

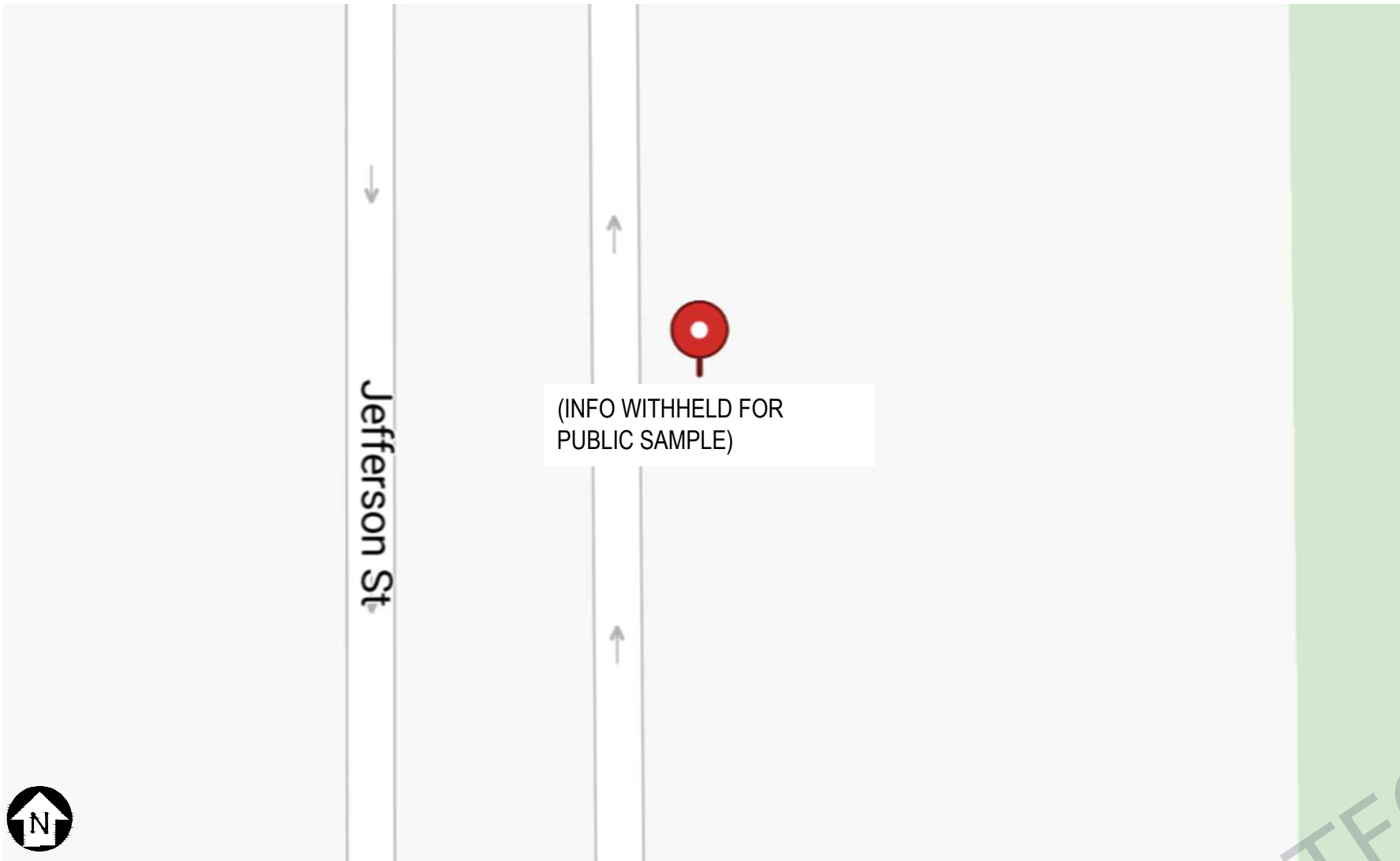
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PROJECT DETAILS	
PROPERTY OWNER	(INFO WITHHELD FOR PUBLIC SAMPLE)
OWNER ADDRESS	(INFO WITHHELD FOR PUBLIC SAMPLE)
OWNER EMAIL	(INFO WITHHELD FOR PUBLIC SAMPLE)
OWNER PHONE	(INFO WITHHELD FOR PUBLIC SAMPLE)
PROPERTY ADDRESS	(INFO WITHHELD FOR PUBLIC SAMPLE)
APN	(INFO WITHHELD FOR PUBLIC SAMPLE)
ZONING	RM - MEDIUM DENSITY RESIDENTIAL DISTRICT
AHJ	CITY OF LA QUINTA
CONST. TYPE	ROOF-MOUNTED PHOTOVOLTAIC ARRAY
OBSERVED CODES	2022 CALIFORNIA ADMINISTRATIVE CODE TITLE 24, PART 1 2022 CALIFORNIA BUILDING CODE TITLE 24, PART 2, VOL. 1 & 2 2022 CALIFORNIA ELECTRICAL CODE TITLE 24, PART 3 2022 CALIFORNIA MECHANICAL CODE TITLE 24, PART 4 2022 CALIFORNIA PLUMBING CODE TITLE 24, PART 5 2022 CALIFORNIA ENERGY CODE TITLE 24, PART 6 2022 CALIFORNIA FIRE CODE, TITLE 24, PART 9 2022 CALIFORNIA GREEN BUILDING STANDARDS CODE, TITLE 24, PART 11 2022 CALIFORNIA REFERENCED STANDARDS CODE, TITLE 24, PART 12 UNDERWRITERS LABORATORIES (UL) STANDARDS LA QUINTA MUNICIPAL CODE
STRUCT. METHOD	ASCE7-16

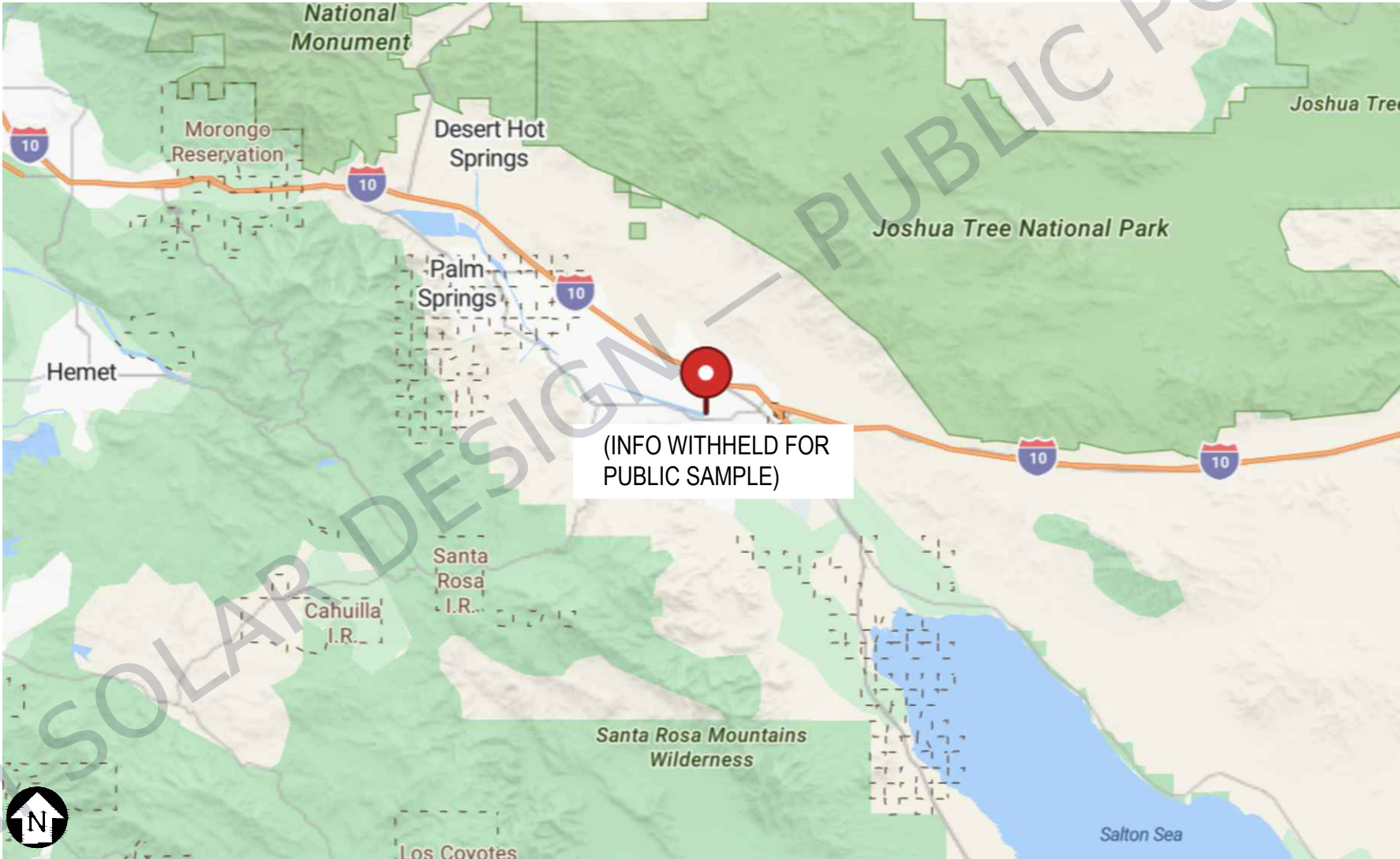
CONTRACTOR INFORMATION	
COMPANY	(INFO WITHHELD FOR PUBLIC SAMPLE)
LICENSE NO.	(INFO WITHHELD FOR PUBLIC SAMPLE)
ADDRESS	(INFO WITHHELD FOR PUBLIC SAMPLE)
PHONE	(INFO WITHHELD FOR PUBLIC SAMPLE)
CONTRACTOR SIGNATURE	

PLAN DESIGNER INFORMATION	
COMPANY	GEMINI SOLAR DESIGN, LLC.
NAME	SANJAY CHRISTOPHER MALLIPUDI
ADDRESS	495 HOWARD HEIGHTS ROAD FRESHWATER, CA 95503
PHONE	(609) 802-5743
PLAN DESIGNER SIGNATURE	<i>Sanjay Mallipudi</i>

SYSTEM DETAILS	
DC RATING OF SYSTEM	38,500W
TOTAL MAXIMUM CONTINUOUS OUTPUT AC CURRENT @ 208VAC, 3-Ø	81.36A @ 208VAC
MICROINVERTER	(77) ENPHASE IQ8H-3P-72-E-US
MODULE	(77) SILFAB SOLAR SIL-500 HM
BRANCH CONFIGURATION	1 BRANCH OF 2 MICROINVERTERS
INTERCONNECTION	5 BRANCHES OF 15 MICROINVERTERS LOAD-SIDE TAP



1 PLOT
PV-1 SCALE: NTS



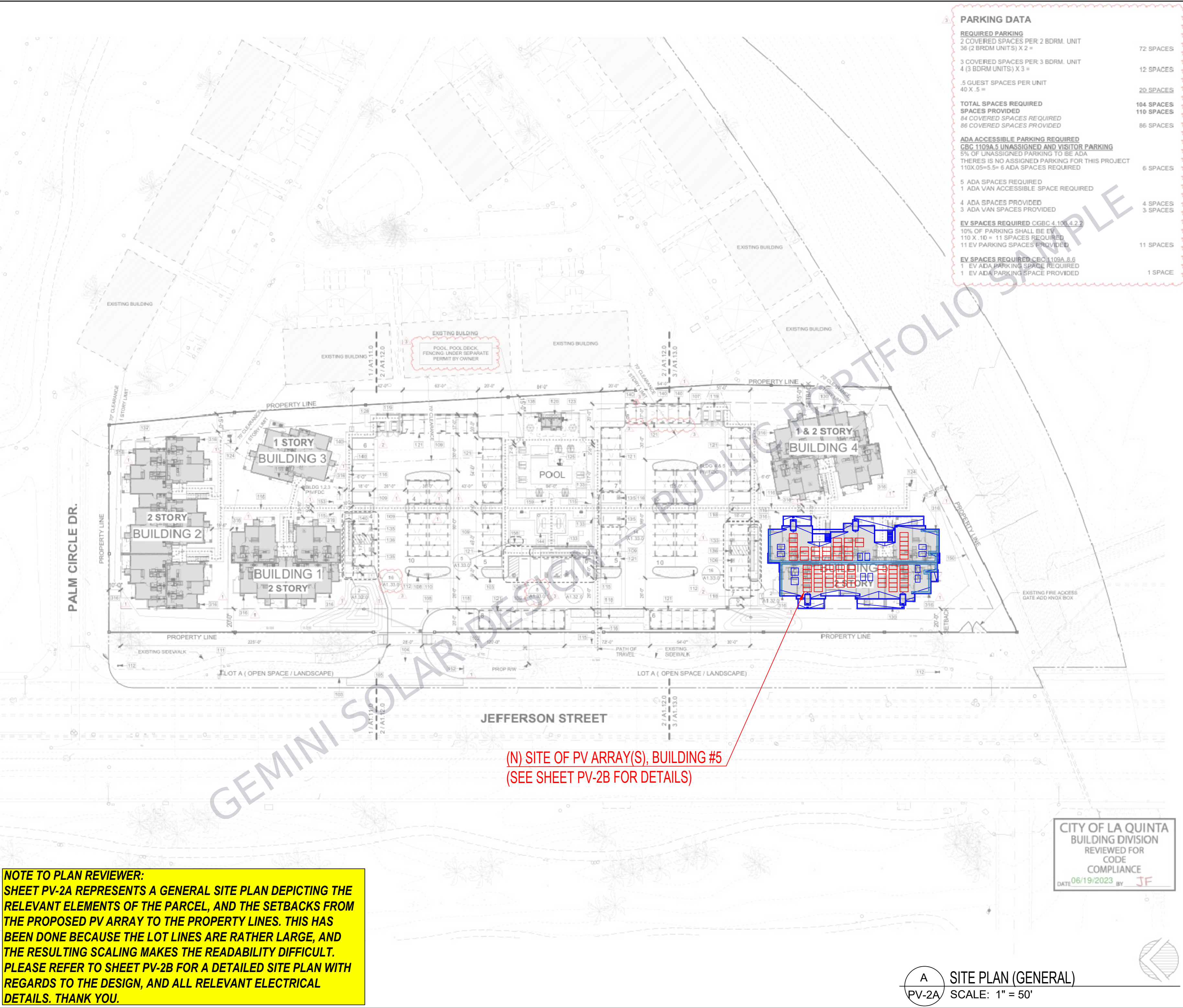
SITE SPECIFICATIONS	
UTILITY SERVICE	120 / 208VAC, 3-Ø, 4-WIRE (WYE)
ELECTRICAL DISTRIBUTION METER SWITCHBOARD	600A RATED BUSBAR 600A / 3P MAIN BREAKER
ASHRAE EXTREME ANNUAL MEAN MINIMUM DENSITY DRY BULB TEMP.	-5°C
ASHRAE 2% ANNUAL DRY DENSITY BULB TEMP.	44°C
DESIGN WIND SPEED	110 MPH
DESIGN SNOW LOAD	NONE
WIND EXPOSURE CATEGORY	C
SEISMIC DESIGN CATEGORY	D2 - RESIDENTIAL CODE; D - BUILDING CODE
RISK CATEGORY	II

2 LOCALE
PV-1 SCALE: NTS

CONSTRUCTION NOTES	
1	CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO INITIATING CONSTRUCTION.
2	CONTRACTOR SHALL REVIEW ALL MANUFACTURER INSTALLATION DOCUMENTS PRIOR TO INITIATING CONSTRUCTION.
3	ALL EQUIPMENT SHALL BE LISTED BY THE U.L. (OR EQUAL) AND LISTED FOR ITS SPECIFIC APPLICATION.
4	ALL EQUIPMENT SHALL BE RATED FOR THE ENVIRONMENT IN WHICH IT IS INSTALLED.
5	ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS.
6	ACCESS TO ELECTRICAL COMPONENTS OVER 150 VOLTS TO GROUND SHALL BE RESTRICTED TO QUALIFIED PERSONNEL.
7	ALL CONDUCTORS SHALL BE COPPER, RATED FOR 600 VOLTS AND 90°C WET ENVIRONMENT, UNLESS OTHERWISE NOTED.
8	WHERE SIZES OF JUNCTION BOXES, RACEWAYS, AND CONDUITS ARE NOT SPECIFIED, CONTRACTOR SHALL SIZE THEM ACCORDING TO APPLICABLE CODES.
9	PV MODULES FRAMES SHALL BE BONDED TO RACKING RAIL OR BARE COPPER G.E.C. PER THE MODULE MANUFACTURER'S LISTED INSTRUCTION SHEET.
10	PV MODULES RACKING RAIL SHALL BE BONDED TO BARE COPPER G.E.C VIA WEEB LUG, ILSCO GBL-4DBT LAY-IN LUG, OR EQUIVALENT LISTED LUG.
11	GROUNDING ELECTRODE CONDUCTOR (G.E.C) SHALL BE CONTINUOUS AND/OR IRREVERSIBLY SPLICED
12	ALL JUNCTION BOXES, COMBINER BOXES, AND DISCONNECTS SHALL BE INSTALLED IN AN ACCESSIBLE LOCATION.
13	WORKING SPACE AROUND ELECTRICAL EQUIPMENT SHALL COMPLY WITH CEC SECTION 110.26.

PROJECT DESCRIPTION	
THE PROPOSED SYSTEM IS A TILT-UP ROOF MOUNTED PHOTOVOLTAIC ARRAY UTILIZING MICROINVERTERS. THE PHOTOVOLTAIC (PV) SYSTEM IS TO BE INSTALLED ON THE "RM - MEDIUM DENSITY RESIDENTIAL DISTRICT" ZONED PROPERTY IN THE CITY OF LA QUINTA, CALIFORNIA. THE ENERGY PRODUCED BY THE PV SYSTEM SHALL BE INTERCONNECTED WITH THE UTILITY GRID THROUGH THE EXISTING ON-SITE ELECTRICAL EQUIPMENT VIA A LOAD-SIDE TAP POINT OF CONNECTION . THIS PROJECT DOES NOT INCLUDE STORAGE BATTERIES.	

(INFO WITHHELD)	
LICENSE NO. (INFO WITHHELD)	
PHONE: (INFO WITHHELD)	
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NEW GRID-TIED SYSTEM 38.5kW DC	(INFO WITHHELD FOR PUBLIC SAMPLE)
SHEET SIZE	
ANSI EXPAND C (22" X 17")	
PLAN DESIGNER SIG.	
<i>Sanjay Mallipudi</i>	
PROJECT INFO	
PROJECT NO: GSD-20260102-SCM	
DRAWN BY: SCM	
DATE: 1/2/2026	
PV-1	



PARKING DATA	
REQUIRED PARKING	
2 COVERED SPACES PER 2 BDRM. UNIT	72 SPACES
36 (2 BDRM UNITS) X 2 =	
3 COVERED SPACES PER 3 BDRM. UNIT	12 SPACES
4 (3 BDRM UNITS) X 3 =	
.5 GUEST SPACES PER UNIT	20 SPACES
40 X .5 =	
TOTAL SPACES REQUIRED	104 SPACES
SPACES PROVIDED	110 SPACES
84 COVERED SPACES REQUIRED	
86 COVERED SPACES PROVIDED	86 SPACES
ADA ACCESSIBLE PARKING REQUIRED	
CBC 1109A.5 UNASSIGNED AND VISITOR PARKING	
5% OF UNASSIGNED PARKING TO BE ADA	
THERE IS NO ASSIGNED PARKING FOR THIS PROJECT	
110X.05=5.5= 6 ADA SPACES REQUIRED	6 SPACES
5 ADA SPACES REQUIRED	
1 ADA VAN ACCESSIBLE SPACE REQUIRED	
4 ADA SPACES PROVIDED	4 SPACES
3 ADA VAN SPACES PROVIDED	3 SPACES
EV SPACES REQUIRED CGBC 4.106.4.2.2	
10% OF PARKING SHALL BE EV	
110 X .10 = 11 SPACES REQUIRED	
11 EV PARKING SPACES PROVIDED	11 SPACES
EV SPACES REQUIRED CBC 1109A.8.6	
1 EV ADA PARKING SPACE REQUIRED	
1 EV ADA PARKING SPACE PROVIDED	1 SPACE

(INFO WITHHELD)

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PHONE: (INFO WITHHELD)

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.

Sanjay Mallipudi

SITE PLAN

PROJECT NO: GSD-20260102-SCM

DRAWN BY: SCM

DATE: 1/2/2026

PV-2A



(N) MEDIUM DENSITY ZONED RESIDENTIAL STRUCTURE

18" FIRE ACCESS PATHWAYS
AS PER CAL FIRE REQUIREMENTS
(PURPLE HATCHED AREAS)

(N) PV ARRAY #2
180° AZIMUTH, 10° TILT-UP ON $\frac{1}{4}$: 12 PITCH
(44) SILFAB SOLAR SIL-500 HM
(44) ENPHASE IQ8H-3P-72-E-US

(N) PV ARRAY #1
180° AZIMUTH, 10° TILT-UP ON $\frac{1}{4}$: 12 PITCH
(33) SILFAB SOLAR SIL-500 HM
(33) ENPHASE IQ8H-3P-72-E-US

(N) NEMA 3R JUNCTION BOX (LOC. ON ROOF)
TRANSITION FROM #12 ENPHASE RAW QD
CABLE TO #8 THWN-2, CU CONDUCTORS
TO BE RAN INSIDE 1.25" DIA. EMT CONDUIT

(N) NEMA 3R JUNCTION BOX (LOC. ON ROOF)
TRANSITION FROM #12 ENPHASE RAW QD
CABLE TO #8 THWN-2, CU CONDUCTORS
TO BE RAN INSIDE 1.25" DIA. EMT CONDUIT

(N) IQ GATEWAY COMMERCIAL 2
MODEL: ENV-IQ8-AM3-3P
SHALL BE POWERED BY (N) 20A / 3P
CIRCUIT BREAKER LOCATED IN
THE 125A SOLAR-ONLY LOAD CENTER
(LOC. IN ELECTRICAL CLOSET)

(N) 125A SOLAR-ONLY LOAD CENTER
120 / 208VAC - 3 ϕ - 4W - NEMA 3R, MLO
(LOC. IN ELECTRICAL CLOSET)

(N) UTILITY AC DISCONNECT (DS1),
MODEL: SQUARE D D324NRB
200A RATED, 3 ϕ - 4-WIRE, 3-POLE
EQUIP WITH (3) X 110A FUSES, 240VAC
DISCONNECT SHALL BE A VISIBLE, LOCKABLE,
KNIFE SWITCH DISCONNECT AS PER UTILITY
MEANS OF DISCONNECTION FOR THE
LOAD-SIDE TAP POINT OF CONNECTION
(LOC. IN ELECTRICAL CLOSET)

(N) ELECTRICAL DISTRIBUTION METER
SWITCHBOARD, BUILDING #5
120 / 208Y, 3- ϕ , 4-WIRE
600A / 3P MAIN BREAKER, 600A BUS

(N) LOAD-SIDE TAP POINT OF INTERCONNECTION
AS PER CEC 240.21(B)(1) & CEC 705.12
(TO TAKE PLACE WITHIN THE NON-EUSERC TERMINATION BOX. THE NON-EUSERC
TERMINATION BOX WILL BE OUR SOLAR PROVISION FOR INTERCONNECTION TO
THE GRID. THE TERMINATION BOX HAS PRE-INSTALLED LUGS (3 PHASES AND A
NEUTRAL) WHERE WE WILL LAND THE OUTPUT SOLAR CIRCUIT CONDUCTORS FOR
INTERCONNECTION TO THE GRID)

(LOC. IN ELECTRICAL CLOSET)

SITE PLAN NOTES

- 1 CONDUCTORS EXPOSED TO SUNLIGHT SHALL BE LISTED AS SUNLIGHT RESISTANT PER CEC 319.0(D).
- 2 CONDUCTORS EXPOSED TO WET LOCATIONS SHALL BE SUITABLE FOR USE IN WET LOCATIONS PER CEC 310.8(C).
- 3 ARRAYS SHALL BE INSTALLED IN A WAY THAT ENSURES THAT PV SOURCE CONDUCTORS SHALL NOT BE READILY ACCESSIBLE.
- 4 EMT CONDUIT SHALL BE PLACED AT A MINIMUM HEIGHT OF $\frac{7}{8}$ " ABOVE THE ROOF DECK.

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.

Sanjay Mallipudi

SITE PLAN

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

A SITE PLAN (DETAILED)
PV-2B SCALE: 1" = 12'

PV-2B



CENTER-TAP

CENTER-TAP

CENTER-TAP

CENTER-TAP

- 1 BRANCH OF 2 MICROINVERTERS (ENPHASE IQ8H-3P-72-E-US)
- 1 BRANCH OF 15 MICROINVERTERS (ENPHASE IQ8H-3P-72-E-US)
- 1 BRANCH OF 15 MICROINVERTERS (ENPHASE IQ8H-3P-72-E-US)
- 1 BRANCH OF 15 MICROINVERTERS (ENPHASE IQ8H-3P-72-E-US)
- 1 BRANCH OF 15 MICROINVERTERS (ENPHASE IQ8H-3P-72-E-US)
- 1 BRANCH OF 15 MICROINVERTERS (ENPHASE IQ8H-3P-72-E-US)

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE
ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.
Sanjay Mallipudi

STRINGING CONFIG.

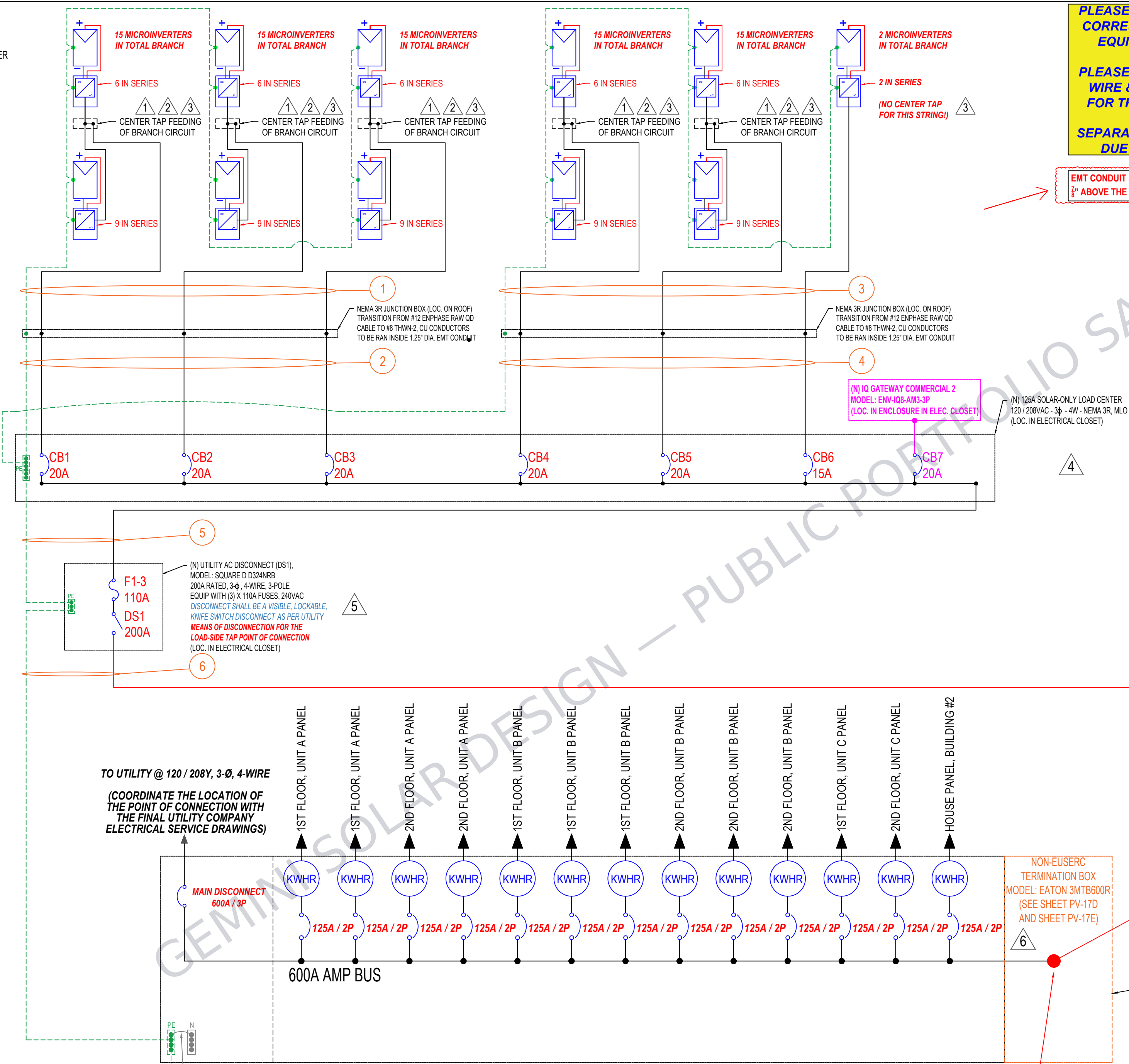
PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

PV-2C

(TYP. OF 2 JUNCTION BOXES)
THIS IS A JUNCTION BOX, NOT A CENTER-TAP
TRANSITION FROM #12 ENPHASE RAW QD
CABLE TO #8 THWN-2, CU CONDUCTORS
TO BE RAN INSIDE 1.25" DIA. EMT CONDUIT

A
PV-2C
STRINGING & CENTER-TAP MAP
SCALE: 1" = 8'

PM1-77
500W
(TYP. OF 77 UNITS)
ENPHASE MICROINVERTER
MODEL: IQ8H-3P-72-E-US



UFR GROUND SYSTEM
REFER TO THE PROJECT GENERAL NOTES "GROUNDING" #2/0 CU TO
METALLIC COLD WATER (SECTION 250.104(A), #1 CU TO METALLIC GAS
PIPING (SECTION 250.104(B), #4 BARE COPPER ENCASED IN 2" OF
CONCRETE 20' LENGTH, 1#6-3/4" TO 5/8" X 8' COPPER GROUND ROD
1#6-3/4" TO THE MAIN COMMUNICATION CABINET

(N) LOAD-SIDE TAP POINT OF INTERCONNECTION, AS PER CEC 240.21(B)(1) & CEC 705.12
(TO TAKE PLACE WITHIN THE NON-EUSERC TERMINATION BOX. THE NON-EUSERC TERMINATION
BOX WILL BE OUR SOLAR PROVISION FOR INTERCONNECTION TO THE GRID. THE TERMINATION
BOX HAS PRE-INSTALLED LUGS (3 PHASES AND A NEUTRAL) WHERE WE WILL LAND THE OUTPUT
SOLAR CIRCUIT CONDUCTORS FOR INTERCONNECTION TO THE GRID)

A
PV-3A

SINGLE-LINE DIAGRAM
SCALE: N/A

(INFO WITHHELD)	
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NEW GRID-TIED SYSTEM 38.5kW DC	(INFO WITHHELD FOR PUBLIC SAMPLE)
SHEET SIZE	
ANSI EXPAND C (22" X 17")	
PLAN DESIGNER SIG.	
Sanjay Mallipudi	
SINGLE-LINE DIAGRAM	
PROJECT NO: GSD-20260102-SCM	
DRAWN BY: SCM	
DATE: 1/2/2026	
PV-3A	

PV MODULE										
REF.	TYP.	MODULE	STC POWER	ISC	IMP	VOC	VMP	SERIES FUSE RATING		
PM1-77	77	SILFAB SOLAR SIL-500 HM	500W	13.48A	12.89A	45.78V	38.80V	25A		

MICROINVERTER										
REF.	TYP.	MICROINVERTER	GROUND	NOMINAL (L-L) VOLTAGE/RANGE	MAX OCPD SIZE	MAXIMUM CONTINUOUS OUTPUT POWER	MAXIMUM CONTINUOUS OUTPUT CURRENT	MAX. DC CONTINUOUS CURRENT (MODULE IMP)	MAXIMUM INPUT DC VOLTAGE	CEC WEIGHTED EFFICIENCY
I1-77	77	ENPHASE IQ8H-3P-72-E-US	INTEGRATED	208VAC / 183–229VAC	20A	380W	1.056A (3-Ø)	14A	63VDC	96.5%

SYSTEM SUMMARY						
	BRANCH #1	BRANCH #2	BRANCH #3	BRANCH #4	BRANCH #5	BRANCH #6
INVERTERS PER BRANCH	15	15	15	15	15	2
MAX AC CURRENT @ 208VAC, 3-Ø	15.85A	15.85A	15.85A	15.85A	15.85A	2.12A
MAX AC OUTPUT POWER	5,700W	5,700W	5,700W	5,700W	5,700W	760W
ARRAY STC POWER	38,500W					
TOTAL MAX AC CURRENT @ 208VAC, 3-Ø	81.36A					
TOTAL MAX AC POWER	29,260W					

SCHEMATIC NOTES	
1	FIELD WIREABLE ADAPTER CABLE & CONNECTOR FOR CENTER FEEDING OF AC BRANCH CIRCUIT FIELD WIREABLE ADAPTER CABLES (QD-LINKFW-10)
2	FIELD WIREABLE ADAPTER CABLE & CONNECTOR FOR CENTER FEEDING OF AC BRANCH CIRCUIT THREE PHASE MALE FIELD WIREABLE (QD-CONN-10M)
3	THE FIRST AC CONNECTOR IN EACH MICROINVERTER BRANCH CIRCUIT IS SUITABLE AS A DISCONNECTING MEANS.
4	OUTPUT OF THE MICROINVERTER BRANCH CIRCUITS SHALL BE BACKFED INTO A 125A SOLAR-ONLY COMBINER PANEL FOR COMBINATION PURPOSES. PLEASE SEE THE OCPD SCHEDULE FOR THE BREAKER SIZES FOR EACH BRANCH CIRCUIT, RESPECTIVELY.
5	DISCONNECT SHALL BE A VISIBLE, LOCKABLE, KNIFE SWITCH DISCONNECT AS PER UTILITY.
6	LOAD-SIDE TAP POINT OF INTERCONNECTION SHALL TAKE PLACE AS PER CEC 240.21(B)(1) & CEC 705.12. LENGTH OF TAP CONDUCTORS SHALL NOT EXCEED 10 FEET.

OCPD SCHEDULE				
REF.	TYP.	POLES	CURRENT RATING	RATED VOLTAGE
CB1 (ENPHASE BRANCH CIRCUIT)	1	3	20A	208VAC
CB2 (ENPHASE BRANCH CIRCUIT)	1	3	20A	208VAC
CB3 (ENPHASE BRANCH CIRCUIT)	1	3	20A	208VAC
CB4 (ENPHASE BRANCH CIRCUIT)	1	3	20A	208VAC
CB5 (ENPHASE BRANCH CIRCUIT)	1	3	20A	208VAC
CB6 (ENPHASE BRANCH CIRCUIT)	1	3	15A	208VAC
CB7 (ENPHASE IQ GATEWAY COMMERCIAL 2)	1	3	20A	208VAC
F1-3 (UTILITY AC DISCONNECT FUSES, DS1)	3	N/A	110A	208VAC

UTILITY AC DISCONNECT SCHEDULE				
REF.	FUSIBLE	POLES	CURRENT RATING	RATED VOLTAGE
UTILITY AC DISCONNECT (DS1) MODEL: SQUARE D D324NRB 3-POLE KNIFE DISCONNECT, FUSIBLE	YES	3	200A	240VAC

EMT CONDUIT SHALL BE PLACED AT A MINIMUM HEIGHT OF 7 7/8" ABOVE THE ROOF DECK.

A

PV-3B

SINGLE-LINE DIAGRAM

SCALE: N/A



EMT CONDUIT SHALL BE PLACED AT A MINIMUM HEIGHT OF 7' 8" ABOVE THE ROOF DECK.

(INFO WITHHELD)
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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE
ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.
Sanjay Mallipudi

SINGLE-LINE DIAGRAM

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

PV-3B

CONDUCTOR SCHEDULE WITH CEC ELECTRICAL CALCULATIONS																	(INFO WITHHELD) LICENSE NO. (INFO WITHHELD) PHONE: (INFO WITHHELD)	
ID	TYP	DESCRIPTION	CONDUCTOR	CONDUIT	NO. OF CURRENT CARRYING CNDRS. IN CNDT.	FILL %	RATED AMPS	OCPD	EGC	TEMP. CORR. FACTOR @ 90°C TEMP. RATING	FILL ADJ. FACTOR	CONT. CURRENT	MAX. CURRENT	TERMINAL RATING CHECK @ 75°C TEMP. RATING SHALL EXCEED 1.25X CONT. CURRENT	BASE AMPACITY @ 90°C TEMP. RATING	CONDITIONS OF USE (COU) @ 90°C TEMP. RATING	CONFIDENTIAL: THE INFORMATION CONTAINED IN THIS DRAWING SET IS CONFIDENTIAL AND SHALL NOT BE DISCLOSED IN FULL OR IN PART TO ANYONE EXCEPT THOSE INVOLVED IN THE DESIGN AND INSTALLATION OF THE PV SYSTEM REPRESENTED IN THIS PLAN.	
1	3	MICROINVERTER OUTPUT: MICROINVERTER TO JUNCTION BOX	12 AWG THWN-2 COPPER (ENPHASE RAW QD CABLE)	FREE AIR (DIRECT HOMERUN TO J-BOX LOCATED UNDER THE SOLAR MODULE)	N/A	N/A	15.85A (BRANCH #1) 15.85A (BRANCH #2) 15.85A (BRANCH #3)	N/A	6 AWG BARE COPPER	0.58 (66°C)	1.0	15.85A (BRANCH #1) 15.85A (BRANCH #2) 15.85A (BRANCH #3)	19.82A (BRANCH #1) 19.82A (BRANCH #2) 19.82A (BRANCH #3)	25A ≥ 19.82A PASS	40A (IN FREE AIR)	23.2A (IN FREE AIR)		
2	1	MICROINVERTER OUTPUT (TRANSITIONED): JUNCTION BOX TO 125A SOLAR-ONLY LOAD CENTER	8 AWG THWN-2 COPPER	1 1/4" DIA. EMT	9 (L1, L2, L3) X 3 *(NEUTRAL IS NOT A CCC IN THIS DESIGN)*	30.1%	15.85A (BRANCH #1) 15.85A (BRANCH #2) 15.85A (BRANCH #3)	20A / 3P (CB1) 20A / 3P (CB2) 20A / 3P (CB3)	10 AWG THWN-2 COPPER	0.58 (66°C)	0.7	15.85A (BRANCH #1) 15.85A (BRANCH #2) 15.85A (BRANCH #3)	19.82A (BRANCH #1) 19.82A (BRANCH #2) 19.82A (BRANCH #3)	50A ≥ 19.82A PASS	55A (IN CONDUIT)	22.33A (IN CONDUIT)		
3	3	MICROINVERTER OUTPUT: MICROINVERTER TO JUNCTION BOX	12 AWG THWN-2 COPPER (ENPHASE RAW QD CABLE)	FREE AIR (DIRECT HOMERUN TO J-BOX LOCATED UNDER THE SOLAR MODULE)	N/A	N/A	15.85A (BRANCH #4) 15.85A (BRANCH #5) 2.12A (BRANCH #6)	N/A	6 AWG BARE COPPER	0.58 (66°C)	1.0	15.85A (BRANCH #4) 15.85A (BRANCH #5) 2.12A (BRANCH #6)	19.82A (BRANCH #4) 19.82A (BRANCH #5) 2.65A (BRANCH #6)	25A ≥ 19.82A PASS	40A (IN FREE AIR)	23.2A (IN FREE AIR)		
4	1	MICROINVERTER OUTPUT (TRANSITIONED): JUNCTION BOX TO 125A SOLAR-ONLY LOAD CENTER	8 AWG THWN-2 COPPER	1 1/4" DIA. EMT	9 (L1, L2, L3) X 3 *(NEUTRAL IS NOT A CCC IN THIS DESIGN)*	30.1%	15.85A (BRANCH #4) 15.85A (BRANCH #5) 2.12A (BRANCH #6)	20A / 3P (CB4) 20A / 3P (CB5) 15A / 3P (CB6)	10 AWG THWN-2 COPPER	0.58 (66°C)	0.7	15.85A (BRANCH #4) 15.85A (BRANCH #5) 2.12A (BRANCH #6)	19.82A (BRANCH #4) 19.82A (BRANCH #5) 2.65A (BRANCH #6)	50A ≥ 19.82A PASS	55A (IN CONDUIT)	22.33A (IN CONDUIT)		
5	1	COMBINED OUTPUT OF MICROINVERTERS: 125A SOLAR-ONLY LOAD PANEL TO UTILITY AC DISCONNECT (DS1)	1 AWG THWN-2 COPPER	1 1/2" DIA. EMT	3 (L1, L2, L3) X 1 *(NEUTRAL IS NOT A CCC IN THIS DESIGN)*	33.2%	81.36A	110A (F1-3) 200A / 3P (DS1)	6 AWG THWN-2 COPPER	0.87 (44°C)	1.0	81.36A	101.7A	130A ≥ 101.7A PASS	150A (IN CONDUIT)	130.5A (IN CONDUIT)		
6	1	UTILITY AC DISCONNECT (DS1) OUTPUT: UTILITY AC DISCONNECT (DS1) TO LOAD-SIDE TAP P.O.C. (TO BE MADE AS PER NEC 240.21(B)(1) & NEC 705.12)	1 AWG THWN-2 COPPER	1 1/2" DIA. EMT	3 (L1, L2, L3) X 1 *(NEUTRAL IS NOT A CCC IN THIS DESIGN)*	33.2%	81.36A	N/A	6 AWG THWN-2 COPPER	0.87 (44°C)	1.0	81.36A	101.7A	130A ≥ 101.7A PASS	150A (IN CONDUIT)	130.5A (IN CONDUIT)		
ALL CONDUCTORS, OCPD SIZES AND TYPES SPECIFIED ACCORDING TO CEC ARTICLES 690.8(A)(1), CEC ARTICLE 240, AND CEC ARTICLE 690.7.																	NEW GRID-TIED SYSTEM 38.5kW DC	(INFO WITHHELD FOR PUBLIC SAMPLE)
EMT CONDUIT SHALL BE PLACED AT A MINIMUM HEIGHT OF 7 7/8" ABOVE THE ROOF DECK.																		
																	SHEET SIZE ANSI EXPAND C (22" X 17")	
																	PLAN DESIGNER SIG. Sanjay Mallipudi	
																	SINGLE-LINE DIAGRAM	
																	PROJECT NO: GSD-20260102-SCM DRAWN BY: SCM DATE: 1/2/2026	
																	PV-3C	

JUNCTION BOX

1 JUNCTION BOX

⚠ WARNING ⚠
PHOTOVOLTAIC
POWER SOURCE

CEC 690.31(E)(3),(4)

2 JUNCTION BOX

⚡ DO NOT
DISCONNECT
UNDER LOAD ⚡

CEC 690.16(B)

UTILITY AC DISCONNECT (DS1)

3 UTILITY AC DISCONNECT (DS1)

PHOTOVOLTAIC SYSTEM
AC DISCONNECT
OPERATING CURRENT 81.36 AMPS
OPERATING VOLTAGE 208 VOLTS

CEC 690.14(C)(2) & CEC 690.54

4 UTILITY AC DISCONNECT (DS1)

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

CEC 690.17.4

5 UTILITY AC DISCONNECT (DS1)

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

CEC 705.12(D)(7)

6 UTILITY AC DISCONNECT (DS1)

SOLAR AC DISCONNECT

CEC 690.14(C)(2)

RACEWAYS

7 RACEWAYS, CABLES PER 10 FT.

⚠ WARNING ⚠
PHOTOVOLTAIC
POWER SOURCE

CEC 690.31(E)(3),(4)

SOLAR-ONLY LOAD CENTER

8 TOTAL SOLAR BACKFED CURRENT

PHOTOVOLTAIC SYSTEM
AC DISCONNECT
OPERATING CURRENT 81.36 AMPS
OPERATING VOLTAGE 208 VOLTS

CEC 690.14(C)(2) & CEC 690.54

9 SOLAR-ONLY LOAD CENTER

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

CEC 705.12(D)(7)

10 SOLAR-ONLY LOAD CENTER

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

CEC 690.17.4

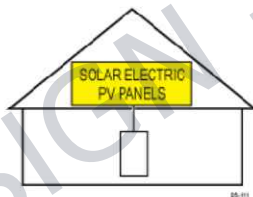
11 SOLAR-ONLY LOAD CENTER

⚠ WARNING ⚠
SOLAR ELECTRIC BREAKER IS BACKFED

12 SOLAR-ONLY LOAD CENTER

SOLAR PV SYSTEM EQUIPPED
WITH RAPID SHUTDOWN

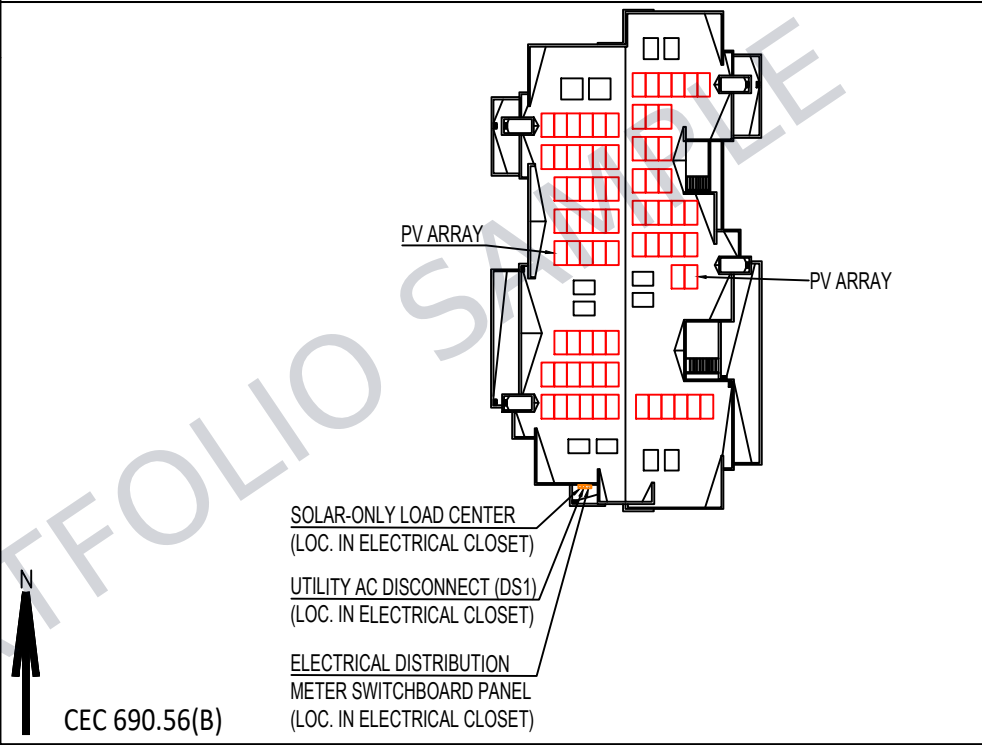
TURN RAPID SHUTDOWN
SWITCH TO THE
'OFF' POSITION TO
SHUT DOWN PV SYSTEM
AND REDUCE
SHOCK HAZARD
IN THE ARRAY



ELECTRICAL DISTRIBUTION
METER SWITCHBOARD PANEL

13 ELECTRICAL DISTRIBUTION METER SWITCHBOARD PANEL

⚡ CAUTION ⚡
POWER TO THIS SERVICE IS ALSO SUPPLIED FROM
THE FOLLOWING SOURCES WITH DISCONNECTS
LOCATED AS SHOWN



CEC 690.56(B)

RAPID SHUTDOWN SWITCHES SHALL HAVE
A LABEL LOCATED ON OR NO MORE THAN
1 M (3 FT) FROM THE SWITCH

RAPID SHUTDOWN
SWITCH FOR
SOLAR PV SYSTEM

SIGNAGE REQUIREMENTS	
1	ALL PLACARDS AND SIGNAGE REQUIRED BY THE 2022 CEC, AND ANY OTHER STATE CODES OR LOCAL ORDINANCES WILL BE INSTALLED AS REQUIRED.
2	RED BACKGROUND
3	WHITE LETTERING
4	MINIMUM 3/8" LETTER HEIGHT
5	ALL CAPITAL LETTERS
6	ARIAL OR SIMILAR FONT
7	WEATHER RESISTANT MATERIAL, PER UL 969

(INFO WITHHELD)
LICENSE NO. (INFO WITHHELD)
PHONE: (INFO WITHHELD)

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DESIGN AND INSTALLATION OF THE PV SYSTEM
REPRESENTED IN THIS PLAN.

NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE
ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.
Sanjay Mallipudi

PLACARDS

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

PV-4

Project Details			
Name		Date	01/02/2026
Location		Total modules	77
Module	Silfab: SIL-500HM (35mm)	Total watts	38,500
Dimensions	Dimensions: 82.6" x 44.61" x 1.38" (2098.0mm x 1133.0mm x 35.0mm)	Attachments	112
ASCE	7-16	Tilt	10°
Inter-row spacing	29.0" Calculated using solar azimuth of -39.94° and solar elevation of 20.91° at 9AM (America/Los_Angeles) on the winter solstice.		



Roof Information			
Roof material family	Membrane	Roof material	TPO
Roof attachment	Flat Roof Attachment	Rafter spacing	24"
Roof manufacturer	Carlisle	Color	White
Thickness	Unknown	Roof material	TPO

Load Assumptions	
Wind exposure	C
Wind speed	110 mph
Ground snow load	0 psf
Attachment spacing	6.0'
Site Elevation	80.0 ft
S _{ps}	1.1

Building Details	
Roof slope	0-7°
Risk category	II
Building height	30 ft
Building north-south	100.0 ft
Building east-west	100.0 ft
Parapet height	6.0 in

Span Details XR100 - Portrait			
Zone	Module Position	Max span	Max cantilever
Zone1	Normal	9'	3'
Zone2	Normal	8'	3'
Zone3	Normal	7' 5"	3'

Reaction Forces XR100 - Portrait								
Zone	Module Position	Uplift (PSF)	Compressive (PSF)	Down (lbs)	Uplift (lbs)	Lateral Perp (lbs)	Lateral Par (lbs)	Moment (lbs-ft)
Zone1	Normal	13	16	348	246	76	85	48
Zone2	Normal	18	21	446	344	76	85	65
Zone3	Normal	21	24	516	414	76	86	77

The provided reactions are ASD (Allowable Stress Design) forces per ASCE 7 Section 2.4 and present combined load effects. Attachment capacity testing does not include the connection of the assembly to the underlying roof deck. Further evaluation of the screw requirement as well as verifying the structural capacity of the roof deck and adequacy of FRA's connection to the roof will be the responsibility of the system designer.

Weights and Loads

Total system weight	5,327.4 lbs
Weight/attachment	47.6 lbs
Racking weight	879.9 lbs
Distributed weight	2.7 psf

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.

Sanjay Mallipudi

SITE-SPECIFIC REPORT

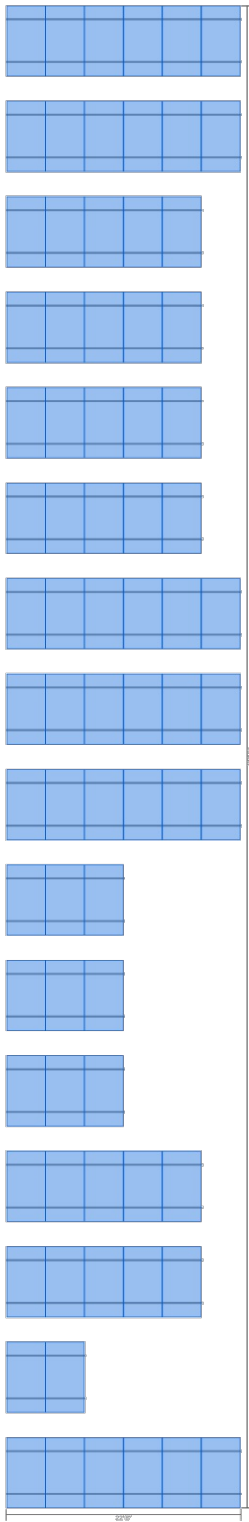
PROJECT NO: GSD-20260102-SCM

DRAWN BY: SCM

DATE: 1/2/2026

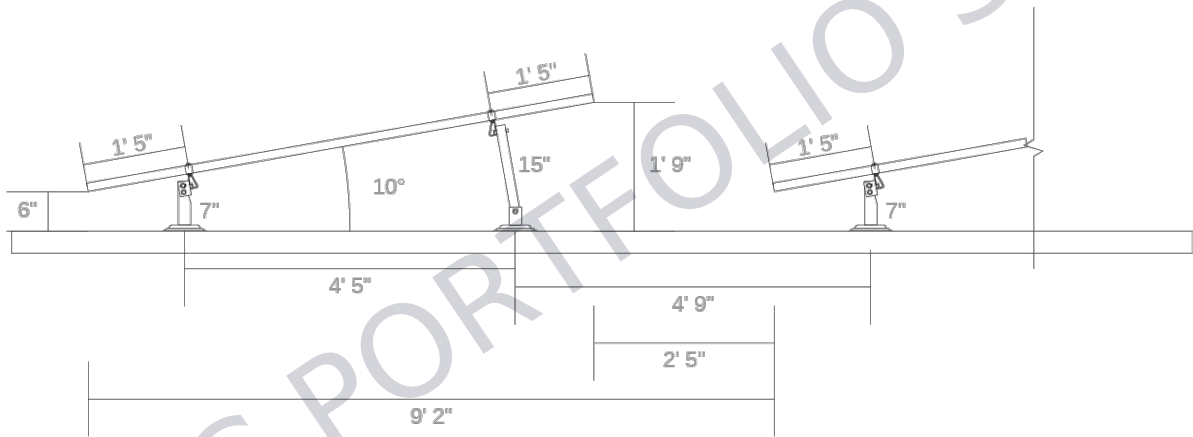
Roof Section 1		
Definition	Roof Section Weights	Roof Section (all segments)
77 modules	Total weight: 5,327.4 lbs	Provided rail: 858' 8" [56 x 184"]
East-West rail orientation	Weight/attachment: 47.6 lbs	Attachments: 112
Portrait module orientation	Total Area: 1,971.4 sq ft	Splices: 24
Graphical entry	Distributed weight: 2.7 psf	

Diagram

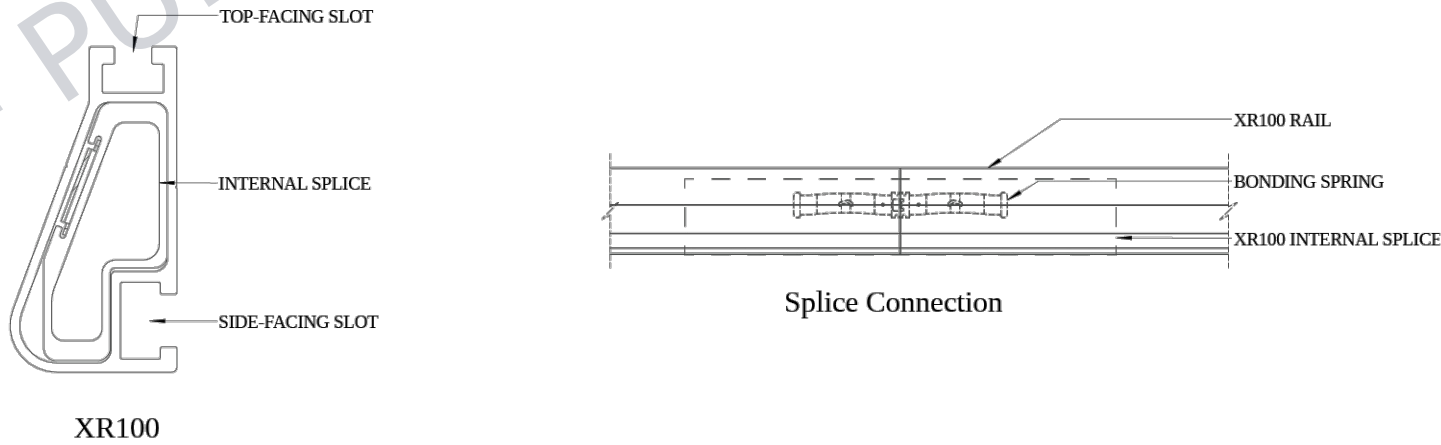


Segments						
Columns	Row length	Rail length	Cantilever	Rail	Attachments	Splices
6	22' 8"	22' 8"	2' 4"	61' 4" [4 x 184"]	8	2
Row segment totals (x 6) →				368' [24 x 184"]	48	12
5	18' 11"	18' 11"	5"	61' 4" [4 x 184"]	8	2
Row segment totals (x 6) →				368' [24 x 184"]	48	12
3	11' 5"	11' 5"	2' 8"	30' 8" [2 x 184"]	4	0
Row segment totals (x 3) →				92' [6 x 184"]	12	0
2	7' 8"	7' 8"	10"	30' 8" [2 x 184"]	4	0

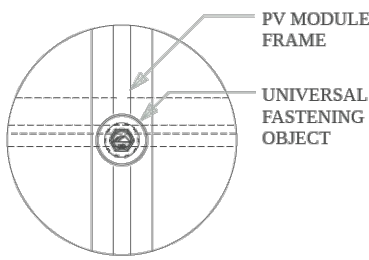
Side View Portrait



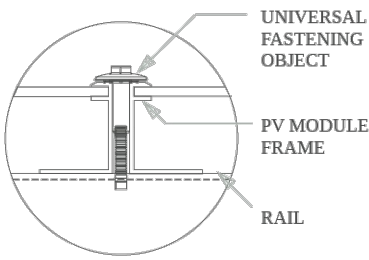
Splice Details



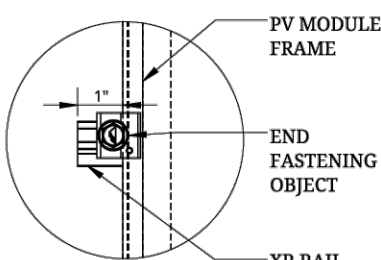
Clamp Detail



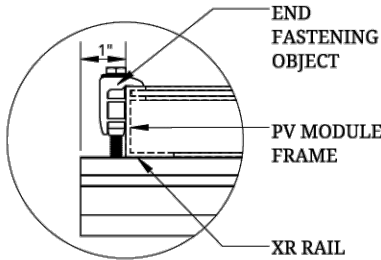
Mid Clamp, Plan



Mid Clamp, Front

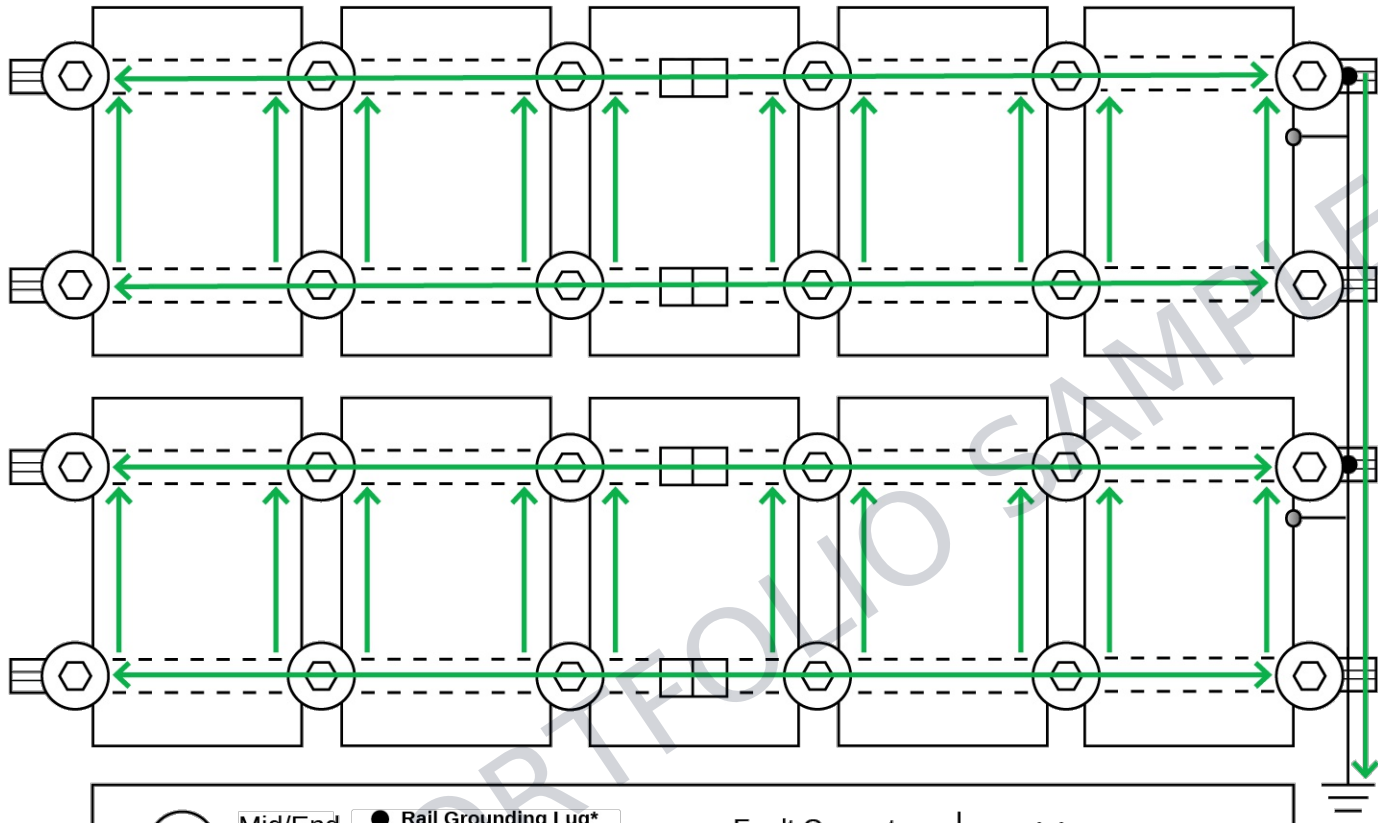


End Clamp, Plan

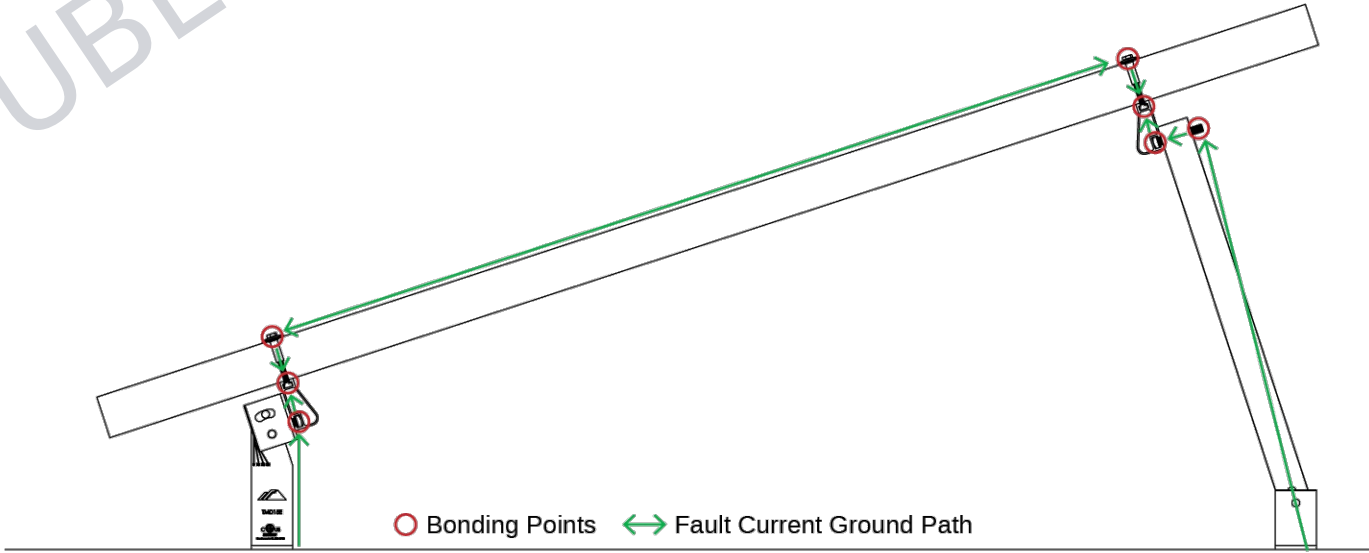


End Clamp, Front

Grounding Diagram



*One Module Grounding Lug or Rail Grounding lug is required per row of a system.



Bill of Materials

Part	Spares	Qty
Rails & Splices		
XR-100-184M XR-100, 184" (15' 4") Mill	0	56
XR100-BOSS-01-M1 Bonded Splice, XR100	0	24
Clamps & Grounding		
UFO-CL-01-A1 Universal Module Clamp, Clear	0	122
UFO-END-01-A1 End Fastening Object (End Clamp, 30-40mm), Mill	0	64
XR-LUG-04-A1 End Grounding Lug, Low Profile	0	16
Tilt Kits & Attachments		
TM-FTL-015 Kit, Fixed Tilt Leg, 15"	0	56
FRA-BASE-01-M1 Flat Roof Attachment, Mill	0	112

CHECKLIST

PRE-INSTALLATION

- Verify module compatibility. See [Page 13](#) for info.

TOOLS REQUIRED

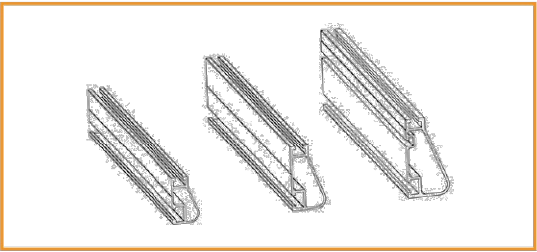
- Cordless Drill (non-impact)
- Impact Driver (for lag bolts)
- Torque Wrench (0-250 in-lbs)
- 5/16" Socket
- 7/16" Socket
- 9/16" Socket (deep)
- String Line

TORQUE VALUES

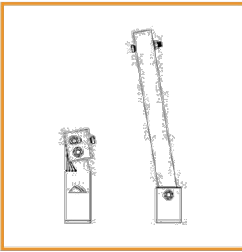
- Tilt Leg Nuts (9/16" Socket): 250 in-lbs
- Rail Grounding Lug Nut (7/16" Socket): 80 in-lbs
- Rail Grounding Lug Nut (7/16" Socket): 80 in-lbs
 - Rail Grounding Lug Terminal Screws (7/16" Socket): 20 in-lbs
- Module Grounding Lug Nut (3/8" Socket): 60 in-lbs
 - Module Grounding Lug Terminal Screws (1/2" Socket): 20 in-lbs
- Universal Fastening Objects (7/16" Socket): 80 in-lbs
- Expansion Joint Nuts (7/16"): 80 in-lbs
- Microinverter Kit Nuts (7/16" Socket): 80 in-lbs
- Frameless Module Kit Nuts (7/16" Socket): 80 in-lbs

- If using previous version of: Integrated Grounding Mid Clamps, End Clamps, and Expansion Joints please refer to Alternate Components Addendum (Version 1.9)
- Unless otherwise noted, all components have been evaluated for multiple use. They can be uninstalled and reinstalled in the same or new location.

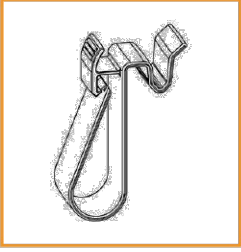
IRONRIDGE COMPONENTS



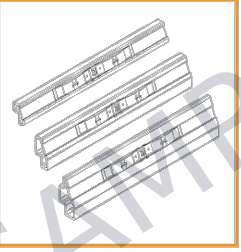
XR Rail



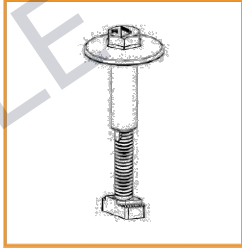
Tilt Leg Kit



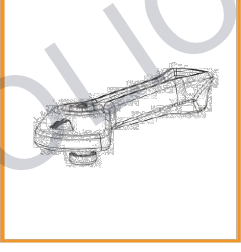
Wire Clip



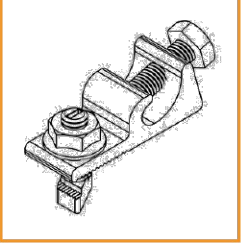
BOSS



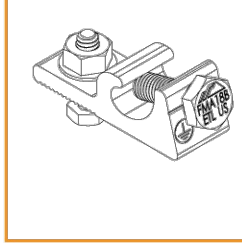
UFO (30-46mm)



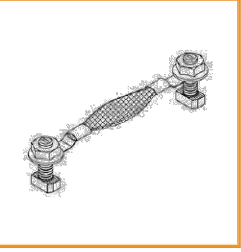
CAMO



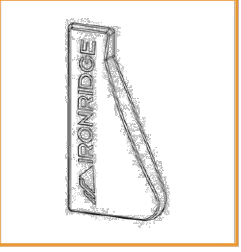
Rail Grounding Lug



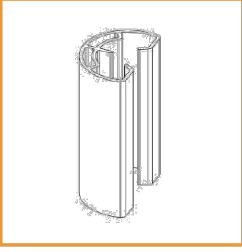
Module Grounding Lug



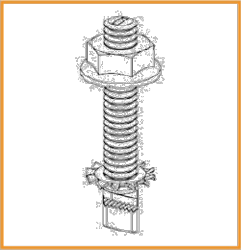
Expansion Joint



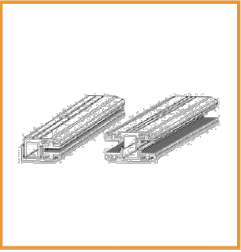
End Cap



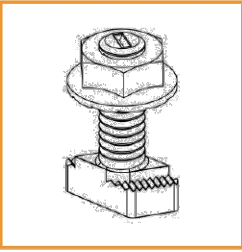
Stopper Sleeve



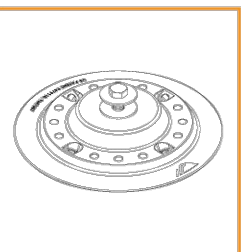
Frameless Module Kit



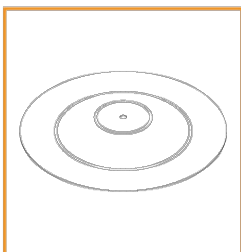
Frameless End/Mid Clamp



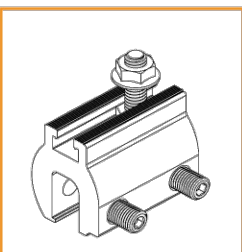
Microinverter Kit



Flat Roof Attachment



Membrane Flashing



Lynx

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.

Sanjay Mallapudi

SITE-SPECIFIC REPORT

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026



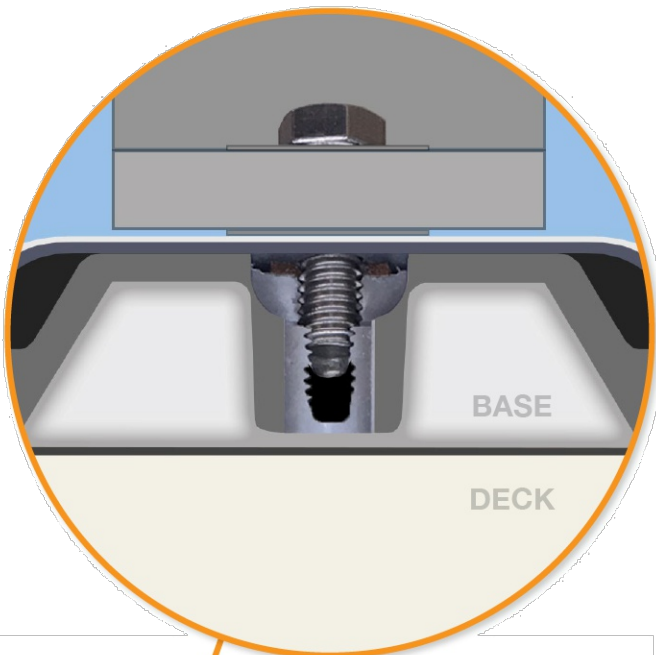
Tech Brief

Flat Roof Attachment

Engineering Down to the Deck

Low-slope roofs (0-6°) are extremely common in residential and commercial buildings, but the roof construction and the structural system below vary significantly, creating a challenge for designing solar arrays.

The IronRidge Flat Roof Attachment combines a high-strength cast aluminum base with a 16-point fastening pattern to enable the widest range of design options on low-sloped roofs. In addition, it is compatible with most common low-slope roofing materials to ensure a system that is easy to integrate down to the deck.



Built-in Waterproofing

Sealed from above with a "blind hole" and pre-installed sealing washer, Flat Roof Attachment delivers integrated waterproofing with popular roofing systems, including single-ply and asphaltic.

High-Strength Aluminum Base

Made from high-strength cast aluminum, the 7" wide, heavy-duty base delivers superior uplift and lateral capacity compared to any other product on the market.

Compatible Roof Membranes

Formed membrane covers are matched to major roofing brands to ensure a tested, engineered system for TPO, PVC, and KEE roofs. No additional sealant required.

16-Point Fastening Pattern

12-straight and 4-angled fastening options provide maximum capacity and versatility with wood, steel, decks, beams, and even concrete slabs.



Tech Brief

Attachment Options

Refer to table for selecting proper roof membrane. Contact support@ironridge.com for approved alternatives.

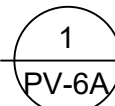
Roof Type					Other Sealing Methods
Material	Thickness	Color	Brand	SKU	
TPO	60 mil	White	Carlisle	FRA-M60T-CA-W1	
			Firestone	FRA-M60T-FS-W1	
			GAF	FRA-M60T-GF-W1	
			Johns Manville	FRA-M60T-JM-W1	
			Mule-Hide	FRA-M60T-MH-W1	
			Versico	FRA-M60T-VS-W1	
PVC	60 mil	White	GAF	FRA-M60P-GF-W1	Three-Course Method (with roof coating)
			Mule-Hide	FRA-M60P-MH-W1	
			Sika Sarnafil	FRA-M60P-SN-W1	Chem Link 9" E-Curb
KEE	60 mil	White	Carlisle	FRA-M60K-CA-W1	

Refer to table to see how regional conditions, tilt angle, and rail size impacts the span between attachments.

Conditions			Rail Span					
Snow	Angle	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
0 PSF	5°	110						
		130						
		160						
	10°	110						
		130	XR10	XR100	XR1000			
		160						
	30°	110						
		130						
		160						
10-20 PSF	5°	110						
		130						
		160						
	10°	110						
		130						
		160						
	30°	110						
		130						
		160						
30-50 PSF	5°	110						
		130						
		160						
	10°	110						
		130						
		160						
	30°	110						
		130						
		160						

Values based on 72-cell modules in Wind Exposure Category B (ASCE 7-10)

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IRON RIDGE FLAT ROOF ATTACHMENT DATASHEET
SCALE: NTS

(INFO WITHHELD)
LICENSE NO. (INFO WITHHELD)
PHONE: (INFO WITHHELD)
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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

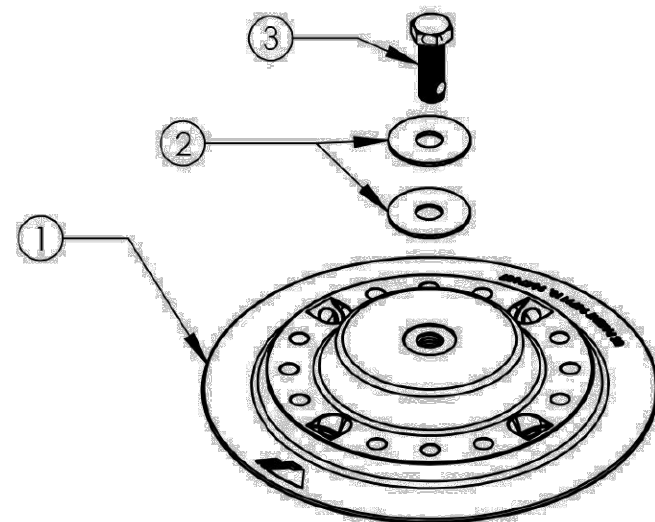
SHEET SIZE
ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.
Sanjay Mallapudi

FRA DATASHEET

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

PV-6A

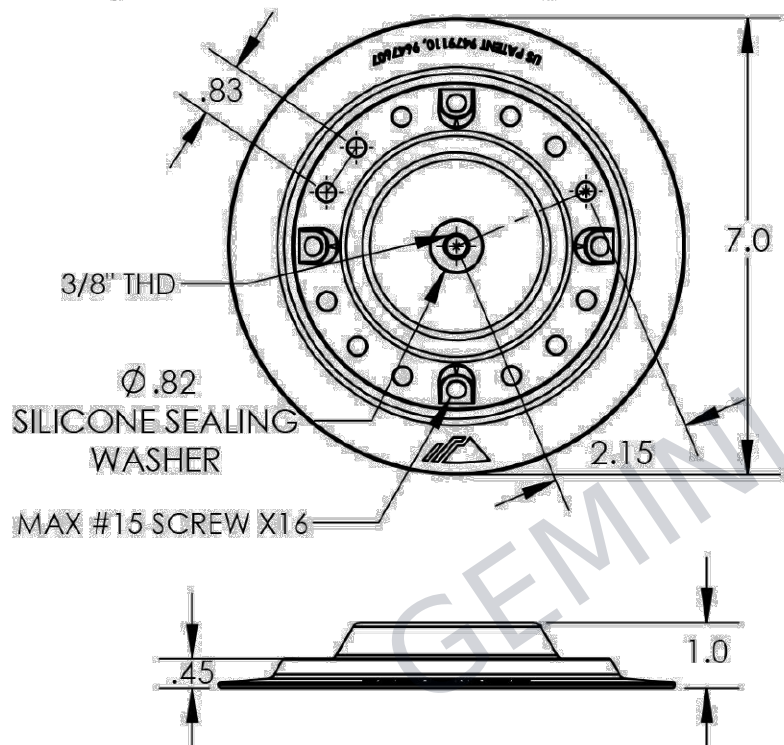


ITEM NO.	DESCRIPTION
1	FLAT ROOF ATTACH, BASE
2	WASHER, FLAT 3/8" X 1.25" OD SS
3	BOLT, 3/8-16 X 1.125" HEX, SS

FLAT ROOF ATTACHMENT (FRA)

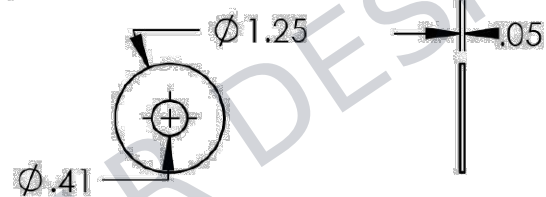
Part Number	Description
FRA-BASE-01-M1	Flat Roof Attachment, Mill

1) FLAT ROOF ATTACH, BASE



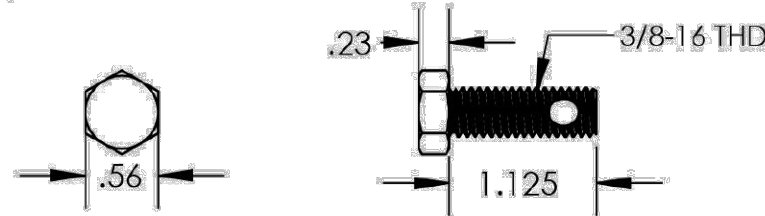
Property	Value
Material	Aluminum
Finish	Mill

2) WASHER, FLAT 3/8" X 1.25" OD SS



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

3) BOLT, 3/8-16 X 1.125" HEX, SS



Property	Value
Material	300 Series Stainless Steel
Finish	Clear

v1.1

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE
ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.
Sanjay Mallipudi

FRA DATASHEET

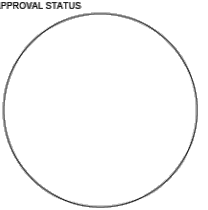
PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026



28357 INDUSTRIAL BLVD, HAYWARD, CA 94545
800.227.9523 IRONRIDGE.COM

IRONRIDGE	CLIENT NAME	IRONRIDGE
FLAT ROOF MOUNT SYSTEM	PROJECT NAME	FLAT ROOF MOUNT SYSTEM
	PROJECT ADDRESS	
	SYSTEM KW/DC	

WIND SPEED, MPH	60	60-CELL	GENERIC
SNOW LOAD, PSF		MODULE TYPE	W/DC
EXPOSURE CAT		MODULE W/DC	
RISK CAT		MODULE QTY	



REV	DESCRIPTION	DATE

SHEET NAME
FLAT ROOF PV
SYSTEM
DETAILS:
COMPONENT
DETAILS

JOB NO.	3.0 FR
ISSUE DATE	JAN 2022
SHEET NO.	IR 1.0
SHEET SIZE	24X36

(INFO WITHHELD)
LICENSE NO. (INFO WITHHELD)
PHONE: (INFO WITHHELD)

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

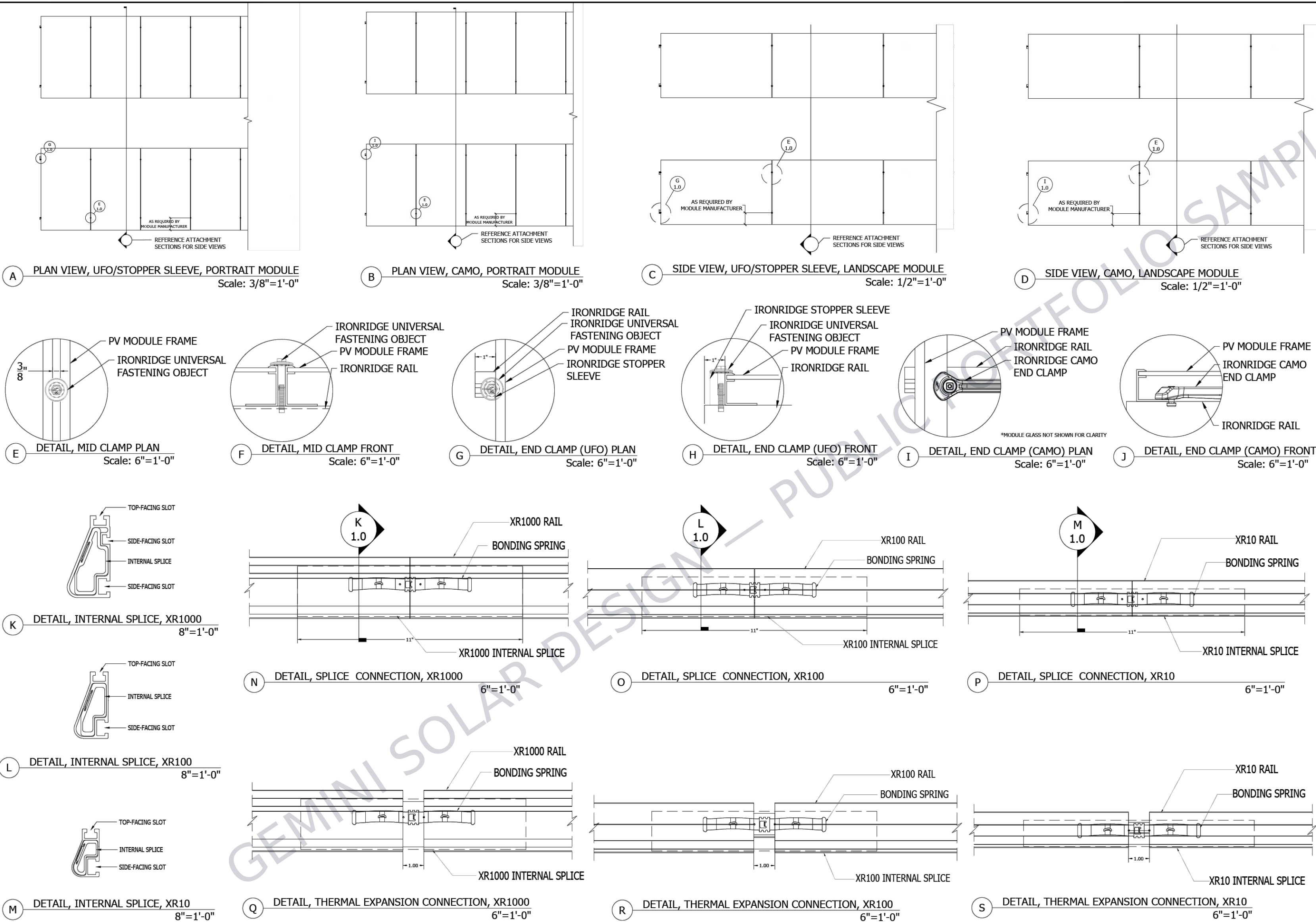
PLAN DESIGNER SIG.

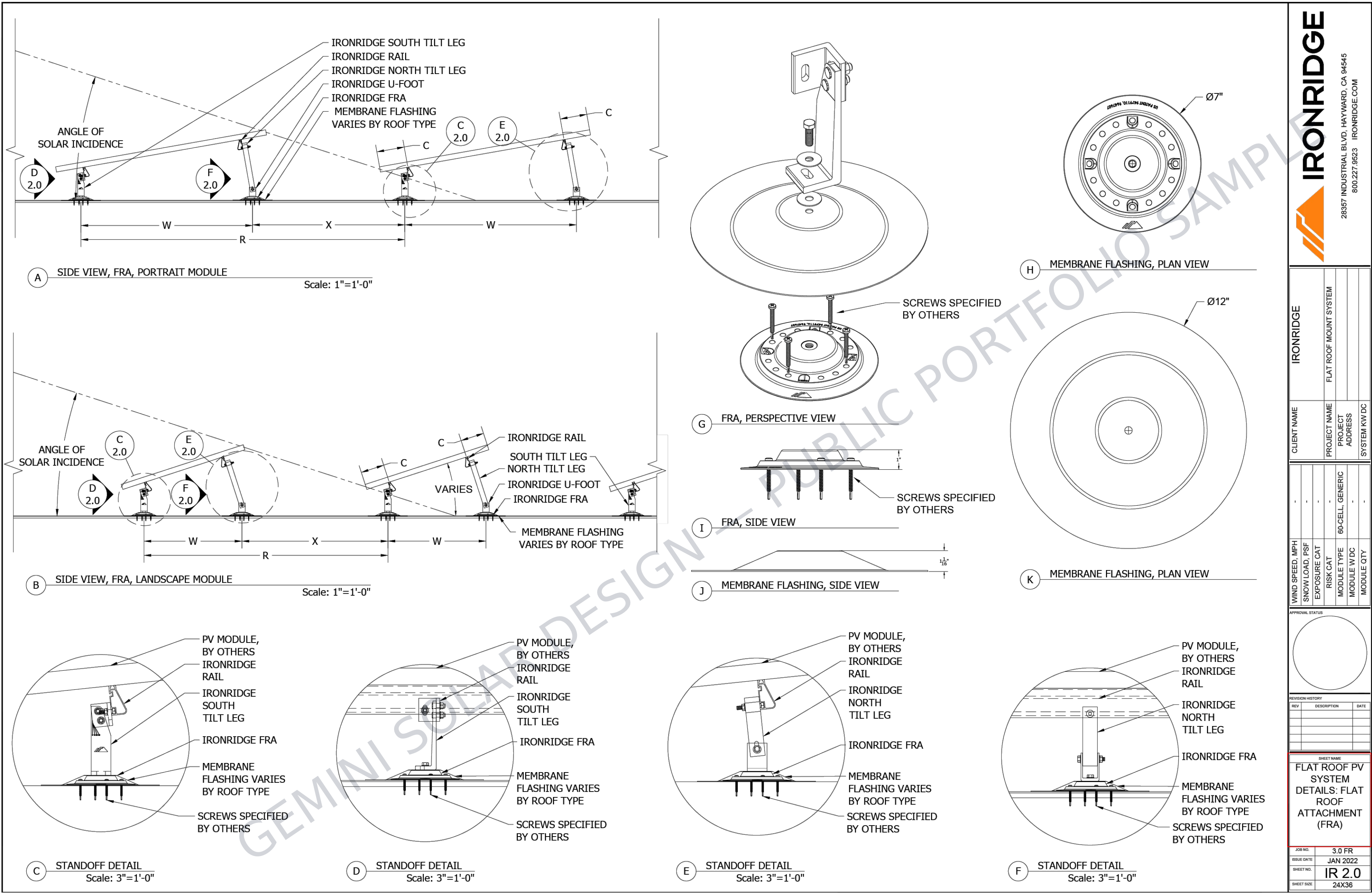
Sanjay Mallapudi

MOUNTING DETAILS

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

PV-6C





IRONRIDGE

28357 INDUSTRIAL BLVD. HAYWARD, CA 94545
800.227.9523 IRONRIDGE.COM

IRONRIDGE

CLIENT NAME

PROJECT NAME

PROJECT ADDRESS

SYSTEM KW DC

WIND SPEED, MPH

SNOW LOAD, PSF

EXPOSURE CAT

RISK CAT

60-CELL, GENERIC

MODULE TYPE

MODULE WDC

MODULE QTY

APPROVAL STATUS

REVISION HISTORY

REV

DESCRIPTION

DATE

SHEET NAME

FLAT ROOF PV

SYSTEM

DETAILS: FLAT

ROOF

ATTACHMENT

(FRA)

JOB NO.

3.0 FR

ISSUE DATE

JAN 2022

SHEET NO.

IR 2.0

SHEET SIZE

24X36

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LICENSE NO. (INFO WITHHELD)
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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE
ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.
Sanjay Mallipudi

MOUNTING DETAILS

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

1
PV-6D

FLAT ROOF PV SYSTEM DETAILS: FLAT ROOF ATTACHMENT (FRA)
SCALE: NTS

PV-6D



Tilt Mount System

Datasheet



Trust your system at every angle.

The IronRidge Tilt Mount System supports a wide range of solar module tilting angles, while also resisting the extreme wind and snow forces experienced over a building's lifetime.

Every component has been carefully engineered and rigorously tested, and the entire system uses only aluminum and stainless steel materials to resist corrosion.



Roof Friendly

Lightweight and compatible with industry-standard attachments.



Strength Tested

All components evaluated for superior structural performance.



UL 2703 Listed System

Meets newest effective UL 2703 standard.



PE Certified

Pre-stamped engineering letters available in most states.



Design Assistant

Online software makes it simple to create, share, and price projects.

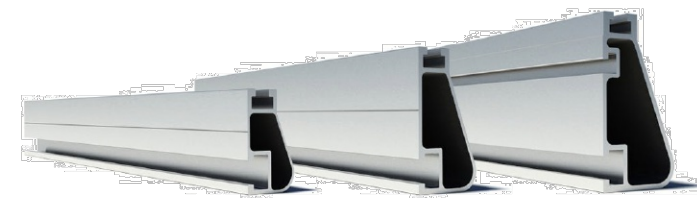


25-Year Warranty

Products guaranteed to be free of impairing defects.

XR Rails & Tilt Legs

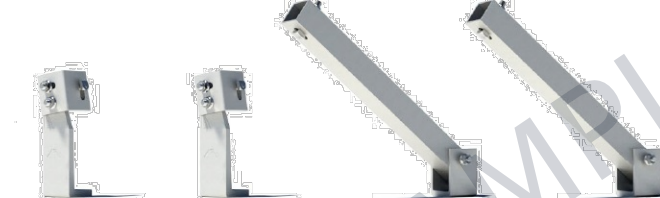
XR Rails



Attach directly to Tilt Legs. Available in three targeted sizes to support specific wind and snow loads.

- Unique curved profile
- Spanning capabilities up to 12'
- Clear and black finish

Tilt Legs

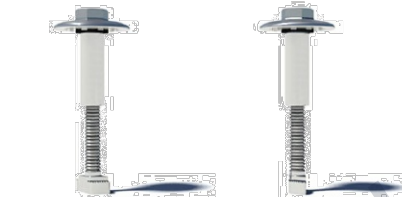


Tilt assembly to desired angle, up to 30 degrees. Kits include South and North Tilt Leg and all hardware.

- Available in multiple lengths for a wide angle range
- Assembled South Tilt Legs include angle indicators
- Legs are electrically bonded to rails

Grounding Clamps

UFOs



Universal Fastening Objects secure and bond modules to rails.

- Fully assembled and lubricated
- Single, universal size
- Clear and black finish

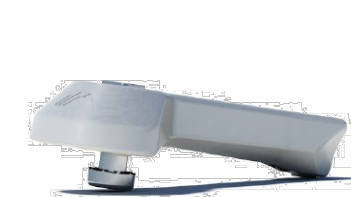
Stopper Sleeves



Snap onto the UFO to transform into a bonded end clamp.

- Bonds modules to rails
- Sized to match modules
- Clear and black finish

CAMO

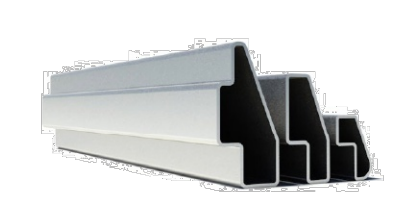


Bond modules to rails while staying completely hidden.

- Universal end-cam clamp
- Tool-less installation
- Fully assembled

Accessories

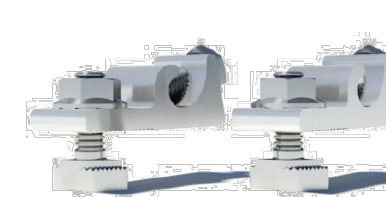
BOSS™ Bonded Splices



Bonded Structural Splices connect and bond XR Rails together.

- Integrated bonding
- No tools or hardware
- Self-centering stop tab

Grounding Lugs



Connects Tilt Mount system to equipment ground.

- Low profile
- Single tool installation
- Mounts in any direction

Ends Caps & Wire Clips



Provide a finished look and organize electrical wires.

- Simple snap-in installations
- Clips hold up to ten 5mm wires
- UV-stabilized polymer

Resources



Design Assistant

Go from rough layout to fully engineered system. For free.

Go to IronRidge.com/design



NABCEP Certified Training

Earn free continuing education credits, while learning more about our systems.

Go to IronRidge.com/training

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE
ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.
Sanjay Mallipudi

RACKING DATASHEET

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

PV-7

1 RACKING DATASHEET
PV-7 SCALE: NTS



8431 Murphy Drive
Middleton, WI 53562 USA

Telephone: 608.836.4400
Facsimile: 608.831.9279
www.intertek.com

Test Verification of Conformity

In the basis of the tests undertaken, the sample(s) of the below product have been found to comply with the requirements of the referenced specifications at the time the tests were carried out.

Applicant Name & Address:	Enstall US, Inc. 41 West Putnam Avenue, Suite 303 Greenwich, CT 06830-5300 USA		
Product Description:	Tilt Mount System with XR Rails.		
Ratings & Principle Characteristics:	<u>Fire Class Resistance Rating:</u> -Tilt Mount (Asymmetrical). Class A Fire Rated for Low Slope applications when using Type 1, 2, 3, 13, 19, 25, 29 and 38 listed photovoltaic modules. Class A Fire Rated for Steep Slope applications with Type 1 and 2, listed photovoltaic modules. "Angle of tilt allowed by the system is any greater than or equal to 1° and specified in the installation instructions. This system was evaluated with a 5" gap between the bottom of the module and the roof's surface. Per UL 2703 this product can be installed with any gap stated in the manufacturer's installation instructions. No perimeter guard is required. Installed with components per IronRidge installation manual and as reviewed by Intertek Engineering Evaluation 102241487MID-001.1. This rating is applicable with any 3rd party roof attachment with similar construction and material.		
Models:	IronRidge Tilt Mount with XR Rails		
Brand Name:	IronRidge Tilt Mount		
Relevant Standards:	UL 2703 (2023) Standard for Safety Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels, Referencing UL61730-2, Standard for Safety Photovoltaic Module Safety Qualification – Part 2: Requirements for Testing.		
Verification Issuing Office:	Intertek Testing Services NA, Inc. 8431 Murphy Drive Middleton, WI 53562		
Date of Tests:	Tests: 08/27/2014 to 03/17/2015; Evaluations: 08/19/2015		
Test Report Number(s):	101769343MID-001r1, 101769343MID-001a, 101915978MID-001, 101999492MID-001ar1-cr1 & 102241487MID-001.1 (Evaluation for South Tilt Leg Assembly) 105499394MID-008 PEV		
Revised Date:	1/5/24 changed the word anchor to attachment.		
This verification is part of the full test report(s) and should be read in conjunction with them. This report does not automatically imply product certification.			
Completed by:	Brian Brunson	Reviewed by:	Chad Naggs
Title:	Operations Manager, Middleton	Title:	Technical Team Lead, Fire Resistance
Signature:		Signature:	
Date:	1/5/24	Date:	1/5/24

This Verification is for the exclusive use of Intertek's client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Verification. Only the Client is authorized to permit copying or distribution of this Verification. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek. The observations and test/inspection results referenced in this Verification are relevant only to the sample tested/inspected. This Verification by itself does not imply that the material, product, or service is or has ever been under an Intertek certification program.

GFT-OP-11a (24-MAR-2014)



Background

All roofing products are tested and classified for their ability to resist fire.

Recently, these fire resistance standards were expanded to include solar equipment as part of the roof system. Specifically, this requires the modules, mounting hardware and roof covering to be tested together as a system to ensure they achieve the same fire rating as the original roof covering.

These new requirements are being adopted throughout the country in 2016.

IronRidge Certification

IronRidge was the first company to receive a Class A Fire Rating—the highest possible rating—from Intertek Group plc., a Nationally Recognized Testing Laboratory.

IronRidge Flush Mount and Tilt Mount Systems were tested on sloped and flat roofs in accordance with the new UL 1703 & UL 2703 test standards. The testing evaluated the system's ability to resist flame spread, burning material and structural damage to the roof.

Refer to the table below to determine the requirements for achieving a Class A Fire Rating on your next project.

System	Roof Slope	Module	Fire Rating*
Flush Mount 	Any Slope	Type 1, 2, & 3	Class A
Tilt Mount 	≤ 6 Degrees	Type 1, 2, & 3	Class A

*Class A rated PV systems can be installed on Class A, B, and C roofs.

Tech Brief

Class A Fire Rating

Fire Testing Process

Test Setup

Solar Modules

Solar modules are given a Type classification based on their materials and construction.

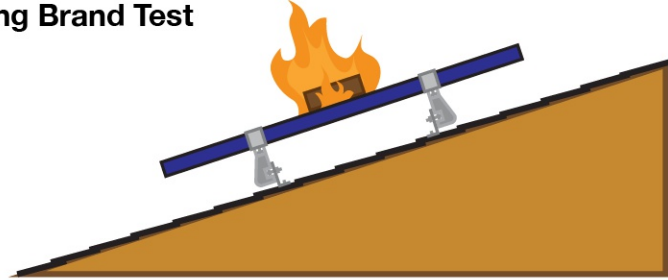
Mounting System

Mounting is tested as part of a system that includes type-tested modules and fire-rated roof covering.

Roof Covering

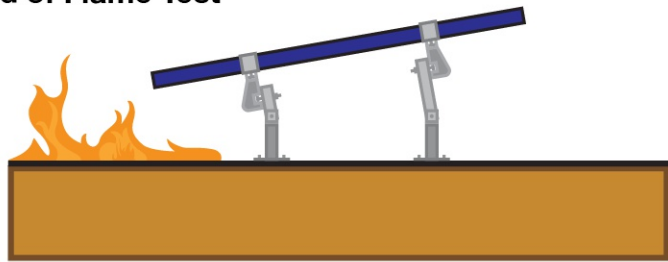
Roof covering products are given a Fire Class Rating of A, B or C based on their tested fire resistance.

Burning Brand Test



A burning wooden block is placed on module as a fan blows at 12 mph. Flame cannot be seen on underside of roof within 90 minutes.

Spread of Flame Test



Flame at southern edge of roof is aimed up the roof as a fan blows at 12 mph. The flame cannot spread 6 feet or more in 10 minutes.

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

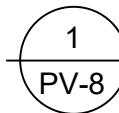
PLAN DESIGNER SIG.

Sanjay Mallapudi

CLASS A FIRE RATING

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

PV-8



CLASS A FIRE RATING DATASHEET
SCALE: NTS



Attn: Sean McDonald, CEO, IronRidge Inc.
Date: February 22nd, 2024

Re: Structural Certification and Span Tables for IronRidge Flat Roof Systems

The letter is to certify the structural performance and code compliance of IronRidge's rooftop photovoltaic (PV) mounting systems used onto flat or low pitched roofs with the slope not exceeding 7 degrees from the horizontal. The two IronRidge's proprietary rooftop systems certified in this letter include Flush Mount System applied when modules are set parallel to the flat or low pitched roofs, and Tilt Mount System which accommodates module tilts ranging from 4 degrees to 30 degrees relative to the roof surface. Both systems are capable supporting PV modules installed in a portrait or landscape orientation. The typical assembly details and core components of the respective system are provided in Exhibit EX-0008.

The IronRidge Flat Roof Systems as depicted above are designed and certified to the structural requirements of the reference standards listed below, for the load conditions and configurations tabulated in the attached span tables.

- ASCE/SEI 7-16 Minimum Design Loads for Buildings and Other Structures (ASCE 7-16)
- 2021 International Building Code (IBC-2021)
- 2022 California Building Code (CBC-2022)
- 2020 Aluminum Design Manual (ADM-2020)

The span tables included in this letter provide the maximum allowable spans of XR Rails used in the Tilt Mount and Flush Mount Systems used onto flat or low pitched roofs for the respective loads and configurations listed, covering wind exposure categories B, C, & D, and roof zones 1, 2 & 3. The span tables are applicable given that the following conditions are met:

- Span* is the distance between two adjacent roof attachment points (measured at the center of the attachment fastener or the group of fasteners).
- The underlying roof pitch is 7 degrees or less relative to horizontal and the maximum module tilt (the angle between module and roof surface) is 30 degrees or less.
- The *building height*, defined as the roof eave height measured from grade, does not exceed 60 feet.
- A maximum array to roof clearance at the leading edge of the module (h_1) and the rear edge of the module (h_2) is 2 feet and 4 feet, respectively. The distance is measured from top of module to top of roof surface.
- Module length and area shall not exceed the maximum values listed on the respective span tables.
- All IronRidge components shall be installed in a professional workmanlike manner per IronRidge's *Tilt Mount and Flush Mount installation manuals* and other applicable standards for general roof construction practice.



Span values for *Exposed* module conditions, as defined below, are included in the attached span tables and shall be used when such condition exists. The reference wind speed for *Exposed* modules shall also include the adjustments for parapet and building height where applicable. The maximum allowable span for *Exposed* modules shall be the lesser of the following two: (1) The span value listed for the *Exposed* module condition; (2) The span value determined by site wind speed and ground snow. Additionally, irrespective of the lesser span, the shaded cells in gray for the *Exposed* module conditions which reflect the UFO clamp usage limitation detailed in note 9 of page 2 shall apply to the *Exposed* modules.

Exposed Module Conditions:

A module is defined as *Exposed* (per Section 29.4.3 of ASCE 7-16) if any of its free edges (an edge with no connectivity to other modules) is an exposed edge. The module edge is considered exposed if its distance to the facing roof edge is greater than $0.5h$ (h is ASCE defined building height) AND if it has no adjacent array/panel or its distance to the adjacent array or panel is exceeding the larger of $4h_2$ and 4 feet, where (h_2) is the module rear side clearance as defined in note 4 of page 1. Additionally, if the exposed edge is the west or east boundary of the row, the modules within a distance $1.5(L_p)$ measured from the exposed edge are considered exposed, where L_p is the length of the module perpendicular to supporting rail.

The allowable spans and cantilever shall only be applied to the portion of rail directly under *Exposed Modules*.

The span tables provided in this letter are certified based on the structural performance of IronRidge XR Rails only with no consideration of the structural adequacy of the chosen roof attachments, PV modules, or the underlying roof supporting members. It is the responsibility of the installer or system designer to verify the structural capacity and adequacy of the aforementioned system components in regards to the applied or resultant loads of any chosen array configuration.

Sincerely,



Matthew S Kuzila, P.E.

02.22.2024

28357 Industrial Boulevard
Hayward, CA 94545
1-800-227-9523
IronRidge.com

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.

Sanjay Mallapudi

ENGINEERING LETTER

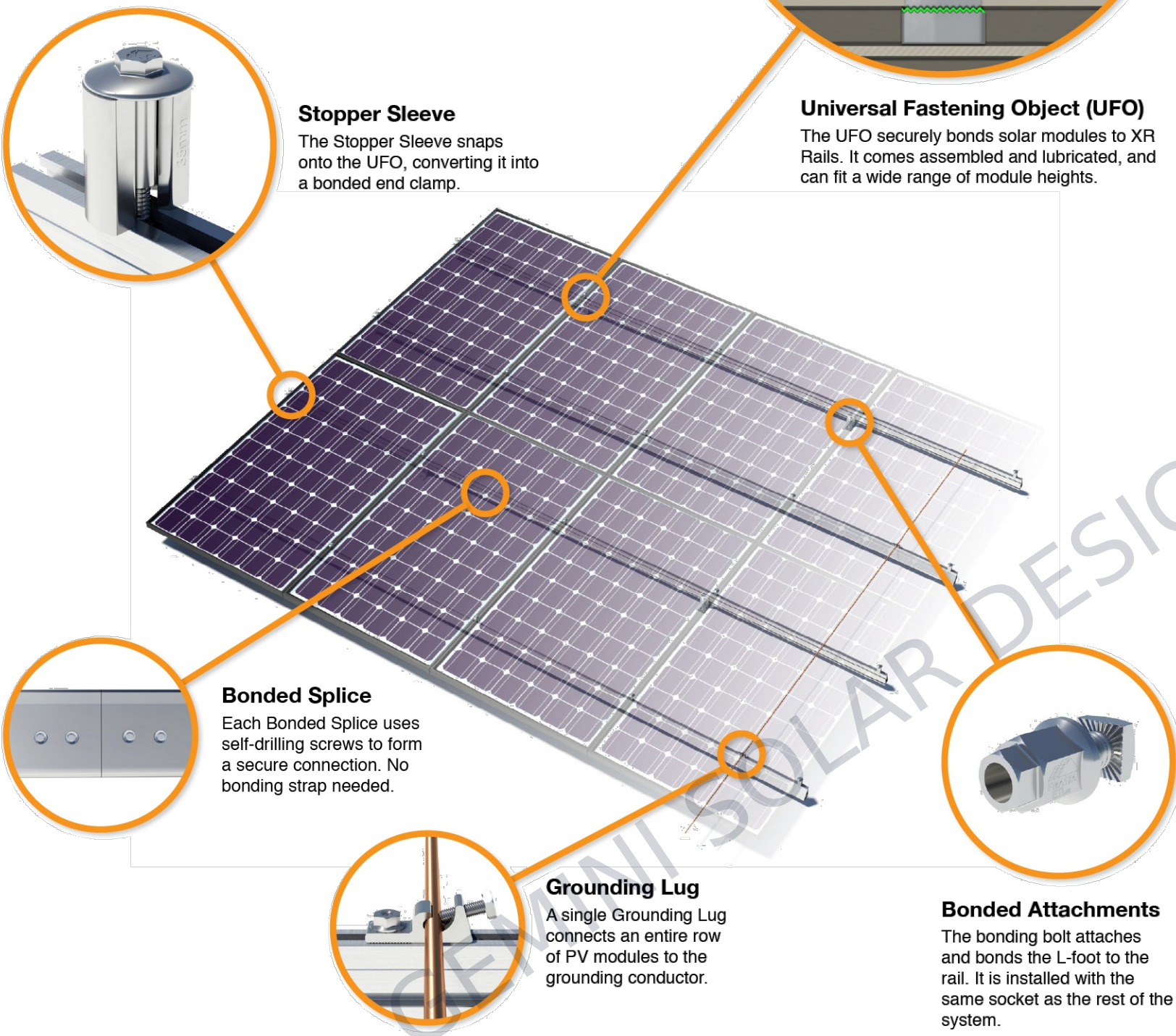
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PV-9

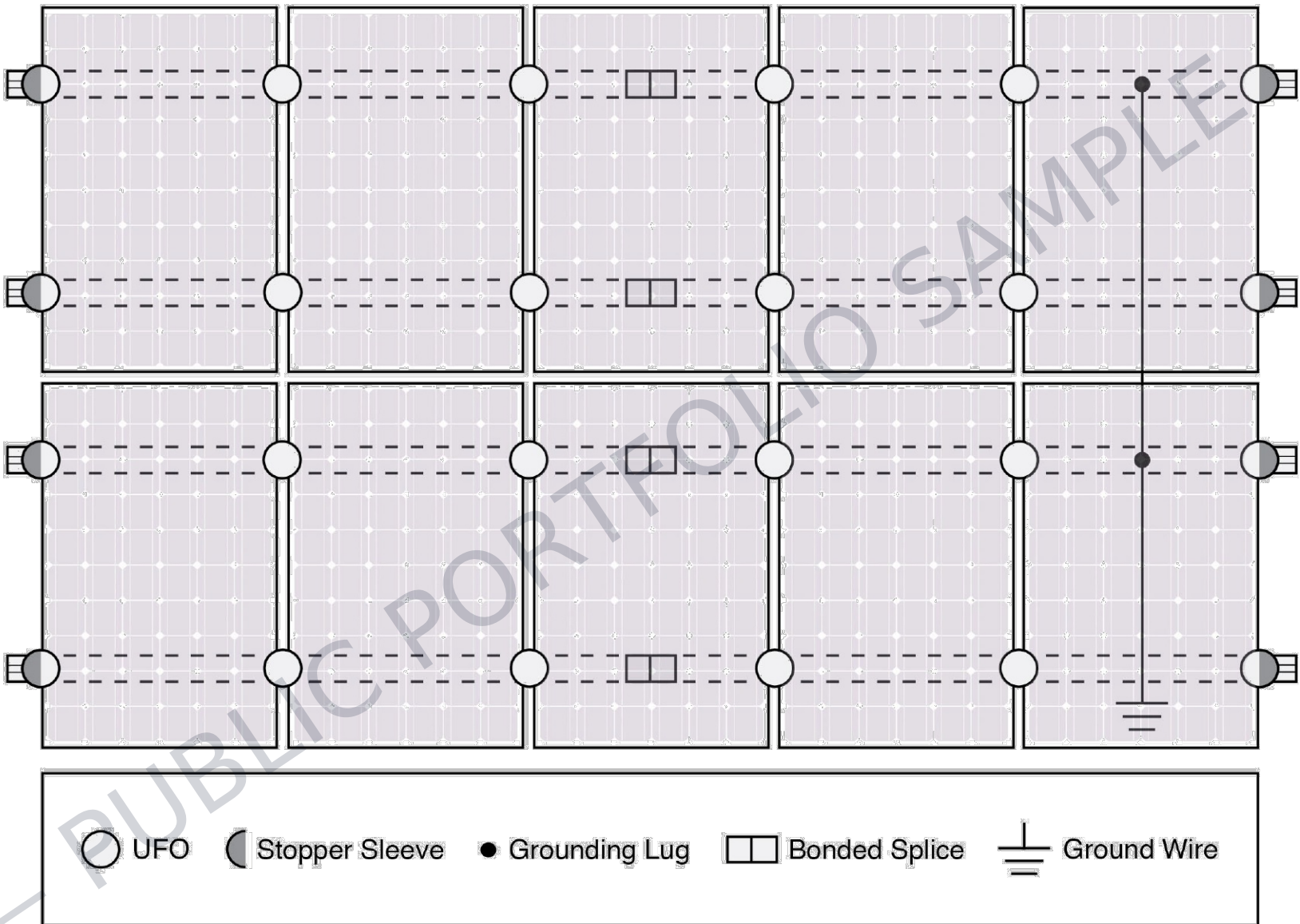
Simplified Grounding for Every Application

The UFO family of components eliminates the need for separate grounding hardware by bonding solar modules directly to IronRidge XR Rails. All system types that feature the UFO family—Flush Mount, Tilt Mount and Ground Mount—are fully listed to the UL 2703 standard.

UFO hardware forms secure electrical bonds with both the module and the rail, resulting in many parallel grounding paths throughout the system. This leads to safer and more reliable installations.



System Diagram



Approved Enphase microinverters can provide equipment grounding of IronRidge systems, eliminating the need for grounding lugs and field installed equipment ground conductors (EGC). A minimum of two microinverters mounted to the same rail and connected to the same Engage cable is required. Refer to installation manuals for additional details.

UL Certification

The IronRidge Flush Mount, Tilt Mount, and Ground Mount Systems have been listed to UL 2703 by Intertek Group plc.

UL 2703 is the standard for evaluating solar mounting systems. It ensures these devices will maintain strong electrical and mechanical connections over an extended period of time in extreme outdoor environments.

Go to [IronRidge.com/UFO](https://www.ironridge.com/UFO)

Cross-System Compatibility			
Feature	Flush Mount	Tilt Mount	Ground Mount
XR Rails	✓	✓	XR1000 Only
UFO/Stopper	✓	✓	✓
Bonded Splice	✓	✓	N/A
Grounding Lugs	1 per Row	1 per Row	1 per Array
Microinverters & Power Optimizers	Enphase - M250-72, M250-60, M215-60, C250-72 Darfon - MIG240, MIG300, G320, G640 SolarEdge - P300, P320, P400, P405, P600, P700, P730		
Fire Rating	Class A	Class A	N/A
Modules	Tested or Evaluated with over 400 Framed Modules Refer to installation manuals for a detailed list.		

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NEW GRID-TIED SYSTEM 38.5kW DC

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SHEET SIZE

ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.

Sanjay Mallapudi

GROUNDING DETAILS

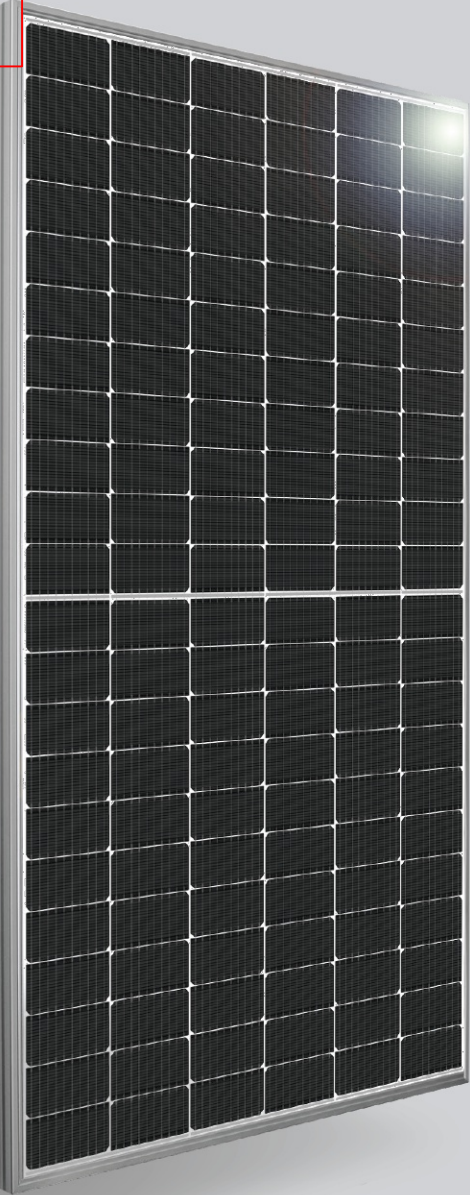
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DRAWN BY: SCM
DATE: 1/2/2026

PV-10

SILFAB COMMERCIAL

SIL-500 HM





ENGINEERED FOR COMMERCIAL & UTILITY PROJECTS

Superior performance and proven reliability from a trusted source.

Unparalleled coverage for all your commercial projects with our industry-leading 25-year product and 30-year linear performance warranty.

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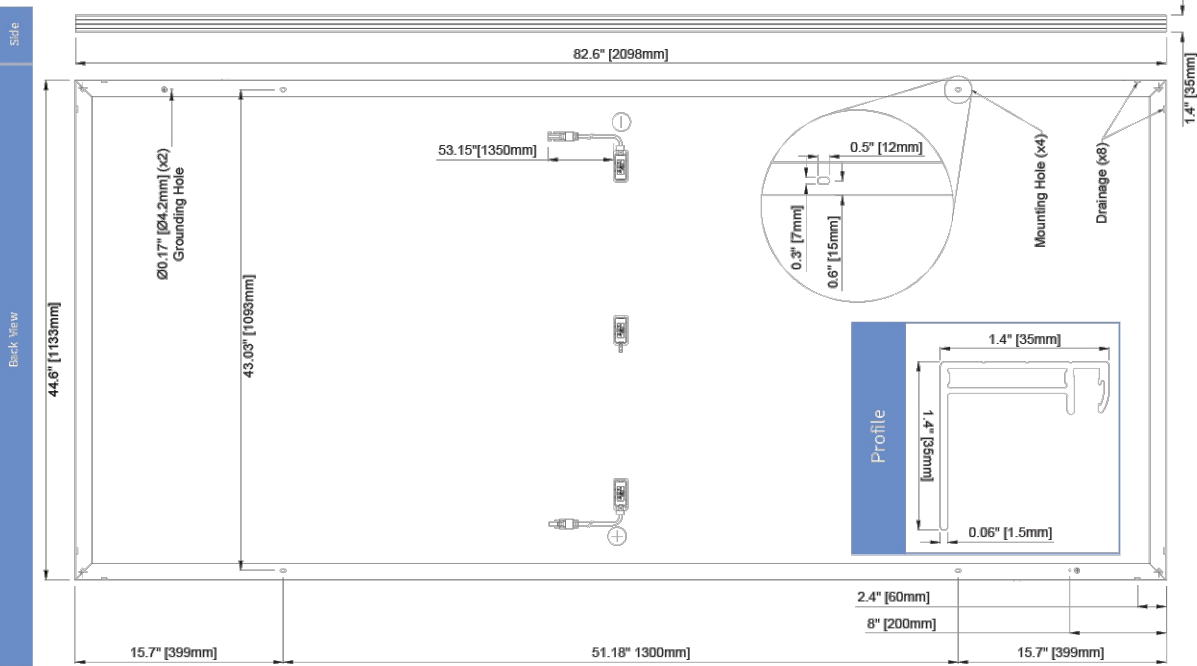




ELECTRICAL SPECIFICATIONS		500 HM	
Test Conditions		STC	NOCT
Module Power (Pmax)	Wp	500	369
Maximum power voltage (Vpmax)	V	38.80	35.69
Maximum power current (Ipmax)	A	12.89	10.34
Open circuit voltage (Voc)	V	45.78	42.11
Short circuit current (Isc)	A	13.48	10.82
Module efficiency	%	21.0%	
Maximum system voltage (VDC)	V	1500	
Series fuse rating	A	25	
Power Tolerance	Wp	0 to +10	
Measurement conditions: STC 1000 W/m² • AM 1.5 • Temperature 25 °C • NOCT 800 W/m² • AM 1.5 • Measurement uncertainty ≤ 3% Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by 0 to +10W.			
MECHANICAL PROPERTIES / COMPONENTS		METRIC	IMPERIAL
Module weight		26.2kg ± 0.2kg	57.8lbs ± 0.4lbs
Dimensions (H x L x D)		2098 mm x 1133 mm x 35 mm	82.6 in x 44.6 in x 1.37 in
Maximum surface load (wind/snow)*		2400 Pa rear load / 5400 Pa front load	50.1 lb/ft² rear load / 112.8 lb/ft² front load
Hail impact resistance		ø 25 mm at 83 km/h	ø 1 in at 51.6 mph
Cells		132 Half cells - Si mono PERC 10 busbar - 182 mm x 91 mm	132 Half cells- Si mono PERC 10 busbar - 3.58 x 7.16 in
Glass		3.2 mm high transmittance, tempered, DSM antireflective coating	0.126 in high transmittance, tempered, DSM antireflective coating
Cables and connectors (refer to installation manual)		1350 mm, ø 5.7 mm, EVO2 from Staubli	53.15 in, ø 0.22 in (12AWG), EVO2 from Staubli
Backsheet		High durability, superior hydrolysis and UV resistance, multi-layer dielectric film, fluorine-free PV white backsheet	
Frame		Anodized Aluminum (Silver)	
Bypass diodes		3 diodes - GF5045 (45V max DC blocking voltage, 50A max forward rectified current)	
Junction Box		UL3730 Certified, IEC 62790 Certified, IP68 rated	
TEMPERATURE RATINGS		WARRANTIES	
Temperature Coefficient Isc	+0.064 %/°C	Module product workmanship warranty	25 years**
Temperature Coefficient Voc	-0.28 %/°C	Linear power performance guarantee	30 years
Temperature Coefficient Pmax	-0.36 %/°C		≥ 97.1% end 1st yr ≥ 91.6% end 12th yr ≥ 85.1% end 25th yr ≥ 82.6% end 30th yr
NOCT (± 2 °C)	45 °C		
Operating temperature	-40/+85 °C		
CERTIFICATIONS		SHIPPING SPECS	
Product	UL 61215-1:2017 Ed.1, UL 61215-2:2017 Ed.1, UL 61730-1:2017 Ed.1, UL 61730-2:2017 Ed.1, CSA C22.2#61730-1:2019 Ed.2, CSA C22.2#61730-2:2019 Ed.2, IEC 61215-1:2016 Ed.1, IEC 61215-2:2016 Ed.1, IEC 61730-1:2016 Ed.2, IEC 61730-2:2016 Ed.2, IEC 61701:2020 (Salt Mist Corrosion), IEC 62716:2013 (Ammonia Corrosion), CEC Listing, UL Fire Rating: Type 1	Modules Per Pallet:	29 or 29 (California)
Factory	ISO9001:2015	Pallets Per Truck	24 or 23 (California)
		Modules Per Truck	696 or 667 (California)

* ⚠ Warning. Read the Safety and Installation Manual for mounting specifications and before handling, installing and operating modules.

** 12 year extendable to 25 years subject to registration and conditions outlined under "Warranty" at [silfabsolar.com](#)
PAN files generated from 3rd party performance data are available for download at: [silfabsolar.com/downloads](#)



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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.



MODULE DATASHEET

PROJECT NO: GSD-20260102-SCM

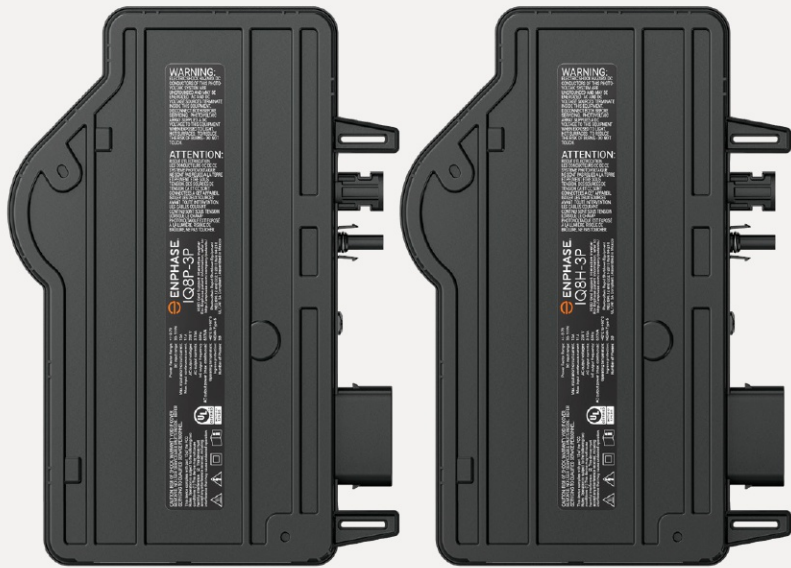
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DATE: 1/2/2026

PV-11



DATA SHEET



IQ8 Commercial Microinverters

The high-powered, smart grid-ready Enphase IQ8P-3P and IQ8H-3P Microinverters are specifically designed for 208 V three-phase interconnection for small commercial solutions.

Each microinverter integrates with the IQ Gateway Commercial 2 and the Enphase App monitoring and analysis software.

With simplified design, improved energy harvesting, and advanced monitoring, microinverters offer true peace of mind during operation and maintenance.



The IQ Series Microinverters extend the reliability standards set forth by previous generations and undergo over a million hours of power-on testing, enabling Enphase to provide an industry-leading warranty of up to 25 years.*

* 25-year warranty is valid, provided an Internet-connected IQ Gateway is installed.

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IQ8P-3P-H-DSH-00236-2.0-EN-US-2023-11-16

Easy to install

- Lightweight and compact with plug-and-play connectors
- Power line communication (PLC) between components
- Faster installation

High productivity and reliability

- More than one million cumulative hours of testing
- Class II double-insulated enclosure
- Optimized for the latest high-powered PV modules

Smart Grid Ready

- Complies with the latest advanced grid support
- Remote automatic updates for the latest grid requirements
- Configurable to support a wide range of grid profiles
- Meets CA Rule 21 (UL 1741-SA) and IEEE 1547 (UL 1741-SB) requirements

IQ8 Commercial Microinverters

INPUT DATA (DC)		I08P-3P-72-E-US		I08H-3P-72-E-US	
Commonly used modules for pairing ¹	W	380–640		320–540	
Module compatibility ¹		54-cell/108 half-cell, 60-cell/120 half-cell, 66-cell/132 half-cell and 72-cell/144 half-cell			
Maximum input DC voltage	V			63	
Peak power tracking voltage	V	35.5–53		28.5–45	
Operating range	V			16 – 63	
Min./Max. start voltage	V			21/63	
Max. DC continuous current (module I _{mp})	A			14	
Max. input DC short-circuit current	A			25	
Max DC short circuit current (module I _{sc})	A			20	
Overvoltage class DC ports				II	
DC port backfeed current	A			0	
PV array configuration		1 x 1 ungrounded array; no additional DC side protection required; AC side protection requires max 20A per branch circuit			
OUTPUT DATA (AC)		I08P-3P-72-E-US		I08H-3P-72-E-US	
Peak output power	VA	480		384	
Maximum continuous output power	VA	475		380	
Nominal (L-L) voltage/range ²	V	208/183–229	220/198–242	208/183–229	220/198–242
Maximum continuous output current	A	2.28	2.16	1.83	1.73
Nominal frequency	Hz	60			
Extended frequency range	Hz	47–68			
Maximum microinverters per 20A 3 Phase branch circuit ³		12	12	15	15
Overvoltage class AC port		III			
Power factor setting		1.0			
Power factor (adjustable)		0.85 leading ... 0.85 lagging			
EFFICIENCY		I08P-3P-72-E-US		I08H-3P-72-E-US	
Peak efficiency	%	97.8		97.7	
CEC weighted efficiency	%	97.5		96.5	
MECHANICAL DATA					
Ambient temperature range		–40°C to +65°C (–40°F to +149°F)			
Relative humidity range		4% to 100% (condensing)			
DC connector type ⁴		Enphase EN4 bulkhead; ECA-EN4-S22-12 : EN4 (TE PV4-S SOLARLOK) 150 mm/5.9" to Staubli MC4 adapter cable pair (Default supply) ⁵			
Dimensions (H x W x D)		265 mm x 200 mm x 35 mm (10.4" x 7.9" x 1.4") without bracket			
Weight		1.6 kg (3.5 lb)			
Cooling		Natural convection			
Approved for wet locations		Yes			
Enclosure		Class II double-insulated, corrosion resistant polymeric enclosure			
Environmental category/UV exposure rating		Outdoor—NEMA Type 6/IP67			
FEATURES					
Communication		Power line communication (PLC)			
Monitoring		Enphase App monitoring and analysis software. Both options require installation of an IQ Gateway Commercial 2.			
Compliance		CA Rule 21 (UL 1741-SB), UL 62109-1, UL1741/IEEE1547, FCC Part 15 Class B, ICES-0003 Class B, CAN/CSA-C22.2 NO. 107.1-01. This product is UL-Listed as PV rapid shutdown equipment and conforms with NEC 2014, NEC 2017, and NEC 2020 section 690.12 and C22.1-2018 Rule 64-218 rapid shutdown of PV systems for AC and DC conductors, when installed according to manufacturer's instructions.			

(1) Pairing PV modules with wattage above the limit may result in additional clipping losses. See the compatibility calculator at <https://link.enphase.com/module-compatibility>. (2) Nominal voltage range can be configured if required by the utility. (3) Limits may vary. Refer to local requirements to define the number of microinverters per branch in your area. (4) Enphase IQ8P-3P and IQ8H-3P Microinverter bulkhead and adapter cable male, female DC connectors must only be mated with the identical type and manufacturer brand of male/female connector. (5) Qualified per UL subject 9703.

IQ8P-3P-H-DSH-00236-2.0-EN-US-2023-11-16

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.

Sanjay Mallapudi

INVERTER DATASHEET

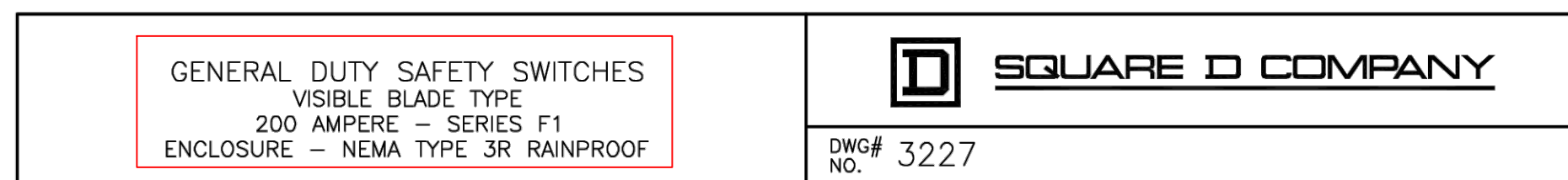
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DATE: 1/2/2026

PV-12

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DECEMBER 2001	3227
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PV-13

Rapid shutdown is built-in

The 2014 and 2017 editions of the National Electrical Code (NEC 2014/NEC 2017) added new rapid shutdown requirements for PV systems installed on buildings. Enphase Microinverters fully meet rapid shutdown requirements in the new code without the need to install any additional electrical equipment.

What's new in Section 690.12?
NEC 2014/2017, Section 690.12 applies to PV conductors over 10 feet from the PV array and requires that the conductors power down to 30 volts and 240 volt-amperes within 10 seconds of rapid shutdown initiation.

String inverters require work arounds for rapid shutdown

Work around.

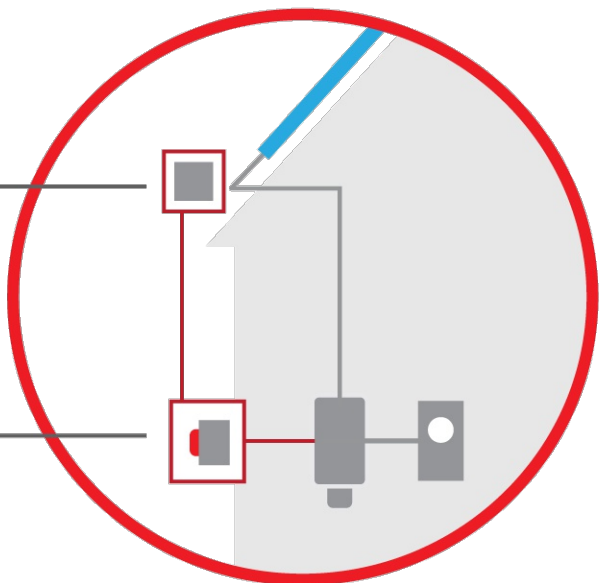
Specialized Rapid Shutdown electrical box installed on the roof within 10 feet of array.

Work around.

Shutoff switch that is easily accessible to first responders on the ground.

Work around.

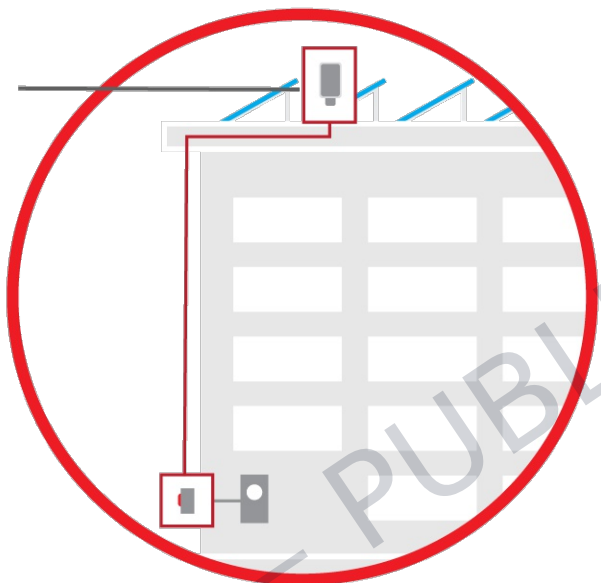
Extra conduit in installation.



Residential String Inverter

Work around.

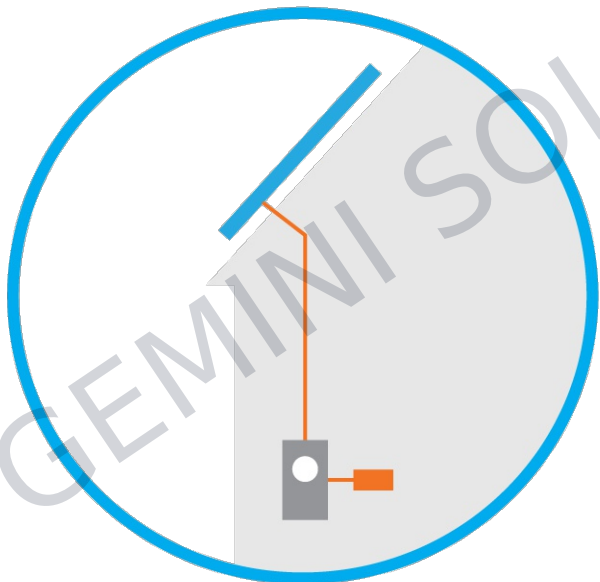
String inverter installed on roof, a hostile environment that string inverters are not built to live in.



Commercial String Inverter

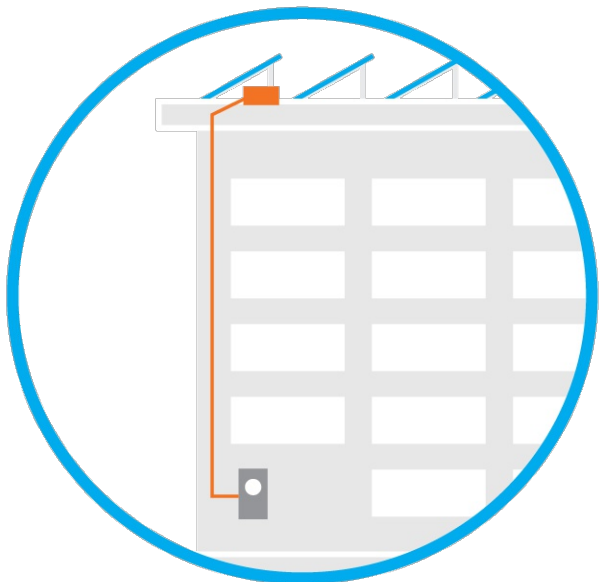
Enphase comes standard with rapid shutdown capability

All Enphase microinverters, even those that were previously installed, inherently meet rapid shutdown requirements, no additional equipment or workarounds needed



Residential Microinverter

Enphase microinverters can safely shut down automatically, leaving only low-voltage DC electricity isolated to the PV module



Commercial Microinverter

To learn more, visit enphase.com



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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE
ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.
Sanjay Mallapudi

RAPID SHUTDOWN

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

PV-14



DATA SHEET



IQ Gateway Commercial 2

The IQ Gateway Commercial 2 delivers solar production and energy consumption data to Enphase App, the monitoring and analysis software for comprehensive, remote maintenance and management of IQ8 Commercial Microinverter based PV systems.

With integrated revenue-grade production metering and optional consumption monitoring, the IQ Gateway Commercial 2 is the platform for total energy management and integrates with the IQ8 Commercial Microinverters.



IQ8 Commercial Series Microinverters
Extra high-powered, smart grid-ready microinverters designed to match larger format commercial PV modules.

Smart

- Enables web-based monitoring and control
- Supports bidirectional communications for remote upgrades
- Supports power export limiting and zero-export applications

Simple

- Easy system configuration using Enphase Installer App
- Flexible networking with Wi-Fi and Ethernet

Reliable

- Designed for installation indoors or outdoors in an enclosure
- 5-year warranty

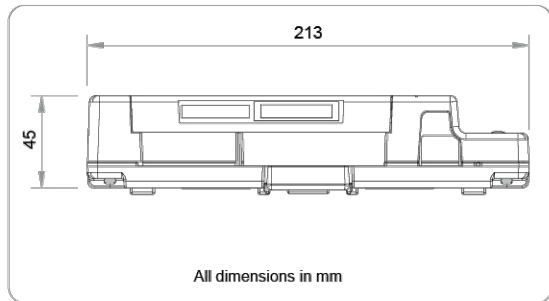
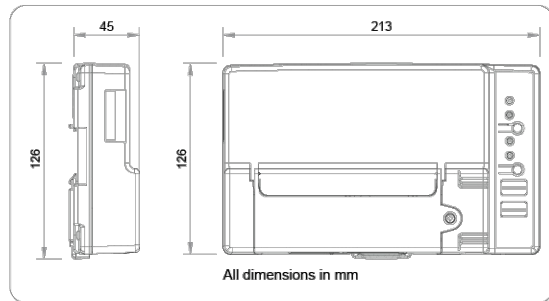
IQ Gateway Commercial 2-DSH-00212-2.0-EN-US-2023-10-31

IQ Gateway Commercial 2

MODEL NUMBERS	UNITS	ENV2-IQC2-AM3-3P
IQ Gateway Commercial 2 ENV2-IQC2-AM3-3P	—	Three-phase communications gateway with integrated, revenue-grade PV production metering ($\pm 0.5\%$) and optional consumption monitoring ($\pm 2.5\%$). Includes three 400 A continuous rated Production CTs. This IQ Gateway Commercial 2 works only with the IQ8 Commercial Microinverters.
ACCESSORIES (ORDER SEPARATELY)		
Enphase Mobile Connect CELLMODEM-M1-06-SP-05 CELLMODEM-M1-06-AT-05	—	Plug-and-play industrial-grade cellular modem with a five-year data plan (expandable to 12 years). Available in the United States, Canada, Mexico, Puerto Rico, and the U.S. Virgin Islands, where there is adequate cellular service in the installation area.
Consumption monitoring CT-600-SPLIT (order three or six, as needed)	—	Split-core current transformers enable consumption metering
CAPACITY		
Number of microinverters polled	—	Up to 276
MECHANICAL AND ELECTRICAL DATA		
Power requirements	—	208 Y/120 VAC three-phase Max 20 A overcurrent protection is required
Typical power consumption	W	5
Rated frequency	Hz	60
Dimensions (W × H × D)	cm	21.3 × 12.6 × 4.5 (8.4" × 5" × 1.8")
Weight	oz	17.6 (498 g)
Ambient temperature range	°C	-40°C to 65°C (-40°F to 149°F) -40°C to 46°C (-40°F to 115°F) if installed in an enclosure
Environmental rating	—	IP30. For installation indoors or in an NRTL-certified, NEMA-type 3R enclosure.
Altitude	m	Up to 2,000 (6,560 ft)
Production CTs	—	- Capable of measuring 400 A of continuous current with 0.5% accuracy - Accuracy of $\pm 0.5\%$ for revenue grade production metering (ANSI C12.20 certified) - The internal aperture measures 43 mm and can support cables up to a maximum size of 1,000 KCMIL conductors - UL2808 certified
Consumption CTs	—	- For electrical services up to 600 A, with parallel runs up to 1200 A - Aperture of 50 mm × 50 mm and can support cables up to a maximum size of 300 KCMIL conductors - Service entrance rated with UL2808 certification - Rated for pollution degree 3 - Accuracy of $\pm 2.5\%$ for consumption monitoring - CT wire insulation rating of 600 V
COMMUNICATION INTERFACES		
Integrated Wi-Fi	—	802.11b/g/n (2.4 GHz, 5 GHz), for connecting the Enphase Cloud via the Internet
Wi-Fi range (recommended)	ft	32.8
Ethernet	—	Optional, 802.3, Cat5E (or Cat 6) UTP Ethernet cable (not included) for connecting to the Enphase Cloud via the Internet
Mobile Connect	—	CELLMODEM-M1-06-SP-05, CELLMODEM-M1-06-AT-05 (to be purchased separately)
Digital I/O	—	Digital Input/output for grid operator control
USB 2.0	—	For Mobile Connect
Access point (AP) mode	—	For a connection between the IQ Gateway and a mobile device running the Enphase Installer App
Metering ports	—	Up to two Consumption CTs and one Production CT
Power line communication (PLC)	kHz	90–110 (Class B) to microinverters
Web API	—	Refer to https://developer-v4.enphase.com
Local API	—	Refer to guide for local API
LED Indicators	—	From top to bottom: Cloud connectivity, Wi-Fi access point mode, PV production state, PLC communications state
Configured via	—	Enphase Installer App and Enphase Installer Platform

IQ Gateway Commercial 2-DSH-00212-2.0-EN-US-2023-10-31

POWER PRODUCTION/EXPORT LIMITING VIA THE IQ GATEWAY'S DIGITAL I/O	UNITS	ENV2-IQC2-AM3-3P
Maximum relays read	—	4
Capabilities supported	—	Power production limiting (Production CTs required), power export limiting (Production CTs required and Consumption CTs - "Load with Solar" configuration)
Minimum IQ Gateway version	—	v7.3.120
Cable configurations	—	18 AWG, UL-Std.62, 600 V, 105°C, and min 0.03 inches average thickness
Signal voltage range	V	2.5–5 (digital high), 0–1.9 (digital low)
Terminal blocks	in ²	Five terminals, up to 0.002 in ²
Configuration via	—	Enphase Installer App, Enphase Installer Platform (site settings)
SCOPE OF DELIVERY		
Package dimensions (H × W × D)	in	6.3" × 10.8" × 3.9"
Package weight	lb	2.2
Aluminium DIN rail	cm	12.4 (4.9 in)
Current Transformers (CTs)	—	Three CT-400-SOLID included
COMPLIANCE		
Compliance	—	UL 916 CAN/CSA C22.2 No. 61010-1 47 CFR Part 15 Class B ICES 003 IEC/EN 61010-1:2010, EN50065-1, EN61000-4-5, EN61000-6-1, EN61000-6-2 ANSI C12.20 IEEE 1547:2018 - UL 1741-SB, 3 rd Ed.
COMPATIBILITY		
Microinverter	—	IQ8H-3P and IQ8P-3P Series Microinverters



IQ Gateway Commercial 2-DSH-00212-2.0-EN-US-2023-10-31

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NEW GRID-TIED SYSTEM 38.5kW DC

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PLAN DESIGNER SIG.

Sanjay Mallapudi

ENPHASE IQ GATEWAY

PROJECT NO: GSD-20260102-SCM

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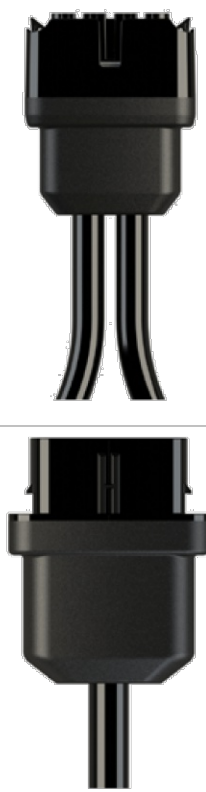
PV-15

PRELIMINARY

Enphase
QD Cable Accessories

The **Enphase QD™ Cable** and accessories are integral parts of the IQ 8D-based small commercial PV system for grid-tied, three-phase, 208V PV applications.

The QD Cable works with the Enphase IQ 8D™ Microinverter (one micro for two series-connected PV modules) and provides self phase balancing and neutral sensing for phase loss protection.



Reliable

- Neutral sensing for phase loss protection
- Locking type connectors
- Rated for outdoor, wet environments, sunlight resistance, and oil resistance

Easy

- Self phase balancing
- Lightweight and simple for fast installation
- Modularly expandable
- Reduction in balance-of-system costs and installation time
- Reach customer support within one minute¹

Field-Wireable Connectors

- Easily connect QD cables on the roof without complex wiring
- Available in male and female connector types
- UL listed (pending)

1. Average wait time for North America technical support was 0.8 minutes in Q1 2020.

To learn more about Enphase offerings, visit enphase.com



Enphase QD Cable and 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 the 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.			
QD CABLE TYPES / ORDERING OPTIONS				
Connectorized Models	Size / Max Nominal Voltage	Connector Spacing	PV Module Orientation	Connector Count per Box
QD-12-10-150	12 AWG / 277 VAC	1.4 m (4.5 ft)	Portrait	150
QD-12-20-135	12 AWG / 277 VAC	2.4 m (7.8 ft)	Landscape	135
QD-12-42-63	12 AWG / 277 VAC	4.6 m (15.1 ft)	Landscape ballast, east-west mount structure	63
ENPHASE QD CABLE ACCESSORIES				
Name	Model Number	Description		
Raw QD Cable	QD-12-RAW-300	300 meters of 12 AWG cable with no connectors		
Field wireable connector (male)	QD-CONN-10M	Male field wireable AC connector for raw QD cable		
Field wireable connector (female)	QD-CONN-10F	Female field wireable AC connector for raw QD cable		
Disconnect tool	QD-DISC-10	Disconnect tool for QD Cable connectors, DC connectors, and AC module mount		
QD Cable sealing caps (female)	QD-SEAL-10	One needed to cover each unused connector on the cabling		
Cable clip	Q-CLIP-100	Used to fasten cabling to the racking or to secure looped cabling		
Terminator	QD-TERM-10	Terminator for unused cable ends		
Center tap adapter cable	QD-LINKFW-10	Link adapter cable for center tapping of QD cable when using QD-12-42-63		
	FIELD WIREABLE CONNECTOR (M) Male field wireable AC connector, sold in packs of ten (QD-CONN-10M)		FIELD WIREABLE CONNECTOR (F) Female field wireable AC connector, sold in packs of ten (QD-CONN-10F)	
	TERMINATOR Terminator cap for unused cable ends, sold in packs of ten. Center feed requires two per branch. (QD-TERM-10)		SEALING CAPS Female sealing caps for unused cable connections, sold in packs of ten (QD-SEAL-10)	
	DISCONNECT TOOL Plan to use at least one per installation, sold in packs of ten (QD-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

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2021-04-01



Detail Bill of Material

Project Name: Negotiation No:
General Order No: Alternate No:

Item No.	Qty	Product	Description
003	1	Group Metering	Aluminum Bus, EUSERC, Total Number of Structures:
		Catalog No	3PMBE600R
		Designation	
Qty	List of Materials		
1	[3PMBE600R] 600A, 65kAIC, PDG3xG, MCB METERING MAIN		
1	[3MMBSK] 1200A Copper Bussed Spacer for Right Hand Mounting in EUSERC Application		
4	[3MM312R] 125A Residential Stack, 3PH, 3 Socket, Outdoor, Ring Style, Aluminum Bus		
4	[1MMWB] 4 Foot Wall Mounting Rail for Meter Stacks, Meter Packs & Main Service Modules		
12	[BRH2125] 125A, 22k, 2-Pole, Plug-in type Main Tenant Circuit Breaker for Residential Stacks		
1	[3MM212R] 125A Residential Stack, 3PH, 2 Socket, Outdoor, Ring Style, Aluminum Bus		
1	[BRH2100] 100A, 22k, 2-Pole, Plug-in type Main Tenant Circuit Breaker for Residential Stacks		
1	[1MMACP] Lexan Blank Meter Socket Cover without Tabs for Meter Stacks and Meter Packs		
1	[3MTB600R] 600A, 3PH, Main Terminal Box, Aluminum Bus		

Group Metering General Information

Specifications

Utility Approval
Bus Type

EUSERC
Aluminum

Breaker Information

12BRH2125

125A, 22k, 2-Pole, Plug-in type Main Tenant Circuit Breaker for Residential Stacks

1BRH2100

100A, 22k, 2-Pole, Plug-in type Main Tenant Circuit Breaker for Residential Stacks

Miscellaneous Specifications

Approval Drawings:
Standard Instructions Books:

No
No

Autocad Drawings:
Certified Test Report (Std):

No
No

Enclosure Properties

Struct #	Width	Depth	Description/Modifications	Catalog Number
1	24.88	11.14	Structure,	3PMBE600R
2	3.75	4.88	Structure,	3MMBSK
3	12.26	7.015	Structure,	3MM312R
4	12.26	7.015	Structure,	3MM312R
5	12.26	7.015	Structure,	3MM312R
6	12.26	7.015	Structure,	3MM312R
7	12.26	7.015	Structure,	3MM212R
8	13.5	7	Structure,	3MTB600R

Total of 8 Structures, Total Width of 103.43 Inches

The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.

PREPARED BY
DATE
2/7/2025

APPROVED BY
DATE

VERSION
8.0.2.3

REVISION
0

Eaton

JOB NAME
DESIGNATION
Group Metering

DRAWING TYPE
Customer Appr.

G.O.

DWG SIZE
A

ITEM
003

SHEET
1 of 2

(INFO WITHHELD)

LICENSE NO. (INFO WITHHELD)

PHONE: (INFO WITHHELD)

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.

Sanjay Mallapudi

ELECTRICAL BOM

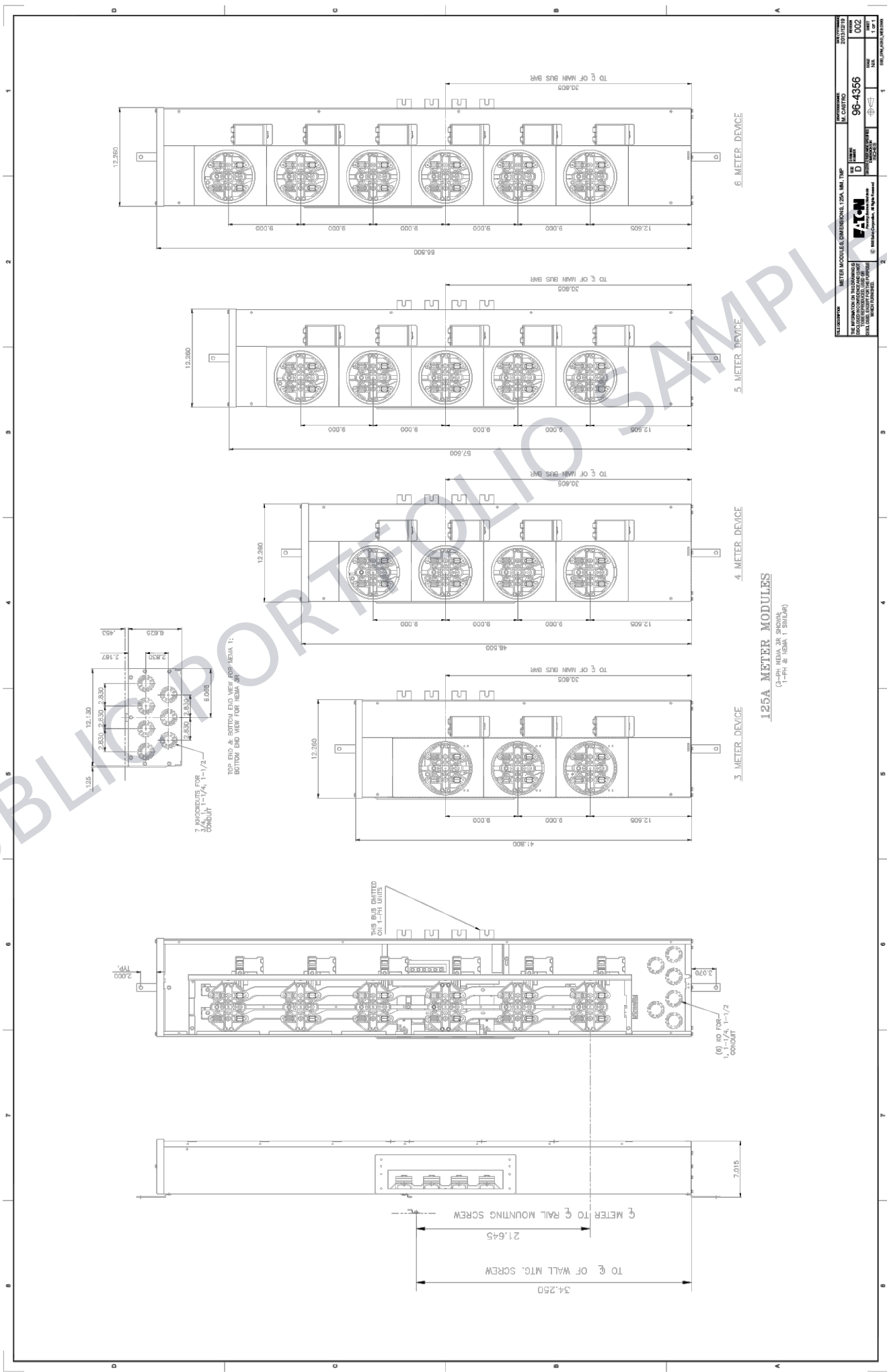
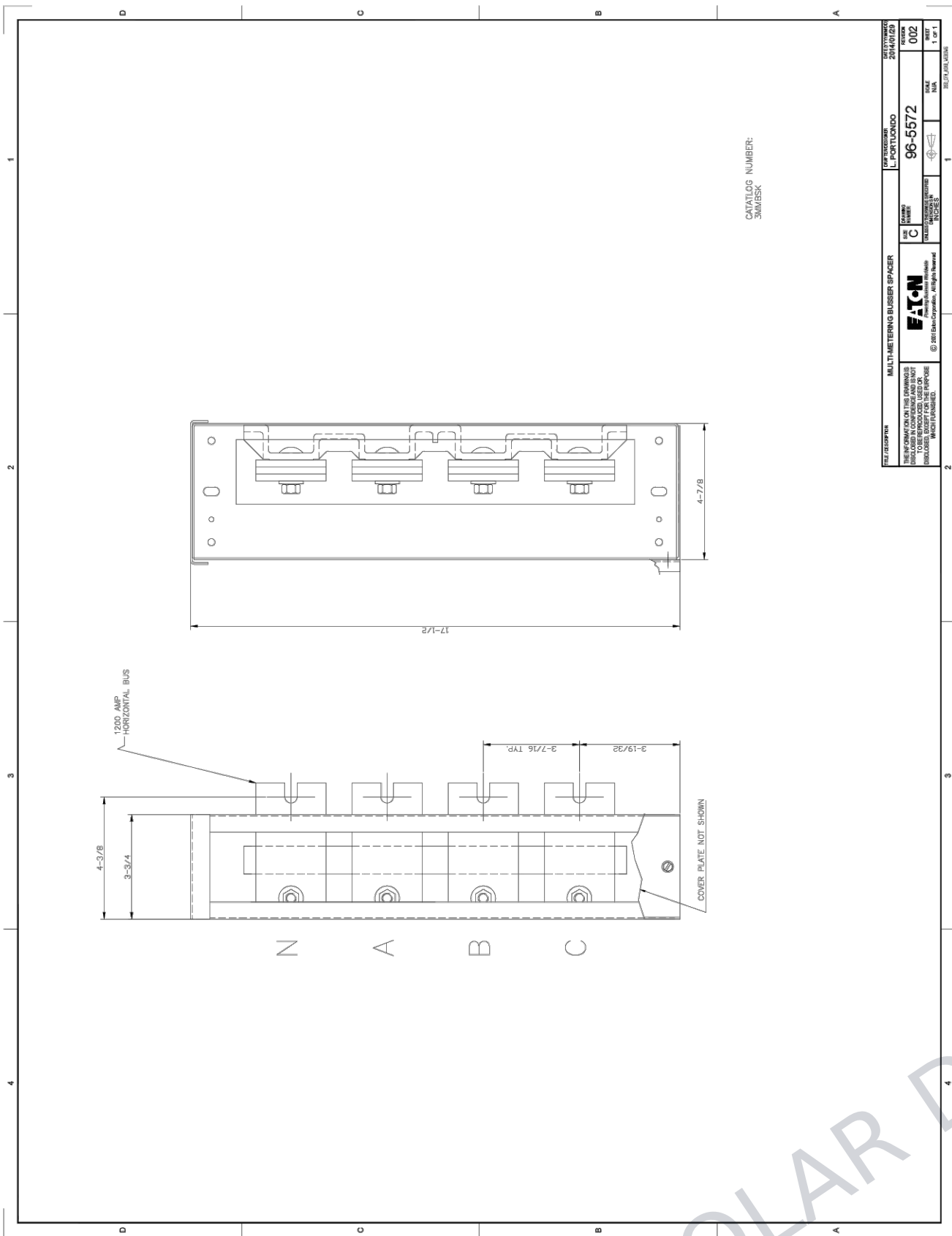
PROJECT NO: GSD-20260102-SCM

DRAWN BY: SCM

DATE: 1/2/2026

PV-17A

The information on this document is created by Eaton Corporation. It is disclosed in confidence and it is only to be used for the purpose in which it is supplied.	PREPARED BY		DATE	2/7/2025		Eaton	
	APPROVED BY		DATE	JOB NAME			
			DESIGNATION				
	VERSION		TYPE		DRAWING TYPE		
	8.0.2.3		Group Metering		Customer Appr.		
	REVISION		DWG SIZE	G.O.	ITEM	SHEET	
	0		A		003	2 of 2	



GO/NEG-Alt-Date:		Job Name:
Item Number:	Catalog Number:	Designation:
003		

GO/NEG-Alt-Date:		Job Name:
Item Number:	Catalog Number:	Designation:
003	3PMBE600R	

(INFO WITHHELD)
LICENSE NO. (INFO WITHHELD)
PHONE: (INFO WITHHELD)

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REPRESENTED IN THIS PLAN.

NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

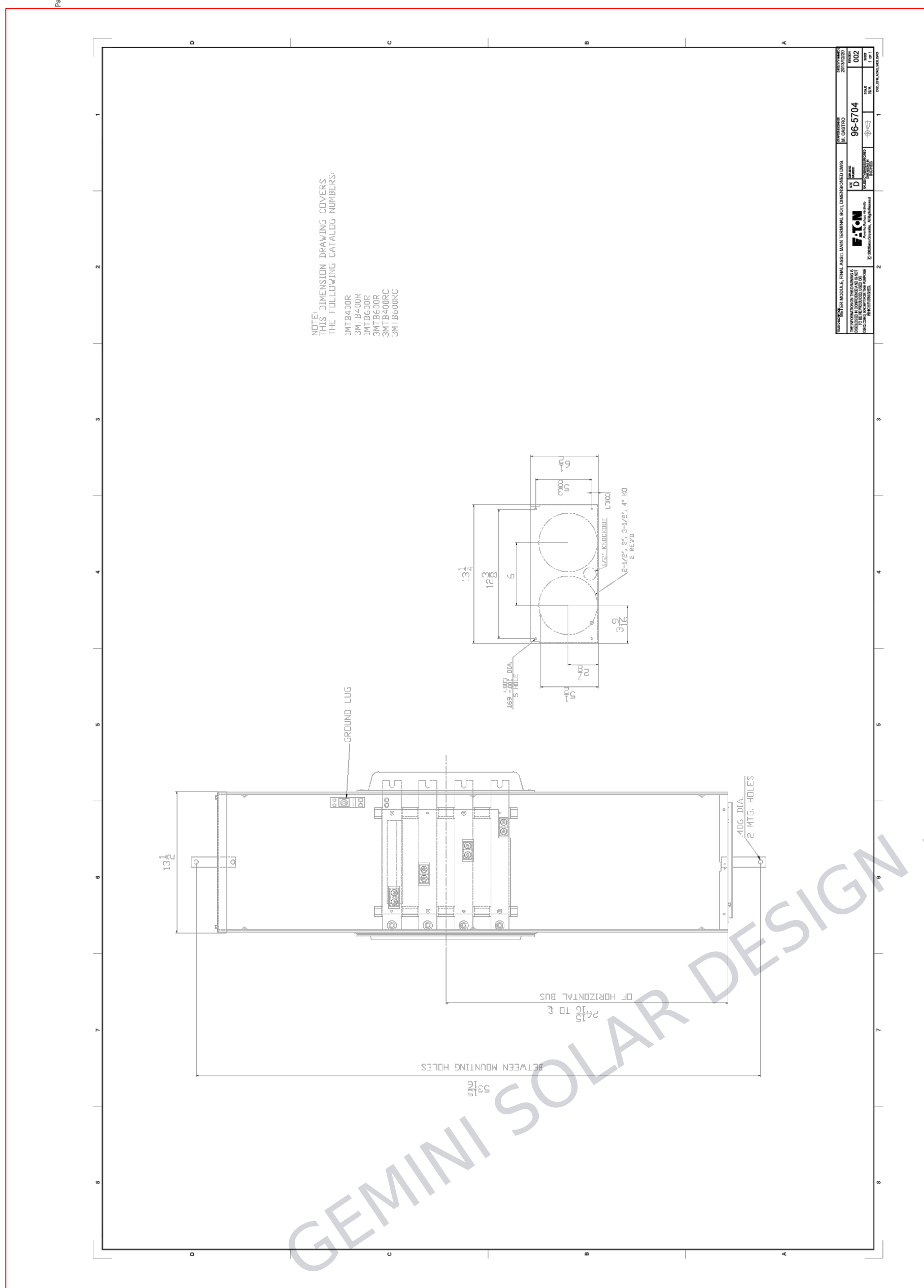
SHEET SIZE
ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.
Sanjay Mallapudi

ELECTRICAL BOM

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

PV-17C



GO/NEG-Alt-Date:		Job Name:
Item Number: 003	Catalog Number: 3PMBE600R	Designation:

(INFO WITHHELD)	
LICENSE NO. (INFO WITHHELD)	
PHONE: (INFO WITHHELD)	
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NEW GRID-TIED SYSTEM 38.5kW DC	(INFO WITHHELD FOR PUBLIC SAMPLE)
SHEET SIZE	
ANSI EXPAND C (22" X 17")	
PLAN DESIGNER SIG.	
Sanyaz Mallapudi	
ELECTRICAL BOM	
PROJECT NO: GSD-20260102-SCM	
DRAWN BY: SCM	
DATE: 1/2/2026	
PV-17D	

Specifications

Eaton 3MTB600R

Catalog Number: 3MTB600R

Eaton Main Terminal Box Group Metering, 600A, Aluminum, NEMA 3R, Overhead/Underground, Four-wire, Three-phase, 120/208V, (2) 250-500 kcmil



General specifications

Product Name	Catalog Number
Eaton main terminal box	3MTB600R
UPC	Product Length/Depth
786849053093	6.5 in
Product Height	Product Width
53.9375 in	13.5 in
Product Weight	Warranty
47.5 lb	Eaton Selling Policy 25-000, one (1) year from the date of installation of the Product or eighteen (18) months from the date of shipment of the Product, whichever occurs first.
Certifications	Catalog Notes
UL Listed	For compression lug landing kits for 600A units, order 3MTB600CLK. Kit includes lug landings for three phases and neutral.

Product specifications

Amperage Rating
600A

Bus material
Aluminum

Feed type
Top/bottom

Phase
Three-phase

Voltage rating
120/208 V

Wire size
(2) 250-500 kcmil

Utility approvals
MI : Consumers Energy
NC : Dominion
VA : Dominion
MI : DTE Energy (Detroit Edison)
WI : WE Energies / Wisconsin Public Service (WPS)
HI : Hawaiian Electric
MT : NorthWestern Energy
NE : NorthWestern Energy
SD : NorthWestern Energy
WY : NorthWestern Energy
MD : Baltimore Gas and Electric
DC : PEPCO
MD : PEPCO

Enclosure
NEMA 3R

Number of wires
4

Resources

Catalogs
Residential and Light Commercial, Metering Products, Volume 1 Tab 4

Specifications and datasheets
Eaton Specification Sheet - 3MTB600R

(INFO WITHHELD)
LICENSE NO. (INFO WITHHELD)
PHONE: (INFO WITHHELD)

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NEW GRID-TIED SYSTEM 38.5kW DC

(INFO WITHHELD FOR PUBLIC SAMPLE)

SHEET SIZE

ANSI EXPAND C (22" X 17")

PLAN DESIGNER SIG.

Sanjay Mallapudi

TERMINATION BOX

PROJECT NO: GSD-20260102-SCM
DRAWN BY: SCM
DATE: 1/2/2026

PV-17E

