Ninyo & Moore
Geotechnical & Environmental Sciences Consultants

INVOICE

Mr. Robert "Ed" Sturdivant
FORT BEND COUNTY
301 Jackson, Suite 533
Richmond, TX 77469

November 28, 2018
Project No: 700382002
Invoice No: 223405

Construction Materials Testing Services
Administration and Operations Facility
Fort Bend County, Texas
P.O. No. 119990

Invoice for materials testing services for the referenced project through October 26, 2018. Services ncluded field services, laboratory testing, report preparation and project management.

Tax ID No. 33-0269828

Professional Services

Task 01 Field Services

		Hours	Rate	Amount
Technician				
Badkoobeh, Hamid	10/19/2018	4.00	60.00	240.00
Nation, David	10/1/2018	8.00	60.00	480.00
Nation, David	10/1/2018 Ovt	1.00	90.00	90.00
Nation, David	10/2/2018	8.00	60.00	480.00
Nation, David	10/2/2018 Ovt	3.50	90.00	315.00
Nation, David	10/3/2018	8.00	60.00	480.00
Nation, David	10/3/2018 Ovt	3.00	90.00	270.00
Nation, David	10/4/2018	8.00	60.00	480.00
Nation, David	10/4/2018 Ovt	3.50	90.00	315.00
Nation, David	10/5/2018	8.00	60.00	480.00
Nation, David	10/5/2018 Ovt	3.00	90.00	270.00
Nation, David	10/6/2018 Ovt	12.50	90.00	1,125.00
Nation, David	10/8/2018	8.00	60.00	480.00
Nation, David	10/8/2018 Ovt	3.50	90.00	315.00
Nation, David	10/9/2018	8.00	60.00	480.00
Nation, David	10/9/2018 Ovt	3.50	90.00	315.00
Nation, David	10/10/2018	8.00	60.00	480.00
Nation, David	10/10/2018 Ovt	3.50	90.00	315.00
Nation, David	10/11/2018	8.00	60.00	480.00
Nation, David	10/11/2018 Ovt	4.00	90.00	360.00

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Nation, David	10/12/2018	8.00	60.00	480.00	
Nation, David	10/12/2018 Ovt	5.00	90.00	450.00	
Nation, David	10/13/2018 Ovt	10.00	90.00	900.00	
Nation, David	10/14/2018 Ovt	9.00	90.00	810.00	
Nation, David	10/15/2018	5.50	60.00	330.00	
Nation, David	10/17/2018	8.00	60.00	480.00	
Nation, David	10/17/2018 Ovt	2.50	90.00	225.00	
Nation, David	10/18/2018	8.00	60.00	480.00	
Nation, David	10/18/2018 Ovt	3.00	90.00	270.00	
Nation, David	10/19/2018	8.00	60.00	480.00	
Nation, David	10/19/2018 Ovt	3.50	90.00	315.00	
Nation, David	10/20/2018 Ovt	4.00	90.00	360.00	
Nation, David	10/22/2018	8.00	60.00	480.00	
Nation, David	10/22/2018 Ovt	4.00	90.00	360.00	
Nation, David	10/25/2018	4.00	60.00	240.00	
Nation, David	10/26/2018	8.00	60.00	480.00	
Nation, David	10/26/2018 Ovt	3.00	90.00	270.00	
Total Labor					**15,660.00**

Task 04 Data Processing

		Hours	**Rate**	**Amount**	
Data Processor					
Hooper, Tiffany	10/22/2018	.25	45.00	11.25	
Hooper, Tiffany	10/26/2018	.25	45.00	11.25	
Schuhmacher, Lauren	10/1/2018	.25	45.00	11.25	
Schuhmacher, Lauren	10/2/2018	.50	45.00	22.50	
Schuhmacher, Lauren	10/3/2018	.25	45.00	11.25	
Schuhmacher, Lauren	10/4/2018	.25	45.00	11.25	
Schuhmacher, Lauren	10/5/2018	.25	45.00	11.25	
Schuhmacher, Lauren	10/8/2018	.50	45.00	22.50	
Schuhmacher, Lauren	10/9/2018	.50	45.00	22.50	
Schuhmacher, Lauren	10/10/2018	.50	45.00	22.50	
Schuhmacher, Lauren	10/11/2018	.50	45.00	22.50	
Schuhmacher, Lauren	10/12/2018	.25	45.00	11.25	
Schuhmacher, Lauren	10/15/2018	.50	45.00	22.50	
Schuhmacher, Lauren	10/16/2018	.25	45.00	11.25	
Schuhmacher, Lauren	10/17/2018	.25	45.00	11.25	
Schuhmacher, Lauren	10/18/2018	.25	45.00	11.25	
Schuhmacher, Lauren	10/19/2018	.75	45.00	33.75	
Schuhmacher, Lauren	10/22/2018	.50	45.00	22.50	
Schuhmacher, Lauren	10/23/2018	.25	45.00	11.25	
Total Labor					**315.00**

Task 08 Geotechnical Calculations

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		Hours	Rate	Amount	
Senior Engineer/Geologist/Scientist					
Whitt, Richard	10/16/2018	1.00	150.00	150.00	
Whitt, Richard	10/17/2018	1.00	150.00	150.00	
Whitt, Richard	10/24/2018	.25	150.00	37.50	
Total Labor					**337.50**

Task 11 Project Coordination

		Hours	Rate	Amount
Principal Engineer/Geologist/Scientist				
Sunderwala, Jay	10/1/2018	.25	180.00	45.00
Sunderwala, Jay	10/9/2018	.25	180.00	45.00
Sunderwala, Jay	10/15/2018	.25	180.00	45.00
Sunderwala, Jay	10/17/2018	.50	180.00	90.00
Sunderwala, Jay	10/23/2018	.25	180.00	45.00
Sunderwala, Jay	10/26/2018	.25	180.00	45.00
Field Operations Manager				
Urban, Glenn	10/1/2018	1.00	90.00	90.00
Urban, Glenn	10/2/2018	1.00	90.00	90.00
Urban, Glenn	10/3/2018	1.00	90.00	90.00
Urban, Glenn	10/4/2018	.50	90.00	45.00
Urban, Glenn	10/8/2018	2.00	90.00	180.00
Urban, Glenn	10/9/2018	1.00	90.00	90.00
Urban, Glenn	10/10/2018	.50	90.00	45.00
Urban, Glenn	10/11/2018	.75	90.00	67.50
Urban, Glenn	10/12/2018	.50	90.00	45.00
Urban, Glenn	10/15/2018	2.00	90.00	180.00
Urban, Glenn	10/16/2018	1.00	90.00	90.00
Urban, Glenn	10/17/2018	1.00	90.00	90.00
Urban, Glenn	10/18/2018	1.00	90.00	90.00
Urban, Glenn	10/19/2018	.50	90.00	45.00
Urban, Glenn	10/24/2018	2.00	90.00	180.00
Technician				
Nix, Joshua	10/1/2018	.25	60.00	15.00
Nix, Joshua	10/2/2018	.25	60.00	15.00
Nix, Joshua	10/3/2018	.25	60.00	15.00
Nix, Joshua	10/4/2018	.25	60.00	15.00
Nix, Joshua	10/5/2018	.25	60.00	15.00
Nix, Joshua	10/8/2018	.25	60.00	15.00
Nix, Joshua	10/10/2018	.25	60.00	15.00
Nix, Joshua	10/11/2018	.25	60.00	15.00
Nix, Joshua	10/15/2018	.25	60.00	15.00
Nix, Joshua	10/16/2018	.25	60.00	15.00
Nix, Joshua	10/17/2018	.25	60.00	15.00
Nix, Joshua	10/18/2018	.25	60.00	15.00

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	Nix, Joshua	10/19/2018	.50	60.00	30.00	
	Nix, Joshua	10/24/2018	.25	60.00	15.00	
	Nix, Joshua	10/25/2018	.25	60.00	15.00	
	Nix, Joshua	10/26/2018	.25	60.00	15.00	
	Total Labor					**1,987.50**

Task	17	Laboratory Testing		
	Atterberg Limits	10.0 Tests @ 55.00	550.00	
	Sieve Analysis - 200 Wash	10.0 Tests @ 45.00	450.00	
	Standard Proctor Density	3.0 Tests @ 175.00	525.00	
	Comp. Strength Cement Stabilized Sand	4.0 Tests @ 65.00	260.00	
	Lime Determination pH Method	1.0 Test @ 200.00	200.00	
	Lime Determination pH Method	1.0 Test @ 210.00	210.00	
	Total Units		**2,195.00**	**2,195.00**

Task	21	Reimbursables		
10/26/2018	Field Vehicle Usage	218.5 Hours @ 10.00	2,185.00	
Nuclear Density Gauge				
10/26/2018		206.5 Hours @ 12.00	2,478.00	
	Total Units		**4,663.00**	**4,663.00**

TOTAL THIS INVOICE $25,158.00

Contract Summary

Previously Invoiced	$8,915.25
Amount This Invoice	$25,158.00
Total Invoiced	$34,073.25
Contract Amount	$270,000.00
Funds Remaining	$235,926.75
Percent Billed	13%

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	18
Contractor:	SpawGlass	**Date Tested:**	10/1/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	402	**Density Standard:**	2718

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 6" Sanitary Sewer								
1	20' South of MH 4	1	9	12	122.7	105.3	16.5	95
2	120' South of MH 4	1	9	12	120.8	105.2	14.8	95

Regular Hours	O.T. Hours
8	1

Glenn Urban

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	19
Contractor:	SpawGlass	**Date Tested:**	10/2/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	398	**Density Standard:**	2723

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 6" Sanitary Sewer								
1	200' South of MH 4	1	9	12	120.8	106.2	13.7	96
2	200' South of MH 4	2	9	12	122.0	109.0	11.9	98
3	20' South of MH 4	2	9	12	122.0	106.9	14.1	96
4	120' South of MH 4	2	9	12	122.0	106.5	14.6	96
Backfill, 24" Storm Sewer								
5	MH A2	2	9	12	121.3	106.4	14.0	96
Backfill, 12" Storm Sewer								
6	10' West of MH C1	1	9	12	119.3	106.0	12.5	96
7	15' South and 30' West of MH C1	1	9	12	119.4	107.2	11.4	97
8	100' South and 30' West of MH C1	1	9	12	119.4	105.9	12.8	95

Regular Hours	O.T. Hours
8	3.5

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	20
Contractor:	SpawGlass	**Date Tested:**	10/3/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
4	Dark Gray Fat Clay	95 / -2 to +2	95.0	23.9	ASTM D698
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	402	**Density Standard:**	2717

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 6" Sanitary Sewer								
1	15' West of MH 5	1	9	12	121.4	105.4	15.2	95
2	15' West of MH 5	2	9	12	122.0	105.4	15.8	95
3	15' West of MH 5	3	4	12	119.5	95.6	25.0	101
4	75' West of MH 5	1	9	12	121.3	105.7	14.8	95
5	25' West of MH 5	2	9	12	118.7	105.4	12.6	95
6	85' West of MH 5	3	4	12	119.1	95.7	24.4	101
7	50' East of MH 4	1	9	12	121.6	107.5	13.1	97
Backfill, 12" Storm Sewer								
8	30' West of Inlet C1	2	4	12	119.3	95.0	25.6	100
9	30' West and 15' South of Inlet C1	2	4	12	119.0	95.7	24.3	101
10	30' West and 100' South of Inlet C1	2	4	12	118.0	93.1	26.8	98
11	10' East of Inlet C1	1	9	12	122.3	108.2	13.0	98
12	10' East of Inlet C1	2	9	12	119.9	105.5	13.7	95
13	10' East of Inlet C1	3	4	12	119.6	96.0	24.6	101
14	10' East of Inlet C1	4	4	12	118.7	93.0	27.6	98

Regular Hours	O.T. Hours
8	3

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	21
Contractor:	SpawGlass	**Date Tested:**	10/4/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	382	**Density Standard:**	2729

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 6" Sanitary Sewer								
1	100' East of MH 4	1	9	12	122.2	108.8	12.3	98
2	150' East of MH 4	1	9	12	122.7	107.8	13.8	97
3	40' West of MH 2	1	9	12	122.6	108.3	13.2	98
4	100' South of MH 2	1	9	12	121.7	105.3	15.6	95
5	200' South of MH 2	1	9	12	121.8	105.5	15.5	95
6	250' South of MH 2	1	9	12	120.9	105.7	14.4	95
7	300' South of MH 2	1	9	12	122.2	108.0	13.1	97

Regular Hours	O.T. Hours
8	3.5

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Report of Soil Properties

Project Name:	Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	22
Contractor:	Spaw Glass	**Date:**	10/4/2018
		Technician:	David Nation

As requested, a Ninyo & Moore technician obtained five samples of stockpiled building pad material to evaluate the soil properties. Presented below is a summary of the test results.

SAMPLE DATA

Sample No.	Material Classification	Material Source	Atterberg Limits ASTM D4318, Method D			Material Finer Than No. 200 Sieve ASTM D1140-06, Method B	
			Liquid Limit	Plastic Limit	Plasticity Index	Material Finer (%)	Initial Dry Mass (g)
1	Sandy Lean Clay	Stockpile	33	17	16	56.1	106.1
2	Sandy Lean Clay	Stockpile	35	18	17	59.5	121.2
3	Sandy Lean Clay	Stockpile	36	18	18	58.3	103.4
4	Sandy Lean Clay	Stockpile	32	19	13	57.8	84.0
5	Sandy Lean Clay	Stockpile	37	18	19	62.2	120.9

Based on the test results, the material is acceptable for use as building pad fill.

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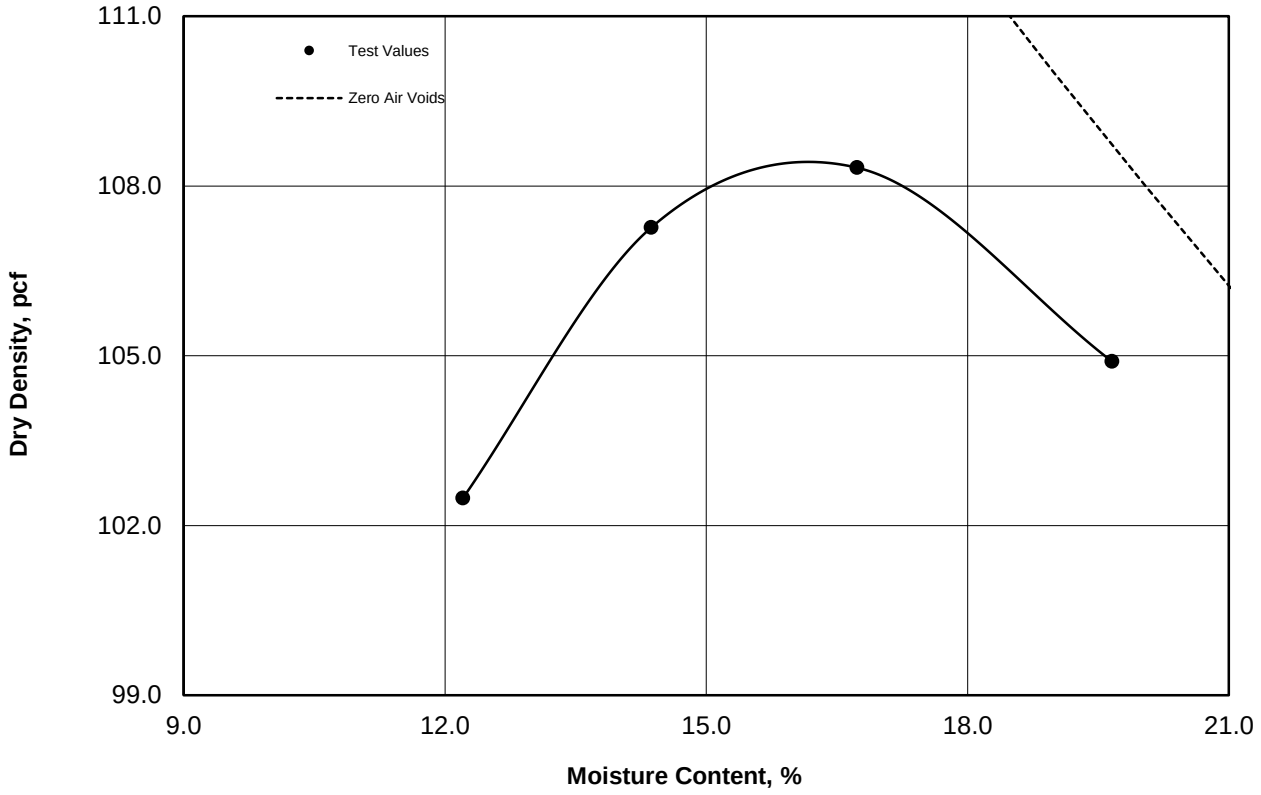
MOISTURE-DENSITY RELATION

Project: Fort Bend Administration and Operations Facility
Project Number: 700382002
Client: Fort Bend County
Report Number: 23
Contractor: SpawGlass
Sample Date: October 4, 2018



Sample Information

Sample: H18-1035
Source: On Site Stockpile
Description: Reddish Brown Sandy Lean Clay

Moisture Density (ASTM D 698, Method A)

Maximum Dry Density, pcf: 108.4
Optimum Moisture Content, %: 16.2
Preparation Method: Wet
Rammer Type: Mechanical

Fines Content (ASTM D 1140, Method B)

% - No. 200 Sieve: 58.3
Initial Dry Mass, g: 121.6

Atterberg Limits (ASTM D 4318, Method B)

Liquid Limit, LL: 36
Plastic Limit, PL: 19
Plasticity Index, PI: 17
% + No. 40 Sieve: 0

Specific Gravity

Specific Gravity : 2.65 (estimated)

Technician: Clint Garlington

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	24
Contractor:	SpawGlass	**Date Tested:**	10/5/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
4	Dark Gray Fat Clay	95 / NA	95.0	23.9	ASTM D698
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	393	**Density Standard:**	2720

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 6" Sanitary Sewer								
1	25' South of MH 3	1	9	12	121.2	106.4	13.9	96
2	75' South of MH 3	1	9	12	124.6	109.5	13.8	99
3	150' South of MH 3	1	9	12	122.5	107.4	14.1	97
4	200' South of MH 3	1	9	12	123.8	108.6	14.0	98
5	275' South of MH 3	1	9	12	122.4	107.3	14.1	97
6	345' South of MH 3	1	9	12	122.4	105.7	15.8	95
7	100' South of MH 2	2	9	12	123.4	108.8	13.4	98
8	200' South of MH 2	2	9	12	122.9	109.0	12.8	98
9	250' South of MH 2	2	9	12	123.1	107.3	14.7	97
10	300' South of MH 2	2	9	12	124.1	108.1	14.8	97
11	100' South of MH 2	3	9	12	121.6	105.5	15.3	95
12	200' South of MH 2	3	9	12	122.1	105.8	15.4	95
13	250' South of MH 2	3	9	12	123.3	109.7	12.4	99
14	300' South of MH 2	3	9	12	122.5	107.9	13.5	97
15	100' East of MH 4	2	9	12	124.5	111.9	11.3	101
16	150' East of MH 4	2	9	12	123.9	108.7	14.0	98
17	100' East of MH 4	3	9	12	123.0	108.8	13.0	98
18	150' East of MH 4	3	9	12	122.7	108.5	13.1	98
19	100' East of MH 4	4	9	12	121.7	107.8	12.9	97
20	150' East of MH 4	4	9	12	124.2	110.7	12.2	100

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	24
Contractor:	SpawGlass	**Date Tested:**	10/5/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
4	Dark Gray Fat Clay	95 / NA	95.0	23.9	ASTM D698
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	393	**Density Standard:**	2720

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Maintenance Building Subgrade								
21	14' North and 43' East of Southwest Corner	Subgrade	4	8	124.0	97.1	27.7	102
22	30' North and 33' West of Southeast Corner	Subgrade	4	8	123.5	98.4	25.5	104
23	101' North and 68' West of Southeast Corner	Subgrade	4	8	122.2	94.9	28.8	100
24	21' South and 21' West of Northeast Corner	Subgrade	4	8	120.2	95.2	26.2	100
25	17' South and 33' East of Northwest Corner	Subgrade	4	8	121.6	99.1	22.7	104

Remarks: For Test Nos. 21 thru 25, the Required Moisture is -1 to Above.

Regular Hours	O.T. Hours
8	3

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	26
Contractor:	SpawGlass	**Date Tested:**	10/6/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
4	Dark Gray Fat Clay	95 / -2 to +2	95.0	23.9	ASTM D698
9	1.5 sk Cement Treated Sand	95 / -2 to +2	110.9	12.7	ASTM D558
28	Reddish Brown Sandy Lean Clay	95 / NA	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	396	**Density Standard:**	2715

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 6" Sanitary Sewer								
1	25' South of MH 3	2	9	12	124.5	111.4	11.8	100
2	75' South of MH 3	2	9	12	119.3	105.3	13.3	95
3	150' South of MH 3	2	9	12	119.0	105.2	13.1	95
4	200' South of MH 3	2	9	12	118.7	105.5	12.5	95
5	275' South of MH 3	2	9	12	118.2	106.9	10.6	96
6	345' South of MH 3	2	9	12	118.2	105.4	12.1	95
7	100' South of MH 2	4	4	6	114.4	90.3	26.7	95
8	200' South of MH 2	4	4	6	114.5	90.3	26.8	95
9	250' South of MH 2	4	4	6	114.1	90.3	26.3	95
10	300' South of MH 2	4	4	6	115.1	90.6	27.0	95
11	100' East of MH 4	5	4	6	116.9	90.6	29.0	95
12	150' East of MH 4	5	4	6	114.5	90.9	26.0	96
13	200' East of MH 4	3	9	6	115.6	105.3	9.8	95
14	20' East of MH 4	3	9	6	115.8	105.7	9.6	95
15	120' East of MH 4	3	9	6	117.2	105.3	11.3	95
Backfill, Building Pad								
16	12' South and 21' West of Northeast Corner	1	28	8	116.2	103.6	**12.2**	96
17	44' South and 60' West of Northeast Corner	1	28	8	116.0	102.7	**12.9**	95
18	93' North and 13' East of Southwest Corner	1	28	8	117.5	104.3	**12.7**	96
19	61' North and 30' West of Northeast Corner	1	28	8	115.4	101.9	13.3	**94**
20	100' North and 20' West of Southeast Corner	1	28	8	116.0	104.2	**11.3**	96

Remarks: Bolded values did not meet the project specification requirements.

Regular Hours	O.T. Hours
0	12.5

Glenn Urban

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	26
Contractor:	SpawGlass	**Date Tested:**	10/6/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
4	Dark Gray Fat Clay	95 / -2 to +2	95.0	23.9	ASTM D698
9	1.5 sk Cement Treated Sand	95 / -2 to +2	110.9	12.7	ASTM D558
28	Reddish Brown Sandy Lean Clay	95 / NA	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	396	**Density Standard:**	2715

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %

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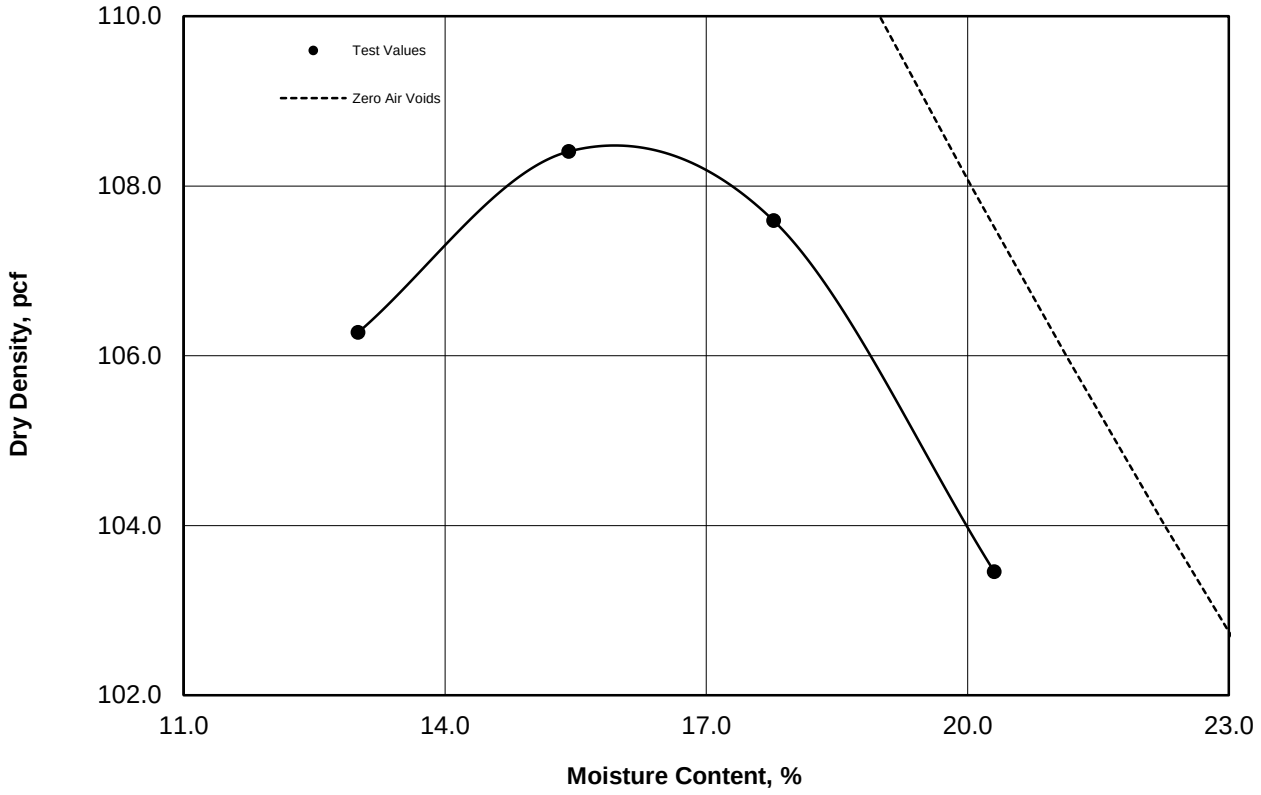
MOISTURE-DENSITY RELATION

Project: Fort Bend Administration and Operations Facility
Project Number: 700382002
Client: Fort Bend County
Report Number: 27
Contractor: SpawGlass
Sample Date: October 6, 2018



Sample Information

Sample: H18-1065
Source: 1st Lift Building Pad
Description: Reddish Brown Sandy Lean Clay

Moisture Density (ASTM D 698, Method A)

Maximum Dry Density, pcf: 108.5
Optimum Moisture Content, %: 16.0
Preparation Method: Wet
Rammer Type: Mechanical

Fines Content (ASTM D 1140, Method B)

% - No. 200 Sieve: 60.8
Initial Dry Mass, g: 85.8

Atterberg Limits (ASTM D 4318, Method B)

Liquid Limit, LL: 32
Plastic Limit, PL: 18
Plasticity Index, PI: 14
% + No. 40 Sieve: 0

Specific Gravity

Specific Gravity : 2.65 (estimated)

Technician: David Nation

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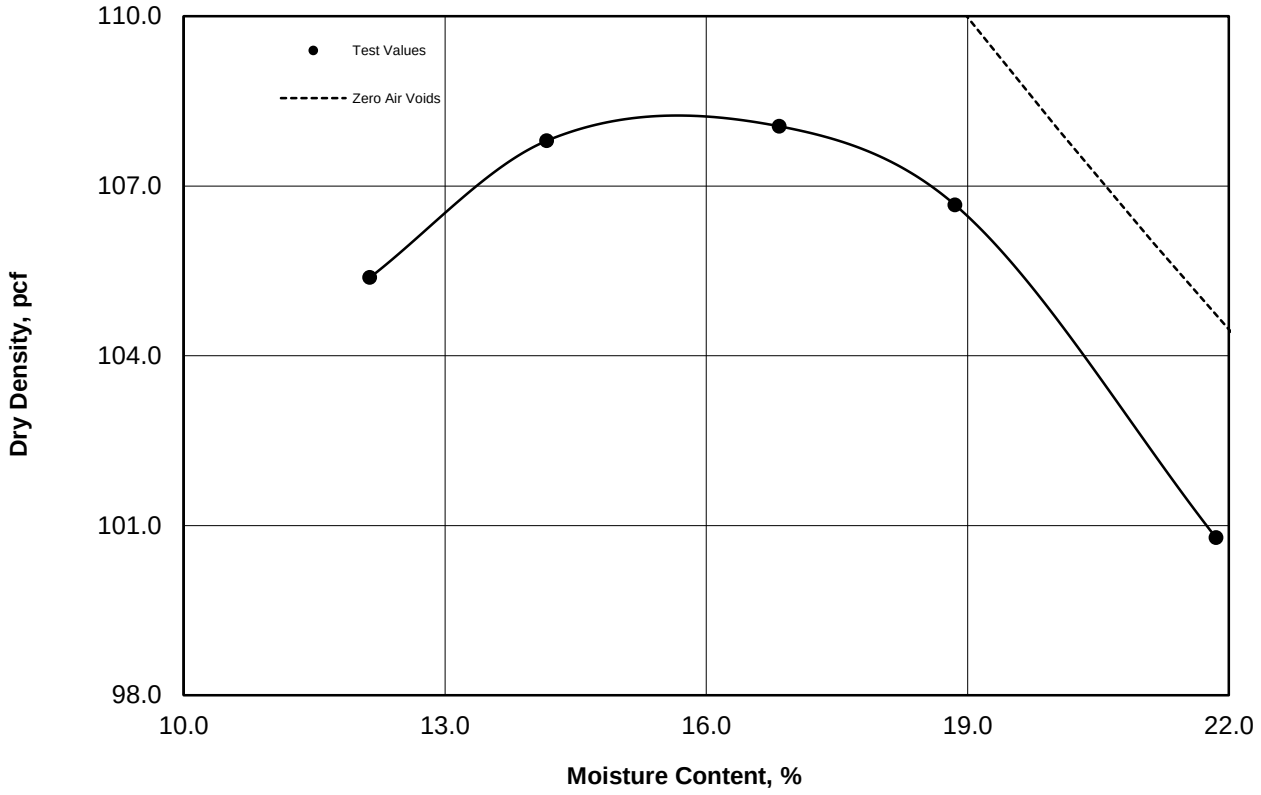
MOISTURE-DENSITY RELATION

Project: Fort Bend Administration and Operations Facility
Project Number: 700382002
Client: Fort Bend County
Report Number: 28
Contractor: SpawGlass
Sample Date: October 6, 2018



Sample Information

Sample: H18-1066
Source: 1st Lift Building Pad
Description: Reddish Brown Sandy Lean Clay

Moisture Density (ASTM D 698, Method A)

Maximum Dry Density, pcf: 108.2
Optimum Moisture Content, %: 15.7
Preparation Method: Wet
Rammer Type: Mechanical

Fines Content (ASTM D 1140, Method B)

% - No. 200 Sieve: 66.1
Initial Dry Mass, g: 69.5

Atterberg Limits (ASTM D 4318, Method B)

Liquid Limit, LL: 34
Plastic Limit, PL: 18
Plasticity Index, PI: 16
% + No. 40 Sieve: 0

Specific Gravity

Specific Gravity : 2.65 (estimated)

Technician: David Nation

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PROOFROLLING OBSERVATION

Project Name:	Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	29
Contractor:	SpawGlass	**Date:**	10/6/18
		Technician:	David Nation

As requested, a Ninyo & Moore technician went to the referenced project to perform a proofrolling observation for the subgrade in the following location.

Maintenance Building

The proofrolling observation was performed utilizing a loaded scraper. Visual signs of pumping and/or rutting were not observed.

Based on our observations, the subgrade in the referenced location is acceptable for fill placement.

Regular Hours	O.T. Hours
8	4.5

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	30
Contractor:	SpawGlass	**Date Tested:**	10/8/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**		**Density Standard:**	

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Fill, Maintenance Building, Building Pad								
1	10' North and 15' East of Southeast Corner	1	28	6	121.0	105.5	14.7	97
2	60' North and 45' East of Southwest Corner	1	28	6	122.7	108.4	**13.2**	100
3	84' North and 6' East of Southwest Corner	1	28	6	119.4	104.8	13.9	97

Remarks: Bolded values did not meet the project specification requirements.

Regular Hours	O.T. Hours
8	3.5

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	31
Contractor:	SpawGlass	**Date Tested:**	10/9/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	387	**Density Standard:**	2727

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Fill, Maintenance Building, Building Pad, Column Lines								
1	B/M2	1	28	8	120.7	104.1	15.9	96
2	C.8/M2	1	28	8	125.6	107.4	17.0	99
3	E.5/M2	1	28	8	119.4	104.5	14.3	97
4	B/M3.9	1	28	8	121.0	105.0	15.2	97
5	C.8/M3.9	1	28	8	117.9	103.1	14.4	95
6	E.5/M3.9	1	28	8	119.1	104.0	14.5	96
7	B/M7	1	28	8	119.1	102.8	15.8	95
8	C.8/M7	1	28	8	118.4	103.0	15.0	95
9	E.5/M7	1	28	8	119.7	104.5	14.6	97
10	B/M8	1	28	8	119.6	104.5	14.4	97
11	C.8/M8	1	28	8	119.3	104.2	14.5	96
12	E.5/M8	1	28	8	116.9	102.7	13.8	95
13	C.8/M9	1	28	8	119.8	102.9	16.4	95
14	E.5/M9	1	28	8	124.7	109.3	14.1	101

The above tests are retests of the first lift of building pad fill.

Regular Hours	O.T. Hours
8	3.5

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	32
Contractor:	SpawGlass	**Date Tested:**	10/10/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
4	Dark Gray Fat Clay	95 / -1 to Above	95.0	23.9	ASTM D698
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	386	**Density Standard:**	2727

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 36" Storm Sewer, Inlets								
1	35' North of Inlet D16	1	9	6	114.7	105.3	8.9	95
2	50' South of Inlet D15	1	9	6	117.3	106.1	10.6	96
3	100' South of Inlet D15	1	9	6	117.2	107.0	9.5	97
4	50' South of Inlet D14	1	9	6	117.7	106.5	10.5	96
5	75' South of Inlet D13	1	9	6	117.9	106.6	10.6	96
Backfill, 24" Storm Sewer, Inlets								
6	25' South of Inlet D12	1	9	6	117.1	105.4	11.1	95
7	100' South of Inlet D11	1	9	6	116.7	106.9	9.2	96
8	75' North of Inlet D9	1	9	6	117.3	107.3	9.3	97
9	50' West of Inlet D12	1	9	6	117.2	107.1	9.4	97
10	75' East of Inlet D8	1	9	6	117.5	106.4	10.4	96
Subgrade, Administration Building, Building Pad, Column Lines								
11	A7 between AB6 & AA9	1	4	8	122.5	97.7	25.4	103
12	A4 & AC	1	4	8	124.6	97.0	28.5	102
13	AB.5 at A2.3	1	4	8	124.8	98.3	27.0	103
14	A3 at AD	1	4	8	123.4	98.6	25.2	104
15	AE at A3	1	4	8	123.6	99.0	24.8	104

Regular Hours	O.T. Hours
8	3.5

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PROOFROLLING OBSERVATION

Project Name:	Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	33
Contractor:	SpawGlass	**Date:**	10/10/18
		Technician:	David Nation

As requested, a Ninyo & Moore technician went to the referenced project to perform a proofrolling observation for the subgrade in the following location.

Administration Building

The proofrolling observation was performed utilizing a tractor and a loaded scraper. Visual signs of significant pumping and/or rutting were not observed.

Based on our observations, the subgrade in the referenced location is acceptable for fill placement.

Regular Hours	O.T. Hours
8	3.5

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CEMENT TREATED SAND COMPRESSIVE STRENGTH

Project Name:	Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	34
Contractor:	SpawGlass	**Placement Date:**	10/10/18
Sample Location:	Inlet D9	**Technician:**	David Nation
Material Description:	1.5 sk Cement Stabilized Sand		

Supplier:	Cherry Crushed Concrete			**Plant No.:**	6
Truck No.:	1RIVAS	**Ticket No.:**	92168097	**Time Batched:**	10:37 AM
Time Sampled:	11:20 AM	**Time Received:**	12:00 PM	**Time Molded:**	12:40 PM

Required Strength: 100 **psi at 48 hours** **Curing Method:** Air Cured in Plastic Cover

Compressive Strength Test Method

ASTM D1633

Sample No.	Age	Date Tested	Area, in.^{2}	Maximum Load, lb	Compressive Strength, psi	Water Content, %
1A	48 Hours	10/12/18	12.57	1270	101	11.7
1B	48 Hours	10/12/18	12.57	1360	108	11.7
1C	7 Days	10/17/18	12.57	2130	169	11.7
1D	7 Days	10/17/18	12.57	2120	169	11.7

Average compressive strength at 48 hours conforms to Project Specifications. ☑ Yes ☐ No

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	35
Contractor:	SpawGlass	**Date Tested:**	10/11/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	402	**Density Standard:**	2727

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 24" Storm Sewer, Inlets								
1	75' West of Inlet D8	1	9	6	116.9	105.3	11.0	95
2	75' East of Inlet D5	1	9	6	114.8	105.2	9.1	95
Backfill, 24" Storm Sewer, Inlets								
3	60' West of Inlet D14	1	9	6	122.2	107.7	13.5	97
4	20' West of Inlet D14	1	9	6	122.6	109.4	12.1	99
5	134' West and 75' South of Inlet D14	1	9	6	122.9	108.7	13.1	98
6	134' West and 150' South of Inlet D14	1	9	6	122.9	108.8	13.0	98
Administration Building, Building Pad, Column Lines								
7	A1.6/AD	1	28	8	117.8	103.2	14.1	95
8	A2.3/AB.6	1	28	8	118.4	103.1	14.8	95
9	AE/A5	1	28	8	118.8	103.9	14.3	96
10	A4/AC	1	28	8	119.8	103.3	16.0	95
11	A6.4 between AF/AD	1	28	8	120.5	102.7	17.3	95
12	A6.4 between A7/AF	1	28	8	119.4	104.4	14.4	96
13	A6.4 between A6.8/AA.9	1	28	8	121.3	106.1	14.3	98
14	AA between A6/AC to AB.6	1	28	8	124.1	107.6	15.3	99

Regular Hours	O.T. Hours
8	4

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	36
Contractor:	SpawGlass	**Date Tested:**	10/12/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	382	**Density Standard:**	2739

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Maintenance Building, Building Pad, Column Lines								
1	M3.9/D.7	2	28	8	120.6	103.5	16.5	96
2	M1.8/E.5	2	28	8	128.8	111.1	15.9	103
3	M4/C	2	28	8	120.7	103.5	16.6	96
4	M5 between B/C	2	28	8	116.8	102.7	13.7	95
5	M5 between C.8/M7	2	28	8	118.8	104.5	13.7	97
Administration Building, Building Pad, Column Lines								
6	A7/AF	2	28	8	118.0	103.5	14.0	96
7	AC/AB.6	2	28	8	122.2	103.8	17.7	96
8	A5.6/AD	2	28	8	120.1	103.8	15.7	96
9	A4 between AF/AD	2	28	8	120.4	103.2	16.7	95
10	A3 between AD/AC	2	28	8	121.1	105.3	15.0	97
11	A3 between A2.3/AB.6	2	28	8	120.4	102.8	17.1	95
12	A3 between A4/AC	2	28	8	118.2	104.0	13.7	96
13	A3 between AB/A3	2	28	8	120.9	102.7	17.7	95
Backfill, 24" Storm Sewer, Inlets								
14	75' South of Inlet D4	1	9	8	118.4	105.3	12.4	95
15	25' North of Inlet D5	1	9	8	118.4	105.5	12.2	95
16	50' South of Inlet D7	1	9	6	126.0	109.2	15.4	98
17	75' North of Inlet D6	1	9	6	125.8	108.7	15.7	98
18	75' South of Inlet D5	1	9	6	122.0	106.5	14.6	96
19	100' South of Inlet D3	1	9	6	122.1	106.1	15.1	96
20	75' South of Inlet D2	1	9	6	121.8	105.6	15.3	95

Regular Hours	O.T. Hours
8	5

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	36
Contractor:	SpawGlass	**Date Tested:**	10/12/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	382	**Density Standard:**	2739

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	37
Contractor:	SpawGlass	**Date Tested:**	10/13/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	397	**Density Standard:**	2721

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Administration Building, Building Pad, Column Lines								
1	A8/AF	3	28	8	118.1	103.0	14.7	95
2	A7/AD	3	28	8	118.4	104.1	13.7	96
3	A5.6/AB.6	3	28	8	116.8	102.7	13.7	95
4	A3/AE	3	28	8	119.5	104.1	14.8	96
5	A2.3/AB.6	3	28	8	121.9	107.2	13.7	99
6	A3 between AF/AD	3	28	8	120.8	106.2	13.7	98
7	A3 between A1.6/AC	3	28	8	121.6	106.7	14.0	99
8	A3 between AC/A2	3	28	8	120.1	104.8	14.6	97
9	A3 between A1.6/AD	4	28	8	117.9	103.7	13.7	96
10	AB.6 between A6.4/A6.8	4	28	8	118.6	104.1	13.9	96
11	AB.6 between AD/A7	4	28	8	119.6	104.8	14.1	97
12	AB.6 between A4/AD	4	28	8	118.9	104.3	14.0	96
13	AB.6 between AA/A2.3	4	28	8	121.6	105.4	15.4	97
14	AB.6 between A1/AE	4	28	8	121.1	103.9	16.5	96
15	AB.5 between A3/A4	4	28	8	118.3	102.8	15.1	95
16	A7/A5	4	28	8	122.2	106.0	15.3	98
Backfill, 24" Storm Sewer, Inlet D1								
17	50' North	1	9	6	123.7	105.5	17.2	95
18	125' North	1	9	6	122.9	105.3	16.7	95

Regular Hours	O.T. Hours
0	10

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	37
Contractor:	SpawGlass	**Date Tested:**	10/13/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	397	**Density Standard:**	2721

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	38
Contractor:	SpawGlass	**Date Tested:**	10/14/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	389	**Density Standard:**	2721

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Administration Building, Building Pad, Column Lines								
1	AA.1/A1.6	5	28	8	117.4	103.3	13.7	95
2	A2/AC	5	28	8	126.2	109.8	14.9	102
3	A4/AB.5	5	28	8	125.4	110.2	13.8	102
4	AD between A5/A5.6	5	28	8	127.0	110.2	15.2	102
5	AD between A7.5/AF	5	28	8	126.2	108.8	16.0	101
6	AD between AB6/A4	5	28	8	124.2	109.2	13.7	101
7	AD between A3/AD	5	28	8	122.6	107.0	14.6	99
8	A8 between AF/AD	5	28	8	119.2	103.7	14.9	96
9	A8 between A7.9/AB.6	6	28	8	118.4	104.1	13.7	96
10	A6.8 between AD/AC	6	28	8	117.0	102.7	13.9	95
11	A6.8 between AC/A5.6	6	28	8	116.8	102.7	13.7	95
12	A6.8 between AF/A5	6	28	8	118.3	104.0	13.8	96
13	A6.8 between A3/AB	6	28	8	121.9	104.9	16.2	97
14	A6.8 between A1/AC	6	28	8	122.9	105.4	16.6	97
15	A6.8 between AC/A2	6	28	8	119.3	104.0	14.7	96
16	A1.6/AB.6	6	28	8	119.5	104.5	14.3	97

Regular Hours	O.T. Hours
0	9

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	39
Contractor:	SpawGlass	**Date Tested:**	10/15/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	402	**Density Standard:**	2723

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Maintenance Building, Building Pad, Column Lines								
1	A/M4	2	28	12	120.1	104.3	15.2	96
2	D/M9	2	28	12	128.6	109.3	17.7	101
3	C between M5/M6	2	28	12	126.0	108.1	16.6	100
4	C between D.2/M10	2	28	12	122.7	107.1	14.6	99
5	B between M6/M5	2	28	12	120.4	103.8	16.0	96
6	B between A/M2.6	2	28	12	121.1	102.9	17.7	95
7	B between M1.8/M1.1	2	28	12	121.5	104.8	15.9	97
8	B between D/M3	2	28	12	121.0	103.3	17.1	95

Regular Hours	O.T. Hours
5.5	0

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PROOFROLLING OBSERVATION

Project Name:	Fort Bend Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	40
Contractor:	SpawGlass	**Date:**	10/15/18
		Technician:	David Nation

As requested, a Ninyo & Moore technician went to the referenced project to perform a proofrolling observation for the subgrade in the following location.

Proposed Wash Building Pad

The proofrolling observation was performed utilizing a tractor and a loaded scraper. Visual signs of significant pumping and/or rutting were not observed.

Based on our observation, the subgrade in the referenced location is acceptable for fill placement.

Regular Hours	O.T. Hours
5.5	0

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	41
Contractor:	SpawGlass	**Date Tested:**	10/17/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
4	Dark Gray Fat Clay	95 / NA	95.0	23.9	ASTM D698
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558

Field Test Equipment

Gauge Serial No: Humboldt EZ / 3139 **Moisture Standard:** 396 **Density Standard:** 2704

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 12" Storm Sewer, Inlets								
1	75' East of Inlet A9	1	9	6	118.2	105.3	12.2	95
2	100' East of Inlet A9	1	9	6	119.3	105.5	13.1	95
3	100' East and 60' South of Inlet A9	1	9	6	121.1	105.9	14.4	95
4	100' East and 60' South of Inlet A9	2	4	12	115.8	90.7	27.7	95
5	25' East of Inlet C1	1	9	12	123.0	105.3	16.8	95
6	40' East and 25' North of Inlet C1	1	9	12	121.1	105.7	14.6	95
7	134' West and 75' North of Inlet D14	1	9	8	122.7	106.4	15.3	96
8	134' West and 100' North of Inlet D14	1	9	8	124.4	107.4	15.8	97

Regular Hours	O.T. Hours
8	2.5

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	42
Contractor:	SpawGlass	**Date Tested:**	10/18/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	390	**Density Standard:**	2727

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 4" Pipe, Communication Conduit, Inlets								
1	60' West of A5	1	9	8	127.6	105.3	21.2	95
2	60' West of A5	2	9	8	130.1	105.5	23.3	95
3	60' West of A5	3	28	6	122.0	102.8	18.7	95
Backfill, 1.25" Gas Line, Administration Building, Building Pad, Inlets								
4	51' South of B1	1	28	8	124.7	106.9	16.6	99
5	51' South of B1	1	28	8	125.6	108.0	16.3	100
6	51' South of B1	1	28	8	124.5	109.0	14.2	101
7	13.5' South of C1	1	9	8	126.5	107.2	18.0	97
8	13.5' South of C1	1	9	8	126.5	105.9	19.5	95
9	13.5' South of C1	1	28	8	119.8	102.9	16.4	95
Backfill, 12" Storm Sewer, Inlets								
10	70' East of D1	1	9	6	124.2	106.1	17.1	96
11	70' West of D9	1	9	6	124.3	105.3	18.0	95
12	25' West of D10	1	9	8	125.9	106.0	18.8	96
13	85' West of D10	1	9	8	126.7	107.9	17.4	97

Remarks: The above tests meet the project specifications and requirements.

Regular Hours	O.T. Hours
8	3

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PROOFROLLING OBSERVATION

Project Name:	Fort Bend Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	43
Contractor:	SpawGlass	**Date:**	10/18/18
		Technician:	David Nation

As requested, a Ninyo & Moore technician went to the referenced project to perform a proofrolling observation for the subgrade in the following location.

Fuel Station Building Pad

The proofrolling observation was performed utilizing a tractor and a loaded scraper. Visual signs of significant pumping and/or rutting were not observed.

Based on our observation, the subgrade in the referenced location is acceptable for fill placement.

Regular Hours	O.T. Hours
8	3

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	44
Contractor:	SpawGlass	**Date Tested:**	10/19/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558
28	Reddish Brown Sandy Lean Clay	95 / -2 to +2	108.2	15.7	ASTM D698

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	386	**Density Standard:**	2711

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 2" Gas Line								
1	21' West of Inlet D4	1	9	12	121.7	105.5	15.4	95
2	21' West and 60' South of Inlet D4	1	9	12	122.5	105.3	16.3	95
3	60' South and 27' East of Inlet C1	1	9	12	123.4	105.3	17.2	95
4	21' West of Inlet D4	2	9	12	123.4	105.6	16.9	95
5	21' West and 60' South of Inlet D4	2	9	12	122.5	105.9	15.7	95
6	60' South and 27' East of Inlet C1	2	9	12	124.1	105.6	17.5	95
7	21' West of Inlet D4	3	9	12	123.1	105.4	16.8	95
8	21' West and 60' South of Inlet D4	3	9	6	122.6	105.9	15.8	95
9	60' South and 27' East of Inlet C1	3	9	6	121.3	105.6	14.9	95
Backfill, 1" Water Line, Administration Building, Building Pad								
10	21' West of Southeast Corner	1	28	8	121.4	103.6	17.2	96
11	21' West of Southeast Corner	2	28	8	121.4	103.5	17.3	96
Backfill, Maintenance Building, Building Pad, Column Lines								
12	M10/E.5	3	28	8	119.7	105.2	13.8	97
13	A/M7	3	28	8	120.0	102.7	16.8	95
14	M5 between B/C	3	28	8	122.2	104.6	16.8	97
15	M5 between B/M1.8	3	28	8	119.4	104.6	14.1	97
16	M5 between A/M2	3	28	8	116.9	102.8	13.7	95
17	M5 between M3.9/B	3	28	8	119.4	103.8	15.0	96
18	M5 between M9/C8	3	28	8	118.5	103.0	15.1	95
19	A between M4/M3.9	3	28	8	118.7	103.2	15.0	95

Remarks: The above tests meet the project specifications and requirements.

Regular Hours	O.T. Hours
8	3.5

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Report of Soil Properties

Project Name:	Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	45
Contractor:	Spaw Glass	**Date:**	10/19/2018
		Technician:	David Nation

As requested, a Ninyo & Moore technician obtained two samples of maintenance building pad material to evaluate the soil properties. Presented below is a summary of the test results.

SAMPLE DATA

Sample No.	Material Classification	Material Source	Atterberg Limits ASTM D4318, Method D			Material Finer Than No. 200 Sieve ASTM D1140-06, Method B	
			Liquid Limit	Plastic Limit	Plasticity Index	Material Finer (%)	Initial Dry Mass (g)
1	Sandy Lean Clay	3rd Lift at A/M9	30	18	12	65.3	88.6
2	Sandy Lean Clay	3rd Lift at D.2/M2.6	30	18	12	65.9	96.6

Based on the test results, the material is acceptable for use as building pad fill.

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CANCELLATION

Project Name:	Fort Bend Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	46
Contractor:	SpawGlass	**Date:**	10/19/18
		Technician:	Hamid Badkoobeh

As requested, a Ninyo & Moore technician went to the referenced project to observe the drilled underreamed pier installation. Due to rain and wet site conditions, operations were cancelled.

Regular Hours	O.T. Hours
4	0

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CANCELLATION

Project Name:	Fort Bend Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	47
Contractor:	SpawGlass	**Date:**	10/20/18
		Technician:	David Nation

As requested, a Ninyo & Moore technician went to the referenced project to perform field density testing. The contractor wasn't able to get cement stabilized sand material from the plant for backfill operations. The trench was flooded and operations were cancelled.

Regular Hours	O.T. Hours
0	4

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	48
Contractor:	SpawGlass	**Date Tested:**	10/22/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	400	**Density Standard:**	2913

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 1.25" Gas Line								
1	60' Southwest of Inlet D16	1	9	12	122.6	105.3	16.4	95
2	33' East of Inlet D6	1	9	12	120.5	105.4	14.3	95
3	60' Southwest of Inlet D10	2	9	6	122.5	107.1	14.4	97
4	33' East of Inlet D6	2	9	6	121.8	105.5	15.4	95
5	36' South of Inlet D7	1	9	12	119.1	105.2	13.2	95
6	36' South of Inlet D7	2	9	6	120.0	105.5	13.7	95
Backfill, 10" Water Line								
7	39' South of Inlet D5	1	9	12	117.1	105.2	11.3	95
8	39' South of Inlet D5	2	9	12	117.5	105.3	11.6	95

Remarks: The above tests meet the project specifications and requirements.

Regular Hours	O.T. Hours
8	4

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SOIL PROPERTIES

Project Name:	Fort Bend Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	49
Contractor:	SpawGlass	**Date:**	10/22/18
		Technician:	David Nation

As requested, a Ninyo & Moore technician obtained one (1) sample of paving subgrade to evaluate the soil properties. Atterberg Limits and material finer than No. 200 Sieve test, and Lime Determinations by the PI and pH method were performed on the sample. The test results were used to provide recommendations for the soil treatment. Presented below is a summary of the test results.

SAMPLE DATA

Sample No.	Material Classification	Material Source	Atterberg Limits ASTM D4318, Method D			Material Finer than No. 200 Sieve ASTM D1140-06, Method B	
			Liquid Limit	Plastic Limit	Plasticity Index	Material Finer (%)	Initial Dry Mass (g)
1	Lean Clay w/Sand	Bus Parking Lot	48	20	28	86.8	118.5

LIME DETERMINE – SAMPLE No. 1
PI METHOD
ASTM D 4318

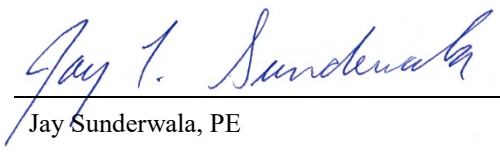
Percent Lime Added	Raw	2	4	6	8	10
Liquid Limit	48	49	50	48	49	50
Plastic Limit	20	27	31	30	32	33
Plasticity Index	28	22	19	18	17	17

LIME DETERMINE – SAMPLE No. 1
pH METHOD
ASTM C 977

Percent Lime Added	Raw	2	4	6	8	10
pH	8.41	12.25	12.38	12.44	12.44	12.44
Temp (°C)	21.5	21.8	21.8	21.7	21.7	21.7

Based on the test results, 8% hydrated lime slurry should be used to treat the paving subgrade. The quantities of treatment agent for this area per square yard using a mix depth of 8 inches should be 48 lbs/yd^2 of hydrated lime. An average soil dry density of 100 lbs/ft^3 was used to calculate thetreatment agent quantities for this area.

Regular Hours	O.T. Hours
8	4



Jay Sunderwala, PE

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CANCELLATION

Project Name:	Fort Bend Administration and Operations Facility	**Project No.:**	700382002
Client:	Fort Bend County	**Report No.:**	50
Contractor:	SpawGlass	**Date:**	10/25/18
		Technician:	David Nation

As requested, a Ninyo & Moore technician went to the referenced project to perform field density testing. Due to wet weather conditions, the contractor cancelled operations.

Regular Hours	O.T. Hours
4	0

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FIELD DENSITY TESTS BY NUCLEAR METHOD

Project Name:	Fort Bend Administration and Operations Facility	**Project No:**	700382002
Client:	Fort Bend County	**Report No:**	51
Contractor:	SpawGlass	**Date Tested:**	10/26/2018
		Technician:	David Nation

Moisture-Density Relation Data

Lab Curve No.	Soil Description	Compaction / Moisture Spec.	Maximum Dry Density, lbs/ft^3	Optimum Moisture, %	Test Method
9	1.5 sk Cement Treated Sand	95 / NA	110.9	12.7	ASTM D558

Field Test Equipment

Gauge Serial No:	Humboldt EZ / 3139	**Moisture Standard:**	400	**Density Standard:**	2705

Test Results
ASTM D6938-08

Test No.	Test Location	Lift No.	Lab Curve No.	Probe Depth, in.	Wet Density, pcf	Dry Density, pcf	Moisture Content, %	Compaction, %
Backfill, 1.25" Gas Line, Inlets								
1	60' West and 27' South of D7	1	9	6	124.3	105.3	18.0	95
2	60' West and 27' South of D7	2	9	6	126.9	105.6	20.2	95
3	60' West and 27' South of D7	3	9	6	125.8	105.3	19.5	95
4	108' South of D5	1	9	6	117.5	105.7	11.2	95
5	108' South of D5	2	9	6	118.3	105.3	12.3	95
6	108' South of D5	3	9	6	118.5	105.5	12.3	95

Remarks: The above tests meet the project specifications and requirements.

Regular Hours	O.T. Hours
8	3

Glenn Urban