

AERIAL SITE VIEW



JURISDICTION CODES AND STANDARDS

GOVERNING CODES
 1. ALL WORK SHALL COMPLY WITH:
 2020 NATIONAL ELECTRIC CODE (NEC)
 2015 INTERNATIONAL BUILDING CODE (IBC)
 2015 INTERNATIONAL RESIDENTIAL CODE (IRC)
 2015 INTERNATIONAL FIRE CODE (IFC)

2018 NORTH CAROLINA STATE CODES
 AND ALL STATE AND LOCAL BUILDING, ELECTRICAL, AND PLUMBING CODES.

SITE CLASSIFICATION NOTES, OSHA REGULATION
 OCCUPANCY CLASS: SFR
 CONSTRUCTION CLASS: V-B
 ZONING TYPE: RESIDENTIAL

1. A LADDER SHALL BE IN PLACE FOR INSPECTION IN COMPLIANCE WITH OSHA REGULATIONS.
2. THIS PROJECT HAS BEEN REVIEWED AND WILL NOT DIRECT CONCENTRATED SOLAR RADIATION OR GLARE ONTO NEARBY PROPERTIES OR ROADWAYS.

3. JUNCTION BOXES UNDER PV ARRAY SHALL BE INSTALLED TO BE CONSIDERED ACCESSIBLE BY NEC 690.34

ELECTRICAL CRITERIA, NOTES
 TEMPERATURE SOURCE: ASHRAE
 WEATHER STATION: POPE AFB
 EXTREME MIN. TEMPERATURE: -10
 ASHRAE 2% HIGH TEMP: 36

1. DRAWINGS HAVE BEEN DETAILED ACCORDING TO UL LISTING REQUIREMENTS.
2. TERMINALS AND LUGS WILL BE TIGHTENED TO MANUFACTURER TORQUE SPECIFICATIONS (WHEN PROVIDED) IN ACCORDANCE WITH NEC 110.14(D) ON ALL ELECTRICAL.
3. PV MODULE CERTIFICATIONS WILL INCLUDE UL1703, IEC61646, IEC61730.
4. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.
5. PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED AS PER SECTION [NEC 110.26].
6. 1. FOR THE PROPOSED PV ELECTRICAL INSTALLATION, TYPE NM-CABLE SHALL ONLY BE USED WHEN RUNNING ELECTRICAL WIRING THROUGH THE ATTIC SPACE OR INTERIOR OF THE PERMITTED STRUCTURE. INSTALLATION OF TYPE NM-CABLE SHALL COMPLY WITH NEC 334.10 AND NEC 334.12.

STRUCTURAL CRITERIA, NOTES
 DESIGN LOAD STANDARD: ASCE 7-10
 WIND EXPOSURE CATEGORY: B
 WIND SPEED (3-SEC GUST): 117 MPH
 GROUND SNOW LOAD: 10 PSF
 DESIGN ROOF SNOW LOAD: 10 PSF
 SEISMIC DESIGN CATEGORY: C
 SEISMIC RISK FACTOR: II



ION

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ION DEVELOPER, LLC
 4801 N UNIVERSITY AVE #900 PROVO, UT 84604
 888.781.7074

ANTHONY GIOVANNI RIVERA
 LIMITED CLASSIFICATION LICENSE
 L.29168

SITE INFORMATION:
 CATHERINE HORN
 34 MCINTOSH COURT
 FUQUAY-VARINA, NORTH CAROLINA 27546
 (10) SILFAB SOLAR SIL-400 HC+
 (10) ENPHASE IQ8PLUS-72-2-US
 4KW DC, 2.9KW STC-AC,
 3.568KW CEC-AC

SCOPE OF WORK

INSTALLATION OF UTILITY INTERACTIVE PHOTOVOLTAIC SOLAR SYSTEM
 4 kW DC & 2.9 kW AC PHOTOVOLTAIC SOLAR ARRAY
 PV MODULES: (10) SILFAB SOLAR SIL-400 HC+
 INVERTER(S): (10) ENPHASE IQ8PLUS-72-2-US
 ROOF TYPE: COMPOSITION SHINGLE - 1 LAYER(S)
 PV MOUNTING HARDWARE: ECOFASTEN CLICKFIT

SHEET LIST

G-1	COVER SHEET
V-2	SITE PLAN (AD. LIB)
S-3	ROOF PLAN
S-4	STRUCTURAL DETAILS
S-5	STRUCTURAL CALCULATIONS & NOTES
E-6	ELECTRICAL DETAILS (LINE DIAGRAM)
E-7	ELECTRICAL CALCULATIONS & NOTES
E-8	ELECTRICAL LOAD CALCULATIONS (AD. LIB)
E-9	ELECTRICAL LABELS & LOCATIONS
E-10	ELECTRICAL DIRECTORY PLACARD (AD. LIB)

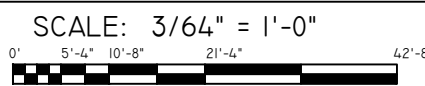
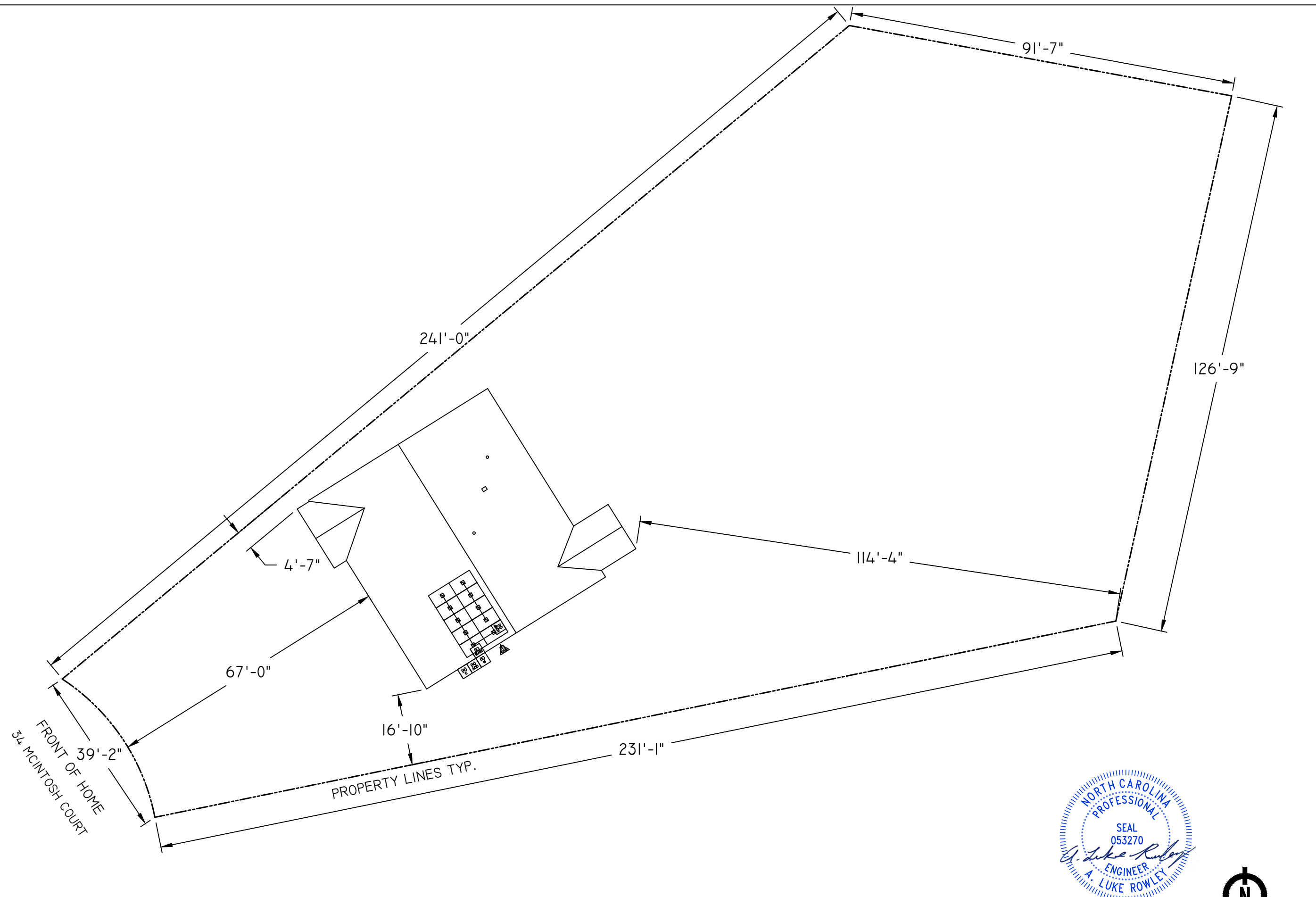
DRAWING BY
 DRS

DATE
 17-MAY-2023

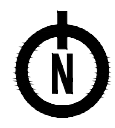
PROJECT ID
 009N41

SHEET NAME
 COVER SHEET

SHEET NUMBER	REVISION
G-1	0



BUILDING LOCATION: 35.4699 -78.8285
 LOT AREA (SQFT): 27007.2
 BUILDING AREA (SQFT): 1890



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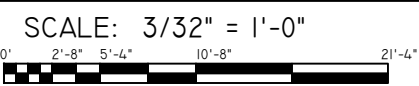
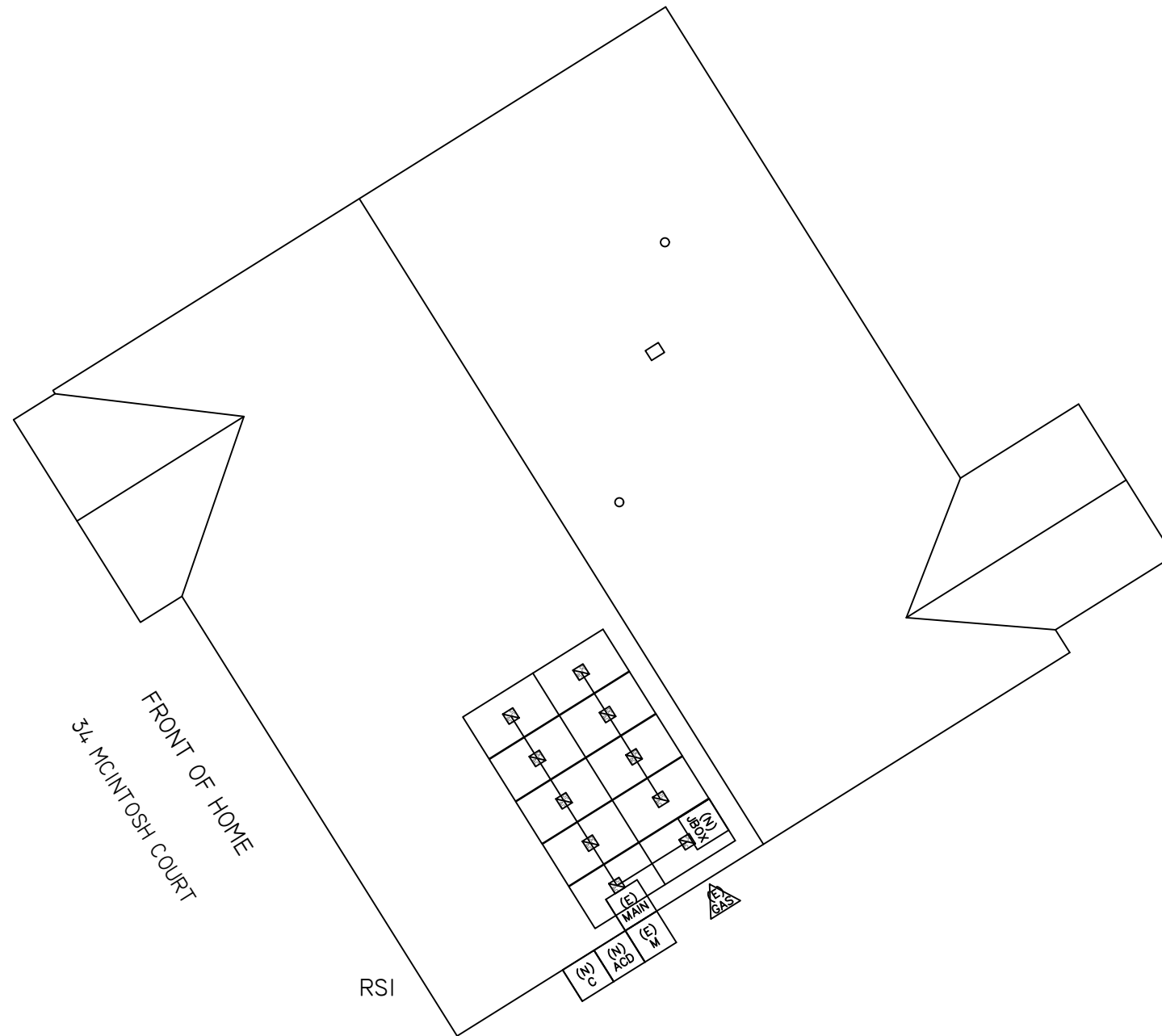
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 (10) ENPHASE IQ8PLUS-72-2-US
 4KW DC, 2.9KW STC-AC,
 3.568KW CEC-AC

DRAWING BY DRS	
DATE 17-MAY-2023	
PROJECT ID 009N41	
SHEET NAME SITE PLAN	
SHEET NUMBER V-2	REVISION 0

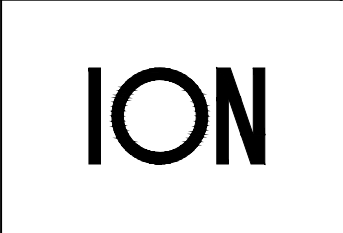
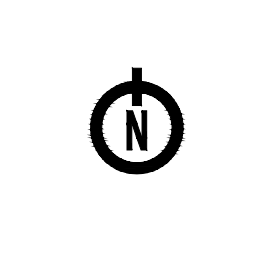
SITE NOTES:

JUNCTION BOXES UNDER PV ARRAY SHALL BE INSTALLED TO BE CONSIDERED ACCESSIBLE BY NEC 690.34



SYSTEM LEGEND			
	(E) UTILITY METER / MAIN SERVICE PANEL		(N) JUNCTION BOX
	(E) MAIN SERVICE PANEL		(N) AC DISCONNECT (VISIBLE-OPEN LOCKABLE LABELED DISCONNECT)
	(E) SUBPANEL		(N) MICROINVERTER
	(N) PV COMBINER PANEL		(N) DC DISCONNECT
	(N) PV LOAD CENTER		SUNEYE LOCATION
	(N) PV PRODUCTION METER		FIRE SETBACK
	(N) DC-DC / STRING INVERTER		(N) PV MODULE

ROOF SECTION CRITERIA AND SPECIFICATIONS				
ROOF SECTION	PV MODULE QTY	AZIMUTH	PITCH	TSRF
RSI	10	238	25	92%



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4KW DC, 2.9KW STC-AC,
3.568KW CEC-AC

DRAWING BY
DRS

DATE
17-MAY-2023

PROJECT ID
009N41

SHEET NAME
ROOF PLAN

SHEET NUMBER S-3	REVISION 0
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RACKING INSTALLATION SCHEDULE AND STRUCTURAL CRITERIA

PV RACKING	
RACKING:	ECOFASTEN CLICKFIT
RACKING TYPE:	RAIL
STANDOFF:	CLICKFIT L-FOOT
STANDOFF TYPE:	L-FOOT & FLASHING
FASTENER:	5/16" X 3-1/2" ZINC PLATED STEEL LAG SCREW

SPAN AREA	TAG	SPAN
<i>RAIL - PORTRAIT - MODULE ORIENTATION</i>		
X- SPACING	P-X1	48 IN. O.C. MAX.
X-CANTILEVER	P-X2	16 IN. MAX.
Y- SPACING	P-Y1	41.3 IN. MIN. - 45.3 IN. MAX.
Y-CANTILEVER	P-Y2	15 IN. MIN. - 17 IN. MAX.

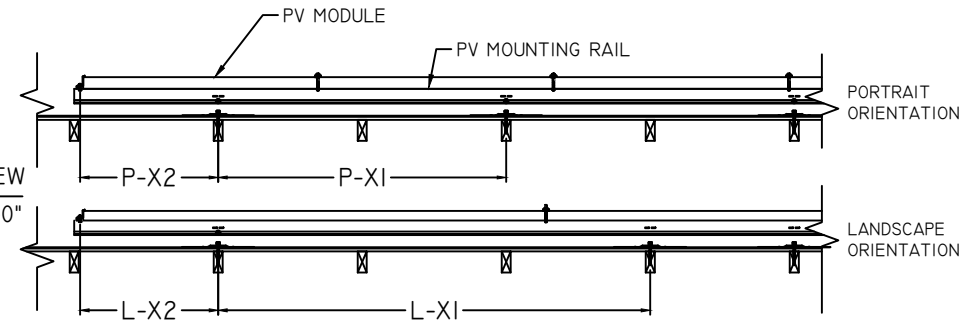
STRUCTURAL	
ROOF TYPE:	COMPOSITION SHINGLE
ROOF SHEATHING TYPE:	7/16" OSB
STRUCTURE TYPE:	MANUFACTURED WOOD TRUSS
RAFTER SIZE:	2x6
RAFTER SPACING:	24

<i>RAIL - LANDSCAPE - MODULE ORIENTATION</i>			
X- SPACING	L-X1	72 IN. O.C. MAX.	
X-CANTILEVER	L-X2	23 IN. MAX.	
Y- SPACING	L-Y1	21.1 IN. MIN. - 25.1 IN. MAX.	
Y-CANTILEVER	L-Y2	7.9 IN. MIN. - 9.8 IN. MAX.	

ARRAY PARAMETERS	
TOTAL ROOF AREA (SQ. FT.)	3086.3
TOTAL PV MODULE AREA (SQ. FT.)	213
% PV MODULE ROOF COVERAGE	7%

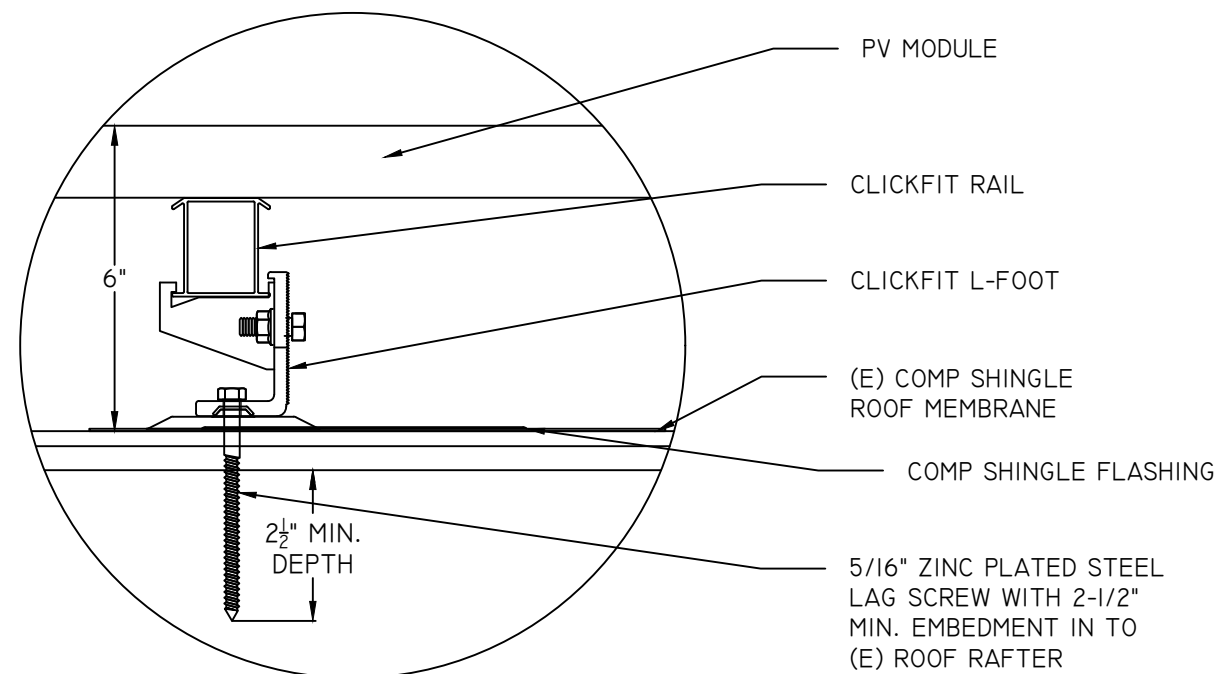
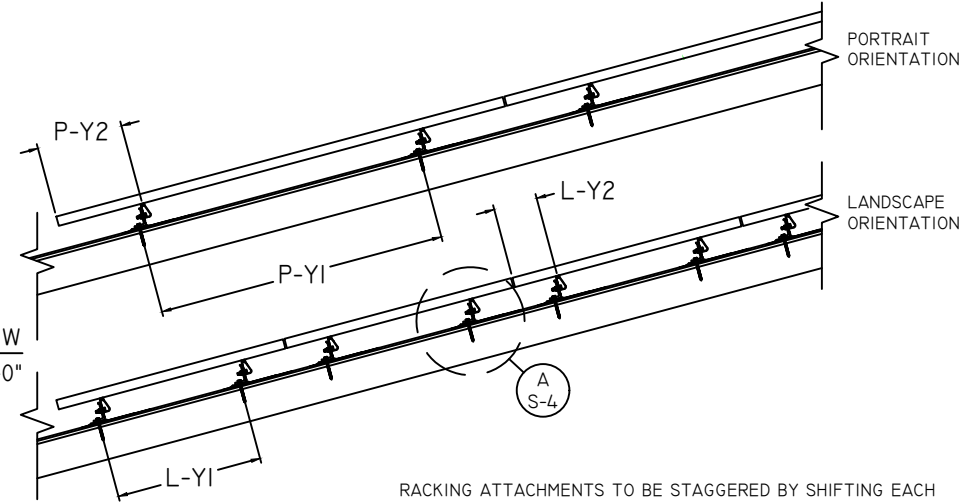
PV ARRAY DETAIL, FRONT VIEW

SCALE: 3/8" = 1'-0"



PV ARRAY DETAIL, SIDE VIEW

SCALE: 3/8" = 1'-0"



A STANDOFF DETAIL
SCALE: 3" = 1'-0"

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4KW DC, 2.9KW STC-AC,
3.568KW CEC-AC

DRAWING BY
DRS

DATE
17-MAY-2023

PROJECT ID
009N41

SHEET NAME
STRUCTURAL DETAILS

SHEET NUMBER
S-4

REVISION
0



PV SYSTEM STRUCTURAL SPECIFICATIONS AND CALCULATIONS

PV SYSTEM EQUIPMENT SPECIFICATIONS

MODULE MANUFACTURER / TYPE	SILFAB SOLAR SIL-400 HC+
SOLAR MODULE WEIGHT (LBS)	47
SOLAR MODULE LENGTH (IN.)	75.3
SOLAR MODULE WIDTH (IN.)	40.8
SOLAR MODULE AREA (SQ. FT)	21.3
PV RACKING	ECOFASTEN CLICKFIT
PV RACKING TYPE	RAIL
PV ROOF ATTACHMENT	CLICKFIT L-FOOT
PV ROOF ATTACHMENT FASTENER	5/16" X 3-1/2" ZINC PLATED STEEL LAG SCREW
RACKING DEAD LOAD (PSF)	0.8
SOLAR MODULE DEAD LOAD (PSF)	2.21
TOTAL PV ARRAY DEAD LOAD (PSF)	3.01

PV SYSTEM STRUCTURAL SPECIFICATIONS

STRUCTURE TYPE - ROOF SHAPE	INHABITED - GABLE / FLAT ROOF
MIN. ROOF SLOPE (DEG.)	25
MEAN ROOF HEIGHT (FT.)	11
PORTRAIT ATT. SPACING (IN. O.C.)	48
LANDSCAPE ATT. SPACING (IN. O.C.)	72
# OF ATTACHMENT POINTS	22
MAX. POINT LOAD (LBS / ATT.)	37.7
MAX. TOTAL PV DEAD LOAD TO RAFTER (LBS)	75.5

DESIGN WIND PRESSURE AND CONNECTION UPLIFT CALCULATIONS

DESIGN WIND PRESSURE (PSF) = $P = qh[(GCP)-(GCPI)]$	ASCE 7-10 (C&C)	EQN. 30.4-1
VELOCITY PRESSURE (PSF) = $qh = 0.00256(KH)(Kzt)(Kd)(V^2)$		EQN. 30.3-1
TERRAIN EXPO. CONSTANT (A) = 7	TABLE 26.9-1	INTERNAL PRESSURE COEFF. (GCPI) = 0
TERRAIN EXPO. CONSTANT (Zg)(FT) = 1200	TABLE 26.9-1	
VP EXPOSURE COEFF.(KH) = 0.70	EQN. 30.3-1	
TOPOGRAPHIC FACTOR (Kzt) = 1.0	EQN. 26.8-1	QH (PSF) = 20.85
WIND DIRECTIONALITY FACTOR (Kd) = 0.85	TABLE 26.6-1	ASCE 7-10 VP (PSF) (0.6) X QH = 12.51

	UPLIFT				FIGURE 30.4-2B
	ZONE 1	ZONE 2	ZONE 3	ALL ZONES	
GABLE / HIP ROOF $7^\circ < \theta \leq 27^\circ$					
RAIL - PORTRAIT MODULE ORIENTATION	48 IN. O.C.	48 IN. O.C.	48 IN. O.C.	48 IN. O.C.	
EXTERNAL PRESSURE COEFF. (GCP) =	-0.9	-1.7	-2.6	0.5	
ASD PRESSURE (0.6P)(PSF) =	-11.26	-21.27	-32.53	17.38	
TRIBUTARY AREA (SQ. FT) =	12.6	12.6	9.4		
MAX. UPLIFT (0.6D+0.6P) (LBS) =	-118.7	-244.3	-289.2		
RAIL - LANDSCAPE MODULE ORIENTATION	72 IN. O.C.	72 IN. O.C.	72 IN. O.C.	72 IN. O.C.	
EXTERNAL PRESSURE COEFF. (GCP) =	-0.9	-1.7	-2.6	0.5	
ASD PRESSURE (0.6P)(PSF) =	-11.26	-21.27	-32.53	17.38	
TRIBUTARY AREA (SQ. FT) =	10.20	10.20	5.10		
MAX. UPLIFT (0.6D+0.6P) (LBS) =	-96.4	-132.4	-156.7		

ROOF ATTACHMENT FASTENER CHECK

CLICKFIT L-FOOT - 5/16" X 3-1/2" ZINC PLATED STEEL LAG SCREW		MANUFACTURER MAX. UPLIFT CAPACITY = 359.6 LBS
LAG SCREW WITHDRAWAL DESIGN VALUE (LBS) = $W = 1800(G^3/2)(D^3/4)$		12.2.1
ROOF ATTACHMENT FASTENER (D) = 5/16 IN. LAG SCREW	LUMBER SPECIFIC GRAVITY (G)= 0.42	TABLE 2.3.2
FASTENER QTY PER ATTACHMENT = 1	LOAD DURATION FACTOR (Cd) = 1.6	TABLE 12.3.3A
FASTENER EMBEDMENT DEPTH (IN.) = 2.5	PRYING COEFFICIENT = 1.4	
WITHDRAWAL DESIGN VALUE(W)(LBS / IN.) = 204.8		
LAG SCREW WITHDRAWAL CAPACITY (LBS) = 585.1		
MAX. ATT. WITHDRAWAL CAPACITY (LBS) = 359.6 > 289.2	MAX UPLIFT DEMAND (LBS) OK	

DESIGN LOCATION AND SITE SPECIFICATIONS

JURISDICTION	HARNETT COUNTY
STATE	NORTH CAROLINA
ADOPTED LOAD STANDARD	ASCE 7-10
OCCUPANCY / RISK CATEGORY	II
BASIC WIND SPEED (MPH (3-SEC GUST))	117
WIND EXPOSURE CATEGORY	B
GROUND SNOW LOAD (PSF) (Pg)	10
BASE ELEVATION (FT)	188

DESIGNED ROOF SNOW LOAD CALCULATIONS

ASCE 7-10 (C&C)	
SLOPED ROOF SNOW LOAD (PSF)	EQN. 7.4-1
= $P_s = (C_s)(0.7)(C_e)(C_t)(I_s)(P_g)$	
EXPOSURE FACTOR (Ce) = 1.0	TABLE 7.3-1
THERMAL FACTOR (Ct) = 1.0	TABLE 7.3-2
IMPORTANCE FACTOR (Is) = 1.0	TABLE 1.5-2
SLOPE FACTOR (Cs) = 1.0	FIG. 7.4-1
Ps (PSF) = 10	OK

GRAVITY LOAD / FRAMING CALCULATIONS

DEAD LOAD (PSF)	RSI
ROOF MEMBRANE	COMPOSITION SHINGLE 4.0
SHEATHING	7/16" OSB 1.7
PITCH (DEG)	25
FRAMING	MANUFACTURED WOOD TRUSS - TOP CHORD 2X6 @ 24 IN. O.C. - SPF #2 @6 FT. MAX SPAN 1.4
TOTAL ROOF DEAD LOAD (PSF)	7.1
ADJUSTED TO SLOPED ROOF (PSF)	7.9
PV ARRAY ADJ. TO ROOF SLOPE (PSF)	3.3
ROOF LIVE LOAD > ROOF SNOW LOAD (PSF)	20.0
TOTAL LOAD (PSF)	31.3
RAFTER / TOP CHORD MEMBER PROPERTIES	SPF #2 - 2x6
SECTION MODULUS (S)(IN^3)	7.56
MOMENT OF INERTIA (I)(IN^4)	20.80
TOTAL LOAD ON MEMBER (W) (PLF)	62.5
MAX. MEMBER SPAN (L) (FT)	6
MODULUS OF ELASTICITY (E) (PSI)	1400000
SHEAR (Fv) (PSI)	135
AREA (A) (IN^2)	8.25
MAX BENDING STRESS CHECK	(Fb)(Cd)(Cf)(Cr)
BENDING (Fb) (PSI)	875
LOAD DURATION FACTOR (Cd)	1.25
SIZE FACTOR (Cf)	1.30
REPETITIVE MEMBER FACTOR (Cr)	1.15
ALLOWABLE BENDING STRESS (PSI)	1635.2
ACTUAL BENDING STRESS (PSI) = (WL^2)/(8(S))	446.5
	27% OK
MAX DEFLECTION CHECK - TOTAL LOAD	UNIFORM DISTRIBUTED
ALLOWABLE DEFLECTION	L / 180
ACTUAL MAX DEFLECTION	0.400 IN.
	(W)(L)^4 / 185(E)(I)
	0.026 IN.
	6% OK
MAX DEFLECTION CHECK - LIVE LOAD	L / 240
ALLOWABLE DEFLECTION	0.3 IN.
ACTUAL MAX DEFLECTION	0.026 IN.
	(W)(L)^4 / 185(E)(I)
	9% OK
MAX SHEAR CHECK	Fv (A)
ALLOWABLE SHEAR	1113.8 LBS.
	(w)(L)/2
	188 LBS.
ACTUAL MAX SHEAR	17% OK



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DRAWING BY
DRS

DATE
17-MAY-2023

PROJECT ID
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SHEET NAME
STRUCTURAL CALCS

SHEET NUMBER S-5 REVISION 0

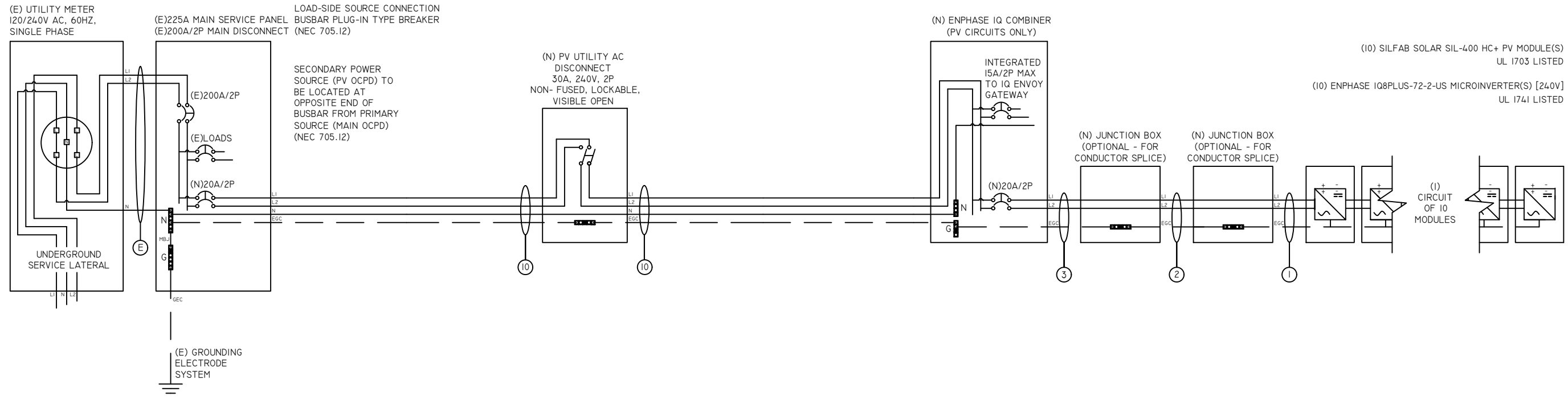
CONDUCTOR AND RACEWAY SCHEDULE

TAG	QTY	SIZE - #	TYPE	DESIGNATOR	I / V	TAG	QTY	SIZE - #	TYPE	DESIGNATOR	I / V	TAG	QTY	SIZE - #	TYPE	DESIGNATOR	I / V	TAG	QTY	SIZE - #	TYPE	DESIGNATOR	I / V
10	(1)	10 AWG	THHN / THWN-2, CU.	BLACK (L1)	12.1 A AC (MAX)	3	(1)	10 AWG	THHN / THWN-2, CU.	BLACK (L1)	12.1 A AC (MAX)	2	(1)	10 AWG	2C, NM-B W/G, CU.	(L1, L2, EGC)	12.1 A AC (MAX)	1	(1)	12 AWG	2C, TC-ER, CU.	(L1, L2)	12.1 A AC (MAX)
	(1)	10 AWG	THHN / THWN-2, CU.	RED (L2)	240 V AC		(1)	10 AWG	THHN / THWN-2, CU.	RED (L2)	240 V AC		(1)	6 AWG	SOLID BARE CU.	(EGC)	240 V AC		(1)	6 AWG	SOLID BARE CU.	(EGC)	240 V AC
	(1)	10 AWG	THHN / THWN-2, CU.	WHITE (N)			(1)	10 AWG	THHN / THWN-2, CU.	GREEN (EGC)			(1)	3/4 IN.	EMT OR FREE AIR	(RACEWAY)			(1)	3/4 IN.	EMT OR FREE AIR	(RACEWAY)	
	(1)	10 AWG	THHN / THWN-2, CU.	GREEN (EGC)			(1)	3/4 IN.	EMT	(RACEWAY)													
	(1)	3/4 IN.	EMT	(RACEWAY)	EXTERIOR						EXTERIOR						INTERIOR						EXTERIOR



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ELECTRICAL LINE DIAGRAM



ELECTRICAL LINE DIAGRAM NOTES

1. FOR THE PROPOSED PV ELECTRICAL INSTALLATION, TYPE NM-CABLE SHALL ONLY BE USED WHEN RUNNING ELECTRICAL WIRING THROUGH THE ATTIC SPACE OR INTERIOR OF THE PERMITTED STRUCTURE. INSTALLATION OF TYPE NM-CABLE SHALL COMPLY WITH NEC 334.10 AND NEC 334.12.

MICROINVERTER CEC PEAK OUTPUT POWER: 290W
MODULE RATED POWER (P_{MAX}): 400W



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4KW DC, 2.9KW STC-AC,
3.568KW CEC-AC

DRAWING BY	DRS
DATE	17-MAY-2023
PROJECT ID	009N41
SHEET NAME	ELEC. LINE DIAG.
SHEET NUMBER	E-6
REVISION	0

PV SYSTEM ELECTRICAL SPECIFICATIONS AND CALCULATIONS

DESIGN LOCATION AND TEMPERATURES

TEMPERATURE DATA SOURCE	ASHRAE
STATE	NORTH CAROLINA
JURISDICTION	HARNETT COUNTY
WEATHER STATION	POPE AFB
ASHRAE EXTREME LOW TEMP (°C)	-10
ASHRAE 2% HIGH TEMP (°C)	36
DESIGNED MAX. SYSTEM VDROPP / VRISE	4.00%

PV MODULE SPECIFICATIONS

SILFAB SOLAR SIL-400 HC+	
RATED POWER (P _{MAX}) (W)	400
MAXIMUM POWER VOLTAGE (V _{MP})	36.05
MAXIMUM POWER CURRENT (I _{MP})	11.1
OPEN CIRCUIT VOLTAGE (V _{OC})	43.02
SHORT CIRCUIT CURRENT (I _{SC})	11.58
PMP/VMP TEMP. COEFFICIENT	-0.36
VOC TEMP. COEFFICIENT	-0.28
SERIES FUSE RATING	20
ADJ. MODULE VOC @ ASHRAE LOW TEMP	47.2
ADJ. MODULE VMP @ ASHRAE 2% AVG. HIGH TEMP	30.5

INVERTER SPECIFICATIONS

ENPHASE IQ8PLUS-72-2-US	
TYPE	MICROINVERTER
MAX. OR RECOMMENDED MODULE POWER (W)	440
MAXIMUM INPUT DC OPEN-CIRCUIT VOLTAGE (V _{OC})	60
MINIMUM START VOLTAGE (V)	30
MAXIMUM START VOLTAGE(V)	58
MAXIMUM INPUT CURRENT (I _{SC}) (A)	15
MAX CONTINUOUS OUTPUT POWER (VA)	290
MAX. CONTINUOUS OUTPUT CURRENT (A)	1.21
NOMINAL (L-L) OUTPUT VOLTAGE	240
CEC WEIGHTED EFFICIENCY (%)	97.0%

SYSTEM ELECTRICAL SPECIFICATIONS

CIR I	
NUMBER OF MODULES PER CIRCUIT	10
DC POWER RATING PER CIRCUIT (STC)(W DC)	4000
TOTAL MODULE QUANTITY	10 PV MODULES
STC DC POWER RATING OF ARRAY	4000W DC
INVERTER OUTPUT CIRCUIT CURRENT(A AC)	12.1
125% INVERTER OUTPUT CIRCUIT CURRENT(A AC)	15.13
CIRCUIT OCPD RATING (A)	20
COMBINED INVERTER CONTINUOUS OUTPUT CURRENT 12.1A AC	
PV POWER PRODUCTION SYSTEM OCPD RATING (X125%)	20A
MAX. ARRAY STC-AC POWER (W)	2900W AC (STC)
MAX. ARRAY CEC-AC POWER (W)	3568W AC (CEC)

AC VOLTAGE RISE CALCULATIONS

	DIST (FT)	COND.	VRISE(V)	VEND(V)	%VRISE
VRISE SEC. 1 (MICRO TO JBOX) *	28.8	12 Cu.	1.4	241.4	0.58%
VRISE SEC. 2 (JBOX TO COMBINER BOX)	18	10 Cu.	0.5	240.5	0.22%
VRISE SEC. 3 (COMBINER BOX TO POI)	10	10 Cu.	0.3	240.3	0.12%
TOTAL VRISE			2.2	242.2	0.92% OK

* 8 MICROINVERTER MAX SUB-BRANCH CIRCUIT SIZE TO COMPLY WITH VRISE CALCULATIONS.

RACEWAY / CONDUCTOR CALCULATIONS

MICROINV. TO JUNCTION BOX (1)

MAX INVERTER OUTPUT CIRCUIT CURRENT = 12.1 A AC
 CONDUCTOR SIZE / INSULATION / TYPE = 12 AWG 2C, TC-ER, CU.
 CONDUCTOR AMP. RATING @ 90°C = 30 A

PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)
 MAX INVERTER OUTPUT CURRENT X125%=15.0 A AC

PER NEC 690.8(B)(2)(WITH CORRECTION FACTORS)
 AMB. TEMP. AMP. CORRECTION = 0.91
 # OF CONDUCTORS IN RACEWAY CORRECTION = 1.0
 ADJUSTED CONDUCTOR AMPACITY (A) = 27.3 A AC

LARGER AMPACITY OF 690.8(B)(1) OR (B)(2) = 15.0 < 27.3
 (B)(1) - W/OUT CORRECTION FACTORS
 LARGER AMPACITY COMPLIANCE = 30.0 > 15.0 **OK**

RACEWAY SIZE / TYPE = 3/4 IN. EMT OR FREE AIR
 CONDUCTOR(S) / CABLE(S) CROSS-SECTION AREA (IN.^2) = 0.142 IN.^2
 CROSS-SECTIONAL AREA OF RACEWAY(IN.^2) = 0.533 IN.^2
 % ALLOWABLE RACEWAY FILL (NEC CH. 9, TBL I) = 53% > 27% **OK**

JUNCTION BOX TO JUNCTION BOX (2)

MAX INVERTER OUTPUT CIRCUIT CURRENT = 12.1 A AC
 CONDUCTOR SIZE / INSULATION / TYPE = 10 AWG 2C, NM-B W/G, CU.
 CONDUCTOR AMP. RATING @60°C = 30 A

PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)
 MAX INVERTER OUTPUT CURRENT X125%=15.0 A AC

PER NEC 690.8(B)(2)(WITH CORRECTION FACTORS)
 AMB. TEMP. AMP. CORRECTION = 0.82
 # OF CONDUCTORS IN RACEWAY CORRECTION = 1.0
 ADJUSTED CONDUCTOR AMPACITY (A) = 24.6 A AC

LARGER AMPACITY OF 690.8(B)(1) OR (B)(2) = 15.0 < 24.6
 (B)(1) - W/OUT CORRECTION FACTORS
 LARGER AMPACITY COMPLIANCE = 30.0 > 15.0 **OK**

RACEWAY SIZE / TYPE = FREE AIR

JUNCTION BOX TO COMBINER BOX (3)

MAX INVERTER OUTPUT CIRCUIT CURRENT = 12.1 A AC
 CONDUCTOR SIZE / INSULATION / TYPE = 10 AWG THHN / THWN-2, CU.
 CONDUCTOR AMP. RATING @75°C = 30 A

PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)
 MAX INVERTER OUTPUT CURRENT X125%=15.0 A AC

PER NEC 690.8(B)(2)(WITH CORRECTION FACTORS)
 AMB. TEMP. AMP. CORRECTION = 0.88
 # OF CONDUCTORS IN RACEWAY CORRECTION = 1.0
 ADJUSTED CONDUCTOR AMPACITY (A) = 26.4 A AC

LARGER AMPACITY OF 690.8(B)(1) OR (B)(2) = 15.0 < 26.4
 (B)(1) - W/OUT CORRECTION FACTORS
 LARGER AMPACITY COMPLIANCE = 30.0 > 15.0 **OK**

RACEWAY SIZE / TYPE = 3/4 IN. EMT
 CONDUCTOR(S) / CABLE(S) CROSS-SECTION AREA (IN.^2) = 0.063 IN.^2
 CROSS-SECTIONAL AREA OF RACEWAY(IN.^2) = 0.533 IN.^2
 % ALLOWABLE RACEWAY FILL (NEC CH. 9, TBL I) = 40% > 12% **OK**

COMBINER BOX TO MAIN PV OCPD (10)


COMBINED INVERTER CONTINUOUS OUTPUT CURRENT = 12.1 A AC
 CONDUCTOR SIZE / INSULATION / TYPE = 10 AWG THHN / THWN-2, CU.
 CONDUCTOR AMP. RATING @75°C = 35 A

PER NEC 690.8(B)(1)(W/OUT CORRECTION FACTORS)
 MAX COMBINED INVERTER CONTINUOUS OUTPUT CURRENT X125% =15.0 A AC


PER NEC 690.8(B)(2)(WITH CORRECTION FACTORS)
 AMB. TEMP. AMP. CORRECTION = 0.88
 # OF CONDUCTORS IN RACEWAY CORRECTION = 1.0
 ADJUSTED CONDUCTOR AMPACITY (A) = 30.8 A AC

LARGER AMPACITY OF 690.8(B)(1) OR (B)(2) = 15.0 < 30.8
 (B)(1) - W/OUT CORRECTION FACTORS
 LARGER AMPACITY COMPLIANCE = 35.0 > 15.0 **OK**

RACEWAY SIZE / TYPE = 3/4 IN. EMT
 CONDUCTOR(S) / CABLE(S) CROSS-SECTION AREA (IN.^2) = 0.084 IN.^2
 CROSS-SECTIONAL AREA OF RACEWAY(IN.^2) = 0.533 IN.^2
 % ALLOWABLE RACEWAY FILL (NEC CH. 9, TBL I) = 40% > 16% **OK**



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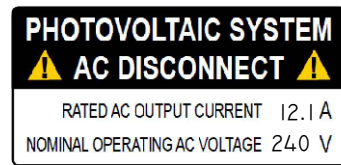
ION DEVELOPER, LLC
 4801 N UNIVERSITY AVE #900 PROVO, UT 84604
 888.781.7074

ANTHONY GIOVANNI RIVERA
 LIMITED CLASSIFICATION LICENSE L.29168

SITE INFORMATION:
 CATHERINE HORN
 34 MCINTOSH COURT
 FUQUAY-VARINA, NORTH CAROLINA 27546
 (10) SILFAB SOLAR SIL-400 HC+
 (10) ENPHASE IQ8PLUS-72-2-US
 4KW DC, 2.9KW STC-AC,
 3.568KW CEC-AC

DRAWING BY	DRS
DATE	17-MAY-2023
PROJECT ID	009N41
SHEET NAME	ELECTRICAL CALCS.
SHEET NUMBER	E-7
REVISION	0

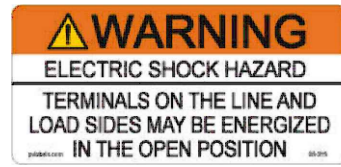
ELECTRICAL FIELD-APPLIED HAZARD MARKINGS



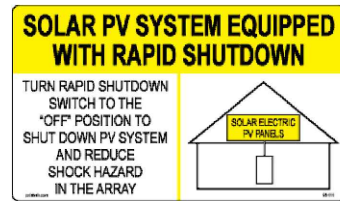
A AT EACH PV SYSTEM DISCONNECTING MEANS. [NEC 690.54, NEC 690.13(B)]



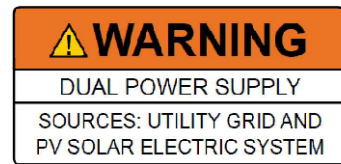
F SIGN LOCATED ON OR NO MORE THAN 3 FT FROM THE RAPID SHUT DOWN DISCONNECT SWITCH(S). IF MORE THAN ONE PV RSD IS IN AN ENCLOSURE, EACH SHALL BE LABELED. [NEC 690.56(C), NEC 690.12(C)]



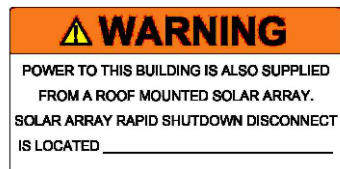
B FOR PV DISCONNECTING MEANS WHERE ALL TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION. [NEC 690.13(B), NEC 705.22]



G FOR BUILDINGS WITH PV SYSTEMS. TO BE LOCATED AT EACH SERVICE EQUIPMENT LOCATION TO WHICH THE PV SYSTEM IS CONNECTED. [NEC 690.56(C)]



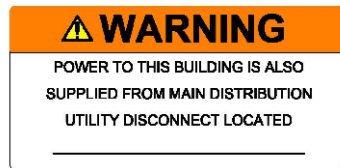
C AT EQUIPMENT CONTAINING OVERCURRENT DEVICES IN CIRCUITS SUPPLYING POWER TO A BUSBAR OR CONDUCTOR SUPPLIED FROM MULTIPLE SOURCES. [NEC 705.12(C)]



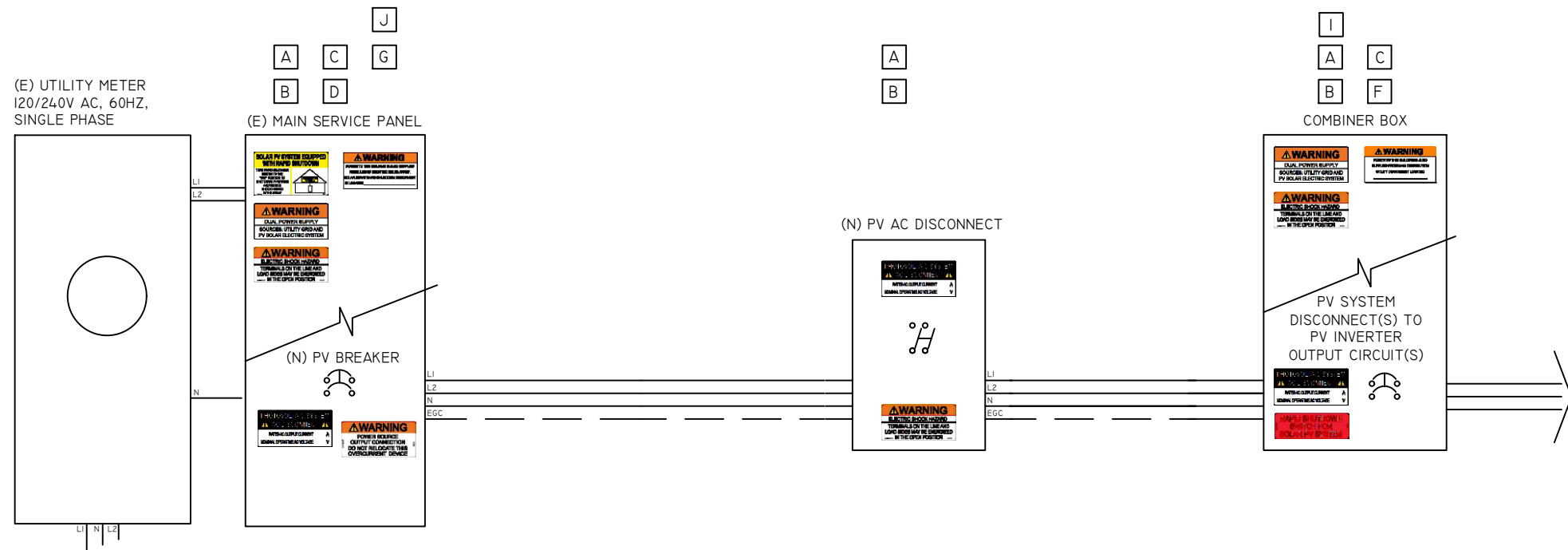
J PERMANENT DIRECTORY TO BE LOCATED AT MAIN SERVICE EQUIPMENT DENOTING THE LOCATION OF THE PV RAPID SHUTDOWN SYSTEM DISCONNECTING MEANS IF SOLAR ARRAY RAPID SHUT DOWN DISCONNECT SWITCH IS NOT GROUPED AND WITHIN LINE OF SITE OF MAIN SERVICE DISCONNECTING MEANS. [NEC 705.10, NEC 690.56(C)(1)]



D PLACED ADJACENT TO PV SYSTEM PLUG-IN TYPE BREAKER TO A BUSBAR FOR A LOAD SIDE CONNECTION. [NEC 705.12(B)(3)(2)]



I PERMANENT DIRECTORY TO BE LOCATED AT SOLAR ARRAY RAPID SHUTDOWN SWITCH DENOTING THE LOCATION OF THE SERVICE EQUIPMENT LOCATION IF SOLAR ARRAY RAPID SHUT DOWN DISCONNECT SWITCH IS NOT GROUPED AND WITHIN LINE OF SITE OF MAIN SERVICE DISCONNECTING MEANS. [NEC 705.10]



- ALL CAUTION, WARNING, OR DANGER SIGNS OR LABELS SHALL:
1. COMPLY WITH ANSI Z535.4-2011 STANDARDS.
 2. BE PERMANENTLY AFFIXED TO THE EQUIPMENT OR WIRING METHOD AND SHALL NOT BE HANDWRITTEN.
 3. SHALL BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT INVOLVED.
 4. UNLESS OTHERS SPECIFIED MINIMUM TEXT HEIGHT TO BE 1/8" (3MM).

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(10) ENPHASE IQ8PLUS-72-2-US
4KW DC, 2.9KW STC-AC,
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DRAWING BY DRS	
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PROJECT ID 009N41	
SHEET NAME ELECTRICAL LABELS	
SHEET NUMBER E-9	REVISION 0