MICHAUD LAW GROUP
RENEWABLE ENERGY LAW IS OUR BUSINESS

Paul R. Michaud
Principal Attorney
175 Capital Boulevard
Suite 402
Rocky Hill, Connecticut 06067
Telephone: 860-338-3728
E-Mail: pmichaud@mlgcleanenergy.com
Website: mlgcleanenergy.com

September 27, 2020

DELIVERED BY U.S. MAIL AND E-MAIL

Melanie Bachman, Esq.
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: PETITION NO. 1427: Proposed Up To 1.0 MW AC Photovoltaic Facility to Be Located At 0 Matthews Street and Interconnected At 125 Hill Street in Bristol, Connecticut; **Responses to Connecticut Siting Council Interrogatories – First Set**

Dear Attorney Bachman:

SunJet Energy, LLC respectfully submits its written responses to the Connecticut Siting Council's First Set of Interrogatories.

Please contact me if you have any questions or concerns.

Sincerely yours,

SUNJET ENERGY, LLC

Paul R. Michaud

Paul R. Michaud

Its Attorney

SUNJET ENERGY, LLC

INTERROGATORY RESPONSES - SET ONE

PETITION NO. 1427

November 27, 2020

Project Development

1. What is the length of the lease with the landowner? Does the lease contain provisions to extend the lease for continued use as a solar facility? If so, over what time interval(s)?

   Response:

   The original lease option agreement had a 20-year term. After the lease option execution, a Purchase and Sale Agreement for the property was executed by the parties.

2. Does the lease agreement contain any provisions related to site restoration at the end of the project's useful life? If so, please provide any such provisions.

   Response:

   The original lease option agreement did not contain any provisions related to site restoration at the end of the project's useful life. After the lease option execution, a Purchase and Sale Agreement for the property was executed by the parties. The Project owner will agree to a reasonable full site restoration as part of the Project Decommissioning Plan.

3. Petition p. 2 states the Petitioner has a 20-year contract with the City of Bristol and Eversource. Petition p. 2 further states the Virtual Net Metering Agreement (VNM) with the City is over a 15-year term. Does the VNM agreement include a five-year option for an extension?

   Response:

   Yes. The 15-year VNM Agreement, as amended, includes two five-year extensions at the sole discretion of the Petitioner.

4. Once the 20-year contract with Eversource and the City expires and the solar facility has not reached the end of its lifespan, would the Petitioner decommission the facility or seek other revenue mechanisms for the power produced by the facility?

   Response:

   Yes. If VNMCs are no longer available at the end of the contract term, Petitioner will seek other revenue mechanisms for the power produced by the facility.

5. If the project is approved, identify all permits necessary for construction and operation and which entity will hold the permit(s)?

   Response:

   Petitioner anticipates that the following permits will be required for the Project: CT DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewater from Construction Activity and City of Bristol Building and Electrical Permits.

6. Would the petitioner participate in the ISO-NE Forward Capacity Auction? If yes, which auction(s) and capacity commitment period(s)?

   Response:

   The petitioner intends to participate in the ISO-NE Forward Capacity Auction. The auctions and capacity commitments are yet to be determined.

Proposed Site

7. What is the municipal zoning designation of the proposed site?

   Response:

   R-15.

8. Is the site parcel, or any portion thereof, part of the Public Act 490 Program? If so, how does the municipal land use code classify the parcel(s)? How would the project affect the use classification?

   Response:

   Yes – the site parcel has been part of the 490 Program for more than ten years. The municipal land use code classifies the parcel as R-15. The project would not affect the use classification.

9. Has the State of Connecticut Department of Agriculture purchased any development rights for the project site or any portion of the project site as part of the State Program for the Preservation of Agricultural Land?

Response:

No.

10. Provide the distance, direction and address of the nearest property line and nearest off-site residence from the solar field perimeter fence.

Response:

The properties at 618 and 628 Matthews Street are both located approximately 58 feet to the north of the solar perimeter fence. The residences from each property are approximately 88 feet from the solar perimeter fence.

Energy Output

11. Have electrical loss assumptions been factored into the output of the facility? What is the output (MW AC) at the point of interconnection with these loss assumptions?

Response:

Yes. Losses have been factored into facility output. Output at the POI is 1.0 MW AC.

12. What is the projected capacity factor (expressed as a percentage) for the proposed project? For clarity, is this capacity factor based on a ratio of AC MWh to AC MWh, or a ratio of AC MWh to DC MWh?

Response:

On a ratio of AC MWh to AC MWh the capacity factor is roughly 17%.

13. Would the power output of the solar panels decline as the panels age? If so, estimate the percent of per year.

Response:

Yes. The power output of the solar panels is predicted to decline 0.8% per year.

14. Is the project being designed to accommodate a potential future battery storage system? If so, please indicate the anticipated size of the system, where it may be located on the site, and the impact it may have on the Virtual Net Metering agreement.

Response:

No.

15. Would the impact of soft or hard shading reduce the energy production of the proposed project? If so, was this included in the proposed projects capacity factor?

Response:

Yes. Shade has been considered as a loss factor.

16. Does the design of the Project, including the method of interconnection, allow it to serve as a microgrid?

Response:

No.

17. If one section of the solar array experiences electrical problems causing the section to shut down, could other sections of the system still operate and transmit power to the grid?

Response:

Yes. Each inverter (8 total on this site) may operate independently and continue to export and transmit power to the grid in the event described.

18. Do solar facilities present a challenge for the independent system operator for balancing loads and generation (to maintain the system frequency) due to the changing (but not controlled) megawatt output of a solar facility? What technology or operational protocols could be employed to mitigate any challenges?

Response:

Interconnection for projects of this size is handled solely by Eversource and not the ISO. Eversource's standard operational guidance per the executed interconnection agreement will be employed here.

Site Components and Solar Equipment

19. Provide the following information regarding the Project solar panels:

    a) What is the length of the driven posts and to what depth would the posts be driven into the ground to provide the required structural stability?

    Response:

    The posts will be driven to a depth of approximately 10.5 feet and will be roughly 14.5-16' in length (dependent on unique topographical conditions).

    b) How many panels will each rack hold?

    Response:

    Each rack will hold 54 panels.

    c) Will the panels be mounted in a portrait or landscape fashion?

    Response:

    The panels will be mounted in portrait but facing east/west as this is a tracker system.

    d) What is the minimum overall height of the panels above grade at maximum tilt position?

    Response:

    Minimum height above grade at max tilt will be 4-6' dependent on unique topographical conditions.

20. Revise the site plan to include the following.

    Response:

    a. locations and height of the four proposed utility poles required for the Project interconnection:

    The revised Site Plan is shown in Attachment A – Site Information.

    b. Dimensions of the proposed utility pads.

    The revised Site Plan is shown in Attachment A – Site Information.

c. Limits of clearing and grubbing.

The limits of clearing and grubbing are shown in EC-3 of Attachment A – Site Information.

d. Areas of subsurface trenching required for the tracking system and electrical conduits.

The area of trenching is shown in SP-1 of Attachment A – Site Information.

e. Site construction phasing/sequencing details; and

The site construction phasing/sequencing details are shown on EC-1 of Attachment A – Site Information.

f. Signature and stamp of the Professional engineer licensed in the State of Connecticut that prepared the plan.

The signed and sealed plans by a Professional Engineer licensed in the State of Connecticut are shown in Attachment A – Site Information.

21. Is the wiring from the panels to the inverters installed on the racking? If wiring is external, how would it be protected from potential damage from weather exposure, vegetation maintenance, or animals?

Response:

The wiring from panels to inverters is installed on the racking along the torque tube. The cable is weather rated and designed to withstand the elements. Further the wiring is shielded from the sun and elements per its location underneath the solar panels (along the torque tube).

22. What is the length of the proposed access drive?

Response:

The length of the proposed access drive is approximately 32 feet.

23. The proposed access gate is across from a residential property. Is it possible to relocate the access gate/road to a location opposite Peppermint Lane or Wintergreen Lane to prevent direct views into the facility from this residence? If not, can a gate with a screening treatment be installed?

Response:

The proposed access road is located at the existing gate for the farm field. The Petitioner is willing to relocate the gate and access road opposite of Peppermint Lane.

24. What is the aisle width between the solar panel rows from panel edge to panel edge?

Response:

The aisle width between the solar panel rows from panel edge to panel edge is roughly 8'6".

Interconnection

25. Is the project interconnection required to be reviewed by ISO-NE?

Response:

No.

26. Is the existing distribution three-phase or would it have to be upgraded from single-phase to three-phase?

Response:

The existing distribution line is three-phase. No upgrade is required from single phase to three phase service. The exact specifications for the upgrade and new equipment required are outlined in the executed interconnection agreement.

Public Safety

27. Would the project comply with the National Electrical Code, the National Electrical Safety Code and any applicable National Fire Protection Association codes and standards including CT State Fire Prevention Code, Ground Mounted Photovoltaic System Installations, Section 11.12.3?

    Response:

    Yes. The project would comply with the National Electrical Code, the National Electrical Safety Code, the National Fire Protection Association Codes and standards including CT State Fire Prevention Code, Ground Mounted Photovoltaic System Installations, Section 11.12.3, and any other applicable code relevant to the project.

28. Where is the nearest federally obligated airport? Is a glare analysis required to comply with FAA policy?

    Response:

    Robertson Field is the closest federally obligated airport. It is approximately 7 miles to the east of the Project Site. The Project does not exceed the notice requirement with the FAA and thus does not require a glare analysis.

29. Petition page 22 states "The Project Site information has been submitted to the Federal Aviation Administration for review and approval." Has the Petitioner received a response from the FAA? If so, provide such response.

    Response:

    The project does not exceed the notice requirement with the FAA as such no further notice to the FAA was required.

30. With regard to emergency response:

    a. Does the project developer intend on conducting outreach and/or training for local emergency responders in the event of a fire or other emergency at the site?

       Response:

       Yes.

b. How would site access be ensured for emergency responders?

Response:

Eversource requires a key or access code to locked facilities. The local fire department will be provided the same 24/7/365 access.

c. In the event of a brush or electrical fire, how would the Petitioner mitigate potential electric hazards that could be encountered by emergency response personnel?

Response:

Emergency placards denote emergency shutoff locations for response personnel. Training with emergency response personnel will outline the unique considerations for solar fields.

d. Could the entire facility be shut down and de-energized in the event of a fire? If so, how?

Response:

Yes - via an emergency shutoff switch at the site and as shown on placards posted at the site.

Environmental

The Stormwater Management Report page 1 states approximately 5.98 acres of the site require clearing and grubbing. Petition page 14 states the project occupies approximately 5.3 acres of hayfield. Clarify the amount of clearing and grubbing. Would grubbed areas be stabilized with vegetative growth prior to installing the solar panel racking system?
Response:

The amount of clearing and grubbing is limited to approximately 0.67 acres. The area of clearing and grubbing will be temporarily stabilized prior to installing the solar panel racking system.

31. Provide the initial wetland technical report referenced on page 15 in the Petition.

Response:

The wetlands technical report is included in Attachment A – Site Information.

32. The Greenhouse Gas (GHG) Assessment in Appendix M of Council Petition No. 1352 compared the life cycle GHG emissions from a solar project to a scenario where the solar project is avoided and an equivalent amount of natural gas-fired electric generation operated for the estimated life of the solar facility. For the proposed project, how would the net GHG emissions (or reduction) over the life of the solar facility and carbon debt payback be affected under this natural gas-fired generation versus proposed solar generation scenario.

Response:

The Project is working with EarthShift Global, LLC to provide an accurate response to the above question. The Project will supplement its interrogatory response once the analysis is completed.

33. Could the Petitioner include a minimum 6-inch gap between the fence fabric and ground level to allow for small wildlife movement through the site?

Response:

Yes, the Petitioner will include a 6-inch gab between the fence fabric and ground level to allow for small wildlife movement through the site.

34. Are there any wells on the site or in the vicinity of the site? If so, how would the petitioner protect the wells and/or water quality from construction impacts?

Response:

There is public water supply in Matthews Street thus there are no expected wells in the vicinity of the site. There are no wells on site.

35. What effect would runoff from the drip edge of each row of solar panels have on the site drainage patterns? Would channelization below the drip edge be expected? Are energy dissipators, as depicted in DEEP's draft Appendix I, Stormwater Management at Solar Array Construction Projects-Figure 2, proposed for this Project? If not, why not?

Response:

Runoff from the drip edge of each row of solar panels will not have an impact on the site drainage patterns. Channelization below the drip edge is not expected. Energy dissipators are not proposed for this project as channelization is not expected below the drip edge and additionally because these units are trackers, they the drip edge will constantly be changing throughout the day.

36. Are any impacts to groundwater quality anticipated from installing support posts for the solar racking? If so, how would the petitioner manage and/or mitigate these impacts?

Response:

There are no anticipated impacts to groundwater quality from the installation of the support posts.

37. Where is the nearest public recreational area from the proposed site? Describe the visibility of the proposed project from this recreational area.

Response:

The nearest public recreation area from the proposed site is Birge Pond/Hoppers over 4,000 feet to the east. The topography of the area consists of highpoint that is 20 feet above the facility grade, approximately 775 feet to the east. Birge Pond/Hoppers sits at an elevation that is greater than 50 feet below the facility elevation. Therefor there will be no visibility of the facility from this recreational area.

38. Referring to Petition p. 22, what methodology was used to determine that operational noise from the Project inverters/transformers would not exceed Department of Energy and Environmental Protection (DEEP) noise standards at the property boundaries?

Response:

The inverter noise level test report is provided in Attachment C – Sungrow Noise Report. The transformer has been tested per ANSI and NEMA regulations, and specifics are provided in Attachment D – Bulletin 30.

39. Please submit photographic site documentation with notations linked to the site plans or a detailed aerial image that identify locations of site-specific and representative site features. The submission should include photographs of the site from public road(s) or publicly accessible area(s) as well as Site-specific locations depicting site features including, but not necessarily limited to, the following locations as applicable:

For each photo, please indicate the photo viewpoint direction and stake or flag the locations of site-specific and representative site features. Site-specific and representative site features include, but are not limited to, as applicable:

1. wetlands, watercourses and vernal pools;
2. forest/forest edge areas;
3. agricultural soil areas;
4. sloping terrain;
5. proposed stormwater control features;
6. nearest residences;
7. Site access and interior access road(s);

8. utility pads/electrical interconnection(s);
9. clearing limits/property lines;
10. mitigation areas; and
11. any other noteworthy features relative to the Project.

A photolog graphic must accompany the submission, using a site plan or a detailed aerial image, depicting each numbered photograph for reference. For each photo, indicate the photo location number and viewpoint direction, and clearly identify the locations of site-specific and representative site features show (e.g., physical staking/flagging or other means of marking the subject area).

Response:

Due to the size of the file, the submission shall be delivered to the Siting Council electronically in a legible portable document format (PDF) with a maximum file size of <20MB. If necessary, multiple files may be submitted and clearly marked in terms of sequence.

Facility Construction

40. Has the petitioner submitted an application for a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities from DEEP?

Response:

Yes. The petitioner applied for the General Permit on September 30, 2020.

41. Has the petitioner met with the DEEP Stormwater Division? If yes, when? Please describe any recommendations, comments or concerns about the project provided by the Stormwater Division.

Response:

Yes, the Petitioner met with the DEEP Stormwater Division on January 29, 2020. The Stormwater Division did not have any comments or concerns about the project.

42. Has the petitioner consulted with the DEEP Dam Safety program regarding permitting requirements, if any, for the proposed stormwater basins?

Response:

No. Both stormwater basins are cut into existing grade.

43. With regard to earthwork required to develop the site, provide the following:

a) Will the site be graded? If so, in what areas?

Response:

The site will be graded in the areas of the stormwater basins.

b) What is the desired slope within the solar array areas?

Response:

Solar arrays may be installed on grades up to 30%.

c) Could the solar field areas be installed with minimal alteration to existing slopes?

Response:

Yes.

d) If minimal alteration of slopes is proposed, can existing vegetation be maintained to provide ground cover during construction?

Response:

Yes. The existing vegetation will be maintained as ground cover.

e) Estimate the amounts of cut and fill in cubic yards for the project.

Response:

The project will generate approximately 4,000 cy of cut.

f) If there is excess cut, will this material be removed from the site property or deposited on the site property?

Response:

The excess cut will be permanently stock piled on the property and stabilized.

44. Would topsoil be stripped from the site prior to grading? If so, would the topsoil be spread over the disturbed areas once grading is complete? If not, how would growth of new vegetation/grasses be promoted within the graded areas if nutrient rich soils are not present?

Response:

Yes. The topsoil will be stripped in the areas requiring grading and will be spread over disturbed areas once final grade is established.

45. How would the posts (that support the racking system) be driven into the ground? In the event that ledge or boulders are encountered, what methods would be utilized for installation?

Response:

Racking system posts will be installed via pile driving machine (most likely a Vermeer PD-10). SunJet anticipates some ledge/boulders will require pre-drilling for post installation. This process involves pre-drill of a pilot hole roughly 4" in diameter. The spoils are then backfilled into the hole. The pile is pounded into the pilot hole and backfill is added to make flush the soil. A pull test procedure has been outlined with the structural and geotechnical EOR to confirm embedment satisfies engineering assumptions and conditions. As soil settles the holes are continually backfilled until they remain flush through expected settling/storm events (typically over a 1-2-year period). Please see Attachment B – Geotechnical Engineering Report.

46. Has a comprehensive geotechnical study been completed for the site to determine if site conditions support the overall Project design? If so, summarize the results. If not, has the Petitioner anticipated and designed the Project with assumed subsurface conditions? What are these assumed conditions?

Response:

Yes. The Geotechnical Report is shown in Attachment B – Geotechnical Engineering Report which summarizes the study results.

47. What is the anticipated sequence of construction? During what time of year would each sequence ideally occur? Does this account for possible seasonal construction restrictions due to the presence of protected species?

Response:

- **Site work – late Winter.**
- **Tracker assembly – late winter/early Spring**

- **Electrical installation – early Spring.**
- **System commissioning – mid to late Spring.**

Maintenance Questions

48. Would the Petitioner remove snow that accumulates on the panels? Would snow accumulation on the solar panels affect the output of the facility? Under what circumstances would snow be removed? Describe snow removal methods.

    Response:

    The single axis tracker racking intended for this site has a snow stow program that will be employed. A censor on the tracker control unit senses snow height/weight and then tilts to maximum (+/- 45 degrees) to release the snow once it hits a specific threshold. Snow accumulation will not affect the output of the facility with this program engaged.

49. Describe the type and frequency of anticipated vegetation management for the site. Include areas inside and outside of the perimeter fence, as well as detention basins and swales.

    Response:

    Project Site vegetation is typically mowed three (3) times annually.

50. Petition page 9 states "Project Site vegetation is typically mowed three (3) times annually." Describe how this will be consistent with the site management protection measures noted in the DEEP NDDB determination letter, dated June 29, 2020.

    Response:

    Petitioner, when possible, will mow outside the active window of April 15th to August 15th on site. If mowing is required during these time periods, then the mower blade will be set greater than 7 inches.

51. The site plan does not show an access gate to the stormwater basins. How would site personnel access the stormwater basins for post construction maintenance?

    Response:

    There is access along the outside of the fence to the stormwater basins.

52. Would the installed solar panels require regular cleaning or other, similar, maintenance? If so, describe cleaning procedures including substances used. Would this maintenance activity have any impacts to water quality?

Response:

No cleaning or similar maintenance is prescribed for the site.

53. Would the petitioner store any replacement modules on-site in the event solar panels are damaged or are not functioning properly? If so, where? How would damaged panels be detected?

Response:

No. Petitioner will detect damaged panels via (1) voltage monitoring, (2) inverter level senses, (3) manual inspection, and/or (4) unmanned drone heat sensor.

Attachment A

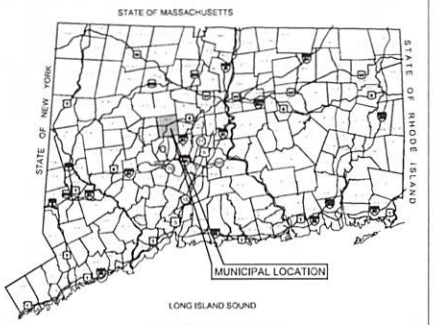
Site Information

SUNJET ENERGY, LLC

INTERROGATORY RESPONSES - SET ONE

PETITION NO. 1427

November 27, 2020



SUNJET, LLC

"BRISTOL SOLAR"

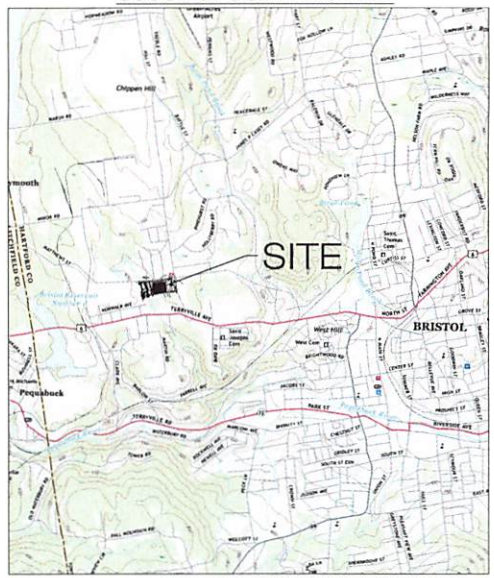
MATTHEWS ST. & HILL ST.
BRISTOL, CT 06010

LIST OF DRAWINGS

SITE INFORMATION

SITE NAME:	"BRISTOL SOLAR"
LOCATION:	MATTHEWS ST. & HILL ST. BRISTOL, CT 06010
SITE TYPE/DESCRIPTION:	ADD (1) GROUND MOUNTED SOLAR PANEL ARRAY W/ ASSOCIATED EQUIPMENT.
PROPERTY OWNER:	LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO 481 MATTHEWS STREET BRISTOL, CT 06010
APPLICANT:	SUNJET ENERGY LLC 28 POCOTOPAUG DRIVE EAST HAMPTON, CT 06424
ENGINEER CONTACT:	BRADLEY J. PARSONS, P.E. (860) 663-1697 x208
LATITUDE: LONGITUDE: ELEVATION:	41°41'03.75" N 72°58'29.78" W 662'± AMSL
MBLU ZONE EXISTING LAND USE PROPOSED LAND USE	66-255A R-15 AGRICULTURAL COMMUNICATIONS, TRANSPORTATION AND PUBLIC UTILITY USES - LARGE SCALE GROUND MOUNTED SOLAR PHOTOVOLTAIC INSTALLATIONS
TOTAL SITE ACREAGE: TOTAL DISTURBED AREA:	11.94± AC. 6.50± AC.
APPROX. VOLUME OF CUT: APPROX. VOLUME OF FILL: APPROX. NET VOLUME:	3,995± CY 0± CY 3,995± CY OF CUT

USGS TOPOGRAPHIC MAP



SCALE : 1" = 2000'± SOURCE: USGS 7.5 BRISTOL QUADRANGLE, CT 2018

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO.	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH

DATE: 05/21/20 CHECKED BY: BJP

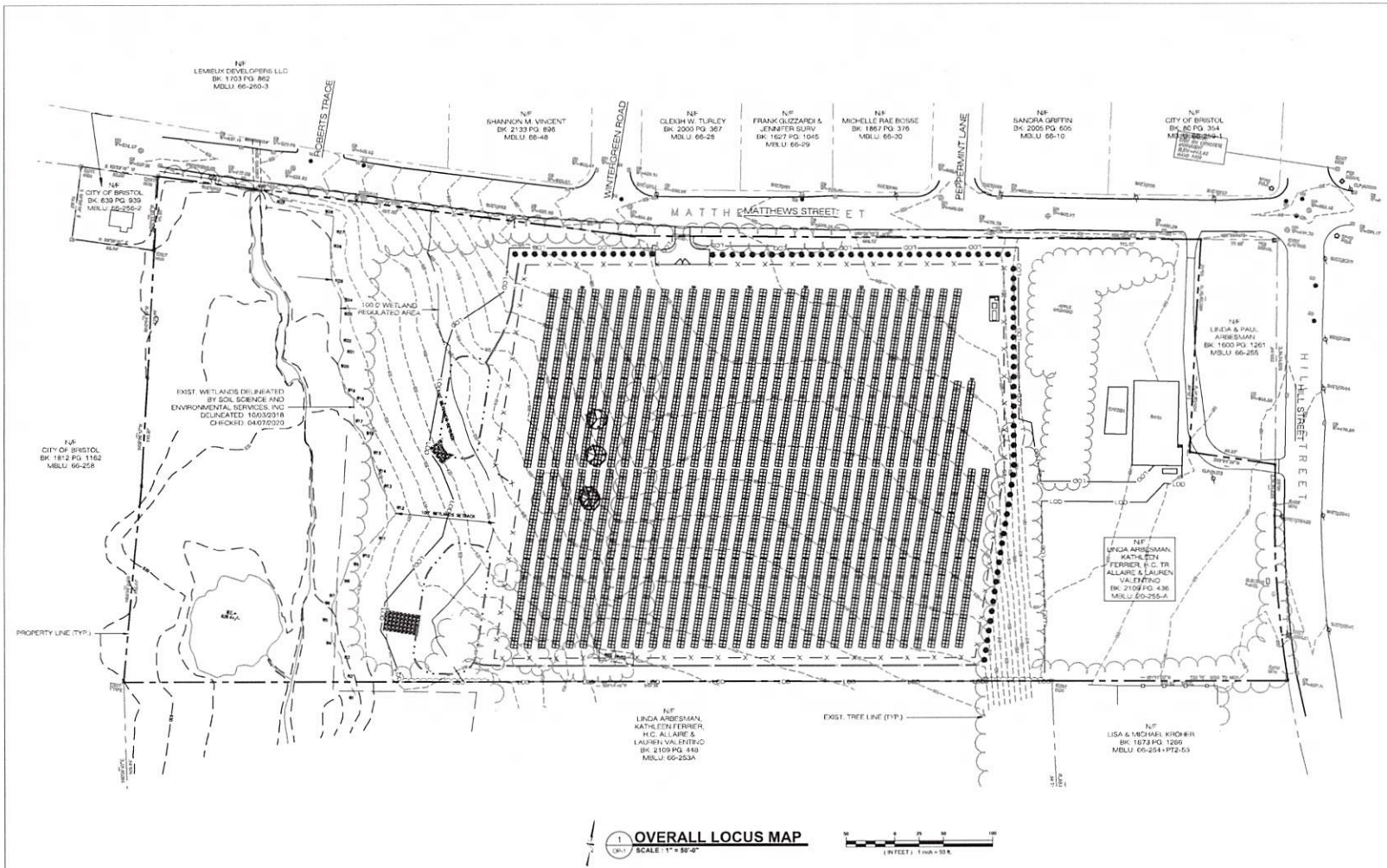
SHEET TITLE:

TITLE SHEET & INDEX

SHEET NUMBER:

T-1

STATE OF CONNECTICUT — BRADLEY J. PARSONS — LICENSED PROFESSIONAL ENGINEER



1 OVERALL LOCUS MAP
SCALE : 1" = 50'-0"

50 0 25 50 100
(IN FEET) 1 inch = 50 ft.

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET		
NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH

DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:

ABUTTERS MAP

SHEET NUMBER:

AB-1

STATE OF CONNECTICUT BRADLEY J. PARSONS 25035 REGISTERED PROFESSIONAL ENGINEER

GENERAL NOTES

1. ALL CONSTRUCTION SHALL COMPLY WITH PROJECT DEVELOPER STANDARDS, CITY OF BRISTOL STANDARDS, CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS IN THE ABOVE REFERENCED INCREASING HIERARCHY. IF SPECIFICATIONS ARE IN CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL APPLY.
2. IF NO PROJECT CONSTRUCTION SPECIFICATION PACKAGE IS PROVIDED BY THE PROJECT DEVELOPER OR THEIR REPRESENTATIVE, THE CONTRACTOR SHALL COMPLY WITH THE MANUFACTURE, CITY OF BRISTOL, OR CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS, AND BE IN ACCORDANCE WITH ALL APPLICABLE OSHA, FEDERAL, STATE AND LOCAL REGULATIONS.
3. THE PROJECT DEVELOPER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY ZONING AND STORMWATER PERMITS REQUIRED BY GOVERNMENT AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL CITY OF BRISTOL CONSTRUCTION PERMITS. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
4. REFER TO PLANS, DETAILS AND REPORTS PREPARED BY ALL-POINTS TECHNOLOGY CORPORATION FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS IN THE FIELD AND CONTACT THE PROJECT DEVELOPER IF THERE ARE ANY QUESTIONS OR CONFLICTS REGARDING THE CONSTRUCTION DOCUMENTS AND/OR FIELD CONDITIONS SO THAT APPROPRIATE REVISIONS CAN BE MADE PRIOR TO BIDDING/CONSTRUCTION. ANY CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATIONS SHALL BE CONFIRMED WITH THE PROJECT DEVELOPERS CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL PRODUCTS, MATERIALS PER PLANS AND SPECIFICATIONS TO THE PROJECT DEVELOPER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OR DELIVERY TO THE SITE. ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.
6. SHOULD ANY UNKNOWN OR INCORRECTLY LOCATED EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, CONSULT THE PROJECT ENGINEER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.
7. DO NOT INTERRUPT EXISTING UTILITIES SERVICING FACILITIES OCCUPIED AND USED BY THE PROJECT DEVELOPER OR OTHERS DURING OCCUPIED HOURS, EXCEPT WHEN SUCH INTERRUPTIONS HAVE BEEN AUTHORIZED IN WRITING BY THE PROJECT DEVELOPER AND THE LOCAL MUNICIPALITY. INTERRUPTIONS SHALL ONLY OCCUR AFTER ACCEPTABLE TEMPORARY SERVICE HAS BEEN PROVIDED.
8. THE CONTRACT LIMIT IS THE PROPERTY LINE UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE CONTRACT DRAWINGS.
9. THE CONTRACTOR SHALL ABIDE BY ALL OSHA, FEDERAL, STATE AND LOCAL REGULATIONS WHEN OPERATING CRANES, BOOMS, HOISTS, ETC. IN CLOSE PROXIMITY TO OVERHEAD ELECTRIC LINES. IF CONTRACTOR MUST OPERATE EQUIPMENT CLOSE TO ELECTRIC LINES, CONTACT POWER COMPANY TO MAKE ARRANGEMENTS FOR PROPER SAFEGUARDS. ANY UTILITY COMPANY FEES SHALL BE PAID FOR BY THE CONTRACTOR.
10. THE CONTRACTOR SHALL COMPLY WITH OSHA CFR 29 PART 1926 FOR EXCAVATION TRENCHING AND TRENCH PROTECTION REQUIREMENTS.
11. THE ENGINEER IS NOT RESPONSIBLE FOR SITE SAFETY MEASURES TO BE EMPLOYED DURING CONSTRUCTION. THE ENGINEER HAS NO CONTRACTUAL DUTY TO CONTROL THE SAFEST METHODS OR MEANS OF THE WORK, JOB SITE RESPONSIBILITIES, SUPERVISION OF PERSONNEL OR TO SUPERVISE SAFETY AND DO NOT VOLUNTARILY ASSUME ANY SUCH DUTY OR RESPONSIBILITY.
12. THE CONTRACTOR SHALL RESTORE ANY DRAINAGE STRUCTURE, PIPE, CONDUIT, PAVEMENT, CURBING, SIDEWALKS, LANDSCAPED AREAS OR SIGNAGE DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER, AS APPROVED BY THE PROJECT DEVELOPER OR CITY OF BRISTOL.
13. THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION INCLUDING UNDERGROUND UTILITIES TO THE PROJECT DEVELOPER AT THE END OF CONSTRUCTION.
14. ALTERNATIVE METHODS AND PRODUCTS, OTHER THAN THOSE SPECIFIED, MAY BE USED IF REVIEWED AND APPROVED BY THE PROJECT DEVELOPER, ENGINEER, AND APPROPRIATE REGULATORY AGENCY PRIOR TO INSTALLATION DURING THE BIDDING/CONSTRUCTION PROCESS.
15. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "DIG SAFE" 72 HOURS BEFORE COMMENCEMENT OF WORK AT "811" AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
16. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.

SITE PLAN NOTES

1. THE SURVEY WAS PROVIDED BY DUFOUR SURVEYING, LLC DATED OCTOBER 30, 2018.
2. THERE ARE WETLANDS LOCATED ON THE SITE AS INDICATED ON THE PLANS. WETLAND BOUNDARIES WERE FLAGGED BY SOIL SCIENCE AND ENVIRONMENTAL SERVICES, INC. AND LOCATED BY DUFOUR SURVEYING LLC IN OCTOBER 2018.
3. THERE WILL BE MINIMAL GRADING ON SITE IN THE AREAS OF THE MINOR CLEARING, TO ENSURE THAT PROPER DRAINAGE IS MAINTAINED.
4. THE CONTRACTOR SHALL FOLLOW THE RECOMMENDED SEQUENCE OF CONSTRUCTION NOTES PROVIDED ON THE EROSION CONTROL PLAN OR SUBMIT AN ALTERNATE PLAN FOR APPROVAL BY THE ENGINEER AND/OR PERMITTING AGENCIES PRIOR TO THE START CONSTRUCTION. ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.
5. PROPER CONSTRUCTION PROCEDURES SHALL BE FOLLOWED ON ALL IMPROVEMENTS WITHIN THIS PARCEL SO AS TO PREVENT THE SILTING OF ANY WATERCOURSE OR BWWS IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATIONS. IN ADDITION, THE CONTRACTOR SHALL ADHERE TO "EROSION CONTROL PLAN" CONTAINED HEREIN. THE CONTRACTOR SHALL BE RESPONSIBLE TO POST ALL BONDS AS REQUIRED BY GOVERNMENT AGENCIES WHICH WOULD GUARANTEE THE PROPER IMPLEMENTATION OF THE PLAN.
6. ALL SITE WORK, MATERIALS OF CONSTRUCTION, AND CONSTRUCTION METHODS FOR EARTHWORK AND STORM DRAINAGE WORK, SHALL CONFORM TO THE SPECIFICATIONS AND DETAILS AND APPLICABLE SECTIONS OF THE PROJECT SPECIFICATIONS MANUAL. OTHERWISE THIS WORK SHALL CONFORM TO THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION AND PROJECT GEOTECHNICAL REPORT IF THERE IS NO PROJECT SPECIFICATIONS MANUAL. ALL FILL MATERIAL UNDER STRUCTURES AND PAVED AREAS SHALL BE PER THE ABOVE STATED APPLICABLE SPECIFICATIONS, AND/OR PROJECT GEOTECHNICAL REPORT, AND SHALL BE PLACED IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER. MATERIAL SHALL BE COMPACTED IN 8" LIFTS TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 1557 AT 95% PERCENT OF OPTIMUM MOISTURE CONTENT.
7. ALL DISTURBANCE INCURRED TO PUBLIC, MUNICIPAL, COUNTY, STATE PROPERTY DUE TO CONSTRUCTION SHALL BE RESTORED TO ITS PREVIOUS CONDITION OR BETTER, TO THE SATISFACTION OF THE CITY OF BRISTOL AND STATE OF CONNECTICUT.
8. IF IMPACTED OR CONTAMINATED SOIL IS ENCOUNTERED BY THE CONTRACTOR, THE CONTRACTOR SHALL SUSPEND EXCAVATION WORK OF IMPACTED SOIL AND NOTIFY THE PROJECT DEVELOPER AND/OR PROJECT DEVELOPERS ENVIRONMENTAL CONSULTANT PRIOR TO PROCEEDING WITH FURTHER WORK IN THE IMPACTED SOIL LOCATION UNTIL FURTHER INSTRUCTED BY THE PROJECT DEVELOPER AND/OR PROJECT DEVELOPERS ENVIRONMENTAL CONSULTANT.

UTILITY NOTES

1. CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE CITY OF BRISTOL TO SECURE CONSTRUCTION PERMITS AND FOR PAYMENT OF FEES FOR STREET CUTS AND CONNECTIONS TO EXISTING UTILITIES.
2. REFER TO DRAWINGS BY PROJECT DEVELOPER FOR THE ONSITE ELECTRICAL DRAWINGS AND INTERCONNECTION TO EXISTING ELECTRICAL GRID. SITE CONTRACTOR SHALL SUPPLY AND INSTALL PIPE ADAPTERS AS NECESSARY AT BUILDING CONNECTION POINT OR AT EXISTING UTILITY OR PIPE CONNECTION POINT. THESE DETAILS ARE NOT INCLUDED IN THESE PLANS.
3. UTILITY LOCATIONS AND PENETRATIONS ARE SHOWN FOR THE CONTRACTORS INFORMATION AND SHALL BE VERIFIED WITH THE ELECTRICAL ENGINEER AND THE PROJECT DEVELOPERS CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY THE ELEVATION AND LOCATION OF ALL UTILITIES BY VARIOUS MEANS PRIOR TO BEGINNING ANY EXCAVATION. TEST PITS SHALL BE DUG AT ALL LOCATIONS WHERE PROP. SANITARY SEWERS AND WHERE PROP. STORM PIPING WILL CROSS EXISTING UTILITIES, AND THE HORIZONTAL AND VERTICAL LOCATIONS OF THE UTILITIES SHALL BE DETERMINED. THE CONTRACTOR SHALL CONTACT THE PROJECT DEVELOPER IN THE EVENT OF ANY DISCOVERED OR UNFORESEEN CONFLICTS BETWEEN EXISTING AND PROPOSED SANITARY SEWERS, STORM PIPING AND UTILITIES SO THAT AN APPROPRIATE MODIFICATION MAY BE MADE.
5. UTILITY CONNECTION DESIGN AS REFLECTED ON THE PLAN MAY CHANGE SUBJECT TO UTILITY PROVIDER AND GOVERNING AUTHORITY STAFF REVIEW.
6. THE CONTRACTOR SHALL ENSURE THAT ALL UTILITY PROVIDERS AND GOVERNING AUTHORITY STANDARDS FOR MATERIALS AND CONSTRUCTION METHODS ARE MET. THE CONTRACTOR SHALL PERFORM PROPER COORDINATION WITH THE RESPECTIVE UTILITY PROVIDER.
7. THE CONTRACTOR SHALL ARRANGE FOR AND COORDINATE WITH THE RESPECTIVE UTILITY PROVIDERS FOR SERVICE INSTALLATIONS AND CONNECTIONS. THE CONTRACTOR SHALL COORDINATE WORK TO BE PERFORMED BY THE VARIOUS UTILITY PROVIDERS AND SHALL PAY ALL FEES FOR CONNECTIONS, DISCONNECTIONS, RELOCATIONS, INSPECTIONS, AND DEMOLITION UNLESS OTHERWISE STATED IN THE PROJECT SPECIFICATIONS MANUAL AND/OR GENERAL CONDITIONS OF THE CONTRACT.
8. ALL EXISTING PAVEMENT WHERE UTILITY PIPING IS TO BE INSTALLED SHALL BE SAW CUT. AFTER UTILITY INSTALLATION IS COMPLETED, THE CONTRACTOR SHALL INSTALL TEMPORARY AND/OR PERMANENT PAVEMENT REPAIR AS DETAILED ON THE DRAWINGS OR AS REQUIRED BY THE CITY OF BRISTOL.
9. ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
10. RELOCATION OF UTILITY PROVIDER FACILITIES, SUCH AS POLES, SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY PROVIDER.
11. THE CONTRACTOR SHALL COMPACT PIPE BACKFILL IN 8" LIFTS ACCORDING TO THE PIPE BEDDING DETAILS. TRENCH BOTTOM SHALL BE STABLE IN HIGH GROUNDWATER AREAS. A PIPE FOUNDATION SHALL BE USED PER THE TRENCH DETAILS AND IN AREAS OF ROCK EXCAVATION.
12. CONTRACTOR TO PROVIDE STEEL SLEEVES AND ANNULAR SPACE SAND FILL FOR UTILITY PIPE AND CONDUIT CONNECTIONS UNDER FOOTINGS.
13. ALL UTILITY CONSTRUCTION IS SUBJECT TO INSPECTION FOR APPROVAL PRIOR TO BACKFILLING, IN ACCORDANCE WITH THE APPROPRIATE UTILITY PROVIDER REQUIREMENTS.
14. A ONE-FOOT MINIMUM VERTICAL CLEARANCE BETWEEN WATER, GAS, ELECTRICAL, AND TELEPHONE LINES AND STORM PIPING SHALL BE PROVIDED. A SIX-INCH MINIMUM CLEARANCE SHALL BE MAINTAINED BETWEEN STORM PIPING AND SANITARY SEWER. A 6-INCH TO 18-INCH VERTICAL CLEARANCE BETWEEN SANITARY SEWER PIPING AND STORM PIPING SHALL REQUIRE CONCRETE ENCASEMENT OF THE PROP. SANITARY PIPING.
15. THE CONTRACTOR SHALL RESTORE ANY UTILITY STRUCTURE, PIPE, CONDUIT, PAVEMENT, CURBING, SIDEWALKS, DRAINAGE STRUCTURE, SIGNAGE OR LANDSCAPED AREAS DISTURBED DURING CONSTRUCTION, TO THEIR ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE PROJECT DEVELOPER AND CITY OF BRISTOL.
16. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS, AND/OR FIELD SURVEY, AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE INCLUDING SERVICES. CONTACT "DIG SAFE" AT 811 72 HOURS PRIOR TO CONSTRUCTION AND VERIFY ALL UNDERGROUND AND OVERHEAD UTILITY AND STORM DRAINAGE LOCATIONS. THE CONTRACTOR SHALL EMPLOY THE USE OF A UTILITY LOCATING COMPANY TO PROVIDE SUBSURFACE UTILITY ENGINEERING CONSISTING OF DESIGNATING UTILITIES AND STORM PIPING ON PRIVATE PROPERTY WITHIN THE CONTRACT LIMIT AND CONSISTING OF DESIGNATING AND LOCATING WHERE PROP. UTILITIES AND STORM PIPING CROSS EXISTING UTILITIES AND STORM PIPING WITHIN THE CONTRACT LIMITS.
17. THE CONTRACTOR SHALL ARRANGE AND COORDINATE WITH UTILITY PROVIDERS FOR WORK TO BE PERFORMED BY UTILITY PROVIDERS. THE CONTRACTOR SHALL PAY ALL UTILITY FEES UNLESS OTHERWISE STATED IN THE PROJECT SPECIFICATION MANUAL AND GENERAL CONDITIONS, AND REPAIR PAVEMENTS AS NECESSARY.
18. ELECTRIC DRAWINGS AND REQUIREMENTS ARE NOT INCLUDED AS PART OF THIS DRAWING SET AND SHOULD BE OBTAINED FROM THE PROJECT DEVELOPER.
19. ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF REVIEWED AND APPROVED BY THE PROJECT DEVELOPER, ENGINEER, AND APPROPRIATE REGULATORY AGENCIES PRIOR TO INSTALLATION.
20. THE CONTRACTOR SHALL MAINTAIN ALL FLOWS AND UTILITY CONNECTIONS TO EXISTING BUILDINGS WITHOUT INTERRUPTION UNLESS/UNTIL AUTHORIZED TO DISCONNECT BY THE PROJECT DEVELOPER, CITY OF BRISTOL, UTILITY PROVIDERS AND GOVERNING AUTHORITIES.

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH
DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:

SITE NOTES

SHEET NUMBER:

GN-1

EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. THE CONTRACTOR SHALL CONSTRUCT ALL SEDIMENT AND EROSION CONTROLS IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, LATEST EDITION, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND AS DIRECTED BY THE TOWN OF BRISTOL PERMITTEE AND/OR SWPCP MONITOR. ALL PERIMETER SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF CLEARING AND GRUBBING AND DEMOLITION OPERATIONS.

2. THESE DRAWINGS ARE ONLY INTENDED TO DESCRIBE THE SEDIMENT AND EROSION CONTROL MEASURES FOR THIS SITE. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE EROSION & SEDIMENT CONTROL PLAN ARE SHOWN IN A GENERAL SIZE AND LOCATION ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL EROSION CONTROL MEASURES ARE CONFIGURED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION OF SOILS AND PREVENT THE TRANSPORT OF SEDIMENTS AND OTHER POLLUTANTS TO STORM DRAINAGE SYSTEMS AND/OR WATERCOURSES. ACTUAL SITE CONDITIONS OR SEASONAL AND CLIMATIC CONDITIONS MAY WARRANT ADDITIONAL CONTROLS OR CONFIGURATIONS, AS REQUIRED, AND AS DIRECTED BY THE PERMITTEE AND/OR SWPCP MONITOR. SEE SEDIMENT AND EROSION CONTROL DETAILS AND SUGGESTED CONSTRUCTION SEQUENCE FOR MORE INFORMATION. REFER TO SITE PLAN FOR GENERAL INFORMATION AND OTHER CONTRACT PLANS FOR APPROPRIATE INFORMATION.

3. A BOND OR LETTER OF CREDIT MAY BE REQUIRED TO BE POSTED WITH THE GOVERNING AUTHORITY FOR THE EROSION CONTROL INSTALLATION AND MAINTENANCE.

4. THE CONTRACTOR SHALL APPLY THE MINIMUM EROSION & SEDIMENT CONTROL MEASURES SHOWN ON THE PLAN IN CONJUNCTION WITH CONSTRUCTION SEQUENCING, SUCH THAT ALL ACTIVE WORK ZONES ARE PROTECTED. ADDITIONAL AND/OR ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES MAY BE INSTALLED DURING THE CONSTRUCTION PERIOD IF FOUND NECESSARY BY THE CONTRACTOR, OWNER, SITE ENGINEER, MUNICIPAL OFFICIALS, OR ANY GOVERNING AGENCY. THE CONTRACTOR SHALL CONTACT THE OWNER AND APPROPRIATE GOVERNING AGENCIES FOR APPROVAL IF ALTERNATIVE CONTROLS OTHER THAN THOSE SHOWN ON THE PLANS ARE PROPOSED BY THE CONTRACTOR.

5. THE CONTRACTOR SHALL TAKE EXTREME CARE DURING CONSTRUCTION SO AS NOT TO DISTURB UNPROTECTED WETLAND AREAS OR INSTALLED SEDIMENTATION AND EROSION CONTROL MEASURES. THE CONTRACTOR SHALL INSPECT ALL SEDIMENT AND EROSION CONTROLS WEEKLY AND WITHIN 24 HOURS OF A STORM WITH A RAINFALL AMOUNT OF 0.25 INCHES OR GREATER TO VERIFY THAT THE CONTROLS ARE OPERATING PROPERLY AND MAKE REPAIRS AS NECESSARY IN A TIMELY MANOR.

6. THE CONTRACTOR SHALL KEEP A SUPPLY OF EROSION CONTROL MATERIAL (SILT FENCE, COMPOST FILTER SOCK, EROSION CONTROL BLANKET, ETC.) ON-SITE FOR PERIODIC MAINTENANCE AND EMERGENCY REPAIRS.

7. ALL FILL MATERIAL PLACED ADJACENT TO ANY WETLAND AREA SHALL BE GOOD QUALITY, WITH LESS THAN 5% FINES PASSING THROUGH A #200 SIEVE (BANK RUN). SHALL BE PLACED IN MAXIMUM ONE FOOT LIFTS, AND SHALL BE COMPACTED TO 95% MAX. DRY DENSITY MODIFIED PROCTOR OR AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

8. PROTECT EXISTING TREES THAT ARE TO BE SAVED BY FENCING, ORANGE SAFETY FENCE, CONSTRUCTION TAPE, OR EQUIVALENT FENCING/TAPE. ANY LIMB TRIMMING SHOULD BE DONE AFTER CONSULTATION WITH AN ARBORIST AND BEFORE CONSTRUCTION BEGINS IN THAT AREA. FENCING SHALL BE MAINTAINED AND REPAIRED DURING CONSTRUCTION.

9. CONSTRUCTION ENTRANCES (ANTI-TRACKING PADS) SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR CONSTRUCTION ACTIVITY AND SHALL BE MAINTAINED THROUGHOUT THE DURATION OF ALL CONSTRUCTION IF REQUIRED, THE LOCATION OF THE TRACKING PADS MAY CHANGE AS VARIOUS PHASES OF CONSTRUCTION ARE COMPLETED. CONTRACTOR SHALL ENSURE THAT ALL VEHICLES EXITING THE SITE ARE PASSING OVER THE ANTI-TRACKING PADS PRIOR TO EXISTING.

10. ALL CONSTRUCTION SHALL BE CONTAINED WITHIN THE LIMIT OF DISTURBANCE, WHICH SHALL BE MARKED WITH SILT FENCE, SAFETY FENCE, HAY BALES, RIBBONS, OR OTHER MEANS PRIOR TO CLEARING. CONSTRUCTION ACTIVITY SHALL REMAIN ON THE UPHILL SIDE OF THE SEDIMENT BARRIER UNLESS WORK IS SPECIFICALLY CALLED FOR ON THE DOWNHILL SIDE OF THE BARRIER.

11. NO CUT OR FILL SLOPES SHALL EXCEED 2:1 EXCEPT WHERE STABILIZED BY ROCK FACED EMBANKMENTS OR EROSION CONTROL BLANKETS. ALL SLOPES SHALL BE SEEDED AND BANKS WILL BE STABILIZED IMMEDIATELY UPON COMPLETION OF FINAL GRADING UNTIL TURF IS ESTABLISHED.

12. DIRECT ALL DEWATERING PUMP DISCHARGE TO A SEDIMENT CONTROL DEVICE THE GUIDE LINES WITHIN THE APPROVED LIMIT OF DISTURBANCE IF REQUIRED. DISCHARGE TO STORM DRAINS OR SURFACE WATERS FROM SEDIMENT CONTROLS SHALL BE CLEAR AND APPROVED BY THE PERMITTEE OR MUNICIPALITY.

13. THE CONTRACTOR SHALL MAINTAIN A CLEAN CONSTRUCTION SITE AND SHALL NOT ALLOW THE ACCUMULATION OF RUBBISH OR CONSTRUCTION DEBRIS ON THE SITE. PROPER SANITARY DEVICES SHALL BE MAINTAINED ON-SITE AT ALL TIMES AND SECURED APPROPRIATELY. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID THE SPILLAGE OF FUEL OR OTHER POLLUTANTS ON THE CONSTRUCTION SITE AND SHALL ADHERE TO ALL APPLICABLE POLICIES AND REGULATIONS RELATED TO SPILL PREVENTION AND RESPONSE/CONTAINMENT.

14. MINIMIZE LAND DISTURBANCES, SEED AND MULCH DISTURBED AREAS WITH TEMPORARY MIX AS SOON AS PRACTICABLE (2 WEEK MAXIMUM UNSTABILIZED PERIOD) USING PERENNIAL RYEGRASS AT 40 LBS PER ACRE. MULCH ALL CUT AND FILL SLOPES AND SWALES WITH LOOSE HAY AT A RATE OF 2 TONS PER ACRE. IF NECESSARY, REPLACE LOOSE HAY ON SLOPES WITH EROSION CONTROL BLANKETS OR JUTE CLOTH. MODERATELY GRADED AREAS, ISLANDS, AND TEMPORARY CONSTRUCTION STAGING AREAS MAY BE HYDROSEEDED WITH TACKIFIER.

15. SWEEP AFFECTED PORTIONS OF OFF SITE ROADS ONE OR MORE TIMES A DAY (OR LESS FREQUENTLY IF TRACKING IS NOT A PROBLEM) DURING CONSTRUCTION. FOR DUST CONTROL, PERIODICALLY MOISTEN EXPOSED SOIL SURFACES WITH WATER ON UNPAVED TRAVELWAYS TO KEEP THE TRAVELWAYS DAMP. CALCIUM CHLORIDE MAY ALSO BE APPLIED TO ACCESS ROADS. DUMP TRUCK LOADS EXITING THE SITE SHALL BE COVERED.

16. TURF ESTABLISHMENT SHALL BE PERFORMED OVER ALL DISTURBED SOIL, UNLESS THE AREA IS UNDER ACTIVE CONSTRUCTION. IT IS COVERED IN STONE OR SCHEDULED FOR PAVING WITHIN 30 DAYS. TEMPORARY SEEDING OR NON-LIVING SOIL PROTECTION OF ALL EXPOSED SOILS AND SLOPES SHALL BE INITIATED WITHIN THE FIRST 7 DAYS OF SUSPENDING WORK IN AREAS TO BE LEFT LONGER THAN 30 DAYS.

17. MAINTAIN ALL PERMANENT AND TEMPORARY SEDIMENT CONTROL DEVICES IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. UPON COMPLETION OF WORK SWEEP CONCRETE PADS, CLEAN THE STORMWATER MANAGEMENT SYSTEMS AND REMOVE ALL TEMPORARY SEDIMENT CONTROLS ONCE THE SITE IS FULLY STABILIZED AND APPROVAL HAS BEEN RECEIVED FROM PERMITTEE OR THE MUNICIPALITY.

18. SEEDING MIXTURES SHALL BE NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX (SEE SITE DETAILS SHEET DN-2), OR APPROVED EQUAL BY OWNER.

SEDIMENT & EROSION CONTROL NARRATIVE

1. THE PROJECT INVOLVES THE CONSTRUCTION OF A GROUND MOUNTED SOLAR PANEL FACILITY WITH ASSOCIATED EQUIPMENT, INCLUDING THE CLEARING, GRUBBING AND GRADING OF APPROXIMATELY 6.50 ACRES OF EXISTING LOT.

THE PROPOSED PROJECT INVOLVES THE FOLLOWING CONSTRUCTION

A. CLEARING, GRUBBING, AND GRADING OF EXISTING LOT.
B. CONSTRUCTION OF 3,456 GROUND MOUNTED SOLAR PANELS AND ASSOCIATED EQUIPMENT.
B. THE STABILIZATION OF DISTURBED AREAS WITH PERMANENT GRASS TREATMENTS.

2. FOR THIS PROJECT, THERE ARE APPROXIMATELY 6.50± ACRES OF THE SITE BEING DISTURBED WITH NEGLIGIBLE INCREASE IN THE IMPERVIOUS AREA OF THE SITE, AS ALL ACCESS THOUGH THE SITE WILL BE GRAVEL. IMPERVIOUS AREAS ARE LIMITED TO THE CONCRETE PADS FOR ELECTRICAL EQUIPMENT.

3. THE PROJECT SITE, AS MAPPED IN THE SOIL SURVEY OF STATE OF CONNECTICUT (NRCS, VERSION 18, DEC 6, 2018), CONTAINS TYPE 38C (HYDROLOGIC SOIL GROUP A) AND 12 (HYDROLOGIC SOIL GROUP C/D) SOILS. A GEOTECHNICAL ENGINEERING REPORT HAS NOT BEEN COMPLETED.

4. IT IS ANTICIPATED THAT CONSTRUCTION WILL BE COMPLETED IN APPROXIMATELY 3-4 MONTHS.

5. REFER TO THE CONSTRUCTION SEQUENCING AND EROSION AND SEDIMENTATION NOTES FOR INFORMATION REGARDING SEQUENCING OF MAJOR OPERATIONS IN THE ON-SITE CONSTRUCTION PHASES.

6. STORMWATER MANAGEMENT DESIGN CRITERIA UTILIZES THE APPLICABLE SECTIONS OF THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL, AND THE CITY OF BRISTOL STANDARDS, TO THE EXTENT POSSIBLE AND PRACTICABLE FOR THIS PROJECT ON THIS SITE. EROSION AND SEDIMENTATION MEASURES ARE BASED UPON ENGINEERING PRACTICE, JUDGEMENT AND THE APPLICABLE SECTIONS OF THE CONNECTICUT EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, LATEST EDITION.

7. DETAILS FOR THE TYPICAL STORMWATER MANAGEMENT AND EROSION AND SEDIMENTATION MEASURES ARE SHOWN ON THE PLAN SHEETS OR PROVIDED AS SEPARATE SUPPORT DOCUMENTATION FOR REVIEW IN THIS PLAN.

8. CONSERVATION PRACTICES TO BE USED DURING CONSTRUCTION AREA

A. STAGED CONSTRUCTION;
B. MINIMIZE THE DISTURBED AREAS TO THE EXTENT PRACTICABLE DURING CONSTRUCTION;
C. STABILIZE DISTURBED AREAS AS SOON AS POSSIBLE WITH TEMPORARY OR PERMANENT MEASURES;
D. MINIMIZE IMPERVIOUS AREAS;
E. UTILIZE APPROPRIATE CONSTRUCTION EROSION AND SEDIMENTATION MEASURES.

9. THE FOLLOWING SEPARATE DOCUMENTS ARE TO BE CONSIDERED A PART OF THE EROSION AND SEDIMENTATION PLAN

A. STORMWATER MANAGEMENT MEMO FOR EXISTING AND PROPOSED PEAK FLOWS.

SUGGESTED CONSTRUCTION SEQUENCE

THE FOLLOWING SUGGESTED SEQUENCE OF CONSTRUCTION ACTIVITIES IS PROJECTED BASED UPON ENGINEERING JUDGEMENT AND BEST MANAGEMENT PRACTICES. THE CONTRACTOR MAY ELECT TO ALTER THIS SEQUENCING TO BEST MEET THE CONSTRUCTION SCHEDULE, THE EXISTING SITE ACTIVITIES AND WEATHER CONDITIONS. SHOULD THE CONTRACTOR ALTER THE CONSTRUCTION SEQUENCE OR ANY EROSION AND SEDIMENTATION CONTROL MEASURES THEY SHALL MODIFY THE STORMWATER POLLUTION CONTROL PLAN ("SWPCP") AS REQUIRED BY THE GENERAL PERMIT.

1. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING, PHYSICALLY FLAG THE LIMITS OF DISTURBANCE IN THE FIELD AS NECESSARY TO FACILITATE THE PRE-CONSTRUCTION MEETING.

2. CONDUCT A PRE-CONSTRUCTION MEETING TO DISCUSS THE PROPOSED WORK AND EROSION AND SEDIMENTATION CONTROL MEASURES. THE MEETING SHOULD BE ATTENDED BY THE OWNER, THE OWNER REPRESENTATIVE(S), THE MUNICIPALITY, THE GENERAL CONTRACTOR, DESIGNATED SUB-CONTRACTORS AND THE PERSON, OR PERSONS, RESPONSIBLE FOR THE IMPLEMENTATION, OPERATION, MONITORING AND MAINTENANCE OF THE EROSION AND SEDIMENTATION MEASURES. THE CONSTRUCTION PROCEDURES FOR THE ENTIRE PROJECT SHALL BE REVIEWED AT THIS MEETING.

3. NOTIFY CITY OF BRISTOL AGENT AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF ANY DEMOLITION, CONSTRUCTION OR REGULATED ACTIVITY ON THIS PROJECT.

4. NOTIFY CALL BEFORE YOU DIG AT 811, AS REQUIRED, PRIOR TO THE START OF CONSTRUCTION.

5. REMOVE EXISTING IMPEDIMENTS AS NECESSARY AND PROVIDE MINIMAL CLEARING AND GRUBBING TO INSTALL THE REQUIRED CONSTRUCTION ENTRANCES.

6. CLEAR ONLY AS NEEDED TO INSTALL THE PERIMETER EROSION AND SEDIMENTATION CONTROL MEASURES AND, IF APPLICABLE, TREE PROTECTION. ALL WETLAND AREAS SHALL BE PROTECTED BEFORE MAJOR CONSTRUCTION BEGINS.

7. CONSTRUCT SEDIMENTATION TRAPS.

8. INSTALL REMAINING PERIMETER EROSION AND SEDIMENTATION CONTROL MEASURES.

9. PERFORM THE REMAINING CLEARING AND GRUBBING AS NECESSARY. REMOVE CUT WOOD AND STOCKPILE FOR FUTURE USE OR REMOVE OFF-SITE. REMOVE AND DISPOSE OF DEMOLITION DEBRIS OFF-SITE IN ACCORDANCE WITH APPLICABLE LAWS.

10. TEMPORARILY SEED DISTURBED AREAS NOT UNDER CONSTRUCTION FOR THIRTY (30) DAYS OR MORE.

11. INSTALL ELECTRICAL CONDUIT AND CONCRETE PADS.

12. INSTALL RACKING POSTS FOR GROUND MOUNTED SOLAR PANELS

13. INSTALL GROUND MOUNTED SOLAR PANELS AND COMPLETE ELECTRICAL INSTALLATION.

14. AFTER SUBSTANTIAL COMPLETION OF THE INSTALLATION OF THE SOLAR PANELS, COMPLETE REMAINING SITE WORK, INCLUDING THE LANDSCAPE SCREENING, AND STABILIZE ALL DISTURBED AREAS.

15. FINE GRADE, RAKE, SEED AND MULCH ALL REMAINING DISTURBED AREAS.

16. AFTER THE SITE IS STABILIZED AND WITH THE APPROVAL OF THE PERMITTEE AND CITY OF BRISTOL AGENT, REMOVE PERIMETER EROSION AND SEDIMENTATION CONTROLS.

CONSTRUCTION OPERATION AND MAINTENANCE PLAN – BY CONTRACTOR

E&S MEASURE	INSPECTION SCHEDULE	MAINTENANCE REQUIRED
CONSTRUCTION ENTRANCE	DAILY	PLACE ADDITIONAL STONE, EXTEND THE LENGTH OR REMOVE AND REPLACE THE STONE. CLEAN PAVED SURFACES OF TRACKED SEDIMENT.
COMPOST FILTER SOCK	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR/REPLACE WHEN FAILURE OR DETERIORATION IS OBSERVED.
SILT FENCE	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR/REPLACE WHEN FAILURE OR DETERIORATION IS OBSERVED. REMOVE SILT WHEN IT REACHES 1/2 THE HEIGHT OF THE FENCE.
TOPSOIL/BORROW STOCKPILES	DAILY	REPAIR/REPLACE SEDIMENT BARRIERS AS NECESSARY.
TEMPORARY SEDIMENT BASIN (W/ BAFFLES)	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.5"	REMOVE SEDIMENT ONCE IT HAS ACCUMULATED TO ONE HALF OF MINIMUM REQUIRED VOLUME OF THE WET STORAGE. DEWATERING AS NEEDED. RESTORE TRAP TO ORIGINAL DIMENSIONS. REPAIR/REPLACE BAFFLES WHEN FAILURE OR DETERIORATION IS OBSERVED.
TEMPORARY SEDIMENT TRAP (W/ BAFFLES)	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.5"	REMOVE SEDIMENT ONCE IT HAS ACCUMULATED TO ONE HALF OF MINIMUM REQUIRED VOLUME OF THE WET STORAGE. DEWATERING AS NEEDED. RESTORE TRAP TO ORIGINAL DIMENSIONS. REPAIR/REPLACE BAFFLES WHEN FAILURE OR DETERIORATION IS OBSERVED.
TEMPORARY SOIL PROTECTION	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR ERODED OR BARE AREAS IMMEDIATELY. RESEED AND MULCH.

SUNJET
ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

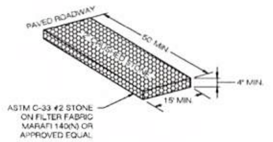
SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH
DATE: 05/21/20 CHECKED BY: BJP

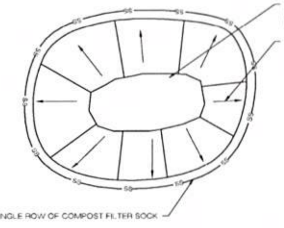
SHEET TITLE:
SEDIMENTATION & EROSION CONTROL NOTES

SHEET NUMBER:
EC-1



CONSTRUCTION ENTRANCE DETAIL

1 / EC-2 — SCALE : N.T.S.

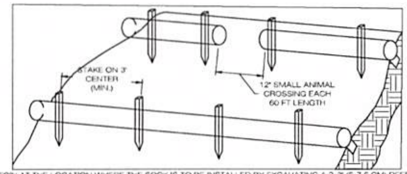


NOTES:

1. ALL EXISTING EXCAVATED MATERIAL THAT IS NOT TO BE REUSED IN THE WORK IS TO BE IMMEDIATELY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.
2. SOIL/AGGREGATE STOCKPILE SITES TO BE WHERE SHOWN ON THE DRAWINGS.
3. RESTORE STOCKPILE SITES TO PRE-EXISTING PROJECT CONDITION AND RESEED AS REQUIRED.
4. STOCKPILE HEIGHTS MUST NOT EXCEED 35'. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.

MATERIALS STOCKPILE DETAIL

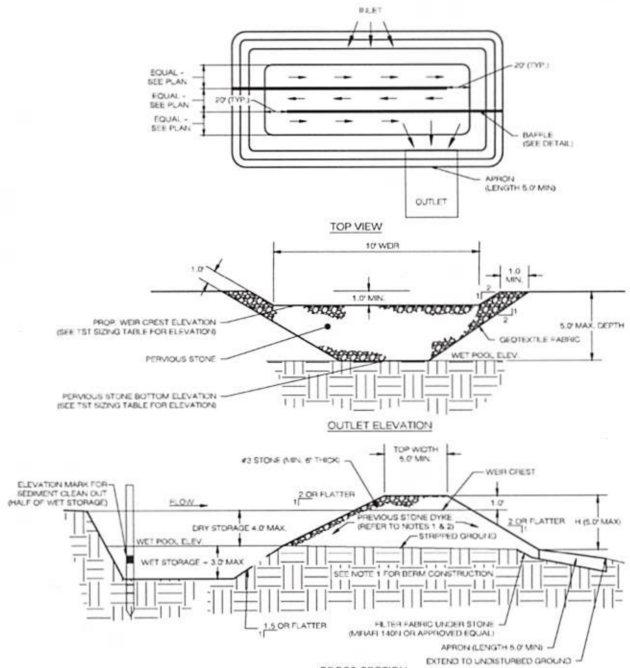
2 / EC-2 — SCALE : N.T.S.



1. BEGIN AT THE LOCATION WHERE THE SOCK IS TO BE INSTALLED BY EXCAVATING A 2-3" (5-7.5 CM) DEEP X 9" (22.9 CM) WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UPSLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE SOCK IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE SOCK ON THE UPHILL SIDE. SOCKS SHALL BE INSTALLED IN 60 FT CONTINUOUS LENGTHS WITH ADJACENT SOCKS TIGHTLY ABUT. EVERY 60 FT THE SOCK ROW SHALL BE SPACED 12 INCHES CLEAR, END TO END, FOR AMPHIBIAN AND REPTILE TRAVEL. THE OPEN SPACES SHALL BE STAGGERED MID LENGTH OF THE NEXT DOWN GRADIENT SOCK.
3. SECURE THE SOCK WITH 18-24" (45.7-61 CM) STAKES EVERY 3-4' (0.9 -1.2 M) AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE SOCK LEAVING AT LEAST 2-3" (5-7.5 CM) OF STAKE EXTENDING ABOVE THE SOCK. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.

COMPOST FILTER SOCK SEDIMENTATION CONTROL BARRIER

3 / EC-2 — SCALE : N.T.S.

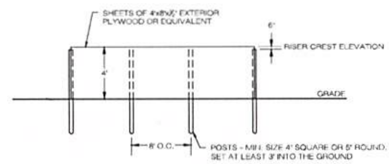


NOTES:

1. CONSTRUCT TEMPORARY SEDIMENT TRAP BERMS AND SIDEWALLS PER THE INFILTRATION BASIN DETAIL.
2. PERVIOUS STONE DIKE SHALL BE CONSTRUCTED OF CT DOT MODIFIED RIP-RAP WITH #3 STONE ON FACE.
3. SEDIMENT TRAP BAFFLES SHALL BE INSTALLED AS SHOWN ON EC-1 AND EC-2.
4. SEE TST SIZING TABLE FOR WET AND DRY STORAGE VOLUMES.

TEMPORARY SEDIMENT TRAP

4 / EC-2 — SCALE : N.T.S.



SEDIMENT TRAP BAFFLE

5 / EC-2 — SCALE : N.T.S.

TEMPORARY SEDIMENT BASIN SIZING TABLE

NAME	DRAINAGE AREA (AC)	SEDIMENT VOLUME/ACRE AREA (CY)	REQ. VOLUME (CY)	REQ. WET VOLUME (CY)	PROP. BTM. ELEV. (FT)	PROP. STONE DIKE BTM. ELEV. (FT)	PROP. WEIR CREST ELEV. (FT)	PROP. TOP ELEV. (FT)	WET VOL. PROVIDED (CY)	TOTAL VOL. PROVIDED. (CY)
TST-1	4.98 AC	134 CYD	659.28 CY	329.64 CYD	628.0'	630.5'	631.5'	632.0'	472.63 CY	722.68 CY
TST-2	1.53 AC	134 CYD	206.32 CY	103.16 CYD	635.0'	636.5'	637.5'	638.0'	129.90 CY	248.43 CY

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH

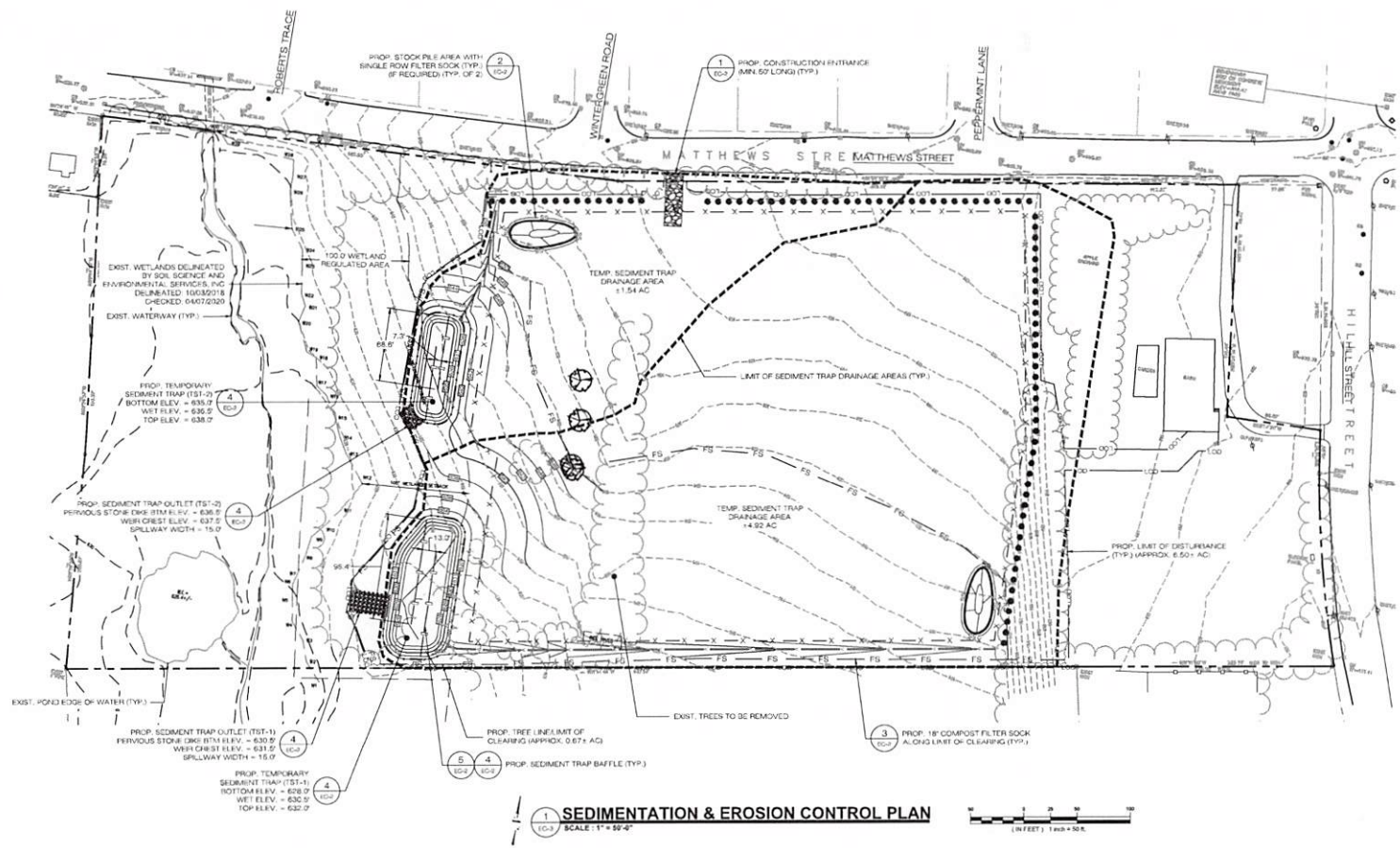
DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:

SEDIMENTATION & EROSION CONTROL DETAILS

SHEET NUMBER:

EC-2



1 EC-3 SEDIMENTATION & EROSION CONTROL PLAN

SCALE : 1" = 50'-0"

(IN FEET) 1 inch = 50 ft.

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH

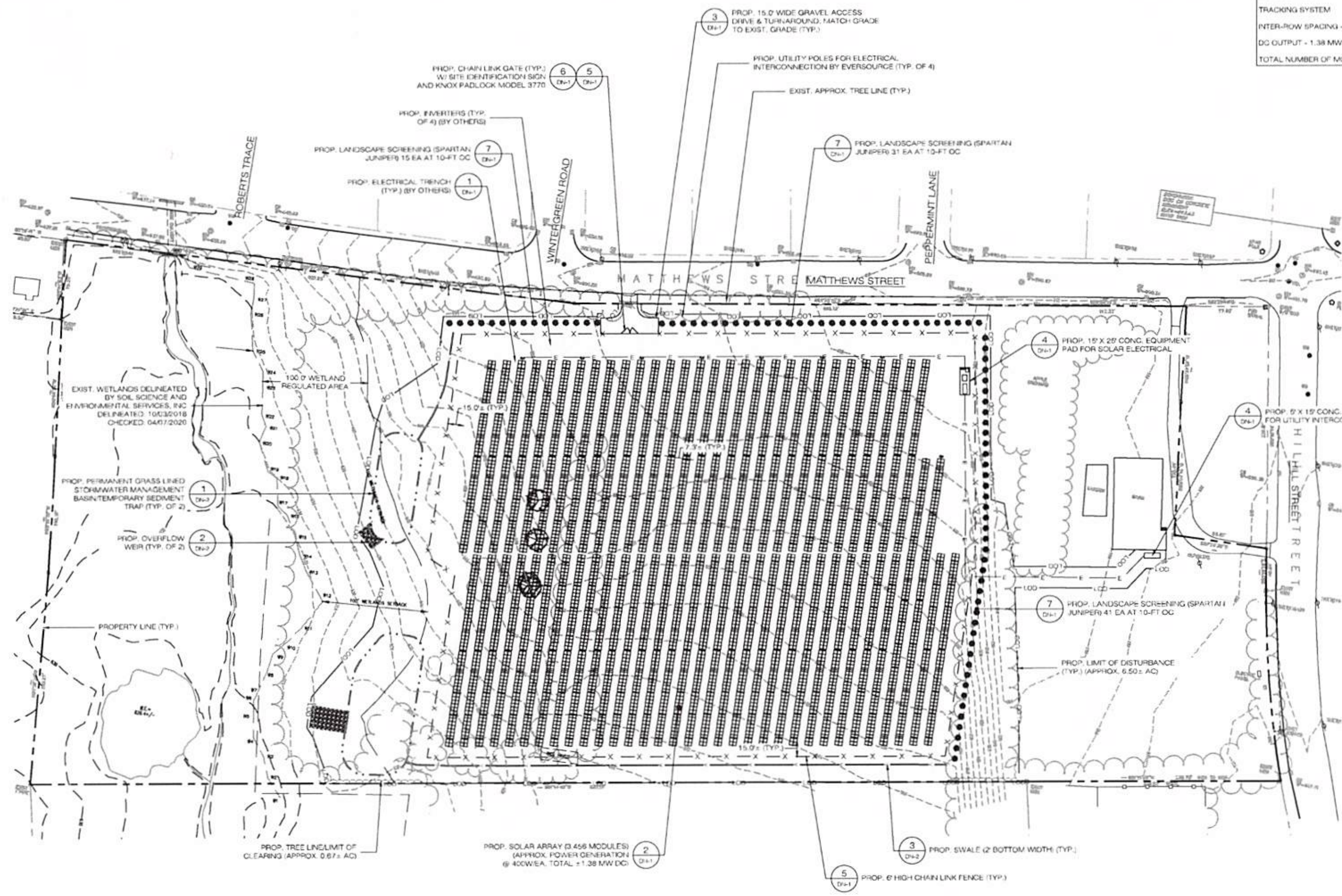
DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:

SEDIMENTATION & EROSION CONTROL PLAN

SHEET NUMBER:

EC-3



1 SP-1 **SITE & UTILITY PLAN**
SCALE: 1" = 40'-0"

(IN FEET) 1 inch = 40 ft.

DESIGN TABLE
MODULE MODEL - JINKO JKM400M-72HL-TV
TRACKING SYSTEM
INTER-ROW SPACING - 7.3± FEET
DC OUTPUT - 1.38 MW
TOTAL NUMBER OF MODULES - 3,456 MODULES

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

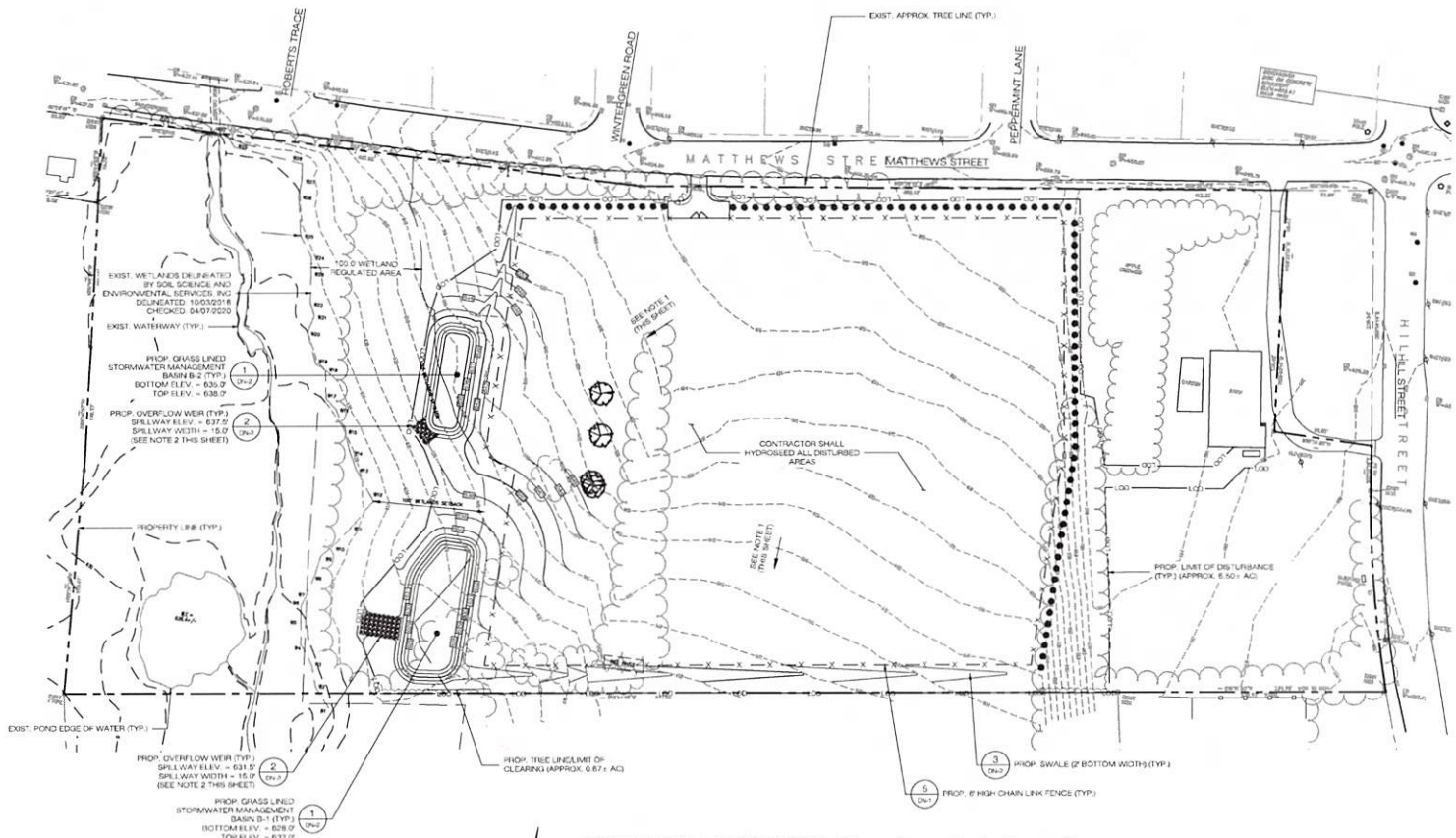
SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH
DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:
SITE & UTILITY PLAN

SHEET NUMBER:
SP-1



GRADING & DRAINAGE PLAN

SCALE : 1" = 50'-0"

(IN FEET) 1 inch = 50 ft.

NOTES:
1. GRADE/SHAPE DISTURBED AREA TO MATCH EXISTING GRADE AND FLOW TOWARDS PROP. GRASS LINED STORMWATER MANAGEMENT BASINS & SWALES.
2. CONTRACTOR SHALL REPLACE TEMPORARY SEDIMENT TRAP OUTLET WITH RIP-RAP OVERFLOW WEIR UPON THE SITE OR DRAINAGE AREA BEING DEEMED STABILIZED PER THE SWPCP.

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	06/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

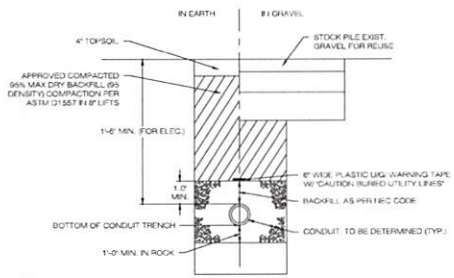
APT FILING NUMBER: CT562100

DRAWN BY: CSH

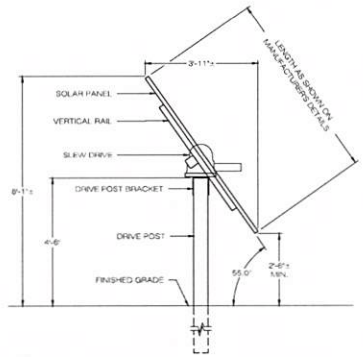
DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE: GRADING & DRAINAGE PLAN

SHEET NUMBER: GP-1

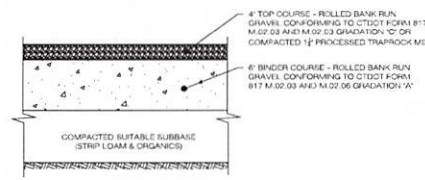


1 DN-1 **ELECTRICAL TRENCH DETAIL**
SCALE : N.T.S.



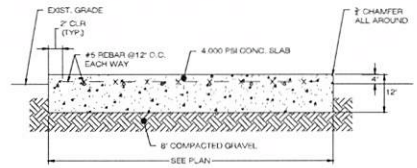
NOTES:
SEE MANUFACTURER'S DETAIL SHEETS FOR ADDITIONAL INFORMATION REGARDING RACKING SYSTEM REQUIREMENTS AND INSTALLATION PROCEDURES. RACKING SYSTEM TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.

2 DN-1 **TYPICAL TRACKER POST MOUNTED RACKING SYSTEM**
SCALE : N.T.S.

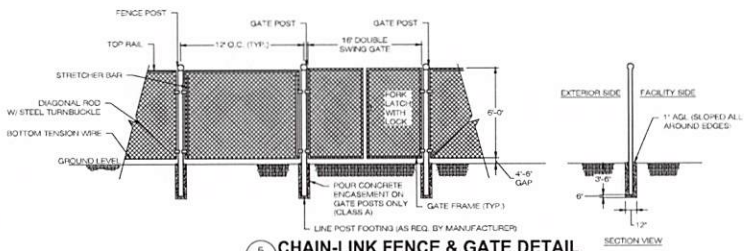


NOTES:
1. SUBBASE MAY CONSIST OF NATIVE MATERIALS IF FOUND ACCEPTABLE BY THE ENGINEER. SUBBASE TO BE COMPACTED TO 95% MAX DRY DENSITY.
2. SUBBASE IS TO BE FREE FROM DEBRIS AND UNSUITABLE MATERIALS.

3 DN-1 **GRAVEL ACCESS DRIVE SECTION**
SCALE : N.T.S.



4 DN-1 **CONCRETE EQUIPMENT PAD**
SCALE : N.T.S.



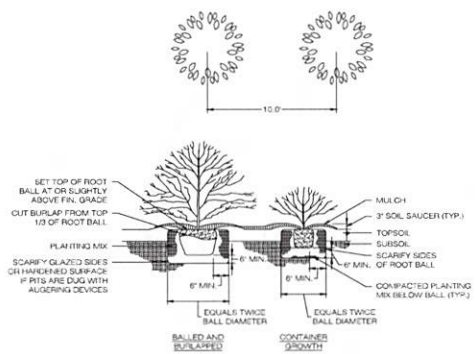
5 DN-1 **CHAIN-LINK FENCE & GATE DETAIL**
SCALE : N.T.S.

BRISTOL SOLAR FARM

IN CASE OF EMERGENCY CALL T.B.D.

NOTES:
EMERGENCY CALL NUMBER TO BE PROVIDED ONCE DETERMINED.

6 DN-1 **NOTIFICATION SIGN DETAIL**
SCALE : N.T.S.



NOTES:
IN AREAS OF MASS PLANTINGS, CONTINUOUSLY EXCAVATE AND MULCH ENTIRE BED.

7 DN-1 **TYPICAL PLANTING DETAIL**
SCALE : N.T.S.

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	06/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

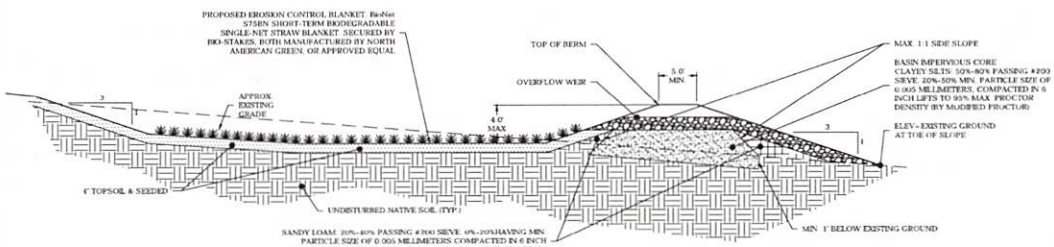
SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH
DATE: 05/21/20 CHECKED BY: BJP

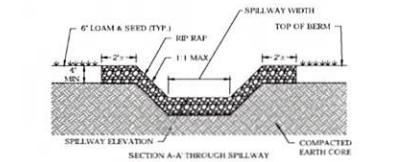
SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
DN-1

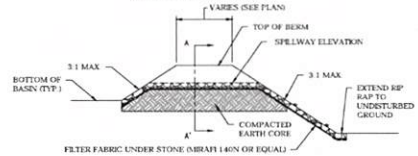


NOTES:
- SEED MIX TO BE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES ON THE BOTTOM OF THE BASIN AND NEW ENGLAND EROSION/RESTORATION MIX FOR DRY SITES ON THE SIDE SLOPES.
- FOR CONVERTING TST TO INFILTRATION BASIN, REMOVE BAFFLES, CLEAN OUT SEDIMENT, RESHAPE AS REQUIRED. RECONSTRUCT OUTLET WEIR INCLUDING ADDITIONAL IMPERVIOUS CORE AND RESEEDING.
- INSPECT AND CLEAN PIPES PRIOR TO INSTALLING PERMANENT OUTLET.

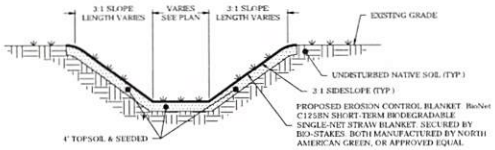
1 GRASS LINED INFILTRATION BASIN
DN-2 SCALE : N.T.S.



SECTION A-A' THROUGH SPILLWAY



2 OVERFLOW WEIR DETAIL
DN-2 SCALE : N.T.S.



NOTES:
1. SEED MIX TO BE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES ON THE BOTTOM OF THE BASIN AND NEW ENGLAND EROSION/RESTORATION MIX FOR DRY SITES ON THE SIDE SLOPES.

3 GRASS LINED SWALE
DN-2 SCALE : N.T.S.

Ernst Conservation Seeds
8884 Mercer Pike
Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

Date: May 17, 2020

Showy Northeast Native Wildflower & Grass Mix - ERNMX-153

	Botanical Name	Common Name	Price/lb
30.50 %	*Schizachyrium scoparium, 'Camper'*	Little Bluestem, 'Camper'	13.61
30.00 %	*Bouteloua curtipendula, Butte*	Sideoats Grama, Butte	11.51
15.00 %	*Elymus virginicus, PA Ecotype*	Virginia Wildrye, PA Ecotype	6.19
4.00 %	*Echinacea purpurea*	Purple Coneflower	39.60
3.50 %	*Chamaecrista fasciculata, PA Ecotype*	Partridge Pea, PA Ecotype	6.60
3.00 %	*Coreopsis lanceolata*	Lanceleaf Coreopsis	26.40
3.00 %	*Rudbeckia hirta, Coastal Plain NC Ecotype*	Blackeyed Susan, Coastal Plain NC Ecotype	22.00
2.00 %	*Helianthus helianthoides, PA Ecotype*	Oxeye Sunflower, PA Ecotype	30.80
1.20 %	*Liatris spicata*	Marsh Blazing Star	231.00
1.00 %	*Tradescantia ohiensis, PA Ecotype*	Ohio Spiderwort, PA Ecotype	231.00
0.70 %	*Pycnanthemum tenuifolium*	Narrowleaf Mountainmint	154.00
0.70 %	*Senna hebecarpa, VA & WV Ecotype*	Wild Senna, VA & WV Ecotype	26.40
0.50 %	*Asclepias tuberosa*	Butterfly Milkweed	396.00
0.50 %	*Baptisia australis, Southern WV Ecotype*	Blue False Indigo, Southern WV Ecotype	88.00
0.50 %	*Zizia aurea*	Golden Alexanders	264.00
0.40 %	*Aster laevis, NY Ecotype*	Smooth Blue Aster, NY Ecotype	396.00
0.40 %	*Aster novae-angliae, PA Ecotype*	New England Aster, PA Ecotype	396.00
0.40 %	*Aster oblongifolius, PA Ecotype*	Aromatic Aster, PA Ecotype	396.00
0.40 %	*Aster prenanthoides, PA Ecotype*	Zigzag Aster, PA Ecotype	396.00
0.40 %	*Eupatorium coelestinum, VA Ecotype*	Mistflower, VA Ecotype	281.60
0.40 %	*Monarda fistulosa, Fort Indiantown Gap-PA Ecotype*	Wild Bergamot, Fort Indiantown Gap-PA Ecotype	105.60
0.40 %	*Solidago nemoralis, PA Ecotype*	Gray Goldenrod, PA Ecotype	396.00
0.30 %	*Penstemon digitalis, PA Ecotype*	Tall White Beardtongue, PA Ecotype	176.00
0.20 %	*Coreopsis tripteris, PA Ecotype*	Tall Coreopsis, PA Ecotype	308.00
0.15 %	*Geum canadense, PA Ecotype*	White Avens, PA Ecotype	176.00
0.15 %	*Oenothera fruticosa var. fruticosa*	Sundrops	330.00
0.15 %	*Penstemon hirsutus*	Hairy Beardtongue	440.00
0.15 %	*Rudbeckia fulgida var. fulgida, Northern VA Ecotype*	Orange Coneflower, Northern VA Ecotype	352.00
0.10 %	*Senna marilandica*	Maryland Senna	26.40
0.10 %	*Solidago odora, PA Ecotype*	Leanice Scented Goldenrod, PA Ecotype	352.00
100.00 %		**Mix Price/lb Bulk:**	**$34.79**

Seeding Rate: 20 lb per acre, or 1/2 lb per 1,000 sq ft

Pollinator Favorites; Uplands & Meadows

The native wildflowers and some grasses provide a gorgeous display of color from spring to fall. Designed for upland sites with well-drained soils and full sun to semi-shaded areas; ideal for attracting butterflies and hummingbirds. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

4 SEED MIX
DN-2 SCALE : N.T.S.

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)663-1897
WWW.ALLPOINTSTECH.COM FAX: (860)663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	09/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

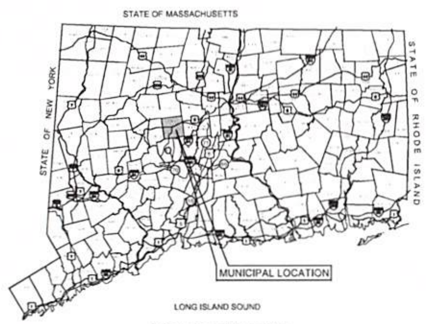
SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH
DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
DN-2



STATE OF CONNECTICUT

SUNJET, LLC

"BRISTOL SOLAR"

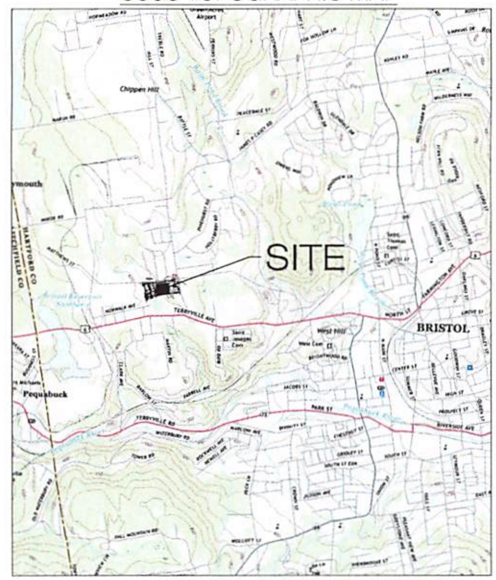
MATTHEWS ST. & HILL ST.
BRISTOL, CT 06010

LIST OF DRAWINGS

SITE INFORMATION

SITE NAME:	"BRISTOL SOLAR"
LOCATION:	MATTHEWS ST. & HILL ST. BRISTOL, CT 06010
SITE TYPE/DESCRIPTION:	ADD (1) GROUND MOUNTED SOLAR PANEL ARRAY W/ ASSOCIATED EQUIPMENT.
PROPERTY OWNER:	LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO 481 MATTHEWS STREET BRISTOL, CT 06010
APPLICANT:	SUNJET ENERGY LLC 28 POCOTOPAUG DRIVE EAST HAMPTON, CT 06424
ENGINEER CONTACT:	BRADLEY J. PARSONS, P.E. (860) 663-1697 x208
LATITUDE:	41°41'03.75" N
LONGITUDE:	72°58'29.78" W
ELEVATION:	662'± AMSL
MBLU:	66-255A
ZONE:	R-15
EXISTING LAND USE:	AGRICULTURAL
PROPOSED LAND USE:	COMMUNICATIONS, TRANSPORTATION AND PUBLIC UTILITY USES - LARGE SCALE GROUND MOUNTED SOLAR PHOTOVOLTAIC INSTALLATIONS
TOTAL SITE ACREAGE:	11.94± AC.
TOTAL DISTURBED AREA:	6.50± AC.
APPROX. VOLUME OF CUT:	3,995± CY
APPROX. VOLUME OF FILL:	0± CY
APPROX. NET VOLUME:	3,995± CY OF CUT

USGS TOPOGRAPHIC MAP



SCALE : 1" = 2000'± SOURCE: USGS 7.5 BRISTOL QUADRANGLE, CT 2018

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH

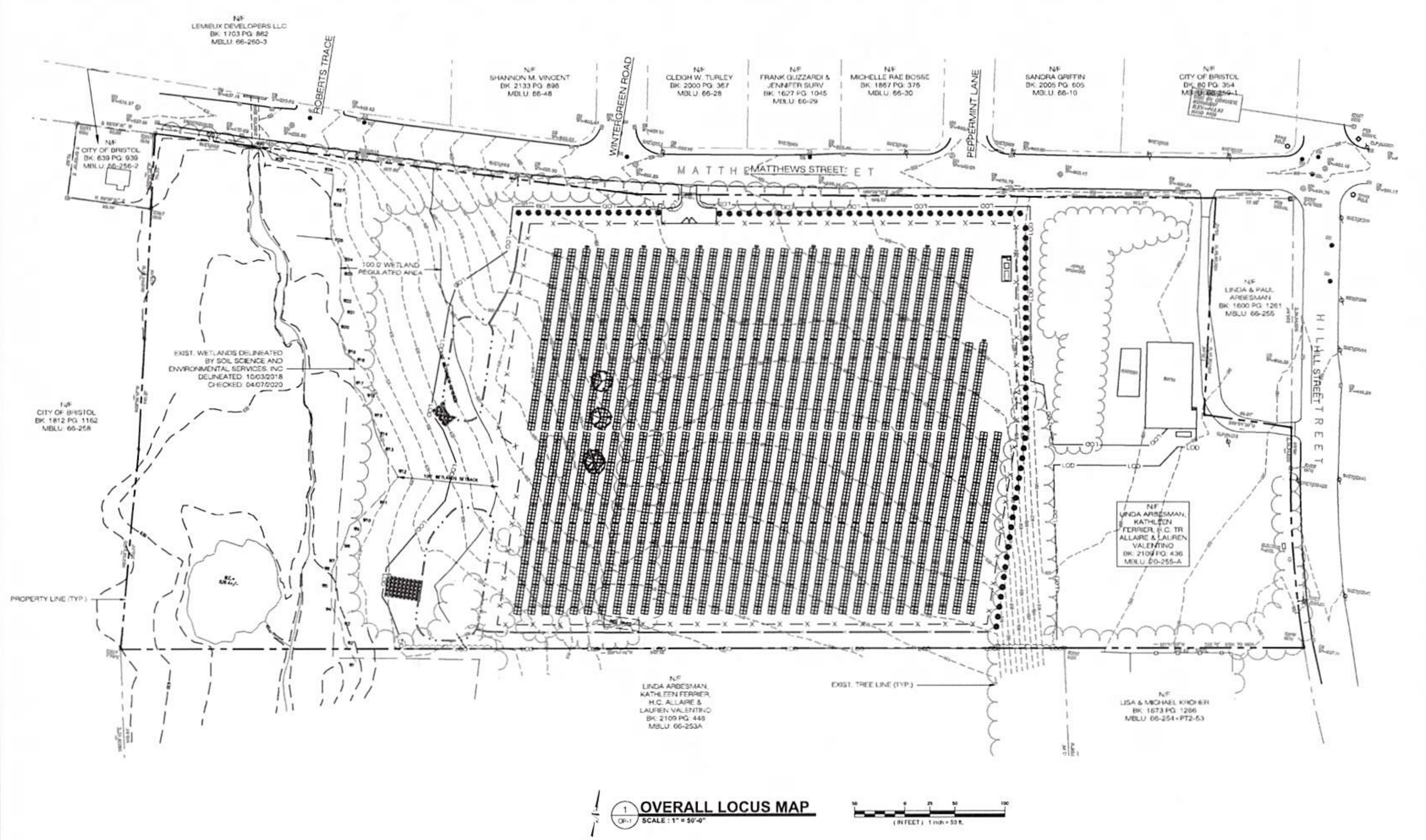
DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:

TITLE SHEET & INDEX

SHEET NUMBER:

T-1



1 OP-1 **OVERALL LOCUS MAP**
SCALE : 1" = 50'-0"

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010
APT FILING NUMBER: CT562100
DRAWN BY: CSH
DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:
ABUTTERS MAP

SHEET NUMBER:
AB-1

GENERAL NOTES

1. ALL CONSTRUCTION SHALL COMPLY WITH PROJECT DEVELOPER STANDARDS, CITY OF BRISTOL STANDARDS, CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARDS AND SPECIFICATIONS IN THE ABOVE REFERENCED INCREASING HIERARCHY. IF SPECIFICATIONS ARE IN CONFLICT, THE MORE STRINGENT SPECIFICATION SHALL APPLY.
2. IF NO PROJECT CONSTRUCTION SPECIFICATION PACKAGE IS PROVIDED BY THE PROJECT DEVELOPER OR THEIR REPRESENTATIVE, THE CONTRACTOR SHALL COMPLY WITH THE MANUFACTURE, CITY OF BRISTOL, OR CONNECTICUT DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS. AND BE IN ACCORDANCE WITH ALL APPLICABLE OSHA, FEDERAL, STATE AND LOCAL REGULATIONS.
3. THE PROJECT DEVELOPER IS RESPONSIBLE FOR OBTAINING ALL NECESSARY ZONING AND STORMWATER PERMITS REQUIRED BY GOVERNMENT AGENCIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL OBTAIN ALL CITY OF BRISTOL CONSTRUCTION PERMITS. THE CONTRACTOR SHALL POST ALL BONDS, PAY ALL FEES, PROVIDE PROOF OF INSURANCE AND PROVIDE TRAFFIC CONTROL NECESSARY FOR THIS WORK.
4. REFER TO PLANS, DETAILS AND REPORTS PREPARED BY ALL-POINTS TECHNOLOGY CORPORATION FOR ADDITIONAL INFORMATION. THE CONTRACTOR SHALL VERIFY ALL SITE CONDITIONS IN THE FIELD AND CONTACT THE PROJECT DEVELOPER IF THERE ARE ANY QUESTIONS OR CONFLICTS REGARDING THE CONSTRUCTION DOCUMENTS AND/OR FIELD CONDITIONS SO THAT APPROPRIATE REVISIONS CAN BE MADE PRIOR TO BIDDING/CONSTRUCTION. ANY CONFLICT BETWEEN THE DRAWINGS AND SPECIFICATIONS SHALL BE CONFIRMED WITH THE PROJECT DEVELOPERS CONSTRUCTION MANAGER PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL PRODUCTS, MATERIALS PER PLANS AND SPECIFICATIONS TO THE PROJECT DEVELOPER FOR REVIEW AND APPROVAL PRIOR TO FABRICATION OR DELIVERY TO THE SITE. ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.
6. SHOULD ANY UNKNOWN OR INCORRECTLY LOCATED EXISTING PIPING OR OTHER UTILITY BE UNCOVERED DURING EXCAVATION, CONSULT THE PROJECT DEVELOPER IMMEDIATELY FOR DIRECTIONS BEFORE PROCEEDING FURTHER WITH WORK IN THIS AREA.
7. DO NOT INTERRUPT EXISTING UTILITIES SERVICING FACILITIES OCCUPIED AND USED BY THE PROJECT DEVELOPER OR OTHERS DURING OCCUPIED HOURS, EXCEPT WHEN SUCH INTERRUPTIONS HAVE BEEN AUTHORIZED IN WRITING BY THE PROJECT DEVELOPER AND THE LOCAL MUNICIPALITY. INTERRUPTIONS SHALL ONLY OCCUR AFTER ACCEPTABLE TEMPORARY SERVICE HAS BEEN PROVIDED.
8. THE CONTRACT LIMIT IS THE PROPERTY LINE UNLESS OTHERWISE SPECIFIED OR SHOWN ON THE CONTRACT DRAWINGS.
9. THE CONTRACTOR SHALL ABIDE BY ALL OSHA, FEDERAL, STATE AND LOCAL REGULATIONS WHEN OPERATING CRANES, BOOMS, HOISTS, ETC. IN CLOSE PROXIMITY TO OVERHEAD ELECTRIC LINES. IF CONTRACTOR MUST OPERATE EQUIPMENT CLOSE TO ELECTRIC LINES, CONTACT POWER COMPANY TO MAKE ARRANGEMENTS FOR PROPER SAFEGUARDS. ANY UTILITY COMPANY FEES SHALL BE PAID FOR BY THE CONTRACTOR.
10. THE CONTRACTOR SHALL COMPLY WITH OSHA CFR 29 PART 1926 FOR EXCAVATION TRENCHING AND TRENCH PROTECTION REQUIREMENTS.
11. THE ENGINEER IS NOT RESPONSIBLE FOR SITE SAFETY MEASURES TO BE EMPLOYED DURING CONSTRUCTION. THE ENGINEER HAS NO CONTRACTUAL DUTY TO CONTROL THE SAFEST METHODS OR MEANS OF THE WORK, JOB SITE RESPONSIBILITIES, SUPERVISION OF PERSONNEL OR TO SUPERVISE SAFETY AND DO NOT VOLUNTARILY ASSUME ANY SUCH DUTY OR RESPONSIBILITY.
12. THE CONTRACTOR SHALL RESTORE ANY DRAINAGE STRUCTURE, PIPE, CONDUIT, PAVEMENT, CURBING, SIDEWALKS, LANDSCAPED AREAS OR SIGNAGE DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION OR BETTER, AS APPROVED BY THE PROJECT DEVELOPER OR CITY OF BRISTOL.
13. THE CONTRACTOR SHALL PROVIDE AS-BUILT RECORDS OF ALL CONSTRUCTION (INCLUDING UNDERGROUND UTILITIES) TO THE PROJECT DEVELOPER AT THE END OF CONSTRUCTION.
14. ALTERNATIVE METHODS AND PRODUCTS, OTHER THAN THOSE SPECIFIED, MAY BE USED IF REVIEWED AND APPROVED BY THE PROJECT DEVELOPER, ENGINEER, AND APPROPRIATE REGULATORY AGENCY PRIOR TO INSTALLATION DURING THE BIDDING/CONSTRUCTION PROCESS.
15. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE SYSTEMS HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE SYSTEMS ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE AND THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE SYSTEMS INCLUDING SERVICES. PRIOR TO DEMOLITION OR CONSTRUCTION, THE CONTRACTOR SHALL CONTACT "DIG SAFE" 72 HOURS BEFORE COMMENCEMENT OF WORK AT "811" AND VERIFY ALL UTILITY AND STORM DRAINAGE SYSTEM LOCATIONS.
16. NO CONSTRUCTION OR DEMOLITION SHALL BEGIN UNTIL APPROVAL OF THE FINAL PLANS IS GRANTED BY ALL GOVERNING AND REGULATORY AGENCIES.

SITE PLAN NOTES

1. THE SURVEY WAS PROVIDED BY DUFOUR SURVEYING, LLC DATED OCTOBER 30, 2018.
2. THERE ARE WETLANDS LOCATED ON THE SITE AS INDICATED ON THE PLANS. WETLAND BOUNDARIES WERE FLAGGED BY SOIL SCIENCE AND ENVIRONMENTAL SERVICES, INC AND LOCATED BY DUFOUR SURVEYING LLC IN OCTOBER 2018.
3. THERE WILL BE MINIMAL GRADING ON SITE IN THE AREAS OF THE MINOR CLEARING, TO ENSURE THAT PROPER DRAINAGE IS MAINTAINED.
4. THE CONTRACTOR SHALL FOLLOW THE RECOMMENDED SEQUENCE OF CONSTRUCTION NOTES PROVIDED ON THE EROSION CONTROL PLAN OR SUBMIT AN ALTERNATE PLAN FOR APPROVAL BY THE ENGINEER AND/OR PERMITTING AGENCIES PRIOR TO THE START CONSTRUCTION. ALLOW A MINIMUM OF 14 WORKING DAYS FOR REVIEW.
5. PROPER CONSTRUCTION PROCEDURES SHALL BE FOLLOWED ON ALL IMPROVEMENTS WITHIN THIS PARCEL SO AS TO PREVENT THE SILTING OF ANY WATERCOURSE OR BVWS IN ACCORDANCE WITH FEDERAL, STATE, AND LOCAL REGULATIONS. IN ADDITION, THE CONTRACTOR SHALL ADHERE TO "EROSION CONTROL PLAN" CONTAINED HEREIN. THE CONTRACTOR SHALL BE RESPONSIBLE TO POST ALL BONDS AS REQUIRED BY GOVERNMENT AGENCIES WHICH WOULD GUARANTEE THE PROPER IMPLEMENTATION OF THE PLAN.
6. ALL SITE WORK, MATERIALS OF CONSTRUCTION, AND CONSTRUCTION METHODS FOR EARTHWORK AND STORM DRAINAGE WORK, SHALL CONFORM TO THE SPECIFICATIONS AND DETAILS AND APPLICABLE SECTIONS OF THE PROJECT SPECIFICATIONS MANUAL. OTHERWISE THIS WORK SHALL CONFORM TO THE STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION AND PROJECT GEOTECHNICAL REPORT IF THERE IS NO PROJECT SPECIFICATIONS MANUAL. ALL FILL MATERIAL UNDER STRUCTURES AND PAVED AREAS SHALL BE PER THE ABOVE STATED APPLICABLE SPECIFICATIONS, AND/OR PROJECT GEOTECHNICAL REPORT, AND SHALL BE PLACED IN ACCORDANCE WITH THE APPLICABLE SPECIFICATIONS UNDER THE SUPERVISION OF A QUALIFIED PROFESSIONAL ENGINEER. MATERIAL SHALL BE COMPACTED IN 8" LIFTS TO 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D 1557 AT 95% PERCENT OF OPTIMUM MOISTURE CONTENT.
7. ALL DISTURBANCE INCURRED TO PUBLIC, MUNICIPAL, COUNTY, STATE PROPERTY DUE TO CONSTRUCTION SHALL BE RESTORED TO ITS PREVIOUS CONDITION OR BETTER, TO THE SATISFACTION OF THE CITY OF BRISTOL AND STATE OF CONNECTICUT.
8. IF IMPACTED OR CONTAMINATED SOIL IS ENCOUNTERED BY THE CONTRACTOR, THE CONTRACTOR SHALL SUSPEND EXCAVATION WORK OF IMPACTED SOIL AND NOTIFY THE PROJECT DEVELOPER AND/OR PROJECT DEVELOPER'S ENVIRONMENTAL CONSULTANT PRIOR TO PROCEEDING WITH FURTHER WORK IN THE IMPACTED SOIL LOCATION UNTIL FURTHER INSTRUCTED BY THE PROJECT DEVELOPER AND/OR PROJECT DEVELOPER'S ENVIRONMENTAL CONSULTANT.

UTILITY NOTES

1. CONTRACTOR IS RESPONSIBLE FOR CONTACTING THE CITY OF BRISTOL TO SECURE CONSTRUCTION PERMITS AND FOR PAYMENT OF FEES FOR STREET CUTS AND CONNECTIONS TO EXISTING UTILITIES.
2. REFER TO DRAWINGS BY PROJECT DEVELOPER FOR THE ONSITE ELECTRICAL DRAWINGS AND INTERCONNECTION TO EXISTING ELECTRICAL GRID. SITE CONTRACTOR SHALL SUPPLY AND INSTALL PIPE ADAPTERS AS NECESSARY AT BUILDING CONNECTION POINT OR AT EXISTING UTILITY OR PIPE CONNECTION POINT. THESE DETAILS ARE NOT INCLUDED IN THESE PLANS.
3. UTILITY LOCATIONS AND PENETRATIONS ARE SHOWN FOR THE CONTRACTOR'S INFORMATION AND SHALL BE VERIFIED WITH THE ELECTRICAL ENGINEER AND THE PROJECT DEVELOPERS CONSTRUCTION MANAGER PRIOR TO THE START OF CONSTRUCTION.
4. THE CONTRACTOR SHALL VISIT THE SITE AND VERIFY THE ELEVATION AND LOCATION OF ALL UTILITIES BY VARIOUS MEANS PRIOR TO BEGINNING ANY EXCAVATION. TEST PITS SHALL BE DUG AT ALL LOCATIONS WHERE PROP. SANITARY SEWERS AND WHERE PROP. STORM PIPING WILL CROSS EXISTING UTILITIES, AND THE HORIZONTAL AND VERTICAL LOCATIONS OF THE UTILITIES SHALL BE DETERMINED. THE CONTRACTOR SHALL CONTACT THE PROJECT DEVELOPER IN THE EVENT OF ANY DISCOVERED OR UNFORESEEN CONFLICTS BETWEEN EXISTING AND PROPOSED SANITARY SEWERS, STORM PIPING AND UTILITIES SO THAT AN APPROPRIATE MODIFICATION MAY BE MADE.
5. UTILITY CONNECTION DESIGN AS REFLECTED ON THE PLAN MAY CHANGE SUBJECT TO UTILITY PROVIDER AND GOVERNING AUTHORITY STAFF REVIEW.
6. THE CONTRACTOR SHALL ENSURE THAT ALL UTILITY PROVIDERS AND GOVERNING AUTHORITY STANDARDS FOR MATERIALS AND CONSTRUCTION METHODS ARE MET. THE CONTRACTOR SHALL PERFORM PROPER COORDINATION WITH THE RESPECTIVE UTILITY PROVIDER.
7. THE CONTRACTOR SHALL ARRANGE FOR AND COORDINATE WITH THE RESPECTIVE UTILITY PROVIDERS FOR SERVICE INSTALLATIONS AND CONNECTIONS. THE CONTRACTOR SHALL COORDINATE WORK TO BE PERFORMED BY THE VARIOUS UTILITY PROVIDERS AND SHALL PAY ALL FEES FOR CONNECTIONS, DISCONNECTIONS, RELOCATIONS, INSPECTIONS, AND DEMOLITION UNLESS OTHERWISE STATED IN THE PROJECT SPECIFICATIONS MANUAL AND/OR GENERAL CONDITIONS OF THE CONTRACT.
8. ALL EXISTING PAVEMENT WHERE UTILITY PIPING IS TO BE INSTALLED SHALL BE SAW CUT. AFTER UTILITY INSTALLATION IS COMPLETED, THE CONTRACTOR SHALL INSTALL TEMPORARY AND/OR PERMANENT PAVEMENT REPAIR AS DETAILED ON THE DRAWINGS OR AS REQUIRED BY THE CITY OF BRISTOL.
9. ALL PIPES SHALL BE LAID ON STRAIGHT ALIGNMENTS AND EVEN GRADES USING A PIPE LASER OR OTHER ACCURATE METHOD.
10. RELOCATION OF UTILITY PROVIDER FACILITIES, SUCH AS POLES, SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF THE UTILITY PROVIDER.
11. THE CONTRACTOR SHALL COMPACT PIPE BACKFILL IN 8" LIFTS ACCORDING TO THE PIPE BEDDING DETAILS. TRENCH BOTTOM SHALL BE STABLE IN HIGH GROUNDWATER AREAS. A PIPE FOUNDATION SHALL BE USED PER THE TRENCH DETAILS AND IN AREAS OF ROCK EXCAVATION.
12. CONTRACTOR TO PROVIDE STEEL SLEEVES AND ANNULAR SPACE SAND FILL FOR UTILITY PIPE AND CONDUIT CONNECTIONS UNDER FOOTINGS.
13. ALL UTILITY CONSTRUCTION IS SUBJECT TO INSPECTION FOR APPROVAL PRIOR TO BACKFILLING, IN ACCORDANCE WITH THE APPROPRIATE UTILITY PROVIDER REQUIREMENTS.
14. A ONE-FOOT MINIMUM VERTICAL CLEARANCE BETWEEN WATER, GAS, ELECTRICAL, AND TELEPHONE LINES AND STORM PIPING SHALL BE PROVIDED. A SIX-INCH MINIMUM CLEARANCE SHALL BE MAINTAINED BETWEEN STORM PIPING AND SANITARY SEWER. A 6-INCH TO 18-INCH VERTICAL CLEARANCE BETWEEN SANITARY SEWER PIPING AND STORM PIPING SHALL REQUIRE CONCRETE ENCASEMENT OF THE PROP. SANITARY PIPING.
15. THE CONTRACTOR SHALL RESTORE ANY UTILITY STRUCTURE, PIPE, CONDUIT, PAVEMENT, CURBING, SIDEWALKS, DRAINAGE STRUCTURE, SWALE OR LANDSCAPED AREAS DISTURBED DURING CONSTRUCTION, TO THEIR ORIGINAL CONDITION OR BETTER TO THE SATISFACTION OF THE PROJECT DEVELOPER AND CITY OF BRISTOL.
16. INFORMATION ON EXISTING UTILITIES AND STORM DRAINAGE HAS BEEN COMPILED FROM AVAILABLE INFORMATION INCLUDING UTILITY PROVIDER AND MUNICIPAL RECORD MAPS AND/OR FIELD SURVEY, AND IS NOT GUARANTEED CORRECT OR COMPLETE. UTILITIES AND STORM DRAINAGE ARE SHOWN TO ALERT THE CONTRACTOR TO THEIR PRESENCE. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR DETERMINING ACTUAL LOCATIONS AND ELEVATIONS OF ALL UTILITIES AND STORM DRAINAGE INCLUDING SERVICES. CONTACT "DIG SAFE" AT 811 72 HOURS PRIOR TO CONSTRUCTION AND VERIFY ALL UNDERGROUND AND OVERHEAD UTILITY AND STORM DRAINAGE LOCATIONS. THE CONTRACTOR SHALL EMPLOY THE USE OF A UTILITY LOCATING COMPANY TO PROVIDE SUBSURFACE UTILITY ENGINEERING CONSISTING OF DESIGNATING UTILITIES AND STORM PIPING ON PRIVATE PROPERTY WITHIN THE CONTRACT LIMIT AND CONSISTING OF DESIGNATING AND LOCATING WHERE PROP. UTILITIES AND STORM PIPING CROSS EXISTING UTILITIES AND STORM PIPING WITHIN THE CONTRACT LIMITS.
17. THE CONTRACTOR SHALL ARRANGE AND COORDINATE WITH UTILITY PROVIDERS FOR WORK TO BE PERFORMED BY UTILITY PROVIDERS. THE CONTRACTOR SHALL PAY ALL UTILITY FEES UNLESS OTHERWISE STATED IN THE PROJECT SPECIFICATION MANUAL AND GENERAL CONDITIONS, AND REPAIR PAVEMENTS AS NECESSARY.
18. ELECTRIC DRAWINGS AND REQUIREMENTS ARE NOT INCLUDED AS PART OF THIS DRAWING SET AND SHOULD BE OBTAINED FROM THE PROJECT DEVELOPER.
19. ALTERNATIVE METHODS AND PRODUCTS OTHER THAN THOSE SPECIFIED MAY BE USED IF REVIEWED AND APPROVED BY THE PROJECT DEVELOPER, ENGINEER, AND APPROPRIATE REGULATORY AGENCIES PRIOR TO INSTALLATION.
20. THE CONTRACTOR SHALL MAINTAIN ALL FLOWS AND UTILITY CONNECTIONS TO EXISTING BUILDINGS WITHOUT INTERRUPTION UNLESS/UNTIL AUTHORIZED TO DISCONNECT BY THE PROJECT DEVELOPER, CITY OF BRISTOL, UTILITY PROVIDERS AND GOVERNING AUTHORITIES.

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH

DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:

SITE NOTES

SHEET NUMBER:

GN-1

EROSION CONTROL NOTES

EROSION AND SEDIMENT CONTROL PLAN NOTES

1. THE CONTRACTOR SHALL CONSTRUCT ALL SEDIMENT AND EROSION CONTROLS IN ACCORDANCE WITH THE 2002 CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL, LATEST EDITION, IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, AND AS DIRECTED BY THE TOWN OF BRISTOL PERMITTEE AND/OR SWPCP MONITOR. ALL PERIMETER SEDIMENTATION AND EROSION CONTROL MEASURES SHALL BE INSTALLED PRIOR TO THE START OF CLEARING AND GRUBBING AND DEMOLITION OPERATIONS.

2. THESE DRAWINGS ARE ONLY INTENDED TO DESCRIBE THE SEDIMENT AND EROSION CONTROL MEASURES FOR THIS SITE. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHOWN ON THE EROSION & SEDIMENT CONTROL PLAN ARE SHOWN IN A GENERAL SIZE AND LOCATION ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT ALL EROSION CONTROL MEASURES ARE CONFIGURED AND CONSTRUCTED IN A MANNER THAT WILL MINIMIZE EROSION OF SOILS AND PREVENT THE TRANSPORT OF SEDIMENTS AND OTHER POLLUTANTS TO STORM DRAINAGE SYSTEMS AND/OR WATERCOURSES. ACTUAL SITE CONDITIONS OR SEASONAL AND CLIMATIC CONDITIONS MAY WARRANT ADDITIONAL CONTROLS OR CONFIGURATIONS, AS REQUIRED, AND AS DIRECTED BY THE PERMITTEE AND/OR SWPCP MONITOR. SEE SEDIMENT AND EROSION CONTROL DETAILS AND SUGGESTED CONSTRUCTION SEQUENCE FOR MORE INFORMATION. REFER TO SITE PLAN FOR GENERAL INFORMATION AND OTHER CONTRACT PLANS FOR APPROPRIATE INFORMATION.

3. A BOND OR LETTER OF CREDIT MAY BE REQUIRED TO BE POSTED WITH THE GOVERNING AUTHORITY FOR THE EROSION CONTROL INSTALLATION AND MAINTENANCE.

4. THE CONTRACTOR SHALL APPLY THE MINIMUM EROSION & SEDIMENT CONTROL MEASURES SHOWN ON THE PLAN IN CONJUNCTION WITH CONSTRUCTION SEQUENCING, SUCH THAT ALL ACTIVE WORK ZONES ARE PROTECTED. ADDITIONAL AND/OR ALTERNATIVE SEDIMENT AND EROSION CONTROL MEASURES MAY BE INSTALLED DURING THE CONSTRUCTION PERIOD IF FOUND NECESSARY BY THE CONTRACTOR, OWNER, SITE ENGINEER, MUNICIPAL OFFICIALS, OR ANY GOVERNING AGENCY. THE CONTRACTOR SHALL CONTACT THE OWNER AND APPROPRIATE GOVERNING AGENCIES FOR APPROVAL IF ALTERNATIVE CONTROLS OTHER THAN THOSE SHOWN ON THE PLANS ARE PROPOSED BY THE CONTRACTOR.

5. THE CONTRACTOR SHALL TAKE EXTREME CARE DURING CONSTRUCTION SO AS NOT TO DISTURB UNPROTECTED WETLAND AREAS OR INSTALLED SEDIMENTATION AND EROSION CONTROL MEASURES. THE CONTRACTOR SHALL INSPECT ALL SEDIMENT AND EROSION CONTROLS WEEKLY AND WITHIN 24 HOURS OF A STORM WITH A RAINFALL AMOUNT OF 0.25 INCHES OR GREATER TO VERIFY THAT THE CONTROLS ARE OPERATING PROPERLY AND MAKE REPAIRS AS NECESSARY IN A TIMELY MANOR.

6. THE CONTRACTOR SHALL KEEP A SUPPLY OF EROSION CONTROL MATERIAL (SILT FENCE, COMPOST FILTER SOCK, EROSION CONTROL BLANKET, ETC.) ON-SITE FOR PERIODIC MAINTENANCE AND EMERGENCY REPAIRS.

7. ALL FILL MATERIAL PLACED ADJACENT TO ANY WETLAND AREA SHALL BE GOOD QUALITY, WITH LESS THAN 5% FINES PASSING THROUGH A #200 SIEVE (BANK RUN), SHALL BE PLACED IN MAXIMUM ONE FOOT LIFTS, AND SHALL BE COMPACTED TO 95% MAX. DRY DENSITY MODIFIED PROCTOR OR AS SPECIFIED IN THE CONTRACT SPECIFICATIONS.

8. PROTECT EXISTING TREES THAT ARE TO BE SAVED BY FENCING, ORANGE SAFETY FENCE, CONSTRUCTION TAPE, OR EQUIVALENT FENCING/TAPE. ANY LIMB TRIMMING SHOULD BE DONE AFTER CONSULTATION WITH AN ARBORIST AND BEFORE CONSTRUCTION BEGINS IN THAT AREA. FENCING SHALL BE MAINTAINED AND REPAIRED DURING CONSTRUCTION.

9. CONSTRUCTION ENTRANCES (ANTI-TRACKING PADS) SHALL BE INSTALLED PRIOR TO ANY SITE EXCAVATION OR CONSTRUCTION ACTIVITY AND SHALL BE MAINTAINED THROUGHOUT THE DURATION OF ALL CONSTRUCTION IF REQUIRED. THE LOCATION OF THE TRACKING PADS MAY CHANGE AS VARIOUS PHASES OF CONSTRUCTION ARE COMPLETED. CONTRACTOR SHALL ENSURE THAT ALL VEHICLES EXITING THE SITE ARE PASSING OVER THE ANTI-TRACKING PADS PRIOR TO EXISTING.

10. ALL CONSTRUCTION SHALL BE CONTAINED WITHIN THE LIMIT OF DISTURBANCE, WHICH SHALL BE MARKED WITH SILT FENCE, SAFETY FENCE, HAY BALES, RIBBONS, OR OTHER MEANS PRIOR TO CLEARING. CONSTRUCTION ACTIVITY SHALL REMAIN ON THE UPHILL SIDE OF THE SEDIMENT BARRIER UNLESS WORK IS SPECIFICALLY CALLED FOR ON THE DOWNHILL SIDE OF THE BARRIER.

11. NO CUT OR FILL SLOPES SHALL EXCEED 2:1 EXCEPT WHERE STABILIZED BY ROCK FACED EMBANKMENTS OR EROSION CONTROL BLANKETS. ALL SLOPES SHALL BE SEEDED AND BANKS WILL BE STABILIZED IMMEDIATELY UPON COMPLETION OF FINAL GRADING UNTIL TURF IS ESTABLISHED.

12. DIRECT ALL DEWATERING PUMP DISCHARGE TO A SEDIMENT CONTROL DEVICE THE GUIDE LINES WITHIN THE APPROVED LIMIT OF DISTURBANCE IF REQUIRED. DISCHARGE TO STORM DRAINS OR SURFACE WATERS FROM SEDIMENT CONTROLS SHALL BE CLEAR AND APPROVED BY THE PERMITTEE OR MUNICIPALITY.

13. THE CONTRACTOR SHALL MAINTAIN A CLEAN CONSTRUCTION SITE AND SHALL NOT ALLOW THE ACCUMULATION OF RUBBISH OR CONSTRUCTION DEBRIS ON THE SITE. PROPER SANITARY DEVICES SHALL BE MAINTAINED ON-SITE AT ALL TIMES AND SECURED APPROPRIATELY. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID THE SPILLAGE OF FUEL OR OTHER POLLUTANTS ON THE CONSTRUCTION SITE AND SHALL ADHERE TO ALL APPLICABLE POLICIES AND REGULATIONS RELATED TO SPILL PREVENTION AND RESPONSE/CONTAINMENT.

14. MINIMIZE LAND DISTURBANCES. SEED AND MULCH DISTURBED AREAS WITH TEMPORARY MIX AS SOON AS PRACTICABLE (2 WEEK MAXIMUM UNSTABILIZED PERIOD) USING PERENNIAL RYEGRASS AT 40 LBS PER ACRE. MULCH ALL CUT AND FILL SLOPES AND SWALES WITH LOOSE HAY AT A RATE OF 2 TONS PER ACRE. IF NECESSARY, REPLACE LOOSE HAY ON SLOPES WITH EROSION CONTROL BLANKETS OR JUTE CLOTH. MODERATELY GRADED AREAS, ISLANDS, AND TEMPORARY CONSTRUCTION STAGING AREAS MAY BE HYDROSEEDED WITH TACKIFIER.

15. SWEEP AFFECTED PORTIONS OF OFF SITE ROADS ONE OR MORE TIMES A DAY (OR LESS FREQUENTLY IF TRACKING IS NOT A PROBLEM) DURING CONSTRUCTION. FOR DUST CONTROL, PERIODICALLY MOISTEN EXPOSED SOIL SURFACES WITH WATER ON UNPAVED TRAVELWAYS TO KEEP THE TRAVELWAYS DAMP. CALCIUM CHLORIDE MAY ALSO BE APPLIED TO ACCESS ROADS. DUMP TRUCK LOADS EXITING THE SITE SHALL BE COVERED.

16. TURF ESTABLISHMENT SHALL BE PERFORMED OVER ALL DISTURBED SOIL UNLESS THE AREA IS UNDER ACTIVE CONSTRUCTION, IT IS COVERED IN STONE OR SCHEDULED FOR PAVING WITHIN 30 DAYS. TEMPORARY SEEDING OR NON-LIVING SOIL PROTECTION OF ALL EXPOSED SOILS AND SLOPES SHALL BE INITIATED WITHIN THE FIRST 7 DAYS OF SUSPENDING WORK IN AREAS TO BE LEFT LONGER THAN 30 DAYS.

17. MAINTAIN ALL PERMANENT AND TEMPORARY SEDIMENT CONTROL DEVICES IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD. UPON COMPLETION OF WORK SWEEP CONCRETE PADS, CLEAN THE STORMWATER MANAGEMENT SYSTEMS AND REMOVE ALL TEMPORARY SEDIMENT CONTROLS ONCE THE SITE IS FULLY STABILIZED AND APPROVAL HAS BEEN RECEIVED FROM PERMITTEE OR THE MUNICIPALITY.

18. SEEDING MIXTURES SHALL BE NEW ENGLAND SEMI-SHADE GRASS AND FORBS MIX (SEE SITE DETAILS SHEET DN-2), OR APPROVED EQUAL BY OWNER.

SEDIMENT & EROSION CONTROL NARRATIVE

1. THE PROJECT INVOLVES THE CONSTRUCTION OF A GROUND MOUNTED SOLAR PANEL FACILITY WITH ASSOCIATED EQUIPMENT, INCLUDING THE CLEARING, GRUBBING AND GRADING OF APPROXIMATELY 6.50 ACRES OF EXISTING LOT.

THE PROPOSED PROJECT INVOLVES THE FOLLOWING CONSTRUCTION

A. CLEARING, GRUBBING, AND GRADING OF EXISTING LOT.
B. CONSTRUCTION OF 3,456 GROUND MOUNTED SOLAR PANELS AND ASSOCIATED EQUIPMENT.
B. THE STABILIZATION OF DISTURBED AREAS WITH PERMANENT GRASS TREATMENTS.

2. FOR THIS PROJECT, THERE ARE APPROXIMATELY 6.50± ACRES OF THE SITE BEING DISTURBED WITH NEGLIGIBLE INCREASE IN THE IMPERVIOUS AREA OF THE SITE. AS ALL ACCESS THOUGH THE SITE WILL BE GRAVEL. IMPERVIOUS AREAS ARE LIMITED TO THE CONCRETE PADS FOR ELECTRICAL EQUIPMENT.

3. THE PROJECT SITE, AS MAPPED IN THE SOIL SURVEY OF STATE OF CONNECTICUT (NRCS, VERSION 18, DEC 6, 2018), CONTAINS TYPE 38C (HYDROLOGIC SOIL GROUP A) AND 12 (HYDROLOGIC SOIL GROUP (C) SOILS. A GEOTECHNICAL ENGINEERING REPORT HAS NOT BEEN COMPLETED.

4. IT IS ANTICIPATED THAT CONSTRUCTION WILL BE COMPLETED IN APPROXIMATELY 3-4 MONTHS.

5. REFER TO THE CONSTRUCTION SEQUENCING AND EROSION AND SEDIMENTATION NOTES FOR INFORMATION REGARDING SEQUENCING OF MAJOR OPERATIONS IN THE ON-SITE CONSTRUCTION PHASES.

6. STORMWATER MANAGEMENT DESIGN CRITERIA UTILIZES THE APPLICABLE SECTIONS OF THE 2004 CONNECTICUT STORMWATER QUALITY MANUAL, AND THE CITY OF BRISTOL STANDARDS. TO THE EXTENT POSSIBLE AND PRACTICABLE FOR THIS PROJECT ON THIS SITE, EROSION AND SEDIMENTATION MEASURES ARE BASED UPON ENGINEERING PRACTICE, JUDGEMENT AND THE APPLICABLE SECTIONS OF THE CONNECTICUT EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, LATEST EDITION.

7. DETAILS FOR THE TYPICAL STORMWATER MANAGEMENT AND EROSION AND SEDIMENTATION MEASURES ARE SHOWN ON THE PLAN SHEETS OR PROVIDED AS SEPARATE SUPPORT DOCUMENTATION FOR REVIEW IN THIS PLAN.

8. CONSERVATION PRACTICES TO BE USED DURING CONSTRUCTION AREA

A. STAGED CONSTRUCTION;
B. MINIMIZE THE DISTURBED AREAS TO THE EXTENT PRACTICABLE DURING CONSTRUCTION.
C. STABILIZE DISTURBED AREAS AS SOON AS POSSIBLE WITH TEMPORARY OR PERMANENT MEASURES.
D. MINIMIZE IMPERVIOUS AREAS.
E. UTILIZE APPROPRIATE CONSTRUCTION EROSION AND SEDIMENTATION MEASURES.

9. THE FOLLOWING SEPARATE DOCUMENTS ARE TO BE CONSIDERED A PART OF THE EROSION AND SEDIMENTATION PLAN:

A. STORMWATER MANAGEMENT MEMO FOR EXISTING AND PROPOSED PEAK FLOWS.

SUGGESTED CONSTRUCTION SEQUENCE

THE FOLLOWING SUGGESTED SEQUENCE OF CONSTRUCTION ACTIVITIES IS PROJECTED BASED UPON ENGINEERING JUDGEMENT AND BEST MANAGEMENT PRACTICES. THE CONTRACTOR MAY ELECT TO ALTER THE SEQUENCING TO BEST MEET THE CONSTRUCTION SCHEDULE, THE EXISTING SITE ACTIVITIES AND WEATHER CONDITIONS. SHOULD THE CONTRACTOR ALTER THE CONSTRUCTION SEQUENCE OR ANY EROSION AND SEDIMENTATION CONTROL MEASURES THEY SHALL MODIFY THE STORMWATER POLLUTION CONTROL PLAN ("SWPCP") AS REQUIRED BY THE GENERAL PERMIT.

1. THE CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING, PHYSICALLY FLAG THE LIMITS OF DISTURBANCE IN THE FIELD AS NECESSARY TO FACILITATE THE PRE-CONSTRUCTION MEETING.

2. CONDUCT A PRE-CONSTRUCTION MEETING TO DISCUSS THE PROPOSED WORK AND EROSION AND SEDIMENTATION CONTROL MEASURES. THE MEETING SHOULD BE ATTENDED BY THE OWNER, THE OWNER REPRESENTATIVE(S), THE MUNICIPALITY, THE GENERAL CONTRACTOR, DESIGNATED SUB-CONTRACTORS AND THE PERSON, OR PERSONS, RESPONSIBLE FOR THE IMPLEMENTATION, OPERATION, MONITORING AND MAINTENANCE OF THE EROSION AND SEDIMENTATION MEASURES. THE CONSTRUCTION PROCEDURES FOR THE ENTIRE PROJECT SHALL BE REVIEWED AT THIS MEETING.

3. NOTIFY CITY OF BRISTOL AGENT AT LEAST FORTY-EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF ANY DEMOLITION, CONSTRUCTION OR REGULATED ACTIVITY ON THIS PROJECT.

4. NOTIFY CALL BEFORE YOU DIG AT 811, AS REQUIRED, PRIOR TO THE START OF CONSTRUCTION.

5. REMOVE EXISTING IMPEDIMENTS AS NECESSARY AND PROVIDE MINIMAL CLEARING AND GRUBBING TO INSTALL THE REQUIRED CONSTRUCTION ENTRANCES.

6. CLEAR ONLY AS NEEDED TO INSTALL THE PERIMETER EROSION AND SEDIMENTATION CONTROL MEASURES AND, IF APPLICABLE, TREE PROTECTION. ALL WETLAND AREAS SHALL BE PROTECTED BEFORE MAJOR CONSTRUCTION BEGINS.

7. CONSTRUCT SEDIMENTATION TRAPS.

8. INSTALL REMAINING PERIMETER EROSION AND SEDIMENTATION CONTROL MEASURES.

9. PERFORM THE REMAINING CLEARING AND GRUBBING AS NECESSARY. REMOVE CUT WOOD AND STOCKPILE FOR FUTURE USE OR REMOVE OFF-SITE. REMOVE AND DISPOSE OF DEMOLITION DEBRIS OFF-SITE IN ACCORDANCE WITH APPLICABLE LAWS.

10. TEMPORARILY SEED DISTURBED AREAS NOT UNDER CONSTRUCTION FOR THIRTY (30) DAYS OR MORE.

11. INSTALL ELECTRICAL CONDUIT AND CONCRETE PADS.

12. INSTALL RACKING POSTS FOR GROUND MOUNTED SOLAR PANELS

13. INSTALL GROUND MOUNTED SOLAR PANELS AND COMPLETE ELECTRICAL INSTALLATION.

14. AFTER SUBSTANTIAL COMPLETION OF THE INSTALLATION OF THE SOLAR PANELS, COMPLETE REMAINING SITE WORK, INCLUDING THE LANDSCAPE SCREENING, AND STABILIZE ALL DISTURBED AREAS.

15. FINE GRADE, RAKE, SEED AND MULCH ALL REMAINING DISTURBED AREAS.

16. AFTER THE SITE IS STABILIZED AND WITH THE APPROVAL OF THE PERMITTEE AND CITY OF BRISTOL AGENT, REMOVE PERIMETER EROSION AND SEDIMENTATION CONTROLS.

CONSTRUCTION OPERATION AND MAINTENANCE PLAN - BY CONTRACTOR

E&S MEASURE	INSPECTION SCHEDULE	MAINTENANCE REQUIRED
CONSTRUCTION ENTRANCE	DAILY	PLACE ADDITIONAL STONE, EXTEND THE LENGTH OR REMOVE AND REPLACE THE STONE. CLEAN PAVED SURFACES OF TRACKED SEDIMENT.
COMPOST FILTER SOCK	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR/REPLACE WHEN FAILURE OR DETERIORATION IS OBSERVED.
SILT FENCE	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR/REPLACE WHEN FAILURE OR DETERIORATION IS OBSERVED. REMOVE SILT WHEN IT REACHES 1/2 THE HEIGHT OF THE FENCE.
TOPSOIL/BORROW STOCKPILES	DAILY	REPAIR/REPLACE SEDIMENT BARRIERS AS NECESSARY.
TEMPORARY SEDIMENT BASIN (W/ BAFFLES)	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.5"	REMOVE SEDIMENT ONCE IT HAS ACCUMULATED TO ONE HALF OF MINIMUM REQUIRED VOLUME OF THE WET STORAGE. DEWATERING AS NEEDED. RESTORE TRAP TO ORIGINAL DIMENSIONS. REPAIR/REPLACE BAFFLES WHEN FAILURE OR DETERIORATION IS OBSERVED.
TEMPORARY SEDIMENT TRAP (W/ BAFFLES)	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.5"	REMOVE SEDIMENT ONCE IT HAS ACCUMULATED TO ONE HALF OF MINIMUM REQUIRED VOLUME OF THE WET STORAGE. DEWATERING AS NEEDED. RESTORE TRAP TO ORIGINAL DIMENSIONS. REPAIR/REPLACE BAFFLES WHEN FAILURE OR DETERIORATION IS OBSERVED.
TEMPORARY SOIL PROTECTION	WEEKLY & WITHIN 24 HOURS OF RAINFALL > 0.25"	REPAIR ERODED OR BARE AREAS IMMEDIATELY. RESEED AND MULCH.

SUNJET
ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

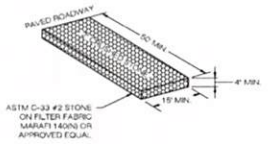
SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH
DATE: 05/21/20 CHECKED BY: BJP

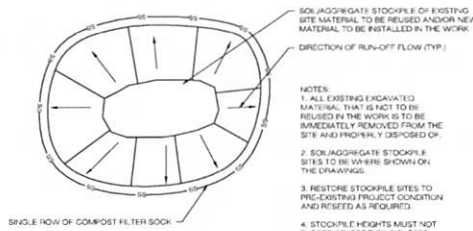
SHEET TITLE:
SEDIMENTATION & EROSION CONTROL NOTES

SHEET NUMBER:
EC-1



CONSTRUCTION ENTRANCE DETAIL

1 / EC-1 SCALE : N.T.S.



NOTES:
1. ALL EXISTING EXCAVATED MATERIAL THAT IS NOT TO BE REUSED IN THE WORK IS TO BE IMMEDIATELY REMOVED FROM THE SITE AND PROPERLY DISPOSED OF.

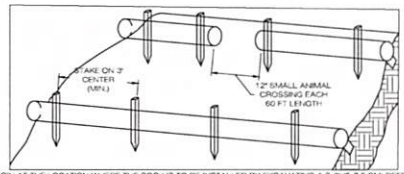
2. SOIL/AGGREGATE STOCKPILE SITES TO BE WHERE SHOWN ON THE DRAWINGS.

3. RESTORE STOCKPILE SITES TO PRE-EXISTING PROJECT CONDITION AND RESEED AS REQUIRED.

4. STOCKPILE HEIGHTS MUST NOT EXCEED 35'. STOCKPILE SLOPES MUST BE 2:1 OR FLATTER.

MATERIALS STOCKPILE DETAIL

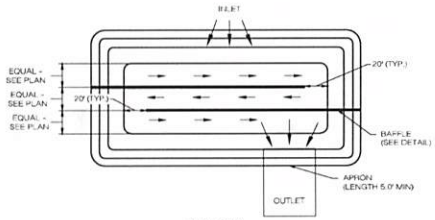
2 / EC-2 SCALE : N.T.S.



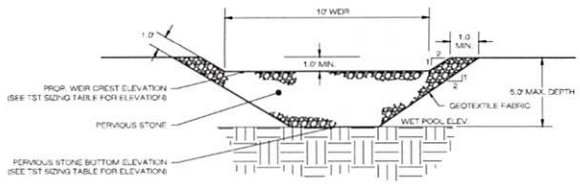
1. BEGIN AT THE LOCATION WHERE THE SOCK IS TO BE INSTALLED BY EXCAVATING A 2-3" (5-7.5 CM) DEEP X 9" (22.9 CM) WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE. EXCAVATED SOIL SHOULD BE PLACED UPSLOPE FROM THE ANCHOR TRENCH.
2. PLACE THE SOCK IN THE TRENCH SO THAT IT CONTOURS TO THE SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE SOCK ON THE UPHILL SIDE. SOCKS SHALL BE INSTALLED IN 60 FT CONTINUOUS LENGTHS WITH ADJACENT SOCKS TIGHTLY ABUT. EVERY 60 FT THE SOCK ROW SHALL BE SPACED 12 INCHES CLEAR, END TO END, FOR AMPHIBIAN AND REPTILE TRAVEL. THE OPEN SPACES SHALL BE STAGGERED MID LENGTH OF THE NEXT DOWN GRADIENT SOCK.
3. SECURE THE SOCK WITH 18-24" (45.7-61 CM) STAKES EVERY 3-4' (0.9 -1.2 M) AND WITH A STAKE ON EACH END. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE SOCK LEAVING AT LEAST 2-3" (5-7.5 CM) OF STAKE EXTENDING ABOVE THE SOCK. STAKES SHOULD BE DRIVEN PERPENDICULAR TO THE SLOPE FACE.

COMPOST FILTER SOCK SEDIMENTATION CONTROL BARRIER

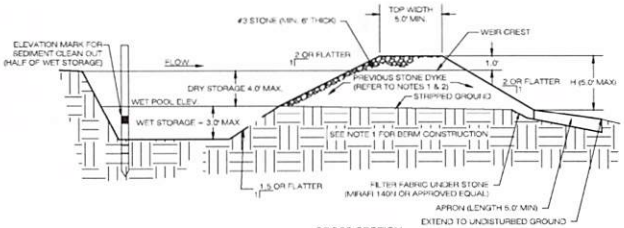
3 / EC-2 SCALE : N.T.S.



TOP VIEW



OUTLET ELEVATION

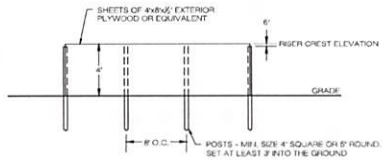


CROSS SECTION

NOTES:
1. CONSTRUCT TEMPORARY SEDIMENT TRAP BERMS AND SIDEWALLS PER THE INFILTRATION BASIN DETAIL.
2. PERVIOUS STONE DIKE SHALL BE CONSTRUCTED OF CT DOT MODIFIED RIP-RAP WITH #3 STONE ON FACE.
3. SEDIMENT TRAP BAFFLES SHALL BE INSTALLED AS SHOWN ON EC-1 AND EC-2.
4. SEE TST SIZING TABLE FOR WET AND DRY STORAGE VOLUMES.

TEMPORARY SEDIMENT TRAP

4 / EC-2 SCALE : N.T.S.



SEDIMENT TRAP BAFFLE

5 / EC-2 SCALE : N.T.S.

TEMPORARY SEDIMENT BASIN SIZING TABLE

NAME	DRAINAGE AREA (AC)	SEDIMENT VOLUME/ACRE AREA (CY)	REQ. VOLUME (CY)	REQ. WET VOLUME (CY)	PROP. BTM. ELEV. (FT)	PROP. STONE DIKE BTM. ELEV. (FT)	PROP. WEIR CREST ELEV. (FT)	PROP. TOP ELEV. (FT)	WET VOL. PROVIDED (CY)	TOTAL VOL. PROVIDED. (CY)
TST-1	4.98 AC	134 CYD	659.28 CY	329.64 CYD	628.0'	630.5'	631.5'	632.0'	472.63 CY	722.68 CY
TST-2	1.53 AC	134 CYD	205.32 CY	103.16 CYD	635.0'	636.5'	637.5'	638.0'	129.90 CY	248.43 CY

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION

567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH

DATE: 05/21/20 CHECKED BY: BJP

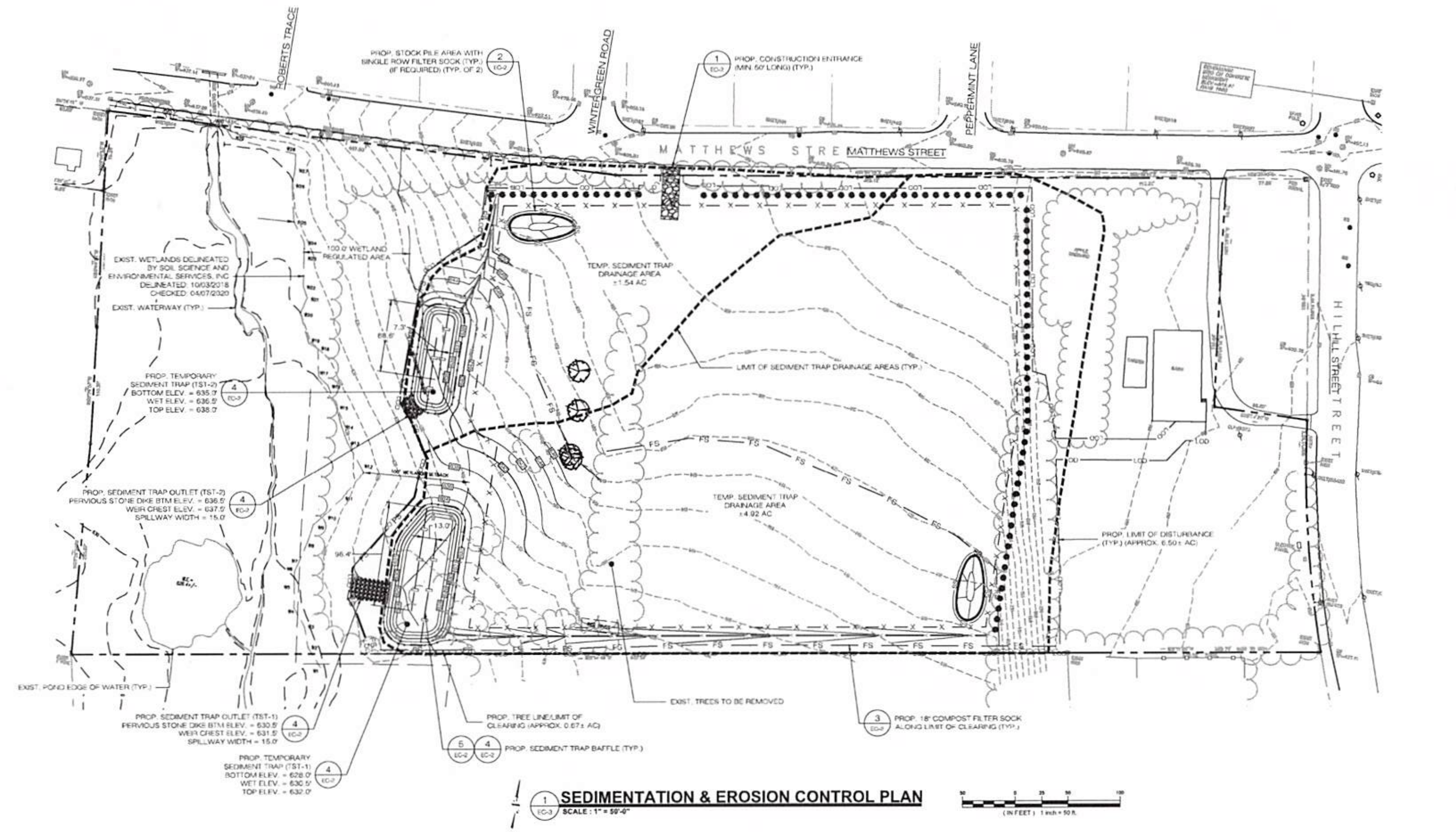
SHEET TITLE:

SEDIMENTATION & EROSION CONTROL DETAILS

SHEET NUMBER:

EC-2

STATE OF CONNECTICUT BRADLEY J. PARSONS LICENSED PROFESSIONAL ENGINEER



SEDIMENTATION & EROSION CONTROL PLAN

SCALE: 1" = 50'-0"

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

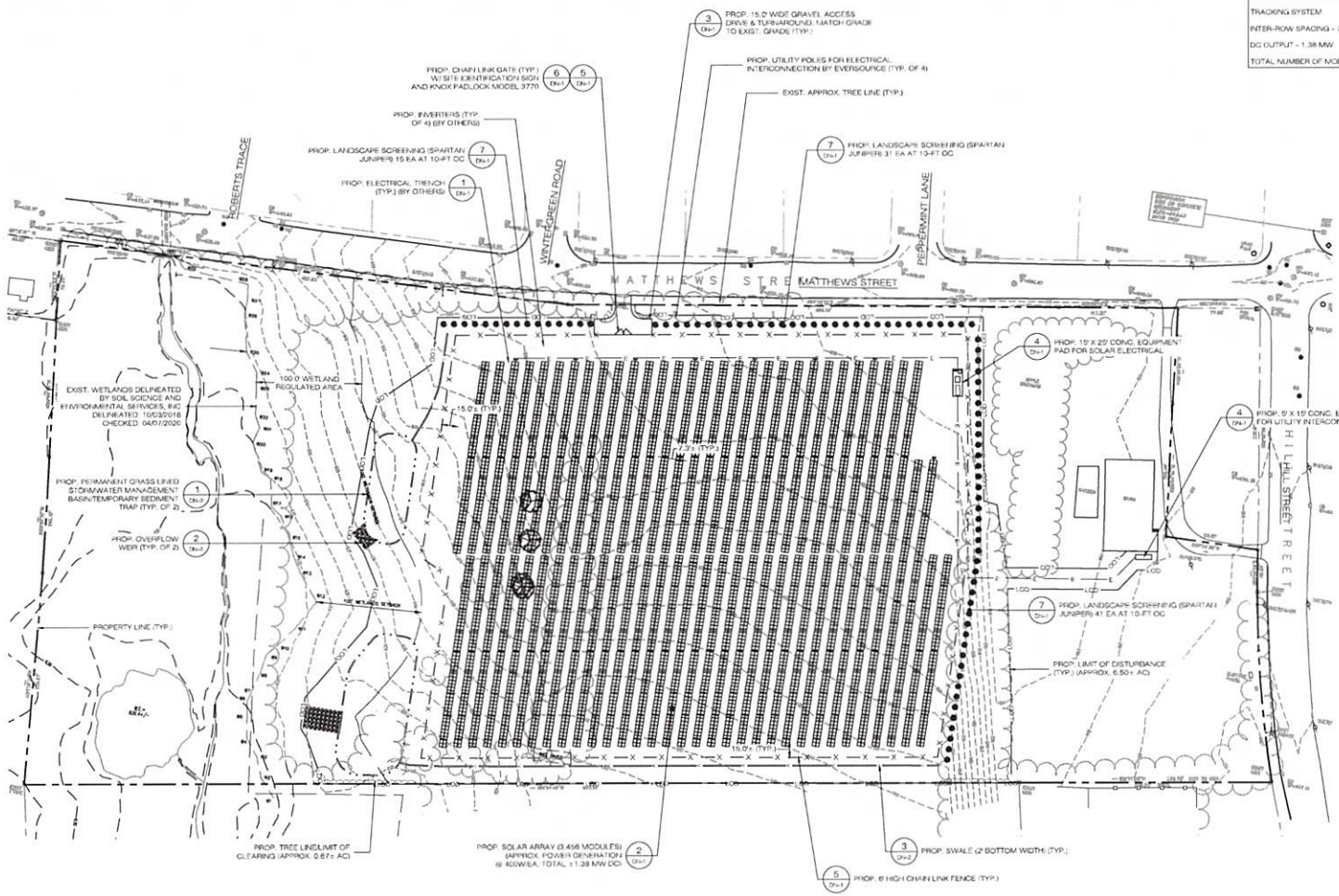
OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010
APT FILING NUMBER: CT582100
DRAWN BY: CSH
DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:
SEDIMENTATION & EROSION CONTROL PLAN

SHEET NUMBER:
EC-3



1 SP-1 **SITE & UTILITY PLAN**
SCALE: 1" = 40'-0"

DESIGN TABLE
MODULE MODEL - JINKO JKM400M-72HL-TV
TRACKING SYSTEM
INTER-ROW SPACING - 7.3± FEET
DC OUTPUT - 1.38 MW
TOTAL NUMBER OF MODULES - 3,456 MODULES

SUNJET
ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

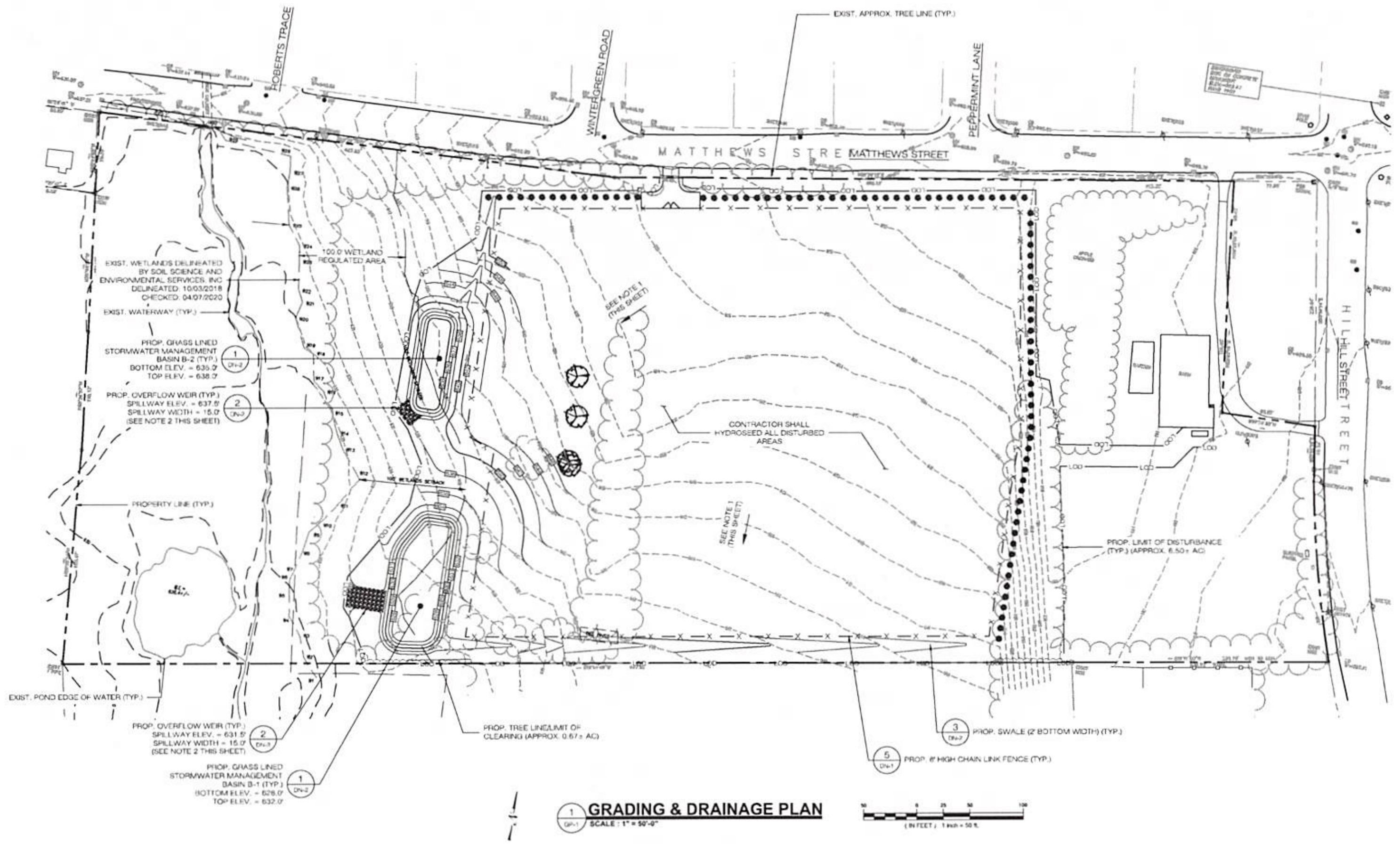
APT FILING NUMBER: C1562100

DRAWN BY: CSH

DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE: **SITE & UTILITY PLAN**

SHEET NUMBER: **SP-1**



GRADING & DRAINAGE PLAN

SCALE : 1" = 50'-0"

(IN FEET) 1 inch = 50 ft.

NOTES:
1. GRADE/SHAPE DISTURBED AREA TO MATCH EXISTING GRADE AND FLOW TOWARDS PROP. GRASS LINED STORMWATER MANAGEMENT BASINS & SWALES.
2. CONTRACTOR SHALL REPLACE TEMPORARY SEDIMENT TRAP OUTLET WITH RIP-RAP OVERFLOW WEIR UPON THE SITE OR DRAINAGE AREA BEING DEEMED STABILIZED PER THE SWPCP.

SUNJET

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

DRAWN BY: CSH

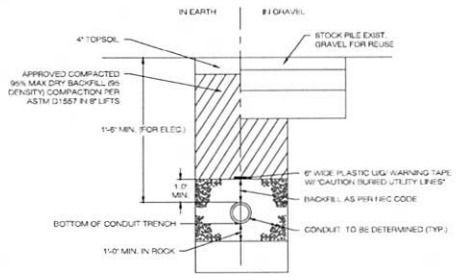
DATE: 05/21/20 CHECKED BY: BJP

SHEET TITLE:

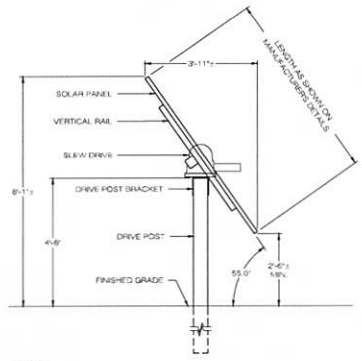
GRADING & DRAINAGE PLAN

SHEET NUMBER:

GP-1

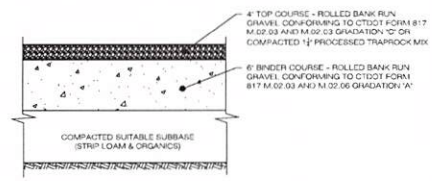


1 DN-1 **ELECTRICAL TRENCH DETAIL**
SCALE : N.T.S.



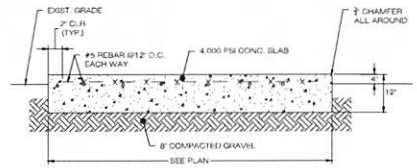
NOTES:
SEE MANUFACTURERS DETAIL SHEETS FOR ADDITIONAL INFORMATION REGARDING RACKING SYSTEM REQUIREMENTS AND INSTALLATION PROCEDURES. RACKING SYSTEM TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURERS REQUIREMENTS.

2 DN-1 **TYPICAL TRACKER POST MOUNTED RACKING SYSTEM**
SCALE : N.T.S.

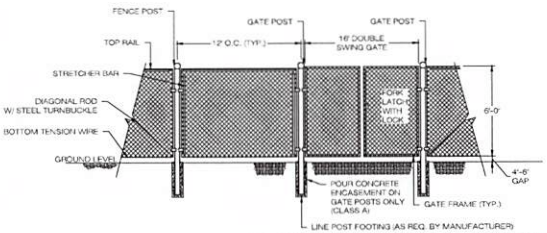


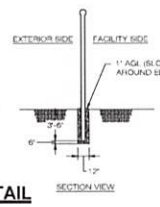
NOTES:
1. SUBBASE MAY CONSIST OF NATIVE MATERIALS IF FOUND ACCEPTABLE BY THE ENGINEER. SUBBASE TO BE COMPACTED TO 95% MAX DRY DENSITY.
2. SUBBASE IS TO BE FREE FROM DEBRIS AND UNSUITABLE MATERIALS.

3 DN-1 **GRAVEL ACCESS DRIVE SECTION**
SCALE : N.T.S.



4 DN-1 **CONCRETE EQUIPMENT PAD**
SCALE : N.T.S.





SECTION VIEW

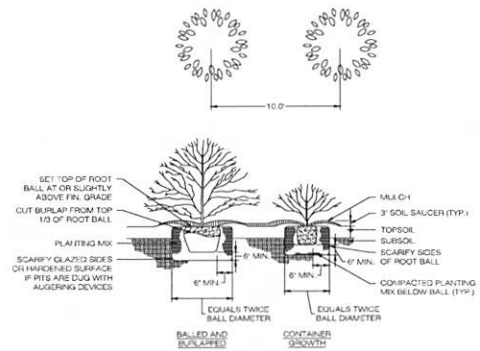
5 DN-1 **CHAIN-LINK FENCE & GATE DETAIL**
SCALE : N.T.S.

BRISTOL SOLAR FARM

IN CASE OF EMERGENCY CALL T.B.D.

NOTES:
EMERGENCY CALL NUMBER TO BE PROVIDED ONCE DETERMINED.

6 DN-1 **NOTIFICATION SIGN DETAIL**
SCALE : N.T.S.



NOTES:
IN AREAS OF MASS PLANTINGS, CONTINUOUSLY EXCAVATE AND MULCH ENTIRE BED.

7 DN-1 **TYPICAL PLANTING DETAIL**
SCALE : N.T.S.

SUNJET
SOLAR ENERGY FUTURE

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	06/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

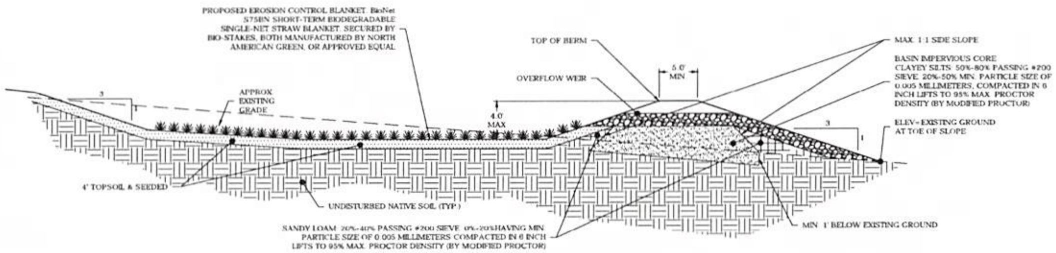
APT FILING NUMBER: CT562100

DRAWN BY: CSH

DATE: 05/21/20 CHECKED BY: BJP

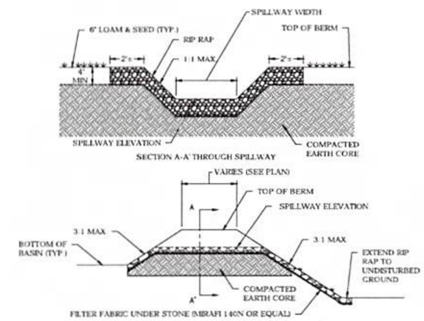
SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
DN-1

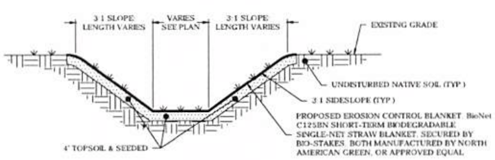


NOTES:
- SEED MIX TO BE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES ON THE BOTTOM OF THE BASIN AND NEW ENGLAND EROSION/RESTORATION MIX FOR DRY SITES ON THE SIDE SLOPES
- FOR CONVERTING TST TO INFILTRATION BASIN, REMOVE BAFFLES, CLEAN OUT SEDIMENT. RESHAPE AS REQUIRED. RECONSTRUCT OUTLET WEIR INCLUDING ADDITIONAL IMPERVIOUS CORE. AND RESEEDING
- INSPECT AND CLEAN PIPES PRIOR TO INSTALLING PERMANENT OUTLET.

1 / DN-2 **GRASS LINED INFILTRATION BASIN**
SCALE : N.T.S.



2 / DN-2 **OVERFLOW WEIR DETAIL**
SCALE : N.T.S.



NOTES:
1. SEED MIX TO BE NEW ENGLAND EROSION CONTROL/ RESTORATION MIX FOR MOIST SITES ON THE BOTTOM OF THE BASIN AND NEW ENGLAND EROSION/RESTORATION MIX FOR DRY SITES ON THE SIDE SLOPES.

3 / DN-2 **GRASS LINED SWALE**
SCALE : N.T.S.

ERNST SEEDS

Ernst Conservation Seeds
8884 Mercer Pike
Meadville, PA 16335
(800) 873-3321 Fax (814) 336-5191
www.ernstseed.com

Date: May 17, 2020

Showy Northeast Native Wildflower & Grass Mix - ERNMX-153

	Botanical Name	Common Name	Price/lb
30.50 %	*Schizachyrium scoparium, 'Camper'*	Little Bluestem, 'Camper'	13.61
30.00 %	*Bouteloua curtipendula, Butte*	Sideoats Grama, Butte	11.51
15.00 %	*Elymus virginicus, PA Ecotype*	Virginia Wildrye, PA Ecotype	6.19
4.00 %	*Echinacea purpurea*	Purple Coneflower	39.60
3.50 %	*Chamaecrista fasciculata, PA Ecotype*	Partridge Pea, PA Ecotype	6.60
3.00 %	*Coreopsis lanceolata*	Lanceleaf Coreopsis	26.40
3.00 %	*Rudbeckia hirta, Coastal Plain NC Ecotype*	Blackeyed Susan, Coastal Plain NC Ecotype	22.00
2.00 %	*Heliopsis helianthoides, PA Ecotype*	Oxeye Sunflower, PA Ecotype	30.80
1.20 %	*Liatris spicata*	Marsh Blazing Star	231.00
1.00 %	*Tradescantia ohiensis, PA Ecotype*	Ohio Spiderwort, PA Ecotype	231.00
0.70 %	*Pycnanthemum tenuifolium*	Narrowleaf Mountainmint	154.00
0.70 %	*Senna hebecarpa, VA & WV Ecotype*	Wild Senna, VA & WV Ecotype	26.40
0.50 %	*Asclepias tuberosa*	Butterfly Milkweed	396.00
0.50 %	*Baptisia australis, Southern WV Ecotype*	Blue False Indigo, Southern WV Ecotype	88.00
0.50 %	*Zizia aurea*	Golden Alexanders	264.00
0.40 %	*Aster laevis, NY Ecotype*	Smooth Blue Aster, NY Ecotype	396.00
0.40 %	*Aster novae-angliae, PA Ecotype*	New England Aster, PA Ecotype	396.00
0.40 %	*Aster oblongifolius, PA Ecotype*	Aromatic Aster, PA Ecotype	396.00
0.40 %	*Aster prenanthoides, PA Ecotype*	Zigzag Aster, PA Ecotype	396.00
0.40 %	*Eupatorium coelestinum, VA Ecotype*	Mistflower, VA Ecotype	281.60
0.40 %	*Monarda fistulosa, Fort Indiantown Gap-PA Ecotype*	Wild Bergamot, Fort Indiantown Gap-PA Ecotype	105.60
0.40 %	*Solidago nemoralis, PA Ecotype*	Gray Goldenrod, PA Ecotype	396.00
0.30 %	*Penstemon digitalis, PA Ecotype*	Tall White Beardtongue, PA Ecotype	176.00
0.20 %	*Coreopsis tripteris, PA Ecotype*	Tall Coreopsis, PA Ecotype	308.00
0.10 %	*Geum canadense, PA Ecotype*	White Avens, PA Ecotype	176.00
0.10 %	*Oenothera fruticosa var. fruticosa*	Sundrops	330.00
0.10 %	*Penstemon hirsutus*	Hairy Beardtongue	440.00
0.10 %	*Rudbeckia fulgida var. fulgida, Northern VA Ecotype*	Orange Coneflower, Northern VA Ecotype	352.00
0.10 %	*Senna marilandica*	Maryland Senna	26.40
0.10 %	*Solidago odora, PA Ecotype*	Licorice Scented Goldenrod, PA Ecotype	352.00
100.00 %		**Mix Price/lb Bulk:**	**$34.79**

Seeding Rate: 20 lb per acre, or 1/2 lb per 1,000 sq ft

Pollinator Favorites; Uplands & Meadows

The native wildflowers and some grasses provide a gorgeous display of color from spring to fall. Designed for upland sites with well-drained soils and full sun to semi-shaded areas; ideal for attracting butterflies and hummingbirds. Mix formulations are subject to change without notice depending on the availability of existing and new products. While the formula may change, the guiding philosophy and function of the mix will not.

4 / DN-2 **SEED MIX**
SCALE : N.T.S.

SUNJET
OUR ENERGY FUTURE

ALL-POINTS TECHNOLOGY CORPORATION
567 VAUXHALL STREET EXTENSION - SUITE 311
WATERFORD, CT 06385 PH: (860)-663-1697
WWW.ALLPOINTSTECH.COM FAX: (860)-663-0935

CSC PERMIT SET

NO	DATE	REVISION
0	05/21/20	FOR REVIEW: BJP
1	08/04/20	FOR PERMIT: BJP
2		
3		
4		
5		
6		

DESIGN PROFESSIONAL OF RECORD

PROF: BRADLEY J. PARSONS P.E.
COMP: ALL-POINTS TECHNOLOGY CORPORATION
ADD: 567 VAUXHALL STREET EXTENSION - SUITE 311 WATERFORD, CT 06385

OWNER: LINDA ARBESMAN, KATHLEEN FERRIER, H.C. TR ALLAIRE & LAUREN VALENTINO
ADDRESS: 481 MATTHEWS STREET BRISTOL, CT 06010

BRISTOL SOLAR

SITE ADDRESS: MATTHEWS ST. & HILL ST. BRISTOL, CT 06010

APT FILING NUMBER: CT562100

	DRAWN BY: CSH
DATE: 05/21/20	CHECKED BY: BJP

SHEET TITLE:
SITE DETAILS

SHEET NUMBER:
DN-2

Attachment B

Geotechnical Engineering Report

SUNJET ENERGY, LLC

INTERROGATORY RESPONSES - SET ONE

PETITION NO. 1427

November 27, 2020

DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

GEOTECHNICAL ENGINEERING REPORT
PROPOSED SOLAR ARRAY
SUNJET BRISTOL
MATTHEWS STREET AND HILL STREET
BRISTOL, CONNECTICUT

Prepared for:

All-Points Technology Corporation, P.C.
567 Vauxhaul Street Extension – Suite 311
Waterford, Connecticut 06385

Prepared by:

Down To Earth Consulting, LLC
122 Church Street
Naugatuck, Connecticut 06770

File No. 0032-036.00
June 2020

DOWN TO EARTH
CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

June 16, 2020
File No. 0032-036.00

Mr. Bradley J. Parsons, PE
All-Points Technology Corporation
567 Vauxhaul Street Extension – Suite 311
Waterford, Connecticut 06385

Via email: bparsons@allpointstech.com

Re: Geotechnical Engineering Report
Sunjet Bristol
Matthews and Hill Street, Bristol, Connecticut

Down To Earth Consulting, LLC (DTE) is pleased to submit this geotechnical engineering report for the Sunjet Bristol Project that will be located at Matthews and Hill Street in Bristol, Connecticut (Site) for All-Points Technology Corporation (Client). Our services were completed in general accordance with our current Master Services Agreement. We appreciate this opportunity to work with you and look forward to our continued involvement. Please call if you have any questions.

Sincerely,

Down To Earth Consulting, LLC

Raymond P. Janeiro, P.E.
Principal

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

Down To Earth Consulting, LLC, completed a subsurface exploration program and geotechnical engineering evaluation for the proposed Sunjet Bristol solar array foundations. Our geotechnical engineering services included: reviewing provided project plans, completing borings and soils testing, characterizing subsurface conditions within the proposed solar array limits, performing geotechnical engineering analyses, and providing geotechnical design and construction recommendations for the project. Refer to Figures 1 and 2 (in Appendix 1) for an area plan and site plan, respectively. Our services were based, in part, on a provided *Site and Utility Plan*, prepared by the Client, revision dated April 2020.

2.0 BACKGROUND

The Sunjet Bristol Site is generally bordered by Matthews Street to the north, wetlands to the west, Hill Street to the east, and an open field to the south. A proposed ground-mount solar array will be constructed that will consist of about 3,432 modules. Nominal cuts on the order of 2-feet or less are anticipated to achieve design grades, as the solar array structures will generally conform to existing Site topography. We understand that deeper cuts will be required to accommodate proposed detention basins. Refer to Figure 2 (Appendix 1) for existing site features and the proposed solar array location.

3.0 SUBSURFACE DATA

3.1 GENERAL SITE GEOLOGY

Published surficial and bedrock geological map data (*1:125,000 scale, Surficial Materials Map of Connecticut, Janet Radway Stone, 1992 and 1:125,000 scale, Bedrock Geological Map of Connecticut, John Rodgers, 1985*) was reviewed. The Site surficial material is mapped as kame-terrace deposits (stratified sand and gravel). The underlying bedrock is classified as gneiss of the Bristol Formation.

3.2 TEST BORINGS

We observed and logged six test borings (B-1 through B-6) drilled by our subcontractor General Borings, Inc. on May 14, 2020. Boring locations are depicted on Figure 2 (Appendix 1) and the logs are included in Appendix 2. Borings were located in the field by taping/pacing from existing site features, thus their locations should be considered approximate.

The borings were drilled to explore the soil, bedrock, and groundwater conditions in the proposed solar array areas. Hollow-stem auger drilling methods were used to advance borings to depths ranging from approximately 5.5 to 22 feet below existing grades.

Representative soil samples were obtained in the borings for soil classification and laboratory testing by split barrel sampling procedures in general accordance with ASTM D-1586. The split-spoon sampling procedure utilizes a standard 2-inch O.D. split-barrel sampler that is driven into the bottom of the boring with a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the sampler the middle 12-inches of a normal 24-inch penetration is

recorded as the Standard Penetration Resistance Value (N). The blows (i.e., "N-Value") are indicated on the boring logs at their depth of occurrence and provide an indication of the relative consistency of the material.

Groundwater levels were measured using a weighted tape in open drill holes and/or inferred from wet soil samples during drilling.

4.0 SUBSURFACE CONDITIONS

4.1 SUBSURFACE PROFILE

The generalized subsurface profile, as inferred from the subsurface data, consists of Fill overlying Sand & Gravel, Glacial Till, and Bedrock. An approximate 6- to 12-inch layer of Topsoil was encountered at the surface of the explorations. The following is a more detailed description of the subsurface materials encountered:

4.1.1 Fill

Fill was encountered directly below the Topsoil at each of the boring locations. This stratum was about 1 to 3 feet thick and typically consisted of medium dense, dark brown, silt with varying amounts of fine to coarse sand and gravel. Trace (0 to 5%) amounts of roots were also observed in the Fill. The existing Fill appeared to generally consist of native soils mixed with topsoil associated with former site activities. The thickness, character, and consistency of the Fill will vary between exploration locations.

4.1.2 Sand/Sand & Gravel

Sand and Sand & Gravel Deposits were observed below the Fill in each boring. This material generally consisted of fine to coarse sand with varying amounts (5% to 60%) of fine to coarse gravel and trace to little (0% to 20%) amounts of silt. In some instances, the presence of cobbles and boulders were inferred by "rig chatter" and refusal during drilling and sampling.

4.1.3 Glacial Till

Glacial Till was observed below the Sand/ Sand & Gravel Deposits in Borings B-4 and B-6. This material generally consisted of very dense, gray/brown, silt with varying amounts of fine to coarse sand (35% to 60%) and fine gravel (5% to 20%). In some instances, the presence of cobbles and possibly boulders were inferred by "rig chatter" and "grinding". Decomposed rock fragments were encountered in some samples of Glacial Till at depth.

4.1.4 Weathered Rock

Weathered Rock was observed in split spoon samples at Borings B-1 and B-2 at about 3 feet below existing grades. Bedrock was inferred from split spoon and/or auger refusal at those borings at depths ranging from about 5.5 to 6 feet below existing grades (bgs). Drilling refusal was also encountered at Borings B-3 (6 feet bgs) and B-6 (17.5 feet bgs) on inferred bedrock. A bedrock core was attempted at Boring B-1 and was advanced about 2 feet prior to encountering

technical issues with the drilling equipment. The retrieved core consisted of Gneiss and Quartzite pieces.

4.2 GROUNDWATER

Groundwater was measured in the boreholes during drilling or inferred from wet soil samples and ranged from about 7 to 10 feet below existing grades (where encountered). Groundwater levels measured in the boreholes may not have had sufficient time to stabilize and should be considered approximate. Groundwater levels will vary depending on factors such as temperature, season, precipitation, construction activity, and other conditions, which may be different from those at the time of these measurements.

5.0 SOILS TESTING

5.1 LABORATORY TESTING

Soils laboratory testing was completed on samples obtained from the borings. Two soil samples were collected within the proposed detention basins (at proposed cut depths indicated by the Client) for grain size distribution testing. This data was used to estimate hydraulic conductivity values for the sampled materials (see Section 5.2).

Soil samples were also collected from 0 to 4 feet below grade at Borings B-2 and B-4 to evaluate the corrosivity potential of sampled soils. Samples were analyzed for pH, Sulfates, Chlorides, and Electrical Resistivity. Based on the laboratory test results, the soil samples are not considered to be corrosive. The results of the laboratory testing are included in Appendix 3.

5.2 ESTIMATED HYDRAULIC CONDUCTIVITY

Kozeny-Carman methodology was used to estimate the hydraulic conductivity (permeability) of the two soil samples submitted for gradation testing. The estimated hydraulic conductivity of the sample from B-3 was about 3x10-4 feet per day, while the sample from B-5 was about 0.3 feet per day. Details of the analyses are provided in Appendix 4. Note that the Kozeny-Carman methodology provides estimated hydraulic conductivity values; field infiltration tests may be required to obtain a more accurate permeability estimate of subsurface soils.

5.3 SOIL RESISTIVITY TESTING

On May 14, 2020, DTE field personnel conducted in-situ soil resistivity testing in accordance with accepted engineering practices using the Wenner electrode configuration. Electrodes were spaced at 5, 10, 20, 30, and 40 feet. One set of two approximately perpendicular resistivity lines were completed in the general vicinity of the proposed solar array area. The approximate locations and orientations of the resistivity lines are shown on the attached Figure 2. The results of the resistivity tests are as follows:

	Resistivity (ohm-cm)	
Electrode Spacing (ft)	Line 1	Line 2
5	300,655	312,145
10	382,042	432,598
20	241,290	403,682
30	162,066	193,032
40	139,258	100,116

Field resistivity results may be influenced by boulders, shallow groundwater, and bedrock. Resistivity results will fluctuate depending on the degree of compaction, moisture content, constituent solubility, and temperature. Field resistivity values may also vary depending upon season, precipitation, and other conditions that may differ from those at the time of testing.

6.0 ENGINEERING IMPLICATIONS OF SUBSURFACE CONDITIONS

Subsurface conditions generally consist of medium dense to very dense soil deposits. In some instances, these soil deposits were observed to contain cobbles and boulders. Relatively shallow bedrock was also encountered at the northern and western limits of the proposed solar array (B-1 through B-3). Due to the presence of obstructions (e.g., cobbles, boulders, and shallow bedrock), pile driving refusal should be expected in localized areas of the proposed solar array.

In areas of pile driving difficulties, predrilling of pilot holes (up to 2/3 of the pile diameter) may be required to accommodate pile installation. The pilot holes would then be backfilled with drill cuttings (absent any cobble-sized material) prior to driving piles. Ground screws (e.g., Krinner) may also be used to support the racking systems, but similarly we recommend predrilling a pilot hole to accommodate ground screw installation.

Piles will need to be designed to resist compression, tension, and lateral loads. Preliminary geotechnical design parameters are provided below. The pile design capacities will need to be verified in the field based on the results of pile load testing completed at the Site.

7.0 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

We offer the following geotechnical design recommendations based on the subsurface conditions encountered at the Site, available project information, and the proposed construction.

7.1 SEISMIC DESIGN

The site class is "C" per the Building Code. Based on the standard penetration test results, visual soil classification, and design peak ground acceleration at this locale, the site soils are not susceptible to liquefaction.

7.2 DRIVEN PILE FOUNDATIONS

The proposed racking systems may be supported on driven steel piles end bearing in natural Sand & Gravel, Glacial Till, Weathered Rock, or Bedrock. The steel piles should conform to ASTM A 572, Grade 50 and have hardened pile tips (e.g., pile driving shoes) to minimize pile damage on potential obstructions (e.g., boulders and bedrock). A minimum steel section corrosion loss of

1/16-inch all around the piles should be used. DTE recommends the following preliminary static design parameters for a driven pile foundation alternative:

DESCRIPTION	VALUE
Maximum Net Allowable Bearing Capacity[1]	
Soil/Weathered Rock	5 kips per square foot (ksf)
Bedrock	10 ksf
Ultimate Skin Friction Value[2]	
Soil (>3.5 fbg)	750 pounds per square foot (psf)
Weathered Rock	1,000 psf
Modulus of Lateral Subgrade Reaction[3]	
Soil (>2.5 fbg) – dry	90 pounds per cubic inch (pci)
Soil (>7 fbg) – wet	90 pci
Weathered Rock	150 pci
Angle of Internal Friction	
Soil	35
Weathered Rock	38
Total Soil Unit Weight	
Soil	130 pounds per cubic foot (pcf)
Weathered Rock	140 pcf

1. End-bearing should be neglected for uplift calculations. Provided value assumes a factor of safety of 3.
2. Contribution to pile capacity within the frost depth (i.e., above depths of 3.5 feet) should be ignored. The uplift capacity should be based on the dead weight of the pile and side resistance provided by the subsurface soils (i.e., end bearing should be neglected).
3. To analyze foundation under lateral loading (e.g., Ensoft LPILE).
4. All values provided in this table are preliminary and must be verified in the field by load testing.

Center-to-center pile spacing should not be less than 30 inches or 3 pile diameters. Final pile order lengths should be established based on the results of pile testing and the contractor should be prepared to increase anticipated pile lengths as conditions are exposed in the field.

Piles should be installed to a minimum ultimate geotechnical axial capacity of the structural load multiplied by 2 (assuming load testing is performed). Based on the recommended pile type, bearing material, and anticipated loads, we estimate negligible pile settlements.

The lateral capacity of the upper 30 inches of soil should be neglected due to loss of strength from frost action and the presence of loose surficial soils. Appropriate lateral capacity reductions associated with group effects should be used for piles having a center-to-center spacing of less than 5 times their largest cross-sectional dimension.

7.2.1 Load Testing and Drivability

Tension and lateral load tests should be performed on test piles to finalize foundation design for uplift and lateral load capacity. Compression load tests should also be completed if end bearing capacity of piles is used. Load tests should be completed near the boring explorations in order to corroborate the load test and subsurface exploration data and develop final design

recommendations. The testing results should be provided to DTE to reevaluate the above design parameters.

We recommend that a drivability analysis (i.e., Wave Equation Analysis for Piles (WEAP)) be performed for the site-specific conditions and selected pile driving hammer to evaluate the proposed pile driving equipment and development of stresses in the piles. The maximum allowable driving stress in both tension and compression should not exceed 45 ksi, which is based on applying a reduction factor of 0.9 to the yield strength of Grade 50 Steel.

7.3 GROUND SCREW FOUNDATION ALTERNATIVE

The proposed racking systems may also be supported on a ground screw foundation system (Krinner or similar) that derive their capacity in the natural Sand & Gravel Deposits, Glacial Till, and/or Weathered Rock. Tension and lateral load tests should also be performed if a ground screw foundation system is selected to assess uplift and lateral capacities. Ground screw foundations are typically designed by a design-build contractor.

7.4 EQUIPMENT FOUNDATIONS

The proposed accessory structures may be designed as mat foundations bearing on a base course of at least 12-inches of Compacted Granular Fill (CGF) or Crushed Stone overlying proof-rolled natural Sand/ Sand & Gravel, or CGF or Crushed Stone placed above a proof-rolled natural soil subgrade. Soils with appreciable organic content (e.g., Topsoil and Fill) are not considered suitable bearing materials and must be excavated from foundation areas during site preparation.

When CGF is used beneath the foundations (e.g., in fill areas, if needed), we recommend that it be placed one foot beyond the edge of the foundations and at a one horizontal to one vertical slope away and down from the bottom outside edge of the foundations (i.e., foundation zone of influence). Crushed Stone can be used in place of CGF as it is much easier to compact.

We recommend a maximum allowable design bearing pressure of four kips per square foot (4 ksf) for foundations bearing on the recommended bearing materials. Shallow foundations should be embedded 42-inches below finished grades to account for frost. Based on the recommended bearing strata and anticipated loads, we anticipate that foundations will undergo less than one inch of total settlement and less than a half inch of differential settlement. Settlements will occur as the loads are applied and are expected to be complete at the end of construction.

We recommend an ultimate coefficient of sliding friction of 0.45. A factor of safety of at least 1.5 should be applied to calculated sliding resistance.

8.0 MATERIALS RECOMMENDATIONS

8.1 COMPACTED GRANULAR FILL

Compacted Granular Fill (CGF) for use as structural fill shall consist of inorganic soil free of clay, loam, ice and snow, tree stumps, roots, and other organic matter; graded within the following limits:

Sieve Size	Percent finer by weight
4-inches	100%
No. 10	30 - 100
No. 40	10 - 90
No. 200	0 - 12*

* To be considered non-frost susceptible, granular fill should have a maximum of 3 percent of particles by weight smaller than 0.02mm in effective diameter.

8.2 CRUSHED STONE

Crushed Stone for use below foundations shall consist of sound, tough, durable, rock that is graded within the following:

Sieve Size	Percent finer by weight
5/8-inches	100%
1/2-inch	85 - 100
3/8 inch	15 - 45
No. 4	0 - 15
No. 8	0 - 5

8.3 COMPACTION REQUIRMENTS

CGF should be placed in loose lifts not exceeding 8-inches in depth and compacted to at least 95 percent of its maximum dry density, and within 2% of optimum moisture content, as determined by ASTM D1557, Method C (Modified Proctor) below foundations and other structures.

Crushed Stone is considered to be "self-compacting" and would negate the need to run laboratory proctor testing and have field density testing of in-place lifts. The crushed stone should be plate compacted to "chink up" the working surface in lifts. We recommend placing Crushed Stone in maximum 12-inch lifts and compacting the lifts with a minimum of four passes with a vibratory plate compactor weighing a minimum of 1,000 pounds and with a minimum centrifugal force of 10,000 pounds.

9.0 CONSTRUCTION RECOMMENDATIONS

9.1 DRIVEN PILES

Technical specifications should be prepared by the design team that require detailed material and construction submittals and proof of experience in pile installation. The installation method or combination of methods selected by the contractor should be submitted for review by the design team, prior to mobilization of equipment. Specifications should include provisions for removing encountered cobbles, boulders, and other obstructions as a contingency. Any pile driving refusal remedies (pre-drilling, etc.) that are adopted by the Contractor during construction will require that those piles be load tested.

9.2 GROUND SCREW FOUNDATION ALTERNATIVE

Ground screws should be designed and installed by a specialty contractor with a minimum of 5 years of experience with designing and installing ground screw systems. The specialty contractor should also be licensed by the manufacturer of the selected ground screw system. The axial capacity of the ground screws must be confirmed during installation using the designer's recommended torque resistance. Predrilling may be required to install the ground screws in areas with cobbles, boulders, and shallow bedrock.

9.3 SHALLOW FOUNDATIONS – EQUIPMENT PADS

The proposed equipment areas should be cleared of existing vegetation and topsoil. Cobbles, boulders, and any identifiable compressible or deleterious materials should be removed. Existing fill (including re-worked parent materials), and other unsuitable materials, must be removed from beneath bearing zones of influence to the top of firm, natural soil deposits prior to construction. Over-excavation below bearing areas should include the zone of influence, defined as the area beneath 1 horizontal to 1 vertical (1H:1V) lines extending downward and outward from pad areas. Equipment pads shall bear on a prepared subgrade of firm natural soil deposits/weathered rock, or CGF or Crushed Stone (over firm natural soils). Refer to Section 8.0 for material and placement recommendations.

Earthwork should be performed in dry conditions so that disturbance to foundation subgrades is limited. During earthwork, the Contractor should be responsible for protecting subgrades from the elements and maintaining the soils in a suitable state until completion of the project. Backfill should not be placed over a subgrade with standing water or that is frozen. Standing water, if present, should be removed and any soft and yielding soil should be removed prior to backfill placement. Excavations to subgrade levels should be performed using a smooth-edged bucket to minimize possible disturbance to the in-place subgrade soils.

Soil subgrades should be proof-rolled under the observation of a qualified Geotechnical Engineer with at least four (4) passes of a smooth-drum vibratory roller (minimum 8,000 pounds, minimum centrifugal force of 12,500 pounds) or, where approved by the geotechnical engineer, a vibratory plate compactor with a minimum of 2,500 pounds of centrifugal force. Any soft or loose zones identified during proof-rolling should be excavated and replaced with CGF, as necessary, and as required by the Geotechnical Engineer.

9.4 TEMPORARY EXCAVATIONS

The site soils are classified as OSHA Class "C" soil and can be cut at a maximum one vertical to one and a half horizontal (1V:1.5H) slope up to a maximum excavation depth of 20 feet. These maximum slope and excavation depths assume no surcharge load (i.e., stockpiles, construction equipment, etc.) at the top of the excavations or groundwater seepage.

9.5 TEMPORARY GROUNDWATER CONTROL

Based on information obtained from the subsurface exploration program, groundwater should not be encountered during construction. We anticipate that stormwater can be managed with conventional sump pumps and trenches in the excavations. Stormwater runoff should not be permitted to

accumulate on/within exposed subgrades and the runoff should be directed away from the exposed subgrade areas. Discharge of dewatering wastewaters must meet applicable local, state, and environmental regulations.

10.0 REVIEW OF FINAL DESIGN, PLANS, AND SPECIFICATIONS

When project plans are finalized, and specifications are available, they should be provided to DTE for review of conformance with our geotechnical recommendations. If any changes are made to the proposed structure locations or bearing levels, the recommendations provided in this report will need to be verified by DTE for applicability.

11.0 CONSTRUCTION QUALITY CONTROL

We further recommend that DTE be retained during earthwork construction to observe excavation to subgrade, fill placement and compaction, subgrade preparation, and deep foundation installation. The geotechnical engineer in the field should observe the work for compliance with the recommendations in this report, identify changes in subsurface conditions from those observed in the explorations should they become apparent, and assist in the development of design changes should subsurface conditions differ from those anticipated prior to the start of construction.

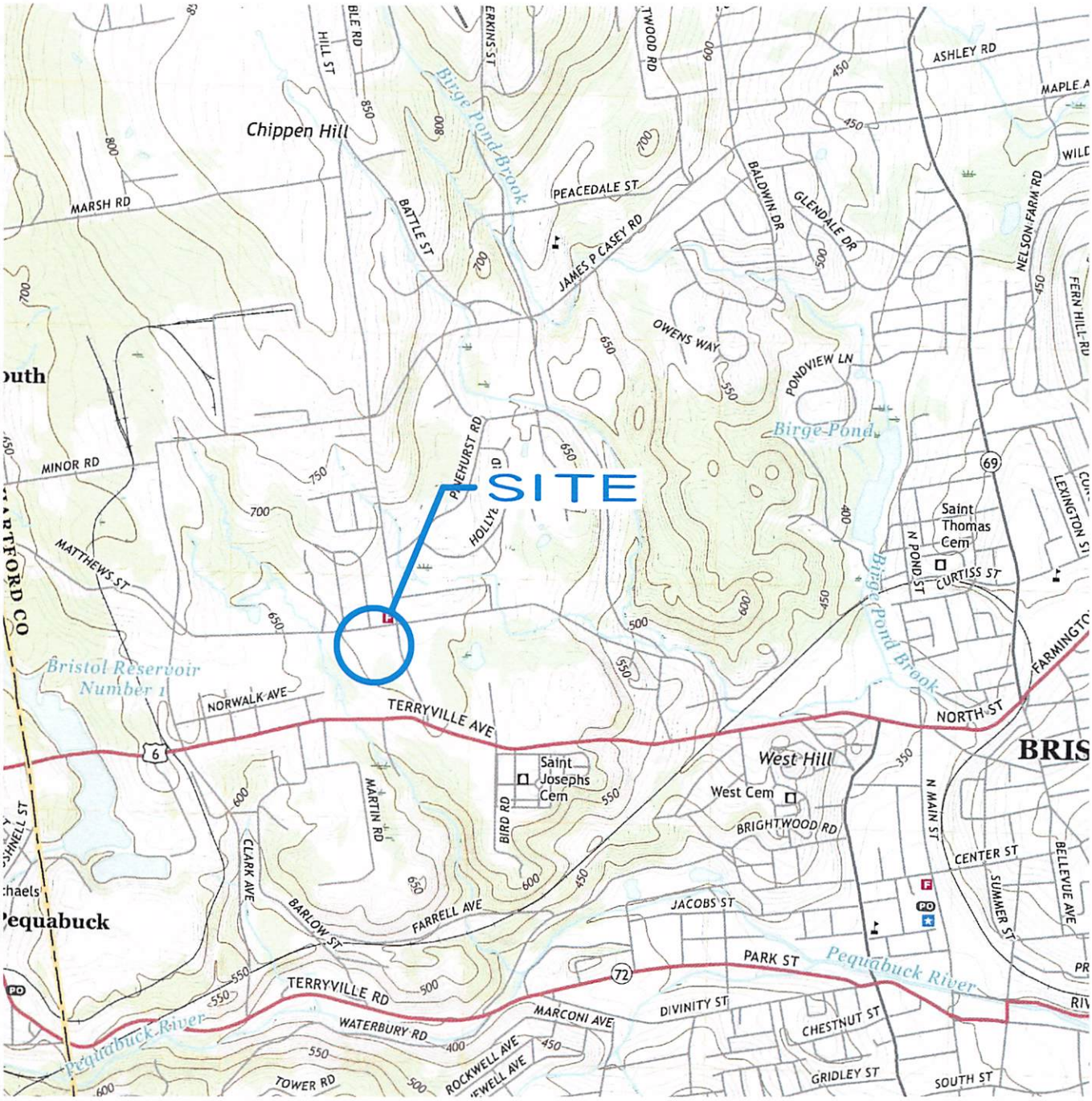
12.0 CLOSURE

We trust the information presented herein is sufficient for your use to progress design of the proposed solar array. We have enjoyed working with you on this project and look forward to our continued involvement. Please do not hesitate to call us if you have any questions.

This report is subject to the limitations included in Appendix 5.

APPENDIX 1 -

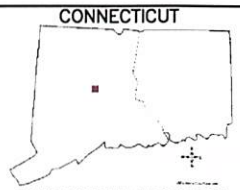
FIGURES



DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

122 CHURCH STREET
NAUGATUCK, CONNECTICUT 06770

CONNECTICUT



QUADRANGLE LOCATION

AREA PLAN
PROPOSED SOLAR ARRAY
MATTHEWS STREET AND HILL STREET
BRISTOL, CONNECTICUT

REFERENCE:
USGS TOPOGRAPHIC QUADRANGLE: BRISTOL, CT

SCALE 1"= 2,000'

2,000' 1,000' 0 2,000'

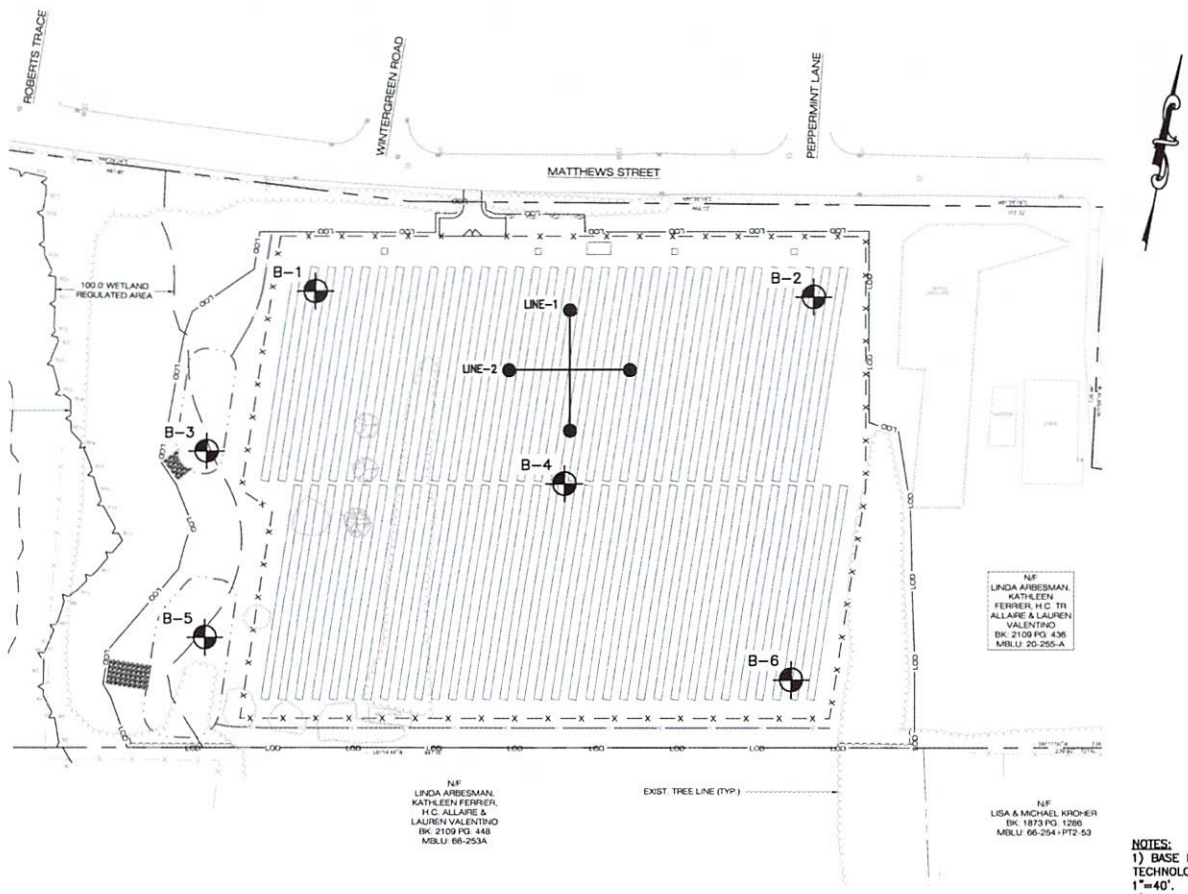
PROJECT NO. 0032-036.00

DATE: 5/20/20

FIGURE NO. 1

DRAWN BY: MF

REVIEWED BY: RPJ



LEGEND

B-1 — TEST BORING NO. AND LOCATION BY DOWN TO EARTH CONSULTING, LLC

LINE-1 — RESISTIVITY TEST LOCATION (TYP.)

NOTES:

1) BASE MAP DEVELOPED FROM AN ELECTRONIC FILE PREPARED BY ALL-POINTS TECHNOLOGY, ENTITLED "SITE AND UTILITY PLAN", DATED APRIL, 2020. ORIGINAL SCALE 1"=40'.
2) BORINGS WERE COMPLETED BY GENERAL BORINGS, INC. AND OBSERVED BY DOWN TO EARTH CONSULTING, LLC.
3) RESISTIVITY TESTING WAS PERFORMED ON MAY 14, 2020 BY DOWN TO EARTH CONSULTING, LLC.
4) THE LOCATIONS OF THE EXPLORATIONS WERE DETERMINED BY TAPING AND VISUAL ESTIMATES FROM EXISTING SITE FEATURES. THESE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

DESIGNED BY OTHERS						
DRAWN BY MF						
CHECKED BY RPJ						
APPROVED BY RPJ	NO.	DATE	REVISIONS	DRWN.	CHKD	APPVD

SCALE 1"=100'

100 50 0 50

DOWN TO EARTH CONSULTING, LLC
122 CHURCH STREET
NAUGATUCK, CONNECTICUT 06770

PROJECT
PROPOSED SOLAR ARRAY
MATTHEWS STREET AND HILL STREET
BRISTOL, CONNECTICUT

DWG. TITLE.
SITE AND EXPLORATION LOCATION PLAN

FILE NO. 0032-036.00
SCALE AS NOTED
DATE 5/20/2020
FIGURE NO. 2

APPENDIX 2 -

TEST BORING LOGS

DOWN TO EARTH CONSULTING, LLC

PROJECT		BORING NO.	B-1
PROPOSED SOLAR ARRAY		SHEET	1 of 1
MATTHEWS STREET AND HILL STREET		FILE NO.	0032-036.00
BRISTOL, CONNECTICUT		CHKD. BY	RPJ

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	John Wyant	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	5/14/2020	Date End	5/14/2020

Hammer Type:	Winch Cable Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Truck Diedrich D-50
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time
5/14/20	-	-	-	not encountered

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA DESCRIPTION
1		S-1	6/24	0 to 2	3-3-13-14		Medium dense, Top 13": dark brown/black SILT and fine to coarse SAND, trace fine Gravel, trace (-) Roots, with fractured coarse gravel fragments in sample tip	8"+/- Topsoil FILL
2								
3		S-2	9/24	2 to 4	23-22-30-25		Medium dense, brown/gray fine to coarse SAND, trace fine Gravel, trace Silt, with decomposed rock fragments at sample tip	SAND
4								
5								WEATHERED ROCK
6		S-3	11/11	5 to 5.9	50-50/5"		Very dense, white/gray decomposed GNEISS fragments	
7		C-1	10/24	6 to 8		2	Very Poor Quality, Moderately Hard, Extremely Weathered, gray/white GNEISS and QUARTZITE	BEDROCK
8						2		
9							END OF EXPLORATION AT 8 FEET BELOW GROUND SURFACE	
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger refusal encountered at about 6 feet below ground surface.
4) Rock coring was attempted at about 6 feet below grade and was advanced about 2 feet prior to experiencing technical issues with the drill rig.

DOWN TO EARTH CONSULTING, LLC

PROJECT		BORING NO.	B-2
PROPOSED SOLAR ARRAY		SHEET	1 of 1
MATTHEWS STREET AND HILL STREET		FILE NO.	0032-036.00
BRISTOL, CONNECTICUT		CHKD. BY	RPJ

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	John Wyant	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	5/14/2020	Date End	5/14/2020

Hammer Type:	Winch Cable Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Truck Diedrich D-50
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time
5/14/20	-	-	-	not encountered

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA DESCRIPTION
1		S-1	14/24	0 to 2	1-7-8-18		Medium dense, dark brown SILT and fine to medium SAND, trace fine Gravel, trace (-) Roots	12"+/- Topsoil
2								FILL
3		S-2	9/15	2 to 3.3	14-17-50/3"		Very dense, brown fine to medium SAND, little Silt, trace fine Gravel, with decomposed rock fragments at sample tip	SAND
4								
5								WEATHERED ROCK
6		S-3	4/4	5 to 5.3	50/4"		Very dense, gray/white decomposed GNEISS fragments	
7								
8							END OF EXPLORATION AT 5.5 FEET BELOW GROUND SURFACE	
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger refusal encountered at about 4 feet below ground surface (bgs). Boring relocated about 4 feet west and advanced to 5 feet bgs prior to collecting subsequent sample.
4) Auger refusal encountered at about 5.5 feet bgs. Boring relocated about 6 feet west and advanced until encountering auger refusal at about 5 feet bgs.

DOWN TO EARTH CONSULTING, LLC
GEOTECHNICAL AND ENVIRONMENTAL ENGINEERING

PROJECT
PROPOSED SOLAR ARRAY
MATTHEWS STREET AND HILL STREET
BRISTOL, CONNECTICUT

BORING NO. B-3
SHEET 1 of 1
FILE NO. 0032-036.00
CHKD. BY RPJ

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	John Wyant	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	5/14/2020	Date End	5/14/2020

Hammer Type:	Winch Cable Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Truck Diedrich D-50
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)

Date	Time	Depth (ft)	Elev.	Stabilization Time
5/14/20	-	-	-	not encountered

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA DESCRIPTION
1		S-1	12/24	0 to 2	4-6-4-4		Medium dense, Top 8": dark brown fine to coarse SAND and SILT, trace (-) Roots; Bottom 4": brown fine to coarse SAND, little Silt	6"+/- Topsoil FILL
2								
3		S-2	7/24	2 to 4	7-18-28-35		Medium dense, brown fine to coarse SAND, some fine to coarse Gravel, trace Silt, with decomposed rock fragments	SAND & GRAVEL
4								
5								
6		S-3	8/9	5 to 5.7	75-55/3"		Very dense, brown fine to coarse SAND and GRAVEL, trace Silt, with decomp. rock frag.	
7							END OF EXPLORATION AT 6 FEET BELOW GROUND SURFACE	
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger chatter observed from about 3 to 6 feet below ground surface on inferred cobbles/boulders.
4) Auger refusal encountered at about 6 feet below ground surface on inferred boulder/possible bedrock.

DOWN TO EARTH CONSULTING, LLC

PROJECT
PROPOSED SOLAR ARRAY
MATTHEWS STREET AND HILL STREET
BRISTOL, CONNECTICUT

BORING NO. B-4
SHEET 1 of 1
FILE NO. 0032-036.00
CHKD. BY RPJ

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	John Wyant	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	5/14/2020	Date End	5/14/2020

Hammer Type:	Winch Cable Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Truck Diedrich D-50
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)

Date	Time	Depth (ft)	Elev.	Stabilization Time
5/14/20	-	9	-	collapsed hole - end of drilling

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA DESCRIPTION
1		S-1	12/15	0 to 1.3	3-8-50/3"		Very dense, dark brown to brown fine to coarse GRAVEL and fine to coarse SAND, little Silt, trace (-) Roots	6"+/- Topsoil FILL
2								
3								COBBLES/ BOULDERS
4								
5								
6		S-2	2/24	5 to 7	31-34-27-34		Very dense, brown, fractured coarse GRAVEL fragments, some fine to coarse Sand, trace Silt	SAND & GRAVEL
7								
8		S-3	20/24	7 to 9	30-23-25-31		Very dense, gray/brown SILT and fine to coarse SAND, trace fine Gravel	GLACIAL TILL
9								
10								
11		S-4	20/24	10 to 12	7-19-34-36		Very dense, gray SILT and fine to coarse SAND, little fine Gravel, moist	
12								
13								
14								
15								
16		S-5	13/24	15 to 17	27-20-24-26		Dense, gray SILT and fine to coarse SAND, with decomposed rock fragments, moist	
17								
18								
19								
20								
21		S-6	20/24	20 to 22	19-34-34-33		Very dense, gray fine to coarse SAND and SILT, trace fine Gravel, moist	
22								
23							END OF EXPLORATION AT 22 FEET BELOW GROUND SURFACE	
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger chatter observed from about 1 to 4 feet below grade on inferred cobbles/boulders.

DOWN TO EARTH CONSULTING, LLC

PROJECT		BORING NO.	B-5
PROPOSED SOLAR ARRAY		SHEET	1 of 1
MATTHEWS STREET AND HILL STREET		FILE NO.	0032-036.00
BRISTOL, CONNECTICUT		CHKD. BY	RPJ

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	John Wyant	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	5/14/2020	Date End	5/14/2020

Hammer Type:	Winch Cable Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Truck Diedrich D-50
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)

Date	Time	Depth (ft)	Elev.	Stabilization Time
5/14/20	-	10	-	wet sample
5/14/20	-	8	-	collapsed hole - end of drilling

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA DESCRIPTION
1		S-1	6/24	0 to 2	8-12-12-7		Medium dense, dark brown to brown fine to coarse SAND, some Silt, trace fine Gravel, trace (-) Roots	6"+/- Topsoil FILL
2								
3		S-2	12/24	2 to 4	5-3-15-20		Medium dense, brown fine to coarse SAND, some fine Gravel, little Silt	
4								
5								SAND & GRAVEL
6		S-3	9/11	5 to 7	36-76/5"		Very dense, brown fine to coarse SAND and GRAVEL, trace Silt, with fractured cobble fragments	
7								
8								
9								
10								
11		S-4	13/22	10 to 11.8	20-23-50-50/4"		Very dense, brown fine to coarse SAND and fine to coarse GRAVEL, trace Silt, wet	
12								
13							END OF EXPLORATION AT 11.8 FEET BELOW GROUND SURFACE	
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.

DOWN TO EARTH CONSULTING, LLC

PROJECT	BORING NO.	B-6
PROPOSED SOLAR ARRAY	SHEET	1 of 1
MATTHEWS STREET AND HILL STREET	FILE NO.	0032-036.00
BRISTOL, CONNECTICUT	CHKD. BY	RPJ

Boring Co.	General Borings, Inc.	Boring Location	See Boring Location Plan		
Driller	John Wyant	Ground Surface El.	Not Available	Datum	Not Available
Logged By	Mateusz Fekieta	Date Start	5/14/2020	Date End	5/14/2020

Hammer Type:	Winch Cable Operated Safety Hammer
Sampler Size:	1-3/8" I.D. Split Spoon
Type Drill Rig:	Truck Diedrich D-50
Drilling Method:	3.25-inch I.D. Hollow-Stem Augers

Groundwater Readings (from ground surface)				
Date	Time	Depth (ft)	Elev.	Stabilization Time
5/14/20	-	7	-	wet sample

DEPTH	Casing Blows (ft)	SAMPLE INFORMATION Type & No.	REC/PEN (inches)	DEPTH (feet)	BLOWS PER 6 INCHES	Core Time (min./ft)	SAMPLE DESCRIPTION	STRATA DESCRIPTION
1		S-1	10/24	0 to 2	2-8-43-18		Very dense, white/light brown fine to coarse GRAVEL and SAND, little Silt	6"+/- Topsoil FILL
2								
3		S-2	13/24	2 to 4	13-13-10-13		Medium dense, brown fine to coarse SAND, trace fine Gravel, trace Silt	SAND
4								
5								
6		S-3	23/24	5 to 7	9-10-14-16		Medium dense, gray/brown SILT, some fine to coarse Sand, trace fine Gravel, moist	
7								
8		S-4	9/24	7 to 9	23-26-35-33		Very dense, gray SILT and fine to coarse SAND, trace fine Gravel, wet	
9								
10								
11		S-5	21/24	10 to 12	8-19-23-32		Dense, gray fine to coarse SAND and SILT, little fine Gravel, with decomposed rock fragments	GLACIAL TILL
12								
13								
14								
15								
16		S-6	10/24	15 to 17	18-30-33-34		Very dense, gray fine to coarse SAND, some Silt, little fine Gravel, with decomposed rock fragments	
17								
18							END OF EXPLORATION AT 17.5 FEET BELOW GROUND SURFACE	
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

SPT N-Values	SPT N-Values	Proportions	SYMBOL KEY	
0 to 4 - Very Loose	0 to 2 - Very Soft	Trace = 0 to 10%	1. S denotes split-barrel sampler.	7. WH denotes weight of hammer
5 to 10 - Loose	3 to 4 - Soft	Little = 10 to 20%	2. ST denotes 3-inch O.D. undisturbed sample.	8. WR denotes weight of rods
11 to 30 - Medium Dense	5 to 8 - Medium Stiff	Some = 20 to 35%	3. UO denotes 3-inch Osterberg undisturbed sample.	9. PP denotes Pocket Penetrometer.
31 to 50 - Dense	9 to 15 - Stiff	And = 35 to 50%	4. PEN denotes penetration length of sampler.	10. FVST denotes field vane shear test.
Over 50 - Very Dense	16 to 30 - Very Stiff		5. REC denotes recovered length of sample.	11. RQD denotes Rock Quality Designation.
	Over 30 - Hard		6. SPT denotes Standard Penetration Test.	12. C denotes core run number.

FIELD NOTES: 1) Stratification lines represent approximate boundaries between soil types, transitions may be gradual.
2) Water level readings have been made at times and under conditions stated, fluctuations may occur due to other factors.
3) Auger refusal encountered at about 17.5 feet below ground surface on inferred boulder/possible bedrock.

APPENDIX 3 -

LABORATORY TEST RESULTS

THIELSCH ENGINEERING
195 Frances Avenue
Cranston RI, 02910
Phone: (401)-467-6454
Fax: (401)-467-2398
thielsch.com
Let's Build a Solid Foundation

Client Information:
Down to Earth Consulting, LLC
Naugatuck, CT
PM: Ray Janeiro
Assigned By: Ran Janeiro
Collected By: Client

Project Information:
Sunjet Bristol
Bristol, CT
DTE Project Number: 0032-036.00
Summary Page: 1 of 1
Report Date: 06.03.2020

LABORATORY TESTING DATA SHEET, Report No.: 7420-E-171

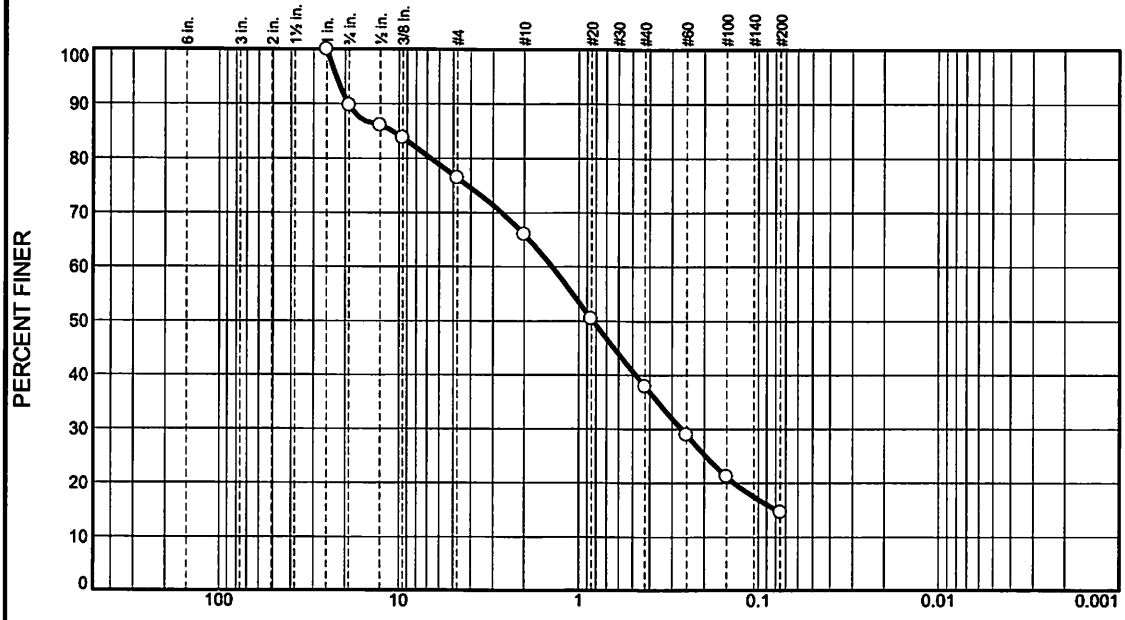
Boring ID	Sample No.	Depth (ft)	Laboratory No.	Identification Tests						Corrosivity Tests								Laboratory Log and Soil Description
				As Received Water Content %	LL %	PL %	Gravel %	Sand %	Fines %	Resitivity (Mohms-cm)	Sulfate (mg/kg)	Chloride (mg/kg)	Sulfide (mg/kg)	Redox Potential (mv)	pH	Electrical Resist. As Received Ohm-cm @ 60°F	Electrial Resist. Saturated Ohm-cm @ 60°F	
				D2216	D4318		D6913			EPA	D4327	D4327	EPA		D4972	G57		
B-2	Grab	0-4	20-S-1405	4.6							ND	ND			6.48	110000	107000	Corrosivity Only
B-4	Grab	0-4	20-S-1406	2.5							ND	ND			7.21	109000	85200	Corrosivity Only
B-3	S-3	5-5.8	20-S-1407				23.6	61.9	14.5									Brown silty sand with gravel
B-5	S-3	5-7	20-S-1408				28.3	63.6	8.1									Brown well-graded sand with silt and gravel

Date Received: *05.26.2020*

Reviewed By:

Date Reviewed: *06.03.2020*

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	10.3	13.3	10.4	28.1	23.4	14.5	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1"	100.0		
0.75"	89.7		
0.5"	86.1		
0.375"	83.7		
#4	76.4		
#10	66.0		
#20	50.4		
#40	37.9		
#60	28.9		
#100	21.2		
#200	14.5		

* (no specification provided)

Material Description

Brown silty sand with gravel

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SM AASHTO (M 145)= A-1-b

Coefficients

D_{90}= 19.2781 D_{85}= 10.8775 D_{60}= 1.4085
D_{50}= 0.8330 D_{30}= 0.2664 D_{15}= 0.0796
D_{10}= C_u= C_c=

Remarks

Date Received: 05.26.2020 **Date Tested:** 05.28.2020

Tested By: IA

Checked By: Steven Accetta

Title: Laboratory Coordinator

Source of Sample: Borings **Depth:** 5-5.8' **Date Sampled:**

Sample Number: B-3 / S-3

Thielsch Engineering Inc.

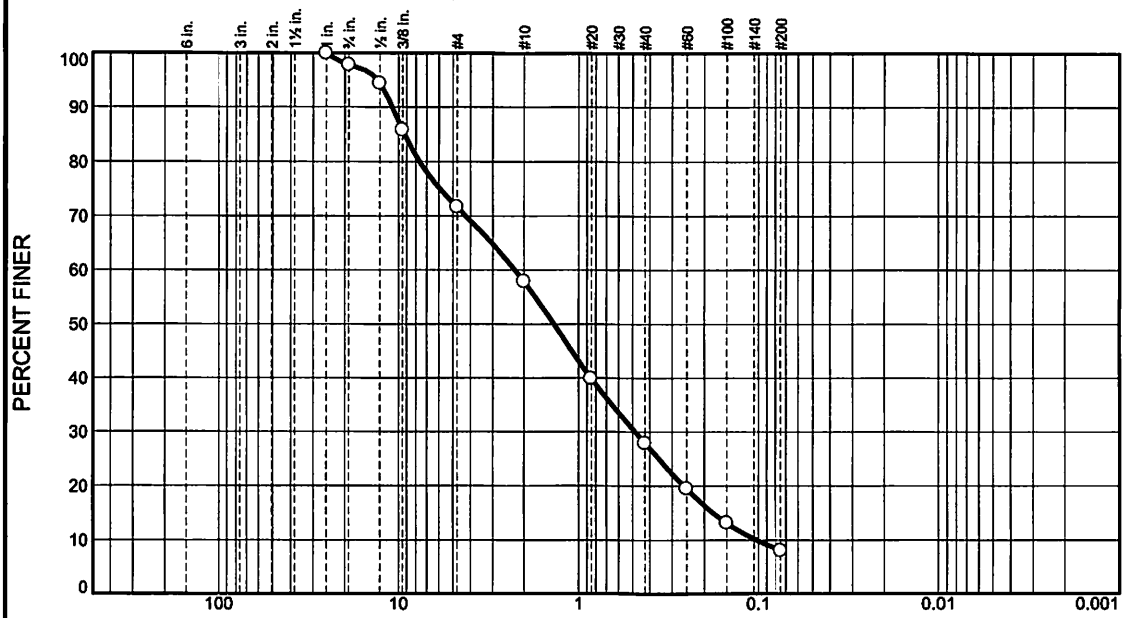
Cranston, RI

Client: Down to Earth Consulting, LLC

Project: Sunjet Bristol
Bristol, CT

Project No: 0032-036.00 **Figure** 20-S-1407

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	2.2	26.1	13.9	29.9	19.8	8.1	

Test Results (D6913 & ASTM D 1140)

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
1"	100.0		
0.75"	97.8		
0.5"	94.4		
0.375"	85.8		
#4	71.7		
#10	57.8		
#20	39.9		
#40	27.9		
#60	19.5		
#100	13.1		
#200	8.1		

* (no specification provided)

Material Description

Brown well-graded sand with silt and gravel

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SW-SM AASHTO (M 145)= A-1-b

Coefficients

D_{90}= 10.8478 D_{85}= 9.2790 D_{60}= 2.2491
D_{50}= 1.3704 D_{30}= 0.4824 D_{15}= 0.1787
D_{10}= 0.1024 C_u= 21.97 C_c= 1.01

Remarks

Date Received: 05.26.2020 **Date Tested:** 05.28.2020

Tested By: IA

Checked By: Steven Accetta

Title: Laboratory Coordinator

Source of Sample: Borings **Depth:** 5-7' **Date Sampled:**

Sample Number: B-5 / S-3

Thielsch Engineering Inc.

Cranston, RI

Client: Down to Earth Consulting, LLC

Project: Sunjet Bristol
Bristol, CT

Project No: 0032-036.00 **Figure** 20-S-1408

CERTIFICATE OF ANALYSIS

Steve Accetta
Thielsch Engineering, Inc.
195 Frances Avenue
Cranston, RI 02910

RE: Sunjet Bristol Down to Earth (0032-036.00)
ESS Laboratory Work Order Number: 20E0675

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 12:02 pm, Jun 03, 2020

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: Sunjet Bristol Down to Earth

ESS Laboratory Work Order: 20E0675

SAMPLE RECEIPT

The following samples were received on May 27, 2020 for the analyses specified on the enclosed Chain of Custody Record.

The client did not deliver the samples in a cooler.

Lab Number	Sample Name	Matrix	Analysis
20E0675-01	B-2 20-S-1405	Soil	D4327
20E0675-02	B-4 20-S-1406	Soil	D4327

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: Sunjet Bristol Down to Earth

ESS Laboratory Work Order: 20E0675

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: Sunjet Bristol Down to Earth

ESS Laboratory Work Order: 20E0675

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: Sunjet Bristol Down to Earth
Client Sample ID: B-2 20-S-1405
Date Sampled: 05/27/20 09:00
Percent Solids: 96

ESS Laboratory Work Order: 20E0675
ESS Laboratory Sample ID: 20E0675-01
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Chloride	WL ND (5)		D4327		1	EEM	05/28/20 19:42	mg/kg dry	DE02831
Sulfate	WL ND (10)		D4327		1	EEM	05/28/20 19:42	mg/kg dry	DE02831

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: Sunjet Bristol Down to Earth
Client Sample ID: B-4 20-S-1406
Date Sampled: 05/27/20 09:00
Percent Solids: 98

ESS Laboratory Work Order: 20E0675
ESS Laboratory Sample ID: 20E0675-02
Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Chloride	WL ND (5)		D4327		1	EEM	05/28/20 19:58	mg/kg dry	DE02831
Sulfate	WL ND (10)		D4327		1	EEM	05/28/20 19:58	mg/kg dry	DE02831

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: Sunjet Bristol Down to Earth

ESS Laboratory Work Order: 20E0675

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch DE02831 - General Preparation										
Blank										
Chloride	ND	0.5	mg/kg wet							
Sulfate	ND	1	mg/kg wet							
LCS										
Chloride	10		mg/L	10.00		97	85-115			
Sulfate	10		mg/L	10.00		98	80-120			

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: Sunjet Bristol Down to Earth

ESS Laboratory Work Order: 20E0675

Notes and Definitions

WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probably Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc.
Client Project ID: Sunjet Bristol Down to Earth

ESS Laboratory Work Order: 20E0675

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS LAB PROJECT ID: 20F0675

Turn Time: Standard Rush _____ Approved By: _____

Reporting Limits -

State where samples were collected: CT

Is this project for any of the following: (please circle)
MA-MCP CT-RCP RGP DOD Other_____

Electonic Deliverable Yes_X__ No____
Format: Excel___ Access___ PDF_X_ Other_____

Project Manager: Steve Accetta
Company: Thielsch Engineering
Address: 195 Frances Ave
Cranston, RI 02910

Project # 0032-036.00

Project Name / Client Name:
Sunjet Bristol
Down to Earth Consulting, LLC

Contract Pricing __x___
Special Pricing WO#: _____

ESS Lab Sample ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample Identification	# of Container	Analysis: Sulfate	Analysis: Chloride									Comment #
1	05.27.2020	9:00	G	S	~~Bristol B-2 S-1405~~ B-2,20-S-1405	1	X	X									
2	05.27.2020	9:00	G	S	~~Bristol B-4 S-1406~~ B-4,20-S-1406	1	X	X									
					hdm 5/28/20												

Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-_CH_3OH____ — NP NP

Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA — AG AG

Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present ____Yes _X_No
Seals Intact _____ Yes _____ No NA: X
Cooler Temperature: 22.1

Sampled by : J. McDaniel

Comments: Please send report to: Rroth@thielsch.com, Saccetta@thielsch.com, mcolman@thielsch.com

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	05.27.20 10:50				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Please E-mail all changes to Chain of Custody in writing.

Page ____ of ____

ESS Laboratory

Division of Thielsch Engineering, Inc.
185 Frances Avenue, Cranston, RI 02910-2211
Tel. (401) 461-7181 Fax (401) 461-4486
www.esslaboratory.com

CHAIN OF CUSTODY

ESS LAB PROJECT ID: 20F0675

Turn Time: Standard Rush _____ Approved By: _____

Reporting Limits -

State where samples were collected: CT

Is this project for any of the following: (please circle)
MA-MCP CT-RCP RGP DOD Other_____

Electonic Deliverable Yes_X__ No____
Format: Excel___ Access___ PDF_X_ Other_____

Project Manager: Steve Accetta
Company: Thielsch Engineering
Address: 195 Frances Ave
Cranston, RI 02910

Project # 0032-036.00
Project Name / Client Name:
Sunjet Bristol
Down to Earth Consulting, LLC
Contract Pricing __x___
Special Pricing WO#:_____

ESS Lab Sample ID	Date	Collection Time	Grab -G Composite-C	Matrix	Sample Identification	# of Container	Analysis: Sulfate	Chloride									Comment #
1	05.27.2020	9:00	G	S	Bristol B-2 S-1405	1	X	X									
2	05.27.2020	9:00	G	S	Bristol B-4 S-1406	1	X	X									
Preservation Code: 1-NP, 2-HCl, 3-H2SO4, 4-HNO3, 5-NaOH, 6-MeOH, 7-Asorbic Acid, 8-ZnAct, 9-_CH_3OH____							NP	NP									
Container Type: P-Poly G-Glass AG-Amber Glass S-Sterile V-VOA							AG	AG									

Matrix: S-Soil SD-Solid D-Sludge WW-Wastewater GW-Groundwater SW-Surface Water DW-Drinking Water O-Oil W-Wipes F-Filter

Cooler Present ____Yes X No
Seals Intact ____ Yes ____ No NA: X
Cooler Temperature: 22.1

Sampled by : J. McDaniel

Comments: Please send report to: Rroth@thielsch.com, Saccetta@thielsch.com, mcolman@thielsch.com

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	05.27.20 10:50				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)

Please E-mail all changes to Chain of Custody in writing.

Page ____ of ____

APPENDIX 4 -

KOZENY-CARMAN ANALYSES

Table 1
Kozeny - Carman Analyses
to Estimate Hydraulic Conductivity

Sunjet Bristol
Bristol, Connecticut
Project Number: 0032-036.00

Test Boring No.	Sample No.	Sample Depth (ft.)	D_{10} (mm)	Descriptive Density	Est. Relative Density (%)	in-situ void ratio e	in-situ porosity n	Coefficient of Permability k (cm/sec)	Coefficient of Permability k (ft/day)
B-3	S-3	5'-5.8'	0.003	Very Dense	100	0.140	0.12	1.02E-07	2.89E-04
B-5	S-3	5'-7'	0.102	Very Dense	100	0.140	0.12	1.18E-04	3.34E-01

SPT (bl/ ft)	Descriptive Density	Relative Density (%)
0 to 4	Very loose	0 to 15
4 to 10	Loose	15 to 35
10 to 30	Medium Dense	35 to 65
30 to 50	Dense	65 to 85
50 +	Very dense	85 to 100

emin	emax
0.14	0.85

APPENDIX 5 -

LIMITATIONS

LIMITATIONS

Explorations

1. The analyses and recommendations submitted in this report are based in part upon the data obtained from subsurface explorations by Down To Earth Consulting, LLC (DTE) and others. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the recommendations of this report.

2. The generalized soil profile described in the text is intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples; actual soil transitions are probably more erratic. For specific information, refer to the boring logs.

3. Water level readings have been made in the drill holes at times and under conditions stated on the boring logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, tidal, temperature, and other factors occurring since the time measurements were made.

Review

4. In the event that any changes in the nature, design or location of the proposed solar arrays are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing by DTE. It is recommended that this firm be provided the opportunity for a general review of final design and specifications in order that earthwork and foundation recommendations may be properly interpreted and implemented in the design and specifications.

Construction

5. It is recommended that this firm be retained to provide soil engineering services during construction of the earthworks and foundation phases of the work. This is to observe compliance with the design concepts, specifications, and recommendations and to allow design changes in the event that subsurface conditions differ from those anticipated prior to start of construction.

Use of Report

6. This report has been prepared for the exclusive use of All-Points Technology Corporation, PC for specific application to the project noted in this geotechnical report in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made.

7. This soil and foundation engineering report has been prepared for this project by DTE. This report is for design purposes only and is not sufficient to prepare an accurate bid. Contractors wishing a copy of the report may secure it with the understanding that its scope is limited to design considerations only.

8. This report may contain comparative cost estimates for the purpose of evaluating alternative foundation schemes. These estimates may also involve approximate quantity evaluations. It should be noted that quantity estimates may not be accurate enough for construction bids. Since DTE has no control over labor and materials cost and design, the estimates of construction costs have been made on the basis of experience. DTE does not guarantee the accuracy of cost estimates as compared to contractor's bids for construction costs.

Attachment C

Sungrow Noise Report

SUNJET ENERGY, LLC

INTERROGATORY RESPONSES - SET ONE

PETITION NO. 1427

November 27, 2020

SG125HV Noise Level Test Report

Version	Date	Author	Approved by
V10	2017,May, 28	Bale, Yang	Chen W

1.Introduction

This document describes the noise level test for SG125HV.The test is conducted in the Sungrow Testing Center, which is a WMT testing lab (Witnessed Manufacturer's Testing) accredited by TUV, CSA and UL.

The test procedures are in accordance with the standard ISO3746 and the sound pressure level fulfills the requirements in the IEC62109-1 standard.

2.Noise Level Test

The noise test was completed in the shielding room using the test platform shown below:

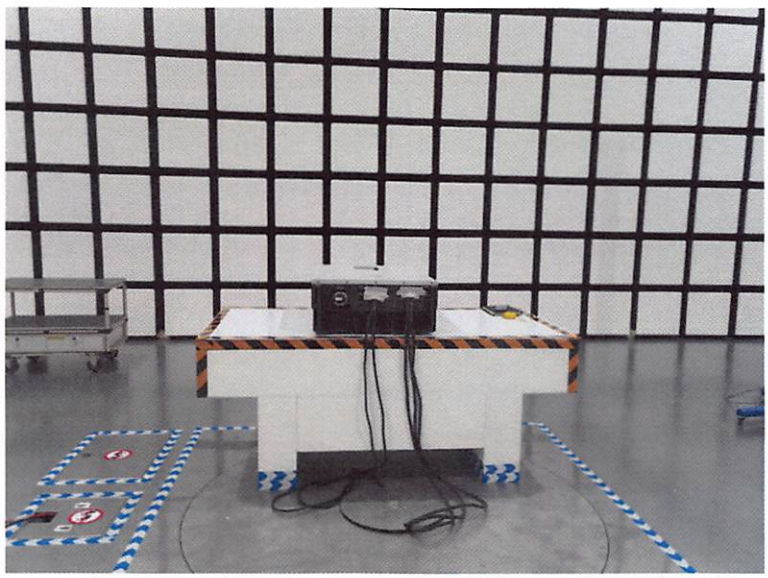


Fig-1 Noise Test Platform

During the test, the noise test instrument is located at a distance of 1m from the inverter, the inverter's operating DC voltage is 1050V and its output power is 125kW.The test data for the four directions and background noise are as follows:

Direction	**Test Data**
Bottom	61.6dB
Left Side	56.9dB
Top	53.7dB
Right Side	53.2dB
Background Noise	31.1dB

Appendix: Testing Pictures

Fig-2 Background Noise

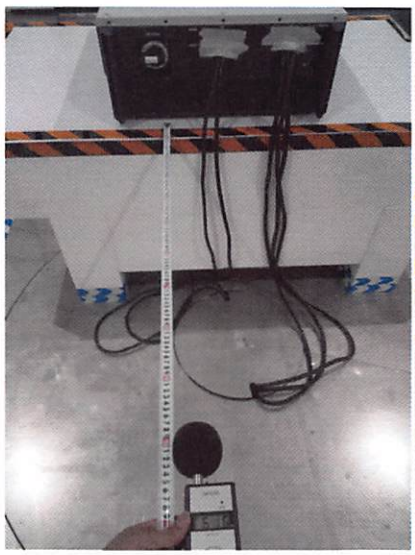


Fig-3 Bottom Side

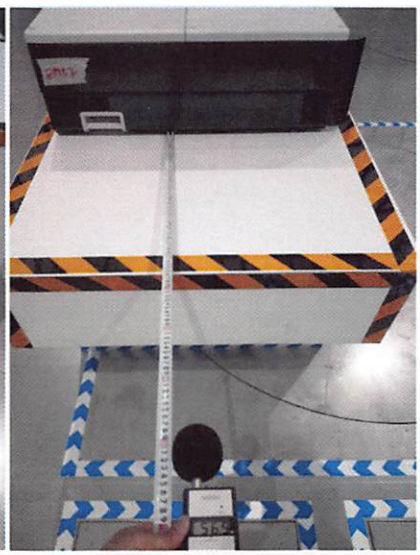


Fig-4 Left Side

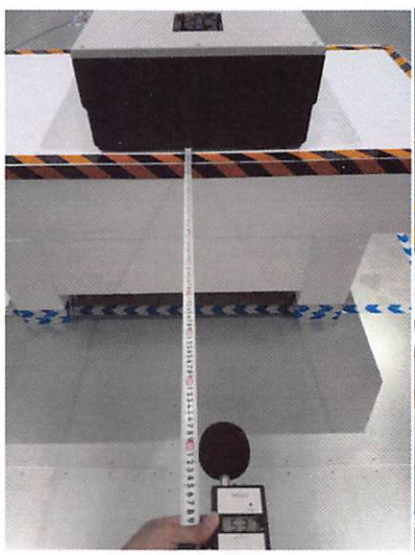


Fig-5Top Side

Fig-6Right Side

Attachment D

Bulletin 30

SUNJET ENERGY, LLC

INTERROGATORY RESPONSES - SET ONE

PETITION NO. 1427

November 27, 2020

MGM

TRANSFORMER COMPANY

COMMERCE, CA MGM TRANSFORMER

BULLETIN 30

Dry Type Substation Transformers

ISO 9001:2008 REGISTERED

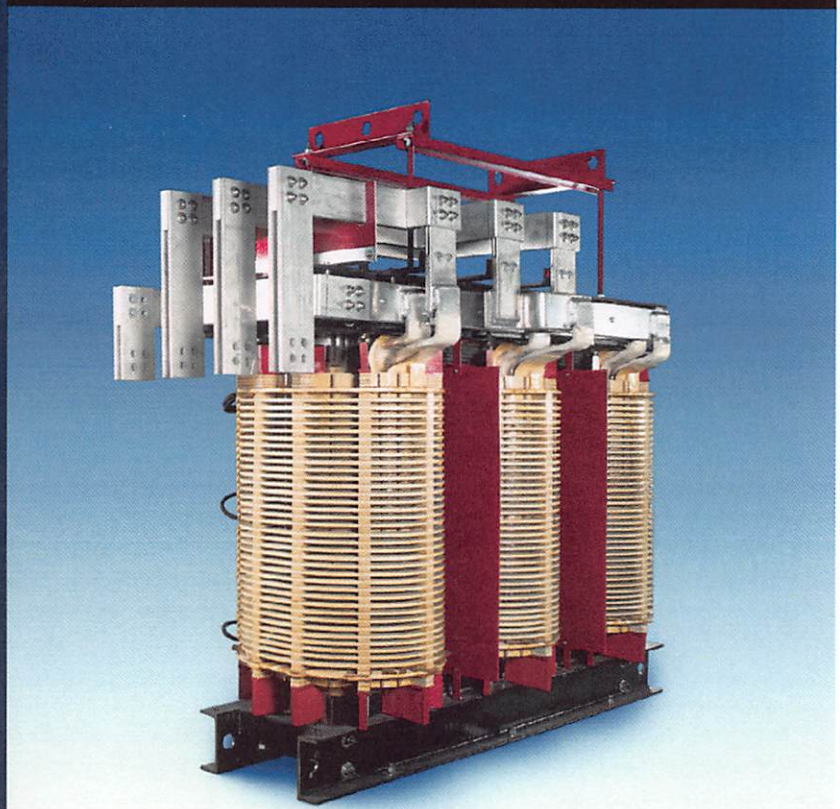
U.S. DEPARTMENT OF ENERGY

DOE 2016 COMPLIANT

ENERGY STAR PARTNER

made in USA

Special Design



MGM Transformer Company manufactures transformers in six major categories:

Special Design Dry Type Transformers:
- 9 kVA to 10,000 kVA
- Single Phase & Three Phase
- 600 V to 34.5 kV
- K-Factor Ratings
- Retrofit Applications

Dry Type Substation Transformers:
- 225 kVA to 10,000 kVA
- 600 V to 34.5 kV
- Indoor and Outdoor

Liquid Filled Substation Transformers:
- 500 kVA to 10,000 kVA
- 2.5 kV to 34.5 kV
- Indoor and Outdoor

Dry Type Drives Isolation Transformers:
- 6, 12, 18, 24 and 36-Pulse
- 15 kVA to 7,500 kVA
- 600 V to 25 kV
- Indoor and Outdoor

Liquid Filled Drives Isolation Transformers:
- 6, 12, 18, 24 and 36-Pulse
- 200 kVA to 7,500 kVA
- 2.5 kV to 25 kV
- Indoor and Outdoor

600V Class Transformers:
- 15 kVA to 3,750 kVA, 3-Phase
- 10 kVA to 833 kVA, 1-Phase

MGM Transformer Company has established itself as a leading manufacturer of custom dry type transformers. With an exceptionally large and experienced engineering staff, MGM has the ability to design to the varying criteria of differing industries while maintaining short lead times. Core and coil applications for regulators and UPS systems, low loss/high efficiency drives isolation transformers. Special custom size K-factor rated substation transformers for retrofit are but a few of the special transformers MGM has designed and manufactured.

MGM employs three winding styles for Special Design Dry Type transformers, based on kVA, voltage and BIL requirements. The ability to select a specific winding style assures the highest degree of mechanical strength under short circuit stress conditions and suitability for different voltage classes.

Most transformer companies offer standard engineered products only, and ask the users to make it fit their applications. MGM can engineer the product both electrically and mechanically to fit virtually any application.

Dry Type Transformers

PRODUCT RANGE

Three Phase

Voltage Class	KVA
600 V thru 1.2 kV	9 thru 2,000
2.4 kV thru 5 kV	15 thru 10,000
8.7 kV thru 15 kV	45 thru 10,000
25 kV	225 thru 10,000
34.5 kV	500 thru 10,000

Single Phase

Voltage Class	KVA
600 V thru 1.2 kV	10 thru 833
2.4 kV thru 5 kV	15 thru 1,667
8.7 kV thru 15 kV	30 thru 1,667
25 kV	150 thru 1,667
34.5 kV	333 thru 1,667

Barrel wound

The rectangular barrel wound style is the most common method in the industry for 600V and 5kV applications.
MGM's standard is the superior oval barrel wound method for 600V class and 5kV class, 45kV BIL maximum.

Section wound

The section wound style is rarely used in the industry due to higher cost vs. barrel or random wound. May be used for special applications up to 125 kV BIL.

SPECIFICATIONS

- Aluminum/Copper
- 150°C / 115°C / 80°C or Special Request
- 220°C insulation
- NEMA standard/special sound levels
- ANSI standard/special BIL levels
- VPI
- UL K-factor ratings
- UL/CUL/CE/CSA listings (check with factory)
- Multi-voltage input/output
- 50/60/400 Hz
- OEM core and coil
- Multiple electrostatic shields
- Design to meet customer impedance and loss criteria
- Ultra Efficient Designs

Disk wound

Due to its superior design criteria, MGM uses this method on most 15kV class to 125kV BIL.

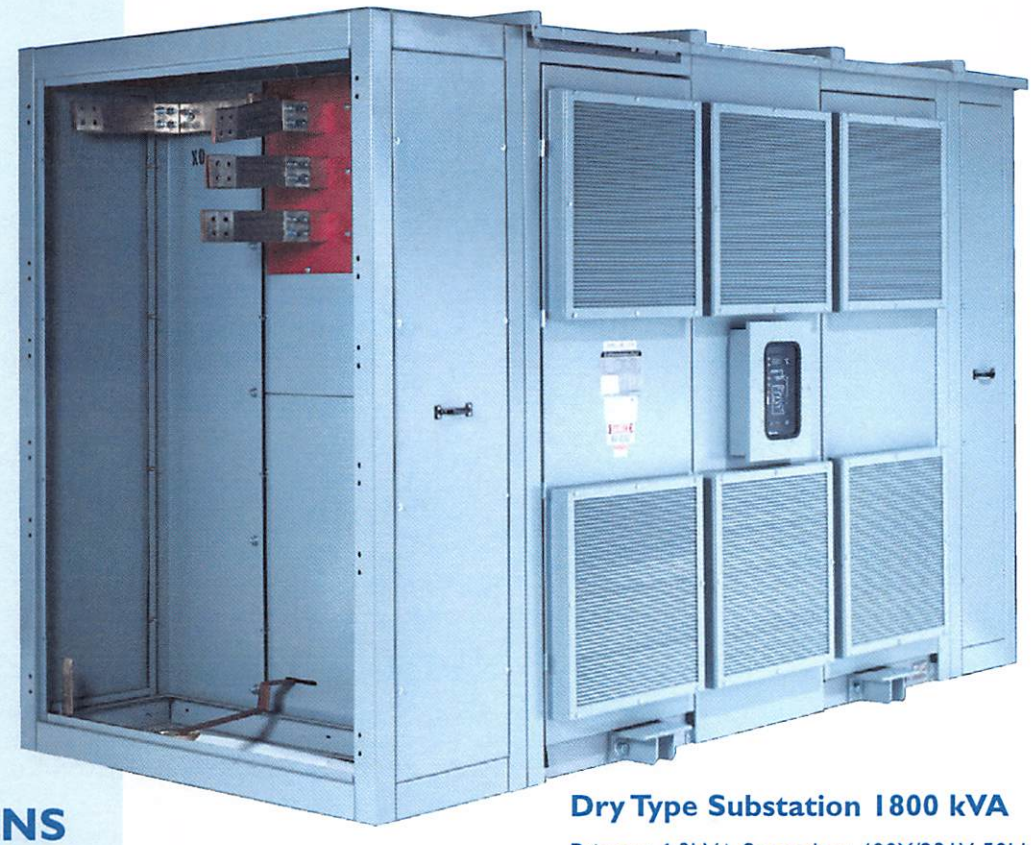
Substation Transformers

RANGE

225kVA-3,750kVA, 600 V

225kVA-10,000kVA, 2.4/5/15kV

500kVA-10,000kVA, 34.5kV



Dry Type Substation 1800 kVA

Primary 6.3kVΔ Secondary 400Y/231V 50Hz; 150°C Rise; Copper Wound; Digital Temperature Monitor; NEMA 3R Louvers; Low Voltage Transition Section with Flex Leads

SPECIFICATIONS

Aluminum/Copper
150°C / 115°C / 80°C
220°C insulation
Indoor/outdoor
ANSI standard/special BIL levels
VPI
UL K-factor ratings
UL/CUL/CSA listings
(check with factory)

BULL RUSH PROGRAM

Need it fast? We can deliver. Emergencies happen and we're here to respond. WE WILL WORK 24/7 TILL THE UNIT IS DONE OR YOUR MONEY BACK! Ask about our BULL RUSH program and let us know what you need.

For over two decades, MGM Transformer Company has been a reliable source for quality secondary unit substation transformers. Our standard designs cover the full range of requirements from 5kV to 34.5kV, 500kVA to 10,000kVA, in both liquid and dry type.

As an engineering oriented transformer company, we maintain a large engineering staff. Our experience in working with various switchgear manufacturers enables us to design the high voltage/low voltage switchgear interface, assuring the proper match in the field. Flex connectors can be supplied.

Non-standard substation designs are also available for special situations such as failed unit retrofitting or PCB replacement.

All manufacturing processes are done on the premises. This advantage, along with a large inventory of electrical steel and wire, assures our customers of the industry's **shortest standard lead times,** regardless of the interface requirements.

Ventilated Dry-Type Transformers

Approximate Enclosure Dimensions and Weights

Based upon 15kV class, 150°C rise. Al windings

KVA	Height Inches	Width* Inches	Depth Inches	Weight lbs
225	90	56	50	2,400
300	90	56	50	3,000
500	90	72	50	3,700
750	90	80	50	4,900
1000	90	90	50	6,000
1500	90	90	50	8,100
2000	100	100	60	9,700
2500	108	108	60	11,500
3000	108	108	60	12,800

*Add 18" to width for each ATC.

NOTES:

1. Coordination to HV/LV Switchgear may require Transition/Throats.
2. Depth and height dimension may increase for outdoor NEMA 3R enclosures.
3. Dimensions may vary with special requirements.
4. Dimensions and weights are subject to change without notice and should not be used for construction purposes.
5. Compact designs available.
6. Retrofit designs available. (with or without enclosures)
7. Special, totally enclosed enclosures available. (dimensions will vary)
8. MGM is now offering NEMA 1/3R/4 stainless steel enclosures.

Safe, Convenient and Environmentally Sound

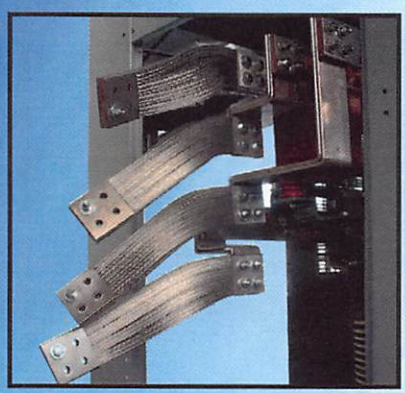
Installations of ventilated dry-type transformers do not require a liquid confinement area, automatic fire extinguishing system or fire vault. Dry-type transformers use no insulating liquids, virtually eliminating the risk of local environment contamination and simplifying routine maintenance by eliminating the need to check, replace or clean liquid. Dry-type units are relatively lightweight and can be conveniently installed on upper floors, balconies, roof trusses or roofs. Insurance companies generally offer lower premiums for installations of dry-types than for liquid-filled transformers.

General Construction

Coils are vacuum-pressure-impregnated (VPI) with solventless polyester resin, ensuring complete impregnation of the windings and insulation. The finished VPI coils are incredibly strong, readily dissipate heat and are protected against moisture, dirt and most industrial contaminants. Ventilated dry-type winding designs vary depending on the voltage, basic impulse level (BIL) and current of the individual winding and/or application of the transformer. For all units, the insulation system will be 220°C regardless of the average winding rise.

MGM ventilated dry-type transformers are designed for indoor or outdoor applications in schools, hospitals, industrial plants, commercial buildings and any place requiring safe and dependable power. Ventilated dry-type transformers offer an economical solution and are extremely reliable when properly installed and maintained.

DRY



ACCESSORIES OR OPTIONS

- Fans for 133% FA kVA rating
- Future fan wiring and control
- Ground bus - full length copper
- Impact indicator - Mechanical
- Outdoor enclosure NEMA 3R
- Paint — polyurethane overcoat
- Screened ventilation openings
- Enclosure — hinged panels
- Enclosure — knockdown
- Electrostatic Shield
- Space heaters
- Temperature monitor/fan controller
- Thermostat for space heaters
- Bus to End
- Flex Leads
- Low Noise

STANDARD FEATURES

- UL Listing, CSA, & CUL
- Vacuum Pressure Impregnated (VPI) windings
- 80°, 115°, 150°C average winding rise ratings
- 60 Hz operation
- 220°C insulation system
- Aluminum or copper windings
- ANSI ground pads
- Core ground strap
- Indoor ventilated enclosure - NEMA 1
- Paint — ANSI 61 finish
- Provisions for lifting
- Removable front and rear panels
- Vibration isolating pads
- (2) 2 1/2 % full capacity taps above and below nominal
- Conform to NEMA, ANSI, & IEE standards for Dry Type Transformers
- OSHPD Qualified

ENCLOSURE

The standard indoor enclosure is NEMA 1, Category C construction. Enclosures are suitable for lifting, jacking, rolling or skidding with provisions for lifting from the transformer base. High voltage and low voltage ANSI ground pads are provided.

The enclosure paint finish is neat, clean and highly resistant to corrosion. Metal surfaces are thoroughly cleaned of scale, oil, grease, rust and other foreign matter before painting. Unless specified otherwise, paint color shall be ANSI 61 (light gray). NEMA 3R and NEMA 4 outdoor enclosures are available for applications that prohibit indoor installation.

COILS

Generally, low voltage (LV) windings less than 2,400 volts are either multi-conductor barrel or sheet conductor types. Multi-conductor windings may be more economical and preferred in smaller kVA low voltage applications in which the current and axial short circuit forces are relatively small. High voltage (HV) windings 2,400 volts or greater may be single-section barrel, multi-section barrel or disk types. Ventilated dry-type coils may be either round, oval or rectangular through about 2,000 kVA. Transformers larger than 2,000 kVA generally are designed with round windings unless there are special considerations, such as limiting dimensions.

CORE

The transformer cores are constructed of non-aging, high grade, grain oriented silicon steel laminations with high magnetic permeability. Magnetic flux densities are kept well below the saturation point. Core laminations are free of burrs and stacked without gaps. Mitered STEPLAP construction cores may be provided when specified. The core clamping brackets are designed to provide even distribution of clamping forces to the core yokes and legs. The core is electrically isolated except for the factory-installed core ground strap, which provides a single path from the core to ground.

FORCED AIR COOLING

All units rated 750 kVA and higher can have added fans, increasing capacity in all current carrying parts for the fan-cooled rating and capability to add a thermometer relay to control fans. When specified, the transformer shall be provided with fans to give a forced air-cooled rating of 33% above the self-cooled rating. Control wiring (wire markers included), a thermal sensor and a fan controller will be supplied.

TYPE

AUDIO SOUND LEVELS

The transformer shall be designed to meet or exceed ANSI and NEMA sound levels for dry-type transformers. As an option, transformers designed at -3dB to -10dB below ANSI and NEMA standard sound levels are available.

Vent-Dry Sound Levels: (dB)

Equivalent Two Winding Base kVA	Self-Cooled dB	Fan-Cooled dB
500	60	N/A
750	64	67
1000	64	68
1500	65	69
2000	66	71
2500	68	71
3000	68	73

Product Coordination

When specified, transformers can be close-coupled to a multitude of High Voltage and Low Voltage Switchgear.

Testing

Each transformer shall receive the following standard production tests in accordance with ANSI C57.12.90

- Resistance test
- Polarity & phase relation test
- Turns ratio test at all tap positions
- No-load loss & exciting current test
- Impedance and load-loss test
- Applied potential test
- Induced potential test

Test results, when requested, are available by transformer serial number. In addition, the following special tests can be performed on each transformer in accordance with applicable ANSI standards at an additional cost.

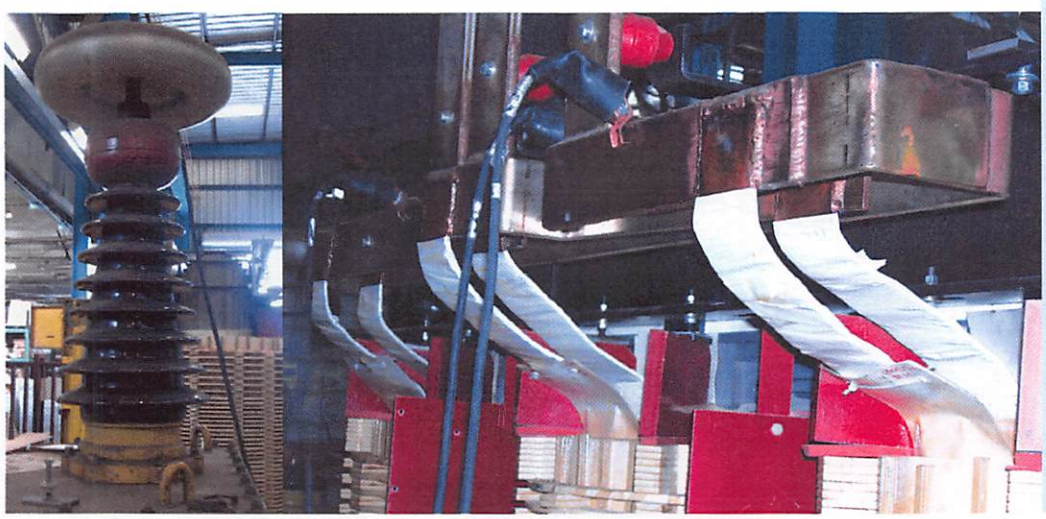
- Temperature test
- Impulse test
- Sound test
- Partial discharge test

Special Design or Application

- Low loss designs
- Rectifier transformer designs
- Special ambient designs
- High overload capacity designs
- Special/low sound level designs
- 50 Hz designs
- Series/parallel windings
- Retrofit to specific dimensions
- K-factor ratings
- Special Paint
- Auto transformers
- PCB replacement
- Grounding transformers
- Zig-zag transformers
- Scott-T transformers
- 6, 12, 18, 24 and 36-pulse transformers
- Drives isolation transformers

VENT-DRY BASIC IMPULSE RATINGS

Nominal System Voltage kV	Standard BIL kV	Option BIL kV
1.2	10	30
2.5	30	45
5.0	30	45,60
8.7	45	60,95
15.0	60	95,110
22.0	110	125

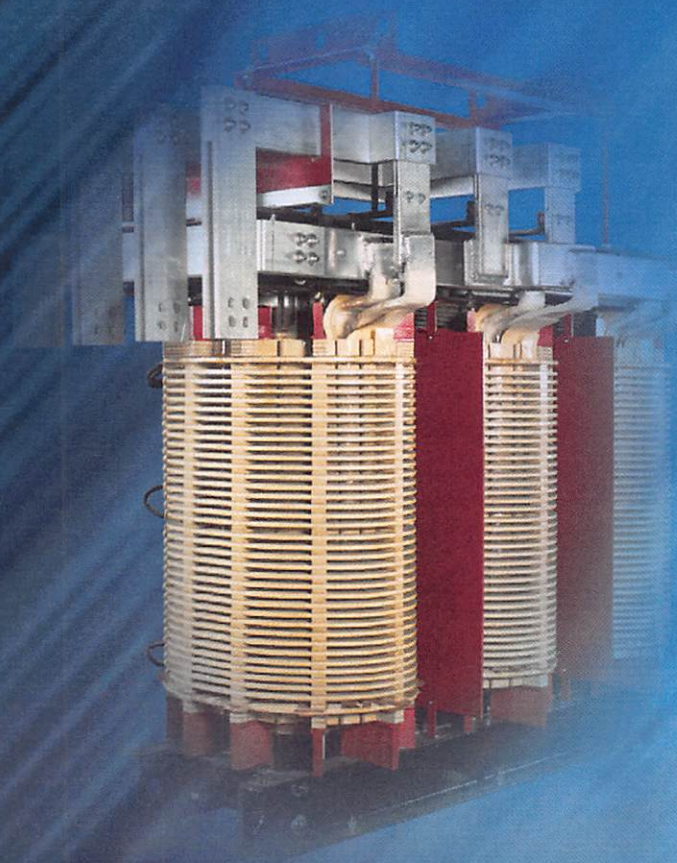


DOE 2016 Energy Efficiency

Single Phase			
kVA	BIL		
	20-45 kV	46-95 kV	>= 96 kV
	Efficiency(%)	Efficiency(%)	Efficiency(%)
15	98.10	97.86	NA
25	98.33	98.12	NA
37.5	98.49	98.30	NA
50	98.60	98.42	NA
75	98.73	98.57	98.53
100	98.82	98.67	98.63
167	98.96	98.83	98.80
250	99.07	98.95	98.91
333	99.14	99.03	98.99
500	99.22	99.12	99.09
667	99.27	99.18	99.15
833	99.31	99.23	99.20

Three Phase			
kVA	BIL		
	20-45 kV	46-95 kV	>= 96 kV
	Efficiency(%)	Efficiency(%)	Efficiency(%)
15	97.50	97.18	NA
30	97.90	97.63	NA
45	98.10	97.86	NA
75	98.33	98.13	NA
112.5	98.52	98.36	NA
150	98.65	98.51	NA
225	98.82	98.69	98.57
300	98.93	98.81	98.69
500	99.09	98.99	98.89
750	99.21	99.12	99.02
1000	99.28	99.20	99.11
1500	99.37	99.30	99.21
2000	99.43	99.36	99.28
2500	99.47	99.41	99.33

MGM Transformer Company is pleased to list a sample of our satisfied customers. For more information, please contact the factory.



Quality
you can see

Drives Industry

Rockwell Automation	Cegelec
Rockwell Reliance	Lloyd Controls
ABB	Ansaldo-Ross Hill
Toshiba	Control Techniques

Industrial & Commercial

General Electric	Motorola
Siemens	LTV Steel
Proctor & Gamble	Toyota
EATON	Hewlett-Packard
BMW	AT&T
Amazon	Logan Aluminum
eBay	Constellium
Boeing	Chrysler

Petrochemical

Amoco Oil	Shell Oil
Arco	Exxon
Chevron	Unocal
Mobil Oil	Premcor
	Aramco

Pulp & Paper

Weyerhauser	Georgia-Pacific
Eddy Paper	

Municipalities & Utilities

Southern California Edison	Pacific Bell
Commonwealth Edison	Iowa Power & Light
L.A. Department of Water & Power	Wisconsin Power & Light
	Pacific Gas & Electric
Metropolitan Water District	Edison International
Florida Power & Light	PSEG Power LLC

Architects & Contractors

ARAMCO	Fluor Daniel
Bechtel	Ralph M. Parsons Co.
Brown & Root	Black & Veatch
Jacobs	Rosendin Electric
Mustang	Cupertino Electric
Bergelectric	

Universities / Labs

UCLA	University of Michigan
UC Berkeley	University of Minnesota
UC San Diego	Lawrence Livermore Labs
Fermilab	SUNY
Argonne National Lab	

Wind-Turbine Power Generation

Palm Springs, California	Tehachapi Pass, California
Solar City	

COMMERCE, CA MGM TRANSFORMER

MGM Transformer Company

5701 Smithway Street, City of Commerce, CA 90040

1-800-423-4366 Fax: (323) 726-8224 Email: sales@mgmtransformer.com www.mgmtransformer.com

Bulletin 30-0600 3/8/17 Printed in U.S.A.