



SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

Quality Assurance

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #: 1051-11-015 County: Dare Date Report: 6/16/2011

State Project No.: 32635.1.3 TIP No. B-2500 Date Tested: 06/07 - 06/11/2011

Federal ID No.: BRNHS-12(23)

Project Name: Replacement of Bridge No.11 (Bonner Bridge) on NC 12 over Oregon Inlet

Client Name: NCDOT Client Address: Raleigh, North Carolina

Boring No.	Sample No.	Sample Depth (ft)	AASHTO Classification	Total % Passing			Coarse Sand	Fine Sand	Silt	Clay	Total Mortar Fraction (%)			LL	PI	Moisture Content %	
				10	40	60					200	270	Coarse Sand				Fine Sand
B-53	SS-500	2.5'-4.0'	A-3 (0)	100	95	67	0.3	0.1	33	67	0	0	0	20	0	NP	ND
B-53	SS-501	7.5'-9.0'	A-3 (0)	99	92	67	1.9	1.3	33	66	0	1	1	20	0	NP	ND
B-53	SS-502	17.5'-19.0'	A-3 (0)	99	97	67	1.8	1.3	33	66	0	1	1	21	0	NP	ND
B-53	SS-503	27.5'-29.0'	A-3 (0)	83	74	31	0.9	0.7	69	30	0	1	1	19	0	NP	ND
B-53	SS-504	37.5'-39.0'	A-2-4 (0)	100	98	92	16.7	14.1	8	78	4	10	10	17	0	NP	22.7
B-53	ST-2	41.0' - 43.0'	A-6 (5)	100	98	94	57.1	51.6	6	42	17	35	6	30	15	15	34.7
B-53	SS-505	42.5'-44.0'	A-6 (5)	100	98	96	57.9	49.5	4	47	22	27	4	29	15	14	25.3
B-53	SS-506	52.5'-54.0'	A-4 (1)	100	100	87	52.2	37.9	13	49	23	15	13	20	12	8	27.2
B-53	ST-3	58.0' - 60.0'	A-6 (11)	100	100	99	88.1	69.2	1	30	30	39	1	31	17	14	32.8
B-53	SS-507	62.5'-64.0'	A-4 (0)	100	99	99	89.6	41.7	1	57	31	11	1	23	2	2	31.2
B-53	SS-508	72.5'-74.0'	A-3 (0)	100	98	95	9.7	7.8	5	87	3	5	5	19	0	NP	ND
B-53	SS-509	82.5'-84.0'	A-2-4 (0)	100	100	99	33.1	25.9	1	73	12	14	1	17	0	NP	32.2
B-53	SS-510	92.5'-94.0'	A-4 (0)	100	100	100	38.3	29.8	0	70	15	15	0	21	16	5	29.5
B-53	SS-511	97.5'-99.0'	A-3 (0)	97	88	69	10.0	7.5	31	62	2	5	29	19	0	NP	ND
B-53	SS-512	07.5'-109.0'	A-3 (0)	100	100	86	5.7	4.2	14	82	2	2	14	23	0	NP	ND
B-53	SS-513	17.5'-119.0'	A-3 (0)	100	100	86	7.1	5.2	14	81	3	2	14	21	0	NP	ND
B-53	SS-514	22.5'-123.0'	A-3 (0)	100	99	86	8.9	6.8	14	79	4	3	14	21	0	NP	ND
B-53	SS-515	32.5'-134.0'	A-3 (0)	100	99	82	9.9	7.4	18	75	3	4	18	20	0	NP	ND
B-53	SS-516	42.5'-144.0'	A-2-4 (0)	100	98	91	24.2	14.8	9	76	10	5	9	21	0	NP	ND
B-53	SS-517	52.5'-154.0'	A-7-5 (87)	100	100	98	93.6	93.3	2	5	24	69	2	34	79	79.7	79.7

References / Comments / Deviations: ND=Not Determined.

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT AASHTO T89: Determining the Liquid Limit of Soils

AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Signature:  Certification #: 104-01-0703 Senior Engineer Position

Technician Name: Mal Krajjan, ET Technical Responsibility: Abner F. Riggs, Jr., P.E.

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Quality Assurance

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #: 1051-11-015

Date Report: 6/9/2011

State Project No.: 32635.1.3

Date Tested: 06/01 - 06/08/2011

Federal ID No.: BRNHS-12(23)

County: Date

TIP No. B-2500

Project Name: Replacement of Bridge No.11 (Bonner Bridge) on NC 12 over Oregon Inlet

Client Name: NCDOT

Client Address: Raleigh, North Carolina

Boring No.	Sample No.	Sample Depth (ft)	AASHTO Classification	Total % Passing Sieve #			Total Mortar Fraction (%)			LL	PL	PI	Organic Content %	Moisture Content %			
				10	40	60	200	270	Coarse Sand						Fine Sand	Silt	Clay
B-56	SS-137	1.8'-3.3'	A-3(0)	100	88	41	1.1	0.9	59	40	0	1	19	0	NP	ND	ND
B-56	SS-138	12.8'-14.3'	A-2-4(0)	100	100	91	16.0	7.7	9	83	4	4	20	0	NP	ND	ND
B-56	SS-139	22.1'-23.6'	A-4(6)	100	100	99	79.1	52.8	1	46	34	19	28	19	9	ND	31.7
B-56	SS-140	32.6'-34.1'	A-6(17)	100	100	100	90.2	75.0	0	25	42	33	38	19	19	ND	43.5
B-56	SS-141	42.6'-44.1'	A-6(13)	100	100	99	78.4	64.3	1	35	37	27	36	18	18	ND	41.0
B-56	SS-142	52.4'-53.9'	A-1-b(0)	76	27	13	5.2	4.3	83	11	4	2	15	0	NP	ND	ND
B-56	SS-143	62.5'-64.0'	A-2-4(0)	94	82	74	11.6	10.1	21	68	4	7	19	0	NP	ND	ND
B-56	SS-144	72.5'-74.0'	A-2-4(0)	98	97	95	16.3	14.0	3	83	7	7	17	0	NP	ND	ND
B-56	SS-145	82.6'-84.1'	A-2-4(0)	100	99	98	31.0	25.6	2	72	14	12	19	0	NP	ND	ND
B-56	SS-146	87.6'-89.1'	A-2-4(0)	100	100	99	31.6	23.3	1	76	11	12	20	0	NP	ND	35.2
B-56	SS-147	97.6'-99.1'	A-4(2)	100	100	100	51.0	36.0	0	64	18	18	28	20	8	ND	36.2
B-56	SS-148	107.6'-109.1'	A-6(12)	100	100	100	75.2	58.6	0	41	33	26	37	20	17	ND	42.5
B-56	SS-149	117.3'-119.8'	A-2-4(0)	100	100	99	27.6	22.5	1	77	11	11	18	0	NP	ND	ND
B-56	SS-150	126.7'-128.2'	A-2-4(0)	100	88	70	18.6	16.7	30	53	8	9	17	0	NP	ND	ND
B-56	SS-151	131.7'-133.2'	A-1-b(0)	96	49	33	5.2	4.4	66	29	2	3	18	0	NP	ND	ND
B-56	SS-152	142.4'-143.9'	A-7-5(70)	100	96	95	94.5	94.0	5	1	49	45	97	35	62	ND	78.1
B-56	SS-153	152.4'-153.9'	A-7-6(60)	100	97	96	93.1	84.8	4	11	39	46	83	27	56	ND	66.2
B-56	SS-154	162.7'-164.2'	A-7-5(84)	100	100	100	99.2	98.4	0	2	37	61	104	34	70	ND	83.5
B-56	SS-155	172.8'-174.3'	A-7-6(52)	100	95	93	90.2	79.4	7	14	37	42	76	25	51	ND	49.3
B-56	SS-156	183.0'-184.3'	A-2-4(0)	99	99	99	21.1	14.0	0	86	6	8	21	0	NP	ND	ND

References / Comments / Deviations: ND=Not Determined.

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT

AASHTO T89: Determining the Liquid Limit of Soils

AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils

AASHTO T265: Laboratory Determination of Moisture Content of Soils

AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes

Mal Krajan, ET

Signature

104-01-0703

Abner F. Riggs, Jr., P.E.

Senior Engineer

Technician Name:

Certification #

Technical Responsibility:

Position

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Quality Assurance

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #: 1051-11-015
 State Project No.: 32635.1.3
 Federal ID No.: BRNHS-12(23)
 Project Name: Replacement of Bridge No.11 (Bonner Bridge) on NC 12 over Oregon Inlet
 Client Name: NCDOT

Date Report: 05/19 - 05/25/2011
 Date Tested: 05/19 - 05/25/2011

County: Dare
 TIP No. B-2500

Client Address: Raleigh, North Carolina

Boring No.	Sample No.	Sample Depth (ft)	AASHTO Classification	Total % Passing			Total Mortar Fraction (%)			LL	PL	PI	Organic Content %	Moisture Content %			
				10	40	Sieve #	Coarse Sand	Fine Sand	Silt						Clay		
B-62	SS-1	3.1'-4.6'	A-3(0)	89	64	29	1.2	1.0	67	32	1	0	13	0	NP	ND	ND
B-62	SS-2	13.1'-14.6'	A-4(0)	98	82	73	42.7	29.3	26	44	17	13	18	15	3	ND	23.3
B-62	SS-3	18.1'-19.6'	A-3(0)	98	58	37	5.1	3.6	62	34	2	2	21	0	NP	ND	ND
B-62	SS-4	28.1'-29.6'	A-4(0)	100	98	98	76.2	36.4	2	62	30	6	22	0	NP	ND	ND
B-62	SS-5	36.9'-38.4'	A-4(0)	100	100	98	81.2	46.6	2	51	33	14	22	20	2	ND	42.8
B-62	SS-6	47.3'-48.8'	A-3(0)	98	92	83	9.8	7.4	15	77	3	5	18	0	NP	ND	ND
B-62	SS-7	57.3'-58.8'	A-3(0)	100	94	65	9.4	7.9	35	57	4	4	17	0	NP	ND	ND
B-62	SS-8	67.8'-69.3'	A-3(0)	99	97	64	6.6	5.1	35	60	2	3	18	0	NP	ND	ND
B-62	SS-9	72.8'-74.3'	A-2-4(0)	98	93	84	11.7	9.1	14	77	5	4	19	0	NP	ND	ND
B-62	SS-10	82.6'-83.1'	A-2-4(0)	100	100	99	16.2	13.3	1	86	7	6	19	0	NP	ND	ND
B-62	SS-11	92.1'-93.6'	A-2-4(0)	100	100	99	12.3	9.4	1	90	5	4	20	0	NP	ND	ND
B-62	SS-12	102.1'-103.6'	A-2-4(0)	100	99	98	24.3	19.1	2	79	9	10	19	0	NP	ND	ND
B-62	SS-13	111.9'-113.0'	A-3(0)	100	91	58	6.6	5.1	42	53	2	3	16	0	NP	ND	ND
B-62	SS-14	121.3'-122.8'	A-3(0)	99	80	33	6.2	4.9	67	28	3	2	17	0	NP	ND	ND
B-62	SS-15	126.3'-127.8'	A-2-4(0)	99	97	96	16.6	13.5	3	83	5	9	18	0	NP	ND	ND
B-62	SS-16	131.3'-132.8'	A-7-6(43)	100	93	89	74.2	72.2	11	17	29	43	79	23	56	ND	32.4
B-62	SS-17	140.7'-142.2'	A-7-6(65)	100	100	100	95.1	83.5	0	17	36	47	87	29	58	ND	61.6
B-62	SS-18	51.0'-152.1'	A-7-6(73)	100	100	100	96.8	86.8	0	13	36	51	93	29	64	ND	67.3
B-62	SS-19	161.0'-162.7'	A-7-6(13)	99	96	94	52.6	47.2	5	47	16	32	51	19	32	ND	40.5
B-62	SS-21	176.2'-176.9'	A-2-4(0)	96	91	88	13.4	11.5	8	80	4	8	20	0	NP	ND	ND

References / Comments / Deviations: ND=Not Determined.

AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT
 AASHTO T90: Determining the Plastic Limit & Plasticity Index of Soils
 AASHTO M145: The Classification of Soils and Soil Aggregate Mixtures for Highway Construction Purposes
 AASHTO T89: Determining the Liquid Limit of Soils
 AASHTO T265: Laboratory Determination of Moisture Content of Soils

Technician Name: Mal Krajan, ET Signature: [Signature] Certification # 104-01-0703
 Position: Senior Engineer
 Technical Responsibility: Abner F. Riggs, Jr., P.E.
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Quality Assurance

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation


S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #: 1051-11-015
 State Project No.: 32635.1.3
 Federal ID No.: BRNHS-12(23)NA
 County: Dare
 Date Report: 05/19 - 05/25/2011
 Date Tested: 05/19 - 05/25/2011

Project Name: Replacement of Bridge No. 11 (Bonner Bridge) on NC 12 over Oregon Inlet
 Client Name: NCDOT
 Client Address: Raleigh, North Carolina

Boring No.	Sample No.	Sample Depth (ft)	AASHTO Classification	Total % Passing			Total Mortar Fraction (%)			LL	PL	PI	Organic Content %	Moisture Content %			
				10	40	Sieve #	Course Sand	Fine Sand	Silt						Clay		
B-65	SS-69	0 - 1.5'	A-2-4 (0)	100	98	81	23.0	1.9	19	79	1	1	21	0	NP	ND	ND
B-65	SS-70	10.0'-11.5'	A-4 (0)	100	98	88	38.2	30.2	12	58	14	16	20	15	5	ND	26.9
B-65	SS-71	15.4'-16.0'	A-3 (0)	100	100	99	8.7	7.2	1	92	5	2	21	0	NP	ND	ND
B-65	SS-72	25.9'-27.4'	A-3 (0)	100	99	98	8.6	4.7	2	93	2	3	22	0	NP	ND	ND
B-65	SS-73	36.1'-37.6'	A-4 (0)	100	100	100	65.4	29.5	0	71	22	7	22	0	NP	ND	ND
B-65	SS-74	41.1'-42.1'	A-4 (0)	100	100	100	75.0	36.8	0	63	26	11	22	0	NP	ND	29.3
B-65	SS-75	46.1'-47.6'	A-6 (12)	100	100	100	93.4	78.9	0	21	49	30	34	21	13	ND	39.6
B-65	SS-76	51.1'-52.6'	A-4 (1)	92	71	59	44.4	40.4	36	20	30	14	31	23	8	ND	25.2
B-65	SS-77	57.0'-58.5'	A-2-4 (0)	99	94	86	10.7	8.4	13	79	4	4	16	0	NP	ND	ND
B-65	SS-78	67.5'-69.0'	A-2-4 (0)	100	90	72	12.1	9.8	28	62	4	6	18	0	NP	ND	ND
B-65	SS-79	72.5'-74.0'	A-3 (0)	95	92	85	8.7	6.5	11	82	4	3	17	0	NP	ND	ND
B-65	SS-80	82.5'-84.0'	A-3 (0)	99	98	89	8.2	6.2	10	84	2	4	19	0	NP	ND	ND
B-65	SS-81	92.5'-94.0'	A-2-4 (0)	100	98	92	26.0	12.8	8	79	6	7	19	0	NP	ND	ND
B-65	SS-82	102.5'-104.0'	A-3 (0)	99	98	80	5.9	4.5	19	77	2	2	20	0	NP	ND	ND
B-65	SS-83	112.5'-113.2'	A-3 (0)	87	72	45	5.2	4.4	48	47	2	3	17	0	NP	ND	ND
B-65	SS-84	122.0'-123.5'	A-2-4 (0)	93	90	86	10.6	7.7	7	85	4	4	17	0	NP	ND	ND
B-65	SS-85	132.0'-133.5'	A-2-4 (0)	98	95	76	13.1	7.1	22	71	3	4	17	0	NP	ND	ND
B-65	SS-86	141.7'-143.2'	A-6 (5)	96	89	78	44.1	42.0	19	37	16	28	37	14	23	ND	28.6
B-65	SS-87	151.7'-153.2'	A-7-5 (63)	100	100	100	97.2	89.2	0	11	40	49	86	32	54	ND	76.6
B-65	SS-88	163.8'-165.3'	A-7-6 (46)	100	100	99	90.7	74.4	1	25	31	43	71	26	45	ND	69.2
B-65	SS-89	174.3'-175.8'	A-2-4 (0)	96	94	92	21.9	20.1	4	75	6	15	18	0	NP	ND	ND

References / Comments / Deviations: ND=Not Determined.
 AASHTO T88: Particle Size Analysis of Soils as Modified by the NCDOT
 AASHTO T89: Determining the Liquid Limit of Soils
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Signature:  Mal Krajan, ET
 Technician Name:
 Certification #: 104-01-0703
 Technical Responsibility: Abner F. Riggis, Jr., P.E.
 Position: Senior Engineer



Quality Assurance

SUMMARY OF LABORATORY TEST DATA

Soil Classification and Gradation

S&ME, Inc. Raleigh, 3201 Spring Forest Road, Raleigh, North Carolina 27616

S&ME Project #: 1051-11-015 County: Dare Date Report: 6/16/2011
 State Project No.: 32635.1.3 TIP No. B-2500 Date Tested: 06/07 - 06/11/2011
 Federal ID No.: BRNHS-12(23)

Project Name: Replacement of Bridge No.11 (Bonner Bridge) on NC 12 over Oregon Inlet
 Client Name: NCDOT Client Address: Raleigh, North Carolina

Boring No	Sample No	Sample Depth (ft)	AASHTO Classification	Total % Passing			Coarse Sand	Fine Sand	Silt	Clay	Total Mortar Fraction (%)			LL	PL	PI	Moisture Content %			
				10	40	60					200	270	Coarse Sand					Fine Sand	Silt	Clay
B-67	SS-518	3.5'-5.0'	A-3 (0)	100	84	45	1.3	1.1	55	44	0	1	55	44	0	1	19	0	NP	ND
B-67	SS-519	13.5'-15.0'	A-3 (0)	100	100	97	3.6	2.4	3	95	1	1	3	95	1	1	24	0	NP	ND
B-67	SS-520	23.5'-25.0'	A-3 (0)	100	99	89	4.5	3.4	11	86	1	2	11	86	1	2	23	0	NP	ND
B-67	SS-521	33.5'-35.0'	A-3 (0)	93	91	86	7.1	5.4	14	81	2	3	8	86	2	4	24	0	NP	ND
B-67	SS-522	43.5'-45.0'	A-3 (0)	100	96	76	5.7	5.1	24	71	1	4	24	71	1	4	21	0	NP	ND
B-67	SS-523	53.5'-55.0'	A-7-6 (33)	100	99	99	93.0	85.5	1	14	42	43	1	14	42	43	53	21	32	48.5
B-67	ST-1	57.0' - 59.0'	A-7-6 (54)	100	99	99	98.6	97.3	1	2	40	57	1	2	40	57	72	25	47	54.0
B-67	SS-524	63.5'-65.0'	A-2-6 (3)	76	57	46	34.8	32.5	54	14	8	24	40	17	12	31	40	17	23	ND
B-67	SS-525	68.5'-70.0'	A-2-4 (0)	100	90	70	14.5	12.4	30	58	3	9	30	58	3	9	17	0	NP	ND
B-67	SS-526	78.5'-80.0'	A-2-4 (0)	100	93	78	16.4	12.0	22	66	3	9	22	66	3	9	17	0	NP	ND
B-67	SS-527	88.5'-90.0'	A-3 (0)	100	97	67	6.4	5.0	33	62	2	3	33	62	2	3	18	0	NP	ND
B-67	SS-528	98.5'-100.0'	A-2-4 (0)	100	100	99	12.7	7.6	1	91	3	5	1	91	3	5	21	0	NP	ND
B-67	SS-529	103.5'-105.0'	A-3 (0)	98	76	43	4.8	3.7	57	39	2	2	56	40	2	2	19	0	NP	ND

References / Comments / Deviations: ND=Not Determined.

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Mal Krajan, ET Signature: *[Signature]* Certification #: 104-01-0703 Abner F. Riggs, Jr., P.E. Senior Engineer
 Technician Name: This report shall not be reproduced, except in full, without the written approval of S&ME, Inc. Technical Responsibility: Position