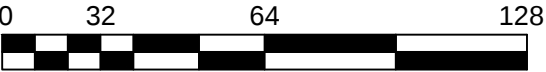
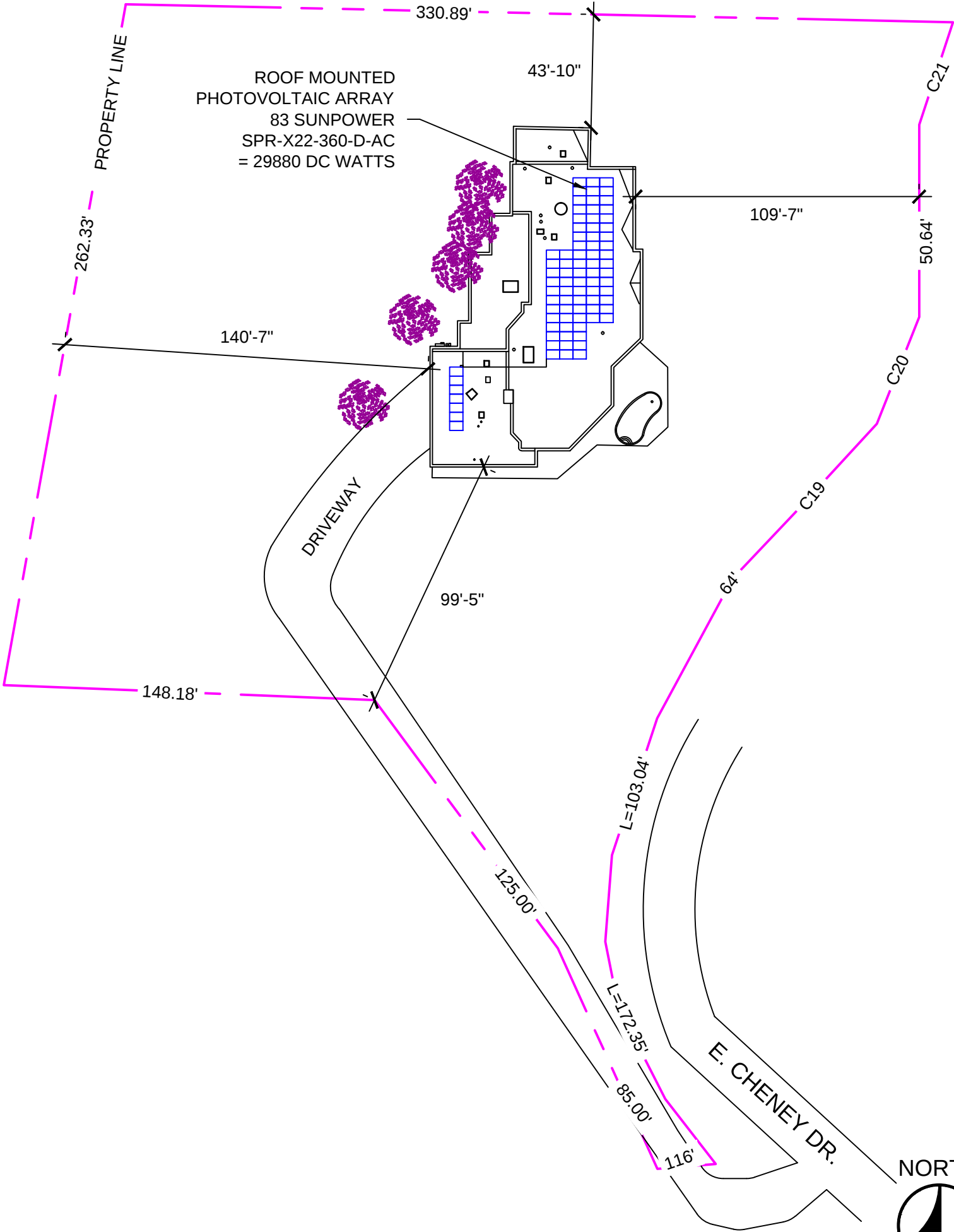
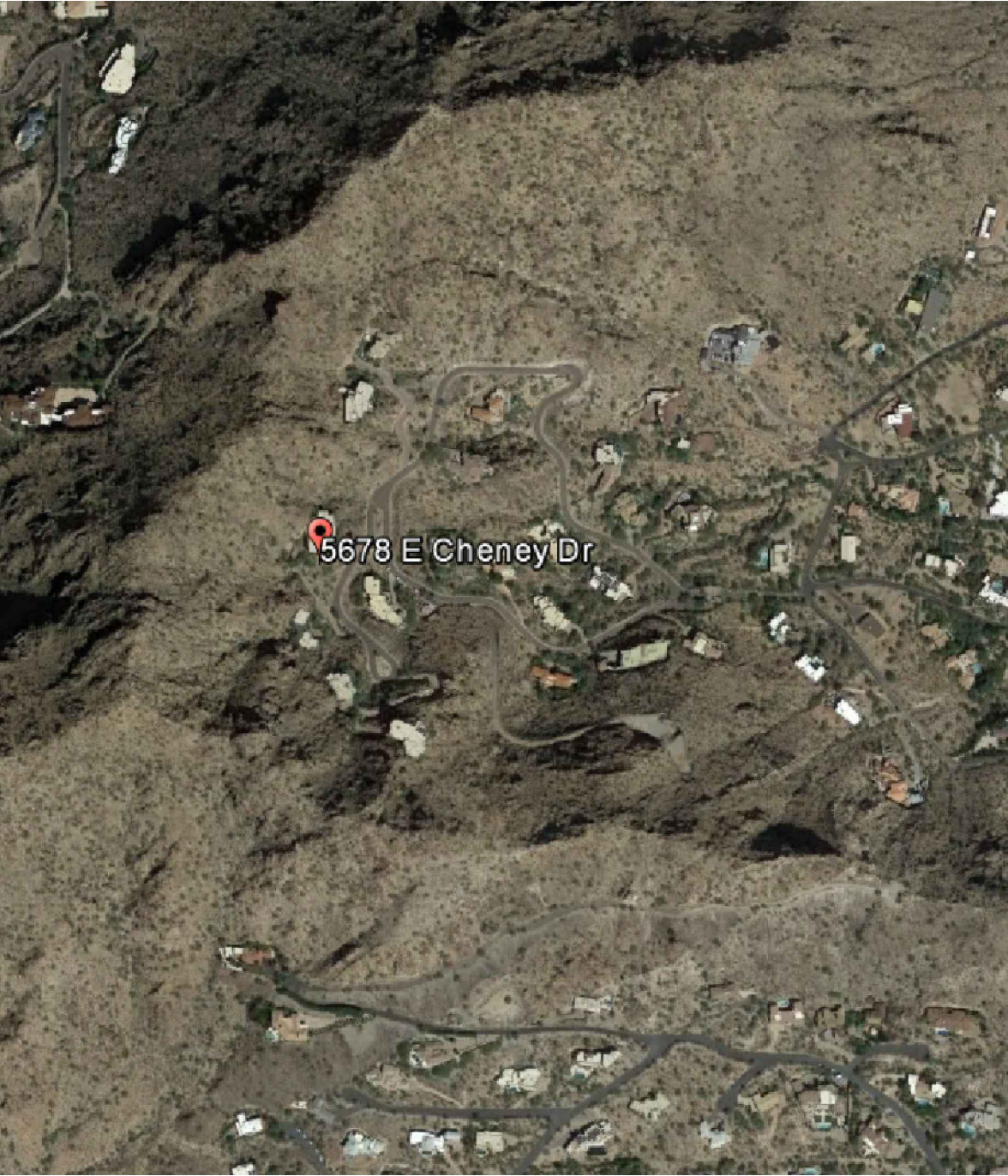


SHEET INDEX

- PV1 COVER/ MAP/NOTES
- PV2 SITE LAYOUT
- PV3 PV LAYOUT
- PV4 ARRAY
- PV5 ONE LINE DIAGRAM
- PV6 THREE LINE DIAGRAM
- PV7 LABELING
- PV8 NOTES AND REFERENCES



2317 W. HUNTINGTON DRIVE
TEMPE, AZ 85282 (480) 446-3600
ROC: CR-11 249334

SYSTEM SIZE:

29.880 DC KW
26.560 AC KW
GRID TIED
AC-MODULE
PV SYSTEM

PROJECT NAME:
SCHLUTER, ROBERT
RESIDENCE
5678 E CHENEY DR
PARADISE VALLEY,
AZ 85253
APN: 169-02-017A

DRAWN BY: KG
DATE: 05-09-2018
SCALE: N.T.S. (AS NOTED)
AHJ: PARADISE VA SHEET:
UTILITY: APS
1'-0"=1/64"

PV1



ROOF MOUNTED
PHOTOVOLTAIC ARRAY
83 SUNPOWER
SPR-X22-360-D-AC
= 29880 DC WATTS

SEE EQUIPMENT
LOCATION
ELEVATION

AC CONDUIT
RAN ON EXTERIOR
OF HOME 1" EMT.
JUNCTION BOX
APPROX. LOCATION

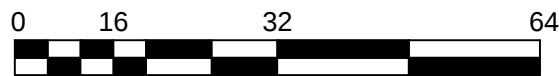
DRIVEWAY

AC INNER ARRAY CONDUIT
RAN ON EXTERIOR
OF HOME

FENCE

RESIDENCE

NOTE:
ALL CONSTRUCTION / INSTALLATION
IS TO COMPLY WITH THE FOLLOWING:
2012 IRC,IBC,IFC
2011 NEC
ALL DIMENSIONS ARE APPROXIMATE



EXISTING 400AMP
ELECTRICAL SERVICE
ENTRANCE & UTILITY
REVENUE METER
SERVICE PANEL

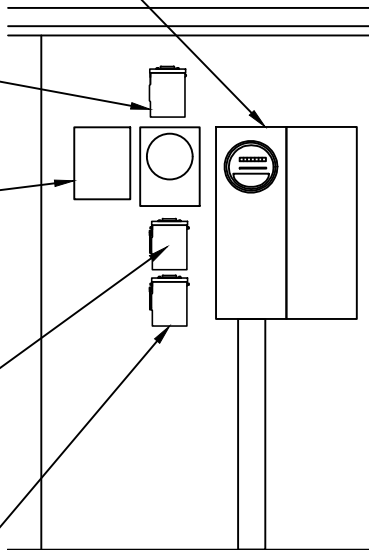
AC
COMBINER BOX

MONITOR BOX

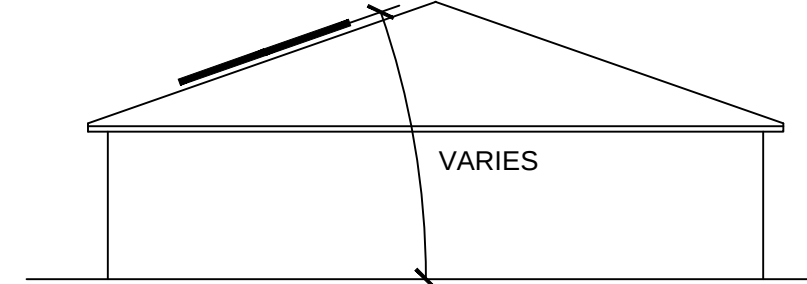
PHOTOVOLTAIC
PRODUCTION UTILITY METER
UTILITY DISCONNECT
SWITCH AND
PV SYSTEM METER

FUSED AC DISCONNECT

EQUIPMENT LOCATION ELEVATION



PANEL LOCATION ELEVATION



NOTE:
UTILITY HAS 24 HR. UNRESTRICTED
ACCESS TO ALL PV SYSTEM COMPONENTS:
LOCATED AT SERVICE ENTRANCE.

NOTE:
WORKSPACE IN FRONT OF AC
ELECTRICAL SYSTEM COMPONENTS SHALL
BE IN ACCORDANCE WITH APS AND NEC
REQUIREMENTS: FOR APS REQUIREMENTS, REF.
SECTION 300 OF THE APS ESRM AND SECTION 8.2 OF
THE APS INTERCONNECTION REQUIREMENTS.

NOTE:
REFERENCE SECTION 301.15 OF THE
APS ESRM FOR ELECTRICAL METER
SEPARATION BETWEEN WATER AND GAS.

AZIMUTH = 0°
MODULE TILT ANGLE = 0°

PROPERTY HAS NO PROPERTY FENCE

ROOF VENTS, SKYLIGHTS,
WILL NOT BE COVERED
UPON PV INSTALLATION



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AC-MODULE
PV SYSTEM

PROJECT NAME:

SCHLUTER, ROBERT
RESIDENCE
5678 E CHENEY DR
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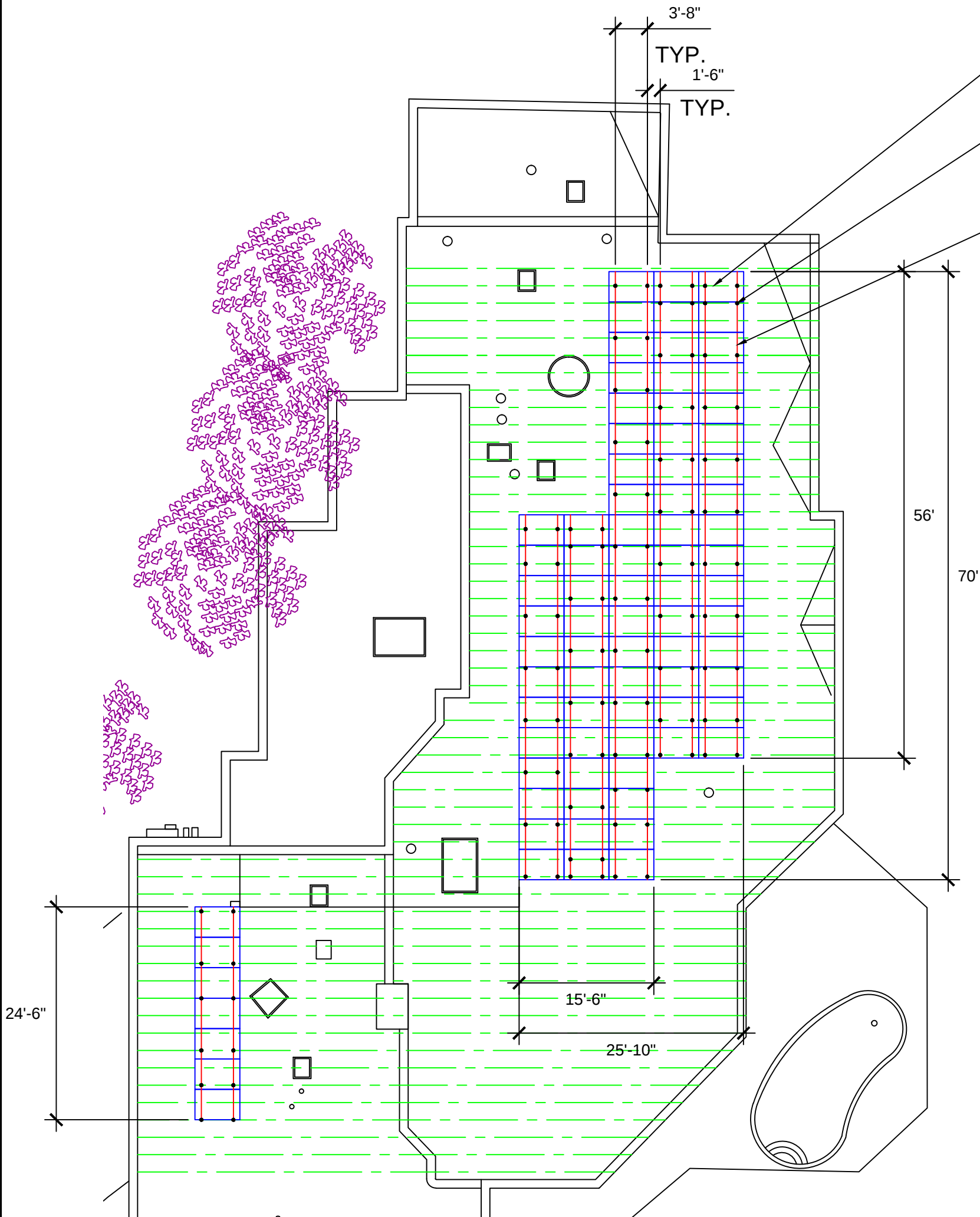
SCALE: N.T.S. (AS NOTED)

AHJ: PARADISE VA SHEET:

UTILITY: APS

1'-0"=1/32"

PV2



2"X4" PRE-FAB TRUSSES @
24" O.C., VERIFY LOCATIONS

MOUNTING POINTS,
REFER TO DETAIL
(TYP TYPE RACKING)

SUNPOWER INVISIMOUNT
PRE-MANUFACTURED
ALUMINUM MOUNTING RAIL
(TYP TYPE RACKING)

MEETS OR EXCEEDS 2012 IBC
IRC CONSTRUCTION STANDARDS
CASE 1 LOAD CALCULATIONS

SUNPOWER
SPR-X22-360-D-AC
45.5 LBS./PANEL
83 X 50.00 = 4150LBS

A=LXW (PANEL):
18 SQ FT = 41.2" X 61.3"
ARRAY:
83 SQ FT X 18 = 1494 SQ FT

83 PANEL ARRAY
UPLIFT CALCULATION
4150 LBS / 116 CONNECTORS
(232 $\frac{5}{16}$ "X3-1/2" LAG BOLTS
2.5" MIN. EMBED) =36 LBS
83*18 = 1494 SQFT * 30PSF= 44820LBS
232* 2.5"*210LBS= 121800LBS

DISTRIBUTED LOAD CALCULATION
4150LBS. / 1494SQ. FT. = 2.77 PSF

NOTE:
ALL CONSTRUCTION / INSTALLATION
IS TO COMPLY WITH THE FOLLOWING:
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2011 NEC
ALL DIMENSIONS ARE APPROXIMATE



2317 W. HUNTINGTON DRIVE
TEMPE, AZ 85282 (480) 446-3600
ROC: CR-11 249334

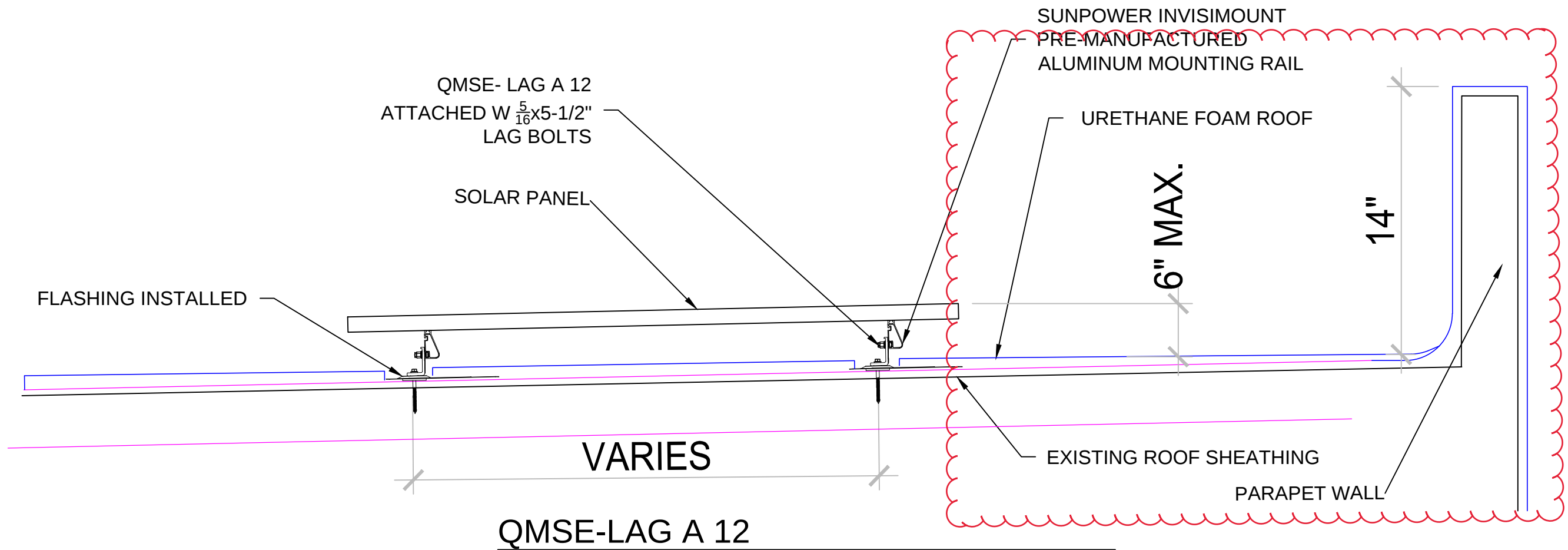
SYSTEM SIZE:

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26.560 AC KW
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AC-MODULE
PV SYSTEM

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DRAWN BY: KG
DATE: 05-09-2018
SCALE: N.T.S. (AS NOTED)
AHJ: PARADISE VA SHEET:
UTILITY: APS

PV3



AZIMUTH = 0°
MODULE TILT ANGLE = 0°

NOTE:
ALL CONSTRUCTION / INSTALLATION
IS TO COMPLY WITH THE FOLLOWING:
2012 IRC,IBC,IFC
2011 NEC
ALL DIMENSIONS ARE APPROXIMATE



2317 W. HUNTINGTON DRIVE
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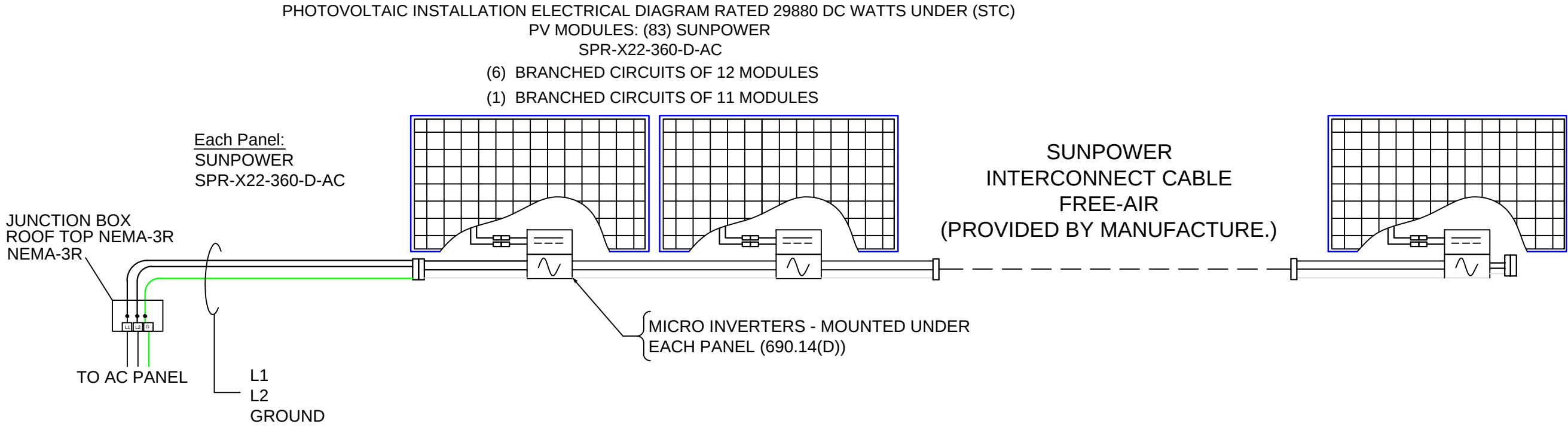
SCALE: N.T.S. (AS NOTED)

AHJ: PARADISE VA

SHEET:

UTILITY: APS

PV3b



NOTE:
ALL CONSTRUCTION / INSTALLATION
IS TO COMPLY WITH THE FOLLOWING:
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2011 NEC
ALL DIMENSIONS ARE APPROXIMATE



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TEMPE, AZ 85282 (480) 446-3600

ROC: CR-11 249334

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DRAWN BY: KG	
DATE: 05-09-2018	
SCALE: N.T.S. (AS NOTED)	
AHJ: PARADISE VA	SHEET:
UTILITY: APS	PV4



2317 W. HUNTINGTON DRIVE
TEMPE, AZ 85282 (480) 446-3600
ROC: CR-11 249334

PHOTOVOLTAIC INSTALLATION ELECTRICAL DIAGRAM RATED 29880 DC WATTS UNDER (STC)

PV MODULES: (83) SUNPOWER
SPR-X22-360-D-AC

(6) BRANCHED CIRCUITS OF 12 MODULES

(1) BRANCHED CIRCUITS OF 11 MODULES

Each Panel:
SUNPOWER
SPR-X22-360-D-AC

ADDITIONAL NOTES:

MARKING IS REQUIRED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES, CABLE ASSEMBLIES, AND JUNCTION BOXES TO ALERT THE FIRE SERVICE TO AVOID CUTTING THEM. MARKING SHOULD BE PLACED ON ALL INTERIOR AND EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES, AND CABLE ASSEMBLIES, AT A MINIMUM OF EVERY 10' FEET, AT TURNS AND ABOVE AND OR BELOW PENETRATIONS AND ALL DC COMBINER AND JUNCTION BOXES.

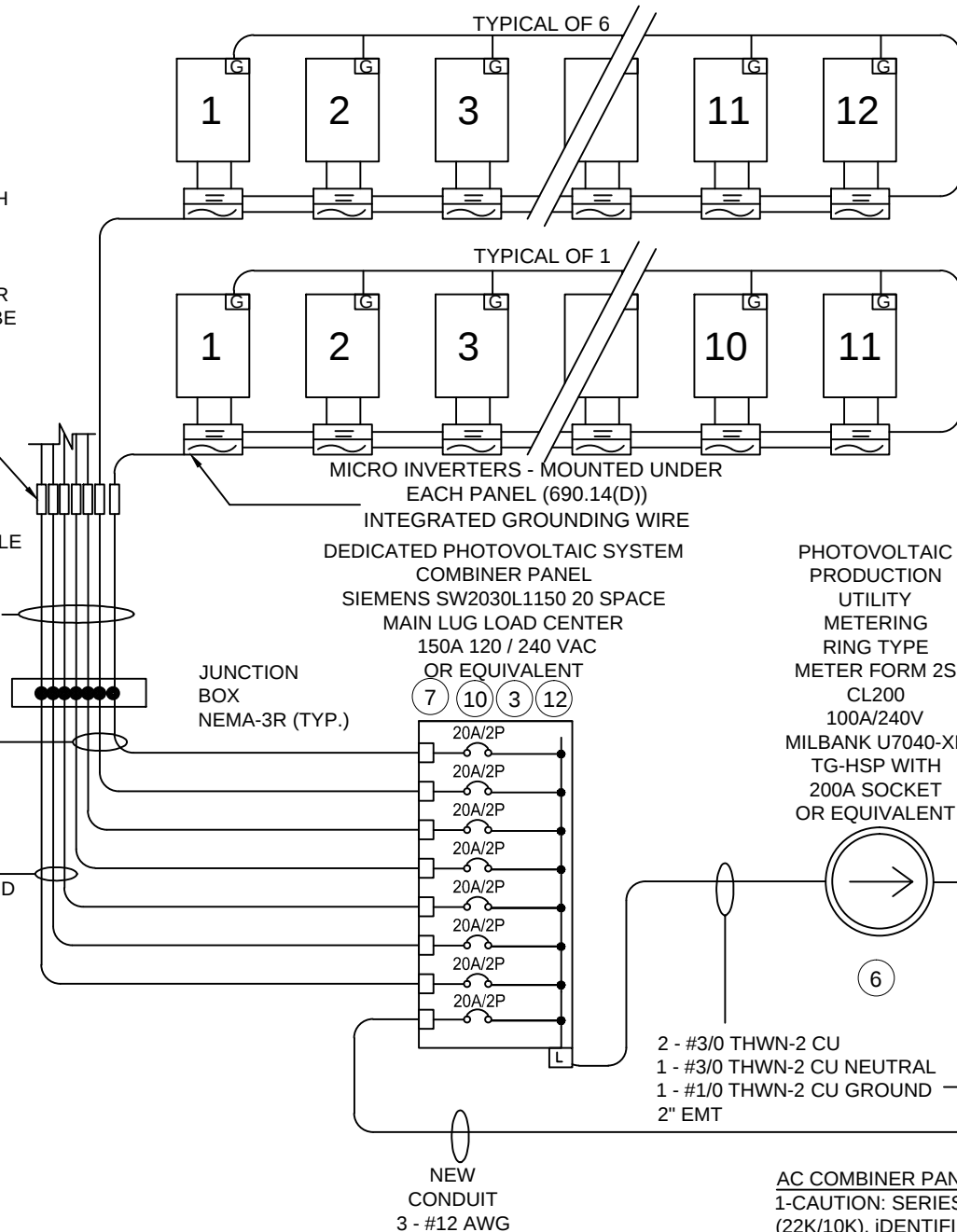
THE FIRST AC CONNECTOR AT EACH BRANCH CIRCUIT IS SUITABLE AS A DISCONNECT MEANS. THE AC LOAD CENTER BREAKERS SHOULD BE OPEN PRIOR TO DISCONNECTING AC CONNECTORS.

INTERCONNECT CABLE
BLACK-L1
RED-L2
GREEN- GROUND
ROOF MOUNTED
WATERPROOF

8 - #8 THWN-2 CU
1" EMT

6 - #8 THWN-2 CU
1 - #8 THWN-2 CU GROUND
1" EMT

"ALL EXPOSED PV ROOFTOP CONDUCTORS THAT ARE NOT LOCATED UNDER THE ARRAY MODULES, SHALL INCLUDE LISTED JUNCTION BOXES AT BOTH ENDS OF THE RACEWAY TO TRANSITION FROM EXPOSED CONDUCTORS TO THE LISTED RACEWAYS. 2011 NEC ARTICLE 690.31(A) AND (B) EXCEPTION"



MICRO INVERTERS - MOUNTED UNDER EACH PANEL (690.14(D))
INTEGRATED GROUNDING WIRE

DEDICATED PHOTOVOLTAIC SYSTEM
COMBINER PANEL
SIEMENS SW2030L1150 20 SPACE
MAIN LUG LOAD CENTER
150A 120 / 240 VAC

OR EQUIVALENT
(7) (10) (3) (12)

PHOTOVOLTAIC
PRODUCTION
UTILITY
METERING
RING TYPE
METER FORM 2S
CL200
100A/240V
MILBANK U7040-XL
TG-HSP WITH
200A SOCKET
OR EQUIVALENT

PHOTOVOLTAIC
SYSTEM
UTILITY
DISCONNECT
SWITCH
SQUARE D
DU324RB 3P
NON-FUSIBLE
240VAC 200A
NEMA-3R
OR EQUIV.

PHOTOVOLTAIC SYSTEM FUSED AC
DISCONNECT SWITCH
120/240V 1PH 3W 200A
100KAIC TYPE R FUSES 150A
CUTLER HAMMER CAT# DH224NRK
FUSIBLE 240VAC NEMA-3R SURFACE
MOUNT OR EQUIVALENT

LINE SIDE TAP
USING POLARIS
CONNECTOR
(OR
EQUIVALENT
TYPE
CONNECTORS)

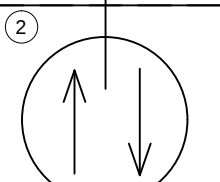
LANDING LUGS
TAP KIT# 1220
PER
MANUFACTURE
SPECS.

2 - #3/0 AWG CU
1- #3/0 AWG CU
NEUTRAL
2" RMC MIN.

6"x6"x4"
JUNCTION BOX
NEMA 3R
OUTDOOR
RATED

NEW
CONDUIT
2 - #12 AWG

UTILITY GRID 120/240VAC
EXISTING
400A 1Ø 3W
SERVICE ENTRANCE



200A/
2P

200A BUS AMPACITY

EXISTING GRN.
ELECTRODE

AC COMBINER PANEL & FUSED AC DISCONNECT
1-CAUTION: SERIES COMBINATION SYSTEM
(22K/10K). IDENTIFIED REPLACEMENT
COMPONENTS REQUIRED"

SYSTEM SIZE:

29.880 DC KW
26.560 AC KW
GRID TIED
AC-MODULE
PV SYSTEM

PROJECT NAME:

SCHLUTER, ROBERT
RESIDENCE
5678 E CHENEY DR
PARADISE VALLEY,
AZ 85253
APN: 169-02-017A

DRAWN BY: KG
DATE: 05-09-2018

SCALE: N.T.S. (AS NOTED)

AHJ: PARADISE VA

UTILITY: APS

SHEET:
PV5

PHOTOVOLTAIC INSTALLATION ELECTRICAL DIAGRAM RATED 29880 DC WATTS UNDER (STC)
PV MODULES: (83) SUNPOWER
SPR-X22-360-D-AC

- (6) BRANCHED CIRCUITS OF 12 MODULES
(1) BRANCHED CIRCUITS OF 11 MODULES

Each Panel:
SUNPOWER
SPR-X22-360-D-AC

THE FIRST AC
CONNECTOR AT EACH
BRANCH CIRCUIT IS
SUITABLE AS A
DISCONNECT MEANS.
THE AC LOAD CENTER
BREAKERS SHOULD BE
OPEN
PRIOR TO
DISCONNECTING AC
CONNECTORS.

INTERCONNECT CABLE
BLACK-L1
RED-L2
GREEN- GROUND
ROOF MOUNTED
WATERPROOF

JUNCTION
BOX NEMA-3R
(TYP.)

6 - #8 THWN-2 CU
1 - #8 THWN-2 CU GROUND
1" EMT

8 - #8 THWN-2 CU
1" EMT

MICRO INVERTERS - MOUNTED UNDER
EACH PANEL (690.14(D))
INTEGRATED GROUNDING WIRE

DEDICATED PHOTOVOLTAIC SYSTEM
SQUARE D QO130L150G 30 SPACE
MAIN LUG LOADCENTER
150A 120 / 240 VAC OR EQUIVALENT

Each Panel:
SUNPOWER
SPR-X22-360-C-AC

CONDUCTOR SIZING PER NEC TABLE
310.16
OVERCURRENT DEVICE SIZING
PER NEC 240.4(B) AND 240.6(A):

DC CALCS:
PER NEC 690.8(A)(1) AND (B)(1):
 $I_{sc} \times 1.25 \times 1.25$

AC CALCS:
PER NEC 690.8(A)(3) AND (B)(1):
 $I \times 1.25$
THE FIRST AC CONNECTOR AT EACH
BRANCH CIRCUIT IS SUITABLE AS A
DISCONNECT MEANS. THE AC LOAD
CENTER BREAKERS SHOULD BE OPEN
PRIOR TO DISCONNECTING AC
CONNECTORS.

CONDUIT FILL CALC FOR #10AWG
.20 sq. in x 8 WIRES = 1.6 sq. in
1.6 sq. in / .40% = 4 sq. in

CONDUIT FILL CALC FOR #10AWG
.20 sq. in x 6 WIRES = 1.2 sq. in
1.2 sq. in / .40% = 3 sq. in

MODULE CALCS:
VOC x 1.12 CORRECTION FACTOR
 $69.5V \times 1.12 = 78V$

AC CALCS:
ISC x 1.25
 $1.33A \times (83) 110.39A \times 1.25 = 137.98A$

BREAKERS FOR SES PANEL:
 $1.33A \times (83) 110.39A \times 1.25 = 137.98A$
(150A BREAKER- 200A FUSED
DISCONNECT FOR THE LINE SIDE TAP)

BREAKERS FOR AC COMBINER PANEL:
TOTAL SYSTEM:
 $11 \times 1.33A = 14.63A \times 1.25 = 18.2A$
(20A BREAKER)
 $12 \times 1.33A = 15.96A \times 1.25 = 19.9A$
(20A BREAKER)

AC WIRE SIZING:
BETWEEN 150A LC > SES
#3/0 AWG THWN-2
TEMPERATURE DE-RATE @ 114-122F
PER NEC 310.16 90°C(194°F)
 $225A \times .71 = 159.75A > OK$

BETWEEN ARRAY > 150A LC
#8 AWG THWN-2
TEMPERATURE DE-RATE @ 114-122F
PER NEC 310.16 90°C(194°F)
 $55A \times 0.5 \times .71 = 19.5A > OK$

LINE SIDE TAP
USING POLARIS
CONNECTOR
(OR
EQUIVALENT
TYPE
CONNECTORS)

PHOTOVOLTAIC SYSTEM FUSED AC
DISCONNECT SWITCH
120/240V 1PH 3W 200A
100KAIC TYPE R FUSES 150A
CUTLER HAMMER CAT# DH224NRK
FUSIBLE 240VAC NEMA-3R SURFACE
MOUNT OR EQUIVALENT

PHOTOVOLTAIC SYSTEM
UTILITY DISCONNECT
SWITCH
SQUARE D DU324RB 3P
NON-FUSIBLE 240VAC 200A
NEMA-3R
OR EQUIV.

PHOTOVOLTAIC
PRODUCTION UTILITY
METERING
RING TYPE
METER FORM 2S CL200
100A/240V
MILBANK U7040-XL
TG-HSP WITH
200A SOCKET
OR EQUIVALENT

LANDING LUGS
TAP KIT# 1220
PER
MANUFACTURE
SPECS.

2 - #3/0 AWG CU
1 - #3/0 AWG CU
NEUTRAL
2" RMC MIN.

6"x6"x4"
JUNCTION BOX
NEMA 3R
OUTDOOR
RATED

1- # 3/0 AWG CU EGC
1" RMC MIN.

UTILITY GRID 120/240VAC
EXISTING
400A 1Ø 3W
SERVICE ENTRANCE

EXISTING GRN.
ELECTRODE

NEW
CONDUIT
2 - #12 AWG

AC COMBINER PANEL & FUSED AC DISCONNECT
1-CAUTION: SERIES COMBINATION SYSTEM
(22K/10K). IDENTIFIED REPLACEMENT
COMPONENTS REQUIRED"

"ALL EXPOSED PV ROOFTOP CONDUCTORS THAT ARE NOT
LOCATED UNDER THE ARRAY MODULES, SHALL INCLUDE
LISTED JUNCTION BOXES AT BOTH ENDS OF THE RACEWAY
TO TRANSITION FROM EXPOSED CONDUCTORS TO THE
LISTED RACEWAYS. 2011 NEC ARTICLE 690.31(A) AND (B)
EXCEPTION"

SYSTEM SIZE:

29.880 DC KW
26.560 AC KW
GRID TIED
AC-MODULE
PV SYSTEM

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DATE: 05-09-2018

SCALE: N.T.S. (AS NOTED)

AHJ: PARADISE VA

UTILITY: APS

SHEET:

PV6

ALL LABELS TO BE ENGRAVED AND MECHANICALLY BONDED UNLESS OTHERWISE STATED

MAIN SERVICE PANEL

INTERACTIVE PHOTOVOLTAIC POWER
FLOWING THROUGH THIS PANEL

MAX AC OUTPUT CURRENT

137.98

AAC

OPERATING AC VOLTAGE

240

VAC

1 1/2"

4 3/8"

(ORANGE WITH BLACK LETTERS)

WARNING

INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVER CURRENT DEVICE

7/8"

2"

(ORANGE WITH BLACK LETTERS)

WARNING

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

1 1/2"

3 1/2"

J-BOX

(ORANGE WITH BLACK LETTERS)

WARNING

ELECTRIC SHOCK HAZARD
IF A GROUND FAULT IS INDICATED, NORMALLY
GROUNDED CONDUCTORS MAY BE
UNGROUNDED AND ENERGIZED

1 1/2"

3 1/2"

DEDICATED PV SYSTEM
KWH METER

(BLACK WITH WHITE LETTERS)

PHOTOVOLTAIC POWER
SYSTEM DEDICATED KWH
METER

1"

2 1/2"

INVERTER

(BLACK WITH WHITE LETTERS)

PHOTOVOLTAIC ARRAY
DC DISCONNECT SWITCH

OPERATING CURRENT (Imp)

6.09

ADC

OPERATING VOLTAGE (Vmp)

59.1

VDC

MAX. SYSTEM VOLTAGE (Voc)

78.0

VDC

SHORT CIRCUIT CURRENT (Isc)

6.48

ADC

1 1/2"

3 1/2"

(ORANGE WITH BLACK LETTERS)

WARNING

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

1 1/2"

3 1/2"

(ORANGE WITH BLACK LETTERS)

WARNING

ELECTRIC SHOCK HAZARD
IF A GROUND FAULT IS INDICATED, NORMALLY
GROUNDED CONDUCTORS MAY BE
UNGROUNDED AND ENERGIZED

1 1/2"

3 1/2"

COMBINER PANEL

WHEN COMBINING TWO OR MORE INVERTERS

(BLUE WITH WHITE LETTERS)

NOTICE

PV SYSTEM COMBINER PANEL
DO NOT ADD LOADS TO THIS PANEL

1 1/2"

3 1/2"

STICKER ON ALL DC CONDUIT

(RED BACKGROUND WITH METALLIC LETTERS)

WARNING PHOTOVOLTAIC POWER SOURCE

3/8"

5"

AC DISCONNECT

(BLACK WITH WHITE LETTERS)

PHOTOVOLTAIC SYSTEM
UTILITY DISCONNECT
SWITCH

1"

2 1/2"

(ORANGE WITH BLACK LETTERS)

WARNING

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

1 1/2"

1 1/2"

(ORANGE WITH BLACK LETTERS)

"PHOTOVOLTAIC SYSTEM EQUIPPED
WITH RAPID SHUTDOWN
DISCONNECT SWITCH"

1/2"

1 3/4"

(ORANGE WITH BLACK LETTERS)

"FAULT AT PHOTOVOLTAIC SYSTEM
DISCONNECT SWITCH"

1/2"

1 3/4"

PV SOLAR LABEL REQUIREMENTS PER
2012 IFC SECTIONS 605.11.1.1 THUR 605.11.1.4 AND
2011 NEC ARTICLE 690.31(E)(3):
" WARNING: PHOTOVOLTAIC POWER SOURCE"
LABEL REQUIRES CAPITALIZATION LETTERS MIN.
HEIGHT 3/8" INCH WHITE LETTERING ON RED
BACKGROUND.
LABEL MUST BE REFLECTIVE AND WEATHER
RESISTANT.
LABELS SHALL BE PLACED ON INTERIOR AND
EXTERIOR DC CONDUIT, RACEWAYS, ENCLOSURES
AND CABLE ASSEMBLIES EVERY 10', WITHIN 1' OF
TURNS OR BENDS WITHIN 1' ABOVE AND BELOW
PENETRATIONS OF ROOF/ CEILING ASSEMBLIES,
WALLS OR BARRIERS.



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AC-MODULE
PV SYSTEM

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AZ 85253
APN: 169-02-017A

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DATE: 05-09-2018

SCALE: N.T.S. (AS NOTED)

AHJ: PARADISE VA

SHEET:

UTILITY: APS

PV7

PHOTOVOLTAIC SYSTEM SHALL BE INSTALLED ACCORDING TO THE 2011 NATIONAL ELECTRIC CODE WITH REFERENCE TO THE FOLLOWING:
ARTICLE 690, AND SECTIONS 200-6, 210-6, 230-70, 240-3, 250-26, 250-50, 250-122 TO INCLUDE REFERENCED SECTIONS AND TABLES
ALL EQUIPMENT PROVIDED SHALL BE LISTED BY AN INDEPENDENT TESTING AGENCY

PARTICULAR NOTE TO THE FOLLOWING:

- NEC 240.4(B)

DEVICES RATED 800 AMPERES OR LESS. THE NEXT HIGHER STANDARD OVERCURRENT DEVICE RATING (ABOVE THE AMPACITY OF THE CONDUCTORS BEING PROTECTED) SHALL BE PERMITTED TO BE USED IF: 1) THE CONDUCTORS BEING PROTECTED ARE NOT PART OF A MULTIOUTLET BRANCH CIRCUIT SUPPLYING RECEPTACLES FOR CORD-AND-PLUG-CONNECTED PORTABLE LOADS. 2) THE AMPACITY OF THE CONDUCTORS DOES NOT CORRESPOND WITH THE STANDARD AMPERE RATING OF A FUSE OR A CIRCUIT BREAKER WITHOUT OVERLOAD TRIP ADJUSTMENTS ABOVE ITS RATING. 3) THE NEXT HIGHER STANDARD RATING SELECTED DOES NOT EXCEED 800 AMPERES.
- NEC 240.6(A)

FUSES AND FIXED-TRIP CIRCUIT BREAKERS. THE STANDARD AMPERE RATINGS FOR FUSES AND INVERSE TIME CIRCUIT BREAKERS SHALL BE CONSIDERED: 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100, 110,125, 150, 175, 200, 225, 250, 300, 350, 400, 450, 500, 600, 700, 800, 1000, 1200, 1600, 2000, 2500, 3000, 4000, 5000, 6000 AMPERES.
- NEC 240.64(C)
NEC 250.160
AND PART VII

GROUNDING ELECTRODE CONDUCTOR BE CONTINUOUS, GROUND CRIMPS TO BE IRREVERSIBLE
- NEC 250.97

FOR CIRCUITS OVER 250 VOLTS TO GROUND, THE ELECTRICAL CONTINUITY OF METAL RACEWAYS AND CABLES WITH METAL SHEATHS THAT CONTAIN ANY CONDUCTOR OTHER THAN SERVICE CONDUCTORS SHALL BE ENSURED BY ONE OR MORE OF THE METHODS SPECIFIED FOR SERVICES IN 250.90(B), EXCEPT OR (B)(1).
- NEC 422.30

DISCONNECTING MEANS
- NEC 422.60

NAMEPLATE MARKING
- NEC 422.62(B)

ADDITIONAL NAMEPLATE MARKING
- NEC 690.4(C)

MODULE CONNECTION ARRANGEMENT SHALL BE ARRANGED SO THAT REMOVAL OF A MODULE OR PANEL FROM A PHOTOVOLTAIC SOURCE CIRCUIT DOES NOT INTERRUPT A GROUNDED CONDUCTOR TO ANOTHER PHOTOVOLTAIC SOURCE CURRENT
- NEC 690.5

GROUND-FAULT PROTECTION
- NEC 690.7(D)

....OUTPUT CIRCUITS OVER 150 VOLTS TO GROUND SHALL NOT BE ACCESSIBLE TO OTHER THAN QUALIFIED PERSONS WHILE ENERGIZED.
- NEC 690.8(A)(1)

PHOTOVOLTAIC SOURCE CIRCUIT CURRENTS. THE MAXIMUM CURRENT SHALL BE THE SUM OF THE PARALLEL MODULE RATED SHORT-CIRCUIT CURRENTS MULTIPLIED BY 125 PERCENT.
- NEC 690.8(A)(3)

INVERTER OUTPUT CIRCUIT CURRENT. THE MAXIMUM CURRENT SHALL BE THE INVERTER CONTINUOUS OUTPUT CURRENT RATING.
- NEC 690.8(B)(1)

SIZING OF CONDUCTORS AND OVERCURRENT DEVICES. THE CIRCUIT CONDUCTORS AND OVERCURRENT DEVICES SHALL BE SIZED TO CARRY NOT LESS THAN 125 PERCENT OF THE MAXIMUM CURRENTS AS CALCULATED IN 690.8(A). THE RATING OR SETTING OF OVERCURRENT DEVICES SHALL BE PERMITTED IN ACCORDANCE WITH 240.4(B) AND (C).
- NEC 690.17

PV SYSTEM DISCONNECT SHALL BE SIGNED LABELED:
WARNING - ELECTRICAL SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES
MAY BE ENERGIZED IN THE OPEN POSITION
- NEC 690.14(C)(2)

PV SYSTEM DISCONNECT SHALL BE PERMANENTLY MARKED AS A "PHOTOVOLTAIC SYSTEM DISCONNECT"

- NEC 690.33

(A) CONFIGURATION
(B) INTERRUPTION OF CIRCUIT
(C) CONNECTORS SHALL BE OF THE LOCKING OR LATCHING TYPE
(E) LABELED "DO NOT OPEN UNDER LOAD"
- NEC 690.53

PERMANENT LABEL FOR DIRECT-CURRENT PHOTOVOLTAIC POWER SOURCE AT DISCONNECTING MEANS
RATED MAXIMUM POWER-POINT CURRENT
RATED MAXIMUM POWER-POINT VOLTAGE
MAXIMUM SYSTEM VOLTAGE [REF: 690.7 (A)]
SHORT-CIRCUIT CURRENT [REF: 690.8 (A)]
MAXIMUM RATED OUTPUT CURRENT OF THE CHARGE CONTROLLER [IF INSTALLED]
- NEC 690.56(B)

PERMANENT LABEL/PLAQUE: [SOURCE/LABEL]
PV SYSTEM DISCONNECT / REF: NEC690.14 (C) (2)
UTILITY SERVICE PANEL / "UTILITY SERVICE DISCONNECT"
- NEC 690.64(B)(5)

CIRCUIT BREAKERS, IF BACKFED, SHALL BE SUITABLE FOR SUCH OPERATION
- NEC 705.10

A PERMANENT PLAQUE OR DIRECTORY, DENOTING ALL ELECTRIC POWER SOURCES ON OR IN THE PREMISES, SHALL BE INSTALLED AT EACH SERVICE EQUIPMENT LOCATION AND AT LOCATIONS OF ALL ELECTRIC POWER PRODUCTION SOURCES CAPABLE OF BEING INTERCONNECTED. EXCEPTION: INSTALLATIONS WITH LARGE NUMBERS OF POWER PRODUCTION SOURCES SHALL BE PERMITTED TO BE DESIGNATED BY GROUPS
- NEC TABLE 250.66

SIZE OF ALTERNATING-CURRENT GROUNDING ELECTRODE CONDUCTOR. THE SIZE OF THE GROUNDING ELECTRODE CONDUCTOR AT THE SERVICE, AT EACH BUILDING OR STRUCTURE WHERE SUPPLIED BY A FEEDER(S) OR BRANCH CIRCUIT(S), OR AT A SEPARATELY DERIVED SYSTEM OF A GROUNDED OR UNGROUNDED AC SYSTEM SHALL NOT BE LESS THAN GIVEN IN TABLE 250.66, EXCEPT AS PERMITTED IN 250.66(A) THROUGH (C).
- NEC TABLE 310.16

ALLOWABLE AMPACITIES OF INSULATED CONDUCTORS RATED 0 THROUGH 2000 VOLTS, 60°C THROUGH 90°C, NOT MORE THAN THREE CURRENT-CARRYING CONDUCTORS IN RACEWAY, CABLE, OR EARTH, BASED ON AMBIENT TEMPERATURE OF 30°C. NOTE CORRECTION FACTORS FOR AMBIENT TEMPERATURE AT END OF TABLE.

NOTE:

ALL CONSTRUCTION / INSTALLATION IS TO COMPLY WITH THE FOLLOWING:
2012 IRC,IBC,IFC
2011 NEC
ALL DIMENSIONS ARE APPROXIMATE



SYSTEM SIZE:

29.880 DC KW
26.560 AC KW
GRID TIED
AC-MODULE
PV SYSTEM

PROJECT NAME:

SCHLUTER, ROBERT
RESIDENCE
5678 E CHENEY DR
PARADISE VALLEY,
AZ 85253
APN: 169-02-017A

DRAWN BY: KG

DATE: 05-09-2018

SCALE: N.T.S. (AS NOTED)

AHJ: PARADISE VA

SHEET:

UTILITY:APS

PV8

- (A) FOR MINIMUM DISTANCE FROM CONDUIT TO ROOFTOP FOR AMBIENT TEMP. DERATING FACTOR. 2011 NEC TABLE 310.15(B)(3)(c). ABOVE 13mm(.5in)-90mm(3.5in) 40°F
- (B) ALL ELECTRICAL EQUIPMENT TERMINATIONS TO BE MIN. 75°C RATED FOR AMBIENT TEMP. CALCULATION 2011 NEC ARTICAL 110.14(C)(1) & TABLE 310.15(B)(16).
- (1) EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE 2011 NEC AND ALL APPLICABLE REQUIREMENTS OF THE SERVING ELECTRICAL UTILITY COMPANY AND OF THE LOCAL AUTHORITY HAVING JURISDICTION.
- (2) BI-DIRCTIONAL UTILITY METER TO BE INSTALLED BY UTLITY COMPANY (WHEN REQUIRED).
- (3) LABEL BREAKER "PHOTOVOLTAIC ELECTRIC POWER SOURCE". PER NEC 705.10 AND "BREAKERS ARE BACKFED" PER NEC 690.64(B)(5). LABEL WITH THE MAXIMUM AC OUTPUT OPERATING CURRENT AND THE OPERATING VOLTAGE PER NEC 690.54.
- (4) LABEL "PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH". SWITCH COVER TO BE LOCKED AT ALL TIMES. SWITCH TO BE VISUAL OPEN AND ACCESSIBLE PER UTILITY REQUIREMENTS AND CONFORM TO NEC 705.22.
- (5) LABEL "PHOTOVOLTAIC POWER SYSTEM DEDICATED KWH METER". METER ENCLOSURE AND SOCKET PROVIDED AND INSTALLED BY CUSTOMER PER APS ESRM. METER PROVIDED BY CUSTOMER.
- (6) LABEL "PHOTOVOLTAIC POWER SYSTEM DEDICATED KWH METER". METER ENCLOSURE AND SOCKET PROVIDED AND INSTALLED BY CUSTOMER PER APS ESRM. METER PROVIDED BY CUSTOMER.
- (6b) A PLACARD OR DIRECTORY IS INSTALLED AT THE SERVICE ENTRANCE WITH EXPLICIT DIRECTIONS TO THE LOCATION OF THE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH AS REQUIRED BY APS.
- (6c) GROUNDING BUSHINGS AT EVERY ENTRY AND EXIT POINT TO 10 ENCLOSURES WITH RMC
- (6d) SUPPLY SIDE CONNECTION IS INSTALLED PER NEC 230, APS ESRM, AND APS INTERCONNECTION REQUIREMENTS. LABEL " PHOTOVOLTAIC SYSTEM SERVICE DISCONNECT SWITCH". SWITCH COVER TO BE LOCKED AT ALL TIMES.
- (7a) A PERMANENT PLACARD OR DIRECTORY IS INSTALLED PER NEC 705.10.
- (7) PROVIDE WARNING SIGN PER NEC 690.17 READING "WARNING-ELECTRICAL SHOCK HAZARD- DO NOT TOUCH TERMINALS- TERMINALS ON BOTH LINE AND LOCAD SIDES MAY BE ENGERIZED IN THE OFF POSITION".
- (8) LISTING AGENCY NAMES AND NUMBERS TO BE INDICATED ON POWER INVERTER AND SOLAR MODULES PER NEC 110.3(b).
- (9) METALLIC CONDUIT SHALL BE USED WITHIN BUILDING PER NEC 690.31(E).
- (10) LABEL "DEDICATED PHOTOVOLTAIC SYSTEM COMBINER PANEL" AND " LOADS NOT TO BE ADDED TO THIS PANEL.
- (11) GEC TO BE INSTALL AS REQUIRED BY MANUFACTURER INSTRUCTIONS AND NEC 690.47
- (12) PER NEC 690.64 B.2: THE SUM OF THE AMPERE RATINGS OF OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO THE BUS BAR SHALL NOT EXCEED 120% THE RATING OF THE BUS BAR OR CONDUCTOR FOR A DWELLING UNIT.
- (13) THE PV PANELS AND THE INVERTERS REQUIRE NEGATIVE GROUNDING PER MANUFACTURE'S INSTRUCTIONS.
- (14) ANTI-ISLANDING PROTECTION ENSURES THE SYSTEM WILL NOT EXPORT POWER INTO A BALANCED 60 Hz RESONANT LOAD WHILE THE UTILITY IS DISCONNECTED.
- (15) PER NEC 690.64(B)(7): UNLESS THE PANELBOARD IS RATED NOT LESS THAN THE SUM OF THE AMPERE RATINGS OF ALL OVERCURRENT DEVICES SUPPLYING IT, A CONNECTION IN A PANELBOARD SHALL BE POSITIONED AT THE OPPOSITE (LOAD) END FROM THE INPUT FEEDER LOCATION OR MAIN CIRCUIT LOCATION. THE BUS OR CONDUCTOR RATING SHALL BE SIZED FOR THE LOADS CONNECTED IN ACCORDANCE WITH ARTICLE 220. A PERMANENT WARNING LABEL SHALL BE APPLIED TO THE DISTRIBUTION EQUIPMENT WITH THE FOLLOWING OR EQUIVALENT MARKING: "WARNING INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE"
- (15b) LABEL "WARNING - A GENERATION SOURCE IS CONNECTED TO THE SUPPLY (UTILITY) SIDE OF THE SERVICE DISCONNECTING MEANS. FOLLOW PROPER LOCKOUT/ TAGOUT PROCEDURES TO ENSURE THE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH IS OPENED PRIOR TO PERFORMING WORK ON THIS DEVICE."
- (15c) SUPPLY SIDE CONNECTION IS INSTALLED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. DOCUMENTATION IS INCLUDED WITH THE APS INTERCONNECTION APPLICATION. ENSURE UL LISTED CONNECTORS

NOTE:
ALL CONSTRUCTION / INSTALLATION IS TO COMPLY WITH THE FOLLOWING:
2012 IRC,IBC,IFC
2011 NEC
ALL DIMENSIONS ARE APPROXIMATE



2317 W. HUNTINGTON DRIVE
TEMPE, AZ 85282 (480) 446-3600
ROC: CR-11 249334

SYSTEM SIZE:

29.880 DC KW
26.560 AC KW
GRID TIED
AC-MODULE
PV SYSTEM

PROJECT NAME:

SCHLUTER, ROBERT
RESIDENCE
5678 E CHENEY DR
PARADISE VALLEY,
AZ 85253
APN: 169-02-017A

DRAWN BY: KG	
DATE: 05-09-2018	
SCALE: N.T.S. (AS NOTED)	
AHJ: PARADISE VA	SHEET:
UTILITY: APS	PV9

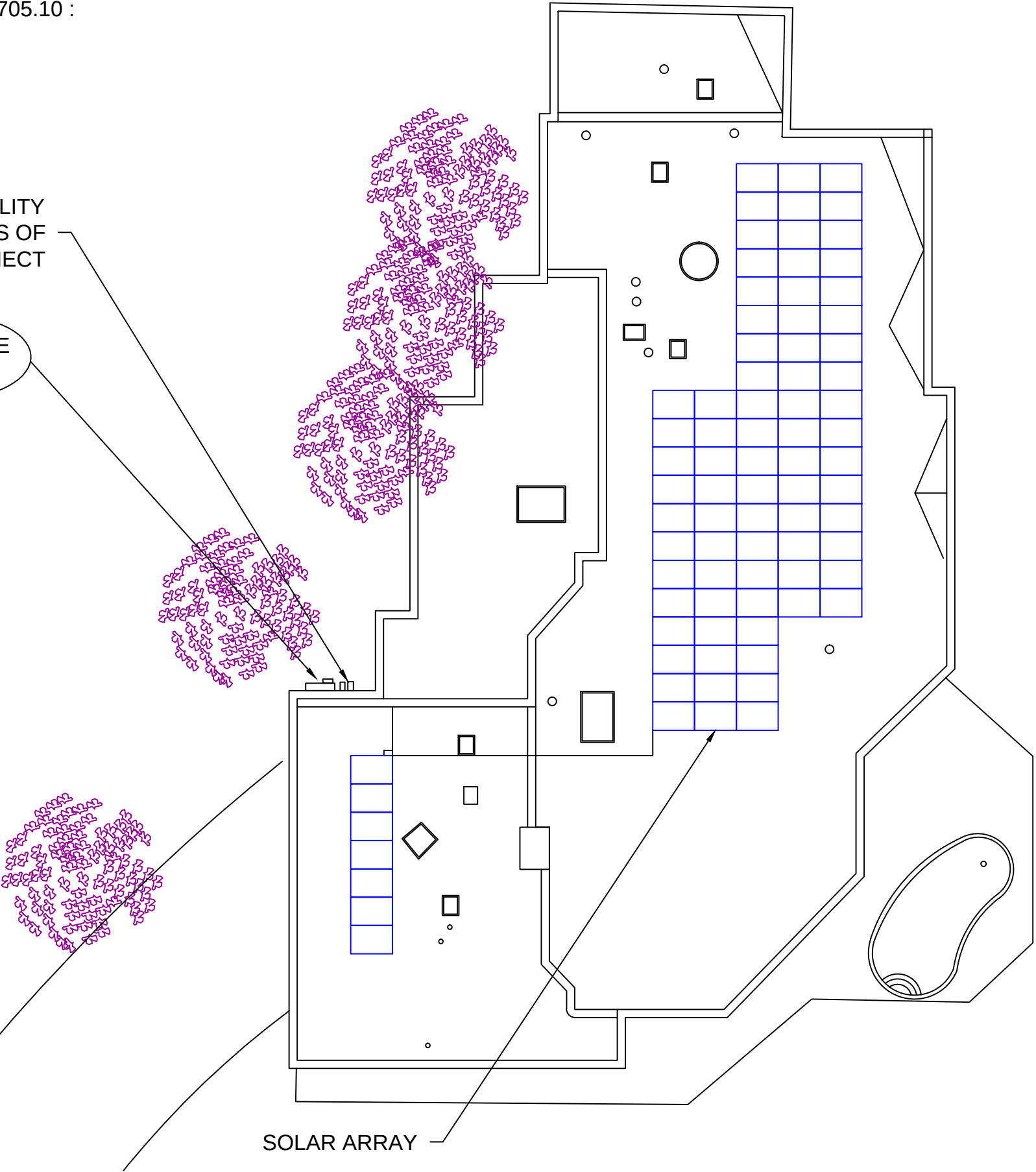
CAUTION

POWER TO THIS BUILDING IS ALSO SUPPLIED FROM
THE FOLLOWING SOURCES WITH DISCONNECT(S)
LOCATED AS SHOWN PER NEC 705.10 :

PLAQUE DIMENSION 6"x 8"

SERVICE POINT UTILITY
METERING, MEANS OF
AC DISCONNECT

YOU ARE
HERE




2317 W. HUNTINGTON DRIVE
TEMPE, AZ 85282

