Historic Preservation Services
Community Development & Neighborhood Services
281 North College Avenue
P.O. Box 580
Fort Collins, CO 80522.0580

970.416.4250
preservation@fcgov.com
fcgov.com/historicpreservation

REPORT OF ALTERATIONS TO DESIGNATED RESOURCE
Site Number/Address: 640 Peterson St.
Laurel School National Register Historic District
ISSUED: November 3, 2022

Brett Bruyere
c/o Megan Close, Independent Power Systems
1501 Lee Hill Dr. #24
Boulder, CO 80304

Dear Brett Bruyere:

This report is to inform you of the results of this office's review of proposed alterations to the S.E. Rice Residence, at 640 Peterson St., pursuant to Fort Collins Municipal Code, Chapter 14, Article IV. A copy of this report may be forwarded to the Colorado Office of Archaeology and Historic Preservation as well.

The alterations reviewed include:

- Installation of roof-mounted solar PV system

Our staff review of the proposed work finds the alterations meet the SOI Standards for Rehabilitation due to the location of the solar panels behind the porch roof and because the panels will be shielded from view from the public right-of-way by a mature tree. The project appears to have minimal effects on the historic resource, meeting the requirements of Article IV cited above.

Notice of the approved application has been provided to building and zoning staff to facilitate the processing of any permits that are needed for the work. Please note that work beyond that indicated in your permit application/correspondence requires additional approval.

If you have any questions regarding this report, or if I may be of any assistance, please do not hesitate to contact me. I can be reached at yjones@fcgov.com or at 970-224-6045.

Sincerely,

Yani Jones
Historic Preservation Planner

Planning, Development and Transportation
Building Services Department
281 N. College Ave P.O. Box 580
Fort Collins, CO 80524
Phone 970-416-2740 Fax 224-6134

SOLAR PERMIT APPLICATION FORM

This application is to be used to apply for the following permits only (check the appropriate box):

☒ **Photovoltaic Solar (PV)**

☐ **Thermal Solar (Hot Water System)**

Complete all applicable information on the application. Incomplete applications will not be accepted.

Application #_____ Date _9/22/2022_____

For office use only

Job Site Address *(required)*		**Value of Construction** (labor, materials, profit)		
640 Peterson St, Fort Collins, CO 80524		$14,995		
Property Owner Name	Address	City/State	Zip	Phone
Brett Bruyere	Same as above			
Applicant Name	Address	City/State	Zip	Phone
Megan Close	1501 Lee Hill Drive #24, Boulder, CO 80304		303-443-0115	
Solar Contractor License #/Co. Name	Address	City/State	Zip	Phone
S-3863	Same as applicant			

Contractor City of Ft. Collins Sales Tax #
Sales tax number is required by all contractors.
48365

Are you paying taxes here or by report? ☒ Here ☐ Report
Are you paying with your trust account? ☐ Yes ☒ No

IF SOLAR PV SYSTEM, HAS THE PROJECT BEEN PRE-APPROVED BY CITY LIGHT AND POWER? ☐ Yes ☐ No

Is this a residential or commercial project? ☒ Residential ☐ Commercial

If residential, is it: ☒ Single Family Detached ☐ Condo/townhome (single family attached) ☐ Duplex ☐ Multifamily (apartment) ☐ Garage

If commercial, is it: ☐ Bank ☐ Bar ☐ Church ☐ Hotel/Motel ☐ Medical office ☐ Office ☐ Retail ☐ Restaurant ☐ Other (explain) _____

Is this building **50 years of age** or more? ☒ Yes ☐ No *If yes, you may need to contact Historic Preservation*

Description of work*
Roof mounted solar photovoltaic system; System size: 3.40kw; (8) Sunpower SPR-M-425-H-AC modules

*Please note in description if; roof flush mounted, roof mounted & elevated, ground array, kw amount, how many solar panels.

Subcontractors: *List the company name or City of Ft Collins license # (PV **MUST** list City Registered Electrician – Thermal **MUST** list City Registered Plumber)*

Electrician_____ Plumber_____ Roofer (For solar PV shingles) _____

I hereby acknowledge that I have read this application and state that the above information is complete and correct. I agree to comply with all requirements contained herein and city ordinances and state laws regulating building construction. **I know that a permit is not valid until it has been paid and issued.**

Applicant:
Print Name: Megan Close **Signature** Megan Close **Date** 9/22/2022

EV ENGINEERS
projects@evengineersnet.com
http://www.evengineersnet.com
276-220-0064

8/30/2022

RE: Structural Certification for Installation of Residential Solar
BRETT BRUYERE:640 PETERSON ST, FORT COLLINS, CO 80524

Attn: To Whom It May Concern

This Letter is for the existing roof framing which supports the new PV modules as well as the attachment of the PV system to existing roof framing. From the field observation report, the roof is made of Composite shingle roofing over roof plywood supported by 2X4 Rafters at 24 inches. The slope of the roof was approximated to be 26 degrees and the allowable maximum chord span is 6.42 feet between supports.

After review and based on our structural capacity calculation, **the existing roof framing has been determined to be adequate to support the imposed loads without structural upgrades.** Contractor shall verify that existing framing is consistent with the described above before install. Should they find any discrepancies, a written approval from SEOR is mandatory before proceeding with install. Capacity calculations were done in accordance with applicable building codes.

Design Criteria

Code	2021 International Residential Code (ASCE 7-16)				
Risk category		II	Wind Load	(component and Cladding)	
Roof Dead Load	Dr	10 psf		V	140 mph
PV Dead Load	DPV	3 psf		Exposure	B
Roof Live Load	Lr	20 psf			
Ground Snow	S	35 psf			

If you have any questions on the above, please do not hesitate to call.

Sincerely,

Vincent Mwumvaneza, P.E.
EV Engineering, LLC
projects@evengineersnet.com
http://www.evengineersnet.com

EXP:10/31/2023

Signed 8/30/2022

EV ENGINEERS
projects@evengineersnet.com
http://www.evengineersnet.com
276-220-0064

Structural Letter for PV Installation

Date: 8/30/2022
Job Address: **640 PETERSON ST**
FORT COLLINS, CO 80524
Job Name: **BRETT BRUYERE**
Job Number: **220830BB**

Scope of Work

This Letter is for the existing roof framing which supports the new PV modules as well as the attachment of the PV system to existing roof framing. All PV mounting equipment shall be designed and installed per manufacturer's approved installation specifications.

Table of Content

Engineering Calculations Summary

Code	2021 International Residential Code (ASCE 7-16)		
Risk category		II	
Roof Dead Load	Dr	10	psf
PV Dead Load	DPV	3	psf
Roof Live Load	Lr	20	psf
Ground Snow	S	35	psf
Wind Load	(component and Cladding)		
	V	140	mph
	Exposure	B	

References

2 NDS for Wood Construction

Sincerely,

Vincent Mwumvaneza, P.E.
EV Engineering, LLC
projects@evengineersnet.com
http://www.evengineersnet.com

EXP:10/31/2023

Signed 8/30/2022

Wind Load Cont.

Risk Category =	II		
Wind Speed (3s gust), V =	**140**	**mph**	**ASCE 7-16 Figure 26.5-1B**
Exposure =	**B**		
K_{Zt} =	1.0		ASCE 7-16 Sec 26.8.2
K_Z =	0.57		ASCE 7-16 Table 26.10-1
K_d =	0.85		ASCE 7-16 Table 26.6-1
K_e =	0.83		ASCE 7-16 Table 26.9-1
$q_h = 0.00256K_zK_{zt}K_dK_eV^2$ =	20.29	psf	
Pitch =	26.0	Degrees	
γ_E =	1.5	Conservatively assuming all exposed	
γ_a =	0.8	conservatively assuming 10 ft^2 effective area	

Uplift (W)		**Zone(1,2e)**	**Zone(2r, 2n)**	**Zone(3e)**	**Zone(3r)**
Fig. 30-3-2	GC_p=	-1.3	-1.7	-1.7	-1.8
Eq. 29.4-7	$P=q_h(GC_p)(\gamma_E)(\gamma_a)$=	-31.65	-41.39	-41.39	-43.83
	GC_p=	0.6			Figure 30.3-2
	$P=q_h(GC_p)(\gamma_E)(\gamma_a)$=	14.61			Equation 29.4-7

Rafter Attachments: 0.6D+0.6W (CD=1.6)

Connection Check

Attachement max. spacing=	4	ft	
5/16" Lag Screw Withdrawal Value=	266	lbs/in	Table 12.2A - NDS
Lag Screw Penetration	2.5	in	DFL Assumed
Prying Coefficient	1.4		
Allowable Capacity=	760	lbs	

Zone	**Trib Width**	**Area (ft)**	**Uplift (lbs)**	**Down (lbs)**	
Zone(1,2e)	4	11.0	100.2	84.9	
Zone(2r, 2n)	4	11.0	128.4	84.9	
Zone(3e)	4	11.0	128.4	84.9	
Zone(3r)	4	11.0	135.4	84.9	
	Conservative Max=		135.4	<	760
			CONNECTION IS OK		

1. Pv seismic dead weight is negligible to result in significant seismic uplift, therefore the wind uplift governs
2. Embedment is measured from the top of the framing member to the tapered tip of a lag screw. Embedment in sheading or other material does not count.

Vertical Load Resisting System Design

Roof Framing Rafters

Snow Load Fully Exposed

pg=	35	psf			
C_e =	0.9				
C_t =	1.1				
I_s =	1.0				
p_f =	24	psf			
$p_{fmin.}$ =	**30.0**	psf			
p_s =	**30**	psf	CS=	0.7	44 plf

Max Length, L =	**6.42**	ft	(Beam maximum Allowable Span)
Tributary Width, W_T =	**24**	in	
Dr =	**10**	psf	20 plf
PvDL =	3	psf	6 plf

Load Case: DL+0.75(0.6W+S)

0.75(Pnet+Ps)+ $P_{pv}\cos(\theta)+P_{DL}$=	85	plf			
M_{down}=	436	lb-ft			
Mallowable = Sx x Fb' (wind)=	704	lb-ft	>	436 lb-ft	**OK**

Load Case: DL+S

Ps+ $P_{pv}\cos(\theta)+P_{DL}$=	69	plf			
M_{down}=	358	lb-ft			
Mallowable = Sx x Fb' (wind)=	506	lb-ft	>	358 lb-ft	**OK**

Load Case: DL+0.6W

Pnet+ $P_{pv}\cos(\theta)+P_{DL}$=	60.5	plf			
Max Moment, $M_u=wL^2/8$ =	311	lb-ft			
Mallowable = Sx x Fb' (wind)=	704	lb-ft	>	311 lb-ft	**OK**
Pv max Shear=	84.9	lbs			
Shear, V_u=wL/2+Pv Point Load =	168	lbs			
Max Shear, V_u=wL/2+Pv Point Load =	272	lb			

Member Capacity

DF-L No.1

2X4	Design Value	C_L	C_F	C_i	C_r	K_F	ϕ	λ	Adjusted Value
F_b =	1000 psi	1.0	1.5	1.0	1.15	2.54	0.85	0.8	1725 psi
F_v =	180 psi	N/A	N/A	1.0	N/A	2.88	0.75	0.8	180 psi
E =	1700000 psi	N/A	N/A	1.0	N/A	N/A	N/A	N/A	1700000 psi
E_{min} =	620000 psi	N/A	N/A	1.0	N/A	1.76	0.85	N/A	620000 psi

Depth, d =	3.5	in			
Width, b =	1.5	in			
Cross-Sectonal Area, A =	5.25	in^2			
Moment of Inertia, I_{xx} =	5.35938	in^4			
Section Modulus, S_{xx} =	3.0625	in^3			
Allowable Moment, $M_{all} = F_b'S_{xx}$ =	440.2	lb-ft	$DCR=M_u/M_{all}$ =	0.64 < 1	**Satisfactory**
Allowable Shear, $V_{all} = 2/3F_v'A$ =	630.0	lb	$DCR=V_u/V_{all}$ =	0.39 < 1	**Satisfactory**

Siesmic Loads Check

Roof Dead Load	10	psf
% or Roof with Pv	9.6%	
Dpv and Racking	3	psf
Average Total Dead Load	10.3	psf
Increase in Dead Load	1.4%	**OK**

The increase in seismic Dead weight as a result of the solar system is less than 10% of the existing structure and therefore no further seismic analysis is required.

Limits of Scope of Work and Liability

We have based our structural capacity determination on information in pictures and a drawing set titled PV plans - BRETT BRUYERE. The analysis was according to applicable building codes, professional engineering and design experience, opinions and judgments. The calculations produced for this Structure's assessment are only for the proposed solar panel installation referenced in the stamped plan set and were made according to generally recognized structural analysis standards and procedures.

PHOTOVOLTAIC ROOF MOUNT SYSTEM

PROJECT DESCRIPTION

SOLAR INFO

8 x 425 SUNPOWER SPR-M-425-H-AC

SYSTEM SIZE: 3.40 KW DC STC, 3.07 KW AC
MODULE DIMENSION: 73.7" X 40.6"
INVERTER MODEL: (8) ENPHASE IQ7HS

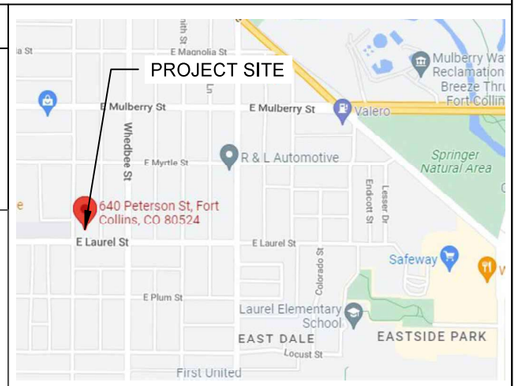
BUILDING AND CODE INFO

PERMITTING JURISDICTION: CITY OF FORT COLLINS
WIND SPEED: 140 MPH
EXPOSURE CATEGORY: B
SNOW LOAD: 35 PSF

GOVERNING CODES:
2021 INTERNATIONAL BUILDING CODE
2021 INTERNATIONAL CONSTRUCTION CODE
2021 INTERNATIONAL RESIDENTIAL CODE
2021 INTERNATIONAL EXISTING BUILDING CODE
2020 NATIONAL ELECTRIC CODE

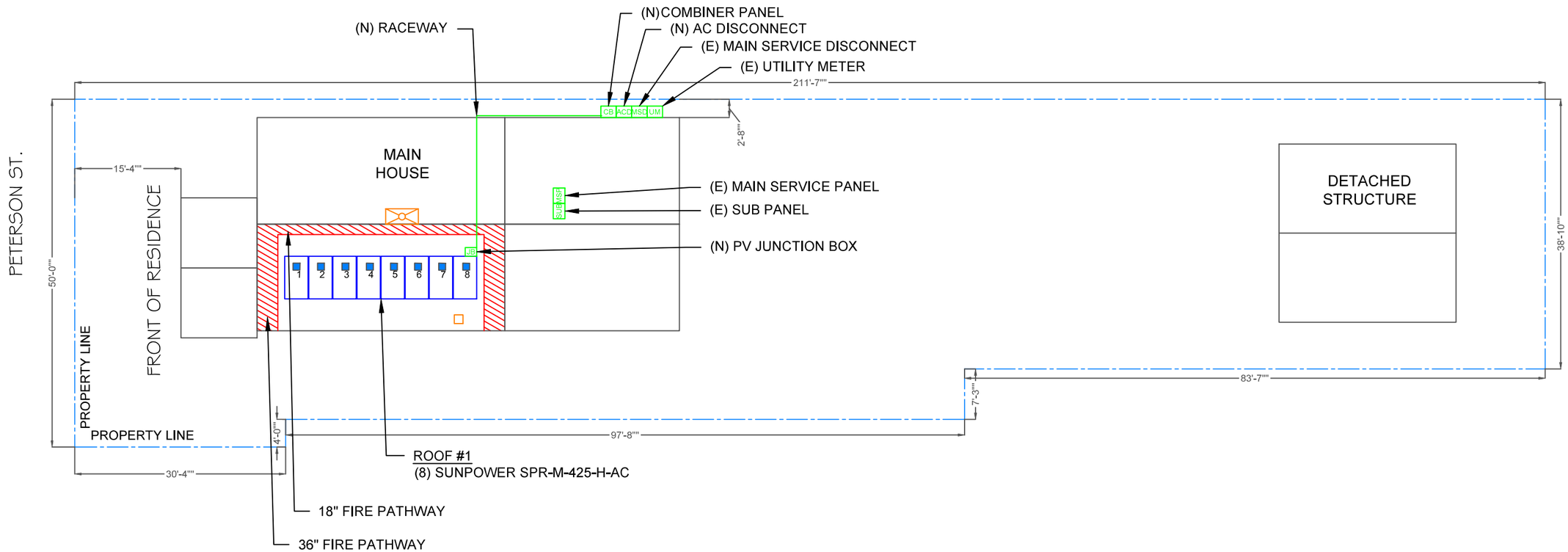
ELECTRICAL INFO:

UTILITY: FORT COLLINS UTILITIES
BUILDING VOLTAGE: 120 / 240 VAC



2 COVER SHEET | VICINITY MAP

SCALE: NTS



1 COVER SHEET | SITE PLAN WITH VICINITY MAP

SCALE: 1/16" = 1'-0"

Independent POWER
1501 LEE HILL DR
BOULDER, CO 80304
Permits@solarips.com
PH# (303) 443-0115

REVISIONS

DESCRIPTION	DATE	REV
INITIAL DESIGN	7/13/2022	A

Signature with Seal

PROJECT NAME

BRETT BRUYERE
640 PETERSON ST,
FORT COLLINS, CO
80524, USA

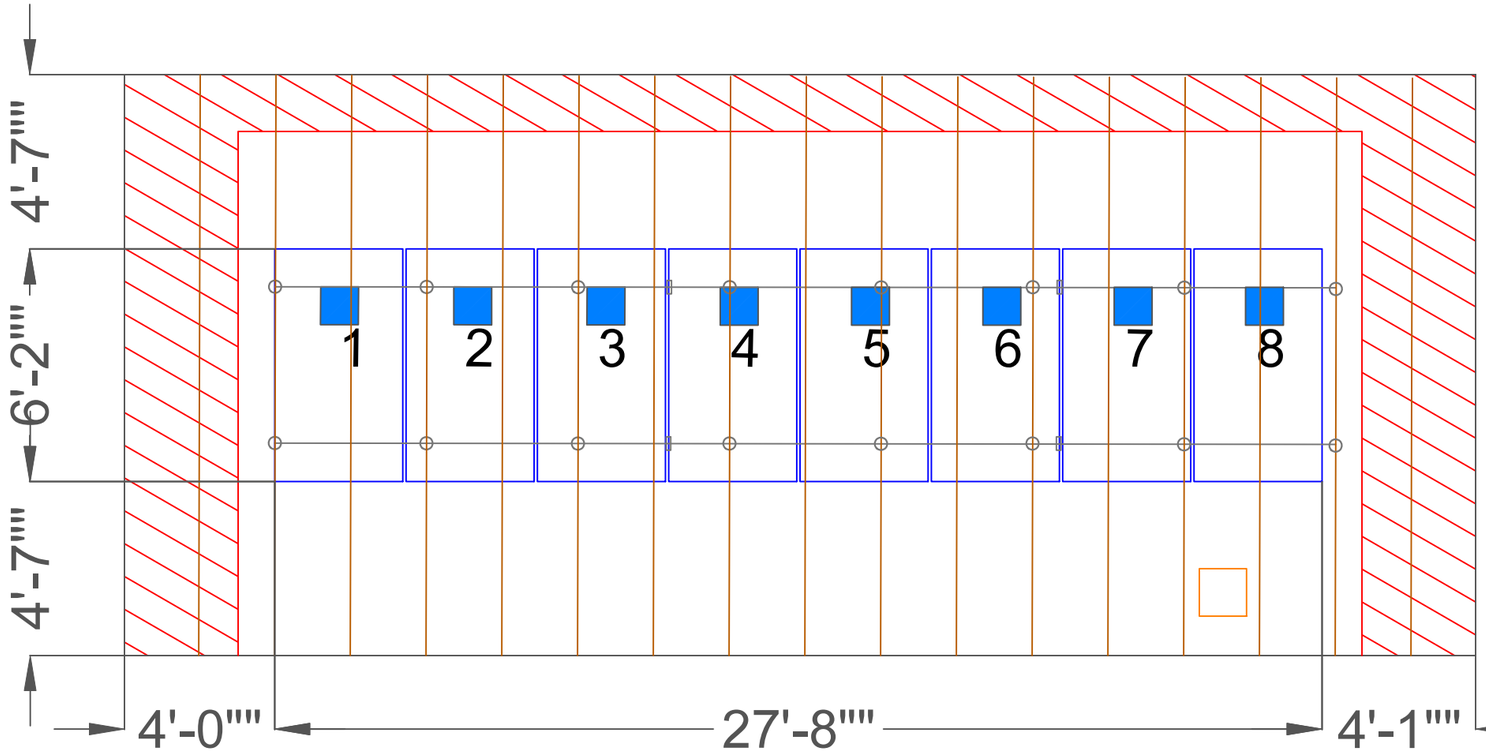
SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-1

BY
HARRISON

ARRAY 1:
(8)SUNPOWER SPR-M-425-H-AC
AZIMUTH: 180
TILT: 26
ROOF TYPE: ASPHALT SHINGLE
ROOF STRUCTURE: RAFTER
FRAMING SIZE: 2"X4" @ 24"OC



Structural only
COLORADO LICENSED
VINCENT MWUMVANEZA
0056164
PROFESSIONAL ENGINEER
Exp. 10/31/2023

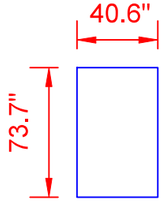
1 SITE PLAN — ROOF PLAN AND MODULES

GENERAL NOTES

NUMBER OF MODULES: 8 MODULES
MODULE TYPE: SUNPOWER SPR-M-425-H-AC
MODULE DIMENSIONS: 73.7"x 40.6" = 20.78 SF
ROOF TYPE: ASPHALT SHINGLE
ROOF STRUCTURE: RAFTER

NOTE TO INSTALLER:
FIELD ADJUSTMENTS CAN BE MADE TO THE LAYOUT OF THE ARRAY
ROOF LAYOUT NOTE
SOLAR PANEL LAYOUT IS CONCEPTUAL, BUT AS PROVIDED, CONFORMS WITH THE REQUIREMENTS SET IN SHEET PV-2 CONTRACTOR MAY ADJUST PANEL LOCATION.

SUNPOWER SPR-M-425-H-AC MODULE



LEGEND

- FRAMING
- PV RAIL
- VENT, (ROOF OBSTRUCTIONS)
- ROOF ATTACHMENT
- RAIL SPLICE
- MICROINVERTER

Independent POWER
1501 LEE HILL DR
BOULDER, CO 80304
Permits@solarips.com
PH# (303) 443-0115

REVISIONS

DESCRIPTION	DATE	REV
INITIAL DESIGN	7/13/2022	A

Signature with Seal

PROJECT NAME

BRETT BRUYERE
640 PETERSON ST,
FORT COLLINS, CO
80524, USA

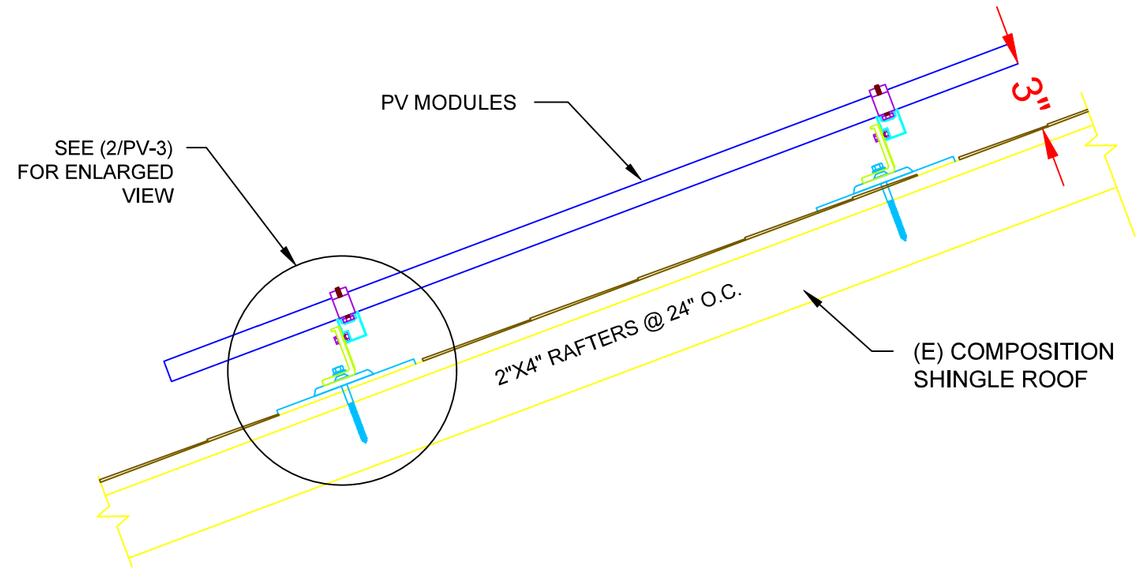
SHEET NAME
STRUCTURAL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

BY
HARRISON

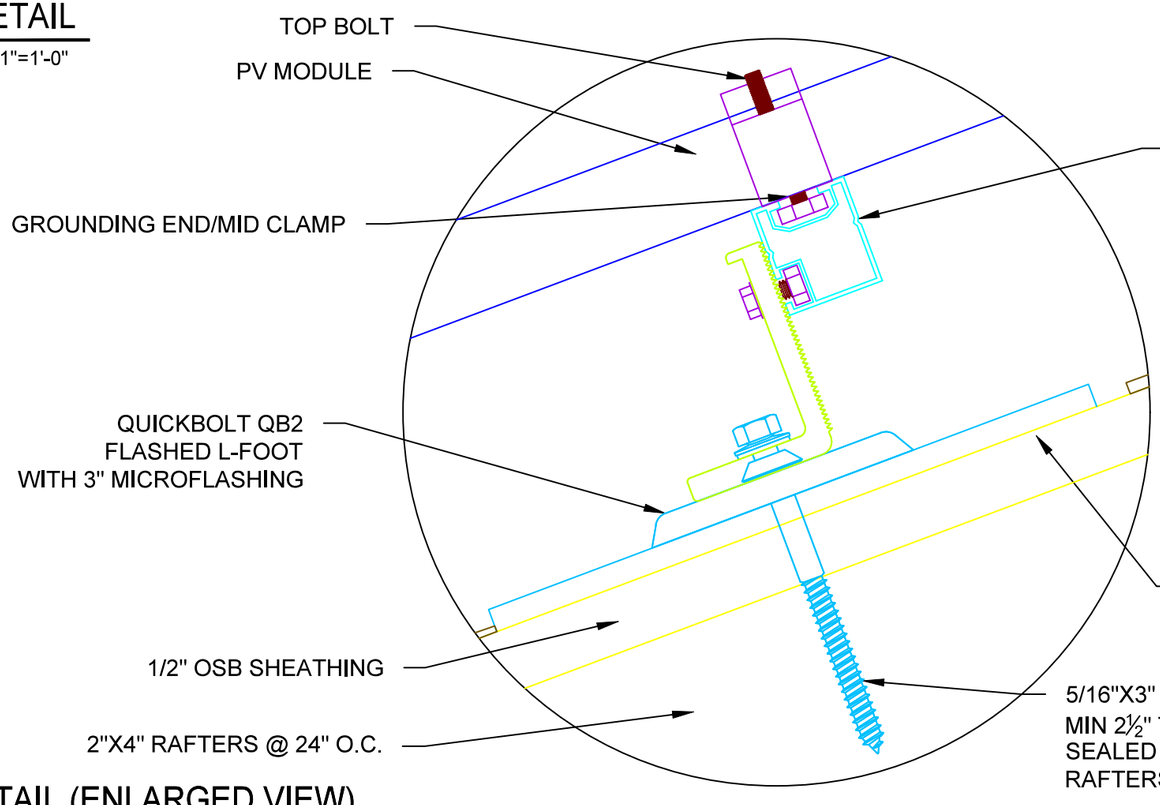
INVISIMOUNT + QUICKBOLT QB2



1 PV-3 | S-02

ATTACHMENT DETAIL

SCALE -1"=1'-0"



2 PV-3

ATTACHMENT DETAIL (ENLARGED VIEW)

Structural only

COLORADO LICENSED
VINCENT MWUMVANEZA
0056164
PROFESSIONAL ENGINEER

Exp. 10/31/2023

Independent POWER

1501 LEE HILL DR
BOULDER, CO 80304
Permits@solarips.com
PH# (303) 443-0115

REVISIONS

DESCRIPTION	DATE	REV
INITIAL DESIGN	7/13/2022	A

Signature with Seal

PROJECT NAME

BRETT BRUYERE
640 PETERSON ST,
FORT COLLINS, CO
80524, USA

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

BY
HARRISON

(8) SUNPOWER SPR-M-425-H-AC MODULES
(CONNECTED IN PARALLEL PER CIRCUIT)

SYSTEM SIZE: 3.40 KW DC STC
3.07 KW AC

MAX. STRING SIZE = 10

THE RAPID SHUTDOWN INITIATION DEVICE FOR AC PANELS IS TO MAIN SERVICE PANEL.
NOTE:
VISIBLE-OPEN AND LOCKABLE DISCONNECT LOCATED LESS THAN 10' FROM UTILITY METER.

WIRE/CONDUITE SCHEDULE

TAG #	Description	Conduit type/size	Current carraying conductor type/size	Neutral Conductor type/size	Grounding conductor type/size	~1 -way length(ft)
1	PV ARRAY TO JUNCTION BOX	N/A	2 X #12 DG	X	1X #10 Bare Cu	40
2	JUNCTION BOX TO COMBINER BOX	1/2" EMT	2 X #12 THWN-2	X	1X #12 THWN-2	40
3	COMBINER BOX TO MSP	3/4" EMT	2 X #10 THWN-2	1 X #10 THWN-2	1X #10 THWN-2	10

COLORADO LICENSED
DOMINGO A. VILLARUEL
PE.0049906
PROFESSIONAL ENGINEER
EXPIRES: 10/31/2023
signed: 08/31/2022

ON ROOF

8- MICRO-INVERTERS IN BRANCH CIRCUIT #1

HOUSE OUTSIDE WALL

PVS6 CONSUMPTION MONITORING

(N) COMBINER BOX
15A
20A
L1 L2 N G

(N) JUNCTION BOX
L1 L2 G

(N) AC DISCONNECT:
30A NON-FUSED,
240V NEMA 3R, UL LISTED
VISIBLE, LOCKABLE

INSIDE HOUSE

(E) MAIN SERVICE PANEL,150A RATED, 240V
20A

TO UTILITY GRID
L1 L2 N

M BI-DIRECTIONAL UTILITY METER 1-PHASE, 3-W, 120V/240V

(E) 125A

(E) MAIN SERVICE DISCONNECT,125A RATED, 240V

(E) GROUNDING ROD

1 2 3 3 E

1 ELECTRICAL LINE DIAGRAM
PV-5 SCALE: NTS

Independent POWER
1501 LEE HILL DR
BOULDER, CO 80304
Permits@solarips.com
PH# (303) 443-0115

REVISIONS

DESCRIPTION	DATE	REV
INITIAL DESIGN	7/13/2022	A

Signature with Seal

PROJECT NAME

BRETT BRUYERE
640 PETERSON ST,
FORT COLLINS, CO
80524, USA

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-4

BY
HARRISON

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM ROOF TOP ARRAY TO COMBINER BOX

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
PER NEC 310.15(C)(3)(c): 0°
EXPECTED WIRE TEMP (°C): 34°
TEMP CORRECTION PER NEC 310.15(B)(1): 0.96
OF CURRENT CARRYING CONDUCTORS: 2
CONDUIT FILL CORRECTION PER NEC 310.15(C)(1): 1.0
CIRCUIT CONDUCTOR SIZE: 12 AWG
CIRCUIT CONDUCTOR AMPACITY: 30 A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X MAX AC OUTPUT CURRENT X # OF INVERTERS
1.25 X1.6X 8 = 16.00 A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC 310.15.
TEMP CORR. PER NEC 310.15(B)(1) X
CONDUIT FILL CORR. PER NEC 310.15(C)(1) X
CIRCUIT CONDUCTOR AMPACITY =
0.96X 1 X 30 = 28.80 A

AC CONDUCTOR AMPACITY CALCULATIONS:
FROM COMBINER BOX TO MSP

AMBIENT TEMPERATURE ADJUSTMENT FOR EXPOSED CONDUIT
EXPECTED WIRE TEMP (°C): 34°
TEMP CORRECTION PER NEC310.15(B)(1): 0.96
OF CURRENT CARRYING CONDUCTORS: 3
CONDUIT FILL CORRECTION PER NEC 310.15(C)(1): 1.00
CIRCUIT CONDUCTOR SIZE: 12 AWG
CIRCUIT CONDUCTOR AMPACITY: 30A

AC OUTPUT CURRENT MAX AC OUTPUT CURRENT X # OF INVERTERS
1.6X 8 = 12.80 A

REQUIRED CIRCUIT CONDUCTOR AMPACITY PER NEC 690.8(A&B):
1.25 X MAX AC OUTPUT CURRENT X # OF INVERTERS
1.25 X1.6X 8 = 16.00 A

DERATED AMPACITY OF CIRCUIT CONDUCTOR PER NEC 310.15.
TEMP CORR. PER NEC 310.15(B)(1) X
CONDUIT FILL CORR. PER NEC 310.15(C)(1) X
CIRCUIT CONDUCTOR AMPACITY =
0.96 X 1.00 X 30 = 28.8 A

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.) WORKING CLEARANCES AROUND ALL NEW AND EXISTING ELECTRICAL EQUIPMENT SHALL COMPLY WITH NEC 110.26.
4.) DRAWINGS INDICATE THE GENERAL ARRANGEMENT OF SYSTEMS. CONTRACTOR SHALL FURNISH ALL NECESSARY OUTLETS, SUPPORTS, FITTINGS AND ACCESSORIES TO FULFILL APPLICABLE CODES AND STANDARDS.
5.) WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, THE CONTRACTOR SHALL SIZE THEM ACCORDINGLY.
6.) ALL WIRE TERMINATIONS SHALL BE APPROPRIATELY LABELED AND READILY VISIBLE.
7.) MODULE GROUNDING CLIPS TO BE INSTALLED BETWEEN MODULE FRAME AND MODULE SUPPORT RAIL, PER THE GROUNDING CLIP MANUFACTURER'S INSTRUCTION.
8.) MODULE SUPPORT RAIL TO BE BONDED TO CONTINUOUS COPPER G.E.C. VIA WEEB LUG OR ILSCO GBL-4DBT LAY-IN LUG.
9.) MINIMUM CONDUCTOR SIZES SHOWN AND MAY BE UP-SIZED IN FIELD SO LONG AS 40% CONDUIT FILL IS NOT EXCEEDED.
10.) CONTRACTOR TO INSTALL SPECIFIED CONDUIT OR EQUIVALENT NEC COMPLIANT RACEWAY.

COLORADO LICENSED DOMINGO A. VILLARUEL PE.0049906 PROFESSIONAL ENGINEER

EXPIRES: 10/31/2023
signed: 08/31/2022

PERCENT OF VALUES	NUMBER OF CURRENT CARRYING CONDUCTORS IN EMT
0.80	4-6
0.70	7-9
0.50	10-20

AMBIENT TEMPERATURE SPECS	
AMBIENT TEMP	34°
RECORD LOW	-25
CONDUIT HEIGHT	0.5" - 3.5"
ROOF TOP ADDER	56°
ROOF TOP TEMP	51°
TEMP-CORRECTION (AMBIENT TEMP)	.96
TEMP-CORRECTION (ROOF TOP TEMP)	.76
CONDUCTOR TEMPERATURE RATE	90°
MODULE TEMPERATURE COEFFICIENT OF Voc	-0.29%/°C

SOLAR MODULE SPECIFICATIONS	
MANUFACTURER	SUNPOWER
MODEL #	SPR-M-425-H-AC
PMAX	425W
PEAK OUTPUT POWER	384VA
MAX CONTINOUS OUTPUT CURRENT	1.60
MAX UNIT PER BRANCH CIRCUIT	10
NOM. FREQUENCY	60HZ
MODULE DIMENSION	73.7"L x 40.6"W x 1.57"D (In Inch)

Independent POWER
1501 LEE HILL DR
BOULDER, CO 80304
Permits@solarips.com
PH# (303) 443-0115

REVISIONS

DESCRIPTION	DATE	REV
INITIAL DESIGN	7/13/2022	A

Signature with Seal

PROJECT NAME

BRETT BRUYERE
640 PETERSON ST,
FORT COLLINS, CO
80524, USA

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

BY
HARRISON

CONDUIT / RACEWAYS / COMBINER BOXES / JUNCTION BOXES

⚠ WARNING
PHOTOVOLTAIC SYSTEM COMBINER PANEL
DO NOT ADD LOADS

1
LABEL LOCATION:
PV AC COMBINER PANEL
NEC 2020

⚠ WARNING
ELECTRIC SHOCK HAZARD
TERMINALS ON BOTH LINE AND LOAD SIDES MAY BE ENERGIZED IN THE OPEN POSITION

2
LABEL LOCATION:
COMBINER BOX / CIRCUITS / CONDUIT / COMBINER BOX / ENCLOSURES / EMT ENCLOSURES
NEC 706.15(C)(4) AND NEC 690.13(B)

WARNING: PHOTOVOLTAIC POWER SOURCE

3
LABEL LOCATION:
EMT / CONDUIT RACEWAYS
NEC 690.31(D)(2)

PHOTOVOLTAIC MICROINVERTERS LOCATED UNDER EACH PV MODULE IN ROOFTOP ARRAY

1
LABEL LOCATION:
PV AC COMBINER PANEL (BACK OF COVER)

INVERTERS / DISCONNECTS

PV SYSTEM
AC DISCONNECT

4
LABEL LOCATION:
AC DISCONNECT / BREAKER / POINTS OF CONNECTION
NEC 690.13(B)

⚠ WARNING
POWER SOURCE OUTPUT CONNECTION DO NOT RELOCATE THIS OVERCURRENT DEVICE

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

AC DISCONNECT		
PHOTOVOLTAICSYSTEM POWER SOURCE		
RATED AC OUTPUT CURRENT	12.8	AMPS
NOMINAL OPERATING AC VOLTAGE	240V	VOLTS

MAIN SERVICE PANEL / BREAKER / POINTS OF INTERCONNECTION / METER

⚠ WARNING
DUAL POWER SUPPLY
SOURCES: UTILITY GRID AND PV SOLAR ELECTRIC SYSTEM

7
LABEL LOCATION:
MAIN SERVICE DISCONNECT
NEC 705.12(C) AND 690.59

PHOTOVOLTAIC SYSTEM CONNECTED

9
LABEL LOCATION:
UTILITY METER
NEC 690.13(B)

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.

11
LABEL LOCATION:
DC DISCONNECT
NEC 690.56(C) IFC1204.5

	EQUIPMENT LABELS:
1	PV COMBINER PANEL
2	COMBINER BOX
3	RACEWAY OR CONDUIT
4	PV AC DISCONNECT
7	MAIN SERVICE PANEL
9	UTILITY METER
11	WITHIN 3' OF SERVICE DISCONNECTING MEANS

COLORADO LICENSED
DOMINGO A. VILLARUEL
PE.0049906
PROFESSIONAL ENGINEER
EXPIRES: 10/31/2023
signed: 08/31/2022

Independent POWER
1501 LEE HILL DR
BOULDER, CO 80304
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PROJECT NAME

BRETT BRUYERE
640 PETERSON ST,
FORT COLLINS, CO
80524, USA

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

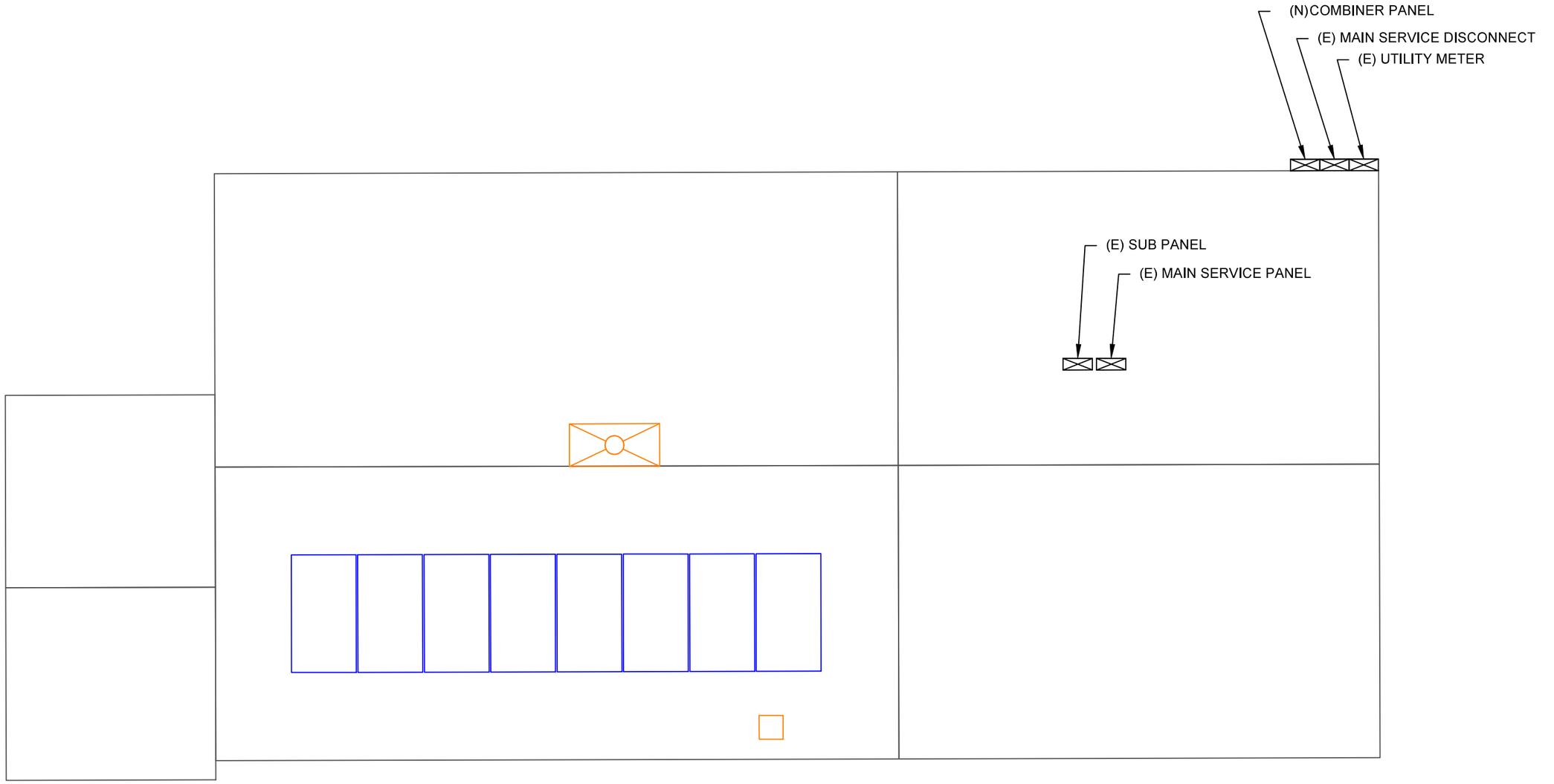
SHEET NUMBER
PV-6

BY
HARRISON

CAUTION:

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

AT: ⊠ METER AND MAIN SERVICE PANEL
AC PV LOAD CENTER



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PROJECT NAME

BRETT BRUYERE
640 PETERSON ST,
FORT COLLINS, CO
80524, USA

SHEET NAME
PLACARD

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-7

BY
HARRISON

M SERIES

SUNPOWER®

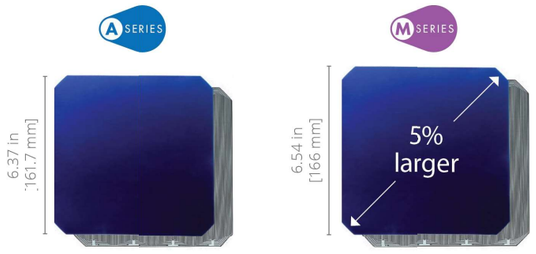
420-440W Residential AC Module

SunPower® Maxeon® Technology

Built specifically for use with the SunPower Equinox® system, the only fully integrated solar solution designed, engineered, and warranted by one company.

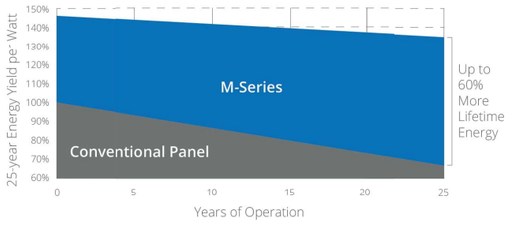
Highest Power AC Density Available.

The patented, solid-copper foundation Maxeon Gen 6 cell is over 5% larger than prior generations, delivering the highest efficiency AC solar panel available.[1]



Highest Lifetime Energy and Savings

Designed to deliver 60% more energy over 25 years in real-world conditions like partial shade and high temperatures.[2]



Best Reliability, Best Warranty

With more than 42.6 million and 15 GW modules deployed around the world, SunPower technology is proven to last. That's why we stand behind our module and microinverter with the industry's best 25-year Combined Power and Product Warranty.

Part of the SunPower Equinox® Solar System

- Compatible with mySunPower™ monitoring
- Seamless aesthetics

Factory-integrated Microinverter

- Highest-power integrated AC module in solar
- Engineered and calibrated by SunPower for SunPower AC modules

M-Series: M440 | M435 | M430 | M425 | M420 SunPower® Residential AC Module

AC Electrical Data		
Inverter Model: Type H (Enphase IQ7HS)	@240 VAC	@208 VAC
Max. Continuous Output Power (VA)	384	369
Nom. (L–L) Voltage/Range[3] (V)	240 / 211–264	208 / 183–229
Max. Continuous Output Current (Arms)	1.60	1.77
Max. Units per 20 A (L–L) Branch Circuit[4]	10	9
CEC Weighted Efficiency	97.0%	96.5%
Nom. Frequency	60 Hz	
Extended Frequency Range	47–68 Hz	
AC Short Circuit Fault Current Over 3 Cycles	4.82 A rms	
Overvoltage Class AC Port	III	
AC Port Backfeed Current	18 mA	
Power Factor Setting	1.0	
Power Factor (adjustable)	0.85 (inductive) / 0.85 (capacitive)	

DC Power Data	SPR-M440-H-AC	SPR-M435-H-AC	SPR-M430-H-AC	SPR-M425-H-AC	SPR-M420-H-AC
Nom. Power[6] (Pnom) W	440	435	430	425	420
Power Tolerance	+5/–0%				
Module Efficiency	22.8%	22.5%	22.3%	22.0%	21.7%
Temp. Coef. (Power)	–0.29% / °C				
Shade Tolerance	Integrated module-level max. power point tracking				

Tested Operating Conditions	
Operating Temp.	-40° F to +185°F (-40°C to +85°C)
Max. Ambient Temp.	122°F (50°C)
Max. Test Load[8]	Wind: 125 psf, 6000 Pa, 611 kg/m² back Snow: 187 psf, 9000 Pa, 917 kg/m² front
Max. Design Load	Wind: 75 psf, 3600 Pa, 367 kg/m² back Snow: 125 psf, 6000 Pa, 611 kg/m² front
Impact Resistance	1 inch (25 mm) diameter hail at 52 mph (23 m/s)

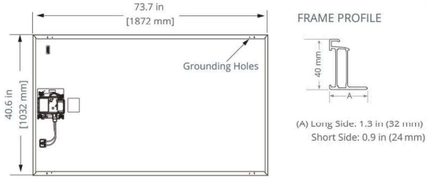
Mechanical Data	
Solar Cells	66 Maxeon Gen 6
Front Glass	High-transmission tempered glass with anti-reflective coating
Environmental Rating	Outdoor rated
Frame	Class 1 black anodized (highest AAMA rating)
Weight	48 lb (21.8 kg)
Recommended Max. Module Spacing	1.3 in. (33 mm)

Warranties, Certifications, and Compliance	
Warranties	• 25-year limited power warranty • 25-year limited product warranty
Certifications and Compliance	• UL 1741 / IEEE-1547 • UL 1741 AC Module (Type 2 fire rated) • UL 61730 • UL 62109-1 / IEC 62109-2 • FCC Part 15 Class B • ICES-0003 Class B • CAN/CSA-C22.2 NO. 107.1-01 • CA Rule 21 (UL 1741 SA)[5] (includes Volt/Var and Reactive Power Priority) • UL Listed PV Rapid Shutdown Equipment[7] Enables installation in accordance with: • NEC 690.6 (AC module) • NEC 690.12 Rapid Shutdown (inside and outside the array) • NEC 690.15 AC Connectors 690.33(A)–(E)(1) When used with AC module Q Cables and accessories (UL 6703 and UL 2238)[7]: • Rated for load break disconnect
PID Test	1000 V: IEC 62804

Packaging Configuration	
Modules per pallet	25
Packaging box dimensions	75.4 × 42.2 × 48.0 in. (1915 × 1072 × 1220 mm)
Pallet gross weight	1300.7 lb (590 kg)
Pallets per container	32
Net weight per container	41,623 lb (18,880 kg)

1 Based on datasheet review of websites of top 20 manufacturers per Wood Mackenzie US PV Leaderboard Q3 2021.
2 Maxeon 435 W, 22.5% efficient, compared to a Conventional Panel on same-sized arrays (260 W, 16% efficient, approx. 1.6 m²), 7.9% more energy per watt (based on PVSyst pan files for avg. US climate), 0.5%/yr slower degradation rate (Jordan, et. al. "Robust PV Degradation Methodology and Application."PVSC 2018).
3 Voltage range can be extended beyond nominal if required by the utility.
4 Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area.
5 Factory set to IEEE 1547a-2014 default settings. CA Rule 21 default settings profile set during commissioning.
6 Standard Test Conditions (1000 W/m² irradiance, AM 1.5, 25°C). All DC voltage is fully contained within the module.
7 UL Listed as PVRSE and conforms with NEC 2014 and NEC 2017 690.12; and C22.1-2015 Rule 64-218 Rapid Shutdown of PV Systems, for AC and DC conductors; when installed according to manufacturer's instructions.
8 Please read the safety and installation instructions for more information regarding load ratings and mounting configurations.

See www.sunpower.com/company for more reference information.
Specifications included in this datasheet are subject to change without notice.



Please read the safety and installation instructions for details.

UL LISTED
AC MODULE
GRID SUPPORT UTILITY INTERACTIVE
PV RAPID SHUTDOWN EQUIPMENT
E478330
Module Fire Performance: Type 2

539973 RevB
January 2022

Independent POWER

1501 LEE HILL DR
BOULDER, CO 80304
Permits@solarips.com
PH# (303) 443-0115

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BRETT BRUYERE
640 PETERSON ST,
FORT COLLINS, CO
80524, USA

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
SPEC SHEET-1

BY
HARRISON

SunPower® InvisiMount™ | Residential Mounting System

Simple and Fast Installation

- Integrated module-to-rail grounding
- Pre-assembled mid and end clamps
- Levitating mid clamp for easy placement
- Mid clamp width facilitates consistent, even module spacing
- UL 2703 Listed integrated grounding

Flexible Design

- Addresses nearly all sloped residential roofs
- Design in landscape and portrait with up to 8' rail span
- Pre-drilled rails and rail splice
- Rails enable easy obstacle management

Customer-Preferred Aesthetics

- #1 module and #1 mounting aesthetics
- Best-in-class system aesthetics
- Premium, low-profile design
- Black anodized components
- Hidden mid clamps and capped, flush end clamps

Part of Superior System

- Built for use with SunPower DC and AC modules
- Best-in-class system reliability and aesthetics
- Optional rooftop transition flashing, rail-mounted J-box, and wire management rail clips
- Combine with SunPower modules and SunPower EnergyLink® monitoring app

Elegant Simplicity

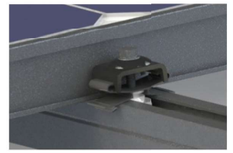
SunPower® InvisiMount™ is a SunPower-designed rail-based mounting system. The InvisiMount system addresses residential sloped roofs and combines faster installation time, design flexibility, and superior aesthetics. The InvisiMount product was specifically envisioned and engineered to pair with SunPower modules. The resulting system-level approach amplifies the aesthetic and installation benefits—for homeowners and for installers.

sunpower.com

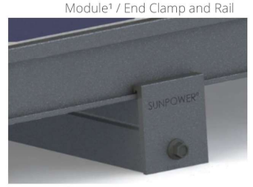
SunPower® InvisiMount™ | Residential Mounting System

InvisiMount Components

Module[1] / Mid Clamp and Rail



Module[1] / End Clamp and Rail



Ground Lug Assembly

Row-to-Row Spacer

End Clamp

Mid Clamp

Row-to-Row Grounding Clip

Rail and Rail Splice

InvisiMount Component Details		
Mid clamp	Black oxide stainless steel 300 series	63 g (2.2 oz)
End clamp	Black anodized aluminum 6000 series	110 g (3.88 oz)
Rail	Black anodized aluminum 6000 series	830 g/m (9 oz/ft)
Rail splice	Aluminum alloy 6000 series	830 g/m (9 oz/ft)
Rail bolt	M10-1.5 × 25 mm; custom T-head SS304	18 g (0.63 oz)
Rail nut	M10-1.5; DIN 6923 SS304	nominal
Ground lug assembly	SS304; A2-70 bolt; tin-plated copper lug	106.5 g (3.75 oz)
Row-to-row grounding clip	SS 301 with SS 304 M6 bolts	75 g (2.6 oz)
Row-to-row spacer	Black POM-grade plastic	5 g (0.18 oz)

InvisiMount Component LRFD Capacities[2]		
Mid clamp	Uplift	664 lbf
	Shear	540 lbf
End clamp	Uplift	899 lbf
	Shear	220 lbf
Rail	Moment: upward	548 lbf-ft
	Moment: downward	580 lbf-ft
Rail splice	Moment: upward	548 lbf-ft
	Moment: downward	580 lbf-ft
L-foot	Uplift	1000 lbf
	Shear	390 lbf

InvisiMount Operating Conditions	
Temperature	-40° C to 90° C (-40° F to 194° F)
Max. Load (LRFD)	• 3000 Pa uplift • 6000 Pa downforce

Roof Attachment Hardware Supported by Design Tool	
Application	• Composition Shingle Rafter Attachment • Composition Shingle Roof Decking Attachment • Curved and Flat Tile Roof Attachment • Universal interface for other roof attachments

InvisiMount Warranties And Certifications	
Warranties	• 25-year product warranty • 5-year finish warranty
Certifications	• UL 2703 Listed • Class A Fire Rated

Roof Attachment Hardware Warranties
Refer to roof attachment hardware manufacturer's documentation.

[1] Module frame that is compatible with the InvisiMount system required for hardware interoperability.
[2] SunPower recommends that all Equinox™, InvisiMount™, and AC module systems always be designed using the InvisiMount Span Tables #524734. If a designer decides to instead use the component capacities listed in this document to design a system, note that the capacities shown are Load and Resistance Factor Design (LRFD) design loads, and are NOT to be used for Allowable Stress Design (ASD) calculations; and that a licensed Professional Engineer (PE) must then stamp all calculations. If you have any questions please contact SunPower Technical Support at 1-855-977-7867.

sunpower.com
509506 RevF

Datasheet SUNPOWER®

Independent POWER
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80524, USA

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
SPEC SHEET-2

BY
HARRISON

Data Sheet
Enphase Q Cable Accessories
REGION: Americas

Enphase Q Cable Accessories

The **Enphase Q Cable**™ and accessories are part of the latest generation Enphase IQ System™. These accessories provide simplicity, reliability, and faster installation times.

Enphase Q Cable

- Two-wire, double-insulated Enphase Q Cable is 50% lighter than the previous generation Enphase cable
- New cable numbering and plug and play connectors speed up installation and simplify wire management
- Link connectors eliminate cable waste

Field-Wireable Connectors

- Easily connect Q cables on the roof without complex wiring
- Make connections from any open connector and center feed any section of cable within branch limits
- Available in male and female connector types

To learn more about Enphase offerings, visit **enphase.com**

ENPHASE.

Enphase Q Cable Accessories

CONDUCTOR SPECIFICATIONS	
Certification	UL3003 (raw cable), UL 9703 (cable assemblies), DG cable
Flame test rating	FT4
Compliance	RoHS, OIL RES I, CE, UV Resistant, combined UL for Canada and United States
Conductor type	THHN/THWN-2 dry/wet
Disconnecting means	The AC and DC bulkhead connectors have been evaluated and approved by UL for use as the load-break disconnect required by NEC 690.

Q CABLE TYPES / ORDERING OPTIONS				
Connectorized Models	**Size / Max Nominal Voltage**	**Connector Spacing**	**PV Module Orientation**	**Connector Count per Box**
Q-12-10-240	12 AWG / 277 VAC	1.3 m (4.2 ft)	Portrait	240
Q-12-17-240	12 AWG / 277 VAC	2.0 m (6.5 ft)	Landscape (60-cell)	240
Q-12-20-200	12 AWG / 277 VAC	2.3 m (7.5 ft)	Landscape (72-cell)	200

ENPHASE Q CABLE ACCESSORIES		
Name	**Model Number**	**Description**
Raw Q Cable	Q-12-RAW-300	300 meters of 12 AWG cable with no connectors
Field-wireable connector (male)	Q-CONN-10M	Make connections from any open connector
Field-wireable connector (female)	Q-CONN-10F	Make connections from any Q Cable open connector
Cable Clip	Q-CLIP-100	Used to fasten cabling to the racking or to secure looped cabling
Disconnect tool	Q-DISC-10	Disconnect tool for Q Cable connectors, DC connectors, and AC module mount
Q Cable sealing caps (female)	Q-SEAL-10	One needed to cover each unused connector on the cabling
Terminator	Q-TERM-10	Terminator cap for unused cable ends
Enphase EN4 to MC4 adaptor[1]	ECA-EN4-S22	Connect PV module using MC4 connectors to IQ micros with EN4 (TE PV4-S SOLARLOK). 150mm/5.9" to MC4.
Enphase EN4 non-terminated adaptor[1]	ECA-EN4-FW	For field wiring of UL certified DC connectors. EN4 (TE PV4-S SOLARLOK) to non-terminated cable. 150mm/5.9"
Enphase EN4 to MC4 adaptor (long)[1]	ECA-EN4-S22-L	Longer adapter cable for EN4 (TE PV4-S SOLARLOK) to MC4. Use with split cell modules or PV modules with short DC cable. 600mm/23.6"
Replacement DC Adaptor (MC4)	Q-DCC-2	DC adaptor to MC4 (max voltage 100 VDC)
Replacement DC Adaptor (UTX)	Q-DCC-5	DC adaptor to UTX (max voltage 100 VDC)

1. Qualified per UL subject 9703.

TERMINATOR
Terminator cap for unused cable ends, sold in packs of ten (Q-TERM-10)

SEALING CAPS
Sealing caps for unused aggregator and cable connections (Q-BA-CAP-10 and Q-SEAL-10)

DISCONNECT TOOL
Plan to use at least one per installation, sold in packs of ten (Q-DISC-10)

CABLE CLIP
Used to fasten cabling to the racking or to secure looped cabling, sold in packs of one hundred (Q-CLIP-100)

To learn more about Enphase offerings, visit **enphase.com**

2020-06-26

ENPHASE.

Independent POWER
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80524, USA

SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
SPEC SHEET-3

BY
HARRISON

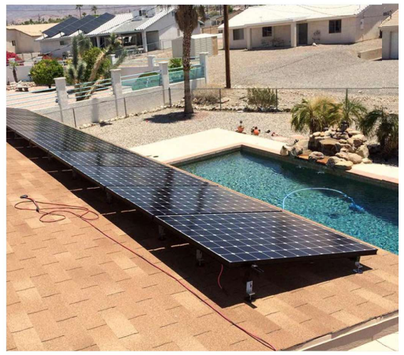
17662

17660, 17862

QB2 WITH 3" MICROFLASHING®

FOR ASPHALT, EPDM, & TPO ROOFS

PATENT # 8448407

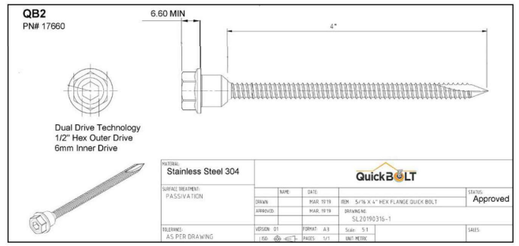


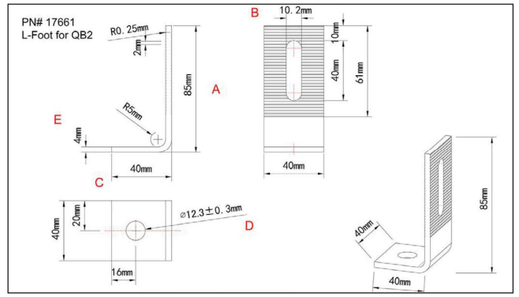
QuickBOLT

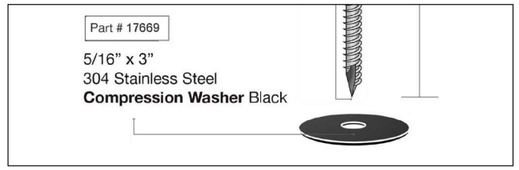
A DIVISION OF QUICKSCREWS INTERNATIONAL CORP

SPEC SHEET

Part #	Box Quantity
17660	4" QB2 (25)
17662	3" Microflashing® (25); 4" QB2 (25); L-Foot (25)







INSTALL INSTRUCTIONS

QB2 (17662)

RECOMMENDED MATERIALS

- Tools to locate and mark rafter
- Drill with a 15/64" drill bit
- MFG approved sealant (optional)
- 1/2" Nut Setter

INSTALLATION INSTRUCTIONS

1. Locate and mark the rafter
2. Predrill the hole
3. Optional: Fill the predrilled hole with MFG approved sealant
4. Optional: Place a ring of sealant around the bottom of the Microflashing® washer
5. Place the Microflashing®
6. Insert the Bolt into the L-Foot
7. Drive the Bolt until the Microflashing® is compressed

To compress Microflashing® properly with QB2 use a 150 minimum torque lbs/inch

UL CERTIFICATION

CERTIFICATE OF COMPLIANCE

Certificate Number	20191115-E493748
Report Reference	E493748-20170817
Issue Date	2019-NOVEMBER-15
Issued to:	QUICKBOLT A DIVISION OF QUICKSCREWS INTERNATIONAL CORP 5830 Las Positas Rd Livermore, CA 94551
This is to certify that representative samples of	COMPONENT - MOUNTING SYSTEMS, MOUNTING DEVICES, CLAMPING DEVICES AND GROUND LUGS FOR USE WITH PHOTOVOLTAIC MODULES AND PANELS (See Addendum for Additional Information.) Have been investigated by UL in accordance with the component requirements in the Standard(s) indicated on this Certificate. UL Recognized components are incomplete in certain constructional features or restricted in performance capabilities and are intended for installation in complete equipment submitted for investigation to UL LLC.
Standard(s) for Safety:	UL 2703 Standard for Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.
Additional Information:	See the UL Online Certifications Directory at www.ul.com/database for additional information

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.

Bruce Mahrenholz, Director North American Certification Program
UL LLC

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL. For questions, please contact a local UL Customer Service Representative at http://ul.com/aboutul/locations/

Page 1 of 2

CERTIFICATE OF COMPLIANCE

Certificate Number	20191115-E493748
Report Reference	E493748-20170817
Issue Date	2019-NOVEMBER-15

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

Addendum -

Models/Product

USR – Component, Roof Mounting Hook Units, Models: 15891 15893 15987 16000 16988 16990 16991 16993 17508 17509 17510 17511 17512 17513 17514 17515 17516 17517 17518 17519 17520 17521 17522 17523 17524 17525 17526 17527 17536 17537 17538 17539 17540 17541 17542 17543 17544 17545 17546 17547 17548 17549 17550 17551 17552 17553 17554 17555 17556 17558 17559 17560 17568 17569 17570 17571 17572 17573 17574 17575 17576 17577 17578 17579 17580 17585 17586 17587 17588 17589 17592 17596 17600 17601 17606 17607 17608 17609 17610 17611 17612 17613 17614 17615 17616 17617 17618 17620 17621 17622 17623 17624 17625 17626 17627 17628 17629 17630 17631 17632 17633 17636 17637 17638 17639 17642 17643 17646 17647 17648 17649 17650 17651 17659 17664 17667 17669 17670 17671 17672 17673 17678 17679 17680 17681 17686 17687 17688 17689 17700 17701 17702 17703 17704 17705 17706 17707 17708 17709 17710 17711 17712 17717 17718 17759 15891-10 15891BLK-1C 15987A 15987B 17667SS 17672SS 17680SS 17688SS 17713SS 17720 17721SS 17723 17724SS 17726 17727SS 17729 17730SS 15894SS 15891SS 15987BSS 17660 17661 17662 17663

Ratings: Overcurrent Protection Rating – 25 Amps

Bruce Mahrenholz, Director North American Certification Program
UL LLC

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Page 2 of 2

Independent POWER
1501 LEE HILL DR
BOULDER, CO 80304
Permits@solarips.com
PH# (303) 443-0115

REVISIONS

DESCRIPTION	DATE	REV
INITIAL DESIGN	7/13/2022	A

Signature with Seal

PROJECT NAME

BRETT BRUYERE
640 PETERSON ST,
FORT COLLINS, CO
80524, USA

SHEET NAME
COVER SHEET

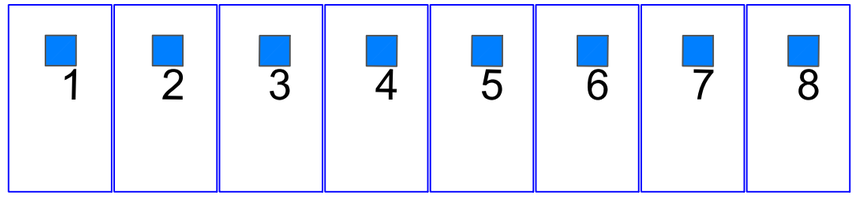
SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
SPEC SHEET-4

BY
HARRISON

MAX. STRING SIZE = 10

STRING 1 = 8



1 CIRCUIT LAYOUT

PV-3.0 SCALE: 51/256" = 1'-0"

Independent POWER

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640 PETERSON ST,
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SHEET NAME
COVER SHEET

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
(Internal) STRING MAP

BY
HARRISON

Fort Collins Utilities
electric · stormwater · wastewater · water
700 Wood Street
PO Box 580
Fort Collins, CO 80522

970.221.6700
970.221.6619 – fax
970.224.6003 – TDD
utilities@fcgov.com
fcgov.com/utilities

Project Approval and Rebate Reservation

for 640 Peterson St, Fort Collins, CO 80524

10/12/2022

Dear Brett L Bruyere,

Thank you for participating in our 2022 solar rebate program. We have reviewed your Distributed Energy Interconnection Application and have approved the project for installation based on the documents submitted.

Based on the preliminary sizing and performance estimates for your system, we are reserving a maximum incentive of $850.00 (Your final rebate amount will be based on the actual size, orientation and estimated performance of the system you install, including battery storage).

Our expectation is that your system will be installed within six months from the date of this rebate reservation confirmation. We encourage you to contact your installer to begin coordinating your installation schedule, which includes obtaining the required building permit. If at any point you determine you will not be able to proceed, please contact us.

Congratulations and please accept our acknowledgement of your commitment to a clean energy future. Please call us if you have any questions.

Todd Musci, Resource Conservation Specialist

Fort Collins Utilities Solar Rebate Program
fcgov.com/solar-rebates
970-224-6157