



September 16, 2025

Subject: Request for Quote – Switchgear and ATS
Project: Ventura-Santa Barbara Counties Intertie, Spec. No. 22-451
Quotes Due: October 16, 2025

Casitas Municipal Water District (CMWD) is soliciting quotations for the switchgear and automatic transfer switch (ATS) in accordance with the attached Schedule A and Schedule B plans and specifications.

This procurement is subject to Build America, Buy America (BABA) requirements under the Infrastructure Investment and Jobs Act (IIJA). All equipment, components, and materials must meet BABA domestic content requirements and be fully compliant with the applicable technical specifications. Appendix A1 summarizes the state and federal requirements.

If any state or federal requirements change during the course of the performance of this procurement, vendor shall comply with such changes. It is anticipated that all work implementing the purchased equipment will be accomplished in Calendar Year 2026. The delivery location is expected to be the Ventura area.

1. Scope of Supply

Schedule A

- (1) Main Switchboard
- Manufacturer-Recommended Spare Parts and Accessory Package

Schedule B

- (1) Main Switchboard
- (1) ATS
- Manufacturer-Recommended Spare Parts and Accessory Package

2. Procurement Phasing

CMWD intends to issue separate Notices to Proceed (NTP) for distinct phases of the Work, which may include:

Phase 1 – Submittals: Product data and shop drawing submittals for review and approval.

Phase 2 – Fabrication: Procurement and fabrication.

Phase 3 – Delivery and Acceptance: Delivery of equipment and materials and acceptance thereof.

Phase 4 – Startup and Testing: Manufacturer support during startup and testing including on-site support as described in the technical specifications.

Phase 5 – Warranty Period: Provision of the standard manufacturer’s equipment warranty commencing upon installation and acceptance by the District.

Casitas may assign any or all phases (including any related contract) to a contractor (e.g., a general contractor). The Supplier shall accept such assignment and, if required by CMWD, shall execute a separate written agreement with the assigned contractor for such assigned phases. Any such agreement shall remain consistent with the terms and conditions of this RFQ and resulting Purchase Order.

3. Vendor Quote Requirements

Vendors shall provide:

1. **Itemized Pricing** – Use the included Bid Schedules A and B.
2. **Submittal Review & Procurement Timeframe** – Estimated number of calendar days required to prepare and submit shop drawings/product data after receipt of purchase order and estimated time to procure/manufacture materials after submittal approval.
3. **Lead Times** – From receipt of approved submittals to delivery at the project site.
4. **Funding Compliance Certification** – Documentation confirming compliance, including manufacturing location(s) and domestic content percentages.
5. **Start-Up and Testing Services** – Cost for manufacturer’s field service representative to perform start-up, field testing, and operational training upon installation by contractor.
6. **Warranty Information** – As required by specifications. Additionally, warranty period shall begin upon completion of start-up and testing.
7. **Storage Requirements** – Provide manufacturer’s recommended storage requirements for material and/or equipment.
8. **Exceptions/Deviations** – Any proposed deviations from the specifications, with justification.

4. Proposal Submittal

Proposals will be accepted until **4:00 p.m. on October 16, 2025**. Only electronic (PDF) proposals will be accepted. Provide proposals to: bids@casitaswater.com.

Bid Schedule A

Bid Item #	Quantity	Description of Work	Unit Price	Amount \$
1	1	Main Switchboard	Lump Sum	\$ _____
2	1	Freight to the Job Site (Ventura, California)	Lump Sum	\$ _____
3	1	Start-up and Testing Services	Lump Sum	\$ _____
4	1	Sales Tax	Lump Sum	\$ _____

TOTAL BID AMOUNT IN WORDS (Item 1 - 4):

\$ _____ **(Figures)**

 _____ **(Words)**

Bid Schedule B

Bid Item #	Quantity	Description of Work	Unit Price	Amount \$
5	1	Main Switchboard	Lump Sum	\$ _____
6	1	Automatic Transfer Switch	Lump Sum	
7	1	Freight to the Job Site (Ventura, California)	Lump Sum	\$ _____
8	1	Start-up and Testing Services	Lump Sum	\$ _____
9	1	Sales Tax	Lump Sum	\$ _____

TOTAL BID AMOUNT IN WORDS (Item 5 - 9):

\$ _____ **(Figures)**

 _____ **(Words)**

Casitas reserves the right to award Schedule A and Schedule B separately.

Questions may be directed to Virgil Clary at vclary@casitaswater.com.

Appendix A1 – State and Federal Requirements and Certifications

Appendix A2 – Public Contracting Requirements

Appendix B – Specifications and Drawings

- **Schedule A – Del Mar Pump Plant Technical Specifications**
- **Schedule A – Drawings (Del Mar Pump Plant Switchboard and ATS)**
- **Schedule B – Red Mountain Pump Plant Technical Specifications**
- **Schedule B – Drawings (Red Mountain Pump Plant Switchboard and ATS)**

Appendix C – Specification Section 01 33 00 Submittals

APPENDIX A1 – STATE AND FEDERAL FUNDING REQUIREMENTS AND CERTIFICATIONS

This project will/may be financed in whole or in part with funding from the Additional Supplemental Appropriations for Disaster Relief Act, 2019 (ASADRA), State Water Resources Control Board (SWRCB) State Revolving Fund (SRF) Program, USBR WaterSMART program, Proposition 1 Round 2 Integrated Regional Water Management Program, and Department of Water Resources (DWR) Urban Community Drought Program. As such, the following requirements apply to all contractors, subcontractors, vendors, and suppliers associated with this project.

American Iron and Steel (AIS) Requirements (Attachment 1):

Pursuant to Section 608 of the Federal Water Pollution Control Act, all iron and steel products used in this project must be produced in the United States. “Iron and steel products” include, but are not limited to, lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials. Any request for a waiver must be submitted in writing to the Owner for forwarding to the SWRCB for approval prior to procurement.

Disadvantaged Business Enterprise (DBE) Requirements:

Contractors must make a good faith effort to solicit and utilize DBEs, including Minority Business Enterprises (MBEs) and Women’s Business Enterprises (WBEs), for procurement and subcontracting opportunities. Documentation of outreach and solicitation must be maintained and may be subject to audit. The “Six Good Faith Efforts” described in 40 CFR 33.301 shall be followed, including but not limited to:

- Ensuring DBEs are made aware of contracting opportunities to the fullest extent practicable;
- Making information on plans, specifications, and requirements available in a timely manner;
- Breaking down work into smaller tasks to encourage participation;
- Encouraging participation through community organizations, trade associations, and publications;
- Using services of minority/women community organizations;
- Negotiating in good faith with interested DBEs.

Davis-Bacon and Related Acts (DBRA) Wage Requirements:

All laborers and mechanics employed by contractors or subcontractors on this project must be paid wages at rates not less than those prevailing on projects of a similar character in the locality as determined by the U.S. Department of Labor (DOL). Certified payrolls shall be maintained and made available for inspection. The applicable wage determination(s) will be provided and must be included in all subcontracts.

Equal Employment Opportunity (EEO) Compliance:

Contractors and subcontractors must comply with Executive Order 11246, as amended, and implement affirmative action to ensure equal employment opportunity without regard to race, color, religion, sex, or national origin.

Debarment and Suspension Certification (Attachment 2):

In accordance with 2 CFR Part 180, contractors must certify that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any federal department or agency.

Records Access and Retention:

Contractors shall permit the Owner, SWRCB, the U.S. Environmental Protection Agency (EPA), and the Comptroller General of the United States, or any of their authorized representatives, access to any books, documents, papers, and records of the contractor which are directly pertinent to the specific contract for the purpose of making audits, examinations, excerpts, and transcriptions. Records must be retained for a minimum of three (3) years after final payment or longer if required.

Environmental and Cultural Resource Compliance:

Contractors shall comply with all applicable environmental laws and regulations, including the National Environmental Policy Act (NEPA), Endangered Species Act (ESA), National Historic Preservation Act (NHPA), and related state requirements. Work must be performed in accordance with any mitigation measures or permit conditions.

Trafficking in Persons:

Supplier, its employees, contractors and subcontractors and their employees may not engage in severe forms of trafficking in persons during the term of this Agreement, procure a commercial sex act during the term of this Agreement, or use forced labor in the performance of this Agreement. Supplier must include this provision in its contracts and subcontracts under this Agreement. Supplier must inform CMWD immediately of any information regarding a violation of the foregoing. CMWD may unilaterally terminate this Agreement if Supplier is determined to have violated the foregoing Trafficking Victims Protection Act of 2000.

Anti-Lobbying Provisions (40 CFR Part 34) & Anti-Litigation Provisions (2 CFR 220, 225, or 230) (Attachment 3):

Supplier shall ensure that no funds under this Agreement are used to engage in lobbying of the federal government or in litigation against the United States unless authorized under existing law. Supplier shall abide by 2 CFR 225 (OMB Circular A-87) (or, if not applicable, other parallel requirements), which prohibits the use of federal grant funds for litigation against the United States or for lobbying or other political activities. Supplier agrees to comply with 40 CFR Part 24, New Restrictions on Lobbying. Supplier agrees to submit certification and disclosure forms in accordance with these provisions. In accordance with the Byrd Anti-Lobbying Amendment, any Supplier who makes a prohibited expenditure under 40 CFR Part 34 or fails to file the required certification or lobbying forms shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such expenditure. Supplier shall abide by its respective 2 CFR 200, 225, or 230, which prohibits the use of federal grant funds for litigation against the United States or for lobbying or other political activities.

Supplier certifies that to the best of their knowledge and belief no state, federal or local agency appropriated funds have been paid, or will be paid by or on behalf of the Consultant to any person for the purpose of influencing or attempting to influence an officer or employee of any state or federal agency; a Member of the State Legislature or United States Congress; an officer or employee of the Legislature or Congress; or any employee of a Member of the Legislature or Congress, in connection with the award of any state or federal contract, grant, loan, or cooperative agreement, or the extension, continuation, renewal, amendment, or modification of any state or federal contract, grant, loan, or cooperative agreement.

a) If any funds other than federal appropriated funds have been paid, or will be paid to any person for the purpose of influencing or attempting to influence an officer or employee of any federal agency; a Member of Congress; an officer or employee of Congress, or an employee of a Member of Congress; in connection with this Agreement, the Supplier shall complete and submit the attached Standard Form-LLL, “Disclosure Form to Report Lobbying,” in accordance with the attached instructions.

b) Supplier’s certification provided in this section is a material representation of fact upon which reliance was placed when this Agreement was entered into, and is a prerequisite for entering into this Agreement.

c) Supplier also agrees by signing this Agreement that they shall require that the language set forth in this section be included in all Supplier’s subcontracts which exceed \$100,000, and that all such subcontractors shall certify and disclose accordingly.

Contract Provisions in Subcontracts:

All the above provisions shall be included in all subcontracts and purchase orders for work or materials associated with this project.

The following terms and conditions apply to this procurement as it is funded in whole or in part by the State Revolving Fund (SRF). Vendors must comply with all applicable federal and state requirements, including but not limited to the following:

- Drinking Water State Revolving Fund (SRF)
- Additional Supplemental Appropriations for Disaster Relief Act, 2019 (ASADRA)

Contract Documents are intended to be complementary, and a requirement in one document is as effective as if it appeared in all of the Contract Documents.

Vendor Certification of SRF and BABA Compliance (Attachment 4):

The undersigned certifies that all products, materials, and labor supplied under this procurement will comply with all applicable requirements of:

- State Revolving Fund (SRF) program terms and conditions
- American Iron and Steel (AIS) requirements
- Build America, Buy America Act (BABA) requirements

- Davis-Bacon and Related Acts (DBRA) wage requirements
 - Disadvantaged Business Enterprise (DBE) good faith efforts
- Exceptions (if any) must be listed below, along with documentation of any approved waivers.

Vendor Name: _____

Authorized Representative: _____

Title: _____

Signature: _____

Date: _____

ATTACHMENT 1:

AIS REQUIREMENT

The Contractor acknowledges to and for the benefit of the Casitas Municipal Water District (“Purchaser”) and the State of California (the “State”) that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel;” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

SAMPLE CERTIFICATIONS

The following information is provided as a sample letter of step certification for AIS compliance. Documentation must be provided on company letterhead.

Example 1:

Date: _____
Company Name: _____
Company Address: _____
City, State Zip: _____

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXXXX)

I, (company representative), certify that the (melting, bending, coating, galvanizing, cutting, etc.) process for (manufacturing or fabricating) the following products and/or materials shipped or

provided for the subject project is in full compliance with the American Iron and Steel requirement as mandated in EPA’s State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location: _____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative _____

Example 2:

Date: _____
Company Name: _____
Company Address: _____
City, State Zip: _____

Subject: American Iron and Steel Certification for Project (XXXXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA’s State Revolving Fund Programs.

Item, Products and/or Materials:

1. XXXX
2. XXXX
3. XXXX

Such process took place at the following location: _____

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

Signed by company representative _____

ATTACHMENT 2:

DEBARMENT AND SUSPENSION CERTIFICATION

TITLE 49, CODE OF FEDERAL REGULATIONS, PART 29

The bidder, under penalty of perjury, certifies that, except as noted below, he/she or any other person associated therewith in the capacity of owner, partner, director, officer, manager:

- is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any Federal agency;
- has not been suspended, debarred, voluntarily excluded or determined ineligible by any Federal agency within the past 3 years;
- does not have a proposed debarment pending; and
- has not been indicted, convicted, or had a civil judgment rendered against it by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past 3 years.

If there are any exceptions to this certification, insert the exceptions in the following space.

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted above, indicate below to whom it applies, initiating agency, and dates of action.

Notes: Providing false information may result in criminal prosecution or administrative sanctions. The above certification is part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Certification.

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ATTACHMENT 3:

NONLOBBYING CERTIFICATION

The prospective participant certifies, by signing and submitting this bid, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, “Disclosure of Lobbying Activities,” in conformance with its instructions.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid or bid that he or she shall require that the language of this certification be included in all lower tier subcontracts which exceed \$100,000 and that all such subrecipients shall certify and disclose accordingly.

DISCLOSURE OF LOBBYING ACTIVITIES
 COMPLETE THIS FORM TO DISCLOSE LOBBYING ACTIVITIES PURSUANT TO 31 U.S.C. 1352

<p>1. Type of Federal Action:</p> <p><input type="checkbox"/> a. contract <input type="checkbox"/> b. grant <input type="checkbox"/> c. cooperative agreement <input type="checkbox"/> d. loan <input type="checkbox"/> e. loan guarantee <input type="checkbox"/> f. loan insurance</p>	<p>2. Status of Federal Action:</p> <p><input type="checkbox"/> a. bid/offer/application <input type="checkbox"/> b. initial award <input type="checkbox"/> c. post-award</p>	<p>3. Report Type:</p> <p><input type="checkbox"/> a. initial <input type="checkbox"/> b. material change</p> <p align="right">For Material Change Only: year _____ quarter _____ date of last report _____</p>
<p>4. Name and Address of Reporting Entity</p> <p><input type="checkbox"/> Prime <input type="checkbox"/> Subawardee Tier _____, if known</p> <p align="center">Congressional District, if known</p>	<p>5. If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:</p> <p align="center">Congressional District, if known</p>	
<p>6. Federal Department/Agency:</p>	<p>7. Federal Program Name/Description:</p> <p align="right">CFDA Number, if applicable _____</p>	
<p>8. Federal Action Number, if known:</p>	<p>9. Award Amount, if known:</p>	
<p>10. a. Name and Address of Lobby Entity (If individual, last name, first name, MI)</p>	<p>b. Individuals Performing Services (including address if different from No. 10a) (last name, first name, MI)</p>	
(attach Continuation Sheet(s) if necessary)		
<p>11. Amount of Payment (check all that apply)</p> <p>\$ _____ <input type="checkbox"/> actual <input type="checkbox"/> planned</p>	<p>13. Type of Payment (check all that apply)</p> <p><input type="checkbox"/> a. retainer <input type="checkbox"/> b. one-time fee <input type="checkbox"/> c. commission <input type="checkbox"/> d. contingent fee <input type="checkbox"/> e. deferred <input type="checkbox"/> f. other, specify _____</p>	
<p>12. Form of Payment (check all that apply):</p> <p><input type="checkbox"/> a. cash <input type="checkbox"/> b. in-kind; specify: nature _____ value _____</p>		
<p>14. Brief Description of Services Performed or to be performed and Date(s) of Service, including officer(s), employee(s), or member(s) contacted, for Payment Indicated in Item 11:</p> <p align="center">(attach Continuation Sheet(s) if necessary)</p>		
<p>15. Continuation Sheet(s) attached: Yes <input type="checkbox"/> No <input type="checkbox"/></p>		
<p>16. Information requested through this form is authorized by Title 31 U.S.C. Section 1352. This disclosure of lobbying reliance was placed by the tier above when his transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to Congress semiannually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.</p>		
		<p>Signature: _____ Print Name: _____ Title: _____ Telephone No.: _____ Date: _____</p>
<p>Federal Use Only:</p>		<p>Authorized for Local Reproduction Standard Form - LLL</p>

INSTRUCTIONS FOR COMPLETION OF DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of covered Federal action or a material change to previous filing pursuant to title 31 U.S.C. section 1352. The filing of a form is required for such payment or agreement to make payment to lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress an officer or employee of Congress or an employee of a Member of Congress in connection with a covered Federal action. Attach a continuation sheet for additional information if the space on the form is inadequate. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence, the outcome of a covered Federal action.
2. Identify the status of the covered Federal action.
3. Identify the appropriate classification of this report. If this is a follow-up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last, previously submitted report by this reporting entity for this covered Federal action.
4. Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the first tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.
5. If the organization filing the report in item 4 checks “Subawardee” then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.
6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organization level below agency name, if known. For example, Department of Transportation, United States Coast Guard.
7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans and loan commitments.
8. Enter the most appropriate Federal identifying number available for the Federal action identification in item 1 (e.g., Request for Proposal (RFP) number, Invitation for Bid (IFB) number, grant announcement number, the contract grant. or loan award number, the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., “RFP-DE-90-001.”
9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitments for the prime entity identified in item 4 or 5.
10. (a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.

- (b) Enter the full names of the individual(s) performing services and include full address if different from 10 (a). Enter Last Name, First Name and Middle Initial (MI).
11. Enter the amount of compensation paid or reasonably expected to be paid by the reporting entity (item 4) to the lobbying entity (item 10). Indicate whether the payment has been made (actual) or will be made (planned). Check all boxes that apply. If this is a material change report, enter the cumulative amount of payment made or planned to be made.
 12. Check the appropriate box(es). Check all boxes that apply. If payment is made through an in-kind contribution, specify the nature and value of the in-kind payment.
 13. Check the appropriate box(es). Check all boxes that apply. If other, specify nature.
 14. Provide a specific and detailed description of the services that the lobbyist has performed or will be expected to perform and the date(s) of any services rendered. Include all preparatory and related activity not just time spent in actual contact with Federal officials. Identify the Federal officer(s) or employee(s) contacted or the officer(s) employee(s) or Member(s) of Congress that were contacted.
 15. Check whether or not a continuation sheet(s) is attached.
 16. The certifying official shall sign and date the form, print his/her name title and telephone number.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instruction, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

ATTACHMENT 4:
BABA REQUIREMENT

The Contractor acknowledges to and for the benefit of the _____ (“Owner”) and the _____ (the “Funding Authority”) that it understands the goods and services under this Agreement are being funded with federal monies and have statutory requirements commonly known as “Build America, Buy America;” that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States (“Build America, Buy America Requirements”) including iron and steel, manufactured products, and construction materials provided by the Contractor pursuant to this Agreement.

The Contractor hereby represents and warrants to and for the benefit of the Owner and Funding Authority (a) the Contractor has reviewed and understands the Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Build America, Buy America Requirements, as may be requested by the Owner or the Funding Authority. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner or Funding Authority to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Owner or Funding Authority resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the Funding Authority or any damages owed to the Funding Authority by the Owner). If the Contractor has no direct contractual privity with the Funding Authority, as a lender or awardee to the Owner for the funding of its project, the Owner and the Contractor agree that the Funding Authority is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the Funding Authority.

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APPENDIX A2 – PUBLIC CONTRACTING REQUIREMENTS

ATTACHMENT 5:

NONCOLLUSION DECLARATION

The undersigned declares:

I am the _____ of _____,
(Title) (Company)

the party making the foregoing bid. The bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The bid is genuine and not collusive or sham. The bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the bid price of the bidder or any other bidder, or to fix any overhead, profit, or cost element of the bid price, or of that of any other bidder. All statements contained in the bid are true. The bidder has not, directly or indirectly, submitted their or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose.

Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that they have full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____, 2025.

(Date)

at _____,
(City) (State)

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ATTACHMENT 6:

Contract Code Section 10162 Questionnaire

In conformance with Public Contract Code Section 10162, the Bidder shall complete, under penalty of perjury, the following questionnaire:

Has the bidder, any officer of the bidder, or any employee of the bidder who has a proprietary interest in the bidder, ever been disqualified, removed, or otherwise prevented from bidding on, or completing a federal, state, or local government project because of a violation of law or a safety regulation?

Yes _____ No _____

If the answer is yes, explain the circumstances in the following space.

Vendor Name: _____

Title: _____

Signature: _____

Date: _____

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ATTACHMENT 7:

Public Contract Code Section 10232 Statement

In conformance with Public Contract Code Section 10232, the Contractor, hereby states under penalty of perjury, that no more than one final unappealable finding of contempt of court by a federal court has been issued against the Contractor within the immediately preceding two-year period because of the Contractor's failure to comply with an order of a federal court which orders the Contractor to comply with an order of the National Labor Relations Board.

Note: The above Statement and Questionnaire are part of the Bid. Signing this Bid on the signature portion thereof shall also constitute signature of this Statement and Questionnaire. Bidders are cautioned that making a false certification may subject the certifier to criminal prosecution.

Vendor Name: _____

Title: _____

Signature: _____

Date: _____

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**APPENDIX B – EQUIPMENT PROCUREMENT
PROJECT SPECIFICATIONS AND DRAWINGS**

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SCHEDULE A

SECTION 26 36 23

AUTOMATIC TRANSFER SWITCH

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. The Contractor shall supply the automatic transfer switch (ATS) as specified herein.
- B. The ATS scope of work includes:
 - 1. Providing and installing one automatic transfer switch of rating shown on Contract Drawings.
 - 2. Submittal data and drawings.
 - 3. Startup assistance.
 - 4. Factory and field testing.
 - 5. Operation and maintenance manuals.
 - 6. Warranty of all components.
- C. Startup and configuration of ATS with installed voltages and loads.
- D. As required under Electrical Specifications [Factory and Field Testing], furnish all required labor, materials, safety equipment, transportation, test equipment, incidentals and services to perform factory and/or field testing.

1.02 REFERENCES

- A. Electrical Specifications [Electrical General]
- B. Electrical Specifications [Factory and Field Testing]
- C. Project Drawings

1.03 SUBMITTALS REQUIREMENTS

- A. Provide Submittals as specified in Electrical Specifications [Electrical General, Submittal Requirements].
- B. Include a record of each parameter available to be changed by the user. The list shall include factory defaults and space for entered values.

1.04 OPERATION AND MAINTENANCE INFORMATION

- A. Provide operation and maintenance information as specified in Electrical Specifications [Electrical General, Operating and Maintenance Information].
- B. Include a record of each ATS parameter setup during startup and testing and place a copy of setting in each O & M manual.

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Automatic Transfer Switch

PART 2 PRODUCTS

2.01 AUTOMATIC TRANSFER SWITCH

A. General:

1. The ATS shall be UL listed in accordance with UL 1008 and be labeled in accordance with that standard's 1½ and 3 cycle, long-time ratings. ATSs which are not tested and labeled with 1½ and 3 cycle (any breaker) ratings and have series, or specific breaker ratings only, are not acceptable.
2. The ATS shall be rated to close on and withstand 42,000 RMS symmetrical short circuit amperes at the ATS terminals or otherwise shown. Provide overcurrent protection as shown on the Contract drawings.
3. The ATS manufacturer shall be certified to ISO 9001 International Quality Standard and the manufacturer shall have third party certification verifying quality assurance in design/development, production, installation and servicing in accordance with ISO 9001.
4. ATS types utilizing components of molded case circuit breakers, contactors, or parts thereof, are not acceptable.
5. The switch assembly shall be installed in a NEMA enclosure located as shown on Contract drawings.
6. The automatic transfer switch shall be an ASCO Model 7000 with options to meet specified requirements, or equal.

B. Switch Unit:

1. The transfer switch unit shall be electrically operated and mechanically held. The electrical operator shall be solenoid operated and only momentarily energized to minimize power consumption and heat generation.
2. The transfer switch shall feature a delayed transition mode. The switch shall remain in the neutral position (neither emergency nor normal) until the associated time delays have expired and allow the switch to complete the transfer.
3. The switch shall be 3 pole double throw with inherently interlocked construction. A solid neutral shall be provided for all systems.
4. Wide contact gaps shall be provided to insure positive isolation of the normal and emergency power sources.
5. The switch shall be fully rated for amperage shown on Contract Drawings, for switching all types of loads including induction motors. The ratings shall apply to the voltage and mounting arrangement as shown in the drawings.
6. The main power contacts shall have silver alloy contact construction featuring a wiping action each time the switch is operated. Arc chutes shall be utilized to contain the inherent spark created when switching under load.
7. The main contact design shall allow repeated making and breaking of rated full load current, with a combination of motor and other loads and without damage or undue wear to the contacts.
8. All main power contacts and auxiliary contacts shall be mechanically driven from a common actuator shaft.

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Automatic Transfer Switch

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9. The bus shall be constructed of silver plated copper.
10. Inspection of all contacts, linkages and moving parts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors.
11. All switch and relay contacts, coils, mechanical linkages, and control elements shall be serviceable or removable from the front of the mounted switch or accessory assembly without removal of the switch or assembly from the compartment and without disconnection of the power cables or control wiring.
12. The switch shall have a manual operating handle for maintenance purposes.
13. Compression screw type solder-less terminals or lugs shall be provided for connecting all external line & load power cables and control wiring. All connections shall be accessible from the front without removal of internal components.
14. A terminal strip shall be provided for terminating all control wiring. All terminals shall be numbered with machine printed lettering matching the wire number of the terminated wire.
15. All control wiring shall have permanent identification at each point of connection. Wire identification shall be by machine printed numbered wiring sleeves. Electrically common wires shall have the same wire number. Electrically different wiring shall have unique wire numbers.
16. Control wiring shall be neatly bundled and secured in place by plastic cable ties. Wiring shall be protected with plastic spiral wrap where it crosses over a hinge to the door.

C. ATS CONTROL PANEL

1. A control panel shall be provided to direct the operation of the transfer switch. The modules sensing and logic shall be controlled by a built in microprocessor. Control panels that do not utilize microprocessor electronics to control the operation of the switch are not acceptable.
2. A four line, 20 character LCD display and keypad shall be an integral part of the controller for viewing all available data and setting desired operational parameters. Operational parameters shall also be available for viewing and limited control through the serial communications input port.
3. The controller shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the controller to be disconnected from the transfer switch for routine maintenance.
 - a. Sensing and control logic shall be provided on multi-layer printed circuit boards.
 - b. The panel shall be enclosed with a protective cover and be outer door or deadfront mounted such that it may be operated with the door closed for safety and ease of maintenance.
4. A single controller shall provide twelve selectable nominal voltages for maximum application flexibility and minimal spare part requirements. Voltage sensing shall be true RMS type and shall be accurate to 0.1% of nominal voltage. Frequency sensing shall be accurate to 0.2%.

- a. The under-voltage of each phase of the normal source shall be monitored, with pickup adjustable from 85% to 100% of nominal and the dropout adjustable from 75% to 98% of pickup setting, both in increments of 1%. These adjustments shall be factory set at 85% dropout, and 90% pickup.
 - b. The voltage of each phase of the emergency source shall be monitored, with pickup adjustable from 85% to 100% of nominal. This adjustment shall be factory set at 95% pickup.
 - c. Frequency sensing of the emergency source shall be provided, with pickup adjustable from 90% to 100% of nominal. This adjustment shall be factory set at 97% pickup.
 - d. The control panel shall meet or exceed the voltage surge withstand capability in accordance with IEEE Standard 472 1974 (ANSI C37.90a 1974) and the withstand voltage test in accordance with the proposed NEMA Standard ICS1 109.21.
5. The transfer switch control panel shall be capable of operating over a temperature range of -20 to +60 degrees C.
 6. The control panel shall include the following field adjustable time delays:
 - a. Time delay to override momentary normal source outages, adjustable from 0 to 5 minutes. This adjustment shall be field set to place emergency generator on-line in 1 minute.
 - b. Transfer to emergency time delay for controlled timing of load transfer to emergency, adjustable from 0 to 5 minutes. This adjustment shall be field set switch position in 5 seconds after power has stabilized.
 - c. Emergency source failure time delay to ignore momentary transients during initial generator set loading, adjustable from 0 to 6 seconds. Set at 2 seconds.
 - d. Retransfer to normal time delay, adjustable 0 to 60 minutes. This adjustment shall be factory set at 5 minutes. The time delay is automatically bypassed if the emergency source fails and normal source is acceptable.
 - e. Unloaded running time delay for emergency engine generator cooldown, adjustable from 0 to 60 minutes. This adjustment shall be factory set at 5 minutes.
 - f. Delayed transition time delay for setting the dead time when all power is removed from the load side of ATS, adjustable 0 to 5 minutes. Set at 1 minute.
 - g. Generator Exercise Timer: Timer provided for operator adjustment of day of week, time of day and run duration for exercising the generator under operating loads by activating the automatic transfer switch. . Timer shall be mounted on the ATS outer deadfront door.
 - h. The controller shall provide an integral engine exerciser. The timer shall be field set by the Contractor with date and time during training. The engine exerciser shall allow the user to program up to seven different exercise routines. For each routine, the user shall be able to:
 - 1) Enable or disable the routine.

- 2) Enable or disable transfer of the load during routine.
 - 3) Set the start time of day, day of week, week of month, alternate or every time start, duration of run.
 - 4) At the end of the specified duration the switch shall transfer the load back to normal and run the generator for the specified cool down period. A 10-year life battery that supplies power to the real time clock in the event of a power loss will maintain all time and date information.
7. The controller shall commit to start engine which requires the engine to reach proper output and run at least the duration of the cooldown setting, regardless of whether the load is transferred.
 8. Provide interface relays or main switch follower contacts to comply with I/O interface requirements as defined in the P&ID diagram. Interfacing relays shall be industrial grade plug-in type with dust covers. Interface connections shall be wired to backpan terminal blocks. At minimum, the switch shall have the following unused I/O contacts available:
 - a. Switch in Normal – SPDT rated 10 amps, 120 VAC
 - b. Switch in Emergency – SPDT rated 10 amps, 120 VAC
 - c. Engine starting contact -- DPDT gold-flashed contacts rated 10 amps, 32 VDC
 - d. Emergency Power available – SPDT rated 10 amps, 120 VAC
 - e. Normal Power available – SPDT rated 10 amps, 120 VAC
 9. Terminals shall be provided for a remote contact which opens to signal the ATS to transfer to emergency and for remote contacts which open to inhibit transfer to emergency and/or retransfer to normal.
 10. Provide separate LED signal lights with nameplates indicating the following:
 - a. Utility power is available (green)
 - b. Generator power is available (red)
 - c. ATS is connected to Utility source (green)
 - d. ATS is connected to the Generator source (red)
 - e. ATS in neutral position (wht)
 11. A three position momentary-type test switch shall be provided for the test / automatic / reset modes:
 - a. Test: simulate normal source failure
 - b. Automatic: normal operation
 - c. Reset: bypass the time delays on either transfer to emergency or retransfer to normal.
 12. All adjustments shall be field adjustable without the use of tools, meters, power supplies, or special test equipment and can be made safely without personal exposure to live parts
 13. Each adjustment resolution shall be settable within minimum increments of 1%.
 14. Repetitive accuracy of timer, voltage and frequency settings over a temperature range of -20° C to 70° C shall be within +/- 2%.
 15. The control panel programming shall be lockable via password protection.

16. The wire harness for connection of the control panel to the transfer switch shall have sufficient length to reach between the mounting locations shown on the Contract drawings.
17. Provide the following displays on the controller:
 - a. Event log to display 99 logged events with the time and date of the event, event type and event reason.
 - b. Total number of ATS transfers.
 - c. Number of ATS transfers caused by power source failures.
 - d. Total number of days ATS has been in operation.
 - e. Total number of hours that the normal and emergency sources have been available.

PART 3 EXECUTION

3.01 WORKMANSHIP

- A. All work in this Section shall conform to the codes and standards specified in Electrical Specifications [Electrical General, Workmanship].

3.02 FIELD ASSISTANCE

- A. Testing, checkout and start-up of the ATS equipment shall be performed under the technical direction of a factory trained authorized manufacturer representative.
 1. The setup and programming of the ATS shall be provided by a factory-trained representative who is authorized by the ATS manufacturer to perform the startup. This setup and programming shall be done prior to and during the first application of power.
 2. Provide testing as specified in Electrical Specifications [Factory and Field Testing].
- B. Provide 1 hour of "ATS Setup" Training on operating and maintenance procedures.

3.03 WARRANTY

- A. Provide warranty as specified in Electrical Specifications [Electrical General, Warranty].

END OF SECTION

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Automatic Transfer Switch

SECTION 26 44 13

LOW VOLTAGE SWITCHBOARD

PART 1 GENERAL

1.01 SCOPE OF WORK

- A. This section applies to specifies switchboards rated 600 volts and below.
- B. Provide Switchboard(s) (SWBD) as specified herein and shown on the Drawings.
- C. All wiring, wire color codes, wire labeling and terminal blocks within SWBD shall be as specified in Electrical Specifications [Low Voltage Wire & Data Cable].
- D. The SWBD scope of work includes:
 - 1. Providing SWBD structure and all internal components.
 - 2. Installation of the SWBD on concrete pad per details.
 - 3. Submittal data and drawings.
 - 4. Startup and configuration of SWBD internal components.
 - 5. Operation and maintenance manuals.
 - 6. Warranty of all components.
- E. All electrical equipment and materials, and methods - including installation, and calibration - shall conform to the applicable codes and standards listed in this and other Sections. All electrical materials and work shall conform to published standards of the National Electric Code (NEC), Institute of Electrical and Electronic Engineers (IEEE), and Underwriters Laboratories Inc (UL).

1.02 REFERENCES

- A. Electrical drawings (One line and Elevation)

1.03 SUBMITTALS REQUIREMENTS

- A. Provide Submittals as specified in Electrical Specifications [Electrical General, Submittal Requirements].
- B. Include a record of each configurable parameter available to be changed by the user for internal components. The list shall include factory defaults and space for entered values for each configurable component.

1.04 OPERATION AND MAINTENANCE INFORMATION

- A. Provide operation and maintenance instructions as specified in Electrical Specifications [Electrical General].

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Low Voltage Switchboard

PART 2 PRODUCTS

2.01 SWITCHBOARD

- A. General:
1. The Switchboard shall be Eaton Pow-R-Line, Square D, Tesco Metering Switchboard, or approved equal.
 2. The Switchboard (SWBD) shall be built and tested in accordance with:
 - a. NEMA Standards
 - b. ANSI
 - c. Underwriters Laboratories, Inc.
 3. Switchboard enclosure shall be NEMA rated as shown in the drawings.
- B. Metering Panel:
1. Provide metal enclosed, front accessible, self contained utility metering panel. Voltage, phase, AIC and continuous amperage rating shall be as shown on Contract Drawings. Panel will include meter socket, factory installed main breaker(s) and test by-pass facility.
 2. Design utility entrance and termination and other features per NEC, local codes, and serving Utility requirements.
 3. Enclosure shall be NEMA 3R construction for underground utility service. Enclosure shall be manufactured from galvanized 14 ga. (min) sheet steel. The enclosure shall be finished with ANSI 61 gray enamel paint. Provide pad mount, surface mount or flush mount cabinet per installation detail.
- C. Switchboard:
1. Switchboard shall be front accessible with group mounted, buss connected circuit protective devices. Where provisions for future circuit protective devices are required, space for the device, corresponding vertical buss, device connectors and the necessary mounting hardware shall be supplied.
 2. Distribution section shall meet all requirements per NEC, local codes, and as defined in the drawings.
 3. Buss shall be copper. Aluminum buss is not equal to copper buss. Furnish buss mounted cable lugs sized for cabling that is required to be directly buss connected.
 4. Buss shall, 3 phase, 4 wire, 480 volt, 65,000 AIC minimum symmetrical (or as shown otherwise in the drawings).
 5. Power buss:
 - a. Continuous amperage rating at least equal to the main circuit breaker or the power source and shall be braced to withstand stresses resulting from the maximum short-circuit current available.
 - b. Horizontal buss shall extend through all sections of the switchgear unless shown otherwise in the drawings with vertical connections to circuit breakers in each section.
 - c. Buss shall be mounted on heavy-duty insulated glass polyester supports, and main bus joints shall be bolted using a minimum of two bolts.

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Low Voltage Switchboard

- d. Shipping splits and provisions for future bus extensions shall have tin-plated bolted connections.
6. Neutral buss, when specified or required, shall have the same capacity as the main bus.
7. Ground buss shall be rated per NEC relative to the power buss amperage rating and shall extend the entire length of the switchboard.

2.02 MOLDED CASE CIRCUIT BREAKERS

A. General

1. Circuit breakers and motor circuit protectors shall be manufactured by Eaton Cutler-Hammer, Square D, G.E., Siemens, or equal.
2. Circuit breakers shall be the bolt-on type.
3. Multiple pole circuit breakers shall be designed so that an overload on one pole automatically causes all poles to open. The use of tandem or dual circuit breakers in a normal single pole space to provide the number of poles or spaces specified are not acceptable.
4. Molded case circuit breakers shall be operated by a single toggle-type handle and shall have a quick-make, quick-break switching mechanism. An automatic trip of the breaker shall be clearly indicated by the handle position. Contacts shall be non-welding silver alloy and have flash reduction arc chutes. A push-to-trip button on the front of the circuit breaker shall provide a local manual means to exercise the trip mechanism.
5. Minimum interrupting capacity:
 - a. 480 volt circuit breaker shall have a minimum interrupting capacity of 42,000 amperes.
 - b. 120 or 208 or 240 volt breaker shall have a minimum interrupting capacity of 22,000 amperes
6. Circuit Breakers protecting full voltage or solid state reduced voltage motor starters shall be motor circuit protector (MCP) breakers with adjustable magnetic trip unless otherwise noted on the drawings.
7. Circuit breakers shall be UL listed for series application.
8. Where indicated circuit breakers shall be current limiting.
9. Where indicated on Drawings, provide UL listed circuit breakers for continuous duty at 100% of their ampere rating in the intended enclosure.
10. Furnish add-on features such as auxiliary position status contacts, trip indication contacts, zone interlocking, shunt trip coils, etc, as shown in the drawings.

B. Trip Unit – Molded Case Circuit Breakers

1. Circuit Breakers over 400 volt and over 90A trip units as defined herein. All other circuit breakers shall have non-electronic thermal-magnetic (TM) trip units with inverse time-current characteristics.
2. The trip unit shall be Eaton type Power Expert Release (PXR) or equal.
 - a. Each circuit breaker trip unit shall have three (3) current sensors, voltage sensors, microprocessor, and flux transfer trip solenoid at minimum.

- b. Trip units shall be continuously self-checking and provide a visual indication that the internal circuitry is being monitored and is fully operational.
 - c. Trip units shall be powered from the primary voltage connected to the circuit breaker. Current flow shall not be required for settings functions. Circuit breaker trip units shall be operable and adjustable with zero current flowing through the circuit breaker.
 - d. True RMS sensing circuit protection shall be achieved by analyzing the secondary current signals received from the circuit breaker current and voltage sensors, and initiating trip signals to the circuit breaker trip actuators when predetermined trip levels and time-delay settings are reached.
 - e. Trip units shall be provided with a display panel. Trip units shall have an information system that provides LEDs to indicate mode of trip following an automatic trip operation. The indication of the mode of trip shall be retained after an automatic trip. A reset button shall be provided to turn off the LED indication after an automatic trip
 - f. Programming may be done via a keypad at the faceplate of the unit. Programming via the communication network if or as shown in drawings.
 - g. The trip unit shall offer a three-event trip log that will store the trip data, and shall time and date stamp the event.
 - h. The trip unit shall have the following advanced protective features integral to the trip unit:
 - 1) Adjustable undervoltage release (defeatable)
 - 2) Adjustable overvoltage release (defeatable)
 - 3) Reverse power and fault current
 - 4) Reverse sequence voltage
 - 5) Under-frequency
 - 6) Over-frequency
 - 7) Voltage phase unbalance and phase loss during current detection.
 - i. Although not preferred but if needed, furnish 24VDC redundant power supply with terminal blocks and 0.5A miniature circuit breakers to distribute control power to each circuit breaker trip unit that requires it for settings. The power supply shall be connected below the main breaker and transfer switch but above any feeder circuit breakers. Provide option for external power supply input.
3. System coordination shall be provided by the following microprocessor-based time-current curve shaping adjustments:
- a. Adjustable long-time setting (set by adjusting the trip setting dial to an amount not to exceed rating plug)
 - b. Adjustable short-time setting and delay with selective flat or I2t curve shaping,
 - c. Adjustable instantaneous setting
 - d. Adjustable ground fault setting and delay with selective flat or I2t curve shaping.

4. The microprocessor-based trip unit shall have both powered and unpowered thermal memory to provide protection against cumulative overheating should a number of overload conditions occur in quick succession.
 5. Furnish internal ground fault protection with adjustable settings. Provide neutral ground fault sensor for four-wire loads. Bypass neutral sensor for 3 wire loads.
 6. Include ARMS technology for all circuit breakers 400A and above or where shown on drawings.
 - a. Activation and deactivation of the ARMS technology and local indication shall be accessible from the face of the trip unit without opening the circuit breaker door or cover and exposing operators to energized parts.
 - b. Recalibration or adjustment of trip unit parameters shall not be required when enabling / disabling the ARMS technology.
 7. Breakers shall have built-in test points for testing the long-time delay, instantaneous, and ground fault functions of the breaker by means of a test set.
- C. Manual operators
1. Furnish door interlocked manual operators for mains and selected feeder circuit breakers as shown in the drawings.
 2. Manually operated mechanisms designed to open, close and reset circuit breakers.
 3. Operators shall be available in three basic configurations— flange mounted, through-the door rotating and direct handle through door to provide a variety of options for different applications and enclosure ratings.

2.03 INSULATED CASE CIRCUIT BREAKERS

- A. Low Voltage Insulated Case Circuit Breaker
1. Circuit breakers shall meet or exceed the following UL and ANSI test certifications:
 - a. ANSI C37.13 (low voltage AC power breakers used in enclosures)
 - b. ANSI C37.16 (preferred ratings, related requirements and application recommendations for low voltage AC power breakers and AC power circuit breakers)
 - c. ANSI C37.17 (trip devices for AC and general purpose DC low voltage power breakers)
 - d. ANSI C37.50 (test procedures for low voltage AC power breakers used in enclosures)
 - e. UL 1066 (standard for low voltage AC and DC power breakers used in enclosures)
 - f. NEMA SG3 (this standard adopts ANSI C37.16 in its entirety)
 2. Circuit breakers shall be 600-volt class, three-pole and sized as shown on Drawings and as necessary for the supplied equipment.
 3. Circuit breakers shall be available with the following minimum ratings and features:

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Low Voltage Switchboard

- a. Circuit breaker shall be available from 800 to 4000 frame amperes.
 - b. Mechanical or electrical two-step stored energy operator as shown.
 - c. Fixed construction.
 - d. 35-150 kA interrupting capacity at 480 VAC.
 - e. 80% continuous-current rated unless specifically stated to be rated 100%.
 - f. Self-powered, self-contained microprocessor-based trip-device that requires no external power to perform protective functions.
 - 1) Where indicated on the Drawings provide breakers with Long (L), Short (S), Instantaneous (I) and Ground Fault (G) adjustable trip functions.
 - 2) Local display for status and diagnostics
 - 3) Ampere, voltage and power metering
 - 4) Basic to programmable overcurrent protection and alarms
 - 5) Power quality, harmonics and waveform capture
 - 6) Integral Arcflash Reduction Maintenance System
 - 7) System diagnostics
 - g. Contact status indicators
 - a) Open – green
 - b) Closed – red
 - h. Spring status indicators
 - a) Charged – yellow
 - b) Discharged – white
 - i. Pushbutton operation
 - a) Push OFF (open) pushbutton – red
 - b) Push ON (closed) pushbutton – green
 - j. Remote operation
 - a) Contact closure from remote pushbutton - Close
 - b) Contact closure from remote pushbutton – Open
 - c) Provide two button control station for remote operation of circuit breaker.
 - k. Manual spring charging handle
 - l. Padlockable levering device shutter for drawout breakers
 - m. Color-coded position indicator for drawout breakers
 - a) CONNECT – red
 - b) TEST – yellow
 - c) DISCONNECT – green
 - n. Secondary contact blocks for connection to external control wiring
4. Insulated-case circuit breakers shall be as manufactured by Eaton, G.E., Siemens, or equal

2.04 ACCESSORIES

- A. Space Heaters:
 - 1. Outdoor rated switchgear shall be provided with 120 volts AC thermostatically controlled space heaters. Heater wiring shall be to

terminal blocks for connection to external power source. One heater shall be provided in each vertical breaker section. Heaters shall have guards to prevent accidental contact with power or control wiring. Provide transformer and fusing to make voltage and power as required for heater circuit.

- B. Surge Protective Device (SPD)
 - 1. SPD shall be suitable Service entrance location per ANSI/IEEE C62.41, IEEE C62.45, and UL1449 3rd edition and tested according to IEEE C62.44 as Secondary Surge Arrestor.
 - 2. Unit shall be sealed and not allow vapors from entering the switchboard enclosure after a voltage surge event.
 - 3. Modes of protection – Line to Line, Line to Ground, Line to Neutral (as applicable). Voltage, phase and neutral connections per one-line diagram. Current surge capacity shall be as shown in the drawings or, if not shown, 100,000 amps per mode minimum
 - 4. The SPD shall be factory installed inside the switchboard during assembly by the original equipment manufacturer. The OEM design shall be integral to the design of the switchgear with special paneling and cutouts specifically designed for unit mounting.
 - 5. The SPD connections shall be located as close as possible to the load side of main disconnect device and ground/neutral bar.
 - 6. The SPD shall have integral 30-amp disconnect and fuses. Service of the SPD assembly, fuses or other serviceable components shall be from front access of the switchboard and shall not require disassembly of switchboard panels to repair or replace parts.
 - 7. SPD shall be Cutler-Hammer Clipper, Current Technology TransGuard or equal.

PART 3 EXECUTION

3.01 WORKMANSHIP

- A. All work in this Section shall conform to the codes and standards specified in Electrical Specifications [Electrical General, Workmanship] and as specified herein.

3.02 INSTALLATION

- A. Vertical sections shall be mounted on steel channel sills continuous on two sides. The steel channel sills shall be heavy duty to meet the specific seismic requirements of this project location. These sills shall be mounted on the concrete pad to be installed per the Contract Drawings.
- B. Conduit entering Switchboard shall be stubbed up 1" into the bottom horizontal wireway (typically) directly below the vertical section in which the conductors are to be terminated.
- C. Base of Switchboard shall be adequately grouted, caulked or sealed to prevent the entry of insects and rodents.

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Low Voltage Switchboard

3.03 WARRANTY

- A. Provide warranty as specified in Electrical Specifications [Electrical General, Warranty].

END OF SECTION

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Low Voltage Switchboard

Ventura Santa Barbara Counties Intertie - Bid Schedule A
Casitas Municipal Water District
Project no. 22-451

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SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
COMPONENTS							
	RESISTOR		SOLENOID COIL		HEATER		CAPACITOR
	DIODE		DIODE, ZENER		METAL OXIDE VARIATOR		AUDIBLE ALARM
	3 PHASE MOTOR ? = MOTOR HP		3 PHASE MOTOR		SINGLE PHASE MOTOR		TRANSFORMER SIZE AND VOLTAGE AS SHOWN
	UTILITY POWER METER		UFER GROUND		GROUND ROD		CURRENT TRANSFORMER RATIO AS NOTED
	DISCONNECT SWITCH SIZED PER FEEDER		POWER DISTRIBUTION BLOCK	SWITCHES - OPERATOR			
	TOGGLE OR DISCONNECT SWITCH		PUSHBUTTON - NORMALLY OPEN, MOMENTARY ACTION		PUSHBUTTON - NORMALLY CLOSED, MOMENTARY UNLESS LOS (LOCK OUT STOP) WHERE MECHANICALLY HELD		PUSHBUTTON, MECHANICALLY CONNECTED, DOUBLE CIRCUIT - NORMALLY CLOSED AND NORMALLY OPEN
	SELECTOR SWITCH, 3 POSITION - CONTACT STATUS SHOWN EXISTS I.E. AT POSITION OF HAND, OFF, OR AUTO		SELECTOR SWITCH, 2 POSITION - MIDDLE POSITION IS DELETED ALTERNATE METHOD: X00 = HAND O0X = AUTO, OX0 = OFF	SWITCHES - PROCESS			
	FLOW SWITCH - CLOSURES UPON INCREASING FLOW		FLOW SWITCH - OPENS UPON INCREASING FLOW		LEVEL SWITCH - CLOSURES UPON INCREASING LEVEL		LEVEL SWITCH - OPENS UPON INCREASING LEVEL
	PRESSURE SWITCH - CLOSURES UPON INCREASING PRESSURE (DECREASING VACUUM)		PRESSURE SWITCH - OPENS UPON INCREASING PRESSURE (DECREASING VACUUM)		TEMPERATURE SWITCH - CLOSURES UPON INCREASING TEMPERATURE		TEMPERATURE SWITCH - OPENS UPON INCREASING TEMPERATURE
	LIMIT SWITCH - CLOSURES AT SET LIMIT		LIMIT SWITCH - OPENS AT SET LIMIT		TORQUE SWITCH - CLOSURES UPON INCREASING TORQUE		TORQUE SWITCH - OPENS UPON INCREASING TORQUE
DEVICES - RELAY							
	CONTROL RELAY CR1		TIME DELAY RELAY TR2 - ADJUSTABLE TIME DELAY RANGE & SETTING AS SHOWN		TIME DELAY ON ENERGIZATION TIME DELAY ON DE-ENERGIZATION REFERENCED RELAY WITH N.C. CONTACT ON LINE 107 N.C. CONTACT ON LINE 121		NORMALLY OPEN, RELAY CONTACT - ACTUATED BY RELAY CR1
	TIME DELAY RELAY TR2 - ADJUSTABLE TIME DELAY RANGE & SETTING AS SHOWN		TIME DELAY RELAY CONTACT - CONTACT CLOSURES AFTER TR2 IS ENERGIZED		NORMALLY OPEN, CONTACT - CONTACT CLOSURES AFTER TR2 IS DE-ENERGIZED		NORMALLY CLOSED, RELAY CONTACT - ACTUATED BY RELAY CR1
	TIME DELAY RELAY CONTACT - CONTACT CLOSURES AFTER TR2 IS ENERGIZED		TIME DELAY RELAY CONTACT - CONTACT CLOSURES AFTER TR2 IS DE-ENERGIZED		CONTACT OPENS AND CLOSURES IN A TIMED REPEAT CYCLE	DEVICES - PROTECTIVE	
	INDICATING LIGHT, LETTER "X" INDICATES COLOR: R=RED G=GREEN, A=AMBER, W=WHITE Y=YELLOW, B=BLUE		INDICATING LIGHT, PUSH TO TEST		ELAPSED TIME METER	DEVICES - FRONT PANEL	
	CT SHORTING TERMINAL BLOCK		FUSED POTENTIAL TRANSFORMER 200/120 V SECONDARY OR AS SHOWN		POWER MONITOR		SURGE PROTECTION DEVICE
	POWER FAIL REPLY	DEVICES - PROTECTIVE					
	POTENTIOMETER	DEVICES - RELAY					

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
AT	ALTERNATING CURRENT	NDL	NORMALLY CLOSED
AC	ACKNOWLEDGE	NHC	NORMALLY HELD CLOSED
ACK	ACKNOWLEDGE	NHO	NORMALLY HELD OPEN
AFF	ABOVE FINISHED FLOOR	NIC	NOT IN CONTRACT
AH	AMP HOUR	NIO	NORMALLY OPEN
AI	ANALOG INPUT	NTS	NOT TO SCALE
AM	AMP INTERRUPTING CAPACITY SYMMETRICAL	OC	ON CENTER
AIC	AMP METER	OI	OPERATOR INTERFACE
AO	ANALOG OUTPUT	OL	OVERLOAD
AWG	AMERICAN WIRE GAUGE	ORP	OXIDATION REDUCTION POTENTIAL
ATS	AUTOMATIC TRANSFER SWITCH	PB	PUSHBUTTON
BATT	BATTERY	PBX	PULL BOX
BFC	BELOW FINISHED CEILING	PDB	POWER DISTRIBUTION BLOCK
BPF	BAND PASS FILTER	PF	POWER FACTOR
BYP	BYPASS	PFR	POWER FAIL RELAY
C	CONDUIT	PH	HYDROGEN ION CONCENTRATION
CAP	CAPACITOR	PLC	PROGRAMMABLE LOGIC CONTROLLER
CB	CIRCUIT BREAKER	PM	POWER MONITOR
CKT	CIRCUIT	POT	POTENTIOMETER
COAX	COAXIAL CABLE	PR	POWER RELAY
COMM	COMMUNICATION	PRI	PRIMARY
CR	CONTROL RELAY	PROVIDE	FURNISH, INSTALL, AND CONNECT
CT	CURRENT TRANSFORMER	PS	PRESSURE SWITCH
CS	CONSTANT SPEED	PT	POTENTIAL TRANSFORMER
CU	COPPER	PTT	PUSH TO TEST
DC	DIRECT CURRENT	PVC	POLYVINYLCHLORIDE
DET	DETAIL	PWR	POWER
DI	DIGITAL INPUT	REF	REFERENCE
DISC	DISCONNECT	RFI	RADIO FREQUENCY INTERFERENCE
DO	DIGITAL OUTPUT	RMS	ROOT MEAN SQUARE
DPDT	DOUBLE POLE DOUBLE THROW	RST	RESET
DWG	DRAWING	RTD	ELECTRICAL DRAWING DETAIL
E-DTL	ELEVATION	RTR	REDUCE VOLTAGE AUTO TRANSFORMER
ELEV	ELEVATION	RTU	REMOTE TERMINAL UNIT
ENET	ETHERNET	RSCH	REUSE EXISTING - RELOCATE, RECONNECT
ETM	ELAPSED TIME METER	SEC	SECONDS
ESW	ETHERNET SWITCH	SECS	SECONDS
(E)	EXISTING	SEL	SELECTOR
FCS	FIELD CONTROL STATION	SFA	SERVICE FACTOR AMPS
FLA	FULL LOAD AMPS	SPEC	SPECIFICATION
FLEX	FLEXIBLE LIQUID TIGHT CONDUIT	SPD	SURGE PROTECTIVE DEVICE
FS	FULL SPEED, FLOW SWITCH	SS	STAINLESS STEEL
FVNR	FULL VOLTAGE NON-REVERSING	SSRC	STAINLESS STEEL RIGID CONDUIT
FVR	FULL VOLTAGE REVERSING	SSS	SOLID STATE STARTER
FWD	FORWARD	ST	START
(F)	FUTURE	STOP	STOP
GALV	GALVANIZED	SV	SOLENOID VALVE
GND	GROUND	SW	SWITCH
GFI	GROUND FAULT INTERRUPTER	SWBD	SWITCHBOARD
GRS-PVC	GALVANIZED RIGID STEEL CONDUIT	SYM	SYMMETRICAL
HI	HIGH	TB	TERMINAL BLOCK
HIM	HUMAN INTERFACE MODULE	TC	TIME CLOCK
HOA	HAND OFF AUTO	TDOD	TIME DELAY ON DE-ENERGIZATION
HP	HORSE POWER	TELECO	TELEPHONE COMPANY
HTR	HEATER	TEMP	THERMAL MAGNETIC
HZD	HAZARD	TR	TEMPERATURE
I/O	INPUT/OUTPUT	TR	TEMPERATURE
INST	INSTANTANEOUS	TRAD	TWISTED AND SHIELDED 3 CONDUCTOR
ISR	INTRINSICALLY SAFE RELAY	TS	TEMPERATURE SWITCH
IS	INTRINSICALLY SAFE	TSPR, TSP	TWISTED AND SHIELDED PAIR
J	JUNCTION BOX	TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
J, JBX	JUNCTION BOX	TY	TYPICAL
K	KILO, PREFIX	UG	UNDERGROUND
LA	LIGHTNING ARRESTOR	ULH	ULTRA LOW HARMONIC
LC	LIGHTING CONTACTOR	UN	UNLESS OTHERWISE NOTED
LEL	LOWER EXPLOSION LIMIT	UPS	UNINTERRUPTIBLE POWER SUPPLY
LOS	LOCK OUT STOP	V	VOLTAGE
LP	LIGHTING PANELBOARD	VA	VOLT AMPS
LS	LIMIT SWITCH	VAR	VARIABLE FREQUENCY DRIVE
M	MOTOR CONTACTOR	VFD	VARIABLE FREQUENCY DRIVE
MAG	MAGNETIC FLOWMETER	VLV	VALVE
MAX	MAXIMUM	VM	VOLTMETER
MCC	MOTOR CONTROL CENTER	VMR	VOLTAGE MONITOR RELAY
MCM	THOUSAND CIRCULAR MILS	VR	VOLTAGE RELAY
MCP	MOTOR CIRCUIT PROTECTOR	W	WATTS
MCS	MOLDED CASE SWITCH	W	WEATHER PROOF, NEMA 3R
MFG	MANUFACTURER	WP	WATER TREATMENT PLANT
MH	MANHOLE	WTP	WASTE WATER TREATMENT PLANT
MIN	MINIMUM, MINUTE	XFMR	TRANSFORMER
MOV	MOTOR OPERATED VALVE	Z	IMPEDANCE
MTR	MOTOR	ZS	LIMIT SWITCH
MUX	MULTIPLEXER		
MV	MEDIUM VOLTAGE, MOTORIZED VALVE		

SYMBOL	DESCRIPTION
AND	AND
AT	ALTERNATING CURRENT
NC	NORMALLY CLOSED
NDL	NORMALLY HELD CLOSED
NHC	NORMALLY HELD OPEN
NHO	NORMALLY HELD OPEN
NIC	NOT IN CONTRACT
NIO	NORMALLY OPEN
NTS	NOT TO SCALE
(N)	NEW
OC	ON CENTER
OI	OPERATOR INTERFACE
OL	OVERLOAD
ORP	OXIDATION REDUCTION POTENTIAL
PB	PUSHBUTTON
PBX	PULL BOX
PDB	POWER DISTRIBUTION BLOCK
PF	POWER FACTOR
PFR	POWER FAIL RELAY
PH	HYDROGEN ION CONCENTRATION
PLC	PROGRAMMABLE LOGIC CONTROLLER
PM	POWER MONITOR
POT	POTENTIOMETER
PR	POWER RELAY
PRI	PRIMARY
PROVIDE	FURNISH, INSTALL, AND CONNECT
PS	PRESSURE SWITCH
PT	POTENTIAL TRANSFORMER
PTT	PUSH TO TEST
PVC	POLYVINYLCHLORIDE
PWR	POWER
REF	REFERENCE
RFI	RADIO FREQUENCY INTERFERENCE
RMS	ROOT MEAN SQUARE
RST	RESET
RTR	REDUCE VOLTAGE AUTO TRANSFORMER
RTU	REMOTE TERMINAL UNIT
(R)	REUSE EXISTING - RELOCATE, RECONNECT
RSCH	SCHEDULE
SEC	SECONDS
SECS	SECONDS
SEL	SELECTOR
SFA	SERVICE FACTOR AMPS
SPEC	SPECIFICATION
SPD	SURGE PROTECTIVE DEVICE
SS	STAINLESS STEEL
SSRC	STAINLESS STEEL RIGID CONDUIT
SSS	SOLID STATE STARTER
ST	START
STOP	STOP
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SYM	SYMMETRICAL
TB	TERMINAL BLOCK
TC	TIME CLOCK
TDOD	TIME DELAY ON DE-ENERGIZATION
TELECO	TELEPHONE COMPANY
TEMP	THERMAL MAGNETIC
TR	TEMPERATURE
TR	TEMPERATURE
TRAD	TWISTED AND SHIELDED 3 CONDUCTOR
TS	TEMPERATURE SWITCH
TSPR, TSP	TWISTED AND SHIELDED PAIR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TY	TYPICAL
UG	UNDERGROUND
ULH	ULTRA LOW HARMONIC
UN	UNLESS OTHERWISE NOTED
UPS	UNINTERRUPTIBLE POWER SUPPLY
V	VOLTAGE
VA	VOLT AMPS
VAR	VARIABLE FREQUENCY DRIVE
VFD	VARIABLE FREQUENCY DRIVE
VLV	VALVE
VM	VOLTMETER
VMR	VOLTAGE MONITOR RELAY
VR	VOLTAGE RELAY
W	WATTS
W	WEATHER PROOF, NEMA 3R
WP	WATER TREATMENT PLANT
WTP	WASTE WATER TREATMENT PLANT
XFMR	TRANSFORMER
Z	IMPEDANCE
ZS	LIMIT SWITCH

FRISCH ENGINEERING, INC.
CONSULTING ELECTRICAL ENGINEERS
3445 FORD ROAD, UNIT 600
FOLSOM, CA 95630

DATE: SEP 11, 2025 TIME: 11:31:10AM

PROJECT NUMBER: **22-451**

DRAWING NUMBER: **20-E-001**

SHEET NUMBER: **133**

CASITAS MUNICIPAL WATER DISTRICT
VENTURA - SANTA BARBARA COUNTIES INTERIE: BID SCHEDULE "A"

ELECTRICAL SYMBOLS AND ABBREVIATIONS

WATERWORKS
ENGINEERS

DESIGNED: T. FRISCH
DRAWN: N. CONANT
CHECKED: M. FRISCH
QA/QC:

PROJECT ENGINEER: _____ DATE: _____
R.C.E. EXP.

CONSTRUCTABILITY: _____

PROJECT DESCRIPTION: _____

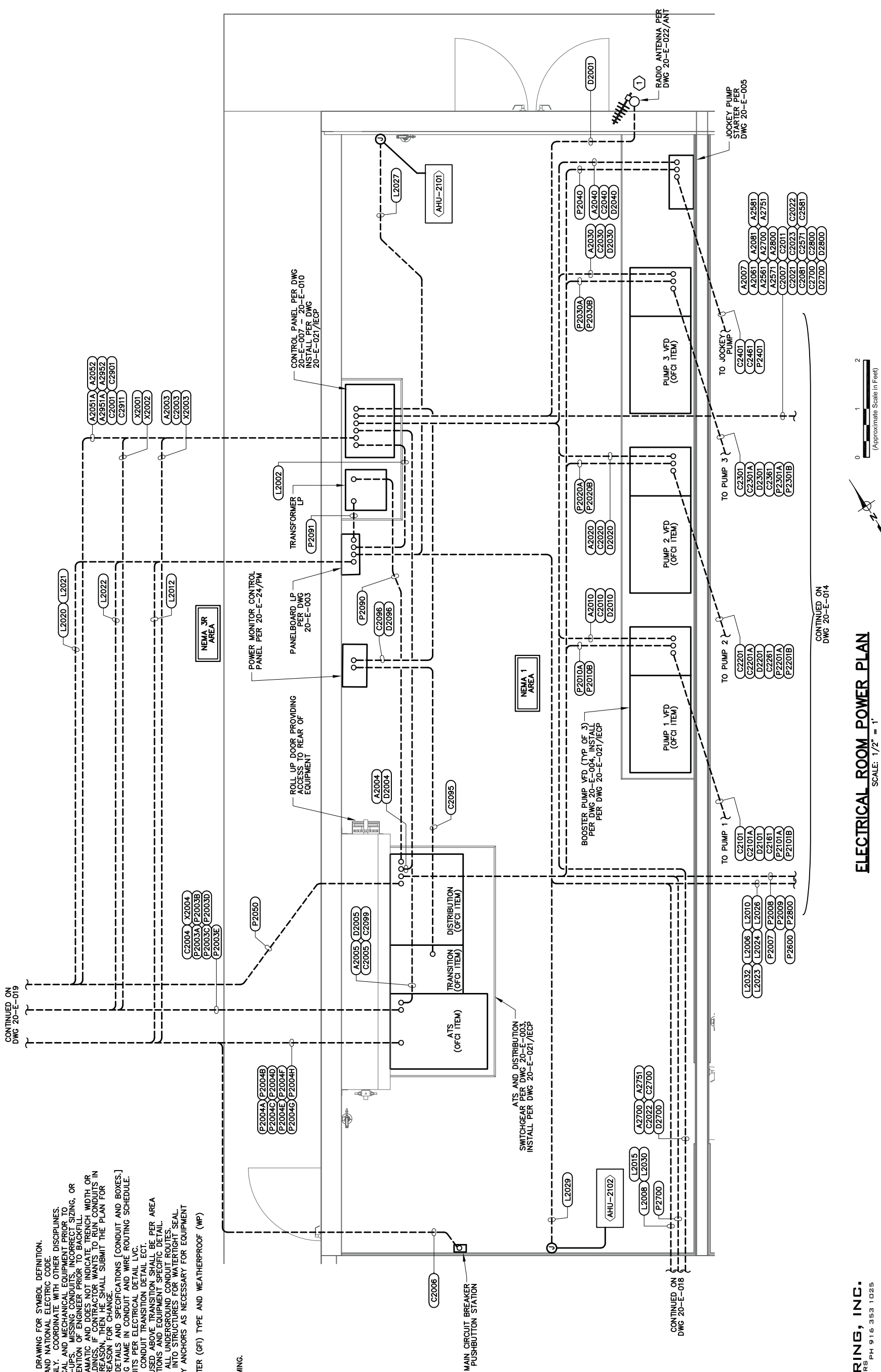
SCALE: SEE PLAN

ELECTRICAL PLAN NOTES:

1. SEE ELECTRICAL SYMBOLS AND ABBREVIATIONS DRAWING FOR SYMBOL DEFINITION.
2. WORK SHALL CONFORM TO LOCAL CODES AND NATIONAL ELECTRIC CODE.
3. SITE PLAN ACCURATE FOR ELECTRICAL FIELD ONLY. COORDINATE WITH OTHER DISCIPLINES.
4. INSTALLING UNDERGROUND CONDUIT AND STUDS: LIPS AND MISSING CONDUITS, INCORRECT SIZING, OR OTHER ISSUES MUST BE BROUGHT TO THE ATTENTION OF ENGINEER PRIOR TO BACKFILL.
5. CONDUIT ROUTING IS SHOWN GENERALLY DIAGRAMATIC AND DOES NOT INDICATE TRENCH WIDTH OR ROUTES OTHER THAN THOSE SHOWN FOR ANY REASON. IF CONTRACTOR WANTS TO RUN CONDUITS IN APPROVAL PRIOR TO INSTALLATION, SPECIFY REASON FOR CHANGE.
6. INSTALL NON-UTILITY CONDUITS PER DRAWING DETAILS AND SPECIFICATIONS [CONDUIT AND BOXES.]
7. CONDUITS SIZE, TYPE AND FILL DEFINED BY TAG NAME IN CONDUIT AND WIRE ROUTING SCHEDULE.
8. INSTALL UNDERGROUND NON-DUCTBANK CONDUITS PER ELECTRICAL DETAIL ECT.
9. CONDUIT TRANSITIONS SHALL BE PER EXPOSED CONDUIT TRANSITION DETAIL ECT.
10. EXPOSED CONDUIT TYPE AND FITTINGS TO BE USED ABOVE TRANSITION SHALL BE PER AREA CLASSIFICATION DEFINED IN CONDUIT SPECIFICATIONS AND EQUIPMENT SPECIFIC DETAIL.
11. REPAIR SURFACE TO PREVIOUS CONDITION FOR ALL UNDERGROUND CONDUIT ROUTES.
12. USE AN EXPANSION WEDGE ANCHORS OR EPOXY ANCHORS AS NECESSARY FOR EQUIPMENT.
13. RECEPTACLES TO BE GROUND FAULT INTERRUPTER (GFI) TYPE AND WEATHERPROOF (WP) OUTDOORS AND WHERE SHOWN.

DRAWING REFERENCED NOTES:

1. CONFIRM DIRECTION WITH OWNER PRIOR TO AIMING.



ELECTRICAL ROOM POWER PLAN
SCALE: 1/2" = 1'

CONTINUED ON DWG 20-E-014

FRISCH ENGINEERING, INC.
CONSULTING ELECTRICAL ENGINEERS
3445 FOXGLOVE DRIVE, UNIT 600
FOLSOM, CA 95630

FILE: 22110-A-E011.DWG DATE: SEP 11, 2025 TIME: 11:41:34M

REV	DATE	BY	DESCRIPTION

WATERWORKS
ENGINEERS

PROJECT ENGINEER: _____ DATE: _____
R.C.E. EXP.

WWE PROJECT NO. 08-018

REGISTERED PROFESSIONAL ENGINEER
STATE OF CALIFORNIA
No. E15781

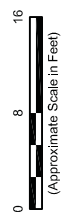
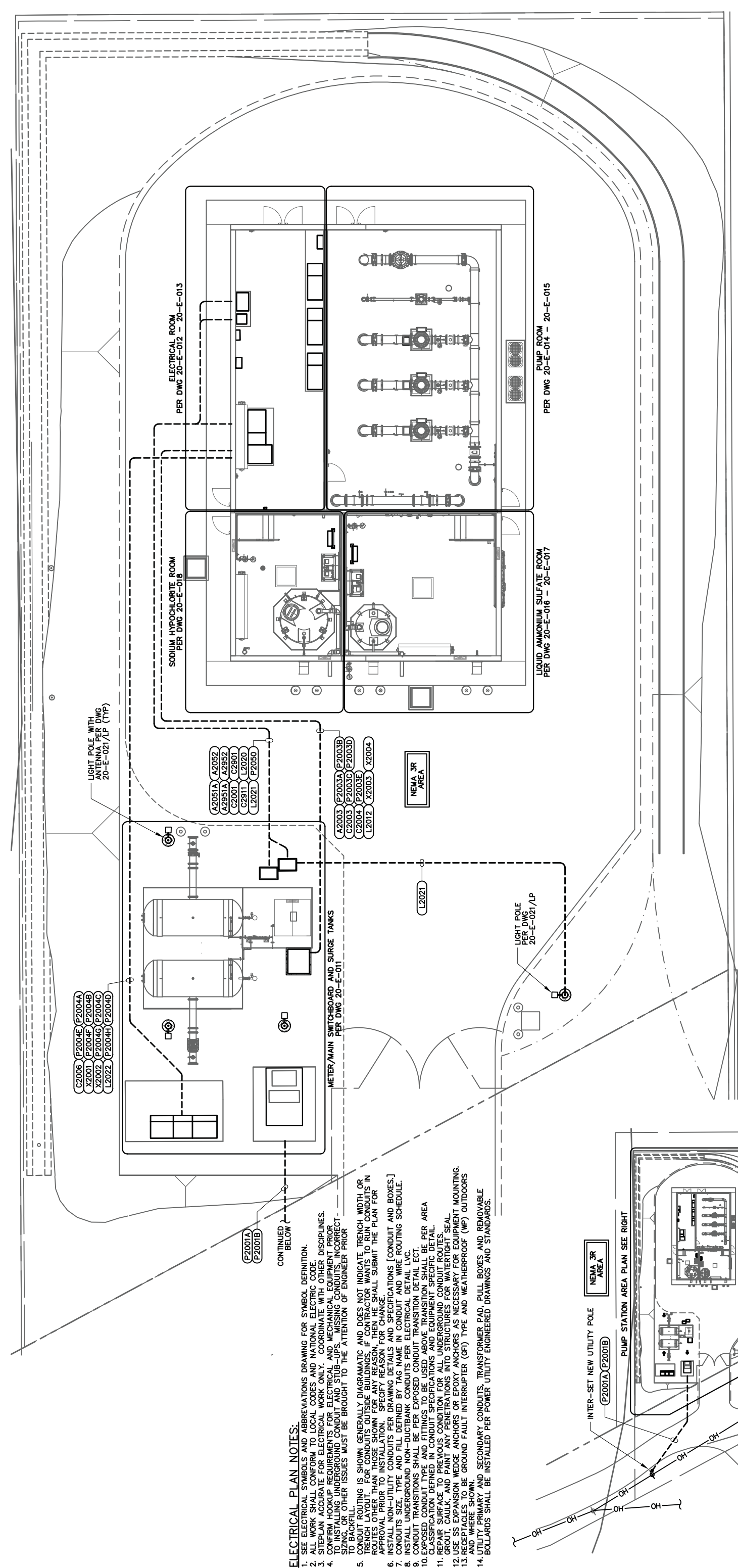
CASITAS MUNICIPAL WATER DISTRICT
VENTURA - SANTA BARBARA COUNTIES INTERIE: BID SCHEDULE "A"

ELECTRICAL ROOM POWER PLAN

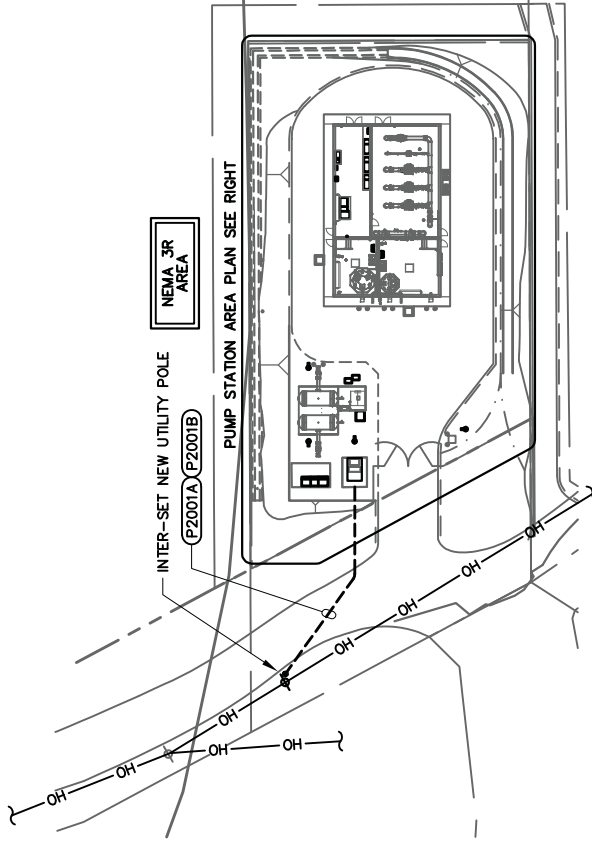
PROJECT NUMBER: 22-451
DRAWING NUMBER: 20-E-012
SHEET NUMBER: 133 OF

CASITAS Municipal Water District

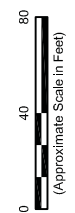
DESIGNED: T. FRISCH
DRAWN: N. CONANT
CHECKED: M. FRISCH
QA/QC: _____
CONSTRUCTIBILITY: _____



PUMP STATION AREA PLAN
SCALE: 1/8" = 1'



PUMP STATION UTILITY PLAN
SCALE: 1" = 40'



- ELECTRICAL PLAN NOTES:**
- SEE ELECTRICAL SYMBOLS AND ABBREVIATIONS DRAWING FOR SYMBOL DEFINITION.
 - ALL WORK SHALL CONFORM TO LOCAL CODES AND NATIONAL ELECTRIC CODE.
 - SITEPLAN ACCURATE FOR ELECTRICAL WORK ONLY. COORDINATE WITH OTHER DISCIPLINES.
 - CONFIRM HOOKUP REQUIREMENTS FOR ELECTRICAL AND MECHANICAL EQUIPMENT PRIOR TO INSTALLING UNDERGROUND CONDUIT AND STUB-UPS. MISSING CONDUITS, INCORRECT SIZING, OR OTHER ISSUES MUST BE BROUGHT TO THE ATTENTION OF ENGINEER PRIOR TO BACKFILL.
 - CONDUIT ROUTING IS SHOWN GENERALLY DIAGNOSTIC AND DOES NOT INDICATE TRENCH WIDTH OR TRENCH ROUTING FOR CONDUITS OUTSIDE BUILDINGS. IF CONTRACTOR WANTS TO RUN CONDUITS IN ROUTES OTHER THAN THOSE SHOWN, SPECIFY REASON FOR CHANGE.
 - INSTALL NON-UTILITY CONDUITS PER DRAWING DETAILS AND SPECIFICATIONS [CONDUIT AND BOXES.]
 - CONDUITS SIZE, TYPE AND FILL DEFINED BY TAG NAME IN CONDUIT AND WIRE ROUTING SCHEDULE.
 - INSTALL UNDERGROUND NON-DUCTBANK CONDUITS PER ELECTRICAL DETAIL LVC.
 - CONDUIT TRANSITIONS SHALL BE PER EXPOSED CONDUIT TRANSITION DETAIL ECT.
 - EXPOSED CONDUIT TYPE AND FITTINGS TO BE USED ABOVE TRANSITION SHALL BE PER AREA CLASSIFICATION DEFINED IN CONDUIT SPECIFICATIONS AND EQUIPMENT SPECIFIC DETAIL.
 - REPAIR SURFACE TO PREVIOUS CONDITION FOR ALL UNDERGROUND CONDUIT ROUTES.
 - GROUT, CAULK, AND PAINT ANY PENETRATIONS INTO STRUCTURES FOR WATERTIGHT SEAL.
 - USE SS EXPANSION WEDGE ANCHORS OR EPOXY ANCHORS AS NECESSARY FOR EQUIPMENT MOUNTING.
 - RECEPTACLES TO BE GROUND FAULT INTERRUPTER (GFI) TYPE AND WEATHERPROOF (WP) OUTDOORS AND WHERE SHOWN.
 - UTILITY PRIMARY AND SECONDARY CONDUITS, TRANSFORMER PAD, PULL BOXES AND REMOVABLE BOLLARDS SHALL BE INSTALLED PER POWER UTILITY ENGINEERED DRAWINGS AND STANDARDS.

- C2006 P2004E P2004A
- X2001 P2004F P2004B
- X2002 P2004G P2004C
- L2022 P2004H P2004D

- A2051A A2052
- A2951A A2952
- C2001 C2901
- L2911 L2020
- L2021 P2050

- A2003 P2003A P2003B
- C2003 P2003C P2003D
- C2004 P2003E
- L2012 X2003 X2004

NEMA 3R AREA

METER/MAIN SWITCHBOARD AND SURGE TANKS
PER DWG 20-E-011

LIGHT POLE WITH ANTENNA PER DWG 20-E-021/LP

L2021

LIGHT POLE PER DWG 20-E-021/LP

FRISCH ENGINEERING, INC.
CONSULTING ELECTRICAL ENGINEERS
3440 FORECAST RD, UNIT 600
FOLSOM, CA 95630



FILE: 22110-A-E011.DWG DATE: SEP 11, 2025 TIME: 11:28:27AM

DESCRIPTION

DESIGNED: T. FRISCH
DRAWN: N. CONANT
CHECKED: M. FRISCH
QA/QC:



WATERWORKS
ENGINEERS



PROJECT ENGINEER: _____ DATE: _____
R.C.E. EXP. WME PROJECT NO. 08-018

CASITAS MUNICIPAL WATER DISTRICT
VENTURA - SANTA BARBARA COUNTIES INTERIE: BID SCHEDULE "A"

PUMP STATION AREA PLAN

PROJECT NUMBER
22-451

DRAWING NUMBER
20-E-019

SHEET NUMBER
OF
133

CONDUIT & WIRE ROUTING SCHEDULE

REV	CONDUIT DETAILS		TO	QTY	SIZE	TYPE	POWER WIRE		CONTROL WIRE		GROUND SIZE	NOTES
	TAG NO.	FROM					QTY	SIZE	QTY	SIZE		
A2003	CONTROL PANEL	GENERATOR CONNECTION PANEL		1	1"	SPEC			1	#18 TSPR	#14	
A2004	CONTROL PANEL	DISTRIBUTION SWITCHBOARD		1	1"	SPEC						
A2005	CONTROL PANEL	AUTOMATIC TRANSFER SWITCH		1	1"	SPEC						
A2007	CONTROL PANEL	BYPASS VALVE MOV-2003		1	1"	SPEC						
A2010	CONTROL PANEL	BOOSTER PUMP 1 VFD		1	1"	SPEC			2	#18 TSPR	#14	
A2020	CONTROL PANEL	BOOSTER PUMP 2 VFD		1	1"	SPEC			2	#18 TSPR	#14	
A2030	CONTROL PANEL	BOOSTER PUMP 3 VFD		1	1"	SPEC			2	#18 TSPR	#14	
A2040	CONTROL PANEL	BOOSTER PUMP STARTER		1	1"	SPEC						
A2051	CONTROL PANEL	GUIDED WAVE RADAR LEVEL XMTR LIT-2051		1	1"	SPEC			1	#18 TSPR	#14	
A2061	CONTROL PANEL	PRESSURE TRANSMITTER FIT-2061		1	1"	SPEC			1	#18 TSPR	#14	
A2081	CONTROL PANEL	ANALYZER AIT-2081		1	1"	SPEC			2	#18 TSPR	#14	
A2561	CONTROL PANEL	PRESSURE TRANSMITTER FIT-2561		1	1"	SPEC			1	#18 TSPR	#14	
A2571	CONTROL PANEL	FLOWMETER FIT-2571		1	1"	SPEC			1	#18 TSPR	#14	
A2581	CONTROL PANEL	ANALYZER AIT-2581		1	1"	SPEC			2	#18 TSPR	#14	
A2600	CONTROL PANEL	STUB FOR FUTURE CHEMICAL SYSTEM		1	1"	SPEC						
A2700	CONTROL PANEL	SHC PUMP PANEL		1	1"	SPEC			5	#18 TSPR	#14	VIA SHC PUMP PANEL
A2751	SHC LEVEL INDICATOR U-2851	SHC TANK LEVEL TRANSMITTER LIT-2751		1	1"	SPEC			1	MFG CABLE	#14	
A2800	CONTROL PANEL	LAS PUMP PANEL		1	1"	SPEC			5	#18 TSPR	#14	VIA LAS PUMP PANEL
A2851	LAS LEVEL INDICATOR U-2851	LAS TANK LEVEL TRANSMITTER LIT-2851		1	1"	SPEC			1	MFG CABLE	#14	
A2951	CONTROL PANEL	GUIDED WAVE RADAR LEVEL XMTR LIT-2951		1	1"	SPEC			1	#18 TSPR	#14	
C0090	DISTRIBUTION SWITCHBOARD	AUTOMATIC TRANSFER SWITCH		1	1"	SPEC						
C2001	CONTROL PANEL	AIR INLET VALVE MV-2001		1	1"	SPEC			6	#14	#14	
C2003	CONTROL PANEL	GENERATOR CONNECTION PANEL		1	1"	SPEC			4	#14	#14	
C2004	AUTOMATIC TRANSFER SWITCH	GENERATOR CONNECTION PANEL		1	1"	SPEC			2	#14	#14	
C2005	CONTROL PANEL	AUTOMATIC TRANSFER SWITCH		1	1"	SPEC						
C2006	METER/MAIN SWITCHBOARD	MAIN CIRCUIT BREAKER PUSHBUTTON STATION		1	1"	SPEC			8	#14	#14	
C2007	METER/MAIN SWITCHBOARD	BYPASS VALVE MOV-2003		1	1"	SPEC			10	#14	#14	
C2010	CONTROL PANEL	BOOSTER PUMP 1 VFD		1	1"	SPEC			14	#14	#14	+24VDC POWER FOR RTD
C2011	CONTROL PANEL	BOOSTER PUMP 2 VFD		1	1"	SPEC			4	#14	#14	
C2030	CONTROL PANEL	BOOSTER PUMP 3 VFD		1	1"	SPEC			2	#14	#14	+24VDC POWER FOR RTD
C2040	CONTROL PANEL	BOOSTER PUMP STARTER		1	1"	SPEC			14	#14	#14	+24VDC POWER FOR RTD
C2081	CONTROL PANEL	ANALYZER AIT-2081		1	1"	SPEC			14	#14	#14	
C2091	CONTROL PANEL	INTRUSION SWITCH ELECTRICAL ROOM		1	1"	SPEC			4	#14	#14	
C2092	CONTROL PANEL	INTRUSION SWITCH BOOSTER PUMP ROOM		1	1"	SPEC			4	#14	#14	
C2093	CONTROL PANEL	INTRUSION SWITCH SHC CHEM ROOM		1	1"	SPEC			4	#14	#14	
C2094	CONTROL PANEL	INTRUSION SWITCH LAS CHEM ROOM		1	1"	SPEC			4	#14	#14	
C2095	DISTRIBUTION SWITCHBOARD	POWER MONITOR		1	1"	SPEC			6	#12	#12	CTS, VOLTAGE
C2096	CONTROL PANEL	POWER MONITOR		1	1"	SPEC			2	#14	#14	
C2098	CONTROL PANEL	SMOKE ALARM SS-2098		1	1"	SPEC			4	#14	#14	
C2099	CONTROL PANEL	AUTOMATIC TRANSFER SWITCH		1	1"	SPEC			4	#14	#14	
C2101A	BOOSTER PUMP 1 VFD	BOOSTER PUMP 1 RTD PANEL		1	1"	SPEC			8	#14	#14	
C2101	BOOSTER PUMP 1 VFD	BOOSTER PUMP 1		1	1"	SPEC			2	#14	#14	24VDC POWER
C2161	BOOSTER PUMP 1 VFD	BOOSTER PUMP 1 PRESSURE SWITCH PSH-2161		1	1"	SPEC			4	#14	#14	
C2201A	BOOSTER PUMP 2 VFD	BOOSTER PUMP 2 RTD PANEL		1	1"	SPEC			2	#14	#14	24VDC POWER
C2201	BOOSTER PUMP 2 VFD	BOOSTER PUMP 2		1	1"	SPEC			4	#14	#14	
C2261	BOOSTER PUMP 2 VFD	BOOSTER PUMP 2 PRESSURE SWITCH PSH-2261		1	1"	SPEC			4	#14	#14	
C2301A	BOOSTER PUMP 3 VFD	BOOSTER PUMP 3 RTD PANEL		1	1"	SPEC			2	#14	#14	24VDC POWER
C2301	BOOSTER PUMP 3 VFD	BOOSTER PUMP 3		1	1"	SPEC			2	#14	#14	
C2361	BOOSTER PUMP 3 VFD	BOOSTER PUMP 3 PRESSURE SWITCH PSH-2361		1	1"	SPEC			4	#14	#14	
C2401	JOCKEY PUMP STARTER	JOCKEY PUMP		1	1"	SPEC			4	#14	#14	
C2461	JOCKEY PUMP STARTER	JOCKEY PUMP PRESSURE SWITCH PSH-2461		1	1"	SPEC			4	#14	#14	
C2571	CONTROL PANEL	FLOWMETER FIT-2571		1	1"	SPEC			2	#14	#14	
C2581	CONTROL PANEL	ANALYZER AIT-2581		1	1"	SPEC			2	#14	#14	
C2600	CONTROL PANEL	STUB FOR FUTURE CHEMICAL SYSTEM		1	1"	SPEC						
C2700	CONTROL PANEL	SHC PUMP PANEL		1	1"	SPEC			10	#14	#14	
C2800	CONTROL PANEL	LAS PUMP PANEL		1	1"	SPEC			10	#14	#14	
C2901	CONTROL PANEL	AIR INLET VALVE MV-2901		1	1"	SPEC			6	#14	#14	
C2911	CONTROL PANEL	SURGE TANK COMPRESSOR		1	1"	SPEC			6	#14	#14	
D2004	CONTROL PANEL	DISTRIBUTION SWITCHBOARD		1	1"	SPEC						
D2005	CONTROL PANEL	AUTOMATIC TRANSFER SWITCH		1	1"	SPEC			1	CAT 6		
D2010	CONTROL PANEL	BOOSTER PUMP 1 VFD		1	1"	SPEC			2	CAT 6		
D2020	CONTROL PANEL	BOOSTER PUMP 2 VFD		1	1"	SPEC			2	CAT 6		
D2030	CONTROL PANEL	BOOSTER PUMP 3 VFD		1	1"	SPEC			2	CAT 6		
D2040	CONTROL PANEL	JOCKEY PUMP STARTER		1	1"	SPEC						
D2096	CONTROL PANEL	POWER MONITOR		1	1"	SPEC			1	CAT 6		

NOTES PERTAINING TO CONDUIT SCHEDULE:

- CONDUIT TYPE "SPEC" IS AS DEFINED IN SPECIFICATIONS SECTION [CONDUIT AND BOXES] FOR NON-EXPOSED AND EXPOSED PORTIONS OF CONDUIT RUN. SEE SPECIFICATIONS AND EXPOSED TRANSITION DETAIL OR EQUIPMENT DETAIL FOR NON-EXPOSED PORTIONS OF RUN.
- CONDUITS OVER 15 FT LENGTH (EITHER EMPTY OR WITH CONDUCTORS SIZED LESS THAN #8 AWG), SHALL INCLUDE A POLY PULL STRING. STRING SHALL BE TIED OFF AT EACH END.
- FITTINGS, CONDULETS, BOXES AND COVERS SHALL MATCH DUTY OF ADJACENT PIPE. SEE SPECIFICATIONS [CONDUIT AND BOXES].
- PIPE SIZING IN TABLE IS BASED ON COPPER CONDUCTORS, THHN INSULATION, WITH TYPE C STRANDING. OTHER CONDUCTOR TYPES, IF ALLOWED OR REQUIRED PER SPECIFICATION, MAY REQUIRE CONDUITS TO BE UPSIZED BY CONTRACTOR AND SUBMITTED FOR APPROVAL.
- CONDUITS SHALL BE INSTALLED IN ACCORDANCE WITH THE SCHEDULE PLAN FOR CONDUIT REQUIREMENTS FOR ELECTRICAL DEVICES WITHOUT CONDUITS SHOWN, CONDUIT NUMBERS, OR NOT LISTED IN SCHEDULE.

REV	DATE	BY	DESCRIPTION



DESIGNED:	T. FRISCH
DRAWN:	N. CONANT
CHECKED:	M. FRISCH
QA/QC:	
CONSTRUCTABILITY:	

WATERWORKS
E N G I N E E R S

PROJECT NUMBER: 22-451
DRAWING NUMBER: 20-E-024
SHEET NUMBER: 133

CASITAS MUNICIPAL WATER DISTRICT
VENTURA - SANTA BARBARA COUNTIES INTERIE: BID SCHEDULE "A"

ELECTRICAL
CONDUIT SCHEDULE 1

SCALE: SEE PLAN

CONDUIT & WIRE ROUTING SCHEDULE

REV	CONDUIT DETAILS		TO				POWER WIRE	CONTROL WIRE	GROUND	NOTES
	TAG NO.	FROM	QTY	SIZE	TYPE	QTY				
D2101	BOOSTER PUMP 1 VFD	BOOSTER PUMP 1 RTD PANEL	1	1"	SPEC	-	-	#12	LOOPED THROUGH TO CP	
D2201	BOOSTER PUMP 2 VFD	BOOSTER PUMP 2 RTD PANEL	1	1"	SPEC	-	-	#12	LOOPED THROUGH TO CP	
D2301	BOOSTER PUMP 3 VFD	BOOSTER PUMP 3 RTD PANEL	1	1"	SPEC	-	-	#12	LOOPED THROUGH TO CP	
D2800	CONTROL PANEL	STUB FOR FUTURE CHEMICAL SYSTEM	1	1"	SPEC	-	-	-	-	
D2700	CONTROL PANEL	SHC PUMP PANEL	1	1"	SPEC	-	-	-	-	
D2800	CONTROL PANEL	LAS PUMP PANEL	1	1"	SPEC	-	-	-	-	
H2101A	J-BOX-2023	AHU-2101	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2101T	AHU-2101	THERMOSTAT 2101	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2101	CONTROL PANEL	HVAC UNIT HP-2101	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2102A	J-BOX-2104	AHU-2102	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2102T	AHU-2102	THERMOSTAT 2102	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2102	CONTROL PANEL	HVAC UNIT HP-2102	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2103T	AHU-2103	THERMOSTAT 2103	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2103	HVAC UNIT HP-2101	THERMOSTAT 2103	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2104T	AHU-2104	THERMOSTAT 2104	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2104	HVAC UNIT HP-2102	THERMOSTAT 2104	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2105T	AHU-2105	THERMOSTAT 2105	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2105	HVAC UNIT HP-2102	THERMOSTAT 2105	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2106T	AHU-2106	THERMOSTAT 2106	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
H2106	J-BOX-2104	AHU-2106	1	1"	SPEC	-	-	#14	PER HVAC REQUIREMENTS	
L2002	PANELBOARD LP	CONTROL PANEL	1	1"	SPEC	4	#12	-	-	
L2006	PANELBOARD LP	STUB FOR FUTURE CHEMICAL SYSTEM	1	1"	SPEC	-	-	-	-	
L2008	PANELBOARD LP	SHC PUMP PANEL	1	1"	SPEC	2	#12	#12	-	
L2010	PANELBOARD LP	LAS PUMP PANEL	1	1"	SPEC	2	#12	#12	-	
L2012	PANELBOARD LP	GENERATOR CONNECTION PANEL	1	1"	SPEC	2	#8	#12	-	
L2020	PANELBOARD LP	COMPRESSOR ENCLOSURE	1	1"	SPEC	2	#12	#12	-	
L2021	PANELBOARD LP	LIGHT POLE	1	1"	SPEC	2	#12	#12	-	
L2022	PANELBOARD LP	METER/MAIN SWITCHBOARD	1	1"	SPEC	2	#12	#12	-	
L2024	PANELBOARD LP	ANALYZER AIT-2081	1	1"	SPEC	2	#12	#12	-	
L2026	PANELBOARD LP	ANALYZER AIT-2581	1	1"	SPEC	2	#12	#12	-	
L2027	PANELBOARD LP	AHU2101 ELECTRICAL ROOM	1	1"	SPEC	3	#12	#12	-	
L2029	PANELBOARD LP	AHU2102 ELECTRICAL ROOM	1	1"	SPEC	3	#12	#12	-	
L2030	PANELBOARD LP	AHU2105 HYPOCHLORITE ROOM	1	1"	SPEC	3	#12	#12	-	
L2031	PANELBOARD LP	AHU2103 MECHANICAL ROOM	1	1"	SPEC	3	#12	#12	-	
L2032	PANELBOARD LP	AHU2106 LAS ROOM	1	1"	SPEC	3	#12	#12	-	
L2033	PANELBOARD LP	AHU2104 MECHANICAL ROOM	1	1"	SPEC	3	#12	#12	-	
P2001A,B	UTILITY POLE	UTILITY TRANSFORMER	2	4"	SPEC	-	-	-	PER UTILITY REQUIREMENTS	
P2002A-H	UTILITY TRANSFORMER	METER/MAIN SWITCHBOARD	8	5"	SPEC	-	-	-	PER UTILITY REQUIREMENTS	
P2003A-E	GENERATOR CONNECTION PANEL	AUTOMATIC TRANSFER SWITCH	5	4"	SPEC	3	#500	#1/0	+#250 NEUTRAL EACH	
P2004A-H	METER/MAIN SWITCHBOARD	AUTOMATIC TRANSFER SWITCH	8	4"	SPEC	3	#500	#1/0	+#250 NEUTRAL EACH	
P2007	DISTRIBUTION SWITCHBOARD	BYPASS VALVE JWOV-2005	1	1"	SPEC	3	#12	#12	VIA DISCONNECT	
P2008	DISTRIBUTION SWITCHBOARD	HVAC UNIT HP-2101	1	1"	SPEC	3	#8	#10	VIA DISCONNECT	
P2009	DISTRIBUTION SWITCHBOARD	HVAC UNIT HP-2102	1	1"	SPEC	3	#8	#10	VIA DISCONNECT	
P2010A,B,C	DISTRIBUTION SWITCHBOARD	BOOSTER PUMP 1 VFD	3	4"	SPEC	3	#500	#4/0	-	
P2020A,B,C	DISTRIBUTION SWITCHBOARD	BOOSTER PUMP 2 VFD	3	4"	SPEC	3	#500	#4/0	-	
P2030A,B,C	DISTRIBUTION SWITCHBOARD	BOOSTER PUMP 3 VFD	3	4"	SPEC	3	#500	#4/0	-	
P2040	DISTRIBUTION SWITCHBOARD	JOCKEY PUMP STARTER	1	1"	SPEC	3	#8	#10	-	
P2050	DISTRIBUTION SWITCHBOARD	SURGE TANK COMPRESSOR	1	1"	SPEC	3	#6	#10	-	
P2090	DISTRIBUTION SWITCHBOARD	TRANSFORMER LP	1	2"	SPEC	2	#3/0	#6	-	
P2091	TRANSFORMER LP	PANELBOARD LP	1	2"	SPEC	3	#3/0	#6	-	
P2101A,B	BOOSTER PUMP 1 VFD	BOOSTER PUMP 1	2	4"	SPEC	3	#750	#4/0	-	
P2201A,B	BOOSTER PUMP 2 VFD	BOOSTER PUMP 2	2	4"	SPEC	3	#750	#4/0	-	
P2301A,B	BOOSTER PUMP 3 VFD	BOOSTER PUMP 3	2	4"	SPEC	3	#750	#4/0	-	
P2401	JOCKEY PUMP STARTER	JOCKEY PUMP	1	1"	SPEC	3	#8	#10	-	
P2600	DISTRIBUTION SWITCHBOARD	STUB FOR FUTURE CHEMICAL SYSTEM	1	1"	SPEC	-	-	-	-	
P2700	DISTRIBUTION SWITCHBOARD	LAS PUMP PANEL	1	1"	SPEC	-	-	-	-	
P2800	DISTRIBUTION SWITCHBOARD	LAS PUMP PANEL	1	1"	SPEC	-	-	-	-	
X2001	CONTROL PANEL	METER/MAIN SWITCHBOARD	1	1"	SPEC	-	-	-	-	
X2002	CONTROL PANEL	METER/MAIN SWITCHBOARD	1	1"	SPEC	-	-	-	-	
X2003	CONTROL PANEL	GENERATOR CONNECTION PANEL	1	1"	SPEC	-	-	-	-	
X2004	AUTOMATIC TRANSFER SWITCH	GENERATOR CONNECTION PANEL	1	1"	SPEC	-	-	-	-	

NOTES PERTAINING TO CONDUIT SCHEDULE:

- CONDUIT TYPE "SPEC" IS AS DEFINED IN SPECIFICATIONS SECTION [CONDUIT AND BOXES] FOR NON-EXPOSED AND EXPOSED PORTIONS OF CONDUIT RUN. SEE SPECIFICATIONS AND EXPOSED TRANSITION DETAIL OR EQUIPMENT DETAIL FOR CONDUIT TYPE TO BE USED FOR EXPOSED PORTIONS OF CONDUIT BELOW GROUND TO EXPOSED PORTIONS OF RUN.
- CONDUITS OVER 15 FT LENGTH (EITHER EMPTY OR WITH CONDUCTORS SIZED LESS THAN #8 AWG), SHALL INCLUDE A POLY PULL STRING. STRING SHALL BE TIED OFF AT EACH END.
- FITTINGS, CONDULETS, BOXES AND COVERS SHALL MATCH DUTY OF ADJACENT CONDUITS [CONDUIT AND BOXES].
- PIPE, SEE SPECIFICATIONS [CONDUIT AND BOXES].
- WIRE SIZING IN TABLE IS BASED ON COPPER CONDUCTORS, THHN INSULATION, REQUIRED PER SPECIFICATION, MAY REQUIRE CONDUITS TO BE UPSIZED BY CONTRACTOR AND SUBMITTED FOR APPROVAL.
- REQUIREMENTS FOR ELECTRICAL DEVICES WITHOUT CONDUITS SHOWN, CONDUIT NUMBERS, OR NOT LISTED IN SCHEDULE.

FRISCH ENGINEERING, INC.
CONSULTING ELECTRICAL ENGINEERS
3440 FORECAST RD, UNIT 600
FOLSOM, CA 95630



FILE:2211C-A-E025.DWG DATE: SEP 11, 2025 TIME: 3:43:03PM

REV	DATE	BY	DESCRIPTION



DESIGNED:	T. FRISCH
DRAWN:	N. CONANT
CHECKED:	M. FRISCH
QA/QC:	
CONSTRUCTIBILITY:	

WATERWORKS
E N G I N E E R S

PROJECT ENGINEER: _____ DATE: _____
R.C.E. EXP. _____
WWE PROJECT NO. 08418

0 1/2 1 2
THIS BAR IS INCHES AT FULL SCALE. IF NOT FULL SCALE, THEN SCALE ACCORDINGLY.

SCALE:
SEE PLAN

CASITAS MUNICIPAL WATER DISTRICT
VENTURA - SANTA BARBARA COUNTIES INTERIE: BID SCHEDULE "A"

ELECTRICAL
CONDUIT SCHEDULE 2

PROJECT NUMBER
22-451

DRAWING NUMBER
20-E-025

SHEET NUMBER
OF 133

SCHEDULE B

SECTION 26 05 00 COMMON WORK RESULTS FOR ELECTRICAL

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. General requirements applicable to all Electrical Work.
 - 2. General requirements for electrical submittals.
- B. Related sections:
 - 1. Section 01 33 00 - Submittal Procedures.
 - 2. Section 01 77 00 - Closeout Procedures.
 - 3. Section 26 05 33 - Conduits.
 - 4. Section 26 05 53 - Identification for Electrical Systems.
 - 5. Section 26 08 50 - Field Electrical Acceptance Tests.
- C. Interfaces to equipment, instruments, and other components:
 - 1. The Drawings, Specifications, and overall design are based on preliminary information furnished by various equipment manufacturers which identify a minimum scope of supply from the manufacturers. This information pertains to, but is not limited to, instruments, control devices, electrical equipment, packaged mechanical systems, and control equipment provided with mechanical systems.
 - 2. Provide all material and labor needed to install the actual equipment furnished, and include all costs to add any additional conduit, wiring, terminals, or other electrical hardware to the Work, which may be necessary to make a complete, functional installation based on the actual equipment furnished:
 - a. Make all changes necessary to meet the manufacturer's wiring requirements.
 - 3. Submit all such changes and additions to the Engineer for acceptance.
 - 4. Review the complete set of Drawings and Specifications in order to ensure that all items related to the electrical power and control systems are completely accounted for. Include any such items that appear on the Drawings or in the Specifications from another discipline in the scope of Work:
 - a. If a conflict between Drawings and Specifications is discovered, refer conflict to the Engineer as soon as possible for resolution.
 - 5. Loop drawings:
 - a. Provide all electrical information required in the preparation of loop drawings including, but not limited to:
 - 1) Conduit numbers and associated signal(s) contained within each conduit.
 - 2) Wire numbers.
 - 3) Equipment terminal numbers.
 - 4) Junction boxes and signal(s) contained within each junction box.
 - 5) Equipment power sources, and associated circuit numbers.
 - 6) As-built drawings detailing wiring.
- D. All electrical equipment and systems for the entire Project must comply with the requirements of the Electrical Specifications, whether referenced in the individual Equipment Specifications or not:
 - 1. The requirements of the Electrical Specifications apply to all Electrical Work specified in other sections.
 - 2. Inform all vendors supplying electrical equipment or systems of the requirements of the Electrical Specifications.
 - 3. Owner is not responsible for any additional costs due to the failure of Contractor to notify all subcontractors and suppliers of the Electrical Specifications requirements.
- E. Contract Documents:
 - 1. General:

- a. The Drawings and Specifications are complementary and are to be used together in order to fully describe the Work.
- 2. Specifications:
 - a. The General and Supplementary Conditions of the Contract Documents govern the Work.
 - b. These requirements are in addition to all General Requirements.
- 3. Contract Drawings:
 - a. The Electrical Drawings show desired locations, arrangements, and components of the Electrical Work in a diagrammatic manner.
 - b. Locations of equipment, control devices, instruments, boxes, panels, etc. are approximate only; exercise professional judgment in executing the Work to ensure the best possible installation:
 - 1) The equipment locations and dimensions indicated on the Drawings are approximate. Use the shop drawings to determine the proper layout, foundation, and pad requirements, etc. for final installation. Coordinate with all subcontractors to ensure that all electrical equipment is compatible with other equipment and space requirements. Make changes required to accommodate differences in equipment dimensions.
 - 2) The Contractor has the freedom to select any of the named manufacturers identified in the individual specification sections, if noted; however, the Engineer has designed the spatial equipment layout based upon a single manufacturer and has not confirmed that every named manufacturer's equipment fits in the allotted space. It is the Contractor's responsibility to ensure that the equipment being furnished fits within the defined space.
 - c. Installation details:
 - 1) The Contract Drawings include typical installation details the Contractor is to use to complete the Electrical Work. For cases where a typical detail does not apply, develop installation details that may be necessary for completing the Work, and submit these details for review by the Engineer.
 - 2) Not all typical installation details are referenced within the Drawing set. Apply and use typical details where appropriate.
 - d. Schematic diagrams:
 - 1) All controls are shown de-energized.
 - 2) Schematic diagrams show control function only. Incorporate other necessary functions for proper operation and protection of the system.
 - 3) Add slave relays, where required, to provide all necessary contacts for the control system or where needed to function as interposing relays for control voltage coordination, equipment coordination, or control system voltage drop considerations.
 - 4) Mount all devices shown on motor controller schematic diagrams in the controller compartment enclosure, unless otherwise noted or indicated.
 - 5) Schematic diagrams are to be used in conjunction with the descriptive operating sequences in the Contract Documents. Combine all information and furnish a coordinated and fully functional control system.
- F. Alternates/Alternatives:
 - 1. In accordance with Owner's front end bid documents.
- G. Changes and change orders:
 - 1. In accordance with Owner's front end bid documents.

1.02 REFERENCES

- A. Code compliance:
 - 1. The publications are referred to in the text by the basic designation only. The latest edition accepted by the Authority Having Jurisdiction of referenced publications in effect at the time of the bid governs.

2. The standards listed are hereby incorporated into this Section.
 - a. American National Standards Institute (ANSI).
 - b. American Society of Civil Engineers (ASCE):
 - 1) ASCE 7 - Minimum Design Loads for Buildings and Other Structures.
 - c. ASTM International (ASTM).
 - d. Illuminating Engineering Society (IES).
 - e. Institute of Electrical and Electronics Engineers (IEEE).
 - f. Insulated Cable Engineers Association (ICEA).
 - g. International Code Council (ICC).
 - 1) International Code Council Evaluation Service (ICC-ES).
 - (a) AC 156 – Acceptance Criteria for Seismic Certification by Shake Table Testing of Non-Structural Components (ICC-ES AC 156).
 - h. International Society of Automation (ISA).
 - i. National Electrical Manufacturers Association (NEMA):
 - 1) 250 - Enclosures for Electrical Equipment (1000 V Maximum).
 - j. National Fire Protection Association (NFPA):
 - 1) 70 - National Electrical Code (NEC).
 - k. National Institute of Standards and Technology (NIST).
 - l. Underwriters' Laboratories, Inc. (UL).
- B. Compliance with laws and regulations:
 1. In accordance with Owner's front end bid documents.

1.03 DEFINITIONS

- A. Definitions of terms and other electrical and instrumentation considerations as set forth by:
 1. IEEE.
 2. NETA.
 3. IES.
 4. ISA.
 5. NEC.
 6. NEMA.
 7. NFPA.
 8. NIST.
- B. Specific definitions:
 1. FAT: Factory acceptance test.
 2. ICSC: Instrumentation and controls subcontractor.
 3. LCP: Local control panel: Operator interface panel that may contain an HMI, pilot type control devices, operator interface devices, control relays, etc. and does not contain a PLC or RIO.
 4. PCM: Process control module: An enclosure containing any of the following devices: PLC, RTU, or RIO.
 5. PCIS: Process control and instrumentation system.
 6. RTU: Remote telemetry unit: A controller typically consisting of a PLC, and a means for remote communications. The remote communications devices typically are radios, modems, etc.
 7. Space: That portion of the switchgear, motor control center, panelboard, switchboard or control panel that does not physically contain a device but is capable of accepting a device with no modifications to the equipment, i.e., provide all standoffs, bus, and hardware, as part of the space.
 8. Spare: That portion of the switchgear, motor control center, panelboard, switchboard or control panel that physically contains a device with no load connections to be made.
 9. VCP: Vendor control panel: Control panels that are furnished with particular equipment by a vendor other than the ICSC. These panels may contain PLCs, RIO, OIT, HMI, etc.

10. Unequipped space: That portion of the switchgear, motor control center, panelboard, switchboard or control panel that does not physically contain a device, standoff, bus, hardware, or other equipment.

1.04 SYSTEM DESCRIPTION

A. General requirements:

1. The Work includes everything necessary for and incidental to executing and completing the Electrical Work indicated on the Drawings and specified in the Specifications and reasonably inferable there from:
 - a. The Electrical Drawings are schematic in nature; use the Structural, Architectural, Mechanical, and Civil Drawings for all dimensions and scaling purposes.
2. It is the intent of these Specifications that the entire electrical power, instrumentation, and control system be complete and operable. Provide all necessary material and labor for the complete system from source of power to final utilization equipment, including all connections, testing, calibration of equipment furnished by others as well as equipment furnished by the Contractor, whether or not specifically mentioned but which are necessary for successful operation.
3. Provide all Electrical Work, including conduit, field wiring, and connections by the electrical subcontractor under the provisions of the Electrical Specifications for all aspects of the Work.
4. Coordinate all aspects of the Work with the electrical subcontractor and other subcontractors before bidding in order to ensure that all costs associated with a complete installation are included. The Owner is not responsible for any change orders due to lack of coordination of the Work between the Contractor, the electrical subcontractor, the other subcontractors or suppliers.
5. Provide all trenching, forming, rebar, concrete, back filling, hard surface removal and replacement, for all items associated with the Electrical Work and installation:
 - a. As specified in the Contract Documents.
6. Defective work:
 - a. In accordance with Owner's front end bid documents.
7. Utility coordination: Coordinate with the electric utility as required.

1.05 SUBMITTALS

A. Furnish submittals as specified in Section 01 33 00 and this Section.

B. General:

1. Instruct all equipment suppliers of submittals and operation and maintenance manuals of the requirements in this Section.
2. Furnish the submittals required by each section in the Electrical Specifications.
3. Adhere to the wiring numbering scheme specified in Section 26 05 53 throughout the Project:
 - a. Uniquely number each wire.
 - b. Wire numbers must appear on all Equipment Drawings.
4. Use equipment and instrument tags, as indicated on the Drawings, for all submittals.

C. Seismic requirements:

1. Provide electrical equipment with construction and anchorage to supporting structures designed to resist site seismic loads based on the seismic design criteria per the Manufacturer's instructions.
2. Exemptions: A "statement of seismic qualification" and a "special seismic certification" are not required for the following equipment:
 - a. Temporary or moveable equipment.
 - b. Equipment anchored to the structure and having a total weight of 20 pounds or less.
 - c. Distribution equipment anchored to the structure and having a total unit weight of 3 pounds per linear foot, or less.

D. Operation and maintenance manuals:

1. Furnish the Engineer with a complete set of written operation and maintenance manuals 8 weeks before Functional Acceptance Testing.
- E. Material and equipment schedules:
1. Furnish a complete schedule and/or matrix of all materials, equipment, apparatus, and luminaries that are proposed for use:
 - a. Include sizes, names of manufacturers, catalog numbers, and such other information required to identify the items.
- F. Schedule of values:
1. In addition to completing all items referred to in the schedule of values, submit per unit material and labor costs used in developing the final bid for the electrical system, for the express purpose of pricing and cost justification for any proposed change orders. In addition to the items shown on the schedule of values, provide per unit material and labor costs for conduit and wire installation for specific types, sizes, and locations as indicated on the Drawings and Conduit Schedule. It is the responsibility of the electrical subcontractor to prove to the Engineer's satisfaction that said per unit costs were used in the development of the final Bid amount.
- G. Record Documents:
1. In accordance with Owner's front end bid documents.
- H. Test reports:
1. As specified in Section 01 33 00.
 2. Additional requirements for field acceptance test reports are specified in Section 26 08 50.
- I. Calculations:
1. Where required by specific Electrical Specifications:
 - a. Because these calculations are being provided by a registered professional engineer, they will be reviewed for form, format, and content but will not be reviewed for accuracy and calculation means.

1.06 QUALITY ASSURANCE

- A. Furnish all equipment listed by and bearing the label of UL or of an independent testing laboratory acceptable to the Engineer and the Authority Having Jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. In accordance with Owner's front end bid documents and per Manufacturer's instructions.

1.08 PROJECT OR SITE CONDITIONS

- A. Site conditions:
1. Provide an electrical, instrumentation and control system, including all equipment, raceways, and any other components required for a complete installation that meets the environmental conditions for the Site as specified in the General Requirements and below.
 2. Altitude, temperature and humidity:
 - a. Provide all electrical components and equipment fully rated for continuous operation at this altitude, with no additional derating factors applied.
 - b. Provide additional temperature conditioning equipment to maintain all equipment in non-conditioned spaces subject to these ambient temperatures, with a band of 10 degrees Fahrenheit above the minimum operating temperature and 10 degrees Fahrenheit below maximum operating temperature, as determined by the equipment manufacturer's guidelines:
 - 1) Provide all power conduits wiring for these devices (e.g. heaters, fans, etc.) whether indicated on the Drawings or not.
- B. Provide enclosures for electrical, instrumentation and control equipment, regardless of supplier or subcontractor furnishing the equipment, that meet the requirements outlined in NEMA Standard 250 for the following types of enclosures:

1. NEMA Type 1: Intended for indoor use, primarily to provide a degree of protection from accidental contact with energized parts or equipment.
2. NEMA Type 3R: Intended for outdoor use, to provide a degree of protection against ingress of solid foreign objects (falling dirt), and from the ingress of water (rain, sleet, snow).
3. NEMA Type 4: Intended for indoor or outdoor use, primarily to protect equipment from exposure to windblown dust and rain, splashing or hose directed water, ice formation and freezing.
4. NEMA Type 4X: Made from corrosion resistant materials (fiberglass reinforced plastic, 316 stainless steel or equal) and are intended for indoor or outdoor use, primarily to protect equipment from exposure to windblown dust and rain, splashing or hose directed water, ice formation and freezing, and corrosion.
5. NEMA Type 12: Intended for indoor use, primarily to provide a degree of protection from dust, falling dirt and dripping non-corrosive liquids.

1.09 SEQUENCING (NOT USED)

1.10 SCHEDULING

- A. General:
 1. As specified in accordance with the Owner's front end bid documents.
 2. Testing requirements are specified in Section 26 08 50 and other sections.
- B. Pre-submittal conference:
 1. Before producing any submittals, schedule a pre-submittal conference for the purposes of reviewing the entire Project, equipment, control philosophy, schedules, and submittal requirements.

1.11 WARRANTY

- A. Warrant the Electrical Work as specified in in accordance with the Owner's front end bid documents.
 1. Provide additional warranty as specified in the individual Electrical Specifications.

1.12 SYSTEM START-UP

- A. Replace or modify equipment, software, and materials that do not achieve design requirements after installation in order to attain compliance with the design requirements:
 1. Following replacement or modification, retest the system and perform additional testing to place the complete system in satisfactory operation and obtain compliance acceptance from the Engineer.

1.13 OWNER'S INSTRUCTIONS (NOT USED)

1.14 MAINTENANCE

- A. Before Substantial Completion, perform all maintenance activities required by any sections of the Specifications including any calibrations, final adjustments, component replacements or other routine service required before placing equipment or systems in service.
- B. Furnish all spare parts as required by other sections of the Specifications.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Provide similar items of same manufacturer throughout the electrical and instrumentation portion of the Project.
- B. Allowable manufacturers are specified in individual Electrical Specifications.

2.02 EXISTING PRODUCTS (NOT USED)

2.03 MATERIALS

- A. Furnish all materials under this Contract that are new, free from defects, and standard products produced by manufacturers regularly engaged in the production of these products and that bear all approvals and labels as required by the Specifications.
- B. Provide materials complying with the applicable industrial standards.
- C. Stainless steel:
 - 1. Where stainless steel is indicated or used for any portion of the Electrical Work, provide a non-magnetic, corrosion-resistant alloy, ANSI Type 316, satin finish.
 - 2. Provide exposed screws of the same alloys.
 - 3. Provide finished material free of any burrs or sharp edges.
 - 4. Use only stainless steel hardware, when chemically compatible, in all areas that are or could be in contact with corrosive chemicals.
 - 5. Use stainless steel hardware, when chemically compatible, in all chemical areas or areas requiring NEMA Type 4X construction.
 - 6. Do not use stainless steel in any area containing chlorine, gas or solution, chlorine products or ferric chloride.

2.04 MANUFACTURED UNITS (NOT USED)

2.05 EQUIPMENT (NOT USED)

2.06 COMPONENTS (NOT USED)

2.07 ACCESSORIES (NOT USED)

2.08 MIXES (NOT USED)

2.09 FABRICATION (NOT USED)

2.10 FINISHES (NOT USED)

2.11 SOURCE QUALITY CONTROL

- A. Provide all equipment that is new, free from defects, and standard products produced by manufacturers regularly engaged in the production of these products.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. It is the electrical subcontractor's responsibility to be fully familiar with the existing conditions and local requirements and regulations.
- B. Comply with pre-bid conference requirements as specified in accordance with the Owner's front end bid documents.
- C. Review the site conditions and examine all shop drawings for the various items of equipment in order to determine exact routing and final terminations for all wiring and cables.

3.02 PREPARATION (NOT USED)

3.03 INSTALLATION

- A. Equipment locations shown on Electrical Drawings may change due to variations in equipment size or minor changes made by others during construction:
 - 1. Verify all dimensions indicated on the Drawings:
 - a. Actual field conditions govern all final installed locations, distances, and levels.
 - 2. Review all Contract Documents and approved equipment shop drawings and coordinate Work as necessary to adjust to all conditions that arise due to such changes.
 - 3. Make minor changes in location of equipment before rough in, as directed by the Owner or Engineer.
 - 4. Provide a complete electrical system:
 - a. Install all extra conduits, cables, and interfaces as may be necessary to provide a complete and operating electrical system.
- B. Install the equipment in accordance with the accepted installation instructions and anchorage details to meet the seismic and wind load requirements at the Project site.

- C. Cutting and patching:
 - 1. Perform all cutting, patching, channeling, core drilling, and fitting required for the Electrical Work, except as otherwise directed:
 - a. Secure the permission of the Engineer before performing any operation likely to affect the strength of a structural member such as drilling, cutting or piercing:
 - 1) Before cutting, channeling, or core drilling any surface, ensure that no penetration of any other systems will be made:
 - (a) Verify that area is clear and free of conduits, cables, piping, ductwork, post-tensioning cables, etc.
 - (b) Use tone-locate system or X-ray to ensure that area is clear of obstructions.
 - b. Review the complete Drawing set to ensure that there are no conflicts or coordination problems before cutting, channeling, or core drilling any surface.
 - 2. Perform all patching to the same quality and appearance as the original work. Employ the proper tradesmen to secure the desired results. Seal around all conduits, wires, and cables penetrating walls, ceilings, and floors in all locations with a fire stop material, typically:
 - a. 3M: CP 25WB+: Caulk.
 - b. 3M: Fire Barrier: Putty.
 - 3. Use the installation details indicated on the Drawings as a guide for acceptable sealing methods.
- D. Install all conduits and equipment in such a manner as to avoid all obstructions and to preserve headroom and keep openings and passageways clear:
 - 1. Install all conduits and equipment in accordance with working space requirements in accordance with the NEC.
 - a. This includes any panel, disconnect switch or other equipment that can be energized while open exposing live parts regardless of whether it is likely to require examination or has serviceable parts.
 - 2. Where the Drawings do not show dimensions for locating equipment, install equipment in the approximate locations indicated on the Drawings.
 - a. Adjust equipment locations as necessary to avoid any obstruction or interferences.
 - 3. Where an obstruction interferes with equipment operation or safe access, relocate the equipment.
 - 4. Where the Drawings do not indicate the exact mounting and/or supporting method to be used, use materials and methods similar to the mounting details indicated on the Drawings.
- E. Earthwork and concrete:
 - 1. Install all trenching, shoring, concrete, backfilling, grading and resurfacing associated with the Electrical Work:
 - a. Requirements as specified in the Contract Documents.
- F. Terminations:
 - 1. Provide and terminate all conductors required to interconnect power, controls, instruments, panels, and all other equipment.
- G. Miscellaneous installation requirements:
 - 1. In case of interference between electrical equipment indicated on the Drawings and the other equipment, notify the Engineer.
 - 2. Location of manholes and pullboxes indicated on the Drawings are approximate. Coordinate exact location of manholes and pullboxes with Mechanical and Civil Work.
 - 3. Provide additional manholes or pullboxes to those shown where they are required to make a workable installation.
- H. Labeling:
 - 1. Provide all nameplates and labels as specified in Sections 26 05 53.
- I. Equipment tie-downs:

1. Anchor all instruments, control panels, and equipment by methods that comply with seismic and wind bracing criteria, which apply to the Site.
2. All control panels must be permanently mounted and tied down to structures in accordance with the Project seismic criteria.

3.04 ERECTION, INSTALLATION, APPLICATION, CONSTRUCTION (NOT USED)

3.05 REPAIR/RESTORATION (NOT USED)

3.06 RE-INSTALLATION (NOT USED)

3.07 COMMISSIONING

- A. For Owner and Engineer witnessed FAT:
 1. Contractor is responsible for the Owner's and Engineer's costs associated with FAT as specified in other sections.
- B. Owner training:
 1. In accordance with Owner's front end bid documents and in this Section.

3.08 FIELD QUALITY CONTROL

- A. Inspection:
 1. Allow for inspection of electrical system installation as specified in this section.
 2. Provide any assistance necessary to support inspection activities.
 3. Engineer inspections may include, but are not limited to, the following:
 - a. Inspect equipment and materials for physical damage.
 - b. Inspect installation for compliance with the Drawings and Specifications.
 - c. Inspect installation for obstructions and adequate clearances around equipment.
 - d. Inspect equipment installation for proper leveling, alignment, anchorage, and assembly.
 - e. Inspect equipment nameplate data to verify compliance with design requirements.
 - f. Inspect raceway installation for quality workmanship and adequate support.
 - g. Inspect cable terminations.
 4. Inspection activities conducted during construction do not satisfy inspection or testing requirements specified in Section 26 08 50.
- B. Field acceptance testing (Functional Testing):
 1. Notify the Engineer when the Electrical Work is ready for field acceptance testing.
 2. Perform the field acceptance tests as specified in Section 26 08 50.
 3. Record results of the required tests along with the date of test:
 - a. Use conduit identification numbers to indicate portion of circuit tested.
- C. Workmanship:
 1. Leave wiring in panels, manholes, boxes, and other locations neat, clean, and organized:
 - a. Neatly coil and label spare wiring lengths.
 - b. Shorten, re-terminate, and re-label excessive used as well as spare wire and cable lengths, as determined by the Engineer.

3.09 ADJUSTING (NOT USED)

3.10 CLEANING

- A. As specified in Section 01 77 00.
- B. Remove all foreign material and restore all damaged finishes to the satisfaction of the Engineer and Owner.
- C. Clean and vacuum all enclosures to remove all metal filings, surplus insulation and any visible dirt, dust or other matter before energization of the equipment or system start-up.
- D. As specified in other sections of the Contract Documents.

3.11 PROTECTION

- A. Protect all Work from damage or degradation until Substantial Completion.

B. Maintain all surfaces to be painted in a clean and smooth condition.

3.12 SCHEDULES (NOT USED)

END OF SECTION

**SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS**

PART 1 – GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Identification of electrical equipment, devices, and components.
 - 2. Material, manufacturing, and installation requirements for identification devices.
- B. Related sections:
 - 1. Section 01 33 00 - Submittal Procedures.
 - 2. Section 26 05 00 - Common Work Results for Electrical.
 - 3. Section 26 05 33 - Conduits.

1.02 REFERENCES

- A. As specified in Section 26 05 00.
- B. Occupational Safety and Health Administration (OSHA).

1.03 DEFINITIONS

- A. As specified in Section 26 05 00.

1.04 SYSTEM DESCRIPTION

- A. Nameplates:
 - 1. Provide a nameplate for each piece of electrical equipment and devices, control panel and control panel components.
 - 2. Provide all nameplates of identical style, color, and material throughout the facility.
 - 3. Device nameplates information:
 - a. Designations as indicated on the Drawings and identified on the Process and Instrumentation Drawings.
- B. Wire numbers:
 - 1. Coordinate the wire numbering system with all vendors of equipment so that every field wire has a unique number associated with it for the entire system:
 - a. Wire numbers shall correspond to the wire numbers on the control drawings or the panel and circuit numbers for receptacles and lighting.
 - b. Wire numbers shall correspond to the terminal block number to which they are attached in the control panel.
 - c. Internal panel wires on a common terminal shall have the same wire number.
 - d. Multi-conductor cables shall be assigned a cable number that shall be attached to the cable at intermediate pull boxes and stub-up locations beneath freestanding equipment. All multi-conductor and instrumentation cables shall be identified at pull points as described above:
 - 1) Label armored multi-conductor cable using the conduit number as indicated on the Drawings, following the requirements for conduit markers in Section 26 05 33.
 - 2. Provide the following wiring numbering schemes throughout the project for field wires between process control module, (PCM), vendor control panels, (VCP), motor control centers, (MCC), field starters, field instruments, etc.

(ORIGIN LOC.)-(ORIGIN TERM.)/(DEST. LOC.)-(DEST. TERM.)

OR

(ORIGIN LOC.)-(ORIGIN TERM.)
(DEST. LOC.)-(DEST. TERM.)

Where:

ORIGIN LOC. = Designation for originating panel or device

ORIGIN TERM. = Terminal designation at originating panel or device

DEST. LOC. = Designation for destination panel or device

DEST. TERM. = Terminal designation at destination panel or device or PLC I/O address at destination panel

- a. Identify equipment and field instruments as the origin.
- b. PCMs are always identified as the destination.
- c. Location is the panel designation for VCP, LCP, or PCM. For connections to MCCs, location is the specific starter tag and loop number. Location is the tag and loop number for motor starters, field instruments, and equipment. Any hyphen in the panel designation or tag and loop number shall be omitted.
- d. Terminal designation is the actual number on the terminal block where the conductor terminates at field devices and vendor control panels. For multi-conductor cables, all terminal numbers shall be shown, separated by commas.
- e. Terminal designations at motor leads shall be the motor manufacturer's standard terminal designation (e.g. T1, T2, T3, etc.).
- f. Terminal designations at PCMs where the field conductor connects to field terminal blocks for a PLC input or output shall be the PLC address (Note: the following PLC I/O numbering scheme is typical for Allen-Bradley, the numbering scheme should be modified to match that of the actual PLC manufacturer used for the project):

Discrete Point: W:X:Y/Z

Analog Point: W:X:Y.Z

Where:

W = I for input, O for output
number (1, 2, 3...)

X = PLC

Y = Slot number (01, 02, 03...)

Z = Terminal number (00, 01, 02...) for a discrete point or a word number for an analog point (1, 2, 3...)

- g. Terminal designations at PCMs where the conductor does not connect to a PLC I/O point shall be the terminal number with a "C" prefix (e.g. C0010). For common power after a fuse or neutrals after a switch, the subsequent points shall have and capital letter suffix starting with "A" (e.g. C0010A).
3. Case 1: Vendor control panel (VCP) to process control module (PCM): Field wire number/label: A-B/C-D
- A = Vendor control panel number without hyphen (VCP#)
B = Terminal number within VCP (manufacturer's or vendor's standard terminal number)
C = Process control module number without hyphen (PCM#)
D = Either the PLC address if the field terminal is connected directly to a PLC input or output point or the terminal number with a "C" prefix if not connected directly to a PLC I/O point (C0010)

Examples: ~~VCP#-10/PCM#-0101017~~

4. Case 2: Field instrument to process control module (PCM): Field wire number/label: E-F/C-D
 - C = Process control module number without hyphen (PCM#)
 - D = Either the PLC address if the field terminal is connected directly to a PLC input or output point or the terminal number with a "C" prefix if not connected directly to a PLC I/O point (C0010)
 - E = Field mounted instrument tag and loop numbers without hyphen (EDV#)
 - F = Manufacturer's standard terminal number within instrument. Use both terminal numbers for analog points separated by a comma
 - Examples: TIT#-2,3/PCM#-I:1:01.1
 TSH#-1/PCM#-I:2:01/00
5. Case 3: Motor control center (MCC) to process control module (PCM): Field wire number/label: G-B/C-D
 - B = Terminal number within Motor Control Center (manufacturer's or vendor's standard terminal number)
 - C = Process control module without hyphen (PCM#)
 - D = Either the PLC address if the field terminal is connected directly to a PLC input or output point or the terminal number with a "C" prefix if not connected directly to a PLC I/O point (C0010)
 - G = Actual starter designation in the motor control center without hyphen (MMS#)
 - Examples: MMS#-10/PCM#-I:1:01/01
 MMS#-10/PCM#-O:1:10/07
 MMS#-10/PCM#-C0100
6. Case 4: Motor control center (MCC) to vendor control panel (VCP): Field wire number/label: G-B/A-B
 - A = Vendor control panel number without hyphen (VCP#)
 - B = Terminal number within motor control center or vendor control panel (manufacturer's or vendors standard terminal number)
 - G = Actual starter designation in the motor control center without hyphen (MMS#)
 - Example: MMS#-X2/VCP#-10
7. Case 5: Motor leads to a motor control center (MCC): Field wire number/label: H-I/G-B
 - B = Terminal number within motor control center (manufacturer's standard terminal number)
 - G = Actual starter designation in the motor control center without hyphen (MMS#)
 - H = Equipment tag and loop number without hyphen (PMP#)
 - I = Motor manufacturer's standard motor lead identification (e.g. T1, T2, T3, etc.)
 - Example: PMP#-T3/MMS#-T3
8. Case 6: Remote or separately mounted starter or variable frequency drive (VFD) to process control module (PCM):
 - Field wire number/label: J-B/C-D
 - B = Terminal number within starter or variable frequency drive (manufacturer's standard terminal number)
 - C = Process control module number without hyphen (VCP#)
 - D = Either the PLC address if the field terminal is connected directly to a PLC input or output point or the terminal number with a "C" prefix if not connected directly to a PLC I/O point (C0010)
 - J = Starter or variable frequency drive tag and loop number without hyphen (MMS#)
 - Examples: MMS#-10/PCM#-I:1:01/01
 MMS#-10/PCM#-O:2:10/07
 MMS#-10/PCM#-C0010
9. Identify all spare conductors as required for other field wires with an "S" prefix:
 - Example: S MMS#-10/PCM#-C011

1.05 SUBMITTALS

- A. Furnish submittals as specified in Sections 01 33 00 and 26 05 00.
- B. Product data:
 - 1. Nameplates:
 - a. Color.
 - b. Size:
 - 1) Outside dimensions.
 - 2) Lettering.
 - c. Material.
 - d. Mounting means.
 - 2. Nameplate schedule:
 - a. Show exact wording for each nameplate.
 - b. Include nameplate and letter sizes.
 - 3. Wire numbers:
 - a. Manufacturer's catalog data for wire labels and label printer.
- C. Record documents:
 - 1. Update the conduit schedule to reflect the exact quantity of wire numbers including spares and destination points for all wires.

1.06 QUALITY ASSURANCE (NOT USED)

1.07 DELIVERY, STORAGE, AND HANDLING

- A. As specified in Section 26 05 00.

1.08 PROJECT SITE CONDITIONS (NOT USED)

1.09 SEQUENCING (NOT USED)

1.10 SCHEDULING (NOT USED)

1.11 WARRANTY

- A. As specified in Section 26 05 00.

1.12 SYSTEM START UP

- A. As specified in Section 26 05 00.

1.13 OWNER'S INSTRUCTIONS (NOT USED)

1.14 MAINTENANCE (NOT USED)

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Nameplates and signs:
 - 1. One of the following or equal:
 - a. Brady.
 - b. Seton.
- B. Conductor and cable markers:
 - 1. Heat-shrinkable tubing:
 - a. One of the following or equal:
 - 1) Raychem.
 - 2) Brady.
 - 3) Thomas & Betts.
 - 4) Kroy.
- C. Conduit and raceway markers:
 - 1. One of the following or equal:
 - a. Almetek: Mini Tags.
 - b. Lapp Group: Maxi System.

2.02 EXISTING PRODUCTS (NOT USED)

2.03 MATERIALS

- A. Nameplates:
 - 1. Fabricated from white-center and red face or black-center, white face laminated plastic engraving stock:
 - a. 3/32-inch thick material.
 - b. Two-ply.
 - c. With chamfered edges.
 - d. Block style engraved characters of adequate size to be read easily from a distance of 6 feet:
 - 1) No characters smaller than 1/8-inch in height.
- B. Signs:
 - 1. Automatic equipment and high voltage signs:
 - a. Suitable for exterior use.
 - b. In accordance with OSHA regulations.
- C. Conductor and cable markers:
 - 1. Machine printed black characters on white tubing.
 - 2. Ten point type or larger.
- D. Conduit and raceway markers:
 - 1. Non-metallic:
 - a. UV resistant holder and letters
 - b. Black letters on yellow background.
 - c. Minimum letter height: 1/2-inch.
 - d. Adhesive labels are not acceptable.

2.04 MANUFACTURED UNITS (NOT USED)

2.05 EQUIPMENT (NOT USED)

2.06 COMPONENTS (NOT USED)

2.07 ACCESSORIES (NOT USED)

2.08 MIXES (NOT USED)

2.09 FABRICATION (NOT USED)

2.10 FINISHES (NOT USED)

2.11 SOURCE QUALITY CONTROL

- A. Nameplates:
 - 1. Provide all nameplates for control panel operator devices (e.g. pushbuttons, selector switches, pilot lights, etc.):
 - a. Same material and same color and appearance as the device nameplates, in order to achieve an aesthetically consistent and coordinated system.

PART 3 – EXECUTION

3.01 EXAMINATION (NOT USED)

3.02 PREPARATION (NOT USED)

3.03 INSTALLATION

- A. As specified in Section 26 05 00.
- B. Nameplates:
 - 1. Attach nameplates to equipment with rivets, bolts or sheet metal screws, approved waterproof epoxy-based cement or install in metal holders welded to the equipment.
 - 2. On NEMA Type 4, NEMA Type 4X, or NEMA Type 7 enclosures, use epoxy-based cement to attach nameplates.
 - 3. Nameplates shall be aligned and level or plumb to within 1/64 inch over the entire length:

- a. Misaligned or crooked nameplates shall be remounted, or provide new enclosures at the discretion of the Engineer.
- C. Conductor and cable markers:
 - 1. Apply all conductor and cable markers before termination.
 - 2. Heat-shrinkable tubing:
 - a. Tubing shall be shrunk using a heat gun that produces low temperature heated air.
 - b. Tubing shall be tight on the wire after it has been heated.
 - c. Characters shall face the open panel and shall read from left to right or top to bottom.
 - d. Marker shall start within 1/32 inch of the end of the stripped insulation point.
- D. Conduit markers:
 - 1. Furnish and install conduit markers for every conduit in the electrical system that is identified in the conduit schedule or part of the process system:
 - 2. Mark conduits at the following locations:
 - a. Each end of conduits that are greater than 10 feet in length.
 - b. Where the conduit penetrates a wall or structure.
 - c. Where the conduit emerges from the ground, slab, etc.
 - d. The middle of conduits that are 10 feet or less in length.
 - 3. Mark conduits after the conduits have been fully painted.
 - 4. Position conduit markers so that they are easily read from the floor.
 - 5. Attach non-metallic conduit markers with nylon cable ties:
 - a. Provide ultraviolet resistant cable ties for conduit markers exposed to direct sunlight.
 - 6. Mark conduits before construction review by Engineer for punch list purposes.
 - 7. Label intrinsically safe conduits in accordance with the requirements of the NEC.
- E. Signs and labeling:
 - 1. Furnish and install warning signs on equipment that has more than one source of power.
 - a. Warning signs to identify every panel and circuit number of the disconnecting means of all external power sources.
 - 2. Place warning signs on equipment that has 120 VAC control voltage source used for interlocking.
 - a. Identify panel and circuit number or conductor tag for control voltage source disconnecting means.

3.04 ERECTION, INSTALLATION, APPLICATION, CONSTRUCTION (NOT USED)

3.05 REPAIR/RESTORATION (NOT USED)

3.06 RE-INSTALLATION (NOT USED)

3.07 FIELD QUALITY CONTROL

- A. Replace any nameplates, signs, conductor markers, cable markers, or raceway labels that in the sole opinion of the Engineer do not meet the Engineer's aesthetic requirements.

3.08 ADJUSTING (NOT USED)

3.09 CLEANING (NOT USED)

3.10 PROTECTION (NOT USED)

3.11 SCHEDULES (NOT USED)

END OF SECTION

SECTION 26 24 13 SWITCHBOARDS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Switchboards
 - 2. Switchboard accessories.
- B. Related sections:
 - 1. Section 01 33 00 - Submittals.
 - 2. Section 26 05 00 - Common Work Results for Electrical.
 - 3. Section 26 05 53 - Identification for Electrical Systems.
 - 4. Section 26 08 50 - Field Electrical Acceptance Tests.
 - 5. Section 26 28 01 - Low Voltage Molded Case Circuit Breakers.
 - 6. Section 26 43 14 - Surge Protective Devices.

1.02 REFERENCES

- A. As specified in Section 26 05 00.
- B. Institute of Electrical and Electronic Engineers (IEEE).
 - 1. C57.13 - IEEE Standard Requirements for Instrument Transformers.
- C. National Electrical Manufacturers' Association (NEMA):
 - 1. PB 2 - Deadfront Distribution Switchboards.
- D. Underwriters' Laboratories, Inc. (UL):
 - 1. 891 - Switchboards.

1.03 DEFINITIONS

- A. As specified in Section 26 05 00.

1.04 SYSTEM DESCRIPTION

- A. Factory assembled, wired, and tested switchboards, with major components being products of a single manufacturer, including circuit breakers, and other equipment specified in this Section and indicated on the Drawings.

1.05 SUBMITTALS

- A. Furnish submittals as specified in Sections 01 33 00 and 26 05 00.
- B. Product data:
 - 1. Manufacturer of switchboard.
 - 2. Manufacturer of all component parts of switchboard.
 - 3. Dimensions:
 - 4. Nameplate schedule.
 - a. Width.
 - b. Length.
 - c. Height.
 - d. Weight.
 - 5. Bill of material.
 - 6. Description of operation.
 - 7. Ratings:
 - a. Voltage.
 - b. Phase.
 - c. Current.
 - d. Interrupting rating (circuit breakers and fuses).
 - 8. List of recommended spare parts.
 - 9. Name of dealer's repair facility and parts stocking agreement with the factory:

- a. Agreement shall outline in detail the manufacturer's parts stocking requirements and the method by which the manufacturer's representative verifies that the stock is at an acceptable level.
 - b. Agreement should also outline the method by which the manufacturer's representative determines that the service personnel meet factory standards.
 - c. A toll-free or local phone number with 24/7 emergency monitoring/call back is required.
10. Furnish circuit breaker submittals as specified in:
 - a. Section 26 28 01.
 - b. Section 26 24 13.
 11. For equipment installed in structures designated as seismic design category C, D, E, or F submit the following as specified in Section 26 05 00:
 - a. Manufacturer's statement of seismic qualification with substantiating test data.
 12. Manufacturer's special seismic certification with substantiating test data.
- C. Shop Drawings:
1. Complete, detailed, and scaled switchboard layout:
 - a. Front panel.
 - b. Sub-panels.
 - c. Interior panels.
 - d. Top and bottom conduit windows.
 2. Complete electrical wiring diagrams:
 - a. Point-to-point connections.
 - b. Internal compartment-to-compartment interconnection wiring diagrams.
 - c. Wiring identification and terminal numbers.
 3. Complete 3-line diagrams for each switchboard lineup. These drawings shall indicate devices comprising the switchboard assembly including, but not limited to, circuit breakers, control power and instrument transformers, meters, and control devices. Clearly, indicate electrical ratings of devices on Drawings.
 4. Complete interface and connection diagrams for metering system.
 5. Complete bill of material list and equipment data sheets identifying appropriate information specific to the switchboard being supplied.
 6. Nameplate schedule.
 7. Before fabrication, submit Switchboard Shop Drawings for approval to Owner's dry utility consultant (if applicable) and SCE.
- D. Installation instructions:
1. Detail the complete installation of the equipment including rigging, moving, and setting into place.
 2. For equipment installed in structures designated as seismic design category A or B:
 - a. Provide manufacturer's installation instructions and anchoring details for connecting equipment to supports and structures.
 3. For equipment installed in structures designated as seismic design category C, D, E, or F:
 - a. Provide project-specific installation instructions and anchoring details based on support conditions and requirements to resist seismic and wind loads as specified in Section 26 05 00.
 - b. Submit anchoring drawings with supporting calculations.
- E. Drawings and calculations shall be stamped by a professional engineer registered in the state where the Project is being constructed.
- F. Test forms and reports:
1. Submit complete factory acceptance test procedures and all forms used during the test.
 2. Manufacturer to furnish a certified report after the shop tests.
 3. Manufacturer's start-up representative to furnish a written report after the start-up:

- a. Report must state that the installation is complete and satisfactory, or list items requiring additional attention and a proposal for the actions.
 - b. If any items require attention after the initial start-up, a final report is required stating that the installation is complete and satisfactory.
- G. Installation instructions:
- 1. The written instructions must detail the complete installation of the switchboard including rigging, moving and setting into place.
 - 2. Provide anchorage instructions and requirements for the switchboard based on the seismic conditions of the site as specified in Section 26 05 00.
 - a. Stamped by a professional engineer licensed in the state where the Project is being constructed.

1.06 QUALITY ASSURANCE

- A. As specified in Section 26 05 00.
- B. The switchboard and all components shall be UL listed and labeled.
- C. Equipment shall be designed and constructed in accordance with the following standards and requirements:
 - 1. NEMA PB 2.
 - 2. UL 891.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. As specified in Section 26 05 00.
- B. Ship switchboards to the site in dedicated air ride vans that will allow the Contractor to utilize on site off loading equipment.
- C. Furnish temporary equipment heaters within the switchboard to prevent condensation from forming.

1.08 PROJECT/SITE CONDITIONS

- A. As specified in Section 26 05 00.

1.09 SEQUENCING

- A. Conduct the initial fault current study and submit results for Engineer's review.
- B. After successful review of the initial fault current study, submit complete equipment submittal.
- C. Conduct factory acceptance test and submit certified test results for Engineer's review.
- D. Ship equipment to the Project Site after successful completion of factory acceptance test.
- E. Assemble equipment in the field.
- F. Conduct field acceptance test and submit results for Engineer's review.
- G. Submit manufacturer's certification that the equipment has been properly installed and is fully functional for Engineer's review.
- H. Conduct Owner's training sessions.

1.10 SCHEDULING (NOT USED)

1.11 WARRANTY

- A. As specified in Section 26 05 00.

1.12 SYSTEM START-UP

- A. As specified in Section 26 05 00.

1.13 OWNER'S INSTRUCTIONS (NOT USED)

1.14 MAINTENANCE (NOT USED)

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Switchboards:

1. The main switchboard shall be Square-D QED-2, Eaton POW-R-LINE XPERT, or Owner appro

2.02 EXISTING PRODUCTS (NOT USED)

2.03 MATERIALS (NOT USED)

2.04 MANUFACTURED UNITS (NOT USED)

2.05 EQUIPMENT

A. Switchboard

1. Complete assembly, including steel framing and covers, bus system, and breaker mounting, shall satisfy applicable provisions of UL 891 and NEMA PB-2 and the California Electrical Code for low-voltage distribution switchboards. Switchboards shall be furnished with UL labels.
2. Short Circuit Current Rating: Switchboards shall be rated with a minimum short circuit current rating of 65,000 rms symmetrical amperes at 480 VAC maximum.
3. Switchboards shall be floor standing, dead front, dead rear, line bussed, front operated and connected, circuit-breaker type, unless otherwise indicated and shall contain equipment indicated and specified. Switchboard shall be complete with pull, service, and distribution sections as required.
4. Required equipment shall be enclosed in fully interchangeable die formed steel sectional cabinets will be absolutely rigid welded construction, plumb and uniform in size. Each cabinet shall be a separate and independent unit with assembly holes die-stamped or jig drilled; openings for interconnections shall be so placed that cabinet can be located in any position in assembly without drilling or cutting holes on job. Deliver switchboard to Project site in completely assembled sections and provide required assembly bolts and blanking plates. Front plates and doors shall be of not less than 12 gage furniture steel, completely removable, secured to cabinet with machine screws, with cup washers uniformly and symmetrically spaced. Provide hinged wire gutter covers for distribution sections. Equipment shall meet NEMA and UL standards.
5. Circuit breakers shall be as follows (protective device shall be as shown on drawings):
 - a. See Section 26 28 01
 - b. Main circuit breakers shall be automatic, one-piece molded-case, trip-free, common trip, quick-make, quick-break, thermal-magnetic with solid state trips, bolted to bus with frame size and trip ratings as indicated on drawings. Voltage, amperage ratings and number of poles shall be as indicated on breakers. Main breaker shall provide a minimum short-circuit interrupting capacity as determined by utility company. Provide shunt-trip and integral ground fault devices, as indicated on drawings. Breakers shall be furnished with lockout provisions.
 - c. Feeder circuit breakers shall be automatic, one-piece molded-case, trip-free, common trip, quick-make, quick-break, thermal-magnetic or solid state type bolted to bus, with handles clearly indicating tripped position.
 - d. Breakers shall be furnished with a single handle with no tie-bar. Voltage, amperage, and number of poles shall be as indicated on Drawings. Breaker ratings shall be on handle or label. Breakers shall be furnished with lockout provisions approved by the State of California for padlocking and shall provide a minimum symmetrical short-circuit interrupting rating, as indicated on Drawings. Series rated circuit breaker combinations are not acceptable.
6. Utility metering provisions shall meet requirements of serving utility and shall be furnished with necessary fittings.

7. Provide switchboard silver-plated copper bus bars of same capacity as main breaker, or as indicated on Drawings, between current transformer and main section and distribution sections; also, full height of breaker space in distribution portions. Copper bus shall have current density of 1000A per square inch of cross section. Bus structure shall be free-fitted, and shall have sufficient strength to withstand short-circuit as indicated on drawings. Connections shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade five machine screws secured with constant pressure-type locking devices. Bus bar bracing shall be designed to withstand maximum available short-circuit current. Connections for cables to circuit breakers, switches and motor control devices shall be heavy-duty mechanical pressure type terminal lugs. Provide service cable lugs as required by utility company. Cables and internal wiring shall be supported with suitable cleats.
8. Switchboard distribution sections shall be furnished with full height bussing. Unused spaces shall be provided with blank covers. Switchboards, as complete units, shall be given single short-circuit current ratings by manufacturer. Such ratings shall be established by actual tests by manufacturer, in accordance with UL specifications, on equipment constructed similarly to the furnished switchboard.
9. Provide a large nameplate identifying switchboard, indicating service voltage, originating power source, function and current rating. Nameplate shall be furnished with 3/16 inch engraved black letters on white background. Name plate shall be mechanically fastened to switchboard.
10. Provide labels for circuit breakers, disconnect switches, and or other disconnecting means in switchboards. Label shall indicate name of load served, name or room number and if in different building, name of building. If equipment is installed in same room as source, label should indicate source name and "in this room".
 - a. Labels shall be as specified in Section 26 05 53.
11. Paint cabinets, framework and plates inside and out with one coat of rust-resistant metal primer and one coat of enamel, baked on, or lacquer sprayed on. Color shall be per Owner's preference.
12. Manufacture boards according to reviewed Shop Drawings. Switchboard shall meet requirements of legally constituted authorities having jurisdiction, and respective serving utility.
13. Switchboards installed indoors shall be NEMA Type 1 enclosure. Indoor enclosures shall provide front access. Switchboard sections shall all be front and rear aligned with the adjacent sections.
14. Switchboards installed outdoors shall be weatherproof NEMA Type 3R enclosure. Enclosure construction shall be formed of code gage galvanized steel with enamel finish. Heavy-duty, three-point latching, vault type door handles with padlocking provisions shall be furnished on doors. Padlocks shall be furnished keyed to Corbin No. 60 keys. Switchboards installed outdoors shall be specifically required to maintain service during extreme outdoor ambient temperatures of a minimum of 150 degrees Fahrenheit in NEMA Type 3R enclosures.
15. For grounded wye electrical service switchboards rated more than 150 volts, to ground and 1,000 amperes or more, provide ground fault protection for main protective device. Ground fault protection shall be UL listed, with ground sensor encircling phase conductors and neutral conductors integral with the main protective device. Provide testing of ground fault protection system by an independent recognized testing laboratory. Testing lab shall provide necessary testing equipment at the Project site and perform a certified test on ground protection system in presence of the Project Inspector. The ground fault setting shall be selected to coordinate with downstream circuit protective devices. Verify that the system neutral is grounded at the service entrance switchboard only, except neutrals of step down distribution transformers. For branch circuit protective devices, rated 800 amps or more, provide ground fault protection where shown on the drawings, or as described above, for main protective device. Coordinate settings with main protective device ground fault protection.

16. Connections to bussing shall be securely bolted together with corrosion-resistant plated carbon steel, minimum grade five machine screws secured with constant pressure-type locking devices.
- B. Accessories:
1. Power monitor:
 - a. As specified on Drawings.
 2. Surge protective devices:
 - a. As specified in Section 26 43 14.

2.06 MIXES (NOT USED)

2.07 FABRICATION (NOT USED)

2.08 FINISHES

- A. Chemically clean all steel surfaces before painting.
- B. Color shall be per Owner's preference.

2.09 SOURCE QUALITY CONTROL (NOT USED)

PART 3 - EXECUTION

3.01 EXAMINATION (NOT USED)

3.02 PREPARATION (NOT USED)

3.03 INSTALLATION

- A. As specified in Section 26 05 00.
- B. Install the equipment in accordance with the accepted installation instructions and anchorage details to meet the seismic and wind load requirements at the Project site.
- C. General:
 1. Furnish cables, conduit, lugs, bolts, expansion anchors, sealants, and other accessories needed to complete the installation of the switchboard.
 2. Physically assemble and install the switchboard in the location and layout indicated on the Drawings.
 3. Make bus splice connections.
 4. Perform work in accordance with manufacturer's instructions and shop drawings.
 5. Furnish components and equipment as required to complete the installation.
 6. Replace hardware lost or damaged during the installation or handling to provide a complete installation.
 7. Weld and/or bolt switchboard frame to leveling channels embedded in the concrete housekeeping pad or foundation:
 - a. Provide structural leveling channels in accordance with manufacturer's recommendations to provide proper alignment of the units.
 - b. The installation shall meet the seismic requirements of the site.
- D. Provide the services of a qualified manufacturer's representative to:
 1. Inspect, verify, and certify that the mechanical installation meets the manufacturer's requirements.
 2. Make control connections across the shipping splits.
 3. Install and align all circuit breakers.
 4. Perform field tests.

3.04 ERECTION, INSTALLATION, APPLICATION, CONSTRUCTION (NOT USED)

3.05 REPAIR/RESTORATION (NOT USED)

3.06 RE-INSTALLATION (NOT USED)

3.07 COMMISSIONING

- A. Factory tests:

1. The Owner and Engineer will witness the factory acceptance test as specified in Section 26 05 00.
2. Test the complete switchgear at the manufacturer's establishment.
 - a. Completely assemble, wire and test the switchboard:
 - 1) Detailed inspections before and after assembly to assure correctness of design and workmanship.
 - 2) Provide groups of wires leaving the shipping-assembled equipment with terminal blocks with suitable numbering strips.
- B. Inspect and test per NETA ATS standards.
- C. Owner training:
 1. As specified in Section 26 05 00.

3.08 FIELD QUALITY CONTROL

- A. As specified in Section 26 05 00.
- B. Provide manufacturer's services for the following:
 1. Make all bus splice connections.
 2. Make all control connections across shipping splits.
 3. Ensure that all items furnished are in proper operating condition:
 - a. Technician must be completely knowledgeable in the operation, maintenance, and start-up of the electrical system.
 4. Furnish a written report after start-up signed by the manufacturer's authorized representative:
 - a. Report must state that the installation is complete and meets all of the manufacturer's requirements.
 - b. List any items requiring additional attention.

3.09 ADJUSTING

- A. Make all adjustments as necessary and recommended by the manufacturer, Engineer, or testing firm.

3.10 CLEANING

- A. As specified in Section 26 05 00.

3.11 PROTECTION

- A. As specified in Section 26 05 00.

3.12 SCHEDULES (NOT USED)

END OF SECTION

SECTION 26 28 01
LOW VOLTAGE MOLDED CASE CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Low voltage molded case circuit breakers.
- B. Related sections:
 - 1. Section 01 33 00 - Submittal Procedures.
 - 2. Section 26 05 00 - Common Work Results for Electrical.
 - 3. Section 26 24 13 - Switchboards.
 - 4. Section 26 24 19 - Motor Control Centers.

1.02 REFERENCES

- A. As specified in Section 26 05 00.
- B. National Electrical Manufacturers Association (NEMA):
 - 1. AB 3. - Molded Case Circuit Breakers and Their Application.
- C. Underwriter's Laboratories (UL):
 - 1. 489 - Molded-Case Circuit Breakers, Molded-Case Switches, and Circuit- Breaker Enclosures.
 - 2. 943 - Ground Fault Circuit Interrupters.

1.03 DEFINITIONS

- A. As specified in Section 26 05 00.
- B. In accordance with UL 489.

1.04 SYSTEM DESCRIPTION

- A. Molded case thermal magnetic or motor circuit protector type circuit breakers as indicated on the Drawings and connected to form a completed system.

1.05 SUBMITTALS

- A. Furnish submittals as specified in Sections 01 33 00 and 26 05 00.
- B. Product data:
 - 1. Catalog cut sheets.
 - 2. Manufacturer's time-current curves for all molded case circuit breakers furnished.

1.06 QUALITY ASSURANCE

- A. As specified in Section 26 05 00.
- B. Low voltage molded case circuit breakers shall be UL listed and labeled.

1.07 DELIVERY, STORAGE AND HANDLING

- A. As specified in Section 26 05 00.

1.08 PROJECT OR SITE CONDITIONS

- A. As specified in Section 26 05 00.

1.09 SEQUENCING (NOT USED)

1.10 SCHEDULING (NOT USED)

1.11 WARRANTY

- A. As specified in Section 26 05 00.

1.12 SYSTEM START-UP

- A. As specified in Section 26 05 00.

1.13 OWNER'S INSTRUCTIONS (NOT USED)

1.14 MAINTENANCE (NOT USED)

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. The following:
 - 1. Schneider Electric/Square D Company.
 - 2. Eaton/Cutler-Hammer.
 - 3. Allen-Bradley.
 - 4. Acceptable Products: Circuit Breakers specified herein shall be the product of a single manufacturer. Products and manufacturers specified are to establish a standard of quality for design, function, materials, and appearance. Products shall be modified as necessary by the manufacturer for compliance with requirements. Provide the aforementioned specified product and manufacturer without exception, unless approved as a substitute by addendum to the Contract Documents prior to the bid date.

2.02 EXISTING PRODUCTS (NOT USED)

2.03 MATERIALS (NOT USED)

2.04 MANUFACTURED UNITS

- A. General:
 - 1. Conforming to UL 489.
 - 2. Operating mechanism:
 - a. Quick-make, quick-break, non-welding silver alloy contacts.
 - b. Common Trip, Open and Close for multi-pole breakers such that all poles open and close simultaneously.
 - c. Mechanically trip free from the handle.
 - d. Trip indicating handle - automatically assumes a position midway between the manual ON and OFF positions to clearly indicate the circuit breaker has tripped.
 - e. Lockable in the "OFF" position.
 - 3. Arc extinction:
 - a. In arc chutes.
 - 4. Voltage and current ratings:
 - a. Minimum ratings as indicated on the Drawings.
 - b. Minimum frame size 100A.
 - 5. Interrupting ratings:
 - a. Minimum ratings as indicated on the Drawings.
 - b. Modify as required to meet requirements of the short circuit fault analysis.
 - c. Not less than the rating of the assembly (panelboard, switchboard, motor control center, etc.)
- B. Motor circuit protectors:
 - 1. Instantaneous only circuit breaker as part of a listed combination motor controller.
 - 2. Each pole continuously adjustable in a linear scale with 'LO' and 'HI' settings factory calibrated.

2.05 EQUIPMENT (NOT USED)

2.06 COMPONENTS

- A. Terminals:
 - 1. Line and load terminals suitable for the conductor type, size, and number of conductors in accordance with UL 489.
- B. Case:
 - 1. Molded polyester glass reinforced.
 - 2. Ratings clearly marked.

- C. Trip units:
 - 1. Provide thermal magnetic or solid-state trip units as indicated on the Drawings.
 - 2. Thermal magnetic:
 - a. Instantaneous short circuit protection.
 - b. Inverse time delay overload.
 - c. Ambient or enclosure compensated by means of a bimetallic element.
 - 3. Solid state:
 - a. With the following settings as indicated on the Drawings.
 - 1) Adjustable long time current setting.
 - 2) Adjustable long time delay.
 - 3) Adjustable short time pickup.
 - 4) Adjustable short time delay.
 - 5) Adjustable instantaneous pickup.
 - 6) Adjustable ground fault pickup as indicated on the Drawings.
 - 7) Adjustable ground fault delay as indicated on the Drawings.
- D. Molded case circuit breakers for use in panelboards:
 - 1. Bolt-on type.
 - a. Plug-in type breakers are not acceptable.
 - 2. Ground fault trip devices as indicated on the Drawings.

2.07 ACCESSORIES (NOT USED)

2.08 MIXES (NOT USED)

2.09 FABRICATION (NOT USED)

2.10 FINISHES (NOT USED)

2.11 SOURCE QUALITY CONTROL

- A. Test breakers in accordance with:
 - 1. Specification Section 26 08 50.
 - 2. UL 489.
 - 3. Manufacturer's standard testing procedures.

PART 3 - EXECUTION

3.01 EXAMINATION (NOT USED)

3.02 PREPARATION (NOT USED)

3.03 INSTALLATION

- A. Install breakers to correspond to the accepted shop drawings.

3.04 ERECTION, INSTALLATION, APPLICATION, CONSTRUCTION (NOT USED)

3.05 REPAIR/RESTORATION (NOT USED)

3.06 RE-INSTALLATION (NOT USED)

3.07 FIELD QUALITY CONTROL

- A. As specified in Section 26 05 00.

3.08 ADJUSTING

- A. Adjust trip settings in accordance with Protective Device Coordination Study as accepted by the Engineer and in accordance with manufacturer's recommendations.
- B. Adjust motor circuit protectors in accordance with NEC and the manufacturer's recommendation based on the nameplate values of the installed motor.

3.09 CLEANING (NOT USED)

3.10 PROTECTION

- A. As specified in Section 26 05 00.

3.11 SCHEDULES (NOT USED)

END OF SECTION

SECTION 26 43 14
SURGE PROTECTIVE DEVICES

PART 1 - GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. High-energy surge protective devices.
- B. Related sections:
 - 1. Section 01 33 00 - Submittal Procedures.
 - 2. Section 26 05 00 - Common Work Results for Electrical.
 - 3. Section 26 08 50 - Field Electrical Acceptance Tests.

1.02 REFERENCES

- A. As specified in Section 26 05 00.
- B. Institute of Electrical and Electronics Engineers (IEEE):
 - 1. C62.41 – Recommended Practice on Surge Voltages in Low Voltage AC Power Circuits.
 - 2. C62.45 – Guide on Surge Testing for Equipment Connected to Low-Voltage (1000 V and Less) AC Power Circuits.
 - 3. C62.62- Standard Test Specifications for Surge Protective Devices for Low Voltage AC Power Circuits.
- C. Underwriters Laboratory:
 - 1. 1449, 4th Edition, Standard for Surge Protective Devices.

1.03 DEFINITIONS

- A. As specified in Section 26 05 00.
- B. Specific definitions:
 - 1. SPD: Surge protective device.
 - 2. SAD: Silicon avalanche diode.
 - 3. MOV: Metal oxide varistor.
 - 4. MCOV: Maximum continuous operating voltage.
 - 5. In: Nominal discharge current.
 - 6. VPR: Voltage protection rating.
 - 7. SCCR: Short circuit current rating.

1.04 SYSTEM DESCRIPTION

- A. Surge protective devices as an integral component of the electrical equipment or externally mounted as indicated on the Drawings.

1.05 SUBMITTALS

- A. Furnish submittals as specified in Sections 01 33 00 and 26 05 00.
- B. Product data:
 - 1. Furnish complete product data confirming detailed compliance or exception statements to all provisions of this Section.
 - 2. Manufacturer's catalog cut sheets indicating:
 - a. Manufacturer and model numbers.
 - b. Ratings of each SPD including but not limited to:
 - 1) Short circuit current rating.
 - 2) Nominal discharge current.
 - 3) Maximum continuous operating voltage.
 - 4) Voltage protection rating.
 - 5) System voltage.
 - 6) System frequency.

- 7) Surge current capacity.
- 3. Submit independent test data from a nationally recognized testing laboratory verifying the following:
 - a. Overcurrent protection.
 - b. UL 1449.
- C. Shop drawings:
 - 1. Provide electrical and mechanical drawings by the manufacturer that detail:
 - a. Unit dimensions.
 - b. Weights.
 - c. Components.
 - d. Field connection locations.
 - e. Mounting provisions.
 - f. Connection details.
 - g. Wiring diagram.
- D. Operation and maintenance manuals:
 - 1. Provide the manufacturer's manual with installation, start-up, spare parts lists, and operating instructions for the specified system.

1.06 QUALITY ASSURANCE

- A. As specified in Section 26 05 00.
- B. Provide SPD units that are designed, manufactured, tested and installed in compliance with the following codes and standards:
 - 1. Institute of Electrical and Electronics Engineers (IEEE C62.41, C62.45, C62.62).
 - 2. Federal Information Processing Standards Publication 94 (FIBS PUB 94).
 - 3. National Electrical Manufacturer Association.
 - 4. National Fire Protection Association (NFPA 20, 75 and 780).
 - 5. National Electric Code (NFPA 70).
 - 6. Underwriters Laboratories (UL 1449 4th Edition and UL 1283).
 - 7. International Electrotechnical Commission (IEC 801).

1.07 DELIVERY, STORAGE, AND HANDLING

- A. As specified in Section 26 05 00.

1.08 PROJECT OR SITE CONDITIONS

- A. As specified in Section 26 05 00.

1.09 SEQUENCING

- A. Coordinate with and provide SPD equipment to the electrical equipment manufacturer before final assembly and factory testing.

1.10 SCHEDULING (NOT USED)

1.11 WARRANTY

- A. As specified in Section 26 05 00.
- B. Extended warranty:
 - 1. Furnish a manufacturer's full 5-year parts and labor warranty from date of shipment against any part failure when installed in compliance with manufacturer's written instructions, UL listing requirements, and any applicable national, state, or local electrical codes.
 - 2. Warranty shall include:
 - a. Direct, factory trained employees must be available within 48 hours for assessment of the problem.
 - b. A 24-hour toll-free 800-number for warranty support.

1.12 SYSTEM START-UP

A. As specified in Section 26 05 00.

1.13 OWNER'S INSTRUCTIONS (NOT USED)

1.14 MAINTENANCE (NOT USED)

PART 2 - PRODUCTS

2.01 MANUFACTURERS

- A. One of the following or equal:
 - 1. Schneider Electric/Square D
 - 2. Eaton/Cutler-Hammer.

2.02 EXISTING PRODUCTS (NOT USED)

2.03 MATERIALS (NOT USED)

2.04 MANUFACTURED UNITS

A. Provide Type 1 or Type 2 SPD units as required for the locations indicated on the Drawings.

B. Electrical requirements:

- 1. SPD ratings are to be consistent with the nominal system operating voltage, phase, and configuration as indicated on the Drawings.
- 2. MCOV:
 - a. For the SPD and all components in the suppression path (including all MOVs, SADs, and selenium cells): Greater than 115 percent of the nominal system operating voltage.
- 3. Operating frequency:
 - a. 47 to 63 hertz.
- 4. SCCR:
 - a. 65 kAIC minimum, but not less than the equipment it is connected to as indicated on the Drawings.
 - b. The SCCR shall be marked on the SPD in accordance with UL 1449 and the NEC.
- 5. Nominal discharge current In:
 - a. 20 kA.
- 6. Maximum VPR:

a. Modes	240/120	208Y/120	480Y/277
b. L-N, L-G, N-G	900	900	1,500
c. L-L	1,200	1,200	2,000
- 7. Peak surge current:
 - a. Service entrance locations:
 - 1) 240 kA per phase minimum.
 - 2) 120 kA per mode minimum.
 - b. Branch locations:
 - 1) 120 kA per phase, minimum.
 - 2) 60 kA per mode minimum.

C. Protection modes:

- 1. Provide SPD protection modes as follows:
 - a. Line to Neutral (L-N) where applicable.
 - b. Line to Ground (L-G).
 - c. Neutral to Ground (N-G), where applicable.

D. Environmental requirements:

- 1. Storage temperature:
 - a. -40 degrees to +50 degrees Celsius.
- 2. Operating temperature:
 - a. -0 degrees to +60 Celsius.
- 3. Relative humidity:

- a. 5 percent to 95 percent.
- 4. Audible noise:
 - a. Less than 45 dBa at 5 feet (1.5 m).
- 5. Operating altitude:
 - a. Zero to 12,000 feet above sea level.
- E. Provide surge protective devices that are suitable for application in IEEE C62.41 Category A, B and C3 environments, as tested to IEEE C62.45.

2.05 EQUIPMENT (NOT USED)

2.06 COMPONENTS

- A. Enclosure:
 - 1. Located in electrical equipment or in an external NEMA 12 enclosure as indicated on the Drawings.
 - a. NEMA Type 12 enclosure:
 - 1) No ventilation openings.
 - b. Hinged cover requiring a tool for internal access.
 - c. Internal drawing pocket.
 - d. All monitoring indications must be visible without opening the door.
- B. Internal connections:
 - 1. Provide low impedance copper plates for intra-unit connections:
 - a. Attach surge modules using bolted connections to the plates for low impedance connections.
 - 2. Size all connections, conductors, and terminals for the specified surge current capacity.
- C. Surge diversion modules:
 - 1. MOV:
 - a. Where multiple MOVs are used in parallel, utilize computer matched MOVs to within 1 volt variance and tested for manufacturer's defects.
- D. Overcurrent protection:
 - 1. Individually fuse all components, including suppression, filtering, and monitoring components:
 - a. Rated to allow maximum specified nominal discharge current capacity.
 - b. Overcurrent protection that limits specified surge currents is not acceptable.
- E. Connections:
 - 1. Provide terminals to accommodate wire sizes up to #2 AWG.

2.07 ACCESSORIES

- A. Unit status indicators:
 - 1. Provide red and green solid-state indicators, with printed labels, on the front cover to redundantly indicate on-line unit status:
 - a. The absence of the green light and the presence of the red light indicate that surge protection is reduced and service is needed to restore full operation.
 - b. Indicates the status of protection on each mode or phase.
- B. Dry contacts for remote monitoring:
 - 1. Electrically isolated Form C dry contacts (1 A/125 VAC) for remote monitoring of system integrity, and indication of under voltage, phase and/or power loss.
- C. Provide transient counter to count transient voltage surges:
 - 1. LCD readout located on the unit's front cover.
 - 2. Counter to utilize batteries with a 10-year nominal life or non-volatile memory to maintain accurate counts in the event of power loss.

2.08 MIXES (NOT USED)

2.09 FABRICATION (NOT USED)

2.10 FINISHES (NOT USED)

2.11 SOURCE QUALITY CONTROL

- A. Permanently affix surge rating to the SPD.
- B. Perform manufacturer's standard factory test.
 - 1. Perform testing in accordance with UL 1449.

PART 3 - EXECUTION

3.01 EXAMINATION (NOT USED)

3.02 PREPARATION (NOT USED)

3.03 INSTALLATION

- A. As specified in Section 26 05 00.
- B. Follow the manufacturer's recommended installation practices and comply with all applicable codes.
- C. Special techniques:
 - 1. Install the SPD with as short and straight conductors including ground conductor as practically possible:
 - a. Twist the input conductors together to reduce input conductor inductance.
 - 2. Do not subject SPD to insulation resistance testing.

3.04 ERECTION, INSTALLATION, APPLICATION, CONSTRUCTION (NOT USED)

3.05 REPAIR/RESTORATION (NOT USED)

3.06 RE-INSTALLATION (NOT USED)

3.07 FIELD QUALITY CONTROL

- A. As specified in Section 26 08 50.

3.08 ADJUSTING (NOT USED)

3.09 CLEANING (NOT USED)

3.10 PROTECTION

- A. As specified in Section 26 05 00.

3.11 SCHEDULES (NOT USED)

END OF SECTION

ELECTRICAL ABBREVIATIONS

A, A/C	AMPERE
A/C	AIR CONDITIONING
AC	ALTERNATING CURRENT
AF	AMPS-FRAME
AI	AVAILABLE INTERRUPTING CAPACITY
AM	AMMETER
AN	ANALOG
ATS	AUTOMATIC TRANSFER SWITCH
AT	AUTOMATIC
AWG	AMERICAN WIRE GAUGE
AWT	AUTOMATIC WELL TESTER
BC	BARE COPPER
BLDG	BUILDING
BPS	BOOSTER PUMP STATION
BSC	BARE STRANDED COPPER
C	CONDUIT
CB	CIRCUIT BREAKER
CKT	CIRCUIT
CLG	CEILING
CO	CONDUIT ONLY
CP	CONTROL PANEL
CPT	CONTROL POWER TRANSFORMER
PAC	CURRENT TRANSFORMER
CT	CURRENT
CU	COPPER
DEMO	DEMOLITION
DET	DETAIL
DIA	DIAMETER
DISC	DISCONNECT
DISTR	DISTRIBUTION
DIV	DIVISION
DN	DOWN
DPS	PUMP DISCHARGE PRESSURE SWITCH
DS	DOOR SWITCH
DWG	DRAWING
E.F.	EXHAUST FAN
E.L.	ELECTRICAL
EL	ELEVATION
ELEV	ELEVATION
EMT	EMERGENCY
EMT	ELECTRICAL METALLIC TUBING
EQIP	EQUIPMENT
EQIP	EQUIPPED
EXIST	EXISTING
EXIST, E	EXISTING
F	FIBRE
F.A	FIRE ALARM
FIN	FINISH
FLA	FULL LOAD AMPERES
FL	FEET
FNAR	FULL VOLTAGE NON-REVERSING
FNR	FULL VOLTAGE STARTER
GA	GAUGE
GALV	GALVANIZED
G, GND	GROUND
GF	GROUND FAULT INTERRUPTER
GW	GROUND FAULT TRIP
GW	GROUND FAULT INTERRUPTER, WEATHERPROOF
GR	GALVANIZED RIGID CONDUIT
HD	HIGH DENSITY DISCHARGE (LAMP)
HP	HORSEPOWER
HQA	HAND-OFF-AUTOMATIC
HPF	HIGH POWER FACTOR
HPS	HIGH PRESSURE SODIUM (LAMP)
HV	HIGH VOLTAGE
HERTZ	HERTZ
IC	ISOLATION CONTACTOR
IOR	I/O RACK
IR	INFRARED
ISC	AVAILABLE SHORT CIRCUIT CURRENT
ISR	INTRINSICALLY SAFE RELAY
JB	JUNCTION BOX
KCM	THOUSAND CIRCULAR MILS (OR MCM)
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KVAR	KILOVOLT AMPERE REACTIVE
LCR	LINE CURRENT RELAY
LCR	LINE CONTINUOUS LOAD
LP	LOCAL-OFF-REMOTE SWITCH
LOS	LOOK-OUT-STOP PUSHBUTTON
LP	LIGHTING PANEL
LP	LEVEL RELAY
LRA	LOCKED ROTOR AMPS
LRP	LINEAR ROD PUMP
LS	LIMIT SWITCH
LTG	LIGHTING
LTS	LINE VOLTAGE (PRESSURE SWITCH TYPE)
LTV	LINE VOLTAGE RELAY
MA	MILLIAMPERE
LVR	LOW VOLTAGE RELAY
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MFL	REDUCED FLOW
MIC	MANUFACTURER'S INTERCONNECTING CABLE
MWI	MAN MACHINE INTERFACE
MOV	MOTOR OPERATED VALVE

ELECTRICAL ABBREVIATIONS

MS	MAGNETIC STARTER
MTD	MOUNTED
MV	MEDIUM VOLTAGE
N	NORMALLY CLOSED
NC	NORMALLY OPEN
N.L.C.	NOT IN CONTACT
NIGHT LIGHT	NIGHT LIGHT
NO	NORMALLY OPEN
N/P	NAMEPLATE
NTS	NOT TO SCALE
OC	OPEN/CLOSE (STATUS)
P	POLE
PULLBOX	PULLBOX
PF	POWER FACTOR
PFR	POWER FAIL RELAY
PH, O	PHASE PIPING AND INSTRUMENTATION DIAGRAM
PLC	PROGRAMMABLE LOGIC CONTROLLER
PNL	PANEL
PAIR	PAIR
POTENTIAL TRANSFORMER	POTENTIAL TRANSFORMER
POLYVINYL CHLORIDE (DUCT)	POLYVINYL CHLORIDE (DUCT)
POWER	POWER
RECEPTACLE	RECEPTACLE
RIGID GALVANIZED STEEL	RIGID GALVANIZED STEEL
RIGID METAL CONDUIT	RIGID METAL CONDUIT
ROOM	ROOM
ROOT MEAN SQUARE	ROOT MEAN SQUARE
REMOTE TERMINAL CABINET	REMOTE TERMINAL CABINET
REDUCED TERMINAL UNIT	REDUCED TERMINAL UNIT
RWAT	REDUCED VOLTAGE AUTO-TRANSFORMER
RVSS	REDUCED VOLTAGE SOLID STATE
SC	SHORTING CONTACTOR
SCADA	SUPERVISED CONTROL AND DATA ACQUISITION
SCOR	SHORT CIRCUIT CURRENT RATING
SOE	SOUTHERN CALIFORNIA EDISON
SHT	SHEET
SPT	SPACE
SPT	SUPPLY
SPT	STAINLESS STEEL
SST	SHIELDED TWISTED PAIR
STP	SHIELDED TWISTED PAIR
SV	SOLENOID VALVE
SW	SWITCH
SWBD	SWITCHBOARD
SYMM	SYMMETRICAL
T	TIMER (SWITCH)
TD	TIME DELAY
TEL	TELEPHONE
TERM	TERMINAL
TEMP	TEMPERATURE
THIN	THERMAL PLASTIC, HEAT RESISTANT, WATERPROOF, NYLON COATED
TP	TWISTED PAIR
TRANS	TRANSFORMER
TRANSF	TRANSFORMER
TRIP	TRIP
TS	TWISTED SHIELDED PAIR
TS	TWISTED SHIELDED PAIR
TVSS	TRANSIENT VOLTAGE SURGE SUPPRESSOR
TYP	TYPICAL
U.G.	UNDERGROUND
UNLESS NOTED OTHERWISE	UNLESS NOTED OTHERWISE
UNO	UNLESS OTHERWISE NOTED
UON	UNINTERRUPTIBLE POWER SUPPLY
UPS	UNSHIELDED TWISTED PAIR
UTP	UNSHIELDED TWISTED PAIR
V	VOLT
VA	VOLT AMPERE
VAC	VOLTS AC
VCLS	VALVE CLOSED LIMIT SWITCH
VD	VOLTAGE DROP
VDC	VOLTS DC
VFD	VARIABLE FREQUENCY DRIVE
VIB	VIBRATION SWITCH, HIGH (WARNING)
VIB	VIBRATION SWITCH, HIGH (SHUTDOWN)
W	WIRE, WATTS
W	WEATHERPROOF
WT	WATERTIGHT
WT	WEATHER STATION
XFR	TRANSFORMER

ELECTRICAL LEGEND

EXISTING	PROPOSED	
		UTILITY POLE
		CONDUIT RUN EXPOSED
		CONDUIT RUN UNDERGROUND OR UNDERFLOOR
		12KV OVERHEAD WIRES
		480V OVERHEAD WIRES
		BARE COPPER GROUND WIRE UNDERGROUND OR UNDERFLOOR
		CONDUIT TURNED UP
		CONDUIT TURNED DOWN
		LIQUIDTIGHT FLEXIBLE METAL CONDUIT
		HOMERUN TO PANEL "LP", CIRCUIT "7"
		INDICATES CONDUIT SIZE, NUMBER AND SIZE OF CONDUCTORS
		1"0-3#12, 1#12 GND.
		LIGHTING FIXTURE IDENTIFICATION SYMBOL, UPPER HALF OF SYMBOL INDICATES TYPE OF FIXTURE AND LOWER HALF INDICATES FIXTURE WATTAGE (INCLUDING BALLAST)
		CEILING MOUNTED LIGHTING FIXTURE
		WALL MOUNTED LIGHTING FIXTURE
		SINGLE POLE TUMBLER SWITCH, 20A-277V, WALL MOUNTED AT +48" OR AS NOTED SUBSCRIPT "G" IDENTIFIES CIRCUIT CONTROLLED
		JUNCTION BOX
		20A-125V, 2 POLE, 3 WIRE, NEMA 5-20R, DUPLEX RECEPTACLE, MOUNTED AT 15" ABOVE FLOOR (UNO)
		20A-125V, 2 POLE, 3 WIRE, NEMA 5-20R, DUPLEX RECEPTACLE, MOUNTED AT 15" ABOVE FLOOR (UNO) - 1/2 CONTROLLED RECEPTACLE
		20A-125V, 2 POLE, 3 WIRE, NEMA 5-20R GROUND FAULT INTERRUPTER, DUPLEX RECEPTACLE MOUNTED AT 15" ABOVE FLOOR (UNO)
		DATA RECEPTACLE
		FLOOR MOUNTED DUPLEX RECEPTACLE WITH DATA OUTLET COMBO
		MOTOR WITH ADJACENT J-BOX, NUMBER INDICATES HORSEPOWER RATING
		CIRCUIT BREAKER, 100 AMP FRAME, 100 AMP TRIP, 3 POLE
		FUSE, 100A
		TRANSFORMER, DESCRIPTION AND RATING AS SHOWN ON DRAWING
		CURRENT TRANSFORMER, 300A TO 5A RATIO
		POTENTIAL TRANSFORMER (PT) OR CONTROL POWER TRANSFORMER (CPT)
		MAGNETIC MOTOR STARTER, 3 POLE, NUMBER DENOTES SIZE
		VARIABLE FREQUENCY DRIVE
		GROUND ROD, 3/4" DIA X 10'-0" LONG, COPPER-CLAD STEEL
		GROUND TEST WELL, 3/4" DIA X 10'-0" LONG, COPPER-CLAD STEEL AND PULL BOX.
		GROUND CONNECTION
		DISCONNECT SWITCH - HORSEPOWER RATED
		DISCONNECT SWITCH - FUSED, HORSEPOWER RATED, FUSE SIZE INDICATED BY ADJACENT NUMBERS
		CUT OUT SWITCH WITH FUSE LINK
		START/STOP PUSHBUTTON STATION
		POWER MONITOR
		FUTURE

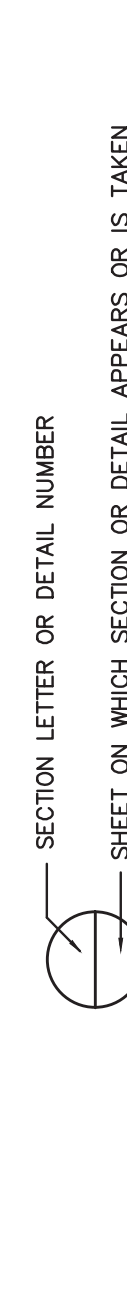
CONTROLS LEGEND

	N.C. PUSHBUTTON
	N.O. PUSHBUTTON
	SELECTOR SWITCH
	N.C. MOTOR OVERLOAD RELAY CONTACTS
	NORMALLY OPEN CONTACT (N.O.) STATUS WITH RELAY DE-ENERGIZED
	NORMALLY OPEN CONTACT (N.C.) STATUS WITH RELAY DE-ENERGIZED
	N.O. CONTACT ON PRESSURED SWITCH
	N.O. LIMIT SWITCH
	N.C. LIMIT SWITCH
	N.O. LEVEL SWITCH
	TIMED CONTACT, CLOSES AFTER TIME DELAY
	TIMED CONTACT, OPENS AFTER TIME DELAY
	TEMPERATURE SWITCH
	FLOW SWITCH
	SOLENOID
	PILOT LIGHT LETTER INDICATED COLOR (AMBER)
	MOTOR STARTER COIL PUMP NO.1
	TERMINAL OR DEVICE LOCATED IN "MCC" MOTOR STARTER COMPARTMENT
	DEVICE LOCATED IN THE FIELD
	TERMINAL OR DEVICE LOCATED IN TELEMETRY CABINET
	MOTOR STARTER COIL PUMP NO.1

GROUNDING NOTES

- ALL GROUNDING CONDUCTORS SHALL BE INSTALLED A MINIMUM 30 INCHES BELOW FINISHED GRADE UNLESS OTHERWISE NOTED.
- MAIN GROUND CONDUCTOR SHALL BE #4/0 STRANDED COPPER AND TAP TO EQUIPMENT SHALL BE #2 STRANDED COPPER, UNLESS OTHERWISE NOTED.
- UNDERGROUND CONNECTION SHALL BE COMPRESSION OR EXOTHERMIC CONNECTION.
- FRAMES OF ALL MOTORS SHALL BE BONDED TO THE GROUND GRID.
- ABOVE-GRADE GROUND WIRE SHALL BE INSULATED COPPER CONDUCTOR.

SECTION AND DETAIL IDENTIFICATION SYSTEM

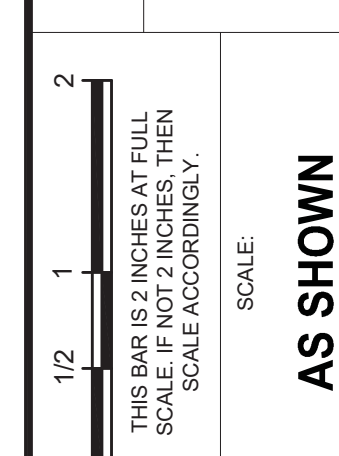
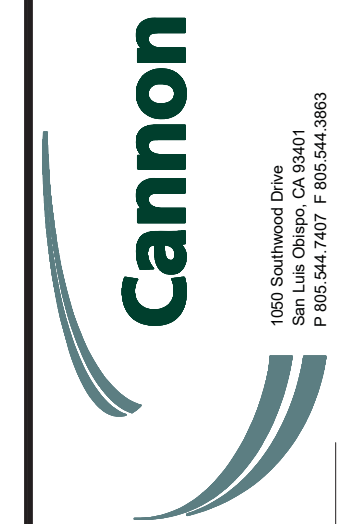


NOTICE TO CONTRACTOR

- THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND ARE NOT TO BE CONSIDERED AS A GUARANTEE OF THE EXACT LOCATION OF ALL EXISTING UTILITIES. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
- IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONTACT UNDERGROUND SERVICE ALERT (PHONE NO. 811) 48 HOURS IN ADVANCE OF ANY EXCAVATION FOR THE MARK-OUT OF THE LOCATION OF UTILITIES AND OBTAIN A DIG ALERT IDENTIFICATION NUMBER PRIOR TO COMMENCEMENT OF WORK.
- CONTRACTOR IS REQUIRED TO TAKE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN HEREON AND ANY OTHER EXISTING LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS.

GENERAL NOTES

- ALL WORK SHALL CONFORM TO AND BE PERFORMED IN ACCORDANCE WITH CODES, STANDARDS, AND REGULATIONS LISTED FOR THE PROJECT AND THE LATEST EDITIONS OF THE FOLLOWING PUBLICATIONS:
 - CALIFORNIA CODE OF REGULATIONS TITLE 24: INCLUDES NATIONAL ELECTRICAL CODE AND INTERNATIONAL FIRE CODE, INTERNATIONAL BUILDING CODE, ETC. WITH CALIFORNIA AND OTHER LOCAL AMENDMENTS AS APPLICABLE.
 - AMERICANS WITH DISABILITIES ACT (ADA).
- THE ELECTRICAL CONTRACTOR IS RESPONSIBLE TO MAINTAIN ALL EQUIPMENT IN A SAFE AND RESPONSIBLE MANNER. KEEP REAR FRONT EQUIPMENT IN PLACE WHILE EQUIPMENT IS ENERGIZED. CONDUCT ALL CONSTRUCTION OPERATIONS IN A SAFE MANNER FOR EMPLOYEES AS WELL AS OTHER WORKERS OR ANYONE VISITING THE JOB SITE. PROVIDE BARRIERS, FLAGS, TAPE, ETC. AS REQUIRED FOR SAFETY. THE CONTRACTOR SHALL HOLD ALL WORKERS HARMLESS OF NEGLIGENT SAFETY PRACTICES, WHICH MAY CAUSE INJURY TO OTHERS ON OR NEAR THE JOB SITE.
- FIRE RATED ASSEMBLIES SHALL MAINTAIN RATINGS AS SPECIFIED IN THE CALIFORNIA BUILDING CODE CHAPTER 7C. CONTRACTOR SHALL PROVIDE AND INSTALL PHYSICAL ENCLOSURE AROUND FIXTURES, EQUIPMENT, AND/OR CONDUITS TO MAINTAIN THE RATED FIRE RESISTANCE OF THE ASSEMBLY. APPLICABLE THROUGH-PENETRATION FIRESTOP SYSTEM AS DETERMINED BY UL CLASSIFICATION. BEFORE CONSTRUCTION, VERIFY AND COMPLY WITH REQUIREMENTS OF LOCAL AUTHORITY JURISDICTION.
- BEFORE ROUGH-IN, VERIFY ALL MOUNTING HEIGHTS AND EXACT LOCATIONS FOR ALL EQUIPMENT, ELECTRICAL CONNECTIONS, STUB-UPS, RECEPTACLES, ETC. WITH OWNER.
- LABEL PANELS, CABINETS, BACKBOARDS, MAIN DEVICES, SAFETY SWITCHES, CONTACTORS, AND OTHER SPECIALLY DESIGNATED EQUIPMENT SHOWN ON PLANS. USE ENGRAVED, ANIMATED PLASTIC NAMEPLATES ATTACHED BY SCREWS OR RIVETS. FOR FEEDERS, NEATLY AND INDELIBLY LABEL CONDUIT DESTINATIONS ON BOTH VISIBLE ENDS OF CONDUIT RUNS WHERE CONDUITS TERMINATE AT DESIGNATED ENCLOSURES, STRUCTURES OR EQUIPMENT (INCLUDING PULL AND SHUCE BOXES).
- ALL MECHANICAL AND ELECTRICAL EQUIPMENT SHALL BE ANCHORED OR BRACED TO MEET THE HORIZONTAL AND VERTICAL FORCES DESCRIBED IN THE LATEST EDITION OF THE CRC AND ASCE.
- ANY DEMOLITION WORK SHOWN WAS PREPARED FOR THE CONVENIENCE OF THE CONTRACTOR. THE ENGINEER DOES NOT REPRESENT THAT ALL ITEMS WHICH REQUIRE DEMOLITION HAVE BEEN SHOWN.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO CAREFULLY EXAMINE THE SITE AND THE LIMITED FIELD INVESTIGATION BEFORE BID, VISIT SITE TO VERIFY EXISTING CONDITIONS AND MAKE NOTICE OF VARIATIONS FROM THAT SHOWN.
- INFORMATION FOR EXISTING CONDITIONS WAS PRIMARILY GAINED FROM "AS BUILT" DRAWINGS AND/OR CHANGES LISTED AND IDENTIFIED FOR USE WITH 75C CONDUCTORS, AND ALL FEEDER CONDUCTORS, AND CONDUITS, ARE SIZED BASED ON USE OF 75C COPPER WIRES TYPE XHHW-2.
- ALL EQUIPMENT SHALL HAVE AN APPROVED TESTING LABORATORY LABEL ATTACHED (UL, CSA, ETC.) (CEC 110-2).
- PROVIDE GROUND WIRE IN ALL CONDUITS CONTAINING POWER OR LIGHTING CIRCUITS.
- ALL ABOVE GROUND CONDUIT SHALL BE THREADED RIGID METAL CONDUIT.
- ALL UNDERGROUND CONDUIT SHALL BE SCHEDULE 40 PVC, WITH PVC COATED RGS BENDS, ELBOWS AND TURN-UPS, UNLESS OTHERWISE NOTED.
- ALL CONDUIT SHALL BE MINIMUM 1" UNLESS NOTED OTHERWISE OR APPROVED BY THE DISTRICT.
- WHERE POWER AND INSTRUMENTATION CONDUITS OCCUPY THE SAME TRENCH, PROVIDE A MINIMUM OF 12" OF SEPARATION.
- TOTAL NUMBER OF CONDUIT BENDS SHALL NOT EXCEED 270 DEGREES OR NO MORE THAN (3) 90 DEGREE BENDS.



CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERIE

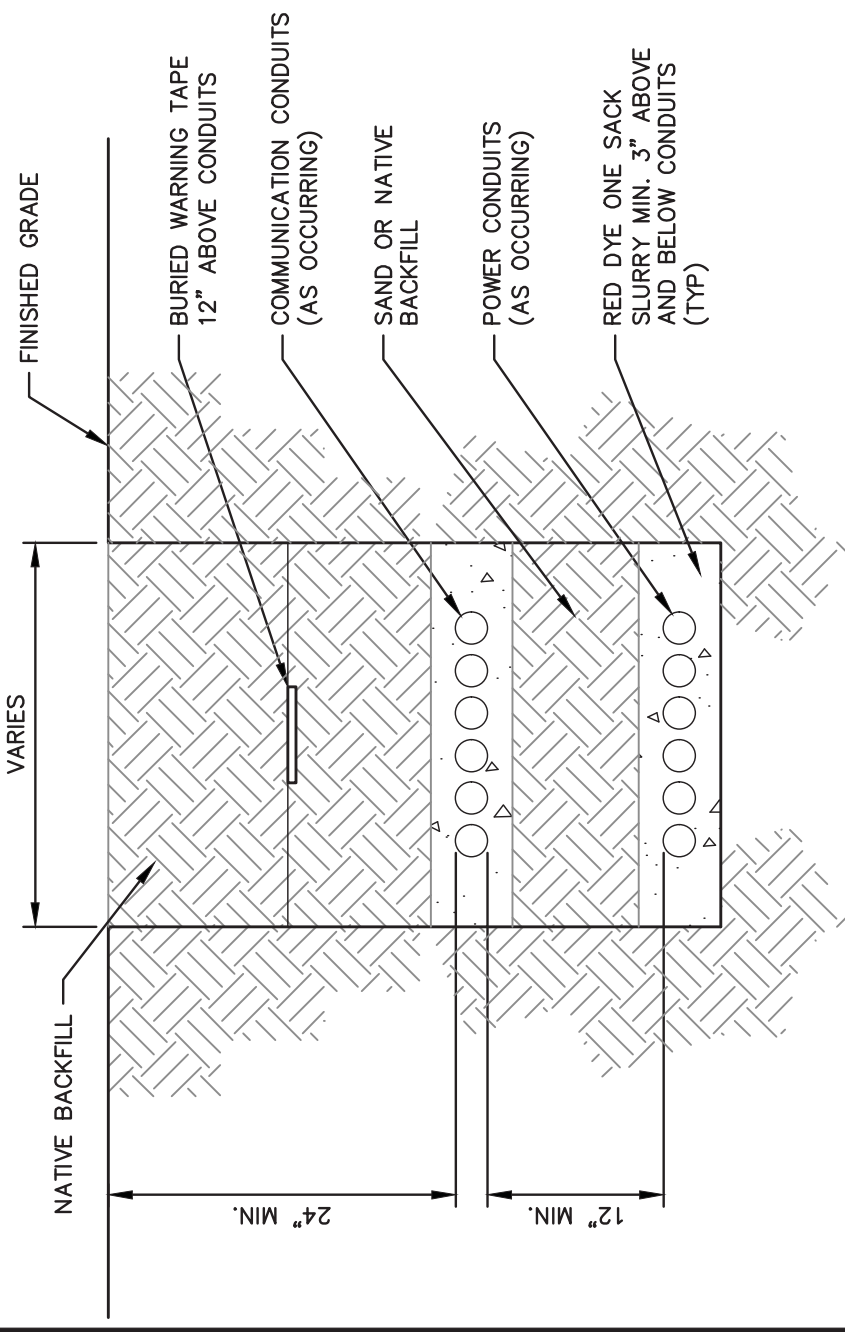
PROJECT NUMBER: 22-451
DRAWING NUMBER: E-001
SHEET NUMBER: 3 OF 59

DESIGNED: AM
DRAWN: AM
CHECKED: AM
DATE: _____
PROJECT ENGINEER: _____
R.C.E. EXP.

CANNON PROJECT NO. 20451
CONSTRUCTABILITY: PR/CG

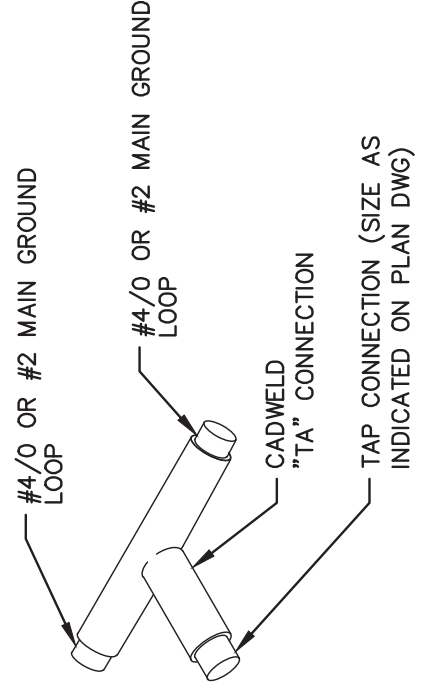


REV	DATE	BY	DESCRIPTION
A	09/06/24	AM	ISSUED FOR REVIEW - 60% SUBMITTAL
B	11/06/24	AM	ISSUED FOR REVIEW - 90% SUBMITTAL
C	01/06/25	AM	ISSUED FOR REVIEW - 100% SUBMITTAL



ELECTRICAL TRENCH DETAIL
SCALE: NO SCALE

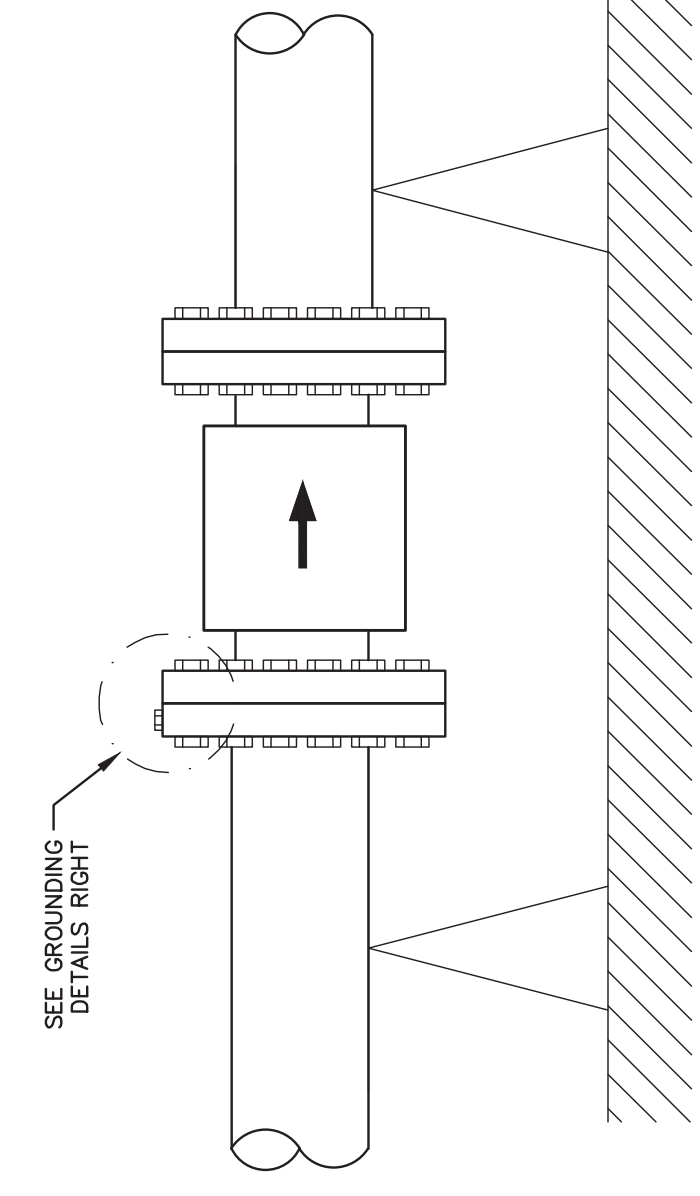
1 4



ITEM	DESCRIPTION	QTY
1A	#4/0 MAIN TO #4/0 TAP EXOTHERMIC WELD, WELD METAL & MOLD	AR
1B	#4/0 MAIN TO #2 TAP EXOTHERMIC WELD, WELD METAL & MOLD	AR
1C	#4/0 MAIN TO #5 TAP EXOTHERMIC WELD, WELD METAL & MOLD	AR
1D	#2 MAIN TO #2 TAP EXOTHERMIC WELD, WELD METAL & MOLD	AR

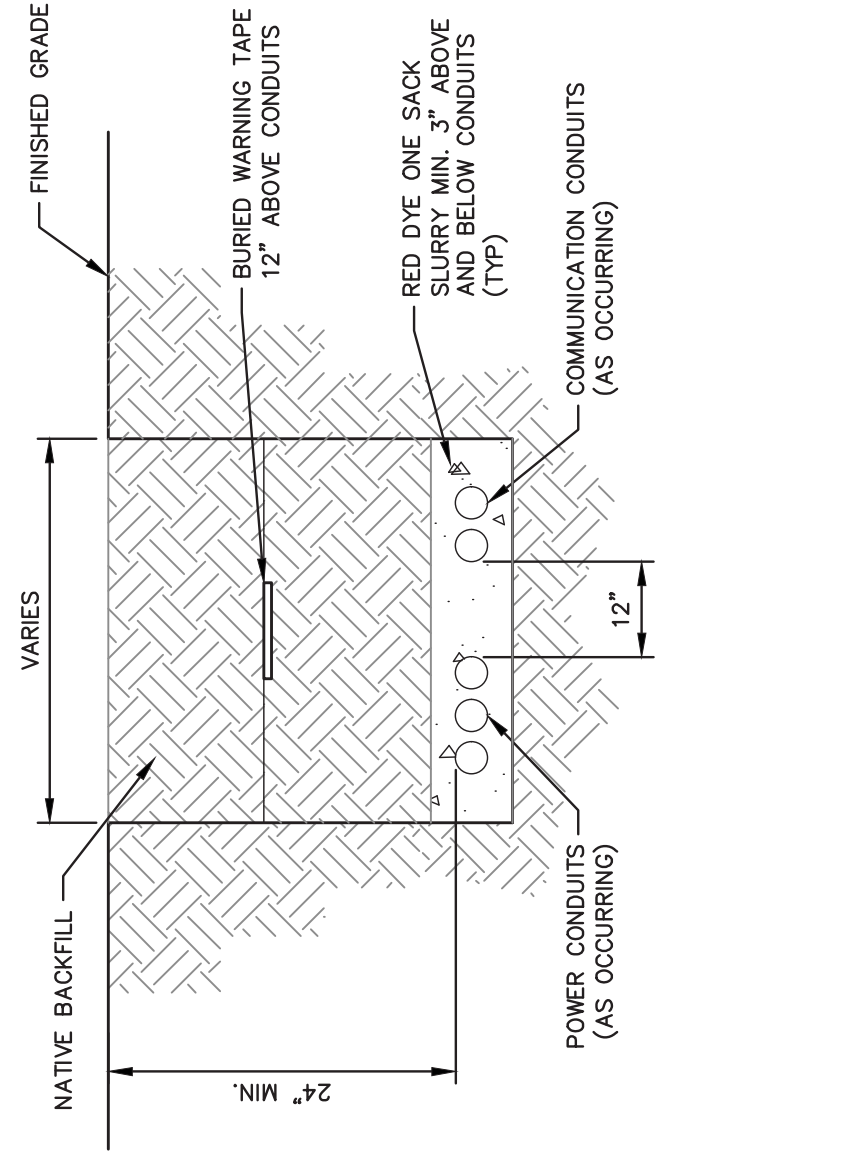
GROUND TAP UNDERGROUND DETAIL
SCALE: NO SCALE

4 4



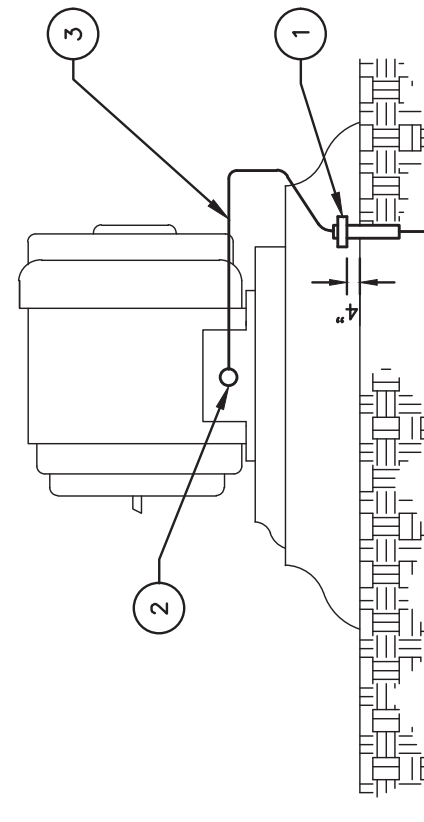
FLOW METER GROUNDING DETAIL
SCALE: NO SCALE

8 4



GROUND BOX DETAIL
SCALE: NO SCALE

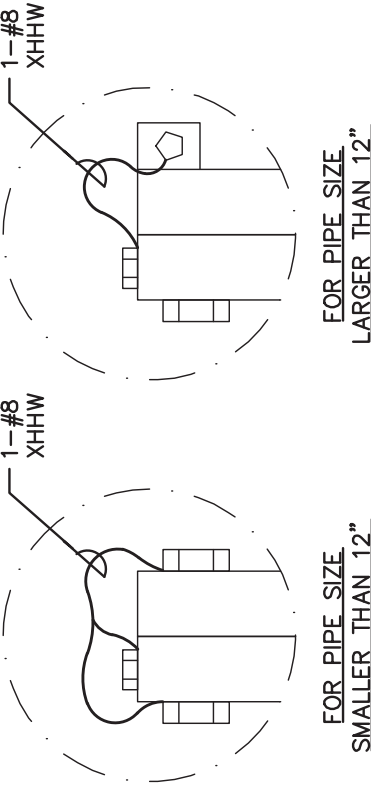
2 4



ITEM	DESCRIPTION	QTY
1	1" CONDUIT PVC	AR
2	EXOTHERMIC WELD FOR CABLE TO STEEL SURFACE OR COMPRESSION LUG WITH BRASS BOLT	AR
3	1/2" #2 INSULATED, GREEN GROUND WIRE	AR

MOTOR GROUND DETAIL
SCALE: NO SCALE

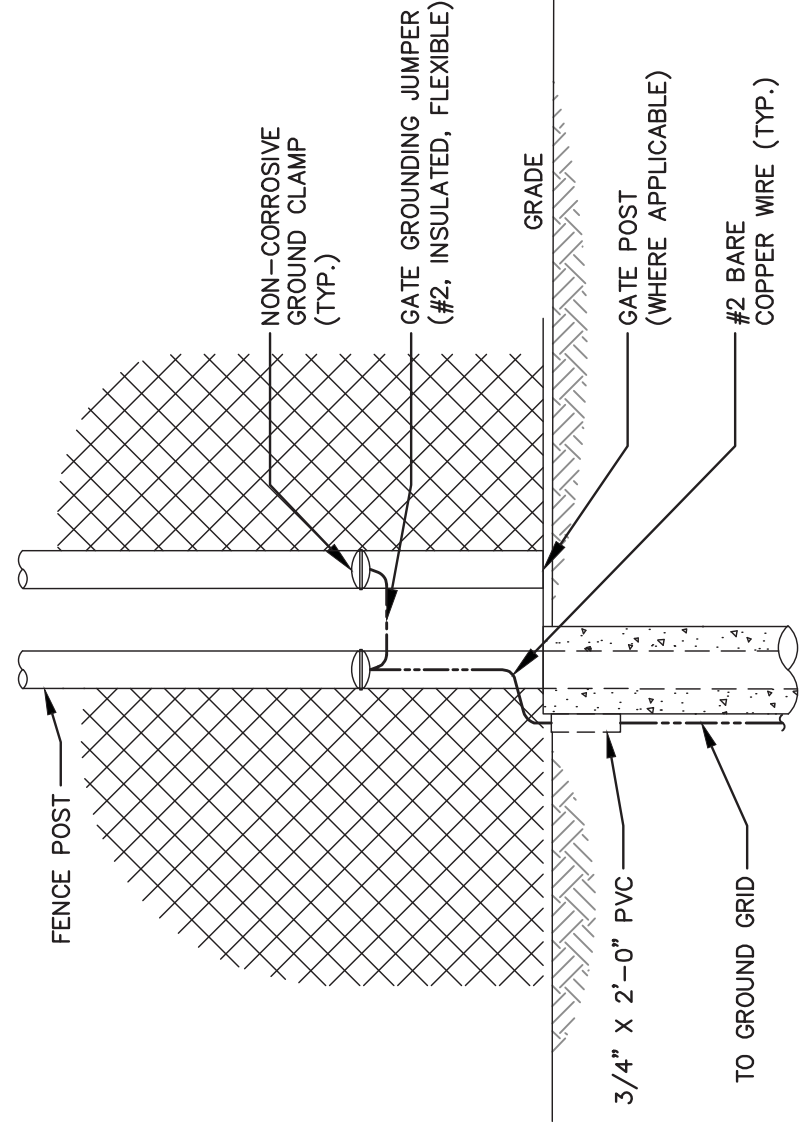
5 4



GROUNDING NOTES:
1. PIPE SIZE 12 INCHES AND SMALLER:
A. THE GROUNDING CLAMP MUST CONTACT WITH THE CONDUCTIVE FLANGE COATING AND IS SECURED BY THE FLANGE BOLTS.
2. PIPE SIZE 12 INCHES AND LARGER:
A. CONNECT GROUND CABLE DIRECTLY TO THE METAL TRANSPORT BRACKET.

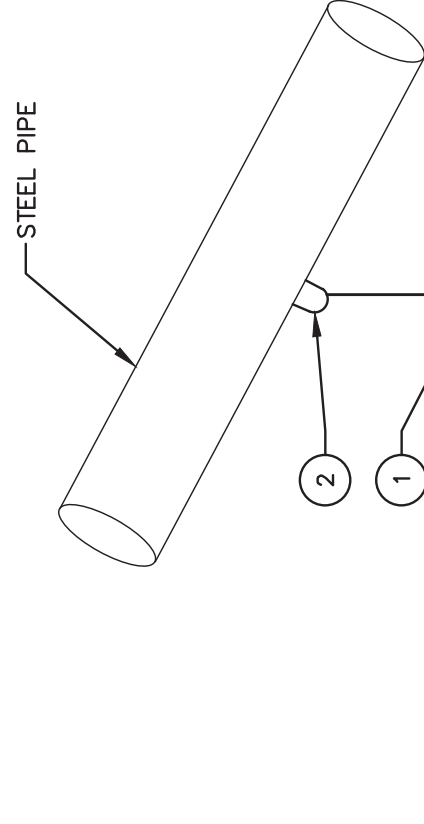
GATE AND FENCE POST GROUNDING DETAIL
SCALE: NO SCALE

9 4



PIPE GROUND DETAIL
SCALE: NO SCALE

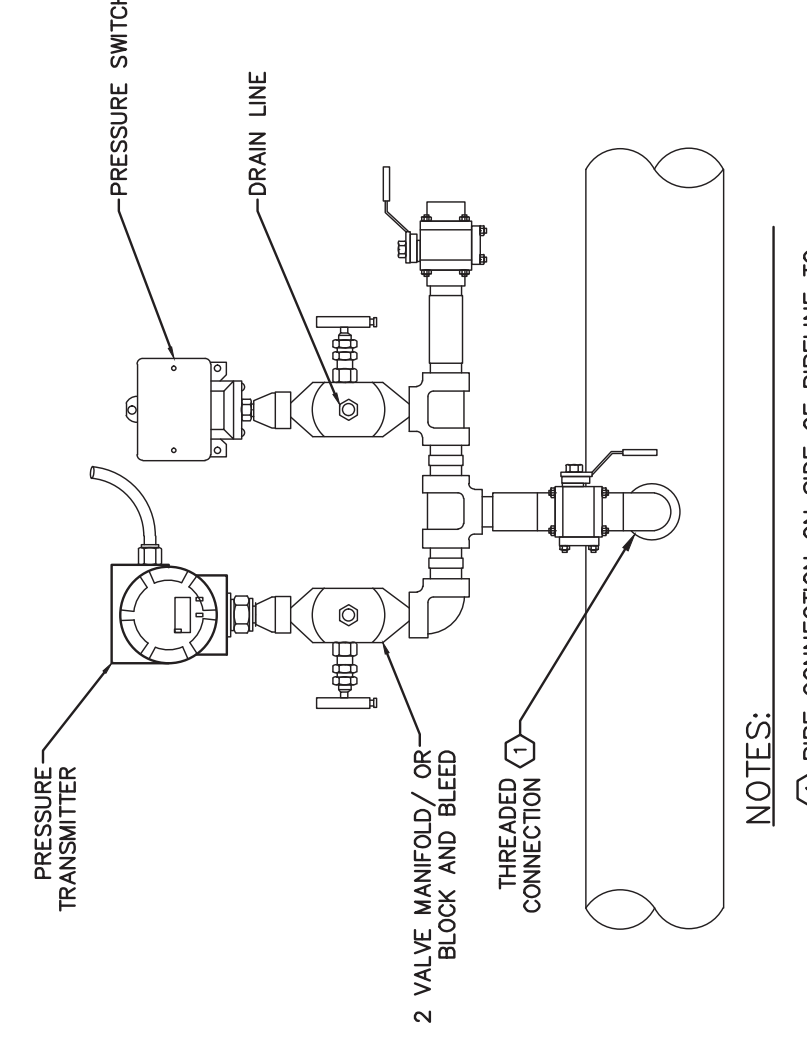
6 4



ITEM	DESCRIPTION	QTY
1	1/2" #2 INSULATED, GREEN GROUND WIRE	AR
2	EXOTHERMIC WELD FOR CABLE TO STEEL SURFACE OR WELDED 1/2" NIPPLE WITH BRASS MECHANICAL CLAMP	AR

UFER GROUND DETAIL
SCALE: NO SCALE

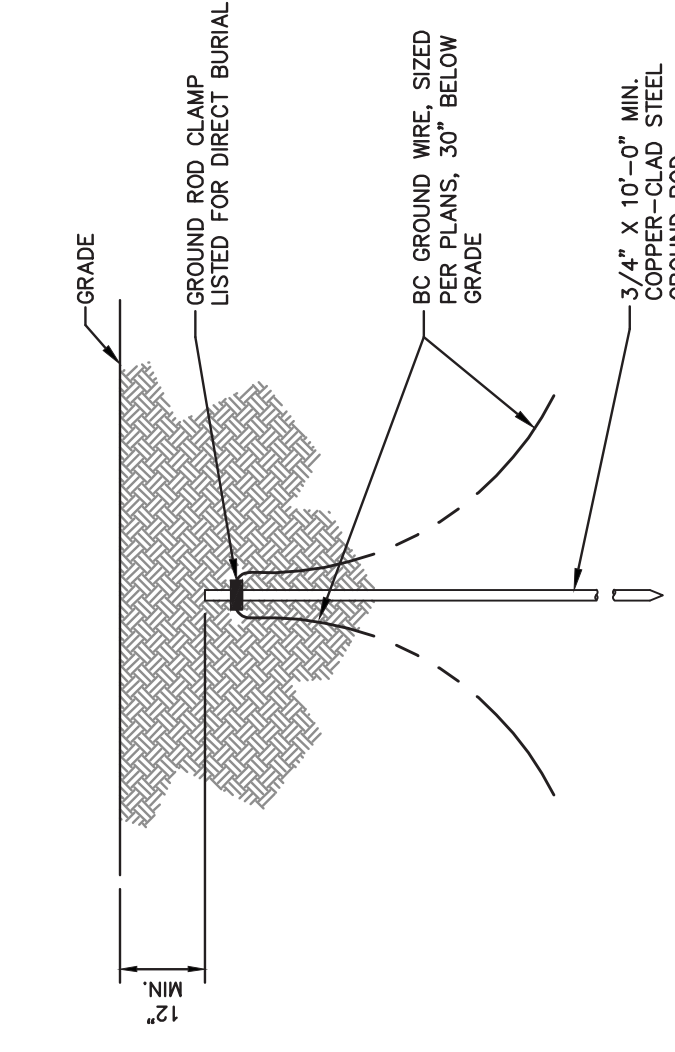
7 4



NOTES:
1. PIPE CONNECTION ON SIDE OF PIPELINE TO AVOID AIR TRAPPED IN SENSING LINE.

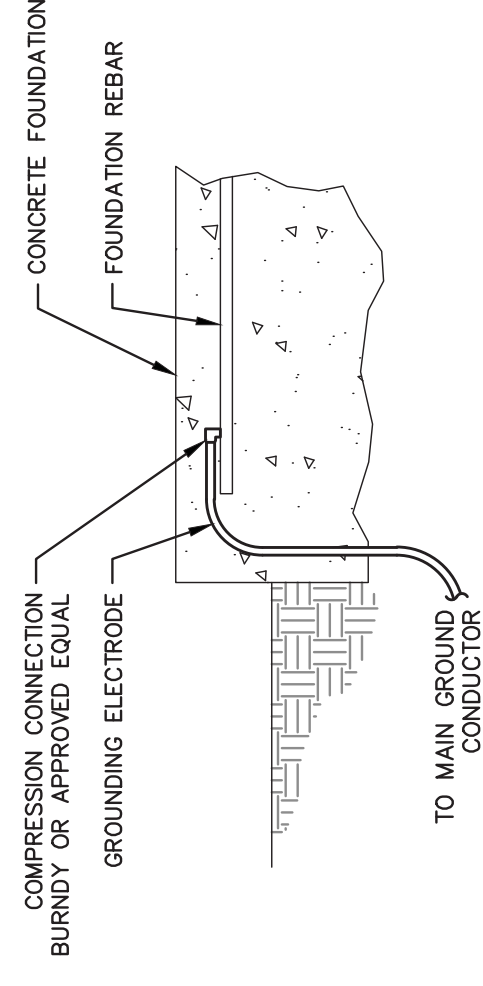
PRESSURE SWITCH & TRANSMITTER
SCALE: NO SCALE

10 4



GROUND ROD DETAIL
SCALE: NO SCALE

3 4



ANTENNA MOUNTING DETAIL
SCALE: NO SCALE

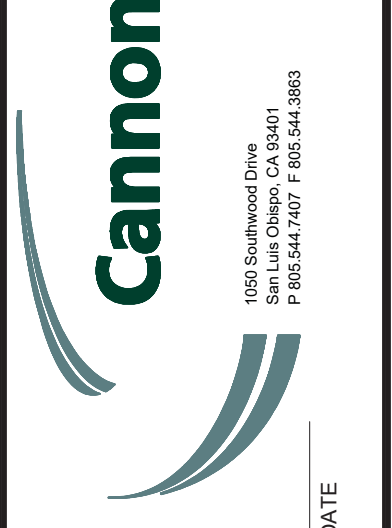
11 4

REV	DATE	BY	DESCRIPTION
A	09/06/24	AM	ISSUED FOR REVIEW - 60% SUBMITTAL
B	11/08/24	AM	ISSUED FOR REVIEW - 90% SUBMITTAL
C	01/06/25	AM	ISSUED FOR REVIEW - 100% SUBMITTAL

DESIGNED:	AM
DRAWN:	AM
CHECKED:	AM
QA/QC:	DR
CONSTRUCTIBILITY:	PR/CG



PROJECT ENGINEER: CANNON PROJECT NO: 240431
R.C.E. EXP. DATE



SCALE: AS SHOWN
THIS BAR IS 2 INCHES AT FULL SCALE IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.

CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERIE

PROJECT NUMBER: 22-451
DRAWING NUMBER: E-002
SHEET NUMBER: 4 OF 59

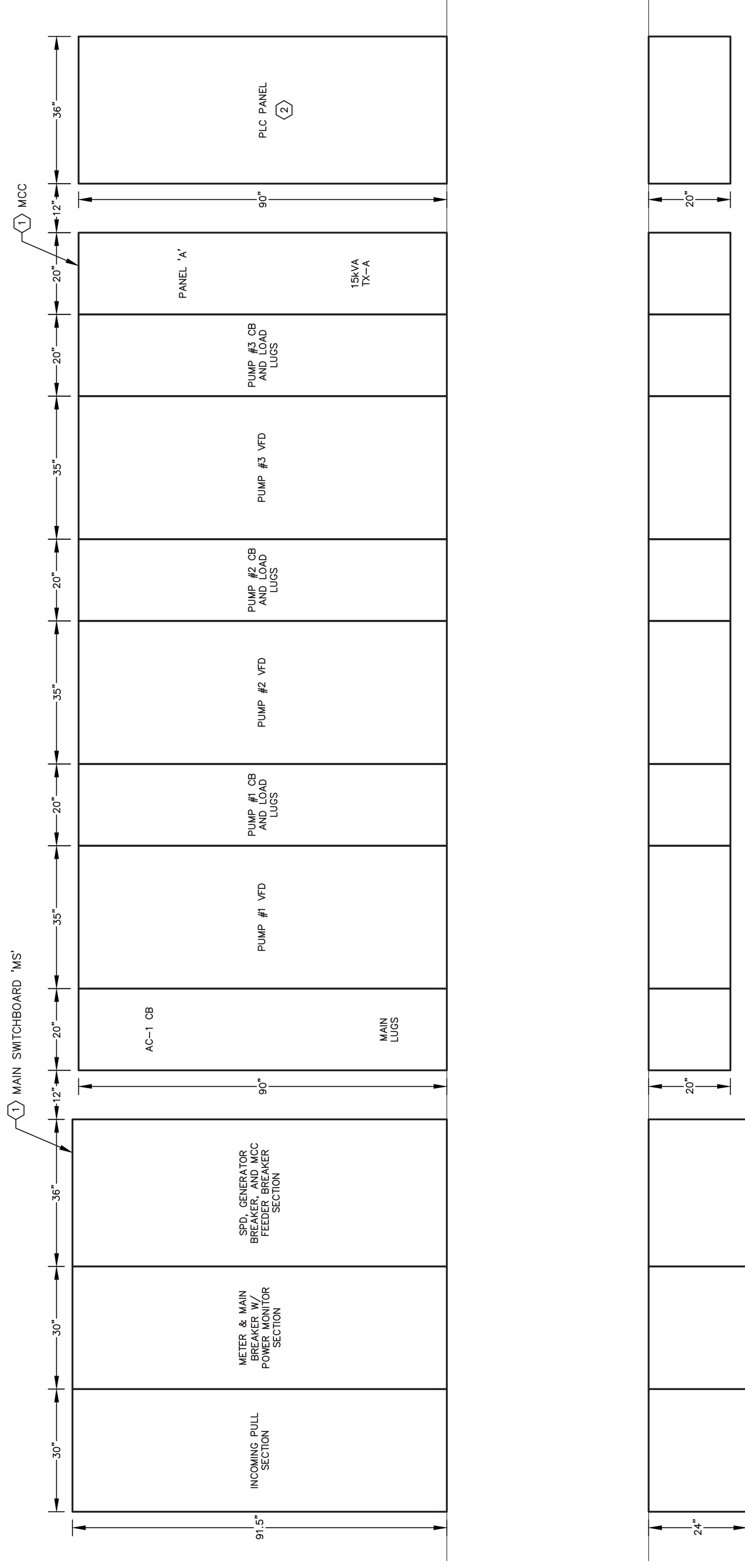
ELECTRICAL DETAILS

GENERAL NOTES:

1. SEE ELECTRICAL SYMBOLS AND GENERAL NOTES ON SHEET 3.
2. EQUIPMENT DIMENSIONS SHOWN ARE PRELIMINARY AND FOR DESIGN PURPOSES ONLY. VERIFY ALL DIMENSIONS AND SPACING WITH MANUFACTURER'S DRAWINGS PRIOR TO INSTALLATION.

CONSTRUCTION NOTES:

- ① SEE SINGLE LINE DIAGRAM ON SHEET 27 FOR EQUIPMENT DETAILS.
- ② SEE PLC PANEL LAYOUT DRAWINGS ON SHEET 37 FOR EQUIPMENT DETAILS.



ELECTRICAL EQUIPMENT ELEVATIONS

SCALE: NO SCALE

REV	DATE	BY	DESCRIPTION
A	09/06/24	AM	ISSUED FOR REVIEW - 60% SUBMITTAL
B	11/08/24	AM	ISSUED FOR REVIEW - 90% SUBMITTAL
C	01/06/25	AM	ISSUED FOR REVIEW - 100% SUBMITTAL

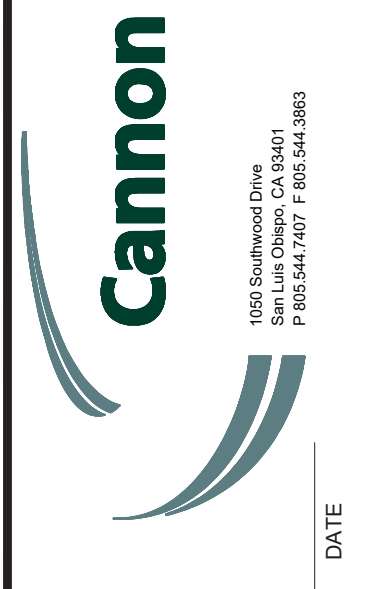


DESIGNED:	AM
DRAWN:	AM
CHECKED:	AM
DATE:	DR
CONSTRUCTABILITY:	PR/CG

PROJECT ENGINEER: _____
R.C.E. EXP.

CANNON PROJECT NO: 240431

DATE _____



SCALE: AS SHOWN

THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.

CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERIE

RED MOUNTAIN PUMPING PLANT:
ELECTRICAL
EQUIPMENT ELEVATIONS

PROJECT NUMBER: 22-451
DRAWING NUMBER: 30-E-002
SHEET NUMBER: 28 OF 59

GENERAL NOTES:

1. SEE SYMBOLS AND GENERAL NOTES ON SHEET 3.
2. SEE CONDUIT AND CABLE SCHEDULE ON SHEET 33.
3. SEE FACILITIES SHOWN ON THIS DRAWING. ALL FOR BIDDING PURPOSES. SEE SHEET 33 FOR FACILITIES THE CONTRACTOR SHALL INSTALL.

CONSTRUCTION NOTES:

1. SEE SINGLE LINE DIAGRAM ON SHEET 27 FOR EQUIPMENT DETAILS.
2. SEE PLC PANEL DRAWINGS ON SHEETS 37-42 FOR DETAILS.
3. 6" x 72" PRE-CAST CONCRETE PAD FOR SCE PAD-MOUNTED TRANSFORMER. PRE-CAST CONCRETE PAD SHALL BE JENSEN PRECAST, OR SCE APPROVED EQUAL. INSTALL PER SCE PLANS AND STANDARDS.
4. PROVIDE PROTECTIVE BOLLARDS FOR TRANSFORMER. INSTALL PER SCE PLANS AND STANDARDS.
5. PUMP MOTOR, 150HP, 480V, 3-PHASE, INVERTER-DUTY. SEE CIVIL PLANS FOR PUMP DETAILS.
6. SEE SCE PLANS FOR PRIMARY AND SECONDARY SERVICE CONDUIT ROUTING. CONDUIT SHALL BE INSTALLED PER SCE REQUIREMENTS, STANDARDS, AND DETAILS.
7. TRANSITION CONDUIT FROM BELOW TO ABOVE GROUND AND PROVIDE LIQUIDTIGHT FLEXIBLE METAL CONDUIT FOR FINAL MOTOR TERMINAL BOX LOCATION PRIOR TO CONDUIT ROUTING AND STUB-UP LOCATION.
8. FLOW SIGNAL CONVERTER. SEE PAD ON SHEET 36 FOR DETAILS. MOUNT ON RETAINING WALL PER MANUFACTURER'S INSTRUCTIONS.
9. PUMP AREA LIGHTING. LITHONIA LIGHTING MODEL NO. ESMT-PL-100. CONTRACTOR SHALL CONFIRM MOUNTING APPROVED EQUAL. CONTRACTOR SHALL CONFIRM MOUNTING OPTION WITH VENDOR PRIOR TO PROCUREMENT. SEE STRUCTURAL DRAWINGS FOR DETAILS FOR MOUNTING TO RETAINING WALL. LIGHTING SHALL BE CONTROLLED BY TIMER SWITCH, AS SHOWN.
10. INDOOR TIMER SWITCH, INTERMATIC FF46H, OR APPROVED AS SHOWN.
11. OUTDOOR NEMA 5-20R GFCI, DUPLEX RECEPTACLE WITH SIGNPOST. COVER-IN-USE BOX. MOUNT TO CONCRETE SUPPORT STRUCTURE APPROXIMATELY 16" ABOVE FOUNDATION SURFACE.
12. SEE HVAC PLANS FOR DETAILS.



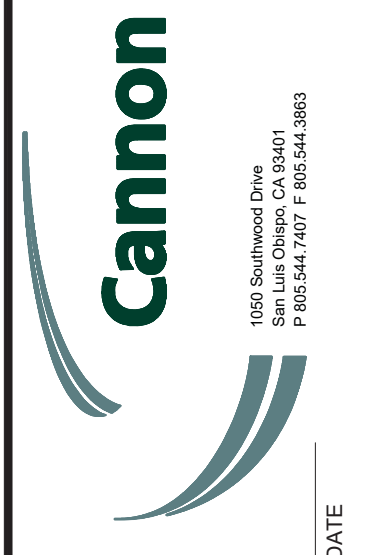
ELECTRICAL PLAN
SCALE: 1"=5'

REV	DATE	BY	DESCRIPTION
A	09/06/24	AM	ISSUED FOR REVIEW - 60% SUBMITTAL
B	11/06/24	AM	ISSUED FOR REVIEW - 90% SUBMITTAL
C	01/06/25	AM	ISSUED FOR REVIEW - 100% SUBMITTAL



DESIGNED:	AM
DRAWN:	AM
CHECKED:	AM
DATE:	DR
CONSTRUCTIBILITY:	PR/CG

PROJECT ENGINEER: R.C.E. EXP.
CANNON PROJECT NO. 240431
DATE



SCALE:
AS SHOWN



CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERIE

RED MOUNTAIN PUMPING PLANT:
ELECTRICAL
ELECTRICAL PLAN

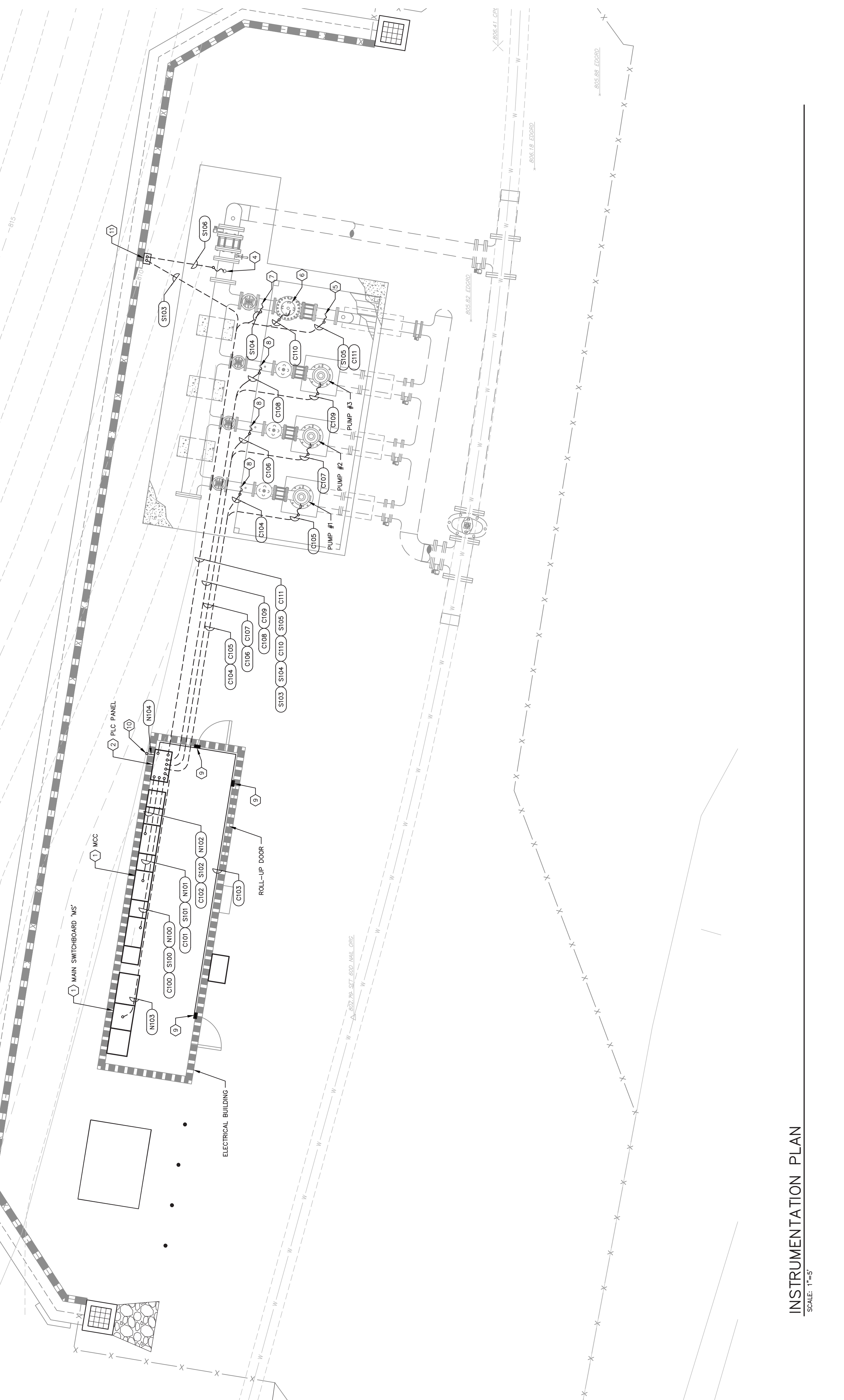
PROJECT NUMBER: **22-451**
DRAWING NUMBER: **30-E-003**
SHEET NUMBER: **29** OF **59**

GENERAL NOTES:

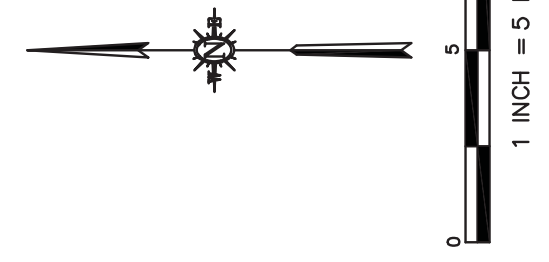
1. SEE SYMBOLS AND GENERAL NOTES ON SHEET 3.
2. SEE CONDUIT AND CABLE SCHEDULE ON SHEET 33.


CONSTRUCTION NOTES:

1. SEE SINGLE LINE DIAGRAM ON SHEET 27 FOR EQUIPMENT DETAILS.
2. SEE PLC PANEL DRAWINGS ON SHEETS 37-42 FOR DETAILS.
3. TRANSITION CONDUIT FROM BELOW TO ABOVE GROUND AND PROVIDE LIQUDTIGHT FLEXIBLE METAL CONDUIT FOR FINAL CONNECTION TO TRANSFORMER. FIELD VERIFY EXACT CONDUIT STUB-UP LOCATION.
4. FLOW METER, SEE P&ID ON SHEET 36 FOR DETAILS.
5. SUCTION PRESSURE TRANSMITTER AND LOW SUCTION PRESSURE SWITCH, SEE P&ID ON SHEET 35 FOR DETAILS. SEE DETAIL 10 ON SHEET 4.
6. PRESSURE RELIEF VALVE WITH LIMIT SWITCH, SEE CIVIL PLANS AND SPECIFICATIONS FOR DETAILS.
7. DISCHARGE PRESSURE TRANSMITTER, SEE P&ID ON SHEET 35 FOR DETAILS.
8. DISCHARGE PRESSURE SWITCH, SEE P&ID ON SHEET 35 FOR DETAILS.
9. ELECTRICAL BUILDING INTRUSION SWITCH, 120VAC, 5W, WITH ACTUATOR, LITTLEFUSE 57140, OR APPROVED EQUAL.
10. 2" CONDUIT FOR ANTENNA CABLE SHALL ROUTE UP AND BE SUPPORTED ALONG THE SIDE OF THE BUILDING AT INTERVALS REQUIRED PER THE NEC. CONDUIT SHALL EXTEND A MINIMUM OF 3' ABOVE ROOF LINE AND SERVE AS THE ANTENNA MAST. SEE DETAIL 11 ON SHEET 4. ANTENNA MODEL (YAGI ANTENNA ZDQJ450-14YG), MOUNTING HEIGHT, AND DIRECTION SHALL BE CONFIRMED PER CEMD RADIO PATH STUDY FOR THIS SITE.
11. FLOW SIGNAL CONVERTER, SEE P&ID ON SHEET 36 FOR DETAILS. MOUNT ON RETAINING WALL PER MANUFACTURER'S INSTRUCTIONS.



INSTRUMENTATION PLAN
SCALE: 1"=5'



 100 Southpoint Drive Santa Ana, California, CA 92701 P 951.544.7407 F 951.544.3863	PROJECT NUMBER 22-451	PROJECT ENGINEER: R.C.E.	CANNON PROJECT NO.: 20431	DATE
	DRAWING NUMBER 30-E-004	PROJECT ENGINEER: DR	CANNON PROJECT NO.: 20431	DATE
	SHEET NUMBER 30 OF 59	PROJECT ENGINEER: PR/CS	CANNON PROJECT NO.: 20431	DATE

CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERIE

RED MOUNTAIN PUMPING PLANT:
ELECTRICAL
INSTRUMENTATION PLAN

DESIGNED: AM
DRAWN: AM
CHECKED: AM
QA/QC: DR
CONSTRUCTIBILITY: PR/CS

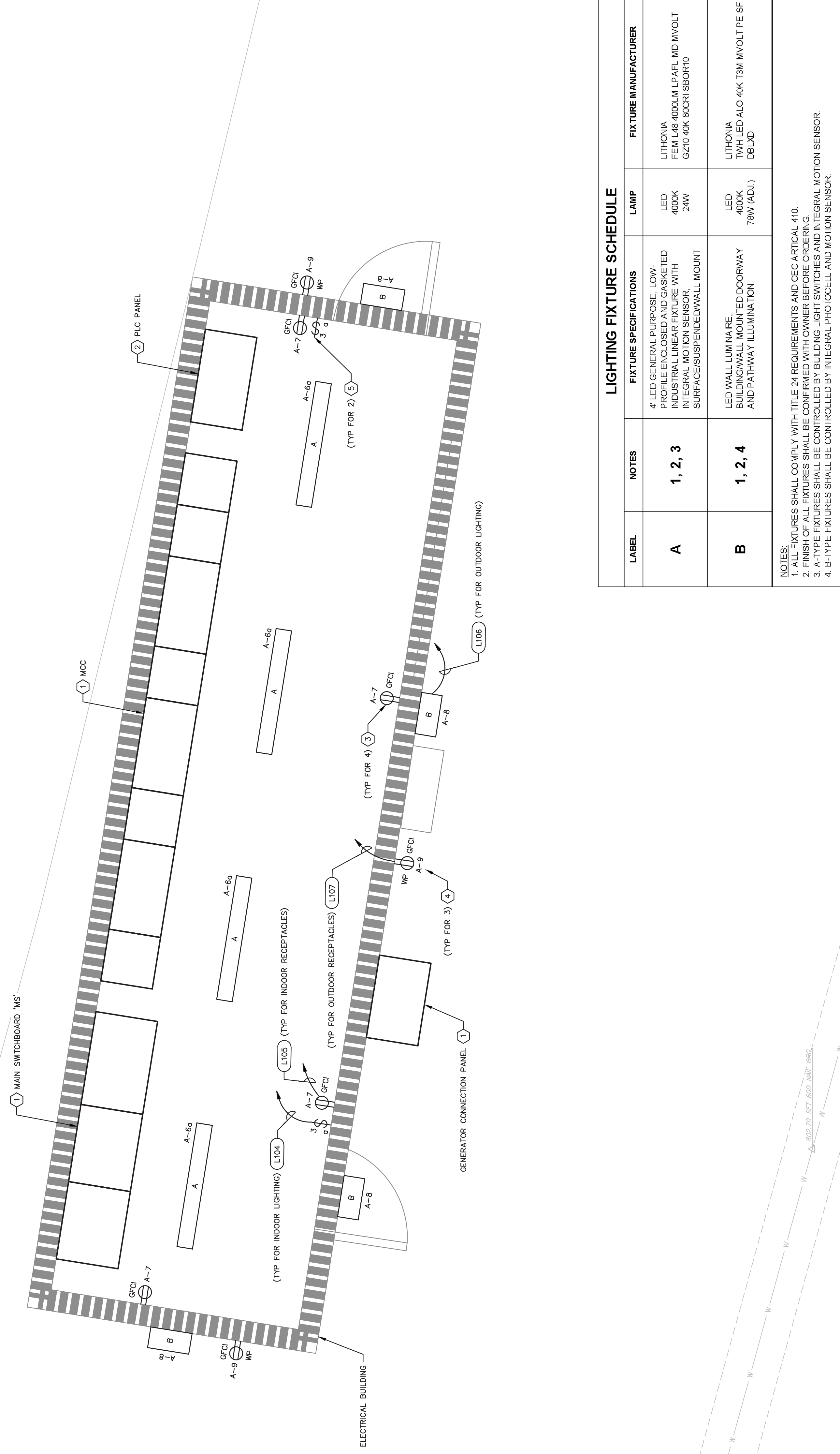
REV A B C	DATE 09/06/24 11/06/24 01/06/25	DESCRIPTION ISSUED FOR REVIEW - 60% SUBMITTAL ISSUED FOR REVIEW - 90% SUBMITTAL ISSUED FOR REVIEW - 100% SUBMITTAL
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GENERAL NOTES:

1. SEE SYMBOLS AND GENERAL NOTES ON SHEET 3.
2. SEE CONDUIT AND CABLE SCHEDULE ON SHEET 33.

CONSTRUCTION NOTES:

1. SEE SINGLE LINE DIAGRAM ON SHEET 27 FOR EQUIPMENT DETAILS.
2. SEE PLC PANEL DRAWINGS ON SHEETS 37-42 FOR DETAILS.
3. INDOOR NEMA 5-20R GFCI, DUPLEX RECEPTACLE.
4. OUTDOOR NEMA 5-20R GFCI, DUPLEX RECEPTACLE WITH WEATHERPROOF, COVER-IN-USE BOX.
5. INDOOR 3-WAY, 120-VOLT LIGHT SWITCH.

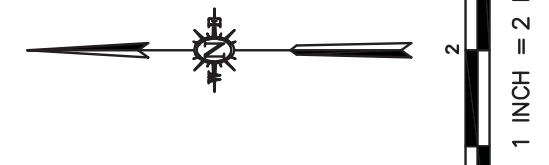



LABEL	NOTES	FIXTURE SPECIFICATIONS	LAMP	FIXTURE MANUFACTURER
A	1, 2, 3	4' LED GENERAL PURPOSE, LOW PROFILE ENCLOSED AND CASKETE INDUSTRIAL LINEAR FIXTURE WITH INTEGRAL MOTION SENSOR, SURFACE/SUSPENDED WALL MOUNT	LED 4000K 24W	LITHONIA EEM148 4000LM LPAFL MD MVOLT GZ10 40K 80CRI SBCR10
B	1, 2, 4	LED WALL LUMINAIRE BUILDING WALL MOUNTED DOORWAY AND PATHWAY ILLUMINATION	LED 4000K 78W (ADJ.)	LITHONIA TWH LED ALO 40K T3M MVOLT PE SF DBLXD

NOTES:

1. ALL FIXTURES SHALL COMPLY WITH TITLE 24 REQUIREMENTS AND CEC ARTICLE 410.
2. FINISH OF ALL FIXTURES SHALL BE CONFIRMED WITH OWNER BEFORE ORDERING.
3. A-TYPE FIXTURES SHALL BE CONTROLLED BY BUILDING LIGHT SWITCHES AND INTEGRAL MOTION SENSOR.
4. B-TYPE FIXTURES SHALL BE CONTROLLED BY INTEGRAL PHOTOCELL AND MOTION SENSOR.

ELECTRICAL BUILDING PLAN
SCALE: 1"=2'



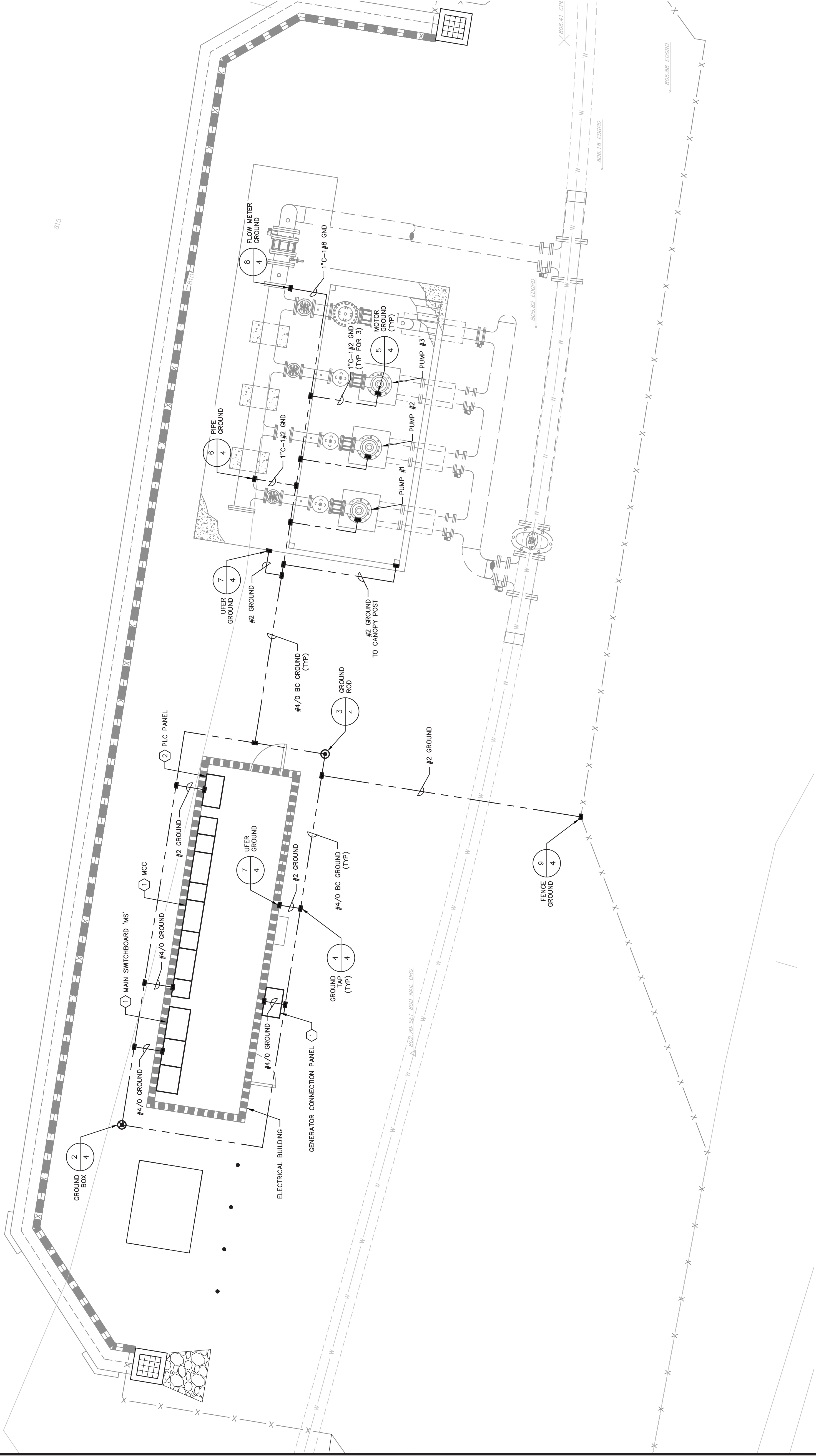
 100 Southpoint Drive San Jose, CA 95128 P 855.544.7407 F 855.544.3863	PROJECT NUMBER 22-451	PROJECT ENGINEER: R.C.E. EXP.	PROJECT NO.: 20431 CANNON PROJECT NO.: 20431	DATE
	DRAWING NUMBER 30-E-005	PROJECT ENGINEER: DR.	PROJECT ENGINEER: R.C.E. EXP.	PROJECT ENGINEER: R.C.E. EXP.
CASITAS MUNICIPAL WATER DISTRICT VENTURA-SANTA BARBARA COUNTIES INTERTIE		PROJECT ENGINEER: R.C.E. EXP.		
RED MOUNTAIN PUMPING PLANT: ELECTRICAL		PROJECT ENGINEER: R.C.E. EXP.		
BUILDING POWER & LIGHTING PLAN		PROJECT ENGINEER: R.C.E. EXP.		
PROJECT NUMBER 22-451		PROJECT ENGINEER: R.C.E. EXP.		
DRAWING NUMBER 30-E-005		PROJECT ENGINEER: R.C.E. EXP.		
SHEET NUMBER 31 OF 59		PROJECT ENGINEER: R.C.E. EXP.		

GENERAL NOTES:

1. SEE SYMBOLS AND GENERAL NOTES ON SHEET 3.

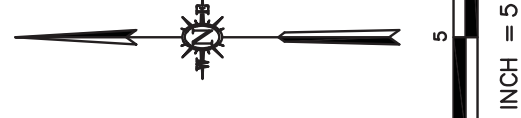
CONSTRUCTION NOTES:

- ① SEE SINGLE LINE DIAGRAM ON SHEET 27 FOR EQUIPMENT DETAILS.
- ② SEE PLC PANEL DRAWINGS ON SHEETS 37-42 FOR DETAILS.



GROUNDING PLAN

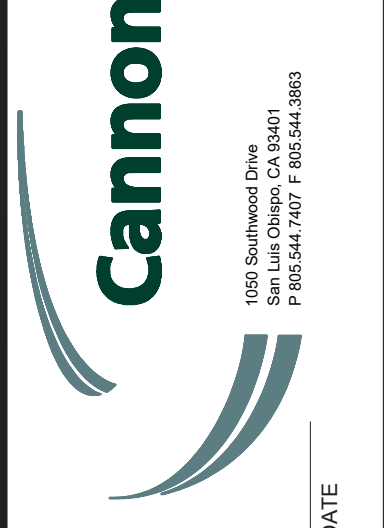
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REV	DATE	BY	DESCRIPTION
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B	11/06/24	AM	ISSUED FOR REVIEW - 90% SUBMITTAL
C	01/06/25	AM	ISSUED FOR REVIEW - 100% SUBMITTAL

DESIGNED:	AM
DRAWN:	AM
CHECKED:	AM
DATE:	DR
CONSTRUCTIBILITY:	PR/CS

PROJECT ENGINEER: R.C.E. EXP.
 CANNON PROJECT NO: 240431
 DATE



SCALE:
AS SHOWN

0 1/2 1 2
 THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.

CASITAS MUNICIPAL WATER DISTRICT
 VENTURA-SANTA BARBARA COUNTIES INTERTIE

**RED MOUNTAIN PUMPING PLANT:
 ELECTRICAL
 GROUNDING PLAN**

PROJECT NUMBER: 22-451
 DRAWING NUMBER: 30-E-006
 SHEET NUMBER: 32 OF 59

CONDUIT & CABLE SCHEDULE

CONDUIT		CONDUIT FILL		From	To	COMMENTS
No.	Qty.	Size (in)				
P-100	1	5	3/8" NYLON PULL CORD	SCE PAD-MOUNTED TRANSFORMER	SEE SCE PLANS FOR DETAILS (SERVICE REQUEST #3793492)	
P-101	2	4	3/8" NYLON PULL CORD	SCE PAD-MOUNTED TRANSFORMER	SEE SCE PLANS FOR DETAILS (SERVICE REQUEST #3793492)	
P-102	2	3	3#500kcmil, 1#1/0 GND	PORTABLE GENERATOR CONNECTION PANEL		
P-103	2	3	3#500kcmil, 1#1/0 GND	MAIN SWITCHBOARD		
P-104	1	3	3#4/0 + GND VFD CABLE	MCC (PUMP #1 VFD)		
P-105	1	3	3#4/0 + GND VFD CABLE	MCC (PUMP #2 VFD)		
P-106	1	3	3#4/0 + GND VFD CABLE	MCC (PUMP #3 VFD)		
P-107	1	1	3#12, 1#12 GND	MCC (AC-1 CIRCUIT BREAKER)		
L-100	1	1	2#12, 1#12 GND	PANEL 'A' (LOCATED IN MCC)		
L-101	1	1	2#12, 1#12 GND	PANEL 'A' (LOCATED IN MCC)		
L-102	1	1	3#8, 2#10, 1#10 GND	PANEL 'A' (LOCATED IN MCC)	3#8 FOR 30A TWIST-LOCK RECEPTACLE; 2#10 FOR 20A DUPLEX RECEPTACLE	
L-103	1	1	2#12, 1#12 GND	PANEL 'A' (LOCATED IN MCC)	ROUTE THROUGH TIMER SWITCH, AS SHOWN ON PLANS	
L-104	1	1	2#12, 1#12 GND	PANEL 'A' (LOCATED IN MCC)	ROUTE THROUGH ELECTRICAL ROOM 3-WAY SWITCHES, AS SHOWN ON PLANS	
L-105	1	1	2#12, 1#12 GND	PANEL 'A' (LOCATED IN MCC)		
L-106	1	1	2#12, 1#12 GND	PANEL 'A' (LOCATED IN MCC)		
L-107	1	1	2#12, 1#12 GND	PANEL 'A' (LOCATED IN MCC)		
L-108	1	1	2#12, 1#12 GND	MCC (PUMP #1 VFD)		
L-109	1	1	2#12, 1#12 GND	MCC (PUMP #2 VFD)		
L-110	1	1	2#12, 1#12 GND	MCC (PUMP #3 VFD)		
L-111	1	1	2#12, 1#12 GND	PANEL 'A' (LOCATED IN MCC)		
C-100	1	1	14#14 (4#14 SPARE)	MCC (PUMP #1 VFD)		
C-101	1	1	14#14 (4#14 SPARE)	MCC (PUMP #2 VFD)		
C-102	1	1	14#14 (4#14 SPARE)	MCC (PUMP #3 VFD)		
C-103	1	1	2#14	ELECTRICAL BUILDING INTRUSION SWITCHES	INTRUSION SWITCHES SHALL BE WIRED IN SERIES	
C-104	1	1	2#14	PUMP #1 HIGH DISCHARGE PRESSURE SWITCH		
C-105	1	1	2#14	PUMP #1 MOTOR HIGH WINDING TEMP		
C-106	1	1	2#14	PUMP #2 HIGH DISCHARGE PRESSURE SWITCH		
C-107	1	1	2#14	PUMP #2 MOTOR HIGH WINDING TEMP		
C-108	1	1	2#14	PUMP #3 HIGH DISCHARGE PRESSURE SWITCH		
C-109	1	1	2#14	PUMP #3 MOTOR HIGH WINDING TEMP		
C-110	1	1	2#14	PRESSURE RELIEF VALVE		
C-111	1	1	2#14	LOW SUCTION PRESSURE SWITCH		
S-100	1	1	2PR#16 TSP	MCC (PUMP #1 VFD)		
S-101	1	1	2PR#16 TSP	MCC (PUMP #2 VFD)		
S-102	1	1	2PR#16 TSP	MCC (PUMP #3 VFD)		
S-103	1	1	1PR#16 TSP	FLOW SIGNAL CONVERTER		
S-104	1	1	1PR#16 TSP	DISCHARGE PRESSURE TRANSMITTER		
S-105	1	1	1PR#16 TSP	SUCTION PRESSURE TRANSMITTER		
S-106	2	1	MANUFACTURER'S CABLES	FLOW METER		
N-100	1	1	CAT-6 ETHERNET CABLE	MCC (PUMP #1 VFD)		
N-101	1	1	CAT-6 ETHERNET CABLE	MCC (PUMP #2 VFD)		
N-102	1	1	CAT-6 ETHERNET CABLE	MCC (PUMP #3 VFD)		
N-103	1	1	CAT-6 ETHERNET CABLE	MAIN SWITCHBOARD (POWER MONITOR)		
N-104	1	2	LMR-600 ANTENNA CABLE	PLC PANEL		

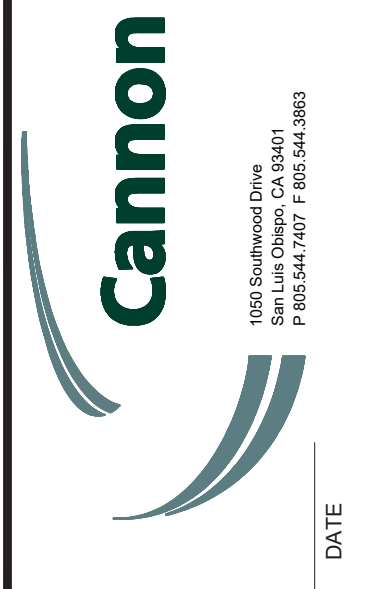
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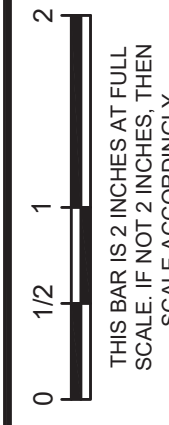
DESIGNED:	AM
DRAWN:	AM
CHECKED:	AM
DATE:	DR
CONSTRUCTABILITY:	PR/CG

PROJECT ENGINEER: _____
R.C.E. EXP.

CANNON PROJECT NO: 240431



SCALE:
AS SHOWN



CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERTIE

RED MOUNTAIN PUMPING PLANT:
ELECTRICAL
CONDUIT & CABLE SCHEDULES

PROJECT NUMBER
22-451

DRAWING NUMBER
30-E-007

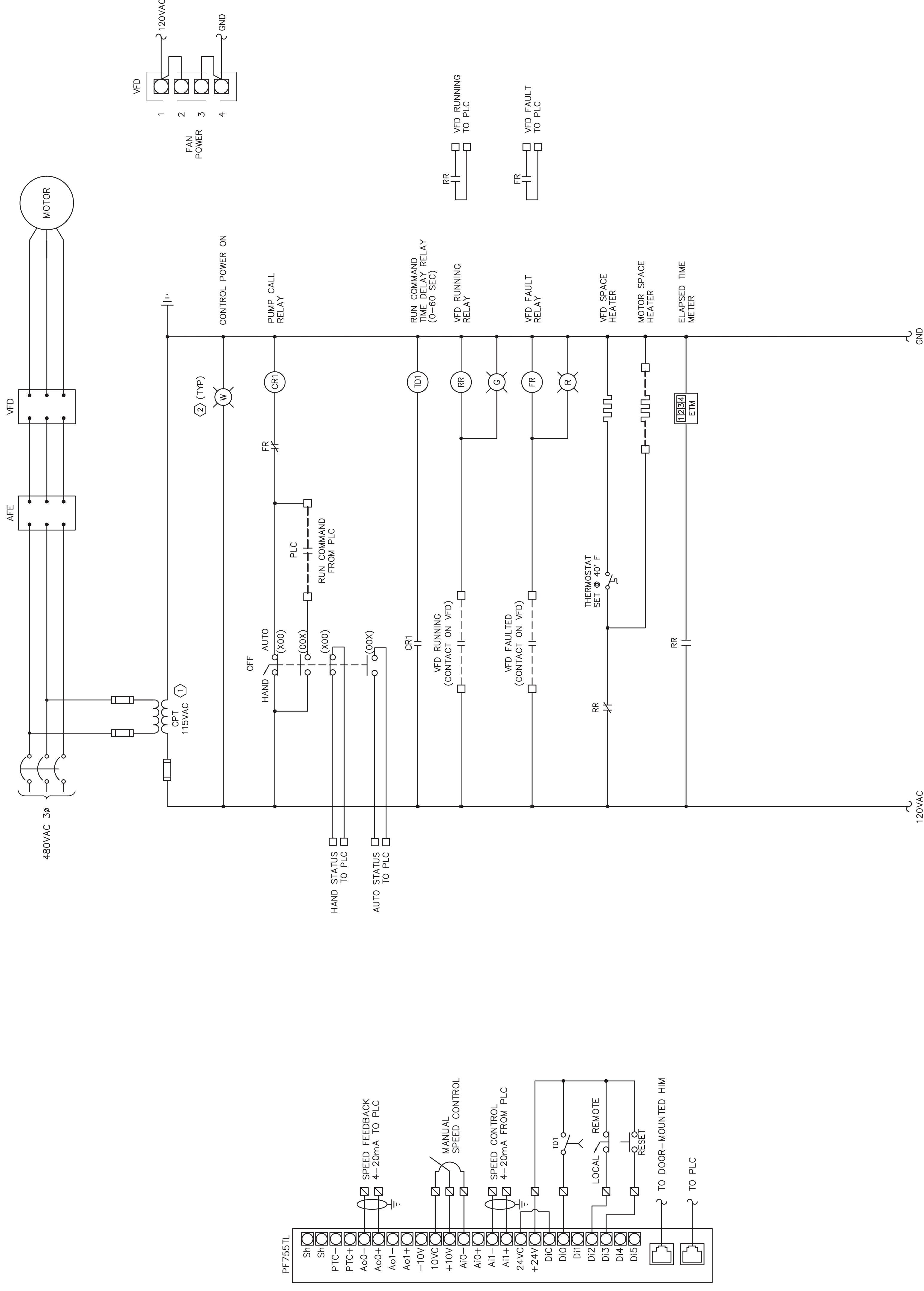
SHEET NUMBER
33 OF **59**

GENERAL NOTES

- 1. REFER TO SYMBOLS AND GENERAL NOTES ON SHEET 3.

CONSTRUCTION NOTES

- ① CPT SHALL BE SIZED ADEQUATELY TO SUPPORT ALL CONTROLS/LOADS, AS SHOWN, WITH MINIMUM 20% SPARE CAPACITY.
- ② ALL PILOT LIGHTS SHALL BE PUSH-TO-TEST.



VFD PUMP CONTROL WIRING DIAGRAM

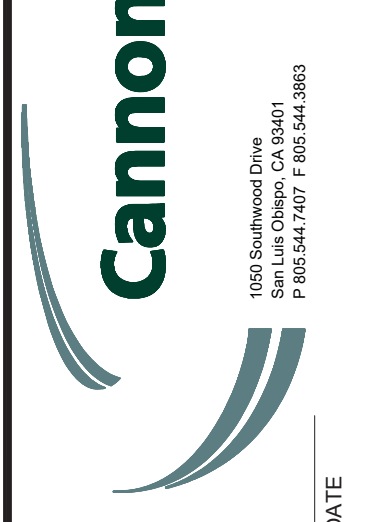
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C	01/06/25	AM	ISSUED FOR REVIEW - 100% SUBMITTAL



DESIGNED:	AM
DRAWN:	AM
CHECKED:	AM
QA/QC:	DR
CONSTRUCTIBILITY:	PR/CS

PROJECT ENGINEER: CANNON PROJECT NO: 240431
R.C.E. EXP.

DATE



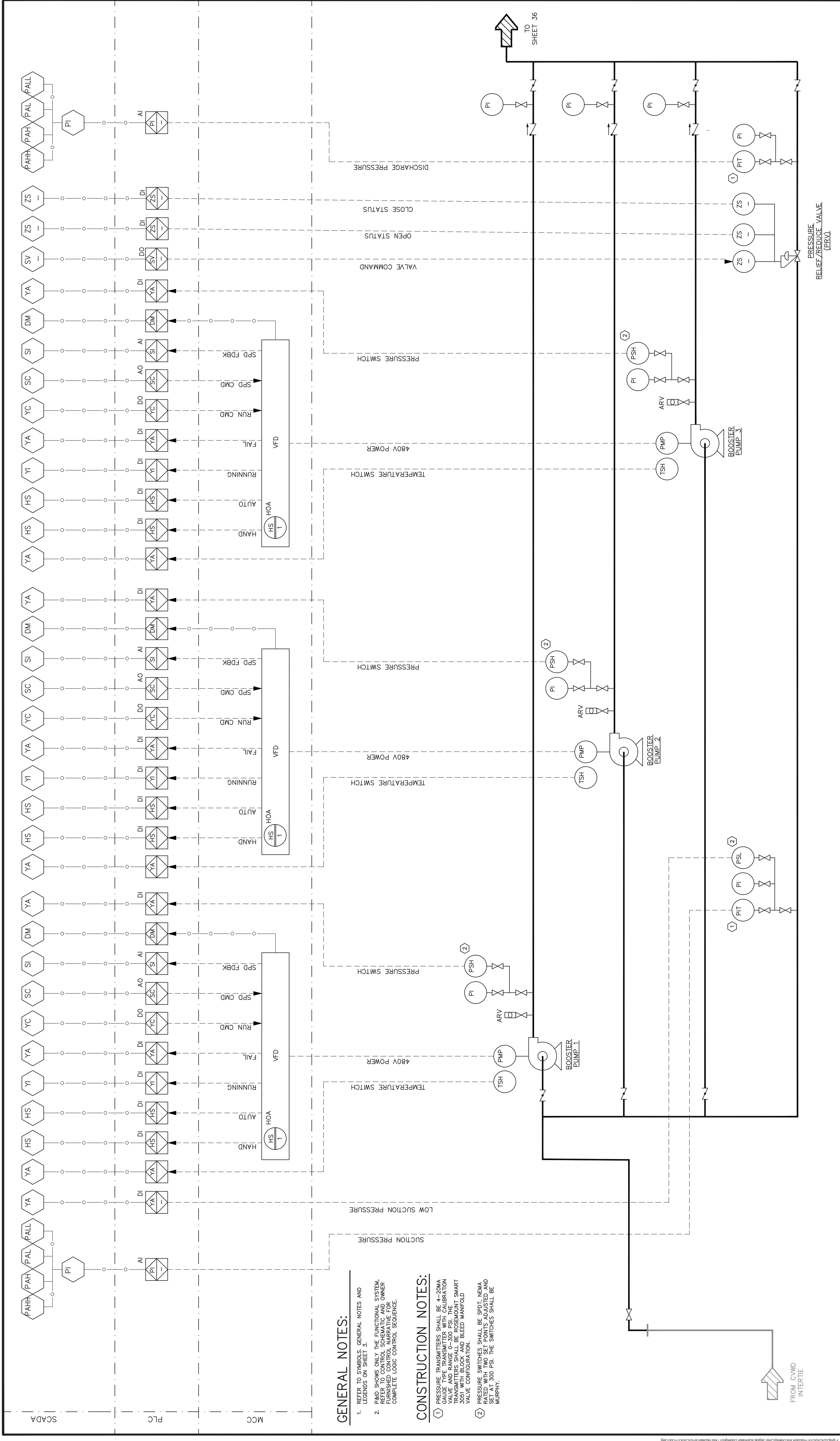
SCALE:
AS SHOWN

0 1/2 1 2
THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.

CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERIE

**RED MOUNTAIN PUMPING PLANT:
ELECTRICAL
PUMP CONTROL WIRING DIAGRAM**

PROJECT NUMBER	22-451
DRAWING NUMBER	30-E-008
SHEET NUMBER	34
OF	59



GENERAL NOTES:

1. REFER TO SYMBOLS, GENERAL NOTES AND LEGENDS ON SHEET 35.
2. P&ID SHOWS ONLY THE FUNCTIONAL SYSTEM, INSTRUMENTATION, CONTROL, AND VALVE. THE OWNER SHALL FURNISH LOGIC CONTROL SEQUENCE FOR COMPLETE LOGIC CONTROL SEQUENCE.

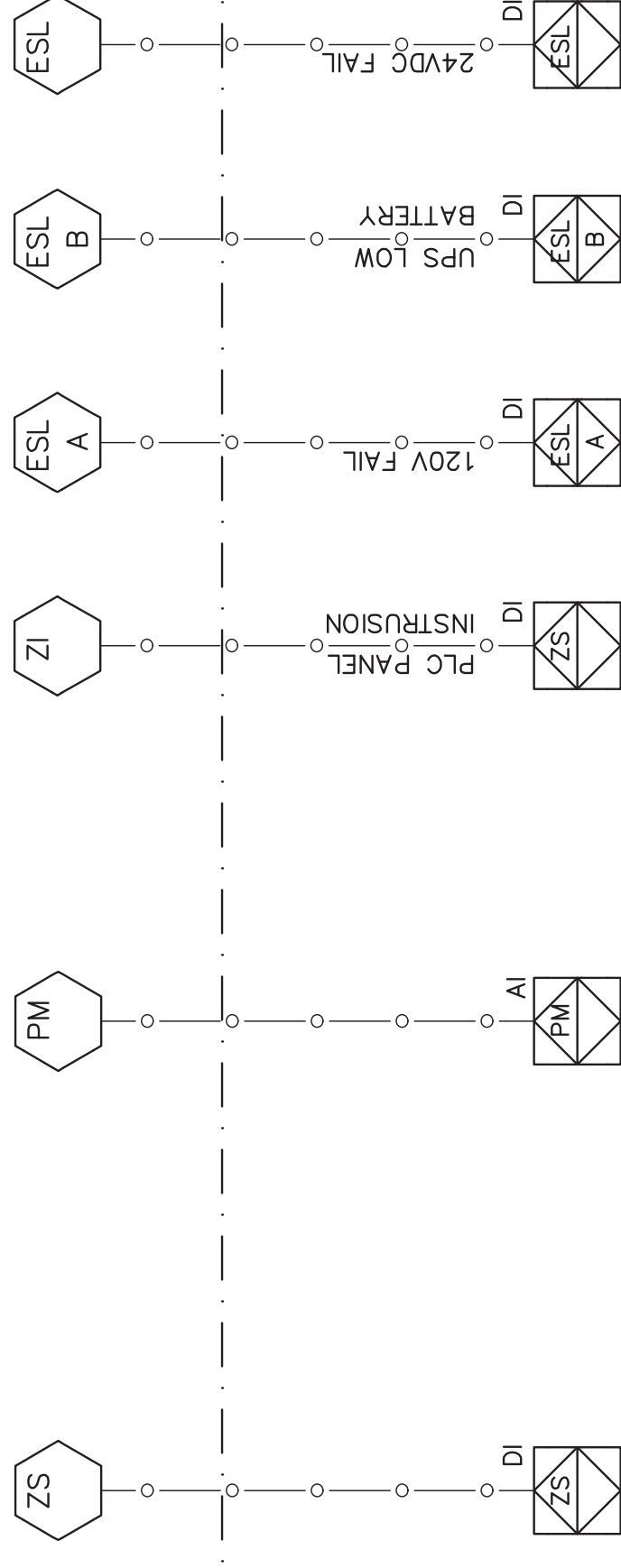
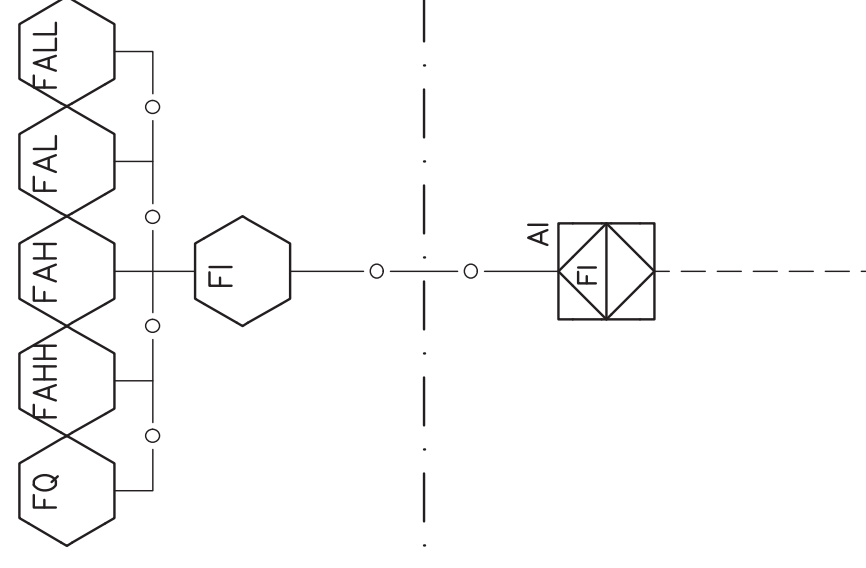
CONSTRUCTION NOTES:

- ① PRESSURE TRANSMITTERS SHALL BE 4-20MA OUTPUT, 0.1% ACCURACY, WITH CALIBRATION VALUE AND RANGE. 150 PPG FOR TRANSMITTERS SHALL BE ROSEMOUNT SMART 3051, WITH BLOCK AND BLEED MANIFOLD VALVE CONFIGURATION.
- ② PRESSURE SWITCHES SHALL BE SPDT, NEMA RATED WITH TWO SET POINTS ADJUSTED AND SET AT 300 PSI. THE SWITCHES SHALL BE MURPHY.

CASITAS MUNICIPAL WATER DISTRICT VENTURA-SANTA BARBARA COUNTIES INTERTIE		PROJECT NUMBER 22-451																								
RED MOUNTAIN PUMPING PLANT: INSTRUMENTATION P&ID		DRAWING NUMBER 30-I-001																								
<p style="font-size: 8px; margin: 0;">1500 S. Bascom Avenue San Jose, CA 95128 P: 800.544.7407 F: 800.544.3883</p>		SHEET NUMBER 35 OF 59																								
<p>DESIGNED: MA</p> <p>DRAWN: BA</p> <p>CHECKED: MA</p> <p>QA/QC: DN</p> <p>CONSTRUCTABILITY: PR/CG</p>	<p>PROJECT ENGINEER: _____</p> <p>R.C.E. EXP.</p> <p>CANNON PROJECT NO: 240431</p> <p>DATE _____</p>	<p>SCALE: THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.</p> <p>0 1/2 1 2</p>																								
<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>REV</th> <th>DATE</th> <th>BY</th> <th>DESCRIPTION</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>09/06/24</td> <td>BA</td> <td>ISSUED FOR REVIEW - 60% SUBMITTAL</td> </tr> <tr> <td>B</td> <td>11/06/24</td> <td>BA</td> <td>ISSUED FOR REVIEW - 90% SUBMITTAL</td> </tr> <tr> <td>C</td> <td>01/06/25</td> <td>BA</td> <td>ISSUED FOR REVIEW - 100% SUBMITTAL</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>			REV	DATE	BY	DESCRIPTION	A	09/06/24	BA	ISSUED FOR REVIEW - 60% SUBMITTAL	B	11/06/24	BA	ISSUED FOR REVIEW - 90% SUBMITTAL	C	01/06/25	BA	ISSUED FOR REVIEW - 100% SUBMITTAL								
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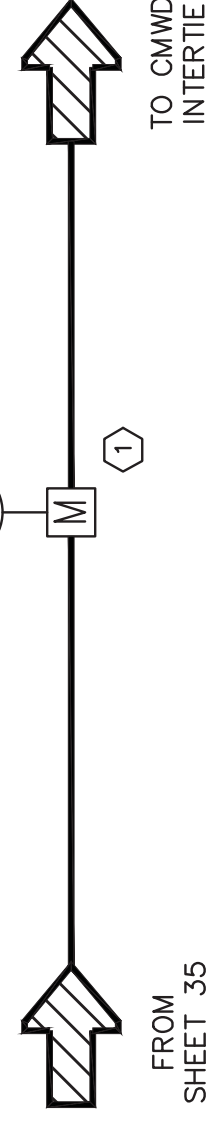
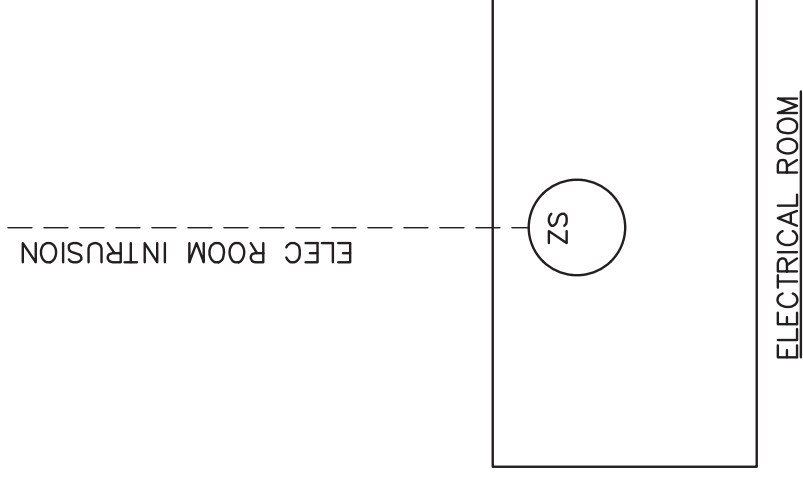


GENERAL NOTES:

1. REFER TO SYMBOLS, GENERAL NOTES AND LEGENDS ON SHEET 3.
2. P&ID SHOWS ONLY THE FUNCTIONAL SYSTEM. REFER TO CONTROL SCHEMATIC AND OWNER FURNISHED CONTROL NARRATIVE FOR COMPLETE LOGIC CONTROL SEQUENCE.

CONSTRUCTION NOTES:

- ① ELECTROMAGNETIC FLOW METER SHALL CONSIST OF A FLOW TUBE (FE) AND A CONVERTER (FIT). RANGE 0-XX GPM. THE CONVERTER SHALL BE MOUNTED REMOTELY TO ELECTRICAL PLAN FOR DETAILS. (REFER TO ELECTRICAL PLAN FOR DETAILS). AND INCLUDE THE INTEGRAL OUTPUTS FOR NETWORK COMMUNICATION OVER ETHERNET ALLEN BRADLEY ETHERNET/IP (NO EQUAL), 4-20 MA FLOW SIGNAL AND THE TOTALIZATION SIGNAL. (REFER TO ELECTRICAL PLAN FOR DETAILS). MICROMETER ULTRA MAG WITH PROCOMM SIGNAL CONVERTER.
- ② LOCATED AT MAIN SWITCHBOARD. REFER TO ELECTRICAL PLAN FOR MORE DETAILS.



REV	DATE	BY	DESCRIPTION
A	09/06/24	BA	ISSUED FOR REVIEW - 60% SUBMITTAL
B	11/06/24	BA	ISSUED FOR REVIEW - 90% SUBMITTAL
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DESIGNED:	MA
DRAWN:	BA
CHECKED:	MA
QA/QC:	DN
CONSTRUCTABILITY:	PR/CG

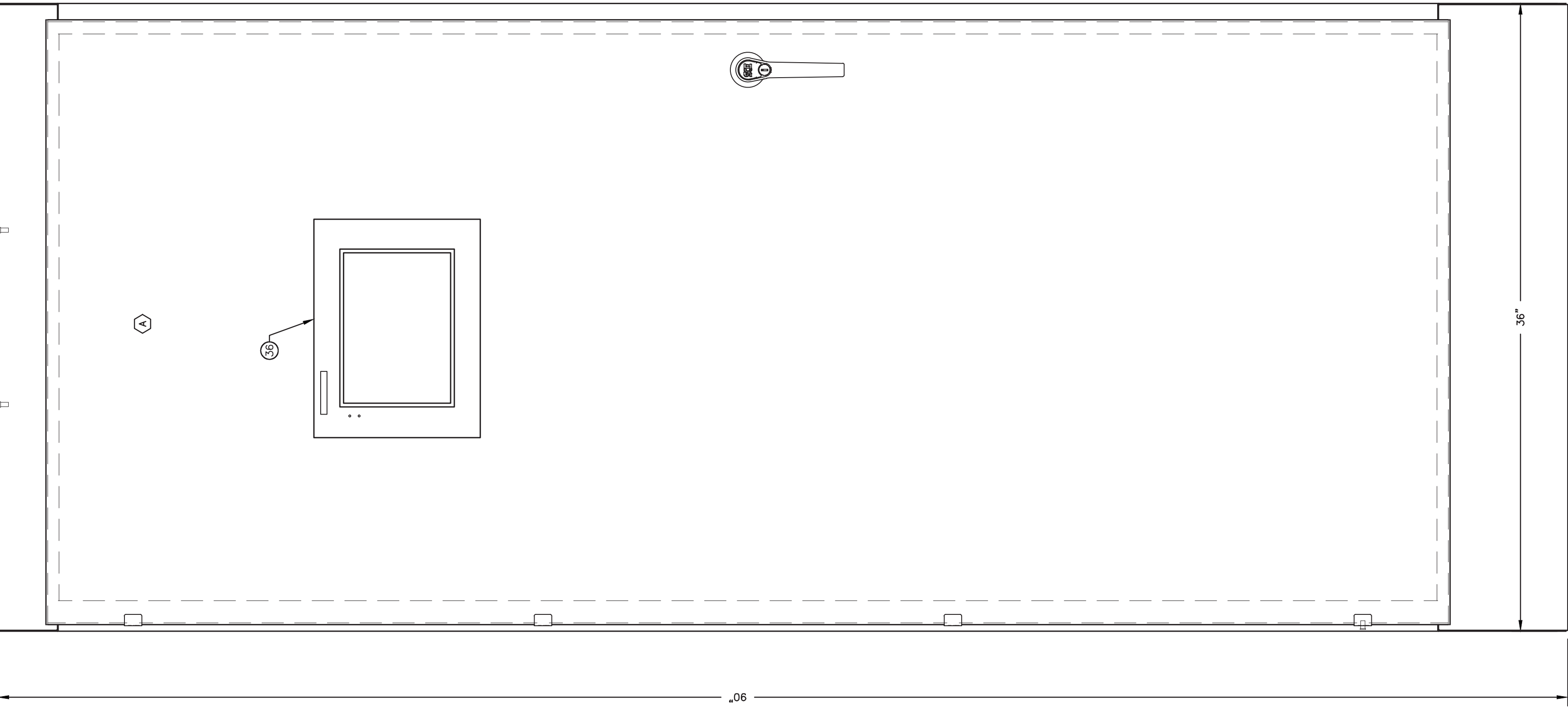
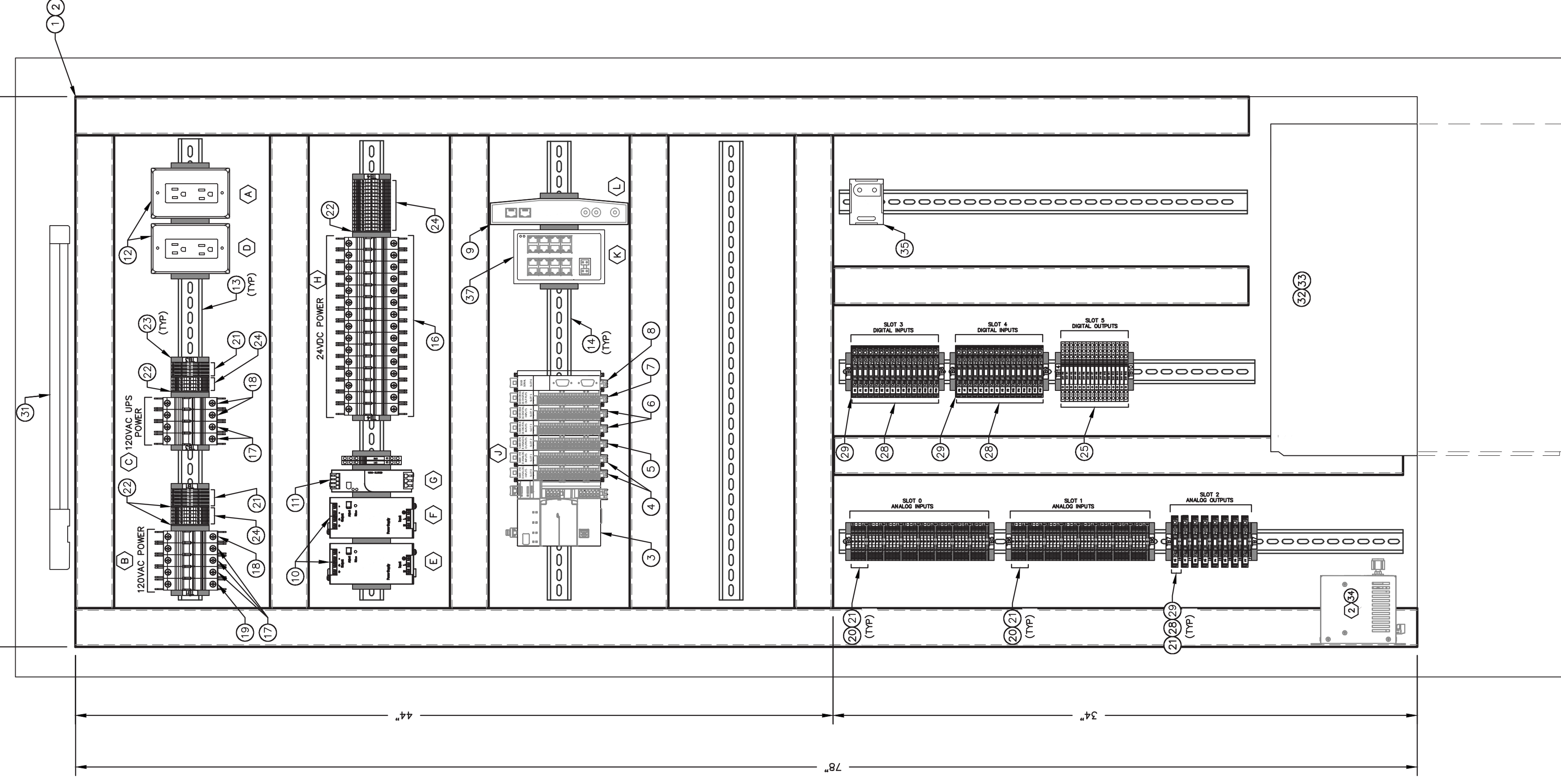
PROJECT ENGINEER: R.C.E.
 PROJECT NO: 240431
 CANNON PROJECT NO: 240431
 DATE




0 1/2 1 2
 THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.
 SCALE:

CASITAS MUNICIPAL WATER DISTRICT
 VENTURA-SANTA BARBARA COUNTIES INTERTIE
RED MOUNTAIN PUMPING PLANT:
INSTRUMENTATION
P&ID

PROJECT NUMBER: **22-451**
 DRAWING NUMBER: **30-I-002**
 SHEET NUMBER: **36** OF **59**



GENERAL NOTES:
 1. REFER TO GENERAL NOTES AND ELECTRICAL SYMBOLS ON SHEET 3.
 2. REFER TO BILL ON MATERIALS ON SHEET 3B.

PROJECT NUMBER 22-451	CASITAS MUNICIPAL WATER DISTRICT VENTURA-SANTA BARBARA COUNTIES INTERTIE	PROJECT ENGINEER: R.C.E.	CANNON PROJECT NO. 240431	DATE	PROJECT ENGINEER: R.C.E.	EXP.	CONSTRUCTIBILITY: PR/CG	DESIGNED: MA DRAWN: BA CHECKED: MA QACC: DN	 <small>1800 S. Bascom Ave. San Jose, CA 95128 P. 855.544.7407 F. 855.544.3863</small>	SCALE: THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.	SHEET NUMBER 37 OF 59

REV	DATE	BY	DESCRIPTION
A	09/06/24	BA	ISSUED FOR REVIEW - 60% SUBMITTAL
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C	01/06/25	BA	ISSUED FOR REVIEW - 100% SUBMITTAL



DESIGNED:	MA
DRAWN:	BA
CHECKED:	MA
QACC:	DN
CONSTRUCTIBILITY:	PR/CG

GENERAL NOTES:

- REFER TO GENERAL NOTES AND ELECTRICAL SYMBOLS ON SHEET 3.

PANEL BILL OF MATERIALS

ITEM #	DESCRIPTION	QTY	PART NUMBER	MANUFACTURER
1	ENCLOSURE	1	SCE-5032QPSD	SCE
2	BACK PANEL	1	SCE50P-36P1	SCE
3	COMPACTLOGIX 5380 PROCESSOR	1	5069	ALLEN BRADLEY
4	COMPACTLOGIX 5380 ANALOG INPUT	2	5069-01R	ALLEN BRADLEY
5	COMPACTLOGIX 5380 ANALOG OUTPUT	1	5069-01R	ALLEN BRADLEY
6	COMPACTLOGIX 5380 16 CHANNEL DIGITAL INPUT	2	5069-0B16	ALLEN BRADLEY
7	COMPACTLOGIX 5380 16 CHANNEL DIGITAL OUTPUT	1	5069-0B16	ALLEN BRADLEY
8	COMPACT 5000 SERIAL INTERFACE MODULE	1	5069-SERIAL	ALLEN BRADLEY
9	RADIO MDS SD4-CES	1	SD4MDS-CESNNSSN	GE ENERGY
10	24VDC POWER SUPPLY	2	1606-XLE240EN	ALLEN BRADLEY
11	24VDC REDUNDANCY MODULE	1	1606-XLSRED	ALLEN BRADLEY
12	15A RECEPTACLE	2	1492-REC15	HOFFMAN
13	DIN RAIL	3	199-DRI	ALLEN BRADLEY
14	2" WIREWAY, 4" TALL, 6 FT LONG	4	FX4LG6 & C2LG6	PANDUIT
15	DOOR SWITCH (NOT SHOWN ON ELEVATION)	1	ALFSWD	HOFFMAN
16	CIRCUIT BREAKER, 2A	14	1489-MIC020	ALLEN BRADLEY
17	CIRCUIT BREAKER, 5A	5	1489-MIC050	ALLEN BRADLEY
18	CIRCUIT BREAKER, 10A	3	1489-MIC100	ALLEN BRADLEY
19	CIRCUIT BREAKER, 20A	1	1489-MIC200	ALLEN BRADLEY
20	TERMINAL BLOCK, IEC I-CIRCUIT, FEED THROUGH - GREY	64	1492-IJ3	ALLEN BRADLEY
21	TERMINAL BLOCK, IEC I-CIRCUIT, GROUND, GREEN/YELLOW	33	1492-IJ3	ALLEN BRADLEY
22	TERMINAL BLOCK, END SECTION	5	1492-EAJ35	ALLEN BRADLEY
23	TERMINAL BLOCK, END BARRIERS	32	1492-EBJ3	ALLEN BRADLEY
24	TERMINAL BLOCK, IEC I-CIRCUIT, FEED THROUGH - WHITE	24	1492-IJW	ALLEN BRADLEY
25	24V ELECTROMECHANICAL RELAY OUTPUT, SPDT	18	700-H1J24	ALLEN BRADLEY
26	FUSE BLOCK, 1/4" x 1 1/4" TYPE FUSE	8	1492-H5	ALLEN BRADLEY
27	FUSE BLOCK, END CAP	8	1492-EBDFB	ALLEN BRADLEY
28	FUSE BLOCK, 1/4" x 1 1/4" TYPE FUSE, TWO LEVEL	48	1492-ID3FB	ALLEN BRADLEY
29	FUSE BLOCK, END CAP	18	1492-N37	ALLEN BRADLEY
30	INTRUSION SWITCH (NOT SHOWN ON PLANS)	1	ALFSWD	HOFFMAN
31	120V 18" PANEL LIGHT	1	LF20V18	HOFFMAN
32	UPS	1	SMX1500RMJL0NC	APC
33	UPS BATTERY PACK	1	SMX888MBP2U	APC
34	PANEL HEATER	1	DAH 100 JA	HOFFMAN
35	CONTROL PANEL EXHAUST FAN THERMOSTAT CONTROLLER	1	THERM146F	HOFFMAN
36	I/O OPERATOR INTERFACE TERMINAL, CAMORE MODEL	1	EXT-IOCL	AUTOMATION DIRECT
37	ETHERNET SWITCH, STRATIX 2000	1	1783-US16T	ALLEN BRADLEY
38				
39				
40				

NAMEPLATE SCHEDULE

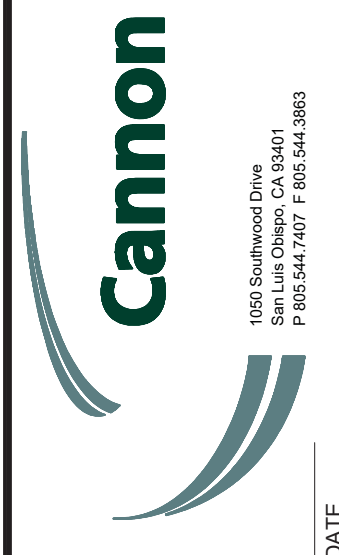
ITEM	SIZE	LETTER HEIGHT	DESCRIPTION	LABEL TYPE	LOCATION
A	AS REQD	1/2"	PLC PANEL	PHENOLIC	EXTERIOR - DOOR
B	AS REQD	3/16"	120VAC POWER	LABEL MAKER	INTERIOR - NEXT TO COMPONENT
C	AS REQD	3/16"	120VAC UPS POWER	LABEL MAKER	INTERIOR - NEXT TO COMPONENT
D	AS REQD	3/16"	RECEPTACLE (FOR AUTOMATION COMPUTER ONLY)	LABEL MAKER	INTERIOR - NEXT TO COMPONENT
E	AS REQD	3/16"	24VDC POWER SUPPLY	LABEL MAKER	INTERIOR - NEXT TO COMPONENT
F	AS REQD	3/16"	24VDC POWER SUPPLY REDUNDANT	LABEL MAKER	INTERIOR - NEXT TO COMPONENT
G	AS REQD	3/16"	24VDC REDUNDANCY MODULE	LABEL MAKER	INTERIOR - NEXT TO COMPONENT
H	AS REQD	3/16"	24VDC POWER	LABEL MAKER	INTERIOR - NEXT TO COMPONENT
J	AS REQD	3/16"	PLC	LABEL MAKER	INTERIOR - NEXT TO COMPONENT
K	AS REQD	3/16"	ETHERNET SWITCH	LABEL MAKER	INTERIOR - NEXT TO COMPONENT
L	AS REQD	3/16"	RADIO	LABEL MAKER	INTERIOR - NEXT TO COMPONENT
M	AS REQD	3/16"	UPS	LABEL MAKER	INTERIOR - NEXT TO COMPONENT



REV	DATE	BY	DESCRIPTION
A	09/06/24	BA	ISSUED FOR REVIEW - 60% SUBMITTAL
B	11/06/24	BA	ISSUED FOR REVIEW - 90% SUBMITTAL
C	01/06/25	BA	ISSUED FOR REVIEW - 100% SUBMITTAL

DESIGNED:	MA
DRAWN:	BA
CHECKED:	MA
QA/QC:	DN
CONSTRUCTABILITY:	PR/CG

PROJECT ENGINEER: CANNON PROJECT NO: 240431
R.C.E. EXP.



THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.



CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERTIE

RED MOUNTAIN PUMPING PLANT:
INSTRUMENTATION
PANEL LAYOUT - BOM

PROJECT NUMBER
22-451

DRAWING NUMBER
30-I-004

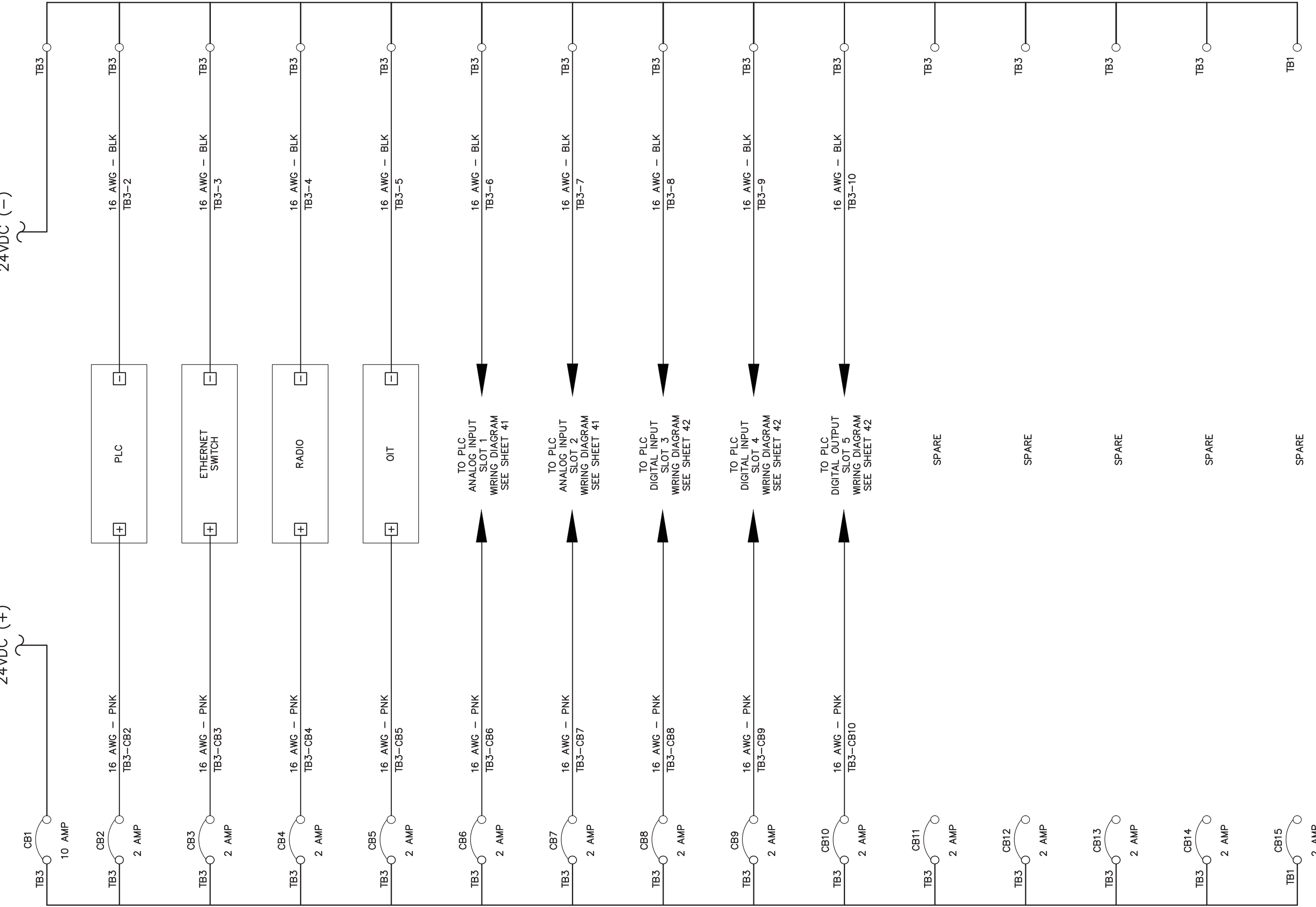
SHEET NUMBER
38 OF 59

GENERAL NOTES

- REFER TO SYMBOLS, GENERAL NOTES AND LEGEND ON SHEET 3.

CONTINUED FROM BELOW LEFT
24VDC (-)

CONTINUED FROM BELOW LEFT
24VDC (+)



24VDC POWER DISTRIBUTION
SCALE: NO SCALE

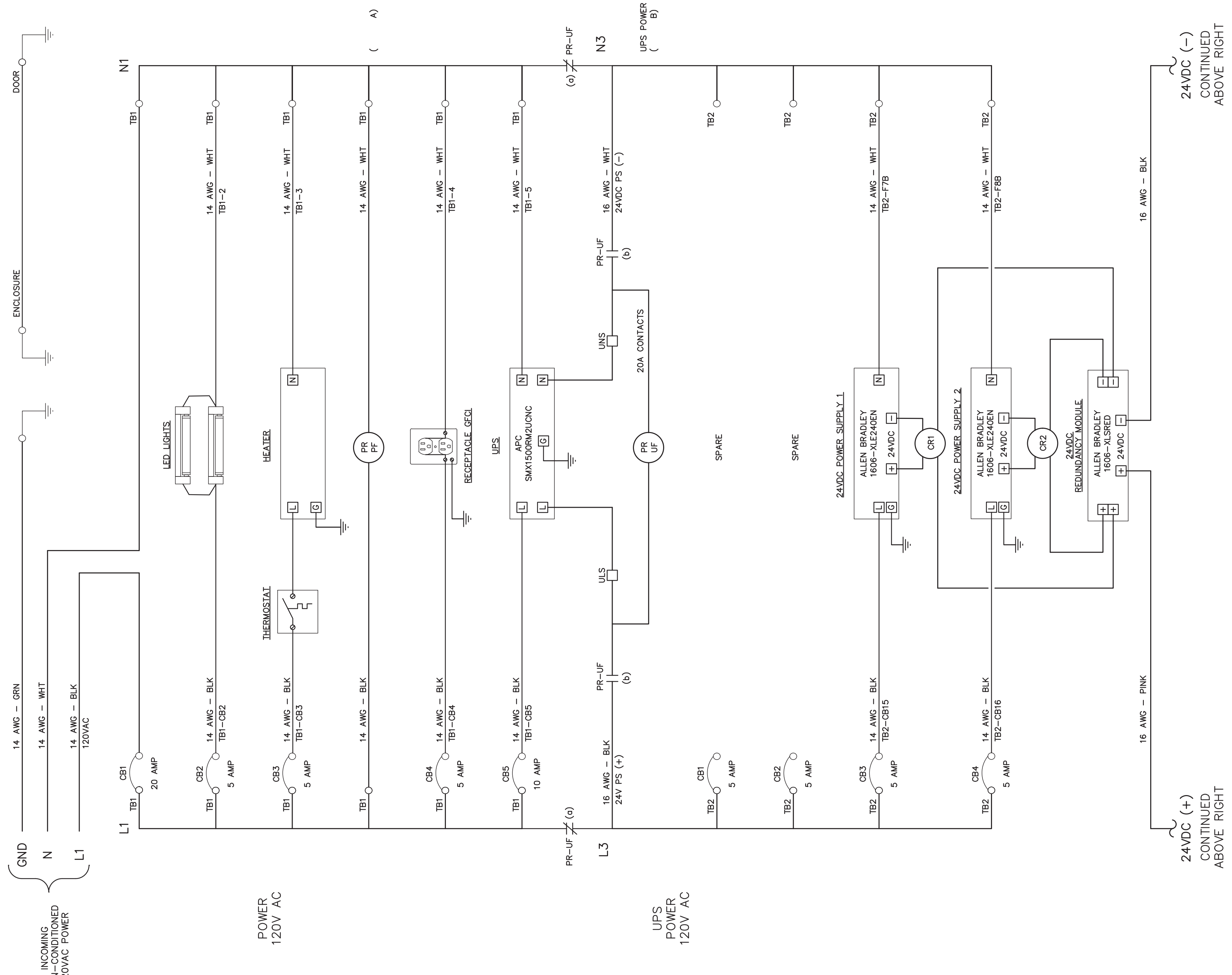


SCALE:

CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERTIE

**RED MOUNTAIN PUMPING PLANT:
INSTRUMENTATION
PANEL WIRING DIAGRAM**

PROJECT NUMBER: **22-451**
DRAWING NUMBER: **30-I-005**
SHEET NUMBER: **39** OF **59**



120VAC POWER DISTRIBUTION
SCALE: NO SCALE

24VDC (-)
CONTINUED ABOVE RIGHT

24VDC (+)
CONTINUED ABOVE RIGHT

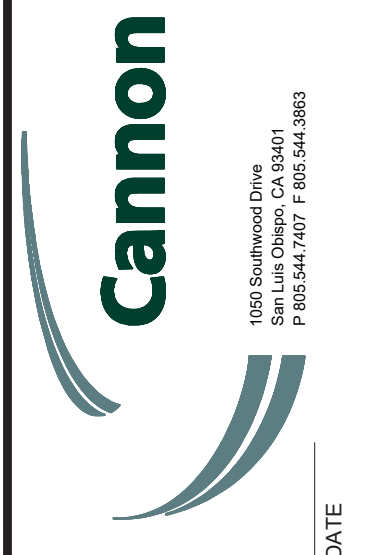
REV	DATE	BY	DESCRIPTION
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B	11/06/24	BA	ISSUED FOR REVIEW - 90% SUBMITTAL
C	01/06/25	BA	ISSUED FOR REVIEW - 100% SUBMITTAL



DESIGNED:	MA
DRAWN:	BA
CHECKED:	MA
QA/QC:	DN
CONSTRUCTABILITY:	PR/CG

PROJECT ENGINEER: CANNON PROJECT NO: 240431
R.C.E. EXP.

DATE



160 S. Main Street
Santa Ana, CA 92701
P: 951.544.7407 F: 951.544.3883

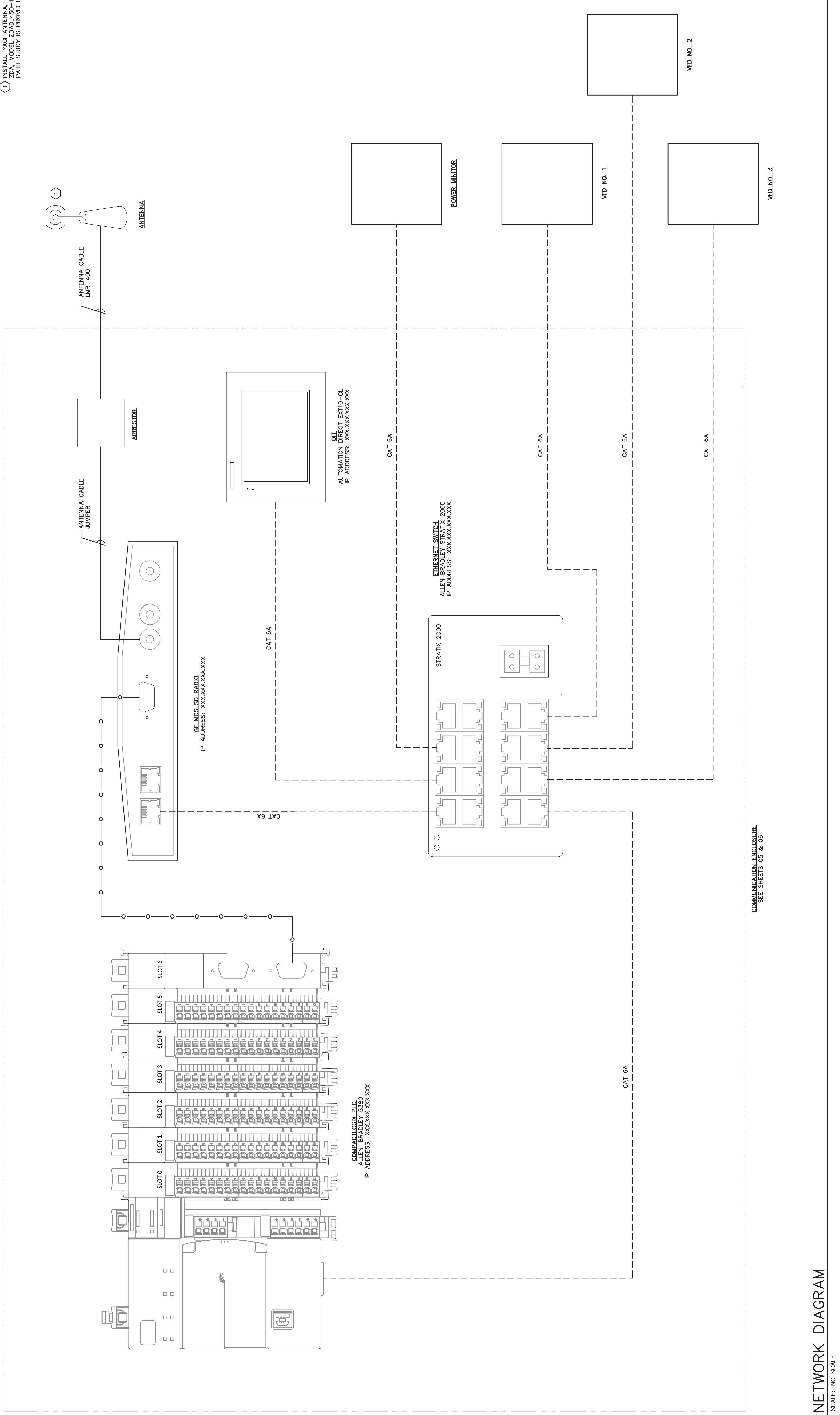
SCALE:

GENERAL NOTES

1. REFER TO SYMBOLS, GENERAL NOTES AND LEGEND ON SHEET 3.

CONSTRUCTION NOTES

1. INSTALL YAG ANTENNA, 450-470MHZ BY THE CITY OF CASITAS. THE ANTENNA PATH STUDY IS PROVIDED BY THE OWNER.



NETWORK DIAGRAM

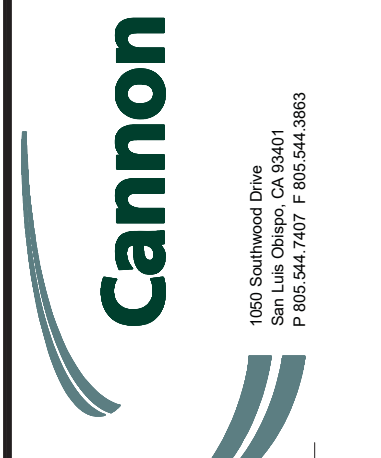
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REV	DATE	BY	DESCRIPTION
A	09/06/24	BA	ISSUED FOR REVIEW - 60% SUBMITTAL
B	11/08/24	BA	ISSUED FOR REVIEW - 90% SUBMITTAL
C	01/08/25	BA	ISSUED FOR REVIEW - 100% SUBMITTAL

DESIGNED:	MA
DRAWN:	BA
CHECKED:	MA
DATE:	DN
CONSTRUCTABILITY:	PR/CG



PROJECT ENGINEER: _____ DATE _____
 R.C.E. EXP. _____
 CANNON PROJECT NO: 240431



0 1/2 1 2
 THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.
 SCALE:

CASITAS MUNICIPAL WATER DISTRICT
 VENTURA-SANTA BARBARA COUNTIES INTERTIE

RED MOUNTAIN PUMPING PLANT:
INSTRUMENTATION
NETWORK DIAGRAM

PROJECT NUMBER: **22-451**
 DRAWING NUMBER: **30-I-006**
 SHEET NUMBER: **40** OF **59**

GENERAL NOTES

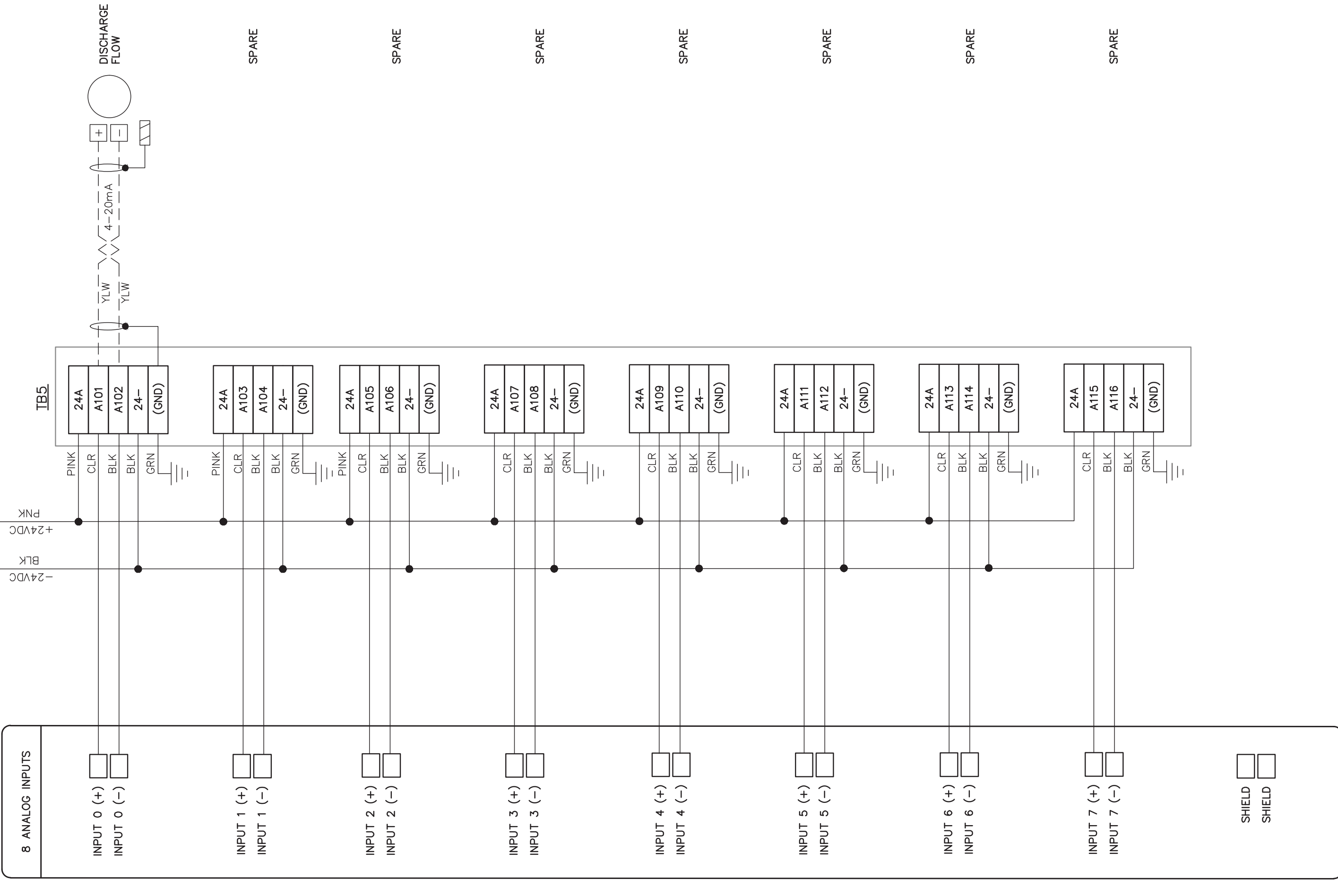
1. REFER TO SYMBOLS, GENERAL NOTES AND LEGEND ON SHEET 3.

24V POWER
SEE SHEET 39

IB3

6

SLOT 0
5069-IF8

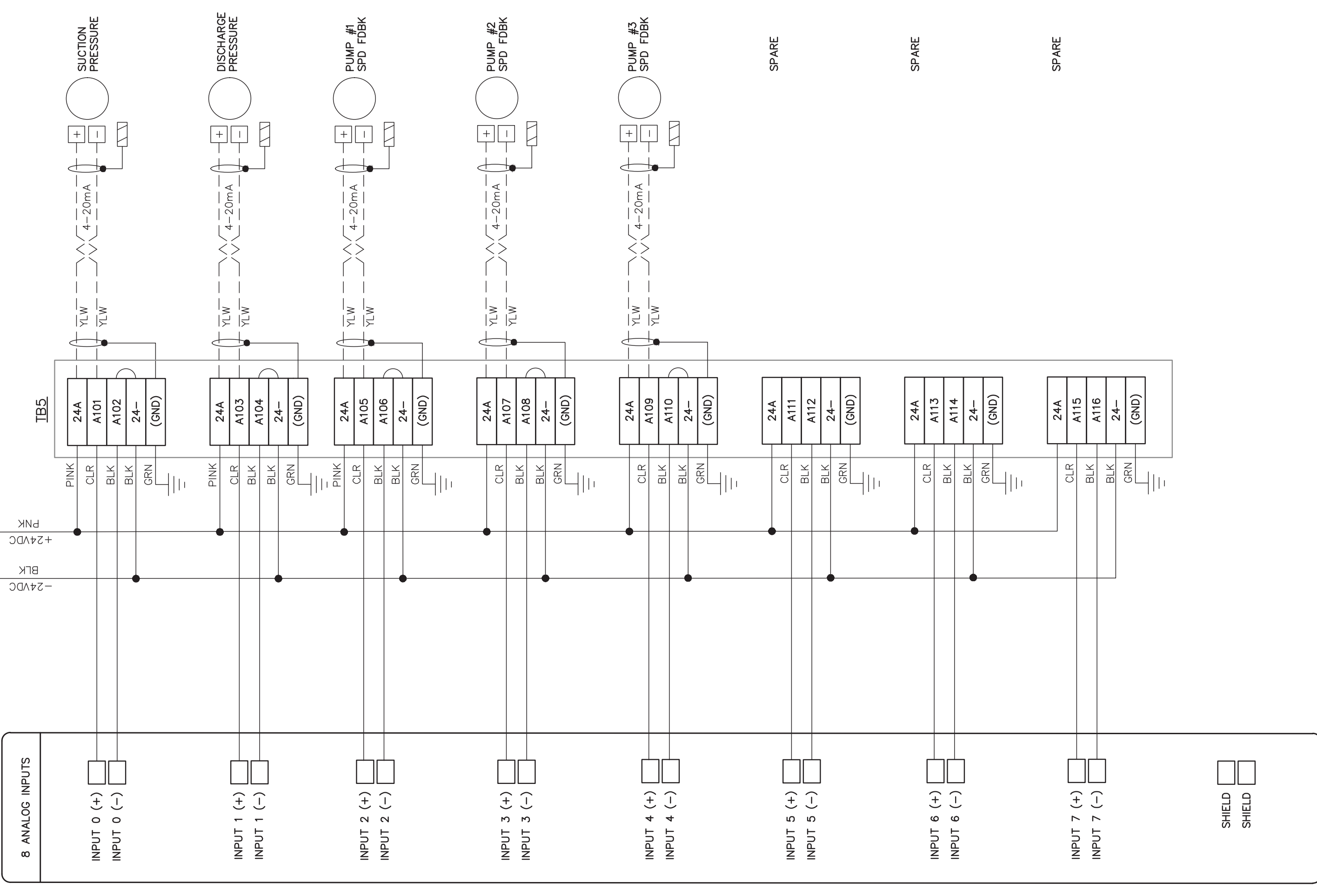


24V POWER
SEE SHEET 39

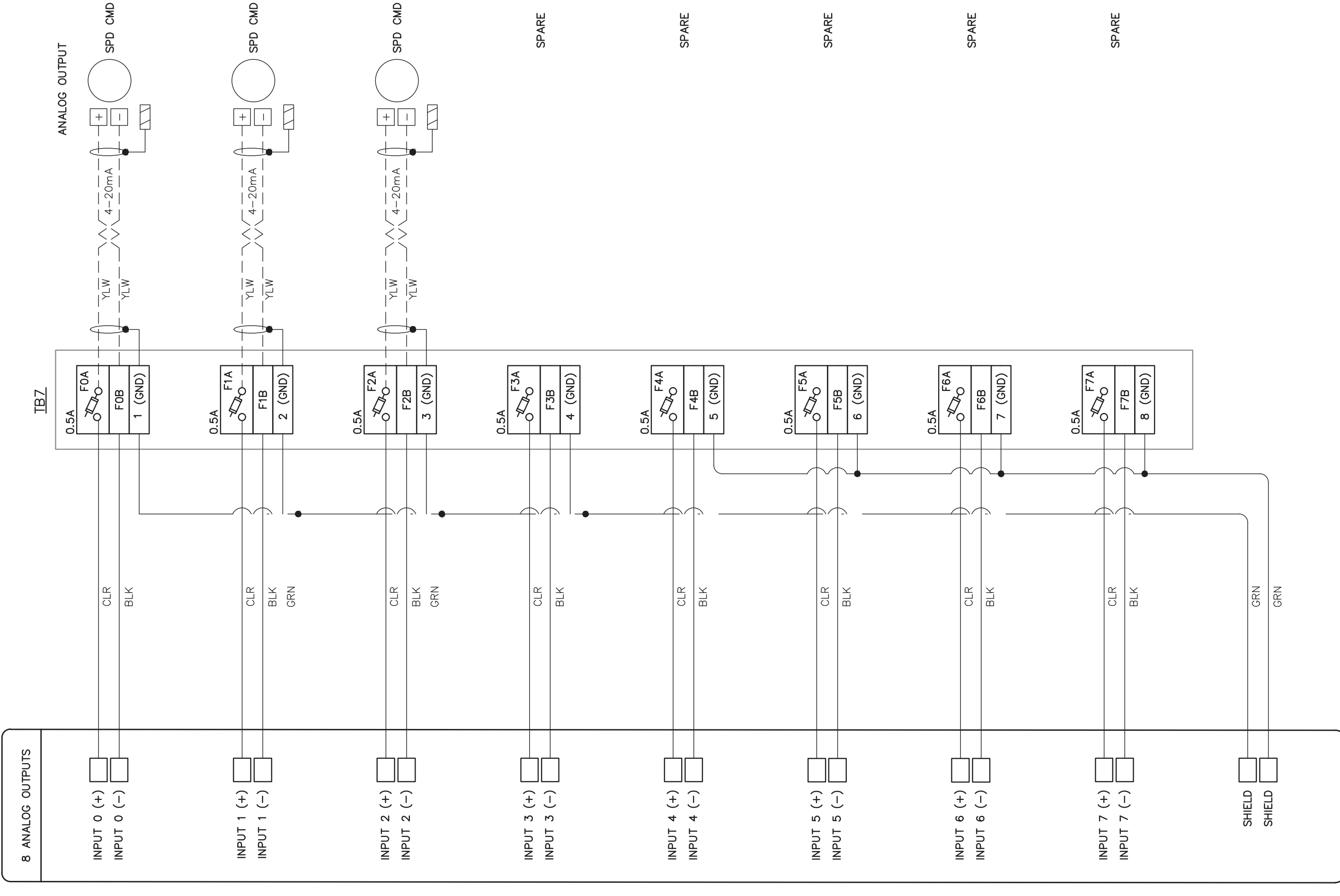
IB3

7

SLOT 1
5069-IF8



SLOT 2
5069-OF8

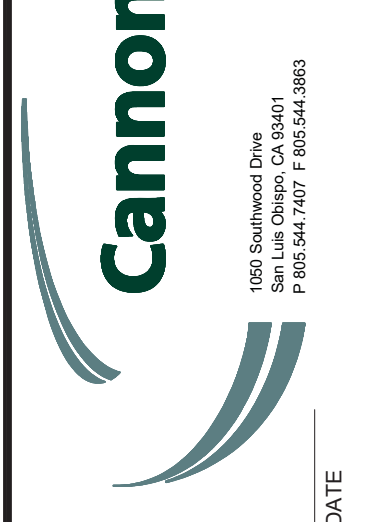


REV	DATE	BY	DESCRIPTION
A	09/06/24	BA	ISSUED FOR REVIEW - 60% SUBMITTAL
B	11/06/24	BA	ISSUED FOR REVIEW - 90% SUBMITTAL
C	01/06/25	BA	ISSUED FOR REVIEW - 100% SUBMITTAL



DESIGNED:	MA
DRAWN:	BA
CHECKED:	MA
QA/QC:	DN
CONSTRUCTABILITY:	PR/CG

PROJECT ENGINEER: R.C.E.
EXP.
CANNON PROJECT NO: 240431
DATE



SCALE:
THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.
0 1/2 1 2

CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERIE
**RED MOUNTAIN PUMPING PLANT:
INSTRUMENTATION
ANALOG PLC WIRING DIAGRAMS**

PROJECT NUMBER: 22-451
DRAWING NUMBER: 30-I-007
SHEET NUMBER: 41 OF 59

GENERAL NOTES

1. REFER TO SYMBOLS, GENERAL NOTES AND LEGEND ON SHEET 3.

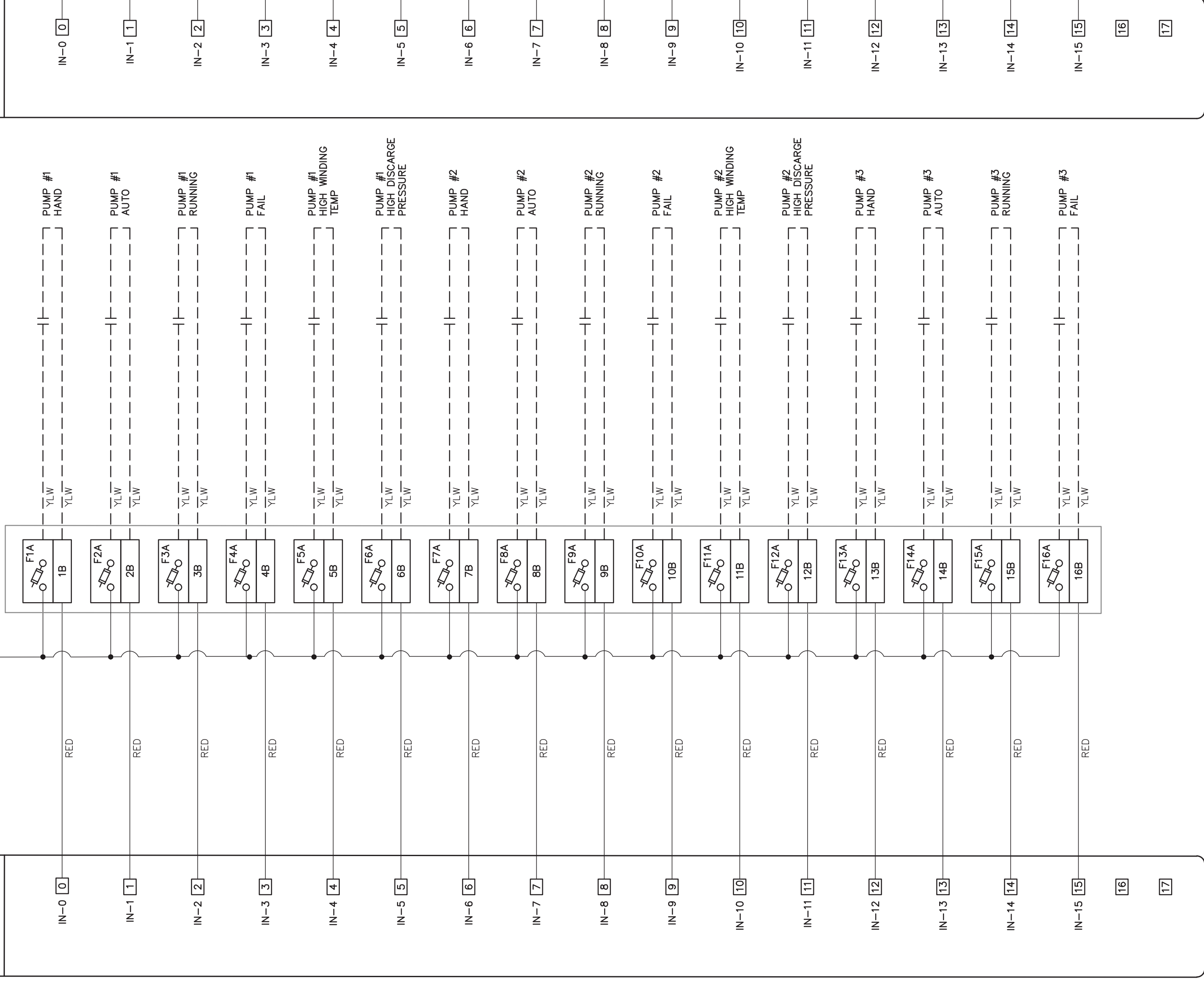
24V POWER
SEE SHEET 39

IB3

CB8
+24VDC
PNK

SLOT 3
5069-IB16

16 DIGITAL INPUTS



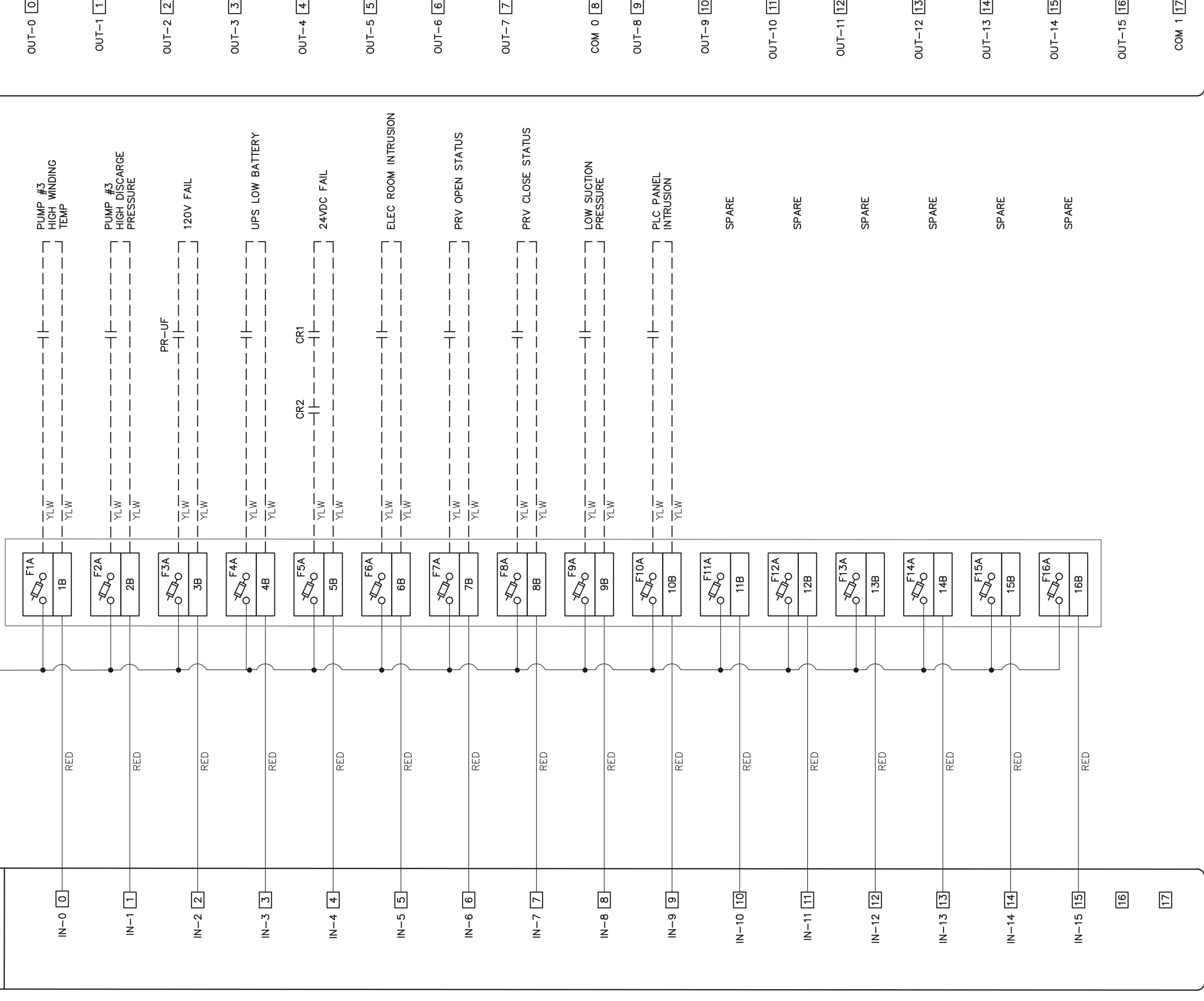
24V POWER
SEE SHEET 39

IB3

CB10
-24VDC
BLK

SLOT 5
5069-OB16

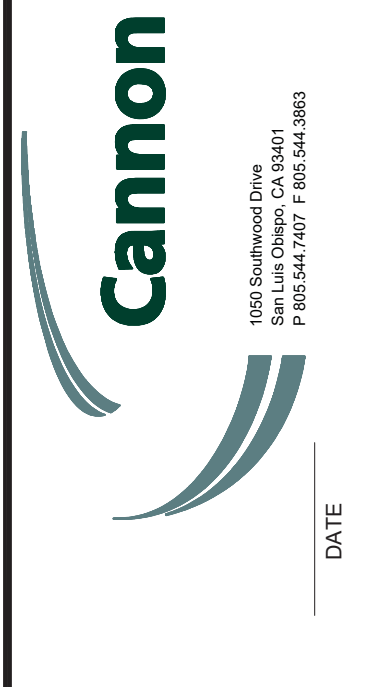
16 RELAY OUTPUTS



REV	DATE	BY	DESCRIPTION
A	09/06/24	BA	ISSUED FOR REVIEW - 60% SUBMITTAL
B	11/06/24	BA	ISSUED FOR REVIEW - 90% SUBMITTAL
C	01/06/25	BA	ISSUED FOR REVIEW - 100% SUBMITTAL

DESIGNED:	MA
DRAWN:	BA
CHECKED:	MA
QA/QC:	DN
CONSTRUCTABILITY:	PR/CG

PROJECT ENGINEER:	CANNON PROJECT NO: 240431
R.C.E.	EXP.



SCALE:	0 1/2 1 2
THIS BAR IS 2 INCHES AT FULL SCALE. IF NOT 2 INCHES, THEN SCALE ACCORDINGLY.	

CASITAS MUNICIPAL WATER DISTRICT
VENTURA-SANTA BARBARA COUNTIES INTERTIE

**RED MOUNTAIN PUMPING PLANT:
INSTRUMENTATION
DIGITAL PLC WIRING DIAGRAMS**

PROJECT NUMBER	22-451
DRAWING NUMBER	30-I-008
SHEET NUMBER	42
OF	59

APPENDIX C

SECTION 01 33 00

SUBMITTALS

1.01 SUBMITTAL PROCEDURES

- A. All submittals will be provided electronically to the Owner via Procore Construction Management Software (Procore) and will be returned similarly to the Contractor. Follow the procedures described below or in other paragraphs in this Section.
 - 1. Designation of Superintendent: Include name, address, home telephone number and a brief resume.
 - 2. List of Subcontractors and Major Suppliers: Include address, telephone number and name of responsible party.
 - 3. Schedule of Values, in a form acceptable to the Owner: See Section 01 11 00.
 - 4. Subcontractors'/Suppliers'/Manufacturers' Affidavits. Submit items specified in the Technical Specifications.
 - 5. Environmental Protection Plan. Submit for information.

- B. Submittals shall contain:
 - 1. Date of the submittal and date(s) of any previous submission(s).
 - 2. Project Title and Specification Number
 - 3. Contractor identification
 - 4. Names of:
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
 - 5. Identification of the product and/or material including Specification Section number and Schedule (A or B), page, and paragraph. Identification of Drawing Sheet number.
 - 6. Field dimensions, clearly identified as such.
 - 7. Relation to adjacent or critical features of the Work or materials.
 - 8. Applicable standards, such as ASTM.
 - 9. Identification of deviations from the Contract Documents
 - 10. Identification of revisions from previous submittals.

- C. Each submittal shall be accompanied by a transmittal form furnished by the Owner.

- D. Submittals shall be combined by Specification Section. Do not combine Submittals for different specification sections under the same transmittal.

- E. Use the Submittal Identification System as follows:
 - 1. The Submittal Number shall be a separate and unique number and consist of a three-part, 10-character number assigned by the Contractor as follows:
 - (a) The first part shall be the letter A or B identifying the Project Schedule.
 - (b) The second part shall be six characters identifying the Specification Section number.
 - (c) The third part shall be three digits (the numbers 001 to 999) to number each separate and unique submittal under each Specification Section.

(d) Separate each section with a dash.

2. An example for a Submittal for Project B, initial submission under Section 03 30 00 Concrete is B-033000-001.

1.02 SCHEDULE OF SUBMITTALS

- A. Within 30 days after the Notice to Proceed, provide a Schedule of Submittals showing the date by which each submittal required for Product Review or Product Information will be made. Identify the items that will be included in each submittal (see paragraph 1.05 of this Section) by listing the item or group of items and the Specification Section and paragraph number under which they are specified. Indicate whether the submittal is required for Product Review/Action including Product Review of Proposed Equivalents, Shop Drawings, Product Data or Samples, or Product Information only.

1.03 PLAN OF OPERATIONS

- A. Before beginning site work, submit a plan showing Contractor's intended use of the site. Show location for Contractor's and Subcontractor's trailer and employee parking. Show location of Contractor's and Subcontractor's work areas and storage areas.

1.04 CONSTRUCTION SCHEDULE

- A. Refer to Section 01 31 10 Construction Progress Documentation.

1.05 SHOP DRAWING, PRODUCT DATA AND SAMPLES SUBMITTED FOR PRODUCT REVIEW

- A. This paragraph covers submittal of Shop Drawings, Product Data and Samples required for the Engineer's review referred to as Product Review or Product Action submittals in the Technical Specifications (Divisions 2 through 17). Submittals required for information only are referred to as Product Information submittals in the Technical Specifications and are covered in paragraph 1.07 of this Section.
- B. Number and type of submittals:
1. Shop Drawings: Submit electronically to the Engineer through Procore. Engineer shall return marked submittal electronically to Contractor. The Contractor shall distribute to its superintendent, subcontractors and suppliers.
 2. Product Data: Engineer shall return marked submittal electronically to Contractor. The Contractor shall distribute to its superintendent, subcontractors and suppliers.
 3. Samples: Submit three labeled samples or three sets of samples of manufacturers full range of colors and finishes. Comply with requirements in Technical Specification Sections. One sample will be returned to Contractor.
- C. The Contractor shall make all Product Review submittals early enough to allow adequate time for the Engineer's review, for manufacture and for delivery at the construction site without causing delay to the Work. Submittals shall be made early enough to allow for unforeseen delays such as:

1. Failure to obtain Favorable Review because of inadequate or incomplete submittal or because the item submitted does not meet the requirements of the Contract Documents.
 2. Delays in manufacture.
 3. Delays in delivery.
- D. Content of Submittals:
1. Each submittal shall include all of the items and material required for a complete assembly, system or Specification Section.
 2. Submittals shall contain all of the physical, technical and performance data required by the specifications or necessary to demonstrate conclusively that the items comply with the requirements of the Contract Documents.
 3. Include information on characteristics of electrical or utility service required and verification that requirements have been coordinated with services provided by the Work and by other interconnected elements of the Work.
 4. Provide verification that the physical characteristics of items submitted, including size, configuration, clearances, mounting points, utility connection points and service access points, are suitable for the space provided and are compatible with other interrelated items that are existing or have or will be submitted.
 5. Label each Product Data Submittal, Shop Drawing and Sample with the information required in paragraph 1.01A and 1.01B of this Section. Highlight or mark every page of every copy of all Product Data submittals to show the specific items being submitted and all options included or choices offered.
 6. Additional requirements for Product Review submittals are contained in the Technical Specification sections.
 7. Designation of work as "NIC" or "by others," shown on Shop Drawings, shall mean that the work will be the responsibility of the Contractor rather than the subcontractor or supplier who has prepared the Shop Drawings.
- E. Compatibility of Equipment and Material: Verify that items contained in the same or in different submittals meet the requirements in the paragraph titled "Material and Equipment" in Section 01 31 00 Coordination and Project Requirements especially the subparagraphs titled "Compatibility of Equipment and Material."
- F. The Contractor shall review and stamp submittals prepared by the Contractor or by Subcontractors or suppliers prior to submitting them to the Engineer certifying Contractor's review.
- G. Submittals that contain deviations from the requirements of the Contract Documents shall be accompanied by a separate letter explaining the deviations. The Contractor's letter shall:
1. Cite the specific Contract requirement including the Specification Section and paragraph number for which approval of a deviation is sought.
 2. Describe the proposed alternate material, item or construction and explain its advantages and/or disadvantages to the Owner.
 3. State the reduction in Contract Price if any that is offered to the Owner.
- H. Engineer's Review Procedure and Meaning:
1. The Engineer will stamp and mark each Product Review submittal prior to returning it to the Contractor. The stamp will indicate whether or not the review was favorable and what action is required of the Contractor. Review categories

"No Exceptions Taken" and "Make Corrections Noted" both indicate Favorable Review.

2. The Engineer's Favorable Review is contingent on:
 - a. The compatibility of items included in a submittal with other related or interdependent items included in previous or future submittals.
 - b. Future submittal of items related to or required to be part of this submittal that were not included with this submittal.
 3. Favorable Review of a submittal does not constitute approval or deletion of items required as part of the submittal but not included with the submittal. Favorable Review of items included in the submittal does not constitute deletion of specified features, options, or accessories that were not included in the submittal.
 4. The action required by the Contractor for each category of review is as follows:
 - a. **NO EXCEPTIONS TAKEN**. NO RESUBMITTAL REQUIRED.
 - b. **MAKE CORRECTIONS NOTED**:
 - (1) **NO RESUBMITTAL REQUIRED**. The Contractor shall make corrections noted prior to manufacture.
 - (2) **PARTIAL RESUBMITTALS REQUIRED**. The Contractor shall submit related accessory or optional items as noted which are required but were not included with the submittal and/or shall resubmit unsatisfactory portions or attributes of items as noted. The Contractor may proceed to manufacture those portions of the submittal that will be unaffected by required resubmittals.
 - c. **AMEND AND RESUBMIT**. The Contractor shall amend and resubmit the submittal as noted or required to comply with the Contract Documents.
 - d. **REJECTED – RESUBMIT**. The item submitted does not comply with the Contract Documents in a major way. Resubmit items that comply with the requirements of the Contract Documents.
 5. The letter of transmittal accompanying the returned Product Review submittal may contain numbered notes. Marking a corresponding number on a Shop Drawing or Product Data submittal shall have the same effect as applying the entire note to the submittal.
- I. Re-submittals that contain changes not requested by the Engineer on the previous submittal shall be accompanied by a letter explaining the change.
 - J. Favorable Review Required Prior to Proceeding: Do not proceed with manufacture, fabrication, delivery or installation of items prior to obtaining the Engineer's Favorable Review of Product Review submittals.
 - K. Intent and Limitation on Engineer's Review:
 1. The Contractor has primary responsibility for submitting and providing work that complies with the requirements of the Contract Documents. That responsibility cannot be delegated in whole or in part to subcontractors or suppliers. Neither the Engineer's Favorable Review nor the Engineer's failure to notice or comment on deficiencies in the Contractor's submittals shall relieve the Contractor from the duty to provide work, which complies with the requirements of the Contract Documents.

1.06 PROPOSED EQUIVALENTS

A. Time of Submittal:

1. Submittal of Proposed Equivalents is required within 30 days of the Notice to Proceed. The Engineer may agree to a later submittal date if requested in writing within 30 days of the Notice to Proceed. The request shall identify the item, give the Specification reference, and proposed manufacturer and model number of the item that will be submitted and the proposed submittal date.
 2. The Engineer's agreement to a later submittal date shall be in writing and shall not be construed as Favorable Review or acceptance of the manufacturer or item proposed.
- B. Content of submittals shall be the same as that required for Product Data, Shop Drawings and Samples submitted for Product Review in another paragraph of this Section. In addition, the Contractor shall provide information on several recent similar installations of the item to verify its suitability. The information shall include the project name and location, the Owner's name, address, telephone number and name of a knowledgeable person to contact for information on performance of the product.
- C. If a non-equivalent substitute is submitted for review, it shall be accompanied by a proposed reduction in Contract Price which shall include the increased cost of Engineering service required to evaluate the proposed substitute (which shall be paid to the Owner whether or not the substitute is accepted) plus the greater of
- 1) the difference in price between the first specified item and the item submitted and
 - 2) the difference in value to the Owner between the two items.

1.07 PRODUCT INFORMATION SUBMITTALS

- A. Product Information submittals are required for the Owner's permanent records and will be used for future maintenance, repair, modification or replacement work. Product Information submittals will be examined only to verify that the required submittals have been made; they will NOT be reviewed for compliance with the Contract Documents.
- B. Make Product Information submittals prior to delivering material, products or items for which Product Information submittals are required.
- C. The Contractor has the sole and exclusive responsibility for furnishing products and work that meets the requirements of the Contract Documents.
- D. The Engineer reserves the right to comment on any submittal and to reject any product or work delivered, installed or otherwise at any time the Engineer become aware it is defective or does not meet the requirements of the Contract Documents.

1.08 MANUFACTURER'S CERTIFICATES

- A. Submit electronically through Procore.
- B. When specified in a Technical Specification section, submit manufacturers' certificate to Engineer for review. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate. Certificates may be recent or previous test results on material or Product, but must be acceptable to the Engineer and Owner.

1.09 CONSTRUCTION PHOTOGRAPHS

- A. Construction photographs shall be submitted via Procore.
- B. Each month submit a minimum of five photographs of each project site where work is actively occurring via Procore with Application for Payment.
 - a. Intertie Pipeline
 - b. Del Mar Pump Plant
 - c. Rincon Intertie Connection
 - d. Rincon Pipeline Relocation West
 - e. Rincon Control Tank Bypass Piping
 - f. Red Mountain Pump Plant
 - g. Rincon Pipeline Relocation East
 - h. Rincon Chlorination Station Bypass Piping
 - i. Rincon Pump Plant Bypass Piping
- C. Contractor shall take pre-construction and post-construction photographs to cover each site.
- D. For work within Caltrans right-of way and the access road to Rincon Control Reservoir, provide a video of the entire affected roadway pre-construction and post-construction.
- E. Identify photographs with date, time, orientation, GPS coordinates, and site name.
- F. Photographs must be digital in JPEG format.

1.10 OPERATION AND MAINTENANCE MANUALS

- A. Submit Operation and Maintenance manuals through Procore as described in the Technical Specifications.
- B. Operation and Maintenance manuals shall be organized by Specification Section using the same numbering system.

END OF SECTION