

SHEET CATALOG	
INDEX NO.	DESCRIPTION
T-01	COVER PAGE
S-01	MOUNTING DETAIL
S-02	STRUCTURAL DETAIL
E-01	SINGLE LINE DIAGRAM
E-02	THREE LINE DIAGRAM
E-03	STRING WIRING DIAGRAM & ELECTRICAL CALCULATION
PL-01	WARNING PLACARDS
PL-02	DIRECTORY PLACARD
PL-03	SAFETY PLANS-1
PL-04	SAFETY PLANS-2
SS	SPEC SHEET(S)

SCOPE OF WORK

GENERAL SYSTEM INFORMATION:
 SYSTEM SIZE:
 13430W DC, 10000W AC
 MODULES:
 (34)HANWHA Q CELLS Q.PEAK DUO L-G5.2 395W
 INVERTER:
 (1)SOLAREEDGE TECHNOLOGIES
 SE10000H-US(240V)
 OPTIMIZER:
 (34)SOLAREEDGE P401 POWER OPTIMIZER

GENERAL NOTES

- 1.MODULES ARE LISTED UNDER UL 61730 AND CONFORM TO THE STANDARDS.
- 2.INVERTERS ARE LISTED UNDER UL 1741 AND CONFORM TO THE STANDARDS.
- 3.DRAWINGS ARE DIAGRAMMATIC, INDICATING GENERAL ARRANGEMENT OF THE PV SYSTEM AND THE ACTUAL SITE CONDITION MIGHT VARY.
- 4.WORKING CLEARANCES AROUND THE NEW PV ELECTRICAL EQUIPMENT WILL BE MAINTAINED IN ACCORDANCE WITH NEC 110.26.
- 5.ALL GROUND WIRING CONNECTED TO THE MAIN SERVICE GROUNDING IN MAIN SERVICE PANEL/ SERVICE EQUIPMENT.
- 6.ALL CONDUCTORS SHALL BE 600V, 75°C STANDARD COPPER UNLESS OTHERWISE NOTED.
- 7.WHEN REQUIRED, A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
- 8.THE SYSTEM WILL NOT BE INTERCONNECTED BY THE CONTRACTOR UNTIL APPROVAL FROM THE LOCAL JURISDICTION AND/OR THE UTILITY.
- 9.ROOF ACCESS POINT SHALL BE LOCATED IN AREAS THAT DO NOT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREES, WIRES OR SIGNS.
- 10.PV ARRAY COMBINER/JUNCTION BOX PROVIDES TRANSITION FROM ARRAY WIRING TO CONDUIT WIRING

PAUL ODOM - 13.430kW DC, 10.000kW AC

SITE PLAN LAYOUT

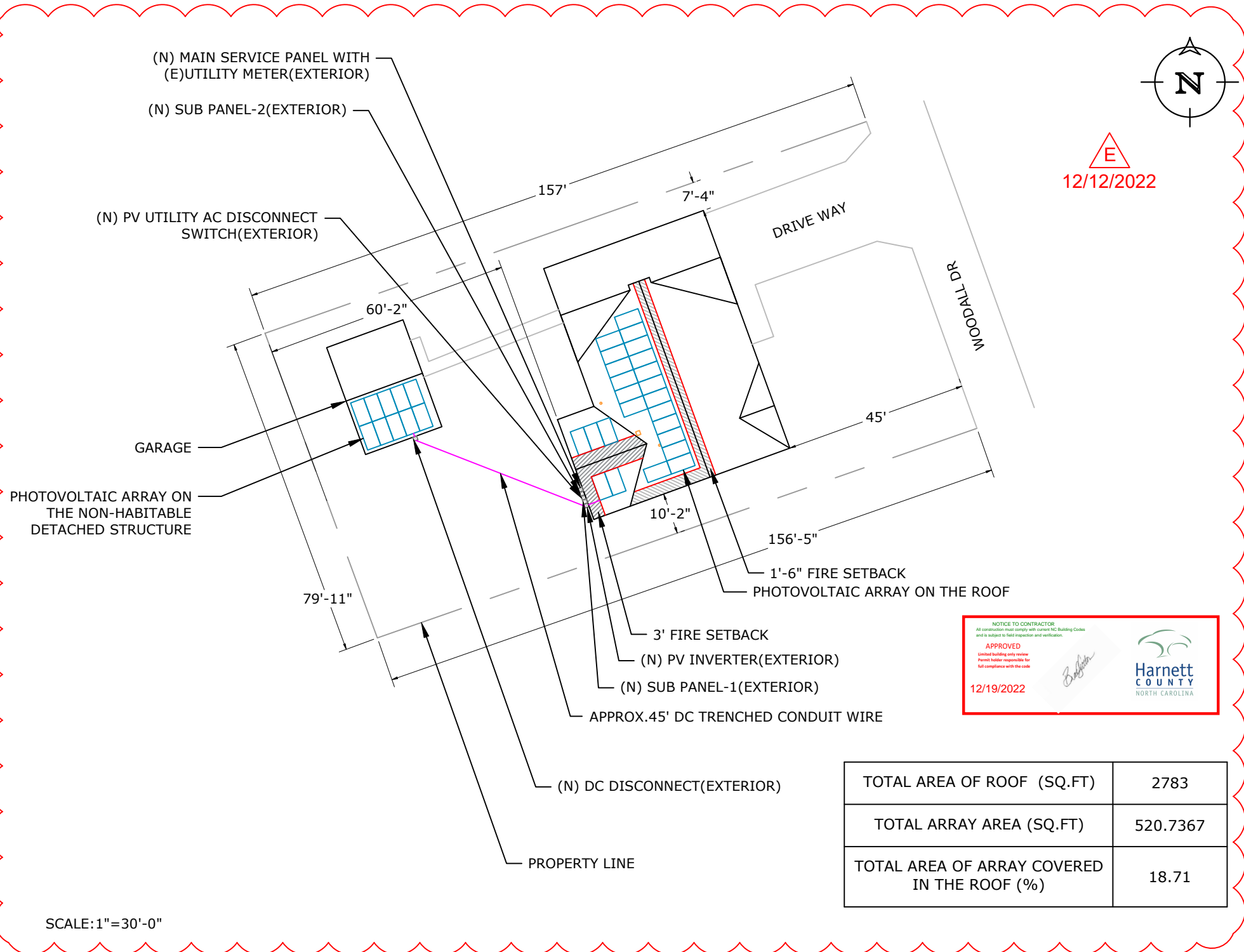
NOTE: NO GATE AND FENCE
 NOTE: PV SYSTEM TO BE INSTALLED ON DETACHED NON-HABITABLE STRUCTURE.

APPLICABLE CODES

- NORTH CAROLINA ELECTRIC CODE:NCEC 2017
- NORTH CAROLINA FIRE CODE:NCFC 2018
- NORTH CAROLINA BUILDING CODE:NCBC 2018
- NORTH CAROLINA RESIDENTIAL CODE: NCRC 2018

ENGINEERING SCOPE OF WORK

1. ILLUMINE INDUSTRIES INC. HAS ONLY PROVIDED DRAFTING SERVICES FOR THE PERMIT DRAWINGS. NO ACTUAL ENGINEERING WORK, ENGINEERING REVIEW OR ENGINEERING. APPROVAL HAS BEEN CONDUCTED BY ILLUMINE INDUSTRIES INC UNLESS NOTED OTHERWISE.
2. WHEN A PROFESSIONAL ENGINEER APPROVES AND SEALS THE DESIGN FOR COMPONENTS OF THEIR RESPECTIVE DISCIPLINE (STRUCTURAL/ELECTRICAL) SHOWN ON THESE PERMIT DRAWINGS, HE/SHE:
 - a. TAKES FULL DIRECT CONTROL OF THE ENGINEERED DESIGN.
 - b. IS GIVEN ACCESS TO PERSONALLY SUPERVISE AND RECTIFY ANY ASPECT OF THE ENGINEERED DESIGN.
 - c. HAS FULLY ACCEPTED RESPONSIBILITY FOR THE ENGINEERED DESIGN.



E
 12/12/2022

NOTICE TO CONTRACTOR
 All construction must comply with current NC Building Codes and is subject to field inspection and verification.
APPROVED
 Limited liability only review.
 Permit holder responsible for full compliance with the code.
 12/19/2022
 Harnett COUNTY NORTH CAROLINA

TOTAL AREA OF ROOF (SQ.FT)	2783
TOTAL ARRAY AREA (SQ.FT)	520.7367
TOTAL AREA OF ARRAY COVERED IN THE ROOF (%)	18.71

SCALE:1"=30'-0"

VICINITY MAP



ADDRESS: 525W, BASELINE RD
 MESA AZ,85210
 LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM
 ADDRESS:104 WOODALL DR, ERWIN, NC 28339
 35.320226, -78.667743
 APN: 060-597-020-218
 AHJ:NC-TOWN OF ERWIN
 UTILITY:DUKE ENERGY
 PRN NUMBER:TPS-40595



COVER PAGE

DRAFTED BY:
 KRISHNAN A.N.
 QC'ED BY:
 RAJ KUMAR K.B.
 SCALE:AS NOTED
 DATE:12/12/2022

PAPER SIZE:17"X11"
 REV:E
 T-01

INSTALLATION NOTES

1. STRUCTURAL ROOF MEMBER LOCATIONS ARE ESTIMATED AND SHOULD BE LOCATED AND VERIFIED BY THE CONTRACTOR WHEN LAG BOLT PENETRATION OR MECHANICAL ATTACHMENT TO THE STRUCTURE IS REQUIRED.
2. ROOFTOP PENETRATIONS FOR SOLAR RACKING WILL BE COMPLETED AND SEALED WITH APPROVED SEALANT PER CODE BY A LICENSED CONTRACTOR.
3. LAGS MUST HAVE A MINIMUM 2.5" THREAD EMBEDMENT INTO THE STRUCTURAL MEMBER.
4. ALL PV RACKING ATTACHMENTS SHALL BE STAGGERED BY ROW BETWEEN THE ROOF FRAMING MEMBERS AS NECESSARY.
5. ROOF MOUNTED STANDARD RAIL REQUIRES ONE THERMAL EXPANSION GAP FOR EVERY RUN OF RAIL GREATER THAN 40'.
6. ALL CONDUCTORS AND CONDUITS ON THE ROOF SHALL BE MINIMUM 7/8" ABOVE THE ROOF SURFACE (INCLUDING CABLES UNDERNEATH MODULES AND RACKING).
7. THE PV INSTALLATION SHALL NOT OBSTRUCT ANY PLUMBING, MECHANICAL OR BUILDING ROOF VENTS.

ROOF ACCESS PATHWAYS AND SETBACKS:

1204.2.1 SOLAR PHOTOVOLTAIC SYSTEMS FOR GROUP R-3 BUILDINGS. SOLAR PHOTOVOLTAIC SYSTEMS FOR GROUP R-3 BUILDINGS SHALL COMPLY WITH SECTIONS 1204.2.1.1 THROUGH 1204.2.1.3.

EXCEPTIONS:

1. THESE REQUIREMENTS SHALL NOT APPLY TO STRUCTURES DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE INTERNATIONAL RESIDENTIAL CODE.

2. THESE REQUIREMENTS SHALL NOT APPLY TO ROOFS WITH SLOPES OF 2 UNITS VERTICAL IN 12 UNITS HORIZONTAL OR LESS.

1204.2.1.1 PATHWAYS TO RIDGE. NOT FEWER THAN TWO 36-INCH-WIDE (914 MM) PATHWAYS ON SEPARATE ROOF PLANES, FROM LOWEST ROOF EDGE TO RIDGE, SHALL BE PROVIDED ON ALL BUILDINGS. NOT FEWER THAN ONE PATHWAY SHALL BE PROVIDED ON THE STREET OR DRIVEWAY SIDE OF THE ROOF. FOR EACH ROOF PLANE WITH A PHOTOVOLTAIC ARRAY, NOT FEWER THAN ONE 36-INCH-WIDE (914 MM) PATHWAY FROM LOWEST ROOF EDGE TO RIDGE SHALL BE PROVIDED ON THE SAME ROOF PLANE AS THE PHOTOVOLTAIC ARRAY, ON AN ADJACENT ROOF PLANE OR STRADDLING THE SAME AND ADJACENT ROOF PLANES

1204.2.1.2 SETBACKS AT RIDGE. FOR PHOTOVOLTAIC ARRAYS OCCUPYING 33 PERCENT OR LESS OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 18 INCHES (457 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE. FOR PHOTOVOLTAIC ARRAYS OCCUPYING MORE THAN 33 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 36 INCHES (457 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.

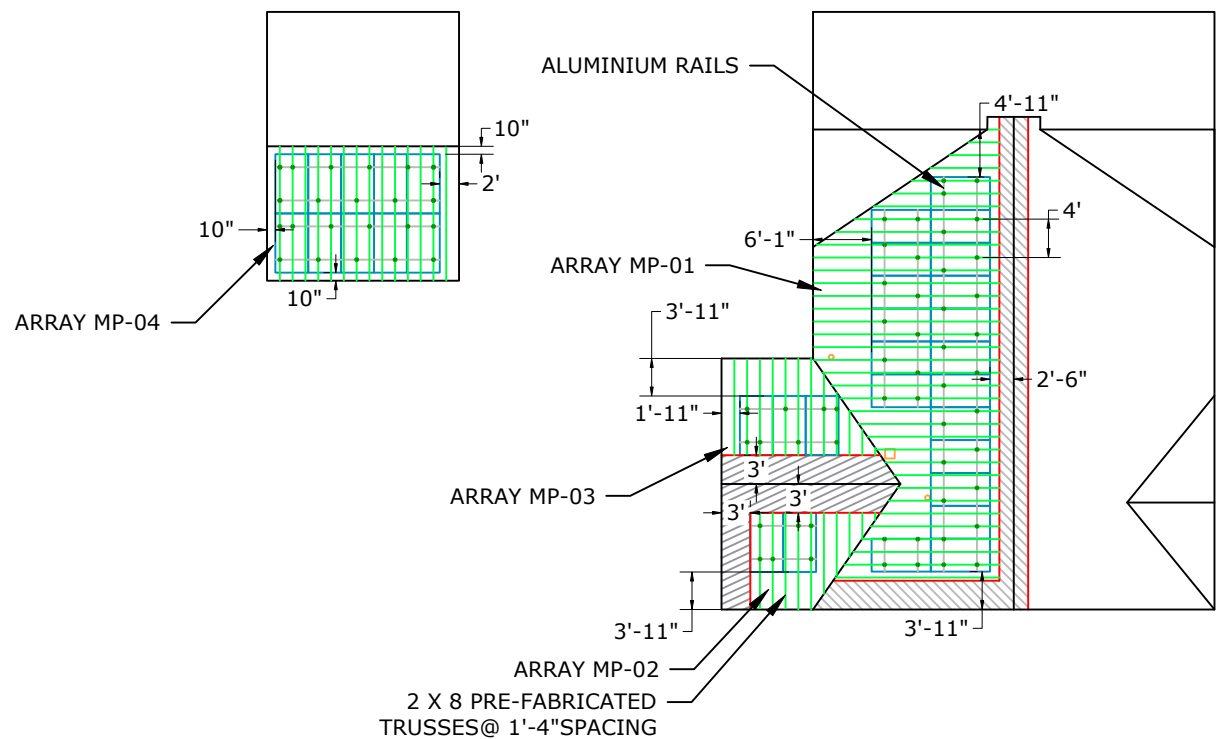
1204.2.2 EMERGENCY ESCAPE AND RESCUE OPENINGS. PANELS AND MODULES INSTALLED ON GROUP R-3 BUILDINGS SHALL NOT BE PLACED ON THE PORTION OF A ROOF THAT IS BELOW AN EMERGENCY ESCAPE AND RESCUE OPENING. A PATHWAY OF NOT LESS THAN 36 INCHES (914 MM) WIDE SHALL BE PROVIDED TO THE EMERGENCY ESCAPE AND RESCUE OPENING

1204.2.1.3 ALTERNATIVE SETBACKS AT RIDGE. WHERE AN AUTOMATIC SPRINKLER SYSTEM IS INSTALLED WITHIN THE DWELLING IN ACCORDANCE WITH SECTION 903.3.1.3, SETBACKS AT THE RIDGE SHALL CONFORM TO ONE OF THE FOLLOWING:

1. FOR PHOTOVOLTAIC ARRAYS OCCUPYING 66 PERCENT OR LESS OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 18 INCHES (457 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.
2. FOR PHOTOVOLTAIC ARRAYS OCCUPYING MORE THAN 66 PERCENT OF THE PLAN VIEW TOTAL ROOF AREA, A SETBACK OF NOT LESS THAN 36 INCHES (914 MM) WIDE IS REQUIRED ON BOTH SIDES OF A HORIZONTAL RIDGE.

SITE INFORMATION - WIND SPEED: 146 MPH AND SNOW LOAD: 10 PSF												
SR. NO	AZIMUTH	PITCH	NO. OF MODULES	ARRAY AREA (SQ. FT.)	ROOF TYPE	ATTACHMENT	ROOF EXPOSURE	FRAME TYPE	FRAME SIZE	FRAME SPACING	MAX RAIL SPAN	OVER HANG
MP-01	258°	47°	19	412.2	COMPOSITION SHINGLE	K2 SPLICE FOOT X	ATTIC	PRE-FABRICATED TRUSSES	2 X 8	1'-4"	4'-0"	1'-6"
MP-02	168°	30°	2	43.4	COMPOSITION SHINGLE	K2 SPLICE FOOT X	ATTIC	PRE-FABRICATED TRUSSES	2 X 8	1'-4"	4'-0"	1'-6"
MP-03	348°	30°	3	65.1	COMPOSITION SHINGLE	K2 SPLICE FOOT X	ATTIC	PRE-FABRICATED TRUSSES	2 X 8	1'-4"	4'-0"	1'-6"
MP-04	168°	24°	10	217.0	COMPOSITION SHINGLE	K2 SPLICE FOOT X	ATTIC	PRE-FABRICATED TRUSSES	2 X 8	1'-4"	4'-0"	1'-6"

NOTE: PENETRATIONS ARE STAGGERED



TOTAL AREA OF ROOF (SQ.FT)	2783
TOTAL ARRAY AREA (SQ.FT)	520.7367
TOTAL AREA OF ARRAY COVERED IN THE ROOF (%)	18.71

SCALE: 1" = 20'-0"



AERIAL VIEW



ADDRESS: 525W, BASELINE RD
MESA AZ, 85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595



MOUNTING DETAIL

DRAFTED BY:
KRISHNAN A.N.
QC'ED BY:
RAJ KUMAR K.B.

PAPER SIZE: 17"X11"

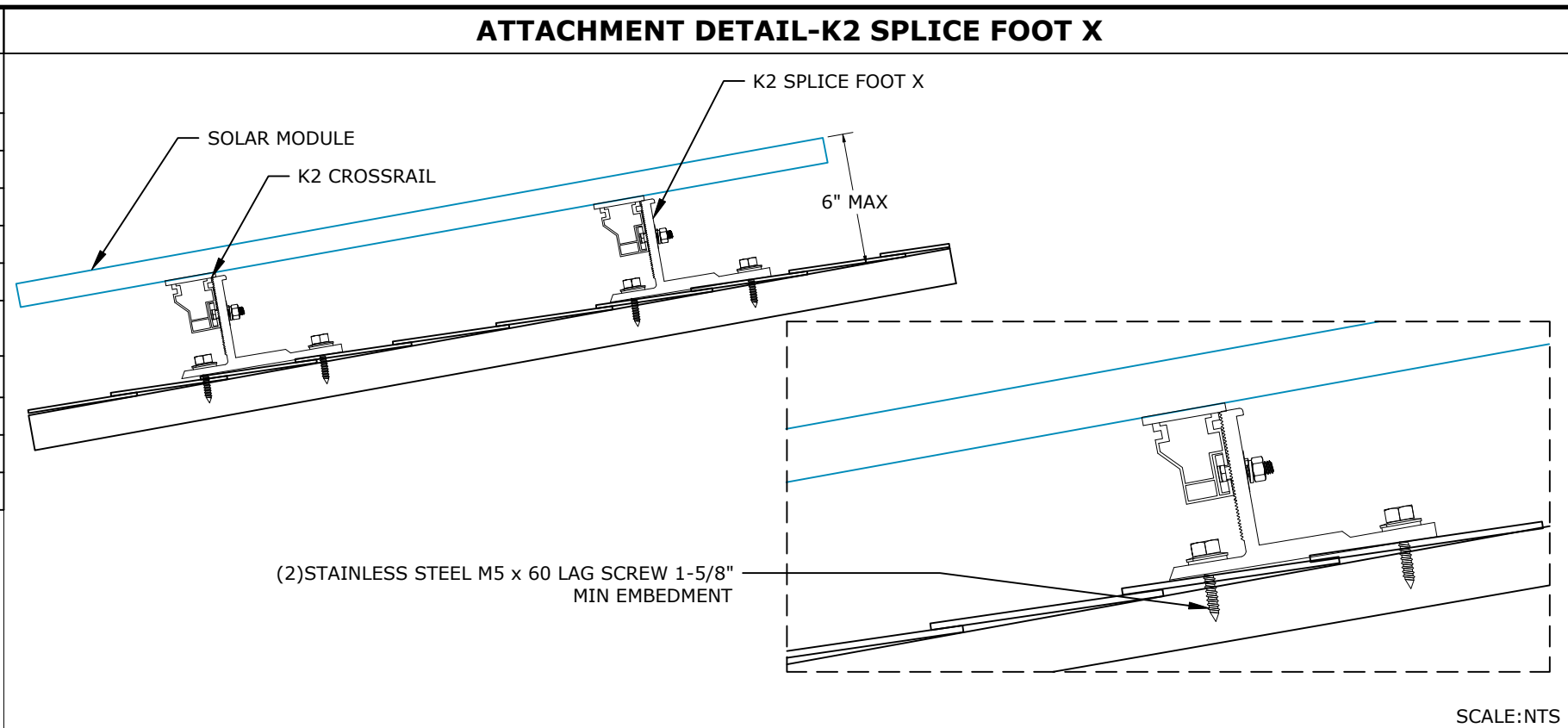
SCALE: AS NOTED

REV: E

DATE: 12/12/2022

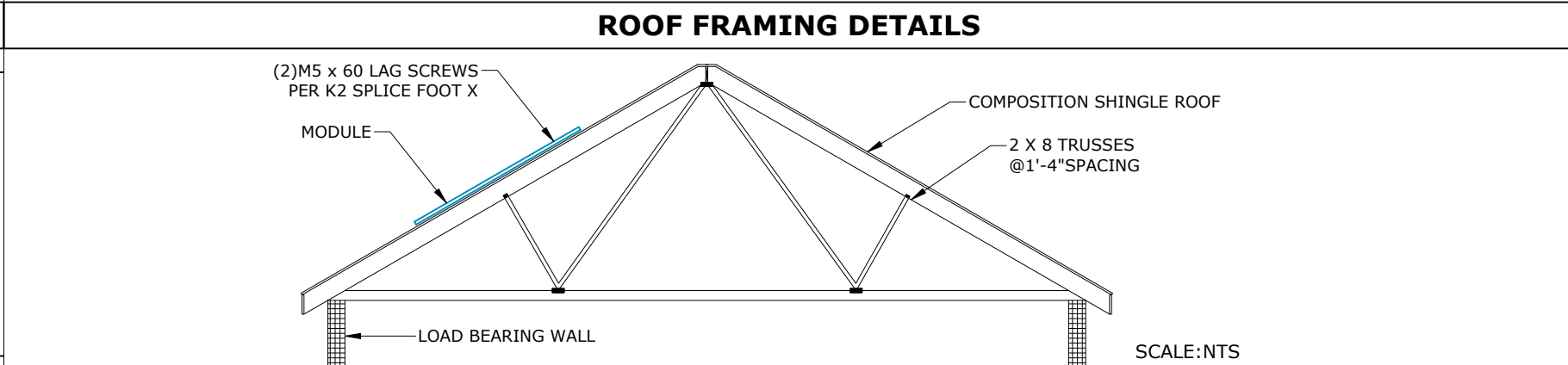
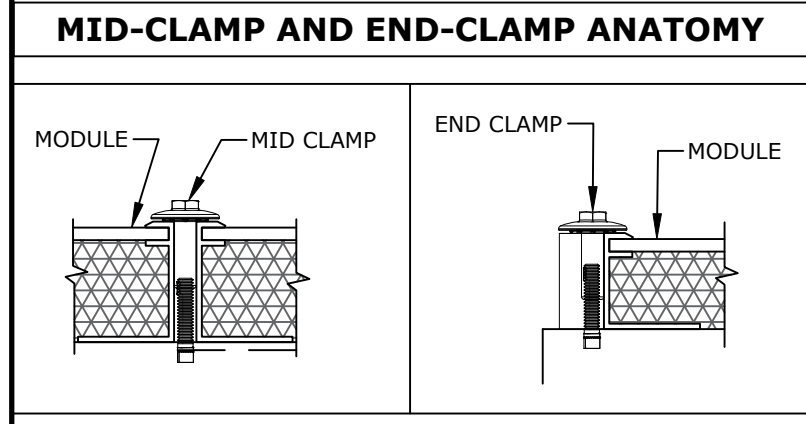
S-01

DEAD LOAD CALCULATIONS			
BOM	QUANTITY	LBS/UNIT	TOTAL WEIGHT (LBS)
MODULES	34	51.8	1761.20
MID-CLAMP	54	0.300	16.20
END-CLAMP	28	0.310	8.68
RAIL LENGTH	229	0.560	128.24
SPLICE BAR	10	0.650	6.50
K2 SPLICE FOOT X	75	1.45	108.75
TOTAL WEIGHT OF THE SYSTEM (LBS)			2029.57
TOTAL ARRAY AREA ON THE ROOF (SQ. FT.)			737.71
WEIGHT PER SQ. FT.(LBS)			2.75
WEIGHT PER PENETRATION (LBS)			27.06



MODULES DATA	
HANWHA Q CELLS Q.PEAK DUO L-G5.2 395W	
MODULE DIMS	79.3"x39.4"x1.38"
LAG SCREWS	(2)M5 x 60 " :1-5/8"MIN EMBEDMENT

UPLIFT CALCULATIONS		
UPLIFT	22131.3	LBS
PULL OUT STRENGTH	46125	LBS
POINT LOADING	23	LBS



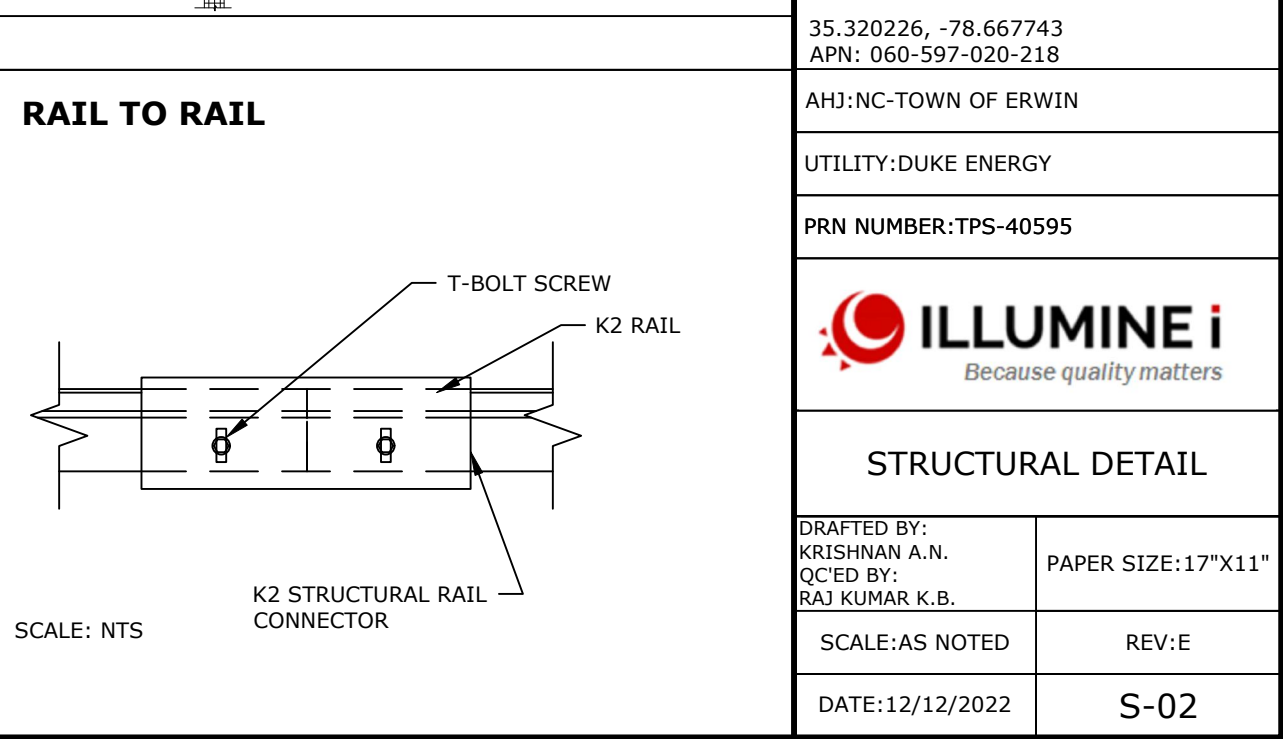
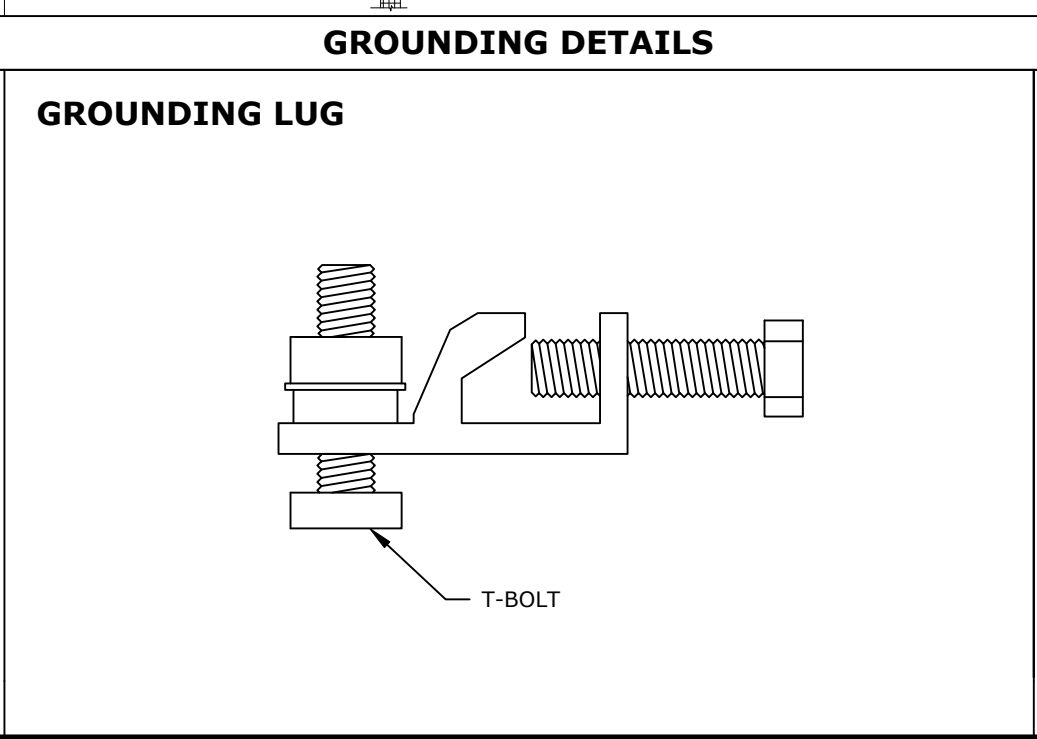
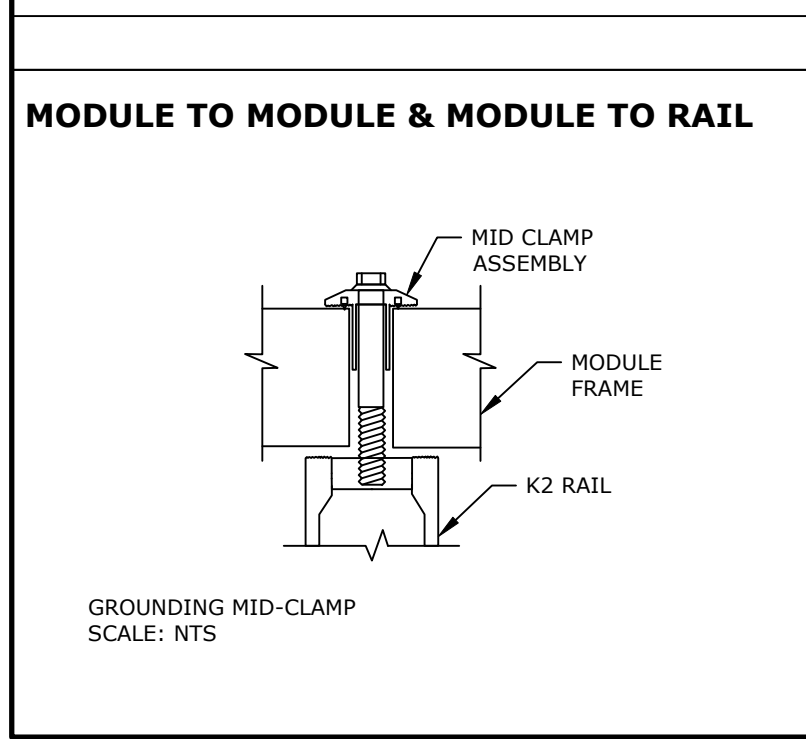
ADDRESS: 525W, BASELINE RD
MESA AZ,85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
APN: 060-597-020-218



AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595

STRUCTURAL DETAIL	
DRAFTED BY: KRISHNAN A.N. QC'ED BY: RAJ KUMAR K.B.	PAPER SIZE: 17"X11"
SCALE: AS NOTED	REV: E
DATE: 12/12/2022	S-02

SINGLE LINE DIAGRAM: DC SYSTEM SIZE - 13430W, AC SYSTEM SIZE - 10000W

ELECTRICAL NOTES

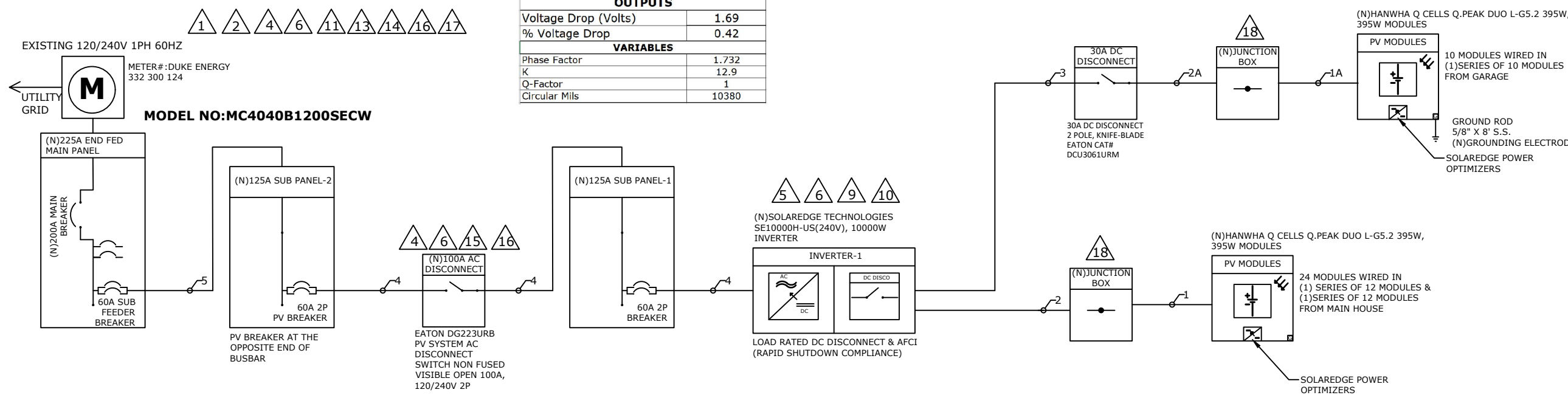
INVERTER-1 SPECIFICATIONS		MODULE SPECIFICATION		OPTIMIZER CHARACTERISTICS		SYSTEM CHARACTERISTICS	
MODEL	SOLAREEDGE TECHNOLOGIES SE10000H-US(240V)	MODEL	HANWHA Q CELLS Q.PEAK DUO L-G5.2 395W	MODEL	P401	DESCRIPTION	INVERTER
POWER RATING	10000W	MODULE POWER @ STC	395W	MIN INPUT VOLTAGE	8 VDC	DC SYSTEM SIZE	13430 W
MAX OUTPUT CURRENT	42A	OPEN CIRCUIT VOLTAGE: Voc	48.74V	MAX INPUT VOLTAGE	60 VDC	INVERTER STRING VOLTAGE: Vmp	400V
CEC WEIGHTED EFFICIENCY	99%	MAX POWER VOLTAGE: Vmp	40.71V	MAX INPUT CURRENT	11.75 ADC	MAX INVERTER SYSTEM VOLTAGE: Voc	480V
MAX INPUT CURRENT	27A	SHORT CIRCUIT CURRENT: Isc	10.19A	MAX OUTPUT CURRENT	15 ADC	MAX SHORT CIRCUIT CURRENT	15A
MAX DC VOLTAGE	480V	MAX POWER CURRENT: Imp	9.70A			OPERATING CURRENT	11.85A

- CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 310.10(D).
- CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC 310.10(C).
- MAXIMUM DC/AC VOLTAGE DROP SHALL BE NO MORE THAN 2%.
- ALL CONDUCTORS SHALL BE IN CONDUIT UNLESS OTHERWISE NOTED.
- BREAKER/FUSE SIZES PER NEC 240.
- AC EQUIPMENT GROUNDING CONDUCTOR SIZED PER NEC 250.122.
- AMBIENT TEMPERATURE CORRECTION FACTOR IS BASED ON NEC 690.31(A).
- AMBIENT TEMPERATURE ADJUSTMENT FACTOR IS BASED ON NEC 310.15(B)(2).
- MAX SYSTEM VOLTAGE CORRECTION IS PER NEC 690.7.
- CONDUCTORS ARE SIZED PER NEC TABLE 310.15(B)(16).

DC VOLTAGE DROP CALCULATIONS

Select Material	Cu
Select Wire Size	10
Select Conduit Type	PVC
Select Voltage & Phase	400
Enter Distance to Load (ft)	45
Enter Load (Amps)	18.75
OUTPUTS	
Voltage Drop (Volts)	1.69
% Voltage Drop	0.42
VARIABLES	
Phase Factor	1.732
K	12.9
Q-Factor	1
Circular Mils	10380

MAIN PANEL UPGRADE: REPLACE EXISTING MAIN SERVICE PANEL WITH NEW 225/200A MAIN PANEL



ADDRESS: 525W, BASELINE RD
MESA AZ, 85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM
ADDRESS: 104 WOODALL DR, ERWIN, NC 28339
35.320226, -78.667743
APN: 060-597-020-218
AHJ: NC-TOWN OF ERWIN
UTILITY: DUKE ENERGY
PRN NUMBER: TPS-40595



SINGLE LINE DIAGRAM

DRAFTED BY: KRISHNAN A.N.
QC'ED BY: RAJ KUMAR K.B.
PAPER SIZE: 17"X11"
SCALE: AS NOTED
REV: E
DATE: 12/12/2022
E-01

CONDUIT SCHEDULE

TAG ID	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	NONE	(4) 10AWG PV WIRE	NONE	(1) 6AWG BARE COPPER
1A	NONE	(2) 10AWG PV WIRE	NONE	(1) 6AWG BARE COPPER
2	3/4"EMT	(4) 10AWG THHN/THWN-2	NONE	(1) 10AWG THHN/THWN-2
2A	3/4"EMT	(2) 10AWG THHN/THWN-2	NONE	(1) 10AWG THHN/THWN-2
3	1-1/4" SCH 40 PVC (BELOW GROUND) 3/4" SCH 80 PVC (ABOVE GROUND)	(2) 10AWG THHN/THWN-2	NONE	(1) 10AWG THHN/THWN-2
4	3/4"EMT	(2) 6AWG THHN/THWN-2	(1) 6AWG THHN/THWN-2	(1) 10AWG THHN/THWN-2
5	1"EMT	(2) 4AWG THHN/THWN-2	(1) 4AWG THHN/THWN-2	(1) 6AWG THHN/THWN-2

NOTE:
SUB PANEL RATING: 125A, SUB FEEDER BREAKER RATING: 60A
120% RULE: (125A x 1.2) - 60A = 90A => ALLOWABLE BACKFEED IS 90A

OCPD CALCULATIONS:
INVERTER OVERCURRENT PROTECTION = INVERTER O/P I X CONTINUOUS LOAD (1.25)
= 42 x 1.25 = 52.5A => PV BREAKER = 60A
ALLOWABLE BACKFEED 90A => 60A PV BREAKER

THE DESIGNED INTERCONNECTION MEETS THE 705.12(B)(2) REQUIREMENTS.

E
12/12/2022

THREE LINE DIAGRAM: DC SYSTEM SIZE - 13430W, AC SYSTEM SIZE - 10000W

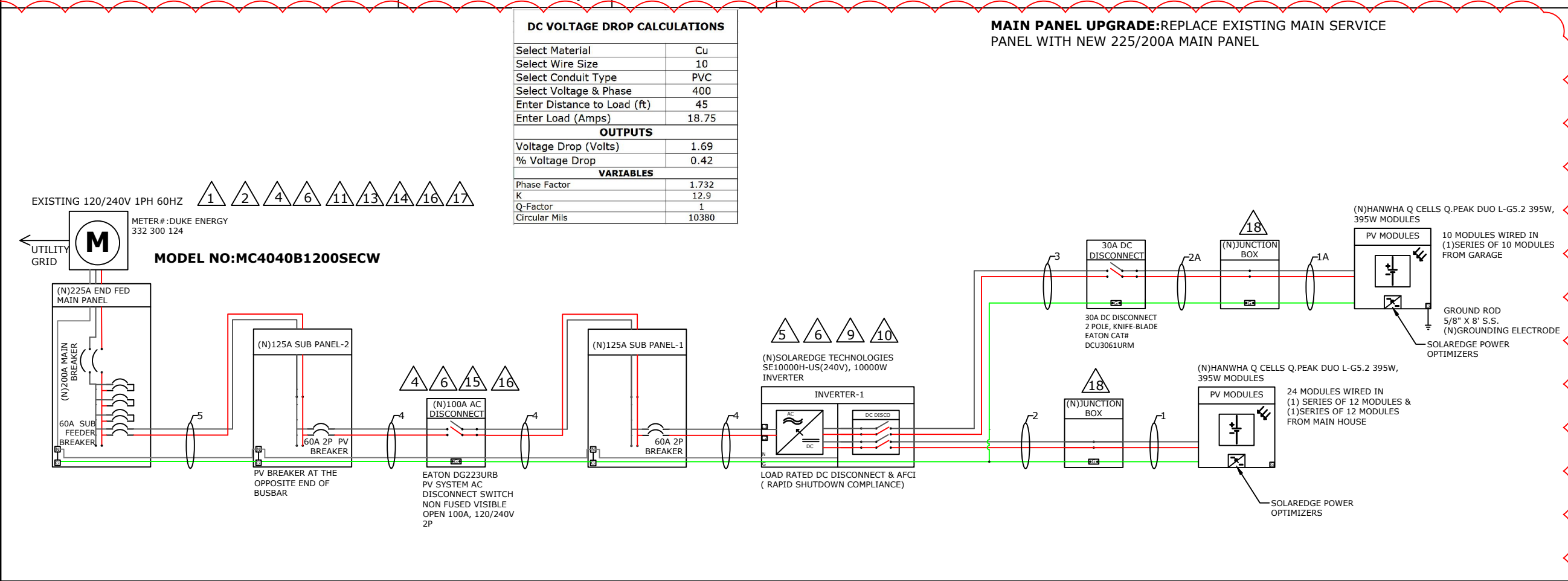
ELECTRICAL NOTES

INVERTER-1 SPECIFICATIONS		MODULE SPECIFICATION		OPTIMIZER CHARACTERISTICS		SYSTEM CHARACTERISTICS	
MODEL	SOLAREEDGE TECHNOLOGIES SE10000H-US(240V)	MODEL	HANWHA Q CELLS Q.PEAK DUO L-G5.2 395W	MODEL	P401	DESCRIPTION	INVERTER
POWER RATING	10000W	MODULE POWER @ STC	395W	MIN INPUT VOLTAGE	8 VDC	DC SYSTEM SIZE	13430 W
MAX OUTPUT CURRENT	42A	OPEN CIRCUIT VOLTAGE: Voc	48.74V	MAX INPUT VOLTAGE	60 VDC	INVERTER STRING VOLTAGE: Vmp	400V
CEC WEIGHTED EFFICIENCY	99%	MAX POWER VOLTAGE: Vmp	40.71V	MAX INPUT CURRENT	11.75 ADC	MAX INVERTER SYSTEM VOLTAGE: Voc	480V
MAX INPUT CURRENT	27A	SHORT CIRCUIT CURRENT: Isc	10.19A	MAX OUTPUT CURRENT	15 ADC	MAX SHORT CIRCUIT CURRENT	15A
MAX DC VOLTAGE	480V	MAX POWER CURRENT: Imp	9.70A			OPERATING CURRENT	11.85A

1. CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER NEC 310.10(D).
2. CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER NEC 310.10(C).
3. MAXIMUM DC/AC VOLTAGE DROP SHALL BE NO MORE THAN 2%.
4. ALL CONDUCTORS SHALL BE IN CONDUIT UNLESS OTHERWISE NOTED.
5. BREAKER/FUSE SIZES PER NEC 240.
6. AC EQUIPMENT GROUNDING CONDUCTOR SIZED PER NEC 250.122.
7. AMBIENT TEMPERATURE CORRECTION FACTOR IS BASED ON NEC 690.31(A).
8. AMBIENT TEMPERATURE ADJUSTMENT FACTOR IS BASED ON NEC 310.15(B)(2).
9. MAX SYSTEM VOLTAGE CORRECTION IS PER NEC 690.7.
10. CONDUCTORS ARE SIZED PER NEC TABLE 310.15(B)(16).

DC VOLTAGE DROP CALCULATIONS	
Select Material	Cu
Select Wire Size	10
Select Conduit Type	PVC
Select Voltage & Phase	400
Enter Distance to Load (ft)	45
Enter Load (Amps)	18.75
OUTPUTS	
Voltage Drop (Volts)	1.69
% Voltage Drop	0.42
VARIABLES	
Phase Factor	1.732
K	12.9
Q-Factor	1
Circular Mills	10380

MAIN PANEL UPGRADE: REPLACE EXISTING MAIN SERVICE PANEL WITH NEW 225/200A MAIN PANEL



ADDRESS: 525W, BASELINE RD
MESA AZ, 85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595

CONDUIT SCHEDULE				
TAG ID	CONDUIT SIZE	CONDUCTOR	NEUTRAL	GROUND
1	NONE	(4) 10AWG PV WIRE	NONE	(1) 6AWG BARE COPPER
1A	NONE	(2) 10AWG PV WIRE	NONE	(1) 6AWG BARE COPPER
2	3/4" EMT	(4) 10AWG THHN/THWN-2	NONE	(1) 10AWG THHN/THWN-2
2A	3/4" EMT	(2) 10AWG THHN/THWN-2	NONE	(1) 10AWG THHN/THWN-2
3	1-1/4" SCH 40 PVC (BELOW GROUND) 3/4" SCH 80 PVC (ABOVE GROUND)	(2) 10AWG THHN/THWN-2	NONE	(1) 10AWG THHN/THWN-2
4	3/4" EMT	(2) 6AWG THHN/THWN-2	(1) 6AWG THHN/THWN-2	(1) 10AWG THHN/THWN-2
5	1" EMT	(2) 4AWG THHN/THWN-2	(1) 4AWG THHN/THWN-2	(1) 6AWG THHN/THWN-2

NOTE:
SUB PANEL RATING: 125A, SUB FEEDER BREAKER RATING: 60A
120% RULE: (125A x 1.2) - 60A = 90A => ALLOWABLE BACKFEED IS 90A

OCPD CALCULATIONS:
INVERTER OVERCURRENT PROTECTION = INVERTER O/P I X CONTINUOUS LOAD (1.25)
= 42 x 1.25 = 52.5A => PV BREAKER = 60A
ALLOWABLE BACKFEED 90A => 60A PV BREAKER
THE DESIGNED INTERCONNECTION MEETS THE 705.12(B)(2) REQUIREMENTS.

E
12/12/2022

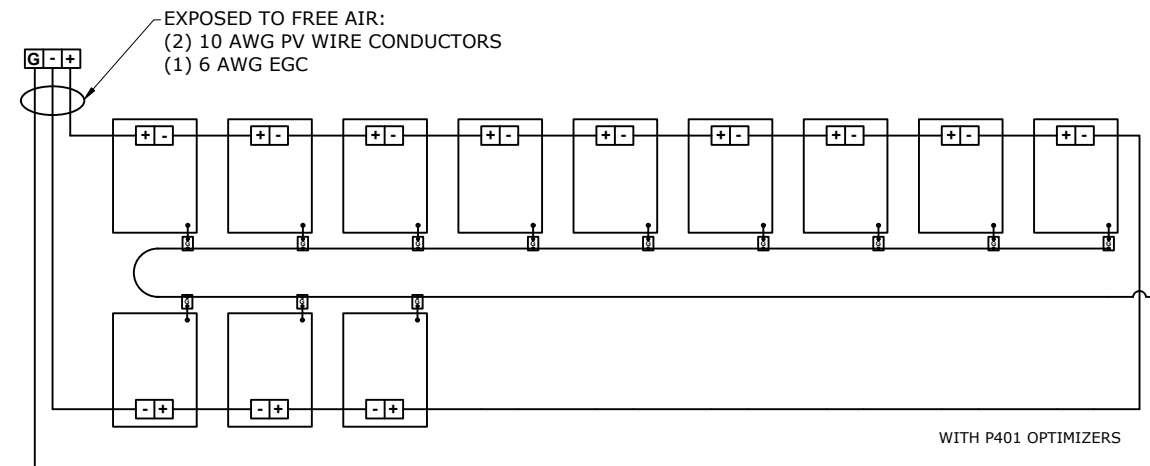


THREE LINE DIAGRAM

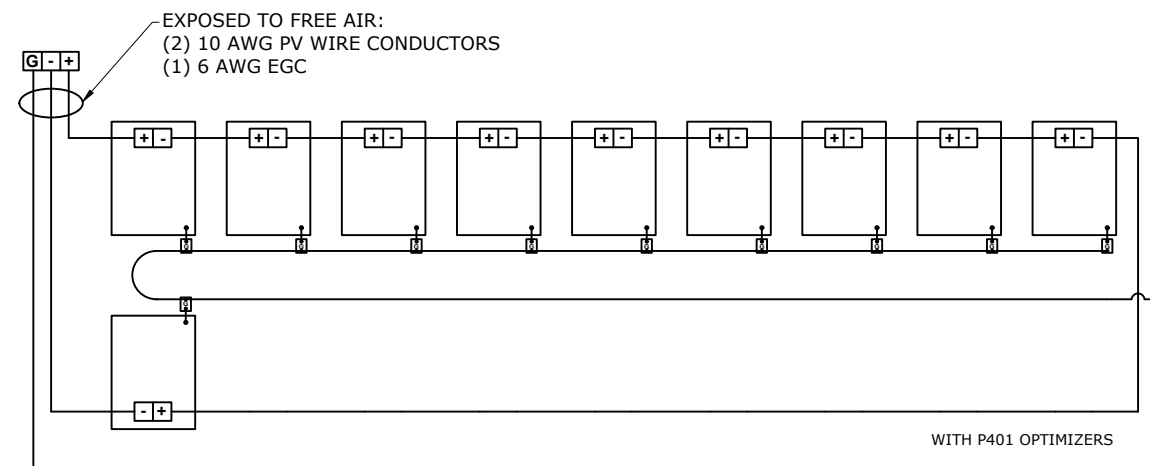
DRAFTED BY: KRISHNAN A.N.	PAPER SIZE: 17"X11"
QC'ED BY: RAJ KUMAR K.B.	
SCALE: AS NOTED	REV: E
DATE: 12/12/2022	E-02

STRING WIRING DIAGRAM

2 STRINGS OF 12 MODULES
ON MAIN HOUSE



1 STRING OF 10 MODULES
ON GARAGE



E
12/12/2022



ADDRESS: 525W, BASELINE RD
MESA AZ,85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595



STRING WIRING DIAGRAM & ELECTRICAL CALCULATION

DRAFTED BY:
KRISHNAN A.N.
QC'ED BY:
RAJ KUMAR K.B.

PAPER SIZE: 17"X11"

SCALE: AS NOTED

REV: E

DATE: 12/12/2022

E-03

ELECTRICAL CALCULATION

DC WIRE SIZING CALCULATIONS BASED ON THE FOLLOWING EQUATIONS>>

- REQUIRED CONDUCTOR AMPACITY: $125\% \times I_{sc}(A) \times \text{\#OF PARALLEL STRINGS} = \text{MAX CURRENT PER 690.8(A)(1)} \times 125\% = \text{MAX CURRENT PER 690.8(B)(1)}$
- CORRECTED AMPACITY CALCULATIONS: $\text{AMPACITY} \times \text{TEMPERATURE DERATE FACTOR} \times \text{CONDUIT FILL DERATE} = \text{DERATED CONDUCTOR AMPACITY PER 690.8(B)(2)}$
- DERATE CONDUCTOR AMPACITY CHECK: $\text{MAX CURRENT PER 690.8(A)(1)} < \text{DERATED CONDUCTOR AMPACITY}$

AC WIRE SIZING CALCULATIONS BASED ON THE FOLLOWING EQUATIONS>>

- REQUIRED CONDUCTOR AMPACITY: $\text{INVERTER OUTPUT CURRENT} \times \text{\#OF INVERTERS} = \text{MAX CURRENT PER 690.8(A)(3)} \times 125\% = \text{MAX CURRENT PER 690.8(B)(1)}$
- CORRECTED AMPACITY CALCULATIONS: $\text{AMPACITY} \times \text{TEMPERATURE DERATE FACTOR} \times \text{CONDUIT FILL DERATE} = \text{DERATED CONDUCTOR AMPACITY PER 690.8(B)(2)}$
- DERATED CONDUCTOR AMPACITY CHECK: $\text{MAX CURRENT PER 690.8(A)(3)} < \text{DERATED CONDUCTOR AMPACITY}$

DC WIRE CALCULATIONS:- MATERIAL: COPPER & TEMPERATURE RATING: 90°C

TAG ID	REQUIRED CONDUCTOR AMPACITY						CORRECTED AMPACITY CALCULATION						DERATED CONDUCTOR AMPACITY CHECK								
1,1A	1	X	15	X	1	=	15	X	1.25	=	18.75A	40	X	0.71	X	0.8	=	22.72A	18.75A	<	22.72A
2,2A	1	X	15	X	1	=	15	X	1.25	=	18.75A	40	X	0.71	X	0.8	=	22.72A	18.75A	<	22.72A
3	1	X	15	X	1	=	15	X	1.25	=	18.75A	40	X	0.71	X	0.8	=	22.72A	18.75A	<	22.72A

AC WIRE CALCULATIONS:- MATERIAL: COPPER & TEMPERATURE RATING: 90°C

TAG ID	REQUIRED CONDUCTOR AMPACITY						CORRECTED AMPACITY CALCULATION						DERATED CONDUCTOR AMPACITY CHECK						
4	42	X	1	=	42	X	1.25	=	52.50A	75	X	0.87	X	1	=	82.65A	52.50A	<	82.65A
5	42	X	1	=	42	X	1.25	=	52.50A	95	X	0.87	X	1	=	82.65A	52.50A	<	82.65A

WARNING PLACARDS

1  **CAUTION**
PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION
BACKFED BREAKER [PER CODE: NEC 705.12(4)]

2  **WARNING**
INVERTER OUTPUT CONNECTION:
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

LABEL LOCATION: BACKFED BREAKER
[PER CODE: 2017 NEC 705.12(B)(2)(3)(b)]

3 **WARNING**
A GENERATION SOURCE IS CONNECTED TO THE SUPPLY
(UTILITY) SIDE OF THE MAIN SERVICE DISCONNECT. FOLLOW
THE PROPER LOCK-OUT/TAG-OUT PROCEDURES TO ENSURE
THE PHOTOVOLTAIC SYSTEM UTILITY DISCONNECT SWITCH IS
OPENED PRIOR TO PERFORMING WORK ON THIS DEVICE


LABEL LOCATION: (IF APPLICABLE) SUPPLY SIDE TAP LOAD PANEL
[PER CODE: UTILITY]

4 **PHOTOVOLTAIC AC DISCONNECT**
RATED AC OPERATING CURRENT 42.00 A
AC NOMINAL OPERATING VOLTAGE 240 VAC

LABEL LOCATION: MAIN SERVICE DISCONNECT,
AC DISCONNECT(S) & SERVICE PANEL
[PER CODE: NEC 690.13(B)]

5 **RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM**

LABEL LOCATION: INVERTER
[PER CODE: NEC 690.56(C)(3)]

6  **WARNING**
ELECTRIC SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY
BE ENERGIZED IN THE OPEN POSITION

LABEL LOCATION: MAIN SERVICE DISCONNECT
AC DISCONNECT, SERVICE PANEL,
AC COMBINER & INVERTER(S)
[PER CODE: NEC 690.13(B)]

7 **PHOTOVOLTAIC
SYSTEM METER**


LABEL LOCATION: DEDICATED KWH METER
[PER CODE: NEC 690.4(B) UTILITY]

8  **WARNING**
PHOTOVOLTAIC SYSTEM
COMBINER PANEL
DO NOT ADD LOADS

LABEL LOCATION: AC COMBINER PANEL
[PER CODE: NEC 690.13(B)]

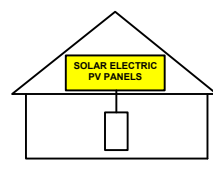
9 **MAXIMUM VOLTAGE: 480 VDC**
MAXIMUM CIRCUIT CURRENT: 45 A
**MAX. RATED OUTPUT CURRENT OF THE
CHARGE CONTROLLER OR
DC-TO-DC-CONVERTER (IF
INSTALLED) 15 A**

LABEL LOCATION: INVERTER
[PER CODE: NEC 690.53]


10  **WARNING**
ELECTRIC SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY
BE ENERGIZED IN THE OPEN POSITION
DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR
MODULES ARE EXPOSED TO SUNLIGHT

LABEL LOCATION
DC DISCONNECT INVERTER, COMBINER BOX
[PER CODE: NEC 690.13(B)]

11 **SOLAR PV SYSTEM EQUIPPED
WITH RAPID SHUTDOWN**
TURN RAPID SHUTDOWN
SWITCH TO THE
"OFF" POSITION TO
SHUT DOWN PV SYSTEM
AND REDUCE
SHOCK HAZARD
IN THE ARRAY



LABEL LOCATION: MAIN SERVICE DISCONNECT
[PER CODE: NEC 690.56(C)(1)(a)]

13  **CAUTION**
DUAL POWER SOURCE
SECOND SOURCE IS
PHOTOVOLTAIC


LABEL LOCATION : MAIN SERVICE DISCONNECT
AC DISCONNECT, SERVICE PANEL,
REVENUE METER & AC COMBINER
[PER CODE: NEC705.12(B)(3)]

14  **WARNING**
INVERTER OUTPUT CONNECTION
DO NOT RELOCATE THIS
OVER-CURRENT DEVICE

LABEL LOCATION : (IF APPLICABLE) SERVICE PANEL
[PER CODE: NEC 705.12(D)(7)]

15 **PHOTOVOLTAIC SYSTEM
UTILITY DISCONNECT SWITCH**

LABEL LOCATION : AC DISCONNECT
[PER CODE: NEC 690.56(C)(3)]

16  **WARNING**
ELECTRIC SHOCK HAZARD
IF GROUND FAULT IS INDICATED ALL NORMALLY
GROUNDED CONDUCTORS MAY BE UNGROUNDED
AND ENERGIZED

LABEL LOCATION
AC DISCONNECT COMBINER BOX SERVICE METER
[PER CODE: NEC 690.5(C)]

17 **PV SOLAR BREAKER**
DO NOT RELOCATE THIS
OVERCURRENT DEVICE

LABEL LOCATION
MAIN SERVICE DISCONNECT & SERVICE PANEL
[PER CODE: NEC 705.12(B)(2)(3)(b)]

18 **WARNING PHOTOVOLTAIC POWER SOURCE**

LABEL LOCATION
DC CONDUIT NO MORE THAN 10FT
[PER CODE: NEC 690.31(G)(3)]



ADDRESS: 525W, BASELINE RD
MESA AZ, 85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC
28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595



WARNING PLACARDS

DRAFTED BY:
KRISHNAN A.N.
QC'ED BY:
RAJ KUMAR K.B.

PAPER SIZE: 17"X11"

SCALE: AS NOTED

REV: E

DATE: 12/12/2022

PL-01

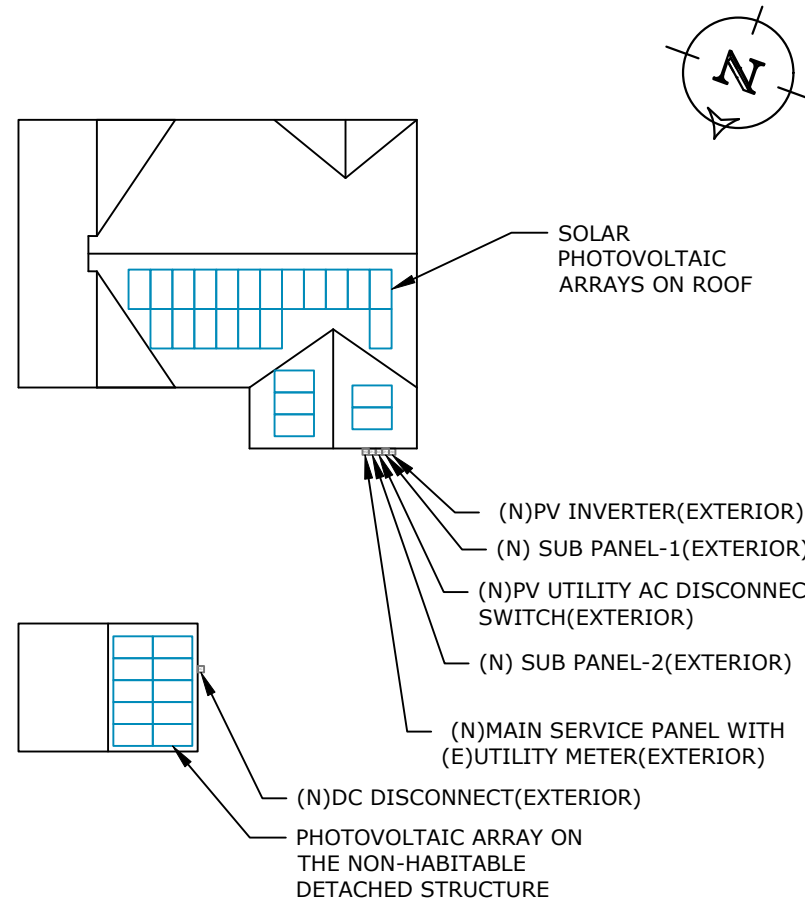
REFLECTIVE AND WEATHER RESISTANCE LABEL REQUIRES CAPITALIZED LETTERS WITH A MINIMUM HEIGHT OF 3/8 INCH, WHITE LETTERS ON RED BACKGROUND LABELS SHALL BE PLACED ON INTERIOR AND EXTERIOR DCCONDUIT, RACEWAYS, ENCLOSURE, AND CABLE ASSEMBLIES EVERY 10 FEET, WITHIN 1 FOOT OF TURNS OR BENDS AND WITHIN 1 FOOT ABOVE AND BELOW PENETRATIONS OF ROOF/ CEILING ASSEMBLIES, WALLS OR BARRIERS.

DIRECTORY PLACARD

CAUTION: MULTIPLE SOURCES OF POWER



POWER TO THIS BUILDING IS ALSO SUPPLIED FROM THE FOLLOWING SOURCES WITH DISCONNECTS LOCATED AS SHOWN



104 WOODALL DR, ERWIN, NC 28339

LABEL LOCATION SERVICE PANEL

PER CODE: NEC 705.10

ALL PLACARDS SHALL BE OF WEATHER PROOF CONSTRUCTION, BACKGROUND ON ALL PLACARDS SHALL BE RED WITH WHITE LETTERING U.O.N.

PLACARD SHALL BE MOUNTED DIRECTLY ON THE EXISTING UTILITY ELECTRICAL SERVICE.

FASTENERS APPROVED BY THE LOCAL JURISDICTION

E
12/12/2022



ADDRESS: 525W, BASELINE RD
MESA AZ,85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595



DIRECTORY PLACARD

DRAFTED BY:
KRISHNAN A.N.
QC'ED BY:
RAJ KUMAR K.B.

PAPER SIZE: 17"X11"

SCALE: AS NOTED

REV: E

DATE: 12/12/2022

PL-02

SAFETY PLANS-1

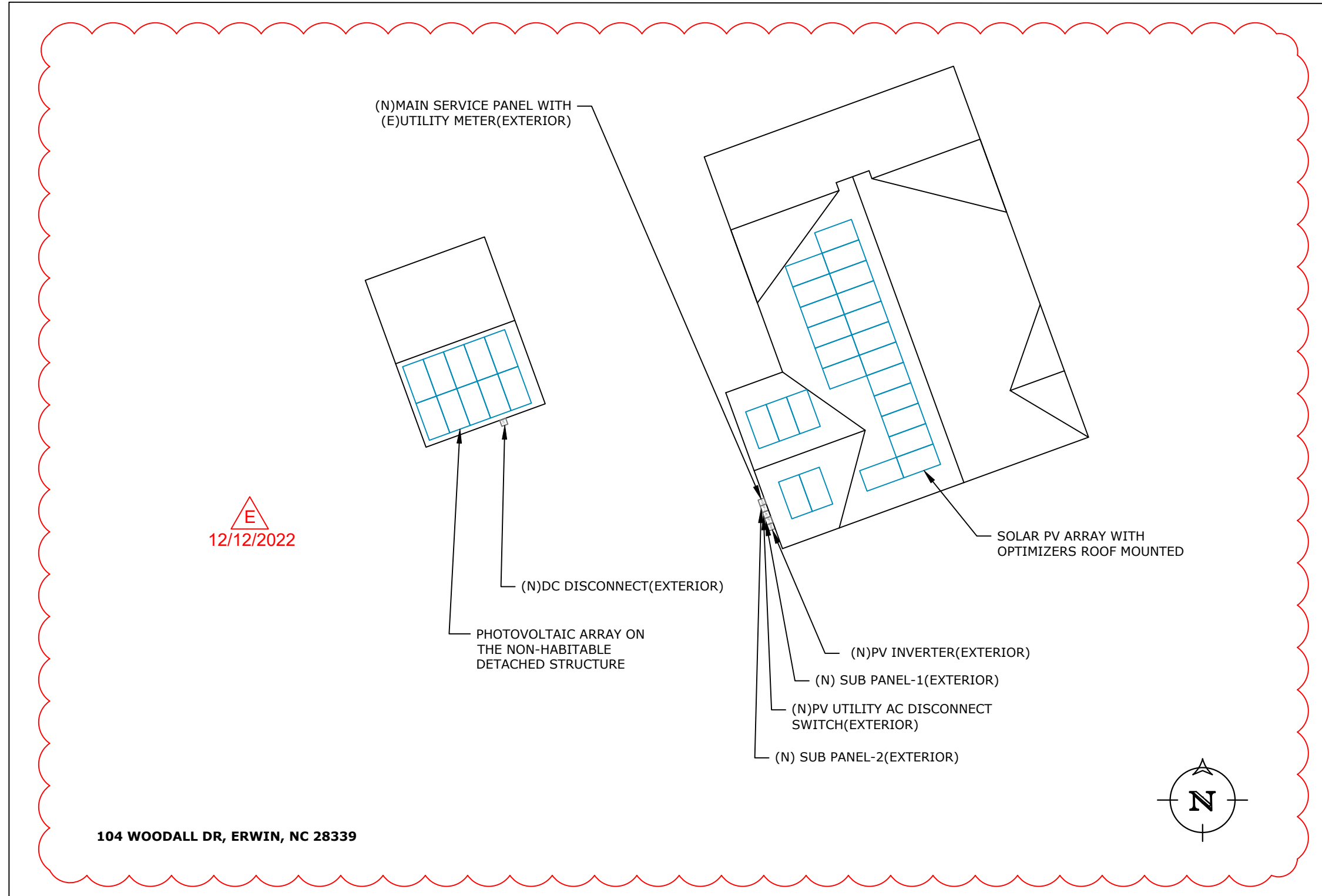
SAFETY PLANS

NOTES:

1. INSTALLERS SHALL DRAW IN DESIGNATED SAFETY AREA AROUND HOME.
2. INSTALLERS SHALL UPDATE NAME ADDRESS AND PHONE NUMBER OF NEAREST.
3. URGENT CARE FACILITY RELATIVE TO THE SITE BEFORE STARTING WORK.

LOCATION OF NEAREST URGENT CARE FACILITY

NAME:
ADDRESS:
PHONE NUMBER:



ADDRESS: 525W, BASELINE RD
MESA AZ,85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS:104 WOODALL DR, ERWIN, NC
28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ:NC-TOWN OF ERWIN

UTILITY:DUKE ENERGY

PRN NUMBER:TPS-40595



SAFETY PLANS-1

DRAFTED BY:
KRISHNAN A.N.
QC'ED BY:
RAJ KUMAR K.B.

PAPER SIZE:17"X11"

SCALE:AS NOTED

REV:E

DATE:12/12/2022

PL-03

SAFETY PLANS-2

SAFETY PLANS

NOTES:

1. INSTALLERS SHALL DRAW IN DESIGNATED SAFETY AREA AROUND HOME.
2. INSTALLERS SHALL UPDATE NAME ADDRESS AND PHONE NUMBER OF NEAREST.
3. URGENT CARE FACILITY RELATIVE TO THE SITE BEFORE STARTING WORK.

LOCATION OF NEAREST URGENT CARE FACILITY

NAME:
ADDRESS:
PHONE NUMBER:

PERSONS COVERED BY THIS JOB SAFETY PLAN

**INJURED AT WORK TODAY?
INITIAL YES OR NO**

PRINT NAME	INITIAL	YES	NO

UNDERGROUND DIG REQUIRED?

YES _____ PERMIT # _____



ADDRESS: 525W, BASELINE RD
MESA AZ,85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS:104 WOODALL DR, ERWIN, NC
28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ:NC-TOWN OF ERWIN

UTILITY:DUKE ENERGY

PRN NUMBER:TPS-40595



SAFETY PLANS-2

DRAFTED BY:
KRISHNAN A.N.
QC'ED BY:
RAJ KUMAR K.B.

PAPER SIZE:17"X11"

SCALE:AS NOTED

REV:E

DATE:12/12/2022

PL-04

SPEC SHEET



Q.PEAK DUO L-G5.2 380-395

Q.ANTUM SOLAR MODULE

The new high-performance module Q.PEAK DUO L-G5.2 is the ideal solution for commercial and utility applications thanks to a combination of its innovative cell technology Q.ANTUM and cutting edge cell interconnection. This 1500V IEC/UL solar module with its 6 busbar cell design ensures superior yields with up to 395Wp while having a very low LCOE.



LOW ELECTRICITY GENERATION COSTS

Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.9%.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID Technology, Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400Pa) and wind loads (2400Pa).



A RELIABLE INVESTMENT

Inclusive 12-year product warranty and 25-year linear performance warranty².



¹ APT test conditions according to IEC/TS 62804-1:2015, method B (-1500V, 168h)
² See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

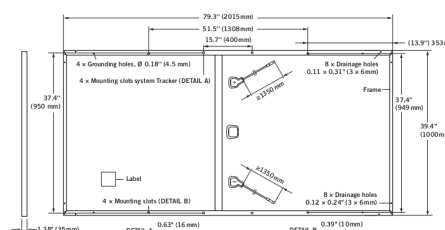


Engineered in Germany



MECHANICAL SPECIFICATION

Format	79.3 in × 39.4 in × 1.38 in (including frame) (2015 mm × 1000 mm × 35 mm)
Weight	51.8 lbs (23.5 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Anodized aluminum
Cell	6 × 24 monocrystalline Q.ANTUM solar half-cells
Junction box	2.76-3.35 in × 1.97-2.76 in × 0.51-0.83 in (70-85 mm × 50-70 mm × 13-21 mm), Protection class IP67, with bypass diodes
Cable	4 mm ² Solar cable; (+) ≥ 53.1 in (1350 mm), (-) ≥ 53.1 in (1350 mm)
Connector	Multi-Contact MC4-EVO2, JMTHY PV-JM601A, IP68 or Renhe O5-6, IP67

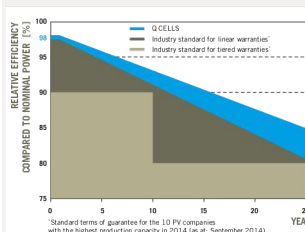


ELECTRICAL CHARACTERISTICS

POWER CLASS	380	385	390	395	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W / -0 W)					
Power at MPP¹	P_{MPP} [W]	380	385	390	395
Short Circuit Current¹	I_{SC} [A]	10.05	10.10	10.14	10.19
Open Circuit Voltage¹	V_{OC} [V]	47.95	48.21	48.48	48.74
Current at MPP	I_{MPP} [A]	9.57	9.61	9.66	9.70
Voltage at MPP	V_{MPP} [V]	39.71	40.05	40.38	40.71
Efficiency¹	η [%]	≥ 18.9	≥ 19.1	≥ 19.4	≥ 19.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ²					
Power at MPP	P_{MPP} [W]	283.9	287.6	291.3	295.1
Short Circuit Current	I_{SC} [A]	8.10	8.14	8.17	8.21
Open Circuit Voltage	V_{OC} [V]	45.12	45.37	45.62	45.87
Current at MPP	I_{MPP} [A]	7.53	7.57	7.60	7.64
Voltage at MPP	V_{MPP} [V]	37.69	38.01	38.33	38.64

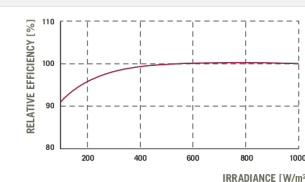
¹Measurement tolerances P_{MPP} ± 3%; I_{SC}, V_{OC} ± 5% at STC: 1000 W/m², 25 ± 2°C, AM 1.5G according to IEC 60904-3 - 7800 W/m², NMOT, spectrum AM 1.5G

Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.54% degradation per year. At least 93.1% of nominal power up to 10 years. At least 85% of nominal power up to 25 years. All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organization of your respective country.

PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25°C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I_{SC}	α [%/K]	+0.04	Temperature Coefficient of V_{OC}	β [%/K]	-0.28
Temperature Coefficient of P_{MPP}	γ [%/K]	-0.37	Normal Operating Module Temperature	NMOT [°F]	109 ± 5.4 (43 ± 3°C)

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{sys}	[V]	1500 (IEC) / 1500 (UL)	Safety Class	II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating	C (IEC) / TYPE 1 (UL)
Max. Design Load, Push / Pull (UL)²	[lbs/ft ²]	75 (3600 Pa) / 33 (1600 Pa)	Permitted module temperature on continuous duty	-40°F up to +185°F (-40°C up to +85°C)
Max. Test Load, Push / Pull (UL)²	[lbs/ft ²]	113 (5400 Pa) / 50 (2400 Pa)	² see installation manual	

QUALIFICATIONS AND CERTIFICATES

UL 1703; CE-compliant; IEC 61215:2016, IEC 61730:2016 application class A



PACKAGING INFORMATION

Number of Modules per Pallet	29
Number of Pallets per 53' Trailer	26
Number of Pallets per 40' High Cube Container	22
Pallet Dimensions (L × W × H)	81.9 in × 45.3 in × 46.7 in (2080 mm × 1150 mm × 1185 mm)
Pallet Weight	1635 lbs (742 kg)

NOTE: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc. 300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us



ADDRESS: 525W, BASELINE RD
 MESA AZ,85210
 LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
 APN: 060-597-020-218

AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595



MODULE SPEC SHEET

DRAFTED BY: KRISHNAN A.N. QC'ED BY: RAJ KUMAR K.B.	PAPER SIZE: 17"X11"
SCALE: AS NOTED	REV: E
DATE: 12/12/2022	SS-01

Single Phase Inverter with HD-Wave Technology

for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US



12-25
YEAR
WARRANTY

INVERTERS

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using the SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014 and 2017, per article 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

solaredge.com



Single Phase Inverter with HD-Wave Technology for North America

SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
APPLICABLE TO INVERTERS WITH PART NUMBER	SEXXXXH-XXXXXBXX4							
OUTPUT								
Rated AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3000	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	-	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5 ^①							Hz
Maximum Continuous Output Current @240V	12.5	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	-	16	-	24	-	-	48.5	A
Power Factor	1, Adjustable - 0.85 to 0.85							
GFDI Threshold	1							A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes							
INPUT								
Maximum DC Power @240V	4650	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	-	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes							
Maximum Input Voltage	480							Vdc
Nominal DC Input Voltage	380				400			Vdc
Maximum Input Current @240V ^②	8.5	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V ^②	-	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45							Adc
Reverse-Polarity Protection	Yes							
Ground-Fault Isolation Detection	600ka Sensitivity							
Maximum Inverter Efficiency	99	99.2					99 @ 240V 98.5 @ 208V	%
CEC Weighted Efficiency	99						99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5							W

^① For other regional settings please contact SolarEdge support

^② A higher current source may be used; the inverter will limit its input current to the values stated



ADDRESS: 525W, BASELINE RD
MESA AZ,85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS:104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ:NC-TOWN OF ERWIN

UTILITY:DUKE ENERGY

PRN NUMBER:TPS-40595



INVERTER SPEC SHEET

DRAFTED BY:
KRISHNAN A.N.
QC'ED BY:
RAJ KUMAR K.B.

PAPER SIZE:17"X11"

SCALE:AS NOTED

REV:E

DATE:12/12/2022

SS-02

SPEC SHEET

/ Single Phase Inverter with HD-Wave Technology for North America

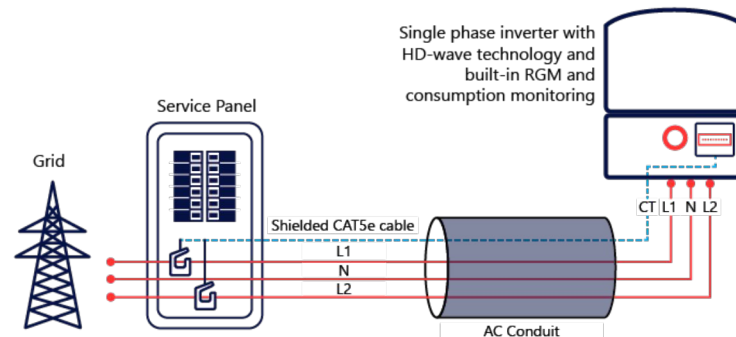
SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US/
SE7600H-US / SE10000H-US / SE11400H-US

MODEL NUMBER	SE3000H-US	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
ADDITIONAL FEATURES								
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), Cellular (optional)							
Revenue Grade Metering, ANSI C12.20	Optional ¹⁾							
Consumption metering								
Inverter Commissioning	With the SetApp mobile application using Built-in Wi-Fi Access Point for Local Connection							
Rapid Shutdown - NEC 2014 and 2017 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect							
STANDARD COMPLIANCE								
Safety	UL1741, UL1741 SA, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07							
Grid Connection Standards	IEEE1547, Rule 21, Rule 14 (H1)							
Emissions	FCC Part 15 Class B							
INSTALLATION SPECIFICATIONS								
AC Output Conduit Size / AWG Range	1" Maximum / 14-6 AWG			1" Maximum / 14-4 AWG				
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1-2 strings / 14-6 AWG			1" Maximum / 1-3 strings / 14-6 AWG				
Dimensions with Safety Switch (HxWxD)	17.7 x 14.6 x 6.8 / 450 x 370 x 174			21.3 x 14.6 x 7.3 / 540 x 370 x 185				in / mm
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9	38.8 / 17.6				lb / kg
Noise	< 25			< 50				dBA
Cooling	Natural Convection							
Operating Temperature Range	-40 to +140 / -40 to +60 ⁴⁾							°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)							

¹⁾ Inverter with Revenue Grade Meter P/N: SExxxxH-US000BNC4; Inverter with Revenue Grade Production and Consumption Meter P/N: SExxxxH-US000BNI4. For consumption metering, current transformers should be ordered separately: SEACT0750-200NA-20 or SEACT0750-400NA-20. 20 units per box.
⁴⁾ Full power up to at least 50°C / 122°F; for power de-rating information refer to: <https://www.solaredge.com/sites/default/files/se-temperature-derating-note-na.pdf>

How to Enable Consumption Monitoring

By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills



© SolarEdge Technologies, Inc. All rights reserved. SOLAREEDGE, the SolarEdge logo, OPTIMIZED BY SOLAREEDGE are trademarks or registered trademarks of SolarEdge Technologies, Inc. All other trademarks mentioned herein are trademarks of their respective owners. Date: 01/2020/V01/ENG NAM. Subject to change without notice.

RoHS



ADDRESS: 525W, BASELINE RD
MESA AZ,85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595



INVERTER SPEC SHEET

DRAFTED BY:
KRISHNAN A.N.
QC'ED BY:
RAJ KUMAR K.B.

PAPER SIZE: 17"X11"

SCALE: AS NOTED

REV: E

DATE: 12/12/2022

SS-03

Power Optimizer

For North America

P370 / P400 / P401 / P485 / P505



POWER OPTIMIZER

PV power optimization at the module-level

- Specifically designed to work with SolarEdge inverters
- Up to 25% more energy
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch losses, from manufacturing tolerance to partial shading
- Flexible system design for maximum space utilization
- Fast installation with a single bolt
- Next generation maintenance with module-level monitoring
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)
- Module-level voltage shutdown for installer and firefighter safety

solaredge.com



Power Optimizer For North America

P370 / P400 / P401 / P485 / P505

Optimizer model (typical module compatibility)	P370 (for higher-power 60 and 72-cell modules)	P400 (for 72 & 96-cell modules)	P401 (for high power 60 and 72 cell modules)	P485 (for high-voltage modules)	P505 (for higher current modules)	
INPUT						
Rated Input DC Power ⁽¹⁾	370		400	485	505	W
Absolute Maximum Input Voltage (Voc at lowest temperature)	60	80	60	125 ⁽²⁾	83 ⁽²⁾	Vdc
MPPT Operating Range	8 - 60	8 - 80	8-60	12.5 - 105	12.5 - 83	Vdc
Maximum Short Circuit Current (Isc)	11	10.1	11.75	11	14	Adc
Maximum Efficiency			99.5			%
Weighted Efficiency			98.8			%
Overvoltage Category			II			
OUTPUT DURING OPERATION (POWER OPTIMIZER CONNECTED TO OPERATING SOLAREEDGE INVERTER)						
Maximum Output Current			15			Adc
Maximum Output Voltage		60		85		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM SOLAREEDGE INVERTER OR SOLAREEDGE INVERTER OFF)						
Safety Output Voltage per Power Optimizer			1 ± 0.1			Vdc
STANDARD COMPLIANCE						
Photovoltaic Rapid Shutdown System	NEC 2014, 2017 & 2020		NEC 2014, 2017 & 2020		NEC 2014, 2017 & 2020	
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3					
Safety	IEC62109-1 (class II safety), UL1741					
Material	UL94 V-0, UV Resistant					
RoHS	Yes					
INSTALLATION SPECIFICATIONS						
Maximum Allowed System Voltage	1000					Vdc
Compatible inverters	All SolarEdge Single Phase and Three Phase inverters					
Dimensions (W x L x H)	129 x 153 x 27.5 / 5.1 x 6 x 1.1	129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 153 x 29.5 / 5.1 x 6 x 1.16	129 x 153 x 33.5 / 5.1 x 6 x 1.3	129 x 162 x 59 / 5.1 x 6.4 x 2.3	mm / in
Weight (including cables)	655 / 1.4	750 / 1.7	655 / 1.4	845 / 1.9	1064 / 2.3	gr / lb
Input Connector	MC4 ⁽³⁾		Single or dual MC4 ⁽³⁾⁽⁴⁾		MC4 ⁽³⁾	
Input Wire Length	0.16 / 0.52, 0.9 / 2.95 ⁽⁴⁾	0.16 / 0.52	0.16 / 0.52, 0.9 / 2.95 ⁽⁴⁾	0.16 / 0.52	0.16 / 0.52	m / ft
Output Wire Type / Connector	Double Insulated / MC4					
Output Wire Length	1.2 / 3.9					m / ft
Operating Temperature Range ⁽⁵⁾	-40 to +85 / -40 to +185					°C / °F
Protection Rating	IP68 / NEMA6P					
Relative Humidity	0 - 100					%

(1) Rated power of the module at STC will not exceed the optimizer "Rated Input DC Power". Modules with up to +5% power tolerance are allowed.
 (2) NEC 2017 requires max input voltage be not more than 80V
 (3) For other connector types please contact SolarEdge
 (4) For dual version for parallel connection of two modules use P485-4NMDMRM. In the case of an odd number of PV modules in one string, installing one P485 dual version power optimizer connected to one PV module. When connecting a single module seal the unused input connectors with the supplied pair of seals
 (5) For ambient temperature above +85°C / +185°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details

PV System Design Using a SolarEdge Inverter ⁽⁶⁾⁽⁷⁾	Single Phase HD-Wave	Single phase	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length (Power Optimizers)	P370, P400, P401 P485, P505	8	10	18	
Maximum String Length (Power Optimizers)		6	8	14	
Maximum Nominal Power per String		25	25	50	
Parallel Strings of Different Lengths or Orientations	5700 ⁽⁸⁾ (6000 with SE7600-US - SE11400-US)	5250 ⁽⁸⁾	6000 ⁽⁹⁾	12750 ⁽¹⁰⁾	W

(6) For detailed string sizing information refer to: http://www.solaredge.com/sites/default/files/string_sizing_na.pdf
 (7) It is not allowed to mix P485/P505 with P370/P400/P401 in one string
 (8) If the inverters rated AC power is maximum nominal power per string, then the maximum power per string will be able to reach up to the inverters maximum input DC power. Refer to: <https://www.solaredge.com/sites/default/files/se-power-optimizer-single-string-design-application-note.pdf>
 (9) For 208V grid: it is allowed to install up to 7,200W per string when the maximum power difference between each string is 1,000W
 (10) For 277/480V grid: it is allowed to install up to 15,000W per string when the maximum power difference between each string is 2,000W

© SolarEdge Technologies Ltd. All rights reserved. SOLAREEDGE, the SolarEdge logo, OPTIMIZED BY SOLAREEDGE are trademarks or registered trademarks of SolarEdge Technologies, Inc. All other trademarks mentioned herein are trademarks of their respective owners. Date: 02/2021/02/ENG NAM. Subject to change without notice.



ADDRESS: 525W, BASELINE RD
 MESA AZ,85210
 LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
 APN: 060-597-020-218

AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595



OPTIMIZER SPEC SHEET

DRAFTED BY:
 KRISHNAN A.N.
 QC'ED BY:
 RAJ KUMAR K.B.

PAPER SIZE: 17"X11"

SCALE: AS NOTED

REV: E

DATE: 12/12/2022

SS-04

SPEC SHEET

We support PV systems
Formerly Everest Solar Systems



Splice Foot X

TECHNICAL SHEET

Item Number	Description	Part Number
1	Splice Foot X	4000113 Splice Foot X Kit, Mill
2	K2 Solar Seal Butyl Pad	
3	M5 x 60 lag screws	
4	T-Bolt & Hex Nut Set	

Technical Data

	Splice Foot X
Roof Type	Composition shingle
Material	Aluminum with stainless steel hardware
Finish	Mill
Roof Connection	M5 x 60 lag screws
Code Compliance	UL 2703
Compatibility	CrossRail 44-X, 48-X, 48-XL, 80

k2-systems.com



ADDRESS: 525W, BASELINE RD
MESA AZ,85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595



MOUNT SPEC SHEET

DRAFTED BY:
KRISHNAN A.N.
QC'ED BY:
RAJ KUMAR K.B.

PAPER SIZE: 17"X11"

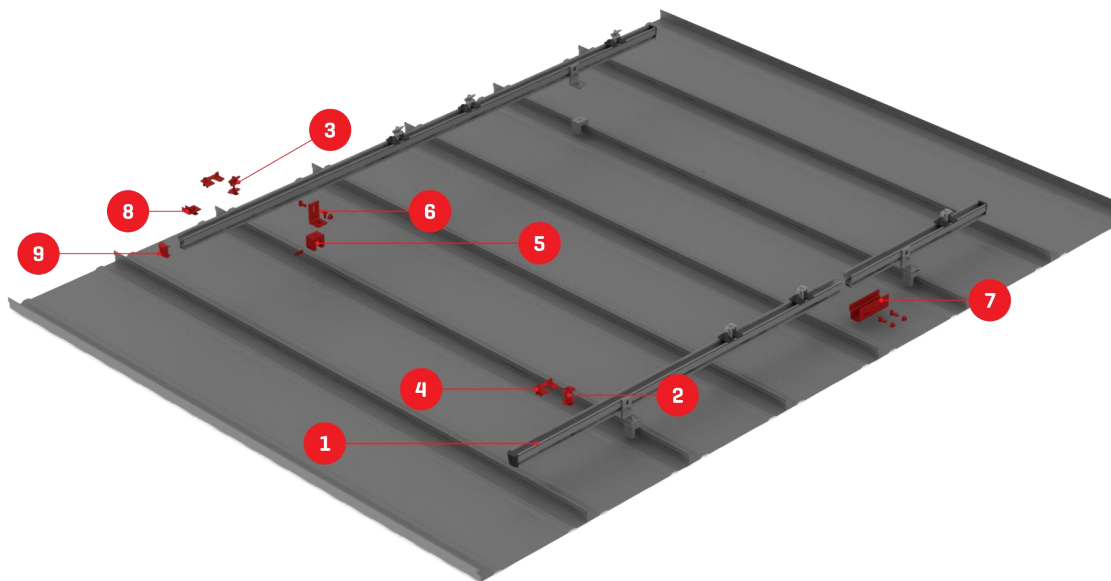
SCALE: AS NOTED

REV: E

DATE: 12/12/2022

SS-05

We support PV systems
Formerly Everest Solar Systems



CrossRail Shared Rail System

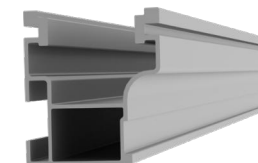
TECHNICAL SHEET

Item Number	Description	Part Number
1	CrossRail 44-X (shown) all CR profiles applicable	4000019 (166" mill), 4000020 (166" dark), 4000021 (180" mill), 4000022 (180" dark)
2	CrossRail Mid Clamp	4000601-H (mill), 4000602-H (dark)
3	CrossRail (Standard) End Clamp	4000429 (mill), 4000430 (dark)
4	Add-On [5mm shown]	4000632 (5mm), 4000609 (10mm)
5	Standing Seam PowerClamp [mini shown]	4000016 (mini), 4000017 (standard)
6	L-Foot Slotted Set	4000630 (mill), 4000631 (dark)
7	CrossRail 44-X Rail Connector (shown) CR 48-X, 48-XL Rail Connector available	4000051 (mill), 4000052 (dark)
8	Everest Ground Lug	4000006-H
9	CrossRail 44-X End Cap (shown) CrossRail 48-X, 48-XL and 80 available	4000067

We support PV systems
Formerly Everest Solar Systems



CROSSRAIL 44-X



Mechanical Properties

	CrossRail 44-X
Material	6000 Series Aluminum
Ultimate Tensile Strength	37.7 ksi [260 MPa]
Yield Strength	34.8 ksi [240 MPa]
Weight	0.47 lbs/ft [0.699 kg/m]
Finish	Mill or Dark Anodized

Sectional Properties

	CrossRail 44-X
Sx	0.1490 in ³ [0.3785 cm ³]
Sy	0.1450 in ³ [0.3683 cm ³]
A [X-Section]	0.4050 in ² [1.0287 cm ²]

Units: [mm] in



Notes:

- ▶ Structural values and span charts determined in accordance with Aluminum Design Manual and ASCE 7-16
- ▶ UL2703 Listed System for Fire and Bonding



ADDRESS: 525W, BASELINE RD
MESA AZ,85210
LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS: 104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
APN: 060-597-020-218

AHJ: NC-TOWN OF ERWIN

UTILITY: DUKE ENERGY

PRN NUMBER: TPS-40595



RAIL SPEC SHEET

DRAFTED BY:
KRISHNAN A.N.
QC'ED BY:
RAJ KUMAR K.B.

PAPER SIZE: 17"X11"

SCALE: AS NOTED

REV: E

DATE: 12/12/2022

SS-06

SPEC SHEET

SIEMENS

Rainproof Combination Metering

Catalog Number **MC4040B1200SECW** Enclosure **Type 3R**

Panelboard Rating: 200 Amps Max; Bus Rating: 225 Amps Max.
 120/240 Volts ~, 1 phase, 3 wire
 208Y/120 Volts ~, 1 phase, 3 wire
 (Derived from 3 phase - 4 wire system)

Meter Socket Rating: 200 Amps Continuous

**Suitable Only For Use As Service Equipment.
 For Overhead or Underground Service.**

Use 60/75° C Copper or Aluminum Conductor in Terminals A1, B1, A2, B2, N1, and N2.

See breaker markings for wire size and torque requirements.
 Branch breakers limited to 3/0 AWG max.

Line terminals A and B have wire connectors installed for underground service entry as shown in the wiring diagram, location A1 and B1. For overhead entry, reposition service bus per enclosed instruction sheet.

Unused neutral branch terminals may be used to terminate equipment grounding wires in the combinations indicated for equipment ground bar terminals.

General Information:
 Circuit breaker trip position is indicated by handle position midway between ON and OFF. To reset, move handle to OFF position then turn ON.

For installation by Qualified Person in accordance with all local electrical codes and/or the National Electrical Code.®

Any 80 Amp or above circuit breaker must be installed in the lowest position in the branch panel. All other positions are limited to 70 Amps maximum for the breaker types listed.

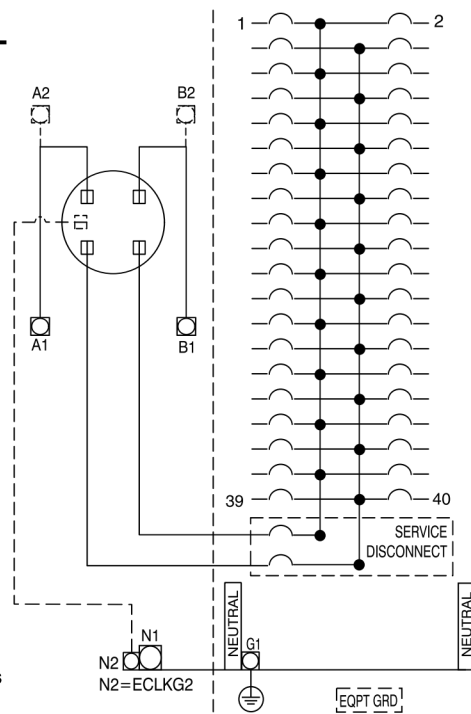
Accessories:

- Filler Plate - ECQF3
- 5" Jaw Assembly - EMC5J
- Flush Rail Kit - FRK1
- Meter Socket Jumper - ECJS
- Ground Bar - "ECGB" series

Lug Kits:

Catalog #	Wire Range	Torque
ECLK1-2	2/0 - #2	45 lb in
ECLK2	2/0 - #4	135 lb in
ECLK3	300kcmil - #1	340 lb in

Trade size (in)	Catalog number
RX Type Hub (top endwall, surface units only)	
1 1/4"	EC38597
1 1/2"	EC38598
2"	EC38599
2 1/2"	EC38600
HC Type Hub (bottom endwall)	
2"	ECHC200
2 1/2"	ECHC250
3"	ECHC300



Terminal	Wire Size	Torque
A1, B1, A2, B2	250kcmil - #4	250 lb-in
N1	250kcmil - #6	275 lb. in.
N2	#2 - #14	50 lb-in
G1	1/0 - #14	120 lb-in
Branch Breaker Terminals	See Markings on Breaker	
Neutral Bar	#10 - #14 CU	20 lb-in
	#10 - #12 AL	20 lb-in
	#8	25 lb-in
	#6	35 lb-in
Ground Conductors Only	(2) or (3) #14 AWG	20 lb-in
	(2) #12-#10 AWG	20 lb-in

SHORT CIRCUIT CURRENT RATING (Wathour meter not included in short circuit rating) This panelboard has a short circuit current rating of 22,000 AMPS RMS symmetrical, 120/240 VAC. The correct branch breakers and main/branch breaker series combinations to be used for various short circuit current levels are listed in the tabulation below. Any circuit breaker installed, replaced or added in this panelboard must be manufactured by Siemens and must be of the correct type as indicated in the tabulation below.

Main Breaker	Branch Breaker	Then the maximum short circuit rating in RMS symmetrical amperes, 120/240V~is:
When the main breaker is:	And the branch breakers installed are Type:	
QNRH	MP-T, MP-HT, MP-MT, MP-AT, MP-HAT, MP-GT, MP-HGT, MP-ET, MP-HET, MD-TR, MD-HTR (Murray) QP, QPH, HQP, QAF, QPHF, QE, QEH, QNR, QNRH (Siemens)	22,000

Important: Do not allow petroleum based (hydrocarbon) sprays, chemicals, solvents or any paint to contact interior components. Petroleum based chemicals can cause degradation of electrical insulating materials.

Siemens Industry, Inc. Norcross, Georgia U.S.A. **J2** 40900965 0102 Rev.00

© National Electrical Code and NFPA 70 are registered trademarks of the National Fire Protection Association.

Assembled in Mexico

© 2019 Copyright Siemens Industry, Inc.



ADDRESS: 525W, BASELINE RD
 MESA AZ,85210
 LICENSE#: GC:84439 EC:U.34445

CUSTOMER INFORMATION

NAME: PAUL ODOM

ADDRESS:104 WOODALL DR, ERWIN, NC 28339

35.320226, -78.667743
 APN: 060-597-020-218

AHJ:NC-TOWN OF ERWIN

UTILITY:DUKE ENERGY

PRN NUMBER:TPS-40595



MPU SPEC SHEET

DRAFTED BY:
 KRISHNAN A.N.
 QC'ED BY:
 RAJ KUMAR K.B.

PAPER SIZE:17"X11"

SCALE:AS NOTED

REV:E

DATE:12/12/2022

SS-07