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September 8, 2022

Mr. Greg Elko
SED NY Holdings LLC
110 Phoenixville Pike, Suite 100
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Re: Geotechnical Engineering Report
Proposed Flat Creek Solar Project
Town of Root, Montgomery County, NY
TRC Project #: 427281.2022.GEOT

Dear Mr. Elko:

TRC Engineers, Inc. (TRC) is pleased to present our Geotechnical Engineering Report for the referenced project. Our work was initiated in accordance with Cordelio Services LLC Work Order #04, dated April 8, 2022 and completed in general accordance with the agreed scope of work presented in TRC's revised proposal, submitted April 6, 2022. A summary of our geotechnical exploration activities, including the laboratory test results, findings and recommendations related to the proposed Flat Creek Solar Project is summarized below.

1.0 INTRODUCTION

This report presents the results of the geotechnical exploration for the proposed photovoltaic (PV) solar array structures to be constructed at the Flat Creek Solar project site located in the Town of Root, Montgomery County, New York (Site). The purpose of our exploration was to evaluate the geologic and subsurface conditions at additional parcel areas leased to the Site since completion of a Preliminary Geotechnical Engineering Report prepared by Terracon Consultants (dated November 21, 2021) to reduce uncertainty with respect to anticipated foundation and site construction, and to provide geotechnical recommendations for design by others of the proposed project.

1.1 Project Description

The Site is located in the Town of Root, Montgomery County, New York along the southwest side of Route 162 and north of Route 92. The Site is primarily vacant agricultural land, which was mostly clear of crops at the time of the field exploration along with scattered wooded areas. Several existing structures, including houses and barns, are currently located on or adjacent to portion of the proposed lease area parcel. Up to approximately 300 MW of PV array capacity will be developed across nearly 3,000 acres. Based on our experience with similar projects, we assume that the proposed photovoltaic array designers would prefer to have the arrays mounted on posts driven into the ground. The anticipated post loads or types have not been provided to TRC but are assumed to be driven approximately 7-10 feet below existing ground surface (bgs) typical for such construction. It is assumed that significant earthwork (cuts and fills) is not required for the project development and that existing grades will remain relatively unchanged.

1.2 Scope of Services

Our geotechnical scope of services was presented in TRC's revised Proposal for Geotechnical Engineering Services dated April 6, 2022. To accomplish this work, we have provided the following services:

- Review of Terracon's Preliminary Geotechnical Engineering Report (dated November 21, 2021) to develop a supplement exploration program.
- Exploration of subsurface conditions by drilling fifteen (15) borings onsite within proposed solar array and substation areas and retrieving soil samples for classification and laboratory testing.
- Evaluation of the physical and engineering properties of the subsurface soils at the boring locations based on visually classifying the samples by a member of our geotechnical staff.
- Engineering analysis to evaluate the proposed foundation systems for the support of the ground-mounted PV solar array.
- Preparation of this report to summarize our findings and to present our conclusions and recommendations regarding the following:

    - Foundation support for the proposed solar array structures assuming post foundations, or alternative system, as applicable based on subsurface conditions.
    - Bearing capacity and other parameters for use in preliminary foundation design by others.
    - Anticipated excavation conditions and presence of potential rock or other refusal conditions, if applicable.
    - Suitability of on-site soils for reuse in backfills and requirements for imported fills.
    - Recommendations for placement, compaction, and testing of fills, if applicable.
    - Soil parameters (both above and below ground water table) for active, at rest, and passive conditions and L-Pile soil parameters for use in foundation design by others.
    - Anticipated ground water conditions and impacts on the design and construction.
    - Frost penetration depth.
    - Corrosivity potential on buried steel and concrete.
    - Field electrical resistivity.
    - Thermal resistivity laboratory test results
    - Preliminary Seismic Site Class parameters in accordance with ASCE 7-16.
    - Other construction-related concerns, as applicable based on available site subsurface conditions, details of the proposed construction and any available preliminary design information.

2.0 SITE CONDITIONS

2.1 Site Reconnaissance, Boring Stakeout, and Investigation

A member of TRC's local professional staff performed a site reconnaissance in conjunction with test boring stakeout and field electrical resistivity testing. Test boring locations were staked in the field using a cellphone-based GPS app at the approximate locations recommended by TRC and approved by SED as shown on the attached Figure 1, *Approximate Test Boring Location Plan*. The 15 test borings were spatially distributed within accessible areas of the solar array area of the additional parcel areas with boring B-116 located within the proposed substation footprint. Prior to drilling, the Dig Safely New York (DSNY) One-Call notification system was contacted to notify owners of public utilities in the area of the proposed testing borings for utility mark out and clearance of test boring activities.

The test boring field activities were performed between June 27, 2022 and June 30, 2022 by TRC's drilling subcontractor, CME Associates, using an ATV-mounted drill rig. Split spoon sampling was performed continuously through the upper 10 ft bgs and at 5 ft intervals thereafter to the completion depths using the Standard Penetration Test (SPT) Method (American Society of Testing and Materials [ASTM] D1586). The soil samples were obtained by driving the split spoon sampler 24 inches into the soil with a 140-pound automatic hammer free-falling 30 inches. The number of blows required for each 6 inches of penetration was recorded separately. The SPT blow count ("N-value") of the soil was calculated as the number of blows required for the middle 12 inches (6-inch to 18-inch interval) of penetration or fraction thereof. The SPT N-value serves as an indicator of relative consistency for cohesive soils and relative density of granular soils. Borings were terminated at the borings' target depths or auger refusal, whichever was encountered first, ranging from approximately 4.6 ft to 35 ft bgs. Upon completion, all test borings were backfilled to the approximate existing ground surface with the auger cuttings. Copies of the test boring logs are attached along with a copy of the approximate test boring location site plan.

2.2 Regional Geology

According to available public geological data, the surficial geology at the project site consists of residual soil deposits weathered in place from the underlying parent rock. Locally the site is underlain predominantly by mudstone and shale of the Utica Shale Formation from the Middle Ordovician Age. The northern parcels sit near a contact with carbonate limestone of the undivided Trenton and Black River Groups and the Beekmantown Group of the Middle and Lower Ordovician Age, respectively.

2.3 Subsurface Conditions

Below a surficial cultivated topsoil layer, the test borings revealed that the surficial soils generally consist mostly of LEAN CLAY and SILTY CLAY with varying quantities of sand and rock fragments extending to depths ranging from approximately 2.5 ft to 22 ft bgs. SPT N-values indicate that the consistency of these soils ranges from "medium stiff" to "hard". Laboratory test results indicate that the materials tested are relatively low plastic and can be described as a silty clay and lean clay with plastic limits ranging from 11% to 21%, liquid limits ranging from 17% to 36%, and plasticity indexes ranging from 4% to 18%. Natural moisture contents as received by the laboratory range from approximately 8% to 18%. Maximum laboratory compacted dry densities of the representative bulk samples of the clay as determined by ASTM D 698 ranged from 104.4 to 117.3 pounds per cubic foot (pcf) at optimum moisture contents ranging from 13.2% to 18.3%.

Occasional cobble inclusions were noted in various borings ranging from the depth of 3 ft to 15 ft bgs. The presence of these oversized materials may pose difficult driving conditions for driven post type foundation during installation.

Below the surficial clayey soil stratum, test borings B-106 and B-116 encountered a stratum consisting of silty, clayey sand with varying quantities of gravel-sized rock fragments. SPT N-values indicate the relative density of this stratum is “medium dense”. Laboratory test results indicate that the fine-grained (silt and clay) content of this layer is approximately 41% to 46%. Natural moisture content as received by the laboratory ranged from approximately 7% to 8%.

Auger refusal, which typically represents the apparent top of weathered rock, was encountered in test borings B-103, B-104, B-111 to B-113, and B-115 at depths ranging from approximately 4.6 ft to 13.1 ft bgs. Difficult drilling conditions, which are typically indicative of hard or very dense soil conditions, presence of rock fragments, and/or decomposed rock, were also encountered at 12 of the 15 test boring locations. The depths and locations where difficult drilling and auger refusal were encountered are summarized in Table 1, below.

Table 1: Summary of Difficult Drilling and Auger Refusal Depths

Test Boring Location	Depth to Hard or Very Dense Soils/Difficult Drilling (ft, bgs^1)	Depth to Auger Refusal (ft, bgs^1)
B-101	>15	>15
B-102	8	>15
B-103	11	13.1
B-104	2.5	5.5
B-105	6	>15
B-106	8.5	>15
B-107	7	>15
B-108	8	>15
B-109	7.5	>15
B-111	2.5	4.6
B-112	4.5	5.2
B-113	3.5	5.2
B-114	>15	>15
B-115	4	5.2

Test Boring Location	Depth to Hard or Very Dense Soils/Difficult Drilling (ft, bgs[1])	Depth to Auger Refusal (ft, bgs[1])
B-116[2]	>15	>15

1. ft, bgs = feet below existing ground surface
2. Boring located in area of proposed substation footprint.

2.4 Groundwater

Groundwater, when encountered, was present at depths ranging from 4 ft to 8.5 ft bgs in test borings B-101, B-103, B-107 and B-115 within the array fields and at a depth of 22.5 ft bgs in test boring B-116 within the proposed substation footprint, respectively, during drilling at the time of the field exploration. However, the development of perched water conditions may be encountered within standard excavation depths for foundations or utilities during wet periods. The groundwater conditions are representative of the conditions at the date and time of this study and are not representative of daily, seasonal, long-term fluctuations, development of perched conditions, or ponding of water in low lying areas during wet periods.

3.0 CORROSION EVALUATION AND THERMAL RESTIVITY

3.1 Corrosion Evaluation

To evaluate the corrosion potential of the subsurface soils at the site, we submitted three (3) representative bulk soil samples at depths of approximately 1-5 ft bgs, composited from test boring locations during our subsurface exploration to an analytical laboratory for pH, chloride, soluble sulfate, and sulfate content, resistivity and oxidation reduction testing. The results are summarized in Table 2, below.

Table 2: Results of Corrosivity Testing

Sample	Boring No.	pH in (H20)	pH in (CaCl2)	Chlorides (mg/kg)*	Sulfates (mg/kg)*	Sulfides (mg/kg)*	Oxidation Reduction	Resistivity (ohm-cm)**
Bulk 1	B-101 to B-104	7.6	6.8	50	85	Nil	+662	2,500
Bulk 2	B-106 to B-108	7.5	6.7	60	93	Nil	+670	2,200
Bulk 3	B-111 to B-115	7.4	6.8	40	65	Nil	+658	3,485

** mg/kg = milligrams per kilogram*
*** ohm-cm = ohm-centimeter*

TRC also conducted field resistivity testing using the Wenner Four-Pin method in general accordance with ASTM G57. Testing was centered at boring locations B-106 and B-109 with the test lines oriented in perpendicular to one another at each test location. Measurements were taken along each test line corresponding to electrode spacings of 2.5 ft, 5 ft, 10 ft, 20 ft, and 40 ft. Field resistivity test results are attached, and the results are discussed further in this section.

Many factors can affect the corrosion potential of soil including soil moisture content, resistivity, permeability, and pH, as well as chloride and sulfate concentration. In general, soil resistivity, which is a measure of how easily electrical current flows through soils, is the most influential factor. Based on classification developed by William J. Ellis (1978), the approximate relationship between soil corrosiveness was developed as shown in Table 3 below.

Table 3: Relationship Between Soil Resistivity and Soil Corrosivity

Soil Resistivity (ohm-cm)*	Classification of Soil Corrosiveness
0 to 900	Very Severely Corrosive
900 to 2,300	Severely Corrosive
2,300 to 5,000	Moderately Corrosive
5,000 to 10,000	Mildly Corrosive
10,000 to >100,000	Very Mildly Corrosive

** ohm-cm = ohm-centimeter*

Chloride and sulfate ion concentrations and pH appear to play secondary roles in affecting corrosion potential. High chloride levels tend to reduce soil resistivity and break down otherwise protective surface deposits, which can result in corrosion of buried metallic improvements or reinforced concrete structures. Sulfate ions in the soil can lower the soil resistivity and can be highly aggressive to Portland cement concrete (PCC) by combining chemically with certain constituents of the concrete, principally tricalcium aluminate. This reaction is accompanied by expansion and eventual disruption of the concrete matrix. Soils containing high sulfate content could also cause corrosion of the reinforcing steel in concrete. Table 4.2.1 of the American Concrete Institute (ACI, 2008) provides requirements for concrete exposed to sulfate-containing solutions as summarized in Table 4 below.

Table 4: Relationship Between Sulfate Concentration and Sulfate Exposure (Table 4.2.1 of ACI)

Water-Soluble Sulfate (SO4) in soil (ppm)*	Sulfate Exposure
0 to 1,000	Negligible
1,000 to 2,000	Moderate
2,000 to 20,000	Severe
over 20,000	Very Severe

**ppm = parts per million*

Acidity is an important factor of soil corrosivity. The lower the pH (the more acidic the environment), the higher will the soil corrosivity be with respect to buried metallic structures. As soil pH increases above 7 (the neutral value), the soil is increasingly more alkaline and less corrosive to buried steel structures due to protective surface films which form on steel in high pH environments. A pH between 5 and 8.5 is generally considered relatively passive from a corrosion standpoint.

The laboratory electrical resistivity test completed on the samples of surficial soils indicates values ranging from 2,200 to 3,485 ohm-centimeters, which would be indicative of moderately to severely corrosive potential to buried metallic improvements. Based on the field resistivity testing results the electrical resistivity values for the existing subsoils range from approximately 153 to 2,561 ohm-centimeters, which would be indicative of moderately to very severely corrosive potential. Based on this result and the resistivity correlations presented in Table 3, the corrosion potential to buried metallic improvements may be characterized as ranging from moderately to very severely corrosive.

Based on our previous experience and Table 4.2.1 of the ACI, it is our opinion that sulfate exposure to PCC may be considered negligible for the native subsurface materials tested.

3.2 Thermal Resistivity

Laboratory thermal resistivity test results with the thermal dryout curves, are attached to this report. Thermal Resistivity testing was performed in general accordance with ASTM 5334 on three (3) representative composite samples compacted to density equivalent to approximately 90% of the maximum dry density and at the optimum moisture content as established by ASTM D 698 for each composite test sample. The samples were then oven dried, and multiple thermal resistivity readings were obtained at various moisture contents. The thermal resistivities decrease with increasing moisture content and varies from 98.8 to 171.2 ^{o}C-cm/W when fully dry and from 55.5 to 62.7 ^{o}C-cm/W at optimum moisture.

4.0 FOUNDATIONS AND EARTHWORK

4.1 Site Seismic Coefficients

According to the ASCE 7-16, the site class is within “Site Class C or D” based on the soil profiles. The maximum considered earthquake ground motions in this area for 0.2 sec. and 1.0 sec. spectral responses are approximately 20.6% g and 6.1% g, respectively. The use of Site Class D is recommended for seismic design of critical equipment, such as within the proposed substation. For Site Class D, the corresponding 0.2 and 1.0 sec. design spectral response acceleration parameters S_{DS} and S_{D1} are 22.0 % g and 9.7 % g, respectively.

4.2 Foundations

Based on the results of this investigation and our experience with similar structures, a foundation system consisting of driven posts is assumed as generally preferred by the designer for support of the proposed ground-mounted photovoltaic arrays. Based on the results of the test borings, the use of driven posts are feasible and could be supported in the natural soils encountered at this project, but could potentially be problematic due to shallow refusal conditions.

It is our understanding that shallow foundations will be needed to support the proposed relatively light equipment, as well as more heavily loaded equipment such as the transformers and dead-end structures at the Site substation location. A combination of shallow foundations and mats could be utilized for support of various structures or equipment bearing on newly placed, compacted load bearing fill or the existing natural soils after proper subgrade preparation as described below. Drilled piers could also be utilized.

As noted in Table 1, six (6) test borings encountered refusal to earth drilling equipment at depths ranging from 4.6 to 13.1 feet bgs. The remaining borings did not encounter auger refusal prior to reaching the planned boring depth. Additionally, difficult drilling conditions and/or hard or very dense soil conditions including cobble inclusions were encountered in 12 of the 15 test borings at depths ranging from 2.5 ft to 11 ft bgs. The remaining borings did not encounter difficult drilling conditions prior to reaching the planned boring depth. Therefore, shallow refusal conditions may be encountered within these areas and other portions of the proposed solar array area when attempting to drive posts and depending on the required minimum embedment depths.

Where the use of a driven post system is limited for use on this project where refusal to drilling and sampling tools is encountered, the designer and contractor should be prepared to implement alternative installation methods (or alternative foundation support systems) for achieving sufficient foundation embedment to provide sufficient resistance for uplift and lateral loading conditions, as necessary. The following alternatives will need to be considered at the Site as subsurface obstructions due to hard or very dense soils, highly decomposed rock, or possible cobbles are likely to be encountered at relatively shallow depths (i.e., less than 10 ft bgs) as observed at most of the test boring locations:

- The use of predrilling to break up the dense highly decomposed rock or other obstructions to increase post embedment for vertical and lateral support.
- The use of larger sized, heavier grade posts that will accommodate harder driving conditions and could provide increased embedment and sufficient lateral capacity and uplift.
- The use of helical screw piles to achieve uplift and lateral capacities at shallower depths.
- The use of shallow spread footings or ballast foundations where adequate embedment with other foundation or installation methods cannot be achieved.

4.2.1 Driven Post Support System

As mentioned above, driving post beyond depths where hard or very dense soils and highly decomposed rock were encountered will be difficult and pre-drilling will likely become necessary to achieve sufficient post depth to resist the required lateral and uplift loads wherever similar conditions are encountered. All posts should be driven to bear at sufficient depths required to provide adequate axial, uplift, and lateral resistances.

4.2.2 Helical Screw Support System

A helical pile system, such as that manufactured by IDEAL Manufacturing, AB Chance, Magnum Piering, or similar, having a minimum 3-inch diameter or low-displacement ground screws, such as those manufactured by TerraSmart, or similar, could be considered as an alternative to driven posts in areas where driving restrictions as previously discussed are less than 8 ft bgs for support of the proposed arrays. Lateral and uplift capacities of helical piles, as well as the ability of the shaft to withstand anticipated installation torque based on subsurface conditions, should be verified by the pile manufacturer or installer. Generally speaking, additional capacities can be developed using larger diameters and helix combinations. Because these piles offer little lateral resistance due to their relatively small cross section, these piles can be installed by grouting on the exterior of the pile during the installation to provide increased lateral and uplift capacity, if required. Installation of helical piles below the auger refusal depths, where encountered, is typically not be feasible. Embedment into the very dense/difficult augering material may be possible, but as stated previously, will be dependent on the ability of the central shaft to withstand installation torque required to advance helices. Depths of hard, very dense soils and auger refusal are as presented in Table 1 above and piles will not be able to penetrate below these depths. Alternative to a conventional small shaft helical pile, the use of a 2-inch to 3-inch diameter continuous flight helical pile, could be considered that generally can be drilled deeper into very dense soil conditions as compared to a conventional helical pile with larger diameter helices.

The final design should be verified by the helical pile manufacturer prior to implementation at the Site. Also, the type and diameter of helix plates to be used, as well as the central bar or round pipe characteristics or that of a continuous flight helical pile should be verified by the product manufacturer based on this design capacity and anticipated torque value required for installation of the helical piles. If subsurface obstructions are encountered during installation, pre-drilling or pre-excavation will be required. If predrilling or pre-excavating, then all piles should be backfilled or grouted to ensure intimate contact with surrounding soils and so not to negatively impact lateral stability.

4.2.3 Recommended Geotechnical Parameters for Pile Design

Allowable design end-bearing capacities (for driven posts) and recommended geotechnical parameters for use in design analysis, included in Tables 5 and 6 below, can be utilized for evaluation of posts or piles for support of the PV solar array, or other design analysis, as required. ***We recommend that lateral and uplift resistance of soils be reduced by 50% above a depth of 4 ft below the ground surface to account for disturbance resulting from construction as well as to account for the negative impacts due to frost and thaw action.*** Allowable capacities assume a factor of safety of 2 for compression loads; a factor of safety equal to 3 was used for determining allowable uplift capacity of piles; a factor of safety equal to 1.5 should be used for transient (wind/seismic) loading conditions. The factor of safety for uplift capacity can be reduced to 2 in conjunction with pile load testing. The use of lower factors of safety is at the sole discretion and risk tolerance of the designing engineer.

Table 5. Summary of Allowable Soil Bearing Capacities

Soil Description[1]	**Relative Density/ Consistency**	**Cohesion (psf)**	**Downward Skin Friction (psf/ft) for steel/soil**	**Upward Skin Friction (psf/ft) for steel/soil**	**Allowable Bearing Capacity (ksf***)**
CLAY/SILTY CLAY	"Medium" to "Stiff"	1,000	200*	100*	2
CLAY/SILTY CLAY	"Very Stiff"	2,000	300*	150*	3
CLAY/SILTY CLAY	"Hard"	4,000	400*	200*	5
SAND/GRAVEL/ Decomposed Rock	"Dense" to "Very Dense"	NA	150**	75**	5

1. See the attached Subsurface Condition Summary Table for additional details
* *psf/ft – pounds per square foot per foot (over pile length)*
** *psf/ft – pounds per square foot per foot (triangular distribution over pile length)*
*** *ksf – kips per square foot*

Table 6. Summary of Unfactored Soil Parameters for Design

Soil Description[1]	**LPILE Soil Type**	**Consistency / Relative Density**	**Total (Submerged) Unit Weight (pcf*)**	**Friction Angle (degrees)**	**E_{50}**	**Cohesion (psf**)**	**Soil Modulus Above/Below Water Table, k (pci**)**
CLAY/SILTY CLAY	Clay	"Medium" to "Stiff"	115 (52.6)	-	0.01	1,000	-
CLAY/SILTY CLAY	Clay	"Very Stiff"	120 (57.6)		0.007	2,000	-
CLAY/SILTY CLAY	Clay	"Hard"	125 (62.6)		0.005	4,000	-
SAND/GRAVEL/ Decomposed Rock	Sand	"Dense" to "Very Dense"	130 (67.6)	34	-	-	225/125

1. See the attached Subsurface Condition Summary Table for additional details
* *pcf – pounds per cubic foot*
** *psf – pounds per square foot*
*** *pci – pounds per cubic inch*

Prior to or during construction, we recommend that tension and lateral load tests be conducted on a minimum of three piles for each size, system, or soil consistency/relative density to verify the adequacy of the design. Testing should be performed in general accordance with ASTM 3689 and ASTM 3966 or in accordance with current standard practice in the industry. The test locations should coincide with the test boring locations based on the variability of the subsurface conditions. The test piles should be installed with the same means and methods used to install production piles. In the event that the means and methods or embedment depths of pile installation are revised following initial pile testing, additional pile tests should be performed to verify that sufficient resistance can be achieved with the revised means, methods, and embedment. The results should be reviewed and approved by a qualified geotechnical engineer.

4.2.4 Shallow Foundations

Shallow foundation systems such as rigid mats can be considered for support of electrical equipment or other ancillary equipment. Additionally, ballasted foundations may need to be considered for support of the proposed solar arrays where installation of helical or driven post foundations cannot achieve sufficient embedment due to shallow refusal conditions due to the presence of weathered rock or cobbles and boulders. ***Ballast foundations for solar array support and mats supporting light equipment can be designed for an allowable bearing capacity of 2,000 psf*** when constructed in accordance with the general recommendations presented in the *Earthwork* section of this report. A vertical subgrade modulus of 80 pci may be used in foundation mat design. A typical allowable interface friction coefficient of 0.35 be used for design of cast in place concrete foundations assuming that they are constructed on grade overlying the natural soils.

Transformers, dead-end structures and similar heavily loaded structure foundations or mats bearing on the existing natural soils or newly placed and compacted fill can be designed for an allowable bearing capacity of 3,000 psf, after proper subgrade preparation as follows:

1. Over-excavate the natural soils for a minimum depth of 2.0 feet below bottom of the footing depth. Over-excavation shall extend beyond the perimeter of the foundation 1 foot horizontally for each foot of depth below existing grade.
2. The exposed subgrade shall be densified in the presence of a qualified geotechnical professional to confirm suitability of exposed grade and identify any soft, loose, unstable or unsuitable (biodegradable material or waste) materials that shall be removed.

Foundation subgrades for supporting electrical equipment or other ancillary structures subjected to freezing temperatures during construction and/or the life of the structure should be established at least 4 ft below adjacent grades or otherwise protected against frost action. Alternatively, to resist frost heave, light loaded mat slabs constructed at grade should be provided a coarse aggregate similar to AASHTO #57 aggregate layer (minimum 24 inches thick) below the mat foundation to reduce frost impacts. To guard against a punching type shear failure, minimum widths of continuous footings should be 24 in.

Shallow excavations for foundation slabs and construction of utilities may encounter perched groundwater in low lying areas or during wet periods. If perched groundwater or surface runoff are encountered, sumps and pumps will be sufficient to control groundwater and provide stable working conditions.

4.2.5 Drilled Shafts

Axial Capacity

Alternately, based on the subsurface conditions encountered and on our experience with similar construction, drilled shafts may be considered, particularly for support of the heavier equipment. The bottom of drilled shafts are anticipated to bear within the very stiff to hard clay or dense decomposed rock. The foundation designer should verify that the overall shaft diameter and length are sufficient to provide the vertical and necessary lateral support based on recommendations presented herein. It is our experience that the required length and diameter of drilled shafts, if used to support structures subjected to high lateral loads (such as the proposed dead end structures) will be controlled by anticipated lateral loading conditions.

Drilled shafts can be designed to derive their load-carrying capacities from shaft sidewall resistance (i.e., “skin friction”), end-bearing, or a combination of the two. The following are noted with respect to axial capacity of drilled shafts:

- Where the shaft length is entirely in soil and the length of the shaft is at least twice the shaft diameter, the embedment length can be checked for adequate axial compression capacity based on the sum of the allowable load in end bearing and side friction.

- Where the shaft length is less than twice the shaft diameter, or where methods of construction preclude consideration for shaft resistance (i.e., permanent casing installed in an oversized hole) the drilled shaft should be sized based on end bearing alone.

- Shaft resistance should not be included in soil within the upper 4 ft from the ground surface to account for disturbance during construction as well as negative impacts from frost action.

- For large diameter shafts, the weight of concrete (including consideration for the effects of buoyancy) might be adequate to resist anticipated uplift (or tension) loads, where applicable. If shaft resistance must be considered in addition to the weight of the shaft, a factor of safety of 3 is recommended for use in estimating allowable uplift capacity.

- Allowable design unit resistances against axial loads are provided in Table 5 above.

Lateral Capacity

Recommended geotechnical parameters for use in LPILE analysis are included in Table 6 above. If drilled shafts are to be constructed within a distance of 3B to 5B, where B is the shaft diameter, reduction factors should be applied as appropriate to account for group effects. We recommend that lateral resistance of soils within 4 ft of the ground surface be neglected to account for disturbance resulting from both drilled shaft construction and the negative impacts due to frost action.

Construction Related Concerns

Temporary casing may be required during shaft construction to maintain sidewall stability through the soft natural soils, where cobble inclusions are present, or in excavations where groundwater and/or perched water zones are encountered.

Intimate contact between the drilled shaft and surrounding soil will be critical to achieve the lateral load resistance predicted by the LPILE models. As such, use of permanent casing in the design and installation of drilled shafts should be avoided. If use of permanent casing is required, the permanent casing should be in intimate contact with the surrounding soil. Permanent casing should not be placed in an oversized hole unless grouting of the exterior annular space is performed to create intimate contact between the casing and soil. If intimate contact is not maintained, lateral deflections will significantly exceed those estimated in the LPILE evaluations. These deflections will be very highly variable and difficult to predict as they will be dependent on the method of construction and the amount of sidewall relaxation and annular space resulting from the construction process.

If the shaft is cased so that the excavation remains stable and free of water infiltration, freefall placement of concrete could be considered, provided the contractor can direct concrete discharge through the center of the shaft and avoid contact with the reinforcement cage during freefall, which could result in unacceptable aggregate separation. In the event of water infiltration into the shaft, the reinforcement cage should be installed followed by installation of a tremie tube to the bottom of the shaft so that the shaft can be concreted using bottom-up tremie techniques. Care will need to be taken to ensure that the tremie remains inserted at the bottom of the shaft during concrete placement.

Final length and diameter of the drilled shafts will be a function of the vertical loads as well as the lateral load and deflection requirements, where applicable. Preferably, shafts should extend into the natural alluvial soils to limit settlements and maximize end bearing capacity.

4.3 Earthwork

Based on our understanding of the proposed construction, significant grading and earthwork operations are not anticipated unless material removal and replacement would be considered for support of equipment foundations. The following recommendations are provided based on the site soils encountered.

Any existing subsurface utilities, which conflict with the proposed development should be removed or relocated, where applicable. In areas of backfill placement and/or construction of shallow foundations, all topsoil and organic or otherwise deleterious material should be removed before foundation construction or new fill placement. Any obstructions that would interfere with new foundation construction must be removed in their entirety from a foundation location. After stripping residual topsoil and excavation to the proposed bearing elevations for shallow mat foundations, the exposed subgrade areas should be vigorously densified with as large a compactor as is practical to improve overall performance and reduce impacts of settlements within the disturbed surficial soil. Soft, loose, or unstable areas identified during the course of excavation should be densified in-place or excavated and replaced with compacted load bearing fill.

The natural surficial soils contain predominant fine-grained (lean clay and/or silty clay) content and will be sensitive to moisture and disturbance. Therefore, they may lose considerable strength when wet or disturbed by construction equipment and could be difficult to work with during cold or wet weather. The presence of low lying areas will be highly sensitive to disturbance when wet. Some moisture conditioning (wetting or drying) of these soils should be anticipated before reuse in compacted backfills, particularly during wet seasons. Existing surficial soils with organic inclusions should be excluded from reuse as load-bearing fill. Once a subgrade has been prepared, construction traffic should be controlled in such a fashion as to minimize subgrade disturbance.

Imported load-bearing fill, if required, should consist of well-graded granular material similar to SW, GW, SM or GM as identified by the Unified Soil Classification System (USCS) which is not excessively moist and is free from ice and snow, roots, surface coatings, sod, loam, clay, rubbish, other deleterious or organic matter, and any particles larger than 4 inches in diameter. Alternatively, an AASHTO No. 57 or NYSDOT Type 2 coarse aggregate layer (minimum 24 inches thick) could be considered below mat foundations supporting electrical equipment to reduce frost impacts.

All backfills fills should be placed in horizontal layers not exceeding 8 inch loose thickness. The lift thickness criterion may be modified in the field depending on the conditions present at the time of construction and on the compaction equipment used. Load-bearing fills for the support of foundations should be compacted to not less than 98% of maximum dry density (ASTM D 698). All newly placed fills and backfills, if utilized for areas of the solar array posts or piles, should be compacted to not less the 95% of maximum dry density (ASTM D698). Fills in paved areas, if planned, or areas supporting access roads should be compacted to not less than 95% of maximum dry density (ASTM D698). Fills in landscaped areas should be compacted to at least 90% of maximum dry density (ASTM D698).

The sidewalls of any confined excavations deeper than 4 ft must be sloped, benched, or adequately shored per OSHA 29 CFR 1926 regulations. Trench boxes and/or sheeting could be used in conjunction with open cut slopes to permit access to confined excavations. The onsite predominantly clayey soils are classified as Type B soils according to OSHA 29 CFR 1926. Open excavations in the natural clay or silt soils should not be steeper than 1H: 1V if dry and 1.5H: 1V if submerged or where wet conditions are observed, such as perched water or significant surface runoff.

If site grading will include cuts, especially near or beyond the depths listed in Table 1, then heavy duty excavators or dozers with ripper attachments will be required to remove the decomposed rock materials.

4.4 Trench Backfill

Bedding and pipe embedment materials to be used around underground utility or electrical conduit pipes should be well graded sand or gravel conforming to the pipe manufacturer's recommendations and should be placed and compacted in accordance with project specifications, local requirements, or governing jurisdiction. General fill to be used above pipe embedment materials should be placed and compacted in accordance with the recommendations contained in this section.

Depended on site grading and depth of trenches, it is noted that cobbles and or refusal to excavation equipment may be encountered during excavation of trenches. Shallow rock if encountered during utility excavation, must be removed entirely from within the bedding zone of all trenches prior to utility construction. Excavation of rock will require the use of larger equipment, including, but not limited to large heavy-duty excavators, hydraulic rams, and dozers with ripper blade attachments. Trench excavations should be over-excavated to provide at least 3 to 4 inches of bedding material to provide a uniform support for utilities and electrical conduits. Where direct bury of utilities will occur, a layer of clean sand, or similar material free of rock fragments should be placed immediately over the cables to prevent damage during compaction of backfill.

Utility trenches located adjacent to footings or foundations should not extend below an imaginary 1:1 (horizontal:vertical) plane projected downward from the foundation bearing surface to the bottom edge of the trench. Where utility trenches will cross beneath footing bearing planes, the footing concrete should be deepened to encase the pipe, or the utility trench should be backfilled with sand/cement slurry or lean concrete within the foundation-bearing plane.

4.5 Gravel Access Roadways

After stripping of the existing topsoil proposed access roads should be proof-rolled with a heavily loaded pneumatic-tired vehicle such as a loaded water truck or tri-axle dump truck. Soft, loose or unstable areas, identified by significant pumping, rutting or similar deformation under wheel loads must be removed and replaced with compacted fill or aggregate material to achieve stable subgrade prior to placing common fill for site grading, if required, or fill aggregate surfacing. A layer of a geogrid should be installed directly over the subgrade with adjacent rolls lapped in accordance with manufacturer's recommendations in general accordance with NYSDEC standard for limited Use Pervious Haul Roads. A layer of aggregate similar in gradation to NYSDOT Item 703-02, Size Designation 3-5 of Table 703-4 material should be placed directly over the geogrid in a single 8-inch thick layer and spread with tracked equipment in accordance with NYSDEC standards. During construction, the access road may need to be occasionally re-graded and re-densified. Any electric cables crossing below the roadway should be installed in heavy duty rigid steel conduits or installed a minimum 3 ft below finished grade to prevent damage to the cables.

4.6 Surface Drainage

Positive surface water drainage gradients at least 2 percent should be provided to direct surface water away from foundations and mat slabs towards suitable discharge facilities. Ponding of surface water should not be allowed on or adjacent to structures, slabs-on-grade, or pavements. Any rain runoff should be directed away from foundation and slabs-on-grade such as equipment pads, as applicable.

In addition, a sufficiently thick velocity dissipater, such as layer of coarse drainage aggregate of at least 3 to 4 inches in size, should be placed along water flow paths to dissipate concentrated flow of runoff water in order to minimize surface erosion.

4.7 Plans, Specifications, and Construction Review

We recommend that TRC perform a plan review of the geotechnical aspects of the project design for general conformance with our recommendations. In addition, subsurface materials encountered in the relatively small diameter, widely spaced borings may vary significantly from other subsurface materials on the site. Therefore, we also recommend that a representative of our firm observe and confirm the geotechnical specifications of the project construction. This will allow us to form an opinion about the general conformance of the project plans and construction with our recommendations. In addition, our observations during construction will enable us to note subsurface conditions that may vary from the conditions encountered during our investigation and, if needed, provide supplemental recommendations. For the above reasons, the recommendations provided in this report are based on the assumption that TRC will be retained to provide observation and testing services during construction to confirm that conditions are similar to that assumed for design and to form an opinion as to whether the work has been performed in general accordance with the project plans and specifications. If we are not retained for these services, TRC cannot assume any responsibility for any potential claims that may arise during or after construction as a result of misuse or misinterpretation of TRC’s report by others. These services are not included as part of TRC’s current scope of work.

4.8 Construction Observation

TRC recommends that a qualified geotechnical professional should observe the geotechnical aspects of the earthwork for general conformance with our recommendations including site preparation, selection of fill materials, pile installation, and the placement and compaction of fill. To facilitate your construction schedule and if you wish TRC to perform these services, we request sufficient notification (72 hours) for site visits. The project plans and specifications should incorporate all recommendations contained in the text of this report. These services are not included as part of TRC’s current scope of work.

5.0 LIMITATIONS

This report has been prepared for SED NY Holdings LLC, specifically for design of the proposed solar array and associated development to be constructed at the Flat Creek Solar project site located in the Town of Root, Montgomery County, NY as identified herein. Transfer of this report or included information is at the sole discretion of SED NY Holdings LLC. TRC's contractual relationship remains with SED NY Holdings LLC and limitations stated herein remain applicable regardless of end user. The opinions, conclusions, and recommendations presented in this report have been formulated in accordance with accepted geotechnical engineering practices that exist in the area at the time this report was written. No other warranty, expressed or implied, is made or should be inferred.

The opinions, conclusions and recommendations contained in this report are based upon the information obtained from our investigation, which includes data from a limited number of widely separated discrete locations, visual observations from our site reconnaissance, and review of other geotechnical data provided to us, along with local experience and engineering judgment. An attempt has been made to provide for normal contingencies; however, the possibility remains that differing or unexpected conditions may be encountered during construction. If this should occur, or if additional or contradictory data are revealed in the future, TRC should be notified so that modifications to this report can be made, if necessary. TRC is not responsible for any conclusions or opinions drawn from the data included herein, other than those specifically stated, nor are the recommendations presented in this report intended for direct use as construction specifications.

TRC should be retained to review the geotechnical aspects of the final plans and specifications for conformance with our recommendations. The recommendations provided in this report are based on the assumption that TRC will be retained to provide observation and testing services during construction to confirm that conditions are similar to that assumed for design and to form an opinion as to whether the work has been performed in accordance with the project plans and specifications. If we are not retained for these services, TRC cannot assume any responsibility for any potential claims that may arise during or after construction as a result of misuse or misinterpretation of TRC's report by others. Furthermore, TRC will cease to be the Geotechnical Engineer-of-Record at the time another consultant is retained for follow up service to this report, if applicable.

The opinions presented in this report are valid as of the present date for the property evaluated. Changes in the condition of the property will likely occur with the passage of time due to natural processes and/or the works of man. In addition, changes in applicable standards of practice can occur as a result of legislation and/or the broadening of knowledge. Furthermore, geotechnical issues may arise that were not apparent at the time of our investigation. Accordingly, the opinions presented in this report may be invalidated, wholly or partially, by changes outside of our control. Therefore, this report is subject to review and should not be relied upon after a period of three years. Similarly, this report should not be used, nor are its recommendation applicable, for any other properties or alternate developments.

We trust this report contains the information you require and thank you for the opportunity to work on this project. Please consider our firm for future geotechnical services as needed.

Sincerely,

TRC Engineers, Inc.

James P. Benjamin

James P. Benjamin, PE*
Geotechnical Project Manager
*NJ, PA

Izzaldin Al Mohd, PhD, PE
Chief Geotechnical Engineer
NY License No.: 105780

cc: S. McGee, TRC
J. Dickey, TRC

FIGURES

Project No. 427281.2022.GEOT
Date: August 30,2022
For: SED NY Holdings LLC

TRC
16000 Commerce Parkway, Mt. Laurel, New Jersey 08054
PH. (856) 273-1224 FAX. (856) 273-9244

APPROXIMATE TEST BORING LOCATIONS

Flat Creek Solar

Town of Root, Montgomery County, New York

FIGURE
1

SunEast - Flat Creek Solar Project
Town of Root, Montgomery County, NY

Boring Number	Depth to Groundwater	CLAY/SILTY CLAY			SILTY/CLAYEY SAND & GRAVEL		Decomposed Rock
		Medium to Stiff	Very Stiff	Hard	Medium Dense to Dense	Very Dense	Very Dense
B-101	8.5	0 to 6	6 to 15	-- to --	-- to --	-- to --	-- to --
B-102	>15	0 to 6	6 to 8	8 to 15	-- to --	-- to --	-- to --
B-103	6	0 to 6	6 to 8	8 to 11	-- to --	-- to --	11 to 13.1
B-104	>5.5	0 to 1	-- to --	1 to 3	-- to --	-- to --	3 to 5.5
B-105	>15	0 to 2	2 to 5.5	5.5 to 15	-- to --	-- to --	-- to --
B-106	>15	0 to 7	-- to --	7 to 15	-- to --	-- to --	-- to --
B-107	5.5	0 to 6	10.5 to 15	6 to 10.5	-- to --	-- to --	-- to --
B-108	>15	0 to 2	-- to --	2 to 13	-- to --	-- to --	13 to 15
B-109	>15	0 to 6	-- to --	6 to 7.5	-- to --	7.5 to 13.5	13.5 to 15
B-111	7.8	0 to 2.5	-- to --	2.5 to 3	-- to --	-- to --	3 to 4.6
B-112	>5.2	0 to 2	2 to 4.5	-- to --	-- to --	-- to --	4.5 to 5.2
B-113	>5.2	0 to 2	-- to --	2 to 3.5	-- to --	-- to --	3.5 to 5.2
B-114	>15	0 to 4	4 to 15	-- to --	-- to --	-- to --	-- to --
B-115	4	0 to 3	-- to --	-- to --	-- to --	-- to --	3 to 5.2
B-116	22.5	0 to 8	18 to 22	8 to 18	22 to 35	-- to --	-- to --

FIELD DATA

TEST BORING LOGS

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

BORING	**B-101**
G.S. ELEV.	
FILE	427281.2022.GEOT
SHEET	1 OF 1

GROUNDWATER DATA

FIRST ENCOUNTERED N/A ▽

DEPTH	HOUR	DATE	ELAPSED TIME	
8.5'	10:30	6/27	0 HR	▼
				▽

METHOD OF ADVANCING BOREHOLE

a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	15.0 '

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/27/2022
DATE COMPLETED 06/27/2022

DEPTH	A	B	C	DESCRIPTION	REC	REMARKS
	S-1	1 4 7 8	▨	***LT BROWN CLAY (TILL), SM F/M/C SAND, TR TO SM F/M GRAVEL***		
	S-2	7 8 10 10	▨	4.0		
5	S-3	3 4 3 3	▨			
▽ ▼	S-4	5 10 8 8	▨	***LT BROWN/ORANGE-BROWN CLAY, SM F/M/C SAND, TR GRAVEL-SIZED ROCK FRAGMENTS***		
10	S-5	6 8 10 11	▨	10.0		
			▨	***BLACK CLAY, SM SAND, TR GRAVEL-SIZED SHALE FRAGMENTS***		
15	S-6	3 5 7 12	▨	15.0		
				END OF BORING AT 15'		
20						
25						
30						
35						

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

BORING **B-102**
G.S. ELEV.
FILE 427281.2022.GEOT
SHEET 1 OF 1

GROUNDWATER DATA			
FIRST ENCOUNTERED NE			
DEPTH	HOUR	DATE	ELAPSED TIME

▽
▼

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	15.0 '

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/27/2022
DATE COMPLETED 06/27/2022

DEPTH	A	B	C	DESCRIPTION	REC	REMARKS
	S-1	2 6 6 8	▨	***LT BROWN CLAY, TR SAND, TR GRAVEL, TR ROOTS***		
	S-2	10 10 9 10	▨			
5	S-3	5 6 9 12	▨	6.0		
	S-4	9 11 13 15	▨	***LT BROWN/BLACK CLAY, SM SAND, TR GRAVEL-SIZED SHALE FRAGMENTS***		SHALE FRAGMENTS FROM 8 FT
10	S-5	4 7 39 27	▨	10.0		
			▨	***BLACK/GRAY CLAY, SM GRAVEL-SIZED SHALE FRAGMENTS***		
15	S-6	7 15 20 23	▨	15.0		
				END OF BORING AT 15'		
20						
25						
30						
35						

DRN. CC
CKD. JPB

NEW PROJECTS TEST BORING LOG 427281 FLAT CREEK SOLAR.GPJ SITE BLAUVELT.GDT 9/9/22

TEST BORING LOG

BORING	**B-103**
G.S. ELEV.	
FILE	427281.2022.GEOT
SHEET	1 OF 1

PROJECT: FLAT CREEK SOLAR

LOCATION: MONTGOMERY COUNTY, NY

GROUNDWATER DATA				
FIRST ENCOUNTERED N/A				▽
DEPTH	HOUR	DATE	ELAPSED TIME	
6.0'	12:00	6/30	0 HR	▼
				▽

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	13.1 '

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/30/2022
DATE COMPLETED 06/30/2022

DEPTH	A	B	C	DESCRIPTION	REC	REMARKS
	S-1	2 6 9 10	▨	***LT BROWN CLAY, TR TO SM SAND, TR GRAVEL-SIZED SHALE FRAGMENTS***		
	S-2	6 7 16 11	▨			
5			▨			
▼	S-3	3 4 5 5	▨	6.0		
	S-4	4 8 13 23	▨	***LT BROWN SILTY CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS, TR SAND***		
10	S-5	15 15 15 24	▨			
			▨	11.0		
			▨	***GRAVEL-SIZED SHALE FRAGMENTS (DECOMPOSED ROCK)***		
	S-6	100/3"	▨	13.1		AUGER REFUSAL AT 13.1 FT
				END OF BORING AT 13.25'		
15						
20						
25						
30						
35						

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR

LOCATION: MONTGOMERY COUNTY, NY

BORING	**B-104**
G.S. ELEV.	
FILE	427281.2022.GEOT
SHEET	1 OF 1

GROUNDWATER DATA			
FIRST ENCOUNTERED NE			
DEPTH	HOUR	DATE	ELAPSED TIME

▽

▼

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	2.7 '
d	FROM	2.7 '	TO	5.5 '

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/30/2022
DATE COMPLETED 06/30/2022

DEPTH		A	B	C	DESCRIPTION	REC	REMARKS
		S-1	2 3 22 17		*LT BROWN SILTY CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS, SM SAND*		
		S-2	26 100/2"	3.0			
		S-3	100/5"		*SHALE FRAGMENTS, TR LIMESTONE (DECOMPOSED ROCK)*		
5				5.5			
					END OF BORING AT 5.5'		AUGER REFUSAL AT 5.5 FT; BORING OFFSET ~15 FT AWAY CONFIRMED REFUSAL
10							
15							
20							
25							
30							
35							

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

BORING **B-105**
G.S. ELEV.
FILE 427281.2022.GEOT
SHEET 1 OF 1

GROUNDWATER DATA			
FIRST ENCOUNTERED NE			
DEPTH	HOUR	DATE	ELAPSED TIME

▽
▼

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	15.0 '

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/27/2022
DATE COMPLETED 06/27/2022

DEPTH		A	B	C	DESCRIPTION	REC	REMARKS
		S-1	2 3 4 6		***LT BROWN CLAY, TR SAND, TR GRAVEL-SIZED ROCK FRAGMENTS WITH COBBLES***		
		S-2	6 12 14 22				
5		S-3	14 16 21 20		5.5		
		S-4	26 30 26 31				
10		S-5	11 26 59 56		***GRAY-BLACK SILTY CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS, TR SAND***		
15					15.0		
					END OF BORING AT 15'		
20							
25							
30							
35							

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

BORING	**B-106**
G.S. ELEV.	
FILE	427281.2022.GEOT
SHEET	1 OF 1

GROUNDWATER DATA

FIRST ENCOUNTERED NE

DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE

a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	15.0 '

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/27/2022
DATE COMPLETED 06/27/2022

DEPTH	A	B	C	DESCRIPTION	REC	REMARKS
	S-1	2 5 6 6		***ORANGE-BROWN SILT, TR ROOTS*** 2.0		
	S-2	5 7 12 12				
5	S-3	5 7 5 7		***LT BROWN CLAY, TR TO SM F/M/C SAND, TR GRAVEL-SIZED ROCK FRAGMENTS*** 7.0		
	S-4	8 14 16 18				
10	S-5	12 41 32 48		***BROWN/WHITE CLAY, TR SAND, TR GRAVEL-SIZED SHALE FRAGMENTS*** 12.5		
15	S-6	4 15 12 16		***GRAY-BLACK SILTY CLAYEY F/M/C SAND, SM GRAVEL-SIZED SHALE FRAGMENTS*** 15.0		
				END OF BORING AT 15'		
20						
25						
30						
35						

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

BORING **B-107**
G.S. ELEV.
FILE 427281.2022.GEOT
SHEET 1 OF 1

GROUNDWATER DATA			
FIRST ENCOUNTERED 5.5 ' ▽			
DEPTH	HOUR	DATE	ELAPSED TIME
▼			

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	15.0 '

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/29/2022
DATE COMPLETED 06/29/2022

DEPTH	A	B	C	DESCRIPTION	REC	REMARKS
	S-1	3 5 6 7		***LT BROWN SILT, SM F/M/C SAND, TR GRAVEL-SIZED ROCK FRAGMENTS, TR CLAY***		
	S-2	6 6 7 7				
5 ▽	S-3	3 3 5 9		6.0		
	S-4	10 13 100/1"		***LT BROWN F/M/C SANDY SILTY CLAY, TR TO SM GRAVEL-SIZED ROCK FRAGMENTS WITH COBBLES***		
10	S-5	10 20 24 31		10.5		
				BLACK CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS WITH COBBLES		
15	S-6	7 7 22 20		15.0		
				END OF BORING AT 15'		
20						
25						
30						
35						

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

BORING **B-108**
G.S. ELEV.
FILE 427281.2022.GEOT
SHEET 1 OF 1

GROUNDWATER DATA			
FIRST ENCOUNTERED NE			
DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	15.0 '

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/27/2022
DATE COMPLETED 06/27/2022

DEPTH	A	B	C	DESCRIPTION	REC	REMARKS
	S-1	2 4 8 7	▨	***LT BROWN SILTY CLAY, TR TO SM SAND, TR GRAVEL-SIZED ROCK FRAGMENTS*** 2.0		
	S-2	13 14 25 33	▨			
5	S-3	8 9 10 15	▨	***LT BROWN CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS***		
	S-4	18 16 24 16	▨	8.0		
10	S-5	18 27 56 57	▨	***LT BROWN-ORANGE SILTY CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS WITH POSSIBLE COBBLES*** 13.0		
15	S-6	10 33 33 33	▨	***GRAY-BLACK CLAY, SM GRAVEL-SIZED SHALE FRAGMENTS (DECOMPOSED ROCK)*** 15.0		
				END OF BORING AT 15'		
20						
25						
30						
35						

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

BORING	**B-109**
G.S. ELEV.	
FILE	427281.2022.GEOT
SHEET	1 OF 1

GROUNDWATER DATA

FIRST ENCOUNTERED NE

DEPTH	HOUR	DATE	ELAPSED TIME

METHOD OF ADVANCING BOREHOLE

a	FROM	0.0 '	TO	10.0 '	
d	FROM	10.0 '	TO	15.0 '	

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/27/2022
DATE COMPLETED 06/27/2022

DEPTH	A	B				C	DESCRIPTION	REC	REMARKS
	S-1	3	6	7	8		***LT BROWN SANDY SILTY CLAY, SM F/M/C SAND, TR GRAVEL-SIZED ROCK FRAGMENTS***		
	S-2	7	16	21	12				
5	S-3	4	5	10	15	6.0			
	S-4	13	21	33	47	7.5	***DARK BROWN-GRAY SILTY CLAY, SM SAND, TR TO SM GRAVEL-SIZED ROCK FRAGMENTS WITH COBBLES***		
10	S-5	10	15	33	27		***BLACK/GRAY SILTY CLAYEY F/M/C SAND, SM GRAVEL-SIZED ROCK FRAGMENTS WITH COBBLES***		
						13.5			
15						15.0	***BLACK ROCK FRAGMENTS, SM SILTY CLAY (DECOMPOSED ROCK)***		
							END OF BORING AT 15'		
20									
25									
30									
35									

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

BORING **B-111**
G.S. ELEV.
FILE 427281.2022.GEOT
SHEET 1 OF 1

GROUNDWATER DATA

FIRST ENCOUNTERED NE ▽

DEPTH	HOUR	DATE	ELAPSED TIME

▼

METHOD OF ADVANCING BOREHOLE

a	FROM	0.0 '	TO	2.7 '	
d	FROM	2.7 '	TO	4.6 '	

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/27/2022
DATE COMPLETED 06/27/2022

DEPTH		A	B	C	DESCRIPTION	REC	REMARKS
		S-1	4 5 5 6	▨	*LT BROWN F/M/C SANDY CLAY, SM GRAVEL*		
		S-2	6 100/2"	3.0			
		S-3	100/4"	4.6	*BROWN-GRAY SHALE ROCK FRAGMENTS (DECOMPOSED ROCK)*		
5					*END OF BORING AT 4.6'*		AUGER REFUSAL AT 4.6 FT; OFFSET BORING INSTALLED ~15 FT AWAY TO CONFIRM REFUSAL
10							
15							
20							
25							
30							
35							

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

BORING	**B-112**
G.S. ELEV.	
FILE	427281.2022.GEOT
SHEET	1 OF 1

GROUNDWATER DATA

FIRST ENCOUNTERED NE

DEPTH	HOUR	DATE	ELAPSED TIME

▽ ▼

METHOD OF ADVANCING BOREHOLE

a	FROM	0.0 '	TO	5.0 '
d	FROM	5.0 '	TO	5.2 '

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/28/2022
DATE COMPLETED 06/28/2022

DEPTH	A	B	C	DESCRIPTION	REC	REMARKS
	S-1	1 3 6 9		***BROWN SILTY CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS, TR SAND***		
	S-2	6 6 12 8		4.5		
5	S-3	11 69 100/0"		5.2 ***GRAY-BLACK SILTY CLAYEY GRAVEL-SIZED ROCK FRAGMENTS, SM F/M/C SAND***		AUGER REFUSAL AT 5.2 FT; OFFSET BORING INSTALLED ~19-20 FT AWAY TO CONFIRM REFUSAL
				END OF BORING AT 5.2'		
10						
15						
20						
25						
30						
35						

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR

LOCATION: MONTGOMERY COUNTY, NY

BORING	**B-113**
G.S. ELEV.	
FILE	427281.2022.GEOT
SHEET	1 OF 1

GROUNDWATER DATA

FIRST ENCOUNTERED NE

DEPTH	HOUR	DATE	ELAPSED TIME

▽

▼

METHOD OF ADVANCING BOREHOLE

a	FROM	0.0 '	TO	5.2 '

DRILLER B. FLETCHER

HELPER RYAN

INSPECTOR R. DEPOLO

DATE STARTED 06/28/2022

DATE COMPLETED 06/28/2022

DEPTH		A	B	C	DESCRIPTION	REC	REMARKS
		S-1	2 4 5 6	▨	***BROWN-BLACK CLAY, TR SAND, TR GRAVEL-SIZED ROCK FRAGMENTS, TR ORGANICS***		
		S-2	14 25 44 34	▨	3.5 ***BLACK SILTY GRAVEL-SIZED SHALE FRAGMENTS (DECOMPOSED ROCK)***		
5		S-3	22 66 100/2"	▨	5.2		
					END OF BORING AT 5.2'		AUGER REFUSAL AT 5.2 FT; OFFSET BORING INSTALLED ~15 FT AWAY TO CONFIRM REFUSAL
10							
15							
20							
25							
30							
35							

DRN. CC

CKD. JPB

NEW PROJECTS TEST BORING LOG 427281 FLAT CREEK SOLAR.GPJ SITE BLAUVELT.GDT 9/9/22

TRC

TEST BORING LOG

BORING	**B-114**
G.S. ELEV.	
FILE	427281.2022.GEOT
SHEET	1 OF 1

PROJECT: FLAT CREEK SOLAR

LOCATION: MONTGOMERY COUNTY, NY

GROUNDWATER DATA			
FIRST ENCOUNTERED NE			
DEPTH	HOUR	DATE	ELAPSED TIME

▽

▼

METHOD OF ADVANCING BOREHOLE				
a	FROM	0.0 '	TO	10.0 '
d	FROM	10.0 '	TO	15.0 '

DRILLER	B. FLETCHER
HELPER	RYAN
INSPECTOR	R. DEPOLO
DATE STARTED	06/28/2022
DATE COMPLETED	06/28/2022

DEPTH	A	B				C	DESCRIPTION	REC	REMARKS
	S-1	3	6	5	7	▨	*LT BROWN F/M SANDY SILTY CLAY*		
	S-2	4	8	7	7	▨			
5						▨	5.0		
	S-3	3	6	10	13	▨	*BLACK SILTY CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS, TR SAND*		
	S-4	12	20	21	20	▨			
10	S-5	6	10	17	27	▨			
						▨	12.5		
						▨	*BLACK CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS*		
15	S-6	9	9	11	11	▨	15.0		
							END OF BORING AT 15'		
20									
25									
30									
35									

DRN.	CC
CKD.	JPB

TRC

TEST BORING LOG

BORING **B-115**
G.S. ELEV.
FILE 427281.2022.GEOT
SHEET 1 OF 1

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

GROUNDWATER DATA

FIRST ENCOUNTERED 4.0 ' ▽

DEPTH	HOUR	DATE	ELAPSED TIME

▼

METHOD OF ADVANCING BOREHOLE

a	FROM 0.0 '		TO	4.9 '
d	FROM 4.9 '		TO	5.2 '

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/28/2022
DATE COMPLETED 06/28/2022

DEPTH	A	B	C	DESCRIPTION	REC	REMARKS
	S-1	1 5 8 12	3.0	***LT BROWN SILTY CLAY, SM SAND, TR GRAVEL-SIZED ROCK FRAGMENTS***		
▽	S-2	7 15 14 12	5.2	***BLACK SILTY-CLAY, SM GRAVEL SIZED SHALE FRAGMENTS (DECOMPOSED ROCK)***		
5	S-3	33 100/5"		***END OF BORING AT 5.2'***		AUGER REFUSAL AT 5.2 FT; OFFSET BORING INSTALLED ~15 FT AWAY TO CONFIRM REFUSAL
10						
15						
20						
25						
30						
35						

DRN. CC
CKD. JPB

TEST BORING LOG

PROJECT: FLAT CREEK SOLAR
LOCATION: MONTGOMERY COUNTY, NY

BORING **B-116**
G.S. ELEV.
FILE 427281.2022.GEOT
SHEET 1 OF 1

GROUNDWATER DATA			
FIRST ENCOUNTERED 22.5 ' ▽			
DEPTH	HOUR	DATE	ELAPSED TIME
▼			

METHOD OF ADVANCING BOREHOLE					
a	FROM	0.0 '	TO	10.0 '	
d	FROM	10.0 '	TO	35.0 '	

DRILLER B. FLETCHER
HELPER RYAN
INSPECTOR R. DEPOLO
DATE STARTED 06/29/2022
DATE COMPLETED 06/29/2022

DEPTH		A	B	C	DESCRIPTION	REC	REMARKS
		S-1	2 8 8 7		***BROWN SILT, TR SAND, TR GRAVEL-SIZED ROCK FRAGMENTS*** 2.0		
		S-2	7 13 15 13		***BROWN SILTY CLAY, TR TO SM SAND, TR GRAVEL-SIZED ROCK FRAGMENTS***		
5		S-3	5 5 7 8				
		S-4	7 8 10 10		8.0		
10		S-5	8 22 24 29		***BROWN-GRAY CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS, SM SAND*** 13.0		
15		S-6	21 25 14 15		***GRAY/BLACK CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS, TR SAND***		
20		S-7	8 8 10 11		22.0		
▽							
25		S-8	5 8 12 13		***GRAY SILTY CLAYEY SAND, TR TO SM GRAVEL-SIZED ROCK FRAGMENTS*** 28.0		
30		S-9	3 8 7 9		***GRAY/BLACK SANDY CLAY, SM GRAVEL-SIZED ROCK FRAGMENTS*** 33.0		
35		S-10	4 10 12 17		***GRAY SILTY CLAYEY SAND, TR TO SM GRAVEL-SIZED ROCK FRAGMENTS*** 35.0		

END OF BORING AT 35'

DRN. CC
CKD. JPB

NEW PROJECTS TEST BORING LOG 427281 FLAT CREEK SOLAR.GPJ SITE BLAUVELT.GDT 9/9/22

KEY TO SYMBOLS

Strata symbols

Symbol	Description
▨	Clay with Low Plasticity
▨	Silty Clay
▨	USCS Low Plasticity Sandy Clay
▦	Highly Weathered or Decomposed Rock
▥	Silt with Low Plasticity
▨	Silty, Clayey Sand

Misc. Symbols

Symbol	Description
▽	Water table first encountered
▼	Water table first reading after drilling
▼	Water table second reading after drilling
▼	Water table third reading after drilling
NR	Not Recorded
MH	Moh's Hardness

Sample Type

Symbol	Description
▯	Split Barrel

Lab Symbols

FINES = Fines %

LL = Liquid Limit %

PI = Plasticity Index %

U_c = Unconfined Compressive Strength

W/V = Unit Weight

Notes:

COLUMN A) Soil sample number.

COLUMN B) FOR SOIL SAMPLE (ASTM D 1586): indicates number of blows obtained for each 6 ins. penetration of the standard split-barrel sampler. FOR ROCK CORING (ASTM D2113): indicates percent recovery (REC) per run and rock quality designation (RQD). RQD is the % of rock pieces that are 4 ins. or greater in length in a core run.

COLUMN C) Strata symbol as assigned by the geotechnical engineer.

DESCRIPTION) Description including color, texture and classification of subsurface material as applicable (see Descriptive Terms). Estimated depths to bottom of strata as interpolated from the borings are also shown.

DESCRIPTIVE TERMS: F = fine M = medium C = coarse

RELATIVE PROPORTIONS:

-Descriptive Term-	-Symbol-	-Est. Percentages-
Trace	TR	1-10
Trace to Some	TR to SM	10-15
Some	SM	15-30
Silty, Sandy, Clayey, Gravelly	-	30-40
And	and	40-50

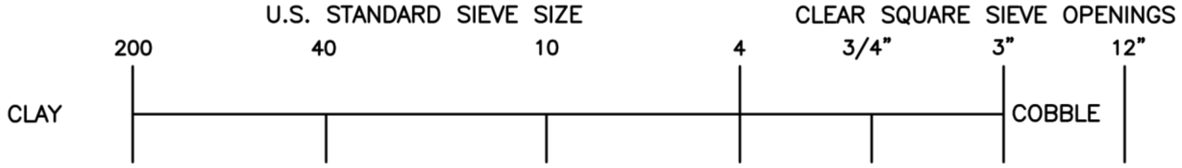
REMARKS) Special conditions or test data as noted during investigation. Note that W.O.P. indicates water observation pipes.

* Free water level as noted may not be indicative of daily, seasonal, tidal, flood, and/or long term fluctuations.

SILTS AND CLAY	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

PRIMARY DIVISIONS			SOIL TYPE		SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS (Less than 5% Fines)	GW	●	Well graded gravels, gravel–sand mixtures, little or no fines
			GP	○	Poorly graded gravels or gravel–sand mixtures, little or no fines
		GRAVEL WITH FINES	GM	○	Silty gravels, gravel–sand–silt mixtures, plastic fines
			GC	▨	Clayey gravels, gravel–sand–clay mixtures, plastic fines
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS (Less than 5% Fines)	SW	⁘	Well graded sands, gravelly sands, little or no fines
			SP	⁘	Poorly graded sands or gravelly sands, little or no fines
		SANDS WITH FINES	SM	▥	Silty sands, sand–silt–mixtures, non–plastic fines
			SC	▨	Clayey sands, sand–clay mixtures, plastic fines
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50 %		ML	▥	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL	▨	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
			OL	☰	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50 %		MH	▥	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	▨	Inorganic clays of high plasticity, fat clays
			OH	≋	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			PT		Peat and other highly organic soils

DEFINITION OF TERMS



METHODS AND TOOLS FOR **ADVANCING BOREHOLES**

a - Continuous Sampling

b - Finger type rotary cutter head 6 in. diameter (open hole)

d - Drilled in casing 3 3/8 in. ID; 8 in. OD (hollow-stem auger)

e - Drilled in casing 2 1/2 in. ID; 6 1/4 in. OD (hollow-stem auger)

f - Driven flush joint casing (BW) - 2 3/8 in. ID; 2 7/8 in. OD (300 lb. hammer, 18 in. drop)

g - Driven flush joint casing (NW) - 3 in. ID; 3 1/2 in. OD (300 lb. hammer, 18 in. drop)

h - Tricone Roller Bit - 2 3/8 in. or 2 7/8 in.

i - Drilling Mud (Slurry Method)

c_1 - Double tube diamond core barrel (BX) : core size: 1.6 in.
hole size: 2.36 in.

c_2 - Double tube diamond core barrel (NX) : core size: 2.0 in.
hole size: 2.98 in.

c_3 - 4 in. thin walled diamond bit

c_4 - 6 in. thin walled diamond bit

METHODS AND TOOLS FOR **TESTING AND SAMPLING SOILS AND/OR ROCKS**

Penetration test and split-barrel sampling of soils, ASTM D1586

140 lb. hammer, 30 in. drop. recording number of blows obtained for each 6 in. penetration usually for a total of 18 in. penetration of the standard 2 in. O.D. and 1 3/8 in. I.D. split-barrel sampler. Penetration resistance (N) is the total number of blows required for the second and third 6 in. penetration.

Thin walled tube sampling, ASTM D1587

Samples are obtained by pressing thin-walled steel, brass or aluminum tubes into soil. Standard thin-walled steel tubes:

O.D. in.	2	3
I.D. in.	1.94	2.87

Diamond core drilling, ASTM D2113

Diamond core drilling is used to recover intact samples of rock and some hard soils generally with the use of a:

BWM double tube core barrel
NWM double tube core barrel

FIELD RESISTIVITY DATA

TRC Engineers, Inc.
Field Resistivity Testing
Wenner Method

Project: Flat Creek Solar
Project No.: 427281
Location: Montgomery County, NY
Client: SED NY Holding
Site Conditions: __ Dry _X_Wet __ Ideal
Date Completed: 6/27/2022
Ambient Temperature: 80 ° F
Operator: R. DePolo
Rain storms previous day- Yes
Helper: NA

Test	Electrode Spacing (ft)	Resistance ⌖ (Ohms)	Apparent Resistivity (Ohm-cm)	Remarks
Line 1	2.5	1.00	479	
	5.0	0.45	431	
	10.0	0.22	421	
	20.0	0.11	421	
	40.0	0.02	153	

Line 1 Direction:
______ N-S
______ NE_SW
___X___ E-W
______ NW-SE

Test Location

B-109

TRC Engineers, Inc.
Field Resistivity Testing
Wenner Method

Project: Flat Creek Solar
Project No.: 427281
Location: Montgomery County, NY
Client: SED NY Holding
Site Conditions: __ Dry _X_Wet __ Ideal
Date Completed: 6/27/2022
Ambient Temperature: 80° F
Operator: R. DePolo
Rain storms previous day- Yes
Helper: NA

Test	Electrode Spacing (ft)	Resistance ⌖ (Ohms)	Apparent Resistivity (Ohm-cm)	Remarks
Line 2	2.5	1.33	637	
	5.0	0.72	689	
	10.0	0.43	823	
	20.0	0.13	498	
	40.0	0.05	383	

Line 2 Direction:
___X___ N-S
______ NE_SW
______ E-W
______ NW-SE

Test Location

B-109

TRC Engineers, Inc.

Field Resistivity Testing

Wenner Method

Project:	Flat Creek Solar	Project No.:	427281
Location:	Montgomery County, NY	Client:	SED NY Holding
Site Conditions:	__ Dry ___Wet _X_ Ideal	Date Completed:	6/29/2022
Ambient Temperature:	85 ° F	Operator:	R. DePolo
Rain storms previous day- No		Helper:	NA

Test	Electrode Spacing (ft)	Resistance ⌖ (Ohms)	Apparent Resistivity (Ohm-cm)	Remarks
Line 1	2.5	4.35	2,083	
	5.0	1.75	1,676	
	10.0	0.65	1,245	
	20.0	0.45	1,724	
	40.0	0.14	1,072	

Line 1 Direction:
______ N-S
______ NE_SW
___X___ E-W
______ NW-SE

Test Location

B-106

TRC Engineers, Inc.

Field Resistivity Testing

Wenner Method

Project:	Flat Creek Solar	Project No.:	427281
Location:	Montgomery County, NY	Client:	SED NY Holding
Site Conditions:	__ Dry ___Wet _X_ Ideal	Date Completed:	6/29/2022
Ambient Temperature:	85° F	Operator:	R. DePolo
Rain storms previous day- No		Helper:	NA

Test	Electrode Spacing (ft)	Resistance ⌖ (Ohms)	Apparent Resistivity (Ohm-cm)	Remarks
Line 2	2.5	5.35	2,561	
	5.0	2.12	2,030	
	10.0	1.13	2,164	
	20.0	0.65	2,490	
	40.0	0.23	1,762	

Line 2 Direction:
___X___ N-S
______ NE_SW
______ E-W
______ NW-SE

Test Location

B-106

LABORATORY DATA

SUMMARY OF LABORATORY TEST DATA

Project Name: Flat Creek Solar
Montgomery County, NY
Client Name: SED NY Holdings, LLC
TRC Project #: 427281.2022.GEOT

SAMPLE IDENTIFICATION			Soil Group (USCS System)	Moisture Content (%)	GRAIN SIZE DISTRIBUTION				PLASTICITY			
Source #	Sample #	Depth (ft)			Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)
B-101	S-3	4.0-6.0	CL*	17.8	-	-	-		22	14	8	0.5
B-101	S-5	8.0-10.0	CL	16.4	2.1	25.0	72.9		30	15	15	0.1
B-101 TO B-104	BULK 1	1.0-5.0	CL	11.1	11.3	28.6	60.1		32	14	18	-0.2
B-102	S-4	6.0-8.0	CL*	15.1	-	-	-		24	13	11	0.2
B-103	S-3	4.0-6.0	CL*	18.1	-	-	-		21	12	9	0.7
B-103	S-4	6.0-8.0	CL-ML*	12.0	-	-	-		19	15	4	-0.8
B-104	S-1	0.0-2.0	CL-ML*	8.9	-	-	-		27	21	6	-2.0
B-105	S-2	2.0-4.0	CL*	11.5	-	-	-		25	17	8	-0.7
B-106	S-2	2.0-4.0	CL*	12.6	-	-	-		20	11	9	0.2

DRAWN BY: TBT 09/08/22

CHECKED BY: JPB 09/08/22

SUMMARY OF LABORATORY TEST DATA

Project Name: Flat Creek Solar
Montgomery County, NY
Client Name: SED NY Holdings, LLC
TRC Project #: 427281.2022.GEOT

SAMPLE IDENTIFICATION			Soil Group (USCS System)	Moisture Content (%)	GRAIN SIZE DISTRIBUTION				PLASTICITY			
Source #	Sample #	Depth (ft)			Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)
B-106	S-6	13.0-15.0	SC-SM	7.3	26.5	32.6	40.9		-	-	-	-
B-106 TO B-108	BULK 2	1.0-5.0	CL	16.0	7.7	21.7	70.6		32	15	17	0.1
B-107	S-5	8.0-10.0	CL-ML	11.4	10.6	23.6	65.8		-	-	-	-
B-109	S-3	4.0-6.0	CL-ML	13.3	10.5	33.1	56.4		-	-	-	-
B-109	S-5	8.0-10.0	SC-SM	9.8	18.5	34.8	46.7		-	-	-	-
B-111 TO B-115	BULK 3	1.0-5.0	CL	16.3	20.2	21.9	57.9		36	19	17	-0.2
B-112	S-3	4.0-5.0	GC-GM	15.5	36.7	26.7	36.6		-	-	-	-
B-114	S-4	6.0-8.0	CL-ML*	13.2	-	-	-		22	16	6	-0.5
B-116	S-3	4.0-6.0	CL-ML*	11.6	-	-	-		19	12	7	-0.1
B-116	S-5	8.0-10.0	CL-ML*	9.8	-	-	-		17	11	6	-0.2

DRAWN BY: TBT 09/08/22

CHECKED BY: JPB 09/08/22

SUMMARY OF LABORATORY TEST DATA

Project Name: Flat Creek Solar
Montgomery County, NY
Client Name: SED NY Holdings, LLC
TRC Project #: 427281.2022.GEOT

SAMPLE IDENTIFICATION			Soil Group (USCS System)	Moisture Content (%)	GRAIN SIZE DISTRIBUTION				PLASTICITY			
Source #	Sample #	Depth (ft)			Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquidity Index (%)
B-116	S-8	23.0-25.0	SC-SM	8.3	15.0	39.0	46.0		14	8	6	0.1

**USCS based on fines only. A gradation analysis was not requested to be completed.*

DRAWN BY: TBT 09/08/22

CHECKED BY: JPB 09/08/22

SUMMARY OF LABORATORY TEST DATA

Project Name: Flat Creek Solar
Montgomery County, NY
Client Name: SED NY Holdings, LLC
TRC Project #: 427281.2022.GEOT

SAMPLE IDENTIFICATION			COMPACTION CHARACTERISTICS			Thermal Resistivity (°C-cm/W)			
Source #	Sample #	Depth (ft)	Type of Test	Maximum Density (PCF)	Optimum Moisture Content (%)	Wet	Dry	Moisture Content (%)	Dry Density (pcf)
B-101 TO B-104	BULK 1	1.0-5.0	D698	117.3	13.2	57.8	129.6	13.2	105.6
B-106 TO B-108	BULK 2	1.0-5.0	D698	104.4	18.3	62.7	171.2	18.3	94.0
B-111 TO B-115	BULK 3	1.0-5.0	D698	112.2	15.2	55.5	98.8	15.2	101.0

DRAWN BY: TBT 09/08/22

CHECKED BY: JPB 09/08/22

SUMMARY OF LABORATORY TEST DATA

Project Name: Flat Creek Solar
Montgomery County, NY
Client Name: SED NY Holdings, LLC
TRC Project #: 427281.2022.GEOT

CORROSION & ELECTRICAL RESISTIVITY

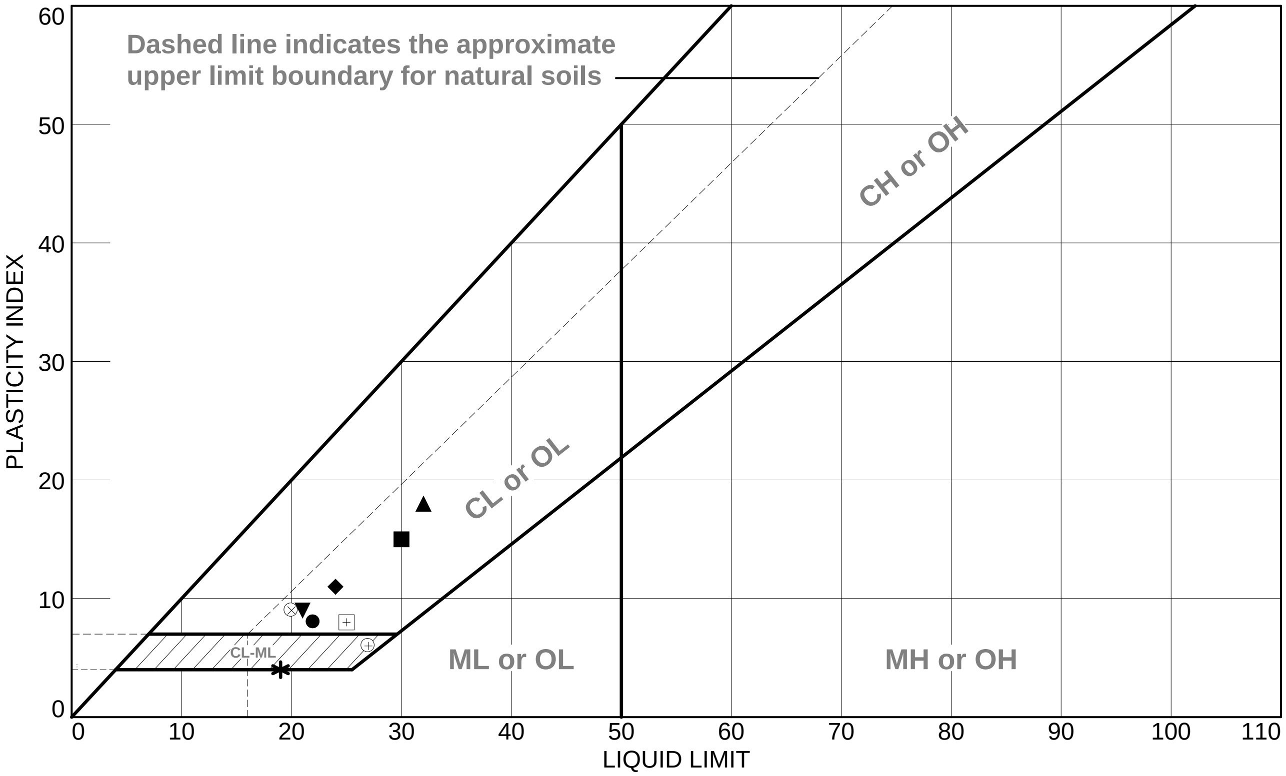
Source #	Sample #	Depth (ft)	pH, ASTM D4972 (in H_20)	pH, ASTM D4972 (in $CaCl_2$)	Water Soluble Sulfates, ASTM D516 (mg/kg)	Chlorides, ASTM D512 (mg/kg)	Sulfides, AWWA 4500-S D (mg/kg)	Oxidation Reduction, ASTM D1498 (mV)	Resistivity, ASTM G187 (ohm-cm)
B-101 TO B-104	BULK 1	1.0-5.0	7.6	6.8	85	50	Nil	+662	2,500
B-106 TO B-108	BULK 2	1.0-5.0	7.5	6.7	93	60	Nil	+670	2,200
B-111 TO B-115	BULK 3	1.0-5.0	7.4	6.8	65	40	Nil	+658	3,485

Nil = <1.0 mg/kg

DRAWN BY: TBT 09/08/22

CHECKED BY: JPB 09/08/22

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

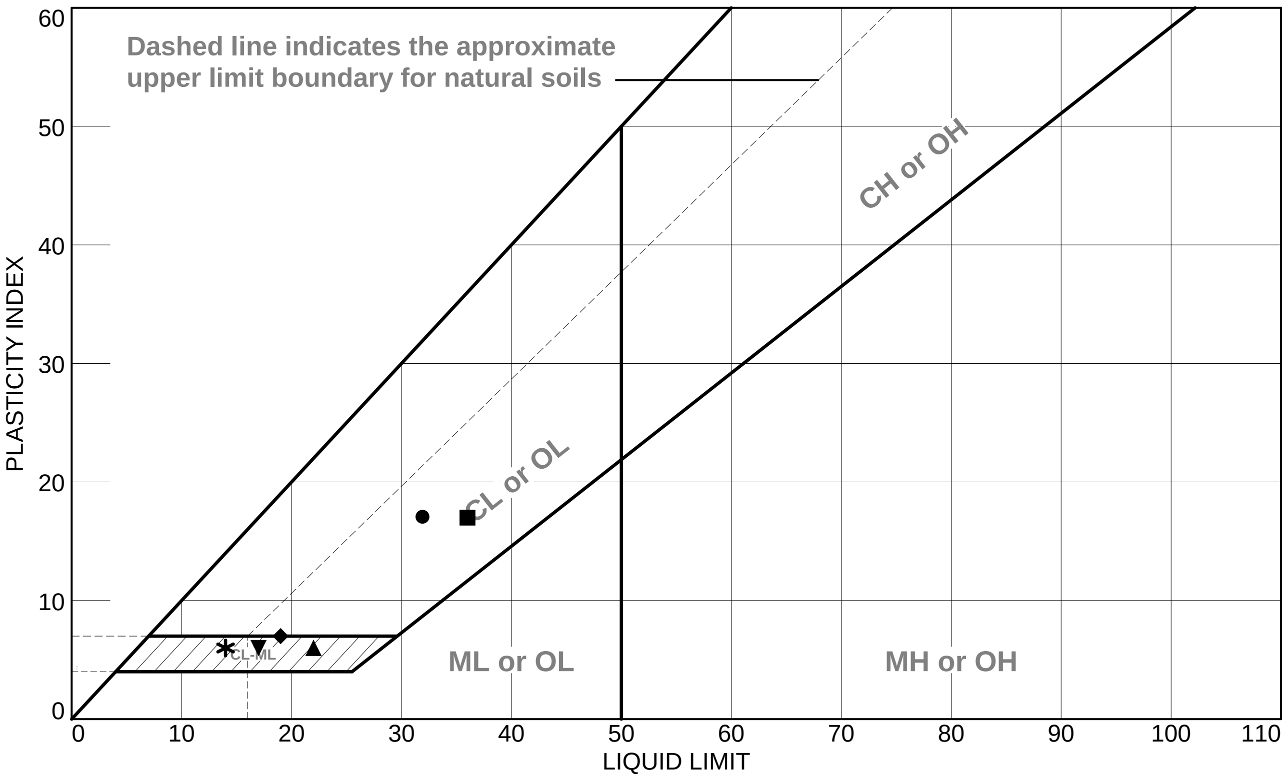
	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LIQUIDITY INDEX	USCS
●	B-101	S-3	4.0-6.0 FT	17.8	14	22	8	0.5	CL*
■	B-101	S-5	8.0-10.0 FT	16.4	15	30	15	0.1	CL
▲	B-101 TO B-104	BULK 1	1.0-5.0 FT	11.1	14	32	18	-0.2	CL
◆	B-102	S-4	6.0-8.0 FT	15.1	13	24	11	0.2	CL*
▼	B-103	S-3	4.0-6.0 FT	18.1	12	21	9	0.7	CL*
✱	B-103	S-4	6.0-8.0 FT	12.0	15	19	4	-0.8	CL-ML*
⊕	B-104	S-1	0.0-2.0 FT	8.9	21	27	6	-2.0	CL-ML*
⊞	B-105	S-2	2.0-4.0 FT	11.5	17	25	8	-0.7	CL*
⊗	B-106	S-2	2.0-4.0 FT	12.6	11	20	9	0.2	CL*

TRC
Engineers, Inc.
Mt. Laurel, NJ

Client: SUNEAST DEVELOPMENT, LLC
Project: SUNEAST FLAT CREEK SOLAR

Project No.: 427281.2022.GEOT **Figure** 1

LIQUID AND PLASTIC LIMITS TEST REPORT



SOIL DATA

	SOURCE	SAMPLE NO.	DEPTH	NATURAL WATER CONTENT (%)	PLASTIC LIMIT (%)	LIQUID LIMIT (%)	PLASTICITY INDEX (%)	LIQUIDITY INDEX	USCS
●	B-106 TO B-108	BULK 2	1.0-5.0 FT	16.0	15	32	17	0.1	CL
■	B-111 TO B-115	BULK 3	1.0-5.0 FT	16.3	19	36	17	-0.2	CL
▲	B-114	S-4	6.0-8.0 FT	13.2	16	22	6	-0.5	CL-ML*
◆	B-116	S-3	4.0-6.0 FT	11.6	12	19	7	-0.1	CL-ML*
▼	B-116	S-5	8.0-10.0 FT	9.8	11	17	6	-0.2	CL-ML*
✱	B-116	S-8	23.0-25.0 FT	8.3	8	14	6	0.1	SC-SM

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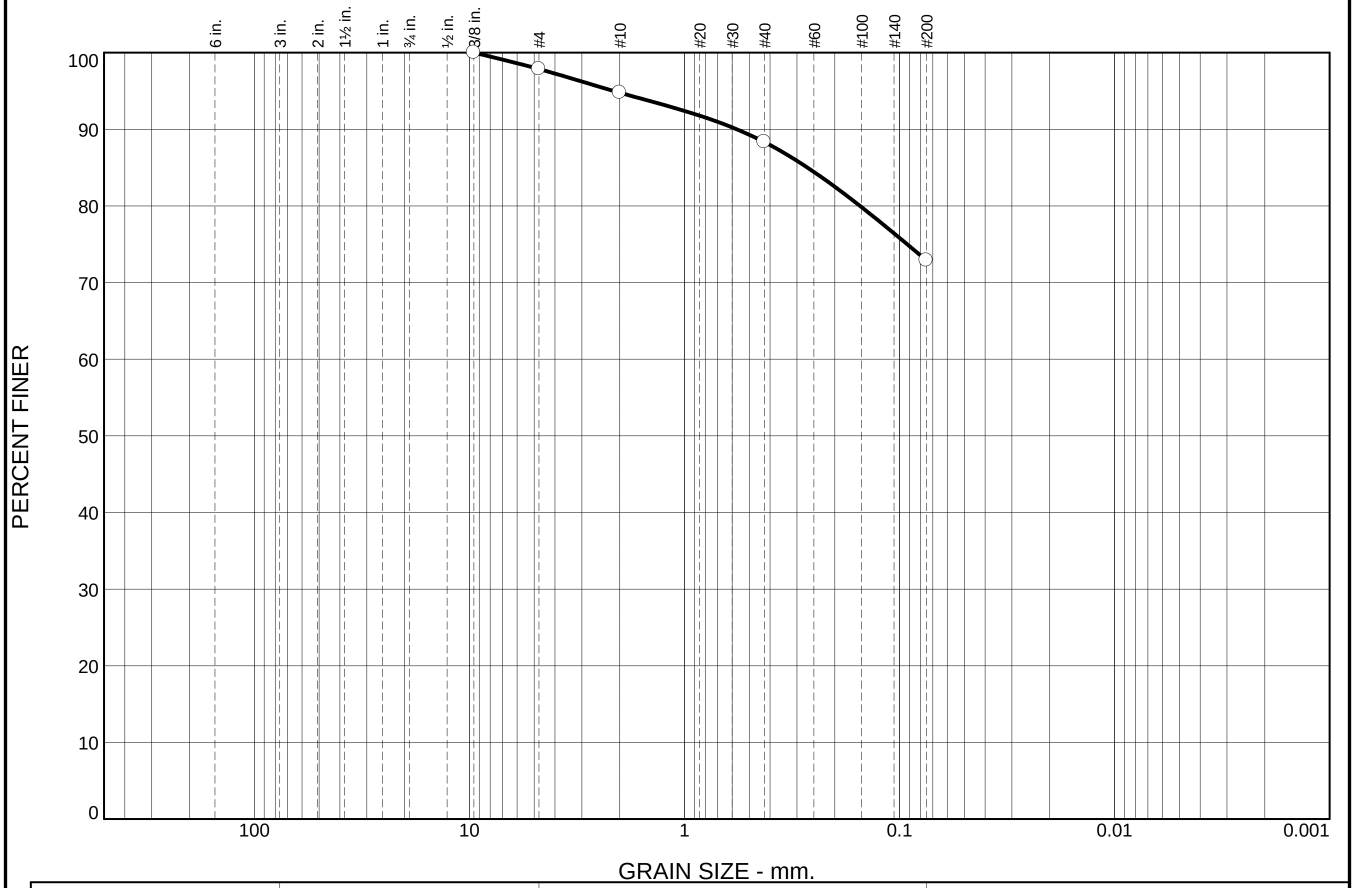
Client: SUNEAST DEVELOPMENT, LLC
Project: SUNEAST FLAT CREEK SOLAR

Project No.: 427281.2022.GEOT **Figure** 2

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	2.1	3.1	6.5	15.4	72.9	

☒	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	30	15	0.2679							

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN LEAN CLAY WITH SAND	08/10/22	CL	16.4

Project No. 427281.2022.GEO **Client:** SUNEAST DEVELOPMENT, LLC

Project: SUNEAST FLAT CREEK SOLAR

○ **Source of Sample:** B-101 **Depth:** 8.0-10.0 FT **Sample Number:** S-5

Remarks:

○SAMPLE DESCRIPTION
BASED ON USCS

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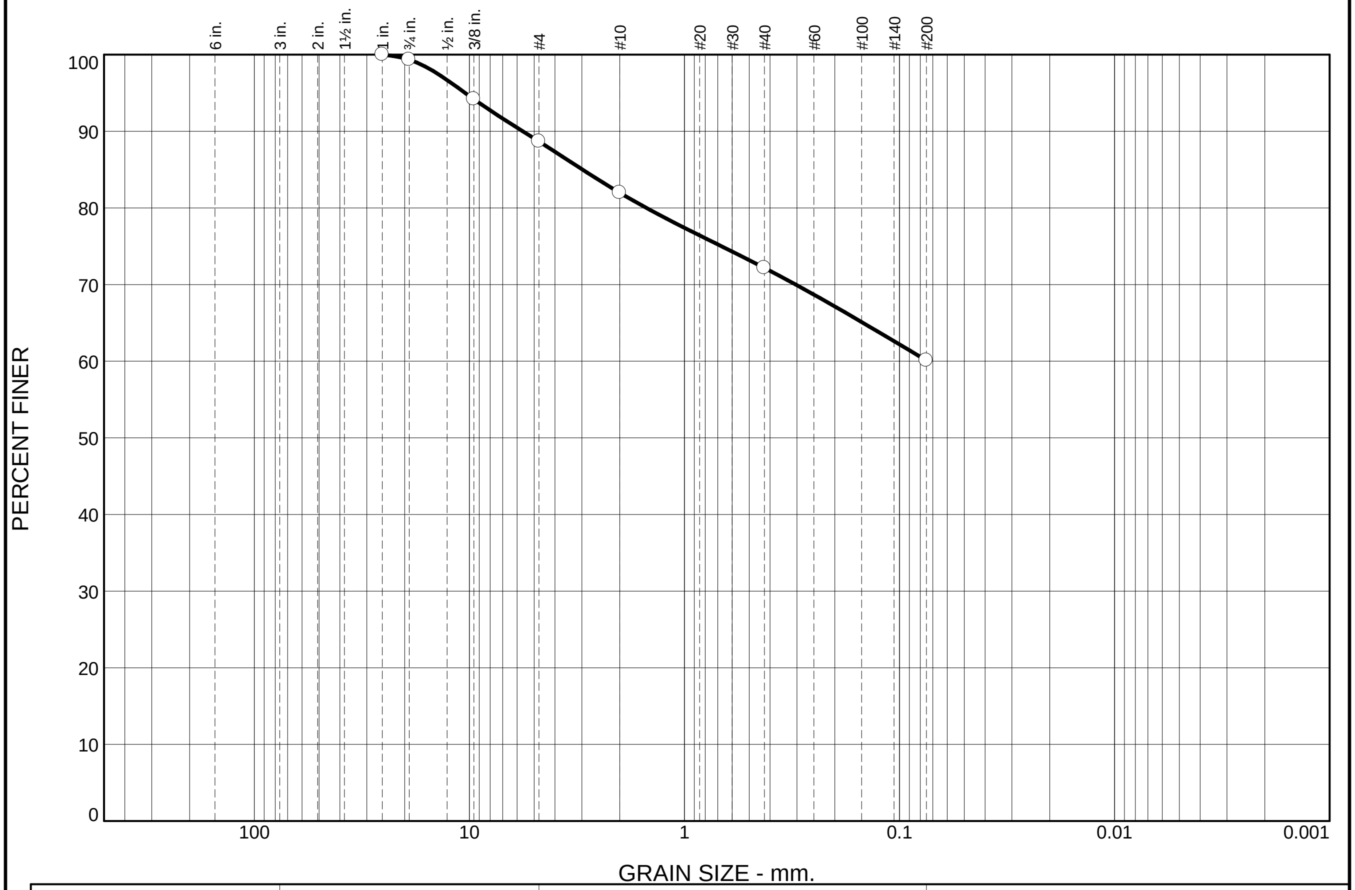
Figure 3

Tested By: EG 08/10/22 **Checked By:** JPB 08/25/22

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.7	10.6	6.7	9.8	12.1	60.1	

☒	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	32	14	2.9756							

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN SANDY LEAN CLAY	08/09/22	CL	11.1

Project No. 427281.2022.GEO **Client:** SUNEAST DEVELOPMENT, LLC

Project: SUNEAST FLAT CREEK SOLAR

○ **Source:** B-101 TO B-104 **Depth:** 1.0-5.0 FT **Sample No.:** BULK 1

Remarks:

○SAMPLE DESCRIPTION
BASED ON USCS

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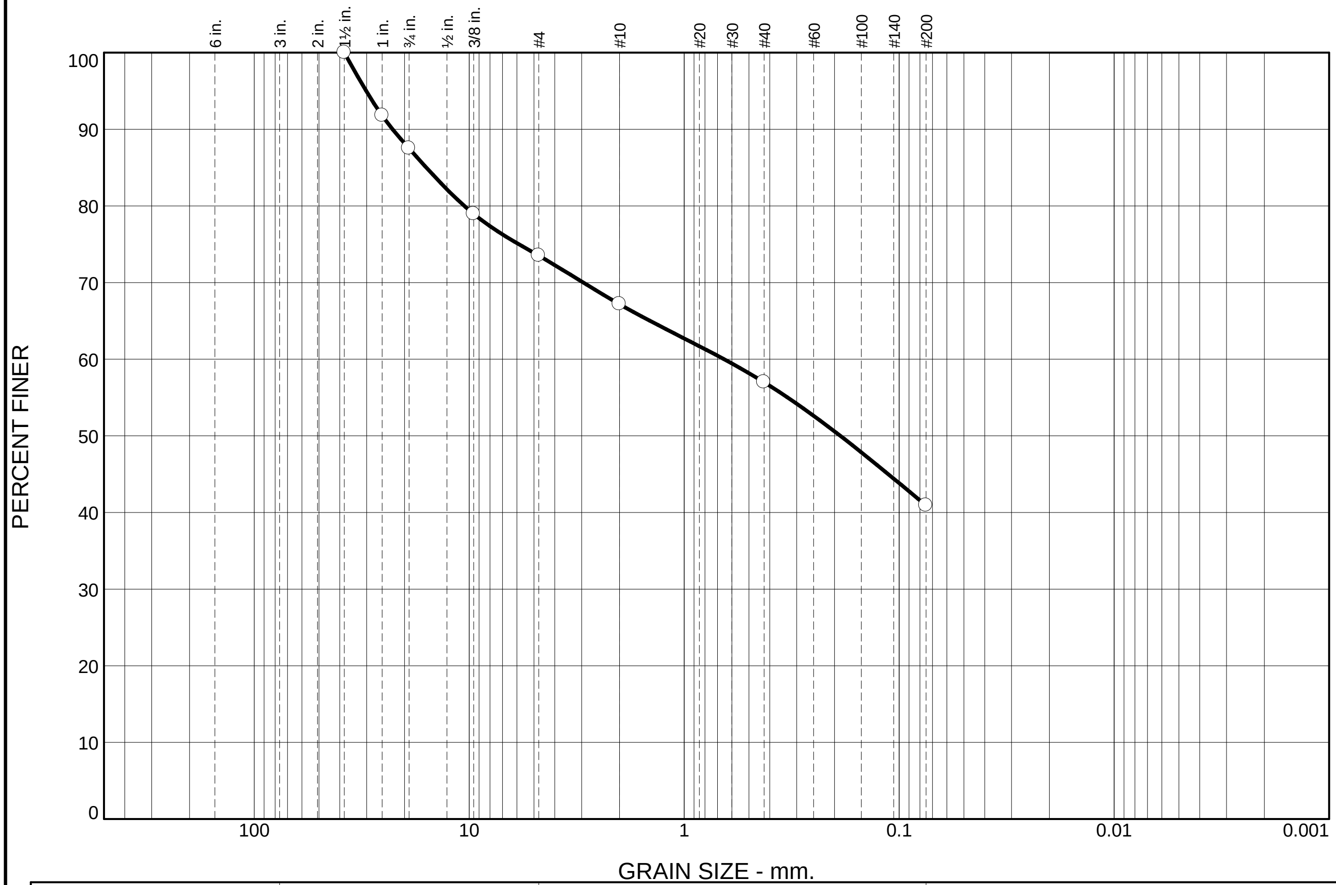
Figure 4

Tested By: JC 08/08/22 **Checked By:** JPB 08/25/22

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	12.5	14.0	6.3	10.2	16.1	40.9	

☒	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			15.8202	0.6526	0.1878					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ GRAY-BROWN SILTY, CLAYEY SAND WITH GRAVEL	08/11/22	SC-SM	7.3

Project No. 427281.2022.GE **Client:** SUNEAST DEVELOPMENT, LLC

Project: SUNEAST FLAT CREEK SOLAR

○ **Source of Sample:** B-106 **Depth:** 13.0-15.0 FT **Sample Number:** S-6

Remarks:

○SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION

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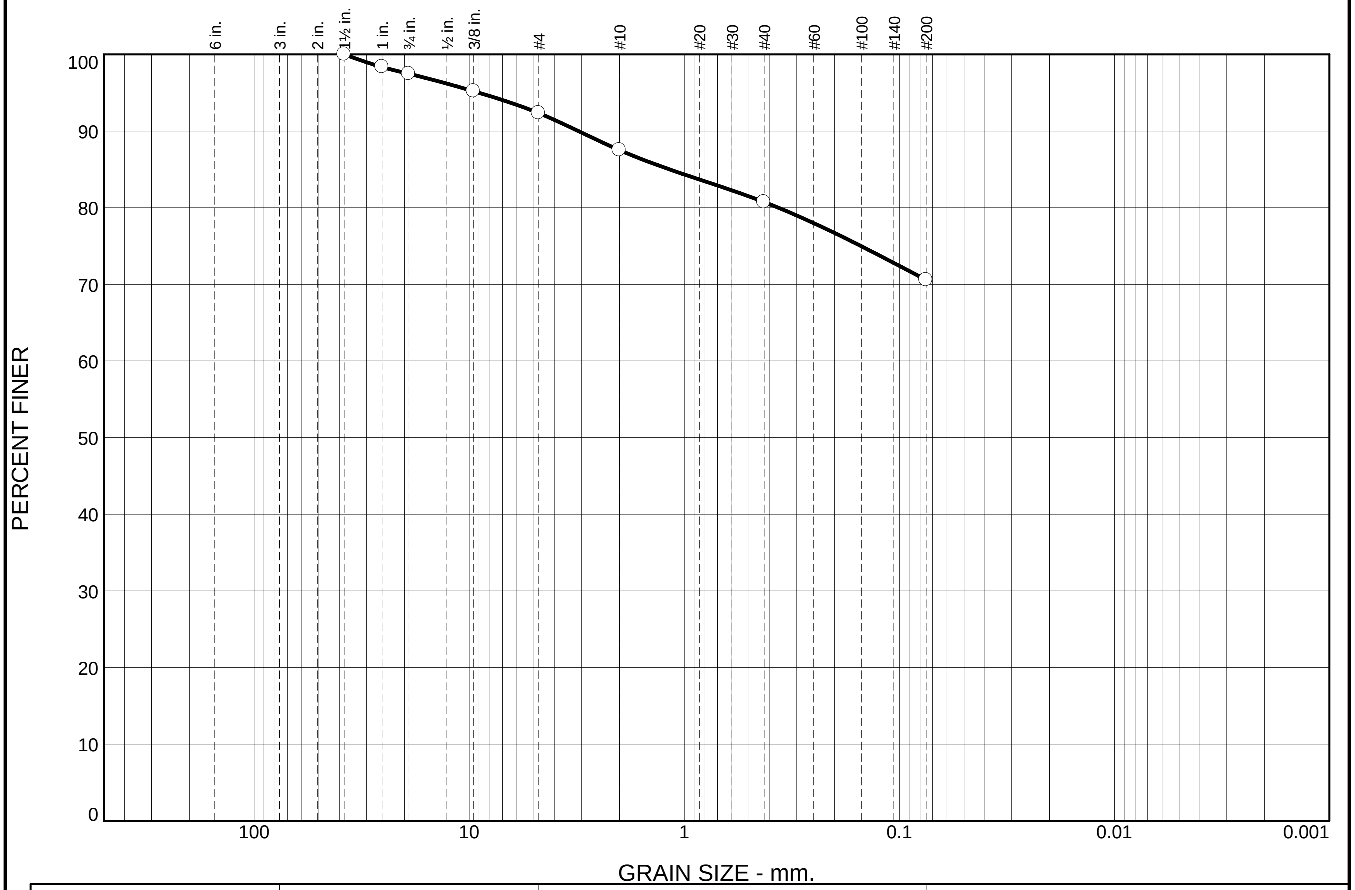
Figure 5

Tested By: JC 08/11/22 **Checked By:** JPB 08/23/22

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	2.5	5.2	4.8	6.8	10.1	70.6	

☒	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	32	15	1.1706							

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN LEAN CLAY WITH SAND	08/09/22	CL	16.0

Project No. 427281.2022.GE **Client:** SUNEAST DEVELOPMENT, LLC
Project: SUNEAST FLAT CREEK SOLAR

○ **Source:** B-106 TO B-108 **Depth:** 1.0-5.0 FT **Sample No.:** BULK 2

Remarks:
○SAMPLE DESCRIPTION
BASED ON USCS

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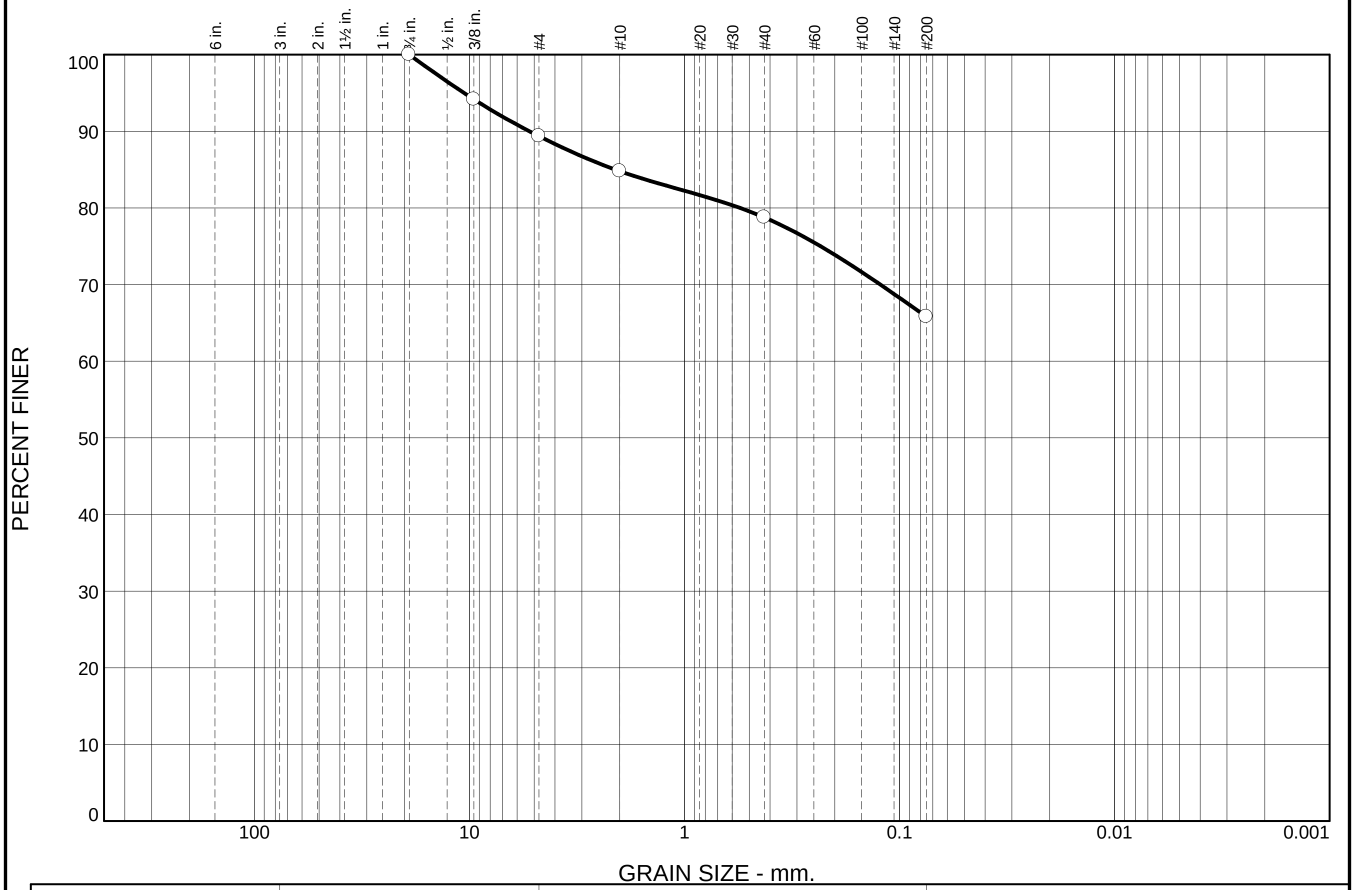
Figure 6

Tested By: JC 08/09/22 **Checked By:** JPB 08/25/22

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	10.6	4.6	6.0	13.0	65.8	

☒	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			2.0946							

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN SANDY SILTY CLAY	08/11/22	CL-ML	11.4

Project No. 427281.2022.GE **Client:** SUNEAST DEVELOPMENT, LLC

Project: SUNEAST FLAT CREEK SOLAR

○ **Source of Sample:** B-107 **Depth:** 8.0-10.0 FT **Sample Number:** S-5

Remarks:

○SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION

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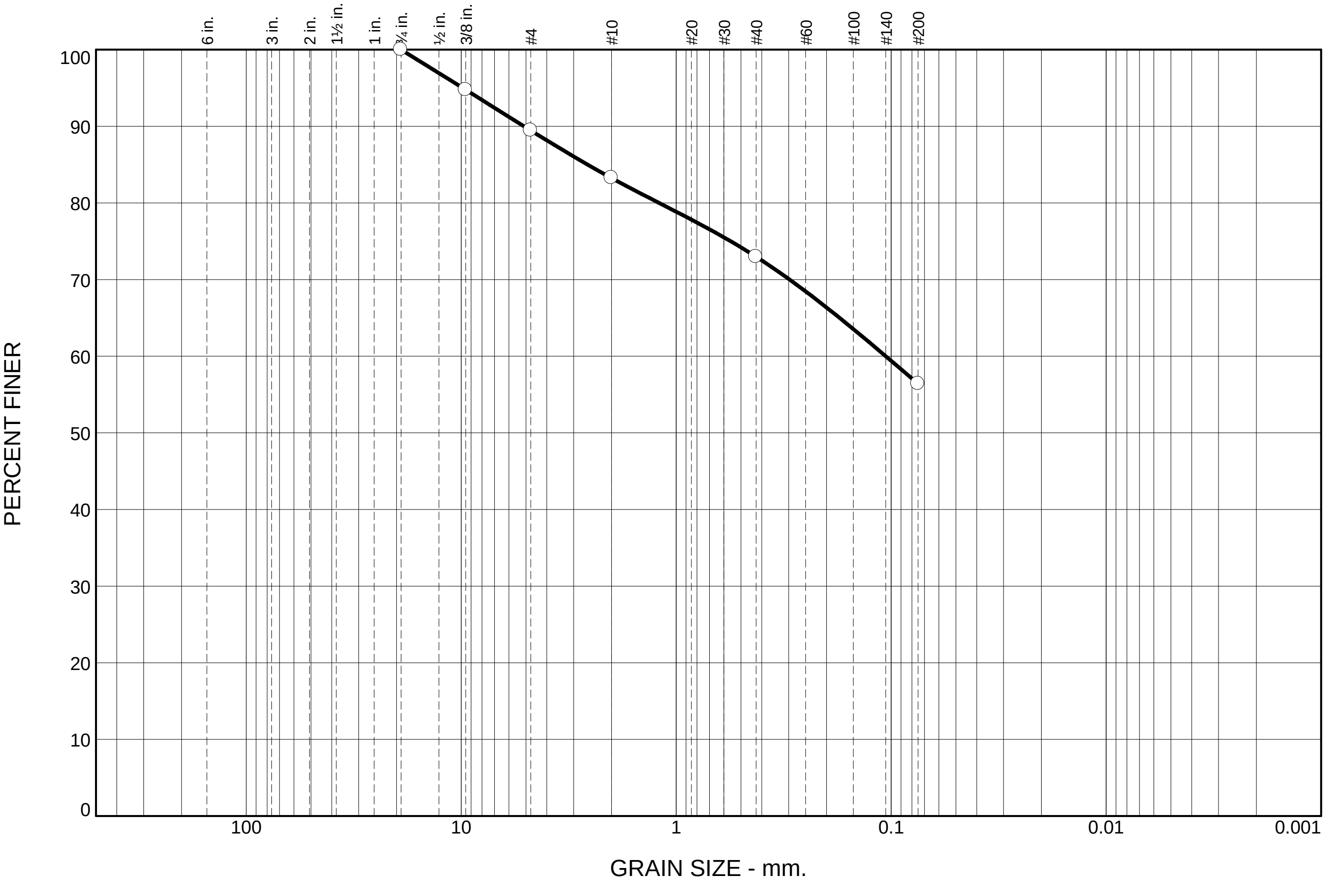
Figure 7

Tested By: JC 08/11/22 **Checked By:** JPB 08/23/22

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	10.5	6.2	10.3	16.6	56.4	

╳	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			2.5820	0.1059						

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN SANDY SILTY CLAY	08/11/22	CL-ML	13.3

Project No. 427281.2022.GE **Client:** SUNEAST DEVELOPMENT, LLC

Project: SUNEAST FLAT CREEK SOLAR

○ **Source of Sample:** B-109 **Depth:** 4.0-6.0 FT **Sample Number:** S-3

Remarks:

○SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION

TRC Engineers, Inc.

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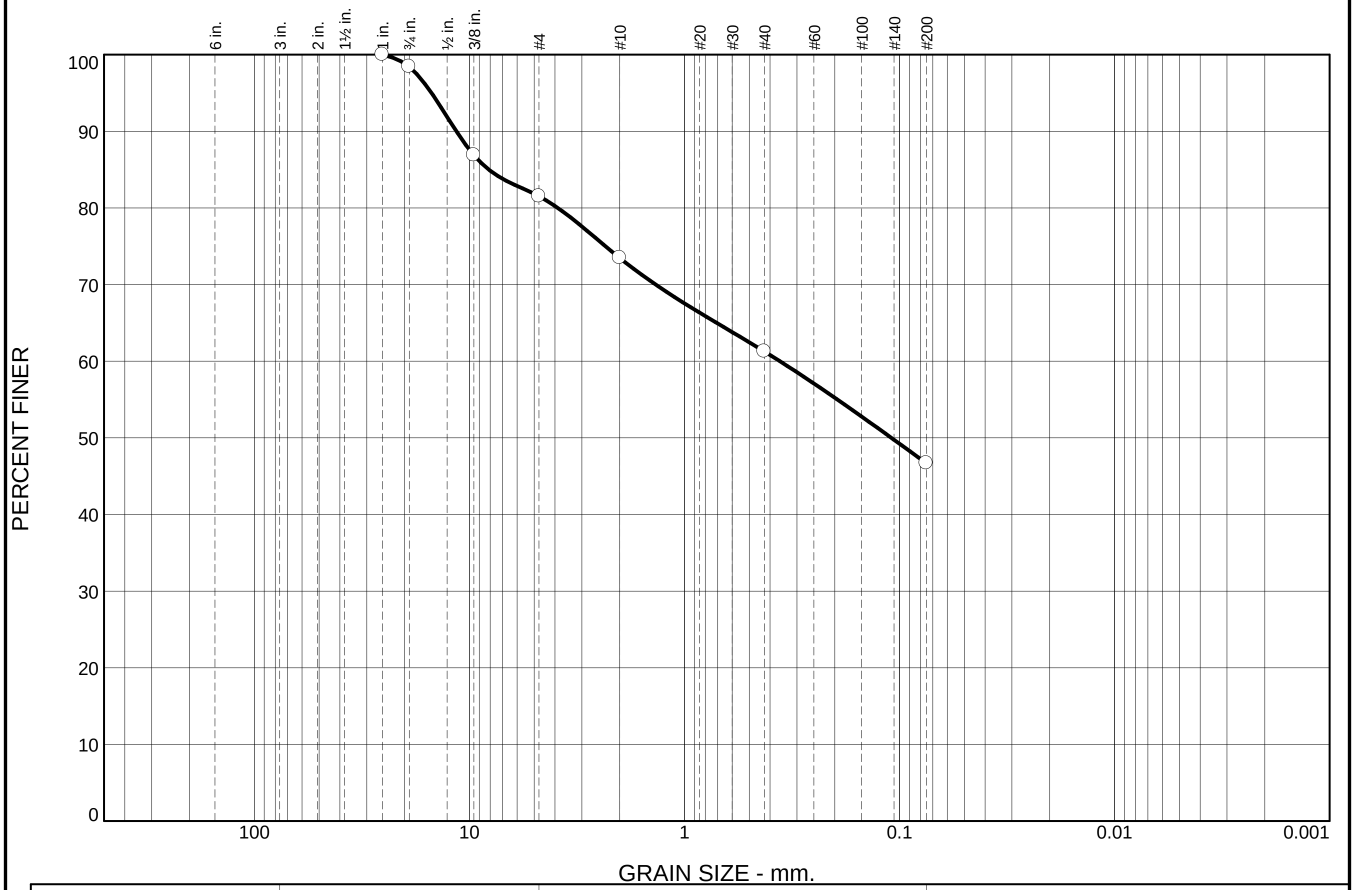
Figure 8

Tested By: JC 08/11/22 **Checked By:** JPB 08/23/22

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	1.6	16.9	8.0	12.2	14.6	46.7	

☒	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			8.1223	0.3599	0.1091					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ DARK BROWN SILTY, CLAYEY SAND WITH GRAVEL	08/11/22	SC-SM	9.8

Project No. 427281.2022.GEO **Client:** SUNEAST DEVELOPMENT, LLC

Project: SUNEAST FLAT CREEK SOLAR

○ **Source of Sample:** B-109 **Depth:** 8.0-10.0 FT **Sample Number:** S-5

Remarks:

○SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION

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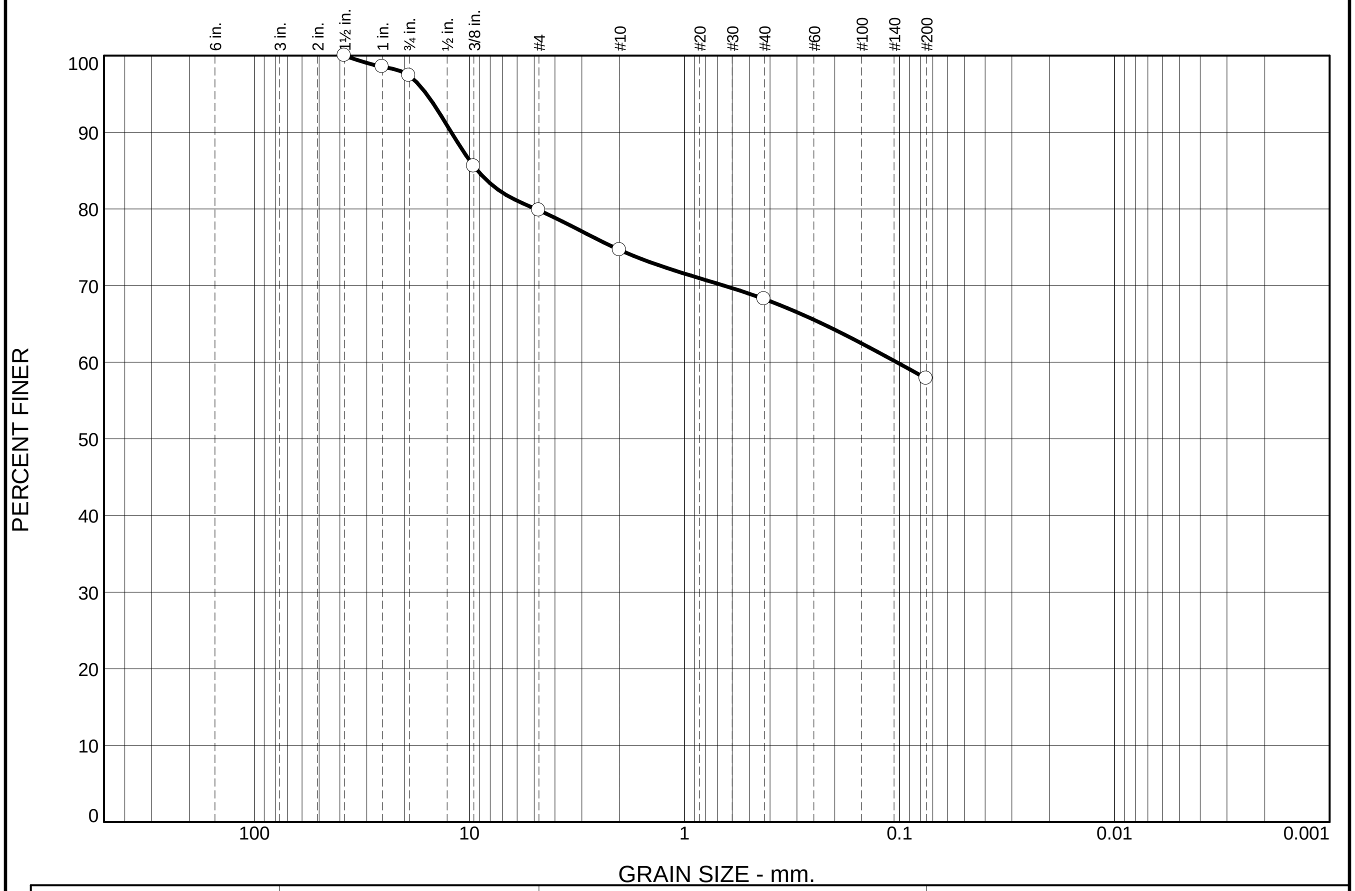
Figure 9

Tested By: JC 08/11/22 **Checked By:** JPB 08/23/22

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	2.6	17.6	5.2	6.4	10.3	57.9	

☒	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	36	19	9.1662	0.1031						

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ BROWN SANDY LEAN CLAY WITH GRAVEL	08/09/22	CL	16.3

Project No. 427281.2022.GE **Client:** SUNEAST DEVELOPMENT, LLC
Project: SUNEAST FLAT CREEK SOLAR

○ **Source:** B-111 TO B-115 **Depth:** 1.0-5.0 FT **Sample No.:** BULK 3

Remarks:
○SAMPLE DESCRIPTION
BASED ON USCS

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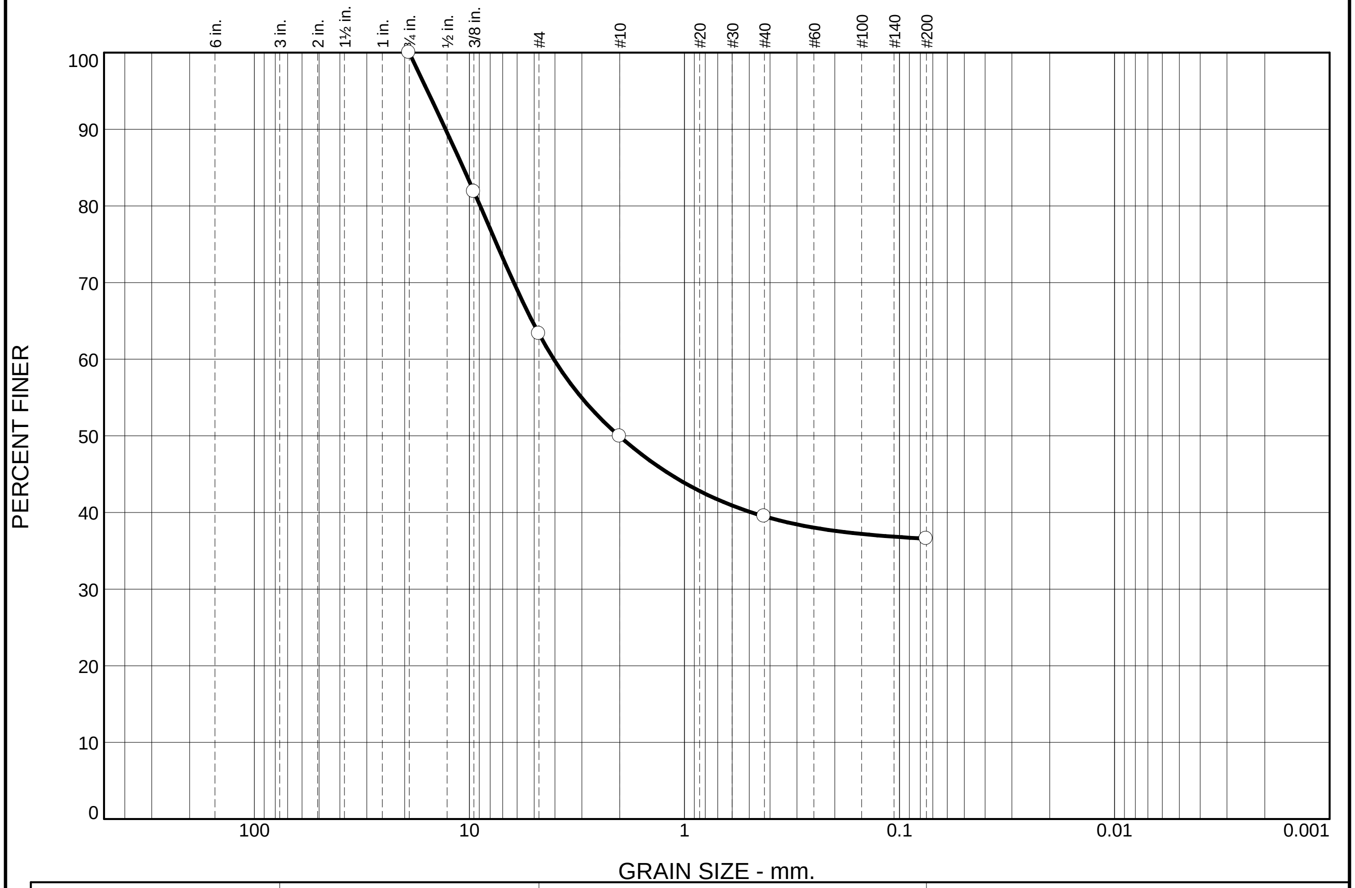
Figure 10

Tested By: JC 08/09/22 **Checked By:** JPB 08/25/22

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	36.7	13.4	10.4	2.9	36.6	

☒	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○			10.6873	4.0503	2.0144					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ DARK BROWN SILTY CLAYEY GRAVEL WITH SAND	08/12/22	GC-GM	15.5

Project No. 427281.2022.GEO **Client:** SUNEAST DEVELOPMENT, LLC

Project: SUNEAST FLAT CREEK SOLAR

○ **Source of Sample:** B-112 **Depth:** 4.0-5.0 FT **Sample Number:** S-3

Remarks:

○SAMPLE DESCRIPTION BASED ON USCS & VISUAL CLASSIFICATION

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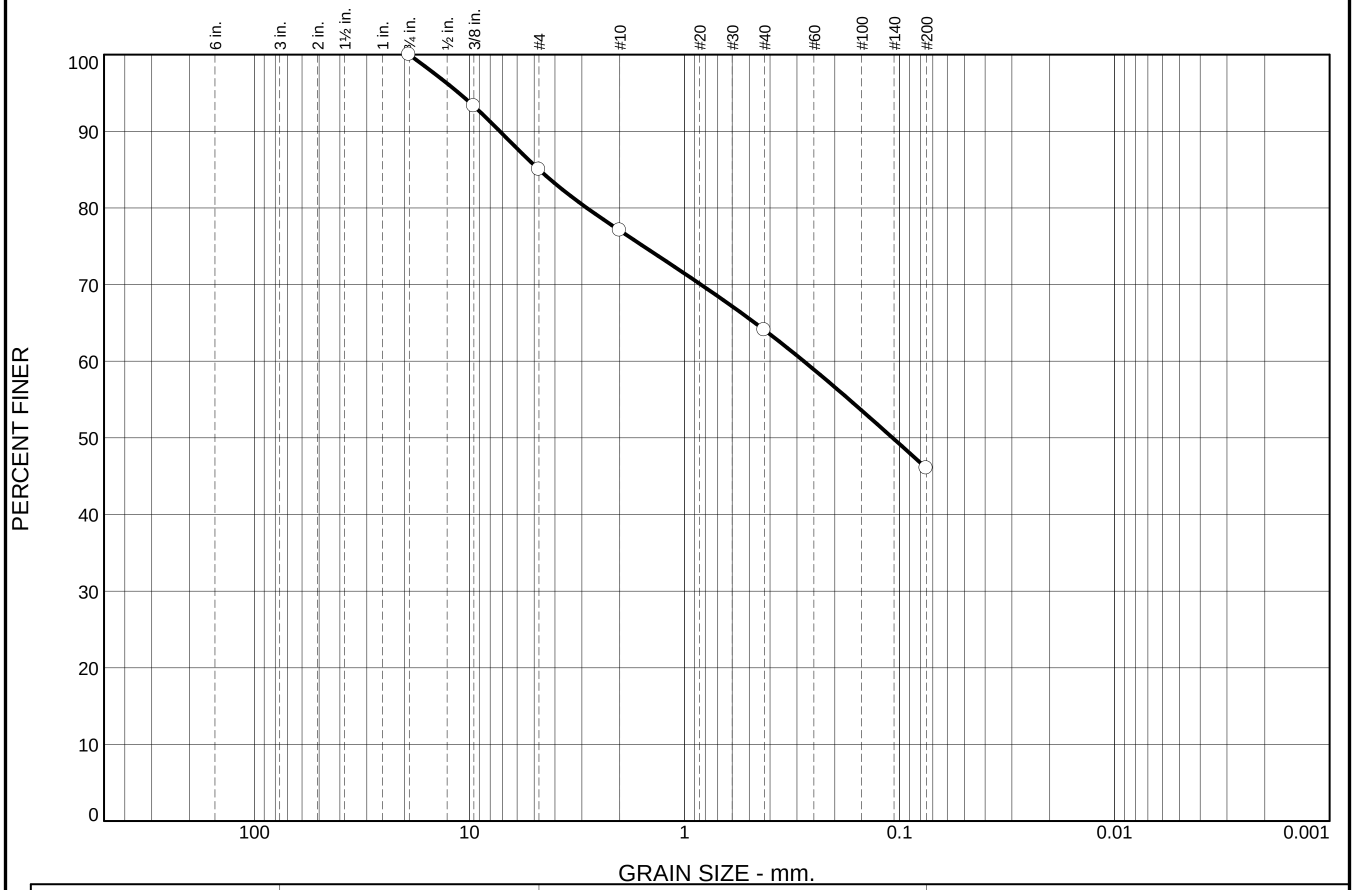
Figure 11

Tested By: JC 08/12/22 **Checked By:** JPB 08/23/22

Particle Size Distribution Report



	% +3"	% Gravel		% Sand			% Fines	
		Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
○	0.0	0.0	15.0	7.9	13.0	18.1	46.0	

	LL	PL	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	14	8	4.7420	0.2785	0.1077					

MATERIAL DESCRIPTION	TEST DATE	USCS	NM
○ DARK BROWN SILTY, CLAYEY SAND WITH GRAVEL	08/10/22	SC-SM	8.3

Project No. 427281.2022.GEO **Client:** SUNEAST DEVELOPMENT, LLC

Project: SUNEAST FLAT CREEK SOLAR

○ **Source of Sample:** B-116 **Depth:** 23.0-25.0 FT **Sample Number:** S-8

Remarks:

○SAMPLE DESCRIPTION
BASED ON USCS

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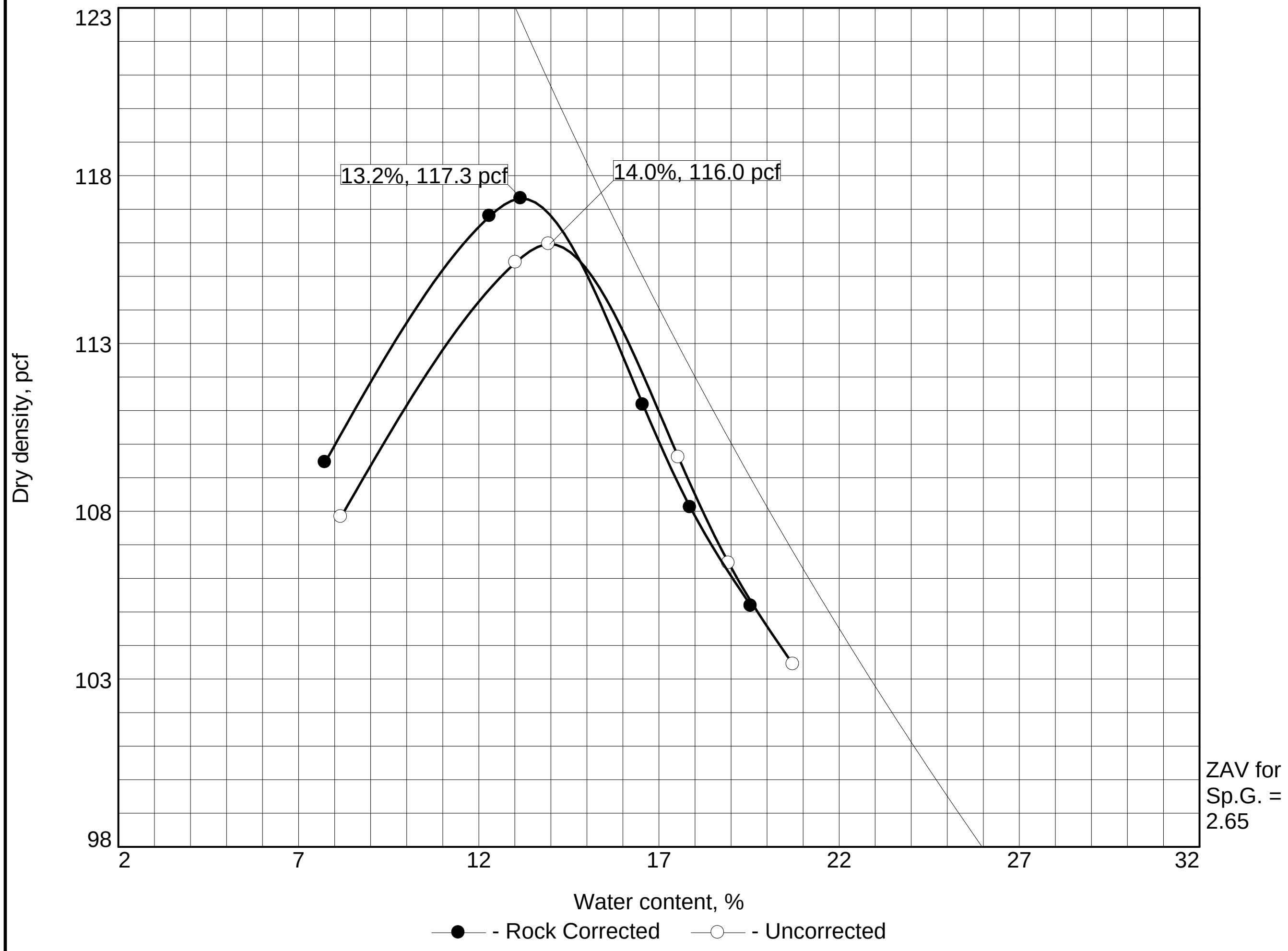
Figure 12

Tested By: JC 08/10/22 **Checked By:** JPB 08/23/22

COMPACTION TEST REPORT



Test specification: ASTM D 698-12 Method B Standard
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
1.0-5.0 FT	CL	A-6(8)	11.1		32	18	5.8	60.1

ROCK CORRECTED TEST RESULTS	UNCORRECTED
Maximum dry density = 117.3 pcf	116.0 pcf
Optimum moisture = 13.2 %	14.0 %

MATERIAL DESCRIPTION

BROWN SANDY LEAN CLAY

Project No. 427281.2022.GEOT **Client:** SUNEAST DEVELOPMENT, LLC
Project: SUNEAST FLAT CREEK SOLAR

○**Source of Sample:** B-101 TO B-104 **Sample Number:** BULK 1

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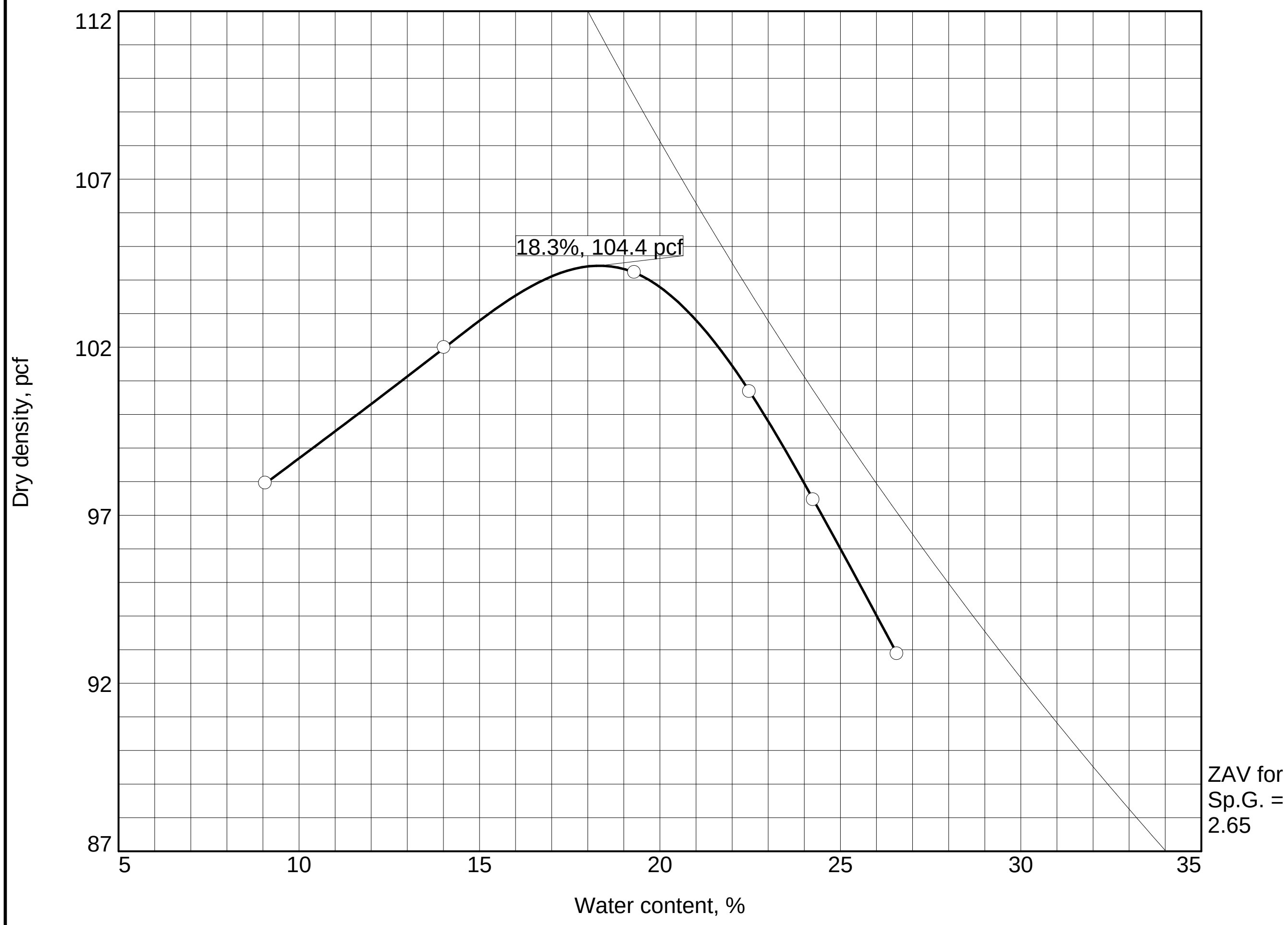
Mt. Laurel, NJ

Remarks:
SAMPLE DESCRIPTION BASED ON USCS

Figure 13

Tested By: JC 07/25/22 **Checked By:** JPB 08/25/22

COMPACTION TEST REPORT



Test specification: ASTM D 698-12 Method B Standard

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
1.0-5.0 FT	CL	A-6(10)	16.0		32	17	4.8	70.6

TEST RESULTS	MATERIAL DESCRIPTION
Maximum dry density = 104.4 pcf Optimum moisture = 18.3 %	BROWN LEAN CLAY WITH SAND

Project No. 427281.2022.GEOT **Client:** SUNEAST DEVELOPMENT, LLC

Project: SUNEAST FLAT CREEK SOLAR

○**Source of Sample:** B-106 TO B-108 **Sample Number:** BULK 2

Remarks:
SAMPLE DESCRIPTION BASED ON USCS

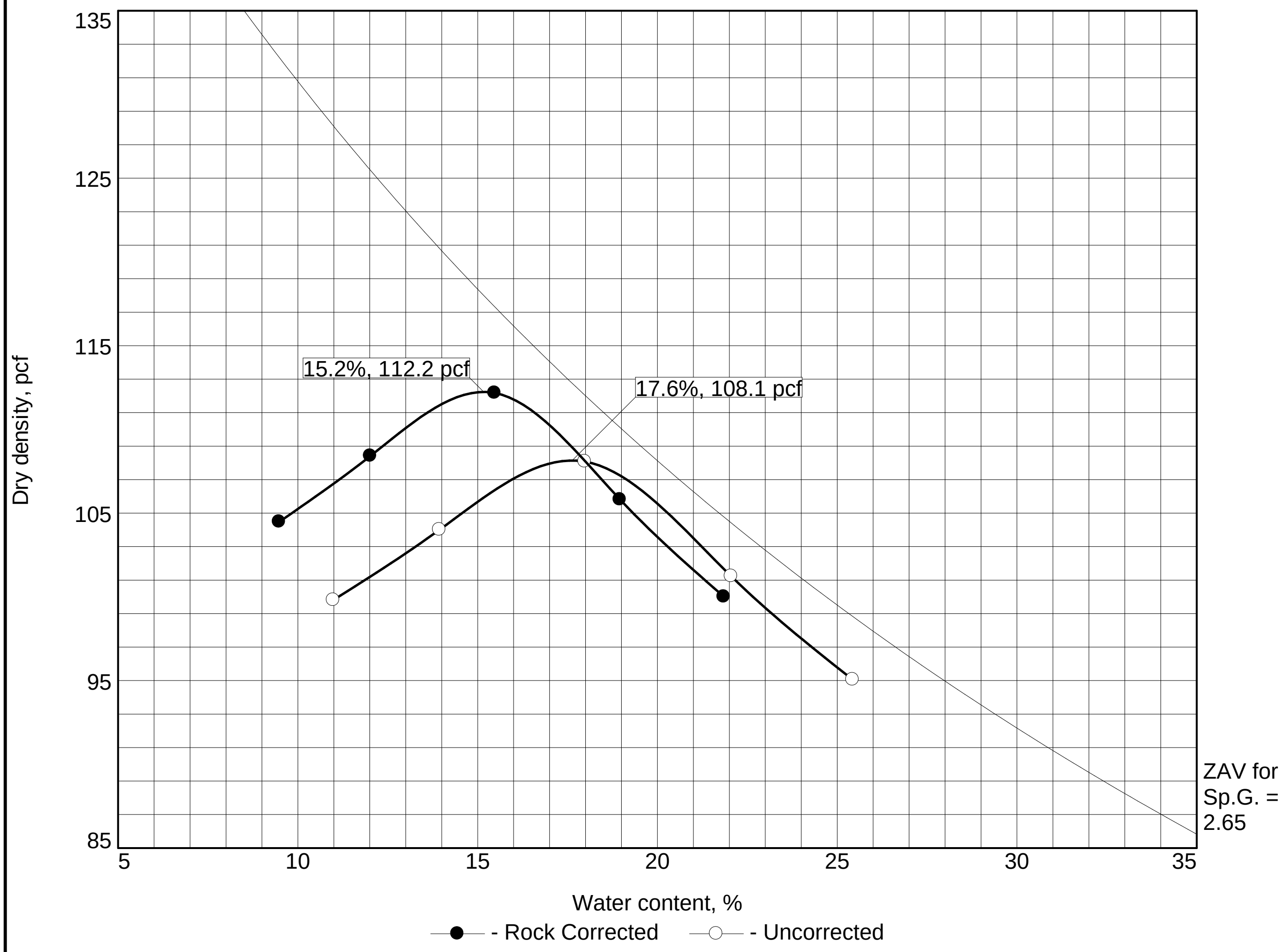
TRC Engineers, Inc.

Mt. Laurel, NJ

Figure 14

Tested By: JC 08/05/22 **Checked By:** JPB 08/25/22

COMPACTION TEST REPORT



Test specification: ASTM D 698-12 Method B Standard
ASTM D4718-15 Oversize Corr. Applied to Each Test Point

Elev/ Depth	Classification		Nat. Moist.	Sp.G.	LL	PI	% > 3/8 in.	% < No.200
	USCS	AASHTO						
1.0-5.0 FT	CL	A-6(7)	16.3		36	17	14.4	57.9

ROCK CORRECTED TEST RESULTS	UNCORRECTED	MATERIAL DESCRIPTION
Maximum dry density = 112.2 pcf	108.1 pcf	BROWN SANDY LEAN CLAY WITH GRAVEL
Optimum moisture = 15.2 %	17.6 %	

Project No. 427281.2022.GEOT **Client:** SUNEAST DEVELOPMENT, LLC
Project: SUNEAST FLAT CREEK SOLAR

○**Source of Sample:** B-111 TO B-115 **Sample Number:** BULK 3

TRC Engineers, Inc.

Mt. Laurel, NJ

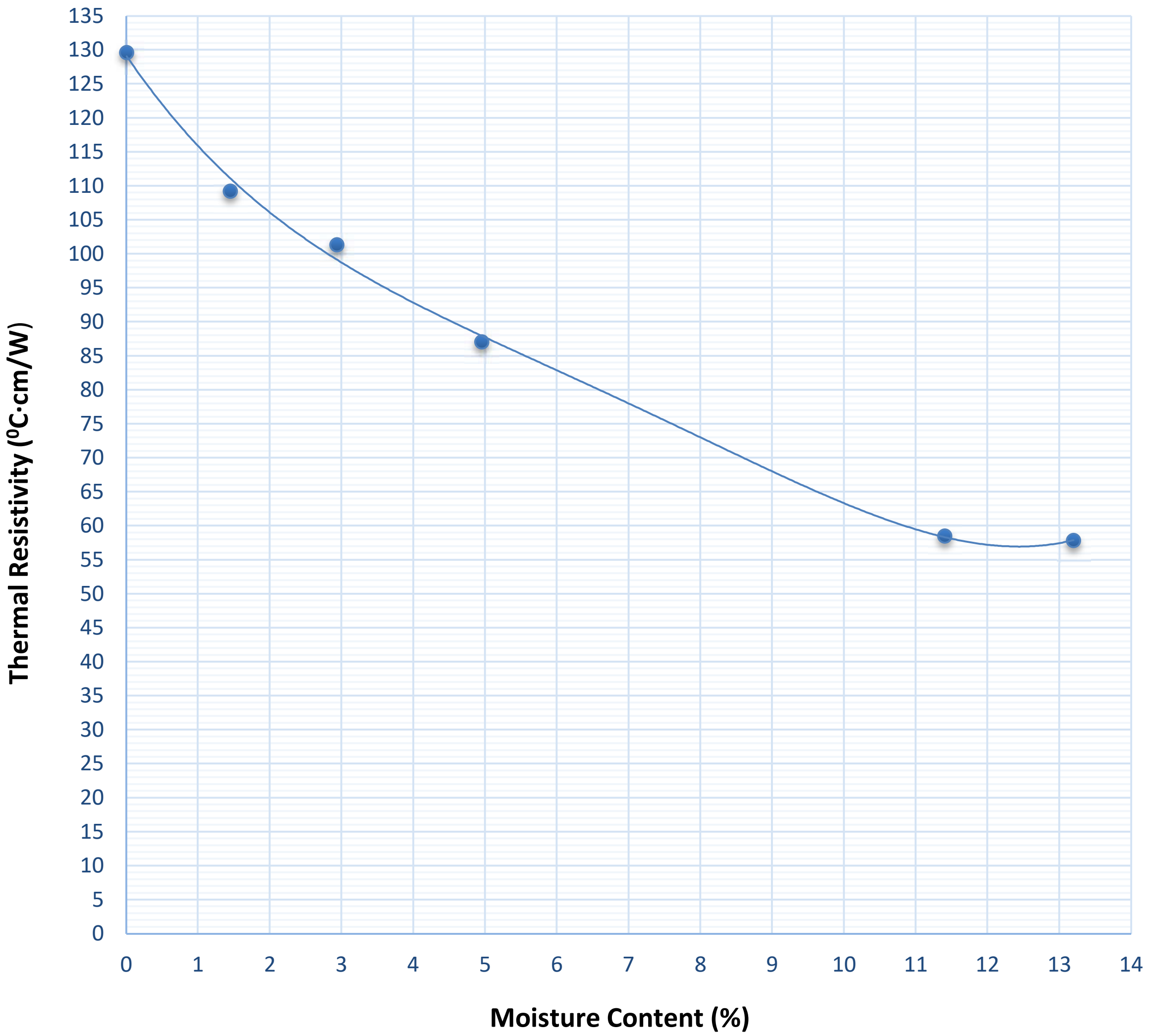
Remarks:
SAMPLE DESCRIPTION BASED ON USCS

Figure 15

Tested By: JC 07/25/22 **Checked By:** JPB 08/23/22

B-101 to B-104, Bulk 1, 1.0-5.0 ft

THERMAL RESISTIVITY DRY-OUT CURVES (ASTM D5334)
427281.2022.GEOT: Flat Creek Solar

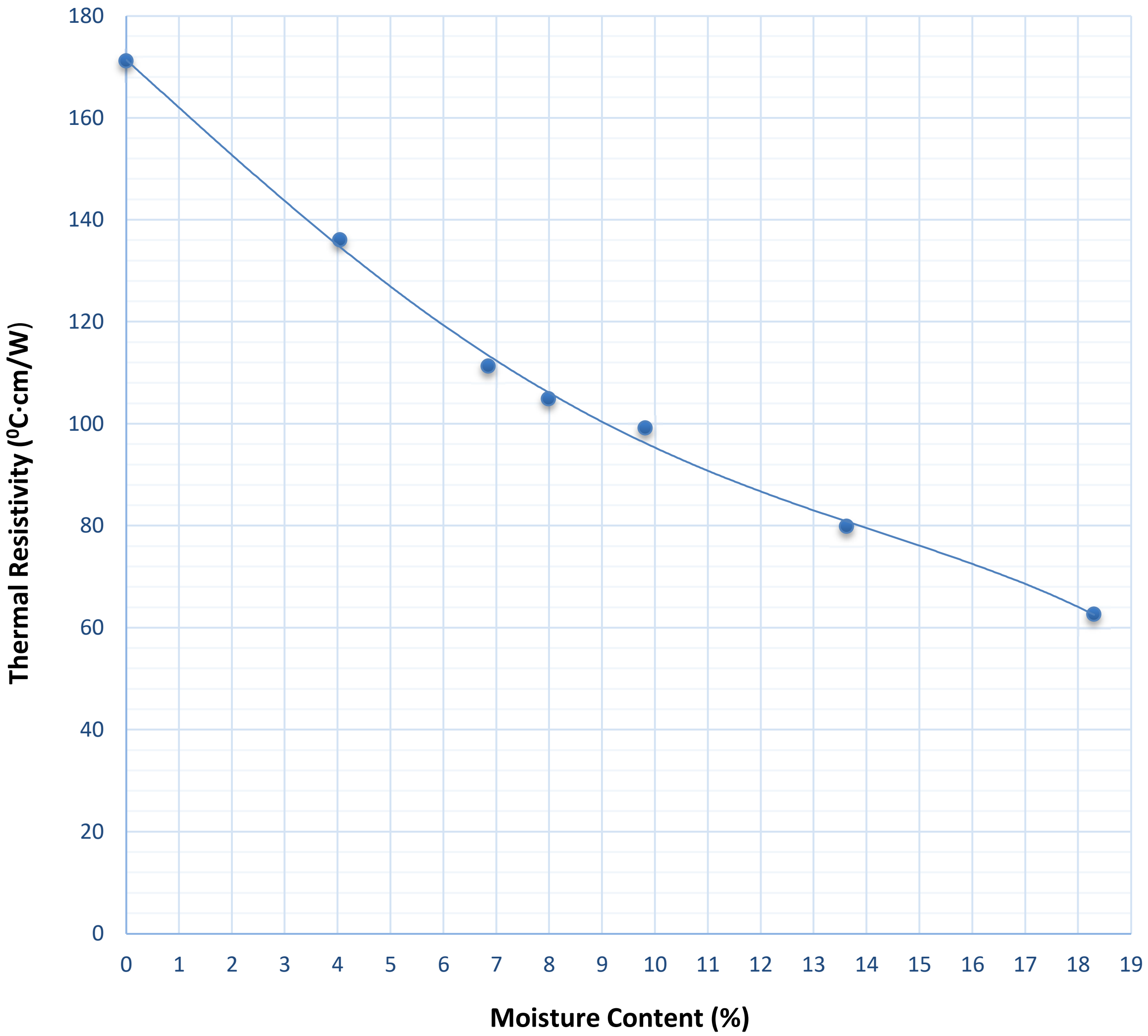


Specimen ID:	B-101 to B-104, BULK 1, 1.0-5.0 FT
USCS:	CL
Received Moisture:	11.1%
LL:	32
PI:	18
P200:	60.1
Max. Dry Dens.:	117.3 pcf
Optimum Moisture:	13.2%

Specimen was prepared at optimum moisture content and at approximately 90% of the maximum dry density as determined by the Standard Proctor test.

B-106 to B-108, Bulk 2, 1.0-5.0 ft

THERMAL RESISTIVITY DRY-OUT CURVES (ASTM D5334)
427281.2022.GEOT: Flat Creek Solar

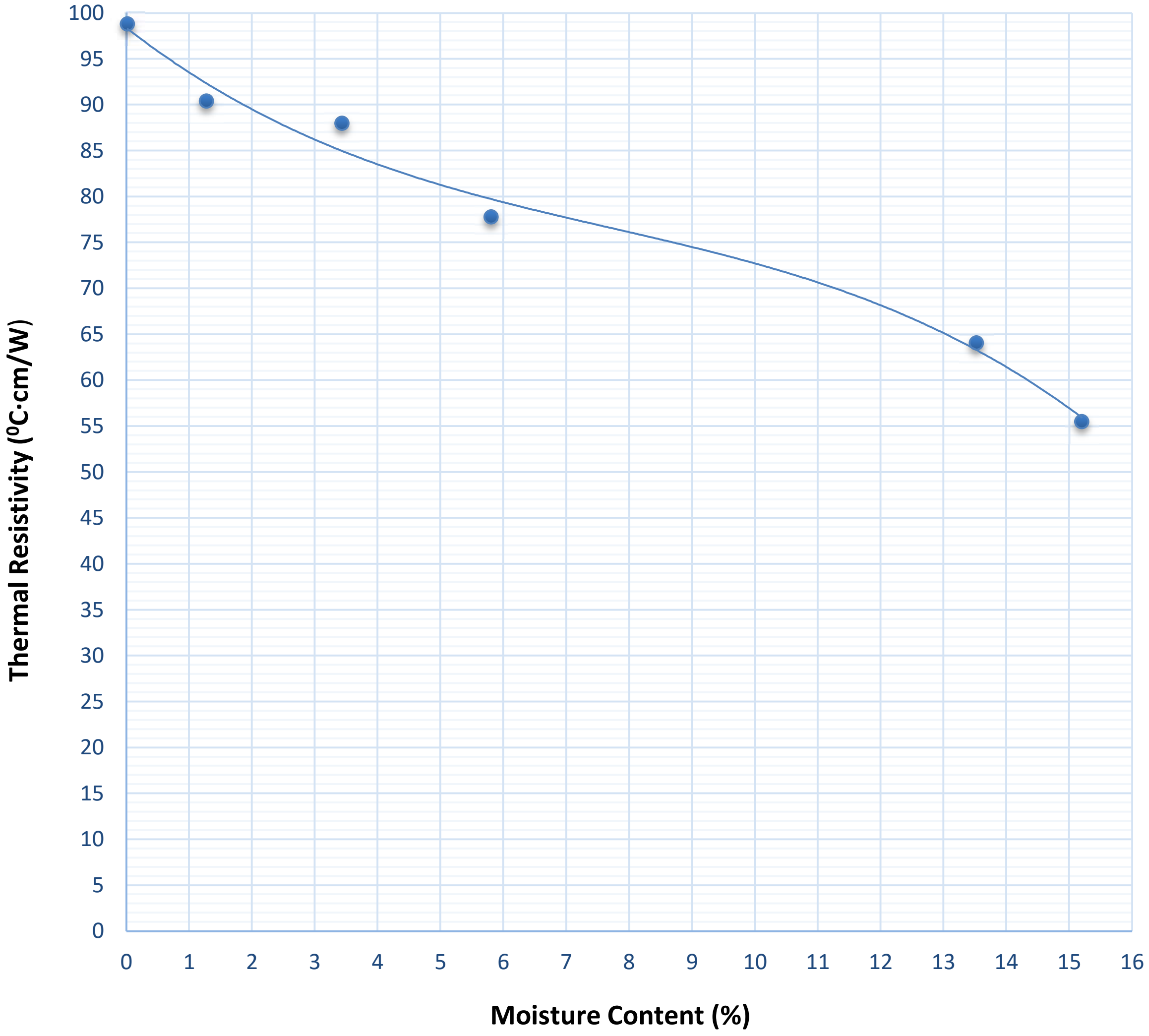


Specimen ID:	B-106 to B-108, BULK 2, 1.0-5.0 FT
USCS:	CL
Received Moisture:	16.0%
LL:	32
PI:	17
P200:	70.6
Max. Dry Dens.:	104.4 pcf
Optimum Moisture:	18.3%

Specimen was prepared at optimum moisture content and at approximately 90% of the maximum dry density as determined by the Standard Proctor test.

B-111 to B-115, Bulk 3, 1.0-5.0 ft

THERMAL RESISTIVITY DRY-OUT CURVES (ASTM D5334)
427281.2022.GEOT: Flat Creek Solar



Specimen ID:	B-111 to B-115, BULK 3, 1.0-5.0 FT
USCS:	CL
Received Moisture:	16.3%
LL:	36
PI:	17
P200:	57.9
Max. Dry Dens.:	112.2 pcf
Optimum Moisture:	15.2%

Specimen was prepared at optimum moisture content and at approximately 90% of the maximum dry density as determined by the Standard Proctor test.

KE CORROSION

3028 ALDON AVE. LAS VEGAS, NV 89121

702-340-1186 KDE@KECORROSION.COM

CLIENT
TRC Solutions, Inc.
16000 Commerce Parkway, Suite B
Mount Laurel, NJ 08054

PROJECT NO: 427281.2002.GEOT
Phase 000Lab

PROJECT
Flat Creek Solar

DATE: July 18, 2022

LAB ID: 22-0088

Sample By: Client

Analyzed By: Kurt D. Ergun

RESULTS FOR CORROSIVITY ANALYSIS OF SOILS

Sample Number:	101-104	106-108	111-115
Sample Location:	Bullk 1	Bulk 2	Bulk 3
Sample Depth:	N/A	N/A	N/A
Laboratory Testing Methods			
pH Analysis, ASTM D4972(in H2O)	7.55	7.51	7.43
PH Analysis, ASTM D4972(in CaCl2)	6.87	6.74	6.76
Water Soluble Sulfates, ASTM D516 (mg/kg)	85	93	65
Clorides, ASTM D512 (mg/kg)	50	60	40
Sulfides, AWWA 4500-S D (mg/kg)	Nil	Nil	Nil
Oxidation-Reduction, AWWA D1498 (mV)	+662	+670	+658
Resistivity, ASTM G187 (ohm-cm)	2500	2200	3485

Nil = <1.0 mg/kg

Kurt D. Ergun
Chemist

Note: The tests were performed in accordance with applicable ASTM, AASHTO, or AWWA methods. Test results submitted are only applicable to samples tested at referenced locations and are not indicative of the results of similar materials.