TOWN OF DIGHTON

PLANNING BOARD
979 SOMERSET AVENUE
DIGHTON, MA 02715
Tel: (508) 669-6431, Ext. 114
Fax: (508) 669-4509

LEGAL NOTICE
DIGHTON PLANNING BOARD
June 4, 2025 at 7:00 PM
Old Town Hall
1111 Somerset Avenue
Dighton, MA 02715

Notice is hereby given the Dighton Planning Board will conduct a Public Hearing on the Special Permit Application & Site Plan Review by Freedom Forever Solar MA, LLC to install 8.000 kW Small-Scale Ground-Mounted Solar PV System for property located at 462 Brook Street being shown as Assessors Map 13, Lot 73, pursuant to Sections 4600, 5300 and 5400 of the Town of Dighton Zoning Bylaws. Said property is located in a Residential/Agricultural District.

Copies of the application and plan may be viewed in the Planning Board office during normal business hours or requested by email at keasterday@dighton-ma.gov. Any person wishing to be heard on the above application should appear at the time and place designated for the public hearing.

DIGHTON PLANNING BOARD
Jeff Carvalho, Chairman

TOWN OF DIGHTON

PLANNING BOARD
979 SOMERSET AVENUE
DIGHTON, MA 02715

PETITIONER: Freedom Forever Solar MA LLC - Kaitlyn Ruggieri
NAME: DEARRUDA, JAMES R
ADDRESS: 462 Brook Street, Dighton MA 02715

LOCATION (from Assessors' Office) PLAT AND LOT NOS.	Map: 013.0 Block: 0073 Lot: 0000.0	
PRESENT ZONING	R1	First Record Date Planning Board Use Only
DATE OF THIS DOCUMENT	3/3/2025	FILE: TITLE:

APPLICATION FOR SPECIAL PERMIT

File two (2) completed copies of this application. One (1) copy with the Planning Board and one (1) copy with the Town Clerk in accordance with the Zoning Bylaws. The filing fee as calculated by Appendix A, made payable to the Town of Dighton.

To the Dighton Planning Board:

PROJECT NAME: Ground Mounted PV Solar Installation - 20 Panels- 501.60 sq ft
SUBJECT PROPERTY ADDRESS: 462 Brook Street, Dighton MA 02715
ASSESSOR'S MAP/LOT(s): Map: 013.0 Block: 0073 Lot: 0000.0
ALL APPLICABLE ZONING DISTRICT: R-1
TITLE OF PLAN: Ground Mounted PV System - 462 Brook Street
PLAN DATED: 1/14/2025

DESCRIBE WHAT IS PROPOSED FOR THIS PROPERTY:
Ground Mounted PV Solar Installation - 20 Panels- 501.60 sq ft

STATE THE EXACT NATURE OF ACTION OR RELIEF REQUESTED BY THIS APPLICATION AND CITE THE APPLICABLE BYLAW(s) AND/OR BYLAW SECTION(s):

4600 - Solar Electric Generating Facilities - 4631.b & 4659.b
Installation of Ground Mounted PV Solar Installation. Proposed installation is 501.60 Sq Ft. Location follows set back regulations from property lines. Propoerty is on 5.2 acres of land

DESCRIBE HOW THIS APPLICATION MEETS THE CRITERIA FOR A SPECIAL PERMIT AS DESCRIBED IN THE APPLICABLE SECTION(s) OF THE DIGHTON ZONING BYLAWS:
4631.b - solar installation will be on property larger than two acre. Property is 5.2 acres of land.
4659.b - proposed ground mount solar instalation will meet the set back requirements from property line.

Setbacks from propoerty lines listed on plans : Left - 103.10 Rear - 221.11 Front - 108.10 Right - 393.2

THE UNDERSIGNED HEREBY CERTIFIES THAT THE INFORMATION ON THIS APPLICATION AND PLANS SUBMITTED HEREWITH IS CORRECT, AND THAT THE APPLICATION COMPLIES WITH ALL APPLICABLE PROVISIONS OF STATUTES, REGULATIONS AND BYLAWS TO THE BEST OF HIS/HER KNOWLEDGE.
THE ABOVE IS SUBSCRIBED TO AN EXECUTED BY THE UNDERSIGNED UNDER THE PENALTIES OF PERJURY IN ACCORDANCE WITH M.G.L. Ch. 268, §1-A.

Received by the Planning Board:
RECEIVED
Date:
Time:
Signature:
APR 30 2025
By: Dighton Planning Board

Received by the Town Clerk:
Date:
Time:
Signature:

Applicant's Name: Freedom Forever Solar MA LLC - Kaitlyn Ruggieri
Applicant's Address: 135 Robert Treat Paine Drive, Taunton, MA 02780
Applicant's Phone #: 774-320-5539
Signature: Kaitlyn Ruggieri

Owner's name, address and signature for authorization (if other than applicant)
Owner's Name: James Dearruda
Owner's Address: 462 Brook Street, Dighton MA 02715
Owner's Phone#: 508-631-8043
Signature: James Dearruda

Checklist of items to be submitted with application.

1. ✓ Application Form (x2)
2. ___ Application Fee (please refer to Fee Schedule)
3. ___ Project Review Fee (please refer to Fee Schedule) & Completed W-9
4. ✓ Tax Status Application Form
5. ✓ Plans (See applicable Zoning Bylaws for Specific Requirements)
6. ✓ Certified Abutters List
7. ✓ Completed Receipt for Special Permit Application/Site Plan Review (within 3 working days of the submittal date)

Town of Dighton, Massachusetts

TAX STATUS APPLICATION FORM

In order to process your application request efficiently and promptly we ask that you provide us with the following information. **One form must be filled out completely for each parcel(s) owned by you and any other parties involved.**

Date of request: 2/25/2025
Requested by: Freedom Forever Massachusetts L:LC
Name: James Dearruda
Address: 462 Brook Street, Dighton MA 02715
Telephone Number: (508) 631-8043
Assessed Owner: DEARRUDA, JAMES R
Current Owner: _____
(If different from the Assessed owner)

Scope of Work: Ground Mounted PV Solar Installation - 20 Panels- 501.60 sq ft

Property Address: 462 Brook Street, Dighton MA 02715

To Be *Completed* and *Initialed* by the Assessors Office
Assessor's Reference (M&L): 13-73-____ VW 4/23/25

If a developer or contractor is involved in this project then this section must be completed.
Contractor/Business Name Freedom Forever Massachusetts L:LC Business ID 198080
Business Address 135 Robert Treat Paine Drive, Taunton, MA 02780 Phone Number 774 3205539
Contact person Kaitlyn Ruggieri

(SIGNATURE REQUIRED TO COMPLETE TAX STATUS)
I hereby attest that all the information provided herein is true and complete to the best of my knowledge.
Kaitlyn Ruggieri Petitioner

For Office use only:
Tax Office Initials A.D.
Real Estate Amt. Due 0
Personal Property Amt. Due 0
Motor Vehicle Amt. Due 0
Tax Title Amt. Due 0

RECEIVED
APR 23 2025
By

VALID FOR 30 DAYS

***As part of Article XXVII of Dighton's bylaws, we have adopted MGL Chapter40 Section 57 titled "Licenses & Permits of Delinquent Taxpayers".**

Please Note: You must contact the office that is requesting the Tax Status Report for any questions or information relating to this form.

TOWN OF DIGHTON

PLANNING BOARD
979 SOMERSET AVENUE
DIGHTON, MA 02715

PETITIONER: Freedom FOrever Solar MA LLC - Kaitlyn Ruggieri
NAME: Dearruda, James R
ADDRESS: 462 Brook Street, Dighton MA 02715

LOCATION (from Assessors' Office) PLAT AND LOT NOS.	Map: 013.0 Block: 0073 Lot: 0000.00	
PRESENT ZONING	R1	First Record Date Planning Board Use Only
DATE OF THIS DOCUMENT	3.3.2025	FILE: TITLE:

APPLICATION FOR SITE PLAN REVIEW

File two (2) completed copies of this application with the Planning Board and within three (3) days thereafter submit a copy to the Board of Health, Board of Appeals, Building Commissioner, Town Engineer and Conservation Commission in accordance with the Zoning Bylaws. The filing fee as calculated by the Fee Schedule, made payable to the Town of Dighton.

To the Dighton Planning Board:

TITLE OF PLAN: Ground Mounted PV System - 462 Brook Street

PLAN DATED: 1/14/2025

SUBJECT PROPERTY ADDRESS: 462 Brook Street, Dighton MA 02715

ASSESSOR'S MAP/LOT(s): Map: 013.0 Block: 0073 Lot: 0000.00

ALL APPLICABLE ZONING DISTRICTS: R1

PROPOSED USES FOR THIS PROPERTY:

Ground Mounted PV Solar Installation - 20 Panels- 501.60 sq ft

TOTAL LOT AREA: 5.2 Acres TOTAL FRONTAGE: 580

EXISTING STRUTURE(s) 2219 S.F.

PROPOSED STRUCTURE(s) 501.60 S.F.

TOTAL # OF PARKING SPACED REQUIRED: 0

TOTAL # OF PARKING SPACES PROPSED: 0

ATTACH A LIST OF VARIANCES REQUESTED, IF ANY. (Variances may require relief from the Zoning Board of Appeals)

SPECIAL PERMIT APPLICATION/FEES PURSUANT TO THE FEE SCHEDULE, IF APPLICABLE, SHALL BE SUBMITTED IN CONJUNCTION WITH THIS SITE PLAN REVIEW APPLICATION.

I HAVE READ SECTION 5400, SITE PLAN REVIEW OF THE DIGHTON ZONING BYLAWS, AND I AM SUBMITTING THIS APPLICATION WITH ACCOMPANYING PLANS AS REQUIRED. EXCEPT FOR THE ATTACHED LIST OF VARIANCES (IF ANY), IT IS MY BELIEF THAT THE PLANS COMPLY WITH SECTION 5400. I HAVE NOTFIED TENANTS AND PARTIES (IF ANY) WHO HAVE AN INTEREST IN OR ARE AFFECTED BY THE PROPOSED PLAN.

Received by the Planning Board:
Date: RECEIVED
Time: APR 30 2025
Signature: By: Dighton Planning Board

Received by the Town Clerk:
Date:
Time:
Signature:

Applicant's Name: Freedom FOrever Solar MA LLC - Kaitlyn Ruggieri
Applicant's Address: 135 Robert Treat Paine Drive, Taunton, MA 02780
Applicant's Phone #: 774-320-5539
Signature: Kaitlyn Ruggieri

Owner's name, address and signature for authorization (if other than applicant)
Owner's Name: Dearruda, James R
Owner's Address: 462 Brook Street, Dighton MA 02715
Owner's Phone#: (508) 631-8043
Signature: James Dearruda

Checklist of items to be submitted with application.

1. ✓ Application Form (x2)
2. ✓ Application Fee (please refer to Fee Schedule)
3. ✓ Project Review Fee (please refer to Fee Schedule) & Completed W-9
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5. ✓ Plans (See applicable Zoning Bylaws for Specific Requirements)
6. ✓ Completed Receipt for Special Permit Application/Site Plan Review (within 3 working days of the submittal date)

Town of Dighton, Massachusetts

TAX STATUS APPLICATION FORM

In order to process your application request efficiently and promptly we ask that you provide us with the following information. **One form must be filled out completely for each parcel(s) owned by you and any other parties involved.**

Date of request: 2/25/2025
Requested by: Freedom Forever Massachusetts L:LC
Name: James Dearruda
Address: 462 Brook Street, Dighton MA 02715
Telephone Number: (508) 631-8043
Assessed Owner: DEARRUDA, JAMES R
Current Owner: _____
(If different from the Assessed owner)

Scope of Work: Ground Mounted PV Solar Installation - 20 Panels- 501.60 sq ft

Property Address: 462 Brook Street, Dighton MA 02715

To Be *Completed* and *Initialed* by the Assessors Office

Assessor's Reference (M&L): ___-____-_____

If a developer or contractor is involved in this project then this section must be completed.

Contractor/Business Name Freedom Forever Massachusetts L:LC Business ID 198080
Business Address 135 Robert Treat Paine Drive, Taunton, MA 02780 Phone Number 774 3205539
Contact person Kaitlyn Ruggieri

(SIGNATURE REQUIRED TO COMPLETE TAX STATUS)
I hereby attest that all the information provided herein is true and complete to the best of my knowledge.

Kaitlyn Ruggieri Petitioner

For Office use only: _____
Tax Office Initials_____
Real Estate Amt. Due_____
Personal Property Amt. Due_____
Motor Vehicle Amt. Due_____
Tax Title Amt. Due_____

***As part of Article XXVII of Dighton's bylaws, we have adopted MGL Chapter40 Section 57 titled "Licenses & Permits of Delinquent Taxpayers".**

Please Note: You must contact the office that is requesting the Tax Status Report for any questions or information relating to this form.

tyler **RESIDENTIAL PROPERTY RECORD CARD** 2025 **DIGHTON**

Situs : 462 BROOK ST	Parcel Id: 076/013.0-0073-0000.0	Class: SINGLE FAMILY RESIDENCE	Card: 1 of 1	Printed: March 3, 2025

Dwelling Information

Style	Conventional	Year Built	1800
Story height	1.5	Eff Year Built	1988
Attic	No	Roof	GABLE
Exterior Walls	Asbstos-Shng	Foundation	STONE
Masonry Trim		SFLA	1584

Basement

Basement	Full	# Car Bsmt Gar	
Bsmt Area	986	Bsmt Grade	
Fin Bsmt Area		Fin Bsmt Grade	
BSMT RecRm Area:			

Heating & Cooling

Heating/AC	Hot Water
Fuel Type	Oil
System Type	

Fireplaces

Fireplaces	1

Room Detail

Bedrooms	3	Full Baths	1
Total Rooms	6	Half Baths	
Custom Feat 1	-	Extra Fixtures	
# of Custom Feat 1		Kitchen Quality	TYPICAL
Custom Feat 2	-	Bath Quality	TYPICAL
# of Custom Feat 2			

Adjustments

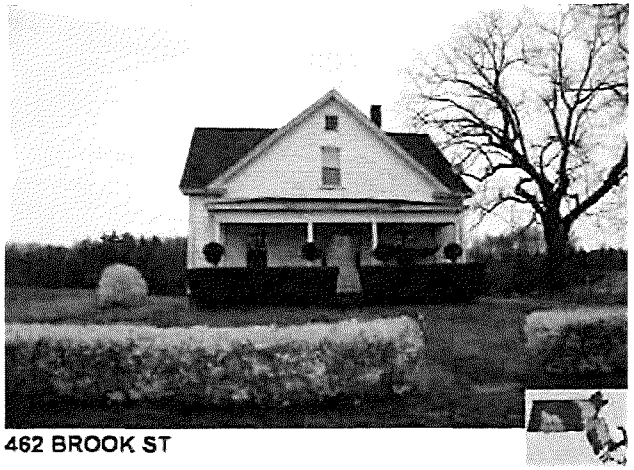
Int vs Ext	Average	Unfinished Area	
		Occupancy	1

Grade & Depreciation

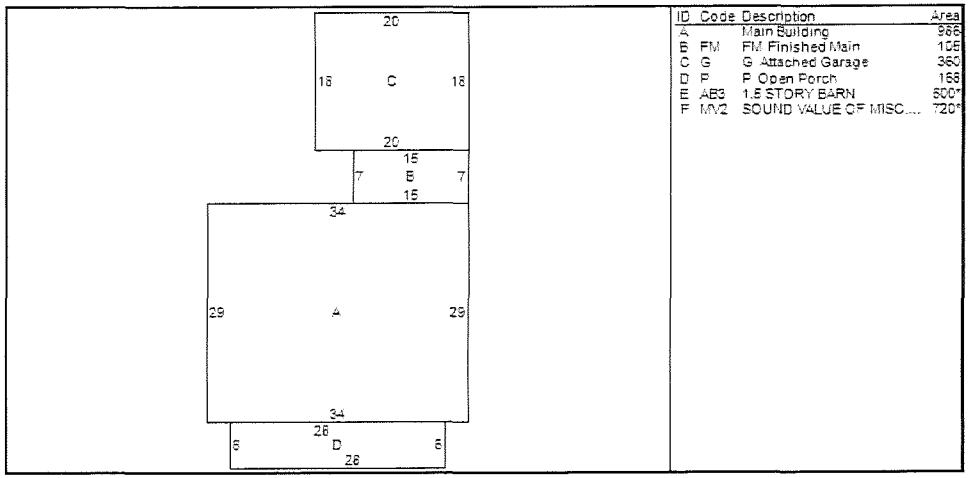
Grade	C	Market Adj	
Condition	Average	Functional	
CDU	AVERAGE	Economic	
Cost & Design	0	% Good Ovr	
% Complete		RCNLD	253590

Dwelling Computations

% Good	76	Economic	
% Good Override		% Complete	
Functional		C&D Factor	



462 BROOK ST



ID	Code	Description	Area
A		Main Building	986
B	FM	FM Finished Main	105
C	G	G Attached Garage	360
D	P	P Open Porch	168
E	AB3	1.5 STORY BARN	500
F	MV2	SOUND VALUE OF MISC....	720

Permits

Num	Date	ID	Amount	Type	Description	% Complete	Open/Closed	Inspection	Completed	Fee
1860	21-MAR-18	84729	4,526	MN	INSULATION			27-MAR-18		
17287	15-NOV-17	84729	4,000	NC	RF MOUNT SOLAR			18-JAN-18		
2744	22-MAY-02	84729		MN	REPLACE WINDOW			25-AUG-02		
1823	30-JUN-98	84729	8,101,998	MN	REPLACE ROOF			10-SEP-98		

RESIDENTIAL PROPERTY RECORD CARD 2025

DIGHTON

Situs : 462 BROOK ST	Map ID: 076/013.0-0073-0000.0	Map: 013.0 Block: 0073 Lot: 0000.0	Card: 1 of 1	Printed: March 3, 2025

CURRENT OWNER

DEARRUDA, JAMES R
462 BROOK ST
DIGHTON MA 02715

GENERAL INFORMATION

Tax Class	
NBHD	006.00
Class	101
Calc'd Acres	5.2

Price	250,000
Sale Date	08/31/17
Type	Land & Bldgs
Validity	No-Family
Grantor	COREY
Book/Page	23977 / 98

Road Type	TWO-WAY
Road Condition	PAVED
Traffic	MEDIUM
Water	
Sewer	

Land Information

Seg	Type	Code	NBHD	Zone	Method	Sq Ft	Acres	Infl Fact	Infl %	Value	Sup?	Class
2	R	101	006.00	R1	A	182952	4.2	ES	70	23,520	N	R
1	P	101	006.00	R1	S	43560	1			133,729	N	R

Assessment Information

	Assessed	Cost	Income	Market
Current Land	157,200	157,200	0	0
Current Building	260,500	260,500	0	260,500
Current Total	417,700	417,700	0	260,500
Current Net Assessment	417,700			
Prior Year Land	148,400	148,400	0	0
Prior Year Building	227,800	227,800	0	227,800
Prior Year Total	376,200	376,200	0	227,800
Prior Year Net Assessment	376,200			

Outbuilding Data

Type	Size 1	Size 2	Area	Qty	Yr Blt	Grade	Condition	Value
1.5s Barn	600 x	1	600	1	1949	E	7	6,220
Other - Sf	720 x	1	720	1	1949	C	5	650

Entrance Information

Date	ID	Entry Code	Source
	CB	Complete-Ins	Owner-Spouse
	CB	Complete-Ins	
	DJL	Complete-Ins	
	DJL	Complete-Ins	

Town of Dighton, MA

1 inch = 141 Feet

0 141 282 423

March 3, 2025

CAI Technologies
Precision Mapping Geospatial Solutions
www.cai-tech.com

Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

TOWN OF DIGHTON

PLANNING BOARD
979 SOMERSET AVENUE
DIGHTON, MA 02715

PETITIONER: Freedom Forever Solar MA LLC - Kaitlyn Ruggieri
NAME: DEARRUDA, JAMES R
ADDRESS: 462 Brook Street, Dighton MA 02715

LOCATION (from Assessors' Office) PLAT AND LOT NOS. Map: 013.0 Block: 0073 Lot: 0000.0	
PRESENT ZONING R1	First Record Date Planning Board Use Only
DATE OF THIS DOCUMENT 4/25/2025	File: Title:

RECEIPT FOR
SPECIAL PERMIT APPLICATION/SITE PLAN REVIEW

Application for approval for a Special Permit Application/Site Plan Review entitled:
Ground Mounted PV Solar Installation - 20 Panels- 501.60 sq ft

Located at: 462 Brook Street, Dighton MA 02715

has been made for approval to the Dighton Planning Board, and for which comments are requested by the following town agencies:

Received by the DIGHTON BOARD OF HEALTH
(Approval necessary in 45 days)
Elizabeth Moura
for the Dighton Board of Health
Date: 4/30/25

Received by the DIGHTON FIRE DEPARTMENT
for the Dighton Fire Department
Date: 4/30/2025

Received by the DIGHTON CONSERVATION COMMISSION for review
for Dighton Conservation Commission
Date: 4/30/2025

Received by the DIGHTON BOARD Of ASSESSORS for review
for L. Caledonia
Stephanie Doell
for Dighton Board of Assessors
Date: 4/30/25

Received by the DIGHTON WATER DISTRICT or NORTH DIGHTON WATER DISTRICT for review (whichever applies)
Tina Braggs
for Dighton Water District
Date: 4/30/25

Received by the DIGHTON POLICE DEPARTMENT for review
for Dighton Police Department
Date: 4-30-25

Received by the BUILDING COMMISSIONER for review
for Building Commissioner
Date: 4/30/25

This receipt is to be returned to the Dighton Planning Board by the person named above as submitting the copy of the application described within three (3) working days of the submittal date.

Kaitlyn Ruggieri

From: Chief George L. Nichols <gnichols@dighton-ma.gov>
Sent: Thursday, April 17, 2025 8:36 AM
To: Kaitlyn Ruggieri
Subject: RE: 462 Brook Street - PV Solar Plans

Good morning,

I reviewed the plans you provide and I don't see any issue.

Respectfully,

George L. Nichols Jr.
Chief of Police
Dighton Police Deparment
1458 Somerset Ave.
Dighton, MA 02715
(508) 669 6711- X 600

From: Kaitlyn Ruggieri <KaitlynRuggieri@freedomforever.com>
Sent: Wednesday, April 16, 2025 2:46 PM
To: Chief George L. Nichols <gnichols@dighton-ma.gov>
Cc: Permits SouthShoreMA <PermitSouthShoreMA@freedomforever.com>
Subject: 462 Brook Street - PV Solar Plans

Hello!

Per our phone conversation please see attached plans for ground mounted solar installation at 462 Brook Street. Please let me know if you have any questions!

Thank you!
Katy

Kaitlyn Ruggieri
Permit Coordinator
South Shore Branch
(774) 320-5539
www.freedomforever.com

Kaitlyn Ruggieri

From: Permits SouthShoreMA
Sent: Monday, March 3, 2025 7:07 AM
To: Kaitlyn Ruggieri
Subject: FW: plan review/approval - Special Use permit - 462 Brook Street

Follow Up Flag: Follow up
Flag Status: Flagged

Kaitlyn Ruggieri
Permit Coordinator
South Shore Branch
(774) 320-5539
www.freedomforever.com

From: Capt. Eric Gagnon <egagnon@dighton-ma.gov>
Sent: Thursday, February 27, 2025 8:53 AM
To: Permits SouthShoreMA <PermitSouthShoreMA@freedomforever.com>
Subject: RE: plan review/approval - Special Use permit - 462 Brook Street

Katy,

I have reviewed the submitted plan and it meets our standards for fire prevention. As there will be no battery storage on site, a permit from my office is not required. You are cleared to proceed with your project.

Best regards,

Eric Gagnon

Captain/Paramedic
Dighton Fire Department
300 Main Street
Dighton, MA 02715
Office: 508-669-6611
Direct Line: 774-872-0702
Fax: 508-669-6861
www.DightonFire.com

ENTITY NAMED ON THIS EMAIL. IF YOU ARE NOT THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT DISCLOSURE, COPYING, DISTRIBUTION OR THE TAKING OF ANY ACTION IN RELIANCE ON THE CONTENTS OF THIS INFORMATION IS STRICTLY PROHIBITED. IN THIS REGARD, IF YOU HAVE RECEIVED THIS EMAIL IN ERROR, PLEASE NOTIFY THIS OFFICE IMMEDIATELY.

From: Permits SouthShoreMA <PermitSouthShoreMA@freedomforever.com>
Sent: Tuesday, February 25, 2025 8:47 AM
To: Capt. Eric Gagnon <egagnon@dighton-ma.gov>
Subject: plan review/approval - Special Use permit - 462 Brook Street

Good Morning!

We are working on a Special Use permit and site plan application for a proposed ground mounted solar installation located at 462 Brook Street , Dighton, MA 02715. We were directed to reach out to the fire department for plan review/approval from the fire department. Could you please let us know how to proceed? We were not sure if this was a fire permit or a different process.

Thank you!
Katy

Kaitlyn Ruggieri
Permit Coordinator
South Shore Branch
(774) 320-5539
www.freedomforever.com

300 feet Abutters List Report

Dighton, MA
April 17, 2025

Subject Property:

Parcel Number:	013.0-0073-0000.0	Mailing Address:	DEARRUDA, JAMES R
CAMA Number:	013.0-0073-0000.0		462 BROOK ST
Property Address:	462 BROOK ST		DIGHTON, MA 02715-

Abutters:

Parcel Number:	013.0-0071-0000.0	Mailing Address:	SOMERSET, TOWN OF
CAMA Number:	013.0-0071-0000.0		C/O WATER DEPT
Property Address:	540 BROOK ST		3249 COUNTY ST
			SOMERSET, MA 02726-
Parcel Number:	013.0-0072-0000.0	Mailing Address:	THE ROSARIO IRREVOCABLE TRUST
CAMA Number:	013.0-0072-0000.0		ROSARIO, ANTONE A, LE
Property Address:	512 BROOK ST		512 BROOK ST
			DIGHTON, MA 02715-
Parcel Number:	013.0-0072-0001.0	Mailing Address:	CHERY, KESCIA
CAMA Number:	013.0-0072-0001.0		520 BROOK ST
Property Address:	520 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	013.0-0073-0000.A	Mailing Address:	PERRY, JAMES H JR
CAMA Number:	013.0-0073-0000.A		488 BROOK ST
Property Address:	488 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	013.0-0084-0000.0	Mailing Address:	COSTA, ROBERT E JR & CAROL A
CAMA Number:	013.0-0084-0000.0		500 BROOK ST
Property Address:	500 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	013.0-0090-0000.0	Mailing Address:	SOMERSET, TOWN OF
CAMA Number:	013.0-0090-0000.0		C/O WATER DEPT
Property Address:	0 BROOK ST		3249 COUNTY ST
			SOMERSET, MA 02726
Parcel Number:	013.0-0091-0000.0	Mailing Address:	SOMERSET, TOWN OF
CAMA Number:	013.0-0091-0000.0		C/O WATER DEPT
Property Address:	0 BROOK ST		3249 COUNTY ST
			SOMERSET, MA 02726-
Parcel Number:	013.0-0092-0000.0	Mailing Address:	DIGHTON, TOWN OF
CAMA Number:	013.0-0092-0000.0		979 SOMERSET AVE
Property Address:	0 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	017.0-0003-0000.A	Mailing Address:	JOYCE, M FRANCIS & VIRGINIA B
CAMA Number:	017.0-0003-0000.A		399 BROOK ST
Property Address:	0 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	017.0-0142-0000.0	Mailing Address:	PACHECO, JUSTIN DAVID
CAMA Number:	017.0-0142-0000.0		483 BROOK ST
Property Address:	483 BROOK ST		DIGHTON, MA 02715-

300 feet Abutters List Report

Dighton, MA
April 17, 2025

Parcel Number:	017.0-0143-0000.0	Mailing Address:	JOYCE, M FRANCIS & VIRGINIA B
CAMA Number:	017.0-0143-0000.0		399 BROOK ST
Property Address:	0 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	017.0-0144-0000.0	Mailing Address:	JOYCE, M FRANCIS & VIRGINIA B
CAMA Number:	017.0-0144-0000.0		399 BROOK ST
Property Address:	399 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	017.0-0148-0000.0	Mailing Address:	SOMERSET, TOWN OF
CAMA Number:	017.0-0148-0000.0		C/O WATER DEPT
Property Address:	0 BROOK ST		3249 COUNTY ST
			SOMERSET, MA 02726-
Parcel Number:	017.0-0150-0000.0	Mailing Address:	ASHLEY, CONSTANCE L TRUSTEES OF
CAMA Number:	017.0-0150-0000.0		ASHLEY REALTY TRUST
Property Address:	413 BROOK ST		1392 PINE ST
			DIGHTON, MA 02715-
Parcel Number:	017.0-0160-0000.0	Mailing Address:	HILBERG, SCOTT
CAMA Number:	017.0-0160-0000.0		461 BROOK ST
Property Address:	461 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	017.0-0160-0001.0	Mailing Address:	JONES-BORKETEY, ENOCH
CAMA Number:	017.0-0160-0001.0		449 BROOK ST
Property Address:	449 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	017.0-0162-0000.0	Mailing Address:	SHAUL-CASEY, ANDREA & ERIC SHAUL
CAMA Number:	017.0-0162-0000.0		515 BROOK ST
Property Address:	515 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	017.0-0163-0000.0	Mailing Address:	FONTAINE, ROBERT & KRISTIE D
CAMA Number:	017.0-0163-0000.0		507 BROOK ST
Property Address:	507 BROOK ST		DIGHTON, MA 02715-
Parcel Number:	017.0-0325-0000.0	Mailing Address:	PIRES, JOSHUA D
CAMA Number:	017.0-0325-0000.0		383 BROOK ST
Property Address:	383 BROOK ST		DIGHTON, MA 02715-

THE ABOVE NAMES AND ADDRESSES
HAVE BEEN CERTIFIED BY THE
DIGHTON ASSESSORS OFFICE AS OF
TODAY 4/17/25

Not official unless stamped by
The Board of Assessors

Eric Easterday
Nancy Goulart
William Moore

462 BROOK ST

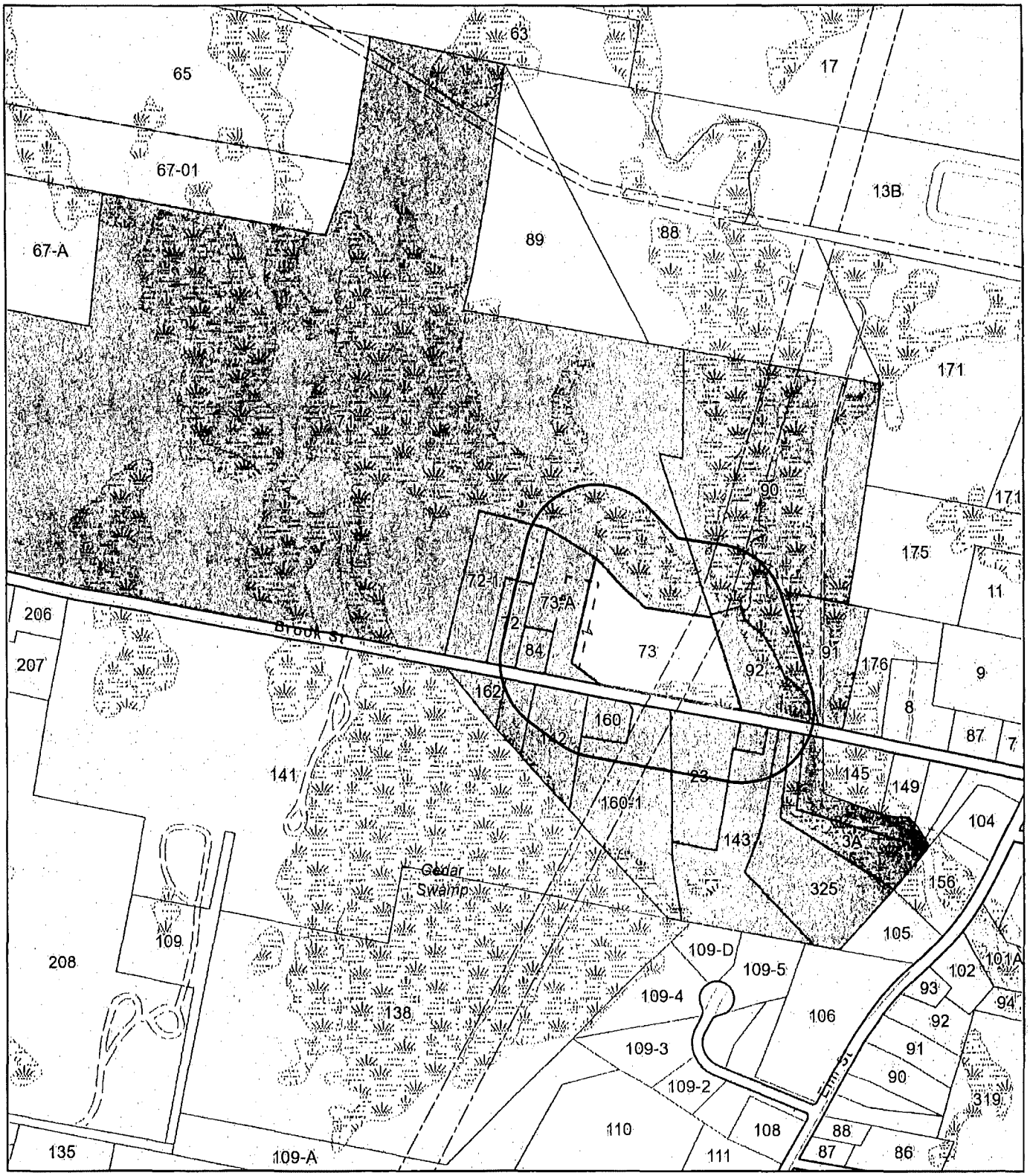
Town of Dighton, MA

1 inch = 562 Feet

0 562 1124 1686

April 17, 2025

CAI Technologies
Precision Mapping. Geospatial Solutions.
www.cai-tech.com



Data shown on this map is provided for planning and informational purposes only. The municipality and CAI Technologies are not responsible for any use for other purposes or misuse or misrepresentation of this map.

GROUND MOUNT PHOTOVOLTAIC SYSTEM

CODES:

THIS PROPOSED INSTALLATION COMPLIES WITH THE FOLLOWING:
2018 INTERNATIONAL BUILDING CODE W/780 CMR
2018 INTERNATIONAL RESIDENTIAL CODE W/780 CMR
2018 INTERNATIONAL FIRE CODE
2018 INTERNATIONAL ENERGY CONSERVATION CODE
2018 INTERNATIONAL EXISTING BUILDING CODE
2018 INTERNATIONAL FUEL GAS CODE
2018 INTERNATIONAL MECHANICAL CODE
2018 INTERNATIONAL PLUMBING CODE
2018 INTERNATIONAL SWIMMING POOL AND SPA CODE W/780 CMR
2020 NATIONAL ELECTRICAL CODE
AS ADOPTED BY TOWN OF DIGHTON

VICINITY MAP:

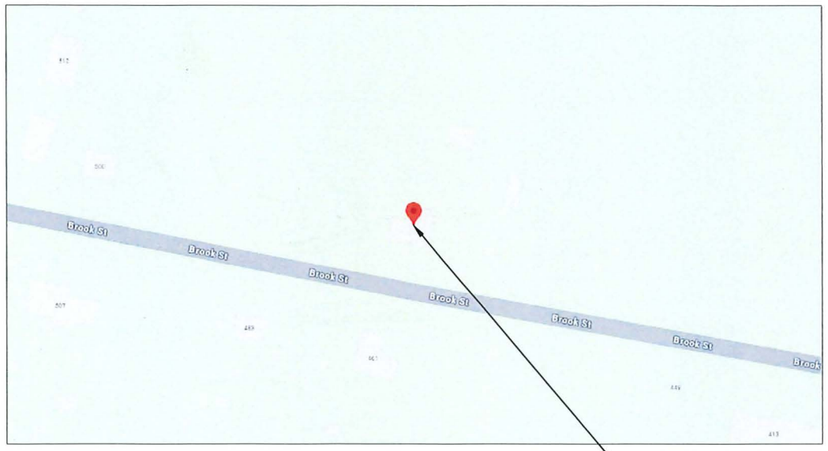


TABLE OF CONTENTS:

CONSTRUCTION NOTES:

CONDUIT AND CONDUCTOR SPECIFICATIONS ARE BASED ON MINIMUM CODE REQUIREMENTS AND ARE NOT MEANT TO LIMIT UP-SIZING AS REQUIRED BY FIELD CONDITIONS.

ALL SOLAR ENERGY SYSTEM EQUIPMENT SHALL BE SCREENED TO THE MAXIMUM EXTENT POSSIBLE AND SHALL BE PAINTED A COLOR SIMILAR TO THE SURFACE UPON WHICH THEY ARE MOUNTED.

MODULES SHALL BE TESTED , LISTED AND INDENTIFIED WITH FIRE CLASSIFICATION IN ACCORDANCE WITH UL 2703. SMOKE AND CARBON MONOXIDE ALARMS ARE REQUIRED PER SECTION R314 AND 315 TO BE VERIFIED AND INSPECTED BY INSPECTOR IN THE FIELD.

DIG ALERT (811) TO BE CONTACTED AND COMPLIANCE WITH EXCAVATION SAFETY PRIOR TO ANY EXCAVATION TAKING PLACE

PHOTOVOLTAIC SYSTEM GROUND WILL BE TIED INTO EXISTING GROUND AT MAIN SERVICE FROM DC DISCONNECT/INVERTER AS PER 2020 NEC SEC 250.166(A).

SOLAR PHOTOVOLTAIC SYSTEM EQUIPMENT WILL BE INSTALLED IN ACCORDANCE WITH REQUIREMENTS OF ART. 690 OF THE 2020 NEC

UTILITY COMPANY WILL BE NOTIFIED PRIOR TO ACTIVATION OF THE SOLAR PV SYSTEM

TERMINALS OF THE DISCONNECTING MEANS MAY BE ENERGIZED IN THE OPEN POSITION

COMMONWEALTH OF MASSACHUSETTS
JOUNGHO CHOI
ELECTRICAL
No. 57967
PROFESSIONAL ENGINEER

Joungho Choi Digitally signed by Joungho Choi
Date: 2025.01.24 06:39:35 -05'00'

CLIENT:
JAMES DEARRUDA
462 BROOK STREET, DIGHTON, MA 02715
AHJ: TOWN OF DIGHTON
UTILITY: NG - NATIONAL GRID
METER: 82708313
APN: DIGH-000013-000073
EMAIL: JDEARR@GMAIL.COM
FINANCE: CASH

SYSTEM:
SYSTEM SIZE (DC): 20 X 400 = 8.000 kW
SYSTEM SIZE (AC): 7.600 kW @ 240V
MODULES: 20 X FREEDOM FOREVER: FF-MP-BBB-400
OPTIMIZERS: 20 X SOLAREDGE S440
INVERTER: SOLAREDGE SE7600H-USRGM (PART/SKU: SE7600H-USRGM)

	REVISIONS	
NO.	REVISED BY	DATE
-	-	-
-	-	-
-	-	-

freedom FOREVER

FREEDOM FOREVER LLC
135 ROBERT TREAT PAINE DR., TAUTON, MA 02780
Tel: (800) 385-1075
GREG ALBRIGHT

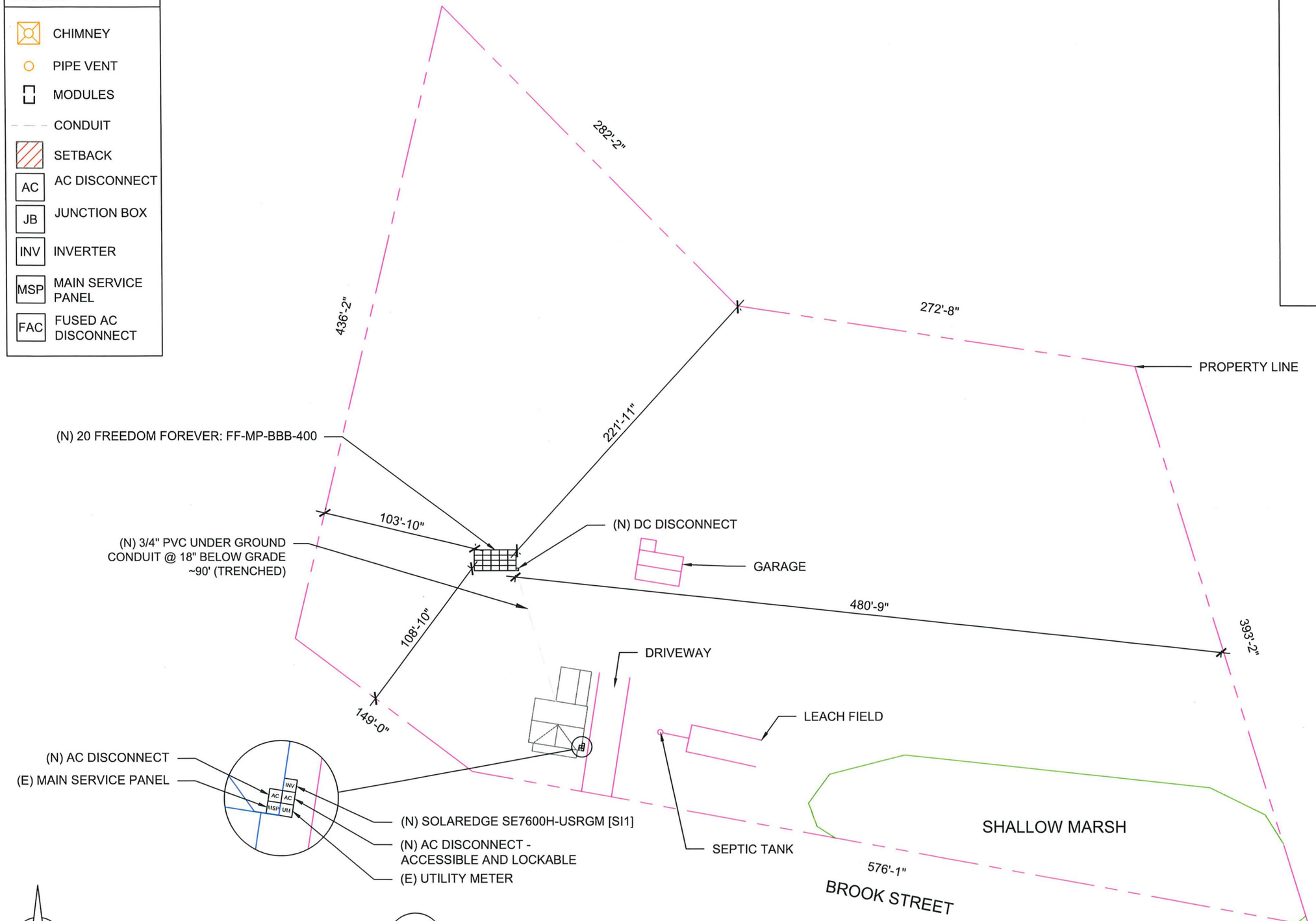
CONTRACTOR LICENSE:
HOME IMPROVEMENT CONTRACTOR 198080; BUSINESS ELECTRICAL CONTRACTOR LICENSE 902-EL-A1; CONSTRUCTION SUPERVISOR LICENSE CS-111662; MASTER ELECTRICIAN 1136 MR

PROJECT DETAILS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-1

LEGEND:

- CHIMNEY
- PIPE VENT
- MODULES
- CONDUIT
- SETBACK
- AC — AC DISCONNECT
- JB — JUNCTION BOX
- INV — INVERTER
- MSP — MAIN SERVICE PANEL
- FAC — FUSED AC DISCONNECT



SITE PLAN
SCALE: 1/64" = 1'-0"

1

Avial Lumagui

Digitally signed by Avial Lumagui
Date: 2025.01.24 09:23:17 -05'00'

COMMONWEALTH OF MASSACHUSETTS
AVIAL LUMAGUI
CIVIL
No. 57691
PROFESSIONAL ENGINEER

STRUCTURAL ONLY

ARRAY AREA: 0 SQ FT

CLIENT:
JAMES DEARRUDA
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AHJ: TOWN OF DIGHTON
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	REVISIONS	
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-	-	-
-	-	-

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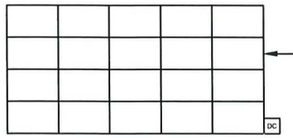
SITE PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-2

LEGEND:

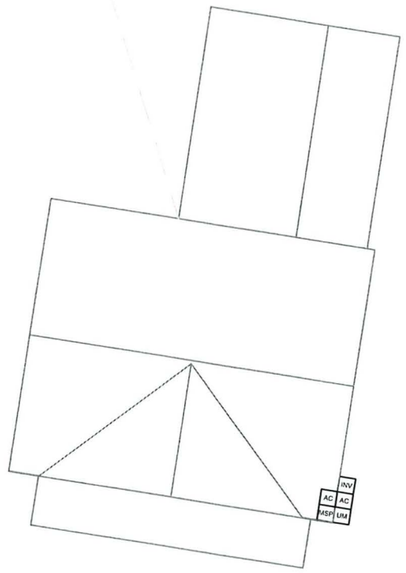
- CHIMNEY
- PIPE VENT
- MODULES
- CONDUIT
- SETBACK
- AC — AC DISCONNECT
- JB — JUNCTION BOX
- INV — INVERTER
- MSP — MAIN SERVICE PANEL
- FAC — FUSED AC DISCONNECT

GROUND MOUNT
TILT - 20
AZM. - 180



(N) 20 FREEDOM FOREVER: FF-MP-BBB-400

(N) 3/4" PVC UNDER GROUND CONDUIT @ 18" BELOW GRADE ~90' (TRENCHED)



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

1

NOTES:
1. ATTACHED CLAMPS AT 25% FROM THE EDGE AND 50% FROM THE CENTER OF THE MODULES
2. JUNCTION BOX IS MOUNTED TO THE RAIL.

COMMONWEALTH OF MASSACHUSETTS
AVIAL LUMAGUI
CIVIL
No. 57691
PROFESSIONAL ENGINEER

STRUCTURAL ONLY

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	REVISIONS	
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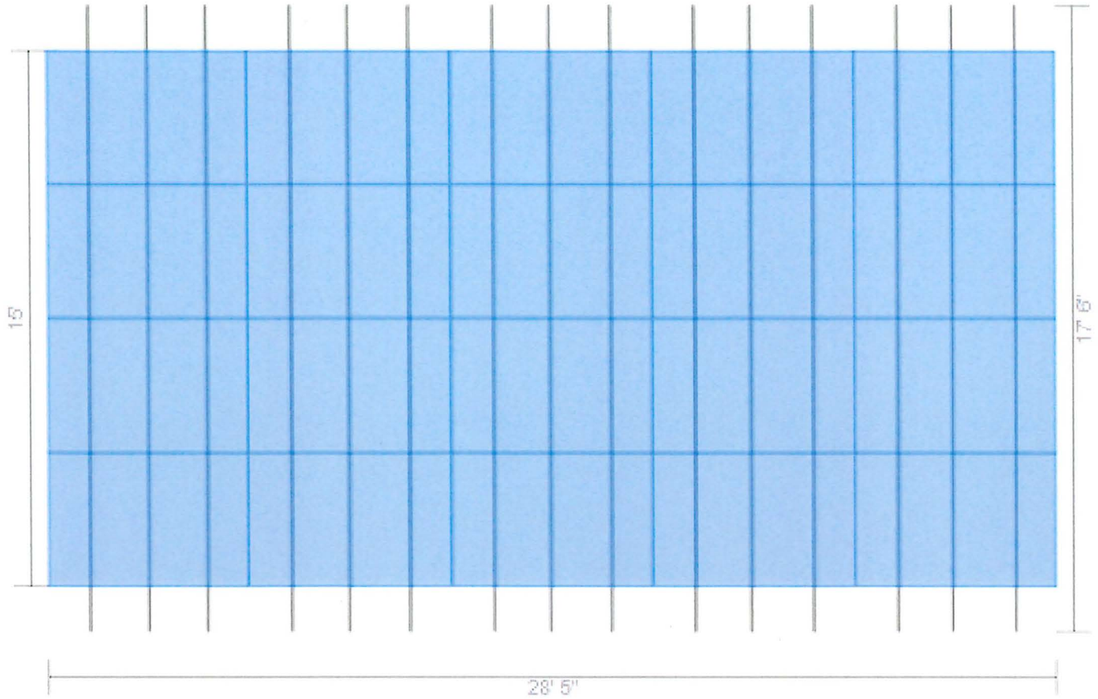
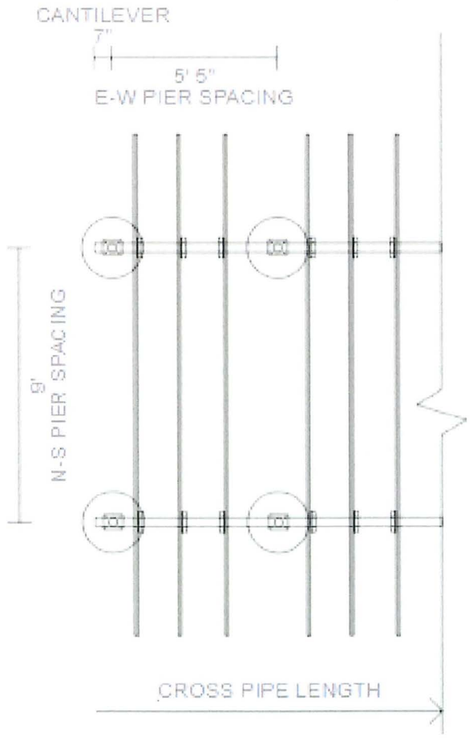
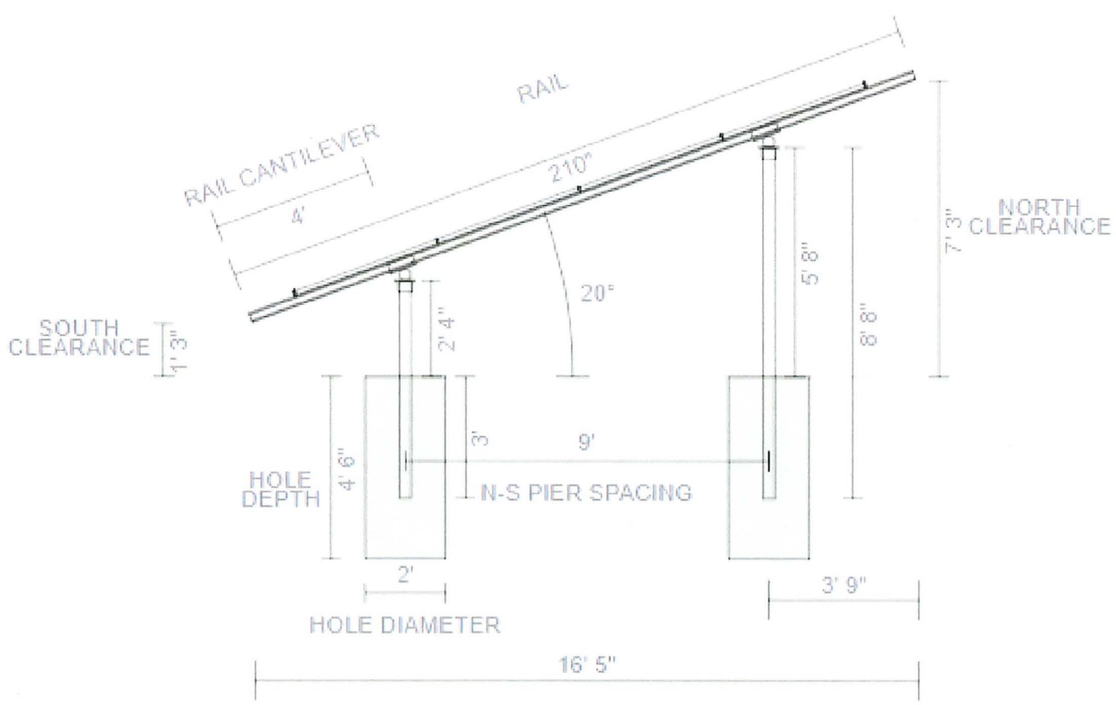
ARRAY PLAN WITH MODULES LAYOUT

JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-2AG







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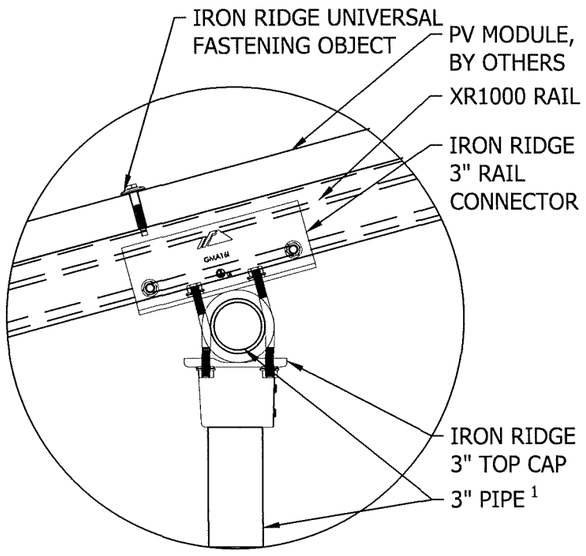
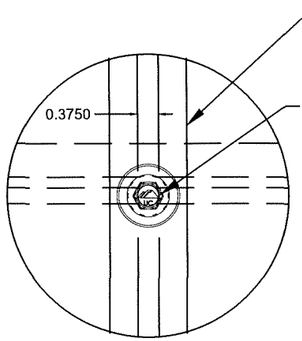
GROUND MOUNT ATTACHMENT DETAILS

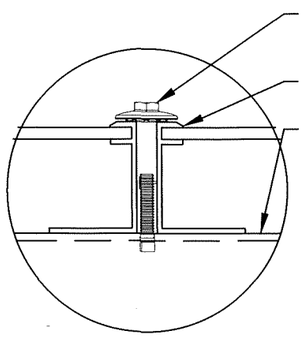
JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-3G



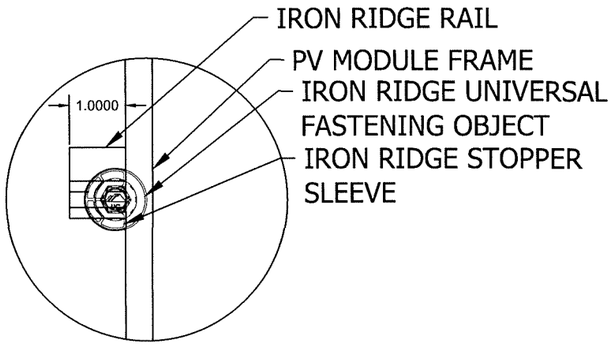
D PIPE FITTINGS DETAIL
Scale: 3" = 1'-0"



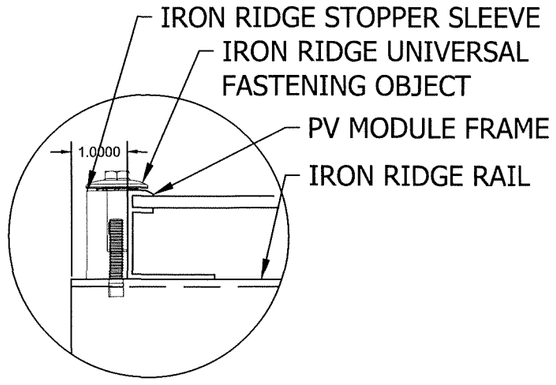
E DETAIL, MID CLAMP PLAN
Scale: 6" = 1'-0"



F DETAIL, MID CLAMP FRONT
Scale: 6" = 1'-0"



G DETAIL, END CLAMP PLAN
Scale: 6" = 1'-0"



H DETAIL, END CLAMP FRONT
Scale: 6" = 1'-0"

COMMONWEALTH OF MASSACHUSETTS
AVIAL LUMAGUI
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PROFESSIONAL ENGINEER

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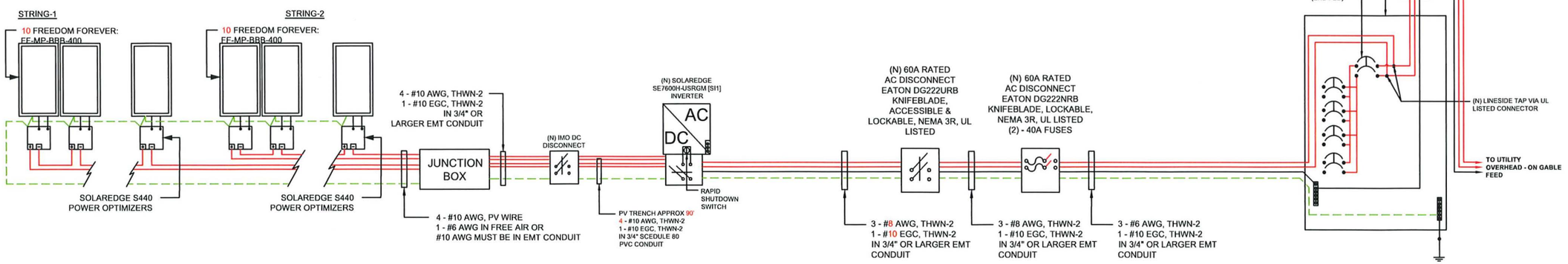
GROUND MOUNT ATTACHMENT DETAILS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-3AG

BACKFEED FUSE SIZING					
MAX. CONTINUOUS OUTPUT 32.00A @ 240V					
32.00	X	1.25	=	40AMPS	40A FUSES - OK

ALL CONSTRUCTION NEEDS TO ABIDE BY THE ESB 750 & ESB 756.
"INSTALLATIONS CAN NOT INCLUDE ANY KIND OF TAPS, METER COLLARS OR ADAPTERS INSIDE NATIONAL GRID OWNED AND MAINTAINED EQUIPMENT, METER SOCKETS, METER CABINETS OR ANYWHERE THERE ARE UN-METERED CONDUCTORS."
"ANY NEW METERING AND DISCONNECT EQUIPMENT WILL NEED TO BE GROUPED, POTENTIALLY LOCATED OUTSIDE AND 24/7 LOCKABLE AND ACCESSIBLE, IN ACCORDANCE WITH ESB 7.1.1."
ALL EQUIPMENT LOCATIONS WILL NEED TO BE APPROVED BY NATIONAL GRID METERING DEPARTMENT PRIOR TO INSTALLATION.

COMMONWEALTH OF MASSACHUSETTS
JOUNGHO CHOI
ELECTRICAL
No. 57967
PROFESSIONAL ENGINEER



NOTE:
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REVISIONS		
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THREE LINE DIAGRAM

JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-4

WIRE SCHEDULE

RACEWAY #	EQUIPMENT				CONDUCTOR QTY.	AWG WIRE SIZE	STARTING ALLOWABLE AMPACITY @ 90°C 310.15(B)(16)	STARTING CURRENT APPLIED TO CONDUCTORS IN RACEWAY	TEMPERATURE CORRECTION FACTOR 310.15(B)(2)(a)	ADJUSTMENT FACTOR FOR MORE THAN 3 CONDUCTORS 310.15(B)(3)(a)	ADJUSTED CONDUCTOR AMPACITY @ 90°C	MAXIMUM CURRENT APPLIED TO CONDUCTORS IN RACEWAY
1	DC	MODULE	TO	OPTIMIZER	2	10	40	17.24	0.91	1	36.40	21.55
2	DC	OPTIMIZER	TO	JUNCTION BOX	2	10	40	15.00	0.91	1	36.40	18.75
3	DC	JUNCTION BOX	TO	DC DISCONNECT	4	10	40	15.00	0.91	0.8	29.12	18.75
4	DC	DC DISCONNECT	TO	INVERTER	4	10	40	15.00	0.91	0.8	29.12	18.75
5	AC	INVERTER	TO	AC DISCONNECT	3	8	55	32.00	0.91	1	50.05	40.00
6	AC	AC DISCONNECT	TO	AC DISCONNECT	3	8	55	32.00	0.91	1	50.05	40.00
7	AC	AC DISCONNECT	TO	POI	3	6	75	32.00	0.91	1	68.25	40.00

CONDUCTOR AMPACITY CALCULATIONS IN ACCORDANCE WITH NEC 690.8.

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	REVISIONS	
NO.	REVISED BY	DATE
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CONDUCTOR CALCULATIONS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-5

OCPD SIZES:

40A FUSES

SERVICE LIST:

TRENCHING

MATERIAL LIST:

QTY.	PART	PART #	DESCRIPTION
20	110 - MODULES	PV-110-400-3	"MFG: FREEDOM FOREVER, 400W BOB (V3.0), MFG SKU: FF-MP-BBB-400"
1	120 - INVERTERS	INV-120-768	"MFG: SOLAREDGE, 7.6 KW, HD WAVE RGM SCREENLESS W/CONSUMPTION MONITORING, MFG SKU: SE7600H-US000BEI4"
1	180 - MONITORING EQUIPMENT	ME-180-502	"MFG: SOLAREDGE, CELL MODEM W/5 YRS, MFG SKU: SE-CELL-B-R05-US-S-S2"
1	160 - EQUIPMENT ACCESSORIES	EA-163-304	"MFG: SOLAREDGE, ENERGY NET PLUG-IN, MFG SKU: ENET-HBNP-01"
20	130 - OPTIMIZERS	OPT-130-440-2	"MFG: SOLAREDGE, 440W 60V OPTIMIZER, MFG SKU: S440"
2	260 - FITTINGS/ANCHORS	RAC-260-061	"MFG: EZ SOLAR, JUNCTION BOX, PV, MFG SKU: JB-3"
1	320 - DISCONNECTS	EE-321-060	"MFG: EATON, DISCONNECT, GENERAL DUTY, 2P, 240V, 60A, NON FUSIBLE, NEMA 3R, MFG SKU: DG222URB"
1	320 - DISCONNECTS	EE-321-061	"MFG: EATON, DISCONNECT, GENERAL DUTY, 2P, 240V, 60A, FUSIBLE W/ NEUTRAL, NEMA 3R, MFG SKU: DG222NRB"
2	350 - ELECTRICAL ACCESSORIES	EA-350-113	"MFG: IDEAL, INSULATED TAP, MAIN 4/0-3, TAP 2-10, MFG SKU: BTC4-0-10"
2	330 - FUSES	BR-330-040	"40AMP FUSE, RK5, 250V"
2	330 - FUSES	BR-330-530	"FUSE REDUCER, 60-30A, CLASS R, 250V"
200	260 - FITTINGS/ANCHORS	RAC-260-550	"MFG: BURNDY, PV WILEY CABLE CLIP THICKNESS RANGE: 1.3 TO 3MM MFG SKU: ACC-FPV180"
3	350 - ELECTRICAL ACCESSORIES	EA-350-585	"MFG: ILSCO, GROUND LUG, MFG SKU: SGB-4"
22	210 - RAILS	RAC-212-126	"MFG: IRON RIDGE, XR1000, RAIL 168"" (14 FEET) CLEAR, MFG SKU: XR-1000-168A"
45	220 - MIDS AND ENDS	RAC-222-108	"MFG: IRON RIDGE, UNIVERSAL BONDING MODULE CLAMP - CLEAR, MFG SKU: UFO-CL-01-A1"
30	220 - MIDS AND ENDS	RAC-222-351	"MFG: IRON RIDGE, STOPPER SLEEVE, 35MM, BLACK, MFG SKU: UFO-STP-35MM-B1"
8	240 - FOOTINGS	RAC-242-303	"MFG: IRON RIDGE, 3"" TOP CAPS / GROUND MOUNT, MFG SKU: 70-0300-SGA"
1	260 - FITTINGS/ANCHORS	RAC-262-505	"MFG: IRON RIDGE, GROUNDING LUG, MFG SKU: XR-LUG-03-A1"
30	240 - FOOTINGS	RAC-242-307	"MFG: IRON RIDGE, 3"" RAIL BRACKETSGROUND MOUNT (TWO PEICE ITEM), MFG SKU: GM-BRC-003"

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JOUNGHO CHOI
ELECTRICAL
No. 57967
PROFESSIONAL ENGINEER

CLIENT:
JAMES DEARRUDA
462 BROOK STREET, DIGHTON, MA 02715
AHJ: TOWN OF DIGHTON
UTILITY: NG - NATIONAL GRID
METER: 82708313
APN: DIGH-000013-000073
EMAIL: JDEARR@GMAIL.COM
FINANCE: CASH

SYSTEM:
SYSTEM SIZE (DC): 20 X 400 = 8.000 kW
SYSTEM SIZE (AC): 7.600 kW @ 240V
MODULES: 20 X FREEDOM FOREVER: FF-MP-BBB-400
OPTIMIZERS: 20 X SOLAREDGE S440
INVERTER: SOLAREDGE SE7600H-USRGM (PART/SKU: SE7600H-USRGM)

REVISIONS		
NO.	REVISED BY	DATE
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FREEDOM FOREVER LLC
135 ROBERT TREAT PAINE DR., TAUTON, MA 02780
Tel: (800) 385-1075
GREG ALBRIGHT

CONTRACTOR LICENSE:
HOME IMPROVEMENT CONTRACTOR 198080; BUSINESS ELECTRICAL CONTRACTOR LICENSE 902-EL-A1; CONSTRUCTION SUPERVISOR LICENSE CS-111662; MASTER ELECTRICIAN 1136 MR

EQUIPMENT & SERVICE LIST

JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-6

MAIN PHOTOVOLTAIC SYSTEM DISCONNECT

690.13(B)

DO NOT DISCONNECT UNDER LOAD

NEC 690.15 (B) & NEC 690.33(D)(2)

⚠ WARNING

SINGLE 120-VOLT SUPPLY
DO NOT CONNECT
MULTIWIRE BRANCH CIRCUITS

NEC 710.15(C) & 692.9 (C)

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D) & NEC 690.59

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(F)(7)

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

706.15(C)(4) & 690.13(B)

⚠ WARNING

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

NEC 705.12(B)(3)(3)

⚠ WARNING

THE DISCONNECTION OF THE GROUNDED CONDUCTOR(S) MAY RESULT IN OVERVOLTAGE ON THE EQUIPMENT

NEC 690.31(E)

RAPID SHUTDOWN SWITCH FOR SOLAR PV SYSTEM

690.56(C)(3)

M

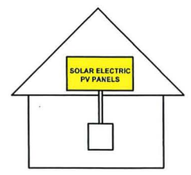
AC

PM

INVERTER

SOLAR PV SYSTEM EQUIPPED WITH RAPID SHUTDOWN

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



IFC 605.11.3.1(1) & 690.56(C)

⚠ CAUTION

PHOTOVOLTAIC SYSTEM CIRCUIT IS BACKFED

NEC 705.12(D) & NEC 690.59

⚠ WARNING

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

NEC 705.12(C) & NEC 690.59

⚠ WARNING

ARC FLASH AND SHOCK HAZARD
APPROPRIATE PPE REQUIRED

24 INCH FLASH HAZARD BOUNDARY
3 CAL/CM^2 FLASH HAZARD AT 18 INCHES
480 VAC SHOCK HAZARD WHEN COVER IS REMOVED
42 INCH LIMITED APPROACH
12 INCH RESTRICTED APPROACH - 500 V CLASS 00 GLOVES
1 INCH PROHIBITED APPROACH - 500 V CLASS 00 GLOVES
LOCATION: 462 BROOK STREET,DIGHTON, MA 02715

NEC 706.15(C) AND NEC 110.16

PHOTOVOLTAIC AC DISCONNECT

NEC 690.13(B)

PHOTOVOLTAIC AC DISCONNECT

RATED AC OUTPUT CURRENT: 32.00A
NOMINAL OPERATING AC VOLTAGE: 240V

NEC 690.54

⚠ WARNING DUAL POWER SOURCE
SECOND SOURCE IS PHOTOVOLTAIC SYSTEM

NEC 705.12(D) & NEC 690.59

SOLAR PV DC CIRCUIT

EVERY 10' ON CONDUIT AND ENCLOSURES
NEC 690.31

PHOTOVOLTAIC POWER SOURCE

EVERY 10' ON CONDUIT AND ENCLOSURES
NEC 690.31(D)(2)

MAXIMUM VOLTAGE	480	V
MAXIMUM CIRCUIT CURRENT	20	A
MAX DC-DC CONVERTER OUTPUT CURRENT	15	A

PHOTOVOLTAIC DC DISCONNECT

NEC 690.13(B)

MAXIMUM DC VOLTAGE OF PV SYSTEM

NEC 690.53

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

DC VOLTAGE IS ALWAYS PRESENT WHEN SOLAR MODULES ARE EXPOSED TO SUNLIGHT

706.15(C)(4) & 690.13(B)

DC

J/B

⚠ WARNING

ELECTRICAL SHOCK HAZARD

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

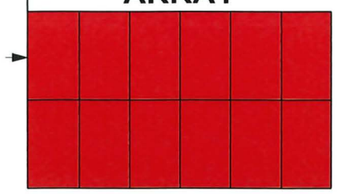
706.15(C)(4) & 690.13(B)

⚠ WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL

NEC 110.27(C) & OSHA 1910.145(F)(7)

ARRAY



NEC 690.31(G)(3) & (4)

NOTES:

1. NEC ARTICLES 690 AND 705 AND IRC SECTION R324 MARKINGS SHOWN HEREON.
2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
   - A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
   - B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
   - C. ARIAL FONT.
3. ALL SIGNS SHALL BE SIZED APPROPRIATELY AND PLACED IN THE LOCATIONS SPECIFIED. SIGNAGE CANNOT BE HAND-WRITTEN.
4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS

COMMONWEALTH OF MASSACHUSETTS
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LABELS

JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-7

CAUTION:

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

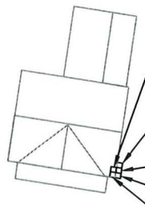
N

DC DISCONNECT

20 PV MODULES

WARNING

TURN OFF PHOTOVOLTAIC AC DISCONNECT PRIOR TO WORKING INSIDE PANEL



AC DISCONNECT
INVERTER EQUIPPED WITH RAPID SHUTDOWN
AC DISCONNECT
UTILITY METER
MAIN SERVICE PANEL

BROOK STREET

NOTES:

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2. ALL MARKING SHALL CONSIST OF THE FOLLOWING:
   A. UV RESISTANT SIGN MATERIAL WITH ENGRAVED OR MACHINE PRINTED LETTERS OR ELECTRO-PLATING.
   B. RED BACKGROUND COLOR WHITE TEXT AND LINE WORK.
   C. AERIAL FONT.
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4. SIGNS SHALL BE ATTACHED TO THE SERVICE EQUIPMENT WITH POP-RIVETS OR SCREWS.

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SITE PLACARD

JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-7A

SOLAREDGE OPTIMIZER CHART

	1-10	11-20	21-30	31-40	41-50	51-60
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

DC

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OPTIMIZER CHART

JOB NO:	DATE:	DESIGNED BY:	SHEET:
526058	1/14/2025	W.K.	PV-8

SAFETY PLAN

INSTRUCTIONS:

1. USE SYMBOLS IN KEY TO MARK UP THIS SHEET.
2. SAFETY PLAN MUST BE MARKED BEFORE JOB STARTS AS PART OF THE PRE-PLAN
3. DOCUMENT ALL ADDITIONAL HAZARDS ON THIS PAGE & MAKE NOTES ON THE JHA SHEET

INCIDENT REPORTING:

INJURIES - CALL INJURY HOTLINE

(855) 400-7233

**If injury is life threatening, call 911 first THEN the Injury Hotline*

NON-INJURIES - USE MOBILE INCIDENT REPORTING
(Auto, Property Damage, Near Miss)

NEAREST OCCUPATIONAL/INDUSTRIAL CLINIC:

NAME: _____

ADDRESS: _____

NEAREST HOSPITAL:

NAME: _____

ADDRESS: _____

SAFETY COACH CONTACT INFORMATION:

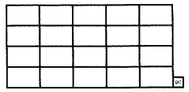
NAME: _____

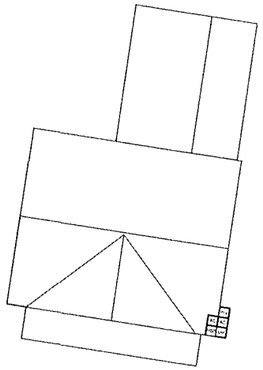
PHONE NUMBER: _____

ALL EMPLOYEES ON SITE SHALL BE MADE AWARE OF THE SAFETY PLAN AND SIGN INDICATING THAT THEY ARE AWARE OF THE HAZARDS ON-SITE AND THE PLAN FOR WORKING SAFELY.

NAME	SIGNATURE

DATE: _____ TIME: _____





MARK UP KEY

- (P) PERMANENT ANCHOR
- (T) TEMPORARY ANCHOR
- IL INSTALLER LADDER
- B JUNCTION / COMBINER BOX
- S STUB-OUT
- SKYLIGHT
- NO LADDER ACCESS (STEEP GRADE OR GROUND LEVEL OBSTRUCTIONS)
- RESTRICTED ACCESS
- CONDUIT
- GAS GAS SHUT OFF
- H_2O WATER SHUT OFF
- 7 SERVICE DROP
- Z POWER LINES

POLICIES

INSTRUCTIONS:

1. SCAN QR LINK BELOW TO ACCESS ALL FREEDOM FOREVER SAFETY POLICIES AND PROGRAMS.

BREAK AND WATER LOG

THIS LOG IS TO BE FILLED OUT ANY TIME THE TEMP EXCEEDS **90** DEGREES. THE CREW LEAD AND ROOF LEAD ARE RESPONSIBLE FOR ENSURING THIS IS COMPLETED AND UPLOADED AT THE END OF EVERYDAY WHEN TEMPS EXCEED **90** DEGREES

NAME	0800HRS	0900HRS	1000HRS	1100HRS	1200HRS	1300HRS	1400HRS	1500HRS	1600HRS

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SAFETY PLAN

JOB NO:	DATE:	DESIGNED BY:	SHEET:
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JOB HAZARD ANALYSIS

Crew leader to fill out all sections below, hold a pre-job safety meeting with all personnel, and upload this completed document and the Safety Plan to Site Capture

Ladder Access
- Ladders must be inspected before each use.
- Extension ladders must be set up on a firm and level surface at a 4-to-1 rise to run angle (or 75 degrees) and the top must be secured to the structure. Extension style ladders placed on uneven, loose or slippery surfaces must additionally have the base firmly anchored or lashed so the base will not slip out.
- Extension ladders must be used with walk-through devices or the ladder must extend 36" above the stepping off point.
- A-frame ladders must only be climbed with the ladder spreader bars locked in the open position; A-frame ladders shall not be climbed while in the closed position (ex, closed and used while leaned against a structure).
- Additional notes:

Mobile Equipment
- Only Qualified operators will operate equipment; operators must maintain a certification on their person for the equipment being operated.
- Type(s) of mobile equipment (Type/Make/Model):
- Qualified operator(s):

Material Handling and Storage
- Materials will be staged/stored in a way that does not present a hazard to client, personnel or public. Materials stored on the roof will be physically protect from failing or sliding off.

Fall Protection
- A site-specific plan for fall prevention and protection is required prior to starting work and must remain onsite at all times until work is complete; a fall rescue plan must be outlined and discussed among the crew prior to work start.
- First-person-Up (FPU) must install their anchor and connect before any other task, including installing other anchors. The Last-Person-Down (LPD) must be the only person on a roof uninstalling fall protection.
- FPCP (name and title):
- FPU and LPD (name and title):

Electrical Safety
- The Electrical Qualified Person (EQP) is required onsite to perform electrical work.
- All electrical work will be performed with equipment in an electrically safe condition (de-energized) unless approval has been granted prior to work.
- Service drops and overhead electrical hazards will be indentified and protected from contact, as neccessary.
- EQP (name and tile):

Public Protection
- The safety of the Client and Public must be maintained at all times.
- The Client and the Public shall be prevented from entering the work zone through the use of barriers and/or signage, as required.
- Company, Client and Public property shall be protected from falling objects.
- Pets (including dogs) shall be secured by their owners prior to work start.
- The Client should not leave pets, family members, or others in charge or care of Employees, Contractors, or Temporary Workers.
- Crew leader responsible for communication with the client:
- Client and public is excluded from work area by barricades (N/A, Yes, No):

Training and Pre-Job Safety Briefing
- All employees onsite shall be made aware of the specific hazards of this project and review this HJA during a pre-job briefing, and their signature indicates awareness of site conditions and the plan to eliminate any hazards identified prior to and during the project.

- Crew leader (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):
- Crew member (name/title):

Airborne Contaminants:
- Asbestos-containing (Transite) piping (ACP) - Do not disturb (move, drill, cut fracture, etc.)
- Asbestos-containing thermal insulation (ACI) and Asbestos-containing duct wrapping (ACW) - do not disturb, no attic or crawlspace access is allowed if work to be performed could cause exposure to personnel, client or public.

- If yes, list specific tasks and protection in place:

Weather and Environment
- The site supervisor shall forecast the weather conditions at the job site, prior to crew arrival, in order to mitigate any hazards associated with inclement weather (heat, cold, wind, rain, etc.)
- The site supervisor will utilized a portable wind meter (anemometer) to verify actual onsite wind conditions, by checking at the ground and on any elevated work surface (ex, rooftop) prior to work start, at midday and prior to solar panel staging on a roof.
- Elevated work involving the moving or maneuvering of solar panels shall cease at 25mph (sustained wind) until wind subsides.
- Forecasted weather maximum temp (degrees f):

Heat Related Illness Prevention
- Employees shall have access to potable drinking water that is fresh, pure, and suitably cool. The water shall be located as close as practicable to the areas where employees are working. Water shall be supplied in sufficient quantity at the beginning of the work shift to provide at least one quart per employee per hour for drinking for the entire shift. Employees may begin the shift with smaller quantities of water if they identify the location and have effective means for replenishment during the shift to allow employees to drink on quart or more per hour. The frequent drinking of water shall be encouraged.
- Shade shall be present when temperature exceeds 80 degrees Fahrenheit. When the outdoor temperature in the work exceeds 80 degrees Fahrenheit, employees shall have and maintain one or more areas with shade at all times.
- New employees must be acclimatized. New employees will be monitored by their Crew Leader (site supervisor) for the first two (2) weeks of employment or longer when necessary.
- Employees will be allowed and encouraged to implement scheduled breaks during each shift. Employees must take cool-down breaks in the shade any time they feel the need to do so to protect them from overheating. Supervisors are REQUIRED to allow employees any break period they need during high heat conditions.
- Cool Vests are encouraged for all employees at all times during periods of high heat.
- Identify the location of the closet Occupational/Industrial Clinic or Hospital in case a crew member becomes ill.

What is the specific plan to provide and replenish sufficient water for all employees on site?
- If offsite replenish is necessary, where will you go to replenish water (location/address):
- Who will replenish the drinking water (name):

Restroom facilities
- Employees shall have access to restroom facilities with hand-washing stations. Use of onsite restroom is at the client's discretion (location is annotated below). If client does not give permission, location of suitable restroom facilities with hand-washing stations offsite will be provided. The onsite supervisor will identify location and make arrangements to ensure all employees have access at any point.
- Restroom facilities will be (circle one): Onsite - Offsite
- If Offsite, add location name and address:

Incident Reporting Procedure
- Contact your Site Supervisor
  - Name:
  - Phone:
- Contact your Manager
  - Name:
  - Phone:
- Contact your Site Supervisor
  - Name:
  - Phone:

With: Your full name, phone number, office location, brief description of what happen and when.

NOTE ADDITIONAL HAZARDS NOT ADDRESSED ABOVE
(add as many as necessary by using additional sheets)

Define the Hazard:	Method/steps to prevent incident:
Define the Hazard:	Method/steps to prevent incident:
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FOR INSTALLATION REFERENCE ONLY

SCAN QR CODE TO ACCESS REFERENCE LINK

FREEDOM REFERENCES

INSTALL HOTLINE

PV INSTALLATION REFERENCES

ENPHASE

SOLAREDGE

TESLA

BATTERY INSTALLATION REFERENCES

Enphase Storage Systems

SOLAREDGE Storage Systems

TESLA Storage Systems

NON-BACKUP Battery Systems

Misc. Quick Guide

V1.4

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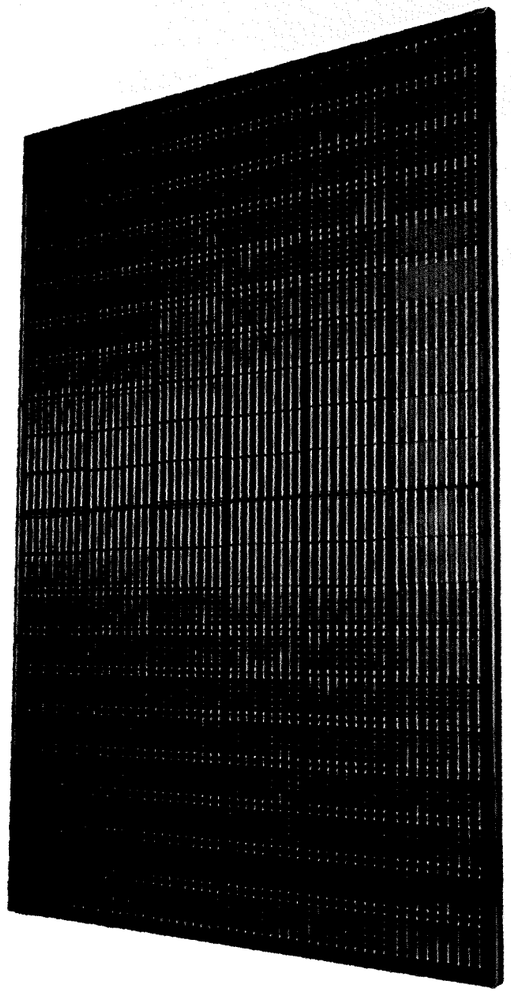
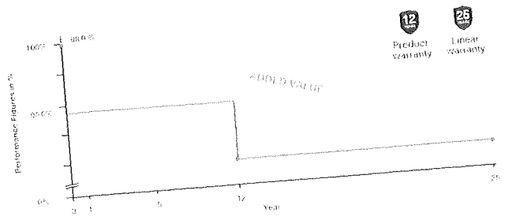
400W MODULE





MODULE SPECIFICATIONS

ELECTRICAL CHARACTERISTICS

Characteristics	FF-MP-BBB-400
Maximum Power (Pmax)	400W
Maximum Power Voltage (Vmp)	31.01V
Maximum Power Current (Imp)[A]	12.90A
Open Circuit Voltage (Voc)[V]	37.04V
Short Circuit Current (Isc)[A]	13.79A
Module Efficiency	20.48%
Power Tolerance	0/+5W
STC	Irradiance of 1000W/m², AM1.5, Cell Temperature 25°C

MECHANICAL CHARACTERISTICS

Cell Type	Mono perc, 182 mm-half cells, 108 (6x9+6x9)
Weight	22.1 kgs (48.7 lbs)
Dimension	1722 x 1134 x 35 mm (67.80 x 44.65 x 1.38 in)
Front Class	3.2 mm (.13 in)
Junction Box	IP68 (3 Bypass Diodes)
Output Cables	1200 mm (47.24 in)
Connector	Staubli MC4
Frame & Installation	Anodized aluminum profile

OPERATIONS CHARACTERISTICS

Operational Temperature	-40°C~+85°
Max System Voltage	1500V
Max Series Fuse Rating	25A
Safety Class	Class II
Fire Rating	Type 1

MECHANICAL LOADING

Snow Load	5,400Pa (~113lb/ft2)
Rear Side Design Load	2,400Pa (50lb/ft2)

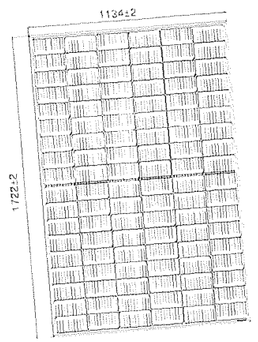
PACKAGING INFORMATION

	20' GP	40' HC
Container	6	26
Pallets per Container	186	806
Panels per Container	31	31
Panels per Pallet	679 kg (1497 lbs)	
Packaging Box Weight	1785 x 1130 x 1180 mm (70.28 x 44.49 x 46.46 in)	
Panels per Pallet		

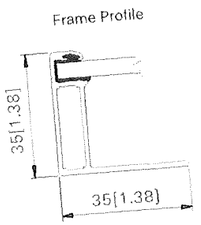
TEMPERATURE RATINGS

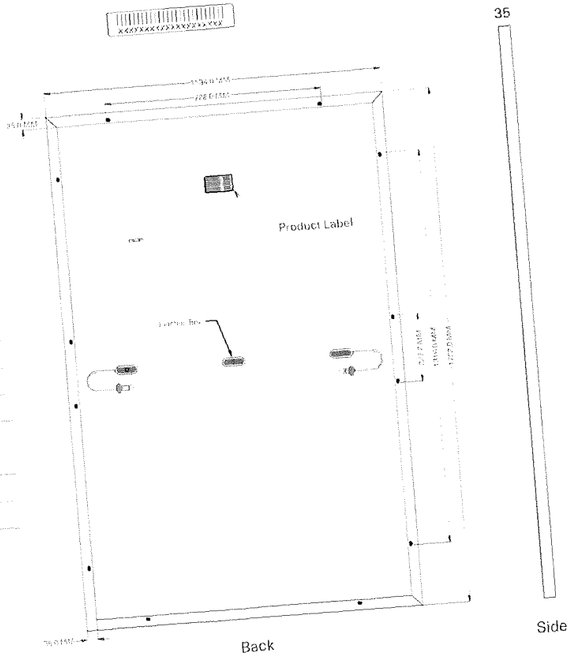
Temperature Coefficient of P_{max}	-0.350%/°C
Temperature Coefficient of V_{oc}	-0.275%/°C
Temperature Coefficient of I_{sc}	+0.045%/°C
Nominal Operating cell Temperature (NOCT)	42°C±2°C

UL 61730 | UL 61215 | ISO 9001 | ISO 14001

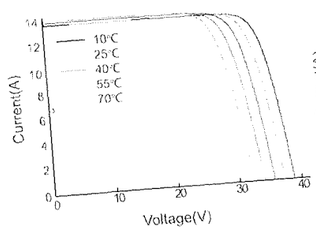


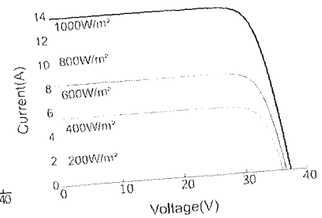
Front





CURRENT-VOLTAGE CURVE





CERTIFICATE
OF COMPLIANCE

intertek
Total Quality. Assured.

This certificate confirms the model(s) for the product listed are in compliance and authorized to bear the Certification Mark(s) shown below when made in accordance with the conditions set forth in the Certification Agreement and Listing Report. This document is for use with the Design Light Consortium or California Energy Commission application only.

Basic Listee:	PT IDN SOLAR TECH	**Multiple Listee:**	Freedom Forever Procurement LLC
Address:	KOMPLEK KABIL INDONUSA ESTATE, BLOK A NOMOR 19B, BATU BESAR, Batam	**Address:**	43445 Business Park Drive, Suite 110, Temecula, CA 92590
Country:	Indonesia	**Country:**	USA

Party Authorized to Apply Label: PT IDN SOLAR TECH
Report Issuing Office: Intertek Testing Services Shanghai Limited

Control Number: 5019087 **Authorized by:** Jordan Holbert
for L. Matthew Snyder, Certification Manager

VALID LISTING MARKS

C ETL LISTED US
Intertek

Intertek Testing Services NA Inc.
545 East Algonquin Road, Arlington Heights, IL 60005
Telephone 800-345-3851 or 847-439-5667

Standard(s):	Photovoltaic (PV) Module Safety Qualification - Part 1: Requirements for Construction [UL 61730-1:2017 Ed.1+R:30Apr2020] Photovoltaic (PV) Module Safety Qualification - Part 1: Requirements for Construction [CSA C22.2#61730-1:2019 Ed.2] Photovoltaic (PV) Module Safety Qualification - Part 2: Requirements for Testing [UL 61730-2:2017 Ed.1+R:30Apr2020]

CERTIFICATE
OF COMPLIANCE

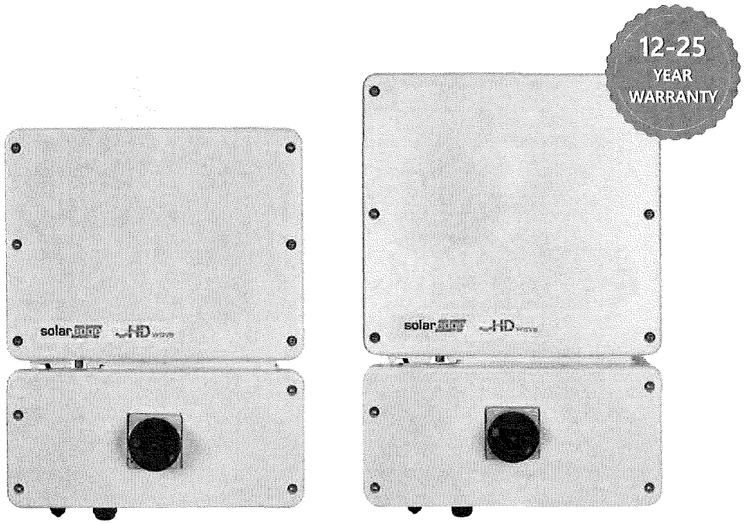
intertek
Total Quality. Assured.

	Photovoltaic (PV) Module Safety Qualification - Part 2: Requirements for Testing [CSA C22.2#61730-2:2019 Ed.2] Terrestrial Photovoltaic (Pv) Modules - Design Qualification And Type Approval - Part 1: Test Requirements [UL 61215-1:2017 Ed.1] Terrestrial Photovoltaic (PV) Modules - Design Qualification And Type Approval - Part 1-1: Special Requirements For Testing of Crystalline Silicon Photovoltaic (PV) Modules [UL 61215-1-1:2017 Ed.1] Terrestrial Photovoltaic (Pv) Modules - Design Qualification And Type Approval - Part 2: Test Procedures[UL 61215-2:2017 Ed.1]
Product:	Crystalline Silicon Photovoltaic (PV) Modules
Brand Name:	Freedom Forever
Models:	MULTIPLE LISTEE 12 MODELS: FF-MP-BBB- followed by 365, 370, 375 or 380. FF-MP-BBB- followed by 395, 400, 405 or 410. BASIC LISTEE MODELS: NUSA120H- followed by 365, 370, 375 or 380; followed by MB. NUSA108H- followed by 395, 400, 405 or 410; followed by MB.

SolarEdge Home Wave Inverter

For North America

SE3800H-US / SE5000H-US / SE6000H-US /
SE7600H-US / SE10000H-US / SE11400H-US



INVERTERS

Optimized installation with HD-Wave technology

- Specifically designed to work with power optimizers
- Record-breaking 99% weighted efficiency
- Quick and easy inverter commissioning directly from a smartphone using SolarEdge SetApp
- Fixed voltage inverter for longer strings
- Integrated arc fault protection and rapid shutdown for NEC 2014-2023 per articles 690.11 and 690.12
- UL1741 SA certified, for CPUC Rule 21 grid compliance
- Small, lightweight, and easy to install both outdoors or indoors
- Built-in module-level monitoring
- Optional: Faster installations with built-in consumption metering (1% accuracy) and production revenue grade metering (0.5% accuracy, ANSI C12.20)

solaredge.com

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SolarEdge Home Wave Inverter

For North America

SE3800H-US / SE5000H-US / SE6000H-US/
SE7600H-US / SE10000H-US / SE11400H-US

Applicable to inverters with part number	SEXXXXH-XXXXXBXX4					SE11400H-XXXXXBXX5	Units
	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
OUTPUT							
Rated AC Power Output	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
Maximum AC Power Output	3800 @ 240V 3300 @ 208V	5000	6000 @ 240V 5000 @ 208V	7600	10000	11400 @ 240V 10000 @ 208V	VA
AC Output Voltage Min.-Nom.-Max. (211 - 240 - 264)	✓	✓	✓	✓	✓	✓	Vac
AC Output Voltage Min.-Nom.-Max. (183 - 208 - 229)	✓	-	✓	-	-	✓	Vac
AC Frequency (Nominal)	59.3 - 60 - 60.5[1]						Hz
Maximum Continuous Output Current @240V	16	21	25	32	42	47.5	A
Maximum Continuous Output Current @208V	16	-	24	-	-	48.5	A
Power Factor	1, Adjustable - 0.85 to 0.85						
GFDI Threshold	1						A
Utility Monitoring, Islanding Protection, Country Configurable Thresholds	Yes						
INPUT							
Maximum DC Power @240V	5900	7750	9300	11800	15500	17650	W
Maximum DC Power @208V	5100	-	7750	-	-	15500	W
Transformer-less, Ungrounded	Yes						
Maximum Input Voltage	480						Vdc
Nominal DC Input Voltage	380						Vdc
Maximum Input Current @240V[2]	10.5	13.5	16.5	20	27	30.5	Adc
Maximum Input Current @208V[2]	9	-	13.5	-	-	27	Adc
Max. Input Short Circuit Current	45						Adc
Reverse-Polarity Protection	Yes						
Ground-Fault Isolation Detection	600k Sensitivity						
Maximum Inverter Efficiency	99.2						%
CEC Weighted Efficiency	99					99 @ 240V 98.5 @ 208V	%
Nighttime Power Consumption	< 2.5						W

(1) For other regional settings please contact SolarEdge support
(2) A higher current source may be used, the inverter will limit its input current to the values stated

/ SolarEdge Home Wave Inverter

For North America

SE3800H-US / SE5000H-US / SE6000H-US/
SE7600H-US / SE10000H-US / SE11400H-US

Applicable to inverters with part number	SEXXXXH-XXXXXBXX4					SE11400H-XXXXXBXX5	
	SE3800H-US	SE5000H-US	SE6000H-US	SE7600H-US	SE10000H-US	SE11400H-US	
ADDITIONAL FEATURES							
Supported Communication Interfaces	RS485, Ethernet, ZigBee (optional), wireless SolarEdge Home Network (optional)[2], Wi-Fi (optional), Cellular (optional)						
Revenue Grade Metering, ANSI C12.20	Optional[3]						
Consumption Metering							
Inverter Commissioning	With the SetApp mobile application using built-in Wi-Fi Access Point for Local Connection						
Rapid Shutdown - NEC 2014-2023 per articles 690.11 and 690.12	Automatic Rapid Shutdown upon AC Grid Disconnect						
STANDARD COMPLIANCE							
Safety	UL1741, UL1741 SA, UL1741 SB, UL1699B, CSA C22.2, Canadian AFCI according to T.I.L. M-07						
Grid Connection Standards	IEEE1547-2018, Rule 21, Rule 14 (HI), CSA C22.3 No. 9						
Emissions	FCC Part 15 Class B						
INSTALLATION SPECIFICATIONS							
AC Output Conduit Size / AWG Range	1" Maximum / 14 – 6 AWG				1" Maximum / 14 – 4 AWG		
DC Input Conduit Size / # of Strings / AWG Range	1" Maximum / 1 – 2 strings / 14 – 6 AWG				1" Maximum / 1 – 3 strings / 14 – 6 AWG		
Dimensions with Safety Switch (H x W x D)	17.7 x 14.6 x 6.8 / 450 x 370 x 174				21.06 x 14.6 x 7.3 / 535 x 370 x 185	21.06 x 14.6 x 8.2 / 535 x 370 x 208[5]	in / mm
Weight with Safety Switch	22 / 10	25.1 / 11.4	26.2 / 11.9		38.8 / 17.6	44.9 / 20.4[5]	lb / kg
Noise	< 25			< 50			dBA
Cooling	Natural Convection						
Operating Temperature Range	-40 to +140 / -40 to +60[6]						°F / °C
Protection Rating	NEMA 4X (Inverter with Safety Switch)						

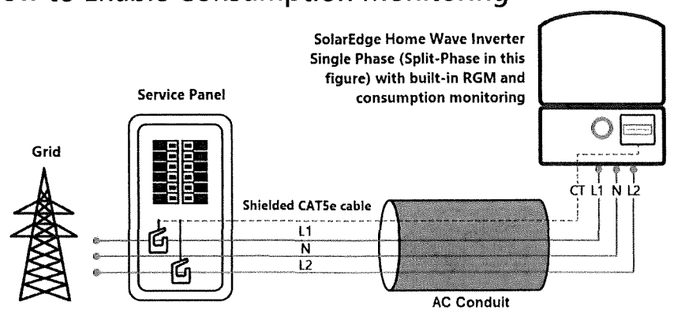
[2] For more information, refer to the SolarEdge Home Network datasheet.

[3] Inverter with Revenue Grade Production and Consumption Meter, P/N: SExxxH-US000BEI4. For cross-mains metering, current transformers should be ordered separately: SEACT0750-200NA-20 or SEACT0750-400NA-20, 20 units per box.

[5] SE11400H-US**xx**B**x5** is the updated P/N. through SE11400H-US**xx**B**x4** will still be available. All specifications are similar for both models **EXCLUDING** the weight and dimensions (H x W x D). The weight and dimensions of SE11400H-US**xx**B**x4** are 47.6 lbs, and 21.06 x 14.6 x 7.3 / 535 x 370 x 185 [in / mm], accordingly.

[6] Full power up to at least 50°C / 122°F, for power de-rating information refer to the Temperature De-rating Technical Note for North America.

How to Enable Consumption Monitoring



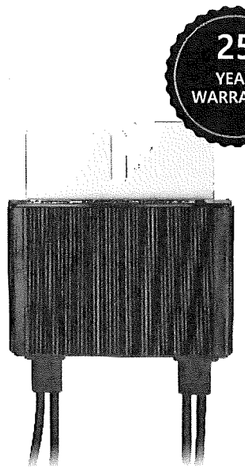
By simply wiring current transformers through the inverter's existing AC conduits and connecting them to the service panel, homeowners will gain full insight into their household energy usage helping them to avoid high electricity bills.

CE

Power Optimizer

For North America

S440, S500



POWER OPTIMIZER

PV power optimization at the module level

- Specifically designed to work with SolarEdge residential inverters
- Detects abnormal PV connector behavior, preventing potential safety issues*
- Module-level voltage shutdown for installer and firefighter safety
- Superior efficiency (99.5%)
- Mitigates all types of module mismatch loss, from manufacturing tolerance to partial shading
- Faster installations with simplified cable management and easy assembly using a single bolt
- Flexible system design for maximum space utilization
- Compatible with bifacial PV modules
- Meets NEC requirements for arc fault protection (AFCI) and Photovoltaic Rapid Shutdown System (PVRSS)

* Expected availability in 2022

solaredge.com

solaredge

Power Optimizer

For North America

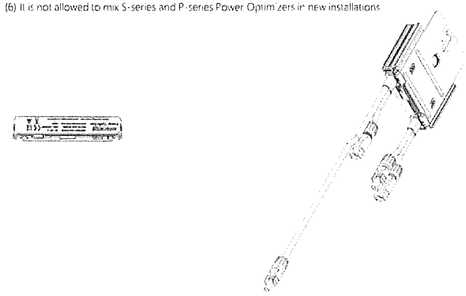
S440, S500

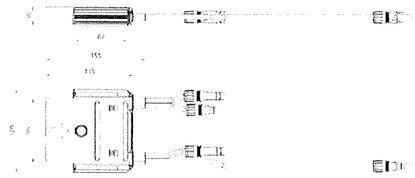
	S440	S500	Unit
INPUT			
Rated Input DC Power(1)	440	500	W
Absolute Maximum Input Voltage (Voc)	60		Vdc
MPPT Operating Range	8 - 60		Vdc
Maximum Short Circuit Current (Isc) of Connected PV Module	14.5	15	Adc
Maximum Efficiency	99.5		%
Weighted Efficiency	98.6		%
Overvoltage Category	II		
OUTPUT DURING OPERATION			
Maximum Output Current	15		Adc
Maximum Output Voltage	60		Vdc
OUTPUT DURING STANDBY (POWER OPTIMIZER DISCONNECTED FROM INVERTER OR INVERTER OFF)			
Safety Output Voltage per Power Optimizer	1+/-0.1		Vdc
STANDARD COMPLIANCE			
Photovoltaic Rapid Shutdown System	NEC 2014, 2017 & 2020		
EMC	FCC Part 15 Class B, IEC61000-6-2, IEC61000-6-3		
Safety	IEC62109-1 (class II safety), UL1741		
Material	UL94 V-0, UV Resistant		
RoHS	Yes		
Fire Safety	VDE-AR-E 2100-712:2013-05		
INSTALLATION SPECIFICATIONS			
Maximum Allowed System Voltage	1000		Vdc
Dimensions (W x L x H)	129 x 153 x 30 / 5.07 x 6.02 x 1.18		mm / in
Weight (including cables)	655 / 1.5		gr / lb
Input Connector	MC4(4)		
Input Wire Length	0.1 / 0.32		m / ft
Output Connector	MC4		
Output Wire Length	(+) 2.3, (-) 0.10 / (+) 7.54, (-) 0.32		m / ft
Operating Temperature Range(3)	-40 to +85		°C
Protection Rating	IP68 / Type6B		
Relative Humidity	0 - 100		%

(1) Rated power of the module at STC will not exceed the power optimizer Rated Input DC Power. Modules with up to +5% power tolerance are allowed
(2) For other connector types please contact SolarEdge
(3) For ambient temperature above +70°C / +158°F power de-rating is applied. Refer to Power Optimizers Temperature De-Rating Technical Note for more details

PV System Design Using a SolarEdge Inverter		Single Phase HD-Wave	Three Phase for 208V grid	Three Phase for 277/480V grid	
Minimum String Length (Power Optimizers)	S440, S500	8	14	18	
Maximum String Length (Power Optimizers)		25		50	
Maximum Nominal Power per String		5700 (6000 with SE7600-US-SE11400-U)	6000	12750	W
Maximum Allowed Connected Power per String (5) (Permitted only when the difference in connected power between strings is 1,000W or less)		Refer to Footnote 5	One String 7200W Two strings or more 7800W	15,000W	
Parallel Strings of Different Lengths or Orientations		Y			

(4) A string with more than 30 optimizers does not meet NEC rapid shutdown requirements; safety voltage will be above the 30V requirement
(5) If the inverter's rated AC power ≤ maximum nominal power per string, then the maximum power per string will be able to reach up to the inverter's maximum input DC power. Refer to https://www.solaredge.com/sites/default/files/se-power-optimizer-single-string-design-application-note.pdf
(6) It is not allowed to mix S-series and P-series Power Optimizers in new installations





Intertek

RoHS

EZ SOLAR
making solar simple.

JB-3
Specification Sheet
PV Junction Box for Rail or Panel Mount Applications

A. System Specifications and Ratings

- Maximum Voltage: 1,000 Volts
- Maximum Current: 80 Amps
- Allowable Wire: 14 AWG – 6 AWG
- Maximum Number of Input Circuits: 4
- Spacing: Please maintain a spacing of at least ½" between uninsulated live parts and fittings for conduit, armored cable, and uninsulated live parts of opposite polarity.
- Enclosure Rating: Type 3R
- Roof Slope Range: 2.5 – 12:12
- Max Side Wall Fitting Size: 1"
- Max Floor Pass-Through Fitting Size: 1"
- Ambient Operating Conditions: (-35°C) - (+75°C)
- Compliance:
  - JB-3: UL1741, CSA C22.2 No. 290
  - Approved wire connectors: must conform to UL1741
- System Marking: **Intertek Symbol and File #5025824**
- Periodic Re-inspections: If re-inspections yield loose components, loose fasteners, or any corrosion between components, components that are found to be affected are to be replaced immediately.

Table 1: Typical Wire Size, Torque Loads and Ratings

	1 Conductor	2 Conductor	Torque				
			Type	NM	Inch Lbs	Voltage	Current
ABB ZS6 terminal block	10-24 awg	16-24 awg	Sol/Str	0.5-0.7	6.2-8.85	600V	30 amp
ABB ZS10 terminal block	6-24 awg	12-20 awg	Sol/Str	1.0-1.6	8.85-14.16	600V	40 amp
ABB ZS16 terminal block	4-24 awg	10-20 awg	Sol/Str	1.6-2.4	14.6-21.24	600V	60 amp
ABB M6/8 terminal block	8-22 awg		Sol/Str	.08-1	8.85	600V	50 amp
Ideal 452 Red WING-NUT Wire Connector	8-18 awg		Sol/Str	Self-Torque	Self-Torque	600V	
Ideal 451 Yellow WING-NUT Wire Connector	10-18 awg		Sol/Str	Self-Torque	Self-Torque	600V	
Ideal, In-Sure Push-In Connector Part #39	10-14 awg		Sol/Str	Self-Torque	Self-Torque	600V	
WAGO, 2204-1201	10-20 awg	16-24 awg	Sol/Str	Self-Torque	Self-Torque	600V	30 amp
WAGO, 221-612	10-20 awg	10-24 awg	Sol/Str	Self-Torque	Self-Torque	600V	30 amp
Dottie DRC75	6-12 awg		Sol/Str	Snap-In	Snap-In		
ESP NG-53	4-6 awg 10-14 awg		Sol/Str Sol/Str		45 35	2000V	
ESP NG-717	4-6 awg 10-14 awg		Sol/Str Sol/Str		45 35	2000V	
Brumall 4-5,3	4-6 awg 10-14 awg		Sol/Str Sol/Str		45 35	2000V	

Table 2: Minimum wire-bending space for conductors through a wall opposite terminals in mm (inches)

Wire size, AWG or kcmil (mm2)	Wires per terminal (pole)			
	1 mm (inch)	2 mm (inch)	3 mm (inch)	4 or More mm (inch)
14-10 (2.1-5.3)	Not Specified	-	-	-
8 (8.4)	38.1 (1-1/2)	-	-	-
6 (13.3)	50.8 (2)	-	-	-

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Intertek
5025824

Product specifications

Eaton DG222URB

Catalog Number: DG222URB

Eaton General duty non-fusible safety switch, single-throw, 60 A, NEMA 3R, Rainproof, Painted galvanized steel, Two-pole, Two-wire, 240 V

General specifications

Product Name
Eaton general duty non-fusible safety switch

Catalog Number
DG222URB

UPC
782113144238

Product Length/Depth
7.38 in

Product Height
14.38 in

Product Width
8.69 in

Product Weight
9 lb

Warranty
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
UL Listed

Catalog Notes
WARNING! Switch is not approved for service entrance unless a neutral kit is installed.

Product specifications

Product Category
General duty safety switch

Enclosure material
Painted galvanized steel

Type
Non-fusible, single-throw

Fuse configuration
Non-fusible

Number of wires
2

Enclosure
NEMA 3R

Voltage rating
240V

Amperage Rating
60A

Number Of Poles
Two-pole

Resources

Catalogs
Eaton's Volume 2—Commercial Distribution

Multimedia
Double Up on Safety

Switching Devices Flex Center

Specifications and datasheets
Eaton Specification Sheet - DG222URB

Warranty guides
Selling Policy 25-000 - Distribution and Control Products and Services

Eaton Corporation plc
Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

Eaton.com/socialmedia

Product specifications

Eaton DG222NRB

Catalog Number: DG222NRB

Eaton General duty cartridge fuse safety switch, 60 A, NEMA 3R, Painted galvanized steel, Class H fuses, Fusible with neutral, Two-pole, Three-wire, Category: general duty safety switch, 240 V

General specifications

Product Name
Eaton general duty cartridge fuse safety switch

Catalog Number
DG222NRB

UPC
782113144221

Product Length/Depth
7.35 in

Product Height
14.37 in

Product Width
8.4 in

Product Weight
10 lb

Warranty
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
UL Listed

Catalog Notes
Maximum hp ratings apply only when dual element fuses are used. 3-Phase hp rating shown is a grounded B phase rating, UL listed.

Physical Attributes

Enclosure
NEMA 3R

Enclosure material
Painted galvanized steel

Fuse configuration
Fusible with neutral

Number Of Poles
Two-pole

Number of wires
3

Type
General duty, cartridge fused

Performance Ratings

Amperage Rating
60A

Fuse class provision
Class H fuses

Voltage rating
240V

Miscellaneous

Product Category
General duty safety switch

Resources

Catalogs
Eaton's Volume 2—Commercial Distribution

Multimedia
Double Up on Safety
Switching Devices Flex Center

Specifications and datasheets
Eaton Specification Sheet - DG222NRB

Eaton Corporation plc
Eaton House
30 Pembroke Road
Dublin 4, Ireland
Eaton.com

Eaton.com/socialmedia

CONSTRUCTION PRODUCTS
BUCHANAN
B-TAP®

Listed
Pressure Cable Connectors
File No. E-5238

INSULATION-PIERCING TAP CONNECTORS | CONECTORES DE DERIVACIÓN QUE PERFORAN EL AISLAMIENTO

Suitable for use on the line side of service equipment.

Adecuado para uso en el lado de la línea del equipo de servicio.

Installation Instructions:

⚠ Warning

Improperly installed electrical wiring can be dangerous and cause electrical fires. The connector chosen must be sized to the wires being used. Consult local building code before doing any electrical work. For assistance, refer to an instructional book or consult a qualified electrician.

⚠ Warning

Contact with electricity can cause serious injury or death. Use on insulated cable only. [RHH, RHW(-2), THHN, THHW, THW, THWN, USE, XHHW(-2). Consult factory for other insulation types]. If the installation is to be made on an energized run, the tap conductor must be under no load and must not be grounded. Use electrically insulated gloves. De-energize the run cable if there are any questions of these conditions being met.

1. Determine the direction for the tap conductor to exit and discard one end cap. **See figure 1.**
2. Position the main (or feeder) side of the connector around the run cable and tighten the bolt finger tight. **See figure 2.** If required, loosen the bolt slightly to allow the connector to open completely. **DISASSEMBLY NOT RECOMMENDED**. The plastic "Turbo" spacer holds the connector open which eases installation and ensures proper connections.
3. Cut the end of the tap cable squarely. **DO NOT STRIP CABLE INSULATION.**
4. Insert the tap cable into the tap side of the connector until it is seated in the remaining end cap. **See figure 3.**
5. Continue tightening the torque regulating bolt with a standard box or socket wrench until the torque regulating piece breaks away. If the connector has two (2) assembly bolts, alternately tighten until the hexagonal torque devices break away. **See figures 4a & 4b.** Note that the plastic "turbo" spacer on the side will also break. To make the installation even easier and to relieve torque from the cables, a second wrench can be used on the hexagonal piece on the bottom of the connector.

   DO NOT use gripping type pliers, pipe, open ended or adjustable wrenches as these may damage the hexagonal torque regulating device. A torque wrench is not required.

   MAKE SURE ONLY THE TOP HEXAGONAL TORQUE DEVICE OF THE BOLT HEAD IS USED FOR ASSEMBLY. THE SECOND HEX PIECE [CLOSER TO THE BODY OF THE CONNECTOR] IS USED FOR DISASSEMBLY.

Note: The torque regulating bolt ensures the correct torque is applied to the conductors without using a torque wrench. Important information such as run and tap ranges, voltage ratings and material/temperature ratings is marked on the connector.

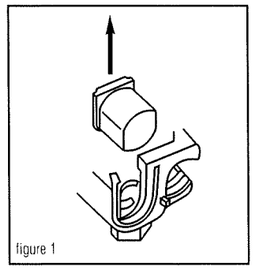


figure 1

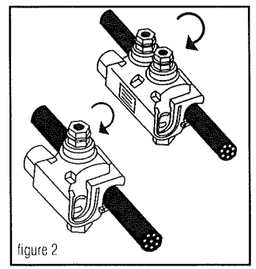


figure 2

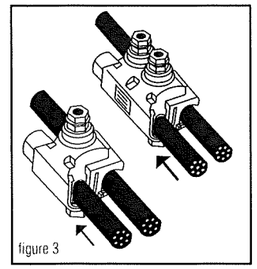
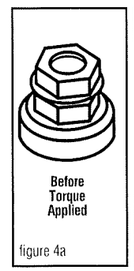
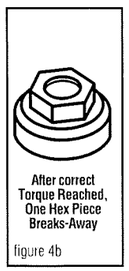


figure 3


Before Torque Applied
figure 4a


After correct Torque Reached, One Hex Piece Breaks-Away
figure 4b

Instalación Instrucciones:

⚠ Advertencia

Los cables eléctricos mal instalados pueden ser peligrosos y provocar incendios. El conector escogido debe ser de un tamaño adecuado para los cables que se utilicen. Consulte los códigos de construcción locales antes de efectuar trabajos eléctricos. Si necesita ayuda, consulte un libro de instrucciones o consulte con un electricista capacitado.

⚠ Advertencia

Use sólo en cable aislado. [RHH, RHW(-2), THHN, THHW, THW, THWN, USE, XHHW(-2). Consulte con la fábrica para obtener información sobre otros tipos de aislamiento]. Si se va a hacer la instalación sobre un cable con corriente el conductor derivado debe estar libre de carga y no debe estar aterado. Use guantes con aislamiento eléctrico. Quite le la corriente al cable del cual se hace la derivación si no se pueden cumplir estas condiciones. El contacto con electricidad puede producir lesiones graves o mortales.

1. Determine la dirección en la que el conductor derivado saldrá y deseche la tapa terminal sobrante. **Vea la ilustración 1.**
2. Coloque el lado principal (o de alimentación) del conector alrededor del cual se hace la derivación y apriete firmemente el dedo del perno. **Vea la ilustración 2**. Si hace falta, afloje el perno ligeramente para permitir que el conector se abra completamente. **NO ES RECOMENDABLE DESARMAR EL CONECTOR.** El espaciador "Turbo" de plástico mantiene al conector abierto, lo cual facilita la instalación y asegura que las conexiones se hagan correctamente.
3. Corte el extremo del cable de derivación perpendicularmente a su eje. **NO PELE EL AISLAMIENTO DEL CABLE.**
4. Inserte el cable de derivación en el lado de derivación del conector hasta que tope contra la tapa terminal que queda. **Vea la ilustración 3.**
5. Continué apretando este perno que regula la torsión con una llave estándar o de cubo hasta que la pieza que regula la torsión se parta y se separe. Si el conector tiene dos (2) pernos de ensamblaje, apriételos alternativamente hasta que el dispositivo de regulación de torció se parta. **Vea la ilustración 4a y 4b**. Observe que el espaciador "turbo" de plástico en el costado también se fracturará. Para hacer esta instalación aún más fácil y para aliviar la torsión de los cables, se puede usar una segunda llave sobre la pieza hexagonal al fondo del conector.

   NO USE alicates de presión, llaves de turbo, llaves comunes o ajustables ya que éstas pueden dañar el dispositivo hexagonal que regula la torsión. No se requiere una llave de torsión.

   ASEGÚRESE QUE SE USE, PARA EL ENSAMBLADO, SÓLO EL DISPOSITIVO SUPERIOR DE REGULACIÓN DE TORSIÓN DE LA CABEZA DEL PERNO. LA SEGUNDA PIEZA HEXAGONAL (LA MÁS CERCANA AL CUERPO DEL CONECTOR) SE USA SÓLO PARA DESARMAR EL CONECTOR.

Nota: El perno regulador de torsión garantiza la aplicación de la torsión correcta a los conductores sin usar una llave de torsión. La información importante de longitud de cable pelado y de toma, las clasificaciones de materiales y temperatura está marcada en el conector.

B-TAP® INSULATION PIERCING TAP CONNECTORS TORQUE AND CURRENT RATINGS

(Solid and/or Stranded)

CATALOG#	MAIN	TAP	NOMINAL TORQUE	TAP CURRENT RATIING (IN AMPS)*
BTC2/0-14	2/0-4	10-14+	80 IN. LBS.	40
BTC1/0-10	1/0-8	2-10++	80 IN. LBS.	130
BTC4/0-10	4/0-3	2-10+++	125 IN. LBS.	130
BTC4/0-6	4/0-2	1/0-6	160 IN. LBS.	170
BTC4/0-2	4/0-2	4/0-2	160 IN. LBS.	260
BTC250-6	250-4	4/0-6	160 IN. LBS.	260
BTC250-4	250-1	3/0-4	160 IN. LBS.	225
BTC250-2	250-1/0	4/0-2	160 IN. LBS.	260
BTC350-1/0	350-1/0	350-1/0	330 IN. LBS.	350
BTC500-4	500-2/0	4/0-4	330 IN. LBS.	260
BTC500-1/0	500-4/0	350-1/0	330 IN. LBS.	350
BTC500-14	750-3/0	10-14 ++++	80 IN. LBS.	40
BTC750-250	750-250	500-250	330 IN. LBS.	430

+10-14 Cu SOLID/STRANDED; 10-12 Al SOLID/STRANDED
++2-10 Cu SOLID/STRANDED; 2-10 Al STRANDED
+++2-10 Cu SOLID/STRANDED; 2-8 Al STRANDED
++++10-14 Cu SOLID/STRANDED; 10-12 Al STRANDED

Full line is 600V dual-rated, 194°F(90°C)

* Based on NEC Table 310-16 1996 (Not more than 3 insulated conductors in a raceway at ambient temperature of 30° C) for the largest tap wire size.

⚠ **WARNING:** Cancer and Reproductive Harm - www.P65Warnings.ca.gov.

⚠ **ADVERTENCIA:** Cáncer y Daño Reproductivo - www.P65Warnings.ca.gov.

One year limited warranty. See idealind.com for more information.

Garantía limitada de un año. Visite www.idealind.com para obtener detalles de la garantía.

CONSTRUCTION PRODUCTS
BUCHANAN
1800 S. Prairie Drive
Sycamore, IL, U.S.A.
800-435-0705 • www.idealind.com

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IDEAL INDUSTRIES, INC.
1375 Park Avenue • Sycamore, Illinois 60178 • 815.895.5181 • www.idealind.com

ALL IDEAL Customers 7/9/24

Subject: **The Buchanan B-TAP® BTC 2/0-14, BTC4/0-10, BTC1/0-10, and BTC250-6 connectors have successfully obtained UL 486A-486B certification to meet the 2020 NEC article 230.46 requirement for "line side applications"**

This letter is being issued as a follow up to the letter dated 7/9/24 regarding the Buchanan B-TAP® splice/tap connectors installed on service conductors from service equipment to the service point (excluding the service point) being marked or identified for use on the line side of service equipment.

The B-TAP® model numbers BTC 2/0-14, BTC4/0-10, BTC1/0-10, BTC500-14, and BTC250-6 connectors have been tested and successfully passed the new requirements in UL 486A-B for the marking "Suitable for Use on the Line Side of Service Equipment". The testing has been acknowledged by Underwriter's Laboratories and is now part of the UL Listing for the IDEAL file E5238. It is important to note, no changes to the existing connectors in the market were required to meet the Line Side requirement.

The UL Guide Info page for category ZMVV recommends the following statement be added to the information sheet, the connector, or the smallest unit container: "Suitable for Use on the Line Side of Service Equipment". IDEAL will be updating all of our information sheets for these connectors immediately to reflect this new UL marking. The product itself will also be marked very soon with a short form of this language. That exact mark is still being updated on the UL Guide Info page. The UL 486 Standard Technical Committee and the NEMA 8CC are going to issue on update as to the final marking that will be required. The prior marking of "SR" is likely to change to "SVC" in order to comply with the new 2026 NEC being promulgated. Therefore, we cannot tell you which mark will be applied yet. But, the language we provide on the information sheet is sufficient for the AHJ community.

In addition, the rest of the UL testing for the models BTC500-4, BTC750-250, BTC500-1/0, BTC350-1/0 will be completed in November.

Once again, we apologize for the delay.

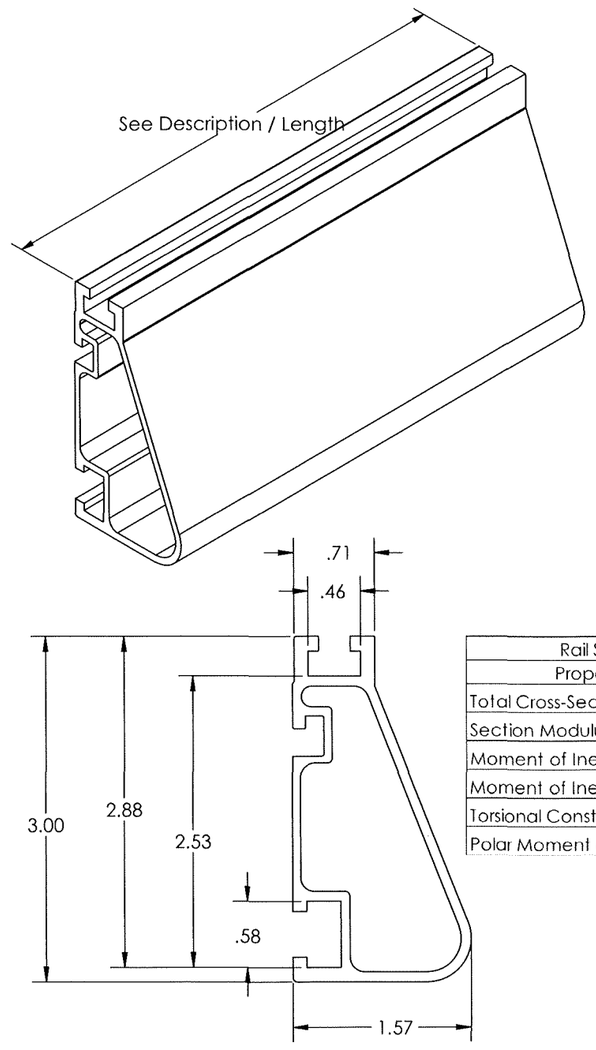
Sushil Keswani

Director of Engineering
IDEAL Industries, Inc.

Cut Sheet

IRONRIDGE

XR1000 Rail



Rail Section Properties	
Property	Value
Total Cross-Sectional Area	0.807 in^2
Section Modulus (X-axis)	0.530 in^3
Moment of Inertia (X-axis)	0.843 in^4
Moment of Inertia (Y-axis)	0.182 in^4
Torsional Constant	0.436 in^3
Polar Moment of Inertia	0.330 in^4

Clear Part Number	Black Part Number	Description / Length	Material	Weight
XR-1000-132A	XR-1000-132B	XR1000, Rail 132" (11 Feet)	6000-Series Aluminum	10.97 lbs.
XR-1000-168A	XR-1000-168B	XR1000, Rail 168" (14 Feet)		13.96 lbs.
XR-1000-204A	XR-1000-204B	XR1000, Rail 204" (17 Feet)		16.95 lbs.

v1.0

Datasheet

IRONRIDGE

Ground Mount System

Mount on all terrains, in no time.

The IronRidge Ground Mount System combines our XR1000 rails with locally-sourced steel pipes or mechanical tubing, to create a cost-effective structure capable of handling any site or terrain challenge.

Installation is simple with only a few structural components and no drilling, welding, or heavy machinery required. In addition, the system works with a variety of foundation options, including concrete piers and driven piles.

Rugged Construction

Engineered steel and aluminum components ensure durability.

PE Certified

Pre-stamped engineering letters available in most states.

UL 2703 Listed System

Meets newest effective UL 2703 standard.

Design Software

Online tool generates engineering values and bill of materials.

Flexible Architecture

Multiple foundation and array configuration options.

25-Year Warranty

Products guaranteed to be free of impairing defects.

Datasheet

360° Product Tour
Visit ironridge.com

Substructure

Top Caps

Connect vertical and cross pipes.

Bonded Rail Connectors

Attach and bond Rail Assembly to cross pipes.

Diagonal Braces

Optional Brace provides additional support.

Cross Pipe & Piers

Steel pipes or mechanical tubing for substructure.

Rail Assembly

XR1000 Rails

Curved rails increase spanning capabilities.

UFOs

Universal Fastening Objects bond modules to rails.

Stopper Sleeves

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

CAMO

Bond modules to rails while staying completely hidden.

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

Tech Brief

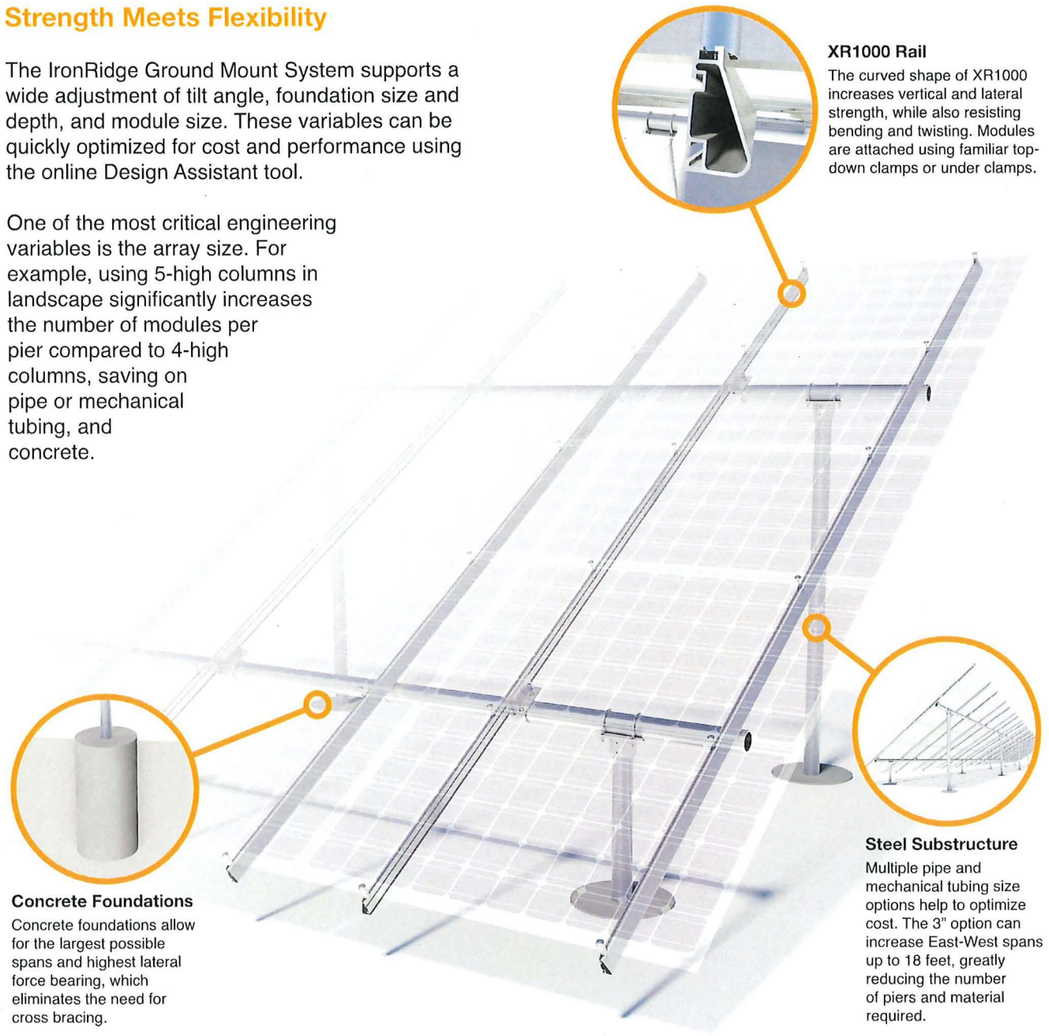
IRONRIDGE

Ground Mount Configurations

Strength Meets Flexibility

The IronRidge Ground Mount System supports a wide adjustment of tilt angle, foundation size and depth, and module size. These variables can be quickly optimized for cost and performance using the online Design Assistant tool.

One of the most critical engineering variables is the array size. For example, using 5-high columns in landscape significantly increases the number of modules per pier compared to 4-high columns, saving on pipe or mechanical tubing, and concrete.



XR1000 Rail

The curved shape of XR1000 increases vertical and lateral strength, while also resisting bending and twisting. Modules are attached using familiar top-down clamps or under clamps.

Concrete Foundations

Concrete foundations allow for the largest possible spans and highest lateral force bearing, which eliminates the need for cross bracing.

Steel Substructure

Multiple pipe and mechanical tubing size options help to optimize cost. The 3" option can increase East-West spans up to 18 feet, greatly reducing the number of piers and material required.

Compatible with Soil Classes 2-4

The size of Ground Mount foundations depends on a number of factors, including column height and site loading conditions. Stronger and sturdier soil classes (Class 2 and Class 3) allow for reduced foundation depth, saving on materials and labor.

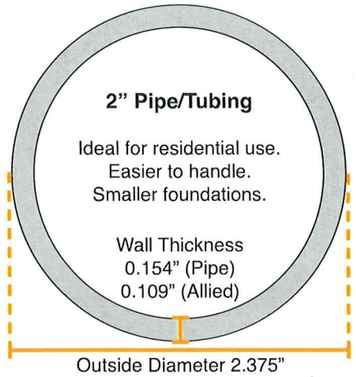
Wide Tilt Angle Range (0-45 Degrees)

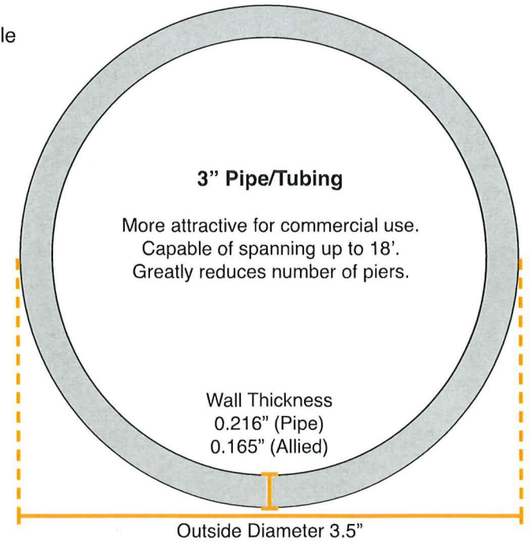
Lower tilt angles are an effective way of reducing wind loads on ground mount structures, resulting in increased East-West pipe spans and reduced number of foundations. Refer to table on backside to see how tilt angle affects spans.

Tech Brief

Substructure Selection

Ground Mount uses locally-sourced galvanized schedule 40 steel pipe (ASTM A53 Grade B, 35 ksi) or Allied mechanical tubing (2" – 50 ksi, 3" – 45 ksi) to reduce shipping costs. Mechanical tubing is lighter and can be easier to couple when building the substructure.





Refer to the following table to see how size impacts the East-West span between foundations. The table complies with ASCE 7-10 structural code. Values are based on 72-cell modules in Wind Exposure Category B.

Conditions				E-W Span							
Snow	Height	Tilt	Wind (MPH)	4'	6'	8'	10'	12'	14'	16'	18'
0 PSF	4-High	10°	100								
			120								
			140								
		30°	100		•	•					
			120	•	•						
			140	•	•						
	5-High	10°	100	2" Pipe/Tubing			3" Pipe/Tubing				
			120								
			140								
		30°	100		•	•					
			120	•	•			•			
30 PSF	4-High	10°	100								
			120								
			140								
		30°	100		•						
			120	•	•						
			140	•	•		•				
	5-High	10°	100								
			120								
			140								
		30°	100		•						

*Requires Diagonal Bracing

RATINGS

UL 2703 LISTED

#5003225

Intertek

- Conforms to STD UL 2703 (2015) Standard for Safety First Edition: Mounting Systems, Mounting Devices, Clamping/ Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels.
- Certified to CSA STD LTR AE-001-2012 Photovoltaic Module Racking Systems.
- Max Overcurrent Protective Device (OCPD) Rating: 25A
- Max Module Size: 24ft²
- Max Frameless Module Size for Canadian LTR-AE: 19.5 ft²
- CAMO Specific Allowable Design Load Rating: 50 PSF downward, 50 PSF upward, 15 PSF lateral
- LTR AE Canadian Load Rating: 2400 Pa
- System Level Allowable Design Load Rating: meets minimum requirements of the standard (10 PSF downward, 5 PSF upward, 5 PSF lateral). Actual system structural capacity is defined by PE stamped certification letters.

CLASS A SYSTEM FIRE RATING PER UL 2703

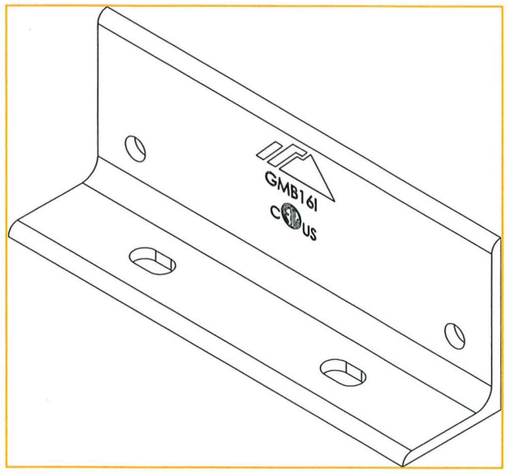
- Not Fire Rated

STRUCTURAL CERTIFICATION

- Designed and Certified for Compliance with the International Building Code & ASCE/SEI-7

MARKINGS

Product markings are located on the system's Rail Connectors.



CHECKLIST

PRE-INSTALLATION

- ☐ Verify module compatibility. See Page 12 for info.
- ☐ Purchase 2" or 3" ASTM A53 Grade B Schedule 40 Pipe, galvanized to a min of ASTM A653 G90 or ASTM A123 G35, or 2.375" or 3.500" Allied Mechanical Tubing with Gatorshield or FlowCoat Zinc coating (ASTM A1057).

TOOLS REQUIRED

- ☐ Post Hole Digger or Powered Auger
- ☐ Socket Drive (7/16", 9/16", and 1/2" Sockets)
- ☐ Torque Wrenches (0-240 in-lbs and 10-40 ft-lbs)
- ☐ Transit, String Line, or Laser Level
- ☐ 3/16" Allen Head

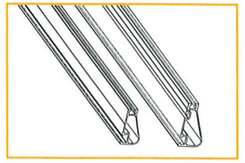
TORQUE VALUES

- ☐ Top Cap Set Screws (3/16" Allen Head)
- ☐ Schedule 40 Grade B Pipe: 20 ft-lbs
- ☐ 2." Allied Mechanical Tubing: 11 ft-lbs
- ☐ 3" Allied Mechanical Tubing: 16 ft-lbs
- ☐ Top Cap U-Bolt Nuts (9/16" Socket): 15 ft-lbs
- ☐ Rail Connector Bracket Nuts (9/16" Socket): 21 ft-lbs
- ☐ Rail Connector U-Bolt Nuts (9/16" Socket): 60 in-lbs
- ☐ Grounding Lug Nuts (7/16" Socket): 80 in-lbs
- ☐ Grounding Lug Terminal Screws (7/16 Socket): 20 in-lbs
- ☐ Universal Fastening Objects (7/16" Socket): 80 in-lbs
- ☐ Diagonal Brace Set Screws (1/2" Socket): 15 ft-lbs
- ☐ Diagonal Brace Bolts (1/2" Socket): 40 ft-lbs
- ☐ Microinverter Kit Nuts (7/16" Socket): 80 in-lbs
- ☐ Frameless Module Kit Nuts (7/16" Socket): 80 in-lbs

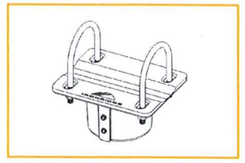
If using previous version of: Integrated Grounding Mid Clamps, Grounding Lug, End Clamps, and Expansion Joints please refer to Alternate Components Addendum (Version 1.30).

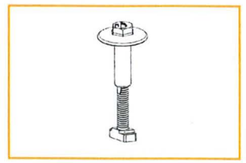
If installing on a low slope roof please refer to Ground Mount for Flat Roof Applications Addendum (Version 2.0).

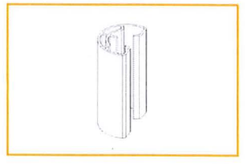
IRONRIDGE COMPONENTS

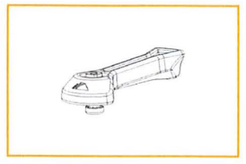

XR100 & XR1000 Rail

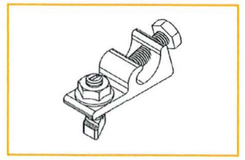

Rail Connector

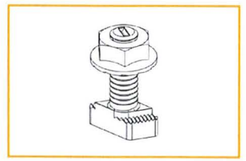

Top Cap

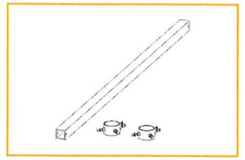

UFO


Stopper Sleeve


CAMO

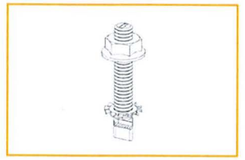

Grounding Lug


Microinverter Kit


Diagonal Brace


End Cap


Wire Clip


Frameless Module Kit


Frameless End/Mid Clamp

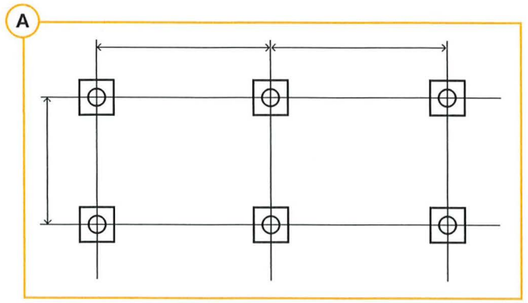
1. BUILD BASE

A. MARK LOCATIONS

Establish pier locations. Once grid of pier locations has been set, verify all angles are square.

- **Spacing varies with load conditions. Consult engineering specs.**

A

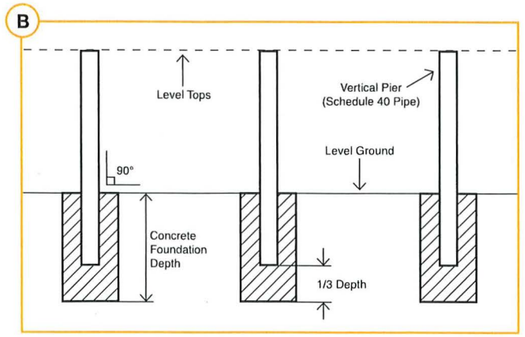


B. POSITION PIERS

Excavate the foundation holes. Insert vertical piers into foundation holes, and pour in concrete mixture. Ensure vertical piers are plumb, level, square, and placed in parallel rows. Level the tops so they are even.

- **Brace piers until concrete foundation has cured.**
- **In some cases, cross bracing is required to provide extra support for piers. If required, install Diagonal Braces at this time.**

B



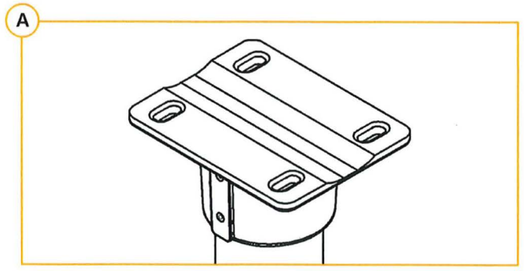
2. CONNECT SUBSTRUCTURE

A. MOUNT TOP CAPS

Mount a Top Cap on each pier. Wait to tighten set screws.

- **If using Diagonal Braces, install them prior to Top Caps.**

A



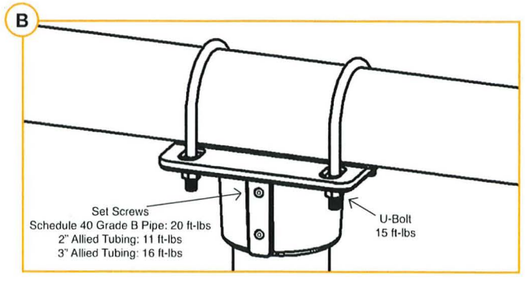
B. LAY CROSS PIPE

Set cross pipes or tubing in Top Cap grooves. Attach with 3/8" U-bolts, flange nuts, flat washers, and lock washers. Torque U-bolts to **15 ft-lbs** and align assembly.

Torque Top Cap set screws to **20 ft-lbs** for Schedule 40 Grade B Pipe, **11 ft-lbs** for 2" Allied Mechanical Tubing, and **16 ft-lbs** for 3" Allied Mechanical Tubing.

- **To join more than one section of cross pipe, see Page 10.**

B



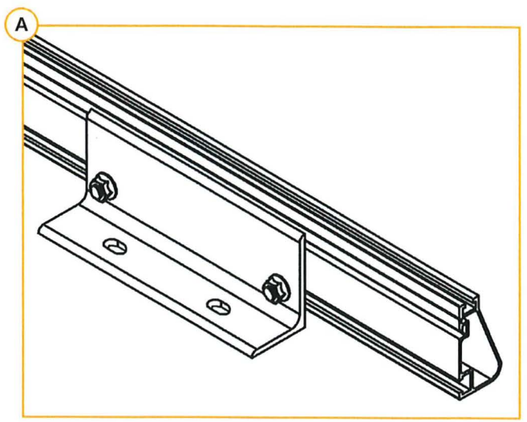
3. PLACE RAILS

A. ATTACH HARDWARE

On the ground, attach Rail Connector brackets to rail by sliding 3/8"-16 bonding bolts into side slot. Space out to match pier spacing. With brackets in place, finger tighten flange nuts onto bolts.

- **Tape ends of rail, to keep bolts from sliding out while moving.**

A

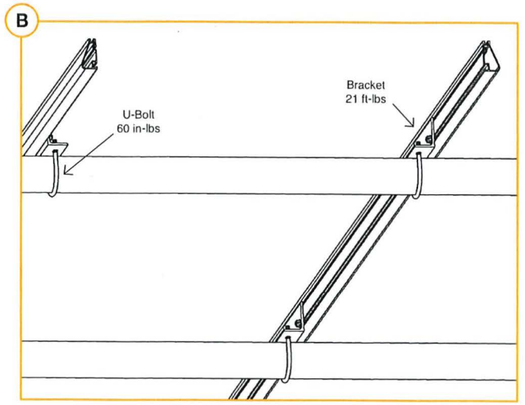


B. FASTEN CONNECTORS

Center rails on cross pipes, leaving equal distance on ends. Secure with Rail Connector hardware: 3/8"-16 U-bolts, flange nuts, flat washers, and lock washers. Torque U-bolt nuts to **60 in-lbs** and bracket to **21 ft-lbs**.

- **Spacing between rails should align with module manufacturer recommended clamping locations.**

B

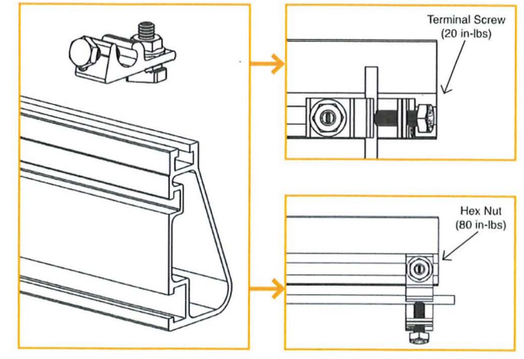


4. SECURE LUGS

GROUNDING LUGS

Insert T-bolt in top rail slot and torque hex nut to **80 in-lbs**. Install a minimum 10 AWG solid copper or stranded grounding wire. Torque terminal screw to **20 in-lbs**.

- **Only one Grounding Lug required per continuous subarray, regardless of subarray size (Unless frameless modules are used, see Page 10).**
- **If using Enphase microinverters or Sunpower AC modules, Grounding Lugs may not be needed. See Page 11 for more info.**
- **Grounding Lugs can be installed anywhere along the rail and in either orientation shown.**
- **Grounding Lugs are intended to for use with one solid or stranded copper wire, conductor size 10-4AWG.**

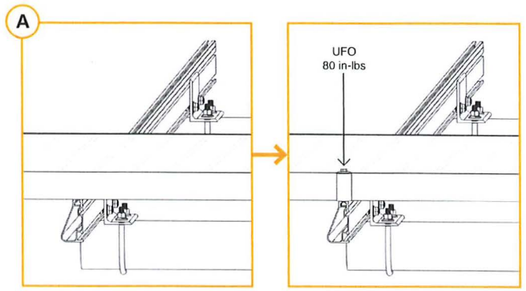


5. SECURE MODULES

A. SECURE FIRST END

Place first module in position on rails, a minimum of 1" from rail ends. Snap Stopper Sleeves onto UFO. Fasten module to rail using the UFO, ensuring that the UFO is hooked over the top of the module. Torque to **80 in-lbs**.

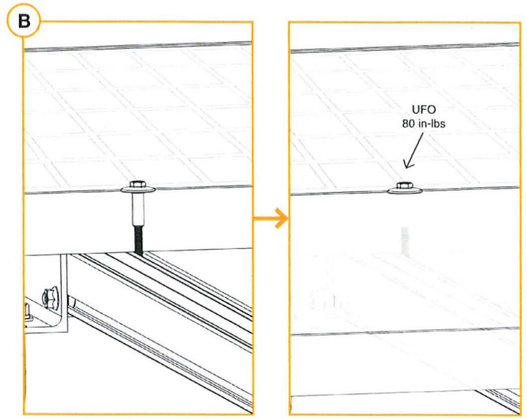
- **Ensure rails are square before placing modules.**
- **Hold Stopper Sleeves on end while torquing to prevent rotation.**
- **If using CAMO instead of UFO + Stopper Sleeve, refer to Page 7 for CAMO installation procedure.**



B. SECURE NEXT MODULES

Place UFO into each rail, placing them flush against first module. Slide second module against UFO. Torque to **80 in-lbs**. Repeat for each following module.

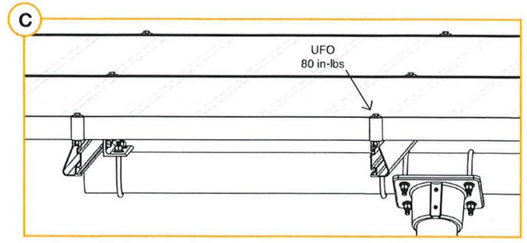
- **When reinstalling UFO, move modules a minimum of 1/16" so UFOs are in contact with a new section of module frame.**
- **When UFOs are loosened and re-tightened, ensure UFO T-bolt bottoms out in rail channel before re-torquing UFO to achieve full engagement between T-bolt and rail.**
- **If using Wire Clips, refer to Page 9.**



C. SECURE LAST END

Place last module in position on rails, a minimum of 1" from rail ends. Snap Stopper Sleeves onto UFO. Secure UFO Clamps on rails, ensuring they are hooked over top of module. Torque to **80 in-lbs**.

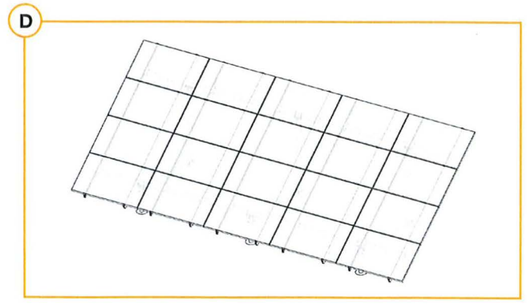
- **Hold Stopper Sleeves on end while torquing to prevent rotation.**
- **If using CAMO instead of UFO + Stopper Sleeve, refer to Page 7 for CAMO installation procedure.**



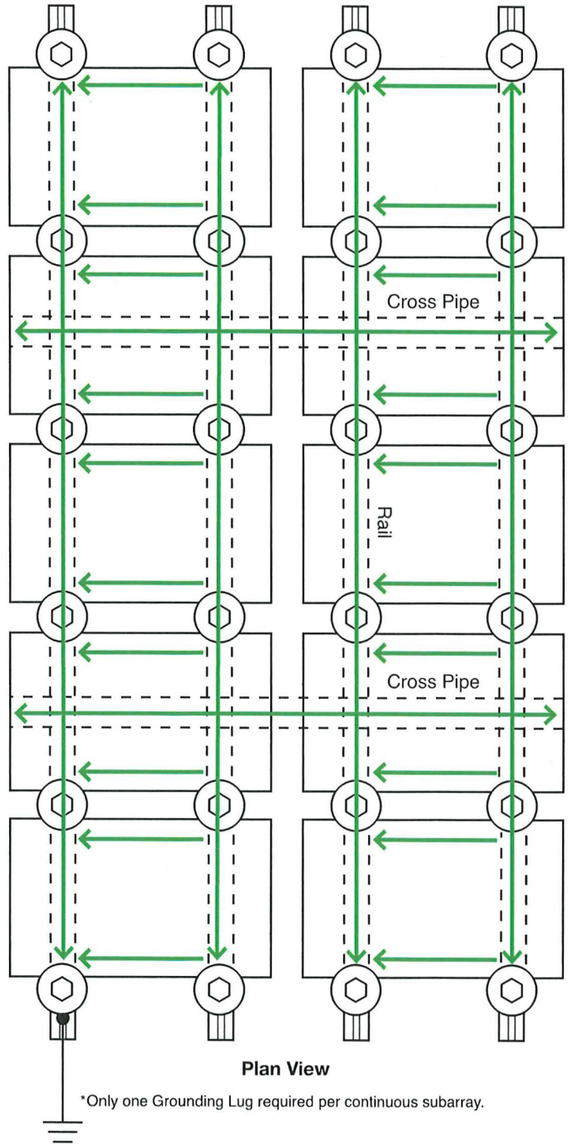
D. REPEAT STEPS

Secure remaining module rows, leaving a minimum 3/8" gap between rows.

- **If using End Caps, refer to Page 9.**

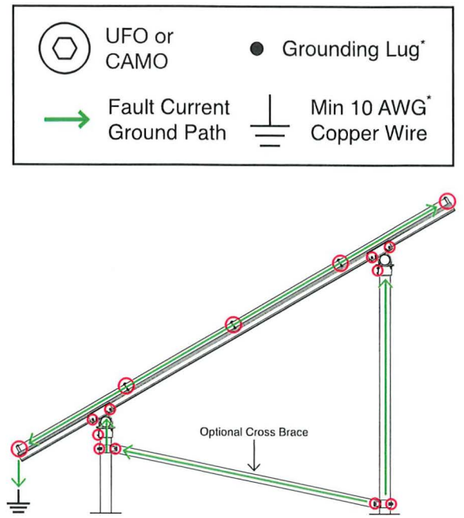


ELECTRICAL DIAGRAM



Plan View

*Only one Grounding Lug required per continuous subarray.



Section View

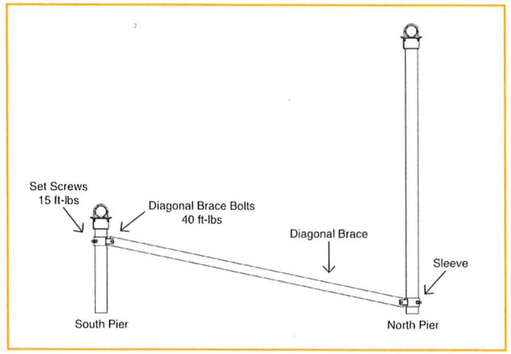
*Grounding Lugs and wire are not required in systems using certain Enphase microinverters or certain Sunpower modules. Equipment grounding is achieved with the Engage cable for Enphase or the AC module cable system for Sunpower via their integrated EGC.

DIAGONAL BRACES (OPTIONAL)

Slide sleeve on north pier 2-3" above the ground (6" max). Attach Diagonal Brace to sleeve with 1/2" hardware.

Slide second sleeve up on south pier 2-3" below top cap (6" max). Raise Diagonal Brace to align holes in sleeve and brace. Attach hardware and raise sleeve to full extent.

Torque Diagonal Brace bolts to **40 ft-lbs**. Torque set screws to **15 ft-lbs**.

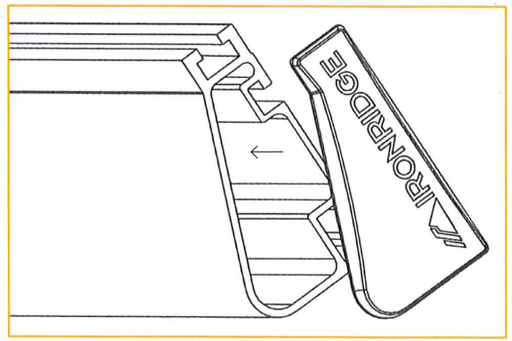


END CAPS

End Caps add a completed look and keep debris and pests from collecting inside rail.

Firmly press End Cap onto rail end.

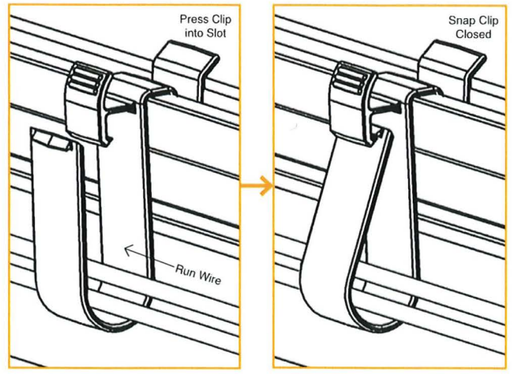
- **End Caps come in sets of left and right. Check that the proper amount of each has been provided.**
- **For open-structure installations, you can use adhesive to secure the End Caps.**



WIRE CLIPS

Wire Clips offer a simple wire management solution.

Firmly press Wire Clip into top rail slot. Open clip and insert electrical wire accordingly. Close clip once complete.



SPLICING CROSS PIPE

The following instructions should be followed, when required, to join more than one section of cross pipe together to ensure bonding is maintained throughout the system.

A. ALLIED MECHANICAL TUBING SPLICES

Mechanical tube splices shown in the table below shall be of equivalent Allied Flowcoat or Gatorshield zinc coating.

Mechanical Tube Size of the Structure	Splice Tube Size
2.375" OD, 12 Gauge	2.000" OD, 9 Gauge, Minimum 12" Long
3.500" OD, 8 Gauge	3.000" OD, 12 Gauge, Minimum 12" Long

Insert splice tube 6" into first section of cross pipe and secure with 2 self-drilling screws (1/4"-14 x ¾"), spacing them approximately 1.25" from end of pipe and approximately 3.50" apart, tightening screws to 9 ft-lbs.

Slide second section of cross pipe over splice tube and secure with two more self-drilling screws. Tighten screws to 9 ft-lbs.

- **Pre-drill 5/32" pilot holes through cross pipe and splice tube for easier installation of self-drilling screws.**

B. SCHEDULE 40 GRADE B PIPE SPLICES

Use galvanized threaded pipe couplings that match the pipe size used for the structure. Threaded Schedule 40 Grade B Pipe must be used when splicing cross pipe together.

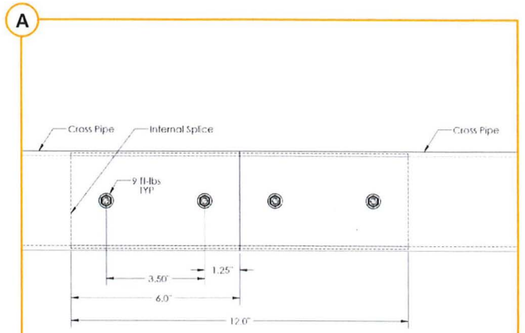
Fully thread coupling onto both sections of pipe being spliced together.

- **To ensure structural integrity of cross pipes, mechanical tube or coupling splices are not permitted in end spans or in middle 1/3 of interior cross pipe spans.**

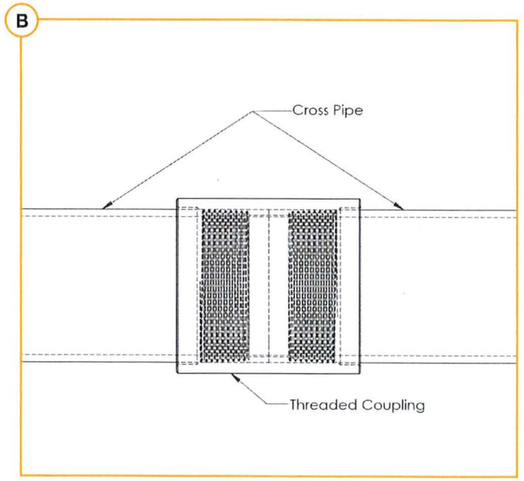
C. CROSS PIPES CAN BE JOINED OVER AN INTERIOR TOP CAP WITH A MAXIMUM GAP OF 1/2"

- **To avoid potential problems from the effects of thermal expansion, a maximum total continuous cross pipe length of 100 ft is recommended.**

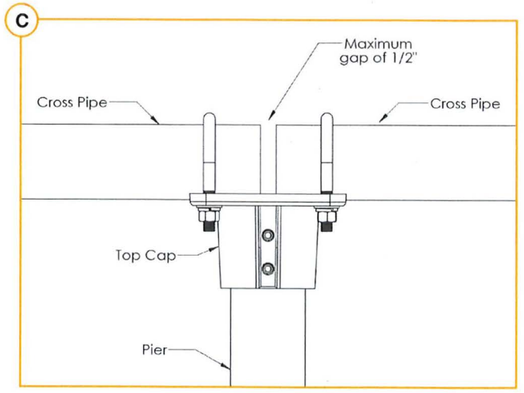
A



B



C



MODULE COMPATIBILITY

The Ground Mount System has been tested and evaluated to UL 2703 for bonding, grounding, mechanical loading and fire classification, and may be used to ground and/or mount PV modules listed to UL 1703 or UL 61730. A list of approved modules is included below. Unless otherwise noted, “xxx” refers to the module power rating and both black and silver frames are included in the certification.certification.

Framed Module List	
Make	Models
Adani	Adani modules with 35 and 40mm frames ASX-Y-ZZ-xxx Where "X" can be B, M or P, "Y" can be 6, 7 or M10 and "ZZ" can be blank, 144, PERC, B-PERC, or AB-PERC
AIONRISE	AIONRISE modules with 35 and 40mm frames AIONyyG1-xxx Where "yy" can be 60 or 72
Amerisolar	Amerisolar modules with 35 and 40 mm frames AS-bYxxxZ Where "b" can be 5 or 6; "Y" can be M, P, M27, P27, M30, or P30; and "Z" can be blank, W or WB
Aptos Solar	Aptos modules with 35 and 40 mm frames DNA-yy-zzaa-xxx Where "yy" can be 108, 120 or 144; "zz" can be MF or BF; and "aa" can be 10, 23 or 26
Astronergy Solar	Astronergy modules with 30, 35 and 40 mm frames aaSMbbyyC/zz-xxx Where “aa” can be CH or A; "bb" can be 60, 66, or 72; “yy” can be blank, 10 or 12; "C" can M, P, M(BL), M-HC, M(BL)-HC, P-HC, M(DG), or M(DGT); and “zz” can be blank, HV, F-B, or F-BH
ASUN	ASUN modules with 35 and 40 mm frames ASUN-xxx-YYZZ-aa Where "YY" can be 60 or 72; "ZZ" can be M,or MH5; and "aa" can be blank or BB
Auxin	Auxin modules with 40 mm frames AXN6y6zAxxxB Where "y" can be M or P; "z" can be 08, 09, 10, 11, or 12; and "A" can be F, M or T; and "B" can be blank, A, B or C
Axitec	Axitec Modules with 30, 35 and 40 mm frames AC-xxxY/aaZZb Where "Y" can be M, P, MB, MBT or MH; "aa" can be blank, 125- or 156-; "ZZ" can be 54, 60, 72, 108, 120, or 144; "b" can be S, X, V, VB, XV, or MX
Bluesun Solar	Bluesun modules with 30 and 35mm frames BSMxxxY-AAA Where "Y" can be M or M10; and "AAA" can be 60HPH or 72HBD
Boviet	Boviet modules with 35 and 40mm frames BVMZZaaYY-xxxBcc Where "ZZ" can be 66 or 76; "aa" can be 9, 10 or 12; "YY" is M or P; and "B" can be blank, L or S; and "cc" can be blank, H, H-BF, H-BF-DG, H-HC, H-HC-BF, H-HC-BF-DG, HC-BF or HC-BF-DG
BYD	BYD modules with 35 mm frames BYDxxxAY-ZZ Where "A" can be M6, P6, MH or PH; "Y" can be C or K; and "ZZ" can be 30 or 36
Canadian Solar	Canadian Solar modules with 30, 32, 35 and 40 mm frames CSbY-xxxZ Where "b" can be 1, 3, 6 or 7 "Y" can be H, K, L, N, P, R, U, V, W, X or Y; and "Z" can be M, P, MS, PX , M-SD, P-AG, P-SD, MB-AG, PB-AG, MS-AG, MS-HL, or MS-SD
CertainTeed	CertainTeed modules with 35 and 40 frames CTxxxYZZ-AA Where "Y" can be M, P, or HC; "ZZ" can be 00, 01, 10, or 11; and "AA" can be 01, 02, 03, 04 or 06

MODULE COMPATIBILITY

CSUN	Csun modules with 35 and 40 mm frames YYxxx-zzAbb Where "YY" is CSUN or SST; "zz" is blank, 60, or 72; and "A" is blank, P, M or MM; "bb" is blank, BB, 5BB, BW, or ROOF
Dehui	Dehui modules with 30, 35 and 40mm frames DH-MYYYZ-xxx Where “YYY” can be 760, 772, 860, 872; and “Z” can be B, F or W
Ecosolargy	Ecosolargy modules with 35 and 40 mm frames ECOxxxYzzA-bbD Where “Y” can be A, H, S, or T; “zz” can be 125 or 156; “A” can be M or P; “bb” can be 60 or 72; and “D” can be blank or B
ET Solar	ET Solar modules with 30, 35 and 40 mm frames ET-YZZZxxxAA Where "Y" can be P, L, or M; "ZZZ" can be 660, 660BH, 672, 672BH, 754BH, 766BH, 772BH; and "AA" can be GL, TB, TW, WB, WW, BB, WBG, WWG, WBAC, WBCO, WWCO, WWBCO or BBAC
Flex	Flex modules with 35 and 40 mm frames FXS-xxxYY-ZZ; Where “YY” can be BB or BC; and “ZZ” can be MAA1B, MAA1W, MAB1W, SAA1B, SAA1W, SAC1B, SAC1W, SAD1W, SBA1B, SBA1W, SBC1B, or SBC1W
Freedom Forever	Freedom Forever modules with 35mm frames FF-MPa-BBB-xxx Where "a" can be blank or 1
Freevolt	Freevolt modules with 35mm frames ECP-PVGRAF-144HC-xxx
GCL	GCL modules with 35 mm and 40 mm frames GCL-ab/YY xxx Where “a” can be M or P; “b” can be 3 or 6; and “YY” can be 60, 72, 72H, or 72DH
GigaWatt Solar	Gigawatt modules with 40 mm frames GWxxxYY Where “YY” can be either PB or MB
Hansol	Hansol modules with 35 and 40 frames HSxxxYY-zz Where “YY” can be PB, PD, PE, TB, TD, UB, UD, or UE; and “zz” can be AH2, AN1, AN3, AN4, HH2, HV1, or JH2
Hanwa Solar	Hanwha Solar modules with 40 mm frames HSLaaP6-YY-1-xxxZ Where “aa” can be either 60 or 72; “YY” can be PA or PB; and “Z” can be blank or B
Hanwha Q CELLS	Hanwha Q CELLS Modules with 32, 35, 40mm frames aaYY-ZZ-xxx where "aa" can be Q. or B.; "YY" can be PLUS, PRO, PEAK, LINE PRO, LINE PLUS, PLUS DUO or PEAK DUO; and "ZZ" can be G3, G3.1, G4, G4.1, L-G2, L-G2.3, L-G3, L-G3.1, L-G3y, L-G4, L-G4.2, L-G4y, LG4.2/TAA, BFR-G3, BLK-G3, BFR-G3.1, BLK-G3.1, BFR-G4, BFR-G4.1, BFR G4.3, BLK-G4.1, G4/SC, G4.1/SC, G4.1/TAA, G4.1/MAX, BFR G4.1/TAA, BFR G4.1/MAX, BLK G4.1/TAA, BLK G4.1/SC, EC-G4.4, G5, G5/SC, G5/TS, BLK-G5, BLK-G5/SC, BLK-G5/TS, L-G5, L-G5.1, L-G5.2, L-G5.2/H, L-G5.3, G6, G6/SC, G6/TS, G6+/TS, G6+, BLK-G6, L-G6, L-G6.1, L-G6.2, L-G6.3, G7, BLK-G6+, BLK-G6+/AC, BLK-G6+/HL, BLK-G6+/SC, BLK-G6/TS, BLK-G6+/TS, BLK-G7, G7.2, G8, BLK-G8, G8+, BLK-G8+ L-G7, L-G7.1, L-G7.2, L-G7.3, L-G8, L-G8.1, L-G8.2, L-G8.3, L-G8.3/BFF, L-G8.3/BFG, L-G8.3/BGT, ML-G9, BLK ML-G9, ML-G9+, BLK ML-G9+, BLK-G10+, BLK G10+/AC, ML-G10, BLK ML-G10, ML-G10+, BLK ML-G10+, ML-G10.a, BLK ML-G10.a, ML-G10.a+, BLK ML-G10.a+, XL-G9, XL-G9.2, XL-G9.3, XL-G9.3/BFG, XL-G10.2, XL-G10.3, XL-G10.c, XL-G10.d, XL-G10.d/BFG, XL-G10.3/BFG, XL-G11.2, XL-G11.3, XL-G11.3/BFG or XL-G11S.3/BFG
Heliene	Heliene modules with 35 and 40 mm frames YYZZxxxA Where "YY" can be 36, 60, 72, 96, 108, 120, 132 or 144; "ZZ" can be HC, M, P, or MBLK; and "A" can be blank, HomePV, Bifacial, M10-SL, M10-SL-BLK, M10 Bifacial or M10 SL-Bifacial

MODULE COMPATIBILITY

HT-SAAE	HT-SAAE modules with 35 and 40 mm frames HTyy-aaaZ-xxx Where "yy" can be 60, 66, 72 or 78, "aaa" can be 18, 156 or 166, "Z" can be M, P, M-C, P-C, M(S), M(VS), M(V), P(V), M(V)-C, P(V)-C, or X
Hyperion	Hyperion modules with 30 and 35mm frames HY-DHzzzP8-xxxB Where “zzz” can be 108 or 144; and “B” can be blank or B
Hyundai	Hyundai modules with 32, 33, 35 and 40mm frames HiY-SxxxZZ Where "Y" can be A, D or S; "S" can be M or S; and "ZZ" can be GI, HG, HI, KI, MI, MF, MG, PI, RI, RG, RG(BF), RG(BK), SG, TI, TG, YH(BK) or XG(BK)
Itek	Itek Modules with 40 mm frames IT-xxx-YY Where “YY” can be blank, HE, or SE, or SE72
JA Solar	JA Solar modules with 30, 35 and 40 mm frames JAyyzz-bbww-xxx/aa Where “yy” can be M, P, M6 or P6; “zz” can be blank, (K), (L), (R), (V), (BK), (FA), (TG), (FA)(R), (L)(BK), (L)(TG), (R)(BK), (R)(TG), (V)(BK), (BK)(TG), or (L)(BK)(TG); “bb” can be 48, 54, 60, 66, 72 or 78; "ww" can be D09, D10, D20, D30, S01, S02, S03, S06, S09, S10, S12, S17, S20, S30 or S31; and “aa” can be BP, MB, MR, SI, SC, PR, 3BB, 4BB, 4BB/RE, 5BB
Jinko	Jinko modules with 35 and 40 mm frames JKMYxxxZZ-aa Where "Y" can either be blank or S; "ZZ" can be M, P, or PP; and "aa" can be blank, 60, 60B, 60H, 60L, 60BL, 60HL, 60HB, 60HBL, 6HBL-EP, 60-J4, 60B-J4, 60B-EP, 60(Plus), 60-V, 60-MX, 6RL3, 6RL3-B, 6TL3-B, 7RL3-V, 7RL3-TV, 72, 72B, 72-J4, 72B-J4, 72(Plus), 72-V, 72H-V, 72L-V, 72HL-V, 72HBL-V, 72HL4-V, 72HL4-TV, 72-MX, 72H-BDVP, 72HL-TV, or 72HL-V-MX3
Kyocera	Kyocera Modules KYxxxZZ-AA Where “Y” can be D or U; “ZZ” can be blank, GX, or SX; and “AA” can be LPU, LFU, UPU, LPS, LPB, LFB, LFBS, LFB2, LPB2, 3AC, 3BC, 3FC, 4AC, 4BC, 4FC, 4UC, 5AC, 5BC, 5FC, 5UC, 6BC, 6FC, 8BC, 6MCA, or 6MPA
LG	LG modules with 35 and 40 mm frames LGxxxYaZ-bb Where "Y" can be A, E, M, N, Q, S; "a" can be A, 1, 2 or 3 "Z" can be C, K, T, or W; and "bb" can be A3, A5, A6, B3, B6, E6, E6.AW5, G3, G4, J5, K4, L5, N5, V5, V6
Longi	Longi modules with 30, 35 and 40 mm frames LRa-YYZZ-xxxM Where "a" can be 4, 5 or 6; "YY" can be blank, 54, 60, 66, or 72; and "ZZ" can be blank, BK, BP, HV, PB, PE, PH, HBD, HIB, HIH, HPB, HPH, or HIBD
Maxeon	Maxeon modules with 35, 40 and 46mm frames SPR-AAAY-xxx-zzz Where "AAA" can be MAX, P or X; "Y" can be 3, 5, 6, 21 or 22; and "zzz" can be R, BLK, COM or UPP
Meyer Burger	Meyer Burger Modules with 35mm frames Meyer Burger Black, White or Glass
Mission Solar	Mission Solar modules with 33, 35 and 40 mm frames YYYbb-xxxZZaa Where "YYY" can be MSE or TXS; "bb" can be blank, 6 or 60A; "ZZ" can be blank, MM, SE, SO, SQ , SR, SX, TS, 120 or 144; and "aa" can be blank, BB, BW, 1J, 4J, 4S, 5K, 5R, 5T, 60, 6J, 6S, 6W, 6Z, 8K, 8T, 9R, 9S or 9Z
Mitsubishi	Mitsubishi modules PV-MYYxxxZZ Where “YY” can be LE or JE; and “ZZ” can be either HD, HD2, or FB
Moltech	IM and XS series modules with 40 mm frames
Next Energy Alliance	Next Energy Alliance modules with 35 and 40mm frames yyNEA-xxxZZ where “yy” can be blank or US; “ZZ” can be M, MB or M-60

MODULE COMPATIBILITY

NE Solar	NE Solar modules with 30, 35 and 40mm frames NESExxx-zzMH-yy Where "zz" can be 54 or 60; and "yy" can be M6 or M10
Neo Solar Power	Neo Solar Power modules with 35 mm frames D6YxxxZZaa Where “Y” can be M or P; “ZZ” can be B3A, B4A, E3A, E4A, H3A, H4A; and “aa” can be blank, (TF), ME or ME (TF)
Panasonic (HIT)	Panasonic modules with 35 and 40 mm frames VBHNxxxYYzzA Where “YY” can be either KA, RA, SA or ZA; “zz” can be either 01, 02, 03, 04, 06, 06B, 11, 11B, 15, 15B, 16, 16B, 17, or 18; and “A” can be blank, E, G, or N
Panasonic (EverVolt)	Panasonic modules with 30 mm frames EVPVxxxA Where "A" can be blank or H, K or PK
Peimar	Peimar modules with 40 mm frames SbxxxYzz Where “b” can be G, M or P; “Y” can be M or P; and “zz” can be blank, (BF) or (FB)
Philadelphia Solar	Philadelphia modules with 35 and 40 mm frames PS-YzzAA-xxx Where "Y" can be M or P; "zz" can be 60, 72 or 144; and "AA" can be blank, (BF), (HC) or (HCBF)
Phono Solar	Phono Solar modules with 30, 35 and 40mm frames PSxxxY-ZZ/A Where "Y" can be M, M1, MH, M1H, M4, M4H, M5GF, M5GFH, M6, M6H, M8, M8H, M8GF, M8GFH or P; "ZZ" can be 18, 20 or 24; and "A" can be F, T, TH, THB, U, UH, UHB, VH or VHB
Prism Solar	Prism Solar modules with 35mm frames PST-xxxW-M72Y Where "Y" can be H, HB or HBI
Recom	Recom modules with 35 and 40 mm frames RCM-xxx-6yy Where “yy” can be MA, MB, ME or MF
REC Solar	REC modules with 30 and 38mm frames RECxxxYYZZ Where “YY” can be AA, M, NP, NP2, PE, PE72, TP, TP2, TP2M, TP2SM, TP2S, TP3M or TP4; and “ZZ” can be blank, Black, BLK, BLK2, SLV, 72, Pure or Pure-R
Renesola	ReneSola modules with 35 and 40 mm frames AAxxxY-ZZ Where "AA" can be SPM(SLP) or JC; "Y" can be blank, F, M or S; and "ZZ" can be blank, Ab, Ab-b, Abh, Abh-b, Abv, Abv-b, Bb, Bb-b, Bbh, Bbh-b, Bbv, Bbv-b, Db, Db-b, or 24/Bb
Renogy	Renogy Modules with 40 mm frames RNG-xxxY Where “xxx” is the module power rating; and “Y” can be D or P
Risen	Risen Modules with 30, 35 and 40 mm frames RSMyy-a-xxxZZ Where "yy" can be 60, 72, 110, 120, 132 or 144; "a" can be 6, 7 or 8; and "ZZ" can be M, P or BMDG
S-Energy	S-Energy modules with 35 and 40mm frames SABB-CCYYY-xxxZ Where “A” can be C, D, L or N; “BB” can be blank, 20, 25, 40 or 45; “CC” can be blank, 60 or 72; “YYY” can be blank, BDE, MAE, MAI, MBE, MBI, MCE or MCI; and “Z” can be V, M-10, P-10 or P-15
SEG Solar	SEG Solar with 30, 35 and 40 mm frames SEG-aYY-xxxZZ Where "a" can be blank, 6 or B; "YY" can be blank, MA, MB, PA, or PB; and "ZZ" can be blank, BB, BG, BW, HV, WB, WW, BMB, BMA-HV, BMA-BG, BMA-TB, BMB-TB, BMB-HV, BMD-HV, BMB-BG

MODULE COMPATIBILITY

Seraphim USA	Seraphim modules with 30, 35 and 40 mm frames SRP-xxx-YYY-ZZ Where "xxx" is the module power rating; and "YYY" can be BMA, BMD, 6MA, 6MB, 6PA, 6PB, 6QA-XX-XX, and 6QB-XX-XX; ZZ is blank, BB, BG or HV
Sharp	Sharp modules with 35 and 40 mm frames NUYYxxx Where “YY” can be SA or SC
Shinsung E&G	Shinsung Modules with 35mm frames SSVxxx-144MH
Silfab	Silfab Modules with 35 and 38 mm frames SYY-Z-xxxAb Where "YY" can be IL, SA, LA, SG or LG; "Z" can be blank, M, P, or X; "A" can be blank, B, H, M, N; and "b" can be A, C, C+, G, K, L, N, T, U or X
Solar4America	Solar4America modules with 35 and 40mm frames S4Axxx-72zz Where “zz” can be MH5 or MH5BB
Solarever	Solarever modules with 35mm frames SE-zzz*yy-xxxM-aaa Where "zzz" can be 166 or 182; "yy" can be 83 or 91; and "aaa" can be 108 or 144
Solaria	Solaria modules with 35 and 40 mm frames PowerA-xxxY-ZZ Where "A" can be X or XT, "Y" can be R or C; and "ZZ" can be blank, AC, BD, BX, BY, PD, PL, PM, PM-AC, PX, PZ, WX or WZ
Solarcity (Tesla)	Solarcity modules with 40 mm frames SCxxxYY Where “YY” can be blank, B1 or B2
SolarTech	SolarTech modules with 40 mm frames AAA-xxxYY Where "AAA" can be PERCB-B, PERCB-W, HJTB-B, HJTB-W or STU; "YY" can be blank, PERC or HJT
SolarWorld AG	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 31 and 33 mm frames SW-xxx
SolarWorld Americas	SolarWorld Sunmodule Plus, Protect, Bisun, XL, Bisun XL, may be followed by mono, poly, duo, black, bk, or clear; modules with 33 mm frames SWA-xxx
Sonali	Sonali Modules with 35 and 40 mm frames SS-M-xxx Where "M" can be blank or M
Star Solar	Star Solar modules with 35mm frames Star-xxxW-YYY-ZZZ Where "YYY" can be M60H or M60HB; and "ZZZ" can be blank or M10
Stion	Stion Thin film modules with 35 mm frames STO-xxx or STO-xxxA
SunEdison	SunEdison Modules with 35 and 40 mm frames SE-YxxxZABCDE Where "Y" can be B, F, H, P, R, or Z; "Z" can be 0 or 4; "A" can be B,C,D,E,H,I,J,K,L,M, or N ; "B" can be B or W; "C" can be A or C; "D" can be 3, 7, 8, or 9; and "E" can be 0, 1 or 2
Suniva	Suniva modules with 35, 38 and 40 mm frames OPTxxx-AA-B-YYY-Z MVXxxx-AA-B-YYY-Z Where "AA" is either 60 or 72; "B" is either 4 or 5; "YYY" is either 100,101,700,1B0, or 1B1; and "Z" is blank or B
Sunmac Solar	Sunmac Solar modules with 30 and 35mm frames SMxxxMaaaZZ-BB Where "aaa" can be 660 or 754; and "ZZ" can be NH or SH

MODULE COMPATIBILITY

Sunpower	Sunpower standard (G3 or G4) or InvisiMount (G5) 35 and 40mm frames SPR-Zb-xxx-YY Where "Z" can be A, E, M, P or X; “b” can be blank, 17, 18, 19, 20, 21, or 22; and “YY” can be blank, BLK, COM, C-AC, D-AC, E-AC, BLK-E-AC, G-AC, BLK-G-AC, H-AC, BLK-H-AC, BLK-C-AC, or BLK-D-AC
Sunspark	Sunspark modules with 40 mm frames SYY-xxxZ-A Where “YY” can be MX or ST; and “Z” can be M, MB, M3, M3B, P or W; and "A" can be 60 or 72
Suntech	Suntech modules with 35 and 40mm frames STPxxxy-zz/aa Where "y" is blank or S; and "zz" can be 20, 24, A60, A72U, B60 or B72; and "aa" can be Vd, Vem, Vfw, Vfh, Vnh, Wdb, Wde, Wd, Wfhb or Wnhb
Talesun	Talesun modules with 30, 35 and 40mm frames TAByZZaa-xxx-b Where "A" can be D or P; "B" can be 6 or 7; "y" can be blank, F, G, H, I or L; "ZZ" can be 54, 60, 66, 72 or 78; "aa" can be M, M(H), or P; and "b" can be blank, B, T, or (H)
Tesla	Tesla modules with 40 mm frames TxxxY Where "Y" can be H or S
Trina	Trina modules with 30, 35 and 40mm frames TSM-xxxYYZZ Where "YY" can be DD05, DD06, DD14, DE14, DE15, DE15V, DEG15, DEG15VC, DE18M, DEG18MC, DE09, DE19, DEG19C.20, DE06X, PA05, PC05, PD05, PD06, PA14, PC14, PD14, PE14, or PE15 ; and "ZZ" can be blank, .05, .05(II), .08, .08(II), .10, .18, .08D, .18D, 0.82, .002, .00S, 05S, 08S, .20(II), A, A.05, A.08, A.10, A.18, (II), A(II), A.05(II), A.08(II), A.082(II), A.10(II), A.18(II), C.05, C.07, C.05(II), C.07(II), H, H(II), H.05(II), H.08(II), HC.20(II), HC.20(II), M, M(II), M.05(II), MC.20(II)
Universal	Universal Solar modules with 35mm frames UNI-xxx-yyyZZZ-aa Where "yyy" can be 108, 120 or 144; "ZZZ" can be M, MH, BMH; and "aa" can be blank, BB or DG
URE	URE modules with 35 mm frames DyZxxxaa Where "D" can be D or F, "y" can be A, B, 6 or 7; "Z" can be K or M; and "aa" can be C8G, H3A, H4A, H8A, E7G-BB, E8G, E8G-BB or MFG-BB
Vikram	Vikram solar modules with 35 and 40 mm frames XVSyy.ZZ.AAA.bb Where "X" can be blank, Paradea, Prexos or Somera; "yy" can be M, P, MBB, MDH, MDHT, MH, MS, MHBB, or PBB; "ZZ" can be 60 or 72; "AAA" is the module power rating; and "bb" can be 03, 04 or 05
VSUN	VSUN modules with 30, 35 and 40 mm frames VSUNxxx-YYz-aa Where "YY" can be 60, 72, 108, 120, 132 or 144; "z" can be M, P, MH, PH, or BMH; and "aa" can be blank, BB, BW, or DG
Waaree	Waaree modules with 35 and 40mm frames AAyy-xxx Where "AA" canbe WS or Bi; and "yy" can be blank, M, MB, 55 or 66
Winaico	Winaico modules with 35 and 40 mm frames Wsy-xxxZa Where "y" can be either P or T; "Z" can be either M, P, or MX; and "a" can be blank or 6
Yingli	Yingli modules with 35 and 40 mm frames YLxxxZ-yy Where "Z" can be D or P; "yy" can be 29b, 30b, 34d, 35b, 36b or 40d
Yotta	Yotta modules with 30 and 35mm frames YSM-Bxxx-ZZ-72-1 Where "ZZ" can be 06 or 10
Zeus	Zeus Solar Modules with 40mm frames ZxxxM-HB
ZN Shine	ZN Shine modules with 35mm frames ZXMY-AAA-xxx/M Where "Y" can be 6, 7 or 8; "AAA" can be 72, NH120, NH144, NHDB144, NHLDD144, SH144, SHDB144, SHLDD144 or TP120

MODULE COMPATIBILITY

FRAMELESS MODULE LIST

MAKE	MODELS
Astronergy Solar	Astronergy frameless modules CHSM6610P(DG)-xxx
Canadian Solar	Canadian Solar frameless modules CSbY-xxx-Z Where “b” can be 3 or 6; “Y” is K, P, U, or X; and “Z” can be M-FG, MS-FG, P-FG, MB-FG, or PB-FG
Heliene	Heliene frameless modules YYZZxxxA Where "YY" can be72; "ZZ" can be M; and "A" can be GH
Jinko	Jinko frameless modules JKMxxxPP-DV
Prism Solar	Prism Solar frameless modules BZYY-xxxAAA Where "Z" can be i or N; "YY" can be 48, 60, 60S, 72 or 72S; and "AAA" can be blank or BSTC
Risen	Risen frameless modules RSMyy-6-xxxZZ Where “yy” can be 60, 72, 120 or 144; and “ZZ” can be MDG or PDG
Stion	Stion frameless modules STL-xxx or STL-xxxA
Sunpreme	Sunpreme frameless modules GXB-xxxYY Where “YY” can be blank or SL
Trina	Trina frameless modules TSM-xxxYY Where “YY” can be either DEG5(II), DEG5.07(II), DEG5.40(II), DEG5.47(II), DEG14(II), DEG14C(II), DE-G14C.07(II), DEG14.40(II), PEG5, PEG5.07, PEG5.40, PEG5.47, PEG14, or PEG14.40

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Subject: ETL Evaluation of SolarEdge Products to NEC 2017 Rapid Shutdown Requirements

To, whom it may concern

This letter represents the testing results of the below listed products to the requirements contained in the following standards:

National Electric Code, 2017, Section 690.12 requirement for rapid shutdown.

UL 1741, UL 1741 CRD for rapid shutdown

The evaluation was done on the PV Rapid Shutdown System (PVRSS), and covers installations consisting of optimizers and inverters with part numbers listed below.

The testing done has verified that controlled conductors are limited to:

- Not more than 30 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation outside the array.
- Not more than 80 volts and 240 voltamperes within 30 seconds of rapid shutdown initiation inside the array.

The rapid shutdown initiation is performed by either disconnecting the AC feed to the inverter, or – if the inverter DC Safety switch is readily accessible – by turning off the DC Safety switch.

Applicable products:

- Power optimizers:
  - PB followed by 001 to 350; followed by -AOB or -TFI.
    OP followed by 001 to 500; followed by -LV, -MV, -IV or -EV.
    P followed by 001 to 850.
    SP followed by 001 to 350.
    *When optimizers are connected to 2 or more modules in series, the max input voltage may exceed 80V. Following the implementation of the NEC 2017 rapid shutdown value of 80V max inside of the array at the beginning of 2019 , modules exceeding this combined input max voltage will be required to use optimizers with parallel inputs.

- 1-ph Inverters:

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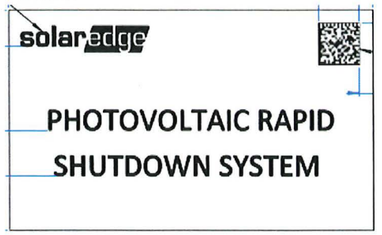
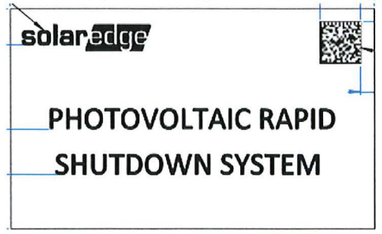
  - SE3000A-US / SE3800A-US / SE5000A-US / SE6000A-US / SE7600A-US / SE10000A-US / SE11400A-US / SE3000H-US / SE3800H-US / SE5000H-US / SE6000H-US / SE7600H-US / SE10000H-US / SE11400H-US when the following label is labeled on the side of the inverter:



Inverter part number may be followed by a suffix

- 3-ph Inverters:
  - SE9KUS / SE10KUS / SE14.4KUS / SE20KUS / SE30KUS / SE33.3KUS /SE43.2KUS / SE66.6KUS / SE100KUS ; when the following label is labeled on the side of the inverter:



Inverter part number may be followed by a suffix

If there are any questions regarding the results contained in this report, or any of the other services offered by Intertek, please do not hesitate to contact the undersigned.

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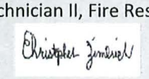
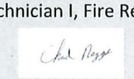
Test Verification of Conformity

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:	IronRidge, Inc. 1495 Zephyr Ave. Hayward, CA 94544 USA
Product Description:	Flush Mount System with XR Rails.
Ratings & Principle Characteristics:	Fire Class Resistance Rating: -Flush Mount (Symmetrical). Class A Fire Rated for Low Slope applications when using Type 1, 2 and 3, listed photovoltaic modules. Class A Fire Rated for Steep Slope applications with Type1, 2 and 3, listed photovoltaic modules. Tested with a 5" gap (distance between the bottom the module frame and the roof covering), per the standard this system can be installed at any gap allowed by the manufacturers installation instructions. No perimeter guarding is required. This rating is applicable with any IronRidge or 3'rd party roof anchor.
Models:	IronRidge Flush Mount with XR Rails
Brand Name:	IronRidge Flush Mount
Relevant Standards:	UL 2703 (Section 15.2 and 15.3) Standard for Safety Mounting Systems, Mounting Devices, Clamping/Retention Devices, and Ground Lugs for Use with Flat-Plate Photovoltaic Modules and Panels, First Edition dated Jan. 28, 2015 **Referencing** UL1703 Third Edition dated Nov. 18, 2014, (Section 31.2) Standard for Safety for Flat-Plate Photovoltaic Modules and Panels.
Verification Issuing Office:	Intertek Testing Services NA, Inc. 8431 Murphy Drive Middleton, WI 53562
Date of Tests:	08/27/2014 to 03/17/2015
Test Report Number(s):	101769343MID-001r1, 101769343MID-001a, 101915978MID-001 & 101999492MID-001ar1-cr1.

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:	Chris Zimbrich	**Reviewed by:**	Chad Naggs
Title:	Technician II, Fire Resistance	**Title:**	Technician I, Fire Resistance
Signature:		**Signature:**	
Date:	05/25/2016	**Date:**	05/25/2016