

Attachment D-1

Specifications & Drawings for Lithia Pavilion PV System

General Roof Requirements

1. The new arrays will be located as shown on the enclosed roof plan.
2. The metal roof structure has been engineered to accommodate the added PV loads.
3. PV panels will be attached to the standing seam metal roof ribs with S-5 type clips.
4. The “flat” membrane roof area will have a ballasted PV array. Total added weight shall not exceed 6 psf (lbs/sq.ft.). Refer to the attached the attached structural engineer’s report.

PV Racking Systems

1. Metal roof tilt angle: Match existing roof slope
2. Metal roof attachment: Basis-of-design is the S-5 PV Kit by Metal Roof Innovations, Ltd., the Snap-N-Rack Series 500 PV Mounting System or approved equal.
3. Membrane roof tilt angle: 5-10 deg as specified by the PV designer.
4. Membrane roof racking Basis-of-Design is the UNIRAC RM10EVO ROOFMOUNT or approved equal.
5. All racking components utilized for array equipment grounding shall be listed for that purpose and must be appropriately isolated to prevent galvanic corrosion and subsequent loss of array grounding continuity.
6. Shop Drawings: Provide layout and erection drawings showing dimensioned locations of all frames and roof attachments. Include erection drawings, elevations, and details where applicable.
7. Manufacturer Qualifications: Manufacturer with a minimum five years documented experience in producing pre-manufactured solar collector supporting steel framework.
8. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
9. Manufacturer’s warranties. Provide a minimum 10-year manufacturer’s workmanship warranty and minimum 5-year finish warranty for the racking system.

Solar Modules:

1. Orientation: South. Refer to Roof Plan A2.40 (attached).
2. Minimum 20-year warranty. Manufacturer must have been in business for at least 10 years under their current name and tax identification number. Warranty must be in the Owner’s name. Minimum 80% power output or more, for a period of 20 years. Manufacturer agrees to repair or replace components of PV modules that fail to exhibit the minimum power output within the specified warranty period.
3. PV modules shall be listed and in compliance with UL standard 1703, Standard for Safety. Flat-plate Photovoltaic Modules and Panels. Entire assembly shall be listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for electrical and fire safety, Class A, according to UL 1703.
4. PV modules must also meet or exceed IEC 61215 and all other relevant standards.
5. Modules by Silfab, SunPower, Q-Cell, Canadian Solar, or approved equal. All electrical equipment must be U.L. listed.

Inverter(s) and Monitoring:

1. Inverter location: In the Lithia mechanical-electrical equipment yard (see Attachment E Drawing).
2. Basis of design: Solar Edge inverters, or approved equal.
3. Provide integrated AC/DC disconnects.
4. Provide necessary inverter communications (hardware and software) to enable SOU to remotely monitor the system output and performance.
5. Data cabling for the offsite monitoring will be provided by SOU.
6. Inverters must be listed with UL 1741SA, "Inverters, Converters, Controllers and Interconnection System Equipment for Use with Distributed Energy Resources".
7. Installation must comply all elements of the IEEE 1547-2018 interconnection standards.
8. Warranty: The inverters shall have a minimum 10-year warranty. All warranties shall be in the Owner's name.

Electrical Interconnection:

1. Provide a solar system AC disconnect integrated with or adjacent to the existing PV disconnect. Comply with City of Ashland Electric Department requirements. The disconnect must be lockable in "ON" and "OFF" positions. Provide permanent labels at equipment per City requirements.
2. Furnish and install a new electrical utility-grade revenue meter (Schweitzer Engineering Labs Model SEL-735) in Electrical Room M026. The meter shall be wired to monitor production from both the new PV system and the existing 63 kW PV system. Meter programming will be performed by others.
3. Furnish and install all wiring, conduit, combiner boxes, and junction boxes for a complete system designed to comply with all building code and local jurisdiction requirements. All exposed wiring must be UV resistant.
4. New AC conductors shall be sized so that voltage drop does not exceed 1% at full load. Provide the City required disconnect on the outside of the building. Connections to the facility's electrical system are design-build by the contractor. The existing facility electrical service is 480-volt, 1,500 amp, three-phase.
5. Furnish and install array equipment grounding hardware. Provide PV grounding conductors and Code required bonding hardware.
6. Refer to attached drawings E1.00 (Electrical One-Line) and E2.13 (Electrical Floor Plan) for additional information.

Required Documentation:

- Roof plan drawn to scale showing all system components and confirmation/coordination with all existing conditions.
- One-Line diagram for entire system. Include all system component specifications and ratings, conductor sizes and types, conduit sizes, ratings of combiner boxes and series OCPD's.
- Location and rating of facility interconnection point.
- Electrical calculations including voltage drops and string sizing calculations.
- Solar collector roof support system design and load calculations including all dead and live (snow, wind, seismic, etc.) loads.

Permitting:

The Design/Builder will be responsible for the preparation of construction drawings and specifications and for submitting documents to the City of Ashland for all required permits. At time of submittal for permitting, the Design/Builder shall provide to the Owner one complete set of permitting documents.

Project Closeout:

At completion of the project, the Design/Builder shall provide to the Owner one (1) Operation & Maintenance (O&M) Manual in a 3-ring binder. Include copies of all as-built drawings, diagrams, calculations, product information, specifications, warranties, maintenances instructions, etc. in the O&M manuals. In addition to the printed O&M manuals, provide an electronic copy (pdf format) of all the O&M information prior to request for final payment.

The Design/Builder shall provide system instruction and training to SOU staff prior to final acceptance and payment.

The final product shall be a fully completed, fully functional, code compliant solar photovoltaic system with inverter(s) and metering, with all equipment and warranties in place, and all permits and approvals secured.

Pricing shall not be submitted where such pricing is contingent on the university's acceptance of a third party's agreement, including but not limited to third-party cooperative procurement agreements. No third-party financing or assigned leases will be associated with contract.

Enclosures:

ZCS Structural Analysis for South Membrane Roof

A2.40 Lithia-SRC Roof Plan

E1.00 Electrical One-Line Diagram

E2.13 Electrical Floor Plan (partial)

May 10, 2023

Jim McNamara, Capital Projects Manager
Southern Oregon University (SOU)
351 Walker Avenue
Ashland, Oregon 97520
541.821.1294

Reference: SOU Student Recreation Center (SRC) – PV
Array Support

Subject: Evaluation Report



EXPIRES: 12-31-23

As requested, ZCS Engineering & Architecture has performed an evaluation of the loading criteria used in the design of the SRC roof structure. The purpose of this evaluation was to determine the available capacity to support a new solar array system. See Figure 1 for the area included in this evaluation.

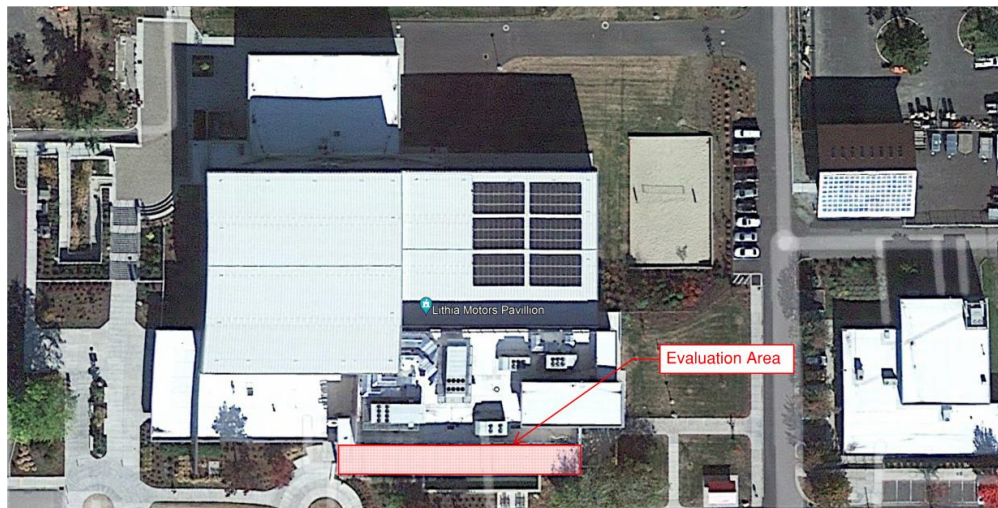


Figure 1: Evaluation Area

After comparing the information provided in the available record documents, including reviewing the construction submittals and as-built drawings, to the design deadload, it was determined that a reserve capacity of 6 psf is available. This evaluation assumes that the solar array system will be ballasted, installed as nearly parallel to the roof slope as possible, and that the as-constructed condition of the facility matches the record documents.

Please feel free to contact our office if you have any questions regarding the information presented in this report.

Respectfully,

A handwritten signature in black ink, appearing to read 'Syllas Allen', with a stylized, cursive script.

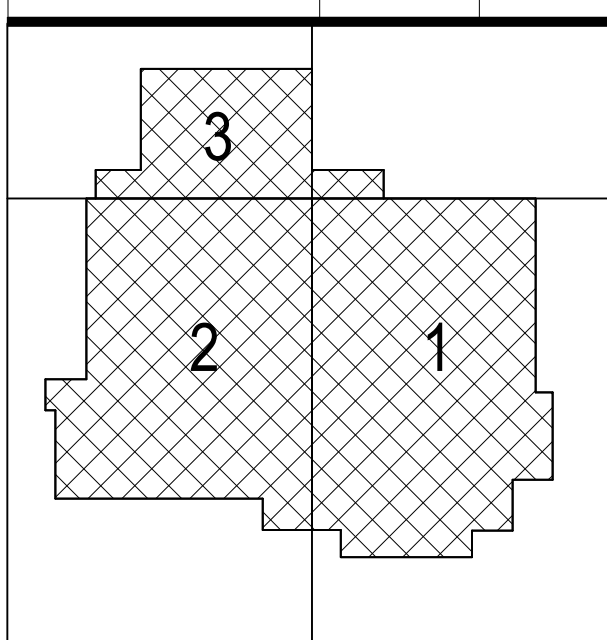
Syllas Allen, P.E.
Managing Principal

McNeal Pavilion
Replacement & Student
Recreation Center

1465 Webster St, Southern Oregon
University, Ashland, OR 97520

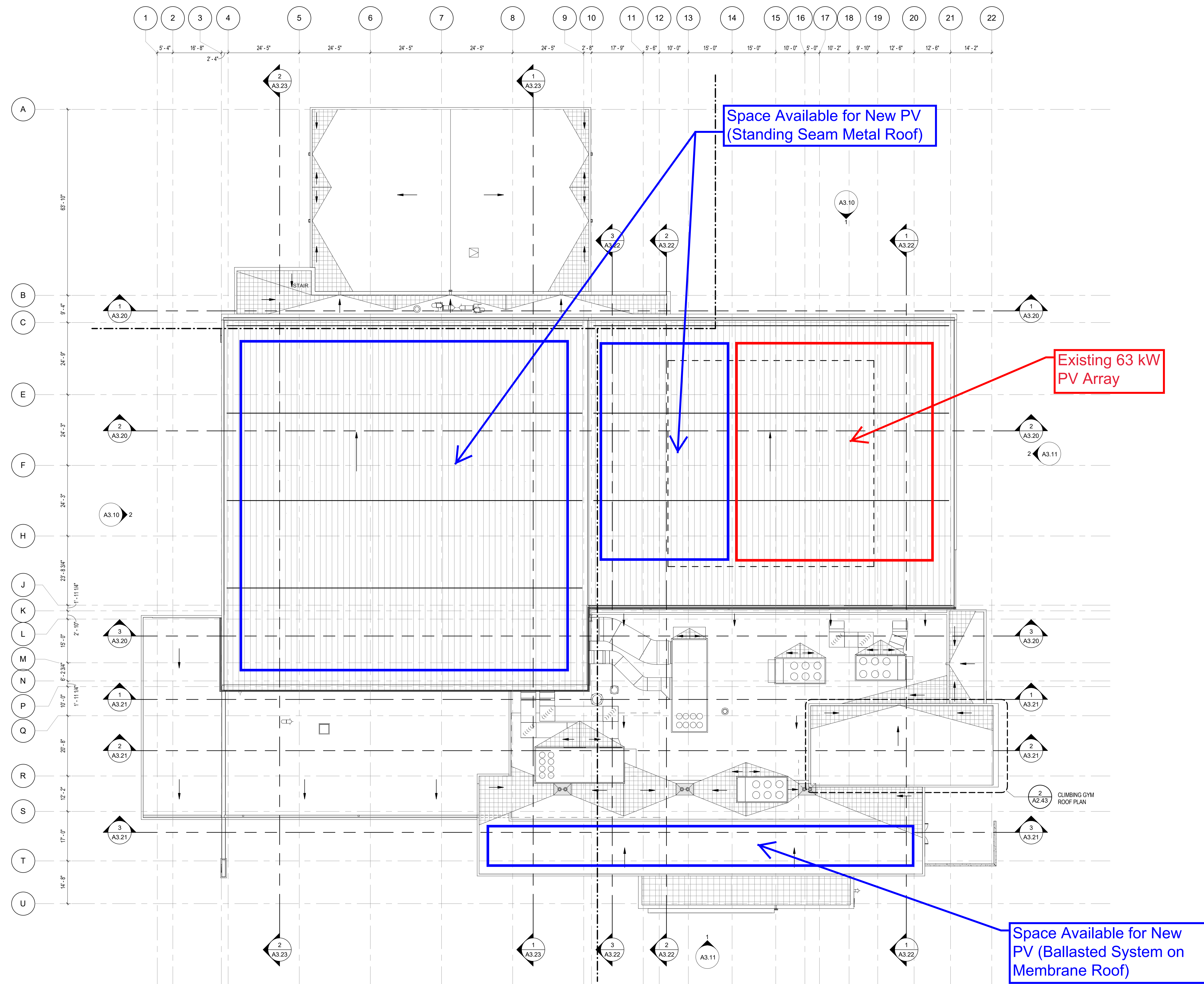
SCD Project No.: 1435.00

All information appearing herein shall not be duplicated, discharged or otherwise used without the written consent of Staus & Seibert Architects or Sink Costs Dethiels.

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**ROOF PLAN -
OVERALL**

A2.40





475 Lincoln Street



1465 Webster St, Southern Oregon
University, Ashland, OR 97520

SSA Project No.: 1435.00

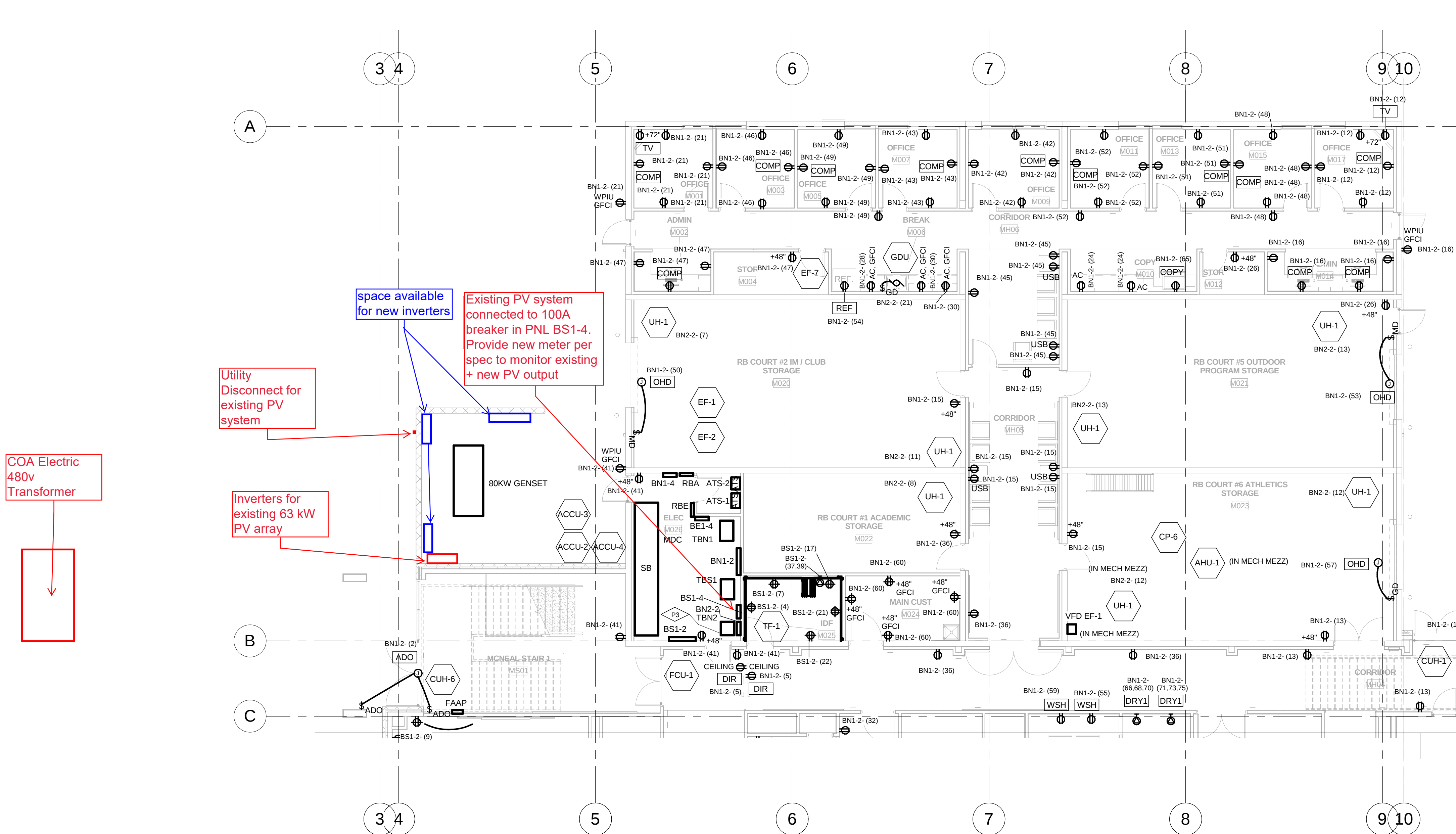
Issues/Revisions:	Date:
FOR CONSTRUCTION	2016-02-22



NOTES:	1. CALCULATIONS WERE PERFORMED USING BUSSMANN "POINT-TO-POINT" METHOD. 2. CALCULATIONS WERE BASED ON A 1500KVA TRANSFORMER WITH AN IMPEDANCE OF 5.75% AND MOTOR FAULTS FROM ROOFTOP UNITS AND THE ELEVATOR 3. TAP UTILITY TRANSFORMER UP TO SUPPLY 480V AT THE SERVICE ENTRANCE. 4. FAULT CURRENT AVAILABLE AT THE GENERATOR IS LESS THAN 1,000A. ALL EQUIPMENT IS SIZED FOR THE GREATER FAULT AVAILABLE FROM THE ELECTRICAL SERVICE THEREFORE ALL EQUIPMENT WILL WITHSTAND A FAULT FROM THE GENSET.
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① LOWER LEVEL AREA 3 - POWER PLAN
1/8" = 1'-0"

LITHIA MOTORS PAVILION PARTIAL LOWER LEVEL FLOOR PLAN