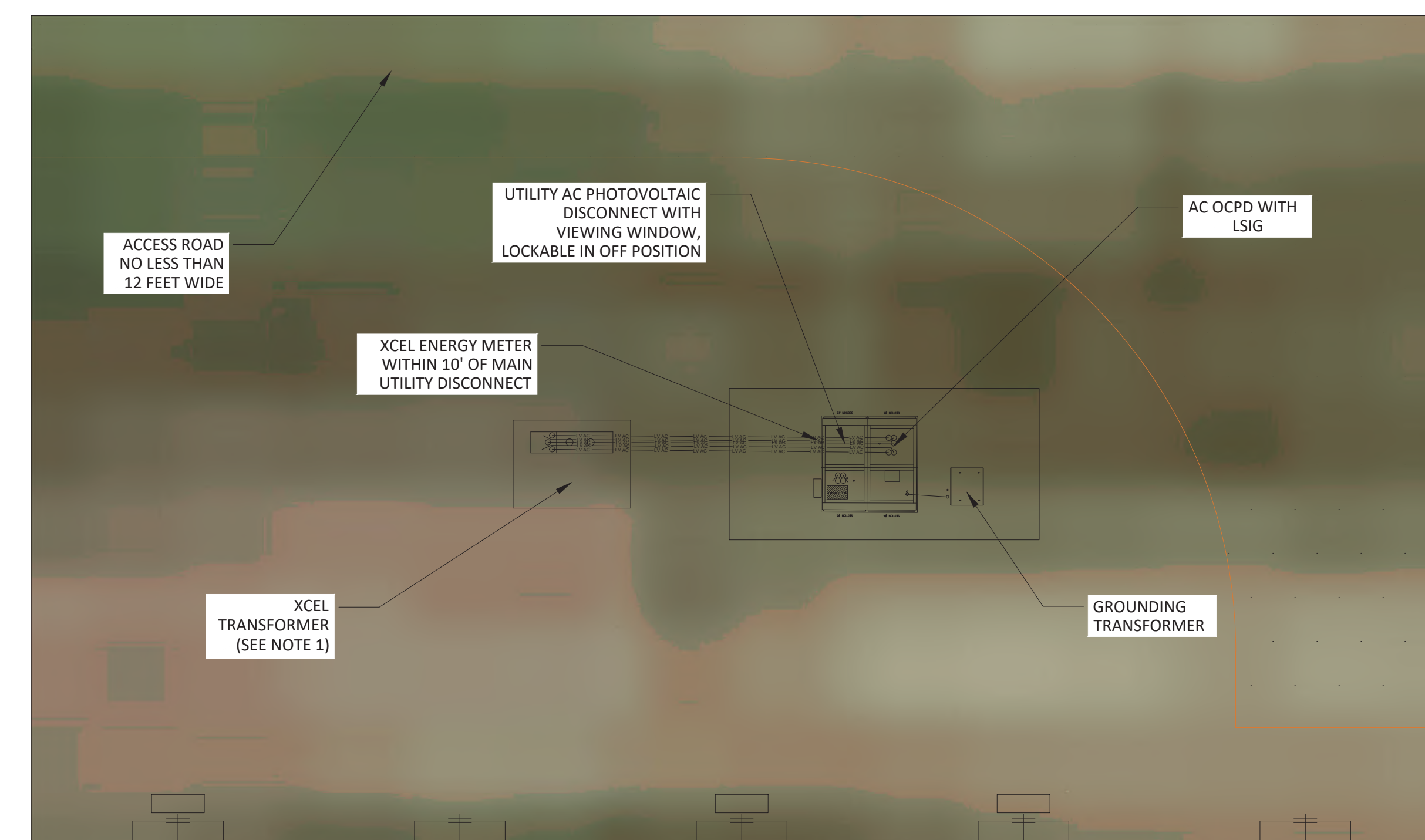




1 SITE PLAN
E100 SCALE: 1"=130'



2 OVERALL VIEW
E100 SCALE: 1"=300'



3 EQUIPMENT PAD & PoC
E100 SCALE: 1:8

PROJECT SUMMARY

DC SYSTEM SIZE:	1,440,000 WATTS
AC SYSTEM SIZE:	1,000,000 WATTS
MODULES TYPES:	CANADIAN SOLAR BIFACIAL MODULES 400Wp (CS3U-400MB-AG)
TOTAL # OF MODULES:	3600
TOTAL # OF STRINGS:	200
MODULES PER STRING:	18
INVERTER TYPE:	CHINT POWER 50KWAC (CPS SCA50KTL-DO/US-480)
TOTAL # OF INVERTERS:	20
TOTAL # OF TRACKERS:	40
MODULES PER TRACKER:	90
ROW-ROW SPACING:	20 Ft

PROJECT INFORMATION

CUSTOMER:
NOVEL STERNER SOLAR LLC

SITE ADDRESS:
(44.977289, -94.050439) WINSTEAD, MN 55395, McLEOD

CASE # 03504506
PID: 140021000

- NOTES**
1. TRANSFORMER PRECAST PAD OR POURED IN PLACE CONCRETE PAD INSTALLED BY CUSTOMER. SEE AND USE XCEL ENERGY STANDARD FOR ELECTRICAL INSTALLATION AND USE.
 2. NES TO INSTALL TRANSFORMER FOUNDATION, LOW VOLTAGE CABLE, AND LV AND MV CONDUITS. XCEL TO INSTALL MV UNDERGROUND CONDUCTORS, POLES AND ASSOCIATED HARDWARE, AND OVERHEAD DISTRIBUTION LINE.
 3. ACCESSIBLE, LOCKABLE DISCONNECT WITH VISIBLE BLADES . SHALL BE WITHIN 10' OF UTILITY METER.
 4. 24/7 UNESCORTED KEYLESS ACCESS SHALL BE PROVIDED TO ALL XCEL ENERGY EQUIPMENT.



Client

Project
NOVEL STERNER SOLAR LLC

Location
(44.977289, -94.050439)
WINSTEAD, MN 55395, McLEOD

CASE # 03504506

Certification

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

Durak Evrim Ercan
DURAK EVRIM ERCAN, P.E.
Registration No. 57332 Date: 07/01/2021
AE JOB # 1364-MN

Summary

Designed: AC Drawn: HH
Approved: DEE Book / Page:
Phase: IC Initial Issue: 07/01/21

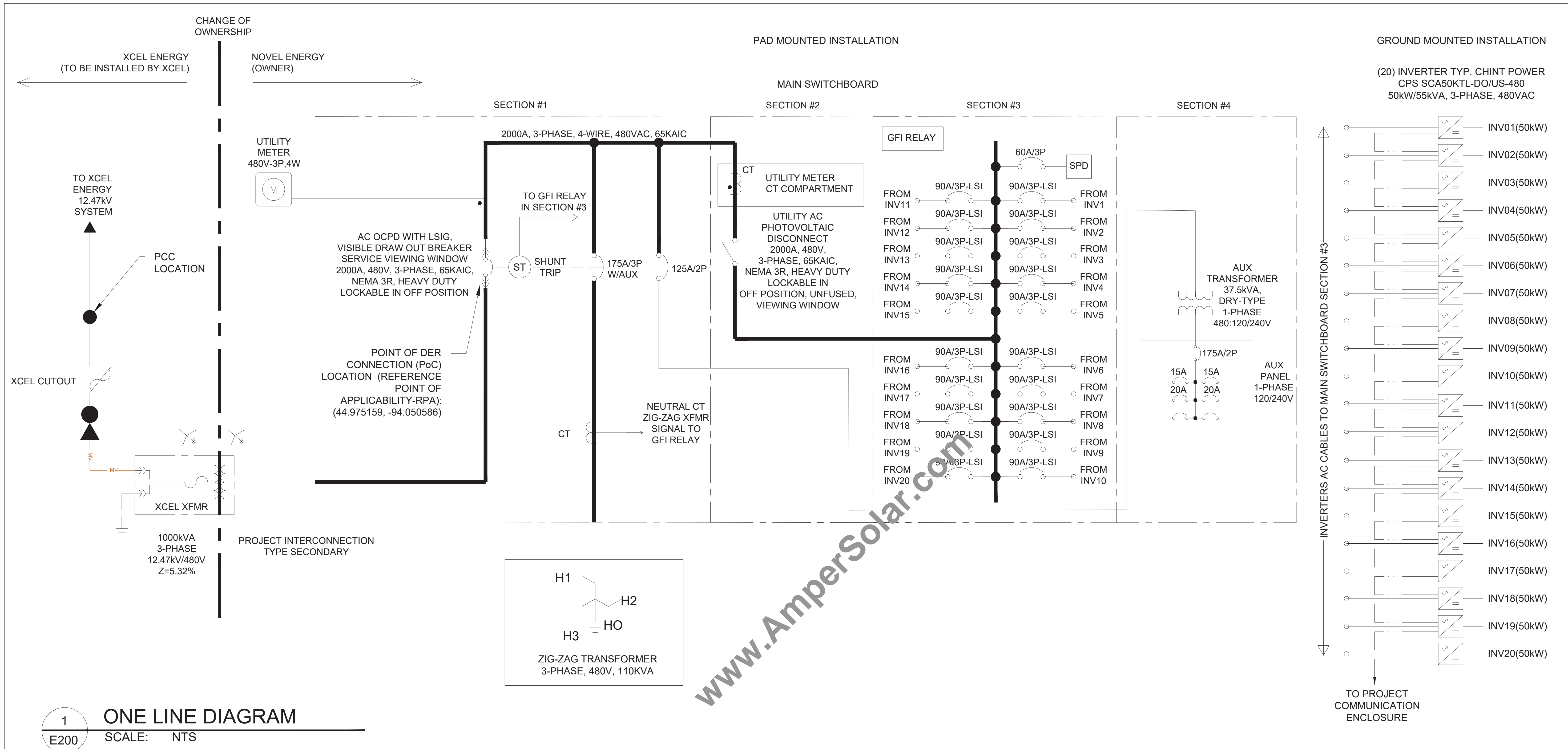
Revisions

No.	Date	By	Chk	Description
1	07/01/21	HH	DEE	INITIAL SUBMITTAL

Sheet Title
SITE PLANE-
OVERALL

Sheet No.
E100

Project No. STERNER



1 ONE LINE DIAGRAM
E200 SCALE: NTS

COMPONENT SUMMARY

ITEM	TYPE	QTY.
MODULES	CANADIAN SOLAR BIFACIAL MODULES 400Wp (CS3U-400MB-AG)	3600
INVERTERS	CHINT POWER 50KWAC (CPS SCA50KTL-DO/US-480)	20
TRANSFORMER	1000KVA	1

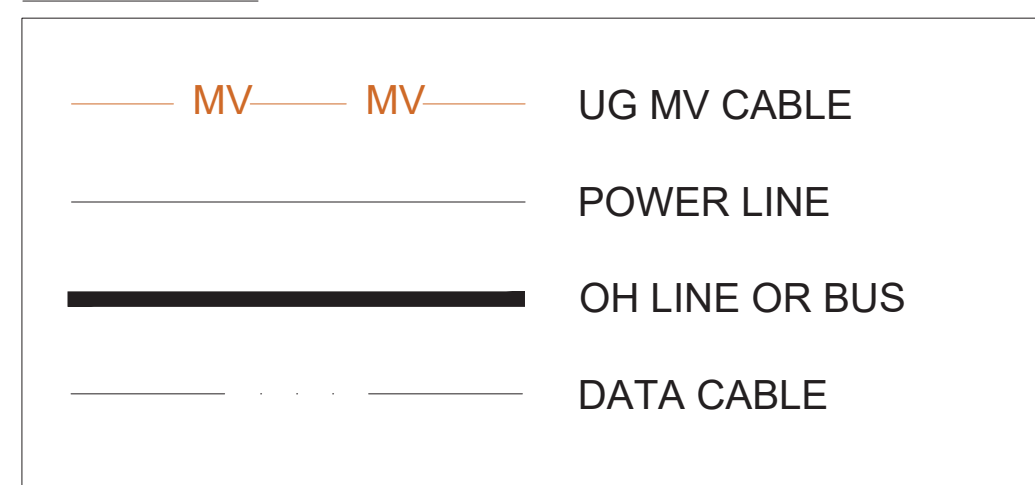
GENERATION SUMMARY

DC SYSTEM SIZE:	1,440,000 WATTS
AC SYSTEM SIZE:	1,000,000 WATTS
CONTINUOUS CURRENT:	1202.8A @ 480VAC
POWER FACTOR	1

NOTES

- METERING AND SCADA TO BE CONFIRMED BY UTILITY.
- ALL INVERTERS TO BE RATED AT 50KW 3-PHASE CPS SCA50KTL-DO/US-480. AND TO BE UL1741 LISTED.
- INVERTER WILL HAVE CAPABILITY OF .80 TO .80 PF. (LEADING TO LAGGING) EXACT POWER FACTOR/VAR CONTROL OF INVERTERS TO BE DETERMINED BASED ON UTILITY REQUIREMENTS.
- MAIN BILLING METER SHALL BE MARKED IN ACCORDANCE WITH THE REQUIREMENTS FOR "METER IDENTIFICATION" IN SECTION 4.14.5 OF THE XCEL ENERGY STANDARD.
- SHUNT TRIP SIGNAL TO TRIP MAIN SOLAR DISCONNECT TO DE-ENERGIZE PLANT WHEN ZIG-ZAG GROUNDING TRANSFORMER IS DISCONNECTED.
- ACCESSIBLE, LOCKABLE, UTILITY AC DISCONNECT WITH VISIBLE BLADES SHALL BE WITHIN 10' OF UTILITY METER.
- DESIGN SHALL MEET ALL APPLICABLE NEC REQUIREMENTS.
- PHOTOVOLTAIC SYSTEM GENERATION TO OPERATE AT PF AS REQUIRED BY XCEL

LEGEND



EFFECTIVE GROUNDING

SYSTEM TO BE EFFECTIVELY GROUNDED PER XCEL REQUIREMENTS:

XCEL REQUIREMENT NUMBER	XCEL REQUIREMENT DETAILS	CALCULATION RESULT
1	$X_{0,DG} = 0.6p.u. \pm 10\%$	$X_{0,DG} = 0.1257 \pm 10\% \text{ OHM}$
2	$X_{0,DG}/R_{0,DG} \geq 4; X_{0,DG}/R_{0,DG}$	$X_{0,DG} = 0.1257 \text{ OHM}, R_{0,DG} = 0.0257 \text{ OHM}, X_{0,DG}/R_{0,DG} = 4.89$
3	$I_0 \text{ IF } V_0 = 4\% \text{ MINIMUM DESIGNED AT } V_0 = 6\% \text{ *SEE NOTE}$	$I_0 = 132.3A, I_n = 3 * I_0 = 396.9A$
4	10 SECOND WITHSTAND RATING IN AMPS	2406A, RATING FOR 110kVA GROUNDING XFMR

Client Information:
 Email: [redacted]@energy.biz
 Phone: 612-343-7188

Project Information:
 Project Name: [redacted]
 Project Location: WINSTEAD, MN 55395, McLEOD

Case and Location:
 CASE # 03504506
 Location: WINSTEAD, MN 55395, McLEOD

Certification:
 I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.
 Signature: [redacted]
 DURAK EVRIM ERCAN, P.E.
 Registration No. 57332 Date: 07/01/2021
 AE JOB # 1364-MN
 If applicable, contact us for a wet signed copy of this plan which is available upon request at Novel Energy Solutions - St. Paul, MN office.

Summary:
 Designed: AC Drawn: HH
 Approved: DEE Book / Page:
 Phase: C Initial Issue: 07/01/21

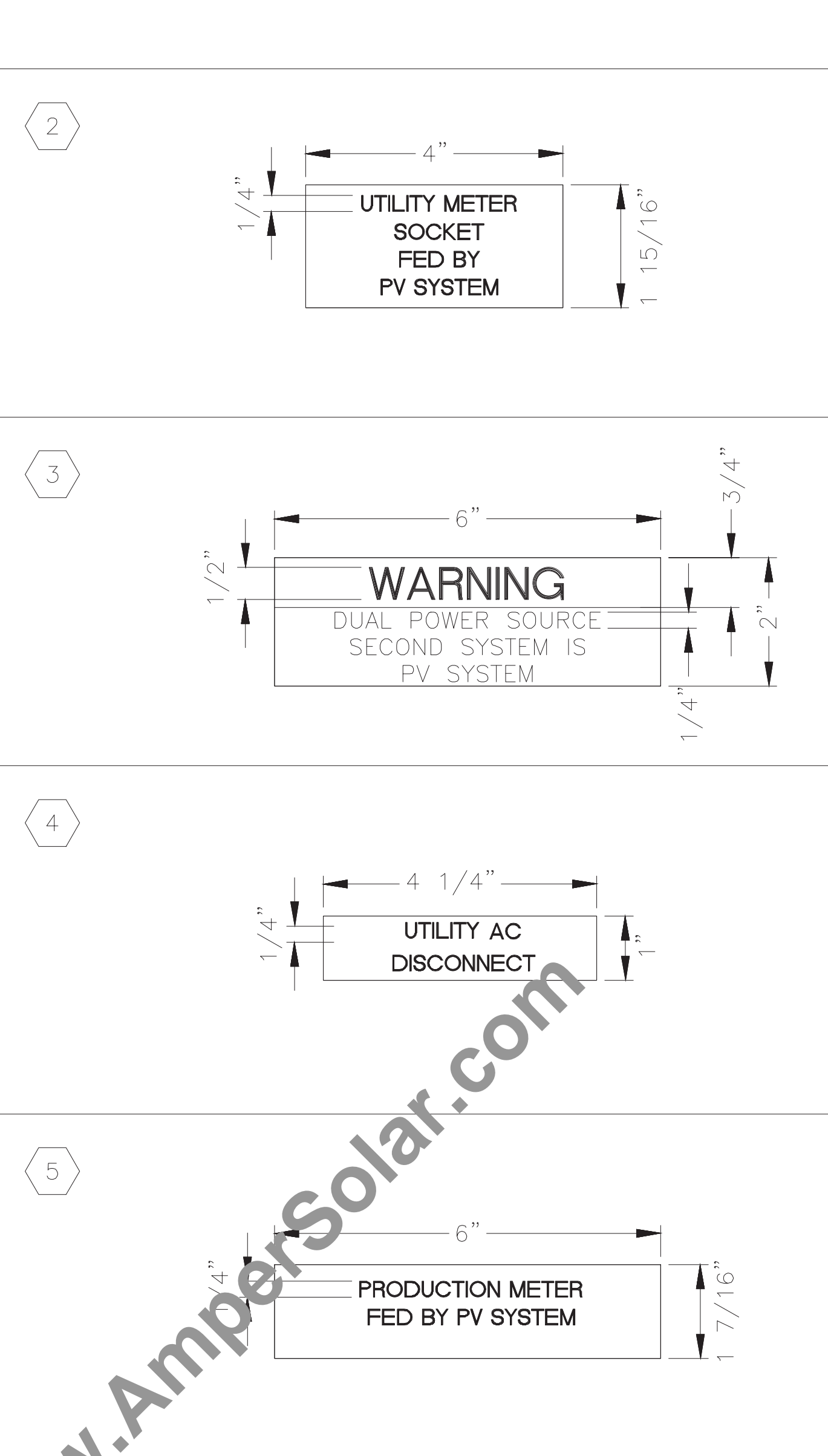
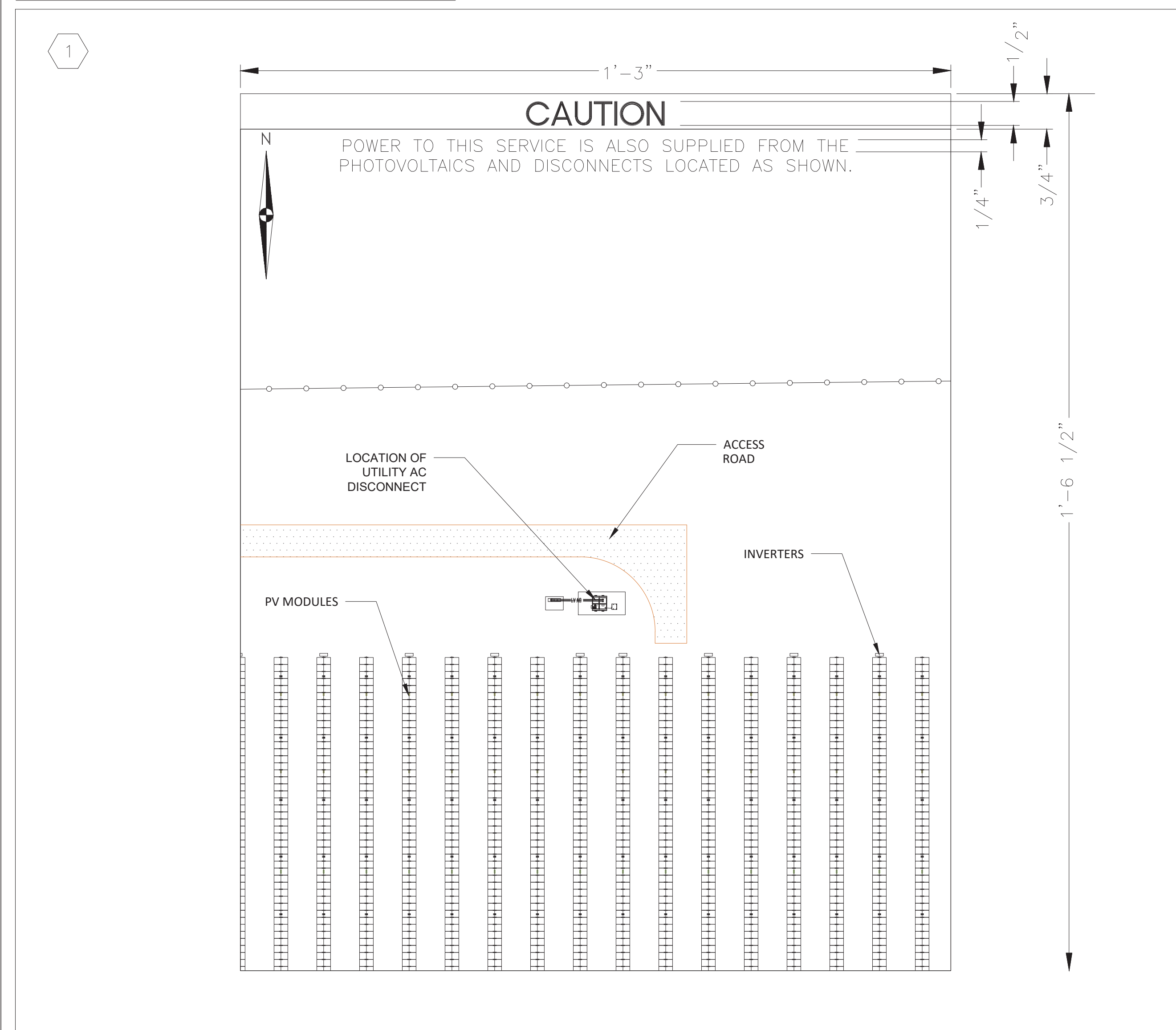
Revisions:

No.	Date	By	Chk	Description
1	07/01/21	HH	DEE	INITIAL SUBMITTAL

Sheet Title ONE LINE DIAGRAM

Sheet No. E200
 Project No. STERNER

LABELS LAYOUT AND SIZE

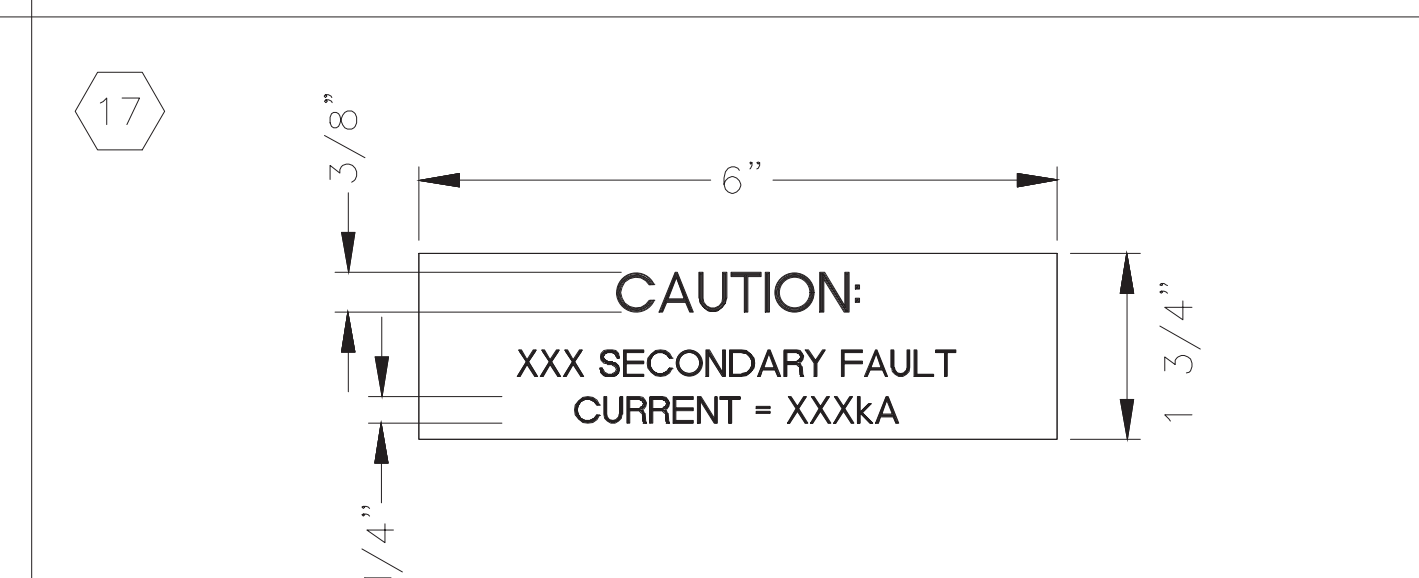
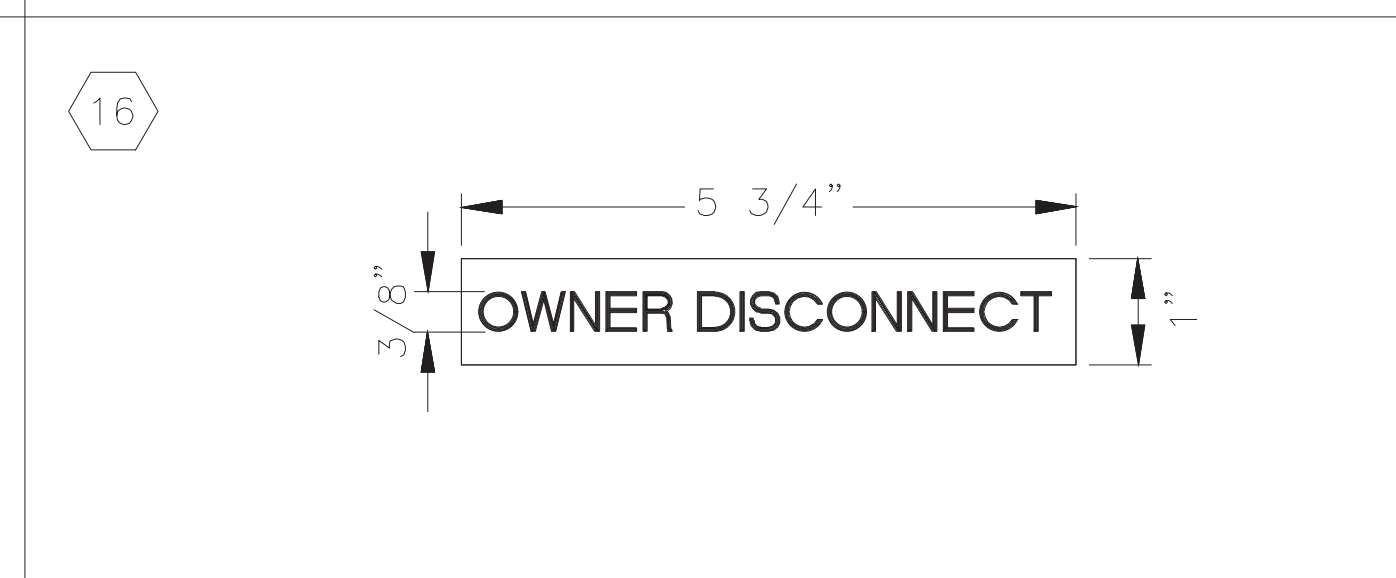
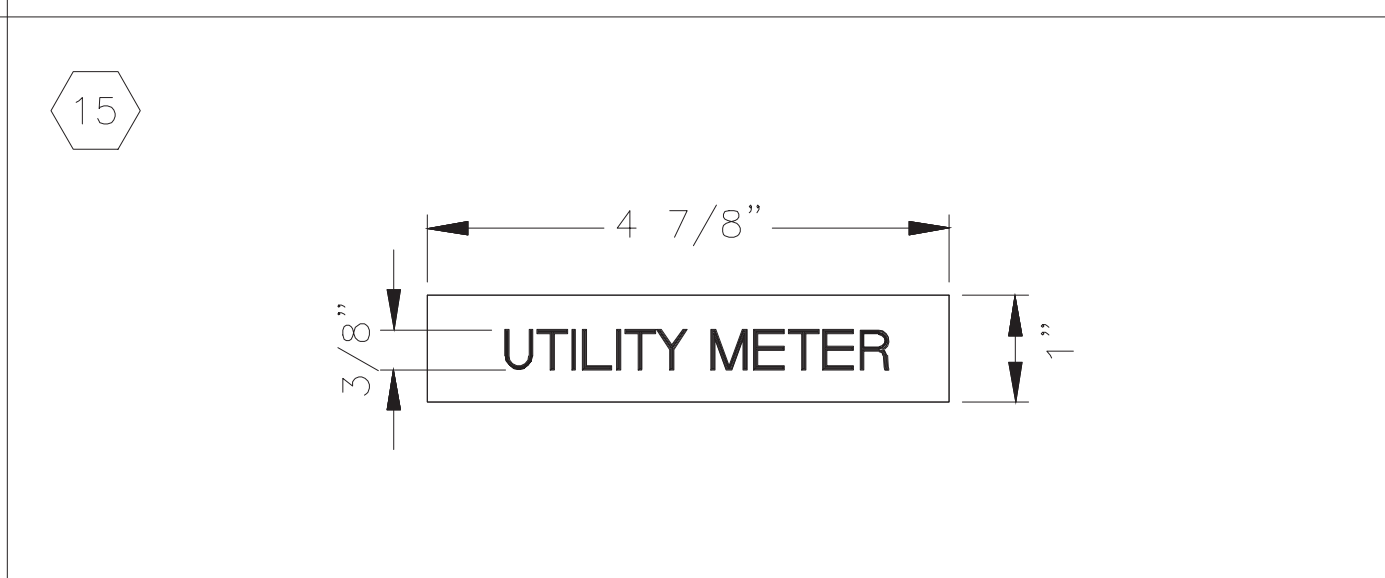
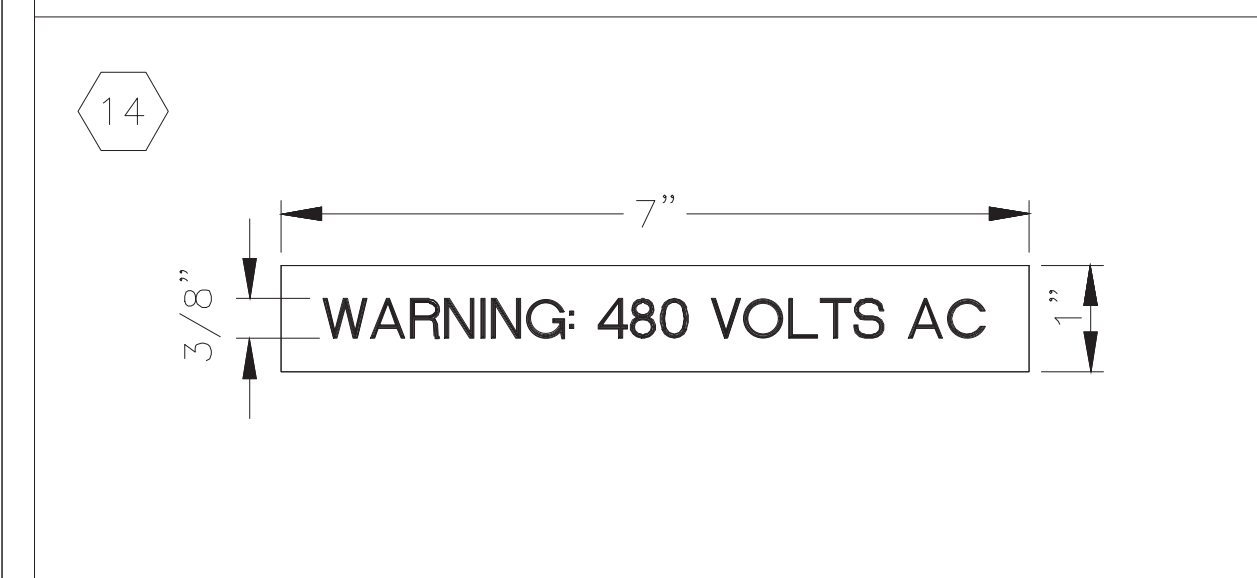
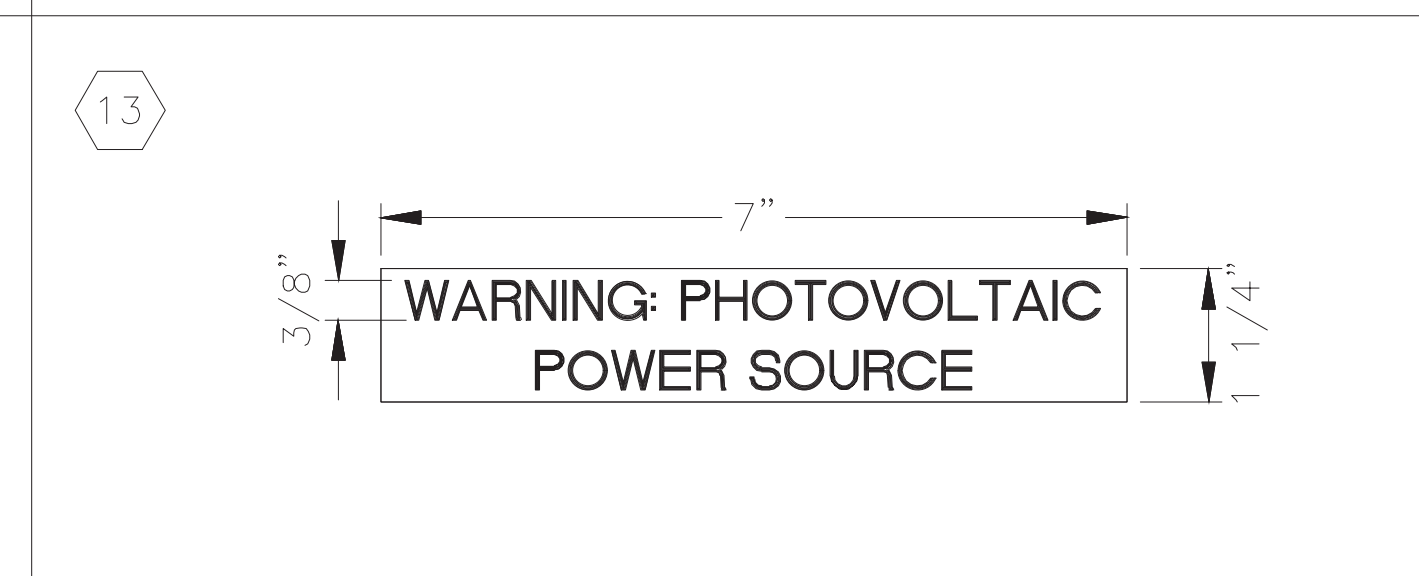
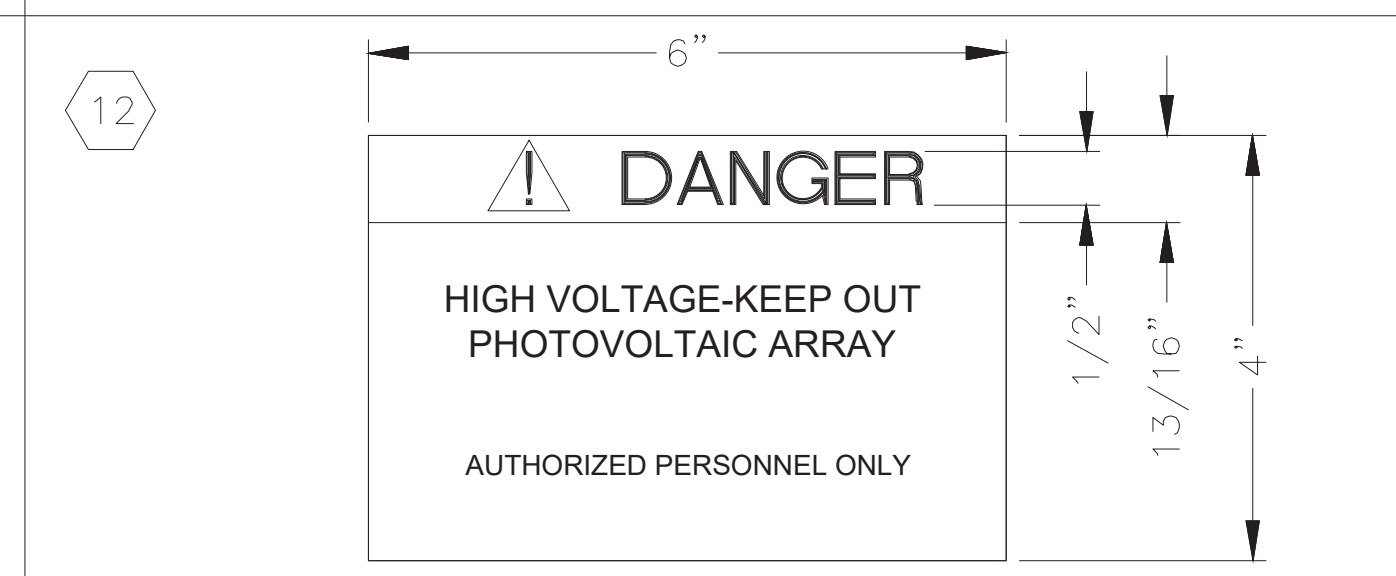
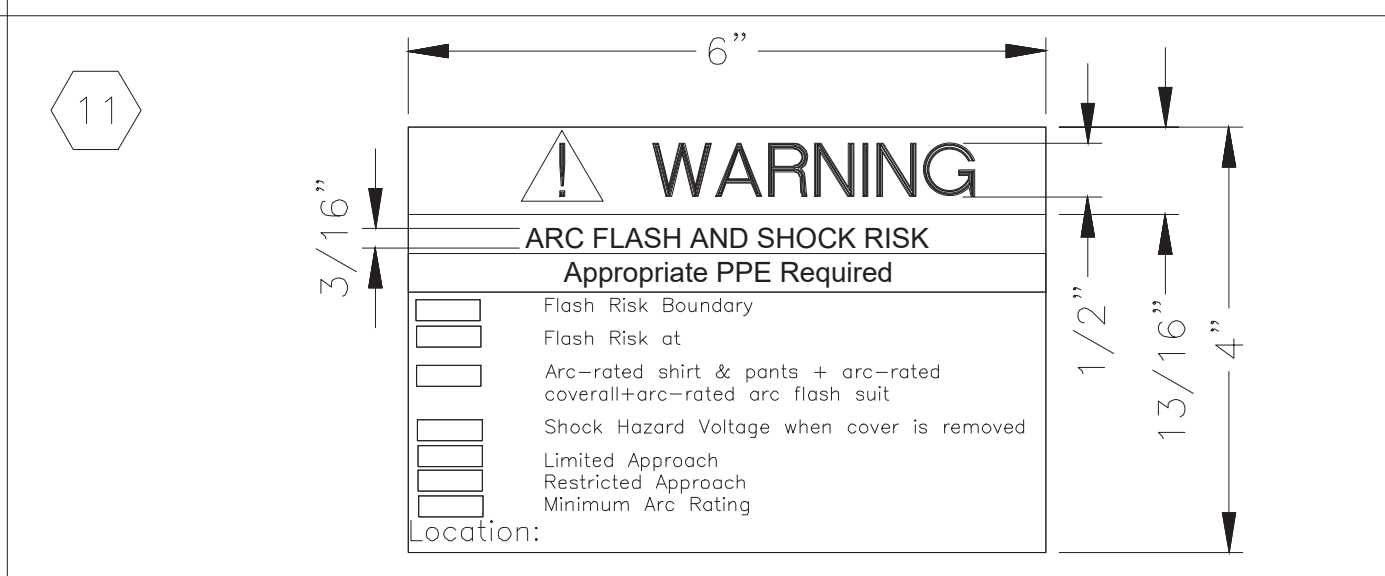
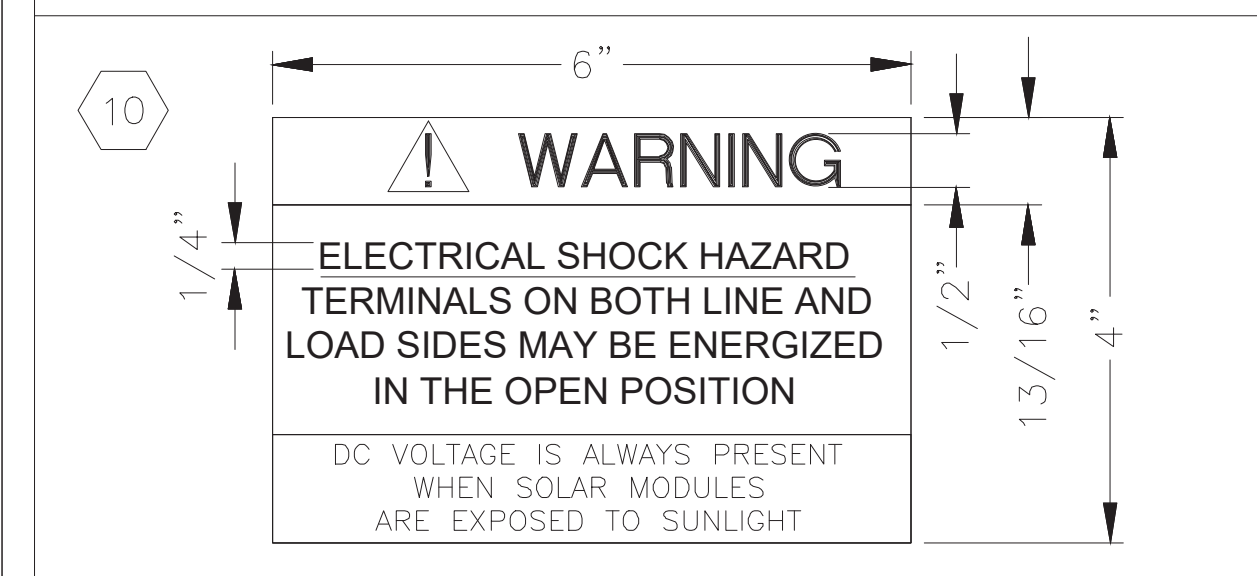
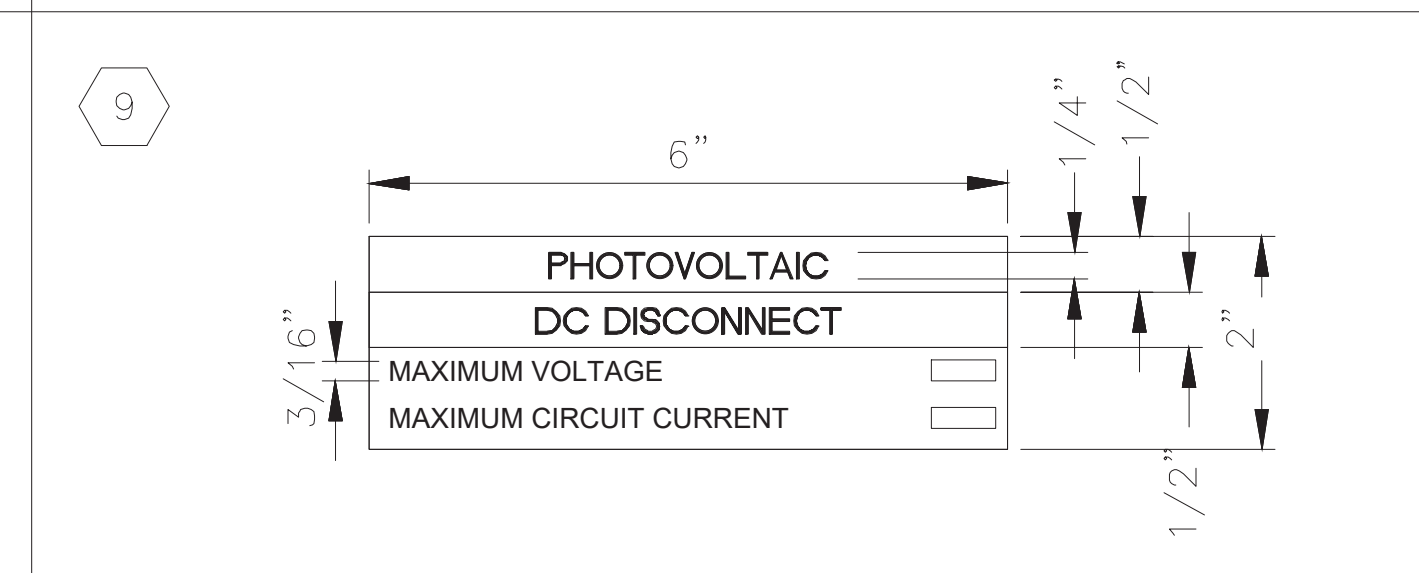
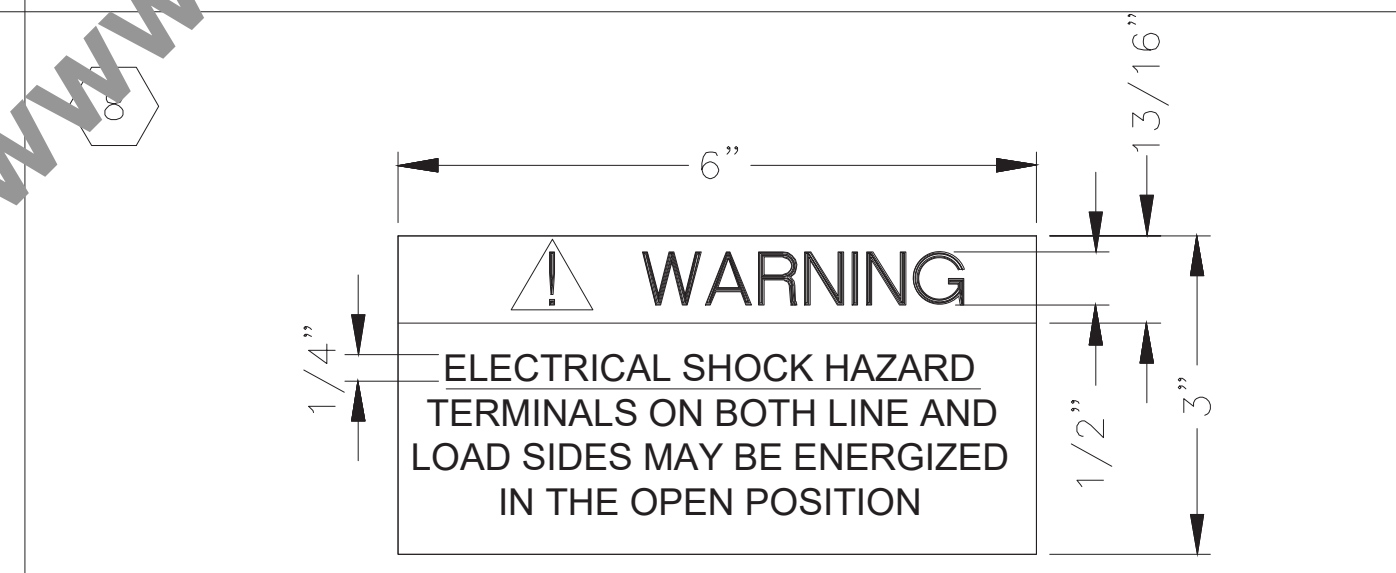
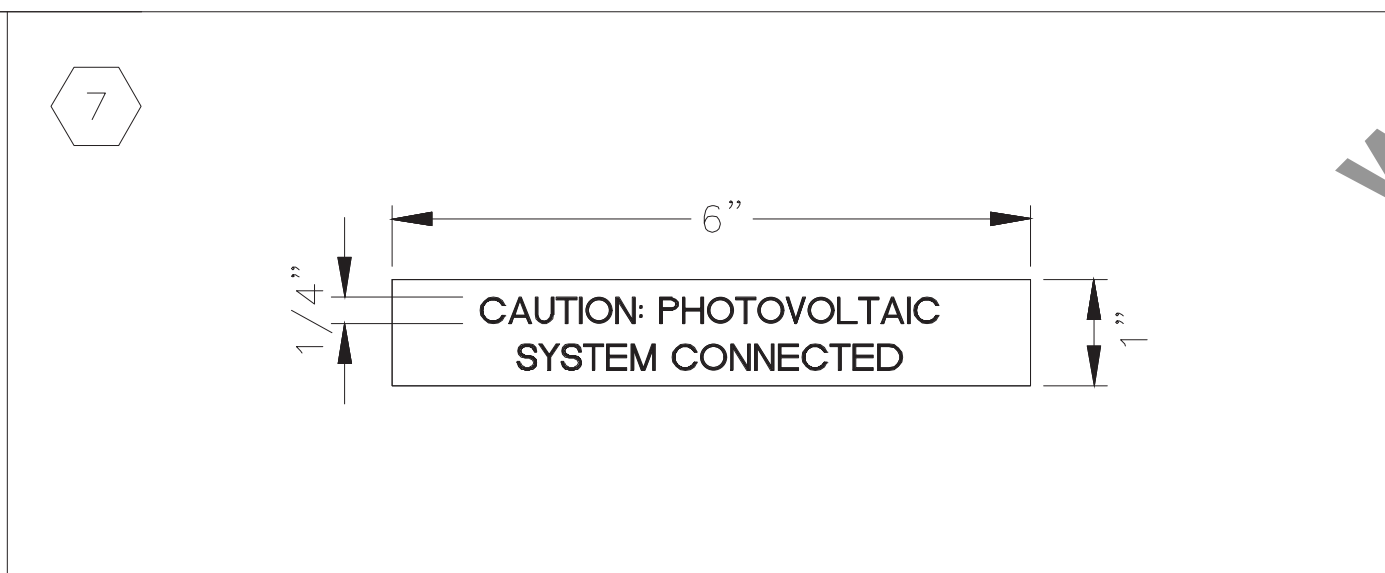
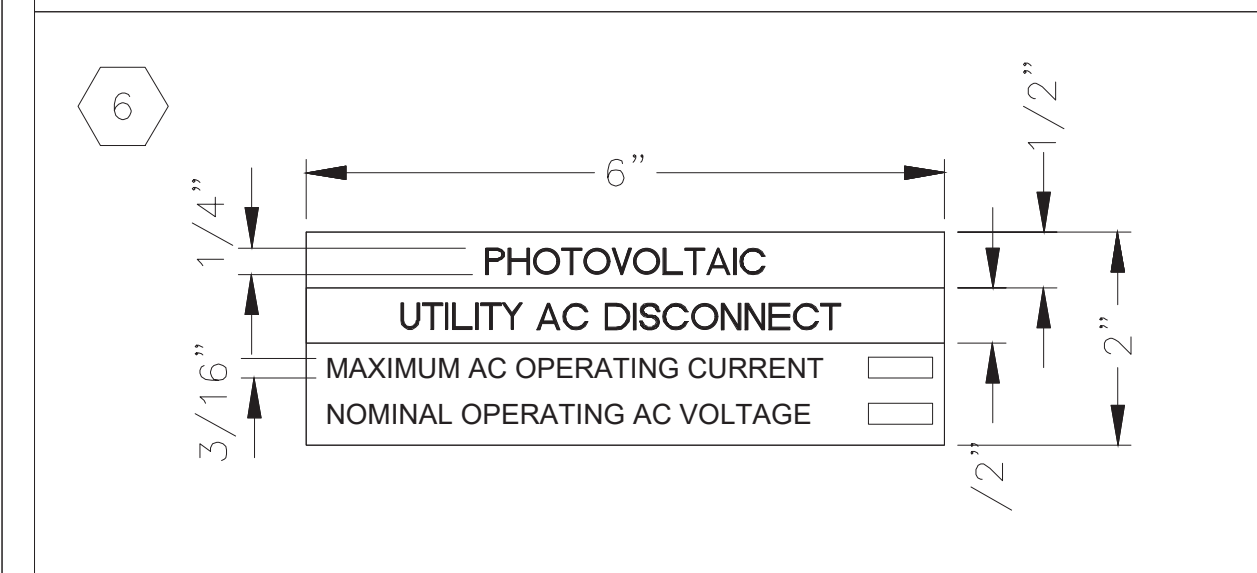



LABELS DETAILS

LABEL #	QTY	LABEL LOCATION	DETAILS
1	TBD	MAIN UTILITY SERVICE DISCONNECT AT POCC	• PLAQUE FOR LOCATING THE MAIN SERVICE DISCONNECTING MEANS AND THE PHOTOVOLTAIC DISCONNECTING MEANS. • WHITE BACKGROUND, BLACK LETTERS • 690.15(A), 705.10, 690.56(B) FACILITIES WITH UTILITY SERVICE AND PV SYSTEMS.
2	TBD	UTILITY SERVICE METER	• RED BACKGROUND, WHITE LETTERS
3	TBD	METERS, PULLBOXES, SWITCHGEAR, DISCONNECTS	• RED BACKGROUND, WHITE LETTERS
4	TBD	PHOTOVOLTAIC DISCONNECTING MEANS AT PROJECT INSTALLED DISCONNECT	• UTILITY MAIN PV AC DISCONNECT • RED BACKGROUND, WHITE LETTERS • 690.13(B)
5	TBD	XCEL PV PRODUCTION METER	• RED BACKGROUND, WHITE LETTERS
6	TBD	P&C UTILITY AC DISCONNECTS, INVERTER DISCONNECTS	• AC UTILITY DISCONNECT SYSTEM DESCRIPTION • RED BACKGROUND, WHITE LETTERS
7	TBD	METERS, UTILITY MAIN SERVICE DISCONNECT, FEEDER BREAKERS	• RED BACKGROUND, WHITE LETTERS
8	TBD	UTILITY MAIN SERVICE DISCONNECT, UTILITY AC PV DISCONNECT	• FOR DISCONNECTING MEANS WHERE BOTH SIDES MAY BE ENERGIZED IN OPEN POSITIONS. • RED BACKGROUND, WHITE LETTERS • 690.13(B), 690.15(D)
9	TBD	COMBINER BOXES, RE-COMBINER, INVERTER	• RED BACKGROUND, WHITE LETTERS • 690.53
10	TBD	COMBINER BOXES, RE-COMBINER, DISCONNECTS	• BUILDING OR STRUCTURE DISCONNECTING MEANS • RED BACKGROUND, WHITE LETTERS • 690.17(E)
11	TBD	DURING ARC FLASH STUDY IN TRANSFORMER, INVERTER, DISCONNECTS, STUDY PANEL BOARDS, COMBINER BOXES	• WARNING: ORANGE BACKGROUND, WHITE LETTERS • DANGER: RED BACKGROUND, WHITE LETTERS • DETAILED TEXT AREA: WHITE BACKGROUND, BLACK LETTERS • 110.16
12	TBD	SECURITY FENCE,	• SPACED EVERY 100 FEET AT PERIMETER OF ARRAY. • SIGN SHALL BE AT LEAST 14WG GALVANIZED STEEL, 20 YEAR LIFE WITH RESISTANCE TO UV. • INSTALL TO STANDARD ASSEMBLY.
13	TBD	PV POWER SOURCE CONDUCTORS ENCLOSURE	• WHERE PV SOURCE CONDUCTORS ARE CONTAINED; CONDUIT BODIES IN WHICH ANY OF THE AVAILABLE CONDUIT OPENINGS ARE UNUSED. • EVERY 10 FEET • 690.31(G)(3)
14	TBD	CONDUIT BETWEEN INVERTER AND TRANSFORMER	• AS NEEDED
15	TBD	SERVICE METER AND PRODUCTION METER	
16	TBD	DISCONNECT	• XCEL ADDITIONAL SIGNAGE REQUIREMENT
17	TBD	MAIN AC SWITCHGEAR	• PROJECT SPECIFICATION

GENERAL NOTES

- ALL SIGNAGE SHALL HAVE ALL CAPITAL LETTERS, ARIAL OR OWNER APPROVED FONT. SIZES AND FORMAT FOR REFERENCE AND OTHER EQUIVALENT LABELS ACCEPTABLE.
- SOLAR PANELS AND INVERTERS ARE EXPECTED TO HAVE NEC REQUIRED LABELING PREVIOUSLY AFFIXED.
- ESTIMATED QUANTITIES PROVIDED HERE ONLY AND FINAL LABEL QUANTITIES TO BE DETERMINED BY CONTRACTOR.
- QUANTITIES ARE BASED ON PER MW PROJECT UNLESS OTHERWISE NOTED.
- UV RESISTANT VINYL LABELS MUST MEET REQUIREMENTS OF UL696.
- MATERIALS ON THIS PAGE ARE CALLED OUT WITH SYMBOL: (XX)
- ALL LABELS PRINTED ON STOCK HELLERMAN-TYTON LABELS.
- ALL LABELS SHALL BE WEATHERPROOF, DURABLE AND PERMANENTLY MOUNTED.

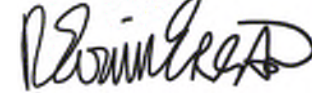



 Email: ercan@amperenergy.biz
 Phone: 612-343-7188

Client

 Digitally signed by Durak Evrim Ercan
 DN: cn=Durak Evrim Ercan, o=Amper Energy Engineering, ou=Amper Energy Engineering, st=New Jersey, c=US
 Reason: I am approving this document.
 Contact info: Printed copies of this document are not considered signed and need not be notarized. Electronic copies must be verified on any electronic copies.
 Date: 2021.07.01 16:22:55-0400

Project
 NOVA
STERNER SOLAR LLC
 CASE # 03504506
Location
 (Redacted)
WINSTEAD, MN 55395, McLEOD

Certification
 I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly licensed professional ENGINEER under the laws of the state of Minnesota.

 DURAK EVRIM ERCAN, P.E.
 Registration No. 57332 Date: 07/01/2021

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 Approved: DEE Book / Page:
 Phase: IC Initial Issue: 07/01/21

Revisions

No.	Date	By	Chk	Description
1	07/01/21	HH	DEE	INITIAL SUBMITTAL

Sheet Title LABELS

Sheet No. E450
Project No. STERNER