SCOPE OF WORK

PHOTOVOLTAIC SYSTEM SUMMARY

SYSTEM SIZE: DC - 18.57 KW
AC - 15.00 KW
(N) MODULES: (47) MISSION SOLAR: MSE395SX9R (395W) MONO MODULES
(N) INVERTER: (1) SOLAREDEGE SE10000H-US (240V) INVERTER
(1) SOLAREDEGE SE5000H-US (240V) INVERTER
(N) AC DISCONNECT: 100A FUSED VISIBLE LOCKABLE LABELED AC DISCONNECT (240V)
(N) JUNCTION BOX: JUNCTION BOX, 600V
(N) 225A MAIN SERVICE PANEL WITH 200A MAIN BREAKER
(N) MAIN BREAKER ENCLOSURE 200A RATED

ARRAY 1:- ARRAY TILT: 25°
ARRAY 1:- AZIMUTH TILT: 180°

ELECTRICAL INFORMATION
UTILITY COMPANY:
MAIN SERVICE AMPERAGE: 225A

GOVERNING CODES & STANDARDS
2021 INTERNATIONAL BUILDING CODE (IBC)
2021 INTERNATIONAL RESIDENTIAL CODE (IRC)
2021 INTERNATIONAL FIRE CODE (IFC) ONCOR
2020 NATIONAL ELECTRICAL CODE (NEC)

- **UTILITY ESID NO.:**10443720001405742
- **INTERCONNECTION METHOD:** LINE SIDE TAP

GENERAL NOTES:

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

SHEET INDEX

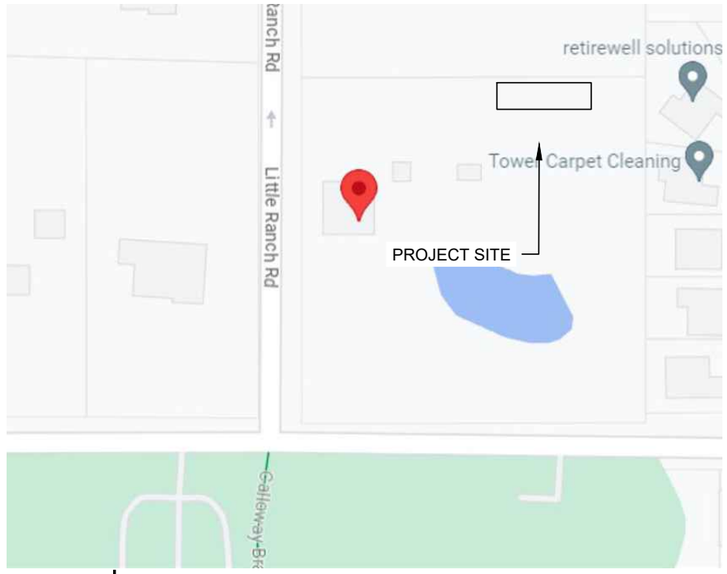
VECTOR ENGINEERS
651 W. GALENA PARK BLVD. STE. 101 DRAPER, UTAH 84020
PHONE (801) 990-1775
WWW.VECTORSE.COM

STATE OF TEXAS
RUSSELL N. EMERY
136827
LICENSED
PROFESSIONAL ENGINEER

08/17/2023
Firm License Number: F11411
VSE Project Number: U4999.0187.231

Vector Structural Engineering scope of work is for the ground mount foundation only. All other structural, mechanical, architectural and all other nonstructural aspects of the design is the responsibility of others. Electrical is by others unless stamped by Dean Levorsen.

1 AERIAL VIEW
PV-1 SCALE: NTS



2 VICINITY MAP
PV-1 SCALE: NTS

MONUMENT SOLAR

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 08/11/2023

Signature with Seal

PROJECT NAME & ADDRESS

DONNA REYNOLDS RESIDENCE
6708 LITTLE RANCH RD.
NORTH RICHLAND HILLS, TX 76182
APN: 01816276
AHJ: CITY OF NORTH RICHLAND HILLS
UTILITY: ONCOR
ESID: 10443720001405742

SHEET NAME
COVER SHEET

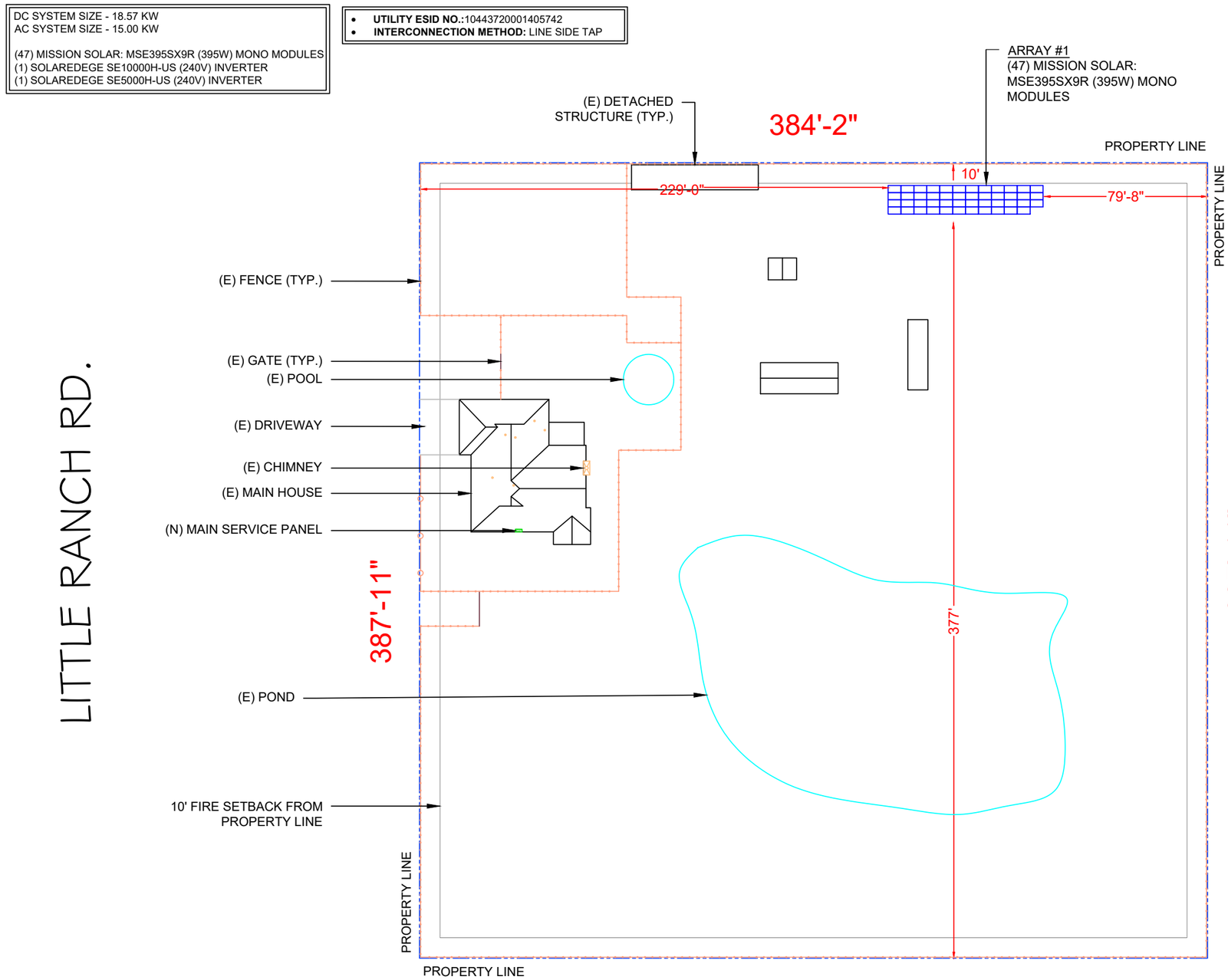
SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-1

DC SYSTEM SIZE - 18.57 KW
AC SYSTEM SIZE - 15.00 KW

(47) MISSION SOLAR: MSE395SX9R (395W) MONO MODULES
(1) SOLAREDEGE SE10000H-US (240V) INVERTER
(1) SOLAREDEGE SE5000H-US (240V) INVERTER

- **UTILITY ESID NO.:**10443720001405742
- **INTERCONNECTION METHOD:** LINE SIDE TAP



1 SITE PLAN
PV-2 SCALE: 1"=50'

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MONUMENT SOLAR

REVISIONS		
DESCRIPTION	DATE	REV

DATE: 08/11/2023

Signature with Seal

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NORTH RICHLAND HILLS, TX 76182
APN: 01816276
AHJ: CITY OF NORTH RICHLAND HILLS
UTILITY: ONCOR
ESID: 10443720001405742

SHEET NAME
SITE PLAN & ROOF PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-2

MODULE TYPE, DIMENSIONS & WEIGHT

NUMBER OF MODULES = 47 MODULES
MODULE TYPE = MISSION SOLAR: MSE395SX9R (395W) MONO MODULES
WEIGHT = 48.5 LBS / 22.00 KG.
MODULE DIMENSIONS = 75.08" x 41.5" = 21.64 SF

DC SYSTEM SIZE - 18.57 KW
AC SYSTEM SIZE - 15.00 KW

(47) MISSION SOLAR: MSE395SX9R (395W) MONO MODULES
(1) SOLAREDEGE SE10000H-US (240V) INVERTER
(1) SOLAREDEGE SE5000H-US (240V) INVERTER

- **UTILITY ESID NO.:**10443720001405742
- **INTERCONNECTION METHOD:** LINE SIDE TAP

NOTE:
THE VISIBLE LOCKABLE LABELED AC DISCONNECT IS WITHIN 10FT OF METER.

ROOF DESCRIPTION			
ROOF TYPE			GROUND MOUNT
ARRAY	ARRAY TILT	AZIMUTH	GROUND TILT
#1	25	180°	0°

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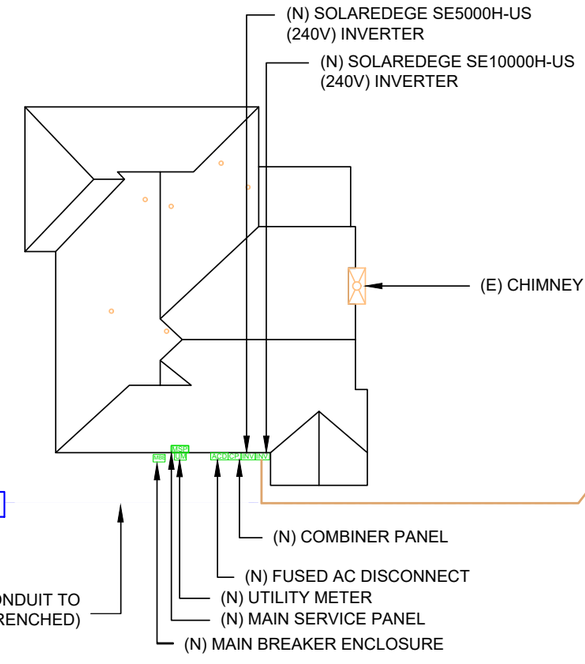
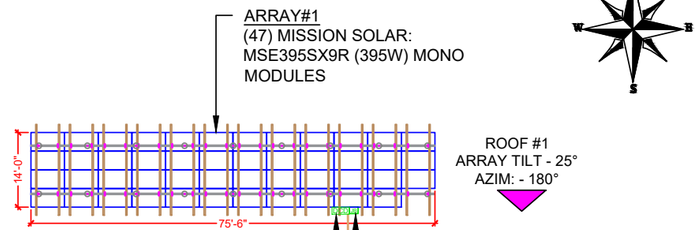
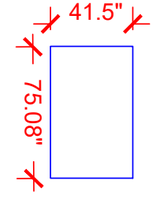


(N) PVC CONDUIT (DC TRENCHED ~500')





MISSION SOLAR: MSE395SX9R (395W) MONO MODULES

LEGEND

JB	- JUNCTION BOX	INV	- INVERTER
CP	- COMBINER PANEL	SD	- SOLADECK
ACD	- AC DISCONNECT		- VENT, ATTIC FAN (ROOF OBSTRUCTION)
SLD	- SOLAR LOAD CENTER		- ROOF ATTACHMENT
UM	- UTILITY METER		
MSP	- MAIN SERVICE PANEL		- CONDUIT

1 SITE PLAN & MODULES
PV-3 SCALE: 1"-25'-0"

MONUMENT SOLAR

REVISIONS		
DESCRIPTION	DATE	REV
DATE: 08/11/2023		

Signature with Seal

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UTILITY: ONCOR
ESID: 10443720001405742

SHEET NAME
ROOF PLAN & MODULES

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-3

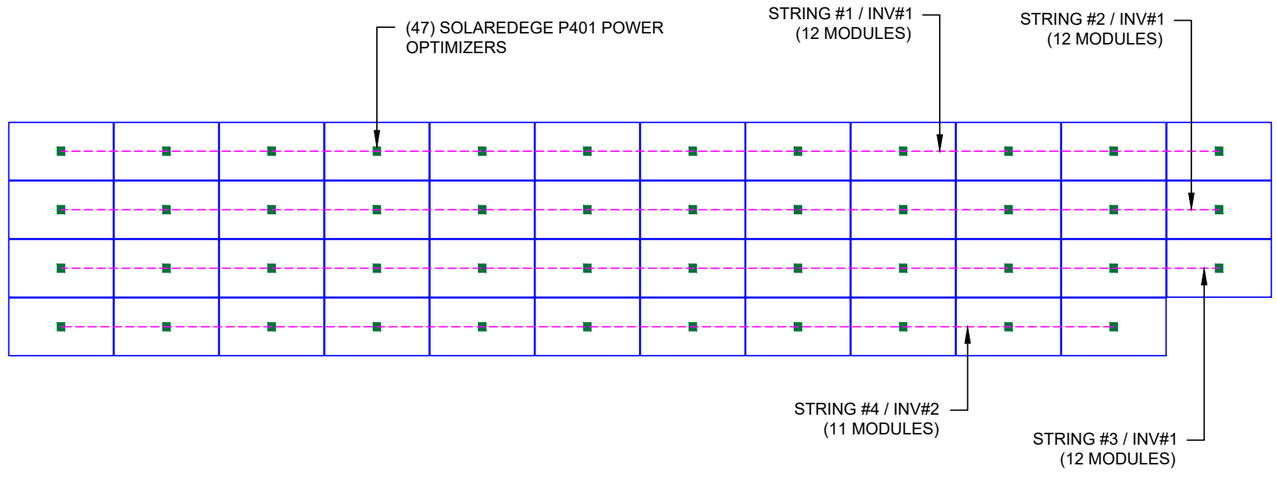
BILL OF MATERIALS		
EQUIPMENT	QTY	DESCRIPTION
SOLAR PV MODULE	47	MISSION SOLAR: MSE395SX9R (395W) MONO MODULES
INVERTER #1	1	SOLAREDGE SE10000H-US (240V) INVERTER
INVERTER #2	1	SOLAREDGE SE5000H-US (240V) INVERTER
AC DISCONNECT	1	100A FUSED, 240V, NEMA 3R, UL LISTED,
COMBINER PANEL	1	125A COMBINER PANEL

- **UTILITY ESID NO.:**10443720001405742
- **INTERCONNECTION METHOD:** LINE SIDE TAP

DC SYSTEM SIZE - 18.57 KW
AC SYSTEM SIZE - 15.00 KW

(47) MISSION SOLAR: MSE395SX9R (395W) MONO MODULES
(1) SOLAREDGE SE10000H-US (240V) INVERTER
(1) SOLAREDGE SE5000H-US (240V) INVERTER

(3) STRINGS OF 12 MODULES
(1) STRING OF 11 MODULES



Bill of Materials

Part	Spares	Total Qty
Rails		
XR-1000-204A XR1000, Rail 204" Clear	0	24
Clamps & Grounding		
UFO-CL-01-A1 Universal Module Clamp, Clear	0	120
UFO-STP-40MM-M1 Stopper Sleeve, 40MM, Mill	0	48
XR-LUG-03-A1 Grounding Lug, Low Profile	0	1
Substructure		
70-0300-SGA SGA Top Cap at 3"	0	18
GM-BRC3-01-M1 Ground Mount Bonded Rail Connector - 3"	0	48

1 ELEC. SITE PLAN
PV-4 SCALE: 1"=8'-0"

MONUMENT SOLAR

REVISIONS		
DESCRIPTION	DATE	REV
DATE: 08/11/2023		

Signature with Seal

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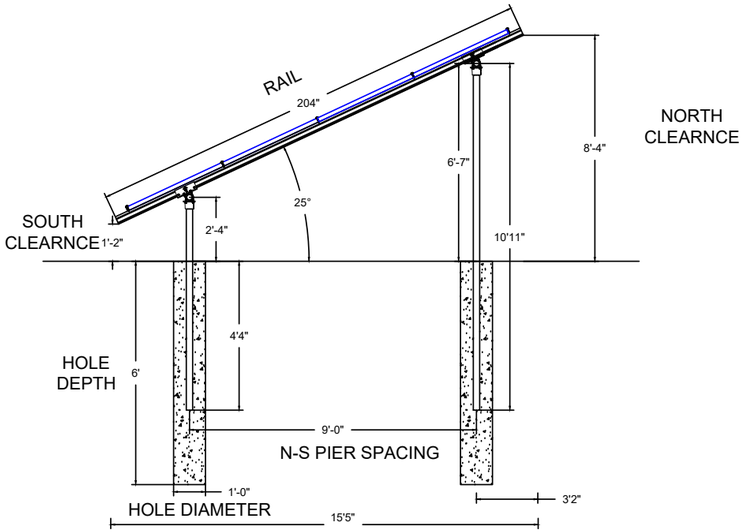
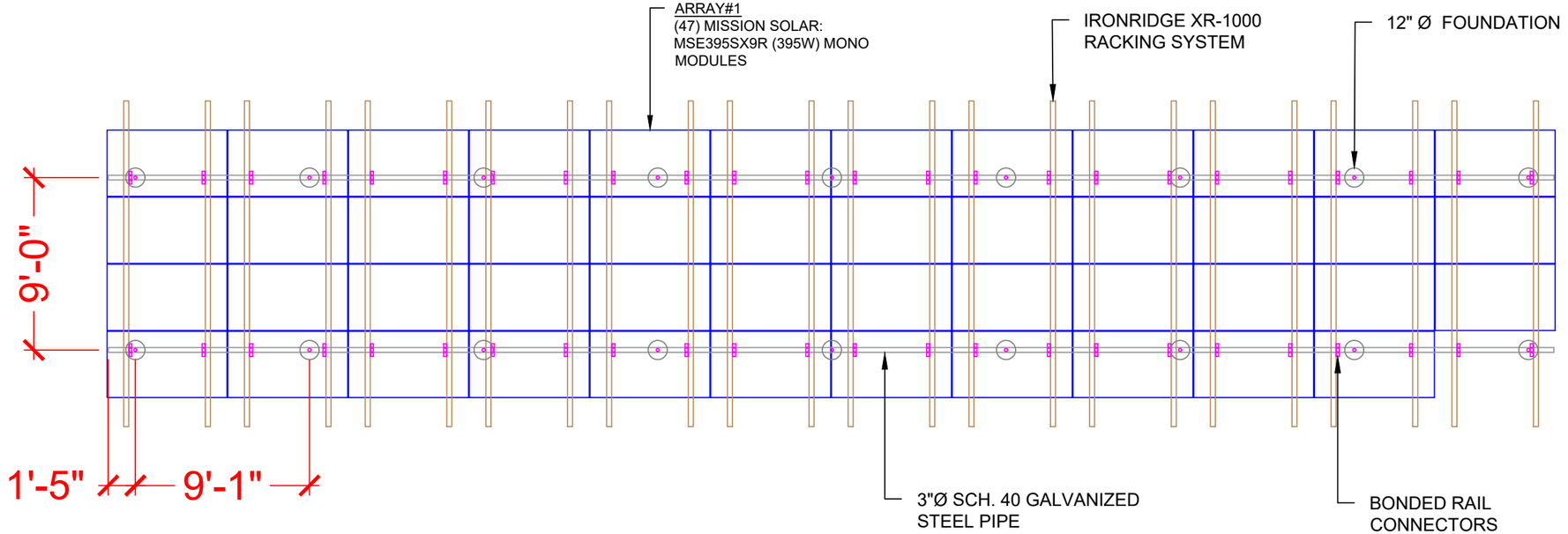
SHEET NAME
ELEC. SITE PLAN

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-4



1 ATTACHMENT DETAIL
PV-5 SCALE: NTS



2 ATTACHMENT DETAIL (SITE VIEW)
PV-5 SCALE: NTS

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08/17/2023
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ESID: 10443720001405742

SHEET NAME
ATTACHMENT DETAIL

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-5

Tech Brief

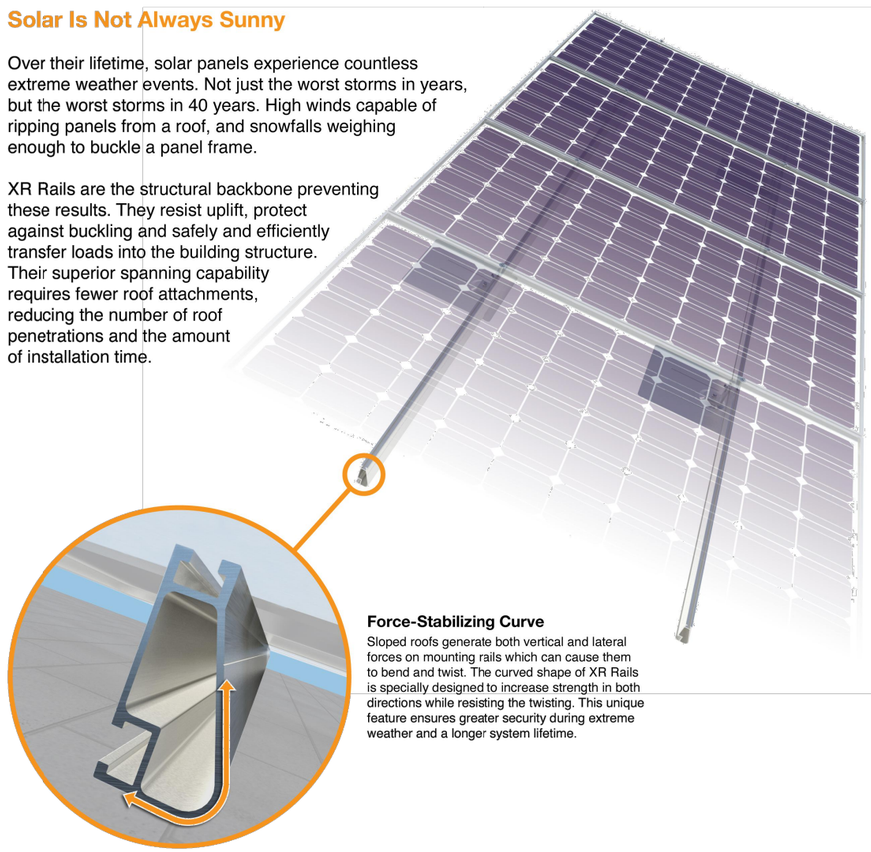
IRONRIDGE

XR Rail Family

Solar Is Not Always Sunny

Over their lifetime, solar panels experience countless extreme weather events. Not just the worst storms in years, but the worst storms in 40 years. High winds capable of ripping panels from a roof, and snowfalls weighing enough to buckle a panel frame.

XR Rails are the structural backbone preventing these results. They resist uplift, protect against buckling and safely and efficiently transfer loads into the building structure. Their superior spanning capability requires fewer roof attachments, reducing the number of roof penetrations and the amount of installation time.



Force-Stabilizing Curve

Sloped roofs generate both vertical and lateral forces on mounting rails which can cause them to bend and twist. The curved shape of XR Rails is specially designed to increase strength in both directions while resisting the twisting. This unique feature ensures greater security during extreme weather and a longer system lifetime.

Compatible with Flat & Pitched Roofs

XR Rails are compatible with FlashFoot and other pitched roof attachments.

IronRidge offers a range of tilt leg options for flat roof mounting applications.

Corrosion-Resistant Materials

All XR Rails are made of 6000-series aluminum alloy, then protected with an anodized finish. Anodizing prevents surface and structural corrosion, while also providing a more attractive appearance.

Tech Brief

XR Rail Family

The XR Rail Family offers the strength of a curved rail in three targeted sizes. Each size supports specific design loads, while minimizing material costs. Depending on your location, there is an XR Rail to match.

XR10

XR10 is a sleek, low-profile mounting rail, designed for regions with light or no snow. It achieves spans up to 6 feet, while remaining light and economical.

- 6' spanning capability
- Moderate load capability
- Clear & black anodized finish
- Internal splices available

XR100

XR100 is the ultimate residential mounting rail. It supports a range of wind and snow conditions, while also maximizing spans up to 10 feet.

- 10' spanning capability
- Heavy load capability
- Clear & black anodized finish
- Internal splices available

XR1000

XR1000 is a heavyweight among solar mounting rails. It's built to handle extreme climates and spans up to 12 feet for commercial applications.

- 12' spanning capability
- Extreme load capability
- Clear anodized finish
- Internal splices available

Rail Selection

The table below was prepared in compliance with applicable engineering codes and standards.* Values are based on the following criteria: ASCE 7-16, Gable Roof Flush Mount, Roof Zones 1 & 2e, Exposure B, Roof Slope of 8 to 20 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed certification letters.

Load		Rail Span					
Snow (PSF)	Wind (MPH)	4'	5' 4"	6'	8'	10'	12'
None	90	XR10		XR100		XR1000	
	120						
	140						
	160						
20	90						
	120						
	140						
	160						
30	90						
	160						
40	90						
	160						
80	160						
120	160						

*Table is meant to be a simplified span chart for conveying general rail capabilities. Use approved certification letters for actual design guidance.

MONUMENT SOLAR

REVISIONS		
DESCRIPTION	DATE	REV
DATE: 08/11/2023		

Signature with Seal

PROJECT NAME & ADDRESS

DONNA REYNOLDS RESIDENCE
6708 LITTLE RANCH RD.
NORTH RICHLAND HILLS, TX 76182
APN: 01816276
AHJ: CITY OF NORTH RICHLAND HILLS
UTILITY: ONCOR
ESID: 1044372000140574

SHEET NAME
EQUIPMENT SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-12

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.

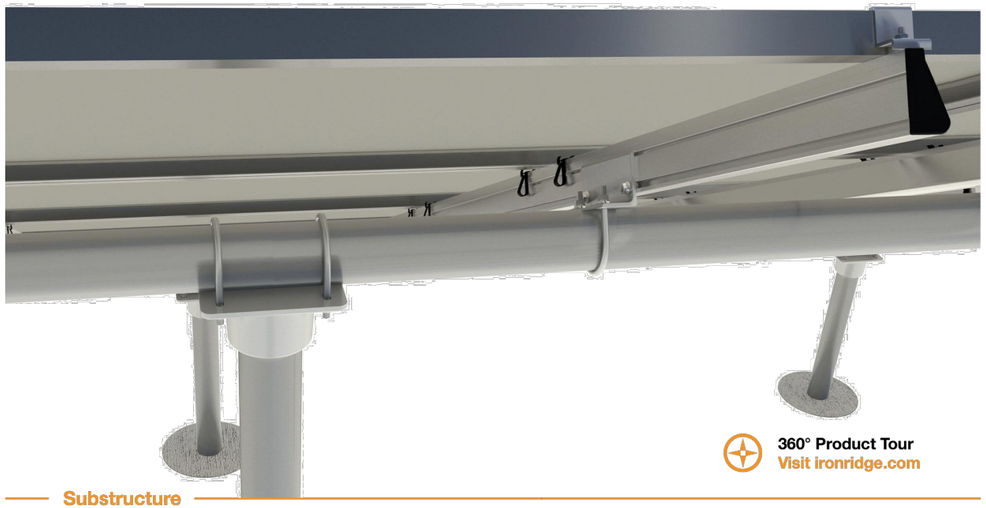
Simple Assembly
Just a few simple components and no heavy equipment.

Design Software
Online tool generates engineering values and bill of materials.

Flexible Architecture
Multiple foundation and array configuration options.

20 Year Warranty
Twice the protection offered by competitors.

Datasheet



360° Product Tour
Visit ironridge.com

Substructure

Top Caps

Connect vertical and cross pipes.

Rail Connectors

Attach Rail Assembly to horizontal 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.

Top-Down Clamps

Secure modules to rails and substructure.

Under Clamps

Alternative clamps for pre-attaching modules to rails.

Accessories

Wire Clips and End Caps provide a finished look.

Resources

Design Assistant
Go from rough layout to fully engineered system. For free.
Go to ironridge.com/gm

NABCEP Certified Training
Earn free continuing education credits, while learning more about our systems.
Go to ironridge.com/training

MONUMENT SOLAR

REVISIONS		
DESCRIPTION	DATE	REV

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AHJ: CITY OF NORTH RICHLAND HILLS
UTILITY: ONCOR
ESID: 1044372000144057 42

SHEET NAME
EQUIPMENT SPECIFICATION

SHEET SIZE
ANSI B
11" X 17"

SHEET NUMBER
PV-14