

PROJECT DESCRIPTION:

22 X 320 HANWHA QCELL Q.PEAK DUO-G5 320 MODULES
 ROOF MOUNTED SOLAR PHOTOVOLTAIC MODULES

SYSTEM SIZE: 7.04 kW DC STC
 ARRAY AREA: ROOF#1 - 253.96 SQ FT
 ARRAY AREA: ROOF#2 - 145.12 SQ FT

AUTHORITIES HAVING JURISDICTION

BUILDING : HARNETT COUNTY
 ZONING : HARNETT COUNTY
 UTILITY : SOUTH RIVER EMC

APPLICABLE CODES & STANDARDS

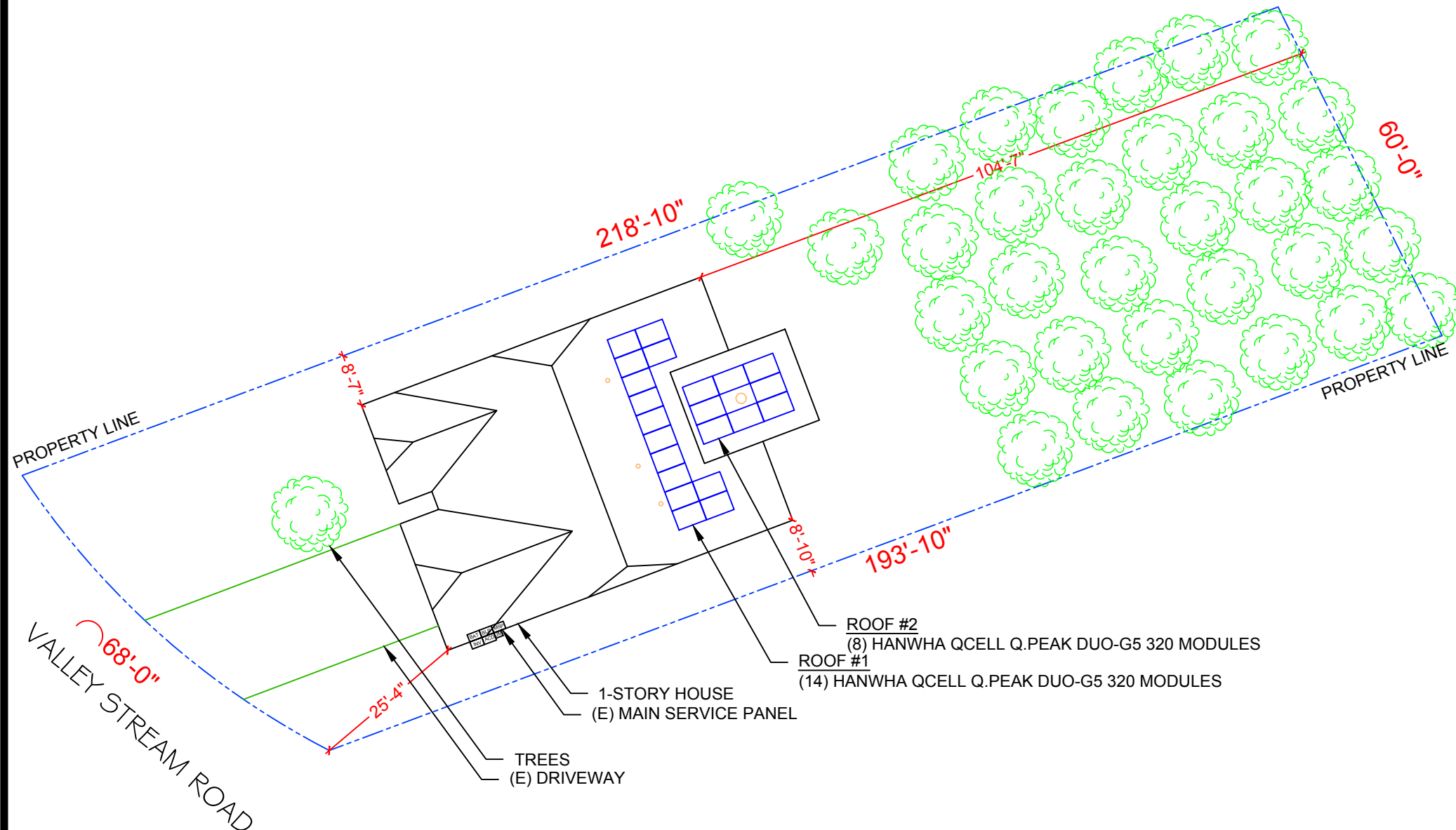
NCBC 2018
 NEC 2017

DESIGN SPECIFICATIONS

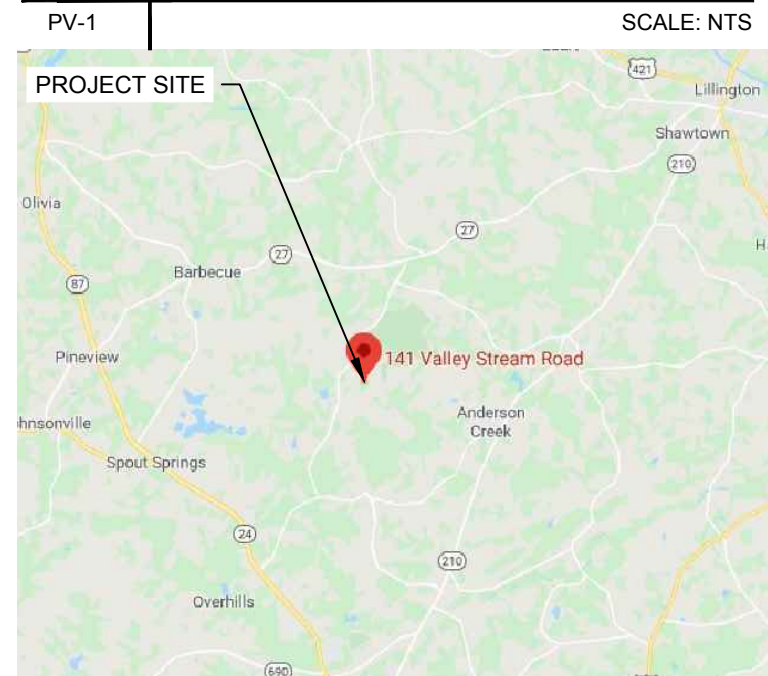
OCCUPANCY : II
 CONSTRUCTION : SINGLE-FAMILY
 ZONING : RESIDENTIAL
 GROUND SNOW LOAD : SEE STRUCTURAL LETTER
 WIND EXPOSURE : SEE STRUCTURAL LETTER
 WIND SPEED : SEE STRUCTURAL LETTER

EQUIPMENT SUMMARY

22 HANWHA QCELL Q.PEAK DUO-G5 320 MODULES
 03 GENERAC PV LINK S2502 POWER OPTIMIZERS
 01 GENERAC PWRCELL X7602 7600W INVERTER



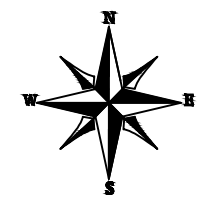
2 HOUSE PHOTO



3 VICINITY MAP

SHEET INDEX

| | |
|------------|--------------------------|
| PV-1 | PLOT PLAN & VICINITY MAP |
| PV-2 | ROOF PLAN & MODULES |
| PV-2A | STRING LAYOUT |
| PV-3 | ATTACHMENT DETAIL |
| PV-4 | ELECTRICAL LINE DIAGRAM |
| PV-5 | WIRING CALCULATIONS |
| PV-6 to 12 | EQUIPMENT SPECIFICATIONS |



1 PLOT PLAN & VICINITY MAP
 PV-1 SCALE: 1"=22'-0"

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REVISIONS

| DESCRIPTION | DATE | REV |
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Signature with Seal
 DATE: 7/7/2020

PROJECT NAME & ADDRESS
 LESTER R BEERY JR.
 RESIDENCE
 141 VALLEY STREAM ROAD,
 SPRING LAKE, NC 28390

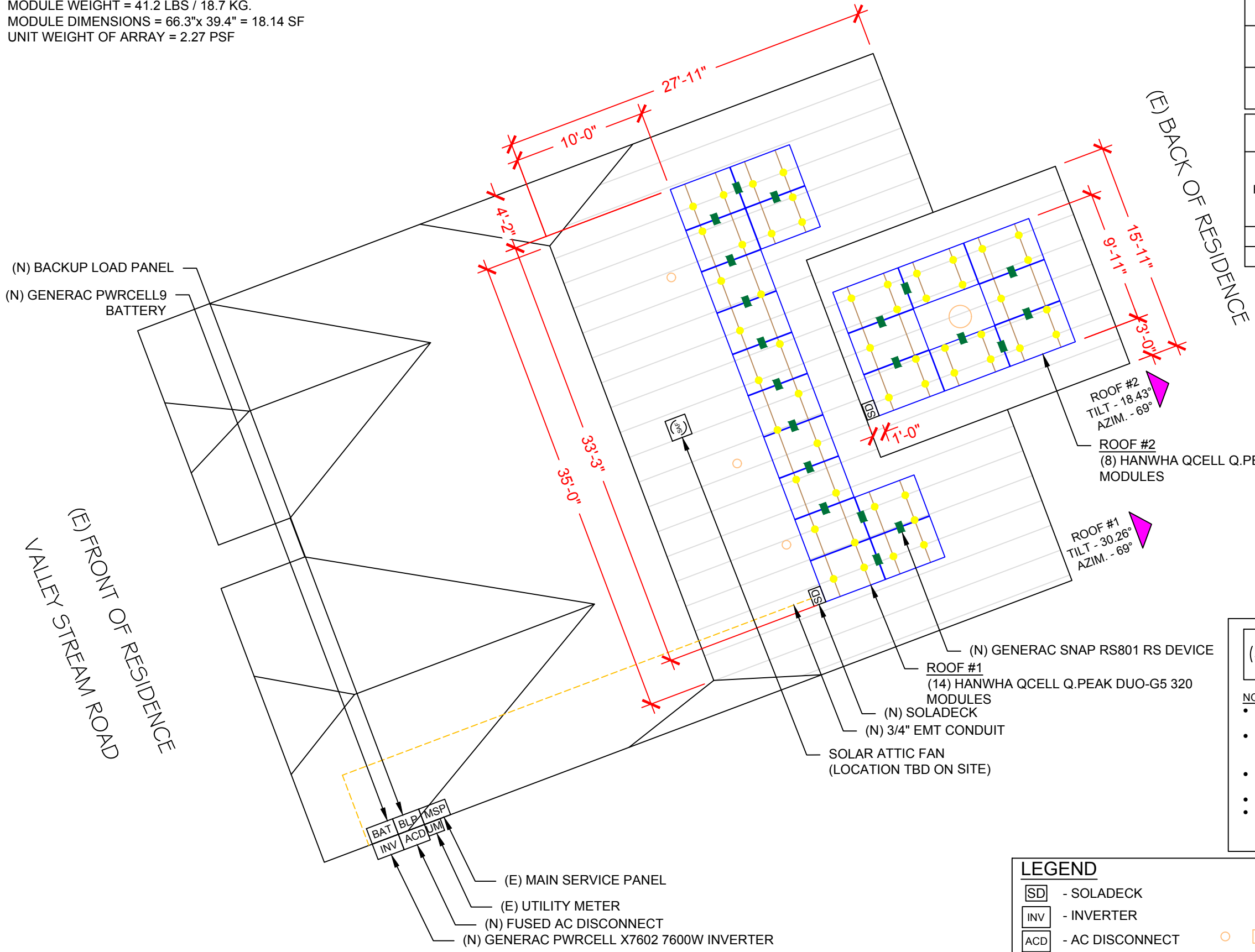
SHEET NAME
PLOT PLAN & VICINITY MAP

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-1

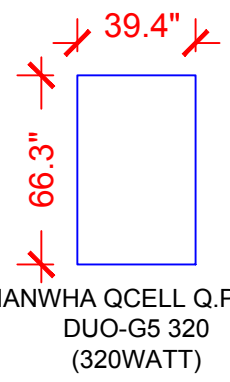
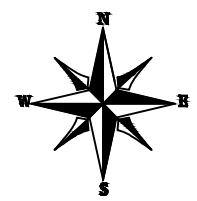
MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 22 MODULES
 MODULE TYPE = HANWHA QCELL Q.PEAK DUO-G5 320 MODULES
 MODULE WEIGHT = 41.2 LBS / 18.7 KG.
 MODULE DIMENSIONS = 66.3"x 39.4" = 18.14 SF
 UNIT WEIGHT OF ARRAY = 2.27 PSF



| ROOF DESCRIPTION | | | | |
|------------------|-----------|---------|-----------------------|-----------------|
| ROOF TYPE | | | COMPOSITION SHINGLE | |
| ROOF | ROOF TILT | AZIMUTH | FRAMING SIZE | FRAMING SPACING |
| #1 | 30.26° | 69° | SEE STRUCTURAL LETTER | |
| #2 | 18.43° | 69° | | |

| ARRAY AREA & ROOF AREA CALC'S | | | | |
|-------------------------------|--------------|----------------------|---------------------|--------------------------------|
| ROOF | # OF MODULES | ARRAY AREA (Sq. Ft.) | ROOF AREA (Sq. Ft.) | ROOF AREA COVERED BY ARRAY (%) |
| #1 | 14 | 253.96 | 998.31 | 25 |
| #2 | 8 | 145.12 | 305.05 | 48 |



(SAF) SOLAR ATTIC FAN

NOTES:

- THE LOCATION OF THE SAF SHOULD BE DETERMINED ON SITE.
- THE SAF SHOULD BE LOCATED 30"-36" FROM THE PEAK OF THE ROOF OR ABOUT 5 ROWS DOWN FROM THE RIDGE.
- THE SAF SHOULD NOT BE MOUNTED ON ANY STRUCTURAL MEMBER LIKE TRUSS/RAFTER.
- "CAN VENTS" CAN BE REPLACED BY SAF.
- SAF CANNOT BE MOUNTED ON A METAL ROOF. PLEASE CARRY GABLE VENT FANS FOR METAL ROOF INSTALLATION (IF APPLICABLE).

| LEGEND | |
|--------|--------------------------------------|
| SD | - SOLADECK |
| INV | - INVERTER |
| ACD | - AC DISCONNECT |
| MSP | - MAIN SERVICE PANEL |
| BLP | - BACKUP LOAD PANEL |
| BAT | - BATTERY |
| OP | - PV LINK OPTIMIZER |
| | - VENT, ATTIC FAN (ROOF OBSTRUCTION) |
| | - ROOF ATTACHMENT |
| | - RAFTERS |
| | - CONDUIT |
| | - RAPID SHUTDOWN |

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Signature with Seal

DATE: 7/7/2020

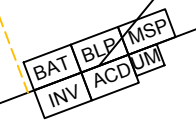
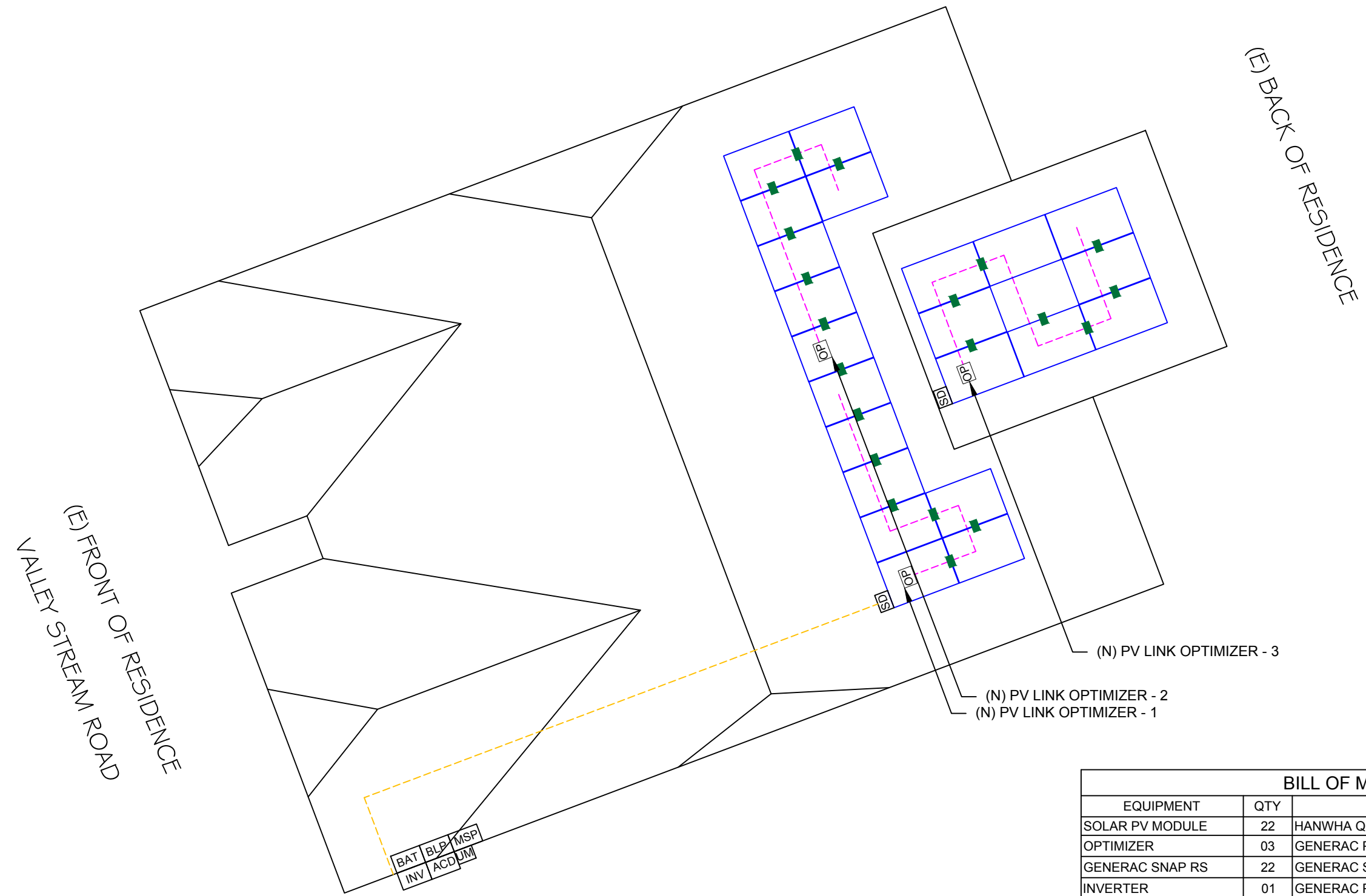
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 SPRING LAKE, NC 28390

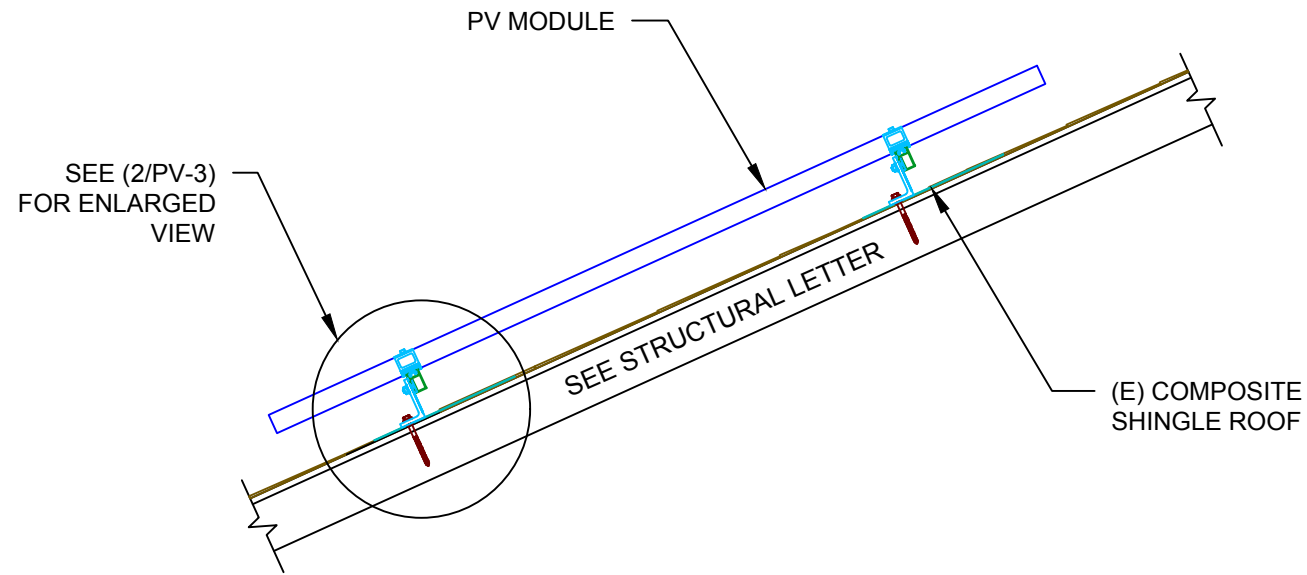
SHEET NAME
STRING LAYOUT

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-2A

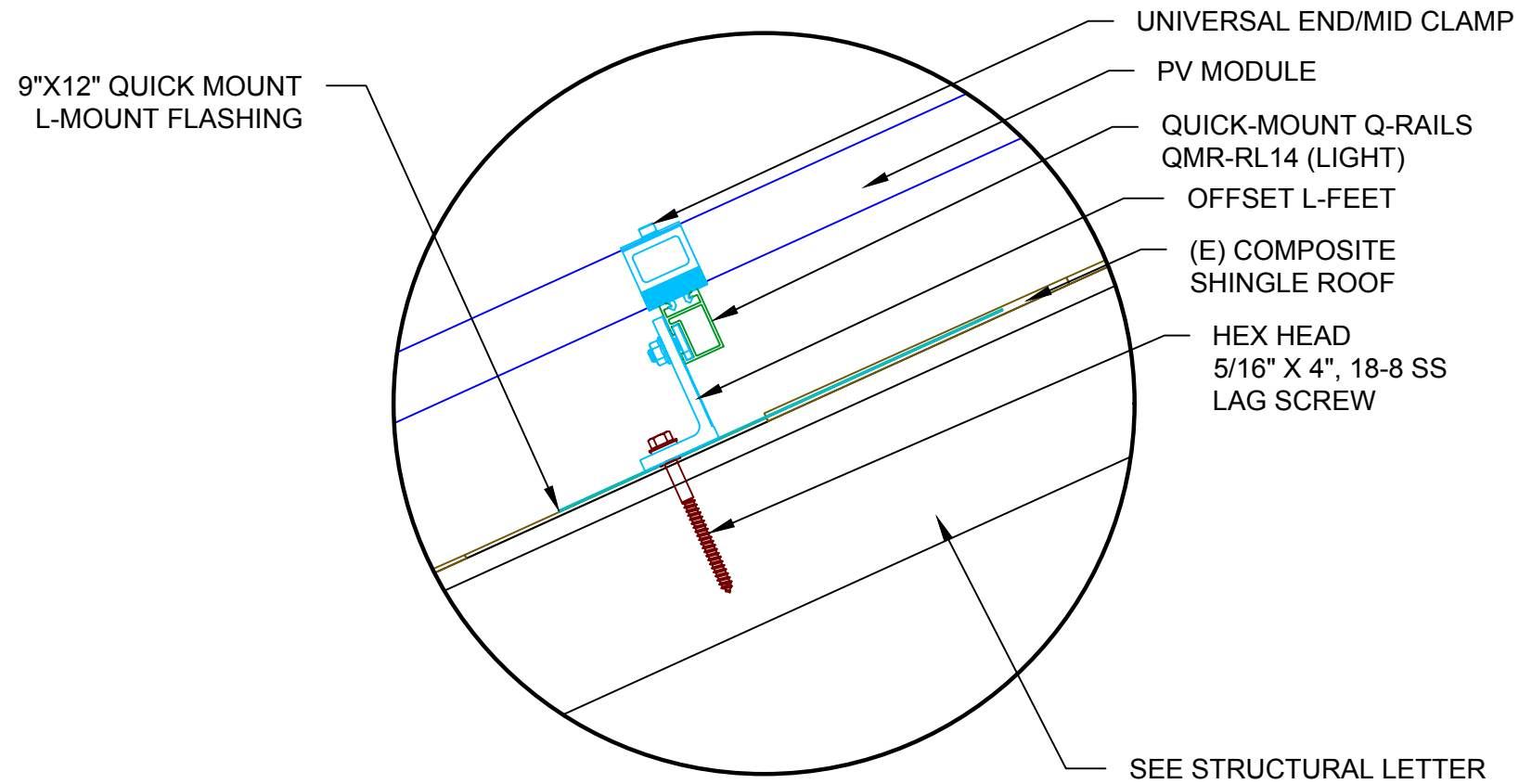


| BILL OF MATERIALS | | |
|-------------------|-----|--|
| EQUIPMENT | QTY | DESCRIPTION |
| SOLAR PV MODULE | 22 | HANWHA QCELL Q.PEAK DUO-G5 320 MODULES |
| OPTIMIZER | 03 | GENERAC PV LINK S2502 POWER OPTIMIZERS |
| GENERAC SNAP RS | 22 | GENERAC SNAPRS MODEL RS801 |
| INVERTER | 01 | GENERAC PWRCELL X7602 7600W INVERTER |
| AC DISCONNECT | 1 | 60A FUSED, (2) 40A FUSES, 240V, NEMA 3R, UL LISTED |
| SOLADECK | 2 | SOLADECKS 600 V, NEMA 3R, UL LISTED |
| BATTERY | 1 | GENERAC PWRCELL9 BATTERY |
| BACKUP PANEL | 1 | 125A, BACKUP PANEL, 240V |
| RAILS | 12 | QRAIL LIGHT 14 FT. BLACK |
| SPLICE KIT | 4 | QSPLICE INTERNAL LIGHT |
| WEEB BMC | 8 | WEEB BMC MILL |
| MODULE CLAMPS | 30 | UNIVERSAL MID CLAMP |
| GROUNDING LUG | 7 | WEEB LUG W/ T-BOLT |
| END CLAMPS | 28 | UNIVERSAL END CLAMPS |
| ATTACHMENT | 58 | L-MOUNT ATTACHMENT (QUICKMOUNT) |
| T-BOLT | 61 | T-BOLT W/ NUT M8 X 20MM |



1 ATTACHMENT DETAIL

PV-3 SCALE: 1" = 1'-0"



2 ATTACHMENT DETAIL (enlarged view)

PV-3 SCALE: NTS

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Signature with Seal

 DATE: 7/7/2020

PROJECT NAME & ADDRESS

**LESTER R BEERY JR.
 RESIDENCE**
 141 VALLEY STREAM ROAD,
 SPRING LAKE, NC 28390

SHEET NAME
**ATTACHMENT
 DETAIL**

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-3

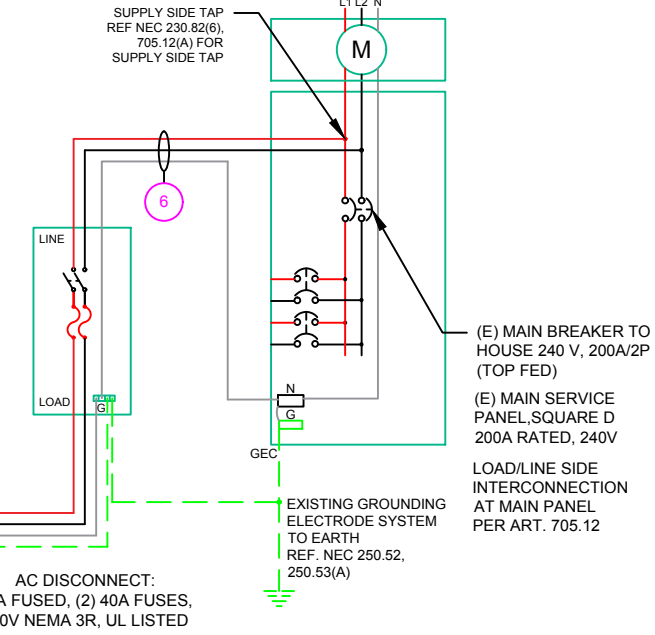
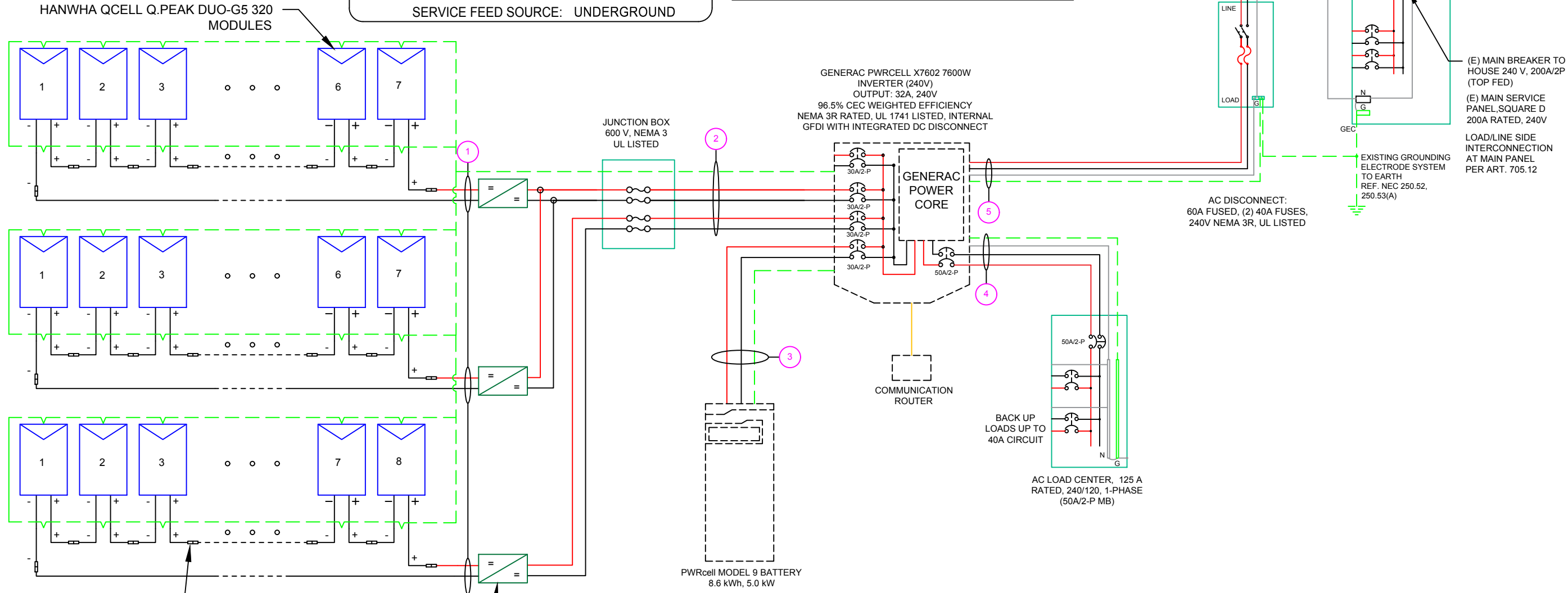
(22) HANWHA QCELL Q.PEAK DUO-G5 320 MODULES
 (2) PV LINKS OF 7 MODULES &
 (1) PV LINK OF 8 MODULES CONNECTED IN SERIES

SERVICE INFO

UTILITY PROVIDER: SOUTH RIVER EMC
 MAIN SERVICE VOLTAGE: 240V
 MAIN PANEL BRAND: SQUARE D
 MAIN SERVICE PANEL: 200A
 MAIN CIRCUIT BREAKER RATING: 200A
 MAIN SERVICE LOCATION: SOUTH-WEST
 SERVICE FEED SOURCE: UNDERGROUND

WIRE LEGEND

- PV ARRAY +VE CONDUCTOR AND L1
- PV ARRAY -VE CONDUCTOR AND L2
- NEUTRAL CONDUCTOR
- EGC AND GEC
- SINGLE TWISTED PAIR, CAT 5 WIRE



SNAP RS (RS801)
 MAX INPUT CURRENT - 13 A
 UL 1741 LISTED
 MODULE LEVEL RAPID
 SHUTDOWN (PVRSS)
 COMPLIANT
 NEMA 6P RATED

PVLINK SUBSTRING OPTIMIZER (S2502)
 RATED POWER : 2500W
 MPPT VOLTAGE RANGE: 60 TO 360 V
 MAX OUTPUT VOLTAGE: 420A
 MAX OUTPUT CURRENT: 8A
 RAPID SHUTDOWN COMPLIANT
 GROUND-FAULT PROTECTION COMPLIANT

! WARNING !
 PHOTOVOLTAIC
 POWER SOURCE

LABEL 1
 ON ALL CONDUITS SPACED AT MAX 10FT

! CAUTION !
 SOLAR ELECTRIC
 SYSTEM CONNECTED
 AND ENERGIZED

LABEL 2
 AT INVERTER

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 3
 AT INVERTER

PHOTOVOLTAIC
 DC DISCONNECT

LABEL 4
 AT DC DISCONNECT

! WARNING !
 ELECTRIC SHOCK HAZARD
 DO NOT TOUCH TERMINALS
 TERMINALS ON BOTH LINE AND LOAD SIDES
 MAY BE ENERGIZED IN THE OPEN POSITION

LABEL 5
 AT EACH AC DISCONNECT

PHOTOVOLTAIC
 AC
 DISCONNECT

LABEL 6
 AT EACH AC DISCONNECT

! WARNING !
 DUAL POWER SOURCES
 SECOND SOURCE IS PV SYSTEM

LABEL 7
 AT MEP

! WARNING !
 SOLAR SYSTEM
 CONNECTED
 AND ENERGIZED

LABEL 8
 AT MEP

! CAUTION !
 SOLAR POINT OF
 INTERCONNECTION

LABEL 9
 AT UTILITY METER

! WARNING !
 THE SERVICE METER IS ALSO SERVED
 BY A PHOTOVOLTAIC SYSTEM

LABEL 10
 AT UTILITY METER

| QTY | CONDUCTOR INFORMATION | CONDUIT TYPE | CONDUIT SIZE |
|-----|---------------------------------|----------------------|--------------|
| (6) | #10AWG - PV WIRE/USE-2 | N/A | N/A |
| (1) | #6AWG - BARE COPPER IN FREE AIR | N/A | N/A |
| (4) | #10AWG - THWN-2 | EMT OR FLEX IN ATTIC | 3/4" |
| (1) | #6AWG - THWN-2 GND | EMT OR FLEX | 3/4" |
| (2) | #10AWG - THWN-2 | EMT OR FLEX | 3/4" |
| (1) | #10AWG - THWN-2 GND | EMT OR FLEX | 3/4" |
| (3) | #6AWG - THWN-2 | EMT OR FLEX | 3/4" |
| (1) | #6AWG - THWN-2 GND | EMT OR FLEX | 3/4" |
| (3) | #6AWG - THWN-2 | EMT OR FLEX | 3/4" |
| (1) | #6AWG - THWN-2 GND | EMT OR FLEX | 3/4" |
| (3) | #6AWG - THWN-2 | EMT OR FLEX | 3/4" |

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Signature with Seal

DATE: 7/7/2020

PROJECT NAME & ADDRESS

LESTER R BEERY JR.
 RESIDENCE
 141 VALLEY STREAM ROAD,
 SPRING LAKE, NC 28390

SHEET NAME
**ELECTRICAL LINE
 DIAGRAM**

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-4

| SOLAR MODULE SPECIFICATIONS | |
|-----------------------------|--|
| MANUFACTURER / MODEL # | HANWHA QCELL Q.PEAK DUO-G5 320 MODULES |
| VMP | 33.32V |
| IMP | 9.60A |
| VOC | 40.13V |
| ISC | 10.09A |
| TEMP. COEFF. VOC | -0.28%/°C |
| PTC RATING | 297W |
| MODULE DIMENSION | 66.3"L x 39.4"W x 1.26"D (In Inch) |

| INVERTER SPECIFICATIONS | |
|---------------------------------------|-----------------------|
| MANUFACTURER / MODEL # | GENERAC PWRCELL X7602 |
| AC POWER OUTPUT (LOADS/GRID) | 7600VA |
| AC POWER OUTPUT (BACKUP) | 8000VA |
| NOMINAL OUTPUT VOLTAGE | 240 VAC |
| MAX OUTPUT CURRENT @240V (LOADS/GRID) | 32A |
| MAX OUTPUT CURRENT @240V (BACKUP) | 50A |
| NOMINAL DC INPUT VOLTAGE | 380Vdc |
| MAX DC INPUT VOLTAGE | 420Vdc |
| CEC WEIGHTED EFFICIENCY | 96.5% |
| MAX DC POWER (PV) | 10000W |
| MAX INPUT CURRENT (PV) | 20Adc |
| CONT. PEAK POWER (BATTERY) | 8000W |

| SERIES SUB STRING OPTIMIZER SPECIFICATIONS | |
|--|---------------|
| MANUFACTURER / MODEL # | PV LINK S2502 |
| RATED POWER | 2500W |
| MPPT VOLTAGE RANGE | 60-360 Vmp |
| MAXIMUM INPUT VOLTAGE | 420Voc |
| MAXIMUM OUTPUT | 420 Adc |
| NOMINAL OUTPUT | 380 Vdc |
| MAXIMUM OUTPUT CURRENT | 8 A |
| MAXIMUM SHORT CIRCUIT CURRENT | 18 A |

| BATTERY SPECIFICATIONS | |
|------------------------------|--------------------------|
| MANUFACTURER / MODEL # | GENERAC PWRCELL9 BATTERY |
| USABLE ENERGY | 8.6kW |
| RATED CONTINUOUS POWER | 3.4Kw |
| POWER: 60 MINUTES | 4.2kW |
| POWER: 2 MINUTES | 5.0kW |
| REBUS VOLTAGE: INPUT/ OUTPUT | 360-420Vdc |
| MODULE VOLTAGE | 46.8Vdc |
| ROUND-TRIP EFFICIENCY | 96.5% |

ELECTRICAL NOTES

- 1.) ALL EQUIPMENT TO BE LISTED BY UL OR OTHER NRTL, AND LABELED FOR ITS APPLICATION.
- 2.) ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 V AND 90 DEGREE C WET ENVIRONMENT.
- 3.) WIRING, CONDUIT, AND RACEWAYS MOUNTED ON ROOFTOPS SHALL BE ROUTED DIRECTLY TO, AND LOCATED AS CLOSE AS POSSIBLE TO THE NEAREST RIDGE, HIP, OR VALLEY.
- 4.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
- 5.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
- 6.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
- 7.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
- 8.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
- 9.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
- 10.) THE POLARITY OF THE GROUNDED CONDUCTORS IS NEGATIVE

| AMBIENT TEMPERATURE SPECS | |
|-----------------------------|------|
| RECORD LOW TEMP | -10° |
| AMBIENT TEMP (HIGH TEMP 2%) | 36° |
| CONDUIT HEIGHT | 0.5" |
| ROOF TOP TEMP | 58° |

DC CONDUCTOR AMPACITY CALCULATIONS: ARRAY TO JUNCTION BOX:

| | |
|--|--------|
| EXPECTED WIRE TEMP (In Celsius) | 58° |
| TEMP. CORRECTION PER NEC TABLE 310.15 (B)(2)(a) | 0.71 |
| NO. OF CURRENT CARRYING CONDUCTORS | 6 |
| CONDUIT FILL CORRECTION PER NEC TABLE 310.15(B)(3)(a) | 0.8 |
| CIRCUIT CONDUCTOR SIZE | 10 AWG |
| CIRCUIT CONDUCTOR AMPACITY PER NEC TABLE 310.15(B)(16) | 40A |

| | |
|---|--------|
| REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B) | 10A |
| 1.25 X I _{max} | |
| DERATED AMPACITY OF CIRCUIT CONDUCTOR | |
| TEMP. CORRECTION PER TABLE 310.15 (B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY 310.15 (B)(16) | 22.72A |
| Result should be greater than (10A) otherwise less the entry for circuit conductor size and ampacity | |

FROM JUNCTION BOX TO INVERTER:

| | |
|--|--------|
| EXPECTED WIRE TEMP (In Celsius) | 58° |
| TEMP. CORRECTION PER NEC TABLE 310.15 (B)(2)(a) | 0.71 |
| NO. OF CURRENT CARRYING CONDUCTORS | 4 |
| CONDUIT FILL CORRECTION PER NEC TABLE 310.15(B)(3)(a) | 0.8 |
| CIRCUIT CONDUCTOR SIZE | 10 AWG |
| CIRCUIT CONDUCTOR AMPACITY PER NEC TABLE 310.15(B)(16) | 40A |

| | |
|---|--------|
| REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B) | 20A |
| 1.25 X I _{max} X # of PV LINKS | |
| DERATED AMPACITY OF CIRCUIT CONDUCTOR | |
| TEMP. CORRECTION PER TABLE 310.15 (B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY 310.15 (B)(16) | 22.72A |
| Result should be greater than (20A) otherwise less the entry for circuit conductor size and ampacity | |

FROM BATTERY TO INVERTER:

| | |
|--|--------|
| EXPECTED WIRE TEMP (In Celsius) | 36° |
| TEMP. CORRECTION PER NEC TABLE 310.15 (B)(2)(a) | 0.91 |
| NO. OF CURRENT CARRYING CONDUCTORS | 2 |
| CONDUIT FILL CORRECTION PER NEC TABLE 310.15(B)(3)(a) | 1 |
| CIRCUIT CONDUCTOR SIZE | 10 AWG |
| CIRCUIT CONDUCTOR AMPACITY PER NEC TABLE 310.15(B)(16) | 40A |

| | |
|---|--------|
| REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B) | 26.25A |
| 1.25 X I _{max} | |
| DERATED AMPACITY OF CIRCUIT CONDUCTOR | |
| TEMP. CORRECTION PER TABLE 310.15 (B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY 310.15 (B)(16) | 36.40A |
| Result should be greater than (26.25A) otherwise less the entry for circuit conductor size and ampacity | |

AC CONDUCTOR AMPACITY CALCULATIONS: FROM INVERTER TO BACK-UP PANEL:

| | |
|--|-------|
| No. OF INVERTER | 1 |
| EXPECTED WIRE TEMP (In Celsius) | 36° |
| TEMP. CORRECTION PER NEC TABLE 310.15(B)(2)(a) | 0.91 |
| NO. OF CURRENT CARRYING CONDUCTORS | 3 |
| CONDUIT FILL CORRECTION PER NEC TABLE 310.15(B)(3)(a) | 1 |
| CIRCUIT CONDUCTOR SIZE | 6 AWG |
| CIRCUIT CONDUCTOR AMPACITY PER NEC TABLE 310.15(B)(16) | 75A |

| | |
|---|--------|
| REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B) | 42.5A |
| 1.25 X INVERTER OUTPUT CURRENT (BACKUP POWER) | |
| DERATED AMPACITY OF CIRCUIT CONDUCTOR | |
| TEMP. CORRECTION PER TABLE 310.15 (B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY 310.15 (B)(16) | 68.25A |
| Result should be greater than (42.5A) otherwise less the entry for circuit conductor size and ampacity | |

AC CONDUCTOR AMPACITY CALCULATIONS: FROM INVERTER TO MEP:

| | |
|--|-------|
| No. OF INVERTER | 1 |
| EXPECTED WIRE TEMP (In Celsius) | 36° |
| TEMP. CORRECTION PER NEC TABLE 310.15(B)(2)(a) | 0.91 |
| NO. OF CURRENT CARRYING CONDUCTORS | 3 |
| CONDUIT FILL CORRECTION PER NEC TABLE 310.15(B)(3)(a) | 1 |
| CIRCUIT CONDUCTOR SIZE | 6 AWG |
| CIRCUIT CONDUCTOR AMPACITY PER NEC TABLE 310.15(B)(16) | 75A |

| | |
|---|--------|
| REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B) | 40A |
| 1.25 X MAX INVERTER OUTPUT CURRENT (LOADS/GRID) | |
| DERATED AMPACITY OF CIRCUIT CONDUCTOR | |
| TEMP. CORRECTION PER TABLE 310.15 (B)(2)(a) X CONDUIT FILL CORRECTION PER NEC 310.15(B)(3)(a) X CIRCUIT CONDUCTOR AMPACITY 310.15 (B)(16) | 68.25A |
| Result should be greater than (40A) otherwise less the entry for circuit conductor size and ampacity | |



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Signature with Seal

DATE: 7/7/2020

PROJECT NAME & ADDRESS

LESTER R BEERY JR.
RESIDENCE
141 VALLEY STREAM ROAD,
SPRING LAKE, NC 28390

SHEET NAME
WIRING
CALCULATIONS

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5



Q.PEAK DUO-G5 315-330

Q.ANTUM SOLAR MODULE

The new Q.PEAK DUO-G5 solar module from Q CELLS impresses thanks to innovative Q.ANTUM DUO Technology, which enables particularly high performance on a small surface. Q.ANTUM's world-record-holding cell concept has now been combined with state-of-the-art circuitry half cells and a six-busbar design, thus achieving outstanding performance under real conditions - both with low-intensity solar radiation as well as on hot, clear summer days.



Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.9%.



INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behavior.



ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID and Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



EXTREME WEATHER RATING
High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa) regarding IEC.



A RELIABLE INVESTMENT
Inclusive 12-year product warranty and 25-year linear performance guarantee².



STATE OF THE ART MODULE TECHNOLOGY
Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

THE IDEAL SOLUTION FOR:



Engineered in Germany

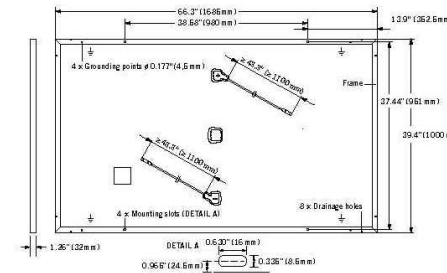


¹ APT test conditions according to IEC/TS 62804-1:2015, method B (-1500V, 168h)
² See data sheet on rear for further information.



MECHANICAL SPECIFICATION

| | |
|---------------------|---|
| Format | 66.3 in × 39.4 in × 1.26 in (including frame) (1685 mm × 1000 mm × 32 mm) |
| Weight | 41.2 lbs (18.7 kg) |
| Front Cover | 0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology |
| Back Cover | Composite film |
| Frame | Black anodized aluminum |
| Cell | 6 × 20 monocrystalline Q.ANTUM solar half-cells |
| Junction box | 2.76-3.35 in × 1.97-2.76 in × 0.51-0.83 in (70-85 mm × 50-70 mm × 13-21 mm), decentralized, IP67 |
| Cable | 4 mm ² Solar cable; (+) ≥ 43.3 in (1100 mm), (-) ≥ 43.3 in (1100 mm) |
| Connector | Multi-Contact MC4, IP68 |

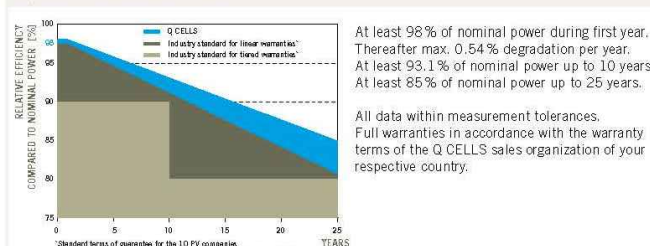


ELECTRICAL CHARACTERISTICS

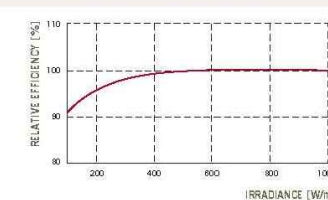
| POWER CLASS | | 315 | 320 | 325 | 330 | |
|---|------------------------------------|----------------------|--------|--------|--------|--------|
| MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5W / -0W) | | | | | | |
| Minimum | Power at MPP ¹ | P _{MPP} [W] | 315 | 320 | 325 | 330 |
| | Short Circuit Current ¹ | I _{sc} [A] | 10.04 | 10.09 | 10.14 | 10.20 |
| | Open Circuit Voltage ¹ | V _{oc} [V] | 39.87 | 40.13 | 40.40 | 40.66 |
| | Current at MPP ¹ | I _{MPP} [A] | 9.55 | 9.60 | 9.66 | 9.71 |
| | Voltage at MPP | V _{MPP} [V] | 32.98 | 33.32 | 33.65 | 33.98 |
| | Efficiency ¹ | η [%] | ≥ 18.7 | ≥ 19.0 | ≥ 19.3 | ≥ 19.6 |
| MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT ² | | | | | | |
| Minimum | Power at MPP | P _{MPP} [W] | 235.3 | 239.0 | 242.8 | 246.5 |
| | Short Circuit Current | I _{sc} [A] | 8.09 | 8.13 | 8.17 | 8.22 |
| | Open Circuit Voltage | V _{oc} [V] | 37.52 | 37.77 | 38.02 | 38.27 |
| | Current at MPP | I _{MPP} [A] | 7.52 | 7.56 | 7.60 | 7.64 |
| | Voltage at MPP | V _{MPP} [V] | 31.30 | 31.62 | 31.94 | 32.25 |

¹ Measurement tolerances P_{MPP} ± 3%; I_{sc}, V_{oc} ± 5% at STC; 1000 W/m², 25 ± 2°C, AM 1.5 G according to IEC 60904-3; ² 800 W/m², NMOT, spectrum AM 1.5 G

Q CELLS PERFORMANCE WARRANTY



PERFORMANCE AT LOW IRRADIANCE



TEMPERATURE COEFFICIENTS

| | | | | | | | |
|---|---|-------|-------|--|------|-------|----------------------|
| Temperature Coefficient of I _{sc} | α | [%/K] | +0.04 | Temperature Coefficient of V _{oc} | β | [%/K] | -0.28 |
| Temperature Coefficient of P _{MPP} | γ | [%/K] | -0.37 | Normal Module Operating Temperature | NMOT | [°F] | 109 ± 5.4 (43 ± 3°C) |

PROPERTIES FOR SYSTEM DESIGN

| | | | | |
|--|------------------------|------------------------------|---|--|
| Maximum System Voltage V _{sys} | [V] | 1000 (IEC) / 1000 (UL) | Safety Class | II |
| Maximum Series Fuse Rating | [A DC] | 20 | Fire Rating | C (IEC) / TYPE 1 (UL) |
| Max. Design Load, push ² | [lbs/ft ²] | 75 (3600 Pa) / 55 (2667 Pa) | Permitted module temperature on continuous duty | -40°F up to +185°F (-40°C up to +85°C) |
| Max. Test Load, Push / Pull ² | [lbs/ft ²] | 113 (5400 Pa) / 84 (4000 Pa) | | ² see installation manual |

QUALIFICATIONS AND CERTIFICATES

UL 1703; VDE Quality Tested; CE-compliant; IEC 61215:2016; IEC 61730:201, application class A



PACKAGING INFORMATION

| | |
|---|--|
| Number of Modules per Pallet | 32 |
| Number of Pallets per 53' Trailer | 30 |
| Number of Pallets per 40' High Cube Container | 26 |
| Pallet Dimensions (L × W × H) | 69.3 in × 45.3 in × 46.9 in (1760 mm × 1150 mm × 1190 mm) |
| Pallet Weight | 1415 lbs (642 kg) |

NOTE: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS America Inc.
300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA | TEL +1 949 748 59 96 | EMAIL inquiry@us.q-cells.com | WEB www.q-cells.us

Specifications subject to technical changes © Hanwha Q CELLS Q.PEAK DUO-G5-315-330_2018-03_Rev03_NA



REVISIONS

| DESCRIPTION | DATE | REV |
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Signature with Seal

DATE: 7/7/2020

PROJECT NAME & ADDRESS

LESTER R BEERY JR.
RESIDENCE
141 VALLEY STREAM ROAD,
SPRING LAKE, NC 28390

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-6

FEATURES:

No autotransformer or battery inverter needed

User-selectable modes

Free system monitoring



GENERAC

PWRCELL

Inverter

Model: X7602, X11402

Solar-plus-storage is simple with the Generac PWRcell Inverter. This bi-directional, REbus™-powered inverter offers a simple, efficient design for integrating smart batteries with solar. Ideal for self-supply, backup power, zero-export and energy cost management, the PWRcell inverter is the industry's most feature-rich line of inverters, available in single-phase and three-phase models.

ADDITIONAL FEATURES

- Single inverter for grid-tied solar with smart battery integration
- Simplified system design: No autotransformer or battery inverter needed
- User-selectable modes for backup power, self-supply, time-of-use and zero-export
- Free system monitoring included via PWRview Web Portal and Mobile App

| AC OUTPUT/ GRID-TIE | MODEL X7602 | MODEL X11402 |
|-------------------------------------|-----------------|-----------------|
| RATED AC POWER OUTPUT | 7600 W | 11400 W |
| AC OUTPUT VOLTAGE | 120/240, 1Ø VAC | 120/208, 3Ø VAC |
| AC FREQUENCY | 60 Hz | 60 Hz |
| MAXIMUM CONTINUOUS OUTPUT CURRENT | 32 A, RMS | 32 A, RMS |
| GROUND-FAULT ISOLATION DETECTION | Included | Included |
| CHARGE BATTERY FROM AC | Yes | Yes |
| THD (CURRENT) | < 2 % | < 2 % |
| TYPICAL NIGHTTIME POWER CONSUMPTION | < 7 W | < 7 W |

| AC OUTPUT/ BACKUP | MODEL X7602 | MODEL X11402 |
|-------------------------------------|-----------------|-----------------|
| RATED AC BACKUP POWER OUTPUT | 8000 W | 8000 W |
| MAXIMUM AC BACKUP POWER OUTPUT | 12000 W | 12000 W |
| AC BACKUP OUTPUT VOLTAGE | 120/240, 1Ø VAC | 120/240, 1Ø VAC |
| AC FREQUENCY | 60 HZ | 60 HZ |
| AC CIRCUIT BREAKER | 50 A | 50 A |
| THD (VOLTAGE) | < 2 % | < 2 % |
| AUTOMATIC SWITCHOVER TIME | < 1 Seconds | < 1 Seconds |
| TYPICAL NIGHTTIME POWER CONSUMPTION | 30 W | 30 W |

| DC INPUT | MODEL X7602 | MODEL X11402 |
|----------------------------------|-------------|--------------|
| DC INPUT VOLTAGE RANGE | 360-420 VDC | 360-420 VDC |
| NOMINAL DC BUS VOLTAGE | 380 VDC | 380 VDC |
| MAX INPUT CURRENT | 20 A | 30 A |
| REVERSE-POLARITY PROTECTION | YES | YES |
| GROUND-FAULT ISOLATION DETECTION | YES | YES |
| TRANSFORMERLESS, UNGROUNDED | YES | YES |

| DC INPUT/ BATTERY | MODEL X7602 | MODEL X11402 |
|-----------------------------------|-------------|--------------|
| MAXIMUM CONTINUOUS POWER | 8000 W | 8000 W |
| INTERNAL DC DISTRIBUTION BREAKERS | 4X 2P30A | 4X 2P30A |
| DC FUSES ON PLUS AND MINUS | 40 A | 40 A |
| 2-POLE DISCONNECTION | YES | YES |

| EFFICIENCY | MODEL X7602 | MODEL X11402 |
|-------------------------|-------------|--------------|
| PEAK EFFICIENCY | 97 % | 98 % |
| CEC WEIGHTED EFFICIENCY | 96.5 % | 97.5 % |

Specifications



FEATURES AND MODES

| | |
|--------------------------------------|-----|
| ISLANDING ³ | Yes |
| GRID SELL | Yes |
| SELF CONSUMPTION | Yes |
| PRIORITIZED CHARGING FROM RENEWABLES | Yes |
| GRID SUPPORT - ZERO EXPORT | Yes |

ADDITIONAL FEATURES

| | |
|--|-----------------------------------|
| SUPPORTED COMMUNICATION INTERFACES | CANbus, RS4854, Ethernet |
| SYSTEM MONITORING | PWRview Web Portal and Mobile App |
| CRITICAL LOADS DISCONNECT ³ | Yes |
| MANUAL INVERTER BYPASS SWITCH | Automatic |
| WARRANTY | 10 Years |

STANDARDS COMPLIANCE

| | |
|---------------------------|-----------------------------|
| SAFETY | UL1741 SA, CSA 22.2 |
| GRID CONNECTION STANDARDS | IEEE1547, Rule 21, Rule 14H |
| EMISSIONS | FCC part15 class B |

DIMENSIONS AND INSTALLATION SPECIFICATIONS

| | |
|---------------------------|---------------------|
| WIRE GAUGE RANGE | 10 - 8 AWG |
| TOTAL AC KNOCKOUTS X SIZE | 2" x 0.75", 2 x 1" |
| TOTAL DC KNOCKOUTS X SIZE | 5" x 1" |
| DIMENSIONS (L, W, H) | 24.5" x 19.25" x 8" |
| WEIGHT | 62.7 lb |
| COOLING | Forced convection |
| NOISE | < 40 dBA |
| OPERATING TEMPERATURE | -20 to 50 °C* |
| PROTECTION RATING | NEMA 3R |

INSTALLATION GUIDELINES

| | |
|--|------------------------|
| BATTERY TYPES SUPPORTED | PWRcell battery module |
| MODULE STRING SIZE PER PV LINK OPTIMIZER | 2-9 PV modules |
| MAXIMUM RECOMMENDED DC POWER FROM PV | 10kW (1Ø), 15kW (3Ø) |
| BATTERIES PER INVERTER | Up to 2 |

³ 3Ø inverters offer islanding for 1Ø loads, ⁴ Modbus, ^{*}Reduced power at extreme temperatures

Specifications subject to change without notice.

GENERAC

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REVISIONS

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Signature with Seal

DATE: 7/7/2020

PROJECT NAME & ADDRESS

LESTER R BEERY JR.
RESIDENCE
141 VALLEY STREAM ROAD,
SPRING LAKE, NC 28390

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-7



FEATURES:

Easy installation

Low cost, high efficiency solution

NEC 2017 and 2020 PVRSS compliant

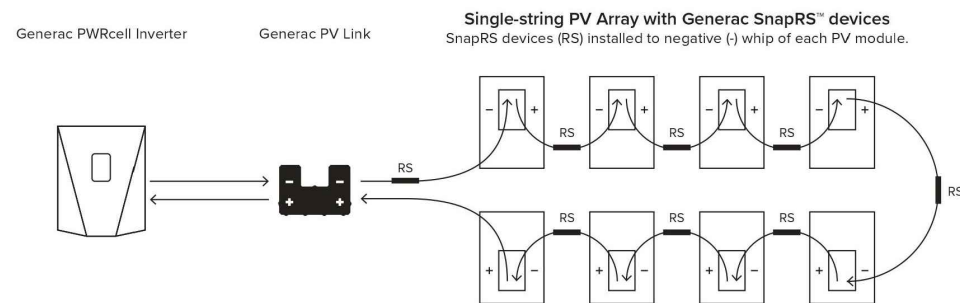
SnapRS™

Instant Rapid Shutdown Compliance
Model: RS801

The Generac SnapRS is NEC 2017 compliant, and doesn't require any extra hardware to mount, no pairing and no fussy digital communications. Just snap a Generac SnapRS disconnect device to each PV module for total rapidshutdown performance. When signaled by the inverter, SnapRS units break the PV circuit, reducing array voltage to <80V in seconds.

SYSTEM DESIGN

Snap a Generac SnapRS disconnect device to the negative whip (-) of each module in the solar array for simple NEC-2017 module-level rapid shutdown compliance. SnapRS devices isolate array voltage when a rapid shutdown command is given by a connected Islanding Inverter



ADDITIONAL FEATURES

- Fast, easy and simple to install
- One SnapRS device per PV module
- Achieves PVRSS Compliance
- Low cost, high efficiency solution

Specifications



SNAPRS (RS801)

| | | | |
|-------------------|--------------|-----------------------|--------------|
| PV MODULE MAX VOC | 75 V | OPERATING TEMPERATURE | -40 to 70 °C |
| EFFICIENCY | 99.9 % | CERTIFICATIONS | UL1741 |
| MAX INPUT CURRENT | 13 A | WEIGHT | 100 g |
| SHUTDOWN TIME | < 10 Seconds | DIMENSIONS (L,W,H) | 1" x 1" x 7" |
| ENCLOSURE RATING | NEMA 6P | WARRANTY | 25 Years |



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Signature with Seal

DATE: 7/7/2020

PROJECT NAME & ADDRESS

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RESIDENCE
141 VALLEY STREAM ROAD,
SPRING LAKE, NC 28390

SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-8

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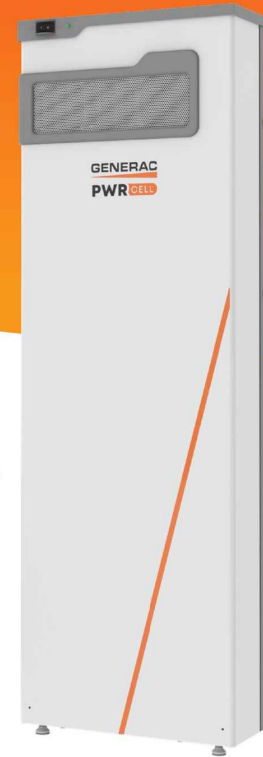
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FEATURES:

Connect up to 2 PWRcells to a single PWRcell Inverter

Plug-and-play with PWRcell Inverters and PV Links

Residential and commercial application ready



GENERAC

PWRCELL

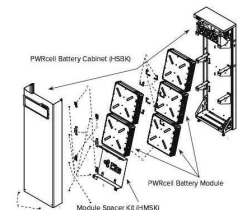
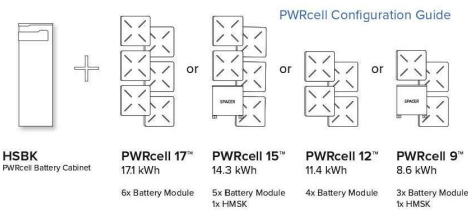
Battery
Model: 9, 12, 15, 17

No other smart battery offers the flexibility of PWRcell. Whether for backup power or smart energy management, the PWRcell battery has power and capacity options for every need, without sacrificing flexibility or function.

The PWRcell battery series allows system owners the flexibility to scale from the economical 8.6kWh PWRcell 9™ to the massive 17.1 kWh PWRcell 17™ by adding additional PWRcell battery modules, the gold standard in storage.

PWRCELL CONFIGURATION GUIDE

PWRCELL ASSEMBLY



PWRCELL BATTERY DESIGN

PWRcell is a modular smart battery platform that allows for a range of configurations to suit any need, small or large. PWRcell can be built in capacities ranging from 8.6-17.1kWh. When needs change, PWRcell can be upgraded with additional modules. Use the chart above to understand what components you need for your chosen PWRcell configuration.

ADDITIONAL FEATURES

- Connect as many as two 2 PWRcells to a single PWRcell Inverter™ for up to 34.2kWh of storage
- Best-in-class battery backup power
- Plug-and-play with PWRcell Inverters™ and PV Links™
- Time-of-use (TOU) and zero-export ready
- Residential and commercial application ready

Specifications

| PWRCELL MODEL | 9 | 12 | 15 | 17 |
|-------------------------------------|-------------------------------------|----------------------|----------------------|----------------------|
| BATTERY MODULES | 3 | 4 | 5 | 6 |
| USABLE ENERGY | 8.6 kWh | 11.4 kWh | 14.3 kWh | 17.1 kWh |
| POWER: RATED CONTINUOUS | 3.4 kW | 4.5 kW | 5.6 kW | 6.7 kW |
| POWER: 60 MINUTES | 4.2 kW | 5.6 kW | 7.0 kW | 8.4 kW |
| POWER: 2 MINUTES | 5.0 kW | 6.7 kW | 8.4 kW | 10.0 kW |
| REBUS VOLTAGE: INPUT/OUTPUT | 360-420 VDC | | | |
| MODULE VOLTAGE | 46.8 VDC | | | |
| ROUND-TRIP EFFICIENCY | 96.5 % | | | |
| OPERATING TEMPERATURE | -10 to 45 °C* | | | |
| RECOMMENDED TEMPERATURE | 13 to 30 °C | | | |
| MAXIMUM INSTALLATION ALTITUDE | 9834 ft. (3000 m) | | | |
| DIMENSIONS (L,W,H) | 68" x 22" x 10" | | | |
| WEIGHT (ENCLOSURE) | 115 lb. (52 kg) | | | |
| WEIGHT (INSTALLED) | 280 lb. (127 kg) | 335 lb. (152 kg) | 390 lb. (178 kg) | 445 lb. (202 kg) |
| WARRANTY: LI-ION MODULES | 10 Years, (22.6 MWh) | 10 Years, (30.2 MWh) | 10 Years, (37.8 MWh) | 10 Years, (45.3 MWh) |
| WARRANTY: ELECTRONICS AND ENCLOSURE | 10 Years | | | |
| COMMUNICATION PROTOCOL | REbus DC Nanogrid™ | | | |
| COMPLIANCE | UL 9540, UL 1973, UL 1642, CSA 22.2 | | | |

*Reduced power at extreme temperatures

Specifications subject to change without notice.

UPGRADING PWRCELL

Inside of the PWRcell battery, the PWRcell battery modules are stacked 2-deep on three levels, allowing for up to six modules to be connected in series. Upgrade an existing PWRcell battery by adding modules and a module spacer (HMSK) if required. PWRcell 9 and PWRcell 15 require a module spacer.

Generac offers a convenient PWRcell Battery Upgrade Kit (HMUK) to help replace lost or misplaced hardware. A PWRcell Battery Upgrade Kit may be purchased from your Generac distributor.

Refer to the table to the right for material requirements related to upgrading PWRcell.

UPGRADE MATERIAL REQUIREMENTS

| Starting Configuration | Ending Configuration | | |
|------------------------|----------------------------------|----------------------------------|----------------------------------|
| | PWRCELL 17 | PWRCELL 15 | PWRCELL 12 |
| PWRCELL 9 | + 3 x PWRCell Mod + 2 x HMUK* | + 2 x PWRCell Mod + 1 x HMUK* | + 1 x PWRCell Mod + 1 x HMUK* |
| PWRCELL 12 | + 2 x PWRCell Mod + 1 x HMUK* | + 1 x PWRCell Mod + 1 x HMSK | |
| PWRCELL 15 | + 1 x PWRCell Mod + 1 x HMUK* | | |

*HMUK (Upgrade kit) only required if original hardware is unavailable



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DATE: 7/7/2020

PROJECT NAME & ADDRESS

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141 VALLEY STREAM ROAD,
SPRING LAKE, NC 28390

SHEET NAME
**EQUIPMENT
SPECIFICATION**

SHEET SIZE

**ANSI B
11" X 17"**

SHEET NUMBER

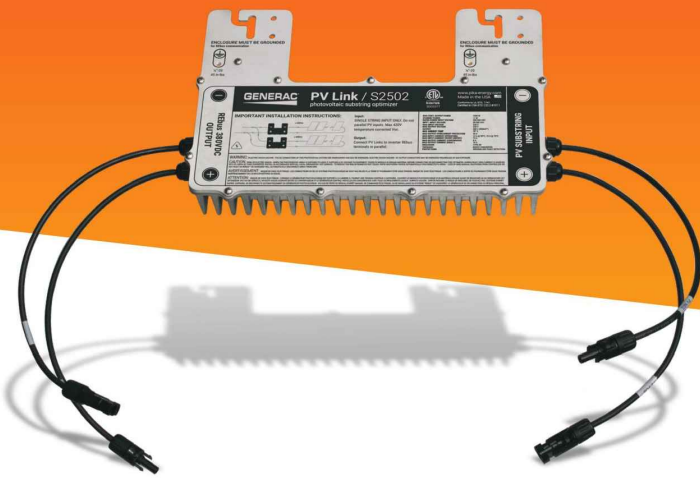
PV-9

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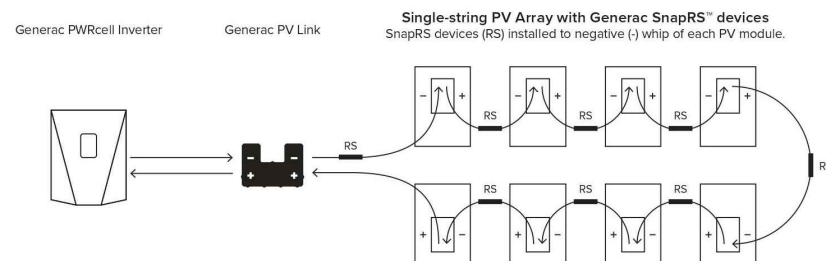
PV Link™

S2500 Series sub-string optimizer
Model: S2502

PV Link is the simple solar optimizer for quick installation and long-lasting performance. Connect as few as two or as many as nine PV modules to each PV Link to overcome shading and challenging roof lines.

ADDITIONAL FEATURES

- Quick connections with MC4 connectors
- 2500W capacity
- Compatible with high-voltage smart batteries
- Cost-effective solution for high-performance PV
- Ground-fault protection



FEATURES:

Fast, simple installation

Lower failure risk than module-level optimizers

NEC 2017 rapid shutdown compliant with SnapRS™

Specifications



PWRCELL PV LINK (S2502)

| | | | |
|---------------------------------|------------------------|--------------------|---|
| RATED POWER | 2500 W | PROTECTIONS | Ground-fault, Arc-fault (Arc-fault Type 1 AFCI, Integrated) |
| PEAK EFFICIENCY | 99% | MAX OPERATING TEMP | 70 °C |
| MPPT VOLTAGE RANGE | 60-360 VMP | SYSTEM MONITORING | PWRview Web Portal and Mobile App |
| MAX INPUT VOLTAGE | 420 VOC; max when cold | ENCLOSURE | Type 3R |
| MAX OUTPUT | 420 VOC | WEIGHT | 7.3 lb |
| NOMINAL OUTPUT (REBUS™) | 380 VDC | DIMENSIONS (L,W,H) | 2" x 15.4" x 9.6" |
| MAX OUTPUT CURRENT | 8 A | COMPLIANCE | UL 1741, CSA 22.2 |
| MAX SHORT CIRCUIT CURRENT (ISC) | 18 A | WARRANTY | 25 Years |
| STANDBY POWER | < 1 W | | |



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Signature with Seal

DATE: 7/7/2020

PROJECT NAME & ADDRESS

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141 VALLEY STREAM ROAD,
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SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

PV-10

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QRail™ — Fully Integrated Mounting and Racking System

The QRail Series is a strong and versatile solar array mounting system that provides unrivaled benefits to solar designers and installers. Combined with Quick Mount PV's industry-leading waterproof mounts, QRail offers a complete racking solution for mounting solar modules on any roof.



Easily design array configurations with the QDesign software application. Generate complete engineering reports and calculate a precise bill of materials for all the mounting, racking and accessories needed for a complete solar array.

Comprehensive, One-Source Solution

QRail, together with Quick Mount PV's waterproof mounting products, provides the benefit of a single-sourced, seamlessly integrated rooftop installation that works with all roof types — composition/asphalt shingles, flat or curved tile, metal shingle, shake, slate and low slope roofs. The QRail system also works with any roof attachment system for maximum flexibility.

Superior Strength and Versatility

QRail is engineered for optimal structural performance. The system is certified to UL 2703, fully code compliant and backed by a 25-year warranty. QRail is available in Light, Standard and Heavy versions to match all geographic locations. QRail is compatible with virtually all modules and works on a wide range of pitched roof surfaces. Modules can be mounted in portrait or landscape orientation in standard or shared-rail configurations.

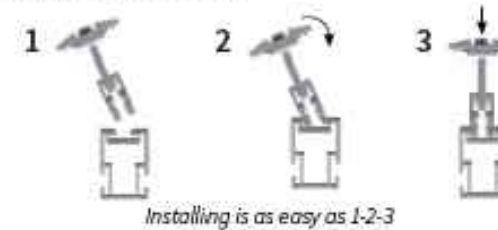


QRails come in two lengths — 168 inches (14 ft) and 208 inches (17.3 ft) Mill and Black Finish

Fast, Simple Installation: It Just Clicks

QClick Technology™

The universal mid and end clamps use QClick technology to simply "click" into the rail channel and remain upright, ready to accept the module. The pre-assembled clamps fit virtually all module frames and require no extra hardware, eliminating pre-loading and reducing installation time.



Installing is as easy as 1-2-3



UNIVERSAL END CLAMP
2 clamps for modules from 30-45mm or 38-50mm thick

UNIVERSAL BONDED MID CLAMP
2 clamps for modules from 30-45mm or 38-50mm thick

QSplice™ Technology

QRail's innovative internal QSplice installs in seconds, requiring no tools or screws. Simply insert QSplice into the rail and slide the other rail on to create a fully structural, bonded splice. An external splice is also available.



Installs in seconds — no tools or hardware required

Fully Integrated Electrical Bonding

The QRail system provides an integrated electrical bonding path, ensuring that all exposed metal parts and the solar module frames are electrically connected. All electrical bonds are created when the components are installed and tightened down.



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REVISIONS

| DESCRIPTION | DATE | REV |
|-------------|------|-----|
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Signature with Seal

DATE: 7/7/2020

PROJECT NAME & ADDRESS

LESTER R BEERY JR.
RESIDENCE
141 VALLEY STREAM ROAD,
SPRING LAKE, NC 28390

SHEET NAME

EQUIPMENT
SPECIFICATION

SHEET SIZE

ANSI B
11" X 17"

SHEET NUMBER

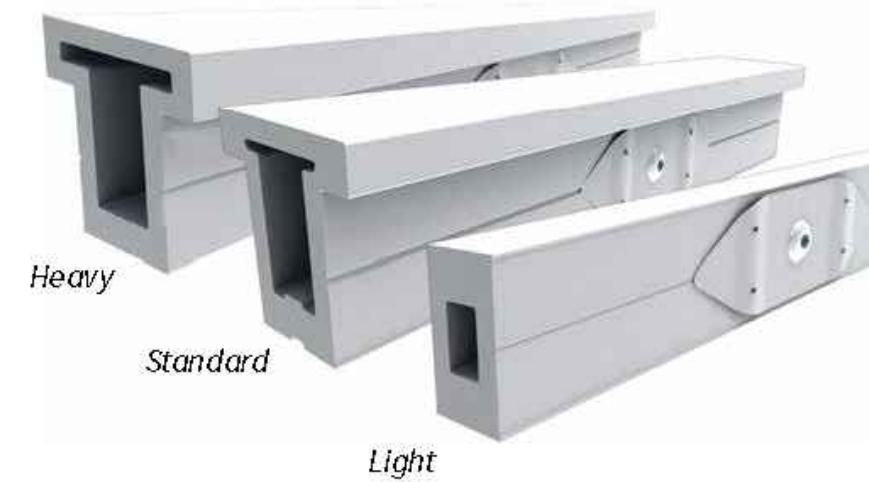
PV-11

QRail™ Configurations



| Item Code | Part Number | Description | Finish |
|-----------------|-------------|-----------------------------------|--------|
| QMR-RL14 A 60 | 800 | QRail Light, 14 ft., 60 Pack | Mill |
| QMR-RL17.3 A 60 | 801 | QRail Light, 17.3 ft., 60 Pack | Mill |
| QMR-RL14 B 60 | 805 | QRail Light, 14 ft., 60 Pack | Black |
| QMR-RL17.3 B 60 | 806 | QRail Light, 17.3 ft., 60 Pack | Black |
| QMR-RS14 A 60 | 810 | QRail Standard, 14 ft., 60 Pack | Mill |
| QMR-RS17.3 A 60 | 811 | QRail Standard, 17.3 ft., 60 Pack | Mill |
| QMR-RS14 B 60 | 815 | QRail Standard, 14 ft., 60 Pack | Black |
| QMR-RS17.3 B 60 | 816 | QRail Standard, 17.3 ft., 60 Pack | Black |
| QMR-RH14 A 60 | 820 | QRail Heavy, 14 ft., 60 Pack | Mill |
| QMR-RH17.3 A 60 | 821 | QRail Heavy, 17.3 ft., 60 Pack | Mill |
| QMR-RH14 B 60 | 825 | QRail Heavy, 14 ft., 60 Pack | Black |
| QMR-RH17.3 B 60 | 826 | QRail Heavy, 17.3 ft., 60 Pack | Black |

QSplice™ Internal Structural Splice



| Item Code | Part Number | Description | Finish |
|--------------|-------------|-------------------------------------|--------|
| QMR-ISL A 15 | 830 | QSplice Internal, Light, 15 Pack | Mill |
| QMR-ISS A 15 | 831 | QSplice Internal, Standard, 15 Pack | Mill |
| QMR-ISH A 15 | 832 | QSplice Internal, Heavy, 15 Pack | Mill |

QSplice™ External Structural Splice



| Item Code | Part Number | Description | Finish |
|--------------|-------------|-------------------------------------|--------|
| QMR-ESS A 15 | 834 | QSplice External, Standard, 15 Pack | Mill |
| QMR-ESH A 15 | 835 | QSplice External, Heavy, 15 Pack | Mill |



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ANSI B
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SHEET NUMBER

PV-11A

Universal End Clamp with QClick™ Technology



Black

Mill

| Item Code | Part Number | Description | Finish |
|--------------------|-------------|---|--------|
| QMR-UEC3045 A 20 | 860 | Universal End Clamp, 30-45mm, 20 Pack | Mill |
| QMR-UEC3850 A 20 | 861 | Universal End Clamp, 38-50mm, 20 Pack | Mill |
| QMR-UEC3045 B 20 | 865 | Universal End Clamp, 30-45mm, 20 Pack | Black |
| QMR-UEC3850 B 20 | 866 | Universal End Clamp, 38-50mm, 20 Pack | Black |
| QMR-UEC3045BP A 20 | 862 | Universal End Clamp, 30-45mm, w/ Bonding, 20 Pack | Mill |
| QMR-UEC3850BP A 20 | 863 | Universal End Clamp, 38-50mm, w/ Bonding, 20 Pack | Mill |
| QMR-UEC3045BP B 20 | 867 | Universal End Clamp, 30-45mm, w/ Bonding, 20 Pack | Black |
| QMR-UEC3850BP B 20 | 868 | Universal End Clamp, 38-50mm, w/ Bonding, 20 Pack | Black |

Mid Clamp with QClick™ Technology



Black

Mill

| Item Code | Part Number | Description | Finish |
|------------------------|-------------|---|--------|
| QMR-UMC3045BP 1.2 A 20 | 872 | Universal Mid Clamp, 30-45mm, w/ Bonding, 20 Pack | Mill |
| QMR-UMC3850BP 1.2 A 20 | 873 | Universal Mid Clamp, 38-50mm, w/ Bonding, 20 Pack | Mill |
| QMR-UMC3045BP 1.2 B 20 | 877 | Universal Mid Clamp, 30-45mm, w/ Bonding, 20 Pack | Black |
| QMR-UMC3850BP 1.2 B 20 | 878 | Universal Mid Clamp, 38-50mm, w/ Bonding, 20 Pack | Black |

Single-Slot L-Foot



| Item Code | Part Number | Description | Finish |
|-------------|-------------|-----------------------------|--------|
| QMC-LF A 12 | 692 | Single-slot L-foot, 12 Pack | Mill |
| QMC-LF B 12 | 693 | Single-slot L-foot, 12 Pack | Black |

End Caps



Heavy

Standard

Light

| Item Code | Part Number | Description | Finish |
|--------------|-------------|---------------------------|--------|
| QMR-CPL B 50 | 885 | End Cap Light, 50 Pack | Black |
| QMR-CPS B 50 | 886 | End Cap Standard, 50 Pack | Black |
| QMR-CPH B 50 | 887 | End Cap Heavy, 50 Pack | Black |



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DATE: 7/7/2020

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SHEET NAME
**EQUIPMENT
 SPECIFICATION**

SHEET SIZE
**ANSI B
 11" X 17"**

SHEET NUMBER
PV-11B

T-Bolt



| Item Code | Part Number | Description | Finish |
|--------------|-------------|-------------------------|-----------------|
| QMR-TB A 300 | 880 | T-Bolt w/ Nut, 300 Pack | stainless steel |

Grounding Lug



| Item Code | Part Number | Description | Finish |
|-------------|-------------|-----------------------------|--------|
| QMR-GL A 50 | 890 | WEEB Lug w/ T-Bolt, 50 Pack | n/a |

Wire Clip



Works with both PV and Trunk Cabling

| Item Code | Part Number | Description | Finish |
|-------------|-------------|--------------------------|-----------------|
| QMR-WCA 300 | 892 | Trunk/PV Cable, 300 Pack | stainless steel |

WEEB BMC



| Item Code | Part Number | Description | Finish |
|-------------|-------------|-------------------|-----------------|
| QMR-ECWA 50 | 891 | WEEB BMC, 50 Pack | stainless steel |



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EQUIPMENT
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SHEET SIZE

ANSI B
 11" X 17"

SHEET NUMBER

PV-11C

L-Mount | QMLM / QMLM-ST

Elevated Water Seal Technology®

| ITEM NO. | DESCRIPTION | QTY. |
|----------|---|------|
| 1 | FLASHING, ROUNDED CORNERS, 9" X 12" X .040", .438" HOLE, 5052, MILL | 1 |
| 2 | L-FOOT, 2" X 3.30" FOR .438" O.D. FASTENER, 2-1/16" SLOT, 6061-T6/6005A-T61, MILL | 1 |
| 3 | WASHER, SEALING, 5/16" ID X 3/4" OD, EPDM BONDED SS | 1 |
| 4 | LAG SCREW, HEX HEAD, 5/16" x 4", 18-8 SS | 1 |
| *5 | STRUCTURAL SCREW, GMPV, T-30 HEX WASHER HEAD, 5/16" X 4-1/2", 18-855 | 1 |

THIS EDGE TOWARDS ROOF RIDGE

12.00

9.00

4.50

3.00 (4.20)

2.00

1.00

2.09

3.30

Ø .408

(.90)

QMLM

QMLM-ST

2.75

4.04

4

3

2

1

*5

* STRUCTURAL SCREW AVAILABLE ON QMLM-ST VERSIONS ONLY

AVAILABLE IN MILL AND BLACK FINISHES

Quick Mount PV®

TITLE: QMLM & QMLM-ST: L-MOUNT, 2-1/16" SLOT

UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONAL ± 1/16 TWO PLACE DECIMAL ± .01 THREE PLACE DECIMAL ± .004

SIZE: A DRAWN BY: AAP REV: 11 DATE: 4/4/2019 SCALE: 1/4 WEIGHT: 0.7566 SHEET 1 OF 1

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DO NOT SCALE DRAWING

L-Mount Installation Instructions

Installation Tools Required: tape measure, roofing bar, chalk line, stud finder, caulking gun, sealant compatible with roofing materials, drill with 7/32" or 1/8" bit, drill or impact gun with 1/2" socket.

WARNING: Quick Mount PV products are NOT designed for and should NOT be used to anchor fall protection equipment.



1 Locate, choose, and mark centers of rafters to be mounted. Select the courses of shingles where mounts will be placed.



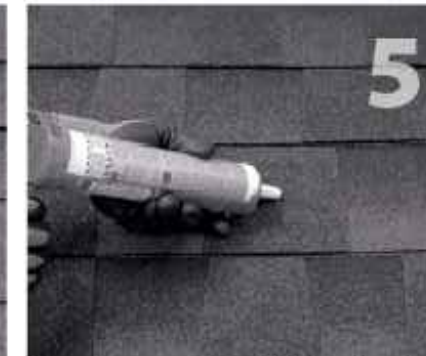
2 Carefully lift composition roof shingle with roofing bar, just above placement of mount. Remove nails as required and backfill holes with approved sealant. See "Proper Flashing Placement" on next page.



3 Insert flashing between 1st and 2nd course. Slide up so top edge of flashing is at least 3/4" higher than the butt-edge of the 3rd course and lower flashing edge is above the butt-edge of 1st course. Mark center for drilling.



4 If attaching with lag bolt use a 7/32" bit (Lag). Use a 1/8" bit (ST) for attaching with the structural screw. Drill pilot hole into roof and rafter, taking care to drill square to the roof. Do not use mount as a drill guide. Drill a 2" deep hole into rafter.



5 Clean off any sawdust, and fill hole with sealant compatible with roofing materials.



6 Place L-foot onto elevated flange and rotate L-foot to desired orientation.



7 Prepare lag bolt or structural screw with sealing washer. Using a 1/2-inch socket on an impact gun, drive prepared lag bolt through L-foot until L-foot can no longer easily rotate. **DO NOT over-torque.** NOTE: Structural screw can be driven with T-30 hex head bit. BI 7.2.3-44



8 You are now ready for the rack of your choice. Follow all the directions of the rack manufacturer as well as the module manufacturer. NOTE: Make sure top of L-Foot makes solid contact with racking.

All roofing manufacturers' written instructions must also be followed by anyone modifying a roof system. Consult the roof manufacturer's specs and instructions prior to working on the roof.



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SHEET NAME
EQUIPMENT
SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12