PHOTOVOLTAIC ROOF MOUNT SYSTEM

45 MODULES-ROOF MOUNTED - 17.775 kW DC, 13.050 kW AC, 905 SYLVAN LANE, MAMARONECK, NY 10543

PHOTOVOLTAIC SYSTEM SPECIFICATIONS:

SYSTEM SIZE:	17.775 kW DC 13.050 kW AC
MODULE TYPE & AMOUNT:	(45) TRINA SOLAR VERTEX S 395W
MODULE DIMENSIONS:	(L/W/H) 69.06"/43.15"/1.18"
INVERTER:	(45) ENPHASE IQ8PLUS-72-2-US [240V]
INTERCONNECTION METHOD:	LINE SIDE TAP
BATTERY:	(01) ENPHASE IQ BATTERY 10T (ENCHARGE-10T-1P-NA)
BATTERY CAPACITY:	10.08 KWH
BATTERY POWER:	3.84 kVA
SMART SWITCH:	ENPHASE IQ SYSTEM CONTROLLER 2 (EP200G101-M240US01)
AHJ#.	MAMARONECK VILLAGE

GOVERNING CODES

ADOPTED CONSTRUCTION CODES

- 2020 BUILDING CODE OF NEW YORK STATE·
- 2020 PLUMBING CODE OF NEW YORK STATE
- 2020 MECHANICAL CODE OF NEW YORK STATE·
- 2020 FUEL GAS CODE OF NEW YORK STATE·
- 2020 RESIDENTIAL CODE OF NEW YORK STATE·
- 2020 FIRE CODE OF NEW YORK STATE·
- 2020 ENERGY CONSERVATION CODE OF NEW YORK STATE·
- 2020 PROPERTY MAINTENANCE CODE OF NEW YORK STATE·
- 2017 NATIONAL ELECTRICAL CODE

GENERAL NOTES:

a. INSTALLATION OF SOLAR PHOTOVOLTAIC SYSTEM SHALL BE IN ACCORDANCE WITH NEC ARTICLE 690, AND ALL OTHER APPLICABLE NEC CODES WHERE NOTED OR EXISTING.

b. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL COMPLY WITH NEC ARTICLE 110.

c. ALL CONDUCTORS, INCLUDING THE GROUNDING ELECTRODE CONDUCTOR SHALL BE PROTECTED FROM PHYSICAL DAMAGE IN ACCORDANCE WITH NEC ARTICLE 250.

d. THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE; THIS SYSTEM IS UTILITY INTERACTIVE PER UL 1741 AND ALSO INCLUDE STORAGE BATTERY.

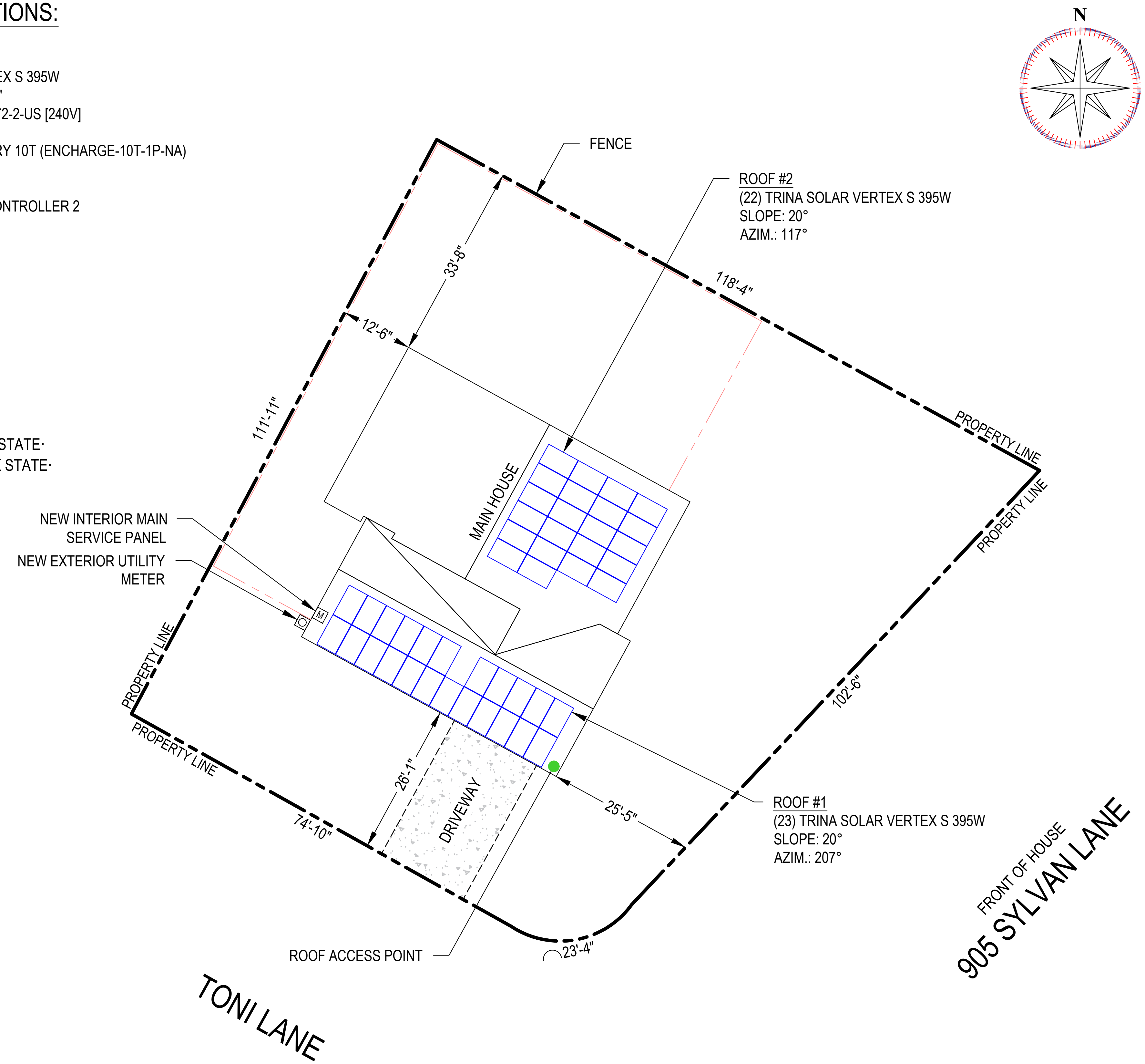
e. ALL DC WIRES SHALL BE SIZED ACCORDING TO [NEC 690.8]

f. DC CONDUCTORS SHALL BE WITHIN PROTECTED RACEWAYS IN ACCORDANCE WITH [NEC 690.31]

g. ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL JURISDICTIONAL BUILDING CODE.

h. PV MODULES TO BE RATED UL 1703 CLASS C FIRE RATING OR BETTER.

i. ALL EQUIPMENT TO BE CERTIFIED BY A NATIONALLY RECOGNIZED TESTING LABORATORY.



1 PLOT PLAN

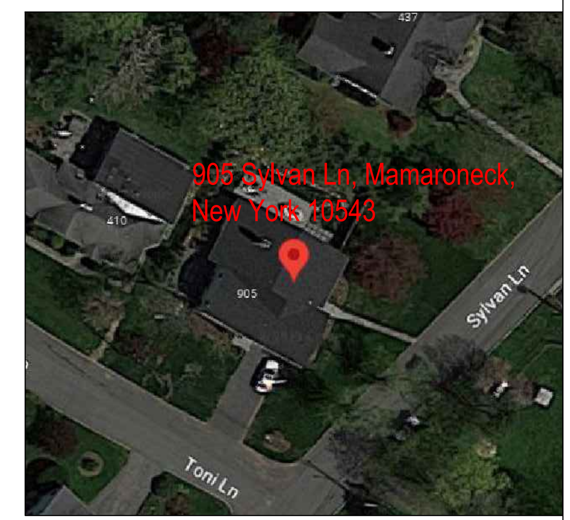
PV 0.0 SCALE: 3/64" = 1'0"

SHEET INDEX:

PV 0.0:	COVER SHEET
PV 1.0:	SITE PLAN
S 1.1:	MOUNT DETAILS
S 1.2:	ROOF SECTION
E 1.1:	3-LINE DIAGRAM
E 1.1A:	WIRE CALCULATIONS
E 1.2:	NOTES
E 1.3:	WARNING LABELS
DS+	EQUIPMENT SPEC SHEET

ROOF ACCESS POINT

ROOF ACCESS POINT SHALL NOT BE LOCATED IN AREAS THAT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.



2 SATELLITE VIEW

PV 0.0 SCALE: NTS

3 VICINITY MAP

PV 0.0 SCALE: NTS

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INFINITY ENERGY
575 CORPORATE DR. SUITE 2200,
MAHWAH, NJ 07430
PH: 1 (845) 200-3700

REVISIONS

Description	Date	Rev
Revision	4/22/2023	01

Signature with Seal

Project Name & Address

PHILIP GREVEN RESIDENCE

905 SYLVAN LANE,
MAMARONECK, NY 10543
PHONE:(917) 548-1096

Sheet Name

COVER SHEET

Sheet Size

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11" X 17"

Sheet Number

PV 0.0

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PremiumCAD

PHOTOVOLTAIC SYSTEM SPECIFICATIONS:

SYSTEM SIZE:	17.775 kW DC 13.050 kW AC
MODULE TYPE & AMOUNT:	(45) TRINA SOLAR VERTEX S 395W
MODULE DIMENSIONS:	(L/W/H) 69.06"/43.15"/1.18"
INVERTER:	(45) ENPHASE IQ8PLUS-72-2-US [240V]
BATTERY:	(01) ENPHASE IQ BATTERY 10T (ENCHARGE-10T-1P-NA)
BATTERY CAPACITY:	10.08 KWH
BATTERY POWER:	3.84 kVA
SMART SWITCH:	ENPHASE IQ SYSTEM CONTROLLER 2 (EP200G101-M240US01)

NOTE :
ATTIC RUN - YES
ATTIC FAN - NO
SHUTDOWN - YES

1 SITE PLAN
PV 1.0
SCALE: 3/32" = 1'-0"

BILL OF MATERIALS

NUMBER OF MODULES	45	TRINA SOLAR VERTEX S 395W
NUMBER OF INVERTER	45	ENPHASE IQ8PLUS-72-2-US [240V]
COMBINER PANEL	1	125A ENPHASE IQ COMBINER 4C X-IQ-AM1-240-4C, 240V
SYSTEM CONTROLLER	1	ENPHASE IQ SYSTEM CONTROLLER 2 (EP200G101-M240US01)
AC DISCONNECT	1	100 A FUSIBLE AC DISCONNECT, WITH 70A FUSES, 240V
SUB-PANEL	1	NEW 100A SUB-PANEL, 120/240V
BATTERY	1	IQ BATTERY 10T (ENCHARGE-10T-1P-NA)
NUMBER OF ATTACHMENTS	101	SPEEDSEAL FOOT ATTACHMENTS
RAILS	24	SNAPNRACK ULTRA RAIL 40 RACKING -168" SECTION
RAIL SPLICE	18	SPLICE KIT
MID CLAMPS	76	MID CLAMPS / UFO
END CLAMPS	28	END CLAMPS / STOPPER SLEEVE
GROUNDING LUG	7	GROUNDING LUG

CIRCUIT(S)

- CIRCUIT #1 - 12 MODULES
- CIRCUIT #2 - 11 MODULES
- CIRCUIT #3 - 11 MODULES
- CIRCUIT #4 - 11 MODULES

SYSTEM LEGEND

- NEW EXTERIOR UTILITY METER.
- M — NEW INTERIOR MAIN SERVICE PANEL & POINT OF INTERCONNECTION.
- C — NEW ENPHASE COMBINER PANEL
- SC — ENPHASE IQ SYSTEM CONTROLLER 2 (EP200G101-M240US01) , MICROGRID INTERCONNECT DEVICE, 200A/240V RATED
- RSD — NEW ENPHASE RAPID SHUT DOWN SWITCH
- AC — NEW VISIBLE, LOCKABLE, LABELED DISCONNECT LOCATED WITHIN 10' FROM THE UTILITY METER
- B — NEW (01) ENPHASE IQ BATTERY 10T (ENCHARGE-10T-1P-NA)
- SP — NEW INTERIOR SUB-PANEL.
- 45 NEW TRINA SOLAR VERTEX S 395W MODULES WITH 45 - ENPHASE IQ8PLUS-72-2-US [240V] INVERTERS, MOUNTED ON THE BACK OF EACH MODULES.
- = FIRE PATHWAY
- = ROOF OBSTRUCTIONS
- = ATTACHMENT POINTS
- = RAFTER
- = RACKING SYSTEM
- = CONDUIT RUN
- = JUNCTION BOX

ROOF SECTIONS

ROOF #01
MODULE - 23
SLOPE - 20°
AZIMUTH - 207°
MATERIAL - COMP. SHINGLE
RAFTER SIZE & SPACING - 2"X10" @ 16" O.C.

ROOF #02
MODULE - 22
SLOPE - 20°
AZIMUTH - 117°
MATERIAL - COMP. SHINGLE
RAFTER SIZE & SPACING - 2"X10" @ 16" O.C.

MODULE, ARRAY WEIGHT (LOAD CALC'S)

Number of Modules	45	
Module Weight	46.3	LBS
Total Module (Array) Weight	2083.50	LBS
Number of Attachment point	101	
Mounting System Weight *(Per Module)*	1.5	LBS
Mounting System Weight	151.50	LBS
Total System Weight *(Module Weight + Mounting System Weight)*	2235.00	LBS
Weight at Each Attachment Point *(Array Weight / Number of Attachment Point)*	20.63	LBS
Module Area (69.06"x43.15")	20.69	SqFt
Total Array Area	931.23	SqFt
Distributed Load *(Total System Weight / Total Array Area)*	2.31	Per SqFt
Total Roof Area	2794	SqFt
Total Percentage or Roof Covered *Total Array Area / Total Roof Area)*100*	33.33%	

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575 CORPORATE DR. SUITE 2200,
MAHWAH, NJ 07430
PH: 1 (845) 200-3700

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STATE OF NEW YORK
MICHAEL EDWARD
079676
LICENSED PROFESSIONAL ENGINEER

Project Name & Address

PHILIP GREVEN RESIDENCE
905 SYLVAN LANE,
MAMARONECK, NY 10543
PHONE:(917) 548-1096

Sheet Name
SITE PLAN

Sheet Size
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PV 1.0

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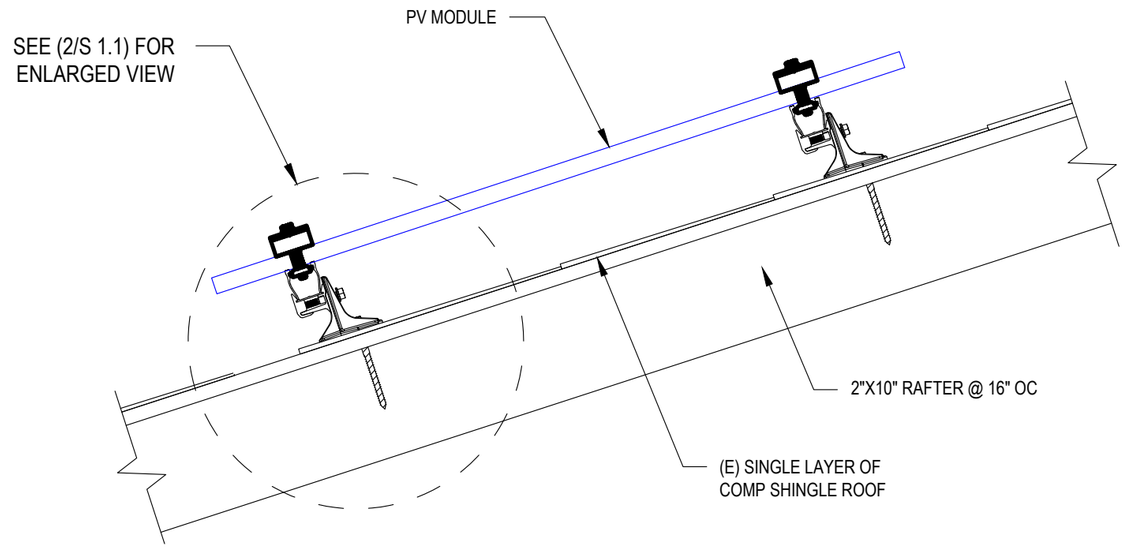
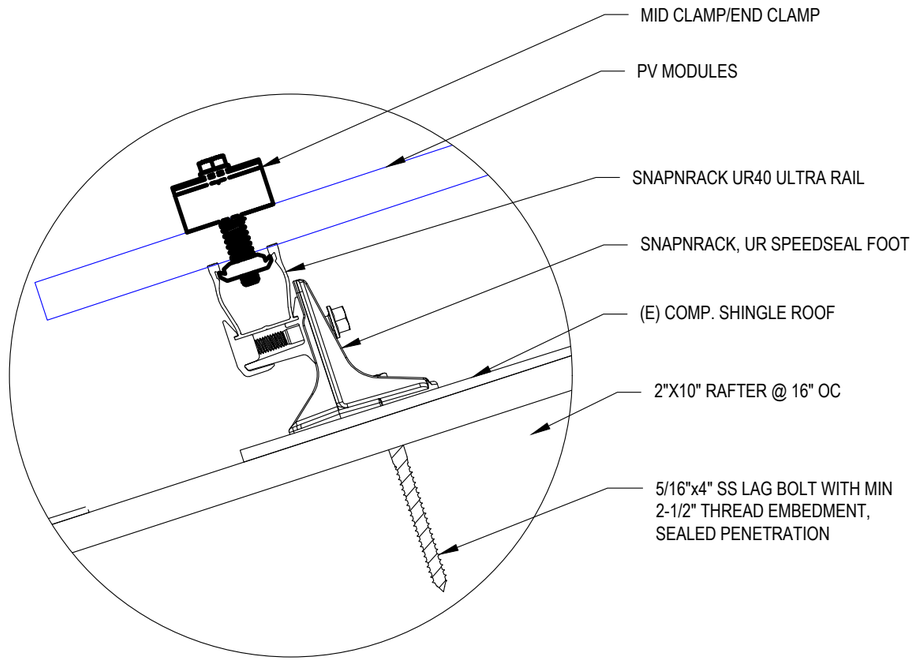
GENERAL STRUCTURAL NOTES:

1. THE SOLAR PANELS ARE TO BE MOUNTED TO THE ROOF FRAMING USING THE SNAPNRACK UR40 ULTRA RAIL WITH SPEEDSEAL FOOT ATTACHMENT. THE MOUNTING FEET ARE TO BE SPACED AS SHOWN IN THE DETAILS, AND MUST BE STAGGERED TO ADJACENT FRAMING MEMBERS TO SPREAD OUT THE ADDITIONAL LOAD.
2. UNLESS NOTED OTHERWISE, MOUNTING ANCHORS SHALL BE 5/16" LAG SCREWS WITH A MINIMUM OF 2-1/2" PENETRATION INTO ROOF FRAMING.
3. THE PROPOSED PV SYSTEM ADDS 2.30 PSF TO THE ROOF FRAMING SYSTEM.
4. ROOF LIVE LOAD = 20 PSF TYPICAL, 0 PSF UNDER NEW PV SYSTEM.
5. GROUND SNOW LOAD = 30 PSF
6. WIND SPEED = 117 MPH
7. EXPOSURE CATEGORY = B
8. RISK CATEGORY = II



1 S 1.1 ATTACHMENT DETAIL (SIDE VIEW)

SCALE: NTS



2 S 1.1 ATTACHMENT DETAIL ENLARGED VIEW

SCALE: NTS

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Project Name & Address

PHILIP GREVEN RESIDENCE
905 SYLVAN LANE,
MAMARONECK, NY 10543
PHONE:(917) 548-1096

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MOUNT DETAIL

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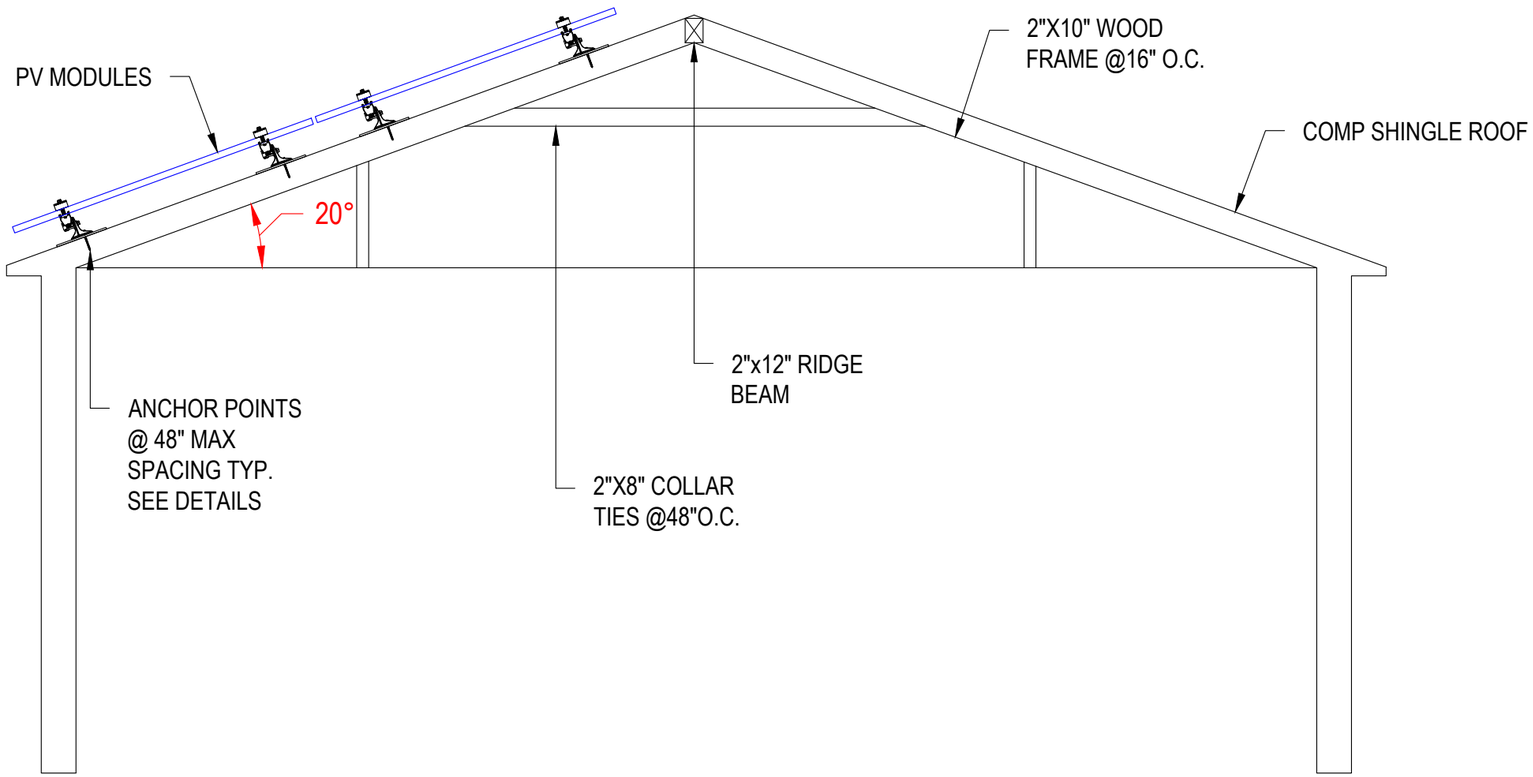
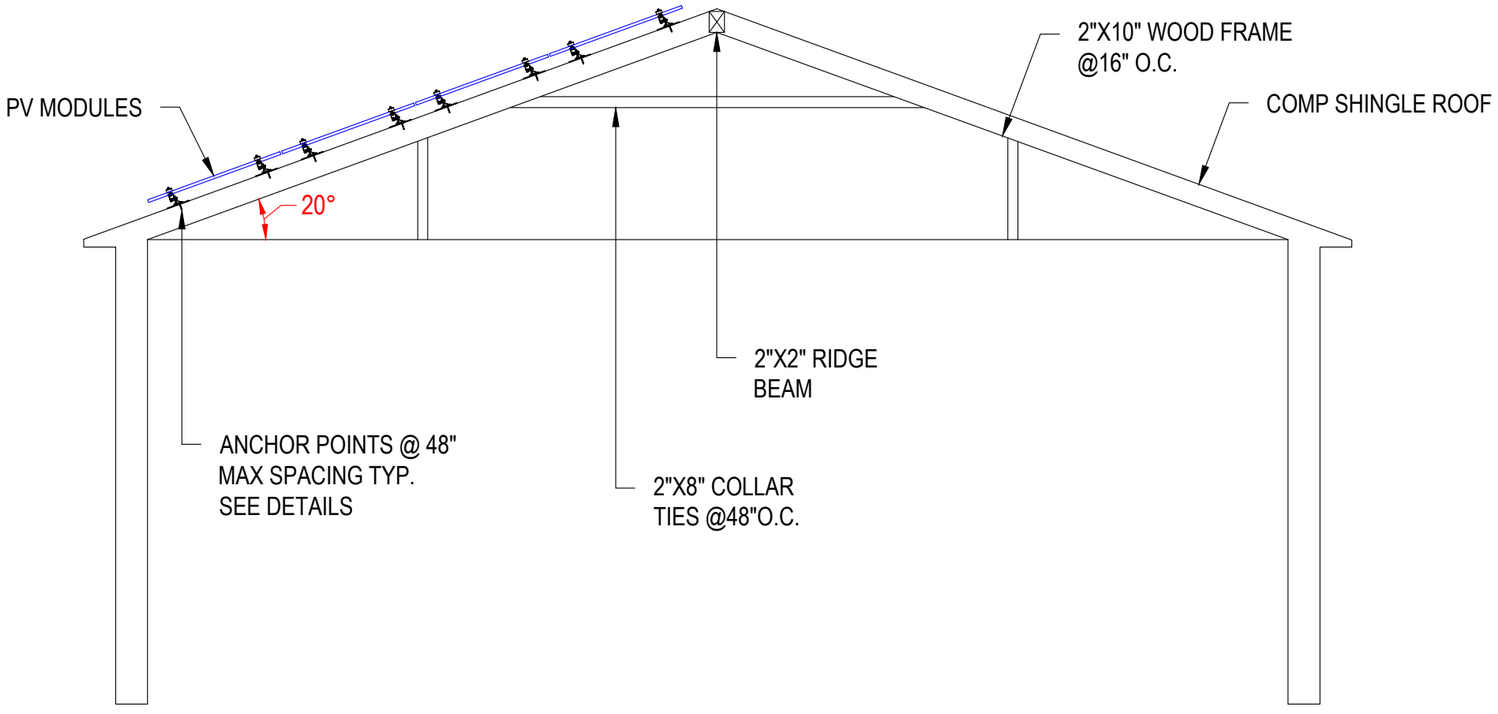
ROOF - #1
SLOPE - 20°
AZIMUTH - 207°



ROOF - #2
SLOPE - 20°
AZIMUTH - 117°



3 ROOF SECTION ROOF#01 & ROOF#02
S 1.2
SCALE: NTS,

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MIKAEL EDWARD M...
079676
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Project Name & Address

PHILIP GREVEN RESIDENCE
905 SYLVAN LANE,
MAMARONECK, NY 10543
PHONE:(917) 548-1096

Sheet Name
ROOF SECTION

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Sheet Number
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SYSTEM SIZE:	17.775 kW DC 13.050 kW AC
MODULE TYPE & AMOUNT:	(45) TRINA SOLAR VERTEX S 395W
INVERTER:	(45) ENPHASE IQ8PLUS-72-2-US [240V]
BATTERY:	(01) ENPHASE IQ BATTERY 10T (ENCHARGE-10T-1P-NA), 10.08kWH
SYSTEM CONTROLLER:	(01) ENPHASE IQ SYSTEM CONTROLLER 2 (EP200G101-M240US01)
BATTERY CAPACITY:	10.08 KWH
BATTERY POWER:	3.84 kVA

VISIBLE, LOCKABLE, LABELED DISCONNECT WITHIN 10' OF UTILITY METER

THIS PANEL IS FED BY MULTIPLE SOURCES (UTILITY AND SOLAR)

AC OUTPUT CURRENT	54.45A
NOMINAL AC VOLTAGE	240V

ENCHARGE BREKAER REQUIRES EATON HOLD DOWN KIT (BRHDK125)

120% RULE

1.) INVERTER OUTPUT (54.5A)x 125% + MAIN BREAKER (200A)= 268.1A
2.) 120% BUS RATING (200A) = 240A

THE VALUE OF 1.) IS LESS THAN OR EQUAL TO 2.)

POINT OF INTERCONNECT, LINE SIDE TAP
NEW INTERIOR 240V/200A BUS BAR RATING, MAIN SERVICE PANEL, SINGLE PHASE, WITH A NEW 200A MAIN BREAKER
NEW UTILITY METER
SERVICE : OVERHEAD

(45) (ENPHASE IQ8PLUS-72-2-US [240V]) MICROINVERTERS, 240VAC, 1.21A MAX
CEC WEIGHTED EFFICIENCY 97.0%
NEMA 4R, UL LISTED, INTERNAL GFDI

11 MICRO-INVERTERS IN BRANCH CIRCUIT #4
11 MICRO-INVERTERS IN BRANCH CIRCUIT #3
12 MICRO-INVERTERS IN BRANCH CIRCUIT #2
12 MICRO-INVERTERS IN BRANCH CIRCUIT #1

TERMINATOR CAP ON LAST CABLE CONNECTOR AC TRUNK CABLE (TYP)

(N) JUNCTION BOX 600 V, NEMA 4 UL LISTED

INSTALL HOLD DOWN KITS FOR EATON CIRCUIT BREAKERS

(N) ENPHASE IQ COMBINER 4/4C X-IQ- AM1-240-4/4C 64A/240V CONTINUOUS, PROTECTION MAX 80A BREAKER ON SOLAR OUTPUT; WITH 10 KAIC CIRCUIT BREAKERS (INSIDE BASEMENT)

20A
20A
20A
20A

M* IQ-GATEWAY

PRODUCTION CT

IQ-ENVOY, L1, L2 WIRED TO IQ CONTROLLER 2

L1
L2
N
G

3

2
2

WIRELESS

(01) ENPHASE ENCHARGE-10T-1P-NA BATTERY UNIT WITH (12) ENPHASE IQ8X-BATT INTEGRAL INVERTERS 10.08 KWH CAPACITY, 16A/240VAC OUTPUT, NEMA 3R (INSIDE BASEMENT)

(N) ENPHASE RAPID SHUTDOWN SWITCH (EP200G-NA-02-RSD) (OUTSIDE WALL)

(4) #12 AWG WIRES

(N) ENPHASE IQ CONTROLLER 2, MICROGRID INTERCONNECT DEVICE, 200A RATED 240V (INSIDE BASEMENT)

INSTALL HOLD DOWN KITS FOR EATON CIRCUIT BREAKERS

MAIN LUGS

MAIN RELAY
ENCHARGE (N) 20A
NFT/ENVOY 40A/15A
PV (N) 70A
GEN (N)15A

(2) #10 THWN-2 WIRES
(1) #10 AWG THWN-2 GND
1" EMT CONDUIT

AC DISCONNECT WITH IN 10' FROM METER

(N) BLADE TYPE FUSIBLE AC DISCONNECT NEMA 3R 100A-2P 120/240VAC (VISIBLE, LOCKABLE, LABELED) (OUTSIDE WALL)

70A FUSES

(3) #4 THWN-2 WIRES
(1) #8 AWG THWN-2 GND
1" EMT CONDUIT

LINE SIDE TAP

CONSUMPTION CTs

M

(N) 200A
(E) LOADS
(E) LOADS
(E) LOADS
(E) LOADS
(E) LOADS
60A/2P

TO EXISTING ATS PANEL

N G

EXISTING GROUNDING ELECTRODE SYSTEM

(3) #4 THWN-2 WIRES
(1) #8 AWG THWN-2 GND
1" EMT CONDUIT

(N) 70A
(E) LOADS
(E) LOADS
(E) LOADS
(E) LOADS
(E) LOADS
(E) LOADS
100A
N
G

NEW 240V/100A BUS BAR RATING, PROTECTED LOADS SUB PANEL, WITH A NEW 70A MAIN BREAKER, SINGLE PHASE (INSIDE BASEMENT)

WIRE TAG #	WIRE FROM - -	CONDUIT	WIRE QTY	WIRE GAUGE:	WIRE TYPE (ENPHASE TRUNK CABLE INCLUDES #12 GROUND)	TEMP RATING:	WIRE AMP	TEMP DE-RATE:	CONDUIT FILL:	WIRE OCP:	TERMINAL 75°C RATING:	INVERTER QTY:	NOC:	NEC:	STRING AMPS	GRND SIZE	GRND WIRE TYPE
1	ARRAY TO JUNCTION BOX	IQ CABLE	8	#12	TRUNK CABLE	90°	30A x	0.96 x	N/A	= 28.80A	25A	12	x 1.21A x 1.25 = 18.15A			#6	SBC
2	JUNCTION BOX TO COMBINER PANEL	1" EMT	8	#10	THWN-2	75°	35A x	0.94 x	0.70	= 23.03A	35A	12	x 1.21A x 1.25 = 18.15A			#8	THWN-2
3	COMBINER PANEL TO IQ CONTROLLER 2	1" EMT	3	#4	THWN-2	75°	85A x	0.94 x	1.00	= 79.90A	85A	45	x 1.21A x 1.25 = 68.06A			#8	THWN-2

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575 CORPORATE DR. SUITE 2200,
MAHWAH, NJ 07430
PH: 1 (845) 200-3700

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STATE OF NEW YORK
MICHAEL EDWARD MEE
079676
LICENSED PROFESSIONAL ENGINEER

Project Name & Address

PHILIP GREVEN RESIDENCE
905 SYLVAN LANE,
MAMARONECK, NY 10543
PHONE:(917) 548-1096

Sheet Name
3-LINE DIAGRAM

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BATTERY CAPACITY:	10.08 KWH
BATTERY POWER:	3.84 kVA

ENPHASE IQ10T BATTERY	
MANUFACTURER	ENCHARGE-10T-1P-NA
NOMINAL VOLTAGE /RANGE	230/184-253 VAC
PEAK OUTPUT POWER	5.76 KVA (10 SECONDS)
RATED CONTINUOUS OUTPUT POWER	3.84 KVA
RATED OUTPUT CURRENT	16 AMPS
PEAK OUTPUT CURRENT	24.6A (10 SECONDS)
NOMINAL DC VOLTAGE	67.2 V
MAX. DC VOLTAGE	75.6 V

INVERTER SPECIFICATIONS	
MANUFACTURER	ENPHASE ENERGY IQ8PLUS-72-2-US
MAX. DC VOLT RATING	60 VOLTS
MAX. POWER AT 40 C	235 WATTS
NOMINAL AC VOLTAGE	290 VOLTS
MAX. AC CURRENT	1.21 AMPS
MAX. OCPD RATING	20 AMPS
MAX. PANELS/CIRCUIT	13
SHORT CIRCUIT CURRENT	15 AMPS

ENPHASE ENPOWER IQ CONTROLLER 2	
MANUFACTURER	EP200G101-M240US01
SYSTEM VOLTAGE	120/240 VAC, 60HZ
MAX. CONT. CURRENT	160 AMPS
MAX. OUTPUT OCPD	200 AMPS
MAX.OCPD FOR STORAGE BRANCH	80 AMPS
MAX. OCPD FOR PV COMBINER BRANCH	80 AMPS

PV MODULE RATING @ STC	
MANUFACTURER	TRINA SOLAR VERTEX S 395W
MAX. POWER-POINT CURRENT (IMP)	11.62 AMPS
MAX. POWER-POINT VOLTAGE (VMP)	34.0 VOLTS
OPEN-CIRCUIT VOLTAGE (VOC)	41.0 VOLTS
SHORT-CIRCUIT CURRENT (ISC)	12.21 AMPS
NOM. MAX. POWER AT STC (PMAX)	395 WATT
MAX. SYSTEM VOLTAGE	1500V
VOC TEMPERATURE COEFFICIENT	-0.25° %/°C

Rooftop conductor ampacities designed in compliance with art. 690.8, Tables 310.15(B)(2)(a), 310.15(B)(3)(a), 310.15(B)(3)(c), 310.15(B)(16), Chapter 9 Table 4, 5, & 9. Location specific temperature obtained from ASHRAE 2017 data tables

RECORD LOW TEMP	-17°C
AMBIENT TEMP (HIGH TEMP 2%)	32°C
CONDUIT HEIGHT	0.5"
ROOF TOP TEMP	54°C
CONDUCTOR TEMPERATURE RATE	90°C

COMMUNICATION NOTES:

- ETHERNET COMMUNICATION TO BE RUN FROM THE INTERNET ROUTER TO THE ENPHASE IQ COMBINER.

- WIRELESS COMMUNICATION KIT NEEDED FOR COMMUNICATION BETWEEN ENVOY (COMMS KIT-01). TO BE INSTALLED AT THE IQ ENVOY FOR COMMUNICATION WITH ENCHARGE AND ENPOWER.
INCLUDES USB CABLE FOR CONNECTION TO ENVOY/IQ COMBINER AND ALLOWS WIRELESS COMMUNICATION WITH ENCHARGE AND ENPOWER.

IQ COMBINER NOTES:

1. ETHERNET OR WIFI IS THE PRIMARY COMM'S FOR ENVOY TO ENLIGHTEN.
2. COMM'S KIT FOR ENSEMBLE DEVICE COMMUNICATION TO BE INSTALLED.

EQUIPMENT LOCATION NOTES :

1. DISTANCE BETWEEN ENPOWER AND ENCHARGE SHOULE BE LESS THEN 5' ELSE AN AC DISCONNECT WILL BE REQUIRED.
2. ENCHARGE BATTERY SYSTEM SHOULDE NOT BE LOCATED IN DIRECT SUNLIGHT (SOUTH WALL).
3. MAX WIRELESS DISTANCE BETWEEN ENSEMBLE DEVICES IS 50'.
4. IF THERE IS COMMUNICATION ISSUE BETWEEN ENPOWER/ENCHARGE TO ENVOY, AN USB EXTENDER CAN BE USED TO RELOCATE THE COMMS KIT NEAR THE ENPOWER AND ENCHARGE.
5. THE PV ARRAY SHOULD NOT EXCEED THE MAX DISTANCE OF 150' FROM ENVOY.

NOTES:

1. ENPOWER INPUT FEEDS UNDER 100A WILL NEED TO DIRECT CONNECTED TO LUGS. ALL MAIN BREAKERS NEED TO BE CSR TYPE.
2. ENPOWER'S MAIN INPUT & OUTPUT LUGS ARE RATED FOR #1-350 kcmil, FOR WIRES SMALLER THAN #1 REMOVE LUG AND USE AN APPROVED UL RING TERMINAL.

InfinityEnergy
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575 CORPORATE DR. SUITE 2200,
MAHWAH, NJ 07430
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Signature with Seal

STATE OF NEW YORK · MICHAEL EDWARD MAC · 079676 · LICENSED PROFESSIONAL ENGINEER

Project Name & Address

PHILIP GREVEN RESIDENCE
905 SYLVAN LANE,
MAMARONECK, NY 10543
PHONE:(917) 548-1096

Sheet Name
3-LINE DIAGRAM

Sheet Size
ANSI B
11" X 17"

Sheet Number
E 1.1 (A)

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SITE NOTES:

1. A LADDER WILL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
2. THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH STORAGE BATTERIES.
3. THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
4. PROPERACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PERSECTION NEC 110.26.
5. 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.

EQUIPMENT LOCATIONS:

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

STRUCTURAL NOTES:

1. RACKING SYSTEM & PV ARRAY WILL BE INSTALLED ACCORDING TO CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUSTALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUBARRAY, ACCORDING TO RAI MANUFACTURER'S INSTRUCTIONS.
2. JUNCTION BOX WILL BE INSTALLED PER MANUFACTURERS' SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.
3. ROOFTOP PENETRATIONS FOR PV RACEWAY WILLBE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.
4. 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.

WIRING & CONDUIT NOTES:

1. ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS AREBASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
2. CONDUCTORS SIZED ACCORDING TO NEC 690.8, NEC 690.7.
3. VOLTAGE DROP LIMITED TO 1.5%.
4. DC WIRING LIMITED TO MODULE FOOTPRINT. MICROINVERTER WIRING SYSTEMS SHALL BE LOCATED AND SECURED UNDER THE ARRAY W/ SUITABLE WIRING CLIPS.
5. 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 [NEC 110.15].

GROUNDING NOTES:

1. GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVISES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
2. PV EQUIPMENT SHALL BE GROUNDED ACCORDING TO NEC 690.43 AND MINIMUM NEC TABLE 250.122.
3. METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORD WITH 250.134 AND 250.136(A).
4. EQUIPMENT GROUNDING CONDUCTORS SHALLBE SIZED ACCORDING TO NEC 690.45 AND MICROINVERTER MANUFACTORERS' INSTRUCTIONS.
5. EACH MODULE WILL BE GROUNDED USING WEEB GROUNDING CLIPS AS SHOWN IN MANUFACTURERDOCUMENTATION 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.
6. THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OFA MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
7. GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER [NEC 250.119]
8. THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690.47 AND NEC 250.50 THROUGH 250.106. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED ACCORDING TO NEC 250, NEC 690.47 AND AHJ.
9. GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690.41(B)(1) AND (2) TO REDUCE FIRE HAZARDS

DISCONNECTION AND OVER-CURRENT PROTECTION NOTES:

1. DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHENTHE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARECONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
2. DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
3. PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.12(A) THROUGH (D).
4. ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690.8, 690.9, AND 240.
5. MICROINVERTER BRANCHES CONNECTED TO A SINGLE BREAKER OR GROUPED FUSES IN ACCORDANCE WITH NEC 110.3(B).
6. IF REQUIRED BY AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION ACCORDING TO NEC 690.11 AND UL1699B.

INTERCONNECTION NOTES:

1. LOAD-SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH [NEC 705.12 (B)]
2. THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120% OF BUSBAR RATING [NEC 705.12(D)(2)(3)].
3. THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD [NEC 705.12(B)(2)(3)].
4. AT MULTIPLE ELECTRIC POWER SOURCES 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 NEC 705.12 (B)(2)(3)(C).
5. FEEDER TAP INTERCONECTION (LOADSIDE) ACCORDING TO NEC 705.12 (B)(2)(1)
6. SUPPLY SIDE TAP INTERCONNECTION ACCORDING TO NEC 705.12 (A) WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.42 2.7.8BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING [NEC 705.12 (B)(5)].

InfinityEnergy
INFINITY ENERGY
575 CORPORATE DR. SUITE 2200,
MAHWAH, NJ 07430
PH: 1 (845) 200-3700

REVISIONS

Description	Date	Rev
Revision	4/22/2023	01

Signature with Seal

STATE OF NEW YORK
MICHAEL EDWARD WEEB
079676
LICENSED PROFESSIONAL ENGINEER

Project Name & Address

PHILIP GREVEN RESIDENCE
905 SYLVAN LANE,
MAMARONECK, NY 10543
PHONE:(917) 548-1096

Sheet Name

NOTES

Sheet Size

ANSI B
11" X 17"

Sheet Number

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Drawn By

PremiumCAD

⚠WARNING⚠

ELECTRICAL SHOCK HAZARD

DO NOT TOUCH TERMINALS. TERMINALS ON LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

PER CODE(S): NEC 2017: 690.13(B)

⚠WARNING

ELECTRICAL SHOCK HAZARD

DO NOT TOUCH TERMINALS. TERMINALS ON LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

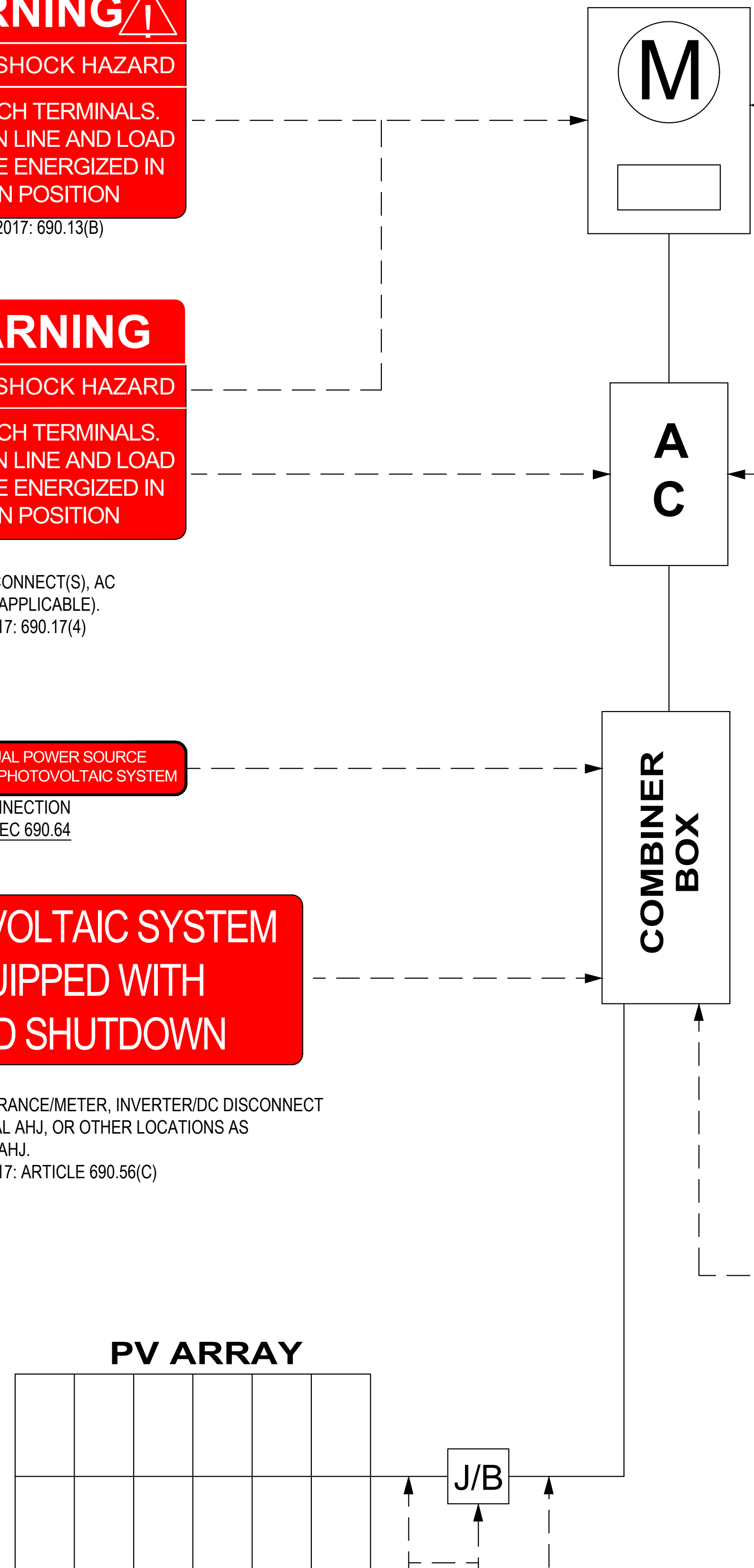
LABEL LOCATION:
INVERTER(S), AC DISCONNECT(S), AC COMBINER PANEL (IF APPLICABLE).
PER CODE(S): NEC 2017: 690.17(4)

⚠WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

POINT OF INTERCONNECTION
NEC 705.12(D)(3) & NEC 690.64

PHOTOVOLTAIC SYSTEM EQUIPPED WITH RAPID SHUTDOWN

LABEL LOCATION:
UTILITY SERVICE ENTRANCE/METER, INVERTER/DC DISCONNECT IF REQUIRED BY LOCAL AHJ, OR OTHER LOCATIONS AS REQUIRED BY LOCAL AHJ.
PER CODE(S): NEC 2017: ARTICLE 690.56(C)



WARNING: PHOTOVOLTAIC POWER SOURCE

(PER CODE: NEC 690.31(G)(3)(4) & NEC 690.13(G)(4))

⚠WARNING⚠

INVERTER OUTPUT CONNECTION

DO NOT RELOCATE THIS OVERCURRENT DEVICE

PER CODE(S): NEC 2017: 705.12(B)(2)(3)(b):

PHOTOVOLTAIC AC DISCONNECT

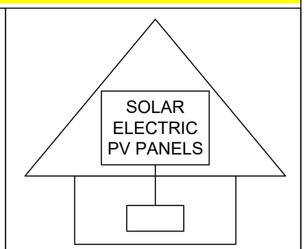
(PER CODE: NEC 690.14 (C) (1))

SOLAR PHOTOVOLTAIC SYSTEMS

(PER CODE: NEC 690)

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN THE ARRAY



AT INVERTER [IFC 605.11.3.1(1) & 690.56(C)(1)(a)]

PER CODE: NEC 2017

SOLAR PHOTOVOLTAIC SYSTEMS

(PER CODE: NEC 690)

SOLAR PHOTOVOLTAIC SYSTEMS

(PER CODE: NEC 690)

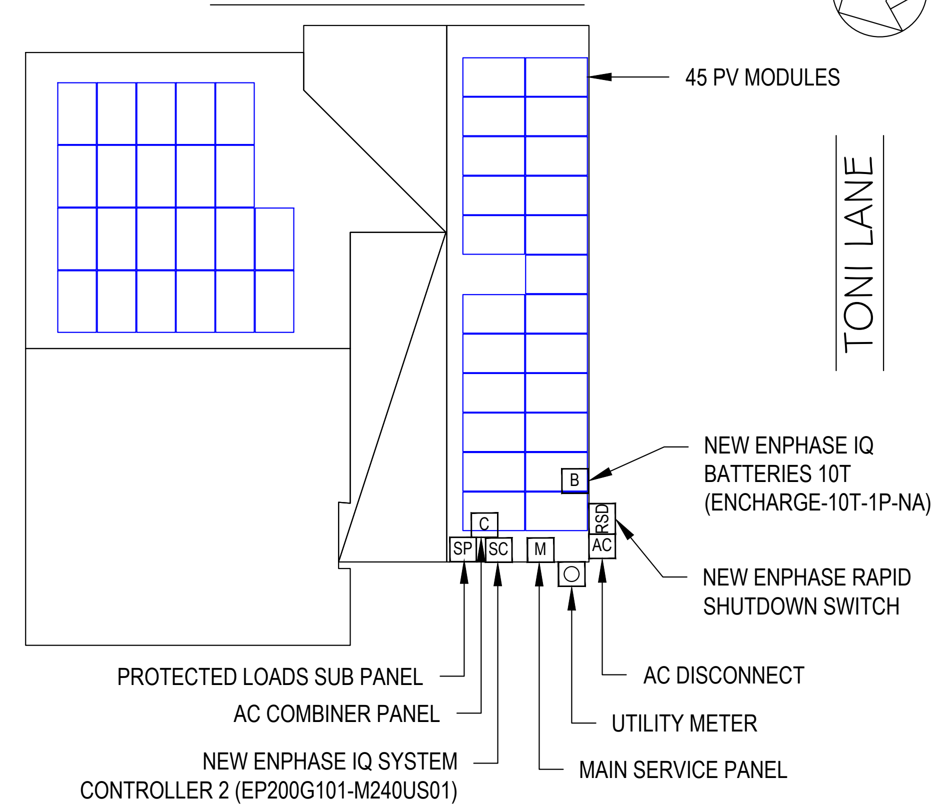
PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED AC OPERATING CURRENT 54.45 AMPS
AC NOMINAL OPERATING VOLTAGE 240 VOLTS

LABEL LOCATION:
AC DISCONNECT, POINT OF INTERCONNECTION
(PER CODE: NEC 690.54)

CAUTION:

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECT(S) LOCATED AS SHOWN.
DANGEROUS VOLTAGE MAY BE PRESENT AT ALL TIMES

905 SYLVAN LANE



InfinityEnergy
INFINITY ENERGY
575 CORPORATE DR. SUITE 2200,
MAHWAH, NJ 07430
PH: 1 (845) 200-3700

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Signature with Seal

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905 SYLVAN LANE,
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