



Site Plan Review and Special Permit Application

Warren Farms Landfill Solar Project

Submitted to:

Town of Dalton
Planning Board
462 Main Street
Dalton, MA 01226



Prepared For:

Warren Farms Solar LLC
Citizens Energy Corporation
88 Black Falcon Avenue, Suite 342
Boston, Massachusetts 02210



Prepared By:

TRC
Wannalancit Mills
650 Suffolk Street
Lowell, Massachusetts 01854



January 2023



January 5, 2023

Town of Dalton
Planning Board
462 Main Street
Dalton, MA 01226

**Re: Site Plan Review and Special Permit Application
Warren Farms Solar, LLC
Proposed Large Scale Solar Facility
Bridle Road, Dalton, Massachusetts
Dalton, Massachusetts**

Dear Planning Board:

On behalf of Warren Farms Solar, LLC (Applicant), TRC Companies (TRC) is pleased to present this Site Plan Review and Special Permit Application to the Town of Dalton Planning Board pursuant to the Large Scale Solar Photovoltaic Installations bylaw (§ 350-37.1) for a proposed 2.66-Megawatt (MW) alternating current (AC) ground-mounted solar photovoltaic (PV) system and 2.1 MW battery energy storage system installation project (the Project). This Special Permit Application was also prepared in accordance with Article XI of the Town of Dalton Zoning Bylaw. The proposed Project is located on the closed and capped private landfill, known as Warren Farms Landfill, at Bridle Road in Dalton, Massachusetts (Site). Enclosed under this cover is the Planning Board Application form (5 copies) including the required Project information. We are also including the permit application fee.

We understand that the Town of Dalton will perform the required abutter notification and legal notice of the public hearing in the local newspaper. If possible, we would request being heard on the January 2023 Planning Board meeting agenda.

Please contact Max Lamson at 978.770.1060 or mlamson@trccompanies.com if you have any questions or comments.

TRC

A handwritten signature in blue ink, appearing to read "Max Lamson", written over a light blue horizontal line.

Max Lamson
Senior Director, Renewable Energy



TOWN OF DALTON

Town Hall
462 Main Street
Dalton, Massachusetts 01226

Telephone (413) 684-6111, Ext. 29

Email: planningboard@dalton-ma.gov

PLANNING BOARD APPLICATION

APPLICANT: Warren Farms Solar LLC
ADDRESS: 88 Black Falcon Ave., Suite 342
Boston, MA 02210
PHONE: 617-951-0418
EMAIL: ebyrne@citizensenergy.com

PROPERTY OWNER: GreySky LLC
ADDRESS: 32 Coleman Drive
Wolcott, CT 06716
PHONE: N/A

FOR ADMINISTRATIVE USE ONLY	
PETITION #:	_____
DATE FILED WITH TOWN CLERK:	_____
HEARING DATE:	_____
TIME:	_____

LOCATION OF PROPERTY AFFECTED (ADDRESS): Bridle Road (Warren Farms Landfill)
Section(s) of the Dalton Zoning By-law under which you are applying: _____

Was project / issue discussed with the Building Inspector? YES (Date: _____) NO

Description of Project or Changes Proposed (please attach additional pages if needed): _____
Large Solar Photovoltaic Installation - See Attached Narrative

NOTICE: The applicant shall provide five (5) copies of this completed Application, either typewritten or printed clearly and legibly, and five (5) copies of the plans and specifications as required on page 2, and one digital copy sent to the email above.

In addition, the Applicant shall pay a fee of three hundred and seventy five dollars (\$375.00) for processing the application, notifying abutters and publication of legal notices of the Public Hearing. (Please make check payable to the Town of Dalton)

SIGNATURE: *Cathy Byrne* DATE: 12/22/22
(Applicant)
SIGNATURE: *Anda Klueman* DATE: 12/25/22
(Owner)

Application and Fee received by: _____
(Agent for the SPGA)

Date: _____

OVER

PLANNING BOARD - SITE PLAN REQUIREMENTS

PLEASE NOTE:

The Planning Board for issuance of special permits, requires a site plan drawn to scale with clearly defined dimensions indicating the location, size and height of the proposed building(s), site improvements, and containing such other information as may be required by the Board.

THE BOARD REQUIRES SITE PLANS TO SHOW THE FOLLOWING:

- √ Site plan drawings to scale (*see above*)
- √ Lot dimensions (*may be obtained at the Assessor's Office*)
- √ Street name(s) abutting the subject property
- √ Lot or building street number(s) (*may be obtained at the Assessor's Office*)
- √ Zoning District, in which subject property is located
- √ Abutting uses
- √ Existing and/or proposed buildings **with dimensions**
- √ Driveway(s) and Parking spaces
- √ Screening or landscaping required for parking (*See Zoning By-law, 350-40: Off Street Parking*)
- √ Exterior lighting, if any
- √ Signs, if any
- √ Other information you believe would be helpful or necessary

Site plan(s) meeting the above requirements shall be filed with the Town Clerk along with the Application to the Board so as to provide this information to other municipal Boards for review, who, by law, may make recommendations on your petition.

Site plan(s) prepared by a Massachusetts Registered Land Surveyor may be required.

Site plans are important and, diligently prepared, may eliminate a zoning issue at a later date, and/or facilitate the transfer or property.

The Board will provide limited guidance to assist you.

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1.0 Project Introduction

On behalf of Warren Farms Solar, LLC (Applicant), TRC Companies (TRC) is pleased to present this Site Plan Review and Special Permit Application to the Town of Dalton Planning Board pursuant to the Large Scale Solar Photovoltaic Installations bylaw (§ 350-37.1) for a proposed 2.66-Megawatt (MW) alternating current (AC) ground-mounted solar photovoltaic (PV) system and 2.1 MW battery energy storage system installation project (the Project). This Special Permit Application was also prepared in accordance with Article XI of the Town of Dalton Zoning Bylaw. The proposed Project is located on the closed and capped private landfill, known as Warren Farms Landfill, at Bridle Road in Dalton, Massachusetts (Site). Warren Farms Solar, LLC is a project entity owned by Citizens Energy Corporation (Citizens). Citizens has a track record of successful landfill solar development projects in Massachusetts, currently operating 16 landfill solar projects across the Commonwealth.

The Project was originally proposed to the Town of Dalton in 2014 by Warren Farms Solar, LLC, but was put on hold due to interconnection limitations. Recent electrical grid improvements in the area have made the interconnection of the proposed solar PV system viable. Based on these conditions, the applicant is re-applying for this Special Permit approval from the Dalton Planning Board. The original Special Permit Application received approval from the Dalton Board of Appeals on June 10, 2014. This approval pre-dated the Large Scale Solar Photovoltaic Installations bylaw.

The proposed Project will be constructed primarily on the existing engineered non-permeable landfill cover system and proposes to use existing access and roads to the extent practical. Additional Project details are included in the remainder of this application. TRC has also included several attachments, as listed above, to provide the Planning Board with necessary information about the Project.

2.0 Existing Conditions

The Warren Farms Landfill is located on a parcel of land to the east of Bridle Road in Dalton, Berkshire County, Massachusetts (Project Site) which is currently owned by Greysky, LLC and has a total area of approximately 31 acres. This parcel is zoned as Residential and Agricultural, Low Density (R-1) Zoning based on the Town of Dalton Zoning Map. The parcel is identified by the Town of Dalton Tax Assessor's Map as Map 106, Lot 55. The dimensions of the landfill parcel are depicted on the Cover Sheet in the Permit Drawing Set provided as **Attachment A**.

The Warren Farms Landfill extends across the parcel's western boundary onto the Town of Dalton Transfer Station property. The Town's Transfer Station property to the west of the Project Site consists of the transfer station, the Town's closed landfill, existing access roads, parking, and stockpile areas. The Warren Farms Landfill does not have existing post-closure uses.

Surrounding land use is primarily residential to the south, undeveloped forested land to the west and north, and a solar development facility to the east. A large sand and gravel pit is located immediately southeast of the Warren Farms Landfill. The Project Site is located within the R-1-

Residential / Agricultural District as shown in the Town of Dalton Zoning Map, dated November 13, 2012.

There is a pond located on the parcel to the south of the landfill that was engineered as a stormwater basin at the time of landfill closure. There are no natural wetlands or streams within the Project site or within the parcel. The closest mapped wetlands offsite are a pond associated with the abutting quarry and the Walter Brook located approximately 1,100 feet to the east of the site. There are no areas mapped as Priority Habitats of Rare Species or Estimated Habitats of Rare Wildlife at the Project property or immediately surrounding area. An Environmental Resource Map is included as **Figure 1**.

3.0 Project Description

3.1 Photovoltaic and Battery System Installation

The proposed 2.66-MW AC solar array will be constructed on the Warren Farms Landfill which is a closed and capped, privately-owned landfill. The solar array is designed to be protective of the existing landfill cover system with a “non-penetrating” foundation system. The array will consist of a fixed-tilt ground-mounted racking system supported by concrete-filled ballast tub supports placed above the topsoil level of the cover system. The landfill solar project will be developed under a Post-Closure Use Permit (PCUP) from the Massachusetts Department of Environmental Protection (MassDEP) Solid Waste Division.

The solar array layout is located on areas of the landfill that have moderate slopes (<15%). Leveling stone will be added beneath the ballasts as-needed in sloped areas to meet the tolerances of the proposed racking system. Module strings contained within the racks will be conducted by Direct Current (DC) wiring which are coupled at combiner boxes and eventually carried throughout the array via aboveground conduit in cable trays to the pair of equipment pads centrally located on the southern portion of the landfill. The wiring is connected to the battery facility and inverter unit followed by the transformer co-located on an adjacent equipment pad. Medium voltage AC cable will leave the equipment pads and travel via aboveground conduit in cable trays within the fenced-in facility and transition to aboveground rigid metal conduit outside the fenced-in facility to the overhead electric lines outside the limits of waste to the point of interconnection located on the east side of Bridle Road. All cable, AC and DC, located within the limit of waste will be aboveground and placed on protective cable trays or in aboveground rigid metal conduit. The use of poles or conduit penetrating the landfill cover will not be used.

The solar array plan layout and details regarding associated components are shown in the permitting drawing set prepared by TRC, included as **Attachment A**, and are discussed in the following sections.

3.2 Electrical Equipment Specifications

The Project will include an inverter that will convert the DC electricity from the batteries to AC electricity to then be transmitted to the local distribution circuit. The inverter also provides ground

fault protection and system statistics, including voltage and current on AC and DC circuits, energy production, and maximum power point tracking. The Project also includes an electric transformer that regulates AC voltage before the electricity leaves the site and enters the grid. The inverter and transformer are mounted on concrete foundations and will be within the secure fenced portion of the Project.

The DC-coupled battery storage containers will have a maximum energy capacity of 2.1 MW. The chemistry within the battery storage containers will be Lithium Iron Phosphate (LFP) cells, which is a common type of Lithium-Ion battery chemistry. The chemicals within the battery cells are typically contained in a sealed Aluminum-plastic film. Risk of exposure occurs only if the battery is mechanically or electrically abused. The batteries are not classified as hazardous under the Classification, Labelling and Packaging (CLP) Regulation. Under conditions of normal use, respiratory protection is not required for working around the battery cells. When promptly used or disposed, the battery does not present an environmental hazard. Battery containers typically have an internal fire suppression system and automatic shutoff protections. The solar array, electrical equipment, and battery layout and details are shown in the permitting drawing set prepared by TRC, included as **Attachment A**.

4.0 Large Scale Solar Photovoltaic Installation Bylaw General Requirements

The following sections address the specific requirements of the Large Scale Solar Photovoltaic Installations bylaw (§ 350-37.1 D thru G).

4.1 Compliance (§ 350-37.1D)

This section summarizes the required Federal, State, and Local compliance requirements.

Federal

The construction of the proposed Project will be regulated by the Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) permitting program under a Construction General Permit (CGP) and Stormwater Pollution Protection Plan (SWPPP). Erosion and sedimentation controls will be installed prior to construction under the SWPPP and CGP for the Project.

State

Project construction and other regulated under the Massachusetts Department of Environmental Protection (MassDEP) Solid Waste program under a Post-Closure Use Permit (PCUP) with a long-term monitoring and reporting requirement.

Local

The Project is filing for a Request for Determination of Applicability (RDA) with the Town of Dalton Stormwater Commission to meet the compliance requirements of the stormwater bylaw. The

Project will also comply with local Town of Dalton electrical and building code as well as the conditions of Site Plan Approval.

4.2 Site Control (§ 350-37.1E)

Warren Farms Solar LLC has site control on the Warren Farm Landfill property in the form of a lease agreement with the property owner (Greysky, LLC). The lease agreement provides Warren Farms Solar LLC with the right to permit, construction, and operate the solar Project at the property for an initial term of 20 years with options to extend.

4.3 Utility Notification (§ 350-37.1F)

The applicant has coordinated with the electric utility, Western Massachusetts Electric Company (WMECo d/b/a Eversource Energy). The Project has applied for interconnection to the local electrical grid and has received a favorable determination.

4.4 Financial Surety (§ 350-37.1G)

Financial assurance requirements associated with post-closure maintenance and monitoring of the landfill were coordinated with the Town of Dalton who has assumed maintenance responsibilities in accordance with 310 CMR 19.051. We anticipate that the Town will continue to maintain the landfill in the areas outside the footprint of the solar array and access road. Warren Farms Solar, LLC will assume responsibility for regular maintenance of the landfill within the footprint of the solar array and access road as part of the Post-Closure Use. As part of the PCUP, the Project will also have a decommissioning bond or other acceptable Financial Assurance Mechanism (FAM) for decommissioning at the end of the solar photovoltaic project life cycle.

5.0 Large Scale Solar Photovoltaic Installation Bylaw Design Requirements

The following sections address the specific requirements of the Large Scale Solar Photovoltaic Installations bylaw or Solar Bylaw (§ 350-37.1 H).

5.1 Height

The total height of the solar array will not exceed 15-feet per the requirements in the Solar Bylaw.

5.2 Setbacks

The limit of disturbance of Project is depicted on the Site Plan of the Permit Drawings in **Attachment A**. The solar array, battery and associated electrical equipment is set back a minimum of 25-feet from side property lines; 30-feet from rear property-lines and 35-feet from the front property line. The solar project is not located within 50 feet of a lot being used for residential purposes.

5.3 Lighting

There is no lighting of the solar photovoltaic installation proposed other than manually operated emergency lighting for use when operating personnel are on site.

5.4 Screening

The proposed solar installation is located in a remote area of Dalton approximately 1,200-feet to the north of a main road/intersection at Park Avenue and High Street. A buffer of natural vegetation will be generally maintained on the south side of the landfill between this intersection and the Project to limit visibility from public rights-of-way. The Project is abutted to the north by a steep hill and wooded area, to the west by the Town Landfill, and to the east by a sand and gravel pit and an existing large scale solar photovoltaic project. These abutters are not residential properties, and it is not anticipated that the solar project will be visible from a public right-of-way or from residential properties.

5.5 Vegetation Clearing

The solar installation will take advantage of the already cleared and grass-vegetated landfill property. Selective tree trimming and cutting may be necessary on the southern portion of the landfill to reduce the potential for shading of the solar area. Additional clearing will be required for the proposed overhead electric line corridor which leads south to the point of interconnection. We anticipate less than one-acre of area will be needed for this selective tree maintenance area and clearing to point of interconnection.

5.6 Habitat Fragmentation

The solar array is located in-between two areas that are also cleared: the Town Landfill to the west and the existing quarry and solar array to the east. This meets the requirement of the solar bylaw. In addition, typically landfill solar projects are constructed with an approximately 4-inch gap beneath the project fence to allow for the passage of smaller animals such as turtles that typically thrive in this meadow environment. Once constructed, the solar array operates passively and can provide a grassy-meadow habitat and/or passage for birds, reptiles, small mammals, and other animals.

5.7 Security Measures

The solar array will have a 7-foot in height chain-link perimeter fence for security and to meet electrical code.

5.8 Emergency Access

The applicant is finalizing an access easement agreement with the Town of Dalton to use the existing access road located on Town property to access the Project. The existing access road is used for accessing the existing Town-owned landfill that is located adjacent to the Warren

Farms Landfill. In the case of an emergency, the Town has access to the locked gate at the entrance to this access road (off of Bridle Road).

As discussed above, the solar array will have a separate security fence and locked gate. The applicant will discuss providing 24/7 access to the gate to Town public safety personnel. This is commonly achieved with a shared combination lock or a Knox® type access system or similar.

5.9 Emergency Response Plan

The Project will have an emergency response plan that will include the emergency access parameters discussed above. In addition, there will be signage at the front gate to the solar installation that will have emergency contact information of the project owner. A copy of the emergency response plan will be shared with the Town of Dalton public safety personnel.

6.0 Facility Operations

6.1 Operations and Maintenance

The Operations & Maintenance (O&M) plan for the solar project will augment the existing O&M plan for the landfill. The purpose of the O&M plan is to monitor the performance of solar array as well as the landfill cover system and related design components such as stormwater drainage. Once the solar installation has been commissioned and is contributing energy to the grid, monitoring of facility electrical operations will be conducted remotely using a Data Acquisition System (DAS). The DAS will allow for daily monitoring of system outputs, real-time assessment of performance, and rapid identification of system alerts and failures. Therefore, the O&M plan will include a combination of as-needed responses and regularly scheduled events. The O&M Plan is included as **Attachment B**.

6.2 Electrical Equipment Noise Impacts

The electrical equipment (inverter/transformer) and battery system operate at a noise-level that is typically in their equipment specifications when the system is energized (i.e. typically during the daytime). Often the battery systems require cooling which also emits a level of noise. We do not anticipate noise levels above ambient at the property boundaries because this equipment is centrally-located at the property (setback from property boundaries). The Project will comply with Section 185-6 of the bylaws.

7.0 Stormwater Management System

7.1 Stormwater Runoff Control Plan

This Project maintains the stormwater runoff control system designed and constructed at the time of landfill closure. The existing landfill is comprised of grass in good condition. Stormwater runoff will sheet flow across the landfill surface to a series of stone lined drainage swales. The existing Site is divided into two drainage areas. The Site radially drains from the high point, located centrally in the northern portion of the Site, to a series of swales. The swales which run around the perimeter of the northern portion of the landfill convey flows to a large stormwater basin to the south of the landfill. Swales which run through the southeastern portion of the landfill convey flows to a smaller stormwater basin in the southeastern corner. TRC completed an analysis of the peak flow rates for pre- and post-development conditions. A summary of these calculations is included in this Section. A detailed Stormwater Management Report has been prepared to demonstrate that the proposed development will comply with the MassDEP Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook.

Stormwater runoff was estimated using HydroCAD, Version 10.0. HydroCAD software is based on methodologies developed by the United States Department of Agriculture Soil Conservation Service (USDA-SCS¹). Methodologies include Technical Release 55: Urban Hydrology for Small Watersheds (TR-55) and Technical Release 20: Computer Program for Project Formulation Hydrology (TR-20), in combination with other hydraulic and hydrologic calculations. Based on site-specific information including subcatchment area and slopes, hydrologic soil groups (HSGs), land cover types, and rainfall data, the program estimates inflow and outflow hydrographs for each subcatchment and performs reach and pond routing calculations.

The solar array development will modify the run-off characteristics slightly through the addition of impervious surfaces created by the concrete ballast foundations, equipment pads, and gravel accessway and turnaround. Note that the PV modules are not “impervious surfaces” from the perspective of stormwater run-off as they are elevated above the ground surface, and do not change the grass cover or slope, thus, the rainfall infiltration/run-off characteristics of the landfill cover were not affected by the PV modules.

Two subcatchments have been delineated for the Project Area to compare pre- and post-development hydrology. These subcatchments were based on existing topography and drainage patterns. HydroCAD input parameters were the same apart from modifying the land cover types to take into account the added impervious surfaces. Summary of pre- and post-development peak rates of runoff, in cubic feet per second (cfs), are provided in **Table 1**.

¹ Now known as the Natural Resource Conservation Service (NRCS)

Table 1. Pre- and Post-Development Peak Rates of Runoff

Storm Event	DP-1		DP-2	
	Pre- (cfs)	Post- (cfs)	Pre- (cfs)	Post- (cfs)
2-Year, 24-hour	12.50	13.26	2.01	2.13
10-Year, 24-hour	24.42	25.39	3.93	4.08
100-Year, 24-hour	54.16	55.31	8.69	8.87

Based upon this analysis, the peak volumes and rates of runoff under post-development conditions are generally the same as those of pre-development conditions. The majority of flows from the Project Area are directed to an onsite stormwater basin that does not discharge from the property.

The proposed access drive crosses existing drainage swales at three locations where culverts are proposed to continue conveying stormwater through these drainageways. Calculations supporting the sizing of the proposed culverts are provided in the HydroCAD model are summarized in **Table 2**, below.

Table 2. Summary of Culvert Calculations

CULVERT ID	DRAINAGE AREA (AC.)	PEAK FLOW (CFS) 25-YR STORM	DIAMETER (IN)	LENGTH (FT)	SLOPE (FT/FT)	DISCHARGE VELOCITY (FPS)	OUTLET STABILIZATION
SD-1	0.496	1.56	18	45	0.007	3.07	Rip Rap Apron
SD-2	1.130	3.52	18	40	0.131	2.70	Rip Rap Apron
SD-3	5.858	15.01	18 (2 culverts)	42	0.007	4.21	Rip Rap Apron

7.2 Stormwater Erosion Control Plan

7.2.1 *During Installation*

The installation of the solar array, equipment pads, gravel accessway, and aboveground conduit runs will have minimal potential to create erosion or to generate sediment. The concrete ballasts and gravel leveling pads for the racking supports, in general, will be placed directly on a closely mowed, grass surface. Excavation of the grass beneath the ballasts is not anticipated except where grounding will occur. The small amount of soil from the excavation will be removed from the landfill at the time of excavation.

A possible source of exposed soil that could lead to erosion would be the addition of cover soil (which is to be placed prior to solar array installation), the disturbance of the landfill surface by low ground pressure equipment, and the installation of belowground conduit runs. Any rutting or exposed soil will be promptly filled, covered, and/or stabilized with straw mulch and seeded by the contractor. Conventional best management practices (BMPs) such as a compost filter sock, filter fabric, erosion control mix berms, silt fence, and mulch will be used as needed. Any BMPs on the landfill cover surface will be non-ground penetrating, such as compost filter socks held in place by sandbags.

The preliminary design drawings in **Attachment A** include a detailed erosion and sedimentation control plan with BMP installation notes and details.

7.2.2 *During Operations*

The erosion of soil below the lower drip edge of the PV modules is a potential localized source of erosion on landfill covers. The focused falling water from the front edge of the modules could damage the grass and cause soil to be exposed, then eroded. Based on TRC's and the Developer's experience, erosion below the modules has not been observed as a significant issue at existing landfill solar array projects in the northeast, provided that the grass is left in place or quickly established following array installation. There are several factors that would limit the likelihood or severity of such erosion to occur at the Warren Farms Landfill, which include:

- Maintained grass cover;
- Relatively flat landfill slopes below the modules;
- Solar array layout designed with modules across contours, therefore, limiting the side slopes typically of concern for leading to concentrated runoff flow;
- Short length of the panels, about 6 feet, and relatively flat slope that will limit runoff water volume;
- Gap between modules to allow for stormwater to drain off each module (i.e., two drip-edges); and
- Sufficiently sized grass buffer strips between rows of solar panels.

The Project-owner will enhance the operational monitoring during the first two years of operation. Inspection of the Site including the landfill cover beneath the array, at the time of the bi-annual mowing, will be performed by experienced personnel. The objective of the inspection would be to identify any splash damage to the grass cover and vegetative soil layer before significant damage occurs. If localized areas of damage are noted, stabilization of the surface using organic materials such as wood chips or other mulch, coir (coconut fiber) matting, or other long-life organic erosion control material will be completed. During these mowing inspections, the overall condition of the landfill cover surface will also be observed.

Because the vegetative cover is critically important to the long-term function of the landfill cover, the monitoring, care, and maintenance of the grass will be a priority throughout the life of the Project. The partial shading of the grass beneath the PV assemblies could result in die-off or changing of grass species (i.e., to more shade-tolerant species) and exposure of soil surface to erosion. The quality of the grass cover will be observed as part of ongoing maintenance. If adverse conditions are seen to be developing, a landscape professional will be consulted and refurbishing/reseeding of impacted areas with more shade-tolerant grasses will be completed.

8.0 Compliance with Special Permit Requirements

This section outlines the Warren Farms Solar Project compliance with the Special Permit finding requirements in the Town of Dalton Bylaws (§ 350-47):

Before granting a special permit for any use requiring such permit under the provisions of this bylaw, the SPGA shall find that the proposed use is in compliance with all provisions and requirements of this bylaw, and in harmony with its general intent and purpose (§ 350-47A):

The Project is in compliance with the provisions and requirements of the Large Solar Photovoltaic Installation Bylaw. The solar installation is allowed by Special Permit in the Residential and Agricultural (R-1) District. As discussed in Sections 4 and 5 of this narrative, the Project meets the siting and design considerations of a solar photovoltaic installation under the current use definition and bylaw.

Is essential or desirable to the public convenience or welfare at the proposed location (§ 350-47B):

The Project is in a desirable location as the redevelopment of a landfill as a solar project takes advantage of cleared land that typically cannot be redeveloped with other types of commercial or residential uses. The Warren Farms landfill (like many landfills) is setback from residential abutters and therefore impacts to the public is not anticipated. The Project also provides the benefit of local renewable energy generation.

Will not be detrimental to adjacent uses or to the established or future character of the neighborhood (§ 350-47C);

The Project will not be detrimental to the adjacent uses or the established or future character of the neighborhood. As discussed, the landfill property is abutted by another landfill and transfer station to the west, a wooded hillside to the north, a sand and gravel operation and another solar array to the east. The future operation of the Project as a landfill solar installation is consistent with the local zoning and the current use of the surrounding properties.

Will not create undue traffic congestion, or unduly impair pedestrian safety (§ 350-47D);

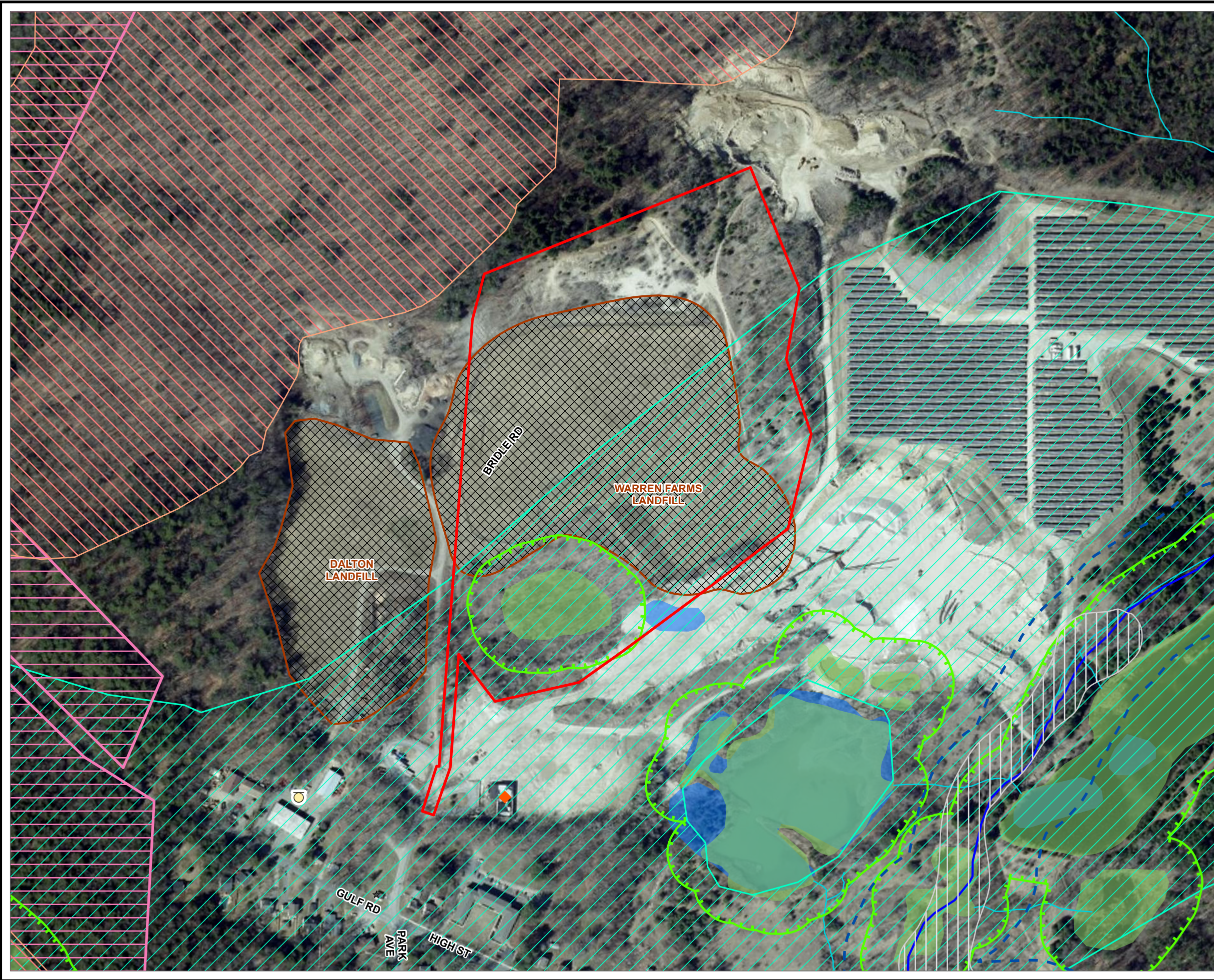
The Project will be an active construction project for approximately 3 to 6 months with associated construction vehicle traffic and materials delivery traffic. Given the location of the Project off the main road, traffic is not likely to be a concern, however, the hours of construction and deliveries can be coordinated with the Town to manage the potential for traffic congestion. Once constructed, the solar photovoltaic installation operates passively and will not generate traffic for the design life of the Project.

Will not overload any public water, drainage or sewer system or any other municipal facility to such an extent that the proposed use or any existing use in the immediate area or in any other area of the Town will be unduly subjected to the hazards affecting public health, safety or general welfare.

The proposed solar photovoltaic installation will not utilize the public water or sewer system. As discussed in the previous sections, the stormwater drainage will be managed onsite. The Project is currently expected to use a shared driveway with the Town of Dalton landfill. To the extent that this road needs to be expanded or improved (or another road installed) there could be drainage located off-of the Warren Farms landfill property. In this scenario, stormwater will be evaluated and stormwater best management practices (BMPs) will be incorporated to manage drainage. Therefore a substantial increase of stormwater runoff from the subject property will not be generated by the Project. More generally, we do not anticipate that other areas of the Town will be subjected to the hazards affecting public health, safety or general welfare as a result of the Project.

Figures

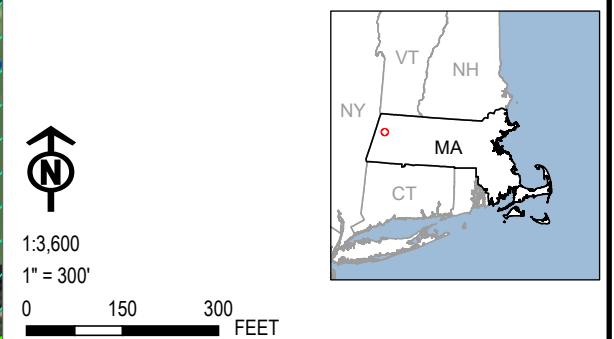
Coordinate System: NAD 1983 StatePlane Massachusetts Mainland FIPS 2001 Feet; Map Rotation: 0
 -- Saved By: SMOTURI on 12/15/2022, 16:37:33 PM; File Path: T:\PROJECTS\CitizensEnergy_Corp\421646_WarrenFarm_Landfill\2-APRX\Landfill.aprx; Layout Name: Fig 1 Landfill_ResourceMap_11x17_20221215



- PROJECT PARCEL
- ★ PRESERVATION RESTRICTION
- ◆ CHAPTER 21E SITE
- UNDERGROUND STORAGE TANK
- PERENNIAL STREAM (DEP)
- MADEP WETLAND (2005)
- MADEP SURFACE WATER
- 100-FT BUFFER ZONE
- 200-FT RIVERFRONT AREA
- ZONE A FLOOD PLAIN (DIGITIZED FROM FIRMETTE 250021002B)
- NHESP PRIORITY HABITAT
- ARTICLE 97 LAND
- AQUIFER PROTECTION DISTRICT

RESOURCES REVIEWED:
 CHAPTER 21E SITE, AUL SITE, UNDERGROUND STORAGE TANK, SUPERFUND SITE, CERTIFIED AND POTENTIAL VERNAL POOLS, PUBLIC WATER SUPPLIES, MHC DATA, FLOOD HAZARD AREA, DEP STREAMS, DEP WETLANDS, WELLHEAD PROTECTION AREAS, NHEHP HABITATS, OUTSTANDING RESOURCE WATERS, AQUIFER PROTECTION DISTRICT, COASTAL FLOOD RESILIENCY ZONE, OPEN SPACE AND RECREATIONAL LAND, ARTICLE 97 LAND, WATERSHED PROTECTION ZONES, 2014 INTEGRATED LIST-305(B)/303(D), CHAPTER 91 TIDELANDS JURISDICTIONAL DATA

BASE MAP: MASSGIS 2021 ORTHO PHOTOS.
 DATA SOURCES: MASSGIS



PROJECT: CITIZENS ENERGY CORPORATION	
WARREN FARM LANDFILL SOLAR PROJECT	
DALTON, MA	
TITLE: ENVIRONMENTAL RESOURCE MAP	
DRAWN BY: S. MOTURI	PROJ. NO.: 421646
CHECKED BY: L. LEFEBVRE	FIGURE 4
APPROVED BY: M. LAMSON	
DATE: DECEMBER 2022	
650 Suffolk Street Suite 200 Lowell, MA 01854 Phone: 978.970.5600	
FILE:	Landfill.aprx

Attachment A: Permitting Plan Set

GENERAL NOTES

- 1. THE PROJECT HORIZONTAL COORDINATES SYSTEM IS BASED ON NAD83 MASSACHUSETTS STATE PLANE (US SURVEY FEET, MAINLAND ZONE, MAB3F). ELEVATIONS ARE BASED ON NAVD88 (US SURVEY FEET).
- 2. PROJECT PROPERTY BOUNDARIES AND SITE TOPOGRAPHIC INFORMATION ARE BASED UPON ON-THE-GROUND FIELD SURVEY COMPLETED BY ALPHA SURVEYING AND RECORDING IN MARCH 2014 AS PROVIDED IN A PLAN ENTITLED "EXISTING CONDITIONS PLAN, 98 BRIDLE ROAD, WARREN LANDFILL, DALTON, MASSACHUSETTS".
- 3. UTILITY INFORMATION DEPICTED IS COMPILED USING PHYSICAL SURFACE EVIDENCE LOCATED IN THE FIELD IN CONJUNCTION WITH ANY RECORD INFORMATION AVAILABLE AT THE TIME OF THE FIELD SURVEY AND MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. THEREFORE ALL UTILITY LOCATIONS SHOULD BE CONSIDERED APPROXIMATE AND BE VERIFIED BY THE CONTRACTOR. DIGSAFE SHALL BE NOTIFIED A MINIMUM OF 72-HOURS PRIOR TO COMMENCING ANY EXCAVATION. FULL UTILITY COORDINATION WITH NON-MEMBER UTILITIES AND USE OF GROUND-PENETRATING RADAR TO LOCATE UTILITIES SHOULD BE PERFORMED AS NECESSARY.
- 4. LIMIT OF LANDFILL CAP IS BASED ON RECORD INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE. LOCATIONS OF MONITORING WELLS AND GAS VENTS ARE BASED ON A COMBINATION OF SURVEYING DATA AND RECORD INFORMATION AND SHOULD BE CONSIDERED APPROXIMATE. CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS AND LOCATION OF STRUCTURES PRIOR TO INITIATING CONSTRUCTION. ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY SITE CONDITIONS THAT DIFFER FROM THOSE SHOWN HEREIN. LANDFILL SITE INFRASTRUCTURE AND MONITORING LOCATIONS SHOULD BE PROTECTED THROUGHOUT CONSTRUCTION.
- 5. NATURAL RESOURCE AND ZONING INFORMATION ARE FROM STATE OF MASSACHUSETTS GIS DATA.
- 6. THIS IS A PRELIMINARY DESIGN PLAN. FINAL DESIGN SHALL BE MODIFIED BY CONTRACTOR TO MATCH FINAL ELECTRICAL INTERCONNECTION STUDIES, EQUIPMENT PURCHASED, AND POSSIBLE PERMIT CONSTRAINTS REVEALED DURING PROJECT'S REVIEW. ELECTRICAL EQUIPMENT LAYOUT, INCLUDING SOLAR ARRAY, EQUIPMENT PADS, UTILITY POLES, ETC. WERE PROVIDED BY CITIZENS CORPORATION IN A CAD FILE DATED OCTOBER 18, 2022.
- 7. ALL WORK DETAILED ON THESE PLANS AND PERFORMED UNDER THIS CONTRACT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, THE PROJECT GEOTECHNICAL REPORT, PERMIT CONDITIONS, AND ANY OTHER APPLICABLE TECHNICAL REPORTS. WHERE INDICATED, STATE AND/OR LOCAL STANDARD SPECIFICATIONS SHALL APPLY. ALL WORK SHALL COMPLY WITH THE ASSOCIATED STANDARDS SET FORTH IN THE TOWN OF DALTON ZONING BYLAWS.
- 8. THE CONTRACTOR SHALL ABIDE BY ALL LOCAL, STATE, AND FEDERAL LAWS, RULES AND REGULATIONS WHICH APPLY TO THE CONSTRUCTION OF THESE IMPROVEMENTS, INCLUDING STATE AND FEDERAL REQUIREMENTS WITH RESPECT TO STORMWATER DISCHARGE.
- 9. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTING ALL EXISTING UTILITY LINES AND SITE INFRASTRUCTURE WITHIN OR ADJACENT TO THE CONSTRUCTION AREA. ANY DAMAGE TO EXISTING FACILITIES CAUSED BY CONSTRUCTION ACTIVITY SHALL BE REPAIRED OR REPLACED AT THE CONTRACTOR'S EXPENSE.
- 10. CONSTRUCTION SHALL NOT OCCUR IN ANY PUBLIC RIGHTS OF WAY, PUBLIC OR PRIVATE EASEMENTS, BEYOND THE LIMITS OF DISTURBANCE, OR OUTSIDE THE PROPERTY LIMITS WITHOUT NECESSARY PERMITS. ANY PUBLIC OR PRIVATE PROPERTY OR IMPROVEMENTS DAMAGED DURING CONSTRUCTION SHALL BE REPAIRED TO THE SATISFACTION OF THE OWNER AT THE COST OF THE CONTRACTOR.
- 11. OVERNIGHT PARKING OF CONSTRUCTION EQUIPMENT SHALL NOT OBSTRUCT DRIVEWAYS OR DESIGNATED TRAFFIC LANES. THE CONTRACTOR SHALL NOT STORE ANY EQUIPMENT OR MATERIAL WITHIN THE PUBLIC RIGHT OF WAY. OVERNIGHT PARKING OF CONSTRUCTION VEHICLES ON PRIVATE PROPERTY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- 12. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE LANDOWNER FOR SITE ACCESS AND USE AND SHALL COMPLETE WORK IN ACCORDANCE WITH THE TERMS AND CONDITIONS OF THE ACCESS AGREEMENT.
- 13. ALL PROPERTY CORNERS OR MONUMENTS DESTROYED DURING CONSTRUCTION SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE. ALL PROPERTY CORNERS MUST BE RESET BY A PROFESSIONAL LAND SURVEYOR LICENSED IN THE STATE OF MASSACHUSETTS.
- 14. CONTRACTOR SHALL COMPLY WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS CONTROLLING THE POLLUTION OF THE ENVIRONMENT.
- 15. CONTRACTOR TO ENSURE ALL WORK PERFORMED IS IN ACCORDANCE WITH EXISTING PROJECT PERMITS, STUDIES, AND REPORTS PROVIDED IN THE CONTRACT DOCUMENTS INCLUDING STATE STORMWATER MANAGEMENT PERMIT, STATE SOLID WASTE REGULATIONS, STATE LANDFILL POST-CLOSURE USE PERMIT, AND LOCAL ORDINANCES.
- 16. IT IS THE INTENT OF THESE PLANS THAT THE CONTRACTOR SHALL NOT PERFORM ANY WORK OUTSIDE THE IDENTIFIED PROJECT BOUNDARIES AND APPROVED LIMITS OF DISTURBANCE.
- 17. WHENEVER PRACTICABLE, NO DISTURBANCE ACTIVITIES SHOULD TAKE PLACE WITHIN 50 FEET OF ANY PROTECTED NATURAL RESOURCE. IF DISTURBANCE ACTIVITIES SHOULD TAKE PLACE UPGRAIDENT TO AND LESS THAN 50 FEET OF ANY PROTECTED NATURAL RESOURCE, PERIMETER EROSION CONTROLS MUST BE DOUBLED. ALL AREAS WITHIN 75 FEET OF A PROTECTED NATURAL RESOURCE MUST BE PROTECTED WITH A DOUBLE ROW OF SEDIMENT BARRIERS NOVEMBER 1 THROUGH APRIL 15. EXPOSED AREAS UPGRAIDENT TO AND LESS THAN 100 FEET OF ANY PROTECTED NATURAL RESOURCE MUST BE TEMPORARILY OR PERMANENTLY STABILIZED WITHIN 7 DAYS, OR PRIOR TO A STORM EVENT.
- 18. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING DRAINAGE THROUGHOUT THE CONSTRUCTION OF THE PROJECT.
- 19. EXISTING ACCESS ROADS TO BE MAINTAINED SHALL BE SMOOTHED AND RESURFACED AS NECESSARY TO PROVIDE AN ACCEPTABLE SURFACE.
- 20. THE CONTRACTOR SHALL SECURE PERMITS FROM THE STATE AND TOWN OF DALTON AS NECESSARY BEFORE DRIVING CONSTRUCTION EQUIPMENT OVER AND ACROSS STATE AND TOWN MAINTAINED ROADS.
- 21. ALL WORK IN THE PUBLIC RIGHTS OF WAY SHALL CONFORM WITH THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES".
- 22. THE INTEGRITY OF THE LANDFILL COVER SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION. THERE SHALL BE NO PENETRATIONS INTO THE COVER OR REMOVAL OF COVER MATERIAL UNLESS SPECIFIED IN THESE PLANS OR PRIOR APPROVAL IS GRANTED BY MASSDEP.
- 23. IF DAMAGE TO THE LANDFILL COVER OCCURS, IT SHALL BE RESTORED TO PREEXISTING CONDITIONS AS SOON AS POSSIBLE. THE LANDFILL COVER SYSTEM IS COMPRISED OF (FROM BOTTOM TO TOP) A 6-INCH SAND GAS VENT LAYER, A GEOCOMPOSITE CLAY LINER (GCL) IMPERMEABLE LAYER, A 12-INCH SAND DRAINAGE LAYER, AND 12-INCH VEGETATIVE SUPPORT MATERIAL LAYER.
- 24. ONLY LOW GROUND PRESSURE EQUIPMENT (HAVING A CONTACT PRESSURE OF 10 PSI OR LESS), SUCH AS TRACK-MOUNTED CONSTRUCTION EQUIPMENT AND RUBBER-TIRED LANDSCAPING EQUIPMENT, SHALL TRAVEL DIRECTLY ON THE LANDFILL COVER. ALL OTHER EQUIPMENT SHALL BE ROUTED OVER ACCESS ROADS. TEMPORARY ACCESS ROADS SHOULD BE PROVIDED AT NO ADDITIONAL COST TO THE OWNER IF RECURRING DAMAGE TO THE LANDFILL COVER OCCURS.
- 25. WHERE APPROVAL OR DIRECTION BY AN ENGINEER IS SPECIFIED, THIS INCLUDES A QUALIFIED ENGINEER OR PROFESSIONAL (MASSACHUSETTS REGISTERED PROFESSIONAL ENGINEER (PE), CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENTATION CONTROL (CPESC), OR SIMILAR SPECIALIST).

HOUSEKEEPING NOTES

- CONTRACTOR SHALL MAINTAIN THE PROJECT SITE IN ACCORDANCE WITH THE FOLLOWING PERFORMANCE STANDARDS:
- 1. **SPILL PREVENTION:** CONTROLS SHALL BE IN PLACE TO PREVENT POLLUTANTS FROM BEING DISCHARGED FROM MATERIALS USED AND STORED ONSITE. APPROPRIATE CONTROLS INCLUDE, BUT ARE NOT LIMITED TO, PROPER STORAGE PRACTICES THAT MINIMIZE EXPOSURE OF MATERIALS TO STORMWATER, AND APPROPRIATE SPILL PREVENTION, CONTAINMENT, AND RESPONSE PLANNING AND IMPLEMENTATION.
- 2. **GROUNDWATER PROTECTION:** DURING CONSTRUCTION, THE CONTRACTOR MAY NOT STORE OR HANDLE LIQUID PETROLEUM PRODUCTS AND OTHER HAZARDOUS MATERIALS WITH THE POTENTIAL TO CONTAMINATE GROUNDWATER IN AREAS OF THE PROJECT SITES DRAINING TO AN INFILTRATION AREA OR WITHIN 100 FEET OF A CRITICAL RESOURCE AREA OR STREAM, DIKES, BERMS, SUMPS, AND OTHER FORMS OF SECONDARY CONTAINMENT THAT PREVENT DISCHARGE TO GROUNDWATER MAY BE USED TO ISOLATE PORTIONS OF THE SITE FOR THE PURPOSES OF STORING AND HANDLING LIQUID HAZARDOUS MATERIALS.
- 3. **FUGITIVE SEDIMENT AND DUST:** CONTRACTOR SHALL TAKE ALL NECESSARY ACTIONS TO ENSURE THAT ACTIVITIES DO NOT RESULT IN NOTICEABLE EROSION OF SOILS OR FUGITIVE DUST EMISSIONS DURING OR AFTER CONSTRUCTION. OPERATIONS DURING DRY MONTHS, THAT EXPERIENCE FUGITIVE DUST PROBLEMS, SHOULD WET DOWN UNPAVED ACCESS ROADS ONCE A WEEK OR MORE FREQUENTLY AS NEEDED WITH WATER. CALCIUM CHLORIDE AND OIL MAY NOT BE USED FOR DUST CONTROL. CONTRACTOR SHALL MONITOR VEHICLES ENTERING AND EXITING THE PROJECT SITE FOR EVIDENCE OF TRACKING MUD ONTO PUBLIC OR PRIVATE ROADWAYS OUTSIDE THE WORK AREA. IF NECESSARY, CONTRACTOR SHALL PROVIDE MEANS FOR SWEEPING AND CLEANING ROAD AREAS EXPERIENCING TRACKING. PAVED SURFACES SHALL BE VACUUM SWEEP WHEN DRY. IF OFF-SITE TRACKING OCCURS ON PUBLIC ROADS, THEY SHOULD BE SWEEP IMMEDIATELY AND NO LESS THAN ONCE A WEEK AND PRIOR TO SIGNIFICANT STORM EVENTS. DURING THE MUD SEASON IT MAY BE NECESSARY TO INCREASE THE SIZE OF STABILIZED CONSTRUCTION ENTRANCES OR PROVIDE A WHEEL WASHING STATION.
- 4. **DEBRIS AND OTHER MATERIALS:** CONTRACTOR SHALL MANAGE ALL LITTER, CONSTRUCTION DEBRIS, CONSTRUCTION CHEMICALS, AND BUILDING AND LANDSCAPING MATERIALS EXPOSED TO STORMWATER TO PREVENT MATERIALS FROM BECOMING A SOURCE OF POLLUTION.
- 5. **TRENCH OR FOUNDATION DEWATERING:** TRENCH DEWATERING IS THE REMOVAL OF WATER FROM TRENCHES, FOUNDATIONS, COFFER DAMS, PONDS, SUMPS, BASINS, AND OTHER AREAS WITHIN THE CONSTRUCTION AREA THAT RETAIN WATER AFTER EXCAVATION. IN MOST CASES THE COLLECTED WATER IS HEAVILY SILTED AND HINDERS CORRECT AND SAFE CONSTRUCTION PRACTICES. THE CONTRACTOR SHALL REMOVE COLLECTED WATER FROM THE PONDED AREAS, EITHER THROUGH GRAVITY OR PUMPING, IN A MANNER THAT SPREADS IT THROUGH NATURAL WOODED BUFFERS OR TO AREAS THAT ARE SPECIFICALLY DESIGNED TO COLLECT THE MAXIMUM AMOUNT OF SEDIMENT POSSIBLE (E.G. COFFERDAM SEDIMENT BASIN). THE CONTRACTOR SHALL AVOID PRACTICES THAT ALLOW SEDIMENT LADEN WATER FROM DEWATERING TO FLOW OVER DISTURBED AREAS OF THE PROJECT SITES. OTHER MEASURES OR METHODS MAY BE UTILIZED AS REVIEWED AND APPROVED BY THE ENGINEER AND, IF NECESSARY, THE MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION.
- 6. **AUTHORIZED NON-STORMWATER DISCHARGES:** THE CONTRACTOR SHALL IDENTIFY AND PREVENT CONTAMINATION BY NON-STORMWATER DISCHARGES, WHERE ALLOWED NON-STORMWATER DISCHARGES EXIST. THEY MUST BE IDENTIFIED AND STEPS SHALL BE TAKEN TO ENSURE IMPLEMENTATION OF APPROPRIATE POLLUTION PREVENTION MEASURES FOR THE NON-STORMWATER COMPONENTS OF THE DISCHARGE. AUTHORIZED NON-STORMWATER DISCHARGES ARE: DISCHARGES FROM FIREFIGHTING ACTIVITY, FIRE HYDRANT FLUSHING, DUST CONTROL RUNOFF IN ACCORDANCE WITH PERMIT CONDITIONS, ROUTINE EXTERNAL PAVEMENT WASHWATER (EXCLUDING AREAS OF SPILLS OR LEAKS OF TOXIC/HAZARDOUS MATERIALS AND USE OF DETERGENTS), UNCONTAMINATED GROUNDWATER OR SPRING WATER, FOUNDATION OR FOOTING DRAIN-WATER WHERE FLOWS ARE NOT CONTAMINATED, UNCONTAMINATED EXCAVATION DEWATERING, POTABLE WATER SOURCES INCLUDING WATERLINE FLUSHING, AND LANDSCAPE IRRIGATION.
- 7. **UNAUTHORIZED NON-STORMWATER DISCHARGES:** THE CONTRACTOR SHALL IDENTIFY AND PREVENT CONTAMINATION BY UNAUTHORIZED NON-STORMWATER DISCHARGES. UNAUTHORIZED STORMWATER DISCHARGES INCLUDE, BUT ARE NOT LIMITED TO, WASTEWATER FROM CONCRETE WASHOUT, FUELS OR HAZARDOUS SUBSTANCES, AND DETERGENTS USED IN VEHICLE AND EQUIPMENT WASHING.
- 8. **ADDITIONAL REQUIREMENTS:** COMPLETION OF THE WORK WILL REQUIRE FREQUENT ACCESS TO VARIOUS PORTIONS OF THE PROJECT AREA FROM STATE AND LOCAL ROADWAYS. CONTRACTOR SHALL MONITOR PUBLIC ROADWAYS AND SHALL CLEAN PAVEMENT BY MEANS NECESSARY IN THE EVENT THAT SEDIMENT OR TRACKING IS OBSERVED. SIGNAGE SHALL BE POSTED AT INTERSECTIONS OF PROJECT ACCESS ROADS AND PUBLIC WAYS, STATING COMPANY NAME AND 24-HOUR CONTACT PHONE NUMBER.

LEGEND

- SURVEYED PROPERTY BOUNDARY
- - - APPROXIMATE ABUTTING PROPERTY BOUNDARY
- ⊕ BENCHMARK, FOUND
- ⊙ IRON PIPE, FOUND
- ⊙ EXISTING GAS VENT
- ⊙ EXISTING DRAINAGE MANHOLE
- - - EXISTING EDGE OF GRAVEL
- - - EXISTING FENCE
- ⊕-⊕ EXISTING OVERHEAD ELECTRIC POLES
- ⊙-⊙ EXISTING STONE WALL
- - - 1180 EXISTING MAJOR CONTOUR
- - - 1179 EXISTING MINOR CONTOUR
- x 1179.7 EXISTING SPOT ELEVATION
- ⊕ EXISTING TREES AND/OR BRUSH
- DEP MAPPED WETLAND
- DEP MAPPED STREAM
- 100' RESOURCE BUFFER
- 200' RIVERFRONT AREA
- - - NHESP PRIORITY HABITAT
- - - AQUIFER PROTECTION DISTRICT
- PROPOSED GRISEL ACCESS
- PROPOSED RAP RAP
- PROPOSED MINOR CONTOUR
- PROPOSED MAJOR CONTOUR
- PROPOSED TREE LINE/CLEARING LIMITS
- PROPOSED CHAIN LINK FENCE
- PROPOSED OVERHEAD ELECTRIC LINE AND POLES
- PROPOSED MV ABOVEGROUND ELECTRIC LINE
- PROPOSED LV ABOVEGROUND ELECTRIC LINE
- PROPOSED FIXED-TILT ARRAY RACKING WITH BALLASTS
- LOD LIMITS OF DISTURBANCE
- SB SEDIMENT BARRIER

ZONING REQUIREMENTS

ZONING DISTRICTS SUMMARY TABLE

GENERAL ZONING DISTRICT	OVERLAY ZONING DISTRICTS
RESIDENTIAL / AGRICULTURAL DISTRICT (R-1)	AQUIFER PROTECTION DISTRICT

DIMENSIONAL STANDARDS

DISTRICT	MIN. FRONT YARD SETBACK		MIN. SIDE YARD SETBACK		MIN. REAR YARD SETBACK		BUILDING MAX. HEIGHT	
	REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED	REQUIRED	PROVIDED
RESIDENTIAL / AGRICULTURAL DISTRICT (R-1)	35'	N/A	25'	25'	30'	160'	15'	<15'

PROJECT SITE INFORMATION

PARCEL ID	PARCEL ADDRESS	PARCEL AREA (AC.)	OWNER NAME	OWNER ADDRESS	TOWN	STATE	ZIP CODE
MAP 106, LOT 55	BRIDLE ROAD	31	GREYSKY, LLC	32 COLMAN DRIVE	WOLCOTT	CT	06716

PROJECT SCHEDULE

SPECIFICS OF HOW WORK IS TO BE COMPLETED SHALL ALSO BE BASED ON ENVIRONMENTAL CONSIDERATIONS ASSOCIATED WITH SEASONAL CHANGES. THE FOLLOWING DATES ARE PROVIDED TO ESTABLISH A GENERAL GUIDELINE FOR THESE SEASONS:

- WINTER: NOVEMBER 1 TO MARCH 19
- MUD SEASON: MARCH 20 TO APRIL 30
- SPRING: MAY 1 TO JUNE 21
- SUMMER: JUNE 22 TO SEPTEMBER 21
- FALL: SEPTEMBER 22 TO OCTOBER 31

MULCH ANCHORING REQUIREMENTS

- ON SLOPES GREATER THAN 3 PERCENT, STRAW MULCH WILL BE FIRMLY ANCHORED INTO THE SOIL UTILIZING ONE OF THE FOLLOWING METHODS:
 - CRIMPING WITH A STRAIGHT OR NOTCHED MULCH CRIMPING TOOL, (FARM DISCS WILL NOT BE ALLOWED);
 - TRACK WALKING WITH DEEP-CLEATED EQUIPMENT OPERATING UP AND DOWN THE SLOPE (MULCH CRIMPED PERPENDICULAR TO THE SLOPE) ON SLOPES <25 PERCENT;
 - APPLICATION OF MULCH NETTING;
 - APPLICATION OF 1000 LB./ACRE OF WOOD FIBER MULCH OVER STRAWHAY MULCH; AND
 - COMMERCIALY AVAILABLE TACKIFIERS (EXCEPT WITHIN 100 FEET OF WATERBODIES OR WETLANDS).

SEED AND MULCH SPECIFICATIONS

SEED MIX SPECIFICATIONS

SEED MIX NAME	SEED MIX COMPONENTS	LB./ACRE ¹
TEMPORARY SEED MIX	ANNUAL RYEGRASS	40
PERMANENT SEED MIX	MASSDOT SEED MIX NO. 765-451 PART SHADE PRAIRIE MIX (OR APPROVED EQUAL)	30
SUPPLEMENTAL WINTER SEED MIX ²	WINTER RYEGRASS	120

NOTES:
1. INCREASE SEEDING RATES 10% WHEN HYDROSEEDING
2. WINTER RYE WILL BE ADDED TO PERMANENT SEED MIX AT A RATE OF 120 LB./ACRE BETWEEN AUGUST 15 AND OCTOBER 15

SUMMARY OF TEMPORARY AND PERMANENT MULCH APPLICATION REQUIREMENTS

CONDITION	TIMING	MULCH TYPE	APPLICATION RATES
INACTIVE AREAS	IF NO ACTIVITY IN EXPOSED AREAS FOR 7 DAYS, OR PRIOR TO A STORM EVENT	STRAW MULCH OR WOOD FIBER MULCH OR EROSION CONTROL MIX	1000 LB./ACRE 1000 LB./ACRE 2" THICK OVER AREA
ALL DISTURBED AREAS OF THE CONSTRUCTION WORKSPACE	APPLY MULCH TO ALL EXPOSED AREAS IF NO ACTIVITY OCCURS WITHIN 30 DAYS. APPLY MULCH AND TEMPORARY SEEDING SOONER WHEN IT CAN BE ANTICIPATED THAT ACTIVITY IS NOT GOING TO OCCUR WITHIN 30 DAYS.	STRAW MULCH OR WOOD FIBER MULCH	1000 LB./ACRE
ALL WORK AREAS EXPOSED ARE TO BE MULCHED DAILY EACH TIME SOIL IS DISTURBED ³	NOVEMBER 1 - APRIL 15	STRAW MULCH OR WOOD FIBER MULCH	1000 LB./ACRE
ON ALL EXPOSED AREAS AFTER SEEDING TO STABILIZE THE SOIL SURFACE	PERMANENT GRASS AND/OR LEGUME SEEDING COVERED BY STRAW MULCH ON ALL AREAS THAT HAVE BEEN RESTORED TO FINAL GRADE. THIS DOES NOT APPLY TO AREAS STABILIZED BY OTHER MEANS SUCH AS JUTE MATTING OR PERMANENT EROSION CONTROL MIX.	CRIMPED STRAW MULCH OR PAPER MULCH OR WOOD FIBER MULCH	1000 LB./ACRE

- NOTES:
1. IN ALL CASES, SUFFICIENT MULCH SHALL BE APPLIED SUCH THAT NO SOIL IS VISIBLE THROUGH THE MULCH.
2. DOUBLE RATE OF WOOD FIBER MULCH WHEN USED IN OR ADJACENT TO CRITICAL AREAS. DOUBLE RATE OF MULCH UNDER SOLAR ARRAY DRIP EDGE.
3. PAPER MULCH IS ACCEPTABLE FOR USE DURING THE GROWING SEASON, ON SLOPES >30 PERCENT AND IN AREAS WHERE VEGETATION HAS NOT ESTABLISHED WELL. ADDITIONAL HAY MULCH WILL BE ADDED AS A WINTERIZING MEASURE.
4. MULCH MAY NOT BE SPREAD ON TOP OF SNOW.

SUMMARY OF SEEDING REQUIREMENTS

CONDITION	TIMING ²	SEED MIX
TEMPORARY SEEDING ³	TEMPORARY SEED BETWEEN APRIL 1 AND JUNE 30 OR SEPTEMBER 1 AND SEPTEMBER 30. DISTURBED AREAS OR SOIL STOCKPILES WILL BE SEEDED IMMEDIATELY IF FURTHER DISTURBANCE IS NOT EXPECTED FOR 30 DAYS OR MORE.	TEMPORARY SEED MIX
PERMANENT SEEDING ^{3,4}	SEED BETWEEN APRIL 1 AND MAY 31 OR AUGUST 1 AND SEPTEMBER 10	PERMANENT SEED MIX
UPLAND PORTIONS OF THE CONSTRUCTION AREA	DISTURBED AREA WILL BE SEEDED WITHIN 7 DAYS OF FINAL GRADING.	PERMANENT SEED MIX
SLOPES > 3:1	DISTURBED AREA WILL BE SEEDED IMMEDIATELY AFTER SEEDED PREPARATION.	PERMANENT SEED MIX
WINTER DORMANT SEEDING	DORMANT SEED BETWEEN NOVEMBER 1 AND DECEMBER 15 ONLY. NO SEEDING WILL OCCUR IF SNOW DEPTHS EXCEED 1 INCH.	PERMANENT SEED MIX PLUS SUPPLEMENTAL WINTER SEED MIX

NOTES:
1. WEATHER CONDITIONS PERMITTING.
2. AREAS THAT DO NOT SUCCESSFULLY REVEGETATE WITHIN APPROPRIATE PERIOD OF TIME WILL BE RESEDED AS NECESSARY.
3. LOOSEN COMPACTED SOIL TO A MINIMUM DEPTH OF 2 TO 4 INCHES.
4. TOP DRESS WITH 4 TO 6 INCHES LOAM, AS NEEDED.

PERMITTING
NOT FOR CONSTRUCTION



SEAL:

	PROFESSIONAL ENGINEER: THOMAS N. DANIELS, JR. DATE: JANUARY 5, 2023
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PROJECT: CITIZENS ENERGY CORP WARREN FARMS SOLAR LLC PROPOSED 2.66 MW-AC SOLAR ARRAY & BESS PROJECT DALTON, BERKSHIRE COUNTY, MASSACHUSETTS

TITLE: PERMITTING AND LEGEND

DRAWN BY:	TRC	PROJ. NO.:	421646
CHECKED BY:	TND		
APPROVED BY:	TND		
DATE:	JANUARY 2023		

G1.01

	650 Suffolk Street Suite 200 Lowell, MA 01854 Phone: 978.970.5600
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FILE NO.: 421646 - G SHEETS.dwg

2408 -- USER: Administrator -- ATTACHED FILES: -- ATTACHED FILES: D:\046 - G SHEETS.dwg -- PLOT DATE: January 06, 2023 - 9:00AM -- LAYOUT: G1.01
DRAWING NAME: \\augustia-p1\Environmental\RM\DWG\1646 - G SHEETS.dwg

EROSION CONTROL NOTES

PROJECT DESCRIPTION

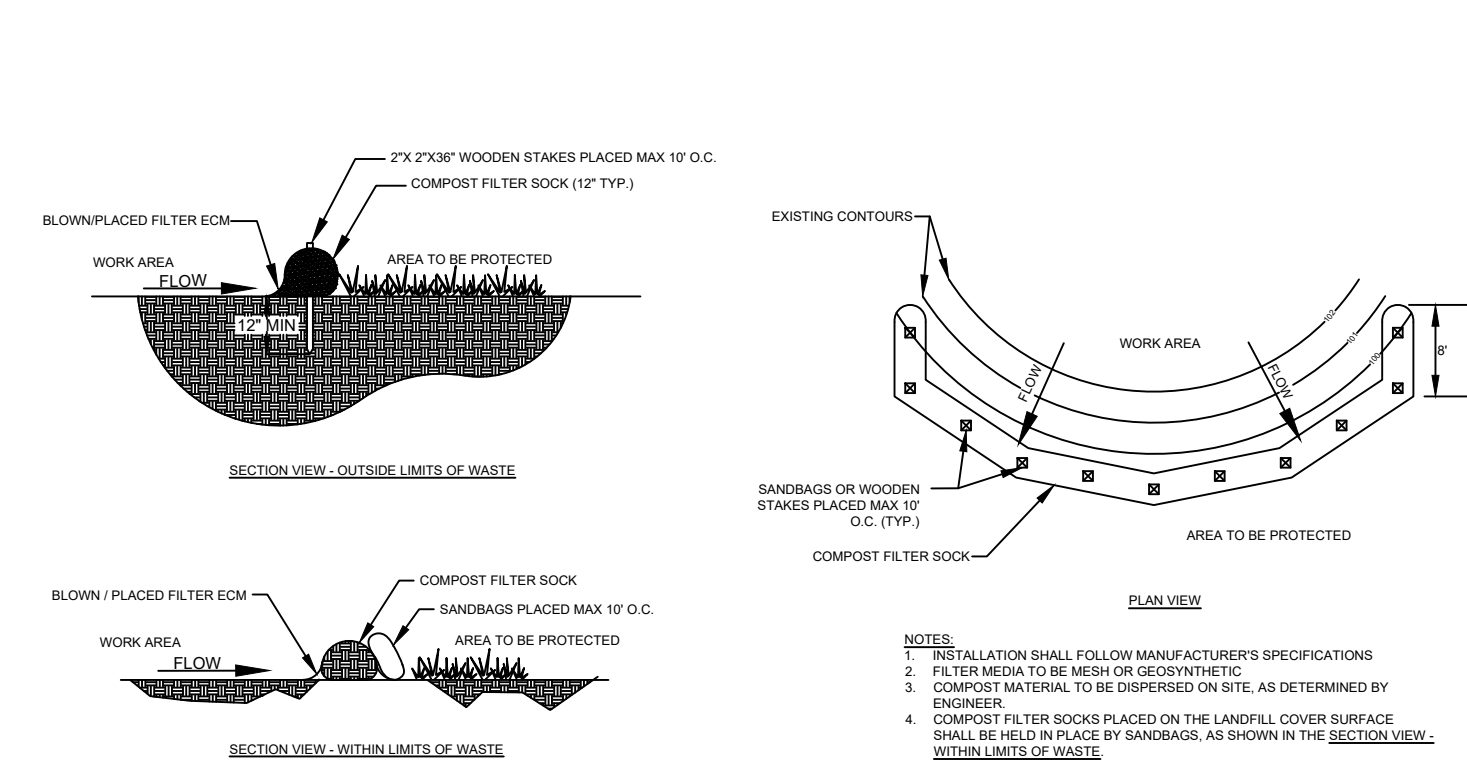
THE PROJECT INVOLVES THE CONSTRUCTION OF A GROUND-MOUNTED PHOTOVOLTAIC SOLAR MODULE SYSTEM AND ALL RELATED ACCESS ROADS, UTILITIES, SITE PREPARATION, CLEARING & GRUBBING, EROSION & SEDIMENTATION CONTROL MEASURES, AND GRADING. EROSION AND SEDIMENTATION CONTROL BEST MANAGEMENT PRACTICES WITH GROUND PENETRATING FEATURES ARE NOT PERMITTED FOR USE WITHIN LIMITS OF LANDFILL CAP.

CONSTRUCTION SEQUENCE

- ESTABLISH CONSTRUCTION WORKSPACE LIMITS; IDENTIFY AND MARK SENSITIVE RECEPTORS INCLUDING NATURAL RESOURCES AND DOWNGRADIENT DRAINAGE INFRASTRUCTURE.
- INSTALLATION OF ALL EROSION AND SEDIMENT CONTROL MEASURES AND ASSOCIATED WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE MASSACHUSETTS EROSION AND SEDIMENTATION CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS.
- PRIOR TO USAGE, CONSTRUCT AND STABILIZE THE CONSTRUCTION ENTRANCE IN THE LOCATION INDICATED ON THE SITE GRADING AND DRAINAGE PLAN SHEET. AT A MINIMUM, A STABILIZED CONSTRUCTION ENTRANCE SHALL BE PROVIDED AT EACH POINT OF ACCESS/EGRESS FROM THE PROJECT AREA TO EXISTING ACCESS ROADS AT THE PROJECT SITE.
- CLEAR BRUSH, SMALL TREES, AND MOW LANDFILL COVER WITHIN PROJECT AREA; GRUBBING SHALL NOT BE COMPLETED UNTIL JUST PRIOR TO PRELIMINARY GRADING AND ESTABLISHMENT AND STABILIZATION OF TEMPORARY OR PERMANENT DRAINAGE CONVEYANCES.
- INSTALL AND MAINTAIN PERIMETER SEDIMENT BARRIERS SUCH AS SILT FENCING AND OTHER APPROVED EROSION CONTROL BARRIERS ALONG THE DOWNHILL LIMIT OF DISTURBANCE AS SHOWN ON THE DRAWINGS. SEDIMENT BARRIER LOCATIONS MAY BE ADJUSTED IN THE FIELD BASED ON ACTUAL SITE CONDITIONS AS DEEMED NECESSARY TO ENSURE PROPER FUNCTION. WHERE SILT FENCE CANNOT BE TOED-IN PROPERLY DUE TO TREE ROOTS, ROCKS, OR FROZEN GROUND, HAY BALES OR AN EROSION CONTROL MIX BERM MAY BE SUBSTITUTED. PERIMETER SEDIMENT BARRIERS SHALL BE INSTALLED AS SOON AS POSSIBLE BUT MAY FOLLOW INITIAL SITE PREPARATION, EROSION OR SEDIMENTATION ISSUES DEVELOPING DURING INITIAL SITE PREPARATION SHALL BE TEMPORARILY STABILIZED AS NECESSARY. ANY EROSION AND SEDIMENT CONTROL MEASURES PLACED ON THE LANDFILL COVER SURFACE SHALL BE NON-GROUND PENETRATING, SUCH AS COMPOST FILTER SOCKS HELD IN PLACE BY SANDBAGS.
- CONSTRUCT TEMPORARY ACCESS ROADS AS NEEDED TO ROUTE TRAFFIC FROM PROPOSED ACCESS ROAD LOCATION ONTO LANDFILL. ONLY LOW GROUND PRESSURE EQUIPMENT MAY BE USED DIRECTLY ON LANDFILL COVER. TEMPORARY ACCESS ROAD SHALL BE REMOVED AS SOLAR ARRAY CONSTRUCTION PROGRESSES FROM FAR EXTENTS OF LANDFILL LIMITS TO CENTER UNDERLYING AND SURROUNDING LANDFILL COVER SHALL BE RESTORED AS NEEDED.
- STABILIZE PERMANENT ACCESS ROAD SURFACES, PARKING AREAS, AND EQUIPMENT STORAGE AND LAYDOWN AREAS WITH MATTING, CRUSHED STONE, OR GRAVEL SUBBASE AS NECESSARY TO MINIMIZE RUTTING AND AVOID PONDING OF STORMWATER.
- CONCURRENT WITH INITIATION OF SITE GRADING, CONSTRUCT AND STABILIZE TEMPORARY DRAINAGE SWALES, DIVERSION BERMS, CHECK DAMS, AND CULVERTS WITH TEMPORARY INLET AND OUTLET PROTECTION TO MINIMIZE SEDIMENT IN SITE RUNOFF DURING CONSTRUCTION. DEWATERING SHALL BE IN ACCORDANCE WITH THE DEWATERING NOTES.
- INSTALL PROPERLY SPACED STONE CHECK DAMS IN ANY SECTION OF DITCH WITHIN 24-HOURS OF FORMING, SHAPING, OR ROUGH GRADING THAT SECTION OF DITCH.
- MINIMIZE THE AMOUNT OF DISTURBANCE AT ANY ONE TIME BY STAGING CONSTRUCTION AS MUCH AS PRACTICAL FOR EFFICIENT CONSTRUCTION OF THE FACILITY. NATURAL VEGETATIVE BUFFERS SHOULD BE LEFT IN PLACE WHERE FEASIBLE TO AID IN SEDIMENT RETENTION AND REDUCE THE POTENTIAL FOR EROSION. OPEN AREA SHALL BE LIMITED TO 5 ACRES OR NO MORE THAN CAN BE MULCHED IN A SINGLE DAY, WHICHEVER IS LESS.
- STABILIZE ANY DISTURBED SLOPES GREATER THAN 3:1 V AND ANY SECTION OF NEWLY CONSTRUCTED DITCH USING ANCHORED EROSION CONTROL BLANKETS OR OTHER APPROVED MULCHING TECHNIQUES WITHIN 24 HOURS. ALL VEGETATED DITCHES THAT HAVE NOT BEEN STABILIZED BY NOVEMBER 1, OR WILL BE WORKED ON BETWEEN NOVEMBER 1 AND APRIL 15, MUST BE STABILIZED WITH STONE LINING BACKED BY GRAVEL BED OR GEOTEXTILE AS SPECIFIED BY THE ENGINEER.
- DUST CONTROL METHODS SHALL BE EMPLOYED AFTER GRADING AND PRIOR TO FINAL STABILIZATION TO PREVENT THE BLOWING AND MOVEMENT OF NUISANCE DUST THROUGH THE APPLICATION OF WATER. CALCIUM CHLORIDE SHALL NOT BE USED.
- APPLY TEMPORARY SEED AND MULCH TO EXPOSED AREAS WHERE ACTIVITY IS NOT ANTICIPATED FOR 30-DAYS. TEMPORARILY MULCH ANY EXPOSED AREAS IF NO ACTIVITY FOR 7 DAYS, OR PRIOR TO A STORM EVENT.
- REMOVE EXCESS SPILLS FROM THE SITE THAT WILL NOT BE USED FOR THE FINAL DESIGN AND STABILIZATION. STOCKPILED SOILS THAT REMAIN IN PLACE FOR 48-HOURS OR MORE SHALL BE CONTAINED WITH SEDIMENT BARRIERS. THE SEDIMENT BARRIERS SHALL BE REINFORCED TO HANDLE A SIGNIFICANT RAIN EVENT AND THE POTENTIAL SLUMPING OF THE PILE. BETWEEN APRIL 15 AND OCTOBER 1, APPLY TEMPORARY SEED AND MULCH TO A STOCKPILE THAT IS NOT ANTICIPATED TO BE DISTURBED WITHIN 30-DAYS. APPLY ANCHORED MULCH DAILY AND/OR AS NEEDED DURING WINTER CONSTRUCTION.
- INSPECT AND REPAIR EROSION CONTROL MEASURES DAILY IN AREAS OF ACTIVE CONSTRUCTION; OTHERWISE WEEKLY AND AFTER A RAINFALL EVENT OF 0.5-INCHES OR GREATER WITHIN A 24-HOUR PERIOD. REMOVE ACCUMULATED SEDIMENT WHEN IT REACHES 1/3 OF THE HEIGHT OF THE BARRIER.
- MONITOR PUBLIC ROADS FOR SIGNS OF TRACKING OR SPILLING OF SOIL MATERIAL AND CLEAN-UP AS NECESSARY.
- COMPLETE FINAL GRADING AND STABILIZATION OF EARTHEN STRUCTURES SUCH AS DIVERSION BERMS, LEVEL SPREADERS, AND SWALES THAT WILL CONTROL POST-CONSTRUCTION RUNOFF.
- FINISH GRADE AND REPLACE TOPSOIL OR LOAM IN DISTURBED AREAS. SEED AND MULCH DISTURBED AREAS WITHIN 7 DAYS OF FINAL GRADING. BETWEEN NOVEMBER 1 AND APRIL 15, STABILIZE AREAS THAT ARE FINAL GRADED AT THE END OF EACH DAY.
- MAINTAIN ALL TEMPORARY EROSION CONTROL AND SEDIMENT BARRIERS UNTIL VEGETATION HAS BEEN ESTABLISHED OVER 90% OF THE AREA TO BE REVEGETATED. RESEED SPARSELY VEGETATED AREAS AS NECESSARY.
- REMOVE AND PROPERLY DISPOSE OF ALL TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES ONCE THE SITE IS PERMANENTLY STABILIZED.

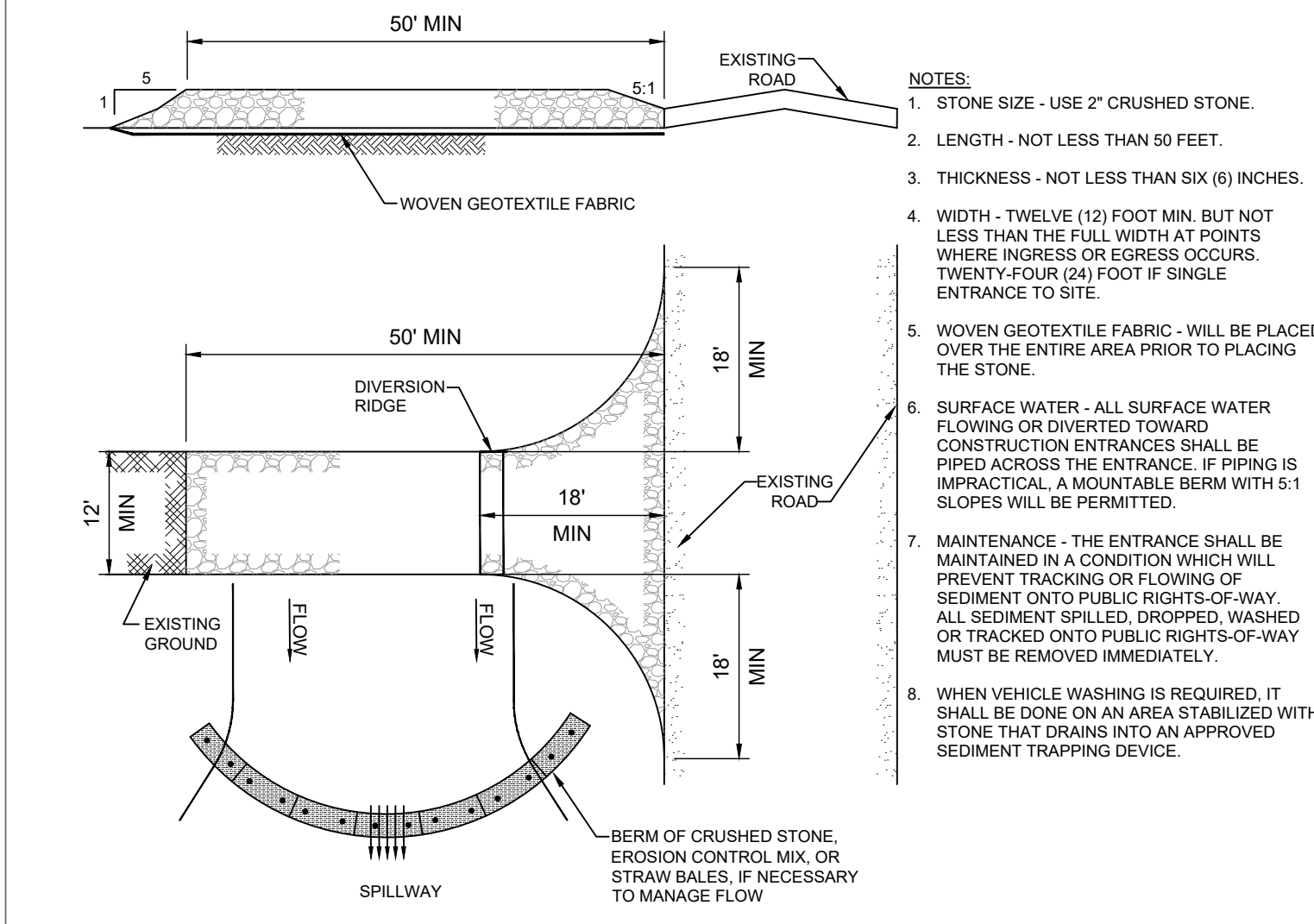
DEWATERING NOTES

- THE CONTRACTOR SHALL INSTALL, MAINTAIN, AND OPERATE ALL CHANNELS, SUMPS, AND OTHER TEMPORARY DIVERSION AND PROTECTIVE WORKS NEEDED TO DIVERT STREAM FLOW AND OTHER SURFACE WATER THROUGH OR AROUND THE CONSTRUCTION SITE. CONTROL OF SURFACE WATER SHALL BE CONTINUOUS DURING THE PERIOD THAT DAMAGE TO CONSTRUCTION WORK COULD OCCUR.
- OPEN EXCAVATIONS SHALL BE DEWATERED AND KEPT FREE OF STANDING WATER AND MUDDY CONDITIONS AS NECESSARY FOR THE PROPER EXECUTION OF THE WORK. THE CONTRACTOR SHALL FURNISH, INSTALL, OPERATE, AND MAINTAIN ALL DRAINS, SUMPS AND ALL OTHER EQUIPMENT REQUIRED TO PROPERLY DEWATER THE SITE. DEWATERING SYSTEMS THAT CAUSE A LOSS OF SOIL FINES FROM THE FOUNDATION AREAS WILL NOT BE PERMITTED.
- INSTALL DIVERSION DITCHES OR BERMS IF NECESSARY TO MINIMIZE THE AMOUNT OF CLEAN STORMWATER RUNOFF ALLOWED INTO THE EXCAVATION AREA.
- REMOVAL OF WATER FROM THE CONSTRUCTION SITE SHALL BE ACCOMPLISHED SO THAT EROSION AND TRANSPORTATION OF SEDIMENT AND OTHER POLLUTANTS ARE MINIMIZED.
- DISCHARGE DEWATERING EFFLUENT TO AREAS AS INDICATED ON THE SITE GRADING PLAN. DISCHARGE SHALL BE MANAGED TO ENSURE SHEET FLOW.
- DEWATERING IN PERIODS OF INTENSE HEAVY RAIN OR WHEN THE INFILTRATIVE CAPACITY OF THE SOIL IS EXCEEDED, SHALL BE AVOIDED TO THE MAXIMUM EXTENT PRACTICABLE.
- FLOW TO THE SEDIMENT REMOVAL STRUCTURE MAY NOT EXCEED THE STRUCTURE'S CAPACITY TO SETTLE AND FILTER FLOW OR THE STRUCTURE'S VOLUME CAPACITY.
- WHEN TEMPORARY WORKS ARE NO LONGER NEEDED, THE CONTRACTOR SHALL REMOVE AND RETURN THE AREA TO A CONDITION SIMILAR TO THAT WHICH EXISTED BEFORE CONSTRUCTION. AREAS WHERE TEMPORARY WORKS WERE LOCATED SHALL BE GRADED FOR SIGHTLY APPEARANCE WITH NO OBSTRUCTION TO NATURAL SURFACE WATER FLOWS OR THE PROPER FUNCTIONING AND ACCESS TO THE WORKS OF IMPROVEMENTS INSTALLED. THE CONTRACTOR SHALL EXERCISE EXTREME CARE DURING THE REMOVAL STAGES TO MINIMIZE THE LOSS OF SOIL SEDIMENT AND DEBRIS THAT WAS COLLECTED DURING CONSTRUCTION.

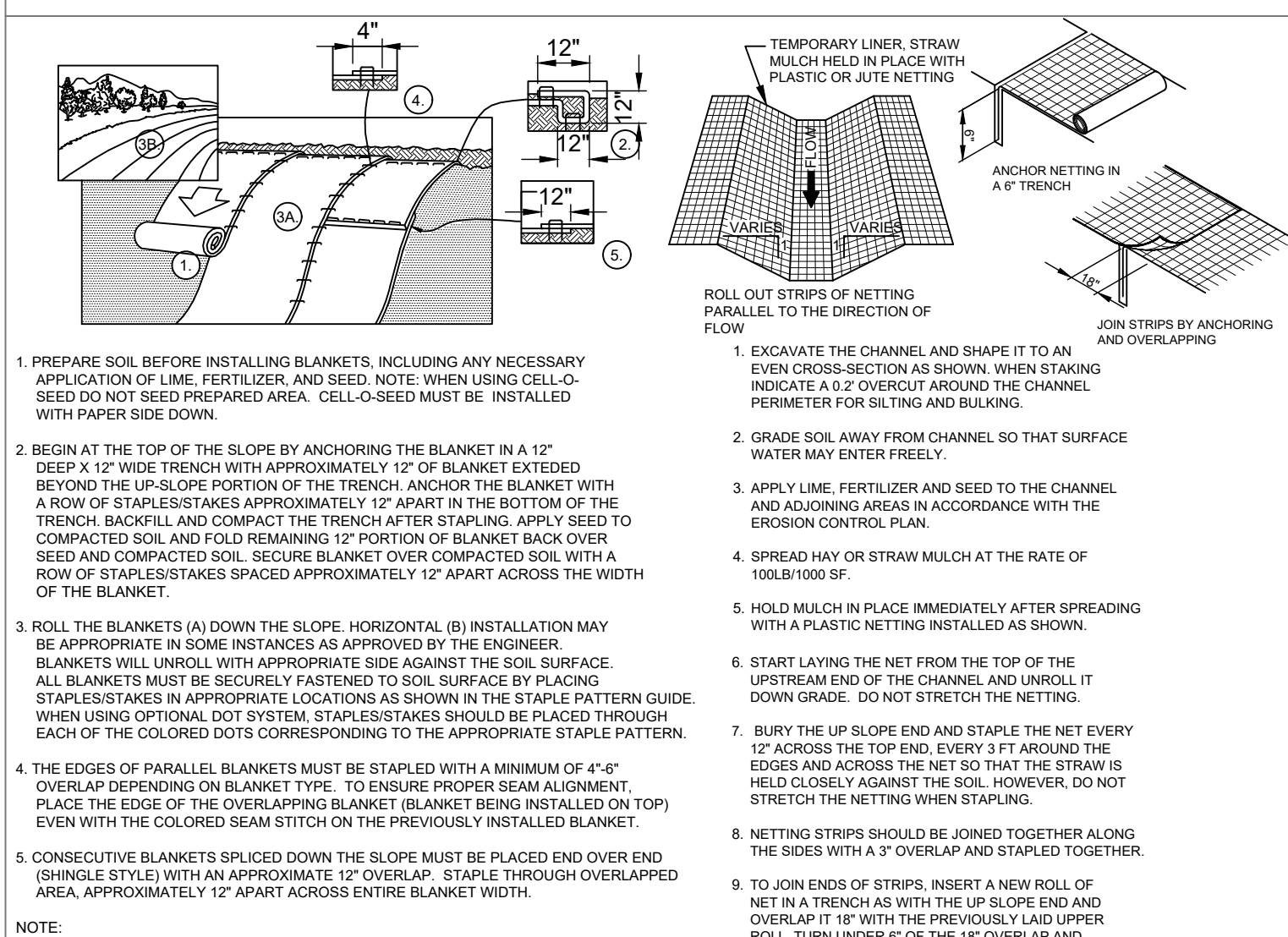


COMPOST FILTER SOCK
NOT TO SCALE

STORM PIPE TRENCH DETAIL
NOT TO SCALE

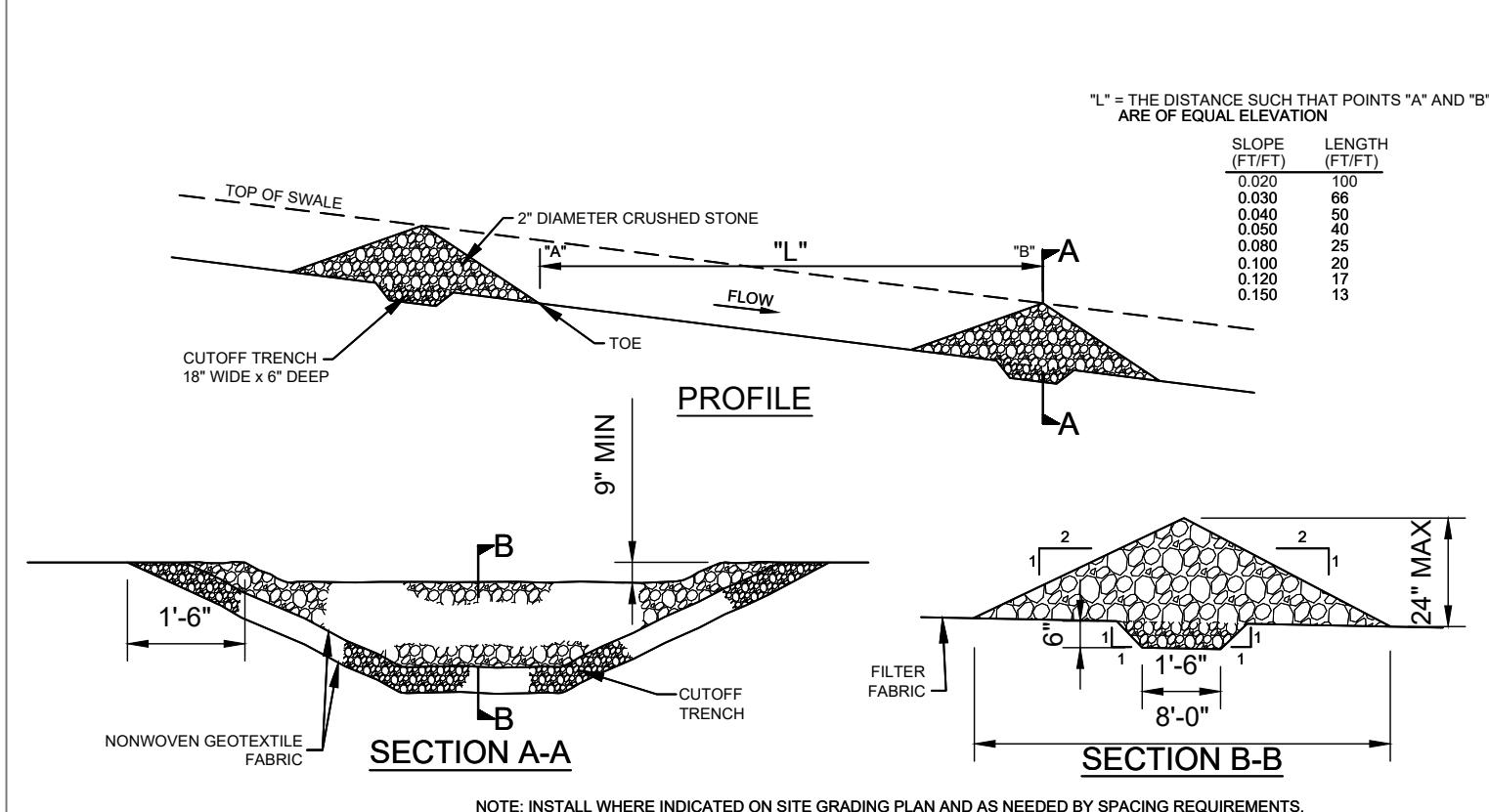


STABILIZED CONSTRUCTION ENTRANCE
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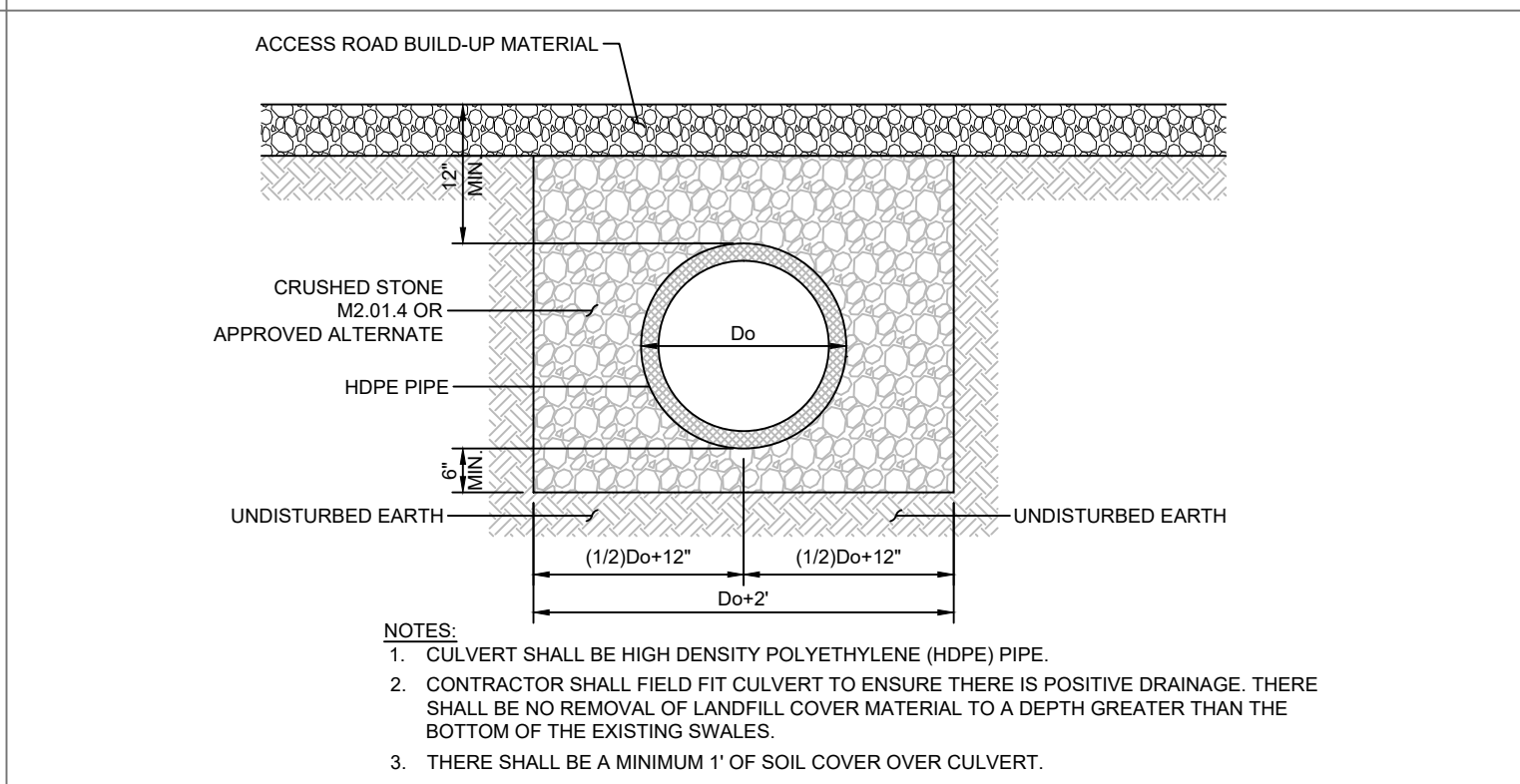


EROSION CONTROL BLANKET
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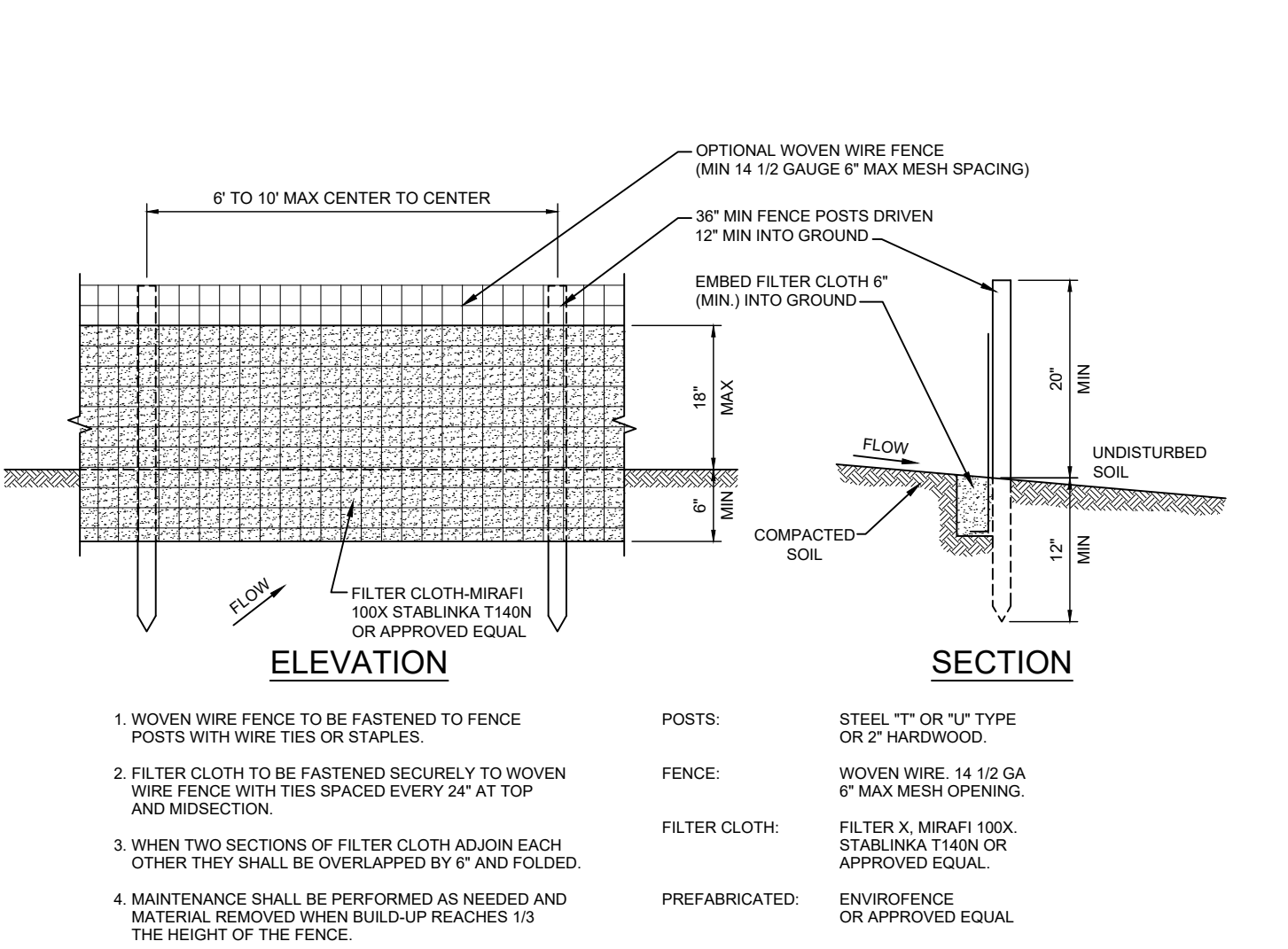
GRASS LINED DITCH
NOT TO SCALE



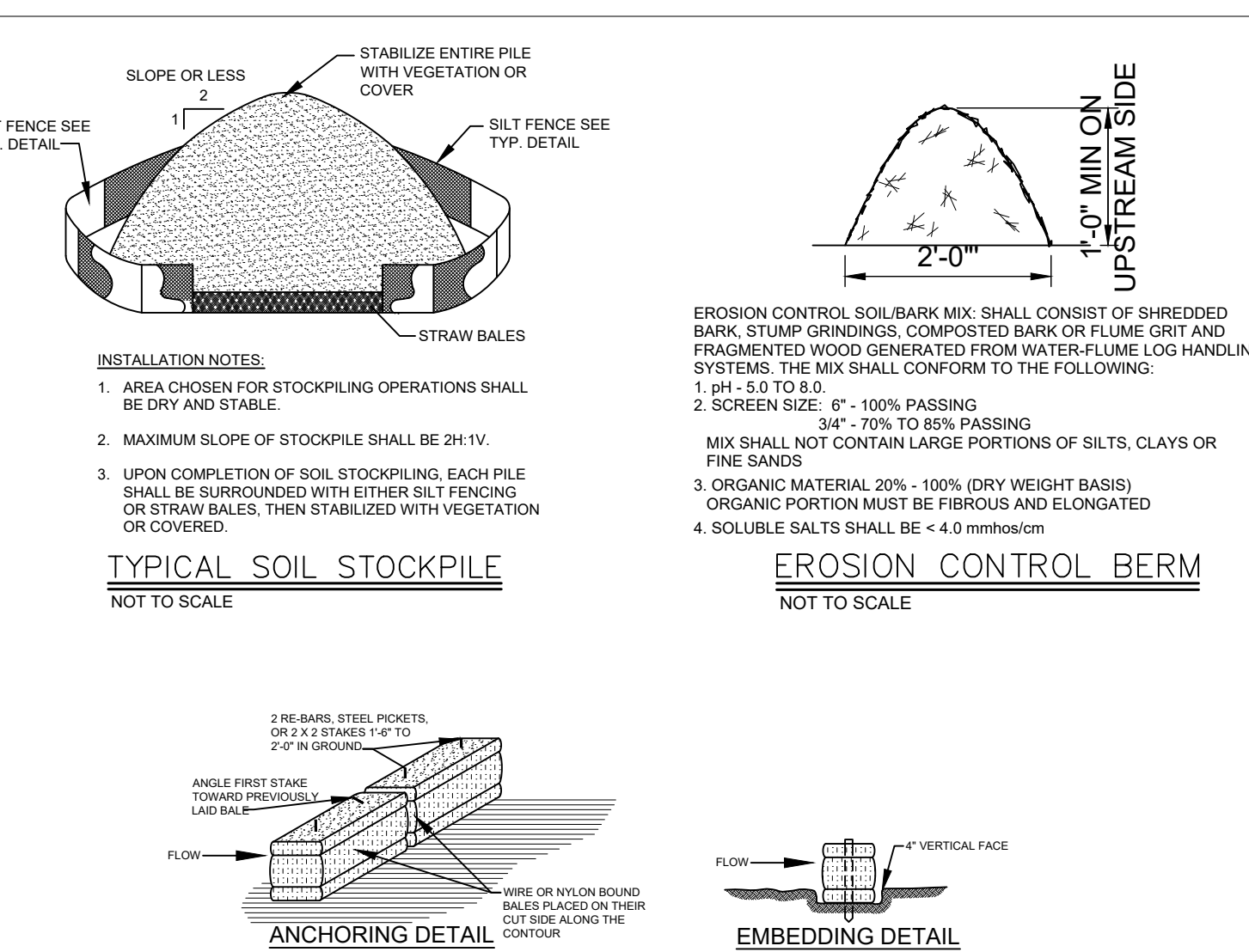
CHECK DAM DETAILS
NOT TO SCALE



EXCAVATION DEWATERING DETAIL
NOT TO SCALE

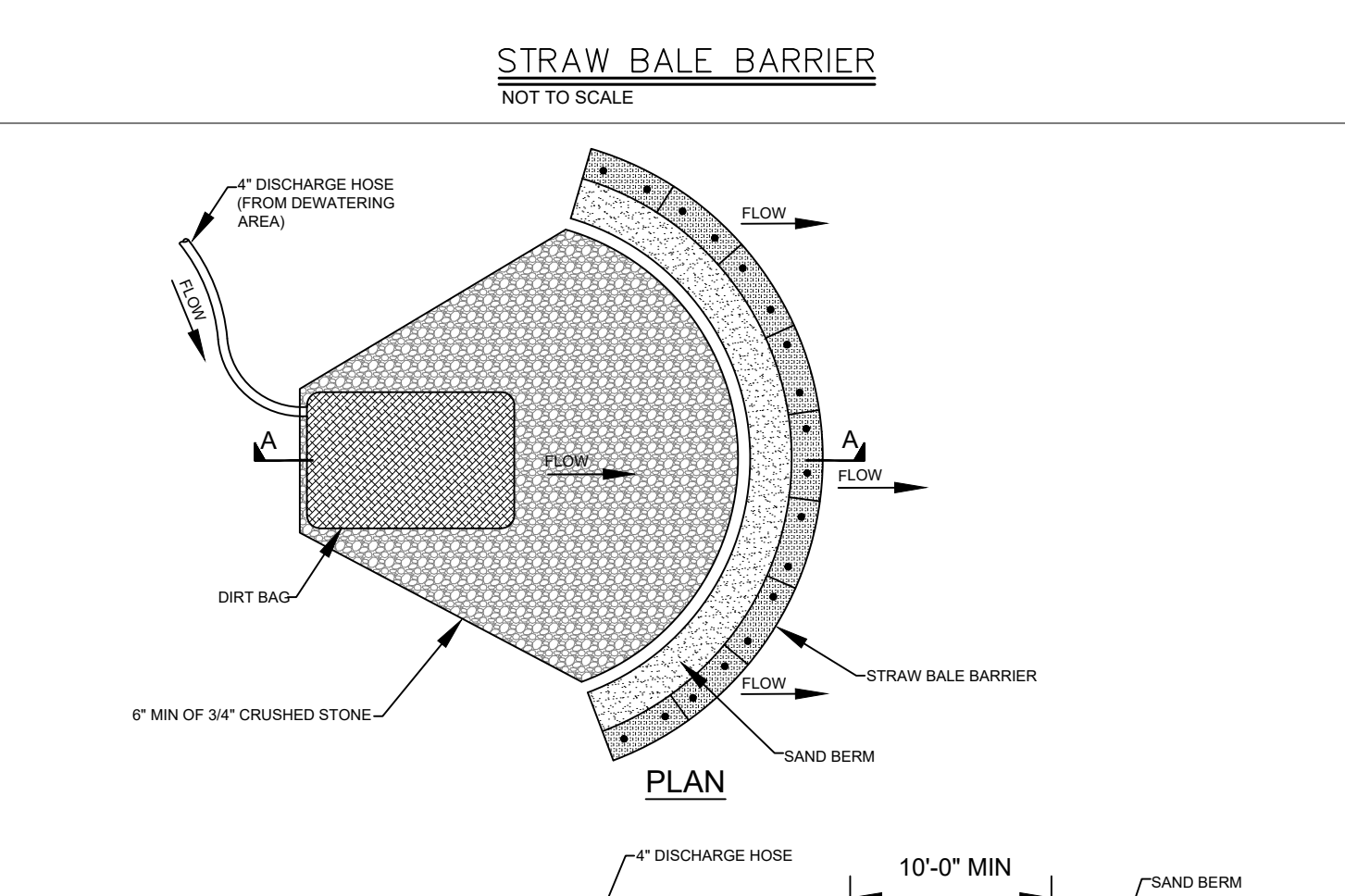


SILT FENCE DETAILS
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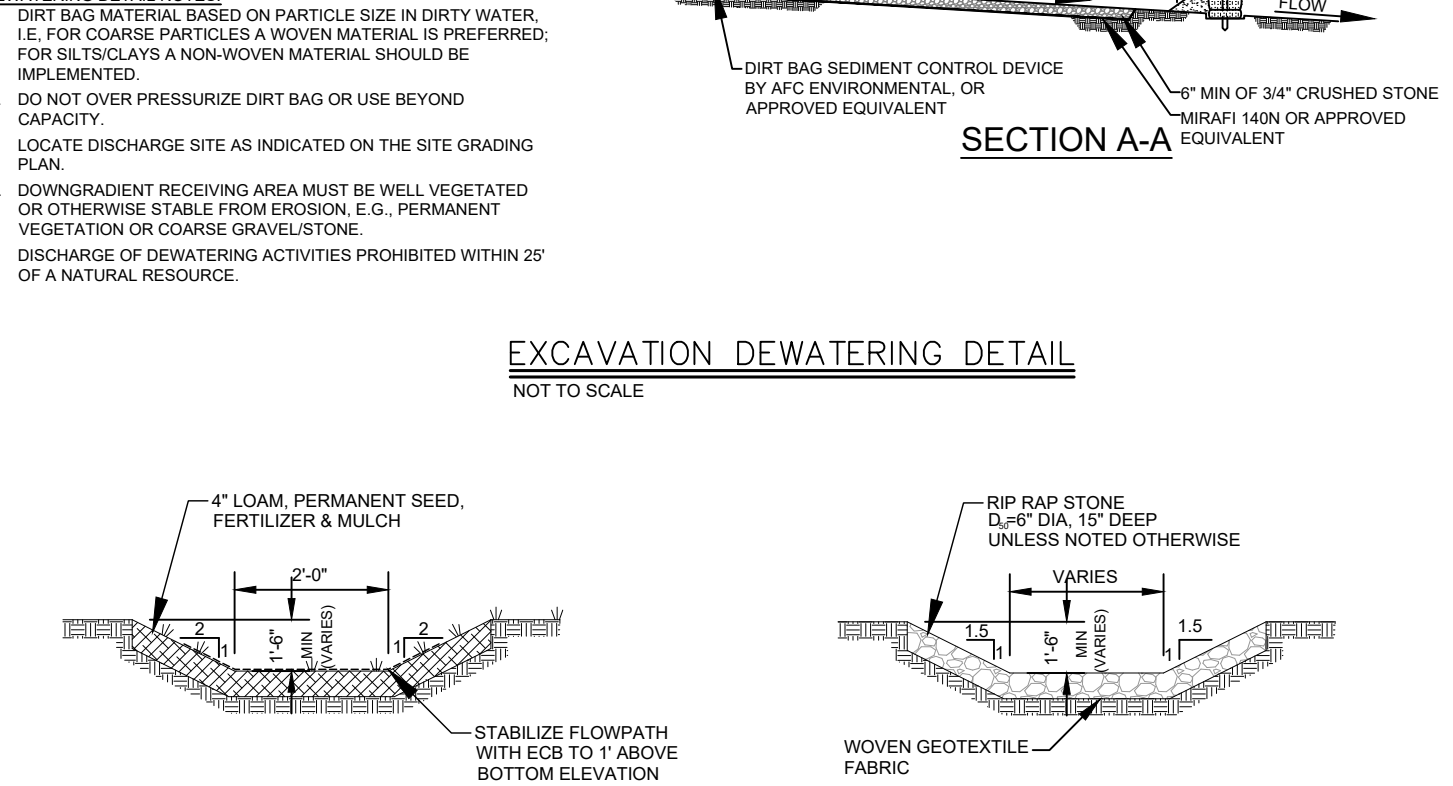


TYPICAL SOIL STOCKPILE
NOT TO SCALE

EROSION CONTROL BERM
NOT TO SCALE

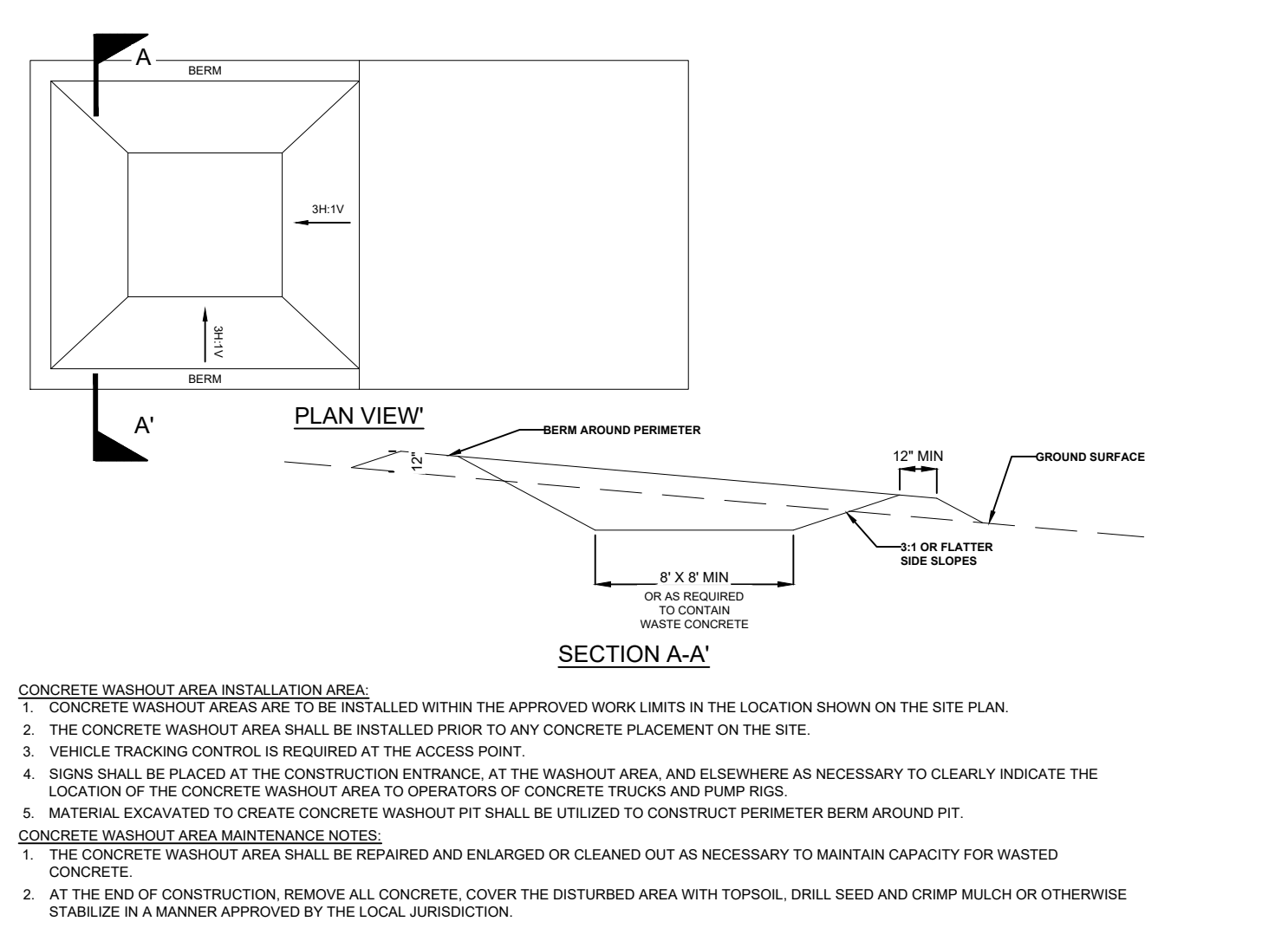


STRAW BALE BARRIER
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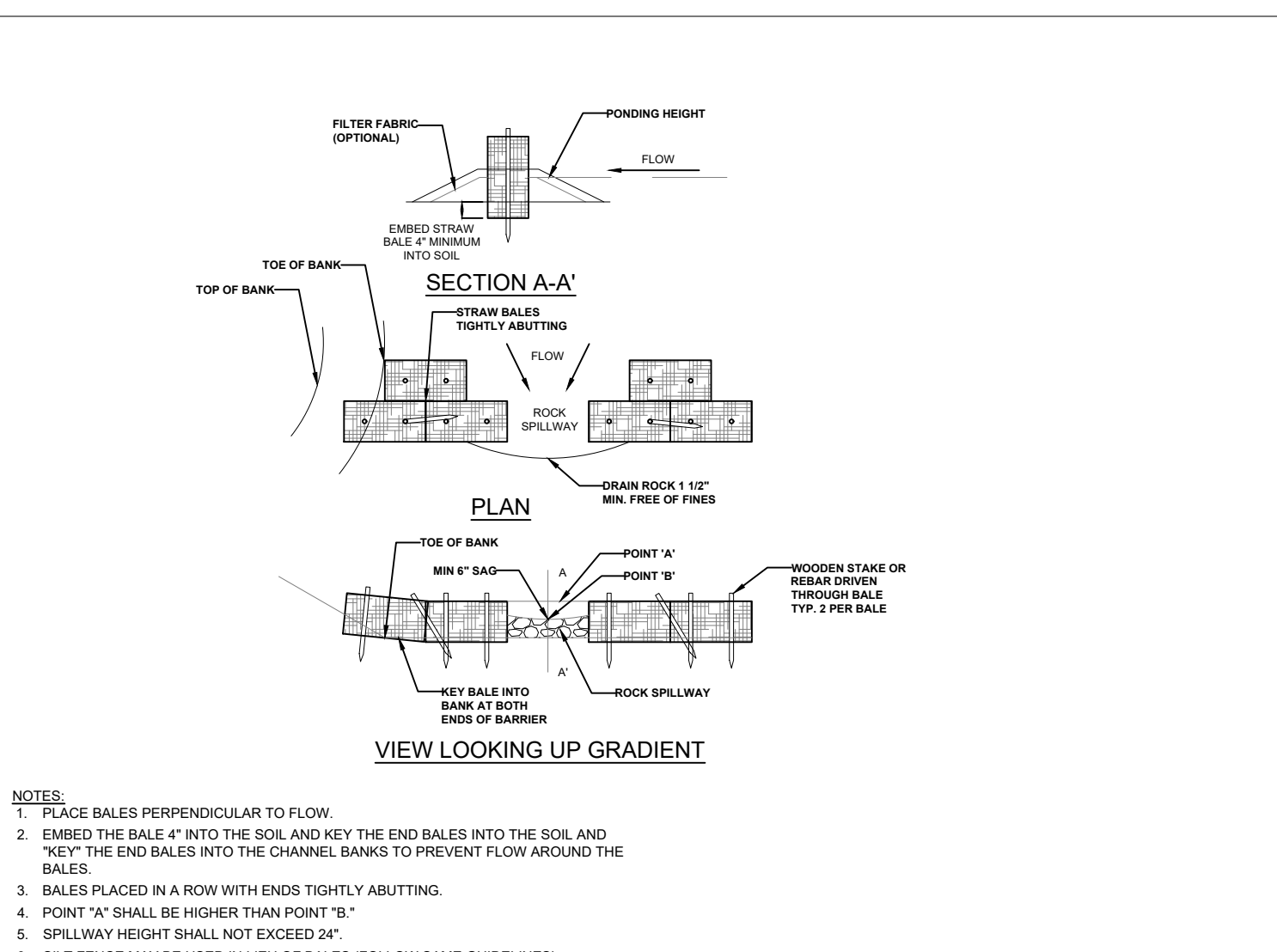


VEGETATED SWALE DETAIL
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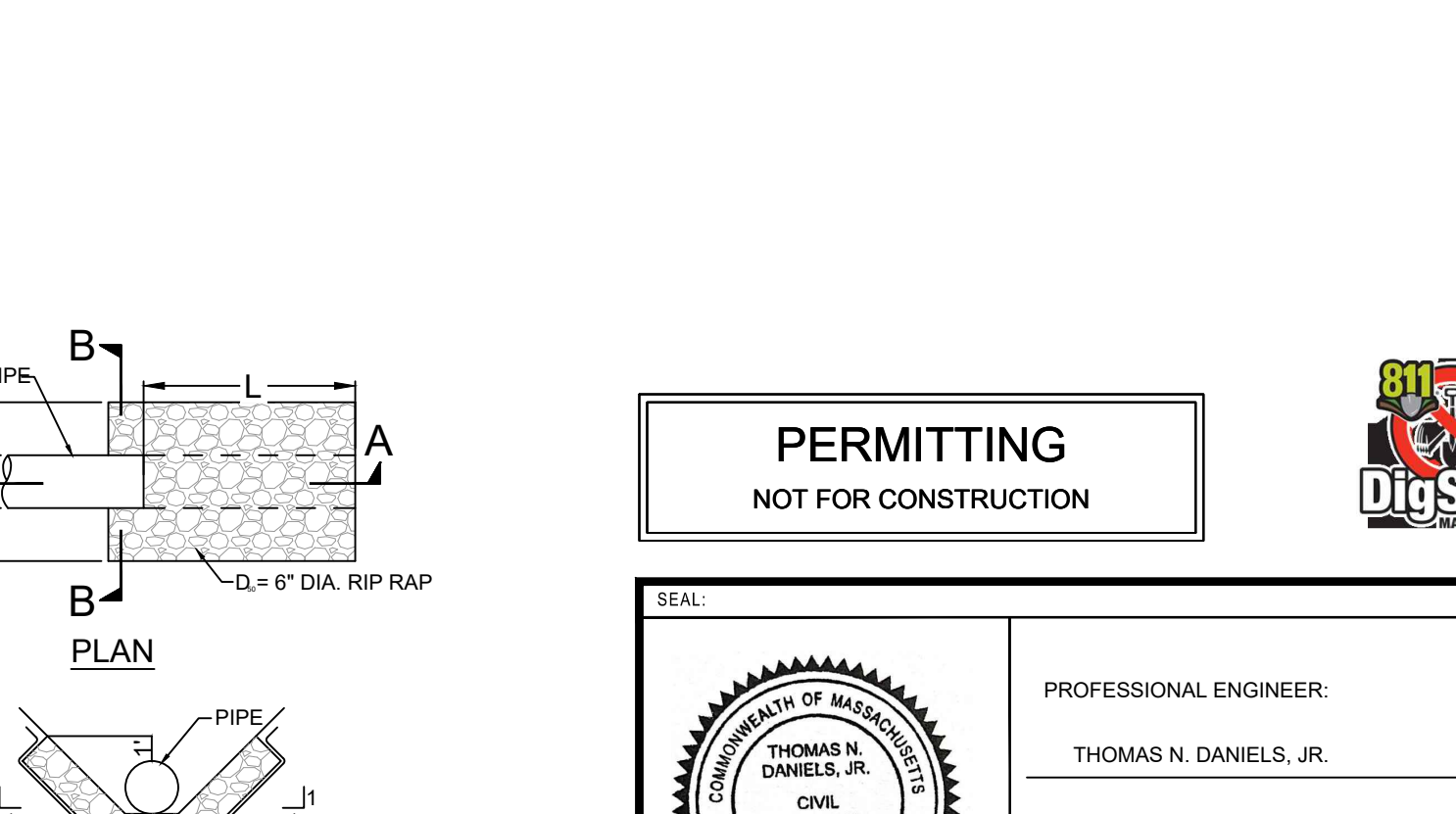
RIP RAP SWALE DETAIL
NOT TO SCALE



CONCRETE WASHOUT AREA
NOT TO SCALE



SEMI-PERMEABLE SEDIMENT BARRIER
NOT TO SCALE



INLET/OUTLET PROTECTION DETAIL
NOT TO SCALE

OUTLET PROTECTION SCHEDULE

CULVERT ID	CULVERT DIA. (D)	LENGTH (L)
SD-1	18"	12'
SD-2	18"	15'
SD-3	2 X 18"	21'

NOTES:
1. EXISTING RIP RAP SWALE SHALL BE IMPROVED ACCORDING TO THIS DETAIL FOR MINIMUM LENGTH SPECIFIED ABOVE AT CULVERT OUTLETS.

PERMITTING
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER:
THOMAS N. DANIELS, JR.
DATE:
JANUARY 5, 2023

PROJECT:
**CITIZENS ENERGY CORP
WARREN FARMS SOLAR LLC
PROPOSED 2.66 MW-AC SOLAR ARRAY & BESS PROJECT
DALTON, BERKSHIRE COUNTY, MASSACHUSETTS**

NO.	TRC	DATE	ISSUED FOR PERMITTING	REVISION	TND	APPD.
0	TRC	01/05/2023	ISSUED FOR PERMITTING		TND	

TITLE:
EROSION CONTROL NOTES & DETAILS

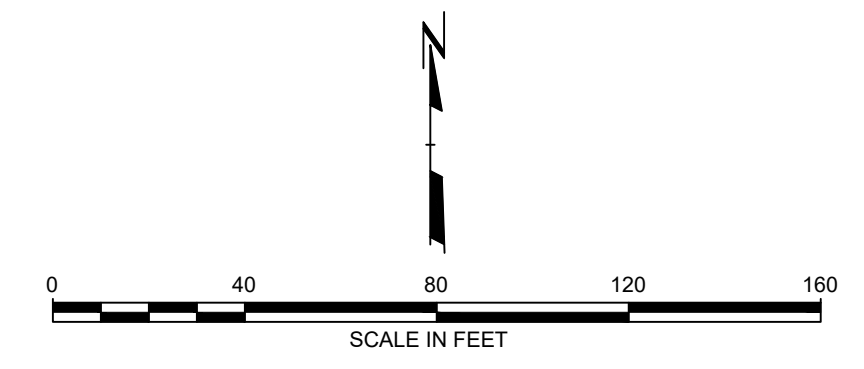
DRAWN BY: TRC
CHECKED BY: TRC
APPROVED BY: TND
DATE: JANUARY 2023

PROJ. NO.: 421646
G1.02

TRC
650 Suffolk Street
Suite 200
Lowell, MA 01854
Phone: 978.970.5600

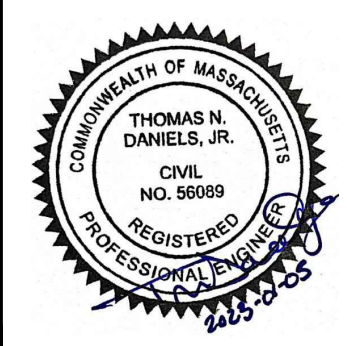


2428 - USER: Administrator - ATTACHED FILES: - ATTACHED FILES: D:\646 - EXISTING.dwg --- PLOT DATE: January 06, 2023 - 9:00AM --- LAYOUT: C1.01
 DRAWING NAME: \\augusta-tp1\Environmental\RMD\Projects\Citizens Energy Corp\421646 - Warren Farms Solar-Dalton, MA\10-DWG-421646 - EXISTING.dwg



PERMITTING
 NOT FOR CONSTRUCTION



	PROFESSIONAL ENGINEER: THOMAS N. DANIELS, JR. DATE: JANUARY 5, 2023
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NO.	BY	DATE	REVISION	APPD.
0	TRC	01/05/2023	ISSUED FOR PERMITTING	TND

PROJECT: **CITIZENS ENERGY CORP
 WARREN FARMS SOLAR LLC
 PROPOSED 2.66 MW-AC SOLAR ARRAY & BESS PROJECT
 DALTON, BERKSHIRE COUNTY, MASSACHUSETTS**

TITLE: **SITE PREPARATION PLAN - SOUTH**

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CHECKED BY:	TND		
APPROVED BY:	TND		C1.01
DATE:	JANUARY 2023		

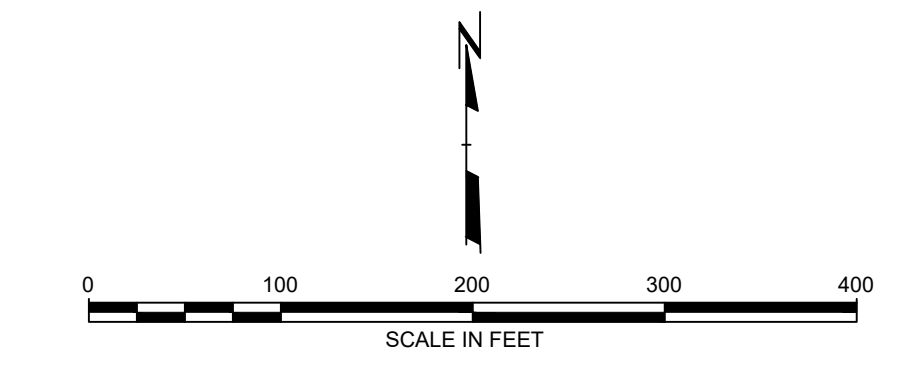
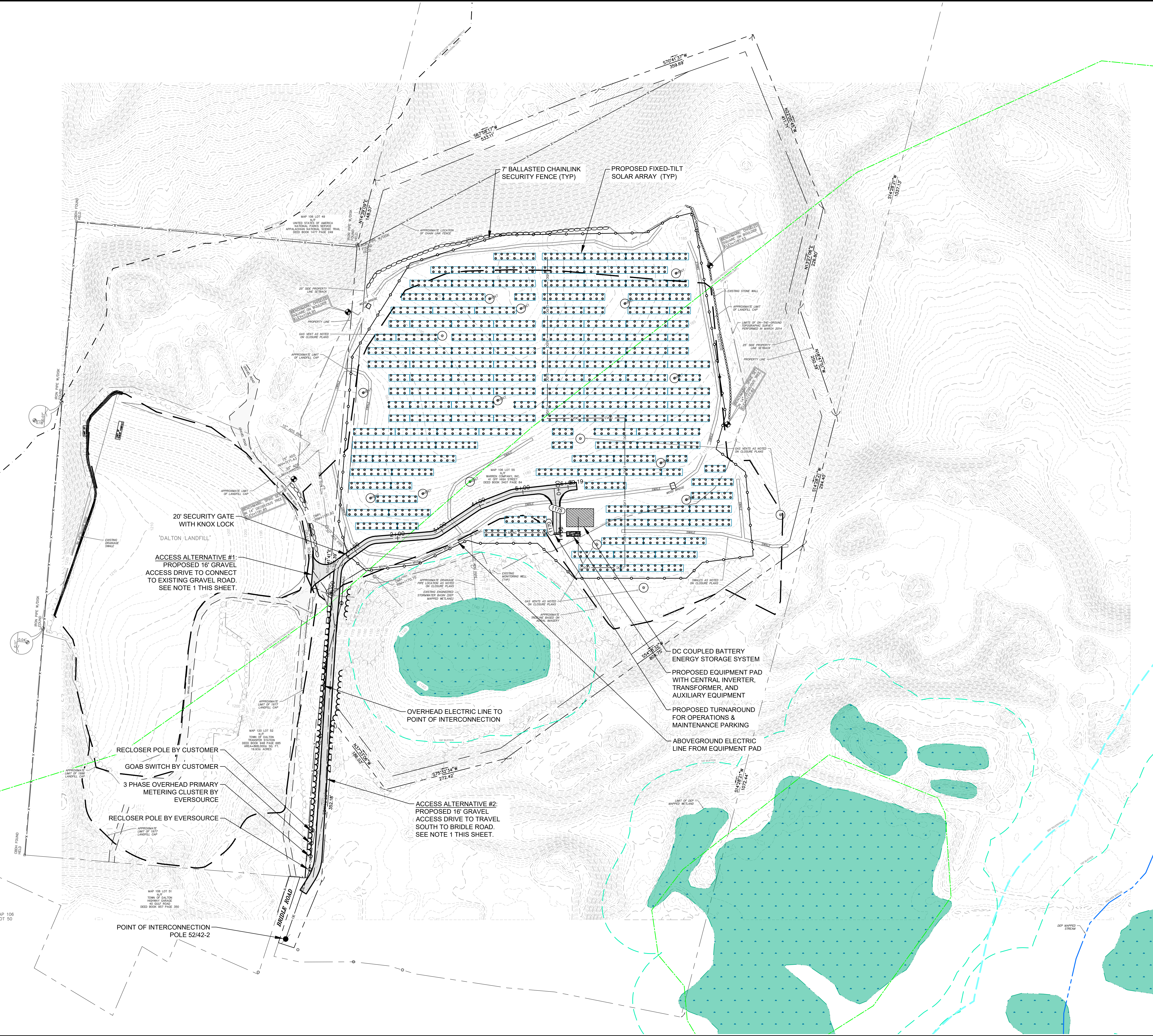
	650 Suffolk Street Suite 200 Lowell, MA 01854 Phone: 978.970.5600
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FILE NO: 421646 - EXISTING.dwg

NOTES

1. ONLY ONE ACCESS ROUTE SHALL BE CONSTRUCTED, EITHER ACCESS ALTERNATIVE #1 OR ACCESS ALTERNATIVE #2. ISSUED FOR CONSTRUCTION DRAWINGS WILL SHOW THE PROPOSED ACCESS ROUTE PER FINALIZED ACCESS EASEMENT AGREEMENT. SITE GRADING & DRAINAGE PLAN SHALL BE UPDATED AS NEEDED.

2438 - USER: Administrator - ATTACHED: 421646 - EXISTING - ATTACHED: 421646 - DWG: 421646 - BASE.dwg - PLOT DATE: January 06, 2023 - 9:00AM - LAYOUT: C2.00
 DRAWING NAME: \\augustia-tp1\Environmental\RMD\Projects\Citizens Energy Corp\421646-Warren Farms Solar-Dalton, MA\10-DWG-421646 - BASE.dwg



PERMITTING
NOT FOR CONSTRUCTION



	PROFESSIONAL ENGINEER:
	THOMAS N. DANIELS, JR.
	DATE: JANUARY 5, 2023

NO.	BY	DATE	REVISION	APPD.
0	TRC	01/05/2023	ISSUED FOR PERMITTING	TND

PROJECT: **CITIZENS ENERGY CORP
WARREN FARMS SOLAR LLC
PROPOSED 2.66 MW-AC SOLAR ARRAY & BESS PROJECT
DALTON, BERKSHIRE COUNTY, MASSACHUSETTS**

OVERALL SITE LAYOUT PLAN

DRAWN BY:	TRC	PROJ. NO.:	421646
CHECKED BY:	TND		
APPROVED BY:	TND		
DATE:	JANUARY 2023		

C2.00

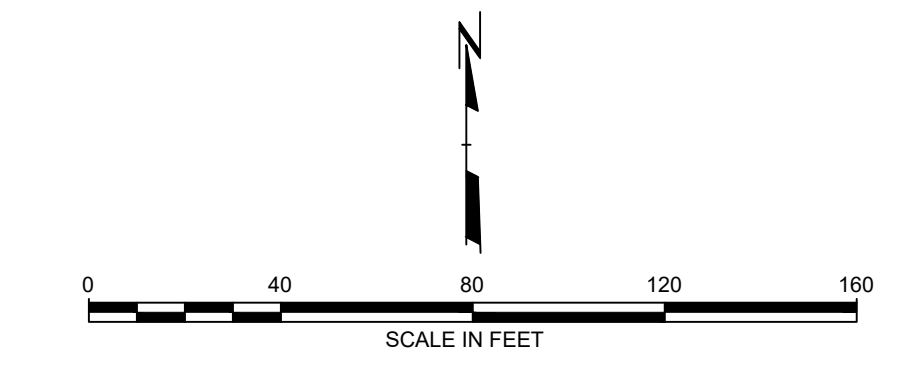
650 Suffolk Street
 Suite 200
 Lowell, MA 01854
 Phone: 978.970.5600



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PERMITTING
NOT FOR CONSTRUCTION



	PROFESSIONAL ENGINEER:
	THOMAS N. DANIELS, JR.
	DATE:
	JANUARY 5, 2023

NO.	BY	DATE	REVISION	APPD.
0	TRC	01/05/2023	ISSUED FOR PERMITTING	TND

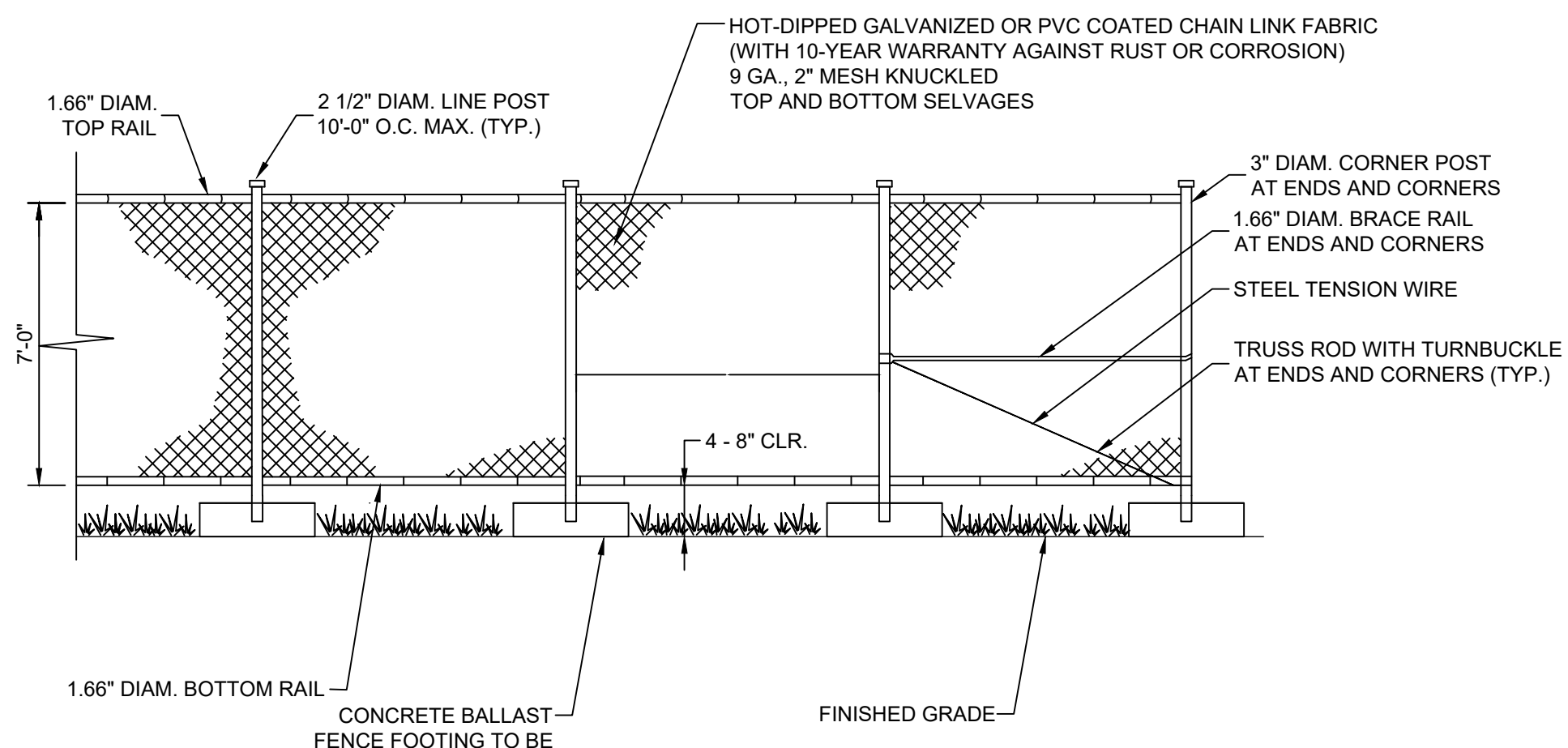
PROJECT: **CITIZENS ENERGY CORP
WARREN FARMS SOLAR LLC
PROPOSED 2.66 MW-AC SOLAR ARRAY & BESS PROJECT
DALTON, BERKSHIRE COUNTY, MASSACHUSETTS**

TITLE: **SITE GRADING & DRAINAGE PLAN - SOUTH**

DRAWN BY:	TRC	PROJ. NO.:	421646
CHECKED BY:	TND		
APPROVED BY:	TND		C2.01
DATE:	JANUARY 2023		

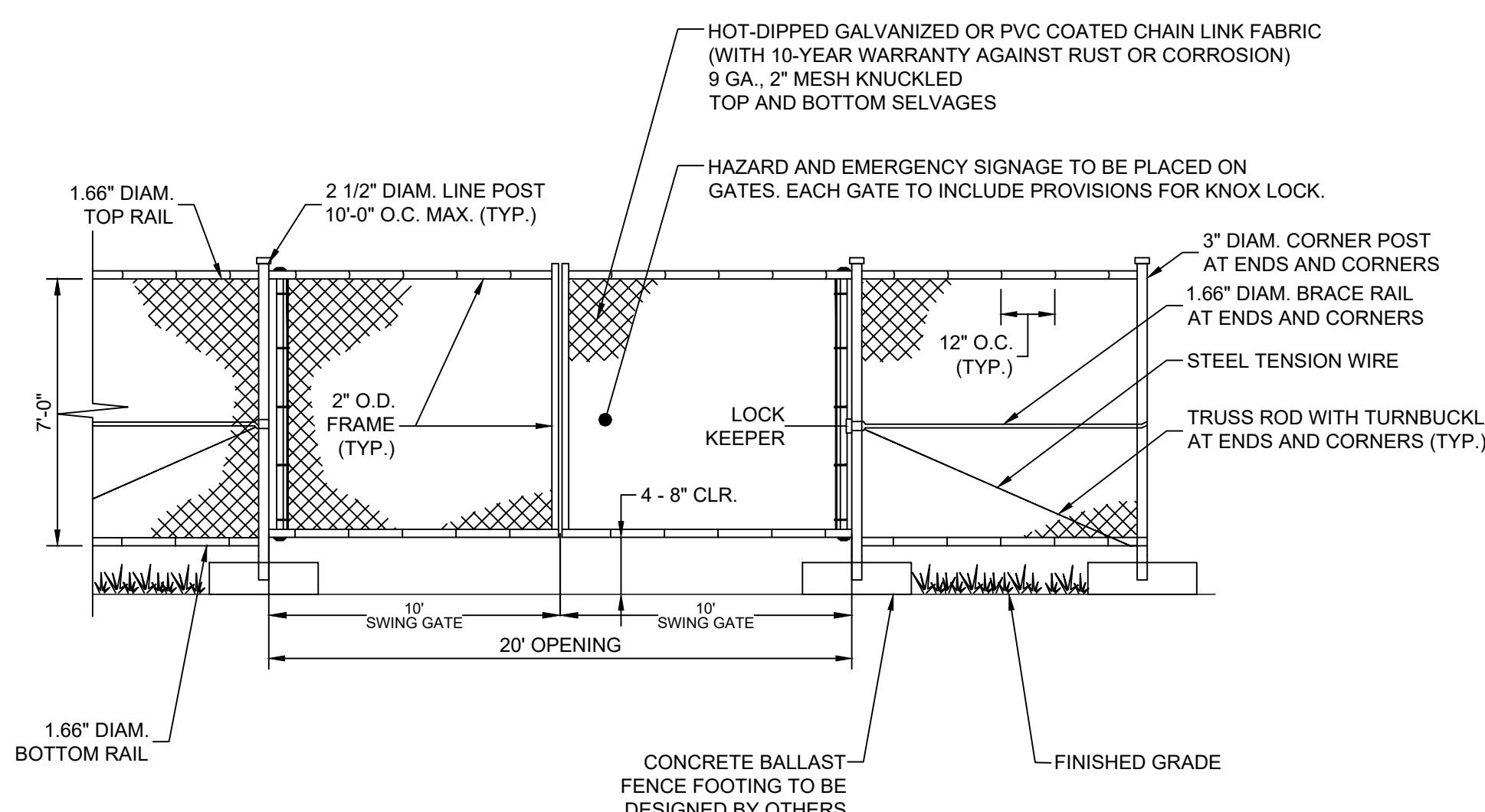
650 Suffolk Street
Suite 200
Lowell, MA 01854
Phone: 978.970.5600

FILE NO.: 421646 - BASE.dwg



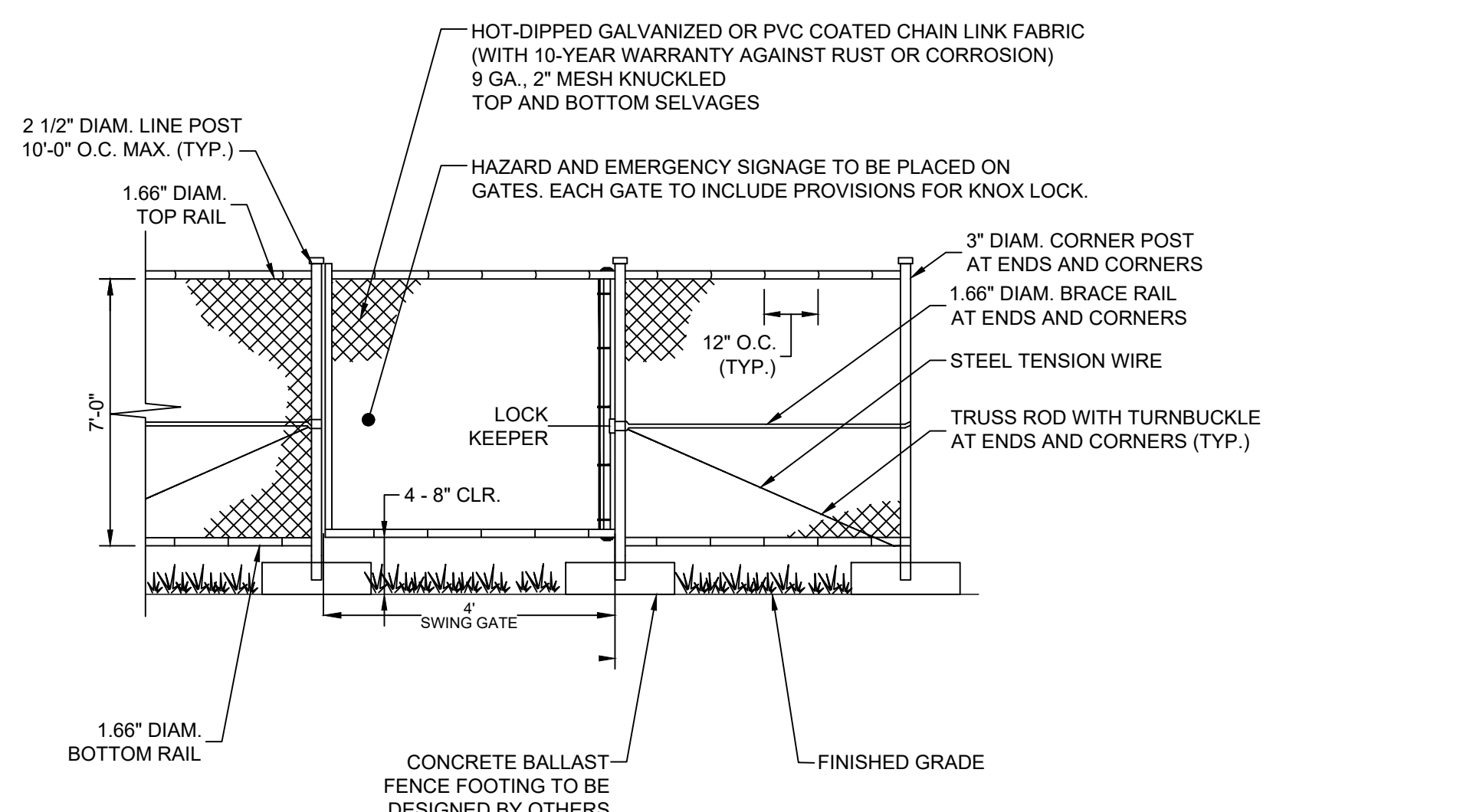
CHAINLINK FENCE DETAIL - BALLAST SUPPORTED
NOT TO SCALE

NOTES:
1. DETAIL IS FOR ILLUSTRATIVE PURPOSES ONLY. FINAL GATE DESIGN AND LAYOUT SUBJECT TO DETAILED ENGINEER, AHJ APPROVAL, AND CONTRACTOR SUBMITTAL.



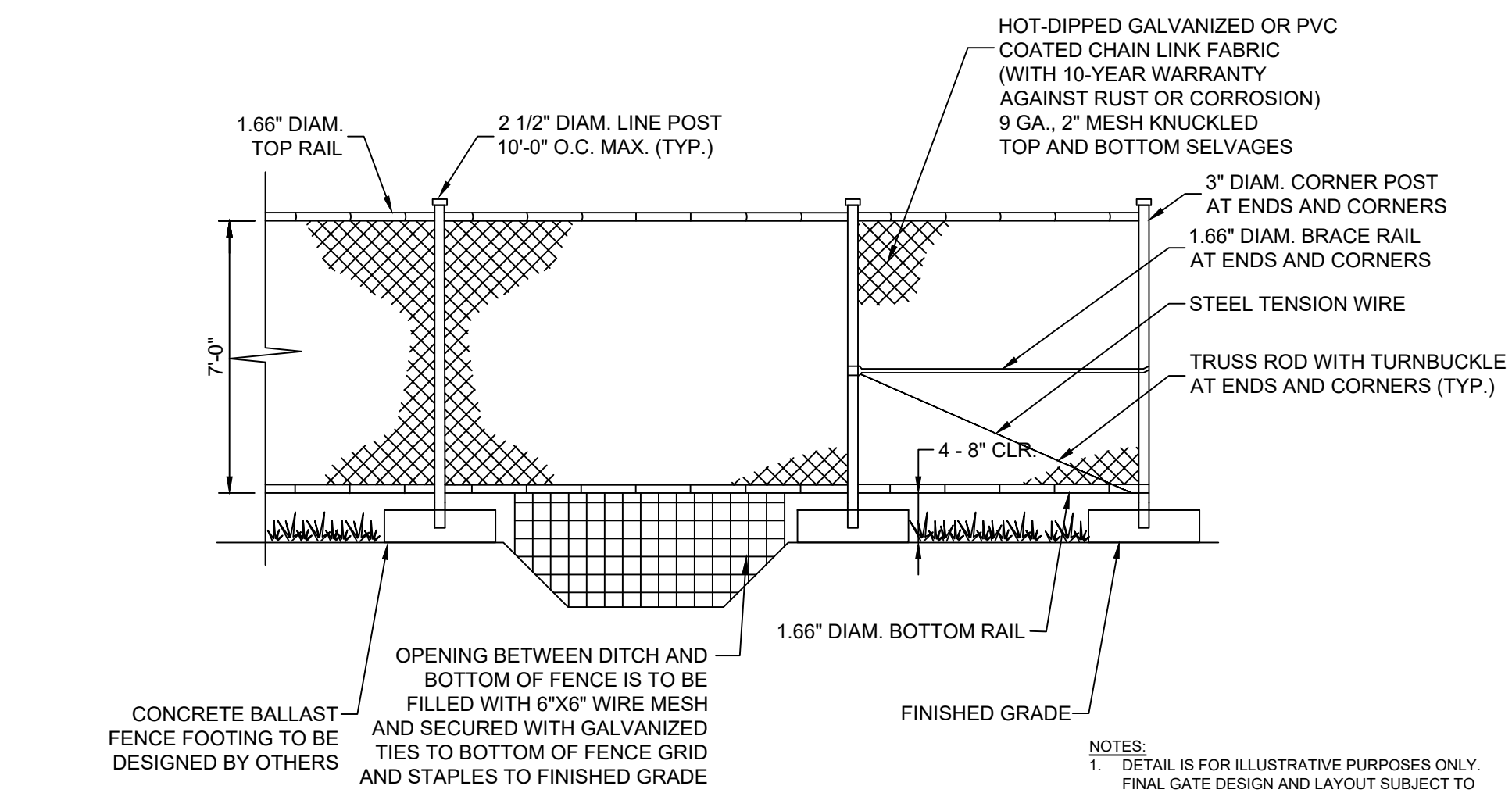
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NOT TO SCALE

NOTES:
1. DETAIL IS FOR ILLUSTRATIVE PURPOSES ONLY. FINAL GATE DESIGN AND LAYOUT SUBJECT TO DETAILED ENGINEER, AHJ APPROVAL, AND CONTRACTOR SUBMITTAL. ALTERNATIVE DESIGN FOR GATE IS 20FT CANTILEVERED SLIDING GATE.



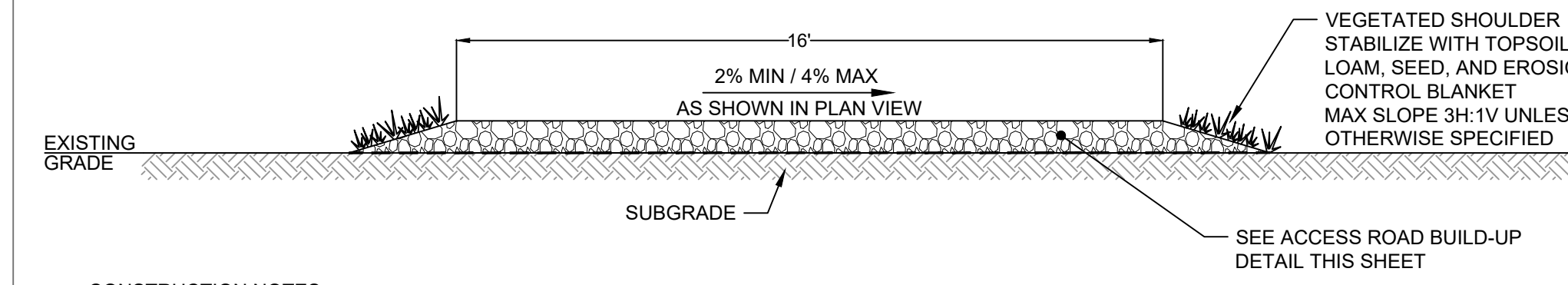
ACCESS GATE DETAIL - BALLAST SUPPORTED
NOT TO SCALE

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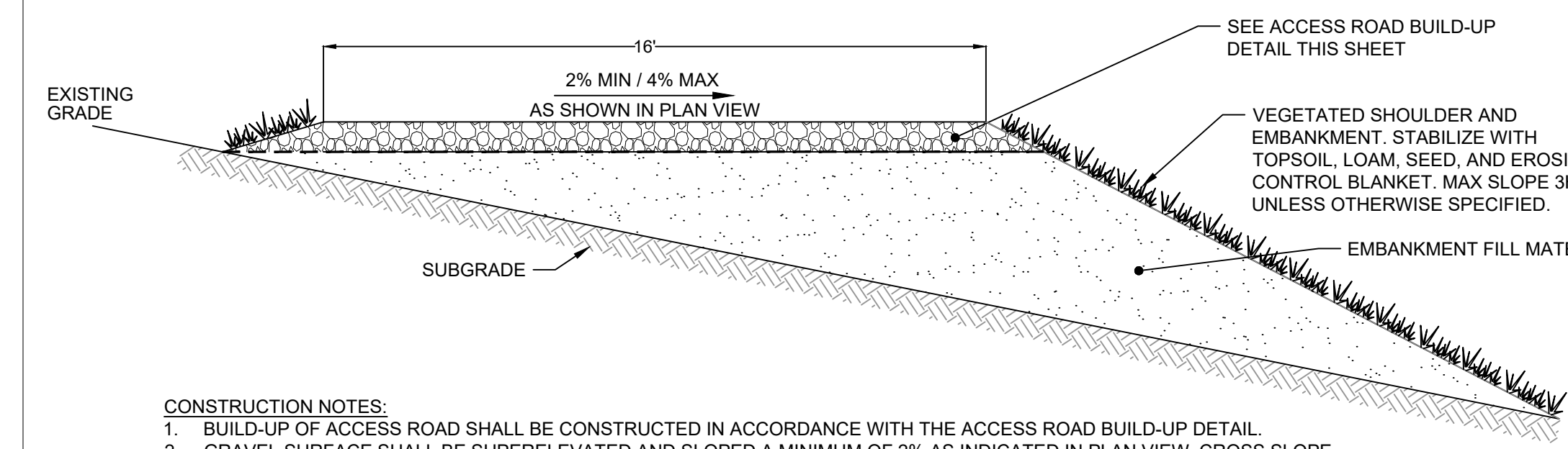
CHAINLINK FENCE AT DITCH DETAIL - BALLAST SUPPORTED
NOT TO SCALE

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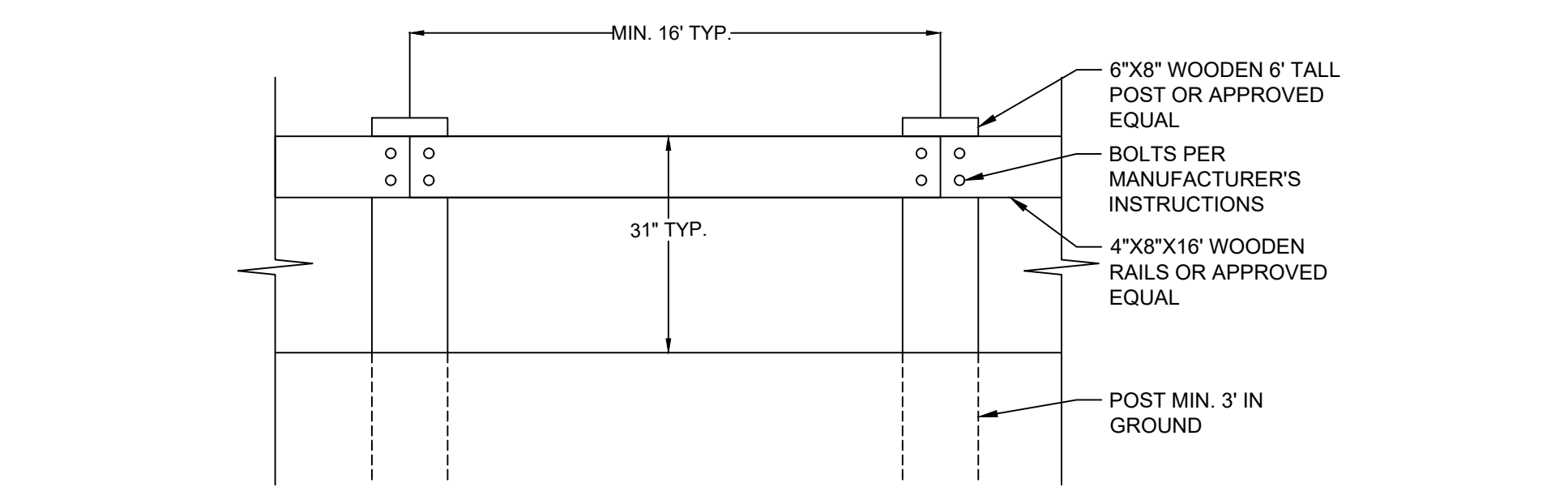
PROPOSED ACCESS ROAD DETAIL
NOT TO SCALE

CONSTRUCTION NOTES:
1. BUILD-UP OF ACCESS ROAD SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE ACCESS ROAD BUILD-UP DETAIL.
2. GRAVEL SURFACE SHALL BE SUPERELEVATED AND SLOPED A MINIMUM OF 2% AS INDICATED IN PLAN VIEW. CROSS SLOPE SHALL NOT EXCEED 4%.
3. VEGETATION AND TOPSOIL WITHIN LIMIT OF ROAD FILL SHALL BE REMOVED PRIOR TO PLACEMENT OF ROAD BUILD-UP MATERIALS AND USED IN SUPPORT OF STABILIZING ROADWAY SHOULDERS. A MAXIMUM 3-INCH LAYER OF TOPSOIL SHALL BE REMOVED WITHIN LIMITS OF LANDFILL.
4. ROADWAY SHOULDER SHALL BE VEGETATED AND PREPARED TO DIRECT RUNOFF AS SHEETFLOW TO UNDISTURBED AREAS.



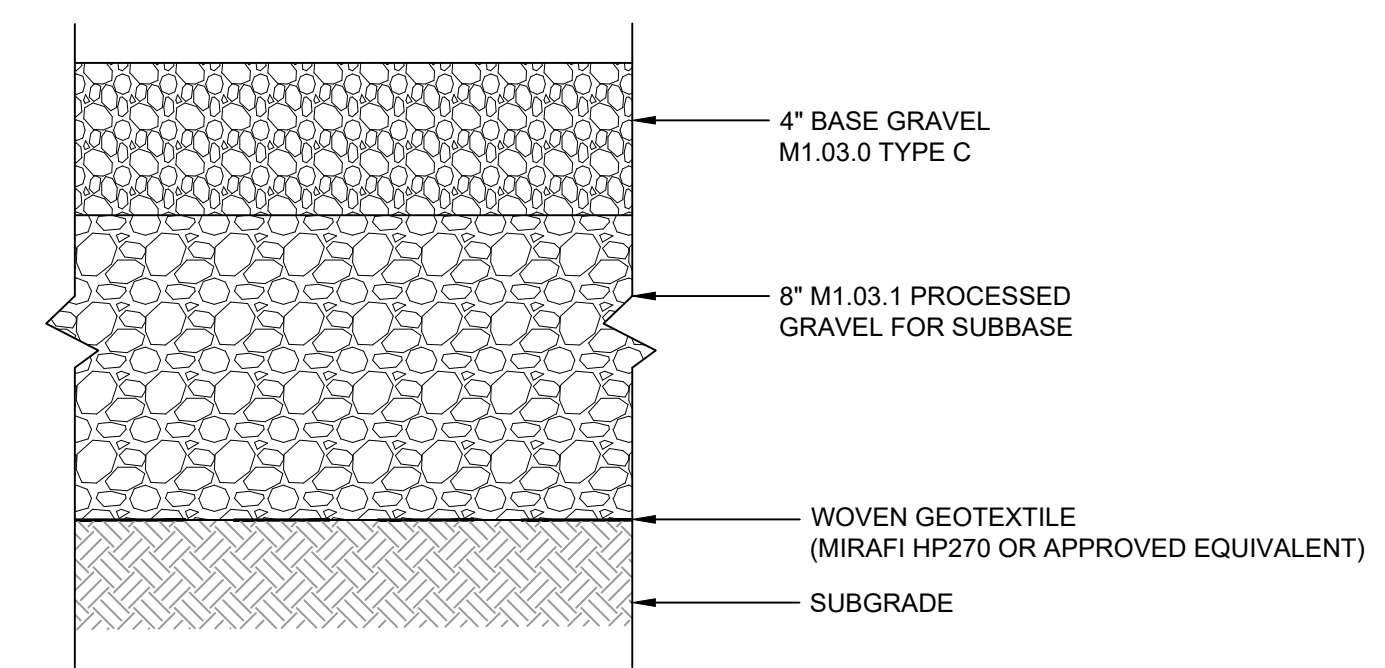
PROPOSED ACCESS ROAD WITH EMBANKMENT DETAIL
NOT TO SCALE

CONSTRUCTION NOTES:
1. BUILD-UP OF ACCESS ROAD SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE ACCESS ROAD BUILD-UP DETAIL.
2. GRAVEL SURFACE SHALL BE SUPERELEVATED AND SLOPED A MINIMUM OF 2% AS INDICATED IN PLAN VIEW. CROSS SLOPE SHALL NOT EXCEED 4%.
3. TOPSOIL WITHIN LIMIT OF ROAD FILL SHALL BE REMOVED PRIOR TO PLACEMENT OF ROAD BUILD-UP MATERIALS AND USED IN SUPPORT OF STABILIZING ROADWAY SHOULDERS. A MAXIMUM 3-INCH LAYER OF TOPSOIL SHALL BE REMOVED WITHIN LIMITS OF LANDFILL.
4. ROADWAY SHOULDER SHALL BE VEGETATED AND PREPARED TO DIRECT RUNOFF AS SHEETFLOW TO UNDISTURBED AREAS.
5. AT LOCATIONS WHERE THE FINAL GRADE OF THE ACCESS ROAD IS GREATER THAN 12" ABOVE THE EXISTING GRADE, ADDITIONAL FILL MATERIAL WILL BE NEEDED BELOW THE ACCESS ROAD BUILD-UP MATERIALS. THE MAXIMUM EMBANKMENT SLOPE SHALL BE 3H:1V UNLESS OTHERWISE SPECIFIED. A GEOTECHNICAL ENGINEER SHALL ASSESS AND FINALIZE EMBANKMENT DESIGN, INCLUDING FILL MATERIAL AND INSTALLATION SPECIFICATIONS, PRIOR TO CONSTRUCTION.



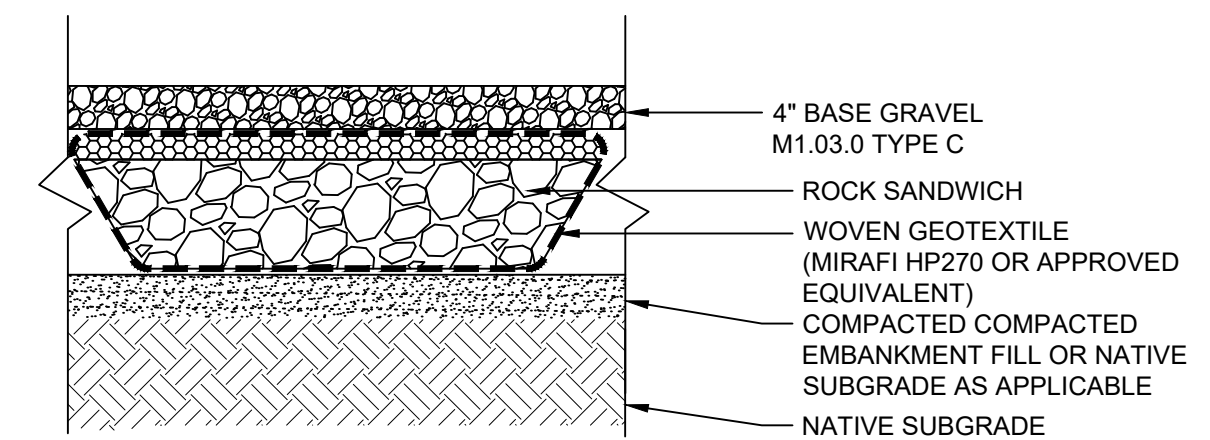
GUARDRAIL DETAIL
NOT TO SCALE

CONSTRUCTION NOTES:
1. GUARDRAIL LAYOUT AS SHOWN IN PLANS. GUARDRAIL TO BE SET BACK FROM EDGE OF ROAD A MINIMUM OF 1'.
2. GUARDRAIL POSTS SHALL BE OFFSET FROM CULVERTS A MINIMUM OF 1' AND SHALL NOT PENETRATE THE UNDERLYING LANDFILL COVER.
3. DETAIL IS FOR ILLUSTRATIVE PURPOSES ONLY. FINAL DESIGN AND LAYOUT SUBJECT TO DETAILED ENGINEER, AHJ APPROVAL, AND CONTRACTOR SUBMITTAL.



ACCESS ROAD BUILD-UP
NOT TO SCALE

CONSTRUCTION NOTES:
1. BASE GRAVEL AND GRAVEL SUBBASE SHALL BE M1.03 AGGREGATE BACKFILL. AGGREGATE SHALL BE DURABLE CRUSHED ROCK CONSISTING OF THE ANGULAR FRAGMENTS OBTAINED BY BREAKING AND CRUSHING SOLID OR SHATTERED NATURAL ROCK, AND FREE FROM A DETRIMENTAL QUANTITY OF THIN, FLAT, ELONGATED, OR OTHER OBJECTIONABLE PIECES.
2. BASE GRAVEL AND GRAVEL SUBBASE SHALL BE COMPACTED TO 95% OF ASTM D1557 AND PLACED IN MAXIMUM COMPACTED LIFTS OF 8-INCHES.
3. VEGETATION AND TOPSOIL WITHIN LIMIT OF ROAD FILL SHALL BE STRIPPED PRIOR TO PLACEMENT OF SUBGRADE/EMBANKMENT FILL OR GEOTEXTILE AS APPLICABLE. A MAXIMUM 3-INCH LAYER OF TOPSOIL SHALL BE REMOVED WITHIN LIMITS OF LANDFILL.
4. EMBANKMENT FILL MATERIAL REQUIRED TO ACHIEVE DESIGN GRADES, BEYOND DEPTH OF BASE GRAVEL AND GRAVEL SUBBASE, SHALL CONFORM TO THE REQUIREMENTS OF M1.02.0. SPECIAL BORROW MATERIAL EXCEPT THAT IT SHALL CONTAIN NO STONE LARGER THAN 6 INCHES.
5. EMBANKMENT FILL MATERIAL SHALL BE COMPACTED TO 95% OF ASTM D1557 IN LAYERS NOT EXCEEDING 8 INCHES IN DEPTH, COMPACTED MEASURE. SUBGRADE SHALL BE COMPACTED TO 95% OF ASTM D1557 TO A DEPTH OF 12-INCHES.



PERMEABLE ROADBASE
NOT TO SCALE

CONSTRUCTION NOTES:
1. ROCK SANDWICH SHALL BE COMPRISED OF 8-INCHES OF 3-6" DIAMETER STONES. SMALLER STONES WITH DIAMETER OF 3/4" - 1-1/2" SHALL BE PLACED ALONG THE UPPER SURFACE TO REMOVE IRREGULARITIES AND PROTECT GEOTEXTILE LAYER.
2. PERMEABLE ROAD BASE MAY BE CONSTRUCTED IN AREAS ADJACENT TO WETLANDS, HYDRIC SOILS, WHERE THE GROUNDWATER TABLE IS INTERCEPTED BY A ROAD CUT, OR TO STRENGTHEN THE ROAD SURFACE OVERLYING AREAS OF SOFT SOILS. AT A MINIMUM, PERMEABLE ROADBASE SHALL BE CONSTRUCTED IN THE SECTIONS OF ACCESS ROAD IDENTIFIED ON THE SITE GRADING AND DRAINAGE PLAN. ADDITIONAL LOCATIONS MAY BE NECESSARY BASED ON ENCOUNTERED SITE CONDITIONS.

PERMITTING
NOT FOR CONSTRUCTION

PROFESSIONAL ENGINEER:
THOMAS N. DANIELS, JR.
DATE:
JANUARY 5, 2023

NO.	BY	DATE	REVISION	APPD.
0	TRC	01/05/2023	ISSUED FOR PERMITTING	TND

CITIZENS ENERGY CORP
WARREN FARMS SOLAR LLC
PROPOSED 2.66 MW-AC SOLAR ARRAY & BESS PROJECT
DALTON, BERKSHIRE COUNTY, MASSACHUSETTS

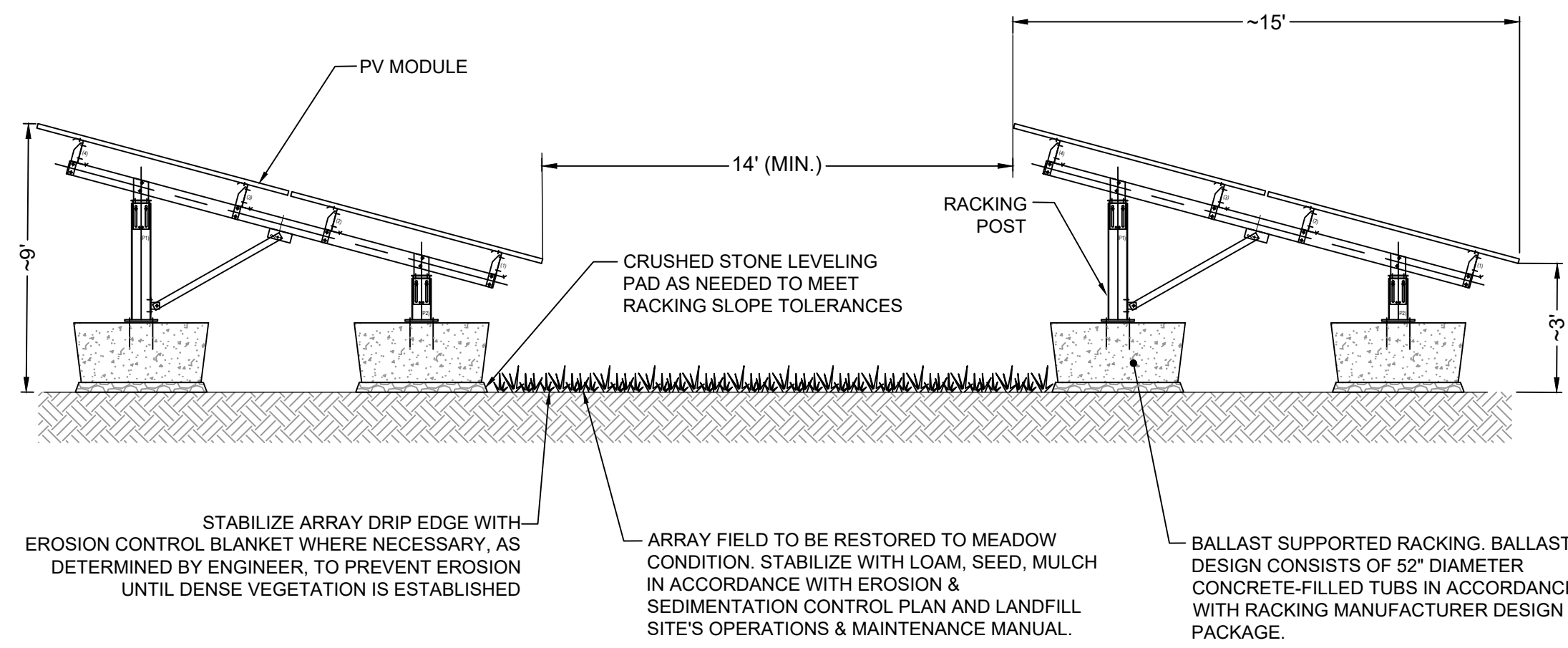
PERMITTING DETAILS

DRAWN BY: TRC	PROJ. NO.: 421646
CHECKED BY: TND	
APPROVED BY: TND	C4.00
DATE: JANUARY 2023	

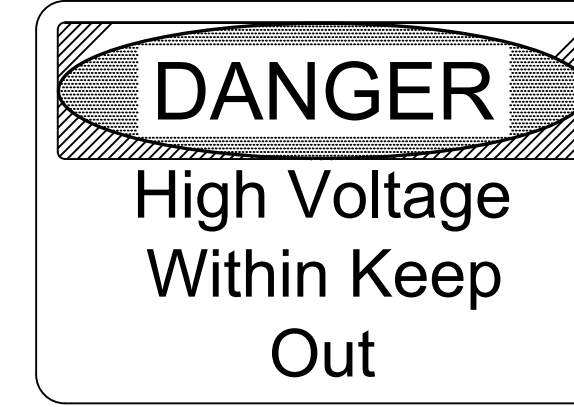
650 Suffolk Street
Suite 200
Lowell, MA 01854
Phone: 978.970.5600

FILE NO.: 421646 - DT.dwg

2438 - USER: Administrator - ATTACHED FILES: - ATTACHED FILES: - PLOT DATE: January 06, 2023 - 9:01AM - LAYOUT: C4.00
 DRAWING NAME: \\augustia-p1\Environmental\RM\DENY RMD Projects\Citizens Energy Corp\421646 - Warren Farms Solar-Dalton, MA\10-DWG_421646 - DT.dwg - Version: 2017-10-21



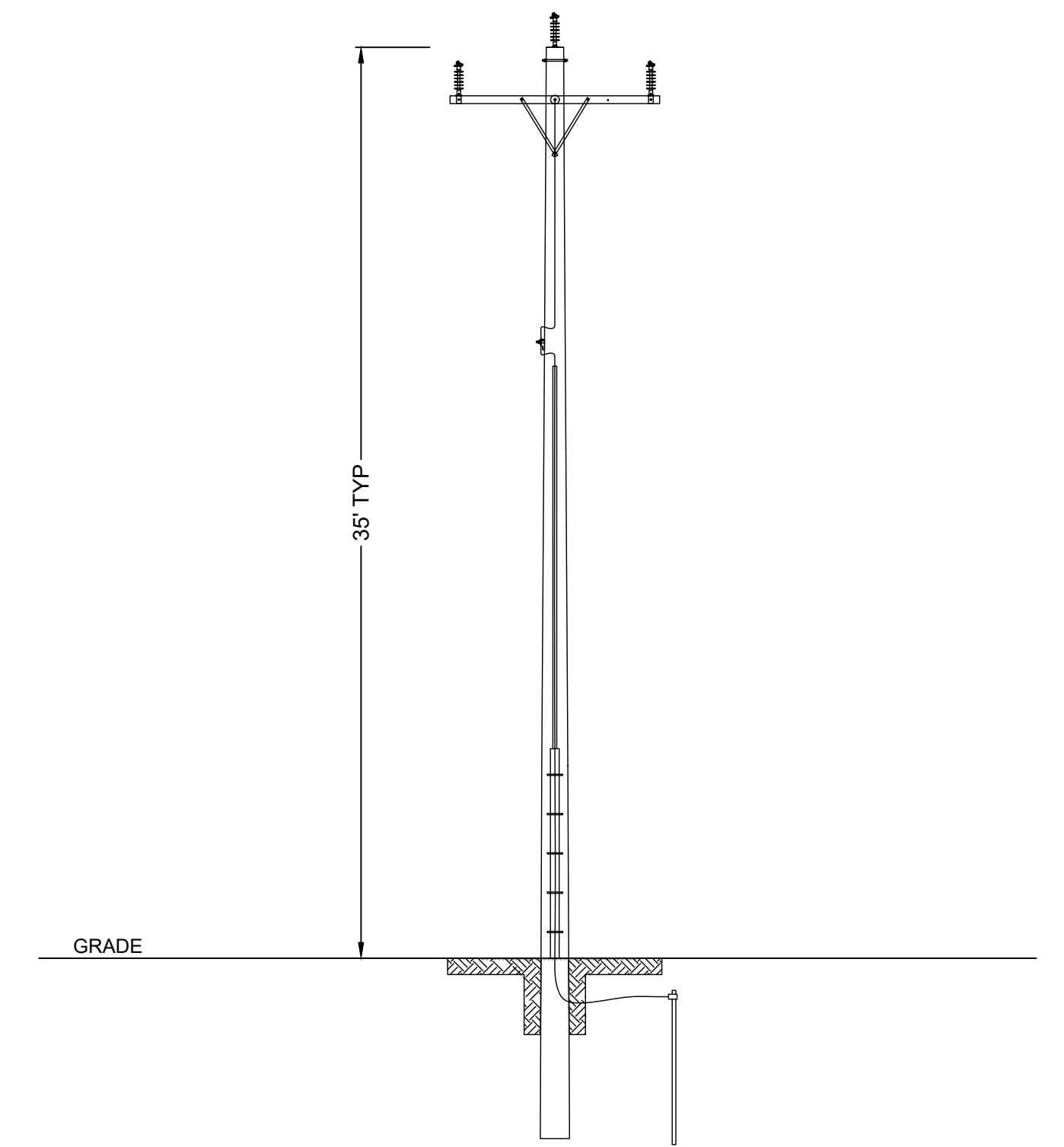
TYPICAL FIXED TILT BALLAST SUPPORTED SOLAR RACKING – SIDE ELEVATION
NOT TO SCALE



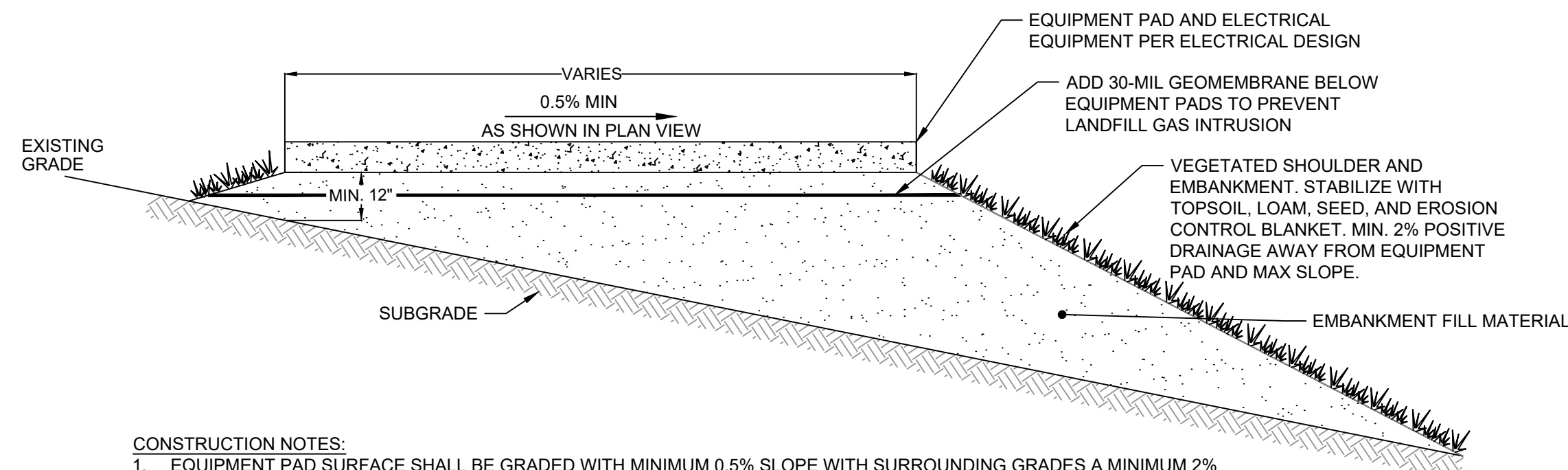
NOTES

1. SIGNS SHALL BE PLACED ON GATES AND ALONG PERIMETER FENCING.
2. SIGNS SHALL CONFORM TO THE 2013 OSHA AND ANSI REQUIREMENTS.
3. SIGNS SHALL BE 20" WIDE BY 14" HIGH.
4. SIGNS SHALL HAVE A MOUNTING HEIGHT OF BETWEEN 45 TO 66 INCHES.
5. SIGN PANELS SHALL BE 10 GAUGE ALUMINUM WITH HIGH VISIBILITY REFLECTIVE SHEETING.
6. SIGNAGE SHALL INCLUDE 24-HR EMERGENCY CONTACT INFORMATION FOR FACILITY OPERATOR.

HAZARD & EMERGENCY SIGNAGE
NOT TO SCALE



TYPICAL UTILITY POLE
NOT TO SCALE



CONSTRUCTION NOTES:

1. EQUIPMENT PAD SURFACE SHALL BE GRADED WITH MINIMUM 0.5% SLOPE WITH SURROUNDING GRADES A MINIMUM 2% SLOPE TO PROVIDE ADEQUATE SURFACE WATER DRAINAGE AWAY FROM EQUIPMENT PAD.
2. TOPSOIL WITHIN LIMIT OF EQUIPMENT PAD FILL SHALL BE REMOVED PRIOR TO PLACEMENT OF FILL MATERIAL AND USED IN SUPPORT OF STABILIZING SHOULDERS/EMBANKMENTS. A MAXIMUM 3-INCH LAYER OF TOPSOIL SHALL BE REMOVED WITHIN LIMITS OF LANDFILL (FOR EQUIPMENT PAD EMBANKMENT CONSTRUCTION AND WHERE ELECTRICAL EQUIPMENT GROUNDING WILL OCCUR). OTHERWISE, THERE WILL BE NO EXCAVATION OF LANDFILL COVER MATERIAL FOR ELECTRICAL EQUIPMENT INSTALLATION.
3. SHOULDER SHALL BE VEGETATED AND PREPARED TO DIRECT RUNOFF AS SHEETFLOW TO UNDISTURBED AREAS.
4. FOUNDATION DESIGN AND SUBGRADE BELOW CONCRETE PAD PER ELECTRICAL DESIGN TO BE FINALIZED PRIOR TO CONSTRUCTION.

TYPICAL EQUIPMENT PAD DETAIL
NOT TO SCALE

PERMITTING
NOT FOR CONSTRUCTION



	PROFESSIONAL ENGINEER:
	THOMAS N. DANIELS, JR.
	DATE:
	JANUARY 5, 2023

NO.	BY	DATE	REVISION	APPD.
0	TRC	01/05/2023	ISSUED FOR PERMITTING	TND

PROJECT: **CITIZENS ENERGY CORP
WARREN FARMS SOLAR LLC
PROPOSED 2.66 MW-AC SOLAR ARRAY & BESS PROJECT
DALTON, BERKSHIRE COUNTY, MASSACHUSETTS**

TITLE: **PRELIMINARY ELECTRICAL DETAILS**

DRAWN BY:	TRC	PROJ. NO.:	421646
CHECKED BY:	TND		
APPROVED BY:	TND		C5.00
DATE:	JANUARY 2023		

	650 Suffolk Street Suite 200 Lowell, MA 01854 Phone: 978.970.5600
	FILE NO.: 421646 - DT.dwg

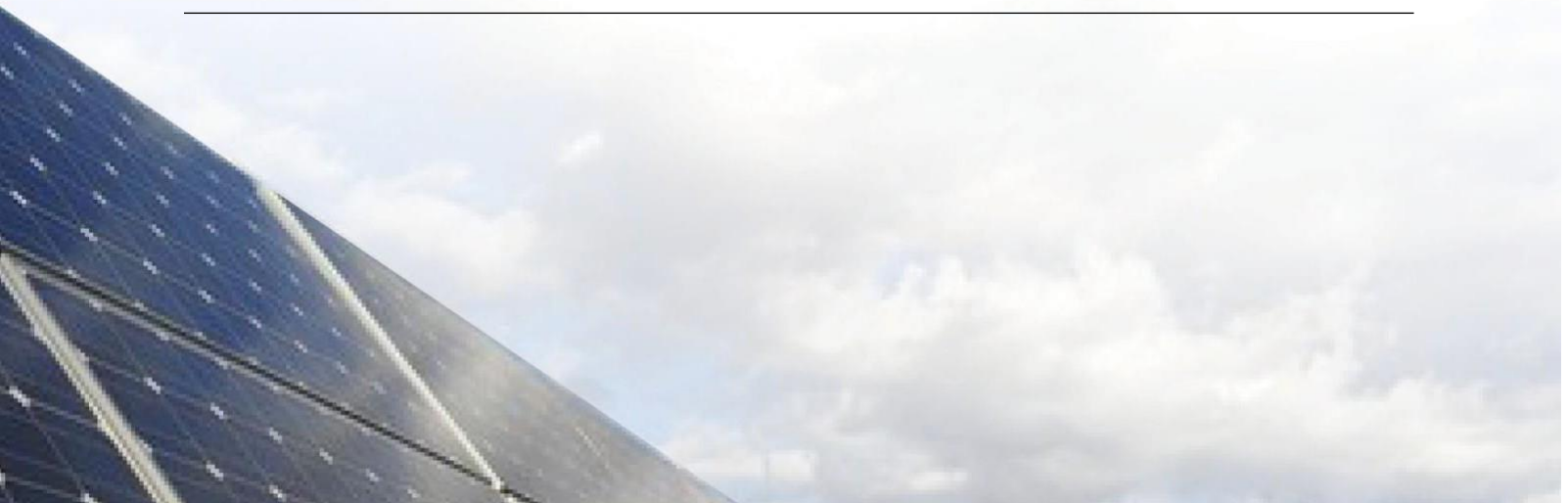
Attachment B: O&M Plan

OPERATIONS & MAINTENANCE

Warren Farms Solar LLC



Citizens Energy Corporation



OPERATIONAL MONITORING

Once the Warren Farms Solar LLC solar installation has been commissioned and is contributing energy to the grid, monitoring of facility operations will be conducted remotely using a Data Acquisition System (DAS). The DAS will allow for daily monitoring of system outputs, real-time assessment of performance, and rapid identification of system alerts and failures. This DAS monitoring will facilitate the generation of monthly and annual system performance reports to be used by site management teams to assess both existing and projected operations and trends. Warren Farms Solar will use the information generated through DAS monitoring to schedule preventative maintenance measures, such as fuse replacements, and to anticipate corrective, equipment maintenance needs to maximize the installations output and lifespan.

MAINTENANCE SCHEDULE

Maintenance Activity	Frequency
Provide name, telephone number, and email address of contact person for public inquiries to the City of Shelton Planning Board.	annually
Mow vegetation within the installation to maintain effective cover and minimize weed growth.	as necessary
Control invasive plant growth.	as necessary
Inspect the perimeter security fence. Repair as necessary.	twice annually
Inspect the condition of all signage and replace as needed.	twice annually
Inspect the condition of the access driveway and regrade as necessary to ensure functionality and maintain accessibility to the installation.	twice annually
Plow snow cover from the driveway to maintain accessibility to the installation.	as necessary
Inspect the property for vandalism, report incidents to police, and repair damage.	twice annually
Inspect the installation for pest infestations (e.g., nests and hives) and remove as required to maintain system safety and functionality.	twice annually

Maintenance Activity	Frequency
Inspect the stormwater management and conveyance system for stability. Repair any indications of sloughing or erosion by filling, seeding, and mulching as necessary to maintain long-term functionality.	twice annually
Inspect racking, rack mounts, and conduits on racking for damage, corrosion, settling, and stability. Repair/replace as necessary.	annually
Inspect 25% of modules (panels) for soiling, breakage, delamination, discoloring, and hot spots, rotating inspected areas annually to achieve 100% inspection every four years. Repair/replace as necessary.	annually
Inspect wires and conductors for damage. Repair/replace as necessary.	twice annually
Inspect electrical combiners and disconnects, bonding bushings, grounding, terminals, and fuses for functionality and indications of corrosion. Repair/replace as necessary.	twice annually
Inspect terminal torque settings for both sides of fuse holders, grounded terminal bar, grounding bar, PV output circuit, and DC disconnects. Correct as necessary.	annually
Perform inverter maintenance work per manufacturer's recommendation and warranty requirements.	annually
Inspect inverter air filters and heat sinks. Clean/replace as necessary.	quarterly
Inspect transformers per manufacturers recommendations, including confirmation of oil level and removal of debris from heat sinking. Clean and refill as necessary.	annually
Inspect AC disconnect, including latches and seals of enclosure, terminal conditions, and terminal torque settings. Check for indications of arcing. Reset/replace as necessary.	annually
Inspect DAS monitoring system components per manufacturers specifications. Verify orientation, attachment, and calibration of pyranometers and module temperature sensors and MET station. Verify backup power supply. Repair/replace as necessary.	annually
Clean pyranometer domes with soft cloth.	each site visit
Conduct 100% module level thermal audits.	annually
Conduct thermal imaging of all overcurrent protection devices and bolted electrical connections.	annually
Sample and test transformer oil per national testing standards	once every 2 years
Inspect and test point-to-point connections between modules, rack, and combiners over a random sampling of 5% of the installation.	annually

**STORMWATER MANAGEMENT SYSTEM
LONG-TERM OPERATION AND MAINTENANCE PLAN**

Prepared for the

**WARREN FARMS LANDFILL 2.66 MW-AC SOLAR ARRAY AND
2.1 MW DC-COUPLED BESS PROJECT**

Location

**Bridle Road
Dalton, Massachusetts**

Owner

Warren Farms Solar LLC
88 Black Flacon Ave.
Center Lobby, Suite 342
Boston, MA 02210

Prepared by



**650 Suffolk Street, Suite 200
Lowell, MA 01854**

January 2023

TABLE OF CONTENTS

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ATTACHMENTS

Attachment A: Legal Responsibility for Stormwater O&M

Attachment B: Site Maintenance Plan

Attachment C: Post-Construction Maintenance and Inspection Log Example

1.0 Objective

This Stormwater Management System Long-Term Operation and Maintenance Plan has been prepared for the Warren Farms Solar LLC 2.66-megawatt (MW) alternating current (AC) ground-mounted solar array and 2.1 MW DC-coupled battery energy storage system (BESS) (the Project). Warren Farms Solar LLC will be the owner of the Project and per Massachusetts stormwater requirements will be responsible for long term maintenance of all components of the associated stormwater management system. Warren Farms Solar LLC will also be responsible for the operation and maintenance of the solar array and BESS facility. These components must be periodically inspected and maintained in effective operating condition. This plan is designed to provide guidance to properly inspect and maintain the stormwater facilities. Should the facility be decommissioned, the Property Owner will be responsible for maintenance of the stormwater facilities if necessary.

2.0 Maintenance Responsibility

The Town will be responsible for providing continued maintenance for the Project Site stormwater management facilities, including the existing stone-lined swales, sedimentation basin, and stormwater basins as part of ongoing post-closure monitoring and maintenance for the closed landfill. Warren Farms Solar LLC will be responsible for the maintenance and inspection of stormwater management facilities associated with the Project, including the culverts installed under the access road, during facility operations. All stormwater maintenance and inspection work will be performed under the direction and supervision of Warren Farms Solar LLC. Warren Farms Solar LLC may select to hire a contractor to perform the stormwater operation and maintenance work. The emergency contact for the project will be the current Property Owner.

Contact information for these parties are as follows:

Project Owner and Operator:

Warren Farms Solar LLC
88 Black Flacon Ave.
Center Lobby, Suite 342
Boston, MA 02210
Contact Person: _____
Contact Number: _____

Property Owner:

Greysky, LLC
32 Coleman Dr.
Wolcott, CT 06716
Contact Person: _____
Contact Number: _____

A copy of the legal instrument that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs is provided as **Attachment A**.

3.0 Public Safety Features

A 7-foot high perimeter security fence is provided around the facility. Access gates provide access control but also have Knox box or similar locking systems. These locking systems will maintain public safety by keeping trespassers away from the array but will not prevent emergency services, maintenance personnel, or other authorized entrants from gaining access. An emergency vehicle turnaround is provided at the equipment pad area.

In the event of an emergency at the facility, dial 911. For non-emergency events, the Town of Dalton Fire and Police Departments can be contacted directly as follows:

- Dalton Fire Department: (413) 684-6118
- Dalton Police Department: (413) 684-0300

4.0 General Inspection and Maintenance Requirements

The components of the stormwater management system must be adequately maintained to ensure that the system operates as designed, and as approved by the state of Massachusetts. At a minimum, Warren Farms Solar LLC, or its designated contractor will inspect stormwater management features at the site on a quarterly basis. Additional inspections may occur, as needed, depending on the results of routine inspections and site conditions. Stormwater system maintenance and repairs will be performed on an as-needed basis, in accordance with recommendations made by the site inspector.

A Site Maintenance Plan depicting the locations of the stormwater BMPs is provided as **Attachment B**. The proposed access drive shown in the plan will provide maintenance access. A post-construction maintenance and inspection log will be completed as part of the quarterly onsite inspections, refer to **Attachment C** for a template of this inspection log. A copy of the log shall be retained by Warren Farms Solar LLC for a period of at least five years from the completion of permanent stabilization.

5.0 Facilities to be Maintained

The stormwater management facilities to be maintained at the Dalton Landfill Solar Array Project include:

- Access Drive;
- Existing Stone-Lined Swales, Sedimentation Basin, and Stormwater Basins; and
- Revegetated Areas and Embankments.

Potential maintenance activities associated with these specific areas and stormwater management features at the facility are identified in the following paragraphs.

Access Drive

The access drive will typically require little ongoing maintenance, owing to their primary and limited use by light-duty vehicles. These areas will be inspected for signs of existing or developing erosion, rutting, trash or unwanted vegetation which will be removed/repared as needed. Additionally, shoulders shall be inspected for low spots or evidence of channelized flow and false ditching. Repair/maintenance shall be completed as necessary to ensure runoff from the roadways is conveyed as sheet flow to the downgradient stabilized areas.

Existing Stone-Lined Swales, Sedimentation Basin, and Stormwater Basins

The existing stone-lined swales, sedimentation basin, and stormwater basins shall continue to be inspected regularly by the Town as part of ongoing post-closure monitoring and maintenance for the closed landfill. The new culverts will be inspected by Warren Farms Solar LLC periodically, at least twice per year and after major rain events. These stormwater management features shall be cleaned, as needed, by removing accumulated sediment, trash, debris, leaves, grass clippings from mowing, and tree seedlings before they become firmly established.

Revegetated Areas and Embankments

Revegetated areas and embankments will be inspected quarterly. Any signs of erosion or inadequate revegetation of these areas will be corrected as needed.

6.0 Miscellaneous Maintenance Activities

Snow removal activities for the Project are anticipated to be minimal. A Site Maintenance Plan depicting the locations of snow storage areas is provided as **Attachment B**.

7.0 Stormwater and Project Decommissioning Plan

Warren Farms Solar LLC would implement the following measures should it be decided that the solar array and battery facility be decommissioned.

- The electrical equipment will be de-energized by licensed electricians;
- Electrical equipment, wiring, copper and aluminum will be removed and recycled;
- Conduits, both above and below grade and other electrical assemblies will be removed;
- Fencing and fence posts will be removed and taken to a recycling facility. Some portions or all of the fence may remain in place as coordinated with the Property Owner;
- Concrete foundations for inverters, transformers, switchgear, and ballast supports will be fractured into manageable sizes and removed from the site for recycling;

- Disturbed areas or areas of bare soil resulting from decommissioning the facility will be graded to match into surrounding areas and stabilized with loam, seed, and mulch; and
- Stormwater BMPs and other control improvements will be maintained by the Town following Project decommissioning.

8.0 Illicit Discharge Compliance Statement

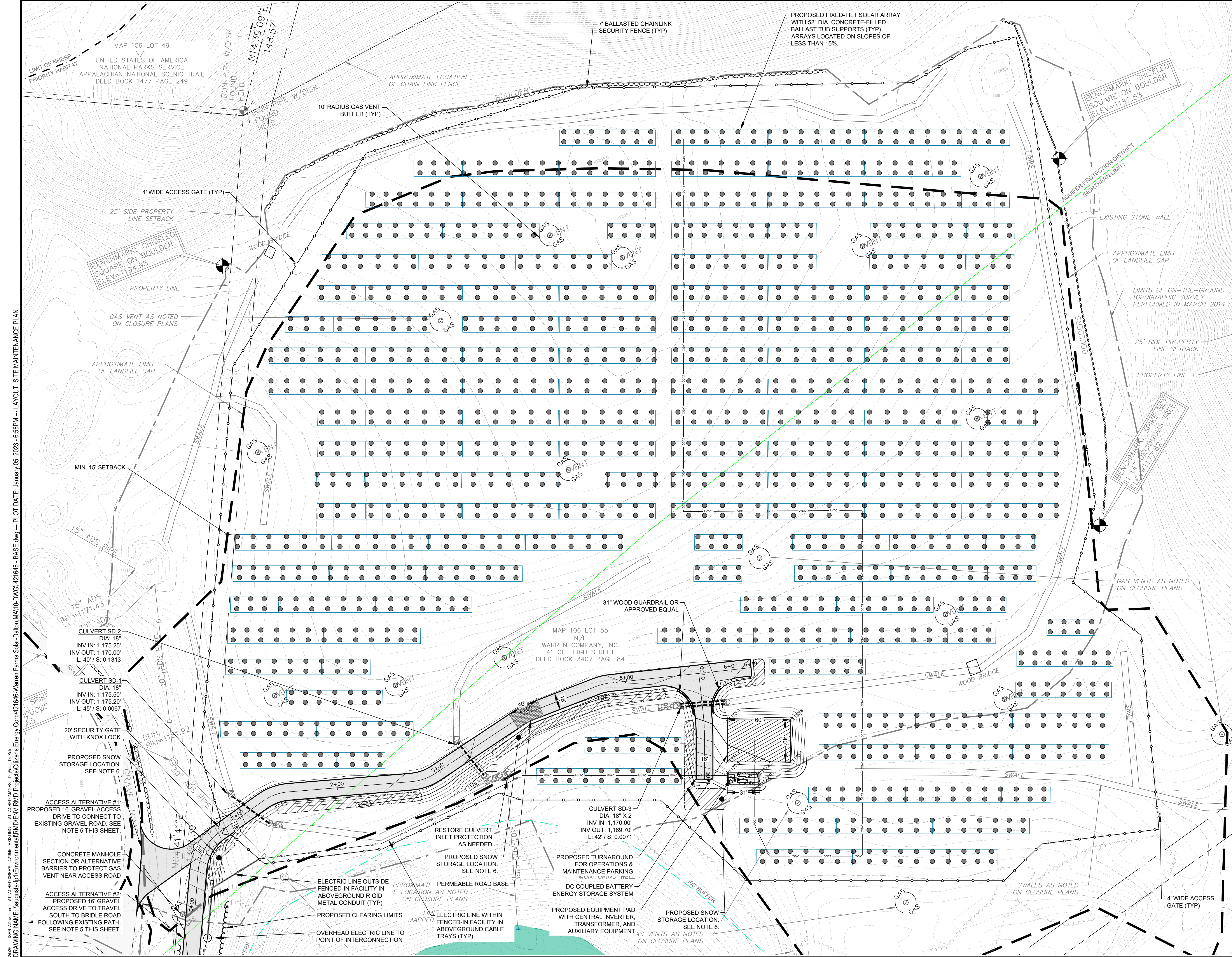
Stormwater management system operation and maintenance will be performed according to this plan and all specified pollution prevention measures will be implemented as needed to prevent illicit discharges. In the post-development condition, stormwater will generally maintain the existing on-site flow conditions generated during a 100-year, 24-hour design storm, for all drainage areas. The Site will be surrounded by fencing and access to the Site will be further limited by locked gates to limit the probability of illicit discharges to the Site stormwater BMPs.

The Site Maintenance Plan, provided as **Attachment B**, depicts the stormwater facility locations at the site and shows that these systems do not allow the entry of any illicit discharges into the stormwater management system. There are no connections between stormwater and wastewater management systems.

ATTACHMENT A

Legal Responsibility for Stormwater O&M

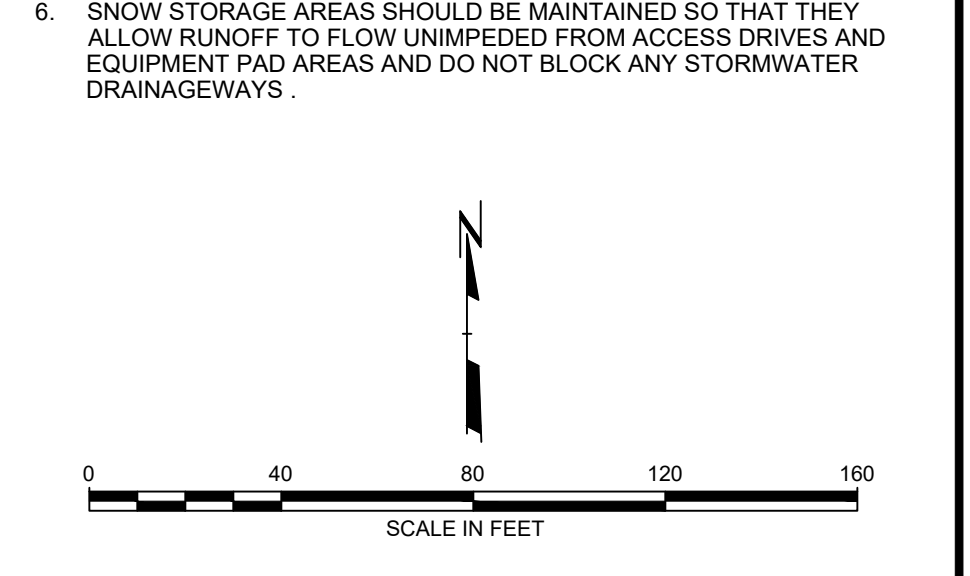
ATTACHMENT B
Site Maintenance Plan



LEGEND

- SURVEYED PROPERTY BOUNDARY
- - - APPROXIMATE ABUTTING PROPERTY BOUNDARY
- ⊕ BENCHMARK, FOUND
- ⊙ IRON PIPE, FOUND
- ⊙ EXISTING GAS VENT
- ⊙ EXISTING DRAINAGE MANHOLE
- - - EXISTING EDGE OF GRAVEL
- - - EXISTING FENCE
- ⊕ EXISTING OVERHEAD ELECTRIC & POLES
- ⊕ EXISTING STONE WALL
- - - 1180 EXISTING MAJOR CONTOUR
- - - 1179 EXISTING MINOR CONTOUR
- x 1179.7 EXISTING SPOT ELEVATION
- ⊕ EXISTING TREES AND/OR BRUSH
- DEP MAPPED WETLAND
- DEP MAPPED STREAM
- 100' RESOURCE BUFFER
- 200' RIVERFRONT AREA
- - - NHESP PRIORITY HABITAT
- - - AQUIFER PROTECTION DISTRICT
- PROPOSED GRAVEL ACCESS
- PROPOSED RIP RAP
- 1180 PROPOSED MINOR CONTOUR
- 1179 PROPOSED MAJOR CONTOUR
- PROPOSED TREE LINE/CLEARING LIMITS
- PROPOSED CHAIN LINK FENCE
- ⊕ EXISTING OVERHEAD ELECTRIC LINE AND POLES
- MAC PROPOSED MV ABOVEGROUND ELECTRIC LINE
- LVSC PROPOSED LV ABOVEGROUND ELECTRIC LINE
- PROPOSED FIXED-TILT ARRAY RACKING WITH BALLAST
- PROPOSED SNOW STORAGE LOCATION

- ### NOTES
- THE PROJECT HORIZONTAL COORDINATES SYSTEM IS BASED ON NAD83 MASSACHUSETTS STATE PLANE (US SURVEY FEET, MAINLAND ZONE, MAB3F). ELEVATIONS ARE BASED ON NAVD88 (US SURVEY FEET).
 - PROJECT PROPERTY BOUNDARIES AND SITE TOPOGRAPHIC INFORMATION ARE BASED UPON ON-THE-GROUND FIELD SURVEY COMPLETED BY ALPHA SURVEYING AND ENGINEERING, INC. IN MARCH 2014 AS PROVIDED IN A PLAN ENTITLED "EXISTING CONDITIONS PLAN - 88 BRIDLE ROAD, WARREN LANDFILL, DALTON, MASSACHUSETTS". SURVEY PLANS SEALED BY A LICENSED PROFESSIONAL LAND SURVEYOR ARE PROVIDED UNDER SEPARATE COVER.
 - UTILITY INFORMATION DEPICTED IS COMPILED USING PHYSICAL SURFACE EVIDENCE LOCATED IN THE FIELD IN CONJUNCTION WITH ANY RECORD INFORMATION AVAILABLE AT THE TIME OF THE FIELD SURVEY AND MAY NOT NECESSARILY REPRESENT ALL EXISTING UTILITIES. THEREFORE ALL UTILITY LOCATIONS SHOULD BE CONSIDERED APPROXIMATE AND BE VERIFIED BY THE CONTRACTOR. DIGSAFE SHALL BE NOTIFIED A MINIMUM OF 72-HOURS PRIOR TO COMMENCING ANY EXCAVATION. FULL UTILITY COORDINATION WITH NON-MEMBER UTILITIES AND USE OF GROUND-PENETRATING RADAR TO LOCATE UTILITIES SHOULD BE PERFORMED AS NECESSARY.
 - NATURAL RESOURCE AND ZONING INFORMATION IS FROM STATE OF MASSACHUSETTS GIS DATA.
 - PROPOSED FEATURES ARE BASED ON ISSUED FOR PERMITTING PROJECT DRAWINGS DATED JANUARY 2023 AND DO NOT REPRESENT AS-BUILT CONDITIONS. ONLY ONE ACCESS ROUTE SHALL BE CONSTRUCTED, EITHER ACCESS ALTERNATIVE #1 OR ACCESS ALTERNATIVE #2. ISSUED FOR CONSTRUCTION DRAWINGS WILL SHOW THE PROPOSED ACCESS ROUTE PER FINALIZED ACCESS EASEMENT AGREEMENT.
 - SNOW STORAGE AREAS SHOULD BE MAINTAINED SO THAT THEY ALLOW RUNOFF TO FLOW UNIMPEDED FROM ACCESS DRIVES AND EQUIPMENT PAD AREAS AND DO NOT BLOCK ANY STORMWATER DRAINAGEWAYS.



PERMITTING
NOT FOR CONSTRUCTION

PROJECT: **CITIZENS ENERGY CORP
WARREN FARMS SOLAR LLC
PROPOSED 2.66 MW-AC SOLAR ARRAY & BESS PROJECT
DALTON, BERKSHIRE COUNTY, MASSACHUSETTS**

TITLE: **SITE MAINTENANCE PLAN**

DRAWN BY: TRC	PROJ. NO.: 421646
CHECKED BY: TRC	
APPROVED BY: TND	FIGURE 1
DATE: JANUARY 2023	

TRC
650 Suffolk Street
Suite 200
Lowell, MA 01854
Phone: 978.970.5800

FILE NO.: 421646 - BASE.dwg

2406 - USER: dshankin - ATTACHED FILES: 421646 - EXISTING - ATTACHED IMAGES: Dshankin - DATE: 2/1/2023
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ATTACHMENT C

Post-Construction Maintenance and Inspection Log Example

STORMWATER MANAGEMENT SYSTEM: POST-CONSTRUCTION MAINTENANCE & INSPECTION LOG

	SCHEDULE		INITIALS & DATE	COMMENTS
	INSPECTION	MAINTENANCE		
REVEGETATED AREAS AND EMBANKMENTS				
Inspect revegetated areas and embankments	Quarterly	 		
Replant bare areas or areas with sparse growth	 	As Required		
Armor areas with rill erosion with an appropriate lining	 	As Required		
DRAINAGE CONVEYANCE SYSTEMS				
Inspect swales, sediment basin, and areas of concentrated flow for evidence of erosion, debris, woody growth, and excessive sediment accumulation	Quarterly	 		
Remove any obstructions and accumulated sediments or debris	 	As Required		
Control vegetated growth and woody vegetation (as allowed)	 	As Required		
Repair any erosion of the swale lining	 	As Required		
Clean-out any accumulation of sediment	 	As Required		
Remove woody vegetation growing through rip-rap	 	As Required		
Repair any slumping side slopes	 	As Required		
Replace rip-rap where underlying filter fabric is showing or where stones have dislodged	 	As Required		
CULVERTS				
Inspect Culvert inlets, outlets, and armoring	Quarterly	 		
Remove accumulated sediments and debris at the inlet, at the outlet, and within the conduit	 	As Required		
Repair any erosion damage at the culvert's inlet and outlet	 	As Required		
ACCESS ROAD SURFACES				
Inspect surfaces and shoulders for erosion, false ditches, rutting, or excess accumulation of fines that could impede water flow	Quarterly	 		
Remove excess fines either manually or with a front-end loader	 	As Required		
Re-grade roads and shoulders	 	As Required		
VEGETATED BUFFERS				
Inspect vegetated buffers for existing or developing erosion, rutting, debris, unwanted vegetation	Quarterly	 		
Correct any erosion/rutting and/or remove debris	 	As Required		
MAINTENANCE NEEDED AND WHEN:				

