

Yeary Residence

6067 N Paradise View Dr.

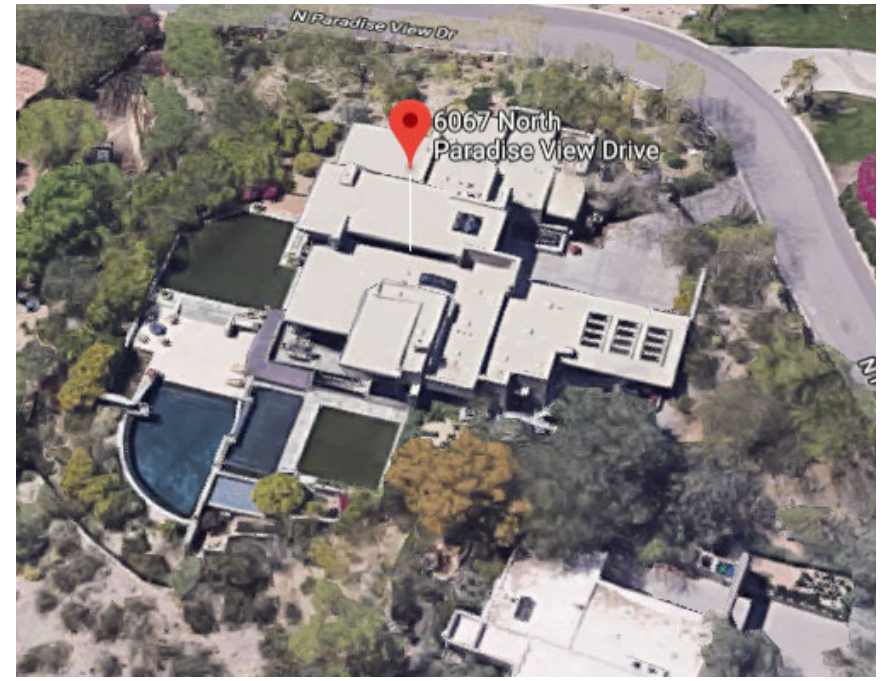
Paradise Valley, AZ 85253



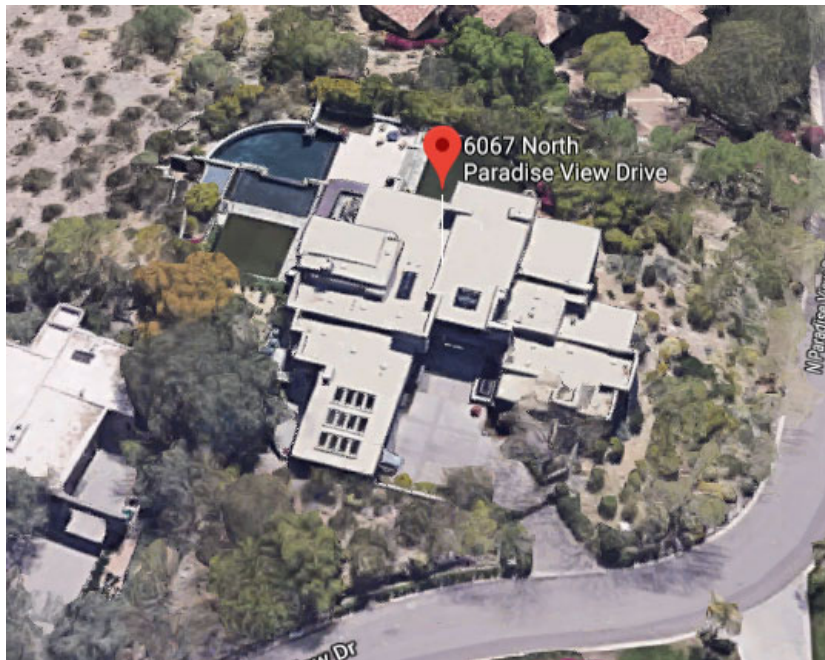
North



West



South



East



SunPower® X-Series Residential Solar Panels | X22-360

More than 22% Efficiency

Ideal for roofs where space is at a premium or where future expansion might be needed.

Maximum Performance

Designed to deliver the most energy in demanding real-world conditions, in partial shade and hot rooftop temperatures.^{1,2,4}

Premier Technology

Engineered with the newest and most powerful Maxeon technology, X-Series brings unmatched power and performance to your home.



Maxeon® Solar Cells: Fundamentally better

Engineered for performance, designed for durability.

Engineered for Peace of Mind

Designed to deliver consistent, trouble-free energy over a very long lifetime.^{3,4}

Designed for Durability

The SunPower Maxeon Solar Cell is the only cell built on a solid copper foundation. Virtually impervious to the corrosion and cracking that degrade conventional panels.³

Same excellent durability as E-Series panels.

#1 Rank in Fraunhofer durability test.⁹

100% power maintained in Atlas 25+ comprehensive durability test.¹⁰

High Performance & Excellent Durability



SPR-X22-360



Highest Efficiency⁵

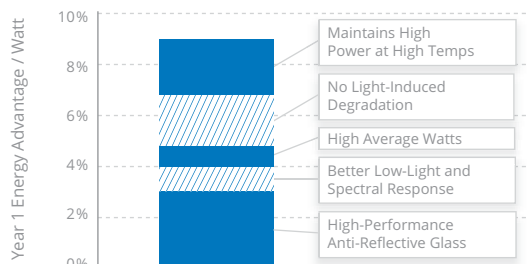
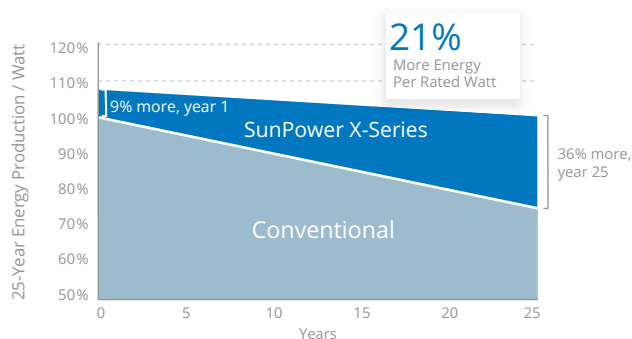
Generate more energy per square foot

X-Series residential panels convert more sunlight to electricity by producing 38% more power per panel¹ and 70% more energy per square foot over 25 years.^{1,2,3}

Highest Energy Production⁶

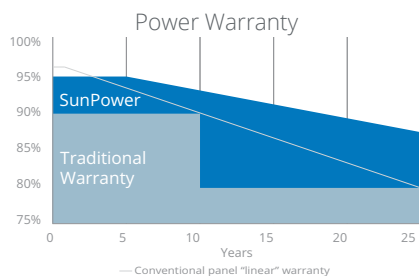
Produce more energy per rated watt

High year-one performance delivers 8–10% more energy per rated watt.² This advantage increases over time, producing 21% more energy over the first 25 years to meet your needs.³

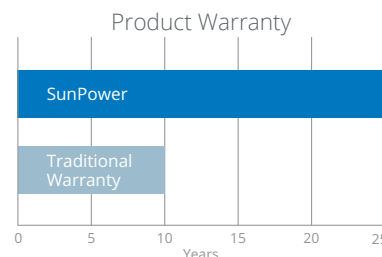


SunPower® X-Series Residential Solar Panels | X22-360

SunPower Offers The Best Combined Power And Product Warranty



More guaranteed power: 95% for first 5 years,
-0.4%/yr. to year 25⁷



Combined Power and Product defect 25-year coverage⁸

Electrical Data

Electrical Data	
	SPR-X22-360
Nominal Power (P _{nom}) ¹¹	360 W
Power Tolerance	+5/-0%
Avg. Panel Efficiency ¹²	22.2%
Rated Voltage (V _{mpp})	59.1 V
Rated Current (I _{mpp})	6.09 A
Open-Circuit Voltage (V _{oc})	69.5 V
Short-Circuit Current (I _{sc})	6.48 A
Max. System Voltage	600 V UL & 1000 V IEC
Maximum Series Fuse	15 A
Power Temp Coef.	-0.29% / °C
Voltage Temp Coef.	-167.4 mV / °C
Current Temp Coef.	2.9 mA / °C

REFERENCES:

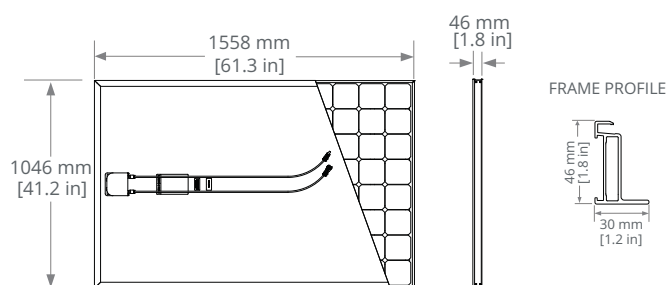
- All comparisons are SPR-X21-345 vs. a representative conventional panel: 250 W, approx. 1.6 m², 15.3% efficiency.
- Typically 8–10% more energy per watt, BEW/DNV Engineering "SunPower Yield Report," Jan 2013.
- SunPower 0.25%/yr degradation vs. 1.0%/yr conv. panel. Campeau, Z. et al. "SunPower Module Degradation Rate," SunPower white paper, Feb 2013; Jordan, Dirk "SunPower Test Report," NREL, Q1-2015.
- "SunPower Module 40-Year Useful Life" SunPower white paper, May 2015. Useful life is 99 out of 100 panels operating at more than 70% of rated power.
- Highest of over 3,200 silicon solar panels, Photon Module Survey, Feb 2014.
- 1% more energy than E-Series panels, 8% more energy than the average of the top 10 panel companies tested in 2012 (151 panels, 102 companies), Photon International, Feb 2013.
- Compared with the top 15 manufacturers. SunPower Warranty Review, May 2015.
- Some restrictions and exclusions may apply. See warranty for details.
- X-Series same as E-Series, 5 of top 8 panel manufacturers tested in 2013 report, 3 additional panels in 2014. Ferrara, C., et al. "Fraunhofer PV Durability Initiative for Solar Modules: Part 2". Photovoltaics International, 2014.
- Compared with the non-stress-tested control panel. X-Series same as E-Series, tested in Atlas 25+ Durability test report, Feb 2013.
- Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25° C). NREL calibration Standard: SOMS current, LACCS FF and Voltage.
- Based on average of measured power values during production.
- Type 2 fire rating per UL1703:2013, Class C fire rating per UL1703:2002.
- See salesperson for details.

Tests And Certifications

Standard Tests ¹³	UL1703 (Type 2 Fire Rating), IEC 61215, IEC 61730
Quality Certs	ISO 9001:2008, ISO 14001:2004
EHS Compliance	RoHS, OHSAS 18001:2007, lead free, REACH SVHC-163, PV Cycle
Sustainability	Cradle to Cradle Certified™ Silver (eligible for LEED points) ¹⁴
Ammonia Test	IEC 62716
Desert Test	10.1109/PVSC.2013.6744437
Salt Spray Test	IEC 61701 (maximum severity)
PID Test	Potential-Induced Degradation free: 1000 V ⁹
Available Listings	UL, TUV, JET, CEC

Operating Condition And Mechanical Data

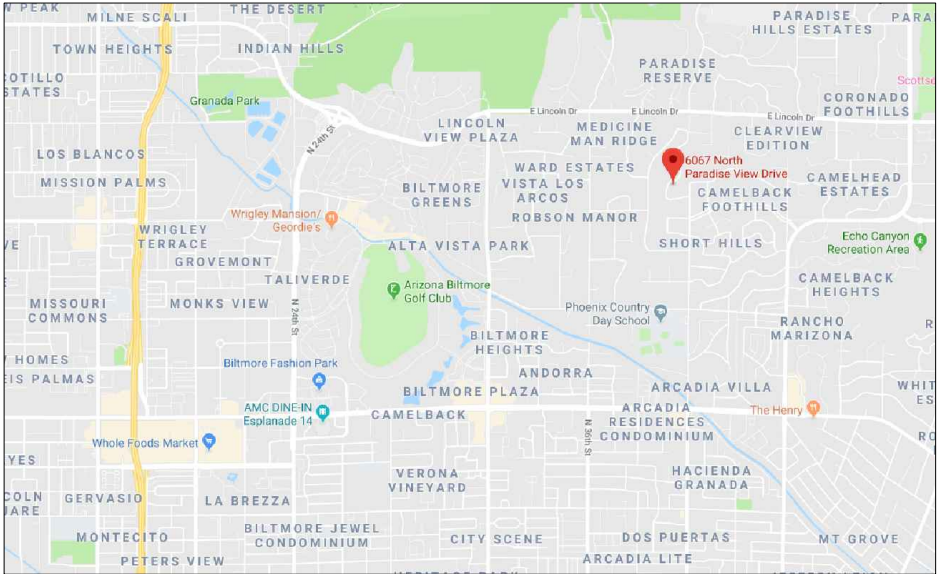
Temperature	-40° F to +185° F (-40° C to +85° C)
Impact Resistance	1 inch (25 mm) diameter hail at 52 mph (23 m/s)
Appearance	Class A+
Solar Cells	96 Monocrystalline Maxeon Gen III
Tempered Glass	High-transmission tempered anti-reflective
Junction Box	IP-65, MC4 compatible
Weight	41 lbs (18.6 kg)
Max. Load	Wind: 62 psf, 3000 Pa, 305 kg/m ² front & back Snow: 125 psf, 6000 Pa, 611 kg/m ² front
Frame	Class 1 black anodized (highest AAMA rating)



Please read the safety and installation guide.

See www.sunpower.com/facts for more reference information.
For more details, see extended datasheet: www.sunpower.com/datasheets.

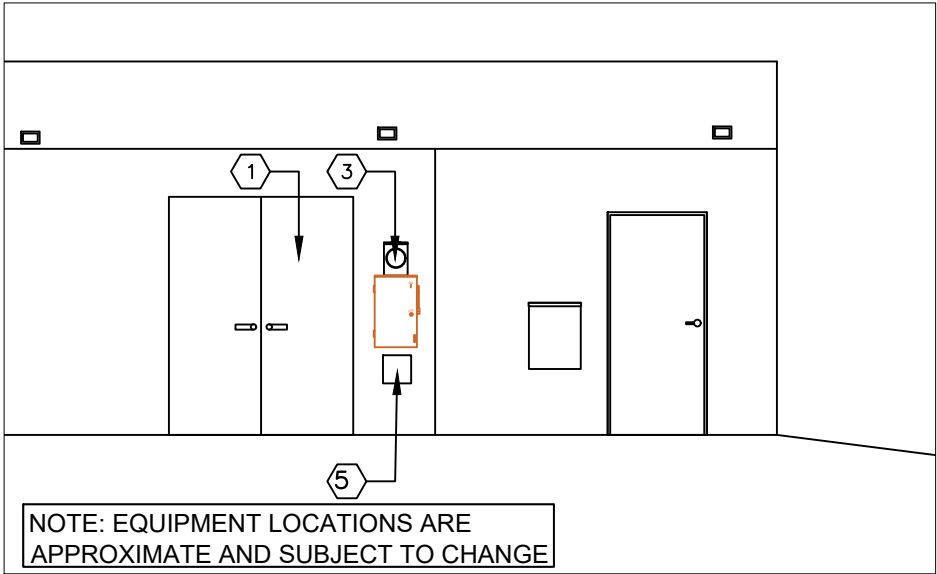
Document # 514618 Rev B /LTR_US



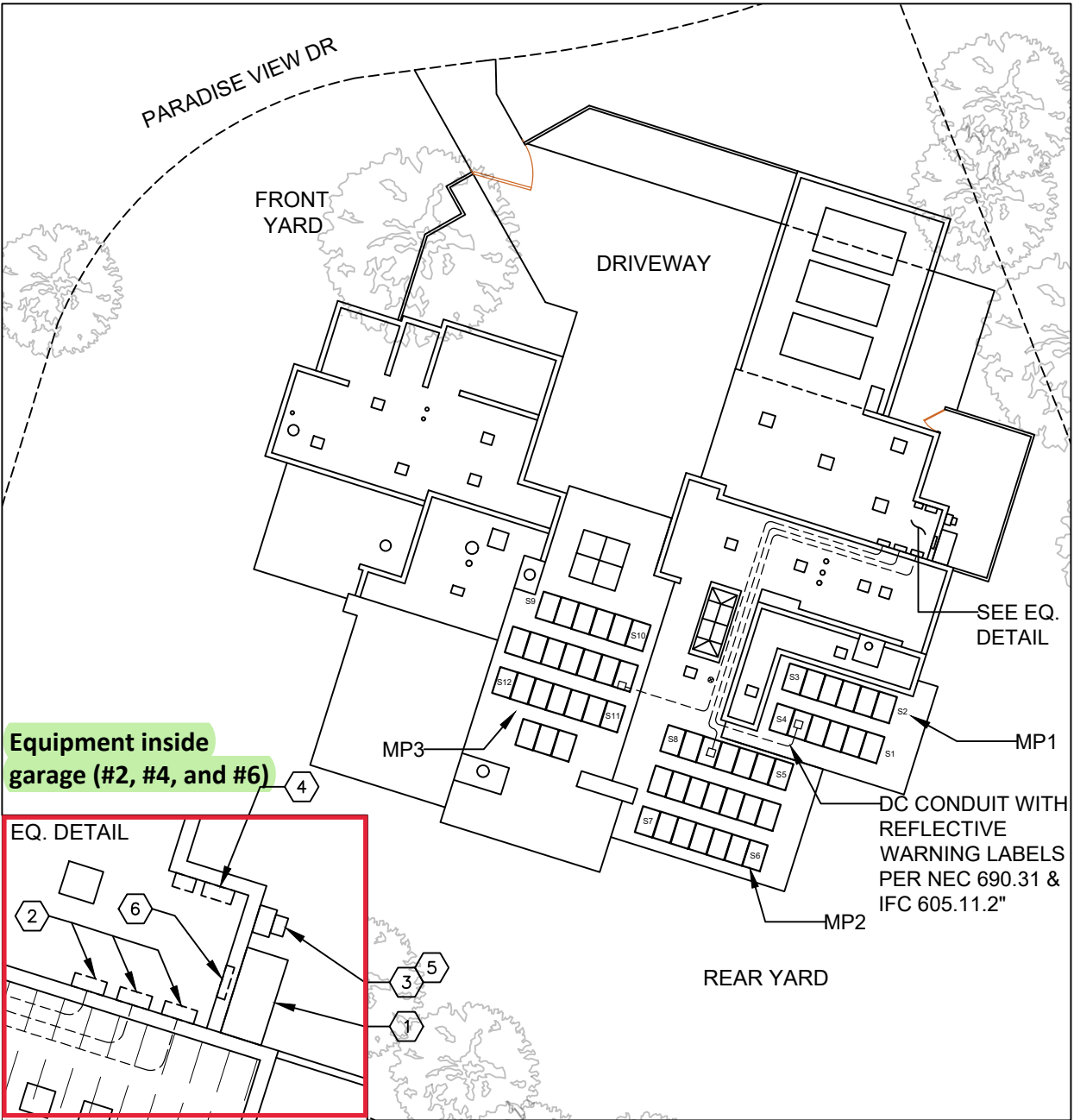
SITE LOCATION



AERIAL VIEW



EQUIPMENT LAYOUT



SITE PLAN

MP1	PITCH: 10 AZIMUTH: 197 MATERIAL: Rolled Asphalt MOUNTING: Tilt Structure	MP3	PITCH: 10 AZIMUTH: 197 MATERIAL: Rolled Asphalt MOUNTING: Tilt Structure	Project Manager: Kaleina Eden Sales Person: Bobby Burnett	PARCEL INFO PARCEL #: 164-04-074 SQUARE FOOTAGE: 8,615 CONST. YEAR: 2007
MP2	PITCH: 10 AZIMUTH: 197 MATERIAL: Rolled Asphalt MOUNTING: Tilt Structure				
ROOF LEGEND ⊗ GAS VENT □ T-TOP VENT ◻ DORMER VENT				 SCALE: NTS	
S# SUNEYE SHOTS SHADE REPORT					

- NOTE:**
- UTILITY HAS 24-HR UNRESTRICTED ACCESS TO ALL PHOTOVOLTAIC SYSTEM COMPONENTS LOCATED AT THE SERVICE ENTRANCE.
 - WORKSPACE IN FRONT OF THE AC ELECTRICAL SYSTEM COMPONENTS SHALL BE IN ACCORDANCE WITH SRP & NEC REQUIREMENTS. FOR SRP REQUIREMENTS, REFERENCE SRP E.S.S.
 - REFERENCE SRP E.S.S FOR ELECTRIC METER SEPARATION BETWEEN WATER & GAS.

SCOPE OF WORK

TO INSTALL A PHOTOVOLTAIC (PV) SYSTEM AT THE
Yearly, Frank Residence
LOCATED AT
6067 N Paradise View Dr
Paradise Valley, AZ 85253

THE POWER GENERATED BY THE PV
SYSTEM WILL BE INTERCONNECTED WITH
THE UTILITY GRID THROUGH THE EXISTING
ELECTRICAL SERVICE EQUIPMENT.

SHEET INDEX

PV1 SITE MAP / SITE PLAN
PV2 ROOF PLAN
E1 THREE LINE DIAGRAM
L1 LABELING
ATTACHMENTS: CUT-SHEETS

GOVERNING CODES

LOCAL JURISDICTION - Paradise Valley
UTILITY - SRP
2014 NATIONAL ELECTRICAL CODE
2015 INTERNATIONAL BUILDING CODE
2015 INTERNATIONAL RESIDENTIAL CODE
2015 INTERNATIONAL FIRE CODE
CITY AMENDMENTS

SITE PLAN NOTES

- (EXISTING) ELECTRICAL SERVICE
ENTRANCE 600A RATED and
UTILITY REVENUE METER
- (NEW) INVERTER WITH
INTEGRATED DC DISCONNECT
- (NEW) DEDICATED PV SYSTEM
KWH METER and UTILITY
DISCONNECT SWITCH
- (NEW) AC COMBINER PANEL
- (NEW) AC TAPPING BOX
- (EXISTING) 200A LOAD CENTER

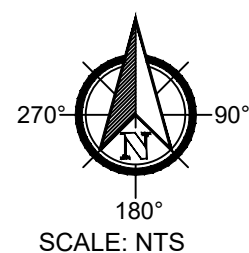
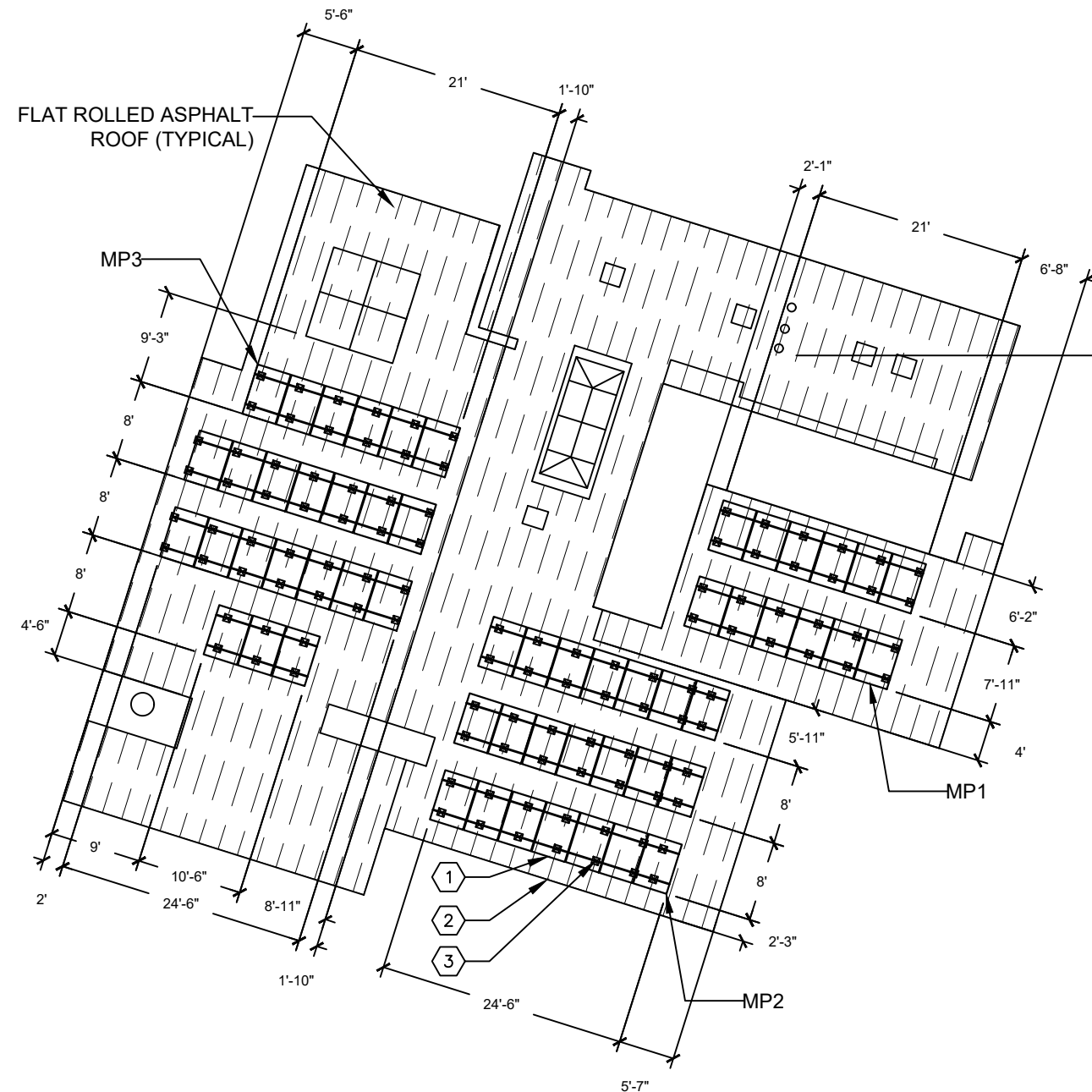
EQUIPMENT SUMMARY

- 56 SunPower SPR-X22-360
03 StorEdgeSE7600A-USS
56 SolarEdge Power Optimizer P400
01 EATON, 200A, DH364 URK, 3P
01 EATON BR816L125RP
01 Inergy Systems: Smart Panel 3000
LVR- 40-50%



ROOF PLAN




RAILS TO BE BONDED TO GROUND (EGC) - 690.4 (C)
RAIL SPLICES TO BE ELECTRICALLY BONDED
FLASHING REQUIRED FOR STANDOFF PENETRATIONS
FOLLOW MODULE INSTRUCTION ON FRAME MOUNTING POINT



NOTE: EXPOSED PV ROOFTOP CONDUCTORS THAT ARE NOT LOCATED UNDER THE ARRAY MODULES, SHALL BE INSTALLED IN A LISTED RACEWAY, AND SHALL INCLUDE LISTED JUNCTION BOXES AT BOTH ENDS OF THE RACEWAY TO TRANSITION FROM EXPOSED CONDUCTORS TO THE LISTED RACEWAYS. NEC ARTICLE 690.31(A) AND (B) EXCEPTION

NOTE: SYSTEM DESIGN
IN ACCORDANCE WITH
THE 2014 N.E.C.

MP1	PITCH: 10 AZIMUTH: 197 MATERIAL: Rolled Asphalt MOUNTING: Tilt Structure
MP2	PITCH: 10 AZIMUTH: 197 MATERIAL: Rolled Asphalt MOUNTING: Tilt Structure
MP3	PITCH: 10 AZIMUTH: 197 MATERIAL: Rolled Asphalt MOUNTING: Tilt Structure

<u>ROOF LEGEND</u>	
	GAS VENT
	T-TOP VENT
	DORMER VENT

ROOF PLAN NOTES:

- 1 (NEW) PHOTOVOLTAIC PANEL ARRAY TILTED TO ROOF WITH 10DEG TILT
- 2 2" x 4" TRUSS @ 24" O.C.
- 3 RACKING INFORMATION
- EVEREST MOUNTING RAIL - Black
 - UNIRAC STANDOFF — 4"
 - EVEREST CROSSRAIL 48
 - TRUSS SPACING = 24" O.C.
 - PENETRATION POINTS = 4' SPACING
 - MOUNTING DETAIL
 - Light Reflective Value- 5-8%
 - Conduit will be painted to match roof/exterior wall color (see site plan for location)

ROOF 2 CALCULATIONS:

STRUCTURAL NOTES:

- 1) TOTAL ASSEMBLY WEIGHT: 1012.9 LBS
- 2) TOTAL AREA COVERED BY MODULES: 395.6 FT²
- 3) DEAD LOAD = $1012.9 / 395.6 = 2.6 \text{ LBS/FT}^2$
- 4) POINT LOAD CALCULATIONS [# OF POINTS (42)] - 24.1 lb/point
- 5) TOTAL DESIGN LOAD (DOWNFORCE) = 12.8 psf
- 6) TOTAL DESIGN LOAD (UPFORCE) = -25.5 psf

ROOF 1 CALCULATIONS:

DESIGN PER ASCE 7-10 2.4.1 & IBC 2015

SOLAR MODULE WEIGHT = 41 LBS.

EXPOSURE CATEGORY = B

BASIC WIND SPEED = 115 MPH

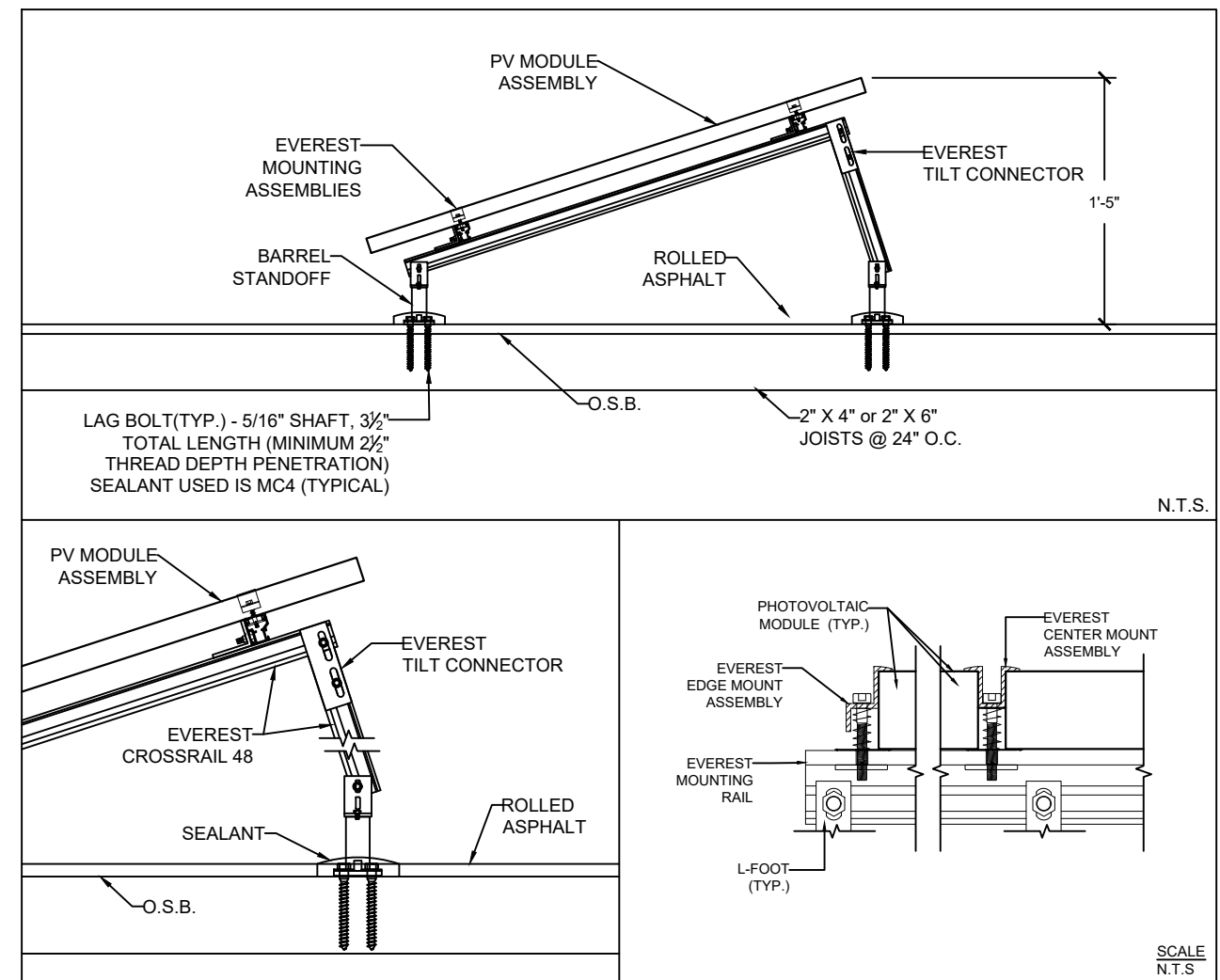
STRUCTURAL NOTES:

- 1) TOTAL ASSEMBLY WEIGHT: 578.8 LBS
- 2) TOTAL AREA COVERED BY MODULES: 226.0 FT²
- 3) DEAD LOAD = $578.8 / 226.0 = 2.6$ LBS/FT²
- 4) POINT LOAD CALCULATIONS [# OF POINTS (114)] - 5.1 lb/point
- 5) TOTAL DESIGN LOAD (DOWNFORCE) = 12.8 psf
- 6) TOTAL DESIGN LOAD (UPFORCE) = -25.5 psf

ROOF 3 CALCULATIONS:

STRUCTURAL NOTES:

- 1) TOTAL ASSEMBLY WEIGHT: 1109.4 LBS
- 2) TOTAL AREA COVERED BY MODULES: 433.2 FT²
- 3) DEAD LOAD = $1109.4 / 433.2 = 2.6 \text{ LBS/FT}^2$
- 4) POINT LOAD CALCULATIONS [# OF POINTS (48)] - 23.1 lb/point
- 5) TOTAL DESIGN LOAD (DOWNFORCE) = 14.0 psf
- 6) TOTAL DESIGN LOAD (UPFORCE) = -28.6 psf



INVERTER 1

PV MODULE = 360 WATTS
14 MODULES = 5040 WATTS
1 STRING OF 14 PV MODULES

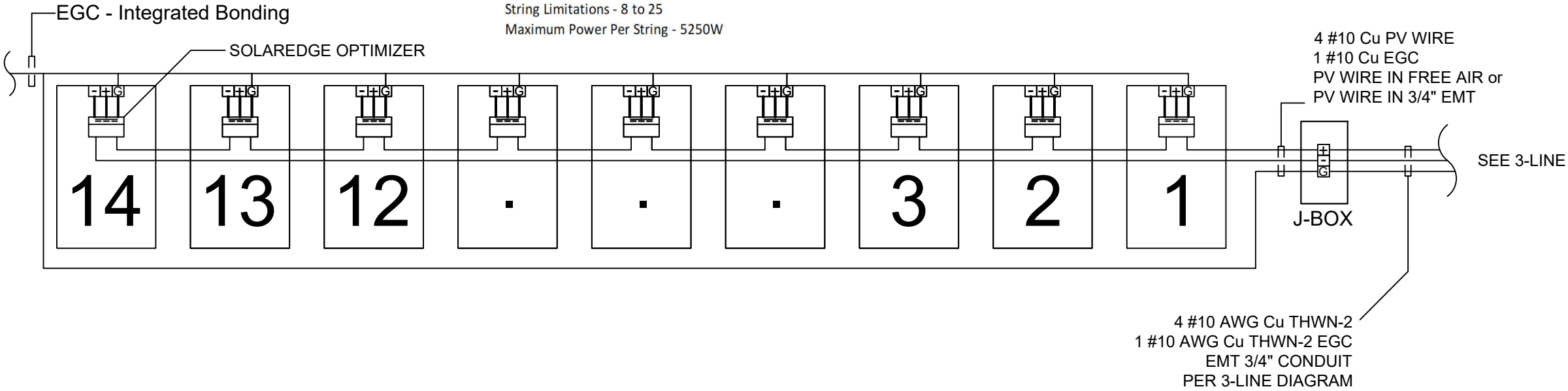
MODULE INFO
Module: SunPower SPR-X22-360
Pmax: 360 W
Voc: 69.5 VDC
Vmp: 59.1 VDC
Imp: 6.09 Amp
Isc: 6.48 Amp
Low Amb Temp (C): -9
Avg High Temp (C): 42

INVERTER 1 INFO
StorEdge SE7600A-USS
Max PV Power: 10250 Watt
DC Max Voltage: 500 VDC
AC Nom Power: 7600 Watt
AC Max Output Current: 32 Amp
AC OCPD Required = 40 Amp
OCPD = 40 Amp

NOTE: SYSTEM DESIGN
IN ACCORDANCE WITH
THE 2014 N.E.C.

SolarEdge Optimizer P400
Rated DC Input Power - 400W
Maximum Input Voltage - 80 Vdc
MPPT Range - 8 to 80 Vdc
Maximum Input Current - 10.1 Adc
Maximum Output Current - 15 Adc
String Limitations - 8 to 25
Maximum Power Per String - 5250W

SYSTEM LABEL 690.53 - [ARRAY 1]
RATED MAX. POWER-POINT CURRENT (Imp): 14.40 Adc
RATED MAX. POWER-POINT VOLTAGE (Vmp): 350 Vdc
MAXIMUM SYSTEM VOLTAGE (Voc): 500 Vdc
MAXIMUM SYSTEM CURRENT (Isc): 15 Adc per String



NOTES

- 1. EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE NEC 690 AND ALL APPLICABLE REQUIREMENTS OF THE SERVING ELECTRICAL UTILITY COMPANY AND OF THE LOCAL AUTHORITY HAVING JURISDICTION
- 2. EGC WIRE MUST BE CONTINUOUS AND INSTALLED TO ALLOW PANEL REMOVAL WITHOUT DISRUPTING CONTINUITY. ALL MODULE EGC CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC 690.4(C)
- 3. FOLLOW MANUFACTURER'S SUGGESTED INSTALLATION PRACTICES AND WIRING SPECIFICATIONS.
- 4. CONDUCTORS SHALL BE RATED AND LABELED
- 5. LISTING AGENCY NAME AND NUMBERS TO BE INDICATED ON POWER INVERTER AND SOLAR MODULES PER NEC 110.3(B)
- 6. METALLIC CONDUIT TO BE USED WITHIN BUILDINGS PER NEC 690.31(E). EMT BONDED PER NEC 250.97

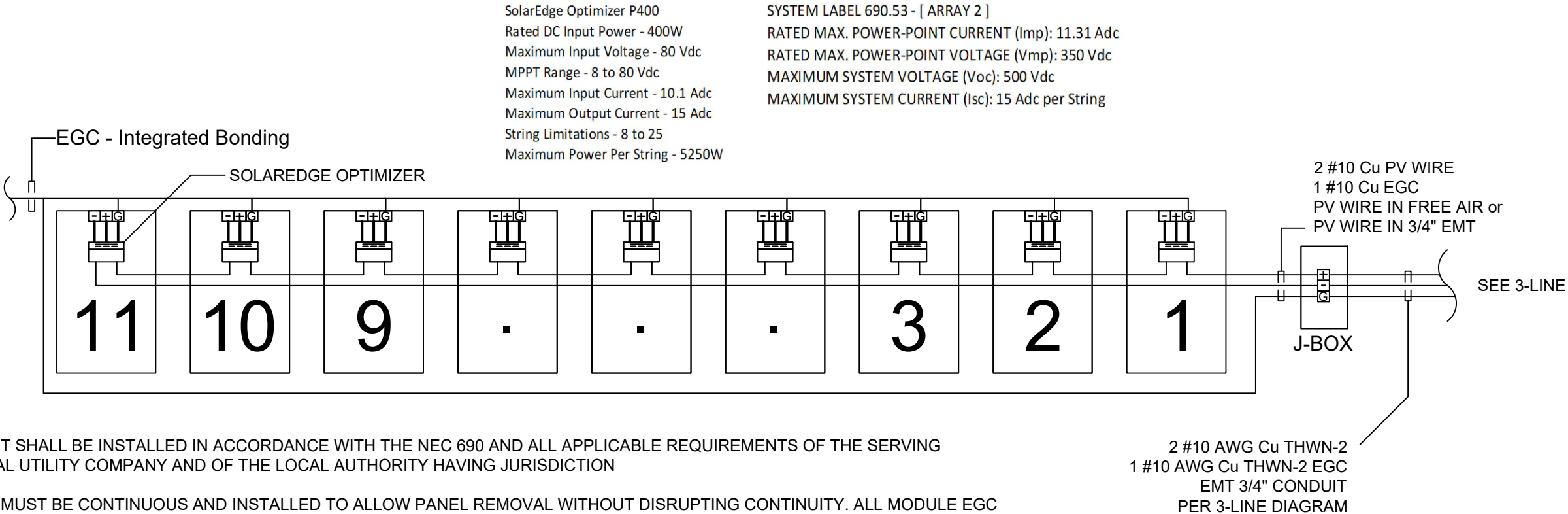
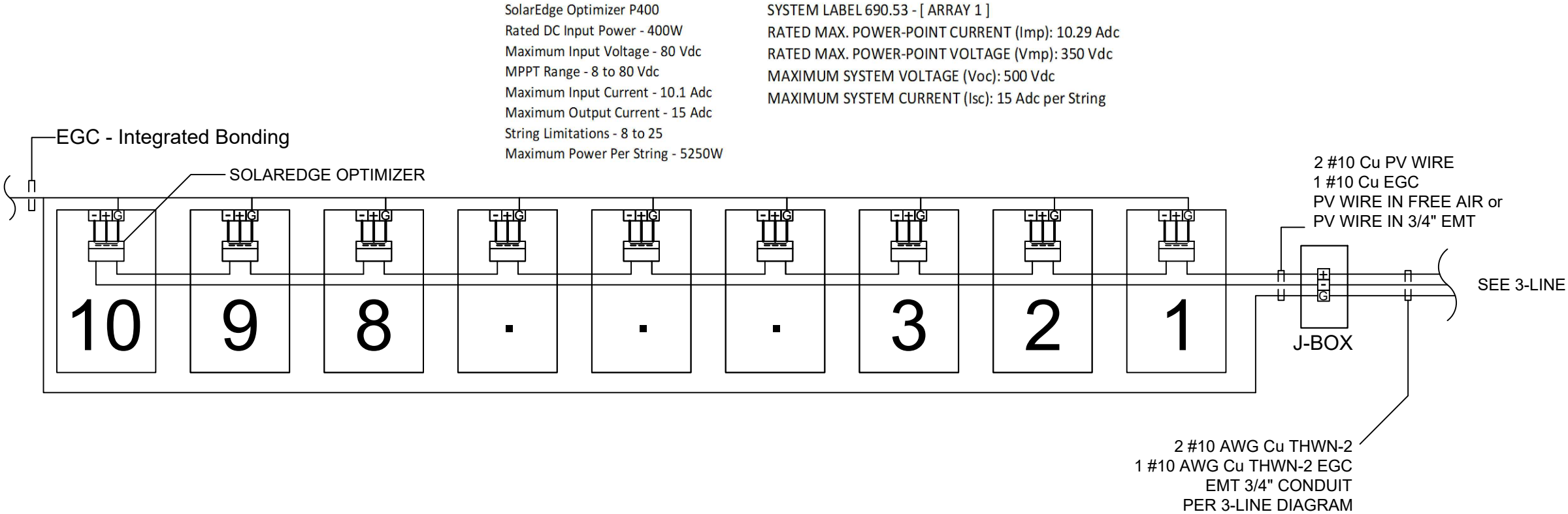
INVERTER 2&3

PV MODULE = 360 WATTS
21 MODULES = 7560 WATTS
1 STRING OF 11 PV MODULES
1 STRING OF 10 PV MODULES

MODULE INFO
Module: SunPower SPR-X22-360
Pmax: 360 W
Voc: 69.5 VDC
Vmp: 59.1 VDC
Imp: 6.09 Amp
Isc: 6.48 Amp
Low Amb Temp (C): -9
Avg High Temp (C): 42

INVERTER 2&3 INFO
StorEdge SE7600A-USS
Max PV Power: 10250 Watt
DC Max Voltage: 500 VDC
AC Nom Power: 7600 Watt
AC Max Output Current: 32 Amp
AC OCPD Required = 40 Amp
OCPD = 40 Amp

NOTE: SYSTEM DESIGN
IN ACCORDANCE WITH
THE 2014 N.E.C.



NOTES

- EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE NEC 690 AND ALL APPLICABLE REQUIREMENTS OF THE SERVING ELECTRICAL UTILITY COMPANY AND OF THE LOCAL AUTHORITY HAVING JURISDICTION
- EGC WIRE MUST BE CONTINUOUS AND INSTALLED TO ALLOW PANEL REMOVAL WITHOUT DISRUPTING CONTINUITY. ALL MODULE EGC CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH NEC 690.4(C)
- FOLLOW MANUFACTURER'S SUGGESTED INSTALLATION PRACTICES AND WIRING SPECIFICATIONS.
- CONDUCTORS SHALL BE RATED AND LABELED
- LISTING AGENCY NAME AND NUMBERS TO BE INDICATED ON POWER INVERTER AND SOLAR MODULES PER NEC 110.3(B)
- METALLIC CONDUIT TO BE USED WITHIN BUILDINGS PER NEC 690.31(E). EMT BONDED PER NEC 250.97

