

TOWN OF DURHAM
Planning Department
8 Newmarket Road
Durham, NH 03824-2898
Phone (603) 868-8064
www.ci.durham.nh.us

Site Plan Application

Property Information

Property address/location: 1 (15) Park Ct

Tax map #: 108 ; Lot #(s): 31 ; Size of site: 1.295 acres;

Zoning Districts

Zoning District: Church Hill ; *Wetland* Overlay District? Yes: ___; No: X ;

Shoreland Overlay District? Yes: ___; No: X ; *Flood* Overlay District? Yes: ___; No: X ;

Aquifer Overlay District? Yes: ___; No: X ; *Historic* District? Yes: X ; No: ___;

Proposed Project

Name of project (if applicable): St. George's Solar Array

Describe proposal – uses, square footage, parking spaces, floors, number of units, beds, etc.

16.8 kW Free standing solar array located on the side lawn of the rectory (15 Park Ct),
behind the main building and parking lot

Utility Information

Town water? yes X no ___; How far is Town water from the site? +65'

Town sewer? yes X no ___; How far is Town sewer from the site? +65'

Property Owner

Name (include name of individual): Nathan Bourne (Rector) – St. George's Episcopal Church

Mailing address: 1 Park Ct, Durham, NH 03824

Telephone #: 828-557-9215 Email: nathan@stgeorgesdurham.org

Applicant/Developer (if different from property owner)

Name (include name of individual): Scott Righini (Facility Manager)

Mailing address: 149 Mill Rd, Durham, NH 03824

Telephone #: 603-502-2357 Email: srighini@comcast.net

(over)

Engineer/Surveyor

Name (include name of individual): _____

Telephone #: _____ Email: _____

Architect/Building Designer

Name (include name of individual): _____

Telephone #: _____ Email: _____

Other Professional/Designer/Agent

Provide name(s) and contact information: Greg Dubela – Harvey Woods Solar

603-793-4201 greg@harveywoods.io

Submission of application

This application must be signed by the property owner, applicant/developer (if different from property owner), and/or the agent. If not by the property owner, then a separate statement from the owner authorizing submission of the application with the authorization to enter the property (below) is required.

I(we) hereby submit this Site Plan application to the Town of Durham Planning Board and attest to the best of my(our) knowledge that all of the information on this application form and in the accompanying application materials and documentation is true and accurate. I(we) understand that any additional costs for review of this application will be borne by the owner/applicant.

Signature of property owner: *Kathaniel Bower*

Date: 2/5/24

Signature of applicant/developer: *Scott Pylinski*

Date: 2/5/24

Signature of agent: _____

Date: _____

(over)

Authorization to enter property

I(we) hereby authorize members of the Durham Planning Board, Planning Department, and other pertinent Town departments, boards and agencies to enter my/our property for the purpose of evaluating this application including performing any appropriate inspections during the application phase, review phase, post-approval phase, construction phase, and occupancy phase. This authorization applies specifically to those people legitimately involved in evaluating, reviewing, or inspecting this specific application/project. It is understood that these people must use all reasonable care, courtesy, and diligence when entering the property.

Signature of property owner: _____

Date: _____

Signature of property owner: _____

Date: _____



January 18, 2024

Planning Board
8 Newmarket Rd
Durham, NH 03824

Re: St. George's Episcopal Church Solar Array

We intend to install a 16.8 kW freestanding solar array which will be capable of producing 22,673 kWh of electricity per year. Over the past few years, we have diligently reduced our electrical consumption at our church and rectory from 23,000 kWh per year in 2018 to only 15,300 kWh per year in 2022. At this current consumption rate our solar array will produce an excess of 7,373 kWh per year. Our intention is to use this additional capacity to power future EV charging stations or electric heating equipment to further reduce our carbon footprint.

Respectfully,

Scott Righini
Facility Manager
St. George's Episcopal Church
1 Park Ct
Durham, NH 03824



January 18, 2024

Planning Board
8 Newmarket Rd
Durham, NH 03824

Re: Decommissioning Plan

Our intention would be to maintain this solar array indefinitely. If at some point in the future these panels no longer function adequately, we intend to upgrade to the latest panels or technology available at that time. At which point these current panels will be disposed of by whatever means are required by state and federal regulations at the time of decommissioning. If for some unforeseen reason we decide to remove this solar array and not replace it, we will dispose of the panels and racking system by whatever means are required by state and federal regulations at that time. After which we will return the site to it's original condition.

ABUTTERS LIST

- 108-6 Durham Community Church
17 Main Street
Durham, NH 03824
- 108-12 Toomerfs, LLC
19 Main Street
Durham, NH 03824
- 108-13 Toomerfs, LLC
21 main Street
Durham, NH 03824
- 108-24 David Richman
16 Cowell Drive
Durham, NH 03824
- 108-25 Refresh Homes and Designs, LLC
14 Cowell Drive
Durham, NH 03824
- 108-26 Toomerfs, LLC
12 Cowell Drive
Durham, NH 03824
- 108-30 Toomerfs, LLC
18 Main Street
Durham, NH 03824
- 108-32 Torrington Mast LLC
21 Park Court
Durham, NH 03824
- 108-35 Torrington Malden One LLC
10 Main Street
Durham, NH 03824

FINAL APPROVAL BY DURHAM PLANNING BOARD.
 CERTIFIED BY MICHAEL BEHRENDT, TOWN PLANNER
 CERTIFIED _____
 DATE _____

St. George's Solar Array

St. George's Episcopal Church
 1 Park Ct.
 Durham, NH 03824

Prepared by:
 Scott Righini

Date:
 2/2/2024

Revision:
 1



LOCATION MAP
 SCALE: 1" = 2,000' ±

108-30

Tax Map 108
 Lot 31
 1.295 Ac
 56,410 Sq. Ft.

ST GEORGE'S
 EPISCOPAL CHURCH

MAIN STREET

PARK COURT

108-35

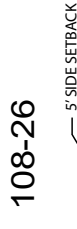
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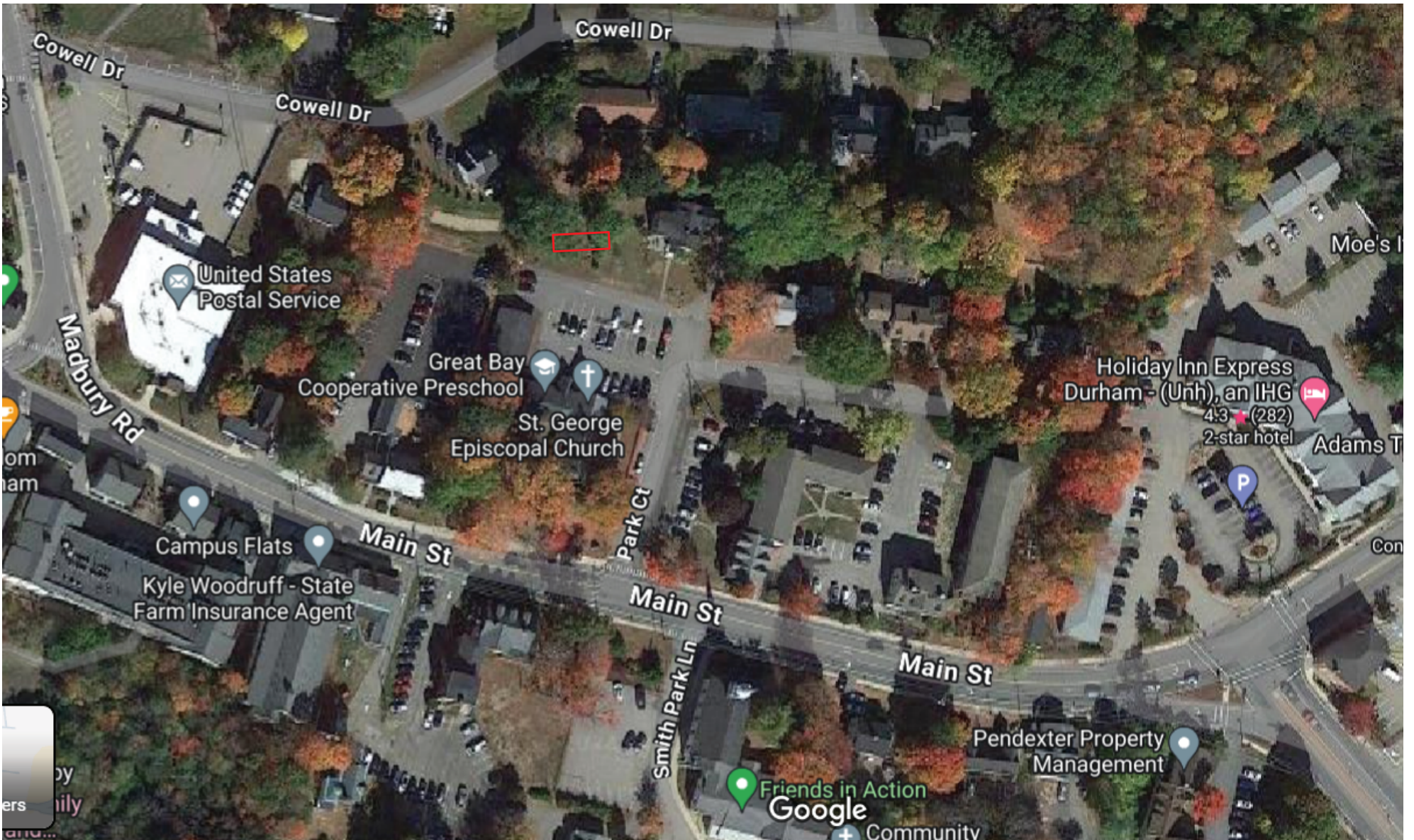
108-32

108-24

108-25

108-26





St. George's Solar Array
Aerial Photo

St. George's Solar Array Site Plan Application Abutters List

Tax Map 108 Lot 31

Generated on 2/5/24

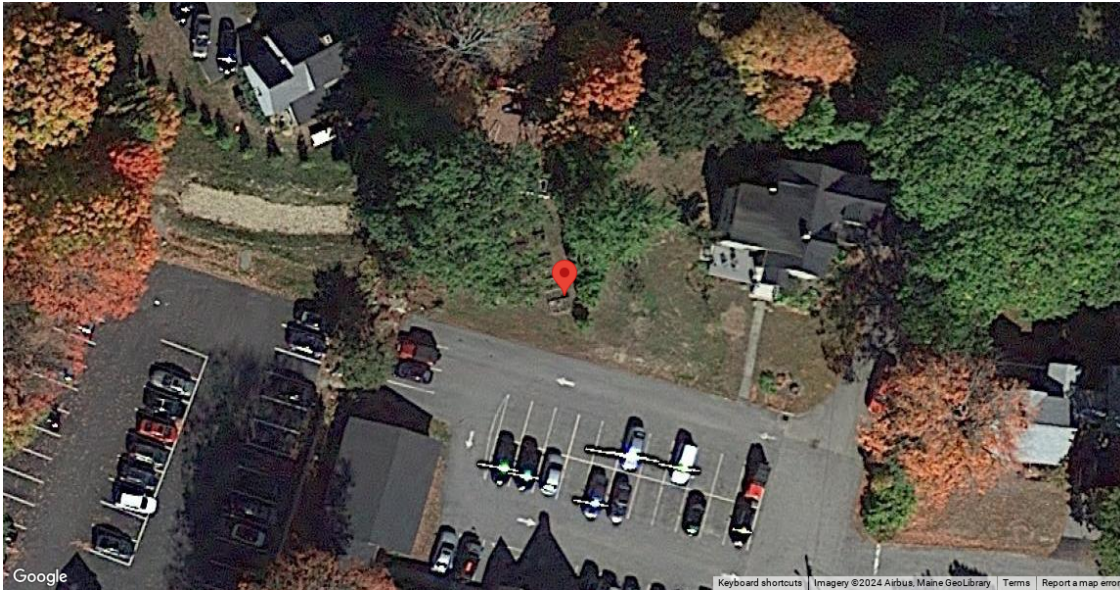
Abutters			
Lot Number	Lot Address	Owner Name	Mailing Address
108-30	18 Main Street	Toomerfs LLC	37 Main Street Unit O, Durham, NH 03824
108-26	12 Cowell Drive	Toomerfs LLC	37 Main Street Unit O, Durham, NH 03824
108-25	14 Cowell Drive	Refresh Homes and Designs LLC	11 Grove Street, Exeter, NH 03833
108-24	16 Cowell Drive	David Richman	16 Cowell Drive, Durham, NH 03824
108-32	21 Park Court	Torrington Mast LLC	60 K Street, Suite 302, Boston, MA 02127
108-35	10 Main Street	Torrington Malden One LLC	60 K Street, Suite 302, Boston, MA 02127
108-6	17 Main Street	Durham Community Church	PO Box 310, Durham, NH 03824
108-12	19 Main Street	Toomerfs LLC	37 Main Street Unit O, Durham, NH 03824
108-13	21 Main Street	Toomerfs LLC	37 Main Street Unit O, Durham, NH 03824

Project Details

Name	1 Park Court	Date	01/11/2024
Location	1 Park Court, Durham, NH 03824	ASCE code	7.10
Total modules	35	Wind speed	110 mph
Module	Hanwha Q.Cells: Q.PEAK DUO XL-G10.3 BFG 485 (35mm)	Snow load	60 psf
Dimensions	Dimensions: 87.24" x 41.14" x 1.38" (2216.0mm x 1045.0mm x 35.0mm)	Wind exposure	B
Total watts	16,975 kW	Piers	12
		Concrete	4.85 yd ³

Inter sub-array spacing

336.0"
Calculated using solar azimuth of -37.77° and solar elevation of 13.76° at 9AM (America/New_York) on the winter solstice.



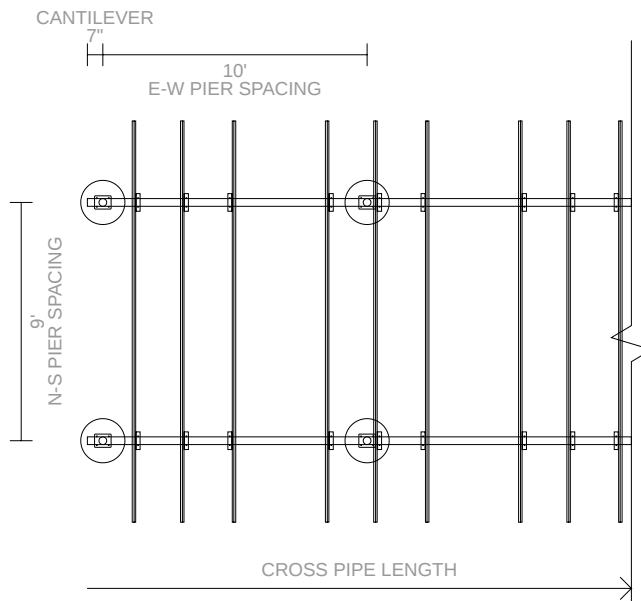
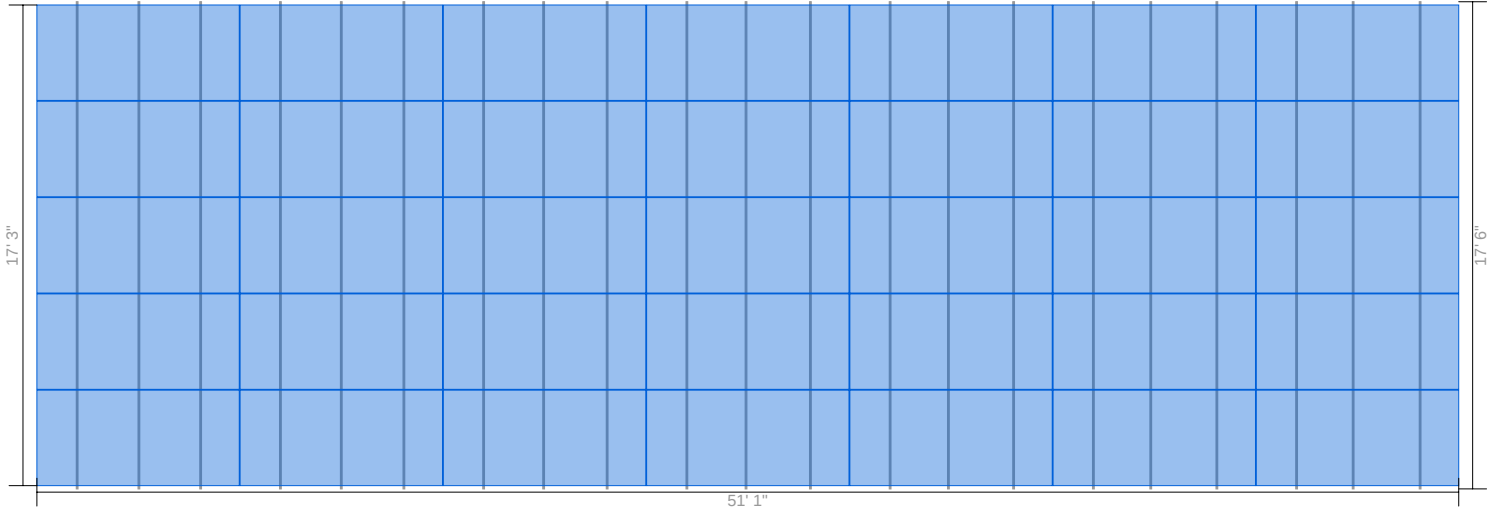
Substructure & Foundation

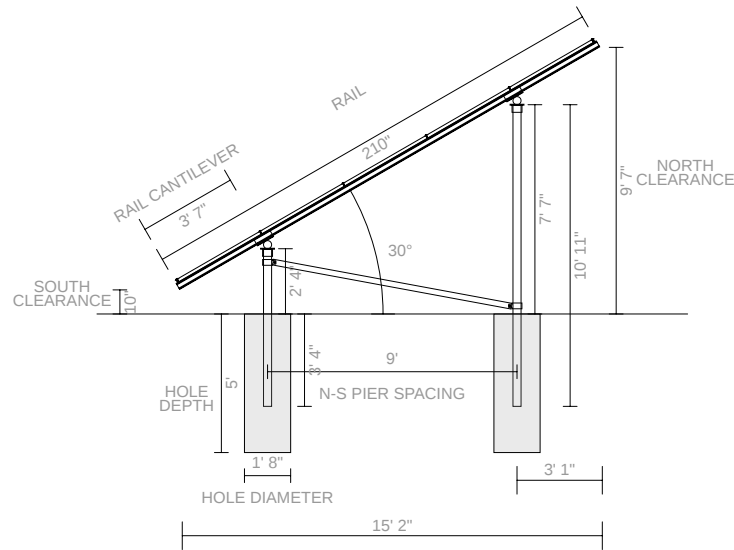
Tilt	30°	South facing grade	0°
Pipe/tubing diameter	3"	Soil class	4
Foundation type	Concrete	Hole diameter	20"

Sub array #1

* IronRidge engineering requires a 3rd rail for each column in this array due to the project parameters and site conditions.

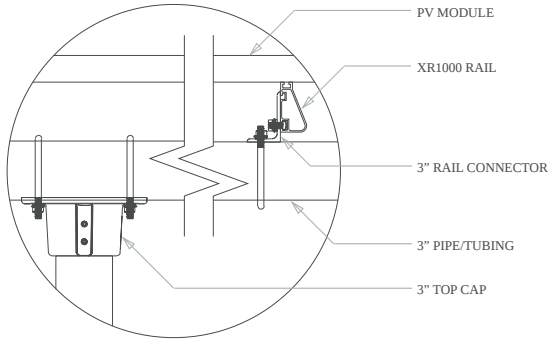
Rows	5	Columns	7	# Arrays	1
Area	51' 1" (EW) × 17' 5" (NS)	Rail type	XR1000	Diagonal bracing	yes
E/W spacing	10'	Rail cantilever	3' 7"	Pipe cantilever	7"
Piers/array	12	Total south piers	6 (5' 8")	Total north piers	6 (10' 11")
Total cross pipes	2 (51' 1")	Total pipe length	201' 7"		
Shear	1,369 lbs	Moment	0 ft-lbs	Uplift	-1,598 lbs



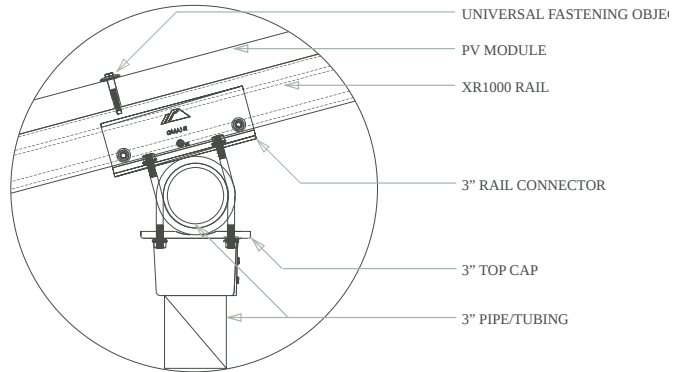


Pipe Fitting Detail

XR1000 Rail

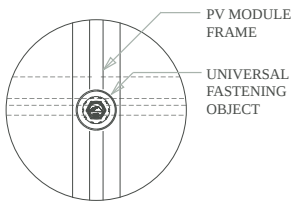


Front View

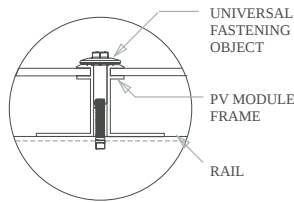


Side View

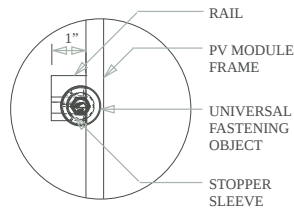
Clamp Detail



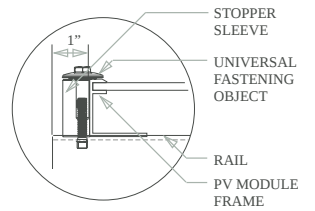
Mid Clamp, Plan



Mid Clamp, Front

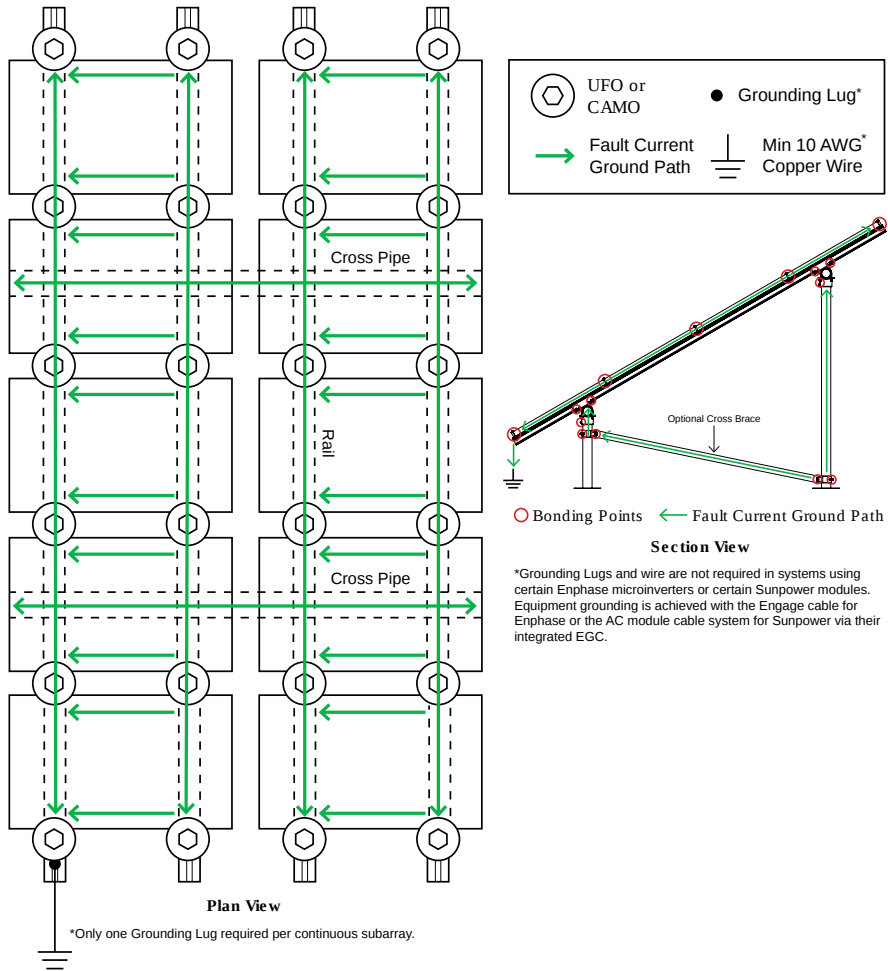


End Clamp, Plan



End Clamp, Front

Grounding Diagram



Bill of Materials

Part	Spares	Total Qty
Rails		
XR-1000-210A XR1000, Rail 210" Clear * [Custom Length] Please check with your distributor for availability.	0	21
Clamps & Grounding		
UFO-CL-01-A1 Universal Module Clamp, Clear	0	126
UFO-STP-35MM-M1 Stopper Sleeve, 35MM, Mill	0	42
XR-LUG-03-A1 Grounding Lug, Low Profile	0	1
Substructure		
70-0300-SGA SGA Top Cap at 3"	0	12
GM-BRC3-01-M1 Ground Mount Bonded Rail Connector - 3"	0	42
GM-DB3-TB02-M1 GM Diagonal Brace, 2.5" Square Tube, 105.0" LG (For 3" Pipe)	0	6
GM-DB3-SLV01-M1 GM 3" Sleeve, Diagonal Brace	0	12
GM-DB-HW01-M1 GM Diagonal Brace Hardware (For 2" & 3" Pipe)	0	6
Accessories		
29-4000-077 Wire Clips, Molded PVC Black, Polybag 20	0	4
XR-1000-CAP Kit, End Cap XR1000 (10 sets per bag)	0	3
BHW-MI-01-A1 Microinverter/MLPE Bonding Hardware, T-Bolt	0	35

CHECKLIST

PRE-INSTALLATION

- Verify module compatibility. See [Page 14](#) for info.
- Purchase 2" or 3" Pipe or Mechanical Tubing

Pipe: 2" or 3" (NPS) ASTM A53 Grade B SCH 40 Pipe, galvanized to a min of ASTM A653 G90 or ASTM A123 G35.

Mechanical Tubing: 2.375" x 12 ga (O.D) or 3.500" x 8 ga (O.D.) Mechanical Tubing with one of the following Galvinizations (ASTM A1057).

- Allied Gatorshield
- Allied Flo-Coat Coating
- Wheatland ThunderCoat

TOOLS REQUIRED

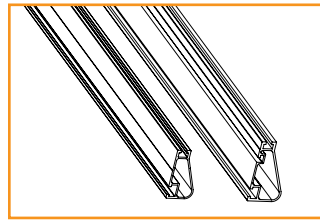
- Post Hole Digger or Powered Auger
- Socket Drive (7/16", 9/16", 15/16" and 1/2" Sockets)
- Torque Wrenches (0-240 in-lbs and 10-40 ft-lbs)
- Transit, String Line, or Laser Level
- 3/16" Allen Head

TORQUE VALUES

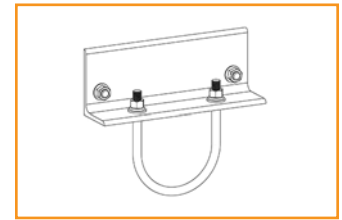
Top Cap Set Screws (3/16" Allen Head)

- 2" or 3" NPS Schedule 40 Grade B Pipe: 20 ft-lbs
- 2.375" x 12 ga OD Mechanical Tubing: 11 ft-lbs
- 3.500" x 8 ga OD Mechanical Tubing: 16 ft-lbs
- For Ground Screw to Pipe Connection Hardware see [Page 5](#).
- 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
- Rail Grounding Lug Nut (7/16" Socket): 80 in-lbs
 - Rail Grounding Lug Terminal Screws (7/16" Socket): 20 in-lbs
- Module Grounding Lug Nut (3/8" Socket): 60 in-lbs
 - Module Grounding Lug Terminal Screws (1/2" Socket): 20 in-lbs
- Universal Fastening Objects (7/16" Socket): 80 in-lbs
- 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 and End Clamps please refer to Alternate Components Addendum (Version 1.90).
- If installing on a low slope roof please refer to Ground Mount for Flat Roof Applications Addendum (Version 3.30).
- Unless otherwise noted, all components have been evaluated for multiple use. They can be uninstalled and reinstalled in the same or new location.

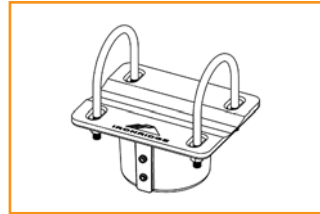
IRONRIDGE COMPONENTS



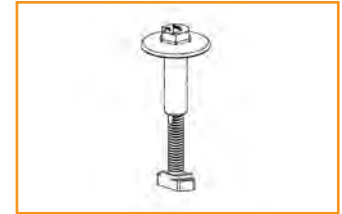
XR100 & XR1000 Rail



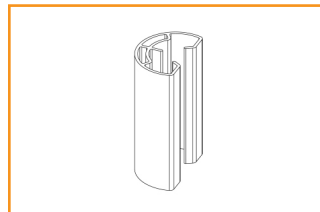
Rail Connector



Top Cap



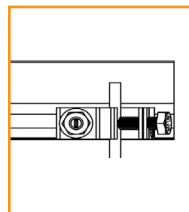
UFO (30-46mm)



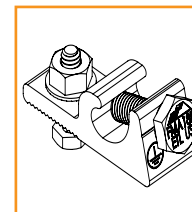
Stopper Sleeve



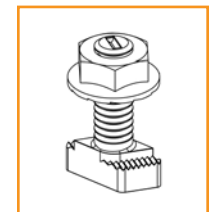
CAMO



Rail Grounding Lug



Module Grounding Lug



Microinverter Kit



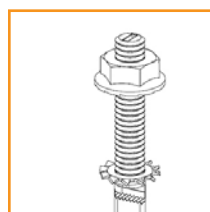
Diagonal Brace



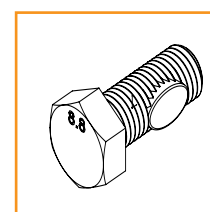
End Cap



Wire Clip



Frameless Module Kit



Hex Head Set Screw



Frameless End/Mid Clamp

Table 2P - MAXIMUM PIER SPACING (in) (APPLICABLE TO PANELS UP TO 92.5in)											
3" Braced Pipe Frame	Snow	Slope (deg)									
		psf	0	5	10	15	20	25	30	35	40
Wind Speed & Exposure Category	psf	0	5	10	15	20	25	30	35	40	45
90 mph Exposure B	0	206	206	206	207	203	195	188	187	189	190
	10	182	182	183	184	186	186	185	187	189	190
	20	155	155	156	157	161	164	167	173	181	188
	30	145	146	146	147	152	155	159	166	174	183
	40	133	133	134	135	140	144	148	156	165	175
	50	121	121	122	123	130	134	140	148	157	168
95 mph Exposure B	60	111	111	112	113	120	127	132	140	150	162
	0	206	206	206	204	195	187	180	179	181	182
	10	182	182	183	182	181	180	179	179	181	182
	20	155	155	156	157	158	160	162	168	175	182
	30	145	146	146	147	149	152	155	162	169	178
	40	133	133	134	134	137	141	145	153	161	170
100 mph Exposure B	50	121	121	122	123	128	132	137	145	154	164
	60	111	111	112	113	120	125	130	138	147	158
	0	206	206	202	196	187	179	172	172	173	174
	10	182	182	180	178	176	175	172	172	173	174
	20	155	155	155	154	155	157	158	163	170	174
	30	145	146	145	144	146	149	152	158	165	172
105 mph Exposure B	40	133	133	133	132	135	139	142	149	157	166
	50	121	121	122	123	126	130	135	142	150	160
	60	111	111	112	113	119	123	128	135	144	154
	0	206	206	194	189	179	172	165	165	166	166
	10	182	182	176	174	172	170	165	165	166	166
	20	155	155	152	151	152	153	154	159	165	166
110 mph Exposure B	30	145	146	143	142	144	146	148	153	160	166
	40	133	133	131	131	133	136	140	146	153	161
	50	121	121	122	122	125	128	132	139	147	156
	60	111	111	112	113	118	122	126	133	141	151
	0	206	206	187	182	173	165	158	158	159	160
	10	182	182	172	170	167	165	158	158	159	160
120 mph Exposure B	20	155	155	149	148	149	149	150	155	159	160
	30	145	146	141	140	141	143	145	150	156	160
	40	133	133	129	129	131	134	137	142	149	157
	50	121	121	120	120	123	126	130	136	144	152
	0	198	203	174	169	160	153	147	146	147	148
	10	178	180	164	162	158	153	147	146	147	148
130 mph Exposure B	20	153	154	144	143	143	143	143	146	147	148
	30	143	145	136	135	136	137	138	142	147	148
	40	131	132	126	125	127	129	131	136	142	148
	50	121	121	118	117	119	122	125	130	137	144
	0	186	191	163	158	149	143	137	136	137	137
	10	171	174	157	154	149	143	137	136	137	137
140 mph Exposure B	20	148	150	139	138	137	136	135	136	137	137
	30	140	141	132	131	131	131	131	135	137	137
	40	128	130	123	122	123	124	125	130	135	137
	50	119	120	115	114	116	118	120	125	131	137
	0	175	180	153	148	140	133	128	127	128	128
	10	164	167	150	147	140	133	128	127	128	128
150 mph Exposure B	20	144	146	134	133	131	130	128	127	128	128
	30	136	138	128	127	126	126	125	127	128	128
	40	125	127	119	118	119	119	120	124	128	128
	50	117	118	112	111	113	114	115	120	125	128
	0	165	170	144	139	132	125	120	119	120	120
	10	158	161	143	139	132	125	120	119	120	120
160 mph Exposure B	20	140	142	130	128	126	124	120	119	120	120
	30	132	134	124	122	121	120	120	119	120	120
	40	123	124	116	115	115	115	115	118	120	120
	0	157	161	136	131	124	118	113	112	113	113
	10	152	155	136	131	124	118	113	112	113	113
20	136	138	125	123	121	118	113	112	113	113	
30	129	131	120	118	117	116	113	112	113	113	
40	120	121	113	111	111	111	110	112	113	113	

Notes: see page 38

Soil Class 4											
Table 4D - MINIMUM FOUNDATION DEPTHS (in)											
3" Pipe Frame Braced	Pier Dia (in)	Slope (deg)									
		0	5	10	15	20	25	30	35	40	45
Wind Speed & Exposure Category											
90 mph Exposure B	12	42	48	48	48	60	66	72	78	84	90
	16	36	36	36	42	54	60	66	72	78	78
	20	36	36	36	42	48	54	60	66	66	72
	24	36	36	36	36	42	48	54	60	60	66
95 mph Exposure B	12	42	48	48	54	60	66	78	84	90	96
	16	36	36	36	48	54	60	66	72	78	84
	20	36	36	36	42	48	54	60	66	72	78
	24	36	36	36	36	42	48	54	60	66	72
100 mph Exposure B	12	42	48	48	54	60	72	78	84	90	96
	16	36	36	36	48	54	60	72	72	78	84
	20	36	36	36	42	48	54	60	66	72	78
	24	36	36	36	36	48	54	60	60	66	72
105 mph Exposure B	12	42	48	48	54	66	72	78	84	96	*
	16	36	36	36	48	54	66	72	78	84	90
	20	36	36	36	42	48	60	66	66	72	78
	24	36	36	36	42	48	54	60	66	66	72
110 mph Exposure B	12	42	48	54	60	66	72	84	90	96	*
	16	36	36	42	48	54	66	72	78	84	90
	20	36	36	36	42	54	60	66	72	78	84
	24	36	36	36	42	48	54	60	66	72	72
120 mph Exposure B	12	42	54	54	66	72	78	84	96	*	*
	16	36	42	42	48	60	66	78	84	90	96
	20	36	36	36	48	54	60	66	72	78	84
	24	36	36	36	42	48	54	66	66	72	78
130 mph Exposure B	12	48	60	60	72	78	84	90	96	*	*
	16	36	42	48	54	60	72	78	84	90	96
	20	36	36	36	48	54	66	72	78	84	90
	24	36	36	36	42	54	60	66	72	78	84
140 mph Exposure B	12	54	66	66	78	84	90	96	*	*	*
	16	42	48	54	60	66	72	84	90	96	*
	20	36	42	42	48	60	66	72	78	84	90
	24	36	36	36	48	54	60	66	72	78	84
150 mph Exposure B	12	54	66	72	84	90	96	96	*	*	*
	16	42	54	54	66	72	78	84	90	96	*
	20	36	42	42	54	60	66	78	84	90	96
	24	36	36	36	48	54	66	72	78	78	90
160 mph Exposure B	12	60	72	78	90	96	*	*	*	*	*
	16	48	54	60	66	72	78	90	96	*	*
	20	36	42	48	54	60	72	78	84	90	96
	24	36	36	42	48	60	66	72	78	84	90

Notes: see page 76

Know All Men by These Presents

THAT I, the Bishop of The Protestant Episcopal Church of New Hampshire, a corporation sole,

for and in consideration of the sum of **one dollar and other valuable consideration** to me in hand before the delivery hereof, well and truly paid by **Frederick James Croy and Dorothy B. Croy of Durham, New Hampshire County of Strafford**

the receipt whereof I do hereby acknowledge, have granted, bargained and sold, and by these presents do give, grant, bargain, sell, alien, enfeoff, convey and confirm unto the said **Frederick James and Dorothy B. Croy as joint tenants and not as tenants in common** heirs and assigns forever,

A certain tract or parcel of land situate in said Durham on Madbury Road and bounded and described as follows: **Beginning at the center of a stone post set in the Northwest Corner of a lot owned by the University of New Hampshire, South 64 degrees East one hundred and fifteen (115) feet, South 48 3/4 degrees East forty-two (42) feet to cross cut on the bottom stone in wall, thence North 42 degrees East one hundred and five (105) feet to cross cut on bottom stone in wall, thence North 50 1/4 degrees West two hundred and thirty five (235) feet one (1) inch to Madbury Road, thence South 1/2 degree West and South 2 1/2 degrees West one hundred and thirty-nine (139) feet eleven (11) inches to the first bound.**

Being the same premises conveyed to me by **Mary H. and Joseph E. Jennings, August 27, 1924** and Recorded in Strafford County Records in Book 412, Page 260.

~~TO HAVE AND TO HOLD the said granted premises, with all the privileges and appurtenances to the same belonging, to the said Grantees as tenants in common, their heirs and assigns forever, to the said grantor / and its heirs, executors and administrators do hereby covenant, grant and agree, to and with the said Grantees as tenants in common, their heirs and assigns forever, that until the delivery hereof I am the lawful owners of the said premises, and am seized and possessed thereof in my own right in fee simple; and have full power and lawful authority to grant and convey the same in manner aforesaid; that the premises are free and clear from all and every incumbrance whatsoever, except no exceptions and that I and my heirs, executors and administrators, shall and will WARRANT and DEFEND the same to the said Grantees as tenants in common, their heirs and assigns forever, against the lawful claims and demands of any person or persons whomsoever.~~

And I, **John T. Dallas, Bishop of New Hampshire** a corporation sole in consideration aforesaid, do hereby covenant, grant and agree, to and with the said Grantees as tenants in common, their heirs and assigns forever, that until the delivery hereof I am the lawful owners of the said premises, and am seized and possessed thereof in my own right in fee simple; and have full power and lawful authority to grant and convey the same in manner aforesaid; that the premises are free and clear from all and every incumbrance whatsoever, except no exceptions and that I and my heirs, executors and administrators, shall and will WARRANT and DEFEND the same to the said Grantees as tenants in common, their heirs and assigns forever, against the lawful claims and demands of any person or persons whomsoever.

And we and each of us do hereby release, discharge and waive all such rights of exemption from attachment and levy, or sale on execution, and such other rights whatsoever in said premises, and in each and every part thereof, as our Family Homestead, as are reserved or secured to us, or either of us, by Chapter 214 Revised Laws of the State of New Hampshire, or by any other statute or statutes of said State.

IN WITNESS WHEREOF, I, **John T. Dallas, Bishop of New Hampshire, corporation sole** have hereunto set my hand and seal, this 7 day of July in the year of our Lord, 1947 (CORPORATE SEAL)

Signed, sealed and delivered in the presence of:

John J. Collins Jr.

John T. Dallas, Bishop of New Hampshire, a corporation sole,

STATE OF NEW HAMPSHIRE,

COUNTY OF Merrimack S.S.

July 7, 1947

~~Personally appeared the above named John T. Dallas and acknowledged the foregoing known to me (or satisfactorily proven) to be the person whose name subscribed to the within instrument and acknowledged that he executed the same for the purposes therein contained.~~

In witness whereof I hereunto set my hand and official seal.

instrument to be his voluntary act and deed. Before me,

E.M. Anderson

(NOTARIAL SEAL)

Notary Public

Title of Officer.

My comm. exp. Feb. 18, 1948 Register.

Received 11 A.M. July 15, 1947

Examined by

Anna M. [Signature]