Preliminary Geotechnical Engineering Report

Excelsior (Byron) Solar Project
Genesee County, New York
January 29, 2020
Terracon Project No. J5195162

Prepared for:
NextEra Energy Resources
Juno Beach, Florida

Prepared by:
Terracon Consultants-NY, Inc.
Rochester, New York

January 29, 2020

NextEra Energy Resources
700 Universe Boulevard
Juno Beach, Florida 33408

Attn: Mr. Joe Cartaya – Project Manager
P: (561) 694 4529
E: joe.cartaya@nexteraenergy.com

Re: Preliminary Geotechnical Engineering Report
Excelsior (Byron) Solar Project
Town of Byron
Genesee County, New York
Terracon Project No. J5195162

Dear Mr. Cartaya:

We have completed the Preliminary Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PJ5195162 dated September 25, 2019. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of solar panel foundations for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants-NY, Inc.

STATE OF NEW YORK
MICHELE A. FIORILLO
085888
LICENSED PROFESSIONAL ENGINEER

Zeru B. Kiffle, E.I.T.
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REPORT TOPICS

Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the ***GeoReport*** logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

Note: Refer to each individual Attachment for a listing of contents.

Preliminary Geotechnical Engineering Report

Excelsior (Byron) Solar Project

Town of Byron

Genesee County, New York

Terracon Project No. J5195162

January 29, 2020

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed Excelsior (Byron) Solar Project in the Town of Byron, Genesee County, New York. The purpose of these services is to provide subsurface information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Site preparation and earthwork
- Thermal resistivity of trench/backfill
- Pile load test results
- Unpaved access roads
- Groundwater conditions
- Foundation design and construction
- Electrical resistivity for grounding design
- Seismic Considerations

Our scope of services for the project consisted of:

- Soil borings for PV arrays and substations at 24 locations to depths ranging from 17 to 34 feet
- Test pits at 10 locations to depths ranging from 10 to 12 feet
- Temporary groundwater monitoring wells at 10 locations
- Infiltration (percolation) tests at 6 locations
- Laboratory testing of soil samples
- Field electrical resistivity testing at 9 locations
- Pile load testing at 10 locations
- Laboratory thermal resistivity tests at 7 locations (5 undisturbed and 7 bulk samples collected)
- Corrosivity suite testing on 17 soil samples
- Geotechnical engineering analysis and preparation of this report

Site location, exploration plans, and the boring logs are provided in **Appendix A**. Results of the laboratory tests are provided on the boring logs in **Appendix A** and in **Appendix B**. Results of the field electrical resistivity tests are provided in **Appendix C**. The pile driving and load testing results are provided in **Appendix D** through **Appendix G**.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project is in the town of Byron, Genesee County, New York. The final size of the project is yet unknown, as land permission is still being negotiated. Based upon the Google Earth Files received by NextEra, the size of the PV Array area is about 1,800± acres. (See Exhibit A 001 in **Appendix A**). The approximate center of the site is at about Latitude 43.0770°N and Longitude -78.0764°W.
Existing Improvements	Mixture of private undeveloped land and farmland.
Current Ground Cover	Agricultural fields with wooded areas.
Existing Topography	Our review of USGS topographic maps indicate that ground surface elevations (El.) across the facility site varies between El. 610 feet and El. 750 feet.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Project Description	The project site will be developed as a 280-megawatt photovoltaic (PV) solar power facility. The proposed facility will also include a substation.
Proposed Structure	We anticipate that the proposed facility will have multiple photovoltaic panel arrays installed on steel raking frames supported on driven steel piles. Substation structures are expected to be founded on drilled shafts, mat foundations and/or shallow spread foundations.
Below Grade Structures	Limited to underground electrical conduits.
Maximum loads (Estimated by Terracon)	Structural loads were not provided, but have been estimated based on our experience on projects using single axis tracking rack systems: ■ Downward: 5 kips ■ Lateral: 3.5 kips ■ Uplift: 2 kips exclusive of frost heave loads
Grading / Slopes	We assume minimal changes to existing site grades. Arrays are expected to follow existing topography.

Item	Description
Access Roads (Based on NextEra)	We understand that access road cross sections used for construction of the project will be the responsibility of the EPC, and that only post construction traffic with an allowable rut depth of 2 inches is what we are to design for in this report. We anticipate low-volume, aggregate-surfaced and native soil access roads based on a design loading of 75,000 and will have travel over the access roads only once per week.

GEOTECHNICAL CHARACTERIZATION

Geology[1]

The project is located within the northeastern portion of Genesee County, in the Erie-Ontario Lowlands Physiographic Province. The soil deposits within this province generally consist of glacially-derived deposits, such as glacial till deposits (i.e. terminal moraines and ground moraine), granular deposits (i.e. kame, glacial outwash, and beach ridges) and lacustrine silt and clay. New State geologic maps the bedrock as shale and dolostone (Upper Silurian).

Subsurface Profile

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. The GeoModels can be found in **Appendix A,** Exhibits A-007 through A-012 and the boring/test pits logs can be found in **Appendix A,** Exhibits A-013 through A-048.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

[1] *References: Fisher, D.W., Isachsen, Y.W., and Rickard, L.V., Surficial and Geologic Maps of New York State, consisting of 5 sheets: Niagara, Finger Lakes, Hudson-Mohawk, Adirondack, and Lower Hudson, New York State Museum and Science Service, Map and Chart Series No. 15, scale 1:250,000.*

Model Layer	Layer Name	General Description
1	**Surficial**	Topsoil: black and brown;
2	**Native Layer**	Clay, Silt and Sand and Gravel mixtures (CL-ML; SM; ML; GM; GC); occasional cobble fragments; red-brown to gray
3	**Weathered Bedrock**	Completely to slightly weathered shale or dolostone; gray or olive-gray
4	**Bedrock**[2]	Shale: unweathered to slightly weathered gray; medium strong, thinly bedded, fractured with occasional gypsum seams

1. The sampling equipment utilized may preclude sampling particles larger than 2-inch in dimension. Rock fragments and split-spoon sampler refusal was encountered at some locations (5 borings) within the depths explored, indicating the presence of possible cobbles and boulders.
2. Unweathered/Slightly Weathered bedrock was encountered in ESS-1 and ESS-2. Core samples of 5 to 6 feet in length were obtained from each location in one and 2 runs. Recovery of the core samples ranged from 42 to 100 percent and RQD's ranged from 27 to 72 percent, indicating very poor to fair rock quality.

Laboratory tests were conducted on selected soil samples and the test results are included in **Appendix B**. The natural moisture contents for the samples tested ranged from 2 to 30 percent, with an average value of approximately 16 percent. Atterberg Limit tests indicated non-plastic to low plastic behavior of the soil tested. Standard Proctor test results show maximum dry density ranging from approximately 118 to 128 pcf and optimum moisture content from about 8 to 12 percent. The California Bearing Ratio (CBR) values for the samples tested (at 95 percent of the Standard Proctor) ranged from 0.5 to 1.

Groundwater Conditions

We monitored the boreholes for the presence and level of groundwater while or at completion of drilling. Temporary groundwater monitoring wells were installed at 10 locations (EB-1, EB-2, EB-6, EB-9, EB-11, EB-17, EB-19, EB-20, EB-21, and ESS-1) for delayed readings. The groundwater levels at each exploration location can be found on the boring/test pits logs in **Appendix A,** Exhibits A-013 through A-048. Summary of the groundwater table at the exploration locations are presented below.

Boring No.	Groundwater level at 1st Observation (ft.)	Groundwater level at 2nd observation (ft)	Groundwater level at 3nd observation (ft)
EB-1	17 ft 10/23/2019	1 ft on 11/26/2019	N/A
EB-2	None encountered on 10/17/2019	0 ft on 11/26/2019	N/A
EB-3	3 ft while drilling	6 ft at completion of drilling	N/A

Boring No.	Groundwater level at 1st Observation (ft.)	Groundwater level at 2nd observation (ft)	Groundwater level at 3nd observation (ft)
EB-4	13.5 ft while drilling	N/A	N/A
EB-5	6 ft at completion of drilling	N/A	N/A
EB-6	None encountered on 10/21/2019	5 ft on 11/26/2019	N/A
EB-9	None encountered on 10/24/2019	0.5 ft on 11/26/2019	N/A
EB-10	18 ft on 10/24/2019	17 ft at completion of drilling	N/A
EB-11	17 ft on 10/24/2019	19 ft on 11/26/2019	N/A
EB-14	4 ft at completion of drilling	N/A	N/A
EB-15	7 ft while drilling	6 ft at completion of drilling	N/A
EB-17	None encountered on 10/18/2019	14.5 ft on 11/21/2019	N/A
EB-19	None encountered on 10/18/2019	18.5 ft on 11/26/2019	N/A
EB-20	5.5 ft on 10/08/2019	1 ft on 11/21/2019	N/A
EB-21	None encountered on 10/18/2019	0.5 ft on 11/21/2019	N/A
ESS-1	25 ft prior to coring on 11/05/2019	0 ft on 11/21/2019	0 ft on 11/26/2019
ETP-1	3 ft while excavating	N/A	N/A
ETP-4	8 ft while excavating	N/A	N/A

Note: Groundwater was not encountered at the time of drilling in the remainder of the borings or during excavation in the remainder of the test pits.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings and test pits were performed. Lacustrine silts and clays, dense glacial till, and sedimentary rock were generally encountered in the borings and test pits and would be considered relatively impermeable. Therefore, perched groundwater conditions could be encountered in excavations where soil/rock conditions are encountered, particularly after rainfall events or irrigation. Groundwater levels during construction or at other

times in the life of the structure may be higher or lower than the levels indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

EXPLORATION AND TESTING PROCEDURES

Field Exploration and Laboratory Testing

The following table summarizes the exploration completed for this geotechnical study:

Number of Explorations	Type of Exploration	Depth or Description	Planned Location
6 locations	SPT Boring	17 to 20 feet bgs	Array Area
2 locations		31 to 34 feet bgs	Substation Area
10 locations	Test Pit Excavation	10 to 12 feet bgs	Array Area
9 locations	Field Electrical Resistivity	2.5, 5, 10, 20, and 50 feet	Array Area
1 location		0.5, 1, 1.5, 2, 3, 5, 7, 10, 15, 20, 30, 45, 70, 100, 150, and 250 feet	Substation Area
6 locations	Thermal Resistivity	1 or 2 tests per location[1]	Array Area (Remolded 90 percent of the Standard Proctor maximum dry density and an undisturbed sample)
1 location (ETP-4)		1[1] lab test per location	Near Substation Area (Remolded 90 percent of the Standard Proctor maximum dry density)
17 locations	Corrosion Testing	1 to 4 feet bgs	Array Area
1 location			Substation Area
10 locations (36 piles)	Pile Load Testing (PLT)	9 to 12 feet bgs (embedment depth[2])	Array Area

1. Attempt was made to push Shelby tubes in EPT-3 and EPT-4 to obtain undisturbed samples; however, not enough soil was recovered in the tubes or conditions was not conducive to driving Shelby tubes.
2. Additional piles were driven and PLT tests were performed at two locations, EB-20 and EB-21. Each additional pile location was pre-drilled utilizing a 6-inch diameter hollow stem auger (undersize hole) to a depth of approximately 6-inch above the anticipated embedment depth. The hole was then backfilled with soil and the pile was driven to proposed embedment depth.

Boring Layout and Elevations: The exploration locations were selected by Terracon personnel based on the site and access conditions and the planned footprint of the PV arrays and substation locations provided by NextEra. The GPS coordinates of the boring locations were obtained with a handheld GPS unit with estimated horizontal accuracy of about ±10 feet. Elevations were estimated from the Google Earth. The boring locations and elevations should be considered accurate only to the degrees implied by the methods used to determine them. If elevations and a more precise boring layout are desired, we recommend borings be surveyed following completion of fieldwork.

Subsurface Exploration Procedures

Test Pits

The test pits were excavated using a tracked excavator. A Terracon field engineer prepared test pit logs at the time of the test pit excavation. The field logs included visual classification of the soils encountered during excavation. Groundwater levels were also observed during excavation and prior to backfill of the test pits. Bulk samples were collected from selected test pit locations for laboratory testing. A thin-walled tube was obtained for laboratory thermal testing at each of the following locations: ETP-2, ETP-5, ETP-6, ETP-7 and ETP-10. In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge is pushed into the soil to obtain a relatively undisturbed sample. The tests pits were backfilled with excavated materials after their completion. The test pit logs are presented in **Appendix A,** Exhibits A-039 through A-048.

Test Borings

The borings were advanced with a track-mounted rotary drill rig using continuous flight, hollow-stem augers. Five samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. The borings were generally sampled using split spoon samplers. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the middle 12 inches of a normal 24-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings after their completion. The boring logs are presented in **Appendix A,** Exhibits A-013 through A-038.

When auger refusal was encountered upon moderately to unweathered bedrock in the borings, rock cores were obtained at ESS-1 and ESS-2 to investigate the nature and quality of the underlying bedrock. The percent recovery and the Rock Quality Designation (RQD) for each core run was recorded. The percent recovery is the ratio of the length of rock recovered over the length of coring. The RQD is the ratio of the sum of the length of recovered rock core 4 inches or greater

in length, over the length of coring. The RQD is useful in providing a qualitative and quantitative evaluation of the engineering quality of bedrock.

The sampling depths, penetration distances, and other sampling information were recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. Field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Field Electrical Resistivity Test Results

Field electrical resistivity surveys (ER) were performed at 8 locations in the PV Array areas and 1 location in the proposed substation area. The approximate locations for the field resistivity tests are presented in **Appendix C**, Exhibit C-001. The ER were performed along pairs of approximately perpendicular arrays at each location with the following electrode spacings (A-spacing):

- PV array areas: 2.5, 5, 10, 20, and 50 feet;
- Substation area: 0.5, 1, 1.5, 2, 3, 5, 7, 10, 15, 20, 30, 45, 70, 100, 150, and 250 feet

ER were performed between October 10 and November 22, 2019. The ER were performed in general accordance with ASTM Test Method G 57, and IEEE Standard 81, using the Wenner Four-Electrode Method. Results of the field electrical resistivity measurements are presented in **Appendix C,** Exhibits C-001 through C-019.

Corrosion Testing

Soil samples from eighteen (18) boring locations were tested for corrosivity potential. These samples were being tested for pH, water soluble sulfate, sulfides, chlorides, total salts, Red-Ox potential, and electrical resistivity. Results of the corrosivity suite tests are provided in **Appendix B,** Exhibits B-016 through B-021. We recommend a corrosion specialist be retained to evaluate our test results and make recommendations for protection of steel piles against potential corrosion.

Thermal Resistivity Laboratory Testing

Laboratory thermal resistivity tests were performed from seven (7) locations. The tests on the bulk samples were completed on specimens remolded to 90 percent of the Standard Proctor maximum dry density. The tube sample was tested “as received”. These tests were performed in accordance with IEEE Standard 442-2017. Laboratory thermal resistivity test results and dry-out curves for bulk samples and the undisturbed sample are presented in **Appendix B,** Exhibits B-022 through B-029.

Geotechnical Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil and rock strata, as necessary, for this project. Procedural standards noted below are for reference to methodology in general. In some cases, variations to methods were applied because of local practice or professional judgment. Standards noted below include reference to other, related standards. Such references are not necessarily applicable to describe the specific test performed.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM D422 Standard Test Method for Particle-Size Analysis of Soils
- ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- ASTM D698 Moisture-Density Relationship (Standard Proctor)
- ASTM D1883 Standard Test Method for California Bearing Ratio (CBR) of Laboratory-Compacted Soils

The laboratory testing program included examination of soil samples by a geologist and/or engineer. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

GEOTECHNICAL CONSIDERATION

The subsurface conditions encountered in the test borings were generally consistent with the mapped surficial and bedrock geology. Subsurface conditions encountered in the borings indicated glacially-derived deposits, such as glacial till (i.e. terminal moraines and ground moraine), granular deposits (i.e. kame, glacial outwash, and beach ridges) and lacustrine silt and clay. Some borings terminated with auger refusal on possible cobbles and boulders or bedrock. Weathered bedrock was encountered in some borings at depth of 8 to 25 feet below the existing grades and underlain by less weathered bedrock at a depth of approximately 28 feet.

The near surface fine-grained soil will become unstable with typical earthwork and construction traffic, especially after precipitation events. The effective drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year (typically May to October). If grading is performed during the winter/spring months (typically November to April), an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations, including subgrade improvement and fill placement, are provided in the **Earthwork** section.

Driven piles are planned to be used to support the PV solar arrays. For PV arrays supported on driven pile foundations, maintenance of the connections between racking system and driven piles may be required during the life of these structures. Pile design recommendations presented in this report are based on our assumption that grades around the piles will not allow ponding of the surface water at the pile locations.

Pile load testing (PLT) results performed at some locations indicated longer driving time or encountered pile driving refusal, due to cobbles/boulders or bedrock. Pre-drilling of undersized holes and backfilling with soil cutting may be required to accommodate pile installation in areas where difficult driving is encountered.

Geotechnical engineering recommendations for PV arrays and substation equipment support foundations are provided in the report. These recommendations are based on the results of field and laboratory testing data, engineering analyses, and our understanding of the project.

A qualified testing agency should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation; proof-rolling; placement and compaction of controlled compacted fills; backfilling of excavations in the completed subgrade; and for construction of foundations.

Preliminary recommendations contained in this report are based upon the data obtained from the limited number of test borings. This report does not reflect conditions that may occur between the points investigated, or between sampling intervals in test borings. The nature and extent of variations between test borings and sampling intervals may not become evident until the course of construction. A detailed subsurface geotechnical investigation should be completed prior to final design and construction to assess localized subsurface conditions at proposed structure locations where existing data is lacking.

The **Access Roads** section addresses the design of aggregate-surfaced pavement systems.

The **General Comments** section provides an understanding of the report limitations

PILE LOAD TESTING

We have performed a full-scale load testing program that included:

- Directing the installation of a group of test piles at 10 locations near EB-2, EB-5, EB-8, EB-10, EB-14, EB-15, EB-17, EB-18, EB-20, and EB-21.
- Performing full-scale testing under axial tensile loads for 2 test piles in each group.
- Performing full-scale testing under compression loads for 1 test pile in each group
- Performing full-scale testing under lateral loads for 2 test piles in each group.

Pile Locations and Driving

Pile load tests were performed at 10 locations across the site. The test piles consisted of wide flange bare steel W6x9 sections. These test piles were installed to embedment depths ranging from 6 to 12 feet below the ground surface (bgs). The test piles have been identified using an alphanumeric system. The pile identification system for each location begins with "EB" and is followed by the number corresponding to the test pile group location with the assigned letters "A", "B" and "C". Pile load tests with letter "A" and "B" were tested for axial tension first and lateral load next. Pile load tests with letter "C" were tested for axial compression only. At two location, EB-20 and EB-21, 3 additional piles (piles "AP", "BP", and "CP") were installed at each location. Each location was pre-drilled utilizing a 6-inch diameter hollow stem auger (undersize hole) to a depth of approximately 6-inch above the anticipated embedment depth. The hole was then backfilled with soil and the pile was driven to proposed embedment depth.

The approximate pile load testing locations are provided in **Appendix D**, Exhibits D-1. The piles were generally installed in groups of three at 10 locations (Piles A, B and C). Prior to driving the tension piles, each location was pre-drilled with a 12-inch auger to a depth of 2 feet approximately. The pre-drilled hole was then backfilled, and the piles were pushed to depths described in **Appendix D**. As discussed above, at two location, EB-20 and EB-21, 3 additional piles (piles "AP", "BP, and "CP") were installed in pre-drilled undersize holes.

The A, B, and C piles were advanced on March 29, 2019 (first round) and AP, BP and CP piles were installed on November 07, 2019 (second round). The piles were installed using a track mounted Vermeer PD10 Pile Driver equipped with hydraulic hammer to the required embedment. The time rate of installation was recorded with a stopwatch. The total time required to advance each pile to its specified embedment depth was recorded and is summarized in the following table:

Pile Location	Target Embedment Depth	Actual Embedment Depth (feet)	Approximate Push Depth (feet)	Drive Time (seconds)	Average Drive Time (seconds/foot)
	Tests: Axial Tension, Lateral, and Axial Compression				
EB-2A	9	8.5	2.25	222.0	35.5
EB-2B	12	11	2.75	349.0	42.3
EB-2C	9	8.1	0.75	282.6	38.6
EB-5A	9	8.8	2.00	265.3	39.3
EB-5B	12	11	2.00	485.4	54.9
EB-5C	9	9	0.50	513.2	60.4
EB-8A	9	8	2.25	205.8	35.8
EB-8B	12	11	2.00	463.2	51.5
EB-8C	9	9	0.50	151.4	17.8
EB-10A	9	9	2.00	71.7	10.3
EB-10B	12	12	2.00	215.2	21.5

Pile Location	Target Embedment Depth	Actual Embedment Depth (feet)	Approximate Push Depth (feet)	Drive Time (seconds)	Average Drive Time (seconds/foot)
	Tests: Axial Tension, Lateral, and Axial Compression				
EB-10C	9	9	0.50	81.9	9.6
EB-14A	9	9	2.00	47.3	6.8
EB-14B	12	12	2.00	89.7	9.0
EB-14C	9	9	0.50	78.0	9.5
EB-15A	9	9	2.75	128.4	19.0
EB-15B	12	11	2.75	444.8	50.8
EB-15C	9	9	0.75	166.2	20.1
EB-17A	9	7	2.00	197.4	39.5
EB-17B	12	9	2.00	447.1	63.9
EB-17C	9	9	0.75	400.1	48.5
EB-18A	9	8	2.50	318.0	57.8
EB-18B	12	11	2.25	675.8	77.2
EB-18C	9	9	0.50	538.4	63.3
EB-20A[1]	9	6.3	2.00	386.1	90.9
EB-20B[1]	12	6	2.00	282.1	70.5
EB-20C[1]	9	6.5	1.00	353.3	64.2
EB-20AP[2]	9	9	2.00	140.7	20.1
EB-20BP[2]	12	12	2.00	219.5	22.0
EB-20CP[2]	9	9	1.50	72.9	9.7
EB-21A[1]	9	9	2.00	478.6	68.4
EB-21B[1]	12	12	2.00	1198.6	119.9
EB-21C[1]	9	9	0.75	454.0	55.0
EB-21AP[2]	9	9	2.00	102.7	14.7
EB-21BP[2]	12	12	1.25	222.0	20.7
EB-21CP[2]	9	9	1.25	46.50	6.0

1. Piles A, B, and C were installed March 29, 2019.
2. Piles AP, BP, and CP were installed November 07, 2019. Each location was pre-drilled utilizing a 6-inch diameter hollow stem auger (undersize hole) to a depth of approximately 6-inch above the anticipated embedment depth. The hole was then backfilled with soil and the pile was driven to proposed embedment depth.

Testing Under Axial Tensile ("Pull-out") Load

We performed testing under axial tensile load for the piles at each location using the procedures generally outlined below.

A total of twenty-four (24) piles, four in EB-20 and EB-21 and two piles in each of the remaining PLT location, were tested under axial tensile ("pull-out") load. Target embedment depths for piles with the designation "A" and "AP" was 9 feet below the ground surface, and for piles with the designation "B" and "BP" was 12 feet below the ground surface.

The "pull-out" load reaction was developed using a tripod frame supported at an appropriate lateral distance from the post. The composite steel and aluminum "tripod" frame were centered over the test post and a system of appropriately rated chains and clevises were used to connect the reaction system (i.e. the eyebolt within the head of the tripod) in series with one Dillion ED Junior Dynamometer 25-kip electronic load cell, and a 10-kip locking "E-grip" clamp gripping the test post web. By pulling a chain hoist the load was applied in successive 500-pound increments to a maximum of 10,000 lbs. Pile deflections were measured with a pair of digital gauges secured with magnetic mounting brackets to each outside flange of the test post with the needle of each gauge resting on a 4-inchx4-inch piece of lumber fastened at each end to steel angle iron that was driven into the ground. Following reaching the maximum target load of 10,000 pounds, the load was reduced in increments until it reached zero and the test was terminated. Results of the axial tension load tests are provided in **Appendix E**, Exhibits E-001 through E-024.

Testing Under Lateral Load

After testing under axial tensile load, the piles at each location were then tested under lateral load as described below.

A total of twenty-four (24) piles, four in EB-20 and EB-21 and two piles in each of the remaining PLT location, were tested under lateral load soon after the completion of the axial tension load tests at those locations. Lateral load tests were performed on the piles designated as "A", "AP", "B", and "BP" at each test location. The lateral load was applied 2-feet above the ground surface. The load was applied with a chain hoist and the test was performed in 500-pound increments, with loading and unloading cycles and loaded until the maximum lateral load of 7,000 lbs. was reached or the pile reached 1-inch of lateral displacement measured at 6-inch above the ground surface. Each load increment was held for at least 1 minute and the stabilized deflection reading of both indicator gauges were recorded. Deflections were measured with Westward dial gauges and loads were measured with a Dillon ED Junior Dynamometer 25-kip electronic load cell. The gauges were read, and the data was recorded manually by Terracon field personnel. Lateral load test results are provided **in Appendix F**, Exhibits F-001 through F-029.

Testing Under Compression Load

Axial compression load tests were performed at 10 locations on the piles designated as "C" and "CP". The axial compression load was applied using a compression cylinder with load increments of 500 lbs. to a maximum compression load of 10,000 lbs. Two dial gauges were used to measure the pile vertical movement. The test was ended after the conclusion of the maximum load schedule. Axial compression test results are provided in **Appendix G**, Exhibits G-001 through G-012.

Summary of Pile Load Test Results

The pile load test locations are provided in Exhibit D-001 in **Appendix D**. The axial tension test load versus deflection graphs, lateral load versus deflection curves, compression load versus deflection curves, and the tension load on shallow embedment piles versus deflection curves are provided in Appendices D through G.

The following table provides a summary of the pile embedment depth, tension load and compression load at approximately 0.25-inch vertical displacement, and lateral load at 0.5-inch lateral displacement at 6 inches above ground surface.

Pile Location	Actual Embedment Depth (feet)	Tension Load at 0.25-inch displacement, (lbs.)	Lateral Load at 0.5- inch Displacement (lbs.)	Compression Load at 0.25-inch displacement, (lbs.)
EB-2A	8.5	10,000+	2,250	---
EB-2B	11	10,000+	2,100	---
EB-2C	8.1	---	--	10,000+
EB-5A	8.8	10,000+	2,400	---
EB-5B	11	10,000+	2,850	---
EB-5C	9	---	---	10,000+
EB-8A	8	10,000+	2,400	---
EB-8B	11	10,000+	2,750	---
EB-8C	9	---	---	10,000+
EB-10A	9	10,000+	1,600	---
EB-10B	12	10,000+	2,900	---
EB-10C	9	---	---	10,000+
EB-14A[1]	9	700	1,610	---
EB-14B	12	10,000+	1,000	---
EB-14C	9	---	---	9,650
EB-15A	9	10,000+	---	---
EB-15B	11	10,000+	1,570	---

Pile Location	Actual Embedment Depth (feet)	Tension Load at 0.25-inch displacement, (lbs.)	Lateral Load at 0.5- inch Displacement (lbs.)	Compression Load at 0.25-inch displacement, (lbs.)
EB-15C	9	---	---	10,000+
EB-17A	7	10,000+	3,000	---
EB-17B	9	10,000+	3,000	---
EB-17C	9	---	---	10,000+
EB-18A	8	10,000+	2,300	---
EB-18B	11	10,000+	2,400	---
EB-18C	9	---	---	10,000+
EB-20A	6.3	10,000+	2,750	---
EB-20B	6	10,000+	3,000	---
EB-20C	6.5	---	---	10,000+
EB-20AP	9	10,000+	3,400	---
EB-20BP	12	10,000+	3,900	---
EB-20CP	9	---	---	10,000+
EB-21A	9	10,000+	3,000	---
EB-21B	12	10,000+	2,900	---
EB-21C	9	---	---	10,000+
EB-21AP	9	10,000+	3,350	---
EB-21BP	12	10,000+	2,700	---
EB-21CP	9	---	---	10,000+

1. PLT-14 A failed at very low load which is an indication of low skin friction at that location.

PV ARRAY FOUNDATION SYSTEM

Recommendations for design of the driven steel W-section piles including ultimate skin friction, end-bearing capacity, and L-PILE input parameters are provided in the following sections of this report. These recommendations are based our analyses of the data obtained from the subsurface soil conditions encountered in our borings and the results of the pile load tests performed at the site.

Based on the subsurface conditions encountered in our borings and pile load testing data, the site has been divided into three (3) major zones, Zone A, B and C. The zoning map is provided in **Appendix A,** Exhibit A-003. The minimum installation drive times at each zone should be used for the pile driving based on the average driving time versus depth of penetration graphs provided in **Appendix D,** Exhibits D-002 through D-005.

The pile driving charts presented in **Appendix D** Exhibits D-002 through D-005 are applicable for piles that are driven using equipment similar to a Vermeer PD10 equipped with hydraulic hammer. The average pile driving time versus depth of penetration may vary, if a different pile driving equipment is used.

Driven Pile Design Recommendations - Axial Capacity

The axial load carrying capacity of driven piles can be estimated based on skin friction developed along the block perimeter of the pile. When computing embedment depths, the perimeter of a wide flange beam should be taken as twice the sum of the flange width and web depth for a block analyses design method. The upper 2.5 feet of soil for each pile should be neglected in all axial tension capacity analyses to account for frost heave.

The ultimate axial capacity of driven steel piles can be estimated using the skin friction and end-bearing values presented in the following table. The ultimate unit skin frictions are based on the results of the axial tension load testing. The ultimate end-bearing values are based on the results of the soil borings and pile load testing for axial compression loads.

Parameters for Analysis of Axial Capacity				
Soil Zones	**Embedment Depth (feet)**	**Minimum Drive Time (sec)**	**Ultimate Skin Friction (psf)**	**Ultimate End-Bearing (lbs.)**
Zone A	9 and 12	47	275	100
Zone B	9, 11 and 12	72	600	150
Zone C	6, 8, 9, 11 and 12	151	650	

It is our opinion that the soils anticipated to be encountered across the project site are frost-susceptible. Frost heave on pile foundations may be significant. If the anchorage of the foundations and the deadweight of the solar panel equipment are not sufficient to resist these forces, it can cause uplift. Based on our review of soil samples obtained in the exploration, our local experience, and available public data, we recommend that an ultimate adfreeze stress (frost heave) of 1,500 psf acting along the pile perimeter to a depth of 30 inches below the ground surface be considered.

For Allowable Stress Design (ASD), we recommend the allowable skin friction and end-bearing be computed by applying a factor of safety of at least 1.5 to the ultimate values. Piles should have a minimum center-to-center spacing of at least 3 times their largest cross-sectional dimension to prevent reduction in the axial capacities due to group effects.

Driven Pile Design - Lateral Loading

Lateral load tests from each design zone with various pile embedment depths were grouped and plotted. L-PILE analyses were performed for each pile embedment depth groups by applying the field test load that resulted in approximately ½-inch deflection at approximately 6 inches above the ground surface.

The calculated p-y curve from L-PILE analyses was adjusted by the varying p-multiplier (by trial method) such that the applied load resulted with a deflection value that approximately matched the measured test results at about 0.5 to 0.6-inch lateral deflection. These results are intended only for use with L-PILE program. In our analyses, the piles were modeled as an elastic section (non-yielding). The results of the lateral load models in L-PILE are provided below in this report.

Lateral Capacity Recommendations

Lateral load response of pile foundations was evaluated based on the lateral load test results and using the commercial software L-PILE 2018, by Ensoft, Inc. We modeled the lateral response of the tested piles to modify the L-PILE input parameters that can be used for design of the production piles. Recommended L-PILE input parameters for lateral load analysis are provided in the tables below.

Zone A			
Depth Range (ft)	**Soil Type (P-y) Curve Model[1]**	**Effective Unit Weight[1] (pcf)**	**Friction Angle Φ' [1] (degrees)**
0-2	Sand (Reese)	110	29°
2-7		58	29°
7-20		68	36°

Note: Estimated average depth to groundwater is 2 feet

1. For L-pile Analysis: Use default subgrade modulus reaction (k).

Zone B			
Depth Range (ft)	**Soil Type (P-y) Curve Model[1]**	**Effective Unit Weight[1] (pcf)**	**Friction Angle Φ' [1] (degrees)**
0-2	Sand (Reese)	110	29°
2-7		58	31°
7-20		68	36°

Note: Estimated average depth to groundwater is 2 feet

2. For L-pile Analysis: Use default subgrade modulus reaction (k).

Zone C			
Depth Range (ft)	**Soil Type (P-y) Curve Model[1]**	**Effective Unit Weight[1] (pcf)**	**Friction Angle Φ' [1] (degrees)**
0-2	Sand (Reese)	110	29°
2-7		63	33°
7-20		68	36°

Note: Estimated average depth to groundwater is 2 feet

3. For L-pile Analysis: Use default subgrade modulus reaction (k).

P-Multipliers:

Zone A	
Depth Range (ft)	**P Multiplier**
9	1.5
9.5 to 12	Linear interpolation between values for 9 and 12 feet
> 12	0.4

Zone B	
Depth Range (ft)	**P Multiplier**
9 to 12	1.1
> 12	5.0

Zone C	
Depth Range (ft)	**P Multiplier**
6	5.0
6.5 to 8	2.5
8.5 to 9	5.2
9.5 to 11	3.0
> 11	5.0

The structural engineer should evaluate the moment capacity of the pile as part of their structural evaluation. Piles should have a minimum center-to-center spacing of at least 5 times their largest cross-sectional dimension in the direction of the lateral loads, or the lateral capacities should be reduced due to group effects. If piles will be spaced closer than 5 times their largest cross-sectional dimension we should be notified to provide supplemental recommendations.

Driven Pile Construction Considerations

Auger refusal, as a result of encountering cobbles, boulders, and/or bedrock, was encountered in some borings during the field exploration program. Cobbles and boulders are commonly found in glacially deposited soil and should be anticipated in some areas. Pile installation via conventional methods – such as driving into undisturbed soils may encounter difficulty and may result in early refusal and inadequate penetration, or else may cause excessive pile deflection, rotation or torsional rotation. In locations where pile driving difficulty is encountered, pre-drilling of undersize or oversized holes and grouting may be required.

Auger drilling typically is unsuccessful for subgrades containing appreciable cobbles and boulders. We expect that percussive drilling methods such as ODEX or air-rotary could then be necessary to complete pre-drilled holes to their design depth.

Piles set in a grout backfilled borehole would develop considerable axial and lateral capacity over a relatively short embedment depth. This would result in reduced pile lengths for the project, which may offset some of the expense of drilling and the use of grout or concrete backfill. A supplemental pile load testing program should be implemented in order to evaluate suitability for such alternative installation methods and to provide design recommendations associated with such methods.

Undersize Holes Design Recommendations

In areas of driven pile refusal prior to reaching the desired pile depth, it may be appropriate to pre-drill an undersized hole. The predrilled hole may then be backfilled with the cuttings, provided cobbles and boulders are culled from the material. The objective of pre-drilling an undersized hole is to facilitate the driving of the web without disturbing the native soils supporting the flanges. Since the lateral and axial capacities are mostly reliant on the soil pile interaction at the flanges, the soil parameters in the table provided in the previous section remain applicable.

SHALLOW FOUNDATIONS

General

We understand within the substation that some equipment may be supported on mat/slab foundations, while other structures may be supported on shallow footing foundations. Transmission line structures are anticipated to be constructed as poles on drilled shafts or as direct embed poles.

Spread Footing Design Recommendations

Item	Description
Maximum net allowable bearing pressure [1, 2]	2,500 psf
Required bearing stratum [3]	Minimum 6 inches of compacted Structural Fill placed upon stable native soils. The Structural Fill should extend a minimum lateral distance of 6 inches beyond the edges of the foundations
Minimum foundation dimensions	Isolated: 30 inches Continuous: 18 inches
Ultimate passive resistance [4] (equivalent fluid pressures)	250 pcf
Ultimate coefficient of sliding friction [5]	0.50 (Concrete on compacted Structural Fill)
Minimum embedment below finished grade [6]	30 inches
Estimated total settlement from structural loads [2]	Less than about 1 inch
Estimated differential settlement [2, 7]	About ¾ of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. The allowable bearing pressure may be increased by one-third when considering the alternative load combinations of Section 1605.3.2 of the 2015 International Building Code, however, it should not be increased when loads are determined by the basic allowable stress design load combinations of Section 1605.3.1.
2. Values provided are for maximum loads noted in **Project Description**.
3. Unsuitable or soft soils should be overexcavated and replaced according to the recommendations presented in **Earthwork**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted structural fill be placed against the vertical footing face.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions. Should be neglected if passive pressure is used to resist lateral loads.
6. Embedment necessary to resist the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 10 horizontal feet of the structure.
7. Differential settlements are as measured over a span of up to 50 feet.

The allowable foundation bearing pressures apply to dead loads plus design live load conditions. The weight of the foundation concrete below grade may be neglected in dead load computations.

Spread Footing Construction Considerations

The bottom of all foundation excavations should be free of water and loose soil prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction.

Extremely wet or dry material or any loose or disturbed material in the bottom of the footing excavations should be removed before foundation concrete is placed.

If unsuitable bearing soils are encountered in footing excavations, the excavations should be extended deeper to suitable soils and the footings could bear directly on those soils at the lower level. Alternatively, the over-excavations could be backfilled with Structural Fill, clean gravel or lean concrete. Foundation bearing level soils should be compacted to a density of at least 95 percent of the standard Proctor maximum dry density for a minimum depth of 12 inches. More complete foundation design and construction recommendations can be provided as the design of the facility progresses.

Foundation excavations should be observed by the Geotechnical Engineer. If the soil conditions encountered differ significantly from those presented in this report, Terracon should be contacted to provide additional evaluation and supplemental recommendations.

Mat Foundation Design Recommendations

Reinforced concrete support slabs (mat foundations) are recommended to support the proposed ancillary equipment. We recommend concrete slabs have thickened edges with a minimum embedment depth to bottom of edge of 12 inches below finished grade. It is our opinion the thickened edge may help in both confining the aggregate placed beneath the slab and minimizing the potential for erosion and foundation damage from storm runoff.

Item	Description
Foundation Type	Mat Foundation.
Maximum Net Allowable Bearing Pressure[1, 2]	2,000 psf
Required Bearing Stratum[2]	Minimum 12-inch thickness of NFS material, Structural Fill, or Crushed Stone placed on either the native material or compacted fill placed for site grading, the surface of which should be proof-rolled. Bearing material should extend a minimum of 12 inches beyond the edges of the foundations.
Foundation Dimensions	■ Mat foundations of unknown dimensions. ■ Minimum foundation width of 12 inches for thickened edges.
Ultimate Coefficient of Sliding Friction[3]	0.45-Structural Fill or NFS. 0.50-Crushed Stone
Minimum Embedment below Finished Grade[4]	■ NFS material will need to be placed at least 30 inches deep to reduce the effects of freeze-thaw. Alternately, the slab (mat) could be designed to allow movement due to frost action. ■ Minimum 12 inches for thickened edges.

Item	Description
Estimated Total Settlement from Structural Loads	Less than about 1 inch
Estimated Differential Settlement	About 2/3 of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. The allowable bearing pressure may be increased by ⅓ when considering the alternative load combinations of Section 1605.3.2 of the *2012 International Building Code*, however, it should not be increased when loads are determined by the basic allowable stress design load combinations of Section 1605.3.1.
2. Unsuitable or soft soils should be over-excavated and replaced per the recommendations presented in the **Earthwork**.
3. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to uplift conditions. A factor of safety of at least 1.5 should be applied to the sliding resistance.
4. Slab foundations will move due to freeze-thaw effects. NFS material will need to be placed at least 30 inches deep to significantly reduce the effects of freeze-thaw. Alternately, the slab could be designed to allow movement due to frost action.

Foundations should be reinforced as necessary to reduce the potential for distress caused by differential foundation movement. Other details including treatment of loose foundation soils, superstructure reinforcement and observation of foundation excavations as outlined in the **Earthwork** section of this report are applicable for the design and construction of a mat foundation.

For structural design of mat foundations, a Modulus of Subgrade Reaction (Kv_1) of 150 pounds per cubic inch (pci) may be used. The Modulus of Subgrade Reaction (K_v) for the mat is not a constant for a given soil[2]. It depends on several factors, such as length and width of the foundation. Typically, the value of the K_v decreases with the width of the foundation and would vary according to the following equations:

- $K_v = K_{v1} * ((B+1)/(2*B))^2$ Foundations on Structural Fill

Where: K_v is the modulus for the size footing being analyzed
B is the width of the mat foundation

Mat Foundation Construction Considerations

On most sites, the site grading is generally accomplished early in the construction phase. However, as construction proceeds, the subgrade may be disturbed by foundation excavations, construction traffic, rainfall, etc. As a result, the subgrade may not be suitable for placement of fill, and corrective action will be required.

[2] Principle of Foundation Engineering, 3rd Edition, Braja M. Das; pgs. 260-265.

We recommend the area underlying the mat foundation be rough graded and proof-rolled with a vibratory roller or heavy plate compactor prior to final grading and placement of Structural Fill. Subgrades with fine-grained soils may need to be proof-rolled/compacted in static mode to avoid disturbance. Attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas previously filled or backfilled. Areas where unsuitable or unstable conditions are located should be repaired by replacing the affected material with properly compacted Structural Fill, as necessary. Surface drainage should be provided away from the edge of foundations to reduce moisture transmission into the subgrade.

Drilled Shaft Foundation Design

Transmission line structures are anticipated to be constructed as poles on drilled shafts or as direct embed poles.

Deep foundations, including drilled shaft foundations and/or direct embedment foundations with concrete backfill, may be utilized for the support of substation transmission line structures for the project. Drilled shaft foundations should have a minimum embedment depth of 4B (where B is the shaft diameter).

Based on the geotechnical engineering analyses, subsurface exploration and laboratory test results, the geotechnical design parameters have been determined for the subsurface profile and are presented in the following sections.

Design Parameters

Recommended geotechnical parameters for lateral load analysis of the drilled shaft foundations have been developed for L-PILE and MFAD analysis and they are presented in the following table:

Zone A							
Depth Range (ft)	**Soil Type (P-y) Curve Model[1]**	**Effective Unit Weight[1] (pcf)**	**Effective Cohesion, C'[1, 2] (ksf)**	**Friction Angle Φ' [1, 2] (degrees)**	**Pressure Modulus [2] (Ksi)**	**Ultimate Skin Friction[1, 2] (ksf)**	**Ultimate End Bearing[1, 2] (ksf)**
0-2	Sand (Reese)	110	0	29°	2	Neglect	---
2-7		58	0	29°	2	0.55	6.0
7-20		68	0	36°	4	0.85	16.0

Zone B							
Depth Range (ft)	Soil Type (P-y) Curve Model[1]	Effective Unit Weight[1] (pcf)	Effective Cohesion, C'[1, 2] (ksf)	Friction Angle Φ' [1, 2] (degrees)	Pressure Modulus [2] (Ksi)	Ultimate Skin Friction[1, 2] (ksf)	Ultimate End Bearing[1, 2] (ksf)
0-2	Sand (Reese)	110	0	29°	2	Neglect	---
2-7		58	0	31°	2	0.60	6.0
7-20		68	0	36°	4	0.85	16.0

Zone C							
Depth Range (ft)	Soil Type (P-y) Curve Model[1]	Effective Unit Weight[1] (pcf)	Effective Cohesion, C'[1, 2] (ksf)	Friction Angle Φ' [1, 2] (degrees)	Pressure Modulus [2] (Ksi)	Ultimate Skin Friction[1, 2] (ksf)	Ultimate End Bearing[1, 2] (ksf)
0-2	Sand (Reese)	110	0	29°	2	Neglect	---
2-7		63	0	33°	2	0.63	6.0
7-20		68	0	36°	4	0.85	16.0

Note: Estimated average depth to groundwater is 2 feet

1. For L-pile Analysis: Use default value for subgrade modulus reaction (k)
2. For MFAD Analysis

Lateral resistance and friction in the upper 2.5 feet should be ignored due to the potential effects of frost action, desiccation, and drilling disturbance. Tensile reinforcement should extend to the bottom of piers subjected to uplift loading. Buoyant unit weights of the soil and concrete should be used in the calculations below the highest anticipated groundwater elevation.

Provided the drilled shaft is designed and constructed in accordance with recommendations presented in this report, we estimate total post-construction settlement of the drilled pier will be 1-inch or less.

Drilled Shaft Construction Considerations

In some locations, shaft drilling through the weathered shale may be difficult based upon the material encountered within the borings. Concentrated effort and/or core barrels may be necessary to advance the shaft excavation through the weathered bedrock or further to the competent bedrock.

Groundwater was encountered during drilling and may be encountered during drilled shaft excavation. Therefore, temporary casing may be needed to advance drilled shaft excavations. Temporary casing should be installed if personnel will enter the shafts.

The bottom of the shaft excavations should be cleaned of any water and loose material before placing reinforcing steel and concrete. A minimum shaft diameter of at least 30 inches is required for entry of personnel.

Concrete should be placed soon after excavating to reduce bearing surface disturbance. Any water that accumulates in the shaft excavation should be pumped from the excavation. Otherwise, the water level should be allowed to stabilize and then concrete should be placed using the tremie method.

If concrete will be placed as the temporary casing is being removed, we recommend the concrete mixture be designed with a slump of about 5 to 7 inches to reduce the potential for arching when removing the casing. While removing the casing from a shaft excavation during concrete placement, the concrete inside the casing should be maintained at a sufficient level to resist any earth and hydrostatic pressures outside the casing during the entire casing removal procedure.

We recommend that a representative of Terracon be present during drilling activities to observe the materials removed from the drilled shaft excavation to document when adequate bearing materials have been encountered, to observe the base of the drilled shaft excavation to document that the cuttings have been adequately removed, and to observe concrete placement.

Although obvious signs of harmful gases such as methane, carbon monoxide, etc., were not noted in the borings during the drilling operations, gas could be encountered in the drilled shaft excavations during construction. The contractor should check for gases and/or oxygen deficiency prior to any workers entering the excavation. Casing will be required if personnel enter the excavation.

EARTHWORK

Earthwork will include clearing and grubbing as well as grading, excavation, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality control criteria as necessary to prepare the site subsurface conditions consistent with the conditions considered in our geotechnical engineering evaluation for slabs/mats, and aggregate surfaced roadways.

Site Preparation

The site is mostly fields with some wooded areas. Prior to placing fill, existing vegetation and root mat should be removed. Complete stripping of the topsoil, forest mat and otherwise unsuitable or

disturbed materials should be removed prior to placing fill. Stripped materials consisting of vegetation and organic materials should be wasted from the site or used to revegetate landscaped areas or exposed slopes after completion of grading operations. If it is necessary to dispose of organic materials on-site, they should be placed in non-structural areas, and in fill sections not exceeding 5 feet in height.

The exposed subgrade should be proof-compacted with a heavy vibratory roller in static mode on cohesive soil. Unstable subgrades should be replaced with compacted Structural Fill, as necessary. Structural Fill may then be placed to attain the required grade. Should Crushed Stone be used instead of Structural Fill, a geotextile separation fabric (Mirafi 140, or similar) should be placed on the native material prior to placing the Crushed Stone.

It is our understanding minimal grading will be performed within the solar arrays. Proposed grades will generally follow existing natural ground elevations. Except in areas to be excavated, stump holes and other holes caused by removal of tree roots and obstructions in wooded areas should be backfilled with suitable material and compacted in accordance with **Fill Compaction Requirements**. All grading within the equipment pads should incorporate the limits of the proposed structures plus a minimum lateral extent of 1 foot.

Based on the outcome of the proof-rolling operations, some undercutting or subgrade stabilization may be expected. Methods of stabilization, outlined below, could include scarification and re-compaction and/or replacing unstable materials with granular fill (with or without geotextiles). The more suitable method of stabilization, if required, will be dependent upon factors such as schedule, weather, size of area to be stabilized and the nature of the instability.

- **Scarification and Re-compaction** - It may be feasible to scarify, dry, and re-compact the exposed subgrades during periods of dry weather. The success of this procedure would depend primarily upon the extent of the disturbed area. Stable subgrades may not be achievable if the thickness of the soft soil is greater than 12 inches.
- **Granular Fill** - The use of Crushed Stone or Structural Fill could be considered to improve subgrade stability. Typical undercut depths would range from about 8 to 24 inches. The use of high modulus geotextiles should be limited to outside of the array area. The maximum particle size of granular material placed immediately over geotextile fabric or geogrid should not exceed 2 inches.

Reuse of On-Site Materials

Excavated soils may be suitable for reuse as Structural Fill to attain proposed subgrade elevation, provided during construction proper compaction and optimum moisture content can be achieved. If construction is performed during the wet season, it is possible the moisture content of the excavated soils is in excess of the optimum moisture content required to achieve proper compaction, and proper compaction of the on-site soils may be difficult to achieve. We anticipate

imported Structural Fill may be required. Saturated soils which cannot achieve compaction should be removed or used in non-structural areas where significant post construction settlement is acceptable. The contractor is ultimately responsible for moisture conditioning of fill/backfill materials to achieve proper compaction.

Fill Material Types

Fill required to achieve design grade should be classified as Structural Fill and General Fill. Structural Fill is material used below, or within 10 feet of equipment slabs/mats, roadways or constructed slopes. General Fill is material used to achieve grade outside of these areas. Earthen materials used for Structural and General Fill should meet the following material property requirements:

Fill Type [1]	USCS Classification or NYSDOT Specification	Acceptable Location for Placement
Structural Fill [2]	GW, GW-GM, SW, SW-SM, SP, GP	All locations and elevations; NYSDOT Item 733-0402, Type 2 is suitable to be used as imported Structural Fill.
Common Fill [3]	Varies	Common Fill may be used for general site grading. Common Fill should not be used under settlement or frost-sensitive structures.
Non-Frost Susceptible (NFS) Fill [4]	GW, GP, SW, SP	Under slabs, or as raise-in-grade fill to reduce potential effects of frost action.
Crushed Stone	GP	For leveling subgrades and to facilitate dewatering, if required. Should be uniform ¾-inch angular Crushed Stone wrapped in a geotextile separation fabric (Mirafi 140N, or similar).
Lean Concrete	Not applicable	Can be used to level subgrades between foundations and native soils. Lean Concrete should be flowable, self-compacting concrete with a compressive strength between 750 and 2,000 psi.

Fill Type [1]	USCS Classification or NYSDOT Specification	Acceptable Location for Placement

1. Compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used. Fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.
2. **Imported Structural Fill** should meet the following gradation specifications:

Structural Fill	
Sieve Size	**Percent Passing by Weight**
2″	100
¼ in	25-60
No. 40	5-40
No. 200	0 - 10

3. General Fill should have a maximum particle size of 6 inches and no more than 20 percent by weight passing the No. 200 sieve.
4. NFS Fill should contain less than 5 percent material passing No. 200 sieve size.

Fill Compaction Requirements

Structural and General Fill should meet the following compaction requirements.

Item	Description
Maximum Fill Lift Thickness	■ 12 inches or less in loose thickness when heavy, self-propelled compaction equipment is used. ■ 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used.
Compaction Requirements [1]	95 percent maximum modified Proctor dry density (ASTM D1557, Method C).
Moisture Content – Granular Material	Workable moisture levels.

1. We recommend fill be tested for moisture content and compaction during placement. Should the results of the in-place density tests indicate the specified moisture or compaction limits have not been met, the area represented by the test should be reworked and retested, as required, until the specified moisture and compaction requirements are achieved.

Utility Trench Backfill

Trench excavations should be made with sufficient working space to permit construction including backfill placement and compaction. As utility trenches can provide a conduit for groundwater flow, trenches should be backfilled with material that approximately matches the permeability characteristics of the surrounding soil. Consideration should be given to installing seepage collars and/or check dams to reduce the likelihood of migration of water through the trenches.

Grading and Drainage

Adequate drainage should be provided at the site to reduce the likelihood of an increase in moisture content of the foundation soils. Surface drainage would likely consist of limited swales to control erosion and flow of runoff towards the equipment.

Earthwork Construction Considerations

Most part of the excavations for the bearing grade of proposed project can be achieved with conventional construction equipment. Although the exposed soil subgrade is anticipated to be relatively stable upon initial exposure, unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. Should unstable subgrade conditions develop, stabilization measures will need to be employed.

Excavations for foundations and utilities may encounter very dense soil (likely with cobbles and/or boulders) and shallow weathered bedrock in some locations. Contractors, especially those digging utilities and working in planned cut areas, should consider “hard dig” conditions may exist and should satisfy themselves based on the hardness of the soil and bedrock. The Civil Engineer should also consider shallow placement of underground utilities if possible, to minimize excavation costs.

Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of slabs. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over, or adjacent to, construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted, prior to slab construction.

As a minimum, temporary excavations should be sloped or braced, as required by Occupational Safety and Health Administration (OSHA) regulations, to provide stability and safe working conditions. The contractor is usually responsible for designing and constructing stable, temporary excavations and should shore, slope or bench the sides of the excavations, as required, to maintain stability of both the excavation sides and bottom. All excavations should comply with applicable local, State, and federal safety regulations, including the current OSHA Excavation and Trench Safety Standards.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for

construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

A qualified testing agency should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation; proof-rolling; placement and compaction of controlled compacted fills; backfilling of excavations in the completed subgrade; and for construction of foundations.

Each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 5,000 square feet of compacted fill in open areas and every 50 linear feet of compacted utility trench backfill. In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

SEISMIC CONSIDERATIONS

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC). Based on the soil and bedrock properties encountered at the site and as described on the exploration logs and results, it is our professional opinion that the **Seismic Site Classification** is **D**. Subsurface explorations at this site were extended to a maximum depth of 34 feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

ACCESS ROADWAYS

General Comments

Surficial materials below the topsoil at the site primarily consists of loose to medium dense mixtures of silt, sand and gravel. It is expected that the proposed site grades will be established near the existing site grades using engineered fill material similar to the surficial soils to level the planned haul road areas.

We understand that haul roads consist of aggregate sections with no asphalt or concrete surface. Recommendations are presented below for two alternative aggregate sections: one assuming the aggregate section placed over stable, proofrolled native subgrade materials; the second for the case where achieving a stabilized subgrade may be difficult or not possible due to weather conditions at the time of construction.

The access road area subgrades should be properly sloped to direct water from beneath the drive area gravel section toward the edge, and/or down gradient. Collected water should be channeled away from the access road. Adequate sloping of the gravel surface will minimize the potential for ponding of water on or within proximity to the drive area, which will shorten the life of the unpaved roadways.

The aggregate sections presented in this report are considered minimal sections based upon the expected traffic and the composite subgrade conditions; however, they are expected to function with periodic maintenance if good drainage is provided and maintained.

Aggregate Section Over Stable Subgrade

The haul road subgrades should be prepared in accordance with the recommendations provided in **Earthwork** section, above, including proof-rolling and removal/replacement of soft/unstable areas identified by the proof-rolling. These subgrades should be prepared immediately prior to the time of aggregate placement to reduce the risk of disturbance due to weather or construction vehicle traffic. If this cannot be done, the subgrades should be reevaluated by a qualified Geotechnical Engineer for disturbance or softening immediately prior to aggregate placement. For subgrades prepared in accordance with **Earthwork** section, we recommend that the aggregate section consist of a minimum 9 inches of NYSDOT Type 2 Subbase Course Aggregate compacted to 95 percent of its maximum dry density as determined by the ASTM D1557 test procedure (Modified Proctor Test).

To maintain surface drainage, the subgrade should have a minimum ¼-inch per foot slope and the final grade adjacent to the road should slope down from road edges at a minimum 2 percent.

Aggregate Section Over Weak Subgrades

The requested pervious haul road could also be established over a relatively weak subgrade with CBR values less than 3, which would allow placement of the roadway section over on-site soils with minimal subgrade preparation activities, without the need for proof-rolling with a heavy construction equipment.

For this scenario, we recommend that the aggregate section consist of a minimum of 12 inches of compacted NYSDOT Type 2 Subbase Course Aggregate placed over high-performance geotextile Mirafi RS380i, or equivalent, installed over the existing subgrade. The high-performance geotextile will provide reinforcement strength to the aggregate material and will limit migration from the underlying subgrade, which may contribute to its degradation and loss of strength. Based upon the soil conditions at the time of construction, additional Subbase Course Aggregate and/or multiple layers of high-strength geotextile may be required to stabilize the aggregate section.

In areas where fill materials are required to level the proposed pavement subgrade, we recommend that these fill materials be compacted at least to the density of the existing subgrade soils.

Haul Road Maintenance

Regardless of the design, unsurfaced roadways will display varying levels of wear and deterioration. We recommend implementation of a site inspection program at a frequency of at least once per year to verify the adequacy of the roadways. Preventative measures should be applied as needed for erosion control and regrading. An initial site inspection should be completed approximately three months following construction. For planning purposes, we recommend assuming that over time the placement of additional aggregate material will likely be required to level depressions and long-term rutting. These areas should be filled with additional aggregate rather than scalping of material from adjacent areas.

Shoulder build-up on both sides of proposed roadways should match the road surface elevation and slope outwards at a minimum grade of 10 percent for five feet. Surface drainage should be provided away from the edge of roadways to reduce lateral moisture transmission into the subgrade.

When potholes, ruts, depressions or yielding subgrades develop, they must be repaired prior to applying additional traffic loads. Typical repairs could consist of placing additional Crushed Stone in ruts or depressed areas and, in some cases, complete removal of Crushed Stone surfacing, repair of unstable subgrade, and replacement of the Crushed Stone surfacing. Potholes and depressions should not be filled by blading adjacent ridges or high areas into the depressed areas. New material should be added to the depressed areas as they develop. Failure to make timely

repairs will result in more rapid deterioration of the roadways, making more extensive repairs necessary.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

ATTACHMENTS

APPENDIX A

LOCATION PLAN AND FIELD EXPLORATION RESULTS

(Exhibits: A001 through A049)

SITE LOCATION

NextEra Byron Solar Site ■ Genesee County, New York

Terracon Project No. J5195162

Terracon GeoReport

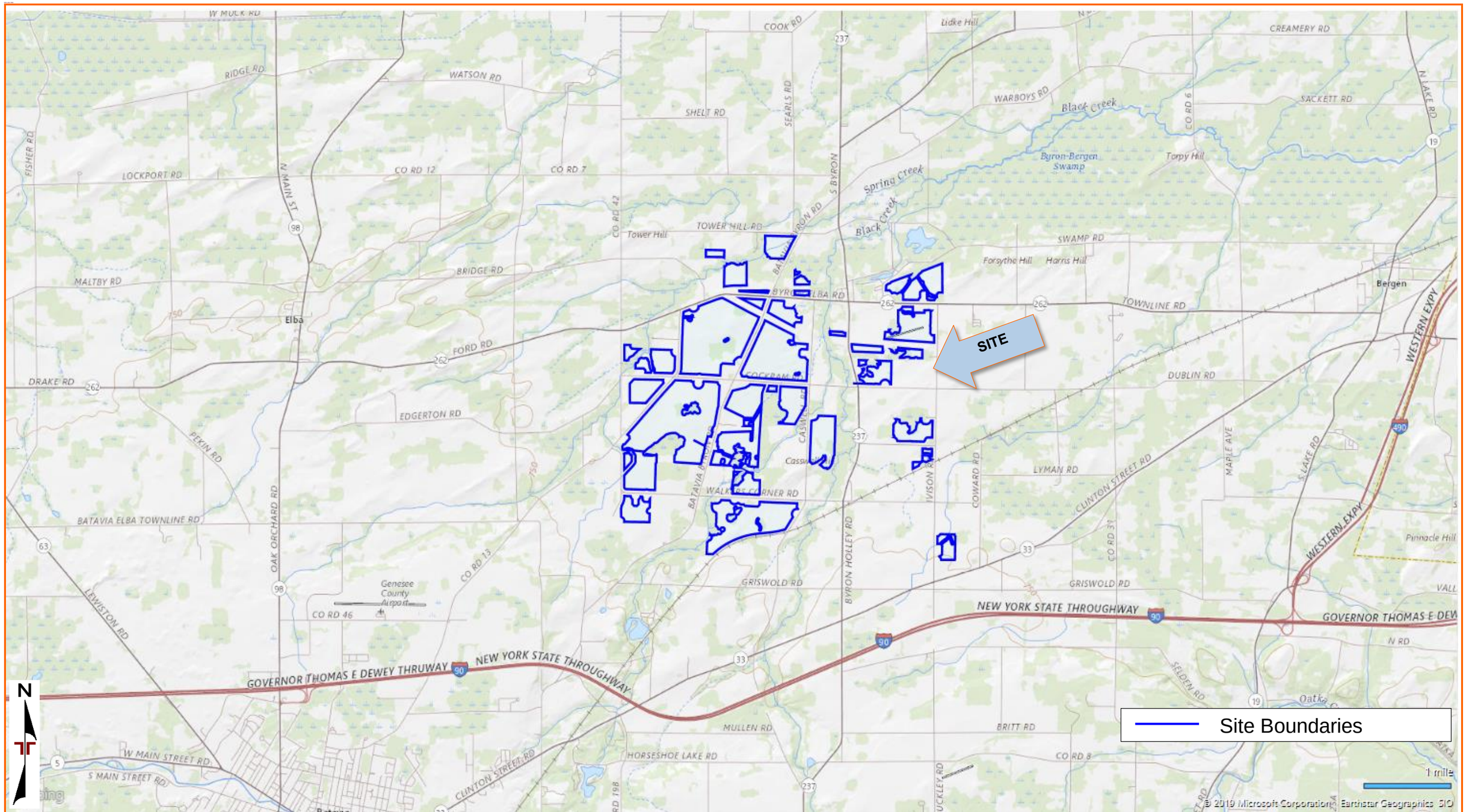
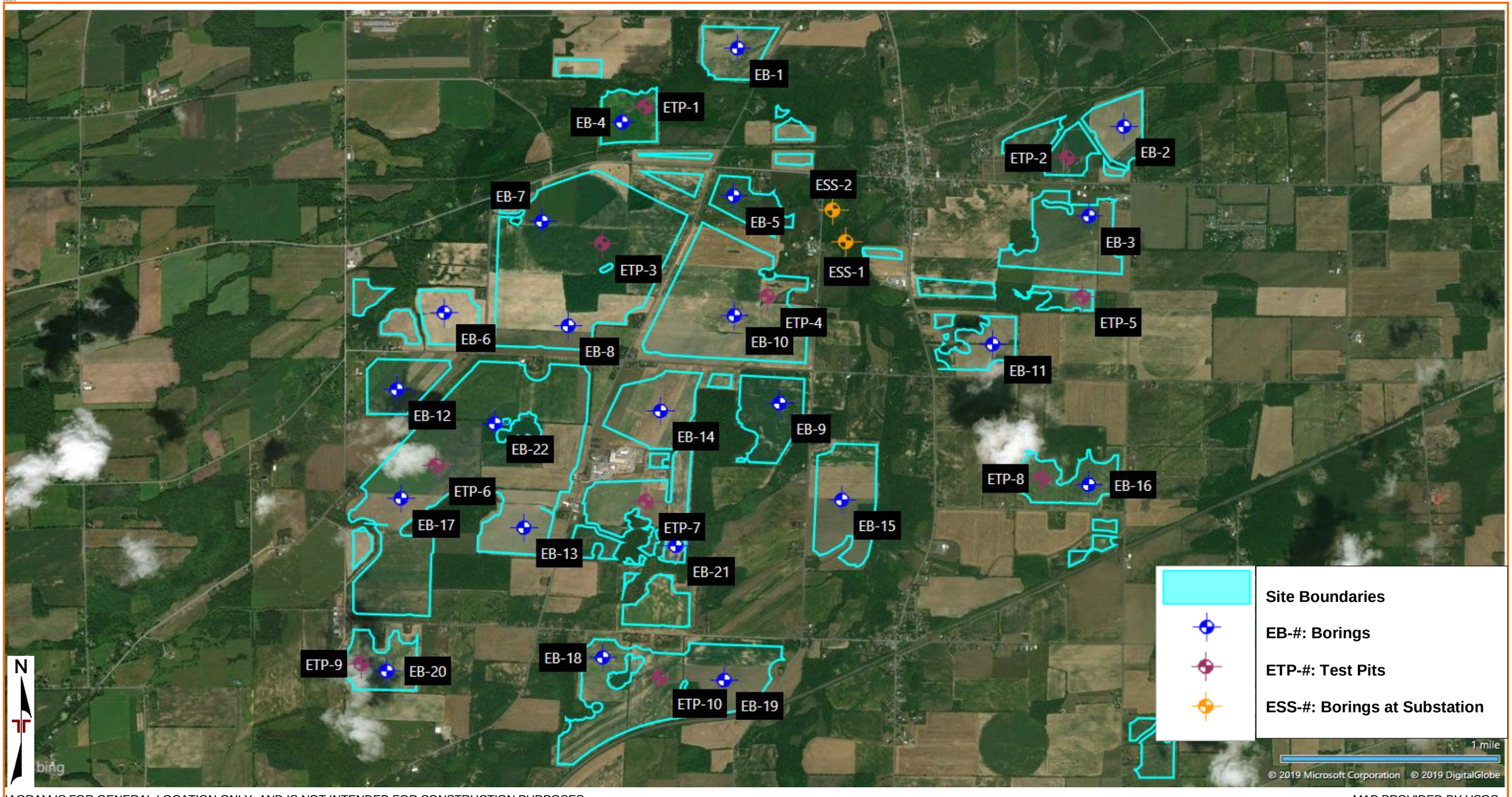


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN: BORING LOCATIONS

NextEra Byron Solar Site ■ Genesee County, New York
Terracon Project No. J5195162



IAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY USGS

EXPLORATION PLAN: ZONES BASED ON PILE LOAD TESTS (PLT)

NextEra Byron Solar Site ■ Genesee County, New York

Project No. J5195162

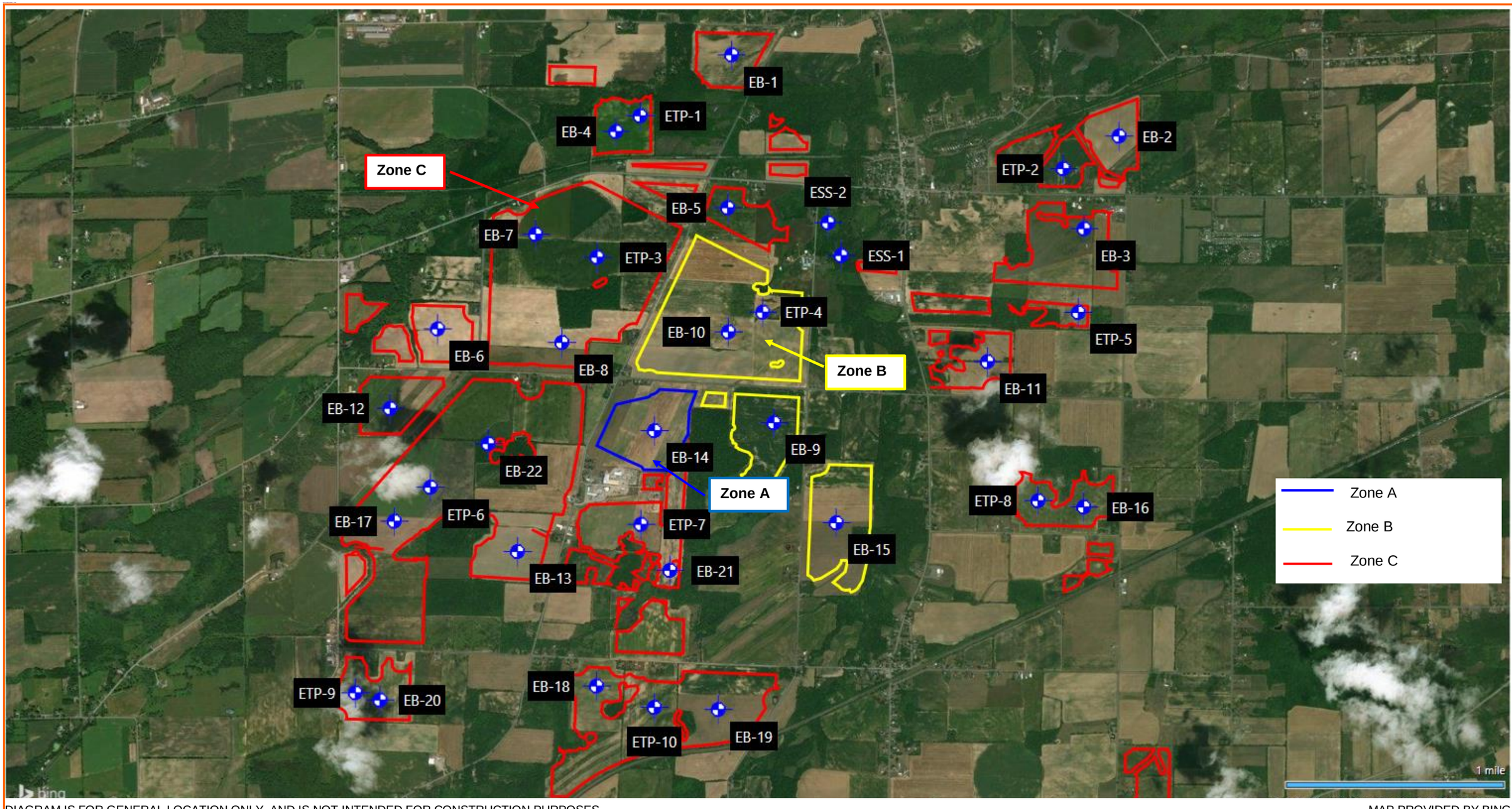


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY BING

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

Excelsior (Byron) Solar Site - Preliminary ■ Byron, NY

■ Terracon Project No. J5195162

Terracon GeoReport

SAMPLING

Rock Core

Grab Sample

Standard Penetration Test

WATER LEVEL

Water Initially Encountered

Water Level After a Specified Period of Time

Water Level After a Specified Period of Time

Cave In Encountered

Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.

FIELD TESTS

N	**Standard Penetration Test Resistance (Blows/Ft.)**
(HP)	**Hand Penetrometer**
(T)	**Torvane**
(DCP)	**Dynamic Cone Penetrometer**
UC	**Unconfined Compressive Strength**
(PID)	**Photo-Ionization Detector**
(OVA)	**Organic Vapor Analyzer**

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance		**CONSISTENCY OF FINE-GRAINED SOILS** (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**
Very Loose	0 - 3	Very Soft	less than 0.25	0 - 1
Loose	4 - 9	Soft	0.25 to 0.50	2 - 4
Medium Dense	10 - 29	Medium Stiff	0.50 to 1.00	4 - 8
Dense	30 - 50	Stiff	1.00 to 2.00	8 - 15
Very Dense	> 50	Very Stiff	2.00 to 4.00	15 - 30
		Hard	> 4.00	> 30

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

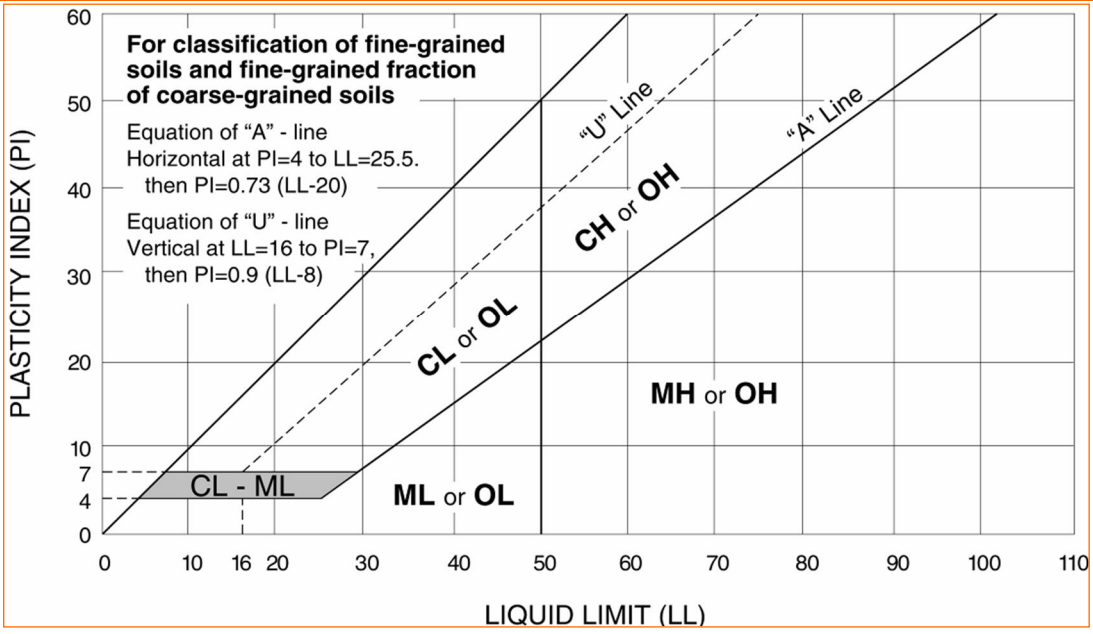
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



DESCRIPTION OF ROCK PROPERTIES

WEATHERING	
Term	**Description**
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	**Field Identification**	**Uniaxial Compressive Strength, psi (MPa)**
Extremely weak	Indented by thumbnail	40-150 (0.3-1)
Very weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
Weak rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
Medium strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
Strong rock	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
Very strong	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
Extremely strong	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		**Bedding Spacing (May Include Foliation or Banding)**	
Description	**Spacing**	**Description**	**Spacing**
Extremely close	< ¾ in (<19 mm)	**Laminated**	< ½ in (<12 mm)
Very close	¾ in – 2-1/2 in (19 - 60 mm)	**Very thin**	½ in – 2 in (12 – 50 mm)
Close	2-1/2 in – 8 in (60 – 200 mm)	**Thin**	2 in – 1 ft. (50 – 300 mm)
Moderate	8 in – 2 ft. (200 – 600 mm)	**Medium**	1 ft. – 3 ft. (300 – 900 mm)
Wide	2 ft. – 6 ft. (600 mm – 2.0 m)	**Thick**	3 ft. – 10 ft. (900 mm – 3 m)
Very Wide	6 ft. – 20 ft. (2.0 – 6 m)	**Massive**	> 10 ft. (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0-degree angle.

ROCK QUALITY DESIGNATION (RQD) [1]	
Description	**RQD Value (%)**
Very Poor	0 - 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 - 100

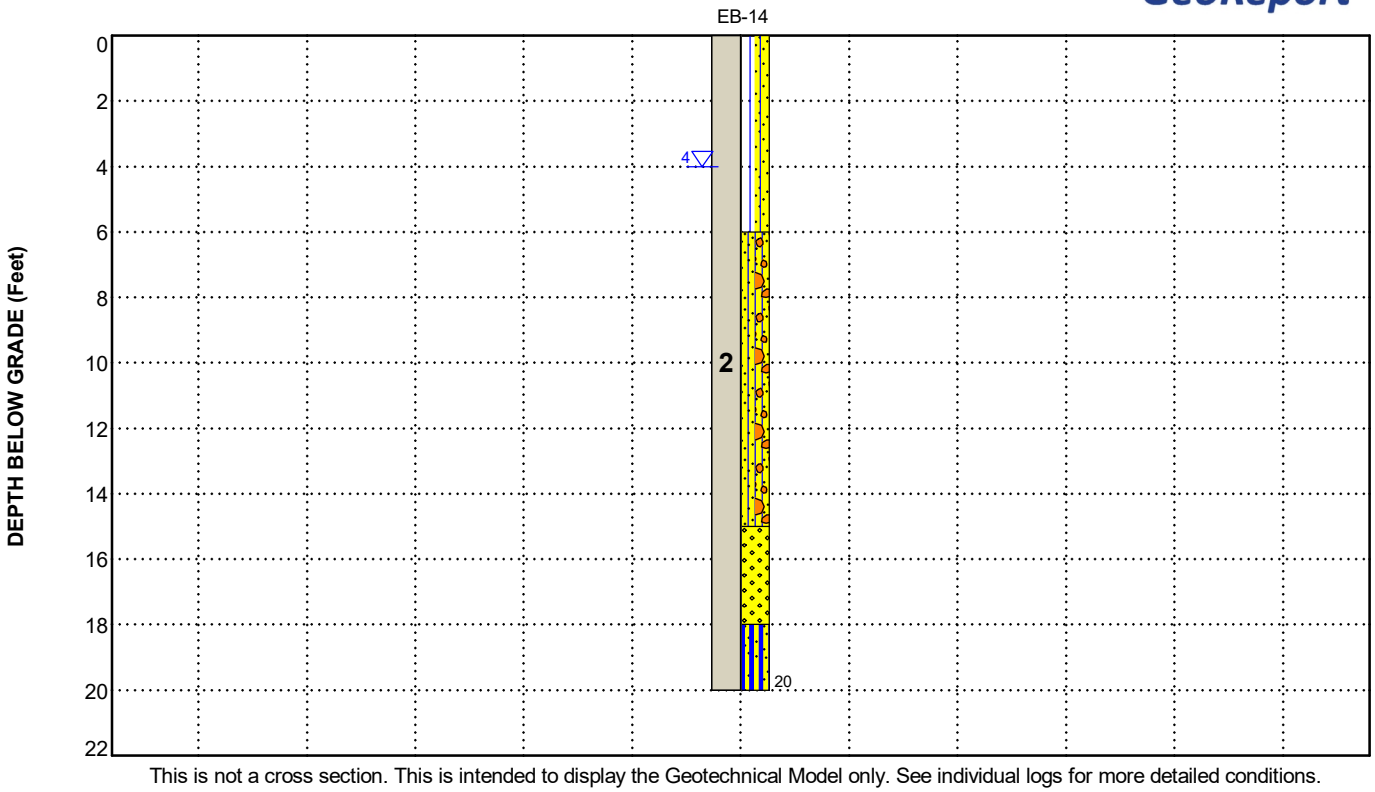
1. The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009
Technical Manual for Design and Construction of Road Tunnels – Civil Elements

GEOMODELS (Exhibits: A007 through A012)
BORING LOGS AND TEST PITS: (Exhibits: A013 through A048)
INFILTRATION TEST DATA: (Exhibits: A049)

GEOMODEL-ZONE A

Excelsior (Byron) Solar Site - Preliminary ■ Byron, NY
Terracon Project No. J5195162



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Surficial	Topsoil: black and brown
2	Native Layer	Clay, Silt and Sand and Gravel mixtures (CL-ML; SM; ML;GM; GC); occasional cobble fragments; red brown to gray
3	Weathered Bedrock	Completely to slightly weathered shale or dolostone; gray or olive-gray
4	Bedrock	Shale: unweathered to slightly weathered gray;medium strong, thinly bedded, fractured with occasional gypsum seams

LEGEND

- Silt with Sand
- Sandy Silt
- Silty Sand with Gravel
- Well-graded Sand

- First Water Observation
- Second Water Observation
- Third Water Observation

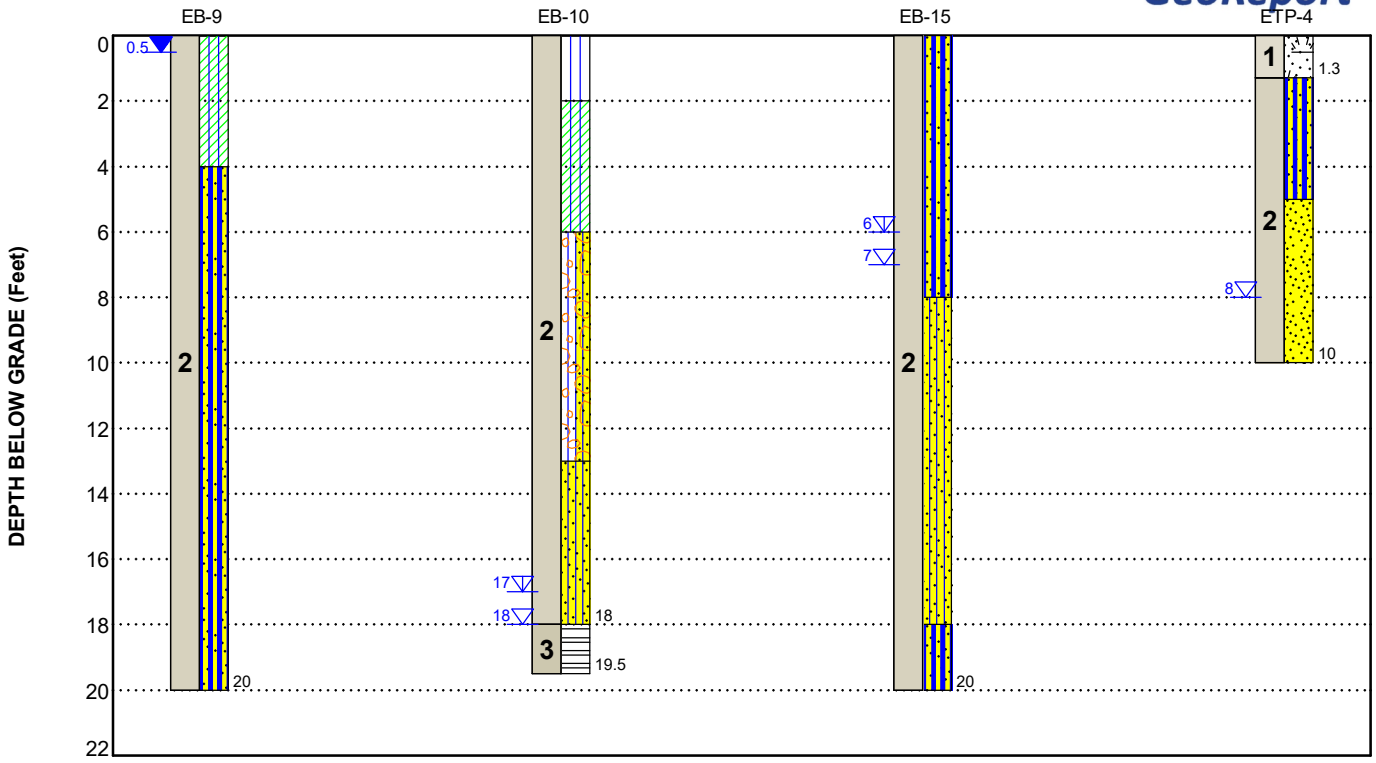
Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL-ZONE B

Excelsior (Byron) Solar Site - Preliminary ■ Byron, NY
Terracon Project No. J5195162

Terracon GeoReport



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Surficial	Topsoil: black and brown
2	Native Layer	Clay, Silt and Sand and Gravel mixtures (CL-ML; SM; ML;GM; GC); occasional cobble fragments; red brown to gray
3	Weathered Bedrock	Completely to slightly weathered shale or dolostone; gray or olive-gray
4	Bedrock	Shale: unweathered to slightly weathered gray;medium strong, thinly bedded, fractured with occasional gypsum seams

LEGEND

- Silty Clay
- Sandy Silt
- Silt
- Silty Gravel with Sand
- Silty Sand
- Highly Weathered Shale
- Topsoil
- Poorly-graded Sand

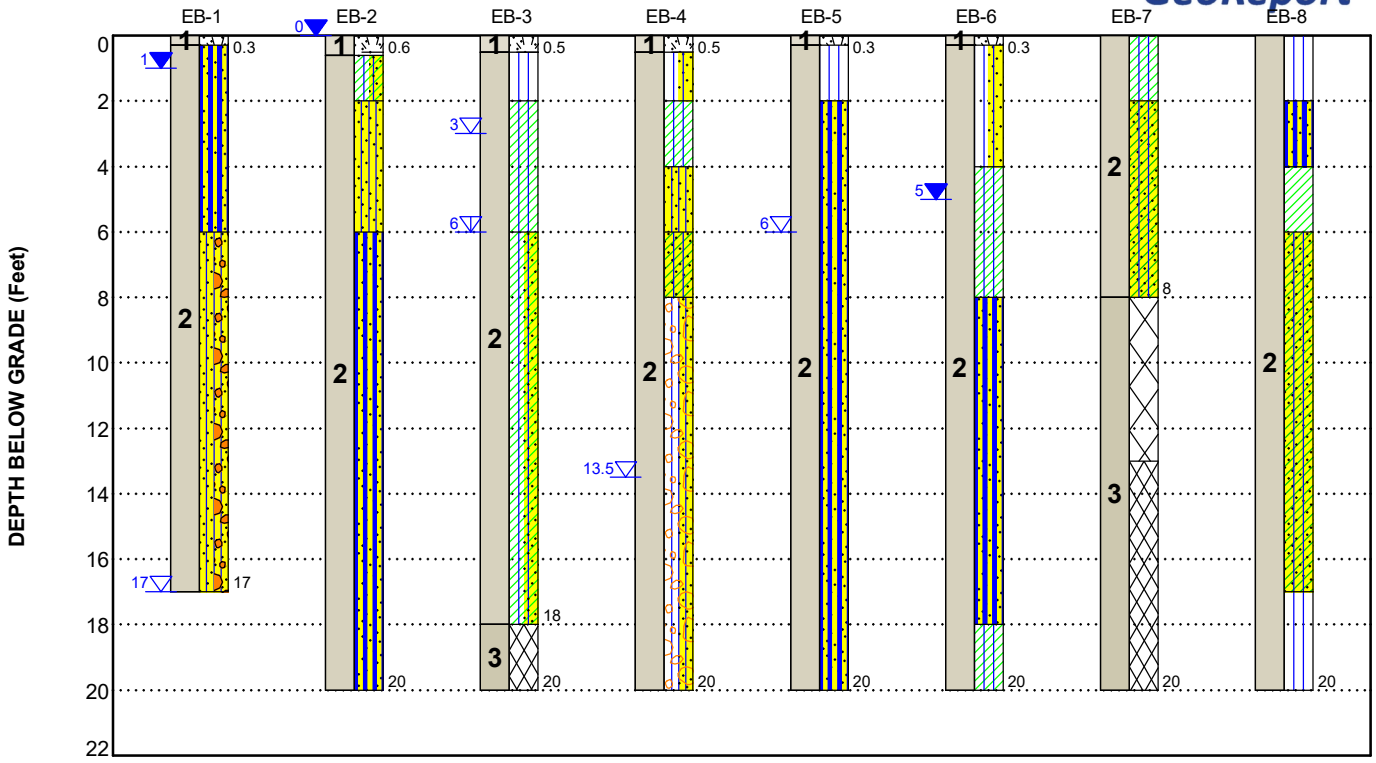
- First Water Observation
- Second Water Observation
- Third Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL- ZONE C(1)

Excelsior (Byron) Solar Site - Preliminary ■ Byron, NY
Terracon Project No. J5195162



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	**Surficial**	Topsoil: black and brown
2	**Native Layer**	Clay, Silt and Sand and Gravel mixtures (CL-ML; SM; ML;GM; GC); occasional cobble fragments; red brown to gray
3	**Weathered Bedrock**	Completely to slightly weathered shale or dolostone; gray or olive-gray
4	**Bedrock**	Shale: unweathered to slightly weathered gray;medium strong, thinly bedded, fractured with occasional gypsum seams

LEGEND

- Topsoil
- Silty Clay with Sand
- Silty Clay
- Sandy Silty Clay
- Lean Clay
- Sandy Silt
- Silty Sand
- Highly Weathered Shale
- Silty Gravel with Sand
- Silty Sand with Gravel
- Silt
- Silt with Sand
- Weathered Rock

First Water Observation
Second Water Observation
Third Water Observation

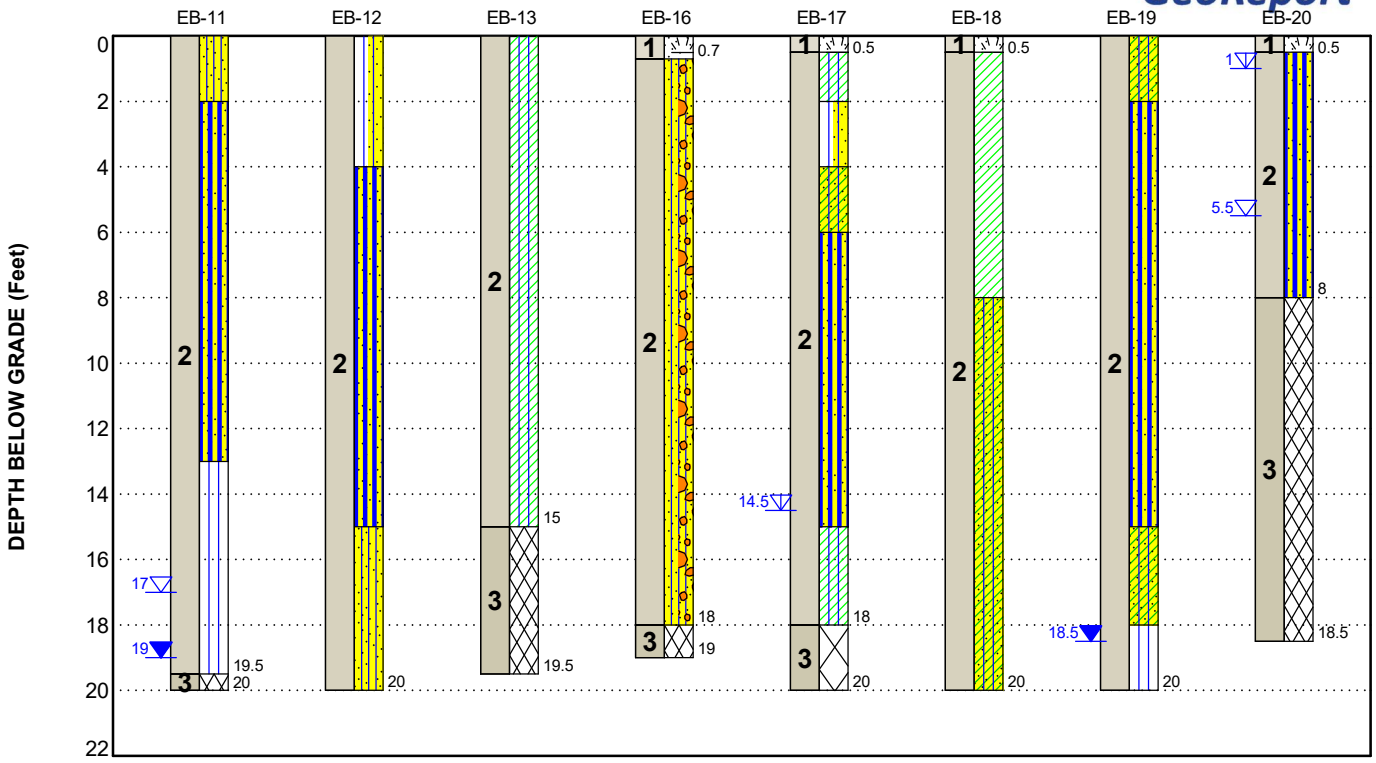
Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL-ZONE C(2)

Excelsior (Byron) Solar Site - Preliminary ■ Byron, NY
Terracon Project No. J5195162

Terracon GeoReport



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	**Surficial**	Topsoil: black and brown
2	**Native Layer**	Clay, Silt and Sand and Gravel mixtures (CL-ML; SM; ML;GM; GC); occasional cobble fragments; red brown to gray
3	**Weathered Bedrock**	Completely to slightly weathered shale or dolostone; gray or olive-gray
4	**Bedrock**	Shale: unweathered to slightly weathered gray;medium strong, thinly bedded, fractured with occasional gypsum seams

LEGEND

- Silty Sand
- Sandy Silt
- Silt
- Highly Weathered Shale
- Silt with Sand
- Silty Clay
- Topsoil
- Silty Sand with Gravel
- Sandy Silty Clay
- Weathered Rock
- Lean Clay

- First Water Observation
- Second Water Observation
- Third Water Observation

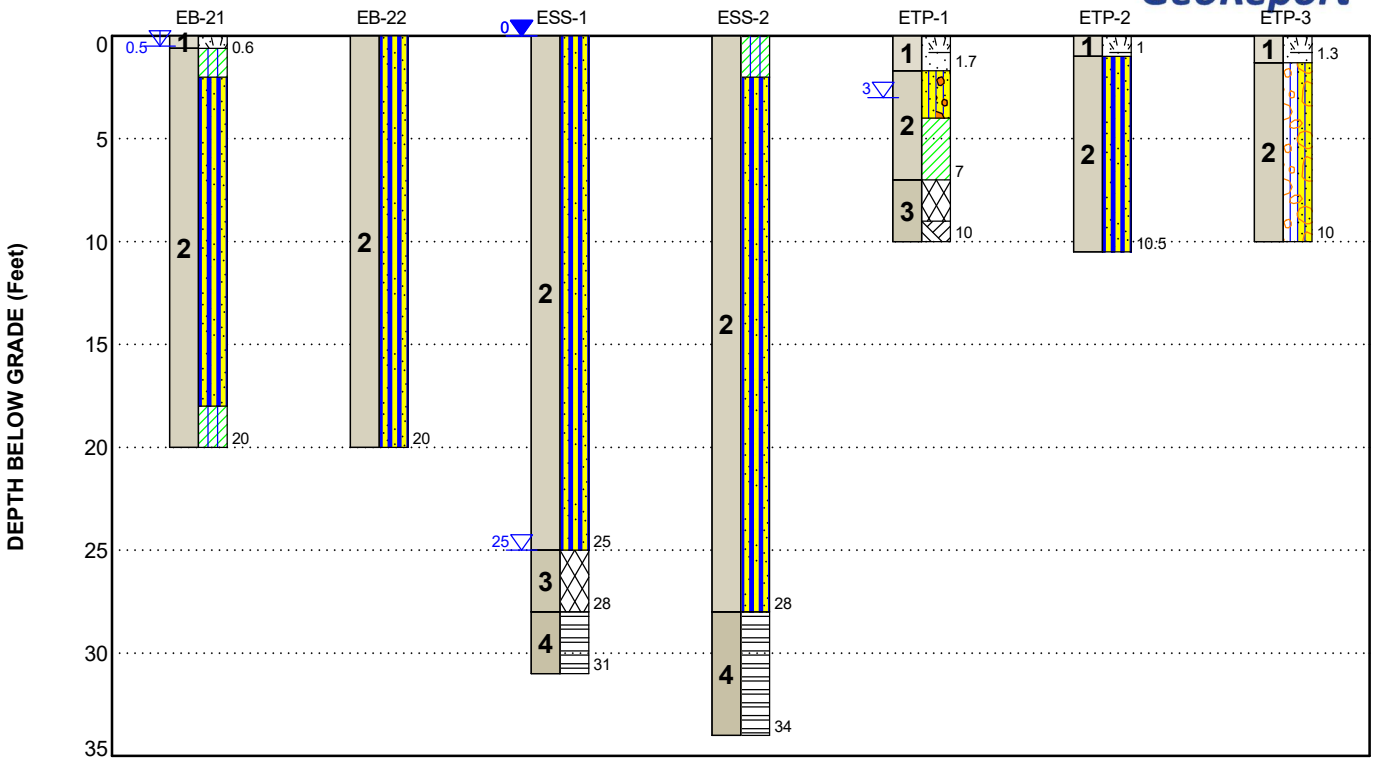
Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL-ZONE C(3)

Excelsior (Byron) Solar Site - Preliminary ■ Byron, NY
Terracon Project No. J5195162

Terracon GeoReport



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	**Surficial**	Topsoil: black and brown
2	**Native Layer**	Clay, Silt and Sand and Gravel mixtures (CL-ML; SM; ML;GM; GC); occasional cobble fragments; red brown to gray
3	**Weathered Bedrock**	Completely to slightly weathered shale or dolostone; gray or olive-gray
4	**Bedrock**	Shale: unweathered to slightly weathered gray;medium strong, thinly bedded, fractured with occasional gypsum seams

LEGEND

- Topsoil
- Silty Clay
- Sandy Silt
- Highly Weathered Shale
- Shale
- Silty Sand with Gravel
- Lean Clay
- Bedrock
- Silty Gravel with Sand

- First Water Observation
- Second Water Observation
- Third Water Observation

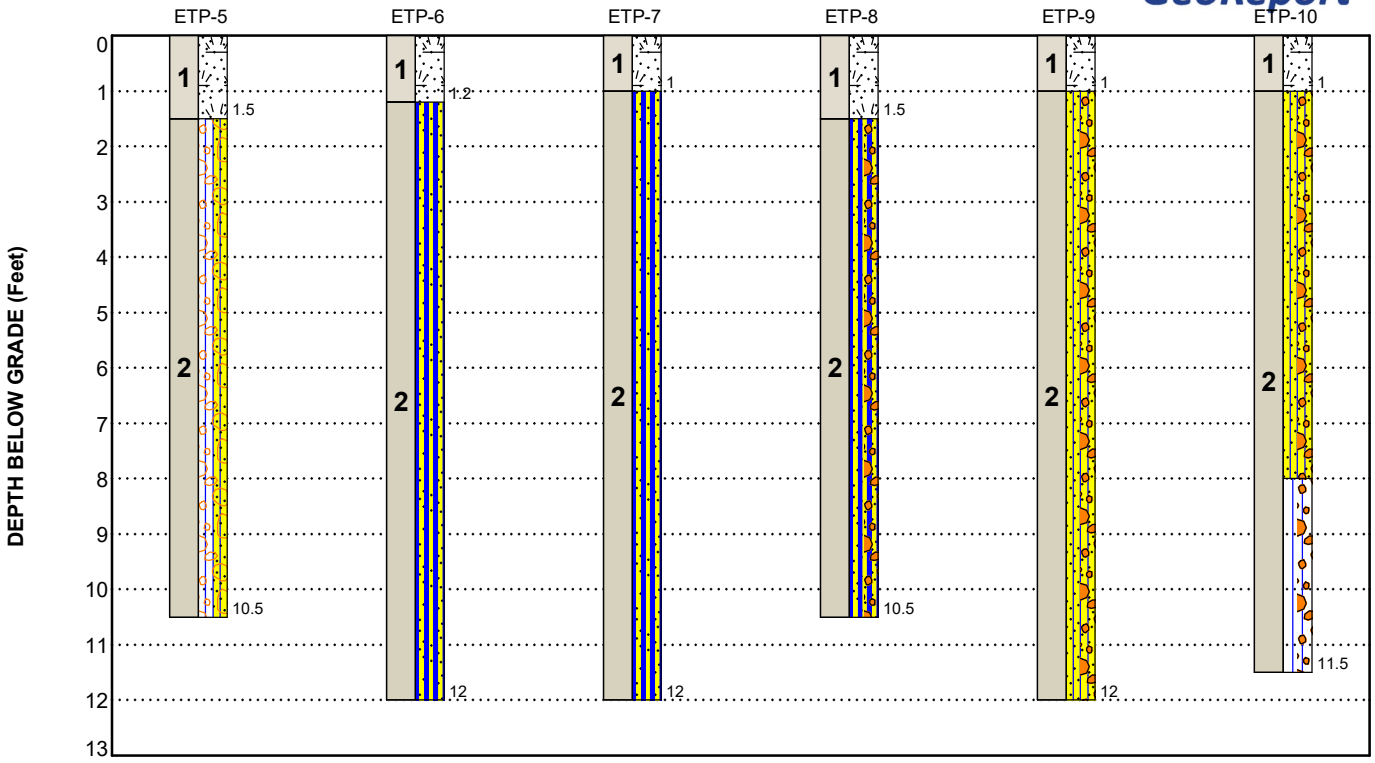
Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time. Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

GEOMODEL-ZONE C(4)

Excelsior (Byron) Solar Site - Preliminary ■ Byron, NY
Terracon Project No. J5195162

Terracon GeoReport



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	**Surficial**	Topsoil: black and brown
2	**Native Layer**	Clay, Silt and Sand and Gravel mixtures (CL-ML; SM; ML;GM; GC); occasional cobble fragments; red brown to gray
3	**Weathered Bedrock**	Completely to slightly weathered shale or dolostone; gray or olive-gray
4	**Bedrock**	Shale: unweathered to slightly weathered gray;medium strong, thinly bedded, fractured with occasional gypsum seams

LEGEND

- Topsoil
- Sandy Silt with Gravel
- Silty Gravel with Sand
- Silty Sand with Gravel
- Sandy Silt
- Silt with Gravel

- First Water Observation
- Second Water Observation
- Third Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.
Numbers adjacent to soil column indicate depth below ground surface.

BORING LOG NO. EB-1

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0886° Longitude: -78.08°

Approximate Surface Elev.: 617 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1	0.3	616.5+/-	**TOPSOIL**							
			SANDY SILT (ML), trace gravel, red-brown, medium stiff		▼		20	1-4-4-5 N=8		10
			Becomes hard				18	10-34-33-17 N=67		9
				5			24	25-21-21-4 N=42		8
	6.0	611+/-								
2			**SILTY SAND WITH GRAVEL (SM)**, brown gray, very dense, contains occasional cobble fragments				24	23-28-32-35 N=60		8
							24	17-32-20-32 N=52		6
				10						
							20	29-27-33-31 N=60		7
				15						
	17.0	600+/-			▽					
			Sample Spoon and Auger Penetration Refusal Encountered at 17 Feet				0	50/0"		

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
Monitoring well was installed at this location

WATER LEVEL OBSERVATIONS

▽ *17 ft BGS at completion of drilling on 10/23/2019*

▼ *1 ft BGS on 11/26/2019*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-23-2019 | Boring Completed: 10-23-2019

Drill Rig: Mobile B-57 | Driller: N. Francis

Project No.: J5195162

BORING LOG NO. EB-2

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0833° Longitude: -78.045°

Approximate Surface Elev.: 620 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0.6	619.5+/-	**TOPSOIL**							
				SILTY CLAY WITH SAND (CL-ML), trace gravel, brown, medium stiff				14	3-3-4-2 N=7		
		2.0	618+/-								
				SILTY SAND (SM), trace gravel, red-brown, medium dense to dense				14	11-11-9-11 N=20		
					5			24	5-18-12-15 N=30		
		6.0	614+/-								
2				**SANDY SILT (ML)**, trace gravel, red-brown, hard				16	20-22-27-50/5" N=49		
				Contains occasional cobble fragments				24	10-28-25-30 N=53		
					10						
					15						
				Becomes brown-gray				20	3-30-31-36 N=61		
								20	14-32-50-50/5" N=82		
		20.0	600+/-		20						
				Sample Spoon Penetration Refusal Encountered at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
Monitoring well was installed at this location

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

0 ft BGS on 11/26/2019

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-17-2019 | Boring Completed: 10-17-2019

Drill Rig: Mobile B-57 | Driller: N. Francis

Project No.: J5195162

BORING LOG NO. EB-3

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0772° Longitude: -78.0482°

Approximate Surface Elev.: 640 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)	
1	0.5	639.5+/-	**TOPSOIL**
			SILT (ML), trace sand, trace clay, brown, soft
			Becomes medium stiff to stiff, red-brown
	6.0	634+/-	
2			**SILTY CLAY WITH SAND (CL-ML)**, trace gravel, brown, stiff to very stiff
			Becomes hard
	18.0	622+/-	
3			**HIGHLY WEATHERED SHALE ROCK**, olive-gray
	20.0	620+/-	
			Sample Spoon Penetration Refusal Encountered at 20 Feet

DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
			18	2-2-2-2 N=4		
	▽		20	2-3-3-3 N=6		
5			16	3-5-6-6 N=11		
	▽		18	5-9-8-8 N=17		
			15	3-4-6-8 N=10		
10						
15			8	18-50/4"		
			13	14-14-25-50/5" N=39		
20						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *3 ft BGS while drilling*

▽ *6 ft BGS at completion of drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-17-2019 | Boring Completed: 10-17-2019

Drill Rig: Mobile B-57 | Driller: N. Francis

Project No.: J5195162

BORING LOG NO. EB-4

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0836° Longitude: -78.0905°

Approximate Surface Elev.: 636 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1	0.5	635.5+/-	**TOPSOIL**							
			SILT WITH SAND (ML), trace organic matter, black, medium stiff				24	4-4-4-6 N=8		18
	2.0	634+/-								
			SILTY CLAY (CL-ML), trace sand, red-brown, stiff				24	4-5-5-6 N=10		19
	4.0	632+/-								
			SILTY SAND (SM), trace clay, trace gravel, red-brown, loose	5			20	2-3-4-9 N=7		15
	6.0	630+/-								
			SANDY SILTY CLAY (CL-ML), trace gravel, red-brown, very stiff				24	6-8-14-16 N=22		14
	8.0	628+/-								
2			**SILTY GRAVEL WITH SAND (SM)**, trace clay, trace cobble fragments, gray, medium dense to dense				24	12-11-10-13 N=21		8
				10						
					▽		20	31-18-24-29 N=42		9
				15						
			Becomes brown, becomes very dense				11	27-50/5"		5
	20.0	616+/-		20						
			Sample Spoon Penetration Refusal Encountered at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *13.5 ft BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-24-2019 | Boring Completed: 10-24-2019

Drill Rig: Mobile B-57 | Driller: N. Francis

Project No.: J5195162

BORING LOG NO. EB-5

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0786° Longitude: -78.0804°

Approximate Surface Elev.: 662 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1	0.3	661.5+/-	**TOPSOIL**							
			ORGANIC SILT WITH CLAY (ML), trace sand, black, medium stiff				20	2-2-3-5 N=5		24
	2.0	660+/-	**SANDY SILT (ML)**, trace gravel, red-brown, stiff				24	3-4-6-10 N=10		11
			Becomes very stiff	5	▽		24	12-14-16-18 N=30		10
							24	13-15-12-30 N=27		10
			Contains numerous cobble fragments, becomes hard				24	11-25-19-20 N=44		10
2				10						
			Becomes dark gray, contins trace shale fragments				6	18-30-27-27 N=57		7
				15						
			Becomes stiff				2	17-5-8-18 N=13		
	20.0	642+/-		20						
			Boring Terminated at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *6 ft BGS while drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-24-2019 | Boring Completed: 10-24-2019

Drill Rig: Mobile B-57 | Driller: N. Francis

Project No.: J5195162

BORING LOG NO. EB-6

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0706° Longitude: -78.1066°

Approximate Surface Elev.: 662 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1	0.3	661.5+/-	**TOPSOIL**							
			SILT WITH SAND (ML), trace organic matter, brown, stiff to very stiff				13	2-6-7-9 N=13		
			Becomes red-brown				19	8-8-10-12 N=18		
	4.0	658+/-								
			SILTY CLAY (CL-ML), trace sand, occasional silt partings, red-brown, very stiff to hard	5	▼		22	9-8-12-15 N=20		
							22	17-19-20-20 N=39		
	8.0	654+/-								
2			**SANDY SILT (ML)**, trace gravel, red-brown, very stiff				22	5-9-12-15 N=21		
				10						
				15			8	8-9-14-13 N=23		
	18.0	644+/-								
			SILTY CLAY (CL-ML), trace sand, trace gravel, brown-gray, stiff				10	4-5-5-7 N=10		
	20.0	642+/-		20						
			Boring Terminated at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
Monitoring well was installed at this location

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

▼ *5 ft BGS on 11/26/2019*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-21-2019 | Boring Completed: 10-21-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

BORING LOG NO. EB-7

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0768° Longitude: -78.0977°

Approximate Surface Elev.: 680 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)	
2	0.0	680+/-	**SILTY CLAY (CL-ML)**, trace sand, trace organics, dark brown, medium stiff
	2.0	678+/-	**SANDY SILTY CLAY (CL-ML)**, trace gravel, red-brown, stiff to very stiff
	8.0	672+/-	**HIGHLY WEATHERED DOLOSTONE ROCK**, olive-gray
3	13.0	667+/-	**HIGHLY WEATHERED SHALE ROCK**, red-brown
	20.0	660+/-	***Sample Spoon Penetration Refusal Encountered at 20 Feet***

DEPTH (Ft.)	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS
5		10	3-3-3-3 N=6
		11	2-3-5-5 N=8
		19	3-3-4-6 N=7
		24	7-8-12-14 N=20
10		22	4-24-35-28 N=59
15		24	5-26-50-50 N=76
		20	8-33-44-50/5" N=77
20			

WATER LEVEL OBSERVATIONS

RQD (%)

WATER CONTENT (%)

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-21-2019 | Boring Completed: 10-21-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 1/15/20

BORING LOG NO. EB-8

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0697° Longitude: -78.0953°

Approximate Surface Elev.: 695 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		RECOVERY (In.)	FIELD TEST RESULTS
2	0	695+/-	**SILT (ML)**, trace sand, trace clay, orange-brown, medium stiff	7	1-2-4-6 N=6
	2.0	693+/-	**SANDY SILT (ML)**, trace gravel, red-brown, very stiff	20	7-8-9-10 N=17
	4.0	691+/-	**LEAN CLAY (CL)**, trace sand, trace gravel, red-brown, stiff	22	5-5-8-15 N=13
	6.0	689+/-	**SANDY SILTY CLAY (CL-ML)**, trace gravel, red-brown, hard	20	14-16-18-19 N=34
			Becomes very stiff	21	3-6-11-11 N=17
			Contains occasional cobble fragments		
			Becomes hard	10	20-50/5"
	17.0	678+/-	**SILT (ML)**, trace sand, trace gravel, brown-gray, medium stiff	10	3-3-4-5 N=7
	20.0	675+/-	***Boring Terminated at 20 Feet***		

DEPTH (Ft.): 5, 10, 15, 20

WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RQD (%) | WATER CONTENT (%)

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-21-2019 | Boring Completed: 10-21-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

BORING LOG NO. EB-9

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0644° Longitude: -78.0762°

Approximate Surface Elev.: 655 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
		0	655+/-							
			SILTY CLAY (CL-ML), trace sand, red-brown, stiff to very stiff				20	3-5-5-9 N=10		22
							24	8-8-9-11 N=17		20
		4.0	651+/-							
2			**SANDY SILT (ML)**, trace gravel, trace clay, red-brown, very stiff	5			24	3-7-10-11 N=17		12
			Becomes very hard				24	12-19-18-20 N=37		11
							24	11-15-20-30 N=35		11
				10						
			Becomes very stiff				24	7-11-16-18 N=27		11
			Becomes brown-gray	15						
							24	5-8-8-25 N=16		12
		20.0	635+/-	20						
			Boring Terminated at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
Monitoring well was installed at this location

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

▼ *0.5 ft BGS on 11/26/2019*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-24-2019 | Boring Completed: 10-24-2019

Drill Rig: Mobile B-57 | Driller: N. Francis

Project No.: J5195162

BORING LOG NO. EB-10

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0704° Longitude: -78.0803°

Approximate Surface Elev.: 668 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		RECOVERY (In.)	FIELD TEST RESULTS	WATER CONTENT (%)
			SILT (ML), trace sand, red-brown and black, medium stiff	22	2-3-3-3 N=6	21
	2.0	666+/-				
			SILTY CLAY (CL-ML), trace sand, red-brown, stiff to very stiff	24	5-5-11-15 N=16	20
				24	2-2-7-18 N=9	22
	6.0	662+/-				
2			**SILTY GRAVEL WITH SAND (GM)**, trace gravel, trace clay, dark brown, medium dense	15	14-11-13-14 N=24	11
			Becomes brown-gray, contains occasional cobble fragments	20	4-10-10-14 N=20	8
	13.0	655+/-				
			SILTY SAND (SM), trace gravel, brown-gray, dense	24	13-18-16-15 N=34	8
	18.0	650+/-				
3			**HIGHLY WEATHERED SHALE ROCK**, gray and brown	17	22-34-50/5"	
	19.5	648.5+/-				
			Sample Spoon Penetration Refusal Encountered at 19.5 Feet			

DEPTH (Ft.): 5, 10, 15

WATER LEVEL OBSERVATIONS: ▽ ▽

SAMPLE TYPE: X

RQD (%)

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *18 ft BGS while drilling*

▽ *17 ft BGS at completion of drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-24-2019 | Boring Completed: 10-24-2019

Drill Rig: Mobile B-57 | Driller: N. Francis

Project No.: J5195162

BORING LOG NO. EB-11

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0684° Longitude: -78.0569°

Approximate Surface Elev.: 655 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
2	0.0	655+/-	**SILTY SAND (SM)**, trace gravel, red-brown, medium dense				20	2-5-8-11 N=13		10
	2.0	653+/-	**SANDY SILT (ML)**, trace gravel, red-brown, hard				24	15-21-23-28 N=44		6
				5			4	15-31-35-36 N=66		8
							24	46-36-32-36 N=68		7
							24	15-17-34-36 N=51		9
				10						
	13.0	642+/-	**SILT (ML)**, trace sand, trace gravel, trace shale, brown, very stiff to hard				24	17-30-40-27 N=70		7
				15	▽					
	19.5	635.5+/-			▼		24	8-10-20-49 N=30		25
3	20.0	635+/-	**HIGHLY WEATHERED SHALE ROCK**, black-gray	20						
			Boring Terminated at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
Monitoring well was installed at this location

WATER LEVEL OBSERVATIONS

▽ *17 ft BGS at completion of drilling*

▼ *19 ft BGS on 11/26/2019*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-24-2019 | Boring Completed: 10-24-2019

Drill Rig: Mobile B-57 | Driller: N. Francis

Project No.: J5195162

BORING LOG NO. EB-12

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0653° Longitude: -78.1109°

Approximate Surface Elev.: 695 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
	0.0	695+/-	**SILT WITH SAND (ML)**, trace gravel, trace organic matter, red-brown and black, medium stiff				15	1-2-3-5 N=5		
			Becomes red-brown; becomes hard				20	5-15-16-20 N=31		
	4.0	691+/-								
2			**SANDY SILT (ML)**, trace gravel, red-brown, hard	5			24	4-16-21-32 N=37		
							12	7-27-37-34 N=64		
								6-50/2"		
				10						
	15.0	680+/-								
			SILTY SAND (SM), trace gravel, trace shale, gray, medium dense	15			16	7-10-7-5 N=17		
			Becomes brown-gray				18	11-9-9-8 N=18		
	20.0	675+/-		20						
			Boring Terminated at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-22-2019 | Boring Completed: 10-22-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 1/15/20

BORING LOG NO. EB-13

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0559° Longitude: -78.0993°

Approximate Surface Elev.: 720 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
2				**SILTY CLAY (CL-ML)**, trace sand, trace gravel, red-brown, medium stiff				16	1-2-3-3 N=5		18
								22	4-4-4-6 N=8		15
				Becomes soft	5			10	2-2-2-4 N=4		20
				Becomes stiff				9	7-7-8-8 N=15		19
								20	2-5-6-8 N=11		13
		15.0	705+/-		10						
3				**HIGHLY WEATHERED SHALE ROCK**, gray-brown	15			8	6-50/5"		16
		19.5	700.5+/-					16	6-2-16-50/5" N=18		
				Sample Spoon Penetration Refusal Encountered at 19.5 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-16-2019 | Boring Completed: 10-16-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 1/15/20

BORING LOG NO. EB-14

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0639° Longitude: -78.087°

Approximate Surface Elev.: 668 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
2	0	668+/-	**SILT WITH SAND (ML)**, trace gravel, trace clay, red-brown, soft				12	1-1-3-2 N=4		20
			Becomes very stiff				16	4-10-14-19 N=24		
			Becomes hard	5	▽		10	5-14-18-14 N=32		15
	6.0	662+/-					10	7-9-10-9 N=19		11
			SILTY SAND WITH GRAVEL (SM), trace clay, brown, medium dense				8	7-11-8-8 N=19		21
			thin clay partings	10						
	15.0	653+/-								
			WELL GRADED SAND (SW), trace silt, trace gravel, brown, medium dense	15			10	14-13-14-11 N=27		14
	18.0	650+/-								
			SANDY SILT (ML), trace gravel, trace shale fragments, gray, very stiff				14	24-14-2-2 N=16		27
	20.0	648+/-		20						
			Boring Terminated at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *4 ft BGS at completion of drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-16-2019 | Boring Completed: 10-16-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 1/15/20

BORING LOG NO. EB-15

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0578° Longitude: -78.0706°

Approximate Surface Elev.: 672 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
2		0.0					22	1-4-4-4 N=8		19
							24	3-2-3-5 N=5		30
				5			24	2-4-8-10 N=12		17
					▽		20	7-12-17-24 N=29		11
		8.0	664+/-		▽		23	11-21-43-50/2" N=64		11
				10						
							23	15-29-42-50/5" N=71		10
		18.0	654+/-	15						
							23	14-20-35-50/5" N=55		9
		20.0	652+/-	20						

SANDY SILT (ML), trace gravel, trace clay, red-brown, medium stiff

Becomes stiff

Becomes brown, becomes very stiff

SILTY SAND (SM), trace gravel, trace cobble fragments, brown-gray, very dense

SANDY SILT (ML), trace gravel, trace cobble fragments, brown-gray, hard

Sample Spoon Penetration Refusal Encountered at 20 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *7 ft BGS while drilling*

▽ *6 ft BGS at completion of drilling*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-25-2019 | Boring Completed: 10-25-2019

Drill Rig: Mobile B-57 | Driller: N. Francis

Project No.: J5195162

BORING LOG NO. EB-16

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0588° Longitude: -78.0482°

Approximate Surface Elev.: 705 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0.7	704.5+/-							
2							20	3-7-11-13 N=18		11
							24	10-24-31-36 N=55		7
				5			24	25-32-40-50/5" N=72		6
							8	49-50/2"		2
							15	34-18-50/4"		8
				10						
				15			24	18-30-28-36 N=58		7
		18.0	687+/-							
3		19.0	686+/-					36-50/2"		

TOPSOIL

SILTY SAND WITH GRAVEL (SM), trace peat, trace organics, brownish gray, medium dense

Contains occasional cobble fragments, becomes very dense

Becomes brown-gray

HIGHLY WEATHERED SHALE ROCK, brown

Sample Spoon Penetration Refusal Encountered at 19 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-24-2019 | Boring Completed: 10-24-2019

Drill Rig: Mobile B-57 | Driller: N. Francis

Project No.: J5195162

BORING LOG NO. EB-17

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0579° Longitude: -78.1105°

Approximate Surface Elev.: 726 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1	0.5	725.5+/-	**TOPSOIL**							
2	2.0	724+/-	**SILTY CLAY (CL-ML)**, trace sand, red-brown, medium stiff				14	2-2-3-3 N=5		20
	4.0	722+/-	**SILT WITH SAND (ML)**, trace clay, red-brown, hard				22	8-16-18-18 N=34		11
	6.0	720+/-	**SANDY SILTY CLAY (CL-ML)**, trace gravel, red-brown, hard	5			16	9-16-20-22 N=36		10
	15.0	711+/-	**SANDY SILT (ML)**, trace gravel, red-brown, very stiff to hard				22	12-20-22-25 N=42		10
							22	6-10-15-15 N=25		10
				10	▽					
	18.0	708+/-	**SILTY CLAY (CL-ML)**, trace sand, trace gravel, brown-gray, very stiff	15			14	5-9-8-23 N=17		13
3	20.0	706+/-	**DOLOSTONE ROCK FRAGMENTS**, brown-gray				16	27-39-37-56 N=76		
			Boring Terminated at 20 Feet	20						

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
Monitoring well was installed at this location

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

▽ *14.5 ft BGS on 11/21/2019*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-18-2019 | Boring Completed: 10-18-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

BORING LOG NO. EB-18

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.047° Longitude: -78.0922°

Approximate Surface Elev.: 690 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0.5	689.5+/-							
			TOPSOIL							
			LEAN CLAY (CL), trace sand, red-brown, stiff				12	4-5-5-5 N=10		21
			Becomes very stiff				24	8-10-12-13 N=22		15
			Becomes stiff	5			24	4-6-8-9 N=14		22
			Becomes hard				24	15-16-19-19 N=35		24
		8.0	682+/-							
2			**SANDY SILTY CLAY (CL-ML)**, trace gravel, red-brown, very stiff				20	3-6-13-16 N=19		13
				10						
			Becomes brown-gray	15			18	6-8-13-14 N=21		10
							18	6-9-12-13 N=21		12
		20.0	670+/-	20						
			Boring Terminated at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-18-2019 | Boring Completed: 10-18-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

BORING LOG NO. EB-19

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0455° Longitude: -78.0812°

Approximate Surface Elev.: 686 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
2	0.0	686+/-	**SANDY SILTY CLAY**, trace gravel, brown-gray, stiff				18	3-3-6-9 N=9		11
	2.0	684+/-	**SANDY SILT (ML)**, trace gravel, trace clay, brown, very stiff				22	8-10-12-12 N=22		11
				5			22	3-8-11-17 N=19		10
			Becomes hard				22	22-21-23-24 N=44		10
							22	8-15-19-24 N=34		10
				10						
	15.0	671+/-								
			SANDY SILTY CLAY (CL-ML), occasional silt seams, trace gravel, red-brown, very stiff	15			22	7-11-13-19 N=24		16
	18.0	668+/-								
			SILT (ML), trace silt, occasional clay partings, red-brown, hard		▼		22	11-21-20-15 N=41		12
	20.0	666+/-		20						
			Boring Terminated at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
Monitoring well was installed at this location

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

▼ *18.5 ft BGS on 11/26/2019*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-18-2019 | Boring Completed: 10-18-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 1/15/20

BORING LOG NO. EB-20

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0461° Longitude: -78.1118°

Approximate Surface Elev.: 733 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0.5	732.5+/-							
2			**TOPSOIL**							
			SANDY SILT (ML), trace clay, trace gravel, red-brown, medium stiff to very stiff		▽		6	1-3-5-7 N=8		10
							22	8-11-14-17 N=25		10
			Becomes hard	5			20	4-27-46-57 N=73		7
					▽		24	40-42-49-50/4" N=91		7
			Contains occasional cobble fragments							
		8.0	725+/-							
3			**HIGHLY WEATHERED SHALE ROCK**, olive-gray				12	14-21-50/5"		
				10						
			Becomes red-brown	15			6	14-32-50/5"		
		18.5	714.5+/-				0	50/2"		
			Sample Spoon Penetration Refusal Encountered at 18.5 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
Monitoring well was installed at this location

WATER LEVEL OBSERVATIONS

▽ *5.5 ft BGS at completion of drilling*

▽ *1ft BGS on 11/21/2019*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-18-2019 | Boring Completed: 10-18-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

BORING LOG NO. EB-21

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0546° Longitude: -78.0856°

Approximate Surface Elev.: 676 (Ft.) +/-

MODEL LAYER	DEPTH	ELEVATION (Ft.)		DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1	0.6	675.5+/-	**TOPSOIL**							
2	2.0	674+/-	**SILTY CLAY (CL-ML)**, trace sand, orange-brown with black, medium stiff				12	1-4-4-8 N=8		
			SANDY SILT (ML), trace gravel, trace clay, red-brown, very stiff				20	8-12-12-15 N=24		
			Becomes hard	5			6	8-11-21-11 N=32		
							20	16-19-20-18 N=39		
							24	8-13-18-21 N=31		
				10						
			Becomes stiff	15			18	3-6-7-12 N=13		
	18.0	658+/-								
			SILTY CLAY (CL-ML), trace sand, trace gravel, brown-gray, very stiff				18	6-10-6-7 N=16		
	20.0	656+/-		20						
			Boring Terminated at 20 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
Monitoring well was installed at this location

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

0.5 ft BGS on 11/21/2019

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-18-2019 | Boring Completed: 10-18-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

BORING LOG NO. EB-22

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.063° Longitude: -78.102°

Approximate Surface Elev.: 742 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
2		0.0	742+/-							
		SANDY SILT (ML), trace gravel, trace clay, brown, very stiff								
							18	5-11-10-8 N=21		10
		Becomes hard								
							22	11-14-17-20 N=31		10
				5			22	10-16-27-36 N=43		8
		Contains occasional cobble fragments					16	49-43-50/4"		9
							22	2-18-39-46 N=57		9
				10						
		Becomes brown-gray		15			22	18-22-26-30 N=48		7
		Becomes gray					22	24-26-38-50 N=64		7
		20.0	722+/-	20						
		Boring Terminated at 20 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of drilling

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 10-16-2019 | Boring Completed: 10-16-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

BORING LOG NO. ESS-1

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0754° Longitude: -78.0701°

Approximate Surface Elev.: 623 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
2		0.0	623+/-							
							10	3-5-7-9 N=12		
		Becomes very stiff					16	5-8-19-18 N=27		
				5			22	4-8-14-20 N=22		
		Contains occasional cobble fragments, becomes hard					18	18-25-43-32 N=68		
							22	13-9-21-23 N=30		
				10						
				15			12	12-13-21-21 N=34		
		Becomes brown-gray		20			22	14-20-28-40 N=48		
		25.0	598+/-	25	▽					

SANDY SILT (ML), trace gravel, red-brown, stiff

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler to 28'
NQ-2 size rock core barrel 28.0' - 31.0'

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
Monitoring well was installed at this location

WATER LEVEL OBSERVATIONS

▽ *25 ft BGS prior to coring*
0 ft BGS on 11/21/2019
0 ft BGS on 11/26/2019

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 11-04-2019 | Boring Completed: 11-05-2019
Drill Rig: Mobile B-57 | Driller: R. Brown
Project No.: J5195162

BORING LOG NO. ESS-1

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0754° Longitude: -78.0701°

Approximate Surface Elev.: 623 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
3		**COMPLETELY WEATHERED SHALE fragments**, gray					4	13-9-50/4"		
		28.0	595+/-							
4		**SHALE ROCK**, unweathered to slightly weathered, gray, medium strong, thinly bedded, fractured with occasional gypsum seams		30			25	RUN #1 28.0' - 31.0'	27	
		31.0	592+/-							
		Boring Terminated at 31 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler to 28'
NQ-2 size rock core barrel 28.0' - 31.0'

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

25 ft BGS prior to coring
0 ft BGS on 11/21/2019
0 ft BGS on 11/26/2019

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 11-04-2019 | Boring Completed: 11-05-2019
Drill Rig: Mobile B-57 | Driller: R. Brown
Project No.: J5195162

BORING LOG NO. ESS-2

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0776° Longitude: -78.0713°

Approximate Surface Elev.: 620 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
2		0	620+/-							
							10	WOH-2-2-3 N=4		
		2.0	618+/-							
							10	2-7-18-10 N=25		
				5			22	10-15-15-23 N=30		
							22	22-35-28-30 N=63		
							22	24-25-24-50/5" N=49		
				10						
				15			22	38-22-26-28 N=48		
				20			12	22-50/5"		
				25						

SILTY CLAY (CL-ML), trace sand, trace organic matter, brown, soft

SANDY SILT (ML), trace gravel, red-brown, very stiff

Contains occasional cobble fragments

Becomes very hard

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler to 28'
NQ-2 size rock core barrel 28.0' - 34.0'

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:
WOH = Weight of Hammer and Rods

WATER LEVEL OBSERVATIONS

None encountered at completion of excavation

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 11-05-2019 | Boring Completed: 11-06-2019
Drill Rig: Mobile B-57 | Driller: R. Brown
Project No.: J5195162

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 1/15/20

BORING LOG NO. ESS-2

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0776° Longitude: -78.0713°

Approximate Surface Elev.: 620 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
2		**SANDY SILT (ML)**, trace gravel, red-brown, very stiff *(continued)*								
		28.0	592+/-							
4		**SHALE ROCK**, unweathered to slightly weathered, gray, medium strong, sound, thinly bedded, numerous gypsum seams and partings		30			12	RUN #1 28.0' - 29.0'	33	
							59	RUN #2 29.0' - 34.0'	72	
		34.0	586+/-							
		Boring Terminated at 34 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
3.25 inch ID Hollow Stem Augers and 2 inch OD Split Barrel Sampler to 28'
NQ-2 size rock core barrel 28.0' - 34.0'

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of excavation

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Boring Started: 11-05-2019 | Boring Completed: 11-06-2019

Drill Rig: Mobile B-57 | Driller: R. Brown

Project No.: J5195162

TEST PIT LOG NO. ETP-1

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0846° Longitude: -78.0883°

Approximate Surface Elev.: 630 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0.0								
		TOPSOIL								
		1.7	628.5+/-							
2		**SILTY SAND WITH GRAVEL (SM)**, brown			▽					
		4.0	626+/-							
		LEAN CLAY (CL), gray		5						
		7.0	623+/-							
3		**SHALE**, completely weathered								
		9.0	621+/-							
		SHALE, slightly weathered								
		10.0	620+/-	10						
		Test Pit Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Excavator Bucket

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *3 ft while excavating*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 10-18-2019 | Test Pit Completed: 10-18-2019

Excavator: Komatsu PC138US | Operator: T. Wooden

Project No.: J5195162

TEST PIT LOG NO. ETP-2

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0811° Longitude: -78.0501°

Approximate Surface Elev.: 620 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0.0	620+/-							
		TOPSOIL								
		1.0	619+/-							
2		**SANDY SILT (ML)**, trace gravel, brown, some cobbles		5						
		10.5	609.5+/-	10						
		Test Pit Terminated at 10.5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Excavator Bucket

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of excavation

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 10-21-2019 | Test Pit Completed: 10-21-2019

Excavator: Komatsu PC138US | Operator: T. Wooden

Project No.: J5195162

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 1/15/20

TEST PIT LOG NO. ETP-3

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0753° Longitude: -78.0922°

Approximate Surface Elev.: 700 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0.0	700+/-							
		TOPSOIL								
		1.3	698.5+/-							
2		**SILTY GRAVEL WITH SAND (GM)**, brown Contains cobbles and boulders, hard excavating		5						
		10.0	690+/-	10						
		Test Pit Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Excavator Bucket

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of excavation

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 10-18-2019 | Test Pit Completed: 10-18-2019

Excavator: Komatsu PC138US | Operator: T. Wooden

Project No.: J5195162

TEST PIT LOG NO. ETP-4

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0717° Longitude: -78.0772°

Approximate Surface Elev.: 652 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0.0	652+/-							
		TOPSOIL								
		1.3	650.5+/-							
2		**SANDY SILT (ML)**, brown								
		5.0	647+/-	5						
		POORLY GRADED SAND (SP), brownish gray			▽					
		10.0	642+/-	10						
		Test Pit Terminated at 10 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Excavator Bucket

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

▽ *8 ft at completion of excavating*

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 10-18-2019 | Test Pit Completed: 10-18-2019

Excavator: Komatsu PC138US | Operator: T. Wooden

Project No.: J5195162

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 1/15/20

TEST PIT LOG NO. ETP-5

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0717° Longitude: -78.0487°

Approximate Surface Elev.: 679 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0								
		TOPSOIL								
		1.5	677.5+/-							
2		**SILTY GRAVEL WITH SAND (GM)**, brown, contains cobbles and boulders		5						
		10.5	668.5+/-	10						
		Test Pit Terminated at 10.5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Excavator Bucket

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of excavation

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 10-21-2019 | Test Pit Completed: 10-21-2019

Excavator: Komatsu PC138US | Operator: T. Wooden

Project No.: J5195162

TEST PIT LOG NO. ETP-6

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0601° Longitude: -78.1072°

Approximate Surface Elev.: 724 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0								
		TOPSOIL								
		1.2	723+/-							
2		**SANDY SILT (ML)**, trace gravel, reddish brown		5						
		Becomes gray		10						
		12.0	712+/-							
		Test Pit Terminated at 12 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Excavator Bucket

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of excavation

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 10-18-2019 | Test Pit Completed: 10-18-2019

Excavator: Komatsu PC138US | Operator: T. Wooden

Project No.: J5195162

TEST PIT LOG NO. ETP-7

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0577° Longitude: -78.0882°

Approximate Surface Elev.: 676 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		1.0	675+/-							
2			**SANDY SILT (ML)**, trace gravel, brown Contains cobbles and boulders	5 10						
		12.0	664+/-							
			Test Pit Terminated at 12 Feet							

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Excavator Bucket

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of excavation

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 10-18-2019	Test Pit Completed: 10-18-2019
Excavator: Komatsu PC138US	Operator: T. Wooden
Project No.: J5195162	

TEST PIT LOG NO. ETP-8

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0592° Longitude: -78.0523°

Approximate Surface Elev.: 695 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0	695+/-							
		TOPSOIL								
		1.5	693.5+/-							
2		**SANDY SILT WITH GRAVEL (ML)**, brown		5						
		Contains cobbles and boulders, hard to excavate								
		10.5	684.5+/-	10						
		Test Pit Terminated at 10.5 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Excavator Bucket

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of excavation

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 10-21-2019 | Test Pit Completed: 10-21-2019

Excavator: Komatsu PC138US | Operator: T. Wooden

Project No.: J5195162

TEST PIT LOG NO. ETP-9

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0466° Longitude: -78.114°

Approximate Surface Elev.: 736 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	RECOVERY (In.)	FIELD TEST RESULTS	RQD (%)	WATER CONTENT (%)
1		0.0	736+/-							
		TOPSOIL								
		1.0	735+/-							
2		**SILTY SAND WITH GRAVEL (SM)**, brown								
		Contains cobbles and boulders		5						
				10						
		12.0	724+/-							
		Test Pit Terminated at 12 Feet								

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Excavator Bucket

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of excavation

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 10-18-2019 | Test Pit Completed: 10-18-2019

Excavator: Komatsu PC138US | Operator: T. Wooden

Project No.: J5195162

TEST PIT LOG NO. ETP-10

PROJECT: Excelsior (Byron) Solar Site - Preliminary

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

SITE: 7361 Caswell Rd.
Byron, NY

LOCATION See Exploration Plan

Latitude: 43.0456° Longitude: -78.087°

Approximate Surface Elev.: 668 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DESCRIPTION
1		1.0	667+/-	**TOPSOIL**
2		8.0	660+/-	**SILTY SAND WITH GRAVEL (SM)**, reddish brown Contains some cobbles, becomes brown
		11.5	656.5+/-	**SILT WITH GRAVEL (ML)**, gray, hard to excavate
				Test Pit Terminated at 11.5 Feet

DEPTH (Ft.) 5 10

WATER LEVEL OBSERVATIONS | SAMPLE TYPE | RECOVERY (In.) | FIELD TEST RESULTS | RQD (%) | WATER CONTENT (%)

Stratification lines are approximate. In-situ, the transition may be gradual.

Advancement Method:
Excavator Bucket

Abandonment Method:
Test pit backfilled with excavated soil upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

Elevations were interpolated from Google Earth.

Notes:

WATER LEVEL OBSERVATIONS

None encountered at completion of excavation

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

Test Pit Started: 10-18-2019 | Test Pit Completed: 10-18-2019

Excavator: Komatsu PC138US | Operator: T. Wooden

Project No.: J5195162

INFILTRATION TEST DATA SUMMARY

Project: Excelsior (Byron) Solar Site
Weather: Overcast
Presoak Date: 25-Nov

Terracon Project No.: J5195162
Tester : Tyler Wooden
Test Date: 26-Nov

Test Location	Test Depth (ft)	Soil Description	Trial Number	Water Drop (inches)	Elapsed Time (hours)	Infiltration Rate (inches/hour)
EB-3	5.1	SILT (ML)	1	0.1	1.0	0.1
			2	0.0	1.0	0.0
			3	0.0	1.0	0.0
			4	0.0	1.0	0.0
			Average infiltration rate for the four trials was 0.0 inches per hour. Infiltration rate of the final trial was 0.0 inches per hour.			
EB-7	4.7	SANDY SILTY CLAY (CL-ML)	1	0.0	1.0	0.0
			2	0.0	1.0	0.0
			3	0.0	1.0	0.0
			4	0.0	1.0	0.0
			Average infiltration rate for the four trials was 0.0 inches per hour. Infiltration rate of the final trial was 0.0 inches per hour.			
EB-9	4.8	SILTY CLAY (CL-ML)	1	-0.1	1.0	-0.1
			2	-0.1	1.0	-0.1
			3	-0.1	1.0	-0.1
			4	-0.1	1.0	-0.1
			Water did not infiltrate and kept collecting in well.			
EB-16	4.0	SILTY SAND with GRAVEL (ML)	1	-0.5	1.0	-0.5
			2	-0.2	1.0	-0.2
			3	-0.1	1.0	-0.1
			4	-0.1	1.0	-0.1
			Water did not infiltrate and kept collecting in well.			
EB-18	4.3	LEAN CLAY (CL)	1	-0.5	1.0	-0.5
			2	-0.4	1.0	-0.4
			3	-0.4	1.0	-0.4
			4	-0.4	1.0	-0.4
			Water did not infiltrate and kept collecting in well.			
EB-22	4.2	SANDY SILT (ML)	1	0.4	1.0	0.4
			2	0.0	1.0	0.0
			3	0.0	1.0	0.0
			4	0.0	1.0	0.0
			Average infiltration rate for the four trials was 0.1 inches per hour. Infiltration rate of the final trial was 0.0 inches per hour.			
Testing was conducted in general accordance with Appendix D of the New York State Storm Water Management Design Manual.						

APPENDIX B
LABORATORY TESTING
(Exhibits- B001 through B029)

GRAIN SIZE DISTRIBUTION (Exhibits - B001 through B005)

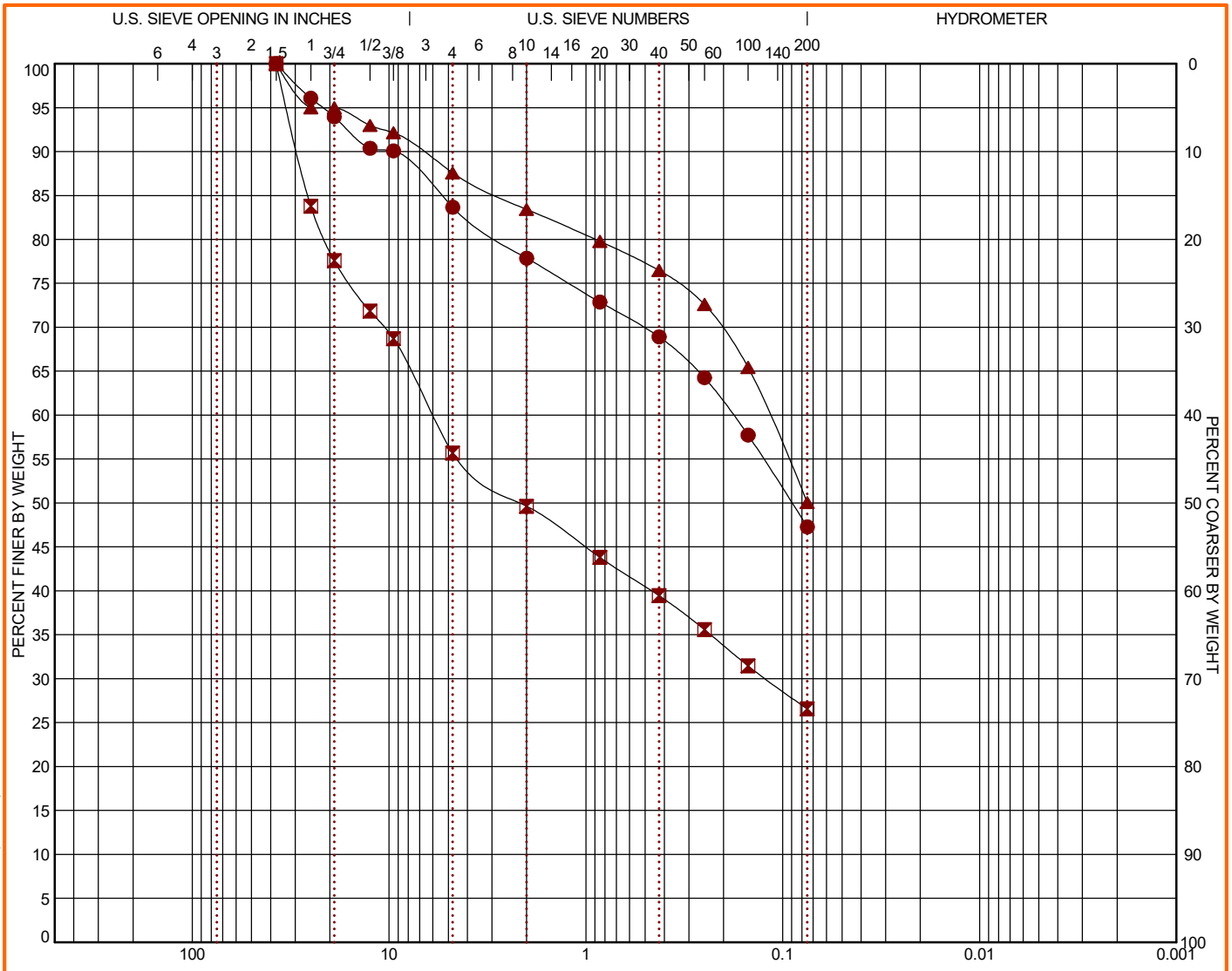
ATTERBERG LIMITS (Exhibit - B006)

MOISTURE-DENSITY RELATIONSHIP (Exhibits - B007 through B013)

CALIFORNIA BEARING RATIO (CBR) (Exhibits - B014 through B015)

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	EB-1	6 - 8	0.0	16.3	36.4		47.3		SM
⊠	EB-4	8 - 10	0.0	44.3	29.1		26.6		GM
▲	EB-5	4 - 6	0.0	12.4	37.5		50.0		ML

GRAIN SIZE	●	⊠	▲
D_{60}	0.179	5.979	0.117
D_{30}		0.122	
D_{10}			

COEFFICIENTS	●	⊠	▲
C_C			
C_U			

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
1 1/2"	100.0	1 1/2"	100.0	1 1/2"	100.0
1"	96.06	1"	83.78	1"	94.98
3/4"	93.96	3/4"	77.58	3/4"	94.98
1/2"	90.37	1/2"	71.83	1/2"	92.97
3/8"	90.07	3/8"	68.71	3/8"	92.15
#4	83.66	#4	55.67	#4	87.57
#10	77.86	#10	49.63	#10	83.41
#20	72.87	#20	43.81	#20	79.78
#40	68.91	#40	39.46	#40	76.48
#60	64.27	#60	35.59	#60	72.6
#100	57.73	#100	31.45	#100	65.43
#200	47.28	#200	26.56	#200	50.05

SOIL DESCRIPTION	
●	SILTY SAND with GRAVEL (SM)
⊠	SILTY GRAVEL with SAND (GM)
▲	SANDY SILT (ML)

REMARKS	
●	
⊠	
▲	

PROJECT: Excelsior (Byron) Solar Site - Preliminary

SITE: Batavia Byron Rd
Byron, NY

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

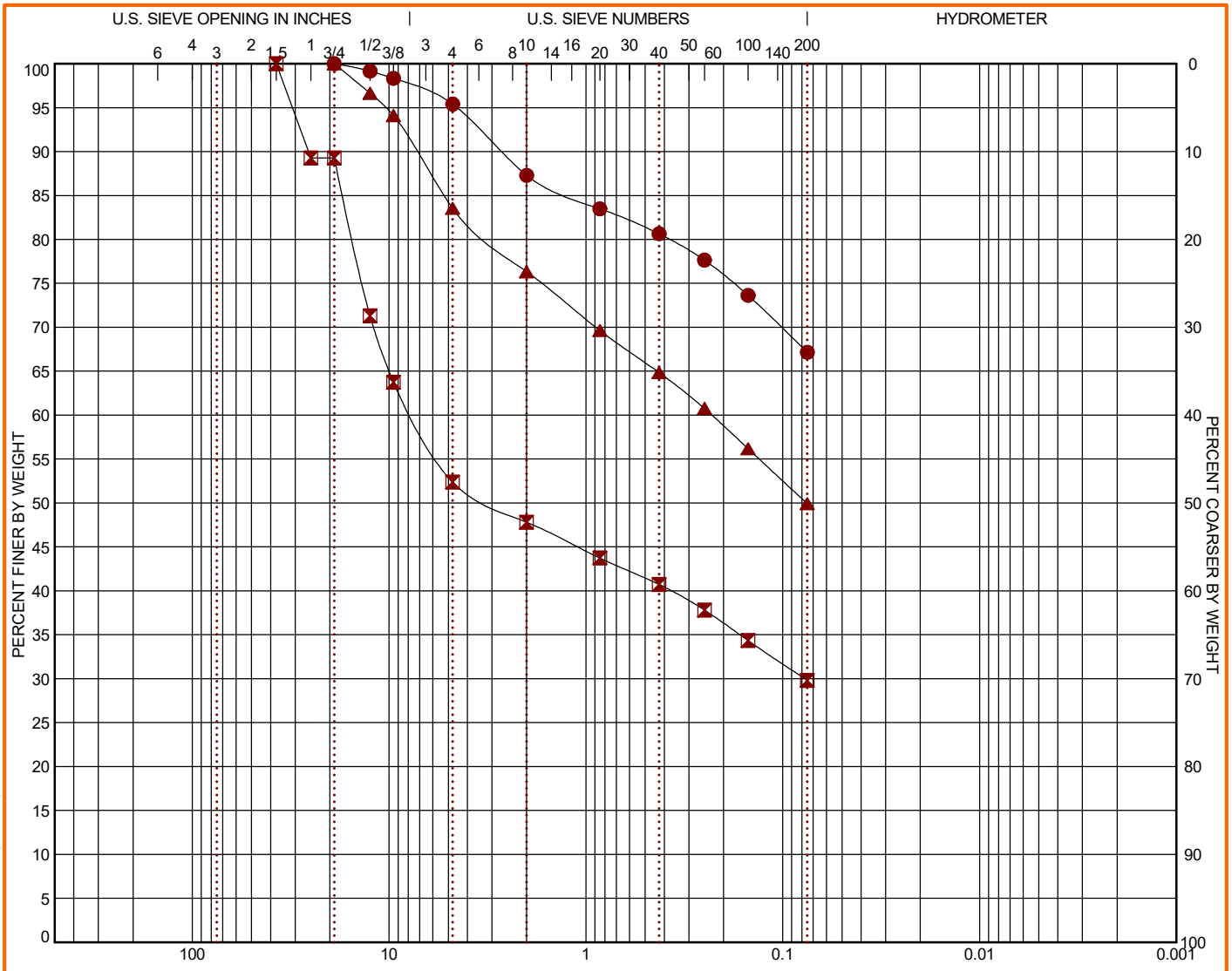
PROJECT NUMBER: J5195162

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GRAIN SIZE: USCS 1 J5195162 EXCELSIOR (BYRON) WITH LAB WORK.GPJ TERRACON_DATATEMPLATE.GDT 12/10/19

GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	EB-9	4 - 6	0.0	4.6	28.2		67.1		ML
⊠	EB-10	8 - 10	0.0	47.6	22.5		29.8		GM
▲	EB-16	8 - 10	0.0	16.5	33.6		49.9		SM

GRAIN SIZE	●	⊠	▲
D_{60}		7.562	0.23
D_{30}		0.077	
D_{10}			

COEFFICIENTS	●	⊠	▲
C_C			
C_U			

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
3/4"	100.0	1 1/2"	100.0	3/4"	100.0
1/2"	99.15	1"	89.28	1/2"	96.64
3/8"	98.33	3/4"	89.28	3/8"	94.1
#4	95.4	1/2"	71.3	#4	83.53
#10	87.29	3/8"	63.74	#10	76.31
#20	83.48	#4	52.37	#20	69.64
#40	80.64	#10	47.81	#40	64.84
#60	77.65	#20	43.73	#60	60.76
#100	73.63	#40	40.73	#100	56.18
#200	67.15	#60	37.82	#200	49.92
		#100	34.34		
		#200	29.82		

SOIL DESCRIPTION	
●	SANDY SILT (ML)
⊠	SILTY GRAVEL with SAND (GM)
▲	SILTY SAND with GRAVEL (SM)

REMARKS	
●	
⊠	
▲	

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Juno Beach, FL

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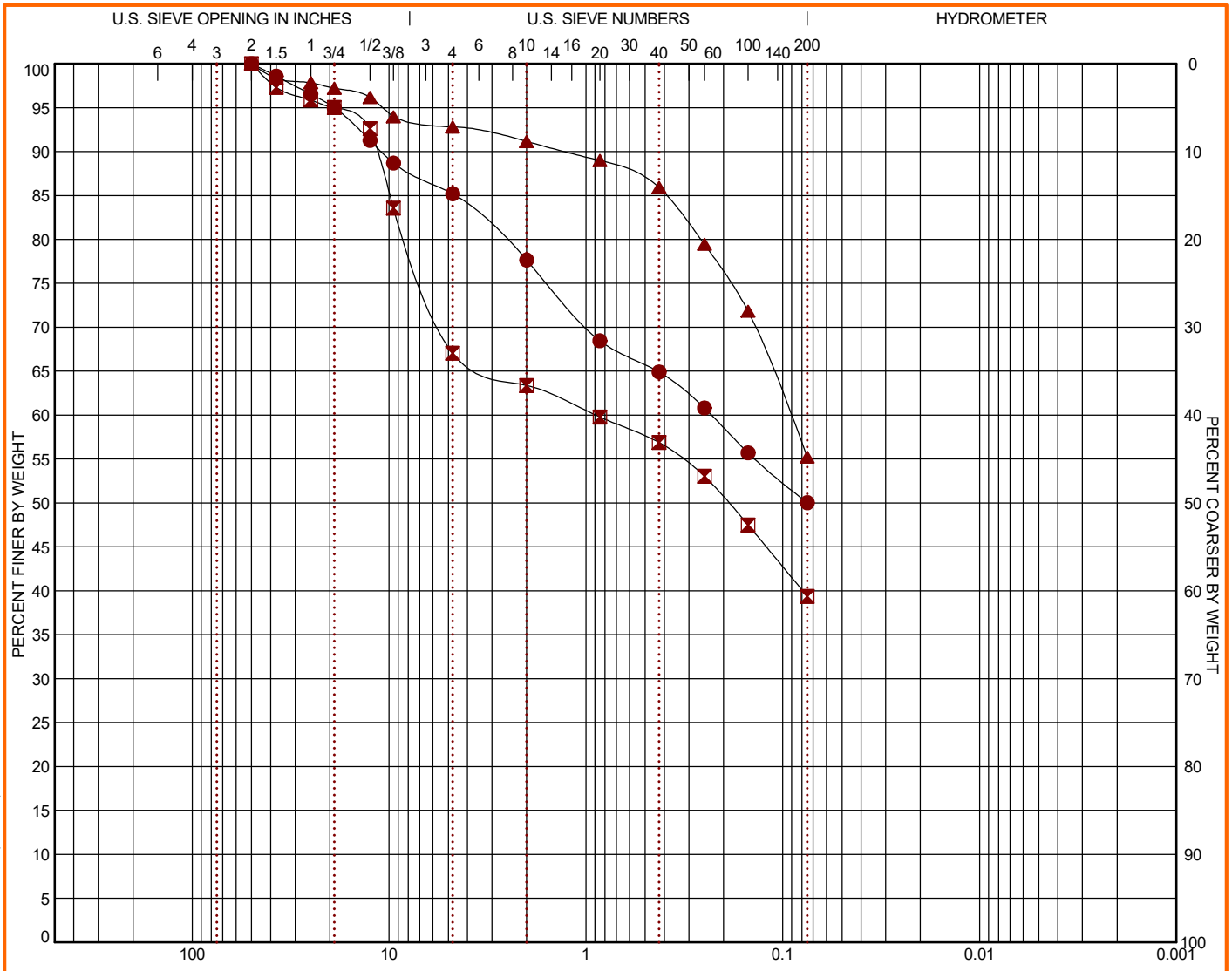
GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	ETP-2	0	0.0	14.8	35.2		50.0		ML
⊠	ETP-3	0	0.0	33.0	27.7		39.4		GM
▲	ETP-4	0	0.0	7.2	37.6		55.2		ML

GRAIN SIZE	●	⊠	▲
D_{60}	0.23	0.894	0.092
D_{30}			
D_{10}			

COEFFICIENTS	●	⊠	▲
C_C			
C_U			

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
2"	100.0	2"	100.0	2"	100.0
1 1/2"	98.58	1 1/2"	97.31	1 1/2"	98.33
1"	96.53	1"	95.86	1"	97.83
3/4"	95.0	3/4"	95.03	3/4"	97.21
1/2"	91.27	1/2"	92.6	1/2"	96.17
3/8"	88.69	3/8"	83.55	3/8"	93.96
#4	85.19	#4	67.04	#4	92.79
#10	77.65	#10	63.38	#10	91.15
#20	68.46	#20	59.79	#20	88.99
#40	64.91	#40	56.88	#40	85.92
#60	60.82	#60	53.04	#60	79.45
#100	55.71	#100	47.5	#100	71.82
#200	50.03	#200	39.36	#200	55.22

SOIL DESCRIPTION	
●	SANDY SILT (ML)
⊠	SILTY GRAVEL with SAND (GM)
▲	SANDY SILT (ML)

REMARKS	
●	
⊠	
▲	

PROJECT: Excelsior (Byron) Solar Site - Preliminary

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Terracon
15 Marway Cir, Ste 2B
Rochester, NY

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Juno Beach, FL

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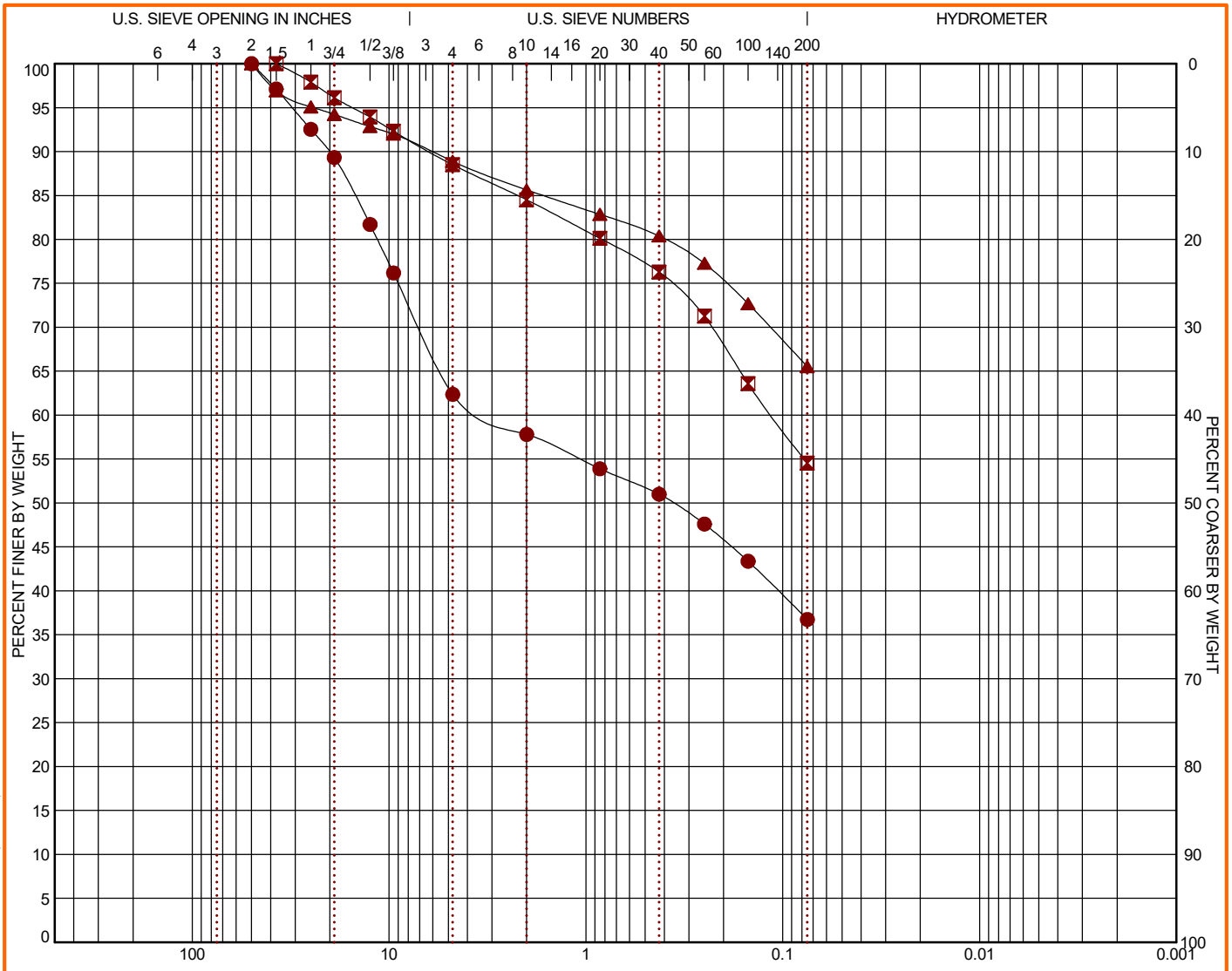
GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	ETP-5	1-4	0.0	37.6	25.6		36.7		GM
⊠	ETP-6	1-4	0.0	11.5	34.0		54.5		ML
▲	ETP-7	1-4	0.0	11.1	23.4		65.5		ML

GRAIN SIZE	●	⊠	▲
D_{60}	3.037	0.114	
D_{30}			
D_{10}			

COEFFICIENTS	●	⊠	▲
C_C			
C_U			

●		⊠		▲	
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
2"	100.0	1 1/2"	100.0	2"	100.0
1 1/2"	97.12	1"	97.9	1 1/2"	96.9
1"	92.53	3/4"	96.13	1"	95.08
3/4"	89.32	1/2"	93.93	3/4"	94.23
1/2"	81.7	3/8"	92.32	1/2"	92.84
3/8"	76.19	#4	88.5	3/8"	91.98
#4	62.35	#10	84.5	#4	88.88
#10	57.8	#20	80.13	#10	85.63
#20	53.89	#40	76.29	#20	82.86
#40	51.0	#60	71.26	#40	80.39
#60	47.6	#100	63.59	#60	77.28
#100	43.37	#200	54.54	#100	72.69
#200	36.75			#200	65.52

SOIL DESCRIPTION	
●	SILTY GRAVEL with SAND (GM)
⊠	SANDY SILT (ML)
▲	SANDY SILT (ML)

REMARKS	
●	
⊠	
▲	

PROJECT: Excelsior (Byron) Solar Site - Preliminary

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15 Marway Cir, Ste 2B
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Juno Beach, FL

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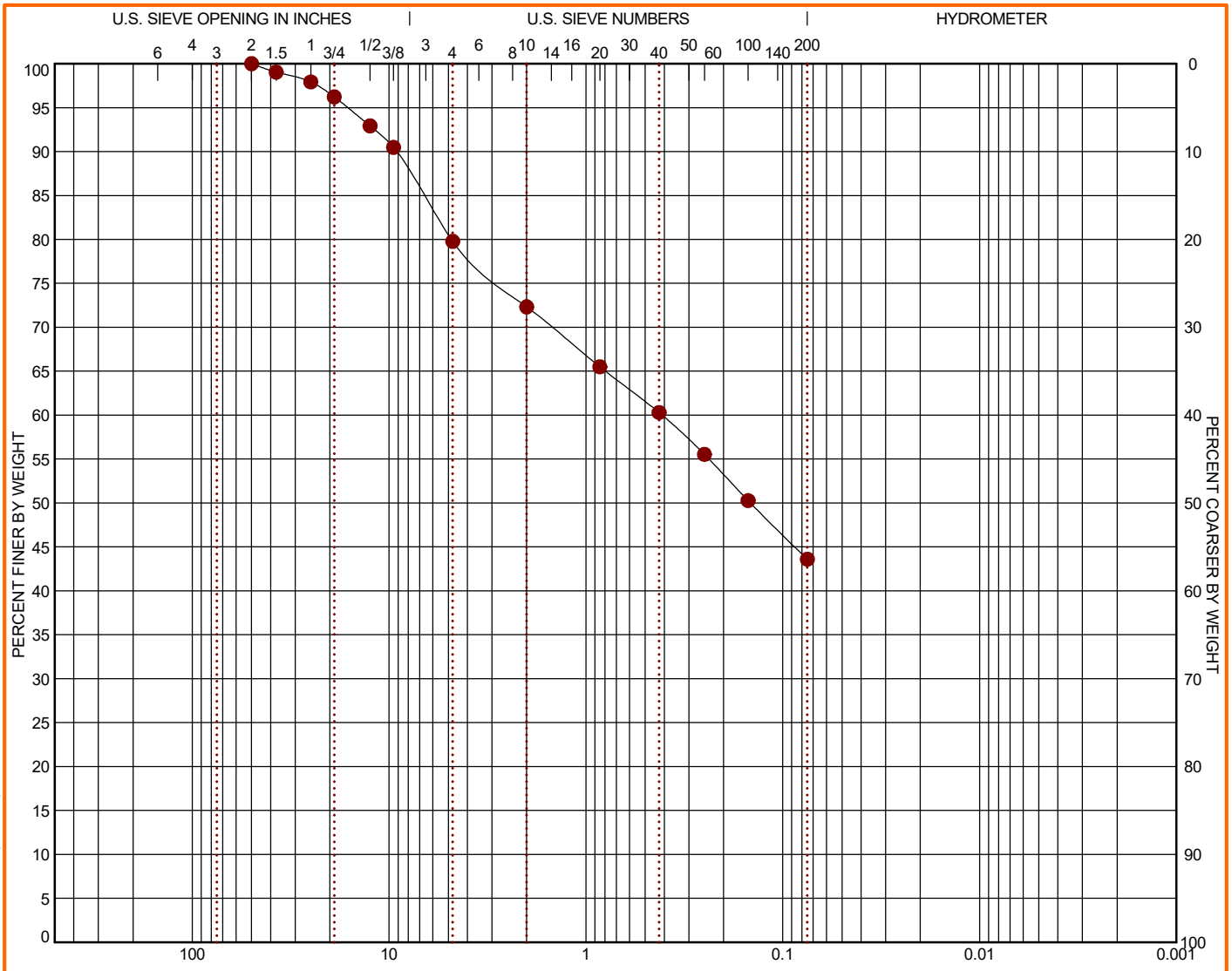
GRAIN SIZE DISTRIBUTION

ASTM D422 / ASTM C136



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	BORING ID	DEPTH	% COBBLES	% GRAVEL	% SAND	% SILT	% FINES	% CLAY	USCS
●	ETP-10	1-4	0.0	20.2	36.2		43.6		SM

GRAIN SIZE			
	●		
D_{60}	0.411		
D_{30}			
D_{10}			

COEFFICIENTS			
	●		
C_C			
C_U			

●					
Sieve	% Finer	Sieve	% Finer	Sieve	% Finer
2"	100.0				
1 1/2"	99.04				
1"	97.92				
3/4"	96.22				
1/2"	92.92				
3/8"	90.47				
#4	79.78				
#10	72.32				
#20	65.5				
#40	60.3				
#60	55.53				
#100	50.27				
#200	43.6				

SOIL DESCRIPTION	
●	SILTY SAND with GRAVEL (SM)

REMARKS	
●	

PROJECT: Excelsior (Byron) Solar Site - Preliminary

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Byron, NY

Terracon
15 Marway Cir, Ste 2B
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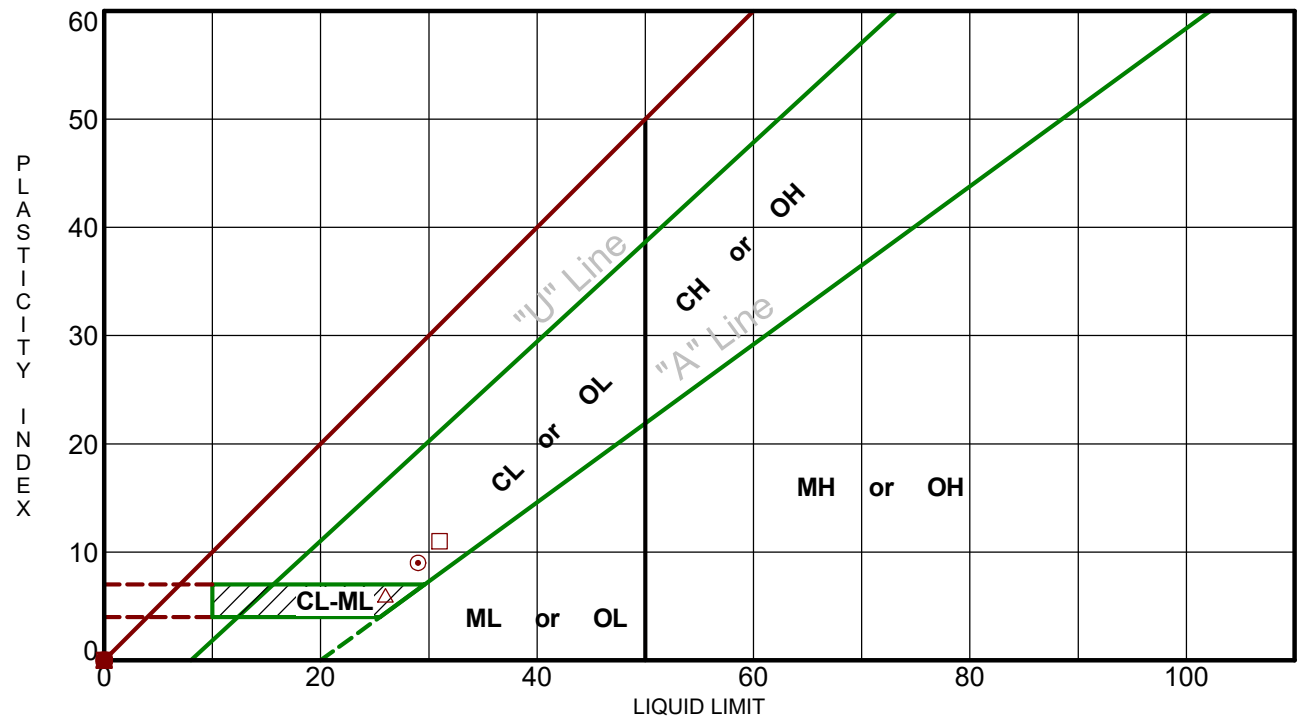
Juno Beach, FL

GRAIN SIZE: USCS 1 J5195162 EXCELSIOR (BYRON) WITH LAB WORK.GPJ TERRACON_DATATEMPLATE.GDT 12/10/19

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT.

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID		Depth	LL	PL	PI	Fines	USCS	Description
●	EB-1	6 - 8	NP	NP	NP	47.3	SM	SILTY SAND with GRAVEL
⊠	EB-3	2 - 4	NP	NP	NP		ML	SILT
▲	EB-4	8 - 10	NP	NP	NP	26.6	GM	SILTY GRAVEL with SAND
★	EB-5	4 - 6	NP	NP	NP	50.0	ML	SANDY SILT
⊙	EB-8	4 - 6	29	20	9		CL	LEAN CLAY
✿	EB-9	6 - 8	NP	NP	NP		ML	SANDY SILT
○	EB-10	8 - 10	NP	NP	NP	29.8	GM	SILTY GRAVEL with SAND
△	EB-13	2 - 4	26	20	6		CL-ML	SILTY CLAY
⊗	EB-15	2 - 4	NP	NP	NP		ML	SANDY SILT
⊕	EB-16	8 - 10	NP	NP	NP	49.9	SM	SILTY SAND with GRAVEL
□	EB-18	2 - 4	31	20	11		CL	LEAN CLAY

PROJECT: Excelsior (Byron) Solar Site - Preliminary

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Byron, NY

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

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Juno Beach, FL

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MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

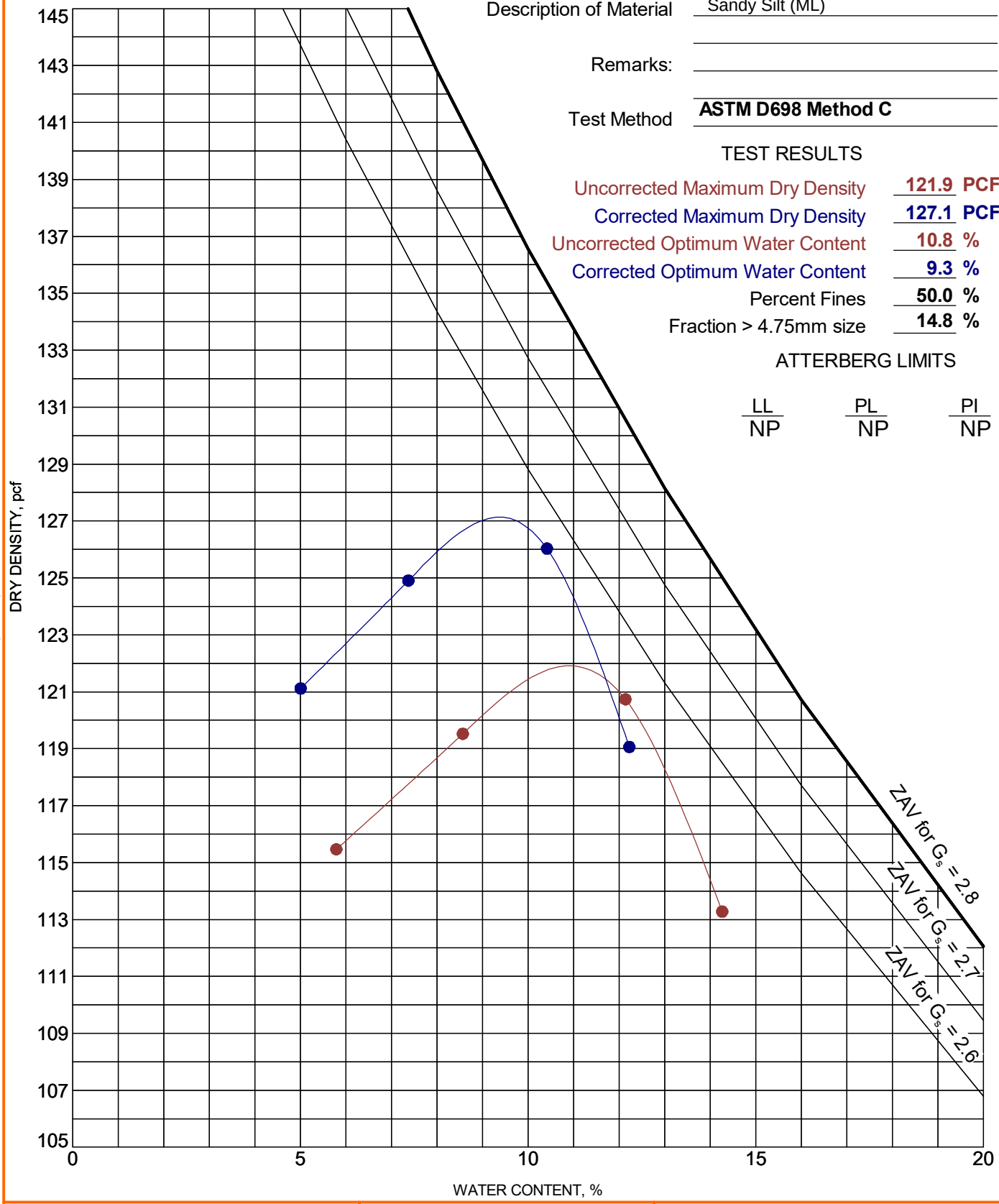
Source of Material	**ETP-2 @ 1 to 4 feet**
Description of Material	Sandy Silt (ML)
Remarks:	
Test Method	**ASTM D698 Method C**

TEST RESULTS

Uncorrected Maximum Dry Density	**121.9 PCF**
Corrected Maximum Dry Density	**127.1 PCF**
Uncorrected Optimum Water Content	**10.8 %**
Corrected Optimum Water Content	**9.3 %**
Percent Fines	**50.0 %**
Fraction > 4.75mm size	**14.8 %**

ATTERBERG LIMITS

LL	PL	PI
NP	NP	NP



PROJECT: Excelsior (Byron) Solar Site - Preliminary

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Byron, NY

Terracon
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Rochester, NY

PROJECT NUMBER: J5195162

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

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MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

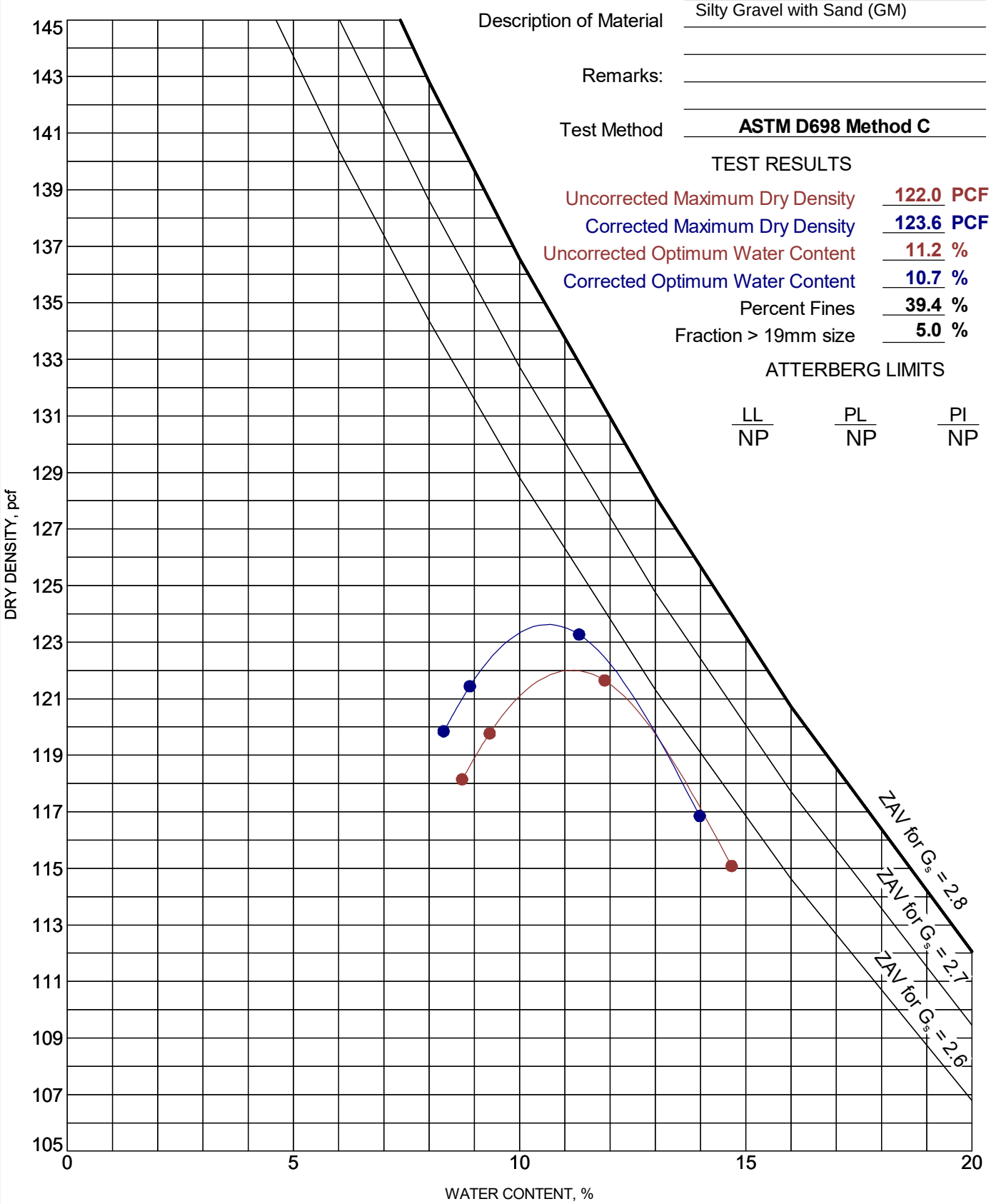
Source of Material	**ETP-3 @ 1 to 4 feet**
Description of Material	Silty Gravel with Sand (GM)
Remarks:	
Test Method	**ASTM D698 Method C**

TEST RESULTS

Uncorrected Maximum Dry Density	**122.0** PCF
Corrected Maximum Dry Density	**123.6** PCF
Uncorrected Optimum Water Content	**11.2** %
Corrected Optimum Water Content	**10.7** %
Percent Fines	**39.4** %
Fraction > 19mm size	**5.0** %

ATTERBERG LIMITS

LL	PL	PI
NP	NP	NP



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MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

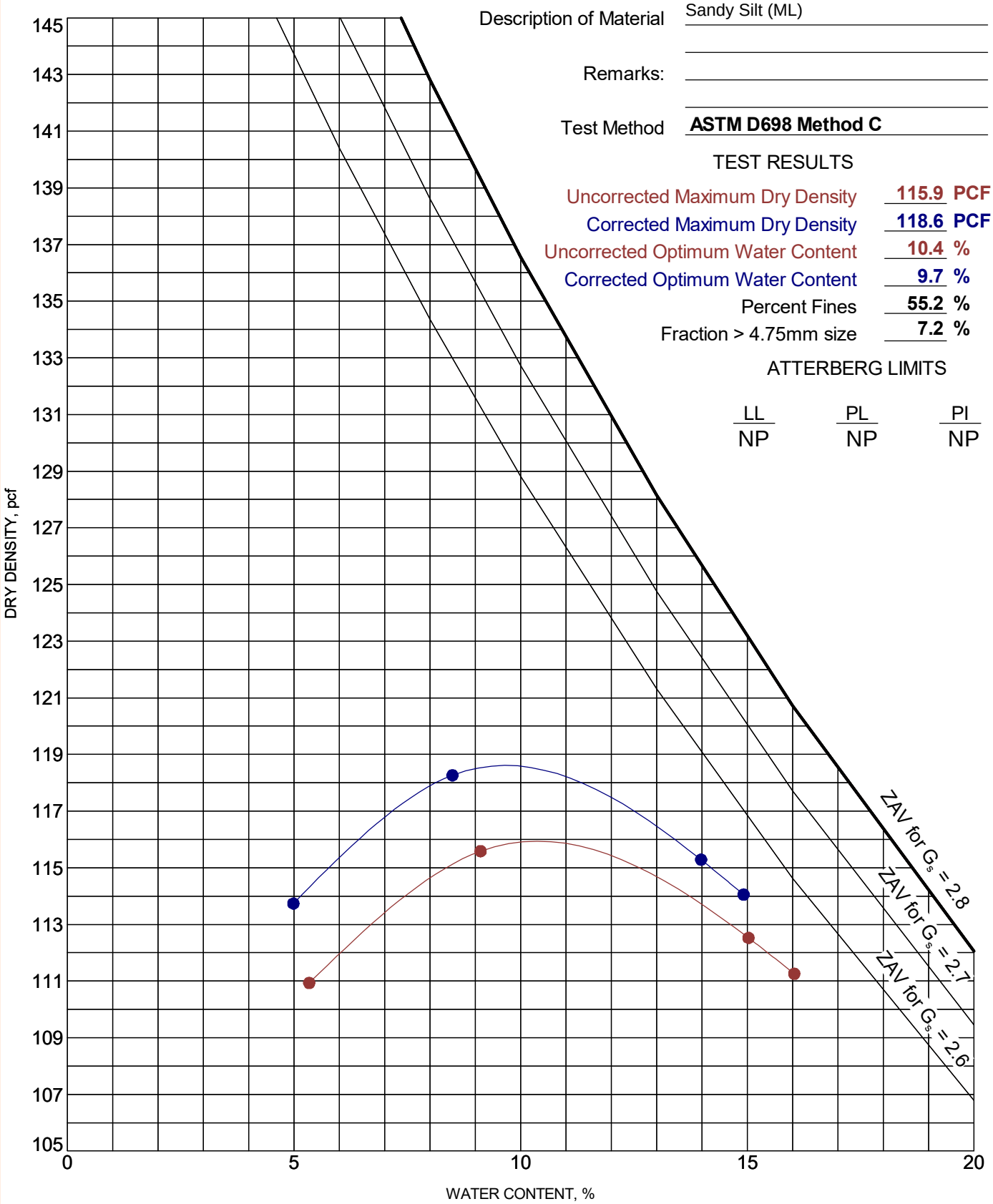
Source of Material	**ETP-4 @ 1 to 4 feet**
Description of Material	Sandy Silt (ML)
Remarks:	
Test Method	**ASTM D698 Method C**

TEST RESULTS

Uncorrected Maximum Dry Density	**115.9 PCF**
Corrected Maximum Dry Density	**118.6 PCF**
Uncorrected Optimum Water Content	**10.4 %**
Corrected Optimum Water Content	**9.7 %**
Percent Fines	**55.2 %**
Fraction > 4.75mm size	**7.2 %**

ATTERBERG LIMITS

LL	PL	PI
NP	NP	NP



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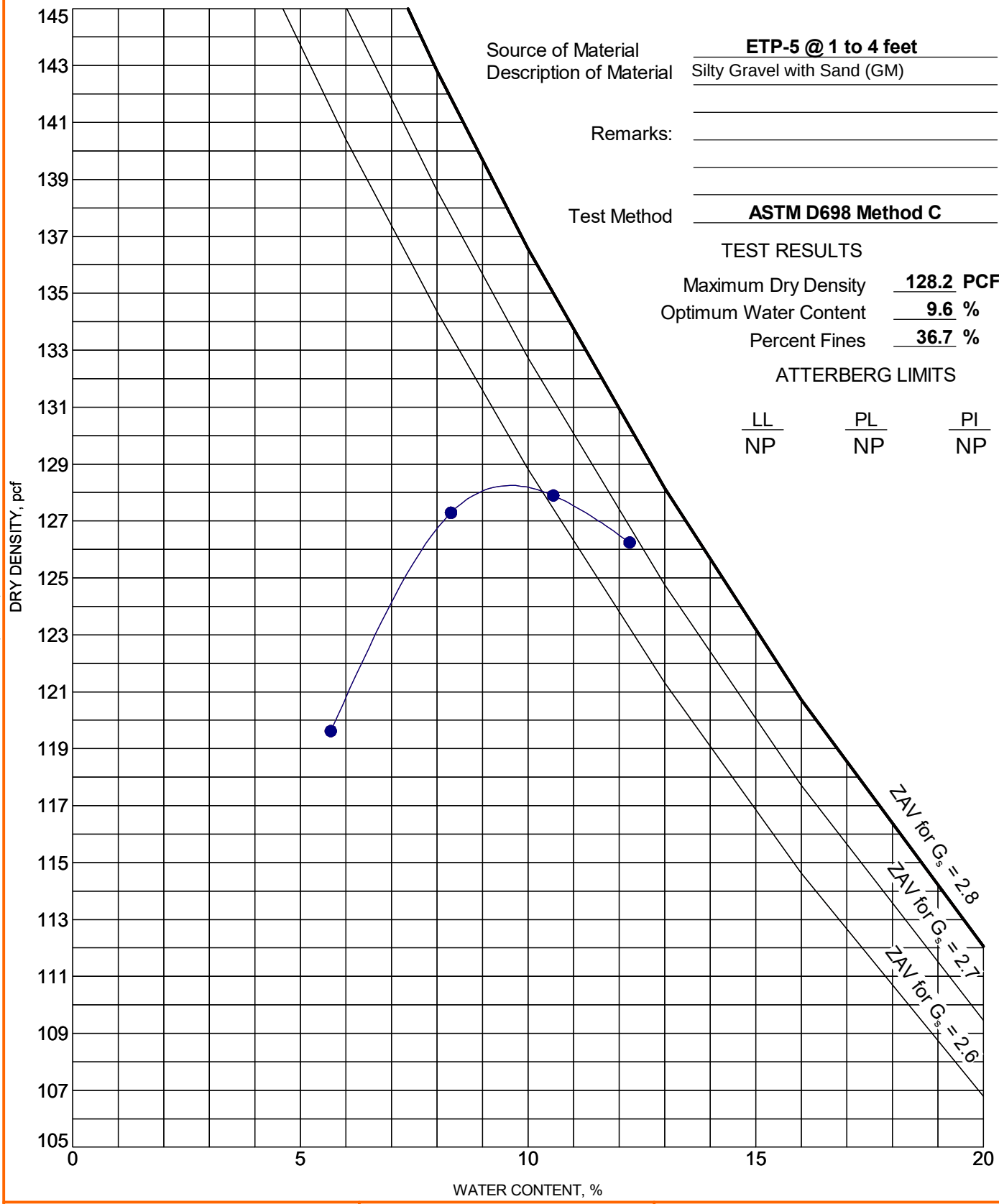
MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557



Source of Material: **ETP-5 @ 1 to 4 feet**

Description of Material: Silty Gravel with Sand (GM)

Remarks:

Test Method: **ASTM D698 Method C**

TEST RESULTS

Maximum Dry Density	**128.2**	**PCF**
Optimum Water Content	**9.6**	**%**
Percent Fines	**36.7**	**%**

ATTERBERG LIMITS

LL	PL	PI
NP	NP	NP

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MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

Source of Material: **ETP-6 @ 1 to 4 feet**

Description of Material: Sandy Silt (ML)

Remarks:

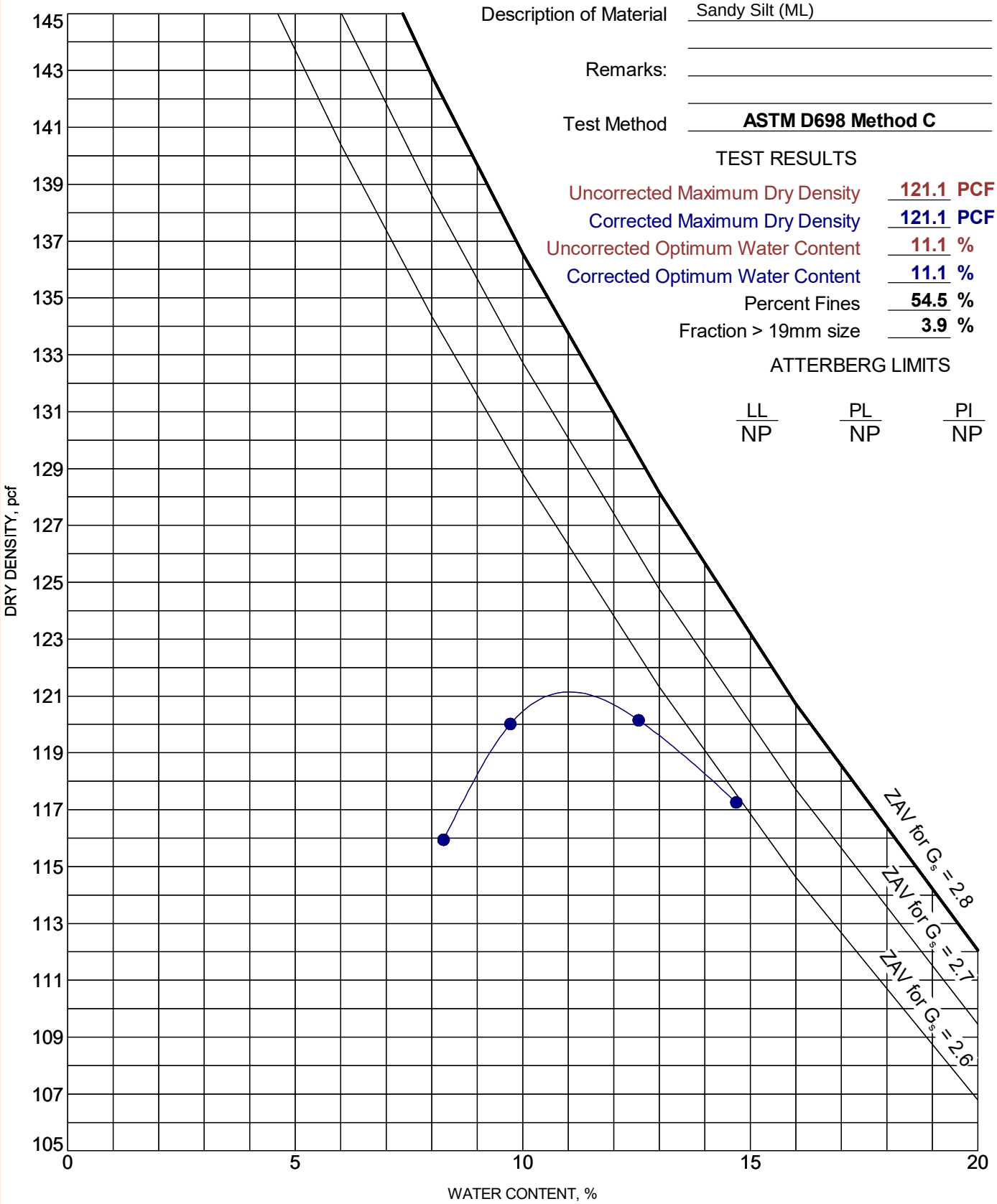
Test Method: **ASTM D698 Method C**

TEST RESULTS

Uncorrected Maximum Dry Density	121.1 PCF
Corrected Maximum Dry Density	121.1 PCF
Uncorrected Optimum Water Content	11.1 %
Corrected Optimum Water Content	11.1 %
Percent Fines	54.5 %
Fraction > 19mm size	3.9 %

ATTERBERG LIMITS

LL	PL	PI
NP	NP	NP



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CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V1 J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 12/3/19

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

Source of Material: **ETP-7 @ 1 to 4 feet**

Description of Material: Sandy Silt (ML)

Remarks:

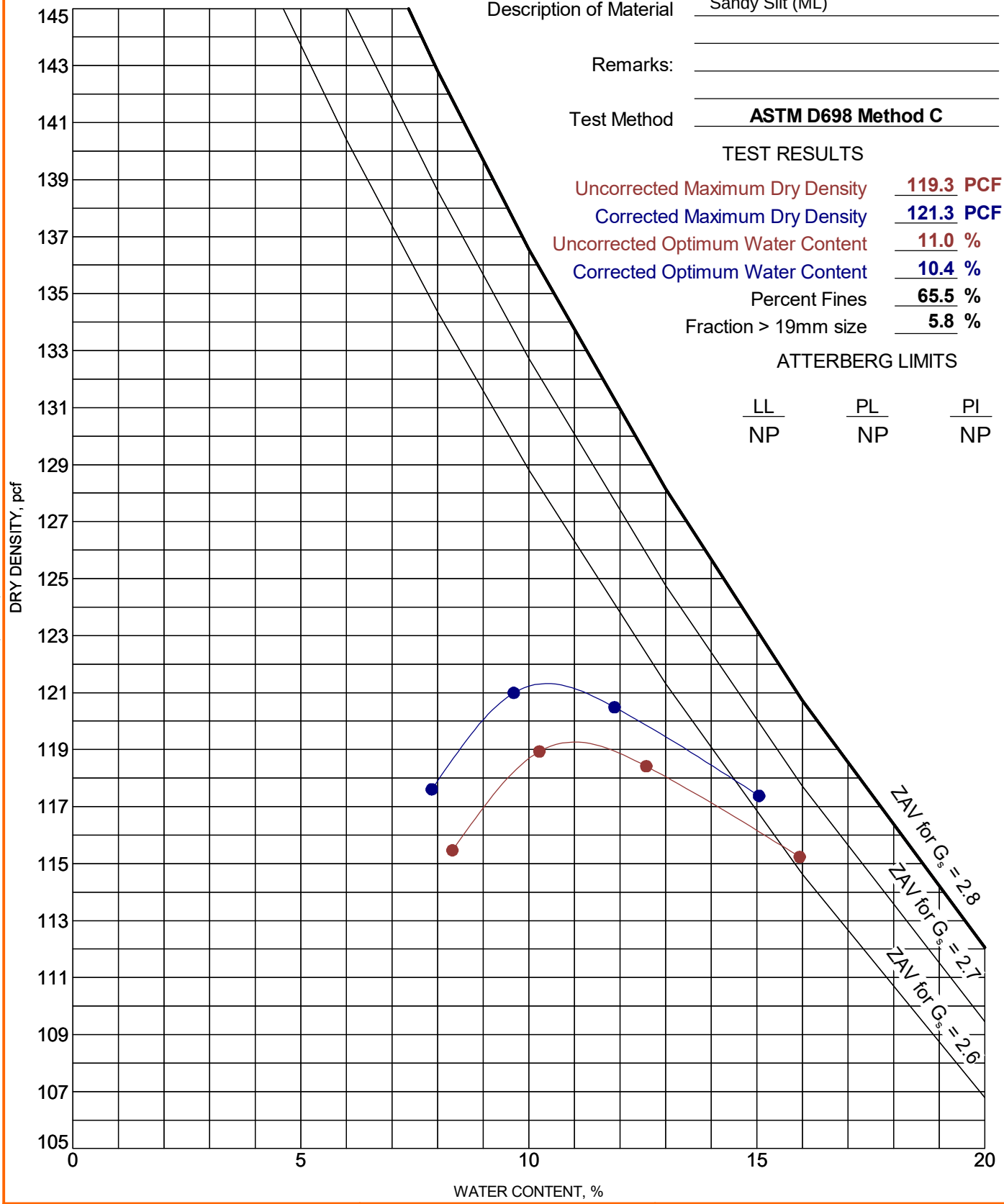
Test Method: **ASTM D698 Method C**

TEST RESULTS

Uncorrected Maximum Dry Density	119.3 PCF
Corrected Maximum Dry Density	121.3 PCF
Uncorrected Optimum Water Content	11.0 %
Corrected Optimum Water Content	10.4 %
Percent Fines	65.5 %
Fraction > 19mm size	5.8 %

ATTERBERG LIMITS

LL	PL	PI
NP	NP	NP



PROJECT: Excelsior (Byron) Solar Site - Preliminary

SITE: Batavia Byron Rd
Byron, NY

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

PROJECT NUMBER: J5195162

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V1 J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 12/3/19

MOISTURE-DENSITY RELATIONSHIP

ASTM D698/D1557

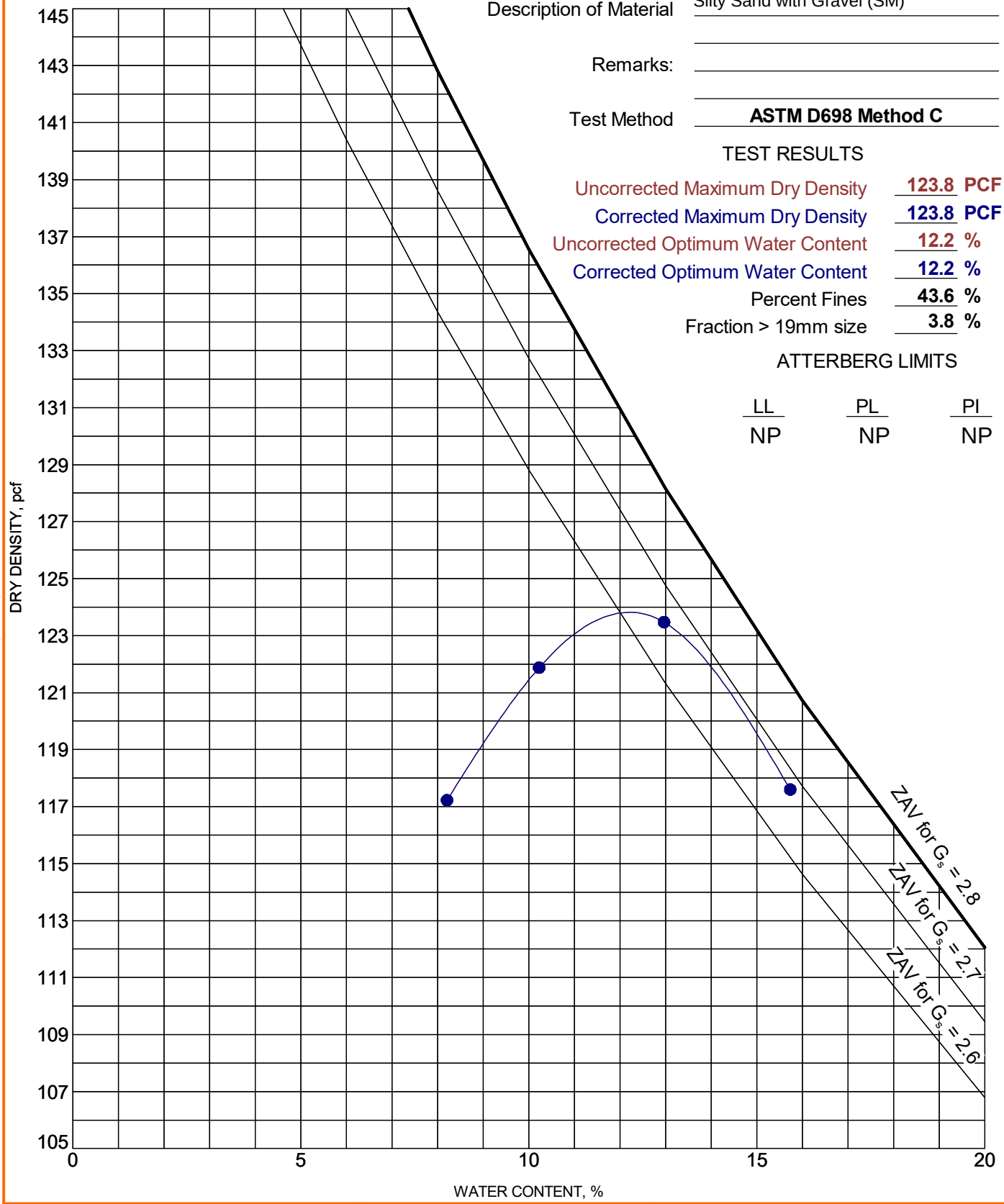
Source of Material	**ETP-10 @ 1 to 4 feet**
Description of Material	Silty Sand with Gravel (SM)
Remarks:	
Test Method	**ASTM D698 Method C**

TEST RESULTS

Uncorrected Maximum Dry Density	123.8	PCF
Corrected Maximum Dry Density	123.8	PCF
Uncorrected Optimum Water Content	12.2	%
Corrected Optimum Water Content	12.2	%
Percent Fines	43.6	%
Fraction > 19mm size	3.8	%

ATTERBERG LIMITS

LL	PL	PI
NP	NP	NP



PROJECT: Excelsior (Byron) Solar Site - Preliminary

SITE: Batavia Byron Rd
Byron, NY

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

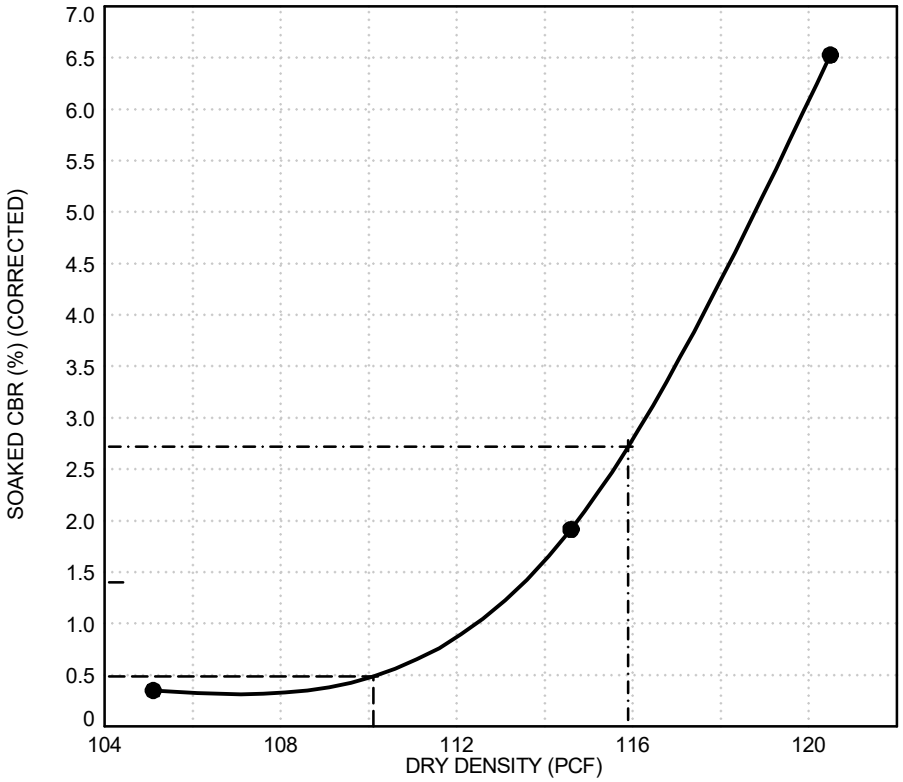
PROJECT NUMBER: J5195162

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. COMPACTION - V1 J5195162 EXCELSIOR (BYRON).GPJ TERRACON_DATATEMPLATE.GDT 12/3/19

CALIFORNIA BEARING RATIO

ASTM D1883-07[2]



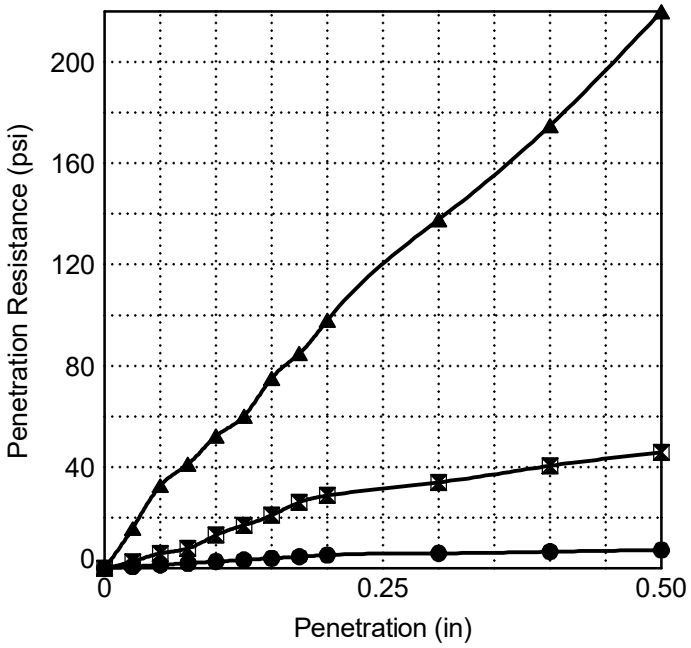
Source of Material: **ETP-4 1.0 to 4.0 ft**

Description of Material: Sandy Silt (ML)

Remarks:

Corrected Percent Fines: **55.2 %**

Atterberg Limits	LL	PL	PI
	NP	NP	NP



Sample No.	1	2	3
Sample Condition		Soaked	
Compaction Method		698A	
Maximum Dry Density, (pcf)	115.9	115.9	115.9
Optimum Moisture Content, (%)	10.4	10.4	10.4
Dry Density before Soaking, (pcf)	105.11	114.60	120.49
Moisture Content, (%)			
After Compaction	7.3	7.3	7.3
Top 1" After Soaking	18.3	16.3	16.2
Surcharge,. (lbs)	5.00	5.00	5.00
Swell, (%)	0.24	0.63	1.07
Bearing Ratio, (%)	0.3	1.9	6.5

Dry Density @ 90% 104.3 pcf

Dry Density @ 95% 110.1 pcf

Dry Density @ 100% 115.9 pcf

CBR @ 90% Density

CBR @ 95% Density 0.5

CBR @ 100% Density 2.7

PROJECT: Excelsior (Byron) Solar Site - Preliminary

SITE: Batavia Byron Rd
Byron, NY

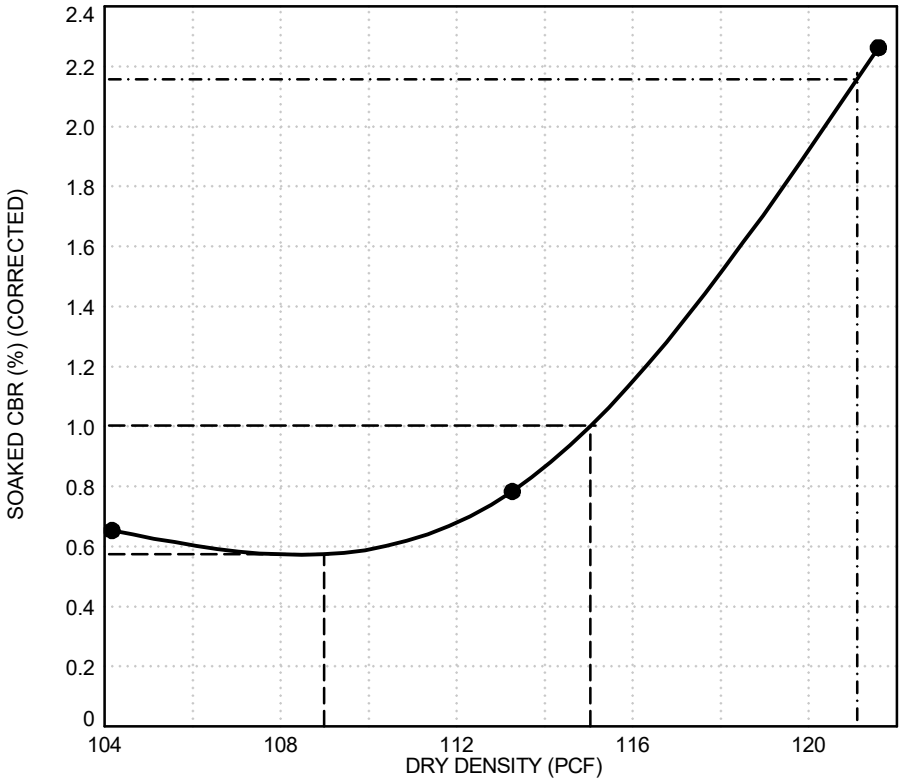
Terracon
15 Marway Cir, Ste 2B
Rochester, NY

PROJECT NUMBER: J5195162

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

CALIFORNIA BEARING RATIO

ASTM D1883-07[2]



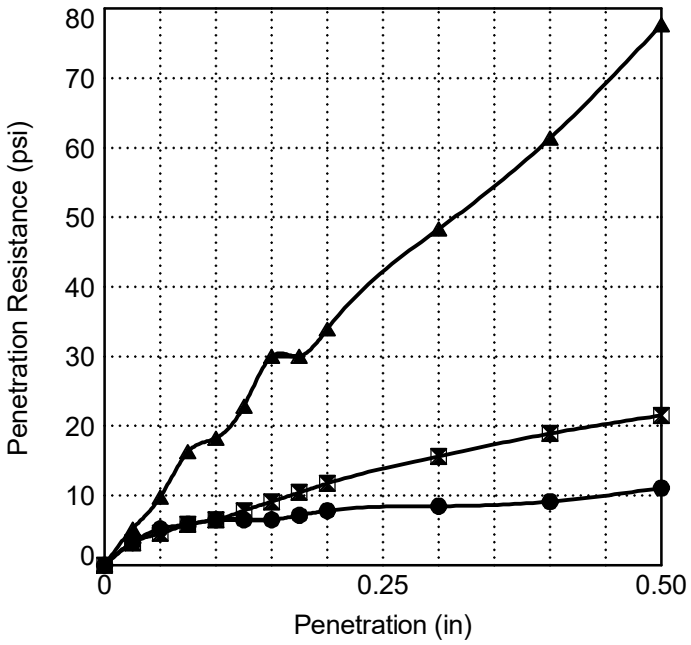
Source of Material: **ETP-6 1.0 to 4 ft**

Description of Material: Sandy Silt (ML)

Remarks:

Percent Fines: **54.5 %**

Atterberg Limits	LL	PL	PI
	NP	NP	NP



Sample No.	1	2	3
Sample Condition	Soaked		
Compaction Method	ASTM 698C		
Maximum Dry Density, (pcf)	121.1	121.1	121.1
Optimum Moisture Content, (%)	11.1	11.1	11.1
Dry Density before Soaking, (pcf)	104.17	113.27	121.59
Moisture Content, (%)			
After Compaction	11.4	11.4	11.4
Top 1" After Soaking	15.6	14.7	14.2
Surcharge,. (lbs)	5.00	5.00	5.00
Swell, (%)	0.11	0.52	0.09
Bearing Ratio, (%)	0.5	0.8	2.3

Dry Density @ 90% 109.0 pcf

Dry Density @ 95% 115.0 pcf

Dry Density @ 100% 121.1 pcf

CBR @ 90% Density 0.6

CBR @ 95% Density 1.0

CBR @ 100% Density 2.2

PROJECT: Excelsior (Byron) Solar Site - Preliminary

SITE: Batavia Byron Rd
Byron, NY

Terracon
15 Marway Cir, Ste 2B
Rochester, NY

PROJECT NUMBER: J5195162

CLIENT: NextEra Energy Constructors, LLC
Juno Beach, FL

CORROSION TESTING

(Exhibits- B016 through B021)

CHEMICAL LABORATORY TEST REPORT

Project Number: J5195162
Service Date: 11/05/19
Report Date: 11/25/19
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

NextEra Energy Constructors, LLC
Juno Beach, FL

Project

Excelsior (Byron) Solar Site - Preliminary

Sample Submitted By: Terracon (J5) **Date Received:** 10/29/2019 **Lab No.: 19-1300**

Results of Corrosion Analysis

Sample Number				
Sample Location	ETP-2	ETP-3	ETP-4	ETP-5
Sample Depth (ft.)	1-4	1-4	1-4	1-4
pH Analysis, AWWA 4500 H	7.80	8.07	7.88	8.09
Water Soluble Sulfate (SO4), ASTM C 1580 (mg/kg)	21	73	65	25
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	30	30	35	35
Red-Ox, AWWA 2580, (mV)	+681	+682	+685	+680
Total Salts, AWWA 2540, (mg/kg)	567	618	769	572
Resistivity, ASTM G 57, (ohm-cm)	6499	4171	6790	6693

Analyzed By:

Trisha Campo
Chemist

CHEMICAL LABORATORY TEST REPORT

Project Number: J5195162
Service Date: 11/05/19
Report Date: 11/25/19
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

NextEra Energy Constructors, LLC
Juno Beach, FL

Project

Excelsior (Byron) Solar Site - Preliminary

Sample Submitted By: Terracon (J5) **Date Received:** 10/29/2019 **Lab No.: 19-1300**

Results of Corrosion Analysis

Sample Number			
Sample Location	ETP-6	ETP-7	ETP-10
Sample Depth (ft.)	1-4	1-4	1-4
pH Analysis, AWWA 4500 H	7.98	7.99	8.19
Water Soluble Sulfate (SO4), ASTM C 1580 (mg/kg)	102	134	30
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	33	58	38
Red-Ox, AWWA 2580, (mV)	+682	+685	+681
Total Salts, AWWA 2540, (mg/kg)	634	830	519
Resistivity, ASTM G 57, (ohm-cm)	4171	2910	5529

Analyzed By: Trisha Campo
Chemist

CHEMICAL LABORATORY TEST REPORT

Project Number: J5195162
Service Date: 11/08/19
Report Date: 11/25/19
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

NextEra Energy Constructors, LLC
Juno Beach, FL

Project

Excelsior (Byron) Solar Site - Preliminary

Sample Submitted By: Terracon (J5) **Date Received:** 11/4/2019 **Lab No.: 19-1301**

Results of Corrosion Analysis

Sample Number				
Sample Location	EB-2	EB-5	EB-8	EB-10
Sample Depth (ft.)	1.0-4.0	1.0-4.0	1.0-4.0	1.0-4.0
pH Analysis, AWWA 4500 H	7.98	8.10	8.06	8.17
Water Soluble Sulfate (SO4), ASTM C 1580 (mg/kg)	39	138	122	156
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	70	85	58	80
Red-Ox, AWWA 2580, (mV)	+681	+684	+685	+686
Total Salts, AWWA 2540, (mg/kg)	533	936	981	966
Resistivity, ASTM G 57, (ohm-cm)	6402	2328	3783	2813

Analyzed By: Trisha Campo

Trisha Campo
Chemist

CHEMICAL LABORATORY TEST REPORT

Project Number: J5195162
Service Date: 11/08/19
Report Date: 11/25/19
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

NextEra Energy Constructors, LLC
Juno Beach, FL

Project

Excelsior (Byron) Solar Site - Preliminary

Sample Submitted By: Terracon (J5) **Date Received:** 11/4/2019 **Lab No.: 19-1301**

Results of Corrosion Analysis

Sample Number				
Sample Location	EB-14	EB-15	EB-17	EB-18
Sample Depth (ft.)	1.0-4.0	1.0-4.0	1.0-4.0	1.0-4.0
pH Analysis, AWWA 4500 H	8.50	8.30	8.26	8.18
Water Soluble Sulfate (SO4), ASTM C 1580 (mg/kg)	87	32	39	31
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	50	63	53	58
Red-Ox, AWWA 2580, (mV)	+682	+683	+681	+680
Total Salts, AWWA 2540, (mg/kg)	662	781	702	778
Resistivity, ASTM G 57, (ohm-cm)	4171	3201	4171	2522

Analyzed By:

Trisha Campo
Chemist

CHEMICAL LABORATORY TEST REPORT

Project Number: J5195162
Service Date: 11/08/19
Report Date: 11/25/19
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

NextEra Energy Constructors, LLC
Juno Beach, FL

Project

Excelsior (Byron) Solar Site - Preliminary

Sample Submitted By: Terracon (J5) **Date Received:** 11/4/2019 **Lab No.: 19-1301**

Results of Corrosion Analysis

Sample Number		
Sample Location	EB-20	EB-21
Sample Depth (ft.)	1.0-4.0	1.0-4.0
pH Analysis, AWWA 4500 H	8.15	8.22
Water Soluble Sulfate (SO4), ASTM C 1580 (mg/kg)	28	41
Sulfides, AWWA 4500-S D, (mg/kg)	Nil	Nil
Chlorides, ASTM D 512, (mg/kg)	73	68
Red-Ox, AWWA 2580, (mV)	+681	+680
Total Salts, AWWA 2540, (mg/kg)	886	833
Resistivity, ASTM G 57, (ohm-cm)	3201	3298

Analyzed By: Trisha Campo
Chemist

CHEMICAL LABORATORY TEST REPORT

Project Number: J5195162
Service Date: 12/06/19
Report Date: 12/10/19
Task:

Terracon
750 Pilot Road, Suite F
Las Vegas, Nevada 89119
(702) 597-9393

Client

NextEra Energy Constructors, LLC
Juno Beach, FL

Project

Excelsior (Byron) Solar Site - Preliminary

Sample Submitted By: Terracon (J5) **Date Received:** 12/5/2019 **Lab No.: 19-1361**

Results of Corrosion Analysis

Sample Number	
Sample Location	ESS-1
Sample Depth (ft.)	0.0-2.0
pH Analysis, AWWA 4500 H	8.10
Water Soluble Sulfate (SO4), ASTM C 1580 (mg/kg)	77
Sulfides, AWWA 4500-S D, (mg/kg)	Nil
Chlorides, ASTM D 512, (mg/kg)	75
Red-Ox, AWWA 2580, (mV)	+682
Total Salts, AWWA 2540, (mg/kg)	975
Resistivity, ASTM G 57, (ohm-cm)	2522

Analyzed By: Trisha Campo
Chemist

THERMAL RESISTIVITY TEST RESULTS
(BULK SAMPLES/UNDISTURBED SAMPLES)

(Exhibits- B022 through B029)

21239 FM529 Rd., Bldg. F
Cypress, TX 77433
Tel: 281-985-9344
Fax: 832-427-1752
info@geothermusa.com

December 2, 2019

Terracon Consultants, Inc.
15 Marway Circle, Suite 2B
Rochester, New York 14624
Attn: Travis Wooden, E.I.T.

Re: Thermal Analysis of Native Soil Samples
Excelsior (Byron) Solar, Byron, NY (Project No. J5195162)

The following is the report of thermal dryout characterization tests conducted on the five (5) tube samples and seven (7) bulk samples of native soil from the referenced project sent to our laboratory.

Thermal Resistivity Tests: The tube samples were tested 'as is' and the bulk samples were reconstituted at the optimum moisture content and at 90% of the maximum dry density ***provided by Terracon.*** The tests were conducted in accordance with the IEEE standard 442-2017. The results are tabulated below and the thermal dryout curves are presented in **Figures 1 and 6.**

Sample ID, Description, Thermal Resistivity, Moisture Content and Density

Sample ID	Depth (1'-4')	Soil Description (Terracon)	Thermal Resistivity (°C-cm/W)		Moisture Content (%)	Dry Density (lb/ft^3)
			Wet	Dry		
EPT-2	Bulk (90%)	Sandy Silt	55	144	12	110
	Tube		49	116	8	127
EPT-3	Bulk (90%)	Silty Gravel with Sand	65	162	12	110
EPT-4	Bulk (90%)	Sandy Silt	72	209	10	107
EPT-5	Bulk (90%)	Silty Gravel with Sand	58	154	10	115
	Tube		82	235	7	94

Sample ID, Description, Thermal Resistivity, Moisture Content and Density

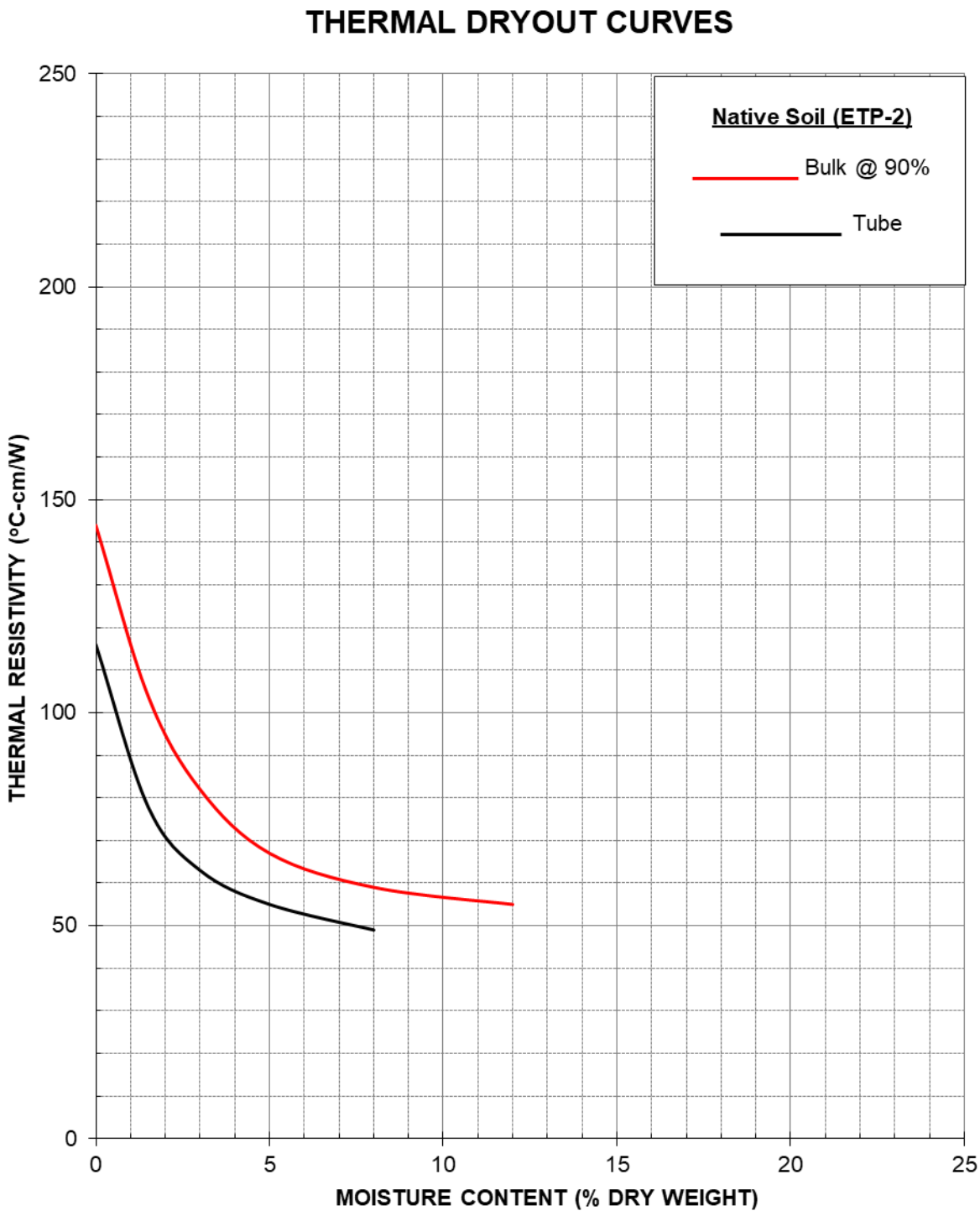
Sample ID	Depth (1'-4')	Soil Description (Terracon)	Thermal Resistivity (°C-cm/W)		Moisture Content (%)	Dry Density (lb/ft^3)
			Wet	Dry		
EPT-6	Bulk (90%)	Sandy Silt	61	166	13	109
	Tube		52	128	10	126
EPT-7	Bulk (90%)	Sandy Silt	61	168	12	109
	Tube		55	144	11	112
EPT-10	Bulk (90%)	Silty Sand with Gravel	57	175	13	111
	Tube		71	214	9	111

Comments: The thermal characteristic depicted in the dryout curves apply for the samples at their respective test dry density.

Please contact us if you have any questions or if we can be of further assistance.

Geotherm USA

Nimesh Patel



Terracon Consultants (Project No. J5195162)

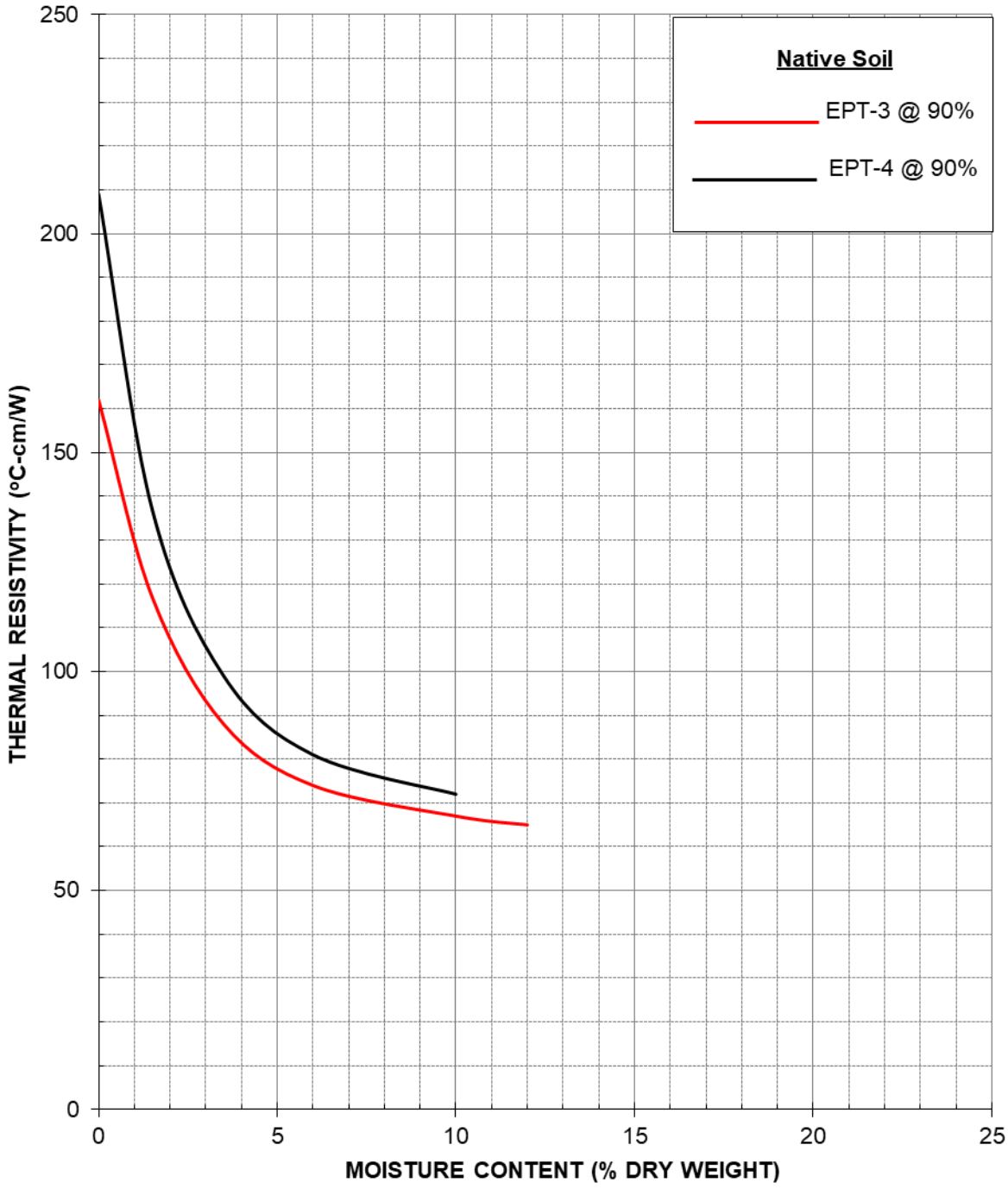
Thermal Analysis of Native Soil

Excelsior (Byron) Solar, Byron, NY

December 2019

Figure 1

THERMAL DRYOUT CURVES



Terracon Consultants (Project No. J5195162)

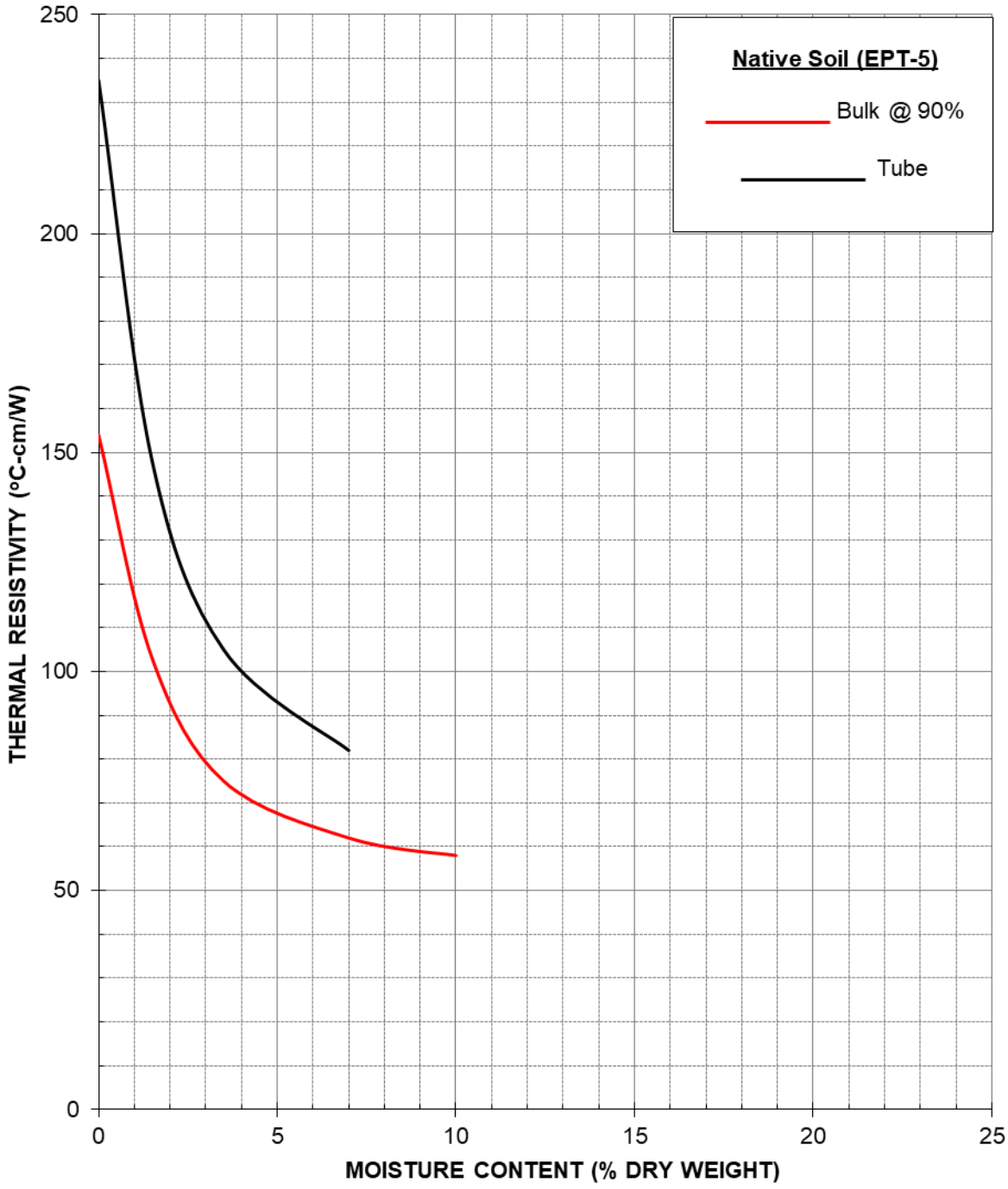
Thermal Analysis of Native Soil

Excelsior (Byron) Solar, Byron, NY

December 2019

Figure 2

THERMAL DRYOUT CURVES



Terracon Consultants (Project No. J5195162)

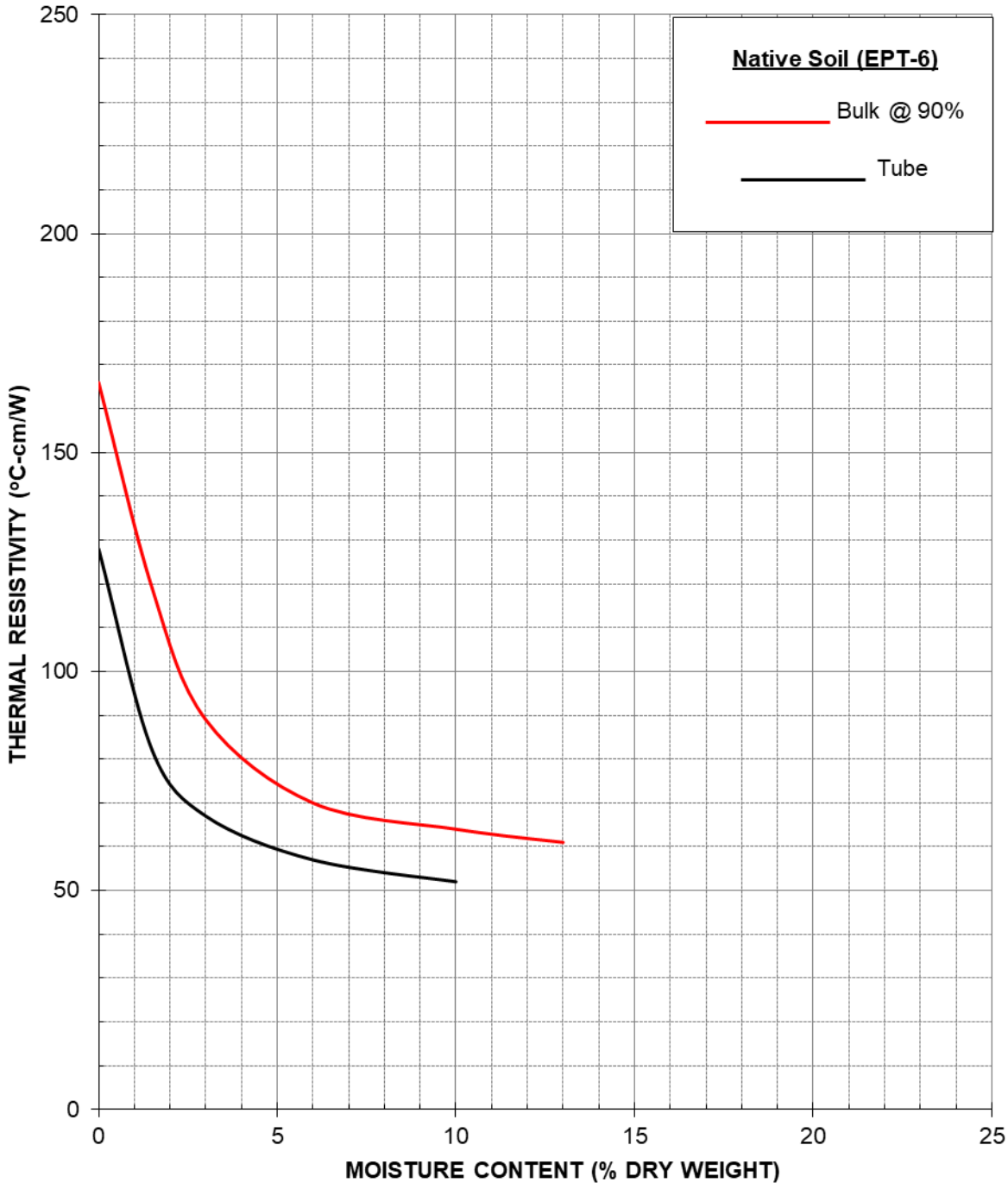
Thermal Analysis of Native Soil

Excelsior (Byron) Solar, Byron, NY

December 2019

Figure 3

THERMAL DRYOUT CURVES



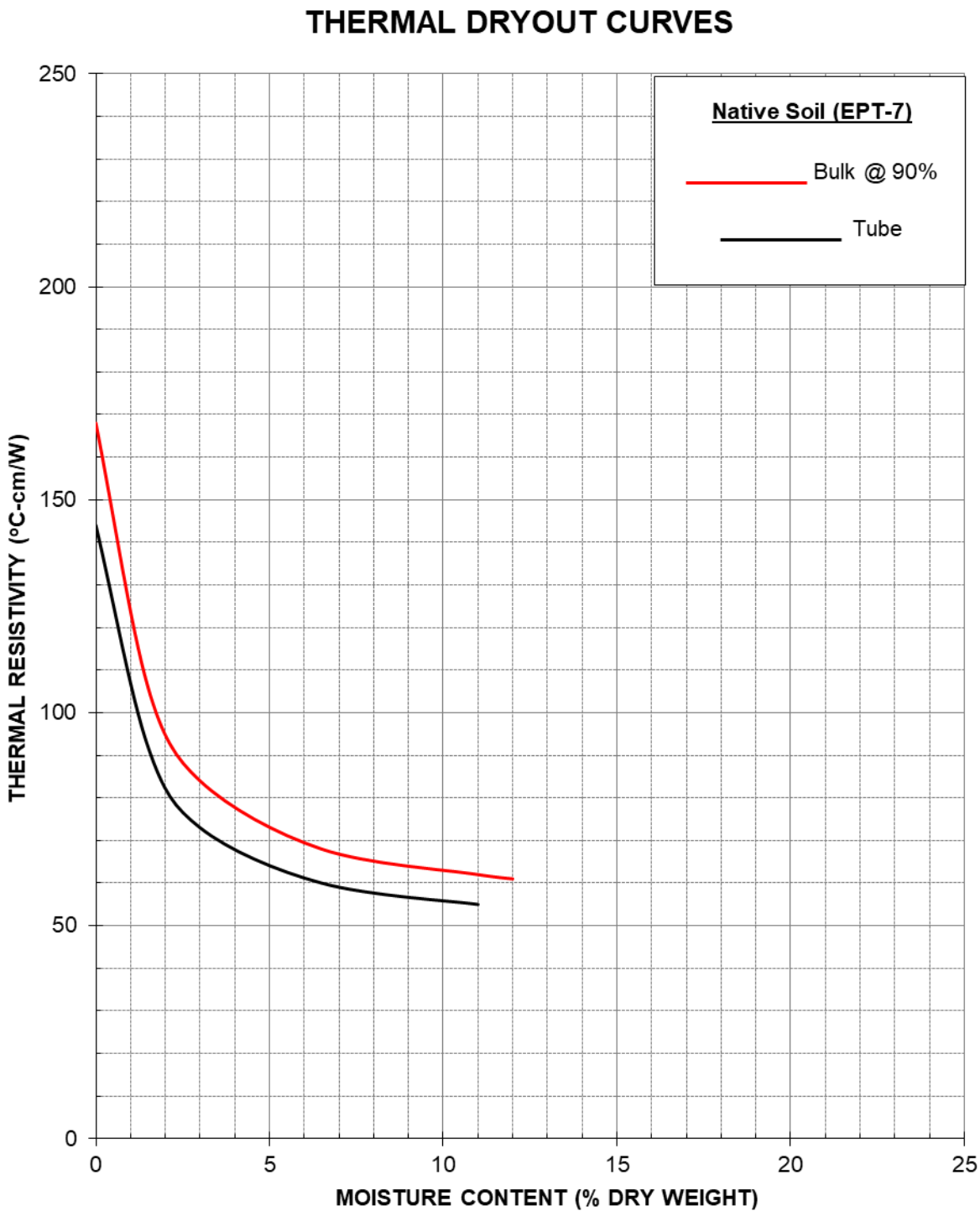
Terracon Consultants (Project No. J5195162)

Thermal Analysis of Native Soil

Excelsior (Byron) Solar, Byron, NY

December 2019

Figure 4



Terracon Consultants (Project No. J5195162)

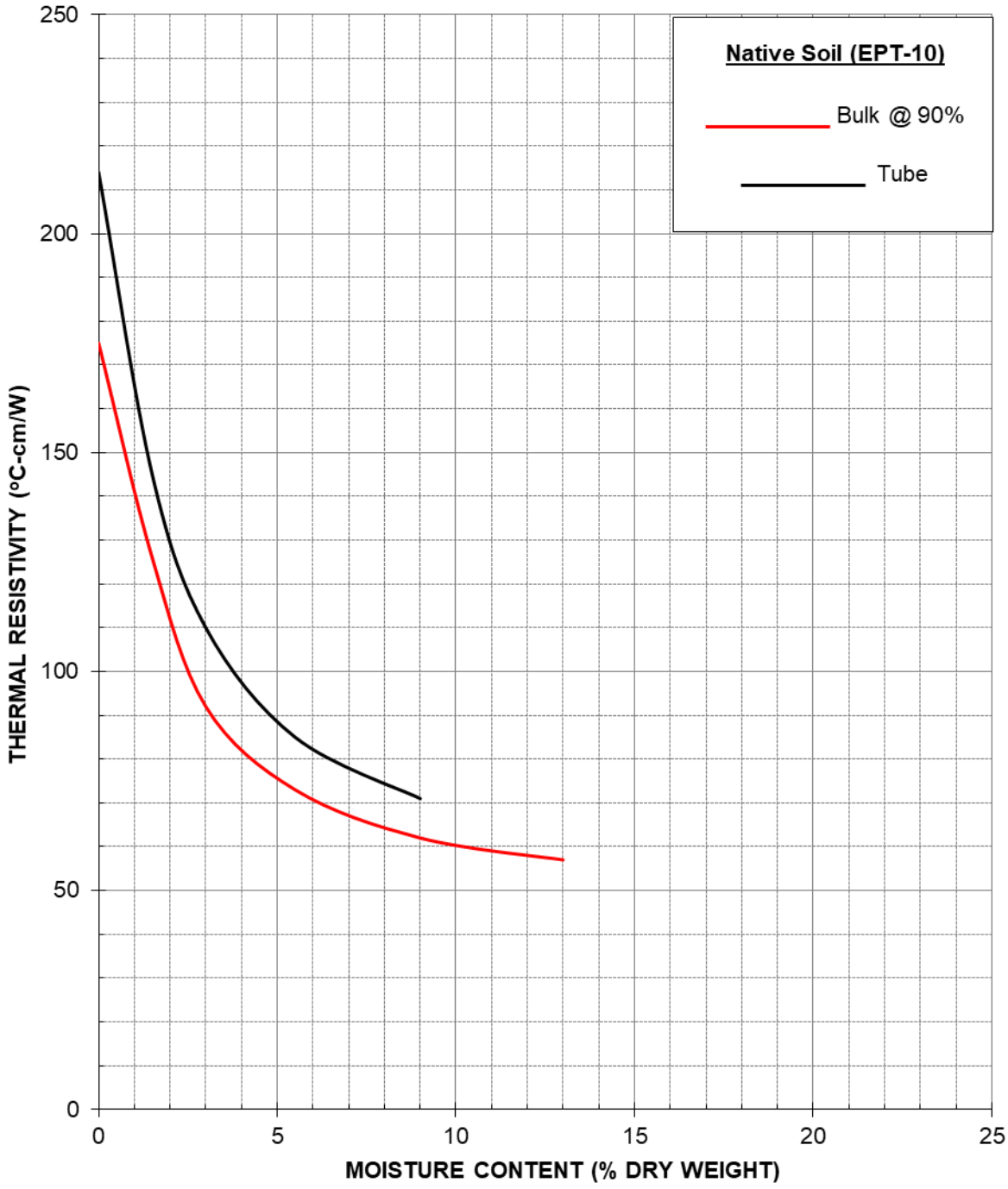
Thermal Analysis of Native Soil

Excelsior (Byron) Solar, Byron, NY

December 2019

Figure 5

THERMAL DRYOUT CURVES



Terracon Consultants (Project No. J5195162)

Thermal Analysis of Native Soil

Excelsior (Byron) Solar, Byron, NY

December 2019

Figure 6

APPENDIX C

FIELD ELECTRICAL RESISTIVITY TEST RESULTS

(Exhibits- C001 through C019)

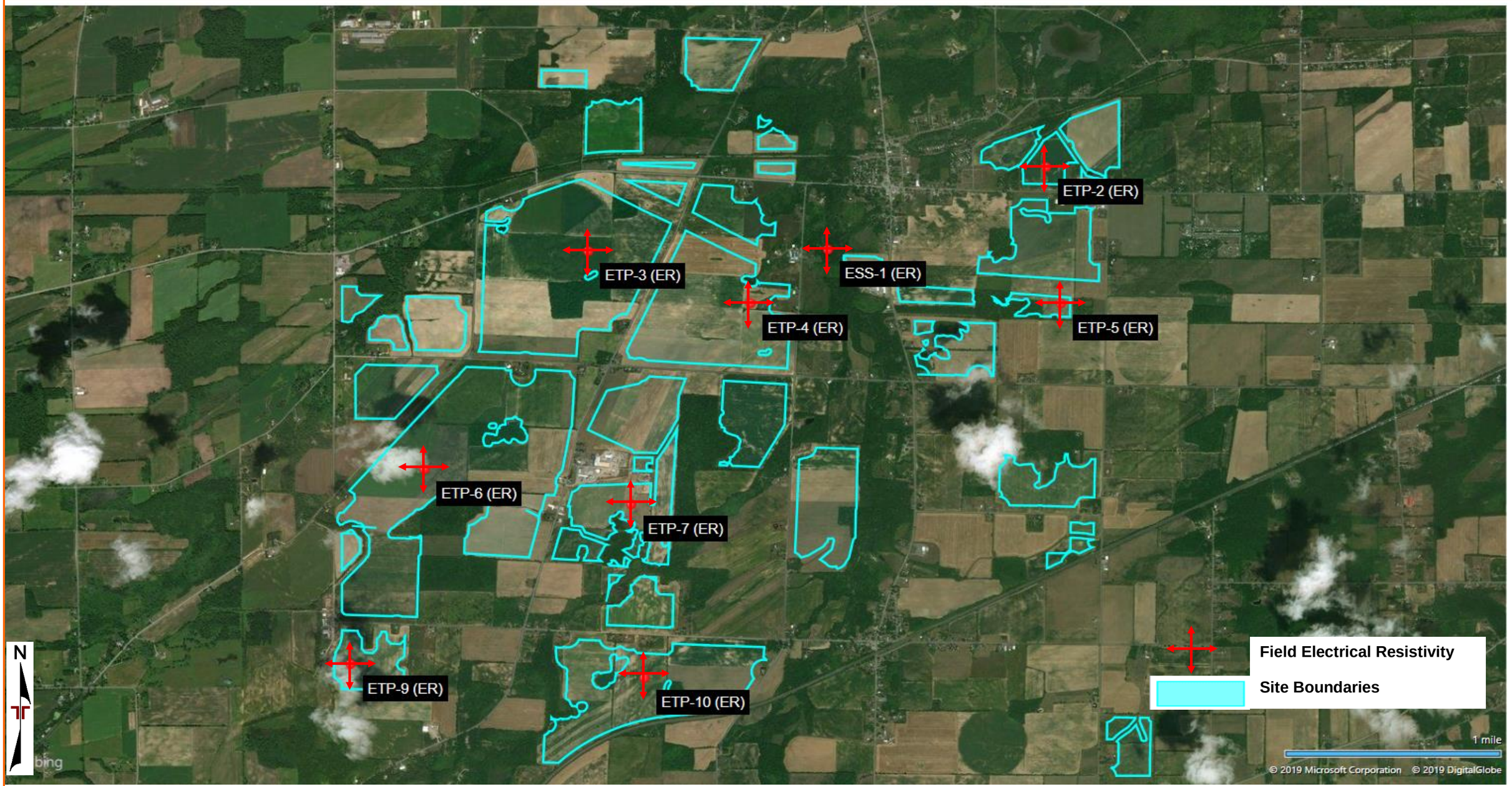


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY USGS

Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-2	Equipment: Megger DET2/2 Auto Earth Tester
Test Date: 10/10/19	Tested by: Tyler Wooden
Weather: clear, sunny	Temperature: 55°F

Resistivity Line 1					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	12.6	12.6	12.6	13	6,037
5	6.0	6.0	6.0	6	5,716
10	2.69	2.69	2.69	3	5,151
20	1.429	1.429	1.429	1	5,473
50	0.757	0.757	0.757	1	7,248
Center Coordinates: 43.0811°N, -78.0501°W					
Line Orientation: North-South					

Line Notes:

Resistivity Line 2					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	16.7	16.7	16.7	17	7,995
5	10.3	10.3	10.3	10	9,881
10	4.32	4.32	4.32	4	8,273
20	1.91	1.91	1.91	2	7,308
50	0.82	0.82	0.82	1	7,823
Center Coordinates: 43.0811°N, -78.0501°W					
Line Orientation: East - West					

Line Notes:

Comments:

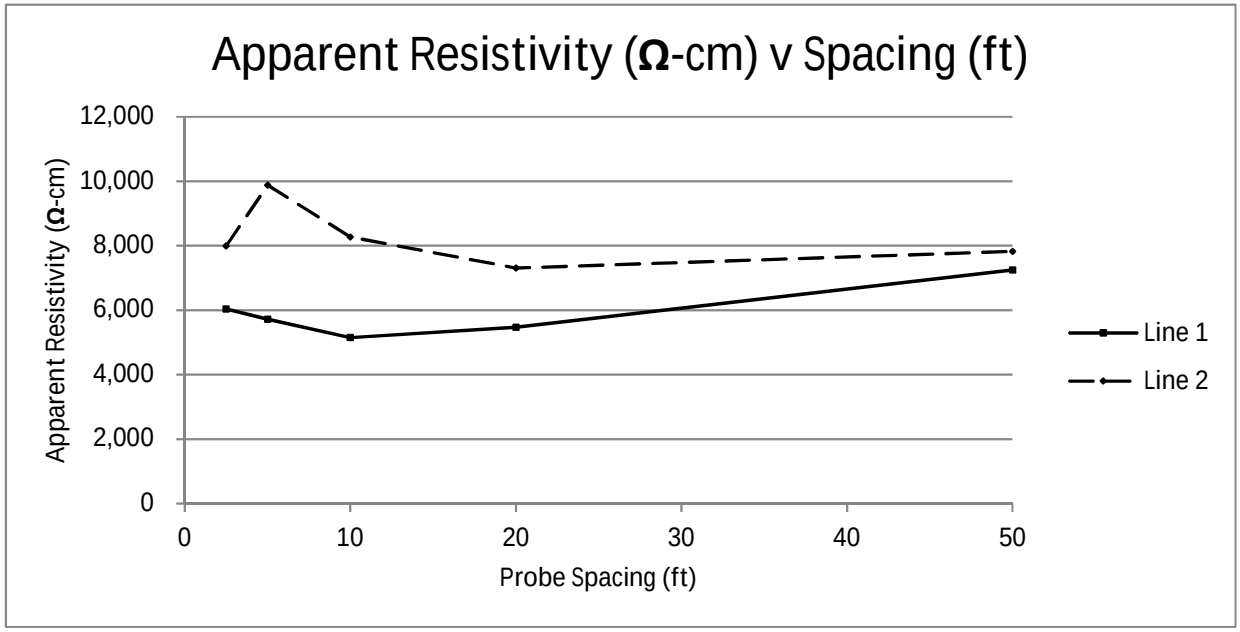
1. Field electrical resistivity testing performed per ASTM G57-06, "Standard Test Method for Field Measurement of Electrical Resistivity Using the Wenner Four-Electrode Method"

2 Ground Conditions: Hay field

3 Field resistivity values may be affected by circumstances such as precipitation, ground temperature and air temperature. Resistivity testing may also be influenced by site conditions such as: presence of cobbles, boulders , bedrock, and groundwater; as well as moisture content of the soils and the compactness of the soil.

Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-2



Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-3	Equipment: Megger DET2/2 Auto Earth Tester
Test Date: 10/10/19	Tested by: Tyler Wooden
Weather: clear, sunny	Temperature: 55°F

Resistivity Line 1					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	9.4	9.4	9.4	9	4,476
5	4.5	4.5	4.5	4	4,290
10	2.53	2.53	2.53	3	4,845
20	1.657	1.657	1.657	2	6,346
50	1.12	1.12	1.12	1	10,762
Center Coordinates: 43.0753°N, -78.0922°W					
Line Orientation:North-South					

Line Notes:

Resistivity Line 2					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	10.8	10.8	10.8	11	5,180
5	6.3	6.3	6.3	6	6,061
10	3.35	3.35	3.35	3	6,415
20	2.19	2.19	2.19	2	8,388
50	1.11	1.11	1.11	1	10,657
Center Coordinates: 43.0753°N, -78.0922°W					
Line Orientation: East - West					

Line Notes:

Comments:

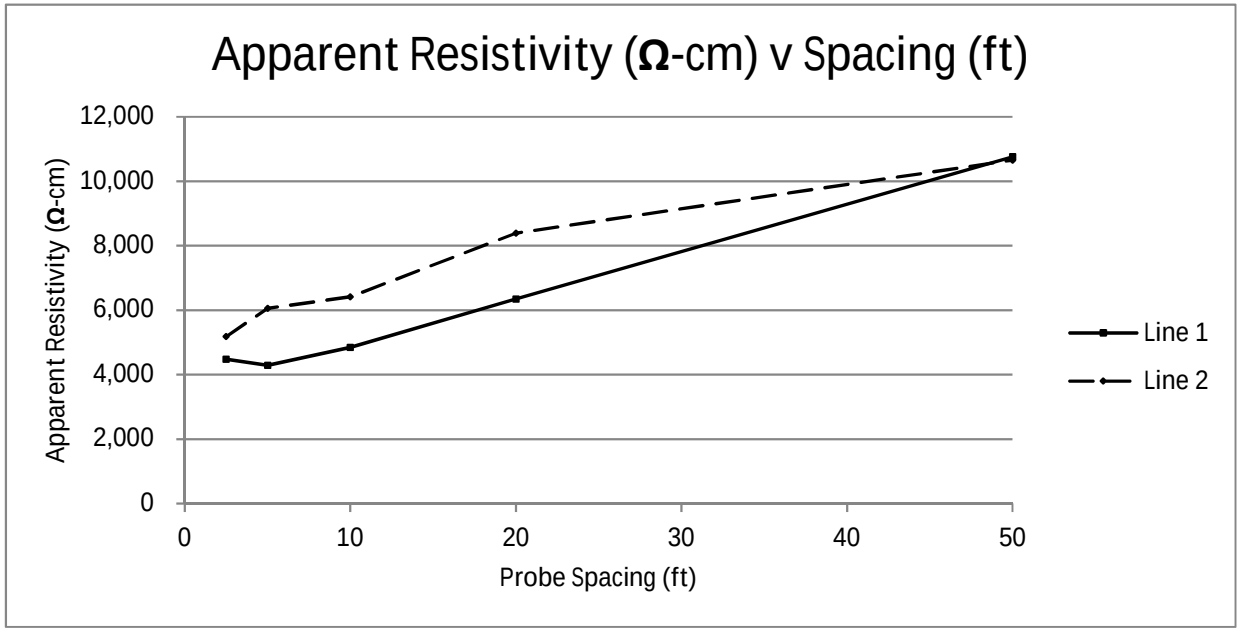
1. Field electrical resistivity testing performed per ASTM G57-06, "Standard Test Method for Field Measurement of Electrical Resistivity Using the Wenner Four-Electrode Method"

2 Ground Conditions: Tilled field

3 Field resistivity values may be affected by circumstances such as precipitation, ground temperature and air temperature. Resistivity testing may also be influenced by site conditions such as: presence of cobbles, boulders , bedrock, and groundwater; as well as moisture content of the soils and the compactness of the soil.

Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-3



Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Terracon

Test Location: ETP-4	Equipment: Megger DET2/2 Auto Earth Tester
Test Date: 10/10/19	Tested by: Tyler Wooden
Weather: clear, sunny	Temperature: 55°F

Resistivity Line 1					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	13.2	13.2	13.2	13	6,324
5	9.4	9.4	9.4	9	9,001
10	4.03	4.03	4.03	4	7,717
20	1.63	1.63	1.63	2	6,243
50	0.96	0.96	0.96	1	9,144
Center Coordinates: 43.0717°N, -78.0772°W					
Line Orientation:North-South					

Line Notes:

Resistivity Line 2					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	12.7	12.7	12.7	13	6,066
5	5.7	5.7	5.7	6	5,496
10	3.03	3.03	3.03	3	5,802
20	1.274	1.274	1.274	1	4,879
50	0.90	0.90	0.90	1	8,589
Center Coordinates: 43.0717°N, -78.0772°W					
Line Orientation: East - West					

Line Notes:

Comments:

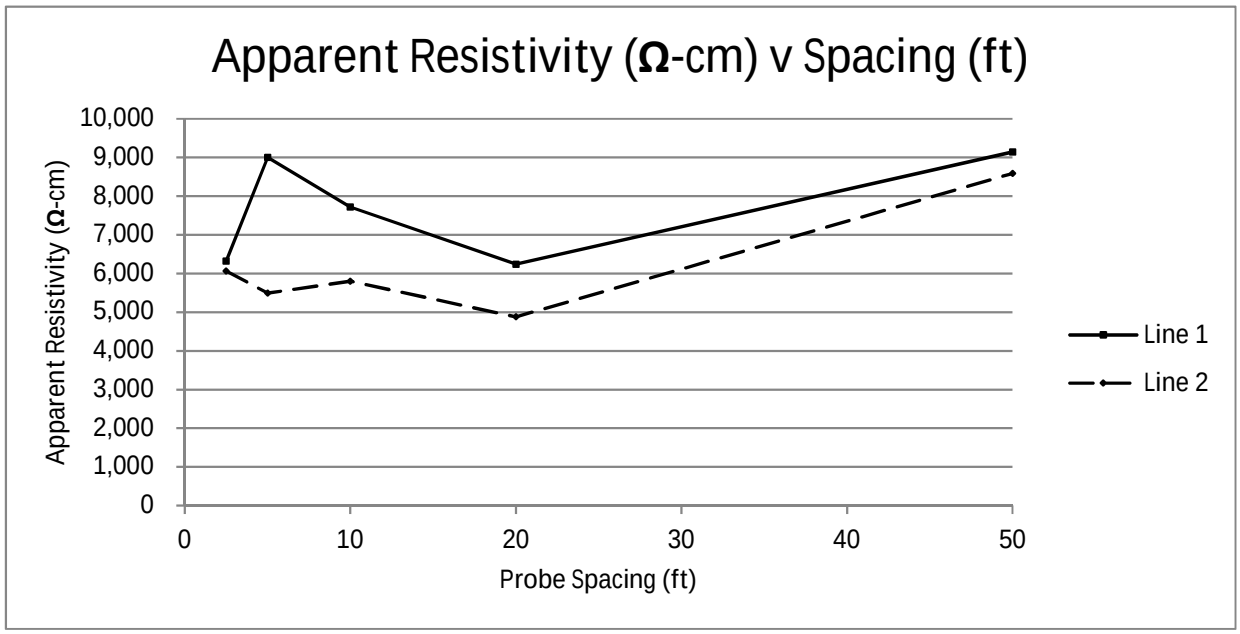
1. Field electrical resistivity testing performed per ASTM G57-06, "Standard Test Method for Field Measurement of Electrical Resistivity Using the Wenner Four-Electrode Method"

2 Ground Conditions: Field edge

3 Field resistivity values may be affected by circumstances such as precipitation, ground temperature and air temperature. Resistivity testing may also be influenced by site conditions such as: presence of cobbles, boulders , bedrock, and groundwater; as well as moisture content of the soils and the compactness of the soil.

Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-4



Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-5	Equipment: Megger DET2/2 Auto Earth Tester
Test Date: 10/10/19	Tested by: Tyler Wooden
Weather: clear, sunny	Temperature: 55°F

Resistivity Line 1					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	14.71	14.71	14.71	15	7,042
5	3.2	3.2	3.2	3	3,074
10	1.776	1.776	1.776	2	3,401
20	1.16	1.16	1.16	1	4,443
50	0.79	0.79	0.79	1	7,564
Center Coordinates: 43.0717°N, 78.0487°W					
Line Orientation:North-South					

Line Notes:

Resistivity Line 2					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	12.65	12.65	12.65	13	6,056
5	3.04	3.04	3.04	3	2,911
10	1.963	1.963	1.963	2	3,759
20	1.277	1.277	1.277	1	4,891
50	0.86	0.86	0.86	1	8,187
Center Coordinates: 43.0717°N, 78.0487°W					
Line Orientation: East - West					

Line Notes:

Comments:

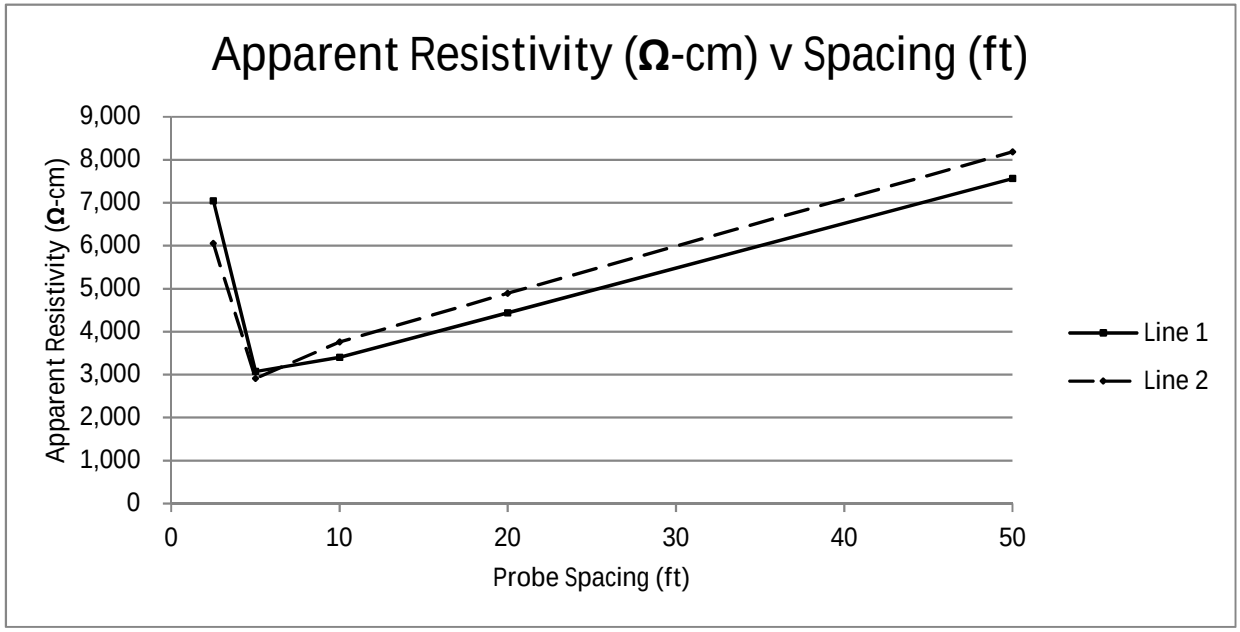
1. Field electrical resistivity testing performed per ASTM G57-06, "Standard Test Method for Field Measurement of Electrical Resistivity Using the Wenner Four-Electrode Method"

2 Ground Conditions: Corn field, edge

3 Field resistivity values may be affected by circumstances such as precipitation, ground temperature and air temperature. Resistivity testing may also be influenced by site conditions such as: presence of cobbles, boulders , bedrock, and groundwater; as well as moisture content of the soils and the compactness of the soil.

Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-5



Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-6	Equipment: Megger DET2/2 Auto Earth Tester
Test Date: 10/10/19	Tested by: Tyler Wooden
Weather: clear, sunny	Temperature: 55°F

Resistivity Line 1					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	13.16	13.16	13.16	13	6,300
5	5.8	5.8	5.8	6	5,515
10	2.74	2.74	2.74	3	5,247
20	1.63	1.63	1.63	2	6,243
50	1.20	1.20	1.20	1	11,509
Center Coordinates: 43.0601°N, -78.1072°W					
Line Orientation:North-South					

Line Notes:

Resistivity Line 2					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	15.84	15.84	15.84	16	7,583
5	5.8	5.8	5.8	6	5,534
10	2.86	2.86	2.86	3	5,477
20	1.63	1.63	1.63	2	6,243
50	1.17	1.17	1.17	1	11,222
Center Coordinates: 43.0601°N, -78.1072°W					
Line Orientation: East - West					

Line Notes:

Comments:

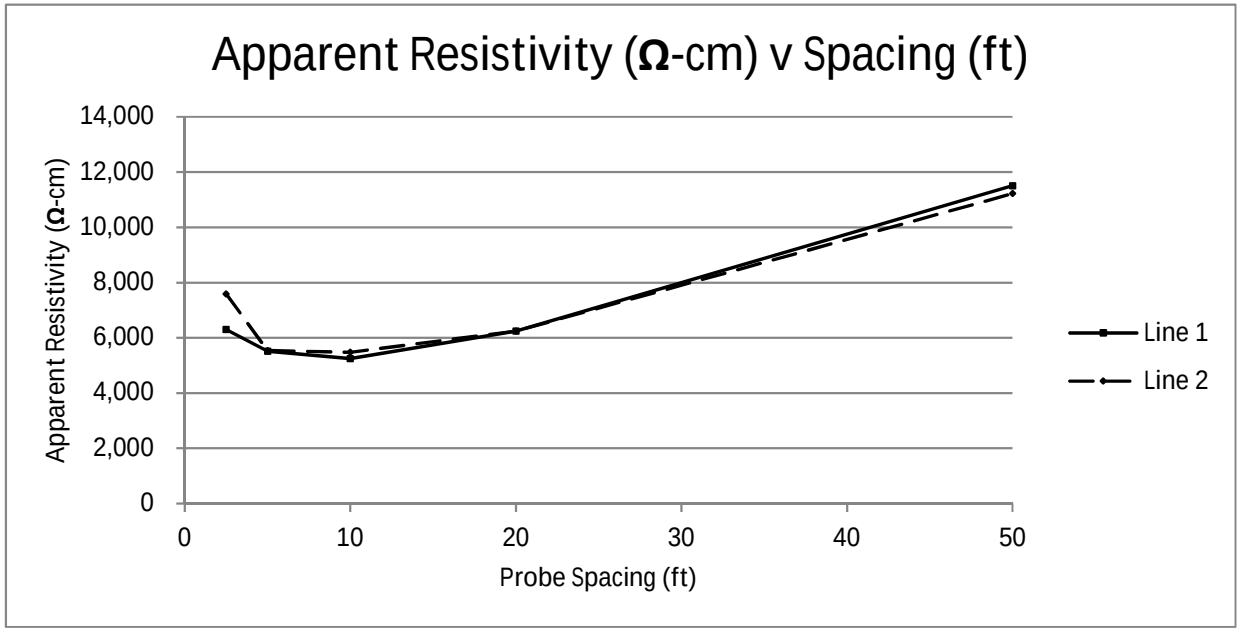
1. Field electrical resistivity testing performed per ASTM G57-06, "Standard Test Method for Field Measurement of Electrical Resistivity Using the Wenner Four-Electrode Method"

2 Ground Conditions: Cabbage field, picked

3 Field resistivity values may be affected by circumstances such as precipitation, ground temperature and air temperature. Resistivity testing may also be influenced by site conditions such as: presence of cobbles, boulders , bedrock, and groundwater; as well as moisture content of the soils and the compactness of the soil.

Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-6



Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Terracon

Test Location: ETP-7	Equipment: Megger DET2/2 Auto Earth Tester
Test Date: 10/10/19	Tested by: Tyler Wooden
Weather: clear, sunny	Temperature: 55°F

Resistivity Line 1					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	6.34	6.34	6.34	6	3,035
5	3.5	3.5	3.5	4	3,351
10	1.8	1.8	1.8	2	3,430
20	0.988	0.988	0.988	1	3,784
50	0.53	0.53	0.53	1	5,113
Center Coordinates: 43.0577°N, -78.0882°W					
Line Orientation:East					

Line Notes:

Resistivity Line 2					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	4.9	4.9	4.9	5	2,327
5	2.15	2.15	2.15	2	2,059
10	1.005	1.005	1.005	1	1,925
20	0.79	0.79	0.79	1	3,010
50	0.49	0.49	0.49	0	4,730
Center Coordinates: 43.0577°N, -78.0882°W					
Line Orientation: West					

Line Notes:

Comments:

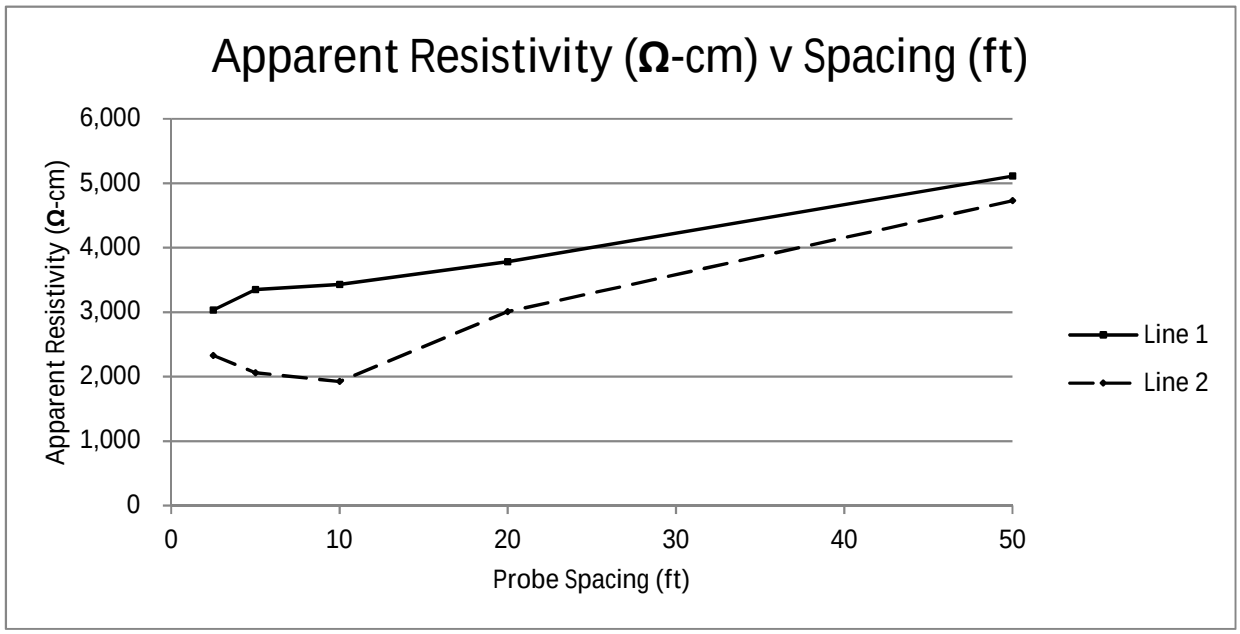
1. Field electrical resistivity testing performed per ASTM G57-06, "Standard Test Method for Field Measurement of Electrical Resistivity Using the Wenner Four-Electrode Method"

2 Ground Conditions: Corn field, cut

3 Field resistivity values may be affected by circumstances such as precipitation, ground temperature and air temperature. Resistivity testing may also be influenced by site conditions such as: presence of cobbles, boulders , bedrock, and groundwater; as well as moisture content of the soils and the compactness of the soil.

Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-7



Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Terracon

Test Location: ETP-9	Equipment: Megger DET2/2 Auto Earth Tester
Test Date: 10/10/19	Tested by: Tyler Wooden
Weather: clear, sunny	Temperature: 55°F

Resistivity Line 1					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	8.08	8.08	8.08	8	3,868
5	5.62	5.62	5.62	6	5,381
10	3.6	3.6	3.6	4	6,798
20	1.767	1.767	1.767	2	6,768
50	1.12	1.12	1.12	1	10,724
Center Coordinates: 43.0466°N, 78.1140°W					
Line Orientation:North-South					

Line Notes:

Resistivity Line 2					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	7.93	7.93	7.93	8	3,796
5	3.69	3.69	3.69	4	3,533
10	2.4	2.4	2.4	2	4,653
20	1.414	1.414	1.414	1	5,416
50	1.11	1.11	1.11	1	10,619
Center Coordinates: 43.0466°N, 78.1140°W					
Line Orientation: East - West					

Line Notes:

Comments:

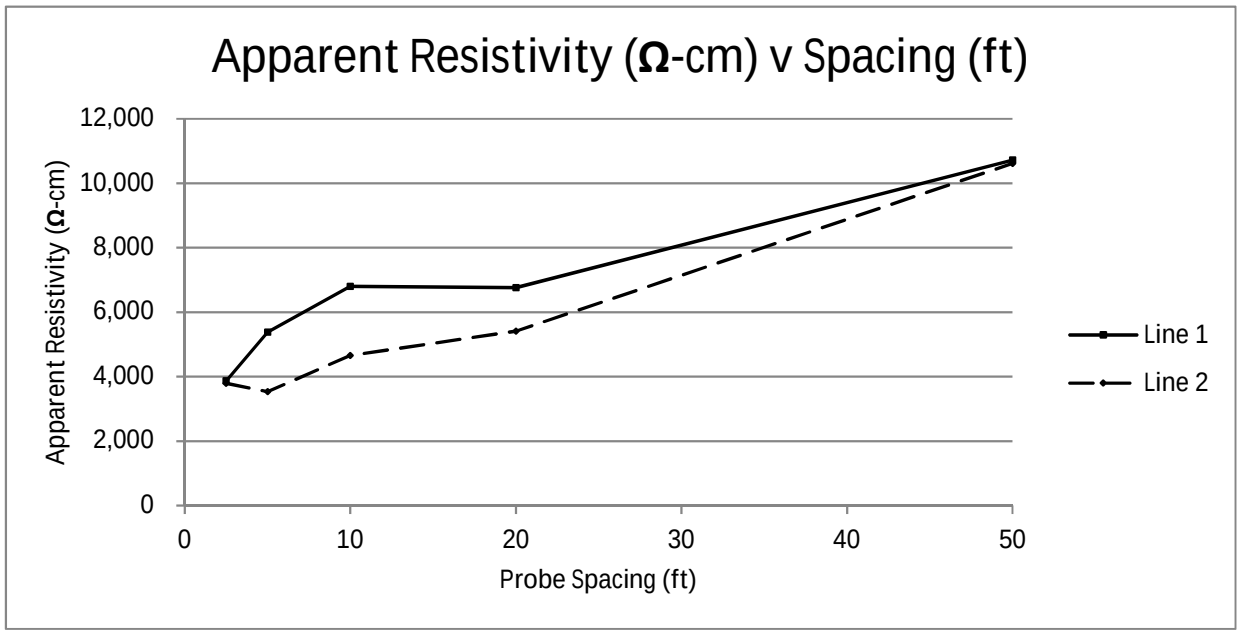
1. Field electrical resistivity testing performed per ASTM G57-06, "Standard Test Method for Field Measurement of Electrical Resistivity Using the Wenner Four-Electrode Method"

2 Ground Conditions: Been field, picked

3 Field resistivity values may be affected by circumstances such as precipitation, ground temperature and air temperature. Resistivity testing may also be influenced by site conditions such as: presence of cobbles, boulders , bedrock, and groundwater; as well as moisture content of the soils and the compactness of the soil.

Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-9



Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-10	Equipment: Megger DET2/2 Auto Earth Tester
Test Date: 10/10/19	Tested by: Tyler Wooden
Weather: clear, sunny	Temperature: 55°F

Resistivity Line 1					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	8.04	8.04	8.04	8	3,849
5	4.83	4.83	4.83	5	4,625
10	3.33	3.33	3.33	3	6,377
20	2.27	2.27	2.27	2	8,694
50	1.242	1.242	1.242	1	11,892
Center Coordinates: 43.0456°N, -78.0870°W					
Line Orientation:North-South					

Line Notes:

Resistivity Line 2					
Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
2.5	7.11	7.11	7.11	7	3,404
5	4.2	4.2	4.2	4	4,060
10	2.76	2.76	2.76	3	5,285
20	2.1	2.1	2.1	2	8,043
50	1.08	1.08	1.08	1	10,303
Center Coordinates: 43.0456°N, -78.0870°W					
Line Orientation: East - West					

Line Notes:

Comments:

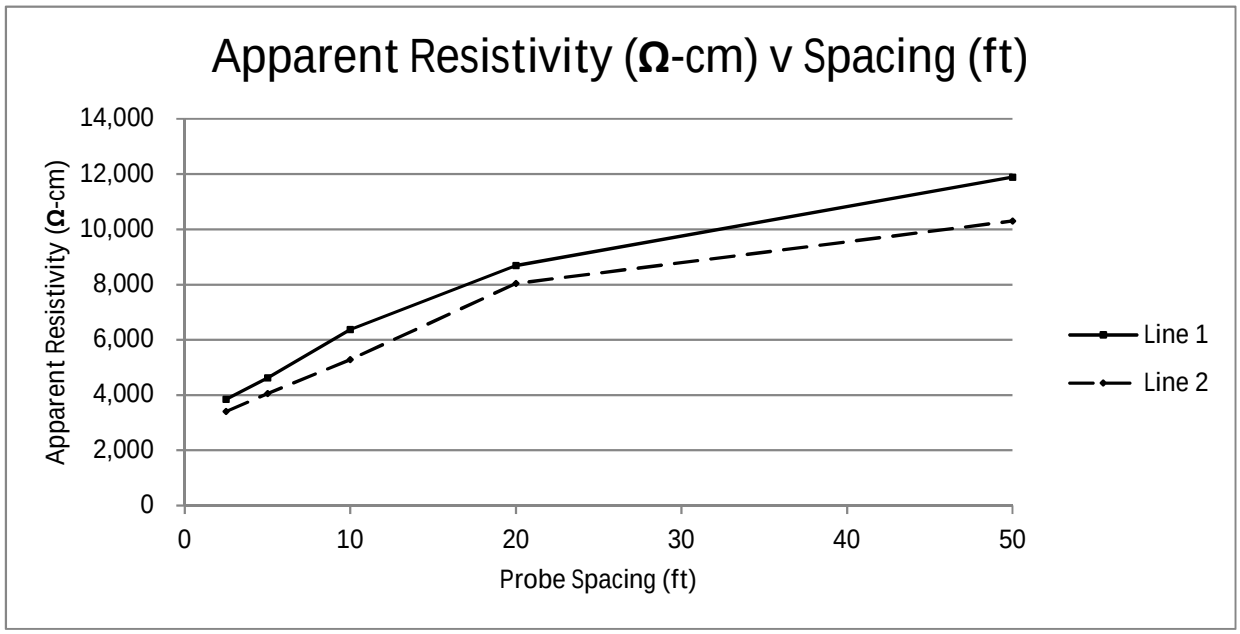
1. Field electrical resistivity testing performed per ASTM G57-06, "Standard Test Method for Field Measurement of Electrical Resistivity Using the Wenner Four-Electrode Method"

2 Ground Conditions: Beet field

3 Field resistivity values may be affected by circumstances such as precipitation, ground temperature and air temperature. Resistivity testing may also be influenced by site conditions such as: presence of cobbles, boulders , bedrock, and groundwater; as well as moisture content of the soils and the compactness of the soil.

Field Electrical Resistivity Test Results
Byron - Excelsior Solar Site - Preliminary
Town of Byron, NY
Project No. J5195162

Test Location: ETP-10



Field Electrical Resistivity Test Results
Excelsior (Byron) Solar Site - Preliminary
Byron, NY
Project No. J5195162

Terracon

Test Location: Subsation Center	Equipment: MiniRes
Test Date: 11/22/2019	Tested by: T. Wooden
Weather: Overcast, Windy	Temperature: 38°F

Resistivity Line 1

Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
0.5	68.9	68.9	68.9	68.9	6,597
1	39.8	39.8	39.8	39.8	7,622
1.5	28.4	28.4	28.4	28.4	8,158
2	20.8	20.8	20.8	20.8	7,966
3	12.582	12.582	12.582	12.6	7,228
5	7.56	7.56	7.56	7.6	7,239
7	5.67	5.67	5.67	5.7	7,601
10	4.008	4.008	4.008	4.0	7,675
15	2.638	2.638	2.638	2.6	7,578
20	1.9491	1.9491	1.9491	1.9	7,465
30	1.5361	1.5361	1.5361	1.5	8,825
45	1.3854	1.3854	1.3854	1.4	11,939
70	1.2748	1.2748	1.2748	1.3	17,089
100	1.2541	1.2541	1.2541	1.3	24,016
150	1.1401	1.1401	1.1401	1.1	32,749
250	0.8235	0.8235	0.8235	0.8	39,425
Center Coordinates: 43.0743° N, -78.0778° W					
Line Orientation:North-South					

Line Notes: Wet field, some grass

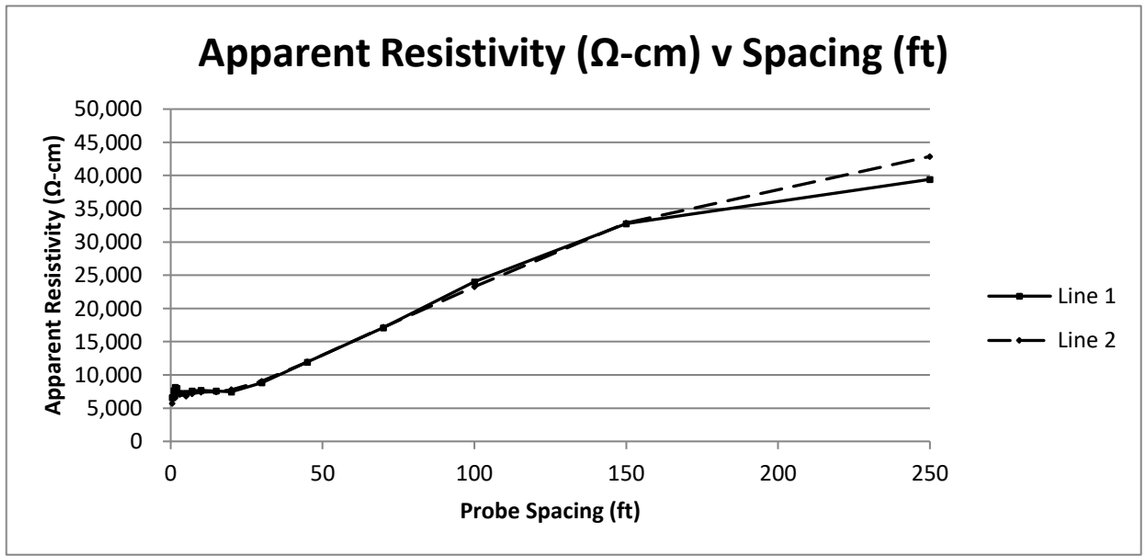
Resistivity Line 2

Probe Spacing (ft)	Resistance Reading (Ω)				Apparent Resistivity (Ω-cm)
	R1	R2	R3	Average	
0.5	59.5	59.5	59.5	59.5	5,697
1	37.2	37.2	37.2	37.2	7,124
1.5	22.8	22.8	22.8	22.8	6,549
2	18.751	18.751	18.751	18.8	7,182
3	12.231	12.231	12.231	12.2	7,027
5	7.09	7.09	7.09	7.1	6,789
7	5.334	5.334	5.334	5.3	7,150
10	3.862	3.862	3.862	3.9	7,396
15	2.596	2.596	2.596	2.6	7,457
20	2.028	2.028	2.028	2.0	7,767
30	1.5723	1.5723	1.5723	1.6	9,033
45	1.3862	1.3862	1.3862	1.4	11,946
70	1.2814	1.2814	1.2814	1.3	17,177
100	1.2145	1.2145	1.2145	1.2	23,258
150	1.1436	1.1436	1.1436	1.1	32,850
250	0.8954	0.8954	0.8954	0.9	42,867
Center Coordinates: 43.0743° N, -78.0778° W					
Line Orientation: East - West					

Line Notes: Wet field, some grass

Field Electrical Resistivity Test Results
Excelsior (Byron) Solar Site - Preliminary
Byron, NY
Project No. J5195162

Test Location: Subsation Center



Comments:

1. Field electrical resistivity testing performed per ASTM G57-06, "Standard Test Method for Field Measurement of Electrical Resistivity Using the Wenner Four-Electrode Method"
2. Ground Conditions: Wet field
3. Field resistivity values may be affected by circumstances such as precipitation, ground temperature and air temperature. Resistivity testing may also be influenced by site conditions such as: presence of cobbles, boulders , bedrock, and groundwater; as well as moisture content of the soils and the compactness of the soil.

APPENDIX D
PILE LOAD TESTING DATA
(PILE DRIVING DATA)

(Exhibits- D001 through D005)

EXPLORATION PLAN: ZONES BASED ON PILE LOAD TESTING (PLT)

NextEra Byron Solar Site ■ Genesee County, New York

Project No. J5195162

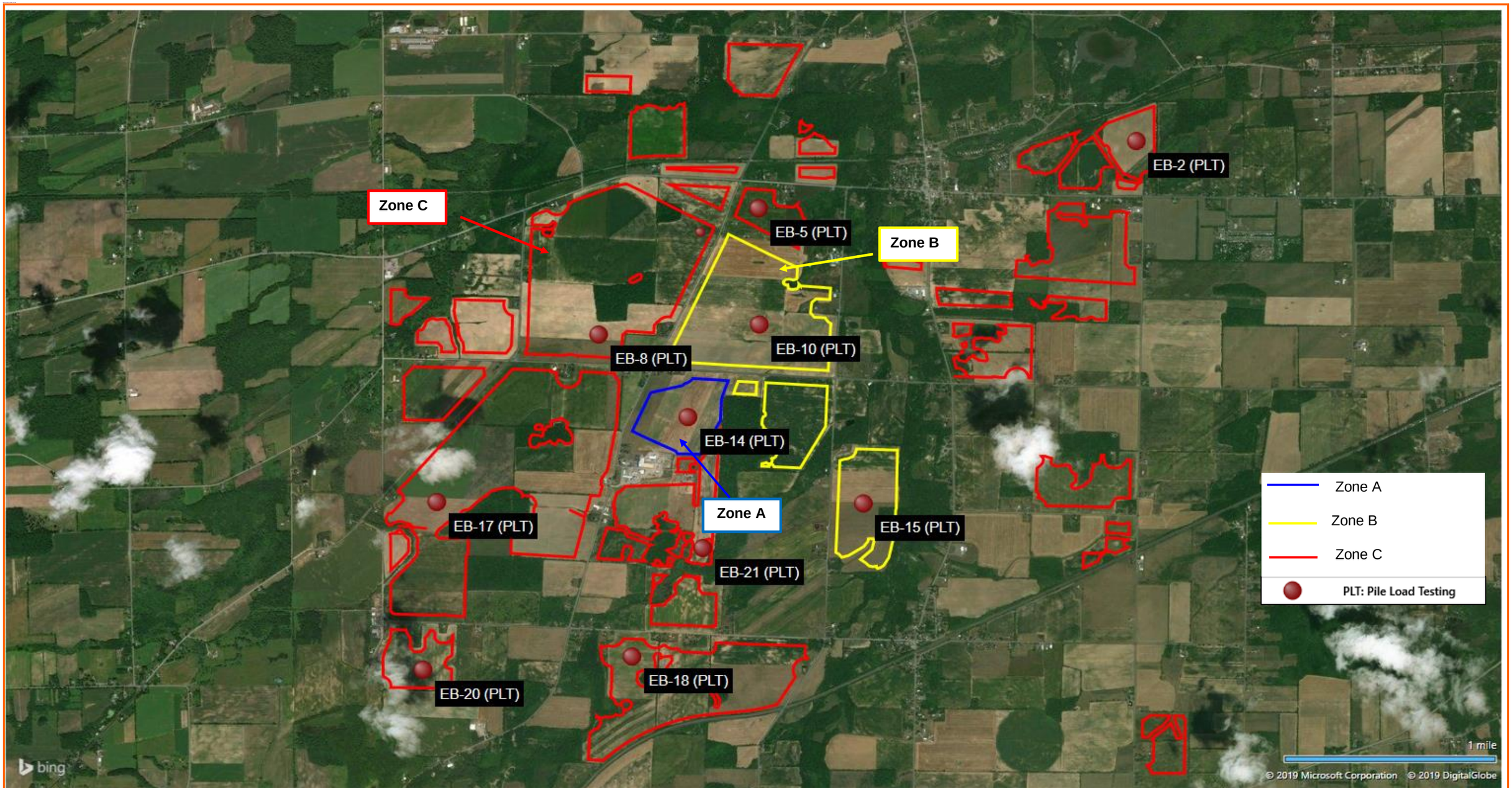
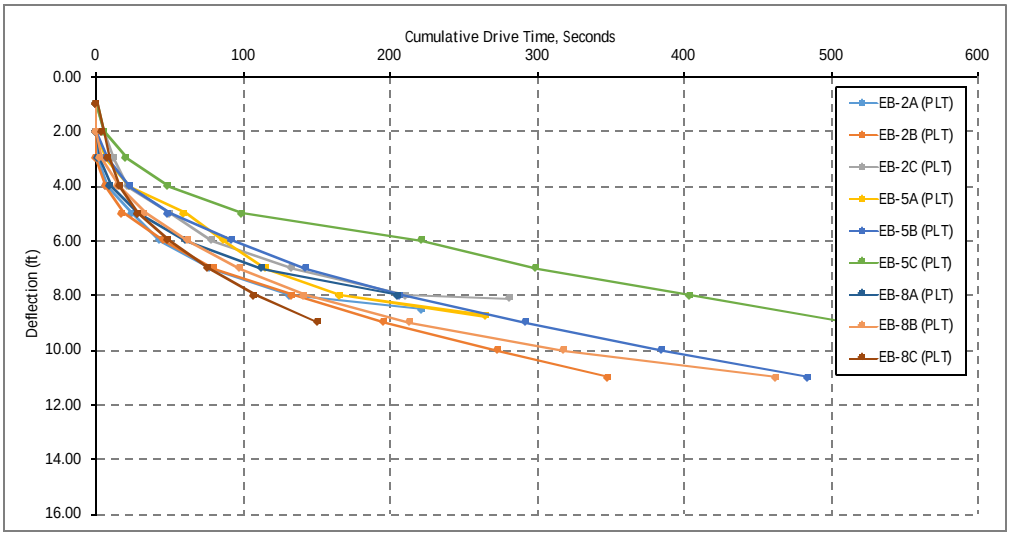


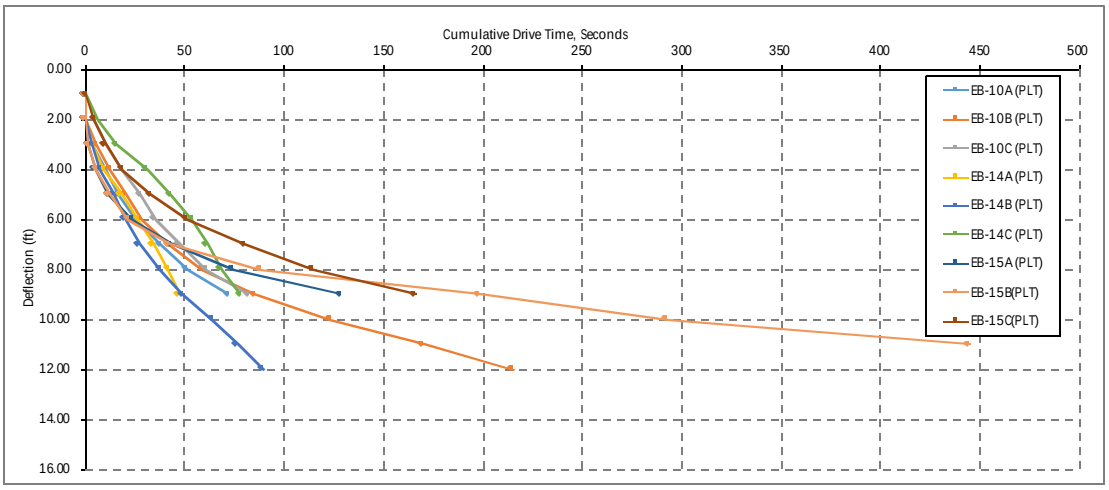
DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY BING

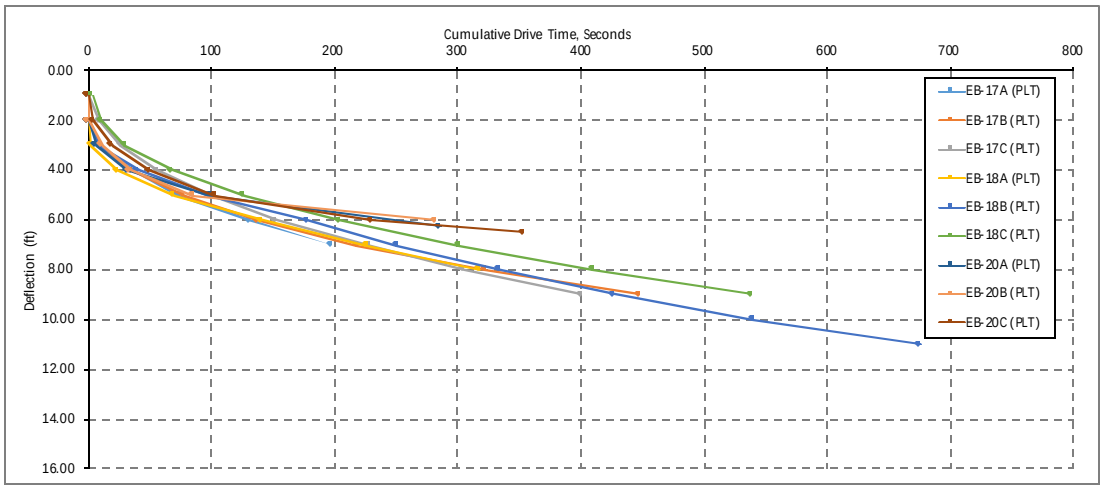
	Cumulative Driving Time (seconds)								
Depth (ft)	**EB-2A (PLT)**	**EB-2B (PLT)**	**EB-2C (PLT)**	**EB-5A (PLT)**	**EB-5B (PLT)**	**EB-5C (PLT)**	**EB-8A (PLT)**	**EB-8B (PLT)**	**EB-8C (PLT)**
1	0	0	0.27	0	0	0.57	0	0	1.16
2	0	0	5	0	0	5.78	0	0	4.95
3	1.24	0.32	12.22	7.12	7.88	21.09	1.91	3.89	9.24
4	7.97	7.05	21.81	23.05	23.28	49.94	10.14	16.01	16.72
5	24.65	18.37	50.6	60.54	49.71	99.36	28.91	33.67	28.51
6	43.74	46.73	79.37	86.96	93.3	221.67	61.74	62.64	49.63
7	78.73	80.57	133.91	115.98	143.03	300.43	113.25	98.33	77.11
8	132.46	134.35	211.23	166.18	207.7	404.09	205.81	142.56	108.64
9	222	196.98	282.55	265.34	292.96	513.21		213.54	151.44
10		273.81			385.98			318.93	
11		348.98			485.4			463.17	
12									
13									
14									
15									
Total Drive Time	**222.00**	**348.98**	**282.55**	**265.34**	**485.40**	**513.21**	**205.81**	**463.17**	**151.44**
Drive Rate ft/sec.	35.52	**42.30**	**38.55**	**39.31**	**53.93**	**60.38**	**35.79**	**51.46**	**17.82**
Embedment Depth	8.5	11	8.1	8.75	11	9	8	11	9
Approximate Push Depth (ft)	2.25	2.75	0.75	2	2	0.5	2.25	2	0.5
Section	**W6x9**								



	Cumulative Driving Time (seconds)								
Depth (ft)	**EB-10A (PLT)**	**EB-10B (PLT)**	**EB-10C (PLT)**	**EB-14A (PLT)**	**EB-14B (PLT)**	**EB-14C (PLT)**	**EB-15A (PLT)**	**EB-15B(PLT)**	**EB-15C(PLT)**
1	0	0	0.73	0	0	0.50	0.00	0.00	0.25
2	0	0	4.24	0	0	6.12	0.00	0.00	4.29
3	3.04	5.45	9.9	3.5	3.11	15.77	1.31	1.30	9.78
4	9.82	12.69	18.81	9.41	7.68	31.06	4.93	5.35	18.56
5	16.65	20.08	27.58	18.03	14.24	42.59	11.70	11.87	32.51
6	25.14	28.23	35.38	26.82	20.08	53.61	23.62	21.80	51.43
7	37.47	41.5	47.03	34.37	26.97	61.28	43.27	42.26	79.91
8	51.33	58.77	60.98	41.78	37.8	68.37	74.58	87.87	114.66
9	71.74	84.86	81.86	47.32	48.75	77.97	128.43	197.98	166.19
10		123.19			63.79			292.67	
11		170.26			76.34			444.76	
12		215.21			89.71				
13									
14									
15									
Total Drive Time	**71.74**	**215.21**	**81.86**	**47.32**	**89.71**	77.97	128.43	444.76	166.19
Drive Rate ft/sec.	**10.25**	**21.52**	**9.63**	**6.76**	**8.97**	9.45	19.03	50.83	20.14
Embedment Depth	9	12	9	9	12	9	9	11	9
Approximate Push Depth (ft)	2	2	0.5	2	2	0.75	2.25	2.25	0.75
Section	**W6x9**								

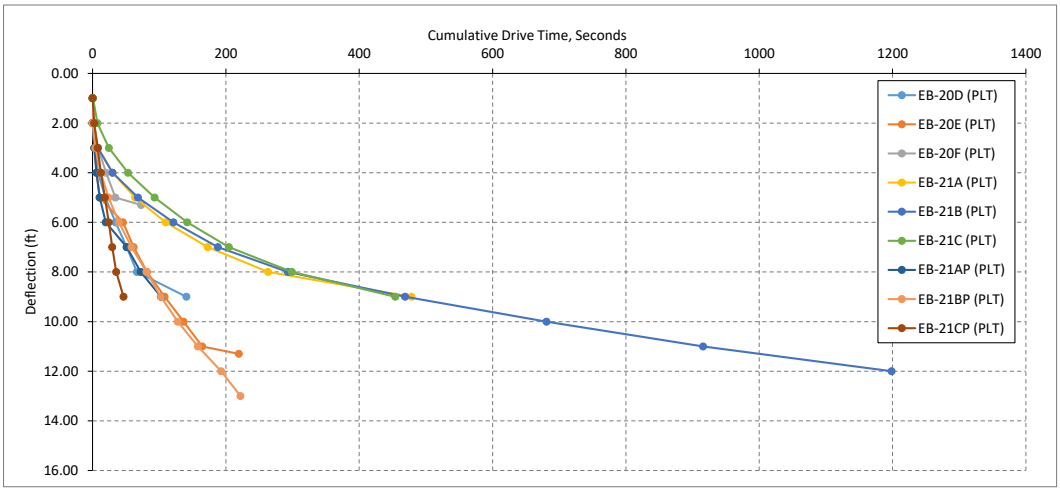


	Cumulative Driving Time (seconds)								
Depth (ft)	**EB-17A (PLT)**	**EB-17B (PLT)**	**EB-17C (PLT)**	**EB-18A (PLT)**	**EB-18B (PLT)**	**EB-18C (PLT)**	**EB-20A (PLT)**	**EB-20B (PLT)**	**EB-20C (PLT)**
1	0	0	0.56	0	0	3.28	0	0	0
2	0	0	9.11	0	0	10.52	0	0	3.93
3	9.05	9.62	26.72	2.78	8.62	30.33	6.91	11.11	19.57
4	35.63	34.98	56.48	23.36	40.59	68.49	31.99	34.27	49.31
5	73.92	77.73	100.86	69.97	98.59	126.99	99.57	85.3	103.09
6	130.45	137.45	152.44	141.36	177.99	204.11	286.08	282.11	229.64
7	197.37	218.14	229.27	226.93	250.89	300.97	386.14		353.25
8		322.31	305.13	318.01	334.28	409.8			
9		447.14	400.1		426.92	538.4			
10					539.68				
11					675.84				
12									
13									
14									
15									
Total Drive Time	**197.37**	**447.14**	**400.10**	**318.01**	675.84	538.40	386.14	282.11	353.25
Drive Rate ft/sec.	39.47	63.88	48.50	57.82	77.24	63.34	90.86	70.53	64.23
Embedment Depth	7	9	9	8	11	9	6.25	6	6.5
Approximate Push Depth (ft)	2	2	0.75	2.5	2.25	0.5	2	2	1
Section	**W6x9**								



	Cumulative Driving Time (seconds)								
Depth (ft)	EB-20D (PLT)	EB-20E (PLT)	EB-20F (PLT)	EB-21A (PLT)	EB-21B (PLT)	EB-21C (PLT)	EB-21AP (PLT)	EB-21BP (PLT)	EB-21CP (PLT)
1	0	0	0	0	0	0.74	0	0	0
2	0	0	1.74	0	0	7.28	0	0	2.59
3	3.8	2.87	8.22	8.28	8.14	24.6	2.66	4.43	7.48
4	8.21	6.36	20.3	30.21	30.09	53.34	5.84	12.3	12.63
5	19.15	10.46	34.3	63.89	68.18	93.28	10.75	23.96	18.57
6	34.41	45.68	72.93	109.68	121.29	142.21	19.74	39.46	24.18
7	51.36	61.72		172.76	187.96	204.58	51.19	58.56	29.63
8	66.45	81.71		263.39	293.17	299.03	72.12	81.05	35.54
9	140.73	108.17		478.55	468.82	454.02	102.66	102.39	46.51
10		136.64			680.89			127.88	
11		164.54			915.82			158.02	
12		219.53			1198.62			193.12	
13								221.97	
14									
15									
Total Drive Time	**140.73**	**219.53**	**72.93**	**478.55**	**1198.62**	**454.02**	**102.66**	**221.97**	**46.51**
Drive Rate ft/sec.	**20.1**	**21.95**	**9.724**	**68.36**	**119.86**	**55.03**	**14.67**	**20.65**	**6.00**
Embedment Depth	**9**	**11.3**	**5.3**	**9**	**12**	**9**	**9**	**12**	**9**
Approximate Push Depth (ft)	**2**	**2**	**1.5**	**2**	**2**	**0.75**	**2**	**1.25**	**1.25**
Section	**W6x9**								

NOTE: Piles AP, BP, and CP were installed November 07, 2019. Each of location was pre-drilled utilizing a 6-inch diameter hollow stem auger (undersize hole) to a depth of approximately 6-inch above the anticipated embedment depth. The hole was then backfilled with soil and the pile was driven to proposed embedment depth.



APPENDIX E
PILE LOAD TESTING DATA
(AXIAL TENSION)

(Exhibits- E001 through E024)

Tension Load Test Result for EB-2A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

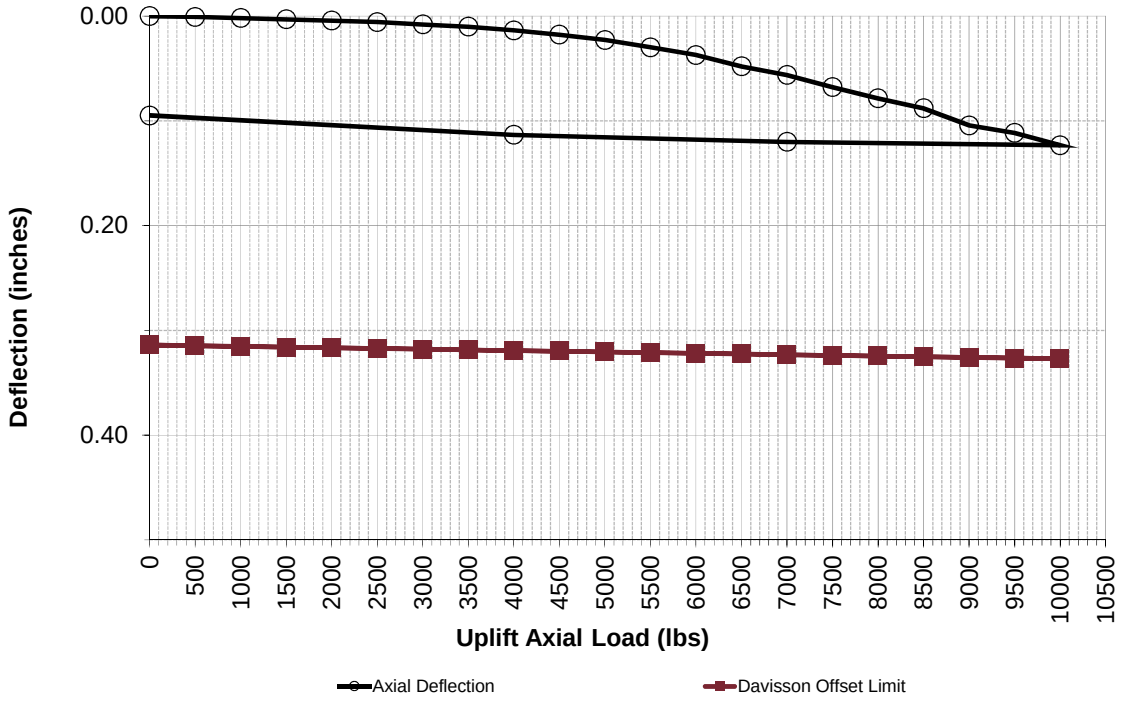
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-2A
Latitude:	43.08330
Longitude:	-78.04502
Pile Type:	W6x9
Pile Embedment Depth [in]:	102
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	222

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.001	0.001	0.315	
50%	1000	0.002	0.001	0.315	
75%	1500	0.003	0.002	0.316	
100%	2000	0.004	0.003	0.317	
125%	2500	0.006	0.003	0.317	
150%	3000	0.008	0.004	0.318	
175%	3500	0.010	0.005	0.319	
200%	4000	0.014	0.005	0.319	
225%	4500	0.018	0.006	0.320	
250%	5000	0.023	0.007	0.321	
275%	5500	0.030	0.007	0.321	
300%	6000	0.037	0.008	0.322	
325%	6500	0.048	0.009	0.323	
350%	7000	0.056	0.009	0.323	
375%	7500	0.068	0.010	0.324	
400%	8000	0.079	0.010	0.324	
425%	8500	0.088	0.011	0.325	
450%	9000	0.104	0.012	0.326	
475%	9500	0.112	0.012	0.326	
500%	10000	0.123	0.013	0.327	
350%	7000	0.120	0.009	0.323	
200%	4000	0.113	0.005	0.319	
0%	0	0.095	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-2B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

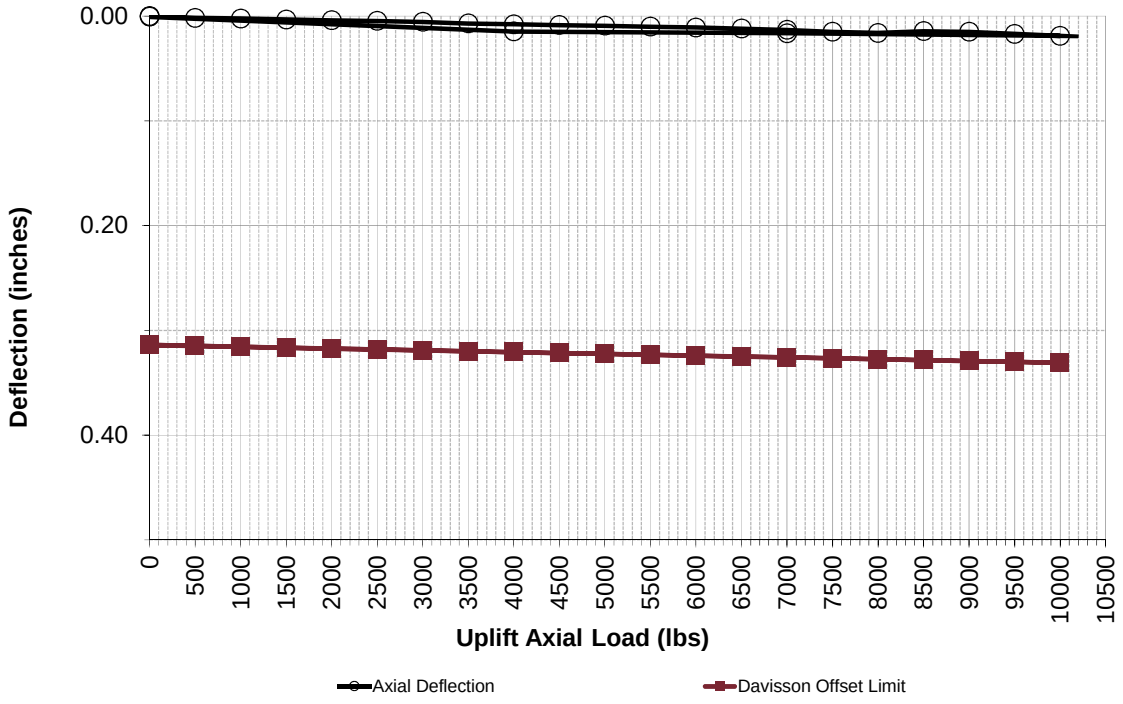
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-2B
Latitude:	43.08330
Longitude:	-78.04502
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	349

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.002	0.001	0.315	
50%	1000	0.002	0.002	0.316	
75%	1500	0.003	0.003	0.317	
100%	2000	0.004	0.003	0.317	
125%	2500	0.005	0.004	0.318	
150%	3000	0.006	0.005	0.319	
175%	3500	0.007	0.006	0.320	
200%	4000	0.008	0.007	0.321	
225%	4500	0.009	0.008	0.322	
250%	5000	0.009	0.008	0.322	
275%	5500	0.010	0.009	0.323	
300%	6000	0.011	0.010	0.324	
325%	6500	0.012	0.011	0.325	
350%	7000	0.013	0.012	0.326	
375%	7500	0.015	0.013	0.327	
400%	8000	0.016	0.014	0.328	
425%	8500	0.014	0.014	0.328	
450%	9000	0.015	0.015	0.329	
475%	9500	0.017	0.016	0.330	
500%	10000	0.019	0.017	0.331	
350%	7000	0.016	0.012	0.326	
200%	4000	0.015	0.007	0.321	
0%	0	0.001	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-5A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

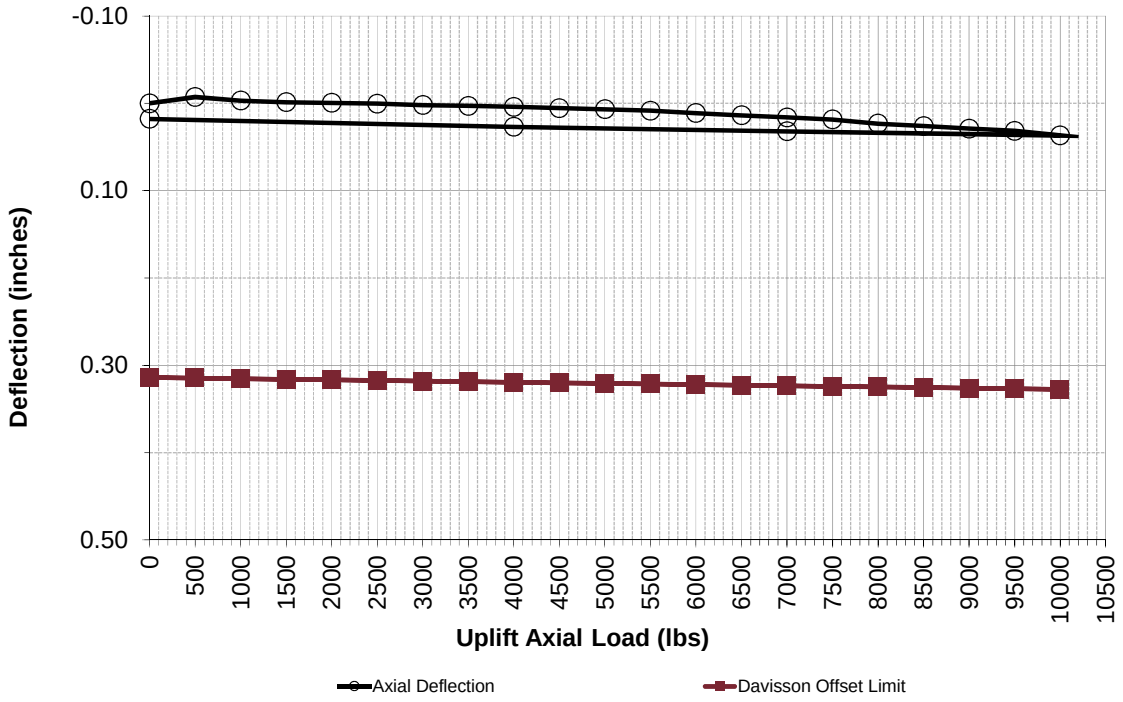
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-5A
Latitude:	43.07850
Longitude:	-78.08036
Pile Type:	W6x9
Pile Embedment Depth [in]:	105
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	265.3

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	-0.007	0.001	0.315	
50%	1000	-0.003	0.001	0.315	
75%	1500	-0.001	0.002	0.316	
100%	2000	-0.001	0.003	0.317	
125%	2500	0.000	0.003	0.317	
150%	3000	0.002	0.004	0.318	
175%	3500	0.003	0.005	0.319	
200%	4000	0.004	0.005	0.319	
225%	4500	0.006	0.006	0.320	
250%	5000	0.007	0.007	0.321	
275%	5500	0.008	0.007	0.321	
300%	6000	0.011	0.008	0.322	
325%	6500	0.014	0.009	0.323	
350%	7000	0.016	0.009	0.323	
375%	7500	0.019	0.010	0.324	
400%	8000	0.023	0.011	0.325	
425%	8500	0.026	0.011	0.325	
450%	9000	0.029	0.012	0.326	
475%	9500	0.031	0.013	0.327	
500%	10000	0.037	0.014	0.328	
350%	7000	0.032	0.009	0.323	
200%	4000	0.027	0.005	0.319	
0%	0	0.018	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-5B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

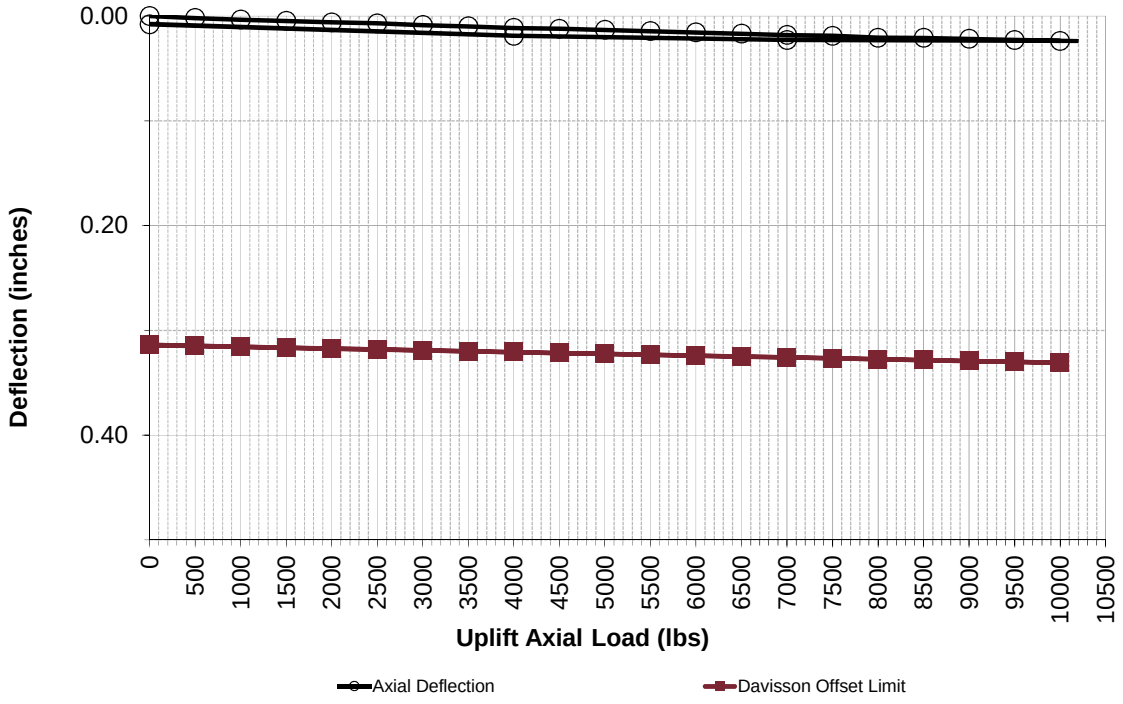
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-5B
Latitude:	43.07850
Longitude:	-78.08036
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	485.4

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.002	0.001	0.315	
50%	1000	0.003	0.002	0.316	
75%	1500	0.005	0.003	0.317	
100%	2000	0.006	0.003	0.317	
125%	2500	0.007	0.004	0.318	
150%	3000	0.009	0.005	0.319	
175%	3500	0.010	0.006	0.320	
200%	4000	0.011	0.007	0.321	
225%	4500	0.012	0.008	0.322	
250%	5000	0.013	0.008	0.322	
275%	5500	0.014	0.009	0.323	
300%	6000	0.016	0.010	0.324	
325%	6500	0.017	0.011	0.325	
350%	7000	0.018	0.012	0.326	
375%	7500	0.019	0.013	0.327	
400%	8000	0.021	0.014	0.328	
425%	8500	0.021	0.014	0.328	
450%	9000	0.022	0.015	0.329	
475%	9500	0.023	0.016	0.330	
500%	10000	0.024	0.017	0.331	
350%	7000	0.023	0.012	0.326	
200%	4000	0.019	0.007	0.321	
0%	0	0.008	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-8A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

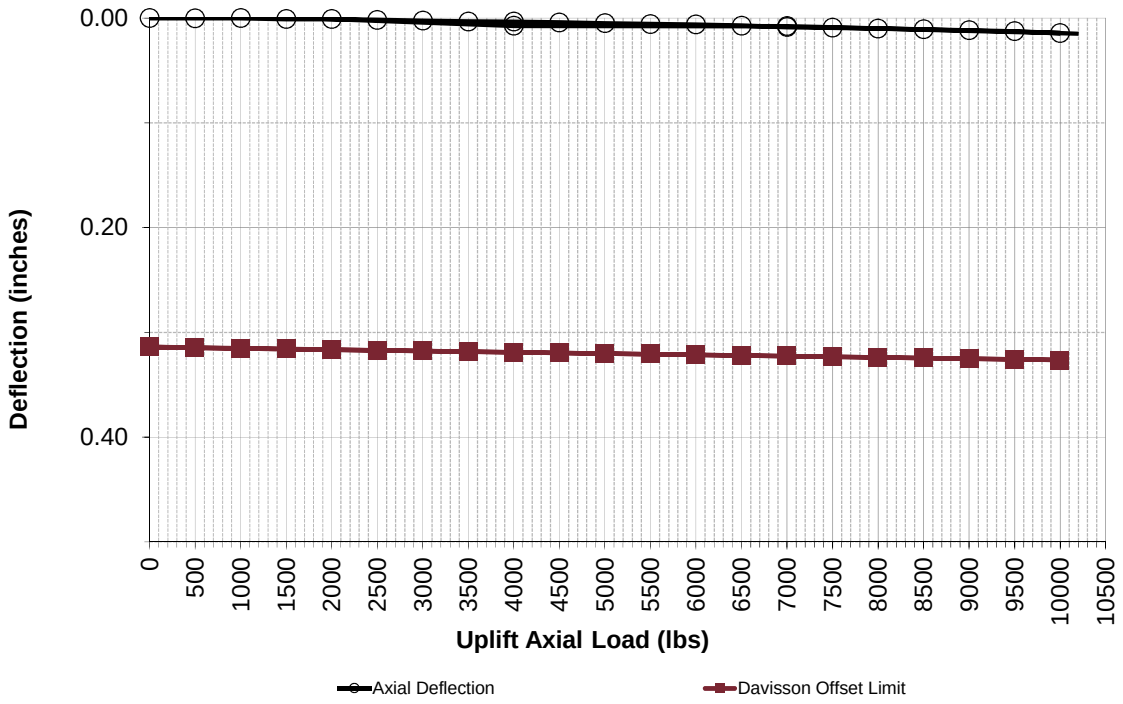
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-8A
Latitude:	43.06970
Longitude:	-78.09533
Pile Type:	W6x9
Pile Embedment Depth [in]:	96
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	205.8

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.000	0.001	0.315	
50%	1000	0.000	0.001	0.315	
75%	1500	0.001	0.002	0.316	
100%	2000	0.001	0.002	0.316	
125%	2500	0.002	0.003	0.317	
150%	3000	0.003	0.004	0.318	
175%	3500	0.003	0.004	0.318	
200%	4000	0.003	0.005	0.319	
225%	4500	0.004	0.006	0.320	
250%	5000	0.005	0.006	0.320	
275%	5500	0.006	0.007	0.321	
300%	6000	0.006	0.007	0.321	
325%	6500	0.007	0.008	0.322	
350%	7000	0.009	0.009	0.323	
375%	7500	0.009	0.009	0.323	
400%	8000	0.010	0.010	0.324	
425%	8500	0.011	0.010	0.324	
450%	9000	0.012	0.011	0.325	
475%	9500	0.013	0.012	0.326	
500%	10000	0.014	0.012	0.326	
350%	7000	0.008	0.009	0.323	
200%	4000	0.007	0.005	0.319	
0%	0	-0.006	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-8B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

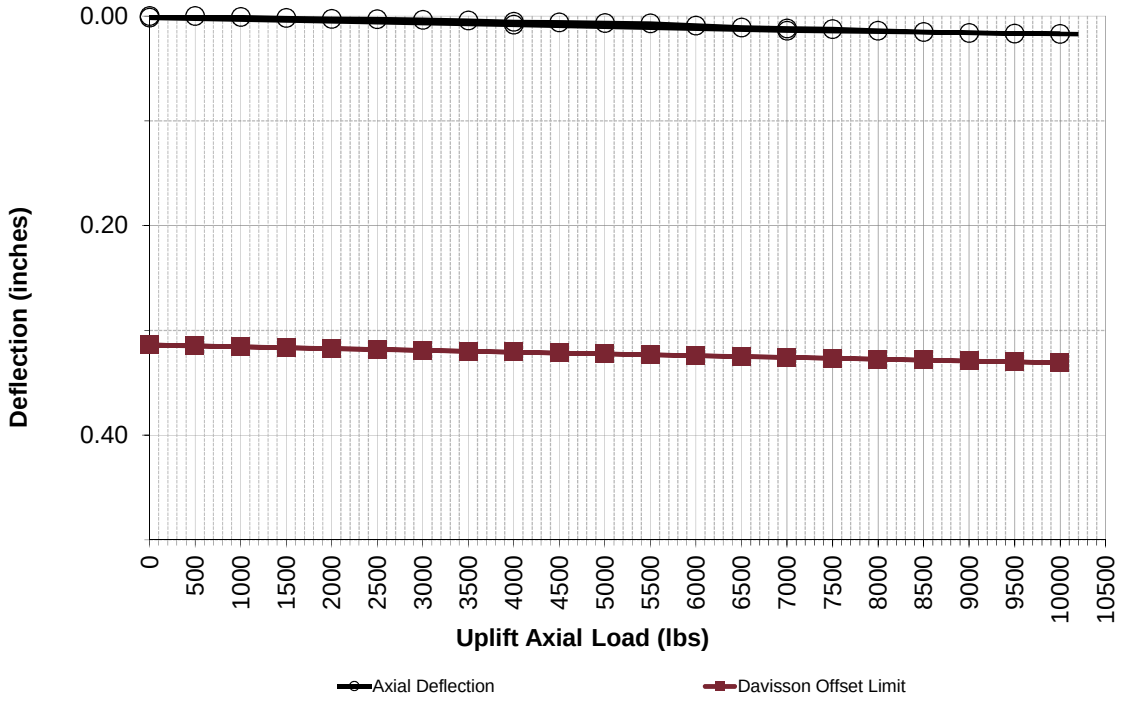
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-8B
Latitude:	43.06970
Longitude:	-78.09533
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	463.2

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.000	0.001	0.315	
50%	1000	0.001	0.002	0.316	
75%	1500	0.002	0.003	0.317	
100%	2000	0.003	0.003	0.317	
125%	2500	0.003	0.004	0.318	
150%	3000	0.004	0.005	0.319	
175%	3500	0.004	0.006	0.320	
200%	4000	0.006	0.007	0.321	
225%	4500	0.006	0.008	0.322	
250%	5000	0.007	0.008	0.322	
275%	5500	0.007	0.009	0.323	
300%	6000	0.009	0.010	0.324	
325%	6500	0.011	0.011	0.325	
350%	7000	0.012	0.012	0.326	
375%	7500	0.012	0.013	0.327	
400%	8000	0.014	0.014	0.328	
425%	8500	0.015	0.014	0.328	
450%	9000	0.016	0.015	0.329	
475%	9500	0.017	0.016	0.330	
500%	10000	0.017	0.017	0.331	
350%	7000	0.014	0.012	0.326	
200%	4000	0.008	0.007	0.321	
0%	0	0.002	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-10A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

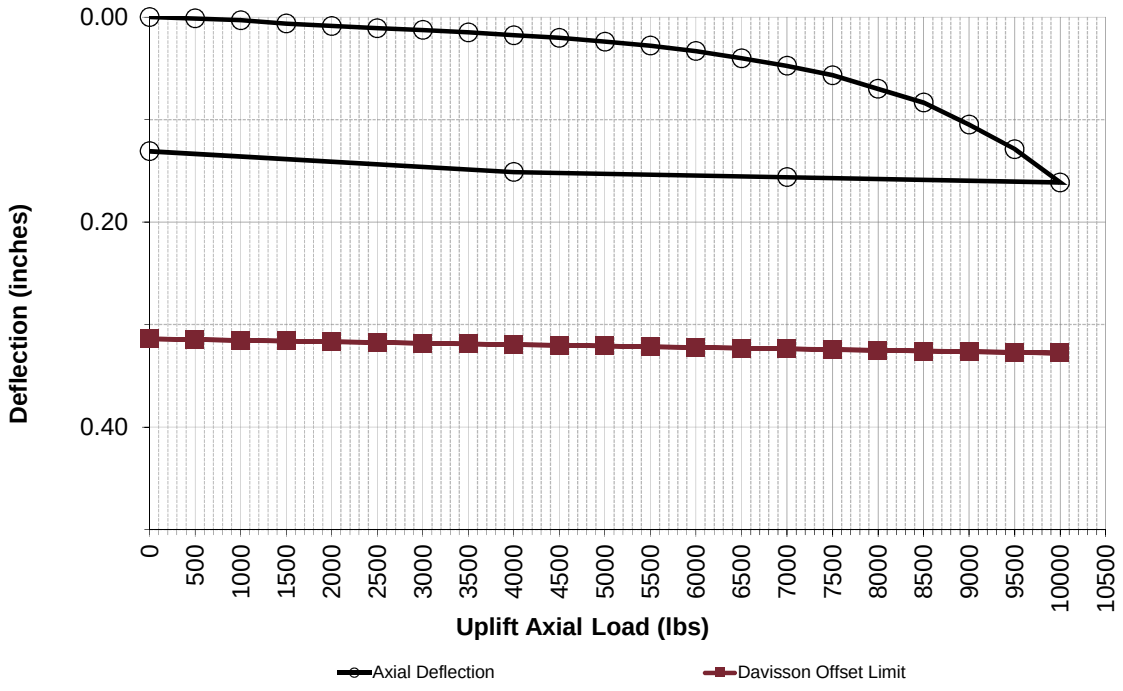
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-10A
Latitude:	43.07040
Longitude:	-78.08030
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	71.7

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.001	0.001	0.315	
50%	1000	0.003	0.001	0.315	
75%	1500	0.006	0.002	0.316	
100%	2000	0.009	0.003	0.317	
125%	2500	0.011	0.003	0.317	
150%	3000	0.013	0.004	0.318	
175%	3500	0.015	0.005	0.319	
200%	4000	0.018	0.006	0.320	
225%	4500	0.020	0.006	0.320	
250%	5000	0.024	0.007	0.321	
275%	5500	0.028	0.008	0.322	
300%	6000	0.033	0.008	0.322	
325%	6500	0.040	0.009	0.323	
350%	7000	0.048	0.010	0.324	
375%	7500	0.057	0.010	0.324	
400%	8000	0.070	0.011	0.325	
425%	8500	0.083	0.012	0.326	
450%	9000	0.105	0.013	0.327	
475%	9500	0.129	0.013	0.327	
500%	10000	0.161	0.014	0.328	
350%	7000	0.156	0.010	0.324	
200%	4000	0.151	0.006	0.320	
0%	0	0.131	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-10B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

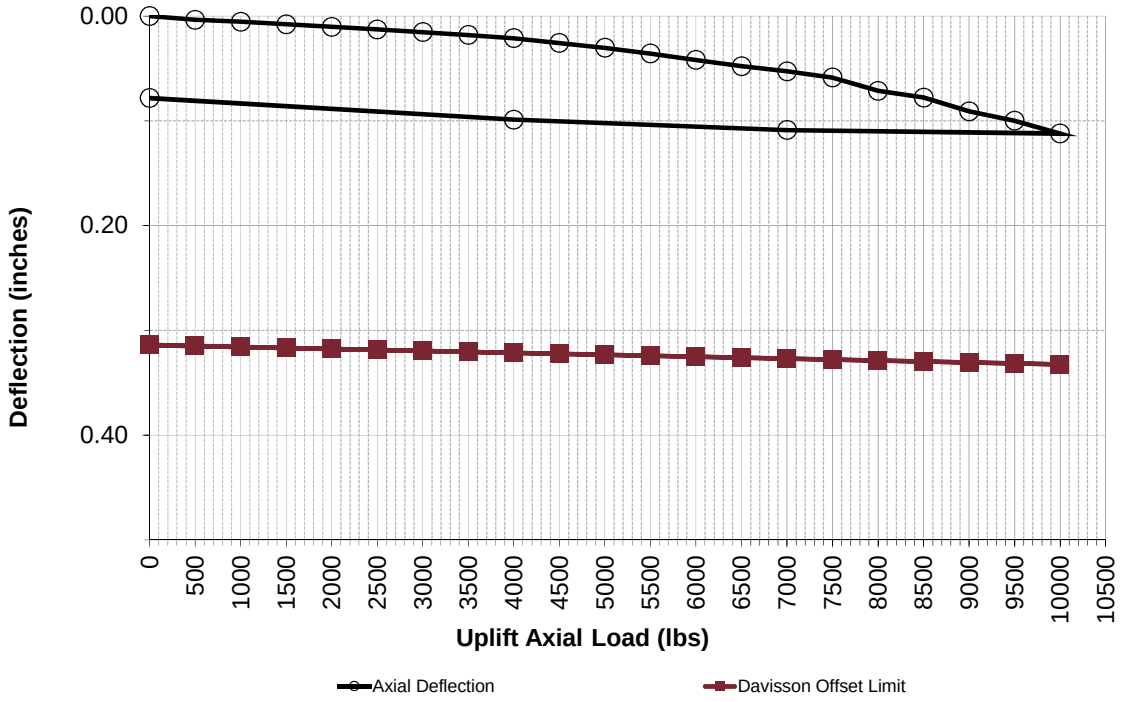
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-10B
Latitude:	43.07040
Longitude:	-78.08030
Pile Type:	W6x9
Pile Embedment Depth [in]:	144
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	215.2

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.004	0.001	0.315	
50%	1000	0.005	0.002	0.316	
75%	1500	0.008	0.003	0.317	
100%	2000	0.010	0.004	0.318	
125%	2500	0.013	0.005	0.319	
150%	3000	0.015	0.006	0.320	
175%	3500	0.018	0.006	0.320	
200%	4000	0.021	0.007	0.321	
225%	4500	0.026	0.008	0.322	
250%	5000	0.030	0.009	0.323	
275%	5500	0.036	0.010	0.324	
300%	6000	0.042	0.011	0.325	
325%	6500	0.048	0.012	0.326	
350%	7000	0.053	0.013	0.327	
375%	7500	0.059	0.014	0.328	
400%	8000	0.071	0.015	0.329	
425%	8500	0.078	0.016	0.330	
450%	9000	0.091	0.017	0.331	
475%	9500	0.100	0.018	0.332	
500%	10000	0.112	0.019	0.333	
350%	7000	0.109	0.013	0.327	
200%	4000	0.099	0.007	0.321	
0%	0	0.078	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-14A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

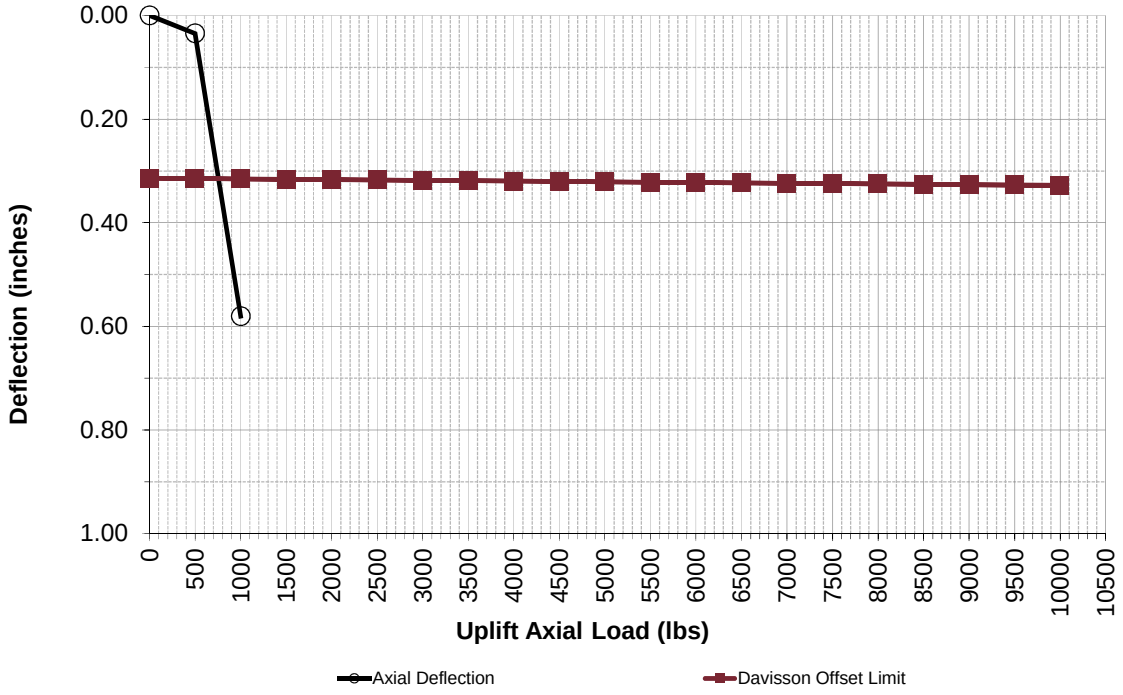
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-14A
Latitude:	43.06380
Longitude:	-78.08697
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	47.3

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.034	0.001	0.315	
50%	1000	0.580	0.001	0.315	
75%	1500		0.002	0.316	
100%	2000		0.003	0.317	
125%	2500		0.003	0.317	
150%	3000		0.004	0.318	
175%	3500		0.005	0.319	
200%	4000		0.006	0.320	
225%	4500		0.006	0.320	
250%	5000		0.007	0.321	
275%	5500		0.008	0.322	
300%	6000		0.008	0.322	
325%	6500		0.009	0.323	
350%	7000		0.010	0.324	
375%	7500		0.010	0.324	
400%	8000		0.011	0.325	
425%	8500		0.012	0.326	
450%	9000		0.013	0.327	
475%	9500		0.013	0.327	
500%	10000		0.014	0.328	
350%	7000		0.010	0.324	
200%	4000		0.006	0.320	
0%	0		0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-14B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

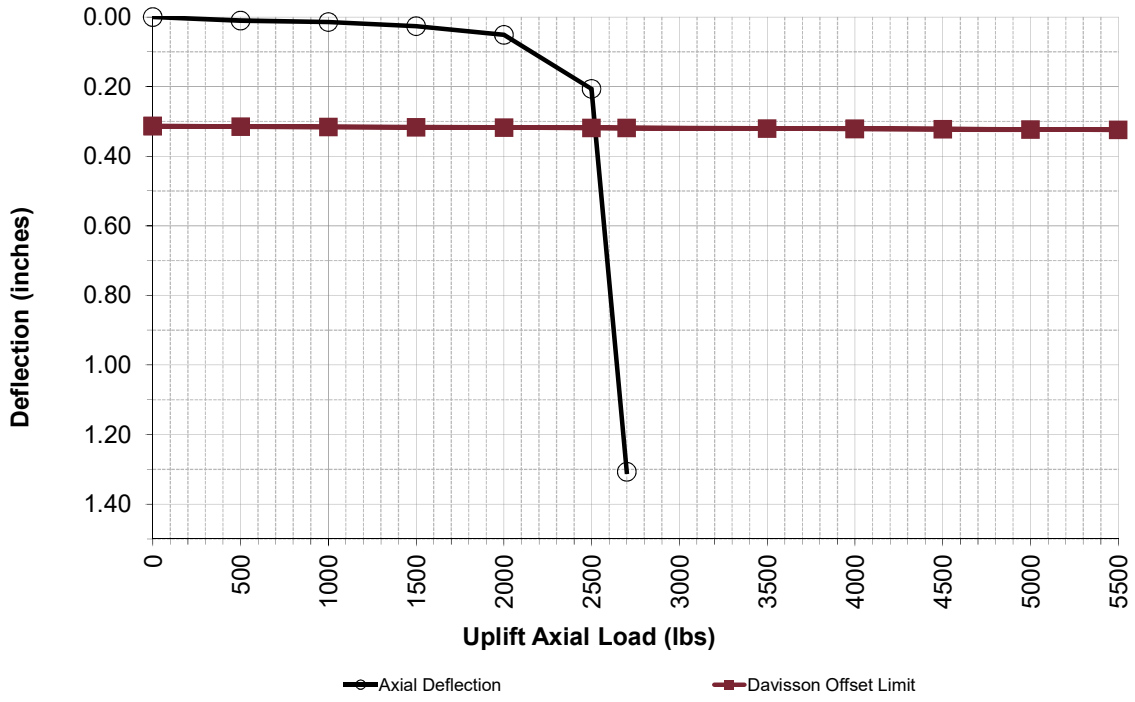
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-14B
Latitude:	43.06380
Longitude:	-78.08697
Pile Type:	W6x9
Pile Embedment Depth [in]:	144
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	89.7

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.010	0.001	0.315	
50%	1000	0.015	0.002	0.316	
75%	1500	0.027	0.003	0.317	
100%	2000	0.051	0.004	0.318	
125%	2500	0.207	0.005	0.319	
135%	2700	1.307	0.005	0.319	
175%	3500		0.006	0.320	
200%	4000		0.007	0.321	
225%	4500		0.008	0.322	
250%	5000		0.009	0.323	
275%	5500		0.010	0.324	
300%	6000		0.011	0.325	
325%	6500		0.012	0.326	
350%	7000		0.013	0.327	
375%	7500		0.014	0.328	
400%	8000		0.015	0.329	
425%	8500		0.016	0.330	
450%	9000		0.017	0.331	
475%	9500		0.018	0.332	
500%	10000		0.019	0.333	
350%	7000		0.013	0.327	
200%	4000		0.007	0.321	
0%	0		0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-15A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

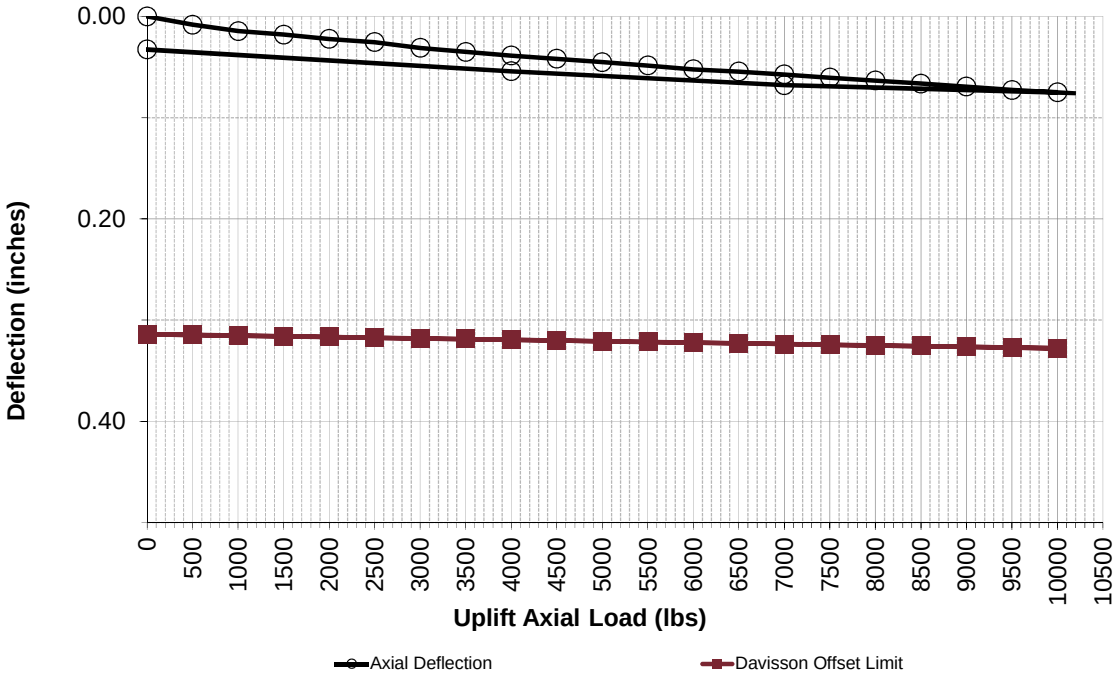
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-15A
Latitude:	43.05778
Longitude:	-78.07056
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	128.4

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.008	0.001	0.315	
50%	1000	0.014	0.001	0.315	
75%	1500	0.018	0.002	0.316	
100%	2000	0.022	0.003	0.317	
125%	2500	0.025	0.003	0.317	
150%	3000	0.031	0.004	0.318	
175%	3500	0.035	0.005	0.319	
200%	4000	0.039	0.006	0.320	
225%	4500	0.042	0.006	0.320	
250%	5000	0.045	0.007	0.321	
275%	5500	0.048	0.008	0.322	
300%	6000	0.052	0.008	0.322	
325%	6500	0.054	0.009	0.323	
350%	7000	0.057	0.010	0.324	
375%	7500	0.060	0.010	0.324	
400%	8000	0.063	0.011	0.325	
425%	8500	0.066	0.012	0.326	
450%	9000	0.069	0.013	0.327	
475%	9500	0.073	0.013	0.327	
500%	10000	0.075	0.014	0.328	
350%	7000	0.068	0.010	0.324	
200%	4000	0.054	0.006	0.320	
0%	0	0.033	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-15B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

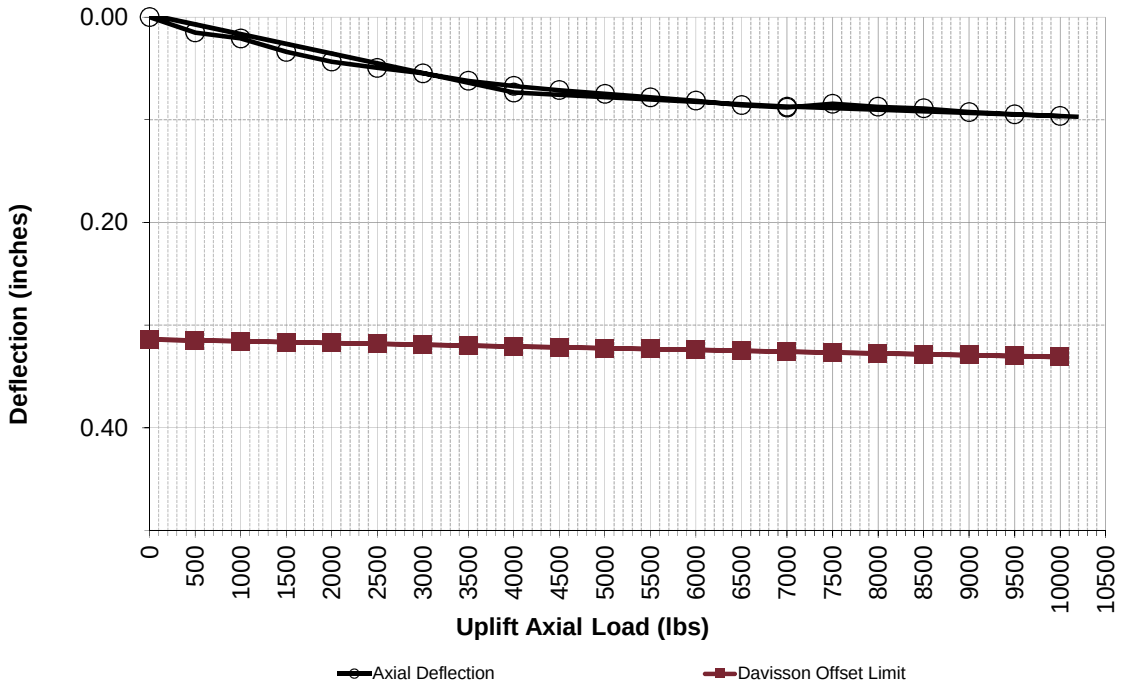
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-15B
Latitude:	43.05778
Longitude:	-78.07056
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	444.8

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.015	0.001	0.315	
50%	1000	0.021	0.002	0.316	
75%	1500	0.034	0.003	0.317	
100%	2000	0.043	0.003	0.317	
125%	2500	0.049	0.004	0.318	
150%	3000	0.055	0.005	0.319	
175%	3500	0.062	0.006	0.320	
200%	4000	0.067	0.007	0.321	
225%	4500	0.071	0.008	0.322	
250%	5000	0.075	0.008	0.322	
275%	5500	0.078	0.009	0.323	
300%	6000	0.082	0.010	0.324	
325%	6500	0.086	0.011	0.325	
350%	7000	0.088	0.012	0.326	
375%	7500	0.084	0.013	0.327	
400%	8000	0.087	0.014	0.328	
425%	8500	0.089	0.014	0.328	
450%	9000	0.092	0.015	0.329	
475%	9500	0.095	0.016	0.330	
500%	10000	0.096	0.017	0.331	
350%	7000	0.087	0.012	0.326	
200%	4000	0.073	0.007	0.321	
0%	0	-0.002	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-17A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

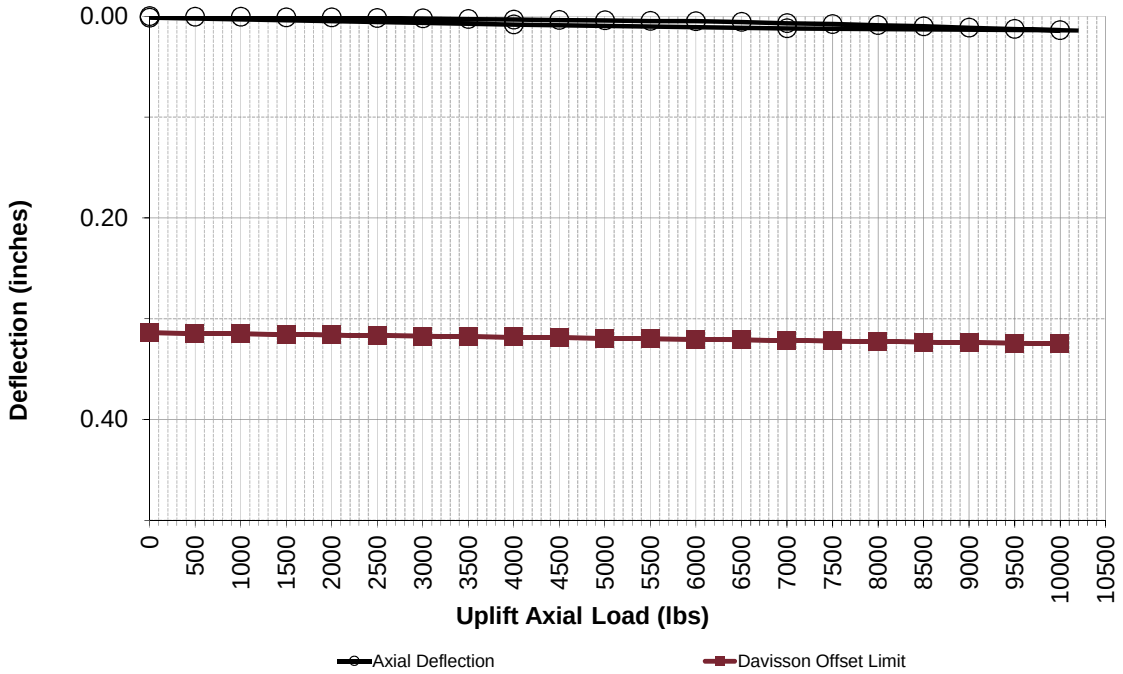
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-17A
Latitude:	43.05788
Longitude:	-78.11047
Pile Type:	W6x9
Pile Embedment Depth [in]:	84
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	197.4

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.000	0.001	0.315	
50%	1000	0.001	0.001	0.315	
75%	1500	0.001	0.002	0.316	
100%	2000	0.001	0.002	0.316	
125%	2500	0.002	0.003	0.317	
150%	3000	0.002	0.003	0.317	
175%	3500	0.003	0.004	0.318	
200%	4000	0.003	0.004	0.318	
225%	4500	0.004	0.005	0.319	
250%	5000	0.004	0.005	0.319	
275%	5500	0.005	0.006	0.320	
300%	6000	0.005	0.006	0.320	
325%	6500	0.006	0.007	0.321	
350%	7000	0.007	0.008	0.322	
375%	7500	0.008	0.008	0.322	
400%	8000	0.009	0.009	0.323	
425%	8500	0.010	0.009	0.323	
450%	9000	0.011	0.010	0.324	
475%	9500	0.013	0.010	0.324	
500%	10000	0.014	0.011	0.325	
350%	7000	0.012	0.008	0.322	
200%	4000	0.008	0.004	0.318	
0%	0	0.001	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-17B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

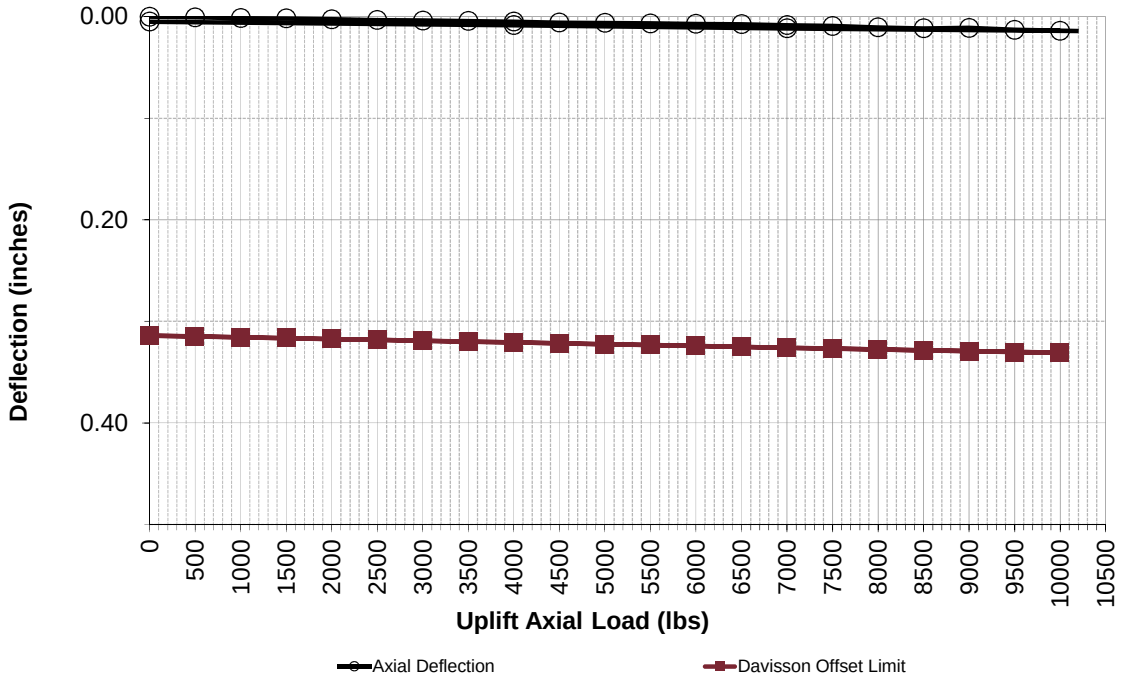
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-17B
Latitude:	43.05788
Longitude:	-78.11047
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	447.1

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.001	0.001	0.315	
50%	1000	0.001	0.002	0.316	
75%	1500	0.002	0.003	0.317	
100%	2000	0.003	0.003	0.317	
125%	2500	0.003	0.004	0.318	
150%	3000	0.004	0.005	0.319	
175%	3500	0.004	0.006	0.320	
200%	4000	0.005	0.007	0.321	
225%	4500	0.006	0.008	0.322	
250%	5000	0.006	0.008	0.322	
275%	5500	0.007	0.009	0.323	
300%	6000	0.007	0.010	0.324	
325%	6500	0.007	0.011	0.325	
350%	7000	0.008	0.012	0.326	
375%	7500	0.009	0.013	0.327	
400%	8000	0.011	0.014	0.328	
425%	8500	0.012	0.014	0.328	
450%	9000	0.011	0.015	0.329	
475%	9500	0.013	0.016	0.330	
500%	10000	0.014	0.017	0.331	
350%	7000	0.012	0.012	0.326	
200%	4000	0.008	0.007	0.321	
0%	0	0.005	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-18A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

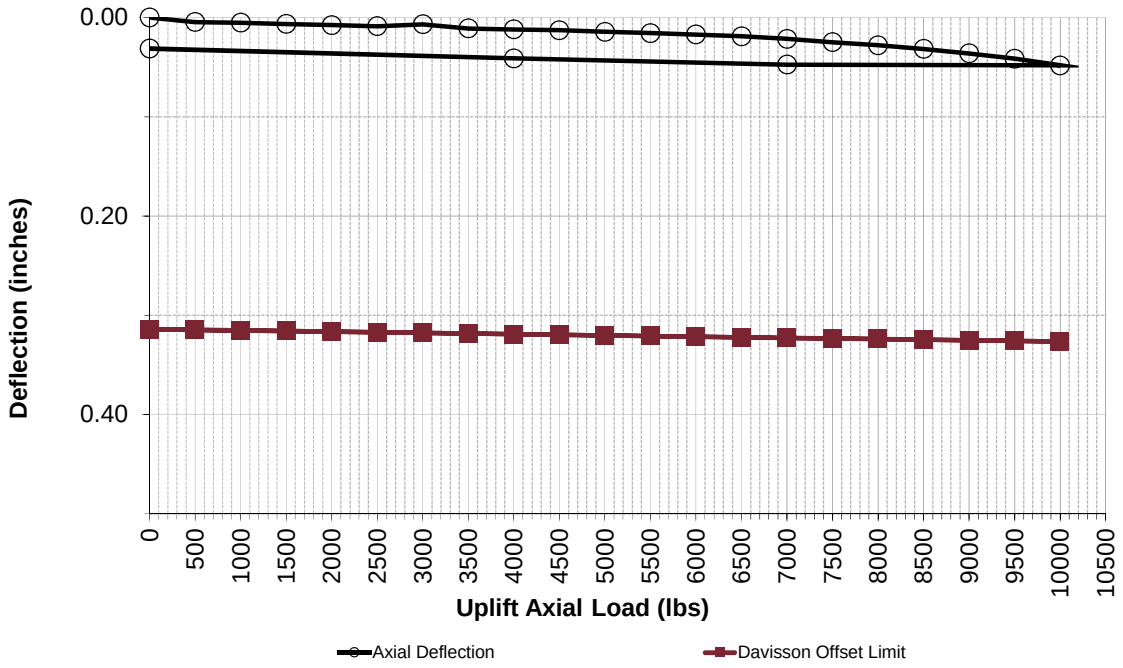
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-18A
Latitude:	43.04700
Longitude:	-78.09221
Pile Type:	W6x9
Pile Embedment Depth [in]:	96
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	318

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.005	0.001	0.315	
50%	1000	0.005	0.001	0.315	
75%	1500	0.006	0.002	0.316	
100%	2000	0.008	0.002	0.316	
125%	2500	0.009	0.003	0.317	
150%	3000	0.007	0.004	0.318	
175%	3500	0.011	0.004	0.318	
200%	4000	0.012	0.005	0.319	
225%	4500	0.013	0.006	0.320	
250%	5000	0.014	0.006	0.320	
275%	5500	0.016	0.007	0.321	
300%	6000	0.017	0.007	0.321	
325%	6500	0.019	0.008	0.322	
350%	7000	0.021	0.009	0.323	
375%	7500	0.025	0.009	0.323	
400%	8000	0.028	0.010	0.324	
425%	8500	0.032	0.010	0.324	
450%	9000	0.036	0.011	0.325	
475%	9500	0.041	0.012	0.326	
500%	10000	0.048	0.012	0.326	
350%	7000	0.047	0.009	0.323	
200%	4000	0.041	0.005	0.319	
0%	0	0.031	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-18B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

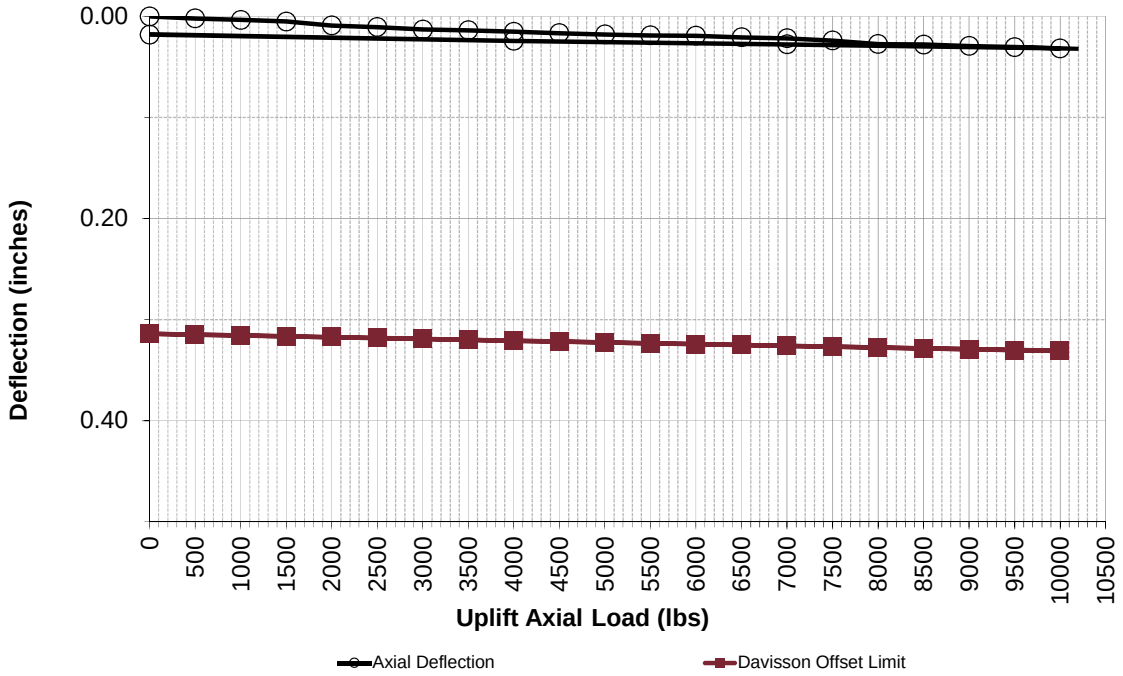
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-18B
Latitude:	43.04700
Longitude:	-78.09221
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	675.8

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.002	0.001	0.315	
50%	1000	0.003	0.002	0.316	
75%	1500	0.005	0.003	0.317	
100%	2000	0.009	0.003	0.317	
125%	2500	0.011	0.004	0.318	
150%	3000	0.013	0.005	0.319	
175%	3500	0.014	0.006	0.320	
200%	4000	0.015	0.007	0.321	
225%	4500	0.017	0.008	0.322	
250%	5000	0.018	0.008	0.322	
275%	5500	0.019	0.009	0.323	
300%	6000	0.019	0.010	0.324	
325%	6500	0.021	0.011	0.325	
350%	7000	0.022	0.012	0.326	
375%	7500	0.024	0.013	0.327	
400%	8000	0.027	0.014	0.328	
425%	8500	0.028	0.014	0.328	
450%	9000	0.029	0.015	0.329	
475%	9500	0.030	0.016	0.330	
500%	10000	0.032	0.017	0.331	
350%	7000	0.028	0.012	0.326	
200%	4000	0.024	0.007	0.321	
0%	0	0.018	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-20A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

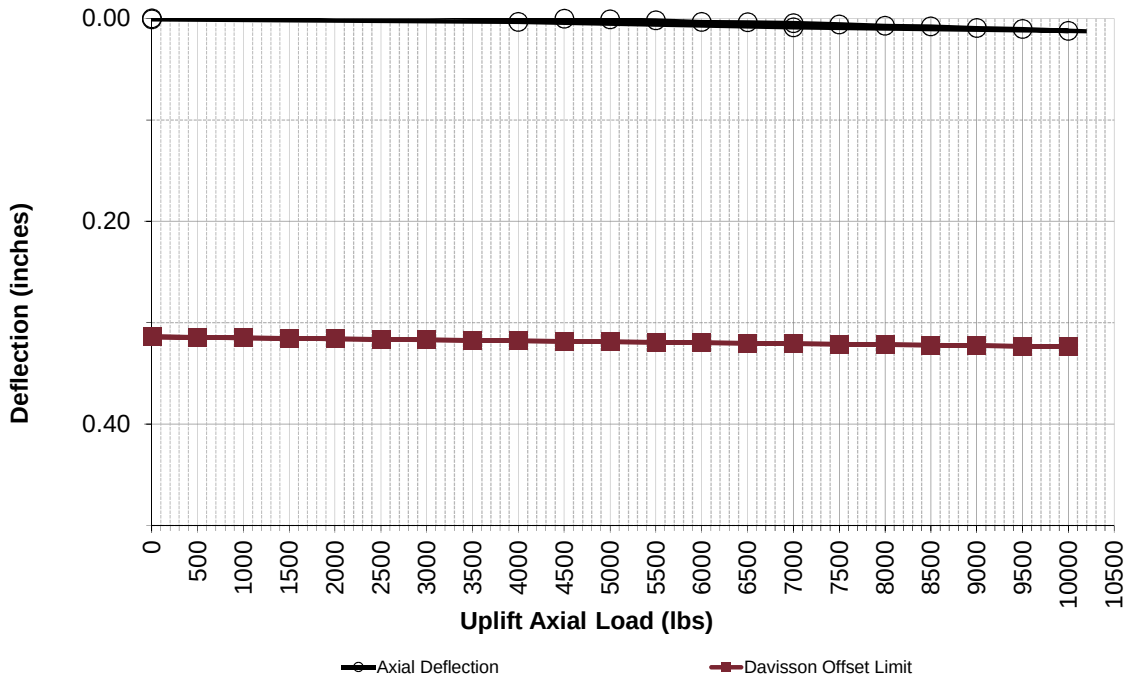
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-20A
Latitude:	43.04608
Longitude:	-78.11177
Pile Type:	W6x9
Pile Embedment Depth [in]:	75
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	386.1

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	-0.002	0.000	0.314	
50%	1000	-0.003	0.001	0.315	
75%	1500	-0.002	0.001	0.315	
100%	2000	-0.003	0.002	0.316	
125%	2500	-0.003	0.002	0.316	
150%	3000	-0.002	0.003	0.317	
175%	3500	-0.002	0.003	0.317	
200%	4000	-0.001	0.004	0.318	
225%	4500	0.000	0.004	0.318	
250%	5000	0.001	0.005	0.319	
275%	5500	0.002	0.005	0.319	
300%	6000	0.003	0.006	0.320	
325%	6500	0.004	0.006	0.320	
350%	7000	0.005	0.007	0.321	
375%	7500	0.006	0.007	0.321	
400%	8000	0.007	0.008	0.322	
425%	8500	0.008	0.008	0.322	
450%	9000	0.009	0.009	0.323	
475%	9500	0.011	0.009	0.323	
500%	10000	0.012	0.010	0.324	
350%	7000	0.009	0.007	0.321	
200%	4000	0.003	0.004	0.318	
0%	0	0.001	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-20B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

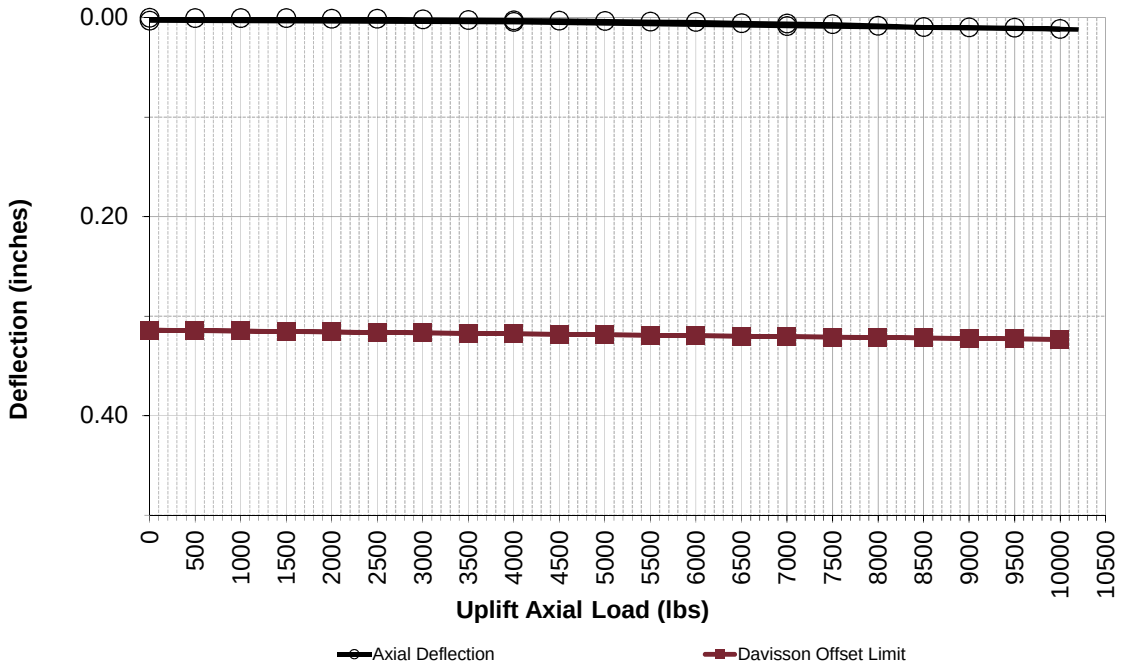
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-20B
Latitude:	43.04608
Longitude:	-78.11177
Pile Type:	W6x9
Pile Embedment Depth [in]:	72
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	282.1

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.001	0.000	0.314	
50%	1000	0.001	0.001	0.315	
75%	1500	0.001	0.001	0.315	
100%	2000	0.001	0.002	0.316	
125%	2500	0.001	0.002	0.316	
150%	3000	0.002	0.003	0.317	
175%	3500	0.002	0.003	0.317	
200%	4000	0.003	0.004	0.318	
225%	4500	0.003	0.004	0.318	
250%	5000	0.003	0.005	0.319	
275%	5500	0.004	0.005	0.319	
300%	6000	0.004	0.006	0.320	
325%	6500	0.006	0.006	0.320	
350%	7000	0.006	0.006	0.320	
375%	7500	0.007	0.007	0.321	
400%	8000	0.008	0.007	0.321	
425%	8500	0.010	0.008	0.322	
450%	9000	0.010	0.008	0.322	
475%	9500	0.010	0.009	0.323	
500%	10000	0.011	0.009	0.323	
350%	7000	0.008	0.006	0.320	
200%	4000	0.004	0.004	0.318	
0%	0	0.003	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-20AP

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

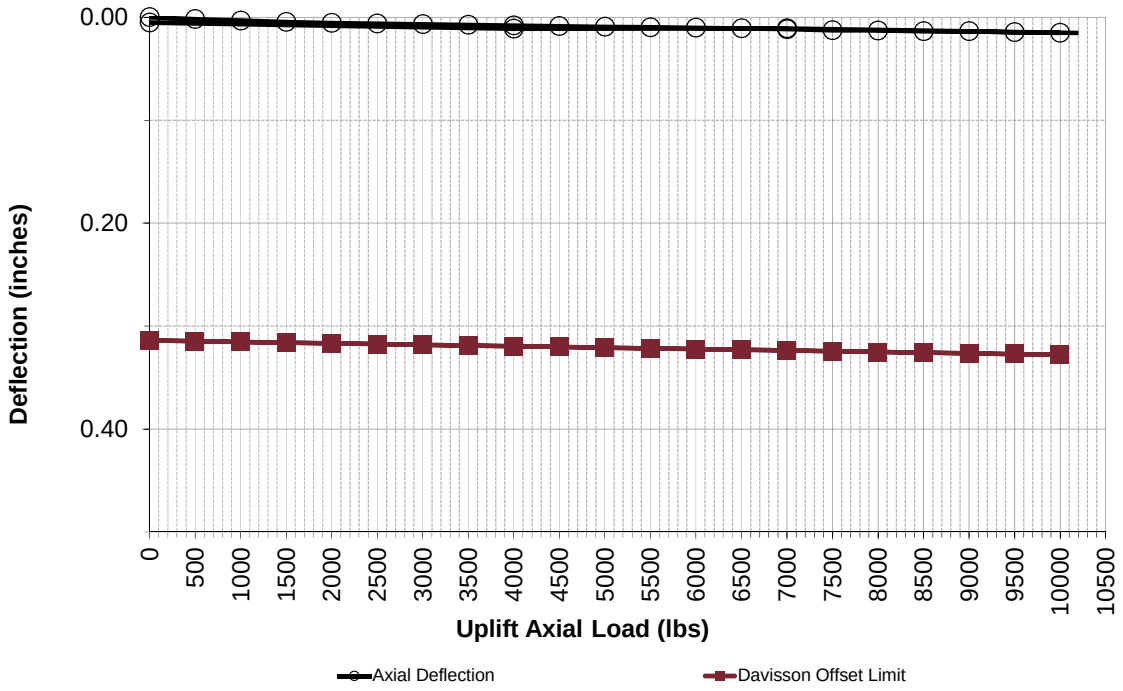
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-20AP
Latitude:	43.04608
Longitude:	-78.11177
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	140.7

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.002	0.001	0.315	
50%	1000	0.003	0.001	0.315	
75%	1500	0.005	0.002	0.316	
100%	2000	0.006	0.003	0.317	
125%	2500	0.006	0.003	0.317	
150%	3000	0.007	0.004	0.318	
175%	3500	0.007	0.005	0.319	
200%	4000	0.008	0.006	0.320	
225%	4500	0.009	0.006	0.320	
250%	5000	0.009	0.007	0.321	
275%	5500	0.010	0.008	0.322	
300%	6000	0.010	0.008	0.322	
325%	6500	0.011	0.009	0.323	
350%	7000	0.012	0.010	0.324	
375%	7500	0.013	0.010	0.324	
400%	8000	0.013	0.011	0.325	
425%	8500	0.014	0.012	0.326	
450%	9000	0.014	0.013	0.327	
475%	9500	0.015	0.013	0.327	
500%	10000	0.015	0.014	0.328	
350%	7000	0.011	0.010	0.324	
200%	4000	0.011	0.006	0.320	
0%	0	0.005	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-20BP

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

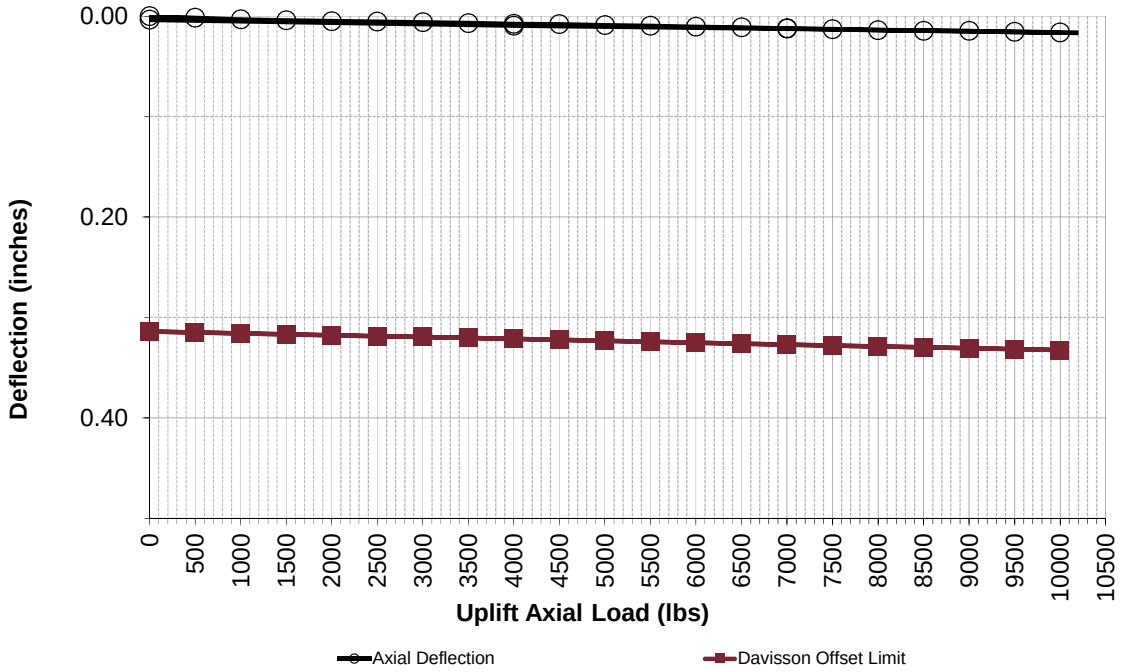
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-20BP
Latitude:	43.04608
Longitude:	-78.11177
Pile Type:	W6x9
Pile Embedment Depth [in]:	144
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	219.5

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.002	0.001	0.315	
50%	1000	0.003	0.002	0.316	
75%	1500	0.004	0.003	0.317	
100%	2000	0.005	0.004	0.318	
125%	2500	0.006	0.005	0.319	
150%	3000	0.006	0.006	0.320	
175%	3500	0.007	0.006	0.320	
200%	4000	0.008	0.007	0.321	
225%	4500	0.008	0.008	0.322	
250%	5000	0.009	0.009	0.323	
275%	5500	0.010	0.010	0.324	
300%	6000	0.011	0.011	0.325	
325%	6500	0.011	0.012	0.326	
350%	7000	0.012	0.013	0.327	
375%	7500	0.013	0.014	0.328	
400%	8000	0.014	0.015	0.329	
425%	8500	0.015	0.016	0.330	
450%	9000	0.015	0.017	0.331	
475%	9500	0.016	0.018	0.332	
500%	10000	0.016	0.019	0.333	
350%	7000	0.013	0.013	0.327	
200%	4000	0.009	0.007	0.321	
0%	0	0.004	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-21A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

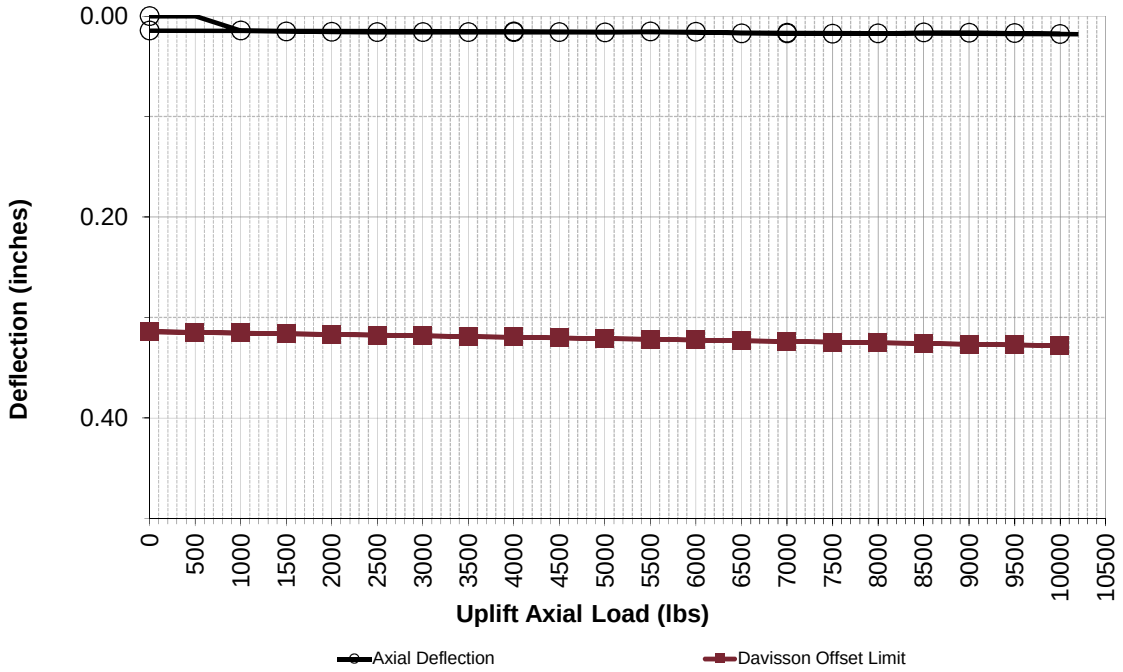
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-21A
Latitude:	43.05464
Longitude:	-78.08558
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	478.6

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.000	0.001	0.315	
50%	1000	0.014	0.001	0.315	
75%	1500	0.015	0.002	0.316	
100%	2000	0.016	0.003	0.317	
125%	2500	0.016	0.003	0.317	
150%	3000	0.016	0.004	0.318	
175%	3500	0.016	0.005	0.319	
200%	4000	0.016	0.006	0.320	
225%	4500	0.016	0.006	0.320	
250%	5000	0.016	0.007	0.321	
275%	5500	0.015	0.008	0.322	
300%	6000	0.016	0.008	0.322	
325%	6500	0.017	0.009	0.323	
350%	7000	0.017	0.010	0.324	
375%	7500	0.017	0.010	0.324	
400%	8000	0.017	0.011	0.325	
425%	8500	0.016	0.012	0.326	
450%	9000	0.017	0.013	0.327	
475%	9500	0.017	0.013	0.327	
500%	10000	0.018	0.014	0.328	
350%	7000	0.017	0.010	0.324	
200%	4000	0.015	0.006	0.320	
0%	0	0.014	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-21B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

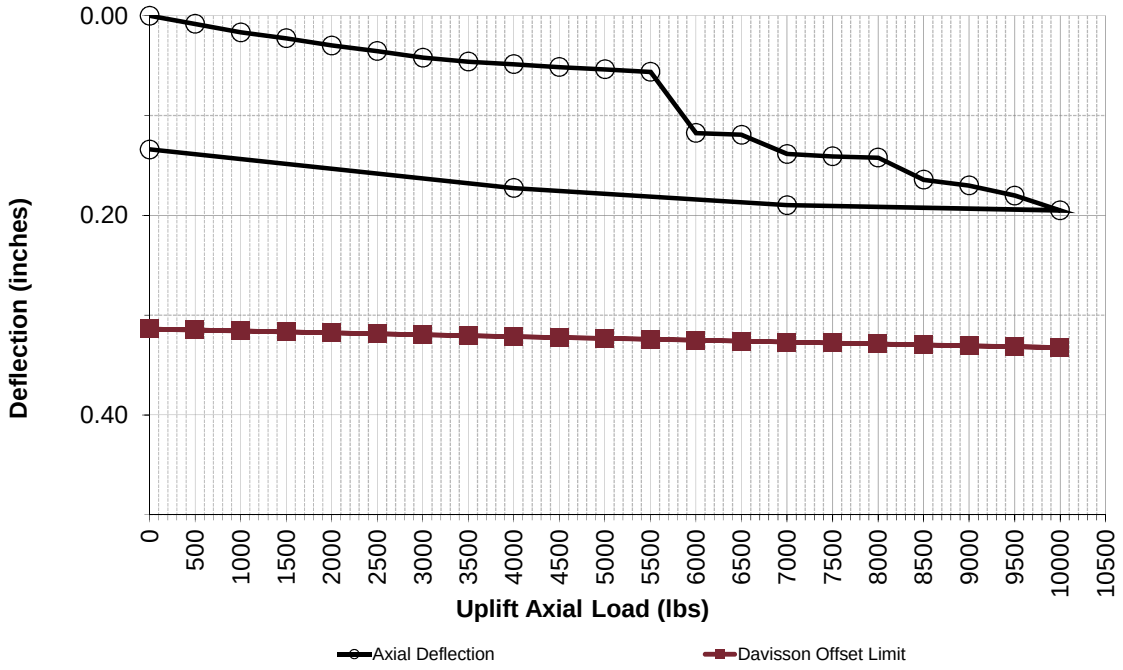
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-21B
Latitude:	43.05464
Longitude:	-78.08558
Pile Type:	W6x9
Pile Embedment Depth [in]:	144
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	1198.6

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.008	0.001	0.315	
50%	1000	0.017	0.002	0.316	
75%	1500	0.022	0.003	0.317	
100%	2000	0.030	0.004	0.318	
125%	2500	0.035	0.005	0.319	
150%	3000	0.042	0.006	0.320	
175%	3500	0.046	0.006	0.320	
200%	4000	0.049	0.007	0.321	
225%	4500	0.051	0.008	0.322	
250%	5000	0.054	0.009	0.323	
275%	5500	0.056	0.010	0.324	
300%	6000	0.118	0.011	0.325	
325%	6500	0.119	0.012	0.326	
350%	7000	0.139	0.013	0.327	
375%	7500	0.141	0.014	0.328	
400%	8000	0.142	0.015	0.329	
425%	8500	0.164	0.016	0.330	
450%	9000	0.170	0.017	0.331	
475%	9500	0.180	0.018	0.332	
500%	10000	0.195	0.019	0.333	
350%	7000	0.190	0.013	0.327	
200%	4000	0.173	0.007	0.321	
0%	0	0.134	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-21AP

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

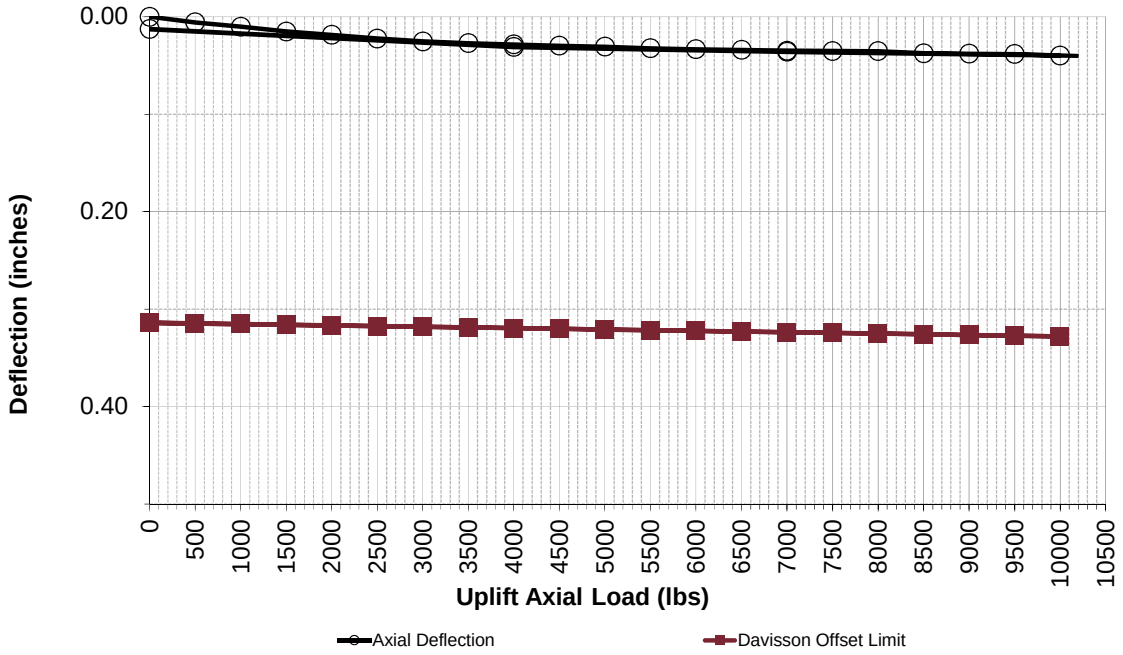
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-21AP
Latitude:	43.05464
Longitude:	-78.08558
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	102.7

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.006	0.001	0.315	
50%	1000	0.010	0.001	0.315	
75%	1500	0.015	0.002	0.316	
100%	2000	0.019	0.003	0.317	
125%	2500	0.022	0.003	0.317	
150%	3000	0.025	0.004	0.318	
175%	3500	0.027	0.005	0.319	
200%	4000	0.028	0.006	0.320	
225%	4500	0.030	0.006	0.320	
250%	5000	0.031	0.007	0.321	
275%	5500	0.032	0.008	0.322	
300%	6000	0.033	0.008	0.322	
325%	6500	0.034	0.009	0.323	
350%	7000	0.035	0.010	0.324	
375%	7500	0.035	0.010	0.324	
400%	8000	0.035	0.011	0.325	
425%	8500	0.037	0.012	0.326	
450%	9000	0.038	0.013	0.327	
475%	9500	0.038	0.013	0.327	
500%	10000	0.040	0.014	0.328	
350%	7000	0.036	0.010	0.324	
200%	4000	0.031	0.006	0.320	
0%	0	0.013	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

Tension Load Test Result for EB-21BP

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	Dillon ED JR

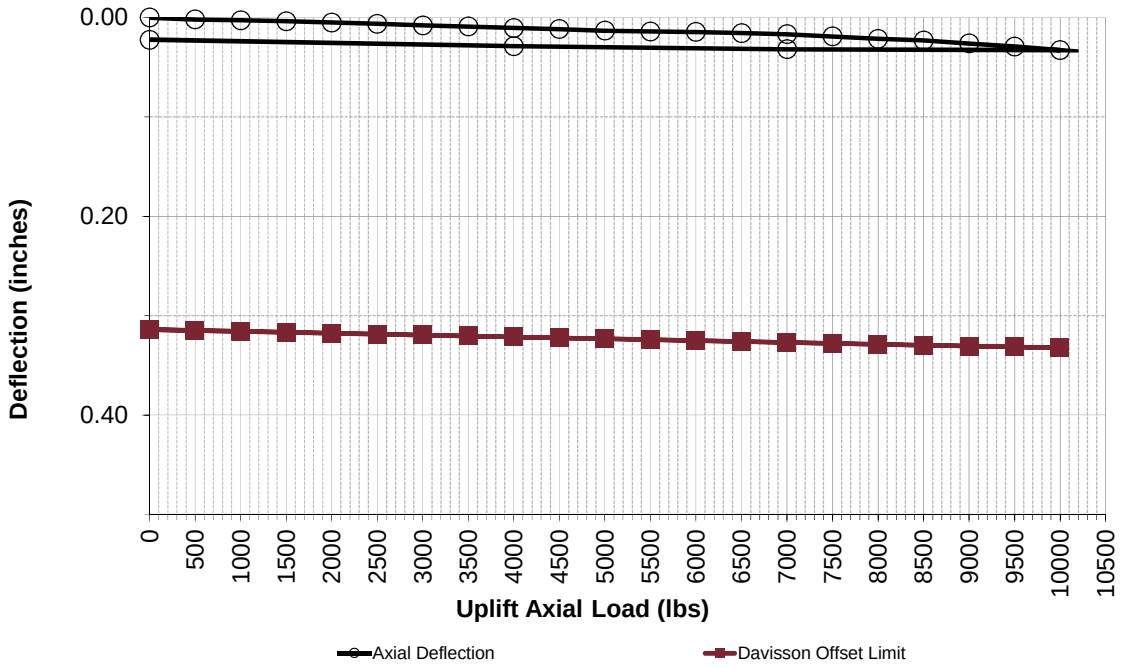
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-21BP
Latitude:	43.05464
Longitude:	-78.08558
Pile Type:	W6x9
Pile Embedment Depth [in]:	144
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	2000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	222

Tension Test Results			Davisson Offset Limit Lines		
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Elastic Data (in) (PL/AE)	Davisson Offest Limit (in) (0.15+D/120+(PL/AE))	Comments
0%	0	0.000	0.000	0.314	
25%	500	0.002	0.001	0.315	
50%	1000	0.003	0.002	0.316	
75%	1500	0.004	0.003	0.317	
100%	2000	0.005	0.004	0.318	
125%	2500	0.006	0.005	0.319	
150%	3000	0.008	0.006	0.320	
175%	3500	0.009	0.006	0.320	
200%	4000	0.010	0.007	0.321	
225%	4500	0.012	0.008	0.322	
250%	5000	0.013	0.009	0.323	
275%	5500	0.014	0.010	0.324	
300%	6000	0.014	0.011	0.325	
325%	6500	0.016	0.012	0.326	
350%	7000	0.017	0.013	0.327	
375%	7500	0.019	0.014	0.328	
400%	8000	0.021	0.015	0.329	
425%	8500	0.023	0.016	0.330	
450%	9000	0.026	0.017	0.331	
475%	9500	0.029	0.018	0.332	
500%	10000	0.033	0.019	0.333	
350%	7000	0.032	0.013	0.327	
200%	4000	0.029	0.007	0.321	
0%	0	0.022	0.000	0.314	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for theapproximate push depth.

APPENDIX F

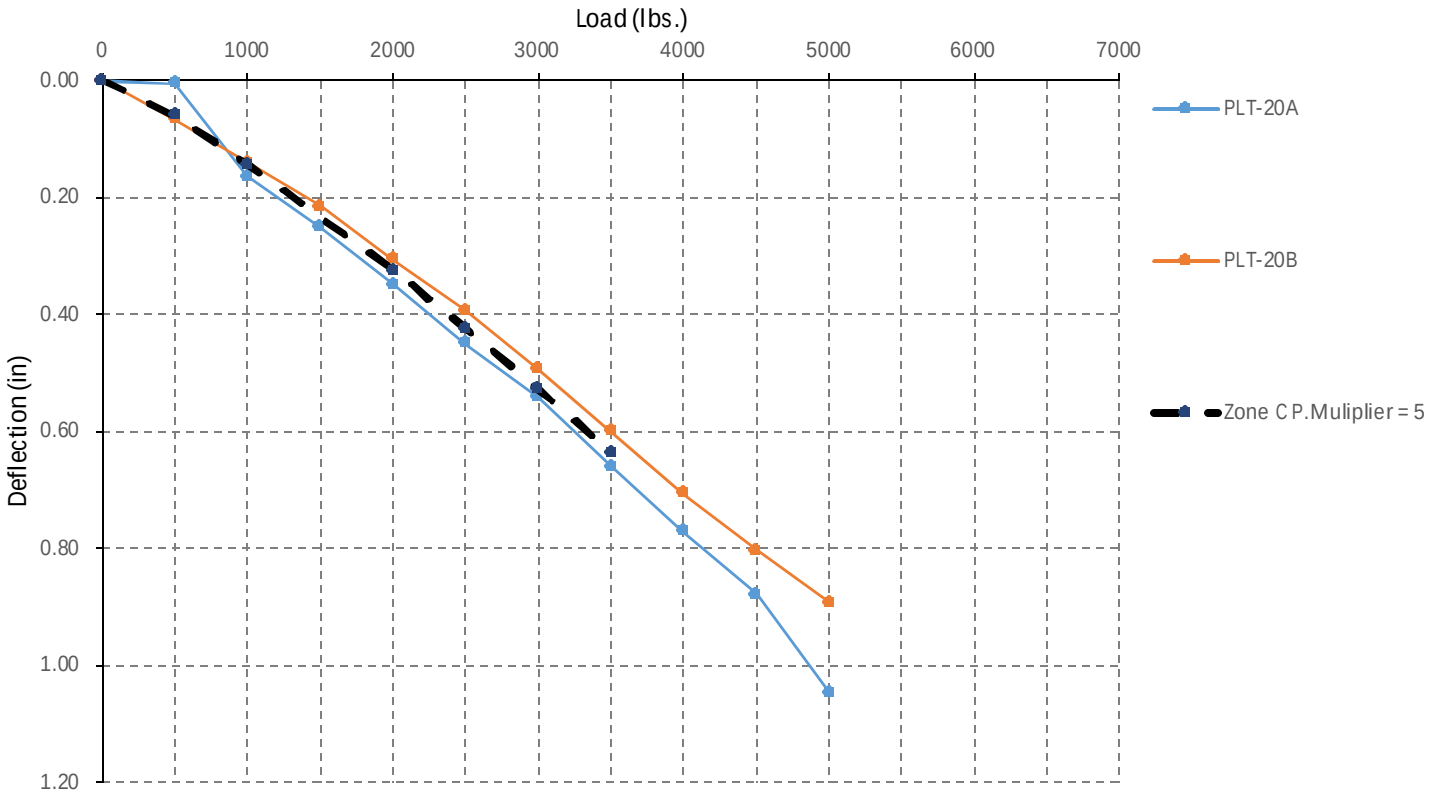
PILE LOAD TESTING DATA (LATERAL LOADS)

(Exhibits- F001 through F029)

Terracon

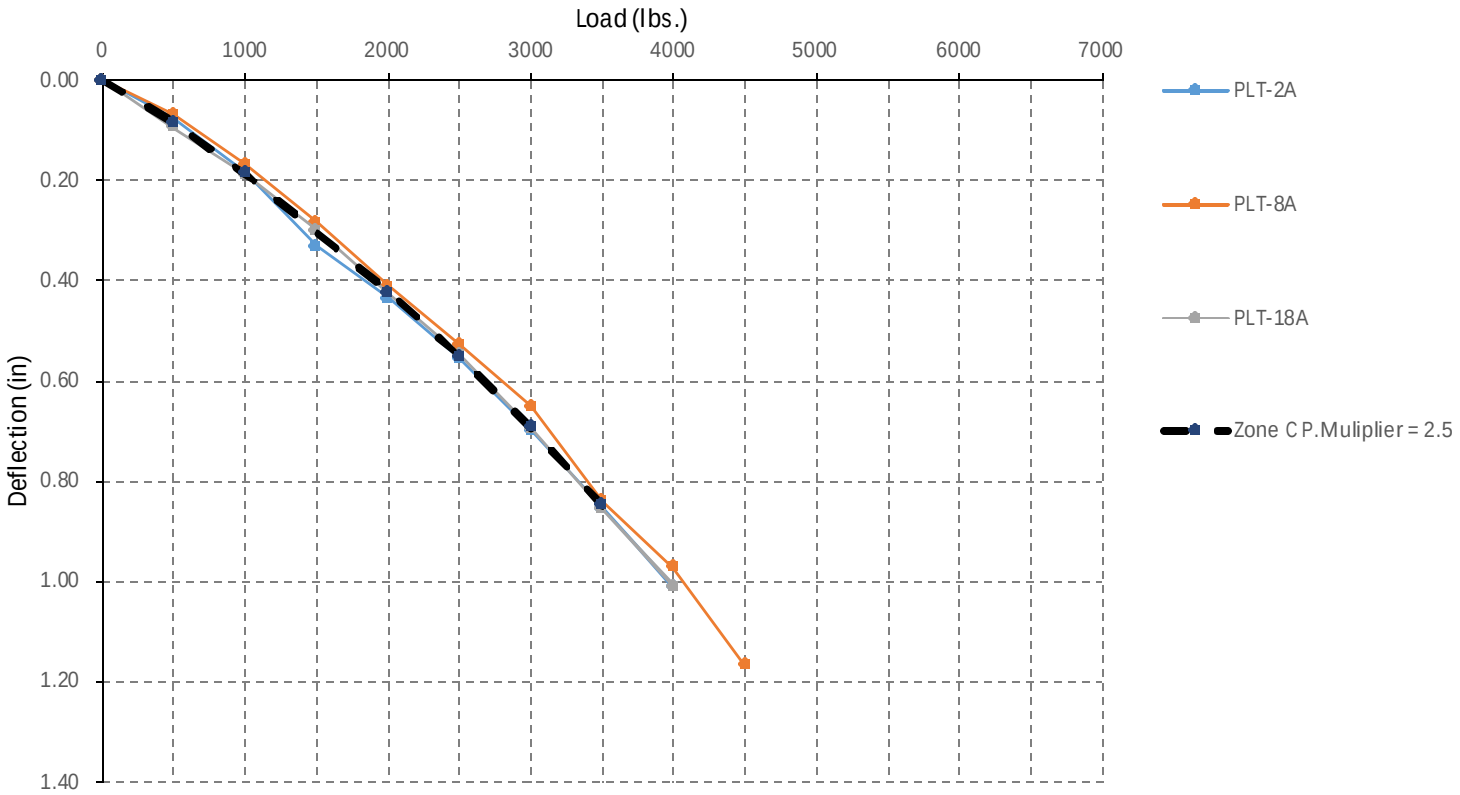
Lateral Load Graphs

W6x9 Piles, 6-foot Embedment



Lateral Load Graphs

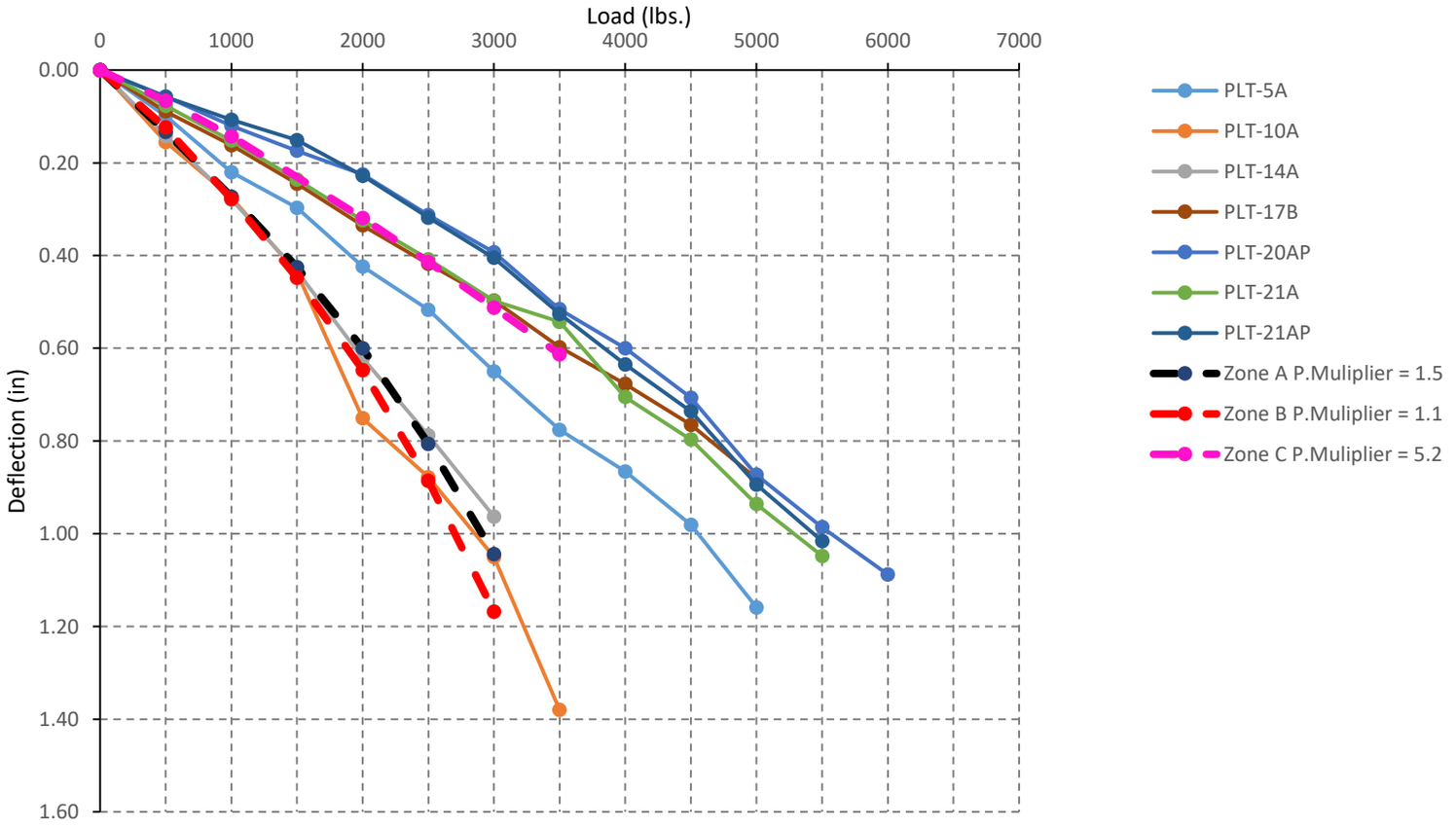
W6x9 Piles, 8-foot Embedment



Terracon

Lateral Load Graphs

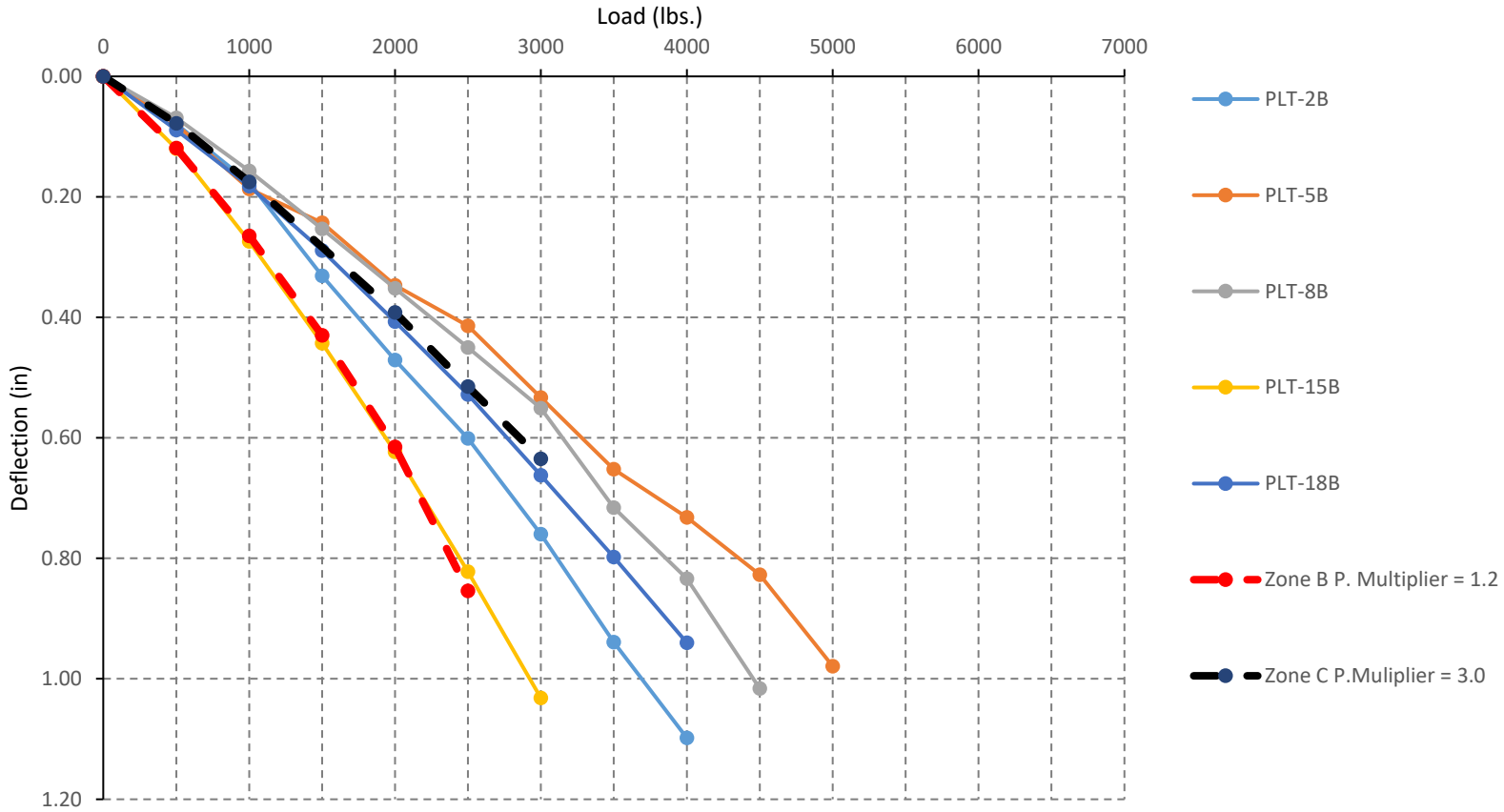
W6x9 Piles, 9-foot Embedment



Terracon

Lateral Load Graphs

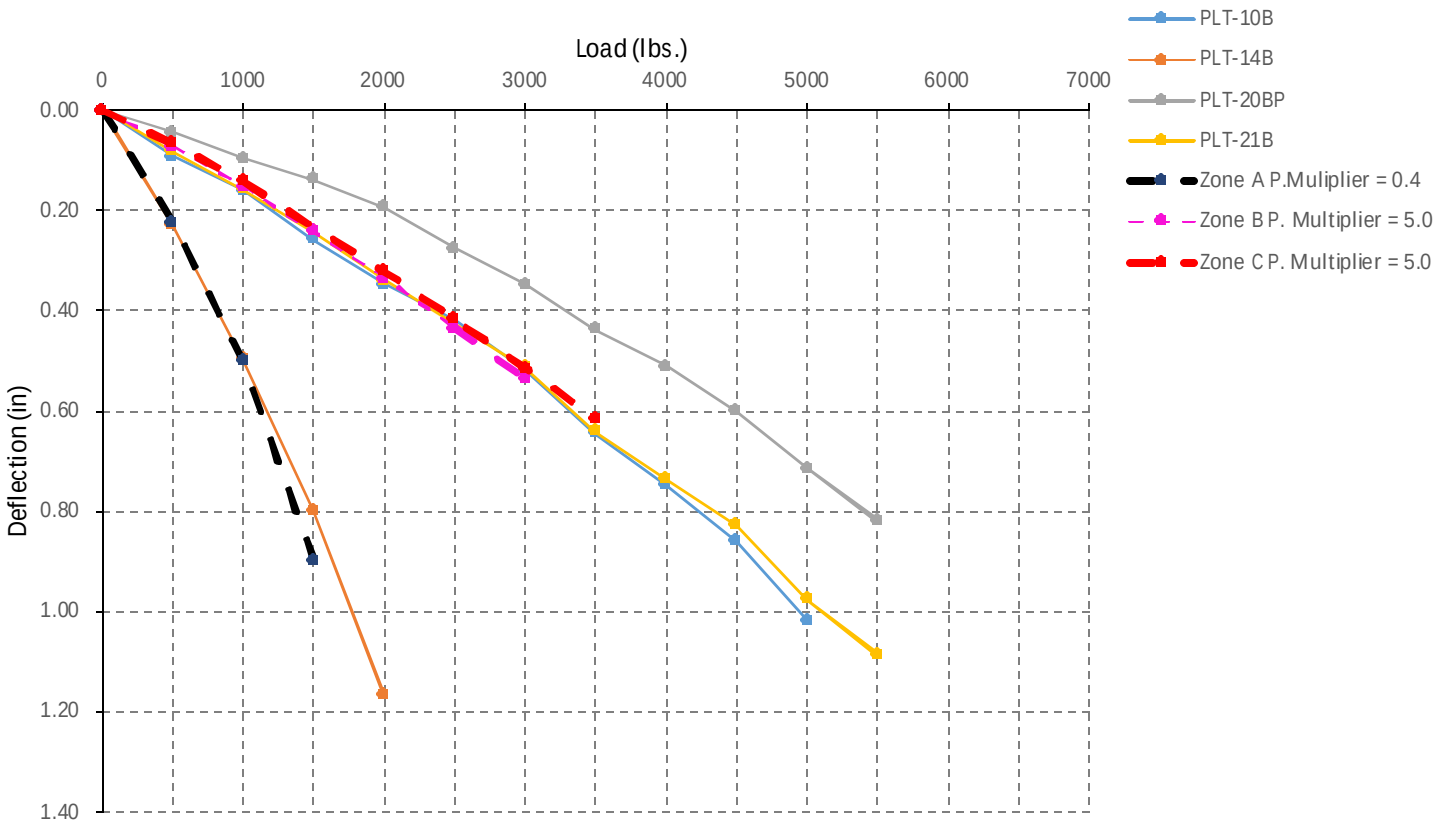
W6x9 Piles, 11-foot Embedment



Terracon

Lateral Load Graphs

W6x9 Piles, 12-foot Embedment



Lateral Load Test Result for EB-2A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

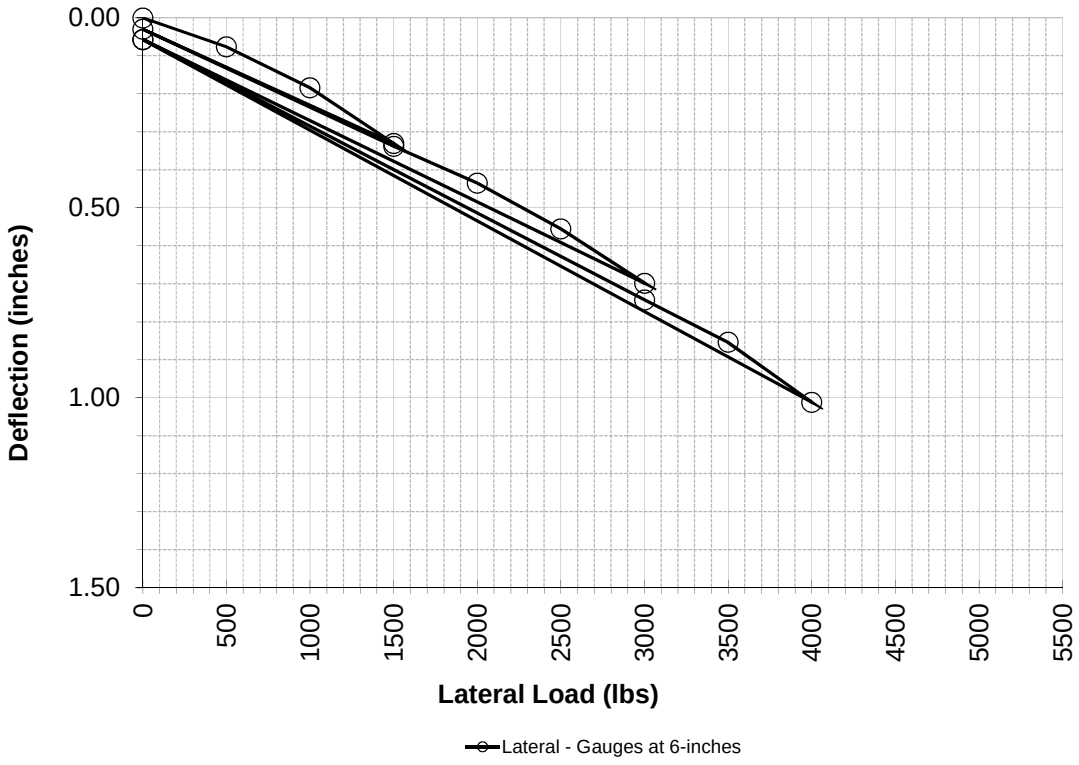
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-2A
Latitude:	43.08330
Longitude:	-78.04502
Pile Type:	W6x9
Pile Embedment Depth [in]:	102
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	222

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.076	
29%	1000	0.184	
43%	1500	0.331	
0%	0	0.029	
43%	1500	0.338	
57%	2000	0.435	
71%	2500	0.555	
86%	3000	0.698	
0%	0	0.057	
86%	3000	0.742	
100%	3500	0.854	
114%	4000	1.012	
129%	4500		
0%	0	0.058	
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-2B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

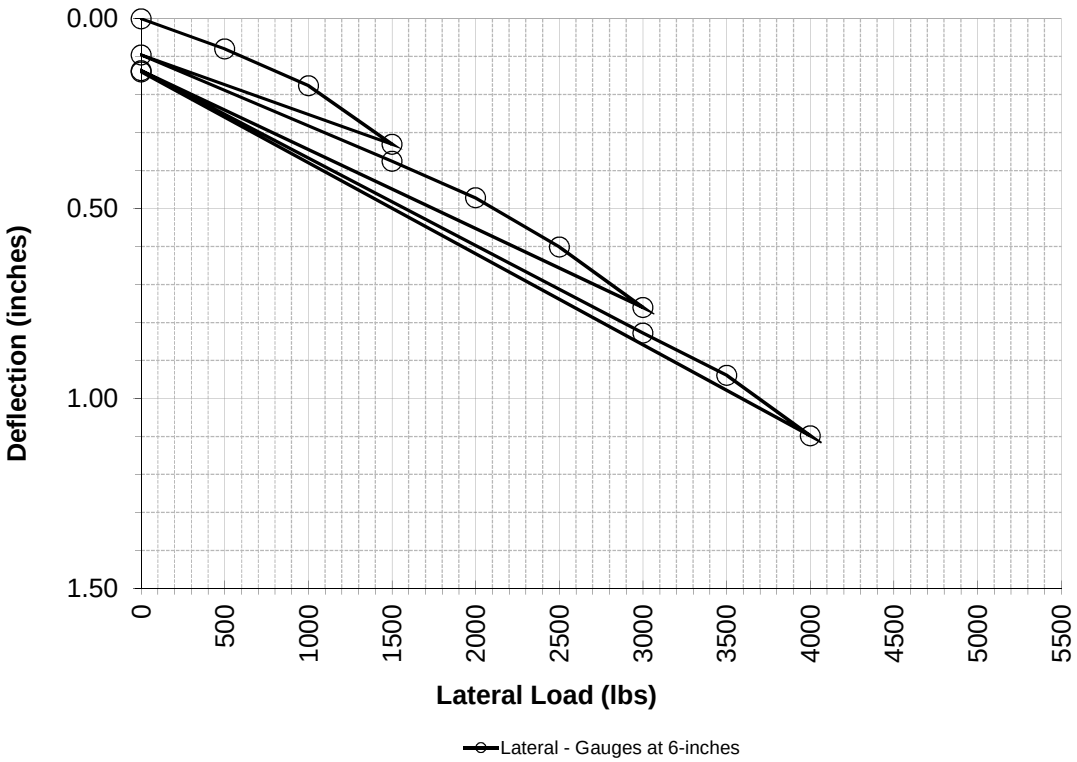
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-2B
Latitude:	43.08330
Longitude:	-78.04502
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	349

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.079	
29%	1000	0.176	
43%	1500	0.331	
0%	0	0.095	
43%	1500	0.375	
57%	2000	0.471	
71%	2500	0.601	
86%	3000	0.760	
0%	0	0.137	
86%	3000	0.827	
100%	3500	0.939	
114%	4000	1.098	
129%	4500		
0%	0	0.140	
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-5A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

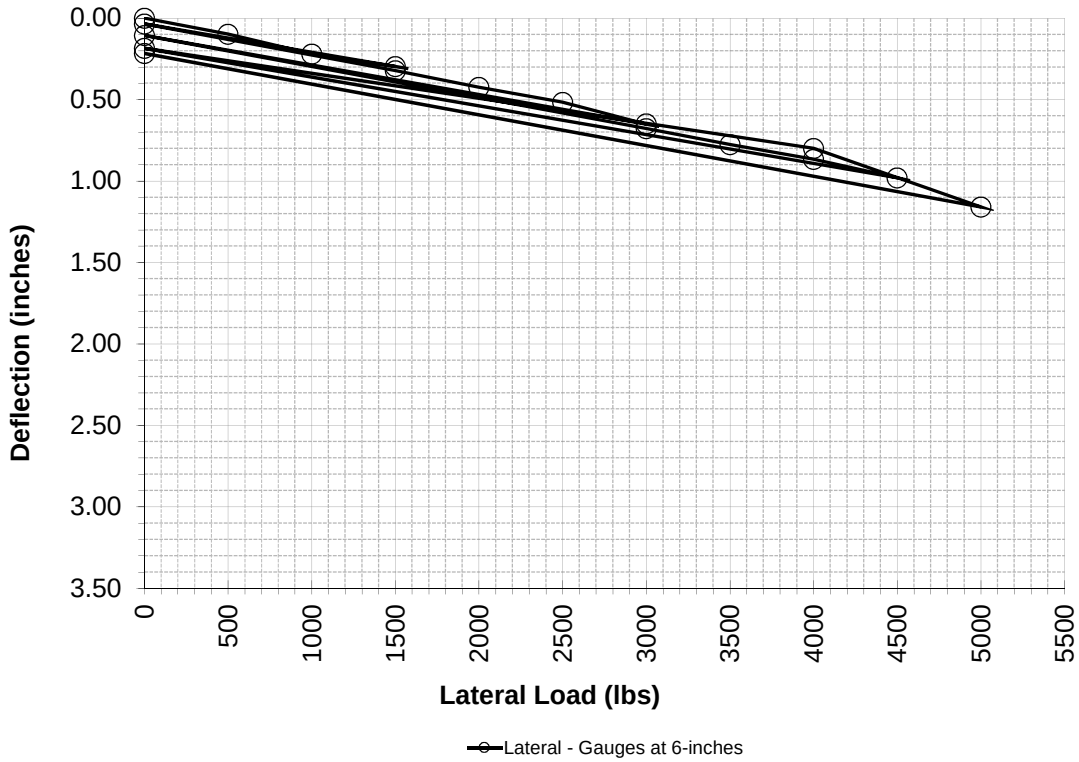
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-5A
Latitude:	43.07850
Longitude:	-78.08036
Pile Type:	W6x9
Pile Embedment Depth [in]:	105
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	265.3

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.099	
29%	1000	0.220	
43%	1500	0.297	
0%	0	0.036	
43%	1500	0.323	
57%	2000	0.424	
71%	2500	0.517	
86%	3000	0.650	
0%	0	0.107	
86%	3000	0.678	
100%	3500	0.776	
114%	4000	0.866	
129%	4500	0.981	
0%	0	0.184	
114%	4000	0.801	
143%	5000	1.159	
157%	5500		
171%	6000		
0%	0	0.217	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-5B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

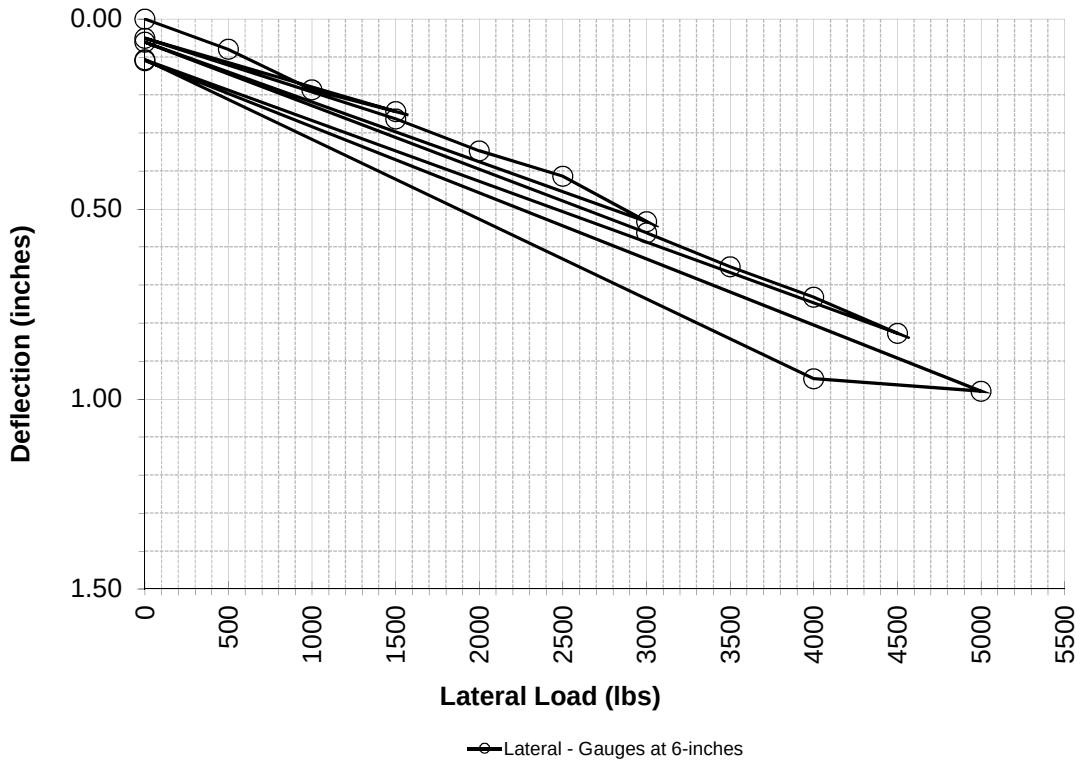
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-5B
Latitude:	43.07850
Longitude:	-78.08036
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	485.4

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.080	
29%	1000	0.187	
43%	1500	0.243	
0%	0	0.051	
43%	1500	0.263	
57%	2000	0.347	
71%	2500	0.414	
86%	3000	0.533	
0%	0	0.061	
86%	3000	0.562	
100%	3500	0.652	
114%	4000	0.732	
129%	4500	0.827	
0%	0	0.107	
114%	4000	0.947	
143%	5000	0.979	
157%	5500		
171%	6000		
0%	0	0.109	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-8A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

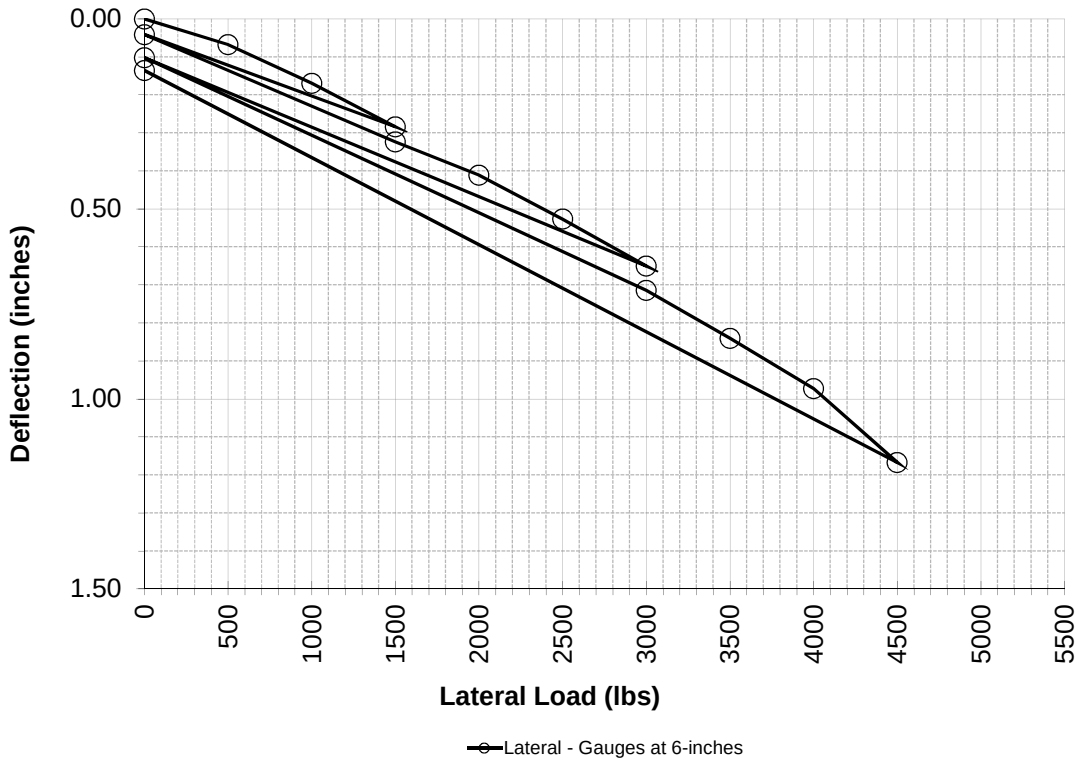
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-8A
Latitude:	43.06970
Longitude:	-78.09533
Pile Type:	W6x9
Pile Embedment Depth [in]:	96
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	205.8

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.068	
29%	1000	0.169	
43%	1500	0.284	
0%	0	0.042	
43%	1500	0.324	
57%	2000	0.411	
71%	2500	0.527	
86%	3000	0.650	
0%	0	0.102	
86%	3000	0.714	
100%	3500	0.840	
114%	4000	0.972	
129%	4500	1.167	
0%	0	0.136	
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-8B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

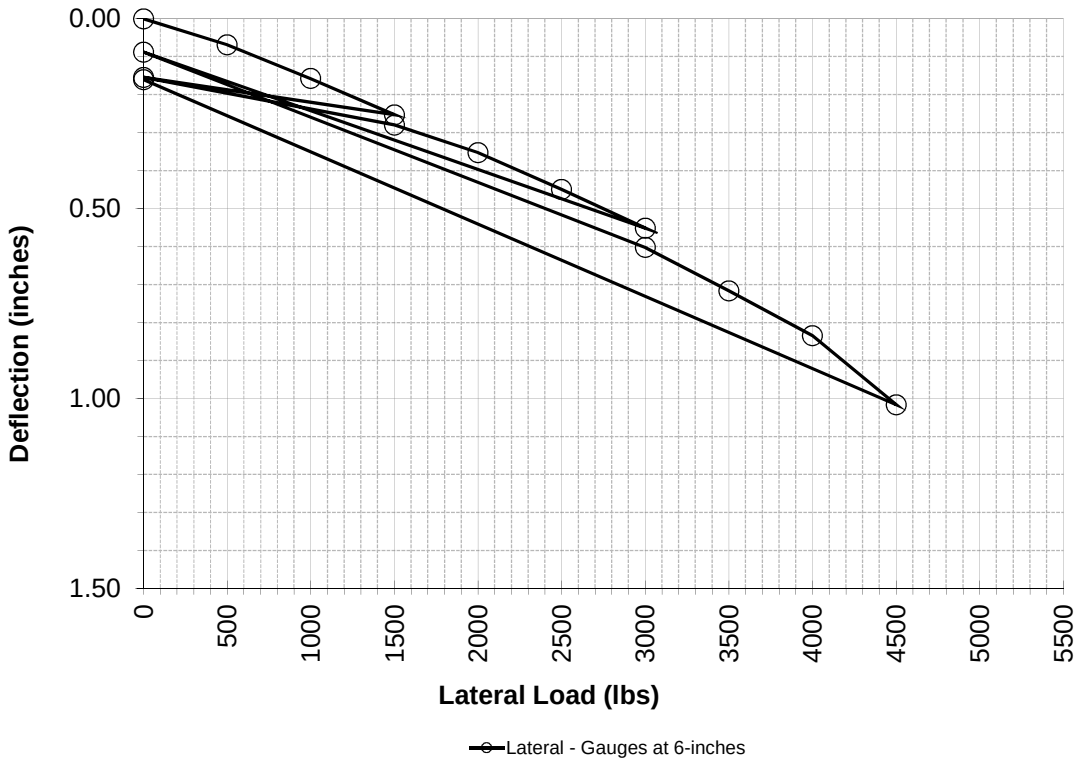
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-8B
Latitude:	43.06970
Longitude:	-78.09533
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	463.2

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.069	
29%	1000	0.157	
43%	1500	0.253	
0%	0	0.154	
43%	1500	0.280	
57%	2000	0.352	
71%	2500	0.450	
86%	3000	0.551	
0%	0	0.088	
86%	3000	0.602	
100%	3500	0.716	
114%	4000	0.834	
129%	4500	1.016	
0%	0	0.161	
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-10A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

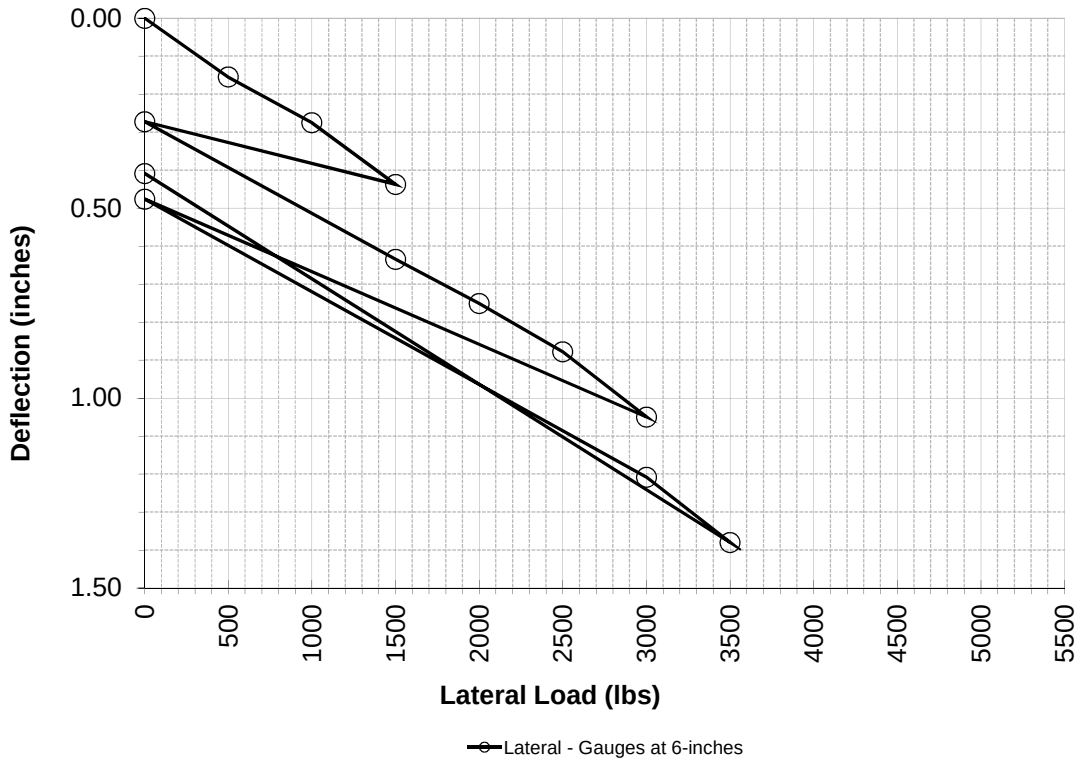
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-10A
Latitude:	43.07040
Longitude:	-78.08030
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	71.7

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.155	
29%	1000	0.275	
43%	1500	0.437	
0%	0	0.273	
43%	1500	0.634	
57%	2000	0.751	
71%	2500	0.878	
86%	3000	1.050	
0%	0	0.476	
86%	3000	1.208	
100%	3500	1.380	
114%	4000		
129%	4500		
0%	0	0.409	
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-10B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

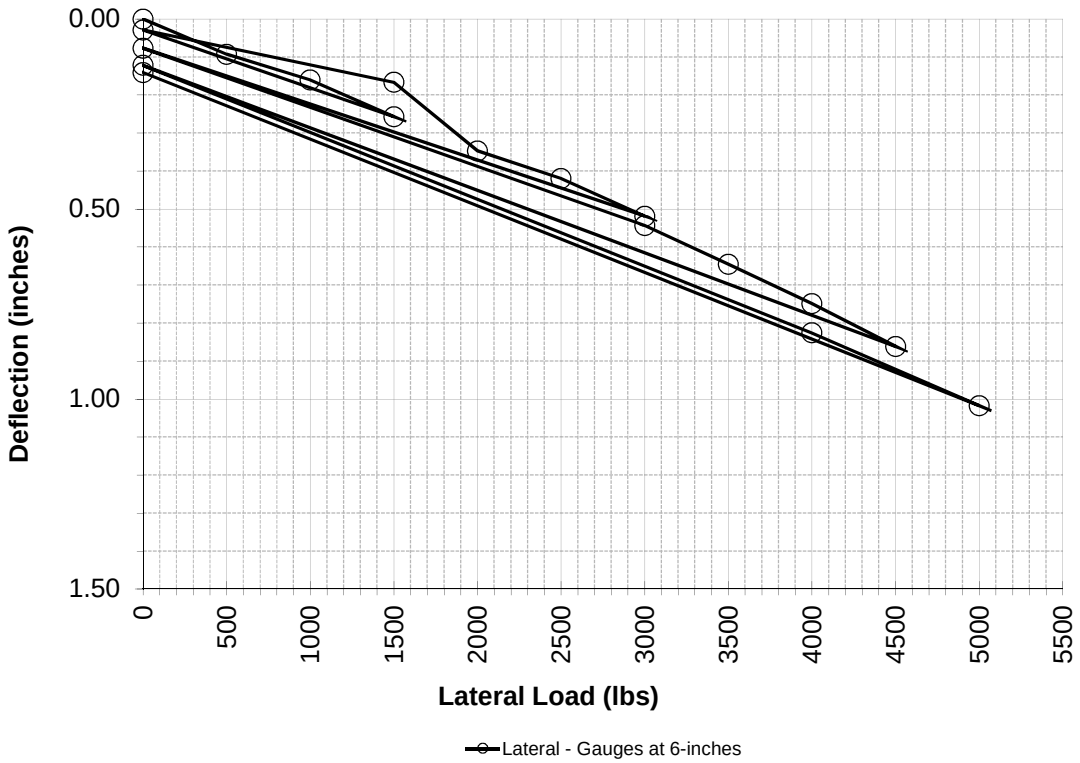
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-10B
Latitude:	43.07040
Longitude:	-78.08030
Pile Type:	W6x9
Pile Embedment Depth [in]:	144
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	215.2

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.093	
29%	1000	0.160	
43%	1500	0.257	
0%	0	0.029	
43%	1500	0.167	
57%	2000	0.347	
71%	2500	0.419	
86%	3000	0.519	
0%	0	0.077	
86%	3000	0.543	
100%	3500	0.645	
114%	4000	0.749	
129%	4500	0.861	
0%	0	0.122	
114%	4000	0.826	
143%	5000	1.017	
157%	5500		
171%	6000		
0%	0	0.140	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-14A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

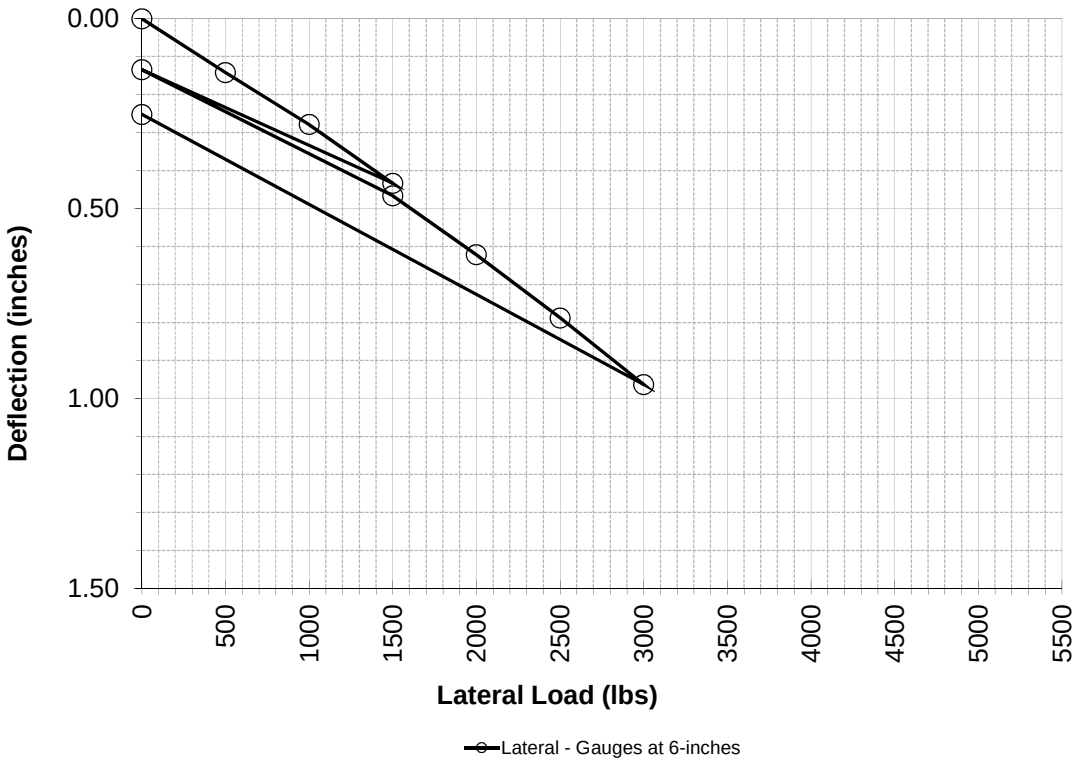
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-14A
Latitude:	43.06380
Longitude:	-78.08697
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	47.3

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.142	
29%	1000	0.279	
43%	1500	0.433	
0%	0	0.134	
43%	1500	0.466	
57%	2000	0.621	
71%	2500	0.788	
86%	3000	0.963	
0%	0	0.252	
86%	3000		
100%	3500		
114%	4000		
129%	4500		
0%	0		
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-14B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

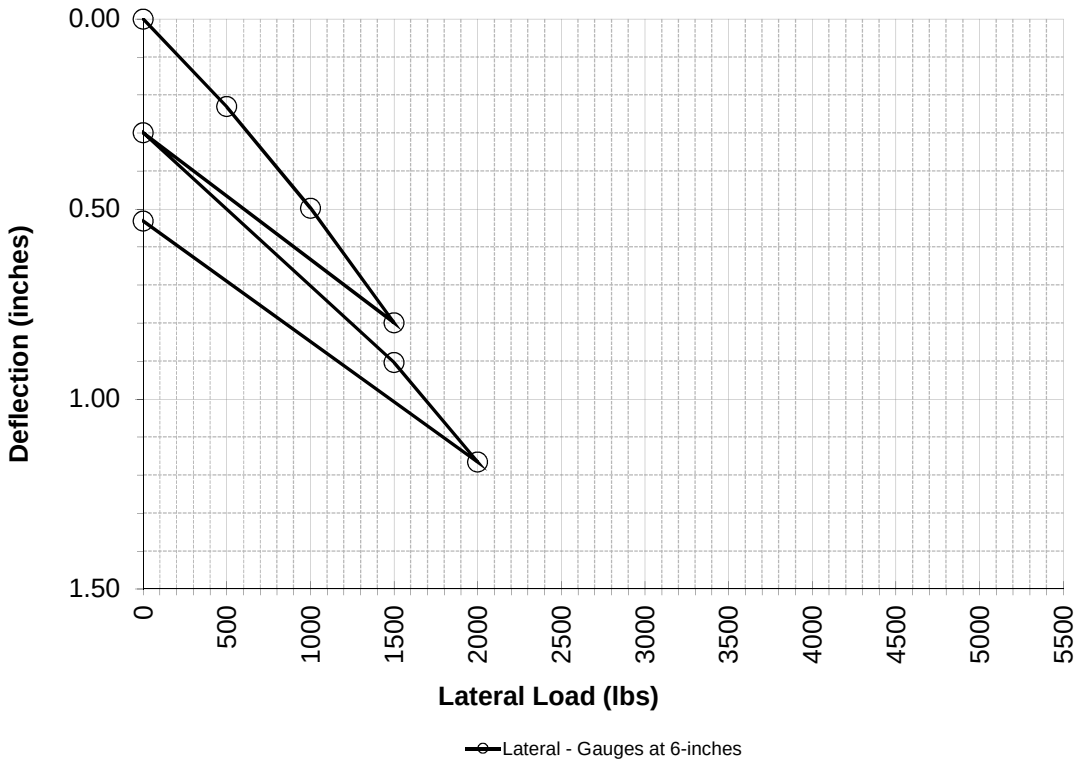
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-14B
Latitude:	43.06380
Longitude:	-78.08697
Pile Type:	W6x9
Pile Embedment Depth [in]:	144
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	89.7

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.230	
29%	1000	0.498	
43%	1500	0.799	
0%	0	0.299	
43%	1500	0.904	
57%	2000	1.166	
71%	2500		
86%	3000		
0%	0	0.531	
86%	3000		
100%	3500		
114%	4000		
129%	4500		
0%	0		
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-15A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

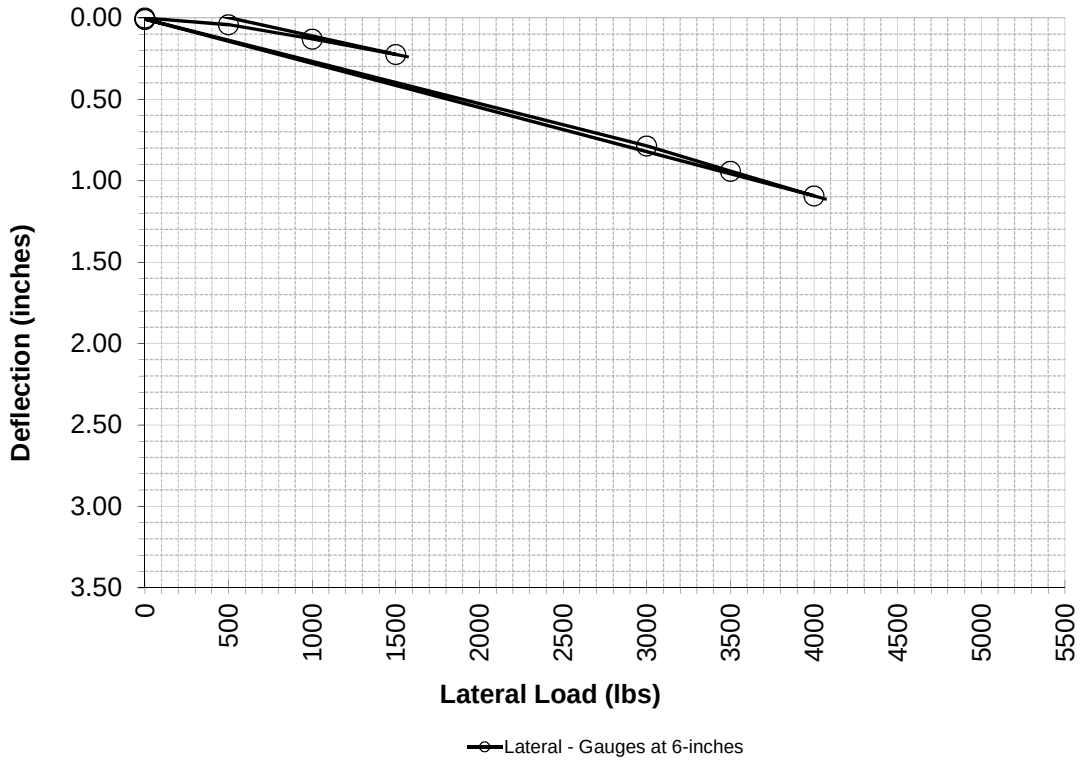
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-15A
Latitude:	43.05778
Longitude:	-78.07056
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	128.4

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.042	
29%	1000	0.131	Dial guage reading for 0, 1,500, 2,000, 2,500, 3,000 was ignored due to inconsitent values. The guages were then reset at 3,000 lbs
43%	1500	0.224	
0%	0	-0.115	
0%	0	0.009	
86%	3000	0.786	
100%	3500	0.942	
114%	4000	1.093	
0%	0	0.009	
0%			
0%			
0%			
0%			
0%	0		
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-15B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

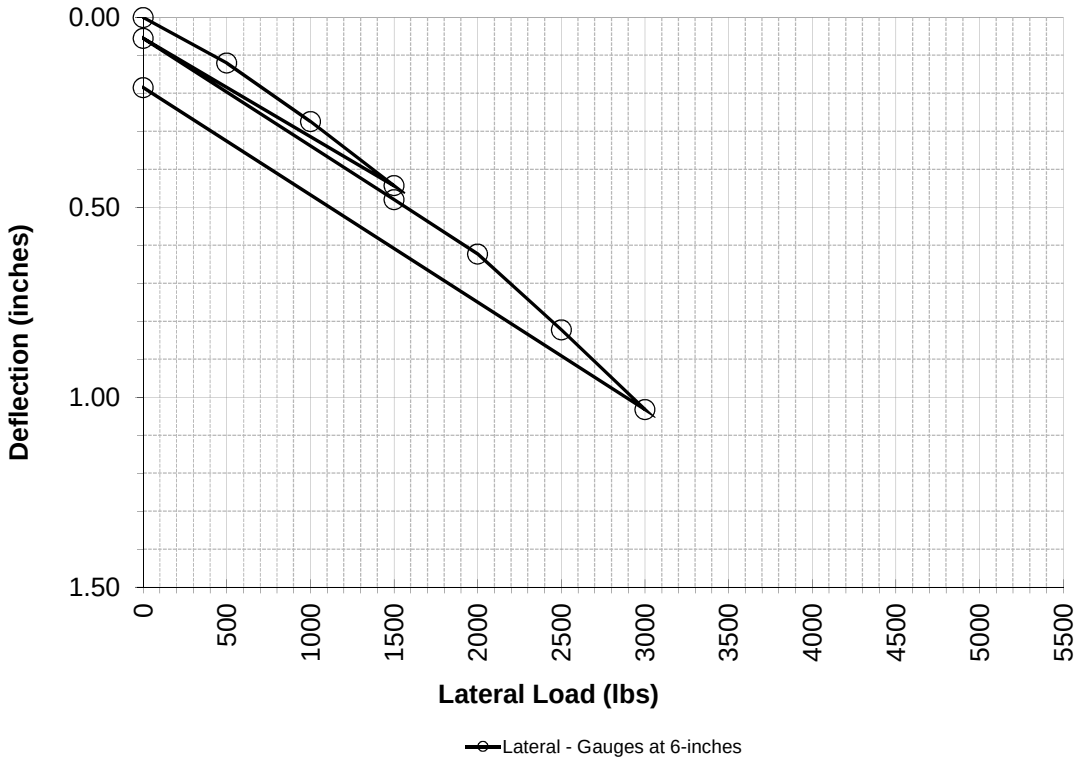
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-15B
Latitude:	43.05778
Longitude:	-78.07056
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	444.8

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.120	
29%	1000	0.274	
43%	1500	0.443	
0%	0	0.055	
43%	1500	0.479	
57%	2000	0.623	
71%	2500	0.822	
86%	3000	1.032	
0%	0	0.185	
86%	3000		
100%	3500		
114%	4000		
129%	4500		
0%	0		
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-17A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

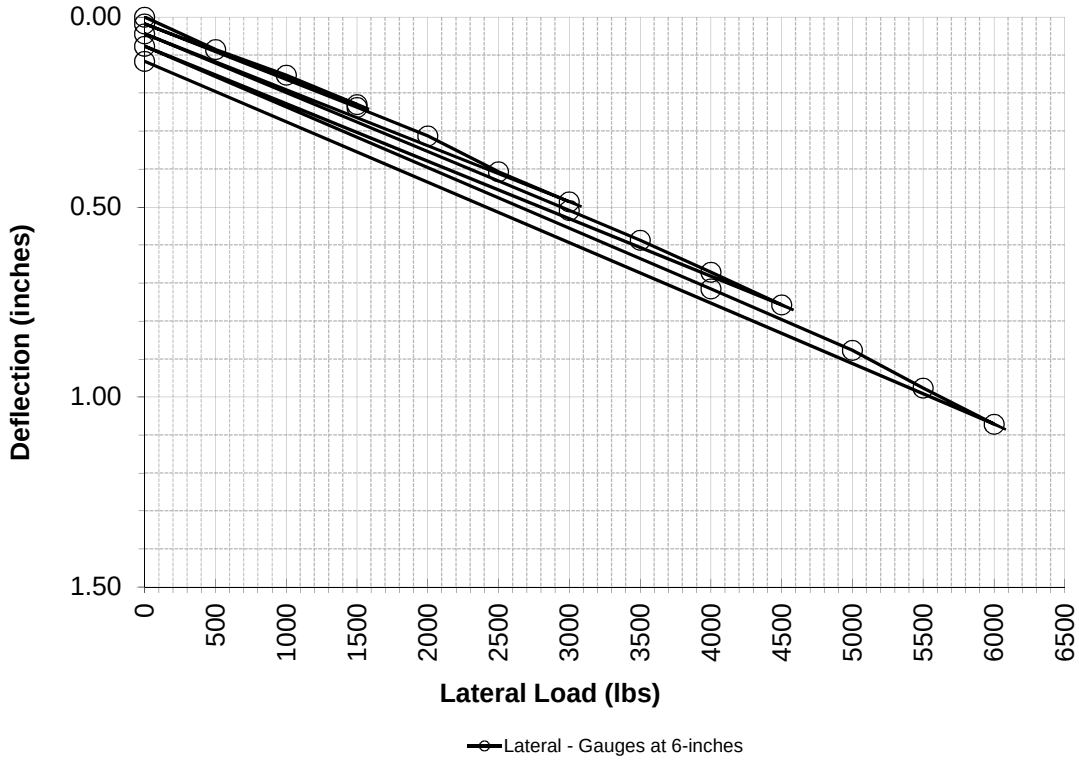
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-17A
Latitude:	43.05788
Longitude:	-78.11047
Pile Type:	W6x9
Pile Embedment Depth [in]:	84
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	197.4

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.085	
29%	1000	0.152	
43%	1500	0.230	
0%	0	0.018	
43%	1500	0.238	
57%	2000	0.313	
71%	2500	0.407	
86%	3000	0.486	
0%	0	0.044	
86%	3000	0.509	
100%	3500	0.587	
114%	4000	0.671	
129%	4500	0.758	
0%	0	0.076	
114%	4000	0.715	
143%	5000	0.877	
157%	5500	0.976	
171%	6000	1.071	
0%	0	0.117	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-17B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

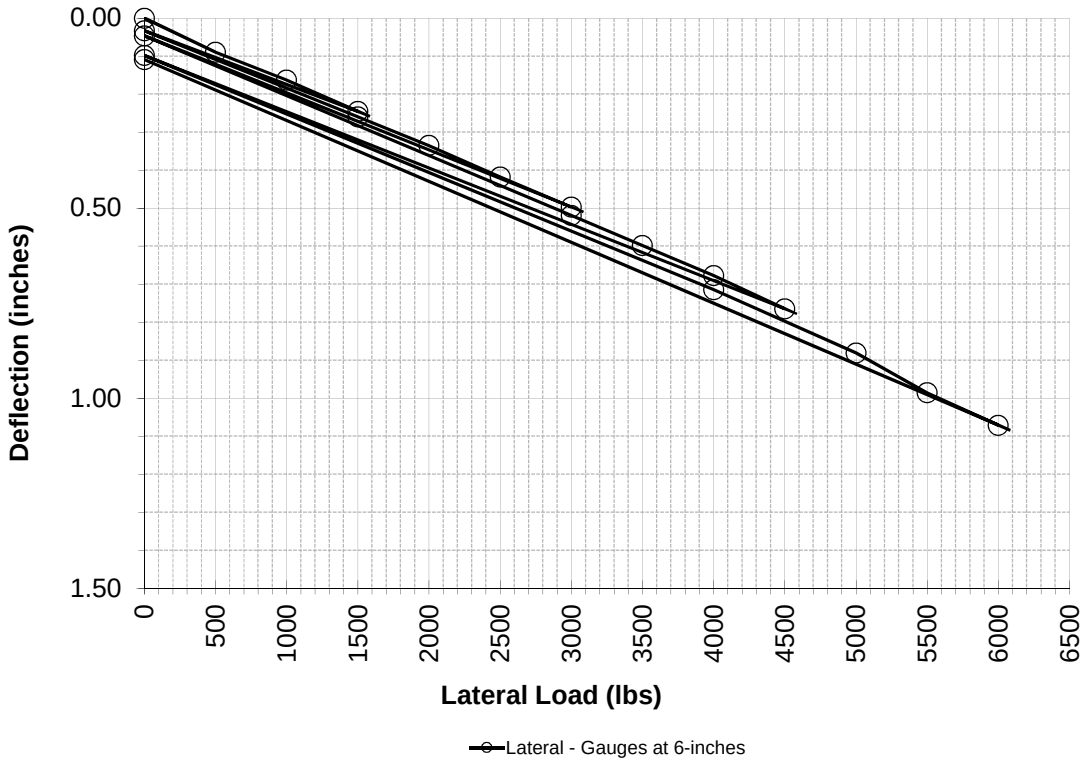
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-17B
Latitude:	43.05788
Longitude:	-78.11047
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	447.1

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.089	
29%	1000	0.162	
43%	1500	0.245	
0%	0	0.033	
43%	1500	0.259	
57%	2000	0.335	
71%	2500	0.418	
86%	3000	0.497	
0%	0	0.046	
86%	3000	0.519	
100%	3500	0.598	
114%	4000	0.677	
129%	4500	0.765	
0%	0	0.098	
114%	4000	0.714	
143%	5000	0.881	
157%	5500	0.986	
171%	6000	1.071	
0%	0	0.109	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-18A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

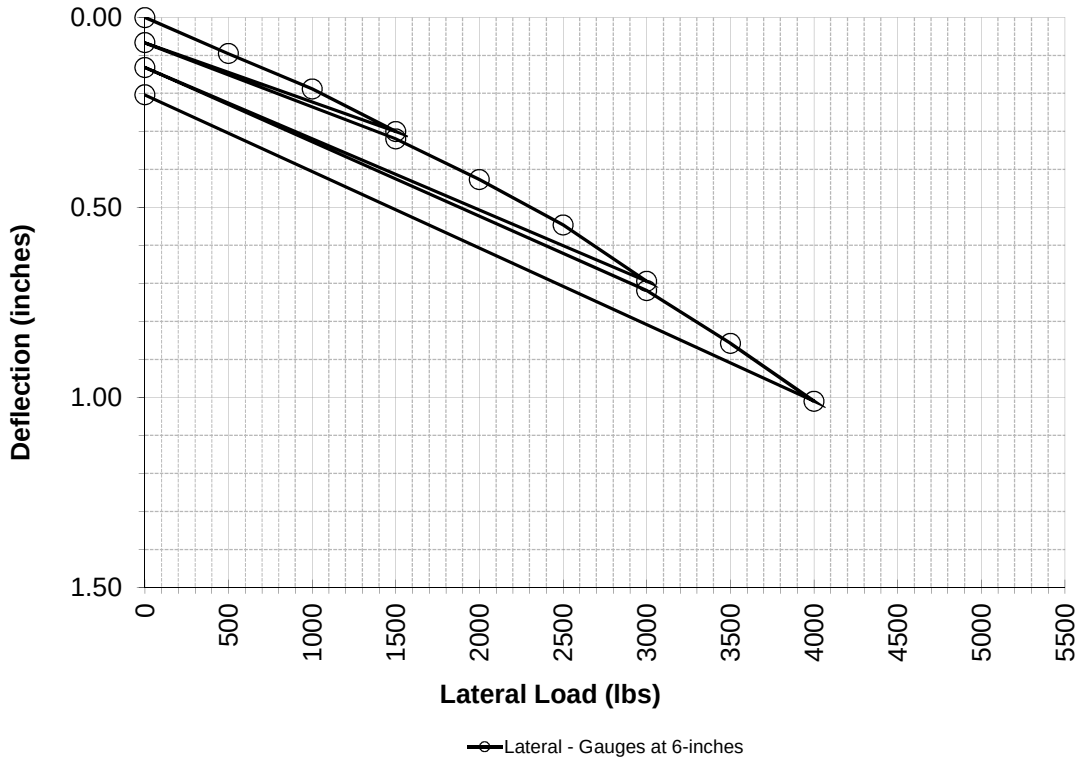
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-18A
Latitude:	43.04700
Longitude:	-78.09221
Pile Type:	W6x9
Pile Embedment Depth [in]:	96
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	318

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.095	
29%	1000	0.188	
43%	1500	0.300	
0%	0	0.066	
43%	1500	0.319	
57%	2000	0.426	
71%	2500	0.546	
86%	3000	0.694	
0%	0	0.131	
86%	3000	0.718	
100%	3500	0.857	
114%	4000	1.010	
129%	4500		
0%	0	0.204	
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-18B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

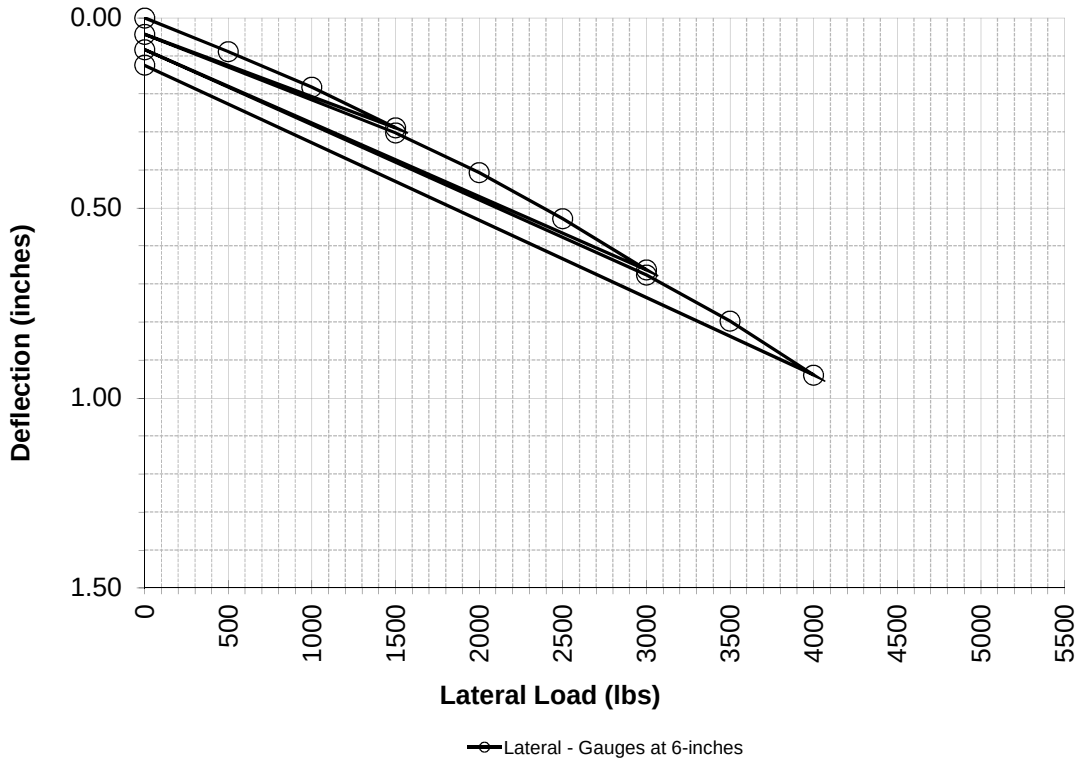
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-18B
Latitude:	43.04700
Longitude:	-78.09221
Pile Type:	W6x9
Pile Embedment Depth [in]:	132
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	675.8

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.089	
29%	1000	0.182	
43%	1500	0.289	
0%	0	0.043	
43%	1500	0.302	
57%	2000	0.407	
71%	2500	0.528	
86%	3000	0.662	
0%	0	0.084	
86%	3000	0.676	
100%	3500	0.798	
114%	4000	0.940	
129%	4500		
0%	0	0.124	
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-20A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

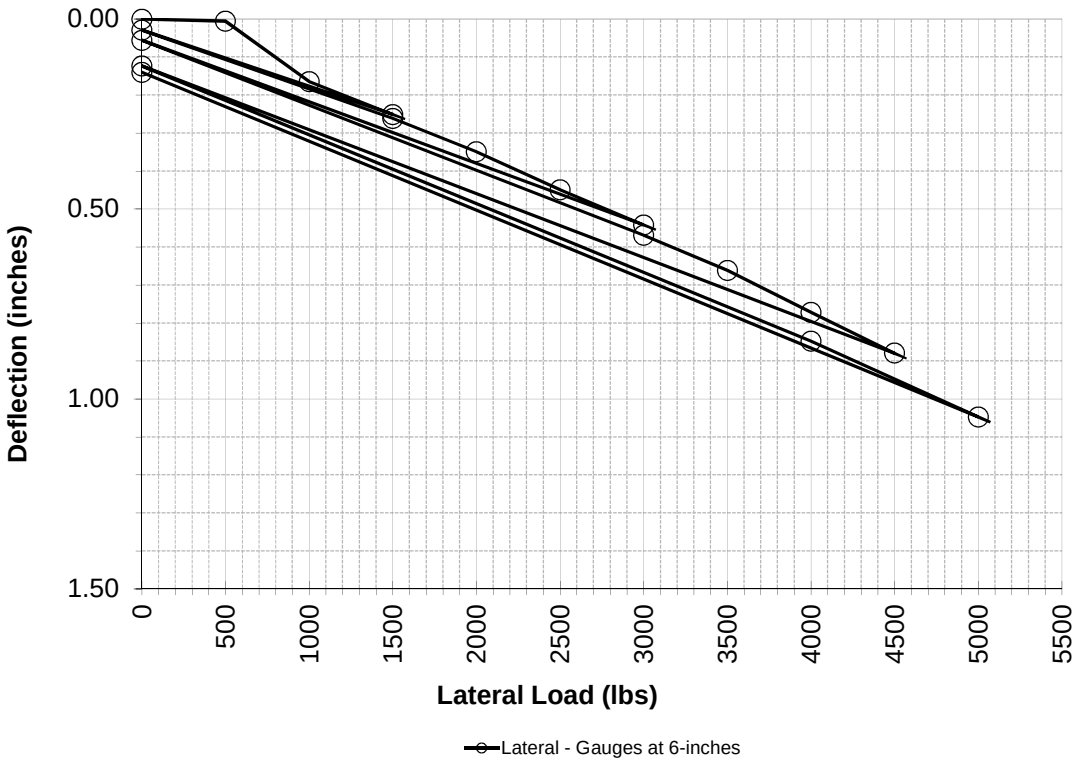
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-20A
Latitude:	43.04608
Longitude:	-78.11177
Pile Type:	W6x9
Pile Embedment Depth [in]:	75
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	386.1

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.005	
29%	1000	0.164	
43%	1500	0.251	
0%	0	0.029	
43%	1500	0.261	
57%	2000	0.349	
71%	2500	0.450	
86%	3000	0.542	
0%	0	0.056	
86%	3000	0.569	
100%	3500	0.661	
114%	4000	0.772	
129%	4500	0.879	
0%	0	0.123	
114%	4000	0.848	
143%	5000	1.047	
157%	5500		
171%	6000		
0%	0	0.140	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-20B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

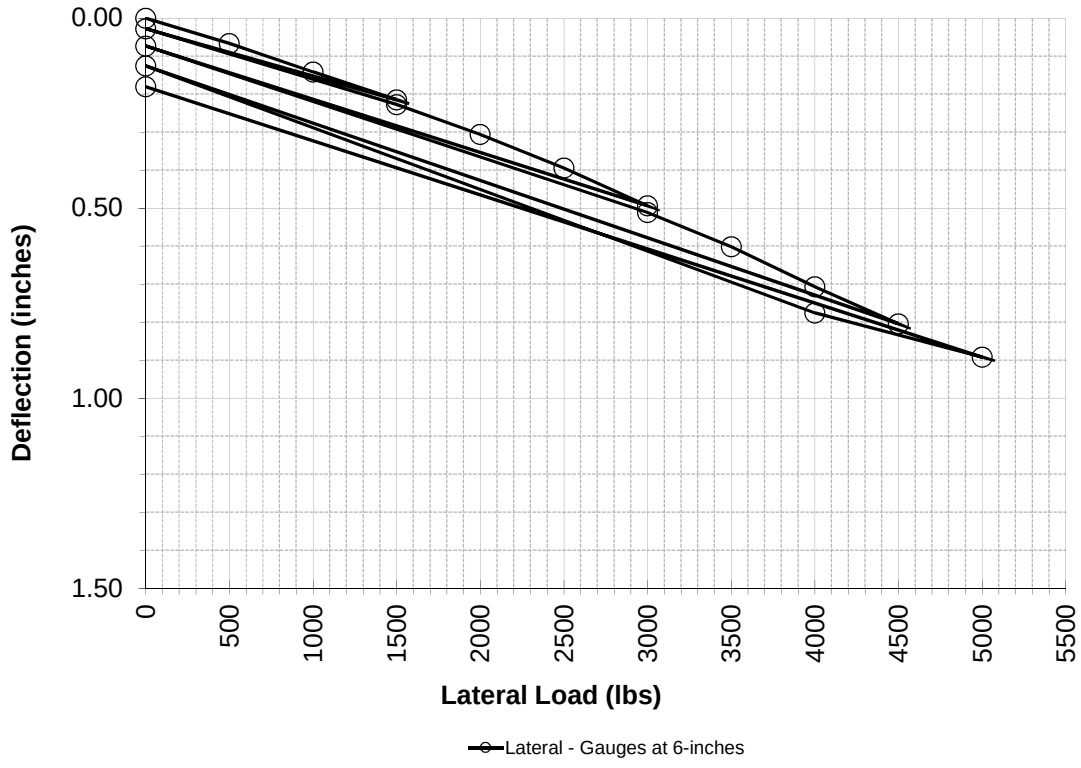
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-20B
Latitude:	43.04608
Longitude:	-78.11177
Pile Type:	W6x9
Pile Embedment Depth [in]:	72
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	282.1

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.067	
29%	1000	0.141	
43%	1500	0.215	
0%	0	0.028	
43%	1500	0.227	
57%	2000	0.306	
71%	2500	0.394	
86%	3000	0.494	
0%	0	0.073	
86%	3000	0.511	
100%	3500	0.601	
114%	4000	0.706	
129%	4500	0.804	
0%	0	0.126	
114%	4000	0.775	
143%	5000	0.892	
157%	5500		
171%	6000		
0%	0	0.180	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-20AP

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

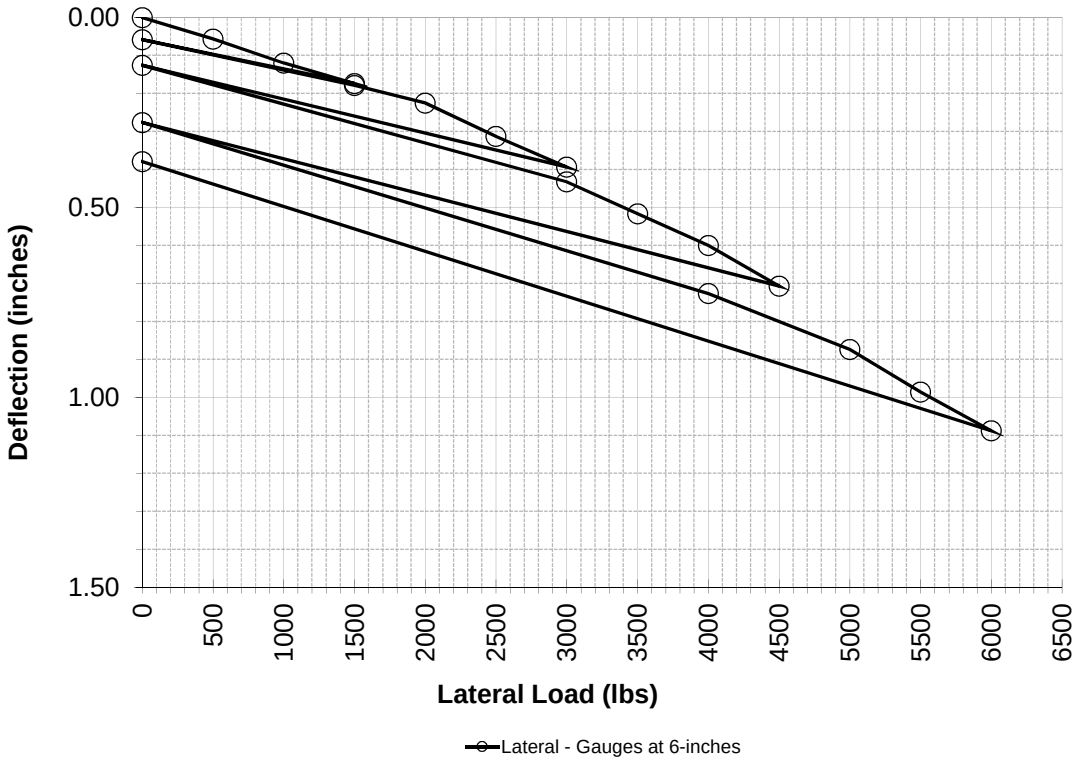
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-20AP
Latitude:	43.04608
Longitude:	-78.11177
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	140.7

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.057	
29%	1000	0.120	
43%	1500	0.174	
0%	0	0.059	
43%	1500	0.179	
57%	2000	0.225	
71%	2500	0.313	
86%	3000	0.393	
0%	0	0.126	
86%	3000	0.433	
100%	3500	0.516	
114%	4000	0.600	
129%	4500	0.707	
0%	0	0.277	
114%	4000	0.727	
143%	5000	0.873	
157%	5500	0.986	
171%	6000	1.088	
0%	0	0.379	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-20BP

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

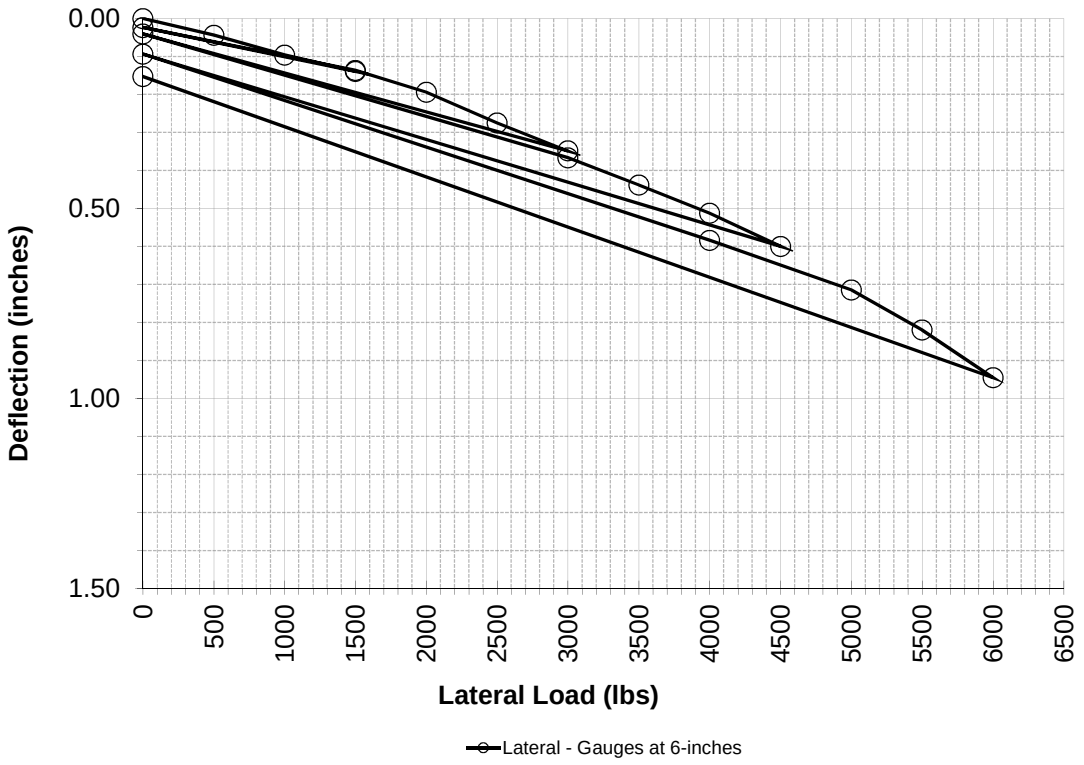
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-20BP
Latitude:	43.04608
Longitude:	-78.11177
Pile Type:	W6x9
Pile Embedment Depth [in]:	144
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	219.5

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.044	
29%	1000	0.096	
43%	1500	0.139	
0%	0	0.024	
43%	1500	0.137	
57%	2000	0.194	
71%	2500	0.275	
86%	3000	0.348	
0%	0	0.041	
86%	3000	0.367	
100%	3500	0.438	
114%	4000	0.512	
129%	4500	0.600	
0%	0	0.093	
114%	4000	0.584	
143%	5000	0.714	
157%	5500	0.819	
171%	6000	0.945	
0%	0	0.153	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-21A

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

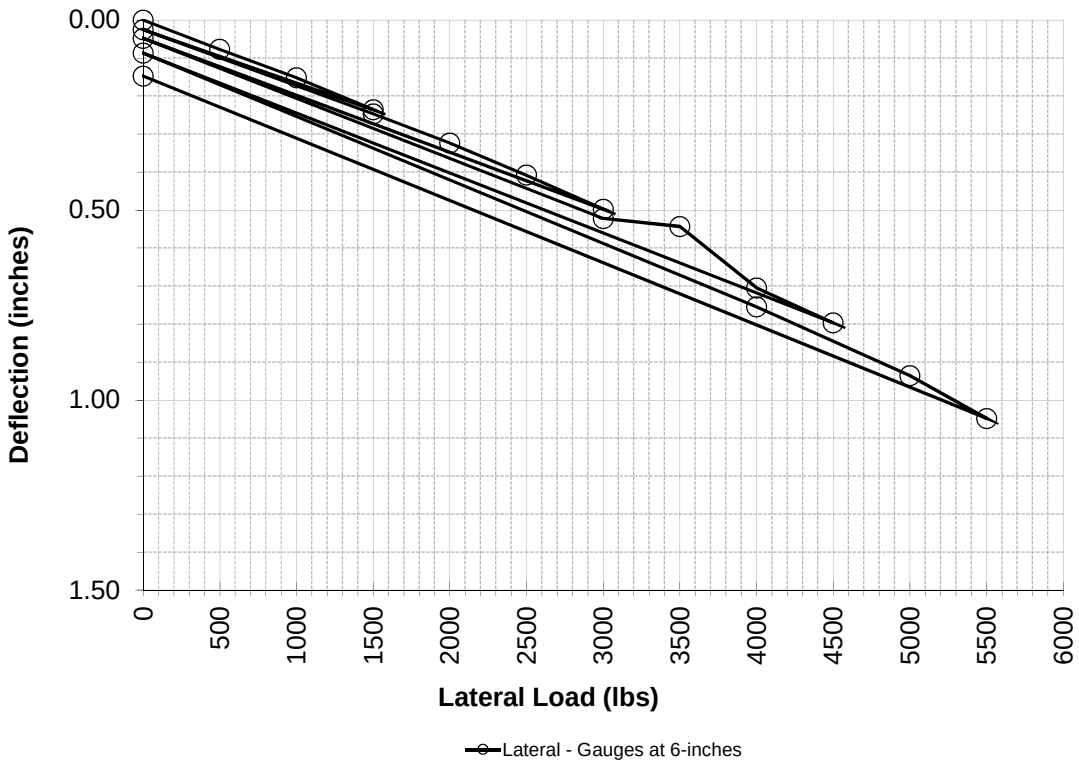
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-21A
Latitude:	43.05464
Longitude:	-78.08558
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	478.6

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.077	
29%	1000	0.152	
43%	1500	0.236	
0%	0	0.026	
43%	1500	0.247	
57%	2000	0.324	
71%	2500	0.408	
86%	3000	0.498	
0%	0	0.048	
86%	3000	0.523	
100%	3500	0.543	
114%	4000	0.705	
129%	4500	0.797	
0%	0	0.087	
114%	4000	0.754	
143%	5000	0.936	
157%	5500	1.048	
171%	6000		
0%	0	0.148	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-21B

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

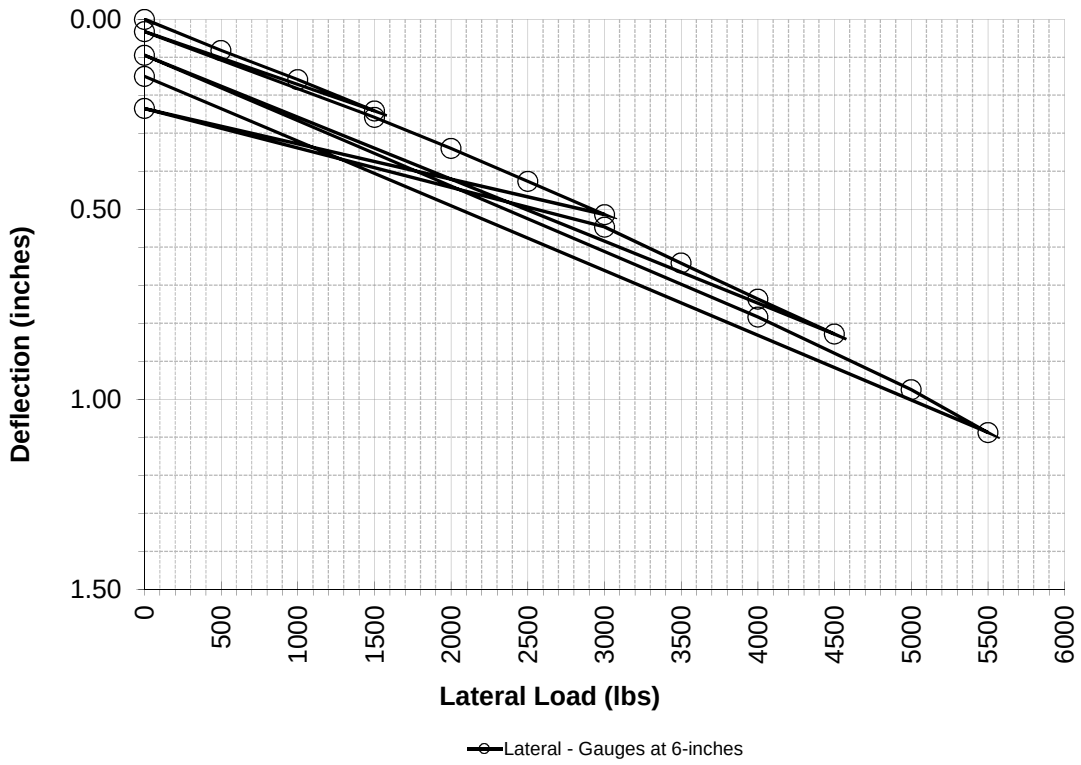
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-21B
Latitude:	43.05464
Longitude:	-78.08558
Pile Type:	W6x9
Pile Embedment Depth [in]:	144
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	1198.6

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.082	
29%	1000	0.158	
43%	1500	0.241	
0%	0	0.032	
43%	1500	0.258	
57%	2000	0.339	
71%	2500	0.426	
86%	3000	0.514	
0%	0	0.235	
86%	3000	0.547	
100%	3500	0.641	
114%	4000	0.736	
129%	4500	0.828	
0%	0	0.094	
114%	4000	0.783	
143%	5000	0.975	
157%	5500	1.087	
171%	6000		
0%	0	0.150	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-21AP

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

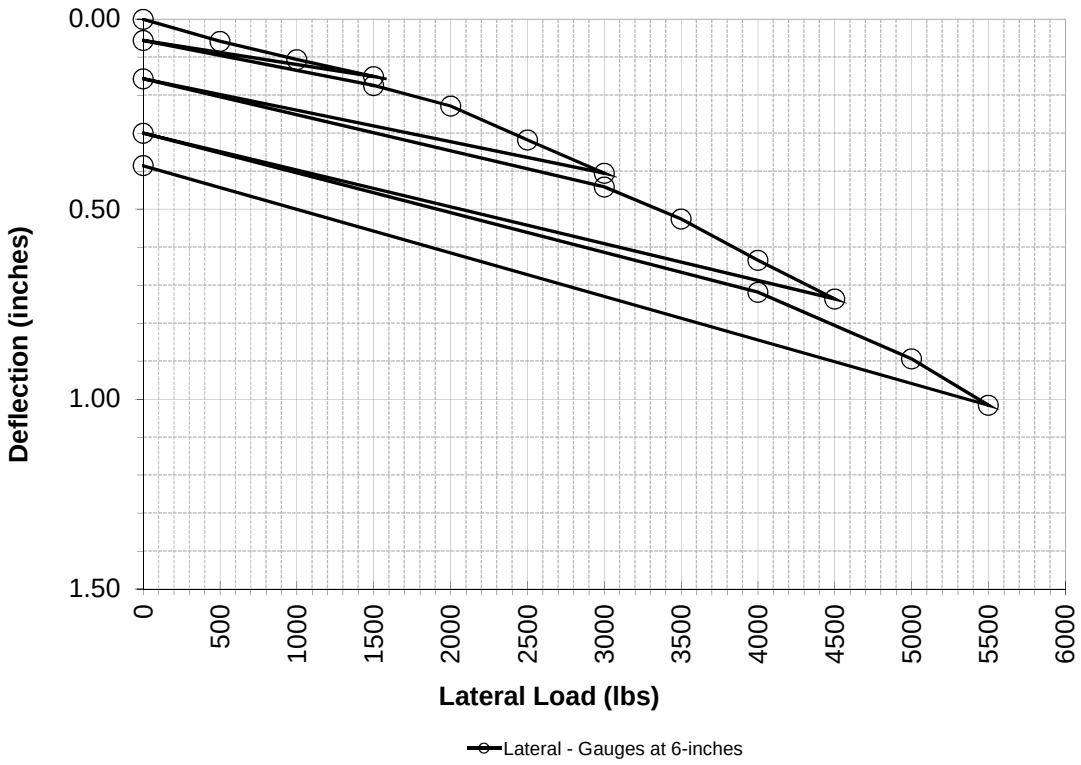
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-21AP
Latitude:	43.05464
Longitude:	-78.08558
Pile Type:	W6x9
Pile Embedment Depth [in]:	108
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	102.7

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.058	
29%	1000	0.107	
43%	1500	0.151	
0%	0	0.056	
43%	1500	0.175	
57%	2000	0.228	
71%	2500	0.318	
86%	3000	0.405	
0%	0	0.157	
86%	3000	0.442	
100%	3500	0.526	
114%	4000	0.635	
129%	4500	0.736	
0%	0	0.300	
114%	4000	0.719	
143%	5000	0.894	
157%	5500	1.016	
171%	6000		
0%	0	0.386	
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Lateral Load Test Result for EB-21BP

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Lateral Load Test Set Up

Number of Top Gauges:	0
Number of Bottom Gauges:	2
Height of Top Gauges [in]:	12
Height of Bottom Gauges [in]:	6
Height of Applied Load [in]:	24
Load Cell:	Dillon ED JR

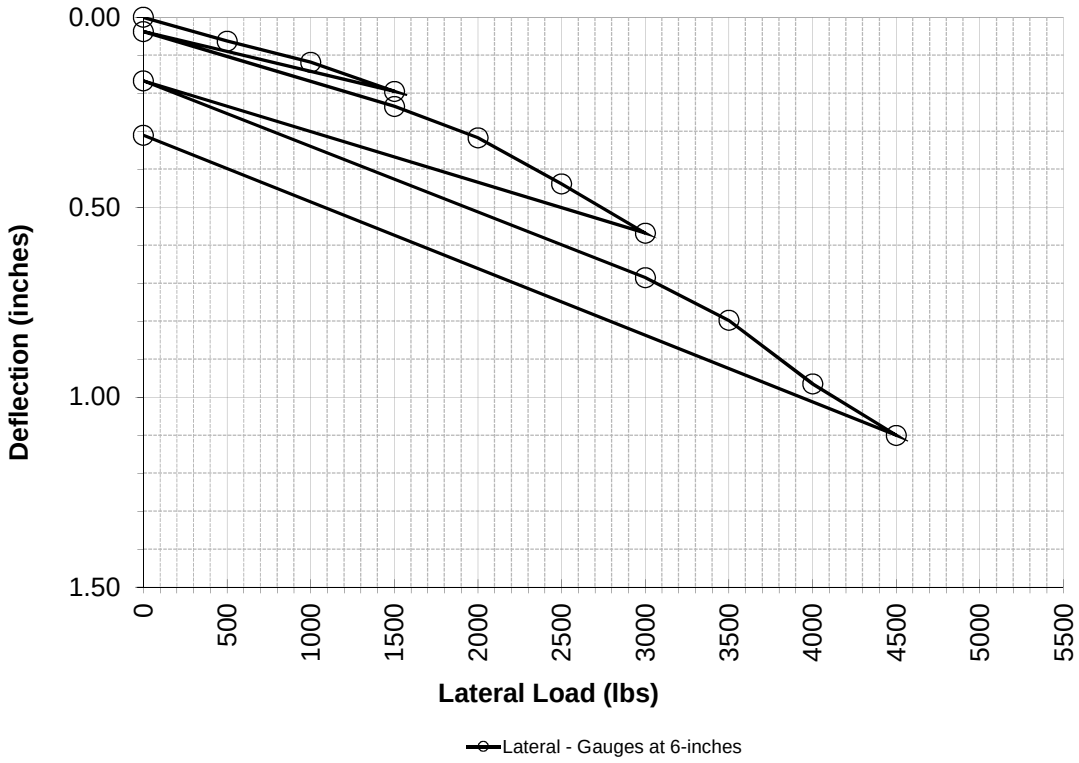
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-21BP
Latitude:	43.05464
Longitude:	-78.08558
Pile Type:	W6x9
Pile Embedment Depth [in]:	144
Pile Stick-Up [in]:	54
Lateral Design Load [lbs]:	3500
Drive Time [sec]:	222

% of Design Load	Lateral Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
14%	500	0.062	
29%	1000	0.118	
43%	1500	0.195	
0%	0	0.038	
43%	1500	0.234	
57%	2000	0.317	
71%	2500	0.439	
86%	3000	0.568	
0%	0	0.167	
86%	3000	0.685	
100%	3500	0.798	
114%	4000	0.965	
129%	4500	1.100	
0%	0	0.310	
114%	4000		
143%	5000		
157%	5500		
171%	6000		
0%	0		
143%	5000		
171%	6000		
186%	6500		
200%	7000		
0%	0		



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

APPENDIX G
PILE LOAD TESTING RESULTS (COMPRESSION)
(Exhibits- G001 through G012)

Compression Load Test Result for EB-2C

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

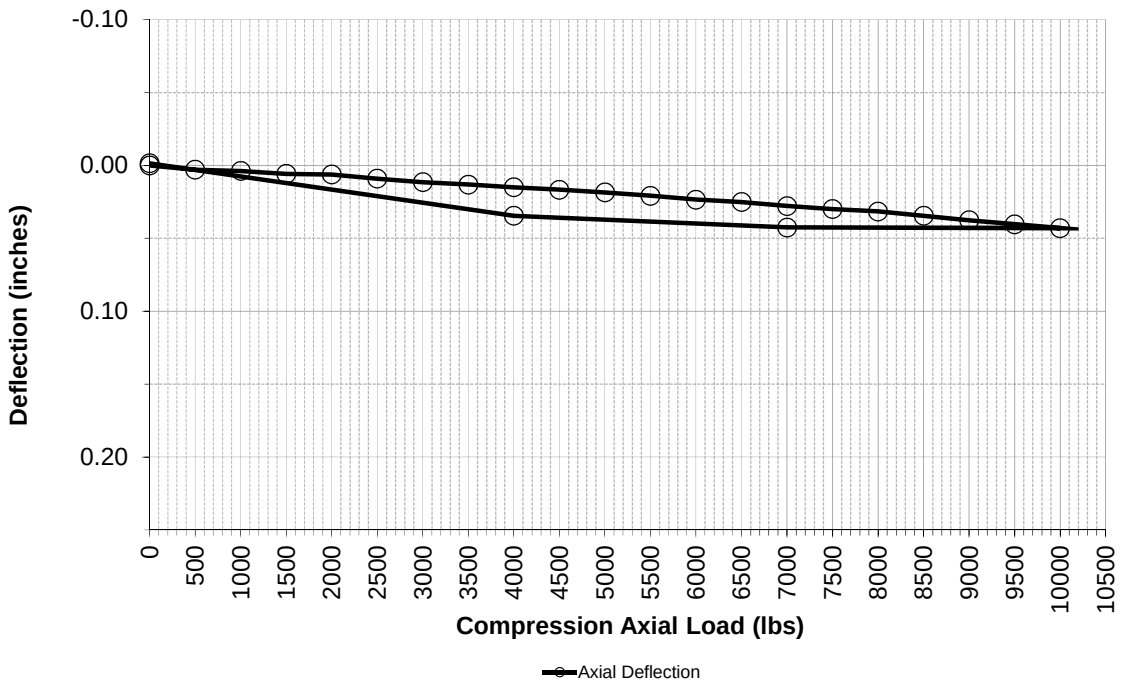
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-2C
Latitude:	43.08330
Longitude:	-78.04502
Pile Type:	W6x9
Pile Embedment Depth [in]:	87
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	282.6

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.003	
20%	1000	0.004	
30%	1500	0.006	
40%	2000	0.006	
50%	2500	0.009	
60%	3000	0.011	
70%	3500	0.013	
80%	4000	0.015	
90%	4500	0.017	
100%	5000	0.018	
110%	5500	0.021	
120%	6000	0.023	
130%	6500	0.025	
140%	7000	0.028	
150%	7500	0.030	
160%	8000	0.032	
170%	8500	0.034	
180%	9000	0.038	
190%	9500	0.040	
200%	10000	0.043	
140%	7000	0.043	
80%	4000	0.034	
0%	0	-0.002	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB5C

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

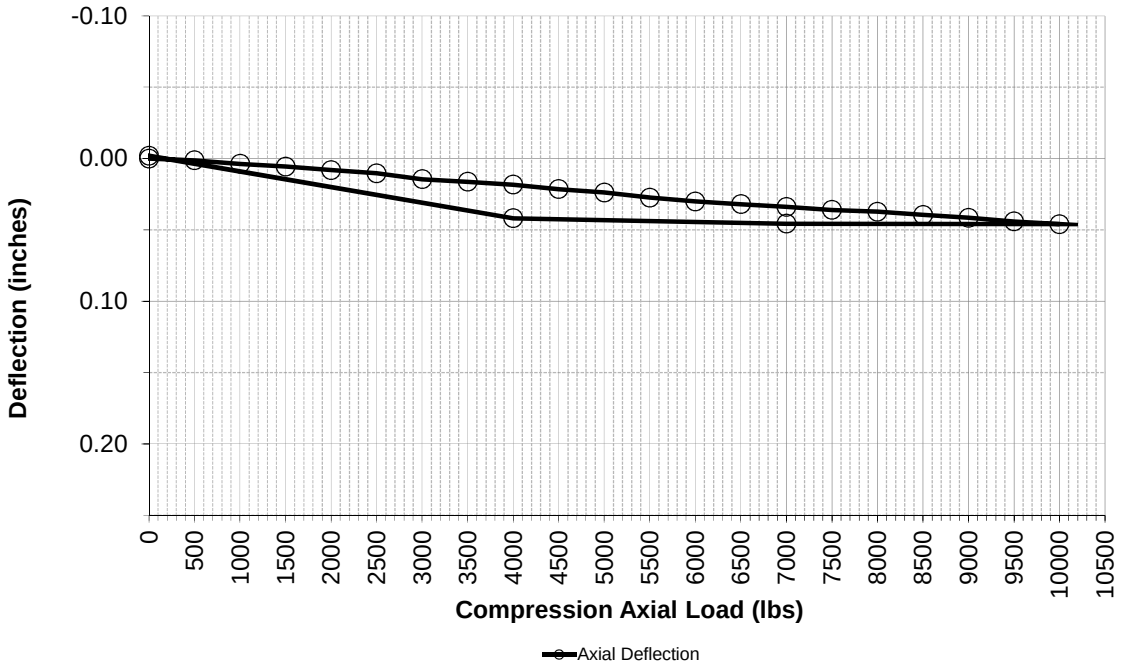
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB5C
Latitude:	43.07850
Longitude:	-78.08036
Pile Type:	W6x9
Pile Embedment Depth [in]:	102
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	513.2

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.001	
20%	1000	0.004	
30%	1500	0.006	
40%	2000	0.008	
50%	2500	0.010	
60%	3000	0.014	
70%	3500	0.016	
80%	4000	0.018	
90%	4500	0.021	
100%	5000	0.024	
110%	5500	0.027	
120%	6000	0.030	
130%	6500	0.032	
140%	7000	0.034	
150%	7500	0.036	
160%	8000	0.037	
170%	8500	0.040	
180%	9000	0.042	
190%	9500	0.044	
200%	10000	0.046	
140%	7000	0.046	
80%	4000	0.042	
0%	0	-0.002	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB-8C

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

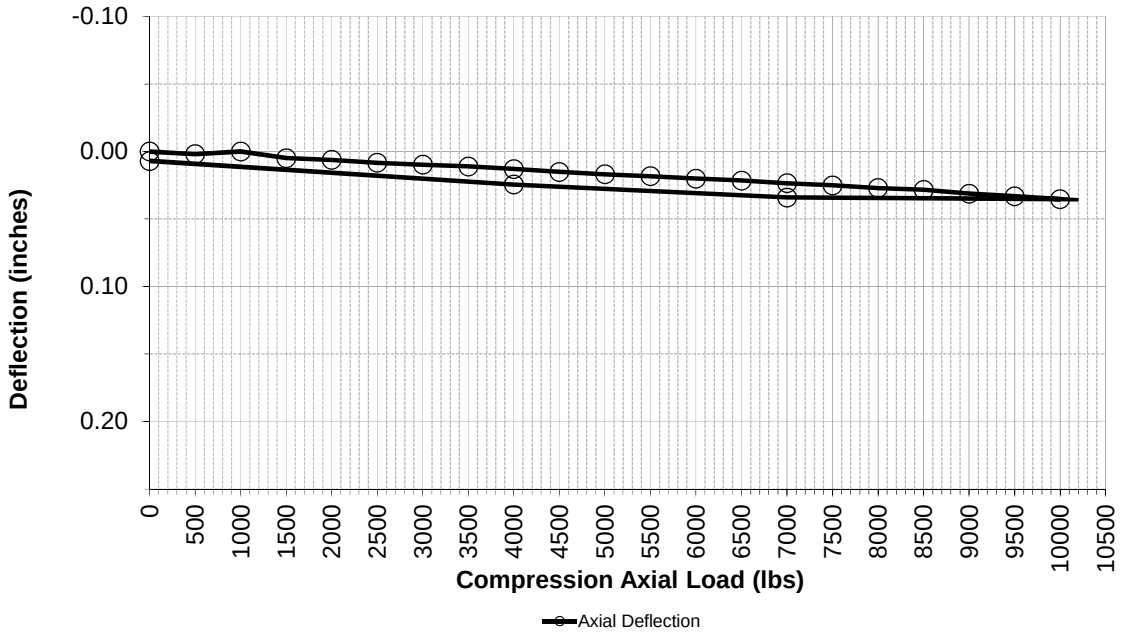
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-8C
Latitude:	43.06970
Longitude:	-78.09533
Pile Type:	W6x9
Pile Embedment Depth [in]:	102
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	151.4

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.002	
20%	1000	0.000	
30%	1500	0.005	
40%	2000	0.006	
50%	2500	0.008	
60%	3000	0.010	
70%	3500	0.011	
80%	4000	0.013	
90%	4500	0.015	
100%	5000	0.017	
110%	5500	0.018	
120%	6000	0.020	
130%	6500	0.022	
140%	7000	0.024	
150%	7500	0.025	
160%	8000	0.027	
170%	8500	0.028	
180%	9000	0.031	
190%	9500	0.033	
200%	10000	0.035	
140%	7000	0.034	
80%	4000	0.024	
0%	0	0.007	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB-10C

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

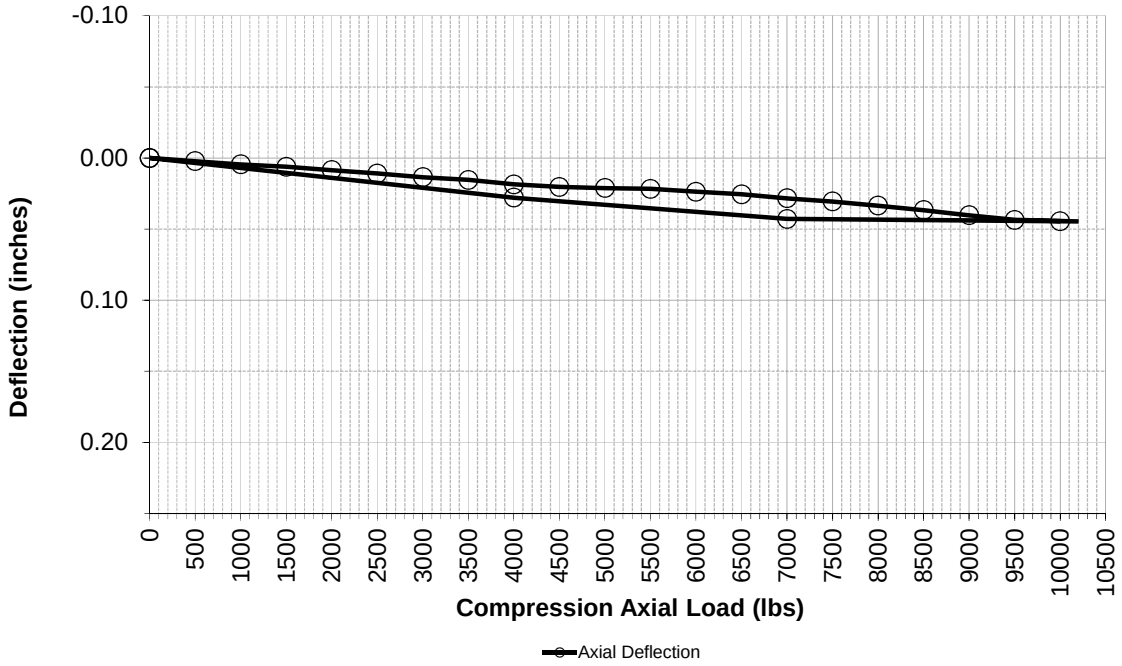
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-10C
Latitude:	43.07040
Longitude:	-78.08030
Pile Type:	W6x9
Pile Embedment Depth [in]:	102
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	81.9

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.002	
20%	1000	0.005	
30%	1500	0.006	
40%	2000	0.009	
50%	2500	0.011	
60%	3000	0.013	
70%	3500	0.015	
80%	4000	0.019	
90%	4500	0.020	
100%	5000	0.021	
110%	5500	0.022	
120%	6000	0.024	
130%	6500	0.026	
140%	7000	0.028	
150%	7500	0.031	
160%	8000	0.034	
170%	8500	0.037	
180%	9000	0.040	
190%	9500	0.044	
200%	10000	0.044	
140%	7000	0.043	
80%	4000	0.028	
0%	0	0.000	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB-14C

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

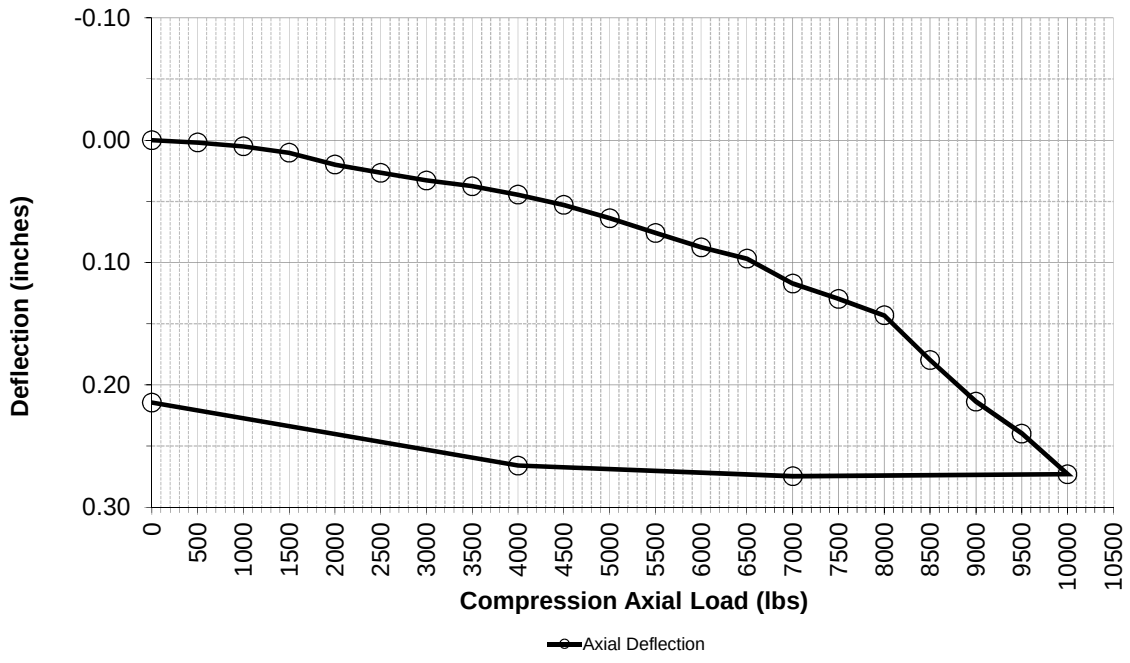
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-14C
Latitude:	43.06380
Longitude:	-78.08697
Pile Type:	W6x9
Pile Embedment Depth [in]:	99
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	78

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.002	
20%	1000	0.005	
30%	1500	0.010	
40%	2000	0.020	
50%	2500	0.027	
60%	3000	0.033	
70%	3500	0.038	
80%	4000	0.045	
90%	4500	0.053	
100%	5000	0.064	
110%	5500	0.076	
120%	6000	0.088	
130%	6500	0.097	
140%	7000	0.117	
150%	7500	0.130	
160%	8000	0.143	
170%	8500	0.180	
180%	9000	0.214	
190%	9500	0.240	
200%	10000	0.273	
140%	7000	0.275	
80%	4000	0.266	
0%	0	0.214	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB-15C

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

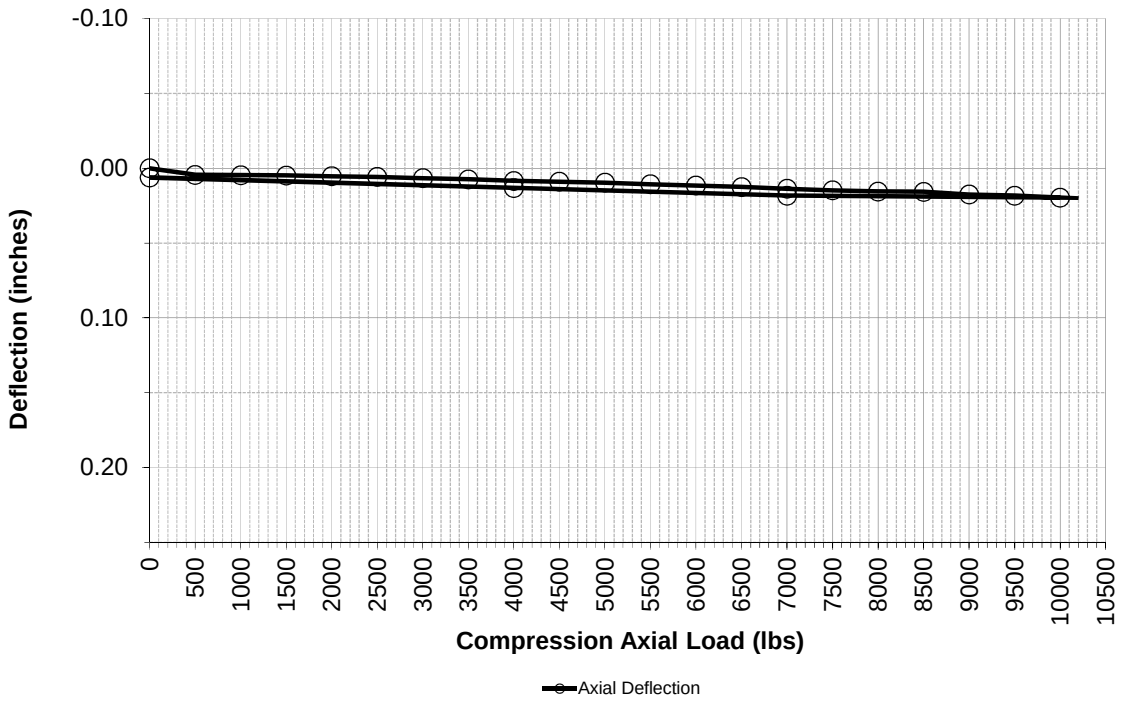
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-15C
Latitude:	43.05778
Longitude:	-78.07056
Pile Type:	W6x9
Pile Embedment Depth [in]:	99
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	166.2

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.004	
20%	1000	0.005	
30%	1500	0.005	
40%	2000	0.005	
50%	2500	0.006	
60%	3000	0.007	
70%	3500	0.007	
80%	4000	0.008	
90%	4500	0.009	
100%	5000	0.010	
110%	5500	0.011	
120%	6000	0.012	
130%	6500	0.012	
140%	7000	0.014	
150%	7500	0.015	
160%	8000	0.015	
170%	8500	0.016	
180%	9000	0.018	
190%	9500	0.018	
200%	10000	0.020	
140%	7000	0.018	
80%	4000	0.013	
0%	0	0.006	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB-17C

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

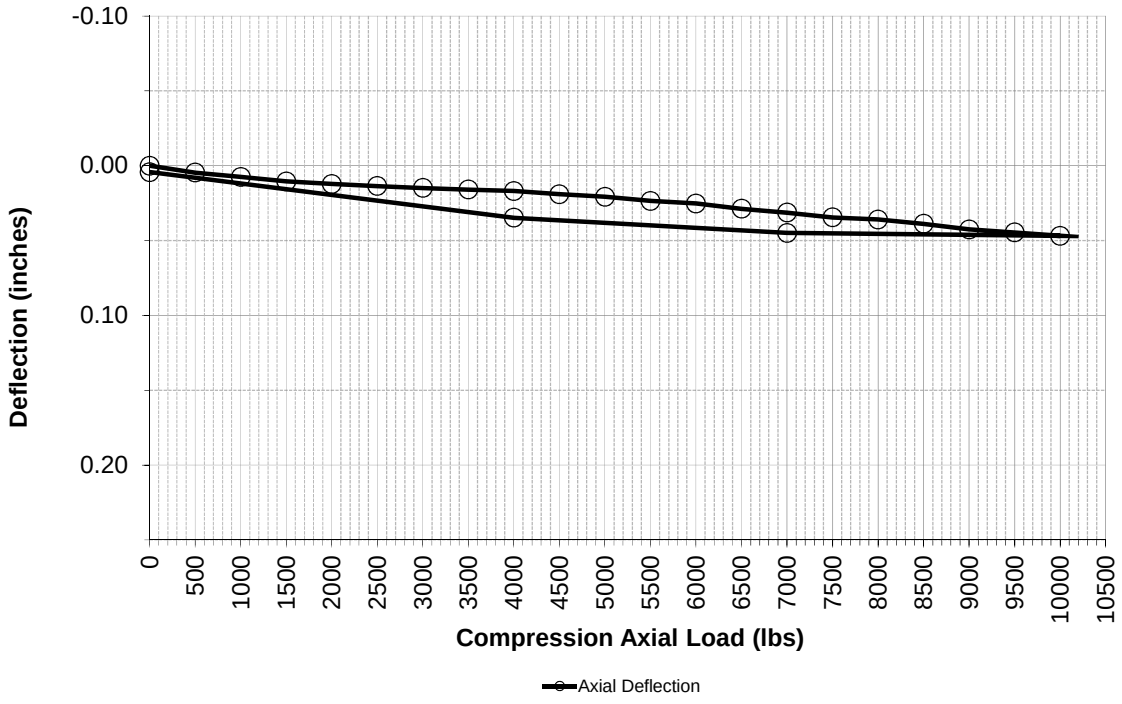
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-17C
Latitude:	43.05788
Longitude:	-78.11047
Pile Type:	W6x9
Pile Embedment Depth [in]:	99
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	400.1

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.005	
20%	1000	0.007	
30%	1500	0.011	
40%	2000	0.012	
50%	2500	0.014	
60%	3000	0.015	
70%	3500	0.016	
80%	4000	0.017	
90%	4500	0.019	
100%	5000	0.021	
110%	5500	0.024	
120%	6000	0.025	
130%	6500	0.029	
140%	7000	0.031	
150%	7500	0.035	
160%	8000	0.036	
170%	8500	0.039	
180%	9000	0.043	
190%	9500	0.045	
200%	10000	0.047	
140%	7000	0.045	
80%	4000	0.035	
0%	0	0.004	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB-18C

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

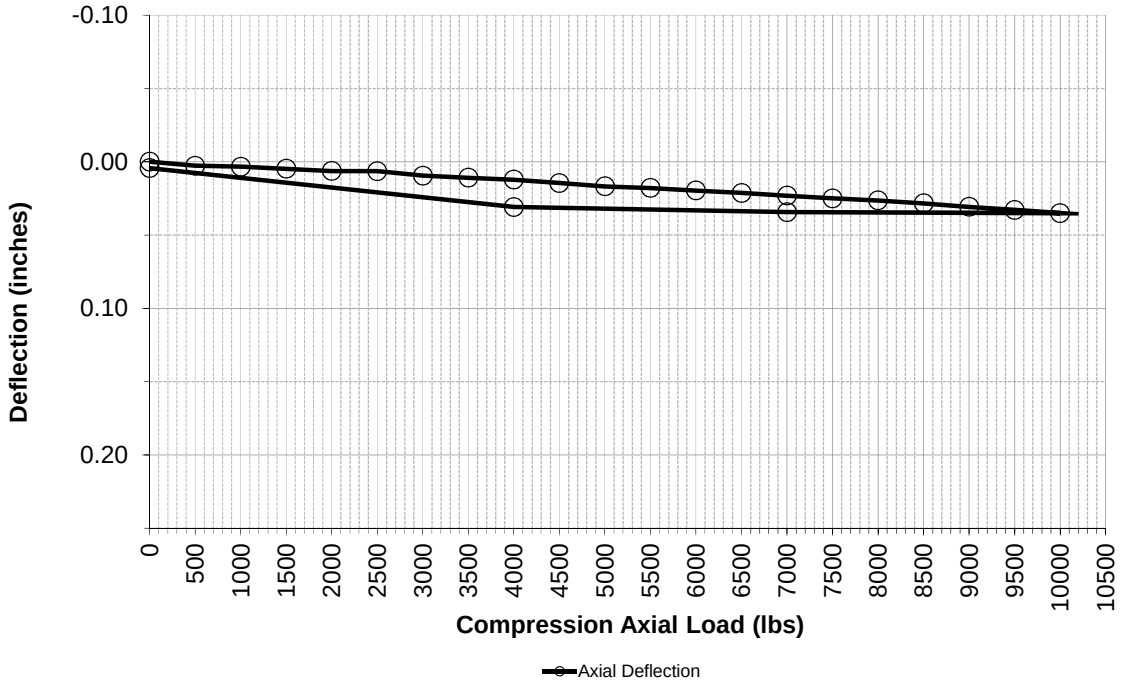
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-18C
Latitude:	43.04700
Longitude:	-78.09221
Pile Type:	W6x9
Pile Embedment Depth [in]:	102
Pile Perimeterr [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	538.4

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.003	
20%	1000	0.003	
30%	1500	0.005	
40%	2000	0.006	
50%	2500	0.006	
60%	3000	0.010	
70%	3500	0.011	
80%	4000	0.012	
90%	4500	0.015	
100%	5000	0.017	
110%	5500	0.018	
120%	6000	0.020	
130%	6500	0.021	
140%	7000	0.023	
150%	7500	0.025	
160%	8000	0.026	
170%	8500	0.028	
180%	9000	0.031	
190%	9500	0.033	
200%	10000	0.035	
140%	7000	0.034	
80%	4000	0.031	
0%	0	0.004	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB-20C

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

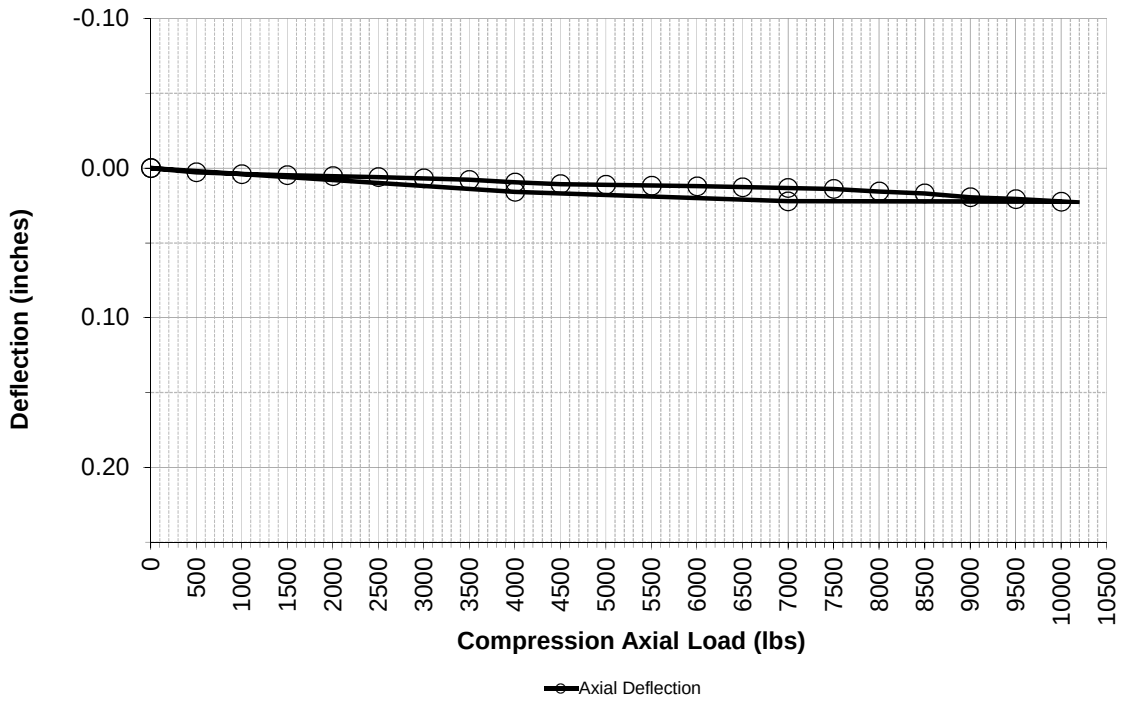
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	3/29/2019

Pile Information

Pile ID:	EB-20C
Latitude:	43.04608
Longitude:	-78.11177
Pile Type:	W6x9
Pile Embedment Depth [in]:	63
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	353.3

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.003	
20%	1000	0.004	
30%	1500	0.005	
40%	2000	0.005	
50%	2500	0.006	
60%	3000	0.007	
70%	3500	0.008	
80%	4000	0.010	
90%	4500	0.011	
100%	5000	0.011	
110%	5500	0.012	
120%	6000	0.012	
130%	6500	0.013	
140%	7000	0.013	
150%	7500	0.014	
160%	8000	0.016	
170%	8500	0.017	
180%	9000	0.019	
190%	9500	0.021	
200%	10000	0.022	
140%	7000	0.022	
80%	4000	0.016	
0%	0	0.000	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB-20CP

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

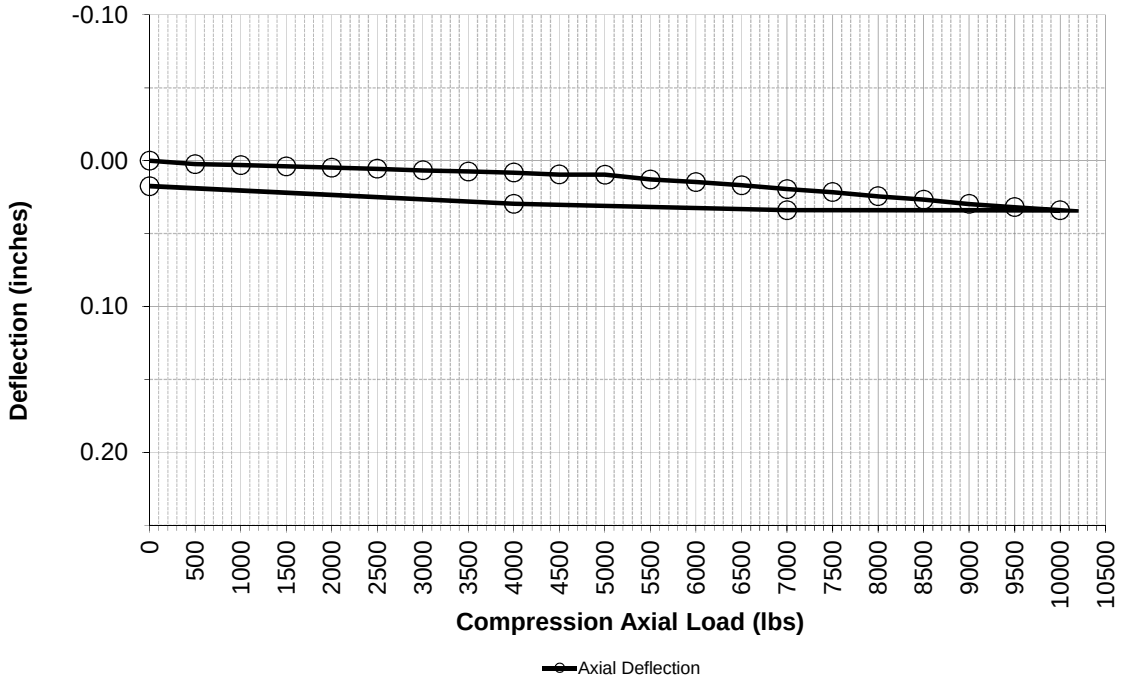
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/10/2019

Pile Information

Pile ID:	EB-20CP
Latitude:	43.04608
Longitude:	-78.11177
Pile Type:	W6x9
Pile Embedment Depth [in]:	46
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	72.9

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.002	
20%	1000	0.003	
30%	1500	0.004	
40%	2000	0.005	
50%	2500	0.006	
60%	3000	0.007	
70%	3500	0.007	
80%	4000	0.008	
90%	4500	0.010	
100%	5000	0.010	
110%	5500	0.013	
120%	6000	0.015	
130%	6500	0.017	
140%	7000	0.020	
150%	7500	0.022	
160%	8000	0.024	
170%	8500	0.027	
180%	9000	0.030	
190%	9500	0.032	
200%	10000	0.034	
140%	7000	0.034	
80%	4000	0.030	
0%	0	0.018	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB-21C

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

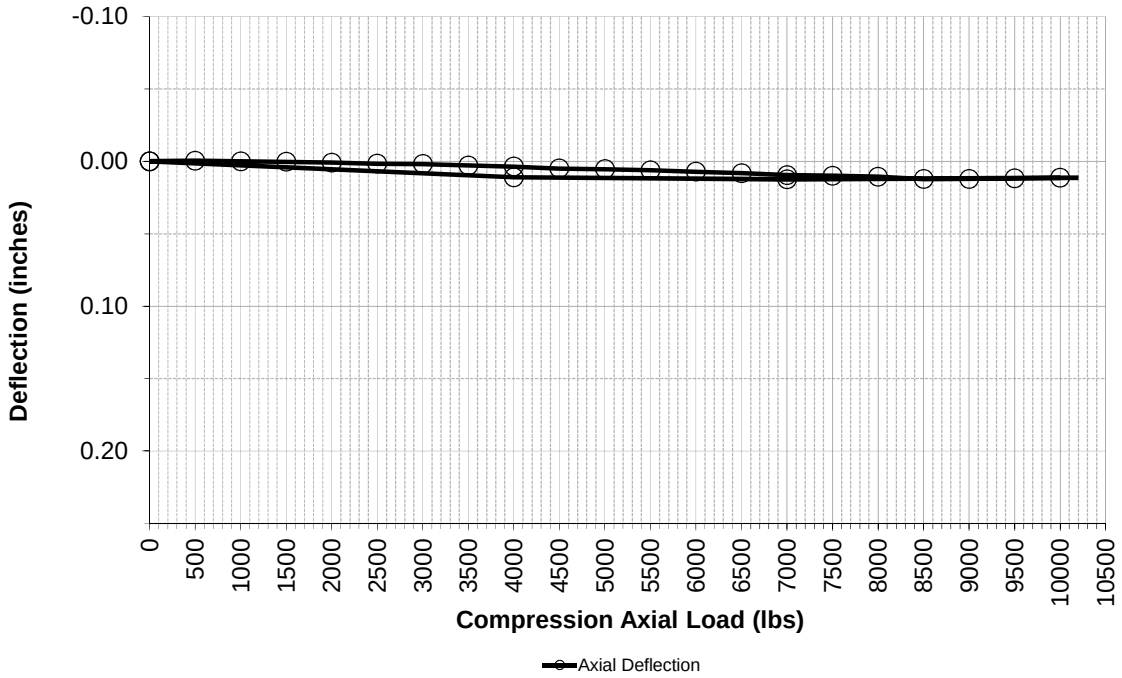
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	4/1/2019

Pile Information

Pile ID:	EB-21C
Latitude:	43.05464
Longitude:	-78.08558
Pile Type:	W6x9
Pile Embedment Depth [in]:	99
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	454

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.000	
20%	1000	0.000	
30%	1500	0.000	
40%	2000	0.001	
50%	2500	0.002	
60%	3000	0.002	
70%	3500	0.003	
80%	4000	0.004	
90%	4500	0.005	
100%	5000	0.005	
110%	5500	0.006	
120%	6000	0.007	
130%	6500	0.008	
140%	7000	0.009	
150%	7500	0.010	
160%	8000	0.011	
170%	8500	0.012	
180%	9000	0.012	
190%	9500	0.012	
200%	10000	0.011	
140%	7000	0.012	
80%	4000	0.011	
0%	0	0.000	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.

Compression Load Test Result for EB-21CP

Project Information

Project Name:	Byron Solar
Project Location:	Byron, New York
Project Number:	J5195162

Axial Load Test Set Up

Number of Gauges:	2
Height of Gauges [in]:	6
Load Cell:	0

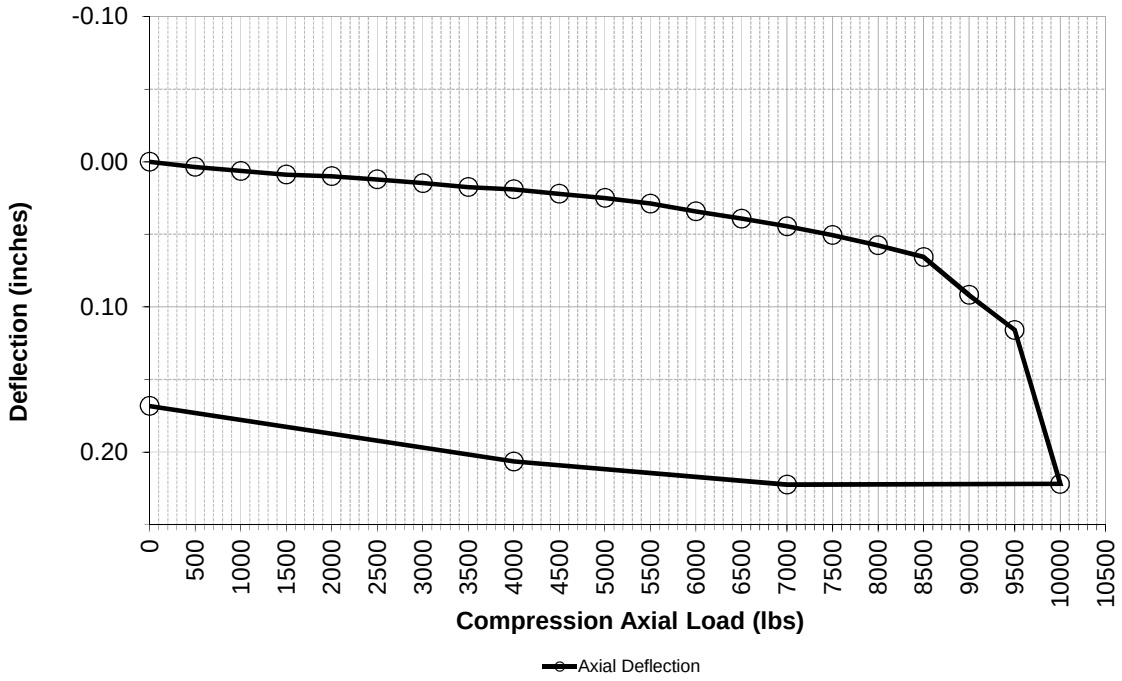
Test Date and Representative

Tested By Terracon Rep:	TW
Date Tested:	11/7/2019

Pile Information

Pile ID:	EB-21CP
Latitude:	43.05464
Longitude:	-78.08558
Pile Type:	W6x9
Pile Embedment Depth [in]:	93
Pile Perimeter [in]:	19.68
Pile Stick-Up [in]:	54
Axial Design Load [lbs]:	5000
Pile Area [sq. in]:	2.68
Elastic Modulus [ksi]:	29,000
Drive Time [sec]:	46.5

Compression Test Results			
% of Design Load	Axial Load [lbs]	Deflection Δ (in.) Gauges #1 & #2	Comments
0%	0	0.000	
10%	500	0.004	
20%	1000	0.006	
30%	1500	0.009	
40%	2000	0.010	
50%	2500	0.012	
60%	3000	0.015	
70%	3500	0.017	
80%	4000	0.019	
90%	4500	0.022	
100%	5000	0.025	
110%	5500	0.029	
120%	6000	0.034	
130%	6500	0.039	
140%	7000	0.044	
150%	7500	0.050	
160%	8000	0.058	
170%	8500	0.066	
180%	9000	0.092	
190%	9500	0.116	
200%	10000	0.222	
140%	7000	0.222	
80%	4000	0.207	
0%	0	0.168	



Note: The pile embedment depth in this analysis ignores the approximate push depth. Refer Appendix D for the approximate push depth.