



**CITY OF ORANGE HISTORIC PRESERVATION COMMISSION**  
 ORANGE CITY HALL  
 29 North Day Street, Orange, New Jersey 07050  
 PHONE (973) 952-6344 FAX (973) 672-6643

**CITY OF ORANGE PRESERVATION COMMISSION**  
**APPLICATION FOR CERTIFICATION OF APPROPRIATENESS**

DATE RECEIVED \_\_\_\_\_ APPLICATION # \_\_\_\_\_

APPLICANT(S): \_\_\_\_\_

Name of Applicant(s): MOMENTUM SOLAR

Address: 326 HIGH STREET METUCHEN NJ 08840 Email: PERMITS@MOMENTUMSOLAR.COM

Telephone (Day) 732-366-1854 (Eve) \_\_\_\_\_ (Fax) 848-291-9798

Relationship of Applicant to Property owner:  
 Owner(s)     Lessee     Property Under Contract     Other (Specify)

Explanation if Other: CONTRACTOR

**OWNER(S), IF DIFFERENT THAN APPLICANT:**

Name(s) of Owner(s): LEVI HOLMES

Address: 370 Fairview Ave Email: wholmes1125@aol.com

Telephone Number: (Day) (973) 868-3980 (Eve) \_\_\_\_\_

Street Address of the Property that is subject of Application: \_\_\_\_\_

370 FAIRVIEW AVENUE

Tax Block: 5201 Lot: 9

Name of Historic District in which Property lies: \_\_\_\_\_

Orange Valley     Montrose Seven Oaks Park     Main Street     St. John's

Existing use of the Property: \_\_\_\_\_  
 SINGLE FAMILY

Existing zoning of the Property: \_\_\_\_\_  
 SINGLE FAMILY

Describe in detail the proposed work to be done at the Property.

ROOFTOP SOLAR INSTALLATION

Explain how you plan to prevent, minimize and mitigate any adverse effects to this Property, to nearby historically significant properties, and to the Historic District?

panels on side roofs

Each Application must be accompanied by sketches, drawings, photographs, descriptions or other information sufficient to show the proposed alterations, additions, changes or new construction. The Commission may require the subsequent submission of such additional materials as it reasonably requires to make an informed decision. A submission shall include:

- A photograph of each elevation of the structure.
- Three (3) copies of drawings, photographs, material brochures, samples, specifications or information that may be necessary to assist the Commission. Copies may be submitted electronically, or by CD or flash drive.
- Three (3) copies of a survey, or if applicable, a site plan showing the location of new and existing structures on the site and their location with respect to the building line, property line, and the front of those buildings or structures immediately adjacent to each side of the lot to be built upon.
- Three (3) copies of facade elevation(s), if applicable, of the proposed work in sufficient detail to identify the limits and location of the proposed work, and existing and proposed materials to be used.
- \$70.00 Application fee (check or money order made to the City of Orange).

By signing this Application, I hereby certify that the owner of record authorizes the proposed work and I have been authorized by the owner to make this Application as his/her authorized agent. By signing this Application, the owner hereby grants authorization to the Commission members, and its professional and support staff to enter the Property in question for inspection purposes. By signing this application I further agree that the attorney's and professional staff's review of my application is chargeable to me and that I agree to pay for such review separately from the application fee, by depositing an escrow payment of \$ \_\_\_\_\_.

Signature of Applicant(s) \_\_\_\_\_

(Print Name) MOMENTUM SOLAR \_\_\_\_\_

Date 2/28/2024 \_\_\_\_\_

*Levi A. Holmes II*

Signature of Owner(s) (if different than Applicant) \_\_\_\_\_

(Print Name) LEVI HOLMES \_\_\_\_\_

Date 2/28/2024 \_\_\_\_\_

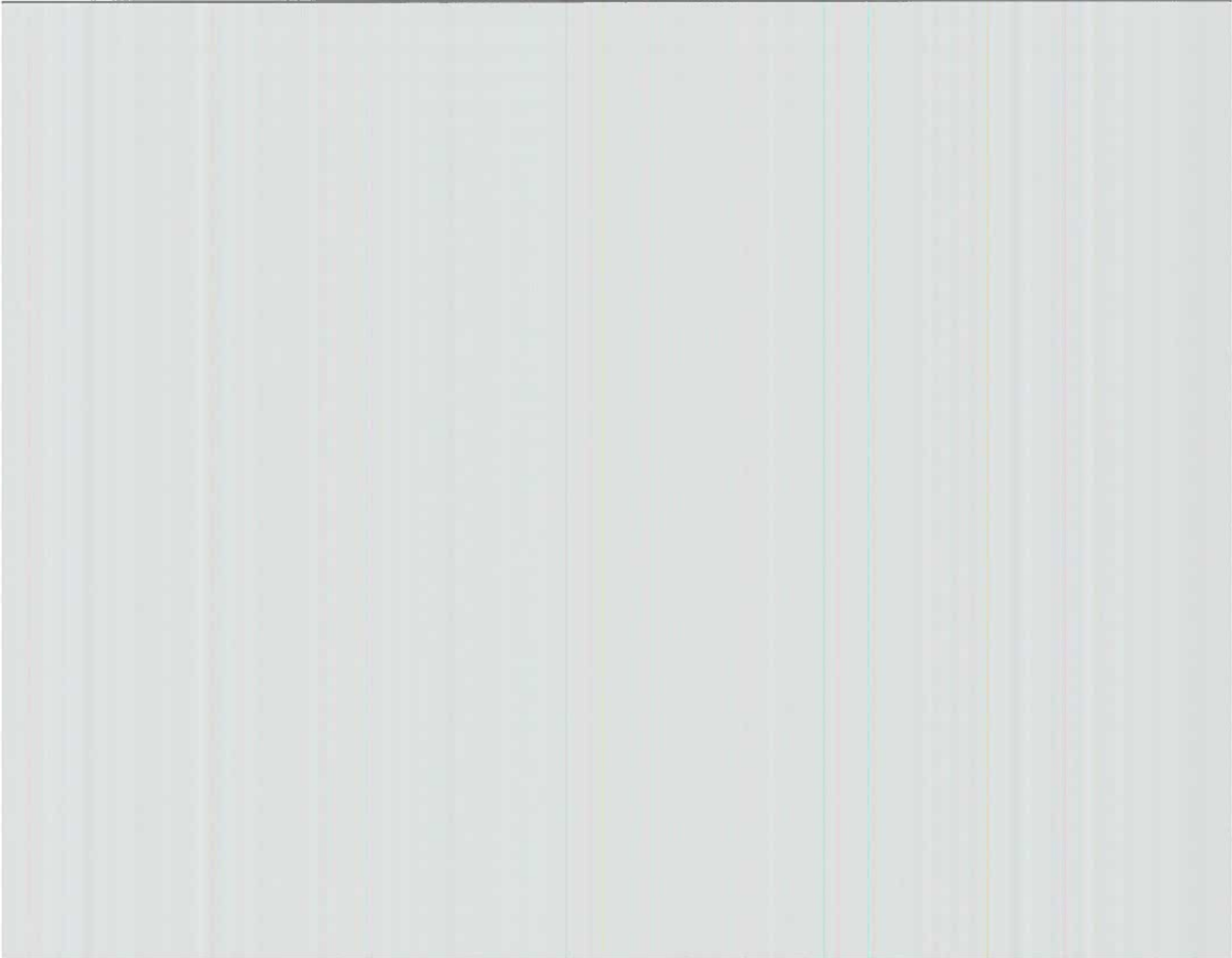
Submittal of this Application form-properly signed, with the indicated copies of documents and the Application fee will constitute a complete Application. Upon receipt of a complete Application, the Board Secretary will schedule the Application with the Commission. The Applicant delays his/her own Application if all of these required items are not submitted. The Commission shall reach a decision on the Application within forty-five (45) days of submission of a complete Application. The Applicant must appear in front of the Commission in order to present the Application during the public hearing on the scheduled date.

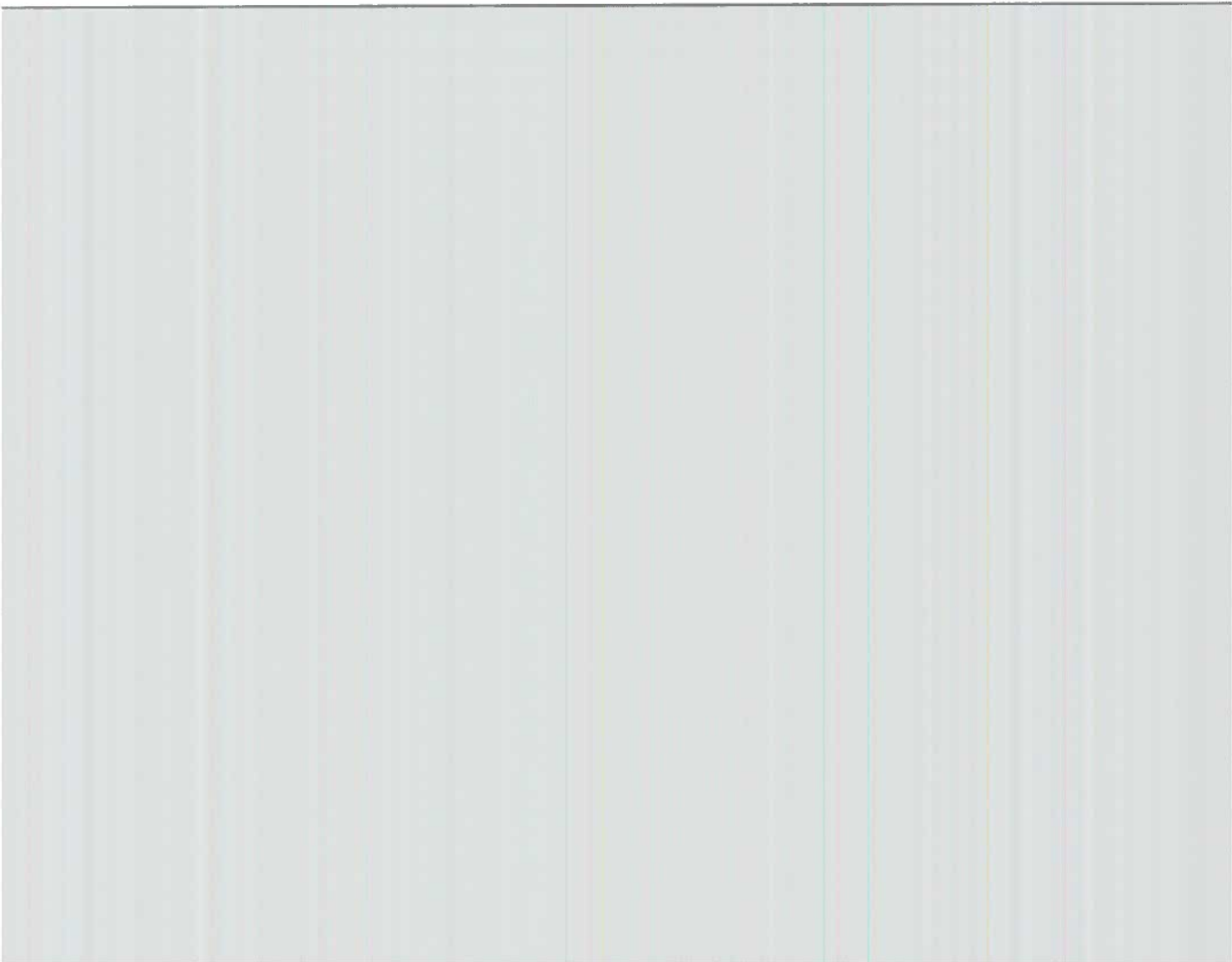
Telephone: 732-366-1854 Fax: 848-291-9798 Website: \_\_\_\_\_

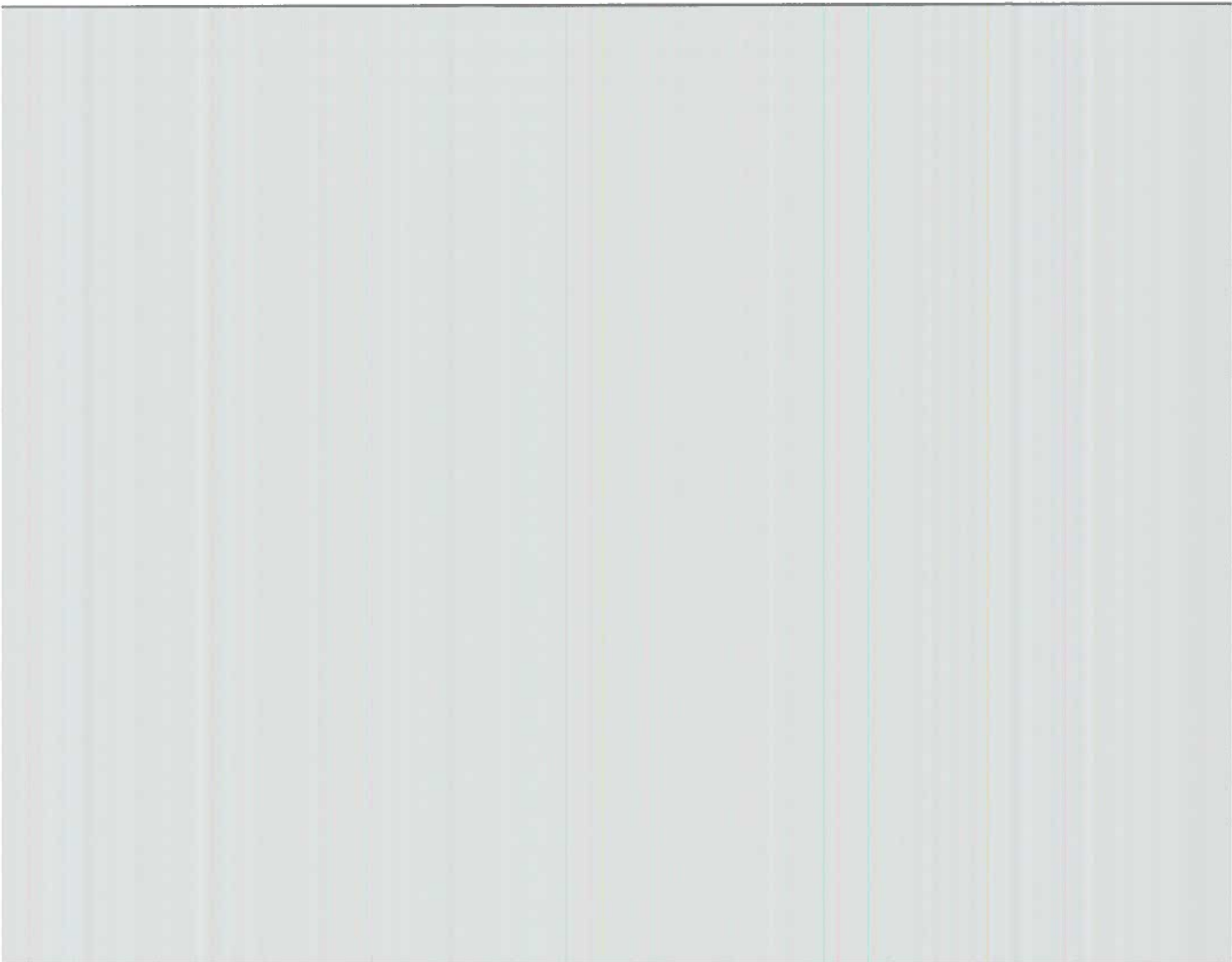
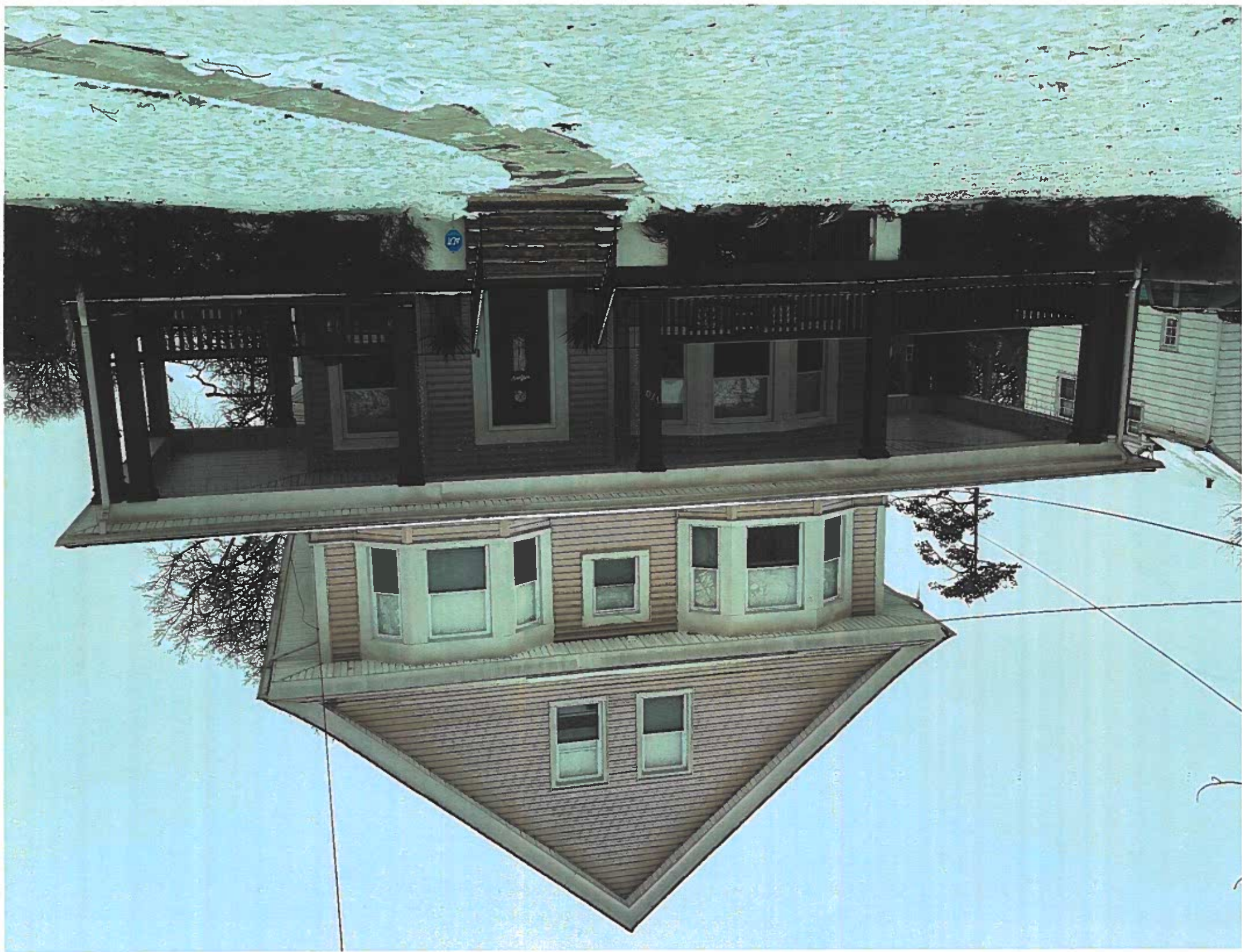
Date payment received: \_\_\_\_\_ Check Number: \_\_\_\_\_

Date sent to Finance: \_\_\_\_\_ Receipt Number: \_\_\_\_\_

Certification of Appropriateness Application Form Adopted 10/21/15, revised 10/6/22.







# Michael S. Rezk

Engineer-PE

Pro Custom Solar LLC

732-902-6224

3096B Hamilton Blvd

January 19, 2024

South Plainfield, NJ 07080

Re: Proposed Photovoltaic Solar Panel Installation

Levi Holmes

370 FAIRVIEW AVE

ORANGE, NJ 07050

Dear Plan Reviewer:

Certification: I have reviewed the engineering testing reports for the racking and attachments to be used on this project and I certify that the products are capable of supporting the code required loads and are suitable for this installation when installed in strict compliance with the manufacturers printed instructions.

Regarding the solar panel array installation on the above referenced project please note that an inspection was performed by a representative of the Architect/Engineer of Record, and analysis of the existing structure was conducted. There is adequate structural capacity for the installation of the array with the following recommendations:

1. The array will be installed on the existing roof. The roof framing is constructed of true 2"x6" wood rafters @16" o.c. spanning 9' 11" with 1/2" plywood sheathing. The new array (See Site map by contractor) will add 2.63 Lb. / Sf. overall to the roof. The existing structure is sufficient to support the new loads associated with the additional weight & wind resistance. No additional structural support is required for the roof structure.

2. The attachment system shall be secured to the roof and shall be in strict compliance with manufacturers printed instructions. The attachment system shall be UL 1703 approved tested. Provide water tight sealant at all penetrations. Attachments shall follow panel rows as specified by the system manufacturer's installation manual. The panel angle shall match the roof slope. Reference summary table below:

Roof Type:	Shingle	Fastener Max Spacing (in.)		
Attachment System:	"ROOFTECH®" "RT MINI II" & "UNIRAC SM" Mounting Systems	Wind Zone 1	Wind Zone 2	Wind Zone 3
Fastener Info:	min. 5/16" x 4" long stainless-steel lags with a min. embedment of 3" into the rafters	80	72	72

3. Solar Modules shall be UL-1703 rated. Refer to manufacturers specifications sheets.

4. Positive drainage of the system shall be so as not to void the existing roof warranty.

5. All aspects of the installation shall comply with NJUCC, ASCE 7-16, IBC NJ 2021, NEC 2020(NFPA-70), IRC NJ 2021. Please review the attached certifications prepared by the manufacturer.

6. Please refer to the attached structural calculations.

If you have any questions relating to this matter, please contact me at your earliest convenience. Thank you.

Michael S. Rezk, P.E.

NJ Lic. No. GE56261



# Michael S. Rezk

Engineer-PE

Pro Custom Solar LLC

732-902-6224

3096B Hamilton Blvd

January 19, 2024

South Plainfield, NJ 07080

## Gravity Load Calculation Criteria

Structural Design Loads per ASCE 7-16

Dead Loads = 10 psf + 2.6 psf (new solar panels) = 12.6 psf

Roof Live Load = 20 psf

Ground Snow Load/Live Load = 25 psf

## Wind Load Calculation Criteria

Wind Loads per ASCE 7-16, Ch. 30.4

Design wind pressure determined by Eq. 29.4-7:

Zone 1 = -18.5 psf

Roof Slope = 41 degrees

Roof Mean Height = 15 ft

Zone 2 = -24 psf

Basic Wind Speed = 115 mph

Zone 3 = -27.1 psf

Exposure = B

Per section 2.4.1, ASD combo = D + 0.6W:

Zone 1 = 2.6 psf + 0.6(-18.5 psf) = -8.5 psf

Zone 2 = 2.6 psf + 0.6(-24 psf) = -11.8 psf

Zone 3 = 2.6 psf + 0.6(-27.1 psf) = -13.7 psf

## Check Attachment to Wood Rafter

Use 5/16 dia. Lag screw w/ 3" embedment into 2 in. wide roof rafter

Lag Screw Spacing:

Lag Screw Tributary Area:

Zone 1 = 80" o.c. max

Zone 1 =  $(80" \text{ o.c. max})^2 / 144 = 44.44 \text{ SF}$

Zone 2 = 72" o.c. max

Zone 2 =  $(72" \text{ o.c. max})^2 / 144 = 36 \text{ SF}$

Zone 3 = 72" o.c. max

Zone 3 =  $(72" \text{ o.c. max})^2 / 144 = 36 \text{ SF}$

Lag Screw Forces:

$W = 266 \text{ lb/in}$  (Table 12.2A, 2015 NDS)

Zone 1 = 8.5 psf x 44.44 SF = 378 lb

< W', OK

$Cd = 1.6$  (Table 2.3.2, 2015 NDS)

Zone 2 = 11.8 psf x 36 SF = 425 lb

< W', OK

$Ct = 1$  (Table 2.3.3, 2015 NDS)

Zone 3 = 13.7 psf x 36 SF = 493 lb

< W', OK

$W' = W \times \text{embed} \times Cd \times Ct$

$W' = 266 \text{ lb/in} \times 3 \text{ in.} \times 1.6 \times 1 = 1276.8 \text{ lb}$

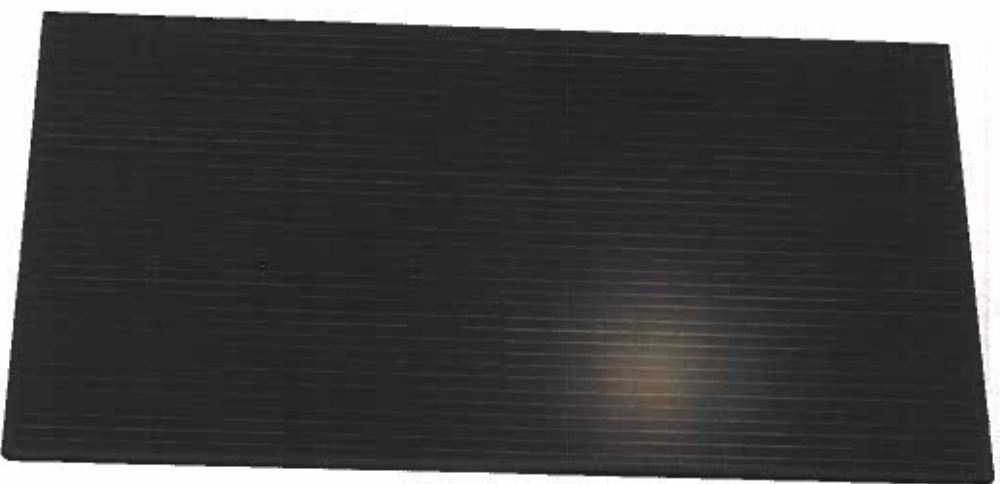


# Q.PEAK DUO BLK ML-G10+ SERIES



**385-410 Wp | 132 Cells**  
**20.9% Maximum Module Efficiency**

MODEL Q.PEAK DUO BLK ML-G10+



**Breaking the 20% efficiency barrier**  
QANTUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 20.9%.



**A reliable investment**  
Inclusive 25-year product warranty and 25-year linear performance warranty<sup>1</sup>.



**Enduring high performance**  
Long-term yield security with Anti LETID Technology, Anti PID Technology<sup>2</sup> and Hot-Spot Protect.



**Extreme weather rating**  
High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).



**Innovative all-weather technology**  
Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



**The most thorough testing programme in the industry**

Qcells is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new "Quality Controlled PV" of the independent certification institute TÜV Rheinland.

<sup>1</sup> See data sheet on [r#66](#) for further information.

<sup>2</sup> APT test conditions according to IEC/TS 62804-1:2015, method A (-1500 V, 96 h)

The ideal solution for:



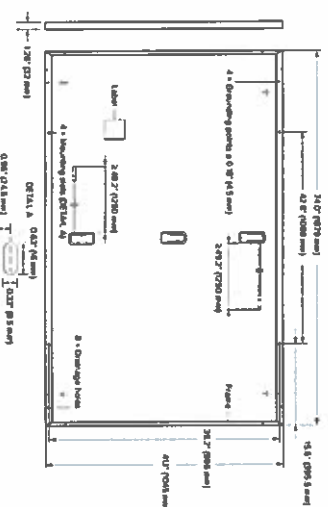
Rooftop arrays on residential buildings



# Q.PEAK DUO BLK ML-G10+ SERIES

## Mechanical Specification

Format	74.0 in x 41.1 in x 1.26 in (including frame) (1879 mm x 1045 mm x 32 mm)
Weight	48 lbs (22.0 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 x 22 monocrystalline G.ANTUM solar half cells
Junction box	2.09-3.98 in x 1.26-2.36 in x 0.59-0.71 in (53.10 mm x 32.60 mm x 15.18 mm), IP67, with bypass diodes
Cable	4 mm <sup>2</sup> solar cable; (+) 249.2 in (1250 mm), (-) 249.2 in (1250 mm)
Connector	Stäubli MCA, IP68



## Electrical Characteristics

POWER CLASS	385	390	395	400	405	410
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### MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC (POWER TOLERANCE +5%/-0W)

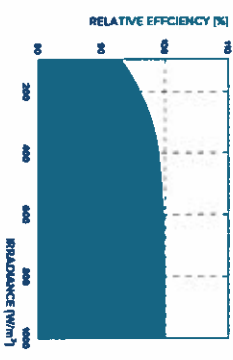
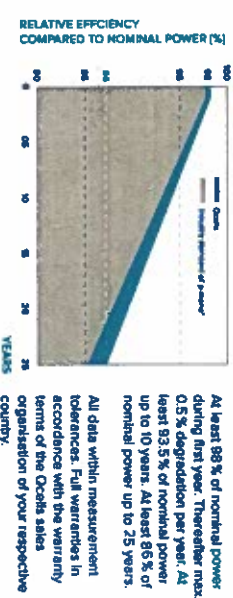
Power at MPP <sup>1</sup>	P <sub>MPP</sub> [W]	385	390	395	400	405	410
Short Circuit Current <sup>1</sup>	I <sub>sc</sub> [A]	11.04	11.07	11.10	11.14	11.17	11.20
Open Circuit Voltage <sup>1</sup>	V <sub>oc</sub> [V]	45.19	45.23	45.27	45.30	45.34	45.37
Current at MPP	I <sub>MPP</sub> [A]	10.59	10.65	10.71	10.77	10.83	10.89
Voltage at MPP	V <sub>MPP</sub> [V]	36.36	36.62	36.88	37.13	37.39	37.64
Efficiency <sup>1</sup>	η [%]	219.6	219.9	220.1	220.4	220.6	220.9

### MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT<sup>2</sup>

Power at MPP	P <sub>MPP</sub> [W]	288.8	292.6	296.3	300.1	303.8	307.6
Short Circuit Current	I <sub>sc</sub> [A]	8.90	8.92	8.95	8.97	9.00	9.03
Open Circuit Voltage	V <sub>oc</sub> [V]	42.62	42.65	42.69	42.72	42.76	42.79
Current at MPP	I <sub>MPP</sub> [A]	8.35	8.41	8.46	8.51	8.57	8.62
Voltage at MPP	V <sub>MPP</sub> [V]	34.59	34.81	35.03	35.25	35.46	35.68

Measurement (tolerances P<sub>MPP</sub> ±3%, I<sub>sc</sub>, V<sub>oc</sub> ±5% at STC; 1000 W/m<sup>2</sup>; 25 ±2 °C, AM 1.5 according to IEC 60904-3 - 3800 W/m<sup>2</sup>; NMOT, spectrum AM 1.5

## Ocells PERFORMANCE WARRANTY



Standard terms of guarantee for the 8 PV companies with the highest production capacity in 2021 (pre-2027)

At least 88% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 83.5% 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 Ocells sales organisation of your respective country.

Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m<sup>2</sup>)

TEMPERATURE COEFFICIENTS	α	β
Temperature Coefficient of I <sub>sc</sub>	α [%/K]	β [%/K]
Temperature Coefficient of P <sub>MPP</sub>	γ [%/K]	-0.34
Temperature Coefficient of V <sub>oc</sub>	-0.04	NMOT
Nominal Module Operating Temperature		109 ±5.4 (43 ±3 °C)

## Properties for System Design

Maximum System Voltage	V <sub>max</sub> [V]	1000 (IEC)/1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI/UL 6730	TYPE 2
Max. Design Load, Push/Pull <sup>3</sup>	[lbs./ft <sup>2</sup> ]	75 (3600 Pa)/55 (2660 Pa)	Permitted Module Temperature on Continuous Duty	-40 °F up to +185 °F (-40 °C up to +85 °C)
Max. Test Load, Push/Pull <sup>3</sup>	[lbs./ft <sup>2</sup> ]	113 (5400 Pa)/84 (4000 Pa)		

## Qualifications and Certificates

UL 6730, CE compliant, Quality Controlled PV, TÜV Rheinland, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,898,215 (solar cells), See Installation Manual!



Ocells pursues minimizing paper output in consideration of the global environment. Note: Installation instructions must be followed. Contact our technical services for further information on approved installations of the product. Himalaya O CELLS America Inc. 400 Spectrum Center Drive, Suite 1000, Irvine, CA 92618, USA. TEL: +1 949 748 89 96 | EMAIL: hpc-hq@ocells.com | WEB: www.ocells.com



## IQ8 and IQ8+ Microinverters

Our newest IQ8 Microinverters are the industry's first microgrid-forming, software-defined microinverters with split-phase power conversion capability to convert DC power to AC power efficiently. The brain of the semiconductor-based microinverter is our proprietary application-specific integrated circuit (ASIC) which enables the microinverter to operate in grid-tied or off-grid modes. This chip is built in advanced 55nm technology with high speed digital logic and has super-fast response times to changing loads and grid events, alleviating constraints on battery sizing for home energy systems.



Part of the Enphase Energy System, IQ8 Series Microinverters integrate with the Enphase IQ Battery, Enphase IQ Gateway, and the Enphase App monitoring and analysis software.

IQ8 Series Microinverters redefine reliability standards with more than one million cumulative hours of power-on testing, enabling an industry-leading limited warranty of up to 25 years.



Connect PV modules quickly and easily to IQ8 Series Microinverters using the included Q-DCC-2 adapter cable with plug-n-play MC4 connectors.

IQ8 Series Microinverters are UL Listed as PV Rapid Shut Down Equipment and conform with various regulations, when installed according to manufacturer's instructions.

### Easy to Install

- Lightweight and compact with plug-n-play connectors
- Power Line Communication (PLC) between components
- Faster installation with simple two-wire cabling

### High productivity and reliability

- Produce power even when the grid is down\*
- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

### Microgrid-forming

- Complies with the latest advanced grid support\*\*
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) requirements

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IQ8SP-DS-0002-01-EN-US-2022-03-17

\* Only when installed with IQ System Controller 2, meets UL 1741.

\*\* IQ8 and IQ8Plus supports split phase, 240V installations only.

# IQ8 and IQ8+ Microinverters

INPUT DATA (DC)	IQ8-80-2-US	IQ8PLUS-72-2-US	
Commonly used module pairings <sup>1</sup>	W	235 - 350	235 - 440
Module compatibility		60-cell/120 half-cell	60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell
MPPV voltage range	V	27 - 37	29 - 45
Operating range	V	25 - 48	25 - 58
Min/max start voltage	V	30 / 48	30 / 58
Max input DC voltage	V	50	60
Max DC current <sup>2</sup> [module loc]	A	15	15
Overvoltage class DC port		II	II
DC port backfeed current	mA	0	0
PV array configuration		1x1 Ungrounded array; No additional DC side protection required; AC side protection requires max 20A per branch circuit	
OUTPUT DATA (AC)	IQ8-80-2-US	IQ8PLUS-72-2-US	
Peak output power	VA	245	300
Max continuous output power	VA	240	290
Nominal (L-L) voltage/range <sup>3</sup>	V		240 / 271 - 284
Max continuous output current	A	1.0	1.21
Nominal frequency	Hz	60	60
Extended frequency range	Hz	50 - 68	
AC short circuit fault current over 3 cycles	A rms	2	2
Max amps per 20 A (L-L) branch circuit <sup>4</sup>		18	13
Total harmonic distortion		<5%	
Overvoltage class AC port		III	
AC port backfeed current	mA	30	30
Power factor setting		1.0	
Grid-tied power factor (adjustable)		0.85 leading - 0.85 lagging	
Peak efficiency	%	97.5	97.6
CEC weighted efficiency	%	97	97
Night-time power consumption	mW	60	

MECHANICAL DATA	
Ambient temperature range	-40°C to +60°C (-40°F to +140°F)
Relative humidity range	4% to 100% (condensing)
DC Connector type	MCC4
Dimensions (HxWxD)	212 mm (8.3") x 175 mm (6.9") x 30.2 mm (1.2")
Weight	1.08 kg (2.38 lbs)
Cooling	Natural convection - no fans
Approved for wet locations	Yes
Pollution degree	PD3
Enclosure	Class II double-insulated, corrosion resistant polymeric enclosure
Environ. category / UV exposure rating	NEMA Type 6 / outdoor

COMPLIANCE	
Certifications	CA Rule 21 (UL 1741-SA), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 1071-01

This product is UL Listed as PV Rapid Shut Down Equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors, when installed according to manufacturer's instructions.

(1) No enforced DC/AC ratio. See the compatibility calculator at <https://n.enphase.com/module-compatibility>  
 (2) Maximum continuous input DC current is 10.6A (3) Nominal voltage range can be extended beyond nominal if required by the utility. (4) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.

## DISCOVER YOUR NXT HORIZON™

The culmination of over two decades of experience. Thoughtful design, rigorous engineering, world-class support, and a reliable supply chain are the foundation of what makes us confident that NXT HORIZON™ is the NXT Level of DESIGN, SIMPLICITY, and VALUE.

**NXT HORIZON™ COMBO CLAMP**  
DARK: CCLAMP01  
MILL: CCLAMP01

Clicks into rail anywhere (even where there are cables!)  
Self-standing clamp with spring combines as both mid and end clamp.  
Clamps 30-40 mm modules

**NXT HORIZON™ CAP KIT**  
ENDCAP01

Make the install look clean with the end cap kit designed to complement the module end clamp and rail ends.

1/2 inch module spacing for efficiency.  
Unirac-quality bonding that works both as mid and end clamps.

**STRONGHOLD™ RAIL CLAMP**  
DARK: SHCLMP01  
MILL: SHCLMP01

Adaptable rail connection to attachments allows click-in feature compatibility with almost all of Unirac's attachments.

FlashLoc technology combined with new features: click-in rail & open slot L-foot for the best flash-less install experience.

**NXT HORIZON™ RAIL**  
DARK: 168RLD1  
MILL: 168RLM1

Strong, lightweight open channel rail with invisible, easy, unthreading and integrated wire management system.

**WIRE MANAGEMENT OPTIONS**

**NXT HORIZON™ MLPE & LUG CLAMP**  
LUGMLPE1

Works as either MLPE Mount or Grounding Lug connection to the rail. Why source two parts when one can do the job?

**NXT HORIZON™ WIRE MANAGEMENT CLIP**  
WRMCLPD1

Aesthetic, yet functional accessory that works to help installers keep wires inside the rail. No zip-ties required. Optional zip tie loop for extra wire management capabilities!

**NXT HORIZON™ NORTH/SOUTH WIRE MANAGEMENT CLIP**  
WRMCHSD1

An elegant solution to help installers get to the home run. The same hardware works to provide both easy entry to rail and adjustability for cable thickness.

**STRONGHOLD™ ATTACHMENT KIT**  
DARK: SHCPKT01  
MILL: SHCPKTM1

Rail clicks into the clamps attached to the Stronghold™ base. Open slot in L-foot allows drop-in rail clamp.

Alternative attachment options:

- SOLARBOOKS
- FLASHSET PRO
- FLASHLOC™ BUS

**NXT HORIZON™ RAIL SPLICE**  
RLSPLCM1

Structural internal splice that does not interfere with roof connection nor module connection. Pre-assembled! Thread cutting bolts.

ALL NXT HORIZON SYSTEMS INCLUDE A FREE PERMITTING PLANSET DESIGN - FOR QUESTIONS OR CUSTOMER SERVICE VISIT [UNIRAC.COM](http://UNIRAC.COM) OR EMAIL [NXTPERMITS@UNIRAC.COM](mailto:NXTPERMITS@UNIRAC.COM)

⑆1020496⑆ ⑆021200339⑆ 381032771650⑆

MEMO

Holmes - 370 Fairview Avenue

*[Signature]*  
VOID AFTER 90 DAYS  
CHECK AMOUNT NOT TO EXCEED \$5,000

DOLLARS

~~SEVENNY~~  
PAY TO THE ORDER OF City of Orange

\$ 70.00 -

2/28/2024

MOMENTUM SOLAR  
3096 B HAMILTON BLVD.  
SOUTH PLAINFIELD, NJ 07080

BANK OF AMERICA, N.A.  
P.O. BOX 15284  
WILMINGTON, DE 19850

1020496


THE FACE OF THIS DOCUMENT HAS A COLORED BACKGROUND ON WHITE PAPER

Security Features include: ⑆ Detect for 2004

PLAN KEY	
PV-1	COVER PAGE
PV-1.1	ATTACHMENT DETAILS
PV-2	PANEL LAYOUT
PV-3	ELECTRICAL
PV-4	EQUIPMENT LABELS

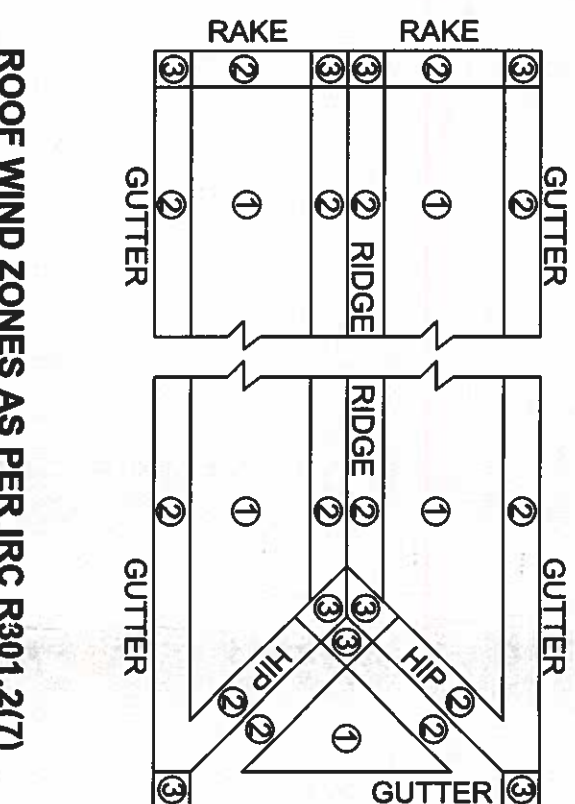
SYSTEM INFORMATION	
MODULE	HANWHA Q, PEAK DUO BLK ML-G10+ 400
INVERTER	ENPHASE IQ8PLUS-72-2-US
RACKING	UNIRAC NXT HORIZON 2-RAIL SYSTEM
SYSTEM SIZE (DC)	13.6 KW
LOCATION	40.7612242, -74.2417073

\*X= 2 OR M DEPENDING ON MANUFACTURER'S AVAILABILITY. SAME ELECTRICAL CHARACTERISTICS WITH DIFFERENT DC CONNECTOR. SEE SPECS FOR DETAILS.

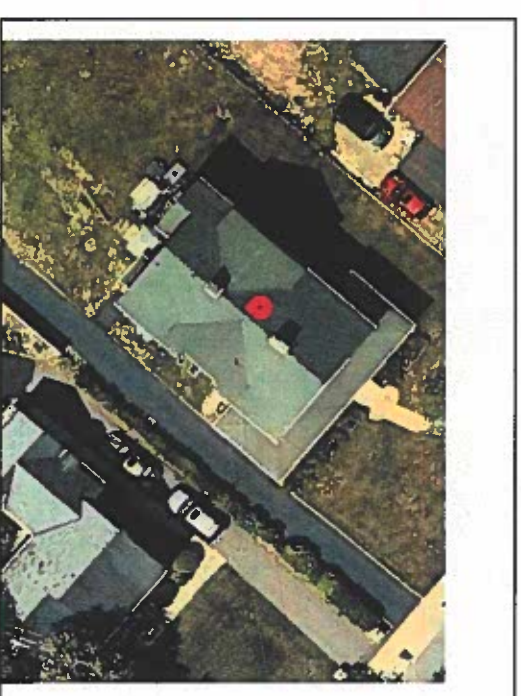


HANWHA Q, PEAK DUO BLK ML-G10+ 400  
400 WATT MODULE  
74" X 41.1" X 1.26"  
(SEE DATASHEET)

1. ALL WIND DESIGN CRITERIA ARE FOR LOW SLOPE ROOFS, GABLE AND HIP ROOFS CONSIDERED FROM AN ANGLE OF MIN. 9.5° (1/2) TO MAX. 45° (3/4) NOT TO EXCEED 30' MEAN ROOF HEIGHT ATTACHED WITH FASTENERS AS SPECIFIED BY THE MANUFACTURER.
2. SPAN TABLES ARE DERIVED FROM MECHANICAL LOAD TESTS PERFORMED BY THE MANUFACTURERS INDEPENDENT TESTING AGENCIES ON BEHALF OF THE MANUFACTURER.
3. ROOF SEALANTS SHALL CONFORM TO ASTM C920 AND ASTM 6511
4. ALL ATTACHMENTS SHALL BE INSTALLED IN STRICT COMPLIANCE WITH MANUFACTURERS PRINTED INSTRUCTIONS.



**ROOF WIND ZONES AS PER IRC R301.2(7)**  
ROOF ZONES 2 & 3 ARE 48" FROM GUTTER ROOF EDGES, RIDGES, HIPs, RAKES, AND GUTTER EDGES FOR STRUCTURES BELOW 30'-0" MEAN ROOF HT.



**VICINITY MAP**

**GENERAL NOTES:**  
THIS PV SYSTEM HAS BEEN DESIGNED TO MEET THE MINIMUM DESIGN STANDARDS FOR BUILDING AND OTHER STRUCTURES OF THE 2021 NEW JERSEY STATE UNIFORM CODE, ALL ASPECTS OF THE INSTALLATION SHALL COMPLY WITH THE 2021 INTERNATIONAL RESIDENTIAL CODE (2021IRC), WITH ALL NEW JERSEY AMENDMENTS, ASCE 7-16, NEC 2020 (NFPA 70), ALL LOCAL GOVERNING COUNTY AND MUNICIPAL ORDINANCES ADOPTED BY REFERENCE OR ENACTED BY LAW, ALL INSTALLATION INSTRUCTIONS PREPARED BY THE MANUFACTURER.

**FASTENER:**  
REFER TO STRUCTURAL CERTIFICATION LETTER FOR ALL STRUCTURAL INFORMATION OF EXISTING BUILDING STRUCTURE.

ATTACHMENT SPACING NOT EXCEED MANUFACTURERS SPECIFICATIONS FOR WIND LOADS AS PER ASCE 07-16. RISK CATEGORY II TOPOGRAPHIC EFFECTS B, C, & D AND ROOF WIND ZONES 1, 2, & 3. ROOF ZONES 2 & 3 ARE WITHIN 48" OF ANY OUTER EDGE, HIP, RIDGE, OR GUTTER LINE FOR STRUCTURES 30'-0" OR LESS MEAN ROOF HEIGHT.

BILL OF MATERIALS			
NON SH MODULES	34	SH MODULES	0
INVERTERS	34	TRUNK CABLE	41
-FOOT ATTACHMENT W/ UNIRAC NX	90	WIRE CLIP	34
ENPHASE COMBINER	1	INVERTER CLIP	34
60A OCCPD	1	171" RAIL	15
SOLAR AC DISCO	1		
125A LINE TAPS	2		

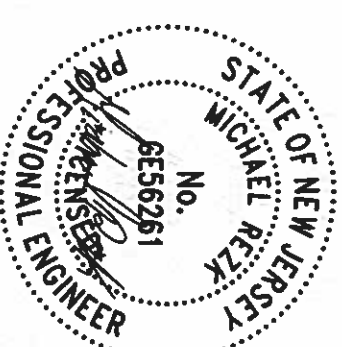


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3096 HAMILTON BLVD, SOUTH PLAINFIELD, NJ 07080  
(732) 902-6224  
MOMENTUMSOLAR.COM

**PROFESSIONAL ENGINEERING**

MICHAEL REZK  
LICENSE # GE56261

ENGINEERING LETTER ATTACHED HAS SPECIFICATIONS FOR WIND AND LOAD CALCULATIONS FOR SOLAR INSTALLATION SPANS & ATTACHMENTS TO MEET LOCAL AND STATE BUILDING CODE COMPLIANCE. WARNING THAT IT IS A VIOLATION OF THE LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ARCHITECT, TO ALTER ANY ITEM IN ANY WAY.



**CUSTOMER INFORMATION**

LEVI HOLMES
370 FAIRVIEW AVE
ORANGE, NJ 07050
(973) 868-3980

**PV SYSTEM INFORMATION**

SYSTEM SIZE (DC): 13.6 KW
SYSTEM DESIGN CAPACITY (AC): 9.86 KVA
34 MODULES: HANWHA Q, PEAK DUO BLK ML-G10+ 400
34 INVERTERS: ENPHASE IQ8PLUS-72-2-US

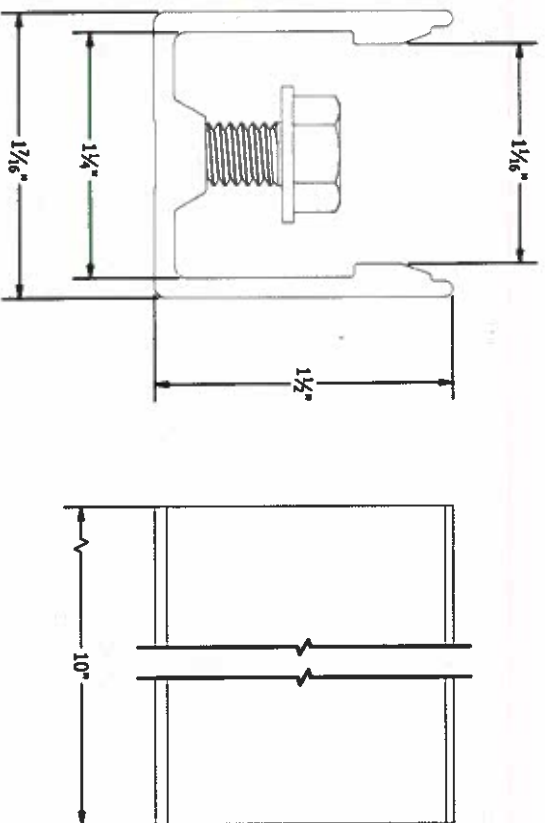
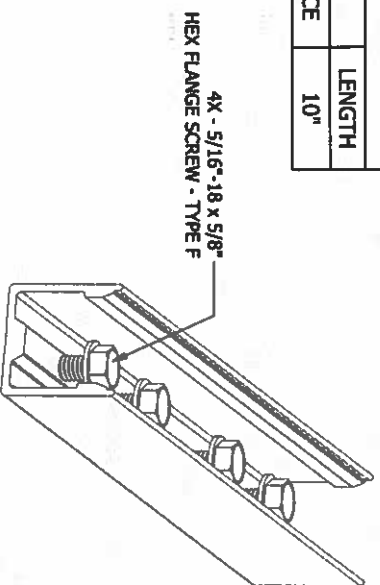
PROJECT INFORMATION - MS144797

INITIAL	DESIGNER: JAM
DATE: 2/8/2024	
REV:	DESIGNER:
DATE:	DESIGNER:

COVER PAGE

**PV-1**

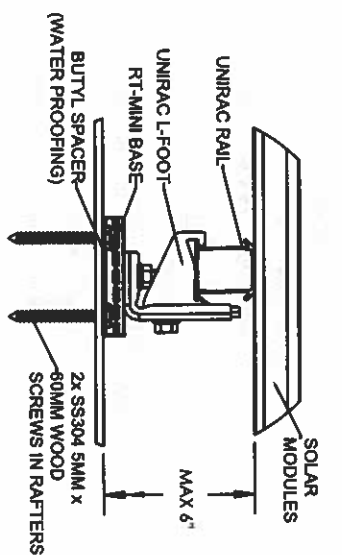
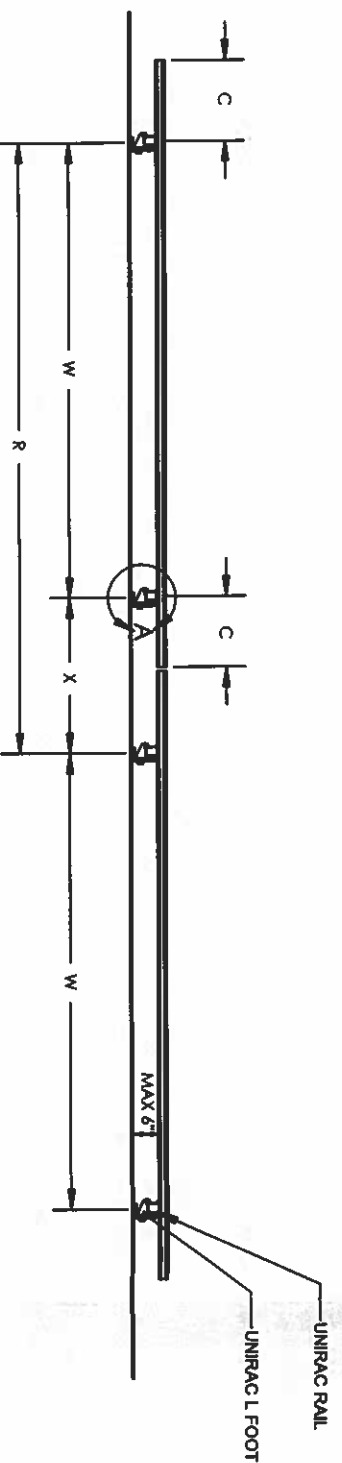
PART # TABLE		LENGTH
P/N	DESCRIPTION	
RSPLCM1	NXT HORIZON RAIL SPLICE	10"



**UNIRAC**  
1411 BROADWAY BLVD, NE  
ALBUQUERQUE, NM 87102 USA  
PHONE: 505.242.6411  
WWW.UNIRAC.COM

PRODUCT LINE:	NXT HORIZON	DRAWING NOT TO SCALE ALL DIMENSIONS ARE NOMINAL
DRAWING TYPE:	PART DETAIL	PRODUCT PROTECTED BY ONE OR MORE US PATENTS
DESCRIPTION:	RAIL SPLICE	LEGAL NOTICE
REVISION DATE:	9/22/2021	

NH-P02  
SHEET



**RT-MINI II**  
A Self-Flashing PV Mount Featuring Roof Tech's AlphaSeal™ Technology

- ✓ Less Aluminum
- ✓ More Efficient Design
- ✓ Additional Mounting Options
- ✓ Metal, EPDM, TPO, & Asphalt Roofs

RT-MINI II is suitable for all systems with a conventional L-foot.

14" x 1" Carriage Bolt  
EMT Accessory

RT Standard Hex Flange Bolt/nut  
5/16-18 x 1"

ICC ESR 3575  
ICC ESR 3575  
Roof Tech  
A Roof Tech  
Installation Manual

Flexible Flashing Certified by the International Code Council (ICC)

**RT-MINI II**  
Dimensions in (mm)

Components  
RT2-00-MINIB2

Optional Mounting:  
• 1/2" (12.7mm) Aluminum  
• 1/2" (12.7mm) Steel  
• 1/2" (12.7mm) Galvalume

Deck Installation: Rubber Insulation

Other Flashing Attachment Options:  
• Metal Flashing Reinforcement  
• Flexible Flashing  
• Flashing Membrane

Roof Tech Inc.  
10620 Terepco Street, Suite 230, San Diego, CA 92131  
858.935.6063

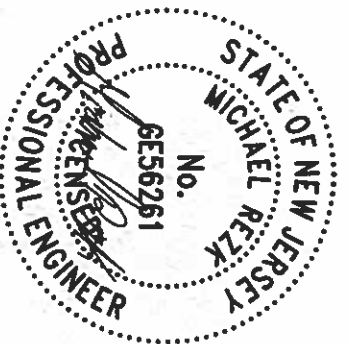


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**PROFESSIONAL ENGINEERING**

MICHAEL REZK  
LICENSE # GE56261

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**CUSTOMER INFORMATION**

LEVI HOLMES  
370 FAIRVIEW AVE  
ORANGE, NJ 07050  
(973) 868-3980

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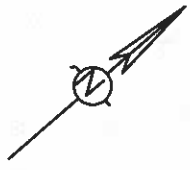
**PROJECT INFORMATION**

INITIAL DATE: 2/8/2024 DESIGNER: JAW  
REV: DATE: DESIGNER:  
REV: DATE: DESIGNER:

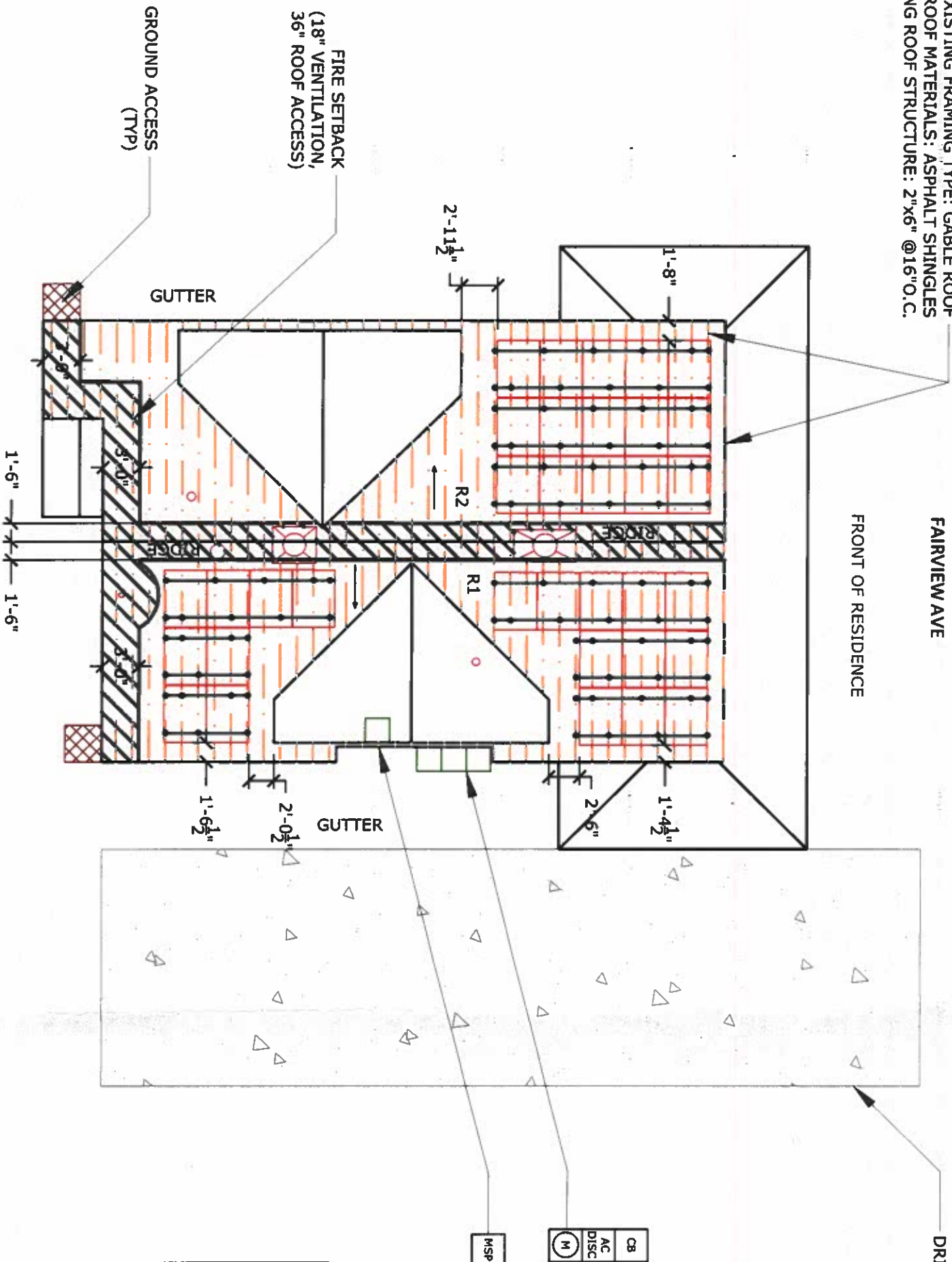
**ATTACHMENT DETAILS**

**PV-1.1**





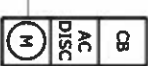
EXISTING FRAMING TYPE: GABLE ROOF  
 ROOF MATERIALS: ASPHALT SHINGLES  
 EXISTING ROOF STRUCTURE: 2"x6" @16"O.C.



ROOF	MODULE COUNT	AZIMUTH	TILT	SHADING	LANDSCAPE ATTACHMENT	PORTRAIT ATTACHMENT MAX
R1	19	131°	41°	92%	MAX SPAN (ROOF AREA 1/2/3) 80/72/72	SPAN (ROOF AREA 1/2/3) 80/72/72
R2	15	311°	41°	86%	80/72/72	80/72/72

**SITE PLAN**  
 SCALE: 3/32" = 1'-0"

ELECTRICAL  
 EQUIPMENT



TOTAL SQUARE FOOTAGE OF ROOF: 3096 SQFT  
 SQUARE FOOTAGE OF SOLAR ARRAY: 718.11 SQFT  
 PERCENTAGE OF SOLAR ROOF COVERAGE: 23.2%  
 18" RIDGE SETBACK SHALL BE REQUIRED

**SYMBOL LEGEND**

MSP	MAIN SERVICE PANEL		CHIMNEY
SP	SUB-PANEL		SKYLIGHT
M	UTILITY METER		VENT
AC DISC	AC DISCONNECT		PIPE VENT
UDC	UTILITY DISCONNECT		FAN
LC	LOAD CENTER		SATELLITE DISH
NBR	NEMA 3R BOX W/ ENVOY-S		FIRE SETBACKS
CB	COMBINER BOX		GROUND ACCESS
PF	PERFORMANCE METER		PITCH DIRECTION
0	MODULE		



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**PROFESSIONAL ENGINEERING**

MICHAEL REZK  
 LICENSE # GE36261  
 ENGINEERING LETTER ATTACHED HAS SPECIFICATIONS FOR WIND AND LOAD CALCULATIONS FOR SOLAR INSTALLATION SPANS & WALLS AND COMPLIANCE WITH LOCAL AND STATE BUILDING CODES. COMPLIANCE WITH ALL APPLICABLE LOCAL AND STATE BUILDING CODES. ANY PERSON UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ARCHITECT, TO ALTER ANY ITEM IN ANY WAY.



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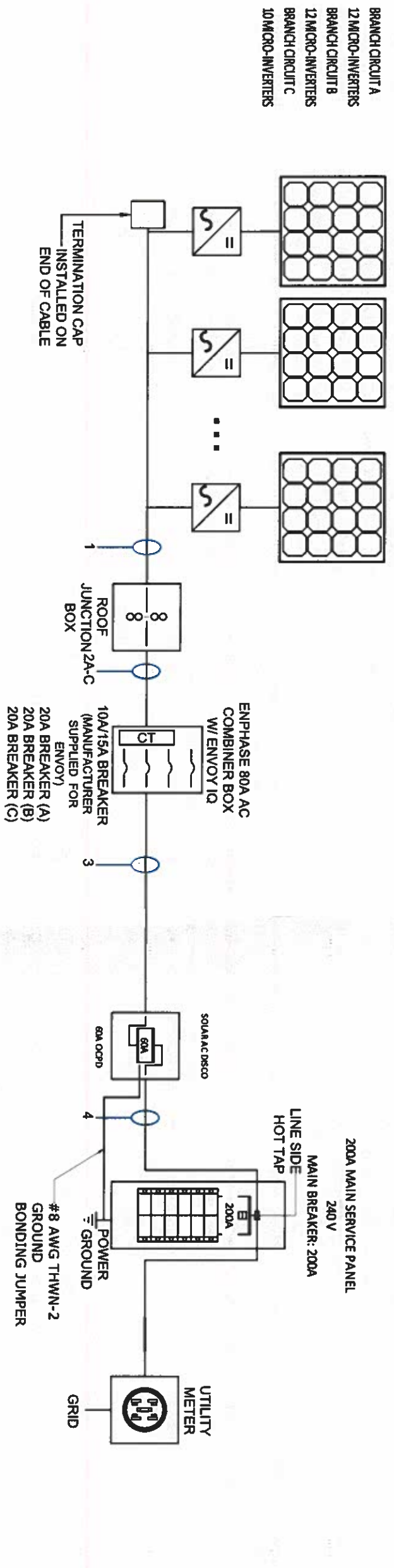
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 34 INVERTERS: ENPHASE IQ8PLUS-72-2-US

**PROJECT INFORMATION - MS14A797**

INITIAL DATE: 2/8/2024 DESIGNER: JAM  
 REV: DATE: DESIGNER:  
 REV: DATE: DESIGNER:

**PANEL LAYOUT**

**PV-2**



**ELECTRICAL NOTES:**

1. ALL CALCULATIONS FOR VOC, VMAX, IMP AND ISC HAVE BEEN CALCULATED USING THE MANUFACTURED STRING CALCULATOR BASED ON ASHRAE 2% HIGH AND EXTREME MINIMUM TEMPERATURE COEFFICIENTS.
2. THE ENTIRE ARRAY IS BONDED ACCORDING TO (NEC 690.46 - 250.120 PARAGRAPH C).
3. THIS SYSTEM COMPLIES WITH NEC 2020
4. BRANCH CIRCUIT CALCULATION FOR WIRE TAG 1 DISPLAYS THE LARGEST BRANCH CIRCUIT IN SYSTEM. OTHER BRANCH CIRCUITS WILL HAVE LOWER DESIGN CURRENT THAN THE ONE SHOWN.
5. ALL CONDUCTORS ARE SIZED BASED ON NEC 2020 ARTICLE 310
6. ALL EQUIPMENT INSTALLED IS RATED AT 75°C UNLESS NOTED
7. INVERTER NOC (NOMINAL OPEN CURRENT) OBTAINED FROM EQUIPMENT DATA SHEET
8. SYSTEM IS CONSIDERED AN AC MODULE SYSTEM. NO DC CONDUCTORS ARE PRESENT IN CONDUIT, COMBINER, JUNCTION BOX, DISCONNECT, AND COMPLES WITH 690.6- NO DC DISCONNECT AND ASSOCIATED DC CABLING ARE REQUIRED.
9. CONDUCTORS IN CONDUIT ARE AC CONDUCTORS - BRANCH CIRCUITS AND NOT PV SOURCE CIRCUITS 690.6.
10. SYSTEM COMPLIES WITH 690.12 RAPID SHUTDOWN AND ASSOCIATED LABELING AS PER 690.56(C). AC VOLTAGE AND SYSTEM OPERATING CURRENT SHALL BE PROVIDED AS PER 690.52.
11. ALL GROUNDING SHALL COMPLY WITH 690.47(A) IN THAT THE AC MODULES SHALL COMPLY WITH 250.64.
12. NO TERMINALS WILL BE ENERGIZED IN THE OPEN POSITION IN THIS AC MODULE SYSTEM 690.6, 690.15.
13. WHERE APPLICABLE, INTERCONNECTION SHALL COMPLY WITH 705.12(B)(2)(3)(b), 705.12(A) AS PERMITTED BY 230.86(6)
14. WHERE APPLICABLE, SOLAR OVERCURRENT PROTECTION FOR SUPPLY SIDE CONNECTION SHALL BE LOCATED WITHIN 10FT OF THE INTERCONNECTION POINT.

**PERMANENT LABEL & LOCATION**  
CUSTOMER OWNED PARALLEL GENERATION  
LABELS ARE WEATHER UV RATED RED PLASTIC WITH WHITE LETTERS

(A) LOAD CENTER: WARNING DUAL POWER SOURCE.  
SECOND SOURCE IS PV SYSTEM.  
DO NOT RELOCATE THIS OVERCURRENT BACKFED DEVICE

(B) WARNING INVERTER OUTPUT CONNECTION.  
DO NOT RELOCATE THIS OVERCURRENT BACKFED DEVICE

(C) AC DISCONNECT: PV AC DISCONNECT 690.15  
(D) WARNING ELECTRIC SHOCK HAZARD.  
DO NOT TOUCH TERMINALS. TERMINALS ON BOTH LINE & LOADSIDES MAY BE ENERGIZED IN THE OPEN POSITION.  
(E) INVERTER: WARNING ELECTRICAL SHOCK HAZARD.  
IF A GROUND FAULT IS INDICATED, NORMALLY GROUNDING CONDUCTORS MAY BE UN-GROUNDED AND ENERGIZED.

(F) JUNCTION BOX: WARNING ELECTRICAL SHOCK HAZARD.  
THE DC CONDUCTORS OF THIS PHOTOVOLTAIC SYSTEM ARE UNGROUNDING AND MAY BE ENERGIZED  
(G) CONDUIT/CABLE EVERY 10 FEET:  
CAUTION: SOLAR CIRCUIT

Wire Tag	Conduit	Wire Qty	Wire Gauge	Wire Type	Temp. Rating	Wire Ampacity (A)	Temp. Derate	Conduit Fill Derate	Derated Ampacity (A)	Inverter Qty	NOC (A)	NEC Correction	Design Current (A)	Ground Size	Ground Wire Type
1	OPEN AIR	2	12AWG	Trunk Cable	90°C	30	0.96	1	28.80	12	1.21	1.25	18.15	08 AWG	THWN-2
2A	3/4" PVC	2	10AWG	THWN-2	90°C	40	0.96	0.8	30.72	12	1.21	1.25	18.15	08 AWG	THWN-2
2B	3/4" PVC	2	10AWG	THWN-2	90°C	40	0.96	0.8	30.72	12	1.21	1.25	18.15	08 AWG	THWN-2
2C	3/4" PVC	2	10AWG	THWN-2	90°C	40	0.96	0.8	30.72	10	1.21	1.25	15.13	08 AWG	THWN-2
3	3/4" PVC	3+G	06AWG	THWN-2	75°C	65	0.96	1	62.40	34	1.21	1.25	51.43	08 AWG	THWN-2
4	3/4" PVC	3	06AWG	THWN-2	75°C	65	0.96	1	62.40	34	1.21	1.25	51.43	08 AWG	THWN-2

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**ELECTRICIAN**

PRO CUSTOM SOLAR DESIGN/MOMENTUM SOLAR  
MATT FRANZ  
325 HIGH STREET  
MELBOURNE, NJ 07640  
(732) 902-6224

**CUSTOMER INFORMATION**

LEVI HOLMES  
370 FAIRVIEW AVE  
ORANGE, NJ 07050  
(973) 868-3980

**PV SYSTEM INFORMATION**

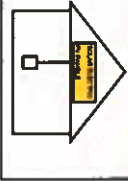
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**PROJECT INFORMATION - [MS1467]**

INITIAL: DATE: 2/8/2024 DESIGNER: JAM  
REV: DATE: DESIGNER:  
REV: DATE: DESIGNER:

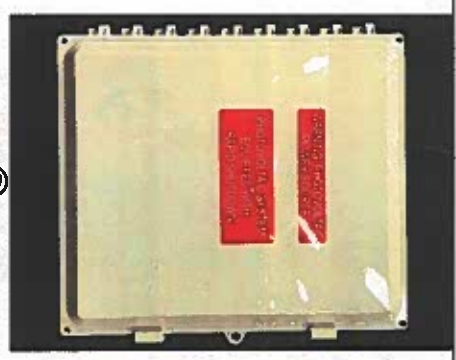
**ELECTRICAL**

**PV-3**

TAG	LABEL	QUANTITY	LOCATION	NOTE
A	CAUTION - AC SOLAR VOLTAGE	12	AC CONDUITS	1 AT EVERY SEPARATION BY ENCLOSURES / WALLS / PARTITIONS / CEILINGS / FLOORS OR NO MORE THAN 10'
B	<b>! WARNING</b> PHOTOVOLTAIC POWER SOURCE	1	COMBINER BOX	1 AT ANY COMBINER BOX
C	<b>! WARNING</b> ELECTRICAL SHOCK HAZARD TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION	1	JUNCTION BOX	1 AT ANY JUNCTION BOX
D	PV SYSTEM AC DISCONNECT RATED AC OUTPUT CURRENT <b>41.14A</b> NOMINAL OPERATING AC VOLTAGE <b>240 V</b> <b>! CAUTION</b> POWER TO THIS SERVICE IS ALSO SUPPLIED FROM ON-SITE SOLAR GENERATION AC SYSTEM DISCONNECT	1	AC DISCONNECT	1 OF EACH AT FUSED AC DISCONNECT COMPLETE VOLTAGE AND CURRENT VALUES ON DISCONNECT LABEL
E	PV METER REVENUE METER	1	PV METER SOCKET	1 AT PV METER SOCKET AND ONE DIRECTORY PLACARD
F	<b>! WARNING</b> DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM	1	UTILITY METER	1 AT UTILITY METER AND ONE DIRECTORY PLACARD
G	SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN TURN RAPID SHUTDOWN SWITCH TO THE "OFF" POSITION TO SHUTDOWN PV SYSTEM AND REDUCE SHOCK HAZARD IN AREA  <b>! WARNING</b> DUAL POWER SOURCE SECOND SOURCE IS PHOTOVOLTAIC SYSTEM	1	INTERCONNECTION POINT	1 OF EACH AT BUILDING INTERCONNECTION POINT AND ONE DIRECTORY PLACARD
H	<b>! WARNING</b> INVERTER OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE NOMINAL OPERATING AC VOLTAGE : 240V NOMINAL OPERATING AC FREQUENCY : 60HZ MAXIMUM AC POWER : 230VA MAXIMUM AC CURRENT : <b>41.14A</b> MAXIMUM OVERCURRENT DEVICE RATING FOR AC MODULE PROTECTION : 20A	1	BACKFEED PANEL	
			AC CURRENT PV MODULES	



A



B



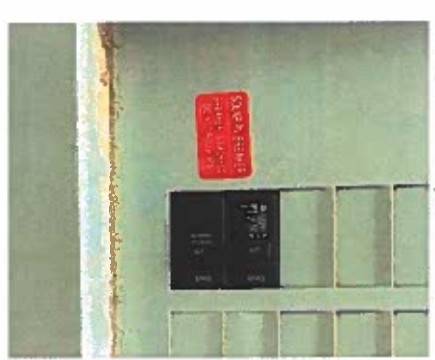
C



D



E



G BACKFEED

EXAMPLES



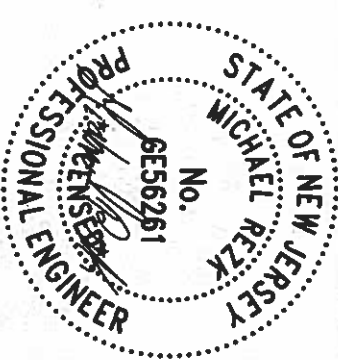
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**PROJECT INFORMATION - MS144797**

INITIAL DATE: 2/8/2024 DESIGNER: JAM  
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**EQUIPMENT LABELS**

**PV-4**