

earthlight EARTHLIGHT SOLAR \$

ENERGY SOLUTIONS

92 WEST ROAD ELLINGTON, CT 06029 P: (860) 871-9700 E: Info@earthlighttech.com

ontractor:

HOPPING BROOK 56 BOYNTON RD. HOLLISTON, MA 01746

323.38 kwstc, 240.00 kw AC AHJ: HOLLISTON, TOWN OF APN: 1360010000100560



STAMPED AND SIGNED FOR ELECTRICAL ONLY

REVIS	IONS		
DESCRIPTION	DATE	Ī	
50% DELIVERABLE	1/6/2020	t	
90% DELIVERABLE	1/17/2020		
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EQUIPMENT DATA SHEETS

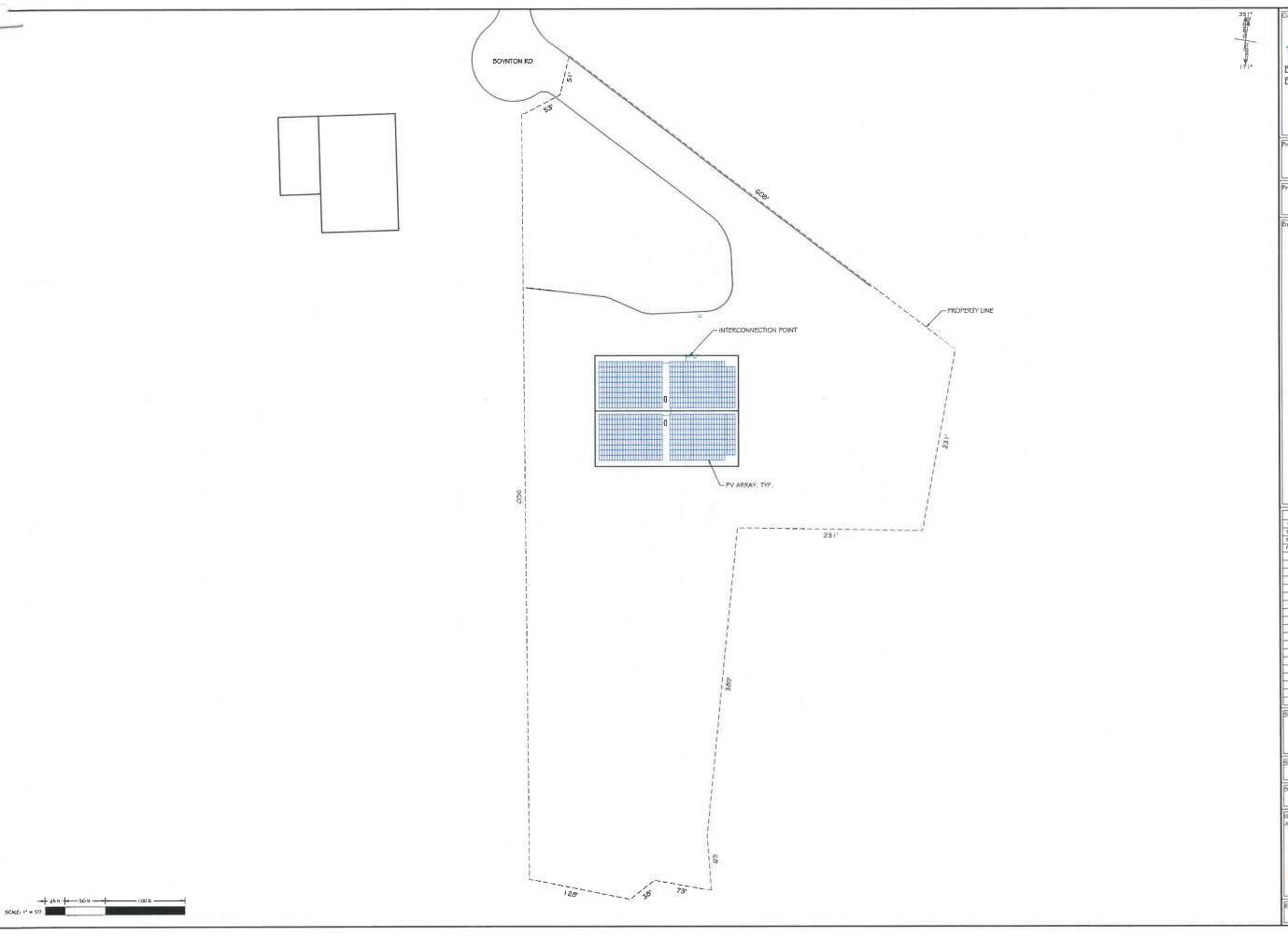
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DESIGN & DRAFTING BY:



RD



Contractor:



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PLOT PLAN

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Sheet Size: ARCH D - 36" x 24"

DESIGN & DRAFTING BY: JUAN CARLOS CHAVEZ



RD

CONTRACTOR NOTES

- 1.) THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE SYSTEM DESIGN ENGINEER OF ANY DISCREPANCIES BETWEEN EXISTING CONDITIONS AND DRAWINGS.
- 2.) THE CONTRACTOR SHALL SUPPLY AND INSTALL ALL WORK AS SHOWN IN THE CONSTRUCTION DOCUMENTS UNLESS OTHERWISE NOTED, ALL WORK SHALL BE PERFORMED IN AN ORDERLY, WORKMAN-LIKE AND SAFE MANNER BY WORKERS SKILLED AND EXPERIENCED IN THEIR TRADES.
- 3.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL INSPECTIONS TO BE WITNESSED BY THE AHJ AND/OR THE OWNER. THE CONTRACTOR SHALL WORK WITH THE OWNER'S INSPECTION AGENCY TO PLAN THE INSPECTIONS, AND NOTIFY ALL PARTIES INVOLVED SUFFICIENTLY IN ADVANCE TO ALLOW THE INSPECTIONS TO TAKE PLACE IN A TIMELY MANNER AND NOT DELAY THE PROGRESS OF THE WORK. THE OWNER AND SYSTEM DESIGN ENGINEER WILL NOT BE RESPONSIBLE FOR SCHEDULING, ARRANGING OR COORDINATING THE INSPECTIONS.
- 4.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING THE AREAS WHERE WORK IS TAKING PLACE, AS WELL AS ANY ADJOINING AREAS WHICH MAY BE AFFECTED BY THE WORK, TO PREVENT SUBJECTING THE OCCUPANTS, STRUCTURES. VEHICLES, EQUIPMENT. OR ANY OTHER PARTS OR CONTENTS OF THE SITE TO HAZARD OR DAMAGE.
- 5.) CONTRACTOR SHALL FURNISH ALL NECESSARY BOXES, OUTLETS, SUPPORTS, CONDUITS, FITTINGS, AND ACCESSORIES TO FULFILL APPLICABLE CODES, REGULATIONS, BUILDING STANDARDS, AND THE BEST PRACTICE OF THE TRADE FOR THE INSTALLATION OF ELECTRICAL WORK.
- G.). THE CONTRACTOR SHALL, AT ALL TIMES DURING THE WORK, MAINTAIN ACCESSIBILITY FROM THE STREET TO ALL FIRE HYDRANTS, POWER OR LIGHT POLES. AND SIMILAR UTILITY AND PUBLIC SERVICE ITEMS WITHIN OR ADJACENT TO THE CONSTRUCTION SITE.
- 7.) WORK SHALL NOT RESTRICT CLEAR AND UNOBSTRUCTED ACCESS TO ANY WATER OR POWER DISTRIBUITION FACILITIES (POWER POLES, PULLBOXES, TRANSFORMERS, VAULTS, PUMPS, VALVES, METERS, APPURTENANCES, ETC.) OR TO THE LOCATION OF THE HOOKUP.
- 8.) THE OWNERS AND THE AHJ SHALL BE NOTIFIED IN WRITING IN ADVANCE OF ANY REQUIRED CONSTRUCTION OPERATION THAT WILL INVOLVE INTERRUPTION OF THE HEATING, WATER, FIRE PROTECTION SYSTEMS. TELEPHONE, GAS OR ELECTRICAL SERVICES TO THE OTHER BUILDINGS AND AREAS OF THE SITE THE CONTRACTOR SHALL COORDINATE ANY REQUIRED SHUTDOWN OF THE UTILITIES WITH THE OWNERS, THE AHJ, AND THE UTILITY COMPANY.
- 9.) UPON REVIEW OF ELECTRICAL DRAWINGS, THE ELECTRICAL CONTRACTOR SHALL INFORM THE SYSTEM DESIGN ENGINEER OF ANY DISCREPANCIES OR REQUEST CLARIFICATION, IF NECESSARY, CONCERNING THE INTENT OF THE PLANS AND SPECIFICATIONS TO PROVIDE A COMPLETE ELECTRICAL INSTALLATION.
- 10.) THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS WHOSE WORK MIGHT AFFECT THIS INSTALLATION. CONTRACTORS SHALL ARRANGE ALL PARTS OF THIS WORK AND EQUIPMENT IN PROPER RELATION TO THE WORK AND EQUIPMENT OF OTHERS AND WITH BUILDING CONSTRUCTION AND ARCHITECTURAL FINISH SO THAT IT WILL HARMONIZE IN SERVICE AND APPEARANCE.
- 11.) THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE OWNER'S INSPECTION AGENCY TO ARRANGE FOR INSPECTIONS RELATED TO ALL SPECIAL INSPECTIONS IN A TIMELY MANNER. AND SHALL BE PRESENT AS REQUIRED AT THE INSPECTIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT THE APPROPRIATE SUBCONTRACTORS ARE PRESENT DURING TESTS AND INSPECTIONS OF THE SYSTEMS FOR WHICH THE SUBCONTRACTORS ARE RESPONSIBLE.

PHOTOVOLTAIC NOTES:

- 1.) ALL ASPECTS OF WORK RELATED TO THE SOLAR PHOTOVOLTAIC (PV) SYSTEM SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL CODES, UTILITY REQUIREMENTS, AND THE NEC, ESPECIALLY ARTICLE 690 AND ARTICLE 705.
- 2.) SOLAR PV MODULE FRAMES SHALL BE BONDED TO RACKING RAIL OR BARE COPPER E.G.C. PER THE MODULE MANUFACTURER'S LISTED INSTRUCTION SHEET.
- 3.) SOLAR PV SYSTEMS SHALL BE GROUNDED IN ACCORDANCE WITH NEC 690 PART V: GROUNDING.
- 4.) COMBINER BOXES, FUSING, WIRE SIZES, QUANTITIES AND CONDUIT SIZES BETWEEN SOLAR ARRAYS AND INVERTERS TO BE VERIFIED BY CONTRACTOR WITH SOLAR MODULE AND INVERTER MANUFACTURERS
- 5.) ALL PV SOURCE CIRCUIT CONDUCTORS AND CONNECTORS SHALL BE SUPPORTED AND SECURED WITHOUT EXCESSIVE STRESS, NO WIRING SHALL BE PERMITTED TO TOUCH THE ROOF SURFACE.
- 6.) PV SOURCE CIRCUIT CONDUCTORS EXPOSED BETWEEN ARRAYS SHALL BE SECURED ON BOTH SIDES. AND BE PROTECTED FROM PHYSICAL DAMAGE AND ABRASION, INCLUDING FROM EDGES OF RACKING. CHANNEL EDGES, WIRE TRAYS, ETC.
- 7.) ANY CABLE TIES USED SHALL BE HEAT STABILIZED (-40C TO 105C), UV STABILIZED AND OUTDOOR RATED, SUITABLE AND DURABLE FOR THE ENVIRONMENT AND LIFE OF THE PV SYSTEM.
- 8.) WHERE EXPOSED TO SUNLIGHT, CONDUCTORS SHALL BE LISTED AND MARKED AS SUNLIGHT RESISTANT.
- 9.) ALL EQUIPMENT GROUND CONDUCTORS SMALLER THAN AWG #G SHALL BE PROTECTED FROM PHYSICAL DAMAGE BY AN IDENTIFIED RACEWAY OR CABLE ARMOR UNLESS INSTALLED WITHIN THE HOLLOW SPACES OF THE FRAMING MEMBERS OF BUILDINGS OR STRUCTURES AND WHERE NOT SUBJECT TO

EQUIPMENT NOTES

- L.) ALL MATERIALS, SUPPLIES, AND EQUIPMENT SHALL BE LISTED, USED, AND INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS, AND APPLICABLE NATIONALLY RECOGNIZED TESTING LABORATORY (NRTL) REQUIREMENTS.
- 2.) ALL EQUIPMENT SHALL BE RATED FOR THE ENVIRONMENT IN WHICH IT IS INSTALLED.
- 3.) WORKING SPACE AROUND ELECTRIAL EQUPMENT SHALL COMPLY WITH NEC 110.26.
- 4.) THE APPROXIMATE LOCATIONS OF ALL JUNCTION BOXES, COMBINER BOXES, CONDUITS, ETC. SHALL BE DETERMINED FROM THE DRAWINGS, AND VERIFIED BY THE CONTRACTOR FOR INSTALLATION.
- 5.) ALL JUNCTION BOXES, COMBINER BOXES, AND DISCONNECTS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION.
- 6.) PROVIDE NEMA 3R RATED EQUIPMENT OR BETTER WHERE EXPOSED TO OUTDOORS.
- 7.) WHERE SIZES OF RACEWAYS OR BOXES ARE NOT INDICATED ON THE DRAWINGS, THE CONTRACTOR SHALL SIZE THESE ITEMS AS REQUIRED FOR THE INSTALLATION
- 8.) ALL VERTICAL RUNS OF CONDUIT OR TUBING TERMINATING IN THE BOTTOM OF WALL BOXES OR CABINETS OR SIMILAR LOCATIONS, SHALL BE PROTECTED FROM THE ENTRANCE OF FOREIGN MATERIAL PRIOR TO THE INSTALLATION OF CONDUCTORS.
- 9.1 METAL RACEWAYS, METAL ENCLOSURES OF ELECTRICAL DEVICES AND EQUIPMENT, MODULE FRAMES, AND OTHER EQUIPMENT SHALL BE COMPLETELY GROUNDED IN ACCORDANCE WITH THE NEC.
- 10.) PROPER HARDWARE FOR A COMPLETE GROUNDING AND BONDING SYSTEM SHALL BE INSTALLED BY THE CONTRACTOR, IF NECESSARY.
- 11.) GROUNDING RODS SHALL HAVE A RESISTANCE TO GROUND OF 25 OHMS OR LESS AND SHALL BE 5/8" x 8' MIN. COPPER-BONDED STEEL. ALL GROUND CLAMPS USED SHALL BE UL 467 LISTED.
- 12.) ALL PVC CONDUIT EXPOSED TO SUNLIGHT SHALL BE SCHEDULE 80 AND MARKED AS SUNLIGHT RESISTANT. ALL UNDERGROUND PVC CONDUIT SHALL BE SCHEDULE 40 OR 80.
- 13.) ALL CONDUIT SHALL BE MOUNTED AT A MINIMUM OF LINCHES ABOVE THE ROOF SURFACE.

ELECTRICAL NOTES

- I.J. ELECTRICAL POWER MUST BE SHUT OFF PRIOR TO THE CONTRACTOR PERFORMING ANY WORK IN RACEWAYS WITH LIVE ELECTRICAL CIRCUITS OR ANY OTHER EQUIPMENT, WHEN SWITCHES OR CIRCUIT BREAKERS ARE OPENED FOR WORK ON ELECTRICAL EQUIPMENT OR WIRING, SIGNS OR TAGS SHOULD BE INSTALLED AT THE SWITCH OR BREAKER STATING THAT WORK IS BEING PERFORMED ON THEM, INCLUDE THE TIME, DATE, AND CONTRACTOR'S NAME ON THE SIGN OR TAG. IF DEVICE IS LOCKABLE, IT SHOULD BE PADLOCKED.
- 2.) THE ELECTRICAL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE AHJ, NATIONAL FIRE PROTECTION AGENCY (NFPA), NATIONAL ELECTRICAL CODE (NEC), AND OSHA.
- 3.) PHASING OF NEW CONDUCTORS TO MATCH EXISTING CONDUCTORS, IF INSTALLATING A NEW CIRCUIT, THEN CONTRACTOR SHALL FOLLOW THE PHASING SCHEMES PROVIDED IN THE ELECTRICAL DIAGRAM.
- 4.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 90°C WET ENVIRONMENT, AND 1000 VOLTS DC OR 600 VOLTS AC. UNLESS OTHERWISE NOTED.
- 5.) GROUNDING ELECTRODE CONDUCTOR (G.E.C.) SHALL BE CONTINUOUS AND/OR IRREVERSIBLY SPLICEDAVELDED.
- G.) FLEXIBLE, FINE-STRANDED CABLES SHALL BE TERMINATED ONLY WITH TERMINALS, LUGS, DEVICES, OR CONNECTORS THAT ARE IDENTIFIED AND LISTED FOR SUCH USE PER NEC 690.31(f).
- 7.) ALL WIRES SHALL BE IDENTIFIED BY CIRCUITS IN ALL CABINETS, BOXES, WIRING TROUGHS, AND OTHER ENCLOSURES, AND AT ALL TERMINAL POINTS, I.E., RECEPTACLES, MECHANICAL LUGS, COMPRESSION FITTINGS. THE CIRCUIT DESIGNATIONS SHALL BE AS SHOWN ON THE CONTRACT DRAWINGS OR AS DIRECTED BY THE SYSTEM DESIGN ENGINEER, LABELS OR TAGS SHALL BE APPLIED TO WIRES SO THAT THEY WILL BE READILY VISIBLE.
- 8.) BREAKERS SHALL BE 80% RATED UNLESS OTHERWISE SPECIFIED.
- 9.) FUSES FOR SWITCHES SHALL BE CURRENT-LIMITING TYPE WITH A MINIMUM INTERRUPTING CAPACITY OF 200,000 AMPERES RMS (UNLESS OTHERWISE NOTED) AND OF THE CONTINUOUS CURRENT RATINGS AS INDICATED ON THE DRAWINGS OR AS RECOMMENDED BY THE MANUFACTURER.
- 10.) THE SHORT-CIRCUIT INTERRUPTING RATING OF ALL NEW EQUIPMENT SHALL BE NO LESS THAN THE INTERRUPTING RATING OF THE EXISTING SERVICE EQUIPMENT, UNLESS A MINIMUM VALUE WAS CALCULATED AND SPECIFIED ON THE PLANS FOR THE NEW EQUIPMENT.

ELECTRICAL LEGEND

= CIRCUIT CONDUCTORS

--- = EQUIPMENT GROUNDING CONDUCTORS

= TERMINAL BLOCK

- PUSE

CIRCUIT BREAKER

= THROW SWITCH (KNIFE-BLADE) RECLOSING CIRCUIT BREAKER

RECLOSING DISCONNECT/RELAY

= GROUNDING ELECTRODE SYSTEM

PV MODULE

☑ □ □ INVERTER

= MICROINVERTER

_ = POWER OPTIMIZER

= METER/MONITORING DEVICE = TRANSFORMER

G= GENERATOR

= TRANSFER SWITCH

= BATTERY

= CURRENT TRANSFORMER (CT)

SITE/ARRAY PLAN LEGEND

- CONDUIT ROUTES

= CONDUIT ROUTES (UGND OR INDOORS

PV MODULE

⇒ PV EQUIPMENT

= RAFTER/TRUSS

--- = STANDING SEAM

O = VENT

= CHIMNEY

 \boxtimes = SKYLIGHT

= ROOF HATCH

= PV ATTACHMENT FLASHING

= SETBACKS/PATHWAYS

SWINGING DOOR

ELECTRICAL LEGEND - DC

= POSITIVE TERMINAL (PHASED RED)

NEGATIVE TERMINAL (PHASED BLACK)

G GROUND TERMINAL (PHASED GREEN)

ELEC. LEGEND - 480 VAC

= LINE I TERMINAL (PHASED BROWN)

L2 = LINE 2 TERMINAL (PHASED ORANGE)

L3 = LINE 3 TERM:NAL (PHASED YELLOW)

N = NEUTRAL TERMINAL (PHASED WHITE) G

ELEC. LEGEND - 208 VAC

- LINE | TERMINAL (PHASED BLACK)

L2 = LINE 2 TERMINAL (PHASED RED)

1.3 LINE 3 TERMINAL (PHASED BLUE)

N. = NEUTRAL TERMINAL (PHASED WHITE) G = GROUND TERMINAL (PHASED GREEN)



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REVISIONS DESCRIPTION DATE
50% DELIVERABLE 1/6/2020 90% DELIVERABLE 1/17/2020 PERMIT SET

PROJECT NOTES

TILL

ARCH D - 36" x 24"

JAN CARLOS CHAVEZ

s doing your best today. - H. Jackson Brown, Jr.



HOPPING BROOK - PHOTOVOLTAIC ENERGY SYSTEM

THIS 323.38 KWSTC, ROOF MOUNTED PHOTOVOLTAIC (PV) SYSTEM IS TO BE INSTALLED AT THE OFFICE BUILDING IN HOLLISTON, MASSACHUSETTS.

THE ENERGY PRODUCED BY THE PV SYSTEM SHALL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ON-SITE ELECTRICAL EQUIPMENT VIA

A SUPPLY SIDE CONNECTION IN THE MAIN SERVICE PANEL. THIS PROJECT DOES NOT INCLUDE ENERGY STORAGE BATTERIES.

PV-SIDE: 277/480 VAC, UTILITY-SIDE: 120/208 VAC

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- DI.I EQUIPMENT DATA SHEETS

COMPONENTS LIST

ELECTRICAL		RACKIN	RACKING		
QTY	NAME	DESCRIPTION	QTY	NAME	DESCRIPTION
874	PV MODULE	HELIENE 72M-370 (TOTAL: 18,227 SQ. FT.)	1535	ATTACHMENT	SOLAR CONNECTIONS MINI 155 CLAMPS 48* O.C. MAX.
4	PV INVERTER	SOLECTRIA PVI GOTL GO.O KW. 480 VAC. 79.4 A	144	END CLAMP	IRONRIDGE END CLAMP
874	RSD	TIGO TS4-A-F (FIRE SAFETY)	1678	MID CLAMP	IRONRIDGE MID CLAMP
ı	AC DISCONNECT	240 VAC, 1200 A, NEMA I	1535	L-FOOT	IRONRIDGE L-FOOT
ı	AC DISCONNECT	600 VAC, 400 A, NEMA 3R	5816	FEET OF RACKING RAIL	IRONRIDGE XR-100 RAIL
ı	AC COM- BINER PANEL	480 VAC. 400 A, NEMA 3R		In .	
I	PV MONITOR	LOCUS LGATE 360 NEMA 3R			
1	PV METER	480 VAC, 400 A, NEMA 3R-			

GOVERNING CODES \$ STANDARDS

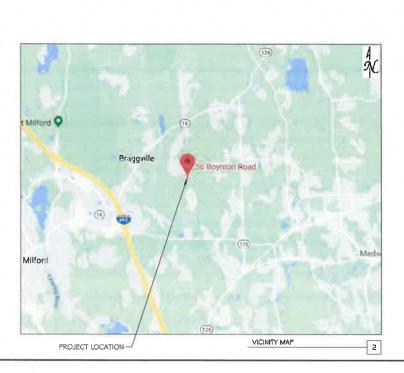
2020 NATIONAL ELECTRICAL CODE 780 CMR, 9TH EDITION UNDERWRITERS LABORATORIES (UL) STANDARDS OSHA 29 CFR 1910.269

SITE SPECIFICATIONS

TRANS-FORMER

EXPOSURE CATEGORY: B
RISK CATEGORY: II
WIND SPEED (ASCE 7-10): 128 MPH
SNOW LOAD (ASCE 7-10): 40 PSF





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Engineering Approx



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