



Google earth



Boring Number	Easting	Northing	Boring Depth (ft.)
BO-01	589827.5333	562989.8143	10
BO-02	589607.8476	562875.9878	10
BO-03	589369.5376	562721.4616	10
BO-04	589329.7371	562627.0652	15
BO-05	589653.7712	562661.2798	35
BO-06	589486.6337	562498.4923	35
BO-07	589599.6772	562458.3157	35
BO-08	589543.2093	562367.0115	35
BO-09	589701.0031	562353.9770	35
BO-10	589385.5970	562409.9451	35
BO-11	589471.8951	562263.4779	35
BO-12	589558.1932	562117.017	35
BO-13	589298.4816	562390.8197	15
BO-14	589437.2384	562175.244	15
BO-15	589576.8693	561985.687	15
BO-16	589859.1713	562042.2299	15
BO-17	589827.4909	561850.3555	15

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-1

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562989.814

Easting: 589827.533

Boring Surface Elev.:

Reference:

Date Started: 4/6/16

Date Completed: 4/6/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)
4/6/16	N/A
4/6/16	N/A

Caved Depth (ft)
2.5

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type:

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.5'	4	Moist very loose orange coarse sandy fine gravel w/some fine sand and silt. 6" RECOVERY	A-1-b	Hot-mix 18"
2.53		2	2.0'	7 9 9 11		Moist medium dense orange fine gravelly coarse sand w/some silt, trace of fine sand. 24" RECOVERY	A-1-b
		3	4.0'	10 12 17 20	Moist medium dense orange silty coarse sand w/some fine gravel and fine sand. 24" RECOVERY	A-1-b	
5.06		4	6.0'	8 12 12 14	Moist medium dense orange coarse sand w/ some fine sand, fine gravel and silt. 24" RECOVERY	A-1-b	
		5	8.0'	5 9 7 7	Moist medium dense orange fine gravelly coarse sand w/some fine sand and silt. 24" RECOVERY	A-1-b	
7.59			10.0'		End Boring		
10.12							
12.65							

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol Description

Strata symbols



Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-2

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562875.987

Easting: 589607.847

Boring Surface Elev.:

Reference:

Date Started: 4/6/16

Date Completed: 4/6/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)
4/6/16	N/A
4/6/16	N/A

Caved Depth (ft)
2.0

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type:

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	1.5'	8	Moist loose orange coarse sandy fine gravel w/some fine sand and silt. 6" RECOVERY	A-1-b	Hot-mix 18"
2.53		2	2.0'	15 13 15 13		A-1-b	
			4.0'		Moist medium dense orange coarse to fine sand w/some fine gravel and silt. 24" RECOVERY		
5.06		3	4.0'	50/3	Moist very dense black coarse sandy fine gravel w/some silt, trace of fine sand. 4" RECOVERY	A-1-a	
			6.0'		Moist dense orange fine gravelly coarse sand w/some fine sand and silt. 24" RECOVERY	A-1-b	
7.59		4	6.0'	13 17 20 22	Moist medium dense orange fine gravelly coarse sand w/some fine sand and silt. 24" RECOVERY	A-1-b	
			8.0'		Moist medium dense orange fine gravelly coarse sand w/some fine sand and silt. 24" RECOVERY	A-1-b	
10.12		5	8.0'	10 15 12 15	End Boring		
			10.0'				
12.65							

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol Description

Strata symbols



Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-3

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562721.461

Easting: 589369.537

Boring Surface Elev.:

Reference:

Date Started: 4/6/16

Date Completed: 4/6/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 10.0
From Depth of: **To:**

Water Level Readings

Date
4/6/16
4/6/16

Depth to Water (ft)
N/A
N/A

Caved Depth (ft)

2.0

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type:

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
2.53		2	2.0'	5 10 10 10	Wet very stiff reddish brown clayey silt w/ some fine sand, trace of coarse sand and fine gravel.	A-4(4)	
			4.0'		20" RECOVERY		
5.06		3	4.0'	5 5 7 10	Wet medium dense orange silty fine sand w/ some coarse sand, trace of fine gravel.	A-2-4(0)	
			6.0'		24" RECOVERY		
7.59		4	6.0'	5 7 9 9	Wet medium dense orange silty fine sand w/ trace coarse sand.	A-2-4(0)	
			8.0'		24" RECOVERY		
10.12		5	8.0'	5 6 8 10	Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
			10.0'		24" RECOVERY		
					End Boring		
12.65							
15.18							

Remarks: _____

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty soils



Poorly graded, silty or clayey
sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-4

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562627.065

Easting: 589329.737

Boring Surface Elev.:

Reference:

Date Started: 4/7/16

Date Completed: 4/7/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 15.0
From Depth of: **To:**

Water Level Readings

Date
4/7/16
4/7/16

Depth to Water (ft)
N/A
N/A

Caved Depth (ft)

5.5

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type:

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	3 5 5 4	Wet stiff brown clayey silt w/some fine to coarse sand, trace of fine gravel.	A-4(1)	Topsoil 5"
			2.0'		12" RECOVERY		
2.53		2	2.0'	5 8 10 10	Wet medium dense brown coarse sand w/ some fine sand, fine gravel and silt.	A-1-b	
			4.0'		24" RECOVERY		
5.06		3	4.0'	3 4 5 5	Wet loose brown coarse to fine sand w/some silt, trace of fine gravel.	A-1-b	
			6.0'		24" RECOVERY		
7.59		4	6.0'	3 6 6 7	Wet medium dense orange coarse to fine sand w/some silt, trace of fine gravel.	A-2-4(0)	
			8.0'		24" RECOVERY		
		5	8.0'	3 4 5 6	Wet loose orange coarse to fine sand w/ some silt, trace of fine gravel.	A-1-b	
10.12			10.0'		24" RECOVERY		
12.65							
		6	13.0'	2 5	Wet medium dense orange silty fine sand w/	A-2-4(0)	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wiczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility

Boring No.: B-4

State Contract: T201680104

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				6 8	 some coarse sand, trace of fine gravel.		
15.18			15.0'		24" RECOVERY		
					End Boring		
17.71							
20.24							
22.77							
25.3							
27.83							
30.36							
32.89							
35.42							

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty soils



Well graded gravels and sands



Poorly graded, silty or clayey
sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-5

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562661.279

Easting: 589653.771

Boring Surface Elev.:

Reference:

Date Started: 4/5/16

Date Completed: 4/5/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 35.0
From Depth of: **To:**

Water Level Readings

Date
4/5/16
4/5/16

Depth to Water (ft)
N/A
N/A

Caved Depth (ft)
8.0

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type:

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 5 12 15	Moist very stiff brown clayey silt w/some coarse sand and fine gravel, trace of fine sand.	A-4(3)	Topsoil 5"
			2.0'		18" RECOVERY		
2.53		2	2.0'	13 9 9 13	Wet very stiff orange clayey fine gravelly silt w/some coarse sand, trace of fine sand.	A-4(1)	
			4.0'		24" RECOVERY		
5.06		3	4.0'	8 10 10 10	Wet medium dense orange coarse sand w/ some fine sand, fine gravel and silt.	A-1-b	
			6.0'		24" RECOVERY		
7.59		4	6.0'	5 8 8 9	Wet medium dense orange coarse to fine sandy fine gravel w/some silt.	A-1-b	
			8.0'		24" RECOVERY		
10.12		5	8.0'	4 6 6 7	Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
			10.0'		24" RECOVERY		
12.65							
		6	13.0'	4 5	Wet medium dense orange fine to coarse sand	A-2-4(0)	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility
State Contract: T201680104

Boring No.: B-5

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				6 6	w/some silt, trace of fine gravel.		
15.18			15.0'		24" RECOVERY		
17.71							
		7	18.0'	5 6 7 7	Wet medium dense orange fine sand w/some silt and coarse sand, trace of fine gravel.	A-2-4(0)	
			20.0'		24" RECOVERY		
20.24							
22.77							
		8	23.0'	5 6 6 7	Wet medium dense orange fine sand w/some coarse sand and silt, trace of fine gravel.	A-2-4(0)	
			25.0'		24" RECOVERY		
25.3							
27.83							
		9	28.0'	4 6 6 8	Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
			30.0'		24" RECOVERY		
30.36							
32.89							
		10	33.0'	10 12 14 24	Wet medium dense orange silty fine to coarse sand w/trace fine gravel.	A-2-4(0)	
			35.0'		24" RECOVERY		
35.42					End Boring		

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty soils



Well graded gravels and sands



Poorly graded, silty or clayey
sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-6

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562498.492

Easting: 589486.633

Boring Surface Elev.:

Reference:

Date Started: 4/4/16

Date Completed: 4/4/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 35.0
From Depth of: **To:**

Water Level Readings

Date **Depth to Water (ft)**
4/4/16 2.3
4/4/16 N/A

Caved Depth (ft)
9.0

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type:

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	10 15 17 15	Moist dense gray silty fine gravel w/some coarse sand and clay, trace of fine sand.	A-1-b	Hot-mix 2"
			2.0'		24" RECOVERY		
2.53	■	2	2.0'	12 9 9 9	Wet very stiff brown clayey silt w/some coarse sand, trace of fine sand and fine gravel.	A-4(3)	
			4.0'		24" RECOVERY		
5.06		3	4.0'	8 10 8 9	Wet medium dense brown fine to coarse sand and fine gravel w/some silt.	A-2-4(0)	
			6.0'		24" RECOVERY		
7.59		4	6.0'	3 5 7 7	Wet medium dense orange fine sand w/some silt, trace of coarse sand.	A-2-4(0)	
			8.0'		24" RECOVERY		
10.12		5	8.0'	5 7 7 7	Wet medium dense orange silty fine sand w/ trace coarse sand.	A-2-4(0)	
			10.0'		24" RECOVERY		
12.65		6	13.0'	5 7	Wet medium dense orange silty fine sand w/	A-2-4(0)	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility
State Contract: T201680104

Boring No.: B-6

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				8 10	trace coarse sand.		
15.18			15.0'		24" RECOVERY		
17.71							
		7	18.0'	5 8 9 9	Wet medium dense orange silty fine sand w/ trace coarse sand.	A-2-4(0)	
20.24			20.0'		24" RECOVERY		
22.77							
		8	23.0'	5 8 8 8	Wet medium dense orange fine sand w/some silt, trace of coarse sand and fine gravel.	A-2-4(0)	
25.3			25.0'		24" RECOVERY		
27.83							
		9	28.0'	5 15 12 10	Wet medium dense orange fine to coarse sand w/some fine gravel and silt.	A-2-4(0)	
30.36			30.0'		18" RECOVERY		
32.89							
		10	33.0'	6 10 13 15	Wet medium dense orange silty coarse to fine sand and fine gravel w/some clay.	A-2-4(0)	
35.42			35.0'		22" RECOVERY		
					End Boring		

KEY TO SYMBOLS

Symbol Description

Strata symbols



Well graded gravels and sands



Silty soils



Poorly graded, silty or clayey
sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-7

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562458.315

Easting: 589599.677

Boring Surface Elev.:

Reference:

Date Started: 4/1/16

Date Completed: 4/1/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 35.0
From Depth of: **To:**

Water Level Readings

Date
4/1/16
4/1/16

Depth to Water (ft)
23.0
N/A

Caved Depth (ft)

5.5

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type:

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.5'	10 10 12	Moist medium dense orange coarse sandy fine gravel w/some silt, trace of fine sand.	A-1-a	Hot-mix 5"
			2.0'		18" RECOVERY		
2.53		2	2.0'	8 15 12 12	Moist very stiff orange coarse to fine sandy silt w/trace fine gravel.	A-4(0)	
			4.0'		24" RECOVERY		
		3	4.0'	4 6 6 7	Moist medium dense orange coarse sand w/ some silt and fine gravel, trace of fine sand.	A-1-b	
5.06			6.0'		24" RECOVERY		
		4	6.0'	3 7 9 9	Moist medium dense orange fine gravelly coarse sand w/some fine sand and silt.	A-1-b	
7.59			8.0'		10" RECOVERY		
		5	8.0'	4 4 5 6	Moist loose orange coarse to fine sand w/ some silt, trace of fine gravel.	A-2-4(0)	
			10.0'		18" RECOVERY		
10.12							
12.65							
		6	13.0'	4 6 7 8	Moist medium dense orange coarse to fine sand w/some fine gravel and silt.	A-1-b	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility
State Contract: T201680104

Boring No.: B-7

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
15.18			15.0'		24" RECOVERY		
17.71							
		7	18.0'	5 6 6 8	Moist medium dense orange silty fine sand w/trace coarse sand.	A-2-4(0)	
20.24			20.0'		24" RECOVERY		
22.77							
	■	8	23.0'	4 6 6 6	Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
25.3			25.0'		24" RECOVERY		
27.83							
		9	28.0'	3 5 5 7	Wet loose orange fine to coarse sand w/ some silt, trace of fine gravel.	A-2-4(0)	
30.36			30.0'		24" RECOVERY		
32.89							
		10	33.0'	5 10 15 12	Wet medium dense orange fine to coarse sand w/some fine gravel and silt.	A-2-4(0)	
35.42			35.0'		24" RECOVERY		
					End Boring		

KEY TO SYMBOLS

Symbol Description

Strata symbols



Well graded gravels and sands



Silty soils



Poorly graded, silty or clayey
sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-8

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562367.011

Easting: 589543.209

Boring Surface Elev.:

Reference:

Date Started: 4/5/16

Date Completed: 4/5/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 35.0
From Depth of: **To:**

Water Level Readings

Date
4/5/16
4/5/16

Depth to Water (ft)
23.0
N/A

Caved Depth (ft)
11.5

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type:

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 5 5 6	Wet stiff brown silt w/some fine to coarse sand and orange, trace of fine gravel.	A-4(1)	Topsoil 6"
			2.0'		24" RECOVERY		
2.53		2	2.0'	3 6 9 7	Wet medium dense orange fine gravelly coarse sand w/some fine sand and silt.	A-1-b	
			4.0'		24" RECOVERY		
5.06		3	4.0'	4 5 5 6	Wet loose orange silty fine sand w/trace coarse sand.	A-2-4(0)	
			6.0'		24" RECOVERY		
7.59		4	6.0'	4 4 5 5	Wet loose orange silty fine sand w/trace coarse sand.	A-2-4(0)	
			8.0'		24" RECOVERY		
		5	8.0'	2 3 4 5	Wet loose orange fine sand w/some silt, trace of coarse sand.	A-2-4(0)	
10.12			10.0'		24" RECOVERY		
12.65							
		6	13.0'	3 5	Wet loose orange silty fine to coarse sand w/	A-2-4(0)	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility
State Contract: T201680104

Boring No.: B-8

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				5 9	trace fine gravel.		
15.18			15.0'		24" RECOVERY		
17.71							
		7	18.0'	3 6 7 8	Wet medium dense orange fine sand w/some coarse sand and silt, trace of fine gravel.	A-2-4(0)	
20.24			20.0'		24" RECOVERY		
22.77							
	■	8	23.0'	5 5 7 6	Wet medium dense orange fine sand w/some silt, trace of coarse sand and fine gravel.	A-2-4(0)	
25.3			25.0'		24" RECOVERY		
27.83							
		9	28.0'	5 25 20 30	Wet dense orange fine sand w/some silt and fine gravel, trace of coarse sand.	A-2-4(0)	
30.36			30.0'		24" RECOVERY		
32.89							
		10	33.0'	4 6 9 13	Wet medium dense orange fine sand w/some coarse sand and silt, trace of fine gravel.	A-2-4(0)	
35.42			35.0'		18" RECOVERY		
					End Boring		

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty soils



Well graded gravels and sands



Poorly graded, silty or clayey
sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-9

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562353.977

Easting: 589701.003

Boring Surface Elev.:

Reference:

Date Started: 4/4/16

Date Completed: 4/4/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 35.0
From Depth of: **To:**

Water Level Readings

Date **Depth to Water (ft)**
4/4/16 28.0
4/4/16 N/A

Caved Depth (ft)
11.0

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type:

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 7 7 11	Moist stiff brown clayey silt w/some coarse to fine sand, trace of fine gravel.	A-4(2)	Topsoil 4"
			2.0'		18" RECOVERY		
2.53		2	2.0'	10 10 7 6	Moist medium dense brown coarse to fine sand and fine gravel w/some silt.	A-1-b	
			4.0'		14" RECOVERY		
5.06		3	4.0'	4 4 3 3	Moist loose brown coarse to fine sand w/ some fine gravel and silt.	A-2-4(0)	
			6.0'		24" RECOVERY		
7.59		4	6.0'	4 5 7 7	Moist medium dense brown coarse to fine sand w/some silt, trace of fine gravel.	A-1-b	
			8.0'		20" RECOVERY		
		5	8.0'	7 7 11 12	No sieve analysis - Indication of moist medium dense brown silty coarse to fine sand w/some silt.		
10.12			10.0'		5" RECOVERY		
12.65							
		6	13.0'	4 6	Moist medium dense brown coarse to fine	A-1-b	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility
State Contract: T201680104

Boring No.: B-9

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				8 10	sand w/some fine gravel and silt.		
15.18			15.0'		24" RECOVERY		
17.71							
		7	18.0'	4 6 6 8	Moist medium dense orange coarse sand w/ some fine sand, trace of fine gravel and silt.	A-1-b	
20.24			20.0'		24" RECOVERY		
22.77							
		8	23.0'	5 8 11 13	Moist medium dense orange coarse sand w/ some fine sand and silt, trace of fine gravel.	A-1-b	
25.3			25.0'		24" RECOVERY		
27.83							
	■	9	28.0'	4 6 10 10	Moist medium dense orange fine gravelly coarse sand w/some fine sand, trace of silt.	A-1-b	
30.36			30.0'		24" RECOVERY		
32.89							
		10	33.0'	5 30 16 12	Wet dense orange fine to coarse sand w trace fine gravel and silt./	A-3	
35.42			35.0'		24" RECOVERY		
					End Boring		

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty soils



Well graded gravels and sands



Poorly graded, silty or clayey
sands and gravel



Clean sand & gravelly sand

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-10

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562409.945

Easting: 589385.597

Boring Surface Elev.:

Reference:

Date Started: 4/6/16

Date Completed: 4/6/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 35.0
From Depth of: **To:**

Water Level Readings

Date
4/6/16
4/6/16

Depth to Water (ft)
28.0
N/A

Caved Depth (ft)
10.5

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type: B-30

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	3 5 5 6	Moist stiff brown clayey silt w/some coarse to fine sand and fine gravel.	A-4(1)	Topsoil 6"
			2.0'		12" RECOVERY		
2.53		2	2.0'	5 7 9 11	Wet stiff orange clayey silt w/trace coarse to fine sand and fine gravel.	A-4(6)	
			4.0'		20" RECOVERY		
5.06		3	4.0'	6 7 9 9	Wet medium dense orange fine gravelly coarse sand w/some fine sand and silt.	A-1-b	
			6.0'		24" RECOVERY		
7.59		4	6.0'	4 5 5 7	Wet loose brown fine gravelly coarse sand w/ trace fine sand and silt.	A-1-b	
			8.0'		24" RECOVERY		
10.12		5	8.0'	5 7 8 10	Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel.	A-2-4(0)	
			10.0'		24" RECOVERY		
12.65							
		6	13.0'	4 6	Wet medium dense orange fine sand w/some	A-2-4(0)	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wiczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility
State Contract: T201680104

Boring No.: B-10

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				7 8	silt and coarse sand, trace of fine gravel. 24" RECOVERY		
15.18			15.0'				
					Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel. 24" RECOVERY	A-2-4(0)	
17.71		7	18.0'	5 5 7 8			
					Wet stiff orange fine sandy silt w/some coarse sand, trace of fine gravel. 24" RECOVERY	A-4(0)	
20.24			20.0'				
					Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel. 24" RECOVERY	A-2-4(0)	
22.77		8	23.0'	4 5 7 8			
					Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel. 24" RECOVERY	A-2-4(0)	
25.3			25.0'				
					Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel. 24" RECOVERY	A-2-4(0)	
27.83		9	28.0'	5 7 8 8			
					Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel. 24" RECOVERY	A-2-4(0)	
30.36			30.0'				
					Wet medium dense orange fine to coarse sand w/some silt, trace of fine gravel. 24" RECOVERY	A-2-4(0)	
32.89		10	33.0'	11 13 15 18			
					End Boring		
35.42			35.0'				

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty soils



Well graded gravels and sands



Poorly graded, silty or clayey
sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-11

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562263.477

Easting: 589471.895

Boring Surface Elev.:

Reference:

Date Started: 4/4/16

Date Completed: 4/4/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 35.0
From Depth of: **To:**

Water Level Readings

Date **Depth to Water (ft)**
4/4/16 29.0
4/4/16 N/A

Caved Depth (ft)
15.0

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type: B-30

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	3 3 6 7	Wet stiff brown clayey silt w/some coarse to fine sand w/trace fine gravel.	A-4(3)	Topsoil 4"
			2.0'		24" RECOVERY		
2.53		2	2.0'	5 7 9 8	Wet medium dense orange coarse to fine sand w/some silt, trace of fine gravel.	A-1-b	
			4.0'		24" RECOVERY		
5.06		3	4.0'	3 4 4 5	Wet loose orange coarse sand w/some fine sand, fine gravel and silt.	A-1-b	
			6.0'		20" RECOVERY		
7.59		4	6.0'	4 5 6 7	Wet medium dense red coarse sand w/some fine sand, fine gravel and silt.	A-1-b	
			8.0'		24" RECOVERY		
		5	8.0'	6 7 10 12	Wet medium dense red coarse sand w/some silt and fine gravel, trace of fine sand.	A-1-b	
10.12			10.0'		24" RECOVERY		
12.65							
		6	13.0'	4 5	Wet medium dense brown coarse sand w/	A-1-b	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wiczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility
State Contract: T201680104

Boring No.: B-11

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				7 9	some fine sand, silt and fine gravel.		
15.18			15.0'		18" RECOVERY		
17.71							
		7	18.0'	5 6 7 9	Wet medium dense brown fine gravelly coarse sand w/some fine sand and silt.	A-1-b	
20.24			20.0'		18" RECOVERY		
22.77							
		8	23.0'	6 9 9 11	Wet medium dense orange coarse sand w/ trace fine sand, fine gravel and silt.	A-1-b	
25.3			25.0'		14" RECOVERY		
27.83							
		9	28.0'	5 7 11 13	Wet medium dense orange coarse sand w/ some fine sand and silt, trace of fine gravel.	A-1-b	
30.36			30.0'		24" RECOVERY		
32.89							
		10	33.0'	8 15 21 23	Wet dense orange fine gravelly coarse to fine sand w/trace silt.	A-1-b	
35.42			35.0'		24" RECOVERY		
					End Boring		

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty soils



Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-12

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562117.017

Easting: 589558.193

Boring Surface Elev.:

Reference:

Date Started: 4/5/16

Date Completed: 4/5/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 35.0
From Depth of: **To:**

Water Level Readings

Date
4/5/16
4/5/16

Depth to Water (ft)
23.0
N/A

Caved Depth (ft)
6.50

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type: B-30

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	1 3 4 4	Moist loose orange clayey fine gravel w/ some fine to coarse sand and silt.	A-2-4(0)	Topsoil 6"
			2.0'		20" RECOVERY		
2.53		2	2.0'	4 4 6 7	Wet stiff brown silt w/some fine to coarse sand and clay, trace of fine gravel.	A-4(2)	
			4.0'		24" RECOVERY		
5.06		3	4.0'	3 5 5 7	Wet loose brown clayey fine to coarse sand w/some silt and fine gravel.	A-2-4(0)	
			6.0'		24" RECOVERY		
7.59		4	6.0'	4 5 6 6	Wet medium dense orange silty fine sand w/ trace coarse sand.	A-2-4(0)	
			8.0'		12" RECOVERY		
		5	8.0'	3 3 5 6	Wet loose orange fine sand w/some silt, trace of coarse sand and fine gravel.	A-2-4(0)	
10.12			10.0'		24" RECOVERY		
12.65							
		6	13.0'	4 6	Wet medium dense orange fine sand w/some	A-2-4(0)	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility
State Contract: T201680104

Boring No.: B-12

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				7 8	coarse sand and silt, trace of fine gravel. 24" RECOVERY		
15.18			15.0'				
					Wet medium dense orange fine sand w/some silt, trace of coarse sand. 24" RECOVERY	A-2-4(0)	
17.71		7	18.0'	3 5 7 9			
					Wet stiff orange silt w/trace fine to coarse sand. 24" RECOVERY	A-4(0)	
20.24			20.0'				
					Wet dense orange fine sand w/some silt, trace of coarse sand. 24" RECOVERY	A-2-4(0)	
22.77		8	23.0'	5 6 6 7			
					Wet medium dense orange coarse to fine sand w/some fine gravel, trace of silt. 24" RECOVERY	A-1-b	
25.3			25.0'				
					End Boring		
27.83		9	28.0'	8 15 19 23			
					End Boring		
30.36			30.0'				
					End Boring		
32.89		10	33.0'	5 7 10 11			
					End Boring		
35.42			35.0'				

KEY TO SYMBOLS

Symbol Description

Strata symbols



Poorly graded, silty or clayey
sands and gravel



Silty soils



Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-13

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562390.8197

Easting: 589298.4816

Boring Surface Elev.:

Reference:

Date Started: 4/7/16

Date Completed: 4/7/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 15.0
From Depth of: **To:**

Water Level Readings

Date
4/7/16
4/7/16

Depth to Water (ft)
N/A
N/A

Caved Depth (ft)
4.50

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type: B-30

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 5 18 18	Moist medium dense brown clayey coarse sand w/some fine sand, fine gravel and silt.	A-2-4(0)	Topsoil 3"
			2.0'		24" RECOVERY		
2.53		2	2.0'	8 10 11 12	Moist medium dense brown coarse sand w/some fine sand, fine gravel and silt.	A-1-b	
			4.0'		24" RECOVERY		
5.06		3	4.0'	3 5 5 5	Moist loose orange coarse to fine sand w/some silt, trace of fine gravel.	A-1-b	
			6.0'		24" RECOVERY		
7.59		4	6.0'	2 6 4 5	Moist loose orange fine sand w/some coarse sand and silt, trace of fine gravel.	A-2-4(0)	
			8.0'		24" RECOVERY		
		5	8.0'	3 4 4 5	Moist loose orange silty fine sand w/some coarse sand, trace of fine gravel.	A-2-4(0)	
10.12			10.0'		24" RECOVERY		
12.65							
		6	13.0'	3 4	Moist loose orange fine sand w/some coarse	A-2-4(0)	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility

Boring No.: B-13

State Contract: T201680104

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks	
				5 9	sand and silt.			
15.18			15.0'			24" RECOVERY		
					End Boring			
17.71								
20.24								
22.77								
25.3								
27.83								
30.36								
32.89								
35.42								

KEY TO SYMBOLS

Symbol Description

Strata symbols



Poorly graded, silty or clayey
sands and gravel



Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-14

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562175.244

Easting: 589437.238

Boring Surface Elev.:

Reference:

Date Started: 4/7/16

Date Completed: 4/7/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 15.0
From Depth of: **To:**

Water Level Readings

Date
4/7/16
4/7/16

Depth to Water (ft)
N/A
N/A

Caved Depth (ft)
6.0

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type: B-30

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	3 4 4 5	Moist firm brown coarse sandy silt w/some fine sand, fine gravel and clay.	A-4(0)	Topsoil 5"
2.53		2	2.0'	3 5 6 7	20" RECOVERY No sieve analysis - Indication of wet medium dense brown fine to coarse sand w/some silt.		
5.06		3	4.0'	4 4 8 10	8" RECOVERY Wet medium dense brown silty fine to coarse sand w/some fine gravel.	A-2-4(0)	
7.59		4	6.0'	7 9 11 13	24" RECOVERY Wet very stiff brown coarse sandy silt w/ some fine sand and clay, trace of fine gravel.	A-4(0)	
10.12		5	8.0'	5 7 7 10	18" RECOVERY Wet stiff brown clayey silt w/some coarse to fine sand, trace of fine gravel.	A-4(2)	
12.65			10.0'		24" RECOVERY		
		6	13.0'	9 10	Wet very stiff brown clayey coarse sandy silt	A-4(1)	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility

Boring No.: B-14

State Contract: T201680104

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				13 19	w/some fine sand, trace of fine gravel.		
15.18			15.0'		18" RECOVERY		
					End Boring		
17.71							
20.24							
22.77							
25.3							
27.83							
30.36							
32.89							
35.42							

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty soils



Poorly graded, silty or clayey
sands and gravel

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-15

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 561985.687

Easting: 589576.863

Boring Surface Elev.:

Reference:

Date Started: 4/7/16

Date Completed: 4/7/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 15.0
From Depth of: **To:**

Water Level Readings

Date **Depth to Water (ft)**
4/7/16 N/A
4/7/16 N/A

Caved Depth (ft)
4.0

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type: B-30

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	2 4 6 7	Moist loose brown coarse sandy fine gravel w/some fine sand and silt.	A-1-b	Topsoil 3"
			2.0'		24" RECOVERY		
2.53		2	2.0'	4 5 9 7	Moist stiff brown clayey coarse sandy silt w/ some fine sand, trace of fine gravel.	A-4(1)	
			4.0'		20" RECOVERY		
5.06		3	4.0'	6 6 12 12	Moist very stiff brown fine to coarse sandy silt w/some clay, trace of fine gravel.	A-4(0)	
			6.0'		12" RECOVERY		
7.59		4	6.0'	9 12 15 22	Moist very dense brown clayey coarse to fine sandy silt w/some fine gravel.	A-4(0)	
			8.0'		24" RECOVERY		
		5	8.0'	8 14 14 18	Moist very stiff brown fine to coarse sandy silt w/some clay, trace of fine gravel.	A-4(0)	
10.12			10.0'		24" RECOVERY		
12.65							
		6	13.0'	8 12	Moist very stiff brown clayey coarse sandy	A-4(0)	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wieczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility

Boring No.: B-15

State Contract: T201680104

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				16 25	silt w/some fine sand and fine gravel.		
15.18			15.0'		24" RECOVERY		
					End Boring		
17.71							
20.24							
22.77							
25.3							
27.83							
30.36							
32.89							
35.42							

KEY TO SYMBOLS

Symbol Description

Strata symbols



Well graded gravels and sands



Silty soils

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-16

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562042.229

Easting: 589859.171

Boring Surface Elev.:

Reference:

Date Started: 4/7/16

Date Completed: 4/7/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 15.0
From Depth of: **To:**

Water Level Readings

Date
4/7/16
4/7/16

Depth to Water (ft)
N/A
N/A

Caved Depth (ft)

5.5

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type: B-30

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	4 12 15 15	Moist very stiff brown clayey silt w/trace fine to coarse sand and fine gravel.	A-4(4)	Topsoil 6"
			2.0'		20" RECOVERY		
2.53		2	2.0'	6 6 8 10	Moist medium dense brown clayey coarse to fine sand and fine gravel w/some silt.	A-2-4(0)	
			4.0'		24" RECOVERY		
5.06		3	4.0'	2 4 4 10	Wet firm orange silty clay w/some coarse sand, trace of fine sand.	A-7-6(16)	
			6.0'		24" RECOVERY		
7.59		4	6.0'	4 5 5 7	Wet loose orange coarse sand w/trace fine sand, fine gravel and silt.	A-1-b	
			8.0'		24" RECOVERY		
10.12		5	8.0'	2 5 4 6	Wet loose brown coarse sand w/some fine sand, trace of fine gravel and silt.	A-1-b	
			10.0'		24" RECOVERY		
12.65		6	13.0'	4 5	Wet medium dense brown coarse sand w/	A-1-b	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wiczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility

Boring No.: B-16

State Contract: T201680104

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				6 7	some fine gravel, trace of fine sand and silt.		
15.18			15.0'		24" RECOVERY		
					End Boring		
17.71							
20.24							
22.77							
25.3							
27.83							
30.36							
32.89							
35.42							

KEY TO SYMBOLS

Symbol Description

Strata symbols



Silty soils



Poorly graded, silty or clayey
sands and gravel



Expansive plastic clays



Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

BORING B-17

Project Name: St. Georges Maintenance Facility

Location: New Castle County, DE

State Contract #: T201680104

Federal Contract #:

Station/Offset:

Northing: 562042.229

Easting: 589859.171

Boring Surface Elev.:

Reference:

Date Started: 4/7/16

Date Completed: 4/7/16

Wt. of Sample Hammer: 140
Type of: D-Sampler: Split Barrel
S-Sampler:
U-Sampler:
Core Bit:

Lbs. O.D.
O.D.
O.D.
O.D.
O.D.

Average Fall: 30
O.D. of Sampler: 2
O.D. of Samp. Tube:
O.D. of Samp. Tube:
O.D. of Rock Core:

IN.
IN.
IN.
IN.
IN.

Hollow Stem Auger Diameter: 3 1/4" **Inches**
Mud Rotary:

From Depth of: 0.0 **To:** 15.0
From Depth of: **To:**

Water Level Readings

Date	Depth to Water (ft)
4/7/16	N/A
4/7/16	N/A

Caved Depth (ft)
5.5

Boring Contractor: Hillis Carnes Engineering Associates

Equipment/Rig Type: B-30

Driller: John M.

Logged By:

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
		1	0.0'	3 7 9 11	Moist medium dense brown silty coarse sand and fine gravel w/some fine sand.	A-2-4(0)	Topsoil 6"
			2.0'		18" RECOVERY		
2.53		2	2.0'	5 5 7 9	Moist medium dense brown silty coarse sand w/trace fine sand and fine gravel.	A-2-4(0)	
			4.0'		20" RECOVERY		
5.06		3	4.0'	3 4 5 7	Moist stiff brown clayey coarse sandy silt w/ trace fine sand and fine gravel.	A-4(0)	
			6.0'		24" RECOVERY		
7.59		4	6.0'	4 4 5 6	Moist loose brown coarse sand w/some silt, trace of fine sand and fine gravel.	A-1-b	
			8.0'		18" RECOVERY		
		5	8.0'	3 4 5 5	Moist loose brown coarse sand w/some fine gravel, trace of fine sand and silt.	A-1-b	
10.12			10.0'		20" RECOVERY		
12.65							
		6	13.0'	5 7	Moist medium dense brown coarse sand w	A-1-b	

Remarks:

Reviewed By: Hany Fekry

Soils Supervisor: Aaron Wiczorek

**STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
MATERIALS AND RESEARCH**

Project Name: St. Georges Maintenance Facility

Boring No.: B-17

State Contract: T201680104

Depth (ft.)	Water Level	No.	Sample Depth	Blows/6"	Sample Description	AASHTO Class.	Remarks
				7 8	trace fine gravel, fine sand and silt./		
15.18			15.0'		18" RECOVERY		
					End Boring		
17.71							
20.24							
22.77							
25.3							
27.83							
30.36							
32.89							
35.42							

KEY TO SYMBOLS

Symbol Description

Strata symbols



Poorly graded, silty or clayey
sands and gravel



Silty soils



Well graded gravels and sands

Notes:

1. Exploratory borings were drilled using a 3 1/4 - inch diameter hollow stem auger.
2. These logs are subject to the limitations, conclusions, and recommendations in this report.
3. All blow counts are uncorrected.