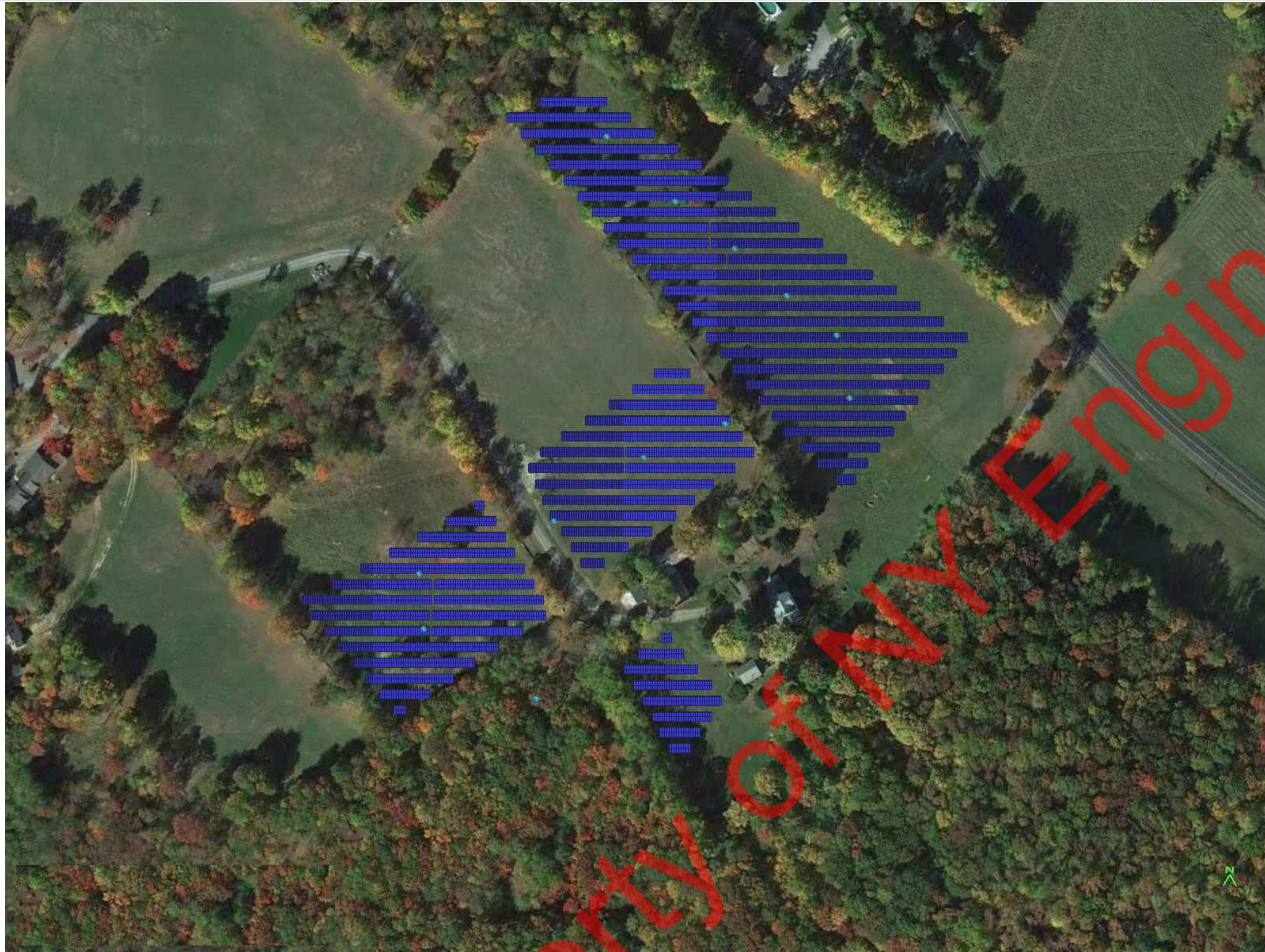


INTERCONNECTION APPLICATION SET



PHOTOVOLTAIC SYSTEM DESCRIPTION:

INSTALLATION TYPE: GROUND
RACK SYSTEM: 25° TILT
INTER CONNECTION UTILITY: NYSEG
AC SYSTEM SIZE: 2.7 MW
DC SYSTEM SIZE: 3.20 MW
SITE ORIENTATION:
ARRAY AZIMUTH: 180°
PROPOSED EQUIPMENT:
MODULE: (6596) 485 WATT MODULE
 MANUFACTURER: HANWHA
 MODEL: Q-PEAK DUO XL-G10.3/BFG 485 (2021) (485W)
INVERTERS: (12) 225 KW 3-PHASE STRING INVERTERS
 MANUFACTURER: YASKAWA SOLECTRIA
 MODEL: SGI 225-480

PRIMARY 4.8 KV CONDUCTOR :

OVERHEAD: 4/0 COPPER
UNDERGROUND : COPPER-3 # 350 TYPE MV-105 4.8KV EPR INSULATED SHIELDED,
 1#3/0 G IN 4'RGS

DISTANCE:

DISTANCE BETWEEN CUSTOMER OWNED STEP UP TRANSFORMER AND NEAREST 2.7 MW AC HOSTING CAPACITY LINE (INTERCONNECTION POINT) IS APPROXIMATELY 5.16 MILE.

UTILITY INTERCONNECTION POINT LOCATION DETAILS:

FEEDER NOMINAL 3-PHASE VOLTAGE: 4.80 KV
FEEDER MAX. 3-PHASE HOSTING CAPACITY: 4.9 MW AC

APPLICABLE PROJECT CODES :

2017 NATIONAL ELECTRICAL CODE (NFPA-70)
 2020 BUILDING CODE OF NEW YORK STATE
 2020 MECHANICAL CODE OF NEW YORK STATE
 2020 FIRE CODE OF NEW YORK STATE
 ASHRAE / IESNA STANDARD 90.1-2007
 UL 1741 - PHOTOVOLTAIC INVERTERS
 UL 1703 - PHOTOVOLTAIC MODULES

IN ADDITION TO CODES LISTED ABOVE, THE ENTIRE INSTALLATION SHALL MEET THE REQUIREMENT OF THE LOCAL LAW / CODES AND AUTHORITY HAVING JURISDICTION.

PROJECT DRAWING LIST :

SHEET	TITLE
PV-0.1	COVER SHEET
PV-1.0	SITE PLAN
PV-2.0	SINGLE LINE DIAGRAM
PV-2.1	THREE LINE DIAGRAM
PV-3.0	ELECTRICAL SPECIFICATION SHEET
PV-4.0	PV CELL MOUNTING & SECTION DETAILS

ELECTRICAL SYMBOL LIST

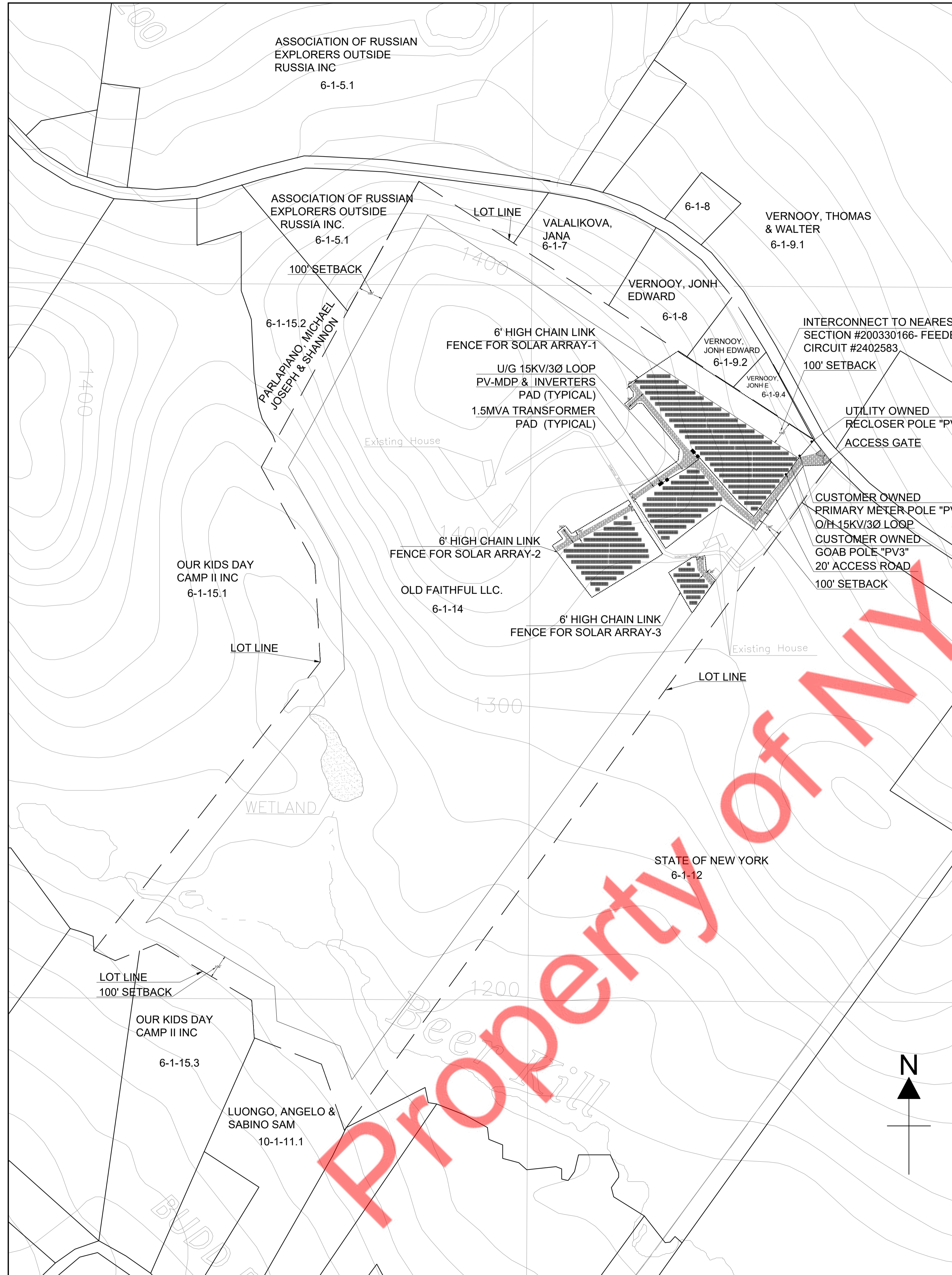
	TRANSFORMER, RATING AS INDICATED
	CIRCUIT BREAKER, RATING AS INDICATED
	INVERTER, RATING AS INDICATED
	DISCONNECT SWITCH, RATING AS INDICATED
	ENERGY METER
	CURRENT TRANSFORMER
	MAJOR ELECTRICAL COMPONENT OR DEVICE. RATING AS INDICATED
	KEYED NOTE REFERENCE
	UNDERGROUND WIRING SYSTEM
	OVERHEAD WIRING SYSTEM
	FUSE, SIZE AS INDICATED

ELECTRICAL ABBREVIATION:

A	AMPERES	°F	DEGREE FAHRENHEIT	PNL	PANEL	PVC	POLYVINYL CHLORIDE
AF	AMPERE FRAME/AMP FUSE	DISC	DISCONNECT	W	WATT	RGS	RIGID GALVANIZED STEEL
AS	AMP SWITCH	DP	DISTRIBUTION PANEL	W	WIRE	SPDT	SINGLE POLE DOUBLE THROW
AIC	AMPS INTERRUPTING CAPACITY	KCMIL	ONE THOUSAND CIRCULAR MILS	E	EXISTING	SPST	SINGLE POLE SINGLE THROW
AT	AMP TRIP	KV	KILOVOLT	EC	EMPTY CONDUIT/ ELECTRICAL CONTRACTOR	SPEC	SPECIFICATION
ATS	AUTOMATIC TRANSFER SWITCH	KVA	KILOVOLT-AMPERES	EMT	ELECTRICAL METALLIC TUBING	SW	SWITCH
AUTO	AUTOMATIC	KW	KILOWATTS	EQUIP	EQUIPMENT	TYP	TYPICAL
AWG	AMERICAN WIRE GAUGE	MCB	MAIN CIRCUIT BREAKER	FDR	FEEDER	U.O.N.	UNLESS OTHERWISE NOTED
C	CONDUIT	N	NEUTRAL	G	GROUND	V	VOLT/VOLTAGE
CB	CIRCUIT BREAKER	NIC	NOT IN CONTRACT	GFI	GROUND FAULT INTERRUPTER	VA	VOLT AMPERE
CKT	CIRCUIT	NTS	NOT TO SCALE	HZ	HERTZ	WP	WEATHERPROOF
CT	CURRENT TRANSFORMER	P	POLES	IC	INTERRUPTING CAPACITY	XFMR	TRANSFORMER
°C	DEGREE CELSIUS	Ø	PHASE	PP	POWER PANEL		

ELECTRICAL NOTES

- CONTRACTOR SHALL VISIT THE SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS THAT MAY AFFECT THE WORK. NO ADDITIONAL COMPENSATION WILL BE CONSIDERED FOR FAILURE TO DO SO.
- CONTRACTOR SHALL PROVIDE A WARRANTY ON ALL MATERIALS, EQUIPMENT, AND WORKMANSHIP FOR A PERIOD OF ONE YEAR FROM THE DATE OF FINAL ACCEPTANCE.
- ALL ELECTRICAL ACCESSORIES AND EQUIPMENT INSTALLED OUTSIDE OR EXPOSED TO WEATHER SHALL HAVE NEMA 3R ENCLOSURES AND SHALL BE TIGHTLY GASKETED FOR A COMPLETE RAIN-TIGHT INSTALLATION.



2 SITE KEY PLAN
SCALE: NTS

1 ELECTRICAL SITE PLAN
SCALE: 1" = 250'

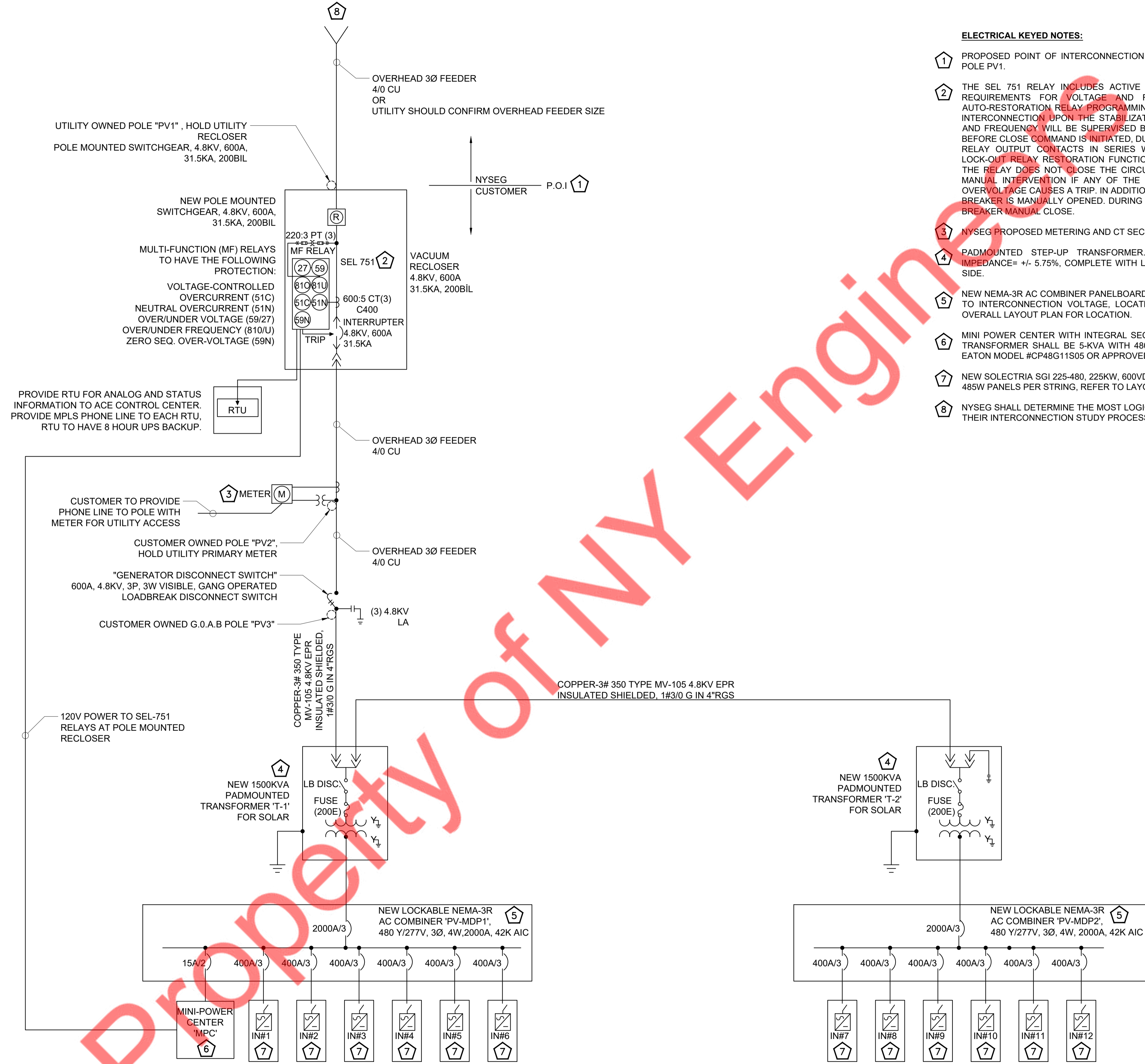
PHOTOVOLTAIC SYSTEM DESCRIPTION:

INSTALLATION TYPE: GROUND
 RACK SYSTEM: 25° TILT
 INTER CONNECTION UTILITY: NYSEG
 AC SYSTEM SIZE: 2.7 MW
 DC SYSTEM SIZE: 3.20 MW
 SITE ORIENTATION:
 ARRAY AZIMUTH: 180°
 PROPOSED EQUIPMENT:
 MODULE: (6596) 485 WATT MODULE
 MANUFACTURER: HANWHA
 MODEL: Q.PEAK DUO XL-G10.3/BFG 485 (2021) (485W)
 INVERTERS: (12) 225 KW 3-PHASE STRING INVERTERS
 MANUFACTURER: YASKAWA SOLECTRIA
 MODEL: SGI 225-480

PRIMARY 4.8 KV CONDUCTOR:
 OVERHEAD: 4/0 COPPER
 UNDERGROUND: COPPER-3 # 350 TYPE MV-105 4.8KV EPR INSULATED SHIELDED, 1#3/0 G IN 4"RGS
 DISTANCE:
 DISTANCE BETWEEN CUSTOMER OWNED STEP UP TRANSFORMER AND NEAREST 2.7 MW AC HOSTING CAPACITY LINE (INTERCONNECTION POINT) IS APPROXIMATELY 5.16 MILE.
 UTILITY INTERCONNECTION POINT LOCATION DETAILS:
 UTILITY NAME- NYSEG
 FEEDER NOMINAL 3-PHASE VOLTAGE: 4.80 KV
 FEEDER MAX. 3-PHASE HOSTING CAPACITY 4.9 MW AC

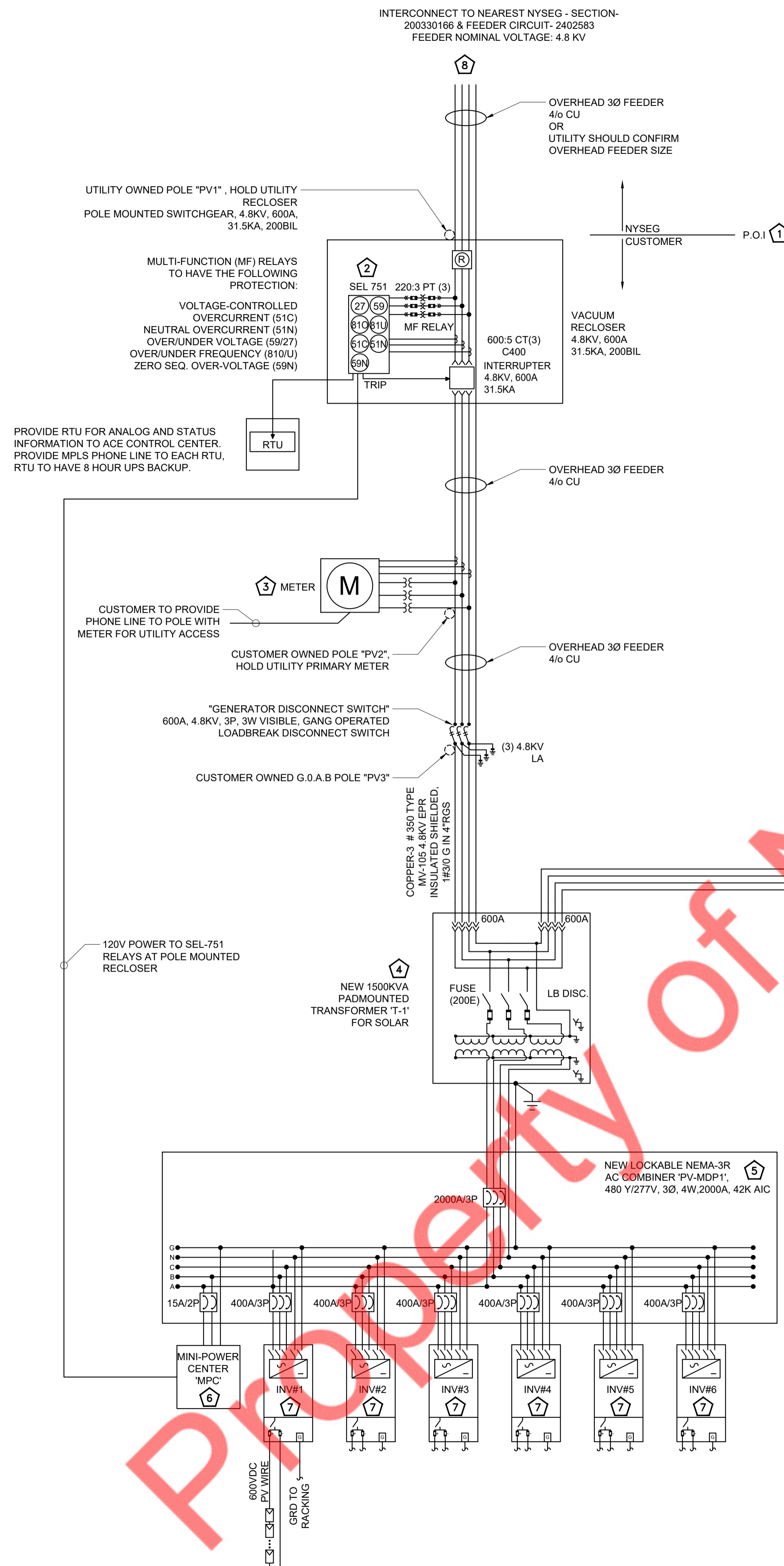
Property of NY Engineers

INTERCONNECT TO NEAREST NYSEG - SUBSTATION-
200330166 & FEEDER CIRCUIT-2402583
FEEDER NOMINAL VOLTAGE: 4.80 KV



ELECTRICAL KEYED NOTES:

- 1 PROPOSED POINT OF INTERCONNECTION SHALL BE AT UTILITY SIDE OF UTILITY OWNED RECLOSER POLE PV1.
- 2 THE SEL 751 RELAY INCLUDES ACTIVE ELEMENTS PER IEEE 1547 STANDARD INTERCONNECTION REQUIREMENTS FOR VOLTAGE AND FREQUENCY DEVICE ELEMENTS 27, 59, 81, AND 51C. AUTO-RESTORATION RELAY PROGRAMMING LOGIC INCLUDED THAT THE SYSTEM WILL RESTORE THE INTERCONNECTION UPON THE STABILIZATION OF THE UTILITY VOLTAGE AND FREQUENCY. VOLTAGE AND FREQUENCY WILL BE SUPERVISED BY 27, 81, AND 59 ELEMENTS FOR A FIVE MINUTE DURATION BEFORE CLOSE COMMAND IS INITIATED. DURING THIS DURATION, MANUAL CLOSE WILL BE BLOCKED VIA RELAY OUTPUT CONTACTS IN SERIES WITH THE TRIP CIRCUIT. AUTO-RESTORATION LOGIC WILL LOCK-OUT RELAY RESTORATION FUNCTION ON OVERCURRENT TRIP OR MANUAL OPEN, SUCH THAT THE RELAY DOES NOT CLOSE THE CIRCUIT. RELAY LOCKS OUT AUTO RESTORATION AND REQUIRES MANUAL INTERVENTION IF ANY OF THE 50/51 OVERCURRENT ELEMENTS OR 59G ZERO-SEQUENCE OVERVOLTAGE CAUSES A TRIP. IN ADDITION, AUTO-RESTORATION IS ALSO LOCKED-OUT IF THE CIRCUIT BREAKER IS MANUALLY OPENED. DURING RELAY FAILURE, THE FAILSAFE DESIGN LOCKS-OUT CIRCUIT BREAKER MANUAL CLOSE.
- 3 NYSEG PROPOSED METERING AND CT SECTION WITH NON-RESIDENTIAL METER.
- 4 PADMOUNTED STEP-UP TRANSFORMER. 4.8KV, 3Ø, 4W PRIMARY, 277/480V, 4W SECONDARY. IMPEDANCE= +/- 5.75%, COMPLETE WITH LOADBREAK DISCONNECT AND 200KAIC FUSING ON PRIMARY SIDE.
- 5 NEW NEMA-3R AC COMBINER PANELBOARD TO COMBINE INVERTER AC OUTPUTS BEFORE STEPPING UP TO INTERCONNECTION VOLTAGE, LOCATED ON PAD NEXT TO STEP-UP TRANSFORMER. REFER TO OVERALL LAYOUT PLAN FOR LOCATION.
- 6 MINI POWER CENTER WITH INTEGRAL SECONDARY PROTECTION, TRANSFORMER AND LOAD CENTER. TRANSFORMER SHALL BE 5-KVA WITH 480V, 1-PHASE PRIMARY AND 120/240V, 1-PHASE SECONDARY, EATON MODEL #CP48G11S05 OR APPROVED EQUAL.
- 7 NEW SOLECTRIA SGI 225-480, 225KW, 600VDC/480VAC, 4W STRING INVERTER WITH (668) STRINGS OF (10) 485W PANELS PER STRING, REFER TO LAYOUT DRAWING FOR APPROXIMATE LOCATION
- 8 NYSEG SHALL DETERMINE THE MOST LOGICAL AND ECONOMICAL POINT OF INTERCONNECTION DURING THEIR INTERCONNECTION STUDY PROCESS.



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 - 2 THE SEL 751 RELAY INCLUDES ACTIVE ELEMENTS PER IEEE 1547 STANDARD INTERCONNECTION REQUIREMENTS FOR VOLTAGE AND FREQUENCY DEVICE ELEMENTS 27, 59, 81, AND 51C. AUTO-RESTORATION RELAY PROGRAMMING LOGIC INCLUDED THAT THE SYSTEM WILL RESTORE THE INTERCONNECTION UPON THE STABILIZATION OF THE UTILITY VOLTAGE AND FREQUENCY. VOLTAGE AND FREQUENCY WILL BE SUPERVISED BY 27, 81, AND 59 ELEMENTS FOR A FIVE MINUTE DURATION BEFORE CLOSE COMMAND IS INITIATED. DURING THIS DURATION, MANUAL CLOSE WILL BE BLOCKED VIA RELAY OUTPUT CONTACTS IN SERIES WITH THE TRIP CIRCUIT. AUTO-RESTORATION LOGIC WILL LOCK-OUT RELAY RESTORATION FUNCTION ON OVERCURRENT TRIP OR MANUAL OPEN, SUCH THAT THE RELAY DOES NOT CLOSE THE CIRCUIT. RELAY LOCKS OUT AUTO RESTORATION AND REQUIRES MANUAL INTERVENTION IF ANY OF THE 50/51 OVERCURRENT ELEMENTS OR 59G ZERO-SEQUENCE OVERVOLTAGE CAUSES A TRIP. IN ADDITION, AUTO-RESTORATION IS ALSO LOCKED-OUT IF THE CIRCUIT BREAKER IS MANUALLY OPENED. DURING RELAY FAILURE, THE FAILSAFE DESIGN LOCKS-OUT CIRCUIT BREAKER MANUAL CLOSE.
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 - 8 NYSEG SHALL DETERMINE THE MOST LOGICAL AND ECONOMICAL POINT OF INTERCONNECTION DURING THEIR INTERCONNECTION STUDY PROCESS.

1 THREE LINE DIAGRAM
SCALE: NTS

SPECIFICATIONS	SGI 225	SGI 250	SGI 266	SGI 300	SGI 500	SGI 500PE	
DC Input							
Absolute Maximum Input Voltage	600 VDC						
Max Power Input Voltage Range (MPPT)*	300-500 VDC						
Maximum Operating Input Current	768 A	853 A	908 A	1026 A	1721 A	1712 A	
Maximum PV Power	331.5 kW	325 kW	345.8 kW	390 kW	650 kW		
Strike Voltage	390 V						
AC Output							
Nominal Output Voltage	480 VAC, 3ø/PE						
AC Voltage Range	-12%/+10%						
Continuous Output Power	225 kW	250 kW	266 kW	300 kW	500 kW		
Continuous Output Current	480 VAC 271 A	301 A	320 A	360 A	602 A		
Maximum Backfeed Current	0 A						
Nominal Output Frequency	60 Hz						
Output Frequency Range	57-60.5 Hz						
Power Factor	Adjustable 0.9 leading / 0.9 lagging, factory set at 1						
Fault Current Contribution (1 Cycle RMS)	325.2 A	361.2 A	384 A	432 A	722 A		
Total Harmonic Distortion (THD) @ Rated Load	1.3%						
Performance							
Peak Efficiency	98.0%						
CEC Efficiency (480 VAC)	97.5%						
Tare Loss	28 W						
Ambient Temperature Range (full power)	-40°F to +122°F (-40°C to +50°C)						
Storage Temperature Range	-40°F to +158°F (-40°C to +70°C)						
Relative Humidity (non-condensing)	5-95%						
Audible Noise	60 dBA @ 5 m						
Safety Listings & Certifications	UL 1741, IEEE 1547, CSA C22.7, 78107.1, FCC part 15 B						
Maintenance Outage Factor	0.1						
Testing Agency	ETL						
Mechanical							
Transformer	Standard, fully-integrated						
AC Breaker/DC Disconnect	Fully-integrated						
Dimensions (H x W x D)	79 in. x 109 in. x 41 in. (2007 mm x 2769 mm x 1042 mm)						
Shading Set Back	137 in. (3480 mm) at 30° solar elevation						
Weight	5170 lbs (2346 kg)	5650 lbs (2563 kg)				6980 lbs (3167 kg)	7107 lbs (3224 kg)
Enclosure Rating	Type 3R						
Enclosure Finish	Polyester powder coated steel; optional 316 stainless steel						
Subcombiner Options							
Fuses or Breakers	6 positions, 225-400 A				8 positions, 225-400 A		
Fuses Only	12 positions, 110-200 A				16 positions, 110-200 A		
Fuses Only	24 positions, 70-100 A				32 positions, 70-100 A		
Communication							
Data Logger Hardware	Standard, integrated						
SolentView™ Monitoring Service	Optional						
Optional Revenue Grade Monitoring (Integrated)	Optional						
Optional SolZone™ Sub-Array Monitoring (DC Current)	400 A						
Optional Cellular Communication	SolentView AIR						
Communication Interface	RS-485 SunSpec Modbus RTU						
Warranty							
Standard	5 year						
Optional	10, 15, 20 year; extended service agreement; uptime guarantee						

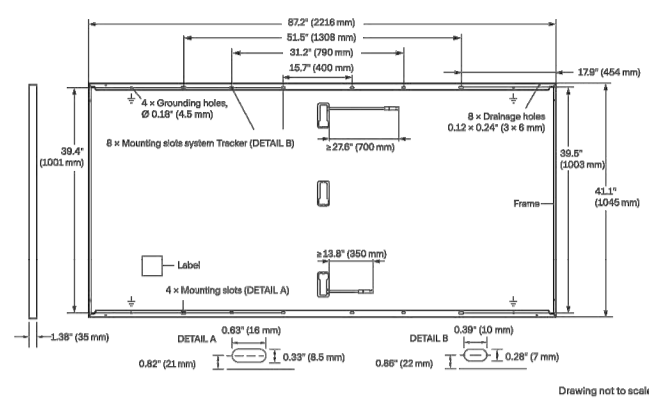
YASKAWA
SOLECRIA SOLAR

www.solcristia.com | inverters@solcristia.com | 978.683.9700



MECHANICAL SPECIFICATION

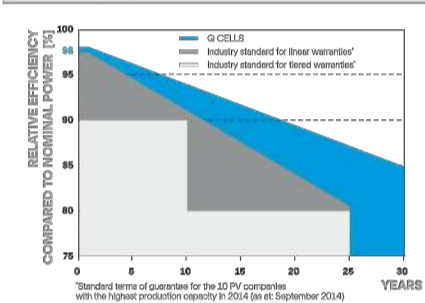
Format	87.2 in x 41.1 in x 1.38 in (including frame) (2216 mm x 1045 mm x 35 mm)
Weight	64.2 lbs (29.1 kg)
Front Cover	0.08 in (2.0 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	0.08 in (2.0 mm) semi-tempered glass
Frame	Anodized aluminum
Cell	6 x 26 monocrystalline Q-ANTUM solar half cells
Junction Box	2.09-3.98 in x 1.26-2.36 in x 0.59-0.71 in (53-101 mm x 32-60 mm x 15-18 mm), IP67, with bypass diodes
Cable	4 mm² Solar cable, (+) ±27.6 in (700 mm), (-) ±13.8 in (350 mm)
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HGQ4, IP68



ELECTRICAL CHARACTERISTICS

POWER CLASS	470	475	480	485					
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC* AND BSTC* (POWER TOLERANCE +5 W / -0 W)									
Power at MPP ¹	P _{MPP} [W]	470	514.1	475	519.6	480	525.0	485	530.5
Short Circuit Current ²	I _{SC} [A]	11.04	12.08	11.08	12.12	11.12	12.17	11.16	12.21
Open Circuit Voltage ³	V _{OC} [V]	62.91	63.10	63.15	63.34	63.39	63.58	63.63	63.82
Current at MPP	I _{MPP} [A]	10.51	11.50	10.55	11.54	10.59	11.58	10.63	11.63
Voltage at MPP	V _{MPP} [V]	44.73	44.72	46.03	46.02	45.33	45.32	45.63	45.62
Efficiency ⁴	η [%]	≥20.3	≥22.2	≥20.5	≥22.4	≥20.7	≥22.7	≥20.9	≥22.9
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									
*Measurement tolerances P _{MPP} ±3%, I _{SC} ±5% at STC, 1000 W/m²; *at BSTC: 1000 W/m² ± φ ± 135 W/m², φ = 70% ± 5%, 25 ± 2°C, AM 1.5 according to IEC 60904-3									
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOOT ⁵									
Power at MPP	P _{MPP} [W]	353.8	357.6	361.4	365.1				
Short Circuit Current	I _{SC} [A]	8.89	8.92	8.96	8.99				
Open Circuit Voltage	V _{OC} [V]	60.04	60.27	60.49	60.72				
Current at MPP	I _{MPP} [A]	8.27	8.30	8.34	8.37				
Voltage at MPP	V _{MPP} [V]	42.77	43.06	43.35	43.63				
*800 W/m², NMOOT, spectrum AM 1.5									

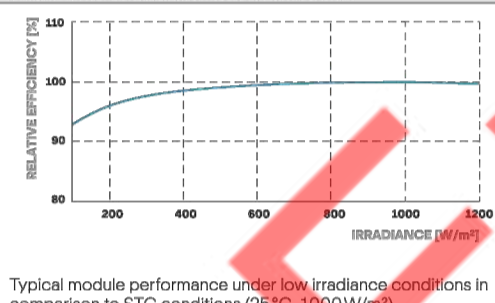
Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.45% degradation per year. At least 93.95% of nominal power up to 10 years. At least 84.95% 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 organization of your respective country.

PERFORMANCE AT LOW IRRADIANCE



TEMPERATURE COEFFICIENTS

Temperature Coefficient of I _{SC}	α [%/K]	+0.04	Temperature Coefficient of V _{OC}	β [%/K]	-0.27
Temperature Coefficient of P _{MPP}	γ [%/K]	-0.34	Nominal Module Operating Temperature	NMOOT [°C]	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]	20	Fuse Rating based on ANSI/UL 61730	TYPE 29 ⁶
Max. Design Load, Push/Pull ⁷ [lbs/ft²]	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 ⁷ [lbs/ft²]	113 (5400 Pa) / 50 (2400 Pa)		

QUALIFICATIONS AND CERTIFICATES



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 89 98 | EMAIL Inquiry@us-q-cells.com | WEB www.q-cells.us

Three-Phase Pad-Mounted Transformers



Typical Pad-Mounted Transformer

Rating

45-10,000 kVA	2400A through 46,000A	1500	1500
High voltages (primary): 4160 Grd. Y/2400 through 43,800 GY/25,300 Grd. Y/19,920		1500	1500
HV Taps: 2-2-1/2% above and below normal, or 4-2-1/2% below normal		1500	1500
Standard BIL levels:		1500	1500
kV Class		1500	1500
1.2		1500	1500
2.5		1500	1500
5.0		1500	1500
8.7		1500	1500
15.0		1500	1500
25.0 Grd. Y Only		1500	1500
25.0		1500	1500
34.5 Grd. Y Only		1500	1500
34.5		1500	1500
46		1500	1500

Design Impedances
Impedances are supplied to meet IEEE C57.12.34 standards. Customer-specified impedances are available. (Subject to IEEE/ANSI ±2.5% impedance tolerance.)

Nominal Impedance per IEEE C57.12.34:	kVA	%Z
45	45	2.70-5.75
75	75	3.1-5.75
112-1/2	150	3.1-5.75
150	225	3.1-5.75
225	300	3.1-5.75
300	500	4.35-5.75
500	750	5.75
750	1000	5.75
1000	1500	5.75
1500	2000	5.75
2000	2500	5.75
2500	3000	5.75
3000	3750	5.75
3750	5000-10,000	6.0-6.5
5000-10,000	1000	10.0
1000	150	15.0
150	150	15.0
150	150	15.0
150	150	15.0
150	150	15.0
150	150	15.0
150	150	15.0

Note: Subject to NEMA/IEEE ±2.5% impedance tolerance.
Note: Non-standard design impedance may be obtained by contacting Eaton.

Layout Dimensions

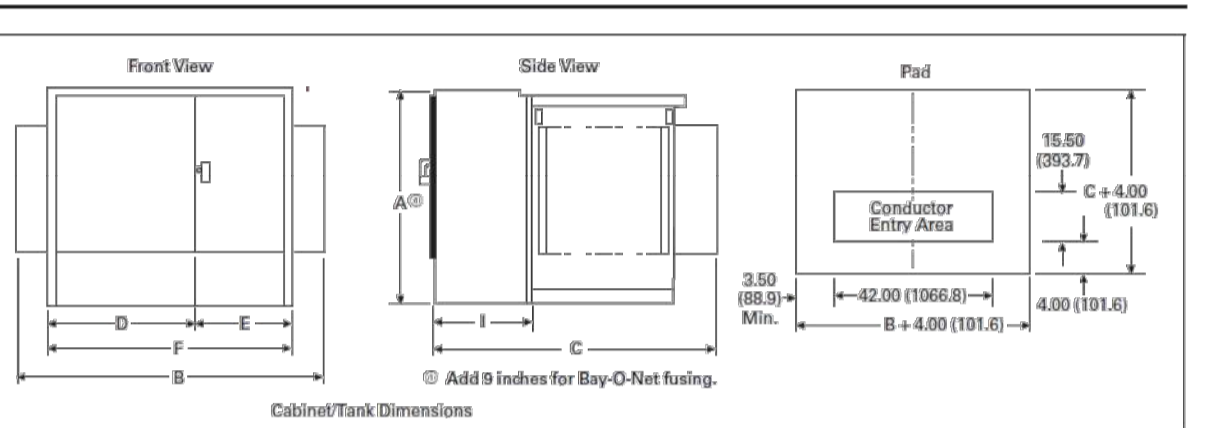
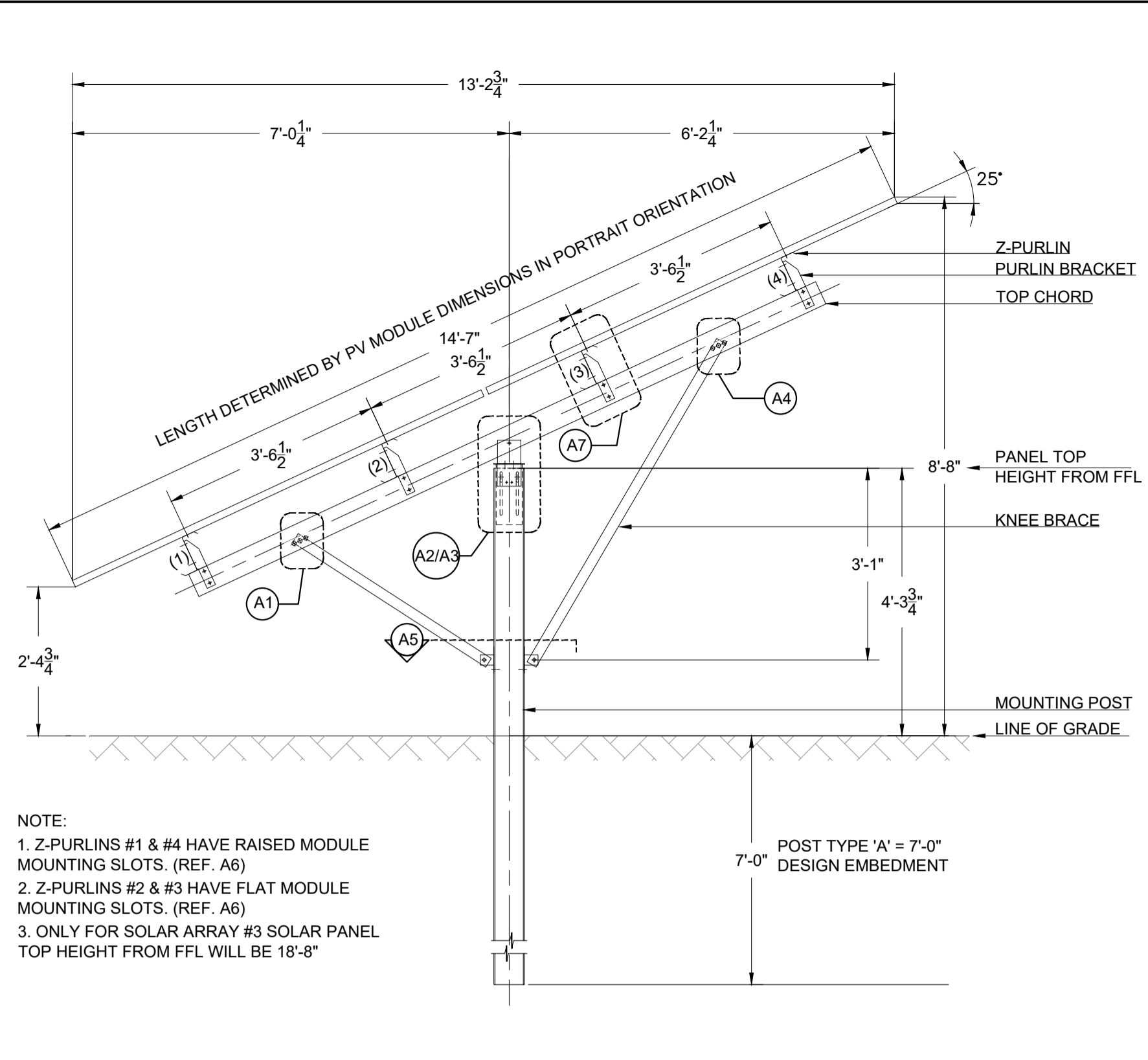


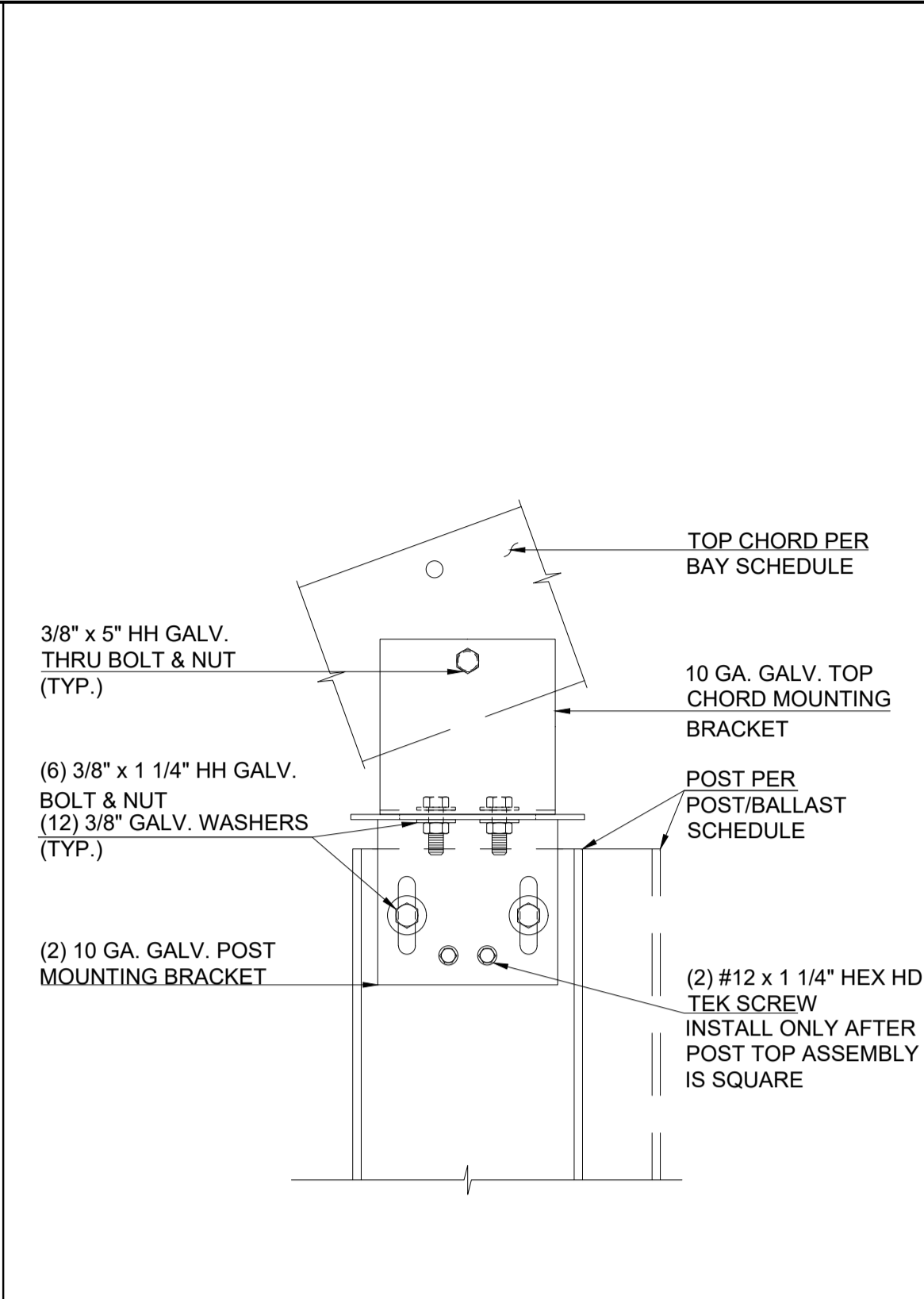
Figure 17.0-12. Pad-Mounted Transformer—Dimensions in Inches (mm)

Table 17.0-13. Dimensions with DOE Efficiency at 65 Degree AWR

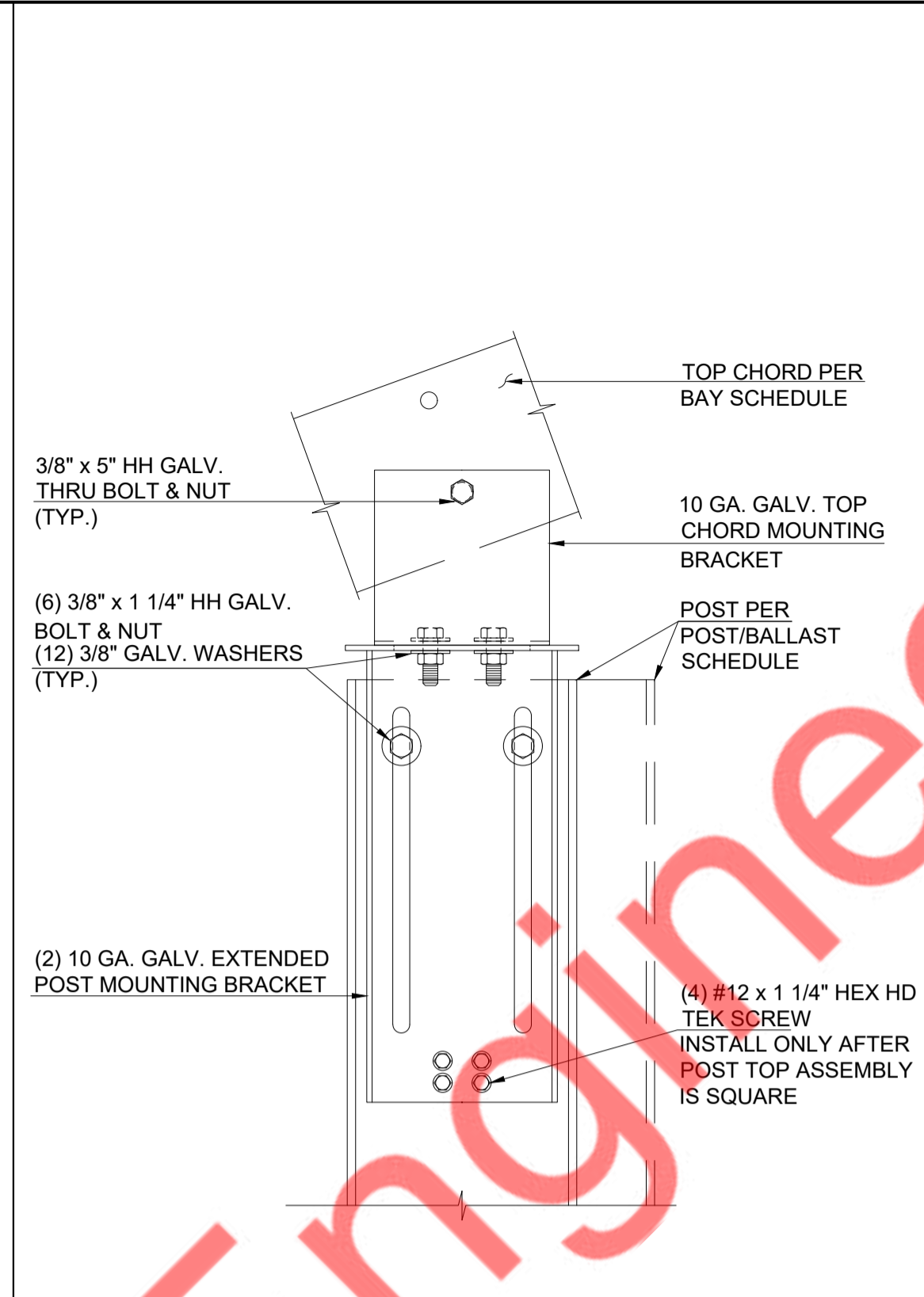
kVA	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	CU	CV	CW	CX	CY	CA	CB	CC	CD	CE	CF	CG	CH	CI	CJ	CK	CL	CM	CN	CO	CP
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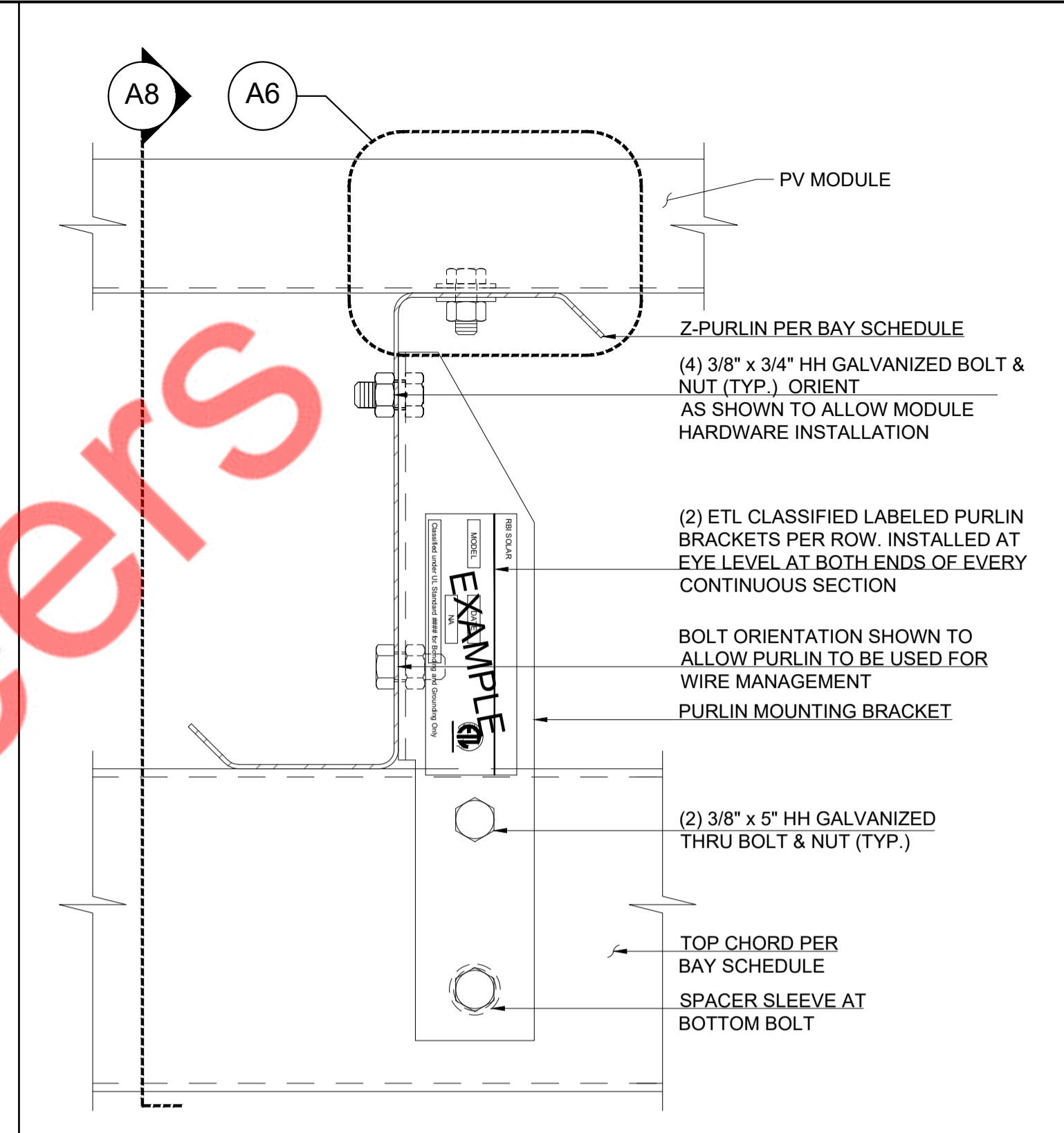
1 DESIGN RACK SECTION
SCALE: 1/2" = 1'-0"



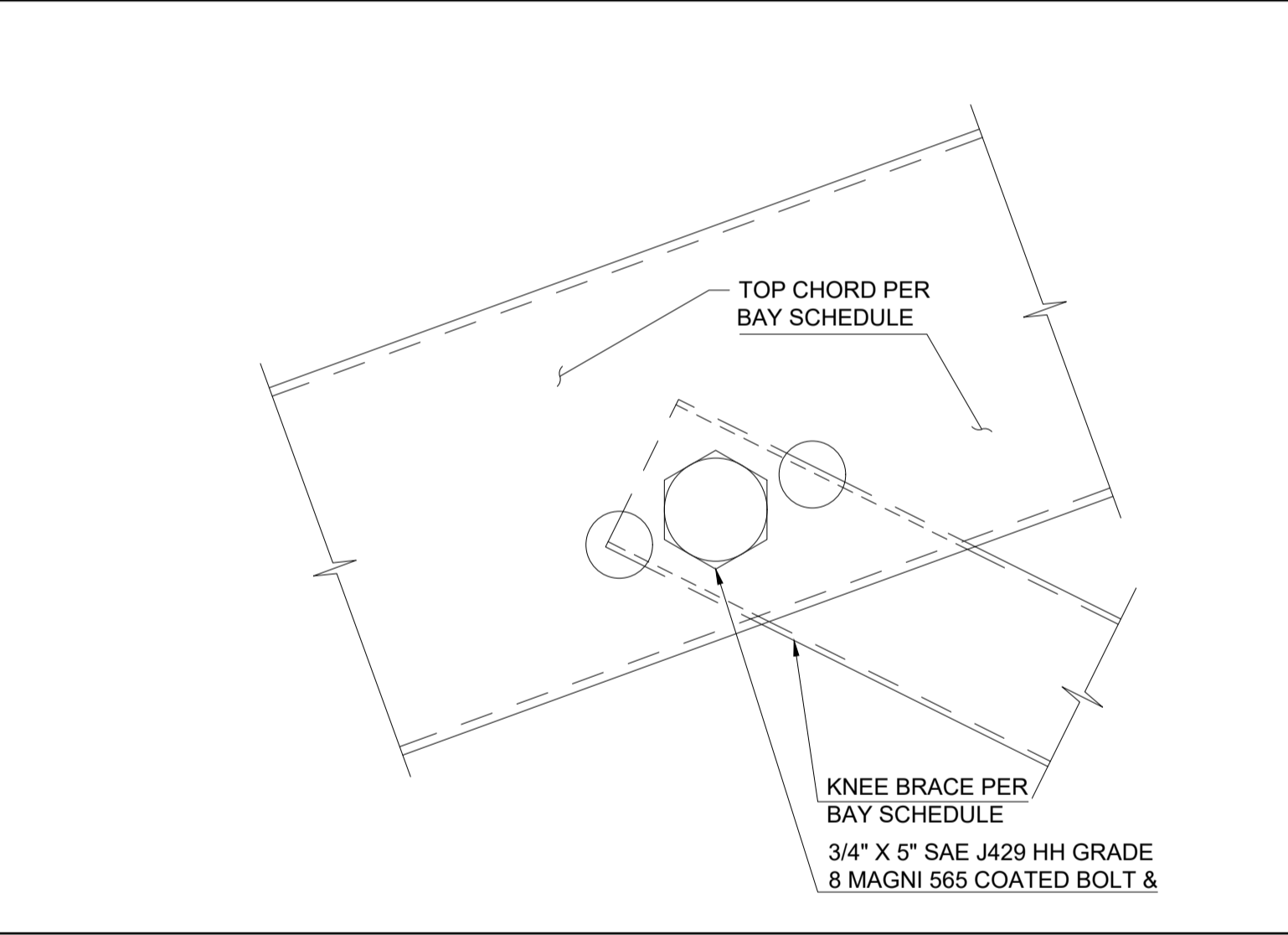
A2 TOP CHORD TO POST CONN. DETAIL
SCALE: NTS



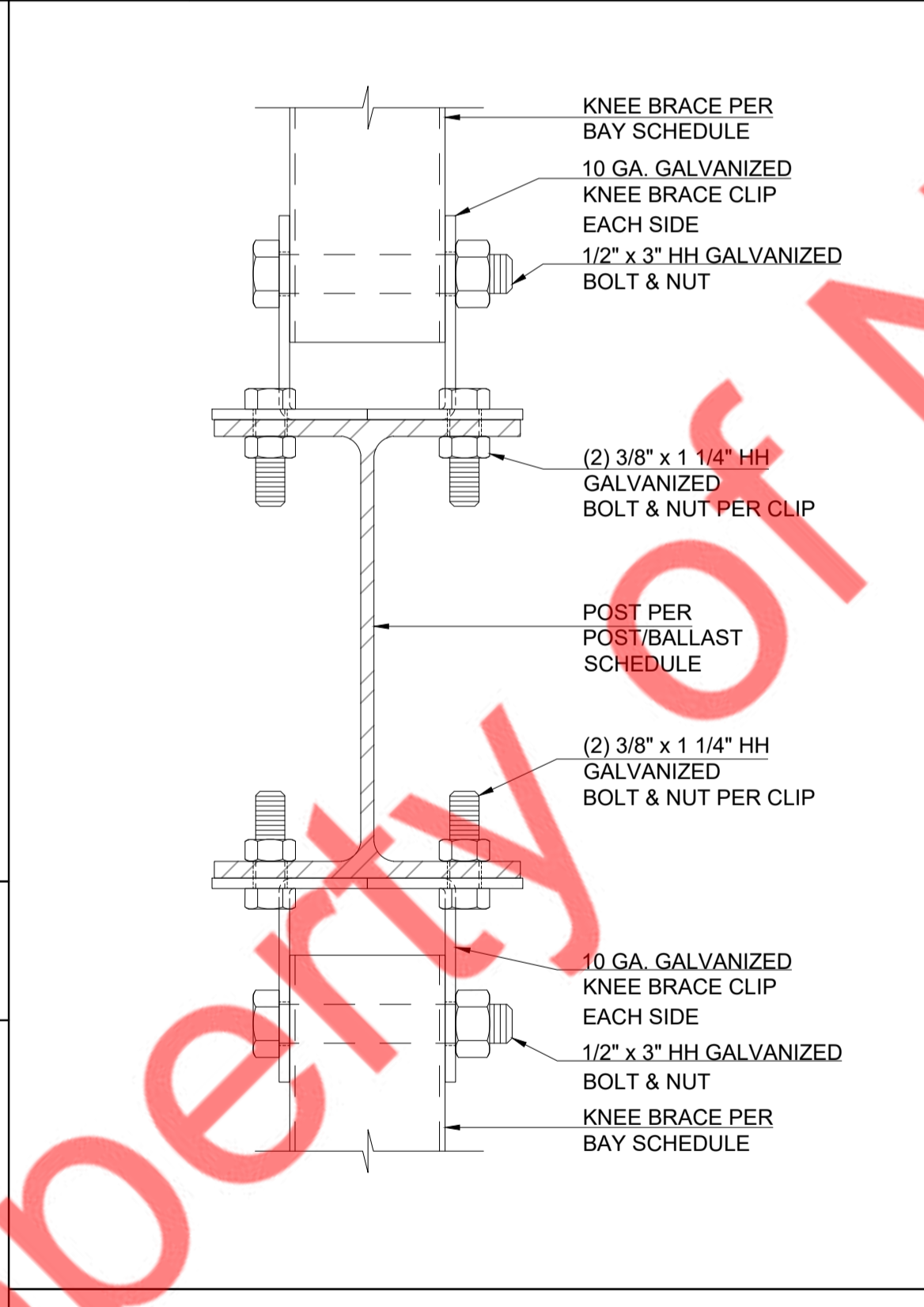
A3 TOP CHORD CONN. DETAIL (EXTENDED)
SCALE: NTS



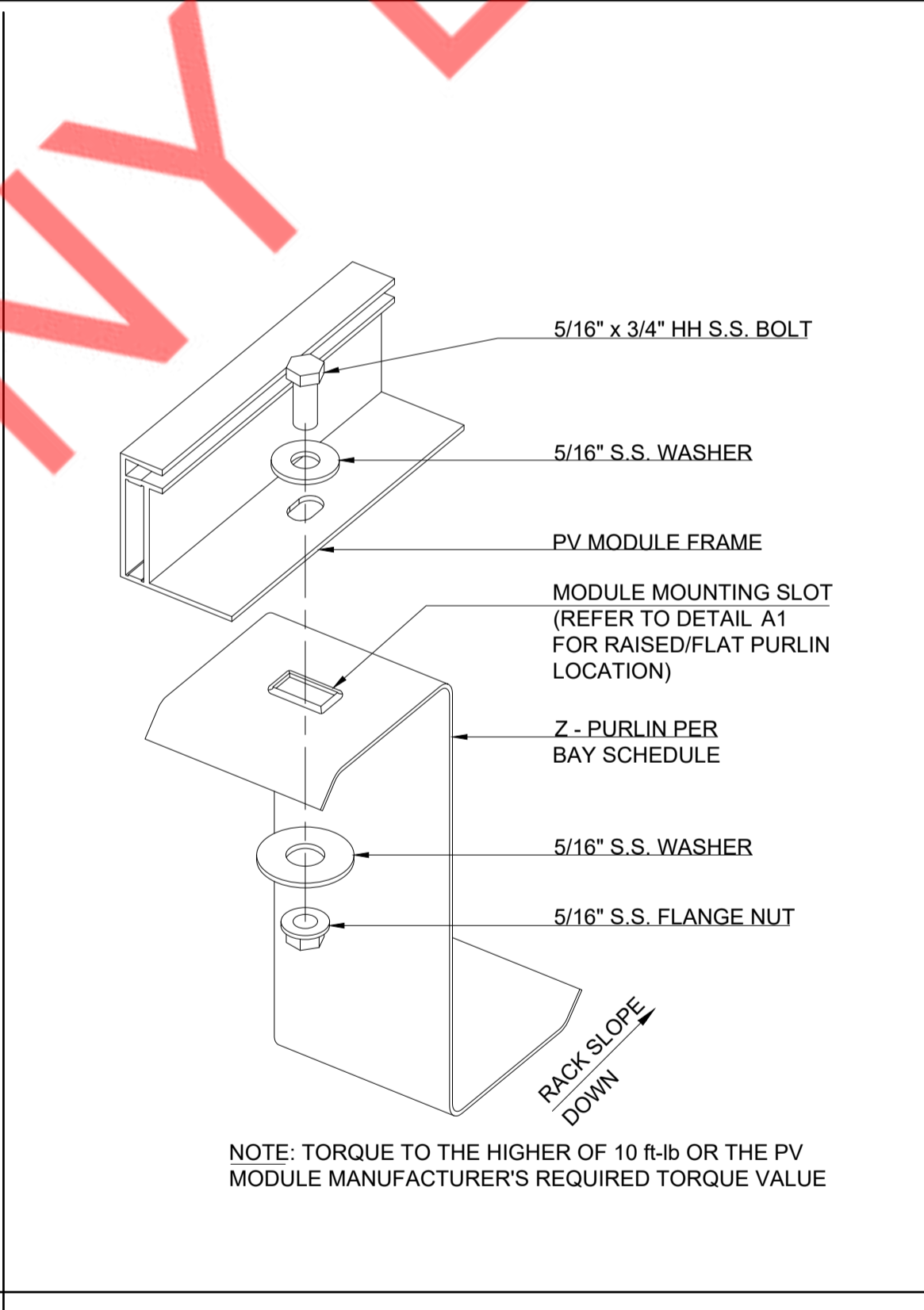
A7 TRANSVERSE PURLIN CONN. DETAIL
SCALE: NTS



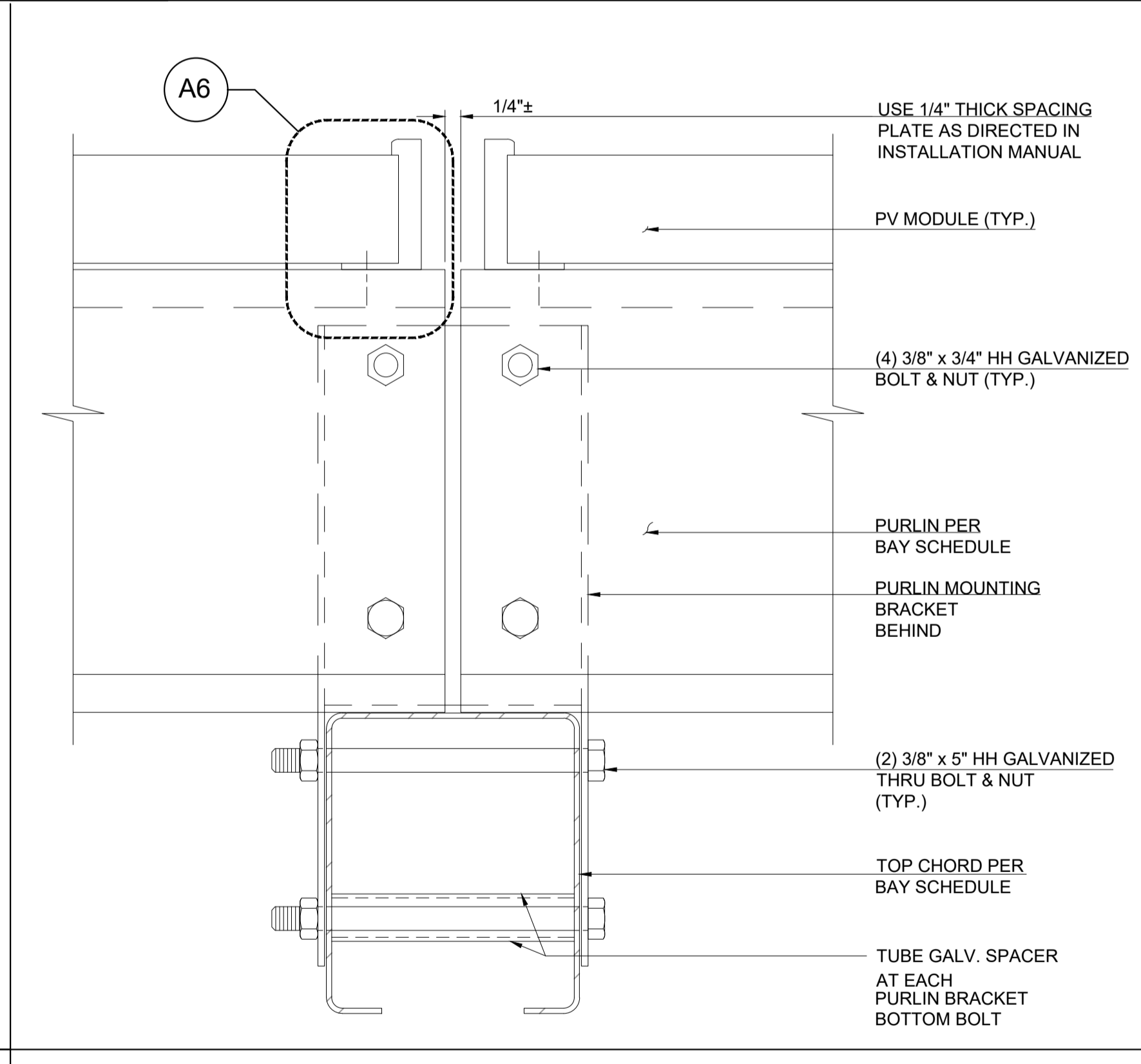
A1 LOWER KNEE BRACE TO TOP CHORD CONN. DETAIL
SCALE: NTS



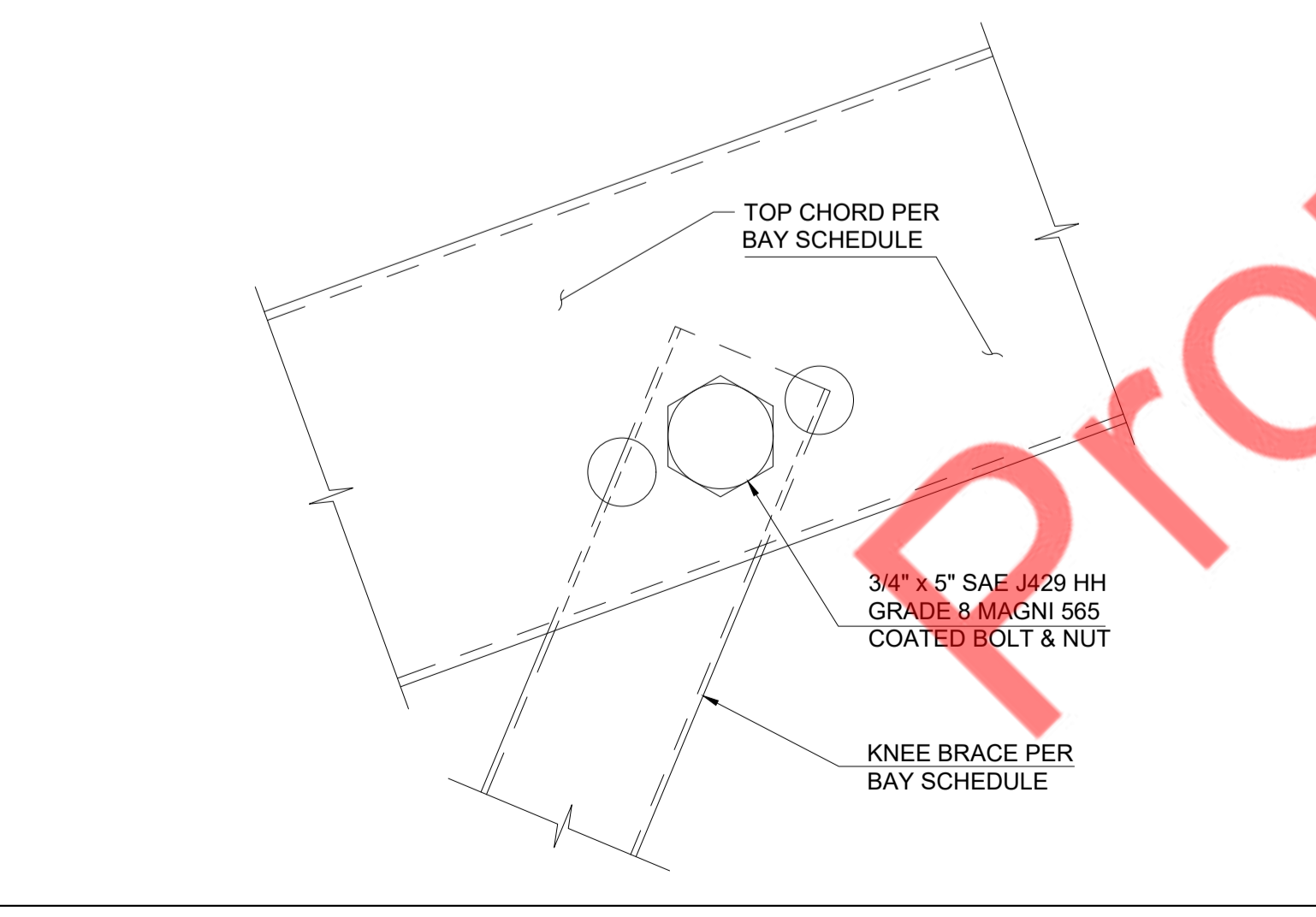
A5 KNEE BRACE TO POST CONN. DETAIL
SCALE: NTS



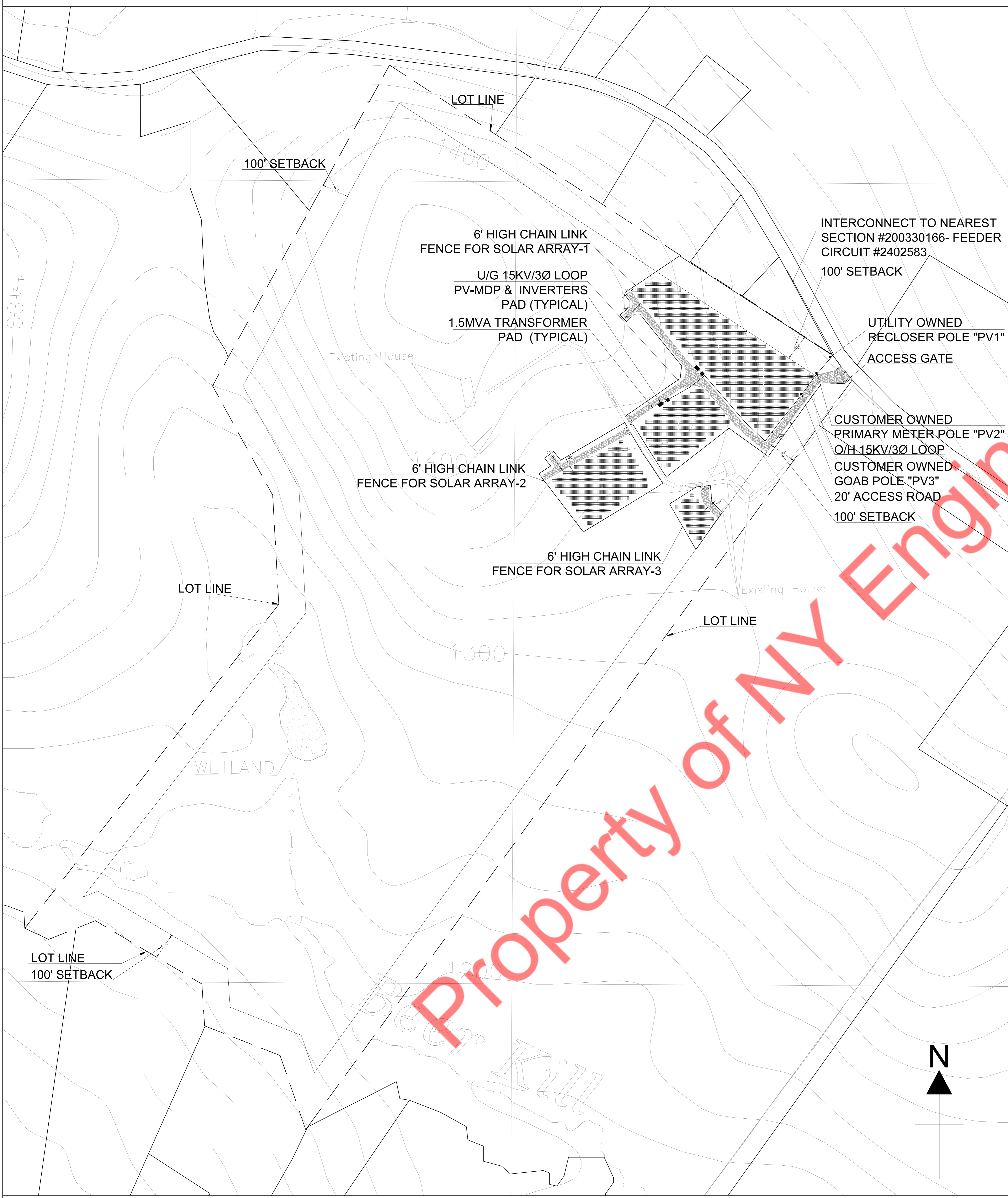
A6 PV MODULE TO PURLIN CONN. DETAIL
SCALE: NTS



A8 LONGITUDINAL PURLIN CONN. DETAIL
SCALE: NTS



A4 UPPER KNEE BRACE TO TOP CHORD CONN. DETAIL
SCALE: NTS



Property of NY Engineers

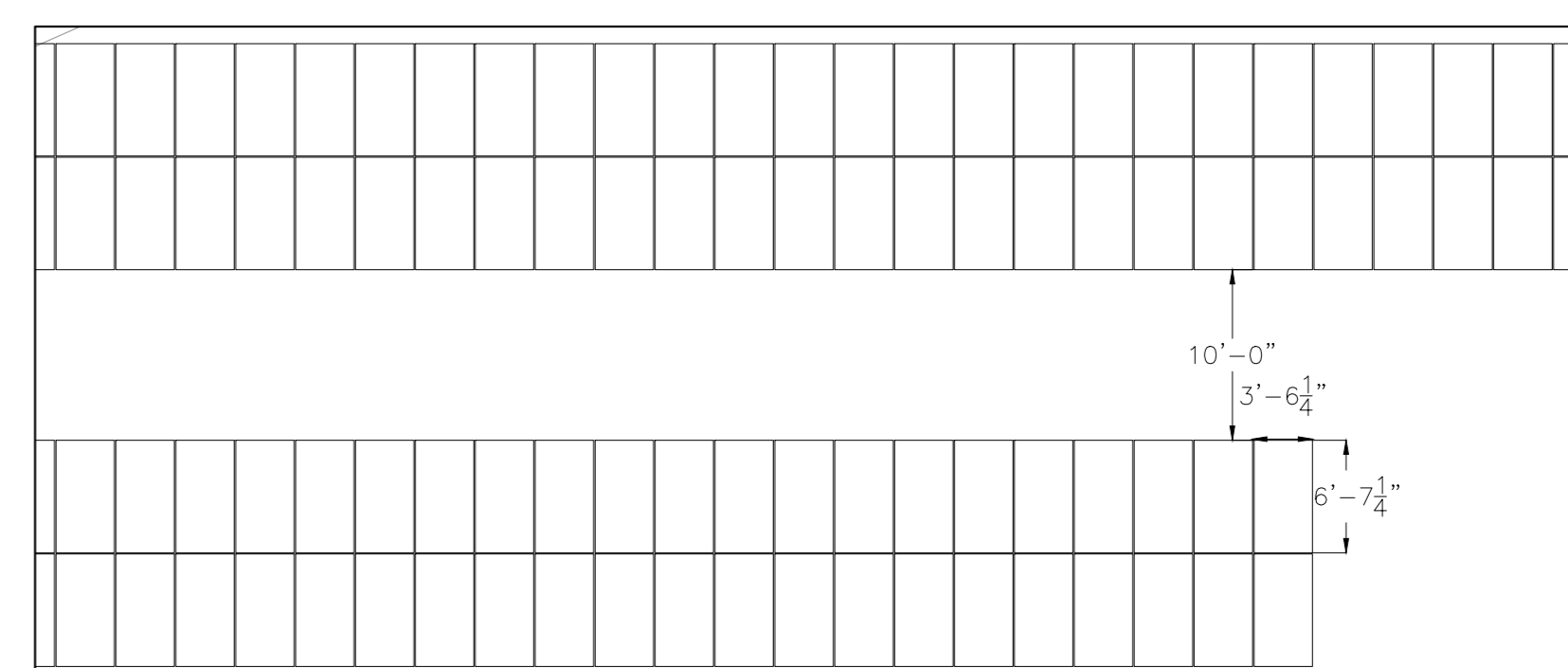
BULK REQUIREMENTS:

§310-6.3 (S) SOLAR ENERGY SYSTEM, LARGE SCALE.

MINIMUM BUILDING REQUIREMENTS	REQUIRED	PROPOSED
SETBACK:	100 FEET	100 FEET
LOT SIZE:	---	123.8 ACRES
MAXIMUM ALLOWABLE	REQUIRED	PROPOSED
HEIGHT:	35 FEET	18'-8" FEET
LOT COVERAGE:	---	3.37 ACRES (Note-1)

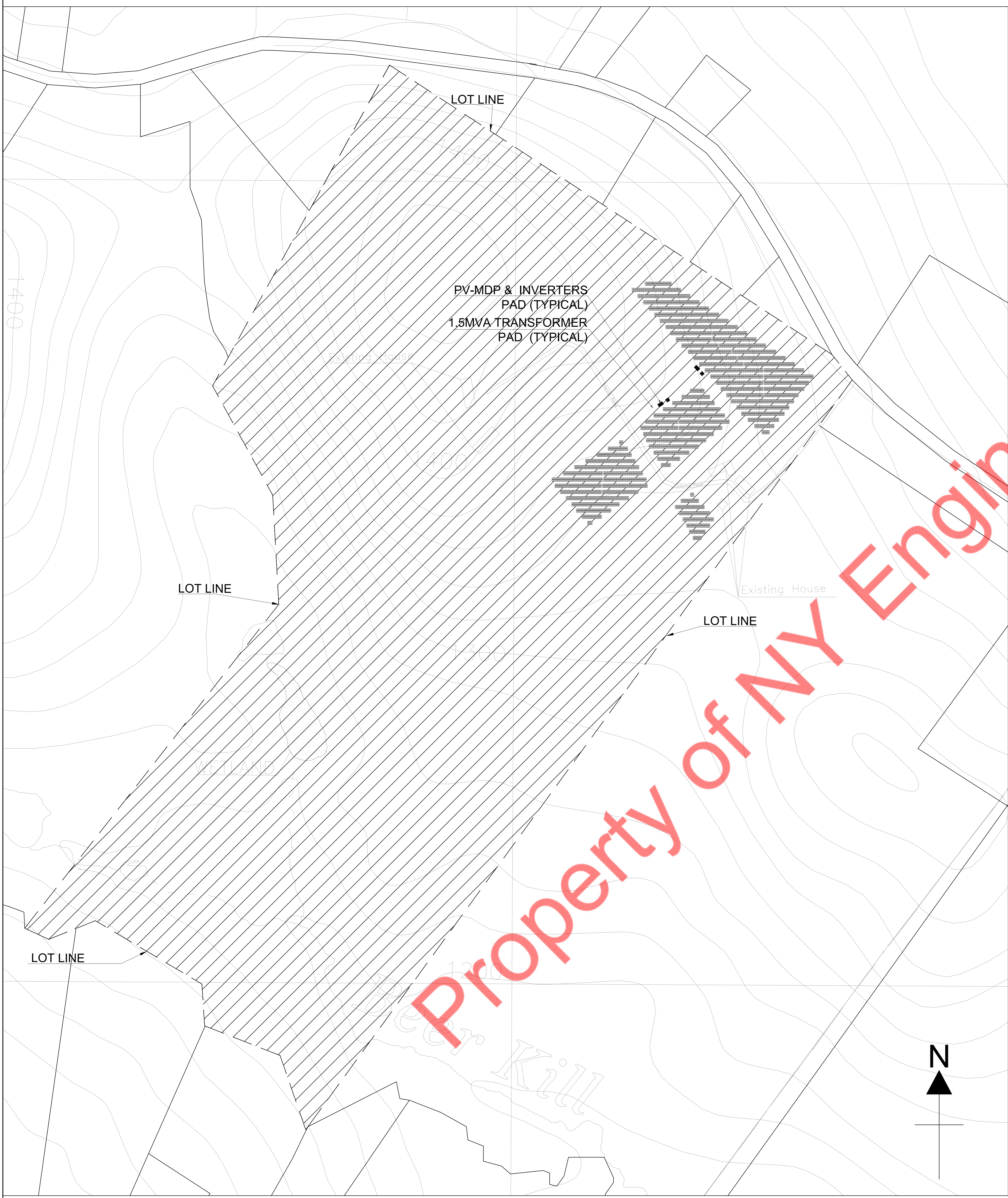
NOTE-1

ONE SOLAR PANEL AREA = 22.28 SQ. FEET
 TOTAL 6596 SOLAR PANEL COVERAGE AREA=146959 SQ.FEET = 3.37 ACRES
 LOT TOTAL AREA= 123.8 ACRES
 TOTAL SOLAR PANEL COVERAGE AREA= 3.37 ACRES= 2.7% LOT COVER BY SOLAR PANELS.



1 SITE PLAN
 SCALE: 1" = 150'-0"

3 ENLARGE VIEW OF PV CELL INSTALLTION
 SCALE: 3/32" = 1'-0"



BULK REQUIREMENTS:

§310-6.3 (S) SOLAR ENERGY SYSTEM, LARGE SCALE.

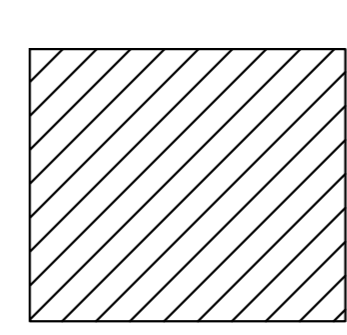
MINIMUM BUILDING REQUIREMENTS	REQUIRED	PROPOSED
SETBACK:	100 FEET	100 FEET
LOT SIZE:	---	123.8 ACRES
MAXIMUM ALLOWABLE	REQUIRED	PROPOSED
HEIGHT:	35 FEET	18'-8" FEET
LOT COVERAGE:	---	3.37 ACRES (Note-1)

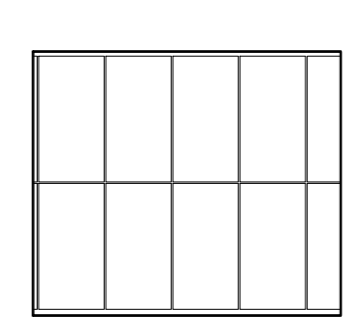
NOTE-1

ONE SOLAR PANEL AREA = 22.28 SQ. FEET
 TOTAL 6596 SOLAR PANEL COVERAGE AREA=146959 SQ.FEET = 3.37 ACRES

LOT TOTAL AREA= 123.8 ACRES
 TOTAL SOLAR PANEL COVERAGE AREA= 3.37 ACRES= 2.7% LOT COVER BY SOLAR PANELS.

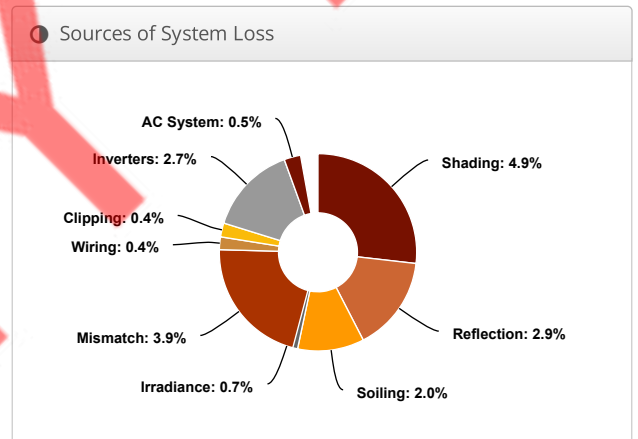
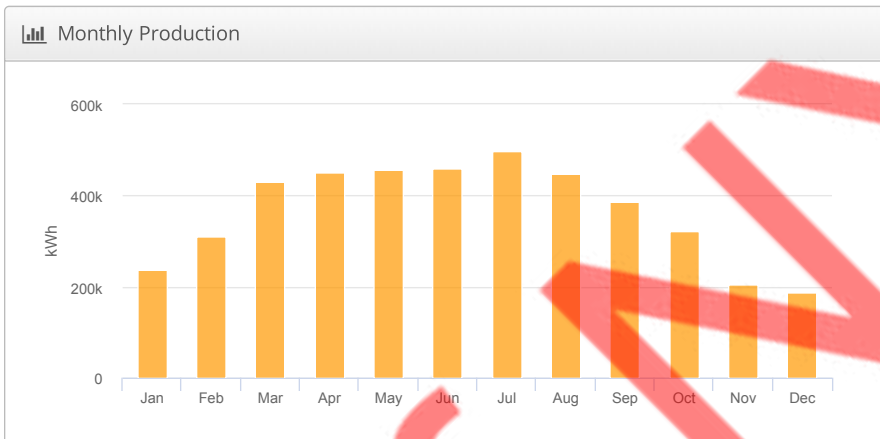
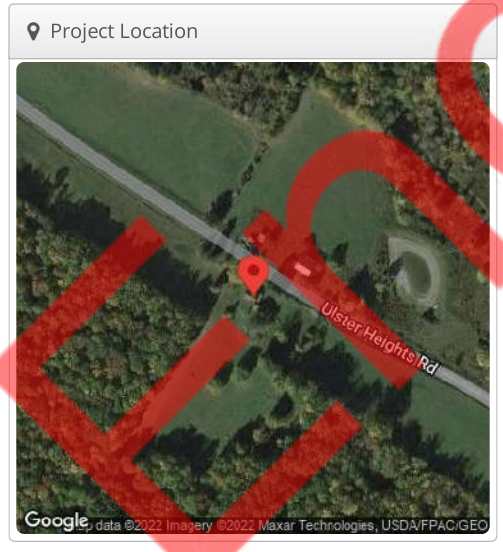
1 SITE PLAN
 SCALE: 1" = 150'-0"

 TOTAL OPEN LOT AREA = 120.43ACRES

 TOTAL SOLAR SYSTEM COVERAGE AREA = 3.37 ACRES

Helioscope Generation Report

System Metrics	
Design	Design
Module DC Nameplate	3.20 MW
Inverter AC Nameplate	2.70 MW Load Ratio: 1.18
Annual Production	4,391 GWh
Performance Ratio	83.4%
kWh/kWp	1,372.6
Weather Dataset	TMY, 10km Grid (41.75,-74.55), NREL (prospector)
Simulator Version	f975c270c8-eae46f3b-303194c02b-ebca9692c5



⚡ Annual Production			
	Description	Output	% Delta
Irradiance (kWh/m ²)	Annual Global Horizontal Irradiance	1,421.2	
	POA Irradiance	1,645.5	15.8%
	Shaded Irradiance	1,564.5	-4.9%
	Irradiance after Reflection	1,519.7	-2.9%
	Irradiance after Soiling	1,489.3	-2.0%
	Total Collector Irradiance	1,489.3	0.0%
Energy (kWh)	Nameplate	4,764,856.0	
	Output at Irradiance Levels	4,733,388.1	-0.7%
	Output at Cell Temperature Derate	4,757,883.6	0.5%
	Output After Mismatch	4,571,607.4	-3.9%
	Optimal DC Output	4,554,195.2	-0.4%
	Constrained DC Output	4,535,168.2	-0.4%
	Inverter Output	4,413,174.0	-2.7%
	Energy to Grid	4,391,108.0	-0.5%
Temperature Metrics			
	Avg. Operating Ambient Temp		9.0 °C
	Avg. Operating Cell Temp		16.1 °C
Simulation Metrics			
	Operating Hours	4690	
	Solved Hours	4690	

☁ Condition Set				
Description	Condition Set 1			
Weather Dataset	TMY, 10km Grid (41.75,-74.55), NREL (prospector)			
Solar Angle Location	Meteo Lat/Lng			
Transposition Model	Perez Model			
Temperature Model	Sandia Model			
Temperature Model Parameters	Rack Type	a	b	Temperature Delta
	Fixed Tilt	-3.56	-0.075	3°C
	Flush Mount	-2.81	-0.0455	0°C
	East-West	-3.56	-0.075	3°C
	Carport	-3.56	-0.075	3°C
Soiling (%)	J	F	M	A
	M	J	J	A
	S	O	N	D
	2	2	2	2
	2	2	2	2
Irradiation Variance	5%			
Cell Temperature Spread	4° C			
Module Binning Range	-2.5% to 2.5%			
AC System Derate	0.50%			
Module Characterizations	Module	Uploaded By		Characterization
	Q,PEAK DUO XL-G10.3/BFG 485 (2021) (Hanwha)	HelioScope		Spec Sheet Characterization, PAN
Component Characterizations	Device	Uploaded By		Characterization

📦 Components		
Component Name		Count
Inverters	Sgi 225-480 (Solectria)	12 (2.70 MW)
Strings	10 AWG (Copper)	668 (153,140.6 ft)
Module	Hanwha, Q,PEAK DUO XL-G10.3/BFG 485 (2021) (485W)	6,596 (3.20 MW)

🏠 Wiring Zones			
Description	Combiner Poles	String Size	Stringing Strategy
Wiring Zone	-	7-10	Along Racking

🏠 Field Segments									
Description	Racking	Orientation	Tilt	Azimuth	Intrarow Spacing	Frame Size	Frames	Modules	Power
Field Segment 1	Fixed Tilt	Portrait (Vertical)	25°	180°	10.0 ft	2x1	1,732	3,464	1.68 MW
Field Segment 3	Fixed Tilt	Portrait (Vertical)	25°	180°	10.0 ft	2x1	666	1,332	646.0 kW
Field Segment 3	Fixed Tilt	Portrait (Vertical)	25°	180°	10.0 ft	2x1	729	1,458	707.1 kW
Field Segment 4	Fixed Tilt	Portrait (Vertical)	25°	180°	10.0 ft	2x1	171	342	165.9 kW

