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1816

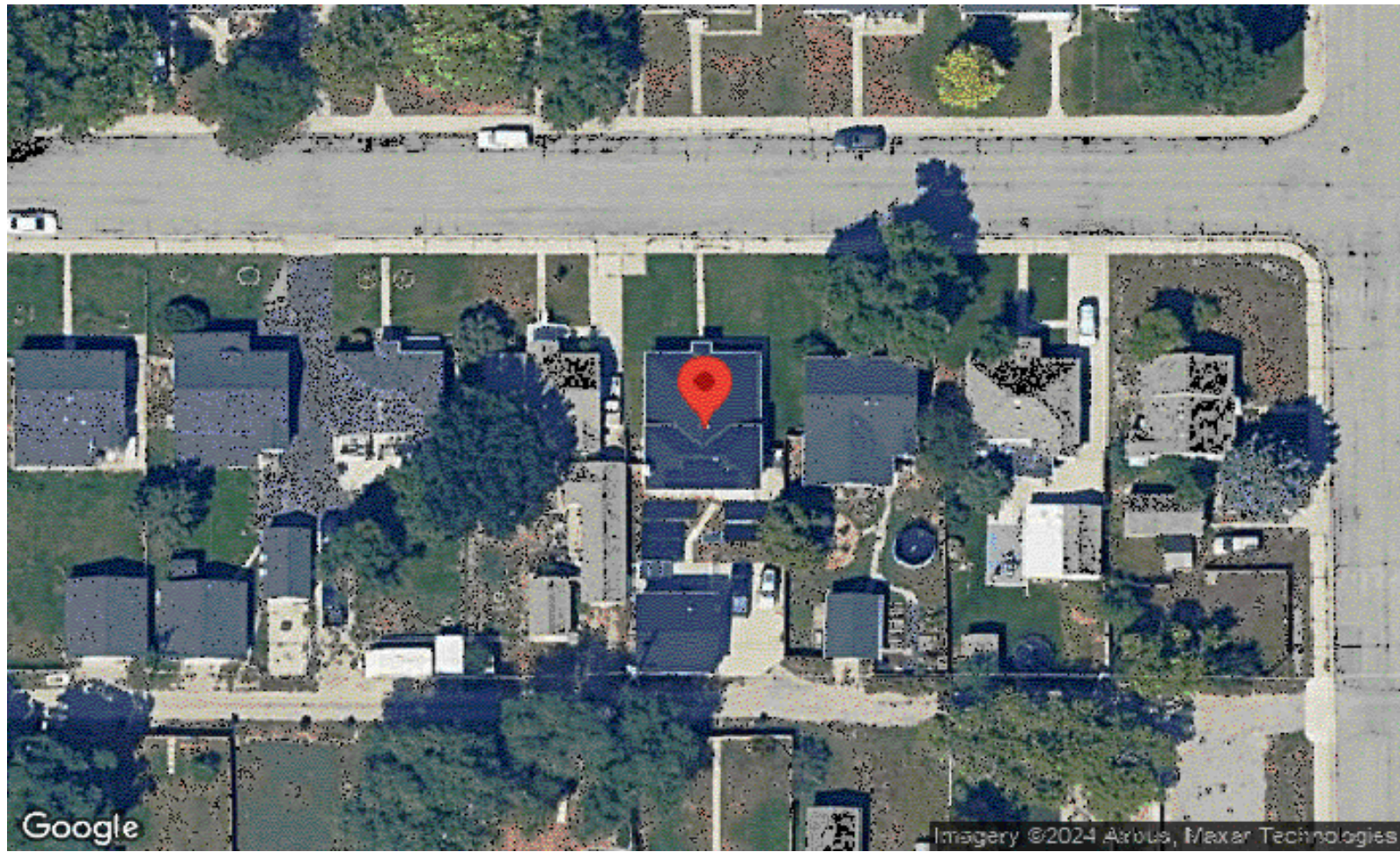
1810







AERIAL IMAGE



SCOPE OF WORK

INSTALLATION OF PERGOLA-MOUNTED UTILITY INTERACTIVE PV SYSTEM
 INSTALLATION OF ENERGY STORAGE SYSTEM

19.68 KW DC & 24.0 KW AC PV SOLAR ARRAY

- PV MODULES - 48 HYPERION SOLAR HY-DH108P8-410(B)
- INVERTER(S) - 2 EG4 18KPV
- BATTERY(IES) - 4 EG4 POWERPRO WALLMOUNT ALLWEATHER LITHIUM BATTERY
- RACKING - CHIKO USA PREMIER STEEL CARPORT/GAZEBO
- ATTACHMENT - METAL BEAMS



A-TEAM ROOFING & SOLAR
 354 SOUTH BILLINGS BLVD,
 BILLINGS, MT 59101

APPLICABLE CODES & STANDARDS

GOVERNING CODES

1. ALL WORK SHALL COMPLY WITH:
 - 1.1. 2020 NATIONAL ELECTRICAL CODE
 - 1.2. 2021 INTERNATIONAL BUILDING CODE
 - 1.3. 2012 INTERNATIONAL FIRE CODE
 - 1.4. 2021 INTERNATIONAL RESIDENTIAL CODE
 - 1.5. 2021 INTERNATIONAL EXISTING BUILDING CODE
 - 1.6. AND ALL OTHER STATE AND LOCAL AMENDMENTS TO BUILDING AND ELECTRICAL CODES

STRUCTURAL CRITERIA

1. WIND EXPOSURE CATEGORY: C
2. WIND SPEED: 110.0 MPH
3. GROUND SNOW LOAD: 30.0 PSF

ELECTRICAL NOTES

1. ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION
2. ALL RACEWAYS ON ROOFTOPS SHALL BE PLACED MORE THAN 7/8" ABOVE THE ROOFTOP. ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600V AND 90°C WET ENVIRONMENT
3. WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY
4. WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26
5. DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS
6. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS, AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS
7. WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUCTORS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY
8. ARRAY GROUNDING TO BE INSTALLED PER RACKING MANUFACTURER'S INSTRUCTION
9. ARRAY RACKING TO BE BONDED WITH CONTINUOUS COPPER E.G.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG
10. THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE.
11. SURGE PROTECTION REQUIRED PER NEC 230.67

GENERAL NOTES

1. THIS PROJECT INVOLVES THE INSTALLATION OF A GRID-INTERACTIVE PV SYSTEM. PV MODULES WILL BE MOUNTED USING A PRE-ENGINEERED MOUNTING SYSTEM. THE MODULES WILL BE ELECTRICALLY CONNECTED TO THE LOCAL UTILITY USING MEANS AND METHODS CONSISTENT WITH THE RULES ENFORCED BY THE LOCAL UTILITY AND AUTHORITY HAVING JURISDICTION.
2. THIS DOCUMENT HAS BEEN PREPARED TO DESCRIBE THE DESIGN OF A PROPOSED PV SYSTEM WITH ENOUGH DETAIL TO DEMONSTRATE COMPLIANCE WITH APPLICABLE CODES AND REGULATIONS. THE DOCUMENT SHALL NOT BE RELIED UPON AS A SUBSTITUTE FOR FOLLOWING MANUFACTURER INSTALLATION INSTRUCTIONS. THE SYSTEM SHALL COMPLY WITH ALL MANUFACTURER INSTALLATION INSTRUCTIONS, AS WELL AS ALL APPLICABLE CODES. NOTHING IN THIS DOCUMENT SHALL BE INTERPRETED IN A WAY THAT OVERRIDES THEM. THE CONTRACTOR IS RESPONSIBLE FOR VERIFICATION OF ALL DETAILS IN THIS DOCUMENT.
3. THIS DOCUMENT IS BASED ON FIELD INSPECTIONS AND OTHER INFORMATION AVAILABLE AT THE TIME. ACTUAL FIELD CONDITIONS MAY VARY AND REQUIRE MODIFICATIONS IN CONSTRUCTION DETAILS.
4. THE DIMENSIONS AND MEASUREMENTS SHOWN IN THIS DOCUMENT ARE BASED ON AERIAL IMAGERY AND OTHER AVAILABLE INFORMATION, AND ARE TO BE TREATED AS APPROXIMATED TO SHOW A GENERAL IDEA OF EQUIPMENT LOCATION AND PROPERTY SIZE.
5. ANY CHANGES TO THIS DESIGN AT THE TIME OF INSTALLATION DUE TO FIELD CONDITIONS MUST BE REPORTED TO THE DESIGNER AND AHJ.

UTIL - NORTHWESTERN ENERGY
 AHJ - BILLINGS (CITY)
 OCCUPANCY - II
 CONSTRUCTION - SFR
 ZONING - RESIDENTIAL

SHEET INDEX

- PV-1 COVER PAGE
- PV-2 SITE PLAN
- PV-3 ATTACHMENT DETAILS
- PV-4 THREE LINE DIAGRAM
- PV-4B ELECTRICAL PHOTOS
- PV-5 ELECTRICAL LABELS
- PV-5A SITE PHOTOS
- PV-6+ SPEC SHEETS

SCALE NTS	DATE 11.21.2024
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PROJECT INFO
 ROGER HARDING
 1816 AVENUE C
 BILLINGS, MT 59102

SHEET NAME COVER PAGE	SHEET NUMBER PV-1
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SYSTEM RATING

19.68 DC KW

24.0 AC KW

ARRAY INFORMATION

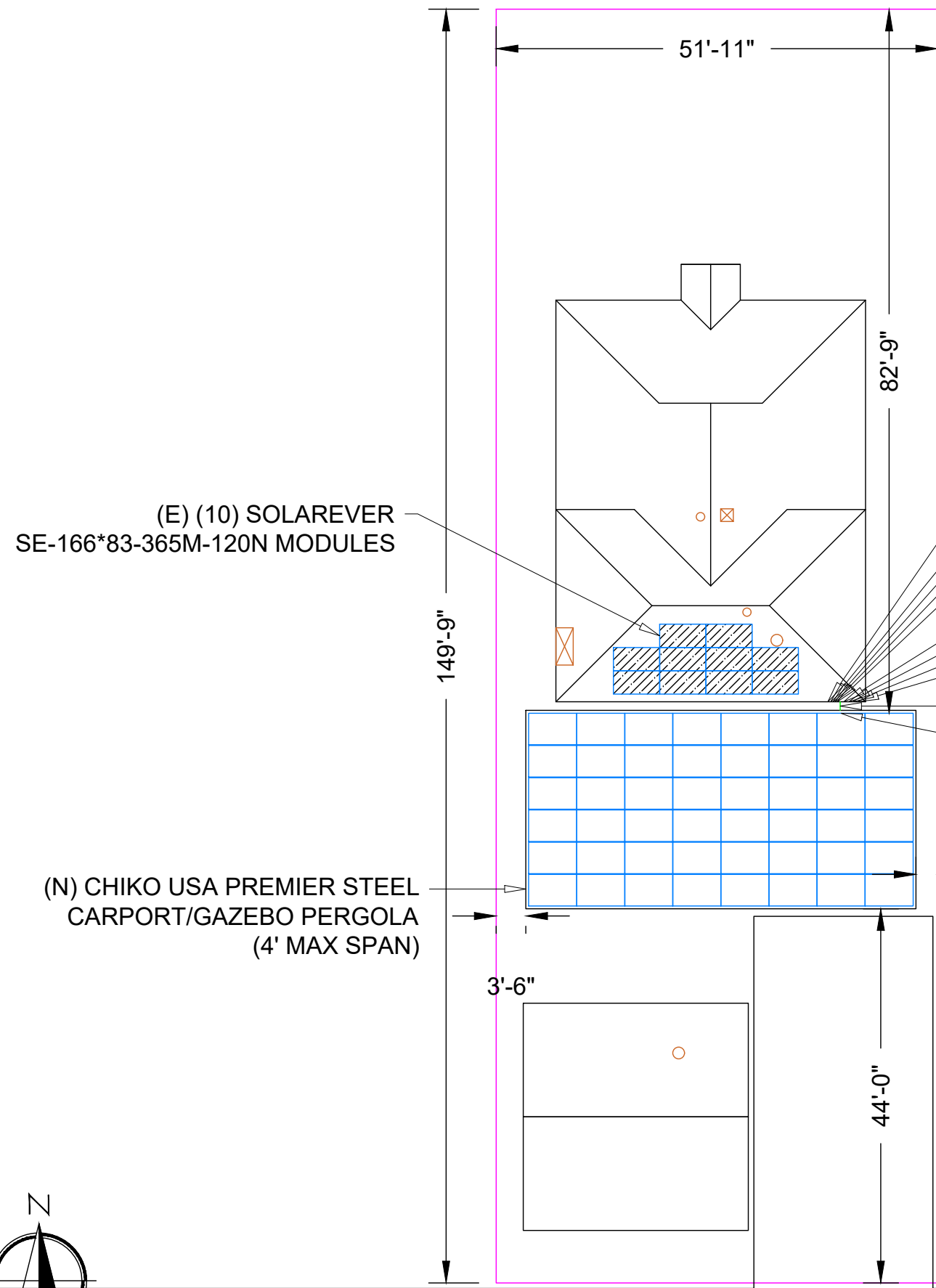
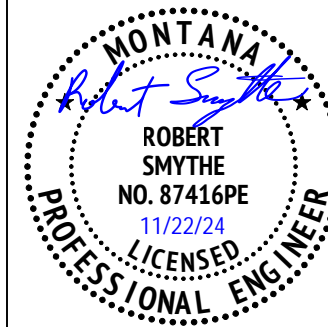
ARRAY SECTION	PANEL COUNT	TILT	AZIMUTH
1	48	5	180

AVENUE C



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Seal applies exclusively to structural items and excludes all else, including civil and survey information.



(E) (10) SOLAREVER SE-166*83-365M-120N MODULES

(N) CHIKO USA PREMIER STEEL CARPORT/GAZEBO PERGOLA (4' MAX SPAN)

- (N) (4) EG4 POWERPRO WALLMOUNT ALLWEATHER LITHIUM BATTERY ESS
- (N) (2) EG4 18KPV INVERTER
- (N) (2) PV AC COMBINER PANEL
- (N) AUTOMATIC TRANSFER SWITCH
- (N) AC DISCONNECT (EXTERNAL, VISIBLE AND LOCKABLE DISCONNECT WITHIN 10 FEET OF THE UTILITY METER.)
- (E) SOLAREEDGE SE5000H-US INVERTER
- (E) AC DISCONNECT
- (E) MAIN SERVICE PANEL
- (E) UTILITY METER
- (N) ~2' TRENCH | 18" MIN. DEPTH PER NEC TABLE 300.5(A)
- (N) (4) DC DISCONNECT

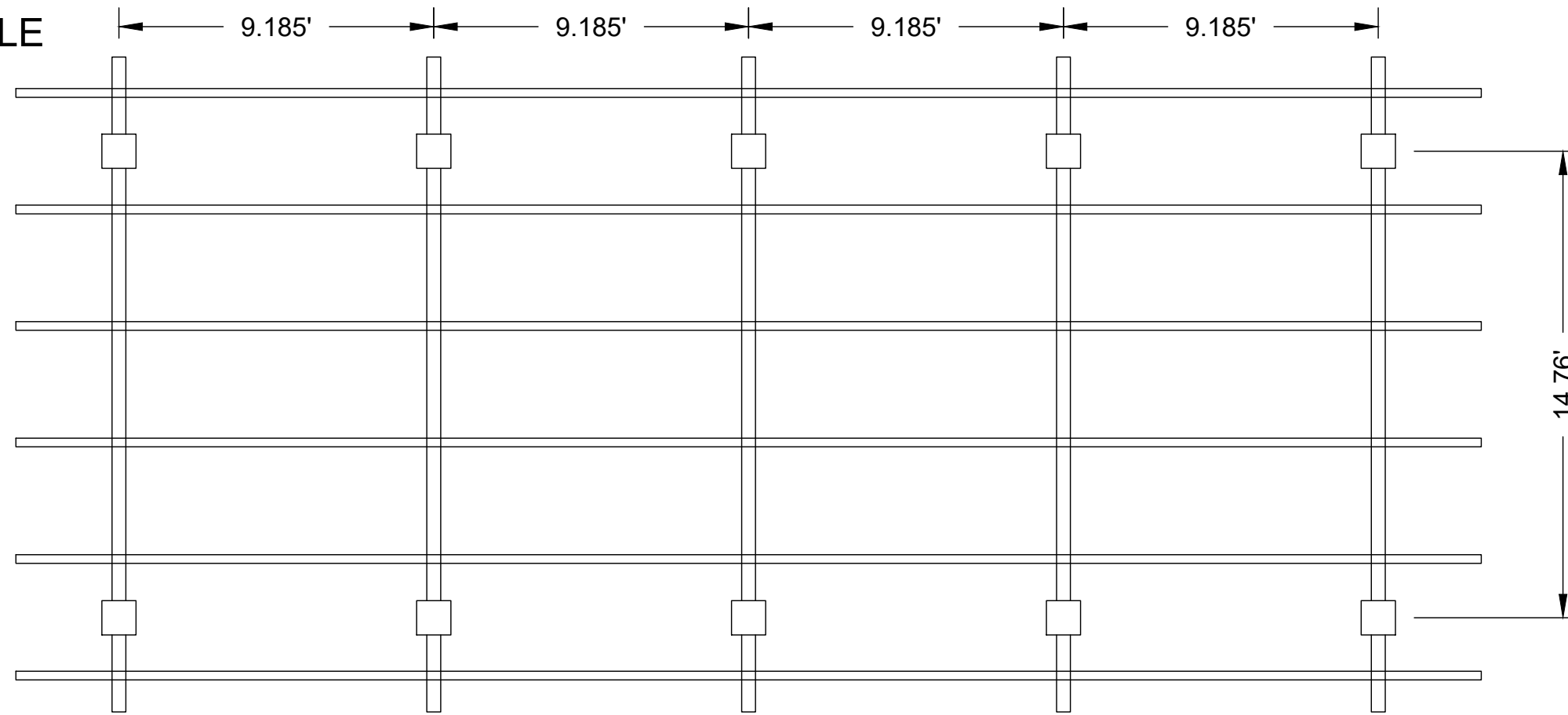
SCALE 1" = 16.39'	DATE 11.21.2024
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PROJECT INFO
ROGER HARDING
1816 AVENUE C
BILLINGS, MT 59102

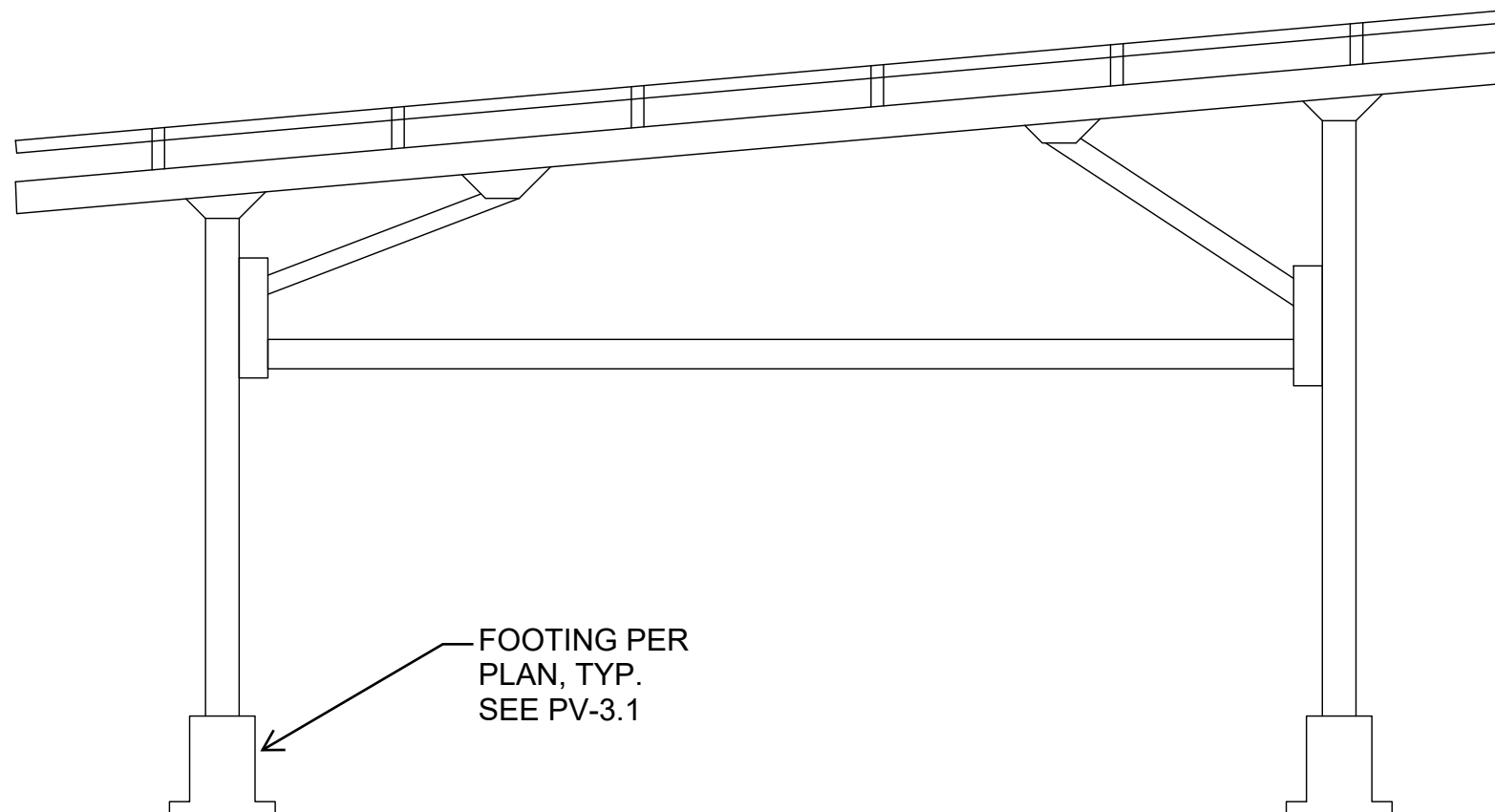
SHEET NAME SITE PLAN	SHEET NUMBER PV-2
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TOP PROFILE



SIDE PROFILE

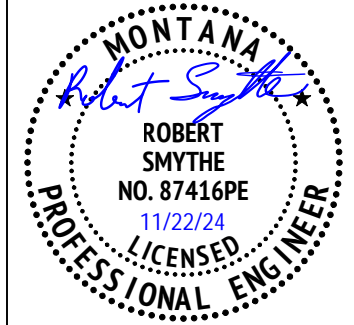


S350 STEEL ZINC ALUMINUM MAGNESIUM COATED
 TILT ANGLE: 5 DEGREES
 WIND VELOCITY: UP TO 185 MPH
 SNOW LOAD: UP TO 60 PSF



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RACKING & STRUCTURAL INFORMATION

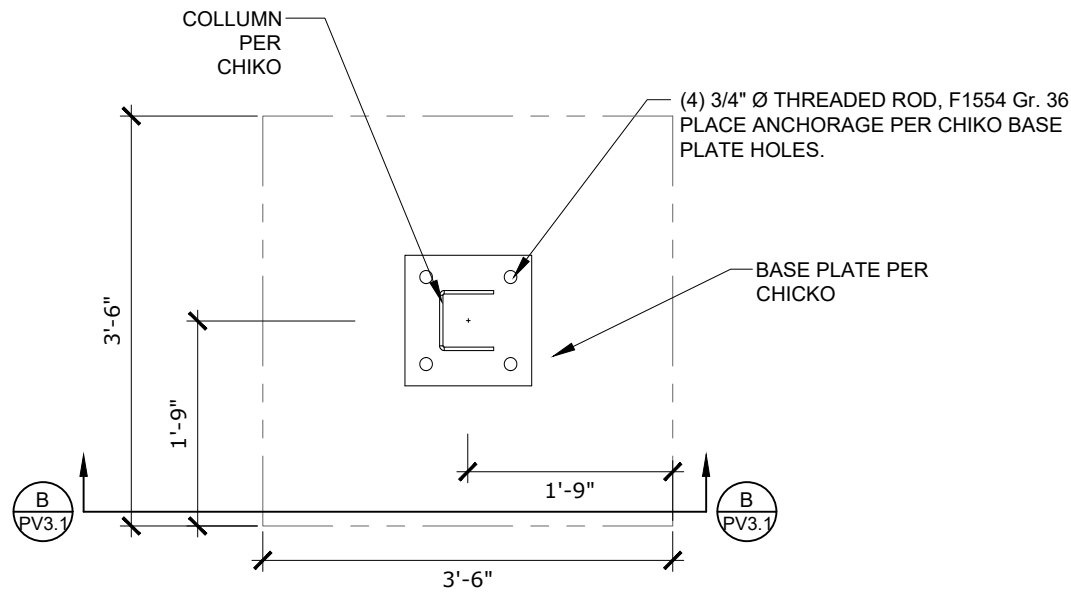
RACKING - CHIKO USA PREMIER STEEL CARPORT/GAZEBO
 ATTACHMENT - METAL BEAMS

SCALE NTS	DATE 11.21.2024
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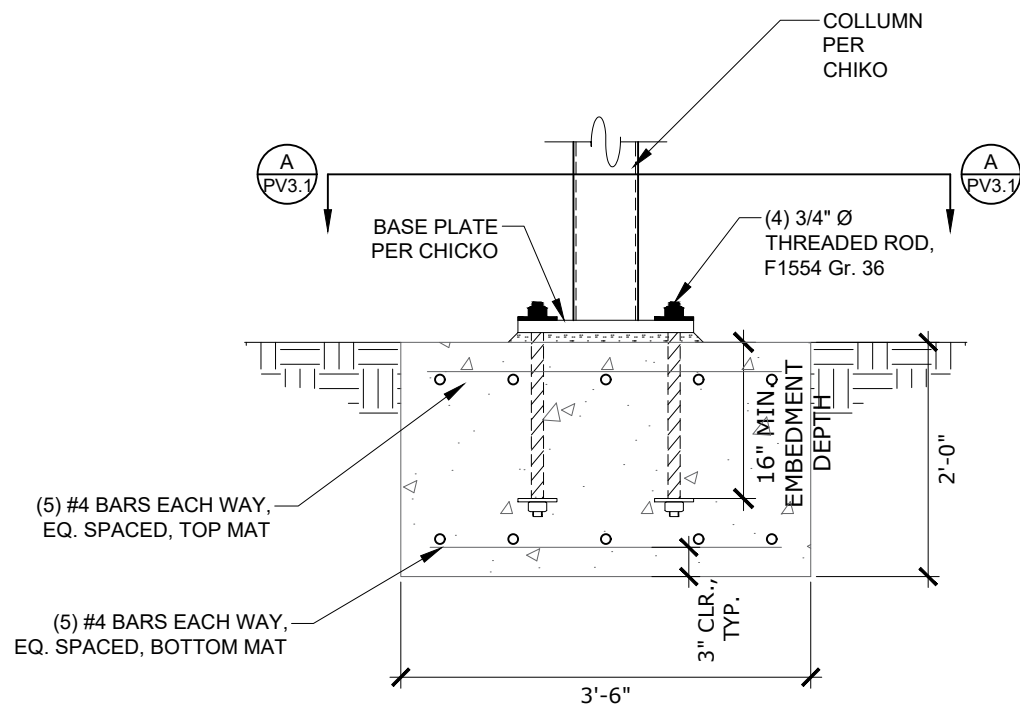
PROJECT INFO	
ROGER HARDING	
1816 AVENUE C BILLINGS, MT 59102	

SHEET NAME ATTACHMENT DETAILS	SHEET NUMBER PV-3
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FOOTING OPTION 1

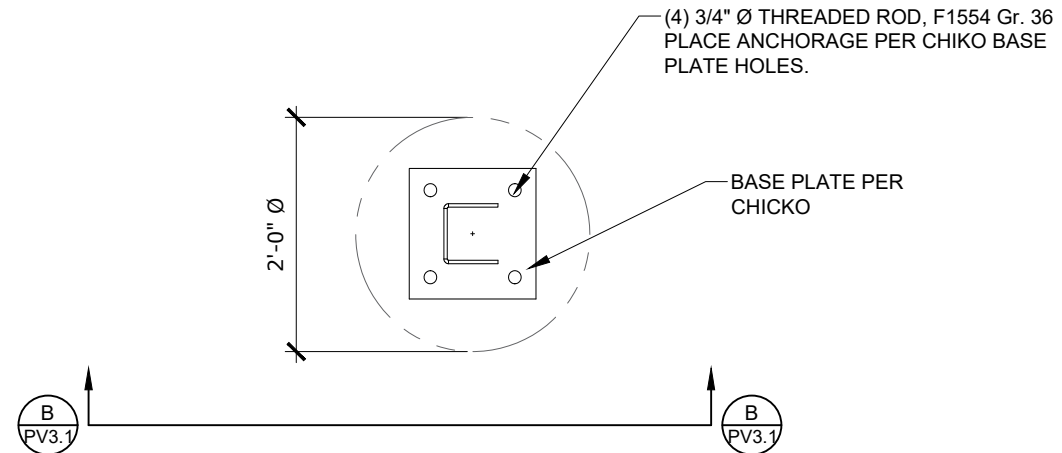


A
PV3.1
BASE PLATE AND FOOTING PLAN

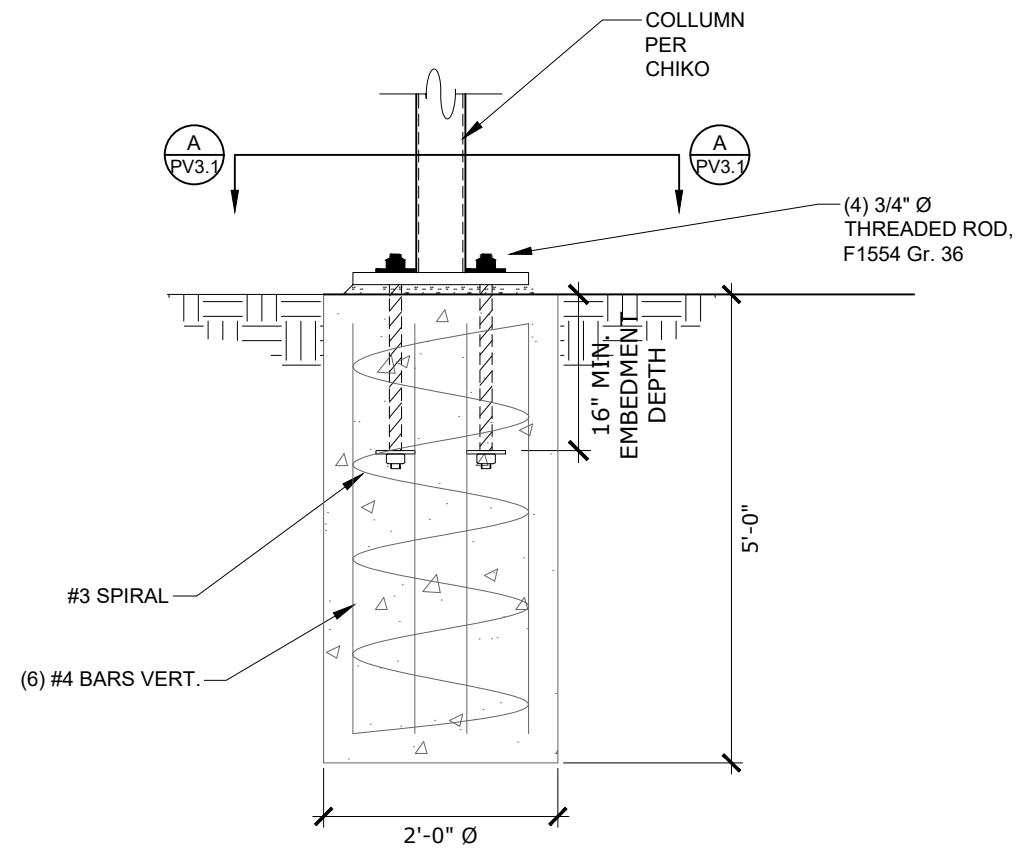


B
PV3.1
BASE PLATE AND FOOTING SECTION

FOOTING OPTION 2



A
PV3.1
BASE PLATE AND FOOTING PLAN

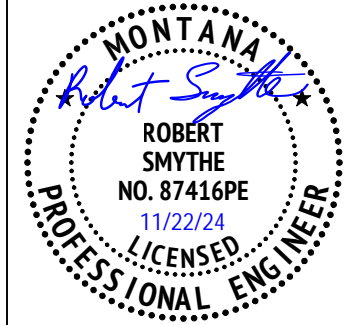


B
PV3.1
BASE PLATE AND FOOTING SECTION



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RACKING & STRUCTURAL INFORMATION

RACKING - CHIKO USA PREMIER STEEL CARPORT/GAZEBO ATTACHMENT - METAL BEAMS

SCALE NTS	DATE 11.21.2024
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ROGER HARDING
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BILLINGS, MT 59102

SHEET NAME FOUNDATION DETAILS	SHEET NUMBER PV-3.1
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WIRE LEGEND

- PV ARRAY -VE CONDUCTOR AND L1
- PV ARRAY +VE CONDUCTOR AND L2
- NEUTRAL CONDUCTOR
- EGC & GEC

SYSTEM RATING

19.68 DC KW
24.0 AC KW

INVERTER SPECIFICATIONS

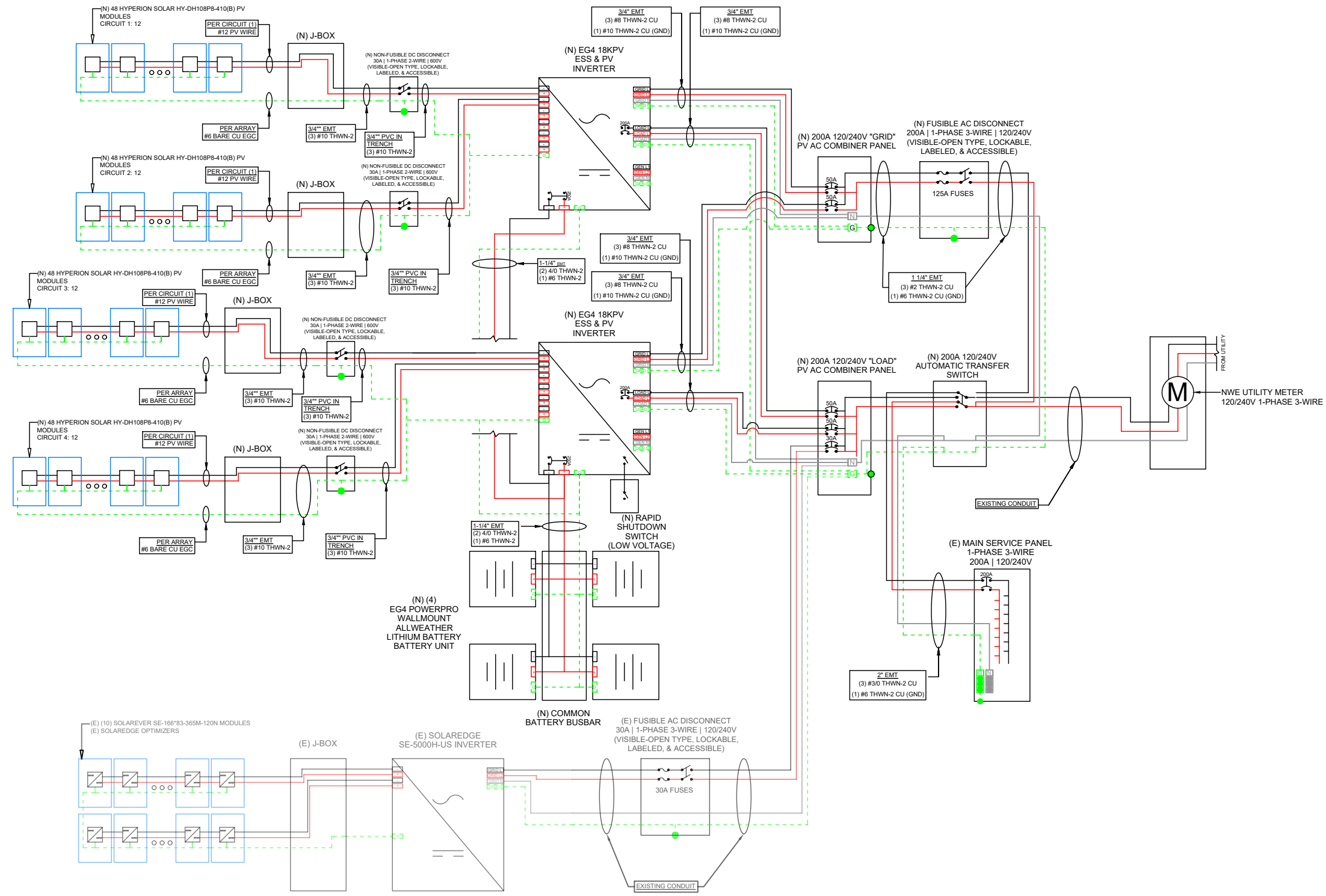
MANUFACTURER/MODEL	EG4 18KPV
MAX INPUT DC POWER	18000 WDC
MAX OUTPUT AC POWER	12000 WAC
NOMINAL OUTPUT VOLTAGE	240.0 VAC
MAX INPUT VOLTAGE	600.0 VDC
MAX OUTPUT CURRENT	50.0 AAC
MAX INPUT CURRENT	25.0 ADC
OUTPUT COMPATIBILITY	1-PHASE 3-WIRE

BILL OF MATERIALS

QTY	EQUIPMENT
48	HYPERION SOLAR HY-DH108P8-410(B) MODULES
2	EG4 18KPV INVERTER(S)
1	200A FUSED AC DISCONNECT
2	AC COMBINER BOX, 240V, NEMA 3R
4	JUNCTION BOX
1	CHIKO USA PREMIER STEEL CARPORT/GAZEBO



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PROJECT INFO

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SHEET NAME LINE DIAGRAM	SHEET NUMBER PV-4
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