

ELECTRICAL CALCULATIONS AND SCHEDULES:

INVERTER DC INPUT CONFIGURATION				ARRAY CONFIGURATION							
INVERTER 1-5	MPPT - 1	8	STRING HOME RUN WIRE SIZE	LONGEST STRING LENGTH (ft)	STRING VOLTAGE DROP (%)	INVERTER NUMBER	MODULE TYPE	# OF MODULES	TILT	AZIMUTH	kW
	MPPT - 2	0	#10 AWG	200'	1.56%	INVERTER 1	CS6X-285P	80	2.4°	8°	22.8
						INVERTER 2	CS6X-285P	80	0.8°	8°	22.8
						INVERTER 3	CS6X-285P	80	0.8°	188°	22.8
						INVERTER 4	CS6X-285P	80	2.4°	188°	22.8
						INVERTER 5	CS6X-285P	80	4°	188°	22.8
						TOTAL		400			114.0

AC WIRE AND CONDUIT SCHEDULE					
CONDUIT ID	MINIMUM WIRE SIZE	WIRE SIZE AND TYPE	MINIMUM CONDUIT	CONDUCTOR LENGTH	VOLTAGE DROP (%)
Ⓐ	#2 AWG	(10) 20 CU THHN + #3 GND	2"	<250'	1.16%
Ⓑ	#8 AWG	(4) #8 CU THHN + #10 GND	1" to TROUGH	<50'	0.27%
Ⓒ	3/0 AWG	(4) 3/0 CU THHN + #4 GND	2 1/2"	<200'	0.67%

- GENERAL NOTES:**
- THE INSTALLATION CONTRACTOR WILL BE REQUIRED TO INSTALL WEATHERPROOF STRAIN RELIEFS FOR ALL WIRES ENTERING OR EXITING THE COMBINER BOX THAT ARE NOT PULLED THROUGH CONDUIT.
 - THE INSTALLATION CONTRACTOR WILL BE RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF THE NEMA RATING OF THE INVERTER AND ENCLOSURES. ALL CONDUIT MUST ENTER THE EQUIPMENT AND BE PROPERLY GASKETED.
 - ELECTRICAL CONTRACTOR SHALL COLOR CODE SOURCE WIRING AS POSITIVE-RED AND NEGATIVE-WHITE IF THE REQUIRED INSULATION COLOR IS NOT AVAILABLE, TAPING WITH CORRECT COLOR SHALL SUFFICE.
 - PROVIDE COMPRESSION LUGS AT BUS TERMINATIONS.
- KEY NOTES:**
- 10 CANADIAN SOLAR CS6X-285P SOLAR PANELS WIRED IN SERIES. EACH MODULE INCLUDES 1 #10 AWG OUTDOOR RATED QUICK CONNECT FOR MODULE INTERCONNECTION. DO NOT REMOVE QUICK CONNECTS, OTHERWISE THE MODULE WARRANTY AND UL LISTING MAY BE INVALIDATED. QUICK CONNECTS WILL COMPLY WITH NEC 690.33.
 - SOLECRIA DC DISCONNECTING COMBINER BOX. 15A FUSE PER STRING.
 - 5 SOLECTRIA PV20TL, 3Φ, SOLAR PV INVERTERS. 20KW-AC EACH.
 - NEW 200A, NEMA-3R MLO 277/480V, SUBPANEL. INSTALL (5) 40A BREAKERS TO MATCH MANUFACTURERS AIC RATING.
 - NEW FORM 16S, CLASS 200 ZREC METER. TO BE REVIEWED AND APPROVED BY UTILITY.
 - NEW LOCUS LGATE-320, REVENUE GRADE SOLAR PV GENERATION METER.
 - NEW 200A, 3P, 4W, NON-FUSIBLE DISCONNECT. MOUNTED ADJACENT TO UTILITY REVENUE METER.
 - EXISTING 600A AUTOMATIC TRANSFER SWITCH FOR CRITICAL LOADS PANEL.
 - EXISTING 1600A, 120/208V MAIN SWITCHGEAR. PV WILL INTERCONNECT VIA 200A BACKFED BREAKER IN MDP.
 - EXISTING UTILITY REVENUE METER.

PV MODULE - CS6X-285P			
MAX POWER (W)	285w		
OPEN CIRCUIT VOLTAGE (V _{oc})	44.30		
MAX POWER VOLTAGE (V _{mp})	35.80		
MAX POWER CURRENT (I _{mp})	7.96		
SHORT CIRCUIT CURRENT (I _{sc})	8.53		

INVERTER - PV20TL			
MAX DC VOLTAGE:	600V	VOLTAGE PICKUP (p.u)	CLEARING TIME (S)
MPP VOLTAGE RANGE:	260-580V	V<0.5	0.16
MIN. DC VOLTAGE/START VOLTAGE:	300V	V<0.88	2.0
NOMINAL INPUT CURRENT:	70A	V>1.1	1.0
# OF MPP TRACKERS/STRINGS PER:	24	V>= 1.2	0.16
AC NOMINAL POWER:	20,000W	FREQUENCY PICKUP (Hz)	CLEARING TIME (S)
MAX AC APPARENT POWER:	20,000VA	F=60.5	0.16
NOMINAL AC VOLTAGE:	480V, 3-PH	F<=57.0	0.16
AC VOLTAGE RANGE:	-12%/+10%	F< (59.8-57.0) ADJUSTABLE	(0.16-300) ADJ
		F<=59.3 STANDARD	0.16 STD
AC GRID FREQUENCY/RANGE:	60Hz/59.3-60.5Hz		
MAX OUTPUT CURRENT:	24A		
POWER FACTOR:	>0.99 (+/- 0.8 ADJ)		
HARMONICS:	<3%		

STRING SIZING CALCULATIONS	
# PANELS PER STRING	10
MIN TEMPERATURE (°C)	-19
TEMP. COEFF. OF VOLT (%/°C)	-0.34%
TEMPERATURE CORR FAC.	14.96%
MAX SYSTEM VOLTAGE (NEC690.7)	509.27V
=V _{oc} x TEMP CORR FAC x PANELS/STRING	
PV SOURCE CIRCUIT CURRENT (NEC690.8(A)(1))	10.66V
=I _{sc} x 1.25	
PV SHORT CIRCUIT CURRENT (NEC690.8(A)(1))	13.31A

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DC RATING:	114kW
ARRAY PITCH:	VARIES
AZIMUTH:	188°
INVERTER:	(5) PV20TL
NO. OF MODULES:	400
RACKING SYSTEM:	CARPORT
SCALE:	NTS
DRAWN:	AP

REV. DATE: 8.10.2015
REVISION 4

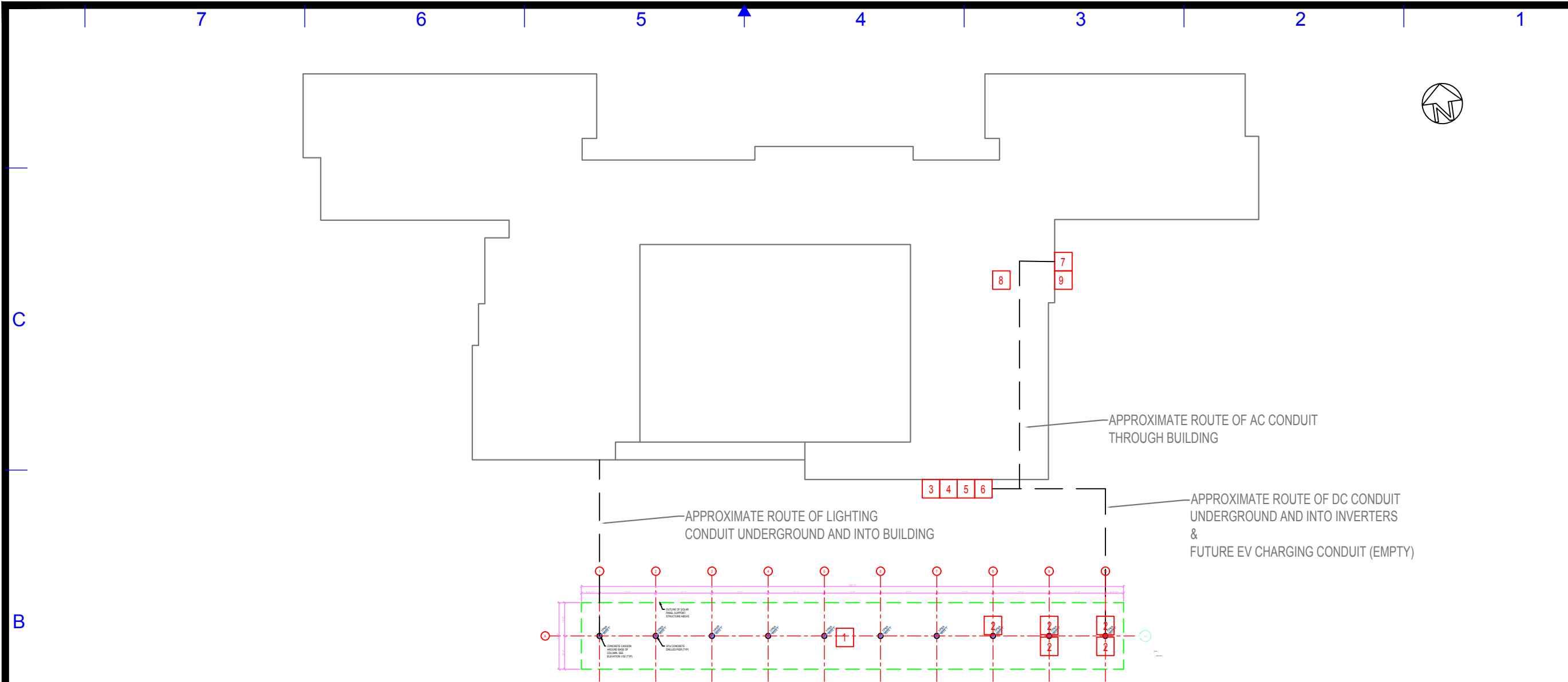
One-Line Schematic

**STAFFORD MIDDLE SCHOOL RUN
21 LEVINTHAL RUN
STAFFORD, CT**

DRAWING NUMBER: **PV-100**
PROJECT NUMBER:

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Legend

- 1) Solar Modules – (400) CANADIAN SOLAR Solar PV modules on Carport
- 2) DC Disconnecting Combiner Box – Located on East carport columns
- 3) Inverters – Installed on South facing exterior wall
- 4) PV AC Load Center – Installed on South wall adjacent to inverters
- 5) ZREC Meter – Installed on South facing exterior wall adjacent to PV AC Load Center
- 6) Locus Meter – Installed on South facing exterior wall adjacent to ZREC Meter
- 7) PV AC Disconnect – Installed on East facing exterior wall adjacent to Utility Revenue Meter
- 8) Main Service Panel – Installed inside electrical room in SE sector of building
- 9) Utility Revenue Meter – Mounted outside electrical room in SE sector of building

	
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REV. DATE: 8.10.2015 REVISIONS: REVISION 4	
DC RATING: 114.0KW ARRAY PITCH: VARIES AZIMUTH: 188° INVERTER: (5) PVI20TL NO. OF MODULES: 400 RACKING SYSTEM: CARPORT SCALE: NTS DRAWN: AP	
DRAWING TITLE: <h2 style="margin: 0;">Site Layout</h2>	
PROJECT: <h3 style="margin: 0;">STAFFORD MIDDLE SCHOOL 21 LEVINTHAL RUN STAFFORD, CT</h3>	
DRAWING NUMBER: <h1 style="margin: 0;">PV-300</h1>	PROJECT NUMBER:

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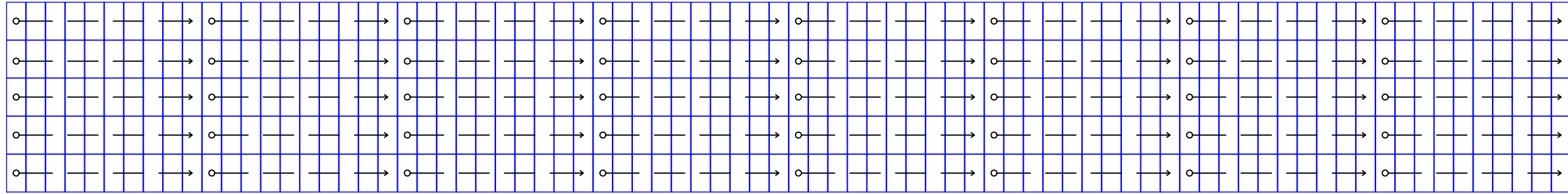
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 2-(1-8)
 3-(1-8)
 4-(1-8)
 5-(1-8)

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REV. DATE	REVISIONS	DC RATING	ARRAY TYPE	AZIMUTH	INVERTER	NO. OF MODULES	RACKING SYSTEM	SCALE	DRAWN
									AP

DRAWING TITLE:
Array Layout

PROJECT:
**STAFFORD
 MIDDLE
 SCHOOL**

DRAWING NUMBER:

PROJECT NUMBER:

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