



PLANNING COMMISSION MEETING AGENDA
TUESDAY JUNE 24, 2025

7:30 PM REGULAR MEETING

1. Call to Order
2. Roll Call
3. Approval of Minutes:
 - a. May 20, 2025, Planning Commission Meeting Minutes.
 - b. June 3, 2025, City Council Meeting Minutes (For Information Only).
4. **PUBLIC HEARING** – Arman Taghizadeh (Applicant) and Mark Moorhouse (Owner) are requesting the following actions for the property located at 7949 County Road 11 (PID No. 09-118-24-22-0004) in the City of Independence, MN.
 - a. A conditional use permit (CUP) to allow a ground mounted solar system which is greater than 500 SF.
 - b. A variance to allow the ground mounted solar system to be located less than 100' from the side property line. The applicant owns both of the properties on either side of the property line.
5. **PUBLIC HEARING** – Chloe Kirks (Applicant) and Andrew Fairbairn (Owner) are requesting the following actions for the property located at 7975 County Road 6 (PID No. 33-118-24-23-0001) in the City of Independence, MN.
 - a. A conditional use permit (CUP) to allow a ground mounted solar system which is greater than 500 SF.
6. Open/Misc.
7. Adjourn.



CITY COUNCIL MEETING AGENDA
TUESDAY JUNE 3, 2025

CITY COUNCIL MEETING TIME: 6:30 PM

1. Call to Order
2. Pledge of Allegiance
3. Roll Call

4. ****Consent Agenda****

All items listed under Consent Agenda are considered to be routine by Council and will be acted on by one motion. There will be no separate discussion of these items. If discussion is desired, that item will be removed from the Consent Agenda and will be considered separately.

- a. Approval of City Council Minutes from the April 30, 2025, City Council Workshop.
 - b. Approval of City Council Minutes from the May 20, 2025, Regular City Council Meeting.
 - c. Approval of Accounts Payable; (Batch #1 - Checks No. 23679-23689, Batch #2 - Checks No. 23690-23702).
 - d. Approval of the following Assembly Permits:
 - i. 3350 County Road 90 – Wedding on Saturday, June 7, 2025.
 - ii. 6625 Fogelman Road – Wedding on Saturday, June 7, 2025.
 - e. Approval of a Solicitor Application for Curbside Waste.
5. Reports of Boards and Committees by Council and Staff.
6. Tyler and Kaitlin Johnson (Applicant/Owner) are requesting the following actions for the property located at 4610 Lake Sarah Dr. S. (PID No. 02-118-24-21-0001) in the City of Independence, MN.
- a. **RESOLUTION No. 25-0603-01** – Considering a variance to allow the subdivision of property in the RR-Rural Residential and S-Shoreland Overlay zoning districts that does not meet the minimum lot size and a minor subdivision to allow the subdivision of the subject parcel into two (2) lots.
7. A proposed text amendment to the City of Independence Ordinance as follows:
- a. **ORDINANCE No. 2025-03** – Considering a text amendment to Chapter VII, Section 705 of the city's ordinance relating to regulations governing On-Site Sewage Treatment. The amendment will consider minor changes that will bring the ordinance into alignment with

recent changes to state statute and also establish provisions relating to the “type” of systems allowed as alternate systems in the city. Council will also consider establishment of language requiring more specific language pertaining to the transfer of properties in the city.

- b. **RESOLUTION No. 25-0603-02** – Approving publication of a summary of Ordinance No. 2025-03.
- 8. Recommendation to establish a new Capital Fund for Public Safety and the transfer of funds from the General Fund to the newly created Public Safety Capital Fund.
 - a. **RESOLUTION No. 25-0603-03** – Considering establishment of a Public Safety Capital Fund.
 - b. **RESOLUTION No. 25-0603-04** – Considering a transfer of \$69,227 from Fund 100 – *General Fund* to Fund 407 *Public Safety*.
- 9. Consider amendment to the Employee Handbook relating to the recent statutory changes requiring cities to provide Earned Sick and Safe Time (ESST). The proposed would stipulate provisions relating to part-time employees.
 - a. **RESOLUTION No. 25-0603-05** – Considering an amendment to the Employee Handbook.
- 10. Open/Misc.
- 11. Adjourn.

City of Independence

Request for a Conditional Use Permit and Variance to Construct a Ground Mounted Solar System on the Property located at 7949 County Road 11

<i>To:</i>	Planning Commission
<i>From:</i>	Mark Kaltsas, City Planner
<i>Meeting Date:</i>	June 24, 2025
<i>Applicant:</i>	Arman Taghizadeh
<i>Property Owner:</i>	Mark Moorhouse
<i>Location:</i>	7949 County Road 11

Request:

Arman Taghizadeh (Applicant) and Mark Moorhouse (Owner) are requesting the following actions for the property located at 7949 and 7855 County Road 11 (PID No.s 09-118-24-22-0004 and 09-118-24-22-0005) in the City of Independence, MN.

- a. A conditional use permit (CUP) to allow a ground mounted solar system which is greater than 500 SF.
- b. A variance to allow the ground mounted solar system to be located less than 100' from the side property line. The applicant owns both of the properties on either side of the property line.

Property/Site Information:

The property is located on the south side County Road 11 and just west of the intersection of County Road 92 and County Road 11. The property has an existing home and several detached accessory structures. The property has the following characteristics:

Property Information: 7949 and 7855 County Road 11
Zoning: Agriculture
Comprehensive Plan: Agriculture
Acreage: 40 acres/40 acres

Subject Property



Discussion:

The applicant approached the City about the possibility of installing a ground mounted solar system on the subject property. The City provided the applicant with the requirements and discussed the process for considering ground mounted solar systems that exceed 500 SF. All ground mounted solar systems require a conditional use permit. Ground mounted solar systems are limited to a maximum square footage of 500 square feet but can now be expanded up to a total of 2,500 SF if additional criteria are satisfied by the applicant. Ground mounted solar systems have the following requirements:

Subd. 5. Ground-Mounted Solar Energy Systems - shall conform to the following standards:

- (a) Ground-mounted systems shall only be allowed on a parcel with an existing principal structure.
- (b) Ground-mounted systems shall be located only in rear or side yards.
- (c) Ground-mounted systems shall not be located in the Shoreland Overlay District.
- (d) Ground-mounted systems shall be wholly screened from view from the public right of way and adjacent residential structures. Methods for screening shall include berming, fencing, landscaping and/or combination thereof.
- (e) Ground-mounted systems shall be located on a parcel of at least 2.5 acres.
- (f) Ground-mounted systems shall have a maximum area of 500 SF.
- (g) Ground mounted systems shall be setback a minimum of 50 feet from all property lines.
- (h) The maximum height for any component of the system shall be 15 feet.
- (i) Ground-mounted systems shall be in compliance with any applicable local, state and federal regulatory standards, including building, electrical and plumbing codes.
- (j) Ground-mounted systems and their support structures shall be designed by a certified professional to meet applicable professional standards for the local soil and climate conditions.
- (k) The city may permit a ground mounted solar energy system which exceeds 500 SF, if the following additional criteria are wholly satisfied:
 - 1. The ground mounted solar system does not exceed 2,500 SF.
 - 2. The ground mounted solar energy system is located on a property that is 5 acres or larger.
 - 3. The ground mounted solar energy system shall be located a minimum of 100 LF from any property line and 500 LF from any residential structure on an adjoining property.
- (l) The city will also consider the following additional criteria to determine if a ground mounted solar energy system will be permitted to exceed the maximum size limitations established in this code:

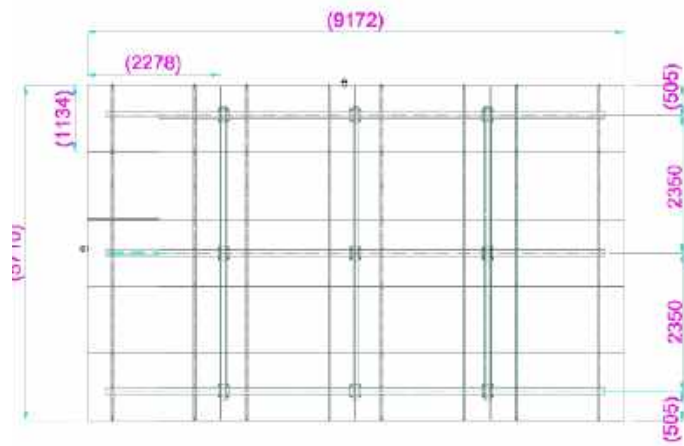
1. The ground mounted solar energy system is not visible from any public street or from adjacent properties. Screening can be used to meet this standard.
2. The applicant has provided with the application, the written consent of the owners of privately or publicly owned real estate directly abutting the premises for which the permit is being requested.
3. The city finds that granting permission for a ground mounted solar energy system, that exceeds 500 SF, will not be detrimental to the public or take away from the reasonable use and enjoyment of the surrounding property.

The proposed ground mounted solar system would be located on a portion of the property that is to the south and east of the existing home. The proposed solar system would be comprised of four (4) ground mounted tracking solar arrays. The total square footage of each array is 561 SF for a total of 2,244 SF. The arrays are proposed to be located on one of the applicants' multiple properties (7855 County Road 11) which is directly east of the subject property. The applicant owns approximately 375 acres in this area, most of which is contiguous. Due to the location of the proposed arrays on the adjacent property, the applicant cannot meet the requisite 100-foot setback from the property line separating their two properties. The closest of the four (4) proposed solar arrays would be approximately 15-20 feet from the property line that currently separates the two parcels. The panels are proposed to meet all other setbacks and would be located approximately 250 feet from County Road 11 (north) property line, 475 feet from the east property line and more than 2,000 feet to the south property line. The required setback from any property line is 100 feet.

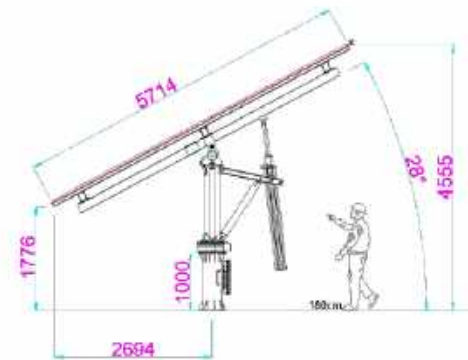
The proposed array is also required to be located a minimum of 500 feet from any residential structure on a surrounding property. The proposed array would be located approximately 685 feet from the residential property to the northwest (across CSAH 6) and 715 feet from the residential structure to the north (across CSAH 6 - see image below showing 500-foot radius).



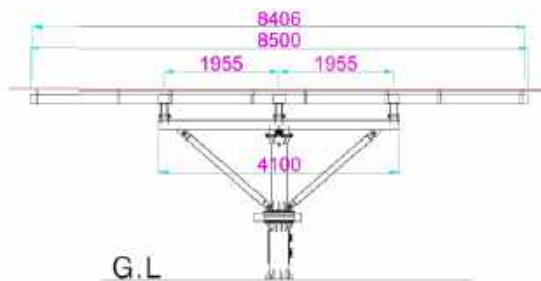
The proposed ground mounted system would have a maximum height of approximately 15' when the trackers are raised to a 28-degree angle. This would be the maximum angle that the trackers could be positioned without exceeding the 15-foot height limitation (see below). The city will want to ensure that the maximum height is not exceeded. Additional discussion and or conditions may need to be considered to ensure compliance with this provision.



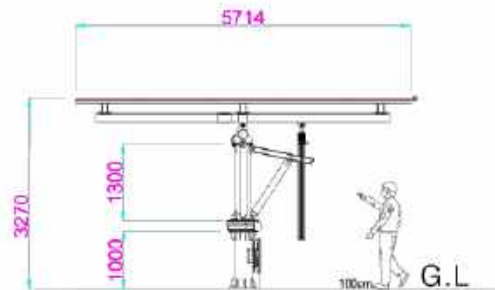
Module array



Side view(28°)



Front view



Side view(0°)

The City requires ground mounted solar systems to be wholly screened from view of the public right of way and adjacent residential structures. The applicant is proposing to install a combination of an earthen berm and landscaping to screen the proposed solar arrays from surrounding views. The applicants plan shows two berms and associated landscaping to the north (between the proposed arrays and CSAH 11). A lower berm (approximately 5 feet tall) with landscaping is shown along CSAH 11 frontage. A second taller berm (approximately 10 feet tall) is shown directly north of the proposed solar arrays (see attached grading and landscape plans). The distance from the proposed solar arrays to the County Road 6 right of way is approximately 250 feet.

View Looking SE Towards Property from CSAH 6



The applicant has provided the City with a site plan and details of the proposed solar system. The system is comprised 64 panels. The panels are designed to track the sun throughout the day/year and would have a variety of orientations. The tracking system is proposed to be secured to the ground using pilings.

The criteria for granting a conditional use permit are clearly delineated in the City's Zoning Ordinance (Section 520.11 subd. 1, a-i) as follows:

1. *The conditional use will not adversely affect the health, safety, morals and general welfare of occupants of surrounding lands.*
2. *The proposed use will not have a detrimental effect on the use and enjoyment of other property in the immediate vicinity for the proposes already permitted or on the normal and orderly development and improvement of surrounding vacant property for uses predominant in the area.*
3. *Existing roads and proposed access roads will be adequate to accommodate anticipated traffic.*
4. *Sufficient off-street parking and loading space will be provided to serve the proposed use.*
5. *The proposed conditional use can be adequately serviced by public utilities or on-site sewage treatment, and sufficient area of suitable soils for on-site sewage treatment is available to protect the city form pollution hazards.*
6. *The proposal includes adequate provision for protection of natural drainage systems, natural topography, tree growth, water courses, wetlands, historic sites and similar ecological and environmental features.*
7. *The proposal includes adequate measures to prevent or control offensive odor, fumes, dust, noise, or vibration so that none of these will constitute a nuisance.*
8. *The proposed condition use is consistent with the comprehensive plan of the City of Independence.*
9. *The proposed use will not stimulate growth incompatible with prevailing density standards.*

The proposed ground mounted solar system exceeds the City's maximum size for ground mounted solar systems; however, the city adopted provisions to allow systems to exceed 500 SF if additional conditions can be satisfied by the applicant. It should be noted that the tracking arrays would only be a portion of the total solar installed on this property. The applicant is also proposing roof mounted solar on one of the detached accessory structures. The combined energy

generated by this system is estimated to be 120kW (AC). The applicant has noted that the proposed system will generate enough electricity to support the electrical loads of the existing residence, and some of the farm operations and accessory buildings. There are a few additional considerations that should be noted by the City:

- The City recently updated the solar energy ordinance to allow for ground mounted systems that are larger than 500 SF if they can meet the additional criteria provided. The applicant has demonstrated that they can meet the additional criteria.
- The proposed system meets the prescribed setbacks and maximum height requirements of the zoning ordinance with the exception of the side property line setback previously noted. The applicant has stated that they own the adjacent property. It should also be noted that the applicant has been discussing the combination of several of their properties.
- The location of the solar tracking arrays would currently be visible from CSAH 11 and several of the surrounding properties. The requirements relating to screening state the following:

The ground mounted solar energy system is not visible from any public street or from adjacent properties.

The applicant is proposing to construct a larger berm to the north of the proposed tracking arrays as well as complete the installation of landscaping on the existing berm along CSAH 11. The combination of the additional berm and landscaping should help to mitigate the visibility of the proposed solar arrays. The city requires the solar arrays to be wholly screened from view. The applicant has provided additional graphics (attached) which are intended to show how the proposed berming and screening would look from various vantage points on CSAH 11 or adjacent properties. Planning Commissioners will need to review this information and determine if the proposed screening achieves the requirements set forth in the ordinance.

- The applicant did not provide any written consent from surrounding property owners, but it should be noted that all were notified of the public hearing. The city did receive one letter from a resident located at 7910 County Road 11 that is opposed to the proposed solar arrays (directly across the street to the north).

The City will need to consider the requested CUP and variance as presented and determine if it meets applicable criteria and can be supported. The orientation of the proposed solar system and the relationship to the surrounding properties helps to aid in the mitigation of potential impacts relating to the ground mounted solar array.

Neighbor Comments:

The City has not received any comments or questions relating to the requested CUP and variance.

Recommendation:

Staff is seeking a recommendation from the Planning Commission pertaining to the request for a conditional use permit and setback variance with the following findings and conditions:

1. The proposed conditional use permit and variance request meets all applicable conditions and restrictions stated in Chapter V, Section 510, Zoning, in the City of Independence Zoning Ordinance.
2. The conditional use permit will include the following conditions:
 - a) The conditional use permit will allow a 2,244 SF ground mounted solar system that is installed in accordance with the approved plans attached hereto as Exhibit A.
 - b) The ground mounted solar system shall be constructed in accordance with all applicable zoning code, building code and other applicable standards.
 - c) The maximum height of the solar arrays is 15'. This height cannot be exceeded at any time during the life of the system.
3. The applicant shall pay for all costs associated with the review and recording of the resolution granting approval of the conditional use permit and variance.

Attachments:

1. Application
2. Ground Mounted Solar Site Plan
3. Ground Mounted Solar Plans and Details
4. Grading Plan
5. Illustrative Screening Exhibits



**CITY OF
INDEPENDENCE
MINNESOTA**

Date Submitted: 05-08-2025

Applicant Information

Name: arman taghizadeh
Address: 3401 Nevada Ave N
Minneapolis, Minnesota
55427
Primary Phone: 6128039000
Email: solar@apadanatechnology.com

Owner Information

Name: Mark Moorhouse
Address: 7949 County Rd 11
Independence, Minnesota 55335
Primary Phone: 7633545635
Email: mmoorhouse@dominiuminc.com

Property Address:

PID:

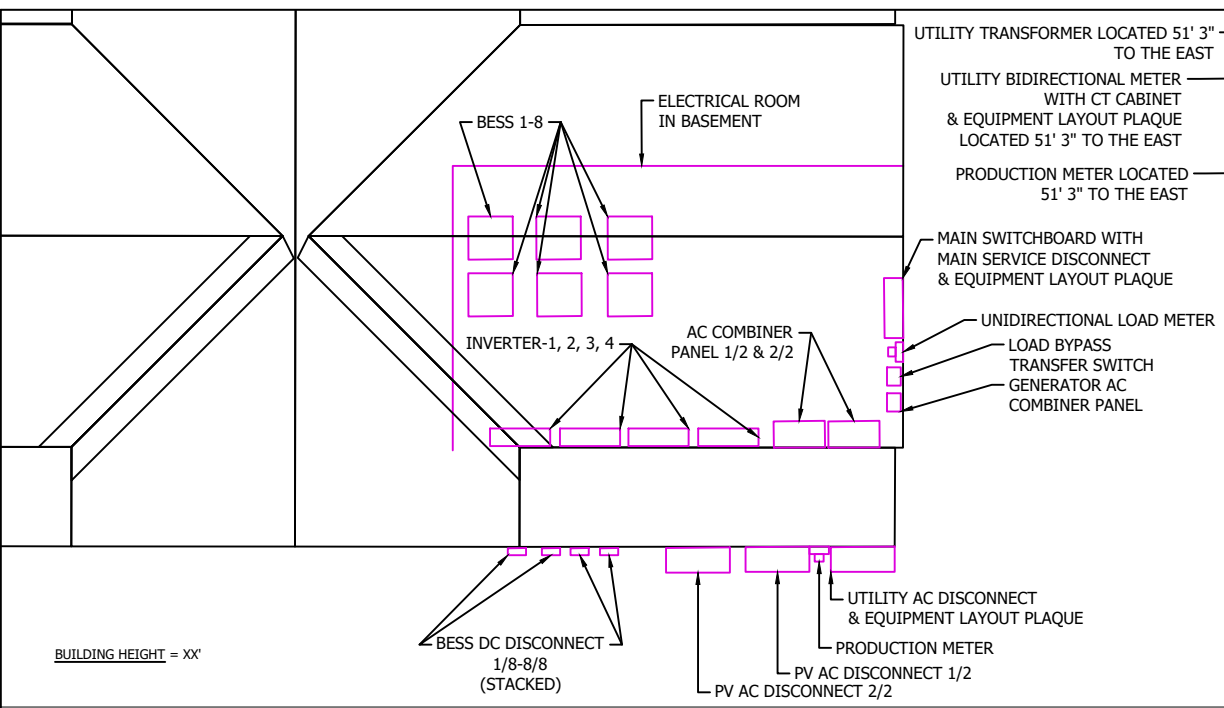
Planning Application Type: Conditional Use Permit

Description:

Supporting Documents: Site Survey (Existing Conditions), Site Survey (Proposed Conditions), Building Plans, Construction Plans, Preliminary/Final Plan

Signature:

Arman T.



INDEX	
INDEX NO.	DESCRIPTION
SP1	SITE PLAN
SP2	MEASUREMENTS
E1	ONELINE
E2	LABELS
E3	CALCULATIONS
E4	DC WIRING
E5	SPECIFICATION SHEETS
E5	SPECIFICATION SHEETS
E5	SPECIFICATION SHEETS
S1	RACKING-1
S2	RACKING-2

APPLICABLE CODES:

2023 NATIONAL ELECTRICAL CODE

2020 MINNESOTA FIRE CODE

2020 MINNESOTA BUILDING CODE

ALL LOCAL ORDINANCES AND REQUIREMENTS

DESIGN CRITERIA:

WIND SPEED: 105 MPH

GROUND SNOW LOAD: 50 PSF

HIGH DESIGN TEMPERATURE: -28 °C

LOW DESIGN TEMPERATURE: 32 °C

MARK MOORHOUSE

SYSTEM INFORMATION:

DC SYSTEM SIZE: 56.45 kW

AC SYSTEM SIZE: 120.00 kW

DC/AC RATIO: 0.47

TILT: 26.56-60°

AZIMUTH: 180°

(30) ZNSHINE SOLAR 415W ZXM7-SHLDD108-415

(80) ZNSHINE SOLAR 550W ZXM7-SHLDD144-550

(4) SOLARK 30KW 30K-3P-208V (208V, 3PH)

(8) ESP-R12-E BESS RACKS

(64) ESP-5K-HL BESS MODULES

(30) AP SYSTEMS RSD-S-PLC

(4) SUN ACTION TRACKERS

IRON RIDGE RACKING

SITE INFORMATION:

ADDRESS: 7949 CR 11

INDEPENDENCE, MN 55371

AHJ: MN-CITY OF INDEPENDENCE

UTILITY: WRIGHT-HENNEPIN

CASE NUMBER: 12914

APADANA JOB NUMBER: ARS25025

REVISIONS

#	DESCRIPTION	DES	CHK	DATE
1	PERMIT PLAN	CH	INTL	04/30/2025
2	V2 PERMIT PLANS	CH		5/5/2025
3				
4				
5				
6				
7				

APADANA ENGINEERING

3401 NEVADA AVE N

NEW HOPE, MN 55427

612-803-9000

SOLAR@APADANATECHNOLOGY.COM

ENGINEER OF RECORD:

NOT FOR CONSTRUCTION

DRAWING TITLE:

SITE PLAN

SCALE:

AS NOTED

SHEET:

SP1

2 EQUIPMENT SPACING

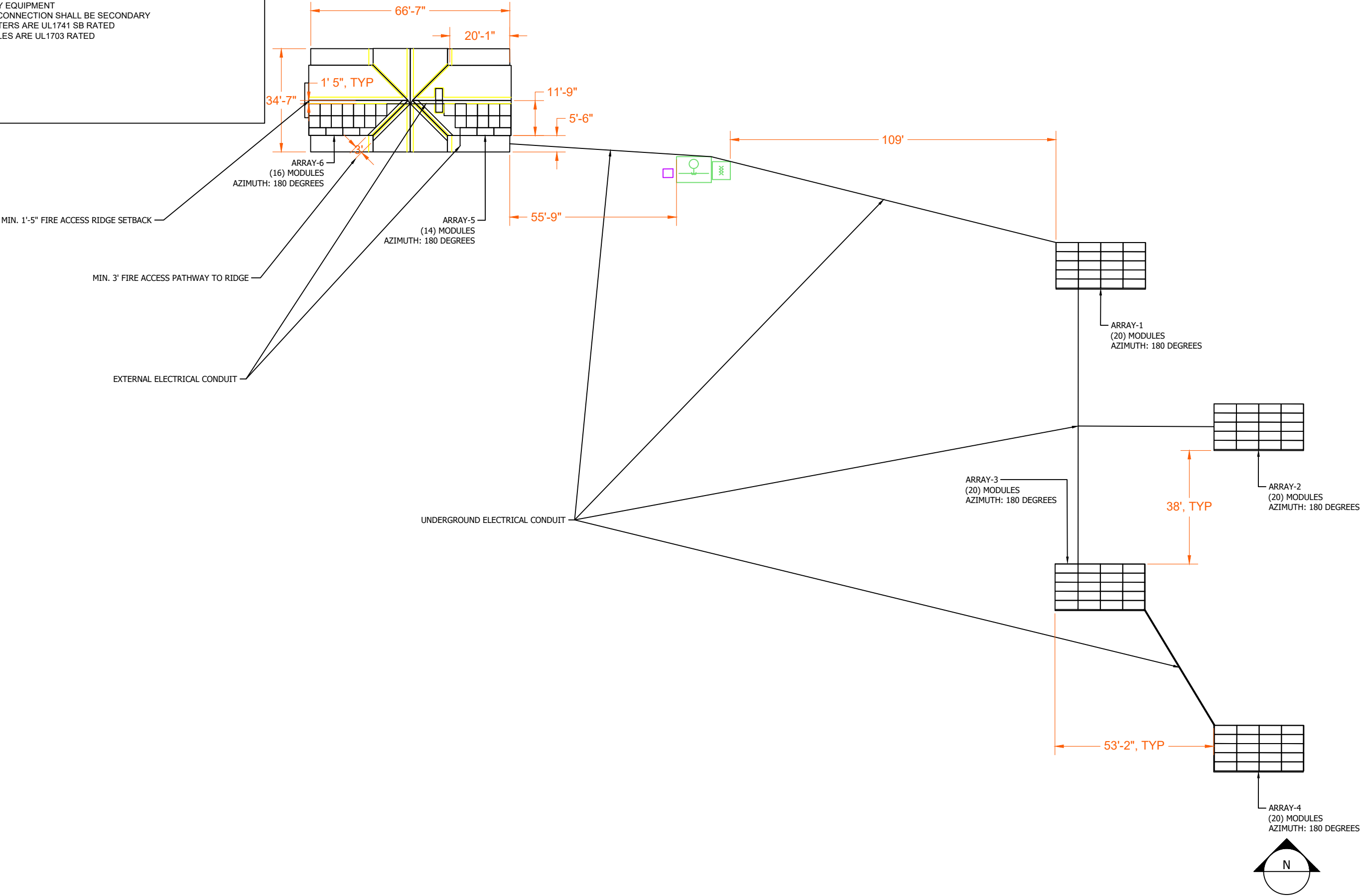
Scale: 3/16" = 1'-0"



1 SITE PLAN

Scale: 1/32" = 1'-0"

- NOTES:**
1. NO CLEARANCE ISSUES WITH EXISTING OVERHEAD LINES
 2. PRODUCTION METER AND UTILITY AC DISCONNECT ARE
 - LOCATED WITH THE EQUIPMENT LAYOUT PLAQUE ON THE UTILITY BIDIRECTIONAL METER AND SERVICE EQUIPMENT
 - VISIBLE OPEN-TYPE, LOCKABLE, AND READILY ACCESSIBLE WITH 24/7 ACCESS
 3. DESIGN COMPLIES WITH NEC 690
 4. LABELS SHALL BE WEATHERPROOF, DURABLE, AND PERMANENTLY MOUNTED
 5. 24/7 UNESCORTED KEYLESS ACCESS IS TO BE PROVIDED FOR ALL UTILITY EQUIPMENT
 6. INTERCONNECTION SHALL BE SECONDARY
 7. INVERTERS ARE UL1741 SB RATED
 8. MODULES ARE UL1703 RATED



MARK MOORHOUSE

SYSTEM INFORMATION:

DC SYSTEM SIZE: 56.45 kW
AC SYSTEM SIZE: 120.00 kW
DC/AC RATIO: 0.47
TILT: 26.56-60°
AZIMUTH: 180°

(30) ZNSHINE SOLAR 415W
ZXM7-SHLDD108-415
(80) ZNSHINE SOLAR 550W
ZXM7-SHLDD144-550
(4) SOLARK 30KW
30K-3P-208V (208V, 3PH)
(8) ESP-R12-E BESS RACKS
(64) ESP-5K-HL BESS MODULES
(30) AP SYSTEMS RSD-S-PLC
(4) SUN ACTION TRACKERS
IRON RIDGE RACKING

SITE INFORMATION:

ADDRESS: 7949 CR 11
INDEPENDENCE, MN 55371
AHJ: MN-CITY OF INDEPENDENCE
UTILITY: WRIGHT-HENNEPIN
CASE NUMBER: 12914
APADANA JOB NUMBER: ARS25025

REVISIONS

#	DESCRIPTION	DES	CHK	DATE
1	PERMIT PLAN	CH	INTL	04/30/2025
2	V2 PERMIT PLANS	CH		5/5/2025
3				
4				
5				
6				
7				



APADANA ENGINEERING
3401 NEVADA AVE N
NEW HOPE, MN 55427
612-803-9000
SOLAR@APADANATECHNOLOGY.COM

ENGINEER OF RECORD:

NOT FOR CONSTRUCTION

DRAWING TITLE:

MEASUREMENTS

SCALE:

1/16" = 1'-0"

SHEET:

SP2

- NOTES:**
1. PRODUCTION METER & UTILITY AC DISCONNECT ARE LOCATED WITH THE EQUIPMENT LAYOUT PLAQUE ON THE UTILITY BIDIRECTIONAL METER AND SERVICE EQUIPMENT
 2. VISIBLE OPEN-TYPE, LOCKABLE, AND READILY ACCESSIBLE WITH 24/7 ACCESS
 3. INVERTERS ARE UL1741 SB RATED
 4. EACH MLPE IS RAPID SHUTDOWN COMPLIANT
 5. EQUIPMENT MARKED WITH (E) IS EXISTING AND (N) IS NEW

MODULE SPECIFICATION		
MODEL	ZNSHINE SOLAR ZXM7-SHLDD108-415W	
POWER @ STC	415	W
VOC	37.70	V
VMP	31.50	V
ISC	13.94	A
IMP	13.18	A
DIMENSIONS	67.87 X 44.65 X 1.18	IN

INVERTER SPECIFICATION		
MODEL	SOLAREEDGE 50kW SE50KUS(208V,3PH)	
POWER RATING	50000	W
MAX OUTPUT CURRENT	139.5	A
CEC WEIGHTED EFFICIENCY	97.0	%
MAX INPUT CURRENT	3 X 46.5	A
MAX DC VOLTAGE	600	V
AC OUTPUT VOLTAGE	208	V
CERTIFICATION	UL1741, UL1741 SA, UL1741 SB	

INVERTER SPECIFICATION		
MODEL	SOLAREEDGE 17.3kW SE17.3KUS(208V,3PH)	
POWER RATING	17300	W
MAX OUTPUT CURRENT	48.3	A
CEC WEIGHTED EFFICIENCY	97.5	%
MAX INPUT CURRENT	48	A
MAX DC VOLTAGE	600	V
AC OUTPUT VOLTAGE	208	V
CERTIFICATION	UL1741, UL1741 SA, UL1741 SB	

MLPE CHARACTERISTICS		
MODEL	AP SYSTEMS RSD-S-PLC	
MAX INPUT VOLTAGE	15	VDC
MAX OUTPUT CURRENT	80	ADC

MARK MOORHOUSE

SYSTEM INFORMATION:

DC SYSTEM SIZE: 56.45 kW
AC SYSTEM SIZE: 120.00 kW
DC/AC RATIO: 0.47
TILT: 26.56-60°
AZIMUTH: 180°

(30) ZNSHINE SOLAR 415W
ZXM7-SHLDD108-415
(80) ZNSHINE SOLAR 550W
ZXM7-SHLDD144-550
(4) SOLARK 30KW
30K-3P-208V (208V, 3PH)
(8) ESP-R12-E BESS RACKS
(64) ESP-5K-HL BESS MODULES
(30) AP SYSTEMS RSD-S-PLC
(4) SUN ACTION TRACKERS
IRON RIDGE RACKING

SITE INFORMATION:

ADDRESS: 7949 CR 11
INDEPENDENCE, MN 55371
AHJ: MN-CITY OF INDEPENDENCE
UTILITY: WRIGHT-HENNEPIN
CASE NUMBER: 12914
APADANA JOB NUMBER: ARS25025

REVISIONS

#	DESCRIPTION	DES	CHK	DATE
1	PERMIT PLAN	CH	INTL	04/30/2025
2	V2 PERMIT PLANS	CH		5/5/2025
3				
4				
5				
6				
7				



APADANA ENGINEERING

3401 NEVADA AVE N
NEW HOPE, MN 55427
612-803-9000
SOLAR@APADANATECHNOLOGY.COM

ENGINEER OF RECORD:

NOT FOR CONSTRUCTION

DRAWING TITLE:

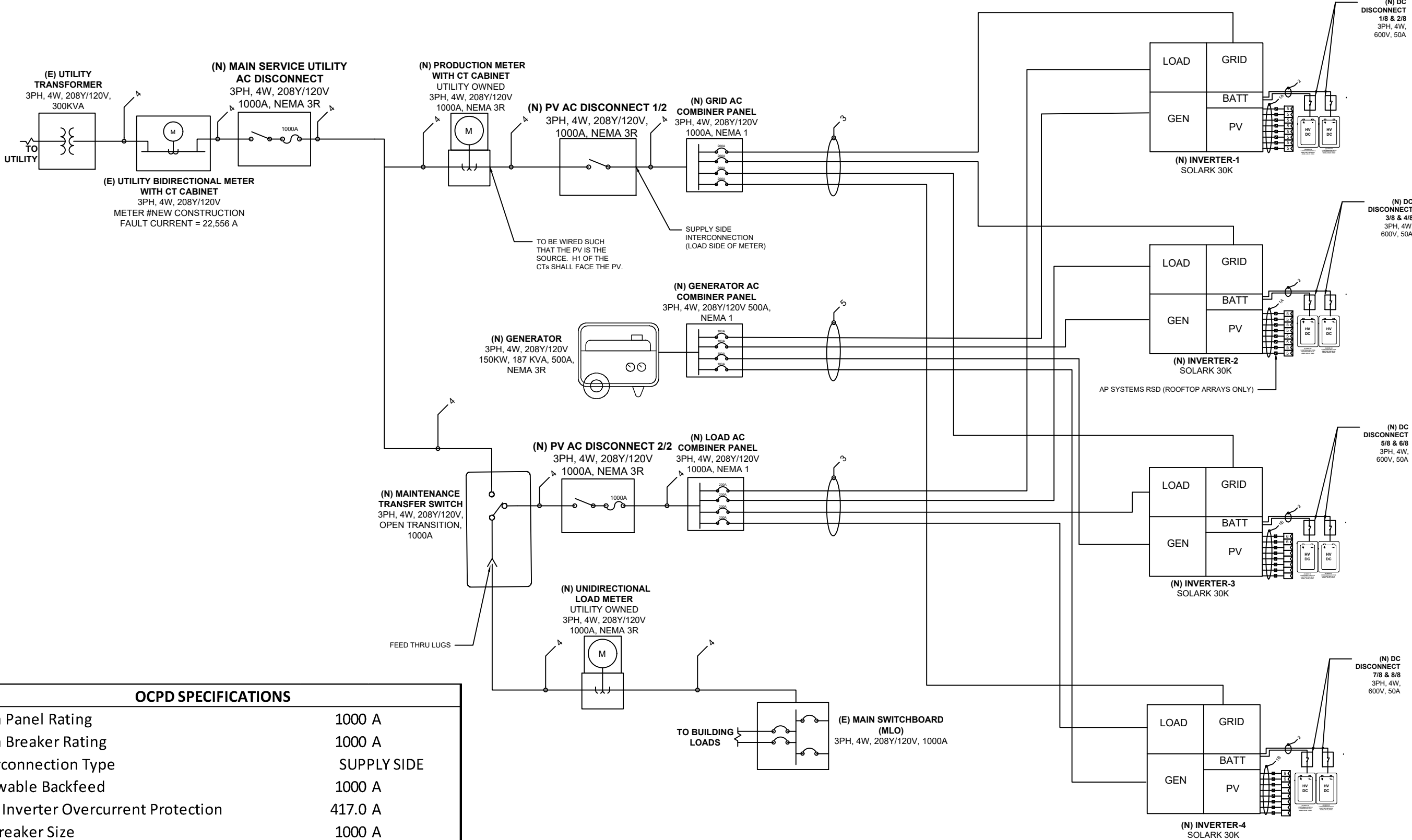
ONELINE

SCALE:

NTS

SHEET:

E1



OCPD SPECIFICATIONS

Main Panel Rating	1000 A
Main Breaker Rating	1000 A
Interconnection Type	SUPPLY SIDE
Allowable Backfeed	1000 A
Min. Inverter Overcurrent Protection	417.0 A
PV Breaker Size	1000 A

UTILITY AC DISCONNECT

LABEL LOCATION
UTILITY AC DISCONNECT
[PER CODE: NEC690.13(B)]

PV AC DISCONNECT

LABEL LOCATION
PV AC DISCONNECT
[PER CODE: NEC690.13(B)]

PRODUCTION METER

LABEL LOCATION
PRODUCTION METER
[PER CODE: NEC690.13(B)]

UTILITY BIDIRECTIONAL METER

LABEL LOCATION
UTILITY BIDIRECTIONAL METER
[PER CODE: NEC690.13(B)]

PV UTILITY AC DISCONNECT 1/2

LABEL LOCATION
PV UTILITY AC DISCONNECT 1/2
[PER CODE: NEC690.13(B)]

PV UTILITY AC DISCONNECT 2/2

LABEL LOCATION
PV UTILITY AC DISCONNECT 2/2
[PER CODE: NEC690.13(B)]

ESS DC DISCONNECT 1/8

LABEL LOCATION
ESS AC DISCONNECT 1/8-8/8
[PER CODE: NEC690.13(B)]

MAXIMUM DC VOLTAGE OF PV SYSTEM
550 VDC

LABEL LOCATION
INVERTER(S)
[PER CODE: NEC690.7(D)]

PHOTOVOLTAIC SYSTEM AC DISCONNECT
RATED OPERATING CURRENT 800 AMPS AC
NOMINAL OPERATING VOLTAGE 208 VAC

LABEL LOCATION
UTILITY AC DISCONNECT, POINT OF INTERCONNECTION
[PER CODE: NEC690.13(B)]

DO NOT RELOCATE THIS
OVERCURRENT DEVICE

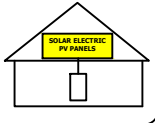
LABEL LOCATION
MAIN SERVICE AC DISCONNECT, POINT OF INTERCONNECTION
[PER CODE: NEC705.12(B)(2)]

MAXIMUM DC VOLTAGE OF ESS
SYSTEM: 409.6 VDC

LABEL LOCATION
INVERTER(S)
[PER CODE: NEC690.7(D)]

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



LABEL LOCATION
POINT OF INTERCONNECTION
[PER CODE: NEC690.12(D)]

WARNING:
PHOTOVOLTAIC POWER
SOURCE

LABEL LOCATION
CONDUIT, COMBINER BOX
[PER CODE: NEC690.4(F)]

RAPID SHUTDOWN
SWITCH FOR SOLAR PV
SYSTEM

LABEL LOCATION
INVERTER(S), POINT OF INTERCONNECTION
[PER CODE: NEC690.12(D)(1)]

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

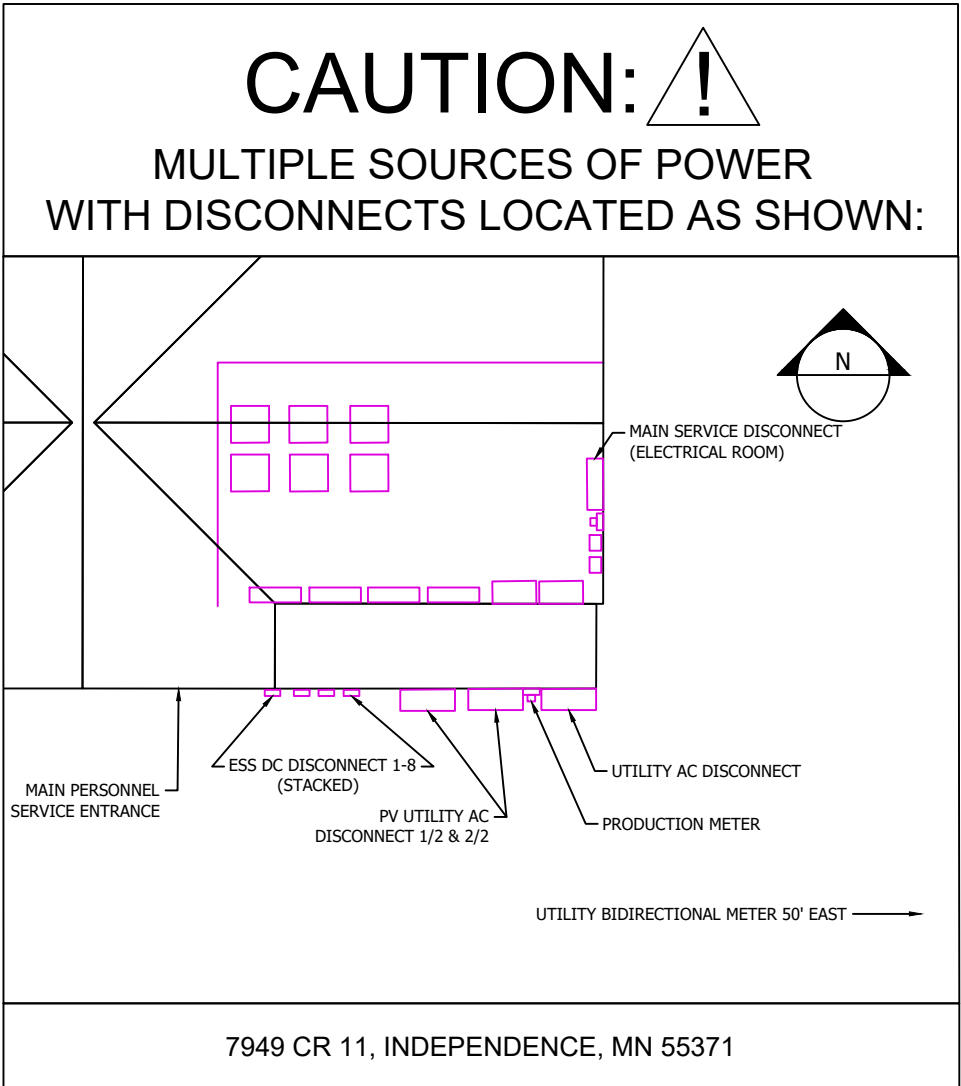
LABEL LOCATION
POINT OF INTERCONNECTION
[PER CODE: NEC705.12(B)(3)]

SOLAR PV DC CIRCUIT

LABEL LOCATION
AT LEAST EVERY 10 FT & AT TURNS ON ALL DC CONDUIT, RACEWAYS,
ENCLOSURES, AND CABLE ASSEMBLIES, ABOVE/BELOW
PENETRATIONS, AT COMBINER(S), AND AT JUNCTION BOXES
[PER CODE: NEC690.31(D)(2)]

WARNING:
PHOTOVOLTAIC SYSTEM
COMBINER PANEL
DO NOT ADD LOADS

LABEL LOCATION
AC COMBINER PANEL
[PER CODE: NFPA 11.12.2.1.1]



LABEL LOCATION
UTILITY AC DISCONNECT, MAIN SERVICE DISCONNECT, UTILITY BIDIRECTIONAL METER
[PER CODE: NEC705.10]

ALL PLACARDS SHALL BE WEATHERPROOF, DURABLE, AND PERMANENTLY MOUNTED.

MARK MOORHOUSE

SYSTEM INFORMATION:
DC SYSTEM SIZE: 56.45 kW
AC SYSTEM SIZE: 120.00 kW
DC/AC RATIO: 0.47
TILT: 26.56-60°
AZIMUTH: 180°

(30) ZNSHINE SOLAR 415W
ZXM7-SHLDD108-415
(80) ZNSHINE SOLAR 550W
ZXM7-SHLDD144-550
(4) SOLARK 30KW
30K-3P-208V (208V, 3PH)
(8) ESP-R12-E BESS RACKS
(64) ESP-5K-HL BESS MODULES
(30) AP SYSTEMS RSD-S-PLC
(4) SUN ACTION TRACKERS
IRON RIDGE RACKING

SITE INFORMATION:
ADDRESS: 7949 CR 11
INDEPENDENCE, MN 55371
AHJ: MN-CITY OF INDEPENDENCE
UTILITY: WRIGHT-HENNEPIN
CASE NUMBER: 12914
APADANA JOB NUMBER: ARS25025

REVISIONS

#	DESCRIPTION	DES	CHK	DATE
1	PERMIT PLAN	CH	INTL	04/30/2025
2	V2 PERMIT PLANS	CH		5/5/2025
3				
4				
5				
6				
7				



APADANA ENGINEERING
3401 NEVADA AVE N
NEW HOPE, MN 55427
612-803-9000
SOLAR@APADANATECHNOLOGY.COM

ENGINEER OF RECORD:

NOT FOR CONSTRUCTION

DRAWING TITLE:

LABELS

SCALE:

NTS

SHEET:

E2

CONDUIT SCHEDULE				
Tag ID	Conduit Size	Conductor	Neutral	Ground
1	RAYTRAY OR 3/4" PVC SCHED 40 OR 3/4" EMT	(8) 10 AWG PV WIRE 2K	NONE	(1) 10 AWG CU THHN
2	1"EMT OR EQUIV	(2) 8 AWG CU THHN	NONE	(1) 8 AWG CU THHN
3	1 1/2"EMT OR EQUIV	(3) 3/0 CU THHN	(1) 1/0 AWG CU THHN	(1) 6 AWG CU THHN
4	2 1/2" EMT OR EQUIV	3 SETS OF (3) 300 KCMIL CU THHN	3 SETS OF (1) 1/0 AWG CU THHN	(1) 2/0 KCMIL CU THHN
5	1 1/4" EMT OR EQUIV	(3) 3 AWG CU THHN	(1) 8 AWG CU THHN	(1) 8 AWG CU THHN

DC CABLE SCHEDULE

TAG IDENTIFIER	DESCRIPTION	MAXIMUM CURRENT (A)	VOLTAGE (V)	LENGTH (FT)	CIRCUIT MAX AMPACITY (CURRENT * 1.25) NEC 690(B)(1)	OCPD SIZE (A)	WIRE SPECIFICATIONS (CONDUCTOR, GROUND)	NEC 75C CABLE AMPACITY	NEC 90C CABLE AMPACITY	AMBIENT TEMP CORR. FACTOR	NUMBER OF CONDUCTORS IN CONDUIT CORR. FACTOR	CONDUCTOR ALLOWABLE AMPACITY WITH CORR. FACTOR NEC 690(B)(2)	AMPACITY CHECK	VOLTAGE DROP (%)	CONDUIT SIZE	CONDUIT FILL PERCENTAGE (%)
	TRACKER 1 STRINGS 1.1.1-1.2.2	17.36	550	100	21.7	25	(2) 10AWG PV WIRE 2K, (1) 10AWG CU THHN	35	40	0.96	1.00	38.4	GOOD	1.08%	RAYTRAY	NA
	TRACKER 2 STRINGS 1.3.1-1.4.2	17.36	550	100	21.7	25	(2) 10AWG PV WIRE 2K, (1) 10AWG CU THHN	35	40	0.96	1.00	38.4	GOOD	1.08%	RAYTRAY	NA
	TRACKER 3 STRINGS 2.1.1-2.2.2	17.36	550	100	21.7	25	(2) 10AWG PV WIRE 2K, (1) 10AWG CU THHN	35	40	0.96	1.00	38.4	GOOD	1.08%	RAYTRAY	NA
	TRACKER 4 STRINGS 2.3.1-2.4.2	17.36	550	100	21.7	25	(2) 10AWG PV WIRE 2K, (1) 10AWG CU THHN	35	40	0.96	1.00	38.4	GOOD	1.08%	RAYTRAY	NA
	GARAGE STRINGS 3.1.1-3.1.2	17.43	550	20	21.8	25	(2) 10AWG PV WIRE 2K, (1) 10AWG CU THHN	35	40	0.96	1.00	38.4	GOOD	0.22%	RAYTRAY	NA
	GARAGE STRINGS 4.1.1-4.1.2	17.43	550	40	21.8	25	(2) 10AWG PV WIRE 2K, (1) 10AWG CU THHN	35	40	0.96	1.00	38.4	GOOD	0.43%	RAYTRAY	NA
1A	DC RUN FROM TRACKER 1 TO INVERTERS	17.4	550	166	21.7	25	(8) 10AWG PV WIRE 2K, (1) 10AWG CU THHN	35	40	0.96	0.70	26.9	GOOD	0.22%	3/4" PVC SCHED 40	36.09%
1B	DC RUN FROM GARAGE ROOF TO INVERTERS	17.43	550	30	21.8	25	(8) 10AWG PV WIRE 2K, (1) 10AWG CU THHN	35	40	0.96	0.70	26.9	GOOD	0.041%	3/4"EMT	36.09%
2	DC RUN FROM BATTERY TO DISCONNECT TO INVERTER	40.00	410	30	50.0	50	(4) 8AWGCU THHN, (1) 8AWG CU THHN	50	55	0.96	0.80	42.2	GOOD	0.570%	1"EMT	33.41%
												AVERAGE DC VOLTAGE DROP %	0.65%			
												MAXIMUM DC VOLTAGE DROP %	1.08%			

MARK MOORHOUSE

SYSTEM INFORMATION:

DC SYSTEM SIZE: 56.45 kW
AC SYSTEM SIZE: 120.00 kW
DC/AC RATIO: 0.47
TILT: 26.56-60°
AZIMUTH: 180°

(30) ZNSHINE SOLAR 415W
ZXM7-SHLDD108-415
(80) ZNSHINE SOLAR 550W
ZXM7-SHLDD144-550
(4) SOLARK 30KW
30K-3P-208V (208V, 3PH)
(8) ESP-R12-E BESS RACKS
(64) ESP-5K-HL BESS MODULES
(30) AP SYSTEMS RSD-S-PLC
(4) SUN ACTION TRACKERS
IRON RIDGE RACKING

SITE INFORMATION:

ADDRESS: 7949 CR 11
INDEPENDENCE, MN 55371
AHJ: MN-CITY OF INDEPENDENCE
UTILITY: WRIGHT-HENNEPIN
CASE NUMBER: 12914
APADANA JOB NUMBER: ARS25025

REVISIONS

#	DESCRIPTION	DES	CHK	DATE
1	PERMIT PLAN	CH	INTL	04/30/2025
2	V2 PERMIT PLANS	CH		5/5/2025
3				
4				
5				
6				
7				



APADANA ENGINEERING
3401 NEVADA AVE N
NEW HOPE, MN 55427
612-803-9000
SOLAR@APADANATECHNOLOGY.COM

ENGINEER OF RECORD:

NOT FOR CONSTRUCTION

DRAWING TITLE:

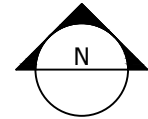
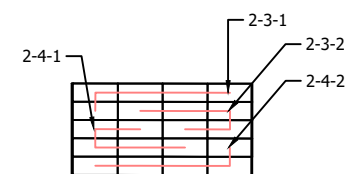
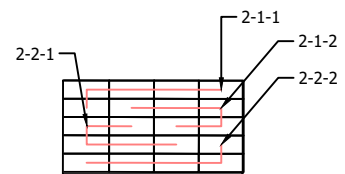
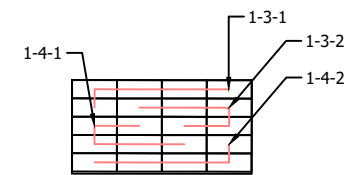
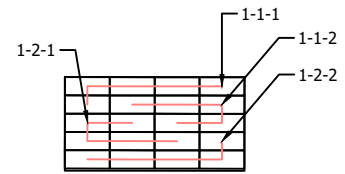
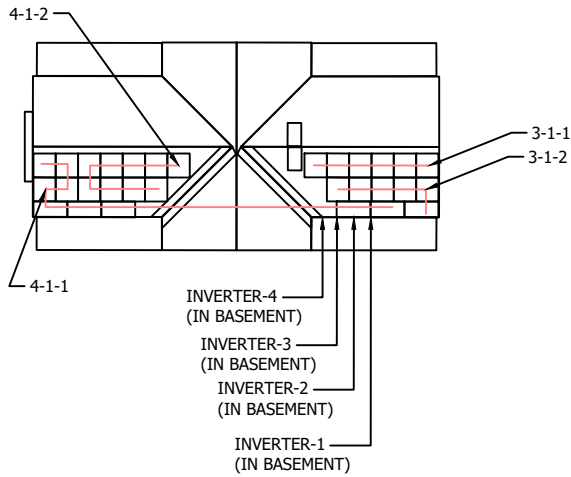
CALCULATIONS

SCALE:

NTS

SHEET:

E3



LEGEND		
STRING (INV-UNIT-INPUT)	MODULE QUANTITY	STRING VOLTAGE MEASUREMENT
1-1-1	5	
1-1-2	5	
1-2-1	5	
1-2-2	5	
1-3-1	5	
1-3-2	5	
1-4-1	5	
1-4-2	5	

LEGEND		
STRING (INV-UNIT-INPUT)	MODULE QUANTITY	STRING VOLTAGE MEASUREMENT
2-1-1	5	
2-1-2	5	
2-2-1	5	
2-2-2	5	
2-3-1	5	
2-3-2	5	
2-4-1	5	
2-4-2	5	

LEGEND		
STRING (INV-UNIT-INPUT)	MODULE QUANTITY	STRING VOLTAGE MEASUREMENT
3-1-1	6	
3-1-2	6	
3-2-1	0	
3-2-2	0	
3-3-1	0	
3-3-2	0	
3-4-1	0	
3-4-2	0	

LEGEND		
STRING (INV-UNIT-INPUT)	MODULE QUANTITY	STRING VOLTAGE MEASUREMENT
4-1-1	9	
4-1-2	9	
4-2-1	0	
4-2-2	0	
4-3-1	0	
4-3-2	0	
4-4-1	0	
4-4-2	0	

MARK MOORHOUSE

SYSTEM INFORMATION:
DC SYSTEM SIZE: 56.45 kW
AC SYSTEM SIZE: 120.00 kW
DC/AC RATIO: 0.47
TILT: 26.56-60°
AZIMUTH: 180°

(30) ZNSHINE SOLAR 415W
ZXM7-SHLDD108-415
(80) ZNSHINE SOLAR 550W
ZXM7-SHLDD144-550
(4) SOLARK 30KW
30K-3P-208V (208V, 3PH)
(8) ESP-R12-E BESS RACKS
(64) ESP-5K-HL BESS MODULES
(30) AP SYSTEMS RSD-S-PLC
(4) SUN ACTION TRACKERS
IRON RIDGE RACKING

SITE INFORMATION:
ADDRESS: 7949 CR 11
INDEPENDENCE, MN 55371
AHJ: MN-CITY OF INDEPENDENCE
UTILITY: WRIGHT-HENNEPIN
CASE NUMBER: 12914
APADANA JOB NUMBER: ARS25025

REVISIONS				
#	DESCRIPTION	DES	CHK	DATE
1	PERMIT PLAN	CH	INTL	04/30/2025
2	V2 PERMIT PLANS	CH		5/5/2025
3				
4				
5				
6				
7				



APADANA ENGINEERING
3401 NEVADA AVE N
NEW HOPE, MN 55427
612-803-9000
SOLAR@APADANATECHNOLOGY.COM

ENGINEER OF RECORD:
NOT FOR CONSTRUCTION

DRAWING TITLE:

DC WIRING

SCALE:

1/16" = 1'-0"

SHEET:

E4



Raising the bar in innovative
DC MLPE solar power systems

RSD-S-PLC

- Meets NEC 2017 & 2020 (890.12) requirements
- Enables rapid shutdown of system when Transmitter-PLC signal is absent
- Meets SunSpec requirements

The RSD-S-PLC meets SunSpec requirements, maintaining normal function by continuously receiving a heartbeat signal from the APsmart Transmitter. The RSD executes rapid system shutdown when the Transmitter signal is absent. Users can manually execute rapid shutdown using Transmitter breaker switch.

RSD-S-PLC TECHNICAL DATA

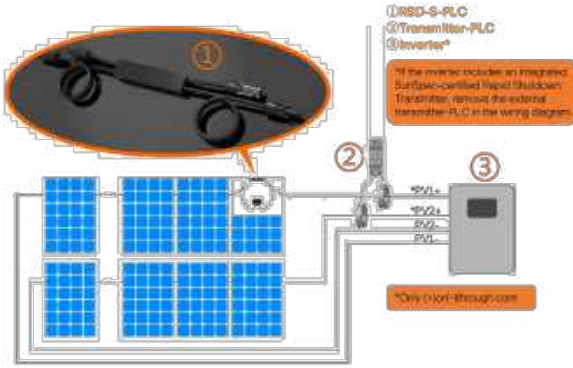
MODEL	RSD-S-PLC
INPUT DATA (DC)	
Input Operating Voltage Range	8-80V
Maximum Cont. Input Current (max)	15A
Maximum Short Circuit Current (Isc)	25A
OUTPUT DATA (DC)	
Output Operating Voltage Range	8-80V
Maximum System Voltage	1000V/1500V
Maximum Series Fuse Rating	30A
Mechanical Data	
Operating Ambient Temperature Range	-40°F to +185°F (-40 °C to +85 °C)
Dimensions (without cable & connectors)	5" x 1.2" x 0.61129 mm x 30 mm x 16 mm
Cable Length	Input 250mm/Output 1200mm
Cable Cross Section Size	UL124WG
Connector	8pin MC4 PV-KBT4KST4 or Customized
Enclosure Rating	NEMA Type 3/IP68
Over Temperature Protection	Yes
FEATURES & COMPLIANCE	
Communication	PLC
Safety Compliance	NEC 2017 & 2020 (890.12), UL1741, CSA C22.2 No. 330-17, IEC/EN62109-1, 2PFG2305
EMC Compliance	FCC Part15, ICES-003, IEC/EN61000-6-1/-2/-3/-4

© All Rights Reserved

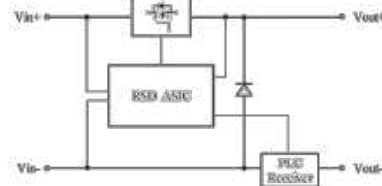
REV.2.3 2023-11-11



RSD-S-PLC WIRING DIAGRAM



WORKING SCHEMATIC DIAGRAM



ORDERING INFORMATION

415002	1500V UL, L2m cable, 8pin MC4 PV-KBT4KST4
415001	1000V UL, L2m cable, Customized connector

APsmart
800 Broken Ave NE, Suite 200 Seattle, WA 98110 | +1-737-218-8486 |
+1-866-374-8538 | support@APsmartGlobal.com | APsmartGlobal.com

REV.2.3 2023-11-11



Raising the bar in innovative
DC MLPE solar power systems

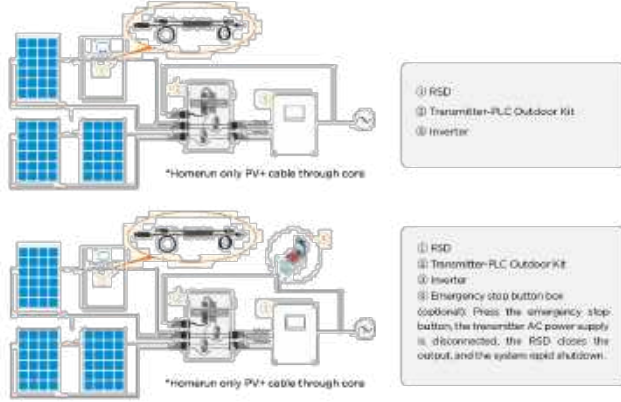
TRANSMITTER-PLC OUTDOOR KIT

- Meets NEC 2017, 2020&2023 (890.12) requirements
- Selecting off Transmitter-PLC results in rapid shutdown of the output of PV modules
- Meets SunSpec requirements
- Equipped with simplified core
- Optional 85-264VAC power supply
- Optional 180-550VAC power supply

The APsmart Rapid Shutdown System Transmitter-PLC is part of a rapid shutdown solution when paired with APsmart RSD, a PV module rapid shutdown unit. While powered on, the Transmitter-PLC sends a signal to the RSD unit to keep their PV modules connected and supplying energy.

RSD units automatically enter rapid shutdown mode when the Transmitter-PLC is switched off and resume energy production when power is restored to the Transmitter-PLC. This solution complies with NEC 690.12 specifications for 2017, 2020&2023 and supports the SunSpec signaling for rapid shutdown.

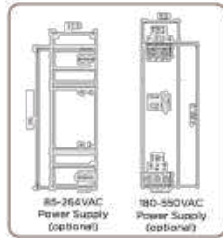
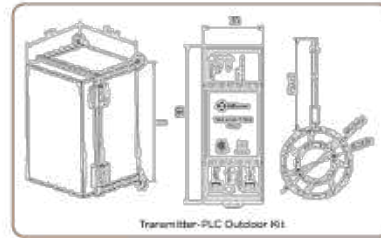
Transmitter-PLC Outdoor Kit includes a Transmitter-PLC with one or two cores, outdoor enclosure, 85-264VAC or 180-550VAC power supply. It could be used in residential or commercial project.



- ① RSD
- ② Transmitter-PLC Outdoor Kit
- ③ Inverter

- ① RSD
- ② Transmitter-PLC Outdoor Kit
- ③ Inverter
- ④ Emergency stop button box (optional). Press the emergency stop button, the transmitter AC power supply is disconnected, the RSD closes the output, and the system rapid shutdown.

Rev2.8 2023-10-07



Main electrical data

Input Voltage	0 VDC
Input Current	0 BA
Communication	PLC

Power Supply

Residential (optional)	85-264VAC Input, 12VDC Output, 90 mm x 17.5 mm x 58.4 mm
Commercial (optional)	180-550VAC Input, 12VDC Output, 125.2 mm x 32 mm x 102 mm

Core data

Max. Current	320A (160A/2)
Max. System Voltage	1500VDC
Internal Opening for Wires/Outside Dimensions	~28mm/65mm
Max. Supported PV Modules per String	30 modules

Max.Number Of Strings Per Core

DC Cable Diameter	Ø5.8mm	Ø6.35mm	Ø7mm	Ø8.6mm
Number Of Strings Per Core (without connector)	≤15	≤15	≤14	≤10

Environmental

Temperature	-40℃ ~ +60℃
-------------	-------------

Structure data

Dimensions (W x H x D)	198.5 mm x 208 mm x 179 mm
Enclosure Environmental Rating	IP68

Features & Compliance

Safety Compliance	NEC 2017, 2020&2023 (890.12), UL1741, CSA C22.2 No. 330-17
EMC Compliance	FCC Part15, ICES-003

ORDERING INFORMATION

408004	Single Core Transmitter-PLC-Outdoor Kit, 180-550VAC Power Supply
408005	Dual Core Transmitter-PLC-Outdoor Kit, 180-550VAC Power Supply
408006	Single Core Transmitter-PLC-Outdoor Kit, 85-264VAC Power Supply
408007	Dual Core Transmitter-PLC-Outdoor Kit, 85-264VAC Power Supply
408010	Single Core Transmitter-PLC-Outdoor Kit, 180-550VAC Power Supply, Emergency button
408011	Dual Core Transmitter-PLC-Outdoor Kit, 180-550VAC Power Supply, Emergency button
408012	Single Core Transmitter-PLC-Outdoor Kit, 85-264VAC Power Supply, Emergency button
408013	Dual Core Transmitter-PLC-Outdoor Kit, 85-264VAC Power Supply, Emergency button

APsmart
8677 N Moapa Expy, Suite 100, Austin, TX 76758 | +1-737-218-8486 |
+1-866-374-8538 | support@APsmartGlobal.com | APsmartGlobal.com

Rev2.8 2023-10-07

MARK MOORHOUSE

SYSTEM INFORMATION:

DC SYSTEM SIZE: 56.45 kW
AC SYSTEM SIZE: 120.00 kW
DC/AC RATIO: 0.47
TILT: 26.56-60°
AZIMUTH: 180°

(30) ZNSHINE SOLAR 415W
ZXM7-SHLDD108-415
(80) ZNSHINE SOLAR 550W
ZXM7-SHLDD144-550
(4) SOLARK 30KW
30K-3P-208V (208V, 3PH)
(8) ESP-R12-E BESS RACKS
(64) ESP-5K-HL BESS MODULES
(30) AP SYSTEMS RSD-S-PLC
(4) SUN ACTION TRACKERS
IRON RIDGE RACKING

SITE INFORMATION:

ADDRESS: 7949 CR 11
INDEPENDENCE, MN 55371
AHJ: MN-CITY OF INDEPENDENCE
UTILITY: WRIGHT-HENNEPIN
CASE NUMBER: 12914
APADANA JOB NUMBER: ARS25025

REVISIONS

#	DESCRIPTION	DES	CHK	DATE
1	PERMIT PLAN	CH	INTL	04/30/2025
2	V2 PERMIT PLANS	CH		5/5/2025
3				
4				
5				
6				
7				



APADANA ENGINEERING

3401 NEVADA AVE N
NEW HOPE, MN 55427
612-803-9000
SOLAR@APADANATECHNOLOGY.COM

ENGINEER OF RECORD:

NOT FOR CONSTRUCTION

DRAWING TITLE:

SPEC SHEETS

SCALE:

NTS

SHEET:

E5



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 racking the building. This unique feature ensures greater security during extreme weather and a longer system lifespan.

Compatible with Flat & Pitched Roofs



Corrosion-Resistant Materials

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

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.



Rail Selection

The following table was prepared in compliance with applicable engineering codes and standards. Values are based on the following criteria: ASCE 7-10, Roof Zone 1, Exposure B, Roof Slope of 7 to 27 degrees and Mean Building Height of 30 ft. Visit IronRidge.com for detailed span tables and certifications.

Load		Rail Span					
Slope (PSF)	Wind (MPH)	4'	6'-4"	8'	10'	12'	
None	100						
	120						
	140	XR10		XR100		XR1000	
	160						
10-20	100						
	120						
	140						
	160						
30	100						
	160						
40	100						
	160						
50-70	160						
	160						

MARK MOORHOUSE

SYSTEM INFORMATION:

DC SYSTEM SIZE: 56.45 kW
AC SYSTEM SIZE: 120.00 kW
DC/AC RATIO: 0.47
TILT: 26.56-60°
AZIMUTH: 180°

(30) ZNSHINE SOLAR 415W
ZXM7-SHLDD108-415
(80) ZNSHINE SOLAR 550W
ZXM7-SHLDD144-550
(4) SOLARK 30KW
30K-3P-208V (208V, 3PH)
(8) ESP-R12-E BESS RACKS
(64) ESP-5K-HL BESS MODULES
(30) AP SYSTEMS RSD-S-PLC
(4) SUN ACTION TRACKERS
IRON RIDGE RACKING

SITE INFORMATION:

ADDRESS: 7949 CR 11
INDEPENDENCE, MN 55371
AHJ: MN-CITY OF INDEPENDENCE
UTILITY: WRIGHT-HENNEPIN
CASE NUMBER: 12914
APADANA JOB NUMBER: ARS25025

REVISIONS

#	DESCRIPTION	DES	CHK	DATE
1	PERMIT PLAN	CH	INTL	04/30/2025
2	V2 PERMIT PLANS	CH		5/5/2025
3				
4				
5				
6				
7				



APADANA ENGINEERING

3401 NEVADA AVE N
NEW HOPE, MN 55427
612-803-9000
SOLAR@APADANATECHNOLOGY.COM

ENGINEER OF RECORD:

NOT FOR CONSTRUCTION

DRAWING TITLE:

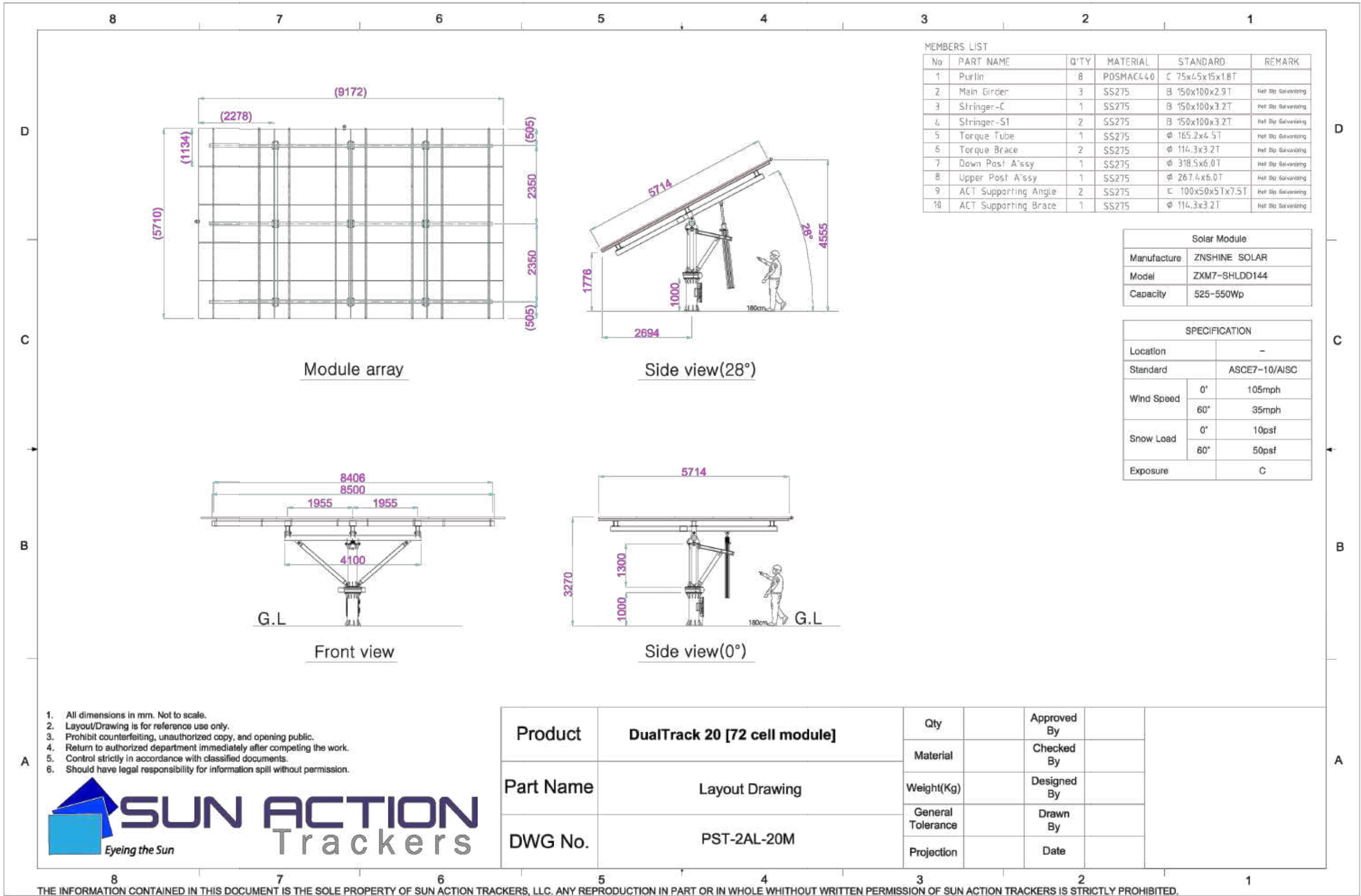
SPEC SHEETS

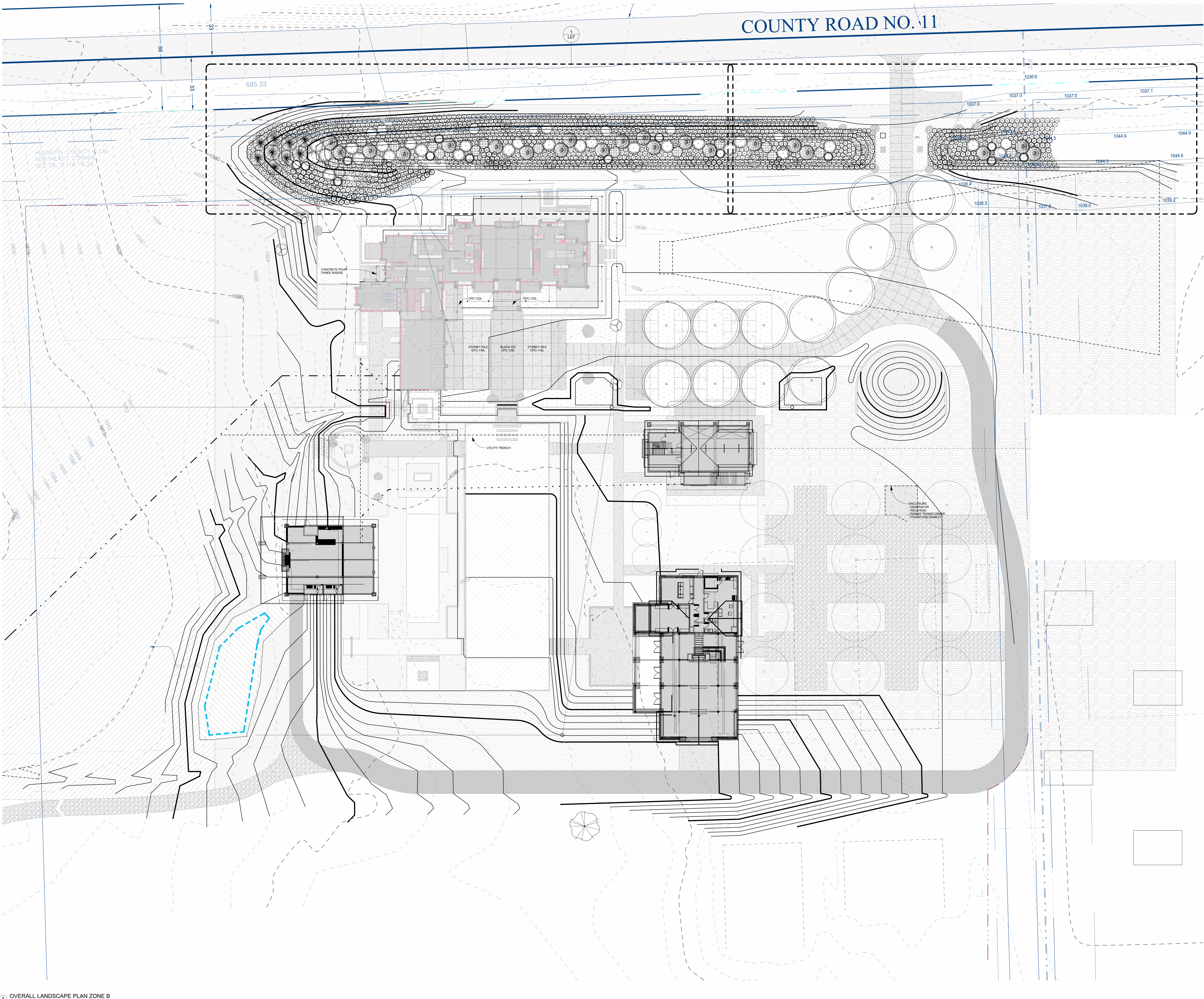
SCALE:

NTS

SHEET:

E5

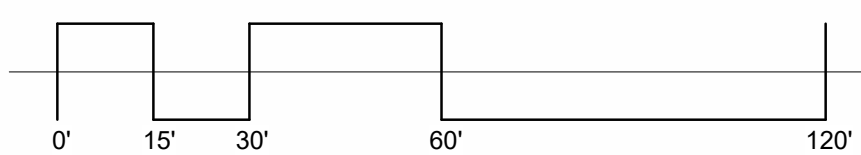




1 OVERALL LANDSCAPE PLAN ZONE B
1" = 20'-0"

KEYNOTES (NOT ALL KEYNOTES ON SHEET)
KEY CONTENT

GRADING LEGEND
-890- EXISTING CONTOURS
-890- PROPOSED CONTOURS
+ (890.00) PROPOSED SPOT ELEVATIONS



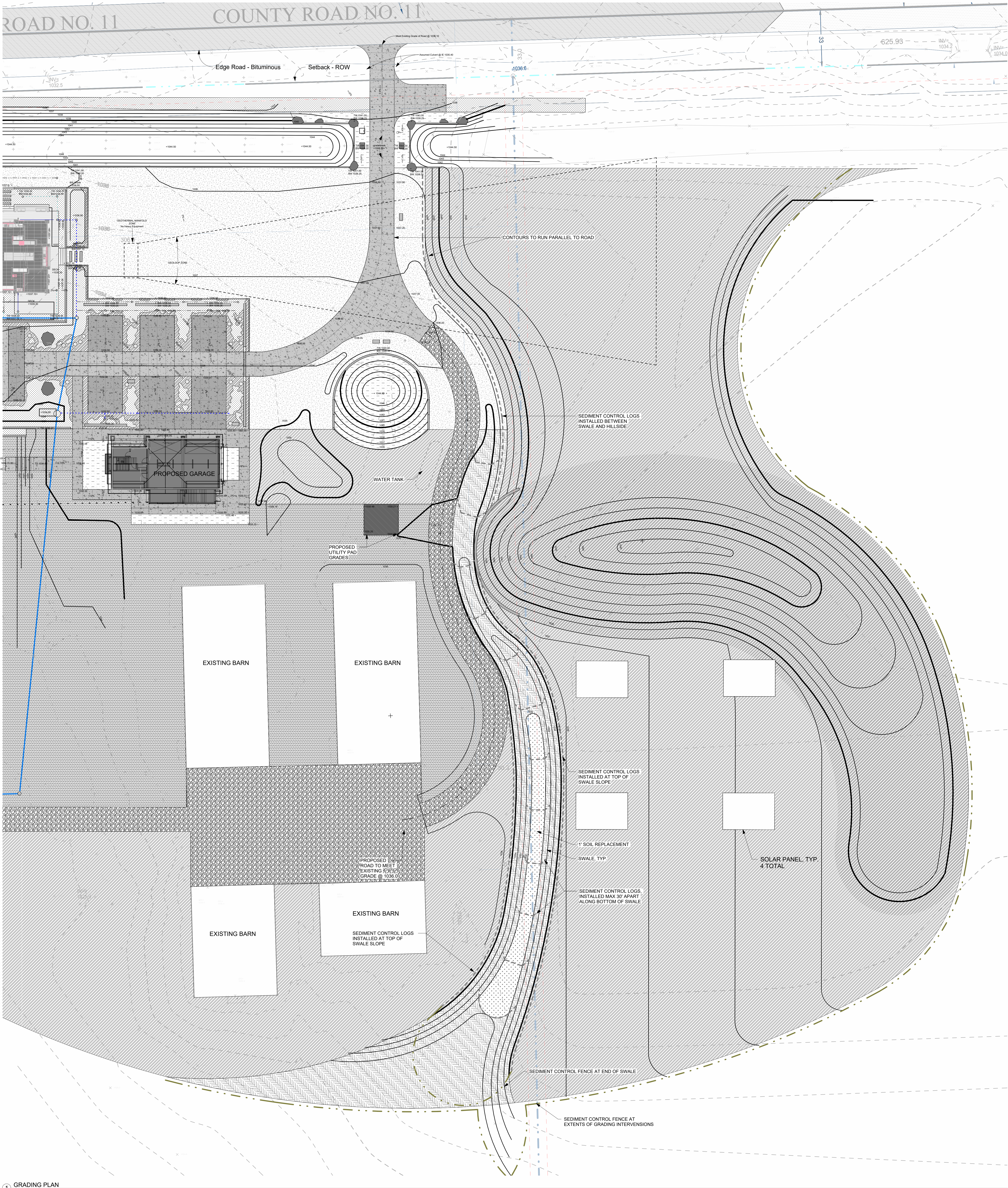
REVISIONS	

DESIGN
DEVELOPMENT

DATE: 11/12/2024
DRAWN: JW
CHECKED: MWK
APPROVED: RUH

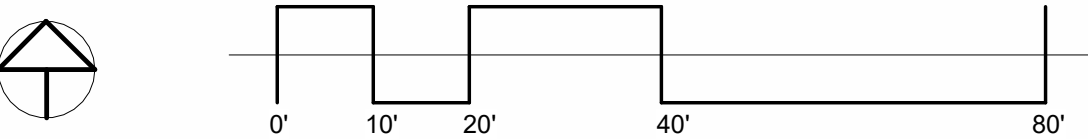
LANDSCAPE
ARCHITECT
11/12/2024
DATE
REGISTRATION #

SHEET:



GRADING LEGEND NOT ALL MATERIALS USED ON SHEET

L1 - FESCUE GRASS	GRAVEL ROADS EXISTING
L2 - TURF GRASS	GRAVEL ROADS PROPOSED
P1 - PLANT MASS 1 - BLUESTEM	CONCRETE EXISTING
P2 - PLANT MASS 2 - PARKING LOT	CONCRETE PROPOSED
P3 - PLANT MASS 3 - STORMWATER	
P4 - PLANT MASS 4 - GARAGE + ENTRY ARCH	SEDIMENT CONTROL LOG
P5 - PLANT MASS 5 - SEEDED GRASSES	SEDIMENT CONTROL FENCE
MNDOT 34-262 WET PRAIRIE - Seedmix	890 - EXISTING MINOR CONTOURS
MNDOT 35-241 MESIC PRAIRIE - Seedmix	890 - EXISTING MAJOR CONTOURS
CUSTOM WOODLAND - Seedmix	(890) - PROPOSED MINOR CONTOURS
	(890) - PROPOSED MAJOR CONTOURS



1 GRADING PLAN
1" = 20'-0"

I HEREBY CERTIFY THAT THIS SHEET WAS PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A QUALIFIED LANDSCAPE ARCHITECT UNDER THE LAW OF THE STATE OF MINNESOTA.

DATE: 05/07/2025
DRAWN BY: BJP/JAW
CHECKED BY: mk
APPROVED BY: mk

PROJECT: FarmLodge
NO: FarmLodge

SOLAR FIELD GRADING PLAN

FARMLODGE
7949 County Road 11
Independence, MN 55359

REVISIONS	
DATE	DESCRIPTION

DESIGN DEVELOPMENT

DATE: 05/07/2025
DRAWN BY: BJP/JAW
CHECKED BY: mk
APPROVED BY: mk

PROJECT: FarmLodge
NO: FarmLodge

FARMHOUSE RESIDENCE

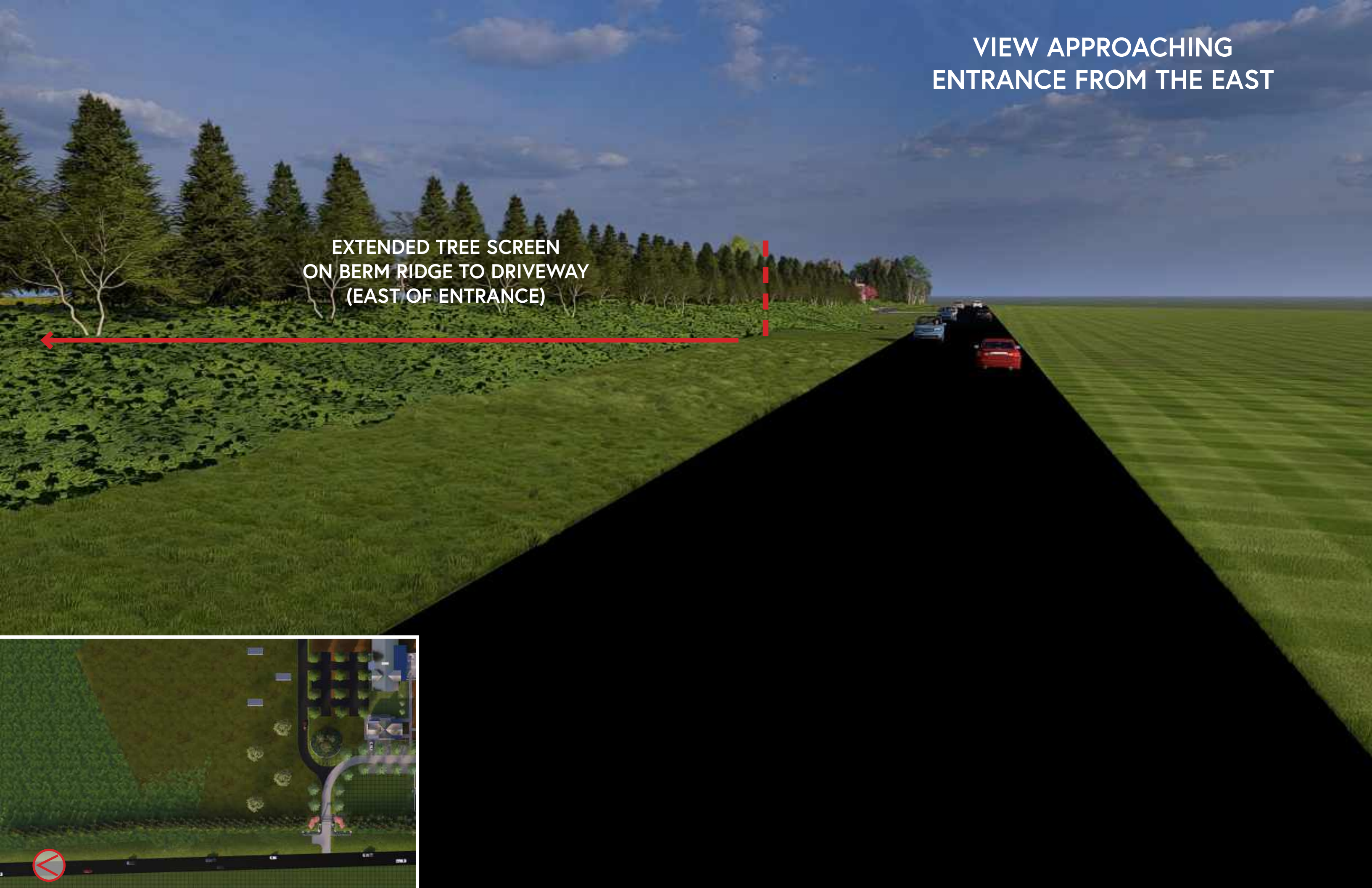
INDEPENDENCE, MN

SOLAR ARRAY PLANNING
NOVEMBER 2024



VIEW APPROACHING ENTRANCE FROM THE EAST

EXTENDED TREE SCREEN
ON BERM RIDGE TO DRIVEWAY
(EAST OF ENTRANCE)



VIEW APPROACHING
ENTRANCE FROM THE EAST

EXTENDED TREE SCREEN
ON BERM RIDGE TO DRIVEWAY
(EAST OF ENTRANCE)





**DIRECT VIEW AT PANELS FROM
COUNTY ROAD 11**

APPROXIMATE VIEW FROM
NEIGHBOR'S RESIDENCE
~300' FROM COUNTY ROAD 11



VIEW APPROACHING
ENTRANCE FROM THE WEST



VIEW APPROACHING
ENTRANCE FROM THE WEST



City of Independence

Request for a Conditional Use Permit to Construct a Ground Mounted Solar System on the Property located at 7975 County Road 6

<i>To:</i>	Planning Commission
<i>From:</i>	Mark Kaltsas, City Planner
<i>Meeting Date:</i>	June 24, 2025
<i>Applicant:</i>	Chloe Kirks
<i>Property Owner:</i>	Andrew Fairbairn
<i>Location:</i>	7975 County Road 6

Request:

Chloe Kirks (Applicant) and Andrew Fairbairn (Owner) are requesting the following actions for the property located at 7975 County Road 6 (PID No. 33-118-24-23-0001) in the City of Independence, MN.

- a. A conditional use permit (CUP) to allow a ground mounted solar system which is greater than 500 SF.

Property/Site Information:

The property is located on the south side County Road 6 and just east of the intersection of County Road 92 and County Road 6. The property has an existing home and several detached accessory structures. The property has the following characteristics:

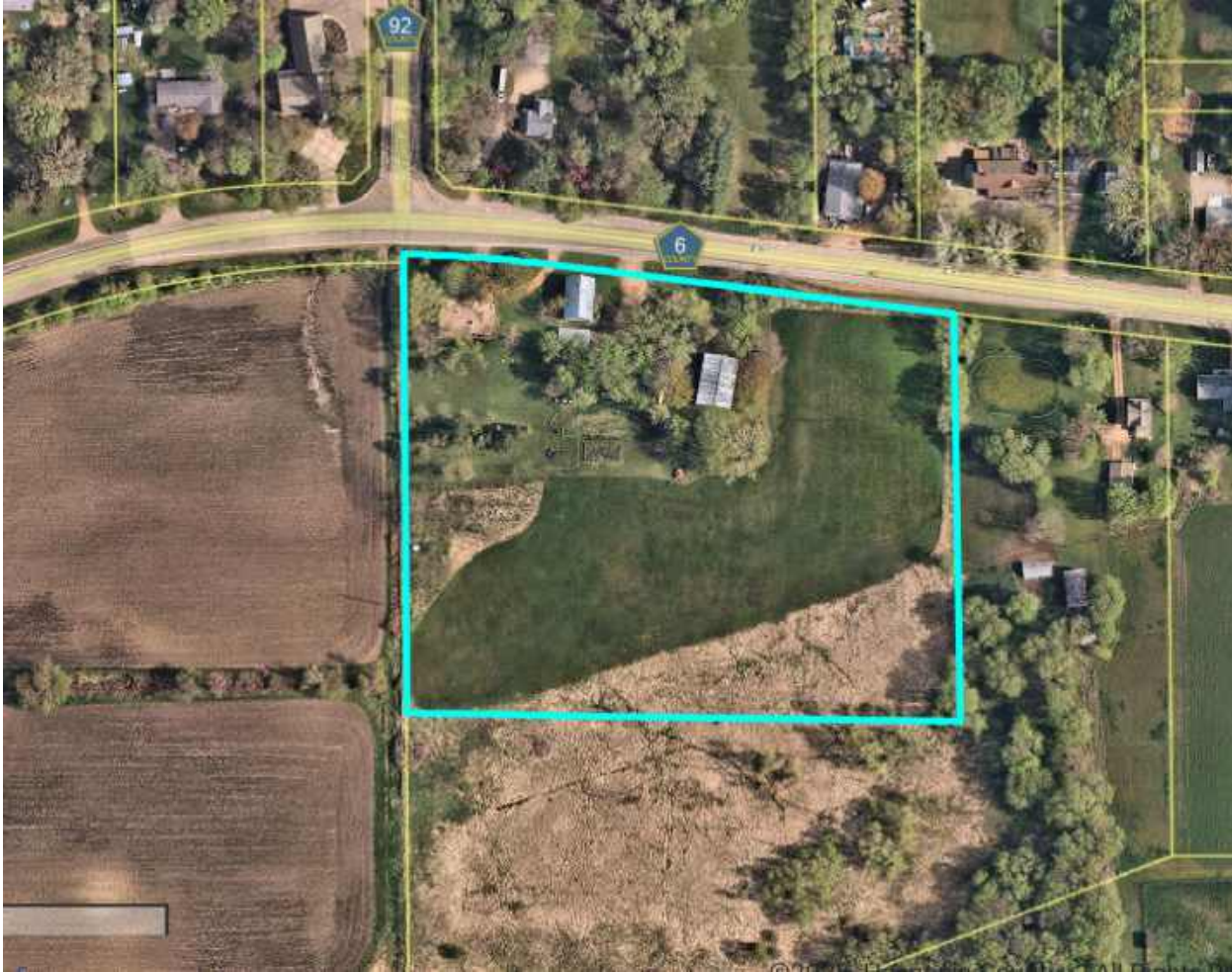
Property Information: **7975 County Road 6**

Zoning: *Agriculture*

Comprehensive Plan: *Agriculture*

Acreage: *7.73 acres*

Subject Property



Discussion:

The applicant approached the City about the possibility of installing a ground mounted solar system on the subject property. The City provided the applicant with the requirements and discussed the process for considering ground mounted solar systems that exceed 500 SF. All ground mounted solar systems require a conditional use permit. Ground mounted solar systems are limited to a maximum square footage of 500 square feet but can now be expanded up to a total of 2,500 SF if additional criteria are satisfied by the applicant. Ground mounted solar systems have the following requirements:

Subd. 5. Ground-Mounted Solar Energy Systems - shall conform to the following standards:

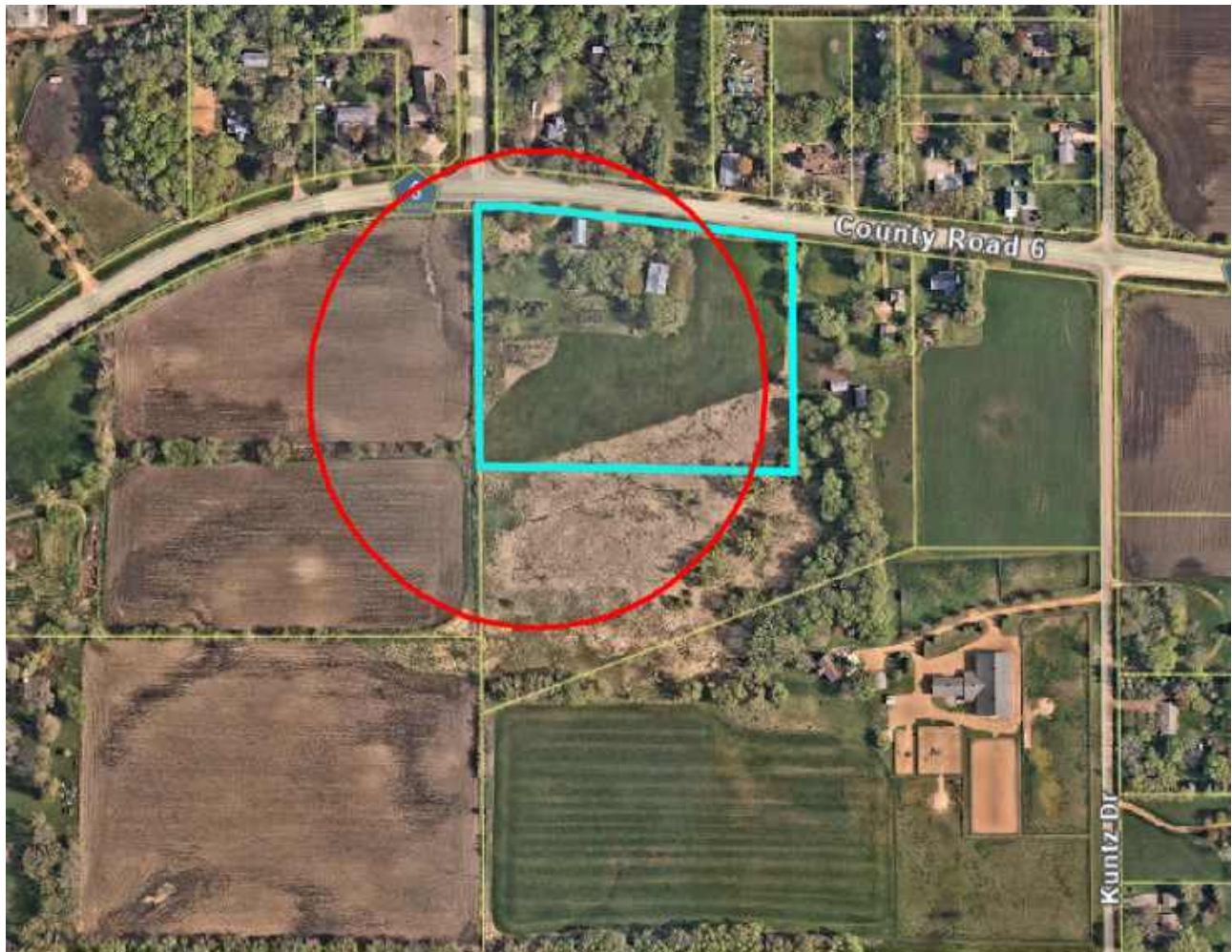
- (a) Ground-mounted systems shall only be allowed on a parcel with an existing principal structure.
- (b) Ground-mounted systems shall be located only in rear or side yards.

- (c) Ground-mounted systems shall not be located in the Shoreland Overlay District.
- (d) Ground-mounted systems shall be wholly screened from view from the public right of way and adjacent residential structures. Methods for screening shall include berming, fencing, landscaping and/or combination thereof.
- (e) Ground-mounted systems shall be located on a parcel of at least 2.5 acres.
- (f) Ground-mounted systems shall have a maximum area of 500 SF.
- (g) Ground mounted systems shall be setback a minimum of 50 feet from all property lines.
- (h) The maximum height for any component of the system shall be 15 feet.
- (i) Ground-mounted systems shall be in compliance with any applicable local, state and federal regulatory standards, including building, electrical and plumbing codes.
- (j) Ground-mounted systems and their support structures shall be designed by a certified professional to meet applicable professional standards for the local soil and climate conditions.
- (k) The city may permit a ground mounted solar energy system which exceeds 500 SF, if the following additional criteria are wholly satisfied:
 - 1. The ground mounted solar system does not exceed 2,500 SF.
 - 2. The ground mounted solar energy system is located on a property that is 5 acres or larger.
 - 3. The ground mounted solar energy system shall be located a minimum of 100 LF from any property line and 500 LF from any residential structure on an adjoining property.
- (l) The city will also consider the following additional criteria to determine if a ground mounted solar energy system will be permitted to exceed the maximum size limitations established in this code:
 - 1. The ground mounted solar energy system is not visible from any public street or from adjacent properties. Screening can be used to meet this standard.
 - 2. The applicant has provided with the application, the written consent of the owners of privately or publicly owned real estate directly abutting the premises for which the permit is being requested.

3. The city finds that granting permission for a ground mounted solar energy system, that exceeds 500 SF, will not be detrimental to the public or take away from the reasonable use and enjoyment of the surrounding property.

The proposed ground mounted solar system would be located on a portion of the property that is to the south of the existing home. The proposed solar system would be comprised of one (1) ground mounted array. The total square footage of the array is proposed to be 944 SF. The array would be setback approximately 109 feet from the west (side) property line and 186 feet from the south property line (rear yard). The required setback from any property line is 100 feet.

The proposed array is also required to be located a minimum of 500 feet from any residential structure on a surrounding property. The proposed array would be located approximately 525 feet from the residential property to the north (across CSAH 6), 750 feet from the residential structure on the property to the east and 700 feet from the residential structure on the property to the southeast (see image below showing 500-foot radius).



The proposed ground mounted system would have a maximum height of approximately 12' to the top of the highest portion of the panels. The City requires systems to be wholly screened from view of the public right of way and adjacent residential structures. The proposed array is located on the property in a location that is approximately 15 feet lower than the centerline of County Road 6 (see below). There is also existing vegetation that will block the view from County Road 6 and adjacent properties to the east. The distance from the proposed solar arrays to the County Road 6 right of way is approximately 450 feet and there is a stand of trees that runs along the road.

View Looking SE Towards Property from CSAH 6



The applicant has provided the City with a site plan and details of the proposed solar system. The system is comprised 44 panels. The panels are oriented to the south and will be installed at a 35-degree angle to the ground. The proposed panels are mounted to a galvanized metal racking system. The racking system is proposed to be secured to the ground using pilings.

The criteria for granting a conditional use permit are clearly delineated in the City's Zoning Ordinance (Section 520.11 subd. 1, a-i) as follows:

1. *The conditional use will not adversely affect the health, safety, morals and general welfare of occupants of surrounding lands.*
2. *The proposed use will not have a detrimental effect on the use and enjoyment of other property in the immediate vicinity for the proposes already permitted or on the normal and orderly development and improvement of surrounding vacant property for uses predominant in the area.*
3. *Existing roads and proposed access roads will be adequate to accommodate anticipated traffic.*
4. *Sufficient off-street parking and loading space will be provided to serve the proposed use.*
5. *The proposed conditional use can be adequately serviced by public utilities or on-site sewage treatment, and sufficient area of suitable soils for on-site sewage treatment is available to protect the city form pollution hazards.*

6. *The proposal includes adequate provision for protection of natural drainage systems, natural topography, tree growth, water courses, wetlands, historic sites and similar ecological and environmental features.*
7. *The proposal includes adequate measures to prevent or control offensive odor, fumes, dust, noise, or vibration so that none of these will constitute a nuisance.*
8. *The proposed condition use is consistent with the comprehensive plan of the City of Independence.*
9. *The proposed use will not stimulate growth incompatible with prevailing density standards.*

The proposed ground mounted solar system exceeds the City's maximum size for ground mounted solar systems; however, the city adopted provisions to allow systems to exceed 500 SF if additional conditions can be satisfied by the applicant. The energy generated by this system is estimated to be 16.89 kW (AC). The applicant has noted that the proposed system will generate enough electricity to support the electrical loads of the existing residence. There are a few additional considerations that should be noted by the City:

- The City recently updated the solar energy ordinance to allow for ground mounted systems that are larger than 500 SF if they can meet the additional criteria provided. The applicant has demonstrated that they can meet the additional criteria.
- The proposed system meets the location, setback and maximum height requirements of the zoning ordinance.
- There are no surrounding properties that appear to have any visibility into the existing site. The site sits higher than many of the surrounding properties and is buffered around the permitter by vegetative cover. The visibility of this system from the County Road 6 right of way is generally screened.
- The applicant did not provide any written consent from surrounding property owners, but it should be noted that all were notified of the public hearing.
- No additional screening is proposed by the applicant.

The City will need to consider the requested CUP as presented and determine if it meets applicable criteria and can be supported. The orientation of the proposed solar system and the relationship to the surrounding properties helps to aid in the mitigation of potential impacts relating to the ground mounted solar array.

Neighbor Comments:

The City has not received any comments or questions relating to the requested CUP.

Recommendation:

Staff is seeking a recommendation from the Planning Commission pertaining to the request for a conditional use permit with the following findings and conditions:

1. The proposed conditional use permit request meets all applicable conditions and restrictions stated in Chapter V, Section 510, Zoning, in the City of Independence Zoning Ordinance.
2. The conditional use permit will include the following conditions:
 - a) The conditional use permit will allow a 944 SF ground mounted solar system that is installed in accordance with the approved plans attached hereto as Exhibit A.
 - b) The ground mounted solar system shall be constructed in accordance with all applicable zoning code, building code and other applicable standards.
3. The applicant shall pay for all costs associated with the review and recording of the resolution granting approval of the conditional use permit.

Attachments:

1. Application
2. Ground Mounted Solar Site Plan
3. Ground Mounted Solar Plans and Details



**CITY OF
INDEPENDENCE
MINNESOTA**

Date Submitted: 05-02-2025

Applicant Information

Name: CHLOE KIRKS
Address: 101 isanti parkway ne
Isanti, Minnesota 55040
Primary Phone: 6124124127
Email: chloe@wolfriverelectric.com

Owner Information

Name: Andrew Fairbairn
Address: 7975 County Road 6
Independence,
Minnesota 55359
Primary Phone: (763) 355-2446
Email: asfairbairn4@gmail.com

Property Address:

PID:

Planning Application Type: Conditional Use Permit

Description:

Supporting Documents: Building Plans, Construction Plans

Signature:

PHOTOVOLTAIC GROUND MOUNT SYSTEM

44 MODULES-GROUND MOUNTED - 17.600 kW DC, 16.896 kW AC

7975 COUNTY ROAD 6, INDEPENDENCE, MN 55359

PHOTOVOLTAIC SYSTEM SPECIFICATIONS:

SYSTEM SIZE: 17.600 kW DC
16.896 kW AC
MODULE TYPE & AMOUNT: (44) WAAREE AKA SERIES WSMI-400 (400W)
MODULE DIMENSIONS: (LxWxH) 75.7"x40.8"x1.37"
INVERTER: (44) ENPHASE IQ7HS-65-M-US (340V, 1 PHASE)
BATTERY: (01) TESLA POWERWALL 3 BATTERY
INTERCONNECTION METHOD: WHOLE HOME BACKUP

GENERAL STRUCTURAL NOTES:

- THE SOLAR PANELS ARE TO BE MOUNTED TO THE GROUND USING SUNMODO GROUND MOUNT RACKING.
- DESIGN CRITERIA:
 - GROUND SNOW LOAD = 50 PSF
 - WIND SPEED = 105 MPH
 - EXPOSURE CATEGORY = C
 - RISK CATEGORY = I

AUTHORITIES HAVING JURISDICTION:

BUILDING: INDEPENDENCE CITY
ZONING: INDEPENDENCE CITY
UTILITY: XCEL ENERGY
UTILITY METER NO: N/A

SHEET INDEX:

PV 0.0: COVER SHEET
PV 0.1: PLOT PLAN
PV 1.0: SITE PLAN
PV 1.1: ATTACHMENT & STRING LAYOUT
PV 1.2: EQUIPMENT ELEVATION
S 1.0: MOUNT DETAILS
S 1.1: MOUNT DETAILS
E 1.1: 3-LINE DIAGRAM
E 1.1(A): 3-LINE DIAGRAM
E 1.2: WIRE CALCULATION
E 1.3: WARNING LABELS
E 1.4: PLACARD
D 1.1: EQUIPMENT SPEC SHEET

GOVERNING CODES

ALL WORK SHALL CONFORM TO THE FOLLOWING CODES

- 2023 NATIONAL ELECTRICAL CODE
- 2020 MINNESOTA RESIDENTIAL CODE
- 2020 MINNESOTA BUILDING CODE
- 2024 MINNESOTA ENERGY CODE
- 2020 MINNESOTA ACCESSIBILITY CODE
- 2020 MINNESOTA MECHANICAL AND FUEL GAS CODE
- 2020 MINNESOTA PLUMBING CODE
- 2020 MINNESOTA STATE FIRE CODE
- ANY OTHER LOCAL AMENDMENTS

GENERAL ELECTRIC NOTES:

- ALL COMPONENTS ARE UL LISTED AND NEC CERTIFIED, WHERE WARRANTED.
- THE SOLAR PV SYSTEM WILL BE INSTALLED IN ACCORDANCE WITH ARTICLE 690 OF THE NEC 2023.
- THE UTILITY INTERCONNECTION APPLICATION MUST BE APPROVED AND PV SYSTEM INSPECTED PRIOR TO PARALLEL OPERATION.
- ALL CONDUCTORS OF A CIRCUIT, INCLUDING THE EGC, MUST BE INSTALLED IN THE SAME RACEWAY, OR CABLE, OR OTHERWISE RUN WITH THE PV ARRAY CIRCUIT CONDUCTORS WHEN THEY LEAVE THE VICINITY OF THE PV ARRAY.
- WHERE METALLIC CONDUIT CONTAINING DC CONDUCTORS IS USED INSIDE THE BUILDING, IT SHALL BE IDENTIFIED AS "CAUTION: SOLAR CIRCUIT" EVERY 10 FT.
- HEIGHT OF THE AC DISCONNECT SHALL NOT EXCEED 6'-7" PER NEC CODE 240.24.
- A GROUNDING ELECTRODE SYSTEM IN ACCORDANCE WITH CEC 690.47 AND 250.50 THROUGH 60 AND 250.166 SHALL BE PROVIDED. PER NEC GROUNDING ELECTRODE SYSTEM OF EXISTING BUILDING MAY BE USED AND BONDED TO THE SERVICE ENTRANCE. IF EXISTING SYSTEM IS INACCESSIBLE OR INADEQUATE A SUPPLEMENTAL GROUNDING ELECTRODE WILL BE USED AT THE INVERTER LOCATION CONSISTING OF A UL LISTED 8 FT. GROUND ROD WITH ACORN CLAMP. GROUNDING ELECTRODE CONDUCTORS SHALL BE NO LESS THAN #8 AWG AND NO LARGER THAN #6 AWG COPPER AND BONDED TO THE EXISTING GROUNDING ELECTRODE TO PROVIDE FOR A COMPLETE SYSTEM.
- PHOTOVOLTAIC MODULES ARE TO BE CONSIDERED NON-COMBUSTIBLE.
- ALL WIRING MUST BE PROPERLY SUPPORTED BY DEVICES OR MECHANICAL MEANS DESIGNED AND LISTED FOR SUCH USE. WIRING MUST BE PERMANENTLY AND COMPLETELY HELD OFF THE ROOF SURFACE.
- ALL SINAGE TO BE PLACED IN ACCORDANCE WITH THE LOCAL BUILDING CODE. IF EXPOSED TO SUNLIGHT, IT SHALL BE UV RESISTANT. ALL PLAQUES AND SINAGE WILL BE INSTALLED AS REQUIRED BY THE NEC AND AHJ.
- AS SPECIFIED BY THE AHJ, EQUIPMENT USED IN UNGROUNDED SYSTEMS LABELED ACCORDING TO NEC 690.35(F).
- INVERTER(S) USED IN UNGROUNDED SYSTEM SHALL BE LISTED FOR THIS USE (NEC 690.35(G)).
- THE INSTALLATION OF EQUIPMENT AND ALL ASSOCIATED WIRING AND INTERCONNECTION SHALL BE PERFORMED ONLY BY QUALIFIED PERSONS (NEC 690.4(C)).
- ALL OUTDOOR EQUIPMENT SHALL BE NEMA 3R RATED (OR BETTER), INCLUDING ALL ROOF MOUNTED TRANSITION BOXES AND SWITCHES.
- ALL EQUIPMENT SHALL BE PROPERLY GROUNDED AND BONDED IN ACCORDANCE WITH NEC ARTICLE 250.
- SYSTEM GROUNDING SHALL BE IN ACCORDANCE WITH NEC 690.41.
- PV SYSTEM CIRCUITS INSTALLED ON OR IN BUILDINGS SHALL INCLUDE A RAPID SHUTDOWN FUNCTION IN ACCORDANCE WITH NEC 690.12.
- DISCONNECTING MEANS SHALL BE LOCATED IN A VISIBLE, READILY ACCESSIBLE LOCATION WITHIN THE PV SYSTEM EQUIPMENT OR A MAXIMUM OF 10 FEET AWAY FROM THE SYSTEM (NEC 690.13(A)).
- ALL WIRING METHODS SHALL BE IN ACCORDANCE WITH NEC 690.31.
- WORK CLEARANCES AROUND ELECTRICAL EQUIPMENT WILL BE MAINTAINED PER NEC 110.26(A)(1), 110.26(A)(2) AND 110.26(A)(3).
- ELECTRICAL CONTRACTOR TO PROVIDE CONDUIT EXPANSION JOINTS AND ANCHOR CONDUIT RUNS AS REQUIRED PER NEC.

44.989283, -93.726809

44.989283, -93.726809



1

SATELLITE VIEW

PV 0.0

SCALE: NTS

2

VICINITY MAP

PV 0.0

SCALE: NTS

Elizabeth Bauer
Elizabeth Bauer

Sandy Hanebunn
Sandy Hanebunn



WOLF RIVER ELECTRIC
101 HANF PARKWAY AS, SUITE C
SHUTT, MN 55354
ELECTRICAL LICENSE #A177690
BUILDING LICENSE #B177691
CONTACT: (612) 225-4662
contact@wolfriverelectric.com

REVISIONS		
Description	Date	Rev
QAD 4	APR 30, 2023	00
QAD 7	APR 30, 2023	01
QAD 8	APR 30, 2023	01
QAD 9	MAY 15, 2023	01

Signature with Seal

Project Name &
Address

ANDREW FAIRBAIRN RESIDENCE
7975 COUNTY ROAD 6, INDEPENDENCE, MN 55359
AHJ: INDEPENDENCE CITY
UTILITY: XCEL ENERGY
CASE NO: 0609251

DESIGNED BY:



TRIVENT CAD SOLUTION

Sheet Name

COVER SHEET

Sheet Size

ANSI B

11" X 17"

Sheet Number

PV 0.0

NOTE:

1. THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY.
2. ALL TESTING SHALL BE PERFORMED BY QUALIFIED PERSONNEL, WITH PROPER PERSONAL PROTECTIVE EQUIPMENT
3. 24/7 UNESCORTED KEYLESS ACCESS SHALL BE PROVIDED TO ALL XCEL ENERGY EQUIPMENT
4. NOTE ALL THE APPLICABLE NEC CODES
5. NESC CLEARANCE REQUIREMENTS IN RELATION TO XCEL ENERGY OWNED FACILITIES.
6. SHOW ALL THE SYSTEMS INCLUDING STORAGE, EXISTING AND NEW (IF APPLICABLE)

SYSTEM LEGEND

LOT: 7.70 ACRES

PARCEL: 3311824230091

— PROPERTY LINE
— DRIVEWAY



WOLF RIVER ELECTRIC
15150 COUNTY ROAD 6, SUITE B
MART, MN 55050
ELECTRICAL LICENSE # 0477069
BUSINESS LICENSE # 0072021
CONTACT: (763) 226-6600
wolfriver@wolfriverelectric.com

REVISIONS

Description	Date	Rev
CHD 6	APR 29, 2025	06
CHD 7	APR 30, 2025	06
CHD 8	APR 30, 2025	07
CHD 9	MAY 16, 2025	08

Signature with Seal

Project Name & Address

ANDREW FAIRBAIN RESIDENCE
7975 COUNTY ROAD 6, INDEPENDENCE, MN 55359
UTILITY: XCEL ENERGY
CASE NO: 00056251

DESIGNED BY:



TRIVENT CAD SOLUTION

Sheet Name

PLOT PLAN

Sheet Size

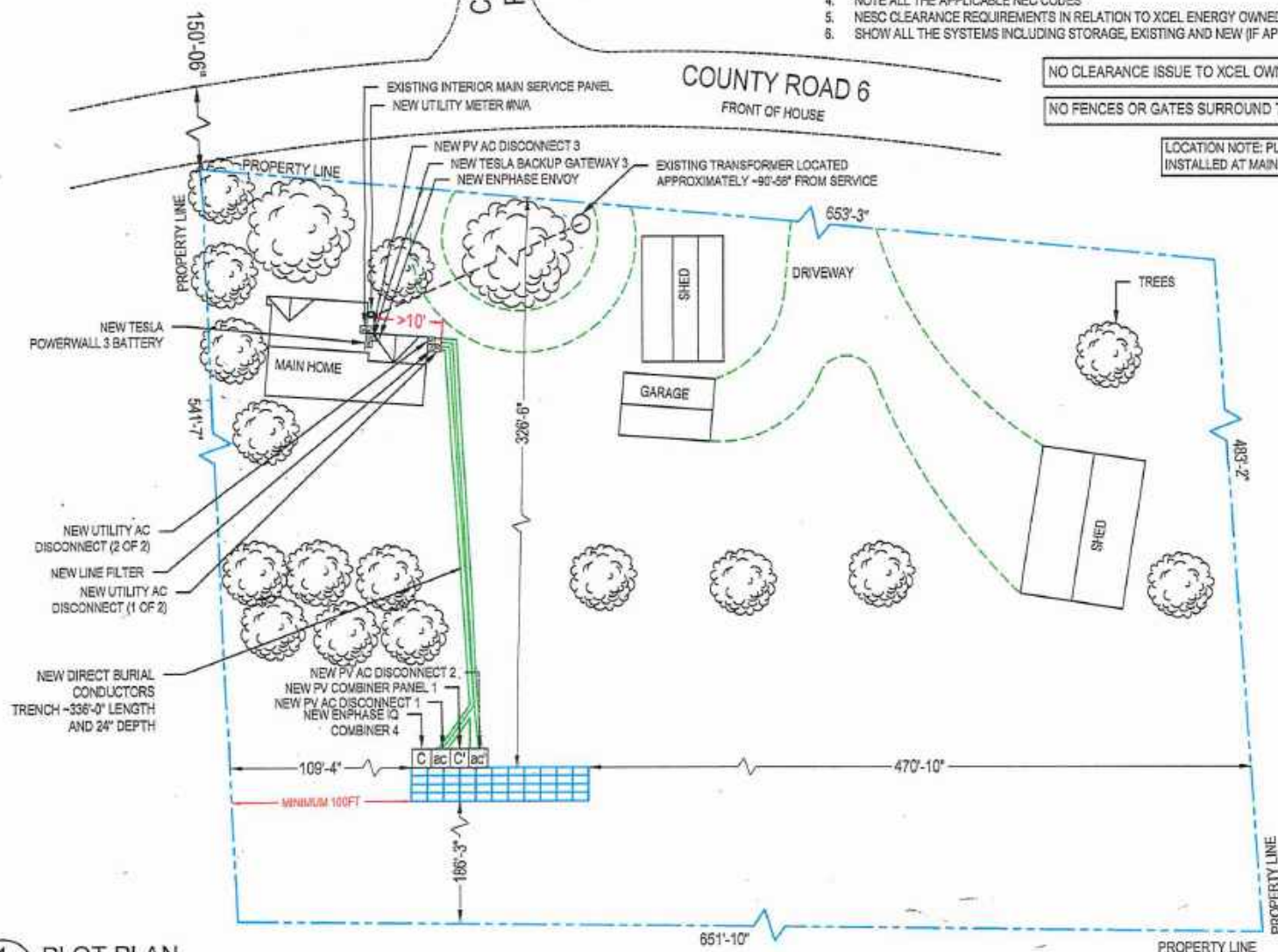
**ANSI B
11" X 17"**

Sheet Number

PV 0.1

COUNTY ROAD 6
FRONT OF HOUSE

COUNTY ROAD 92



NO CLEARANCE ISSUE TO XCEL OWNED EQUIPMENT

NO FENCES OR GATES SURROUND THE PROPERTY

LOCATION NOTE: PLACARD TO BE INSTALLED AT MAIN UTILITY METER



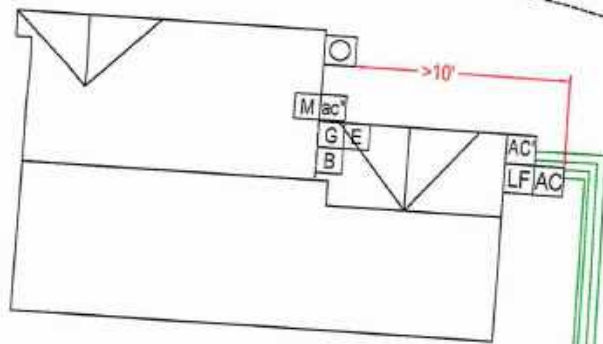
1 PLOT PLAN
SCALE: 3/16" = 1'-0"

COUNTRY ROAD 92

COUNTY ROAD 6
FRONT OF HOUSE

- NOTE:**
1. THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY!
 2. ALL TESTING SHALL BE PERFORMED BY QUALIFIED PERSONNEL, WITH PROPER PERSONAL PROTECTIVE EQUIPMENT
 3. 24/7 UNESCORTED KEYLESS ACCESS SHALL BE PROVIDED TO ALL XCEL ENERGY EQUIPMENT
 4. NOTE ALL THE APPLICABLE NEC CODES
 5. NESC CLEARANCE REQUIREMENTS IN RELATION TO XCEL ENERGY OWNED FACILITIES.
 6. SHOW ALL THE SYSTEMS INCLUDING STORAGE, EXISTING AND NEW (IF APPLICABLE)

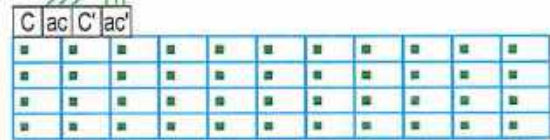
NO CLEARANCE ISSUE TO XCEL OWNED EQUIPMENT



NO CLEARANCE ISSUE TO XCEL OWNED EQUIPMENT

LOCATION NOTE: PLACARD TO BE
INSTALLED AT MAIN UTILITY METER

NEW DIRECT BURIAL CONDUCTORS
TRENCH ~336'-0" LENGTH AND 24" DEPTH



SYSTEM LEGEND

- NEW UTILITY METER #WA
- EXISTING INTERIOR MAIN SERVICE PANEL
- NEW UTILITY AC DISCONNECT (1 OF 2)
- NEW UTILITY AC DISCONNECT (2 OF 2)
- NEW PV AC DISCONNECT 1
- NEW PV AC DISCONNECT 2
- NEW PV AC DISCONNECT 3
- NEW ENPHASE IQ COMBINER 4
- NEW PV COMBINER PANEL 1
- NEW TESLA POWERWALL 3 BATTERY
- NEW TESLA BACKUP GATEWAY 3
- NEW ENPHASE IQ ENVY
- NEW LINE FILTER
- 44 NEW WAAREE ARKA SERIES WSM21-400 (400W) MODULES NEW 44 - ENPHASE IQ7HS-66-M-US (240V, 1 PHASE) INVERTERS, MOUNTED ON THE BACK OF EACH MODULE.
- = TRENCHED CONDUCTORS

ARRAY SECTIONS

ARRAY #1: MODULE - 44
SLOPE - 35°
AZIMUTH - 180°



TOTAL MODULE AREA: 944ft²



REVISIONS		
Drawn By	Date	Rev
CHD 6	APR. 29, 2025	01
CHD 7	APR. 30, 2025	02
CHD 8	APR. 30, 2025	03
CHD 9	MAY. 16, 2025	04

Signature with Seal

Project Name &
Address

ANDREW FAIRBAIRN RESIDENCE
7975 COUNTY ROAD 6, INDEPENDENCE, MN 55359
AND INDEPENDENCE CITY
UTILITY: XCEL ENERGY
CASE NO: 06092751

DESIGNED BY:
TRIVENT CAD:
TRIVENT CAD SOLUTION

Sheet Name
SITE PLAN

Sheet Size
ANSI B
11" X 17"

Sheet Number
PV 1.0



CIRCUIT(S)

CIRCUIT #01	
#MODULE - 10	
CIRCUIT #02	
#MODULE - 10	
CIRCUIT #03	
#MODULE - 08	
CIRCUIT #04	
#MODULE - 08	
CIRCUIT #05	
#MODULE - 08	

WOLF RIVER ELECTRIC
 101 SOUTH PARKWAY NE, SUITE 6
 SAINT ANGELO, TEXAS 76903
 ELECTRICAL LICENSE #0077000
 BUILDING LICENSE #0077001
 CONTACT: (817) 228-6000
 contact@wolfriverelectric.com

REVISIONS

Description	Date	Rev
CAD 4	APR. 23, 2023	05
CAD 7	APR. 30, 2023	08
CAD 8	APR. 30, 2023	07
CAD 9	MAY. 18, 2023	09

Signature with Seal

Project Name & Address
ANDREW FAIRBAIRN RESIDENCE
 7975 COUNTY ROAD 6, INDEPENDENCE, MN 55359
 AND INDEPENDENCE CITY
 UTILITY: XCEL ENERGY
 CASE NO. 00092751

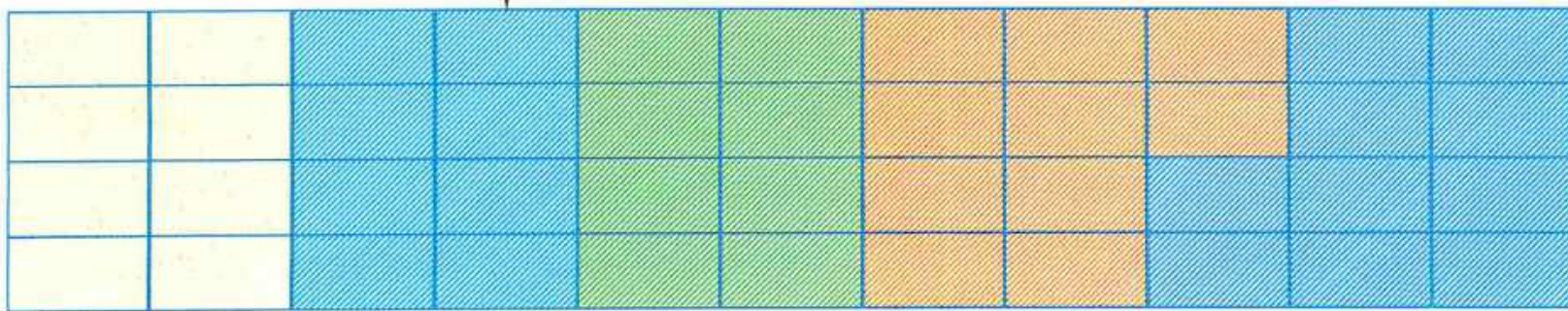
DESIGNED BY:
 TRIVENTCAD

TRIVENTCAD SOLUTION
 Sheet Name
ATTACHMENT & STRING LAYOUT

Sheet Size
**ANSI B
 11" X 17"**

Sheet Number
PV 1.1

GROUND ARRAY #1
 (44) WAAREE ARKA SERIES WSM01-400 [400W]
 SLOPE: 35°
 AZIM.: 183°



TOTAL MODULE AREA: 944ft²

REVISIONS		
Description	Date	Rev
CHG 1	APR 20, 2023	01
CHG 7	APR 20, 2023	01
CHG 8	APR 30, 2023	07
CHG 9	MAY 16, 2023	08

Signature With Seal

Project Name & Address

ANDREW FAIRBAIN RESIDENCE
 7975 COUNTY ROAD 6, INDEPENDENCE, MN 55359
 ANL INDEPENDENCE CITY
 UTILITY: XCEL ENERGY
 CASE NO: 00092751

DESIGNED BY:

 TRIVENTCAD
 TRIVENT CAD SOLUTION

Sheet Name
EQUIPMENT ELEVATION

Sheet Size
**ANSI B
 11" X 17"**

Sheet Number
PV 1.2

AT PV ARRAY

INTERIOR WALL

EXTERIOR WALL

INTERIOR WALL

