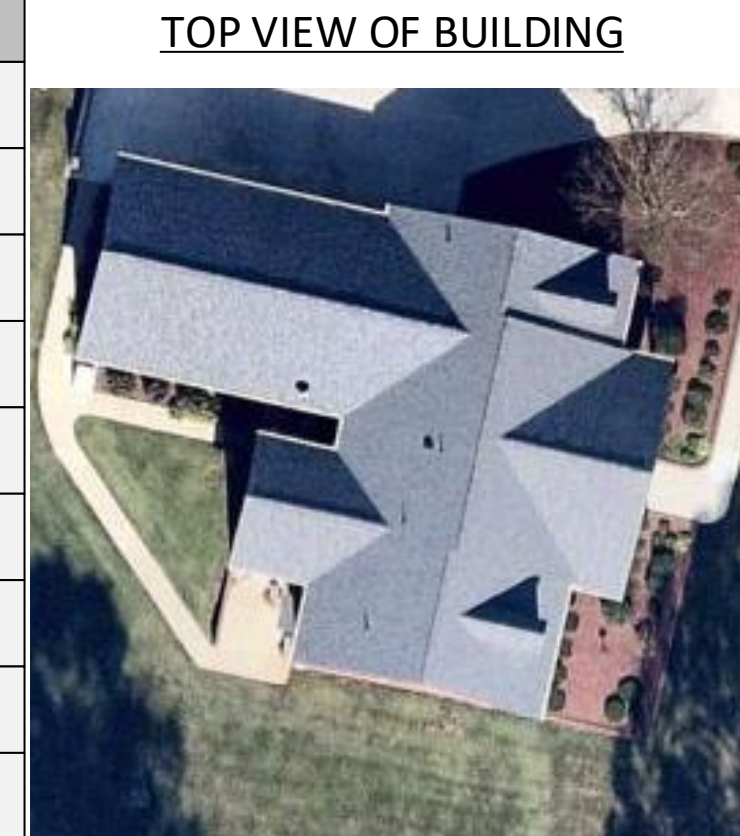


PROJECT DETAILS	
PV Modules	50 x SOLARIA PowerX-390R
Microinverters	50 x IQ8PLUS-72-2-US
Roof Type	Asphalt Shingles
Racking	PSR-B84 Rails (Black)
Mounting Type	CompMount Flashing (Black)
DC SIZE	19.5 kW
AC SIZE	14.5 kVA

DRAWING INDEX			
Item	Drawing #	Rev	Description
1	22598DB00-0	A	Drawing Index
2	22598DB00-1	A	Site Layout
3	22598DB00-2	A	String Mapping
4	22598DB00-3	A	Electrical One Line Diagram
5	22598DB00-4	A	Detailed Electrical Wiring Schematic
6	22598DB00-5	A	PV Labels
7	22598DB00-6	A	Bill of Materials
8	22598DB00-7	A	PV Dead Load



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PHOTOVOLTAIC NOTES

1. THE INSTALLATION OF SOLAR ARRAYS AND PHOTOVOLTAIC POWER SYSTEMS SHALL COMPLY WITH THE FOLLOWING CODES:

- 2020 NATIONAL ELECTRICAL CODE
- 2018 NORTH CAROLINA RESIDENTIAL CODE
- 2018 NORTH CAROLINA BUILDING CODE
- AS ADOPTED BY THE STATE OF NORTH CAROLINA
- ALL OTHER ORDINANCE ADOPTED BY THE LOCAL GOVERNING AGENCIES

2. ROOFTOP MOUNTED PHOTOVOLTAIC PANELS AND MODULES SHALL BE TESTED, LISTED AND IDENTIFIED BY RECOGNIZED ELECTRICAL TESTING LABORATORY.

3. SOLAR SYSTEM SHALL NOT COVER ANY PLUMBING OR MECHANICAL VENTS

4. MODULES AND SUPPORT STRUCTURES SHALL BE GROUNDED

5. SOLAR INVERTER SHALL BE LISTED TO UL1741

6. ALL CONDUCTORS SHALL BE COPPER AND SHOULD BE 75 AND 90 DEG RATED

7. REMOVAL OF AN INTERACTIVE INVERTER OR OTHER EQUIPMENT SHALL NOT DISCONNECT THE BONDING CONNECTION BETWEEN THE GROUNDING ELECTRODE CONDUCTOR AND THE PHOTOVOLTAIC SOURCE AND/OR OUTPUT CIRCUIT GROUNDED CONDUCTORS.

8. LIVE PARTS OF PV SOURCE CIRCUITS AND PV OUTPUT CIRCUITS OVER 150V TO GROUND SHALL NOT BE ACCESSIBLE TO OTHER THAN QUALIFIED PERSONS WHILE ENERGIZED.

9. ALL PV MODULES AND ASSOCIATED EQUIPMENT AND WIRING SHALL BE PROTECTED FROM PHYSICAL DAMAGE.



PV Installation
Professional

Ali Buttar
PVIP #031310-32

A 12/28/2022

Customer's Signature

JOB NUMBER

22-598-DB00

PROJECT STATUS

PERMITTING

SHEET

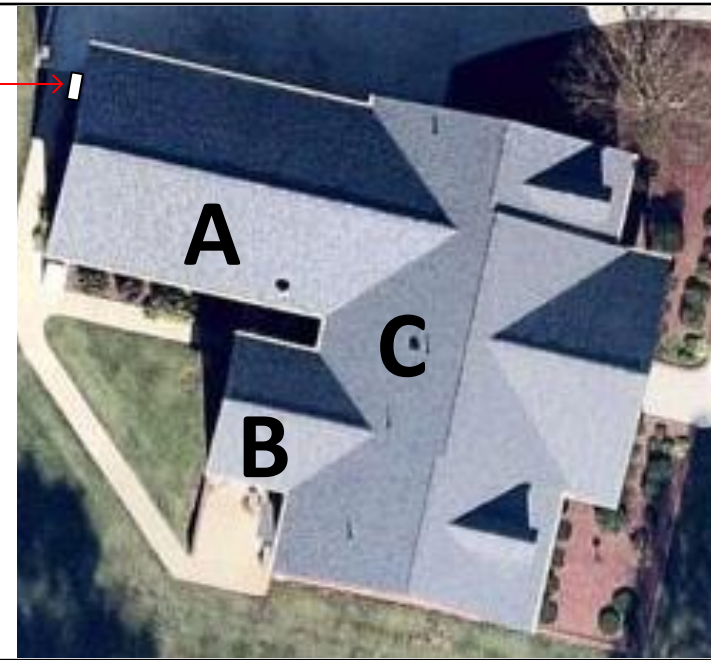
DRAWING INDEX

DB
22598DB00-0

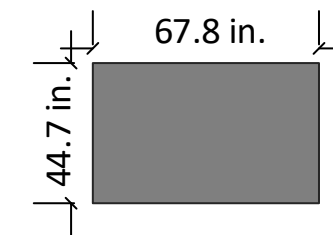
Roofs have one layer of shingles and roofing material is asphalt shingles.

The roof is located in 115mph wind zone

Utility Meter



Module Dimension



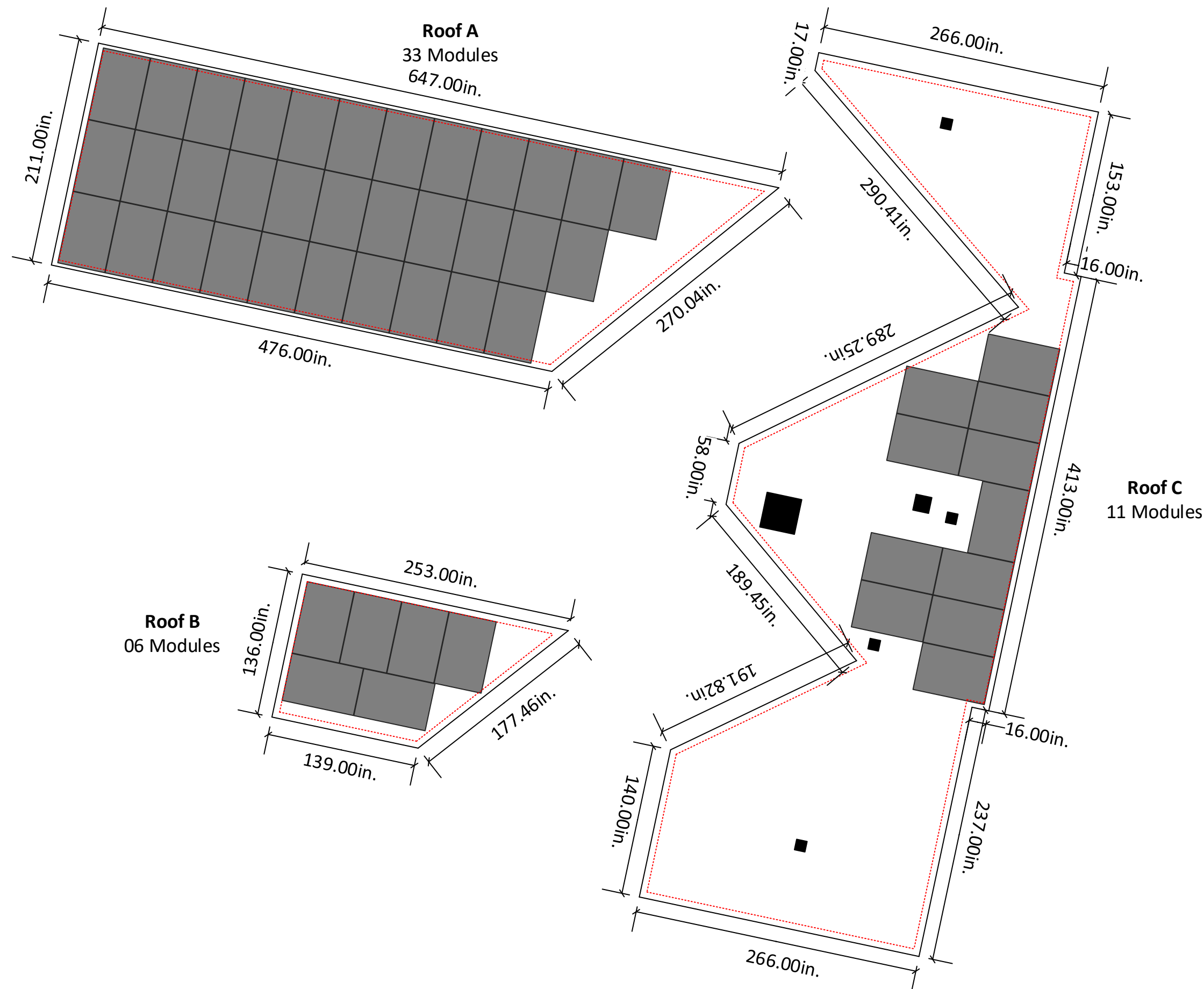
Roofs	Pitch	Azimuth
A	34°	192°
B	34°	192°
C	34°	282°



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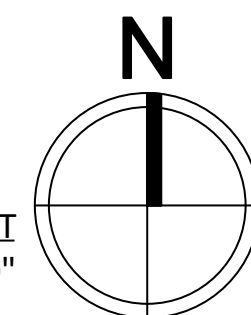
SYSTEM DETAILS

NUMBER OF PANELS : 50
 PANELS MODEL : SOLARIA PowerX-390R
 DC SIZE : 19.5 KW
 AC SIZE : 14.5 KVA



6" clearance from each side of the roof

SITE LAYOUT
 SCALE: 1/8" - 1' 0"



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 Holly Springs NC 27540



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Customer's Signature

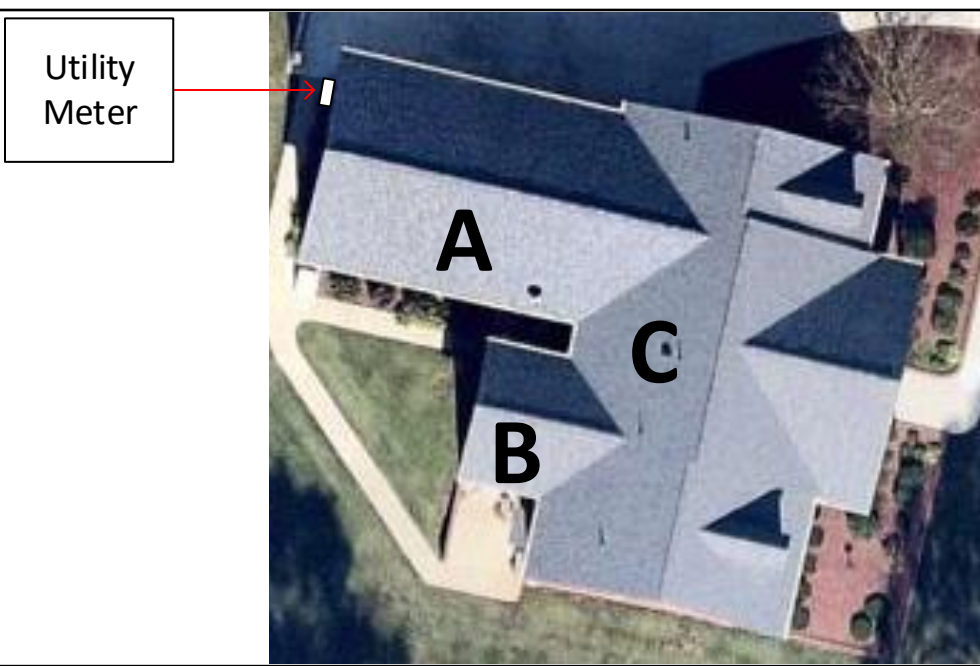
JOB NUMBER
 22-598-DB00

PROJECT STATUS
 PERMITTING

SHEET
 SITE LAYOUT

DB
 22598DB00-1

String Layout					
Enphase IQ Combiner 4					
Strings #	No. of Modules	Color Code	Strings #	No. of Modules	Color Code
String 1	13		String 4	12	
String 2	13				
String 3	12				



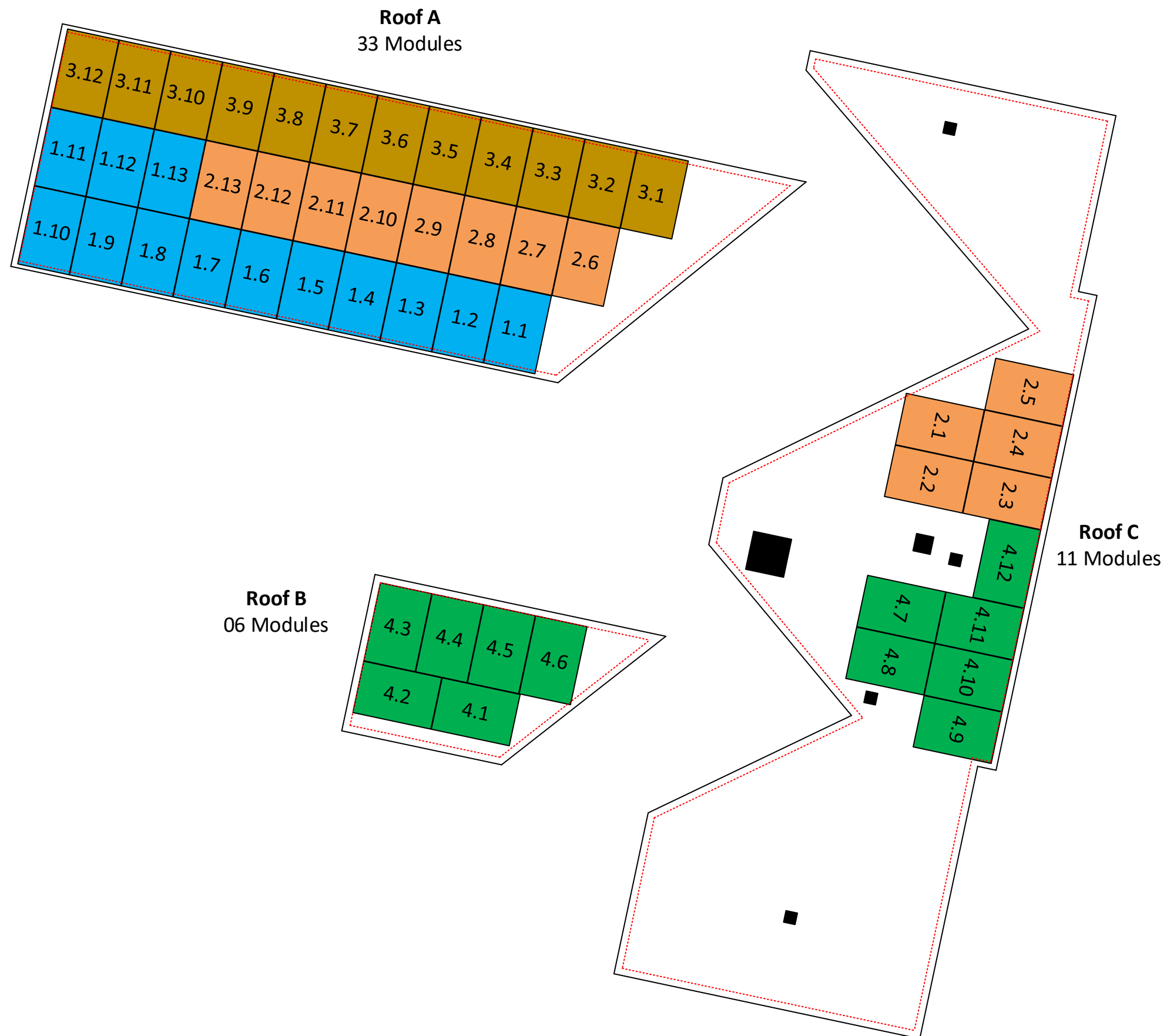
Module Dimension		
	Pitch	Azimuth
Roofs		
A	34°	192°
B	34°	192°
C	34°	282°



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SYSTEM DETAILS

NUMBER OF PANELS : 50
 PANELS MODEL : SOLARIA PowerX-390R
 DC SIZE : 19.5 KW
 AC SIZE : 14.5 KVA



6" clearance from each side of the roof

STRING MAPPING
 SCALE: 1/8" - 1' 0"

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 Holly Springs NC 27540



A 12/28/2022

Customer's Signature

JOB NUMBER
 22-598-DB00

PROJECT STATUS
 PERMITTING

SHEET
 STRING MAPPING

DB
 22598DB00-2



PV Installation
Professional

Ali Butar
PVIP #031310-32

A 12/28/2022

Customer's Signature

JOB NUMBER

22-598-DB00

PROJECT STATUS

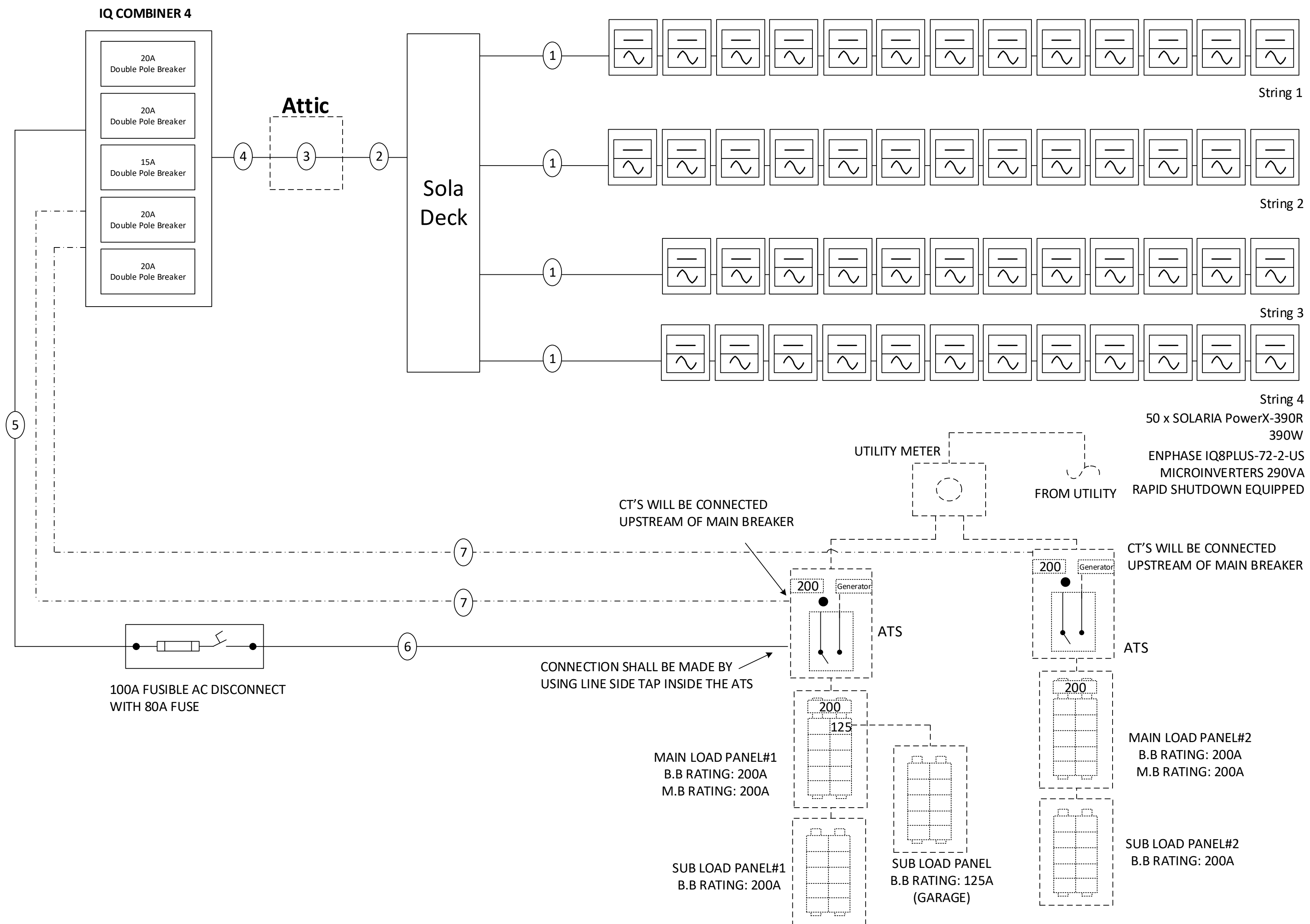
PERMITTING

SHEET

ELECTRICAL ONE LINE DIAGRAM

DB

22598DB00-3



ELECTRICAL NOTES

- System Size: 19,500W DC
- (50) SOLARIA PowerX-390R
- (50) ENPHASE IQ8PLUS-72-2-US MICROINVERTERS
- Inverter Output: 1.21A max @ 240 VAC (each micro inverter)
- 290 VA AC output max (each micro inverter)
- 14.5 kVA AC output max

- Grounding will be done via Pegasus grounding lugs and mid-clamps to ensure the rail and panels are continuously grounded.
- Rapid Shutdown is included in the Micro Inverters, refer to Micro Inverter attached datasheets.
- The load center / disconnect will be visible, lockable accessible to utility linesmen and will be properly labelled as per NEC requirements. It will be located on the exterior wall of the building, next to the utility meter.

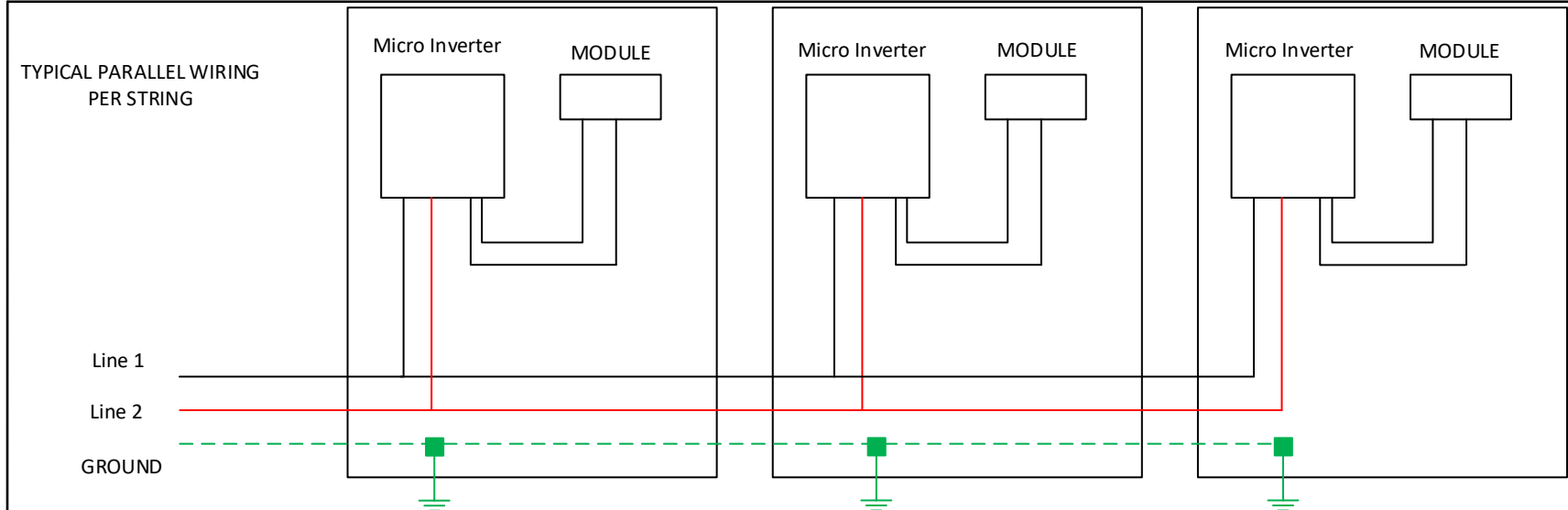
STRING 1:
13 x 390W = 5,070W ea
 $I_{max}(1.21 \times 1.25 \times 13) = 19.66 \text{ AC}$
 $V_{mpp} = 240 \text{ AC}$
 $V_{rise} (1.05+0.41 = 1.46) \leq 2\%$
 $V_{oc} \leq 30 \text{ VAC}$

STRING 2:
13 x 390W = 5,070W ea
 $I_{max}(1.21 \times 1.25 \times 13) = 19.66 \text{ AC}$
 $V_{mpp} = 240 \text{ AC}$
 $V_{rise} (1.30+0.41 = 1.71) \leq 2\%$
 $V_{oc} \leq 30 \text{ VAC}$

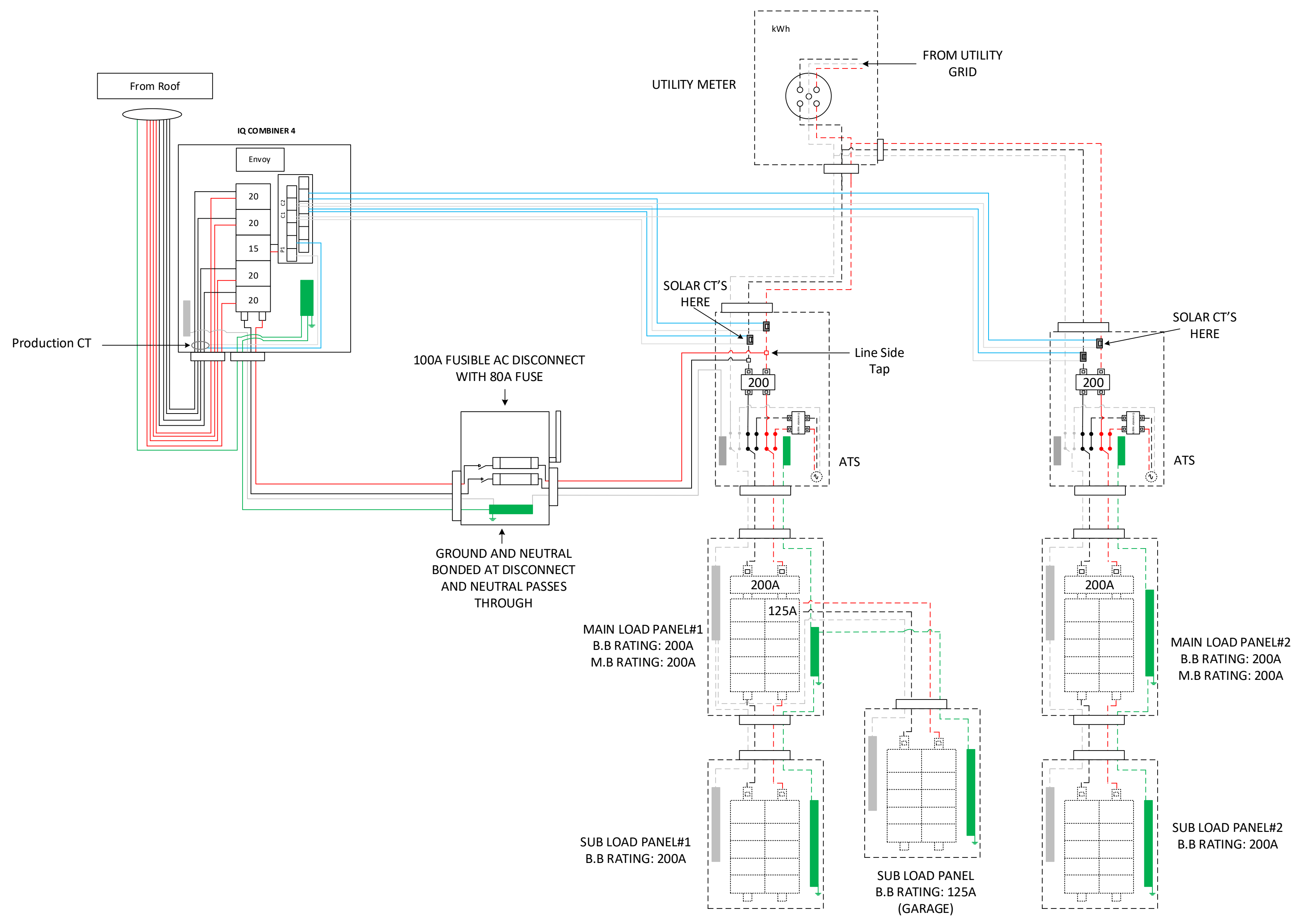
STRING 3:
12 x 390W = 4,680W ea
 $I_{max}(1.21 \times 1.25 \times 13) = 18.15 \text{ AC}$
 $V_{mpp} = 240 \text{ AC}$
 $V_{rise} (1.06+0.39 = 1.45) \leq 2\%$
 $V_{oc} \leq 30 \text{ VAC}$

STRING 4:
12 x 390W = 4,680W ea
 $I_{max}(1.21 \times 1.25 \times 13) = 18.15 \text{ AC}$
 $V_{mpp} = 240 \text{ AC}$
 $V_{rise} (1.37+0.52 = 1.89) \leq 2\%$
 $V_{oc} \leq 30 \text{ VAC}$

Sr.No	#Wire	Conduit Size	Ground Wire	Amperage
1	01 x #12 Q Cable		#10 Bare CU	20A
2	4 x #10 MC Cable			20A
3	8 x #10 THHN Cu	3/4" LFMC	#10 Green	20A
4	8 x #10 THHN Cu	3/4" EMT	#10 Green	20A
5	3 x #04 THHN Cu	1.25" PVC	#08 Green	80A
6	3 x #04 THHN Cu	1.25" PVC		80A
7	Lead Wire 18AWG, PVC Extruded	3/4" EMT		



Line 1		Note: Line 1 from all strings will be passed from the production CT
Line 2		
Neutral		Note: The arrow on production CT's and consumption CT's must point towards the loads and away from the source.
Ground		



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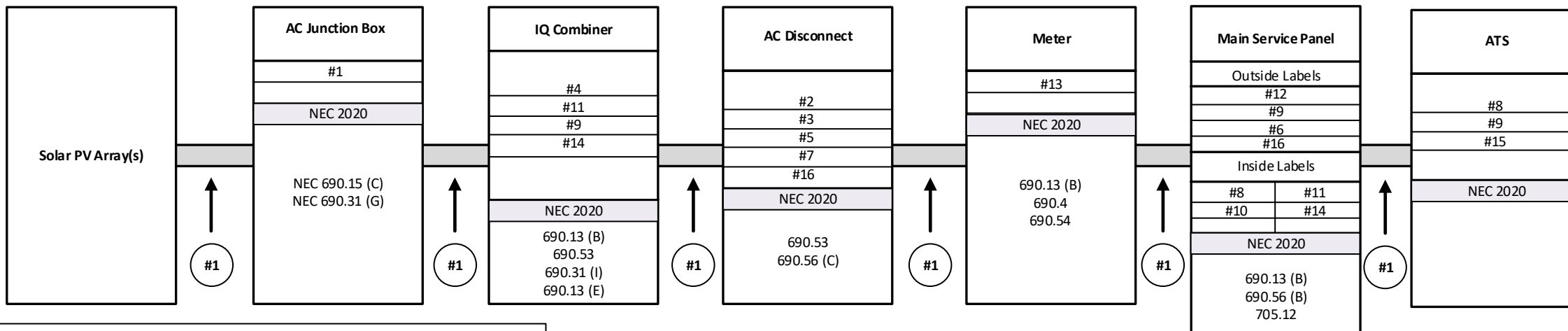
Customer's Signature

JOB NUMBER
 22-598-DB00

PROJECT STATUS
 PERMITTING

SHEET
 DETAILED ELECTRICAL DIAGRAM

DB
 22598DB00-4



Daniel Brown
1261 Rollins Mill Rd
Holly Springs NC 27540



A 12/28/2022

Customer's Signature _____

JOB NUMBER 22-598-DB00

PROJECT STATUS _____

PERMITTING _____

SHEET PV LABELS

DB
22598DB00-5

LABELING AND WARNING SIGNS NEC 2020

A. PURPOSE

PROVIDE EMERGENCY RESPONDERS WITH APPROPRIATE WARNING AND GUIDANCE WITH RESPECT TO ISOLATING THE SOLAR ELECTRIC SYSTEM. THIS CAN FACILITATE IDENTIFYING ENERGIZED ELECTRICAL LINES THAT CONNECT THE SOLAR PANELS TO THE INVERTER, AS SHOULD NOT BE CUT WHEN VENTING FOR SMOKE REMOVAL.

B. MAIN SERVICE DISCONNECT:

1. RESIDENTIAL BUILDINGS- THE MARKING MAY BE PLACED WITHIN THE MAIN SERVICE DISCONNECT. THE MARKING SHALL BE PLACED ON THE OUTSIDE COVER IF THE MAIN SERVICE DISCONNECT IS OPERABLE WITH THE SERVICE PANEL CLOSED.

2. COMMERCIAL BUILDINGS- THE MARKINGS SHALL BE PLACED ADJACENT TO THE MAIN SERVICE DISCONNECT CLEARLY VISIBLE FROM THE LOCATION WHERE THE LEVER IS OPERATED

3. MARKINGS, VERBIAGE, FORMAT AND TYPE OF MATERIAL

- a. VERBIAGE: CAUTION; SOLAR ELECTRIC SYSTEM CONNECTED
- b. FORMAT:

- (1) WHITE LETTERING ON A RED BACKGROUND
- (2) MINIMUM 3/8 INCH LETTER HEIGHT
- (3) ALL LETTERS SHALL BE CAPITALIZED
- (4) ARIAL OR SIMILAR FONT, NON-BOLD

c. MATERIAL:

- (1) REFLECTIVE, WEATHER RESISTANT MATERIAL SUITABLE FOR THE ENVIRONMENT (USE UL-969) AS STANDARD FOR WEATHER RATING); DURABLE ADHESIVE MATERIALS MEET THIS REQUIREMENT.

C. MARKING REQUIREMENTS ON DC CONDUIT, RACEWAYS, ENCLOSURES, CABLE ASSEMBLIES, DC COMBINERS AND JUNCTION BOXES;

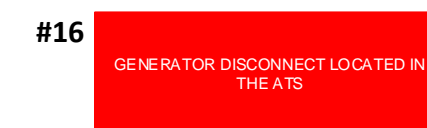
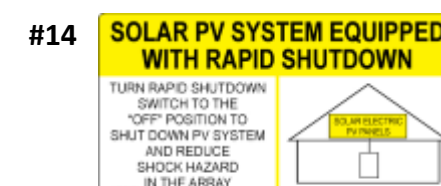
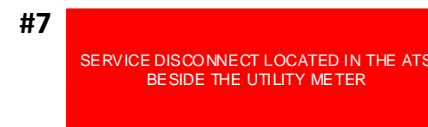
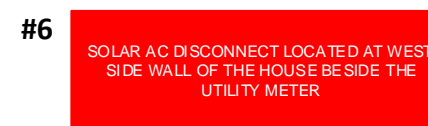
- 1. MARKING: PLACEMENT, VERBIAGE, FORMAT AND TYPE OF MATERIAL.

a. PLACEMENT: MARKINGS SHALL BE PLACED EVERY 10 (TEN) FEET ON ALL INTERIOR AND EXTERIOR DC CONDUITS, RACEWAYS, ENCLOSURES AND CABLE ASSEMBLIES, AT TURNS ABOVE AND/OR BELOW PENETRATIONS, ALL DC COMBINERS AND JUNCTION BOXES.

b. VERBIAGE: CAUTION SOLAR CIRCUIT

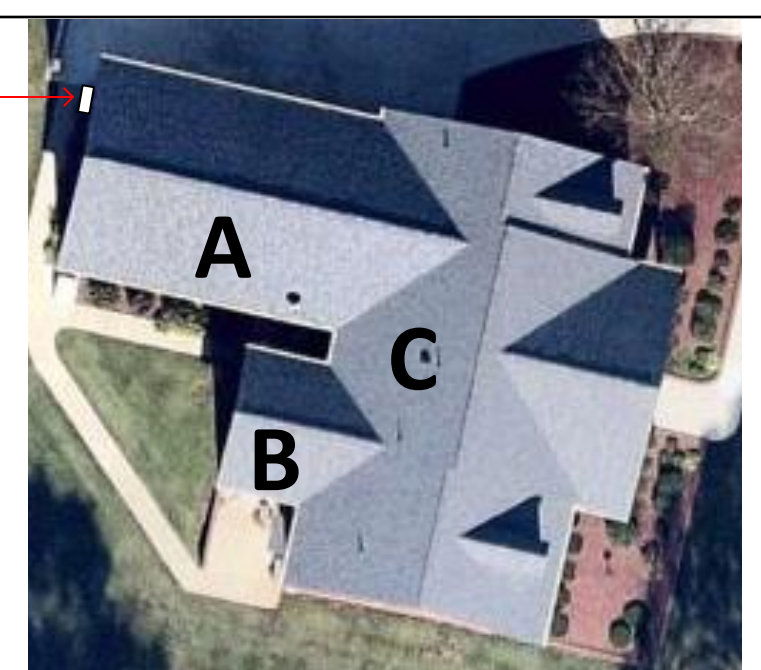
c. THE FORMAT AND TYPE OF MATERIAL SHALL ADHERE TO SECTION B-3.B & C ABOVE

D. INVERTERS ARE NOT REQUIRED TO HAVE CAUTION MARKINGS



Rails and Splices : PSR-B84 (BLACK)	Roof Attachment : Pegasus Comp Mount
Rafter Spacing : 24 in	There is one layer of shingles Roofing material is asphalt shingles
Attachment Span: 4ft	The roof is located in 115mph wind zone

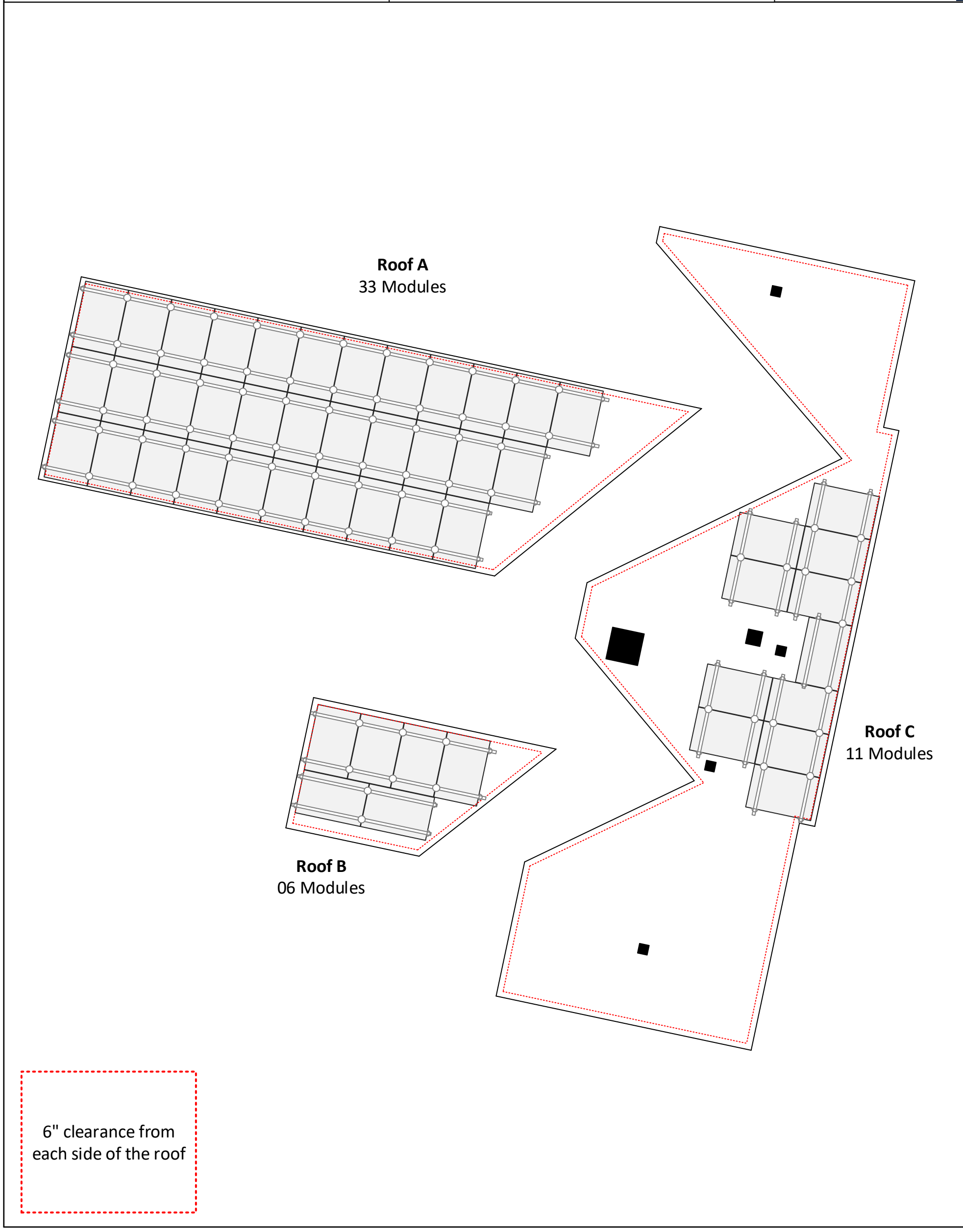
Utility Meter



Module Dimension		
	Pitch	Azimuth
Roofs		
A	34°	192°
B	34°	192°
C	34°	282°



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PV LABELS

Sr No	Code	Qty
01	02-314	10
02	03-302	01
03	02-316	01
04	03-390	01
05	03-306	01
06	8M-001	01
07	8M-002	01
08	05-108	02
09	05-211	03
10	05-372	01
11	05-215	01
12	05-216	01
13	07-359	01
14	07-111	02
15	8M-005	02
16	8M-003	02

- 66 x PSR-B84: Pegasus Rail, Black, 84" (7 Feet)
- 46 x PSR-SPL: Pegasus - Bonded, Structural Splice
- 80 x PSR-MCB: Pegasus - Multiclamp, Mid/End, 30 to 40 mm, Black
- 40 x PSR-HEC: Pegasus - Hidden End Clamp
- 50 x PSR-MLP: Pegasus - MLPE Mount
- 17 x PSR-LUG: Pegasus - Grounding Lug
- 75 x PSR-WMC: Pegasus - Wire Management Clip
- 09 x PSR-CBG: Pegasus - Cable Grip
- 40 x PSR-CAP: Pegasus - End Cap
- 108 x PSCR-UBBDT: Pegasus Comp Mount - Open Slot, Black L Foot, Black Flashing, Dovetail 3/8" T-Bolt
- 100 x Heyco Wire Clips

- SOLAR MODULES**
- 50 x SOLARIA PowerX-390R
- INVERTER & SUPPORTING ITEMS**
- 50 x Enphase IQ8PLUS-72-2-US micro inverter
 - 01 x X-IQ-AM1-240-4 IQ Combiner 4
- ENPHASE CABLES AND ACCESSORIES**
- 53 x Q-12-10-240: Q Cable
 - 03 x Q-12-20-200: Q Cable
 - 01 x Q-12-RAW-300:Q Cable, 12 AWG (50ft)
 - 08 x Q-CONN-10M Male Field-wireable connector
 - 08 x Q-CONN-10F Female Field-wireable connector
 - 04 x Q-TERM-10: Terminator Cap
 - 04 x Q-SEAL-10: Female Sealing Cap
 - 01 x Q-CLIP-100: Q Cable rail mount cable management clip (Pack of 100)
 - 01 x Q-DISC-10: Disconnect tool
 - 04 x Eaton BR220B with hold down kit support (Circuit breaker, 2 pole, 20A)
 - 02 x CT-200-SPLIT

Daniel Brown
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Holly Springs NC 27540



A 12/28/2022

Customer's Signature

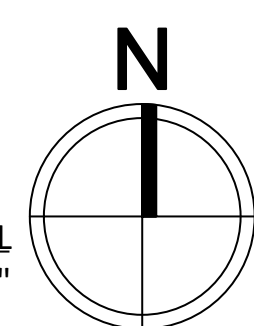
JOB NUMBER
22-598-DB00

PROJECT STATUS
PERMITTING

SHEET
BILL OF MATERIAL

DB
22598DB00-6

BILL OF MATERIAL
SCALE: 1/8" - 1' 0"



PV System Dead Load
(Panel + Racking weight) / PV System Area
 (No. of panels x Weight of panel(lbs.) +Length of racking(ft.) x 1.17 lb.ft) /
 (No. of panels x Height x Width) = Total psf

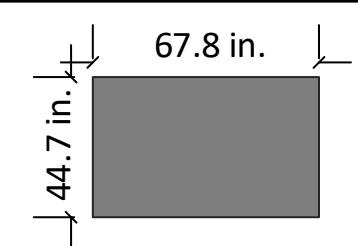
The roof is located in 115mph wind zone

There is one layer of shingles
 Roofing material is asphalt shingles

Utility
 Meter



Module Dimension	Pitch	Azimuth
A	34°	192°
B	34°	192°
C	34°	282°



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ROOF A
<p>PV System Dead Load (Panel + Racking weight) / PV System Area (33 panels x 48.7 lbs./panel + 248 ft. of racking x 1.17 lb.ft) / (33 panels x 5.65' x 3.72') = 2.73 psf</p>

ROOF B
<p>PV System Dead Load (Panel + Racking weight) / PV System Area (06 panels x 48.7 lbs./panel + 53 ft. of racking x 1.17 lb.ft) / (06 panels x 5.65' x 3.72') = 2.80 psf</p>

ROOF C
<p>PV System Dead Load (Panel + Racking weight) / PV System Area (11 panels x 48.7 lbs./panel + 87 ft. of racking x 1.17 lb.ft) / (11 panels x 5.65' x 3.72') = 2.75 psf</p>

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Customer's Signature

JOB NUMBER
 22-598-DB00

PROJECT STATUS
 PERMITTING

SHEET
 PV DEAD LOAD

DB
 22598DB00-7