

## **Appendix A: Revised BESS Specification Sheet**

**\*For illustrative purposes, subject to change**

# e-STORAGE

A subsidiary of Canadian Solar

## UTILITY-SCALE ENERGY STORAGE



## SolBank 3.0 ST

### ENERGY STORAGE SYSTEM

S-5016-2H-NA | S-5016-4H-NA

**Capacity: 5.0 MWh**

e-STORAGE, a subsidiary of **Canadian Solar**, is a world-class energy storage solution provider, specializing in storage system design, manufacturing, and integration of battery energy storage systems for utility-scale applications.

The company offers value-added system consulting and turnkey EPC services, in addition, we provide customers with our proprietary LFP battery solution SolBank.

**Together, we are building a brighter, greener future for all.**

### Key Features

#### Enhanced Energy Density

- Utilizes 314 Ah battery cells and compact integration, increases single container energy density up to 45%
- Reduces land cost by up to 35% in a 100MWh project

#### Safety

- IP67-rated pack design
- Up to 20% faster detection of abnormal and automatic protection
- Advanced pack thermal isolation, electrical redundancy protection, and multi-level fire protection, effectively minimize potential issues
- Tested and passed large-scale fire testing with verified, no enclosure level propagation

#### SolBank 3.0 ST Highlights

- **Cutting-Edge Technology:** SolBank 3.0 ST features high-density LFP cells, an active balancing BMS, and an innovative liquid cooling TMS, ensuring optimal safety.
- **Compliance and Certifications:** SolBank 3.0 ST adheres to all industry standards: NFPA855, NFPA69, NFPA72, NFPA70E, and optional NFPA68. Certified under UL1973, UL9540, UL9540A, UN38.3/UN3536, ensuring rigorous safety and performance criteria.

#### Intelligent Control

- Liquid cooling cuts auxiliary consumption up to 30%
- Active balance and string-level management, guarantee high efficiency and availability

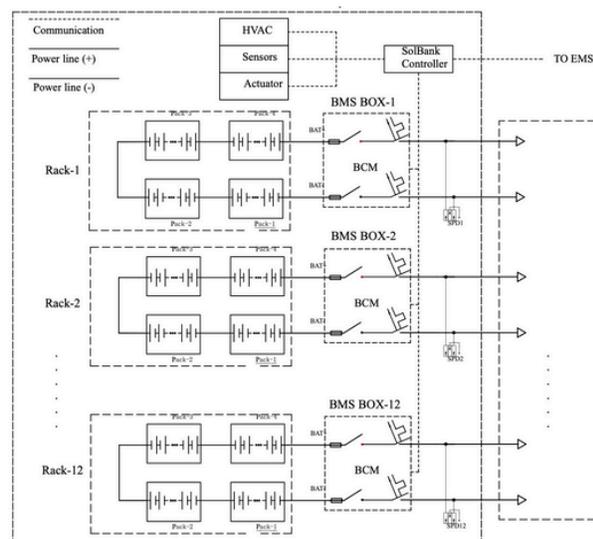
#### Compatibility & Installation

- Supports various PCS topologies
- Turn-key integration and stationery certification, reduce project schedule risks by up to 40%
- Plug-and-play setup for streamlined commissioning

**SolBank 3.0 ST**  
System Parameter

General	
Product Model	CSI-SolBank-S-5016-2h-NA CSI-SolBank-S-5016-4h-NA
Battery Chemistry	Lithium Iron Phosphate (LFP)
Pack Configuration	1P104S (104 Cells)
Rack Configuration	1P416S (4 Packs)
System Configuration	12P416S (12 Racks)
Nominal Capacity*	5016 kWh
Nominal DC Voltage	1331.2 V
Operation DC Voltage Range <sup>(1)</sup>	1164.8 V ~ 1497.6 V
Performance	
Charging/Discharging Mode	0.5 P / 0.5 P    0.25 P / 0.25 P
Rated DC Power <sup>(2)</sup>	2400 kW    1200 kW
Rated DC Capacity <sup>(3)</sup>	4800 kWh    4800 kWh
Duration @Rated DC Power	2hrs    4hrs
Round Trip Efficiency (RTE) <sup>(4)</sup>	93%    94%
Auxiliary Load (Standby/Peak)	1.5 kVA / 50 kVA    1.5 kVA / 22 kVA
Max. Short Circuit Current	10 kA*12    10 kA*12
Operating Temperature (Ambient) <sup>(5)</sup>	-30 °C to 55 °C (derating from 45°C to 55°C)
Relative Humidity <sup>(5)</sup>	≤95% (non-condensing)
Altitude	≤4000 m (derating from 2000 m to 4000 m)
Noise Sound Pressure Level (LPA) at 1 meter distance	≤75 dB(A)
External Communication Interface	Ethernet connection, Modbus TCP/IP protocol

Mechanical	
Enclosure	20ft. high-cube container
Dimensions (L*W*H)	6058*2438*2896 mm (238.50*95.98*114.02 in)
Weight (Battery Included)	43,000 kg (94,800 lbs)
Enclosure Ingress Rating	IP55 / NEMA 3R
Painting/Coating	RAL9003 / C4 Coating
Seismic Parameter	Zone 4
Safety	
Fire Detection and Alarm	Fire alarm panel, heat and smoke detection, alarm bell and strobe
Explosion Prevention	Combustible gas detector with active ventilation
Uninterrupted Power Reserve	Container level UPS for 2-hr control system backup; dedicated fire safety UPS for 24-hr fire alarm backup
Emergency Stop/Automatic Shut-off	Local and Remote
Fire Suppression Options	Aerosol-based suppression system. Dry pipe sprinkler system.



Notes  
 \* Nominal capacity is a calculated number using the entire summation of the cells and their specified capacities.  
 (1). The unit is rated at 1164.8V~1497.6V for optimized product performance, the maximum voltage range for the battery system is 1060.8V~1497.6V.  
 (2). Rated DC Power is measured at the product DC terminal, the Rated DC Power and Capacity is limited to the use of two SolBank 3.0 units connected in parallel.  
 (3). Rated DC Capacity represents the baseline capacity for specification and performance guarantees. The product's actual usable capacity may exceed this value to support long-term performance.  
 (4). DC RTE is measured during capacity test at Rated DC Power, refer to the product warranty document for the complete procedure.  
 (5). Options need to be selected to fully meet the 55°C, 95% RH.

Due to ongoing innovation, improvements, and product enhancements, the technical specifications in this document are subject to change and are not guaranteed. Canadian Solar reserves the right to update or change its products or this technical data without prior notice and customers should not rely upon these or any technical specifications which are not made part of a definitive binding agreement.



# **Appendix B: Revised Issued for Permitting Plan Set**

# BWC WADES STREAM, LLC

## 2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT

### 190 RIDGE ROAD

### WORTHINGTON, MA 01098

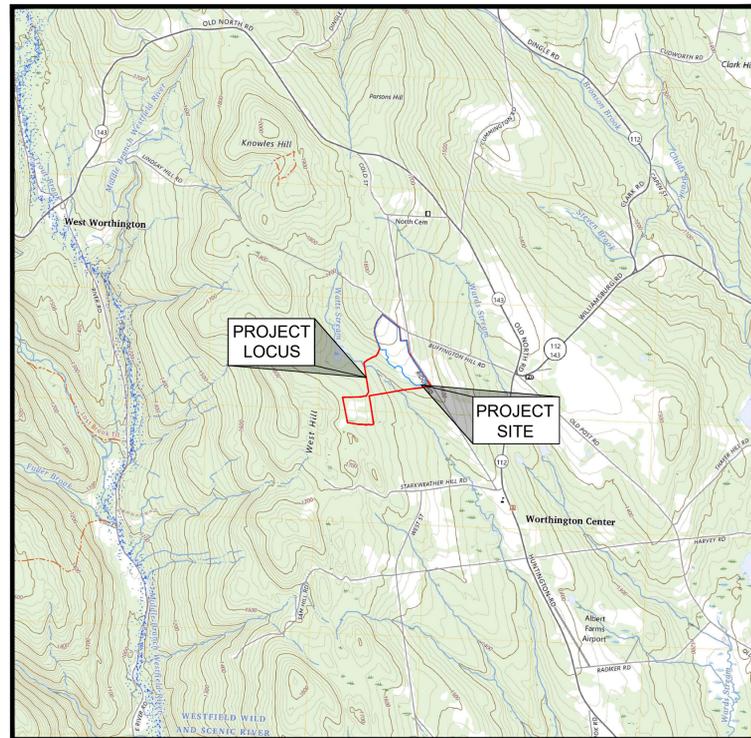
### SEPTEMBER 23, 2025

### LAST REVISED FEBRUARY 03, 2026

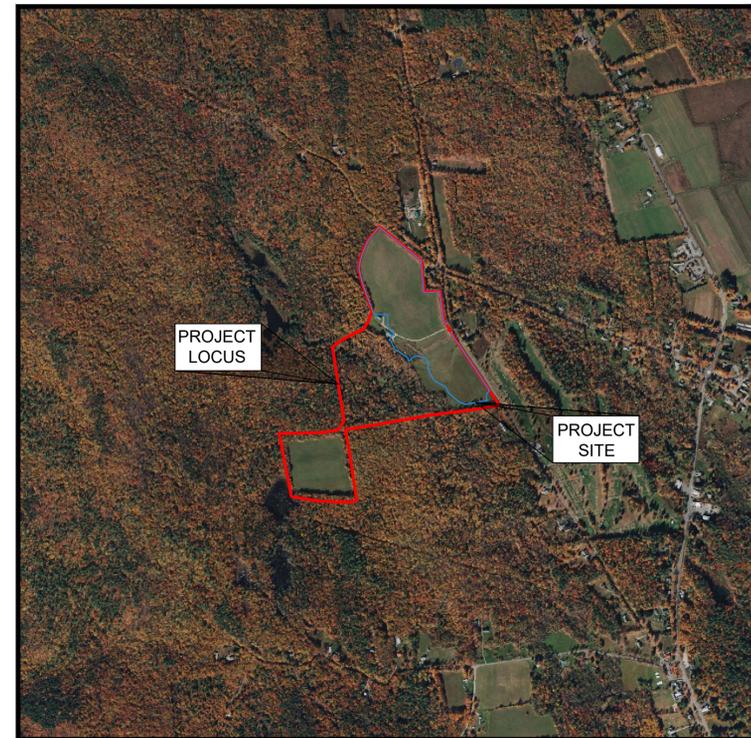
### ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

DRAWING INDEX

SHEET NUMBER	DRAWING TITLE	DRAWING NUMBER
	COVER SHEET	
1	CONSTRUCTION, EROSION AND SEDIMENTATION CONTROL NOTES	G-001
2	EXISTING CONDITIONS	V-101
3	GRADING/EARTHWORK PLAN	C-101
4	PROPOSED CONDITIONS	C-102
5	WATER SUPPLY PROTECTION DISTRICT OVERLAY	C-103
6	ACCESS ROAD TOPOGRAPHIC PROFILE ANALYSIS	C-104
7	EQUIPMENT PADS	C-105
8	SHADOW ANALYSIS OF PROPOSED CONDITIONS	C-106
9	DETAILS (SHEET 1 OF 3)	C-501
10	DETAILS (SHEET 2 OF 3)	C-502
11	DETAILS (SHEET 3 OF 3)	C-503



LOCUS MAP  
1"=2500'



AERIAL IMAGE  
1"=1000'

PROPERTY OWNER  
**TIMOTHY J. SENA &  
CATHERINE RUDE-SENA**  
PO BOX 132  
WORTHINGTON, MA 01098

PREPARED BY  
**wsp**

**WSP USA INC.**  
100 APOLLO DRIVE SUITE 302  
CHELMSFORD, MASSACHUSETTS 01824  
T +1 978-692-9090  
OLIVIA.CROSBY@WSP.COM

DEVELOPED BY  
**BWC WADES STREAM, LLC**

  
116 HUNTINGTON AVE  
BOSTON, MA 02116  
T +1 617-209-3122  
ASSETMGMT@BLUEWAVE.ENERGY

SITE PLAN REVIEW BY  
**TOWN OF WORTHINGTON  
PLANNING BOARD**  
PO BOX 247, 160 HUNTINGTON ROAD  
WORTHINGTON, MA 01098  
T +1 413-238-5577  
PLANNING@WORTHINGTONMA.US

**MATERIAL SPECIFICATIONS AND PLACEMENT REQUIREMENTS:**

**1.1 ANGULAR ROCK FILL**

ANGULAR ROCK FILL SHALL BE USED FOR THE CONSTRUCTION ENTRANCE AS SHOWN ON THE DRAWINGS, AND SHALL MEET THE GRADATION REQUIREMENTS LISTED BELOW.

U.S. STANDARD SIEVE	PERCENT PASSING
3 INCH	100
2 INCH	80 - 100
1 INCH	50 - 80
NO. 200	0 - 10

PRIOR TO USE, THE ANGULAR ROCK FILL SHALL BE TESTED FOR APPROVAL AS DESCRIBED IN SECTION 2.0 AND SHALL BE PLACED AS DESCRIBED IN SECTION 3.0.

**1.2 DENSE GRADED CRUSHED STONE**

DENSE GRADED CRUSHED STONE SHALL BE USED TO CONSTRUCT THE CRUSHED STONE ACCESS ROAD, AND SHALL MEET THE REQUIREMENTS OF A MATERIAL SUCH AS MASSDOT SPECIFICATION M2.01.7 CRUSHED STONE, OR APPROVED EQUAL. THIS MATERIAL SHALL BE PLACED AT A MINIMUM THICKNESS OF 6-INCHES AND SHALL BE IN DIRECT CONTACT WITH THE BALLAST BLOCKS. THIS MATERIAL SHALL CONSIST OF CLEAN, HARD, DURABLE CRUSHED ROCK OR CRUSHED GRAVEL STONE, FREE FROM LOAM AND CLAY AND DELETERIOUS MATERIAL AND NO MORE THAN 10 PERCENT PASSING THE U.S. NO. 200 SIEVE. THIS MATERIAL SHALL MEET THE FOLLOWING GRADATION:

SIEVE DESIGNATION	PERCENT PASSING
2-INCH	100
1.5-INCH	70-100
¾-INCH	50-85
NO. 4	30-55
NO. 50	8-24
NO. 200	3-10

PRIOR TO USE, THE DENSE GRADED CRUSHED STONE SHALL BE TESTED FOR APPROVAL AS DESCRIBED BELOW IN SECTION 2.0 AND SHALL BE PLACED AS DESCRIBED BELOW IN SECTION 3.0.

**1.3 GRANULAR FILL MATERIAL**

CLEAN GRANULAR FILL MAY BE USED FOR FILL OR GRADING MATERIAL. GRANULAR FILL SHALL CONSIST OF MASSDOT MATERIAL M1.03.0, GRAVEL BORROW, TYPE C, OR APPROVED EQUAL, AND MEET THE FOLLOWING GRADATION:

SIEVE DESIGNATION	PERCENT PASSING
2-INCH	100
¾-INCH	50-85
NO. 4	40-75
NO. 50	8-28
NO. 200	0-10

PRIOR TO USE, THE GRANULAR FILL SHALL BE TESTED FOR APPROVAL AS DESCRIBED IN SECTION 2.0 AND SHALL BE PLACED AS DESCRIBED IN SECTION 3.0.

**1.4 LOAM BORROW MATERIAL**

THE LOAM BORROW SHALL CONFORM TO MASSACHUSETTS HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES, DIVISION III - MATERIALS SPECIFICATIONS, SECTION M1.05.0 "LOAM BORROW". THE LOAM SHALL CONTAIN NOT LESS THAN 4% NOR MORE THAN 20% ORGANIC MATTER.

**1.5 GEOTEXTILE FABRIC**

FIBERS USED IN MANUFACTURING OF THE GEOTEXTILES SHALL CONSIST OF POLYPROPYLENE, POLYVINYL CHLORIDE, NYLON, POLYOLEFINS, POLYAMIDES, OR POLYESTER. THE FIBERS SHALL BE FORMED INTO A NETWORK SUCH THAT THE FILAMENTS OR YARNS RETAIN DIMENSIONAL STABILITY RELATIVE TO EACH OTHER, INCLUDING SELVAGES. THE GEOTEXTILE SHALL CONTAIN STABILIZERS AND/OR INHIBITORS TO MAKE THE FIBERS RESISTANT TO DEGRADATION RESULTING FROM EXPOSURE TO SUNLIGHT, WATER, OR HEAT. THE GEOTEXTILE SHALL BE FREE OF DEFECTS OR FLAWS WHICH WILL AFFECT ITS PHYSICAL PROPERTIES. PROVIDE A GEOTEXTILE MEETING THE PROPERTIES LISTED IN TABLE 1:

TABLE 1 REQUIRED PHYSICAL PROPERTIES OF GEOTEXTILE FABRIC			
PROPERTY	TEST METHOD	NON-WOVEN	WOVEN
MASS PER UNIT AREA	D 5261	6	N/A
GRAB TENSILE STRENGTH (LBS)	D 4632	170	N/A
TENSILE STRENGTH (LBS/FT)	D 4595	N/A	7200
ELONGATION (%)	D 4632	50	N/A
PUNCTURE STRENGTH (LBS)	D 6241	435	N/A
TRAPEZOID TEAR (LBS)	D 4533	70	N/A
PERMITTIVITY (SEC <sup>-1</sup> )	D 4491	1.50	0.90
WATER FLOW RATE (GPM/FT <sup>2</sup> )	D 4491	110	65
ULTRAVIOLET STABILITY (% FOR MIN 500 HRS)	D 4355	70	80
APPARENT OPENING SIZE (AOS) (STANDARD SIEVE)	D 4751	70	20

**TABLE NOTES:**

- ALL NUMERICAL VALUES EXCEPT AOS AND ULTRAVIOLET STABILITY REPRESENT MINIMUM AVERAGE ROLL VALUES (MARV), IN THE WEAKER PRINCIPAL DIRECTION.
- AOS VALUE IS A MAXIMUM AVERAGE ROLL VALUE OR MAXARV.
- ULTRAVIOLET STABILITY IS MEASURED AS A MINIMUM AVERAGE PERCENTAGE.
- SEE DETAILS ON DRAWING C-501 FOR LOCATIONS OF WOVEN AND NON-WOVEN GEOTEXTILES.

**2.0 BORROW SOURCE TESTING REQUIREMENTS**

PRIOR TO USE, BORROW SOURCE TESTING, INCLUDING GEOTECHNICAL CHARACTERIZATION REQUIREMENTS, SHALL BE CONDUCTED ON ALL SOIL MATERIALS PROPOSED FOR CONSTRUCTION AND SUBMITTED TO THE ENGINEER TO ASSESS CONFORMANCE TO MATERIAL SPECIFICATIONS.

**3.0 MATERIAL PLACEMENT AND FIELD QUALITY CONTROL REQUIREMENTS**

- FILL MATERIAL SHALL NOT BE PLACED ON SURFACES THAT ARE MUDDY, FROZEN, OR CONTAIN FROST OR ICE.
- SURFACES ON WHICH THE GEOTEXTILE WILL BE PLACED SHALL BE PREPARED TO A RELATIVELY SMOOTH SURFACE CONDITION. SURFACES SHALL BE FREE FROM OBSTRUCTION, DEBRIS, DEPRESSIONS, EROSION FEATURE, OR VEGETATION. ANY IRREGULARITIES SHALL BE REMOVED SO AS TO ENSURE CONTINUOUS, INTIMATE CONTACT OF THE GEOTEXTILE WITH THE SURFACE. ANY LOOSE MATERIAL, OR SOFT OR LOW DENSITY POCKETS OF MATERIAL, SHALL BE REMOVED, FILLED WITH SUITABLE SUBGRADE FILL, AND COMPACTED. EROSION FEATURES SUCH AS RILLS AND GULLIES MUST BE GRADED OUT OF THE SURFACE BEFORE GEOTEXTILE PLACEMENT.
- AT THE TIME OF INSTALLATION, FABRIC SHALL BE REJECTED IF IT HAS DEFECTS, RIPS, HOLES, FLAWS, DEGRADATION OR DAMAGE INCURRED DURING MANUFACTURE, TRANSPORT OR STORAGE.
- FABRIC SHALL LAY SMOOTH AND BE FREE OF TENSION, STRESS, FOLDS, WRINKLES, OR CREASES.
- CRUSHED STONE FOR ACCESS ROADS SHALL BE PLACED IN MAXIMUM 6-INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 95% OF MAXIMUM DRY DENSITY (MODIFIED PROCTOR (ASTM D 1557)).
- LOAM BORROW FOR STORMWATER INFILTRATION BEST MANAGEMENT PRACTICES (BMPS) SHALL BE PLACED IN MAXIMUM 6-INCH LOOSE LIFTS AND COMPACTED TO A MINIMUM OF 92% OF MAXIMUM DRY DENSITY (MODIFIED PROCTOR (ASTM D 1557)).

**CONCEPTUAL CONSTRUCTION SEQUENCE:**

- ESTABLISHMENT OF LIMITS OF WORK;
- PLACEMENT OF EROSION CONTROLS;
- MINOR CLEARING AND GRUBBING AND SITE GRADING;
- CONSTRUCTION OF ACCESS ROAD;
- CONSTRUCTION OF THE SOLAR ARRAY AND APPURTENANT EQUIPMENT;
- RESTORATION OF DISTURBED AREAS;
- CONSTRUCTION OF STORMWATER INFILTRATION BMPS;
- ERECTION OF THE PERIMETER FENCE; AND
- FINAL STABILIZATION OF DISTURBED AREAS.

**EROSION AND SEDIMENTATION CONTROL PLAN:**

THIS PLAN HAS BEEN DEVELOPED TO PROVIDE A STRATEGY FOR CONTROLLING SOIL EROSION AND SEDIMENTATION DURING AND AFTER CONSTRUCTION OF THE PROPOSED PROJECT.

THIS PLAN IS BASED ON STANDARDS AND SPECIFICATIONS FOR EROSION PREVENTION IN DEVELOPING AREAS AS CONTAINED IN MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, 2003.

**GENERAL EROSION AND SEDIMENTATION CONSTRUCTION DETAIL NOTES:**

DURING CONSTRUCTION, THE CONTRACTOR SHALL TAKE ALL REASONABLE MEASURES TO SCHEDULE EARTHWORK OPERATIONS SUCH THAT THE AREA OF EXPOSED AND DISTURBED SOIL IS MINIMIZED. CONSTRUCTION SHALL BE PHASED TO MINIMIZE THE AREA OF DISTURBED SOIL THAT IS EXPOSED AT ANY ONE TIME. UPGRADIENT STORM WATER DIVERSION AND DISPERSION MEASURES SHALL BE INSTALLED WHERE APPROPRIATE. ALL CUT AND FILL SLOPES SHALL BE STABILIZED UPON COMPLETION. THE FOLLOWING MEASURES WILL BE UNDERTAKEN TO PROVIDE MAXIMUM PROTECTION TO THE SOIL, WATER, AND ABUTTING LANDS:

PRIOR TO GRUBBING OR ANY EARTH MOVING OPERATION, SEDIMENT BARRIERS, OR OTHER APPROPRIATE PERIMETER CONTROL BMPS SHALL BE INSTALLED ACROSS THE SLOPE ON THE CONTOUR AT THE DOWNHILL LIMIT OF THE WORK AS PROTECTION AGAINST CONSTRUCTION RELATED EROSION. INSTALL ALL NECESSARY STORMWATER DIVERSIONS AND DISPERSION MEASURES.

- PERMANENT SOIL STABILIZATION MEASURES FOR ALL SLOPES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN FOURTEEN CALENDAR DAYS AFTER FINAL GRADING HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE OR PRACTICAL TO PERMANENTLY STABILIZE DISTURBED LAND, TEMPORARY EROSION CONTROL MEASURES SHALL BE IMPLEMENTED ON DISTURBED AREAS (INCLUDING STOCKPILES) WITHIN FOURTEEN CALENDAR DAYS OF EXPOSURE OF SOIL OR FORMATION OF PILES, UNLESS THESE AREAS ARE TO BE SUBSEQUENTLY SURFACED WITH PERMANENT STRUCTURES. ALL DISTURBED AREAS SHALL BE MULCHED FOR EROSION CONTROL UPON COMPLETION OF ROUGH GRADING.
- ANY EXPOSED SLOPES 3:1 OR GREATER SHALL BE STABILIZED WITH EROSION CONTROL BLANKETS (NORTH AMERICAN GREEN C125BN OR APPROVED EQUAL) TO PREVENT EROSION DURING CONSTRUCTION AND TO FACILITATE REVEGETATION AFTER TOPSOILING AND SEEDING.
- EXISTING TOPSOIL SHALL BE SAVED, STOCKPILED, AND REUSED AS MUCH AS POSSIBLE ON SITE. SEDIMENT BARRIER SHALL BE INSTALLED AT THE BASE OF STOCKPILES AT THE DOWNHILL LIMIT TO PROTECT AGAINST EROSION. STOCKPILES ANTICIPATED TO REMAIN FOR MORE THAN 14 CALENDAR DAYS SHALL BE STABILIZED BY SEEDING AND MULCHING UPON FORMATION OF THE PILES. UPGRADIENT OF THE STOCKPILES, STABILIZED DITCHES AND/OR BERMS SHALL BE CONSTRUCTED TO DIVERT STORMWATER RUNOFF AWAY FROM THE PILES.
- INTERCEPTED SEDIMENT SHALL BE REMOVED WHEN IT REACHES ONE-HALF THE HEIGHT OF THE SEDIMENT BARRIER, OR AS DIRECTED IN THE DRAWING DETAILS FOR OTHER BMPS, AND SHALL BE DEPOSITED IN AN AREA THAT SHALL NOT CONTRIBUTE TO SEDIMENT OFF-SITE AND CAN BE PERMANENTLY STABILIZED. ALL DAMAGED EROSION CONTROL DEVICES SHALL BE REPAIRED AND/OR REPLACED IMMEDIATELY. DEVICES NO LONGER SERVICEABLE DUE TO SEDIMENT ACCUMULATION SHALL ALSO BE REPAIRED AND/OR REPLACED AS REQUIRED.
- ADDITIONAL EROSION CONTROL METHODS SHALL BE IMPLEMENTED IF CONSTRUCTION OCCURS BETWEEN NOVEMBER 1ST AND APRIL 15TH. ALL DISTURBED AREAS SHALL BE MINIMIZED TO THE EXTENT POSSIBLE. PRIOR TO FREEZING, ADDITIONAL EROSION CONTROL DEVICES SHALL BE INSTALLED AS APPROPRIATE. INSPECTION OF THESE EROSION CONTROL ITEMS SHALL BE FREQUENT, WITH PARTICULAR ATTENTION PAID TO WEATHER PREDICTIONS TO ENSURE THAT THESE MEASURES ARE PROPERLY IN PLACE TO HANDLE LARGE QUANTITIES OF RUNOFF RESULTING FROM HEAVY RAINS OR EXCESSIVE THAWS.
- GENERAL EROSION AND SEDIMENTATION CONTROL ACTIONS SHALL BE EMPLOYED, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
  - MARK SOIL DISTURBANCE LIMITS
  - INSTALL SEDIMENT BARRIERS BEFORE DISTURBING ANY SOILS
  - DIVERT AND DISPERSE STORM WATER RUNOFF TO UNDISTURBED AREAS WHEREVER POSSIBLE
  - MULCH DISTURBED AREAS
  - PROTECT STEEP SLOPES
  - INSPECT AND REPAIR EROSION CONTROLS AND SEDIMENT BARRIERS

**DUST CONTROL:**

- CONSTRUCTION ACTIVITIES SHALL BE SCHEDULED TO MINIMIZE THE AREA OF DISTURBED SOIL THAT IS EXPOSED AT ONE TIME.
- DUST CONTROL SHALL BE USED ON CONSTRUCTION ROUTES AND OTHER DISTURBED AREAS SUBJECT TO SURFACE DUST MOVEMENT AND DUST BLOWING.
- MAINTAIN DUST CONTROL MEASURES PROPERLY THROUGH DRY WEATHER PERIODS UNTIL ALL DISTURBED AREAS HAVE BEEN PERMANENTLY STABILIZED.
- DUST CONTROL METHODS SHALL BE APPROVED BY THE ENGINEER AND MAY INCLUDE VEGETATIVE COVER, MULCH (INCLUDING GRAVEL MULCH), SPRINKLING, STONE, AND BARRIERS.
- VEGETATIVE COVER - FOR DISTURBED AREAS NOT SUBJECT TO TRAFFIC, VEGETATION PROVIDES THE MOST PRACTICAL METHOD OF DUST CONTROL.
- MULCH (INCLUDING GRAVEL MULCH) - WHEN PROPERLY APPLIED, MULCH OFFERS A FAST, EFFECTIVE MEANS OF CONTROLLING DUST. SEE MANUFACTURER'S RECOMMENDATIONS OR THE MASSACHUSETTS EROSION AND SEDIMENT CONTROL GUIDELINES FOR URBAN AND SUBURBAN AREAS, 2003 FOR APPLICATION RATES.
- SPRINKLING - EXPOSED SOILS MAY BE SPRINKLED UNTIL THE SURFACE IS WET. SPRINKLING IS ESPECIALLY EFFECTIVE FOR DUST CONTROL ON HAUL ROADS AND OTHER TRAFFIC ROUTES.
- STONE - USED TO STABILIZE CONSTRUCTION ROADS; CAN ALSO BE EFFECTIVE FOR DUST CONTROL.
- BARRIERS - A BOARD FENCE, WIND FENCE, SEDIMENT FENCE, OR SIMILAR BARRIER CAN CONTROL AIR CURRENTS AND BLOWING SOIL. ALL OF THESE FENCES ARE NORMALLY CONSTRUCTED OF WOOD AND THEY PREVENT EROSION BY OBSTRUCTING THE WIND NEAR THE GROUND AND PREVENTING THE SOIL FROM BLOWING OFFSITE.

**MONITORING PROGRAM:**

- EROSION AND SEDIMENTATION CONTROLS SHALL BE INSPECTED AT LEAST ONCE EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS OF THE END OF A STORM EVENT OF 0.25 INCHES OR GREATER. DAILY RAINFALL SHALL BE MONITORED AND RECORDED BY THE CONTRACTOR. ALL STRUCTURES DAMAGED BY CONSTRUCTION EQUIPMENT, VANDALS, OR THE ELEMENTS SHALL BE REPAIRED OR REPLACED IMMEDIATELY, PRIOR TO CONTINUING THE CONSTRUCTION.
- FOLLOWING THE FINAL SEEDING, THE SITE SHALL BE INSPECTED IN ACCORDANCE WITH THE SCHEDULE OUTLINED IN #1 ABOVE. TO ENSURE THAT THE VEGETATION HAS BEEN ESTABLISHED (90% COVER ACHIEVED), IN THE EVENT OF ANY UNSATISFACTORY GROWTH, RESEEDING WILL BE CARRIED OUT, WITH FOLLOW-UP INSPECTION.
- AFTER THE CONSTRUCTION INSPECTOR HAS DETERMINED THAT THE PROJECT AREA HAS BEEN PERMANENTLY STABILIZED (70% COVER HAS BEEN ACHIEVED OR NON-VEGETATED MEASURES HAVE BEEN IMPLEMENTED), THE CONTRACTOR SHALL REMOVE ALL SEDIMENT BARRIERS, TEMPORARY SEDIMENTATION CONTROL RISERS AND ANY OTHER TEMPORARY EROSION CONTROL MEASURES.

**SEEDING AND REVEGETATION PLAN:**

IMMEDIATELY FOLLOWING THE COMPLETION OF TREE CLEARING, ALL DISTURBED AREAS SHALL BE TREATED AS STATED BELOW IN ORDER TO MINIMIZE CONSTRUCTION-PERIOD EROSION.

APPLY SEED/TACKIFIER MIX ACCORDING TO THE FOLLOWING SPECIFICATIONS:

- SEED: ERNST SEEDS QUICK EROSION CONTROL COVER MIX CONSISTING OF (% BY WEIGHT):
  - 50% LOLIUM MULTIFLORUM (ANNUAL RYEGRASS)
  - 50% LOLIUM PERENNE, 'BIGLEAGUE' (PERENNIAL RYEGRASS, 'BIGLEAGUE')

- SEEDING RATE: 50 LBS PER ACRE
- TACKIFIER: GEOPERM BONDED FIBER MATRIX (OR APPROVED EQUAL) APPLIED PER MANUFACTURER SPECIFICATIONS.

UPON COMPLETION OF SITE CONSTRUCTION, ALL AREAS PREVIOUSLY DISTURBED WITHIN THE FENCED AREA SHALL BE TREATED AS STATED BELOW. THESE AREAS WILL BE CLOSELY MONITORED BY THE CONTRACTOR UNTIL SUCH TIME AS A SATISFACTORY GROWTH OF VEGETATION IS ESTABLISHED. SATISFACTORY GROWTH SHALL MEAN A MINIMUM OF 90% OF THE AREA IS VEGETATED WITH VIGOROUS GROWTH.

- TOPSOIL WILL BE SPREAD OVER ALL DISTURBED AREAS TO BE REVEGETATED AND SHALL BE GRADED TO A UNIFORM DEPTH OF FOUR (4) TO SIX (6) INCHES.
- APPLY SEED AS DIRECTED BY THE OWNER AND FARMER OF THE LAND TO MAINTAIN HAY PRODUCTION AND RESTORE SITE TO PRE-EXISTING CONDITIONS TO THE MAXIMUM EXTENT PRACTICABLE.
- SEEDING METHODS MAY BE DRILL SEEDINGS, BROADCASTS AND ROLLED, CULTIPACKED, OR TRACKED WITH A SMALL TRACK PIECE OF CONSTRUCTION EQUIPMENT, OR HYDRO-SEEDING, WITH SUBSEQUENT TRACKING.
- WATERING MAY BE REQUIRED DURING DRY PERIODS, THE CONTRACTOR MUST CONSULT SEED MANUFACTURER'S INSTRUCTIONS.
- INSPECT SEEDED AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS AND RESEED IMMEDIATELY. CONDUCT A FOLLOW-UP SURVEY AFTER ONE YEAR AND RESEED WHERE NECESSARY.
- ALL SEDIMENT CONTROL STRUCTURES LOCATED DOWN GRADIENT OF SOILS STABILIZED BY VEGETATIVE MEASURES SHALL REMAIN IN PLACE UNTIL VEGETATION IS ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 70% OF THE AREA IS VEGETATED WITH VIGOROUS GROWTH.

UPON COMPLETION OF SITE CONSTRUCTION, ALL AREAS PREVIOUSLY DISTURBED OUTSIDE THE FENCED AREA SHALL BE TREATED AS STATED BELOW. THESE AREAS WILL BE CLOSELY MONITORED BY THE CONTRACTOR UNTIL SUCH TIME AS A SATISFACTORY GROWTH OF VEGETATION IS ESTABLISHED. SATISFACTORY GROWTH SHALL MEAN A MINIMUM OF 90% OF THE AREA IS VEGETATED WITH VIGOROUS GROWTH.

**1. APPLY SEED AS DIRECTED BELOW:**

(APRIL 1ST THROUGH OCTOBER 1ST)

- SEED DISTURBED AREAS AT THE RATE OF 30 LBS PER ACRE OF ERNST SEEDS NORTHEAST SOLAR POLLINATOR 4' MIX CONSISTING OF (% BY WEIGHT):
  - 35% BOUTELOUA CURTIPENDULA, BUTTE (SIDEOATS GRAMA, BUTTE)
  - 35% SCHIZACHYRIUM SCOPARIUM, 'CAMPER' (LITTLE BLUESTEM, 'CAMPER')
  - 10% PANICUM SPHAERONCARPON (ROUNDSEED PANICGRASS)
  - 4% ASCLEPIAS TUBEROSA (BUTTERFLY MILKWEED)
  - 4% CHAMAECRISTA FASCICULATA, PA ECOTYPE (PARTRIDGE PEA, PA ECOTYPE)
  - 4% COREOPSIS LANCEOLATA (LANCELEAF COREOPSIS)
  - 4% RUDBECKIA HIRTA (BLACKEYED SUSAN)
  - 0.9% PYCNANTHEMUM TENUIFOLIUM (NARROWLEAF MOUNTAINMINT)
  - 0.7% ASTER OBLONGIFOLIUS, (AROMATIC ASTER, PA ECOTYPE)
  - 0.5% ASTER PRENANTHOIDES, PA ECOTYPE (ZIGZAG ASTER, PA ECOTYPE)
  - 0.5% PENSTEMON DIGITALIS (TALL WHITE BEARDTONGUE)
  - 0.5% TRADESCANTIA OHIENSIS (OHIO SPIDERWORT, PA ECOTYPE)
  - 0.5% ZIZIA AUREA (GOLDEN ALEXANDERS)
  - 0.3% OENOTHERA FRUTICOSA VAR. FRUTICOSA (SUNDROPS)
  - 0.1% SOLIDAGO NEMORALIS, PA ECOTYPE (GRAY GOLDENROD, PA ECOTYPE)
- APPLY WOOD FIBER MULCH AT A RATE OF 2,000 LBS PER ACRE FOR MAXIMUM MOISTURE RETENTION.
- SEEDING SHALL HAVE A MINIMUM GERMINATION PERCENTAGE OF 85%.

(NOVEMBER 1ST THROUGH DECEMBER 15TH)

- SEED DISTURBED AREAS AT THE RATE OF 3 LBS PER 1,000 SQ. FT. OF WINTER RYE
- APPLY HAY MULCH AT THE RATE OF 100 LBS PER 1,000 SQ. FT.

(AFTER DECEMBER 15TH)

- DO NOT SEED.
  - APPLY HAY MULCH AT THE RATE OF 100 LBS PER 1,000 SQ. FT.
- SEEDING METHODS MAY BE DRILL SEEDINGS, BROADCASTS AND ROLLED, CULTIPACKED, OR TRACKED WITH A SMALL TRACK PIECE OF CONSTRUCTION EQUIPMENT, OR HYDRO-SEEDING, WITH SUBSEQUENT TRACKING.
  - WATERING MAY BE REQUIRED DURING DRY PERIODS CONSULT SEED MANUFACTURER'S INSTRUCTIONS.
  - INSPECT SEEDED AREAS FOR FAILURE AND MAKE NECESSARY REPAIRS AND RESEED IMMEDIATELY. CONDUCT A FOLLOW-UP SURVEY AFTER ONE YEAR AND RESEED WHERE NECESSARY.
  - ALL SEDIMENT CONTROL STRUCTURES LOCATED DOWN GRADIENT OF SOILS STABILIZED BY VEGETATIVE MEASURES SHALL REMAIN IN PLACE UNTIL VEGETATION IS ESTABLISHED. ESTABLISHED MEANS A MINIMUM OF 70% OF THE AREA IS VEGETATED WITH VIGOROUS GROWTH.

**AGRIVOLTAICS SPECIFICS:**

- REMOVE TOPSOIL IN AREAS OF PROPOSED GRADING TO ACHIEVE REQUIRED RACKING SYSTEM SLOPES. STOCKPILE TOPSOIL SEPERATELY TO AVOID MIXING WITH OTHER SOILS AND INVERTING SOIL LAYERS. LOAM AND SEED DISTURBED AREAS WITH TEMPORARY SEEDING AND INSTALL INTERMEDIATE EROSION CONTROL MEASURES PARALLEL TO THE SLOPES IMMEDIATELY FOLLOWING COMPLETION OF GRADING.
- TOPSOIL SHALL NOT BE MIXED WITH SUBGRADE MATERIALS. TOPSOIL SHALL NOT BE BURIED. NO TOPSOIL SHALL LEAVE THE SITE. CONTRACTOR SHALL EMPLOY BEST MANAGEMENT PRACTICES TO ENSURE NO INVERSION OF TOPSOIL AND PROVIDE DECOMPACTION FOR FUTURE SOIL PRESERVATION.
- APPLY NPK FERTILIZER AND LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT MANUFACTURER'S RECOMMENDED RATES. FINE GRADE, LOAM DISTURBED AREAS AS NECESSARY AND SEED SITE FOLLOWING INSTALLATION OF PANELS. DISTURBED AREAS SHALL BE TREATED WITH SUFFICIENT TOPSOIL/LOAM TO PROMOTE VEGETATION GROWTH FOR STABILIZATION IN ACCORDANCE WITH THE NOTES IN THIS PLAN. DISTURBED AREAS SHALL BE RAKED AND SURFACE STONES LARGER THAN 6" SHALL BE REMOVED PRIOR TO PLACEMENT OF SEED.
- REVEGETATION MEASURES WILL COMMENCE UPON COMPLETION OF CONSTRUCTION EXCEPT AS NOTED. ALL DISTURBED AREAS NOT OTHERWISE STABILIZED SHALL BE GRADED, SMOOTHED, AND PREPARED FOR FINAL SEEDING AS FOLLOWS:
  - INTER-ROW AREAS SHALL BE DECOMPACTED TO A DEPTH OF 12", REMOVING STONES GREATER THAN 3" AND WOOD DEBRIS. ENSURE PROTECTIONS OF BURIED CONDUIT DURING DECOMPACTION.
  - ANY TOPSOIL TO BE PLACED FOR REVEGETATION MEASURES (WHETHER SCREENED ON-SITE OR IMPORTED) SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS, AND SHALL BE PLACED TO A DEPTH OF FOUR (4) INCHES ON ALL LOAM AND SEED AREAS OR AS SPECIFIED ON THE DRAWINGS.
  - APPLY FERTILIZER AND/OR LIMESTONE (EQUIVALENT TO 50% CALCIUM PLUS MAGNESIUM OXIDE) AT MANUFACTURER'S RECOMMENDED RATES.
  - THE DESIGN MIXES FOR SEEDING SHALL BE IN ACCORDANCE WITH THE SEED MIX TABLES AS SHOWN IN THIS PLAN. THE SEED MIX SHALL BE INOCULATED WITHIN TWENTY-FOUR (24) HOURS, BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY. (ALTERNATIVE SEED MIXES SHALL BE APPROVED BY THE OWNER AND ENGINEER PRIOR TO CONSTRUCTION).



WSP USA INC.  
100 APOLLO DRIVE, SUITE 302  
CHELMSFORD MASSACHUSETTS 01824  
TELEPHONE: (978) 692-9000  
FAX: (978) 692-6633  
WEB: WWW.WSP.COM

DATE	REVISION	ISSUE / REVISION DESCRIPTION
02/03/2008	3	RESPONSE TO COMMENTS
01/05/2008	2	RESPONSE TO COMMENTS
10/21/2005	1	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS
09/23/2005	0	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

PROJECT: **2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT**  
190 RIDGE ROAD  
WORTHINGTON, MA 01098  
CLIENT: **BWC WADES STREAM, LLC**  
TITLE: **CONSTRUCTION, EROSION, AND SEDIMENTATION CONTROL NOTES**



DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	
DRAWING NUMBER: <b>G-001</b>	
SHEET NUMBER: <b>1 OF 11</b>	

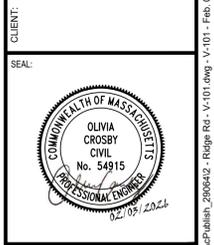
**ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION**

REVISION	DATE	ISSUE / REVISION DESCRIPTION
3	02/03/2026	RESPONSE TO COMMENTS
2	01/05/2026	RESPONSE TO COMMENTS
1	10/17/2025	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

**PROJECT:**  
 2.0 MW AC GROUND-MOUNT SOLAR PV  
 DEVELOPMENT  
 190 RIDGE ROAD  
 WORTHINGTON, MA 01098

**TITLE:**  
 EXISTING CONDITIONS

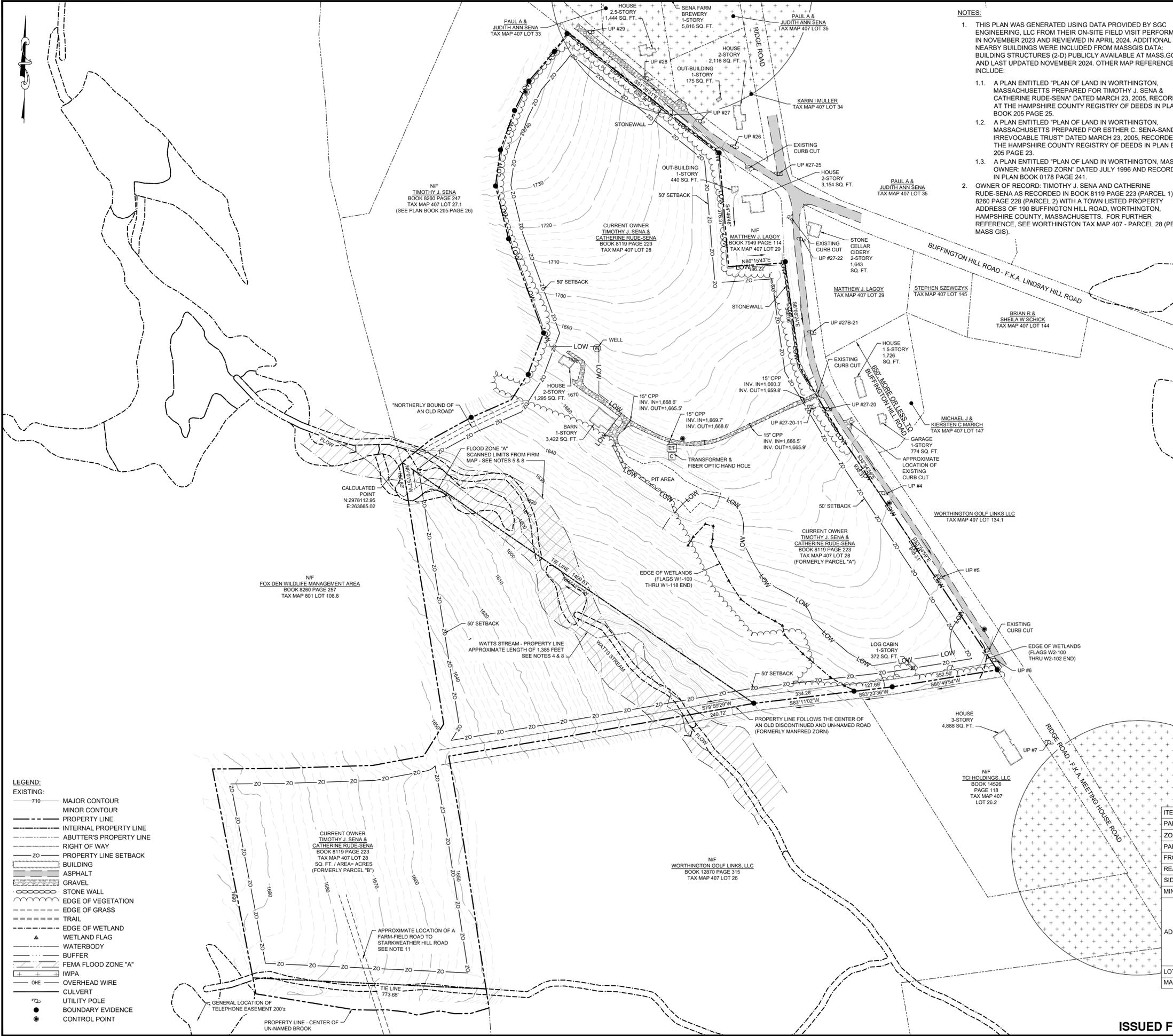
**CLIENT:**  
 BWC WADES  
 STREAM, LLC



**DESIGNED BY:** OAC  
**CHECKED BY:** APV  
**PROJECT NUMBER:** US-EI-365230438  
**DRAWING NUMBER:** V-101  
**SHEET NUMBER:** 2 OF 11

- NOTES:**
- THIS PLAN WAS GENERATED USING DATA PROVIDED BY SGC ENGINEERING, LLC FROM THEIR ON SITE FIELD VISIT PERFORMED IN NOVEMBER 2023 AND REVIEWED IN APRIL 2024. ADDITIONAL NEARBY BUILDINGS WERE INCLUDED FROM MASSGIS DATA: BUILDING STRUCTURES (2-D) PUBLICLY AVAILABLE AT MASS.GOV AND LAST UPDATED NOVEMBER 2024. OTHER MAP REFERENCES INCLUDE:
    - A PLAN ENTITLED "PLAN OF LAND IN WORTHINGTON, MASSACHUSETTS PREPARED FOR TIMOTHY J. SENA & CATHERINE RUDE-SENA" DATED MARCH 23, 2005, RECORDED AT THE HAMPSHIRE COUNTY REGISTRY OF DEEDS IN PLAN BOOK 205 PAGE 25.
    - A PLAN ENTITLED "PLAN OF LAND IN WORTHINGTON, MASSACHUSETTS PREPARED FOR ESTHER C. SENA-SANDERS IRREVOCABLE TRUST" DATED MARCH 23, 2005, RECORDED AT THE HAMPSHIRE COUNTY REGISTRY OF DEEDS IN PLAN BOOK 205 PAGE 23.
    - A PLAN ENTITLED "PLAN OF LAND IN WORTHINGTON, MASS - OWNER: MANFRED ZORN" DATED JULY 1996 AND RECORDED IN PLAN BOOK 0178 PAGE 241.
  - OWNER OF RECORD: TIMOTHY J. SENA AND CATHERINE RUDE-SENA AS RECORDED IN BOOK 819 PAGE 223 (PARCEL 1) 8260 PAGE 228 (PARCEL 2) WITH A TOWN LISTED PROPERTY ADDRESS OF 190 BUFFINGTON HILL ROAD, WORTHINGTON, HAMPSHIRE COUNTY, MASSACHUSETTS. FOR FURTHER REFERENCE, SEE WORTHINGTON TAX MAP 407 - PARCEL 28 (PER MASS GIS).

- HORIZONTAL DATUM IS BASED ON MASSACHUSETTS STATE GRID COORDINATE SYSTEM NAD83 (2011 - MAINLAND). VERTICAL DATUM IS REFERENCED TO NAVD 88. TOPOGRAPHY SHOWN WAS DEVELOPED UTILIZING THE MOST UP TO DATE ONLINE ELECTRONIC LIDAR FILES FROM NGS, IN COMBINATION WITH ON THE GROUND DATA COLLECTION WITH SURVEY GRADE GPS AND OR ROBOTIC TOTAL STATION. CONTOUR INTERVAL SHOWN ON PLAN IS 2 FOOT.
- BUILDING STORY HEIGHTS WERE OBTAINED FROM PUBLICLY AVAILABLE PROPERTY RECORD CARDS AND GOOGLE IMAGERY. AN AVERAGE STORY IS APPROXIMATELY 10 FEET TALL FLOOR TO FLOOR AND ROOFING CAN PROVIDE AN ADDITIONAL AVERAGE 3 TO 7 FEET TO THE TOTAL BUILDING HEIGHT.
- THE WETLANDS SHOWN ON THIS PLAN WERE REVIEWED, DEFINED, AND FLAGGED BY OTHERS AND FIELD LOCATED BY SGC ENGINEERING DATED NOVEMBER 22, 2023. ADDITIONAL WETLANDS SHOWN WITHOUT BUFFERS WERE INCLUDED FROM MASSGIS DATA: NATIONAL WETLANDS INVENTORY PUBLICLY AVAILABLE AT MASS.GOV AND LAST UPDATED SEPTEMBER 2025.
- A PREDOMINATE PORTION OF THE PROPERTY LIES WITHIN ZONE "X" AND THE PROPOSED SOLAR DEVELOPMENT IS NOT AFFECTED (SEE PLAN). A SMALL CENTRAL PORTION OF THE LOCUS PARCEL IS AFFECTED BY ZONE "A" AND IS CATEGORIZED AS A SPECIFIED FLOOD HAZARD ZONE. FOR FURTHER REFERENCE SEE F.I.R.M. - FLOOD INSURANCE RATE MAP - COMMUNITY PANEL NUMBER 250175 0008 SUFFIX B / MAP NUMBER 8 OF 25 FOR THE TOWN OF WORTHINGTON, HAMPSHIRE COUNTY (ALL JURISDICTIONS), MASSACHUSETTS, WITH AN EFFECTIVE DATE OF JUNE 19, 1989. ZONE "A" (WATTS STREAM SO-CALLED) IS DESCRIBED AS AN AREA THAT NO BASE FLOOD ELEVATION HAS BEEN DETERMINED. THE BASE FLOOD ELEVATION IS THE WATER SURFACE ELEVATION OF THE 1% ANNUAL CHANCE FLOOD. ZONE "X" IS DETERMINED AS AREAS OUTSIDE 500 - YEAR FLOOD PLAIN.
- NEITHER SGC ENGINEERING, LLC NOR WSP HAVE INDEPENDENTLY VERIFIED THE LOCATION, EXISTENCE, AND SERVICEABILITY OF ANY UTILITIES AND MAKE NO GUARANTEE TO THE COMPLETENESS OR THE ACCURACY OF ANY UTILITIES SHOWN ON THIS PLAN. UTILITIES SHOWN WERE FIELD LOCATED ABOVEGROUND AND VISUAL, AND OR REFERENCED FROM PLANS AND MAP REFERENCES. ADDITIONAL UTILITIES MAY EXIST IN THE FIELD, WHICH ARE NOT SHOWN ON THIS PLAN. ACTUAL LOCATIONS MUST BE DETERMINED IN THE FIELD PRIOR TO EXCAVATION OR OTHER CONSTRUCTION ACTIVITIES. CALL "DIG SAFE" AT 1-888-344-7233 OR DIAL 811. SGC ENGINEERING, LLC AND WSP USA INC. ASSUME NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED OR INACCURATELY SHOWN ON THIS PLAN.
- THIS SURVEY WAS PREPARED FOR THE EXCLUSIVE USE OF THE PERSON, PERSONS, OR ENTITY NAMED IN THE CERTIFICATION AND TITLE BLOCK OF THIS PLAN. THIS SURVEY DOES NOT EXTEND TO ANY UNNAMED PERSON, PERSONS, OR ENTITY WITHOUT HAVING SGC ENGINEERING'S CONSENT IN WRITING.
- THE LOCATIONS OF THE WATTS STREAM, WITHIN PARCEL "A" (SO CALLED), AND AN UN-NAMED BROOK, THAT DEMARCATES A WESTERLY BOUNDARY LINE OF PARCEL "B", ARE BOTH BASED ON PHYSICAL FIELD EVIDENCE, DEED CALLS, AND OR PLANS OF RECORD AT TIME OF SURVEY. BOTH WATTS STREAM AND THE UN-NAMED BROOK MAY OR MAY NOT AFFECT THE PRESENT - FUTURE PROPERTY DUE TO AVULSION, ACCRETION, AND/OR RELICTION.
- OBSERVATIONS OF THE PREMISES BY SGC IN NOVEMBER 2023:
  - LOCUS PARCEL HAS FREE AND CLEAR ACCESS, IN AND TO BUFFINGTON HILL ROAD AND RIDGE ROAD AS SHOWN ON PLAN. BOTH ROADS ARE DEDICATED AND PUBLIC WAYS OF VARIABLE WIDTHS.
  - THE LOCUS PARCEL IS THE SAME LAND AS DESCRIBED IN THE TITLE COMMITMENT AS EXHIBIT "A".
  - NO EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION, AND BUILDING ADDITIONS WERE OBSERVED ON SURVEYED PREMISES.
  - THE PROPERTY COMPRISES A SINGLE TAX LOT - TOWN OF WORTHINGTON TAX MAP NUMBER 407 PARCEL 28.
  - NO EVIDENCE WAS NOTICED OF THE SITE BEING USED AS A SOLID WASTE DUMP.

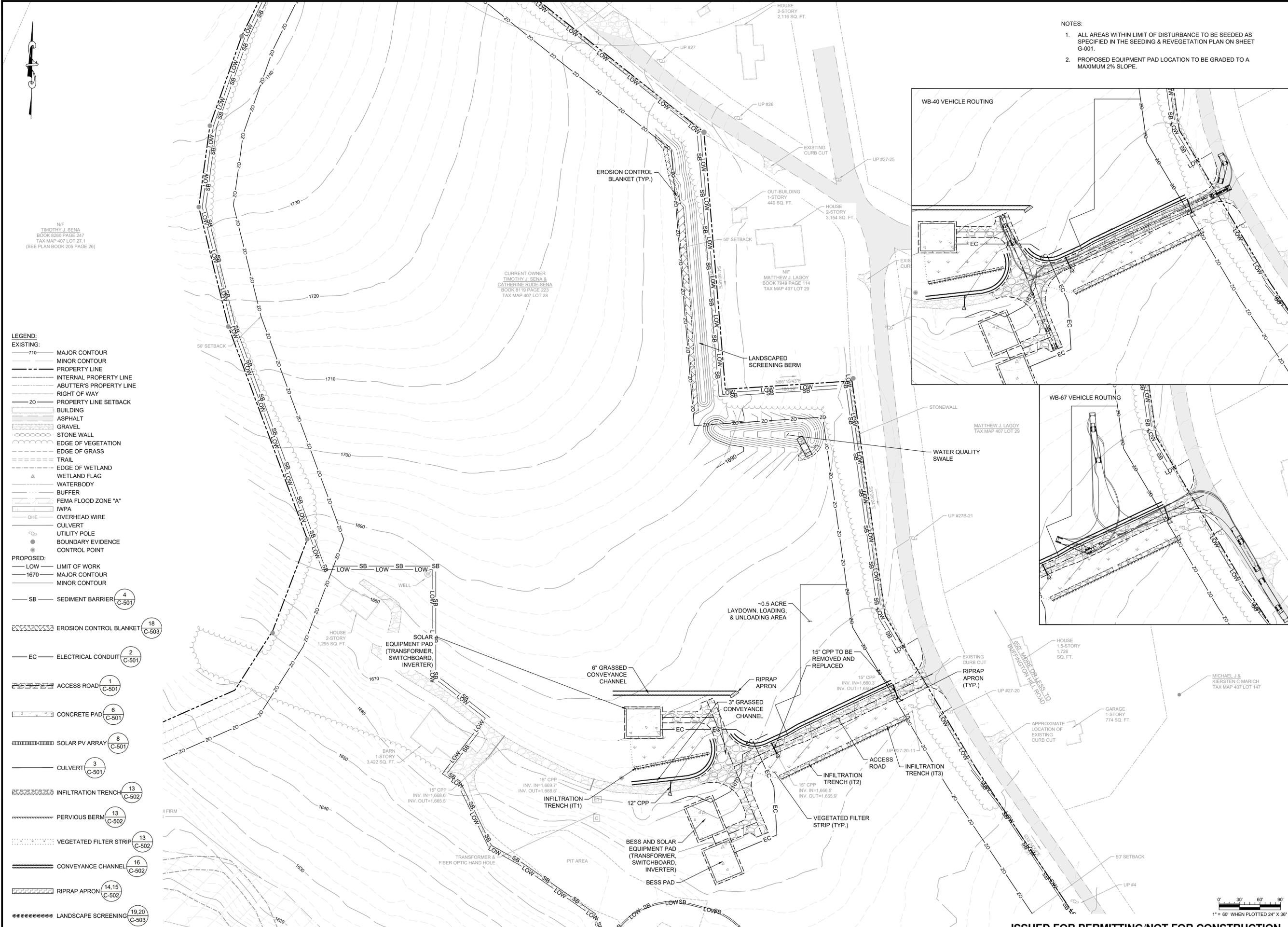


ITEM	REQUIRED	PROPOSED
PARCEL ID NUMBER(S)	TAX MAP 407 0 28	
ZONING DISTRICT	RESIDENTIAL - AGRICULTURAL DISTRICT	
PARCEL ACREAGE	2.0	71.6
FRONT SETBACK (FT)	50	50
REAR SETBACK (FT)	50	>500
SIDE SETBACK (FT)	50	50
MINIMUM FRONTAGE (FT)	400	1542
ADDITIONAL SETBACKS	ACCESS TO SIDE-REAR (FT)	25 >400
	ACCESS EASEMENT (FT)	15 -
	UTILITY EASEMENT (FT)	20 -
	LEASE TO FENCE (FT)	25 -
	LEASE TO BASINS (FT)	15 -
WETLANDS (FT)	100 -	
LOT COVERAGE	<50%	7.7%
MAX BUILDING HEIGHT (FT)	35	10

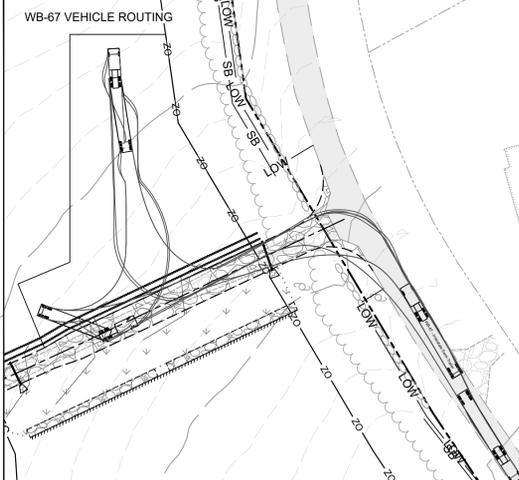
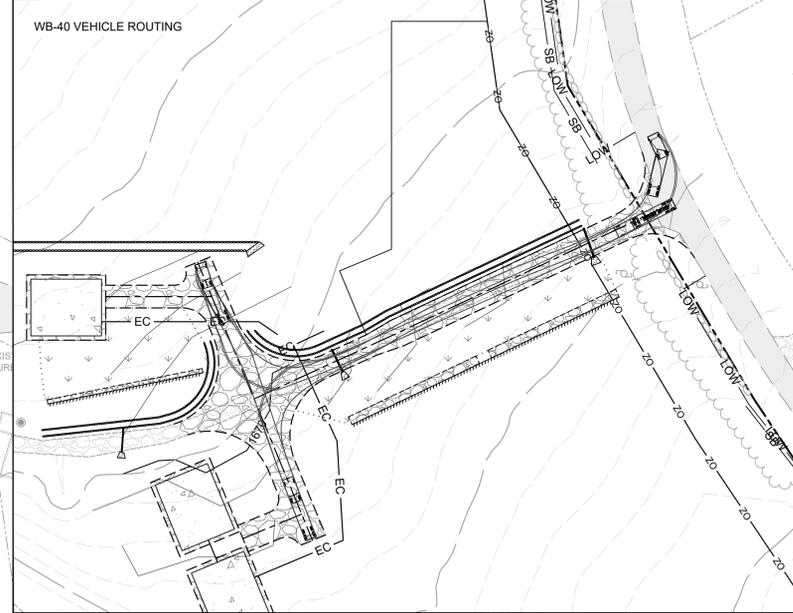


**ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION**

NOTES:  
 1. ALL AREAS WITHIN LIMIT OF DISTURBANCE TO BE SEEDED AS SPECIFIED IN THE SEEDING & REVEGETATION PLAN ON SHEET G-001.  
 2. PROPOSED EQUIPMENT PAD LOCATION TO BE GRADED TO A MAXIMUM 2% SLOPE.



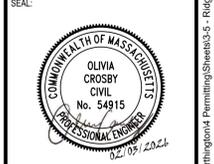
- LEGEND:**
- EXISTING:**
- 710 MAJOR CONTOUR
  - MINOR CONTOUR
  - PROPERTY LINE
  - INTERNAL PROPERTY LINE
  - ABUTTER'S PROPERTY LINE
  - RIGHT OF WAY
  - PROPERTY LINE SETBACK
  - BUILDING
  - ASPHALT
  - GRAVEL
  - STONE WALL
  - EDGE OF VEGETATION
  - EDGE OF GRASS
  - TRAIL
  - EDGE OF WETLAND
  - WETLAND FLAG
  - WATERBODY
  - BUFFER
  - FEMA FLOOD ZONE "A"
  - IWPA
  - OHE OVERHEAD WIRE
  - CULVERT
  - UTILITY POLE
  - BOUNDARY EVIDENCE
  - CONTROL POINT
- PROPOSED:**
- LOW LIMIT OF WORK
  - 1670 MAJOR CONTOUR
  - MINOR CONTOUR
  - SB SEDIMENT BARRIER (4 C-501)
  - EROSION CONTROL BLANKET (18 C-503)
  - EC ELECTRICAL CONDUIT (2 C-501)
  - ACCESS ROAD (1 C-501)
  - CONCRETE PAD (6 C-501)
  - SOLAR PV ARRAY (8 C-501)
  - CULVERT (3 C-501)
  - INFILTRATION TRENCH (13 C-502)
  - PERVIOUS BERM (13 C-502)
  - VEGETATED FILTER STRIP (13 C-502)
  - CONVEYANCE CHANNEL (16 C-502)
  - RIPRAP APRON (14,15 C-502)
  - LANDSCAPE SCREENING (19,20 C-503)



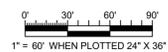
REVISION	DATE	ISSUE / REVISION DESCRIPTION
3	02/03/2026	RESPONSE TO COMMENTS
2	01/05/2026	RESPONSE TO COMMENTS
1	10/21/2025	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

PROJECT: 2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT  
 190 RIDGE ROAD  
 WORTHINGTON, MA 01098  
 TITLE: GRADING/EARTHWORK PLAN

CLIENT: BWC WADES STREAM, LLC



DESIGNED BY: OAC  
 CHECKED BY: APV  
 PROJECT NUMBER: US-EI-365230438  
 DRAWING NUMBER: C-101  
 SHEET NUMBER: 3 OF 11



ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

- NOTES:**
- ELECTRICAL DESIGN, INCLUDING UTILITY POLES, PERFORMED BY OTHERS. ELECTRICAL EQUIPMENT AND COMPONENTS SHOWN TO ILLUSTRATE LOCATIONS ONLY. REFER TO ELECTRICAL DRAWINGS FOR DETAILED ELECTRICAL SYSTEM.
  - ALL AREAS WITHIN LIMIT OF DISTURBANCE TO BE SEEDED AS SPECIFIED IN THE SEEDING & REVEGETATION PLAN ON SHEET G-001.

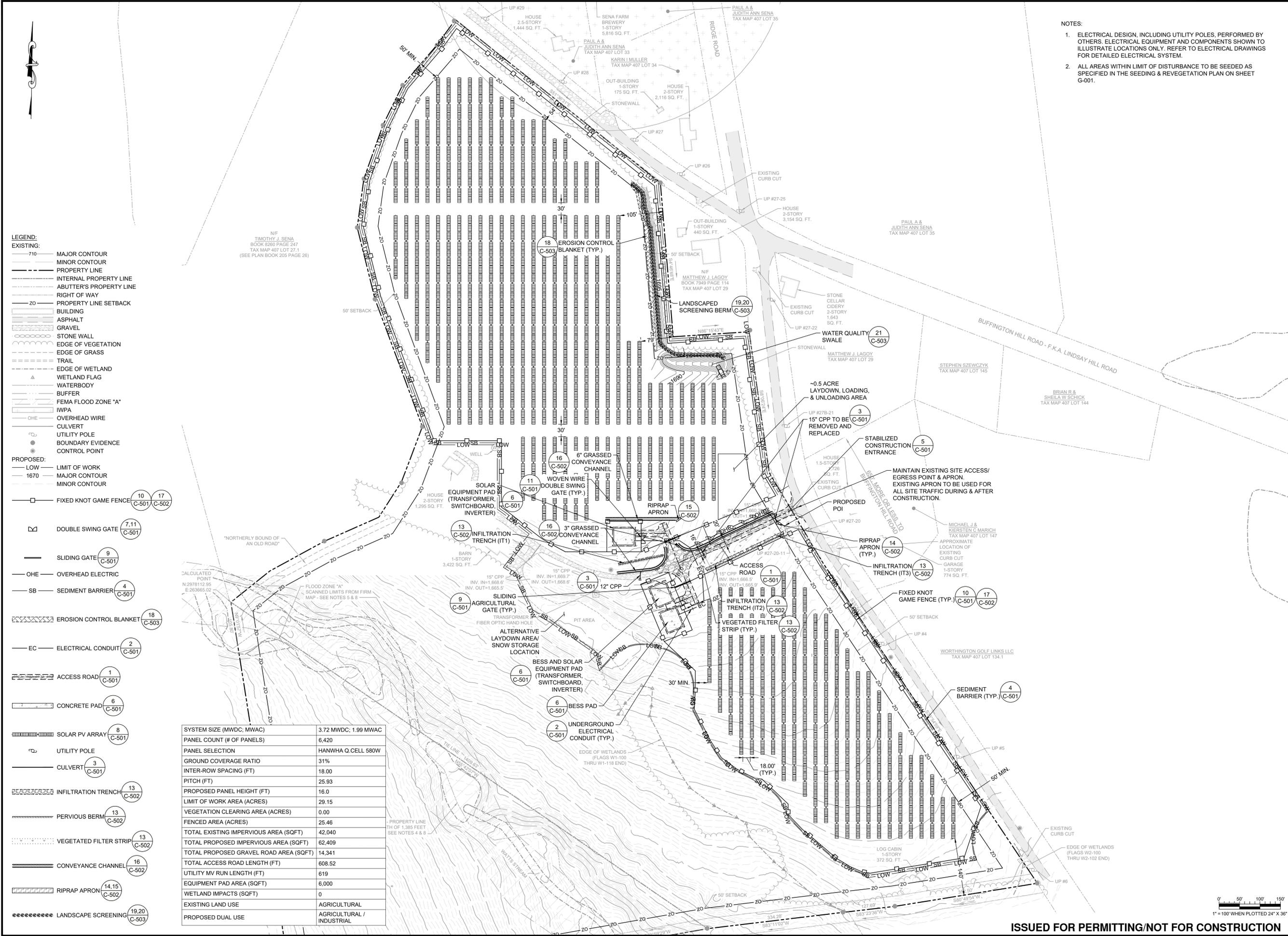
REVISION	DATE	ISSUE / REVISION DESCRIPTION
3	02/03/2026	RESPONSE TO COMMENTS
2	01/05/2026	RESPONSE TO COMMENTS
1	10/17/2025	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

PROJECT:	2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT 190 RIDGE ROAD WORTHINGTON, MA 01098
CLIENT:	BWC WADES STREAM, LLC
TITLE:	PROPOSED CONDITIONS

DESIGNED BY:	OAC	DRAWN BY:	MRB
CHECKED BY:	APV	SCALE:	AS SHOWN
PROJECT NUMBER:	US-EI-365230438	DRAWING NUMBER:	C-102
DRAWING NUMBER:	C-102	SHEET NUMBER:	4 OF 11



DESIGNED BY:	OAC	DRAWN BY:	MRB
CHECKED BY:	APV	SCALE:	AS SHOWN
PROJECT NUMBER:	US-EI-365230438	DRAWING NUMBER:	C-102
DRAWING NUMBER:	C-102	SHEET NUMBER:	4 OF 11

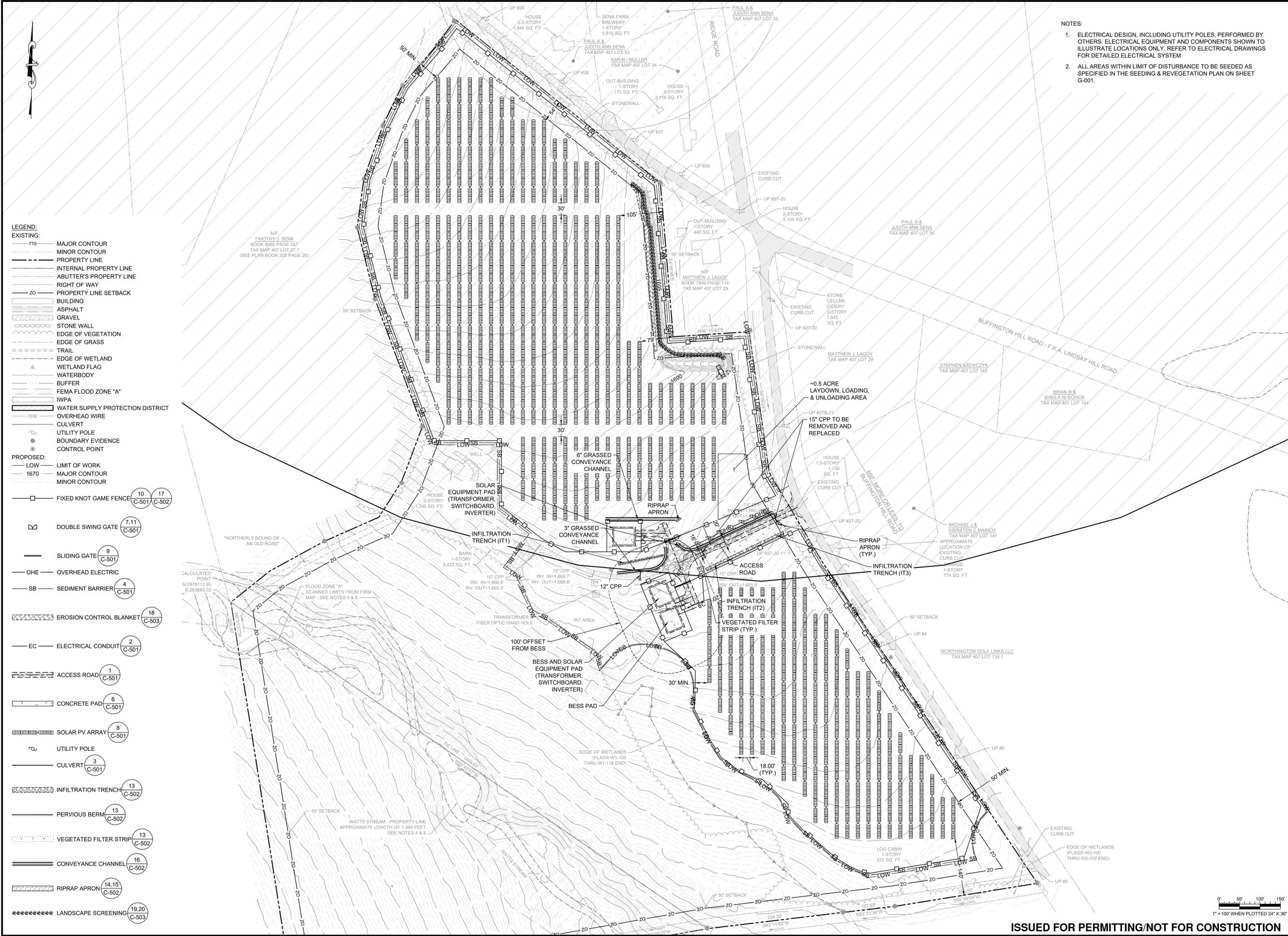


- LEGEND:**
- EXISTING:**
- 710 MAJOR CONTOUR
  - MINOR CONTOUR
  - PROPERTY LINE
  - INTERNAL PROPERTY LINE
  - ADJACENT'S PROPERTY LINE
  - RIGHT OF WAY
  - Z0 PROPERTY LINE SETBACK
  - BUILDING
  - ASPHALT
  - GRAVEL
  - STONE WALL
  - EDGE OF VEGETATION
  - EDGE OF GRASS
  - TRAIL
  - EDGE OF WETLAND
  - WETLAND FLAG
  - WATERBODY
  - BUFFER
  - FEMA FLOOD ZONE "A"
  - IWPA
  - OHE OVERHEAD WIRE
  - CULVERT
  - UTILITY POLE
  - BOUNDARY EVIDENCE
  - CONTROL POINT
- PROPOSED:**
- LOW LIMIT OF WORK
  - 1670 MAJOR CONTOUR
  - MINOR CONTOUR
  - FIXED KNOT GAME FENCE (C-501, C-502)
  - DOUBLE SWING GATE (7, 11, C-501)
  - SLIDING GATE (9, C-501)
  - OHE OVERHEAD ELECTRIC
  - SB SEDIMENT BARRIER (4, C-501)
  - EROSION CONTROL BLANKET (18, C-503)
  - EC ELECTRICAL CONDUIT (2, C-501)
  - ACCESS ROAD (1, C-501)
  - CONCRETE PAD (6, C-501)
  - SOLAR PV ARRAY (8, C-501)
  - UTILITY POLE (3, C-501)
  - CULVERT (3, C-501)
  - INFILTRATION TRENCH (13, C-502)
  - PERVIOUS BERM (13, C-502)
  - VEGETATED FILTER STRIP (13, C-502)
  - CONVEYANCE CHANNEL (16, C-502)
  - RIPRAP APRON (14, 15, C-502)
  - LANDSCAPE SCREENING (19, 20, C-503)

SYSTEM SIZE (MWDC, MWAC)	3.72 MWDC; 1.99 MWAC
PANEL COUNT (# OF PANELS)	6,420
PANEL SELECTION	HANWHA Q.CELL 580W
GROUND COVERAGE RATIO	31%
INTER-ROW SPACING (FT)	18.00
PITCH (FT)	25.93
PROPOSED PANEL HEIGHT (FT)	16.0
LIMIT OF WORK AREA (ACRES)	29.15
VEGETATION CLEARING AREA (ACRES)	0.00
FENCED AREA (ACRES)	25.46
TOTAL EXISTING IMPERVIOUS AREA (SQFT)	42,040
TOTAL PROPOSED IMPERVIOUS AREA (SQFT)	62,409
TOTAL PROPOSED GRAVEL ROAD AREA (SQFT)	14,341
TOTAL ACCESS ROAD LENGTH (FT)	608.52
UTILITY MV RUN LENGTH (FT)	619
EQUIPMENT PAD AREA (SQFT)	6,000
WETLAND IMPACTS (SQFT)	0
EXISTING LAND USE	AGRICULTURAL
PROPOSED DUAL USE	AGRICULTURAL / INDUSTRIAL



**ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION**



- LEGEND:**
- EXISTING:**
- 710 MAJOR CONTOUR
  - MINOR CONTOUR
  - PROPERTY LINE
  - INTERNAL PROPERTY LINE
  - ABUTTER'S PROPERTY LINE
  - RIGHT OF WAY
  - PROPERTY LINE SETBACK
  - BUILDING
  - ASPHALT
  - GRAVEL
  - STONE WALL
  - EDGE OF VEGETATION
  - EDGE OF GRASS
  - TRAIL
  - EDGE OF WETLAND
  - WETLAND FLAG
  - WATERBODY
  - BUFFER
  - FEMA FLOOD ZONE "A"
  - IWPA
  - WATER SUPPLY PROTECTION DISTRICT
  - OHE OVERHEAD WIRE
  - CULVERT
  - UTILITY POLE
  - BOUNDARY EVIDENCE
  - CONTROL POINT
- PROPOSED:**
- LOW LIMIT OF WORK
  - 1670 MAJOR CONTOUR
  - MINOR CONTOUR
  - FIXED KNOT GAME FENCE (10, 17) (C-501, C-502)
  - DOUBLE SWING GATE (7, 11) (C-501)
  - SLIDING GATE (9) (C-501)
  - OHE OVERHEAD ELECTRIC
  - SB SEDIMENT BARRIER (4) (C-501)
  - EROSION CONTROL BLANKET (18) (C-503)
  - EC ELECTRICAL CONDUIT (2) (C-501)
  - ACCESS ROAD (1) (C-501)
  - CONCRETE PAD (6) (C-501)
  - SOLAR PV ARRAY (8) (C-501)
  - UTILITY POLE
  - CULVERT (3) (C-501)
  - INFILTRATION TRENCH (13) (C-502)
  - PERVIOUS BERM (13) (C-502)
  - VEGETATED FILTER STRIP (13) (C-502)
  - CONVEYANCE CHANNEL (16) (C-502)
  - RIPRAP APRON (14, 15) (C-502)
  - LANDSCAPE SCREENING (19, 20) (C-503)

- NOTES:**
- ELECTRICAL DESIGN, INCLUDING UTILITY POLES, PERFORMED BY OTHERS. ELECTRICAL EQUIPMENT AND COMPONENTS SHOWN TO ILLUSTRATE LOCATIONS ONLY. REFER TO ELECTRICAL DRAWINGS FOR DETAILED ELECTRICAL SYSTEM.
  - ALL AREAS WITHIN LIMIT OF DISTURBANCE TO BE SEEDED AS SPECIFIED IN THE SEEDING & REVEGETATION PLAN ON SHEET G-001.

**wsp**

WSP USA INC.  
100 APOLLO DRIVE, SUITE 302  
CHELMSFORD MASSACHUSETTS 01824  
TELEPHONE: (978) 692-9000  
FAX: (978) 692-6633  
WEB: WWW.WSP.COM

REVISION	DATE	ISSUE / REVISION DESCRIPTION
3	02/03/2026	RESPONSE TO COMMENTS
2	01/05/2026	RESPONSE TO COMMENTS
1	10/11/2025	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

**PROJECT:** 2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT  
190 RIDGE ROAD  
WORTHINGTON, MA 01098

**TITLE:** WATER SUPPLY PROTECTION DISTRICT OVERLAY

**CLIENT:** BWC WADES STREAM, LLC

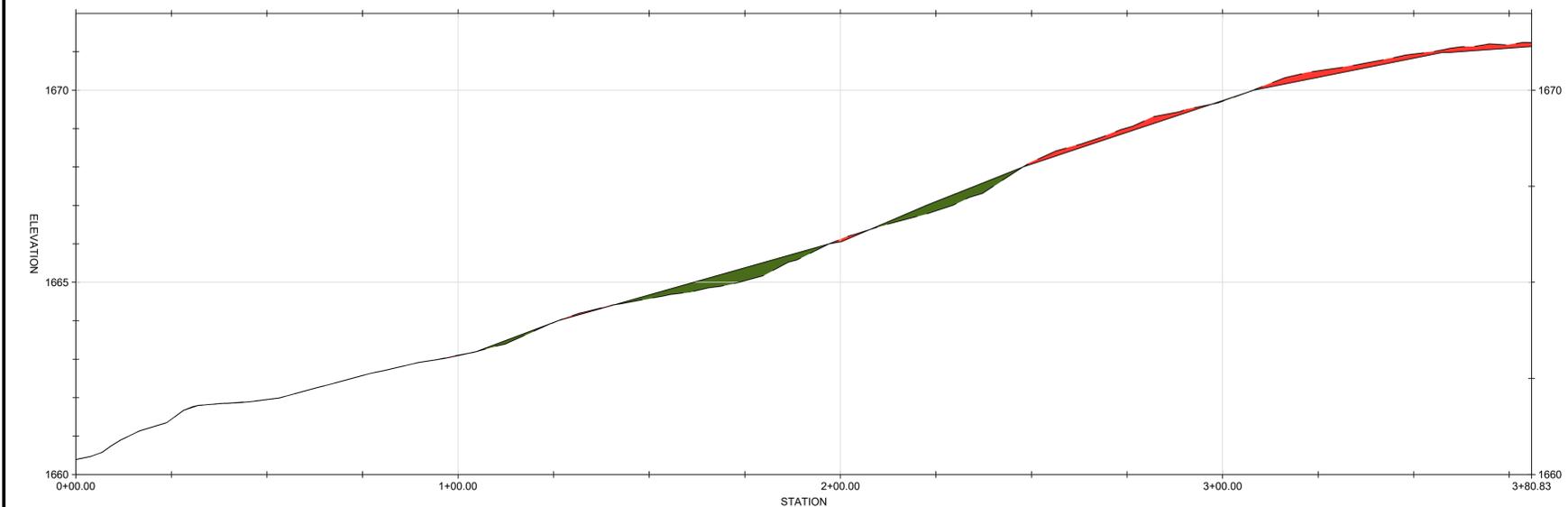
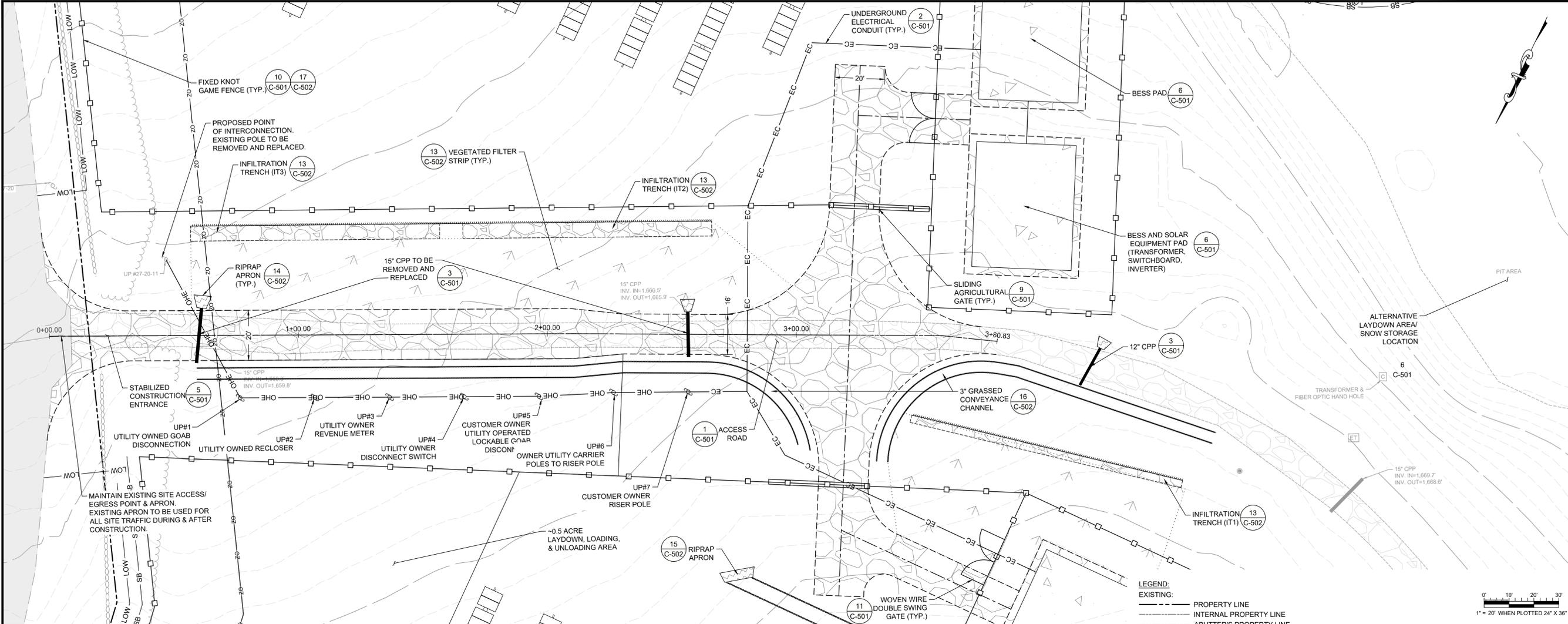
**SEAL:**

**DESIGNED BY:** OAC  
**CHECKED BY:** APV  
**PROJECT NUMBER:** US-EI-365230438  
**DRAWING NUMBER:** C-103  
**SHEET NUMBER:** 5 OF 11

**DRAWN BY:** MRB  
**SCALE:** AS SHOWN



**ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION**



- LEGEND:**
- EXISTING:**
- PROPERTY LINE
  - INTERNAL PROPERTY LINE
  - ABUTTER'S PROPERTY LINE
  - RIGHT OF WAY
  - PROPERTY LINE SETBACK
  - BUILDING
  - ASPHALT
  - GRAVEL
  - STONE WALL
  - EDGE OF VEGETATION
  - EDGE OF GRASS
  - TRAIL
  - EDGE OF WETLAND
  - WETLAND FLAG
  - WATERBODY
  - BUFFER
  - FEMA FLOOD ZONE "A"
  - IWPA
  - OHE OVERHEAD WIRE
  - CULVERT
  - UTILITY POLE
  - BOUNDARY EVIDENCE
  - CONTROL POINT
- PROPOSED:**
- LOW LIMIT OF WORK
  - 1670 MAJOR CONTOUR
  - MINOR CONTOUR
  - FIXED KNOT GAME FENCE (10, 17)
  - DOUBLE SWING GATE (7.11)
  - SLIDING GATE (9)
  - OHE OVERHEAD ELECTRIC
  - SB SEDIMENT BARRIER (4)
  - EROSION CONTROL BLANKET (18)
  - EC ELECTRICAL CONDUIT (2)
  - ACCESS ROAD (1)
  - CONCRETE PAD (6)
  - SOLAR PV ARRAY (8)
  - UTILITY POLE
  - CULVERT (3)
  - INFILTRATION TRENCH (13)
  - PERVIOUS BERM (13)
  - VEGETATED FILTER STRIP (13)
  - CONVEYANCE CHANNEL (16)
  - RIPRAP APRON (14, 15)
  - LANDSCAPE SCREENING (19, 20)

**PROFILE LEGEND:**

- EXISTING ELEVATION
- PROPOSED ELEVATION
- CUT AREA
- FILL AREA

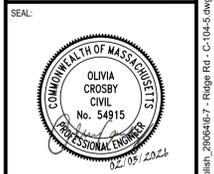
- NOTES:**
- ELECTRICAL DESIGN, INCLUDING UTILITY POLES, PERFORMED BY OTHERS. ELECTRICAL EQUIPMENT AND COMPONENTS SHOWN TO ILLUSTRATE LOCATIONS ONLY. REFER TO ELECTRICAL DRAWINGS FOR DETAILED ELECTRICAL SYSTEM.
  - ALL AREAS WITHIN LIMIT OF DISTURBANCE TO BE SEEDED AS SPECIFIED IN THE SEEDING & REVEGETATION PLAN ON SHEET G-001.
  - THE TOTAL GRADING CUT VOLUME FOR THE ACCESS ROAD AND EQUIPMENT PAD AREA IS 841.92 CUBIC YARDS. THE TOTAL GRADING FILL VOLUME IS 584.76 CUBIC YARDS. THE GRADING OF THE ACCESS ROAD AND EQUIPMENT PAD AREA WILL RESULT IN A NET CUT VOLUME OF 257.16 CUBIC YARDS.

REVISION	DATE	ISSUE / REVISION DESCRIPTION	APPROVED
3	02/03/2026	RESPONSE TO COMMENTS	OAC
2	01/05/2026	RESPONSE TO COMMENTS	MRB
1	10/21/2025	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS	MRB
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION	MRB

**PROJECT:** 2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT  
 190 RIDGE ROAD  
 WORTHINGTON, MA 01098

**TITLE:** ACCESS ROAD TOPOGRAPHIC PROFILE ANALYSIS

**CLIENT:** BWC WADES STREAM, LLC



**DESIGNED BY:** OAC  
**CHECKED BY:** APV  
**PROJECT NUMBER:** US-EI-365230438  
**DRAWING NUMBER:** C-104  
**SHEET NUMBER:** 6 OF 11

**ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION**

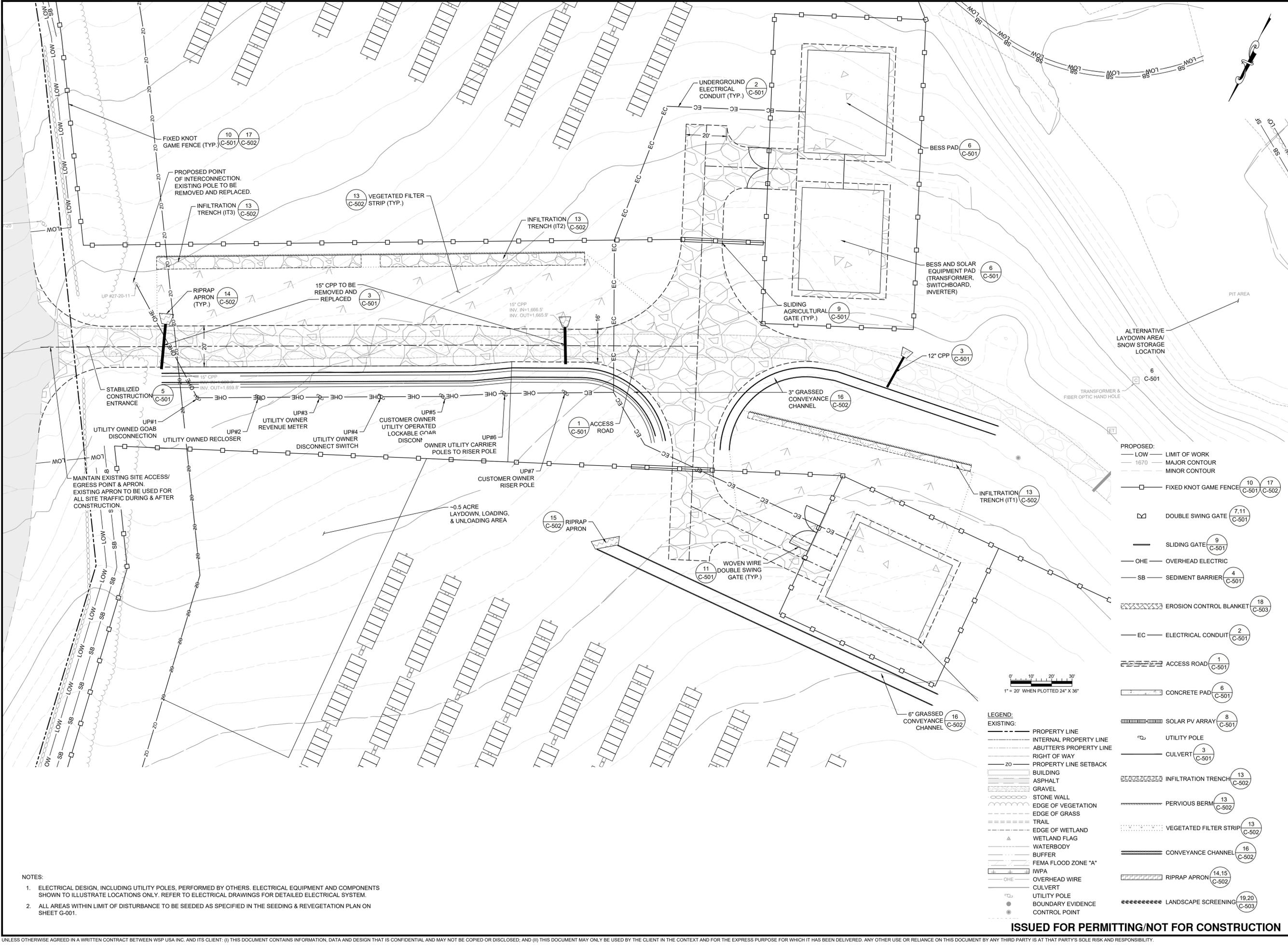
REVISION	DATE	ISSUE / REVISION DESCRIPTION
3	02/03/2026	RESPONSE TO COMMENTS
2	01/05/2026	RESPONSE TO COMMENTS
1	10/21/2025	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

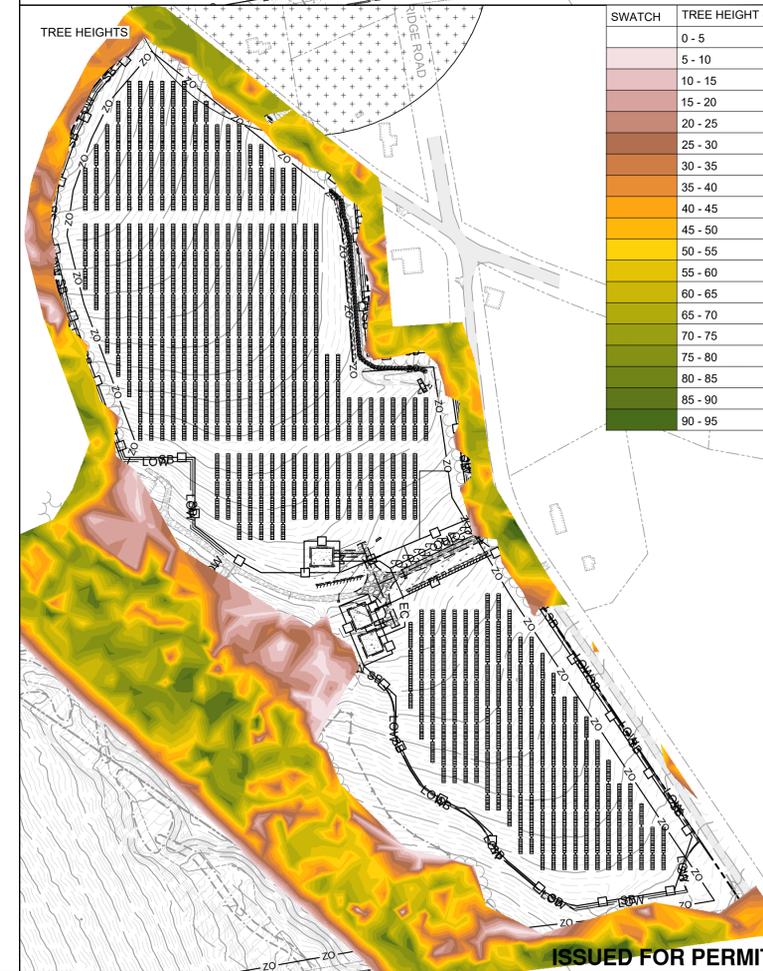
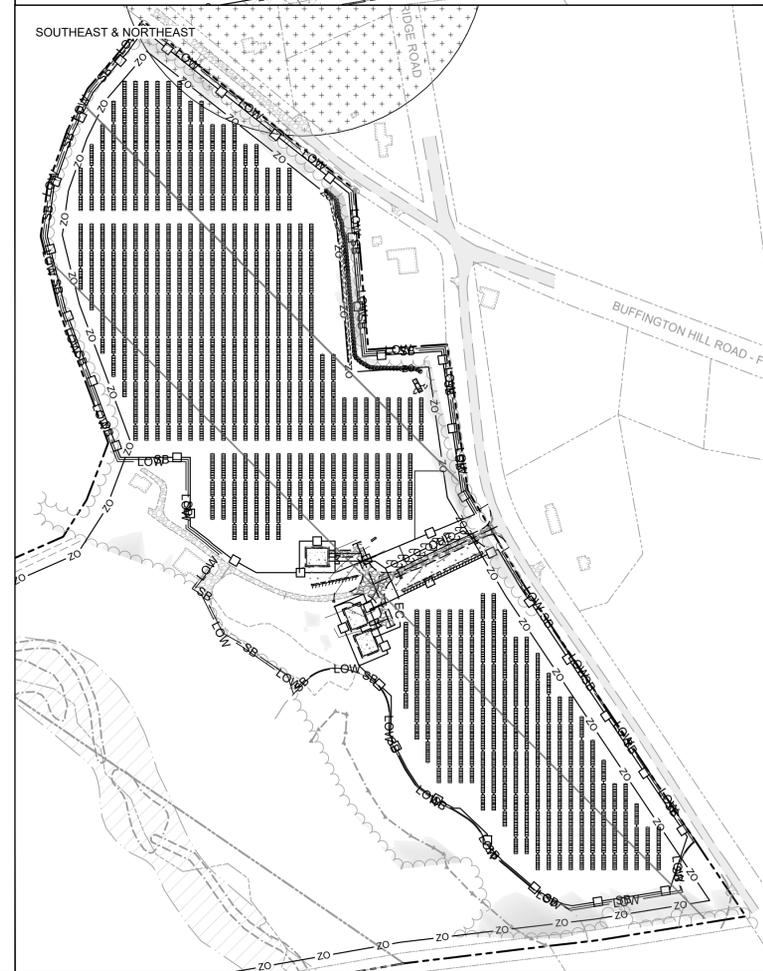
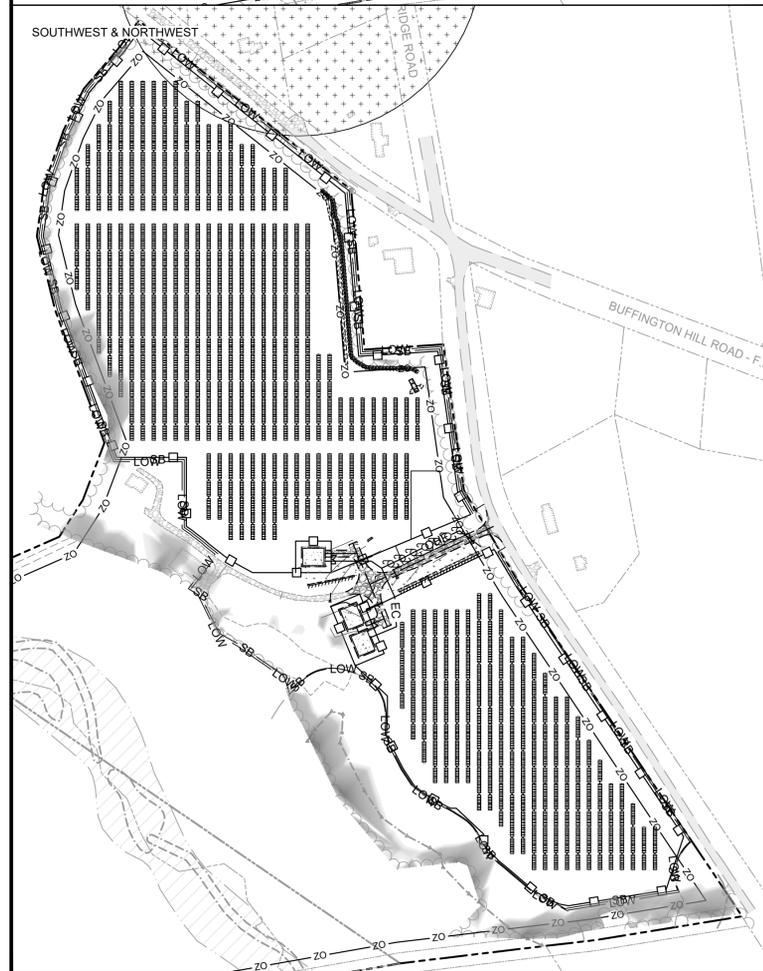
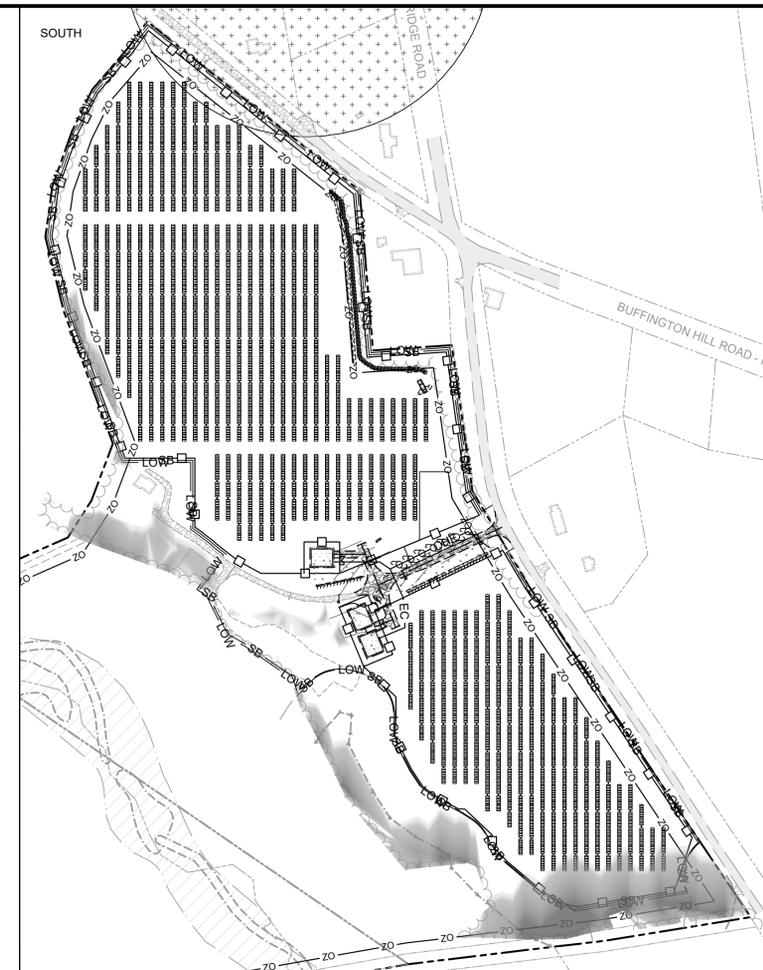
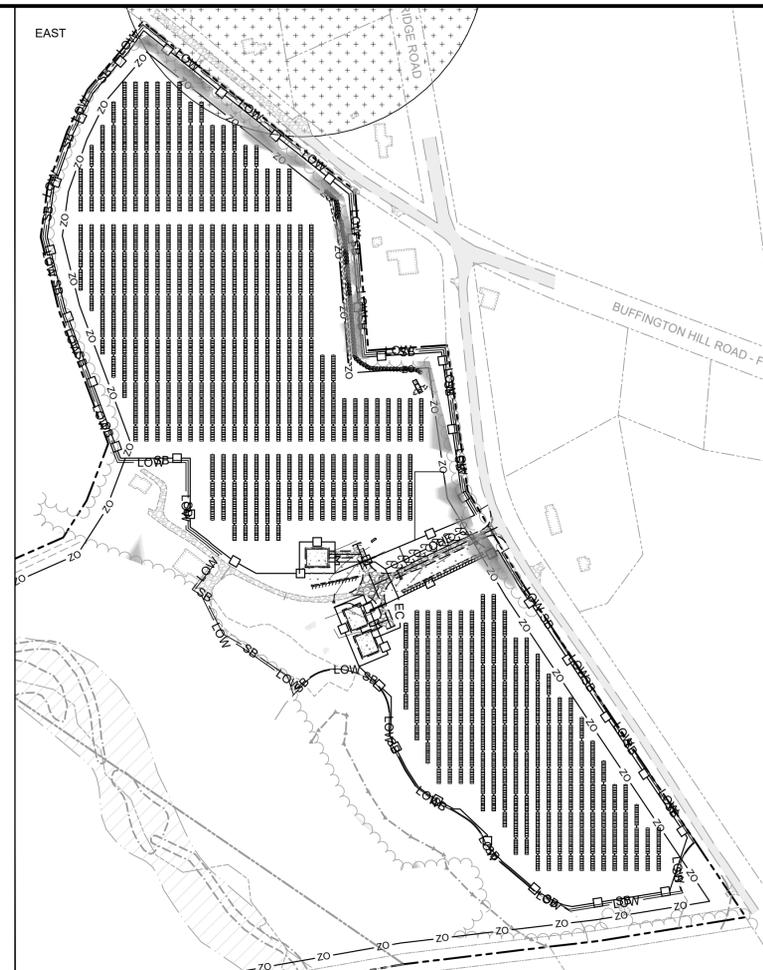
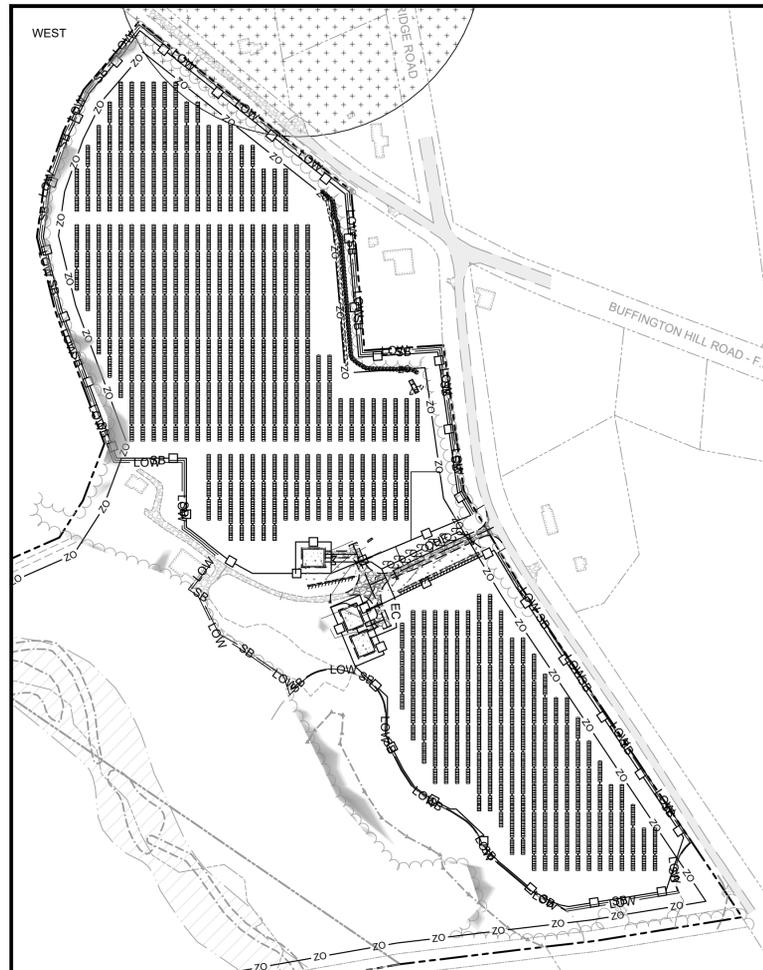
PROJECT:	2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
CLIENT:	BWC WADES STREAM, LLC
TITLE:	EQUIPMENT PADS
LOCATION:	190 RIDGE ROAD, WORTHINGTON, MA 01098

DESIGNED BY:	OAC	DRAWN BY:	MRB
CHECKED BY:	APV	SCALE:	AS SHOWN
PROJECT NUMBER:	US-EI-365230438	DRAWING NUMBER:	C-105
SHEET NUMBER:	7 OF 11		



ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION
--





- NOTES:
1. IDEAL SHADING SETBACKS:
    - 1.1. SOUTHERN TREES: 3X TREE HEIGHT
    - 1.2. EAST & WEST TREES: 2.5X TREE HEIGHT
    - 1.3. SOUTHWEST & SOUTHEAST TREES: 3X TREE HEIGHT
    - 1.4. NORTHWEST AND NORTHEAST TREES: 0.85X TREE HEIGHT

- LEGEND:
- EXISTING:
- 710 MAJOR CONTOUR
  - MINOR CONTOUR
  - PROPERTY LINE
  - INTERNAL PROPERTY LINE
  - ABUTTER'S PROPERTY LINE
  - RIGHT OF WAY
  - 20 PROPERTY LINE SETBACK
  - BUILDING
  - ASPHALT
  - GRAVEL
  - STONE WALL
  - EDGE OF VEGETATION
  - EDGE OF GRASS
  - TRAIL
  - EDGE OF WETLAND
  - WETLAND FLAG
  - WATERBODY
  - BUFFER
  - FEMA FLOOD ZONE "A"
  - IWPA
  - OHE OVERHEAD WIRE
  - CULVERT
  - UTILITY POLE
  - BOUNDARY EVIDENCE
  - CONTROL POINT
- PROPOSED:
- LOW LIMIT OF WORK
  - 1670 MAJOR CONTOUR
  - MINOR CONTOUR
  - FIXED KNOT GAME FENCE
  - DOUBLE SWING GATE
  - SLIDING GATE
  - OHE OVERHEAD ELECTRIC
  - SB SEDIMENT BARRIER
  - EROSION CONTROL BLANKET
  - EC ELECTRICAL CONDUIT
  - ACCESS ROAD
  - CONCRETE PAD
  - SOLAR PV ARRAY
  - UTILITY POLE
  - CULVERT
  - INFILTRATION TRENCH
  - PERVIOUS BERM
  - VEGETATED FILTER STRIP
  - CONVEYANCE CHANNEL
  - RIPRAP APRON
  - LANDSCAPE SCREENING

SWATCH	TREE HEIGHT (FT)
0 - 5	
5 - 10	
10 - 15	
15 - 20	
20 - 25	
25 - 30	
30 - 35	
35 - 40	
40 - 45	
45 - 50	
50 - 55	
55 - 60	
60 - 65	
65 - 70	
70 - 75	
75 - 80	
80 - 85	
85 - 90	
90 - 95	

- 9 SLIDING GATE (C-501)
- 4 SB SEDIMENT BARRIER (C-501)
- 18 EROSION CONTROL BLANKET (C-503)
- 2 EC ELECTRICAL CONDUIT (C-501)
- 1 ACCESS ROAD (C-501)
- 6 CONCRETE PAD (C-501)
- 8 SOLAR PV ARRAY (C-501)
- 3 UTILITY POLE (C-501)
- 3 CULVERT (C-501)
- 13 INFILTRATION TRENCH (C-502)
- 13 PERVIOUS BERM (C-502)
- 13 VEGETATED FILTER STRIP (C-502)
- 16 CONVEYANCE CHANNEL (C-502)
- 14,15 RIPRAP APRON (C-502)
- 19,20 LANDSCAPE SCREENING (C-503)



WSP USA INC.  
100 APOLLO DRIVE, SUITE 302  
CHELMSFORD MASSACHUSETTS 01824  
TELEPHONE: (978) 692-9090  
FAX: (978) 692-6633  
WEB: WWW.WSP.COM

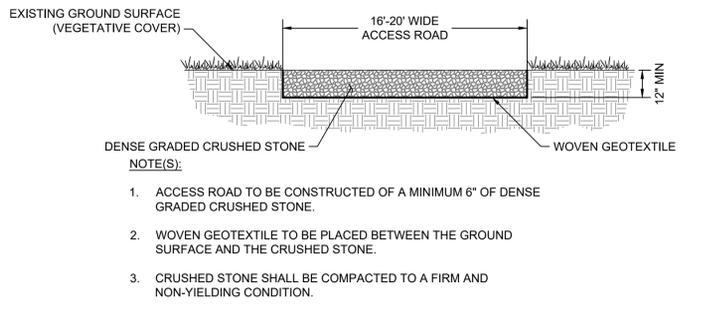
REVISION	DATE	ISSUE / REVISION DESCRIPTION
3	02/03/2026	RESPONSE TO COMMENTS
2	01/05/2026	RESPONSE TO COMMENTS
1	10/17/2025	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

PROJECT: **2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT**  
190 RIDGE ROAD  
WORTHINGTON, MA 01098

TITLE: **SHADOW ANALYSIS OF PROPOSED CONDITIONS**

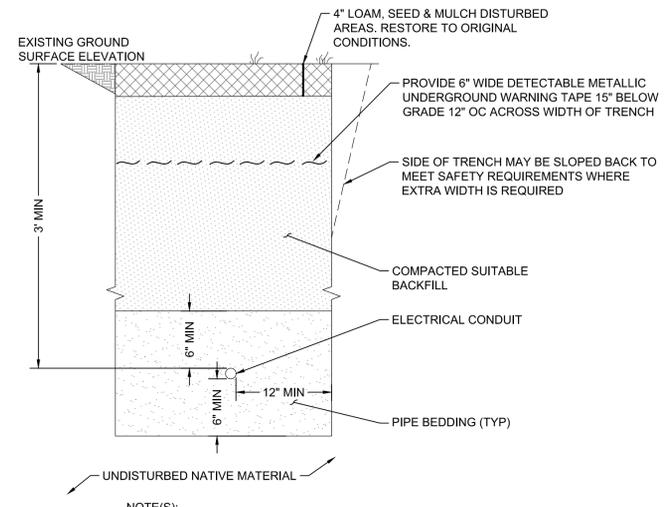
CLIENT: **BWC WADES STREAM, LLC**

DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	DRAWING NUMBER: <b>C-106</b>
SHEET NUMBER:	<b>8 OF 11</b>



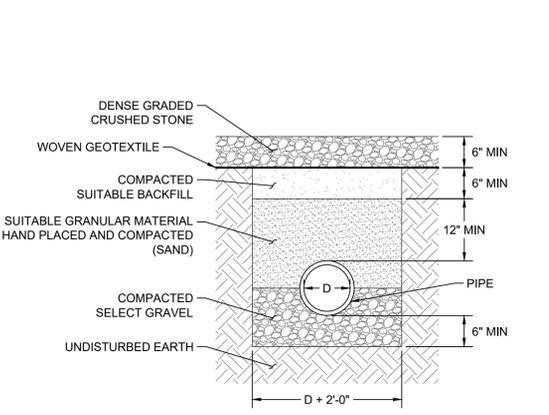
**FLUSH CRUSHED STONE ACCESS ROAD**  
NOT TO SCALE

- NOTE(S):**
- ACCESS ROAD TO BE CONSTRUCTED OF A MINIMUM 6" OF DENSE GRADED CRUSHED STONE.
  - WOVEN GEOTEXTILE TO BE PLACED BETWEEN THE GROUND SURFACE AND THE CRUSHED STONE.
  - CRUSHED STONE SHALL BE COMPACTED TO A FIRM AND NON-YIELDING CONDITION.



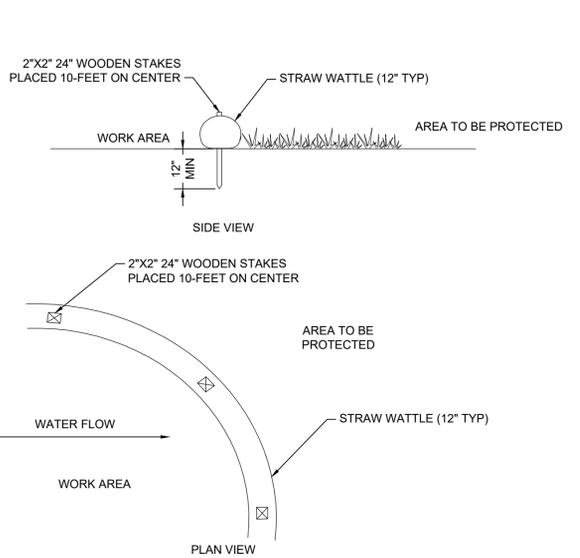
**TYPICAL ELECTRICAL CONDUIT UTILITY TRENCH**  
NOT TO SCALE

- NOTE(S):**
- DETAIL SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. ELECTRICAL ENGINEER TO CONFIRM REGULATORY AND CODE COMPLIANCE.

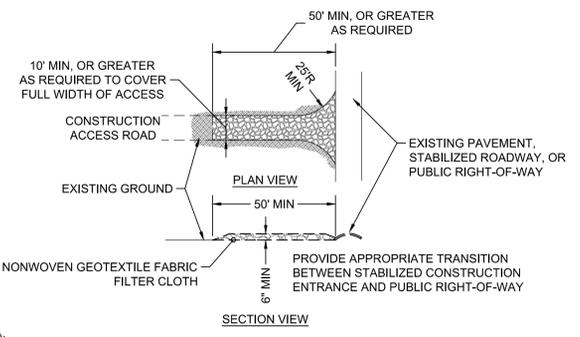


**TYPICAL CULVERT TRENCH**  
NOT TO SCALE

- NOTE(S):**
- ALIGN CENTER OF PIPE WITH CENTERLINE OF DITCH AND BOTTOM OF PIPE WITH DITCH LINE.
  - PIPE EXTENDS A MINIMUM OF 3' BEYOND DENSE GRADED CRUSHED STONE AT INLET AND OUTLET.
  - PIPE SLOPE SHALL FOLLOW EXISTING DITCH LINE BUT BE NO LESS THAN 1.5% AND NO MORE THAN 10%.

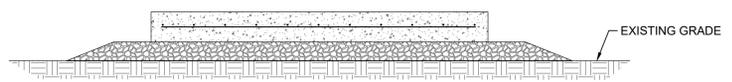


**SEDIMENT BARRIER - STRAW WATTLE**  
NOT TO SCALE



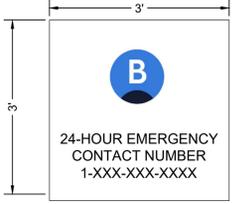
**STABILIZED CONSTRUCTION ENTRANCE**  
NOT TO SCALE

- NOTE(S):**
- STONE TO BE 1"-3" STONE, RECLAIMED STONE, OR RECYCLED CONCRETE EQUIVALENT.
  - LENGTH - AS REQUIRED, BUT NOT LESS THAN 50 FT.
  - THICKNESS - NOT LESS THAN SIX (6) INCHES.
  - WIDTH - TEN (10) FT. MIN, BUT NOT LESS THAN THE FULL TRAVELED WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
  - FILTER CLOTH - SHALL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
  - SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCE SHALL BE PIPED ACROSS OR BENEATH THE ENTRANCE.
  - MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
  - WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. IF WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
  - PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

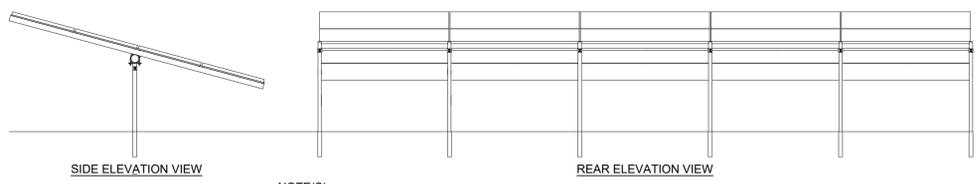


**TYPICAL CONCRETE EQUIPMENT PAD SECTION**  
NOT TO SCALE

- NOTE(S):**
- CONCRETE PAD SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. DESIGN TO BE FINALIZED AT LATER DATE.

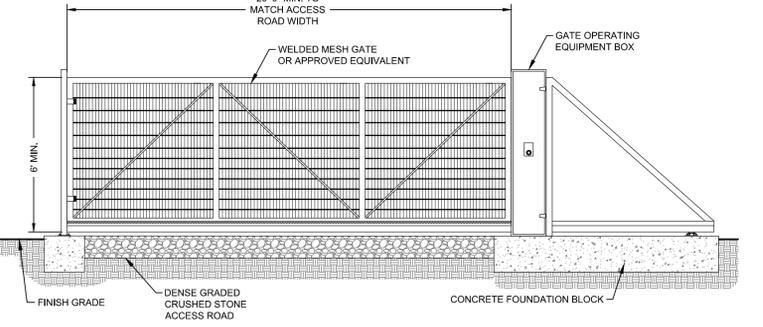


**TYPICAL ENTRANCE SIGN**  
NOT TO SCALE



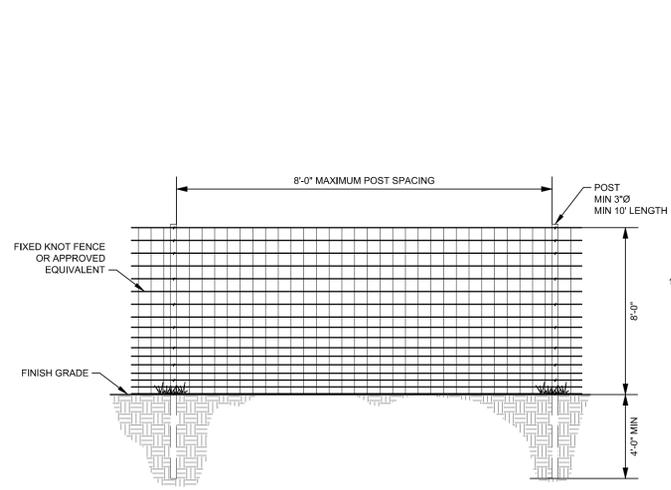
**TRACKER SOLAR PV ARRAY**  
NOT TO SCALE

- NOTE(S):**
- DESIGN FOR FOUNDATIONS, RACKING, AND MODULES BY OTHERS. DETAILS SHOWN FOR ILLUSTRATION PURPOSES ONLY.



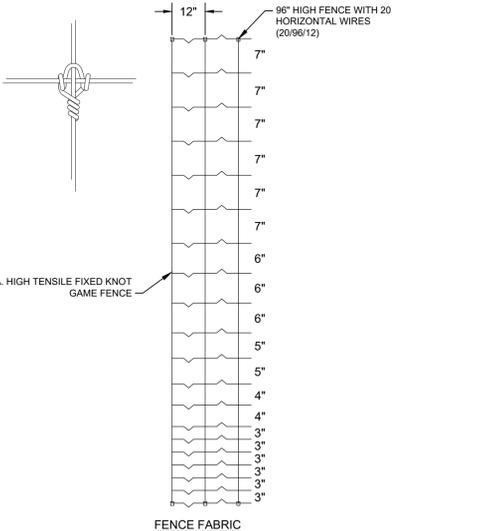
**WELDED MESH ELECTRIC SLIDING GATE**  
NOT TO SCALE

- NOTE:**
- TYPICAL GATE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. DESIGN TO BE FINALIZED AT LATER DATE.

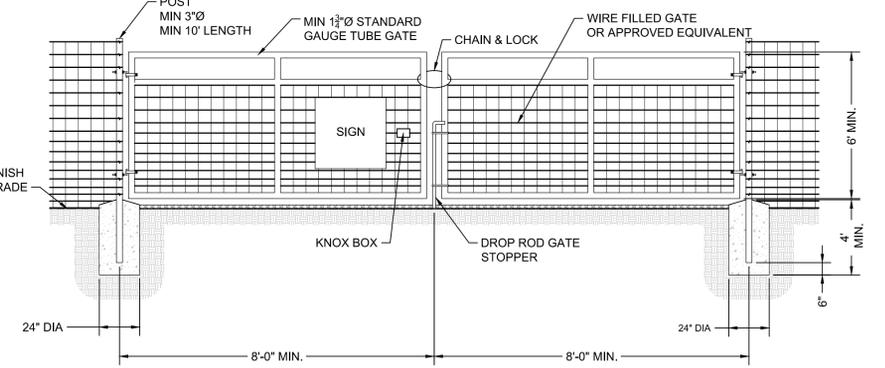


**WOVEN WIRE FENCE**  
NOT TO SCALE

- NOTE:**
- TYPICAL FENCE SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. DESIGN TO BE FINALIZED AT LATER DATE.



**WOVEN WIRE DOUBLE SWING GATE**  
NOT TO SCALE



**HIGH VOLTAGE SIGN**  
NOT TO SCALE

- NOTES:**
- PLACE ALONG PERIMETER FENCING AT AN INTERVAL NO LESS THAN 100 FEET.
  - DETAIL SHOWN FOR ILLUSTRATIVE PURPOSES ONLY. DESIGN TO BE FINALIZED AT LATER DATE.

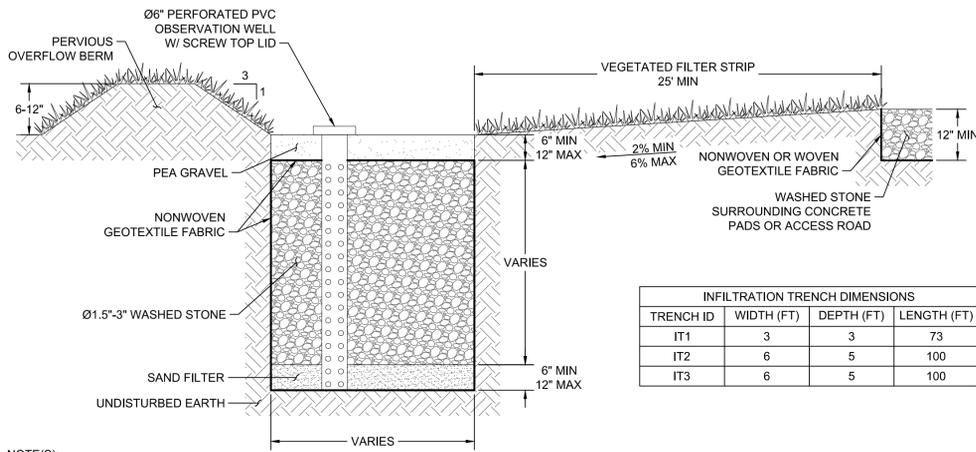
REVISION	DATE	ISSUE / REVISION DESCRIPTION
3	02/03/2026	RESPONSE TO COMMENTS
2	01/05/2026	RESPONSE TO COMMENTS
1	10/17/2025	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

**PROJECT:** 2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT  
190 RIDGE ROAD  
WORTHINGTON, MA 01098  
**TITLE:** DETAILS (SHEET 1 OF 3)

**CLIENT:** BWC WADES STREAM, LLC



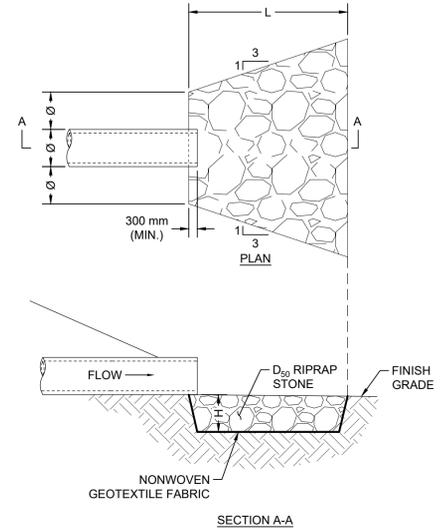
DESIGNED BY: OAC	DRAWN BY: MRB
CHECKED BY: APV	SCALE: AS SHOWN
PROJECT NUMBER: US-EI-365230438	DRAWING NUMBER: C-501
SHEET NUMBER: 9	OF 11



NOTE(S):

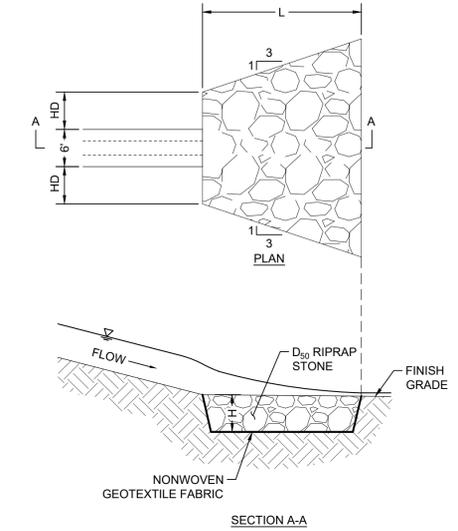
1. PEROUS BERM MAY VARY IN HEIGHT BETWEEN 6 TO 12 INCHES IN ORDER TO ACHIEVE A LEVEL ELEVATION ALONG THE TOP OF THE BERM TO THE MAXIMUM EXTENT POSSIBLE.
2. ONE SCREW TOP OBSERVATION WELL TO BE INSTALLED CENTRAL TO THE TRENCH LENGTH.

**INFILTRATION TRENCH**  
NOT TO SCALE



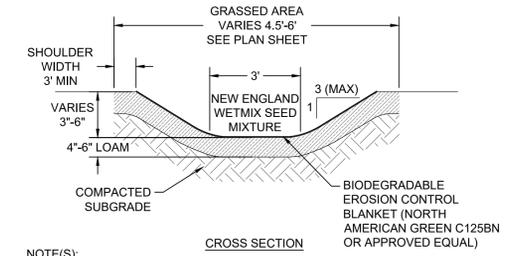
RIPRAP APRON DIMENSIONS				
PIPE Ø	CLASS	D <sub>50</sub> (IN)	LENGTH L (FT)	HEIGHT H (IN)
12"	1	5	4	18
15"	1	5	5	18

**RIPRAP APRON (PIPE)**  
NOT TO SCALE



RIPRAP APRON DIMENSIONS				
HYDRAULIC DIAMETER (HD)	CLASS	D <sub>50</sub> (IN)	LENGTH L (FT)	HEIGHT H (IN)
0.75'	3	10	4	24

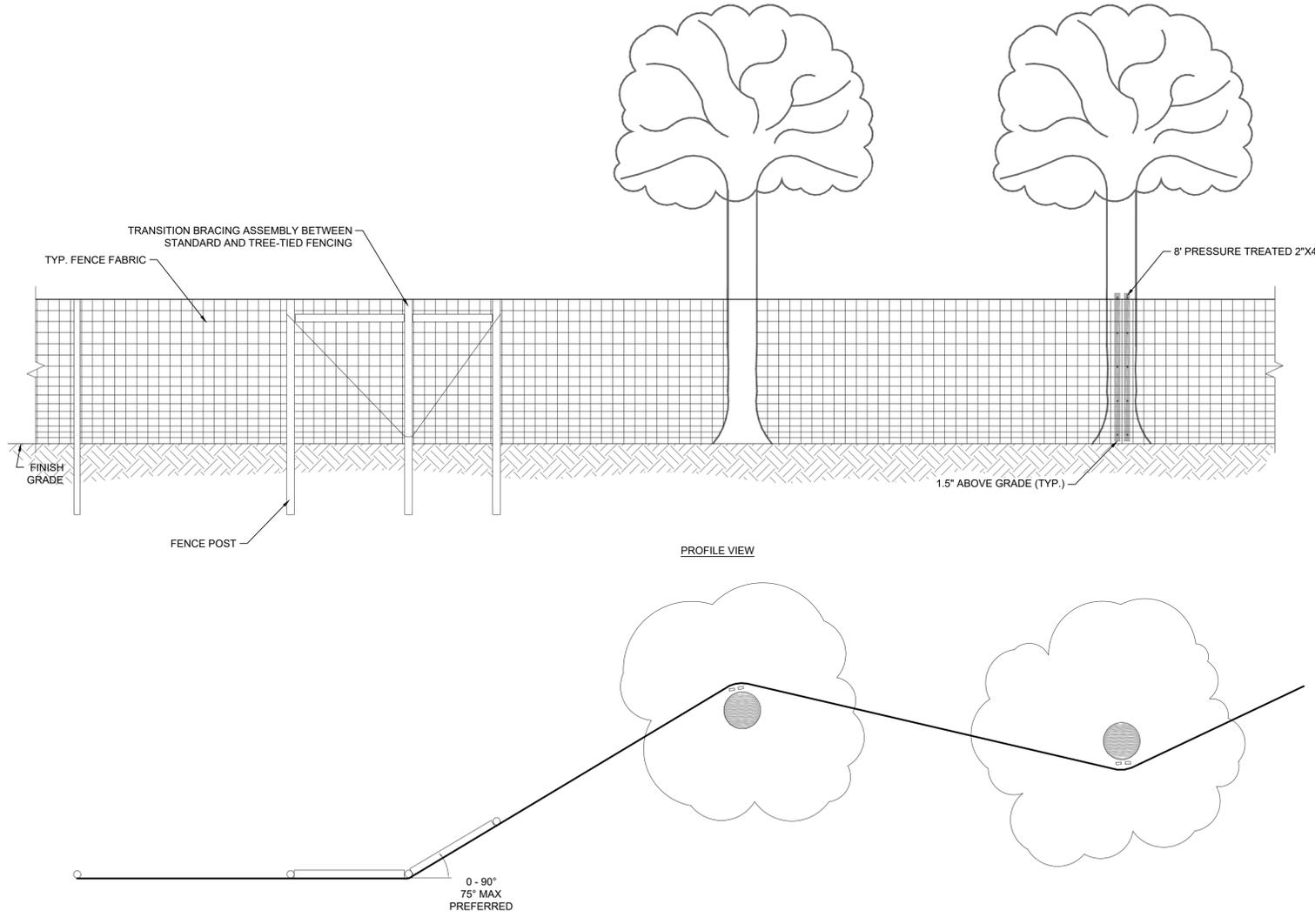
**RIPRAP APRON (CHANNEL)**  
NOT TO SCALE



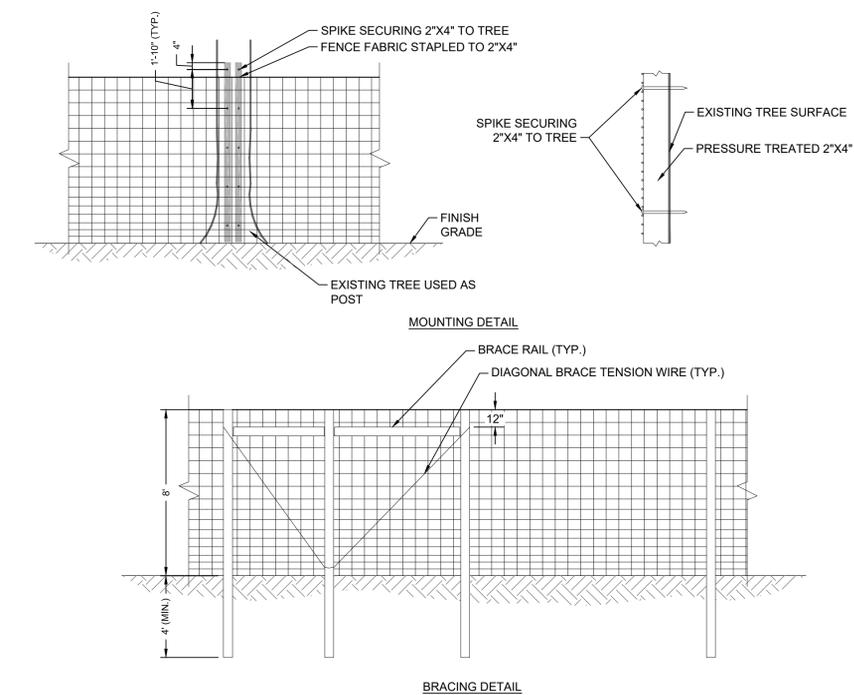
NOTE(S):

1. THE LONGITUDINAL SLOPE OF THE CHANNEL BOTTOM SHOULD BE AS FLAT AS POSSIBLE AND NO GREATER THAN 5%.

**GRASSED CONVEYANCE CHANNEL**  
NOT TO SCALE



**TREE-TIED WOVEN WIRE FENCE**  
NOT TO SCALE



NOTE(S):

1. ALL FENCING AND HARDWARE SHALL BE GALVANIZED.
2. FIXED KNOT WIRE MESH TO BE BEKAERT SOLIDLOCK (R) PRO 30 (2096-3), 12.5AWG-16 HIGH TENSILE FIXED KNOT GAME FENCE OR APPROVED EQUIVALENT. INSTALLED AND BRACED PER MANUFACTURERS RECOMMENDATIONS. NOT TO EXCEED 2" GAP ABOVE GRADE.
3. ONLY SOUND, HEALTHY TREES GREATER THAN 6" DBH SPACED 10' - 40' APART SHALL BE USED.
4. ROUTE FENCE TO AVOID IMPINGING ON GROWTH OF ADJACENT TREES.
5. ADD 2"x4" SPACERS AS NEEDED BASED ON ANGLE AND DBH TO ENSURE FENCING DOES NOT CONTACT TREE.
6. OBSTRUCTIVE LIMBS TO BE CLIPPED FROM TRUNK OF TREE.

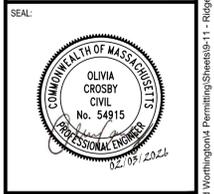
**BRACING DETAIL**

REVISION	DATE	ISSUE / REVISION DESCRIPTION
3	02/03/2026	RESPONSE TO COMMENTS
2	01/05/2026	RESPONSE TO COMMENTS
1	10/21/2025	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

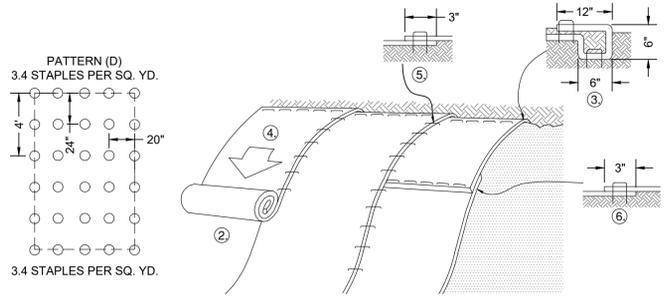
PROJECT: **2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT**  
190 RIDGE ROAD  
WORTHINGTON, MA 01098

TITLE: **DETAILS (SHEET 2 OF 3)**

CLIENT: **BWC WADES STREAM, LLC**



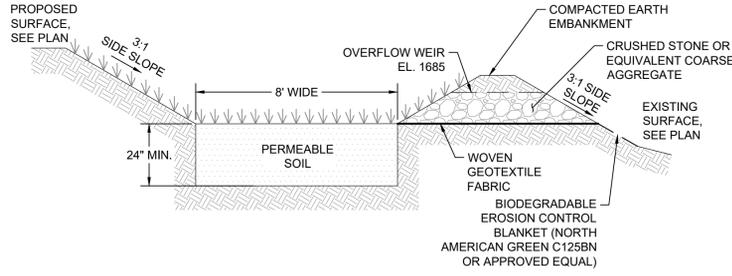
DESIGNED BY: OAC  
DRAWN BY: MRB  
CHECKED BY: APV  
SCALE: AS SHOWN  
PROJECT NUMBER: US-EI-365230438  
DRAWING NUMBER: **C-502**  
SHEET NUMBER: **10 OF 11**



**PATTERN (D)**  
3.4 STAPLES PER SQ. YD.  
**STAPLE PATTERN GUIDE**  
6.67" WIDE ROLLS  
**SLOPE INSTALLATION**  
(SEE STEPS BELOW)

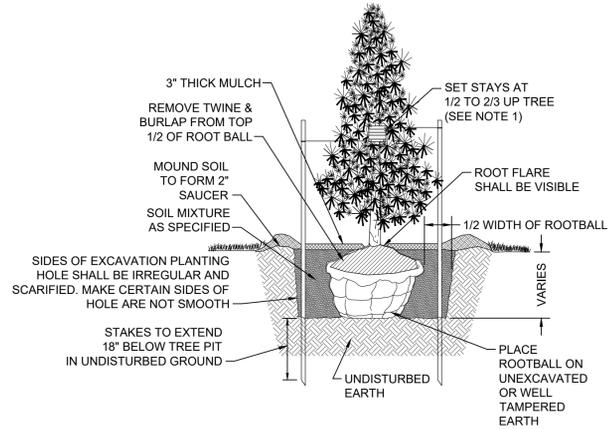
- NOTE(S):**
- THIS DETAIL REFERENCES PRODUCTS BY NORTH AMERICAN GREEN. EQUIVALENT PRODUCTS MAY BE USED AS APPROVED BY THE ENGINEER. EROSION CONTROL BLANKETS TO BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND INSTRUCTIONS.
  - EROSION CONTROL MATTING TO BE NORTH AMERICAN GREEN C125BN OR APPROVED EQUAL. INSTALL USING STAPLE PATTERN D.
  - PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECPs), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED (SEE DRAWING G-001).
  - BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECPs IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECPs EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECPs WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECPs BACK OVER SEED AND COMPACTED SOIL. SECURE RECPs OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECPs.
  - ROLL THE RECPs DOWN THE SLOPE. RECPs WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECPs MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING THE DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
  - THE EDGES OF PARALLEL RECPs MUST BE STAPLED WITH AN APPROXIMATE 3" OVERLAP.
  - CONSECUTIVE RECPs SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECPs WIDTH.
  - STAPLES LONGER THAN 6 INCHES SHALL NOT BE USED WITHIN THE LIMIT OF WASTE TO AVOID PENETRATION INTO THE LANDFILL CAP.

**EROSION CONTROL BLANKET INSTALLATION**  
NOT TO SCALE 18



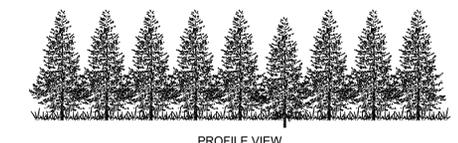
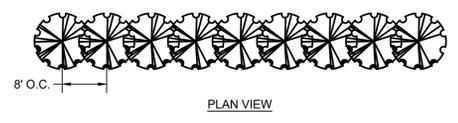
- NOTE(S):**
- LONGITUDINAL SLOPE OF THE BOTTOM OF THE SWALE SHALL NOT EXCEED 5%.

**WATER QUALITY DRY SWALE**  
NOT TO SCALE 21



- NOTE(S):**
- STAKE ALL TREES OVER 6 FEET TALL.
  - TREE SHALL BEAR SAME RELATION TO FINISHED GRADE AS IT BORE TO PREVIOUS GRADE (OR SLIGHTLY ABOVE).
  - NEVER CUT LEADERS.
  - PRUNE ONLY TO REMOVE DAMAGED OR BROKEN BRANCHES.
  - REMOVE ALL WIRE BRACKETS FROM ROOTBALL.
  - REMOVE ALL STAKES 1 YEAR AFTER PLANTING.

**VEGETATIVE SCREENING PLANTING**  
NOT TO SCALE 19



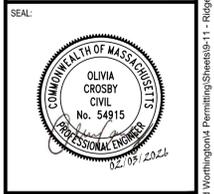
SPECIES	COMMON NAME	HEIGHT WHEN PLANTED	MATURE HEIGHT	MATURE WIDTH	ROOT
THUJA PLICATA X STANDISHII 'GREEN GIANT'	GREEN GIANT ARBORVITAE	6'-7'	30'-50'	10'-15'	BALLED & BURLAPED (B&B)

**VEGETATIVE SCREENING PLANTING PLAN**  
NOT TO SCALE 20

REVISION	DATE	ISSUE / REVISION DESCRIPTION
3	02/03/2026	RESPONSE TO COMMENTS
2	01/05/2026	RESPONSE TO COMMENTS
1	10/41/2025	REVISED PER TOWN OF WORTHINGTON PLANNING BOARD COMMENTS
0	09/23/2025	ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION

PROJECT:	2.0 MW AC GROUND-MOUNT SOLAR PV DEVELOPMENT
LOCATION:	190 RIDGE ROAD WORTHINGTON, MA 01098
TITLE:	DETAILS (SHEET 3 OF 3)

CLIENT:  
**BWC WADES STREAM, LLC**



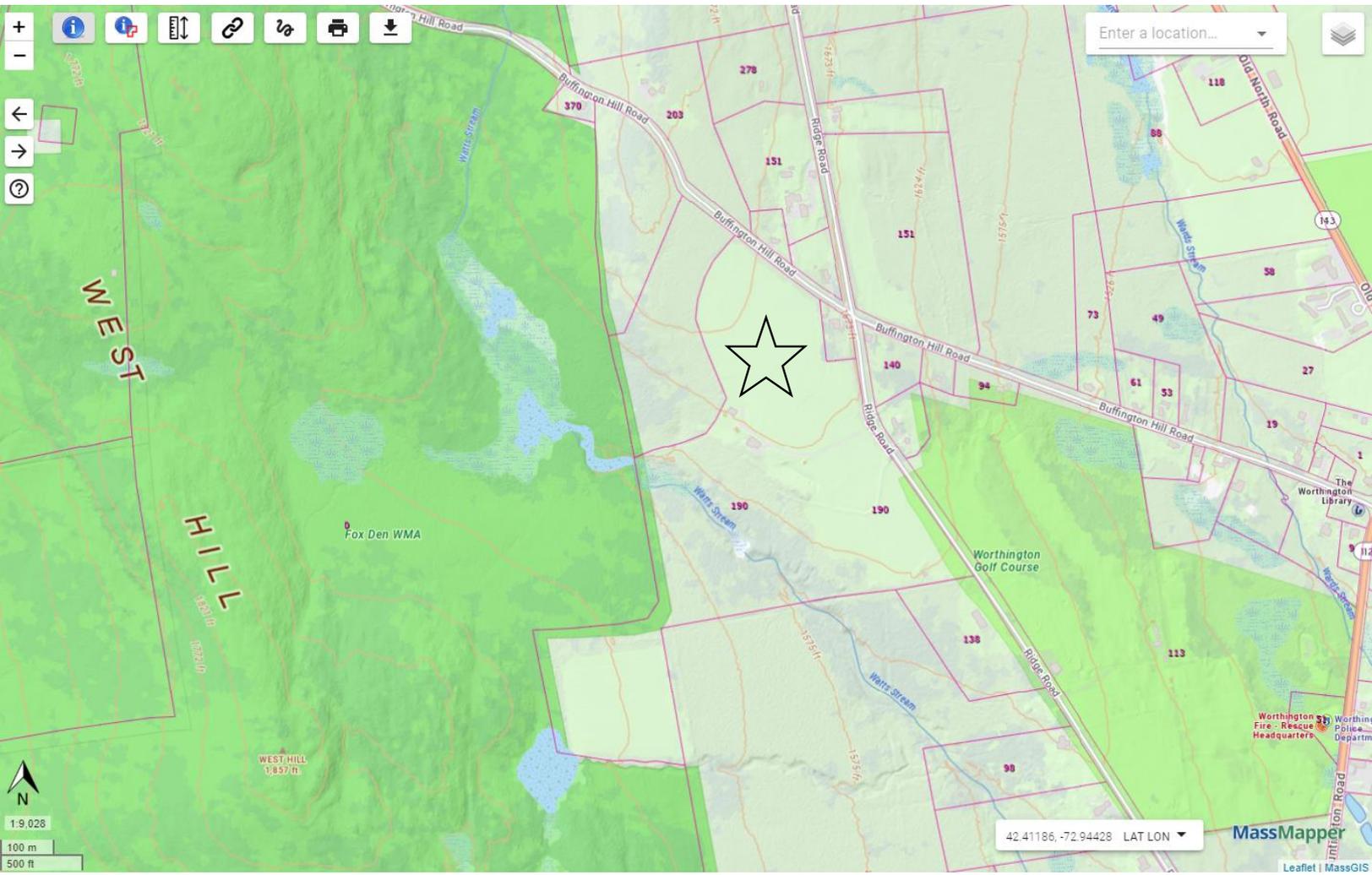
DESIGNED BY:	OAC	DRAWN BY:	MRB
CHECKED BY:	APV	SCALE:	AS SHOWN
PROJECT NUMBER:	US-EI-365230438		
DRAWING NUMBER:	<b>C-503</b>		
SHEET NUMBER:	<b>11 OF 11</b>		

**ISSUED FOR PERMITTING/NOT FOR CONSTRUCTION**

# BLUEWAVE

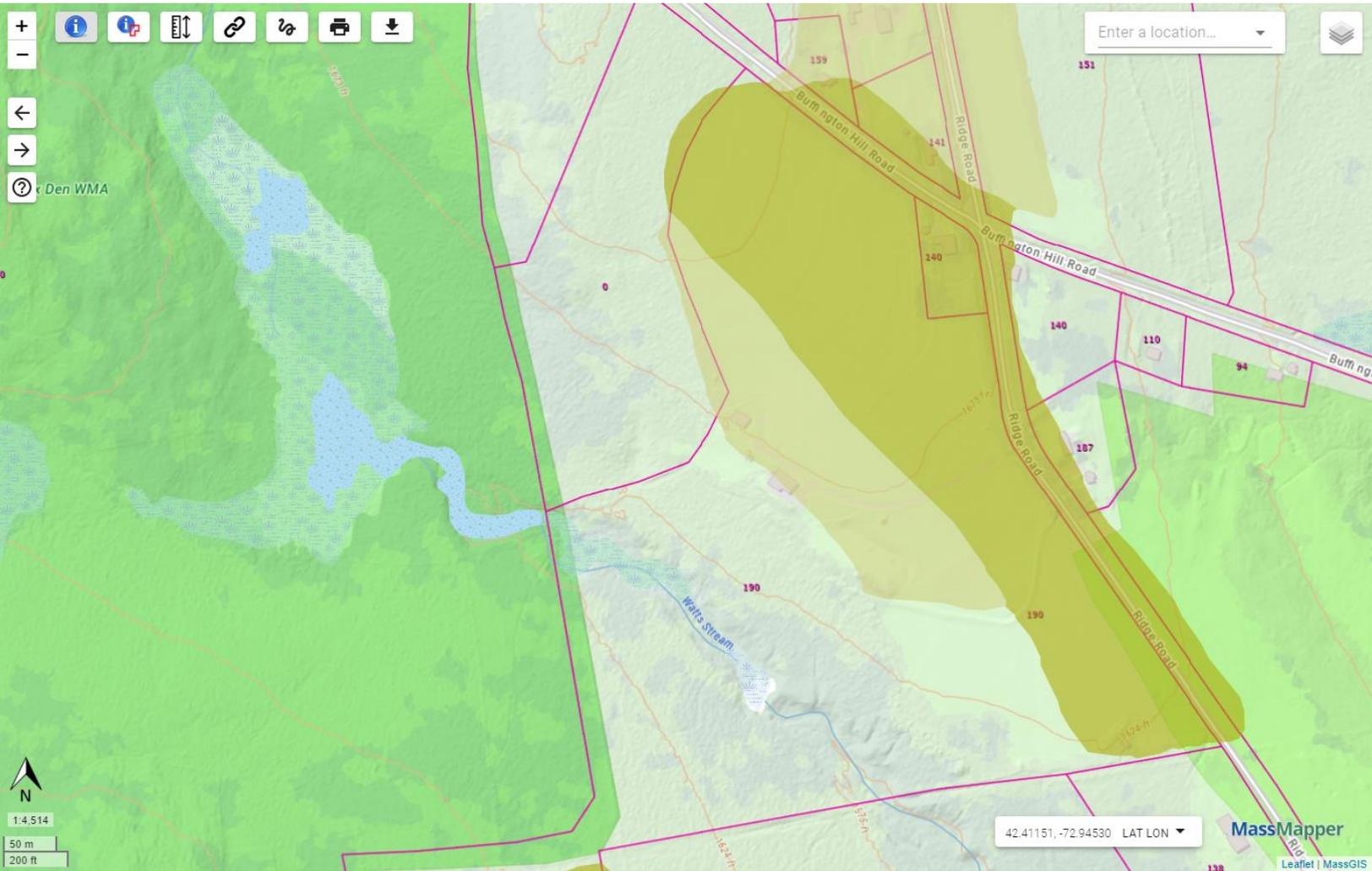
## **Appendix C: Appendix to the Predetermination Application**

# Attachment A-1



Star marks the approximate location of the array.

# Attachment A2



- [Prime Farmland Soils](#)
  - All Areas Are Prime Farmland
  - Farmland of Statewide Importance
  - Farmland of Unique Importance
- [Property Tax Parcels](#)

# Attachment A4

Doc: 950020925 OR /4767/0006 11/01/1995 13:07

THIS INSTRUMENT MUST BE FILED FOR RECORD OR REGISTRATION

STATE TAX FORM CL-3  
(REV. 10/93)

THE COMMONWEALTH OF MASSACHUSETTS

Worthington

Name of City or Town

OFFICE OF THE BOARD OF ASSESSORS

## CLASSIFIED FOREST-AGRICULTURAL OR HORTICULTURAL-RECREATIONAL LAND TAX LIEN

The Board of Assessors of the city/town of Worthington hereby states it has accepted and approved the application of \_\_\_\_\_ Timothy J. Sena, Catherine Bude-Sena and Paul A. Sena owner(s) of the real property described below, for the valuation, assessment and taxation of that property as classified forest  agricultural or horticultural  recreational  land under the provisions of General Laws Chapter 61  61A  61B . This classification is effective as of January 1, 1995 for the fiscal year96 beginning July 1, 1995.

### DESCRIPTION OF PROPERTY

(The description must be sufficiently accurate to identify the property. In the case of registered land, the Certificate of Title Number and the Registry Volume and Page must be given.)

Map 407 Lot 28, Book 2167 Page 303, Ridge Road

Total acreage= 41

Chapter 61A = 36

Chapter 61B = 4.75 Exclusion of .25 acre

This statement made on the 17<sup>TH</sup> day of OCTOBER, 1995 constitutes a lien upon the property as provided in General Laws Chapter 61 §2  61A §9  61B §6 .

Tom Quinn  
Jean Bourdon MAA  
BOARD OF ASSESSORS

THE COMMONWEALTH OF MASSACHUSETTS

Hampshire ss.

October 17 1995

Then personally appeared the above named Tom Quinn & Jean Bourdon, Board of Assessors for the city/town of Worthington and acknowledged the foregoing instrument to be their free act and deed, before me.

Julia J. Sharkey  
Notary Public/Justice of the Peace

My commission expires Sept. 14, 2001

THIS FORM APPROVED BY THE COMMISSIONER OF REVENUE

ATTEST: HAMPSHIRE, Marianne L. Donohue, REGISTER  
MARIANNE L. DONOHUE

# Attachment A4 (cont.)

State Tax Form CL-1  
Revised 9/2008

The Commonwealth of Massachusetts  
**WORTHINGTON**  
Name of City or Town

01	01A	01B
Assessors' Use only		
Date Received		
Application No		

Fiscal Year **2025** Application for  
Forest-- Agricultural or Horticultural -- Recreational Land Classification  
General Laws Chapter 61, §§ 1 & 2 - Chapter 61A, § 6 - Chapter 61B, § 3

**INSTRUCTIONS:** Complete all sections that apply. Please print or type.

**A. IDENTIFICATION.** Complete 1'

Name of Applicant(s):	190 RIDGE RD SENA TIMOTHY J RUDE-SENA CATHERINE PO BOX 132 WORTHINGTON MA 01098	407 028 LUC 017	Total Acres	Acres to be Classified
Mailing Address:			72.00	70.00
Property Covered by Application:				

**B. TYPE OF CLASSIFICATION.** Check the classification you are seeking and provide the required information.

**FOREST**  Attach State Forester's Certificate and Approved Forest Management Plan.

**AGRICULTURAL or HORTICULTURAL**

1. Current use of land. List by classes established by the Farmland Valuation Advisory Commission, if applicable.

Land Use by Class	No. of Acres	Specific Use, Crops Grown
a. Vegetables, Tobacco, Sod and Nursery Cropland		
b. Dairy, Beef and Hay Cropland	49.75	HAY
c. Orchards, Vineyards and Blueberries Cropland	1.00	Elderberries
d. Cranberries		
e. Christmas Trees		
f. Productive Woodland (Attach copy of State Forester's Certificate and Approved Management Plan if initial application, or new/revised plan)		
g. Cropland Pasture, Permanent Pasture and Necessary and Related Land		
h. Contiguous Non-productive Land	19.25	cord wood
i. Other Agricultural or Horticultural (Specify)		

2. Statement of income in preceding year. Supporting documentation, including copies of your federal and state tax income returns, may be requested to verify your income. **Schedule E**

Gross sales from agricultural or horticultural use.....	A = Hay	B = Cordwood	\$ 14750	1000
Amount received under MA or US Soil Conservation or Pollution Abatement Program.....			\$	
Total (Provide a detailed description of the source of the farm income listed above).....			\$ 14750	1000

Previous use of land. Was the land valued, assessed and taxed as classified agricultural or horticultural land under c. 61A for the prior 2 fiscal years? Yes  No

Was the use of the land during the prior 2 fiscal years the same as the current use described above? Yes  No

Describe in detail the use of the land during the prior 2 fiscal years \_\_\_\_\_

Was your farm income during either of the prior 2 fiscal years less than the amount reported above?  No

List the income for the year \$ \_\_\_\_\_ Fiscal year \_\_\_\_\_

# Attachment A4 (cont.)

**C. LESSEE CERTIFICATION.** If any portion of property is leased, the following statement must be signed by each lessee.

I hereby certify that the property I lease is being used as described in this application and that I intend to use the property in that manner during the period to which the application applies.

Lessee \_\_\_\_\_ Date \_\_\_\_\_

---

**D. SIGNATURE.** All owners must sign here to complete the application.

This application has been prepared or examined by me. Under the pains and penalties of perjury, I declare that to the best of my knowledge and belief, it and all accompanying documents and statements are true, correct and complete. I also certify that I have signed and attached a Property Owner's Acknowledgement of Rights and Obligations under classified forest, agricultural or horticultural or recreational land programs, as part of this application.

Owner \_\_\_\_\_ Date 11/30/23

\_\_\_\_\_ Date 11/25/23

*If signed by agent, attach copy of written authorization to sign on behalf of taxpayer.*

---

**DISPOSITION OF APPLICATION (ASSESSORS' USE ONLY)**

Ownership <input type="checkbox"/>	All <input type="checkbox"/>	<b>GRANTED</b>	Date Voted / Denied _____
Min. Acres <input type="checkbox"/>	Part <input type="checkbox"/>		Date Notice Sent _____
Use/Condition <input type="checkbox"/>	Deemed <input type="checkbox"/>		Board of Assessors
Gross Sales <input type="checkbox"/>	All <input type="checkbox"/>	<b>DENIED</b>	Date _____
	Part <input type="checkbox"/>		
	Deemed <input type="checkbox"/>		

Current and previous 5-year assessments from Patriot Properties, showing the breakdown of the 72 acres by crop and use code denoting 61A or 61B. Note that "square feet" refers to acres.

Year	Code	Previous Assessments							Total
		Building	Yard Items	Land Value	Square Feet	Special Land			
2024	101 - ONE FAM	514,400	144,000	54,000	2.00	0.00		712,400	
2024	713 - HAY/GRN/TILL	0	0	12,500	50.00	86,500.00		12,500	
2024	714 - BLUEBER	0	0	1,252	1.00	248.00		1,252	
2024	720 - NONPROD	0	0	1,178	19.00	27,322.00		1,178	
2023	720 - NONPROD	0	0	988	19.00	27,512.00		988	
2023	720 - NONPROD	0	0	1,083	19.00	27,417.00		1,083	
2023	713 - HAY/GRN/TILL	0	0	10,750	50.00	88,250.00		10,750	
2023	713 - HAY/GRN/TILL	0	0	11,500	50.00	87,500.00		11,500	
2023	714 - BLUEBER	0	0	1,151	1.00	349.00		1,151	
2023	714 - BLUEBER	0	0	1,058	1.00	442.00		1,058	
2023	101 - ONE FAM	387,600	125,200	54,000	2.00	0.00		566,800	
2023	101 - ONE FAM	297,100	88,700	54,000	2.00	0.00		439,800	
2022	101 - ONE FAM	297,100	88,700	54,000	2.00	0.00		439,800	
2022	713 - HAY/GRN/TILL	0	0	10,750	50.00	88,250.00		10,750	
2022	720 - NONPROD	0	0	988	19.00	27,512.00		988	
2022	714 - BLUEBER	0	0	1,058	1.00	442.00		1,058	
2021	720 - NONPROD	0	0	931	19.00	27,569.00		931	
2021	713 - HAY/GRN/TILL	0	0	9,800	50.00	89,200.00		9,800	
2021	714 - BLUEBER	0	0	982	1.00	518.00		982	
2021	101 - ONE FAM	283,800	85,500	54,000	2.00	0.00		423,300	
2020	101 - ONE FAM	280,600	85,500	54,000	2.00	0.00		420,100	
2020	714 - BLUEBER	0	0	982	1.00	518.00		982	
2020	713 - HAY/GRN/TILL	0	0	9,800	50.00	89,200.00		9,800	
2020	720 - NONPROD	0	0	931	19.00	27,569.00		931	
2019	720 - NONPROD	0	0	912	19.00	34,713.00		912	
2019	713 - HAY/GRN/TILL	0	0	9,600	50.00	108,150.00		9,600	
2019	714 - BLUEBER	0	0	958	1.00	917.00		958	
2019	101 - ONE FAM	275,300	85,500	54,000	2.00	0.00		414,800	

# Unofficial Property Record Card - Worthington, MA

## General Property Data

Parcel ID <b>407 0 28</b>	Account Number
Prior Parcel ID <b>--</b>	Property Location <b>190 RIDGE RD</b>
Property Owner <b>SENA TIMOTHY J RUDE-SENA CATHERINE</b>	Property Use <b>017</b>
Mailing Address <b>PO BOX 132</b>	Most Recent Sale Date <b>12/30/2004</b>
City <b>WORTHINGTON</b>	Legal Reference <b>8119-223</b>
Mailing State <b>MA</b> Zip <b>01098</b>	Grantor <b>SENA, TIMOTHY J + CATHERINE,</b>
ParcelZoning	Sale Price <b>1</b>
	Land Area <b>72.000 acres</b>

## Current Property Assessment

Card 1 Value	Building Value <b>514,400</b>	Xtra Features Value <b>144,000</b>	Land Value <b>68,930</b>	Total Value <b>727,330</b>
--------------	-------------------------------	------------------------------------	--------------------------	----------------------------

## Building Description

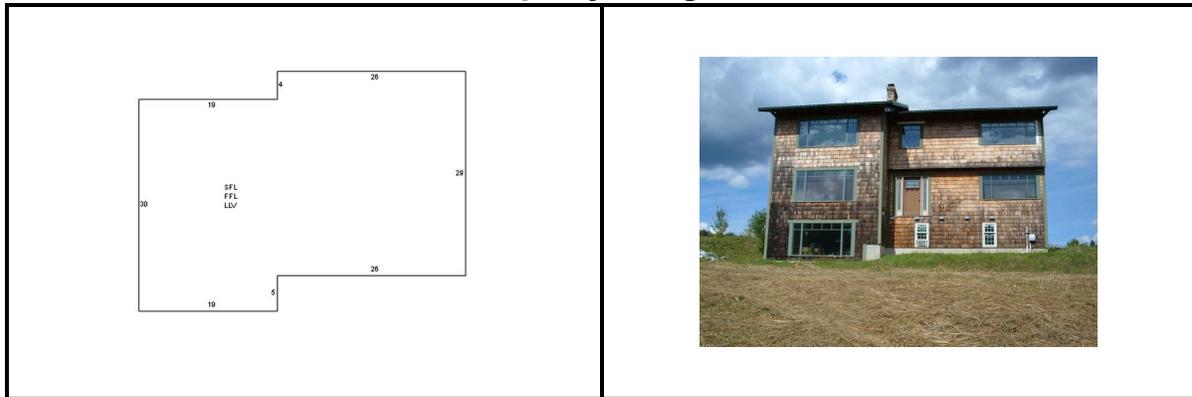
Building Style <b>CONTEMPORY</b> # of Living Units <b>1</b> Year Built <b>2012</b> Building Grade <b>GOOD (+)</b> Building Condition <b>Good</b> Finished Area (SF) <b>2648</b> Number Rooms <b>6</b> # of 3/4 Baths <b>3</b>	Foundation Type <b>CONCRETE</b> Frame Type <b>WOOD</b> Roof Structure <b>GABLE</b> Roof Cover <b>METAL</b> Siding <b>WOOD SHING</b> Interior Walls <b>DRYWALL</b> # of Bedrooms <b>2</b> # of 1/2 Baths <b>1</b>	Flooring Type <b>CERAMIC TL</b> Basement Floor <b>CONCRETE</b> Heating Type <b>RADIANT HW</b> Heating Fuel <b>WOOD</b> Air Conditioning <b>0%</b> # of Bsmt Garages <b>0</b> # of Full Baths <b>0</b> # of Other Fixtures <b>0</b>
--	---	---

## Legal Description

## Narrative Description of Property

This property contains 72.000 acres of land mainly classified as 017 with a(n) CONTEMPORY style building, built about 2012 , having WOOD SHING exterior and METAL roof cover, with 1 unit(s), 6 room(s), 2 bedroom(s), 0 bath(s), 1 half bath(s).

## Property Images



Disclaimer: This information is believed to be correct but is subject to change and is not warranted.

# Attachment A4 (cont.)

## Clean Energy Extension

209 Agricultural Engineering Building • University of Massachusetts • 250 Natural Resources Way • Amherst, MA 01003 • p: 413.545.8510

June 21, 2024

**Reference:** Comments on ASTGU Pre-determination Application  
190 Ridge Road, Worthington, MA

Dear Gabrielle Hayes, Timothy Sena, Mark Sylvia, and Michael Zhe,

The attached document contains comments and suggestions regarding your draft Pre-Determination Form for an Agricultural STGU to be developed at the above referenced property. Under the Solar Massachusetts Renewable Target (SMART) program, all applicants for Agricultural STGU projects are required to collaborate with the UMass Center for Agriculture, Food, and the Environment in development of an agricultural plan for farming activities to take place under and around the proposed solar PV array. In this capacity, UMass clean energy and agricultural extension staff are reviewing draft Agricultural STGU Pre-Determination Forms to provide farmers and developers with recommendations to improve their applications. We share these comments with the Massachusetts Department of Agricultural Resources and Department of Energy Resources, but UMass Extension provides this feedback as part of its outreach and education services, and serves no decision-making role in the success or failure of a pre-determination request.

If you have additional questions, or would like to schedule a site visit to consult with agricultural and energy extension staff regarding your agricultural plan and project-specific operational considerations, please contact Mary Kraus at [mlkraus@umass.edu](mailto:mlkraus@umass.edu) or 413-545-8514. You can also find additional information about the SMART program, and dual-use Agricultural STGU projects in particular, on the Clean Energy Extension website: <http://ag.umass.edu/clean-energy/solarag>.

You are not required to revise your Pre-Determination Form before submitting the final version to the Massachusetts Department of Energy Resources (MA DOER). However, if you would like us to review an updated draft Pre-Determination Form prior to submission to MA DOER, please include a document that specifically identifies which comments have been addressed, and indicate where changes have been made in the revised Form.

Thank you,

Dwayne Breger  
Director, Clean Energy Extension

## Comments regarding Pre-Determination Application for an ASTGU at 190 Ridge Road, Worthington, MA

### B. Site Information

**Attachment A4 – 61A current and previous enrollment documentation:** Previous 61A status is documented. However, in terms of current status, there appears to be only a completed application in which the disposition is not yet checked off as *granted*. Please include documentation of current 61A status.

We have additionally included the property card from Patriot Properties and a screenshot of “Previous Assessment” data that shows the various land use codes for the parcel, including 50 acres coded 713 – HAY/GRN/TILL. You can verify this information by going to <https://worthington.patriotproperties.com/Summary.asp?AccountNumber=330> and looking at the “Previous Assessment” tab. Per the Massachusetts Property Type Classification Codes prepared by the Bureau of Local Assessment and revised April 2019, use codes beginning with 7 refer to Agricultural/Horticultural land enrolled in Chapter 61A.

### D. Solar Array Design

**Acreage of Farmland Over Which Array Installed:** Application notes: “~20 fenced acres, 4.48 acres covered by solar panels”. The 4.48-acre value doesn’t appear to correlate with the number and size of panels and/or design submitted; please clarify.

This has been recalculated and adjusted to show 4.28 acres covered by solar panels.

**Nameplate Capacity DC:** This is noted as 3.84 MW. However, the application also notes 5250 panels at 580 watts each, which would result in 3.05 MW. Please clarify.

This has been corrected in the application. The current design is rated at 3.67 MWDC using 6,336 panels. Please note that this is unlikely to be the exact wattage of the array, since it must go through multiple design iterations and may need to incorporate feedback from the town during the permitting process.

**Attachment B1 – Site Plan:** This application requires a clear depiction of the layout of all array modules, including dimensions of the overall array, each module, and all applicable spacing. From your application, we are not able to identify the following item: distance between edge of array and fence; please add this to the site plan.

There will be a 40’ setback between the fence and the array in areas where the array rows end perpendicular to the fence. This has been added to the site plan. We are unable to provide an estimate of the length of individual rows this early in the design process. Row lengths are determined by the number of strings per row and the length of each string, which will be based on the electrical parameters of the modules and inverters selected for this site. Based on similar system designs and the shape of this field, we estimate that rows will be between 104 and 820

feet long. Rows that are more than ~450 feet long typically require at least one break in the row. This break will be wide enough to enable easy access by tractors.

## **G. Crop Narrative**

**Soil Amendment Plan:** (Note that the fertilizer company is no longer called Crop Production Services but is now called Nutrients.) The application notes that Nutrients applies 250-285 pounds of a nitrogen-phosphorous-potassium fertilizer per acre. The fertilizer analysis was not mentioned in the proposal, so it is not clear why all nutrients, especially Ca, Mg, and K, are deficient. Also, the soil's pH is very acidic and the soil lab recommended applying 8,000 pounds of lime per acre, but there is no mention of lime in the soil amendment plan. Please clarify.

The name of the fertilizer company has been corrected. The farmer applies lime to these fields periodically, but not every year. It is common during the construction process for lime and fertilizer to be applied to encourage enough grass growth that the project's Stormwater Permit can be successfully closed out. Lime will be applied during construction, after which the farmer will follow their typical schedule of fertilizing and liming.

## **Crop Table**

**Expected Productivity:** Given the soil's acidity, the expected harvested hay yield is unrealistic. The proposal uses the average productivity reported by the USDA, but the yield estimate is for a normal field and not one with acidic soil with several nutrient deficiencies. Please clarify.

The yield estimates previously provided align with the farmer's historical yield data. However, to avoid overpromising, yield estimates have been adjusted downward to account for changes due to shading and reduced efficiency of managing the hay crop within the array.

## **I. Compliance with 225 CMR 20.00 and Guideline Regarding the Definition of ASTGU**

**6-b-Other System Design Information – Total gross acres of open farmland to be integrated with the project:** This is noted as "Roughly 9 acres". Elsewhere in the application, acreage is noted as "~20 fenced acres, 4.48 acres covered by solar panels". Please clarify.

This mistake has been corrected.

# Attachment B-1

**BLUEWAVE**

## PHOTOVOLTAIC SYSTEM

MA Worthington Ridege Rd

**BLUEWAVE**

BLUEWAVE  
116 Handington Ave  
Suite 801  
Dorset, MA 02116  
(617) 258-2122  
bluewave.energy



**4** SITE LOCATION: Worthington Ridge Rd



**3** SINGLE-AXIS TRACKER PV ARRAY

MODULES	6,336 (580 W)
ROW SPACING	18'
TRUE AZIMUTH	180°
SYSTEM SIZE DC	3.67
SYSTEM SIZE AC	1.99
ANNUAL ENERGY OUTPUT	9,417,140 kWh

**1** PROPOSED GROUND MOUNT PV ARRAY 3.84 MWDC: 1.99 MWAC

**2** TECHNICAL ANALYSIS

REV	DN	DATE	COMMENTS

PROJECT: MA WORTHINGTON RIDGE RD  
190 RIDGE RD  
WORTHINGTON, MA, 01098

SHEET TITLE: PRELIMINARY SITE PLAN

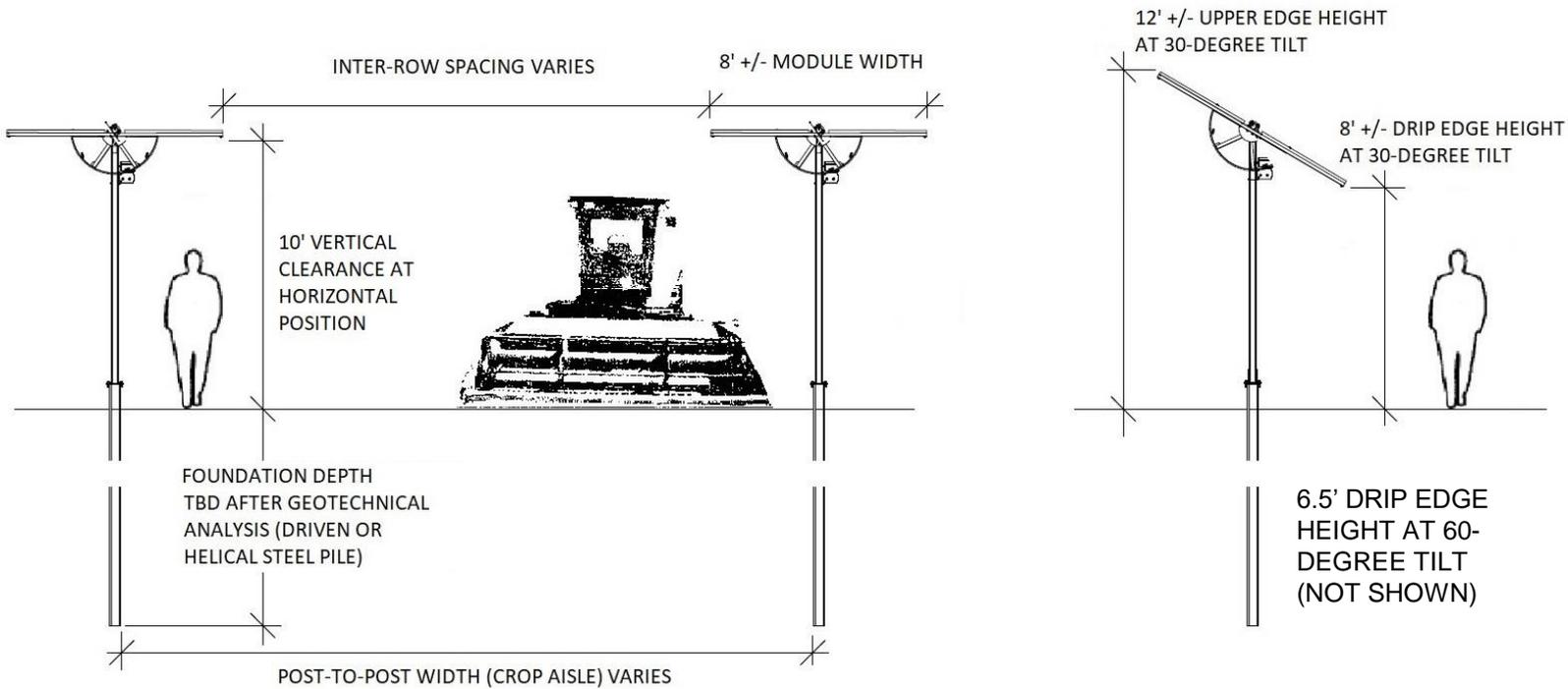
DRAWN BY: MG  
PRINT DATE: 07/03/24  
SHEET NAME: PV\_P1

18' interrow spacing  
Maximum 0.5" individual panel spacing  
6336 modules  
Module size: 7.925' x 3.725'  
Total Array area: ~20 acres  
Unable to provide individual row lengths  
at this stage in the design process.

# Attachment B-2

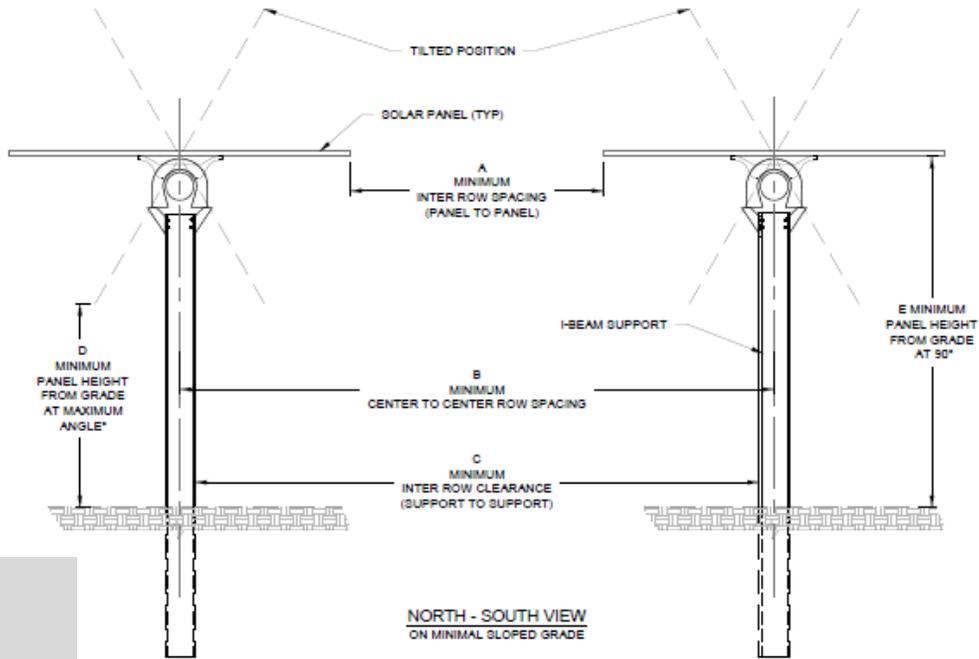
## SINGLE-AXIS TRACKER AGRIVOLTAIC SYSTEM

TILT RANGE AND ROW SPACING MAY VARY TO ACCOMODATE AGRICULTURAL REQUIREMENTS



# Attachment B-3

Foundation type will be finalized following completion of geotechnical studies. It will align with one of the two drawings below.



## SPACING

A: 18'

B: 26'

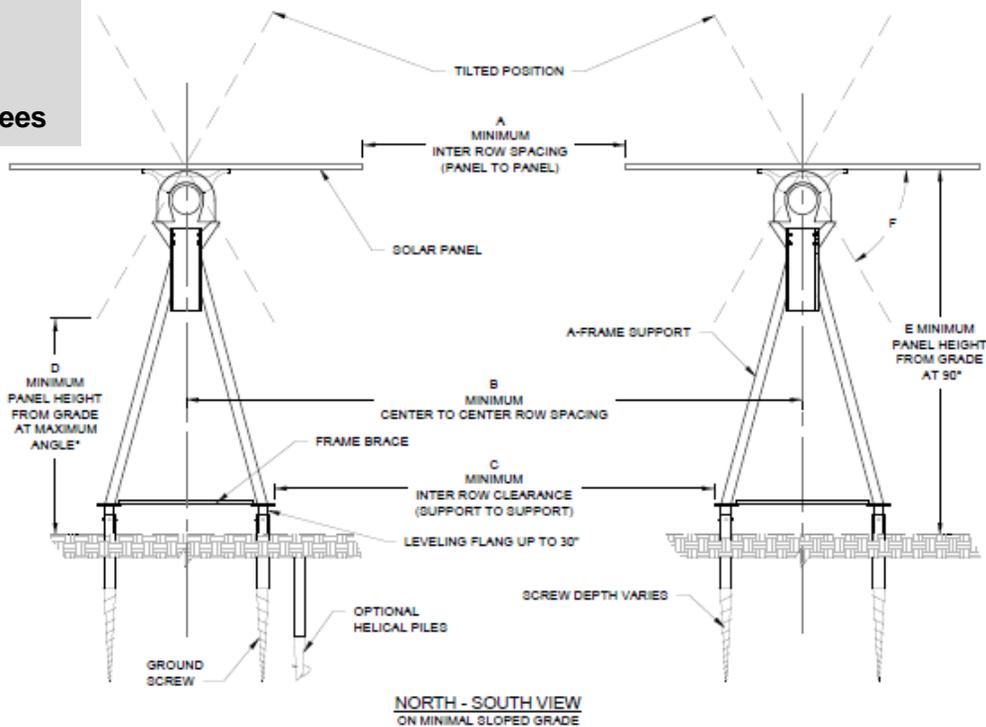
C (I-Beam): 25'

C (A-Frame): 20'

D: 6.5'

E: 10'

Maximum tilt  
angle: 60 degrees



powered by

**Q.ANTUM DUO Z**

## Attachment B-4

# Q.PEAK DUO XL-G11.3 / BFG 570-585

BIFACIAL DOUBLE GLASS MODULE  
WITH EXCELLENT RELIABILITY  
AND ADDITIONAL YIELD



### BIFACIAL ENERGY YIELD GAIN OF UP TO 20%

Bifacial Q.ANTUM solar cells make efficient use of light shining on the module rear-side for radically improved LCOE.



### LOW ELECTRICITY GENERATION COSTS

Q.ANTUM DUO Z combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology for higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 21.5%.



### INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.



### ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID and Anti PID Technology<sup>1</sup>, Hot-Spot Protect and Traceable Quality Tra.Q™.



### FRAME FOR VERSATILE MOUNTING OPTIONS

High-tech aluminum alloy frame protects from damage, enables use of a wide range of mounting structures and is certified regarding IEC for high snow (5400 Pa) and wind loads (2400 Pa).



### A RELIABLE INVESTMENT

Double glass module design enables extended lifetime with 12-year product warranty and improved 30-year performance warranty<sup>2</sup>.



<sup>1</sup> APT test conditions according to IEC / TS 62804-1:2015 method B (-1500 V, 168h) including post treatment according to IEC 61215-1-1 Ed. 2.0 (CD)

<sup>2</sup> See data sheet on rear for further information.

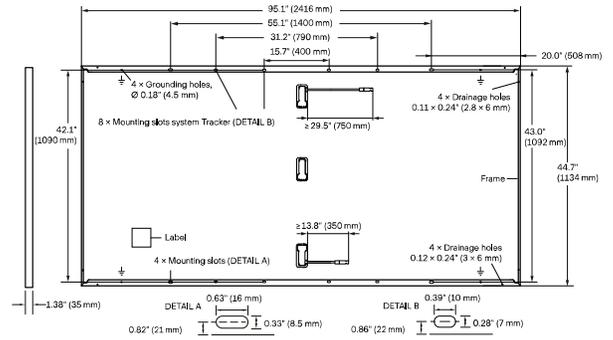
### THE IDEAL SOLUTION FOR:



Ground-mounted  
solar power plants

## MECHANICAL SPECIFICATION

Format	95.1 in × 44.7 in × 1.38 in (including frame) (2416 mm × 1134 mm × 35 mm)
Weight	75.8 lbs (34.4 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 × 26 monocrystalline Q.ANTUM solar half cells
Junction Box	2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in (53-101 mm × 32-60 mm × 15-18 mm), IP67, with bypass diodes
Cable	4 mm <sup>2</sup> Solar cable; (+) ≥ 29.5 in (750 mm), (-) ≥ 13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4, IP68



## ELECTRICAL CHARACTERISTICS

POWER CLASS	570	575	580	585
-------------	-----	-----	-----	-----

MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC <sup>1</sup> AND BSTC <sup>1</sup> (POWER TOLERANCE +5 W / -0 W)		BSTC*		BSTC*		BSTC*		BSTC*		
Minimum	Power at MPP <sup>1</sup>	$P_{MPP}$ [W]	570	623.5	575	629.0	580	634.4	585	639.9
	Short Circuit Current <sup>1</sup>	$I_{SC}$ [A]	13.50	14.77	13.52	14.80	13.55	14.83	13.57	14.86
	Open Circuit Voltage <sup>1</sup>	$V_{OC}$ [V]	53.50	53.69	53.53	53.72	53.56	53.75	53.59	53.78
	Current at MPP	$I_{MPP}$ [A]	12.83	14.03	12.87	14.09	12.92	14.14	12.97	14.19
	Voltage at MPP	$V_{MPP}$ [V]	44.44	44.43	44.66	44.65	44.88	44.87	45.10	45.09
	Efficiency <sup>1</sup>	$\eta$ [%]	≥ 20.8	≥ 22.8	≥ 21.0	≥ 23.0	≥ 21.2	≥ 23.2	≥ 21.4	≥ 23.4

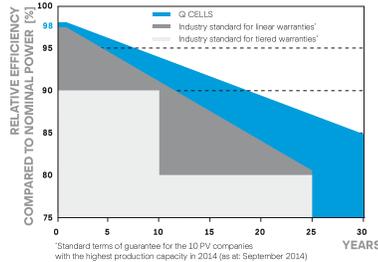
Bifaciality of  $P_{MPP}$  and  $I_{SC}$  70% ± 5% • Bifaciality given for rear side irradiation on top of STC (front side) • According to IEC 60904-1-2

<sup>1</sup> Measurement tolerances  $P_{MPP}$  ± 3%;  $I_{SC}$ ,  $V_{OC}$  ± 5% at STC: 1000 W/m<sup>2</sup>; \*at BSTC: 1000 W/m<sup>2</sup> +  $\phi$  × 135 W/m<sup>2</sup>,  $\phi$  = 70% ± 5%, 25 ± 2 °C, AM 1.5 according to IEC 60904-3

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT <sup>2</sup>		570		575		580		585	
Minimum	Power at MPP	$P_{MPP}$ [W]	429.1	432.9	436.6	440.4			
	Short Circuit Current	$I_{SC}$ [A]	10.87	10.89	10.91	10.93			
	Open Circuit Voltage	$V_{OC}$ [V]	50.60	50.63	50.66	50.68			
	Current at MPP	$I_{MPP}$ [A]	10.09	10.14	10.18	10.22			
	Voltage at MPP	$V_{MPP}$ [V]	42.51	42.71	42.89	43.08			

<sup>2</sup> 800 W/m<sup>2</sup>, NMOT, spectrum AM 1.5

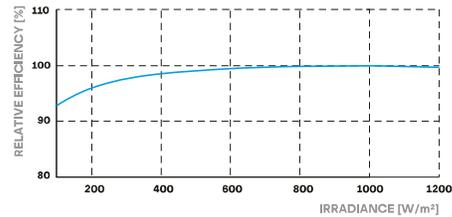
### Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.45% degradation per year. At least 94% of nominal power up to 10 years. At least 85% of nominal power up to 30 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organisation of your respective country.

### PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m<sup>2</sup>)

TEMPERATURE COEFFICIENTS		Temperature Coefficient of $I_{SC}$		Temperature Coefficient of $V_{OC}$	
Temperature Coefficient of $I_{SC}$	$\alpha$ [%/K]	+0.04	Temperature Coefficient of $V_{OC}$	$\beta$ [%/K]	-0.27
Temperature Coefficient of $P_{MPP}$	$\gamma$ [%/K]	-0.34	Nominal Module Operating Temperature	NMOT [°F]	108 ± 5.4 (42 ± 3 °C)

## PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage $V_{SYS}$	[V]	1500	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	25	Fire Rating based on ANSI / UL 61730	TYPE 29 <sup>4</sup>
Max. Design Load, Push / Pull <sup>3</sup>	[lbs/ft <sup>2</sup> ]	75 (3600 Pa) / 33 (1600 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push / Pull <sup>3</sup>	[lbs/ft <sup>2</sup> ]	113 (5400 Pa) / 50 (2400 Pa)		

<sup>3</sup> See Installation Manual

<sup>4</sup> New Type is similar to Type 3 but with metallic frame

## QUALIFICATIONS AND CERTIFICATES

UL 61730, CE-compliant,  
IEC 61215:2016,  
IEC 61730:2016,  
U.S. Patent No. 9,893,215  
(solar cells)



**Note:** Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

**Hanwha Q CELLS America Inc.**

400 Spectrum Center Drive, Suite 1400, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

# Attachment C-1

## DUAL-USE SHADING ANALYSIS TOOL



### DASHBOARD

### TRACKING INPUT

### DUAL USE INFORMATION

#### PANEL INFORMATION

Panel Length (ft)  ⓘ

Panel Width (ft)  ⓘ

Panel Wattage (W)  ⓘ

#### TABLE DIMENSIONS

Panel Orientation  ⓘ

Panel Orientation  ⓘ

Panels Wide (#)  ⓘ

Panels Tall (#)  ⓘ

Space B/t Panels (hor.) (ft)  ⓘ

Space B/t Panels (vert.) (ft)  ⓘ

Tilt (degrees)  ⓘ

Azimuth (degrees)  ⓘ

Top Height (ft)  ⓘ

Center Height (ft)  ⓘ

Bottom Height (ft)  ⓘ

#### OTHER DESIGN PARAMETERS

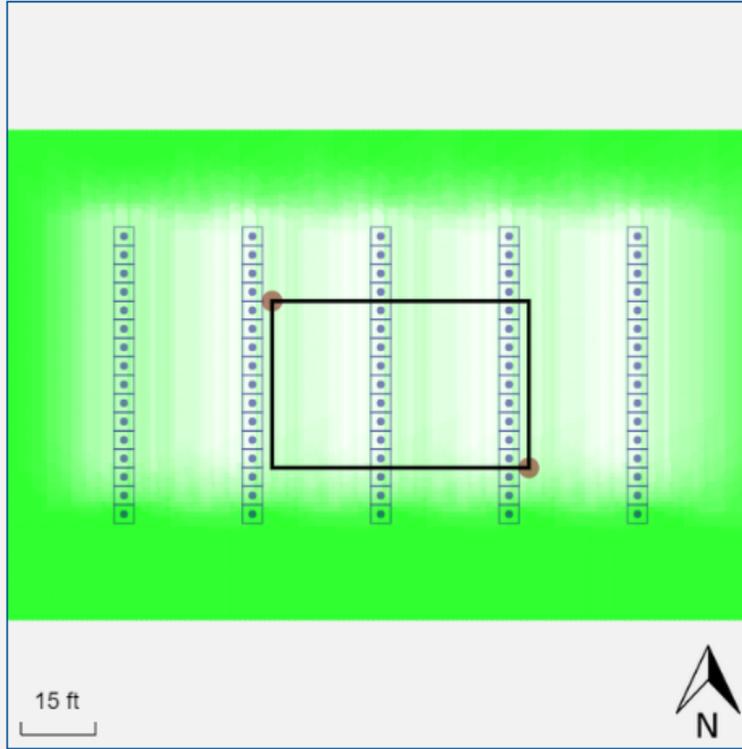
Tables Wide (#)  ⓘ

Space Between Tables (ft)  ⓘ

Rows (#)  ⓘ

Inter-Row Spacing (ft)  ⓘ

Tracking  ⓘ



Done!
  Array
  Study Area
  Shade Map
  Zoom

#### SUN ANGLE

Location  ⓘ

#### STUDY PERIOD

Check All
  Clear All
  SMART Window

JAN
  FEB
  MAR
  APR

MAY
  JUN
  JUL
  AUG

SEP
  OCT
  NOV
  DEC

#### STUDY AREA METRICS

Study Area (SF)  ⓘ

Capacity in Study Area (kWdc)  ⓘ

#### PERCENT SHADE

#### PERCENT SUN

Maximum Shade	49 %
Minimum Shade	31 %
Average Shade	42 %

<input checked="" type="checkbox"/> 0% – 10% Shade	<input type="checkbox"/>	0 SF
<input checked="" type="checkbox"/> 10% – 20% Shade	<input type="checkbox"/>	0 SF
<input checked="" type="checkbox"/> 20% – 30% Shade	<input type="checkbox"/>	0 SF
<input checked="" type="checkbox"/> 30% – 40% Shade	<input type="checkbox"/>	678 SF
<input checked="" type="checkbox"/> 40% – 50% Shade	<input type="checkbox"/>	1090 SF
<input checked="" type="checkbox"/> 50% – 60% Shade	<input type="checkbox"/>	0 SF
<input checked="" type="checkbox"/> 60% – 70% Shade	<input type="checkbox"/>	0 SF
<input checked="" type="checkbox"/> 70% – 80% Shade	<input type="checkbox"/>	0 SF
<input checked="" type="checkbox"/> 80% – 90% Shade	<input type="checkbox"/>	0 SF
<input checked="" type="checkbox"/> 90% – 100% Shade	<input type="checkbox"/>	0 SF

[Legal Disclaimer](#)

Got feedback? Report it to [DOER.SMART@mass.gov](mailto:DOER.SMART@mass.gov)

0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40	0.43	0.43	0.43	0.43	0.46	0.46	0.46	0.49	0.47	0.46	0.49	0.47	0.41	0.47	0.44	0.35	0.40	0.40	0.37	0.38	0.41	0.37	0.38	0.37	0.40
------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------

# Attachment C-2

## Crop Shading Suitability

Species	Spring-Early Summer		Summer-Fall Season	
	50% Shade	80% Shade	50% Shade	80% Shade
	<i>Introduced cool-season grasses</i>			
Kentucky bluegrass	51%	30%	99%	65%
Orchardgrass 'Benchmark'	71%	58%	85%	46%
Orchardgrass 'Justus'	99%	74%	95%	81%
Ryegrass 'Manhattan II'	47%	42%	87%	68%
Smooth bromegrass	58%	48%	124%	99%
Tall Fescue 'KY31'	70%	67%	122%	60%
Tall Fescue 'Martin'	68%	50%	95%	49%
Timothy	66%	47%	88%	54%
<i>Introduced warm-season grasses</i>				
Bermudagrass			66%	15%
<i>Native warm-season grasses</i>				
Big bluestem	49%	25%	74%	39%
Buffalograss			46%	20%
Indiangrass	42%	23%	73%	40%
Switchgrass	51%	19%	72%	33%
<i>Introduced cool-season legumes</i>				
Alfalfa 'Cody'	62%	28%	86%	60%
Alfalfa 'Vernal'	64%	25%	76%	45%
Alsike clover	51%	12%	57%	32%
Berseem clover	65%	35%	43%	18%
Birdfoot trefoil hybrid Rhizomatous	27%	8%	65%	35%
Birdsfoot Trefoil 'Nocem'	39%	23%	65%	30%
White clover	48%	44%	81%	59%
Red clover	64%	28%	61%	30%
<i>Introduced warm-season legumes</i>				
Korean Lespedeza			70%	32%
Korean Lespedeza 'Summit'	49%	18%	37%	21%
Striate Lespedeza 'Kobe'	45%	44%	83%	51%
Serecia Lespedeza			68%	44%
<i>Native warm-season legumes</i>				
Desmodium canescens	84%	77%	132%	130%
Desmodium paniculatum	62%	61%	125%	110%

From C. H. Lin, et al, "Shade effects on forage crops with potential in temperate agroforestry practices," *Agroforestry Systems*, 1999

**BLUEWAVE**



## Soil Test Report

### Attachment D-2

### Sample Information:

Sample ID: South Field

### Prepared For:

Gabrielle Hayes  
BlueWave  
116 Huntington Ave, Suite 601  
Boston, MA 02116

Order Number: 73981

Lab Number: S240504-119

Area Sampled: 10 acres

Received: 4/29/2024

Reported: 5/9/2024

ghayes@bluewave.energy

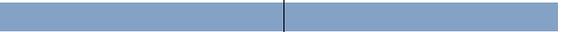
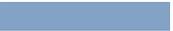
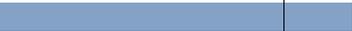
978-979-9517

## Results

<i>Analysis</i>	<i>Value Found</i>	<i>Optimum Range</i>	<i>Analysis</i>	<i>Value Found</i>	<i>Optimum Range</i>
Soil pH (1:1, H <sub>2</sub> O)	5.3		Cation Exch. Capacity, meq/100g	11.9	
Modified Morgan extractable, ppm			Exch. Acidity, meq/100g	9.9	
<i>Macronutrients</i>			<b>Base Saturation, %</b>		
Phosphorus (P)	3.9	4-14	Calcium Base Saturation	13	50-80
Potassium (K)	62	100-160	Magnesium Base Saturation	2	10-30
Calcium (Ca)	309	1000-1500	Potassium Base Saturation	1	2.0-7.0
Magnesium (Mg)	31	50-120	<b>Scoop Density, g/cc</b>	0.96	
Sulfur (S)	9.2	>10	<b>Optional tests</b>		
<i>Micronutrients *</i>			Soil Organic Matter (LOI), %	6.3	
Boron (B)	0.1	0.1-0.5			
Manganese (Mn)	13.8	1.1-6.3			
Zinc (Zn)	0.8	1.0-7.6			
Copper (Cu)	2.0	0.3-0.6			
Iron (Fe)	32.0	2.7-9.4			
Aluminum (Al)	220	<75			
Lead (Pb)	0.8	<22			

\* Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.

### Soil Test Interpretation

Nutrient	Very Low	Low	Optimum	Above Optimum
<b>Phosphorus (P):</b>				
<b>Potassium (K):</b>				
<b>Calcium (Ca):</b>				
<b>Magnesium (Mg):</b>				



**Soil and Plant Nutrient Testing Laboratory**

203 Paige Laboratory  
 161 Holdsworth Way  
 University of Massachusetts  
 Amherst, MA 01003  
 Phone: (413) 545-2311  
 e-mail: soiltest@umass.edu  
 website: soiltest.umass.edu

***Recommendations for Timothy & mixtures-Maintenance***

**Yield Goal: 3.5 tons / Acre**

<b>Limestone (Target pH of 6.5)</b>	<b>Nitrogen, N</b>	<b>Phosphorus, P2O5</b>	<b>Potassium, K2O</b>
<b>8000</b>	<b>175</b>	<b>40</b>	<b>140</b>

**Comments:**

- Your magnesium level is below optimum. Using limestone containing at least 10% calcium carbonate equivalence from magnesium sources is recommended.
- Apply half the recommended K2O after the first cut, and the remainder after the second or third cut.
- The lead level in this soil is less than 22 ppm, which falls below the listed optimum level. However, many variables affect this result, and safety thresholds vary by location and soil use. There is still a potential risk of lead exposure for soils used for growing food or as play areas for children. Our Total Sorbed Metals test provides an accurate measurement of soil lead. For more information about lead levels in soil, see the fact sheet entitled "Soil Lead: Testing, Interpretation, & Recommendations," listed under General References at the end of this report.

**General References:**

Interpreting Your Soil Test Results	<a href="http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results">http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results</a>
Soil Lead: Testing, Interpretation & Recommendations	<a href="http://ag.umass.edu/soil-plant-nutrient-testing-laboratory/fact-sheets/soil-lead-fact-sheet">http://ag.umass.edu/soil-plant-nutrient-testing-laboratory/fact-sheets/soil-lead-fact-sheet</a>
For current information and order forms, please visit	<a href="http://soiltest.umass.edu/">http://soiltest.umass.edu/</a>
UMass Extension Nutrient Management	<a href="http://ag.umass.edu/agriculture-resources/nutrient-management">http://ag.umass.edu/agriculture-resources/nutrient-management</a>

## Soil Test Report

### Prepared For:

Gabrielle Hayes  
BlueWave  
116 Huntington Ave, Suite 601  
Boston, MA 02116

ghayes@bluewave.energy  
978-979-9517

## Attachment D-2

### Sample Information:

Sample ID: North Field

Order Number: 73981

Lab Number: S240504-118

Area Sampled: 15 acres

Received: 4/29/2024

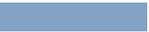
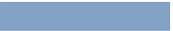
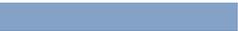
Reported: 5/9/2024

## Results

<i>Analysis</i>	<i>Value Found</i>	<i>Optimum Range</i>	<i>Analysis</i>	<i>Value Found</i>	<i>Optimum Range</i>
Soil pH (1:1, H <sub>2</sub> O)	5.4		Cation Exch. Capacity, meq/100g	11.4	
Modified Morgan extractable, ppm			Exch. Acidity, meq/100g	9.6	
<i>Macronutrients</i>			<b>Base Saturation, %</b>		
Phosphorus (P)	1.1	4-14	Calcium Base Saturation	13	50-80
Potassium (K)	56	100-160	Magnesium Base Saturation	1	10-30
Calcium (Ca)	308	1000-1500	Potassium Base Saturation	1	2.0-7.0
Magnesium (Mg)	21	50-120	<b>Scoop Density, g/cc</b>	1.04	
Sulfur (S)	9.1	>10	<b>Optional tests</b>		
<i>Micronutrients *</i>			Soil Organic Matter (LOI), %	5.6	
Boron (B)	0.1	0.1-0.5			
Manganese (Mn)	10.0	1.1-6.3			
Zinc (Zn)	0.8	1.0-7.6			
Copper (Cu)	2.8	0.3-0.6			
Iron (Fe)	28.3	2.7-9.4			
Aluminum (Al)	221	<75			
Lead (Pb)	1.0	<22			

\* Micronutrient deficiencies rarely occur in New England soils; therefore, an Optimum Range has never been defined. Values provided represent the normal range found in soils and are for reference only.

### Soil Test Interpretation

Nutrient	Very Low	Low	Optimum	Above Optimum
Phosphorus (P):				
Potassium (K):				
Calcium (Ca):				
Magnesium (Mg):				



**Soil and Plant Nutrient Testing Laboratory**

203 Paige Laboratory  
 161 Holdsworth Way  
 University of Massachusetts  
 Amherst, MA 01003  
 Phone: (413) 545-2311  
 e-mail: soiltest@umass.edu  
 website: soiltest.umass.edu

***Recommendations for Timothy & mixtures-Maintenance***

**Yield Goal: 3.5 tons / Acre**

<b>Limestone (Target pH of 6.5)</b>	<b>Nitrogen, N</b>	<b>Phosphorus, P2O5</b>	<b>Potassium, K2O</b>
<b>7000</b>	<b>175</b>	<b>140</b>	<b>140</b>

**Comments:**

- Your magnesium level is below optimum. Using limestone containing at least 10% calcium carbonate equivalence from magnesium sources is recommended.
- Apply half the recommended K2O after the first cut, and the remainder after the second or third cut.
- The lead level in this soil is less than 22 ppm, which falls below the listed optimum level. However, many variables affect this result, and safety thresholds vary by location and soil use. There is still a potential risk of lead exposure for soils used for growing food or as play areas for children. Our Total Sorbed Metals test provides an accurate measurement of soil lead. For more information about lead levels in soil, see the fact sheet entitled "Soil Lead: Testing, Interpretation, & Recommendations," listed under General References at the end of this report.

**General References:**

Interpreting Your Soil Test Results	<a href="http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results">http://soiltest.umass.edu/fact-sheets/interpreting-your-soil-test-results</a>
Soil Lead: Testing, Interpretation & Recommendations	<a href="http://ag.umass.edu/soil-plant-nutrient-testing-laboratory/fact-sheets/soil-lead-fact-sheet">http://ag.umass.edu/soil-plant-nutrient-testing-laboratory/fact-sheets/soil-lead-fact-sheet</a>
For current information and order forms, please visit	<a href="http://soiltest.umass.edu/">http://soiltest.umass.edu/</a>
UMass Extension Nutrient Management	<a href="http://ag.umass.edu/agriculture-resources/nutrient-management">http://ag.umass.edu/agriculture-resources/nutrient-management</a>

# Attachment E-1

Attachments B-2 and B-3 include design drawings showing the mounting system type (single-axis tracking), panel tilt (assumed to be  $\leq 60^\circ$ ) and panel row spacing (18' inter-row, 26' center to center). Individual panels in this array will be separated by  $\leq 0.5''$ , thus individual panel spacing is not shown.

## **Appendix D: Specification Sheet for BESS Air Conditioning Unit**

**\*For illustrative purposes, subject to change**

## » Features & Applications



### Excellent Thermal Performance

- Lower air supply design, uniform air supply, fast cooling
- Support cooling, heating, dehumidification, air supply mode
- Configured with PTC heater, safe and reliable
- Professional dehumidification design, control relative humidity
- Fan speed regulation function for standard configuration, saving energy and reducing noise

### Intelligent Operation & Maintenance

- RS485 interface for remote control, support Modbus RTU protocol
- Support dry contact alarm and remote on/off switching
- Full front maintenance, easy and convenient
- Integrated design, saving on-site installation and commissioning costs
- Optional smoke detector, access control and water immersion alarm signal output

### Safety & Reliability

- Self start when power on, delay start, various alarm reports and protection functions available
- LCD display, with easy access to parameter and alarm status
- RoHS 2.0 compliant, support environmental friendly refrigerants
- Optional configured separate output for smoke detector, access control and water immersion alarms

### Applications

- Equipment Container
- BESS Container
- BESS Cabinet



## » Product Specification

Model	EC06HDNC1U	EC20HDNC1U	EC20HDNC1R	EC20HDNC1E	EC25HDNC1E
Power Supply (V, Hz)	230, 50/60	230, 50/60	230, 50/60	230, 50/60	230, 50/60
Cooling Capacity (kW)	0.6(L35/L35, 50Hz) 0.65(L35/L35, 60Hz)	2(L35/L35, 50Hz) 2.3(L35/L35, 60Hz)	2(L35/L35, 50Hz) 2.3(L35/L35, 60Hz)	2.1(L35/L35)	2.5(L35/L35)
Heating Capacity (kW)	0.5	1.05	1.05	0.8	0.8
Internal Airflow (m³/h)	180	650	650	650	700
Refrigerant	R134a	R134a	R513A	R513A	R513A
Certification	CB&UL	CE&UL	CE&UL	UL	UL
Weight (kg)	20.5	35	35	39	39
Dimension (mm, WxDxH) With Flange	352*170*583	483*200*783	483*200*783	483*257*783	483*257*783
Dimension (mm, WxDxH) Without Flange	320*170*550	446*200*746	446*200*746	446*257*746	446*257*746
IP Protection Level	IPX5 For Outdoor Side	IPX5 For Outdoor Side	IPX5 For Outdoor Side	IPX5 For Outdoor Side	IPX5 For Outdoor Side
Working Ambient Temperature Range(°C)	-40~+55	-40~+55	-40~+55	-40~+55	-40~+55
Mounting Method	Door Mounted	Door Mounted	Door Mounted	Door Mounted	Door Mounted

Model	MC05HDNC1U	MC06HDNC1A	MC15HDNC1B
Power Supply (V, Hz)	220, 50/60	220~240, 50/60	220, 50
Cooling Capacity (kW)	0.5(L35/L35, 50Hz) 0.55(L35/L35, 60Hz)	0.6(L35/L35)	1.5(L35/L35)
Heating Capacity (kW)	0.5	0.5	1
Internal Airflow (m³/h)	120	120	380
Refrigerant	R513A	R134a	R134a
Certification	CE&UL	CE	CE
Weight (kg)	21	17	32
Dimension (mm, WxDxH) With Flange	352*145*583	352*170*582	495*195*795
Dimension (mm, WxDxH) Without Flange	315*145*545	315*170*545	495*195*795
IP Protection Level	IPX5 For Outdoor Side	IPX5 For Outdoor Side	IPX5 For Outdoor Side
Working Ambient Temperature Range(°C)	-20~+55	-40~+55	-40~+55
Mounting Method	Door Mounted	Door Mounted	Door Mounted

\* Remark: environmentally friendly refrigerant available, please consult Envicool for details.