

PROJECT INFORMATION

OWNER
ELLIOT BRANDT RESIDENCE
2523 P St NW Washington, DC 20007

SCOPE OF WORK
RESIDENTIAL GRID INTERACTIVE SOLAR INSTALLATION
SOLAREVER SE-166*83-445M-144445 OR EQUAL
(35) x 445W = 15.575 KWdc @ STC
(35) IQ7PLUS-72-2-US MICROINVERTERS

NUMBER OF ARRAYS PROPOSED: 1				
ARRAY #1 DETAILS	# OF MODULES: 35	TILT:1°	AZIMUTH: 180°	ARRAY HEIGHT: 1'-4"

NOTE: MAX HEIGHT OF SYSTEM IS 1'-4" ABOVE ROOF

BUILDING
SINGLE FAMILY RESIDENTIAL

CODES
2017 DCMR 12A, DC BUILDING CODE AMENDMENTS
2017 DCMR 12B, DC RESIDENTIAL CODE AMENDMENTS
2017 DCMR 12C, DC ELECTRICAL CODE
2017 DCMR 12H, DC FIRE CODE

MODULE SPECS
SOLAREVER SE-166*83-445M-144 445
(L) 82.44 X (W) 40.86" X (H) 1.37"
WEIGHT = 51.8 LBS
COMBINED WEIGHT OF
MODULES AND RACKING: 3.15PSF ≤ 4.5PSF

CONTRACTOR
REVOLUTION SOLAR
10746 JUDY LANE
COLUMBIA, MD 21044
CONTACT: MATT YOUNG
PHONE: 443-865-5039

SITE AND ARRAY DETAILS
FLAT ROOF , 2 x 8 RAFTERS
24" O.C. , DF #2
TILT: 1°
AZIMUTH: 180°
AREA OF ROOF(PLAN VIEW)= 2726 SF
AREA OF NEW ARRAY = 630 SF

CLIMATE DATA SOURCE: WASHINGTON
DC REAGAN AP, VA, USA, 38.87N,
77.03W
ASHRAE EXTREME LOW: -12.3°C
ASHRAE 2% HIGH: 36°C
ASHRAE EXTREME HIGH: 40.9°C
WIND SPEED: 115 MPH (ASCE7-10)
RISK CATEGORY: II
WIND EXPOSURE CATEGORY: B
GROUND SNOW LOAD: 25 PSF

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PV-6	ELEVATION

SUPPORTING DOCUMENTS
DATA SHEETS
STRUCTURAL CALCULATIONS



2523 P St NW
Washington, DC 20007



OFFICIAL USE

PE STAMP

CONTRACTOR
REVOLUTION SOLAR
10746 JUDY LANE
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Contractor # 410518000062



ELLIOT BRANDT RESIDENCE
Residential Grid Interactive Solar Installation
2523 P St NW Washington, DC 20007
Ph:
Square / Lot / Zoning: 2726, 4000, R3
PEPCO#: 1264 0106

COVER SHEET

System AC Size @ STC:10.150 kW System DC Size @ STC:15.575 kW
(35)SOLAREVER SE-166*83-445M-144 445 SOLAR MODULES OR EQUAL
(35) IQ7PLUS-72-2-US MICRO INVERTERS

Drawn by:
TC
Rev: PERMIT SET

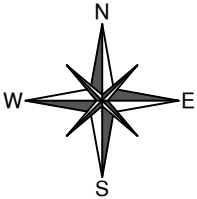
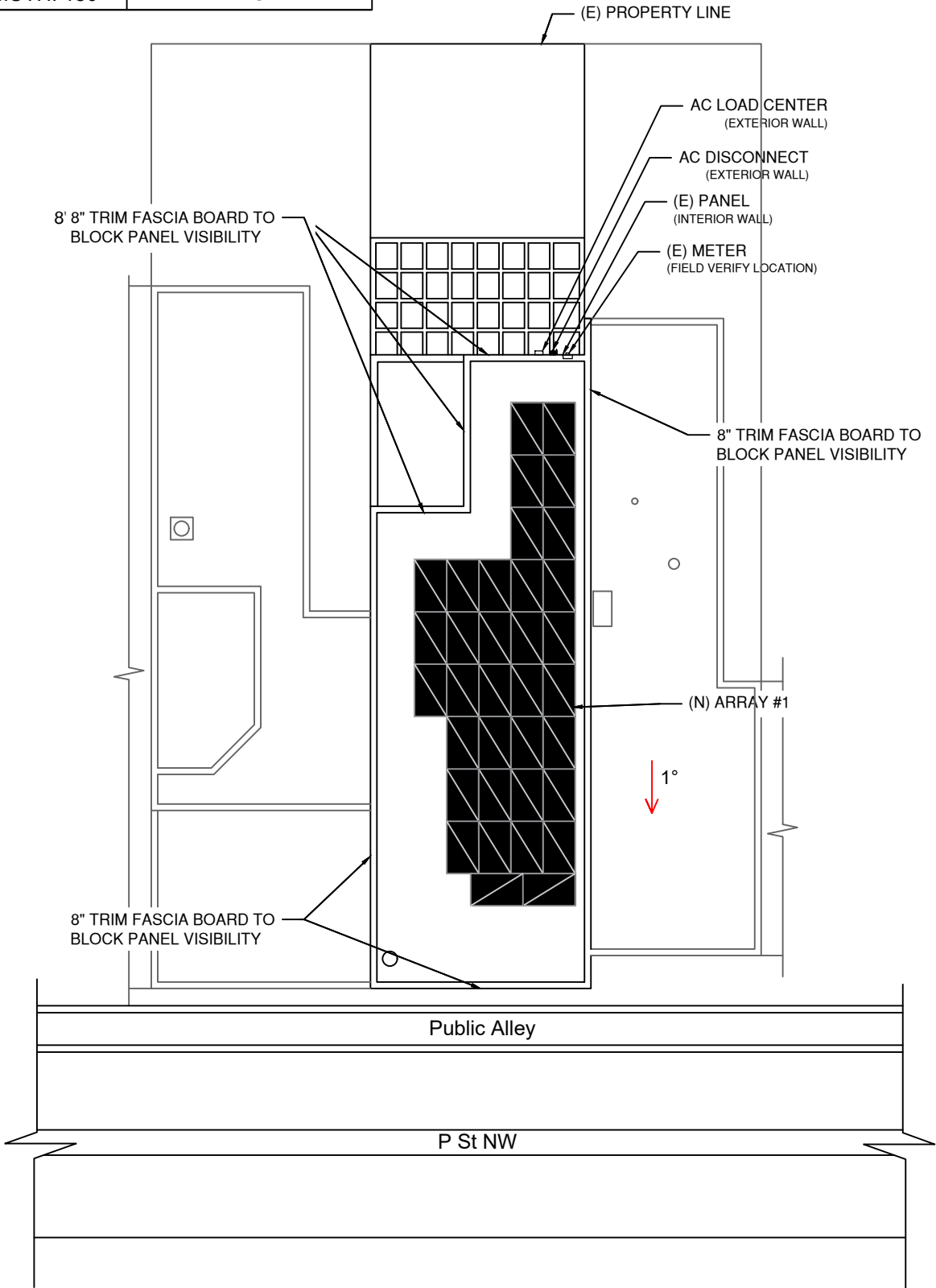
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NUMBER OF ARRAYS PROPOSED: 1				
ARRAY #1 DETAILS	# OF MODULES: 35	TILT: 1°	AZIMUTH: 180°	ARRAY HEIGHT: 1'-4"

NOTE: *CHECK WITH CITY/COUNTY OR LAND SURVEYOR FOR ACCURATE PROPERTY LOCATE.



SITE PLAN
SCALE: 1/16" = 1'-0"

OFFICIAL USE

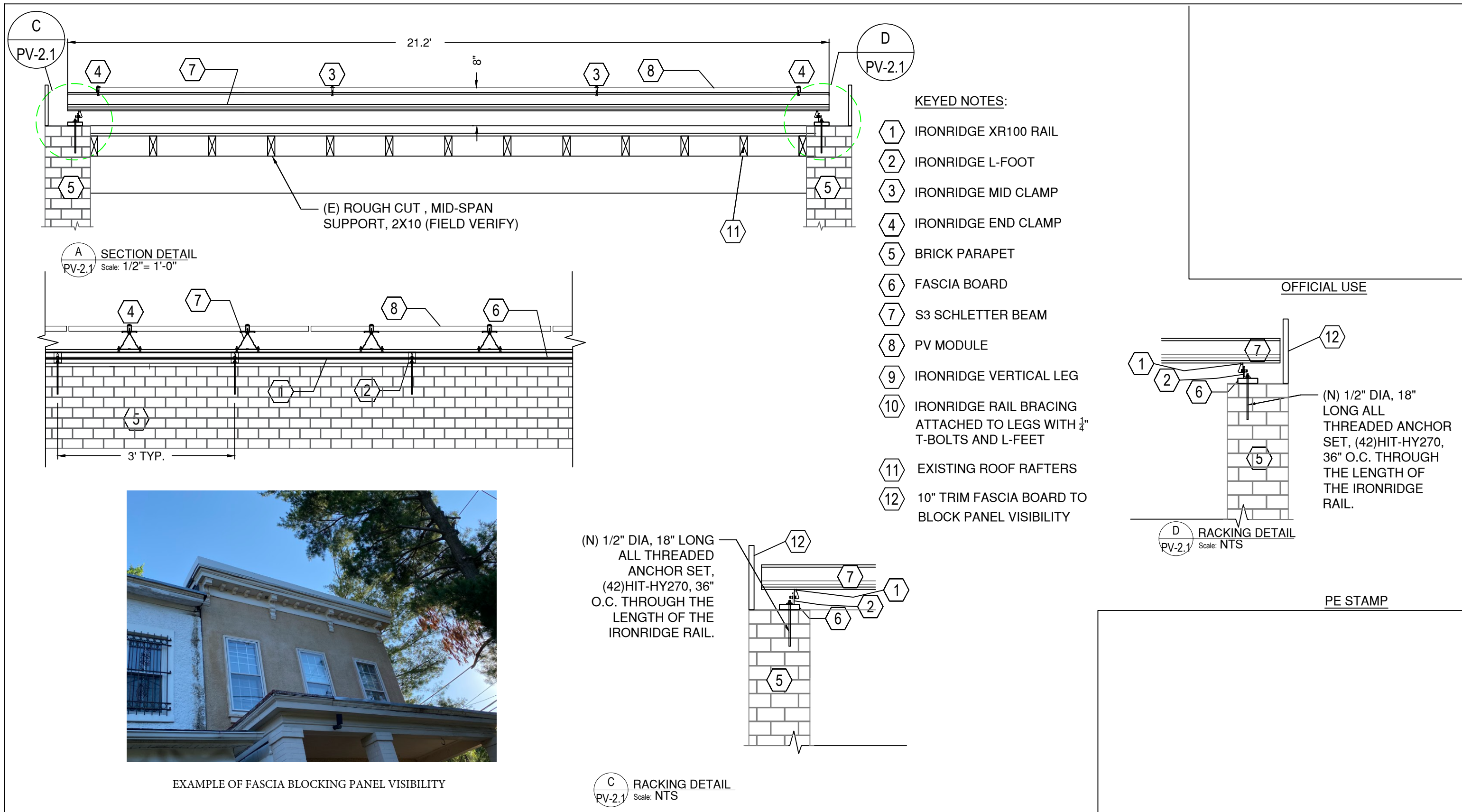
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System AC Size @ STC:10.150 kW System DC Size @ STC:15.575 kW (35)SOLAREVER SE-166*83-445M-144 445 SOLAR MODULES OR EQUAL (35) IQ7PLUS-72-2-US INVERTERS	Page: PV-1
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CONTRACTOR REVOLUTION SOLAR 10746 JUDY LANE COLUMBIA MD 21044 Ph: 443-865-5039 Contractor # 410518000062		ELLIOT BRANDT RESIDENCE Residential Grid Interactive Solar Installation 2523 P St NW Washington, DC 20007 Ph: Square / Lot / Zoning: 2726, 4000, R3 PEPCO#: 1264 0106	STRUCTURAL DETAILS		Page: PV-2.1
			System AC Size @ STC:10.150 kW System DC Size @ STC:15.575 kW (35) SOLAREVER SE-166*83-445M-144 445 SOLAR MODULES OR EQUAL (35) IQ7PLUS-72-2-US MICRO INVERTERS		
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ROOF PROPERTIES	
ROOF MATERIAL	FLAT ROOF
ROOF SLOPE	1°
MEAN ROOF HEIGHT	~20 FT
DECK SHEATING	7/16" OR THICKER OSB OR PLYWOOD
CONSTRUCTION	2 x 8 RAFTERS

MODULE MECHANICAL PROPERTIES	
MODEL	SOLAREVER SE-166*83-445M-144
DIMENSIONS	(L) 82.44 X (W) 40.86" X (H) 1.37"
WEIGHT	51.8 LB

KEYED NOTES:

- 1

IRONRIDGE XR100 RAIL
- 2

IRONRIDGE L-FOOT
- 3

IRONRIDGE MID CLAMP
- 4

IRONRIDGE END CLAMP
- 5

BRICK PARAPET
- 6

FASCIA BOARD
- 7

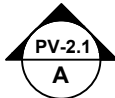
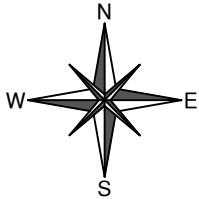
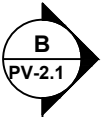
S3 SCHLETTER BEAM
- 8

PV MODULE
- 9

IRONRIDGE VERTICAL LEG
- 10

IRONRIDGE RAIL BRACING ATTACHED TO LEGS WITH 1/4" T-BOLTS AND L-FEET
- 11

2 x 8 RAFTERS @24" O.C.(FIELD VERIFY), TYP.



ROOF LAYOUT
SCALE: 3/32" = 1'-0"

NOTE: MAX HEIGHT OF SYSTEM IS 1'-4" ABOVE FLAT ROOF

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ROOF LAYOUT	
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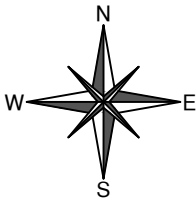
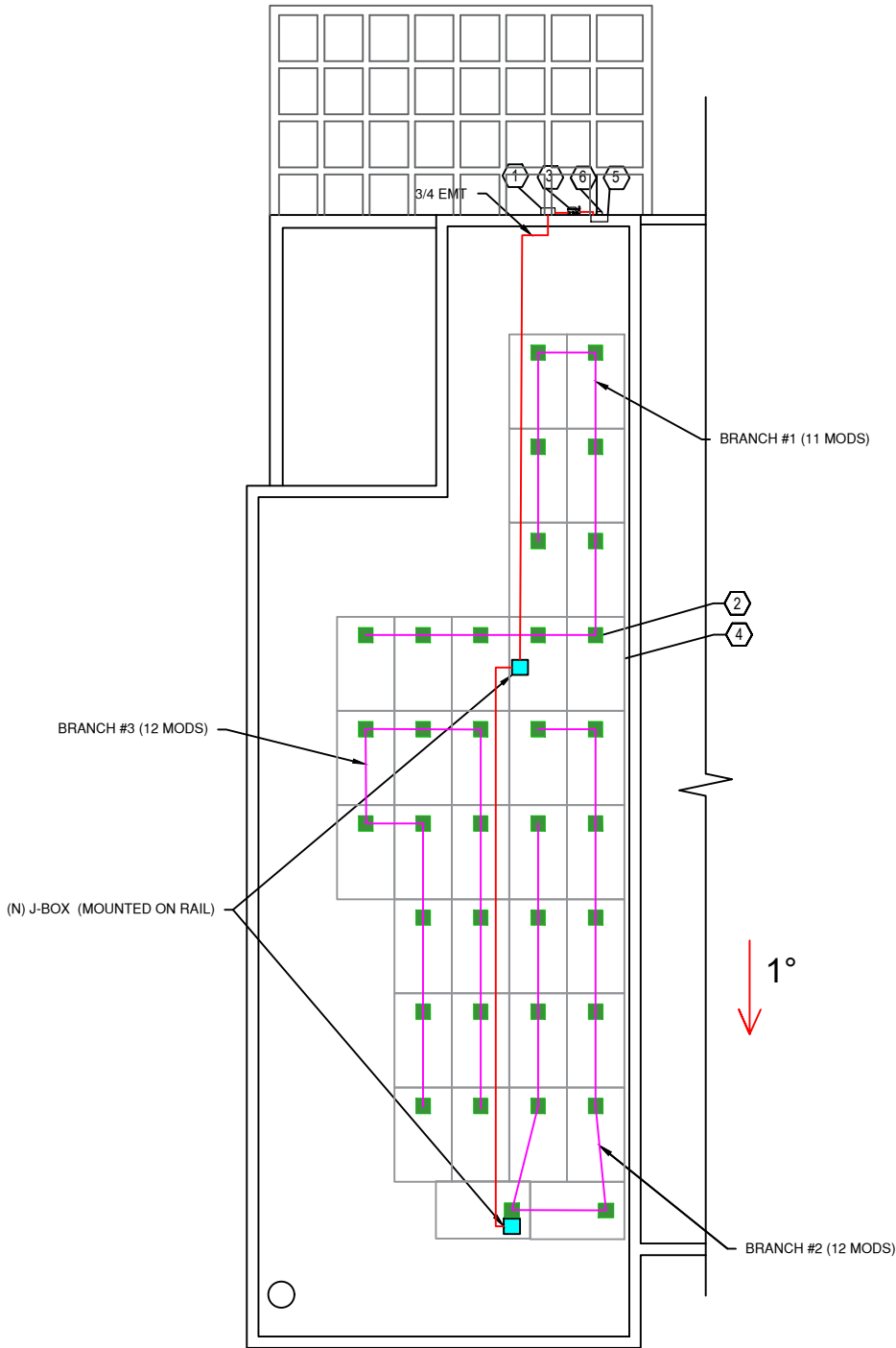
GENERAL NOTES:
1. CONDUIT AND WIRING IS
DIAGRAMMATIC. FINAL ROUTING TO BE
DETERMINED BY INSTALLER

OFFICIAL USE

KEYED NOTES:

- 1 (N) AC DISCONNECT
(EXTERIOR WALL)
- 2 (N) IQ7PLUS-72-2-US MICRO INVERTER
(ARE LOCATED UNDERSIDE OF EACH MODULE AND
ARE INSTALLED TO CONTINUOUS SUPPORT RAIL)
- 3 (N) ENPHASE IQ COMBINER+ W/ ENVOY
(AT GROUND LEVEL)
- 4 (N) PV MODULE
- 5 (E) METER
(FIELD VERIFY LOCATION)
- 6 (E) SERVICE PANEL
(INTERIOR WALL)

PE STAMP



ELECTRICAL PLAN
SCALE: 3/32" = 1'-0"

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ELECTRICAL PLAN			Page:
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VOLTAGE DROP CALCULATIONS								
WIRE RUN	# OF MODS	V (VOLTS)	I (AMPS)	L (FT)	VD**	VD (%)	WIRE SIZE	RACEWAY
BRANCH #1 TO J-BOX	11	240V	13.31A	40	0.85V	0.35%	12 AWG	FREE AIR
BRANCH #2 TO J-BOX	12	240V	16.94A	40	0.92V	0.38%	12 AWG	FREE AIR
BRANCH #3 TO J-BOX	12	240V	16.94A	40	0.92V	0.38%	12 AWG	FREE AIR
J-BOX TO IQ COMBINER	12	240V	16.94A	30	0.69V	0.29%	12 AWG	3/4" EMT
IQ COMBINER TO POI	35	240V	42.35A	10	0.17V	0.070%	6 AWG	3/4" EMT
MAX VOLTAGE DROP: 1.47%								

MODULE SPECS	
MODULE MAKE	SOLAREVER
MODULE MODEL	SE-166*83-445M-144
MAX. POWER Pmax	445W
OPEN CIRCUIT VOLTAGE Voc	49.86 V
MAX. POWER POINT Vmp	41.19 A
SHORT CIRCUIT CURRENT Isc	11.41 A
MAX. POWER POINT Imp	10.81A
Voc TEMP. COEFF.	-0.29%/°C
Pmax TEMP. COEFF.	-0.35%/°C

INVERTER SPECS	
ENPHASE MODEL	IQ7PLUS-72-2-US
MAX. POWER Pmax	290 W
MAX. INPUT VOLTAGE	60 V
SE-166*83-445M-144	49.86 V
Voc @ -12.3°C	
44.5V < 48V	YES
OUTPUT CURRENT	1.21 A
OUTPUT VOLTAGE	240 V, 1φ
DC/AC RATIO	1.31

OFFICIAL USE

PE STAMP

METER

INTERCONNECTION TYPE:
SUPPLY SIDE CONNECTION (LINE TAP) VIA
ILSCO IPC4/0-2/0 OR EQUIVALENT INSIDE MEP.

200A

NEUTRAL

GROUND

EXISTING AC DISTRIBUTION PANEL
120/240V, 1P, 3W
200A WITH
200A MAIN BREAKER

60A LOCKABLE,
FUSIBLE AC
DISCONNECT WITH 60A
FUSES, 240V, 2-POLE

3/4" EMT:
(6) #12 AWG RHWN-2 CONDUCTORS
(1) #12 AWG THWN-2 GROUND

10A

20A

20A

20A

GROUND

125A ENPHASE IQ
COMBINER + W/ENVOY,
NEMA-3R, 120/240V, 1Ø

3/4" EMT OR EQUIVALENT:
(2) #6 AWG THWN-2 CONDUCTORS
(1) #8 AWG THWN-2 GROUND

EXISTING
GROUNDING
ELECTRODE

JUNCTION BOX (TYP.)

ENPHASE Q CABLE (TYP.)
BLACK - L1
RED - L2

INTEGRATED GROUNDING, TYP.

INTEGRATED GROUNDING CLAMP, TYP.

MODULE J-BOX

ENPHASE IQ7-60-2-US

LAY IN LUG, TYP.

RACKING RAIL, TYP.

BRANCH CIRCUIT #1
(11) SOLAREVER
SE-166*83-445M-144
MODULES
(11) MICRO-INVERTERS
@ 240V VAC

BRANCH CIRCUIT #2
(12) SOLAREVER
SE-166*83-445M-144
MODULES
(12) MICRO-INVERTERS
@ 240V VAC

BRANCH CIRCUIT #3
(12) SOLAREVER
SE-166*83-445M-144
MODULES
(12) MICRO-INVERTERS
@ 240V VAC

GENERAL NOTES:

- CONTRACTOR RESPONSIBLE FOR COMPLYING WITH ALL LOCAL OR NATIONAL CODE REQUIREMENTS AND EQUIPMENT INSTALLATION INSTRUCTIONS.
- SEE PV-5 FOR LABELING REQUIREMENTS

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SINGLE LINE DIAGRAM

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SOLAR ELECTRIC SYSTEM
DISCONNECT LOCATED IN MAIN
SERVICE PANEL

LOCATION: USE ONLY WHEN THE MAIN SERVICE
DISCONNECT IS ON THE METER (METER MAIN)
LABEL ON THE OUTSIDE OF THE METER
ENCLOSURE (WHEN THE METER MAIN ACTS AS
THE RAPID SHUTDOWN): NEC 705.10 & 690.56(B)

PV SYSTEM POINT OF
INTERCONNECTION

LOCATION: MAIN
SERVICE PANEL

 WARNING

DUAL POWER SUPPLY

SOURCES: UTILITY GRID AND
SOLAR PHOTOVOLTAIC SYSTEM

LOCATION: MAIN SERVICE PANEL

NOMINAL OPERATING AC VOLTAGE:	240V
NOMINAL OPERATING AC FREQUENCY:	60HZ
MAXIMUM AC POWER:	10.150 KW
MAXIMUM AC CURRENT:	42.35A
MAXIMUM OVERCURRENT PROTECTIVE DEVICE FOR AC MODULE PROTECTION:	60A

LOCATION AT POINT OF INTERCONNECTION CODE SECTION: NEC 690.52

**WARNING - PHOTOVOLTAIC
POWER SOURCE**

IF APPLICABLE PER IFC 605.11.1.2

PHOTOVOLTAIC SYSTEM DISCONNECT
OPERATING AMPS 42.35A
OPERATING VOLTAGE 240V

LOCATION: PV SYSTEM DISCONNECT

CAUTION SOLAR CIRCUIT

LABEL EVERY 10'

**RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM**

LOCATION: PV SYSTEM DISCONNECT

 WARNING

ELECTRIC SHOCK HAZARD
DO NOT TOUCH TERMINALS
TERMINALS ON BOTH LINE AND
LOAD SIDE MAY BE ENERGIZED IN
THE OPEN POSITION

LOCATION: PV SYSTEM DISCONNECT

OFFICIAL USE

PE STAMP

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10" TRIM FASCIA BOARD TO
BLOCK PANEL VISIBILITY

8" Max

10" TRIM FASCIA BOARD TO
BLOCK PANEL VISIBILITY

CONDUIT

29'

REAR OF HOME

AC LOAD CENTER

AC DISCONNECT

METER

OFFICIAL USE

PE STAMP

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ELEVATION

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