

NEW WORK BY THIS CONTRACTOR (WIDE LINE) ----- EXISTING TO BE REMOVED (SHORT DASHED PATTERN) — — NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN) EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE) ----- EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN) — — EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

ELECTRICAL ABBREVIATION KEY			
ABBR:	DESCRIPTION:		
ABV	ABOVE		
AFC	ABOVE FINISHED CEILING		
AFF	ABOVE FINISHED FLOOR		
AFG	ABOVE FINISHED GRADE		
С	CONDUIT (BRANCH CIRCUIT OR FEEDER CONTEXT)		
EG	EQUIPMENT GROUND		
EGC	EQUIPMENT GROUNDING CONDUCTOR		
NC	NORMALLY CLOSED		
NEMA#	NEMA RATING		
NIC	NOT IN CONTRACTED SCOPE		
NO	NORMALLY OPEN		
ROOF	EQUIPMENT LOCATED ON ROOF ABOVE		
TYP	TYPICAL		

ELECTRICAL SYMBOL LIST			
SYMBOL:	TAG:	DESCRIPTION:	
	PANEL '###'	PANELBOARD - SURFACE MOUNT	
	TR-#/XFMR-#	TRANSFORMER	
	<u>DS-#/FDS-#</u>	DISCONNECT SWITCH FUSED DISCONNECT SWITCH	
	<u>INV-#</u>	INVERTER. REFER TO SPECIFICATIONS	

#### **ELECTRICAL - RISER DIAGRAM NOTES:**

- 1. THE RISER DIAGRAM IS INTENDED TO CONVEY THE COMPONENTS OF THE ELECTRICAL DISTRIBUTION SYSTEM RELEVANT TO THIS PROJECT. REFER TO ELECTRICAL DRAWINGS,
- DETAILS, AND SPECIFICATIONS FOR ADDITIONAL INFORMATION. 2. SHORT CIRCUIT CURRENT RATINGS (SCCR) FOR EQUIPMENT SHALL BE DETERMINED BY THE CONTRACTOR. ALL EQUIPMENT SHALL BE FULLY RATED UNLESS SPECIFICALLY NOTED
- AS SERIES RATED. 3. THE BASIS OF DESIGN: EQUIPMENT AND FEEDER SIZES SHOWN ARE PRELIMINARY. THE
- CONTRACTOR SHALL BE RESPONSIBLE FOR FINAL SIZING OF EQUIPMENT, CONDUCTORS, AND CONDUITS ACCORDING TO THE FINAL SYSTEM DESIGN.
- a. FEEDER CHARACTERISTICS: ALL CURRENT CARRYING CONDUCTORS SHALL BE COPPER UNLESS NOTED OTHERWISE.
- c. CONDUCTORS SHALL BE SIZED ACCORDING TO VOLTAGE DROP AND DERATING CALCULATIONS PERFORMED BY THE CONTRACTOR.

b. GROUNDING AND BONDING CONDUCTORS SHALL BE COPPER.

- 4. CIRCUIT BREAKER CHARACTERISTICS AND ACCESSORIES: a. [CB] INDICATES CIRCUIT BREAKER
  - b. [FU] INDICATES FUSED SWITCH
  - [NF] INDICATES NON-FUSED SWITCH d. [MLO] INDICATES MAIN LUG ONLY
  - [MCB] INDICATES MAIN CIRCUIT BREAKER [MCCB] INDICATES MOLDED CASE CIRCUIT BREAKER
  - [LSIGM] INDICATES FEATURES PROVIDED WITH SOLID STATE CIRCUIT BREAKER [LONG TIME (W/DELAY), SHORT TIME (W/DELAY), INSTANTANEOUS, GROUND FAULT METER (CBM)]

#### SOLAR PHOTOVOLTAIC (PV) SYSTEM **RISER DIAGRAM NOTES:**

1. ALL AC CONDUCTORS SHALL BE COPPER THHN/THWN UNLESS OTHERWISE NOTED. 2. ALL DC CONDUCTORS SHALL BE COPPER UV RATED RHW-2 UNLESS OTHERWISE NOTED. 3. ARRAY CONDUCTORS SHALL SIZED FOR DERATED CURRENT PER STRING. 4. INVERTER SHALL PROVIDE NECESSARY GROUND FAULT PROTECTION AS REQUIRED BY CEC 690.5

#### **ELECTRICAL RENOVATION NOTES:**

- THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES.
- 1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS.

2. NOT ALL EXISTING EQUIPMENT AND CONDUITS ARE SHOWN. CONTRACTOR SHALL REVIEW

- EXISTING CONDITIONS AND ADJUST AS NEEDED. 3. ELECTRICAL CONTRACTOR SHALL REVIEW EXISTING CONDITIONS TO VERIFY ACCESSIBILITY TO THE AREAS OF THEIR WORK INCLUDING WALLS, FLOOR, CEILINGS, CEILING TILES/GRID, AND ROOF. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE CUTTING, REMOVAL, PATCHING, AND REINSTALLATION OF AFFECTED AREAS ASSOCIATED WITH THEIR WORK BY
- COORDINATING WITH THE GENERAL CONTRACTOR OR QUALIFIED CONTRACTOR. 4. WHERE EXISTING ELECTRICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT OR CONDUIT, CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT OR CONDUIT, IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING ELECTRICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT OR CONDUIT.

#### SOLAR PHOTOVOLTAIC (PV) GROUNDING **AND BONDING NOTES:**

- 1. GROUND WIRE MUST BE CONTINUOUS AND INSTALLED TO ALLOW FOR PHOTOVOLTAIC
- PANEL REMOVAL WITHOUT DISRUPTING CONTINUITY.
- 2. PROVIDE GROUNDING ELECTRODE CONDUCTOR FROM PHOTOVOLTAIC ARRAY FRAME TO GROUNDING ELECTRODE SYSTEM PER ELECTRICAL CODE. CEC 690.47(A)
- 3. ALL EXPOSED METALLIC SYSTEM COMPONENTS (MODULE FRAMES, SUPPORT
- STRUCTURES, ENCLOSURES, ETC) SHALL BE GROUNDED. INSTALL OZ GEDNEY OR EQUIVALENT STYLE GROUNDING BUSHINGS PER CEC AT
- RACEWAY CONNECTIONS OF ALL METALLIC ENCLOSURES.
- 5. AVOID DIRECT CONTACT OF COPPER OR COPPER ALLOY GROUND CONDUCTORS WITH ALUMINUM MODULE FRAME.
- 6. PHOTOVOLTAIC SYSTEM GROUNDING CONFIGURATIONS SHALL BE EMPLOYED PER ONE OF THE ITEMS AS REQUIRED BY CEC 690.41. PHOTOVOLTAIC SYSTEMS THAT USE OTHER METHODS THAT ACCOMPLISH EQUIVALENT SYSTEM PROTECTION IN ACCORDANCE WITH CEC 250.4(A) SHALL BE LISTED AND IDENTIFIED FOR THE USE.

#### **PV SYSTEM INSTALLATION NOTES:**

- 1. THE PHOTOVOLTAIC SYSTEM SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH ADA, APPLICABLE CODES, LOCAL UTILITY STANDARDS, AND AUTHORITY HAVING
- 2. THE CONTRACTOR SHALL CONFIRM ALL UTILITY REQUIREMENTS PRIOR TO BIDDING. THIS INCLUDES, BUT IS NOT LIMITED TO, UTILITY DISCONNECT, METERING, RENEWABLE ENERGY CREDITS, INTERCONNECTION STRATEGY, AND ALL COMMISSIONING
- 3. ROUTE POSITIVE AND NEGATIVE DC CONDUCTORS IN THE SAME RACEWAY. ALL WIRING OUTSIDE OF THE ARRAYS SHALL BE INSTALLED IN RACEWAYS UNLESS NOTED
- OTHERWISE IN THE DRAWINGS. 4. CIRCUIT ROUTING IS SHOWN SCHEMATICALLY FOR DESIGN INTENT. CONTRACTOR SHALL COORDINATE ALL EXPOSED RACEWAY AND CABLE INSTALLATIONS WITH OWNER AND FIELD CONDITIONS. SUPPORT ALL RACEWAYS AND WIRING WITH LISTED MOUNTING HARDWARE; MAXIMUM INTERVAL OF 42 INCHES (106 CM) AND WITHIN 12 INCHES (30 CM)
- OF BOXES AND RACEWAY TRANSITIONS. 5. INSTALL PULL BOXES WHERE REQUIRED OR WHERE NEEDED TO ENSURE CABLE PULLING MAXIMUM TENSIONS ARE NOT EXCEEDED.
- 6. INSTALL (PV) WIRING AND CABLING IN SEPARATE RACEWAYS FROM OTHER SYSTEMS. INSTALL DATA SIGNAL AND ACQUISITION CABLING IN SEPARATE RACEWAYS AS
- REQUIRED FOR A TURNKEY SYSTEM. 7. ALL CONDUCTORS SHALL BE COPPER, UNLESS SPECIFICALLY NOTED OTHERWISE.

#### **ELECTRICAL INSTALLATION NOTES:**

- 1. ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS. 2. ELECTRICAL AND TECHNOLOGY EQUIPMENT SHALL BE MOUNTED TO AVOID IMPEDANCE OF,
- OPERATION OF, AND/OR ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. 3. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL
- OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
- 4. CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO THE WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR IS RESPONSIBLE FOR PATCHING TO

MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.



LCAT Waukegan Admin Bldg Photovoltaic 18 North County Street

LAKE COUNTY

Waukegan, IL 60085



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<u>\_\_\_\_</u>\_\_ REF. SCALE IN INCHES PROJECT #25002276.00 REVISIONS Revision / Issue

SHEET INFORMATION 08/29/2025 25002276.00 Project # TIMPAA KELRIC Checked Approved

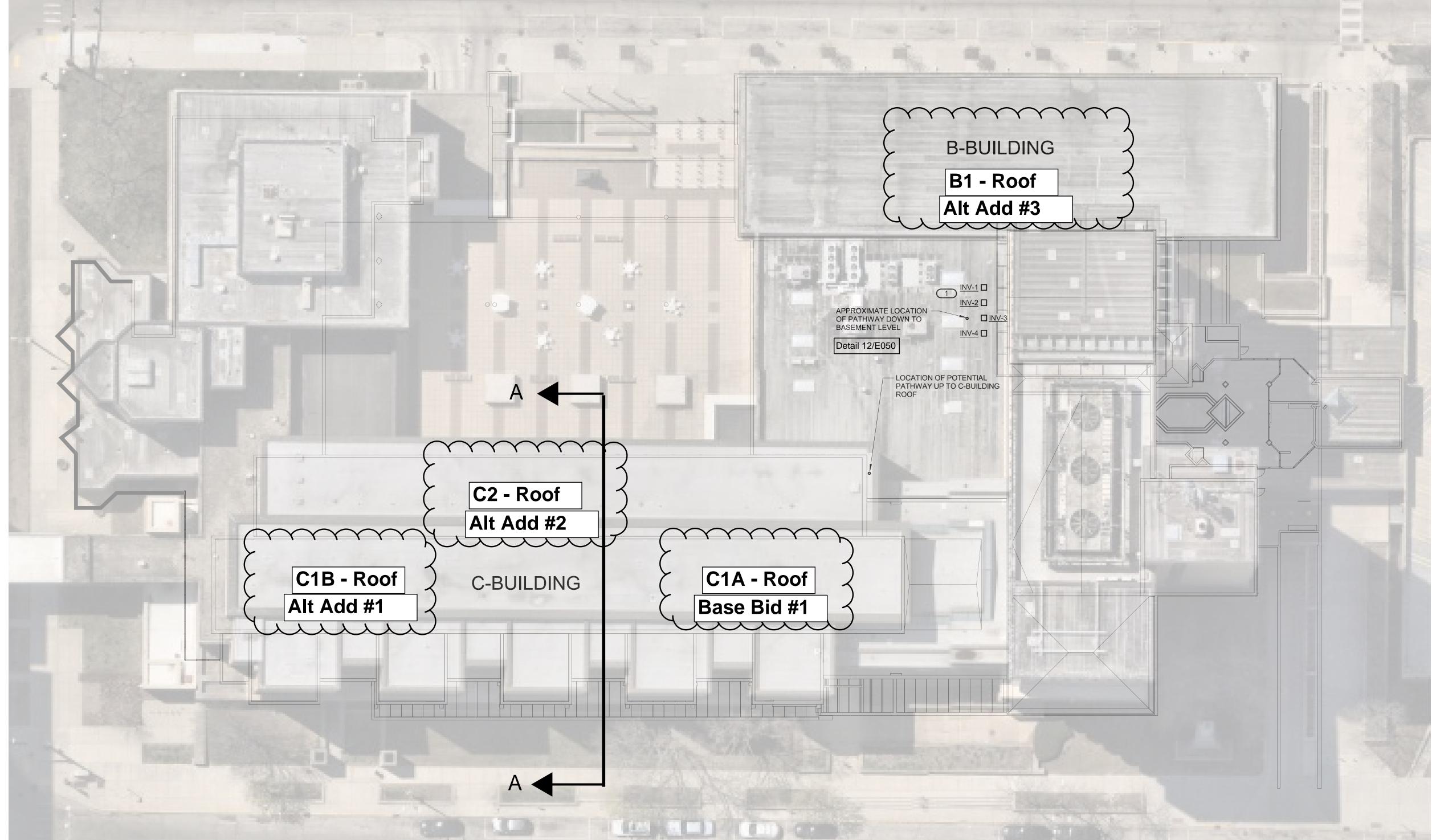
**ELECTRICAL COVERSHEET** 

As indicated

SHEET NUMBER

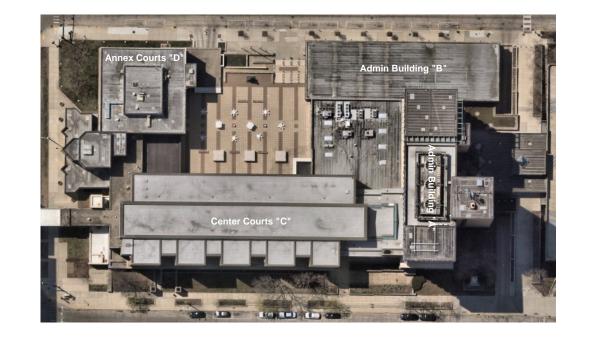
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**ELECTRICAL SHEET INDEX** ELECTRICAL COVERSHEET OVERALL PLAN - ELECTRICAL BASEMENT PLAN - POWER ROOF PLAN - POWER ELECTRICAL DIAGRAMS GRAND TOTAL: 5



OVERALL PLAN - ELECTRICAL

1" = 20'-0"



SHEET NOTES:

PV SYSTEM DESIGN IS PRELIMINARY.
 CONTRACTOR SHALL FINALIZE SYSTEM AND DESIGN ACCORDING TO SITE CONDITIONS AND OWNER REQUIREMENTS.

KEYNOTES:

INVERTERS LOCATED ON ROOF. ADJUST LAYOUT AND LOCATION OF INVERTERS FOR FINAL SYSTEM DESIGN. COORDINATE FINAL LOCATIONS WITH OWNER.

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REVISIO

No. Date Revision / Issue

 SHEET INFORMATION

 Issue
 RFP

 Date
 08/29/2025

 Project #
 25002276.00

 Drawn
 TIMPAA

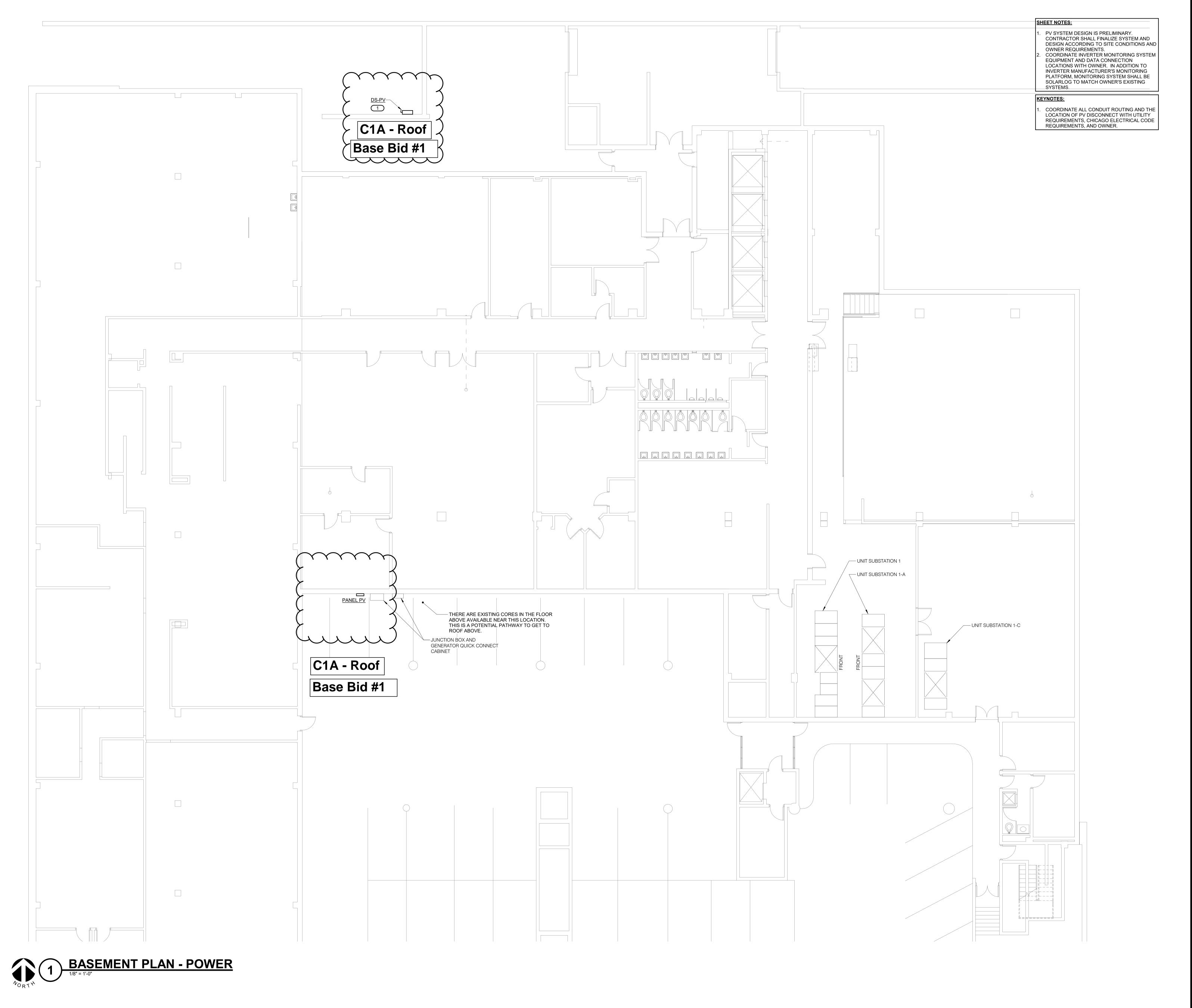
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OVERALL PLAN - ELECTRICAL

SCALE 1" = 20'-0"

SHEET NUMBER

E050





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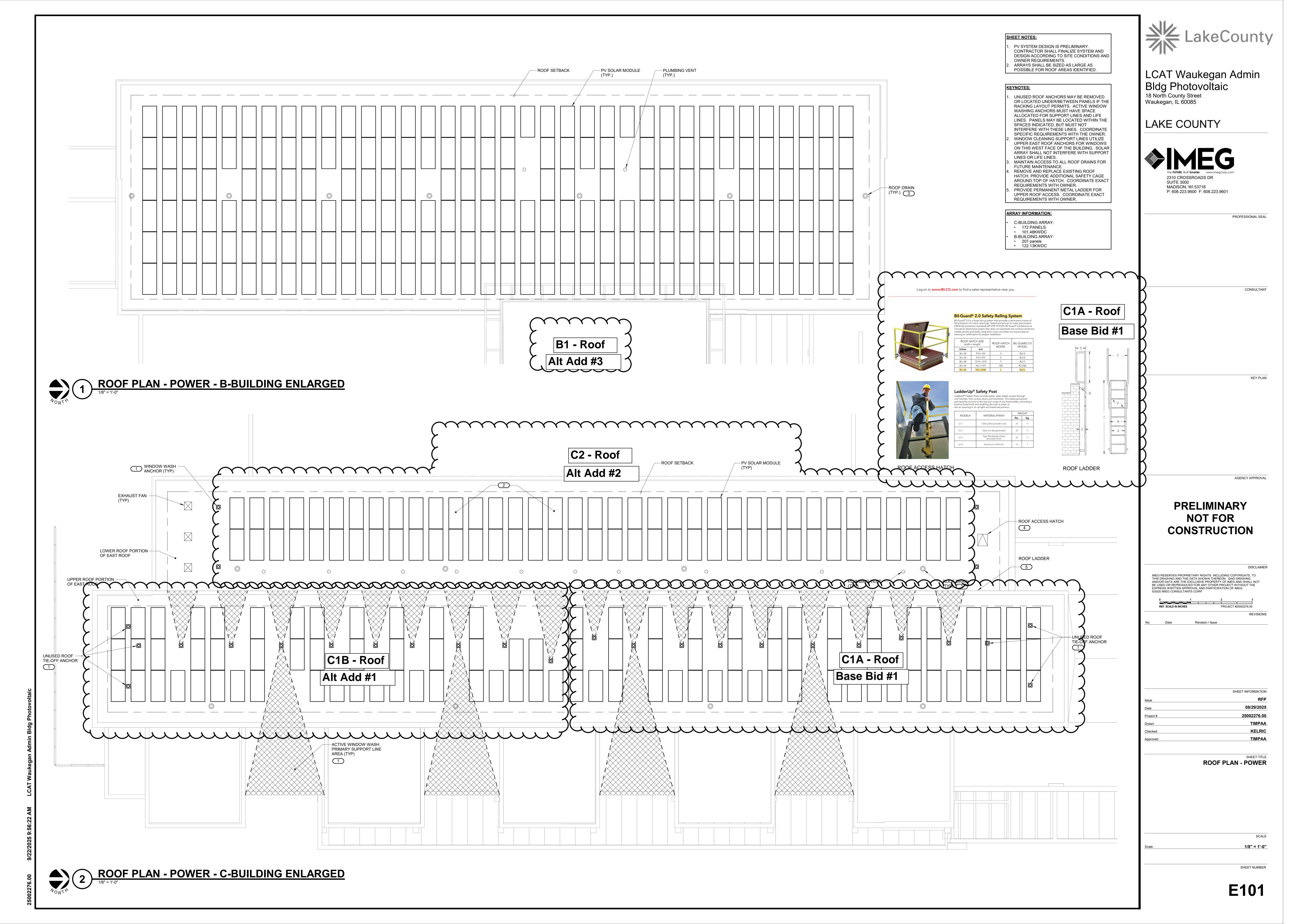
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BASEMENT PLAN - POWER

Scale: 1/8" = 1'-0"

SHEET NUM

E100



- CONFIRM INTERCONNECTION STRATEGY WITH UTILITY AND RENEWABLE ENERGY CREDIT (R.E.C.) REQUIREMENTS. PROVIDE
- ADDITIONAL R.E.C. METER AS REQUIRED. PROVIDE INVERTER MANUFACTURER MONITORING GATEWAY AND SOLARLOG
- MONITORING EQUIPMENT TO CONNECT TO OWNER'S EXISTING MONITORING SYSTEM.
- PV SYSTEM TO TIE INTO DISTRIBUTION PANEL 1C IN CHILLER ROOM. CONTRACTOR SHALL PROVIDE SUPPLEMENTAL POWER SUPPLY AS REQUIRED.
- TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. CONNECT SMART INVERTERS/METERS TO THE

PROVIDE SUB-METERING FOR SOLAR PRODUCTION, WITH SUB-METERS TIED INTO THE COUNTY MONITORING SYSTEM. REFER

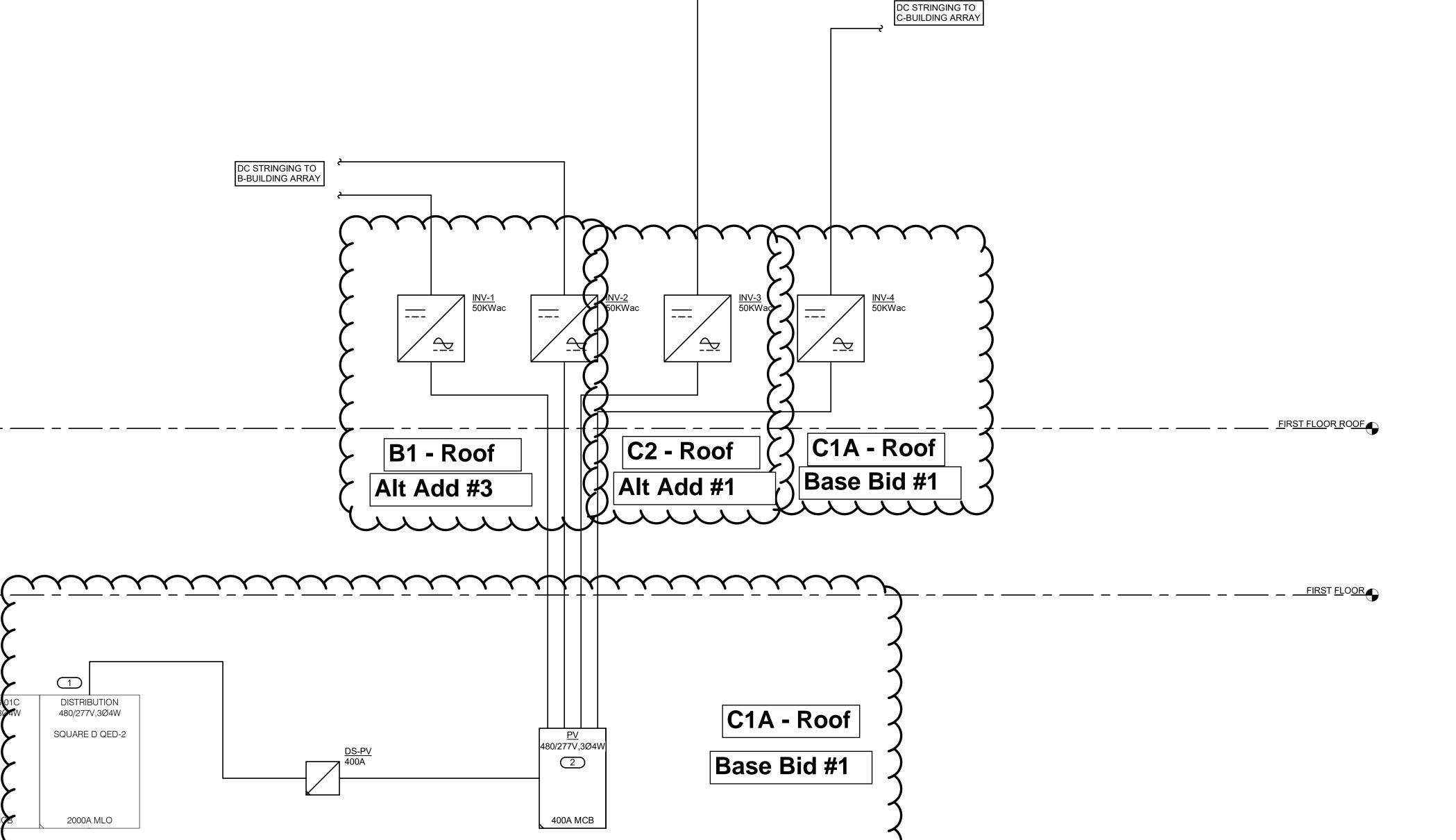
COUNTY NETWORK. CLOUD ACCESS IS REQUIRED FOR FACILITIES MONITORING. CONTRACTOR TO COORDINATE ALL SHUTDOWNS WITH LAKE COUNTY. OUTAGES

MUST BE PRE-APPROVED AND MINIMIZED.

#### KEYNOTES:

- PROVIDE NEW 400A/3P BREAKER IN USS-1C SWITCHBOARD TO SERVE PV SOLAR.
- BREAKER SHALL BE LOCATED AT OPPOSITE END OF BUS FROM MAIN BREAKER. AC COMBINER PANEL WITH BRANCH

BREAKERS SIZED FOR INVERTERS



480/277V,3Ø4W

1600A MLO

**UNIT SUBSTATION 1-A** 

120/208V,3Ø4W

1800A MCCB

600KVA

480:120/208V

XFMR 4 1000KVA

4160:480/277V

480/277V,3Ø4W

1600A MCB

USS-1A MAIN

4160V,3Ø3W

600A

1 RISER DIAGRAM
NO SCALE

DISTRIBUTION

480/277V,3Ø4W

SQUARE D QED-2

2000A MLO

A&B BUILDINGS

600A

**UNIT SUBSTATION 1** 

750KVA

4160:120/208V

NoneV,0Ø0W

3000A MCB

120/208V,3Ø4W

3000A MLO

120/208V,3Ø4W

3000A MLO

BASEMENT

4160V,3Ø3W

300A

USS-1C

4160V,3Ø3W

600A

2000KVA

4160:480/277V

TO USS-2

4160V,3Ø3W

600A

480/277V,364W

2000A M

FROM UTILITY GEAR

UTILITY METERING

4160V,3Ø3W

600A

**UNIT SUBSTATION 1-C** 

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SHEET INFORMATION 08/29/2025 25002276.00 Project # TIMPAA KELRIC Checked TIMPAA

> SHEET TITLE **ELECTRICAL DIAGRAMS**

12" = 1'-0"

**E200**