SOLAR PV ELECTRIC GENERATION SYSTEM INSTALLATION ON EXISTING BUILDINGS:
1 Bedford Banksville Road, Bedford, NY 10506

Legend

- Solar Panel
- FD Setbacks & Pathways
- Gas Line
- D/C Home Run
- A/C Home Run
- Light Shade
- Heavy Shade
- Obstruction (Vent Pipe)
- Building Outline
- Solar Inverter/Electrical Equipment

SCOPE OF WORK

SCOPE OF WORK IS SOLELY FOR THE INSTALLATION OF THE SOLAR ELECTRONIC GENERATING SYSTEM. ALL OTHER WORK IS NOT TO BE RELIED UPON AS BEING APPROVED AND/OR PERMITTED BY THE BUILDINGS DEPARTMENT.

SYSTEM SUMMARY

(448) Solar Modules 395W (7,840 sqft)
Solar Connection Racking
(3)Chint Power 50.0kW Inverter
(1)300A 52IT Solar AC Combiner Panel
(1)150 kVa MGM 3 Phase Transformer
(1)89L 300A AC Disconnect Switches

APPLICABLE CODES

All materials, equipment, installation and work shall comply with the following applicable codes:

2017 National Electrical Code
2020 New York State Building Code
2020 New York State Existing Building Code
2020 New York State Fire Code

PHOTOVOLTAIC SYSTEM IS COMPLIANT WITH SECTIONS 1204.2, 1204.2.1-3 OF THE NYS 2020 FIRE CODE

PHOTOVOLTAIC SYSTEM IS EQUIPPED WITH RAPID SHUTDOWN

SCALE: 1"=20'-0" (IN FEET)
0 15' 30' 60'

DESIGN CRITERIA

Occupancy Classification:	B
Existing Buiding Height:	44 ft
Proposed Building Height:	44 ft
Allowable Building Height:	30 ft

No equipment to be installed on roof shall exceed the allowable building height designated by the zoning commission of the town.

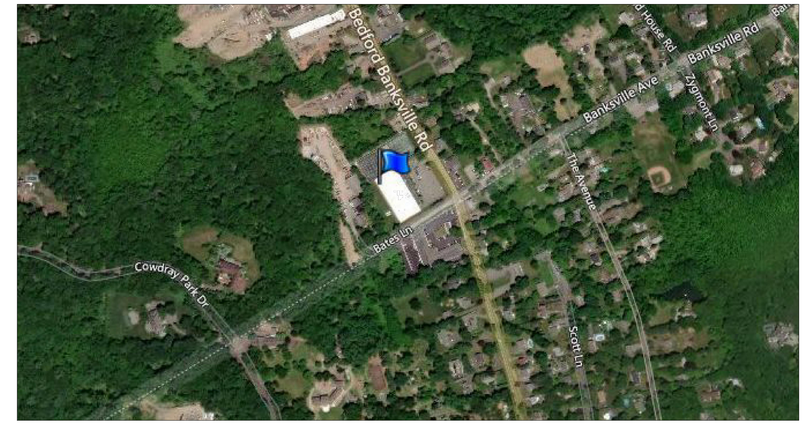
Snow Load:	
Ground Snow Load:	30 psf
Exposure Factor:	1.0
Importance Factor:	1.0
Flat Roof Snow Load:	21 psf
Thermal Factor:	1.0
Drift Surcharge:	33.5 psf
Drift Width:	10.9 ft
Wind Design	
Ultimate Design Speed:	115 mph
Risk category:	II
Exposure Category:	B
Topograhic Effects:	no
Special Wind Region:	no

DRAWING INDEX

1	Zoning Information, Site Plan	Z-000.00
2	General Notes	G-000.00
3	Building Overview	A-000.00
4	Racking Overview	A-001.00
5	Racking Details	A-002.00
6	AC Electrical Wiring Diagram	E-000.00
7	AC Electrical Plan Elevations	E-001.00
8	DC Electrical String Diagram	E-002.00
9	Equipment Details	E-003.00
10	Conduit & RaceTray Details	E-004.00
11	Grounding Details	E-005.00
12	Electrical Line Diagrams/Calculations	E-100.00
13	Monitoring Diagram	E-200.00
14	Labels	L-000.00
15	Equipment Data Sheets	G-100.00

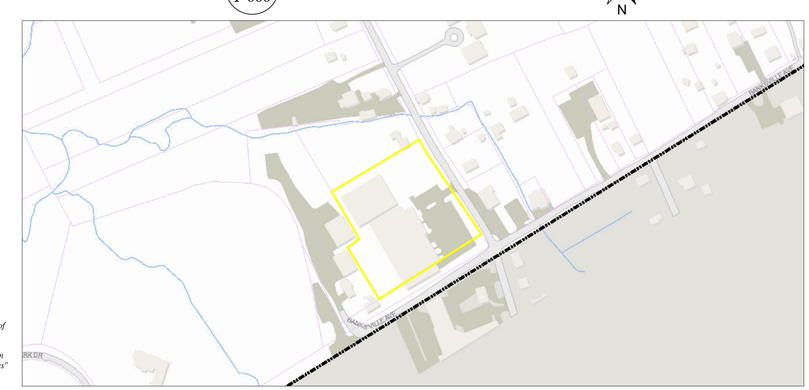
1 T-000 **Site Plan**
Scale: 1" = 20'-0"

2 T-000 **Aerial Map Overview**
Scale: NTS



3 T-000 **Aerial Map Focused**
Scale: NTS

4 T-000 **Tax Map**
Scale: NTS



Drafting/Design

Developer

PhRGD

25 Broadway 9th Floor
NY, NY 10004
(646) 866-4734

NOTES

Per attached structural analysis letter, the existing roof structure, with upgrades where necessary, is capable of supporting the loads of the solar electrical generating system.

For Tenant Safety, Electrical, and Installation notes please see page G-000.00 "General Notes"

Drafting/Design Firm

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PROPERTY INFORMATION
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Deed Acres: 3.68

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PE STAMP/SIGNATURE

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Community Solar

Page Size: 36" x 24"

ZONING INFORMATION SITE PLAN

Scale: See Scales | Page 1 of 15

Z-000.01

CONTRACTOR NOTES

1. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS AND NOTIFY THE SYSTEM DESIGN ENGINEEROF 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, WORKMANLIKE AND SAFE MANNER BY WORKERS SKILLED AND EXPERIENCED IN THEIR TRADES.
3. ALL REQUIRED AND NECESSARY PERMITS SHALL BE SECURED FROM ALL MUNICIPAL AGENCIES HAVING JURISDICTION AT THE COST AND EXPENSE OF THE CONTRACTORS PRIOR TO THE START OF WORK.
4. 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.
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.
6. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH OTHER CONTRACTORS WHOSE WORK MIGHT AFFECT THIIS 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.

TENANT SAFETY NOTES

1. 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.
2. CONSTRUCTION SHALL BE PERMITTED DURING NORMAL BUSINESS HOURS 8AM TO 5PM AND SHALL NOT EXCEED PAST THESE TIMES
3. 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.
4. 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.
5. 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.
6. ANY DAMAGE TO SURROUNDING PROPERTIES INCLUDING SIDEWALKS, CURBS, TREES, AND STREET SHALL BE REPAIRED SATISFACTORILY TO ORIGINAL CONDITIONS.
7. PERSONAL PROTECTIVE EQUIPMENT (PE) SHALL BE PROVIDED AS REQUIRED IN ACCORDANCE WITH NEC 70E AND OSHA REQUIREMENTS

GENERAL NOTES

1. THE GENERAL NOTES APPLY TO ALL DRAWINGS UNDER THE CONTRACT. REFER TO INDIVIDUAL DRAWINGS FOR ADDITIONAL NOTES.
2. UNFORESEEN OBSTRUCTIONS ON THE ROOF MAY REQUIRE A CHANGE IN THE LAYOUT. ANY CHANGES TO THE RACKING LAYOUT SHOULD BE REPORTED TO THE ENGINEER. CHANGES IN UP TO 6% OF THE MODULES SHOULD BE ANTICIPATED. CHANGES TO THE ARRAY LAYOUT SHOULD BE MADE AS TO NOT IMPACT THE NUMBER OF MODULES ON A COMBINER BOX OR INVERTER.
3. DRAWINGS ARE DIAGRAMS AND INDICATE GENERAL ARRANGEMENT OF SYSTEMS AND WORK. FOLLOW DRAWINGS IN LAYING OUT OF WORK AND CHECK DRAWINGS OF OTHER TRADES TO VERIFY SPACE CONDITIONS.

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.
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 BEFORE INSTALLATION.
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 #6 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 PHYSICAL DAMAGE.

EQUIPMENT NOTES

1. 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. METAL RACEWAYS, METAL ENCLOSURES OF ELECTRICAL DEVICES AND EQUIPMENT, MODULE FRAMES, AND OTHER EQUIPMENT SHALL BE COMPLETELY GROUNDED IN ACCORDANCE WITH THE NEC. PROPER HARDWARE FOR A COMPLETE GROUNDING AND BONDING SYSTEM SHALL BE INSTALLED BY THE CONTRACTOR, IF NECESSARY.
10. 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.
11. 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.
12. ALL CONDUIT SHALL BE MOUNTED AT A MINIMUM OF 1 INCHES ABOVE THE ROOF SURFACE.

ELECTRICAL NOTES

1. 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. EQUIPMENT GROUNDING CONDUCTOR FOR PV MODULES SMALLER THAN 6AWG SHALL BE PROTECTED FROM PHYSICAL DAMAGE BY A RACEWAY OR CABLE ARMOR.
6. ALL EQUIPMENT SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH NEC ARTICLE 250.
7. GROUNDING ELECTRODE CONDUCTOR (G.E.C.) SHALL BE CONTINUOUS AND/OR IRREVERSIBLY SPLICED/WELDED.
8. 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).
9. THE UTILITY INTERACTIVE INVERTER SHALL AUTOMATICALLY DE-ENERGIZE ITS OUTPUT TO THE CONNECTED ELECTRICAL PRODUCTION AND DISTRIBUTION NETWORK UPON LOSS OF VOLTAGE IN THE SYSTEM AND SHALL REMAIN IN THE STATE UNTIL THE ELECTRICAL PRODUCTION AND DISTRIBUTION NETWORK VOLTAGE HAS BEEN RESTORED.
10. DUE TO THE FACTS THAT PV MODULES ARE ENERGIZED WHENEVER EXPOSED TO LIGHT, PV CONTRACTOR SHALL DISABLE THE ARRAY DURING INSTALLATION AND SERVICE BY SHORT CIRCUITING, OPEN CIRCUITING, OR COVERING THE ARRAY WITH OPAQUE COVERING.
11. 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.
12. BREAKERS SHALL BE 80% RATED UNLESS OTHERWISE SPECIFIED.
13. 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.

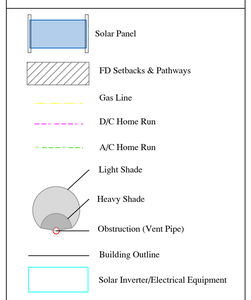
TESTING

1. FINAL TEST AND INSPECTION SHALL BE HELD IN THE PRESENCE OF OWNER'S REPRESENTATIVES AND TO THEIR SATISFACTION.
2. MEGGER ALL: STRING WIRING, COMBINER BOX OUTPUT FEEDERS, AND AC FEEDERS. SUBMIT RESULTS TO OWNER FOR REVIEW.
3. IV CURVE TRACES OF STRINGS SHALL BE GENERATED USING THE SOLMETRIC PV ANALYZER (OR EQUIVALENT DEVICE) AND SUBMITTED TO OWNER FOR APPROVAL.

ABBREVIATIONS

A	AMPERES
AC	ALTERNATING CURRENT
AF	AMP FRAME
AFDI	ARC FAULT DETECTION INTERRUPTER
AT	AMP TRIP
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BIL	BASIC IMPULSE LEVEL
BIB	BYPASS ISOLATION BREAKER
BPS	BOLT PRESSURE SWITCH
CA	CIRCULAR MILS AREA
CB	COMBINER BOX
COMM	COMMUNICATIONS
CT	CURRENT TRANSFORMER
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
CU	COPPER
CO	CONTINUOUS OPERATION CURRENT
CYC	CYCLE
D	DISTANCE
DC	DIRECT CURRENT
DISC	DISCONNECT
EDP	EMERGENCY DISTRIBUTION TRANSFORMER
EGC	EQUIPMENT GROUNDING CONDUCTOR
EHDP	EMERGENCY HIGH VOLTAGE DISTRIBUTION PANELBOARD
ELDP	EMERGENCY LOW VOLTAGE DISTRIBUTION PANELBOARD
EMT	ELECTRICAL METALLIC TUBING
EPR	ETHYLENE PROPYLENE RUBBER
EQUIP	EQUIPMENT
EXIST	EXISTING
GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
GFD	GROUND FAULT DEVICE
HWG	HEATER WATER GAS LINE
INV	INVERTER
Ipmax	NOMINAL CURRENT (AMPS)
IMC	INTERMEDIATE METAL CONDUIT
KCMIL	THOUSAND CIRCULAR MILS
KV	THOUSAND VOLT
KVA	THOUSAND VOLT-AMP
KW	THOUSAND WATT
LFMC	LIQUID TIGHT FLEXIBLE METALLIC CONDUIT
LSC	SHORT CIRCUIT CURRENT
LSIG	LONG, SHORT, INSTANTANEOUS, GROUND TIME
MAU	MAKEUP AIR UNIT
MBP	MAINTENANCE BYPASS BREAKER
MCB	MINI CIRCUIT BREAKERS
MCCB	MOLDED CASE CIRCUIT BREAKERS
MIB	MAINTENANCE ISOLATION BREAKER
MISC	MISCELLANEOUS
MFG	MANUFACTURER
MPPT	MAXIMUM POWER POINT TRACKING
MV	MEDIUM VOLTAGE
NEC	NATIONAL ELECTRIC CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NESC	NATIONAL ELECTRIC SAFETY CODE
NTS	NOT TO SCALE
OCPD	OVERCURRENT PROTECTION DEVICE
PCC	POINT OF COMMON COUPLING
PDU	POWER DISTRIBUTION UNIT
PF	POWER FACTOR
POI	POINT OF INTERCONNECTION
PRI	PRIMARY
PT	POTENTIAL (VOLTAGE) TRANSFORMER
PV	PHOTOVOLTAIC
PVC	POLYVINYL CHLORIDE
PWR	POWER
RCA	RECYCLED CONCRETE AGGREGATE
RIB	UPS RECTIFIER
RMC	RIGID METAL CONDUIT
RS	RAPID SHUTDOWN
RTU	ROOFTOP AIR HANDLING UNIT
SA	SURGE ARRESTER
SCH	SCHEDULE
SEC	SECONDARY
SPD	SURGE PROTECTION DEVICE
TBD	TO BE DETERMINED
UL	UNDERWRITER's LAB
UPS	UNINTERRUPTED POWER SUPPLY
V	VOLT
VA	VOLT-AMPERE
Vin	INPUT VOLTAGE
VOC	OPEN CIRCUIT VOLTAGE
VOC Low	MAXIMUM OPEN CIRCUIT VOLTAGE IN LOWEST TEMPERATURE CONDITIONS
Vout	OUTPUT VOLTAGE
W	WATT
WP	WEATHER PROOF
XFMR	TRANSFORMER
Z	IMPEDANCE

LEGEND



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1
A-000

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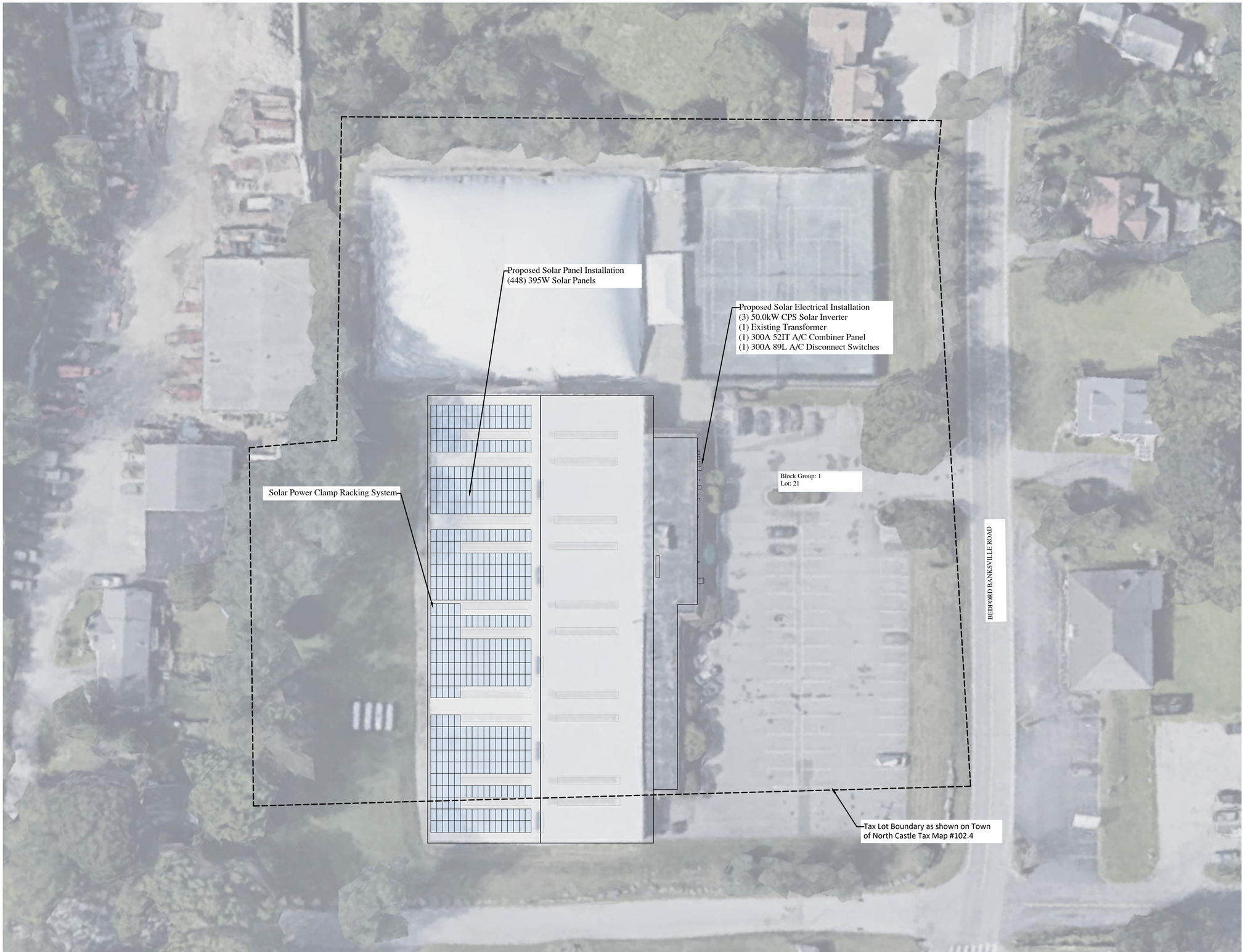

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BUILDING OVERVIEW

Scale: NTS | Page 3 of 15

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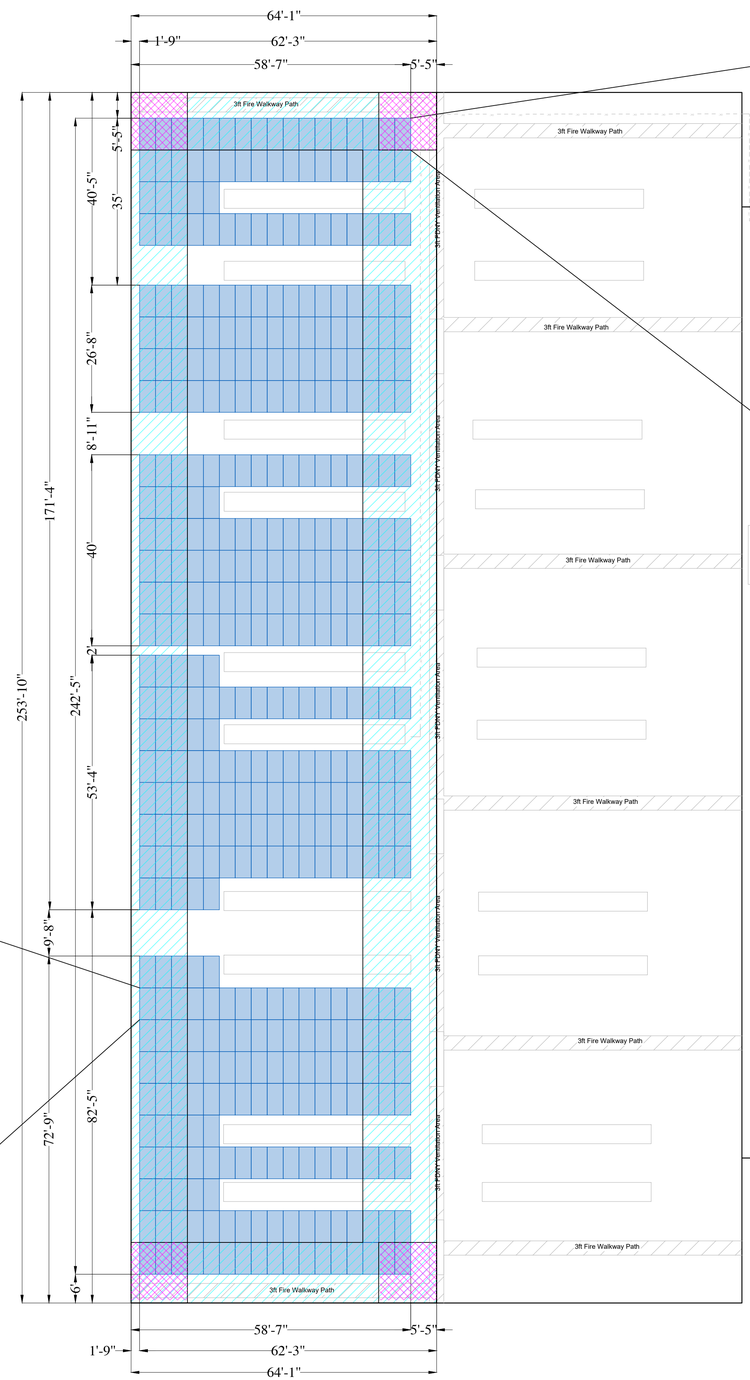
A-001

RACKING OVERVIEW

Scale: 1" = 15'-0"



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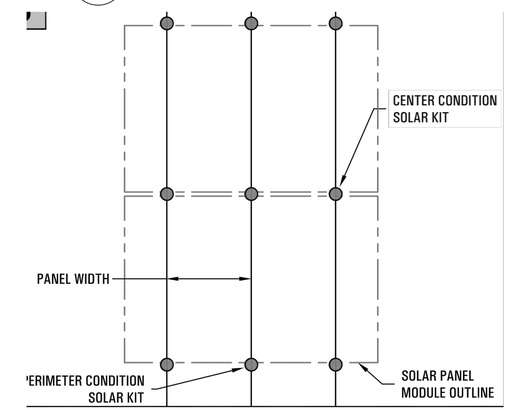
Racking Detail

Scale: NTS



Minimum number of fasteners/ module length

Zone 1: 2
Zone 2: 3
Zone 3: 4

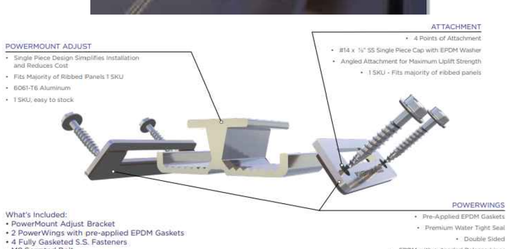
Legend

- Wind Zone 1
- Wind Zone 2
- Wind Zone 3

3
A-001

Racking Detail

Scale: NTS



SCALE: 1"=15'-0" (IN FEET)

0 12.5' 25' 50'

LEGEND

- Solar Panel
- FD Setbacks & Pathways
- Gas Line
- D/C Home Run
- A/C Home Run
- Light Shade
- Heavy Shade
- Obstruction (Vent Pipe)
- Building Outline
- Solar Inverter/Electrical Equipment

Drafting/Design Firm

PhRGD

25 Broadway 9th Floor
NY, NY 10004
(646) 866-4734

Developer

PROPERTY INFORMATION
Tax Lot ID # 102.04-1-21
Block Group: 1
Lot: 21
Deed Acres: 3.68

ZONING INFORMATION
Building Type: B
Building Max Height: 30'
Zoning District: CB-B

Array Azimuth: 240°
Array Tilt: 17°

PE STAMP/SIGNATURE

James W. Luckner, P.E.
New York State License # 67443
P.O. Box 414 High Falls, NY 12440
(845)658-3635 jimluckn@hvi.net

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.00	6/15/20	Shop	MJ
.00	8/5/20	Print	JL

1 Bedford Banksville Rd
Bedford, NY 10506

Owner: Grand Slam Tennis

Solar Modules:
(448) 395W Solar Modules

Solar Inverters:
(3) CPS 50.0kW Chint Inv

Solar System DC Size: 176.9 kW

Innerconnection Type:
Community Solar

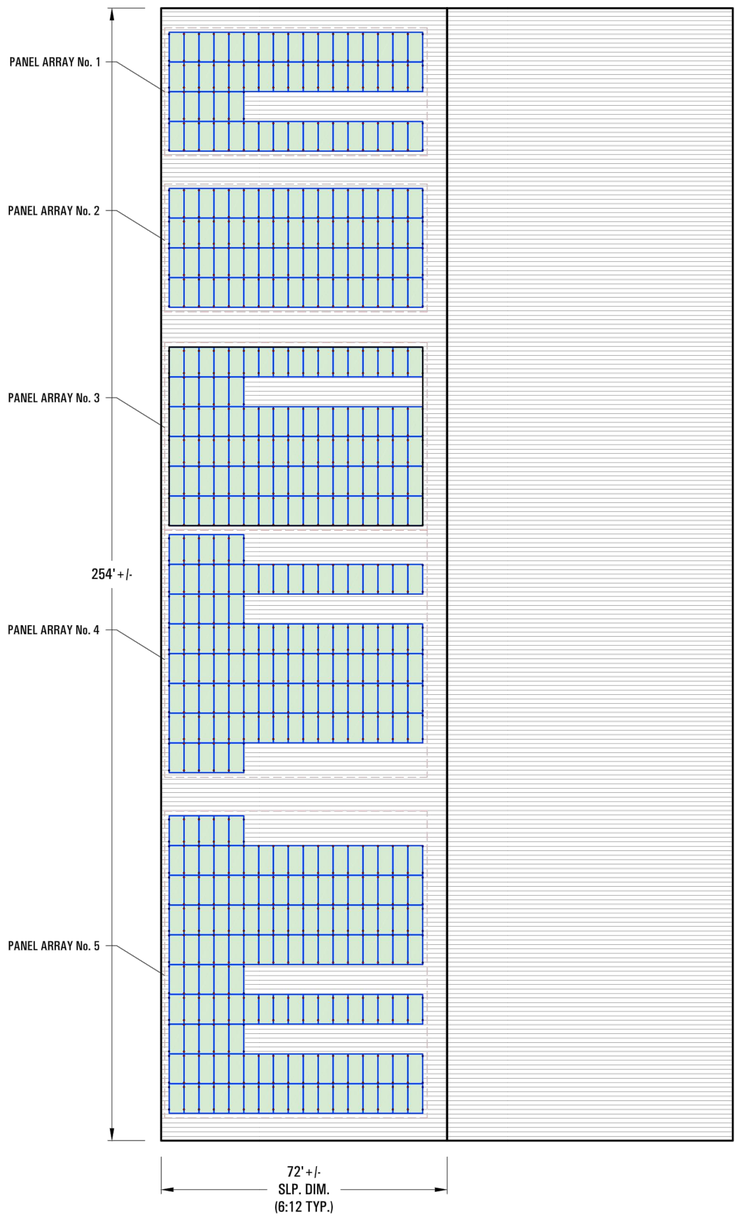
Page Size: 36" x 24"

BUILDING OVERVIEW

Scale: 1"=15'-0" | Page 4 of 15

A-001.01

*** GENERAL LAYOUT ONLY ***



PANEL ARRAY #1			
Item	QTY	LBS	TOTAL WEIGHT
Mini Clamp + SCI Kit	120	0.61	73.20
Solar Panels	56	50.7	2839.20
TOTAL WEIGHT	2912.40		
ARRAY AREA (SQ.FT.)	1212.91		
AVG PSF	2.40		

PANEL ARRAY #2			
Item	QTY	LBS	TOTAL WEIGHT
Mini Clamp + SCI Kit	144	0.61	87.84
Solar Panels	68	50.7	3447.60
TOTAL WEIGHT	3535.44		
ARRAY AREA (SQ.FT.)	1472.82		
AVG PSF	2.40		

PANEL ARRAY #3			
Item	QTY	LBS	TOTAL WEIGHT
Mini Clamp + SCI Kit	192	0.61	117.12
Solar Panels	90	50.7	4563.00
TOTAL WEIGHT	4680.12		
ARRAY AREA (SQ.FT.)	1949.32		
AVG PSF	2.40		

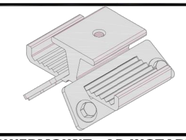
PANEL ARRAY #4			
Item	QTY	LBS	TOTAL WEIGHT
Mini Clamp + SCI Kit	216	0.61	131.76
Solar Panels	100	50.7	5070.00
TOTAL WEIGHT	5201.76		
ARRAY AREA (SQ.FT.)	2165.91		
AVG PSF	2.40		

PANEL ARRAY #5			
Item	QTY	LBS	TOTAL WEIGHT
Mini Clamp + SCI Kit	288	0.61	175.68
Solar Panels	135	50.7	6844.50
TOTAL WEIGHT	7020.18		
ARRAY AREA (SQ.FT.)	2923.98		
AVG PSF	2.40		

LEGEND:

INDICATES THE APPROXIMATE LOCATION OF THE SOLAR PANEL MODULE

SCI PART(S):



POWERMOUNT - ADJUSTABLE

SOLAR KIT

PROJECT LAYOUT:

ALL SOLAR CONNECTIONS INTERNATIONAL (SCI) LAYOUTS INCLUDING, BUT NOT LIMITED TO, THE NUMBER OF ROWS AND PRODUCT QUANTITIES ARE RECOMMENDATIONS ONLY, BASED SOLELY ON THE INFORMATION PROVIDED BY THE PURCHASER, IN ADDITION TO THE PROJECT'S GENERAL GEOGRAPHICAL LOCATION, ROOF PITCH, LENGTH OF RUN, AND TYPE OF ROOF SYSTEM. ALL SCI RECOMMENDATIONS ARE SUBJECT TO CONFIRMATION, VERIFICATION AND APPROVAL BY THE PROJECT ARCHITECT, ENGINEER, OR AUTHORITY HAVING JURISDICTION, AND ANY SUCH RECOMMENDATION IS ALSO REQUIRED TO BE EVALUATED BY EACH, TO ENSURE THAT THE SNOW RETENTION SYSTEM WILL COMPLY WITH THE PROJECT'S DESIGN, GEOGRAPHICAL LOCATION, THE BUILDING'S ROOF PITCH, LENGTH OF RUN, AND TYPE OF ROOF SYSTEM, AS WELL AS THAT THE BUILDING STRUCTURE CAN WITHSTAND THE PROJECTED SNOW LOAD. SCI HAS NOT PERFORMED AN INDEPENDENT SITE INSPECTION OR PROJECT SPECIFIC SNOW RETENTION SYSTEM ENGINEERED CALCULATIONS. BUYER MAKES THIS PURCHASE BASED ON ITS' OWN DUE DILIGENCE AND NOT BY REASON OF ANY STATEMENT MADE, OR PURPORTED TO HAVE BEEN MADE BY, OR ON BEHALF OF SCI.

PRODUCT INSTALLATION:

SCI STRONGLY RECOMMENDS THAT THESE PRODUCTS BE INSTALLED BY A QUALIFIED AND LICENSED ROOFING AND/OR SHEET METAL CONTRACTOR (AS APPLICABLE). SCI IS NOT RESPONSIBLE FOR ANY ACTS, ERRORS, OR OMISSIONS OF THE INSTALLER OR PURCHASER, AND SHALL NOT BE HELD RESPONSIBLE IN ANY WAY FOR THE PRODUCT INSTALLATION. SCI DOES NOT PROVIDE ANY WARRANTY ON THE INSTALLATION OF ANY OF ITS PRODUCTS. INSTALLATION USING AN ADHESIVE/SEALANT, TAPE, SOLDER, OR FASTENER APPLICATION/PRODUCT SHOULD BE PERFORMED IN ACCORDANCE WITH THE APPLICABLE MANUFACTURER'S PUBLISHED INSTRUCTIONS AND REQUIREMENTS. SCI DOES NOT WARRANT AGAINST ADHESIVE/SEALANT, TAPE, SOLDER, OR FASTENER FAILURE. SCI IS NOT RESPONSIBLE FOR MISAPPLICATION OF THE PRODUCT, INCORRECT MATERIALS, DEFECTS THAT WERE OBVIOUS AT THE TIME OF INSTALLATION, OR ANY OMISSION FROM INSTALLATION PROCEDURES. THE PURCHASER AND INSTALLER ARE RESPONSIBLE FOR ENSURING THAT IT IS USING THE MANUFACTURER'S MOST CURRENT INSTALLATION PROCEDURES. PLEASE CONTACT SCI DIRECTLY WITH ANY QUESTIONS, PRIOR TO COMMENCEMENT OF ANY INSTALLATION. ALL PURCHASES ARE SUBJECT TO SCI'S STANDARD TERMS AND CONDITIONS.

NOTES:

1. FOR CLARITY THIS DRAWING IS NOT TO SCALE.
2. THIS IS A GENERAL LAYOUT ADDRESSING ONLY THE AREAS INDICATED BY THE ARCHITECTURAL PLANS. IF ADDITIONAL AREAS ARE OF CONCERN, OR FURTHER LOCATIONS REQUIRING SNOW RETENTION ARE TO BE ADDRESSED, PLEASE NOTIFY SNO GEM, INC. ACCORDINGLY.

GRAND SLAM TENNIS

BEDFORD, NY

GROUND SNOW LOAD:	N/A	SCALE:	N.T.S.
PANEL WIDTH:	12"	DATE:	07/01/20
PROPOSED LINEAR FEET:	N/A	SALES REP:	CR
PROPOSED No. OF PARTS:	960+/-	DRAWN BY:	RJH

SOLAR CONNECTIONS INTERNATIONAL
THE FUTURE OF SOLAR ATTACHMENTS

CONTACT INFORMATION:

4800 METALMASTER WAY
McHENRY, IL 60050

P: 815.477.4367 | F: 815.455.4367
SNOGEM.COM
INFO@SOLARCONNECTIONS.COM

Drafting/Design Firm

PhRGD

25 Broadway 9th Floor
NY, NY 10004
(646) 866-4734

Developer

PROPERTY INFORMATION
Tax Lot ID # 102.04-1-21
Block Group: 1
Lot: 21
Deed Acres: 3.68

ZONING INFORMATION
Building Type: B
Building Max Height: 30'
Zoning District: CB-B

Array Azimuth: 240°
Array Tilt: 17°

PE STAMP/SIGNATURE

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New York State License # 67443
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(448) 395W Solar Modules

Solar Inverters:
(3) CPS 50.0kW Chint Inv

Solar System DC Size: 176.9 kW

Interconnection Type:
Community Solar

Page Size: 36" x 24"

RACKING DETAILS

Scale: 1"=15'-0"

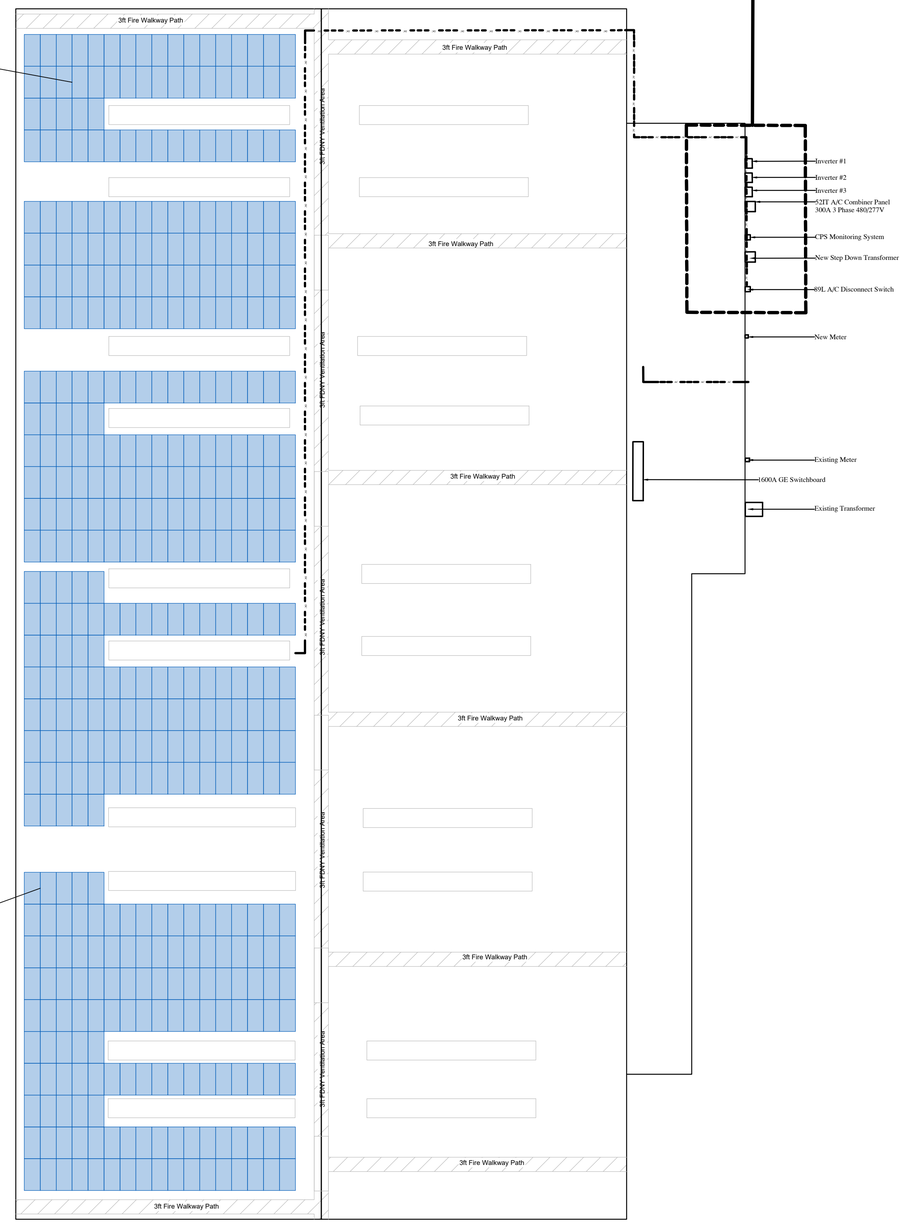
A-002.01

1 / E-000 A/C ELECTRICAL WIRING DIAGRAM

Scale: 1" = 15'-0"

For Electrical Equipment and Inverter Plan / Elevations Please See 1/E-002.00

ADD THERMAL EXPANSION JOINTS FOR DISTANCES THAT EXCEED MORE THAN A 1 INCH TOLERANCE (SEE CALCULATIONS PAGE ON E-100.00 FOR DETAILS)



FOR DETAILS ON CONDUIT COUPLINGS, CONDUIT STRAPS, EXPANSION FITTINGS PLEASE SEE 2/E-004

LEGEND

- Solar Panel
- FD Setbacks & Pathways
- Gas Line
- D/C Home Run
- A/C Home Run
- Light Shade
- Heavy Shade
- Obstruction (Vent Pipe)
- Building Outline
- Solar Inverter/Electrical Equipment

SCALE: 1"=15'-0" (IN FEET)

0 10' 15' 20' 40'

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Community Solar

Page Size: 36" x 24"

A/C ELECTRICAL WIRING DIAGRAM

Scale: 1"=10'-0" Page 6 of 15

E-000.01

1 / E-001 DC ELECTRICAL STRINGING DIAGRAM

Scale: 1" = 15'-0"

N

LEGEND

- Solar Panel
- FD Setbacks & Pathways
- Gas Line
- D/C Home Run
- A/C Home Run
- Light Shade
- Heavy Shade
- Obstruction (Vent Pipe)
- Building Outline
- Solar Inverter/Electrical Equipment

Stringing Key

2 - 5 - 10 - 17

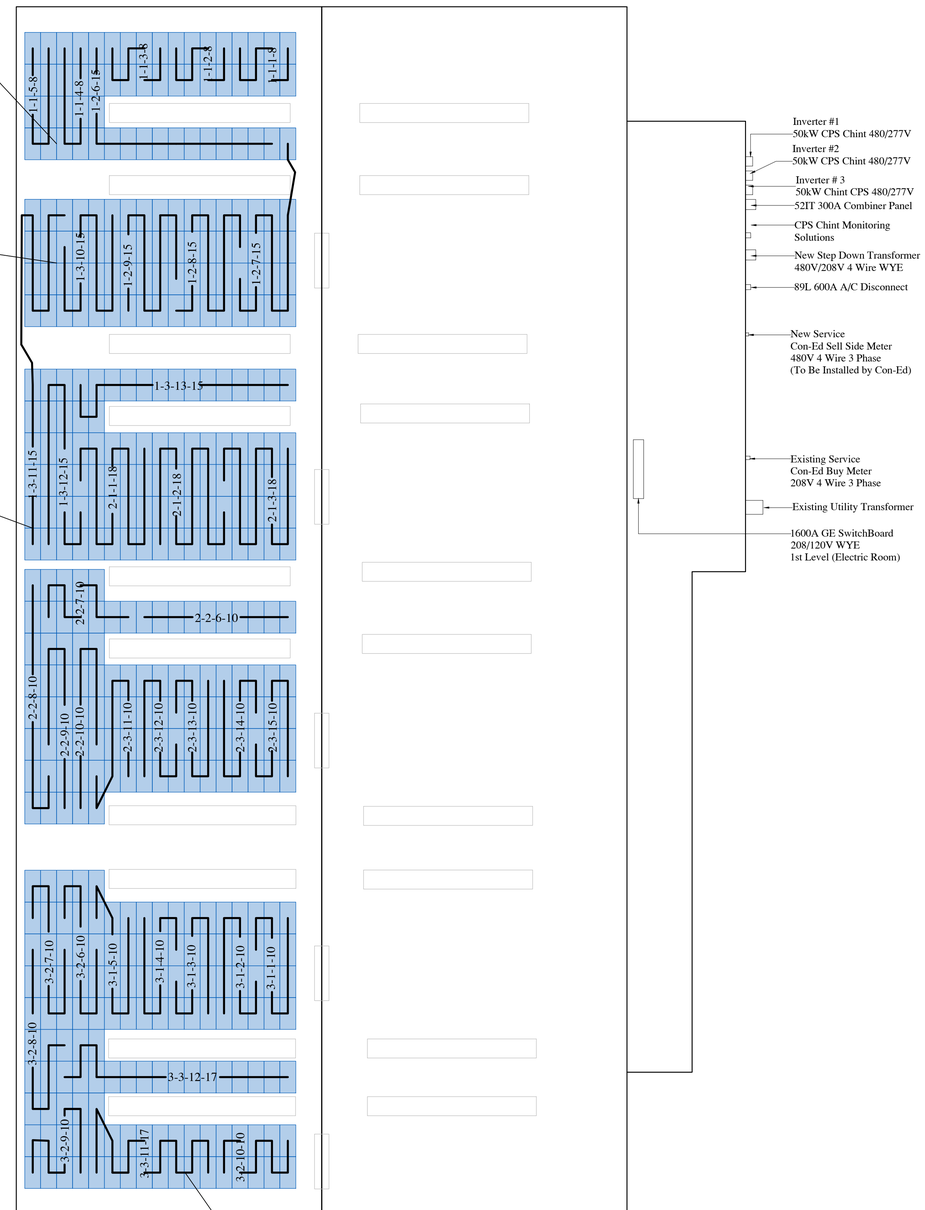
Inverter # MPPT # String # Panel Count

NOTE TO FOREMAN:
PLEASE PROVIDE REDLINE TO REFLECT ANY CHANGES TO THE PROVIDED STRINGING DIAGRAM

IF DC WIRE RUNS ARE TO USE THWN-2 RATHER THAN PV WIRE, THE PV WIRE SHOULD FIRST TERMINATE IN A FUSED OR UN-FUSED PASS-THROUGH BOX AND THEN RUN TO THE APPROPRIATE CONDUIT BACK TO THE INVERTER

GROUNDING LUGS SHOULD BE APPLIED TO RAILS WHERE ROWS ARE CONNECTED TO SECURE EGC RUNS (SEE 1/E-005 FOR ADDITIONAL DETAILS)

DC HOME RUNS TO BE GROUPED AND RAN THROUGH APPROPRIATE SIZED CONDUITS OR CABLE TRAYS BACK TO INVERTERS (SEE 3/E-004, 4/E-004, 6/E-006 FOR ADDITIONAL DETAILS)



DC WIRES TO BE SECURED BEHIND PANELS USING WEATHER APPROVED CABLE CLIPS IN AN ORGANIZED MANOR (SEE 1/E-003 FOR ADDITIONAL DETAILS)

SCALE: 1"=15'-0" (IN FEET)

0 10' 15' 20' 40'

Drafting/Design Firm

PhRGD

25 Broadway 9th Floor
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PROPERTY INFORMATION
Tax Lot ID # 102.04-1-21
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Deed Acres: 3.68

ZONING INFORMATION
Building Type: B
Building Max Height: 30'
Zoning District: CB-B

Array Azimuth: 240°
Array Tilt: 17°

PE STAMP/SIGNATURE

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Page Size: 36" x 24"

D/C ELECTRICAL ROOF 1 STRING DIAGRAM

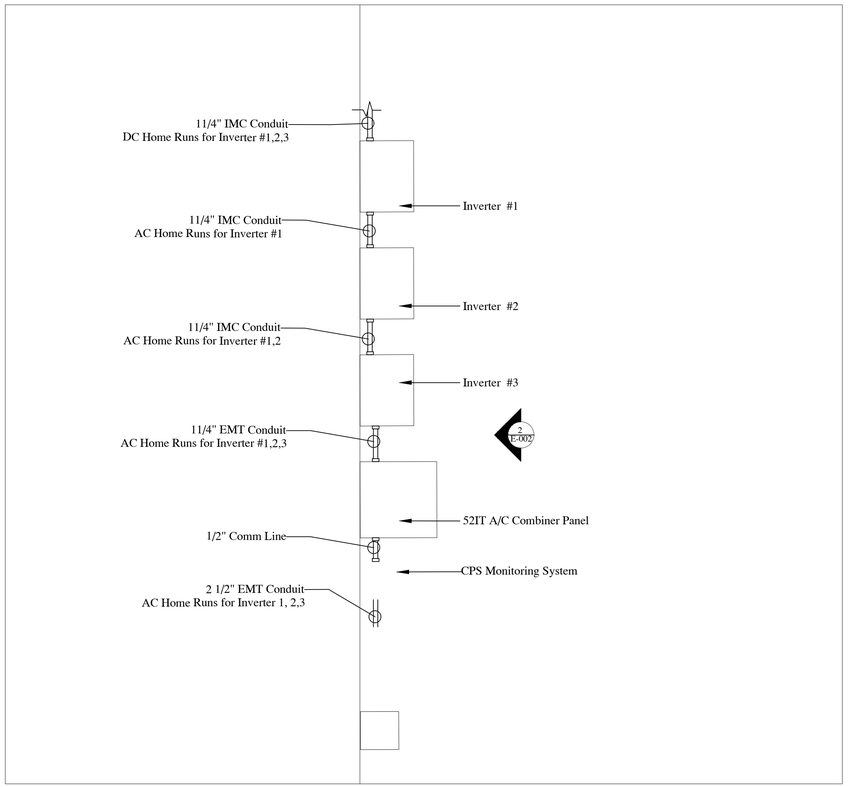
Scale: 1"=15'-0" Page 7 of 15

E-001.01

1
E-002

ELECTRICAL EQUIPMENT PLAN

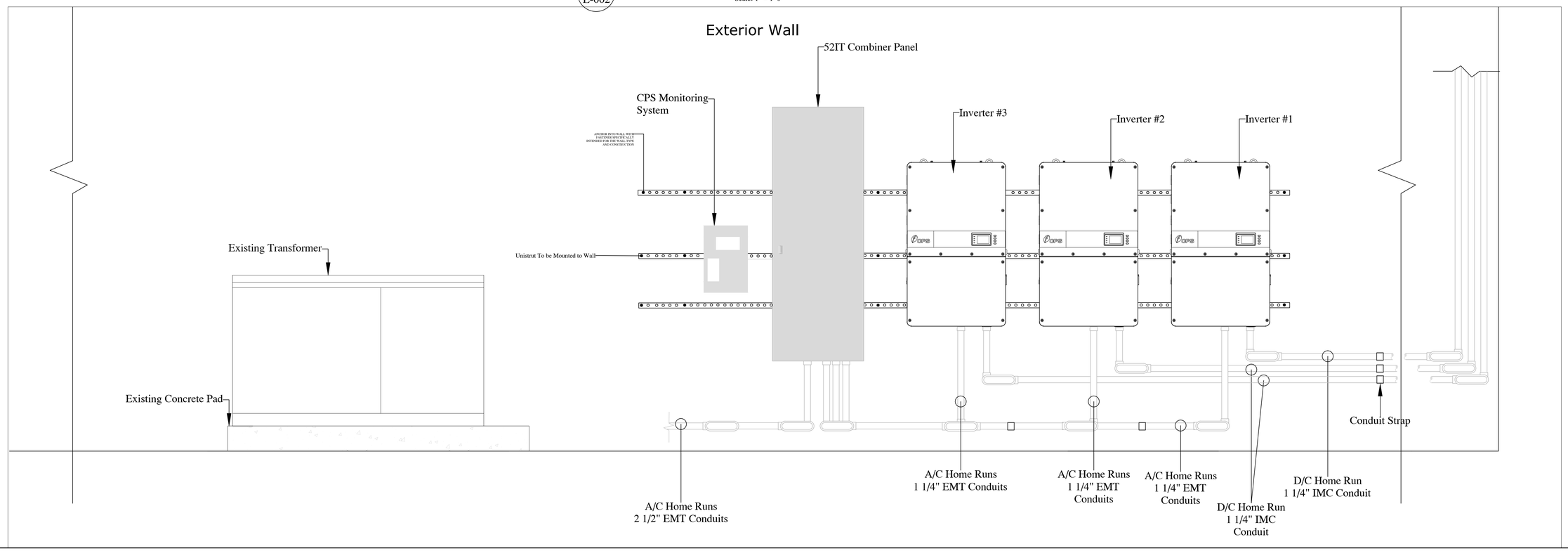
Scale: 1" = 2'-0"



3
E-002

ELECTRICAL EQUIPMENT ELEVATION

Scale: 1" = 1'-0"



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Developer

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Interconnection Type:
Community Solar

Page Size: 36" x 24"

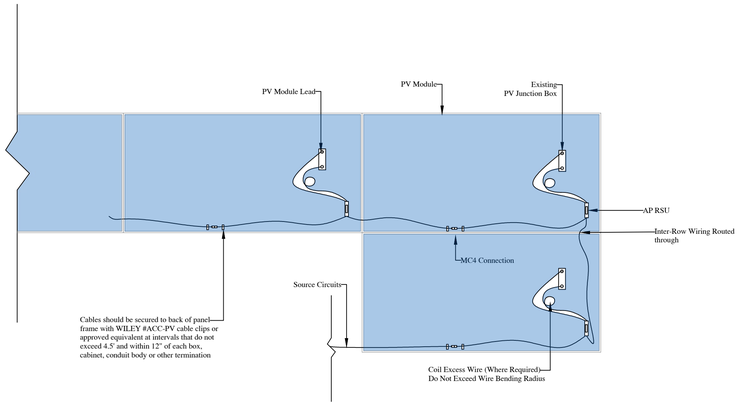
AC ELECTRICAL PLAN & ELEVATIONS

Scale: See Scale

E-002.01

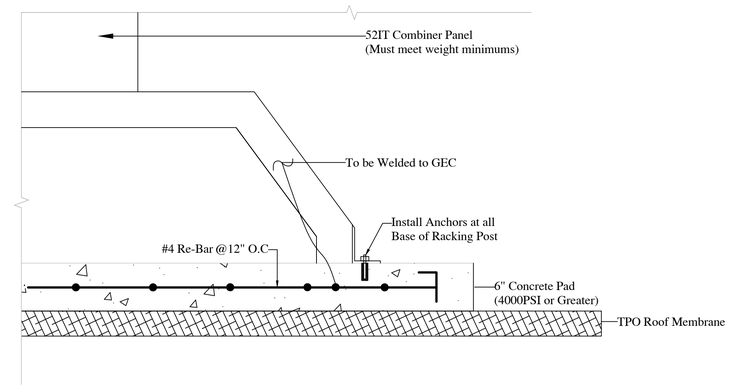
1 E-003 PANEL/AP RSU WIRE MANAGEMENT DETAIL

Scale: 1" = 2'-0"



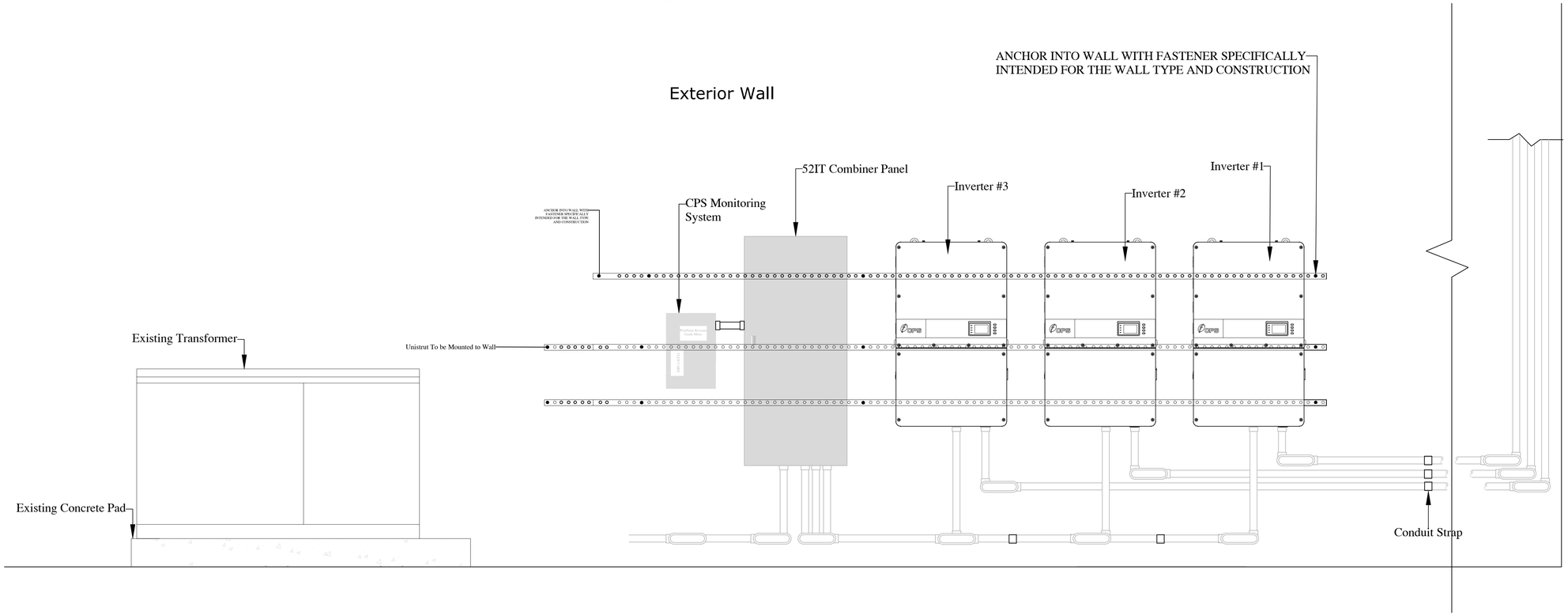
3 E-003 CONCRETE PAD-FOR SITES NEEDED

Scale: 1" = 0'-6"



2 E-003 STRUT WALL MOUNT

Scale: 1" = 1'-0"



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Community Solar

Page Size: 36" x 24"

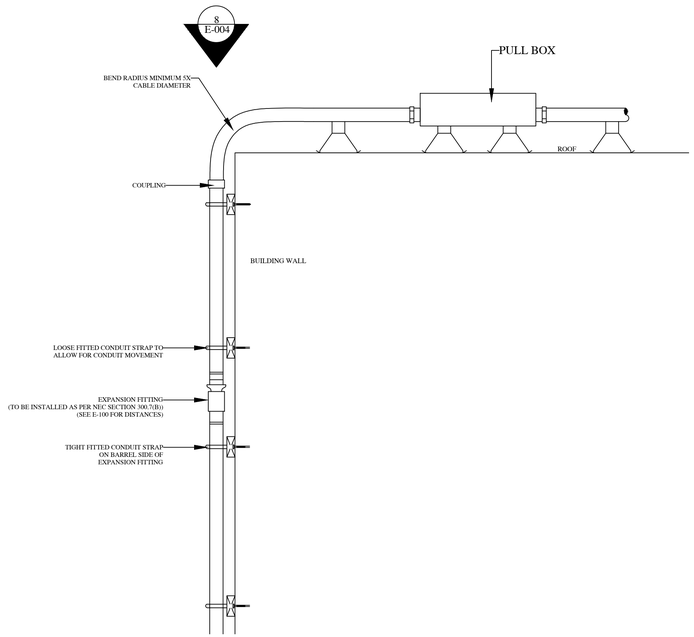
EQUIPMENT DETAILS

Scale: See Scale

E-003.01

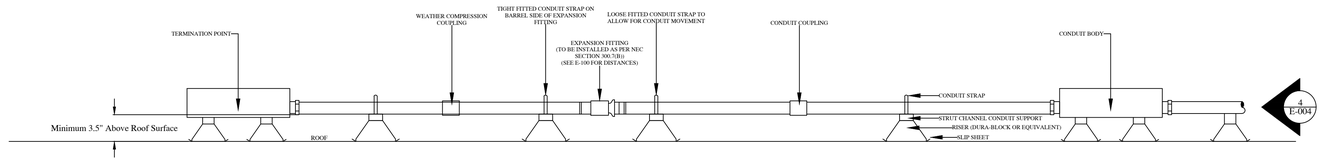
1 E-004 CONDUIT WALL MOUNT

Scale: 1" = 0'-8"



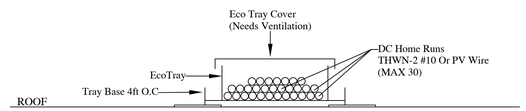
2 E-004 FLAT ROOF CONDUIT SUPPORT/ EXPANSION JOINTS

Scale: 1" = 0'-9"



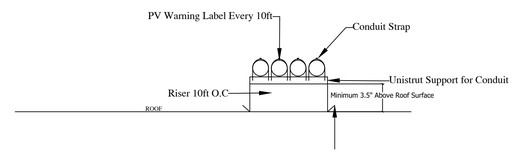
3 E-004 FLAT ROOF ECOTRAY SUPPORT

Scale: 1" = 0'-5"



4 E-004 FLAT ROOF CONDUIT SUPPORT

Scale: 1" = 0'-9"



5 E-005 CONDUIT ATTACHMENT DETAIL

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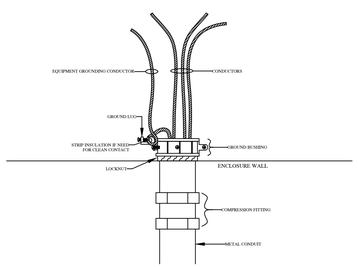
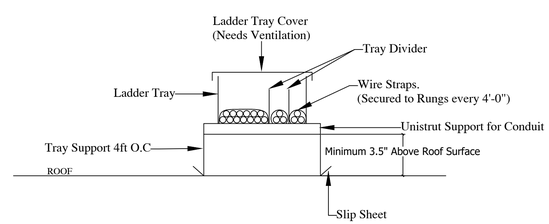


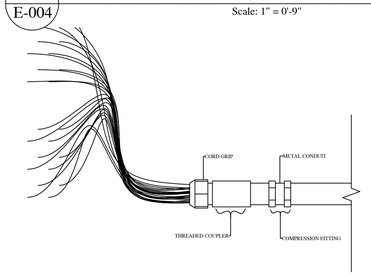
6 E-004 FLAT ROOF LADDER TRAY SUPPORT

Scale: 1" = 0'-6"



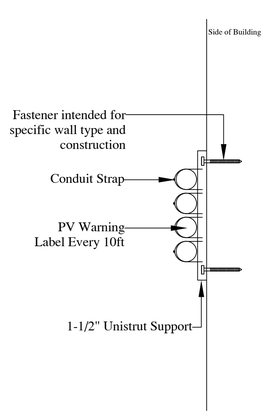
7 E-004 CORD GRIP CONNECTOR DETAILS

Scale: 1" = 0'-9"



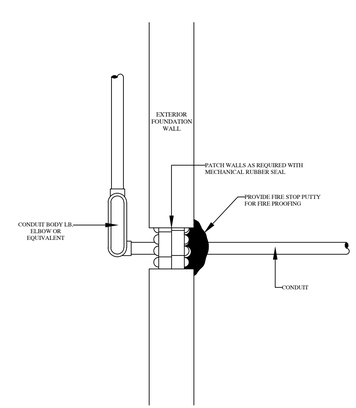
8 E-004 WALL CONDUIT ATTACHMENT

Scale: 1" = 0'-7"



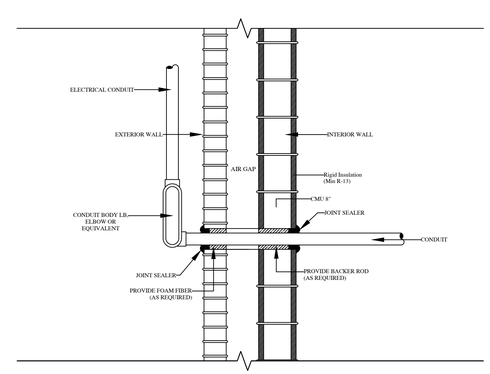
9 E-004 FOUNDATION WALL PENETRATION

Scale: 1" = 0'-9"



10 E-004 EXTERIOR WALL PENETRATION

Scale: 1" = 0'-9"



Drafting/Design Firm

PhRGD

25 Broadway 9th Floor
NY, NY 10004
(646) 866-4734

Developer

PROPERTY INFORMATION
Tax Lot ID # 102.04-1-21
Block Group: 1
Lot: 21
Deed Acres: 3.68

ZONING INFORMATION
Building Type: B
Building Max Height: 30'
Zoning District: CB-B

Array Azimuth: 240°
Array Tilt: 17°

PE STAMP/SIGNATURE

James W. Luckner, P.E.
New York State License # 67443
P.O. Box 414 High Falls, NY 12440
(845)658-3635 jimluckn@hvi.net

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Rev	Date	Description	Initial
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.00	6/15/20	Shop	MJ
.00	8/5/20	Print	JL

1 Bedford Banksville Rd
Bedford, NY 10506

Owner: Grand Slam Tennis

Solar Modules:
(448) 395W Solar Modules

Solar Inverters:
(3) CPS 50.0kW Chint Inv

Solar System DC Size: 176.9 kW

Innerconnection Type:
Community Solar

Page Size: 36" x 24"

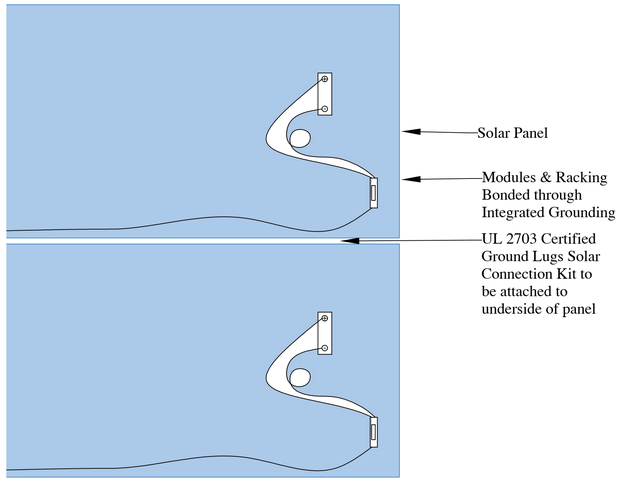
CONDUIT & RACETRAY DETAILS

Scale: See Scale | Page 10 of 15

E-004.01

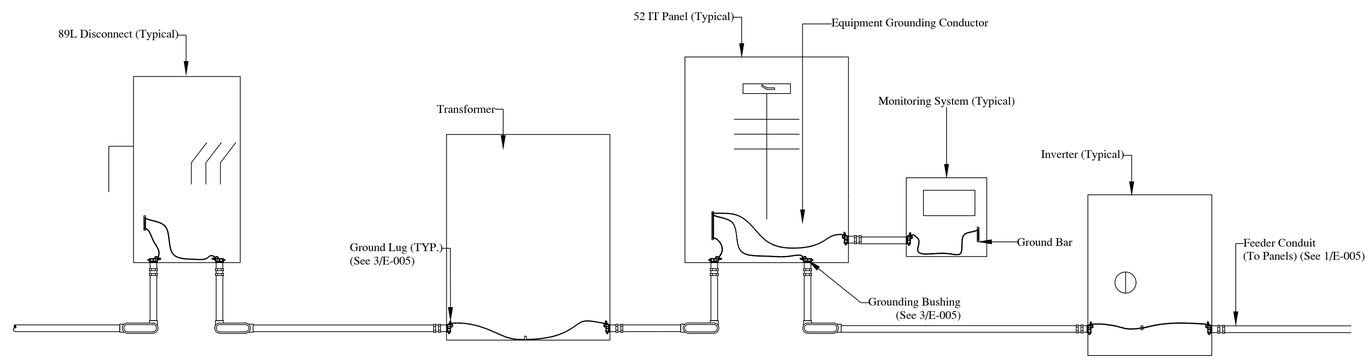
1 E-005 PANEL/RACKING GROUNDING

Scale: 1" = 1'-0"



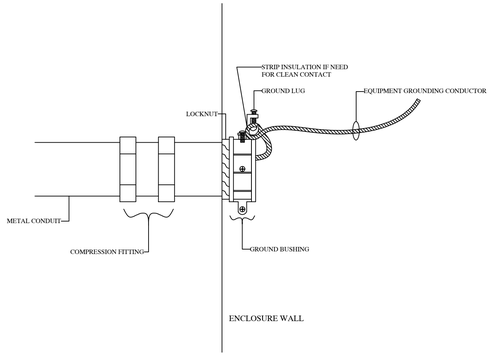
2 E-005 GROUNDING OVERVIEW

Scale: NTS



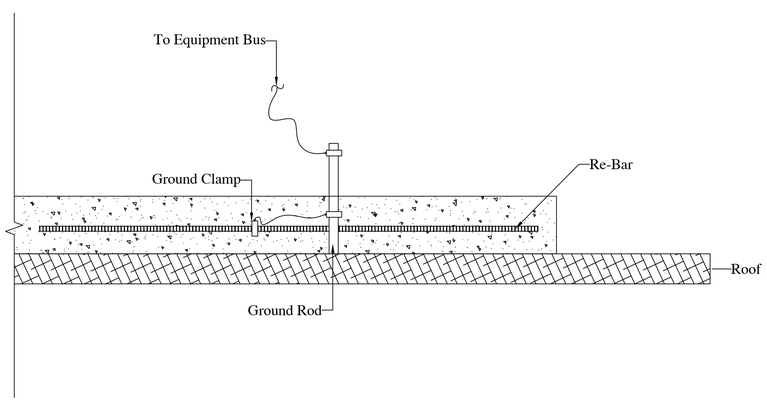
3 E-005 CONDUIT GROUNDING

Scale: 1" = 0'-2"



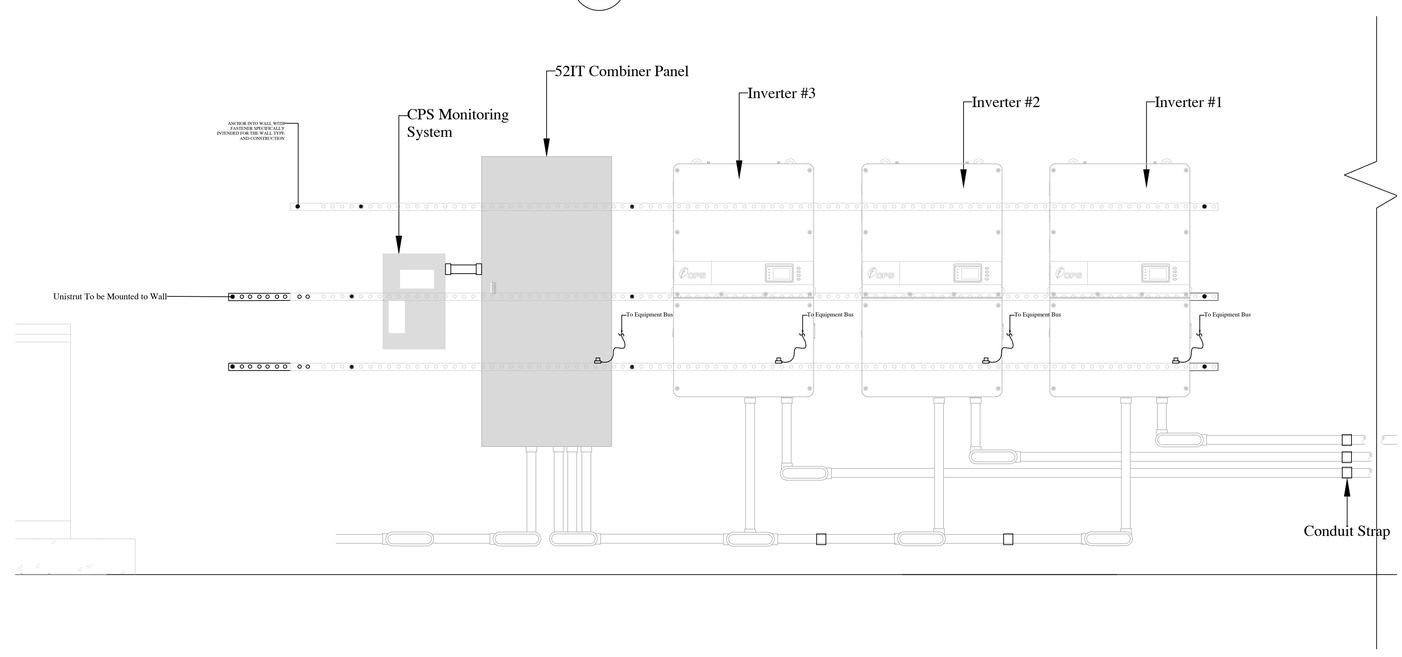
4 E-005 CONCRETE PAD GROUNDING-FOR SITES NEEDED

Scale: 1" = 0'-5"



5 E-005 STRUT RACK GROUNDING

Scale: 1" = 1'-0"



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Interconnection Type:
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Page Size: 36" x 24"

GROUNDING DETAILS

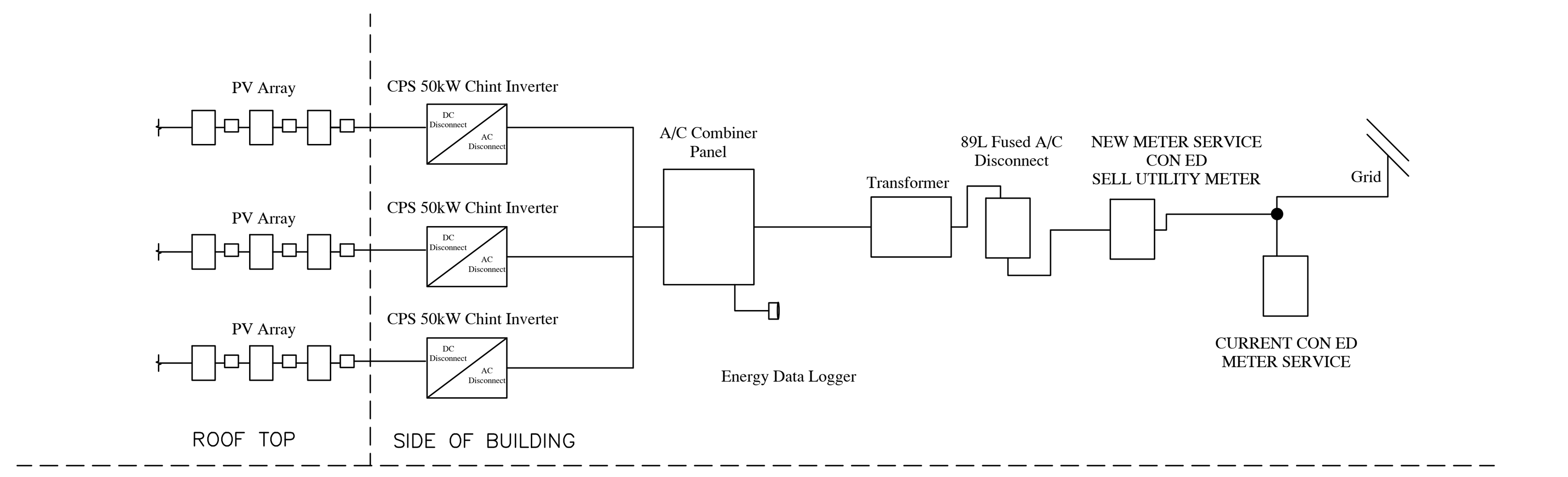
Scale: See Scale | Page 11 of 15

E-005.01

1-LINE DIAGRAM

1 / E-100

Scale: NTS



<u>(448) Phono TwinPlus Module</u>
PS395M1H-24/TH
Maximum Power: 395W +- 5W
Open Circuit Voltage: 48.55V
Short-Circuit Current: 10.64A
Voc Temp Coefficient: -0.306%/C°
Vpmax: 40.77V
Ipmax: 9.81A

<u>(3) Chint CPS Inverters</u>
CPS SCA50KTL-DO/US-480
Maximum DC Input Power: 75000 W
Max Input Voltage (Vin): 1000V
Operating Voltage (V): 200V-950V
Max Input Current (Iin): 68A Per MPPT (204A Total)
Maximum AC Power Output: 50000 W
Max Iout Continuous: 60.2A
Number of MPPT's = 3
Number of String Inputs = 15
Nominal AC voltage: 480V/ 277V WYE
Efficiency: 98.8%

<u>A/C Combiner Panel</u>
SQUARE D 300A Rated
250A Main Disconnect
(3) 80Amp Breakers Voltage: 480/240V
UL Listed Approved

<u>A/C Disconnect Switch (Side of Building)</u>
SQUARE D 600A Rated
600A Fuse
480/277V
UL Listed Approved
Knife Switch

<u>CPS Monitoring Systen</u>
2050 Revenue Grade Meter
3 Phase 4 Wire
480V/277V WYE
UL Listed Approved

<u>AP Smart RSU</u>
RSD-S-PLC
Max Vin: 80V
Max Isc: 15A
Max DC Input Power: 800W
Max Vout: 80V
Output DC Power Range: 0-800W

(448) Solar Panels PS395M1H-24/TH
Panel Power = (448) x 367.3 x 0.965 = 158.8kW
Max Inverter Input = (3)(50kW) *1.5 = 225kW
Generated Annual Production = 212.3 MWh

Voltage Drop (See E-202 For Details)

Average Total Voltage drop = DC+AC+CB+HR
Average Total Voltage drop = 1.66% + 0.04% + 0.02% = 1.72%

ASHRAE High Low Temps

Westchester, NY High =32°C
Westchester, NY Low =-17°C

Panel Calculations

Voc Low Temp (VocLow) = 48.5V - {-0.1486V/C * [25C°-(-17C°)]} = 55.9V
Vmp High Temp = 41.4V - {-0.1486V * [25C°-(32C°)]} = 42.44V
Minimum String Length = 150V / 42.44V =3.78 ---> 4 Modules
Maximum String Length = 1000V / 54.7V = 18.25 ---> 18 Modules
Max Modules per MPPT = 18 Modules * 5 Strings per MPPT = 90 Modules
Max Modules per Inverter = 90 Modules * 3 MPPT's per Inverter = 270 Modules

D/C SOURCE TO INVERTER CALCULATIONS

Inverter #	Ipmax of Panel/Optimizer	# of Parallel Strings	Continuous Operation (CO) 690.8(B)(1)	Input Max Current (Ipmax* # of strings* CO)	Overcurrent Rating (OR) 690.9(B)	Overcurrent Amperage (Ipmax* # of strings* CO*OR)	OCPD Size (A)	PV Source Conductor Size	Source Conductor Ampacity @90°	Source Conductor Ampacity @75°	Local 2% AVG. High Temp °C	Height Above Roof (in)	Temp Adder 310.15(B)(3)(c) °C	Operating Temp °C	D-Rate for Ambient Temperature	# of Current Carrying Conductors Per Conduit	D-Rate for Conduit Fill	Total D-Rate (DAT*DCF)	D-Rated Conductor Ampacity	PV Source EGC Conductor Size	Source EGC Ampacity	Strings Per Inverter	Modules Per String (MPS)	Max DC Voltage (VocLow*MPS) (V)	Operating Voltage (Vpmax*MPS) (OV)	Input k Value	Input Circular Mils Area (CA)	Input Resistance Value (k/CA) (Ω/kft)	Average One Way Distance (D) (ft)	Input Voltage Drop (Ipmax*2*D*(Ω/1000ft))/OV)	Source Current Carrying Conductor Area (mm²) (SCCCA)	Source EGC Area (mm²) (SEGCA)	Total Source Area (mm²) (#CCC's*SCCCA) + (#EGC's*SEBCA)	D/C Feeder Conduit Type	D/C Feeder Conduit Size (Inches)	D/C Feeder Conduit Area (mm²)	Thermal Expansion Co-Efficient for Conduit (TEC) (mm/mm°C)	Maximum Temperature Fluctuation (ASHRAE High - Low Temp) (°C)	Max Allowable Thermal Expansion (MaxE) (in)	Max Length of Straight Conduit Runs (Before Expansion Joints Added) [MaxE/(TEC*MaxTF)] (ft)
		Fuse Sizing						D-Rate / Ampacity												Checks		Array Config				Voltage Drop Calculations					Conduit Sizing/Fill Ratio						Conduit Expansion Calculations			
1	9.81A	1	1.25	12.26A	1.25	15.325	20	#10	40A	35A	32	3.5	17	50	0.82	26	.45	.37	14.76A	10	60A	8	15	838.5	611.5	12.9	10,403	1.24	340	1.35%	13.61	13.61	368	IMC	1¼	425	.0000117	49°C	1	145
																						5	8	447	326.2	12.9	10,403	1.24	294	2.19%										
2	9.81A	1	1.25	12.26A	1.25	15.325	20	#10	40A	35A	32	3.5	17	50	0.82	26	.5	.41	16.4A	10	60A	10	10	559	407.7	12.9	10,403	1.24	305	1.82%	13.61	13.61	368	IMC	1¼	425	.0000117	49°C	1	145
																						3	18	997	733.9	12.9	10,403	1.24	340	1.13%										
3	9.81A	1	1.25	12.26A	1.25	15.325	20	#10	40A	35A	32	3.5	17	50	0.82	24	.5	.41	16.4A	11	60A	10	10	559	407.7	12.9	10,403	1.24	335	2.12%	13.61	13.61	340	IMC	1¼	425	.0000117	49°C	1	145
																						2	17	950.3	693.1	12.9	10,403	1.24	375	1.32%										
																													Average Total:	1.66%										

A/C INVERTER TO COMBINER PANEL CALCULATIONS

Inverter #	Inverter MaxIout Continuous	# of Parallel Strings	Continuous Operation (CO) 690.8(B)(1)	Overcurrent Rating (OR) 690.9(B)	Overcurrent Amperage (Max Iout * # of strings* CO*OR)	OCPD Size (A)	A/C Output Conductor Size	Output Conductor Ampacity @90°	Source Conductor Ampacity @75°	Local 2% AVG. High Temp °C	Height Above Roof (in)	Temp Adder 310.15(B)(3)(c) °C	Operating Temp °C	D-Rate for Ambient Temperature	# of Current Carrying Conductors Per Conduit (CCC's)	D-Rate for Conduit Fill	Total D-Rate (DAT*DCF)	D-Rated Conductor Ampacity	A/C Output EGC Conductor Size	Source EGC Ampacity	Operating Voltage (V)	Output k Value	Output Circular Mils Area (CA)	Output Resistance Value (k/CA) (Ω/kft)	Max One Way Distance (D) (ft)	Output Voltage Drop (Max Iout*√3*D*(Ω/1000ft))/OV)	Output Current Carrying Conductor Area (mm²) (SCCCA)	Output EGC Area (mm²) (OEGCA)	Total Output Area (mm²) [(#C's+1)*SCCCA] + OEBCA	A/C Output Conduit Type	A/C Output Conduit Size (Inches)	A/C Output Conduit Total Area (mm²)	Thermal Expansion Co-Efficient for Conduit (TEC) (mm/mm°C)	Maximum Temperature Fluctuation (ASHRAE High - Low Temp) (°C)	Max Allowable Thermal Expansion (MaxE) (in)	Max Length of Straight Conduit Runs (Before Expansion Joints Added) [MaxE/(TEC*MaxTF)/12] (ft)
		Fuse Sizing					D-Rate / Ampacity													Checks		Voltage Drop Calculations					Conduit Sizing/Fill Ratio						Conduit Expansion Calculations			
1	60.2	1	1	1.25	75	80	#4	95A	85A	32	3.5	17	50	0.82	3	1	.82	77.9A	8	100A	480	12.9	41,883	.308	1	0.01%	53.16	23.61	236	EMT	1¼	387	.0000117	49°C	1	145
2	60.2	1	1	1.25	75	80	#4	95A	85A	32	3.5	17	50	0.82	3	1	.82	77.9A	8	100A	480	12.9	41,883	.308	5	0.03%	53.16	23.61	236	EMT	1¼	387	.0000117	49°C	1	145
3	60.2	1	1	1.25	75	80	#4	95A	85A	32	3.5	17	50	0.82	3	1	.82	77.9A	8	100A	480	12.9	41,883	.308	10	0.07%	53.16	23.61	236	EMT	1¼	387	.0000117	49°C	1	145
																								Average Total:		0.04%										

A/C COMBINER PANEL TO TRANSFORMER CALCULATIONS

A/C Combiner Panel #	A/C Combiner MaxIout Continuous	Overcurrent Rating (OR) 690.9(B)	Overcurrent Amperage (Max Iout*OR)	OCPD Size (A)	# of Feeder Conductor Sets	Conductor Size	Conductor Ampacity @90°	Conductor Ampacity @75°	D-Rate for Ambient Temperature (DAT)	# of Current Carrying Conductors Per Conduit (CCC's)	D-Rate for Conduit Fill (DCF)	Total D-Rate (DAT*DCF)	D-Rated Conductor Ampacity (DRCA)	Total D-Rated Conductor Ampacity (DRCA * # of Conductor Sets)	A/C Output EGC Conductor Size	Source EGC Ampacity	Operating Voltage (V)	Output k Value	Output Circular Mils Area (CA)	Output Resistance Value (k/CA) (Ω/kft)	Max One Way Distance (D) (ft)	Output Voltage Drop (Max Iout*√3*D*(Ω/1000ft))/OV)	Output Current Carrying Conductor Area (mm²) (SCCCA)	Output EGC Area (mm²) (OEGCA)	Total Output Area (mm²) [(#C's+1)*SCCCA] + OEBCA	A/C Output Conduit Type	A/C Output Conduit Size (Inches)	A/C Output Conduit Total Area (mm²)	Thermal Expansion Co-Efficient for Conduit (TEC) (mm/mm°C)	Maximum Temperature Fluctuation (ASHRAE High - Low Temp) (°C)	Max Allowable Thermal Expansion (MaxE) (in)	Max Length of Straight Conduit Runs (Before Expansion Joints Added) [MaxE/(TEC*MaxTF)] (ft)
		Fuse Sizing					D-Rate / Ampacity									Checks		Voltage Drop Calculations					Conduit Sizing/Fill Ratio						Conduit Expansion Calculations			
1	180.6	1.25	225.8	250	1	250	290A	255A	.82	3	1	.82	237A	237A	#4	300A	480	12.9	250,485	.0515	6	0.02%	256	53	1077	EMT	2½	1513	.0000117	49°C	1	145

TRANSFORMER TO INTERCONNECTION CALCULATIONS

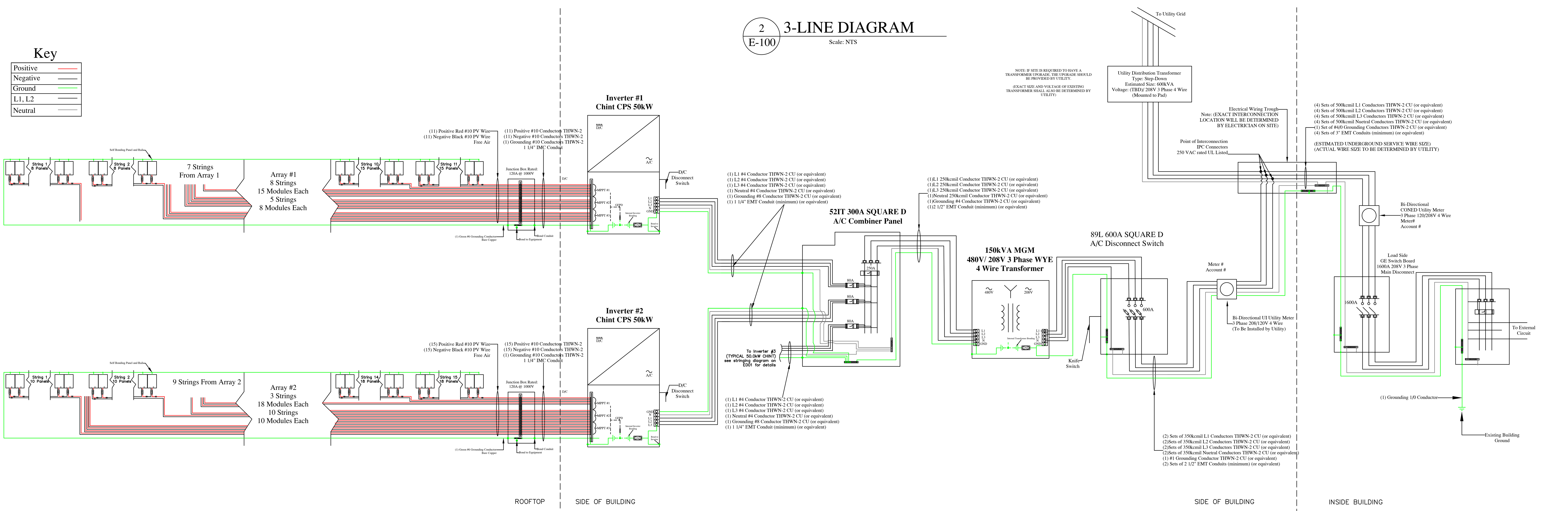
A/C Combiner Panel #	Transformer MaxIout Continuous	Overcurrent Rating (OR) 690.9(B)	Overcurrent Amperage (Max Iout*OR)	OCPD Size (A)	# of Feeder Conductor Sets	Conductor Size	Conductor Ampacity @90°	Conductor Ampacity @75°	D-Rate for Ambient Temperature (DAT)	# of Current Carrying Conductors Per Conduit (CCC's)	D-Rate for Conduit Fill (DCF)	Total D-Rate (DAT*DCF)	D-Rated Conductor Ampacity (DRCA)	Total D-Rated Conductor Ampacity (DRCA * # of Conductor Sets)	A/C Output EGC Conductor Size	Source EGC Ampacity	Operating Voltage (V)	Output k Value	Output Circular Mils Area (CA)	Output Resistance Value (k/CA) (Ω/kft)	Max One Way Distance (D) (ft)	Output Voltage Drop (Max Iout*√3*D*(Ω/1000ft))/OV)	Output Current Carrying Conductor Area (mm²) (SCCCA)	Output EGC Area (mm²) (OEGCA)	Total Output Area (mm²) [(#C's+1)*SCCCA] + OEBCA	A/C Output Conduit Type	A/C Output Conduit Size (Inches)	A/C Output Conduit Total Area (mm²)	Thermal Expansion Co-Efficient for Conduit (TEC) (mm/mm°C)	Maximum Temperature Fluctuation (ASHRAE High - Low Temp) (°C)	Max Allowable Thermal Expansion (MaxE) (in)	Max Length of Straight Conduit Runs (Before Expansion Joints Added) [MaxE/(TEC*MaxTF)] (ft)
		Fuse Sizing					D-Rate / Ampacity									Checks		Voltage Drop Calculations					Conduit Sizing/Fill Ratio						Conduit Expansion Calculations			
1	436	1.25	545	600	2	350	350A	310A	.82	3	1	.82	287A	574A	#1	600A	208	12.9	354,498	0.0367	100	1.56%	338	101	1,453	EMT	2½	1513	.0000117	49°C	1	145

<u>NOTE:</u> IF CONTRACTOR WOULD PREFER TO USE ALUMINUM WIRE AS APPOSED TO COPPER PLEASE REACH OUT TO THE ENGINEER OF RECORD TO HAVE ALL NECESSARY WIRE SIZE ADJUSTMENTS MADE.

3-LINE DIAGRAM

2 / E-100

Scale: NTS



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One Line Drawing
3-Line Drawing
Elec. Calculations

1 / E-200 MONITORING EQUIPMENT OVERVIEW

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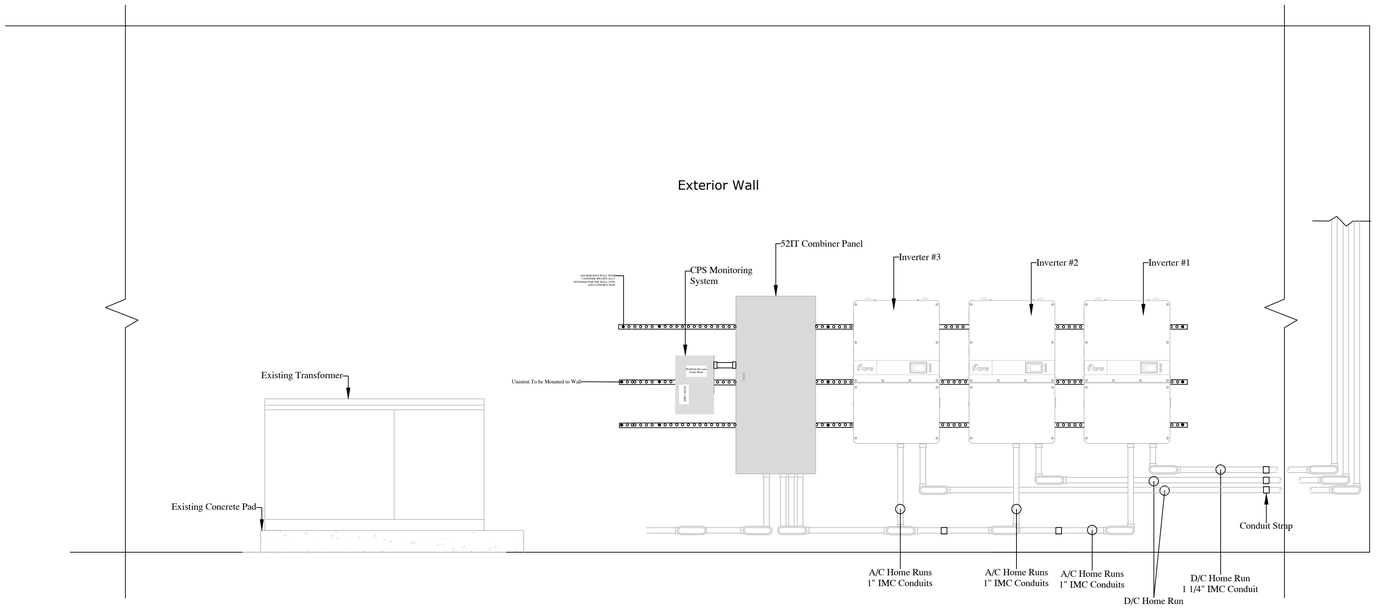
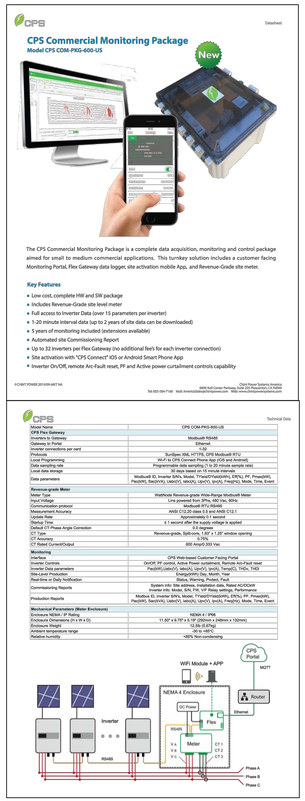


GENERAL NOTES:
CONTRACTOR SHOULD FOLLOW MONITORING SYSTEMS INSTRUCTION MANUAL FOR ALL GRANULAR WIRING DETAILS AND FURTHER EXPLANATION.
WEATHER SENSORS ARE TO BE MOUNTED AND SETUP TO OBSERVE THAT OF THE SOLAR ARRAY'S WEATHER CONDITIONS. DO NOT MOUNT IRRADIANCE SENSORS IN AREAS OF SHADE. SEE INSTALLATION MANUAL FOR FURTHER DETAILS.



CPS — Datasheet

CPS Commercial Monitoring Package

Model CPS COM-PKG-600-US

New

The CPS Commercial Monitoring Package is a complete data acquisition, monitoring and control package aimed for small to medium commercial applications. This turnkey solution includes a customer facing Monitoring Portal, Flex Gateway data logger, site activation mobile App, and Revenue-Grade site meter.

Key Features

- Low cost, complete HW and SW package
- Includes Revenue-Grade site level meter
- Full access to Inverter Data (over 15 parameters per inverter)
- 1-20 minute Interval data (up to 2 years of site data can be downloaded)
- 5 years of monitoring included (extensions available)
- Automated site Commissioning Report
- Up to 32 inverters per Flex Gateway (no additional fee's for each inverter connection)
- Site activation with "CPS Connect" iOS or Android Smart Phone App
- Inverter On/Off, remote Arc-Fault reset, PF and Active power curtailment controls capability

A SCHNEIDER POWER 2010 SHER-64ET MA

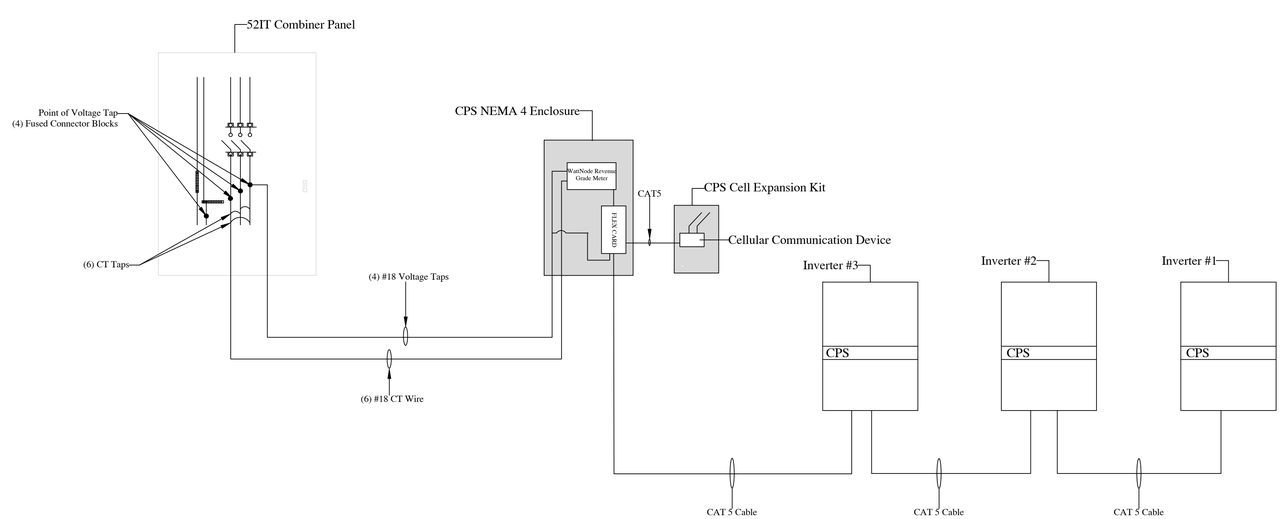
CSAA Power Systems Inverters
Tel: 855-584-7168 · Mail: AmericasSales@CSAapower.com · Web: www.csaapowersystems.com

CPS — Technical Data

Model Name	CPS COM-PKG-600-US
CPS Flex Gateway	
Inverters to Gateway	Modbus® RS485
Inverters to Portal	Ethernet
Inverter connectivity per card	Fixed
Protocols	SunSpec (XML HTTPS), CPS Modbus® RTU
Local Programming	WiFi to CPS Connect Phone App (iOS and Android)
Data sampling rate	Programmable (data sampling 1 to 20 minute sample rate)
Local data storage	2 years of data (Flex Gateway)
Data parameters	Modbus® ID, Inverter SN#s, Model, TYmeSYmeMWh, DY(s), PF, PmaxDAR, Pac(kW), Sac(kVA), Uab(V), Ubc(V), Uac(V), Ipv(A), Freq(Hz), Mode, Time, Event
Revenue-grade Meter	
Meter Type	Wattnode Revenue-grade Wide-Range Modbus® Meter
Input Voltage	Line powered from 90 to 480 Vac, 50Hz, 60Hz
Current Inputs	Split-core CT's (100A, 200A, 400A, 600A)
Measurement Accuracy	ANSI C12.20 class 0.5 and ANSI C12.1
Update Rate	Approximately 1 second
Startup Time	≤ 1 second after the supply voltage is applied
Wiring to 3 Phase Angle Connection	Direct or CT's
CT Type	Revenue-grade, Split-core, 1.48" x 1.18" window opening
CT Accuracy	0.75%
CT Rated Current/Output	600 Amp/0.333 Vac
Monitoring	
Interface	CPS Web-based Customer Facing Portal
Inverter Controls	On/Off, PF control, Active Power curtailment, Remote Arc-Fault reset
Inverter Data Parameters	Pac(kW), Uac(V), Ipv(A), Freq(Hz), Mode, Time, Event, TmDy, TmSy
Site-Level Production	Energy(kWh) Day, Month, Year
Real-time or Daily Notification	Status, Warning, Protect, Fault
Commissioning Reports	System info, Site address, Installation date, Signal AC/DC/kW, Inverter info, Inverter Serial Number, Inverter Model, Inverter Firmware
Production Reports	Modbus ID, Inverter SN#s, Model, TYmeSYmeMWh, DY(s), PF, PmaxDAR, Pac(kW), Sac(kVA), Uab(V), Ubc(V), Uac(V), Ipv(A), Freq(Hz), Mode, Time, Event
Mechanical Parameters (Meter Enclosure)	
Enclosure NEMA / IP Rating	NEMA 4 / IP66
Enclosure Dimensions (H x W x D)	11.50" x 9.75" x 5.19" (292mm x 248mm x 132mm)
Enclosure Weight	12 lb. (5.87kg)
Ambient Temperature range	-40°C to +70°C
Relative humidity	<85% Non-condensing

2 / E-200 MONITORING CONNECTION DIAGRAM

Scale: NTS



Drafting/Design Firm

PhRGD

25 Broadway 9th Floor
NY, NY 10004
(646) 866-4734

Developer

PROPERTY INFORMATION

Tax Lot ID # 102.04-1-21

Block Group: 1

Lot: 21

Deed Acres: 3.68

ZONING INFORMATION

Building Type: B

Building Max Height: 30'

Zoning District: CB-B

Array Azimuth: 240°

Array Tilt: 17°

PE STAMP/SIGNATURE

James W. Luckner, P.E.
New York State License # 67443
P.O. Box 414 High Falls, NY 12440
(845)658-3635 jimluckn@hvi.net

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1 Bedford Banksville Rd
Bedford, NY 10506

Owner: Grand Slam Tennis

Solar Modules:
(448) 395W Solar Modules

Solar Inverters:
(3) CPS 50.0kW Chint Inv

Solar System DC Size: 176.9 kW

Innerconnection Type:
Community Solar

Page Size: 36" x 24"

MONITORING DIAGRAM

Scale: NTS | Page 13 of 15

E-200.01

Labels comply with NEC 110.21(B) and ANSI Z535.4

.\External Reference\Labels\ WARNING.PNG ELECTRIC SHOCK HAZARD DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION	INVERTER (DC DISCONNECT) COMBINER PANEL A/C DISCONNECT JUNCTION BOX
.\External Reference\Labels\ WARNING.PNG ELECTRIC SHOCK HAZARD THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDED AND MAY BE ENERGIZED	INVERTER (DC DISCONNECT) JUNCTION BOX
.\External Reference\Labels\ WARNING.PNG ELECTRIC SHOCK HAZARD IF A GROUND FAULT IS INDICATED, NORMALLY GROUNDED CONDUCTORS MAY BE UNGROUNDED AND ENERGIZED	INVERTER (DC DISCONNECT)
DANGER ARC FLASH HAZARD APPROPRIATE PPE REQUIRED. FAILURE TO COMPLY CAN RESULT IN INJURY OR DEATH. REFER TO NFPA 70E.	COMBINER PANEL
CAUTION DUAL POWER SOURCE DO NOT INSTALL ADDITIONAL LOADS IN THIS PANEL	COMBINER PANEL
.\External Reference\Labels\ WARNING.PNG INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE	COMBINER PANEL MAIN DISTRIBUTION
.\External Reference\Labels\ WARNING.PNG DUAL POWER SOURCE TOTAL RATING OF ALL OVERCURRENT DEVICES, EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE, SHALL NOT EXCEED AMPACITY OF BUSBAR	COMBINER PANEL
CAUTION DUAL POWER SOURCE TWO POWER SOURCES INSIDE UTILITY AND SOLAR PV	MAIN DISTRIBUTION PANEL

INVERTER A/C DISCONNECT	PHOTOVOLTAIC SYSTEM EQUIPPED WITH: RAPID SHUTDOWN
INVERTER A/C DISCONNECT	SOLAR AC DISCONNECT
INVERTER D/C DISCONNECT	SOLAR DC DISCONNECT
50.0kW CHINT INVERTER #1	GRID TIED PHOTOVOLTAIC POWER SOURCE MAX POWER POINT CURRENT: 127A MAX POWER POINT VOLTAGE: 611.5V MAX SYSTEM VOLTAGE: 838V MAX SYSTEM CURRENT: 204A MAX INVERTER OUTPUT: 50.0kW, 60.2A, 480V
50.0kW CHINT INVERTER #2	GRID TIED PHOTOVOLTAIC POWER SOURCE MAX POWER POINT CURRENT: 127A MAX POWER POINT VOLTAGE: 733V MAX SYSTEM VOLTAGE: 997V MAX SYSTEM CURRENT: 204A MAX INVERTER OUTPUT: 50.0kW, 60.2A, 480V
50.0kW CHINT INVERTER #3	GRID TIED PHOTOVOLTAIC POWER SOURCE MAX POWER POINT CURRENT: 117A MAX POWER POINT VOLTAGE: 693V MAX SYSTEM VOLTAGE: 950V MAX SYSTEM CURRENT: 204A MAX INVERTER OUTPUT: 50.0kW, 60.2A, 480V
A/C DISCONNECT	PHOTOVOLTAIC SYSTEM DISCONNECT AC OUTPUT CURRENT: 600A NOMINAL OPERATING AC VOLTAGE: 208V
CONDUIT EVERY 10 FT JUNCTION BOX	WARNING: PHOTOVOLTAIC POWER SOURCE
MAIN DISTRIBUTION	WARNING: ELECTRIC SHOCK HAZARD. DO NOT TOUCH TERMINALS. TERMINALS ON BOTH THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION. FOR SERVICE DE-ENERGIZE BOTH SOURCE AND MAIN BREAKER. PV POWER SOURCE AC OUTPUT CURRENT: 1600A MAX AC VOLTAGE: 208V

NOTES:
- SIGNAGE LETTERS REQUIRED TO BE AT LEAST 3/8" IN HEIGHT
- LABELS SHALL BE CREATED WITH WHITE LETTERS ON A RED BACKGROUND
- TEXT SHOULD BE IN ALL CAPITAL LETTERS AND USE ARIAL FONT OR EQUIVALENT
- LABELS MUST BE PRINTED ON WEATHER RESISTANT MATERIAL, PER UL 969

Drafting/Design Firm

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LABELS

Scale: NTS

L-000.01

Phono® Solar

TwinPlus Module

Mono Perc/390-410W/Big Cell

Bloomberg New Energy Finance Tier 1 | 2019 Top Performer PVEL | DNV-GL PV Module Reliability Scorecard

- **PID Resistant**
- **Better shading tolerance**
- **More Reliable**
  Lower hot spot temperature
- **More Power**
  Low power loss in cell connection
  Low temperature coefficient (Pmax): -0.417% / °C
  Low NOCT: 45±2°C

2x72 Cells

EN EN-20191028

SINOMACH SUMEC
SUMEC GROUP CORPORATION

ELECTRICAL TYPICAL VALUES

Model	PS390M1-24/TH PS390M1H-24/TH	PS395M1-24/TH PS395M1H-24/TH	PS400M1-24/TH PS400M1H-24/TH	PS405M1-24/TH PS405M1H-24/TH	PS410M1-24/TH PS410M1H-24/TH
Type	Perc Monocrystalline 158.75mm X 79.38mm				
Rated Power (Pmpp)	390W	395W	400W	405W	410W
Tolerance	0~+5w				
Rated Current (Impp)	9.66	9.74	9.81	9.89	9.97
Rated Voltage (Vmpp)	40.37	40.55	40.77	40.95	41.12
Short Circuit Current (Isc)	10.48	10.56	10.64	10.71	10.79
Open Circuit Voltage (Voc)	48.18	48.37	48.55	48.73	48.91
Module Efficency (%)	19.38	19.63	19.88	20.13	20.38
NOCT (Nominal Operating Cell Temperature)	45±2°C				
Voltage Temperature Coefficient	-0.306%/°C				
Current Temperature Coefficient	+0.046%/°C				
Power Temperature Coefficient	-0.417%/°C				

MECHANICAL CHARACTERISTICS

Dimension (L× W × H)	Length: 2008mm (79.06inch) Width: 1002mm (39.45 inch) Height: 40mm (1.57 inch)
Weight	23.0kg (50.7 lbs)
Front Glass	3.2mm toughened glass
Frame	Anodized aluminium alloy
Cable	4mm² (IEC), Length:350mm (vertical) 1250mm (horizontal) or Customized length
Junction Box	IP 68 rated

ABSOLUTE MAXIMUM RATING

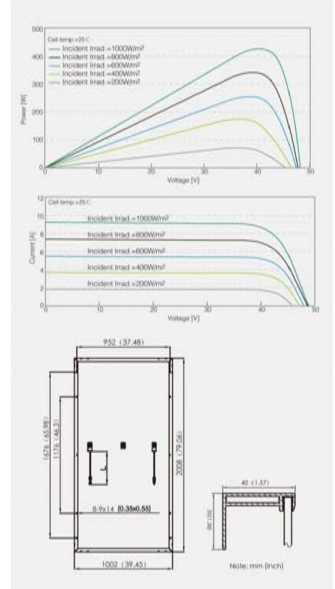
Parameter	Values
Operating Temperature	From -40 to +85°C
Hail Diameter @ 80km/h	Up to 25mm
Surface Maximum Load Capacity	Up to 5400Pa
Maximum Series Fuse Rating	20A
Application Class	A
Fire Rating (IEC61730)	C
Module Fire Performance (UL 1703)	Type1
Maximum System Voltage	DC 1000V/1500V (IEC/UL)

PACKING CONFIGURATION

Container	40' HQ
Pieces/Container	594

1. In compliance with our warranty terms and conditions.
2. Measurement conditions under irradiance level of Standard Test Conditions(STC): 1000W/m²
Air mass 1.5 Spectrum, cell temperature of 25°C.

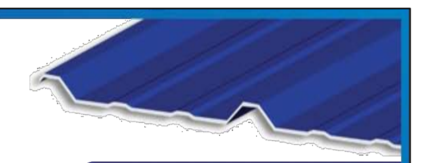
ELECTRICAL CHARACTERISTICS



Phono® Solar

Note: This datasheet is not legally binding. Phono Solar Technology Co., Ltd. reserves the right to adjust specifications without notice. Further information please refer to our ***Website:www.phonosolar.com, E-mail:info@phonosolar.com***

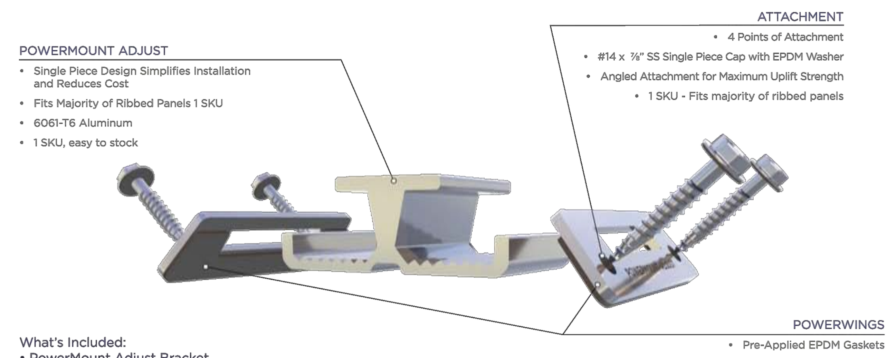
R-PANEL



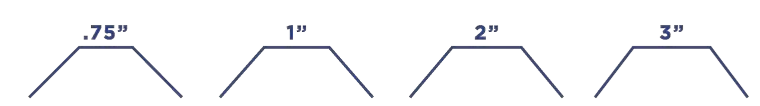
POWERMOUNT ADJUST FOR **R-PANEL** ROOFS

FULLY ADJUSTABLE R-PANEL / TRAPEZOIDAL SOLUTION

- Priced more aggressive than S-5! ProteaBracket and a EcoFasten Corruslide
- Overall better design and aesthetics
- Pre-applied EPDM gaskets for water tight seal
- 1 SKU (easy to stock)
- Packaged in quantities of 50
- Fits on ribbed panels ranging from .75" - 3.00"



What's Included:
- PowerMount Adjust Bracket
- 2 PowerWings with pre-applied EPDM Gaskets
- 4 Fully Gasketed S.S. Fasteners
- M8 Serrated Bolt



Reference Guide on **Page 11**

CPS

Datasheet

50/60kW, 1000Vdc String Inverters for North America

The 50 & 60kW (55 & 66kVA) medium power CPS three phase string inverters are designed for ground mount, large rooftop and carport applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiency at 98.8% peak and 98.5% CEC, wide operating voltages, broad temperature ranges and a NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The CPS 50/60KTL products ship with either the Standard wire-box or the Rapid Shutdown wire-box, each fully integrated and separable with touch safe fusing, monitoring, and AC and DC disconnect switches. The integrated PLC transmitter in the Rapid Shutdown version enables PVRSS certified module-level rapid shutdown when used with the Tigo TS4-F/TS4-A-F products. Both models are also PVRSS certified with the Tigo TS4-O and -L models. The CPS Flex Gateway enables monitoring, controls and remote product upgrades.

CPS SCA50KTL-DO/US-480
CPS SCA60KTL-DO/US-480

Key Features

- NEC 2017 PVRSS Certified Rapid Shutdown
- 55 & 66kVA rating allows max rated Active Power @±0.91PF
- Selectable Max AC Apparent Power of 50/55kVA and 60/66kVA
- NEC 2014/17 compliant & UL listed Arc-Fault circuit protection
- 15-90° Mounting orientation for low profile roof installs
- Optional Flex Gateway enables remote FW upgrades
- Integrated AC & DC disconnect switches
- 3 MPPT's with 5 inputs each for maximum flexibility
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- UL1741 SA Certified to CA Rule 21, including SA14 FW and SA15 VW
- Separable wire-box design for fast service
- Standard 10 year warranty with extensions to 20 years
- Generous 1.5 DC/AC Inverter Load Ratio

50/60KTL Standard Wire-box

50/60KTL Rapid Shutdown Wire-box

©CHINT POWER SYSTEMS AMERICA 2019/09-MKT NA

Chint Power Systems America
6800 Koll Center Parkway, Suite 235 Pleasanton, CA 94566
Tel: 855-584-7168 Mail: AmericaSales@chintpower.com Web: www.chintpowersystems.com

CPS

Technical Data

Model Name	CPS SCA50KTL-DO/US-480	CPS SCA60KTL-DO/US-480
DC Input		
Max. PV Power	75kW (30kW per MPPT)	90kW (33kW per MPPT)
Max. DC Input Voltage	1000Vdc	
Operating DC Input Voltage Range	200-950Vdc	
Start-up DC Input Voltage / Power	330V / 80W	
Number of MPP Trackers	3	
MPPT Voltage Range @ PF>0.99¹	480-850Vdc	540-850Vdc
Max. PV Short-Circuit Current (Isc x 1.25)	204A (68A per MPPT)	
Number of DC Inputs	15 inputs, 5 per MPPT	
DC Disconnection Type	Load rated DC switch	
DC Surge Protection	Type II MOV, 2800V$_C$, 20kA I$_{TM}$ (8/20 S)	
AC Output		
Rated AC Output Power @ PF>0.99 to ±0.91²	50kW	60kW
Max. AC Apparent Power (Selectable)	50/55kVA	60/66kVA
Rated Output Voltage	480Vac	
Output Voltage Range³	422 - 528Vac	
Grid Connection Type	3Φ / PE / N (Neutral optional)	
Max. AC Output Current @480Vac	60.2/66.2A	72.2/79.4A
Rated Output Frequency	60Hz	
Output Frequency Range³	57 - 63Hz	
Power Factor	>0.99 (±0.8 adjustable)	
Current THD @ Rated Load	<3%	
Max. Fault Current Contribution (1 Cycle RMS)	64.1A	
Max. OCPD Rating	110A	125A
AC Disconnection Type	Load rated AC switch	
AC Surge Protection	Type II MOV, 1240V$_C$, 15kA I$_{TM}$ (8/20 S)	
System and Performance		
Topology	Transformerless	
Max. Efficiency	98.8%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	<1W	
Environment		
Enclosure Protection Degree	NEMA Type 4X	
Cooling Method	Variable speed cooling fans	
Operating Temperature Range⁴	-22°F to +140°F / - 30°C to +60°C	
Non-Operating Temperature Range⁵	No low temp minimum to +158°F / +70°C maximum	
Operating Humidity	0 to 100%	
Operating Altitude	13,123.4ft / 4000m (derating from 9842.5ft / 3000m)	
Audible Noise	<60dBA @ 1m and 25°C	
Display and Communication		
User Interface and Display	LCD+LED	
Inverter Monitoring	SunSpec, Modbus RS485	
Site Level Monitoring	CPS Flex Gateway (1 per 32 inverters)	
Modbus Data Mapping	CPS	
Remote Diagnostics / FW Upgrade Functions	Standard / (with Flex Gateway)	
Mechanical		
Dimensions (HxWxD)	39.4 x 23.6 x 10.24in. (1000 x 600 x 260mm)	
Weight	Inverter: 123.5lbs/56kg; Wire-box: 33lbs/15kg	
Mounting / Installation Angle⁶	15 to 90 degrees from horizontal (vertical or angled)	
AC Termination	M8 Stud Type Terminal Block (Wire range: #6 - 3/0AWG CU/AL, Lugs not supplied)	
DC Termination⁷	Screw Clamp, Neg. Busbar (RSD version⁷) Wire range: #14 - #6AWG CU	
Fused String Inputs (5 per MPPT)⁸	15A fuses provided (Fuse values up to 30A acceptable)	
Safety		
Certifications and Standards	UL1741SA-2016, UL1699B, CSA-C22.2 NO.107.1-01, IEEE1547a-2014; FCC PART15	
Selectable Grid Standard	IEEE 1547a-2014, CA Rule 21, ISO-NE	
Smart-Grid Features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-VAr, Freq-Watt, Volt-Watt	
Warranty		
Standard	10 years	
Extended Terms	15 and 20 years	

1) See user manual for further information regarding MPPT Voltage Range when operating at non-unity PF.
2) Active Power Derating begins; at PF=±0.91 to ±0.8 when Max AC Apparent Power is set to 55 or 66kVA.
3) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
4) Active Power Derating begins; at 40°C when PF=±0.9 and MPPT ≥Vmin, at 45°C when PF=1 and MPPT ≥Vmin, and at 50°C when PF=1 and MPPT V ≥ 700Vdc.
5) See user manual for further requirements regarding non-operating conditions.
6) Shade Cover accessory required for installation angles of 75 degrees or less.
7) RSD wire-box only includes fuses/fuseholders on the positive polarity, compliant with NEC 2017, 690.9 (C).
8) Fuse values above 20A have additional spacing requirements or require the use of the Y-Comb Terminal Block. See user manual for details.

APsmart

Raising the bar in innovative
DC MLPE solar power systems

RSD-S-PLC

- Meets NEC 2017 (690.12) requirements
- Executes rapid shutdown of system when Transmitter-PLC signal is absent
- Meets SunSpec requirements

RSD-S-PLC Technical Data

Model	RSD-S-PLC
Input Data (DC)	
Input operating Voltage Range	8-80V
Maximum Cont. Input Current (Imax)	15A
Maximum Input Power	800W
Output Data (DC)	
Output operating Voltage Range	8-80V
Output Power Range	0-800W
Maximum System Voltage	1000V/1500V
Mechanical Data	
Operating Ambient Temperature Range	-40 °C to + 85 °C (-40 °F to +185 °F)
Dimensions (without cable&connectors)	5" x 1.2" x 0.6"(129 mm x 30 mm x 16 mm)
Cable length	Input 250mm/Output 1200mm or Customize
Module Connector	MC4 or MC4 Compatible
Enclosure Rating	Type 6P / IP68
Overtemperature protection	Yes
Features & Compliance	
Communication	PLC
Safety Compliance	NEC 2017 (690.12); UL1741; CSA C22.2 No. 330-17; IEC/EN62109-1; 2PFG2305
EMC Compliance	FCC Part15; ICES-003; IEC/EN61000-6-1/-2/-3/-4

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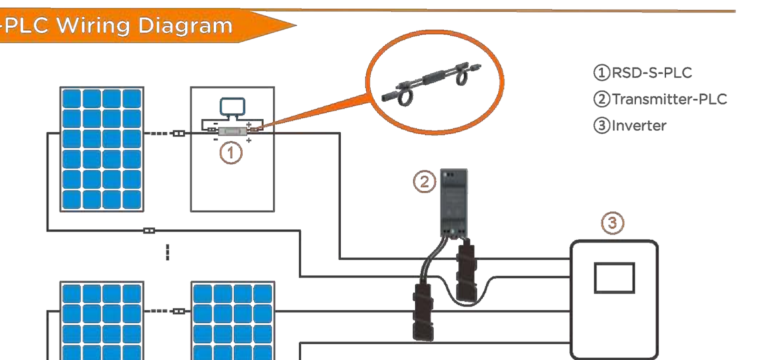
2020-03-17

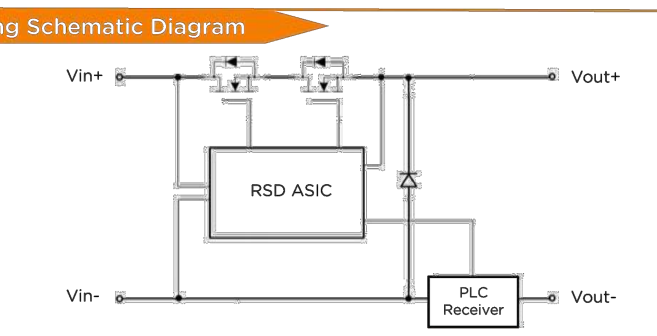
APsmart

RSD-S-PLC meets SunSpec requirements,maintaining normal function by continually receiving a heart-beat signal from the APsmart Transmitter. The RSD executes rapid system shutdown when Transmitter signal is absent. Users can manually execute rapid shutdown using Transmitter breaker switch.

RSD-S-PLC Wiring Diagram



Working Schematic Diagram



ORDERING INFORMATION	
405002	1500V UL/1000V TUV, 1.2m cable, MC4
405001	1000V UL/TUV, 1.2m cable, MC4 compatible
405003	1500V UL/TUV, 1.2m cable, MC4-Evo2

APsmart
19925 Stevens Creek Blvd, Suite 100, Cupertino, CA 95014
+1 737-218-8486 | info@APsmartGlobal.com | APsmartGlobal.com

Rapid Shutdown CERTIFIED

2020-03-17

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LABELS

Scale: NTS

G-000.01

I. IDENTIFICATION OF PROPERTY OWNER, APPLICANT AND PROFESSIONAL REPRESENTATIVES

Name of Property Owner: _____

Mailing Address: _____

Telephone: _____ Fax: _____ e-mail _____

Name of Applicant (if different): _____

Address of Applicant: _____

Telephone: _____ Fax: _____ e-mail _____

Interest of Applicant, if other than Property Owner:
_____

Is the Applicant (if different from the property owner) a Contract Vendee?

Yes ☐ No ☐

If yes, please submit affidavit sating such. If no, application cannot be reviewed by Planning Board

Name of Professional Preparing Site Plan:
_____

Address: _____

Telephone: _____ Fax: _____ e-mail _____

Name of Other Professional: _____

Address: _____

Telephone: _____ Fax: _____ e-mail _____

Name of Attorney (if any): _____

Address: _____

Telephone: _____ Fax: _____ e-mail _____

II. IDENTIFICATION OF SUBJECT PROPERTY

Street Address: _____

Location (in relation to nearest intersecting street):

_____ feet (north, south, east or west) of _____

Abutting Street(s): _____

Tax Map Designation (NEW): Section_____Block_____Lot_____

Tax Map Designation (OLD): Section_____Block_____Lot_____

Zoning District: _____ Total Land Area _____

Land Area in North Castle Only (if different) _____

Fire District(s)_____ School District(s)_____

Is any portion of subject property abutting or located within five hundred (500) feet of the following:

The boundary of any city, town or village?
No ____ Yes (adjacent) _____ Yes (within 500 feet) _____
If yes, please identify name(s): _____

The boundary of any existing or proposed County or State park or any other recreation area?
No ____ Yes (adjacent) _____ Yes (within 500 feet) _____

The right-of-way of any existing or proposed County or State parkway, thruway, expressway, road or highway?
No ____ Yes (adjacent) _____ Yes (within 500 feet) _____

The existing or proposed right-of-way of any stream or drainage channel owned by the County or for which the County has established channel lines?
No _____ Yes (adjacent) _____ Yes (within 500 feet) _____

The existing or proposed boundary of any county or State owned land on which a public building or institution is situated?
No _____ Yes (adjacent) _____ Yes (within 500 feet) _____

The boundary of a farm operation located in an agricultural district?
No _____ Yes (adjacent) _____ Yes (within 500 feet) _____

Does the Property Owner or Applicant have an interest in any abutting property?
No _____ Yes _____

If yes, please identify the tax map designation of that property:

_____

III. DESCRIPTION OF PROPOSED DEVELOPMENT

Proposed Use: _____

Gross Floor Area: Existing _____ S.F. Proposed _____ S.F.

Proposed Floor Area Breakdown:

Retail _____S.F.; Office _____S.F.;

Industrial _____ S.F.; Institutional _____S.F.;

Other Nonresidential _____S.F.; Residential _____ S.F.;

Number of Dwelling Units: _____

Number of Parking Spaces: Existing _____ Required _____ Proposed _____

Number of Loading Spaces: Existing _____ Required _____ Proposed _____

Earthwork Balance: Cut _____ C.Y. Fill _____ C.Y.

Will Development on the subject property involve any of the following:

Areas of special flood hazard? No _____ Yes _____
(If yes, application for a Development Permit pursuant to Chapter 177 of the North Castle Town Code may also be required)

Trees with a diameter at breast height (DBH) of 8" or greater?

No _____ Yes _____
(If yes, application for a Tree Removal Permit pursuant to Chapter 308 of the North Castle Town Code may also be required.)

Town-regulated wetlands? No _____ Yes _____
(If yes, application for a Town Wetlands Permit pursuant to Chapter 340 of the North Castle Town Code may also be required.)

State-regulated wetlands? No _____ Yes _____
(If yes, application for a State Wetlands Permit may also be required.)

Short Environmental Assessment Form
Part 1 - Project Information

Instructions for Completing

Part 1 - Project Information. The applicant or project sponsor is responsible for the completion of Part 1. Responses become part of the application for approval or funding, are subject to public review, and may be subject to further verification. Complete Part 1 based on information currently available. If additional research or investigation would be needed to fully respond to any item, please answer as thoroughly as possible based on current information.

Complete all items in Part 1. You may also provide any additional information which you believe will be needed by or useful to the lead agency; attach additional pages as necessary to supplement any item.

Part 1 - Project and Sponsor Information

Name of Action or Project:
Grand Slam Health & Tennis Limited

Project Location (describe, and attach a location map):
1 Bedford Banksville Rd, Bedford, NY 10506

Brief Description of Proposed Action:
Installation of(448) Solar Modules 395W (7,840 sqft),(3)Chint Power 50.0kW Inverter, (1)300A 52IT Solar AC Combiner Panel, (1)150 kVa MGM 3 Phase Transformer,(1)89L 300A AC Disconnect Switches

Name of Applicant or Sponsor:	Telephone: 646 866 4734
Michael Tarzian	E-Mail:

Address:
181 Westchester Ave

City/PO:	State:	Zip Code:
Port Chester	NY	10573

	NO	YES
1. Does the proposed action only involve the legislative adoption of a plan, local law, ordinance, administrative rule, or regulation? If Yes, attach a narrative description of the intent of the proposed action and the environmental resources that may be affected in the municipality and proceed to Part 2. If no, continue to question 2.	☑	☐
2. Does the proposed action require a permit, approval or funding from any other governmental Agency? If Yes, list agency(s) name and permit or approval:	☑	☐

3.a. Total acreage of the site of the proposed action? _____ acres
b. Total acreage to be physically disturbed? _____ acres
c. Total acreage (project site and any contiguous properties) owned or controlled by the applicant or project sponsor? _____acres

4. Check all land uses that occur on, adjoining and near the proposed action.
☐ Urban ☐ Rural (non-agriculture) ☐ Industrial ☑ Commercial ☐ Residential (suburban)
☐ Forest ☐ Agriculture ☐ Aquatic ☐ Other (specify): _____
☐ Parkland

	NO	YES	N/A
5. Is the proposed action,			
a. A permitted use under the zoning regulations?	☐	☐	✔
b. Consistent with the adopted comprehensive plan?	☐	☐	✔

	NO	YES
6. Is the proposed action consistent with the predominant character of the existing built or natural landscape?	✔	☐
7. Is the site of the proposed action located in, or does it adjoin, a state listed Critical Environmental Area? If Yes, identify: _____	✔	☐
8. a. Will the proposed action result in a substantial increase in traffic above present levels?	✔	☐
b. Are public transportation service(s) available at or near the site of the proposed action?	✔	☐
c. Are any pedestrian accommodations or bicycle routes available on or near site of the proposed action?	✔	☐
9. Does the proposed action meet or exceed the state energy code requirements? If the proposed action will exceed requirements, describe design features and technologies: _____	✔	☐
10. Will the proposed action connect to an existing public/private water supply? If No, describe method for providing potable water: _____	✔	☐
11. Will the proposed action connect to existing wastewater utilities? If No, describe method for providing wastewater treatment: _____	✔	☐
12. a. Does the site contain a structure that is listed on either the State or National Register of Historic Places?	✔	☐
b. Is the proposed action located in an archeological sensitive area?	✔	☐
13. a. Does any portion of the site of the proposed action, or lands adjoining the proposed action, contain wetlands or other waterbodies regulated by a federal, state or local agency?	✔	☐
b. Would the proposed action physically alter, or encroach into, any existing wetland or waterbody? If Yes, identify the wetland or waterbody and extent of alterations in square feet or acres: _____	✔	☐

14. Identify the typical habitat types that occur on, or are likely to be found on the project site. Check all that apply:

☐ Shoreline ☐ Forest ☐ Agricultural/grasslands ☐ Early mid-successional

☐ Wetland ☐ Urban ☐ Suburban

	NO	YES
15. Does the site of the proposed action contain any species of animal, or associated habitats, listed by the State or Federal government as threatened or endangered?	✔	☐
16. Is the project site located in the 100 year flood plain?	✔	☐
17. Will the proposed action create storm water discharge, either from point or non-point sources? If Yes, a. Will storm water discharges flow to adjacent properties? ☐ NO ☐ YES	✔	☐
b. Will storm water discharges be directed to established conveyance systems (runoff and storm drains)? If Yes, briefly describe: ☐ NO ☐ YES _____		

	NO	YES
18. Does the proposed action include construction or other activities that result in the impoundment of water or other liquids (e.g. retention pond, waste lagoon, dam)? If Yes, explain purpose and size: _____	✔	☐
19. Has the site of the proposed action or an adjoining property been the location of an active or closed solid waste management facility? If Yes, describe: _____	✔	☐
20. Has the site of the proposed action or an adjoining property been the subject of remediation (ongoing or completed) for hazardous waste? If Yes, describe: _____	✔	☐

I AFFIRM THAT THE INFORMATION PROVIDED ABOVE IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE

Applicant/sponsor name: Michael Tarzian Date: 9/4/2020

Signature: _____

PRINT FORM