WEEKLY SUMMARY REPORT

Date: 08/16/2024 (Friday)
Report No.: W-01-081624

Civil & Environmental Consultants, Inc.

PROJECT INFORMATION

PROJECT NAME:	BYPASS BASIN RETROFIT CQA		
LOCATION:	Powerton Generating Station	CEC PROJECT NO:	343-014.0200
PLANS AND SPECS:	S&L Bypass Basin Retrofit Project	WEATHER:	Rain total 2.8”
ISSUED DATE:	07/12/24	TEMP. RANGE (°F)	60-83

PERSONNEL

FIELD REP(S):	Derek Dorsz	CEC PROJ. MANAGER(S):	Dean Jones
CLIENT:	Midwest Generation	CLIENT CONTACT(S):	Joe Kotas
CONTRACTOR:	Bluff City Construction (BCC)	SUPERVISOR(S):	Larry Hunt

SAFETY MEETINGS AND PARTICIPATION

Participation in Contractor’s Tailgate Safety Meeting? ☐ **Yes** ☒ **No** *Vehicle Check Performed?* ☒ **Yes or** ☐ **No**

Plan for the Day Required (WSM 200.25): ☐ Yes (CLICK LINK BELOW) ☒ No

WORK PERFORMED SINCE CEC’S LAST VISIT[(1)]

Work performed since CEC representative’s last site visit? [(1)] ☐ **Yes** ☒ **No**

Date CEC representative was last onsite: Enter Date CEC’s last site visit

(1) Critical work or work requiring continuous observation that has been completed without CEC representation being present onsite. CEC was not made aware that this work was being completed.

SUMMARY OF WORK OBSERVED, LOCATION, AND CONTRACTOR PERFORMING WORK

- Bluff City Construction (BCC) received loads of structural fill.
- Placed, graded, and compacted 3 lifts of structural fill within the bottom of the bypass basin, including adding water to achieve adequate compaction of the lifts.
  - Each lift had thicknesses verified before and after compaction efforts to verify lift thicknesses.
  - Lift compaction tested with the nuclear density gauge and sand cone, see attachments for reports.
- Delivery of HDPE liner.
  - Rolls delivered were unloaded and staged in the staging area located east of the bypass basin. Unloading methods and staging area were acceptable.
  - Delivered rolls matched rolls listed in the approved submittals.
- Delivery of geocomposite membrane and non-woven geotextile.
  - Rolls delivered were unloaded and staged in the staging area located east of the bypass basin. Unloading methods and staging area were acceptable.
  - Delivered rolls matched rolls listed in the approved submittals.
- Cleared and grubbed anchor trench path along west and south top of slope.
- No work on Friday, 8/16/24 due to rain event early in the morning. Pumping of the sump area was prepared and water was discharged out of the basin.

UNEXPECTED, UNUSUAL, OR NONCONFORMING OBSERVATIONS (NEW / RESOLVED)

Unexpected, unusual, or nonconforming work observed? ☐ **Yes** ☒ **No**

- N/A

SUMMARY OF MEETINGS / DISCUSSIONS / PHONE CONVERSATIONS

- NA

ATTACHMENTS

- Field Density Test Report and Sand Cone Test Reports

DESCRIPTION OF SAMPLES TAKEN OR MATERIALS DELIVERED TO LAB

- PBBR-SF-1, SF-2 SF-3 and SF-4 structural fill samples taken and taken to lab.

PHOTOGRAPHS

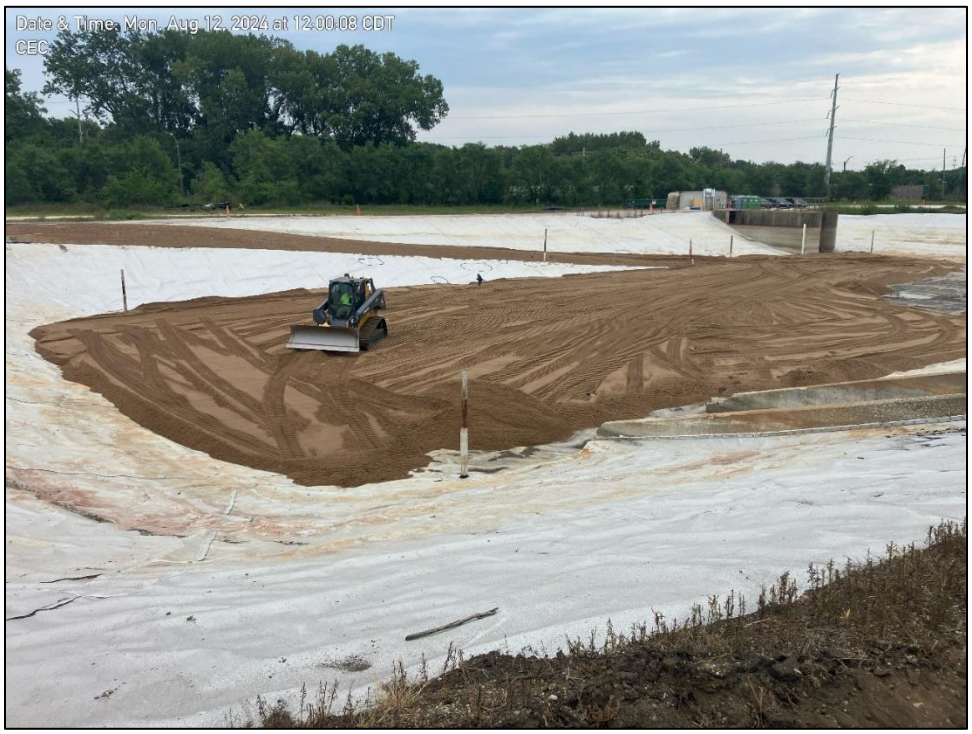

Photo 1: Grading of the 1st lift of structural fill.

* No representations or warranties are made regarding the accuracy of the information generated by the Theodolite application, which is stamped on the photo, or the suitability of that information for any; legal, engineering, surveying, or other use or purpose.

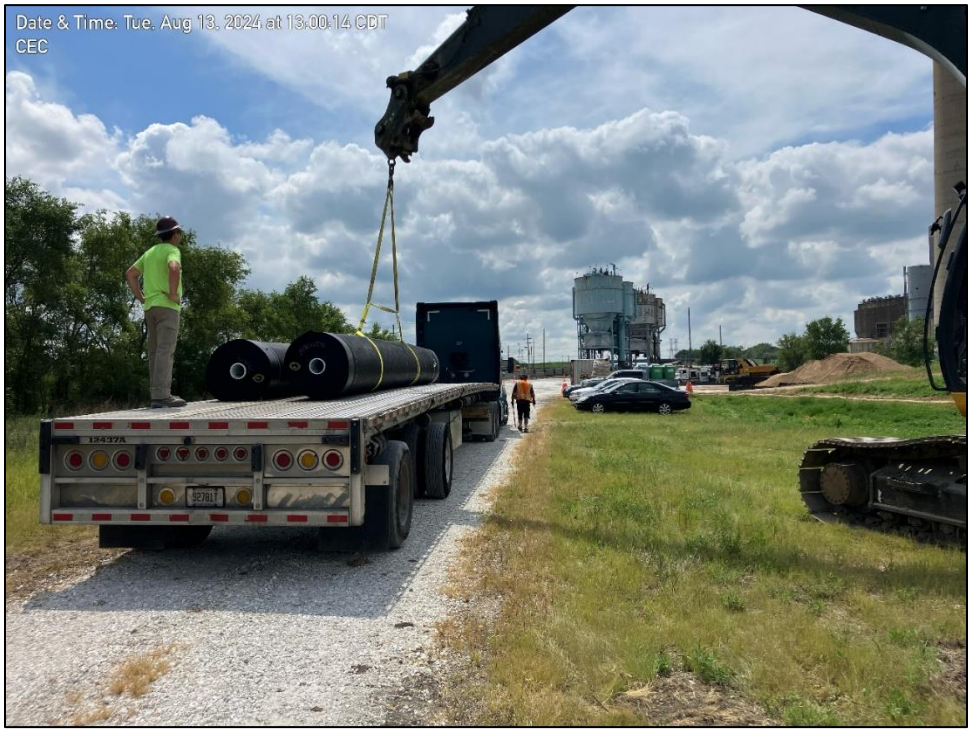

Photo 2: Unloading of HDPE geomembrane.

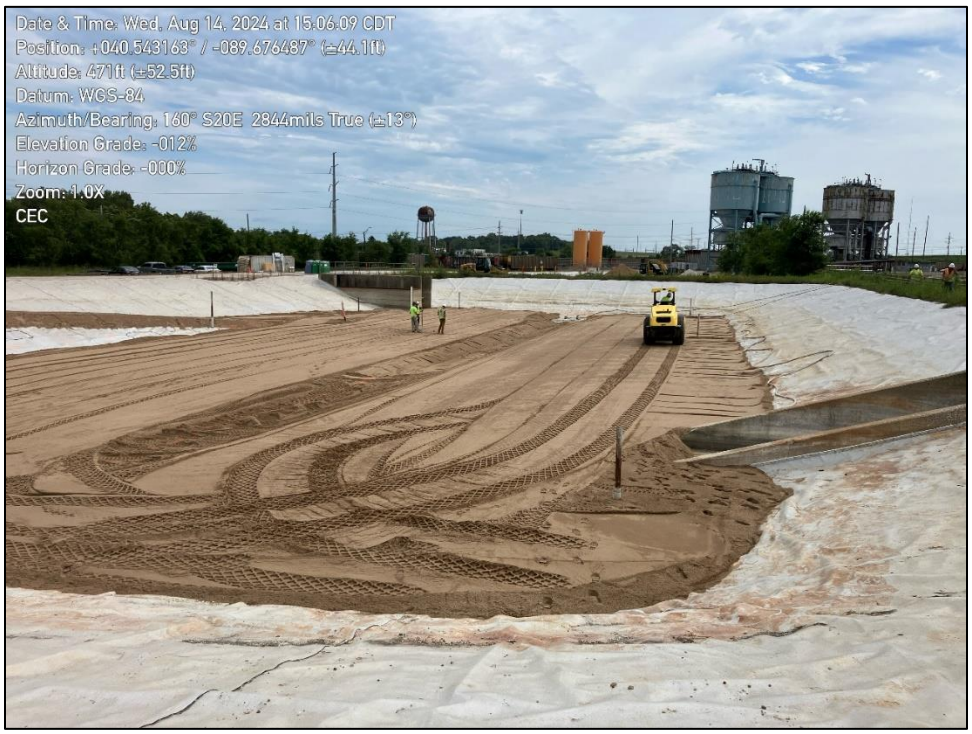

Photo 3: Compaction of the 3rd lift of structural fill.

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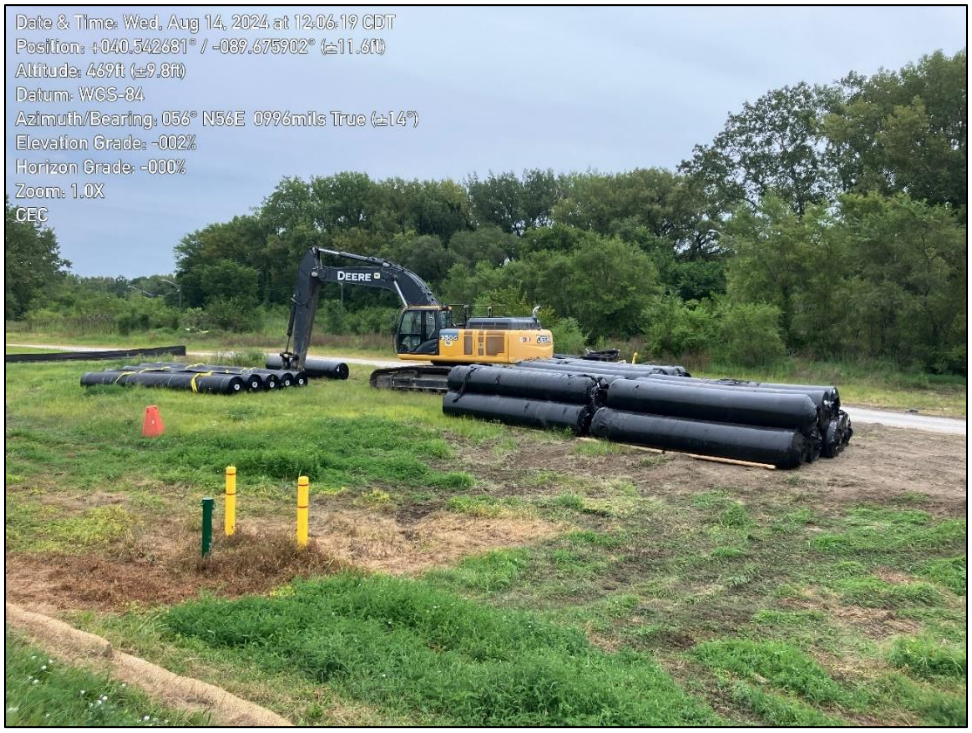

Photo 4: Staging area of liner rolls.

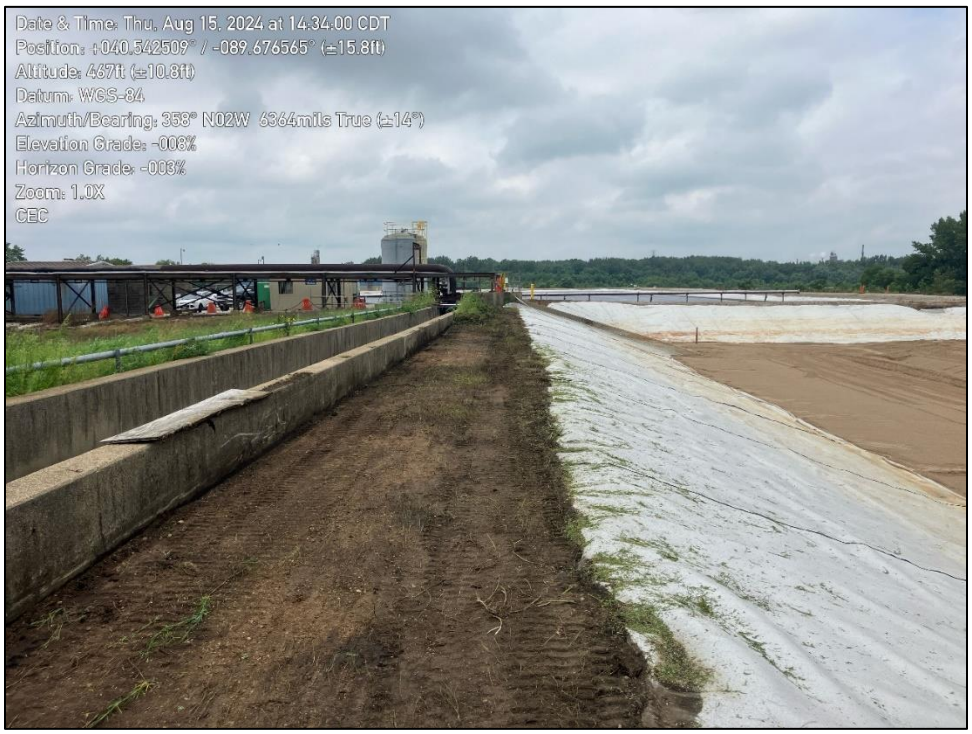

Photo 5: Cleared and grubbed anchor trench along western top of slope.

APPROVED BY

FIELD REP: Derek Dorsz DATE: 08/16/2024 CEC MANAGER: Dean Jones DATE: 08/19/2024

This document is draft until reviewed and approved by a Project Manager

* No representations or warranties are made regarding the accuracy of the information generated by the Theodolite application, which is stamped on the photo, or the suitability of that information for any; legal, engineering, surveying, or other use or purpose.

DAILY FIELD REPORT

Date: 08/12/2024 (Monday)
Report No.: 02-081224

Civil & Environmental Consultants, Inc.

NUCLEAR COMPACTION TEST DATA (ASTM D6938)

PROJECT NAME: Powerton Bypass Basin Retrofit
PROJECT NUMBER: 343-014
CEC TECHNICIAN: Derek Dorsz
GAUGE NUMBER: 27636
CONTRACTOR: Bluff City Construction

STANDARD COUNTS:

DENSITY	949	**%**	**DEVIATION**	0.63	**±1% PASSING**
MOISTURE	613	**%**	**DEVIATION**	0.49	**±2% PASSING**

TEST NUMBER	C-1	C-2	C-3	C-4	C-5	
LOCATION	N/A	N/A	N/A	N/A	N/A	
ELEVATION OR LIFT NUMBER	N/A	N/A	N/A	N/A	N/A	
LIFT THICKNESS (in.)	12	12	12	12	12	
NUMBER OF PASSES	2	2	2	2	2	
PROBE DEPTH (in.)	0	0	0	0	0	
FIELD WET DENSITY (pcf)	110.8	110.8	110.3	110.9	109.8	
FIELD DRY DENSITY (pcf)	107.2	106.8	106.5	107.2	106.9	
COMPACTION (%)	95.0	94.7	94.4	95	94.8	
COMPACTION PASS/FAIL	N/A	N/A	N/A	N/A	N/A	
FIELD MOISTURE (%)	3.2	3.6	3.4	3.3	2.6	
MOISTURE PASS/FAIL	N/A	N/A	N/A	N/A	N/A	
LAB PROCTOR MDD	112.8	112.8	112.8	112.8	112.8	
PROCTOR TYPE (Mod./Stan.)	Modified	Modified	Modified	Modified	Modified	
SPECIFIED MIN. COMPACTION (%)	95.0	95.0	95.0	95.0	95.0	
LABORATORY OMC (%)	12.0	12.0	12.0	12.0	12.0	
SPECIFIED MOISTURE RANGE	N/A	N/A	N/A	N/A	N/A	
RETEST NUMBER	N/A	N/A	N/A	N/A	N/A	
REMARKS	Confirmation testing in conjunction with Sand Cone Tests.					

NOTES:
1. MDD denotes Maximum Dry Density.
2. OMC denotes Optimum Moisture Content.
3. Elevations and lift thicknesses are approximate.
4. N denote Northing, E denotes Easting, and Z denotes elevation. Coordinates given by Bluff City Construction.

Powerton Bypass Basin Retrofit
Sand Cone Test

Civil & Environmental Consultants, Inc.

Sand Cone Analysis (Cannot be performed in soils with coarse aggregates)
Date: 8/12/24 Test No: 1

This method is using balance scales measuring mass **to determine unit weight**. If you are using digital scales or scales with springs for the force-measuring mechanism, use the "Pounds-Force" Tab.

Obtain Sample for Wet Density

- Excavate hole with large metal spoon or garden trowel that is 3 to 4" in diameter and 3 to 4 inches deep in order to obtain a sample of at least 500 grams (1.1 lbs).

- Fill the cone on the apparatus with the sand from the sandcone to detemine the weight of the sand in the cone.

-Weight of sand from full cone (W_1) in Pounds (grams) = 1573.000 grams
-Weight of cone/jar aperatus with sand = (W) in grams 6630.000 grams
-Enter pre-determined density of sand in jar = 1.530 g/cm^3

-Place base plate over excavated hole with hole in base plate in ceter of excavated hole.
-Weigh moist/wet soil from excavation Ws = 1425.000 grams
- Place cone (attached to sand jar) over hole and open valve.
- Turn Valve off and remove cone and base plate. If excavation is not full, spread sand evenly in excavation and repeat last step.

- Determine Volume of Hole Excavated.

- Weigh jar and remaining sand **(W_2)** 3838.000 grams + weight of sand in the full cone **(W_1)** and subtract from weight of full jar **(W)**: **$W - (W_1+W_2)$** 1219.000 grams

Volume of Excavation = 796.732 cm^3

Wet Density of Excavated Soil W_W = 1788.556 kg/m^3

Dry Density of Soil

- Place moist soil obtained from the excavation into pan for drying after weighing on the scale
- Place material in iron skillet over active burner and break apart the core so that it can be dried over the heat.
- Carefully remove dried material from skillet making sure to transfer all material into a tin or other aparatus to be weighed.

- Obtain weight in grams of dry soil W_D = 1370.000 grams
- Moisture Content of sample = 3.860 %

Soil Dry Density = 1722.090 **kg/m^3**

***Soil Dry Unit Wt. = 107.46 **lb/ft^3** *** measured in force (lb/ft^3)

Powerton Bypass Basin Retrofit
Sand Cone Test

Civil & Environmental Consultants, Inc.

Sand Cone Analysis (Cannot be performed in soils with coarse aggregates)
Date: 8/12/24 Test No: 2

This method is using balance scales measuring mass **to determine unit weight**. If you are using digital scales or scales with springs for the force-measuring mechanism, use the "Pounds-Force" Tab.

Obtain Sample for Wet Density

- Excavate hole with large metal spoon or garden trowel that is 3 to 4" in diameter and 3 to 4 inches deep in order to obtain a sample of at least 500 grams (1.1 lbs).

- Fill the cone on the apparatus with the sand from the sandcone to detemine the weight of the sand in the cone.

-Weight of sand from full cone (W_1) in Pounds (grams) = 1573.000 grams
-Weight of cone/jar aperatus with sand = (W) in grams 6343.000 grams
-Enter pre-determined density of sand in jar = 1.530 g/cm^3

-Place base plate over excavated hole with hole in base plate in ceter of excavated hole.

-Weigh moist/wet soil from excavation Ws = 987.000 grams

- Place cone (attached to sand jar) over hole and open valve.
- Turn Valve off and remove cone and base plate. If excavation is not full, spread sand evenly in excavation and repeat last step.

- Determine Volume of Hole Excavated.

- Weigh jar and remaining sand **(W_2)** 3923.000 grams + weight of sand in the full cone **(W_1)** and subtract from weight of full jar **(W)**: **W - (W_1+W_2)** 847.000 grams

Volume of Excavation = 553.595 cm^3

Wet Density of Excavated Soil W_W = 1782.893 kg/m^3

Dry Density of Soil

- Place moist soil obtained from the excavation into pan for drying after weighing on the scale
- Place material in iron skillet over active burner and break apart the core so that it can be dried over the heat.
- Carefully remove dried material from skillet making sure to transfer all material into a tin or other aparatus to be weighed.

- Obtain weight in grams of dry soil W_D = 947.000 grams
- Moisture Content of sample = 4.053 %

Soil Dry Density = 1713.452 **kg/m^3**

***Soil Dry Unit Wt. = 106.92 **lb/ft^3** *** measured in force (lb/ft^3)

Powerton Bypass Basin Retrofit
Sand Cone Test

Civil & Environmental Consultants, Inc.

Sand Cone Analysis (Cannot be performed in soils with coarse aggregates)
Date: 8/12/24 Test No: 3

This method is using balance scales measuring mass **to determine unit weight**. If you are using digital scales or scales with springs for the force-measuring mechanism, use the "Pounds-Force" Tab.

Obtain Sample for Wet Density

- Excavate hole with large metal spoon or garden trowel that is 3 to 4" in diameter and 3 to 4 inches deep in order to obtain a sample of at least 500 grams (1.1 lbs).

- Fill the cone on the apparatus with the sand from the sandcone to detemine the weight of the sand in the cone.

-Weight of sand from full cone (W_1) in Pounds (grams) = 1573.000 grams
-Weight of cone/jar aperatus with sand = (W) in grams 6001.000 grams
-Enter pre-determined density of sand in jar = 1.530 g/cm^3

-Place base plate over excavated hole with hole in base plate in ceter of excavated hole.

-Weigh moist/wet soil from excavation Ws = 1089.000 grams

- Place cone (attached to sand jar) over hole and open valve.
- Turn Valve off and remove cone and base plate. If excavation is not full, spread sand evenly in excavation and repeat last step.

- Determine Volume of Hole Excavated.

- Weigh jar and remaining sand **(W_2)** 3483.000 grams + weight of sand in the full cone **(W_1)** and subtract from weight of full jar **(W)**: **W - (W_1+W_2)** 945.000 grams

Volume of Excavation = 617.647 cm^3

Wet Density of Excavated Soil W_W = 1763.143 kg/m^3

Dry Density of Soil

- Place moist soil obtained from the excavation into pan for drying after weighing on the scale
- Place material in iron skillet over active burner and break apart the core so that it can be dried over the heat.
- Carefully remove dried material from skillet making sure to transfer all material into a tin or other aparatus to be weighed.

- Obtain weight in grams of dry soil W_D = 1049.000 grams
- Moisture Content of sample = 3.673 %

Soil Dry Density = 1700.675 **kg/m^3**

***Soil Dry Unit Wt. = 106.12 **lb/ft^3** *** measured in force (lb/ft^3)

Powerton Bypass Basin Retrofit
Sand Cone Test

Civil & Environmental Consultants, Inc.

Sand Cone Analysis (Cannot be performed in soils with coarse aggregates)
Date: 8/12/24 Test No: 4

This method is using balance scales measuring mass **to determine unit weight**. If you are using digital scales or scales with springs for the force-measuring mechanism, use the "Pounds-Force" Tab.

Obtain Sample for Wet Density

- Excavate hole with large metal spoon or garden trowel that is 3 to 4" in diameter and 3 to 4 inches deep in order to obtain a sample of at least 500 grams (1.1 lbs).

- Fill the cone on the apparatus with the sand from the sandcone to detemine the weight of the sand in the cone.

-Weight of sand from full cone (W_1) in Pounds (grams) = 1573.000 grams
-Weight of cone/jar aperatus with sand = (W) in grams 5793.000 grams
-Enter pre-determined density of sand in jar = 1.530 g/cm^3

-Place base plate over excavated hole with hole in base plate in ceter of excavated hole.
-Weigh moist/wet soil from excavation Ws = 1267.000 grams
- Place cone (attached to sand jar) over hole and open valve.
- Turn Valve off and remove cone and base plate. If excavation is not full, spread sand evenly in excavation and repeat last step.

- Determine Volume of Hole Excavated.

- Weigh jar and remaining sand **(W_2)** 3125.000 grams + weight of sand in the full cone **(W_1)** and subtract from weight of full jar **(W)**: **W - (W_1+W_2)** 1095.000 grams

Volume of Excavation = 715.686 cm^3

Wet Density of Excavated Soil W_W = 1770.329 kg/m^3

Dry Density of Soil

- Place moist soil obtained from the excavation into pan for drying after weighing on the scale
- Place material in iron skillet over active burner and break apart the core so that it can be dried over the heat.
- Carefully remove dried material from skillet making sure to transfer all material into a tin or other aparatus to be weighed.

- Obtain weight in grams of dry soil W_D = 1225.000 grams
- Moisture Content of sample = 3.315 %

Soil Dry Density = 1713.527 **kg/m^3**

***Soil Dry Unit Wt. = 106.92 **lb/ft^3** *** measured in force (lb/ft^3)

Powerton Bypass Basin Retrofit
Sand Cone Test

Civil & Environmental Consultants, Inc.

Sand Cone Analysis (Cannot be performed in soils with coarse aggregates)
Date: 8/12/24 Test No: 5

This method is using balance scales measuring mass **to determine unit weight**. If you are using digital scales or scales with springs for the force-measuring mechanism, use the "Pounds-Force" Tab.

Obtain Sample for Wet Density

- Excavate hole with large metal spoon or garden trowel that is 3 to 4" in diameter and 3 to 4 inches deep in order to obtain a sample of at least 500 grams (1.1 lbs).

- Fill the cone on the apparatus with the sand from the sandcone to detemine the weight of the sand in the cone.

-Weight of sand from full cone (W_1) in Pounds (grams) = 1573.000 grams
-Weight of cone/jar aperatus with sand = (W) in grams 5276.000 grams
-Enter pre-determined density of sand in jar = 1.530 g/cm^3

-Place base plate over excavated hole with hole in base plate in ceter of excavated hole.

-Weigh moist/wet soil from excavation Ws = 1498.000 grams

- Place cone (attached to sand jar) over hole and open valve.
- Turn Valve off and remove cone and base plate. If excavation is not full, spread sand evenly in excavation and repeat last step.

- Determine Volume of Hole Excavated.

- Weigh jar and remaining sand **(W_2)** 2409.000 grams + weight of sand in the full cone **(W_1)** and subtract from weight of full jar **(W)**: **W - (W_1+W_2)** 1294.000 grams

Volume of Excavation = 845.752 cm^3

Wet Density of Excavated Soil W_W = 1771.206 kg/m^3

Dry Density of Soil

- Place moist soil obtained from the excavation into pan for drying after weighing on the scale
- Place material in iron skillet over active burner and break apart the core so that it can be dried over the heat.
- Carefully remove dried material from skillet making sure to transfer all material into a tin or other aparatus to be weighed.

- Obtain weight in grams of dry soil W_D = 1455.000 grams
- Moisture Content of sample = 2.870 %

Soil Dry Density = 1721.782 **kg/m^3**

***Soil Dry Unit Wt. = 107.44 **lb/ft^3** *** measured in force (lb/ft^3)

DAILY FIELD REPORT

Date: 08/13/2024 (Tuesday)
Report No.: 03-081324

Civil & Environmental Consultants, Inc.

NUCLEAR COMPACTION TEST DATA (ASTM D6938)

PROJECT NAME: Powerton Bypass Basin Retrofit
PROJECT NUMBER: 343-014
CEC TECHNICIAN: Derek Dorsz
GAUGE NUMBER: 27636
CONTRACTOR: Bluff City Construction

STANDARD COUNTS:

DENSITY 949 **%** **DEVIATION** 0.63 **±1% PASSING**
MOISTURE 613 **%** **DEVIATION** 0.49 **±2% PASSING**

TEST NUMBER	1	2	3	4	5	6
LOCATION	N: 1411999.2 E: 2432878.3	N: 1411896.3 E: 2432844.8	N: 1411995.8 E: 2432843.1	N: 1411902.1 E: 2432894.8	N: 1412009.8 E: 2432834.8	N: 1411948.4 E: 2432845.8
ELEVATION OR LIFT NUMBER	Lift 1 Z: 456.9	Lift 1 Z: 457.1	Lift 1 Z: 456.9	Lift 1 Z 457.0	Lift 2 Z 458.0	Lift 2 Z 457.8
LIFT THICKNESS (in.)	12	12	12	12	8	8
NUMBER OF PASSES	2	2	2	2	2	2
PROBE DEPTH (in.)	0	0	0	0	0	0
FIELD WET DENSITY (pcf)	109.9	113.1	113.2	111.2	115.6	112.5
FIELD DRY DENSITY (pcf)	107.2	107.5	108.6	107.5	110.6	107.8
COMPACTION (%)	95.0	95.3	96.3	95.3	98.1	95.6
COMPACTION PASS/FAIL	PASS	PASS	PASS	PASS	PASS	PASS
FIELD MOISTURE (%)	2.5	5.2	4.2	3.5	4.5	4.3
MOISTURE PASS/FAIL	PASS	PASS	PASS	PASS	PASS	PASS
LAB PROCTOR MDD	112.8	112.8	112.8	112.8	112.8	112.8
PROCTOR TYPE (Mod./Stan.)	Modified	Modified	Modified	Modified	Modified	Modified
SPECIFIED MIN. COMPACTION (%)	95.0	95.0	95.0	95.0	95.0	95.0
LABORATORY OMC (%)	12.0	12.0	12.0	12.0	12.0	12.0
SPECIFIED MOISTURE RANGE	N/A	N/A	N/A	N/A	N/A	N/A
RETEST NUMBER	N/A	N/A	N/A	N/A	N/A	N/A
REMARKS						

DAILY FIELD REPORT

Date: 08/13/2024 (Tuesday)
Report No.: 03-081324

Civil & Environmental Consultants, Inc.

TEST NUMBER	7	8				
LOCATION	N: 1412032.9 E: 2432890.6	N: 1411929.3 E: 2432882.9				
ELEVATION OR LIFT NUMBER	Lift 2 Z: 457.7	Lift 2 Z: 457.8				
LIFT THICKNESS (in.)	8	8				
NUMBER OF PASSES	2	2				
PROBE DEPTH (in.)	0	0				
FIELD WET DENSITY (pcf)	109.8	109.8				
FIELD DRY DENSITY (pcf)	107.4	107.5				
COMPACTION (%)	95.2	95.3				
COMPACTION PASS/FAIL	PASS	PASS				
FIELD MOISTURE (%)	2.2	2.1				
MOISTURE PASS/FAIL	PASS	PASS				
LAB PROCTOR MDD	112.8	112.8				
PROCTOR TYPE (Mod./Stan.)	Modified	Modified				
SPECIFIED MIN. COMPACTION (%)	95.0	95.0				
LABORATORY OMC (%)	12.0	12.0				
SPECIFIED MOISTURE RANGE	N/A	N/A				
RETEST NUMBER	N/A	N/A				
REMARKS						

NOTES:
1. MDD denotes Maximum Dry Density.
2. OMC denotes Optimum Moisture Content.
3. Elevations and lift thicknesses are approximate.
4. N denote Northing, E denotes Easting, and Z denotes elevation. Coordinates given by Bluff City Construction.

Powerton Bypass Basin Retrofit
Sand Cone Test

Civil & Environmental Consultants, Inc.

Sand Cone Analysis (Cannot be performed in soils with coarse aggregates)
Date: 8/13/24 Test No: 7

This method is using balance scales measuring mass **to determine unit weight**. If you are using digital scales or scales with springs for the force-measuring mechanism, use the "Pounds-Force" Tab.

Obtain Sample for Wet Density

- Excavate hole with large metal spoon or garden trowel that is 3 to 4" in diameter and 3 to 4 inches deep in order to obtain a sample of at least 500 grams (1.1 lbs).

- Fill the cone on the apparatus with the sand from the sandcone to detemine the weight of the sand in the cone.

-Weight of sand from full cone (W_1) in Pounds (grams) = 1573.000 grams
-Weight of cone/jar aperatus with sand = (W) in grams 6794.000 grams
-Enter pre-determined density of sand in jar = 1.530 g/cm^3

-Place base plate over excavated hole with hole in base plate in ceter of excavated hole.
-Weigh moist/wet soil from excavation Ws = 1175.000 grams
- Place cone (attached to sand jar) over hole and open valve.
- Turn Valve off and remove cone and base plate. If excavation is not full, spread sand evenly in excavation and repeat last step.

- Determine Volume of Hole Excavated.

- Weigh jar and remaining sand **(W_2)** 4200.000 grams + weight of sand in the full cone **(W_1)** and subtract from weight of full jar **(W)**: **W - (W_1+W_2)** 1021.000 grams

Volume of Excavation = 667.320 cm^3

Wet Density of Excavated Soil W_W = 1760.774 kg/m^3

Dry Density of Soil

- Place moist soil obtained from the excavation into pan for drying after weighing on the scale
- Place material in iron skillet over active burner and break apart the core so that it can be dried over the heat.
- Carefully remove dried material from skillet making sure to transfer all material into a tin or other aparatus to be weighed.

- Obtain weight in grams of dry soil W_D = 1150.000 grams
- Moisture Content of sample = 2.128 %

Soil Dry Density = 1724.091 **kg/m^3**

***Soil Dry Unit Wt. = 107.58 **lb/ft^3** *** measured in force (lb/ft^3)

DAILY FIELD REPORT

Date: 08/14/2024 (Wednesday)
Report No.: 04-081424

Civil & Environmental Consultants, Inc.

NUCLEAR COMPACTION TEST DATA (ASTM D6938)

PROJECT NAME: Powerton Bypass Basin Retrofit
PROJECT NUMBER: 343-014
CEC TECHNICIAN: Derek Dorsz
GAUGE NUMBER: 27636
CONTRACTOR: Bluff City Construction

STANDARD COUNTS:

DENSITY 951 **%** **DEVIATION** 0.21 **±1% PASSING**
MOISTURE 611 **%** **DEVIATION** 0.33 **±2% PASSING**

TEST NUMBER	9	10	11	12		
LOCATION	N: 1411884.9 E: 2432838.2	N: 1411988.3 E: 2432835.4	N: 1412035.0 E: 2432908.0	N: 1411952.2 E: 2432885.2		
ELEVATION OR LIFT NUMBER	Lift 3 Z: 458.2	Lift 3 Z: 458.7	Lift 3 Z: 458.6	Lift 3 Z 458.1		
LIFT THICKNESS (in.)	8	8	8	8		
NUMBER OF PASSES	2	2	2	2		
PROBE DEPTH (in.)	0	0	0	0		
FIELD WET DENSITY (pcf)	110.4	111.1	110.7	113.8		
FIELD DRY DENSITY (pcf)	107.2	107.7	107.9	110.7		
COMPACTION (%)	95.0	95.5	95.7	98.2		
COMPACTION PASS/FAIL	PASS	PASS	PASS	PASS		
FIELD MOISTURE (%)	3.0	3.1	2.6	2.8		
MOISTURE PASS/FAIL	PASS	PASS	PASS	PASS		
LAB PROCTOR MDD	112.8	112.8	112.8	112.8		
PROCTOR TYPE (Mod./Stan.)	Modified	Modified	Modified	Modified		
SPECIFIED MIN. COMPACTION (%)	95.0	95.0	95.0	95.0		
LABORATORY OMC (%)	12.0	12.0	12.0	12.0		
SPECIFIED MOISTURE RANGE	N/A	N/A	N/A	N/A		
RETEST NUMBER	N/A	N/A	N/A	N/A		
REMARKS						

NOTES:
1. MDD denotes Maximum Dry Density.
2. OMC denotes Optimum Moisture Content.
3. Elevations and lift thicknesses are approximate.
4. N denote Northing, E denotes Easting, and Z denotes elevation. Coordinates given by Bluff City Construction.

Powerton Bypass Basin Retrofit
Sand Cone Test

Civil & Environmental Consultants, Inc.

Sand Cone Analysis (Cannot be performed in soils with coarse aggregates)
Date: 8/14/24 Test No: 11

This method is using balance scales measuring mass **to determine unit weight**. If you are using digital scales or scales with springs for the force-measuring mechanism, use the "Pounds-Force" Tab.

Obtain Sample for Wet Density

- Excavate hole with large metal spoon or garden trowel that is 3 to 4" in diameter and 3 to 4 inches deep in order to obtain a sample of at least 500 grams (1.1 lbs).

- Fill the cone on the apparatus with the sand from the sandcone to detemine the weight of the sand in the cone.

-Weight of sand from full cone (W_1) in Pounds (grams) = 1573.000 grams

-Weight of cone/jar aperatus with sand = (W) in grams 4538.000 grams

-Enter pre-determined density of sand in jar = 1.530 g/cm^3

-Place base plate over excavated hole with hole in base plate in ceter of excavated hole.

-Weigh moist/wet soil from excavation Ws = 810.000 grams

- Place cone (attached to sand jar) over hole and open valve.
- Turn Valve off and remove cone and base plate. If excavation is not full, spread sand evenly in excavation and repeat last step.

- Determine Volume of Hole Excavated.

- Weigh jar and remaining sand **(W_2)** 2274.000 grams + weight of sand in the full cone **(W_1)** and subtract from weight of full jar **(W)**: **W - (W_1+W_2)** 691.000 grams

Volume of Excavation = 451.634 cm^3

Wet Density of Excavated Soil W_W = 1793.488 kg/m^3

Dry Density of Soil

- Place moist soil obtained from the excavation into pan for drying after weighing on the scale
- Place material in iron skillet over active burner and break apart the core so that it can be dried over the heat.
- Carefully remove dried material from skillet making sure to transfer all material into a tin or other aparatus to be weighed.

- Obtain weight in grams of dry soil W_D = 790.000 grams

- Moisture Content of sample = 2.469 %

Soil Dry Density = 1750.271 **kg/m^3**

***Soil Dry Unit Wt. = 109.22 **lb/ft^3** *** measured in force (lb/ft^3)