

NEW PHOTOVOLTAIC PITCHED ROOF MOUNTED SYSTEM - 32.190 KW DC/23.000 KW AC
& ENERGY STORAGE SYSTEM - 27 KWH
50 CENTER RIDGE RD, EAST AURORA, NY 14052

NEW PV SYSTEM SPECIFICATIONS
SYSTEM SIZE: DC SIZE: 32.190 KW DC-(STC)
AC SIZE: 23.000 KW AC
MODULE: (74) HYUNDAI HIN-T435NF(BK)
INVERTER: (2) TESLA 1707000-XX-Y
RSD'S: (29) TESLA MCI-2 HIGH CURRENT

APPLICABLE CODES
ALL WORK SHALL CONFORM TO THE FOLLOWING CODES:
2020 BUILDING CODE OF NEW YORK STATE
2020 RESIDENTIAL CODE OF NEW YORK STATE
2020 FIRE CODE OF NEW YORK STATE
2017 NATIONAL ELECTRICAL CODE
AS ADOPTED BY TOWN OF AURORA

DESIGN CRITERIA
ROOF SURFACE TYPE: COMPOSITE SHINGLE
ROOF FRAMING: 2"x6" RAFTER @ 24" OC
BUILDING STORY: TWO STORY
GROUND SNOW LOAD: 35 PSF
WIND SPEED: 110 MPH
WIND EXPOSURE: C
RISK CATEGORY: II

PROJECT NOTES
1.1.1 THIS PHOTOVOLTAIC (PV) & ENERGY STORAGE SYSTEM SHALL COMPLY WITH THE RELEVANT YEAR OF THE NATIONAL ELECTRICAL CODE (NEC), ALL MANUFACTURER'S LISTING AND INSTALLATION INSTRUCTIONS, AND THE RELEVANT CODES AS SPECIFIED BY THE AUTHORITY HAVING JURISDICTION'S (AHJ) APPLICABLE CODES.
1.1.2 THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND THE PV & ENERGY STORAGE SYSTEM MUST BE INSPECTED PRIOR TO OPERATION
1.1.3 ALL PV & ENERGY STORAGE SYSTEM COMPONENTS; MODULES, UTILITY-INTERACTIVE INVERTERS, BATTERIES, AND SOURCE CIRCUIT COMBINER BOXES ARE IDENTIFIED AND LISTED FOR USE IN PHOTOVOLTAIC SYSTEMS AS REQUIRED BY NEC AND OTHER GOVERNING CODES
1.1.4 ALL SIGNAGE TO BE PLACED IN ACCORDANCE WITH LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SIGNAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.

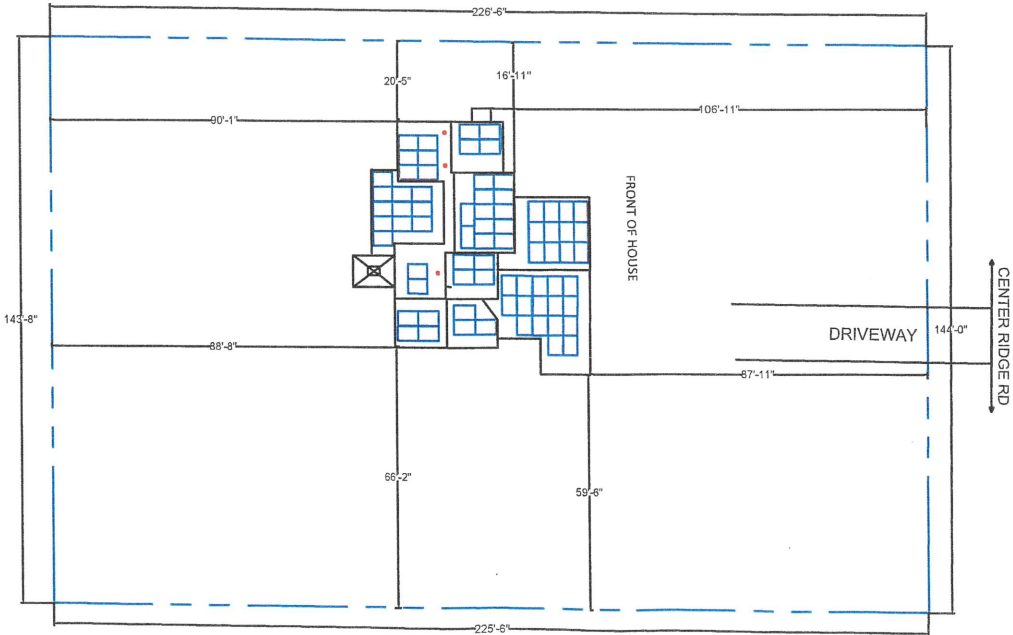
SCOPE OF WORK
1.2.1 CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND SPECIFICATIONS OF THE GRID-TIED PHOTOVOLTAIC & ENERGY STORAGE SYSTEM. THE CONTRACTOR WILL BE RESPONSIBLE FOR COLLECTION OF EXISTING ONSITE CONDITIONS TO DESIGN, SPECIFY, AND INSTALL THE PITCHED ROOF-MOUNTED PV SYSTEM AND ENERGY STORAGE SYSTEM DETAILED IN THIS DOCUMENT



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PV-01

PROPERTY PLAN

SCALE: 1" = 40'-0"



Wyssling Consulting, PLLC
76 N. Meadowbrook Drive, Alpine UT
New York COA #0022571

Signed 9/10/2025
Expires 7/31/2027

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EQUIPMENT DATASHEETS ATTACHED	

LEGEND

	- PROPERTY LINE
	- FENCE LINE

VICINITY MAP



SATELLITE MAP



CONTRACTOR



EMPIRE SOLAR SOLUTIONS

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NEWBURGH, 12550
PHONE - (845) 728-2165
LIC. NO. - WC-29806-H17

PROJECT NAME & ADDRESS
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REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE

COVER PAGE

DRAWN DATE	9/9/2025
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SHEET NUMBER

PV-01

NOTES:

1. ROOF ACCESS POINT SHALL NOT BE LOCATED IN AREAS THAT REQUIRE THE PLACEMENT OF GROUND LADDERS OVER OPENINGS SUCH AS WINDOWS OR DOORS, AND LOCATED AT STRONG POINTS OF BUILDING CONSTRUCTION IN LOCATIONS WHERE THE ACCESS POINT DOES NOT CONFLICT WITH OVERHEAD OBSTRUCTIONS SUCH AS TREE LIMBS, WIRES OR SIGNS.
2. STRUCTURES, PATIO COVERS, AND/OR ADDITIONS BUILT WITHOUT PERMITS TO BE RESOLVED BY A SEPARATE PERMIT.



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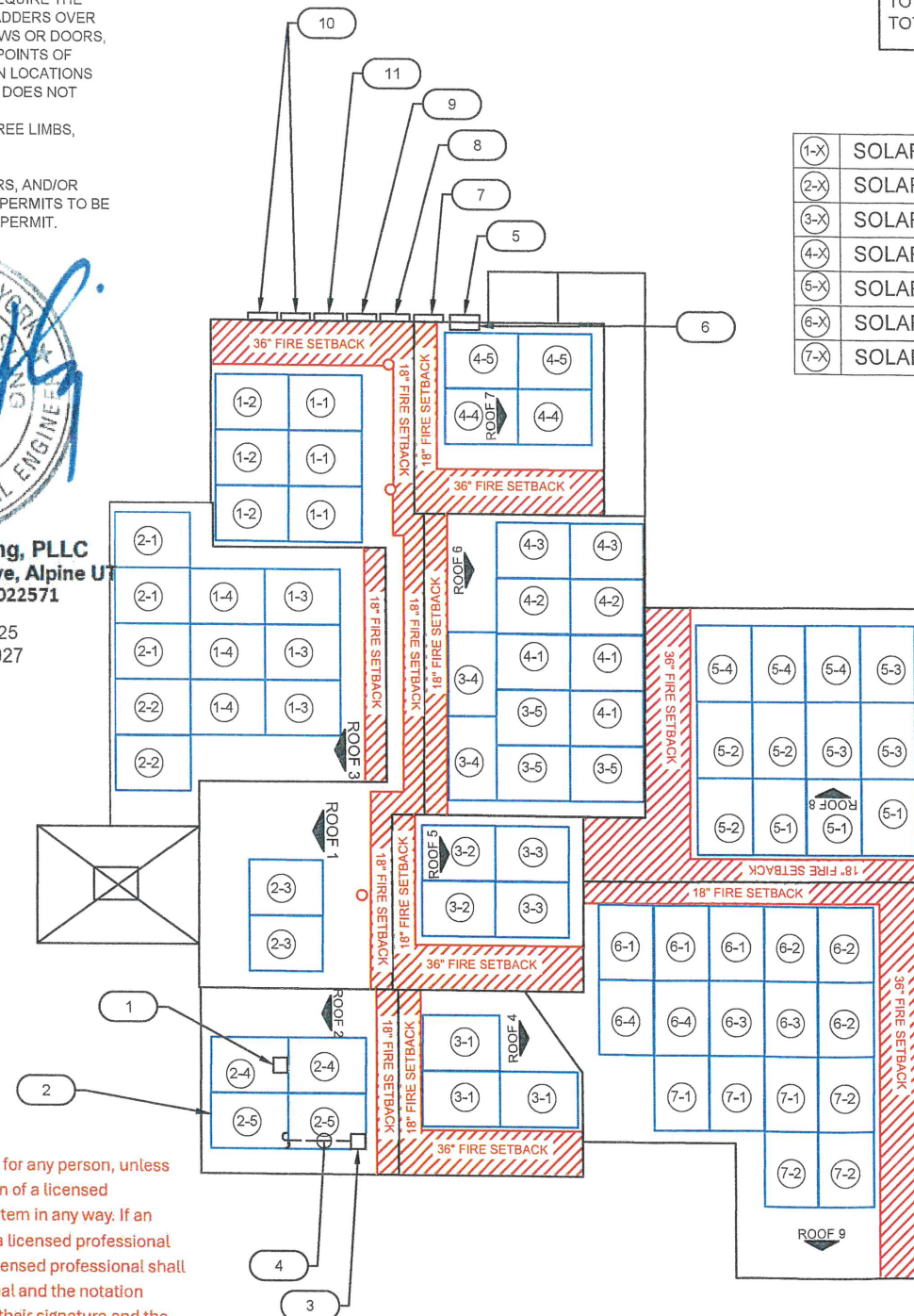
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PV-02

SITE PLAN

SCALE: 1" = 10'-0"



PLAN VIEW TOTAL ROOF AREA: 3012.79 FT²
TOTAL PV ARRAY AREA: 1553.94 FT²
TOTAL % OF ROOF COVERED BY PV: 51.58%

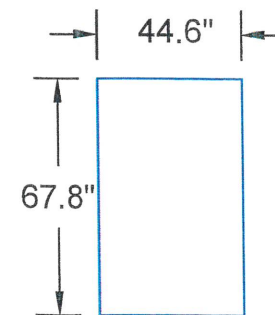
STRINGING LEGEND

(1-X)	SOLAR STRING 1 - 12 MODULES
(2-X)	SOLAR STRING 2 - 11 MODULES
(3-X)	SOLAR STRING 3 - 12 MODULES
(4-X)	SOLAR STRING 4 - 11 MODULES
(5-X)	SOLAR STRING 5 - 12 MODULES
(6-X)	SOLAR STRING 6 - 10 MODULES
(7-X)	SOLAR STRING 7 - 6 MODULES

LEGEND

- 36" 18" FIRE SETBACKS
- = MECHANICAL VENT
○ = FLUE / PLUMBING VENT
- 1 RAPID SHUTDOWN DEVICE (1 PER 3 MODULES)
2 PV MODULES
3 JUNCTION BOX; SIZE DETERMINED IN FIELD
4 CONDUIT RUN; SURFACE MOUNTED (ACTUAL CONDUIT RUNS TO BE DETERMINED IN FIELD)
5 UTILITY METER (UNDERGROUND SERVICE)
6 MAIN SERVICE PANEL
7 TESLA BACKUP GATEWAY 3
8 AC DISCONNECT
9 PV PRODUCTION METER
10 (2) TESLA 1707000-XX-Y
11 125A ESS COMBINER PANEL

FRONT OF HOUSE



ROOF 1	SLOPE - 24° AZIMUTH - 270° MODULE QTY - 6 RAFTER - 2"x6" @ 24" O.C. COMPOSITE SHINGLE
ROOF 2	SLOPE - 24° AZIMUTH - 270° MODULE QTY - 4 RAFTER - 2"x6" @ 24" O.C. COMPOSITE SHINGLE
ROOF 3	SLOPE - 24° AZIMUTH - 270° MODULE QTY - 11 RAFTER - 2"x6" @ 24" O.C. COMPOSITE SHINGLE
ROOF 4	SLOPE - 24° AZIMUTH - 90° MODULE QTY - 3 RAFTER - 2"x6" @ 24" O.C. COMPOSITE SHINGLE
ROOF 5	SLOPE - 24° AZIMUTH - 90° MODULE QTY - 4 RAFTER - 2"x6" @ 24" O.C. COMPOSITE SHINGLE
ROOF 6	SLOPE - 24° AZIMUTH - 90° MODULE QTY - 12 RAFTER - 2"x6" @ 24" O.C. COMPOSITE SHINGLE
ROOF 7	SLOPE - 24° AZIMUTH - 90° MODULE QTY - 4 RAFTER - 2"x6" @ 24" O.C. COMPOSITE SHINGLE
ROOF 8	SLOPE - 24° AZIMUTH - 360° MODULE QTY - 12 RAFTER - 2"x6" @ 24" O.C. COMPOSITE SHINGLE
ROOF 9	SLOPE - 180° AZIMUTH - 180° MODULE QTY - 16 RAFTER - 2"x6" @ 24" O.C. COMPOSITE SHINGLE

CONTRACTOR



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SITE PLAN

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PV-02

DISTRIBUTED LOAD CALCULATIONS	
MODULE	HYUNDAI HIN-T435NF(BK)
MODULE WEIGHT	50.01 LBS
MODULE DIMENSIONS (L" x W")	67.8" x 44.6"
TOTAL QTY. OF MODULES	74
TOTAL WEIGHT OF MODULES	3700.7 LBS
TYPE OF RACKING	K2 CROSSRAIL 44-X
TYPE OF ATTACHMENT	K2 SPLICE FOOT XL
DISTRIBUTED WEIGHT OF RACKING	0.5 PSF
TOTAL WEIGHT OF ARRAY	4477.7 LBS
AREA OF MODULE	21.0 SQFT.
TOTAL ARRAY AREA	1553.9 SQFT.
DISTRIBUTED LOAD	2.9 PSF

- NOTE:
1. CONTRACTOR/INSTALLER TO VERIFY COMPATIBILITY OF ANY BRANDS OR PRODUCTS SUBSTITUTED OR USED AS ALTERNATES WITHIN ANY BRAND-SPECIFIC SYSTEMS. CONTRACTOR SHALL SUPPLY AND PRESENT CERTIFICATES OF COMPATIBILITY TO THE BUILDING OFFICIAL UPON INSPECTION AS NEEDED.
 2. REFER TO PV MODULE MANUFACTURER'S INSTALLATION INSTRUCTIONS FOR RAIL SPACING SPECIFICATIONS

LEGEND	
	- ATTACHMENT POINTS
	- RAIL
	- STRUCTURAL MEMBER

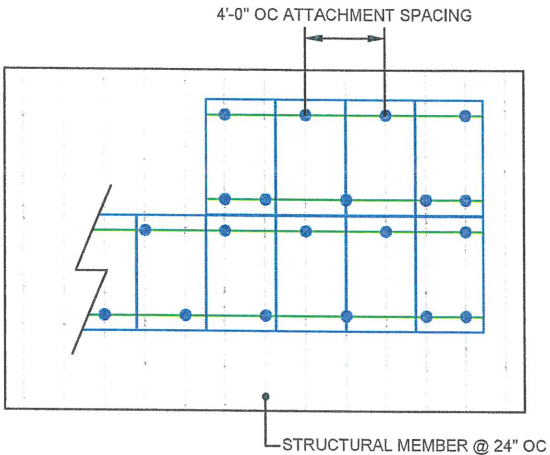
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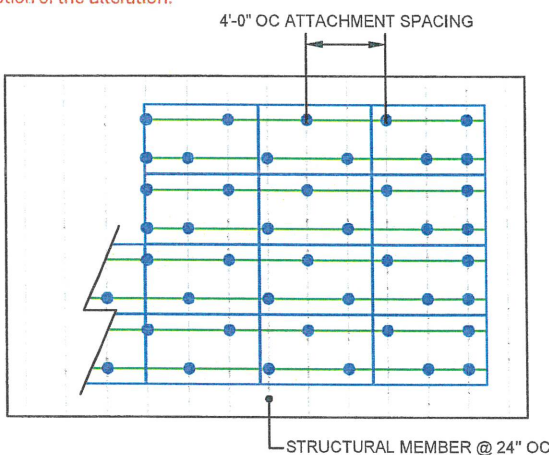
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1.0 TYPICAL ATTACHMENT PLAN (PORTRAIT)
PV-03 SCALE: NTS



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1.1 TYPICAL ATTACHMENT PLAN (LANDSCAPE)
PV-03 SCALE: NTS

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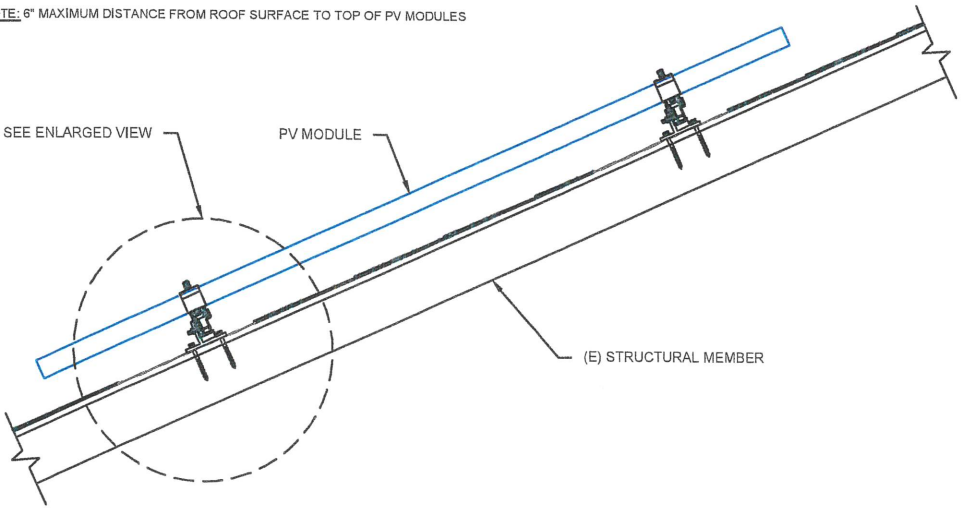
ATTACHMENT PLAN
& DETAILS

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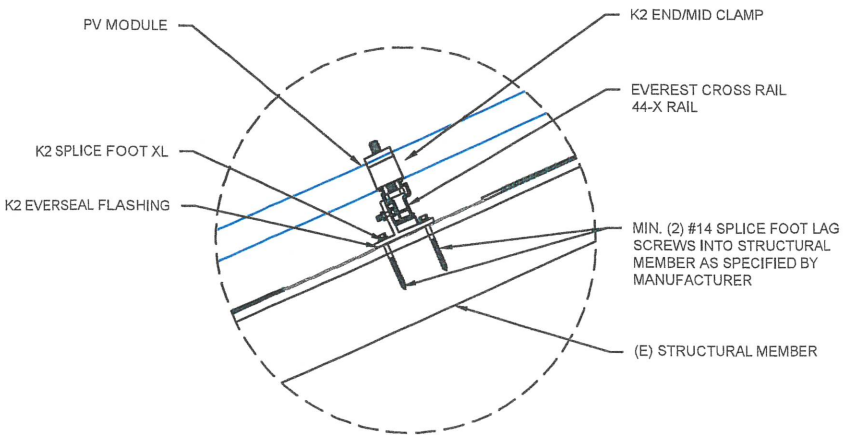
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PV-03

NOTE: 6" MAXIMUM DISTANCE FROM ROOF SURFACE TO TOP OF PV MODULES



2 ATTACHMENT DETAIL
PV-03 Scale: NTS



3 ENLARGED VIEW
PV-03 Scale: NTS

INVERTER SPECIFICATIONS

MANUFACTURER / MODEL #
POWER RATING
MAX CONT. OUTPUT CURRENT
MAX CURRENT PER MPPT (IMP)
MAX DC VOLTAGE
MAX SHORT CIRCUIT CURRENT PER MPPT (ISC)

TESLA 1707000-XX-Y
11500W
48A
15A²
600V
19A²

SOLAR MODULE SPECIFICATIONS

MANUFACTURER / MODEL #
VMP
IMP
VOC
ISC
TEMP. COEFF. VOC

HYUNDAI HIN-T435NF(BK)
32.1 V
13.56 A
38.6 V
14.32 A
-0.25 %/°C

AMBIENT TEMPERATURE SPECIFICATIONS

RECORD LOW TEMP
AMBIENT TEMP (HIGH TEMP 2% AVG.)
MINIMUM CONDUIT HEIGHT ABOVE ROOF SURFACE

-20 °C
30 °C
7/8"

CONTRACTOR

EMPIRESOLAR

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ELECTRICAL
DIAGRAM

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PV-04

HYUNDAI HIN-T435NF(BK)

1 2 3 ... 10 11 12

TESLA MCI-2 HIGH CURRENT - IN-LINE RAPID SHUTDOWN DEVICE
1 FOR EVERY 3 MODULES

HYUNDAI HIN-T435NF(BK)

1 2 3 ... 8 9 10

(N) JUNCTION BOX
600 V, NEMA 3R
UL LISTED

(N) TESLA 1707000-XX-Y
240V, 11kW, 13.5kWh

DC

AC

ENERGY STORAGE

(N) JUNCTION BOX
600 V, NEMA 3R
UL LISTED

(N) TESLA 1707000-XX-Y
240V, 11kW, 13.5kWh

DC

AC

ENERGY STORAGE

(N) 125A ESS
COMBINER PANEL,
240V

PV 60A/2P
PV 60A/2P

(N) PV PRODUCTION
METER
NEMA 3R, UL LISTED
200A RATED

(N) AC DISCONNECT 200A
VISIBLE, LOCKABLE,
LABELED AND NON-FUSIBLE
240V, NEMA 3R, UL LISTED

(N) TESLA BACKUP GATEWAY 3
200A, NEMA 3R, 120/240V

TO UTILITY GRID
L1 L2 N

METER # 300 487 880

(E) BI-DIRECTIONAL
UTILITY METER
1-PHASE, 3-W,
120V/240V

(N) 150A/2P MAIN
BREAKER

BONDED

EXISTING GROUNDING
ELECTRODE SYSTEM

(E) 150A MAIN SERVICE
PANEL 120/240V, 1-PHASE
(BACKUP PANEL)

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FULL HOME CONNECTION WILL BE DONE THROUGH LUGS BETWEEN METER AND MAIN SERVICE PANEL

DESCRIPTION						FORMULA			RESULT			
PV OVERCURRENT PROTECTION NEC 690.9(B)						TOTAL INVERTER OUTPUT CURRENT x 1.25 = 96.0A x 1.25			120.00A (SELECTED OCPD = 125A)			
DC WIRE CALCULATION												
WIRE ID	EXPECTED WIRE TEMP (°C)	TEMP DERATE (90 °C)	QTY OF CURRENT CARRYING CONDUCTORS	CONDUIT FILL DERATE	MINIMUM CONDUIT SIZE (TBD ON SITE)	WIRE GAUGE & TYPE	CONDUCTOR AMPACITY @ 90°C (A)	CONDUCTOR AMPACITY @ 75°C (A)	REQUIRED CIRCUIT CONDUCTOR AMPACITY (A)	ADJUSTED CONDUCTOR AMPACITY @ 90 °C (A)	NEUTRAL CONDUCTOR SIZE & TYPE	GROUND WIRE SIZE & TYPE
1	30	1	8	IN AIR	N/A	#10 AWG PV WIRE	40	35	22.38	40	NONE	#6 AWG BARE Cu
2	30	1	8	0.7	3/4" METAL	#10 THWN-2	40	35	22.38	28	NONE	#8 THWN-2
1A	30	1	6	IN AIR	N/A	#10 AWG PV WIRE	40	35	22.38	40	NONE	#6 AWG BARE Cu
2A	30	1	6	0.8	3/4" METAL	#10 THWN-2	40	35	22.38	32	NONE	#8 THWN-2
AC WIRE CALCULATION												
3	30	1	2	1	3/4"	#6 THWN-2	75	65	60	75	#6 THWN-2	#8 THWN-2
4	30	1	2	1	1-1/4"	#1 THWN-2	145	130	125	145	#1 THWN-2	#6 THWN-2
5	30	1	2	1	1-1/2"	#1/0 THWN-2	170	150	150	170	#1/0 THWN-2	#6 THWN-2
6	30	1	2	1	1-1/4"	#1/0 THWN-2	170	150	150	170	#1/0 THWN-2	NONE

GENERAL NOTES

SITE NOTES

2.1.1 A LADDER WILL BE IN PLACE FOR INSPECTION IN ACCORDANCE WITH OSHA REGULATIONS.
2.1.2 THE PV MODULES ARE CONSIDERED NON-COMBUSTIBLE AND THIS SYSTEM IS A UTILITY INTERACTIVE SYSTEM WITH STORAGE BATTERIES.
2.1.3 THE SOLAR PV INSTALLATION WILL NOT OBSTRUCT ANY PLUMBING, MECHANICAL, OR BUILDING ROOF VENTS.
2.1.4 PROPER ACCESS AND WORKING CLEARANCE AROUND EXISTING AND PROPOSED ELECTRICAL EQUIPMENT WILL BE PROVIDED IN ACCORDANCE WITH SECTION NEC 110.
2.1.5 ROOF COVERINGS SHALL BE DESIGNED, INSTALLED, AND MAINTAINED IN ACCORDANCE WITH THIS CODE AND THE APPROVED MANUFACTURER'S INSTRUCTIONS SUCH THAT THE ROOF COVERING SERVES TO PROTECT THE BUILDING OR STRUCTURE.

EQUIPMENT LOCATIONS

2.2.1 ALL EQUIPMENT SHALL MEET MINIMUM WORKING CLEARANCES IN ACCORDANCE WITH NEC 110.
2.2.2 WIRING SYSTEMS INSTALLED IN DIRECT SUNLIGHT MUST BE RATED FOR EXPECTED OPERATING TEMPERATURE AS SPECIFIED BY 2017 NATIONAL ELECTRICAL CODE.
2.2.3 JUNCTION AND PULL BOXES PERMITTED INSTALLED UNDER PV MODULES IN ACCORDANCE WITH NEC 690.
2.2.4 ALL EQUIPMENT SHALL BE INSTALLED ACCESSIBLE TO QUALIFIED PERSONNEL IN ACCORDANCE WITH NEC APPLICABLE CODES.
2.2.5 ALL COMPONENTS ARE LISTED FOR THEIR PURPOSE AND RATED FOR OUTDOOR USAGE WHEN APPROPRIATE.

STRUCTURAL NOTES

2.3.1 RACKING SYSTEM & PV ARRAY WILL BE INSTALLED IN ACCORDANCE WITH THE CODE-COMPLIANT INSTALLATION MANUAL. TOP CLAMPS REQUIRE A DESIGNATED SPACE BETWEEN MODULES, AND RAILS MUST ALSO EXTEND A MINIMUM DISTANCE BEYOND EITHER EDGE OF THE ARRAY/SUB-ARRAY, IN ACCORDANCE WITH RAIL MANUFACTURER'S INSTALLATION PRACTICES.
2.3.2 JUNCTION BOX WILL BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. IF ROOF-PENETRATING TYPE, IT SHALL BE FLASHED & SEALED PER LOCAL REQUIREMENTS.
2.3.3 ROOFTOP PENETRATIONS FOR PV RACEWAY WILL BE COMPLETED AND SEALED W/ APPROVED CHEMICAL SEALANT PER CODE BY A LICENSED CONTRACTOR.
2.3.4 ALL PV RELATED ROOF ATTACHMENTS TO BE SPACED NO GREATER THAN THE SPAN DISTANCE SPECIFIED BY THE RACKING MANUFACTURER OR PROFESSIONAL ENGINEERING GUIDANCE.
2.3.5 WHEN POSSIBLE, ALL PV RELATED RACKING ATTACHMENTS WILL BE STAGGERED AMONGST THE ROOF FRAMING MEMBERS.

WIRING & CONDUIT NOTES

2.4.1 ALL CONDUIT AND WIRE WILL BE LISTED AND APPROVED FOR THEIR PURPOSE. CONDUIT AND WIRE SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING.
2.4.2 CONDUCTORS SIZED IN ACCORDANCE WITH THE NEC
2.4.3 AC CONDUCTORS TO BE COLORED OR MARKED PER NEC
2.4.4 LISTED OR LABELED EQUIPMENT SHALL BE INSTALLED AND USED IN ACCORDANCE WITH ANY INSTRUCTIONS INCLUDED IN THE LISTING OR LABELING PER NEC

GROUNDING NOTES

2.5.1 GROUNDING SYSTEM COMPONENTS SHALL BE LISTED FOR THEIR PURPOSE, AND GROUNDING DEVICES EXPOSED TO THE ELEMENTS SHALL BE RATED FOR SUCH USE.
2.5.2 PV EQUIPMENT SHALL BE GROUNDED IN ACCORDANCE WITH NEC 690 AND NEC TABLE 250.122.
2.5.3 METAL PARTS OF MODULE FRAMES, MODULE RACKING, AND ENCLOSURES CONSIDERED GROUNDED IN ACCORDANCE WITH NEC 250.
2.5.4 EQUIPMENT GROUNDING CONDUCTORS SHALL BE SIZED IN ACCORDANCE WITH NEC 690 AND INVERTER MANUFACTURER'S INSTALLATION PRACTICES
2.5.5 EACH MODULE WILL BE GROUNDED AS SHOWN IN MANUFACTURER DOCUMENTATION AND APPROVED BY THE AHJ.
2.5.6 THE GROUNDING CONNECTION TO A MODULE SHALL BE ARRANGED SUCH THAT THE REMOVAL OF A MODULE DOES NOT INTERRUPT A GROUNDING CONDUCTOR TO ANOTHER MODULE.
2.5.7 GROUNDING AND BONDING CONDUCTORS, IF INSULATED, SHALL BE COLORED GREEN OR MARKED GREEN IF #4 AWG OR LARGER PER NEC 250.
2.5.8 THE GROUNDING ELECTRODE SYSTEM COMPLIES WITH NEC 690 AND NEC 250. IF EXISTING SYSTEM IS INACCESSIBLE, OR INADEQUATE, A GROUNDING ELECTRODE SYSTEM PROVIDED IN ACCORDANCE WITH NEC 250, NEC 690 AND THE AHJ.
2.5.9 GROUND-FAULT DETECTION SHALL COMPLY WITH NEC 690 TO REDUCE FIRE HAZARDS

DISCONNECTION AND OVERCURRENT PROTECTION NOTES

2.6.1 DISCONNECTING SWITCHES SHALL BE WIRED SUCH THAT WHEN THE SWITCH IS OPENED THE CONDUCTORS REMAINING ENERGIZED ARE CONNECTED TO THE TERMINALS MARKED "LINE SIDE" (TYPICALLY THE UPPER TERMINALS).
2.6.2 DISCONNECTS TO BE ACCESSIBLE TO QUALIFIED UTILITY PERSONNEL, BE LOCKABLE, AND BE A VISIBLE-BREAK SWITCH
2.6.3 PV SYSTEM CIRCUITS INSTALLED ON OR IN HABITABLE BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION TO REDUCE SHOCK HAZARD FOR EMERGENCY RESPONDERS IN ACCORDANCE WITH 690.
2.6.4 ALL OCPD RATINGS AND TYPES SPECIFIED ACCORDING TO NEC 690 AND 240.
2.6.5 INVERTER ON-GRID BRANCHES SHALL BE CONNECTED TO A SINGLE BREAKER OR GROUPEF FUSE DISCONNECT(S) IN ACCORDANCE WITH NEC 110.
2.6.6 IF REQUIRED BY THE AHJ, SYSTEM WILL INCLUDE ARC-FAULT CIRCUIT PROTECTION IN ACCORDANCE WITH NEC 690 AND UL1699B.

INTERCONNECTION NOTES

2.7.1 LOAD SIDE INTERCONNECTION SHALL BE IN ACCORDANCE WITH NEC 705.
2.7.2 THE SUM OF THE UTILITY OCPD AND INVERTER CONTINUOUS OUTPUT MAY NOT EXCEED 120 PERCENT OF BUSBAR RATING PER NEC 705.
2.7.3 THE SUM OF 125 PERCENT OF THE POWER SOURCE(S) OUTPUT CIRCUIT CURRENT AND THE RATING OF THE OVERCURRENT DEVICE PROTECTING THE BUSBAR SHALL NOT EXCEED 120 PERCENT OF THE AMPACITY OF THE BUSBAR, PV DEDICATED BACKFEED BREAKERS MUST BE LOCATED OPPOSITE END OF THE BUS FROM THE UTILITY SOURCE OCPD PER NEC 705.
2.7.4 AT MULTIPLE ELECTRIC POWER SOURCES OUTPUT COMBINER PANEL, TOTAL RATING OF ALL OVERCURRENT PROTECTION DEVICES SHALL NOT EXCEED AMPACITY OF BUSBAR. HOWEVER, THE MAIN OVERCURRENT PROTECTION DEVICE MAY BE EXCLUDED IN ACCORDANCE WITH NEC 705.
2.7.5 FEEDER TAP INTERCONNECTION (LOAD SIDE) IN ACCORDANCE WITH NEC 705.
2.7.6 SUPPLY SIDE TAP INTERCONNECTION IN ACCORDANCE WITH TO NEC 705 WITH SERVICE ENTRANCE CONDUCTORS IN ACCORDANCE WITH NEC 230.
2.7.7 BACKFEEDING BREAKER FOR ELECTRIC POWER SOURCES OUTPUT IS EXEMPT FROM ADDITIONAL FASTENING PER NEC 705.



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New York COA #0022571

Signed 9/10/2025

Expires 7/31/2027

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CONTRACTOR



EMPIRE SOLAR SOLUTIONS

2-8 JOHNES ST
NEWBURGH,12550
PHONE - (845) 728-2165
LIC. NO. - WC-29806-H17

PROJECT NAME & ADDRESS
THOMAS MILLER
50 CENTER RIDGE RD,
EAST AURORA, NY 14052

APN #: 142489A1870200002017000
AHJ: TOWN OF AURORA
UTILITY: NEW YORK STATE
ELECTRIC & GAS

SYSTEM DETAILS

32.190 KW DC-(STC) / 23.000 KW AC
(74) HYUNDAI HIN-T435NF(BK)
(2) TESLA 1707000-XX-Y
(29) TESLA MCI-2 RSD'S HIGH CURRENT

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE

NOTES

DRAWN DATE	9/9/2025
DRAWN BY	VHN

SHEET NUMBER

PV-05

WARNING

ELECTRICAL SHOCK HAZARD

TERMINALS ON THE LINE AND
LOAD SIDES MAY BE ENERGIZED
IN THE OPEN POSITION

LABEL LOCATION: COMBINER PANEL, AC
DISCONNECT, POINT OF INTERCONNECTION
PER CODE: NEC 690.13(B)

WARNING

TURN OFF PHOTOVOLTAIC AC
DISCONNECT PRIOR TO
WORKING INSIDE PANEL

LABEL LOCATION: COMBINER PANEL(S), MAIN SERVICE DISCONNECT
PER CODE: NEC 110.27(C), OSHA 1910.145(f)(7)

**WARNING: PHOTOVOLTAIC
POWER SOURCE**

LABEL LOCATION: DC CONDUIT/RACEWAY/CABLE TRAY
PER CODE: NEC 690.31(G)(3-4)

PHOTOVOLTAIC SYSTEM AC DISCONNECT

RATED AC OUTPUT CURRENT:

96.00 A

NOMINAL OPERATING AC VOLTAGE:

240 V

LABEL LOCATION: POINT OF INTERCONNECTION
PER CODE: NEC 690.54

PV SYSTEM

DISCONNECT

LABEL LOCATION: AC DISCONNECT
PER CODE: NEC 690.13(B)

**DO NOT DISCONNECT
UNDER LOAD**

LABEL LOCATION: MAIN SERVICE DISCONNECT
PER CODE: NEC 690.15(C) & NEC 690.33(E)(2)

WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

LABEL LOCATION: MAIN SERVICE DISCONNECT
PER CODE: NEC 705.12(B)(3-4), NEC 690.59

WARNING

THIS EQUIPMENT FED BY MULTIPLE SOURCES.
TOTAL RATING OF ALL OVERCURRENT DEVICES
EXCLUDING MAIN SUPPLY OVERCURRENT DEVICE
SHALL NOT EXCEED AMPACITY OF BUSBAR

LABEL LOCATION: POINT OF INTERCONNECTION, COMBINER PANEL
PER CODE: NEC 705.12(B)(2)(3)(c)

WARNING

POWER SOURCE OUTPUT
CONNECTION. DO NOT RELOCATE
THIS OVERCURRENT DEVICE.

LABEL LOCATION: MAIN SERVICE DISCONNECT,
POINT OF INTERCONNECTION
PER CODE: 705.12(B)(2)(3)(b)

**MAIN PHOTOVOLTAIC
SYSTEM DISCONNECT**

LABEL LOCATION: MAIN SERVICE DISCONNECT, UTILITY METER
PER CODE: NEC 690.13(B)

**RAPID SHUTDOWN SWITCH
FOR SOLAR PV SYSTEM**

LABEL LOCATION: RSD INITIATION DEVICE, AC DISCONNECT
PER CODE: NEC 690.56(C)(3)

**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)

PHOTOVOLTAIC DC DISCONNECT

MAXIMUM SYSTEM VOLTAGE:

600

 VDC

MAXIMUM CIRCUIT CURRENT:

19

 ADC

MAX RATED OUTPUT CURRENT OF THE CHARGE
CONTROLLER OR DC-TO-DC CONVERTER (IF INSTALLED):

15

 ADC

LABEL LOCATION: INVERTER(S), DC DISCONNECT(S).
PER CODE: NEC 690.53

WARNING

ELECTRICAL 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
PER CODE: NEC 690.13(B)

CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

LABEL LOCATION: MAIN SERVICE DISCONNECT
PER CODE: NEC 690.13(F), NEC 705.12(B)(3-4), NEC 690.59

WARNING MULTIPLE POWER SOURCE
SOURCES: UTILITY GRID, PV AND ESS SYSTEM

LABEL LOCATION: MAIN SERVICE DISCONNECT
PER CODE: NEC 705.12(B)(3-4), NEC 690.59



Wyssling Consulting, PLLC
76 N. Meadowbrook Drive, Alpine UT
New York COA #0022571

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description of the alteration.

CAUTION

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

ADDRESS: 50 CENTER RIDGE RD, EAST AURORA, NY 14052

CONTRACTOR

EMPIRE SOLAR SOLUTIONS

2-8 JOHNES ST
NEWBURGH,12550
PHONE - (845) 728-2165
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(2) TESLA 1707000-XX-Y
(29) TESLA MCI-2 RSD'S HIGH CURRENT

REVISIONS

REV	DESCRIPTION	DATE

SHEET TITLE

WARNING LABELS

DRAWN DATE

9/9/2025

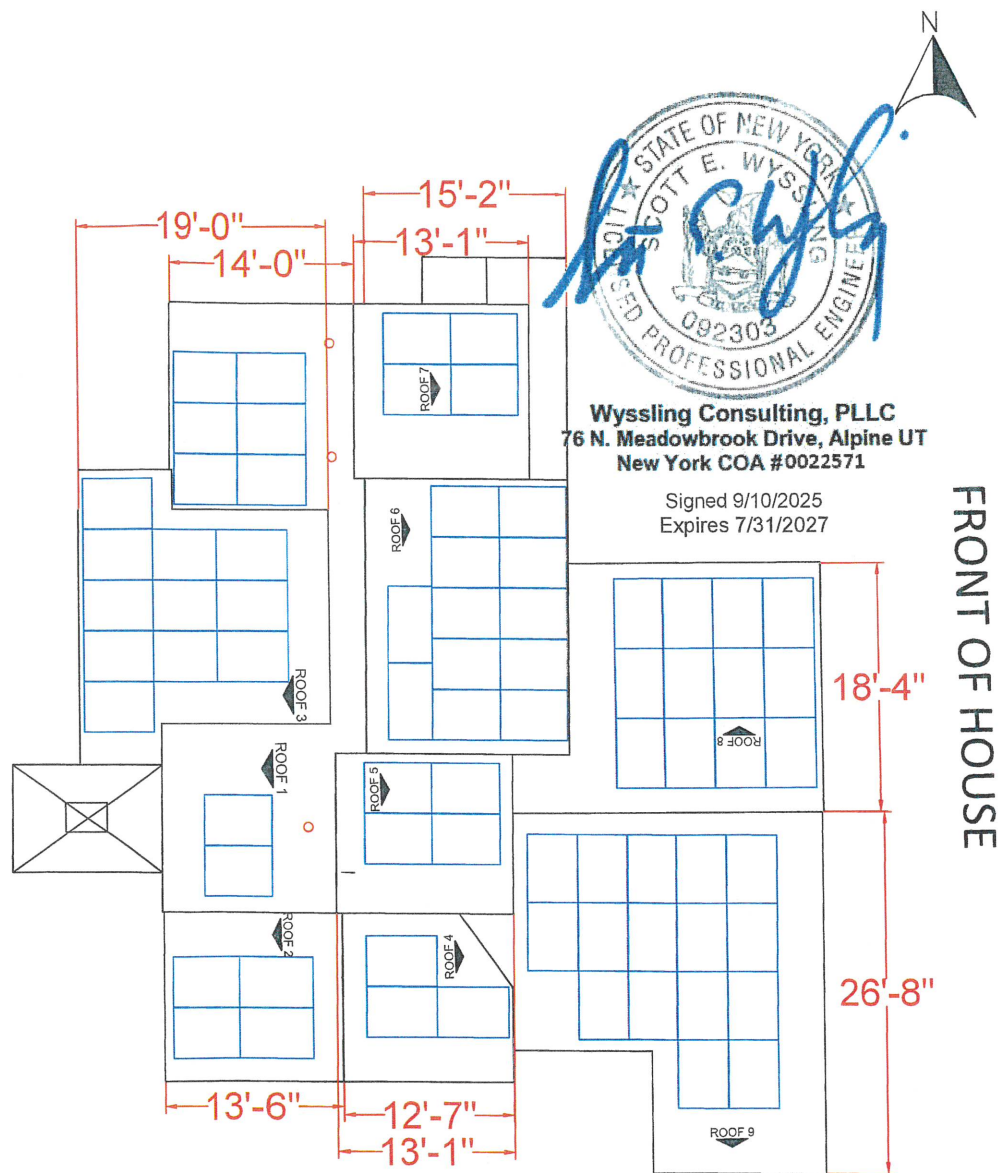
DRAWN BY

VHN

SHEET NUMBER

PV-06

	A	B	C	D	E	F
1						
2						
3						
4						
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7						
8						
9						
10						



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****DIMENSIONS ARE 2D (FLAT)**

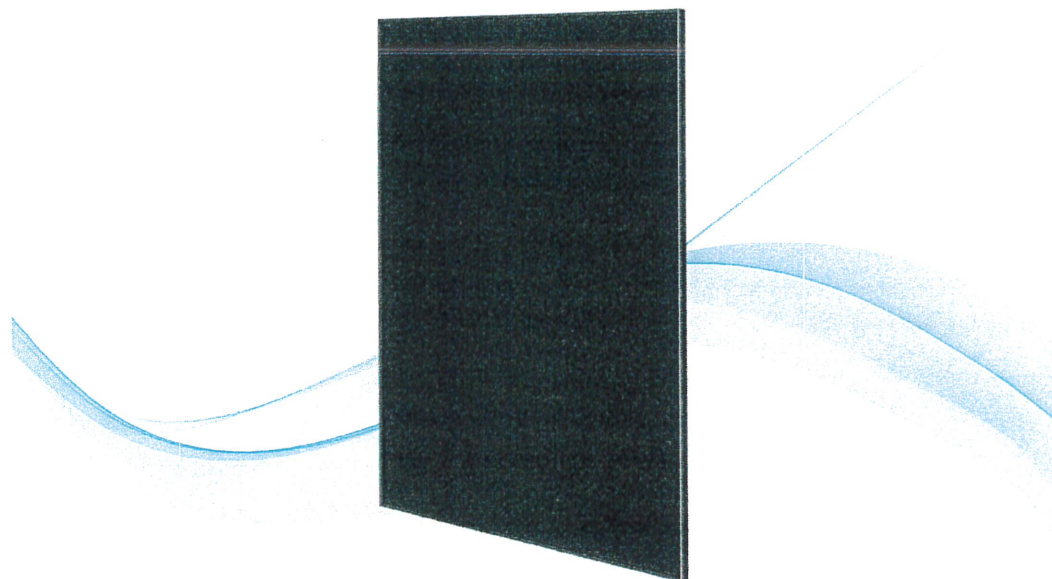
CONTRACTOR		
		
EMPIRE SOLAR SOLUTIONS 2-8 JOHNES ST NEWBURGH, 12550 PHONE - (845) 728-2165 LIC. NO. - WC-29806-H17		
PROJECT NAME & ADDRESS THOMAS MILLER 50 CENTER RIDGE RD, EAST AURORA, NY 14052 APN #: 142489A1870200002017000 AHJ: TOWN OF AURORA UTILITY: NEW YORK STATE ELECTRIC & GAS		
SYSTEM DETAILS 32,190 KW DC-(STC) / 23,000 KW AC (74) HYUNDAI HIN-T435NF(BK) (2) TESLA 1707000-XX-Y (29) TESLA MCI-2 RSD'S HIGH CURRENT		
REVISIONS		
REV	DESCRIPTION	DATE
SHEET TITLE INSTALLATION RESOURCE		
DRAWN DATE	9/9/2025	
DRAWN BY	VHN	
SHEET NUMBER PV-07		

HD HYUNDAI SOLAR MODULE

NF(BK) Series

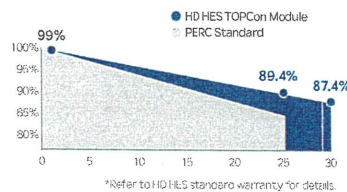
Premium N-Type TOPCon Module

HIN-T430NF(BK) | HIN-T435NF(BK) | HIN-T440NF(BK)



HD Hyundai's Warranty Provisions

- 25 YEARS** • 25-Year Product Warranty
• Materials and workmanship
- 30 YEARS** • 30-Year Performance Warranty
• First year degradation: 1%
• Linear warranty after initial year:
with 0.41% annual degradation.
87.4% is guaranteed up to 30 years



Certification

- ISO 9001: Quality management systems
- ISO 14001: Environmental management systems
- ISO 45001: Occupational health and safety management systems
- UL 61720: Photovoltaic (PV) module safety qualification (CSA)
- IEC 61701: Salt mist corrosion testing
- IEC 62716: Immersion corrosion testing
- IEC 62824: Power and induced degradation (PID) testing
- IEC 60068-2-68: Sand and dust testing for environmental durability

Electrical Characteristics

Item	Unit	HIN-T430NF(BK)		HIN-T435NF(BK)		HIN-T440NF(BK)	
		W	BNPI	W	BNPI	W	BNPI
Nominal output (Pmax)	W	430	476	435	482	440	488
Open circuit voltage (Voc)	V	38.4	38.4	38.6	38.6	38.8	38.8
Short circuit current (Isc)	A	14.25	15.79	14.32	15.87	14.39	15.94
Voltage at Pmax (Vmpp)	V	31.9	31.9	32.1	32.1	32.3	32.3
Current at Pmax (Impp)	A	13.48	14.94	13.56	15.01	13.63	15.10
Module efficiency	%	22.02	24.40	22.28	24.68	22.53	25.00
Power Class Sorting	W	0 ~ +5					
Temperature coefficient of Pmax	%/K	-0.30					
Temperature coefficient of Voc	%/K	-0.25					
Temperature coefficient of Isc	%/K	0.046					
Bifaciality	%	80%±10%					

*STC: Irradiance 1,000 W/m², cell temperature 25°C, AM=1.5 / Test uncertainty for Pmax ±3%, Voc ±3%, Isc ±3%
**The electrical properties of BNPI are measured under the irradiance corresponding to 1000 W/m² on the module front and 130 W/m² on the module rear

Additional Power Gain from rear side					
Pmpp gain	Pmpp[W]	Vmpp[V]	Impp[A]	Voc[V]	Isc[A]
5%	458	32.30	14.18	38.80	14.97
15%	493	32.30	15.27	38.80	16.12
25%	528	32.40	16.36	38.90	17.27

*Electrical characteristics with different rear power gain (reference to 440W)

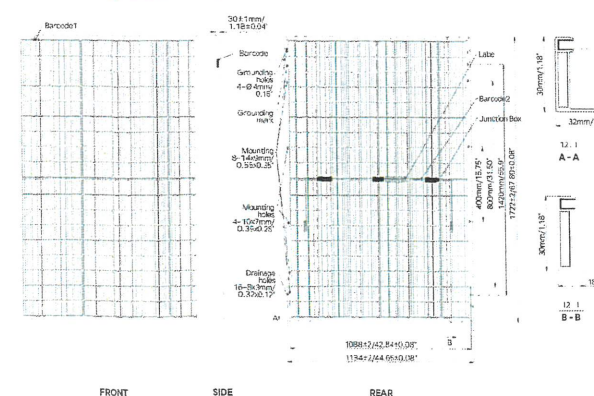
Mechanical Characteristics

Dimensions	1,722mm (L) x 1,134mm (W) x 30mm (H) (57.8in x 44.6in x 1.2in)
Weight	24.5 kg (50.01lbs)
Solar Cells	N-Type TOPCon, 108 (6x18) monocrystalline 16BB half-cut bifacial cells
Output Cables	Cable: (+)1,200mm(47.2in), (-)1,200mm(47.2in) / Customized length available Connector: Staubli MC4 genuine Connector / Compatible, IP68
Junction Box	3-part, 3 bypass diodes, IP68 rated
Construction	Front: 2.0mm(0.08in) semi-tempered solar glass with high transmittance and anti-reflective coating Rear: 2.0mm(0.08in) semi-tempered solar glass
Frame	Anodized aluminum alloy

Shipping Configurations

Packing Direction	Vertical	Packing pallet weight (kg)	912
Container Size (HC)	40'	Modules Per Pallet (pcs)	36
Pallets Per Container	26	Modules Per Container (pcs)	936

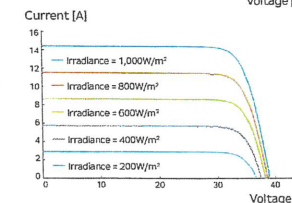
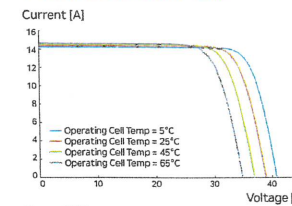
Module Diagram (unit: mm)



Sales & Marketing
hes.sales@hd.com

HD Hyundai Energy Solutions reserves the right to update or modify the specifications and features listed in this datasheet without prior notice. Always check the latest version of the datasheet for accurate information. Before using the product, please refer to the Installation and Operation Manual and Warranty. We retain the right of final interpretation.

I-V Curves (HIN-T440NF(BK))



CONTRACTOR



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REV	DESCRIPTION	DATE

SHEET TITLE RESOURCE DOCUMENTS

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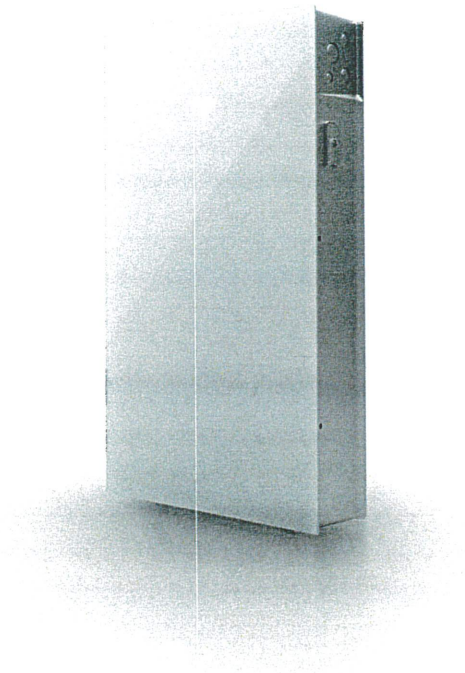
SHEET NUMBER

R-01

Powerwall 3
Power Everything

Powerwall 3 is a fully integrated solar and battery system, designed to accelerate the transition to sustainable energy. Customers can receive whole home backup, cost savings, and energy independence by producing and consuming their own energy while participating in grid services. Once installed, customers can manage their system using the Tesla App to customize system behavior to meet their energy goals.

Powerwall 3 achieves this by supporting up to 20 kW DC of solar and providing up to 11.5 kW AC of continuous power per unit. It has the ability to start heavy loads rated up to 185 LRA, meaning a single unit can support the power needs of most homes. Powerwall 3 Expansions make it easier and more affordable to scale up customers' systems to meet their current or future needs. Powerwall 3 is designed for fast and efficient installations, modular system expansion, and simple connection to any electrical service.



Powerwall 3 Technical Specifications

System Technical Specifications

Model Number	1707000-xx-y			
Nominal Grid Voltage (Input & Output)	120/240 VAC			
Grid Type	Split phase			
Frequency	60 Hz			
Nominal Battery Energy	13.5 kWh AC ¹			
Nominal Output Power (AC)	5.8 kW	7.6 kW	10 kW	11.5 kW
Maximum Apparent Power	5,800 VA	7,600 VA	10,000 VA	11,500 VA
Maximum Continuous Current	24 A	31.7 A	41.7 A	48 A
Overcurrent Protection Device ²	30 A	40 A	60 A	60 A
Configurable Maximum Continuous Discharge Power Off-Grid (PV Only, -20°C to 25°C)	15.4 kW ³			
Maximum Continuous Charge Current / Power (Powerwall 3 only)	20.8 A AC / 5 kW			
Maximum Continuous Charge Current / Power (Powerwall 3 with up to (3) Expansion units)	33.3 A AC / 8 kW			
Output Power Factor Rating	0 – 1 (Grid Code configurable)			
Maximum Output Fault Current (1 s)	160 A			
Maximum Short-Circuit Current Rating	10 kA			
Load Start Capability	185 LRA			
Solar to Battery to Home/Grid Efficiency	89% ¹⁴			
Solar to Home/Grid Efficiency	97.5% ⁵			
Power Scalability	Up to 4 Powerwall 3 units supported			
Energy Scalability	Up to 3 Expansion units (for a maximum total of 7 units)			
Supported Islanding Devices	Gateway 3, Backup Switch, Backup Gateway 2			
Connectivity	Wi-Fi (2.4 and 5 GHz), Ethernet, Cellular (LTE/4G ⁶)			
Hardware Interface	Dry contact relay, Rapid Shutdown (RSD) certified switch and 2-pin connector, RS-485 for meters			
AC Metering	Revenue Grade (+/- 0.5%, ANSI C12.20)			
Protections	Integrated arc fault circuit interrupter (AFCI), Isolation Monitor Interrupter (IMI), PV Rapid Shutdown (RSD) using Tesla Mid-Circuit Interrupters			
Customer Interface	Tesla Mobile App			
Warranty	10 years			

¹Values provided for 25°C (77°F), at beginning of life. 3.3 kW charge/discharge power.

²See [Powerwall 3 Installation Manual](#) for fuse requirements if using fuse for overcurrent protection.

³15.4kW off-grid maximum continuous discharge power is only available if on-grid rating is 11.5 kW. If enabled, Powerwall 3 must be installed with an 80 A breaker and appropriately sized conductors.

⁴Typical solar shifting use case.

⁵Tested using CEC weighted efficiency methodology.

⁶The customer is expected to provide internet connectivity for Powerwall 3; cellular should not be used as the primary mode of connectivity. Cellular connectivity subject to network operator service coverage and signal strength.

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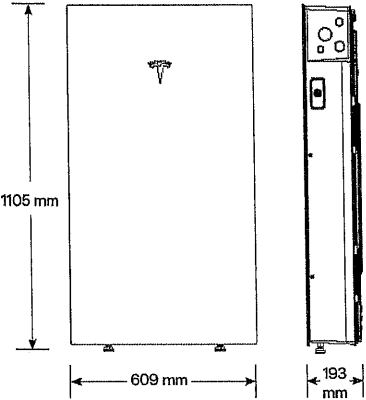
SHEET NUMBER
R-02

Powerwall 3 Technical Specifications

Solar Technical Specifications	Maximum Solar STC Input	20 kW
	Withstand Voltage	600 V DC
	PV DC Input Voltage Range	60 — 550 V DC
	PV DC MPPT Voltage Range	60 — 480 V DC
	MPPTs	6
	Maximum Current per MPPT (I_{mp})	15 A ^{7,8}
	Maximum Short Circuit Current per MPPT (I_{sc})	19 A ⁸
	⁷ Only applicable to Powerwall 3 units with 15 A I_{mp} on the product label. Otherwise, Powerwall 3 has an I_{mp} of 13 A.	
	⁸ When PV strings are combined on the roof and the DC input current exceeds the MPPT rating, a jumper can be used to combine two MPPTs into a single input to intake DC current up to 30 A I_{mp} / 38 A I_{sc} for 26 A I_{mp} / 30 A I_{sc} if Powerwall 3 is labeled with 13 A I_{mp} / 15 A I_{sc} .	
Environmental Specifications	Operating Temperature	–20°C to 50°C (–4°F to 122°F) ⁹
	Operating Humidity (RH)	Up to 100%, condensing
	Storage Temperature	–20°C to 30°C (–4°F to 86°F), up to 95% RH, non-condensing, State of Energy (SOE): 25% initial
	Maximum Elevation	3000 m (9843 ft)
	Environment	Indoor and outdoor rated
	Enclosure Rating	NEMA 3R
	Ingress Rating	IP67 (Battery & Power Electronics) IP55 (Wiring Compartment)
	Pollution Rating	PD3
	Operating Noise @ 1 m	< 50 db(A) typical < 62 db(A) maximum
	⁹ Performance may be de-rated at operating temperatures above 40°C (104°F).	
Compliance Information	Certifications	UL 1741, UL 9540, UL 9540A, UL 3741, UL 1741 PCS, UL 1741 SA, UL 1741 SB, UL 1741 Multimode, UL 1973, UL 1699B, UL 1998, CSA C22.2 No. 0.8, CSA C22.2 No. 1071, CSA C22.2 No. 330, CSA 22.3 No. 9, IEEE 1547, IEEE 1547A, IEEE 1547.1, CA Rule No.21
	Grid Connection	United States and Canada
	Emissions	FCC Part 15 Class B, ICES 003
	Environmental	RoHS Directive 2011/65/EU
	Seismic	AC156, IEEE 693–2005 (high)
	Fire Testing	Meets the unit level performance criteria of UL 9540A

Powerwall 3 Technical Specifications

Mechanical Specifications	Dimensions	1105 x 609 x 193 mm (43.5 x 24 x 7.6 in) ¹⁰
	Total Weight of Installed Unit	132 kg (291.2 lb)
	Weight of Powerwall 3	124 kg (272.5 lb)
	Weight of Glass Front Cover	6.5 kg (14.5 lb)
	Weight of Wall Bracket	1.9 kg (4.2 lb)
	Mounting Options	Floor or wall mount
¹⁰ These dimensions include the glass front cover being installed on Powerwall 3.		



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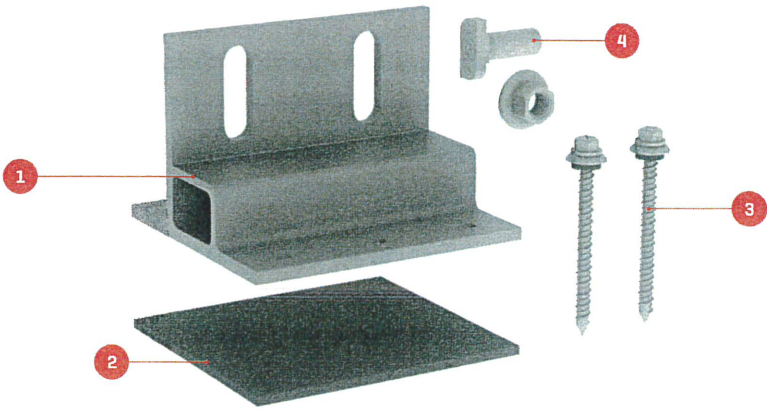
REV	DESCRIPTION	DATE

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RESOURCE
DOCUMENTS

DRAWN DATE	9/9/2025
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SHEET NUMBER
R-03

We support PV systems
Formerly Everest Solar Systems



Splice Foot XL

Patent Pending

TECHNICAL SHEET

Item Number	Description	Part Number
1	Splice Foot XL	4000162 Splice Foot XL Kit, Mill
2	K2 FlexFlash Butyl	
3	M5 x 60 lag screws	
4	T-Bolt & Hex Nut Set	

Technical Data

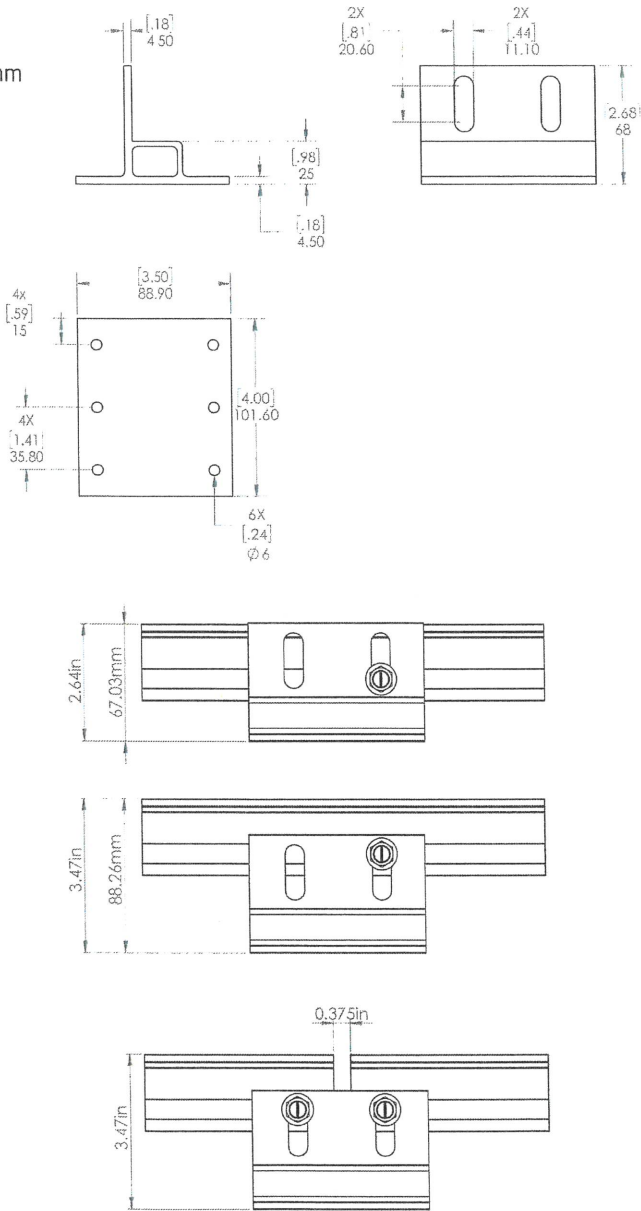
	Splice Foot XL
Roof Type	Composition shingle
Material	Aluminum with stainless steel hardware
Finish	Mill
Roof Connection	M5 x 60 lag screws
Code Compliance	UL 2703
Compatibility	CrossRail 44-X, 48-X, 48-XL, 80

k2-systems.com

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Units: [in] mm



k2-systems.com

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R-06