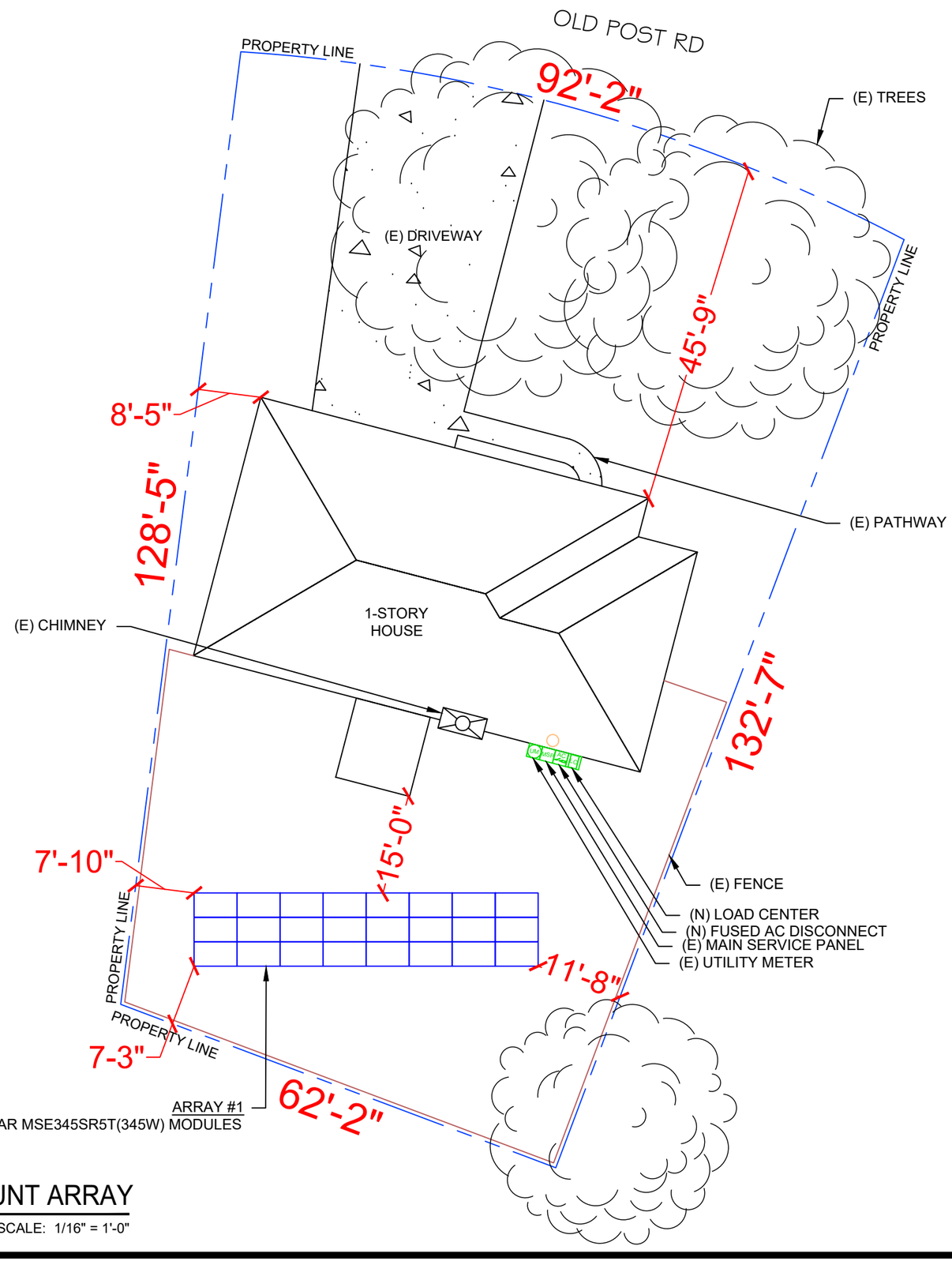


1 PLOT PLAN WITH GROUND MOUNT ARRAY

PV-1

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

ESI ID# : 10204049755532551

SYSTEM INFO.
(24) MISSION SOLAR MSE345SR5T(345W)
(24) ENPHASE IQ7-60-2-US(240V)
DC SYSTEM SIZE: 8.28 KWDC
AC SYSTEM SIZE: 6.00 KWAC

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 11/03/2022

PROJECT NAME & ADDRESS

LARRY THOMAS
RESIDENCE

SHEET NAME
PLOT PLAN WITH GROUND MOUNT ARRAY

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-1

DESIGN SPECIFICATION	
RISK CATEGORY:	II
CONSTRUCTION:	SFD
ZONING:	RESIDENTIAL
SNOW LOAD (ASCE 7-16):	10 PSF
EXPOSURE CATEGORY:	C
WIND SPEED (ASCE 7-16):	105 MPH

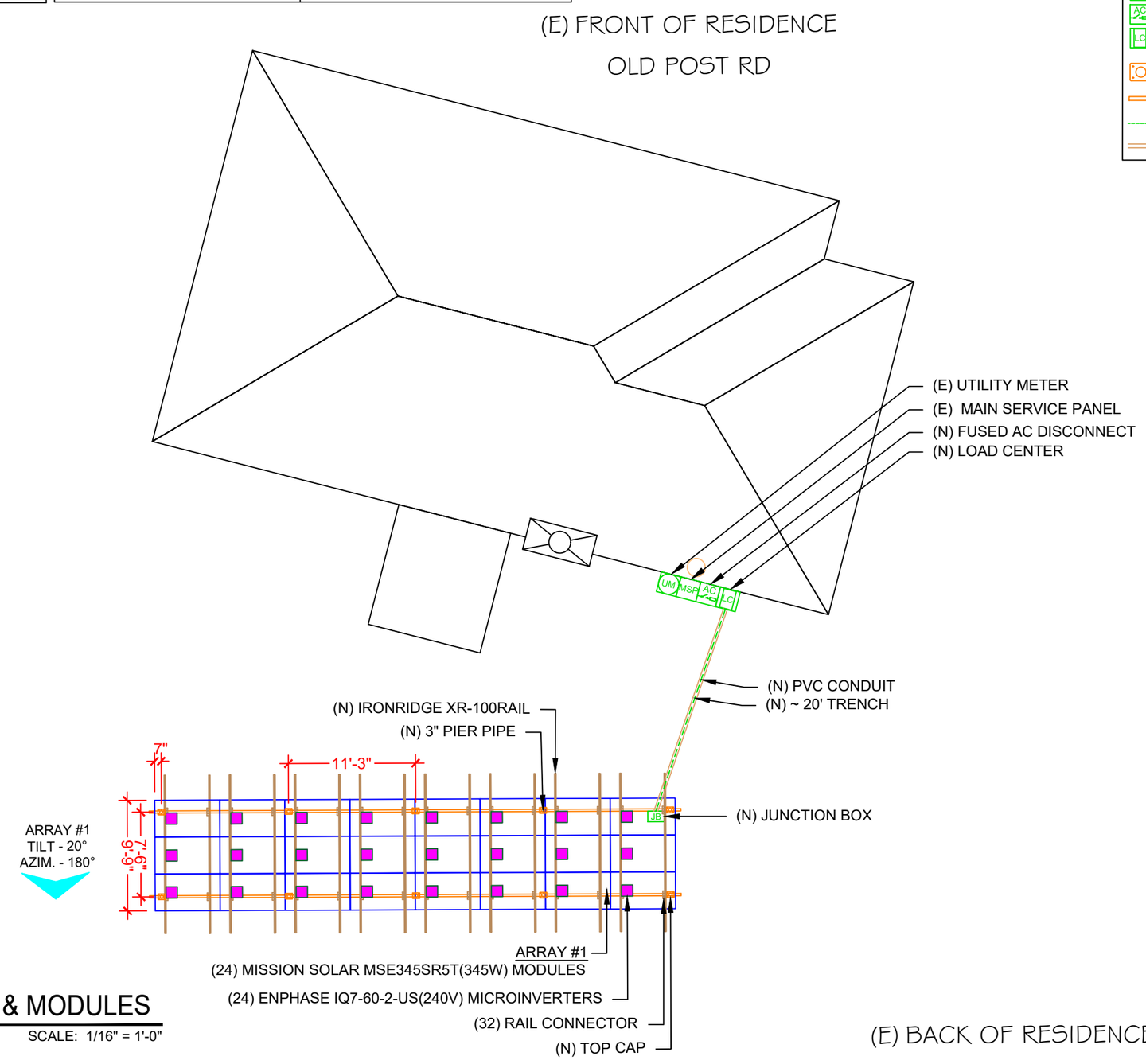
MODULE TYPE, DIMENSIONS & WEIGHT	
NUMBER OF MODULES:	24 MODULES
MODULE TYPE:	MISSION SOLAR MSE345SR5T(345W)
MODULE WEIGHT:	44.8 LBS
MODULE DIMENSIONS:	68.82" X 41.49" = 19.83 SF
UNIT WEIGHT OF AREA:	2.26 PSF

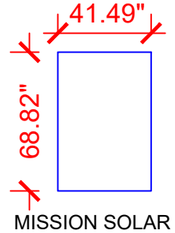
ARRAY DESCRIPTION		
ARRAY	ARRAY TILT	AZIMUTH
#1	20°	180°

ARRAY AREA CALC'S		
ARRAY	# OF MODULES	ARRAY AREA (Sq. Ft.)
#1	24	450.40

LEGEND

- JB — (N) JUNCTION BOX
- UM — (E) UTILITY METER
- MSP — (E) MAIN SERVICE PANEL (MSP)
- AC — (N) FUSED AC DISCONNECT
- LC — (N) LOAD CENTER (IQ COMBINER)
- - TOP CAP
- - PIPE
- - CONDUIT
- - TRENCH





MISSION SOLAR MSE345SR5T(345W) MODULES

1 ARRAY LAYOUT PLAN & MODULES

PV-2

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

SYSTEM INFO.
(24) MISSION SOLAR MSE345SR5T(345W)
(24) ENPHASE IQ7-60-2-US(240V)
DC SYSTEM SIZE: 8.28 KWDC
AC SYSTEM SIZE: 6.00 KWAC

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 11/03/2022

PROJECT NAME & ADDRESS

LARRY THOMAS RESIDENCE

SHEET NAME

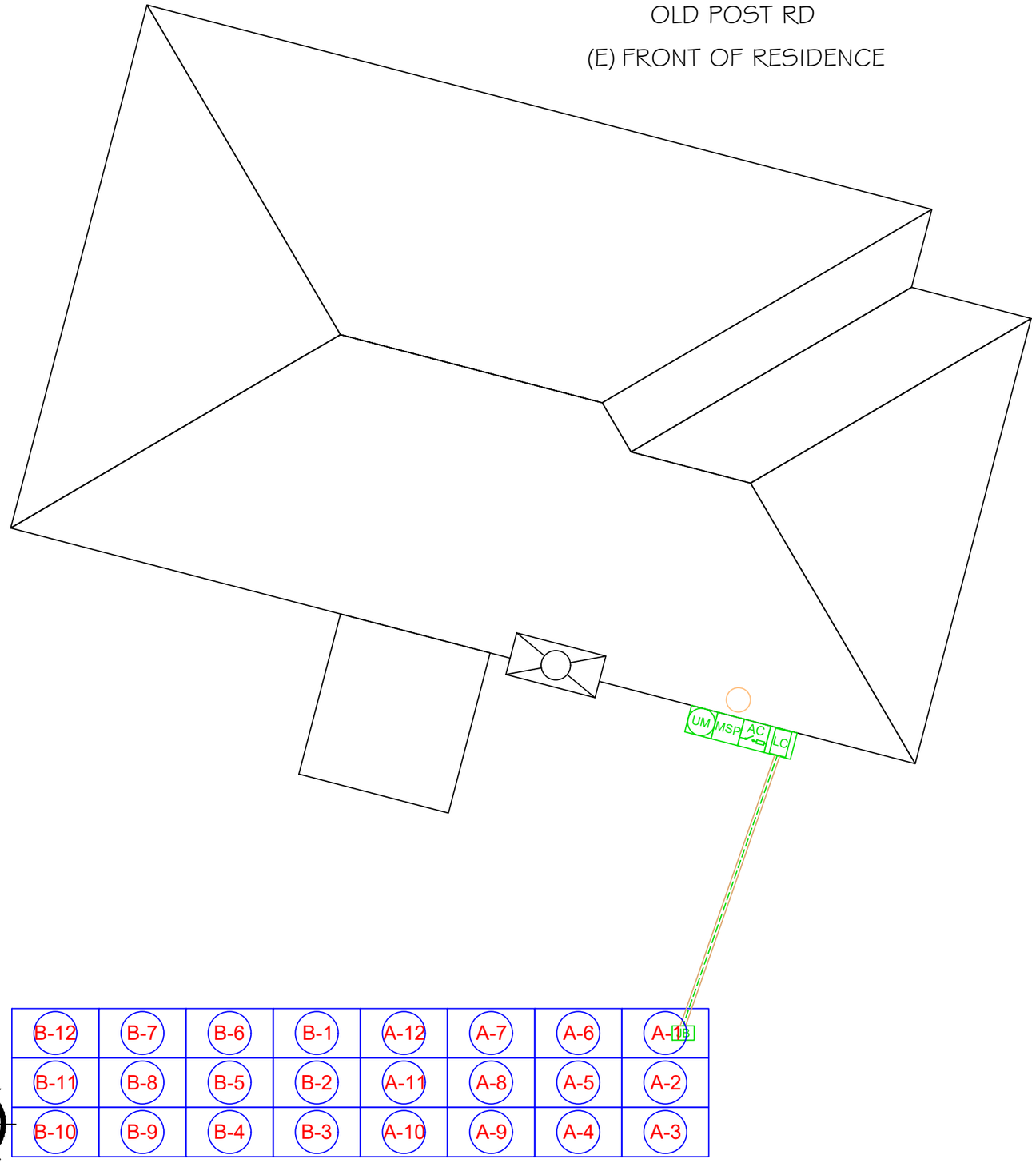
ARRAY LAYOUT PLAN & MODULES

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-2



1 ARRAY PLAN WITH STRING LAYOUT & BOM

PV-2A

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

BILL OF MATERIALS

EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	24	MISSION SOLAR MSE345SR5T(345W)
INVERTER	24	ENPHASE IQ7-60-2-US(240V)
JUNCTION BOX	1	JUNCTION BOX, NEMA 3R, UL LISTED
COMBINER BOX	1	ENPHASE IQ COMBINER 3 W/ IQ ENVOY (X-IQ-AM1-240-3)
AC DISCONNECT	1	60A FUSED AC DISCONNECT, (2) 60A FUSES, 240V, NEMA 3R, UL LISTED
ENPHASE Q CABLE	30	ENPHASE Q CABLE 240V, (PER CONNECTOR)
BRANCH TERMINATOR	3	BRANCH TERMINATOR
IQ WATER TIE CAP	6	IQ WATER TIE CAP
RAILS	16	IRONRIDGE XR-1000-204A RAIL 204" (17 FEET)
CLAMP	64	UNIVERSAL MODULE CLAMPS (UFO-CL-01-A1)
CLAMP	32	STOPPER SLEEVES (UFO-STP-40MM-M1)
GROUNDING LUG	1	IRONRIDGE GROUNDING LUG
TOP CAP	10	SGA TOP CAP AT 3"
RAIL CONNECTOR	32	GROUND MOUNT BONDED RAIL CONNECTOR - 3"

A B - MODULE STRINGING

SYSTEM INFO.

(24) MISSION SOLAR MSE345SR5T(345W)

(24) ENPHASE IQ7-60-2-US(240V)

DC SYSTEM SIZE: 8.28 KWDC

AC SYSTEM SIZE: 6.00 KWAC

REVISIONS

DESCRIPTION	DATE	REV

Signature with Seal

DATE: 11/03/2022

PROJECT NAME & ADDRESS

LARRY THOMAS RESIDENCE

SHEET NAME

STRING LAYOUT & BOM

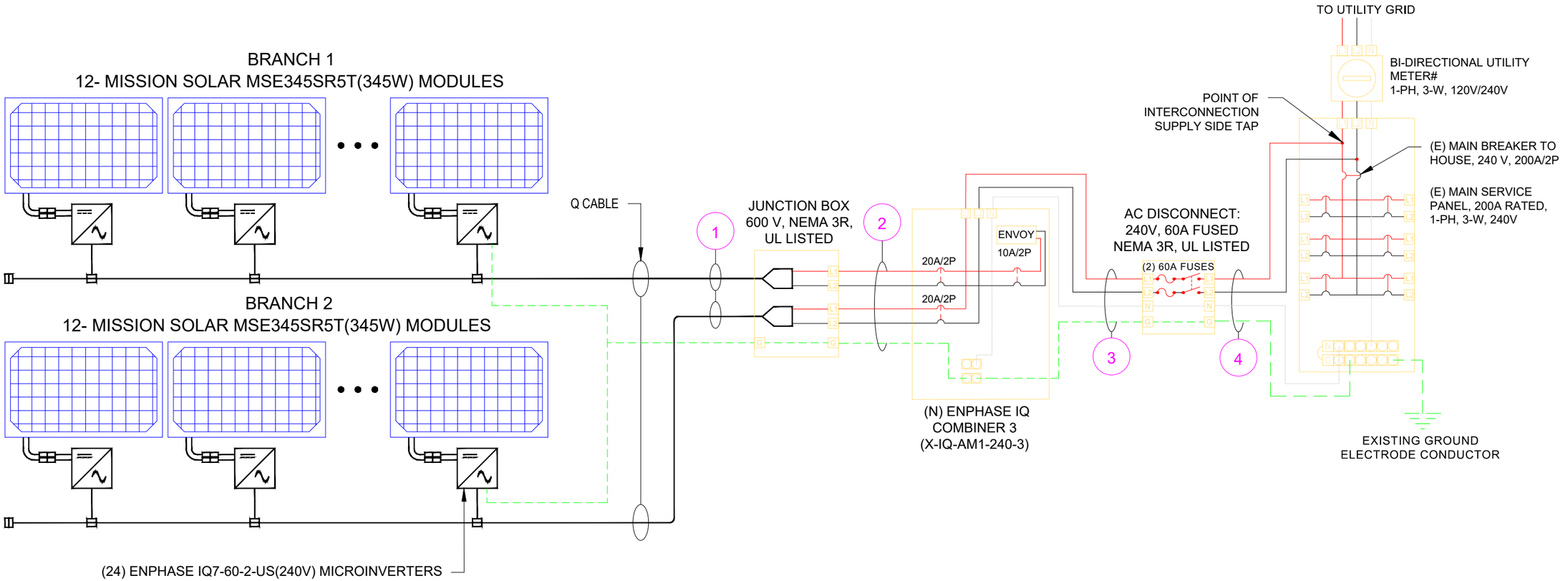
SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-2A

ID	TYPICAL	INITIAL CONDUCTOR LOCATION	FINAL CONDUCTOR LOCATION	CONDUCTOR			CONDUIT	# OF PARALLEL CIRCUITS	CURRENT-CARRYING CONDUCTORS IN CONDUIT	CONDUIT FILL PERCENT	OCPD	EGC		TEMP. CORR. FACTOR		CONDUIT FILL FACTOR	CONT. CURRENT	MAX. CURRENT	BASE AMP.	DERATED AMP.	TERM. TEMP. RATING	LENGTH	VOLTAGE DROP
1	2	ARRAY	JUNCTION BOX	12 AWG	Q CABLE	-	-	1	2	N/A	N/A	6 AWG	BARE COPPER	0.71	(59°C)	N/A	12.0A	15.0A	N/A	N/A	90°C	69FT	0.55%
2	1	JUNCTION BOX	IQ COMBINER BOX	10 AWG	THWN-2	COPPER	MIN 0.75" Dia PVC	2	4	19.09%	20A	8 AWG	THWN-2, COPPER	0.91	(37°C)	0.8	12.0A	15.0A	40A	29.1A	90°C	23FT	0.30%
3	1	IQ COMBINER BOX	FUSED AC DISCONNECT	6 AWG	THWN-2	COPPER	MIN 0.75" Dia EMT	1	3	36.53%	60A	8 AWG	THWN-2, COPPER	0.91	(37°C)	1	24.0A	30.0A	75A	68.3A	90°C	5FT	0.05%
4	1	FUSED AC DISCONNECT	MSP	6 AWG	THWN-2	COPPER	MIN 0.75" Dia EMT	1	3	36.53%	N/A	6 AWG	THWN-2, COPPER	0.91	(37°C)	1	24.0A	30.0A	75A	68.3A	90°C	5FT	0.05%



1 ELECTRICAL LINE DIAGRAM
PV-4 SCALE: NTS

SERVICE INFO.	
UTILITY PROVIDER:	AEP
MAIN SERVICE VOLTAGE:	240V
MAIN SERVICE PANEL:	200A
MAIN BREAKER RATING:	200A
MAIN SERVICE LOCATION:	SOUTH
SERVICE FEED SOURCE:	UNDERGROUND

SYSTEM INFO.

(24) MISSION SOLAR MSE345SR5T(345W)

(24) ENPHASE IQ7-60-2-US(240V)

DC SYSTEM SIZE: 8.28 KWDC

AC SYSTEM SIZE: 6.00 KWAC

REVISIONS

DESCRIPTION	DATE	REV

Signature with Seal

DATE: 11/03/2022

PROJECT NAME & ADDRESS

LARRY THOMAS
RESIDENCE

SHEET NAME
ELECTRICAL LINE & CALCS.

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-4

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER / MODEL	MISSION SOLAR MSE345SR5T(345W)
VMP	33.37 V
IMP	10.34 A
VOC	41.00 V
ISC	10.92 A
TEMP. COEFF. VOC	-0.262 %/°C
PTC RATING	321.24 W
MODULE DIMENSION	68.82" (L) x 41.49" (W)
PANEL WATTAGE	345W

INVERTER SPECIFICATIONS	
MANUFACTURER / MODEL	ENPHASE IQ7-60-2-US (240V)
MAX DC SHORT CIRCUIT CURRENT	15 A
CONTINUOUS OUTPUT CURRENT	1.0A (240V)

AMBIENT TEMPERATURE SPECS	
RECORD LOW TEMP	-10°C
AMBIENT TEMP (HIGH TEMP 2%)	37°C
CONDUIT HEIGHT	0.5"
ARRAY TOP TEMP	59°C
CONDUCTOR TEMPERATURE RATE	90°C
MODULE TEMPERATURE COEFFICIENT OF VOC	-0.262 %/°C

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
0.80	4-6
0.70	7-9
0.50	10-20

Voltage rise in Q Cable from the Microinverters to the Junction Box

For branch circuit #1 of 12 IQ 7 Micros, the voltage rise on the 240 VAC Q Cable is 0.55%

For branch circuit #2 of 12 IQ 7 Micros, the voltage rise on the 240 VAC Q Cable is 0.55%

Voltage rise from the Junction Box to the IQ Combiner box

VRise = (amps/inverter × number of inverters) × (resistance in Ω/ft) × (2-way wire length in ft)
= (1 amp × 12) × (0.001290 Ω/ft) × (23 ft × 2)
= 12 amps × 0.001290 Ω/ft × 46 ft
= 0.71 volts
%VRise = 0.71 volts ÷ 240 volts = 0.30%
The voltage rise from the Junction Box to the IQ Combiner Box is 0.30%

Voltage rise from the IQ Combiner box to AC Disconnect

VRise = (amps/inverter × number of inverters) × (resistance in Ω/ft.) × (2-way wire length in ft.)
= (1 amp × 24) × (0.000491 Ω/ft) × (5 ft. × 2)
= 24 amps × 0.000491 Ω/ft × 10 ft.
= 0.12 volts
%VRise = 0.12 volts ÷ 240 volts = 0.05%
The voltage rise from the IQ Combiner Box to the AC Disconnect is 0.05%

Voltage rise from the AC Disconnect to the Main Service Panel

VRise = (amps/inverter × number of inverters) × (resistance in Ω/ft) × (2-way wire length in ft)
= (1 amp × 24) × (0.000491 Ω/ft) × (5 ft × 2)
= 24 amps × 0.000491 Ω/ft × 10 ft
= 0.12 volts
%VRise = 0.12 volts ÷ 240 volts = 0.05%
The voltage rise from the AC Disconnect to the Main Panel is 0.05%

Total system voltage rise for all four wire sections

0.55 % + 0.30% + 0.05% + 0.05% = 0.95%

SYSTEM INFO.
(24) MISSION SOLAR MSE345SR5T(345W)
(24) ENPHASE IQ7-60-2-US(240V)
DC SYSTEM SIZE: 8.28 KWDC
AC SYSTEM SIZE: 6.00 KWAC

REVISIONS		
DESCRIPTION	DATE	REV

Signature with Seal

DATE: 11/03/2022

PROJECT NAME & ADDRESS

LARRY THOMAS
RESIDENCE

SHEET NAME
SPECIFICATIONS & CALC.

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-4A