COMPACTION TEST REPORT/ ASTM D-1557-02

Curve No.: TP-3-1

Project No.: 6468061472 **Date:** 12/2/06

Project: NORTH ANNA COL PROJECT

Location: Test Pit No 3 JAB 1/22/07

Elev./Depth: 0-2.6' **Sample No.** TP-3-1

Remarks: ND = NOT DETERMINED.

MATERIAL DESCRIPTION

Description: Tan slightly silty clayey sand(VISUAL)

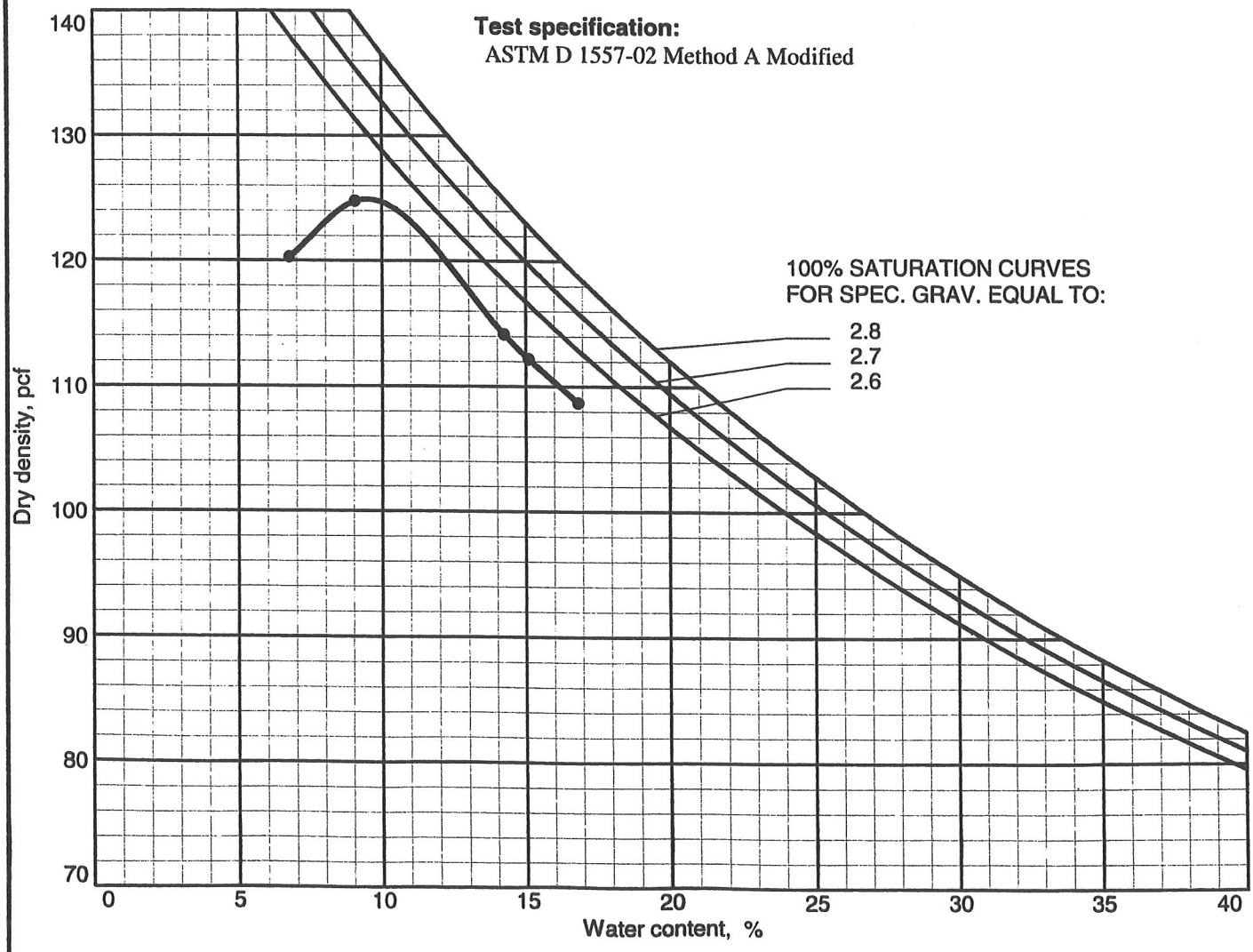
Classifications - **USCS:** ND **AASHTO:** ND

Nat. Moist. = 16.1 % **Sp.G. =** ND

Liquid Limit = ND **Plasticity Index =** ND

% > No.4 = 0.8 % **% < No.200 =** ND %

TEST RESULTS
Maximum dry density = 124.9 pcf
Optimum moisture = 9.5 %



Figure

MACTEC, Inc.

MOISTURE DENSITY TEST DATA

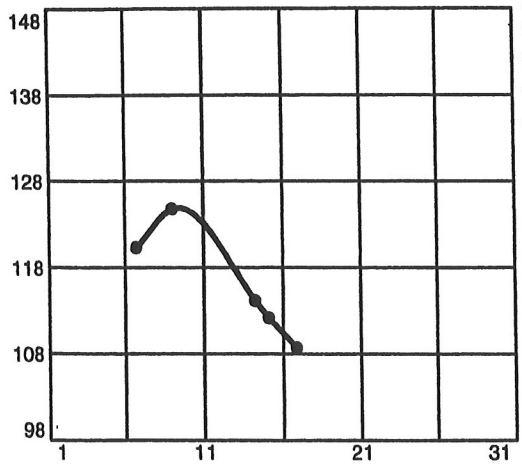
Client: Dominion Nuclear North Anna
Project: NORTH ANNA COL PROJECT
Project Number: 6468061472

Specimen Data

Source: TEST PIT 3
Sample No.: TP-3-1
Elev. or Depth: 0-2.6' **Sample Length(in./cm.):** 30
Location:
Description: Tan slightly silty clayey sand(VISUAL)
Liquid Limit: ND **Plasticity Index:** ND **Natural Moisture:** 16.1
Date: 12/2/06 **USCS Classification:** ND **AASHTO Classification:** ND
Testing Remarks: ND = NOT DETERMINED.
Percent retained on No.4 sieve: 0.8
Percent passing No. 200 sieve: ND **Specific gravity:** ND

Test Data And Results For Curve TP-3-1

Type of test: ASTM D 1557-02 Method A Modified
Mold Dia.: 4.00 in. **Hammer Wt.:** 10 lb. **Drop:** 18 in.
Layers: five **Blows per Layer:** 25



POINT NO.	1	2	3	4	5
WM + WS	4115.4	4029.5	4010.1	3978.2	3999.4
WM	2060.0	2060.0	2060.0	2060.0	2060.0
WW+T	620.80	535.60	571.90	578.50	528.00
WD+T	569.90	470.00	498.00	496.50	495.20
TARE	8.20	9.30	9.00	9.40	9.00
MOIST	9.1	14.2	15.1	16.8	6.7
MOISTURE	9.1	14.2	15.1	16.8	6.7
DRY DEN	124.8	114.1	112.2	108.7	120.3

Max dry den= 124.9 pcf **Opt moisture=** 9.5 %

COMPACTION TEST REPORT/ ASTM D-1557-02

Curve No.: TP-3-2

Project No.: 6468061472 **Date:** 12/2/06

Project: NORTH ANNA COL PROJECT

Location: TEST PIT # 3 LBJ 1/22/07

Elev./Depth: 2.6-4.6' **Sample No.** TP-3-2

Remarks: ND = NOT DETERMINED.

MATERIAL DESCRIPTION

Description: Light tan slightly silty sand (VISUAL)

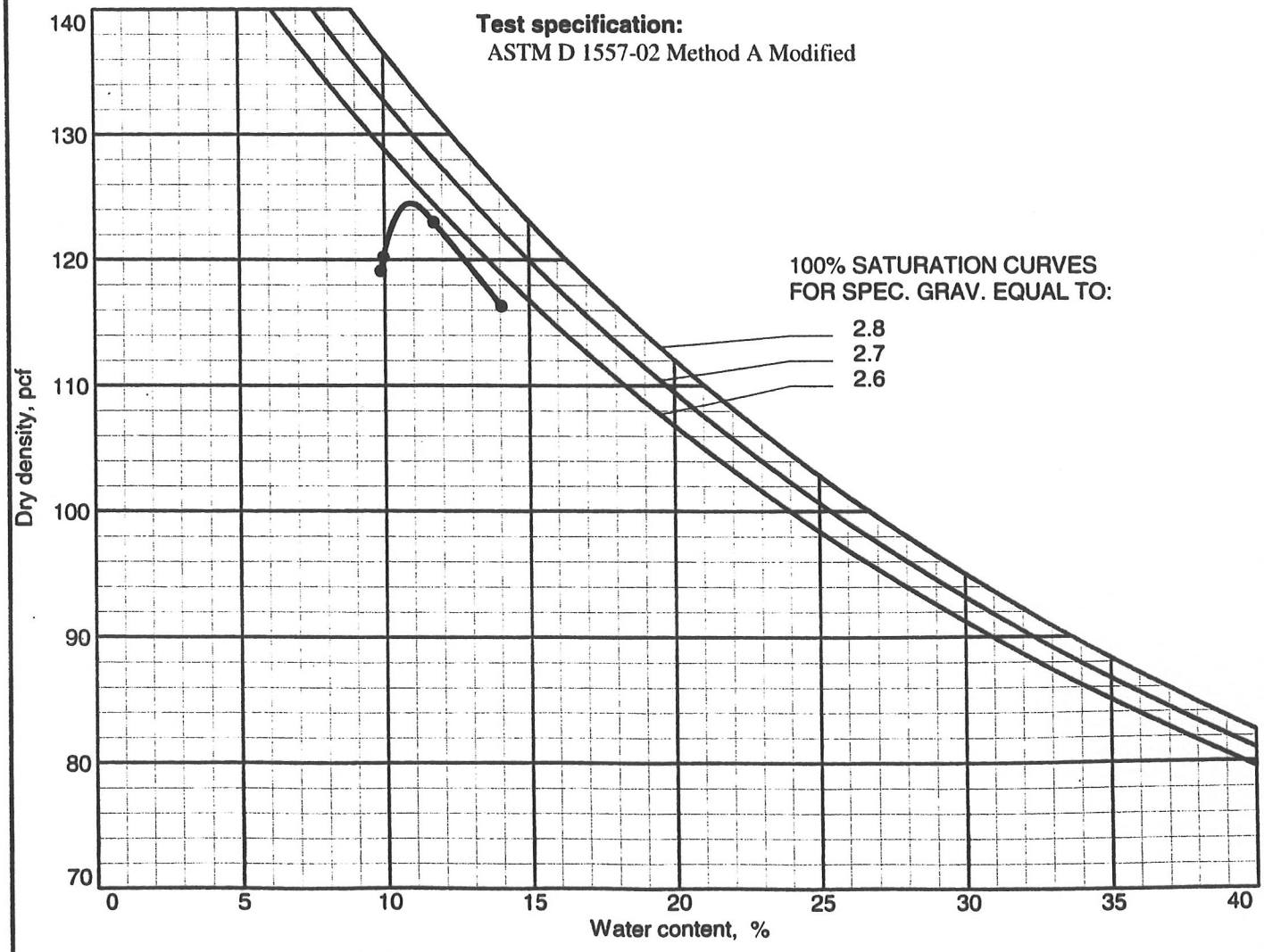
Classifications - **USCS:** ND **AASHTO:** ND

Nat. Moist. = 12.4 % **Sp.G. =** ND

Liquid Limit = ND **Plasticity Index =** ND

% > No.4 = 1.8 % **% < No.200 =** ND %

TEST RESULTS
Maximum dry density = 124.5 pcf
Optimum moisture = 10.9 %



Figure

MOISTURE DENSITY TEST DATA

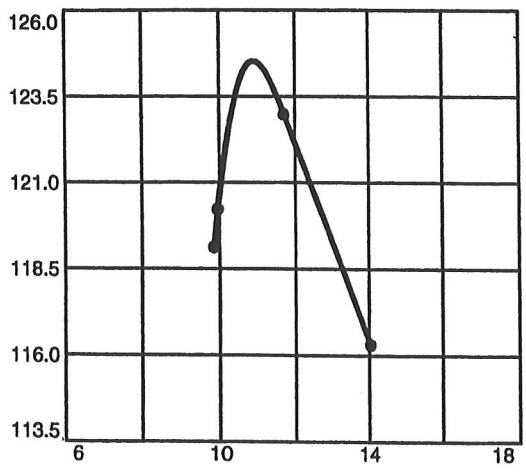
Client: Dominion Nuclear North Anna
Project: NORTH ANNA COL PROJECT
Project Number: 6468061472

Specimen Data

Source: TEST PIT 3
Sample No.: TP-3-2
Elev. or Depth: 2.6-4.6' **Sample Length(in./cm.):** 24
Location:
Description: Light tan slightly silty sand (VISUAL)
Liquid Limit: ND **Plasticity Index:** ND **Natural Moisture:** 12.4
Date: 12/2/06 **USCS Classification:** ND **AASHTO Classification:** ND
Testing Remarks: ND = NOT DETERMINED.
Percent retained on No.4 sieve: 1.8
Percent passing No. 200 sieve: ND **Specific gravity:** ND

Test Data And Results For Curve TP-3-2

Type of test: ASTM D 1557-02 Method A Modified
Mold Dia.: 4.00 in. **Hammer Wt.:** 10 lb. **Drop:** 18 in.
Layers: five **Blows per Layer:** 25

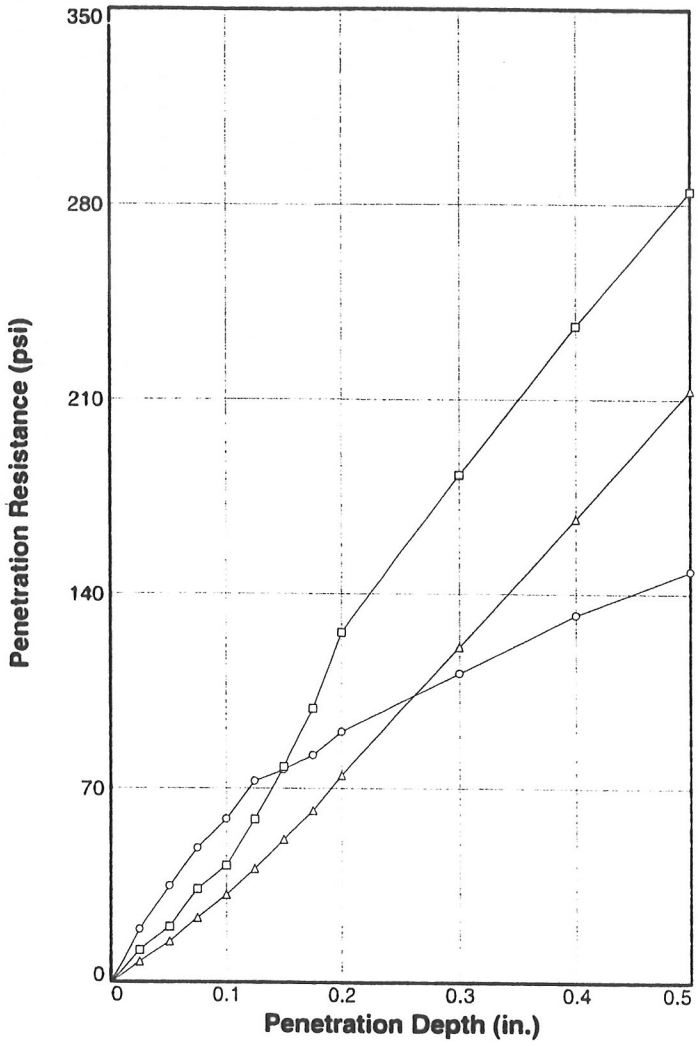


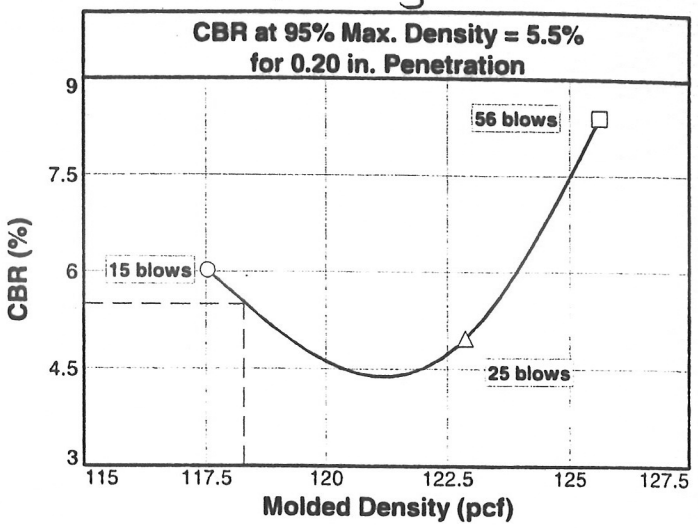
POINT NO.	1	2	3	4
WM + WS	4135.0	4036.6	4063.5	4056.6
WM	2060.0	2060.0	2060.0	2060.0
WW+T	574.10	579.90	612.50	779.10
WD+T	514.90	528.70	547.50	722.67
TARE	9.20	9.20	84.70	155.90
MOIST	11.7	9.9	14.0	10.0
MOISTURE	11.7	9.9	14.0	10.0
DRY DEN	123.0	119.1	116.3	120.2

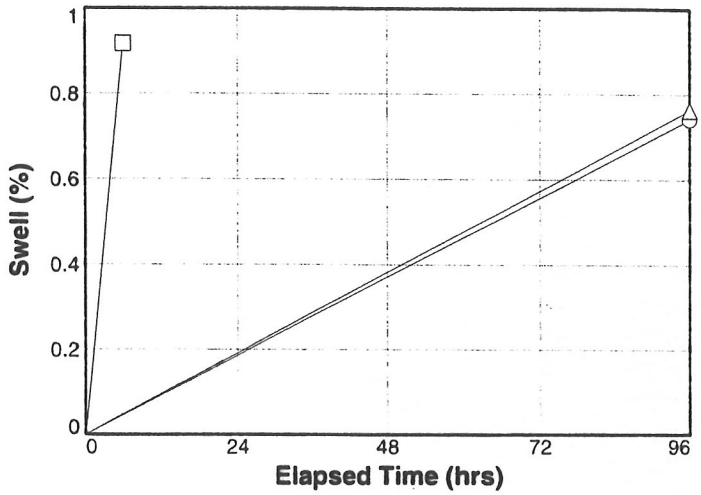
Max dry den= 124.5 pcf **Opt moisture=** 10.9 %

BEARING RATIO TEST REPORT

ASTM D 1883-~~99~~05 1/23/07 2BS







	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	117.5	94.4	10.7	116.7	93.7	13.2	5.9	6.0	0.000	10.03	0.7
2 △	122.9	98.7	10.6	121.9	97.9	12.4	3.2	5.0	0.000	10.01	0.8
3 □	125.6	100.9	10.5	124.5	100	11.8	4.2	8.4	0.000	10.03	0.9

Material Description	USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Light tan slightly silty sand (VISUAL)	ND	124.5	10.9	ND	ND

Project No: 6468061472

Project: NORTH ANNA COL PROJECT

Source of Sample: TEST PIT 3 **Depth:** 2.6-4.6'

Sample Number: TP-3-2

Date: 12/2/06

BEARING RATIO TEST REPORT

MACTEC, Inc.

Test Description/Remarks:

Tested in accordance with ASTM D-1883 section 7.1.2

ND= NOT DETERMINED.

Figure _____

BEARING RATIO TESTING RESULTS
(ASTM D 1883-~~99~~05 2nd 1/23/07

Date:	12/2/06		
Project No.:	6468061472		
Project:	NORTH ANNA COL PROJECT		
Location:	TEST PIT 3		
Depth:	2.6-4.6'	**Sample Number:**	TP-3-2
Material Description:	Light tan slightly silty sand (VISUAL)		
USCS Classification:	ND		
Liquid Limit:	ND	**Plasticity Index:**	ND

Test Description:	Tested in accordance with ASTM D-1883 section 7.1.2		
Maximum Dry Density:	124.5	**Optimum Moisture Content:**	10.9
Testing Remarks:	ND= NOT DETERMINED.		

Sample 1 (15 Blows; Surcharge: 10.03 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 554.9 | Wt. Soil+Tare, gms. 504.7 | Wt. Tare, gms. 33.5 | Moisture, % 10.7

Unit Weight

Wt. Mold+Soil, gms. 8610 | Wt. Mold, gms. 4188 | Ht. Soil, in. 4.581 | Density, pcf 117.5

Swell Data

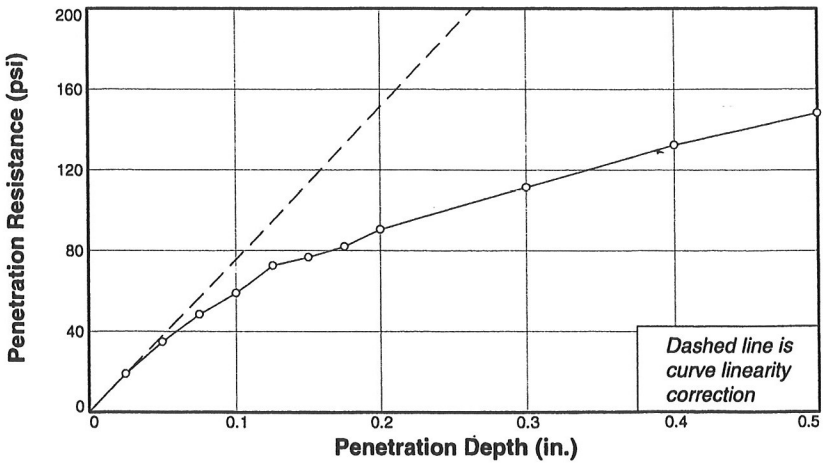
Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	125	0.0
96	159	0.7

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	591.4	524.2	34.4	13.7
Middle	547.7	488.9	33.6	12.9
Bottom	547.7	488.9	33.6	12.9

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0	0.0	
0.025	18	18.9	
0.05	33	34.7	
0.075	46	48.3	
0.1	56	58.8	5.9
0.125	69	72.5	
0.15	73	76.7	
0.175	78	81.9	
0.2	86	90.3	6.0
0.3	106	111.3	5.9
0.4	126	132.4	5.8
0.5	141	148.1	5.7



Sample 2 (25 Blows; Surcharge: 10.01 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 447.8 | Wt. Soil+Tare, gms. 408.2 | Wt. Tare, gms. 33.4 | Moisture, % 10.6

Unit Weight

Wt. Mold+Soil, gms. 8838 | Wt. Mold, gms. 4218 | Ht. Soil, in. 4.582 | Density, pcf 122.9

Swell Data

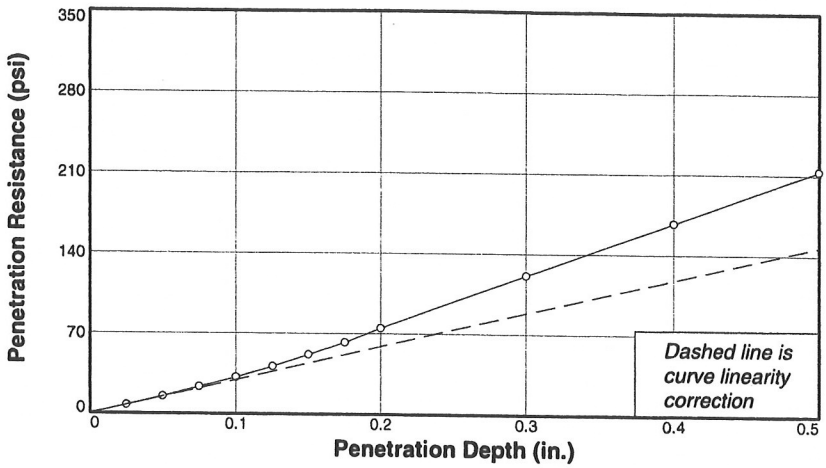
Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	124	0.0
96	159	0.8

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	558.5	494.6	33.5	13.9
Middle	575.8	517.3	15.1	11.6
Bottom	575.8	517.3	15.1	11.6

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0	0.0	
0.025	7	7.4	
0.05	14	14.7	
0.075	22	23.1	
0.1	30	31.5	3.2
0.125	39	41.0	
0.15	49	51.5	
0.175	59	62.0	
0.2	71	74.6	5.0
0.3	115	120.8	6.4
0.4	159	167.0	7.3
0.5	203	213.2	8.2



Sample 3 (56 Blows; Surcharge: 10.03 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 331.6 | Wt. Soil+Tare, gms. 303.4 | Wt. Tare, gms. 33.7 | Moisture, % 10.5

Unit Weight

Wt. Mold+Soil, gms. 8902 | Wt. Mold, gms. 4187 | Ht. Soil, in. 4.578 | Density, pcf 125.6

Swell Data

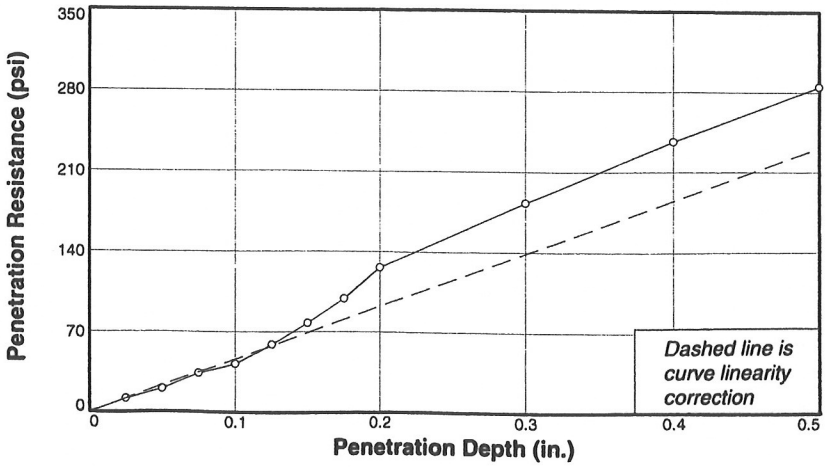
Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	135	0.0
06	177	0.9

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	555.4	493	17.1	13.1
Middle	584.4	527.4	17	11.2
Bottom	584.4	527.4	17	11.2

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0	0.0	
0.025	11	11.6	
0.05	19	20.0	
0.075	32	33.6	
0.1	40	42.0	4.2
0.125	56	58.8	
0.15	74	77.7	
0.175	94	98.7	
0.2	120	126.1	8.4
0.3	174	182.8	9.6
0.4	225	236.4	10.3
0.5	271	284.7	10.9



COMPACTION TEST REPORT/ ASTM D-1557-02

Curve No.: TP-4-1

Project No.: 6468061472 **Date:** 12/2/06

Project: NORTH ANNA COL PROJECT

Location: Test Pit #4 JMJ 1/22/07

Elev./Depth: 2.3-3.2' **Sample No.** TP-4-1

Remarks: ND = NOT DETERMINED.

MATERIAL DESCRIPTION

Description: Orange slightly silty sandy clay (VISUAL)

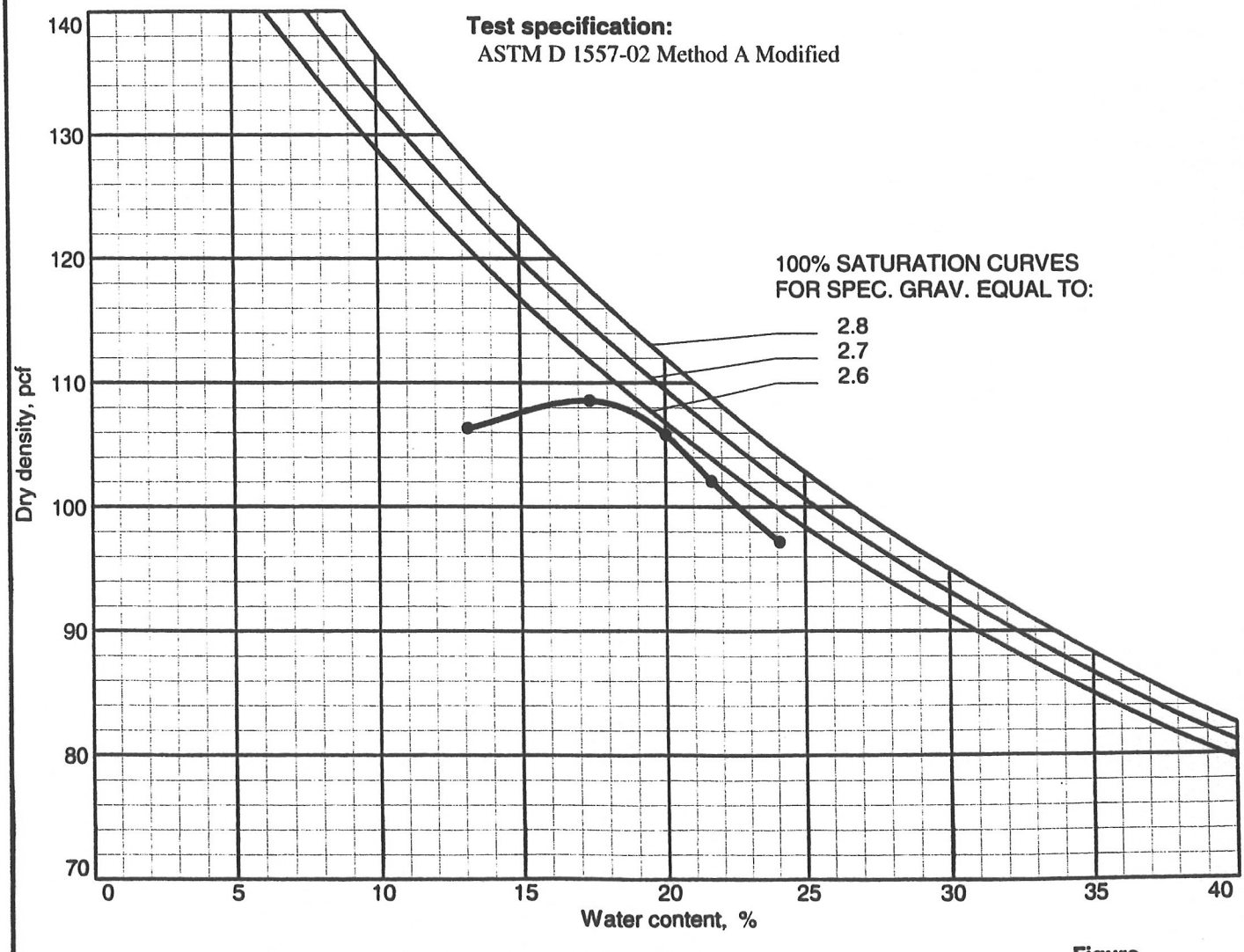
Classifications - **USCS:** ND **AASHTO:** ND

Nat. Moist. = 30.2 % **Sp.G. =** ND

Liquid Limit = ND **Plasticity Index =** ND

% > No.4 = 0.7 % **% < No.200 =** ND %

TEST RESULTS
Maximum dry density = 108.6 pcf
Optimum moisture = 17.1 %



Figure

MACTEC, Inc.

MOISTURE DENSITY TEST DATA

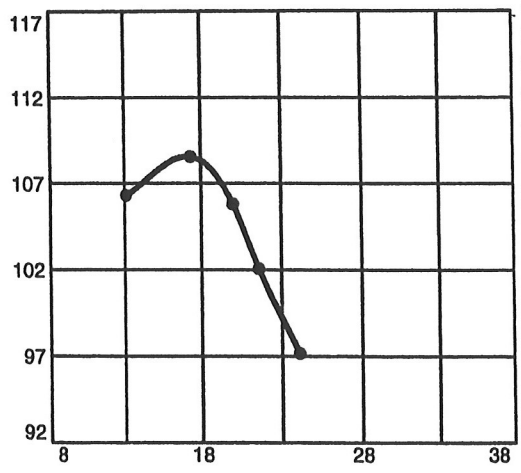
Client: Dominion Nuclear North Anna
Project: NORTH ANNA COL PROJECT
Project Number: 6468061472

Specimen Data

Source: TEST PIT 4
Sample No.: TP-4-1
Elev. or Depth: 2.3-3.2' **Sample Length(in./cm.):** 11
Location:
Description: Orange slightly silty sandy clay (VISUAL)
Liquid Limit: ND **Plasticity Index:** ND **Natural Moisture:** 30.2
Date: 12/2/06 **USCS Classification:** ND **AASHTO Classification:** ND
Testing Remarks: ND = NOT DETERMINED.
Percent retained on No.4 sieve: 0.7
Percent passing No. 200 sieve: ND **Specific gravity:** ND

Test Data And Results For Curve TP-4-1

Type of test: ASTM D 1557-02 Method A Modified
Mold Dia.: 4.00 in. **Hammer Wt.:** 10 lb. **Drop:** 18 in.
Layers: five **Blows per Layer:** 25



POINT NO.	1	2	3	4	5
WM + WS	3984.9	3977.8	3934.7	3880.9	3876.6
WM	2060.0	2060.0	2060.0	2060.0	2060.0
WW+T	520.60	530.90	540.30	537.00	518.10
WD+T	444.80	443.90	445.90	434.60	459.00
TARE	9.00	9.10	9.30	9.40	9.10
MOIST	17.4	20.0	21.6	24.1	13.1
MOISTURE	17.4	20.0	21.6	24.1	13.1
DRY DEN	108.6	105.8	102.0	97.2	106.3

Max dry den= 108.6 pcf **Opt moisture=** 17.1 %

COMPACTION TEST REPORT/ ASTM D-1557-02

Curve No.: TP-4-2

Project No.: 6468061472 **Date:** 12/2/06

Project: NORTH ANNA COL PROJECT

Location: TEST PIT #4 TBJ 1/22/07

Elev./Depth: 3.2-4.4 **Sample No.** TP-4-2

Remarks: ND=NOT DETERMINED

MATERIAL DESCRIPTION

Description: Tan orange slightly silty sandy clay (VISUAL)

Classifications - **USCS:** ND **AASHTO:** ND

Nat. Moist. = 15.2 %

Liquid Limit = ND

% > No.4 = 1.4 %

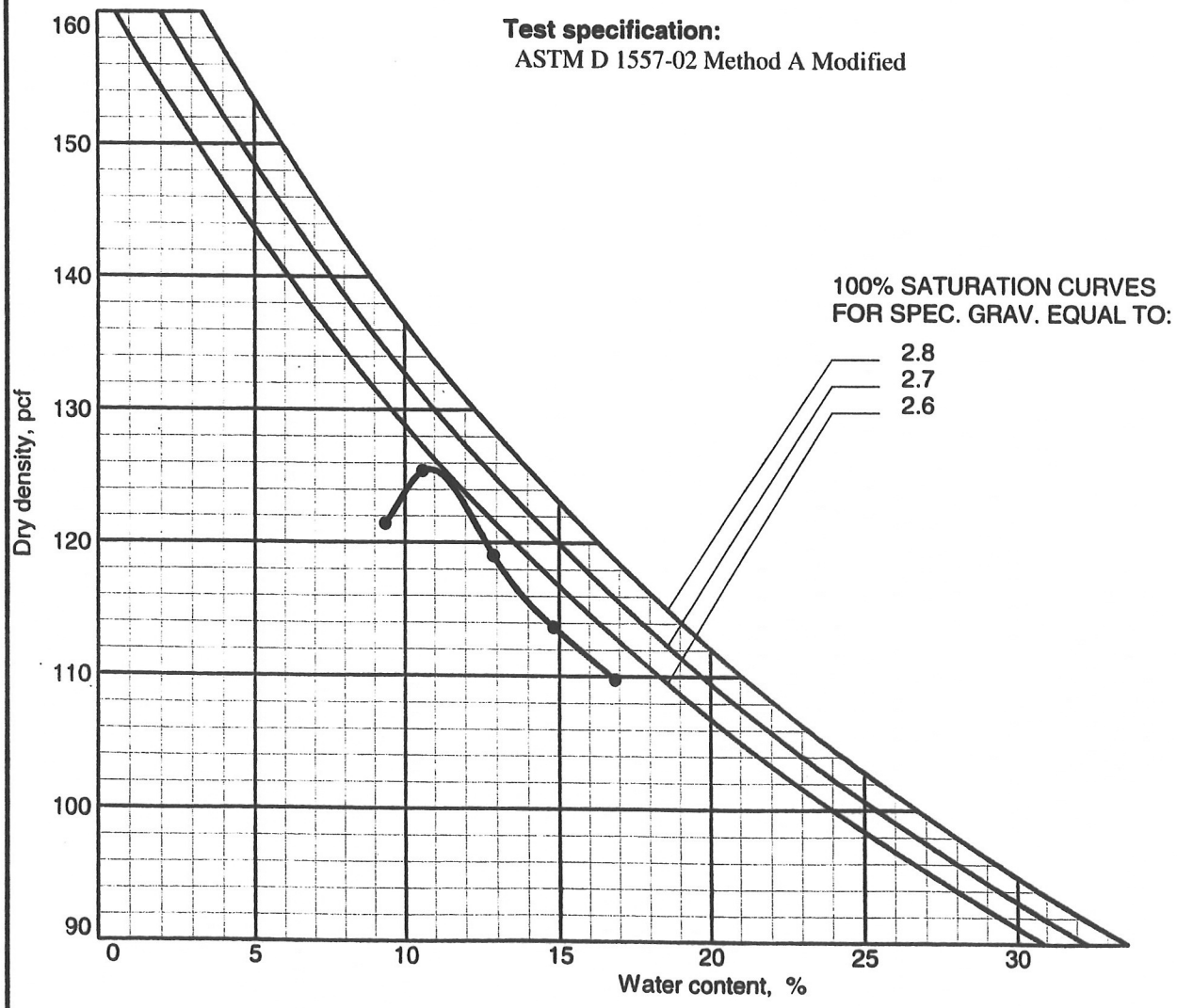
Sp.G. = ND

Plasticity Index = ND

% < No.200 = ND %

TEST RESULTS
Maximum dry density = 125.5 pcf
Optimum moisture = 10.8 %

Test specification:
ASTM D 1557-02 Method A Modified



Figure

MOISTURE DENSITY TEST DATA

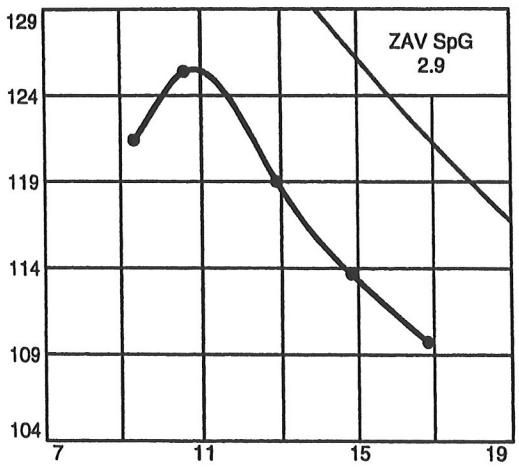
Client: Dominion Nuclear North Anna
Project: NORTH ANNA COL PROJECT
Project Number: 6468061472

Specimen Data

Source: TEST PIT 4
Sample No.: TP-4-2
Elev. or Depth: 3.2-4.4 **Sample Length(in./cm.):** 13
Location:
Description: Tan orange slightly silty sandy clay (VISUAL)
Liquid Limit: ND **Plasticity Index:** ND **Natural Moisture:** 15.2
Date: 12/2/06 **USCS Classification:** ND **AASHTO Classification:** ND
Testing Remarks: ND=NOT DETERMINED
Percent retained on No.4 sieve: 1.4
Percent passing No. 200 sieve: ND **Specific gravity:** ND

Test Data And Results For Curve TP-4-2

Type of test: ASTM D 1557-02 Method A Modified
Mold Dia.: 4.00 in. **Hammer Wt.:** 10 lb. **Drop:** 18 in.
Layers: five **Blows per Layer:** 25

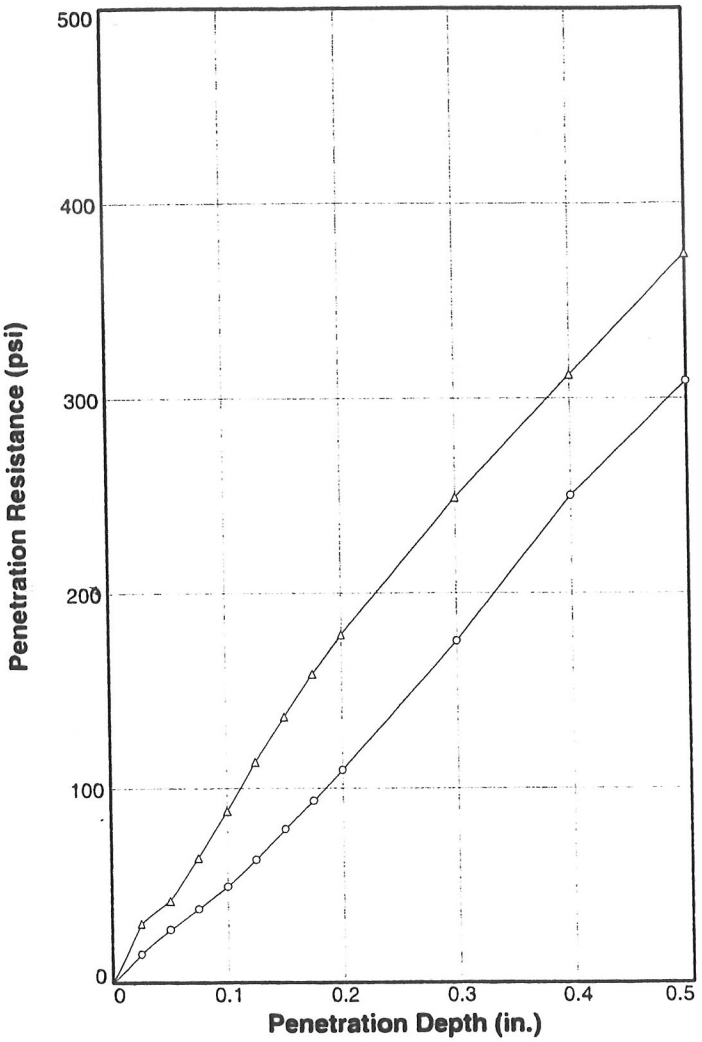


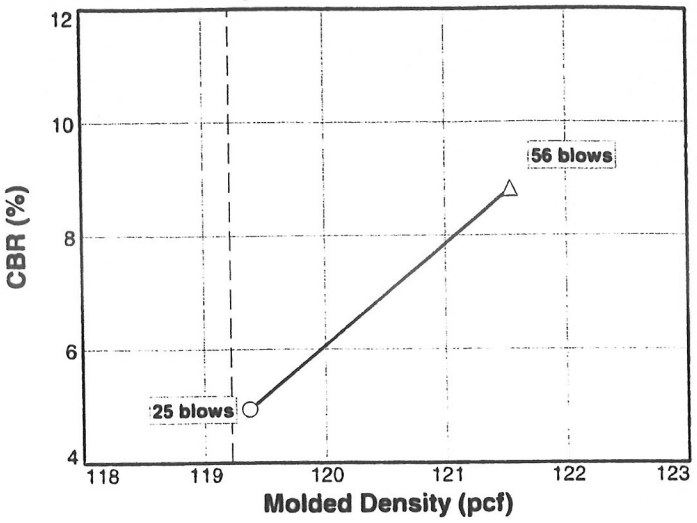
POINT NO.	1	2	3	4	5
WM + WS	4154.7	4089.3	4031.1	3996.6	4065.2
WM	2060.0	2060.0	2060.0	2060.0	2060.0
WW+T	584.30	610.60	525.30	526.10	524.80
WD+T	529.20	542.00	458.60	451.60	480.70
TARE	9.20	9.50	8.50	9.20	9.00
MOIST	10.6	12.9	14.8	16.8	9.3
MOISTURE	10.6	12.9	14.8	16.8	9.3
DRY DEN	125.4	119.0	113.7	109.7	121.4

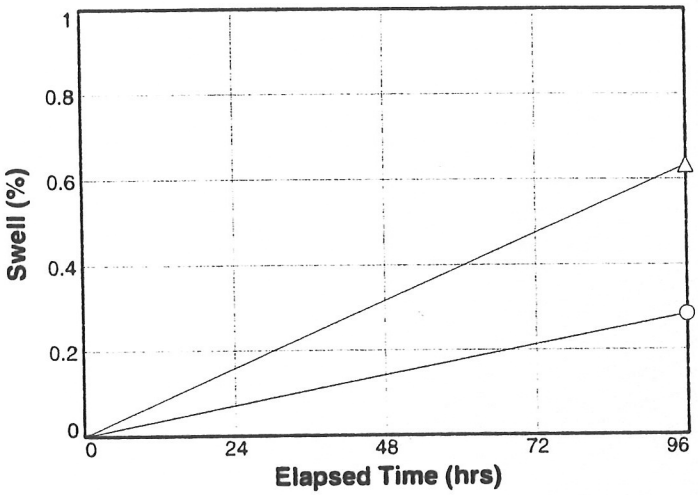
Max dry den= 125.5 pcf **Opt moisture=** 10.8 %

BEARING RATIO TEST REPORT

ASTM D 1883-~~99~~05 JAJ 1/23/07







	Molded			Soaked			CBR (%)		Linearity Correction (in.)	Surcharge (lbs.)	Max. Swell (%)
	Density (pcf)	Percent of Max. Dens.	Moisture (%)	Density (pcf)	Percent of Max. Dens.	Moisture (%)	0.10 in.	0.20 in.			
1 ○	119.4	95.1	11.0	119.0	94.8	14.3	4.9	7.3	0.000	10.01	0.3
2 △	121.5	96.8	10.6	120.8	96.2	14.0	8.8	11.9	0.000	10.04	0.6
3 □											

Material Description	USCS	Max. Dens. (pcf)	Optimum Moisture (%)	LL	PI
Tan orange slightly silty sandy clay (VISUAL)	ND	125.5	10.8	ND	ND

Project No: 6468061472

Project: NORTH ANNA COL PROJECT

Source of Sample: TEST PIT 4 **Depth:** 3.2-4.4

Sample Number: TP-4-2

Date: 11/15/06

Test Description/Remarks:

Tested in accordance with ASTM D-1883-05, section 7.1.2,

Insufficent material to perform three specimens.

BEARING RATIO TEST REPORT

MACTEC, Inc.

Figure _____

BEARING RATIO TESTING RESULTS
(ASTM D 1883-~~99~~) 05 2B 1/23/07

Date:	11/15/06		
Project No.:	6468061472		
Project:	NORTH ANNA COL PROJECT		
Location:	TEST PIT 4		
Depth:	3.2-4.4	**Sample Number:**	TP-4-2
Material Description:	Tan orange slightly silty sandy clay (VISUAL)		
USCS Classification:	ND		
Liquid Limit:	ND	**Plasticity Index:**	ND

Test Description:	Tested in accordance with ASTM D-1883-05, section 7.1.2,		
Maximum Dry Density:	125.5	**Optimum Moisture Content:**	10.8
Testing Remarks:	Insufficent material to perform three specimens.		

Sample 1 (25 Blows; Surcharge: 10.01 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 253.9	Wt. Soil+Tare, gms. 229.6	Wt. Tare, gms. 9.2	Moisture, % 11.0

Unit Weight

Wt. Mold+Soil, gms. 8706	Wt. Mold, gms. 4196	Ht. Soil, in. 4.585	Density, pcf 119.4

Swell Data

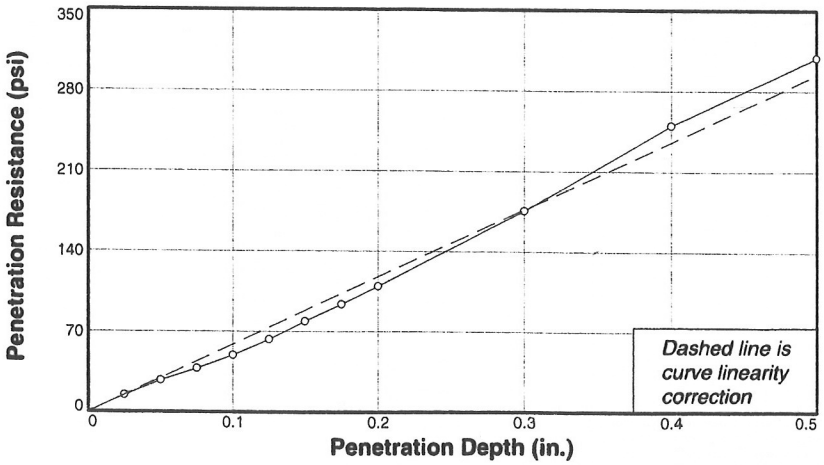
Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	62	0.0
96	75	0.3

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	520.9	463.9	94.5	15.4
Middle	440.9	394.6	58.2	13.8
Bottom	440.9	394.6	58.2	13.8

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0.0	0.0	
0.025	14	14.7	
0.05	26	27.3	
0.075	36	37.8	
0.1	47	49.4	4.9
0.125	60	63.0	
0.15	75	78.8	
0.175	89	93.5	
0.2	104	109.2	7.3
0.3	167	175.4	9.2
0.4	238	250.0	10.9
0.5	294	308.8	11.9



Sample 2 (56 Blows; Surcharge: 10.04 lbs.)

Water Content

Wt. Wet Soil+Tare, gms. 194.2 | Wt. Soil+Tare, gms. 176.5 | Wt. Tare, gms. 9 | **Moisture, % 10.6**

Unit Weight

Wt. Mold+Soil, gms. 8788 | Wt. Mold, gms. 4218 | Ht. Soil, in. 4.582 | **Density, pcf 121.5**

Swell Data

Elapsed Time, hrs.	Dial Reading in. x 1,000	Swell %
0	121	0.0
96	150	0.6

Final Water Content

	Wt. Wet Soil+Tare, gms.	Dry Soil+Tare	Tare	Moisture, %
Top	553.5	504.7	190.1	15.5
Middle	442.9	402.6	99.1	13.3
Bottom	442.9	402.6	99.1	13.3

Penetration Test Data

Pen. in.	Dial Reading in. x 1,000	Stress psi	CBR %
0.0	0	0.0	
0.025	29	30.5	
0.05	40	42.0	
0.075	61	64.1	
0.1	84	88.2	8.8
0.125	108	113.5	
0.15	130	136.6	
0.175	151	158.6	
0.2	170	178.6	11.9
0.3	237	249.0	13.1
0.4	297	312.0	13.6
0.5	356	374.0	14.4