9.6	60.7	28.1	100	99	94	-	-	L
S-295	CL	343+00	21.0-23.0	A-7-5(16)	44	14	0.6	8.4	58.9	32.1	100	100	94	-	-	L
S-296	60 LT	324+65	0.5-2.5	A-7-5(52)	79	45	1.8	3.6	26.4	68.2	100	99	96	40	-	L
S-297	60 LT	324+65	10.0-12.0	A-7-5(21)	50	18	0.6	9.0	52.3	38.1	100	100	94	-	-	L
S-298	60 LT	324+65	18.0-20.0	A-4(11)	36	9	0.8	3.4	57.7	38.1	100	99	98	-	-	L
S-299	40 RT	327+60	0.5-2.5	A-6(15)	39	17	5.6	7.6	46.6	40.1	99	95	88	-	-	L
S-300	40 RT	327+60	3.0-5.0	A-6(7)	35	16	11.6	9.4	38.8	40.1	73	67	60	-	-	L
SS-301	CL	326+00	3.4-4.9	A-4(11)	37	10	1.2	4.2	56.5	38.1	100	99	97	-	-	L
SS-302	CL	326+00	8.4-8.9	A-7-5(13)	42	11	1.8	9.8	52.3	36.1	100	99	93	-	-	L
SS-303	CL	326+00	18.4-19.8	A-4(9)	37	8	2.6	12.2	49.0	36.1	100	99	89	-	-	L
SS-304	CL	326+00	23.4-24.9	A-4(8)	33	8	1.0	7.2	67.7	24.1	100	99	95	-	-	L
SS-305	CL	326+00	28.4-29.9	A-4(2)	32	5	22.7	20.1	43.2	14.0	100	85	63	-	-	L
S-306	65 RT	324+65	38.0-40.0	A-6(15)	40	13	0.8	3.8	55.3	40.1	100	100	96	-	-	L
S-307	CL	329+00	0.5-2.5	A-7-5(23)	50	19	0.4	3.4	40.0	56.2	100	100	97	-	-	L
S-308	CL	329+00	8.0-10.0	A-7-6(17)	42	15	0.4	2.8	56.7	40.1	100	100	97	-	-	L
S-309	CL	329+00	27.0-29.0	A-4(11)	36	10	0.6	4.8	54.5	40.1	100	100	96	-	-	L
SS-310	90 LT	330+18	4.0-5.5	A-7-5(28)	54	23	0.2	2.0	40.9	56.9	100	100	99	30	-	L
SS-311	90 LT	330+18	9.0-10.5	A-7-5(9)	44	12	16.5	16.1	49.2	18.3	100	88	72	-	-	L
S-312	90 LT	330+18	15.0-17.0	A-7-5(13)	43	11	1.4	2.6	59.3	36.6	97	96	94	-	-	L
S-313	90 LT	332+00	18.0-20.0	A-7-5(19)	48	15	0.4	4.3	52.6	42.7	100	100	97	-	-	L
S-314	90 LT	332+00	46.0-48.0	A-7-5(16)	46	13	0.6	5.9	54.9	38.6	100	100	96	-	-	L
S-315	38 RT	20+50	0.5-2.5	A-7-6(10)	44	21	9.8	8.1	43.5	38.6	70	64	60	-	-	Y7
S-316	10 RT	11+00	0.5-2.5	A-7-6(33)	60	31	2.2	6.5	38.4	52.8	97	95	91	-	-	Y7A
S-317	10 RT	11+00	5.0-7.0	A-6(13)	38	14	3.9	10.8	46.7	38.6	100	98	89	-	-	Y7A
S-318	CL	350+00	0.5-2.5	A-7-6(18)	42	19	4.7	9.3	43.3	42.7	97	94	88	-	-	L
S-319	CL	350+00	3.0-5.0	A-6(8)	38	12	10.6	19.1	41.9	28.5	95	90	72	-	-	L
S-320	25 RT	11+50	1.5-3.5	A-7-6(22)	44	22	1.8	8.3	35.0	54.9	99	98	93	-	-	Y7
S-321	16 LT	13+58	0.5-2.5	A-7-6(31)	57	30	2.8	7.3	39.0	50.8	97	95	90	-	-	Y7
S-322	16 LT	13+58	5.0-7.0	A-4(10)	35	10	1.0	15.4	49.0	34.6	100	100	90	-	-	Y7
S-323	36 RT	15+50	0.5-2.5	A-7-6(28)	55	35	6.3	14.0	30.9	48.8	94	90	79	27	-	Y7A
S-324	36 RT	15+50	4.0-6.0	A-7-6(23)	50	24	1.6	19.9	41.9	36.6	100	100	86	-	-	Y7A
SS-325	12 RT	353+84	3.1-4.6	A-7-5(21)	54	22	10.8	8.9	39.6	40.7	100	93	83	-	-	L
SS-326	12 RT	353+84	8.1-9.6	A-5(6)	44	8	10.6	11.0	60.2	18.3	81	75	67	-	-	L

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-327	12 RT	353+84	13.1-14.6	A-5(4)	41	5	18.5	21.3	43.9	16.3	100	87	67	-	-	L
SS-328	12 RT	353+84	28.1-29.6	A-5(6)	42	7	13.0	25.8	47.0	14.2	99	90	70	-	-	L
S-329	20 RT	17+50	1.0-3.0	A-7-6(21)	51	27	12.4	10.4	36.3	40.8	95	86	76	28	-	Y7A
S-330	20 RT	17+50	6.0-8.0	A-6(8)	39	14	18.6	16.3	38.6	26.5	96	84	67	-	-	Y7A
S-331	CL	19+20	0.5-2.5	A-7-6(28)	50	26	2.2	5.9	42.9	49.0	100	99	95	27	-	Y7A
S-332	CL	19+20	4.5-6.5	A-6(11)	40	11	5.3	9.4	50.6	34.7	97	94	87	-	-	Y7A
S-333	CL	358+00	1.0-3.0	A-7-5(46)	77	39	1.4	6.9	20.2	71.4	100	99	94	43	-	L
S-334	CL	358+00	5.0-7.0	A-7-5(27)	67	26	4.3	11.6	35.1	49.0	94	91	83	-	-	L
S-335	CL	360+30	0.5-2.5	A-7-5(44)	76	43	6.3	5.5	26.9	61.2	98	94	88	-	-	L
S-336	CL	362+00	6.0-8.0	A-7-6(20)	46	17	0.6	5.9	50.6	42.9	100	100	96	-	-	L
SS-337	CL	364+00	3.2-4.7	A-4(6)	36	6	2.0	19.8	53.7	24.5	100	99	80	-	-	L
SS-338	CL	364+00	8.2-9.7	A-4(2)	34	1	1.2	18.6	65.9	14.3	100	100	86	-	-	L
SS-339	25 RT	366+00	3.1-4.6	A-7-5(13)	48	16	7.3	29.0	37.1	26.5	100	97	74	-	-	L
SS-340	25 RT	366+00	8.1-9.6	A-4(5)	39	8	19.4	23.3	47.1	10.2	98	86	64	-	-	L
S-341	CL	368+00	0.5-2.5	A-7-6(30)	58	29	2.7	5.5	34.7	57.1	96	94	90	-	-	L
S-342	CL	368+00	10.0-12.0	A-5(11)	43	9	1.4	8.4	51.4	38.8	100	99	92	-	-	L
S-343	CL	21+50	0.5-2.5	A-7-6(50)	76	53	3.5	12.4	33.2	50.9	97	95	86	-	-	Y9RPC
S-344	CL	21+50	5.0-7.0	A-7-6(22)	45	25	6.3	12.6	42.4	38.7	100	97	85	-	-	Y9RPC
S-345	CL	21+50	18.0-20.0	A-4(5)	30	9	8.4	23.6	43.6	24.4	96	84	69	-	-	Y9RPC
S-346	CL	395+00	1.5-3.5	A-6(6)	37	18	20.0	19.3	30.1	30.5	77	66	51	-	-	L
SS-347	CL	397+00	8.9-10.4	A-6(6)	36	14	13.0	34.4	32.2	20.4	98	92	59	-	-	L
S-348	CL	11+50	0.5-2.5	A-7-6(49)	78	56	6.1	5.5	27.3	61.1	90	85	82	33	-	Y9LP
SS-349	CL	14+03	4.2-5.7	A-7-6(15)	42	16	5.1	13.4	42.8	38.7	100	97	87	-	-	Y9RPC
SS-350	CL	14+03	9.2-10.7	A-4(2)	26	3	0.6	26.9	52.1	20.4	100	100	85	-	-	Y9RPC
SS-351	CL	14+03	14.2-15.7	A-4(3)	28	5	6.7	24.2	46.6	22.4	100	97	78	-	-	Y9RPC
S-352	CL	13+50	0.5-2.5	A-6(12)	33	13	3.1	7.3	48.9	40.7	98	96	91	-	-	Y9LP
S-353	CL	21+50	0.5-2.5	A-6(9)	34	11	2.6	15.3	43.4	38.7	96	94	84	-	-	Y9FLY
S-354	CL	21+50	4.5-6.5	A-4(5)	29	8	6.1	19.6	45.8	28.5	100	98	80	-	-	Y9FLY
SS-355	CL	391+00	3.5-5.0	A-7-6(30)	56	31	3.3	11.8	42.2	42.8	98	96	87	-	-	L
SS-356	CL	389+00	4.1-5.6	A-7-6(37)	61	32	0.4	2.2	42.4	55.0	100	100	98	-	-	L
SS-357	CL	389+00	9.1-10.6	A-7-5(23)	52	20	0.8	8.4	46.0	44.8	100	100	94	-	-	L
SS-358	CL	389+00	14.1-15.6	A-4(5)	34	4	1.0	12.4	62.1	24.4	100	100	91	-	-	L
SS-359	CL	389+00	24.1-25.6	A-4(3)	31	5	14.9	18.1	48.7	18.3	97	88	70	-	-	L
SS-360	CL	14+51	3.2-4.7	A-7-6(25)	50	21	0.6	1.8	42.9	54.7	100	100	98	-	-	Y9FLY
SS-361	CL	14+51	8.2-9.7	A-7-5(13)	41	11	2.2	6.3	61.1	30.4	100	99	94	-	-	Y9FLY
SS-362	CL	14+51	13.2-14.7	A-4(5)	34	4	3.6	7.9	62.1	26.3	100	99	91	-	-	Y9FLY
S-363	20 LT	16+00	1.0-3.0	A-7-5(41)	68	35	1.8	5.9	33.6	58.7	100	99	96	-	-	Y12
S-364	15 RT	14+00	1.0-3.0	A-7-5(24)	52	21	2.4	6.7	46.4	44.5	100	99	94	-	-	Y12
S-365	23 RT	18+00	1.5-3.5	A-7-6(42)	68	40	4.0	5.5	31.8	58.7	99	96	92	-	-	Y12
SS-366	CL	52+45	4.3-5.8	A-7-6(32)	59	31	5.9	7.5	36.0	50.6	100	96	90	-	-	Y9FLY
SS-367	50 RT	52+45	9.1-10.6	A-7-5(12)	46	12	8.9	15.6	47.2	28.3	100	94	82	-	-	Y9FLY
SS-368	50 RT	52+45	14.1-15.6	A-5(9)	45	9	11.9	21.3	48.6	18.2	100	91	76	-	-	Y9FLY
SS-369	50 RT	52+45	19.1-20.6	A-5(1)	41	6	38.1	20.2	27.5	14.2	100	72	47	-	-	Y9FLY
SS-370	CL	12+51	3.5-5.0	A-7-5(15)	45	13	3.2	10.7	55.7	30.4	100	98	92	-	-	Y9RPD
SS-371	CL	12+51	13.5-15.0	A-4(1)	32	2	15.4	25.1	47.4	12.1	100	91	70	-	-	Y9RPD
SS-372	CL	12+51	18.5-20.0	A-5(7)	41	6	8.9	15.4	61.5	14.2	100	95	82	-	-	Y9RPD
S-373	32 LT	23+00	1.0-3.0	A-7-6(32)	59	32	4.9	10.7	35.8	48.6	100	97	89	-	-	Y12
S-374	28 LT	27+00	1.0-3.0	A-7-6(17)	44	15	2.8	7.3	45.3	44.5	100	98	94	-	-	Y12
S-375	28 LT	27+00	5.0-7.0	A-7-6(14)	42	13	3.4	8.5	49.6	38.5	100	98	92	-	-	Y12
SS-376	28 RT	29+00	3.5-5.0	A-4(6)	37	5	5.8	14.9	67.2	12.1	99	95	85	-	-	Y12
SS-377	28 RT	29+00	8.5-10.0	A-4(4)	33	4	7.9	18.3	61.7	12.1	99	95	80	-	-	Y12
SS-378	15 RT	31+00	3.3-4.5	A-5(7)	42	7	10.5	23.0	54.5	12.1	100	93	77	-	-	Y12
SS-379	15 RT	31+00	13.3-14.8	A-5(5)	43	5	12.1	30.0	51.9	6.0	100	92	70	-	-	Y12
SS-380	15 RT	31+00	23.3-24.8	A-4(2)	38	5	17.7	36.1	40.2	6.0	99	89	58	-	-	Y12

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC	Alignment
SS-381	CL	33+00	3.8-5.3	A-7-5(29)	58	27	4.2	7.9	45.6	42.3	100	98	91	-	-	Y12
SS-382	CL	33+00	8.8-10.3	A-5(11)	43	9	3.4	10.5	68.0	18.1	100	98	92	-	-	Y12
SS-383	CL	33+00	18.8-20.3	A-4(7)	40	7	8.3	19.9	55.7	16.1	100	95	79	-	-	Y12
SS-384	CL	33+00	28.8-30.3	A-4(2)	34	3	15.7	27.4	48.8	8.1	100	93	65	-	-	Y12
SS-385	CL	33+00	33.8-35.3	A-4(0)	31	1	17.1	27.4	47.4	8.1	100	92	63	-	-	Y12
SS-386	CL	35+00	3.5-5.0	A-7-5(35)	64	33	5.0	7.0	37.6	50.4	99	96	90	-	-	Y12
SS-387	CL	35+00	8.5-10.0	A-7-5(19)	55	17	2.6	13.7	47.4	36.3	99	98	87	-	-	Y12
SS-388	CL	35+00	13.5-15.0	A-5(6)	53	8	10.5	37.9	37.6	14.1	100	98	60	-	-	Y12
SS-389	CL	35+00	18.5-20.0	A-5(7)	51	10	8.7	38.5	40.8	12.1	100	98	61	-	-	Y12
SS-390	CL	35+00	23.5-25.0	A-7-5(8)	48	13	15.9	28.8	45.2	10.1	98	89	62	-	-	Y12
SS-391	30 RT	10+22	3.4-4.9	A-7-5(21)	49	19	3.4	7.0	57.3	32.2	100	98	93	-	-	Y10RPB
SS-392	30 RT	10+22	8.4-9.9	A-4(7)	37	7	3.0	16.7	64.1	16.1	100	98	87	-	-	Y10RPB
SS-393	30 RT	10+22	13.4-14.9	A-4(5)	36	4	0.4	20.3	63.1	16.1	100	100	88	-	-	Y10RPB
SS-394	30 RT	10+22	18.4-19.8	A-5(8)	41	8	4.8	21.8	61.3	12.1	100	98	81	-	-	Y10RPB
SS-395	30 RT	10+22	28.4-29.9	A-4(2)	32	4	15.5	30.4	46.0	8.1	100	91	63	-	-	Y10RPB
SS-396	30 RT	10+22	33.4-34.9	A-4(6)	39	4	3.4	16.5	68.0	12.1	100	99	87	-	-	Y10RPB
SS-397	125 RT	426+25	3.7-5.2	A-5(8)	41	6	5.9	12.7	60.9	20.5	100	96	87	-	-	L
SS-398	125 RT	426+25	13.7-15.2	A-4(6)	39	6	8.8	17.4	59.5	14.3	100	94	81	-	-	L
SS-399	125 RT	426+25	23.7-25.2	A-4(2)	34	2	12.7	26.2	48.8	12.3	100	93	70	-	-	L
SS-400	125 RT	426+25	28.7-30.2	A-4(1)	30	2	17.4	25.2	49.2	8.2	100	91	65	-	-	L
S-401	30 LT	49+00	1.0-3.0	A-4(2)	31	8	28.0	15.1	38.4	18.4	82	63	51	-	-	Y10
S-402	30 LT	49+00	8.0-10.0	A-7-6(21)	49	20	3.3	7.2	52.7	36.8	97	95	90	-	-	Y10
S-403	30 LT	47+00	1.0-3.0	A-6(5)	29	11	7.6	30.1	35.7	26.6	91	88	65	-	-	Y10
S-404	30 LT	37+00	1.0-3.0	A-6(8)	34	11	11.3	7.8	52.3	28.7	91	83	76	-	-	Y10
S-405	30 LT	37+00	7.0-9.0	A-4(6)	30	6	1.0	5.5	70.9	22.5	100	100	97	-	-	Y10
S-406	30 LT	33+00	1.0-3.0	A-7-6(27)	48	29	2.5	8.4	50.3	38.9	97	96	90	-	-	Y10
S-407	20 LT	23+00	1.0-3.0	A-6(4)	36	21	29.3	10.6	31.4	28.7	65	51	41	-	-	Y10
S-408	20 LT	23+00	4.0-6.0	A-6(6)	37	14	15.6	20.5	39.4	24.6	84	76	59	-	-	Y10
S-409	24 LT	19+13	0.5-2.5	A-7-6(15)	41	16	4.9	10.6	45.5	38.9	98	96	87	-	-	Y10
S-410	24 LT	19+13	5.0-7.0	A-4(2)	27	9	18.6	16.4	44.5	20.5	80	71	56	-	-	Y10
SS-411	20 RT	20+50	3.8-5.3	A-7-5(23)	54	21	4.9	6.3	51.9	36.8	100	97	91	-	-	Y10
SS-412	20 RT	20+50	8.8-10.3	A-4(0)	29	5	40.5	17.8	27.3	14.3	81	58	36	-	-	Y10
SS-413	53 RT	24+67	4.0-5.5	A-4(0)	31	4	22.1	34.0	35.7	8.2	96	85	51	-	-	Y10
SS-414	45 RT	35+00	4.1-5.6	A-4(5)	33	6	4.3	17.0	52.1	26.6	100	98	84	-	-	Y10
S-415	55 RT	39+00	0.5-2.5	A-7-6(15)	43	15	5.9	10.2	44.9	38.9	98	94	86	-	-	Y10
S-416	40 RT	43+00	1.0-3.0	A-7-5(50)	79	44	2.0	5.3	31.2	61.4	98	97	94	-	-	Y10
S-417	40 RT	43+00	6.0-8.0	A-7-5(22)	51	19	2.4	9.2	45.6	42.8	100	98	93	-	-	Y10
SS-418	45 RT	41+00	3.7-5.2	A-7-5(36)	66	29	1.4	4.9	36.6	57.1	100	99	96	-	-	Y10
SS-419	45 RT	41+00	8.7-10.2	A-5(12)	51	9	0.4	23.4	45.6	30.6	100	100	86	-	-	Y10
SS-420	45 RT	41+00	13.7-15.2	A-5(8)	46	4	1.0	16.5	60.0	22.4	100	100	89	-	-	Y10
SS-421	40 RT	45+00	3.7-5.2	A-7-5(11)	52	11	6.5	23.4	47.6	22.4	97	94	75	-	-	Y10
SS-422	40 RT	45+00	8.7-10.2	A-7-5(10)	43	11	2.2	30.4	47.0	20.4	100	100	78	-	-	Y10
S-423	28 LT	24+00	0.5-2.5	A-7-6(41)	66	41	4.9	9.8	32.3	53.0	99	96	89	-	-	Y13
S-424	28 LT	24+00	5.0-7.0	A-7-6(20)	43	21	1.2	17.7	44.3	36.7	100	99	90	-	-	Y13
SS-425	CL	15+66	3.3-4.8	A-7-5(41)	73	33	1.0	4.9	28.8	65.2	100	99	96	-	-	Y10RPD
S-426	20 LT	18+50	0.5-2.5	A-7-5(44)	76	37	2.0	3.1	19.5	75.4	99	98	95	-	-	Y13
S-427	20 LT	18+50	5.0-7.0	A-7-6(17)	48	20	10.2	14.7	38.4	36.7	100	95	80	-	-	Y13
S-428	40 RT	31+00	0.5-2.5	A-6(14)	37	17	3.9	6.1	53.3	36.7	92	89	85	-	-	Y10
S-429	40 RT	31+00	5.0-7.0	A-6(6)	32	12	8.2	15.7	37.4	38.7	79	75	64	-	-	Y10
S-430	40 RT	31+00	11.0-13.0	A-7-5(17)	44	14	0.6	3.1	49.4	46.9	100	100	98	-	-	Y10
SS-431	45 RT	29+00	3.6-5.1	A-4(2)	31	8	20.8	34.5	26.4	18.3	99	89	51	-	-	Y10
SS-432	40 RT	17+00	1.0-2.0	A-4(2)	26	5	9.6	19.2	50.9	20.4	100	96	77	-	-	Y10
SS-433	CL	445+82	3.3-4.8	A-7-5(54)	77	45	0.4	2.0	28.2	69.3	100	100	99	-	-	L
SS-434	CL	445+82	8.3-9.8	A-7-5(18)	51	14	2.2	5.7	53.3	38.7	98	97	92	-	-	L

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-435	CL	10+50	3.8-5.3	A-6(19)	39	20	3.1	5.5	50.7	40.8	100	98	94	-	-	Y10LPD
SS-436	CL	10+50	8.8-10.3	A-4(3)	29	6	7.1	29.6	42.9	20.4	100	98	72	-	-	Y10LPD
S-437	CL	448+00	1.0-3.0	A-6(13)	39	16	6.3	7.1	49.8	36.7	92	88	82	-	-	L
S-438	CL	448+00	6.0-8.0	A-7-6(13)	41	15	4.7	10.2	46.4	38.7	92	90	81	-	-	L
SS-439	CL	12+22	3.6-5.1	A-7-5(21)	49	17	2.6	2.2	46.5	48.7	99	97	96	-	-	Y10RPB
SS-440	CL	12+22	8.6-10.1	A-5(11)	46	6	2.0	5.7	63.9	28.4	100	99	95	-	-	Y10RPB
SS-441	CL	12+22	18.6-20.1	A-5(15)	48	10	1.8	6.1	69.8	22.3	100	99	96	-	-	Y10RPB
SS-442	CL	12+22	28.6-30.1	A-5(9)	49	3	0.4	10.1	71.2	18.3	100	100	95	-	-	Y10RPB
SS-443	CL	12+22	38.6-40.1	A-4(6)	36	5	1.4	12.6	59.6	26.4	100	99	92	-	-	Y10RPB
SS-444	CL	430+50	3.7-5.2	A-7-6(29)	57	31	5.7	5.9	45.8	42.6	94	90	85	-	-	L
SS-445	CL	430+50	8.7-10.2	A-7-5(20)	46	16	0.2	0.8	54.4	44.6	100	100	99	-	-	L
SS-446	CL	430+50	13.7-15.2	A-5(8)	43	3	0.6	4.9	70.2	24.3	100	100	98	-	-	L
SS-447	CL	432+50	3.1-4.6	A-7-5(41)	72	37	2.8	6.7	33.7	56.8	98	96	91	-	-	L
SS-448	CL	432+50	8.1-9.6	A-4(3)	30	6	9.5	36.7	39.6	14.2	100	96	65	-	-	L
SS-449	CL	432+50	13.1-14.6	A-5(7)	42	10	3.2	41.8	40.8	14.2	100	99	68	-	-	L
SS-450	CL	432+50	23.1-24.6	A-6(7)	38	13	12.0	32.7	35.1	20.3	100	94	65	-	-	L
SS-451	CL	14+24	3.5-5.0	A-7-6(14)	45	21	13.0	5.9	46.7	34.5	85	75	71	-	-	Y10RPB
SS-452	CL	14+24	8.5-10.0	A-7-5(22)	50	19	1.0	7.7	52.7	38.5	100	99	95	-	-	Y10RPB
SS-453	CL	14+24	13.5-15.0	A-4(9)	40	6	0.4	7.3	76.1	16.2	100	100	97	-	-	Y10RPB
SS-454	125 RT	416+00	3.4-4.9	A-7-6(31)	54	33	3.2	17.2	36.9	42.6	99	97	87	-	-	L
S-455	CL	414+00	0.5-2.5	A-7-5(42)	68	35	0.4	2.2	32.5	64.9	100	100	98	-	-	L
S-456	CL	414+00	5.0-7.0	A-7-6(23)	46	19	0.2	0.4	52.7	46.7	100	100	100	-	-	L
SS-457	CL	410+00	3.8-5.3	A-7-6(26)	54	28	2.6	19.7	39.1	38.5	99	97	85	-	-	L
SS-458	CL	37+00	3.5-5.0	A-7-5(28)	53	23	0.4	2.0	51.6	46.0	100	100	99	-	-	Y12
SS-459	CL	37+00	8.5-10.0	A-6(12)	39	11	1.2	10.4	56.4	32.0	100	100	94	-	-	Y12
SS-460	CL	37+00	13.5-15.0	A-4(8)	38	6	0.6	15.0	64.4	20.0	100	100	91	-	-	Y12
SS-461	CL	37+00	18.5-20.0	A-4(4)	37	4	10.6	24.6	54.8	10.0	100	92	74	-	-	Y12
SS-462	CL	39+00	3.5-5.0	A-7-6(17)	42	15	0.4	8.2	53.4	38.0	100	100	95	-	-	Y12
SS-463	CL	39+00	8.5-10.0	A-4(6)	35	4	0.2	3.8	78.0	18.0	100	100	99	-	-	Y12
SS-464	CL	39+00	13.5-15.0	A-4(4)	33	3	0.4	8.0	73.6	18.0	100	100	97	-	-	Y12
SS-465	CL	39+00	18.5-20.0	A-4(4)	34	3	1.4	17.8	66.8	14.0	100	99	91	-	-	Y12
S-468	CL	42+50	0.0-3.0	A-4(2)	27	6	13.4	8.0	56.6	22.0	77	68	63	21	-	Y12
S-466	CL	40+92	0.0-3.5	A-4(3)	31	4	6.2	13.2	62.6	18.0	96	92	83	-	-	Y12
S-467	CL	40+92	3.5-5.0	A-4(1)	27	4	16.6	18.4	48.9	16.0	91	80	64	-	-	Y12
S-469	CL	45+06	2.0-3.0	A-7-6(25)	50	26	6.2	6.8	44.9	42.0	97	93	87	-	-	Y12
S-470	CL	45+06	6.0-10.0	A-4(4)	32	5	6.6	18.4	53.0	22.0	100	97	82	-	-	Y12
SS-471	20 RT	47+00	0.5-1.5	A-7-5(39)	70	39	6.0	4.0	27.9	62.1	95	91	87	-	-	Y12
SS-472	20 RT	47+00	8.5-9.0	A-7-6(17)	43	16	2.0	12.2	57.8	28.0	100	99	91	-	-	Y12
SS-473	20 RT	47+00	14.0-14.5	A-7-5(23)	53	19	0.4	6.2	55.4	38.0	100	100	96	-	-	Y12
S-474	CL	51+50	1.0-2.0	A-2-4(0)	28	10	38.2	12.0	29.7	20.0	47	34	25	-	-	Y12
S-475	CL	51+50	5.0-7.0	A-4(3)	28	6	13.4	14.4	50.2	22.0	96	88	74	-	-	Y12
S-476	CL	49+55	1.0-2.0	A-7-6(36)	63	34	3.0	10.2	42.7	44.0	100	99	91	-	-	Y12
S-477	CL	49+55	4.0-5.0	A-4(3)	36	4	9.2	32.4	46.3	12.0	100	96	68	-	-	Y12
S-478	CL	49+55	7.0-10.0	A-4(2)	40	3	8.4	41.8	41.7	8.0	100	98	63	-	-	Y12
SS-479	CL	16+55	3.5-5.0	A-4(4)	36	7	8.0	35.2	38.7	18.0	100	96	68	-	-	Y10LPD
SS-480	CL	28+50	0.0-1.5	A-6(10)	32	13	4.2	10.6	51.2	34.0	97	94	87	-	-	Y10LPD
SS-481	CL	28+50	3.5-5.0	A-4(3)	33	3	5.0	25.6	59.4	10.0	100	98	80	-	-	Y10LPD
SS-482	CL	28+50	8.5-10.0	A-7-5(16)	46	14	4.2	6.6	65.2	24.0	100	97	93	-	-	Y10RPD
SS-482A	CL	26+50	1.0-1.5	A-7-6(32)	60	36	8.6	14.8	32.5	44.0	100	94	82	-	-	Y10RPD
SS-483	CL	24+50	4.0-5.0	A-7-5(38)	65	33	2.4	4.7	54.1	38.8	100	99	95	-	-	Y10RPD
SS-484	CL	24+50	8.5-9.0	A-4(7)	40	6	3.7	16.3	67.8	12.2	100	98	86	-	-	Y10RPD
SS-485	CL	24+50	19.0-20.0	A-4(7)	38	7	4.5	19.6	65.7	10.2	100	98	84	-	-	Y10RPD
S-486	CL	30+50	1.0-3.0	A-7-6(21)	50	25	1.4	10.2	47.6	40.8	86	85	80	-	-	Y10RPD
SS-487	CL	14+50	0.5-1.5	A-7-6(31)	55	28	2.0	5.5	41.4	51.0	100	99	95	-	-	Y10LPD

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-488	CL	14+50	9.0-10.0	A-4(4)	39	3	5.7	23.3	60.8	10.2	100	97	81	-	-	Y10LPD
SS-489	CL	14+50	1.0-3.0	A-5(10)	43	7	0.6	18.0	67.1	14.3	100	100	90	-	-	Y10LPD
SS-490	CL	14+50	23.5-24.0	A-7-5(10)	41	11	7.3	18.4	58.0	16.3	97	92	79	-	-	Y10LPD
S-491	CL	12+60	1.0-3.0	A-6(11)	40	16	12.7	16.9	39.8	30.6	97	90	73	-	-	Y10LPD
SS-492	30 RT	22+50	3.5-4.0	A-7-6(23)	53	25	1.8	22.9	40.6	34.7	100	99	84	-	-	Y10RPD
S-493	CL	20+80	1.0-3.0	A-6(7)	31	11	9.4	8.4	53.7	28.6	91	85	78	-	-	Y10RPD
S-494	CL	20+80	6.0-7.0	A-7-6(22)	48	24	5.1	13.1	45.1	36.7	97	94	86	-	-	Y10RPD
S-495	CL	19+50	1.0-4.0	A-6(12)	39	15	6.1	18.6	42.7	32.7	100	98	79	36	-	Y10RPD
S-496	CL	19+50	5.0-7.0	A-6(11)	37	11	3.1	11.2	63.3	22.4	100	99	89	32	-	Y10RPD
S-497	CL	17+50	2.0-3.0	A-7-6(36)	59	32	1.2	4.7	36.9	57.1	100	99	96	-	-	Y10RPD
S-498	CL	17+50	6.0-7.0	A-7-5(16)	45	15	2.2	9.2	47.8	40.8	100	99	91	-	-	Y10RPD
SS-499	CL	456+00	0.0-1.5	A-6(10)	38	15	10.6	10.8	43.9	34.7	90	82	74	-	-	L
SS-500	CL	456+00	3.5-5.0	A-6(7)	35	12	5.1	37.1	39.4	18.4	100	98	69	-	-	L
SS-501	90 RT	454+00	4.0-4.5	A-7-5(27)	57	21	0.4	1.6	44.9	53.1	100	100	99	-	-	L
SS-502	90 RT	454+00	9.0-9.5	A-4(7)	36	6	1.0	12.2	64.3	22.4	100	100	92	-	-	L
SS-503	90 RT	454+00	19.0-19.5	A-4(9)	39	8	0.2	19.8	53.5	26.5	100	100	86	-	-	L
SS-504	90 RT	454+00	28.5-30.0	A-4(6)	36	7	0.8	28.0	50.8	20.4	100	100	81	-	-	L
SS-505	90 LT	454+00	1.0-1.5	A-7-6(26)	51	23	2.2	2.4	42.2	53.1	100	98	97	-	-	L
SS-506	90 LT	454+00	4.0-4.5	A-4(4)	30	4	0.4	7.6	65.5	26.5	100	100	96	-	-	L
SS-507	90 LT	454+00	14.0-14.5	A-4(12)	40	10	0.4	8.4	62.7	28.6	100	100	95	-	-	L
SS-508	CL	454+00	4.0-4.5	A-7-5(43)	67	36	0.2	1.0	43.7	55.1	100	100	99	-	-	L
SS-509	CL	454+00	9.0-9.5	A-4(9)	40	5	0.2	1.4	80.0	18.4	100	100	99	-	-	L
SS-510	CL	454+00	19.0-19.5	A-7-5(4)	56	21	27.1	11.8	38.6	22.4	62	48	39	-	-	L
SS-511	CL	454+00	24.0-24.5	A-6(11)	39	11	1.8	16.3	53.3	28.6	100	99	89	32	-	L
SS-512	CL	458+00	0.5-1.5	A-4(5)	27	7	6.3	8.2	59.0	26.5	99	94	88	-	-	L
SS-513	CL	458+00	4.0-4.5	A-7-5(27)	61	28	9.4	12.2	37.6	40.8	100	93	83	-	-	L
SS-514	CL	458+00	14.0-14.5	A-7-5(14)	47	16	4.5	24.7	52.4	18.4	100	98	80	24	-	L
SS-515	CL	13+57	4.0-4.5	A-7-5(48)	73	41	0.6	3.6	37.2	58.6	100	100	97	-	-	Y10RPD
SS-516	CL	13+57	14.0-14.5	A-5(10)	47	8	2.0	20.2	55.6	22.2	100	99	85	-	-	Y10RPD
SS-517	20 LT	460+00	9.0-9.5	A-7-5(17)	48	13	3.0	4.4	40.0	52.5	100	98	94	-	-	L
SS-518	20 LT	460+00	14.0-14.5	A-7-6(16)	45	17	4.0	14.1	49.5	32.3	100	98	86	-	-	L
S-519	CL	462+90	1.0-3.0	A-7-6(42)	67	39	3.8	5.5	32.1	58.6	100	97	93	-	-	L
S-520	CL	462+90	8.0-9.0	A-7-5(15)	47	14	4.2	15.6	43.8	36.4	100	98	85	-	-	L
S-521	CL	464+90	1.0-3.0	A-7-6(28)	54	27	3.0	4.2	34.1	58.6	97	95	92	-	-	L
S-522	CL	464+90	8.0-10.0	A-7-5(22)	52	19	1.6	10.5	43.4	44.4	100	99	92	36	-	L
S-523	CL	464+90	15.0-17.0	A-7-5(17)	48	15	2.4	14.3	44.8	38.4	100	100	89	49	-	L
S-524	CL	469+75	1.0-3.0	A-7-5(43)	68	37	1.0	5.5	37.0	56.6	100	99	96	-	-	L
S-525	CL	471+00	1.0-2.0	A-7-6(33)	57	29	1.2	2.2	46.1	50.5	98	97	96	-	-	L
S-526	CL	471+00	3.0-4.0	A-7-6(24)	49	21	1.6	4.2	55.8	38.4	100	99	96	-	-	L
S-527	CL	471+00	7.0-8.0	A-7-5(32)	57	27	0.6	3.2	45.7	50.5	100	100	98	29	-	L
S-528	CL	471+00	11.0-12.0	A-4(6)	34	8	6.3	11.5	58.0	24.2	89	86	77	-	-	L
SS-529	CL	452+00	4.0-4.5	A-7-6(29)	52	26	1.4	3.4	42.6	52.5	100	99	97	-	-	L
SS-530	CL	452+00	19.0-19.5	A-1-b(0)	28	2	16.2	23.6	46.1	14.1	32	29	21	-	-	L
S-531	CL	449+75	2.0-3.0	A-7-6(19)	45	20	2.2	14.7	42.6	40.4	100	98	87	-	-	L
SS-532	CL	10+80	4.0-4.5	A-7-5(16)	48	15	4.6	9.3	63.8	22.2	96	93	86	31	-	Y10LPB
S-533	CL	17+00	1.0-2.0	A-4(0)	23	2	10.7	10.5	62.6	16.2	95	88	79	-	-	Y10LPB
S-534	CL	17+00	4.0-5.0	A-4(5)	26	9	11.1	10.7	45.9	32.3	97	90	79	-	-	Y10LPB
S-535	CL	17+00	10.0-11.0	A-4(1)	25	7	32.3	18.8	30.7	18.2	92	71	49	-	-	Y10LPB
SS-536	CL	24+00	0.0-1.5	A-4(1)	23	4	10.4	16.6	54.7	18.3	98	92	78	-	-	Y10RPB
S-537	3 LT	424+20	1.0-2.0	A-4(5)	28	9	17.9	13.4	40.3	28.4	100	87	73	-	-	L
S-538	3 LT	424+20	4.0-5.0	A-7-5(21)	55	21	8.1	14.4	10.5	67.0	100	95	83	-	-	L
SS-539	CL	420+00	0.5-1.0	A-4(3)	26	5	7.9	13.4	56.3	22.3	100	95	84	-	-	L

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-540	CL	420+00	9.0-9.5	A-1-b(0)	30	6	46.1	13.2	26.5	14.2	53	35	23	-	-	L
SS-541	CL	420+00	19.0-19.5	A-5(10)	43	10	7.1	21.7	59.0	12.2	100	96	80	-	-	L
SS-542	CL	420+00	28.5-30.0	A-4(6)	39	5	9.1	18.3	58.4	14.2	100	95	80	-	-	L
SS-543	CL	418+00	4.0-4.5	A-7-6(29)	57	28	6.3	6.5	42.5	44.7	100	96	89	-	-	L
SS-544	CL	418+00	13.5-14.5	A-4(7)	39	6	1.6	19.1	61.0	18.3	100	99	87	-	-	L
S-545	CL	434+05	0.0-2.0	A-7-6(39)	61	35	2.2	2.8	46.2	48.7	100	98	96	-	-	L
S-546	CL	436+00	1.0-3.0	A-7-6(10)	43	17	19.1	7.3	35.0	38.6	86	72	65	33	-	L
S-547	CL	439+95	6.0-8.0	A-7-5(17)	48	14	2.4	5.7	53.3	38.6	100	98	94	-	-	L
SS-548	CL	441+60	0.5-1.0	A-7-5(56)	87	46	2.2	1.6	19.0	77.2	100	98	97	-	-	L
SS-549	CL	441+60	19.0-19.5	A-7-5(35)	66	30	0.4	12.8	46.2	40.6	100	100	93	-	-	L
SS-550	CL	441+60	24.0-24.5	A-5(10)	42	8	2.0	16.2	61.4	20.3	100	99	90	-	-	L
S-551	20 FT RT	13+00	2.0-3.0	A-7-5(44)	73	38	3.0	4.3	35.9	56.8	100	98	94	-	-	Y10LPB
S-552	20 FT RT	13+00	10.0-12.0	A-7-5(18)	49	17	2.6	14.8	48.1	34.5	100	99	87	-	-	Y10LPB
SS-553	CL	15+00	4.0-4.5	A-4(2)	33	9	19.3	14.6	39.8	26.4	73	63	51	-	-	Y10LPB
SS-554	CL	23+00	0.5-1.0	A-6(9)	36	14	8.1	7.5	49.8	34.5	84	79	73	-	-	-Y10RPB-
S-555	CL	21+00	1.0-4.0	A-7-5(47)	74	39	0.8	2.2	27.9	69.0	100	99	98	29	-	-Y10RPB-
S-556	CL	19+00	1.0-4.0	A-7-5(21)	52	21	3.0	11.4	34.8	50.8	96	94	87	-	-	-Y10RPB-
S-557	28 RT	36+00	1.0-3.0	A-7-6(18)	43	20	3.9	4.5	41.0	50.7	92	90	86	-	-	Y12
S-558	28 LT	36+00	1.0-3.0	A-6(7)	34	13	9.7	7.7	44.0	38.5	81	75	69	-	-	Y12
S-559	28 LT	36+00	5.0-6.0	A-7-5(49)	80	40	0.6	4.1	18.3	77.1	100	100	97	-	-	Y12
SS-560	CL	28+60	0.5-1.0	A-4(5)	26	7	6.9	11.0	51.7	30.4	100	95	87	-	-	Y9RPD
SS-561	CL	28+60	9.0-9.5	A-4(5)	40	6	11.4	22.5	45.8	20.3	100	95	72	34	-	Y9RPD
SS-562	CL	26+58	4.0-4.5	A-4(8)	40	8	8.1	15.8	53.8	22.3	97	91	81	-	-	Y9RPD
S-563	CL	14+20	2.0-3.0	A-4(1)	21	4	7.5	11.6	58.6	22.3	99	94	85	-	-	Y9RPD
S-564	CL	14+20	6.0-7.0	A-6(10)	34	11	6.1	9.1	50.3	34.5	100	96	88	28	-	Y9RPD
S-565	CL	15+00	1.0-3.0	A-6(7)	32	17	21.3	10.8	33.5	34.5	83	69	59	-	-	Y9RPD
S-566	CL	17+00	1.0-3.0	A-4(4)	28	9	18.5	11.2	42.0	28.4	91	79	67	-	-	Y9RPD
S-567	CL	17+00	6.0-7.0	A-7-6(29)	60	36	8.7	11.2	27.4	52.7	92	87	77	-	-	Y9RPD
SS-568	40 RT	19+00	4.0-4.5	A-7-5(22)	55	18	1.8	11.2	48.4	38.6	100	100	92	-	-	Y9RPD
SS-569	40 RT	19+00	14.0-14.5	A-7-5(18)	56	16	1.8	21.3	58.6	18.3	100	99	84	-	-	Y9RPD
SS-570	40 RT	19+00	17.0-17.5	A-5(6)	45	4	0.2	33.7	55.9	10.2	100	100	79	-	-	Y9RPD
SS-571	CL	51+20	0.5-1.0	A-7-5(47)	71	41	0.8	3.4	36.9	58.8	100	100	97	-	-	Y9FLY
SS-572	CL	51+20	9.0-9.5	A-5(11)	45	7	1.8	6.9	75.1	16.2	100	99	95	-	-	Y9FLY
SS-573	CL	23+50	9.0-9.5	A-7-6(6)	41	12	14.8	34.5	36.5	14.2	100	94	60	-	-	Y9RPC
S-574	CL	19+35	1.0-3.0	A-6(11)	35	16	11.4	7.1	51.1	30.4	90	81	76	-	-	Y9RPC
S-575	CL	19+35	6.0-7.0	A-7-5(43)	75	37	1.6	7.3	28.2	62.9	100	99	94	-	-	Y9RPC
SS-576	CL	16+00	4.0-4.5	A-4(6)	37	6	3.4	20.7	55.6	20.3	100	99	82	-	-	Y9RPC
SS-577	CL	16+00	14.0-14.5	A-5(13)	45	10	1.0	11.6	63.1	24.3	100	100	93	-	-	Y9RPC
S-578	CL	12+00	1.0-3.0	A-7-5(40)	68	33	0.4	3.2	25.4	71.0	100	100	97	-	-	Y9RPC
S-579	CL	10+20	1.0-3.0	A-7-5(50)	77	47	3.9	4.9	38.5	52.7	98	95	91	-	-	Y9RPC
S-580	CL	10+20	7.0-9.0	A-7-6(21)	45	20	1.8	8.9	46.7	42.6	100	99	93	-	-	Y9RPC
SS-581	CL	27+50	0.5-1.0	A-7-6(13)	46	26	26.4	9.5	31.6	32.5	90	70	60	-	-	Y9RPC
S-582	CL	29+68	1.0-3.0	A-4(7)	29	9	4.5	7.9	57.2	30.4	100	97	91	-	-	Y9RPC
S-583	CL	29+68	5.0-7.0	A-4(0)	23	3	13.0	12.2	58.6	16.2	93	85	75	-	-	Y9RPC
S-584	CL	29+68	11.0-12.0	A-6(15)	40	16	6.5	8.3	50.7	34.5	100	96	89	-	-	Y9RPC
S-585	20 RT	47+00	1.0-3.0	A-4(9)	31	10	4.1	7.5	60.0	28.4	100	97	92	-	-	Y9FLY
S-586	20 RT	47+00	10.0-12.0	A-6(16)	39	19	9.5	9.1	44.8	36.5	100	94	85	-	-	Y9FLY
S-587	CL	45+00	1.0-3.0	A-7-6(42)	67	43	5.5	10.3	33.5	50.7	99	95	88	-	-	Y9FLY
SS-588	CL	45+00	14.0-14.5	A-4(5)	36	6	2.0	33.3	44.4	20.3	100	100	76	-	-	Y9FLY
S-589	CL	11+40	0.0-10.0	A-7-5(21)	53	18	1.2	14.0	42.2	42.6	100	100	90	-	-	Y10RPD
S-590	90 FT	42+60	0.5-1.0	A-4(5)	31	6	6.5	11.8	63.5	18.3	100	98	84	-	-	Y5

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC	Alignment
S-591	90 FT	42+60	1.5-2.0	A-4(0)	20	2	21.9	25.8	40.2	12.2	87	76	50	-	-	Y5
S-592	90 RT	41+50	2.0-2.5	A-4(2)	23	4	2.0	13.2	60.4	24.3	100	99	90	-	-	Y5
S-593	30 RT	41+50	1.0-2.0	A-4(4)	28	5	2.6	9.7	63.3	24.3	100	99	91	-	-	Y5
S-594	30 RT	41+50	2.0-3.0	A-6(12)	35	20	14.2	15.6	37.7	32.5	98	90	72	-	-	Y5
SS-595	CL	41+00	5.0-5.5	A-4(1)	29	3	5.9	30.6	51.3	12.2	100	98	72	-	-	Y9FLY
SS-596	CL	43+00	5.0-5.5	A-4(4)	31	8	7.1	37.9	38.7	16.2	97	94	65	-	-	Y9FLY
SS-597	CL	43+00	15.0-16.0	A-7-6(19)	43	22	2.2	23.1	36.1	38.5	100	99	85	-	-	Y9FLY
SS-598	CL	43+00	20.0-20.5	A-2-6(3)	39	24	33.9	22.9	18.9	24.3	71	53	34	-	-	Y9FLY
S-599	55 RT	19+80	0.0-2.3	A-7-6(23)	49	22	3.0	7.1	47.3	42.6	99	97	92	-	-	Y10RPD
S-600	55 RT	19+80	2.3-3.0	A-7-5(13)	45	14	4.3	22.9	50.5	22.3	100	98	81	-	-	Y10RPD
SS-568	40 RT	19+00	4.0-4.5	A-7-5(22)	55	18	1.8	11.2	48.4	38.6	100	100	92	-	-	Y9RPD
SS-569	40 RT	19+00	14.0-14.5	A-7-5(18)	56	16	1.8	21.3	58.6	18.3	100	99	84	-	-	Y9RPD
SS-570	40 RT	19+00	17.0-17.5	A-5(6)	45	4	0.2	33.7	55.9	10.2	100	100	79	-	-	Y9RPD
SS-1000	16 RT	45+04	0.0-1.2	A-7-6(33)	61	32	5.7	5.5	30.3	58.6	98	94	89	-	-	FLYA
SS-1001	16 RT	45+04	1.2-1.5	Not Enough Material			22.6	10.3	38.8	28.3	100	82	71	-	-	FLYA
SS-1002	16 RT	45+04	3.5-4.6	A-7-6(17)	46	19	9.7	10.7	53.3	26.3	100	94	84	-	-	FLYA
SS-1003	16 RT	45+04	4.6-5.0	A-4(7)	38	6	4.8	15.8	63.2	16.2	100	98	86	-	-	FLYA
SS-1004	16 RT	45+04	8.5-9.3	A-4(8)	40	8	10.7	7.7	61.4	20.2	100	93	84	-	-	FLYA
SS-1005	16 RT	45+04	9.3-10.0	A-4(1)	40	6	44.4	13.1	30.3	12.1	99	63	45	-	-	FLYA
SS-1006	24 LT	45+04	14.0-15.0	A-7-5(10)	57	11	12.3	29.1	36.4	22.2	100	95	67	-	-	FLYA
SS-1007	24 LT	45+04	23.5-25.6	A-7-5(15)	52	13	3.6	18.2	62.0	16.2	100	99	84	-	-	FLYA
S-1009	CL	46+60	0.2-2.0	A-6(14)	40	15	6.7	11.7	41.2	40.4	100	96	85	-	-	FLYA
S-1010	CL	46+60	5.0-6.0	A-7-6(25)	54	27	7.3	10.5	39.8	42.4	100	96	85	-	-	FLYA
S-1011	CL	46+60	8.0-11.0	A-7-6(15)	43	17	10.1	7.5	50.1	32.3	97	90	82	-	-	FLYA
S-1012	CL	12+43	0.1-1.5	A-7-6(11)	44	20	5.1	7.5	39.0	48.5	70	67	63	-	-	LPC
S-1013	CL	12+43	3.0-4.0	A-7-5(39)	67	33	1.4	5.5	24.4	68.7	100	99	95	-	-	LPC
S-1014	CL	12+43	4.0-4.5	A-7-5(22)	53	21	3.8	12.5	43.2	40.4	100	99	89	-	-	LPC
S-1015	CL	12+43	6.0-8.0	A-5(11)	42	10	5.1	14.7	51.9	28.3	100	99	86	-	-	LPC
SS-1016	24 LT	37+41	0.0-1.5	A-7-6(28)	55	28	4.8	5.9	36.8	52.5	96	93	88	-	-	FLYA
SS-1017	24 LT	37+41	3.5-5.0	A-6(5)	32	13	17.2	11.1	43.4	28.3	78	68	59	-	-	FLYA
SS-1018	24 LT	37+41	13.5-15.0	A-7-6(24)	48	25	1.0	16.4	42.2	40.4	100	100	90	-	-	FLYA
SS-1019	24 LT	37+41	23.5-25.0	A-5(10)	42	7	2.2	4.0	65.5	28.3	100	99	95	-	-	FLYA
SS-1020	16 RT	37+41	23.5-25.0	A-4(4)	35	4	7.5	27.5	52.9	12.1	100	97	76	-	-	FLYA
SS-1021	10 RT	29+50	0.2-1.1	Not Enough Material			32.7	11.3	41.8	14.1	48	35	28	-	-	RPB
SS-1022	10 RT	29+50	1.1-1.5	A-7-6(11)	50	31	22.0	10.9	30.7	36.4	70	58	49	-	-	RPB
SS-1023	10 RT	29+50	3.5-5.0	A-6(10)	32	11	2.2	10.1	47.3	40.4	100	100	91	-	-	RPB
SS-1024	10 RT	29+50	8.5-10.0	A-4(3)	31	4	7.7	23.4	52.7	16.2	100	98	77	-	-	RPB
SS-1025	10 RT	29+50	13.5-14.7	A-7-6(3)	41	13	28.5	20.0	35.4	16.2	83	67	47	-	-	RPB
SS-1026	10 RT	29+50	23.5-25.0	A-4(3)	30	4	3.6	16.0	60.2	20.2	100	99	86	-	-	RPB
SS-1027	10 RT	29+50	28.5-30.0	A-4(3)	29	3	3.2	14.7	53.7	28.3	100	99	87	-	-	RPB
SS-1028	16 RT	42+50	0.1-0.8	A-7-5(17)	45	14	2.8	4.4	54.3	38.4	100	98	95	-	-	FLYA
SS-1029	16 RT	42+50	0.8-1.5	A-6(10)	34	12	5.3	6.3	46.1	42.4	97	93	88	-	-	FLYA
SS-1030	16 RT	42+50	3.8-5.0	A-7-5(7)	53	11	22.0	24.4	25.3	28.3	100	88	59	-	-	FLYA
SS-1031	24 LT	42+50	3.5-5.0	A-6(9)	40	12	20.1	8.7	46.8	24.4	100	84	74	-	-	-FLYA-
SS-1032	24 LT	42+50	8.8-9.6	A-7-5(26)	75	36	23.1	10.6	11.5	54.8	100	83	68	-	-	-FLYA-
S-1033	CL	285+50	0.0-1.5	A-7-5(24)	55	24	4.5	4.7	23.9	67.0	91	88	85	-	-	-L-
S-1034	CL	285+50	5.0-6.0	A-7-5(28)	63	26	6.1	8.1	39.1	46.7	100	96	88	-	-	-L-
S-1035	CL	285+50	11.0-12.0	A-7-6(19)	45	18	4.3	4.3	40.7	50.8	100	97	93	-	-	-L-
S-1036	CL	285+50	18.0-19.0	A-7-5(25)	52	21	2.2	2.6	40.3	54.8	100	98	96	-	-	-L-
S-1037	CL	285+50	22.0-23.0	A-7-6(20)	45	17	1.2	3.0	47.0	48.7	100	99	97	-	-	-L-
S-1038	CL	17+81	1.0-2.0	A-7-5(47)	77	44	2.2	5.9	16.8	75.1	97	95	91	-	-	-Y1-

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-1039	CL	59+37	0.1-1.5	A-7-6(20)	53	27	4.7	8.7	35.8	50.8	83	82	73	-	-	-CD-
SS-1040	CL	59+37	4.5-5.5	A-4(7)	35	8	8.9	11.2	43.4	36.5	100	97	82	-	-	-CD-
SS-1041	CL	59+37	15.5-16.0	A-4(7)	39	6	6.9	13.4	51.3	28.4	100	98	83	-	-	-CD-
S-1042	CL	57+37	1.0-2.0	A-7-6(19)	44	19	3.5	6.5	31.2	58.9	95	92	89	-	-	-CD-
S-1043	CL	57+37	8.0-9.0	A-7-5(20)	47	17	0.8	7.1	43.4	48.7	100	100	96	-	-	-CD-
S-1044	CL	57+37	10.5-11.0	A-4(5)	34	9	21.5	12.0	40.1	26.4	91	75	65	-	-	-CD-
S-1045	CL	57+37	13.5-14.0	A-6(12)	39	14	10.6	10.8	50.3	28.4	99	91	82	-	-	-CD-
S-1046	CL	62+87	1.0-2.0	A-7-5(7)	45	11	9.3	26.4	37.9	26.4	90	86	64	-	-	-CD-
S-1047	CL	62+87	4.0-5.0	A-2-7(1)	46	15	7.9	17.1	42.5	32.5	41	39	33	-	-	-CD-
S-1048	CL	62+87	6.0-7.0	A-7-6(14)	42	13	1.6	6.7	55.1	36.5	97	96	92	-	-	-CD-
S-1049	CL	66+37	1.0-2.0	A-7-5(16)	44	14	1.6	7.7	54.1	36.5	100	99	94	-	-	-CD-
S-1050	CL	66+37	7.0-8.0	A-5(12)	45	9	0.8	8.7	53.9	36.5	100	100	94	-	-	-CD-
S-1051	CL	66+37	8.5-9.0	A-7-6(38)	62	33	0.6	3.9	38.7	56.9	100	100	97	-	-	-CD-
S-1052	CL	66+37	9.0-10.0	A-6(13)	40	11	0.6	8.3	44.6	46.5	100	100	95	-	-	-CD-
S-1053	67 RT	185+00	0.5-1.0	A-7-5(31)	57	25	0.4	4.0	41.0	54.5	100	100	99	-	-	-Y11-
S-1054	67 RT	185+00	2.0-3.0	A-7-5(20)	50	16	0.4	7.7	47.5	44.4	100	100	96	-	-	-Y11-
S-1055	67 RT	185+00	4.5-5.5	A-7-5(16)	57	17	6.3	10.7	32.5	50.5	89	85	77	-	-	-Y11-
S-1056	67 RT	185+00	6.0-7.0	A-7-5(21)	52	18	1.6	9.9	46.1	42.4	100	99	93	-	-	-Y11-
S-1057	67 RT	185+00	9.0-10.0	A-4(11)	39	9	0.6	6.3	60.8	32.3	100	100	97	-	-	-Y11-
S-1058	67 RT	185+00	10.0-11.0	A-7-6(15)	42	13	0.4	10.1	57.2	32.3	100	100	94	-	-	-Y11-
S-1059	67 RT	185+00	12.0-13.0	A-5(12)	46	10	1.4	16.8	49.5	32.3	100	100	88	-	-	-Y11-
S-1060	72 RT	187+00	3.5-4.5	A-7-5(15)	44	11	0.4	4.6	60.6	34.3	100	100	98	-	-	-Y11-
S-1061	72 RT	187+00	8.0-9.0	A-7-5(16)	44	13	0.4	2.4	58.8	38.4	100	100	98	-	-	-Y11-
SS-1062	CL	26+09	0.3-1.5	A-4(1)	29	4	12.7	17.2	49.9	20.2	83	78	62	-	-	-RPA-
S-1063	CL	56+36	4.0-5.0	A-7-5(16)	46	14	1.6	12.9	51.1	34.3	100	99	93	-	-	-CD-
S-1064	CL	56+36	6.0-7.0	A-7-5(17)	47	15	2.8	12.1	44.6	40.4	100	98	92	-	-	-CD-
S-1065	CL	55+37	1.0-2.0	A-7-5(43)	67	36	1.0	2.2	36.2	60.6	100	99	98	-	-	-CD-
SS-1066	CL	54+10	0.3-1.5	A-7-6(34)	56	31	1.2	4.2	38.0	56.6	100	99	96	-	-	-CD-
SS-1067	CL	54+10	4.0-5.0	A-7-5(16)	48	17	2.4	22.8	36.4	38.4	100	99	82	-	-	-CD-
SS-1068	CL	54+10	9.0-10.0	A-4(8)	37	8	1.8	15.8	56.2	26.3	100	100	87	-	-	-CD-
S-1069	CL	52+37	0.3-1.0	A-7-6(25)	51	26	3.0	5.3	45.3	46.5	94	92	88	-	-	-CD-
S-1070	CL	52+37	6.0-7.0	A-7-5(15)	43	12	0.4	1.8	51.3	46.5	100	100	98	-	-	-CD-
S-1071	CL	52+37	10.5-11.5	A-7-5(24)	50	19	0.4	1.4	51.7	46.5	100	100	99	-	-	-CD-
S-1072	CL	52+37	16.0-17.0	A-7-5(22)	51	18	0.4	4.6	54.5	40.4	100	100	97	-	-	-CD-
SS-1073	24 LT	34+76	0.0-1.5	A-6(10)	38	13	8.7	5.1	47.9	38.4	87	81	76	-	-	-FLYA-
SS-1074	24 LT	34+76	4.0-5.5	A-7-5(20)	50	16	1.2	2.6	55.6	40.6	100	99	97	-	-	-FLYA-
SS-1075	24 LT	34+76	9.0-10.5	A-7-5(17)	46	16	5.3	9.5	60.9	24.3	100	97	88	-	-	-FLYA-
SS-1076	24 LT	34+76	18.0-19.5	A-7-5(10)	47	11	4.9	29.0	51.9	14.2	100	99	74	-	-	-FLYA-
SS-1077	16 RT	34+76	9.0-10.5	A-7-5(22)	64	14	0.4	10.8	56.4	32.5	100	100	94	-	-	-FLYA-
S-1078	CL	16+50	1.0-2.0	A-6(15)	39	17	6.3	4.5	54.8	34.5	94	89	85	-	-	-RPA-
S-1079	CL	16+50	3.0-4.0	A-7-5(49)	78	38	0.2	0.4	34.5	64.9	100	100	100	-	-	-RPA-
S-1080	CL	16+50	5.0-6.0	A-7-5(31)	61	23	0.2	0.6	44.4	54.8	100	100	100	-	-	-RPA-
S-1081	CL	16+50	7.0-8.0	A-7-5(22)	51	17	0.4	1.2	51.7	46.7	100	100	99	-	-	-RPA-
S-1082	CL	16+50	9.5-10.5	A-7-5(18)	49	13	0.4	1.0	60.0	38.5	100	100	99	-	-	-RPA-
S-1083	CL	50+37	21.0-22.0	A-6(13)	39	11	0.8	3.4	57.2	38.5	100	100	98	-	-	-CD-
S-1084	CL	48+37	1.0-2.0	A-4(3)	26	7	17.6	16.2	41.8	24.3	97	86	67	-	-	-CD-
S-1085	CL	48+37	10.0-11.0	A-7-6(24)	44	22	0.8	3.9	42.6	52.7	100	99	99	-	-	-CD-
SS-1086	CL	46+37	0.2-1.5	Not Enough Material			11.6	9.9	54.2	24.3	86	78	70	-	-	-CD-
SS-1087	CL	46+37	4.0-5.5	Not Enough Material			0.2	3.0	50.1	46.7	100	100	98	-	-	-CD-
SS-1088	CL	46+37	9.0-10.5	A-5(14)	47	10	0.4	7.1	66.1	26.4	100	100	96	-	-	-CD-
SS-1089	62 LT	293+93	0.0-1.5	A-7-6(23)	58	29	4.1	2.0	39.1	54.8	78	75	74	-	-	-L-

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT C.SAND	F.SAND	SILT	CLAY	% PASSING (SIEVES) 10	40	200	% MOISTURE	% ORGANIC	Alignment
SS-1090	62 LT	293+93	4.0-5.5	A-7-5(14)	44	11	2.4	3.7	73.6	20.3	100	98	95	-	-	-L-
SS-1091	62 LT	293+93	14.0-15.5	A-7-5(19)	61	21	9.5	19.7	36.3	34.5	100	96	76	-	-	L
SS-1092	62 LT	293+93	24.0-25.5	A-7-5(24)	70	24	5.7	20.3	37.5	36.5	100	99	79	-	-	L
SS-1093	62 LT	293+93	29.0-30.5	A-7-5(4)	49	12	29.0	28.8	17.8	24.3	100	85	47	-	-	L
SS-1094	62 LT	293+93	34.0-35.5	A-7-5(10)	52	12	9.9	26.6	41.2	22.3	100	96	70	-	-	L
SS-1096	87 RT	294+27	4.0-5.5	A-7-5(20)	50	16	0.4	4.7	58.4	36.5	100	100	97	-	-	L
SS-1097	CL	10+70	3.5-5.0	A-7-6(28)	61	34	1.4	4.1	45.8	48.7	81	80	78	-	-	LPA
SS-1098	CL	10+70	28.5-30.0	A-5(9)	46	3	1.2	3.2	73.2	22.3	100	99	98	-	-	LPA
SS-1099	15 RT	29+82	0.1-1.5	A-7-6(40)	63	35	1.0	3.0	31.0	64.9	100	99	97	-	-	Y1
SS-1100	15 RT	29+82	8.5-10.0	A-5(13)	44	9	0.2	5.3	60.0	34.5	100	100	97	-	-	Y1
SS-1101	15 RT	29+82	13.5-15.0	A-5(13)	43	10	0.2	9.9	61.5	28.4	100	100	95	-	-	Y1
SS-1102	75 LT	291+28	0.0-1.5	A-7-6(14)	46	21	8.7	6.3	36.3	48.7	81	76	70	-	-	L
SS-1103	75 LT	291+28	3.5-5.0	A-7-5(31)	56	26	0.2	1.6	49.5	48.7	100	100	99	-	-	L
SS-1104	75 LT	291+28	8.5-10.0	A-7-5(25)	55	21	0.6	5.7	34.9	58.8	100	100	95	-	-	L
SS-1105	75 LT	291+28	18.5-20.0	A-7-5(33)	65	27	1.0	13.4	45.0	40.6	100	99	95	-	-	L
SS-1106	75 LT	291+28	28.5-30.0	A-7-5(18)	64	26	15.2	8.9	39.4	36.5	82	72	66	-	-	L
SS-1107	75 LT	291+28	33.5-35.0	A-7-5(31)	66	26	1.0	16.0	54.6	28.4	100	99	92	-	-	L
SS-1108	75 LT	291+28	38.5-40.0	A-7-5(28)	60	22	0.8	3.7	57.0	38.5	100	100	97	-	-	L
SS-1109	75 LT	291+28	43.5-45.0	A-7-5(19)	54	18	1.2	23.5	57.0	18.3	100	100	86	-	-	L
SS-1110	75 LT	291+28	63.5-65.0	A-7-5(10)	43	11	2.4	30.6	54.8	12.2	100	99	78	-	-	L
SS-1111	CL	291+40	19.0-20.5	A-7-5(15)	43	11	0.2	1.0	64.3	34.5	100	100	99	-	-	L
SS-1112	CL	291+40	44.0-45.5	A-4(9)	38	6	0.2	3.4	70.0	26.4	100	100	99	-	-	L
SS-1113	90 RT	291+55	4.0-5.5	A-7-5(51)	75	42	0.6	1.0	21.3	77.1	100	100	99	-	-	L
SS-1114	CL	36+81	0.2-1.5	A-7-6(15)	41	16	5.5	6.3	47.6	40.6	98	95	88	-	-	CD
SS-1115	CL	36+81	4.0-5.5	A-7-6(27)	52	23	0.8	3.2	51.3	44.7	100	100	97	-	-	CD
SS-1116	CL	36+81	8.5-10.0	A-4(11)	39	9	0.6	6.3	72.8	20.3	100	100	97	-	-	CD
S-1117	CL	34+27	4.0-5.0	A-7-6(17)	48	25	8.7	6.3	40.3	44.7	83	78	72	-	-	CD
S-1118	CL	34+27	11.0-12.0	A-7-6(15)	41	14	3.0	7.3	53.1	36.5	100	98	92	-	-	CD
S-1119	CL	31+73	6.0-7.0	A-7-5(44)	73	39	3.0	3.7	32.4	60.9	100	98	94	-	-	CD
SS-1120	CL	26+65	0.2-1.5	Not Enough Material			6.9	9.3	51.3	32.5	85	81	73	-	-	CD
SS-1121	CL	26+65	4.0-5.5	A-7-5(33)	73	27	2.4	9.3	23.2	65.0	100	99	91	-	-	CD
SS-1122	CL	26+65	8.5-10.0	A-7-5(49)	86	41	1.6	6.9	22.4	69.0	100	100	93	-	-	CD
SS-1123	CL	26+65	11.7-12.0	Not Enough Material			44.3	22.5	21.0	12.2	78	52	29	-	-	CD
S-1124	CL	22+58	0.5-1.5	A-6(11)	40	18	7.5	7.7	42.3	42.5	80	75	69	-	-	CD
S-1125	CL	22+58	3.0-4.0	A-7-5(37)	71	29	2.0	4.7	18.4	74.9	100	99	95	-	-	CD
S-1126	CL	22+58	6.0-7.0	A-7-5(32)	65	25	0.8	5.3	19.0	74.9	100	100	96	-	-	CD
S-1127	CL	22+58	8.0-9.0	A-7-5(51)	82	43	0.6	7.9	16.6	74.9	100	100	95	-	-	CD
S-1128	14 LT	19+94	3.0-4.0	A-7-6(13)	43	18	14.6	10.7	42.3	32.4	96	85	75	-	-	CD
S-1129	14 LT	19+94	5.0-6.0	A-7-5(45)	76	41	3.4	7.7	22.1	66.8	100	98	91	-	-	CD
S-1130	14 LT	19+94	7.0-8.0	A-7-5(15)	47	15	3.2	18.4	56.1	22.3	100	99	84	-	-	CD
SS-1131	CL	17+54	0.2-1.5	A-4(5)	28	8	8.7	11.7	47.2	32.4	96	90	80	-	-	CD
SS-1132	CL	17+54	4.0-5.5	A-7-5(20)	47	16	0.2	1.2	46.0	52.6	100	100	99	-	-	CD
S-1133	CL	15+04	1.0-2.0	A-4(6)	30	10	10.3	13.0	40.3	36.4	95	88	76	-	-	CD
S-1134	CL	15+04	4.0-5.0	A-7-6(17)	43	19	7.9	9.9	33.6	48.6	100	94	86	-	-	CD
S-1135	CL	15+04	5.0-6.0	A-7-6(16)	51	25	15.0	8.1	32.4	44.5	85	75	68	-	-	CD
S-1136	CL	15+04	7.0-8.0	A-7-6(27)	55	27	7.9	6.5	33.0	52.6	100	94	88	-	-	CD
S-1137	CL	15+04	8.0-9.0	A-7-6(46)	68	44	4.3	4.9	34.2	56.7	100	97	93	-	-	CD
S-1138	CL	15+04	9.0-10.0	A-7-6(26)	50	22	1.0	3.0	51.4	44.5	100	99	98	-	-	CD
S-1139	CL	11+02	1.0-2.0	A-7-6(23)	55	28	12.3	14.0	19.0	54.7	100	93	77	-	-	CD
S-1140	CL	11+02	5.0-6.0	A-7-6(43)	67	41	2.4	7.5	27.3	62.8	100	99	92	-	-	CD
S-1141	CL	11+02	8.5-9.5	A-6(11)	38	13	5.5	15.6	40.5	38.5	100	99	83	-	-	CD

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
S-1142	CL	13+03	4.0-5.0	A-7-6(31)	58	32	4.5	13.8	33.2	48.6	100	98	87	-	-	CD
S-1143	CL	13+03	9.8-10.0	A-7-6(24)	47	24	4.0	6.7	36.6	52.6	100	97	92	-	-	CD
S-1144	100 RT	180+00	0.2-0.8	A-7-6(10)	44	16	5.5	6.1	48.0	40.5	73	70	66	-	-	Y11
S-1146	100 RT	180+00	1.0-2.0	A-4(4)	27	6	6.1	6.1	57.5	30.4	97	92	87	-	-	Y11
S-1147	100 RT	180+00	2.5-3.5	A-4(7)	31	8	4.5	8.3	52.8	34.4	100	97	90	-	-	Y11
S-1148	100 RT	180+00	3.5-4.5	A-4(0)	23	NP	5.1	8.3	66.4	20.2	100	97	89	-	-	CD
S-1149	100 RT	180+00	4.5-5.5	A-4(3)	24	5	4.7	6.9	58.1	30.4	98	95	89	-	-	CD
SS-1151	19 LT	68+37	0.9-2.4	A-7-6(17)	43	16	2.8	9.9	38.7	48.6	100	99	91	-	-	CD
SS-1152	19 LT	68+37	9.0-10.5	A-7-6(26)	54	27	5.9	7.3	26.1	60.7	97	93	87	-	-	CD
SS-1153	19 LT	68+37	13.5-15.0	A-7-6(29)	56	27	4.7	7.1	33.6	54.7	100	98	91	-	-	CD
SS-1154	3 LT	70+37	24.0-25.5	A-6(8)	34	13	8.3	14.2	47.2	30.4	87	83	72	-	-	CD
SS-1155	3 LT	70+37	30.5-32.0	A-4(4)	32	4	2.4	22.5	52.8	22.3	100	100	83	-	-	CD
S-1156	CL	73+38	1.0-2.0	A-7-6(27)	52	29	6.9	9.7	30.8	52.6	100	95	87	-	-	CD
S-1157	CL	73+38	3.0-4.0	A-7-6(24)	47	24	3.8	7.7	37.9	50.6	100	97	92	-	-	CD
S-1158	CL	73+38	5.0-5.7	A-7-6(13)	41	18	10.9	9.3	31.2	48.6	90	83	75	-	-	CD
S-1159	8 RT	45+39	1.0-2.0	A-4(0)	22	2	6.9	7.9	54.9	30.4	100	95	87	-	-	Y1
S-1160	8 RT	45+39	3.0-4.0	A-4(4)	28	8	11.5	7.7	46.4	34.4	89	81	74	-	-	Y1
S-1161	8 RT	45+39	4.0-5.0	A-7-6(31)	53	28	1.6	2.4	41.3	54.7	100	99	97	-	-	Y1
S-1162	CL	43+92	3.5-4.5	A-7-6(17)	41	16	2.2	4.3	40.9	52.6	99	98	94	-	-	Y1
S-1164	CL	43+92	5.0-7.0	A-7-5(45)	71	38	1.2	4.3	35.6	58.9	100	99	97	-	-	Y1
S-1165	CL	43+92	10.0-11.0	A-7-5(26)	55	21	0.6	6.3	44.4	48.7	100	100	96	-	-	Y1
SS-1166	6.5 RT	35+82	0.3-1.5	A-7-6(22)	44	23	4.9	5.3	39.1	50.8	97	93	89	-	-	Y1
SS-1167	6.5 RT	35+82	4.0-5.5	A-7-6(19)	44	19	5.1	5.9	48.4	40.6	97	93	89	-	-	Y1
SS-1168	6.5 RT	35+82	9.5-10.5	A-7-5(58)	90	49	0.4	9.3	31.4	58.9	100	100	95	-	-	Y1
SS-1169	6.5 RT	35+82	14.0-15.5	A-4(4)	38	6	6.1	44.1	37.7	12.2	100	99	65	-	-	Y1
SS-1170	6.5 RT	35+82	19.5-20.5	A-4(2)	33	4	10.2	37.6	36.0	16.2	100	96	66	-	-	Y1
S-1171	CL	35+50	1.0-2.0	A-7-6(17)	47	19	8.9	10.2	36.2	44.7	99	93	83	-	-	RPB
S-1172	CL	35+50	3.0-4.0	A-7-6(20)	48	24	6.7	17.1	35.6	40.6	99	95	81	-	-	RPB
S-1173	CL	35+50	9.0-10.0	A-7-6(24)	47	30	6.7	17.1	31.6	44.7	100	97	82	-	-	RPB
SS-1174	15 LT	30+89	0.0-1.5	A-4(0)	25	2	14.7	8.2	51.0	26.1	62	55	49	-	-	Y5
SS-1175	15 LT	30+89	9.0-10.5	A-7-6(12)	42	16	14.5	14.1	41.3	30.2	100	91	75	-	-	Y5
SS-1176	15 LT	34+81	0.4-1.5	A-7-5(49)	77	44	2.8	6.4	26.4	64.3	100	98	93	-	-	Y5
SS-1177	15 LT	34+81	9.0-10.5	A-7-5(33)	73	29	3.8	11.7	30.3	54.3	100	99	87	-	-	Y5
SS-1178	15 LT	34+81	15.2-16.7	A-5(0)	44	3	26.3	26.1	29.4	18.1	83	69	44	-	-	Y5
S-1179	100 RT	182+50	3.2-3.5	A-6(5)	37	14	8.5	7.5	39.2	44.7	62	58	53	-	-	Y11
SS-1180	CL	34+46	0.3-1.5	A-6(14)	39	13	3.9	5.1	48.4	42.7	100	97	93	-	-	RPD
SS-1182	CL	34+46	9.0-10.5	A-7-6(13)	44	16	8.3	8.1	38.8	44.7	88	82	76	-	-	RPD
SS-1183	CL	34+46	14.0-15.5	A-7-5(14)	41	11	0.2	4.1	55.1	40.7	100	100	97	-	-	RPD
SS-1184	CL	34+46	29.0-30.5	A-4(10)	37	8	0.6	7.5	63.4	28.5	100	100	95	-	-	RPD
SS-1185	CL	13+25	29.0-30.5	A-5(8)	44	7	2.8	22.6	44.1	30.5	100	99	82	-	-	FLYA
SS-1186	CL	13+25	38.5-40.0	A-4(2)	30	2	2.2	22.6	56.9	18.3	100	99	84	-	-	FLYA
SS-1187	CL	309+90	3.5-5.0	A-4(6)	37	7	5.5	20.3	55.9	18.3	100	98	80	-	-	L
SS-1188	CL	29+50	0.2-1.5	A-4(4)	27	5	0.8	3.5	61.2	34.6	100	100	97	-	-	RPD
SS-1189	CL	29+50	4.0-5.5	A-7-5(21)	58	20	5.3	16.9	43.3	34.6	100	98	83	-	-	RPD
SS-1190	CL	29+50	24.0-25.5	A-4(6)	39	8	4.1	35.2	44.5	16.3	100	99	71	-	-	RPD
SS-1191	250 RT	27+50	3.5-5.0	A-4(4)	30	4	2.2	13.4	57.9	26.4	100	99	89	-	-	RPD
SS-1192	160 RT	19+00	0.2-1.5	A-4(3)	28	4	0.4	12.2	69.1	18.3	100	100	92	-	-	FLYA
SS-1193	160 RT	19+00	4.0-5.2	A-1-b(0)	20	1	32.7	24.6	30.5	12.2	50	40	24	-	-	FLYA
SS-1194	160 RT	19+00	5.2-5.5	Not Enough Material			39.4	15.0	29.3	16.3	60	43	29	-	-	FLYA
SS-1195	160 RT	19+00	9.0-10.5	A-4(1)	33	NP	1.8	19.7	64.2	14.2	100	100	87	-	-	FLYA
SS-1196	12 RT	17+12	0.2-1.5	A-7-5(35)	75	40	6.3	2.8	23.8	67.1	85	81	78	-	-	FLYA

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-1197	12 RT	17+12	18.5-20.0	A-7-5(13)	48	12	3.9	17.3	52.4	26.4	100	99	83	-	-	FLYA
SS-1198	12 RT	17+12	23.5-25.0	A-7-5(4)	42	11	31.3	20.3	30.1	18.3	100	79	52	-	-	FLYA
SS-1199	CL	15+35	23.5-25.0	A-5(6)	41	3	0.6	16.9	62.2	20.3	100	100	89	-	-	FLYA
SS-1200	CL	15+35	33.5-35.0	A-4(5)	34	4	1.0	13.0	61.6	24.4	100	100	92	-	-	FLYA
SS-1201	CL	18+72	0.2-1.5	A-4(0)	22	NP	1.8	24.2	63.8	10.2	100	100	81	-	-	FLYA
SS-1202	CL	18+72	8.5-10.0	A-4(2)	37	7	19.5	36.4	31.9	12.2	100	91	53	-	-	FLYA
SS-1203	CL	308+00	14.0-15.5	A-7-5(22)	50	20	2.6	6.9	55.9	34.6	100	99	92	-	-	L
SS-1204	CL	318+00	0.1-1.5	A-7-5(46)	76	37	0.2	4.1	24.6	71.1	100	100	98	-	-	L
SS-1205	CL	318+00	3.5-5.0	A-7-5(17)	47	13	1.4	4.3	49.6	44.7	100	99	96	-	-	L
SS-1206	CL	318+00	13.5-15.0	A-6(5)	40	11	29.1	13.4	37.2	20.3	95	72	59	-	-	L
SS-1207	CL	318+00	23.5-25.0	A-5(15)	63	10	1.0	29.1	45.5	24.4	100	100	83	-	-	L
SS-1208	CL	320+00	0.2-1.5	A-7-5(15)	45	15	5.1	13.0	41.3	40.7	100	97	86	-	-	L
SS-1209	16 LT	26+19	0.5-1.5	A-7-5(19)	51	18	5.5	12.0	41.9	40.7	100	97	87	-	-	Y6
SS-1210	16 LT	26+19	3.5-5.0	A-7-5(12)	43	11	4.1	13.8	43.5	38.6	100	98	86	-	-	Y6
SS-1211	16 LT	26+19	8.5-10.0	A-2-4(0)	29	3	27.8	24.8	35.2	12.2	66	54	35	-	-	Y6
SS-1212	16 LT	26+19	18.5-20.0	A-7-5(20)	58	17	4.5	10.4	54.6	30.5	100	98	88	-	-	Y6
SS-1213	16 LT	26+19	43.5-45.0	A-7-5(9)	43	11	5.1	30.3	52.4	12.2	100	98	74	-	-	Y6
SS-1214	16 RT	23+86	3.5-5.0	A-4(6)	38	4	0.6	11.2	68.0	20.3	100	100	93	-	-	Y6
SS-1215	16 RT	23+86	13.5-15.0	A-4(1)	31	1	4.2	15.5	62.1	18.2	100	98	85	-	-	Y6
S-1216	CL	47+50	0.5-1.0	A-1-a(0)	18	1	47.0	15.7	25.1	12.1	30	18	12	-	-	Y5
S-1217	CL	47+50	3.0-3.5	A-2-6(1)	40	19	43.8	14.7	13.2	28.3	56	36	25	-	-	Y5
S-1218	CL	47+50	4.0-4.5	A-2-7(3)	47	27	40.8	16.5	10.4	32.3	75	51	34	-	-	Y5
S-1219	CL	47+50	8.5-9.0	A-7-6(4)	42	25	39.2	19.4	17.3	24.2	83	58	37	-	-	Y5
S-1220	CL	45+50	2.5-3.0	A-7-6(18)	41	22	8.1	10.3	37.2	44.4	99	94	84	-	-	Y5
S-1221	CL	45+50	4.0-4.5	A-7-6(15)	42	21	12.9	15.1	33.6	38.3	100	93	76	-	-	Y5
S-1222	CL	45+50	7.0-7.5	A-7-6(19)	43	20	4.0	12.3	37.2	46.4	100	98	88	-	-	Y5
S-1223	CL	45+50	15.0-15.5	A-6(10)	37	13	6.5	20.6	34.6	38.3	100	98	79	-	-	Y5
SS-1224	26 LT	23+96	0.2-1.5	A-7-5(16)	50	17	2.8	25.4	47.5	24.2	100	99	80	-	-	Y6
SS-1225	26 LT	23+96	23.5-25.0	A-5(8)	43	10	4.6	34.5	44.7	16.1	100	99	71	-	-	Y6
SS-1226	100 RT	319+00	22.5-23.0	A-7-6(19)	45	17	0.8	7.7	37.0	54.5	100	100	95	-	-	L
SS-2000	CL	16+50	3.6-5.1	A-7-5(44)	68	37	0.4	3.2	35.8	60.6	100	100	98	-	-	-Y14-
S-2000A	CL	18+50	0.0-10.0	A-7-6(22)	50	28	4.3	20.2	28.9	46.6	94	92	77	-	-	Y14
SS-2001	20 RT	12+50	5.2-6.7	A-7-5(26)	66	27	10.1	4.2	27.1	58.6	93	85	81	-	-	-Y14-
S-2001A	CL	14+50	0.0-10.0	A-7-5(29)	57	24	0.6	5.3	27.3	66.8	100	100	97	-	-	Y14
SS-2002	20 RT	12+50	15.2-16.7	A-7-5(10)	53	12	11.7	6.7	43.2	38.4	82	74	68	-	-	-Y14-
SS-2003	75 LT	374+27	4.2-5.7	A-2-4(0)	25	4	27.7	24.0	32.1	16.2	48	39	26	-	-	-L-
S-2003A	CL	372+00	0.0-16.0	A-7-6(13)	43	16	13	13.6	12.8	60.7	100	91	77	-	-	Y14
S-2004	CL	376+00	0.0-18.0	A-6(10)	39	13	11.1	15.2	33.2	40.5	100	94	78	-	-	L
SS-2005	CL	378+00	9.4-10.9	A-1-a(0)	23	4	55.8	19.8	10.3	14.1	44	25	12	-	-	-L-
SS-2006	CL	383+00	4.3-5.8	A-7-6(13)	42	14	5.3	18.6	43.8	32.3	100	98	84	-	-	-L-
SS-2007	CL	383+00	9.3-10.8	A-4(5)	37	8	11.3	28.1	42.4	18.2	100	96	68	15	-	-L-
SS-2008	CL	10+46	4.9-6.4	A-7-5(12)	46	11	5.0	18.4	44.3	32.3	100	98	83	-	-	Y9FLY
SS-2009	CL	10+46	14.9-16.4	A-4(9)	40	9	6.1	18.4	47.3	28.3	100	97	81	-	-	Y9FLY
SS-2011	CL	10+46	29.9-31.4	A-4(7)	38	7	4.8	19.0	49.9	26.2	100	98	83	-	-	Y9FLY
SS-2015	CL	385+00	4.1-5.6	A-7-5(38)	67	31	0.6	4.4	36.4	58.5	100	100	97	-	-	L
SS-2016	CL	385+00	9.1-10.6	A-4(7)	37	7	4.4	21.8	47.5	26.2	100	98	81	-	-	L
SS-2017	CL	385+00	19.1-20.6	A-4(10)	39	10	5.9	14.7	45.1	34.3	100	96	85	-	-	L
SS-2018	CL	385+00	24.1-25.6	A-4(7)	38	6	2.2	18.4	47.1	32.3	100	99	87	-	-	L
SS-2019	90 RT	385+00	4.3-5.8	A-7-5(18)	48	15	0.6	3.6	43.3	52.5	96	96	94	-	-	L
SS-2020	90 RT	385+00	9.3-10.8	A-4(9)	38	8	0.6	11.3	51.8	36.3	100	100	92	-	-	L
SS-2021	15 RT	386+95	4.3-5.8	A-7-5(24)	50	20	0.8	4.2	40.5	54.5	100	99	97	-	-	L

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-2022	15 RT	386+95	9.3-10.8	A-4(8)	38	6	0.2	10.1	55.4	34.3	100	100	93	-	-	L
SS-2023	15 RT	386+95	24.3-25.8	A-4(7)	38	7	4.0	18.8	42.9	34.3	100	99	82	-	-	L
SS-2024	CL	12+72	4.8-6.3	A-6(10)	38	12	12.9	11.3	39.5	36.3	100	91	79	-	-	Y9FLY
SS-2025	CL	12+72	9.8-11.3	A-5(12)	43	10	1.4	13.5	48.7	36.3	100	100	90	-	-	Y9FLY
M-2026	CL	12+72	19.8-21.3	-	-	-	-	-	-	-	-	-	-	20	-	Y9FLY
SS-2027	CL	12+72	24.8-26.3	A-4(8)	36	8	2.6	18.0	51.2	28.3	100	99	87	-	-	Y9FLY
S-2028	CL	17+25	0.0-1.0	A-7-5(34)	63	26	0.4	2.0	43.1	54.5	100	100	99	-	-	Y9FLY
S-2029	CL	19+50	0.0-12.5	A-7-6(10)	42	16	21.2	17.0	31.6	30.3	100	86	67	-	-	Y9FLY
S-2030	CL	23+50	4.5-6.0	A-4(8)	36	8	3.6	17.8	48.3	30.3	100	98	85	-	-	Y9FLY
SS-2031	CL	25+50	4.2-5.7	A-7-6(9)	42	13	8.5	7.5	39.5	44.5	79	74	69	-	-	Y9 FLY
SS-2032	CL	25+50	14.2-15.7	A-7-5(13)	44	11	3.2	10.3	50.0	36.4	100	98	91	-	-	Y9 FLY
SS-2033	CL	25+50	19.2-20.7	A-4(8)	40	7	5.3	14.2	50.2	30.4	100	97	86	-	-	Y9 FLY
SS-2034	CL	27+50	3.8-5.3	A-4(1)	27	5	8.3	34.4	31.0	26.3	97	93	63	-	-	Y9 FLY
SS-2036	16 LT	35+73	4.4-5.9	A-4(2)	30	4	7.9	36.0	31.8	24.3	100	97	67	-	-	Y9 FLY
S-2037	CL	393+00	0.0-5.3	A-6(7)	34	13	11.5	27.9	28.1	32.4	97	91	66	-	-	-L-
S-2038	CL	399+00	0.0-7.8	A-6(5)	29	12	19.0	26.5	20.0	34.4	100	88	61	-	-	-L-
SS-2039	CL	416+00	4.1-5.6	A-6(10)	32	11	5.3	5.7	50.6	38.5	100	97	91	-	-	-L-
SS-2040	CL	416+00	9.1-10.6	A-4(2)	33	4	9.7	30.2	31.8	28.3	100	96	67	-	-	-L-
SS-2041	CL	416+00	14.1-15.6	A-6(5)	32	13	18.0	18.8	26.7	36.4	88	76	60	-	-	-L-
SS-2042	75 RT	445+65	4.8-6.3	A-6(5)	36	15	20.2	14.1	35.2	30.5	76	64	54			-L-
SS-2043	75 RT	445+65	9.8-11.3	A-4(6)	36	7	3.3	27.3	55.2	14.3	100	99	80			-L-
SS-2044	77 LT	445+94	9.7-11.2	A-4(2)	28	4	5.3	25.3	51.1	18.3	100	98	77			-L-
SS-2045	CL	444+66	4.7-6.2	A-4(4)	27	6	1.2	18.5	53.8	26.5	100	99	89			-L-
SS-2046	114 RT	400+00	4.3-5.8	A-7-5(17)	46	14	2.6	6.3	42.2	48.9	100	99	94			-L-
SS-2047	114 RT	400+00	14.3-15.8	A-5(12)	42	10	2.9	7.9	50.5	38.7	100	98	93			-L-
SS-2048	27 LT	21+88	4.7-6.2	A-4(1)	27	4	6.1	36.7	40.9	16.3	98	96	70			Y13
SS-2049	28 LT	19+17	4.8-6.3	A-7-5(18)	48	15	1.6	5.7	31.6	61.1	100	99	95			Y13
SS-2050	45 RT	19+00	14.4-15.9	A-5(11)	45	10	2.6	18.1	50.7	28.5	100	99	86			Y13
SS-2051	47 RT	21+62	4.5-6.0	A-4(11)	39	10	2.2	9.6	47.5	40.7	100	99	92			Y13
SS-2052	47 RT	21+62	29.5-31.0	A-4-(6)	33	7	3.9	14.5	47	34.6	100	98	87			Y13
SS-3000	CL	293+52	0.0-1.5	A-7-5(26)	55	20	0.2	1.4	50.2	48.2	100	100	99	-	-	L
SS-3001	CL	293+52	3.5-5.0	A-4(5)	38	2	0.0	7.0	84.9	8.0	100	100	99	-	-	L
SS-3002	CL	293+52	8.5-10.0	A-7-5(25)	68	19	1.4	16.5	39.9	42.2	100	100	88	-	-	L
SS-3003	CL	293+52	23.5-25.0	A-7-5(43)	96	44	2.8	24.5	40.5	32.2	100	100	79	-	-	L
SS-3004	CL	293+52	33.5-35.0	A-5(5)	51	9	15.9	34.6	31.5	18.1	100	96	56	-	-	L
SS-3005	CL	293+52	38.5-40.0	A-5(7)	51	9	8.6	33.6	43.7	14.1	100	99	63	-	-	L
SS-3006	CL	293+52	43.5-45.0	A-7-5(15)	53	19	8.2	27.1	36.5	28.1	100	97	73	-	-	L
SS-3007	CL	293+52	53.5-55.0	A-7-5(15)	50	17	6.6	26.1	47.1	20.1	100	98	76	-	-	L
SS-3008	58 LT	293+44	0.0-1.5	A-7-5(53)	78	44	0.8	2.6	22.2	74.4	100	100	98	-	-	L
SS-3009	58 LT	293+44	8.5-10.0	A-7-5(26)	64	19	0.6	8.2	51.0	40.2	100	100	95	-	-	L
SS-3011	58 LT	293+44	23.5-25.0	A-2-5(0)	61	9	9.8	20.3	47.7	22.1	43	40	34	-	-	L
SS-3012	58 LT	293+44	28.5-30.0	A-7-5(13)	51	11	7.8	15.1	57.0	20.1	100	94	84	-	-	L
SS-3013	58 LT	293+44	33.5-35.0	A-5(9)	46	3	0.8	4.8	78.3	16.1	100	100	97	-	-	L
SS-3015	77 RT	293+77	0.0-1.5	A-7-6(60)	79	55	1.4	5.0	25.2	68.3	100	99	95	-	-	L
SS-3016	77 RT	293+77	3.5-5.0	A-7-6(11)	42	18	11.3	29.3	35.3	24.1	100	94	67	-	-	L
SS-3017	16 RT	36+29	0.0-1.5	A-7-5(19)	57	14	1.4	10.5	54.0	34.2	100	100	91	-	-	FLYA
SS-3019	16 RT	36+29	18.5-20.0	A-5(12)	43	10	1.2	9.6	75.1	14.1	100	100	93	-	-	FLYA
SS-3020	16 RT	36+29	23.5-25.0	A-4(7)	40	10	14.5	22.5	53.0	10.1	100	92	69	-	-	FLYA
SS-3021	16 RT	36+29	28.5-30.0	A-7-6(13)	45	18	11.1	21.7	45.1	22.1	100	94	74	-	-	FLYA
SS-3022	28 LT	36+33	0.0-1.5	A-4(12)	40	9	0.2	1.6	62.0	36.2	100	100	99	-	-	FLYA
SS-3024	78 LT	292+38	0.2-0.5	A-7-6(23)	49	23	6.0	7.8	43.9	42.2	100	99	89	-	-	L

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-3025	78 LT	292+38	0.5-1.5	A-5(13)	46	8	0.4	6.2	77.3	16.1	100	100	97	-	-	L
SS-3026	78 LT	292+38	8.5-10.0	A-5(10)	44	6	0.6	5.6	81.7	12.1	100	100	97	-	-	L
SS-3027	CL	292+56	0.0-1.5	A-5(10)	47	6	2.0	16.3	69.5	12.2	100	99	89	-	-	L
SS-3028	CL	292+56	3.5-5.0	A-5(10)	45	7	1.4	16.7	67.7	14.2	100	100	89	-	-	L
SS-3029	CL	292+56	13.5-15.0	A-4(6)	37	5	2.4	18.5	66.8	12.2	100	99	85	-	-	L
SS-3030	CL	292+56	23.5-25.0	A-6(9)	40	11	6.7	19.1	55.8	18.3	100	98	79	-	-	L
SS-3031	15 RT	33+13	0.0-1.5	A-7-6(21)	50	22	7.3	9.8	42.2	40.7	100	95	86	-	-	Y5
SS-3032	15 RT	33+13	18.5-20.0	A-7-5(16)	68	11	3.7	22.2	49.7	24.4	100	99	81	-	-	Y5
SS-3033	15 LT	32+41	0.0-1.5	A-7-6(26)	51	28	6.1	4.6	38.8	50.5	95	91	86	-	-	Y5
SS-3034	15 LT	32+41	23.5-25.0	A-5(3)	49	7	19.2	34.5	30.2	16.1	100	91	54	-	-	Y5
S-3035	CL	39+83	0.2-0.6	A-7-5(13)	43	13	6.7	8.3	50.8	34.3	96	92	84	-	-	Y1
S-3036	CL	39+83	3.5-3.7	A-4(8)	32	9	7.3	5.9	50.6	36.3	98	93	87	-	-	Y1
S-3037	CL	39+83	5.6-5.9	A-7-6(17)	44	15	1.4	8.3	49.9	40.4	100	100	94	-	-	Y1
S-3038	CL	39+83	8.8-9.1	A-4(8)	22	1	6.9	15.3	57.6	20.2	100	97	82	-	-	Y1
SS-3039	13 RT	18+33	0.2-1.5	A-4(1)	27	4	11.5	8.7	47.4	32.4	82	73	69	-	-	Y7
SS-3040	13 LT	18+39	8.5-10.0	A-7-6(11)	46	21	21.7	12.3	25.5	40.5	89	75	61	-	-	Y7
SS-3041	13 LT	16+17	0.3-1.5	A-7-6(34)	56	33	2.4	8.3	26.5	62.8	100	99	93	-	-	Y7
SS-3042	13 LT	17+27	13.5-15.0	A-4(2)	31	5	11.7	34.0	25.9	28.3	100	96	61	-	-	Y7
PS-2	100LT	23+50	0.0-0.5	A-6(15)	39	15	3.9	5.9	47.5	42.8	100	98	93			Y10RPD

The following are bulk samples taken for resilient modulus tests.

Mr-1XR	15 LT	10+50	0.0-13.0	A-6(14)	40	12	0.6	4.5	44.2	50.8	99	99	97	-	-	-Y14-
Mr-2XR	CL	381+00	0.0-18.0	A-7-6(15)	42	15	5.1	8.7	45.6	40.6	100	97	89	-	-	-L-
Mr-3XR	CL	379+50	0.0-10.0	A-7-5(24)	54	21	2.4	7.9	42.9	46.7	100	99	93	-	-	-L-

SECTION 2

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34450.1.1 (R-2536B)	1	14

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34450.1.1 (R-2536B) F.A. PROJ. STPNHF-0064(107)

COUNTY RANDOLPH

PROJECT DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS FROM US 220 TO SR 2834 (OLD COX ROAD)

SITE DESCRIPTION BRIDGE ON -FLYA- OVER -L-

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PROJECT: 34450.1.1

ID: R-2536B

PROJECT REFERENCE NO.	SHEET NO.
24450.1.1 (R-2536B)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7							
											A-7-5 A-7-6			
SYMBOL														
% PASSING # 10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
# 40	30 MX	50 MX	51 MN											
# 200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL - LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL - PLASTIC LIMIT		
OM - OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL - SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL	MED. - MEDIUM	VST - VANE SHEAR TEST
BT - BORING TERMINATED	MICA. - MICACEOUS	WEA. - WEATHERED
CL. - CLAY	MOD. - MODERATELY	γ - UNIT WEIGHT
CPT - CONE PENETRATION TEST	NP - NON PLASTIC	γ_d - DRY UNIT WEIGHT
CSE. - COARSE	ORG. - ORGANIC	
DMT - DILATOMETER TEST	PMT - PRESSUREMETER TEST	SAMPLE ABBREVIATIONS
DPT - DYNAMIC PENETRATION TEST	SAP. - SAPROLITIC	S - BULK
e - VOID RATIO	SD. - SAND, SANDY	SS - SPLIT SPOON
F - FINE	SL. - SILT, SILTY	ST - SHELBY TUBE
FOSS. - FOSSILIFEROUS	SLI. - SLIGHTLY	RS - ROCK
FRAC. - FRACTURED, FRACTURES	TCR - TRICONE REFUSAL	RT - RECOMPACTED TRIAXIAL
FRAGS. - FRAGMENTS	w - MOISTURE CONTENT	CBR - CALIFORNIA BEARING RATIO
HI. - HIGHLY	V - VERY	

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [X] CME-55
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE ____" STEEL TEETH
- [ ] TRICONE ____" TUNG.-CARB.
- [X] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -N 03
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS across GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

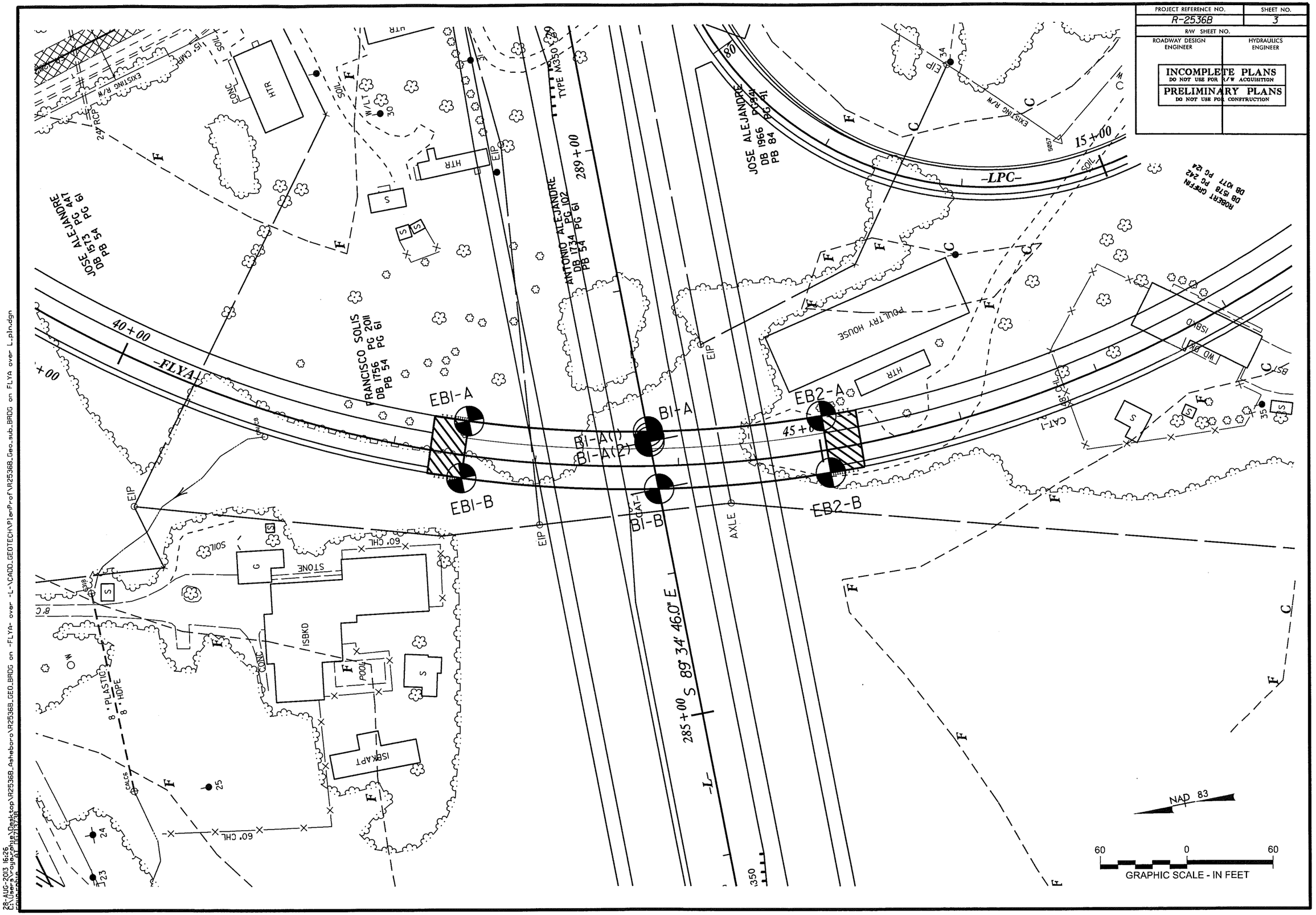
TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: ELEVATIONS DETERMINED FROM NCDOT ELECTRONIC PROJECT DRAWING FILES.

ELEVATION: N/A FT.

NOTES:
CT - CORING TERMINATED

REVISED 09/23/09



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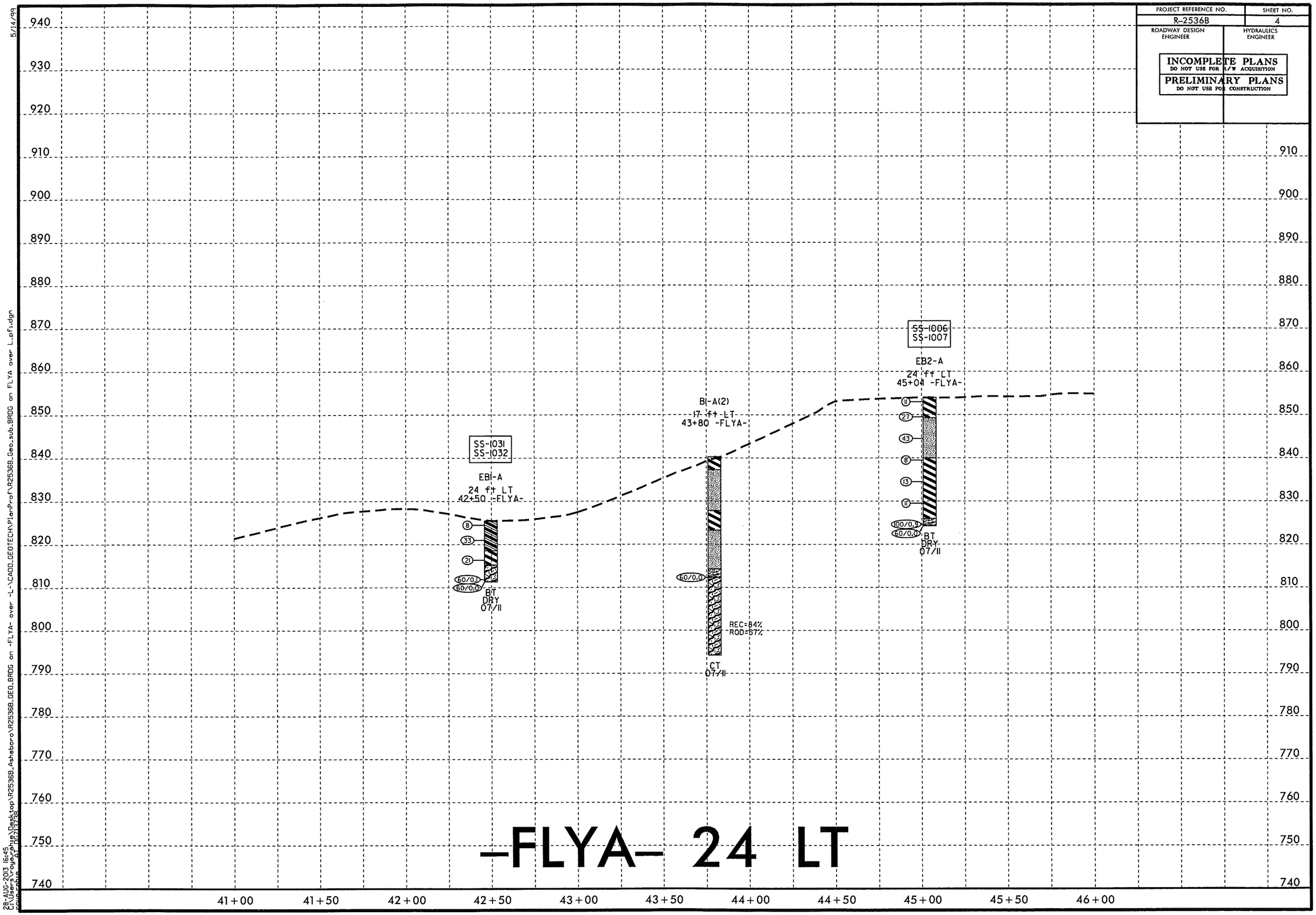
roya.rahie AT DG713738

PROJECT REFERENCE NO.	SHEET NO.
R-2536B	4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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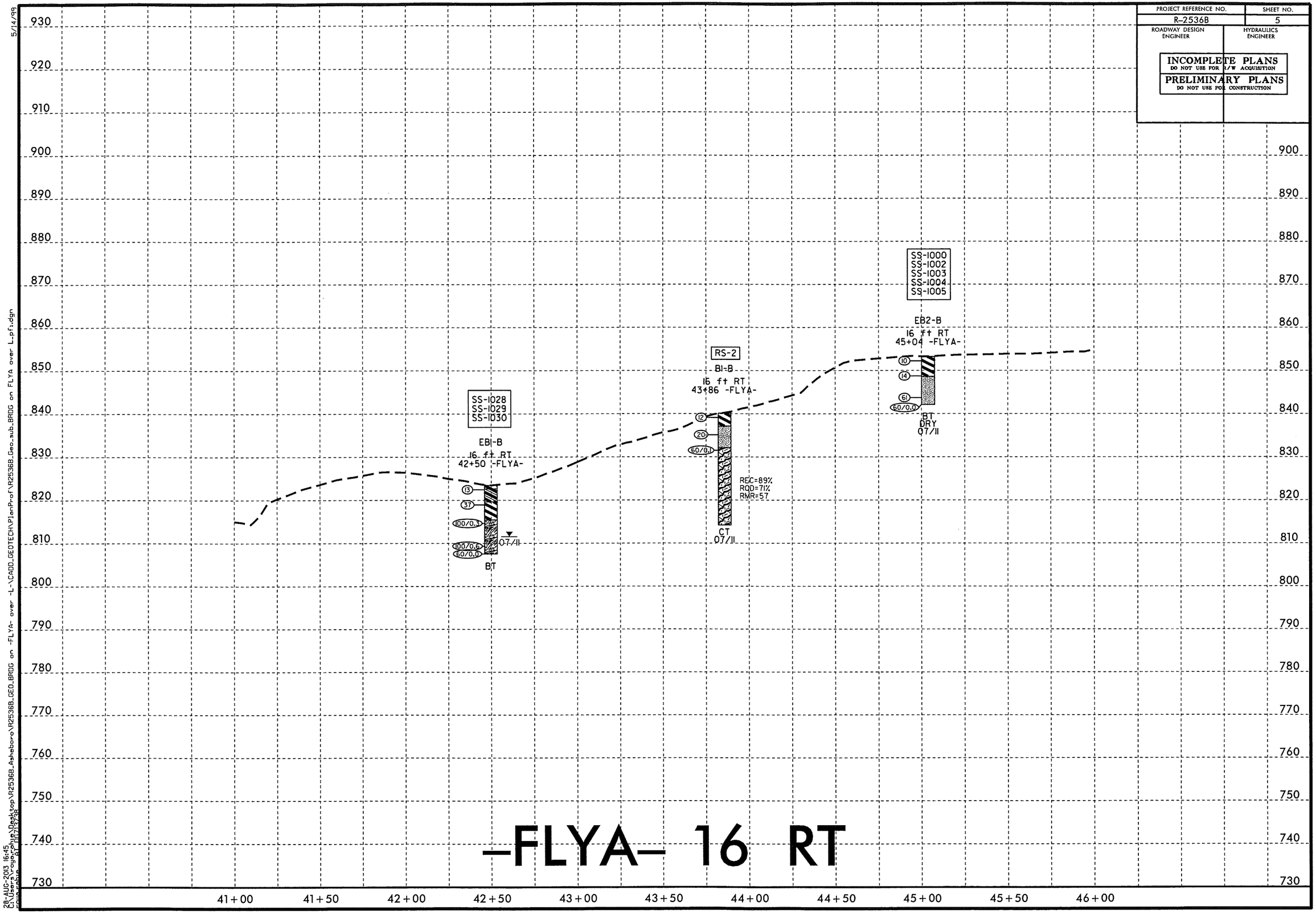

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NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 42+50	**OFFSET** 24 ft LT	**ALIGNMENT** -FLYA-
COLLAR ELEV. 825.4 ft	**TOTAL DEPTH** 14.1 ft	**NORTHING** 692,650	**EASTING** 1,751,973
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.	**START DATE** 07/01/11	**COMP. DATE** 07/05/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. Dry; 24 HR. Dry

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
830											
825	825.4	0.0	2	3	5	8, 33		D		825.4 GROUND SURFACE	0.0
										RESIDUAL TAN & TAN-RED MED. STIFF TO HARD DRY LOW (PI=12) PLASTIC HIGHLY SILTY SANDY CLAY (A-6) W/ TRACE ROOTS & F. SAND	
820	821.9	3.5	20	19	14		SS-1031	D		818.5	6.9
										TAN & RED V. STIFF DRY HIGH (PI=36) PLASTIC F. SANDY SILTY CLAY & SILTY CLAY (A-7-5) W/ HIGH ROCK FRAGS. @ 6.9-8.8 & TRACE ROCK FRAGS. @ 8.8-10.2	
815	817.3	8.1	79	13	8	21	SS-1032			815.2	10.2
	811.9	13.5	60/0.1			60/0.1				**CRYSTALLINE ROCK** GRAY META-VOLCANIC	
	811.3	14.1	60/0.0			60/0.0				811.3	14.1

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 811.3 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS FLYA-4250L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 42+50	**OFFSET** 16 ft RT	**ALIGNMENT** -FLYA-
COLLAR ELEV. 823.4 ft	**TOTAL DEPTH** 15.9 ft	**NORTHING** 692,663	**EASTING** 1,751,935
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.	**START DATE** 07/01/11	**COMP. DATE** 07/01/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. Dry; 24 HR. 11.9

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
825											
	823.4	0.0								823.4 GROUND SURFACE	0.0
			1	6	7	13	SS-1028	D		822.6 **RESIDUAL** BRN STIFF DRY LOW (PI=14) PLASTIC HIGHLY SILTY CLAY (A-7-5) W/ TRACE ROOTS & F. SAND	0.8
820	819.9	3.5					SS-1029				
			18	19	18	37	SS-1030	M		819.6 TAN STIFF DRY LOW (PI=12) PLASTIC HIGHLY SILTY SANDY CLAY (A-6) W/ TRACE ROOTS & F. SAND	3.8
815	814.9	8.5	100/0.3			100/0.3		M		815.4 RED HARD MOIST LOW (PI=11) PLASTIC HIGHLY SANDY SILTY CLAY (A-7-5)	8.0
										WEATHERED ROCK META-VOLCANIC, W/ SOFTER LAYER @ 10.5-11.6	
810	809.9	13.5	18	82/0.1		100/0.6		M			
	807.5	15.9	60/0.0			60/0.0				807.5	15.9

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 807.5 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS FLYA-4250R

NCDOT BORE DOUBLE R2536B_GEO_BRDG ON -FLYA- OVER -L-_GINT.GPJ NC_DOT.GDT 10/16/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 43+79	**OFFSET** 24 ft LT	**ALIGNMENT** -FLYA- — **0 HR.** NM
COLLAR ELEV. 839.7 ft	**TOTAL DEPTH** 30.1 ft	**NORTHING** 692,529	**EASTING** 1,751,941 — **24 HR.** NM
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/06/11	**COMP. DATE** 07/14/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
840										839.7 GROUND SURFACE	0.0
	839.7	0.0	4	15	29	44		M		**RESIDUAL** 837.7 RED-BRN & YELLOW HARD MOIST SILTY CLAY (A-7) W/ TRACE ROCK FRAGS.	2.0
835	836.2	3.5	19	19	15	34		M		**RESIDUAL** YELLOW & RED HARD MOIST SANDY SILT (A-4) W/ TRACE ROCK FRAGS.	
830	831.2	8.5	10	15	21	36		M		828.7	11.0
825	826.2	13.5	5	4	5	9		M		**RESIDUAL** MAROON STIFF MOIST SILTY CLAY (A-7) 823.7	16.0
820	821.2	18.5	10	21	47	68		M		**RESIDUAL** YELLOW & RED HARD TO V. STIFF MOIST SANDY SILT (A-4) W/ TRACE ROCK FRAGS.	
815	816.2	23.5	7	8	12	20		M		811.8	27.9
810	811.8 / 810.1	27.9 / 29.6	31 / 100/0.5	27	73/0.1	100/0.6 / 100/0.5				**WEATHERED ROCK** 809.6 SEV. WEATH. CRYSTALLINE ROCK W/ CRYSTALLINE ROCK LAYER @ 28.9 (META-VOLCANIC)	30.1

Boring Terminated at Elevation 809.6 ft IN SEV. WEATH. CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-28700

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A(1)	**STATION** 43+80	**OFFSET** 20 ft LT	**ALIGNMENT** -FLYA- — **0 HR.** NM
COLLAR ELEV. 840.0 ft	**TOTAL DEPTH** 5.0 ft	**NORTHING** 692,529	**EASTING** 1,751,937 — **24 HR.** NM
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/14/11	**COMP. DATE** 07/14/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
840										840.0 GROUND SURFACE	0.0
										RESIDUAL 837.5 RED-BRN V. STIFF MOIST SILTY CLAY (A-7)	2.5
835	835.0	5.0	60/0.0			60/0.0				835.0 **RESIDUAL** YELLOW & RED HARD MOIST SANDY SILT (A-4)	5.0

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 835.0 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-28696

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A(2)	**STATION** 43+80	**OFFSET** 17 ft LT	**ALIGNMENT** -FLYA- — **0 HR.** N/A
COLLAR ELEV. 840.2 ft	**TOTAL DEPTH** 46.0 ft	**NORTHING** 692,529	**EASTING** 1,751,934 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/15/11	**COMP. DATE** 07/15/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
845										
840										840.2 GROUND SURFACE 0.0
										RESIDUAL RED-BROWN, YELLOW, HARD, SILTY CLAY (A-7-5) 837.2 3.0
835										YELLOW AND RED-BROWN, HARD, SANDY SILT (A-4)
830										
										827.7 12.5
825										MAROON, STIFF, SILTY CLAY (A-7-5)
										823.2 17.0
820										YELLOW AND RED, HARD, SANDY SILT (A-4)
815										814.2 26.0
										WEATHERED ROCK (META-VOLCANIC) 812.2 28.0
810	812.2	28.0	60/0.0			60/0.0				CRYSTALLINE ROCK (META-VOLCANIC)
805										
800										
795										794.2 46.0
										Boring Terminated at Elevation 794.2 ft IN CRYSTALLINE ROCK (META-VOLCANIC)
										NOTE: ROADWAY BORING DESIGNATION IS L-28693

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

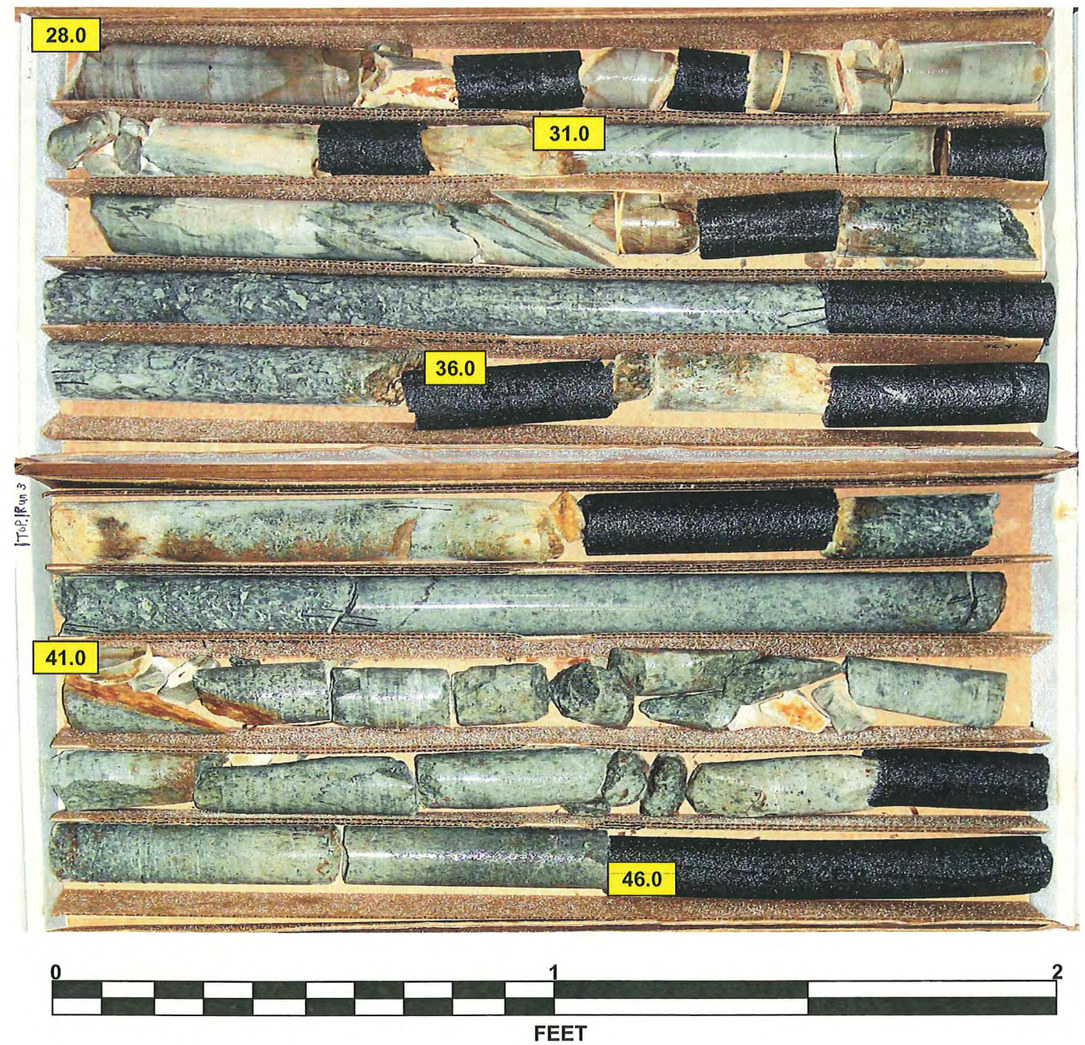
WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A(2)	**STATION** 43+80	**OFFSET** 17 ft LT	**ALIGNMENT** -FLYA- — **0 HR.** N/A
COLLAR ELEV. 840.2 ft	**TOTAL DEPTH** 46.0 ft	**NORTHING** 692,529	**EASTING** 1,751,934 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/15/11	**COMP. DATE** 07/15/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ3	**TOTAL RUN** 18.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS (ELEV. (ft) / DEPTH (ft))
812.2											Begin Coring @ 28.0 ft
810	812.2	28.0	3.0	3:50 4:58 4:56	(2.4) 80%	(0.9) 30%		(15.1) 84%	(10.3) 57%		812.2 **CRYSTALLINE ROCK** GRAY, FRESH TO MODERATELY SEVERELY WEATHERED, VERY HARD TO MODERATELY HARD, MODERATELY CLOSE TO CLOSELY FRACTURED EPICLASTIC, META-VOLCANIC WITH SOIL SEAMS 28.0
	809.2	31.0									
805	804.2	36.0	5.0	3:50 2:16 2:43 2:49 2:03	(4.6) 92%	(3.8) 76%					
800	799.2	41.0	5.0	1:56 2:09 2:42 3:09 5:27	(3.6) 72%	(3.1) 62%					
795	794.2	46.0	5.0	7:16 6:38 6:31 6:54 4:48	(4.5) 90%	(2.5) 50%					794.2 46.0
											Boring Terminated at Elevation 794.2 ft IN CRYSTALLINE ROCK (META-VOLCANIC)
											NOTE: ROADWAY BORING DESIGNATION IS L-28693

CORE PHOTOGRAPHS

B1-A(2)

BOXES 1 & 2 OF 2: 28.0 - 46.0 FEET



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 43+86	**OFFSET** 16 ft RT	**ALIGNMENT** -FLYA- — **0 HR.** N/A
COLLAR ELEV. 840.1 ft	**TOTAL DEPTH** 25.9 ft	**NORTHING** 692,529	**EASTING** 1,751,901 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.	**START DATE** 07/06/11	**COMP. DATE** 07/06/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
845										
840	840.1	0.0								840.1 GROUND SURFACE 0.0
			2	5	7	12		M		**RESIDUAL** RED-BROWN, STIFF, SILTY CLAY WITH TRACE ROOTS AND ROUND GRAVEL (A-7-5)
835	836.1	4.0	5	9	11	20		M		837.1 3.0 YELLOW, RED, AND WHITE, VERY STIFF, SANDY SILT (A-4)
830	831.6	8.5	60/0.1			60/0.1				832.1 8.0 **CRYSTALLINE ROCK** (FELSITE, UWHARRIE FORMATION)
825							RS-2			
820										
815										814.2 25.9 Boring Terminated at Elevation 814.2 ft IN CRYSTALLINE ROCK (FELSITE, UWHARRIE FORMATION) NOTE: ROADWAY BORING DESIGNATION IS L-28660

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

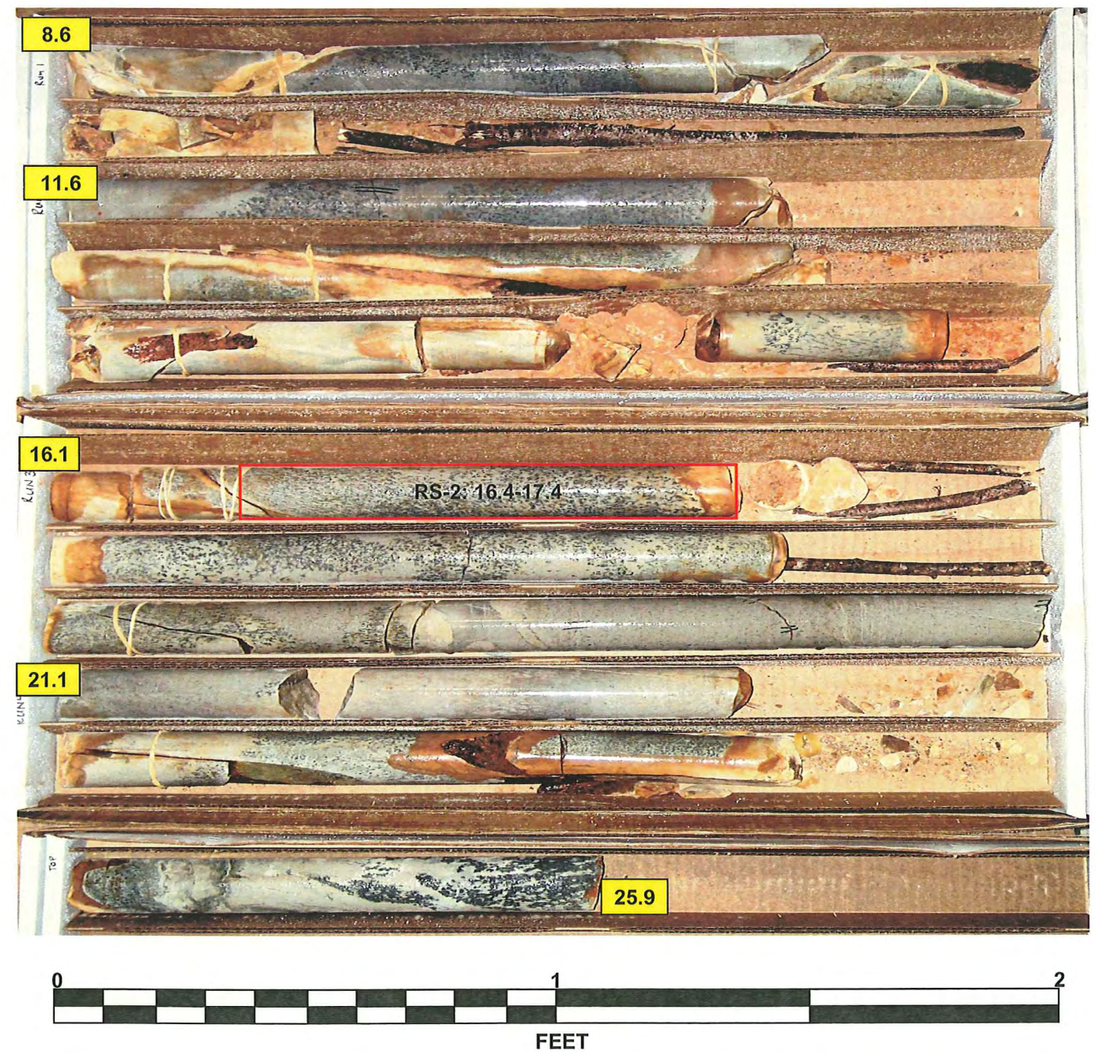
WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 43+86	**OFFSET** 16 ft RT	**ALIGNMENT** -FLYA- — **0 HR.** N/A
COLLAR ELEV. 840.1 ft	**TOTAL DEPTH** 25.9 ft	**NORTHING** 692,529	**EASTING** 1,751,901 — **24 HR.** N/A
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.	**START DATE** 07/06/11	**COMP. DATE** 07/06/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ3	**TOTAL RUN** 17.3 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS (ELEV. (ft) / DEPTH (ft))
831.5											Begin Coring @ 8.6 ft
830	831.5	8.6	3.0	5:50 5:24 4:35	(2.4) 80%	(0.7) 23%					**CRYSTALLINE ROCK** FRESH TO SEVERELY WEATHERED, VERY HARD TO MODERATELY HARD, MODERATELY CLOSE TO CLOSELY FRACTURED, FELSITE WITH SOIL SEAMS (UWHARRIE FORMATION)
	828.5	11.6									
825			4.5	6:00 3:30 3:35 3:00 2:15/0.5	(4.5) 100%	(3.7) 82%					RS-2: R1=7, R2=13, R3=10, R4=20, R5=7; Total RMR=57 (Rock Type: D; Class III; Fair Rock) *(continued)*
	824.0	16.1									
820			5.0	3:43 4:00 3:57 4:30 4:25	(4.9) 98%	(4.2) 84%	RS-2				
	819.0	21.1									
815			4.8	1:38/0.4 4:45 4:40 3:32 5:34 3:45/0.4	(3.6) 75%	(3.6) 75%					
	814.2	25.9									814.2 25.9 Boring Terminated at Elevation 814.2 ft IN CRYSTALLINE ROCK (FELSITE, UWHARRIE FORMATION) NOTE: ROADWAY BORING DESIGNATION IS L-28660

CORE PHOTOGRAPHS

B1-B

BOXES 1 TO 3 OF 3: 8.6 - 25.9 FEET



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 45+04	**OFFSET** 24 ft LT	**ALIGNMENT** -FLYA- — **0 HR.** Dry
COLLAR ELEV. 853.9 ft	**TOTAL DEPTH** 29.7 ft	**NORTHING** 692,408	**EASTING** 1,751,928 — **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.	**START DATE** 06/30/11	**COMP. DATE** 06/30/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
855										
	853.9	0.0	4	6	5	11		M		853.9 — GROUND SURFACE — 0.0
850	850.4	3.5	11	12	15	27		M		**RESIDUAL** RED-BRN & YELLOW STIFF TO V. STIFF MOIST SILTY CLAY (A-7) W/ TRACE ROCK FRAGS. — 849.2 — 4.7
845	845.4	8.5	21	21	22	43		M		YELLOW & RED & WHITE V. STIFF TO HARD MOIST SANDY SILT (A-4) W/ SOME ROCK FRAGS.
840	840.4	13.5	7	4	4	8	SS-1006	M		839.9 — 14.0 — MAROON & RED & WHITE & YELLOW MED. STIFF TO STIFF MOIST LOW (PI=11, 13) PLASTIC HIGHLY SANDY SILTY CLAY TO SILTY CLAY & HIGHLY SILTY CLAY (A-7-5)
835	835.4	18.5	5	5	8	13		M		
830	830.4	23.5	4	5	6	11	SS-1007	M		
825	825.4	28.5								825.9 — 28.0
	824.2	29.7	24	76/0.4		100/0.9		M		824.2 — **WEATHERED ROCK** META-VOLCANIC — 29.7
			60/0.0			60/0.0				Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 824.2 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS FLYA-4504L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 45+04	**OFFSET** 16 ft RT	**ALIGNMENT** -FLYA- — **0 HR.** Dry
COLLAR ELEV. 853.2 ft	**TOTAL DEPTH** 11.1 ft	**NORTHING** 692,410	**EASTING** 1,751,888 — **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.	**START DATE** 06/30/11	**COMP. DATE** 06/30/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
855										
	853.2	0.0	3	5	5	10	SS-1000	M		853.2 — GROUND SURFACE — 0.0
850	849.7	3.5	3	5	9	14	SS-1002	M		**RESIDUAL** RED-BRN & YELLOW STIFF MOIST HIGH (PI=32) TO MED. (PI=19) PLASTIC HIGHLY SILTY CLAY (A-7-6) W/ TRACE ROOTS, ROUNDED GRAVEL & ROCK FRAGS. — 848.6 — 4.6
							SS-1003	M		YELLOW & RED & WHITE STIFF TO HARD MOIST TO DRY SANDY SILT (A-4) W/ TRACE ROCK FRAGS. @ 8.5-9.3, TRACE CLAY & SOME ROCK FRAGS. @ 9.3-10.0
845	844.7	8.5	21	36	25	61	SS-1004	M		
	842.1	11.1	60/0.0			60/0.0	SS-1005	D		842.1 — 11.1 — Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 842.1 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS FLYA-4504R

US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-1000	16 RT	45+04	0.0-1.2	A-7-6(33)	61	32	5.7	5.5	30.3	58.6	98	94	89	-	-	FLYA
SS-1002	16 RT	45+04	3.5-4.6	A-7-6(17)	46	19	9.7	10.7	53.3	26.3	100	94	84	-	-	FLYA
SS-1003	16 RT	45+04	4.6-5.0	A-4(7)	38	6	4.8	15.8	63.2	16.2	100	98	86	-	-	FLYA
SS-1004	16 RT	45+04	8.5-9.3	A-4(8)	40	8	10.7	7.7	61.4	20.2	100	93	84	-	-	FLYA
SS-1005	16 RT	45+04	9.3-10.0	A-4(1)	40	6	44.4	13.1	30.3	12.1	99	63	45	-	-	FLYA
SS-1006	24 LT	45+04	14.0-15.0	A-7-5(10)	57	11	12.3	29.1	36.4	22.2	100	95	67	-	-	FLYA
SS-1007	24 LT	45+04	23.5-25.6	A-7-5(15)	52	13	3.6	18.2	62.0	16.2	100	99	84	-	-	FLYA
SS-1028	16 RT	42+50	0.1-0.8	A-7-5(17)	45	14	2.8	4.4	54.3	38.4	100	98	95	-	-	FLYA
SS-1029	16 RT	42+50	0.8-1.5	A-6(10)	34	12	5.3	6.3	46.1	42.4	97	93	88	-	-	FLYA
SS-1030	16 RT	42+50	3.8-5.0	A-7-5(7)	53	11	22.0	24.4	25.3	28.3	100	88	59	-	-	FLYA
SS-1031	24 LT	42+50	3.5-5.0	A-6(9)	40	12	20.1	8.7	46.8	24.4	100	84	74	-	-	FLYA
SS-1032	24 LT	42+50	8.8-9.6	A-7-5(26)	75	36	23.1	10.6	11.5	54.8	100	83	68	-	-	FLYA

US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -L-

ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	BORING NO.	DEPTH INTERVAL (ft)	UNIT WT. lbs/cf	UNCONFINED COMPRESSIVE STRENGTH (ksi)	YOUNG'S MODULUS (Mpsi)	ROCK MASS RATING
RS-2	16' RT	43+86	B1-B	16.4-17.4	169.90	9.93	16.17	57

SECTION 3

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34450.1.1 (R-2536B)	1	19

PROJECT: 34450.1.1 ID: R-2536B

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34450.1.1 (R-2536B) F.A. PROJ. STPNHF-0064(107)

COUNTY RANDOLPH

PROJECT DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS FROM US 220 TO SR 2834 (OLD COX ROAD)

SITE DESCRIPTION DUAL BRIDGES ON -L- OVER -Y11-

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
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18	SOIL TEST RESULTS
19	ROCK TEST RESULTS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHCH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA , AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS, INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

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D. Racey

D. Tignor

J. Gilchrist

DRAWN BY R. Rahie

INVESTIGATED BY C. Youngblood

CHECKED BY M. Lear, PG

SUBMITTED BY B. Deobald, LG

DATE August, 2013

NORTH CAROLINA LICENSED SEAL 1927 GEOLOGIST MICHAEL B. LEAR

MBL 8/29/13

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NC Engineering F-1253 NC Geology C-247

PROJECT REFERENCE NO.	SHEET NO.
24450.1.1 (R-2536B)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING # 10	50 MX		51 MN									GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
# 40	30 MX	50 MX	10 MX											
# 200	15 MX	25 MX		35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS
S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [X] CME-55
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE ____" STEEL TEETH
- [ ] TRICONE ____" TUNG.-CARB.
- [X] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -N Q
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS across GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: ELEVATIONS DETERMINED FROM NCDOT ELECTRONIC PROJECT DRAWING FILES.

ELEVATION: N/A FT.

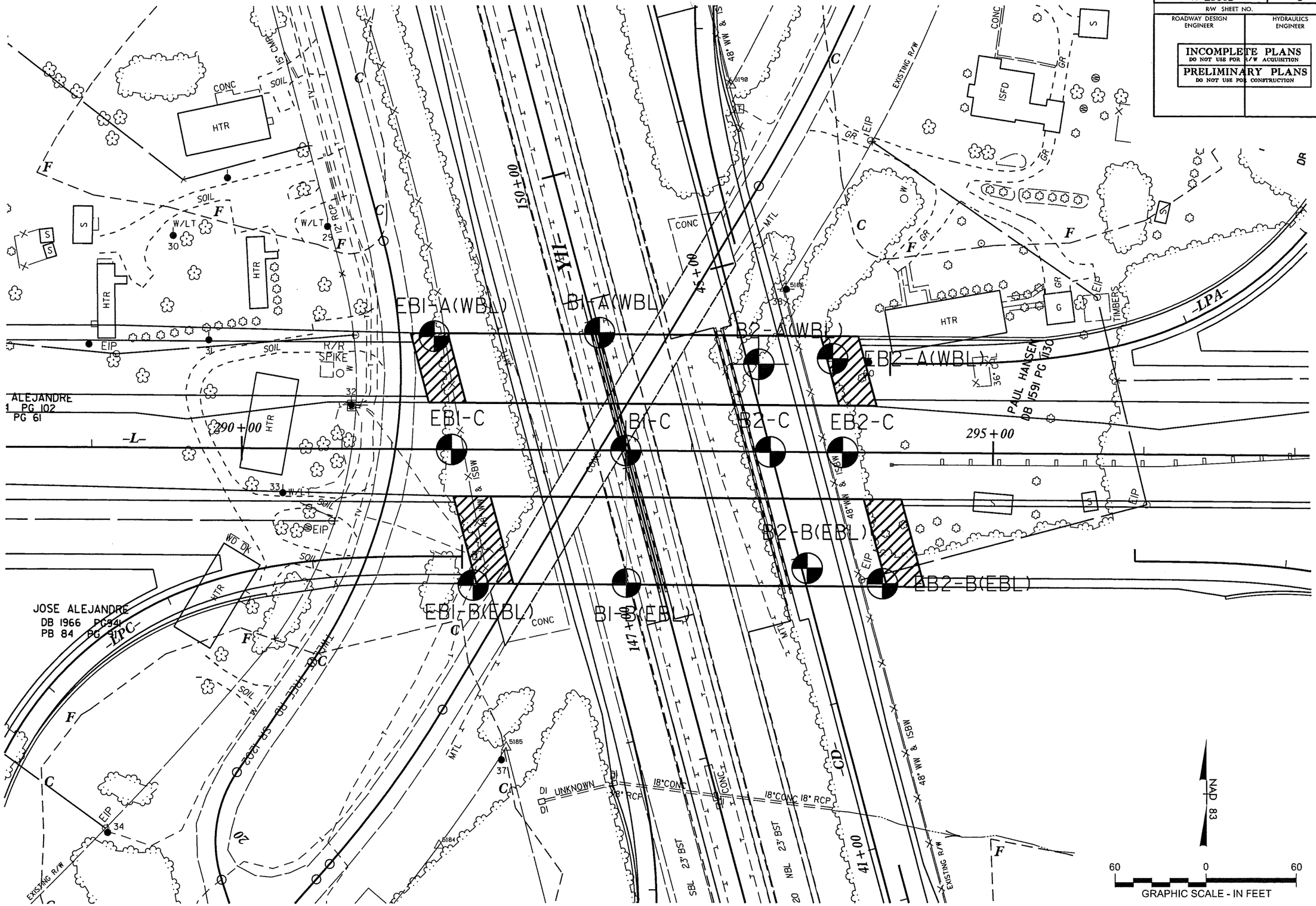
NOTES:
FIAD - FILLED IMMEDIATELY AFTER DRILLING
CT - CORING TERMINATED

REVISED 09/23/09

PROJECT REFERENCE NO.	SHEET NO.
R-2536B	3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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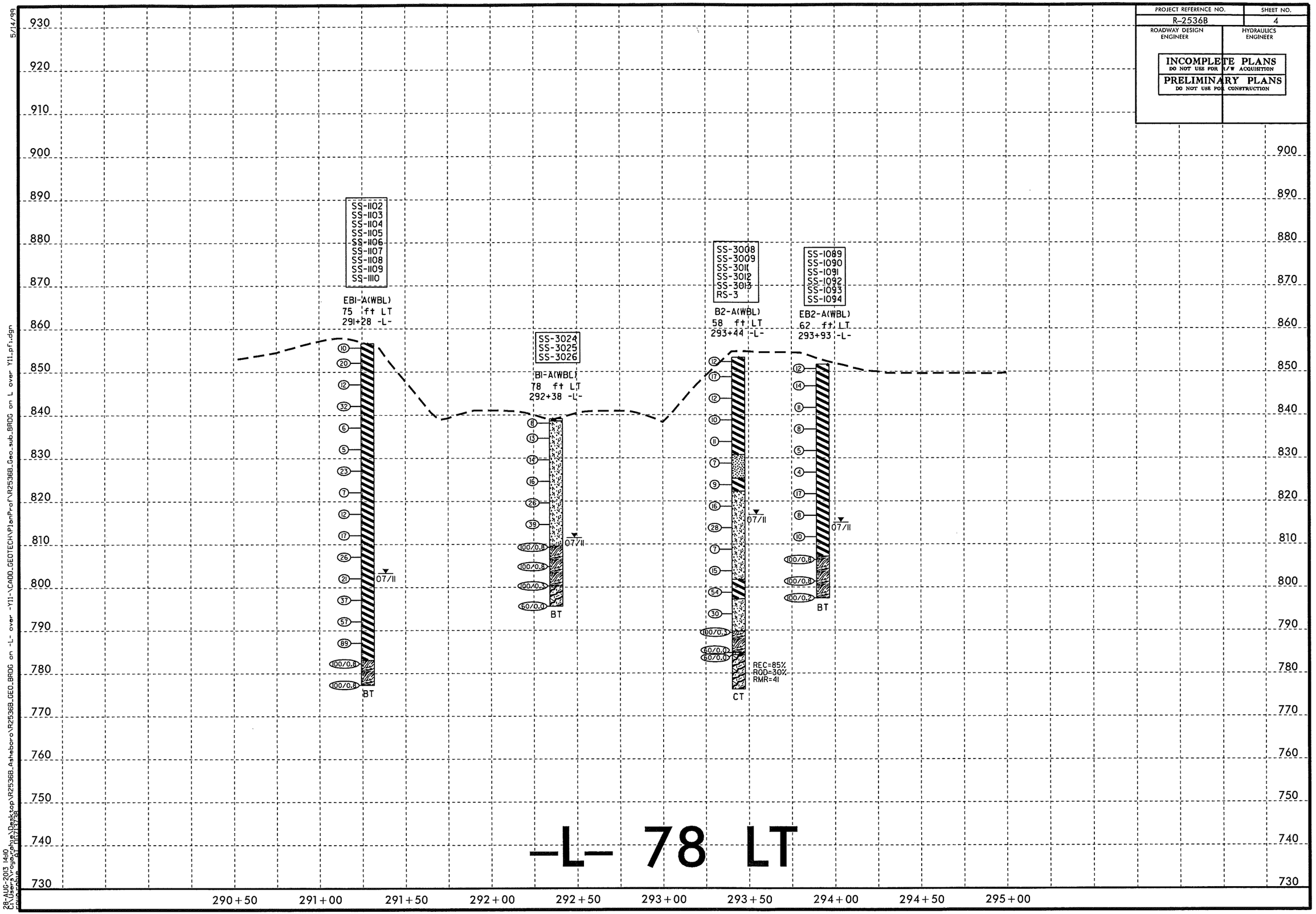
PROJECT REFERENCE NO.
R-2536B
SHEET NO.
4
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SS-1102
SS-1103
SS-1104
SS-1105
SS-1106
SS-1107
SS-1108
SS-1109
SS-1110
EB1-A(WBL)
75 ft LT
291+28 -L-
SS-3024
SS-3025
SS-3026
B1-A(WBL)
78 ft LT
292+38 -L-
SS-3008
SS-3009
SS-3011
SS-3012
SS-3013
RS-3
B2-A(WBL)
58 ft LT
293+44 -L-
SS-1089
SS-1090
SS-1091
SS-1092
SS-1093
SS-1094
EB2-A(WBL)
62 ft LT
293+93 -L-
07/11
BT
CT
REC=85%
RQD=30%
RMR=41
-L- 78 LT
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
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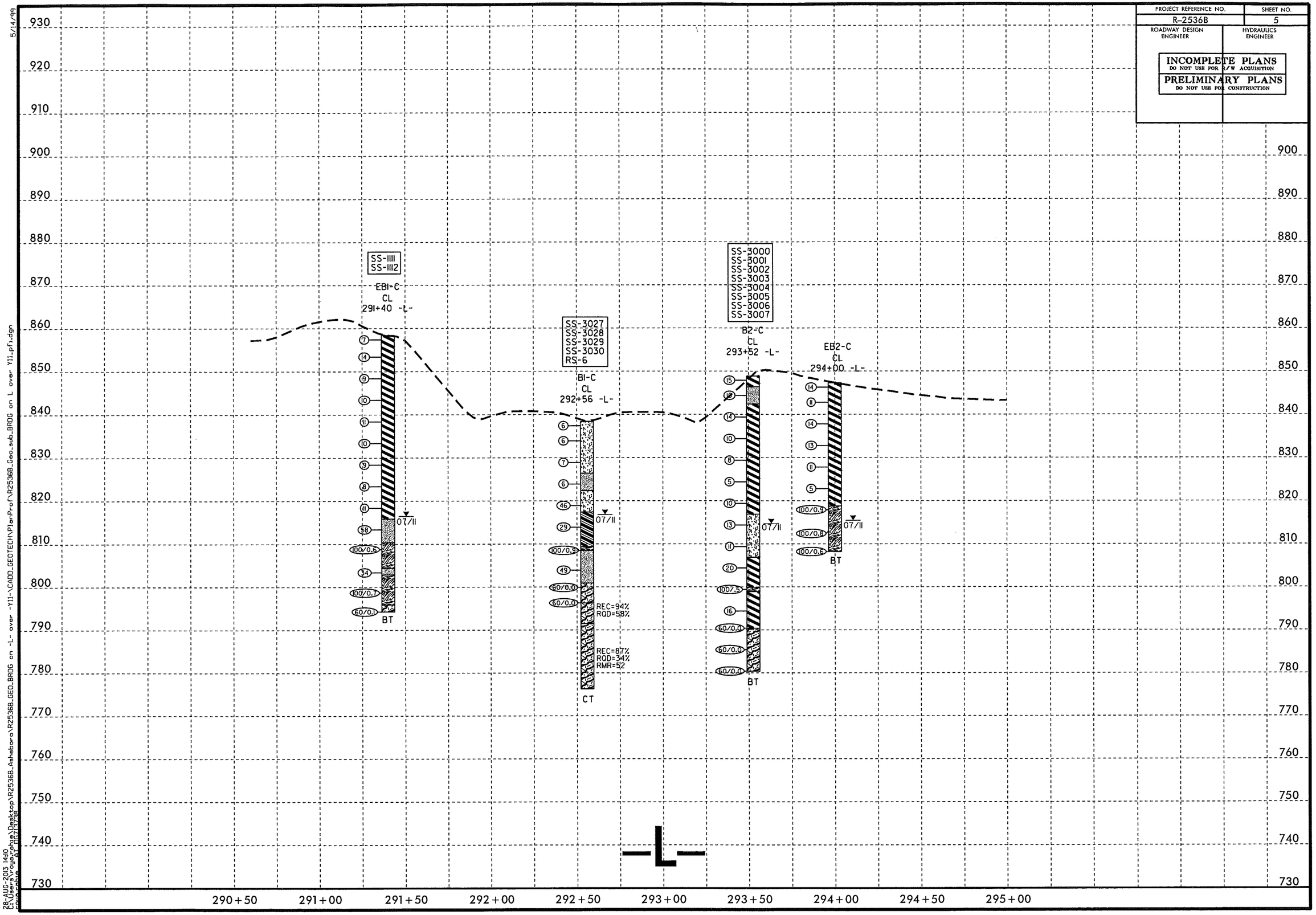
293+50
294+00
294+50
295+00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R-2536B
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SS-1111
SS-1112
EB1-C
CL
291+40 -L-
SS-3027
SS-3028
SS-3029
SS-3030
RS-6
B1-C
CL
292+56 -L-
SS-3000
SS-3001
SS-3002
SS-3003
SS-3004
SS-3005
SS-3006
SS-3007
B2-C
CL
293+52 -L-
EB2-C
CL
294+00 -L-
07/11
BT
CT
REC=94%
RQD=58%
REC=87%
RQD=34%
RMR=52
-L-
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
730
290+50
291+00
291+50
292+00
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294+50
295+00
5/14/99
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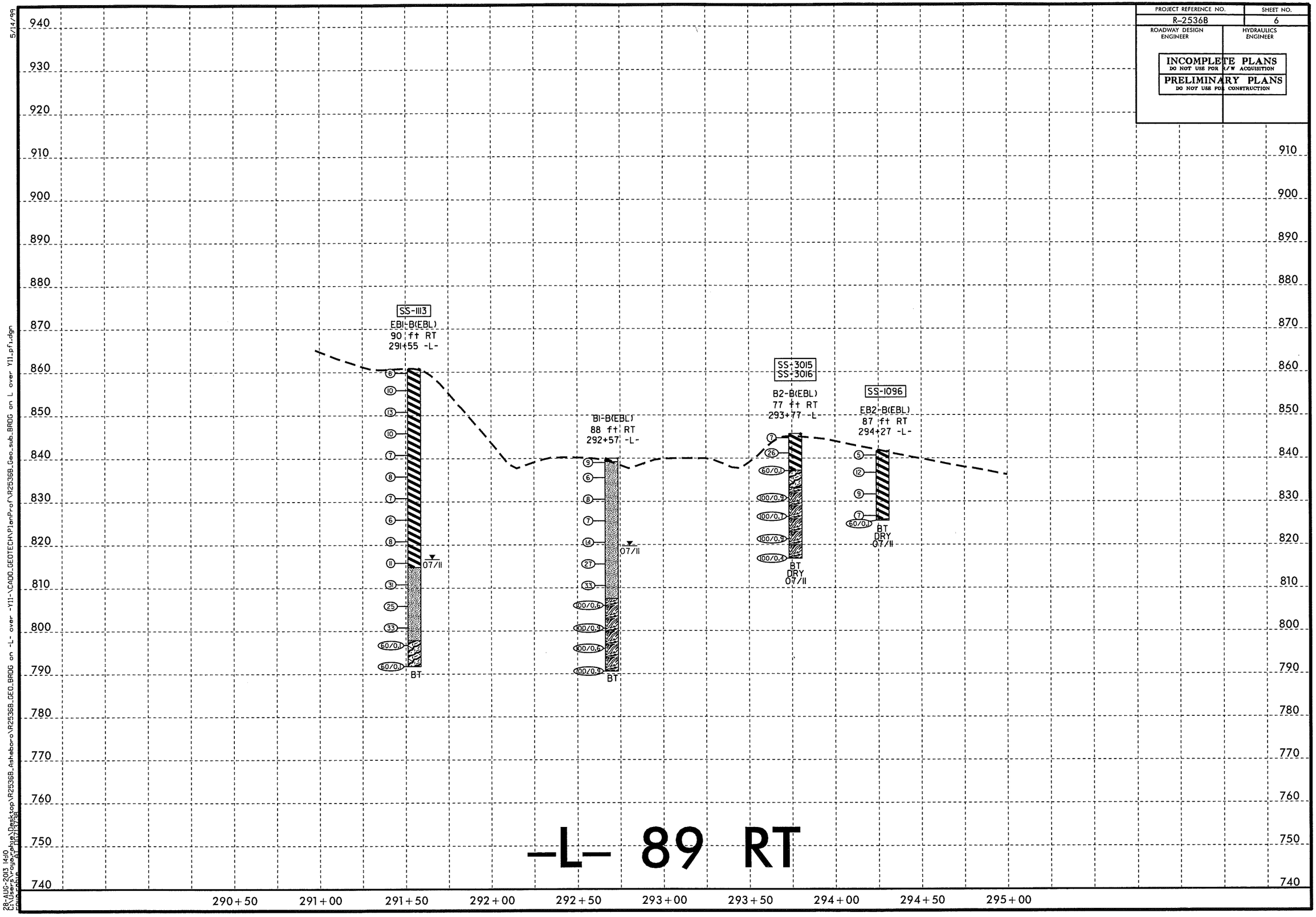
PROJECT REFERENCE NO.
R-2536B
SHEET NO.
6
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
5/14/99
SS-1113
EB1-B(EBL)
90 ft RT
291+55 -L-
B1-B(EBL)
88 ft RT
292+57 -L-
SS-3015
SS-3016
B2-B(EBL)
77 ft RT
293+77 -L-
SS-1096
EB2-B(EBL)
87 ft RT
294+27 -L-
07/11
BT
DRY
-L- 89 RT
940
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
290+50
291+00
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28-AUG-2013 14:10
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NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB1-A (WBL)	**STATION** 291+28	**OFFSET** 75 ft LT	**ALIGNMENT** -L- — **0 HR.** 57.8
COLLAR ELEV. 856.6 ft	**TOTAL DEPTH** 79.3 ft	**NORTHING** 692,601	**EASTING** 1,752,369 — **24 HR.** 53.3
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/14/11	**COMP. DATE** 07/14/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
860										
	856.6	0.0								856.6 GROUND SURFACE 0.0
855			1	3	7	10	SS-1102	M		**RESIDUAL** RED, TAN, WHITE, MAROON & BRN MED. STIFF TO HARD MOIST MED. & HIGH TO LOW PLASTIC SILTY CLAY & HIGHLY SILTY CLAY (A-7-6, A-7-5) W/ TRACE QTZ. FRAGS. & ROOTS @ 0.0-1.5, SOME QTZ. FRAGS. @ 13.5, LITTLE SAND @ 28.5, SOME SAND @ 43.5 & 63.5. (PI=21, 26, 21, 27, 26, 26, 22, 18, 11)
	853.1	3.5	7	10	10	20	SS-1103	M		
850										
	848.1	8.5	4	6	6	12	SS-1104	M		
845										
	843.1	13.5	18	15	17	32		M		
840										
	838.1	18.5	3	2	4	6	SS-1105	M		
835										
	833.1	23.5	2	2	3	5		M		
830										
	828.1	28.5	4	16	7	23	SS-1106	M		
825										
	823.1	33.5	3	3	4	7	SS-1107	M		
820										
	818.1	38.5	3	5	7	12	SS-1108	M		
815										
	813.1	43.5	6	7	10	17	SS-1109	M		
810										
	808.1	48.5	9	11	15	26		M		
805										
	803.1	53.5	5	9	12	21		M		
800										
	798.1	58.5	8	14	23	37		M		
795										
	793.1	63.5	12	22	35	57	SS-1110	M		
790										
	788.1	68.5	15	30	59	89		M		
785										
	783.1	73.5	33	67/0.3		100/0.8				783.1 73.5 **WEATHERED ROCK** (META-VOLCANIC)
780										

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB1-A (WBL)	**STATION** 291+28	**OFFSET** 75 ft LT	**ALIGNMENT** -L- — **0 HR.** 57.8
COLLAR ELEV. 856.6 ft	**TOTAL DEPTH** 79.3 ft	**NORTHING** 692,601	**EASTING** 1,752,369 — **24 HR.** 53.3
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/14/11	**COMP. DATE** 07/14/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
780						Match Line				
	778.1	78.5	47	53/0.3		100/0.8				777.3 **WEATHERED ROCK** (META-VOLCANIC) *(continued)* 79.3

Boring Terminated at Elevation 777.3 ft IN WEATHERED ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-29128L

NCDOT BORE DOUBLE R2536B_GEO_BRDG ON -L- OVER -Y11-_GINT.GPJ NC_DOT.GDT 10/16/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB1-C	**STATION** 291+40	**OFFSET** CL	**ALIGNMENT** -L-
COLLAR ELEV. 858.4 ft	**TOTAL DEPTH** 64.1 ft	**NORTHING** 692,526	**EASTING** 1,752,381
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/14/11	**COMP. DATE** 07/15/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. 48.2; 24 HR. 41.9

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
860										
	858.4	0.0								858.4 GROUND SURFACE 0.0
			2	3	4	7		M		**RESIDUAL** RED, TAN, WHITE, & PINK MED. STIFF TO STIFF MOIST TO WET SILTY CLAY & HIGHLY SILTY CLAY (A-7-5) W/ TRACE QTZ. FRAGS. & ROOTS @ 0.0-1.5
855	854.4	4.0	5	7	7	14		M		
850	849.4	9.0	3	4	5	9		M		
845	844.4	14.0	4	4	6	10		M		
840	839.4	19.0	3	6	5	11	SS-1111	M		
835	834.4	24.0	3	5	5	10		M		
830	829.4	29.0	3	4	5	9		M		
825	824.4	34.0	2	4	4	8		W		
820	819.4	39.0	3	4	7	11		M		
815	814.4	44.0	10	20	38	58	SS-1112	M		815.9 GRAY-TAN HARD MOIST SANDY SILT (A-4) W/ SOME CLAY 42.5
810	809.4	49.0	48	52/0.1		100/0.6				810.4 **WEATHERED ROCK** (META-VOLCANIC) 48.0
805	804.4	54.0	10	13	21	34		M		804.4 **RESIDUAL** 802.9 GRAY-TAN HARD MOIST SILT (A-4) 55.5
800	799.4	59.0	27	73/0.2		100/0.7				**WEATHERED ROCK** (META-VOLCANIC)
795	794.4	64.0	60/0.1			60/0.1				795.9 **CRYSTALLINE ROCK** TAN META-VOLCANIC 62.5; 794.3 64.1

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 794.3 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-29140

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB1-B (EBL)	**STATION** 291+55	**OFFSET** 90 ft RT	**ALIGNMENT** -L-
COLLAR ELEV. 860.8 ft	**TOTAL DEPTH** 69.0 ft	**NORTHING** 692,436	**EASTING** 1,752,395
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/15/11	**COMP. DATE** 07/15/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. Dry; 24 HR. 44.2

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
865										
860	860.8	0.0	1	3	3	6		D M		860.8 GROUND SURFACE 0.0
										RESIDUAL RED, TAN, WHITE, PINK, YELLOW, GRAY & GRAY-TAN MED. STIFF TO HARD DRY TO WET SILTY CLAY (A-7-5) HIGHLY PLASTIC (PI=42) @ 4.0 W/ TRACE QTZ. FRAGS. & ROOTS @ 0.0-1.5
855	856.8	4.0	3	4	6	10	SS-1113	M		
850	851.8	9.0	4	6	7	13		M		
845	846.8	14.0	4	4	6	10		M		
840	841.8	19.0	3	3	4	7		M		
835	836.8	24.0	3	3	5	8		M		
830	831.8	29.0	3	3	4	7		M		
825	826.8	34.0	3	2	4	6		M		
820	821.8	39.0	2	3	5	8		W		
815	816.8	44.0	3	4	7	11		M		814.8 GRAY-TAN HARD MOIST SANDY SILT (A-4) W/ SOME CLAY @ 49.0 46.0
810	811.8	49.0	7	13	18	31		M		
805	806.8	54.0	8	11	14	25		M		
800	801.8	59.0	11	17	16	33		M		797.8 **CRYSTALLINE ROCK** GRAY META-VOLCANIC 63.0
795	796.8	64.0	60/0.1			60/0.1				
	791.9	68.9	60/0.1			60/0.1				791.8 69.0

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 791.8 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS L-29155R

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B1-A (WBL)	**STATION** 292+38	**OFFSET** 78 ft LT	**ALIGNMENT** -L- / **0 HR.** NM
COLLAR ELEV. 839.1 ft	**TOTAL DEPTH** 43.5 ft	**NORTHING** 692,603	**EASTING** 1,752,479 / **24 HR.** 27.6
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/21/11	**COMP. DATE** 07/22/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
840											
	839.1	0.0	4	4	4	8	SS-3024	M		839.1 GROUND SURFACE	0.0
							SS-3025	M		838.6 **RESIDUAL** RED SOFT TO MED. STIFF MOIST MED. (PI=23) PLASTIC SILTY CLAY (A-7-6)	0.5
835	835.6	3.5	4	5	8	13		M		LIGHT GRAY & ORANGE MED. STIFF TO HARD MOIST CLAYEY SILT (A-5)	
830	830.6	8.5	5	6	8	14	SS-3026	M			
825	825.6	13.5	6	7	9	16		M			
820	820.6	18.5	8	11	15	26		M			
815	815.6	23.5	6	15	24	39		M			
810	810.6	28.5	15	50	50/0.3	100/0.8				809.6 **WEATHERED ROCK** LIGHT GRAY, GRAY & ORANGE SEV. WEATH. CRYSTALLINE ROCK (META-VOLCANIC)	29.5
805	805.6	33.5	25	75/0.3		100/0.8					
800	800.6	38.5	100/0.3			100/0.3				800.3 **CRYSTALLINE ROCK** (META-VOLCANIC)	38.8
	795.6	43.5	60/0.0			60/0.0				795.6 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 795.6 ft IN CRYSTALLINE ROCK (META-VOLCANIC)	43.5

NOTE: ROADWAY BORING DESIGNATION IS L-29238L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B1-B (EBL)	**STATION** 292+57	**OFFSET** 88 ft RT	**ALIGNMENT** -L- / **0 HR.** 35.7
COLLAR ELEV. 840.0 ft	**TOTAL DEPTH** 49.4 ft	**NORTHING** 692,437	**EASTING** 1,752,497 / **24 HR.** 20.3
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/29/11	**COMP. DATE** 07/29/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
840										840.0 GROUND SURFACE	0.0
	840.0	0.0	1	4	5	9		M		839.2 **RESIDUAL** RED, STIFF, SILTY CLAY	0.8
835	836.5	3.5	3	2	4	6		M		TAN, MEDIUM STIFF TO HARD, SANDY SILT	
830	831.5	8.5	2	3	5	8		M			
825	826.5	13.5	1	3	4	7		M			
820	821.5	18.5	3	6	8	14		M			
815	816.5	23.5	8	12	15	27		M			
810	811.5	28.5	8	11	22	33		M		807.5 **WEATHERED ROCK** TAN AND BROWN (META-VOLCANIC)	32.5
805	806.5	33.5	70	30/0.1		100/0.6					
800	801.5	38.5	33	67/0.4		100/0.9					
795	796.5	43.5	90	10/0.1		100/0.6					
	791.5	48.5	5	95/0.4		100/0.9				790.6 Boring Terminated at Elevation 790.6 ft IN WEATHERED ROCK (META-VOLCANIC)	49.4

NOTE: ROADWAY BORING DESIGNATION IS L-29244R

NCDOT GEOTECHNICAL ENGINEERING UNIT
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WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B1-C	**STATION** 292+56	**OFFSET** CL	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 838.4 ft	**TOTAL DEPTH** 62.1 ft	**NORTHING** 692,525	**EASTING** 1,752,496 — **24 HR.** 21.6
DRILL RIG/HAMMER EFF./DATE F&H0404 CME-45C 87% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/22/11	**COMP. DATE** 07/29/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
840										838.4 GROUND SURFACE	0.0
	838.4	0.0	3	3	3	6	SS-3027	M		**RESIDUAL** TAN AND ORANGE, CLAYEY SILT	
835	834.9	3.5	2	3	3	6	SS-3028	M			
830	829.9	8.5	3	3	4	7		M		826.4 TAN, SANDY SILT	12.0
825	824.9	13.5	1	2	4	6	SS-3029	M		822.4 LIGHT GRAY, CLAYEY SILT	16.0
820	819.9	18.5	20	21	25	46		M		817.4 ORANGE, HIGHLY SILTY, SANDY CLAY	21.0
815	814.9	23.5	5	9	20	29	SS-3030	M			
810	809.9	28.5	14	42	58/0.4	100/0.9				809.4 **WEATHERED ROCK** (FELSITE, UWHARRIE FORMATION)	29.0
805	804.9	33.5	7	12	37	49		M		808.5 **RESIDUAL** TAN, SANDY SILT	29.9
800	799.9	38.5	60/0.0			60/0.0				800.9 **CRYSTALLINE ROCK** (FELSITE, UWHARRIE FORMATION)	37.5
795	796.3	42.1	60/0.0			60/0.0				796.3	42.1
790										791.5 **CRYSTALLINE ROCK** (FELSITE, UWHARRIE FORMATION)	46.9
785											
780							RS-6			776.3	62.1

Boring Terminated at Elevation 776.3 ft IN CRYSTALLINE ROCK (FELSITE, UWHARRIE FORMATION)

NOTE: ROADWAY BORING DESIGNATION IS L-29256

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B1-C	**STATION** 292+56	**OFFSET** CL	**ALIGNMENT** -L- — **0 HR.** N/A
COLLAR ELEV. 838.4 ft	**TOTAL DEPTH** 62.1 ft	**NORTHING** 692,525	**EASTING** 1,752,496 — **24 HR.** 21.6
DRILL RIG/HAMMER EFF./DATE F&H0404 CME-45C 87% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/22/11	**COMP. DATE** 07/29/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 20.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS — ELEV. (ft)	DEPTH (ft)
796.3											Begin Coring @ 42.1 ft	
795	796.3	42.1	5.0	2:46 3:17 4:41 4:31 4:24	(4.7) 94%	(2.8) 56%		(4.5) 94%	(2.8) 58%		796.3 **CRYSTALLINE ROCK** TAN AND GRAY, FRESH TO SLIGHTLY WEATHERED, HARD, MODERATELY CLOSE TO CLOSELY FRACTURED, FELSITE (UWHARRIE FORMATION)	42.1
	791.3	47.1									791.5	46.9
790			5.0	3:53 4:16 2:14 3:26 4:31	(4.5) 90%	(1.0) 20%		(13.2) 87%	(5.1) 34%		**CRYSTALLINE ROCK** TAN, MODERATELY WEATHERED, MODERATELY HARD, CLOSE TO VERY CLOSELY FRACTURED, FELSITE (UWHARRIE FORMATION) RS-6: R1=7, R2=8, R3=10, R4=20, R5=7; Total RMR=52 (Rock Type: D; Class III; Fair Rock)	
	786.3	52.1										
785			5.0	6:05 4:40 4:42 4:58 5:43	(4.8) 96%	(1.7) 34%						
	781.3	57.1										
780			5.0	4:10 3:34 4:36 6:27 6:30	(3.7) 74%	(2.4) 48%	RS-6					
	776.3	62.1									776.3	62.1

Boring Terminated at Elevation 776.3 ft IN CRYSTALLINE ROCK (FELSITE, UWHARRIE FORMATION)

NOTE: ROADWAY BORING DESIGNATION IS L-29256

CORE PHOTOGRAPHS

B1-C

BOXES 1 & 2 OF 2: 42.1 - 62.1 FEET

0 1 2
FEET

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B2-A (WBL)	**STATION** 293+44	**OFFSET** 58 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 853.3 ft	**TOTAL DEPTH** 77.0 ft	**NORTHING** 692,582	**EASTING** 1,752,585	**24 HR.** 36.4
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/18/11	**COMP. DATE** 07/19/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
855											
	853.3	0.0								853.3 GROUND SURFACE	0.0
			3	6	6	12	SS-3008	M		**RESIDUAL** RED AND ORANGE, STIFF, HIGHLY PLASTIC, SILTY CLAY AND HIGHLY SILTY CLAY	
850	849.8	3.5	5	8	9	17		M			
845	844.8	8.5	3	5	7	12	SS-3009	M			
840	839.8	13.5	3	5	5	10		M			
835	834.8	18.5	2	4	7	11		M			
830	829.8	23.5	7	3	4	7	SS-3011	M		830.8 BROWN, MEDIUM STIFF, HIGHLY SILTY SAND WITH QUARTZ FRAGMENTS	22.5
825	824.8	28.5	3	4	5	9	SS-3012	M		825.3 LIGHT BROWN, STIFF, HIGHLY SILTY CLAY	28.0
820	819.8	33.5	4	7	9	16	SS-3013	M		822.3 TAN, VERY STIFF, CLAYEY SILT	31.0
815	814.8	38.5	9	12	16	28		M			
810	809.8	43.5	2	3	4	7		M			
805	804.8	48.5	3	6	9	15		M		801.8 BROWN AND TAN, HARD, SILTY CLAY	51.5
800	799.8	53.5	8	16	38	54		M		797.3 TAN, VERY STIFF, CLAYEY SILT	56.0
795	794.8	58.5	14	15	15	30		M			
790	789.8	63.5	100/0.3			100/0.3				789.8 **WEATHERED ROCK** (META-VOLCANIC)	63.5
785	784.8	68.5								784.8 **CRYSTALLINE ROCK** (META-VOLCANIC)	68.5
	784.3	69.0	60/0.0			60/0.0				784.3	69.0
			60/0.0			60/0.0					
780							RS-3				
										776.3 Boring Terminated at Elevation 776.3 ft IN	77.0

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B2-A (WBL)	**STATION** 293+44	**OFFSET** 58 ft LT	**ALIGNMENT** -L-	**0 HR.** N/A
COLLAR ELEV. 853.3 ft	**TOTAL DEPTH** 77.0 ft	**NORTHING** 692,582	**EASTING** 1,752,585	**24 HR.** 36.4
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/18/11	**COMP. DATE** 07/19/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
775						Match Line				
										CRYSTALLINE ROCK (META-VOLCANIC)
										NOTE: ROADWAY BORING DESIGNATION IS L-29344L

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B2-A (WBL)	**STATION** 293+44	**OFFSET** 58 ft LT	**ALIGNMENT** -L- / **0 HR.** N/A
COLLAR ELEV. 853.3 ft	**TOTAL DEPTH** 77.0 ft	**NORTHING** 692,582	**EASTING** 1,752,585 / **24 HR.** 36.4
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/18/11	**COMP. DATE** 07/19/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 8.0 ft		

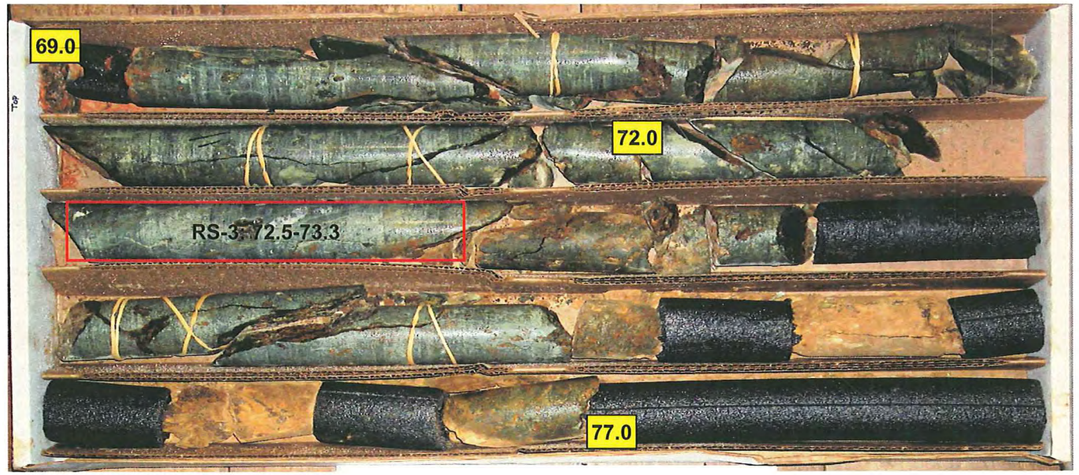
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS (ELEV. (ft) / DEPTH (ft))
784.3											Begin Coring @ 69.0 ft
	784.3	69.0	3.0	2:03 3:00 3:19	(2.9) 97%	(1.2) 40%		(6.8) 85%	(2.4) 30%		784.3 / 69.0 **CRYSTALLINE ROCK** GREEN-GRAY, AND BROWN, SLIGHTLY TO SEVERELY WEATHERED, MODERATELY TO MEDIUM HARD, CLOSE TO VERY CLOSELY FRACTURED EPICLASTIC, META-VOLCANIC
	781.3	72.0									
780			5.0	2:44 3:39 2:32 4:24 5:01	(3.9) 78%	(1.2) 24%	RS-3				RS-3: R1=4, R2=8, R3=10, R4=12, R5=7; Total RMR=41 (Rock Type: D; Class III; Fair Rock)
	776.3	77.0									776.3 / 77.0 Boring Terminated at Elevation 776.3 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS L-29344L

NCDOT CORE SINGLE R2536B_GEO_BRDG ON -L- OVER -Y11-_GINT.GPJ NC_DOT.GDT 8/28/13

CORE PHOTOGRAPHS

B2-A (WBL)

BOX 1 OF 1: 69.0 - 77.0 FEET



FEET

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B2-C	**STATION** 293+52	**OFFSET** CL	**ALIGNMENT** -L-
COLLAR ELEV. 848.9 ft	**TOTAL DEPTH** 68.5 ft	**NORTHING** 692,524	**EASTING** 1,752,592
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/15/11	**COMP. DATE** 07/18/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. NM; 24 HR. 34.2

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
850											
	848.9	0.0								848.9 GROUND SURFACE	0.0
			4	6	9	15	SS-3000	M		**RESIDUAL** RED STIFF TO V. STIFF MOIST MED. (PI=20) PLASTIC HIGHLY SILTY CLAY (A-7-6) W/ TRACE ROOTS	
845	845.4	3.5								846.4	2.5
			5	4	6	10	SS-3001	D		ORANGE STIFF DRY SANDY SILT (A-4)	
										842.4	6.5
840	840.4	8.5								RED MED. STIFF TO STIFF MOIST MED. (PI=19) TO HIGH (PI=44) PLASTIC SILTY CLAY & HIGHLY SILTY CLAY (A-7-5) W/ SOME SAND	
			4	6	8	14	SS-3002	M			
835	835.4	13.5									
			3	4	6	10		M			
830	830.4	18.5									
			2	3	5	8		M			
825	825.4	23.5									
			1	2	3	5	SS-3003	M			
820	820.4	28.5									
			3	3	7	10		M			
815	815.4	33.5									
			4	5	8	13	SS-3004	M			
810	810.4	38.5									
			2	4	7	11	SS-3005	M			
805	805.4	43.5									
			4	6	14	20	SS-3006	M			
800	800.4	48.5									
			17	70	30/0.0	100/.5					
795	795.4	53.5									
			6	8	8	16	SS-3007	M			
790	790.4	58.5									
			60/0.0			60/0.0					
785	785.4	63.5									
			60/0.0			60/0.0					
	780.4	68.5									
			60/0.0			60/0.0					

ELEV (ft)	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
816.9	BRN STIFF MOIST HIGHLY SANDY CLAYEY SILT (A-5)	32.0
806.9	ORANGE-BRN V. STIFF MOIST MED. (PI=19) PLASTIC HIGHLY SILTY CLAY (A-7-5)	42.0
799.9		49.0
798.9	**WEATHERED ROCK** (META-VOLCANIC)	50.0
	RESIDUAL LIGHT BRN V. STIFF MOIST MED. (PI=17) PLASTIC HIGHLY SILTY CLAY (A-7-5) W/ SOME SAND	
790.4	**CRYSTALLINE ROCK** (META-VOLCANIC)	58.5
780.4	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 780.4 ft IN CRYSTALLINE ROCK (META-VOLCANIC)	68.5

NOTE: ROADWAY BORING DESIGNATION IS L-29352

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B2-B (EBL)	**STATION** 293+77	**OFFSET** 77 ft RT	**ALIGNMENT** -L-
COLLAR ELEV. 845.7 ft	**TOTAL DEPTH** 28.9 ft	**NORTHING** 692,447	**EASTING** 1,752,617
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/19/11	**COMP. DATE** 07/19/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. Dry; 24 HR. Dry

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
850										
845	845.7	0.0								845.7 GROUND SURFACE 0.0
			3	3	4	7	SS-3015	M		**RESIDUAL** ORANGE MED. STIFF TO V. STIFF MOIST HIGH (PI=55) TO MED. (PI=18) PLASTIC SILTY CLAY & HIGHLY SANDY SILTY CLAY (A-7-6)
	842.2	3.5								
			10	12	14	26	SS-3016	M		
840	837.2	8.5								837.2 8.5
			60/0.1			60/0.1				**CRYSTALLINE ROCK** GRAY META-VOLCANIC
835	832.2	13.5								833.2 12.5
			17	30	70/0.4	100/0.9				**WEATHERED ROCK** (META-VOLCANIC)
830	827.2	18.5								
			62	38/0.2		100/0.7				
825	822.2	23.5								
			30	70/0.4		100/0.9				
820	817.2	28.5								
			100/0.4			100/0.4				

ELEV (ft)	SOIL AND ROCK DESCRIPTION	DEPTH (ft)
816.8	Boring Terminated at Elevation 816.8 ft IN WEATHERED ROCK (META-VOLCANIC)	28.9

NOTE: ROADWAY BORING DESIGNATION IS L-29377R

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB2-A (WBL)	**STATION** 293+93	**OFFSET** 62 ft LT	**ALIGNMENT** -L- / **0 HR.** 37.1
COLLAR ELEV. 851.7 ft	**TOTAL DEPTH** 54.2 ft	**NORTHING** 692,586	**EASTING** 1,752,634 / **24 HR.** 36.6
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/12/11	**COMP. DATE** 07/12/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
										851.7 GROUND SURFACE	0.0
	851.7	0.0	3	7	5	12	SS-1089	M		**RESIDUAL** RED, TAN, PINK, WHITE, MAROON & BRN SOFT TO V. STIFF MOIST TO WET HIGH, MED., & LOW PLASTIC SILTY CLAY, HIGHLY SILTY CLAY & HIGHLY SANDY SILTY CLAY (A-7-6, A-7-5) W/ TRACE ROOTS & QTZ. FRAGS. @ 0.0-1.5, SOME SAND @ 14.0, 24.0 & 34.0. (PI=29, 11, 21, 24, 12, 12)	
	847.7	4.0	4	7	7	14	SS-1090	M			
	842.7	9.0	4	5	6	11		M			
	837.7	14.0	3	4	4	8	SS-1091	M			
	832.7	19.0	2	3	2	5		M			
	827.7	24.0	2	2	2	4	SS-1092	M			
	822.7	29.0	6	7	10	17	SS-1093	M			
	817.7	34.0	3	3	5	8	SS-1094	M			
	812.7	39.0	3	4	6	10		W			
	807.7	44.0	7	6	94/0.3	100/0.8				807.2 **WEATHERED ROCK** (META-VOLCANIC)	44.5
	802.7	49.0	4	15	85/0.3	100/0.8					
	797.7	54.0	100/0.2			100/0.2				797.5 Boring Terminated at Elevation 797.5 ft IN WEATHERED ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS L-29393L	54.2

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB2-C	**STATION** 294+00	**OFFSET** CL	**ALIGNMENT** -L- / **0 HR.** 32.4
COLLAR ELEV. 847.3 ft	**TOTAL DEPTH** 39.1 ft	**NORTHING** 692,524	**EASTING** 1,752,640 / **24 HR.** 31.8
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/13/11	**COMP. DATE** 07/13/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
										847.3 GROUND SURFACE	0.0
	847.3	0.0	2	7	7	14		D		**RESIDUAL** RED, TAN, MAROON & BRN STIFF TO MED. STIFF DRY TO WET SILTY CLAY (A-7) W/ TRACE ROOTS & QTZ. FRAGS. @ 0.0-1.5	
	843.8	3.5	5	5	6	11		M			
	838.8	8.5	5	6	8	14		M			
	833.8	13.5	6	6	7	13		M			
	828.8	18.5	5	5	6	11		M			
	823.8	23.5	2	1	4	5		M W			
	818.8	28.5	16	84/0.4		100/0.9				818.8 **WEATHERED ROCK** (META-VOLCANIC)	28.5
	813.8	33.5	52	48/0.3		100/0.8					
	808.8	38.5	56	44/0.1		100/0.6				808.2 Boring Terminated at Elevation 808.2 ft IN WEATHERED ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS L-29400	39.1

NCDOT BORE DOUBLE R2536B_GEO_BRDG ON -L- OVER -Y11-_GINT.GPJ NC_DOT.GDT 10/16/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB2-B (EBL)	**STATION** 294+27	**OFFSET** 87 ft RT	**ALIGNMENT** -L- — **0 HR.** Dry
COLLAR ELEV. 841.8 ft	**TOTAL DEPTH** 16.1 ft	**NORTHING** 692,437	**EASTING** 1,752,667 — **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/13/11	**COMP. DATE** 07/13/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
845										
	841.8	0.0								841.8 GROUND SURFACE 0.0
840			4	3	2	5		D		**RESIDUAL** RED, TAN & YELLOW MED. STIFF TO STIFF DRY TO MOIST MED. (PI=16) PLASTIC SILTY CLAY & HIGHLY SILTY CLAY (A-7-5) W/ TRACE ROOTS & QTZ. FRAGS.
	837.8	4.0	5	6	6	12	SS-1096	M		
835										
	832.8	9.0	4	5	4	9		M		
830										
	827.8	14.0	4	4	3	7		M		
	825.8	16.0	60/0.1			60/0.1				826.0 / 15.8 — 825.7 / 16.1 **CRYSTALLINE ROCK** TAN META-VOLCANIC

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 825.7 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-29427R

NCDOT BORE SINGLE R2536B_GEO_BRDG ON -L- OVER -Y11- GINT.GPJ NC_DOT.GDT 8/28/13

US 64 Asheboro Southern Bypass - Dual Bridges on -L- Over -Y11-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-1089	62 LT	293+93	0.0-1.5	A-7-6(23)	58	29	4.1	2.0	39.1	54.8	78	75	74	-	-	L
SS-1090	62 LT	293+93	4.0-5.5	A-7-5(14)	44	11	2.4	3.7	73.6	20.3	100	98	95	-	-	L
SS-1091	62 LT	293+93	14.0-15.5	A-7-5(19)	61	21	9.5	19.7	36.3	34.5	100	96	76	-	-	L
SS-1092	62 LT	293+93	24.0-25.5	A-7-5(24)	70	24	5.7	20.3	37.5	36.5	100	99	79	-	-	L
SS-1093	62 LT	293+93	29.0-30.5	A-7-5(4)	49	12	29.0	28.8	17.8	24.3	100	85	47	-	-	L
SS-1094	62 LT	293+93	34.0-35.5	A-7-5(10)	52	12	9.9	26.6	41.2	22.3	100	96	70	-	-	L
SS-1096	87 RT	294+27	4.0-5.5	A-7-5(20)	50	16	0.4	4.7	58.4	36.5	100	100	97	-	-	L
SS-1102	75 LT	291+28	0.0-1.5	A-7-6(14)	46	21	8.7	6.3	36.3	48.7	81	76	70	-	-	L
SS-1103	75 LT	291+28	3.5-5.0	A-7-5(31)	56	26	0.2	1.6	49.5	48.7	100	100	99	-	-	L
SS-1104	75 LT	291+28	8.5-10.0	A-7-5(25)	55	21	0.6	5.7	34.9	58.8	100	100	95	-	-	L
SS-1105	75 LT	291+28	18.5-20.0	A-7-5(33)	65	27	1.0	13.4	45.0	40.6	100	99	95	-	-	L
SS-1106	75 LT	291+28	28.5-30.0	A-7-5(18)	64	26	15.2	8.9	39.4	36.5	82	72	66	-	-	L
SS-1107	75 LT	291+28	33.5-35.0	A-7-5(31)	66	26	1.0	16.0	54.6	28.4	100	99	92	-	-	L
SS-1108	75 LT	291+28	38.5-40.0	A-7-5(28)	60	22	0.8	3.7	57.0	38.5	100	100	97	-	-	L
SS-1109	75 LT	291+28	43.5-45.0	A-7-5(19)	54	18	1.2	23.5	57.0	18.3	100	100	86	-	-	L
SS-1110	75 LT	291+28	63.5-65.0	A-7-5(10)	43	11	2.4	30.6	54.8	12.2	100	99	78	-	-	L
SS-1111	CL	291+40	19.0-20.5	A-7-5(15)	43	11	0.2	1.0	64.3	34.5	100	100	99	-	-	L
SS-1112	CL	291+40	44.0-45.5	A-4(9)	38	6	0.2	3.4	70.0	26.4	100	100	99	-	-	L
SS-1113	90 RT	291+55	4.0-5.5	A-7-5(51)	75	42	0.6	1.0	21.3	77.1	100	100	99	-	-	L
SS-3000	CL	293+52	0.0-1.5	A-7-5(26)	55	20	0.2	1.4	50.2	48.2	100	100	99	-	-	L
SS-3001	CL	293+52	3.5-5.0	A-4(5)	38	2	0.0	7.0	84.9	8.0	100	100	99	-	-	L
SS-3002	CL	293+52	8.5-10.0	A-7-5(25)	68	19	1.4	16.5	39.9	42.2	100	100	88	-	-	L
SS-3003	CL	293+52	23.5-25.0	A-7-5(43)	96	44	2.8	24.5	40.5	32.2	100	100	79	-	-	L
SS-3004	CL	293+52	33.5-35.0	A-5(5)	51	9	15.9	34.6	31.5	18.1	100	96	56	-	-	L
SS-3005	CL	293+52	38.5-40.0	A-5(7)	51	9	8.6	33.6	43.7	14.1	100	99	63	-	-	L
SS-3006	CL	293+52	43.5-45.0	A-7-5(15)	53	19	8.2	27.1	36.5	28.1	100	97	73	-	-	L
SS-3007	CL	293+52	53.5-55.0	A-7-5(15)	50	17	6.6	26.1	47.1	20.1	100	98	76	-	-	L
SS-3008	58 LT	293+44	0.0-1.5	A-7-5(53)	78	44	0.8	2.6	22.2	74.4	100	100	98	-	-	L
SS-3009	58 LT	293+44	8.5-10.0	A-7-5(26)	64	19	0.6	8.2	51.0	40.2	100	100	95	-	-	L
SS-3011	58 LT	293+44	23.5-25.0	A-2-5(0)	61	9	9.8	20.3	47.7	22.1	43	40	34	-	-	L
SS-3012	58 LT	293+44	28.5-30.0	A-7-5(13)	51	11	7.8	15.1	57.0	20.1	100	94	84	-	-	L
SS-3013	58 LT	293+44	33.5-35.0	A-5(9)	46	3	0.8	4.8	78.3	16.1	100	100	97	-	-	L
SS-3015	77 RT	293+77	0.0-1.5	A-7-6(60)	79	55	1.4	5.0	25.2	68.3	100	99	95	-	-	L
SS-3016	77 RT	293+77	3.5-5.0	A-7-6(11)	42	18	11.3	29.3	35.3	24.1	100	94	67	-	-	L
SS-3024	78 LT	292+38	0.2-0.5	A-7-6(23)	49	23	6.0	7.8	43.9	42.2	100	99	89	-	-	L
SS-3025	78 LT	292+38	0.5-1.5	A-5(13)	46	8	0.4	6.2	77.3	16.1	100	100	97	-	-	L
SS-3026	78 LT	292+38	8.5-10.0	A-5(10)	44	6	0.6	5.6	81.7	12.1	100	100	97	-	-	L
SS-3027	CL	292+56	0.0-1.5	A-5(10)	47	6	2.0	16.3	69.5	12.2	100	99	89	-	-	L
SS-3028	CL	292+56	3.5-5.0	A-5(10)	45	7	1.4	16.7	67.7	14.2	100	100	89	-	-	L
SS-3029	CL	292+56	13.5-15.0	A-4(6)	37	5	2.4	18.5	66.8	12.2	100	99	85	-	-	L
SS-3030	CL	292+56	23.5-25.0	A-6(9)	40	11	6.7	19.1	55.8	18.3	100	98	79	-	-	L

US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -L- OVER -Y11-

ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	BORING NO.	DEPTH INTERVAL (ft)	UNIT WT. lbs/cf	UNCONFINED COMPRESSIVE STRENGTH (ksi)	YOUNG'S MODULUS (Mpsi)	ROCK MASS RATING
RS-3	58' LT	293+44	B2-A(WBL)	72.5-73.3	186.10	6.65	10.79	41
RS-6	CL	292+56	B1-C	57.9-58.3	161.60	8.4	1.665	52

SECTION 4

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34450.1.1 (R-2536B)	1	13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34450.1.1 (R-2536B) F.A. PROJ. STPNHF-0064(107)

COUNTY RANDOLPH

PROJECT DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS FROM US 220 TO SR 2834 (OLD COX ROAD)

SITE DESCRIPTION BRIDGE ON -Y6- OVER -L-

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
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4-5	PROFILES
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12	SOIL TEST RESULTS
13	ROCK TEST RESULTS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

C. Manning

D. Racey

J. Gilchrist

DRAWN BY R. Rahie

INVESTIGATED BY C. Youngblood

CHECKED BY M. Lear, PG

SUBMITTED BY B. Deobald, LG

DATE August, 2013

NORTH CAROLINA LICENSED SEAL 1927 GEOLOGIST MICHAEL B. LEAR

MBL 8/29/13

amec

AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900

SIGNATURE

NC Engineering F-1253 NC Geology C-247

PROJECT: 34450.1.1

ID: R-2536B

PROJECT REFERENCE NO.	SHEET NO.
24450.1.1 (R-2536B)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL - LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL - PLASTIC LIMIT		
OM - OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL - SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS
S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [X] CME-55
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [X] CASING [ ] W/ ADVANCER
- [ ] TRICONE ____" STEEL TEETH
- [ ] TRICONE ____" TUNG.-CARB.
- [X] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -N Q
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

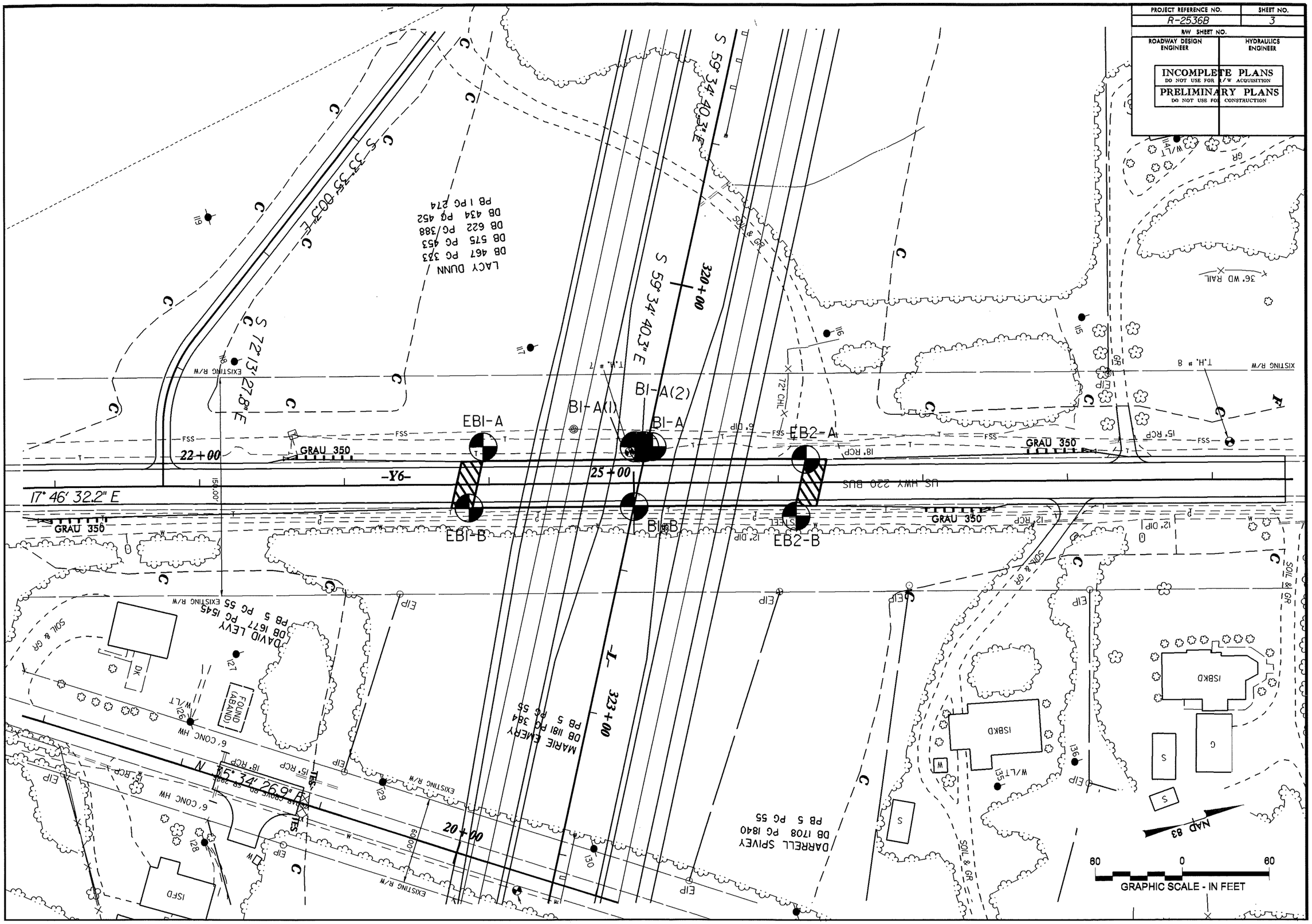
BENCH MARK: ELEVATIONS DETERMINED FROM NCDOT ELECTRONIC PROJECT DRAWING FILES.
ELEVATION: N/A FT.

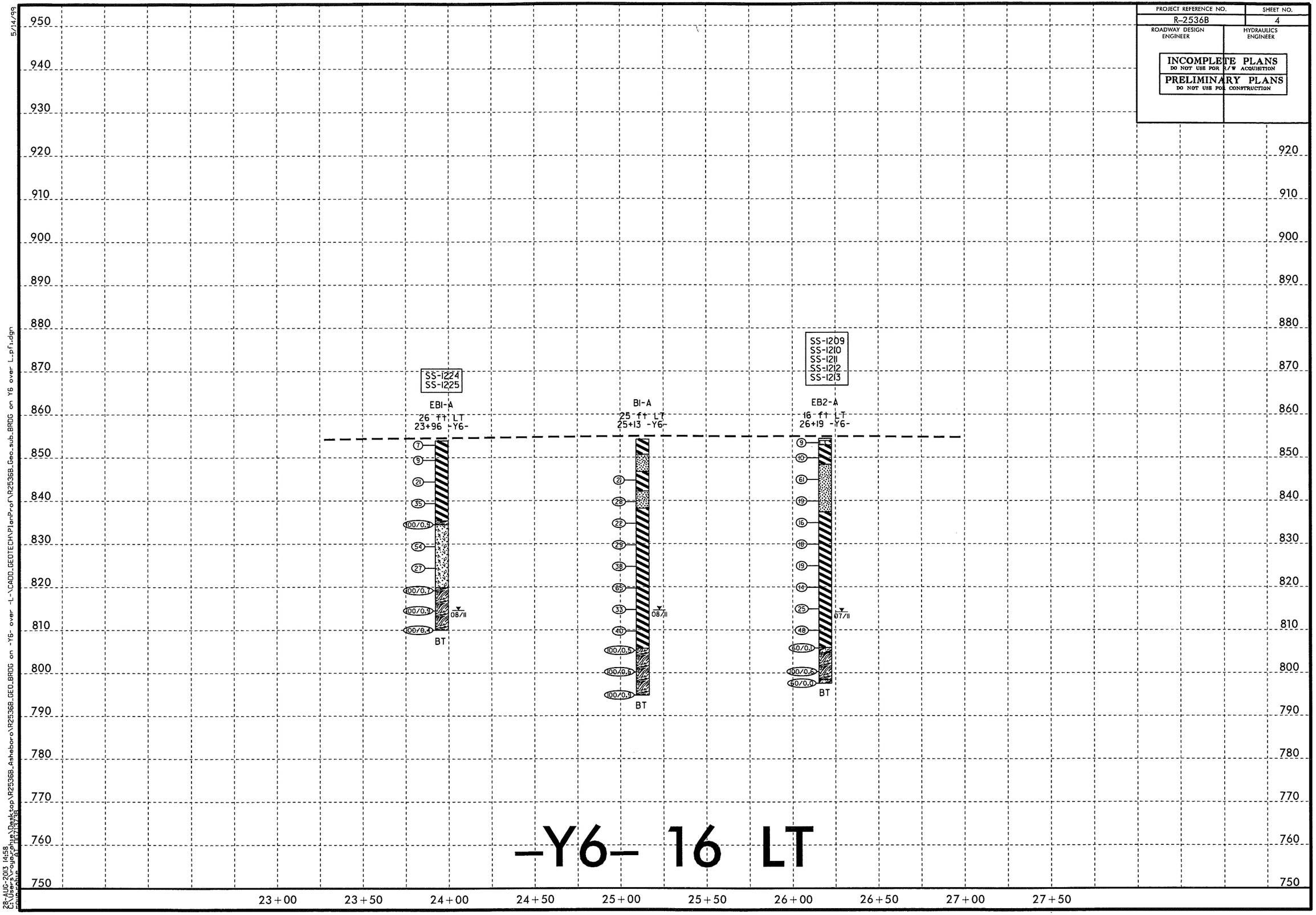
NOTES:
CT - CORING TERMINATED

REVISED 09/23/09

PROJECT REFERENCE NO.	SHEET NO.
R-2536B	3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION




PROJECT REFERENCE NO.
R-2536B
SHEET NO.
4
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SS-1224
SS-1225
EB1-A
26 ft LT
23+96 -Y6-
B1-A
25 ft LT
25+13 -Y6-
SS-1209
SS-1210
SS-1211
SS-1212
SS-1213
EB2-A
16 ft LT
26+19 -Y6-
BT
08/11
07/11
-Y6- 16 LT
950
940
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
23+00
23+50
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27+00
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5/14/99
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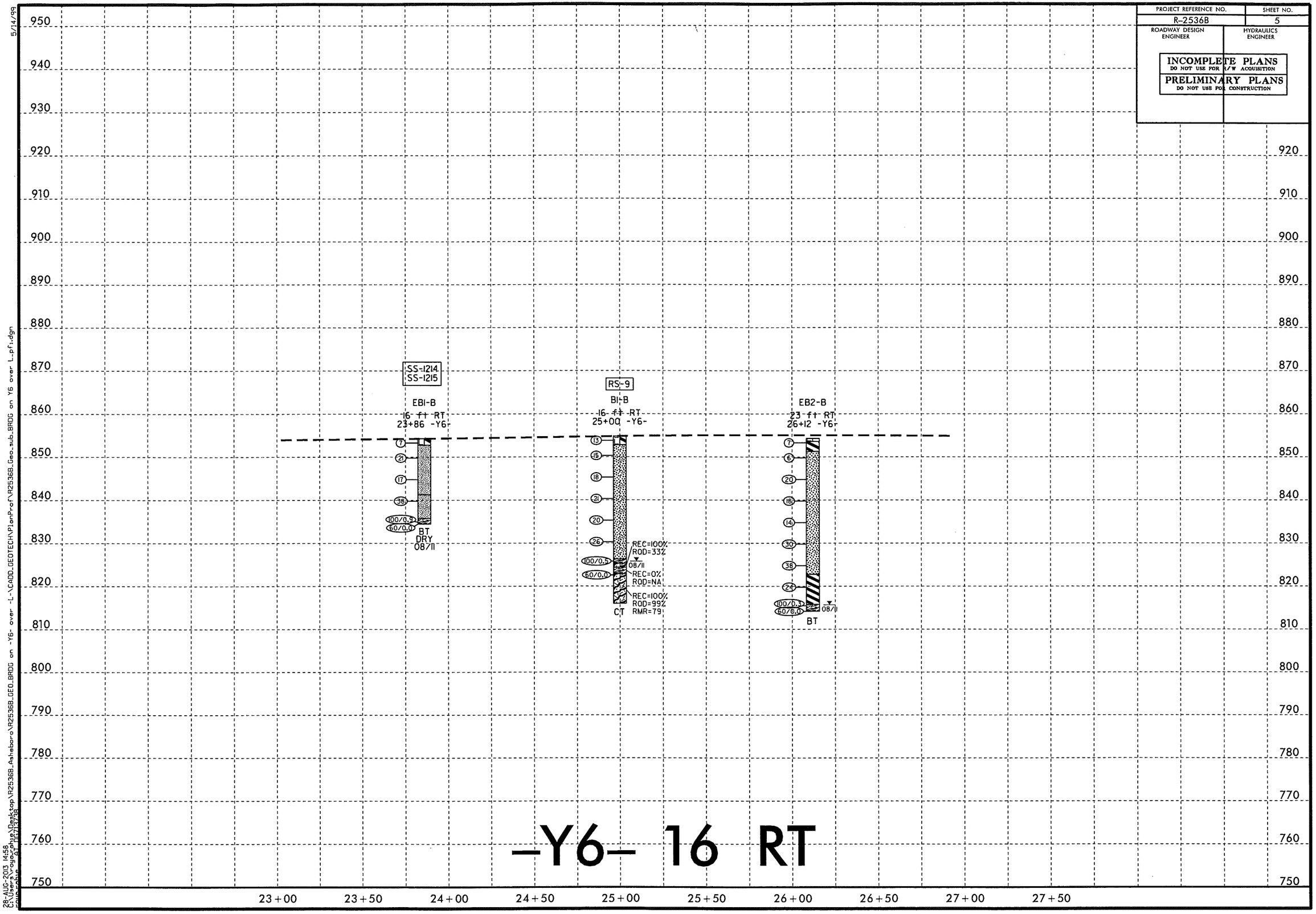

PROJECT REFERENCE NO.
R-2536B
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SS-1214
SS-1215
EB1-B
16 ft RT
23+86 -Y6-
BT
DRY
08/11
RS-9
B1-B
16 ft RT
25+00 -Y6-
REC=100%
ROD=33%
08/11
REC=0%
ROD=NA
REC=100%
ROD=99%
RMR=79
CT
EB2-B
23 ft RT
26+12 -Y6-
BT
08/11
-Y6- 16 RT
950
940
930
920
910
900
890
880
870
860
850
840
830
820
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NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y6- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 23+96	**OFFSET** 26 ft LT	**ALIGNMENT** -Y6- / **0 HR.** Dry
COLLAR ELEV. 853.9 ft	**TOTAL DEPTH** 43.9 ft	**NORTHING** 691,657	**EASTING** 1,755,144 / **24 HR.** 39.3
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 08/03/11	**COMP. DATE** 08/03/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
855											
	853.9	0.0								853.9 GROUND SURFACE	0.0
			1	4	3	7	SS-1224	M		**RESIDUAL** BRN MED. STIFF TO HARD MOIST MED. (PI=17) PLASTIC HIGHLY SILTY CLAY & SILTY CLAY (A-7-5) W/ TRACE ROOTS	
850	850.4	3.5	3	4	5	9		M			
845	845.4	8.5	6	8	13	21		M			
840	840.4	13.5	9	16	19	35		M			
835	835.4	18.5	37	63/0.4		100/0.9				835.4 / 834.5 **WEATHERED ROCK** (META-VOLCANIC)	18.5 / 19.4
										RESIDUAL BRN HARD TO V. STIFF MOIST HIGHLY SANDY CLAYEY SILT & CLAYEY SILT (A-5)	
830	830.4	23.5	17	23	31	54	SS-1225	M			
825	825.4	28.5	8	12	15	27		M			
820	820.4	33.5	26	57	43/0.2	100/0.7				819.9 **WEATHERED ROCK** (META-VOLCANIC)	34.0
815	815.4	38.5	27	73/0.4		100/0.9					
810	810.4	43.5	100/0.4			100/0.4				810.0 Boring Terminated at Elevation 810.0 ft IN WEATHERED ROCK (META-VOLCANIC)	43.9

NOTE: ROADWAY BORING DESIGNATION IS Y6-2396L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y6- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 23+86	**OFFSET** 16 ft RT	**ALIGNMENT** -Y6- / **0 HR.** Dry
COLLAR ELEV. 854.3 ft	**TOTAL DEPTH** 19.8 ft	**NORTHING** 691,634	**EASTING** 1,755,181 / **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 08/01/11	**COMP. DATE** 08/01/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
855											
	854.3	0.0								854.3 GROUND SURFACE	0.0
			3	4	3	7		M		852.8 **ROADWAY EMBANKMENT** RED, TAN, AND WHITE, SILTY CLAY	1.5
850	850.8	3.5	11	12	9	21	SS-1214	M		**RESIDUAL** TAN AND WHITE, SANDY SILT WITH SOME CLAY	
845	845.8	8.5	6	8	9	17		M			
840	840.8	13.5	5	9	29	38	SS-1215	M		841.3 TAN, SANDY SILT	13.0
835	835.8 / 834.5	18.5 / 19.8	2	98/0.4	60/0.0	100/0.9 60/0.0				835.8 / 834.5 **WEATHERED ROCK** (META-VOLCANIC)	18.5 / 19.8

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 834.5 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y6-2386R

NCDOT BORE DOUBLE R2536B_GEO_BRDG ON -Y6- OVER -L- GINT.GPJ NC_DOT.GDT 10/24/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y6- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A(1)	**STATION** 25+01	**OFFSET** 25 ft LT	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. 854.2 ft	**TOTAL DEPTH** 9.9 ft	**NORTHING** 691,756	**EASTING** 1,755,177	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Contract Driller	**START DATE** 08/03/11	**COMP. DATE** 08/03/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
855										854.2 GROUND SURFACE	0.0
										RESIDUAL RED, TAN, AND WHITE, MED. STIFF, SILTY CLAY	
850										850.2 TAN AND ORANGE, DENSE, SILTY SAND WITH SOME WEATHERED ROCK FRAGMENTS	4.0
845	845.7	8.5	19	53	47/0.4	100/0.9				845.2	9.0
										844.3 **WEATHERED ROCK** TAN, ORANGE, AND WHITE (METAVOLCANIC)	9.9

Boring Terminated at Elevation 844.3 ft in WEATHERED ROCK (METAVOLCANIC)

NOTE: BORING OFFSET FROM B1-A TO AVOID POSSIBLE BOULDER. AUGERS BECAME CROOKED WHILE DRILLING AND THE SPLIT SPOON BENT WHILE SAMPLING AT 8.5'. ABANDON BORING TO DRILL B1-A (2). NOTE: ROADWAY BORING DESIGNATION IS Y6-2501L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y6- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A(2)	**STATION** 25+07	**OFFSET** 25 ft LT	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. 854.2 ft	**TOTAL DEPTH** 7.0 ft	**NORTHING** 691,762	**EASTING** 1,755,178	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Contract Driller	**START DATE** 08/03/11	**COMP. DATE** 08/03/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
855										854.2 GROUND SURFACE	0.0
	854.2	0.0								**RESIDUAL** RED, TAN, AND WHITE, SILTY CLAY	
			1	3	2	5		M		849.9	4.3
850	850.7	3.5	3	7	38	45		M		849.2 TAN AND ORANGE, SILTY SAND WITH SOME WEATHERED ROCK FRAGMENTS	5.0
	847.2	7.0	60/0.0			60/0.0				847.2 **WEATHERED ROCK** (METAVOLCANIC)	7.0

Boring Terminated with Standard Penetration Test Refusal at Elevation 847.2 ft on CRYSTALLINE ROCK (METAVOLCANIC)

NOTE: POSSIBLE BOULDER; OFFSET TO BI-A (1) TO AVOID IT.
NOTE: ROADWAY BORING DESIGNATION IS Y6-2507L

NCDOT BORE DOUBLE R2536B_GEO_BRDG ON -Y6- OVER -L-_GINT.GPJ NC_DOT.GDT 8/28/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y6- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 25+13	**OFFSET** 25 ft LT	**ALIGNMENT** -Y6-	**0 HR.** Dry
COLLAR ELEV. 854.2 ft	**TOTAL DEPTH** 59.4 ft	**NORTHING** 691,768	**EASTING** 1,755,180	**24 HR.** 39.6
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 08/03/11	**COMP. DATE** 08/03/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
855										854.2 GROUND SURFACE	0.0
850										**RESIDUAL** RED, TAN, AND WHITE, MED. STIFF, SILTY CLAY — 850.7	3.5
										TAN AND ORANGE, DENSE, SILTY SAND — 846.7	7.5
845	845.7	8.5	8	10	11	21		M		BROWN, VERY STIFF, SILTY CLAY — 842.2	12.0
840	840.7	13.5	9	12	16	28		M		TAN AND ORANGE, VERY STIFF, SILTY SAND — 838.2	16.0
835	835.7	18.5	7	8	14	22		M		TAN AND RED, VERY STIFF, SILTY CLAY	
830	830.7	23.5	6	12	17	29		M			
825	825.7	28.5	9	16	22	38		M			
820	820.7	33.5	11	27	38	65		M			
815	815.7	38.5	6	14	19	33		▼			
810	810.7	43.5	11	17	23	40		M			
805	805.7	48.5	88	12/0.0		100/0.5				805.7 WEATHERED ROCK (META-VOLCANIC)	48.5
800	800.7	53.5	68	38/0.0		100/0.5					
795	795.7	58.5	31	69/0.4		100/0.9				794.8 Boring Terminated at Elevation 794.8 ft IN WEATHERED ROCK (META-VOLCANIC)	59.4

NOTE: ROADWAY BORING DESIGNATION IS Y6-2513L

NCDOT BORE SINGLE R2536B_GEO_BRDG ON -Y6- OVER -L- GINT.GPJ NC_DOT.GDT 8/28/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y6- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 25+00	**OFFSET** 16 ft RT	**ALIGNMENT** -Y6- — **0 HR.** N/A
COLLAR ELEV. 854.8 ft	**TOTAL DEPTH** 38.8 ft	**NORTHING** 691,743	**EASTING** 1,755,215 — **24 HR.** 29.0
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 08/04/11	**COMP. DATE** 08/04/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
855										854.8 GROUND SURFACE	0.0
	854.8	0.0	3	7	6	13		M		**ROADWAY EMBANKMENT** RED, TAN, AND WHITE, SILTY CLAY WITH TRACE ROOTS	2.0
850	851.3	3.5	8	7	8	15		M		852.8 **RESIDUAL** TAN AND ORANGE, MED. DENSE, SILTY SAND	
845	846.3	8.5	8	9	9	18		M			
840	841.3	13.5	6	9	12	21		M			
835	836.3	18.5	6	9	11	20		M			
830	831.3	23.5	5	11	15	26		M			
825	826.3	28.5	100/0.5			100/0.5				826.3	28.5
										825.3 **WEATHERED ROCK** (META-VOLCANIC)	29.5
										824.4	30.4
820	822.6	32.2	60/0.0			60/0.0	RS-9			822.9 **CRYSTALLINE ROCK** (META-VOLCANIC)	31.9
										WEATHERED ROCK (META-VOLCANIC)	
										CRYSTALLINE ROCK (META-VOLCANIC)	
										816.0	38.8

Boring Terminated at Elevation 816.0 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y6-2500R

NCDOT BORE SINGLE R2536B_GEO_BRDG ON -Y6- OVER -L-_GINT.GPJ NC_DOT.GDT 8/28/13

SHEET 9 OF 13

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y6- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 25+00	**OFFSET** 16 ft RT	**ALIGNMENT** -Y6- — **0 HR.** N/A
COLLAR ELEV. 854.8 ft	**TOTAL DEPTH** 38.8 ft	**NORTHING** 691,743	**EASTING** 1,755,215 — **24 HR.** 29.0
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 08/04/11	**COMP. DATE** 08/04/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 9.3 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS — ELEV. (ft)	DEPTH (ft)
825.3											Begin Coring @ 29.5 ft	
	825.3	29.5	1.0	5:30	(0.9) 90%	(0.3) 30%		(0.9) 100%	(0.3) 33%		825.3 **CRYSTALLINE ROCK** WHITE, FRESH TO VERY SLIGHTLY WEATHERED, VERY HARD, CLOSE TO VERY CLOSELY FRACTURED, QUARTZ	29.5
	824.3	30.5	5.0	10:03	(3.7) 74%	(3.6) 72%		(0.0) 0%	N/A (6.8) 99%		824.4	30.4
				10:00 *N=60/0.0* 21:00							822.9 **WEATHERED ROCK**	31.9
820	819.3	35.5		6:53 4:47			RS-9	(6.9) 100%			**CRYSTALLINE ROCK** GRAY AND WHITE, FRESH, HARD, WIDE TO MODERATELY CLOSE FRACTURE AND EPICLASTIC META-VOLCANIC RS-9: R1=12, R2=20, R3=20, R4=20, R5=7; Total RMR=79 (Rock Type: D; Class II; Good Rock)	
			3.3	5:46 9:02	(3.2) 97%	(3.2) 97%						
	816.0	38.8		12:08 10:05/0.3							816.0	38.8

Boring Terminated at Elevation 816.0 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

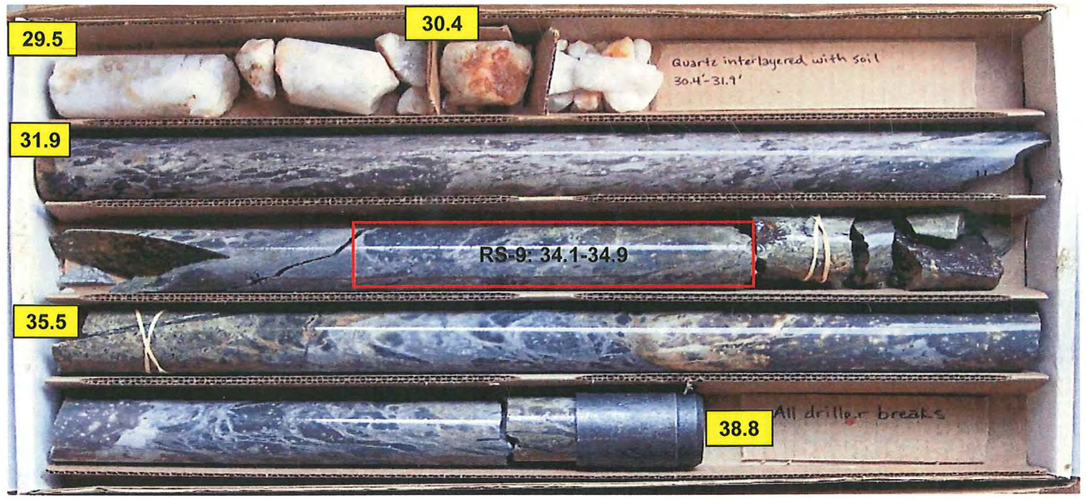
NOTE: ROADWAY BORING DESIGNATION IS Y6-2500R

NCDOT CORE SINGLE R2536B_GEO_BRDG ON -Y6- OVER -L-_GINT.GPJ NC_DOT.GDT 8/28/13

CORE PHOTOGRAPHS

B1-B

BOX 1 OF 1: 29.5 - 38.8 FEET



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y6- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 26+19	**OFFSET** 16 ft LT	**ALIGNMENT** -Y6- / **0 HR.** 44.2
COLLAR ELEV. 854.9 ft	**TOTAL DEPTH** 56.8 ft	**NORTHING** 691,866	**EASTING** 1,755,221 / **24 HR.** 40.2
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/29/11	**COMP. DATE** 07/29/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI
855							
	854.9	0.0	8	5	4	SS-1209	M
	851.4	3.5	5	5	5	SS-1210	M
850							
	846.4	8.5	6	22	39	SS-1211	M
845							
	841.4	13.5	8	9	10		M
840							
	836.4	18.5	6	7	9	SS-1212	M
835							
	831.4	23.5	5	7	11		M
830							
	826.4	28.5	5	8	11		M
825							
	821.4	33.5	4	5	9		M
820							
	816.4	38.5	5	10	15		▼
815							
	811.4	43.5	8	16	32	SS-1213	M
810							
	806.4	48.5	60/0.1				
805							
	801.4	53.5	59	41/0.1			
800							
	798.1	56.8	60/0.0				

BLOWS PER FOOT (0 25 50 75 100): 9, 10, 61, 19, 16, 18, 19, 14, 25, 48, 60/0.1, 100/0.6, 60/0.0

LOG

SOIL AND ROCK DESCRIPTION

ELEV. (ft)		DEPTH (ft)
854.9	GROUND SURFACE	0.0
854.4	**ARTIFICIAL FILL** GRAVEL DRIVEWAY	0.5
853.4	**ROADWAY EMBANKMENT** RED, TAN, AND WHITE, STIFF, SILTY CLAY	1.5
848.9	**RESIDUAL** RED, TAN, AND WHITE, STIFF, SILTY CLAY	6.0
	TAN AND ORANGE, HARD TO VERY STIFF, SILTY SAND WITH SOME TO TRACE ROCK FRAGMENTS	
837.9	TAN AND RED, VERY STIFF, HIGHLY SILTY CLAY TO SILTY CLAY	17.0
806.4	**CRYSTALLINE ROCK** (META-VOLCANIC)	48.5
805.2	**WEATHERED ROCK** (META-VOLCANIC)	49.7
798.9	**CRYSTALLINE ROCK** (META-VOLCANIC)	56.0
798.1	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 798.1 ft ON CRYSTALLINE ROCK (META-VOLCANIC)	56.8

NOTE: ROADWAY BORING DESIGNATION IS Y6-2619L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y6- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 26+12	**OFFSET** 23 ft RT	**ALIGNMENT** -Y6- / **0 HR.** Dry
COLLAR ELEV. 854.3 ft	**TOTAL DEPTH** 40.1 ft	**NORTHING** 691,847	**EASTING** 1,755,256 / **24 HR.** 38.6
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 08/01/11	**COMP. DATE** 08/01/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI
855							
	854.3	0.0	2	3	4		M
	850.8	3.5	3	3	3		M
850							
	845.8	8.5	7	11	9		M
845							
	840.8	13.5	5	9	9		M
840							
	835.8	18.5	10	7	7		M
835							
	830.8	23.5	10	12	18		M
830							
	825.8	28.5	10	17	21		M
825							
	820.8	33.5	11	12	12		M
820							
	815.8	38.5	100/0.3				▼
815							
	814.2	40.1	60/0.0				

BLOWS PER FOOT (0 25 50 75 100): 7, 6, 20, 18, 14, 30, 38, 24, 100/0.3, 60/0.0

LOG

SOIL AND ROCK DESCRIPTION

ELEV. (ft)		DEPTH (ft)
854.3	GROUND SURFACE	0.0
853.6	**ROADWAY EMBANKMENT** RED, TAN, AND WHITE, MEDIUM STIFF, SILTY CLAY	0.7
851.3	**RESIDUAL** RED, TAN, AND WHITE, MEDIUM STIFF, SILTY CLAY	3.0
	TAN AND ORANGE, MEDIUM DENSE TO DENSE, SILTY SAND	
822.8	TAN, VERY STIFF, HIGHLY SILTY CLAY	31.5
815.8	**WEATHERED ROCK** (META-VOLCANIC)	38.5
814.2	Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 814.2 ft ON CRYSTALLINE ROCK (META-VOLCANIC)	40.1

NOTE: ROADWAY BORING DESIGNATION IS Y6-2612R

NCDOT BORE DOUBLE R2536B_GEO_BRDG ON -Y6- OVER -L-_GINT.GPJ NC_DOT.GDT 10/24/13

US 64 Asheboro Southern Bypass - Bridge on -Y6- over -L-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-1209	16 LT	26+19	0.5-1.5	A-7-5(19)	51	18	5.5	12.0	41.9	40.7	100	97	87	-	-	Y6
SS-1210	16 LT	26+19	3.5-5.0	A-7-5(12)	43	11	4.1	13.8	43.5	38.6	100	98	86	-	-	Y6
SS-1211	16 LT	26+19	8.5-10.0	A-2-4(0)	29	3	27.8	24.8	35.2	12.2	66	54	35	-	-	Y6
SS-1212	16 LT	26+19	18.5-20.0	A-7-5(20)	58	17	4.5	10.4	54.6	30.5	100	98	88	-	-	Y6
SS-1213	16 LT	26+19	43.5-45.0	A-7-5(9)	43	11	5.1	30.3	52.4	12.2	100	98	74	-	-	Y6
SS-1214	16 RT	23+86	3.5-5.0	A-4(6)	38	4	0.6	11.2	68.0	20.3	100	100	93	-	-	Y6
SS-1215	16 RT	23+86	13.5-15.0	A-4(1)	31	1	4.2	15.5	62.1	18.2	100	98	85	-	-	Y6
SS-1224	26 LT	23+96	0.2-1.5	A-7-5(16)	50	17	2.8	25.4	47.5	24.2	100	99	80	-	-	Y6
SS-1225	26 LT	23+96	23.5-25.0	A-5(8)	43	10	4.6	34.5	44.7	16.1	100	99	71	-	-	Y6

US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y6- OVER -L-

ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	BORING NO.	DEPTH INTERVAL (ft)	UNIT WT. lbs/cf	UNCONFINED COMPRESSIVE STRENGTH (ksi)	YOUNG'S MODULUS (Mpsi)	ROCK MASS RATING
RS-9	16' RT	25+00	B1-B	34.1-34.9	171.20	23.2	0.644	79

SECTION 5

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34450.1.1 (R-2536B)	1	16

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34450.1.1 (R-2536B) F.A. PROJ. STPNHF-0064(107)

COUNTY RANDOLPH

PROJECT DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS FROM US 220 TO SR 2834 (OLD COX ROAD)

SITE DESCRIPTION BRIDGE ON -Y7- OVER -L-

PROJECT: 34450.1.1

ID: R-2536B

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-5	PROFILES
6-14	BORE LOGS, CORE REPORTS AND CORE PHOTORAPHS
15	SOIL TEST RESULTS
16	ROCK TEST RESULTS

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NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

J. Howard

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DATE August, 2013

NORTH CAROLINA LICENSED SEAL 1927 GEOLOGIST MICHAEL B. LEAR

MBL 8/29/13

SIGNATURE

amec

AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
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NC Engineering F-1253 NC Geology C-247

PROJECT REFERENCE NO.	SHEET NO.
24450.1.1 (R-2536B)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
DM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS

S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [X] CME-55
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE ____" STEEL TEETH
- [ ] TRICONE ____" TUNG.-CARB.
- [X] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -N Q
- [X] -H Q

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS across GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: ELEVATIONS DETERMINED FROM NCDOT ELECTRONIC PROJECT DRAWING FILES.

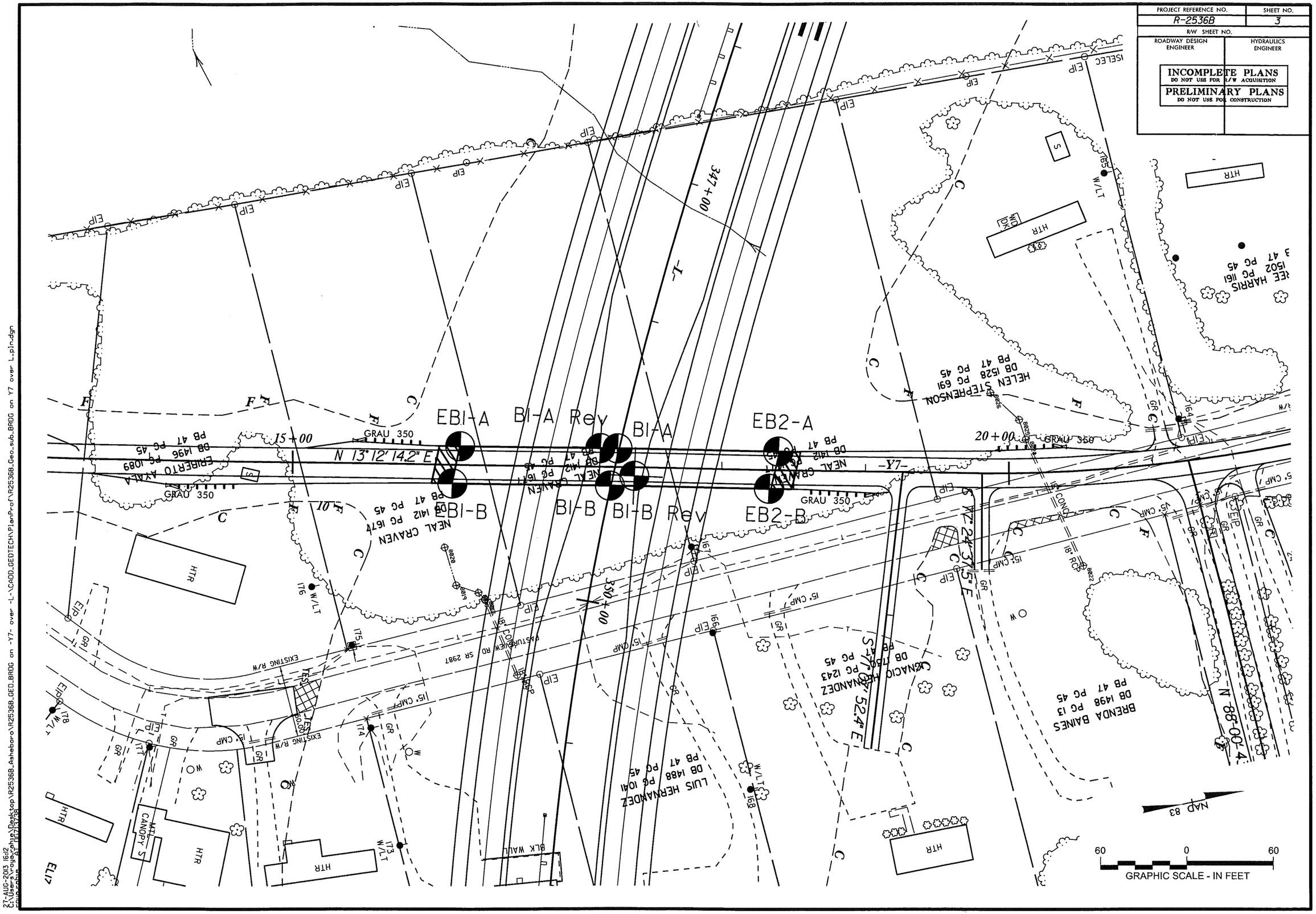
ELEVATION: N/A FT.

NOTES:

CT - CORING TERMINATED

FIAD - FILLED IMMEDIATELY AFTER DRILLING

REVISED 09/23/09



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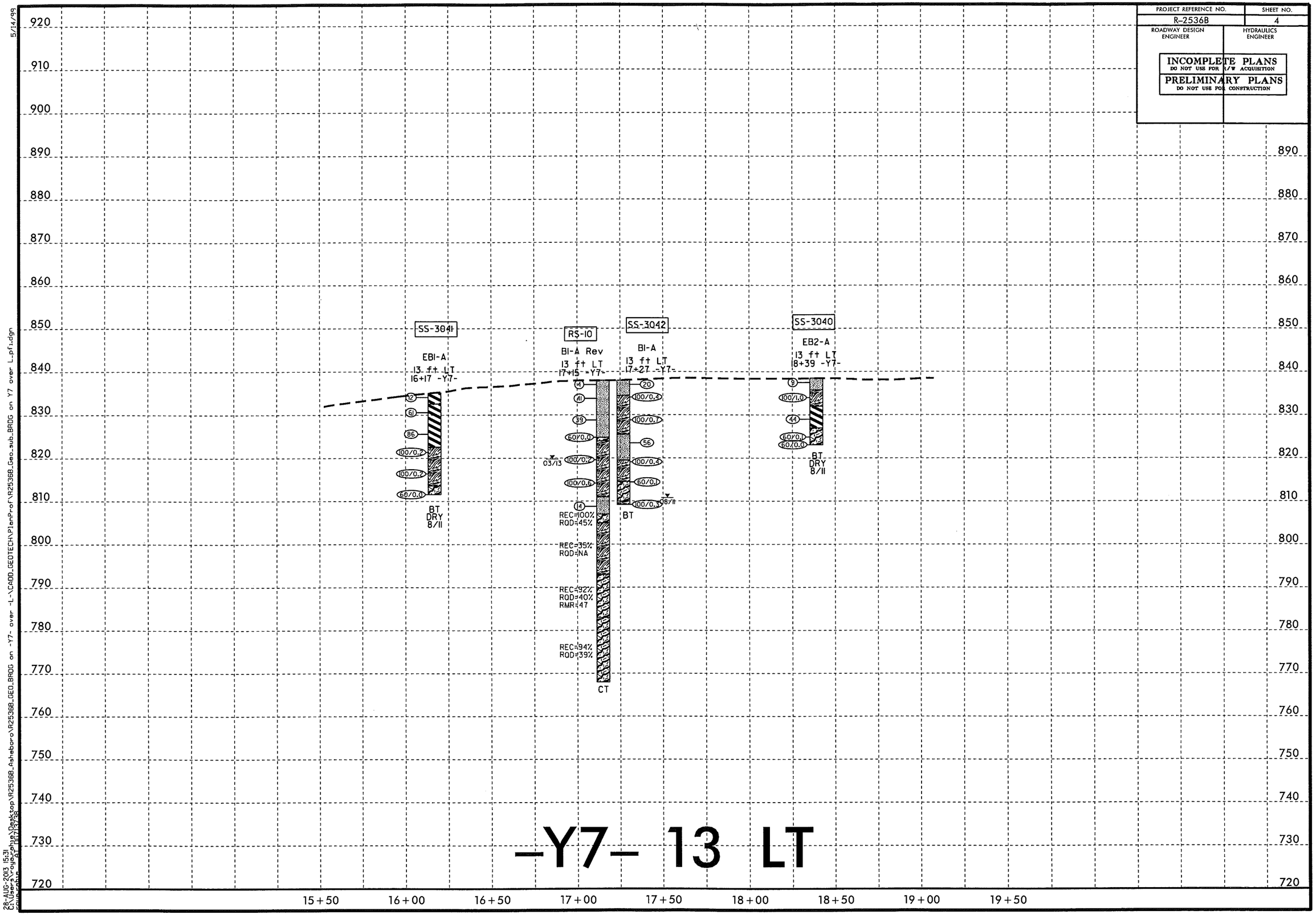
roya.rahie AT 06713738

PROJECT REFERENCE NO.	SHEET NO.
R-2536B	4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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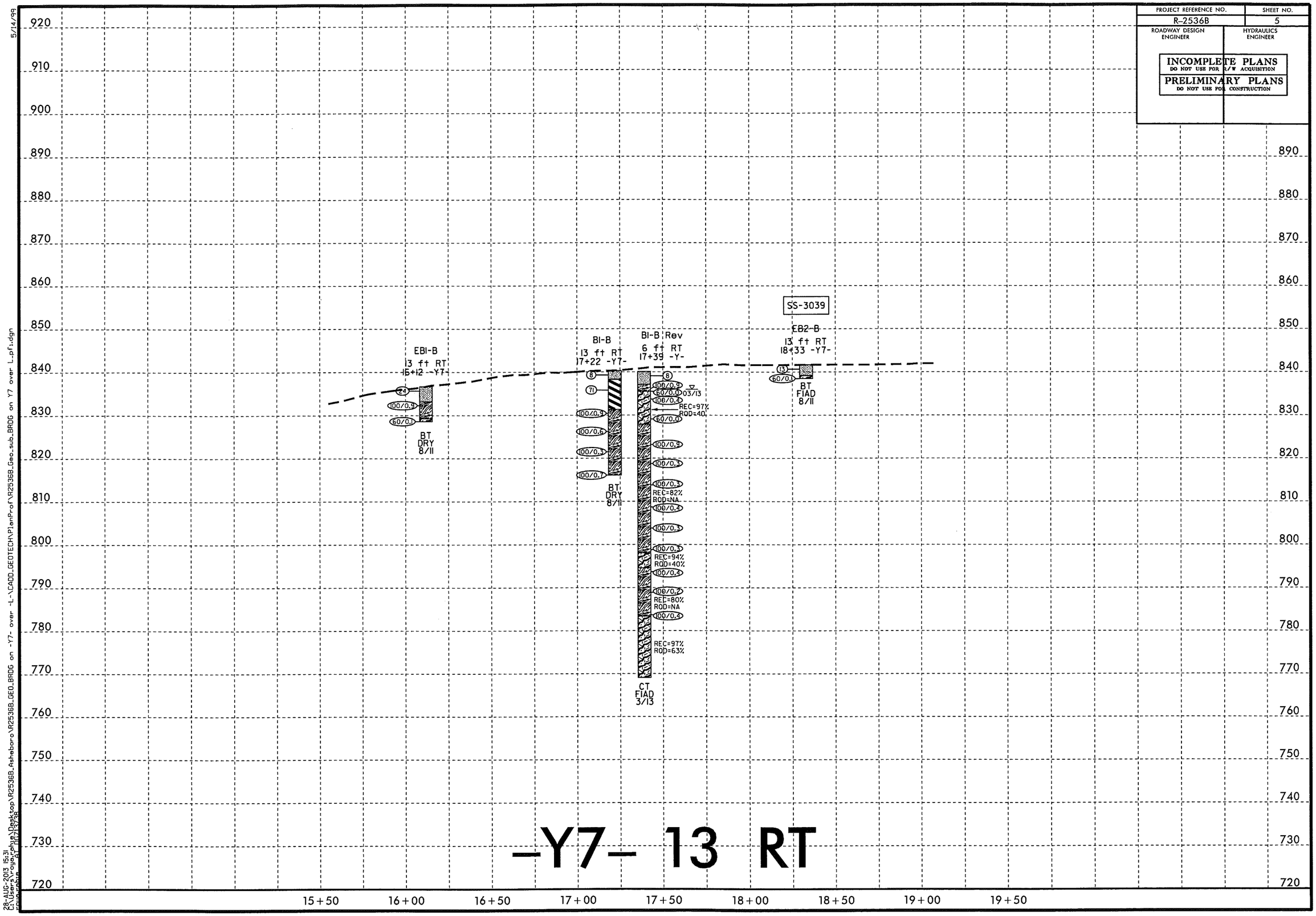
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R-2536B
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
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13 ft RT
15+12 -Y7-
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DRY
8/11
B1-B
13 ft RT
17+22 -Y7-
BT
DRY
8/11
B1-B Rev
6 ft RT
17+39 -Y-
03/13
REC=97%
ROD=40
REC=82%
ROD=NA
REC=94%
ROD=40%
REC=80%
ROD=NA
REC=97%
ROD=63%
CT
FIAD
3/13
SS-3039
EB2-B
13 ft RT
18+33 -Y7-
BT
FIAD
8/11
-Y7- 13 RT
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
730
720
15+50
16+00
16+50
17+00
17+50
18+00
18+50
19+00
19+50

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 16+17	**OFFSET** 13 ft LT	**ALIGNMENT** -Y7- / **0 HR.** Dry
COLLAR ELEV. 835.1 ft	**TOTAL DEPTH** 23.5 ft	**NORTHING** 690,259	**EASTING** 1,757,554 / **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/16/11	**COMP. DATE** 08/16/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
840											
835	835.1	0.0	3	4	8	12	SS-3041	D		835.1 GROUND SURFACE	0.0
										RESIDUAL BRN STIFF DRY HIGH (PI=33) PLASTIC SILTY CLAY (A-7-6)	
	831.6	3.5	28	29	32	61		M		832.6 GRAY & BRN HARD MOIST SILTY CLAY (A-7)	2.5
830											
	826.6	8.5	25	33	53	86		M			
825											
	821.6	13.5	100/0.2			100/0.2				822.6 **WEATHERED ROCK** (META-VOLCANIC)	12.5
820											
	816.6	18.5	100/0.2			100/0.2					
815											
										813.6	21.5
	811.6	23.5	60/0.0			60/0.0				811.6 **CRYSTALLINE ROCK** GRAY META-VOLCANIC	23.5

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 811.6 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y7-1617L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 16+12	**OFFSET** 13 ft RT	**ALIGNMENT** -Y7- / **0 HR.** Dry
COLLAR ELEV. 836.7 ft	**TOTAL DEPTH** 8.1 ft	**NORTHING** 690,248	**EASTING** 1,757,578 / **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/16/11	**COMP. DATE** 08/16/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
840											
	836.7	0.0	4	7	17	24		M		836.7 GROUND SURFACE	0.0
835										**RESIDUAL** TAN & YELLOW V. STIFF MOIST SANDY SILT (A-4) W/ TRACE ROCK FRAGS.	
	833.2	3.5	43	57/0.4		100/0.9				833.2 **WEATHERED ROCK** (META-VOLCANIC)	3.5
830											
	828.7	8.0	60/0.1			60/0.1				829.3 / 828.6 **CRYSTALLINE ROCK** GRAY META-VOLCANIC	7.4 / 8.1

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 828.6 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y7-1612R

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 17+27	**OFFSET** 13 ft LT	**ALIGNMENT** -Y7- — **0 HR.** Dry
COLLAR ELEV. 838.0 ft	**TOTAL DEPTH** 28.8 ft	**NORTHING** 690,366	**EASTING** 1,757,579 — **24 HR.** 27.2
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/17/11	**COMP. DATE** 08/17/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
840											
	838.0	0.0								838.0 GROUND SURFACE	0.0
			4	8	12	20		M		**RESIDUAL** TAN & YELLOW V. STIFF MOIST SANDY SILT (A-4)	
835	834.5	3.5								834.5	3.5
			100/0.4			100/0.4				**WEATHERED ROCK** (META-VOLCANIC)	
830	829.5	8.5									
			42	58/0.2		100/0.7					
825	824.5	13.5								825.5	12.5
			16	15	41	56	SS-3042	D		**RESIDUAL** BRN HARD DRY SANDY SILT (A-4)	
820	819.5	18.5								819.5	18.5
			100/0.4			100/0.4				**WEATHERED ROCK** (META-VOLCANIC)	
815	814.5	23.5								814.5	23.5
			60/0.1			60/0.1				**CRYSTALLINE ROCK** GRAY META-VOLCANIC	
810	809.5	28.5								810.0	28.0
			100/0.3			100/0.3				809.2 **WEATHERED ROCK** (META-VOLCANIC)	28.8

Boring Terminated at Elevation 809.2 ft IN WEATHERED ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y7-1727L

NCDOT BORE DOUBLE R2563B_GEO_BRDG ON -Y7- OVER -L-_GINT.GPJ NC_DOT.GDT 10/18/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** J. Howard
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A Rev	**STATION** 17+15	**OFFSET** 13 ft LT	**ALIGNMENT** -Y7- — **0 HR.** 9.4
COLLAR ELEV. 838.0 ft	**TOTAL DEPTH** 70.0 ft	**NORTHING** 690,354	**EASTING** 1,757,577 — **24 HR.** 18.2
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 03/01/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 03/07/13	**COMP. DATE** 03/08/13	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft) / DEPTH (ft)
840										
	838.0	0.0								838.0 — GROUND SURFACE — 0.0
			1	2	2	4		M		**RESIDUAL** TAN, ORANGE, BROWN AND GRAY TO LIGHT GRAY SANDY CLAYEY SILT (A-4) SAPROLITIC
835	834.8	3.2	5	15	26	41		D		
830	829.8	8.2	13	13	26	39		D		
825	824.8	13.2	60/0.0			60/0.0				824.8 — 13.2; 824.0 — 14.0 — **CRYSTALLINE ROCK** META-VOLCANIC ROCK; **WEATHERED ROCK** LIGHT GRAY AND ORANGE, META-VOLCANIC ROCK
820	819.8	18.2	100/0.2			100/0.2				
815	814.8	23.2	70	30/0.1		100/0.6				811.0 — 27.0 — **RESIDUAL** ORANGE, BROWN, BLACK SANDY SILT (A-4), SAPROLITIC; Auger Refusal at 31.0 feet
810	809.8	28.2	4	6	8	14		M		807.0 — 31.0 — **CRYSTALLINE ROCK** GRAY, TAN, BROWN, META-VOLCANIC ROCK; **WEATHERED ROCK** GRAY, TAN, BROWN, META-VOLCANIC ROCK
805								100% LOSS OF WATER		805.0 — 33.0
800								75% LOSS OF WATER		
795										793.0 — 45.0 — **CRYSTALLINE ROCK** TAN, BROWN, AND GREEN GRAY, META-VOLCANIC ROCK
790							RS-10			
785										783.0 — 55.0 — GRAY WITH BROWN STAINING TO LIGHT GRAY GREEN, META-VOLCANIC ROCK
780										
775										
770										768.0 — 70.0 — Boring Terminated at Elevation 768.0 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y7-1715L

NCDOT BORE SINGLE_R2563B_GEO_BRDG ON -Y7- OVER -L- GINT.GPJ NC_DOT.GDT 8/28/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** J. Howard
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A Rev	**STATION** 17+15	**OFFSET** 13 ft LT	**ALIGNMENT** -Y7- — **0 HR.** 9.4
COLLAR ELEV. 838.0 ft	**TOTAL DEPTH** 70.0 ft	**NORTHING** 690,354	**EASTING** 1,757,577 — **24 HR.** 18.2
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 03/01/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 03/07/13	**COMP. DATE** 03/08/13	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 39.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS — ELEV. (ft) / DEPTH (ft)
807											Begin Coring @ 31.0 ft
805	807.0	31.0	4.0	21:00 9:00 5:30 5:30	(2.1) 53%	(0.9) 23%		(2.0) 100%	(0.9) 45%		807.0 — 31.0; 805.0 — 33.0 — **CRYSTALLINE ROCK** GRAY, TAN, BROWN, MODERATELY TO MODERATELY SEVERELY WEATHERED, HARD TO MODERATELY HARD, CLOSE TO VERY CLOSE FRACTURE SPACING, META-VOLCANIC ROCK
	803.0	35.0						(4.2) 35%	N/A		
800			5.0	5:30 8:45 11:00 7:45 5:00	(2.7) 54%	N/A					**WEATHERED ROCK** GRAY, TAN, BROWN, SEVERELY WEATHERED, MEDIUM HARD TO SOFT, CLOSELY TO VERY CLOSELY FRACTURED, META-VOLCANIC ROCK
	798.0	40.0									
795			5.0	2:45 7:45 7:30 6:15 6:30	(1.4) 28%	N/A					
	793.0	45.0									793.0 — 45.0
790			5.0	7:45 8:15 9:00 7:00 9:30	(4.8) 96%	(2.5) 50%	RS-10	(9.2) 92%	(4.0) 40%		**CRYSTALLINE ROCK** TAN, BROWN, AND GREEN GRAY, MODERATELY TO SLIGHTLY WEATHERED, MODERATELY HARD TO HARD, VERY CLOSE TO CLOSE FRACTURE SPACING, META-VOLCANIC ROCK (19 JOINTS AT 10-20°; 4 JOINTS AT 30-45°, 6 JOINTS AT 75°) RS-10: R1=2, R2=8, R3=10, R4=20, R5=7; Total RMR=47 (Rock Type: D; Class III; Fair Rock)
	788.0	50.0									
785			5.0	7:15 6:00 6:45 7:00 4:45	(4.4) 88%	(1.5) 30%					
	783.0	55.0									783.0 — 55.0
780			5.0	4:15 5:30 10:45 7:30 10:45	(4.2) 84%	(0.4) 8%		(14.1) 94%	(5.9) 39%		GRAY WITH BROWN STAINING TO LIGHT GRAY GREEN, VERY SLIGHTLY WEATHERED TO FRESH, HARD, CLOSE FRACTURE SPACING, META-VOLCANIC ROCK 3 JOINTS AT 10-20° 7 JOINTS AT 30-45° 24 JOINTS AT 60°
	778.0	60.0									
775			5.0	7:00 5:00 4:00 4:30 5:00	(5.0) 100%	(2.6) 52%					
	773.0	65.0									
770			5.0	4:30 4:30 5:30 6:15 4:40	(4.9) 98%	(2.9) 58%					
	768.0	70.0									768.0 — 70.0 — Boring Terminated at Elevation 768.0 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

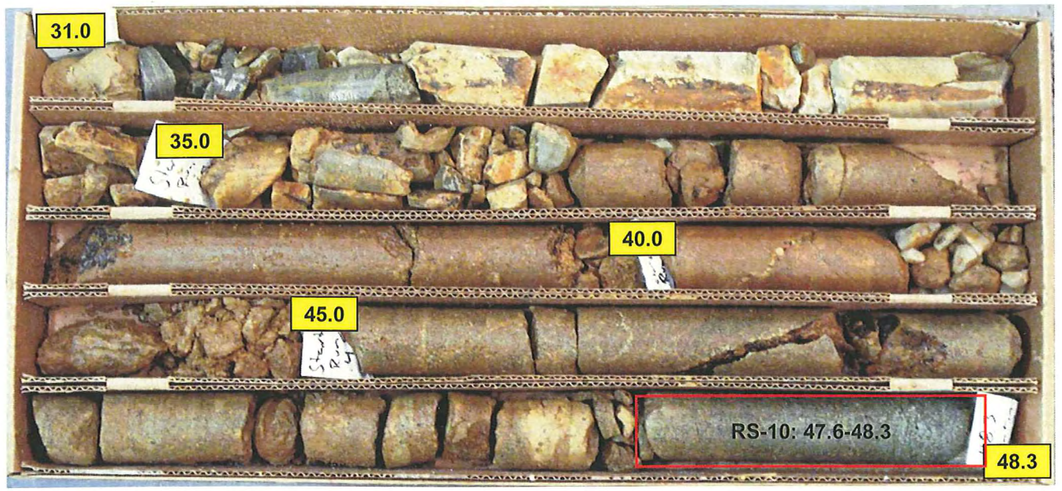
NOTE: ROADWAY BORING DESIGNATION IS Y7-1715L

NCDOT CORE SINGLE_R2563B_GEO_BRDG ON -Y7- OVER -L- GINT.GPJ NC_DOT.GDT 8/28/13

CORE PHOTOGRAPHS

B1-A Rev

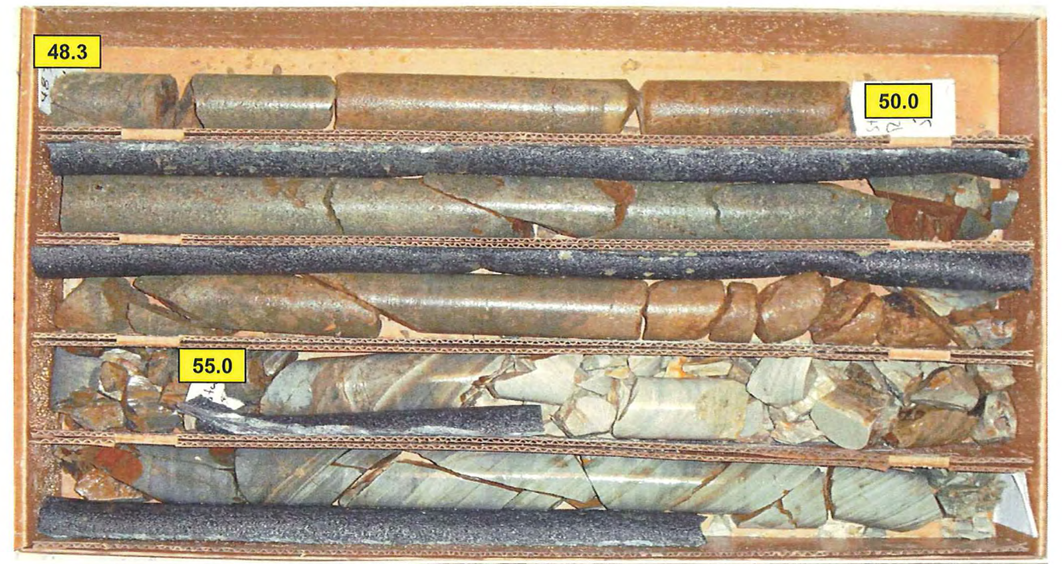
BOX 1 OF 3: 31.0 - 48.3 FEET



0 1 2
FEET

B1-A Rev

BOXES 2&3 OF 3: 48.3 - 70.0 FEET



0 1 2
FEET

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 17+22	**OFFSET** 13 ft RT	**ALIGNMENT** -Y7- — **0 HR.** Dry
COLLAR ELEV. 840.3 ft	**TOTAL DEPTH** 24.2 ft	**NORTHING** 690,355	**EASTING** 1,757,603 — **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/17/11	**COMP. DATE** 08/17/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT (0 25 50 75 100)	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
845											
840	840.3	0.0								840.3 GROUND SURFACE	0.0
			1	3	5	8		D		**RESIDUAL**	
	836.8	3.5								838.3 TAN & YELLOW MED. STIFF TO STIFF DRY SANDY SILT (A-4)	2.0
835			27	34	37	71		D		BRN HARD DRY SILTY CLAY (A-7)	
	831.8	8.5								831.3	9.0
830			28	42	58/0.4	100/0.9		D		**WEATHERED ROCK** (META-VOLCANIC)	
	826.8	13.5									
825			70	30/0.1		100/0.6					
	821.8	18.5									
820			100/0.3			100/0.3					
	816.8	23.5	52	48/0.2		100/0.7				816.1	24.2

Boring Terminated at Elevation 816.1 ft IN WEATHERED ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y7-1722R

NCDOT BORE DOUBLE R2563B_GEO_BRDG ON -Y7- OVER -L-_GINT.GPJ NC_DOT.GDT 10/18/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** J. Howard
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-B Rev	**STATION** 17+39	**OFFSET** 6 ft RT	**ALIGNMENT** -Y7- — **0 HR.** 4.1
COLLAR ELEV. 840.1 ft	**TOTAL DEPTH** 71.0 ft	**NORTHING** 690,373	**EASTING** 1,757,600 — **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 03/01/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 03/11/13	**COMP. DATE** 03/12/13	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
845											
840	840.1	0.0								840.1 GROUND SURFACE	0.0
			2	3	5	8		D		**RESIDUAL** ORANGE-TAN, SANDY SILT (A-4), WITH TRACE ORGANICS	
	837.0	3.1								837.1	3.0
	835.5	4.6	20	80/0.4		100/0.9				**WEATHERED ROCK** TAN-ORANGE, GRAY, META-VOLCANIC ROCK	
835	834.1	6.0	60/0.0			60/0.0				835.5	4.6
			100/0.4			100/0.4				**CRYSTALLINE ROCK** GRAY-BROWN TO BLUE-GRAY, META-VOLCANIC ROCK (NOTE: SPT at 6.0-6.4' along fracture zone in Crystalline Rock)	
830	829.1	11.0	60/0.0			60/0.0				827.9	12.2
										WEATHERED ROCK ORANGE-BROWN TO TAN-BROWN AND LIGHT GRAY, META-VOLCANIC ROCK	
825	824.1	16.0	45	55/0.4		100/0.9					
820	819.1	21.0	100/0.3			100/0.3					
815	814.1	26.0	100/0.3			100/0.3					
810	809.1	31.0	100/0.4			100/0.4					
805	804.1	36.0	100/0.3			100/0.3					
800	799.1	41.0	100/0.3			100/0.3				798.1	42.0
										CRYSTALLINE ROCK WHITE, QUARTZ VEIN WITH WEATHERED META-VOLCANIC ROCK LAYERS	
795	794.1	46.0	100/0.4			100/0.4				794.6	45.5
										WEATHERED ROCK BROWN-TAN, META-VOLCANIC ROCK	
790	789.1	51.0	100/0.2			100/0.2					
785	784.1	56.0	100/0.4			100/0.4				783.4	56.7
										CRYSTALLINE ROCK GREEN-GRAY, META-VOLCANIC ROCK	
780											
775											
770										769.1	71.0
										Boring Terminated at Elevation 769.1 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS Y7-1739R	

NCDOT BORE SINGLE R2563B_GEO_BRDG ON -Y7- OVER -L- GINT.GPJ NC_DOT.GDT 8/28/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** J. Howard
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-B Rev	**STATION** 17+39	**OFFSET** 6 ft RT	**ALIGNMENT** -Y7- — **0 HR.** 4.1
COLLAR ELEV. 840.1 ft	**TOTAL DEPTH** 71.0 ft	**NORTHING** 690,373	**EASTING** 1,757,600 — **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 03/01/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. Cox	**START DATE** 03/11/13	**COMP. DATE** 03/12/13	**SURFACE WATER DEPTH** N/A
CORE SIZE HQ	**TOTAL RUN** 62.5 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS — ELEV. (ft)	DEPTH (ft)
835.5											Begin Coring @ 4.6 ft	
835	835.5	4.6	1.4	10:15	(1.2)	(0.8)		(7.0)	(2.9)		835.5 **CRYSTALLINE ROCK** GRAY-BROWN TO BLUE-GRAY, FRESH TO SLIGHTLY WEATHERED, HARD, VERY CLOSE TO CLOSELY FRACTURED, META-VOLCANIC ROCK (NOTE: SPT at 6.0-6.4' along fracture zone in Crystalline Rock)	4.6
	834.1	6.0		5:00/0.4	86%	57%		97%	40%			
	833.7	6.4	4.6	N=100/0.4	(4.6)	(2.1)						
				14:00/0.6	100%	46%						
				12:45								
				9:00								
830	829.1	11.0		11:00								
				14:15								
			5.0	N=60/0.0	(1.7)	(0.0)					827.9 2 JOINTS AT 50° 4 JOINTS AT 30-40° 4 JOINT AT 85-90°	12.2
				6:00	34%	0%		(22.5)	N/A			
				10:15				82%			**WEATHERED ROCK** ORANGE-BROWN TO TAN-BROWN AND LIGHT GRAY, SEVERELY WEATHERED, SOFT TO MEDIUM HARD, VERY CLOSELY FRACTURED, META-VOLCANIC ROCK, WITH SEAMS OF MODERATELY SEVERELY WEATHERED CRYSTALLINE ROCK	
825				8:00								
	824.1	16.0		8:15								
	823.2	16.9		7:45								
			4.1	N=100/0.9	(3.9)	N/A						
				0:45/0.1	95%							
				6:30								
				5:00								
820	819.1	21.0		5:00								
	818.8	21.3		6:15								
			4.7	N=100/0.3	(4.7)	N/A						
				6:00/0.7	100%							
				6:00								
				5:45								
815				5:30								
	814.1	26.0		7:30								
	813.8	26.3	4.7	N=100/0.3	(4.5)	N/A						
				7:45/0.7	96%							
				7:30								
				7:30								
810				7:30								
				9:00								
	809.1	31.0										
	808.7	31.4	4.6	N=100/0.4	(4.2)	N/A						
				6:15/0.6	91%							
				6:15								
				7:30								
805				7:00								
	804.1	36.0		7:00								
	803.8	36.3	4.7	N=100/0.3	(4.3)	N/A						
				5:30/0.7	91%							
				4:30								
				5:00								
800				5:15								
	799.1	41.0		5:45								
	798.8	41.3	4.7	N=100/0.3	(3.7)	(1.4)						
				4:30/0.7	79%	30%		(3.3)	(1.4)			
				6:15				94%	40%			
				4:15								
795				6:30								
	794.1	46.0		5:00							794.6 **WEATHERED ROCK** WHITE, FRESH TO SLIGHTLY WEATHERED, VERY HARD, CLOSELY FRACTURED, QUARTZ VEIN, WITH SEAMS OF SEVERELY WEATHERED META-VOLCANIC ROCK	45.5
	793.7	46.4	4.6	N=100/0.4	(3.3)	N/A		(8.2)	N/A			
				6:30/0.6	72%			80%				
				6:45								
				6:15								
790				6:00								
	789.1	51.0		8:15								
	788.9	51.2	4.8	N=100/0.2	(4.6)	N/A						
				7:45/0.8	96%							
				6:00								
				6:15								
785				6:15								
	784.1	56.0		4:45								
	783.7	56.4	4.6	N=100/0.4	(4.6)	(1.3)						
				5:15/0.6	100%	28%		(13.9)	(9.0)			
				7:45				97%	63%			
				4:30								
780				5:00								
	779.1	61.0		6:00								
			5.0	5:15	(4.6)	(4.4)						
				4:15	92%	88%						
				4:15								
775				4:15								
	774.1	66.0		4:00								
			5.0	4:15	(5.0)	(3.3)						
				4:15	100%	66%						
				6:00								
770				5:00								
	769.1	71.0		4:00								
											783.4 **CRYSTALLINE ROCK** GREEN-GRAY, SLIGHTLY WEATHERED TO FRESH, MODERATELY HARD TO HARD, CLOSELY FRACTURED, META-VOLCANIC ROCK, WITH SEVERELY WEATHERED SEAMS	56.7
											24 JOINTS AT 45° 23 JOINTS AT 60-65° 6 JOINTS AT 85-90° 2 JOINTS AT 30°	
											769.1 Boring Terminated at Elevation 769.1 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS Y7-1739R	71.0

NCDOT CORE SINGLE R2563B_GEO_BRDG ON -Y7- OVER -L- GINT.GPJ NC_DOT.GDT 8/28/13

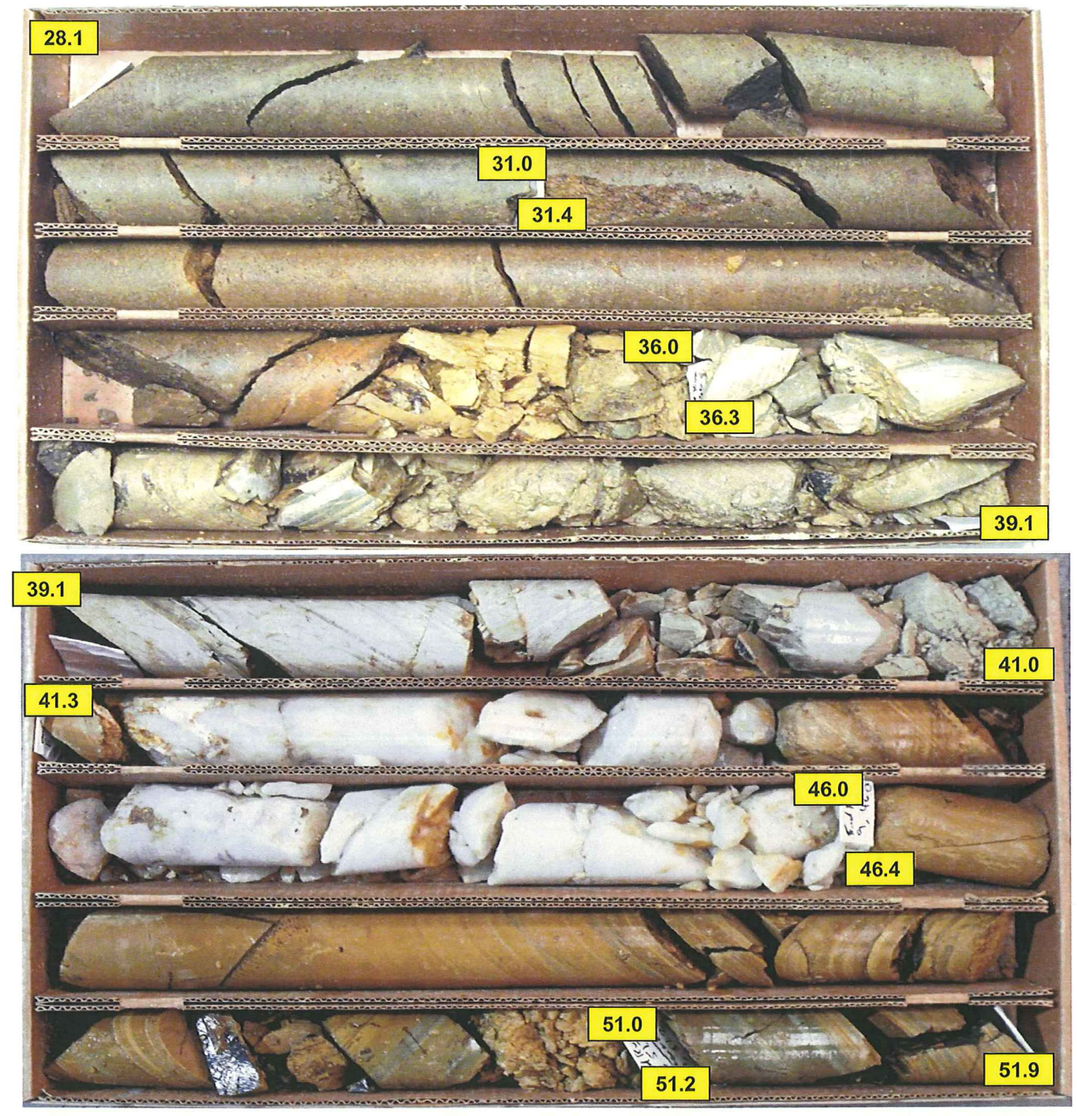
CORE PHOTOGRAPHS

B1-B Rev

BOX 1 & 2 OF 6: 4.6 - 28.1 FEET

B1-B Rev

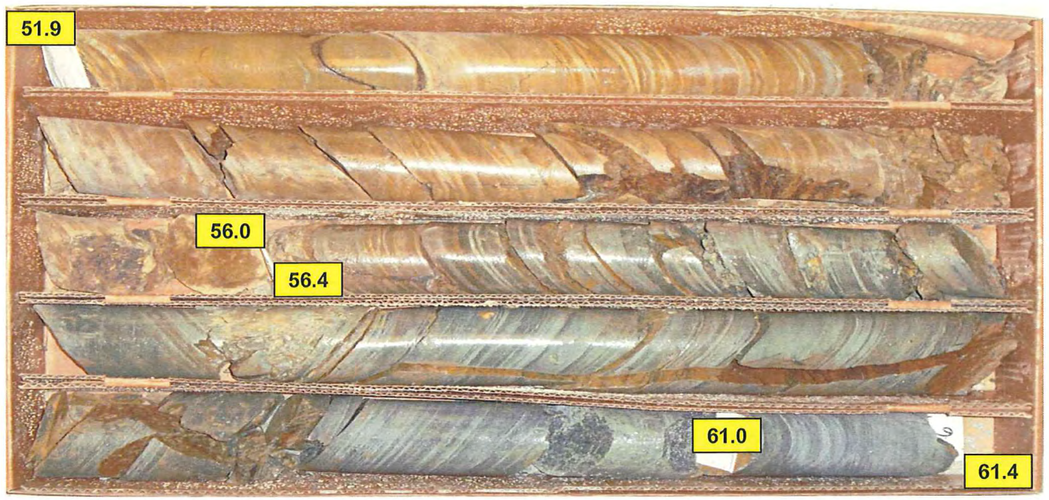
BOXES 3 & 4 OF 6: 28.1 - 51.9 FEET

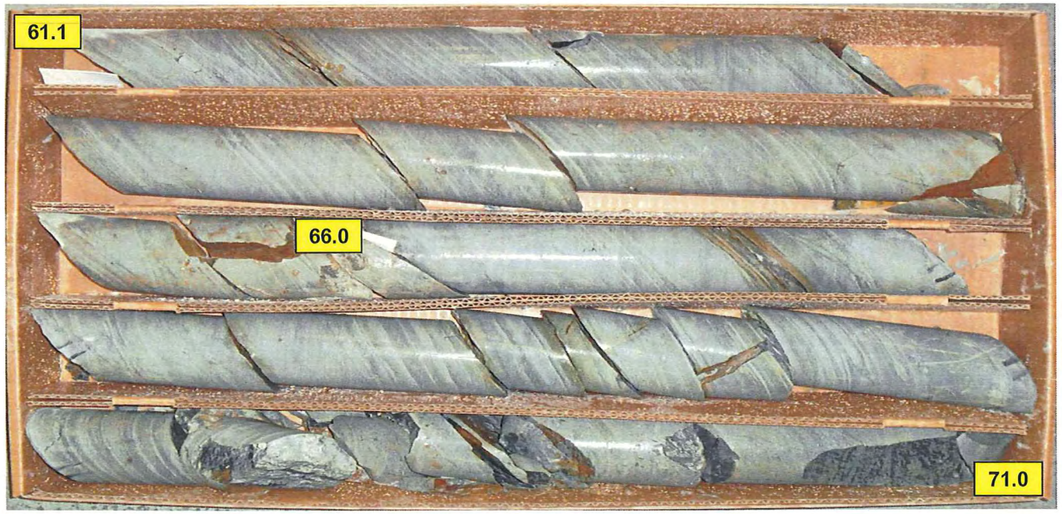


CORE PHOTOGRAPHS

B1-B Rev

BOXES 5&6 OF 6: 51.9 - 71.0 FEET





NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 18+39	**OFFSET** 13 ft LT	**ALIGNMENT** -Y7- — **0 HR.** Dry
COLLAR ELEV. 838.5 ft	**TOTAL DEPTH** 15.4 ft	**NORTHING** 690,475	**EASTING** 1,757,605 — **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/16/11	**COMP. DATE** 08/16/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
840											
	838.5	0.0								838.5 GROUND SURFACE	0.0
			2	3	6	9		M		**RESIDUAL** TAN & YELLOW STIFF MOIST SANDY SILT (A-4)	2.7
835	835.0	3.5								835.8	
			38	62/0.5		100/1.0				**WEATHERED ROCK** (META-VOLCANIC)	
										832.0	6.5
830	830.0	8.5								**RESIDUAL** GRAY & BRN HARD MOIST MED. (PI=21) PLASTIC HIGHLY SANDY SILTY CLAY (A-7-6)	
			12	16	28	44	SS-3040	M			
										827.0	11.5
825	825.0	13.5								**CRYSTALLINE ROCK** GRAY META-VOLCANIC	
			60/0.1			60/0.1					
	823.1	15.4	60/0.0			60/0.0				823.1	15.4

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 823.1 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y7-1839L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 18+33	**OFFSET** 13 ft RT	**ALIGNMENT** -Y7- — **0 HR.** Dry
COLLAR ELEV. 841.7 ft	**TOTAL DEPTH** 3.2 ft	**NORTHING** 690,463	**EASTING** 1,757,629 — **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/15/11	**COMP. DATE** 08/15/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
845										
	841.7	0.0								841.7 GROUND SURFACE 0.0
840			2	7	6	13	SS-3039	M		**RESIDUAL** TAN & YELLOW STIFF MOIST SANDY SILT (A-4) W/ SOME CLAY
	838.6	3.1								839.2 2.5
			60/0.1			60/0.1				838.5 3.2
										CRYSTALLINE ROCK GRAY META-VOLCANIC

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 838.5 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y7-1833R

NCDOT BORE DOUBLE R2563B_GEO_BRDG ON -Y7- OVER -L-_GINT.GPJ NC_DOT.GDT 10/18/13

US 64 Asheboro Southern Bypass-Bridge on -Y7- over -L-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-3039	13 RT	18+33	0.2-1.5	A-4(1)	27	4	11.5	8.7	47.4	32.4	82	73	69	-	-	Y7
SS-3040	13 LT	18+39	8.5-10.0	A-7-6(11)	46	21	21.7	12.3	25.5	40.5	89	75	61	-	-	Y7
SS-3041	13 LT	16+17	0.3-1.5	A-7-6(34)	56	33	2.4	8.3	26.5	62.8	100	99	93	-	-	Y7
SS-3042	13 LT	17+27	13.5-15.0	A-4(2)	31	5	11.7	34.0	25.9	28.3	100	96	61	-	-	Y7

US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y7- OVER -L-

ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	BORING NO.	DEPTH INTERVAL (ft)	UNIT WT. lbs/cf	UNCONFINED COMPRESSIVE STRENGTH (ksi)	YOUNG'S MODULUS (Mpsi)	ROCK MASS RATING
RS-10	13' LT	17+15	B1-A Rev	47.6-48.3	169.00	3.06	0.947	47

SECTION 6

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34450.1.1 (R-2536B)	1	12

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34450.1.1 (R-2536B) F.A. PROJ. STPNHF-0064(107)

COUNTY RANDOLPH

PROJECT DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS FROM US 220 TO SR 2834 (OLD COX ROAD)

SITE DESCRIPTION BRIDGE ON -Y9FLY- OVER -L-

PROJECT: 34450.1.1

ID: R-2536B

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-5	PROFILES
6-10	BORE LOGS, CORE REPORTS AND CORE PHOTORAPHS
11	SOIL TEST RESULTS
12	ROCK TEST RESULTS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA , AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS, INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

B. Smith

S. Gower

DRAWN BY R. Rahie

INVESTIGATED BY C. Youngblood

CHECKED BY M. Lear, PG

SUBMITTED BY B. Deobald, LG

DATE August, 2013

NORTH CAROLINA LICENSED SEAL 1927 GEOLOGIST MICHAEL B. LEAR

8/29/13

amec

AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900

SIGNATURE

NC Engineering F-1253 NC Geology C-247

PROJECT REFERENCE NO.	SHEET NO.
24450.1.1 (R-2536B)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT PLASTIC RANGE (PI) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS
S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE ____" STEEL TEETH
- [ ] TRICONE ____" TUNG.-CARB.
- [X] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -N QZ
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: ELEVATIONS DETERMINED FROM NCDOT ELECTRONIC PROJECT DRAWING FILES.

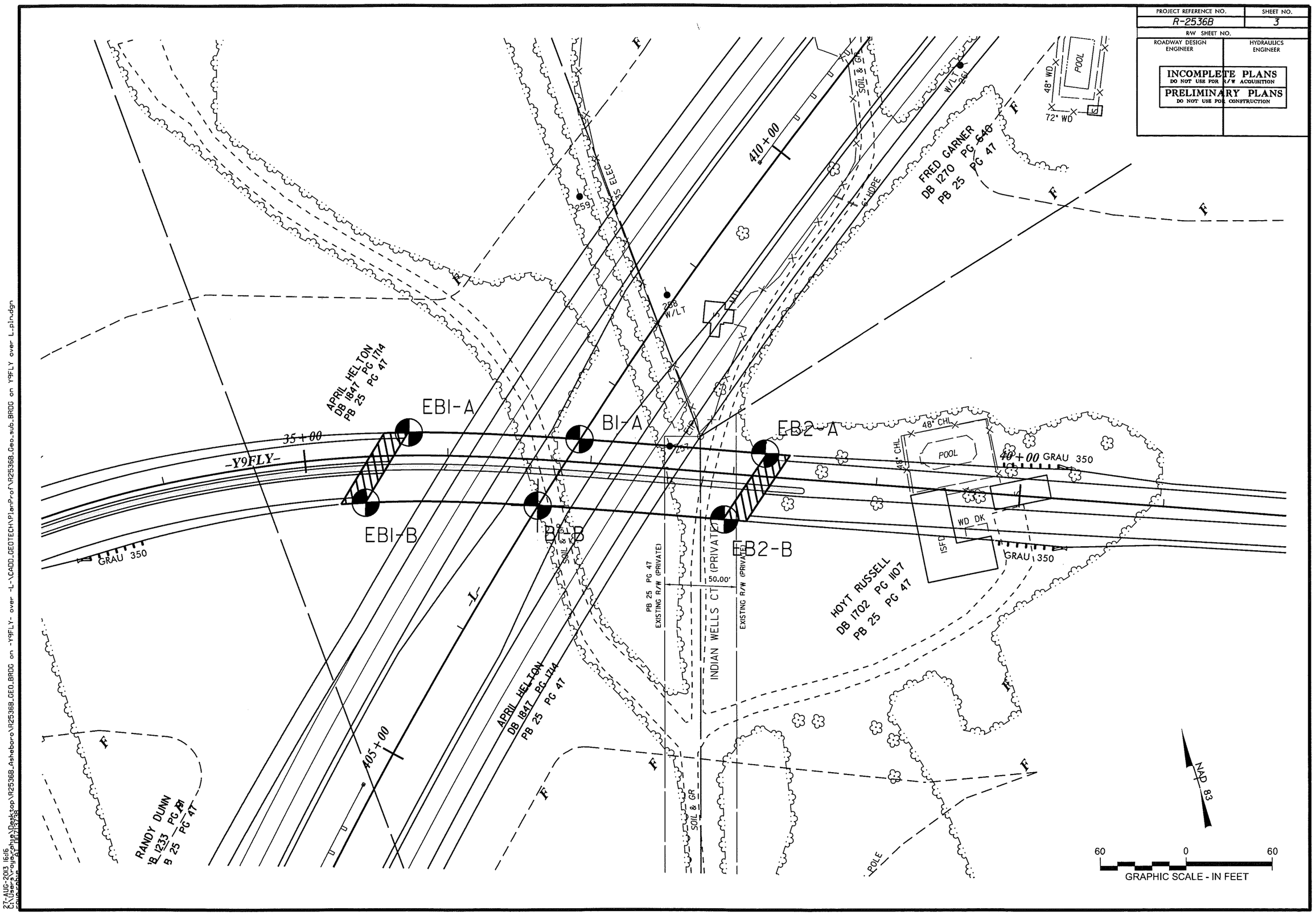
ELEVATION: N/A FT.

NOTES:

CT - CORE TERMINATED
FIAD - FILLED IMMEDIATELY AFTER DRILLING

PROJECT REFERENCE NO.	SHEET NO.
R-2536B	3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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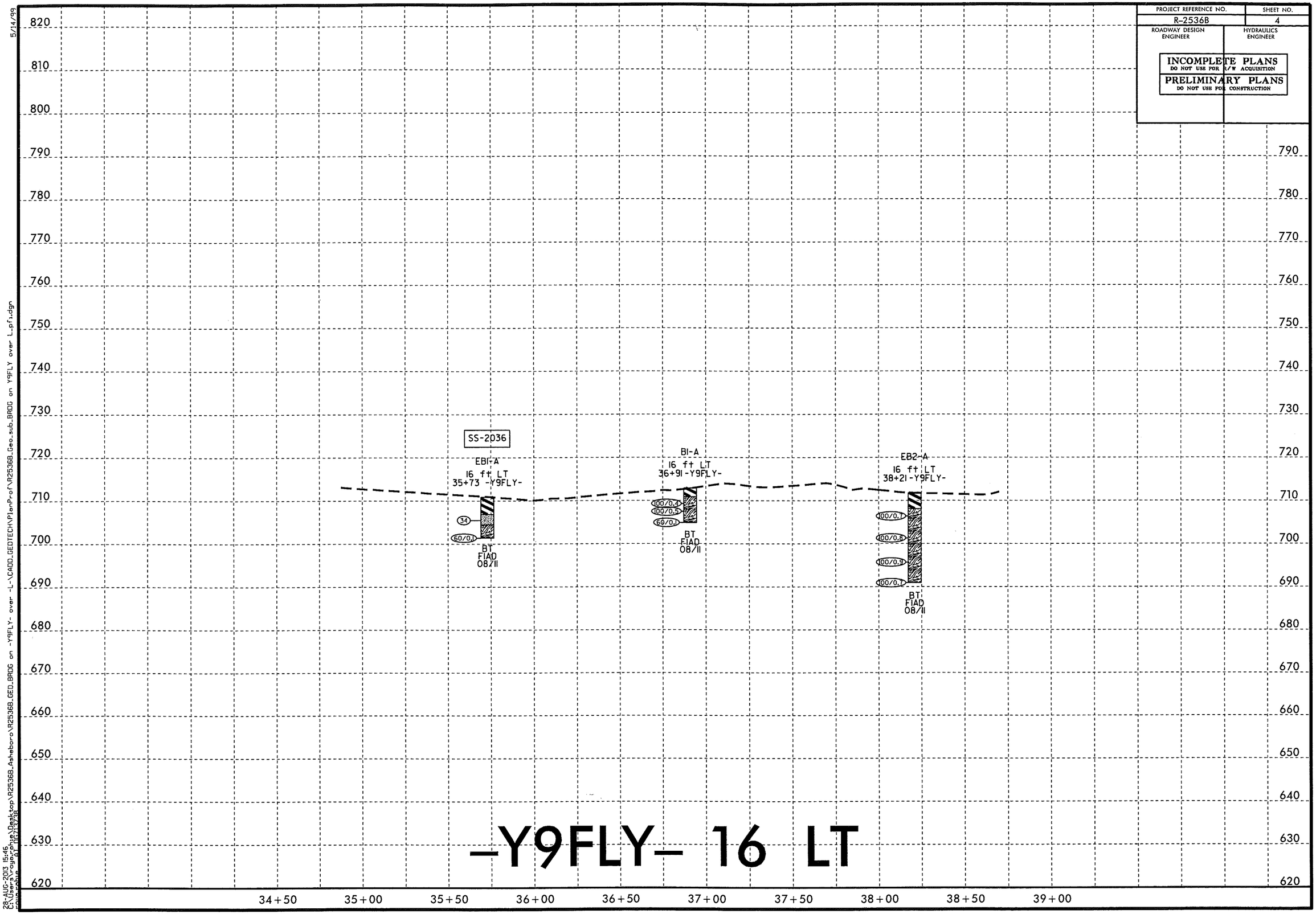
PROJECT REFERENCE NO.
R-2536B
SHEET NO.
4
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
5/14/99
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750
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730
720
710
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690
680
670
660
650
640
630
620
SS-2036
EB1-A
16 ft LT
35+73 -Y9FLY-
34
60/0.1
BT
FIAD
08/11
B1-A
16 ft LT
36+91 -Y9FLY-
100/0.4
100/0.5
60/0.1
BT
FIAD
08/11
EB2-A
16 ft LT
38+21 -Y9FLY-
100/0.7
100/0.8
100/0.9
100/0.7
BT
FIAD
08/11
-Y9FLY- 16 LT
34+50
35+00
35+50
36+00
36+50
37+00
37+50
38+00
38+50
39+00
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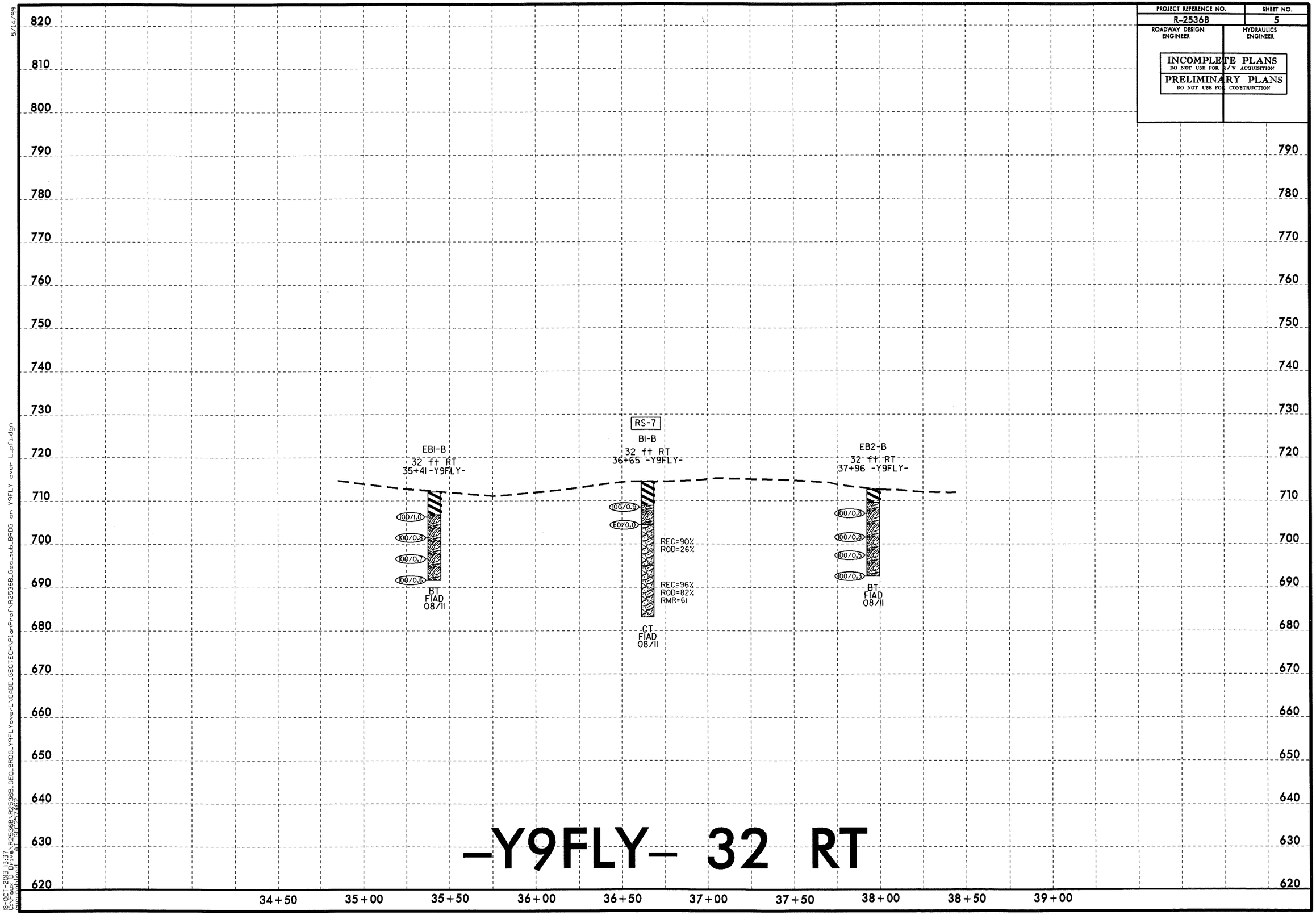
roya.rahie AT DG713738


PROJECT REFERENCE NO.
R-2536B
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
820
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780
770
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620
EB1-B
32 ft RT
35+41 -Y9FLY-
100/1.0
100/0.8
100/0.7
100/0.6
BT
FIAD
08/11
RS-7
B1-B
32 ft RT
36+65 -Y9FLY-
100/0.9
60/0.0
REC=90%
ROD=26%
REC=96%
ROD=82%
RMR=61
CT
FIAD
08/11
EB2-B
32 ft RT
37+96 -Y9FLY-
100/0.8
100/0.8
100/0.5
100/0.3
BT
FIAD
08/11
-Y9FLY- 32 RT
34+50
35+00
35+50
36+00
36+50
37+00
37+50
38+00
38+50
39+00
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NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, Brett
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y9FLY- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 35+73	**OFFSET** 16 ft LT	**ALIGNMENT** -Y9FLY- / **0 HR.** Dry
COLLAR ELEV. 710.9 ft	**TOTAL DEPTH** 9.5 ft	**NORTHING** 693,299	**EASTING** 1,761,977 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H9274 CME-45C 85% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 08/19/11	**COMP. DATE** 08/19/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
715											
710										710.9 GROUND SURFACE	0.0
										RESIDUAL DARK BRN STIFF MOIST SILTY CLAY (A-7) W/ ROOTS & ROCK FRAGS. (FLOAT BOULDERS) (BOULDER @ 2.0)	
	706.5	4.4	9	9	25	34	SS-2036	M		706.9	4.0
705										ORANGE-BRN HARD MOIST SAPROLITIC SANDY SILT (A-4) 704.5	6.4
										WEATHERED ROCK (META-VOLCANIC)	
	701.5	9.4	60/0.1			60/0.1				701.5	9.4
										701.4 **CRYSTALLINE ROCK** (META-VOLCANIC)	9.5
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 701.4 ft IN CRYSTALLINE ROCK (META-VOLCANIC)	
										NOTE: ROADWAY BORING DESIGNATION IS Y9FLY-3573L	

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, Brett
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y9FLY- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 35+41	**OFFSET** 32 ft RT	**ALIGNMENT** -Y9FLY- / **0 HR.** Dry
COLLAR ELEV. 712.1 ft	**TOTAL DEPTH** 20.4 ft	**NORTHING** 693,262	**EASTING** 1,761,934 / **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H9274 CME-45C 85% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 08/19/11	**COMP. DATE** 08/19/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
715											
										712.1 GROUND SURFACE	0.0
710										**RESIDUAL** DARK BRN & ORANGE-BRN STIFF TO HARD MOIST SILTY CLAY (A-7)	
	707.3	4.8	36	33	67/0.5	100/1.0				706.8	5.3
705										**WEATHERED ROCK** (META-VOLCANIC)	
	702.3	9.8	63	37/0.3		100/0.8					
700											
	697.3	14.8	55	45/0.2		100/0.7					
695											
	692.3	19.8	30	70/0.1		100/0.6				691.7	20.4
										Boring Terminated at Elevation 691.7 ft IN WEATHERED ROCK (META-VOLCANIC)	
										NOTE: ROADWAY BORING DESIGNATION IS Y9FLY-3514R	

NCDOT BORE DOUBLE R2563B_GEO_BRDG ON -Y9FLY- OVER -L- GINT.GPJ NC_DOT.GDT 10/18/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, Brett
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y9FLY- OVER -L-			**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 36+91	**OFFSET** 16 ft LT	**ALIGNMENT** -Y9FLY-	**0 HR.** Dry
COLLAR ELEV. 712.9 ft	**TOTAL DEPTH** 8.0 ft	**NORTHING** 693,259	**EASTING** 1,762,090	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H9274 CME-45C 85% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 08/18/11	**COMP. DATE** 08/18/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
715											
										712.9 GROUND SURFACE	0.0
										RESIDUAL	
710	709.7	3.2								710.9 ORANGE-BRN HARD MOIST SILTY CLAY (A-7)	2.0
	708.0	4.9	100/0.4			100/0.4				**WEATHERED ROCK** (META-VOLCANIC)	
			100/0.5			100/0.5					
705	705.0	7.9	60/0.1			60/0.1				705.0	7.9
										704.9 **CRYSTALLINE ROCK** (META-VOLCANIC)	8.0
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 704.9 ft IN CRYSTALLINE ROCK (META-VOLCANIC)	
										NOTE: ROADWAY BORING DESIGNATION IS L-40755	

NCDOT BORE DOUBLE R2563B_GEO_BRDG ON -Y9FLY- OVER -L-_GINT.GPJ NC_DOT.GDT 10/18/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	TIP R-2536B	COUNTY RANDOLPH	GEOLOGIST Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y9FLY- OVER -L-			GROUND WTR (ft)
BORING NO. B1-B	STATION 36+65	OFFSET 32 ft RT	ALIGNMENT -Y9FLY- — 0 HR. N/A
COLLAR ELEV. 714.4 ft	TOTAL DEPTH 31.3 ft	NORTHING 693,224	EASTING 1,762,049 — 24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE F&H9274 CME-45C 85% 10/06/2010		DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 08/17/11	COMP. DATE 08/18/11	SURFACE WATER DEPTH N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
715										714.4 GROUND SURFACE	0.0
710	709.4	5.0	12	34	66/0.4	100/0.9				RESIDUAL ORANGE-BROWN, STIFF TO HARD, SILTY CLAY — 708.9	5.5
705	704.4	10.0	60/0.0			60/0.0				WEATHERED ROCK (META-VOLCANIC) — 704.4	10.0
700										CRYSTALLINE ROCK (META-VOLCANIC)	
695							RS-7			695.1 (META-VOLCANIC)	19.3
690											
685										683.1	31.3

Boring Terminated at Elevation 683.1 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-40701

NCDOT BORE SINGLE R2563B_GEO_BRDG ON -Y9FLY- OVER -L-_GINT.GPJ NC_DOT.GDT 8/28/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	TIP R-2536B	COUNTY RANDOLPH	GEOLOGIST Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y9FLY- OVER -L-			GROUND WTR (ft)
BORING NO. B1-B	STATION 36+65	OFFSET 32 ft RT	ALIGNMENT -Y9FLY- — 0 HR. N/A
COLLAR ELEV. 714.4 ft	TOTAL DEPTH 31.3 ft	NORTHING 693,224	EASTING 1,762,049 — 24 HR. FIAD
DRILL RIG/HAMMER EFF./DATE F&H9274 CME-45C 85% 10/06/2010		DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic
DRILLER Contract Driller	START DATE 08/17/11	COMP. DATE 08/18/11	SURFACE WATER DEPTH N/A
CORE SIZE NQ2	TOTAL RUN 21.3 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
704.4											Begin Coring @ 10.0 ft	
	704.4 703.1	10.0 11.3	1.3	2:00/1.3	(1.3) 100%	(0.0) 0%		(8.4) 90%	(2.4) 26%		704.4 CRYSTALLINE ROCK LIGHT TO DARK GRAY WITH ORANGE-BROWN STAINING, MODERATELY SEVERE TO SEVERELY WEATHERED, HARD TO MODERATE HARD, CLOSE TO VERY CLOSELY FRACTURED, FELSIC META-VOLCANIC, NUMEROUS HIGH ANGLE AND VERTICAL FRACTURES	10.0
700	698.1	16.3	5.0	2:11 2:21 2:43 1:11 2:57	(4.5) 90%	(2.4) 48%						
695	693.1	21.3	5.0	3:51 3:06 4:15 6:38 3:36	(4.6) 92%	(1.9) 38%	RS-7	(11.5) 96%	(9.8) 82%		695.1 LIGHT AND DARK GRAY, SLIGHTLY WEATHERED WITH MODERATELY WEATHERED ZONE FROM 21.3' TO 21.7, MODERATELY CLOSE TO CLOSELY FRACTURED, FELSIC META-VOLCANIC RS-7: R1=7, R2=17, R3=10, R4=20, R5=7; Total RMR=61 (Rock Type: D; Class II; Good Rock)	19.3
690	688.1	26.3	5.0	2:19 5:03 4:09 3:29 3:00	(4.6) 92%	(4.0) 80%						
685	683.1	31.3	5.0	4:38 4:48 3:06 2:30 3:57	(4.9) 98%	(3.9) 78%					683.1	31.3

Boring Terminated at Elevation 683.1 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-40701

NCDOT CORE SINGLE R2563B_GEO_BRDG ON -Y9FLY- OVER -L-_GINT.GPJ NC_DOT.GDT 8/28/13

CORE PHOTOGRAPHS

B1-B

BOXES 1 TO 3 OF 3: 10.0 - 31.3 FEET

0 1 2
FEET

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, Brett
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y9FLY- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 38+21	**OFFSET** 16 ft LT	**ALIGNMENT** -Y9FLY- — **0 HR.** Dry
COLLAR ELEV. 711.8 ft	**TOTAL DEPTH** 20.9 ft	**NORTHING** 693,212	**EASTING** 1,762,211 — **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H9274 CME-45C 85% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 08/19/11	**COMP. DATE** 08/19/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
715											
										711.8 GROUND SURFACE	0.0
710										**RESIDUAL** ORANGE-BRN STIFF TO HARD MOIST SILTY CLAY (A-7)	
	707.1	4.7	40	60/0.2		100/0.7				708.1	3.7
705										**WEATHERED ROCK** (META-VOLCANIC)	
	702.1	9.7	34	66/0.3		100/0.8					
700											
	697.1	14.7	17	43	57/0.4	100/0.9					
695											
	692.1	19.7	15	39	61/0.2	100/0.7				690.9	20.9

Boring Terminated at Elevation 690.9 ft IN WEATHERED ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y9FLY-3821L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, Brett
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y9FLY- OVER -L-			**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 37+96	**OFFSET** 32 ft RT	**ALIGNMENT** -Y9FLY- — **0 HR.** Dry
COLLAR ELEV. 712.6 ft	**TOTAL DEPTH** 20.0 ft	**NORTHING** 693,177	**EASTING** 1,762,170 — **24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H9274 CME-45C 85% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 08/19/11	**COMP. DATE** 08/19/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
715										
										712.6 GROUND SURFACE 0.0
710										**RESIDUAL** ORANGE-BRN V. STIFF TO HARD MOIST SILTY CLAY (A-7) 709.6 3.0
	707.9	4.7	11	89/0.3		100/0.8				**WEATHERED ROCK** (META-VOLCANIC)
705										
	702.9	9.7	16	52	48/0.3	100/0.8				
700										
	697.9	14.7	80	20/0.0		100/0.5				
695										
	692.9	19.7	100/0.3			100/0.3				692.6 20.0

Boring Terminated at Elevation 692.6 ft IN WEATHERED ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y9FLY-3796R

NCDOT BORE DOUBLE R2563B_GEO_BRDG ON -Y9FLY- OVER -L-_GINT.GPJ NC_DOT.GDT 10/18/13

US 64 Asheboro Southern Bypass-Bridge on -Y9FLY- over -L-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-2036	**16 LT**	**35+73**	**4.4-5.9**	**A-4(2)**	**30**	**4**	**7.9**	**36.0**	**31.8**	**24.3**	**100**	**97**	**67**	**-**	**-**	Y9FLY

US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y9FLY- OVER -L-

ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	BORING NO.	DEPTH INTERVAL (ft)	UNIT WT. lbs/cf	UNCONFINED COMPRESSIVE STRENGTH (ksi)	YOUNG'S MODULUS (Mpsi)	ROCK MASS RATING
RS-7	32' RT	36+65	B1-B	19.5-20.7	181.70	10.6	12.93	61

SECTION 7

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34450.1.1 (R-2536B)	1	13

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34450.1.1 (R-2536B) F.A. PROJ. STPNHF-0064(107)

COUNTY RANDOLPH

PROJECT DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS FROM US 220 TO SR 2834 (OLD COX ROAD)

SITE DESCRIPTION DUAL BRIDGES ON -L- OVER -Y10-

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
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12	SOIL TEST RESULTS
13	ROCK TEST RESULTS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

B. Smith

J. Milkovits

J. Estep

S. Gower

DRAWN BY R. Rahie

INVESTIGATED BY C. Youngblood

CHECKED BY M. Lear, PG

SUBMITTED BY B. Deobald, LG

DATE August, 2013

NORTH CAROLINA PROFESSIONAL SEAL 1927 GEOLOGIST MICHAEL B. LEAR

MBL 8/29/13

SEAL

SIGNATURE

amec

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NC Engineering F-1253 NC Geology C-247

PROJECT: 34450.1.1

ID: R-2536B

PROJECT REFERENCE NO.	SHEET NO.
24450.1.1 (R-2536B)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT PLASTIC RANGE (PI) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS
S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45C
- [X] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE ____" STEEL TEETH
- [ ] TRICONE ____" TUNG.-CARB.
- [X] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -N 02
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS across GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: ELEVATIONS DETERMINED FROM NCDOT ELECTRONIC PROJECT DRAWING FILES.

ELEVATION: N/A FT.

NOTES:

FIAD - FILLED IMMEDIATELY AFTER DRILLING

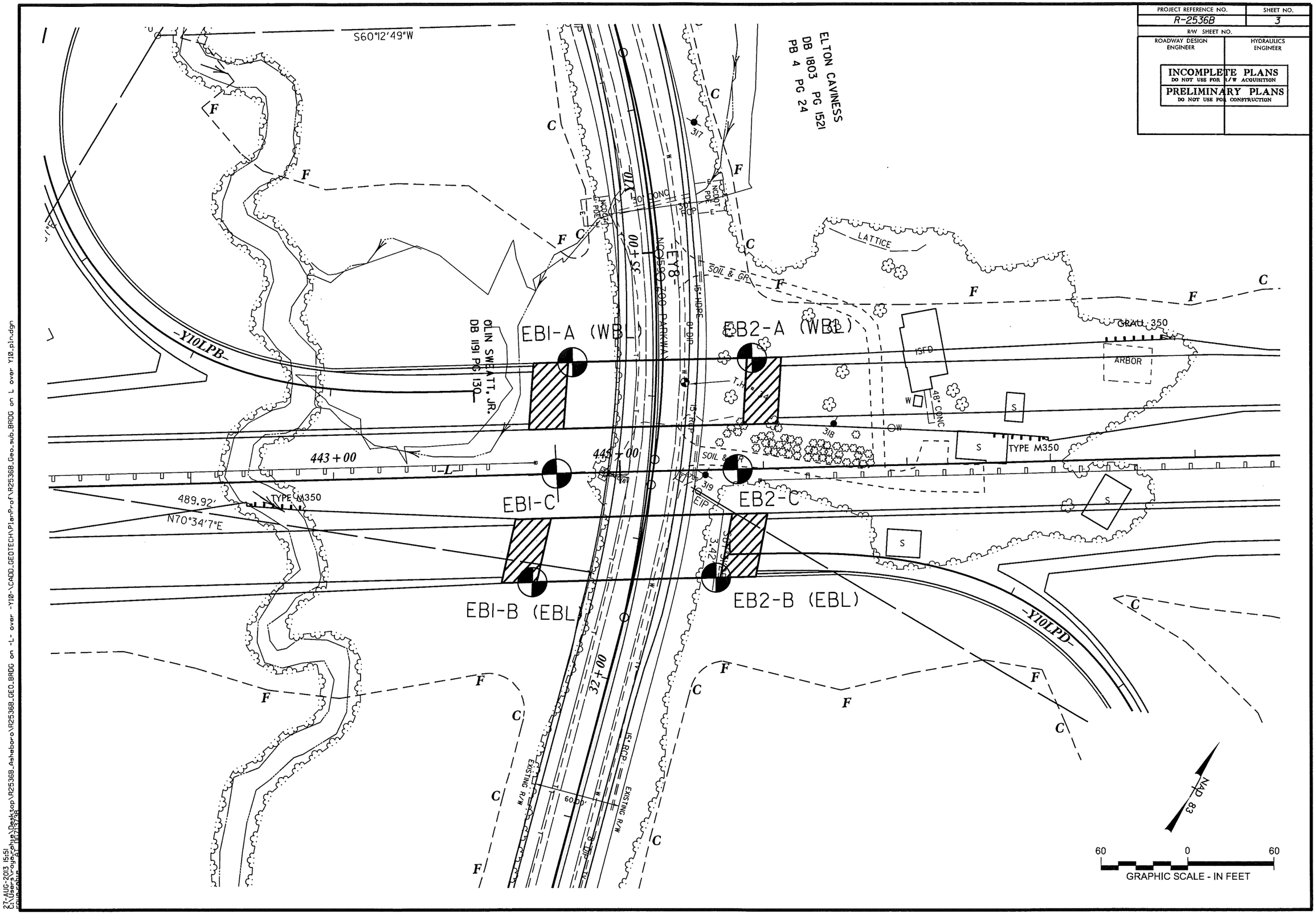
CT - CORING TERMINATED

REVISED 09/23/09

PROJECT REFERENCE NO.	SHEET NO.
R-2536B	3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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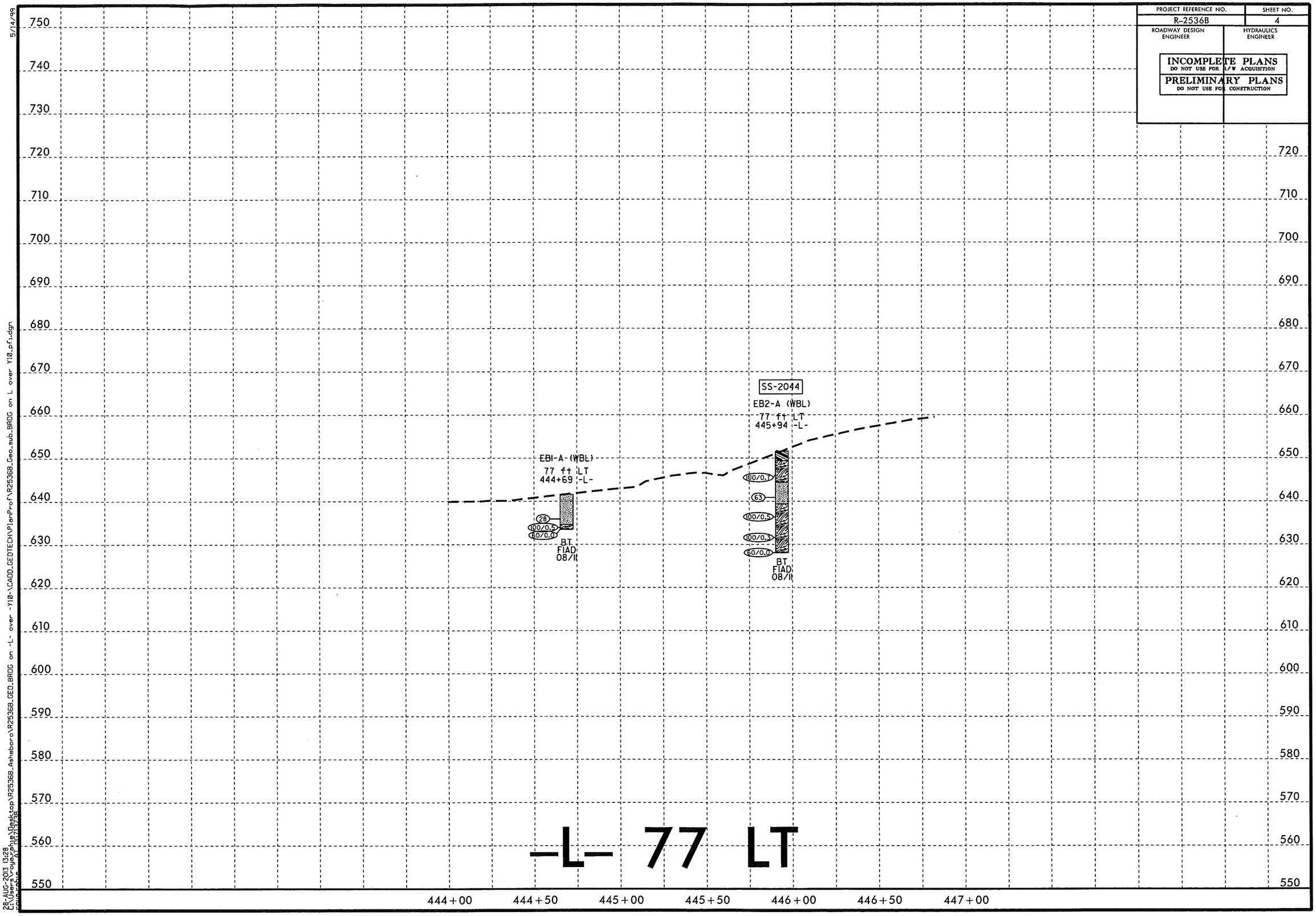
rogerohie AT DOT/13/38



PROJECT REFERENCE NO.
R-2536B
SHEET NO.
4
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SS-2044
EB2-A (WBL)
77 ft LT
445+94 -L-
EB1-A (WBL)
77 ft LT
444+69 -L-
28
100/0.5
60/0.0
BT
FIAD
08/11
100/0.7
63
100/0.5
100/0.3
60/0.0
BT
FIAD
08/11
-L- 77 LT
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
600
590
580
570
560
550
444+00
444+50
445+00
445+50
446+00
446+50
447+00
5/14/99
28-AUG-2013 13:28
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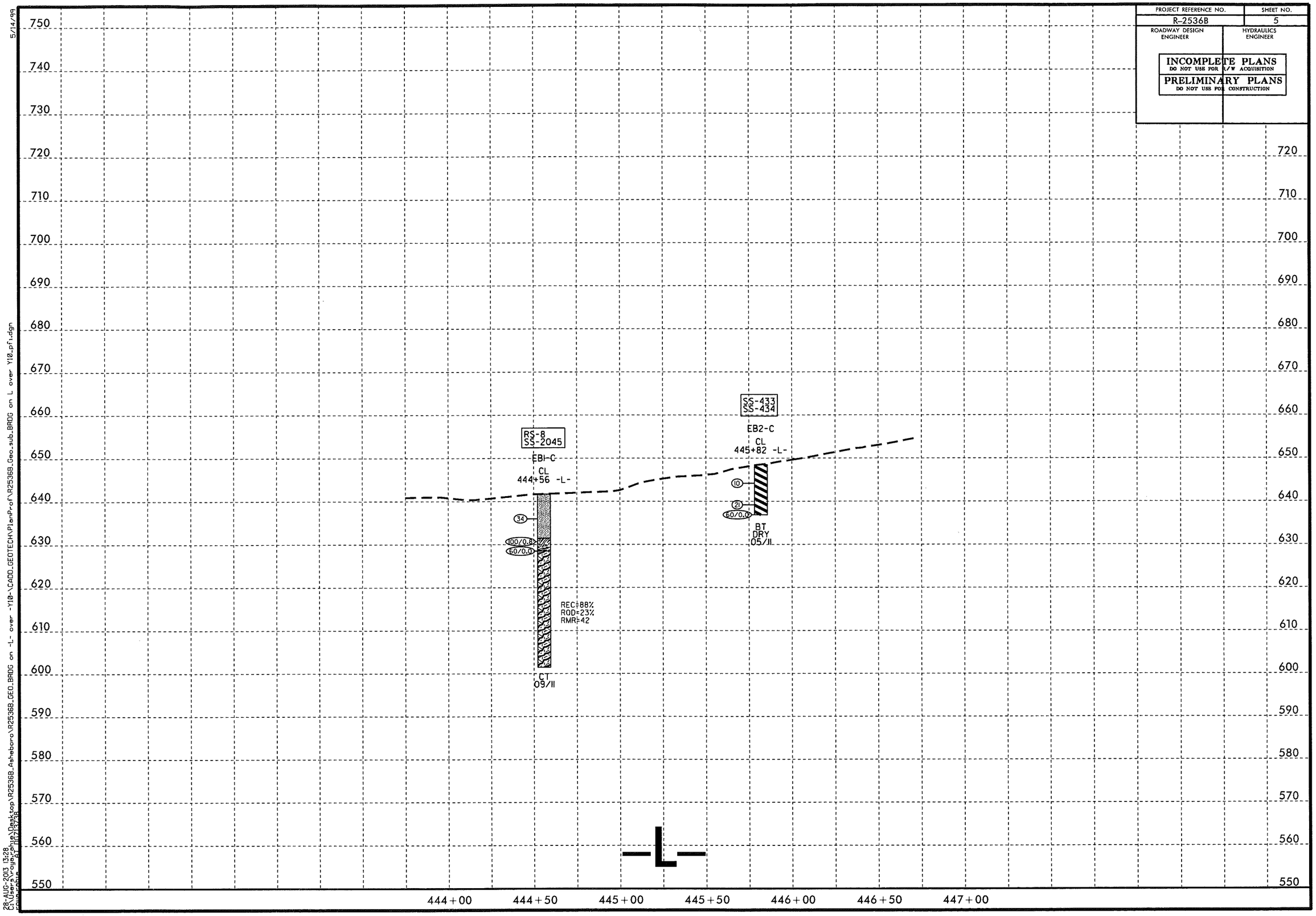

PROJECT REFERENCE NO.
R-2536B
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
600
590
580
570
560
550
RS-8
SS-2045
EB1-C
CL
444+56 -L-
34
100/0.8
60/0.0
REC=88%
ROD=23%
RMR=42
CT
09/11
SS-433
SS-434
EB2-C
CL
445+82 -L-
10
21
60/0.0
BT
DRY
05/11
-L-
444+00
444+50
445+00
445+50
446+00
446+50
447+00
5/14/99
28-AUG-2013 13:28
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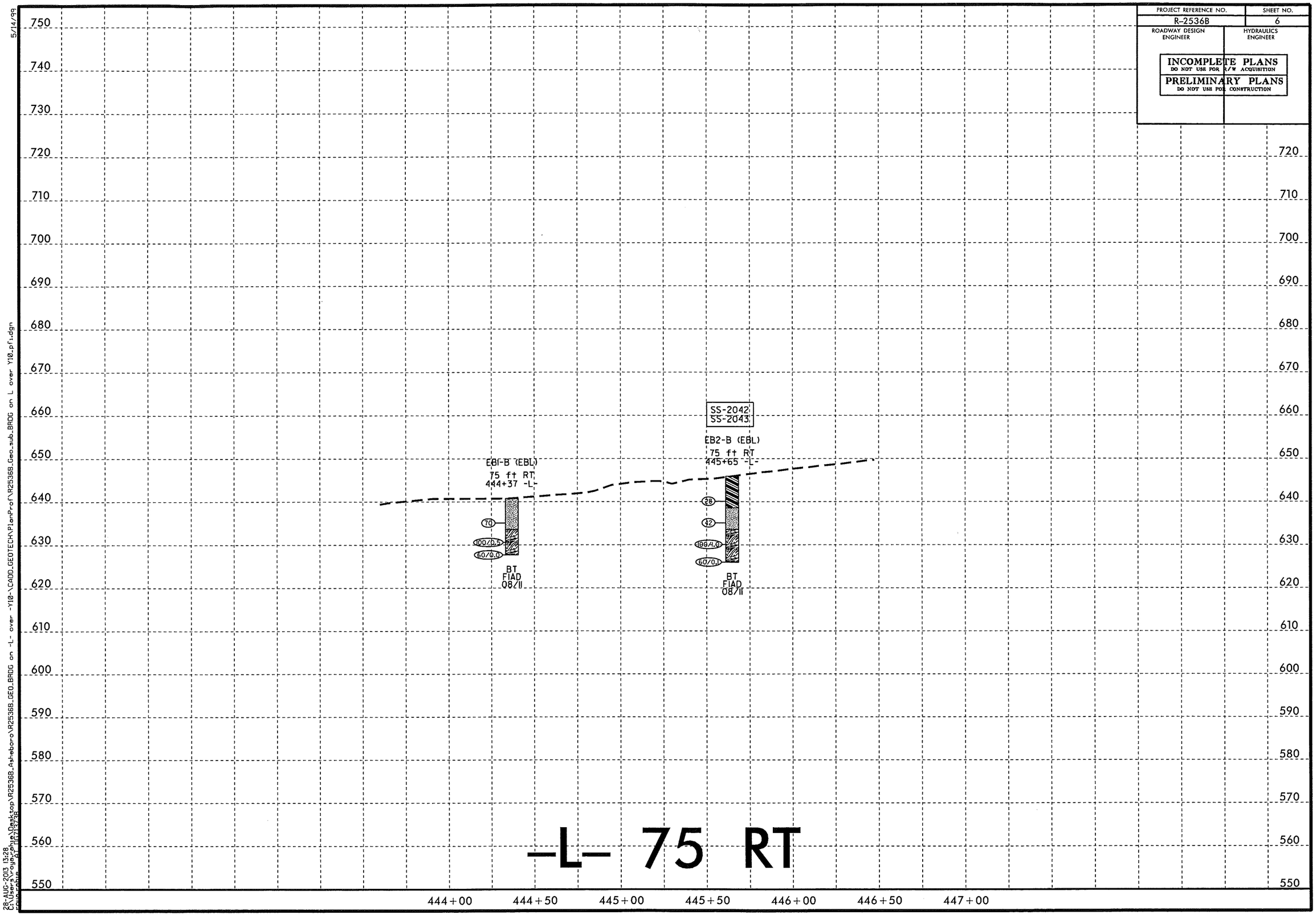

PROJECT REFERENCE NO.
R-2536B
SHEET NO.
6
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
600
590
580
570
560
550
SS-2042
SS-2043
EB2-B (EBL)
75 ft RT
445+65 -L-
EB1-B (EBL)
75 ft RT
444+37 -L-
70
100/0.5
60/0.0
BT
FIAD
08/11
28
42
100/1.0
60/0.1
BT
FIAD
08/11
-L- 75 RT
444+00
444+50
445+00
445+50
446+00
446+50
447+00
5/14/99
28-AUG-2013 13:28
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NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y10-			**GROUND WTR (ft)**
BORING NO. EB1-A (WBL)	**STATION** 444+69	**OFFSET** 77 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 641.6 ft	**TOTAL DEPTH** 8.1 ft	**NORTHING** 695,212	**EASTING** 1,765,248	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H0404 CME-45C 87% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 08/31/11	**COMP. DATE** 08/31/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
645											
										641.6 GROUND SURFACE	0.0
640										**RESIDUAL** ORANGE-BROWN WITH SOME GRAY, SAPROLITIC, SANDY SILT	
	636.9	4.7									
635			5	7	21	28		W			
	634.4	7.2								634.6	7.0
	633.5	8.1	100/0.5			100/0.5				633.5	8.1
			60/0.0			60/0.0				**WEATHERED ROCK** (META-VOLCANIC)	

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 633.5 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-44469L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y10-			**GROUND WTR (ft)**
BORING NO. EB1-B (EBL)	**STATION** 444+37	**OFFSET** 75 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 640.8 ft	**TOTAL DEPTH** 13.1 ft	**NORTHING** 695,064	**EASTING** 1,765,296	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H0404 CME-45C 87% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 08/31/11	**COMP. DATE** 08/31/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
645										
										640.8 GROUND SURFACE 0.0
640										**RESIDUAL** ORANGE-BROWN, SAPROLITIC, SANDY SILT
	636.1	4.7								
635			17	30	40	70		M		
										633.6 7.2
										WEATHERED ROCK (META-VOLCANIC)
	631.1	9.7								
630			65	35/0.0		100/0.5				
	627.7	13.1				60/0.0				627.7 13.1
			60/0.0							

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 627.7 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-44437R

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	TIP R-2536B	COUNTY RANDOLPH	GEOLOGIST Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y10-			GROUND WTR (ft)
BORING NO. EB1-C	STATION 444+56	OFFSET CL	ALIGNMENT -L-
COLLAR ELEV. 641.7 ft	TOTAL DEPTH 40.2 ft	NORTHING 695,139	EASTING 1,765,275
DRILL RIG/HAMMER EFF./DATE F&H9274 CME-45C 85% 10/06/2010		DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic
DRILLER Gower, S.	START DATE 08/31/11	COMP. DATE 09/01/11	SURFACE WATER DEPTH N/A

GROUND WTR (ft): 0 HR. N/A; 24 HR. N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
645											
										641.7 GROUND SURFACE	0.0
640										RESIDUAL LIGHT GRAY, SAPROLITIC, SANDY SILT	
	637.0	4.7	8	13	21	34	SS-2045	D			
635											
	632.0	9.7	19	45	55/0.3	100/0.8				631.5	10.2
630										WEATHERED ROCK (META-VOLCANIC)	
	628.5	13.2	60/0.0			60/0.0				628.5	13.2
625										CRYSTALLINE ROCK (META-VOLCANIC)	
620											
615											
610											
605							RS-8				
										601.5	40.2

Boring Terminated at Elevation 601.5 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-44456

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	TIP R-2536B	COUNTY RANDOLPH	GEOLOGIST Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y10-			GROUND WTR (ft)
BORING NO. EB1-C	STATION 444+56	OFFSET CL	ALIGNMENT -L-
COLLAR ELEV. 641.7 ft	TOTAL DEPTH 40.2 ft	NORTHING 695,139	EASTING 1,765,275
DRILL RIG/HAMMER EFF./DATE F&H9274 CME-45C 85% 10/06/2010		DRILL METHOD SPT Core Boring	HAMMER TYPE Automatic
DRILLER Gower, S.	START DATE 08/31/11	COMP. DATE 09/01/11	SURFACE WATER DEPTH N/A
CORE SIZE NQ2	TOTAL RUN 27.0 ft		

GROUND WTR (ft): 0 HR. N/A; 24 HR. N/A

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
628.5											Begin Coring @ 13.2 ft	
	628.5	13.2	2.0	3:42	(1.9)	(1.4)		(23.8)	(6.1)		628.5 CRYSTALLINE ROCK	13.2
	626.5	15.2		4:50	95%	70%		88%	23%		GRAY, SLIGHT WEATHERING, HARD, CLOSE TO VERY CLOSE FRACTURE SPACING, APHANITIC META-VOLCANIC (UWHARRIE FORM.) SEVERAL HIGH ANGLE AND VERTICAL FRACTURES. IRON OXIDE STAINING ALONG FRACTURES SOME CLAY INFILL ALONG FRACTURES	
625			5.0	2:25 3:43 6:19 3:14 6:59	(4.5) 90%	(1.2) 24%						
	621.5	20.2									RS-8: R1=2, R2=3, R3=10, R4=20, R5=7; Total RMR=42 (Rock Type: D; Class III; Fair Rock)	
620			5.0	3:53 3:42 4:03 4:17 6:02	(4.4) 88%	(1.7) 34%						
	616.5	25.2										
615			5.0	4:09 4:34 6:35 7:50 8:00	(3.8) 76%	(0.4) 8%						
	611.5	30.2										
610			5.0	6:21 6:19 3:13 2:50 6:00	(4.7) 94%	(1.4) 28%						
	606.5	35.2					RS-8					
605			5.0	3:25 9:11 4:25 3:09 7:00	(4.5) 90%	(0.0) 0%						
	601.5	40.2									601.5	40.2

Boring Terminated at Elevation 601.5 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-44456

CORE PHOTOGRAPHS

EB1-C

BOXES 1 TO 3 OF 3: 13.2 - 40.2 FEET

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y10-			**GROUND WTR (ft)**
BORING NO. EB2-A (WBL)	**STATION** 445+94	**OFFSET** 77 ft LT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 651.6 ft	**TOTAL DEPTH** 23.5 ft	**NORTHING** 695,274	**EASTING** 1,765,357	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H0404 CME-45C 87% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 08/31/11	**COMP. DATE** 08/31/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
655											
										651.6 GROUND SURFACE	0.0
650										**RESIDUAL** ORANGE-BROWN, SANDY CLAY	649.4 2.2
	646.9	4.7	50	50/0.2		100/0.7				**WEATHERED ROCK** (META-VOLCANIC)	644.4 7.2
645										**RESIDUAL** ORANGE-BROWN, SAPROLITIC, SANDY SILT	639.4 12.2
	641.9	9.7	17	25	38	63	SS-2044	M			
640										**WEATHERED ROCK** (META-VOLCANIC)	
	636.9	14.7	100/0.5			100/0.5					
635											
	631.9	19.7	100/0.3			100/0.3					
630											
	628.1	23.5	60/0.0			60/0.0					628.1 23.5

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 628.1 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-44594L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y10-			**GROUND WTR (ft)**
BORING NO. EB2-B (EBL)	**STATION** 445+65	**OFFSET** 75 ft RT	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 645.9 ft	**TOTAL DEPTH** 19.9 ft	**NORTHING** 695,128	**EASTING** 1,765,407	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H0404 CME-45C 87% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 08/31/11	**COMP. DATE** 08/31/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
650										
										645.9 GROUND SURFACE 0.0
645										**RESIDUAL** LIGHT ORANGE-BROWN, HIGHLY SILTY SANDY CLAY WITH QUARTZ FRAGMENTS AND TRACE FINE-GRAINED SAND
	641.1	4.8	13	12	16	28	SS-2042	M		
640										638.6 7.3
										LIGHT BROWN, SAPROLITIC, SANDY SILT
	636.1	9.8	10	20	22	42	SS-2043	M		
635										633.6 12.3
										WEATHERED ROCK (META-VOLCANIC)
	631.1	14.8	25	75/0.5		100/1.0				
630										
	626.1	19.8	60/0.1			60/0.1				626.1 19.8 / 626.0 19.9
										CRYSTALLINE ROCK (META-VOLCANIC)

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 626.0 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-44565R

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Milkovits, J. I.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-DUAL BRIDGES ON -L- OVER -Y10-			**GROUND WTR (ft)**
BORING NO. EB2-C	**STATION** 445+82	**OFFSET** CL	**ALIGNMENT** -L-	**0 HR.** Dry
COLLAR ELEV. 648.5 ft	**TOTAL DEPTH** 11.6 ft	**NORTHING** 695,201	**EASTING** 1,765,385	**24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE HFO0066 CME-550 81% 09/02/2009		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Estep, J. E.	**START DATE** 05/26/11	**COMP. DATE** 05/26/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
650										648.5 GROUND SURFACE	0.0
645	645.2	3.3	3	4	6	10	SS-433	M		RESIDUAL YELLOW-TAN STIFF TO V. STIFF MOIST HIGH (PI=45) TO LOW (PI=14) PLASTIC SILTY CLAY & HIGHLY SILTY CLAY (A-7-5)	
640	640.2	8.3	3	5	16	21	SS-434	M			
	636.9	11.6	60/0.0			60/0.0				636.9	11.6

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 636.9 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS L-44582

US 64 Asheboro Southern Bypass - Dual Bridges on -L- over -Y10-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-433	CL	445+82	3.3-4.8	A-7-5(54)	77	45	0.4	2.0	28.2	69.3	100	100	99	-	-	L
SS-434	CL	445+82	8.3-9.8	A-7-5(18)	51	14	2.2	5.7	53.3	38.7	98	97	92	-	-	L
SS-2042	75 RT	445+65	4.8-6.3	A-6(5)	36	15	20.2	14.1	35.2	30.5	76	64	54	-	-	L
SS-2043	75 RT	445+65	9.8-11.3	A-4(6)	36	7	3.3	27.3	55.2	14.3	100	99	80	-	-	L
SS-2044	77 LT	445+94	9.7-11.2	A-4(2)	28	4	5.3	25.3	51.1	18.3	100	98	77	-	-	L
SS-2045	CL	444+66	4.7-6.2	A-4(4)	27	6	1.2	18.5	53.8	26.5	100	99	89	-	-	L

US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -L- OVER -Y10-

ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	BORING NO.	DEPTH INTERVAL (ft)	UNIT WT. lbs/cf	UNCONFINED COMPRESSIVE STRENGTH (ksi)	YOUNG'S MODULUS (Mpsi)	ROCK MASS RATING
RS-8	CL	444+56	EB1-C	34.4-34.8	173.60	1.955	11.33	42

SECTION 8

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34450.1.1 (R-2536B)	1	8

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34450.1.1 (R-2536B) F.A. PROJ. STPNHF-0064(107)

COUNTY RANDOLPH

PROJECT DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS FROM US 220 TO SR 2834 (OLD COX ROAD)

SITE DESCRIPTION BRIDGE ON -Y13- OVER -L- AND -Y10RPD-

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-5	PROFILES
6-7	BORE LOGS
8	SOIL TEST RESULTS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

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NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

B. Smith

S. Gower

DRAWN BY R. Rahie

INVESTIGATED BY C. Youngblood

CHECKED BY M. Lear, PG

SUBMITTED BY B. Deobald, LG

DATE August, 2013

NORTH CAROLINA PROFESSIONAL SEAL 1927 GEOLOGIST MICHAEL B. LEAR

MBL 8/29/13

SEAL

SIGNATURE

amec

AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9800

NC Engineering F-1253 NC Geology C-247

PROJECT: 34450.1.1

ID: R-2536B

PROJECT REFERENCE NO.	SHEET NO.
24450.1.1 (R-2536B)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING # 10	50 MX			51 MN								GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
# 40	30 MX	50 MX	51 MN											
# 200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT				40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX	6 MX		NP	10 MX	10 MN	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT PLASTIC RANGE (PI) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS; ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL	MED. - MEDIUM	VST - VANE SHEAR TEST
BT - BORING TERMINATED	MICA. - MICACEOUS	WEA. - WEATHERED
CL. - CLAY	MOD. - MODERATELY	γ - UNIT WEIGHT
CPT - CONE PENETRATION TEST	NP - NON PLASTIC	γ_d - DRY UNIT WEIGHT
CSE. - COARSE	ORG. - ORGANIC	
DMT - DILATOMETER TEST	PMT - PRESSUREMETER TEST	SAMPLE ABBREVIATIONS
DPT - DYNAMIC PENETRATION TEST	SAP. - SAPROLITIC	S - BULK
e - VOID RATIO	SD. - SAND, SANDY	SS - SPLIT SPOON
F - FINE	SL. - SILT, SILTY	ST - SHELBY TUBE
FOSS. - FOSSILIFEROUS	SLI. - SLIGHTLY	RS - ROCK
FRAC. - FRACTURED, FRACTURES	TCR - TRICONE REFUSAL	RT - RECOMPACTED TRIAXIAL
FRAGS. - FRAGMENTS	w - MOISTURE CONTENT	CBR - CALIFORNIA BEARING RATIO
HI. - HIGHLY	V - VERY	

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE ____" STEEL TEETH
- [ ] TRICONE ____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION. AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

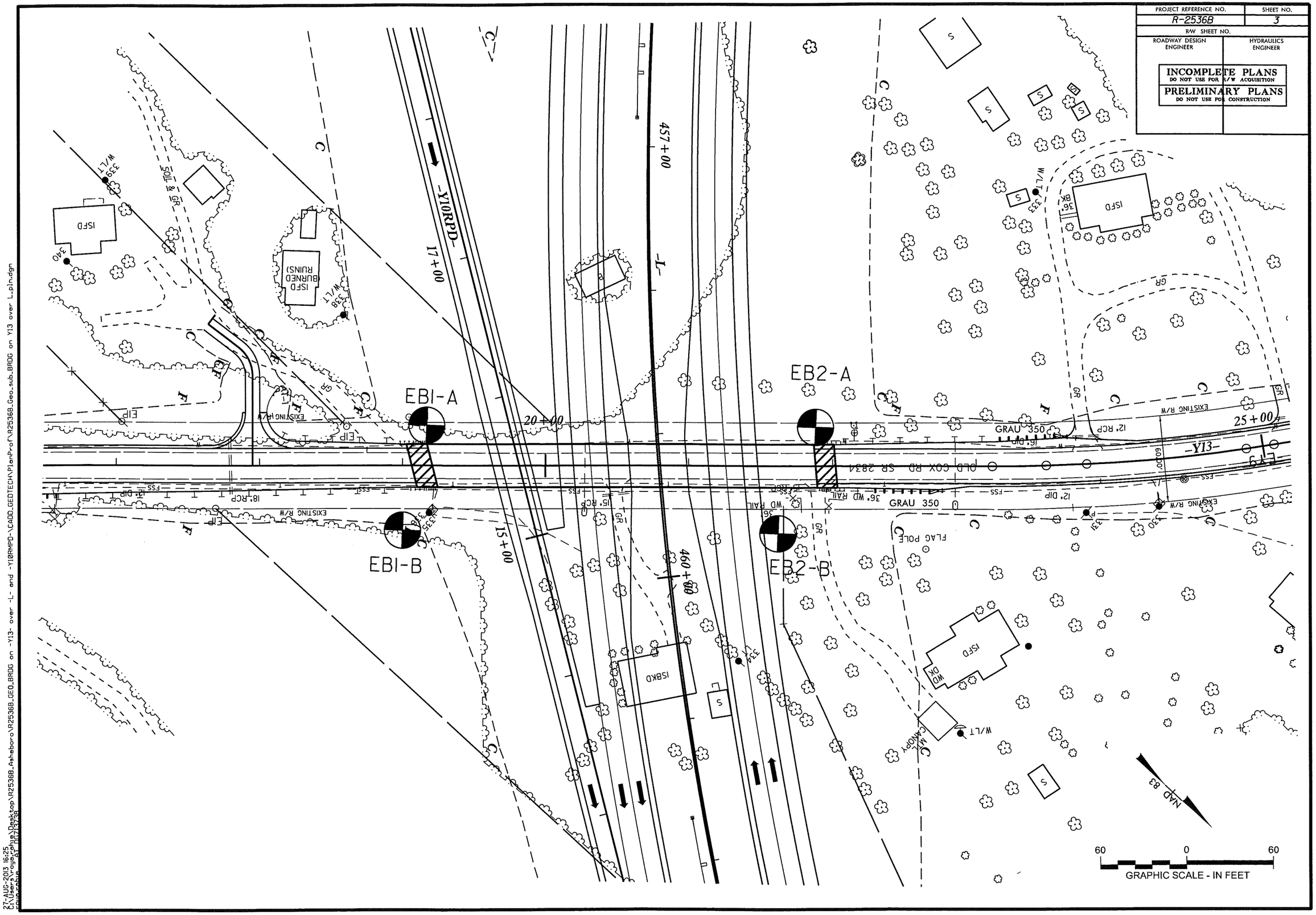
STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: ELEVATIONS DETERMINED FROM NCDOT ELECTRONIC PROJECT DRAWING FILES.

ELEVATION: N/A FT.

NOTES:
FIAD - FILLED IMMEDIATELY AFTER DRILLING



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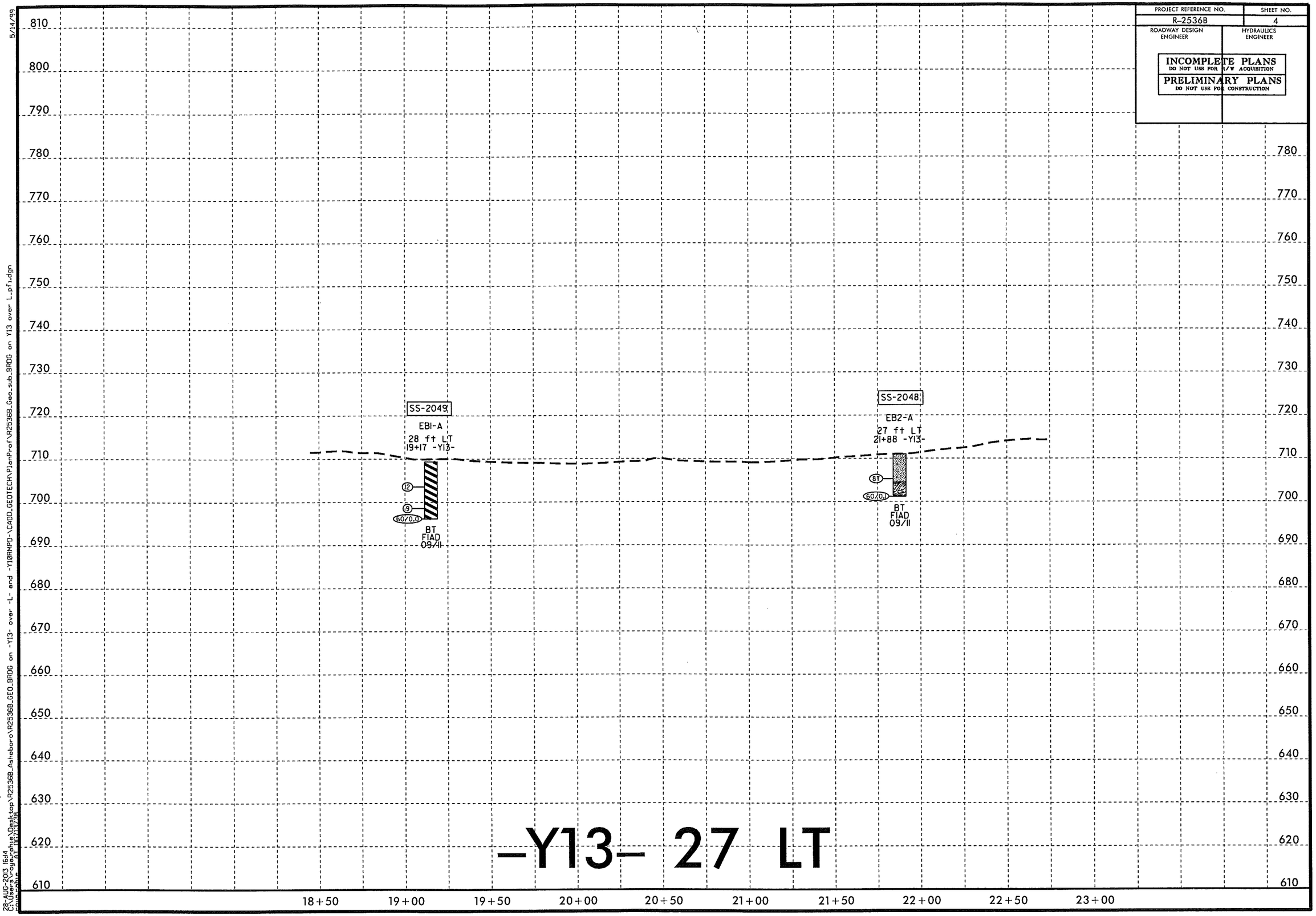
roya.rahie AT DG713738


PROJECT REFERENCE NO.
R-2536B
SHEET NO.
4
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
5/14/99
810
800
790
780
770
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
SS-2049
EB1-A
28 ft LT
19+17 -Y13-
12
9
60/0.0
BT
FIAD
09/11
SS-2048
EB2-A
27 ft LT
21+88 -Y13-
87
60/0.1
BT
FIAD
09/11
-Y13- 27 LT
18+50
19+00
19+50
20+00
20+50
21+00
21+50
22+00
22+50
23+00
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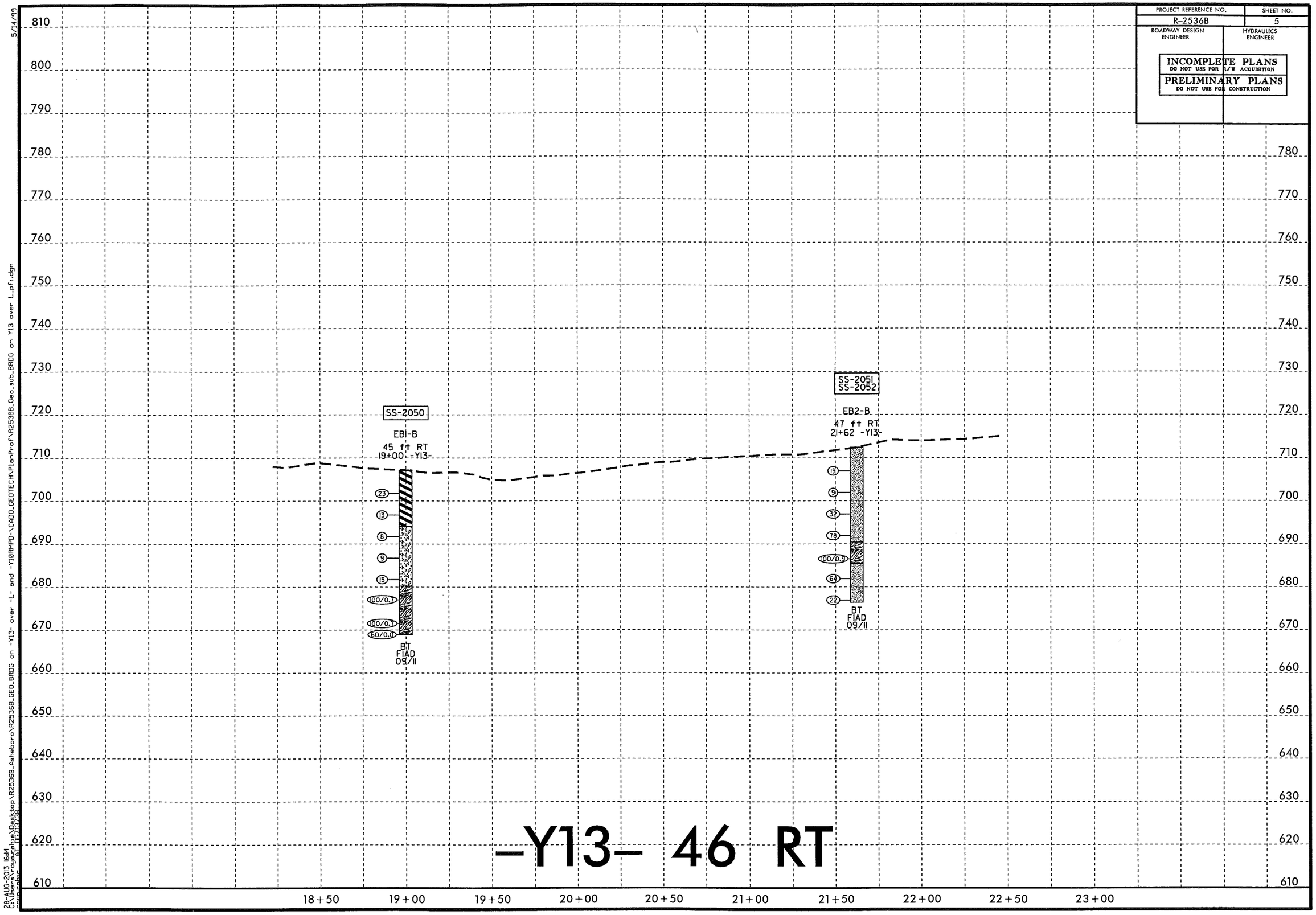
PROJECT REFERENCE NO.
R-2536B
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SS-2050
EB1-B
45 ft RT
19+00 -Y13-
23
13
8
9
15
100/0.7
100/0.7
60/0.0
BT
FIAD
09/11
SS-2051
SS-2052
EB2-B
47 ft RT
21+62 -Y13-
19
9
32
78
100/0.9
64
22
BT
FIAD
09/11
-Y13- 46 RT
810
800
790
780
770
760
750
740
730
720
710
700
690
680
670
660
650
640
630
620
610
18+50
19+00
19+50
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21+00
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22+00
22+50
23+00
5/14/99
28-AUG-2013 16:14
C:\Users\roya.rahie\Desktop\R2536B_Asheboro\R2536B_GEO_BRDG on -Y13- over -L- and -Y10RMPD-\CADD_GEOTECH\PlanProf\R2536B_Geo_sub_BRDG on Y13 over L_pfi.dgn

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y13- OVER -L- and -Y10RPD-			**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 19+17	**OFFSET** 28 ft LT	**ALIGNMENT** -Y13-	**0 HR.** Dry
COLLAR ELEV. 709.4 ft	**TOTAL DEPTH** 13.2 ft	**NORTHING** 695,816	**EASTING** 1,766,573	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H0404 CME-45C 87% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 09/09/11	**COMP. DATE** 09/09/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
710										709.4 GROUND SURFACE	0.0
705	704.6	4.8	9	5	7	12	SS-2049	W		**RESIDUAL** RED, SILTY CLAY	
700	699.6	9.8	4	4	5	9		W			
	696.2	13.2	60/0.0			60/0.0				696.2	13.2

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 696.2 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y13-1917L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y13- OVER -L- and -Y10RPD-			**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 19+00	**OFFSET** 45 ft RT	**ALIGNMENT** -Y13-	**0 HR.** Dry
COLLAR ELEV. 707.1 ft	**TOTAL DEPTH** 38.2 ft	**NORTHING** 695,853	**EASTING** 1,766,638	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE F&H0404 CME-45C 87% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 09/09/11	**COMP. DATE** 09/09/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
710										707.1 GROUND SURFACE 0.0
705	702.7	4.4	5	12	11	23		M		**RESIDUAL** RED TO RED-ORANGE, SILTY CLAY
700	697.7	9.4	3	6	7	13		W		
695	692.7	14.4	3	3	5	8	SS-2050	W		694.1 13.0 RED-BROWN TO RED-ORANGE, AND GRAY, SAPROLITIC CLAYEY SILT
690	687.7	19.4	2	3	6	9		W		
685	682.7	24.4	3	6	9	15		W		680.2 26.9
680	677.7	29.4	38	62/0.2		100/0.7				**WEATHERED ROCK** (META-VOLCANIC)
675	672.7	34.4	19	65	35/0.2	100/0.7				
670	668.9	38.2	60/0.0			60/0.0				668.9 38.2

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 668.9 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y13-1900R

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y13- OVER -L- and -Y10RPD-			**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 21+88	**OFFSET** 27 ft LT	**ALIGNMENT** -Y13-
COLLAR ELEV. 711.0 ft	**TOTAL DEPTH** 9.8 ft	**NORTHING** 696,018	**EASTING** 1,766,392
DRILL RIG/HAMMER EFF./DATE F&H0404 CME-45C 87% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 09/08/11	**COMP. DATE** 09/08/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. Dry; 24 HR. FIAD

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
715									
710									711.0 GROUND SURFACE 0.0 — **RESIDUAL** BROWN TO ORANGE-BROWN, HARD, SANDY SILT WITH FINE-GRAINED SAND, SAPROLITIC
705	706.3	4.7	25	27	60	SS-2048			704.5 6.5 — **WEATHERED ROCK** (META-VOLCANIC)
	701.3	9.7	60/0.1						701.3 9.7 — **CRYSTALLINE ROCK** (META-VOLCANIC) 701.2 9.8

BLOWS PER FOOT (0, 25, 50, 75, 100): 87; 60/0.1

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 701.2 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y13-2188L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Smith, B.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y13- OVER -L- and -Y10RPD-			**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 21+62	**OFFSET** 47 ft RT	**ALIGNMENT** -Y13-
COLLAR ELEV. 712.4 ft	**TOTAL DEPTH** 36.0 ft	**NORTHING** 696,048	**EASTING** 1,766,464
DRILL RIG/HAMMER EFF./DATE F&H0404 CME-45C 87% 10/06/2010		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gower, S.	**START DATE** 09/09/11	**COMP. DATE** 09/09/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. Dry; 24 HR. FIAD

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
715									712.4 GROUND SURFACE 0.0
710	707.9	4.5	4	10	9	SS-2051	M		**RESIDUAL** ORANGE-BROWN, SAPROLITIC HIGHLY CLAYEY, SANDY SILT
705	702.9	9.5	5	4	5		M		
700	697.9	14.5	6	17	15		M		
695	692.9	19.5	9	31	47		M		690.4 22.0 — **WEATHERED ROCK** (META-VOLCANIC)
690	687.9	24.5	15	42	58/0.4				685.4 27.0 — **RESIDUAL** ORANGE-BROWN, SAPROLITIC SANDY SILT
685	682.9	29.5	8	28	36	SS-2052	M		
680	677.9	34.5	14	10	12		W		676.4 36.0

BLOWS PER FOOT (0, 25, 50, 75, 100): 19; 9; 32; 78; 100/0.9; 64; 22

Boring Terminated at Elevation 676.4 ft IN RESIDUAL SANDY SILT

NOTE: ROADWAY BORING DESIGNATION IS Y13-2162R

NCDOT BORE DOUBLE R2563B_GEO_BRDG ON -Y13- OVER -L- AND -Y10RPD- .GINT.GPJ NC_DOT.GDT 8/27/13

US 64 Asheboro Southern Bypass US 220 to SR 2834 (Old Cox Road)-Bridge on -Y13- over -L- and -Y10RPD-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-2048	27 LT	21+88	4.7-6.2	A-4(1)	27	4	6.1	36.7	40.9	16.3	98	96	70	-	-	Y13
SS-2049	28 LT	19+17	4.8-6.3	A-7-5(18)	48	15	1.6	5.7	31.6	61.1	100	99	95	-	-	Y13
SS-2050	45 RT	19+00	14.4-15.9	A-5(11)	45	10	2.6	18.1	50.7	28.5	100	99	86	-	-	Y13
SS-2051	47 RT	21+62	4.5-6.0	A-4(11)	39	10	2.2	9.6	47.5	40.7	100	99	92	-	-	Y13
SS-2052	47 RT	21+62	29.5-31.0	A-4-(6)	33	7	3.9	14.5	47	34.6	100	98	87	-	-	Y13

SECTION 9

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34450.1.1 (R-2536B)	1	21

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34450.1.1 (R-2536B) F.A. PROJ. STPNHF-0064(107)

COUNTY RANDOLPH

PROJECT DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS FROM US 220 TO SR 2834 (OLD COX ROAD)

SITE DESCRIPTION BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-5	PROFILES
6-19	BORE LOGS, CORE REPORTS AND CORE PHOTORAPHS
20	SOIL TEST RESULTS
21	ROCK TEST RESULTS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA , AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (ON-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS, INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, OR THE OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

C. Manning

D. Racey

J. Gilchrist

D. Tignor

DRAWN BY R. Rahie

INVESTIGATED BY C. Youngblood

CHECKED BY M. Lear, PG

SUBMITTED BY B. Deobald, LG

DATE August, 2013

NORTH CAROLINA LICENSED SEAL 1927 GEOLOGIST MICHAEL B. LEAR

MBL 8/29/13

SEAL

SIGNATURE

amec

AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900

NC Engineering F-1253 NC Geology C-247

PROJECT: 34450.1.1

ID: R-2536B

PROJECT REFERENCE NO.	SHEET NO.
24450.1.1 (R-2536B)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING # 10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
# 40	30 MX	50 MX	51 MN											
# 200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT / PLASTIC INDEX	6 MX		NP	40 MX / 10 MX	41 MN / 10 MX	40 MX / 11 MN	41 MN / 11 MN	40 MX / 10 MX	41 MN / 10 MX	40 MX / 11 MN	41 MN / 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS

S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [x] CME-55
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [x] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE ____" STEEL TEETH
- [ ] TRICONE ____" TUNG.-CARB.
- [x] CORE BIT
- [ ] _____

HAMMER TYPE:
- [x] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [x] -N Q
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

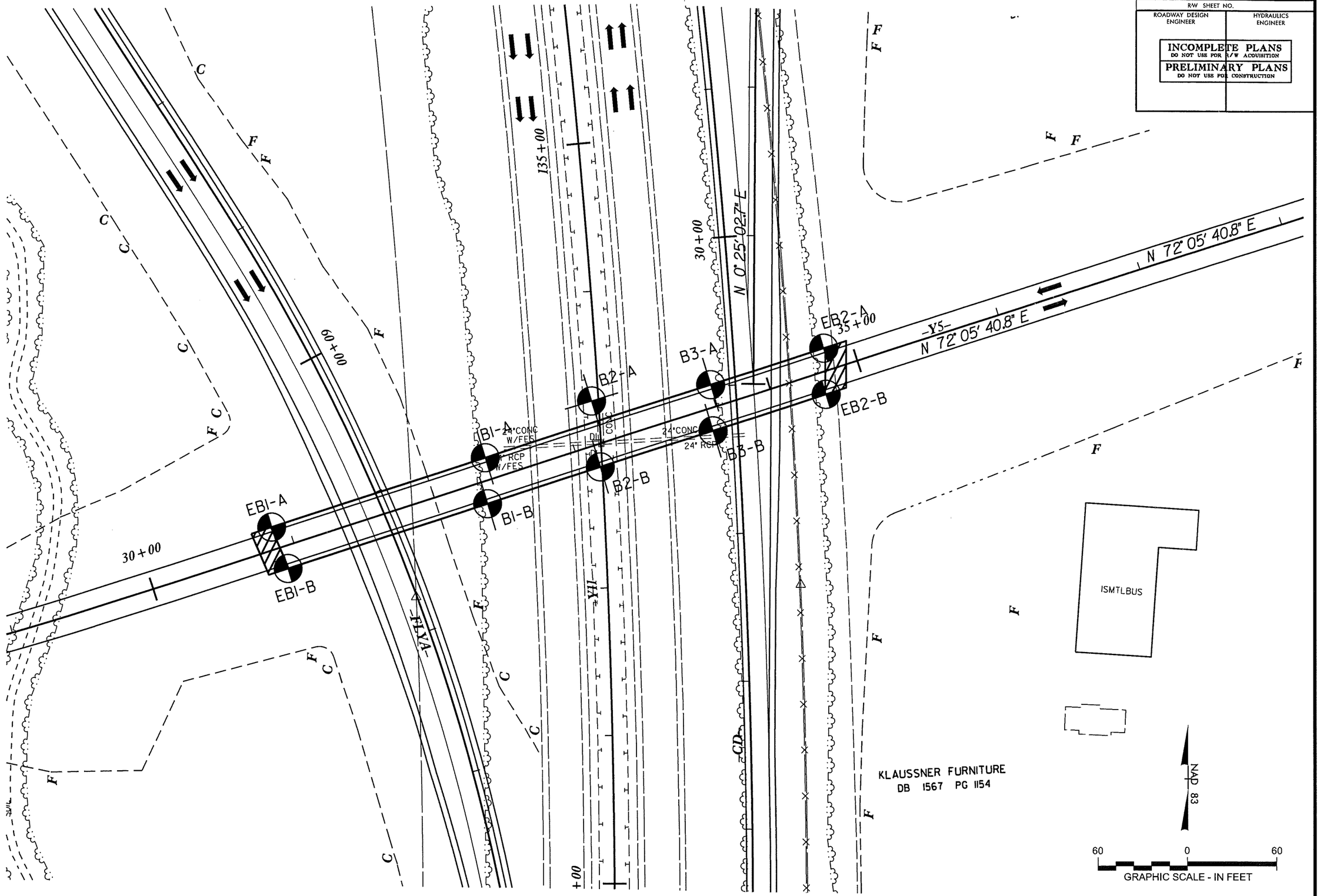
STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: ELEVATIONS DETERMINED FROM NCDOT ELECTRONIC PROJECT DRAWING FILES.

ELEVATION: N/A FT.

NOTES:
CT - CORING TERMINATED



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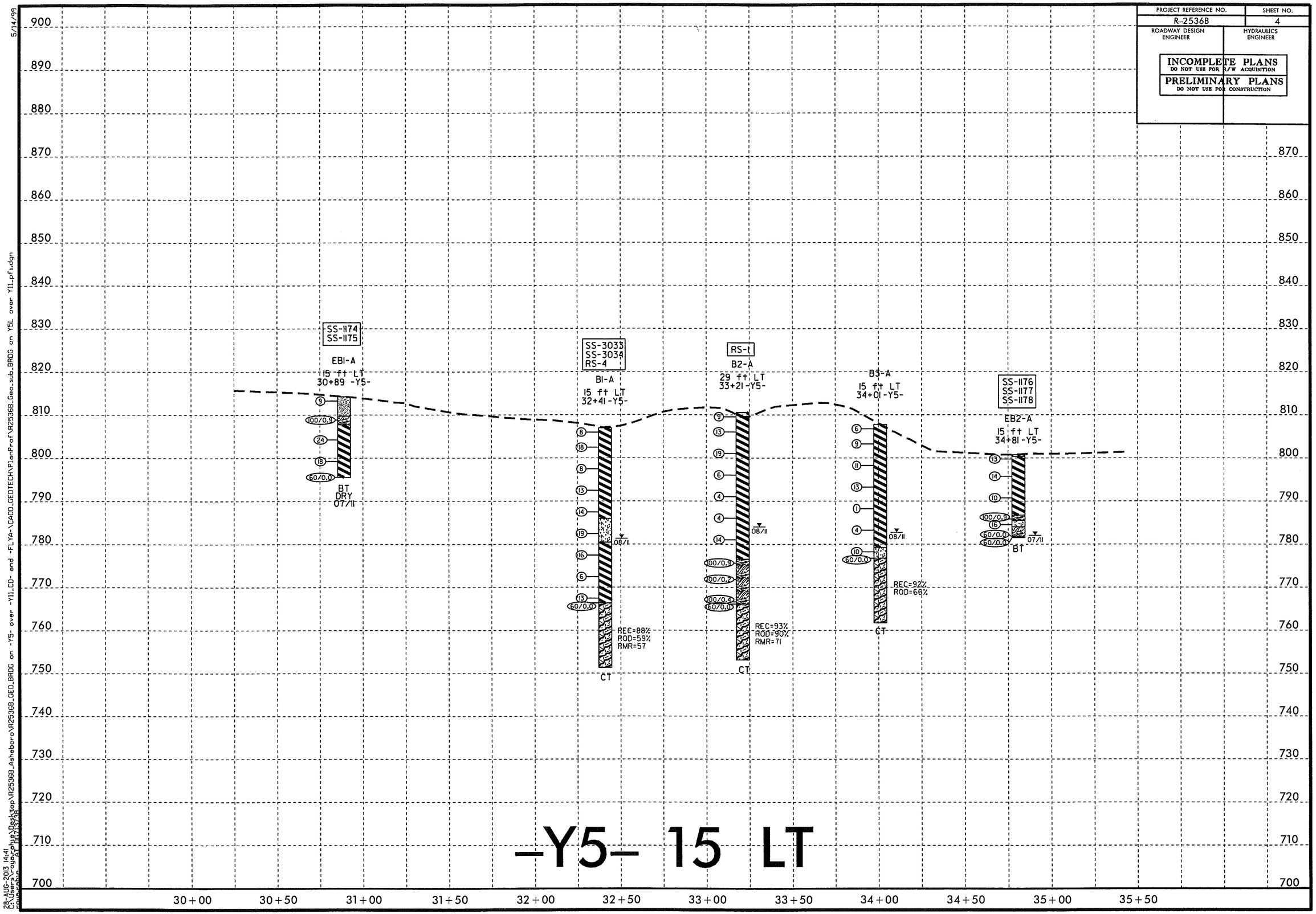

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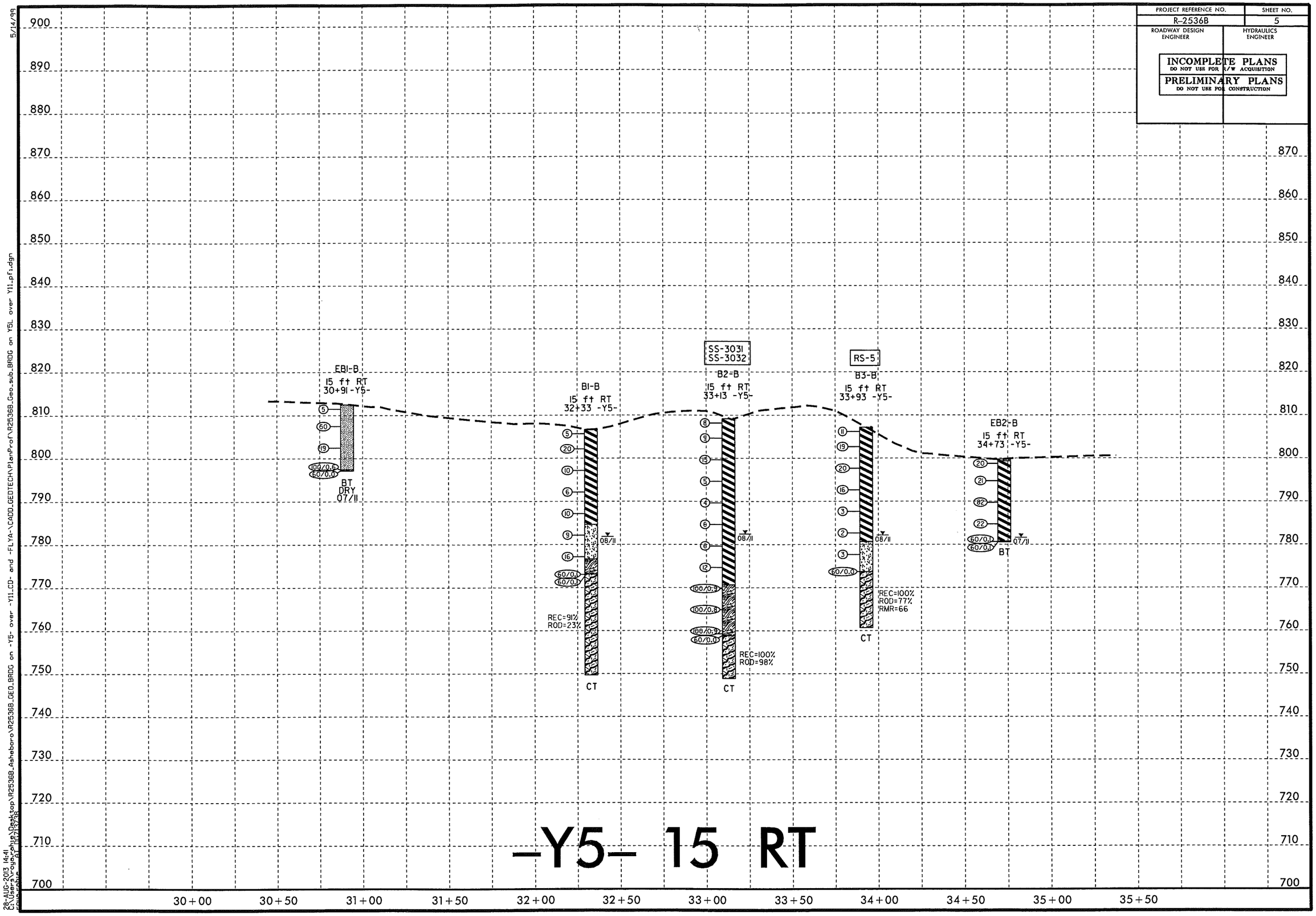
roya.rahie AT DG713738

PROJECT REFERENCE NO.	SHEET NO.
R-2536B	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 30+89	**OFFSET** 15 ft LT	**ALIGNMENT** -Y5-
COLLAR ELEV. 814.3 ft	**TOTAL DEPTH** 18.7 ft	**NORTHING** 690,983	**EASTING** 1,752,546
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/21/11	**COMP. DATE** 07/21/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft)	
0 HR.	Dry
24 HR.	Dry

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
815										
	814.3	0.0								814.3 GROUND SURFACE 0.0
			2	4	5	9	SS-1174	D		**RESIDUAL** WHITE-TAN STIFF DRY SANDY SILT (A-4) W/ TRACE ROOTS & SOME ROCK FRAGS.
810	810.3	4.0								809.8 4.5
			9	29	71/0.4	100/0.9		D		**WEATHERED ROCK** (META-VOLCANIC)
										807.8 6.5
										RESIDUAL TAN, WHITE & RED V. STIFF DRY MED. (PI=16) PLASTIC SANDY HIGHLY SILTY CLAY (A-7-6) W/ SOME ROCK FRAGS.
805	805.3	9.0								
			11	9	15	24	SS-1175	D		
800	800.3	14.0								
			9	8	10	18		D		
	795.6	18.7	60/0.0			60/0.0				795.6 18.7

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 795.6 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y5-3089L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 30+91	**OFFSET** 15 ft RT	**ALIGNMENT** -Y5-
COLLAR ELEV. 812.5 ft	**TOTAL DEPTH** 15.3 ft	**NORTHING** 690,955	**EASTING** 1,752,557
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/21/11	**COMP. DATE** 07/21/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft)	
0 HR.	Dry
24 HR.	Dry

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
815										
	812.5	0.0								812.5 GROUND SURFACE 0.0
			1	2	3	5		D		**RESIDUAL** WHITE, TAN & RED MED. STIFF TO HARD DRY SANDY SILT (A-4) W/ SOME ROCK FRAGS. & CLAY
810	808.5	4.0								
			11	20	30	50		D		
805	803.5	9.0								
			9	9	10	19		D		
800	798.5	14.0								
	797.2	15.3	7	13	87/0.1	100/0.6				797.5 15.0
			60/0.0			60/0.0				797.2 15.3 **WEATHERED ROCK** TAN, GRAY & RED META-VOLCANIC

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 797.2 ft ON CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS Y5-3091R

NCDOT BORE DOUBLE R2536B_GEO_BRDG ON -Y5- OVER -Y11_CD- AND -FLYA-_GINT.GPJ NC_DOT.GDT 10/23/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 32+41	**OFFSET** 15 ft LT	**ALIGNMENT** -Y5- — **0 HR.** N/A
COLLAR ELEV. 807.0 ft	**TOTAL DEPTH** 55.6 ft	**NORTHING** 691,030	**EASTING** 1,752,690 — **24 HR.** 25.6
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/08/11	**COMP. DATE** 08/09/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
810											
	807.0	0.0								807.0 GROUND SURFACE	0.0
805			2	3	5	8	SS-3033	M		**RESIDUAL** RED, TAN, AND BROWN, MEDIUM STIFF TO STIFF, HIGHLY PLASTIC SILTY CLAY	
	803.5	3.5	6	9	9	18		M			
800											
	798.5	8.5	2	4	4	8		M			
795											
	793.5	13.5	2	5	8	13		M			
790											
	788.5	18.5	3	6	8	14		M		786.0	21.0
785										BROWN, VERY STIFF, HIGHLY SANDY CLAYEY SILT	
	783.5	23.5	4	8	11	19	SS-3034	M		780.5	26.5
780										BROWN, MEDIUM STIFF, SILTY CLAY	
	778.5	28.5	3	7	9	16		M			
775											
	773.5	33.5	2	3	3	6		W			
770											
	768.5	38.5	3	5	8	13		W			
	766.4	40.6	60/0.0			60/0.0				766.4	40.6
765										CRYSTALLINE ROCK (META-VOLCANIC)	
760											
755							RS-4				
										751.4	55.6
										Boring Terminated at Elevation 751.4 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS Y5-3241L	

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

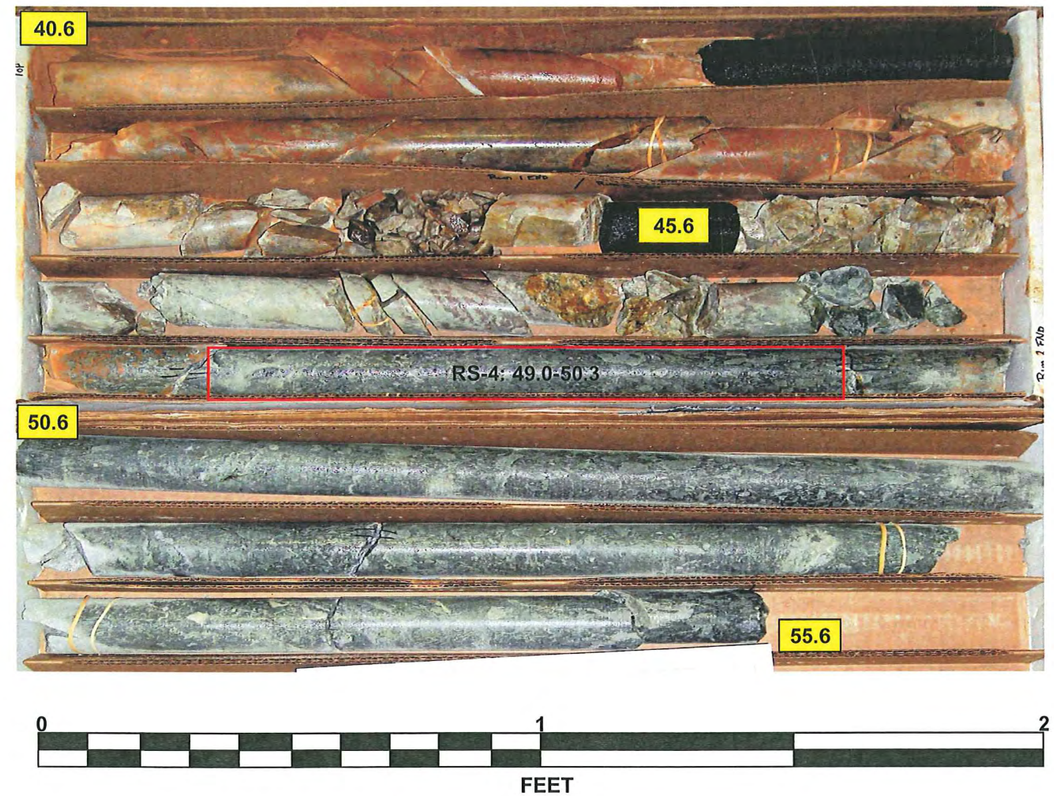
WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 32+41	**OFFSET** 15 ft LT	**ALIGNMENT** -Y5- — **0 HR.** N/A
COLLAR ELEV. 807.0 ft	**TOTAL DEPTH** 55.6 ft	**NORTHING** 691,030	**EASTING** 1,752,690 — **24 HR.** 25.6
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/08/11	**COMP. DATE** 08/09/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 15.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
766.4											Begin Coring @ 40.6 ft	
765	766.4	40.6	5.0	3:05 3:26 3:55 4:46 6:06	(4.5) 90%	(1.7) 34%		(13.2) 88%	(8.9) 59%		**CRYSTALLINE ROCK** GREEN-GRAY, FRESH TO SLIGHTLY WEATHERED, HARD TO MODERATELY HARD, WIDE TO VERY CLOSELY FRACTURED, EPICLASTIC META-VOLCANIC	
	761.4	45.6										
760			5.0	4:41 5:32 5:15 2:49 2:46	(3.7) 74%	(2.2) 44%	RS-4				RS-4: R1=7, R2=13, R3=10, R4=20, R5=7; Total RMR=57 (Rock Type: D; Class III; Fair Rock)	
	756.4	50.6										
755			5.0	2:02 1:54 2:01 2:09 2:20	(5.0) 100%	(4.9) 98%						
	751.4	55.6									751.4	55.6
											Boring Terminated at Elevation 751.4 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS Y5-3241L	

CORE PHOTOGRAPHS

B1-A

BOXES 1 & 2 OF 2: 40.6 - 55.6 FEET



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 32+33	**OFFSET** 15 ft RT	**ALIGNMENT** -Y5- — **0 HR.** N/A
COLLAR ELEV. 806.7 ft	**TOTAL DEPTH** 57.0 ft	**NORTHING** 690,999	**EASTING** 1,752,692 — **24 HR.** 24.8
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/10/11	**COMP. DATE** 08/10/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
810										
	806.7	0.0								806.7 — GROUND SURFACE — 0.0
805			1	2	3	5		M		**RESIDUAL** RED AND TAN, MEDIUM STIFF, SILTY CLAY
	803.2	3.5	6	9	11	20		M		
800										
	798.2	8.5	3	4	6	10		M		
795										
	793.2	13.5	3	3	3	6		M		
790										
	788.2	18.5	5	6	4	10		M		
785										784.7 — 22.0
	783.2	23.5	5	5	4	9		M		LIGHT BROWN, STIFF, CLAYEY SILT WITH TRACE ROCK FRAGMENTS
780										
	778.2	28.5	1	4	12	16		M		776.7 — 30.0
										WEATHERED ROCK (META-VOLCANIC)
775										
	773.2	33.5								773.2 — 33.5
	772.8	33.9	60/0.1				60/0.1			772.7 — 34.0
			60/0.1				60/0.1			CRYSTALLINE ROCK GRAY (META-VOLCANIC)
770										
765										
760										
755										
750										749.7 — 57.0
										Boring Terminated at Elevation 749.7 ft IN CRYSTALLINE ROCK (META-VOLCANIC)
										NOTE: ROADWAY BORING DESIGNATION IS Y5-3233R

NCDOT BORE SINGLE R2536B_GEO_BRDG ON -Y5- OVER -Y11_CD- AND -FLYA-_GINT.GPJ NC_DOT.GDT 8/28/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B1-B	**STATION** 32+33	**OFFSET** 15 ft RT	**ALIGNMENT** -Y5- — **0 HR.** N/A
COLLAR ELEV. 806.7 ft	**TOTAL DEPTH** 57.0 ft	**NORTHING** 690,999	**EASTING** 1,752,692 — **24 HR.** 24.8
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/10/11	**COMP. DATE** 08/10/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 23.0 ft		

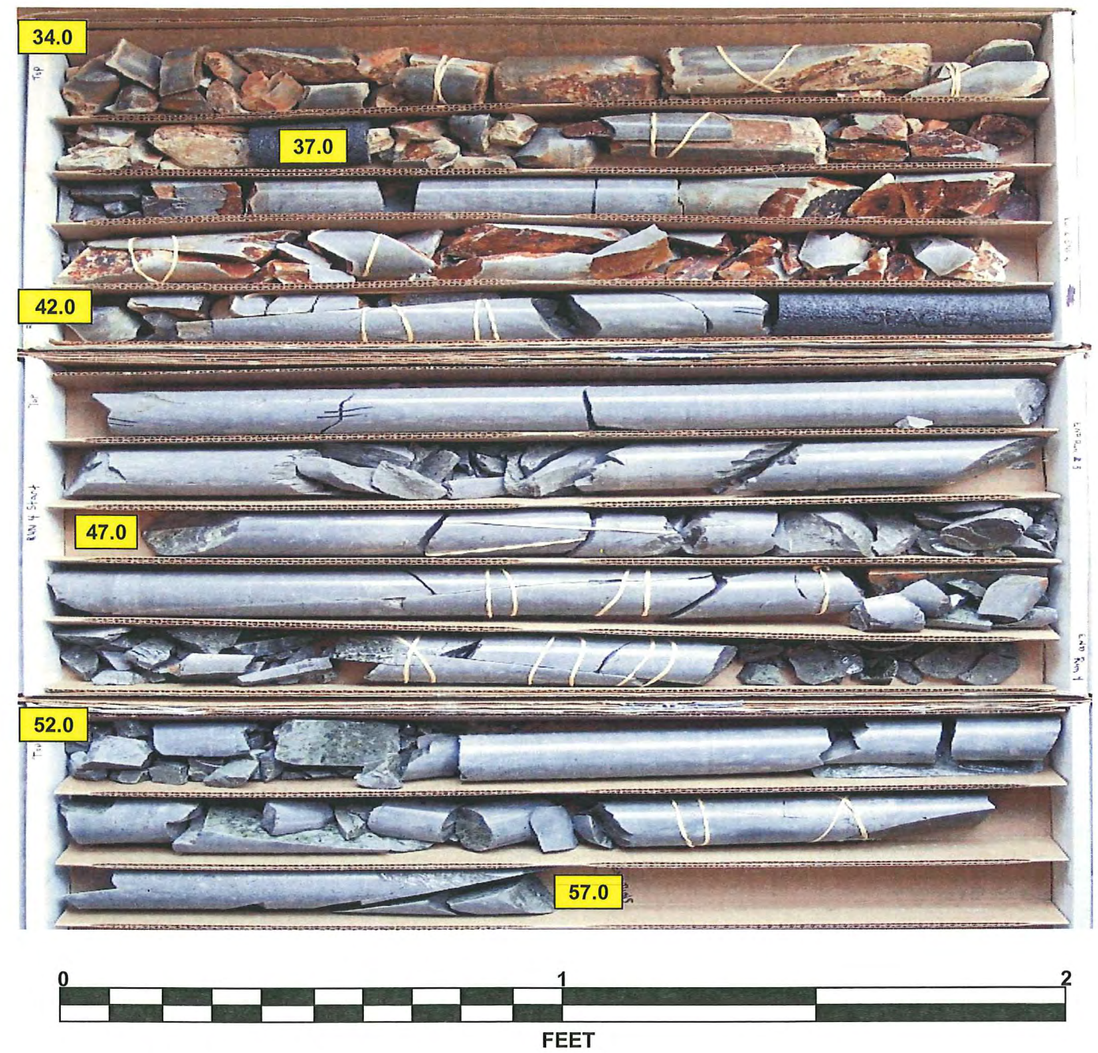
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS (ELEV. (ft) / DEPTH (ft))
772.7											Begin Coring @ 34.0 ft
	772.7	34.0	3.0	2:49 2:48 3:52	(2.4) 80%	(0.0) 0%		(21.0) 91%	(5.4) 23%		772.7 — 34.0 **CRYSTALLINE ROCK** GREENISH-GRAY, SLIGHTLY TO MODERATELY WEATHERED HARD CLOSELY FRACTURED, EPICLASTIC, META-VOLCANIC WITH NEW VERTICAL JOINTS
770	769.7	37.0									
			5.0	5:42 8:49 7:17 4:00 4:20	(4.6) 92%	(0.3) 6%					
765	764.7	42.0									
			5.0	6:13 4:26 4:43 4:24 9:37	(4.7) 94%	(2.7) 54%					
760	759.7	47.0									
			5.0	7:48 8:03 5:02 4:21 6:22	(4.8) 96%	(1.3) 26%					
755	754.7	52.0									
			5.0	4:54 4:46 5:09 4:51 5:25	(4.5) 90%	(1.1) 22%					
750	749.7	57.0									749.7 — 57.0
											Boring Terminated at Elevation 749.7 ft IN CRYSTALLINE ROCK (META-VOLCANIC)
											NOTE: ROADWAY BORING DESIGNATION IS Y5-3233R

NCDOT CORE SINGLE R2536B_GEO_BRDG ON -Y5- OVER -Y11_CD- AND -FLYA-_GINT.GPJ NC_DOT.GDT 8/28/13

CORE PHOTOGRAPHS

B1-B

BOXES 1 TO 3 OF 3: 34.0 - 57.0 FEET



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B2-A	**STATION** 33+21	**OFFSET** 29 ft LT	**ALIGNMENT** -Y5- — **0 HR.** N/A
COLLAR ELEV. 810.6 ft	**TOTAL DEPTH** 57.4 ft	**NORTHING** 691,068	**EASTING** 1,752,762 — **24 HR.** 26.5
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/02/11	**COMP. DATE** 08/02/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
815											
810	810.6	0.0	2	4	5	9 13		M		810.6 GROUND SURFACE	0.0
										RESIDUAL RED AND TAN, MEDIUM STIFF, SILTY CLAY	
805	807.1	3.5	4	5	8	19		M			
800	802.1	8.5	6	8	11	6		M			
795	797.1	13.5	2	2	4	4		M			
790	792.1	18.5	1	1	3	4		M			
785	787.1	23.5	2	1	3	14		M			
780	782.1	28.5	3	5	9			M			
775	777.1	33.5	14	40	60/0.4	100/0.9		M		776.6 WEATHERED ROCK (META-VOLCANIC)	34.0
770	772.1	38.5	100/0.2			100/0.2					
765	767.1 766.2	43.5 44.4	100/0.4 60/0.0			100/0.4 60/0.0	RS-1			766.2 CRYSTALLINE ROCK (META-VOLCANIC)	44.4
760											
755										753.2	57.4
										Boring Terminated at Elevation 753.2 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS Y5-3321L	

NCDOT BORE SINGLE R2536B_GEO_BRDG ON -Y5- OVER -Y11_CD- AND -FLYA-_GINT.GPJ NC_DOT.GDT 8/28/13

SHEET 11 OF 21

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B2-A	**STATION** 33+21	**OFFSET** 29 ft LT	**ALIGNMENT** -Y5- — **0 HR.** N/A
COLLAR ELEV. 810.6 ft	**TOTAL DEPTH** 57.4 ft	**NORTHING** 691,068	**EASTING** 1,752,762 — **24 HR.** 26.5
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/02/11	**COMP. DATE** 08/02/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 13.0 ft		

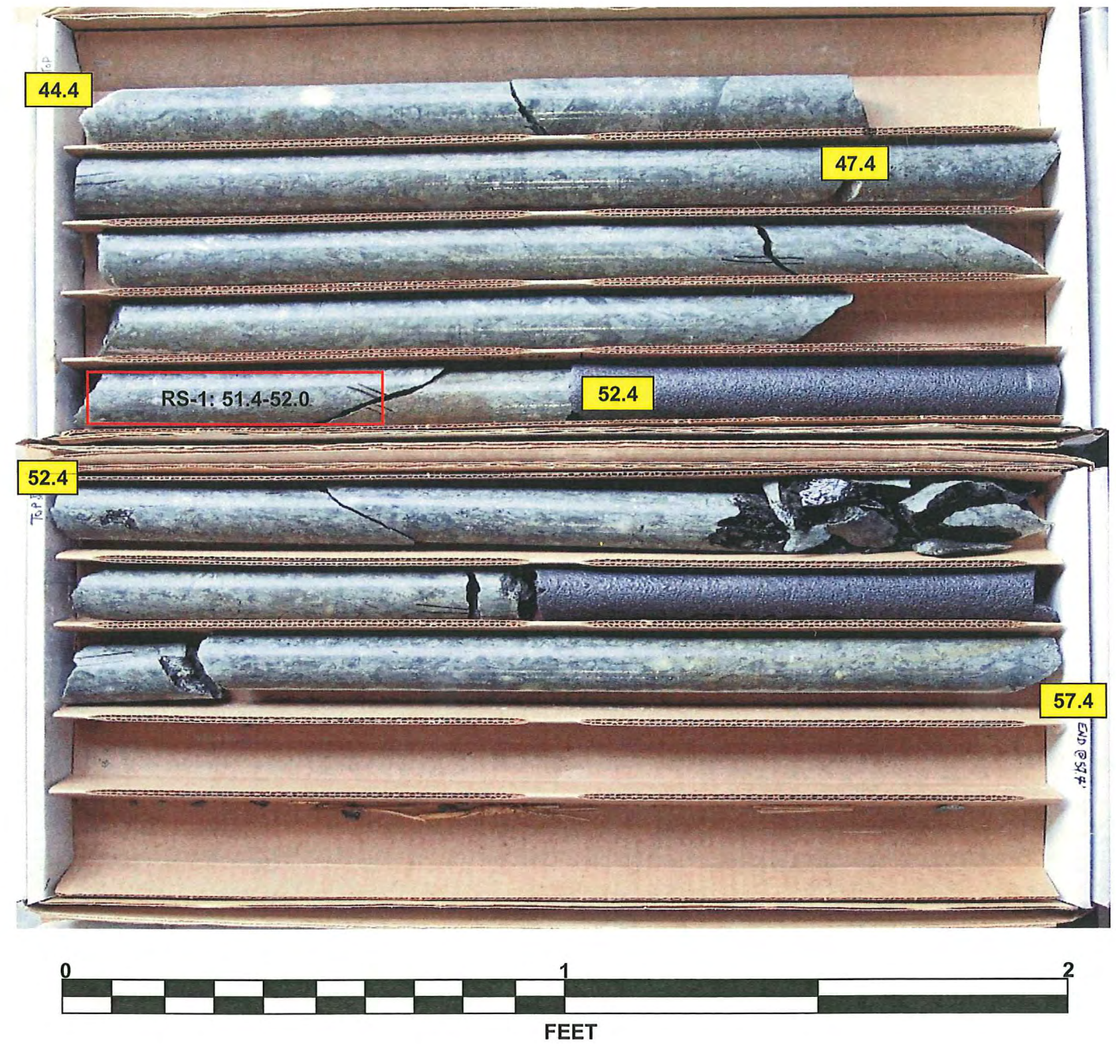
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
766.2											Begin Coring @ 44.4 ft	
765	766.2	44.4	3.0	2:26 3:23 2:28	(3.0) 100%	(3.0) 100%		(12.1) 93%	(11.7) 90%		766.2 CRYSTALLINE ROCK GRAY-GREEN, FRESH, HARD, MODERATELY CLOSE TO VERY CLOSELY FRACTURED, EPICLASTIC, META-VOLCANIC RS-1: R1=7, R2=17, R3=20, R4=20, R5=7; Total RMR=71 (Rock Type: D; Class II; Good Rock)	44.4
	763.2	47.4	5.0	2:38 2:46 3:02 2:51 2:50	(4.5) 90%	(4.5) 90%						
760	758.2	52.4	5.0	2:47 2:48 3:07 3:04 3:01	(4.6) 92%	(4.2) 84%	RS-1					
755	753.2	57.4									753.2	57.4
											Boring Terminated at Elevation 753.2 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS Y5-3321L	

NCDOT CORE SINGLE R2536B_GEO_BRDG ON -Y5- OVER -Y11_CD- AND -FLYA-_GINT.GPJ NC_DOT.GDT 8/28/13

CORE PHOTOGRAPHS

B2-A

BOXES 1 & 2 OF 2: 44.4 - 57.4 FEET



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 33+13	**OFFSET** 15 ft RT	**ALIGNMENT** -Y5- — **0 HR.** N/A
COLLAR ELEV. 809.2 ft	**TOTAL DEPTH** 60.3 ft	**NORTHING** 691,023	**EASTING** 1,752,768 — **24 HR.** 26.7
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/01/11	**COMP. DATE** 08/01/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
810											
	809.2	0.0								809.2 GROUND SURFACE	0.0
			1	3	5	8	SS-3031	M		**RESIDUAL** RED AND TAN, MEDIUM STIFF, SILTY CLAY AND HIGHLY SILTY CLAY	
805	805.7	3.5	3	4	5	9		M			
800	800.7	8.5	3	6	9	15		M			
795	795.7	13.5	2	2	3	5		M			
790	790.7	18.5	1	1	3	4	SS-3032	M			
785	785.7	23.5	1	2	4	6		M			
780	780.7	28.5	1	2	4	6		M			
775	775.7	33.5	1	4	8	12		M			
770	770.7	38.5	5	95/0.4		100/0.9				770.7 WEATHERED ROCK (META-VOLCANIC)	38.5
765	765.7	43.5	24	76/0.3		100/0.8					
760	760.7	48.5	60	19	81/0.4						
	758.9	50.3	60/0.0			100/0.9 60/0.0				758.9 CRYSTALLINE ROCK (META-VOLCANIC)	50.3
755											
750										748.9 Boring Terminated at Elevation 748.9 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS Y5-3313R	60.3

NCDOT BORE SINGLE R2536B_GEO_BRDG ON -Y5- OVER -Y11_CD- AND -FLYA- GINT.GPJ NC_DOT.GDT 8/28/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B2-B	**STATION** 33+13	**OFFSET** 15 ft RT	**ALIGNMENT** -Y5- — **0 HR.** N/A
COLLAR ELEV. 809.2 ft	**TOTAL DEPTH** 60.3 ft	**NORTHING** 691,023	**EASTING** 1,752,768 — **24 HR.** 26.7
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/01/11	**COMP. DATE** 08/01/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 10.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
758.9											Begin Coring @ 50.3 ft	
	758.9	50.3	5.0	3:12 2:22 2:02 2:19 2:22	(5.0) 100%	(4.8) 96%		(10.0) 100%	(9.8) 98%		758.9 **CRYSTALLINE ROCK** GRAY-GREEN, FRESH, HARD, WIDELY FRACTURED, EPICLASTIC, META-VOLCANIC	50.3
755	753.9	55.3	5.0	2:18 2:24 2:22 2:10 3:09	(5.0) 100%	(5.0) 100%						
750	748.9	60.3									748.9 Boring Terminated at Elevation 748.9 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS Y5-3313R	60.3

NCDOT CORE SINGLE R2536B_GEO_BRDG ON -Y5- OVER -Y11_CD- AND -FLYA- GINT.GPJ NC_DOT.GDT 8/28/13

CORE PHOTOGRAPHS

B2-B

BOXES 1 & 2 OF 2: 50.3 - 60.3 FEET

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B3-A	**STATION** 34+01	**OFFSET** 15 ft LT	**ALIGNMENT** -Y5-
COLLAR ELEV. 807.8 ft	**TOTAL DEPTH** 46.0 ft	**NORTHING** 691,079	**EASTING** 1,752,842
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/11/11	**COMP. DATE** 08/11/11	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. N/A; 24 HR. 25.0

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
810											
	807.8	0.0								807.8 GROUND SURFACE	0.0
805			2	3	3	6		M		**RESIDUAL** RED AND TAN, MEDIUM STIFF TO STIFF, SILTY CLAY	
	804.3	3.5									
800			3	4	5	9		M			
	799.3	8.5									
795			3	4	7	11		M			
	794.3	13.5									
790			5	6	7	13		M			
	789.3	18.5									
785			WOH	1	0	1		M			
	784.3	23.5									
780			1	0	4	4		M			
	779.3	28.5								779.3	28.5
	776.8	31.0	1	2	8	10		M		RED AND TAN, CLAYEY SILT WITH TRACE ROCK FRAGMENTS	
775			60/0.0			60/0.0				776.8 CRYSTALLINE ROCK (DIABASE DIKE)	31.0
770											
765										761.8	46.0
										Boring Terminated at Elevation 761.8 ft IN CRYSTALLINE ROCK (DIABASE DIKE) NOTE: ROADWAY BORING DESIGNATION IS Y5-3401L	

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B3-A	**STATION** 34+01	**OFFSET** 15 ft LT	**ALIGNMENT** -Y5-
COLLAR ELEV. 807.8 ft	**TOTAL DEPTH** 46.0 ft	**NORTHING** 691,079	**EASTING** 1,752,842
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/11/11	**COMP. DATE** 08/11/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 15.0 ft		

GROUND WTR (ft): 0 HR. N/A; 24 HR. 25.0

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
776.8											Begin Coring @ 31.0 ft	
775	776.8	31.0	5.0	2:55 2:32 2:51 3:23 3:26	(4.4) 88%	(1.5) 30%		(13.8) 92%	(9.9) 66%		**CRYSTALLINE ROCK** GRAY, VERY SLIGHT TO SLIGHTLY WEATHERED, MODERATELY HARD, MODERATELY CLOSE TO VERY CLOSE FRACTURE SPACING, MAFIC DIABASE DIKE WITH SOIL SEAMS	
	771.8	36.0										
770			5.0	2:54 2:44 2:54 2:51 3:05	(5.0) 100%	(4.2) 84%						
	766.8	41.0										
765			5.0	2:55 2:46 3:00 3:05 3:07	(4.4) 88%	(4.2) 84%						
	761.8	46.0									761.8	46.0
											Boring Terminated at Elevation 761.8 ft IN CRYSTALLINE ROCK (DIABASE DIKE) NOTE: ROADWAY BORING DESIGNATION IS Y5-3401L	

CORE PHOTOGRAPHS

B3-A

BOXES 1 & 2 OF 2: 31.0 - 46.0 FEET

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 33+93	**OFFSET** 15 ft RT	**ALIGNMENT** -Y5- — **0 HR.** N/A
COLLAR ELEV. 807.2 ft	**TOTAL DEPTH** 46.5 ft	**NORTHING** 691,048	**EASTING** 1,752,844 — **24 HR.** 25.0
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/11/11	**COMP. DATE** 08/11/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
810											
	807.2	0.0								807.2 GROUND SURFACE	0.0
805			2	4	7	11		M		RESIDUAL RED AND TAN, STIFF TO VERY STIFF, SILTY CLAY	
	803.7	3.5	6	9	10	19		M			
800											
	798.7	8.5	8	9	11	20		M			
795											
	793.7	13.5	4	6	10	16		M			
790											
	788.7	18.5	1	1	2	3		M			
785											
	783.7	23.5	0	1	1	2		M			
780										780.7	26.5
	778.7	28.5	1	1	2	3		M		BROWN, SOFT, CLAYEY SILT	
775										773.7	33.5
	773.7	33.5	60/0.0			60/0.0				CRYSTALLINE ROCK (DIABASE DIKE)	
770											
765							RS-5				
										760.7	46.5
										Boring Terminated at Elevation 760.7 ft IN CRYSTALLINE ROCK (DIABASE DIKE) NOTE: ROADWAY BORING DESIGNATION IS Y5-3393R	

NCDOT BORE SINGLE R2536B_GEO_BRDG ON -Y5- OVER -Y11_CD- AND -FLYA- GINT.GPJ NC_DOT.GDT 8/28/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. B3-B	**STATION** 33+93	**OFFSET** 15 ft RT	**ALIGNMENT** -Y5- — **0 HR.** N/A
COLLAR ELEV. 807.2 ft	**TOTAL DEPTH** 46.5 ft	**NORTHING** 691,048	**EASTING** 1,752,844 — **24 HR.** 25.0
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 08/11/11	**COMP. DATE** 08/11/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 13.0 ft		

ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS ELEV. (ft)	DEPTH (ft)
773.7											Begin Coring @ 33.5 ft	
	773.7	33.5	3.0	3:13 2:42 2:48	(3.0) 100%	(2.3) 77%		(13.0) 100%	(10.0) 77%		CRYSTALLINE ROCK GRAY TO BLACK, VERY SLIGHT TO SLIGHTLY WEATHERED, HARD TO MODERATELY HARD, MODERATELY CLOSE TO CLOSELY FRACTURED, MAFIC DIABASE DIKE RS-5: R1=12, R2=17, R3=10, R4=20, R5=7; Total RMR=66 (Rock Type: D; Class II; Good Rock)	
770	770.7	36.5	5.0	2:46 2:06 2:19 2:26 2:12	(5.0) 100%	(3.6) 72%						
765	765.7	41.5	5.0	2:29 1:47 1:55 2:19 2:35	(5.0) 100%	(4.1) 82%	RS-5					
	760.7	46.5									760.7	46.5
											Boring Terminated at Elevation 760.7 ft IN CRYSTALLINE ROCK (DIABASE DIKE) NOTE: ROADWAY BORING DESIGNATION IS Y5-3393R	

NCDOT CORE SINGLE R2536B_GEO_BRDG ON -Y5- OVER -Y11_CD- AND -FLYA- GINT.GPJ NC_DOT.GDT 8/28/13

CORE PHOTOGRAPHS

B3-B

BOXES 1 & 2 OF 2: 33.5 - 46.5 FEET

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 34+81	**OFFSET** 15 ft LT	**ALIGNMENT** -Y5- / **0 HR.** Dry
COLLAR ELEV. 800.8 ft	**TOTAL DEPTH** 19.2 ft	**NORTHING** 691,104	**EASTING** 1,752,919 / **24 HR.** 18.7
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/22/11	**COMP. DATE** 07/22/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
805										
	800.8	0.0	3	6	7	13				800.8 / 0.0 GROUND SURFACE
800										800.4 / 0.4 **ARTIFICIAL FILL** V. LOOSE GRAVEL (PARKING LOT)
	796.8	4.0	4	7	7	14	SS-1176	M		**RESIDUAL** RED & TAN STIFF MOIST HIGH (PI=44, 29) PLASTIC SILTY CLAY & HIGHLY SILTY CLAY (A-7-5)
795								M		
	791.8	9.0	2	3	7	10	SS-1177	M		
790										
	786.8	14.0	25	75/0.4						786.8 / 14.0
	785.6	15.2	9	8	8	100/0.9				785.6 / 15.2 **WEATHERED ROCK** (META-VOLCANIC)
785						16	SS-1178	W		784.1 / 16.7 **RESIDUAL** TAN & BRN V. STIFF WET HIGHLY CLAYEY SILT (A-5) W/ SOME ROCK FRAGS. & SAND
	781.8	19.0	60/0.0			60/0.0				781.8 / 19.0
	781.6	19.2	60/0.0							781.6 / 19.2 **WEATHERED ROCK** (META-VOLCANIC)
										CRYSTALLINE ROCK GRAY META-VOLCANIC
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 781.6 ft IN CRYSTALLINE ROCK (META-VOLCANIC)
										NOTE: ROADWAY BORING DESIGNATION IS Y5-3481L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-			**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 34+73	**OFFSET** 15 ft RT	**ALIGNMENT** -Y5- / **0 HR.** Dry
COLLAR ELEV. 799.8 ft	**TOTAL DEPTH** 19.2 ft	**NORTHING** 691,073	**EASTING** 1,752,920 / **24 HR.** 18.1
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/25/11	**COMP. DATE** 07/25/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
800										
	799.8	0.0	3	8	12	20		D		799.8 / 0.0 GROUND SURFACE
										799.4 / 0.4 **ARTIFICIAL FILL** GRAVEL PARKING LOT (A-1-B)
795	795.8	4.0	10	10	11	21		M		**RESIDUAL** TAN & RED V. STIFF TO HARD DRY TO WET SILTY CLAY (A-7) W/ TRACE WR FRAGS. @ 9.0 & TRACE F. SAND & WR FRAGS. @ 14.0 Driller indicates harder drilling from 6.5'-8.5'
790	790.8	9.0	2	56	26	82		M		
785	785.8	14.0	5	11	11	22		W		
	780.8	19.0	60/0.1			60/0.1				780.8 / 19.0
	780.7	19.1	60/0.1							780.6 / 19.2 **CRYSTALLINE ROCK** GRAY META-VOLCANIC
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 780.6 ft IN CRYSTALLINE ROCK (META-VOLCANIC)
										NOTE: ROADWAY BORING DESIGNATION IS Y5-3473R

US 64 Asheboro Southern Bypass - Bridge on -Y5- Over -Y11/CD- and -FLYA-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-1174	15 LT	30+89	0.0-1.5	A-4(0)	25	2	14.7	8.2	51.0	26.1	62	55	49	-	-	Y5
SS-1175	15 LT	30+89	9.0-10.5	A-7-6(12)	42	16	14.5	14.1	41.3	30.2	100	91	75	-	-	Y5
SS-1176	15 LT	34+81	0.4-1.5	A-7-5(49)	77	44	2.8	6.4	26.4	64.3	100	98	93	-	-	Y5
SS-1177	15 LT	34+81	9.0-10.5	A-7-5(33)	73	29	3.8	11.7	30.3	54.3	100	99	87	-	-	Y5
SS-1178	15 LT	34+81	15.2-16.7	A-5(0)	44	3	26.3	26.1	29.4	18.1	83	69	44	-	-	Y5
SS-3031	15 RT	33+13	0.0-1.5	A-7-6(21)	50	22	7.3	9.8	42.2	40.7	100	95	86	-	-	Y5
SS-3032	15 RT	33+13	18.5-20.0	A-7-5(16)	68	11	3.7	22.2	49.7	24.4	100	99	81	-	-	Y5
SS-3033	15 LT	32+41	0.0-1.5	A-7-6(26)	51	28	6.1	4.6	38.8	50.5	95	91	86	-	-	Y5
SS-3034	15 LT	32+41	23.5-25.0	A-5(3)	49	7	19.2	34.5	30.2	16.1	100	91	54	-	-	Y5

US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y5- OVER -Y11/CD- AND -FLYA-

ROCK TEST RESULTS

SAMPLE NO.	OFFSET	STATION	BORING NO.	DEPTH INTERVAL (ft)	UNIT WT. lbs/cf	UNCONFINED COMPRESSIVE STRENGTH (ksi)	YOUNG'S MODULUS (Mpsi)	ROCK MASS RATING
RS-1	29' LT	33+21	B2-A	51.4-52.0	184.10	10.47	14.38	71
RS-4	15' LT	32+41	B1-A	49.0-50.3	180.90	9.23	2.25	57
RS-5	15' RT	33+93	B3-B	42.1-43.7	184.80	16.37	13.86	66

SECTION 10

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34450.1.1 (R-2536B)	1	11

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34450.1.1 (R-2536B) F.A. PROJ. STPNHF-0064(107)

COUNTY RANDOLPH

PROJECT DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS FROM US 220 TO SR 2834 (OLD COX ROAD)

SITE DESCRIPTION BRIDGE ON -FLYA- OVER -YI1-

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-5	PROFILES
6-10	BORE LOGS, CORE REPORTS AND CORE PHOTORAPHS
11	SOIL TEST RESULTS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA , AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS, INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, OR THE OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THE PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

C. Manning

D. Racey

D. Tignor

J. Gilchrist

DRAWN BY R. Rahie

INVESTIGATED BY C. Youngblood

CHECKED BY M. Lear, PG

SUBMITTED BY B. Deobald, LG

DATE August, 2013

NORTH CAROLINA LICENSED SEAL 1927 GEOLOGIST MICHAEL B. LEAR

MBL 8/29/13

SEAL

SIGNATURE

amec

AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900

NC Engineering F-1253 NC Geology C-247

PROJECT: 34450.1.1

ID: R-2536B

PROJECT REFERENCE NO.	SHEET NO.
24450.1.1 (R-2536B)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (TONS/FT^2)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL	MED. - MEDIUM	VST - VANE SHEAR TEST
BT - BORING TERMINATED	MICA. - MICACEOUS	WEA. - WEATHERED
CL. - CLAY	MOD. - MODERATELY	γ - UNIT WEIGHT
CPT - CONE PENETRATION TEST	NP - NON PLASTIC	γ_d - DRY UNIT WEIGHT
CSE. - COARSE	ORG. - ORGANIC	
DMT - DILATOMETER TEST	PMT - PRESSUREMETER TEST	SAMPLE ABBREVIATIONS
DPT - DYNAMIC PENETRATION TEST	SAP. - SAPROLITIC	S - BULK
e - VOID RATIO	SD. - SAND, SANDY	SS - SPLIT SPOON
F - FINE	SL. - SILT, SILTY	ST - SHELBY TUBE
FOSS. - FOSSILIFEROUS	SLI. - SLIGHTLY	RS - ROCK
FRAC. - FRACTURED, FRACTURES	TCR - TRICONE REFUSAL	RT - RECOMPACTED TRIAXIAL
FRAGS. - FRAGMENTS	w - MOISTURE CONTENT	CBR - CALIFORNIA BEARING RATIO
HI. - HIGHLY	V - VERY	

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [ ] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [X] CME-55
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [X] TRICONE 3" STEEL TEETH
- [ ] TRICONE ___" TUNG.-CARB.
- [X] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [X] -N Q
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

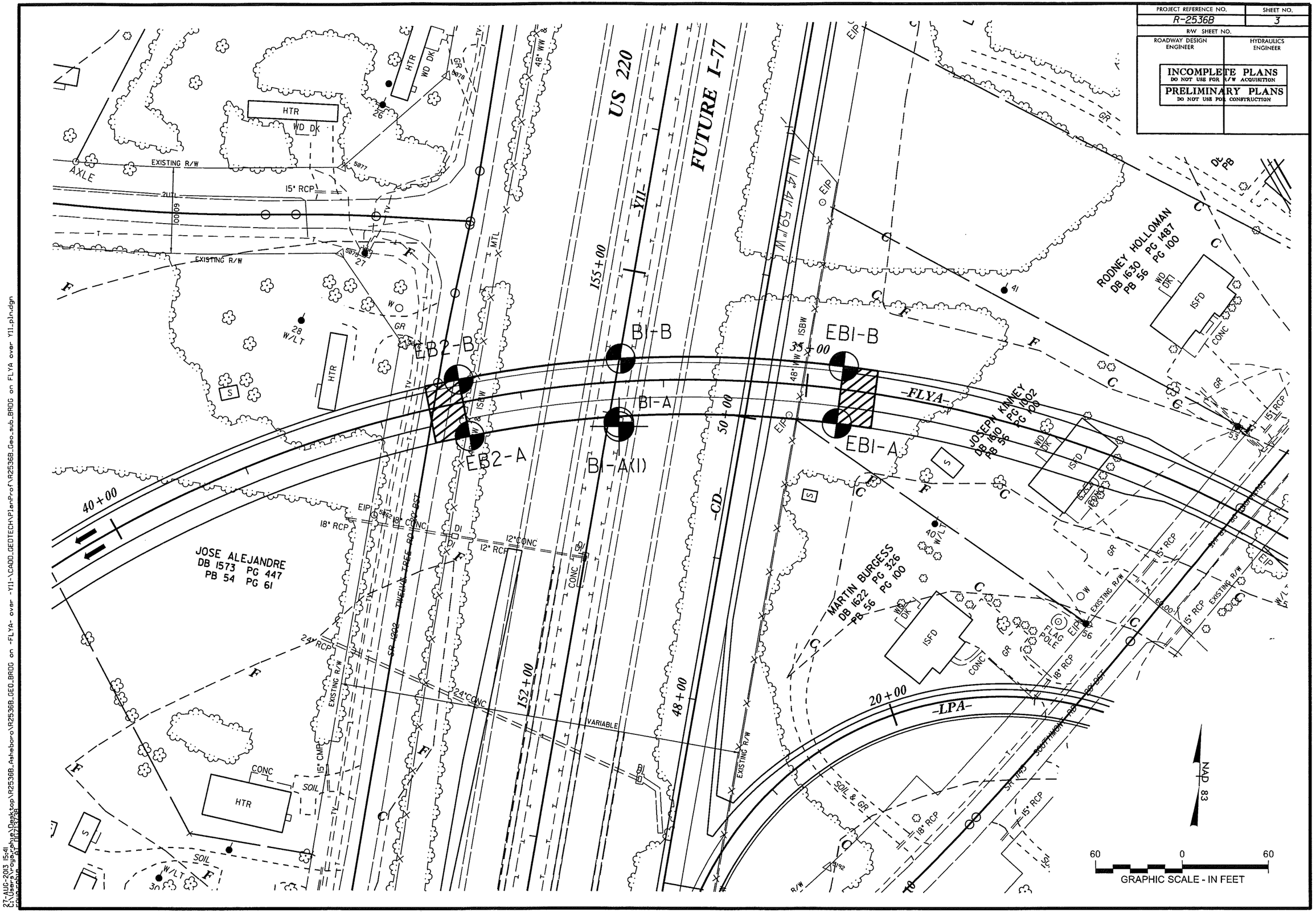
TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: ELEVATIONS DETERMINED FROM NCDOT ELECTRONIC PROJECT DRAWING FILES.

ELEVATION: N/A FT.

NOTES:
CT - CORING TERMINATED

REVISED 09/23/09



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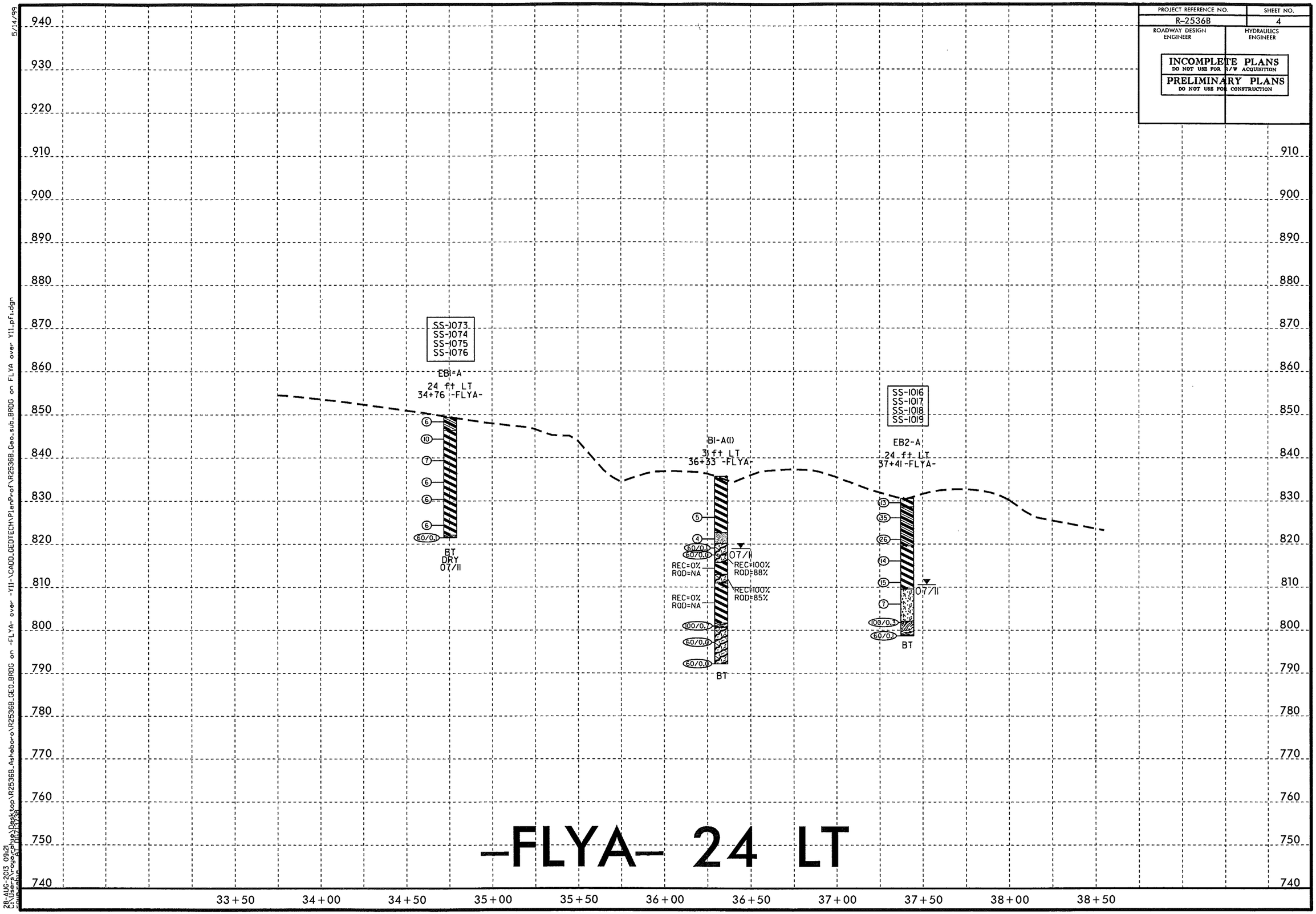
roya.rahie AT DG713738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R-2536B
SHEET NO.
4
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
5/14/99
940
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
SS-1073
SS-1074
SS-1075
SS-1076
EB1-A
24 ft LT
34+76 -FLYA-
BT
DRY
07/11
B1-A(1)
31 ft LT
36+33 -FLYA-
REC=0%
RQD=NA
REC=100%
RQD=88%
REC=100%
RQD=85%
07/11
BT
SS-1016
SS-1017
SS-1018
SS-1019
EB2-A
24 ft LT
37+41 -FLYA-
07/11
BT
-FLYA- 24 LT
33+50
34+00
34+50
35+00
35+50
36+00
36+50
37+00
37+50
38+00
38+50
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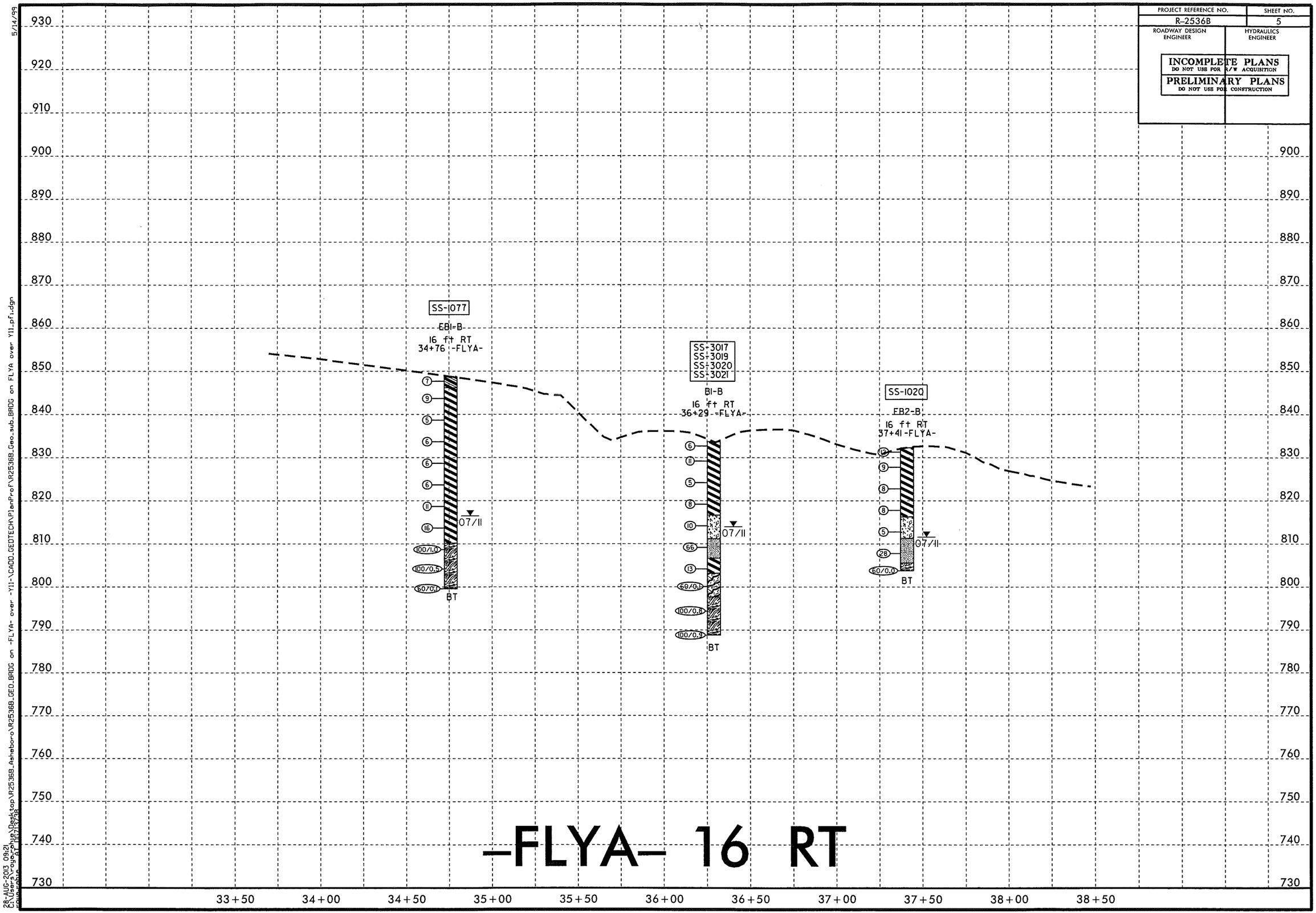
PROJECT REFERENCE NO.	SHEET NO.
R-2536B	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 34+76	**OFFSET** 24 ft LT	**ALIGNMENT** -FLYA- / **0 HR.** Dry
COLLAR ELEV. 849.4 ft	**TOTAL DEPTH** 27.9 ft	**NORTHING** 693,154	**EASTING** 1,752,494 / **24 HR.** Dry
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/11/11	**COMP. DATE** 07/11/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
850	849.4	0.0								849.4 GROUND SURFACE 0.0
			2	2	4	6	SS-1073	M		**RESIDUAL** RED & TAN MED. STIFF MOIST LOW (PI=13) PLASTIC HIGHLY SILTY SANDY CLAY (A-6) W/ TRACE QTZ. FRAGS. & ROOTS 846.4 3.0
845	845.4	4.0	5	5	5	10	SS-1074	M		RED, TAN, WHITE & TAN-BRN STIFF TO MED. STIFF MOIST MED. (PI=16) TO LOW (PI=11) PLASTIC HIGHLY SILTY CLAY (A-7-5) (W/ SOME SAND 18.0-27.3)
840	840.4	9.0	5	4	3	7	SS-1075	M		
835	835.4	14.0	2	3	3	6		M		
830	831.4	18.0	3	3	3	6	SS-1076	M		
825	825.4	24.0	2	2	4	6		M		
	821.6	27.8	60/0.1			60/0.1				822.1 27.3; 821.6 27.8; 821.5 27.9 **WEATHERED ROCK** (META-VOLCANIC) **CRYSTALLINE ROCK** (META-VOLCANIC) Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 821.5 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS FLYA-3476L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 34+76	**OFFSET** 16 ft RT	**ALIGNMENT** -FLYA- / **0 HR.** Dry
COLLAR ELEV. 848.7 ft	**TOTAL DEPTH** 49.1 ft	**NORTHING** 693,192	**EASTING** 1,752,482 / **24 HR.** 32.2
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.W.	**START DATE** 07/11/11	**COMP. DATE** 07/11/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
850	848.7	0.0								848.7 GROUND SURFACE 0.0
			3	3	4	7		M		**RESIDUAL** RED & TAN MED. STIFF MOIST SANDY CLAY (A-6) 846.2 2.5
845	844.7	4.0	4	4	5	9		M		RED, TAN, WHITE, MAROON & TAN-BRN MED. STIFF TO V. STIFF MOIST SILTY CLAY & LOW (PI=14) PLASTIC HIGHLY SILTY CLAY (A-7-5)
840	839.7	9.0	3	2	3	5	SS-1077	M		
835	834.7	14.0	3	3	3	6		M		
830	829.7	19.0	2	3	3	6		M		
825	824.7	24.0	3	3	3	6		M		
820	819.7	29.0	2	4	7	11		M		
815	814.7	34.0	5	6	10	16		M		
810	809.7	39.0	44	56/0.5		100/1.0				810.2 38.5 **WEATHERED ROCK** (META-VOLCANIC)
805	804.7	44.0	100/0.5			100/0.5				
800	799.7	49.0	60/0.1			60/0.1				799.7 49.0; 799.6 49.1 **CRYSTALLINE ROCK** (META-VOLCANIC) Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 799.6 ft IN CRYSTALLINE ROCK (META-VOLCANIC) NOTE: ROADWAY BORING DESIGNATION IS FLYA-3476R

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B1-A(1)	**STATION** 36+33	**OFFSET** 31 ft LT	**ALIGNMENT** -FLYA- — **0 HR.** N/A
COLLAR ELEV. 835.7 ft	**TOTAL DEPTH** 43.5 ft	**NORTHING** 693,089	**EASTING** 1,752,357 — **24 HR.** 16.7
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/20/11	**COMP. DATE** 07/21/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION — ELEV. (ft)	DEPTH (ft)
840											
										835.7 GROUND SURFACE	0.0
835										RESIDUAL ORANGE AND WHITE, SILTY CLAY (A-7-5)	
830											
	827.2	8.5	3	2	3	5		M			
825											
	822.2	13.5	3	2	2	4		M		822.7	13.0
820										ORANGE AND WHITE, SANDY SILT (A-4)	
	819.2	16.5	60/0.1			60/0.1				820.2	15.5
	817.5	18.2	60/0.0			60/0.0				CRYSTALLINE ROCK (FELSITE)	
815										817.5	18.2
										815.8	19.9
										RESIDUAL TAN, SILTY CLAY (A-7-5)	
810										813.0	22.7
										CRYSTALLINE ROCK (FELSITE)	
										811.0	24.7
805										RESIDUAL TAN, SILTY CLAY (A-7-5)	
	802.2	33.5	4	46	54/0.2	100/0.7				801.7	34.0
800										800.7 WEATHERED ROCK (FELSITE)	35.0
	797.2	38.5	60/0.0			60/0.0				CRYSTALLINE ROCK (FELSITE)	
795											
	792.2	43.5	60/0.0			60/0.0				792.2	43.5
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 792.2 ft IN CRYSTALLINE ROCK (FELSITE) NOTE: ROADWAY BORING DESIGNATION IS FLYA-3633L31	

NCDOT BORE SINGLE R2536B_GEO_BRDG ON -FLYA- OVER -Y11- GINT.GPJ NC_DOT.GDT 8/28/13

SHEET 7 OF 11

NCDOT GEOTECHNICAL ENGINEERING UNIT
CORE BORING REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B1-A(1)	**STATION** 36+33	**OFFSET** 31 ft LT	**ALIGNMENT** -FLYA- — **0 HR.** N/A
COLLAR ELEV. 835.7 ft	**TOTAL DEPTH** 43.5 ft	**NORTHING** 693,089	**EASTING** 1,752,357 — **24 HR.** 16.7
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** SPT Core Boring	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/20/11	**COMP. DATE** 07/21/11	**SURFACE WATER DEPTH** N/A
CORE SIZE NQ	**TOTAL RUN** 13.0 ft		

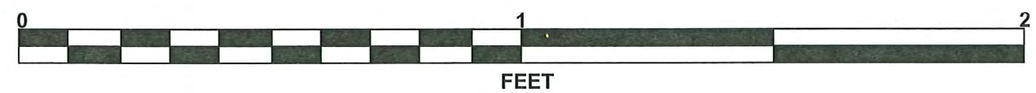
ELEV (ft)	RUN ELEV (ft)	DEPTH (ft)	RUN (ft)	DRILL RATE (Min/ft)	RUN REC. (ft) %	RUN RQD (ft) %	SAMP. NO.	STRATA REC. (ft) %	STRATA RQD (ft) %	LOG	DESCRIPTION AND REMARKS — ELEV. (ft)	DEPTH (ft)
817.5											Begin Coring @ 18.2 ft	
	817.5	18.2	3.0	3:02 2:53 1:49	(1.7) 57%	(1.5) 50%		(1.7) 100%	(1.5) 88%		817.5 GRAY, FRESH, VERY HARD, MODERATELY CLOSELY FRACTURED, FELSITE, (UWHARRIE FORMATION)	18.2
815	814.5	21.2						(0.0) 0%	N/A		815.8 RESIDUAL	19.9
			5.0	1:33 2:22 3:27 2:24 0:58	(2.0) 40%	(1.7) 34%		(2.0) 100%	(1.7) 85%		813.0 CRYSTALLINE ROCK 811.0 GRAY, FRESH, VERY HARD, MODERATELY TO CLOSELY FRACTURED FELSITE (UWHARRIE FORMATION)	22.7 24.7
810	809.5	26.2						(0.0) 0%	N/A		RESIDUAL	
			5.0	2:09 2:29 1:36 2:17 1:32	(0.0) 0%	(0.0) 0%						
805	804.5	31.2										
				N=100/0.7							801.7 800.7 WEATHERED ROCK	34.0 35.0
800											CRYSTALLINE ROCK	
				N=60/0.0								
795											792.2	43.5
				N=60/0.0							Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 792.2 ft IN CRYSTALLINE ROCK (FELSITE) NOTE: ROADWAY BORING DESIGNATION IS FLYA-3633L31	

NCDOT CORE SINGLE R2536B_GEO_BRDG ON -FLYA- OVER -Y11- GINT.GPJ NC_DOT.GDT 8/28/13

CORE PHOTOGRAPHS

B1-A(1)

BOX 1 OF 1: 18.2 - 31.2 FEET



NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. B1-A	**STATION** 36+33	**OFFSET** 28 ft LT	**ALIGNMENT** -FLYA- / **0 HR.** NM
COLLAR ELEV. 835.5 ft	**TOTAL DEPTH** 8.6 ft	**NORTHING** 693,091	**EASTING** 1,752,355 / **24 HR.** NM
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Tignor, D.	**START DATE** 07/20/11	**COMP. DATE** 07/20/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
840										
835	835.5	0.0	2	2	4	6	SS-3022	M		835.5 GROUND SURFACE 0.0
										RESIDUAL ORANGE-WHITE MED. STIFF TO STIFF MOIST HIGHLY CLAYEY SANDY SILT & SANDY SILT (A-4)
830	832.0	3.5	2	3	5	8		M		
	827.0	8.5	60/0.1			60/0.1				827.0 8.5
										826.9 8.6 **CRYSTALLINE ROCK** ORANGE-GRAY META-VOLCANIC

Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 826.9 ft IN CRYSTALLINE ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS FLYA-3633L28

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Manning, C.						
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -Y11-			**GROUND WTR (ft)**						
BORING NO. B1-B	**STATION** 36+29	**OFFSET** 16 ft RT	**ALIGNMENT** -FLYA- / **0 HR.** 22.3						
COLLAR ELEV. 833.7 ft	**TOTAL DEPTH** 44.9 ft	**NORTHING** 693,132	**EASTING** 1,752,338 / **24 HR.** 19.7						
DRILL RIG/HAMMER EFF./DATE F&R3495 CME-55 75% 2/15/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic						
DRILLER Tignor, D.	**START DATE** 07/19/11	**COMP. DATE** 07/20/11	**SURFACE WATER DEPTH** N/A						

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
835										
	833.7	0.0	1	2	4	6	SS-3017	M		833.7 GROUND SURFACE 0.0
830	830.2	3.5	3	5	6	11		M		**RESIDUAL** ORANGE & RED MED. STIFF TO STIFF MOIST LOW (PI=14) PLASTIC HIGHLY SILTY CLAY & SILTY CLAY (A-7-5)
825	825.2	8.5	2	2	3	5		M		
820	820.2	13.5	2	3	5	8		M		816.7 17.0
815	815.2	18.5	2	5	5	10	SS-3019			WHITE & ORANGE STIFF MOIST CLAYEY SILT (A-5)
										811.2 22.5
810	810.2	23.5	19	28	38	66	SS-3020	M		ORANGE & LIGHT BRN HARD MOIST SANDY SILT (A-4)
										806.7 27.0
805	805.2	28.5	5	6	7	13	SS-3021	M		BRN STIFF MOIST MED. (PI=18) PLASTIC HIGHLY SILTY CLAY (A-7-6)
										803.2 30.5
800	800.2	33.5	60/0.1			60/0.1				**CRYSTALLINE ROCK** LIGHT BRN & GRAY META-VOLCANIC
										797.7 36.0
795	795.2	38.5	50	50/0.3		100/0.8				**WEATHERED ROCK** (META-VOLCANIC)
790	790.2	43.5	73	23	77/0.4	100/0.9				788.8 44.9

Boring Terminated at Elevation 788.8 ft IN WEATHERED ROCK (META-VOLCANIC)

NOTE: ROADWAY BORING DESIGNATION IS FLYA-3629R

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 37+41	**OFFSET** 24 ft LT	**ALIGNMENT** -FLYA- / **0 HR.** 22.9
COLLAR ELEV. 830.6 ft	**TOTAL DEPTH** 31.9 ft	**NORTHING** 693,039	**EASTING** 1,752,265 / **24 HR.** 20.0
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.	**START DATE** 06/30/11	**COMP. DATE** 06/30/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
835											
830	830.6	0.0	3	6	7	13	SS-1016	D		830.6 GROUND SURFACE	0.0
										RESIDUAL RED & TAN STIFF DRY HIGH (PI=28) PLASTIC SILTY CLAY (A-7-6) W/ TRACE ROOTS	
	827.1	3.5	10	8	27	35	SS-1017	M		828.6	2.0
825										YELLOW & BRN HARD TO V. STIFF MOIST LOW (PI=13) PLASTIC HIGHLY SILTY SANDY CLAY (A-6) W/ TRACE CSE. SAND & ROUNDED GRAVEL (HARDER SEAM @ 5.8-8.2)	
	822.1	8.5	10	12	14	26		M			
820										819.6	11.0
										WHITE STIFF TO V. STIFF MOIST MED. (PI=25) PLASTIC SILTY CLAY (A-7-6)	
	817.1	13.5	7	7	7	14	SS-1018	M			
815											
	812.1	18.5	7	8	7	15					
810										809.6	21.0
										TAN & WHITE MED. STIFF MOIST CLAYEY SILT (A-5)	
	807.1	23.5	4	3	4	7	SS-1019	M			
805											
	802.1	28.5	100/0.3			100/0.3		W		802.1	28.5
										WEATHERED ROCK (META-VOLCANIC)	
800											
	798.8	31.8	60/0.1			60/0.1				798.8	31.8
										798.7 **CRYSTALLINE ROCK** (TAN & WHITE META-VOLCANIC)	31.9
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 798.7 ft IN CRYSTALLINE ROCK (META-VOLCANIC)	
										NOTE: ROADWAY BORING DESIGNATION IS FLYA-3741L	

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** Racey, D.
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -FLYA- OVER -Y11-			**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 37+41	**OFFSET** 16 ft RT	**ALIGNMENT** -FLYA- / **0 HR.** Dry
COLLAR ELEV. 832.3 ft	**TOTAL DEPTH** 28.5 ft	**NORTHING** 693,072	**EASTING** 1,752,241 / **24 HR.** 20.7
DRILL RIG/HAMMER EFF./DATE F&R2175 CME-55 88% 1/14/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER Gilchrist, J.	**START DATE** 06/30/11	**COMP. DATE** 06/30/11	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION
835										
	832.3	0.0								832.3 GROUND SURFACE 0.0
830			3	6	6	12		D		**RESIDUAL** RED & TAN & WHITE STIFF TO MED. STIFF DRY TO MOIST SILTY CLAY (A-7) W/ TRACE ROOTS @ 0.0 & 8.5
	828.8	3.5	4	4	5	9		M		
825										
	823.8	8.5	3	4	4	8		M		
820										
	818.8	13.5	3	3	5	8		M		816.3 16.0
815										TAN & WHITE MED. STIFF MOIST CLAYEY SILT (A-5)
	813.8	18.5	2	2	3	5				811.3 21.0
810										TAN V. STIFF MOIST SANDY SILT (A-4) W/ TRACE F. SAND
	808.8	23.5	20	16	12	28	SS-1020	M		
805										805.6 26.7
	803.8	28.5	60/0.0			60/0.0				803.8 **WEATHERED ROCK** (META-VOLCANIC) 28.5
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 803.8 ft ON CRYSTALLINE ROCK (META-VOLCANIC)
										NOTE: ROADWAY BORING DESIGNATION IS FLYA-3741R

US 64 Asheboro Southern Bypass - Bridge on -FLYA- Over -Y11-

SOIL TEST RESULTS

SAMPLE NO.	OFFSET	STATION	DEPTH INTERVAL	AASHTO CLASS.	L.L.	P.I.	% BY WEIGHT				% PASSING (SIEVES)			% MOISTURE	% ORGANIC	Alignment
							C.SAND	F.SAND	SILT	CLAY	10	40	200			
SS-1016	24 LT	37+41	0.0-1.5	A-7-6(28)	55	28	4.8	5.9	36.8	52.5	96	93	88	-	-	FLYA
SS-1017	24 LT	37+41	3.5-5.0	A-6(5)	32	13	17.2	11.1	43.4	28.3	78	68	59	-	-	FLYA
SS-1018	24 LT	37+41	13.5-15.0	A-7-6(24)	48	25	1.0	16.4	42.2	40.4	100	100	90	-	-	FLYA
SS-1019	24 LT	37+41	23.5-25.0	A-5(10)	42	7	2.2	4.0	65.5	28.3	100	99	95	-	-	FLYA
SS-1020	16 RT	37+41	23.5-25.0	A-4(4)	35	4	7.5	27.5	52.9	12.1	100	97	76	-	-	FLYA
SS-1073	24 LT	34+76	0.0-1.5	A-6(10)	38	13	8.7	5.1	47.9	38.4	87	81	76	-	-	FLYA
SS-1074	24 LT	34+76	4.0-5.5	A-7-5(20)	50	16	1.2	2.6	55.6	40.6	100	99	97	-	-	FLYA
SS-1075	24 LT	34+76	9.0-10.5	A-7-5(17)	46	16	5.3	9.5	60.9	24.3	100	97	88	-	-	FLYA
SS-1076	24 LT	34+76	18.0-19.5	A-7-5(10)	47	11	4.9	29.0	51.9	14.2	100	99	74	-	-	FLYA
SS-1077	16 RT	34+76	9.0-10.5	A-7-5(22)	64	14	0.4	10.8	56.4	32.5	100	100	94	-	-	FLYA
SS-3017	16 RT	36+29	0.0-1.5	A-7-5(19)	57	14	1.4	10.5	54.0	34.2	100	100	91	-	-	FLYA
SS-3019	16 RT	36+29	18.5-20.0	A-5(12)	43	10	1.2	9.6	75.1	14.1	100	100	93	-	-	FLYA
SS-3020	16 RT	36+29	23.5-25.0	A-4(7)	40	10	14.5	22.5	53.0	10.1	100	92	69	-	-	FLYA
SS-3021	16 RT	36+29	28.5-30.0	A-7-6(13)	45	18	11.1	21.7	45.1	22.1	100	94	74	-	-	FLYA
SS-3022	28 LT	36+33	0.0-1.5	A-4(12)	40	9	0.2	1.6	62	36.2	100	100	99	-	-	FLYA

SECTION 11

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34450.1.1 (R-2536B)	1	7

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

STRUCTURE SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34450.1.1 (R-2536B) F.A. PROJ. STPNHF-0064(107)

COUNTY RANDOLPH

PROJECT DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS FROM US 220 TO SR 2834 (OLD COX ROAD)

SITE DESCRIPTION BRIDGE ON -Y12- OVER -Y9FLY- AND -Y9RPD-

CONTENTS

SHEET	DESCRIPTION
1	TITLE SHEET
2	LEGEND
3	SITE PLAN
4-5	PROFILES
6-7	BORE LOGS

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF PREPARING THE SCOPE OF WORK TO BE INCLUDED IN THE REQUEST FOR PROPOSAL. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 707-6850. THE SUBSURFACE PLANS, FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA ARE NOT PART OF THE CONTRACT.

SOIL AND ROCK BOUNDARIES WITHIN A BOREHOLE ARE BASED ON GEOTECHNICAL INTERPRETATION UNLESS ENCOUNTERED IN A SAMPLE. INTERPRETED BOUNDARIES MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN SAMPLED STRATA , AND BOREHOLE INFORMATION MAY NOT NECESSARILY REFLECT ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS. THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS, INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N. C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IT IS CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.

PERSONNEL

DRAWN BY J. Howard

F. Cox

INVESTIGATED BY R. Rahie

CHECKED BY AMEC E&I, Inc.

SUBMITTED BY M. Lear, PG

DATE B. Deobald, LG

August, 2013

NORTH CAROLINA PROFESSIONAL SEAL 1927 GEOLOGIST MICHAEL B. LEAR

MBL 8/29/13

SEAL

SIGNATURE

amec

AMEC E&I, Inc.
4021 STIRRUP CREEK DRIVE, SUITE 100
DURHAM, NORTH CAROLINA 27703
(919) 381-9900

NC Engineering F-1253 NC Geology C-247

PROJECT: 34450.1.1

ID: R-2536B

PROJECT REFERENCE NO.	SHEET NO.
24450.1.1 (R-2536B)	2

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM. BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING # 10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
# 40	30 MX	50 MX	51 MN											
# 200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL, AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<0.25 0.25 TO 0.50 0.5 TO 1.0 1 TO 2 2 TO 4 >4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE IN.: 12 | 3

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT PLASTIC RANGE (PI) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY). MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE.
UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED)
GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KADLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT DPT DMT VST PMT TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS
S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE ____" STEEL TEETH
- [ ] TRICONE ____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [X] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK.
ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN, CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.
SLIGHT (SLI.)	ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.
MODERATE (MOD.)	SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK"SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.

AQUIFER - A WATER BEARING FORMATION OR STRATA.

ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.

ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.

ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.

COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.

CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.

DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.

DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.

FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.

FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.

FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.

FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.

FORMATION (FM.) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.

JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.

LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.

LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.

MOTTLED (MOT.) - IRREGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.

PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.

RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.

SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.

SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.

STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.

STRATA CORE RECOVERY (SREC.) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.

STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

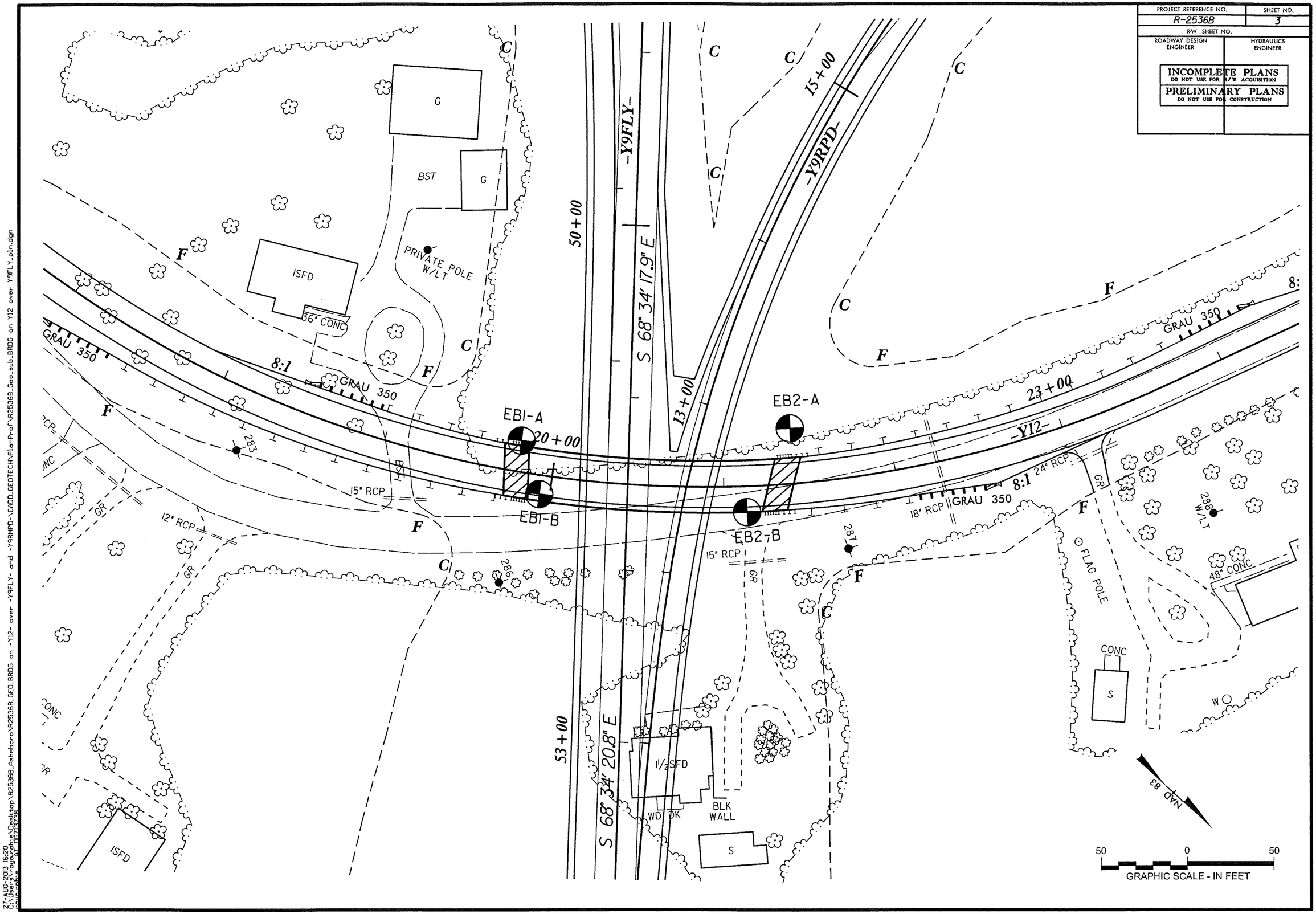
TOPSOIL (TS.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK: ELEVATIONS DETERMINED FROM NCDOT ELECTRONIC PROJECT DRAWING FILES.

ELEVATION: N/A FT.

NOTES:
FIAD - FILLED IMMEDIATELY AFTER DRILLING

REVISED 09/23/09



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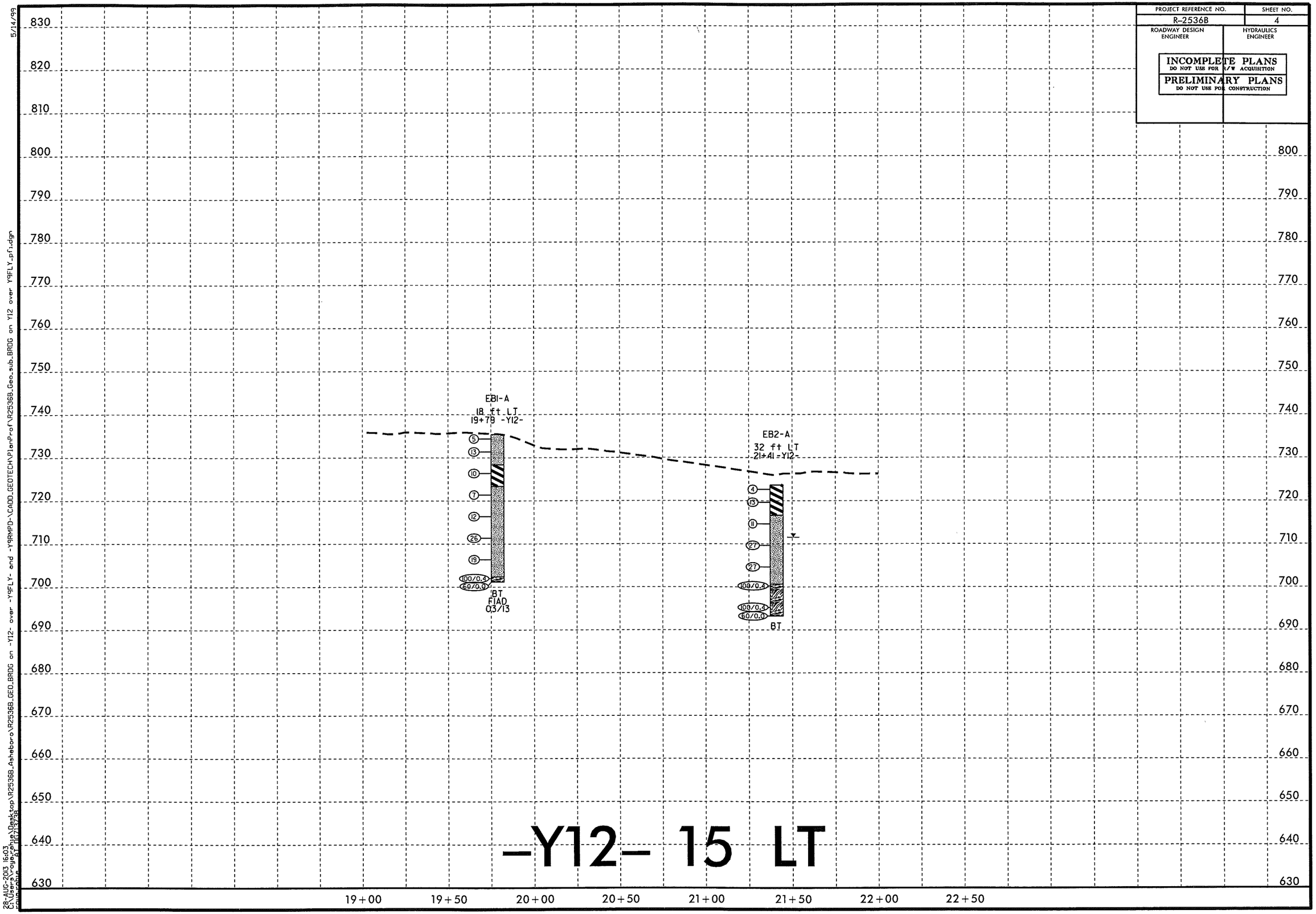
roya.rahie AT 06713738

PROJECT REFERENCE NO.	SHEET NO.
R-2536B	4
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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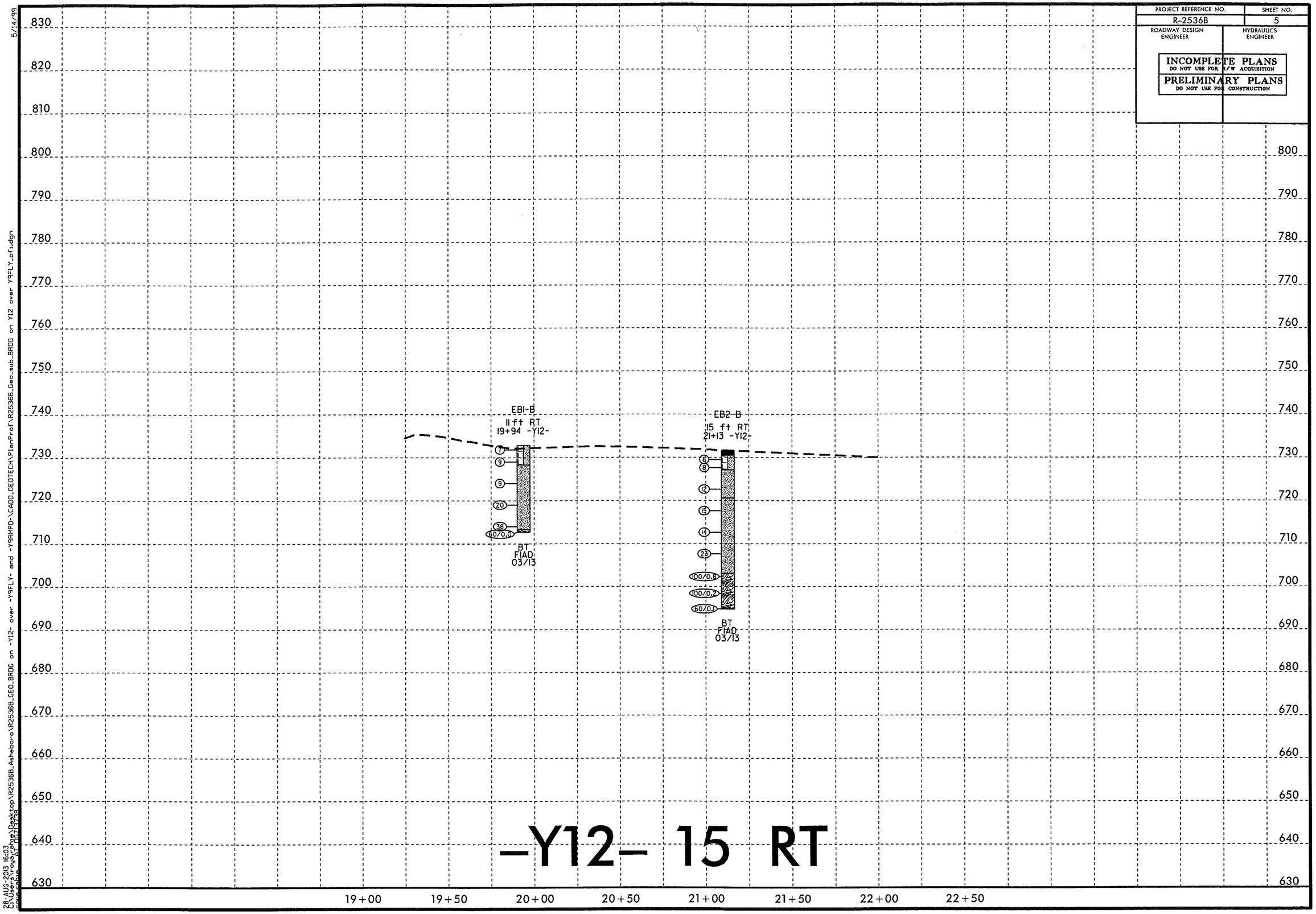
roya.rahie AT 0G713738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R-2536B
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
830
820
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770
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720
710
700
690
680
670
660
650
640
630
EB1-B
11 ft RT
19+94 -Y12-
7
9
9
20
38
60/0.0
BT
FIAD
03/13
EB2-B
15 ft RT
21+13 -Y12-
8
8
12
15
14
23
100/0.8
100/0.2
60/0.1
BT
FIAD
03/13
-Y12- 15 RT
19+00
19+50
20+00
20+50
21+00
21+50
22+00
22+50
5/14/99
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NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** J. HOWARD
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y12- OVER -Y9FLY- AND -Y9RPD-			**GROUND WTR (ft)**
BORING NO. EB1-A	**STATION** 19+79	**OFFSET** 18 ft LT	**ALIGNMENT** -Y12-	**0 HR.** Caved/24.0
COLLAR ELEV. 735.3 ft	**TOTAL DEPTH** 34.2 ft	**NORTHING** 692,662	**EASTING** 1,763,398	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 03/01/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. COX	**START DATE** 03/07/13	**COMP. DATE** 03/07/13	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION ELEV. (ft)	DEPTH (ft)
740											
735	735.3	0.0								735.3 GROUND SURFACE	0.0
	732.3	3.0	1	1	4	5		M		**RESIDUAL** RED ORANGE, SANDY CLAYEY SILT (A-4) WITH TRACE ORGANICS	
730			3	5	8	13		M			
	727.3	8.0	5	5	5	10		M		728.3 RED ORANGE, SILTY CLAY (A-7-5) WITH TRACE QUARTZ FRAGMENTS	7.0
725											
	722.3	13.0	3	3	4	7		D		723.3 ORANGE RED AND BROWN, SANDY SILT (A-4) WITH TRACE QUARTZ FRAGMENTS	12.0
720											
	717.3	18.0	3	5	7	12		D			
715											
	712.3	23.0	11	12	14	26		D			
710											
	707.3	28.0	10	9	10	19		D			
705											
	702.3	33.0	100/0.4			100/0.4				702.3 **WEATHERED ROCK** TAN ORANGE, META-VOLCANIC ROCK	33.0
	701.1	34.2	60/0.0			60/0.0				701.1 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 701.1 ft ON CRYSTALLINE ROCK (META-VOLCANIC ROCK)	34.2
										NOTE: ROADWAY BORING DESIGNATION IS Y12-1979L	

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** J. HOWARD
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y12- OVER -Y9FLY- AND -Y9RPD-			**GROUND WTR (ft)**
BORING NO. EB1-B	**STATION** 19+94	**OFFSET** 11 ft RT	**ALIGNMENT** -Y12-	**0 HR.** Caved/14.2
COLLAR ELEV. 732.8 ft	**TOTAL DEPTH** 20.1 ft	**NORTHING** 692,661	**EASTING** 1,763,430	**24 HR.** FIAD
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 03/01/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. COX	**START DATE** 03/07/13	**COMP. DATE** 03/07/13	**SURFACE WATER DEPTH** N/A

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	BLOWS PER FOOT 0 25 50 75 100	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION	
735											
	732.8	0.0								732.8 GROUND SURFACE	0.0
			2	3	4	7		M		**ROADWAY EMBANKMENT** ORANGE RED, SANDY CLAYEY SILT (A-4)	
730	730.0	2.8									
			3	5	4	9		D		728.3 **RESIDUAL** TAN ORANGE TO GRAY, SANDY SILT (A-4) SAPROLITIC	4.5
725	725.0	7.8									
			3	4	5	9		D			
720	720.0	12.8									
			5	10	10	20		D			
715	715.0	17.8									
			23	20	18	38		D		713.3	19.5
	712.7	20.1	60/0.0			60/0.0				712.7 **WEATHERED ROCK** META-VOLCANIC ROCK	20.1
										Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 712.7 ft ON CRYSTALLINE ROCK (META-VOLCANIC ROCK)	
										NOTE: ROADWAY BORING DESIGNATION IS Y12-1994R	

NCDOT BORE DOUBLE R2536B_GEO_BRDG ON -Y12- OVER -Y9FLY- AND -Y9RPD- GINT.GPJ NC_DOT.GDT 8/27/13

NCDOT GEOTECHNICAL ENGINEERING UNIT
BORELOG REPORT

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** J. HOWARD
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y12- OVER -Y9FLY- AND -Y9RPD-			**GROUND WTR (ft)**
BORING NO. EB2-A	**STATION** 21+41	**OFFSET** 32 ft LT	**ALIGNMENT** -Y12-
COLLAR ELEV. 723.6 ft	**TOTAL DEPTH** 30.4 ft	**NORTHING** 692,811	**EASTING** 1,763,443
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 03/01/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. COX	**START DATE** 03/06/13	**COMP. DATE** 03/07/13	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. Caved/13.6; 24 HR. 12.1

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
									723.6 GROUND SURFACE 0.0
	723.6	0.0	1	2	2		M		**RESIDUAL** RED, ORANGE, AND BROWN, SILTY CLAY (A-7-5) WITH TRACE FINE SAND, ORGANICS, AND ROCK FRAGMENTS
	720.6	3.0	3	6	7		M		
	716.6	7.0							RED, ORANGE, TAN, AND BROWN, CLAYEY SILT (A-4) SAPROLITIC WITH TRACE TO SOME FINE SAND AND QUARTZ FRAGMENTS
	715.6	8.0	5	5	6		M		
	710.6	13.0	4	12	15		M		
	705.6	18.0	15	14	13		D		
	700.6	23.0	100/0.4						**WEATHERED ROCK** ORANGE-TAN, GRAY, AND BLUE-GRAY, META-VOLCANIC ROCK
	695.6	28.0	100/0.4						
	693.2	30.4	60/0.0						Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 693.2 ft ON CRYSTALLINE ROCK (META-VOLCANIC ROCK)

BLOWS PER FOOT: 0 25 50 75 100

NOTE: ROADWAY BORING DESIGNATION IS Y12-2141L

WBS 34450.1.1	**TIP** R-2536B	**COUNTY** RANDOLPH	**GEOLOGIST** J. HOWARD
SITE DESCRIPTION US 64 ASHEBORO SOUTHERN BYPASS-BRIDGE ON -Y12- OVER -Y9FLY- AND -Y9RPD-			**GROUND WTR (ft)**
BORING NO. EB2-B	**STATION** 21+13	**OFFSET** 15 ft RT	**ALIGNMENT** -Y12-
COLLAR ELEV. 731.6 ft	**TOTAL DEPTH** 36.8 ft	**NORTHING** 692,772	**EASTING** 1,763,480
DRILL RIG/HAMMER EFF./DATE MAC9354 CME-45C 81% 03/01/2011		**DRILL METHOD** H.S. Augers	**HAMMER TYPE** Automatic
DRILLER F. COX	**START DATE** 03/06/13	**COMP. DATE** 03/07/13	**SURFACE WATER DEPTH** N/A

GROUND WTR (ft): 0 HR. Caved/23.6; 24 HR. FIAD

ELEV (ft)	DRIVE ELEV (ft)	DEPTH (ft)	BLOW COUNT 0.5ft	0.5ft	0.5ft	SAMP. NO.	MOI	LOG	SOIL AND ROCK DESCRIPTION (ELEV. (ft) / DEPTH (ft))
									731.6 GROUND SURFACE 0.0
	730.5	1.1							730.5 **ROADWAY EMBANKMENT** 1.1
	728.6	3.0	2	3	5		D		ASPHALT 0.0 - 0.7 FT ABC STONE 0.7 - 1.1 FT
			3	4	4		D		727.1 RED ORANGE, SANDY CLAYEY SILT (A-4) WITH TRACE ORGANICS 4.5
	723.6	8.0	4	5	7		M		**RESIDUAL** TAN-YELLOW, WHITE, CLAYEY SILT (A-4) WITH TRACE FINE SAND
	720.6	11.0							GRAY, TAN, ORANGE AND BROWN, SANDY SILT (A-4) SAPROLITIC
	718.6	13.0	5	6	9		D		
	713.6	18.0	3	6	8		D		
	708.6	23.0	8	10	13		D		
	703.6	28.0	15	43	57/0.3				703.1 **WEATHERED ROCK** BROWN GRAY, META-VOLCANIC ROCK 28.5
	698.6	33.0	100/0.2						
	694.9	36.7	60/0.1						694.9 / 694.8 **CRYSTALLINE ROCK** META-VOLCANIC ROCK 36.7 / 36.8 Boring Terminated WITH STANDARD PENETRATION TEST REFUSAL at Elevation 694.8 ft IN CRYSTALLINE ROCK (META-VOLCANIC ROCK)

BLOWS PER FOOT: 0 25 50 75 100

NOTE: ROADWAY BORING DESIGNATION IS Y12-2113R

NCDOT BORE DOUBLE R2536B_GEO_BRDG ON -Y12- OVER -Y9FLY- AND -Y9RPD- GINT.GPJ NC_DOT.GDT 8/27/13