Building Inspection Department

Jason Dool
Chief Building Inspector

Lockport Municipal Building
One Locks Plaza
Lockport, NY 14094
Phone (716) 439-6754
Fax (716) 439-6605

June 26, 2024

Megan Brewer

REGULAR MEETING

Please be advised that there is one (1) item on the agenda for the regularly scheduled meeting of the Planning Board to be held **Monday, July 1, 2024** at 5:00 P.M.

1. Bob Timkey. 1149 Lincoln Avenue. Request to install 152 roof mounted solar panels on the west side of the building situated in a B-1 Zone

If you cannot attend this meeting, please contact Megan Brewer at 716-439-6754 or mbrewer@lockportny.gov

APPLICATION: APPROVED _____ DISAPPROVED _____

CITY OF LOCKPORT
PLANNING BOARD APPLICATION

DESCRIPTION OF PROPOSED REQUEST:

NAME OF PROPERTY: Dr. Christopher Beney PHONE: 716-433-2674

NAME OF APPLICANT: Bob Timkey PHONE: 716-880-6000

ADDRESS OR LOCATION OF PROPOSAL: 1149 Lincoln Ave., Lockport, NY 14094

SIZE OF PARCEL OR STRUCTURE: 10,400 sq. ft.

EXISTING ZONING: Commercial

PROPOSED REQUEST Installation of (152) roof mounted solar panels on West facing roof of existing building.

REQUIRED ENCLOSURES:

In order to provide the City Planning Board with adequate information on which to base its decision, this application will not be heard unless the following information is submitted ten (10) days prior to the meeting by no later than 1 p.m.

1. Adequate description of proposal.

2. Survey of property affected, together with a Plot Plan which shows the distance to nearest intersection, proposed physical layout of the property including any existing or proposed structures, traffic access patterns, parking arrangements, walls, fences or other buffers and signs.

SEQRA:

This proposal constitutes a: ( )Type I, ( )Type II, ( )Unlisted action as per the provisions of the State Environmental Quality Review Act. A determination of environmental significance has been made: ( )yes, ( )no; a copy of this determination is attached ( )yes, ( )no.

PROPERTY OWNER'S SIGNATURE _____

APPLICANT'S SIGNATURE _____

PLEASE NOTE YOU OR A REPRESENTATIVE ARE TO BE PRESENT AT THE MEETING TO PRESENT YOUR PROJECT TO THE BOARD.

CITY OF LOCKPORT
BUILDING INSPECTION DEPARTMENT

ONE LOCKS PLAZA PHONE-439-6754 FAX-439-6605

BUILDING PERMIT APPLICATION FOR GENERAL CONSTRUCTION

Job Location: 1149 Lincoln Avenue, Lockport Date: 5/30/24

Owner: Dr. Christopher Beney Address (if different): same

Phone: 716-433-2674 City: Lockport Zip: 14094

Construction Cost: $179,400

Description of work: (152) roof mounted solar panels on West facing roof of small-commercial office building.

Contractor(s): Go Solar, LLC
Bob Timkey, Owner / Operator

Please Attach the Following:
(New Construction only)

___ Property survey that is current and accurate
___ 2 sets of plans for new construction
___ Setback dimensions (front, rear and all sides)
___ Sketch if altering interior dimensions
___ Locations of the proposed structures

The Owner/ Applicant agrees to conform to all applicable laws of this jurisdiction, adhere to the plans and specifications affixed hereto and permit Building Department personnel to perform required inspections.

Applicant's Name:(if different than owner) Will R [signature] (attach letter of agency)

Owner/ Applicant Signature: [signature] Date: 5/30/24

May 30, 2024

NYSEG
Distributed Generation Services

Dr. Christopher Beney
1149 Lincoln Ave.
Lockport, NY 14094

LETTER OF AUTHORIZATION

To Whom It May Concern:

Please be advised that Go Solar, LLC has been contracted and authorized to complete installation of 79.04 kW residential solar pv power generation system for my office building at the above listed address.

Go Solar, LLC is authorized to represent me in official matters dealing with this installation.

Respectfully,

Dr. Christopher Beney,
Owner,
NYSEG Acct # 1005-083-4463

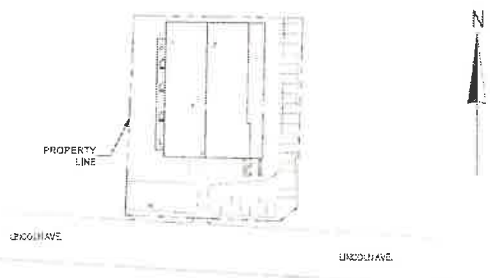
NEW PV SYSTEM: 79.04 kWDC, 72.20 kWAC

DR. CHRISTOPHER BENEY

1149 LINCOLN AVE., LOCKPORT, NY 14094

AERIAL VIEW:

PLAN MAP:



SCOPE OF WORK
SYSTEM SIZE STC: 152X 520W = 79.04 kWDC
(152) SILFAB SOLAR SIL-520 QM (520W) MODULES
(152) ENPHASE IQ8P-3P-72-E-US (475VA) (208V) INVERTERS

RACKING TYPE IRONRIDGE AIRE A1 RAILS W/ S-5! S-5-V CLAMPS

CONTACT INFO:

PROJECT
NAME DR. CHRISTOPHER BENEY

PROJECT MANAGER
NAME [illegible]
PHONE [illegible]

CONTRACTOR
NAME GO SOLAR LLC
ADDRESS [illegible] LINCOLN AVE., LOCKPORT, NY 14094
PHONE [illegible]

AUTHORITIES HAVING JURISDICTION
BUILDING CITY OF LOCKPORT
ZONING CITY OF LOCKPORT
UTILITY [illegible]

APPLICABLE CODES & STANDARDS
BUILDING CODES IBC 2015
FIRE CODE IFC 2015
ELECTRICAL CODE NEC 2017
PARCEL NO 123.12-1-4.112

SHEET SCHEDULE

SHEET NUMBER	SHEET TITLE
T-001	COVER PAGE
A-101	SITE PLAN
A-102	ELECTRICAL PLAN
A-103	STRING PLAN
A-104	STRUCTURAL PLAN
E-601	THREE LINE DIAGRAM
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

2.1.1 SITE NOTES
2.1.2 A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
2.1.3 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH NO STORAGE BATTERIES.
2.1.4 THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL OR BUILDING ROOF VENTS.
2.1.5 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION CEC 110.26.
2.1.6 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE BUILDING OR STRUCTURE.

2.2.1 EQUIPMENT LOCATIONS
2.2.2 ALL EQUIPMENT SHALL MEET MINIMUM SETBACKS AS REQUIRED BY CEC 110.26.
2.2.3 WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY CEC 690.31 (A),(C) AND CEC TABLES 310.15 (B)(2)(A) AND 310.15 (B)(3)(C).
2.2.4 JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES ACCORDING TO CEC 690.34.
2.2.4 ADDITIONAL AC DISCONNECT(S) SHALL BE PROVIDED WHERE THE INVERTER IS NOT WITHIN SIGHT OF THE AC SERVICING DISCONNECT.
2.2.5 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL ACCORDING TO NEC APPLICABLE CODES.
2.2.6 ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

2.3.1 STRUCTURAL NOTES
2.3.2 RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAIL MANUFACTURER'S INSTRUCTIONS.
2.3.3 JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.
2.3.4 ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.
2.3.5 ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER.
2.3.6 WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

2.4.1 GROUNDING NOTES
2.4.2 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
2.4.3 AS IN CONVENTIONAL PV SYSTEMS, UNGROUNDED PV SYSTEMS REQUIRE AN EQUIPMENT GROUNDING CONDUCTOR. ALL METAL ELECTRICAL EQUIPMENT AND [illegible] IN ACCORDANCE WITH 250.134 OR 250.136(A). ONLY THE DC CONDUCTORS ARE UNGROUNDED.
2.4.4 PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO CEC 690.43 AND MINIMUM CEC TABLE 250.122.
2.4.5 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURE CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A).
2.4.6 EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ. IF WEEBS ARE NOT USED, MODULE GROUNDING LUGS MUST BE INSTALLED AT THE SPECIFIED GROUNDING LUG HOLES PER THE MANUFACTURERS' INSTALLATION REQUIREMENTS.
2.4.7 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
2.4.8 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [CEC 250.119].
2.4.9 THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH CEC 690.47 AND CEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO CEC 250, CEC 690.47 AND AHJ.
2.4.10 ACCORDING TO CEC 690.47 (C)(3), UNGROUNDED SYSTEMS INVERTER MAY SIZE DC GEC ACCORDING TO EGC REQUIREMENTS OF CEC 250.122. HOWEVER, DC GEC TO BE UNSPLICED OR IRREVERSIBLY SPLICED.
2.4.11 IN UNGROUNDED INVERTERS, GROUND FAULT PROTECTION IS PROVIDED BY "ISOLATION MONITOR INTERRUPTOR" AND GROUND FAULT DETECTION PERFORMED BY "RESIDUAL CURRENT DETECTOR."

2.5.1 INTERCONNECTION NOTES
2.5.2 LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [CEC 690.64 (B)]
2.5.3 THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS INPUT MAY NOT EXCEED 120% OF BUSBAR RATING [CEC 705.12(D)(2)(3)].
2.5.4 WHEN SUM OF THE PV SOURCES EQUALS >100% OF BUSBAR RATING, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD [CEC 705.12(D)(2)(3)].
2.5.5 AT MULTIPLE INVERTERS OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE COMBINED OVERCURRENT DEVICE MAY BE EXCLUDED ACCORDING TO CEC 705.12 (D)(2)(3)(C).
2.5.6 FEEDER TAP INTERCONNECTION (LOAD SIDE) ACCORDING TO CEC 705.12 (D)(2)(1)
2.5.7 SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO CEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH CEC 230.42
2.5.8 BACKFEEDING BREAKER FOR UTILITY-INTERACTIVE INVERTER OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [CEC 705.12 (D)(5)].

2.6.1 DISCONNECTION AND OVER-CURRENT PROTECTION NOTES
2.6.2 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
2.6.3 DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH.
2.6.4 BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED. THEREFORE BOTH MUST OPEN WHERE A DISCONNECT IS REQUIRED, ACCORDING TO CEC 690.13.
2.6.5 DC DISCONNECT INTEGRATED INTO ROOFTOP DC COMBINER OR INSTALLED WITHIN 5 FT ACCORDING TO CEC 690.15 (C).
2.6.6 RAPID SHUTDOWN OF ENERGIZED CONDUCTORS BEYOND 10 FT OF PV ARRAY OR 5 FT INSIDE A BUILDING WITHIN 10 SECONDS. CONTROLLED CONDUCTORS ≤30V AND ≤240VA [CEC 690.12]. LOCATION OF LABEL ACCORDING TO AHJ.
2.6.7 ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO CEC 690.8, 690.9 AND 240.
2.6.8 BOTH POSITIVE AND NEGATIVE PV CONDUCTORS ARE UNGROUNDED. THEREFORE BOTH REQUIRE OVER-CURRENT PROTECTION ACCORDING TO CEC 240.21 (SEE EXCEPTION IN CEC 690.9).
2.6.9 IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO CEC 690.11 AND UL1699B.

2.7 WIRING & CONDUIT NOTES
2.7.2 ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
2.7.3 ALL CONDUCTORS SIZED ACCORDING TO CEC 690.8, CEC 690.7
2.7.4 EXPOSED UNGROUNDED PV SOURCE AND OUTPUT CIRCUITS WILL USE WIRE LISTED AND IDENTIFIED AS PHOTOVOLTAIC (PV) WIRE [690.35 (D)]. PV MODULES WIRE LEADS SHALL BE LISTED FOR USE WITH UNGROUNDED SYSTEMS ACCORDING TO CEC 690.35 (D)(3).
2.7.5 PV WIRE BLACK WIRE MAY BE FIELD-MARKED WHITE [CEC 200.6 (A)(6)].
2.7.6 MODULE WIRING SHALL BE LOCATED AND SECURED UNDER THE ARRAY
2.7.7 ACCORDING TO NEC 200.7, UNGROUNDED SYSTEMS DC CONDUCTORS COLORED OR MARKED AS FOLLOWS:
DC POSITIVE- RED, OR OTHER COLOR EXCLUDING WHITE, GREY AND GREEN
DC NEGATIVE- BLACK, OR OTHER COLOR EXCLUDING WHITE, GREY AND GREEN
2.7.8 AC CONDUCTORS COLORED OR MARKED AS FOLLOWS:
PHASE A OR L1- BLACK
PHASE B OR L2- RED, OR OTHER CONVENTION IF THREE PHASE
PHASE C OR L3- BLUE, YELLOW, ORANGE*, OR OTHER CONVENTION
NEUTRAL- WHITE OR GREY

* IN 4-WIRE DELTA CONNECTED SYSTEMS THE PHASE WITH HIGHER VOLTAGE TO BE MARKED ORANGE [CEC 110.15].

SYMBOL LEGEND

MAIN ENTRANCE DOOR
MAIN ELECTRICAL PANEL
JUNCTION BOX
AC DISCONNECT
DC/AC INVERTER
DC DISCONNECT
AC PANELBOARD
COMBINER BOX
TAP BOX
SUB-PANEL
METER MAIN
RAPID SHUTDOWN
LOAD CENTER
UTILITY METER
PV REVENUE METER
UTILITY POLE
MODULE STRINGING
MODULE STRINGING
MODULE STRINGING
MODULE STRINGING
PROPERTY LINE
ROOF RAFTERS
MODULE STRINGING
EQUIPMENT GROUND
CONDUIT
FIRE CLEARANCE
SOLAR PANEL
SHEET KEYNOTE INDICATOR
NORTH INDICATOR
DETAIL INDICATOR
ELEVATION INDICATOR

DISCLAIMER: PLEASE NOTE THAT THE ABBREVIATIONS, ANNOTATIONS, AND SYMBOLS LISTED ARE INTENDED TO ILLUSTRATE THOSE THAT ARE COMMONLY USED. NOT ALL ARE NECESSARILY UTILIZED WITHIN THIS SET OF DRAWINGS.

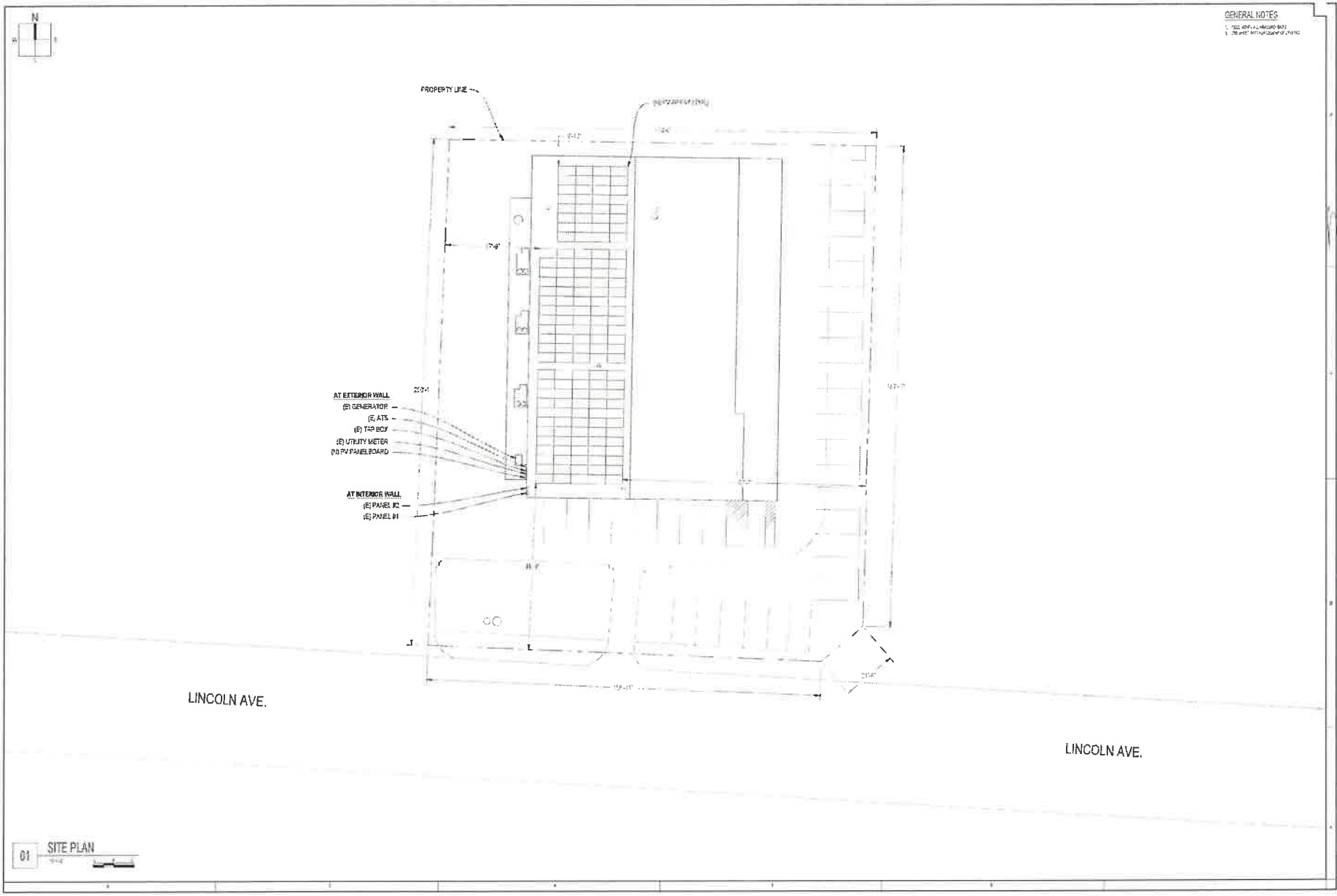
GoSolar
GO SOLAR LLC

DR. CHRISTOPHER BENEY
1149 LINCOLN AVE.,
LOCKPORT, NY 14094
APN: 123.12-1-4.112

NTS

COVER PAGE

T-001



GENERAL NOTES

01 SITE PLAN

GoSolar

DR. CHRISTOPHER BENEY
1149 LINCOLN AVE.,
LOCKPORT, NY 14094
APN: 123.12-1-4.112

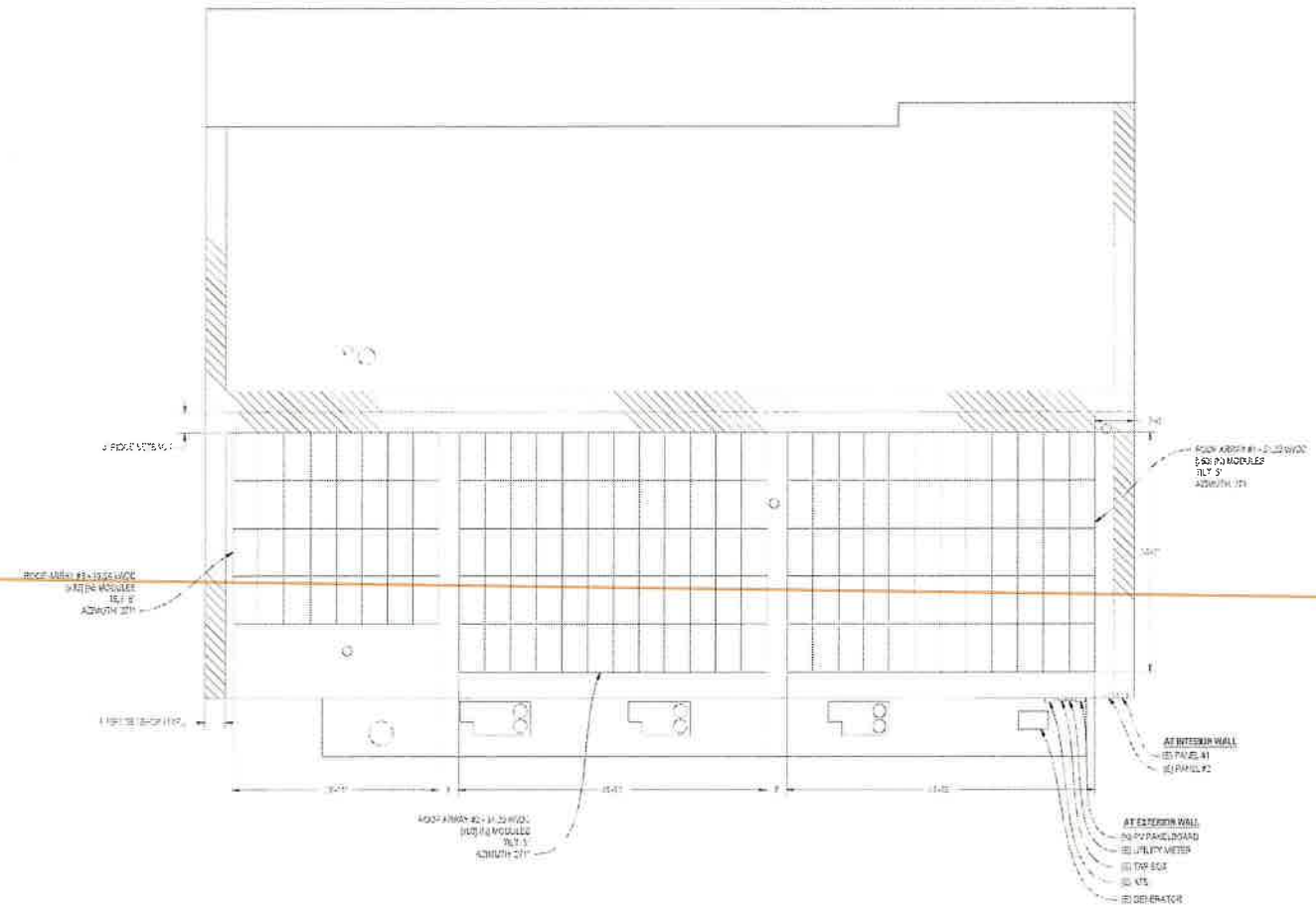
PV SYSTEM

SCALE: 1/8"=1'-0"

SHEET NAME: SITE PLAN

SHEET #: A-101

GENERAL NOTES



01 ELECTRICAL PLAN

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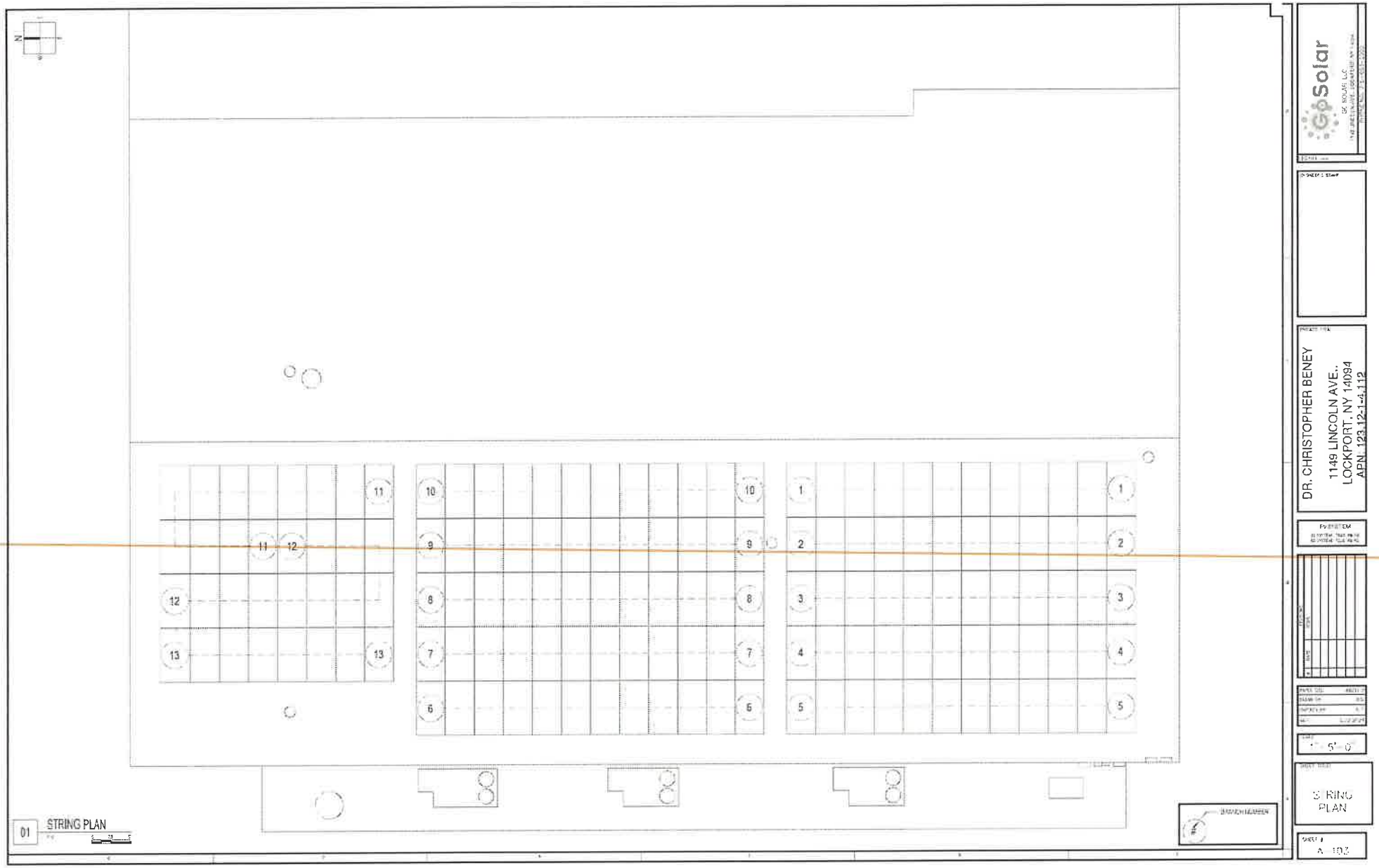
LOCKPORT, NY 14094
APN: 123.12-1-4.112

ELECTRICAL PLAN

A-102



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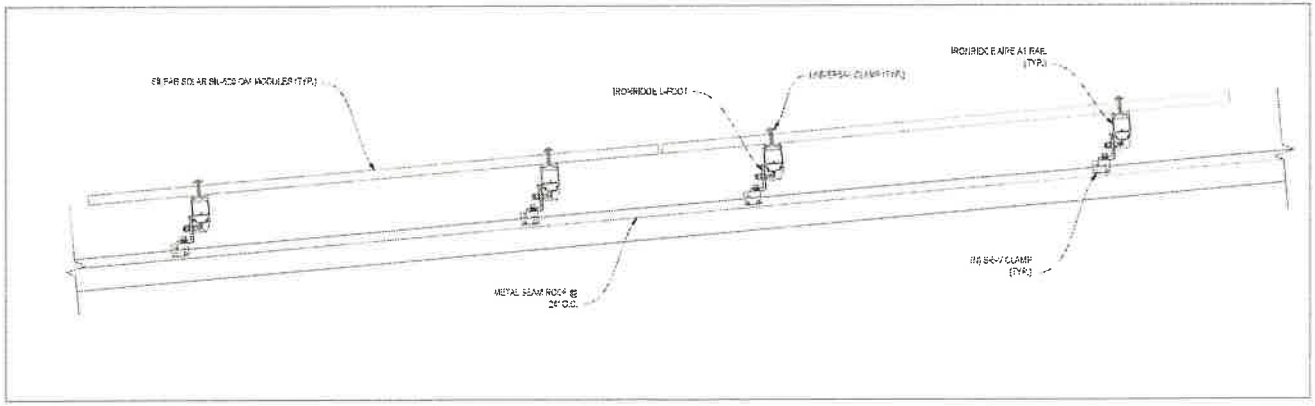
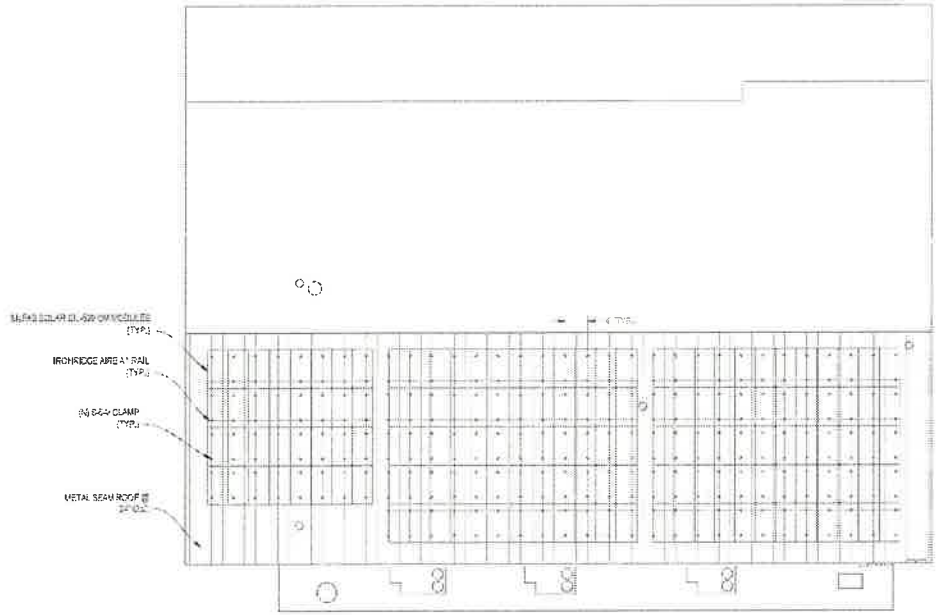
PV SYSTEM

STRING PLAN

A-102



02 MOUNTING DETAILS



01 STRUCTURAL PLAN

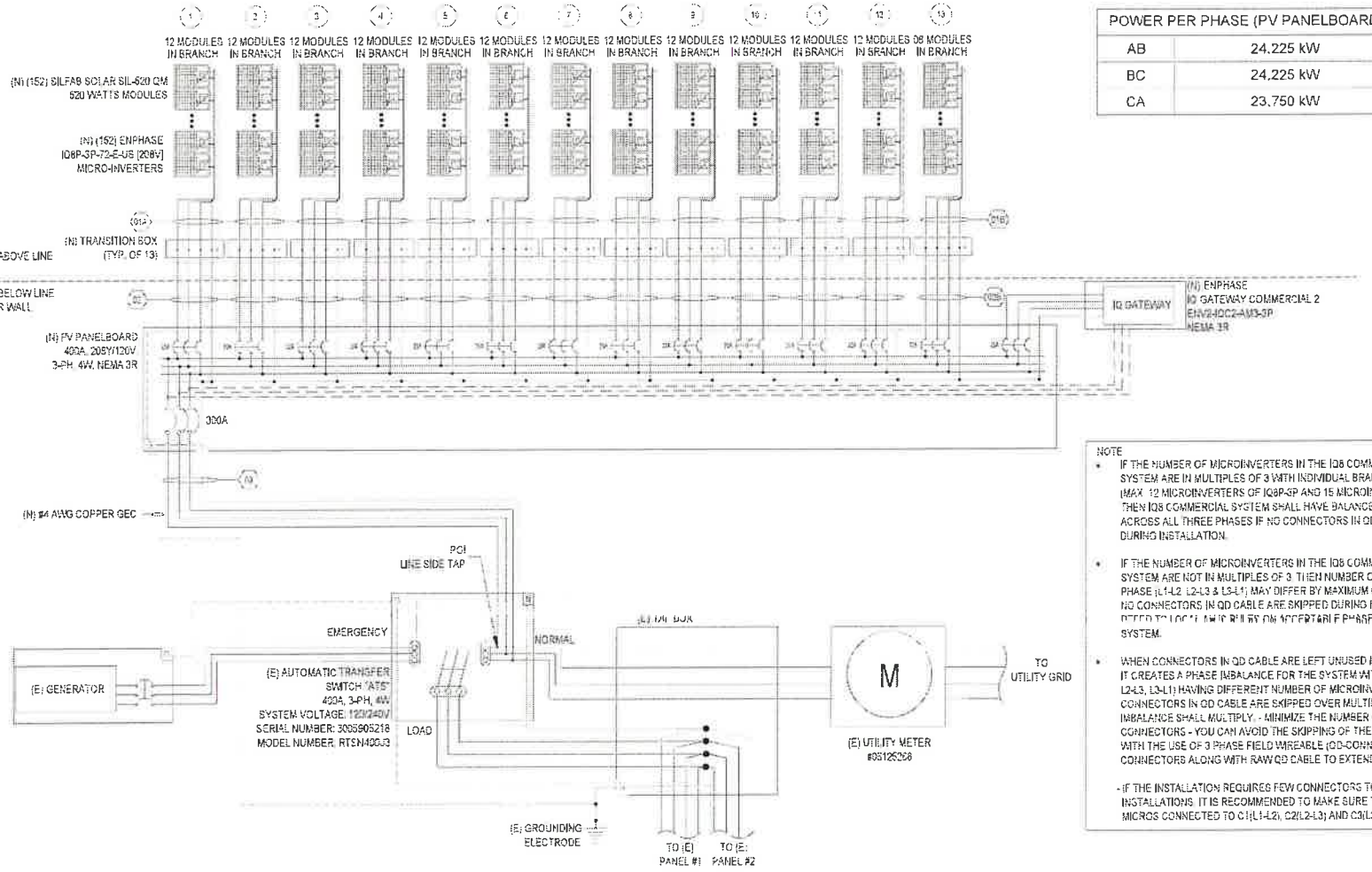
GPSolar

DR. CHRISTOPHER BENEY
1149 LINCOLN AVE.,
LOCKPORT, NY 14094
APN: 123.12-1-4.112

PV SYSTEM

STRUCTURAL PLAN

A-104



POWER PER PHASE (PV PANELBOARD)	
AB	24.225 kW
BC	24.225 kW
CA	23.750 kW

NOTE

- IF THE NUMBER OF MICROINVERTERS IN THE IQ8 COMMERCIAL MICROINVERTER SYSTEM ARE IN MULTIPLES OF 3 WITH INDIVIDUAL BRANCH CIRCUITS OF ANY SIZE (MAX. 12 MICROINVERTERS OF IQ8P-3P AND 15 MICROINVERTERS OF IQ8H-3P) THEN IQ8 COMMERCIAL SYSTEM SHALL HAVE BALANCED CONFIGURATION ACROSS ALL THREE PHASES IF NO CONNECTORS IN QD CABLE ARE SKIPPED DURING INSTALLATION.
- IF THE NUMBER OF MICROINVERTERS IN THE IQ8 COMMERCIAL MICROINVERTER SYSTEM ARE NOT IN MULTIPLES OF 3 THEN NUMBER OF MICROS ACROSS EACH PHASE (L1-L2, L2-L3 & L3-L1) MAY DIFFER BY MAXIMUM OF 1 MICRO PER PHASE IF NO CONNECTORS IN QD CABLE ARE SKIPPED DURING INSTALLATION. PLEASE REFER TO LOCAL AHJ IF RULES ON ACCEPTABLE PHASE IMBALANCE ACROSS THE SYSTEM.
- WHEN CONNECTORS IN QD CABLE ARE LEFT UNUSED IN A THREE-PHASE SYSTEM, IT CREATES A PHASE IMBALANCE FOR THE SYSTEM WITH EACH PHASE (L1-L2, L2-L3, L3-L1) HAVING DIFFERENT NUMBER OF MICROINVERTERS. IF MULTIPLE CONNECTORS IN QD CABLE ARE SKIPPED OVER MULTIPLE BRANCH CIRCUITS, THE IMBALANCE SHALL MULTIPLY. - MINIMIZE THE NUMBER OF UNUSED QD CABLE CONNECTORS - YOU CAN AVOID THE SKIPPING OF THE QD CABLE CONNECTORS WITH THE USE OF 3 PHASE FIELD WIREABLE (QD-CONN-10F AND QD-CONN-10M) CONNECTORS ALONG WITH RAW QD CABLE TO EXTEND THE CABLE DROP LENGTH.

- IF THE INSTALLATION REQUIRES FEW CONNECTORS TO BE SKIPPED DURING INSTALLATIONS, IT IS RECOMMENDED TO MAKE SURE THAT EQUAL NUMBER OF MICROS CONNECTED TO C1(L1-L2), C2(L2-L3) AND C3(L3-L1) TYPE CONNECTORS.

GoSolar

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1149 LINCOLN AVE.,
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APN: 123.12-1-4.112

PV SYSTEM

DRAWN BY:
CHECKED BY:
DATE:

NTS

THREE LINE DIAGRAM

E-301

SYSTEM SUMMARY			
Design low temp. °C	Ambient temperature °C	Temp. coef of VOC	Mod VOC
-19.9	25.4	-0.24	47.52
VPC			
-0.11			
Voltage Increase	5.29		
Max VOC	52.80		
BRANCH #	# MODS. PER BRANCH	BRANCH DC POWER	BRANCH AC POWER
1	12	6240	5700
2	12	6240	5700
3	12	6240	5700
4	12	6240	5700
5	12	6240	5700
6	12	6240	5700
7	12	6240	5700
8	12	6240	5700
9	12	6240	5700
10	12	6240	5700
11	12	6240	5700
12	12	6240	5700
13	8	4160	3800

MODULES

QTY.	MAKE AND MODEL	PMAX	ISC	IMP	VOC	VMP	TEMP. COEFF. OF VOC	MAX. FUSE RATING
152	SILFAB SOLAR SIL-520 QM	520W	13.65A	12.85A	47.52V	40.48V	-0.24%/°C	25A

INVERTERS

QTY.	MAKE AND MODEL	AC VOLTAGE	RATED POWER	MAX OUTPUT CURRENT	MAX INPUT CURRENT	MAX INPUT VOLTAGE	CEC EFFICIENCY
152	ENPHASE IQ8P-3P-72-E-US [208V]	208V	475W	2.28A	14A	63V	97.50%

DESIGN TEMPERATURES	
ASHRAE EXTREME LOW	-19.9°C (-3.82F), SOURCE: NIAGARA FALLS INTL NY, USA
ASHRAE 2% HIGH	25.4°C (78.52F), SOURCE: NIAGARA FALLS INTL NY, USA

CONDUCTOR AND CONDUIT SCHEDULE W/ELECTRICAL CALCULATIONS

ID	TYPICAL	CONDUCTOR	CONDUIT	CURRENT-CARRYING CONDUCTORS IN CONDUIT	OCPD	EGC	TEMP. CORR. FACTOR	CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT (125% FOR DC, 125% FOR AC)	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	AMP. @ TERMINAL	LENGTH (FT)	VOLTAGE DROP %
01A	12	12 AWG 4 CORE RAW QD CABLE	FREE AIR	N/A	20A	6 AWG BARE, COPPER	1.0 (25.4°C)	1.0	15.82A	19.77A	40A	40A	60°C	30A	50	1.32
01B	1	12 AWG 4 CORE RAW QD CABLE	FREE AIR	N/A	20A	6 AWG BARE, COPPER	1.0 (25.4°C)	1.0	10.54A	13.19A	40A	40A	60°C	30A	30	0.79
02A	12	10 AWG THWN-2, COPPER	3/4" EMT	3+N	20A	10 AWG THWN-2, COPPER	1.0 (25.4°C)	1.0	15.82A	19.65A	40A	40A	60°C	30A	50	0.78
02B	1	10 AWG THWN-2, COPPER	3/4" EMT	3+N	20A	10 AWG THWN-2, COPPER	1.0 (25.4°C)	1.0	10.54A	13.19A	40A	40A	60°C	30A	90	1.41
03	1	350 MCM THWN-2, COPPER	2-1/2" EMT	3+N	300A	N/A	1.0 (25.4°C)	1.0	201.7A	252.12A	350A	350A	75°C	310A	10	0.06

⚠WARNING
ELECTRICAL SHOCK HAZARD
TERMINALS ON THE LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

LABEL 1
AT EACH DISCONNECTING MEANS FOR PHOTOVOLTAIC EQUIPMENT (2" X 4").
[NEC 690.13]

WARNING: PHOTOVOLTAIC POWER SOURCE

LABEL 2
AT EXPOSED RACEWAYS, CABLE TRAYS, AND OTHER WIRING METHODS, SPACED AT MAXIMUM 10 FT SECTION OR WHERE SEPARATED BY ENCLOSURES, WALLS, PARTITIONS, CEILINGS, OR FLOORS (5 3/4" X 1 1/8").
[CEC 690.31(G)]
LETTERS AT LEAST 3/8 INCH, WHITE ON RED BACKGROUND; REFLECTIVE
[IFC 605.11.1.1]

⚠ CAUTION
SOLAR ELECTRIC SYSTEM CONNECTED

LABEL 3
AT UTILITY METER (5 3/4" X 1 1/8")
[NEC 690.56(B)]

PHOTOVOLTAIC SOLAR AC DISCONNECT

LABEL 4
AT EACH AC DISCONNECTING MEANS
(1" X 1").
[NEC 690.13(B)]

⚠ WARNING
DUAL POWER SUPPLY
SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

LABEL 5
AT POINT OF INTERCONNECTION
(2 3/4" X 1 5/8").
[NEC 705.12(B)(3)]

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

LABEL 6
AT RAPID SHUTDOWN SWITCH
[NEC 690.56(C)(2)].
LETTERS CAPITALIZED AND HAVING A MINIMUM HEIGHT OF 9.5 MM (3/8 IN.) IN WHITE ON RED BACKGROUND.

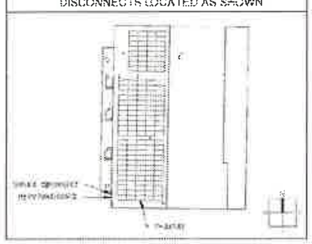
⚠ PHOTOVOLTAIC SYSTEM AC DISCONNECT ⚠
RATED AC OUTPUT CURRENT [201.7] A
NOMINAL OPERATING AC VOLTAGE [208] V

LABEL 7
AT POINT OF INTERCONNECTION MARKED AT PV AC DISCONNECT
(4" X 2").
[NEC 690.54]

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

LABEL 8

CAUTION
POWER TO THIS SERVICE IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



LABELING NOTES
1.1 LABELING REQUIREMENTS BASED ON THE 2017 NATIONAL ELECTRICAL CODE, INTERNATIONAL FIRE CODE 605.11, OSHA STANDARD 1910.145, ANSI Z535
1.2 MATERIAL BASED ON THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
1.3 LABELS TO BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
1.4 LABELS TO BE A MINIMUM LETTER HEIGHT OF 3/8" AND PERMANENTLY AFFIXED.
1.5 ALERTING WORDS TO BE COLOR CODED. " DANGER" WILL HAVE RED BACKGROUND " WARNING" WILL HAVE ORANGE BACKGROUND; " CAUTION" WILL HAVE YELLOW BACKGROUND. [ANSI Z535]
1.6 ALL SIGNAGE MUST BE PERMANENTLY ATTACHED AND BE WEATHER RESISTANT/SUNLIGHT RESISTANT AND CANNOT BE HAND-WRITTEN PER NEC 110.21(B)
1.7 PANEL DIRECTORY SHALL HAVE SUFFICIENT DETAIL SO THAT EACH CIRCUIT MAY BE DISTINGUISHED FROM ALL OTHERS.

INTERACTIVE PHOTOVOLTAIC SYSTEM CONNECTED
PHOTOVOLTAIC SYSTEM DISCONNECT LOCATED
SOUTH WEST SIDE OF THE BUILDING

DIRECTORY
PERMANENT PLAQUE OR DIRECTORY PROVIDING THE LOCATION OF THE SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC SYSTEM DISCONNECTING MEANS IF NOT IN THE SAME LOCATION (5 3/4" X 1 1/8").
[CEC 690.56(B)]
WHERE THE PV SYSTEMS ARE REMOTELY LOCATED FROM EACH OTHER, A DIRECTORY IN ACCORDANCE WITH 705.10 SHALL BE PROVIDED AT EACH PV SYSTEM DISCONNECTING MEANS.
PV SYSTEM EQUIPMENT AND DISCONNECTING MEANS SHALL NOT BE INSTALLED IN BATHROOMS
[CEC 690.4(D),(E)]

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APN: 123.12-1-4.112

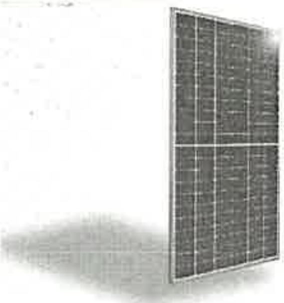
NTS

WIRING CALCULATION & PLACARD

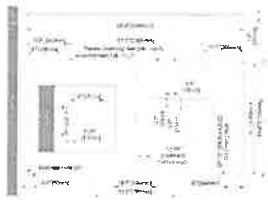
E-202

SILFAB COMMERCIAL NTC

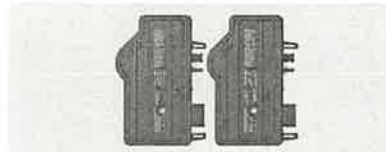
SILFAB SOLAR



INTRODUCING NEXT-GENERATION N-TYPE CELL TECHNOLOGY



ENPHASE.



IQ8 Commercial Microinverters

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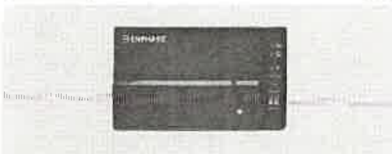
IQ8 Commercial Microinverters

ENPHASE.



IQ Gateway Commercial 2

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UL LISTED

IQ Gateway Commercial 2

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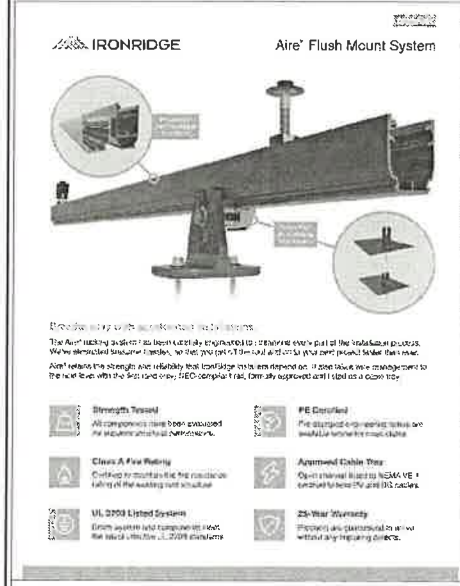
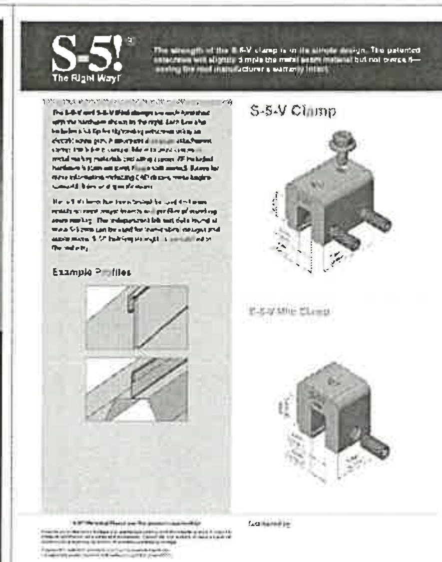
SCALE: NTS

SHEET TITLE: RESOURCE DOCUMENTS-1

SHEET #: R 1.1





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PV SYSTEM

SCALE: NTS

SHEET TITLE: RESOURCE DOCUMENTS - 2

SHEET #: R-102