

**SERVICE CONTRACT**  
**Laboratory Building HVAC Controls Replacement at Plant No. 1 (FR1-0014)**  
**SPECIFICATION NO. S-2021-1276BD**

**This CONTRACT** is made and entered into as of the date fully executed below, by and between Orange County Sanitation District, with a principal place of business at 10844 Ellis Avenue, Fountain Valley, CA 92708 (hereinafter referred to as "OC San") and Retrofit Service Company, Inc. with a principal place of business at 8656 Utica Ave., #300, Rancho Cucamonga, CA 91730 (hereinafter referred to as "Contractor") collectively referred to as the "Parties" ("Contract").

**WITNESSETH**

**WHEREAS**, OC San desires to temporarily retain the services of Contractor for Laboratory Building HVAC Controls Replacement at Plant No. 1 "Services" as described in Exhibit "A"; and

**WHEREAS**, OC San has chosen Contractor to conduct Services in accordance with Ordinance No. OC SAN-56; and

**WHEREAS**, on February 2, 2022, the Operations Committee of OC San, by minute order, authorized execution of this Contract between OC San and Contractor; and

**WHEREAS**, Contractor is qualified by virtue of experience, training, and expertise to accomplish such Services,

**NOW, THEREFORE**, in consideration of the mutual promises and mutual benefits exchanged between the Parties, the Parties mutually agree as follows:

**1. Introduction**

1.1 This Contract and all exhibits hereto (called the "Contract") is made by OC San and the Contractor. The terms and conditions herein exclusively govern the purchase of Services as described in Exhibit "A".

1.2 Exhibits to this Contract are incorporated by reference and made a part of this Contract as though fully set forth at length herein.

Exhibit "A" Scope of Work  
Exhibit "B" Bid  
Exhibit "C" Determined Insurance Requirement Form  
Exhibit "D" Contractor Safety Standards  
Exhibit "E" Human Resources Policies

1.3 In the event of any conflict or inconsistency between the provisions of this Contract and any of the provisions of the exhibits hereto, the provisions of this Contract shall in all respects govern and control.

1.4 The provisions of this Contract may be amended or waived only by a writing executed by authorized representatives of both Parties hereto.

1.5 The various headings in this Contract are inserted for convenience only and shall not affect the meaning or interpretation of this Contract or any paragraph or provision hereof.

- 1.6 The term “days”, when used in the Contract, shall mean calendar days, unless otherwise noted as business days.
  - 1.7 OC San holidays (non-working days) are as follows: New Year’s Day, Lincoln’s Birthday, Presidents’ Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, Day after Thanksgiving, Christmas Eve, and Christmas Day.
  - 1.8 Work Hours: The work required under this Agreement may include normal business hours, evenings, and weekends. OC San will not pay for travel time.
  - 1.9 Contractor shall provide OC San with all required premiums and/or overtime work at no charge beyond the price provided under “Compensation” below.
  - 1.10 Except as expressly provided otherwise, OC San accepts no liability for any expenses, losses, or action incurred or undertaken by Contractor as a result of work performed in anticipation of purchases of said services by OC San.
2. **Compensation** Compensation to be paid by OC San to Contractor for the Services provided under this Contract shall be a total amount not exceed One Hundred Seventy-six Thousand, Eight Hundred Forty-seven Dollars (\$176,847.00).
3. **California Department of Industrial Relations (DIR) Registration and Record of Wages**
    - 3.1 To the extent Contractor’s employees and/or its subcontractors who will perform Work during the design and preconstruction phases of a construction contract or perform work under a maintenance contract for which Prevailing Wage Determinations have been issued by the DIR and as more specifically defined under Labor Code Section 1720 et seq, Contractor and its subcontractors shall comply with the registration requirements of Labor Code Section 1725.5. Pursuant to Labor Code Section 1771.4, the work is subject to compliance monitoring and enforcement by the DIR.
    - 3.2 The Contractor and its subcontractors shall maintain accurate payroll records and shall comply with all the provisions of Labor Code Section 1776, and shall submit payroll records to the Labor Commissioner pursuant to Labor Code 1771.4(a)(3). Penalties for non-compliance with the requirements of Section 1776 may be deducted from progress payments per Section 1776.
    - 3.3 Pursuant to Labor Code Section 1776, the Contractor and its subcontractors shall furnish a copy of all certified payroll records to OC San and/or general public upon request, provided the public request is made through OC San, the Division of Apprenticeship Standards or the Division of Labor Standards Enforcement of the Department of Industrial Relations.
    - 3.4 The Contractor and its subcontractors shall comply with the job site notices posting requirements established by the Labor Commissioner per Title 8, California Code of Regulation Section 16461(e).
4. **Payments and Invoicing**
    - 4.1 OC San shall pay, net thirty (30) days, upon receipt and approval, by OC San’s Project Manager or designee, of itemized invoices submitted for Milestones completed and Warranty Items provided as defined in Exhibit “B”.
    - 4.2 OC San, at its sole discretion, shall be the determining party as to whether the Milestones have been satisfactorily completed.

- 4.3 Invoices shall be emailed by Contractor to OC San Accounts Payable at [APStaff@OCSan.gov](mailto:APStaff@OCSan.gov) and "INVOICE" with the Purchase Order Number and S-2021-1276BD shall be referenced in the subject line.
5. **Audit Rights** Contractor agrees that, during the term of this Contract and for a period of three (3) years after its termination, OC San shall have access to and the right to examine any directly pertinent books, documents, and records of Contractor relating to the invoices submitted by Contractor pursuant to this Contract.
6. **Scope of Work** Subject to the terms of this Contract, Contractor shall perform the Services identified in Exhibit "A". Contractor shall perform said Services in accordance with generally accepted industry and professional standards.
7. **Modifications to Scope of Work** Requests for modifications to the Scope of Work hereunder can be made by OC San at any time. All modifications must be made in writing and signed by both Parties.
8. **Contract Term** The Services provided under this Contract shall be completed within 210 calendar days from the effective date of the Notice to Proceed.
9. **Extensions** The term of this Contract may be extended only by written instrument signed by both Parties.
10. **Performance** Time is of the essence in the performance of the provisions hereof.
11. **Termination**
- 11.1 OC San reserves the right to terminate this Contract for its convenience, with or without cause, in whole or in part, at any time, by written notice from OC San of intent to terminate. Upon receipt of a termination notice, Contractor shall immediately discontinue all work under this Contract (unless the notice directs otherwise). OC San shall thereafter, within thirty (30) days, pay Contractor for work performed (cost and fee) to the date of termination. Contractor expressly waives any claim to receive anticipated profits to be earned during the uncompleted portion of this Contract. Such notice of termination shall terminate this Contract and release OC San from any further fee, cost or claim hereunder by Contractor other than for work performed to the date of termination.
- 11.2 OC San reserves the right to terminate this Contract immediately upon OC San's determination that Contractor is not complying with the Scope of Work requirements, if the level of service is inadequate, or any other default of this Contract.
- 11.3 OC San may also immediately cancel for default of this Contract in whole or in part by written notice to Contractor:
- if Contractor becomes insolvent or files a petition under the Bankruptcy Act; or
  - if Contractor sells its business; or
  - if Contractor breaches any of the terms of this Contract; or
  - if total amount of compensation exceeds the amount authorized under this Contract.
- 11.4 All OC San property in the possession or control of Contractor shall be returned by Contractor to OC San upon demand, or at the termination of this Contract, whichever occurs first.

12. **Insurance** Contractor and all subcontractors shall purchase and maintain, throughout the life of this Contract and any periods of warranty or extensions, insurance in amounts equal to the requirements set forth in the signed Determined Insurance Requirement Form (attached hereto and incorporated herein as Exhibit "C"). Contractor shall not commence work under this Contract until all required insurance is obtained in a form acceptable to OC San, nor shall Contractor allow any subcontractor to commence service pursuant to a subcontract until all insurance required of the subcontractor has been obtained. Failure to maintain required insurance coverage shall result in termination of this Contract.
13. **Indemnification and Hold Harmless Provision** Contractor shall assume all responsibility for damages to property and/or injuries to persons, including accidental death, which may arise out of or be caused by Contractor's services under this Contract, or by its subcontractor(s) or by anyone directly or indirectly employed by Contractor, and whether such damage or injury shall accrue or be discovered before or after the termination of the Contract. Except as to the sole active negligence of or willful misconduct of OC San, Contractor shall indemnify, protect, defend and hold harmless OC San, its elected and appointed officials, officers, agents and employees, from and against any and all claims, liabilities, damages or expenses of any nature, including attorneys' fees: (a) for injury to or death of any person or damage to property or interference with the use of property, arising out of or in connection with Contractor's performance under the Contract, and/or (b) on account of use of any copyrighted or uncopyrighted material, composition, or process, or any patented or unpatented invention, article or appliance, furnished or used under the Contract, and/or (c) on account of any goods and services provided under this Contract. This indemnification provision shall apply to any acts or omissions, willful misconduct, or negligent misconduct, whether active or passive, on the part of Contractor or anyone employed by or working under Contractor. To the maximum extent permitted by law, Contractor's duty to defend shall apply whether or not such claims, allegations, lawsuits, or proceedings have merit or are meritless, or which involve claims or allegations that any of the parties to be defended were actively, passively, or concurrently negligent, or which otherwise assert that the parties to be defended are responsible, in whole or in part, for any loss, damage, or injury. Contractor agrees to provide this defense immediately upon written notice from OC San, and with well qualified, adequately insured, and experienced legal counsel acceptable to OC San.
14. **Contractor Safety Standards and Human Resources Policies** OC San requires Contractor and its subcontractor(s) to follow and ensure their employees follow all Federal, State, and local regulations as well as Contractor Safety Standards while working at OC San locations. If during the course of the Contract it is discovered that Contractor Safety Standards do not comply with Federal, State, or local regulations, then the Contractor is required to follow the most stringent regulatory requirement at no additional cost to OC San. Contractor and all of its employees and subcontractors, shall adhere to all applicable Contractor Safety Standards attached hereto in Exhibit "D" and the Human Resources Policies in Exhibit "E".
15. **Warranties** In addition to the warranties stated in Exhibit "A", the following shall apply:
- 15.1 Manufacturer's standard warranty shall apply. All manufacturer warranties shall commence on the date of acceptance by the OC San Project Manager or designee of the work as complete.
- 15.2 Contractor's Warranty (Guarantee): If within a one (1) year period of completion of all work as specified in Exhibit "A", OC San informs Contractor that any portion of the Services provided fails to meet the standards required under this Contract, Contractor shall, within



the time agreed to by OC San and Contractor, take all such actions as are necessary to correct or complete the noted deficiency(ies) at Contractor's sole expense.

16. **Force Majeure** Neither party shall be liable for delays caused by accident, flood, acts of God, fire, labor trouble, war, acts of government or any other cause beyond its control, but said party shall use reasonable efforts to minimize the extent of the delay. Work affected by a Force Majeure condition may be rescheduled by mutual consent or may be eliminated from the Contract.
17. **Freight (F.O.B. Destination)** Contractor assumes full responsibility for all transportation, transportation scheduling, packing, handling, insurance, and other services associated with delivery of all products deemed necessary under this Contract.
18. **Familiarity with Work** By executing this Contract, Contractor warrants that: 1) it has investigated the work to be performed; and 2) it understands the facilities, difficulties and restrictions of the work under this Contract. Should Contractor discover any latent or unknown conditions materially differing from those inherent in the work or as represented by OC San, it shall immediately inform OC San of this and shall not proceed, except at Contractor's risk, until written instructions are received from OC San.
19. **Regulatory Requirements** Contractor shall perform all work under this Contract in strict conformance with applicable Federal, State, and local regulatory requirements including, but not limited to, 40 CFR 122, 123, 124, 257, 258, 260, 261, and 503, Title 22, 23, and California Water Codes Division 2.
20. **Environmental Compliance** Contractor shall, at its own cost and expense, comply with all Federal, State, and local environmental laws, regulations, and policies which apply to the Contractor, its subcontractors, and the Services, including, but not limited to, all applicable Federal, State, and local air pollution control laws and regulations.
21. **Licenses, Permits, Ordinances and Regulations** Contractor represents and warrants to OC San that it has obtained all licenses, permits, qualifications, and approvals of whatever nature that are legally required to engage in this work. Any and all fees required by Federal, State, County, City and/or municipal laws, codes and/or tariffs that pertain to the work performed under the terms of this Contract will be paid by Contractor.
22. **Applicable Laws and Regulations** Contractor shall comply with all applicable Federal, State, and local laws, rules, and regulations. Contractor also agrees to indemnify and hold harmless from any and all damages and liabilities assessed against OC San as a result of Contractor's noncompliance therewith. Any permission required by law to be included herein shall be deemed included as a part of this Contract whether or not specifically referenced.
23. **Contractor's Employees Compensation**
  - 23.1 **Davis-Bacon Act** – Contractor will pay and will require all subcontractors to pay all employees on said project a salary or wage at least equal to the prevailing rate of per diem wages as determined by the Secretary of Labor in accordance with the Davis-Bacon Act for each craft or type of worker needed to perform the Contract. The provisions of the Davis-Bacon Act shall apply only if the Contract is in excess of two thousand dollars (\$2,000.00) and when twenty-five percent (25%) or more of the Contract is funded by Federal assistance. If the aforesaid conditions are met, a copy of the provisions of the Davis-Bacon Act to be complied with are incorporated herein as a part of this Contract and referred to by reference.

- 23.2 General Prevailing Rate – OC San has been advised by the State of California Director of Industrial Relations of its determination of the general prevailing rate of per diem wages and the general prevailing rate for legal holiday and overtime work in the locality in which the work is to be performed for each craft or type of work needed to execute this Contract, and copies of same are on file in the Engineering Department. The Contractor agrees that not less than said prevailing rates shall be paid to workers employed on this Contract as required by Labor Code Section 1774 of the State of California. Per California Labor Code 1773.2, OC San will have on file copies of the prevailing rate of per diem wages at its principal office and at each project site, which shall be made available to any interested party upon request.
- 23.3 Forfeiture For Violation – Contractor shall, as a penalty to OC San, forfeit fifty dollars (\$50.00) for each calendar day or portion thereof for each worker paid (either by the Contractor or any subcontractor under it) less than the prevailing rate of per diem wages as set by the Director of Industrial Relations, in accordance with Sections 1770-1780 of the California Labor Code for the work provided for in this Contract, all in accordance with Section 1775 of the Labor Code of the State of California.
- 23.4 Apprentices – Sections 1777.5, 1777.6, 1777.7 of the Labor Code of the State of California, regarding the employment of apprentices are applicable to this Contract and the Contractor shall comply therewith if the prime contract involves thirty thousand dollars (\$30,000.00) or more or twenty (20) working days or more; or if contracts of specialty contractors not bidding for work through the general or prime Contractor are two thousand dollars (\$2,000.00) or more or five (5) working days or more.
- 23.5 Workday – In the performance of this Contract, not more than eight (8) hours shall constitute a day's work, and the Contractor shall not require more than eight (8) hours of labor in a day from any person employed by it hereunder. Contractor shall conform to Article 3, Chapter 1, Part 7 (Section 1810 et seq.) of the Labor Code of the State of California and shall forfeit to OC San as a penalty, the sum of twenty-five dollars (\$25.00) for each worker employed in the execution of this Contract by Contractor or any subcontractor for each calendar day during which any worker is required or permitted to labor more than eight (8) hours in any one (1) calendar day and forty (40) hours in any one (1) week in violation of said Article. Contractor shall keep an accurate record showing the name and actual hours worked each calendar day and each calendar week by each worker employed by Contractor in connection with the project.
- 23.6 Record of Wages; Inspection – Contractor agrees to maintain accurate payroll records showing the name, address, social security number, work classification, straight-time and overtime hours worked each day and week, and the actual per diem wages paid to each journeyman, apprentice, worker or other employee employed by it in connection with the project and agrees to require that each of its subcontractors do the same. All payroll records shall be certified as accurate by the applicable Contractor or subcontractor or its agent having authority over such matters. Contractor further agrees that its payroll records and those of its subcontractors shall be available to the employee or employee's representative, the Division of Labor Standards Enforcement, and the Division of Apprenticeship Standards and shall comply with all of the provisions of Labor Code Section 1776, in general. Penalties for non-compliance with the requirements of Section 1776 may be deducted from project payments per the requirements of Section 1776.
24. South Coast Air Quality Management District's (SCAQMD) Requirements It is Contractor's responsibility that all equipment furnished and installed be in accordance with the latest rules and regulations of the SCAQMD. All Contract work practices, which may

have associated emissions such as sandblasting, open field spray painting or demolition of asbestos containing components or structures, shall comply with the appropriate rules and regulations of the SCAQMD.

25. **Governing Law** This Contract shall be governed by and interpreted under the laws of the State of California and the Parties submit to jurisdiction in the County of Orange, in the event any action is brought in connection with this Contract or the performance thereof.
26. **Breach** The waiver of either party of any breach or violation of, or default under, any provision of this Contract, shall not be deemed a continuing waiver by such party of any other provision or of any subsequent breach or violation of this Contract or default thereunder. Any breach by Contractor to which OC San does not object shall not operate as a waiver of OC San's rights to seek remedies available to it for any subsequent breach.
27. **Remedies** In addition to other remedies available in law or equity, if the Contractor fails to make delivery of the goods or Services or repudiates its obligations under this Contract, or if OC San rejects the goods or Services or revokes acceptance of the goods or Services, OC San may (1) cancel the Contract; (2) recover whatever amount of the purchase price OC San has paid, and/or (3) "cover" by purchasing, or contracting to purchase, substitute goods or Services for those due from Contractor. In the event OC San elects to "cover" as described in (3), OC San shall be entitled to recover from Contractor as damages the difference between the cost of the substitute goods or Services and the Contract price, together with any incidental or consequential damages.
28. **Dispute Resolution**
- 28.1 In the event of a dispute as to the construction or interpretation of this Contract, or any rights or obligations hereunder, the Parties shall first attempt, in good faith, to resolve the dispute by mediation. The Parties shall mutually select a mediator to facilitate the resolution of the dispute. If the Parties are unable to agree on a mediator, the mediation shall be conducted in accordance with the Commercial Mediation Rules of the American Arbitration Agreement, through the alternate dispute resolution procedures of Judicial Arbitration through Mediation Services of Orange County ("JAMS"), or any similar organization or entity conducting an alternate dispute resolution process.
- 28.2 In the event the Parties are unable to timely resolve the dispute through mediation, the issues in dispute shall be submitted to arbitration pursuant to California Code of Civil Procedure, Part 3, Title 9, Sections 1280 et seq. For such purpose, an agreed arbitrator shall be selected, or in the absence of agreement, each party shall select an arbitrator, and those two (2) arbitrators shall select a third. Discovery may be conducted in connection with the arbitration proceeding pursuant to California Code of Civil Procedure Section 1283.05. The arbitrator, or three (3) arbitrators acting as a board, shall take such evidence and make such investigation as deemed appropriate and shall render a written decision on the matter in question. The arbitrator shall decide each and every dispute in accordance with the laws of the State of California. The arbitrator's decision and award shall be subject to review for errors of fact or law in the Superior Court for the County of Orange, with a right of appeal from any judgment issued therein.
29. **Attorney's Fees** If any action at law or inequity or if any proceeding in the form of an Alternative Dispute Resolution (ADR) is necessary to enforce or interpret the terms of this Contract, the prevailing party shall be entitled to reasonable attorney's fees, costs and necessary disbursements in addition to any other relief to which he may be entitled.

30. **Survival** The provisions of this Contract dealing with Payment, Warranty, Indemnity, and Forum for Enforcement, shall survive termination or expiration of this Contract.
31. **Severability** If any section, subsection, or provision of this Contract, or any agreement or instrument contemplated hereby, or the application of such section, subsection, or provision is held invalid, the remainder of this Contract or instrument in the application of such section, subsection or provision to persons or circumstances other than those to which it is held invalid, shall not be affected thereby, unless the effect of such invalidity shall be to substantially frustrate the expectations of the Parties.
32. **Damage to OC San's Property** Any of OC San's property damaged by Contractor, any subcontractors or by the personnel of either will be subject to repair or replacement by Contractor at no cost to OC San.
33. **Disclosure** Contractor agrees not to disclose, to any third party, data or information generated from this project without the prior written consent from OC San.
34. **Independent Contractor** The legal relationship between the parties hereto is that of an independent contractor, and nothing herein shall be deemed to make Contractor an OC San employee. During the performance of this Contract, Contractor and its officers, employees, and agents shall act in an independent capacity and shall not act as OC San's officers, employees, or agents. Contractor and its officers, employees, and agents shall obtain no rights to any benefits which accrue to OC San's employees.
35. **Limitations upon Subcontracting and Assignment** Contractor shall not delegate any duties nor assign any rights under this Contract without the prior written consent of OC San. Any such attempted delegation or assignment shall be void.
36. **Third Party Rights** Nothing in this Contract shall be construed to give any rights or benefits to anyone other than OC San and Contractor.
37. **Non-Liability of OC San Officers and Employees** No officer or employee of OC San shall be personally liable to Contractor, or any successor-in-interest, in the event of any default or breach by OC San or for any amount which may become due to Contractor or to its successor, or for breach of any obligation for the terms of this Contract.
38. **Read and Understood** By signing this Contract, Contractor represents that he has read and understood the terms and conditions of the Contract.
39. **Authority to Execute** The persons executing this Contract on behalf of the Parties warrant that they are duly authorized to execute this Contract and that by executing this Contract, the Parties are formally bound.
40. **Entire Agreement** This Contract constitutes the entire agreement of the Parties and supersedes all prior written or oral and all contemporaneous oral agreements, understandings, and negotiations between the Parties with respect to the subject matter hereof.
41. **Notices** All notices under this Contract must be in writing. Written notice shall be delivered by personal service or sent by registered or certified mail, postage prepaid, return receipt requested, or by any other overnight delivery service which delivers to the noticed destination and provides proof of delivery to the sender. Rejection or other refusal to accept

or the inability to deliver because of changed address for which no notice was given as provided hereunder shall be deemed to be receipt of the notice, demand or request sent. All notices shall be effective when first received at the following addresses:

OC San: Jackie Lagade, Principal Buyer  
Orange County Sanitation District  
10844 Ellis Avenue  
Fountain Valley, CA 92708

Contractor: Jeff Mann, CEO  
Retrofit Service Company, Inc.  
8656 Utica Avenue, #300  
Rancho Cucamonga, CA 91730

Each party shall provide the other party written notice of any change in address as soon as practicable.

[Intentionally left blank. Signatures follow on the next page.]

**IN WITNESS WHEREOF**, intending to be legally bound, the Parties hereto have caused this Contract to be signed by the duly authorized representatives.

**ORANGE COUNTY SANITATION DISTRICT**

Dated: \_\_\_\_\_

By: \_\_\_\_\_

Brooke Jones  
Chair, Operations Committee

Dated: \_\_\_\_\_

By: \_\_\_\_\_

Kelly A. Lore  
Clerk of the Board

Dated: \_\_\_\_\_

By: \_\_\_\_\_

Ruth Zintzun  
Purchasing & Contracts Manager

**RETROFIT SERVICE COMPANY, INC.**

Dated: \_\_\_\_\_

By: \_\_\_\_\_

\_\_\_\_\_  
Print Name and Title of Officer

CMM

# **Exhibit “A”**

## **SCOPE OF WORK AND APPENDIX A-1**

**EXHIBIT A**  
**SCOPE OF WORK**

**For**

**Laboratory Building HVAC Controls Replacement at Plant No. 1 (FR1-0014)**



**EXHIBIT A**  
**SCOPE OF WORK**  
**Laboratory Building HVAC Controls Replacement at Plant No. 1 (FR1-0014)**  
**SPECIFICATION NO. S-2021-1276BD**

**SCOPE OF WORK**

**1. Location of Work**

The work covered under this Scope of Work will take place at the Orange County Sanitation District's ("OC San's"): Plant No. 1 Laboratory Building located at 10844 Ellis Avenue, Fountain Valley, CA.

**2. General**

The Contractor shall furnish all labor, equipment, materials, machinery, tools, supplies, insurance, permits, licenses, transportation, and other incidentals necessary to complete all tasks and items of work described within this Exhibit A, as more specifically described below.

**3. Description of the Work**

3.1. The work involves retrofitting an existing pneumatic HVAC controls system by replacing pneumatic thermostats with battery-powered digital thermostats that wirelessly communicate to a wireless mesh network, components of which are supplied and installed in this project, to create a Direct Digital Control (DDC)/Pneumatic hybrid HVAC controls system for the Laboratory Building that is fully operational, tested and confirmed to fulfill all OC San requirements.

3.2. Purpose

- a. Provide OC San the ability to better control the Laboratory Building HVAC through remote wireless setpoint control, remote monitoring of temperature & pressure, programmable temperature setbacks, occupancy override, enabling demand response strategies, and implementing energy savings strategies, features that the current pneumatic system does not accommodate.
- b. Accomplish the work with minimal impact to the facilities on-going operations, avoid partial or complete building HVAC shutdowns, avoid any demolition, avoid installation of new wiring, and shutdowns of current workspaces.

3.3. Implementation Description

- a. A hybrid electronic and pneumatic solution consisting of using the existing pneumatic systems without altering them and adding an electronic layer to monitor and remotely control the existing main Air Handling Units and Zone Terminal Units.
- b. Implementation Features are based on maintaining existing systems and functionality without disturbing the on-going work occurring in an occupied building and include but are not limited to:
  - i. No physical demolition of building finishes or structure
  - ii. No partial or complete system shutdowns
  - iii. No replacement of valves or dampers
  - iv. Continued use of the pneumatic systems in place
  - v. Pneumatic systems overridden by a converter controlled electronic signal
  - vi. A wireless zone-controlled system consisting of thermostats that communicate to other system components wirelessly using a frequency that does not interfere with existing Ethernet/IP wireless systems or other wireless frequency waves.

- c. Components of the work shall include
  - i. BUILDING MANAGEMENT SYSTEM Providing Control of:
    - (1) Energy Management System Software and Operator Workstation; Tridium, or equal,
    - (1) Global Controller w/ Control Panel
    - Graphical User Interface Development
  - ii. (4) AIR HANDLING UNIT CONTROLS Providing Control of:
    - Supply Fan Command / Status
    - Hot Water Valve Electro-Pneumatic Transducer
    - Chilled Water Valve Electro-Pneumatic Transducer
    - Supply Air Temperature Sensor
    - Mixed Air Temperature Sensor
    - Return Air Temperature Sensor
    - Mixed Air Damper Actuator
    - Return Air Damper Actuator
    - Outside Air Damper Actuator
    - Filter Differential Pressure Sensor
    - Static High Limit Switch
    - Discharge Static Pressure Sensor
    - Field Controller w/ Enclosure
  - iii. WIRELESS PNEUMATIC ZONE CONTROLS Providing Control of:
    - (34) Wireless Pneumatic Thermostats (WPT) with Temperature Only; Cypress Envirosystems WPT, or equal.
    - (20) Wireless Pneumatic Thermostats with Temperature & Humidity; Cypress Envirosystems WPT, or equal.
    - (5) Wireless Repeaters
    - (1) Controller w/ BACnet/IP Gateway to Building Management System; Cypress Envirosystems Green Box, or equal.
  - iv. CENTRAL PLANT CONTROLS Providing Control of:
    - (4) Boiler Command / Status
    - (2) Chiller Command / Status
    - (6) Pump Command / Status
    - Field Controller w/ Enclosure
- d. Implementation Requirements shall include
  - i. Contractor-provided controller component of the system shall be integrated to a Facility Building Wide Management System (BMS) so that it properly synchronizes with the Air Handling Units and Central Plant.
  - ii. Contractor-provided Hybrid Electro-Pneumatic Thermostats shall have the ability to communicate to the provided BMS.
  - iii. Start-up, testing and point-to-point check-out, and verification of entire installed system.
  - iv. Low-voltage (24v and less) electrical control wiring and/or conduit installed, where new conduit is necessary, per code requirements. It is anticipated that no new conduit would be required.
- e. Required Features of Contractor-provided system components
  - i. Controller
    - Data collection unit for receiving wireless data from field devices
    - Built in web server
    - Capability for local data storage

- Highly optimized industrial DSSS radio and protocol with antenna and frequency diversity
- Ruggedized enclosure
- FCC, RoHS and ETSI compliant
- ii. Wireless Pneumatic Thermosats (Shall be from the same manufacturer as the Contractor-provided Controller.)
  - Remote monitoring of temperature, relative humidity and branch pressure
  - Automatic setpoint changes based on time-of-day schedule and night setback
  - Automatic calibration
  - Notification on occupancy override
  - Early problem detection to avoid occupant complaints
  - Zone control for optimal energy use and comfort
  - Remote control of setpoint
  - Holding of setpoint upon battery failure **(critical feature)**

3.4. OC San Inspection staff shall witness all tasks performed by Contractor.

### 3.5. Work Restrictions

- a. Safety: Contractor to receive Contractor Safety Orientation by OC San Risk Management Division prior to start of work.
- b. Parking: Contractor can park a maximum of two (2) vehicles at OC San Plant No. 1 during working hours.
- c. Contractor shall provide continuous access to all equipment, facilities, and processes to OC San operations and maintenance personnel. The health, safety, and welfare of OC San service is dependent on the continuous and uninterrupted operation of OC San's facilities.

## 4. Project Work Elements

### 4.1. Submittals

- a. Design Submittal including all information necessary to describe the complete system including but not limited to product data listed in paragraph 4.2.8 and Shop Drawings listed in Paragraph 4.2.10 of this Scope of Work summary.
- b. Unlocked Java Application Control Engine (JACE) Firm Ware License
- c. Work Plan
- d. Work Schedule
- e. Start-up and testing documentation will be provided to OC San in a Field Test Report.
- f. Contractor to submit Site-Specific Safety Plan (SSSP) in accordance with OC San Safety Standards. OC San must approve the SSSP prior to start of work.
- i. Programmer shall be N4 certified for Tridium Niagara software.

- g. Product Data: For each type of product include the following:
- i. Construction details, material descriptions, dimensions of individual components and profiles, and finishes.
  - ii. Operating characteristics, electrical characteristics, and furnished accessories indicating process operating range, accuracy over range, control signal over range, default control signal with loss of power, calibration data specific to each unique application, electrical power requirements, and limitations of ambient operating environment, including temperature and humidity.
  - iii. Product description with complete technical data, performance curves, and product specification sheets.
  - iv. Installation, operation and maintenance instructions including factors effecting performance.
  - v. Bill of materials of indicating quantity, manufacturer, and extended model number for each unique product.
- h. Product Certificates
- i. Data Communications Protocol Certificates: Certifying that each proposed DDC system component complies with ASHRAE 135.
- i. Shop Drawings:
- i. General Requirements:
    - Include cover drawing with Project name, location, Owner, Architect, Contractor and issue date with each Shop Drawings submission.
    - Include a drawing index sheet listing each drawing number and title that matches information in each title block.
    - Drawings Size: 11x17
  - ii. Schematic drawings for each controlled HVAC system indicating the following:
    - I/O points labeled with point names shown. Indicate instrument range, normal operating set points, and alarm set points. Indicate fail position of each damper and valve, if included in Project.
    - I/O listed in table format showing point name, type of device, manufacturer, model number, and cross-reference to product data sheet number.
    - A graphic showing location of control I/O in proper relationship to HVAC system.
    - Wiring diagram with each I/O point having a unique identification and indicating labels for all wiring terminals.
    - Unique identification of each I/O that shall be consistently used between different drawings showing same point.
    - Elementary wiring diagrams of controls for HVAC equipment motor circuits including interlocks, switches, relays, and interface to DDC controllers.
    - Narrative sequence of operation.
    - Graphic sequence of operation, showing all inputs and output logical blocks.
  - iii. DDC system network riser diagram indicating the following:
    - Each device connected to network with unique identification for each.
    - Interconnection of each different network in DDC system.

- For each network, indicate communication protocol, speed and physical means of interconnecting network devices, such as copper cable type, or optical fiber cable type. Indicate raceway type and size for each.
- Each network port for connection of an operator workstation or other type of operator interface with unique identification for each.

j. Closeout Submittals

- i. Project Record Drawings of as-built versions of submittal Shop Drawings provided in electronic PDF format.
- ii. Testing reports and checklists of completed final versions of reports.
- iii. As-built versions of submittal Product Data.
- iv. Names, addresses, e-mail addresses, and 24-hour telephone numbers of Installer and service representatives for DDC system and products.
- v. Operator's manual with procedures for operating control systems including logging on and off, handling alarms, producing point reports, trending data, overriding computer control, and changing set points and variables.
- vi. Programming manuals with description of programming language and syntax, of statements for algorithms and calculations used, of point database creation and modification, of program creation and modification, and of editor use.
- vii. Engineering, installation, and maintenance manuals.

4.2. Material Requirements

- a. System components meeting the criteria listed in Section 3.3.c and 3.3.e of this document
- b. JACE NT8000 Controller (that supports native BACnet) and HTML5 for viewing graphics. Controller that can be scaled for future expansion of at least 50% additional control points.
- c. Remote controller (as applicable, including boiler, pumps, chillers, etc.)
- d. Controller enclosure with 120V I 24V - Power supply (includes transformer, on/off switch and outlet) and uninterruptible power supply (UPS) for a minimum of 1 hour backup electrical power to the controller. It is anticipated that the Controller will be located in Room 105 (Appendix A-1, a), to be field verified.
- e. JACE controller to use Tridium Niagara operating software.
- f. BACnet VAV box zone controller with damper actuator (24-volt preferred).
- g. System Monitoring Features
  - i. Digital feedback for the damper position.
  - ii. Graphic pages that show
    - Zone controllers by "ID tag" (determined by OC San). Each zone would have a link to a graphic page specific to that zone that shows temperature setpoint, actual space temperature, CFM being delivered by the zone, what mode the zone is in (cooling, heating, or dead ban) and damper position.
    - HVAC subsystems (as applicable, including boiler, hot water pumps, chillers, etc.).
    - Individual schedule for each day of the week. Scheduling programs will have the ability to pre-program Holidays to be scheduled as unoccupied time from the building.
    - Trending page that can trend any of the control points, and the trending page will be set up to trend discharged air for each VAV packaged unit.

4.3. Permits / Licenses

- a. None

#### 4.4. Implementation

- a. Contractor to provide the following services:
  - i. Synchronize the new system(s) with the existing OC San electronic timeclocks (for start/stop schedule).
  - ii. Control integration to allow the JACE controller to "read" the points from the BACnet card.
  - iii. Integration to existing building systems (as applicable, including boiler, pumps, chillers, etc.).
  - iv. Collaboration with OC San IT team to provide and configure a static I.P. address for the new controller's internet connection.
  - v. Programmer shall write, install and test the programming for the new control system.

#### 4.5. Testing

- a. DDC System Wireless Network Verification
- b. DDC system Installer shall design wireless DDC system networks to comply with performance requirements indicated.
- c. Installer shall verify wireless network performance through field testing and shall document results in a field test report.
- d. Testing and verification of all wireless devices shall include, but not be limited to:
  - i. Speed
  - ii. Online status
  - iii. Signal strength
- e. Testing
  - i. Perform validation tests before requesting final review of system. Before beginning testing, first submit Pretest Checklist and Test Plan.
  - ii. After approval of Test Plan, execute tests and procedures
  - iii. After testing is complete, submit completed test checklist.
  - iv. Pretest Checklist: Submit the following list with items checked off once verified:
    - Detailed explanation for any items that are not completed or verified.
    - Required DDC system components, wiring, and accessories are installed.
    - Control electric power circuits operate at proper voltage and are free from faults.

#### 4.6. Warranty

- a. Manufacturer's Warranty: Manufacturer and Installer agree to repair or replace products that fail in materials or workmanship within specified one-year warranty period.
  - i. Failures shall be adjusted, repaired, or replaced at no additional cost or reduction in service to Owner.
  - ii. Include updates or upgrades to software and firmware if necessary to resolve deficiencies.
  - iii. Install updates only after receiving Owner's written authorization.
  - iv. Warranty service shall occur during normal business hours and commence within 24 hours of Owner's warranty service request.
  - v. Warranty Extension: Contractor to provide an extended warranty for equipment, materials, and labor for two years beyond the standard warranty as an alternate to the base bid.

#### 4.7. Training

- a. Engage a factory-authorized service representative with complete knowledge of Project-specific system installed to train OC San's maintenance personnel to adjust, operate, and maintain DDC system.

- b. Extent of Training:
  - i. Base extent of training on scope and complexity of DDC system indicated and training requirements indicated. Provide extent of training required to satisfy requirements indicated even if more than minimum training requirements are indicated.
  - ii. Inform OC San of anticipated training requirements if more than minimum training requirements are indicated.

4.8. Adjusting

- a. Occupancy Adjustments: When requested within 12 months from date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other-than-normal occupancy hours for this purpose.

**5. Resources Available**

5.1. None

**6. Project Schedule**

The following schedule is an indication of anticipated durations considered to be achievable for the stages of the project. The Contractor’s schedule, as accepted by OC San, shall govern the work in lieu of the following table.

Milestones / Timeline	Deadline (Weeks from NTP)	Review Period (Weeks)	Cumulative Weeks	Payment Percentage of Total Contract Amount
Kick-Off Meeting (NTP)	Day of NTP	0	0	10%
Submittal of Schedule	1	1	2	
Design Submittal	8	3	11	20%
Design Corrections and Approval	13	2	15	
Procurement of Material	21	2	23	50%
Installation Work	24	0	24	
Final Completion of Work Including Training	26	0	26	10%
Contract Close-out	30	0	30	10%

**7. Project Management**

7.1. Project Kick-Off Meeting

- a. At the time of notice to proceed, a meeting with OC San staff shall be held to establish appropriate contacts and review the Contractor’s plan to implement this work.
- b. Contract conferences shall be held on an as-needed basis with OC San staff to keep OC San apprised of the job, review work in progress, and receive comments. Conferences shall be held virtually. All notes and decision items shall be captured by the Contractor and reported in electronic format. The formal agenda shall be submitted with the previous meeting notes at least one week

prior to each meeting. At a minimum, progress meetings will be held once a week starting a week prior to the start of project work and throughout the duration of the work.

## **8. Staff Assistance**

The Contractor will be assigned a single point of contact on this project. Any meetings and/or correspondence related to this project shall be scheduled and approved by the Project Manager.

## **9. Appendices**

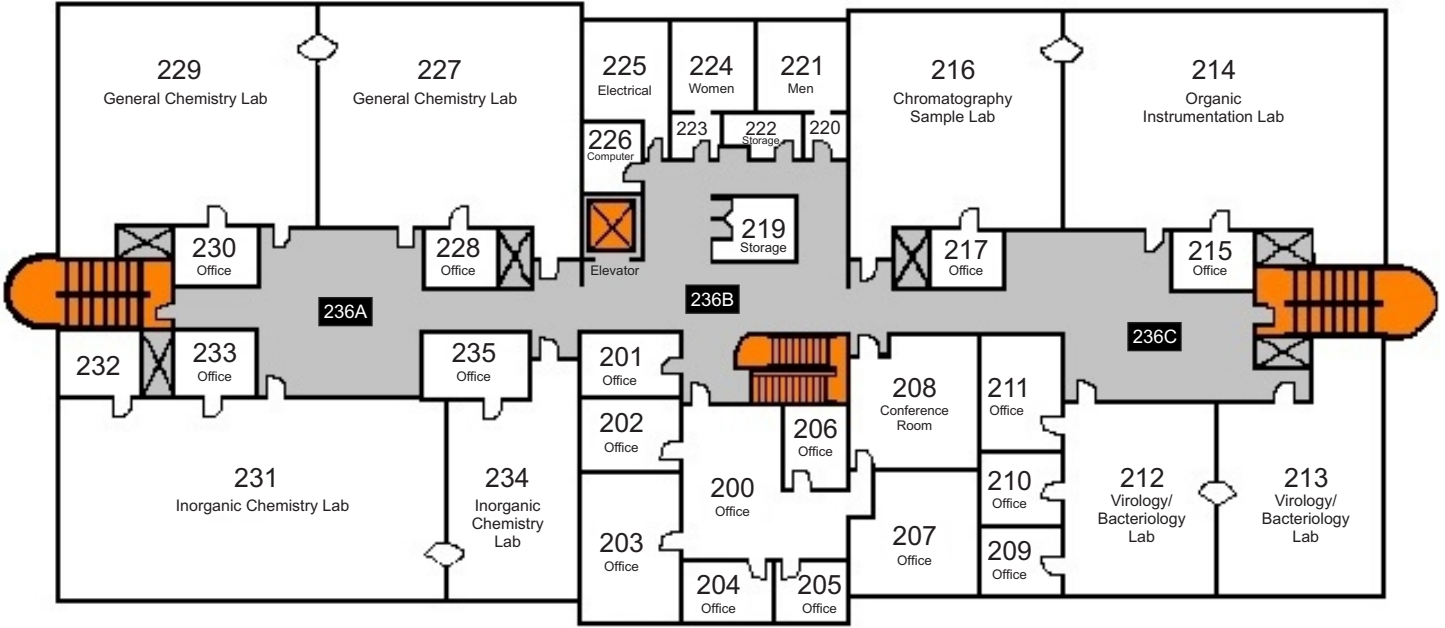
A-1 Record Drawings: The following Record Drawings are provided for the Contractor's use in understanding the existing system and as a basis for drawings and exhibits to be provided by the Contractor. The provided drawings represent historical information re: building and system details; the accuracy of the drawings is not guaranteed as a representation of existing conditions. Contractor shall confirm and correlate dimensions, equipment specifics, and any and all details relevant to the the Scope of Work of this project.

- a. Laboratory Floorplan with Planned Controller Location
- b. M-1R Mechanical Schedule
- c. M-2R AC Plan 1<sup>st</sup> Floor
- d. M-3R AC Plan 2<sup>nd</sup> Floor
- e. M-4R Mechanical Roof Plan
- f. M-5 Mechanical Plan Room 1
- g. M-6R Mechanical Plan Room 2
- h. M-7 Mechanical Control Diagrams
- i. M-8R Mechanical Control Diagrams
- j. M-11R Air Balance Diagrams



**APPENDIX A-1**  
**RECORD DRAWINGS**  
**For**  
**Laboratory Building HVAC Controls Replacement at Plant No. 1 (FR1-0014)**

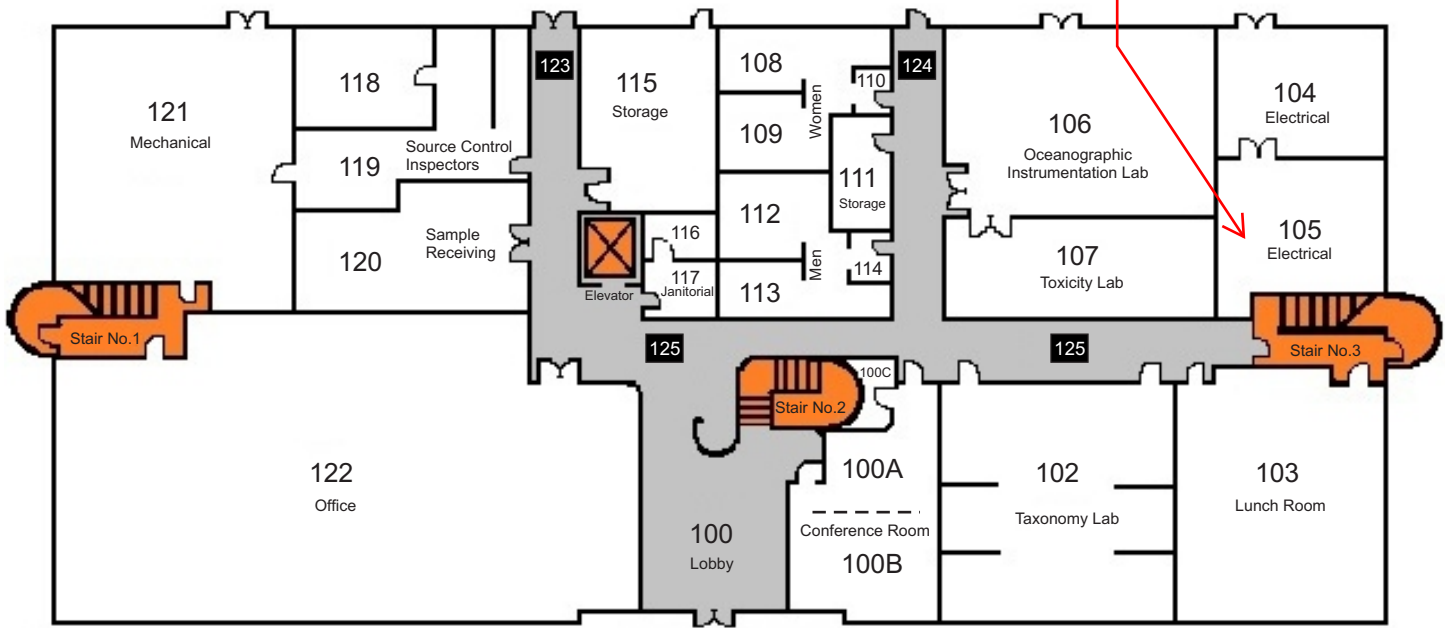
# Second Floor



Planned  
HVAC DDC  
Controller  
Location



# First Floor



Main Entrance

# ORANGE COUNTY SANITATION DISTRICT LABORATORY



AC UNIT SCHEDULE

Table with columns for NO, MFR, MODEL NO, SUPPLY CFM, SUPPLY SP, IN WG, SUPPLY FAN HP, VOLTS, PHASE, CYCLE, EVAP COIL, COOLING COIL, HEATING COIL, FILTER TYPE, FILTER SIZE, OSA, MAX.

NOTE: EVAP COIL SHALL BE 6-ROW 100 FPI MIN. TYPE 'K' COPPER CLEANABLE. MAX. FACE VELOCITY 340 FPM

CHILLER SCHEDULE

Table with columns for NO, TYPE, MFR, MODEL, NOM TONS, COMPRESSOR QUANTITY, COMPRESSOR SIZE, UNLOADER STEPS, COMPRESSOR RLA EA, COMPRESSOR LRA EA, CONDENSER FANS, NO/FLA, VOLTAGE, PHASE, HERTZ, MCA, MAX FUSE, CONTROL KW, GPM, MAX WPD/FT, LWT, OSA AMBIENT, TONS AT, CONDITIONS, KW AT, CONDITIONS, EER.

BOILER SCHEDULE

Table with columns for NO, MFR, MODEL, INPUT BTUH, OUTPUT BTUH, WATER IN, WATER OUT, FUEL, VOLTS, MAX OPERATING PRESSURE, LOCATION, GPM.

MAKEUP AIR HEATING COIL SCHEDULE

Table with columns for NO, CFM, BTU/HR, ENT WT, LVG WT, GEM, WPD/FT, APD/IN, MAX FV.

HEATING COIL SCHEDULE

Table with columns for NO, CFM, BTU/HR, ENT WT, LVG WT, GEM, WPD/FT, APD/IN, MAX FV.

Table with columns for NO, CFM, BTU/HR, ENT WT, LVG WT, GEM, WPD/FT, APD/IN, MAX FV.

SUPPLY FAN FILTERS SCHEDULE

Table with columns for SYSTEM NUMBER, QUANTITY & SIZE, MANUFACTURER'S MODEL, STATIC PRESSURE, INITIAL/FINAL, REMARKS OR EQUAL.

NOTE: SEE CHG ORDER #2

COOLING COIL SCHEDULE

Table with columns for NO, MFR, AC UNIT, CC-1, CC-2, CC-3, CC-4, CC-5, CC-6, PUMP SERVICE, MFR, MODEL, TYPE, GPM, HD/FT, HP, VOLTS, CYCLE, PHASE, SEAL, LOCATION.

EXHAUST FAN FILTERS SCHEDULE AIR DISTRIBUTION SCHEDULE

Table with columns for SYSTEM NUMBER, QUANTITY & SIZE, MANUFACTURER'S MODEL, STATIC PRESSURE, INITIAL/FINAL, REMARKS OR EQUAL.

PUMP SCHEDULE

Table with columns for PUMP SERVICE, MFR, MODEL, TYPE, GPM, HD/FT, HP, VOLTS, CYCLE, PHASE, SEAL, LOCATION.

NOTE: SEE P-1 FOR SCHEDULE P-5 & P-8, P-9

MECHANICAL SYMBOLS & ABBREVIATIONS

Table with columns for ITEM, ABBREVIATION, SYMBOL.

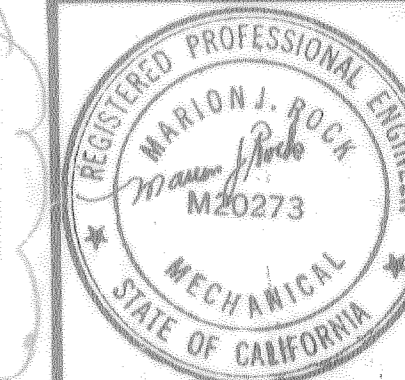
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EXHAUST FAN SCHEDULE

Table with columns for NO, MFR, MODEL, CFM, SP IN WG, HP, VOLTS, PHASE, CYCLE, BIRD SCREEN, DISCONNECT, LOCATION.

NOTE: FIRE DAMPERS SHALL BE INSTALLED AS REQUIRED BY USC SECTION 4306 (J) & WHERE INDICATED

NOTE: EXCEPT FOR C-13, AND EF-10 ALL EXISTING EQUIP IE, AC-UNITS, X-FANS, & COILS ARE TO BE USED. ADJUST SHEAVES OR PROVIDE NEW DRIVES AS REQUIRED TO ACHIEVE INDICATED AIR QUANTITIES. REFER TO CHANGE ORDER NO. 2 FOR PREVIOUS WATER FLOWS AND CONTROL MODIFICATIONS.



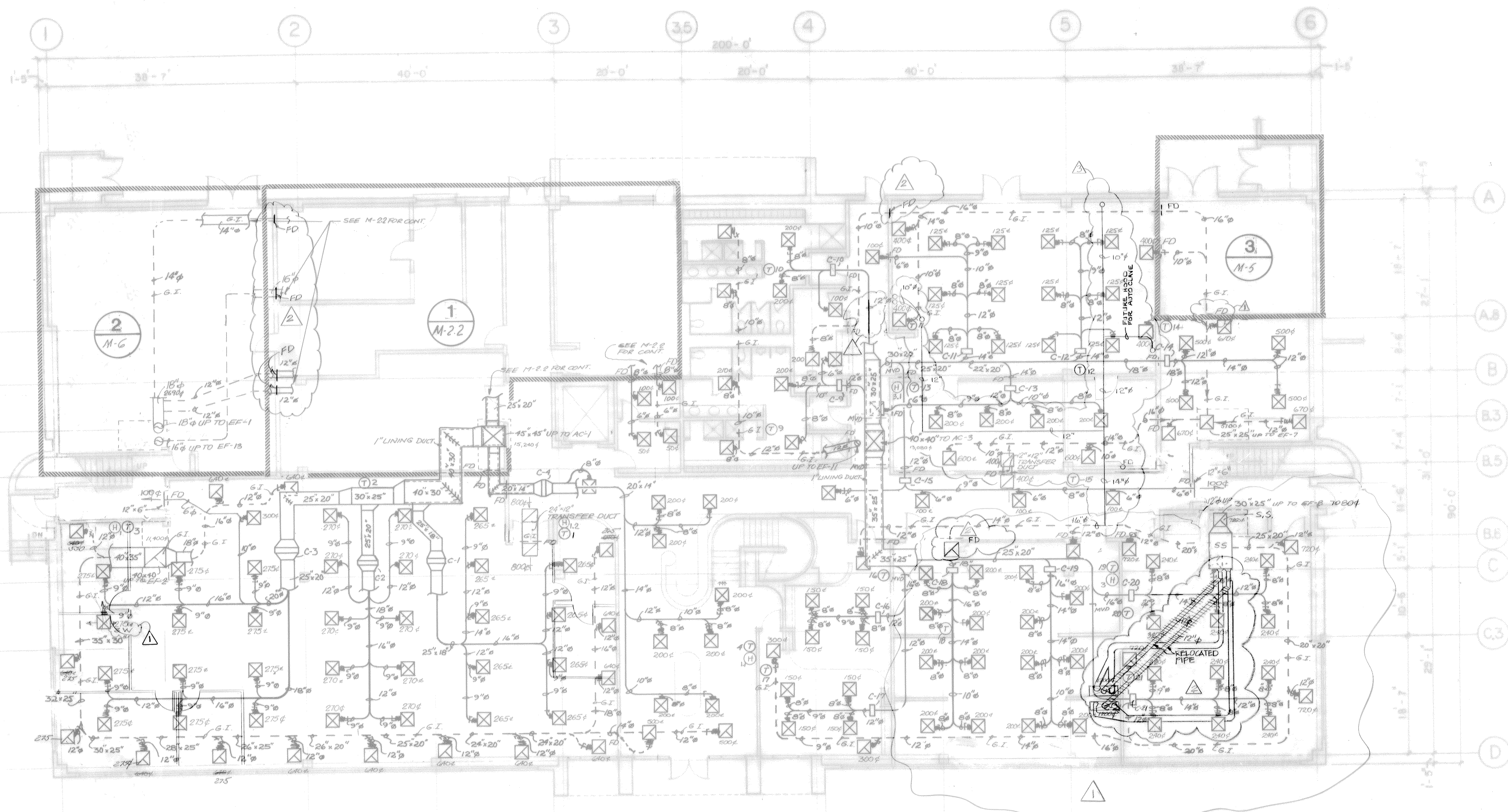
COUNTY SANITATION DISTRICTS OF ORANGE COUNTY, CALIFORNIA. CENTRAL LABORATORY. PLANT No. 1 10844 ELLIS AVE. FOUNTAIN VALLEY, CALIFORNIA

BOYLE ENGINEERING CORPORATION 1501 Quail Street, P. O. Box 3030, Newport Beach, CA 92658-9020 714/475-3300

Table with columns for NO, PLAN CHANGE IO, DESCRIPTION, APPROVED, DATE, DESIGNED, DRAWN, CHECKED, REVISIONS.

RECORD DRAWING





NOTE:  
 FIRE DAMPERS SHALL BE INSTALLED AS  
 REQUIRED BY USC SECTION 4306(J)  
 & WHERE INDICATED  
 CENTER THERMOSTATS AT 60 1/2" ABOVE F.F.

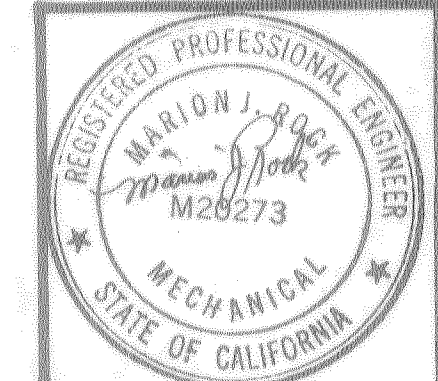
**MECHANICAL PLAN FIRST FLOOR**

SCALE - 1/8" = 1'-0"

**RECORD DRAWINGS**

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**RECORD DRAWING**



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 ORANGE COUNTY, CALIFORNIA

**CENTRAL LABORATORY**  
 PLANT No. 1  
 10844 ELLIS AVE.  
 FOUNTAIN VALLEY, CALIFORNIA

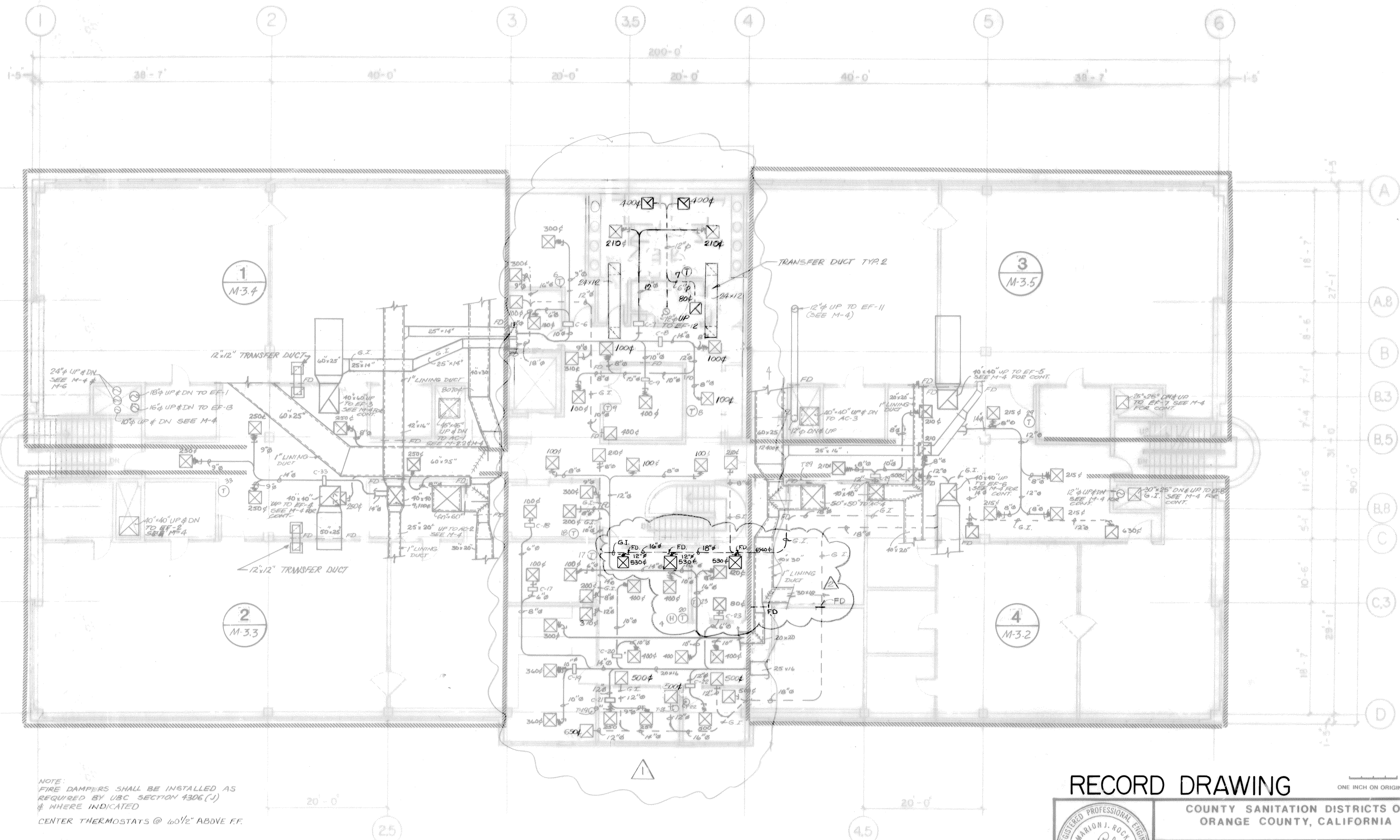
**BOYLE ENGINEERING CORPORATION**  
 1501 Quail Street, P. O. Box 3030, Newport Beach, CA 92658-9020  
 714/76-3300

REVISIONS		DATE	DATE	DATE
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2	"AS BUILT"		11/22/81	
3	PLAN CHANGE 10			
NO.	DESCRIPTION	APPROVED	DATE	DRAWN

AC PLAN 1ST FL

DRAWING NO  
**M-2R**  
 SHEET  
 NO. 62 OF 129





NOTE:  
 FIRE DAMPERS SHALL BE INSTALLED AS  
 REQUIRED BY UBC SECTION 4306 (1)  
 # WHERE INDICATED  
 CENTER THERMOSTATS @ 60 1/2" ABOVE FF.

**MECHANICAL 2ND FLOOR PLAN**

SCALE 1/8" = 1'-0"

**RECORD DRAWINGS**

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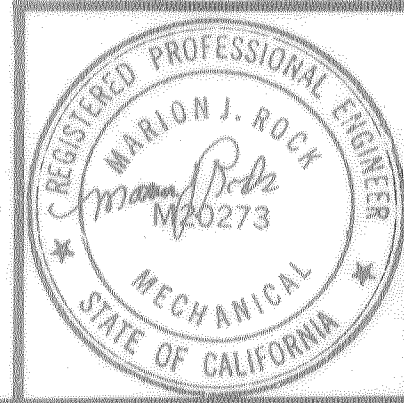
**RECORD DRAWING**

ONE INCH ON ORIGINAL

COUNTY SANITATION DISTRICTS OF  
 ORANGE COUNTY, CALIFORNIA

**CENTRAL LABORATORY**

PLANT No. 1  
 10844 ELLIS AVE.  
 FOUNTAIN VALLEY, CALIFORNIA



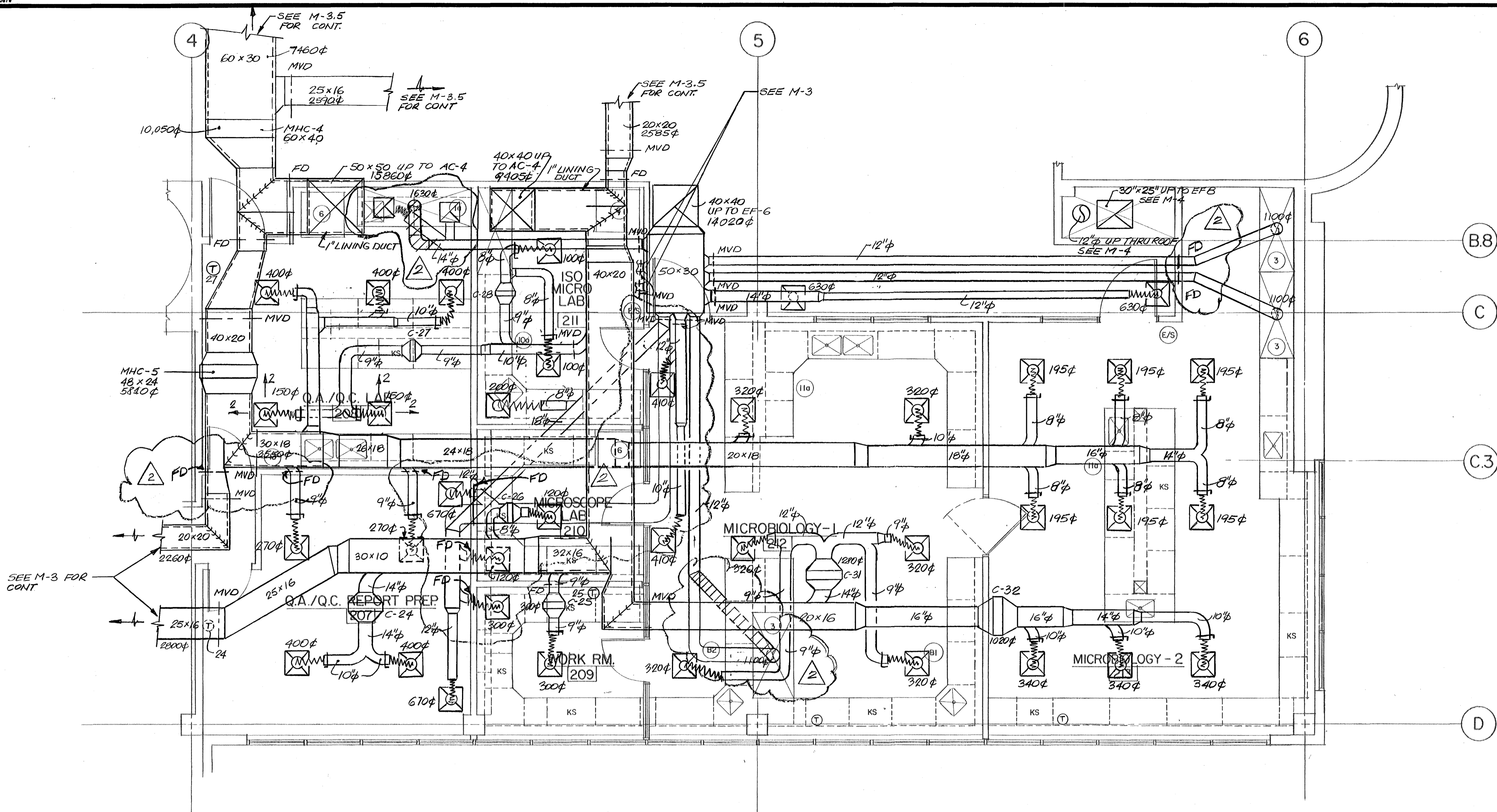
**BOYLE ENGINEERING CORPORATION**  
 1501 Quail Street, P. O. Box 3030, Newport Beach, CA 92658-0320  
 714/476-3300

NO.	DESCRIPTION	APPROVED	DATE	DATE	DESIGNED	DRAWN	CHECKED
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2	PLAN CHANGE 10			12/21/71			
REVISIONS							

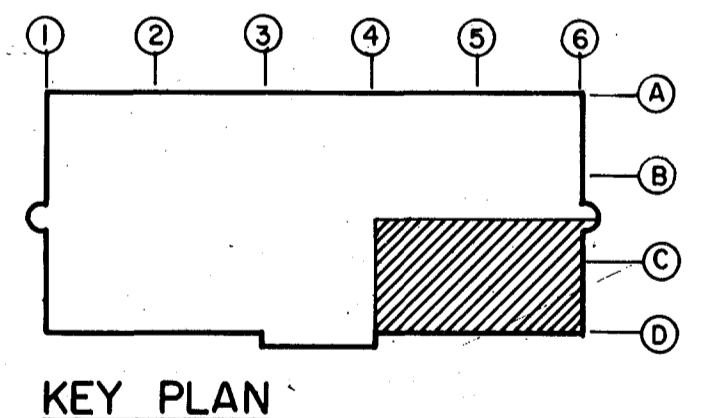
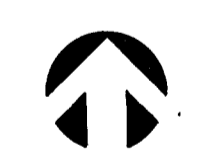
AC PLAN 2ND FL

DRAWING NO. **M-3R**  
 SHEET NO. 65 OF 129





NOTE:  
CENTER THERMOSTATS @ 60 1/2" ABOVE F.F.



**MECHANICAL PARTIAL PLAN 2ND FLOOR**  
SCALE 1/4" = 1'-0"

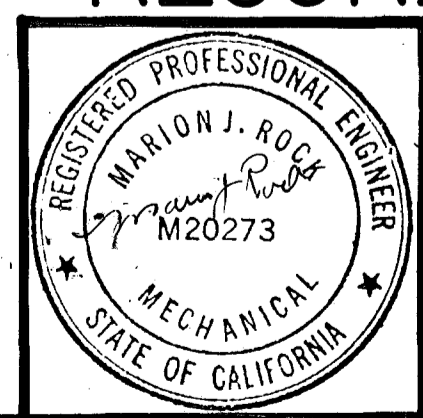
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**RECORD DRAWING**

ONE INCH ON ORIGINAL

COUNTY SANITATION DISTRICTS OF  
ORANGE COUNTY, CALIFORNIA  
J-17

**CENTRAL LABORATORY**  
PLANT No. 1  
10844 ELLIS AVE.  
FOUNTAIN VALLEY, CALIFORNIA



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NO.	DESCRIPTION	APPROVED	DATE
1	"AS BUILT"		2/9/92
2	PLAN CHANGE TO - FULL SHIT		1/24/91

DATE	1/22/91	DRAWING NO.	M-3.2R
DESIGNED		SHEET	
DRAWN			
CHECKED			

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714/76-3300

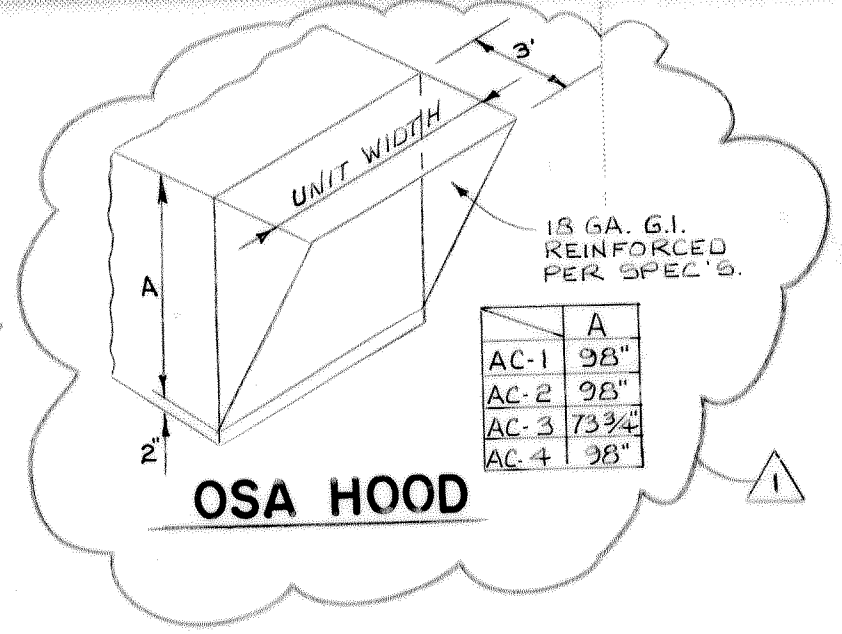
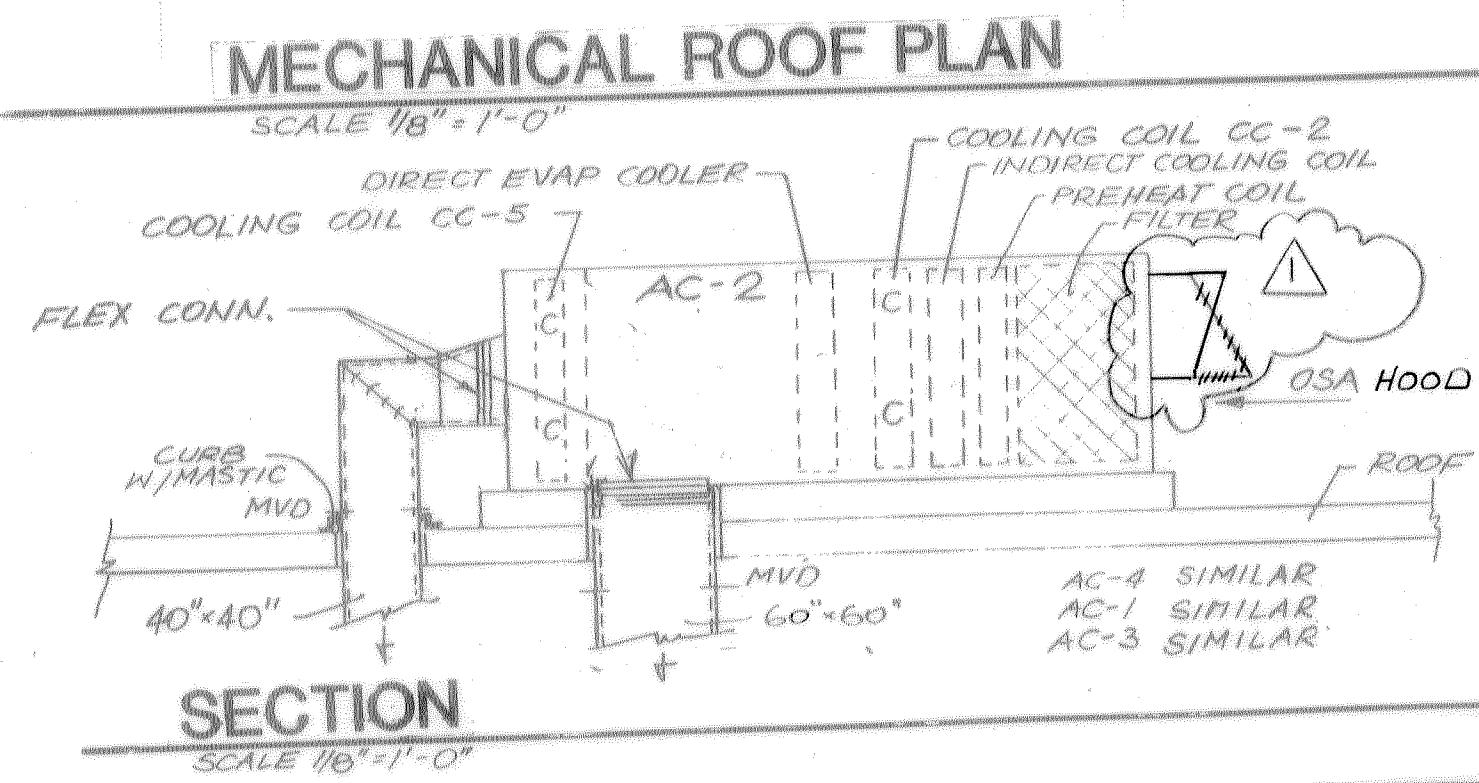
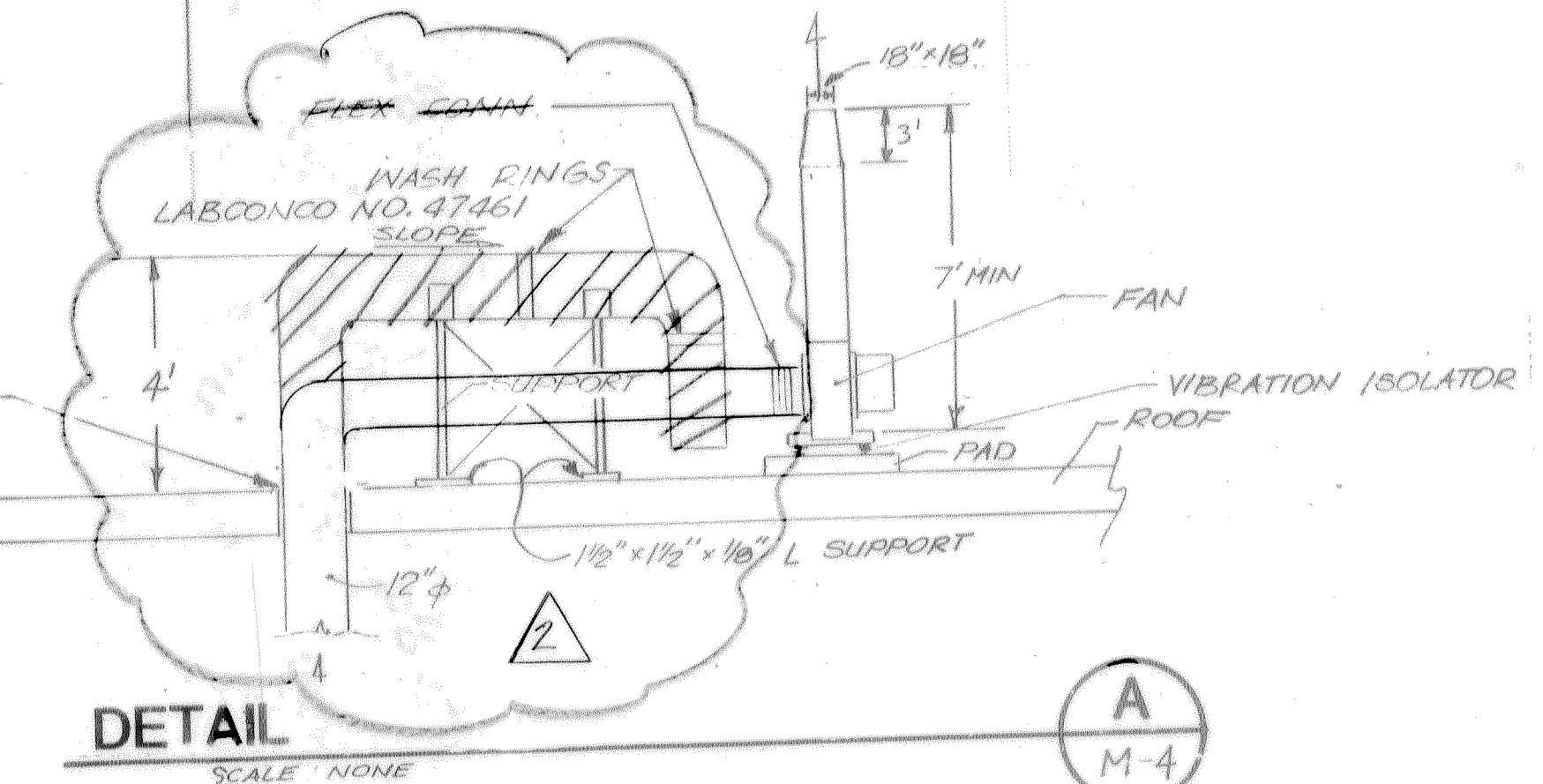
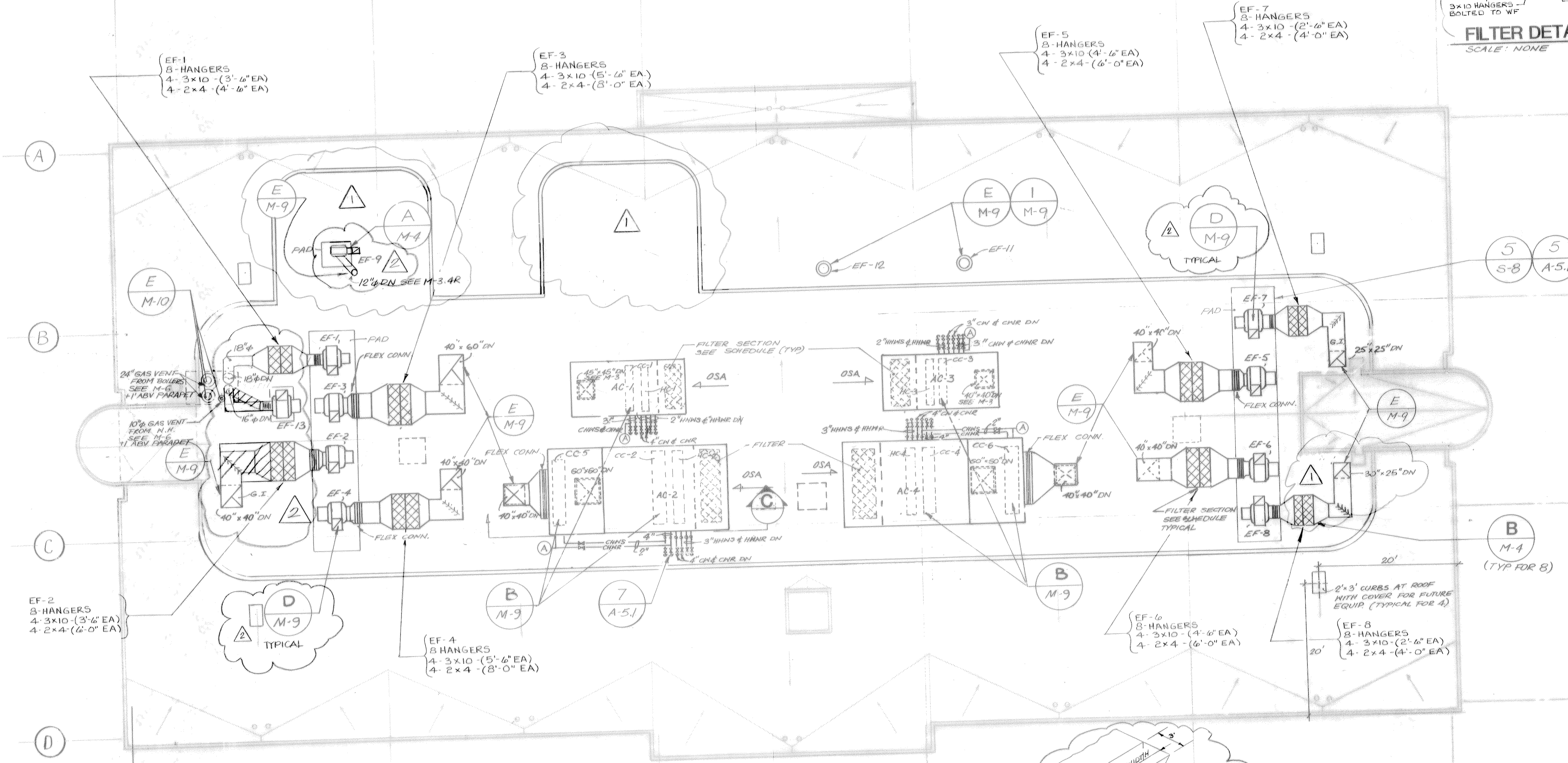
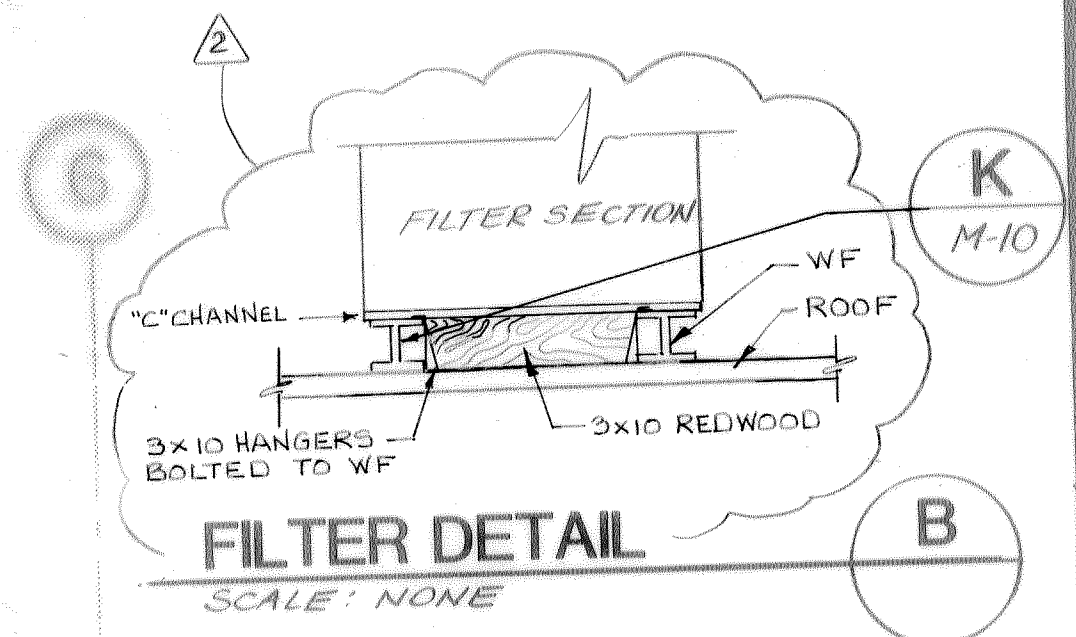
PARTIAL PLAN AC  
2ND FLOOR

NO. 67 OF 129



# RECORD DRAWINGS

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## RECORD DRAWING

ONE INCH ON ORIGINAL



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**BOYLE ENGINEERING CORPORATION**  
1501 Quail Street, P. O. Box 3070, Newport Beach, CA 92658-9020  
714/476-3300

REVISIONS		DATE	DESIGNED	DATE	DRAWN	CHECKED
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AS BUILT						
PLAN CHANGE 10						

MECHANICAL ROOF PLAN

DRAWING NO. **M-4R**  
SHEET NO. 71 OF 128

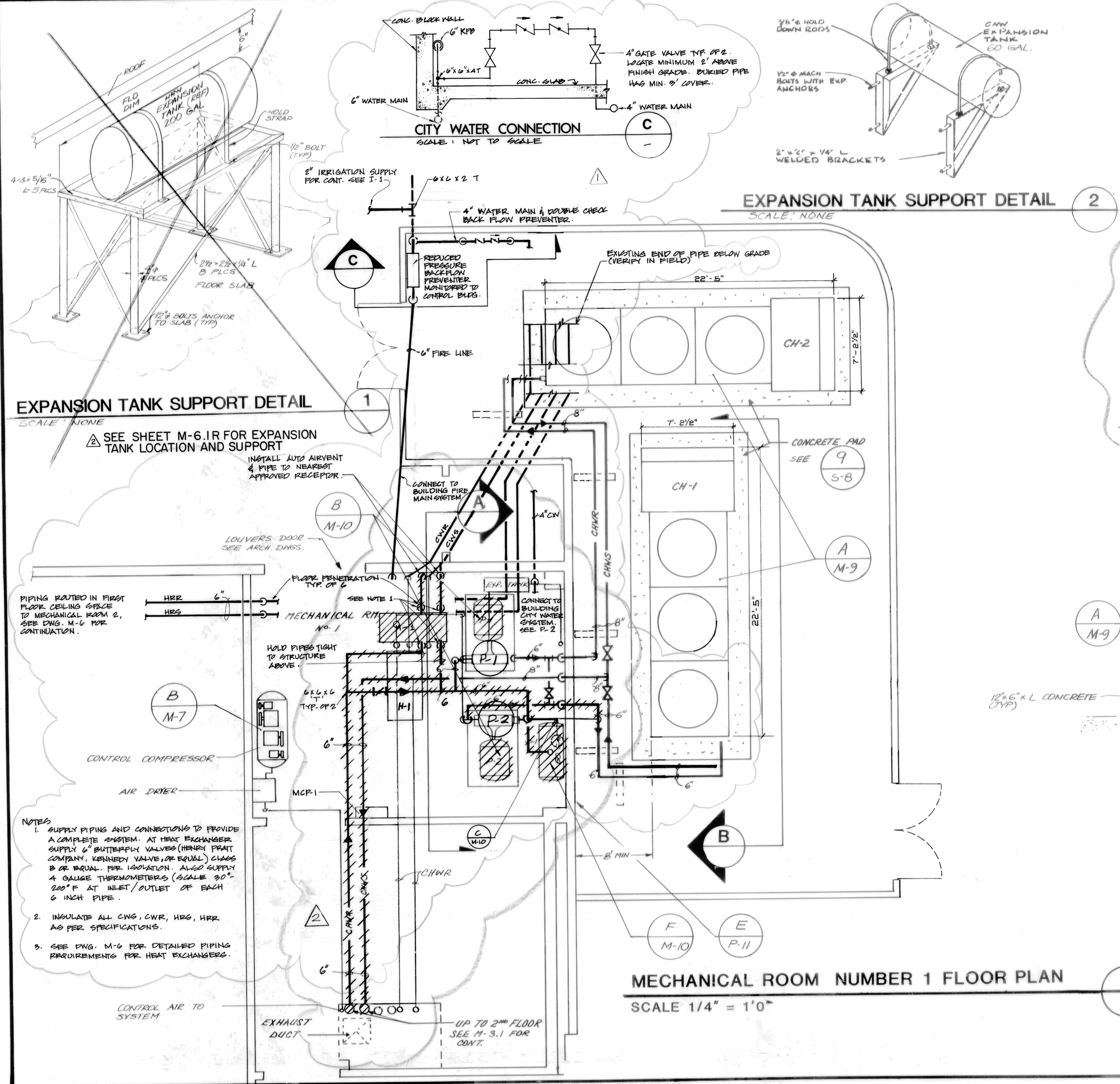






# RECORD DRAWINGS

THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE ENGINEER HAS NOT VERIFIED THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE HEREIN AS A RESULT.



**EXPANSION TANK SUPPORT DETAIL**  
SCALE: NONE

1

SEE SHEET M-6.1R FOR EXPANSION TANK LOCATION AND SUPPORT

INSTALL AUTO AIRVENT & PIPE TO NEAREST APPROVED RECEPTOR.

**CITY WATER CONNECTION**  
SCALE: NOT TO SCALE

C

**EXPANSION TANK SUPPORT DETAIL**  
SCALE: NONE

2

**SECTION**

SCALE 1/4" = 1'0"

A  
M-5

**SECTION**

SCALE 1/4" = 1'0"

B  
M-5

**MECHANICAL ROOM NUMBER 1 FLOOR PLAN**

SCALE 1/4" = 1'0"

3

## RECORD DRAWING



COUNTY SANITATION DISTRICTS OF ORANGE COUNTY, CALIFORNIA

**CENTRAL LABORATORY**

PLANT No. 1  
10844 ELLIS AVE.  
FOUNTAIN VALLEY, CALIFORNIA

**BOYLE ENGINEERING CORPORATION**  
1501 Quail Street, P. O. Box 3030, Newport Beach, CA 92658-9020  
714/46-3300

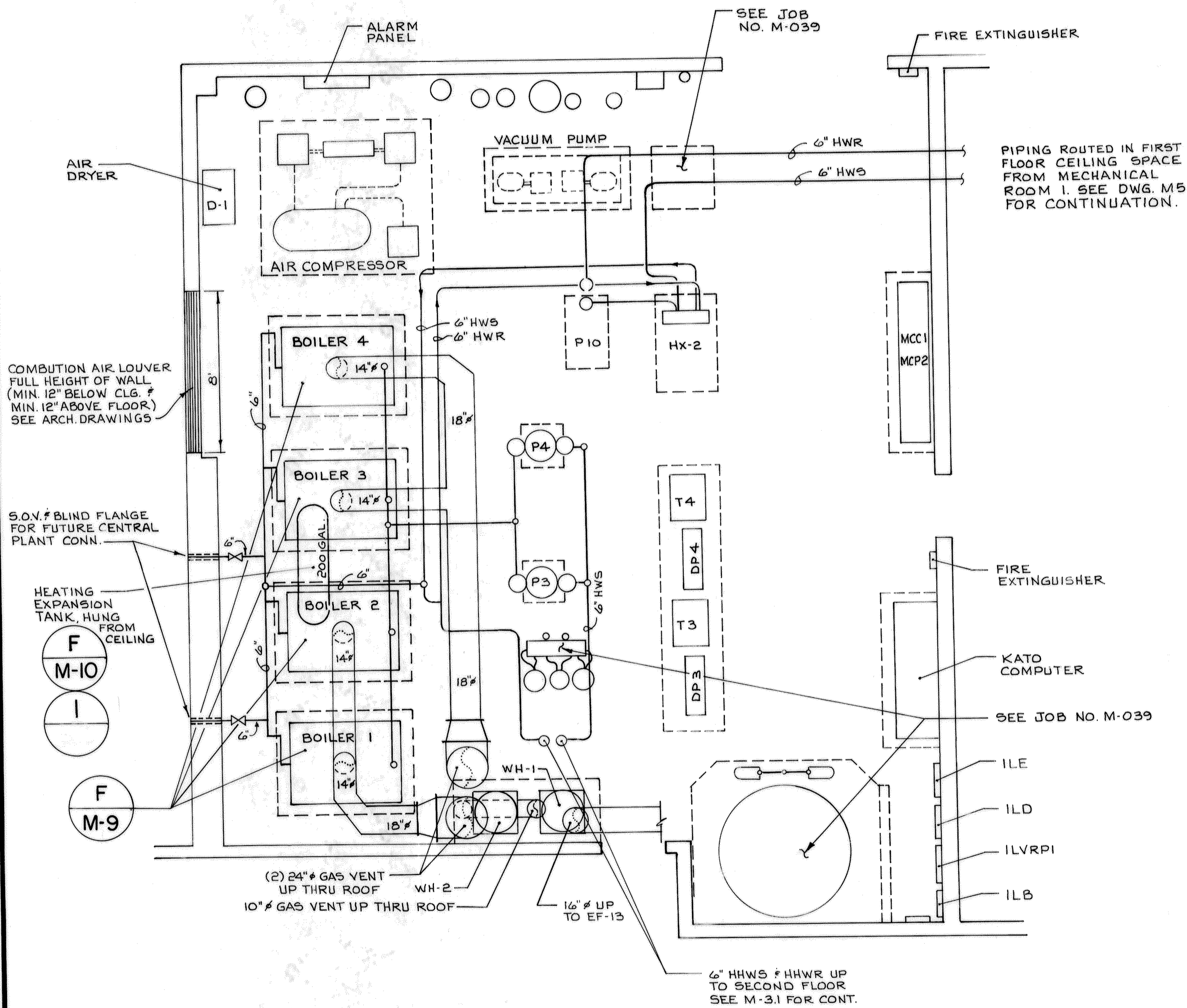
NO.	DESCRIPTION	APPROVED	DATE
1	"AS BUILT"	J.V.	8/31/90
REVISIONS			

DATE	DESIGNED	DRAWN	CHECKED
2/7/89			

MECHANICAL PLAN RM-1

DRAWING NO. **M-5**  
SHEET NO. 72 OF 291

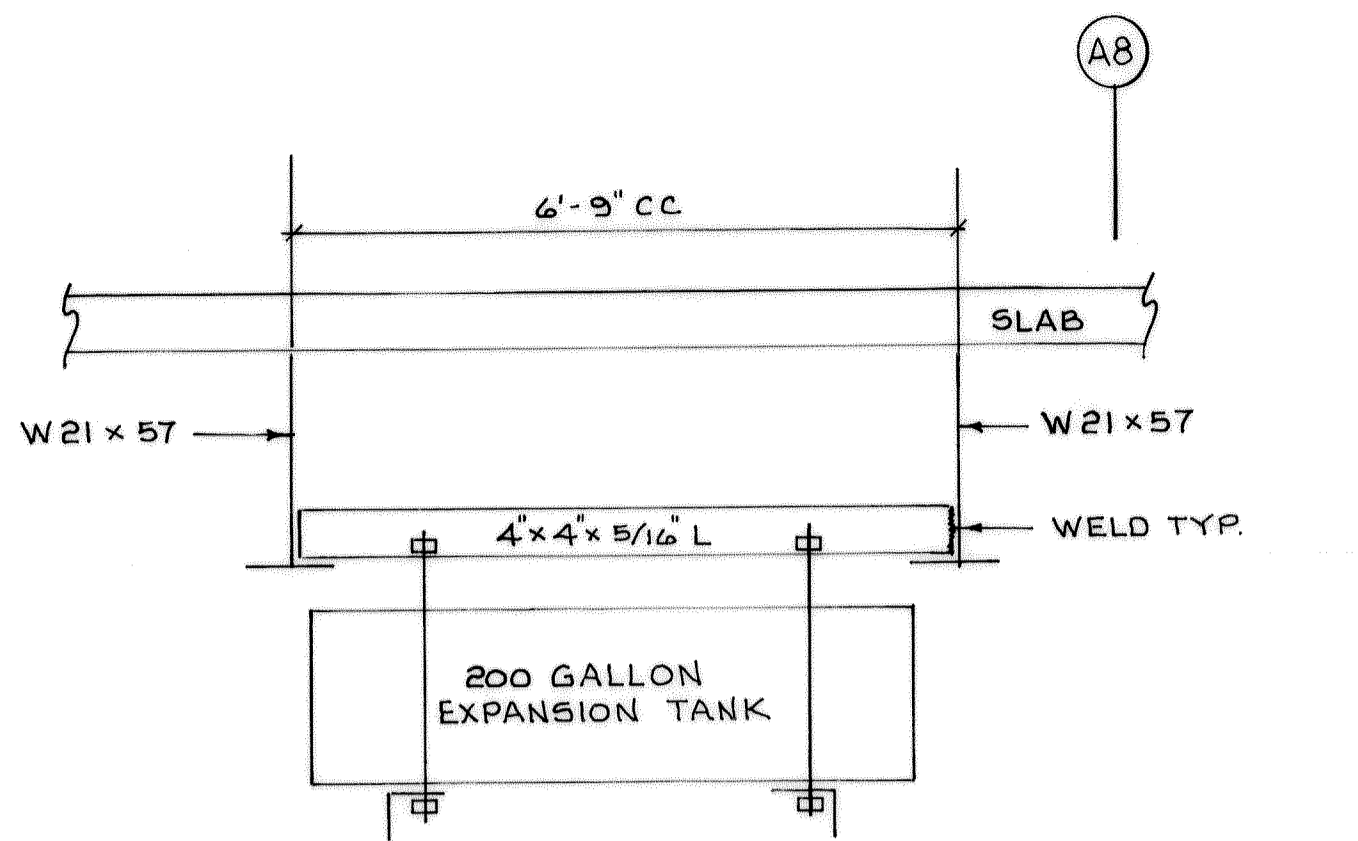




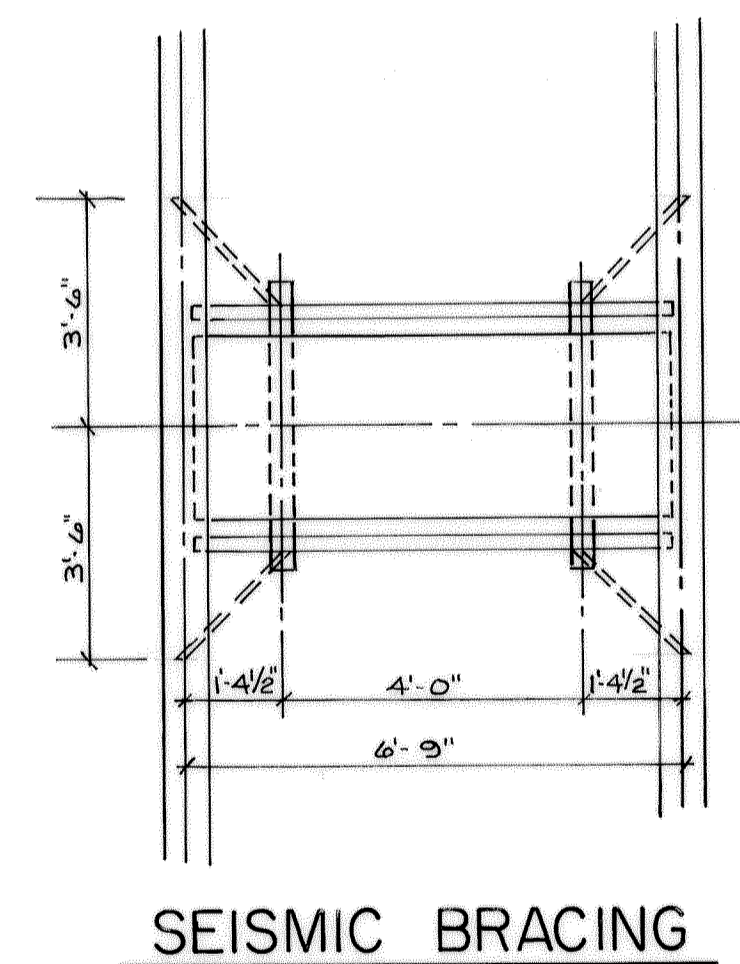
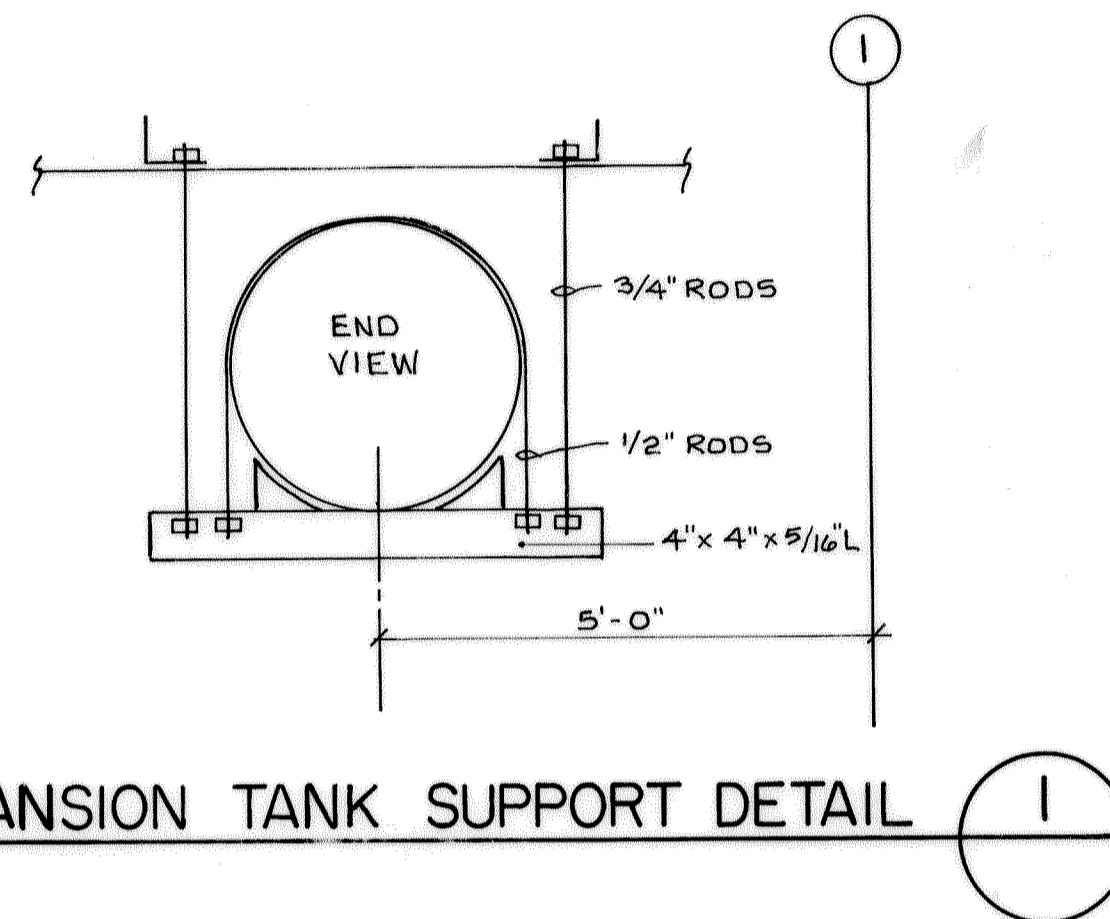
**MECHANICAL ROOM NO. 2 FLOOR PLAN**

SCALE 1/4" = 1'-0"

2



**EXPANSION TANK SUPPORT DETAIL**



**SEISMIC BRACING**

**RECORD DRAWINGS**  
 THESE RECORD DRAWINGS HAVE BEEN PREPARED BASED ON INFORMATION PROVIDED BY OTHERS. THE ENGINEER HAS NOT VERIFIED THE ACCURACY OF THIS INFORMATION AND SHALL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH MAY BE HEREIN AS A RESULT.

**RECORD DRAWING**

COUNTY SANITATION DISTRICTS OF ORANGE COUNTY, CALIFORNIA

**CENTRAL LABORATORY**

PLANT No. 1  
 10844 ELLIS AVENUE  
 FOUNTAIN VALLEY, CALIFORNIA

NO.	DESCRIPTION	APPROVED	DATE

DATE 9-28-93  
 DESIGNED  
 DRAWN L.E.  
 CHECKED

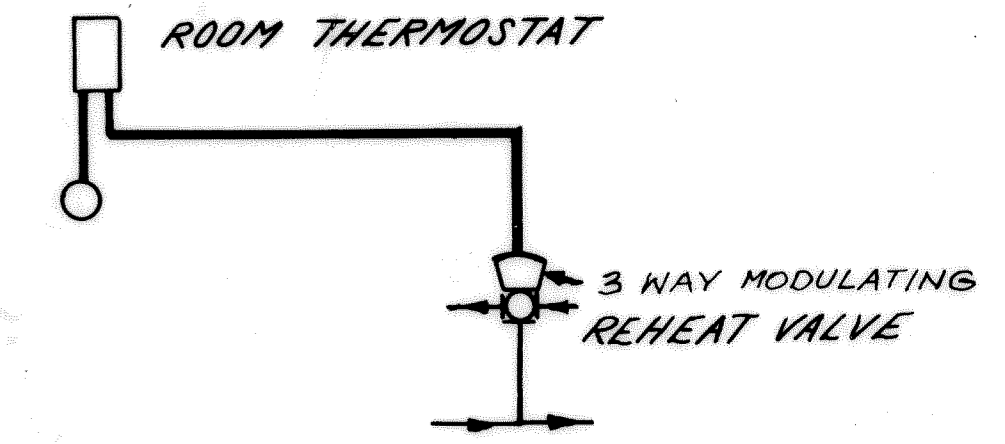
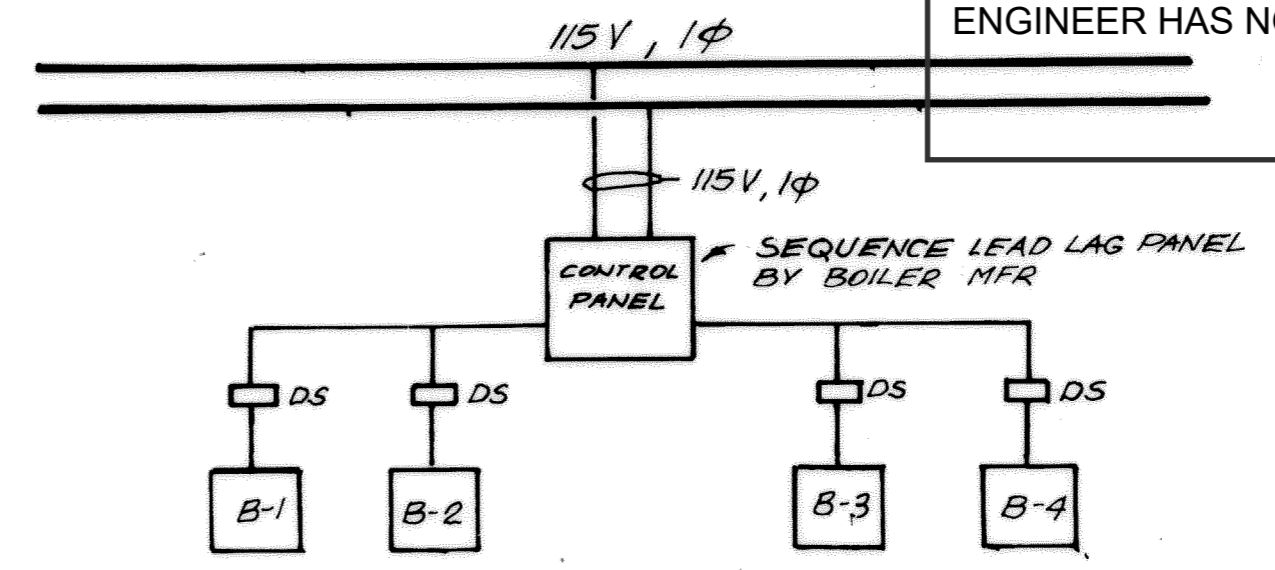
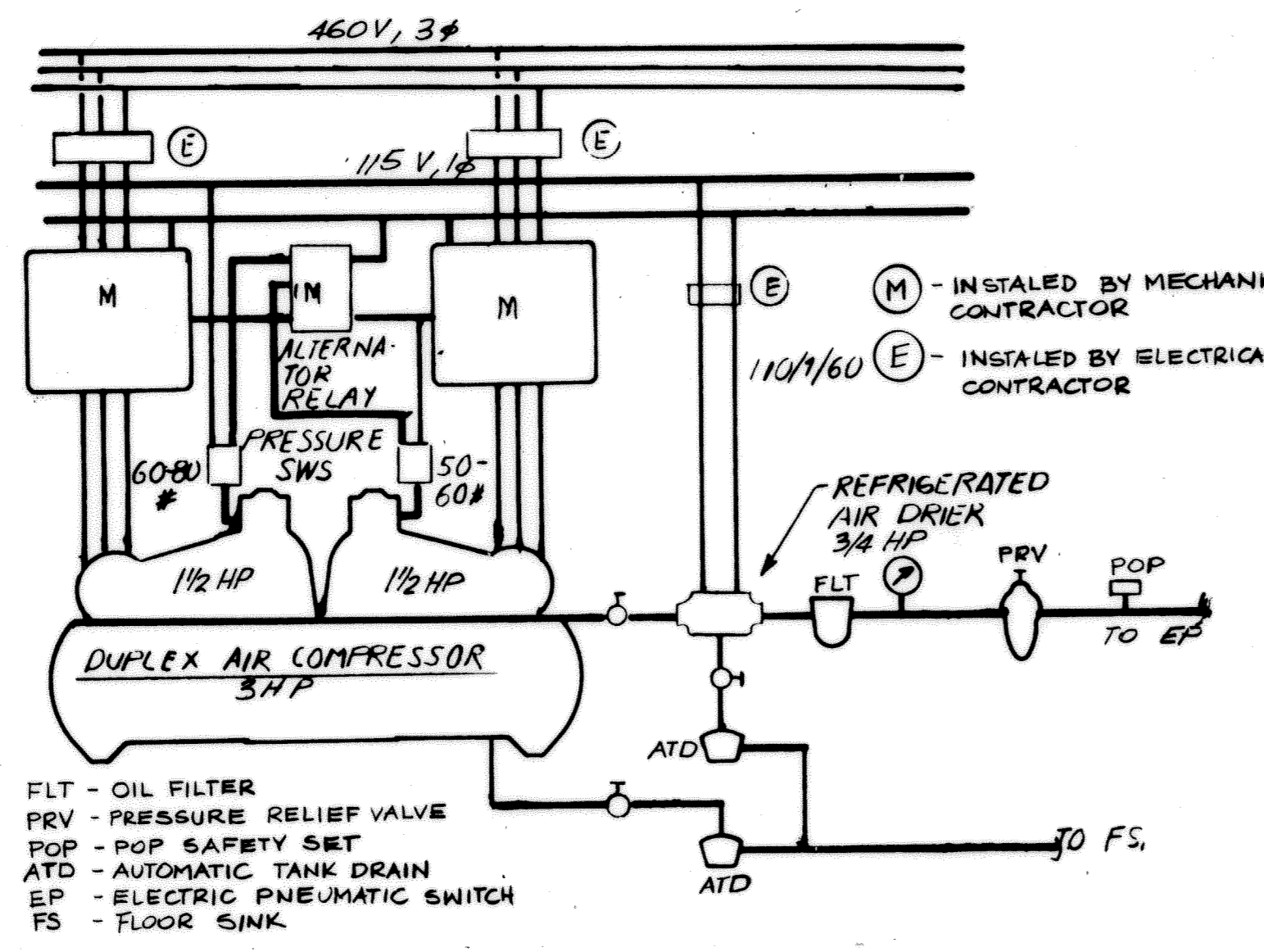
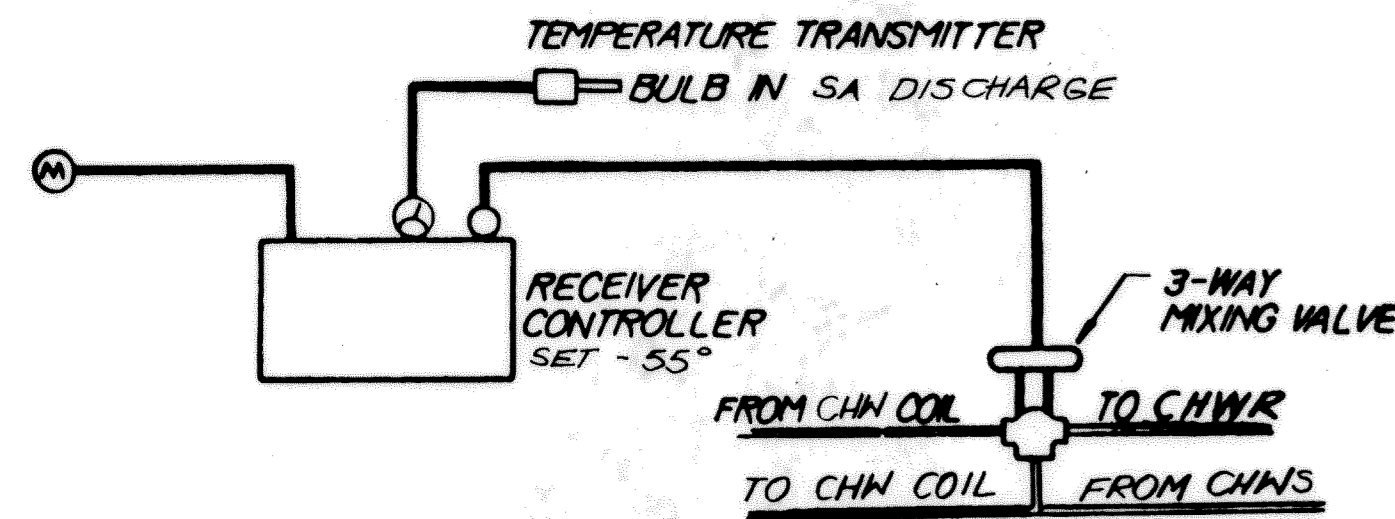
MECHANICAL PLAN RM-2

DRAWING NO. **M-6.1R**  
 SHEET  
 NO. 73A OF 129



### RECORD DRAWINGS

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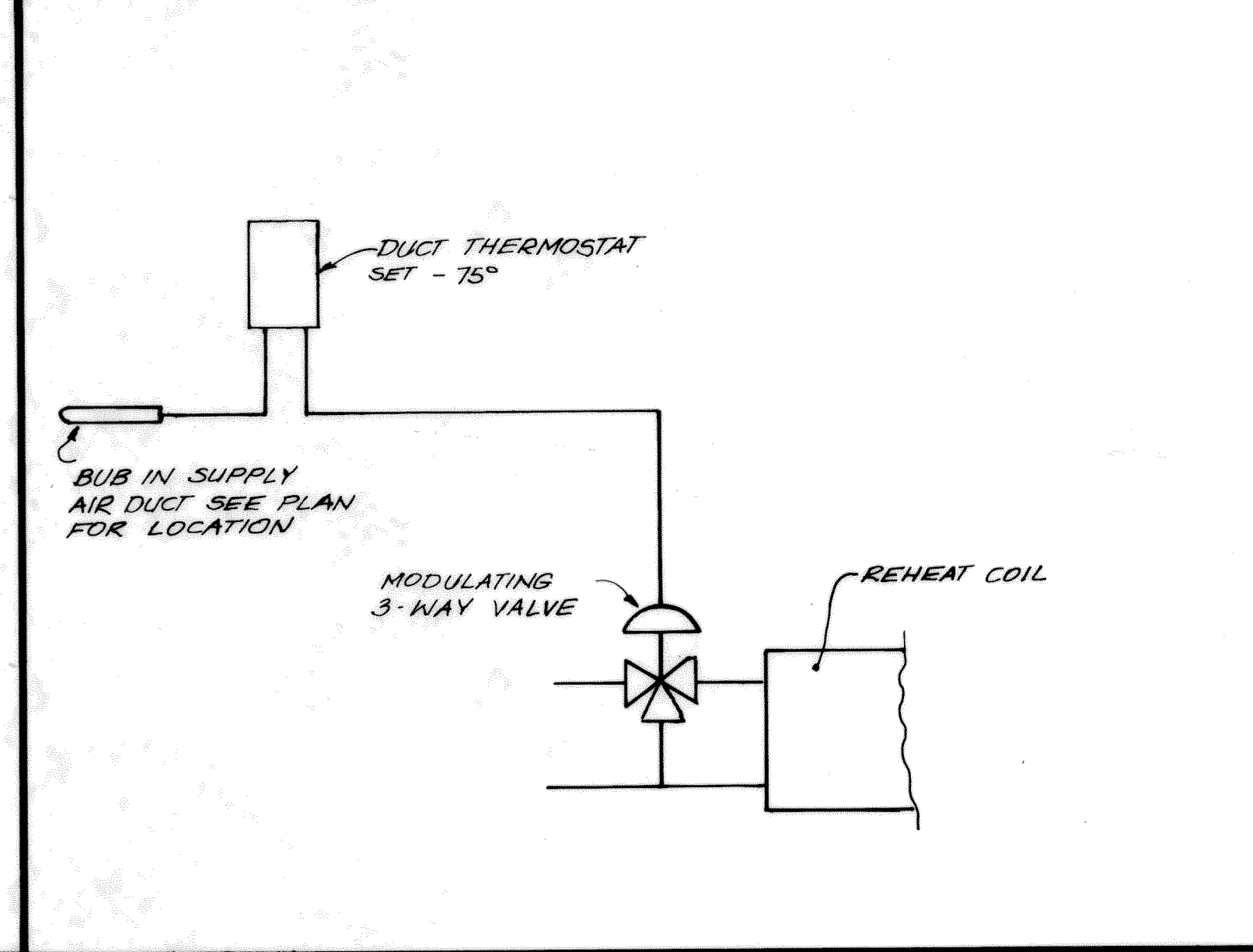
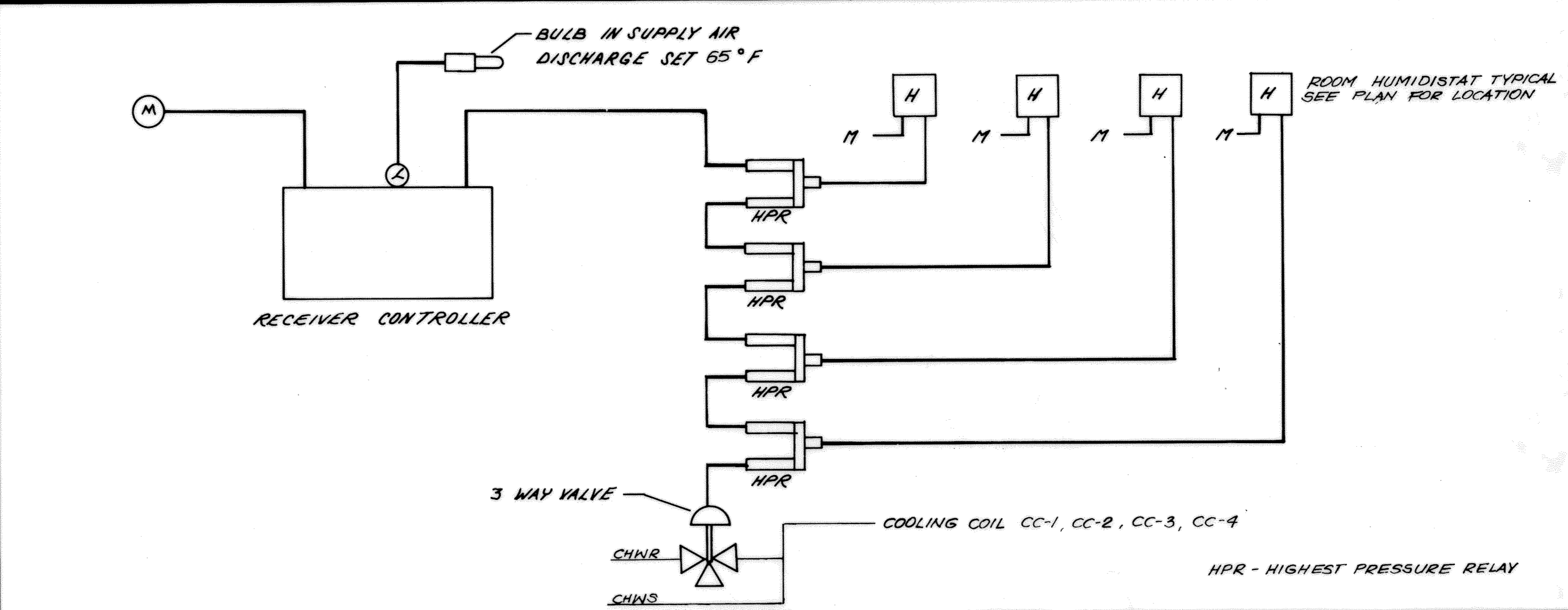
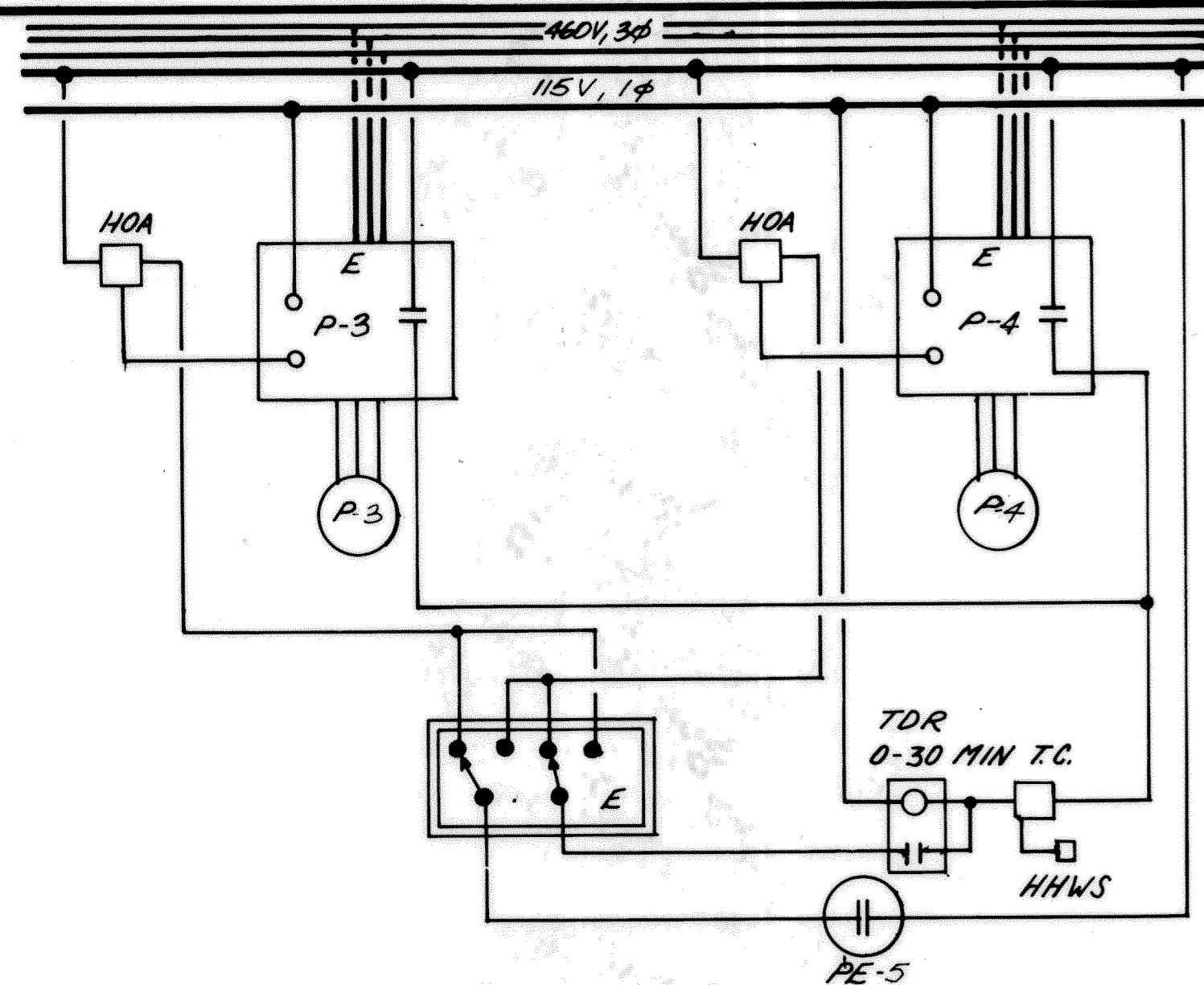


SUPPLY AIR CONTROL CC-5 & CC-6

CONTROL AIR SUPPLY SYSTEM

BOILER CONTROL

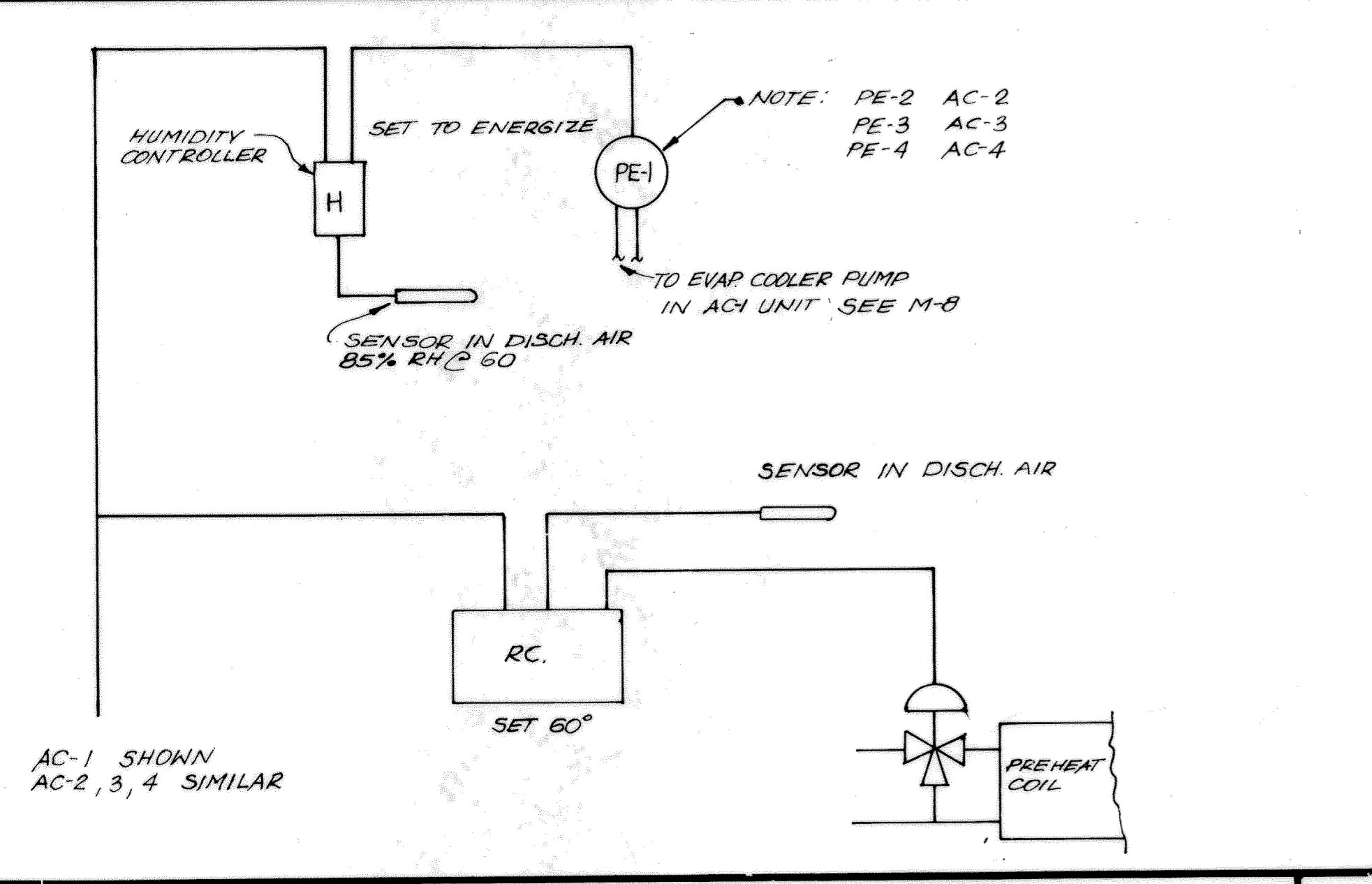
ZONE CONTROL



HEATING HOT WATER CONTROL

SUPPLY AIR CONTROL AND DEHUMIDIFICATION CONTROL

MAKEUP AIR REHEAT CONTROL



SYSTEM OPERATES 24 HOURS

CHILLED WATER SYSTEM. CHILLED WATER SYSTEM SHALL BE ENERGIZED WHEN CHILLED WATER PUMP IS ENERGIZED FROM OSA.

A. CHILLER SHALL HAVE LEAD LAG CONTROL.

B. IND. EVAP COOLER PUMP IS ENERGIZED WHEN OSA IS 75° OR MORE

C. CHILLER CAPACITY CONTROL BY CHILLER MANUFACTURER.

HEATING SYSTEM CONTROL. HEATING SYSTEM PUMPS SHALL BE ENERGIZED WHEN CONTROL SYSTEM IS ENERGIZED THRU PNEUMATIC ELECTRIC SWITCH PE-5. BOILER SHALL FIRE ON THEIR OWN CONTROLS TO MAINTAIN SET POINT TEMPERATURE.

AC UNIT CONTROL

A. PRIMARY COOLING COIL SHALL BE CONTROLLED FROM SENSOR IN DISCHARGE AIR TO MODULATE 3 WAY CHILLED WATER VALVE TO MAINTAIN PRIMARY AIR SET POINT TEMPERATURE.

B. DEHUMIDIFICATION. SPACE HUMIDISTAT SHALL OVERRIDE THE PRIMARY AIR TEMPERATURE CONTROL THRU HIGHEST PRESSURE RELAY TO OPEN THE 3 WAY CHILLED WATER VALVE.

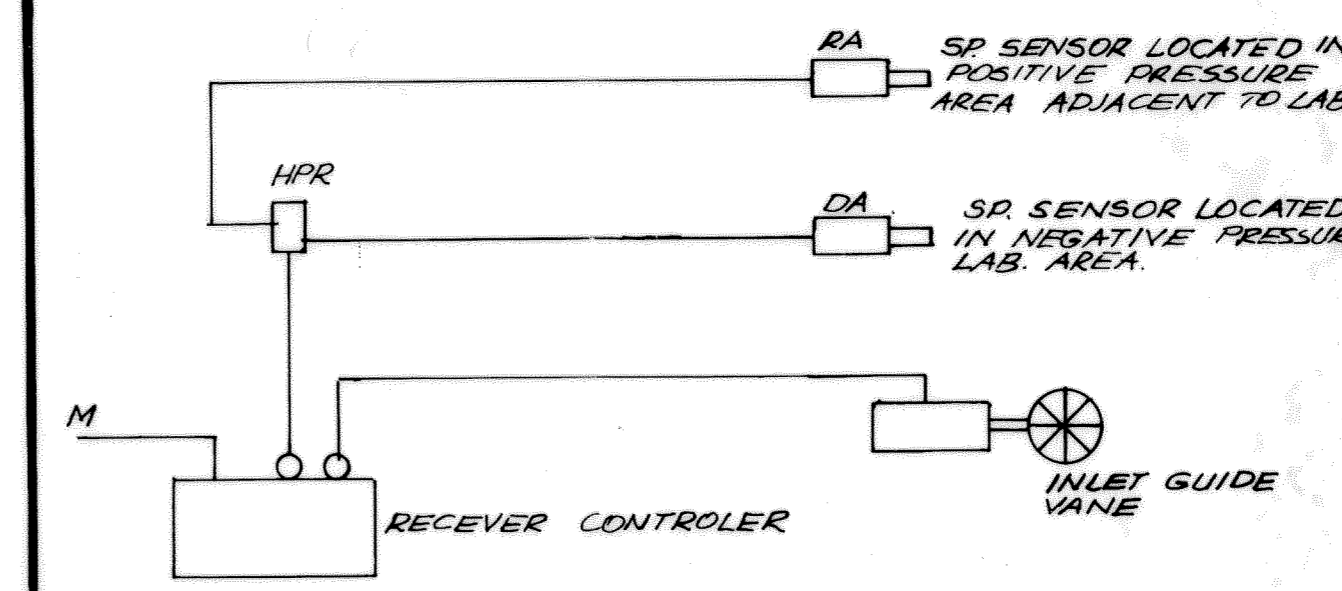
HUMIDITY CONTROL. HUMIDITY SENSOR LOCATED IN DISCHARGE AIR SHALL ENERGIZE THE DIRECT EVAP COOLER PUMP TO ADD MOISTURE TO THE AIR.

PREHEAT CONTROL. CONTROLLER WITH SENSOR LOCATED DOWNSTREAM OF PREHEAT COIL SHALL MODULATE 3 WAY VALVE TO MAINTAIN SET POINT TEMPERATURE.

ZONE CONTROL. ROOMS THERMOSTAT SHALL MODULATE 3 WAY VALVE AT REHEAT COIL TO MAINTAIN ZONE TEMPERATURE.

MAKE UP AIR ZONES. DUCT THERMOSTAT SHALL MODULATE 3 WAY VALVE AT REHEAT COIL.

STATIC PRESSURE CONTROL. SENSORS LOCATED IN ADJACENT SPACES SHALL MODULATE INLET GUIDE VANES ON AC UNITS TO MAINTAIN NEGATIVE PRESSURE IN LAB AREAS.



STATIC PRESSURE CONTROL

**RECORD DRAWING**

COUNTY SANITATION DISTRICTS OF  
ORANGE COUNTY, CALIFORNIA

**CENTRAL LABORATORY**

PLANT No. 1  
10844 ELLIS AVE.  
FOUNTAIN VALLEY, CALIFORNIA

**BOYLE ENGINEERING CORPORATION**  
1501 Quail Street, P. O. Box 3030, Newport Beach, CA 92658-9020  
714/76-3300

DATE: 2/7/81

DESIGNED: [Signature]

DRAWN: [Signature]

CHECKED: [Signature]

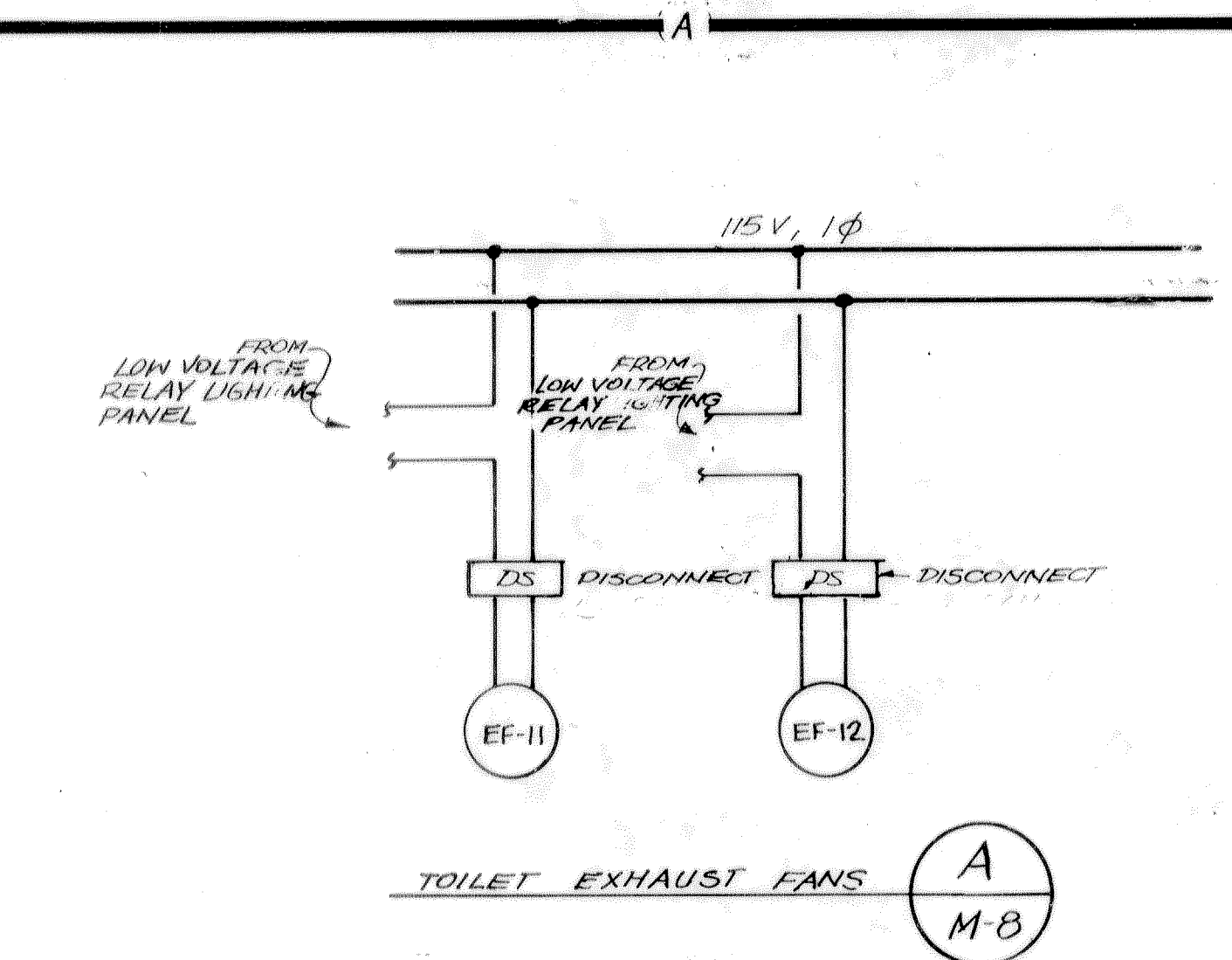
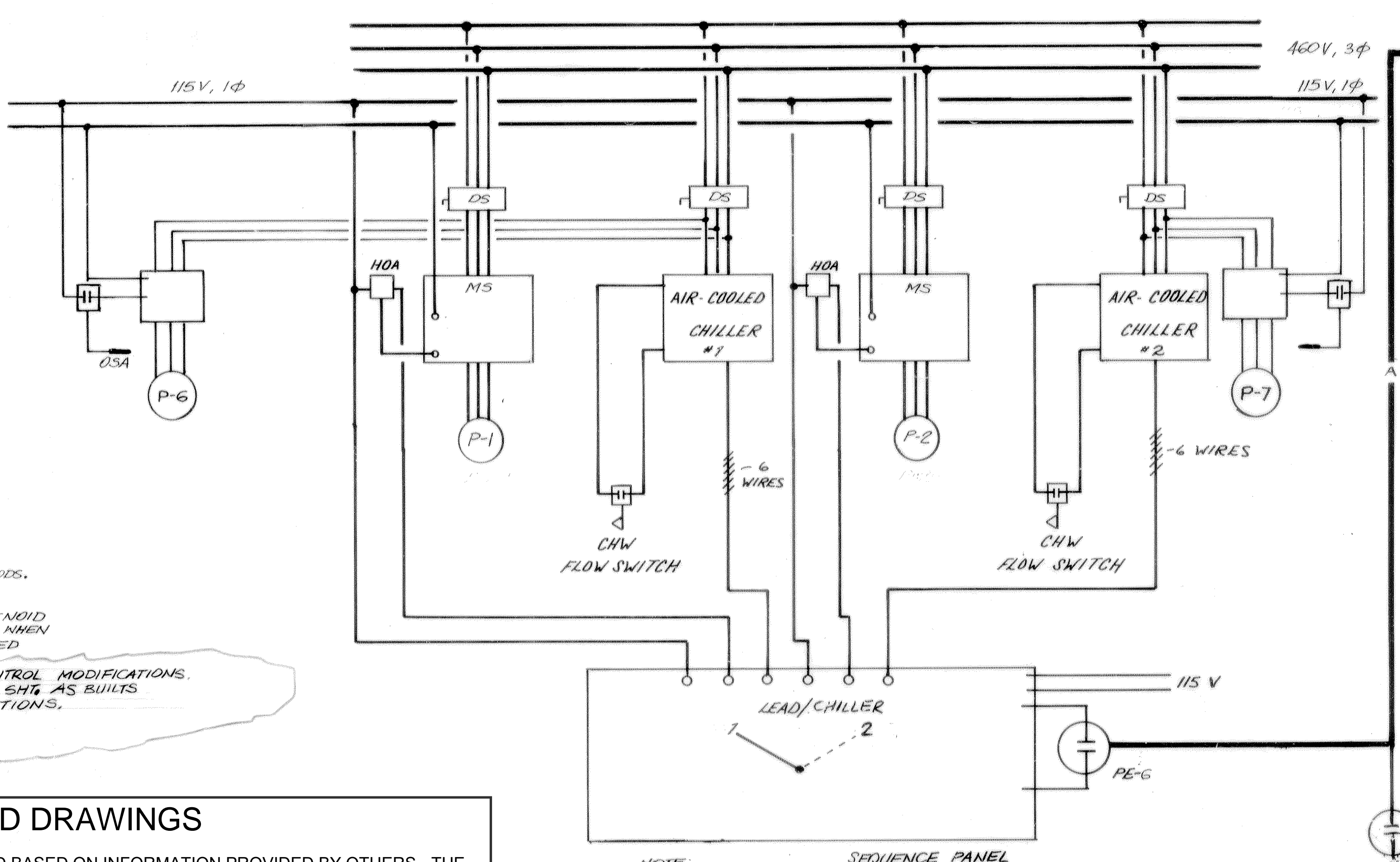
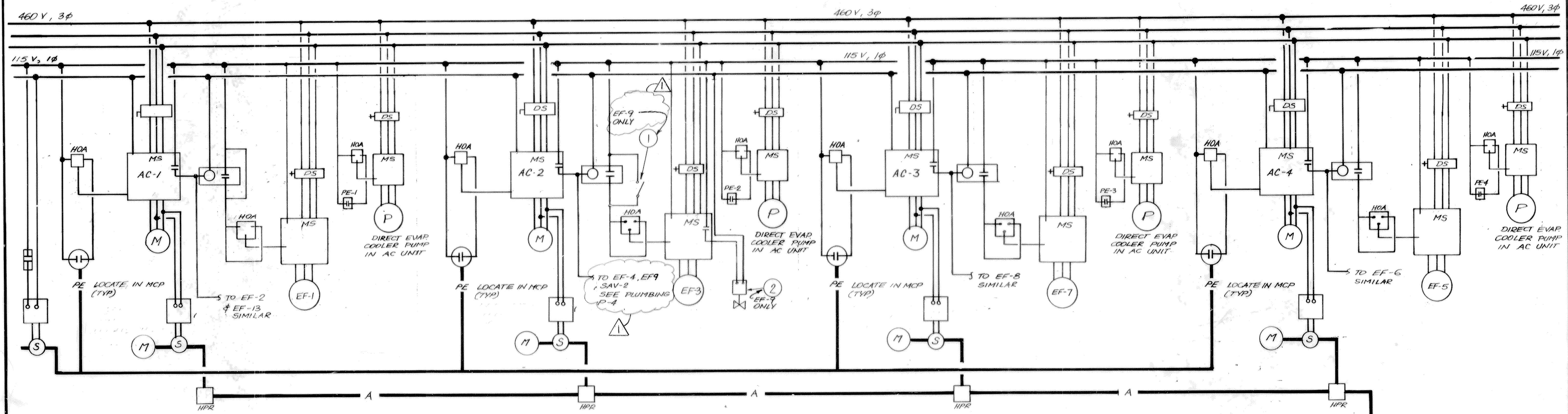
MECHANICAL CONTROL  
DIAGRAMS

M-7  
SHEET 74 OF 129

AC-UNIT HUMIDITY CONTROL

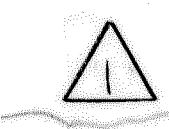
SEQUENCE OF CONTROL





- (M) - MOTOR
- A - CONTROL AIR
- HPR - HIGH PRESSURE RELAY
- MS - MAG. STARTER
- DS - DISCONNECT SW
- HOA - HAND OF AUTO SWITCH
- OSA - OUTSIDE AIR
- P - PUMP MOTOR
- EF - EXHAUST FAN
- PE - PNEUMATIC ELECTRIC SW. LOCATE IN MCP
- M - MAIN CONTROL SUPPLY AIR

- ① - SPST BYPASS SW AT PERCHLORIC FUME HOODS. FOR EXHAUST FANS EF-9 & EF-10 ONLY
- ② - PERCHLORIC FUME HOODS WASH RING SOLENOID VALVE SEE P.A.R. VALVE SHALL OPEN WHEN EXHAUST FAN EF-9 IS ENERGIZED ONLY
- ③ - REFER TO REV. # 2 FOR PREVIOUS CONTROL MODIFICATIONS. REVISIONS INDICATED ONLY ON THIS SHEET AS BUILTS SHALL REFLECT PREVIOUS MODIFICATIONS.



**RECORD DRAWINGS**

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NOTE: LABEL PANEL AS INDICATED

**RECORD DRAWING**

COUNTY SANITATION DISTRICTS OF ORANGE COUNTY, CALIFORNIA

**CENTRAL LABORATORY**

PLANT No. 1  
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FOUNTAIN VALLEY, CALIFORNIA

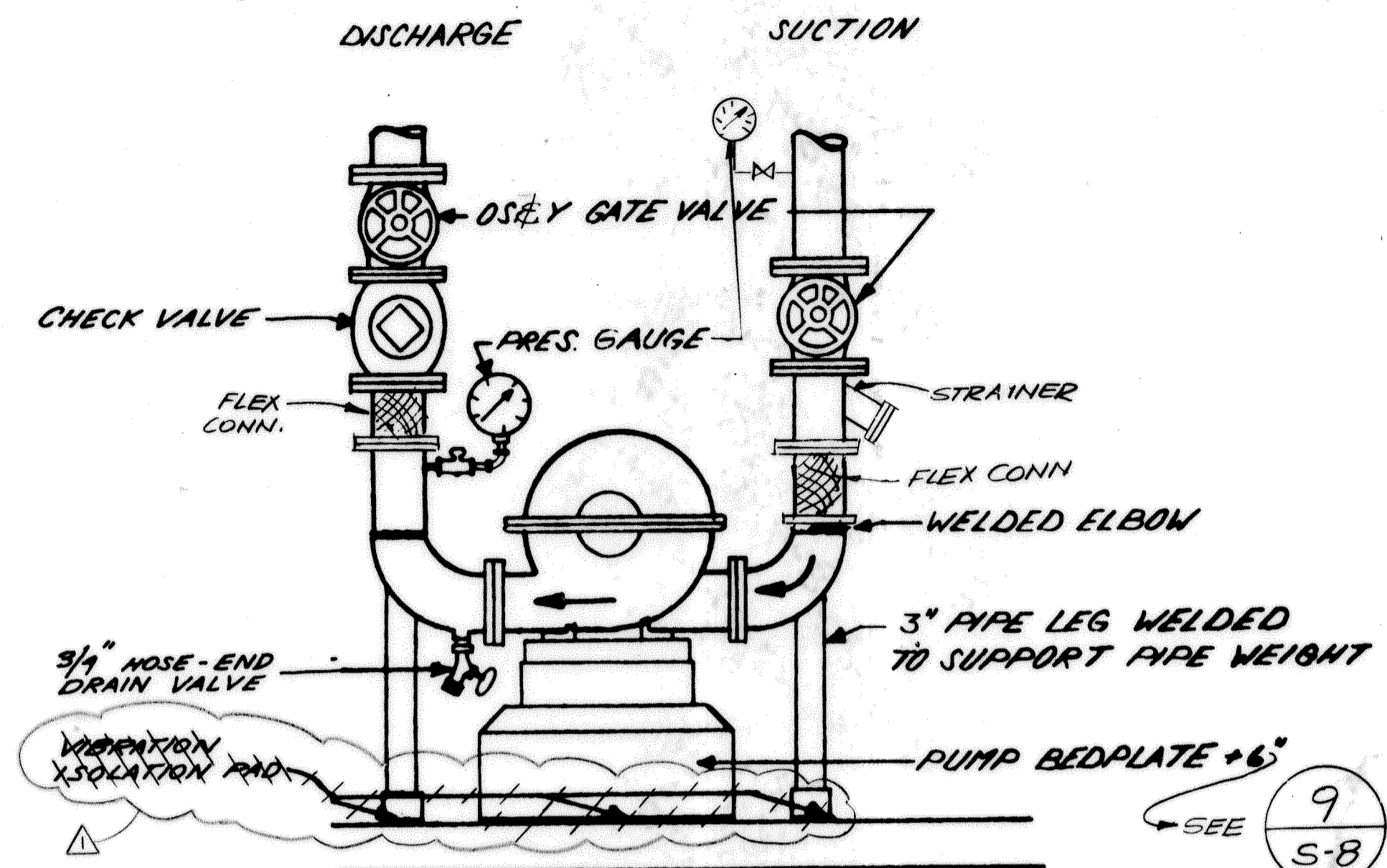


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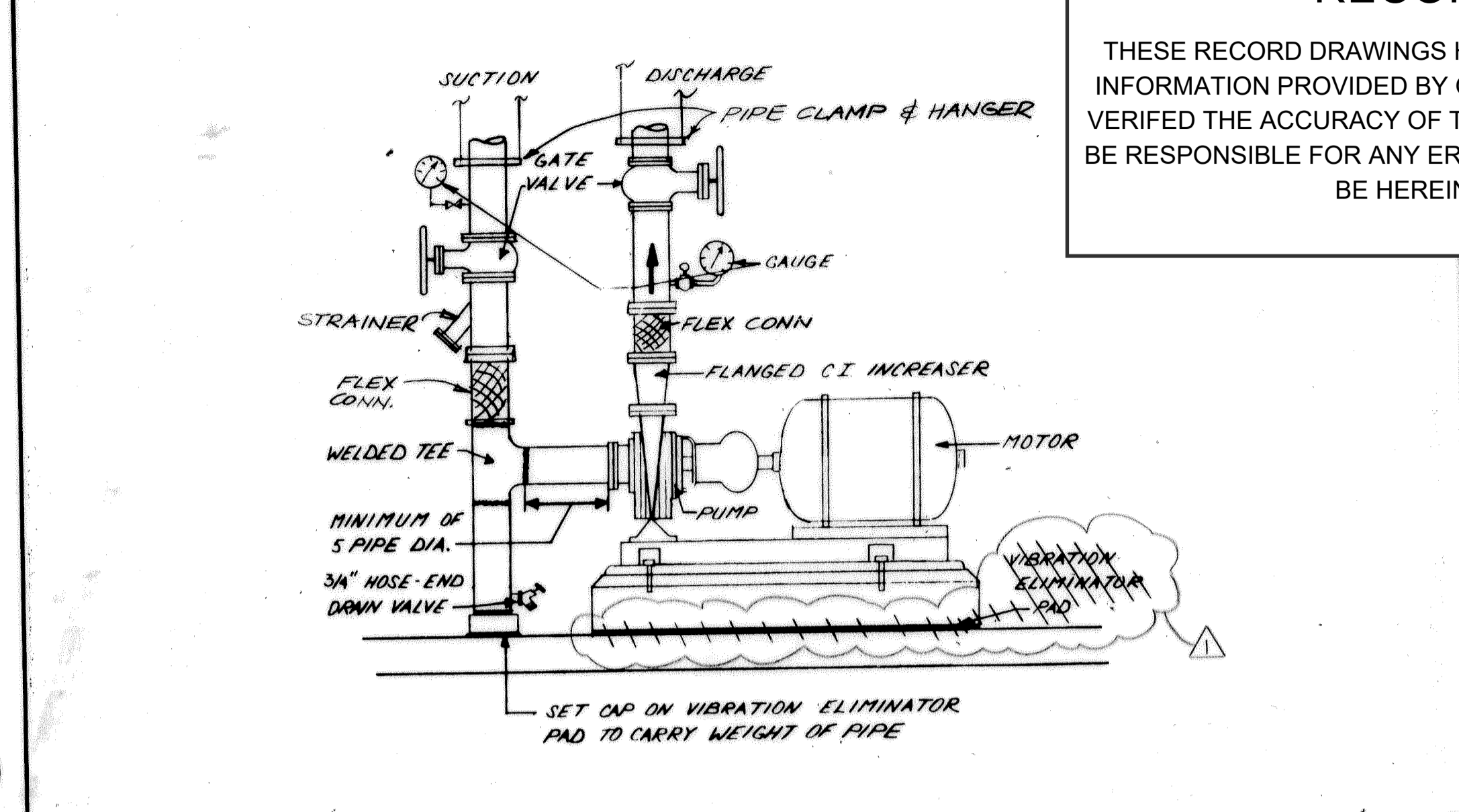
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1	PLAN CHANGE 10		1/24/81
REVISIONS			

DATE	DESIGNED	DRAWING NO. <b>M-8R</b>
APPROVED	DRAWN	
CHECKED	SHEET	
MECHANICAL CONTROL DIAGRAMS		NO. 75 OF 129





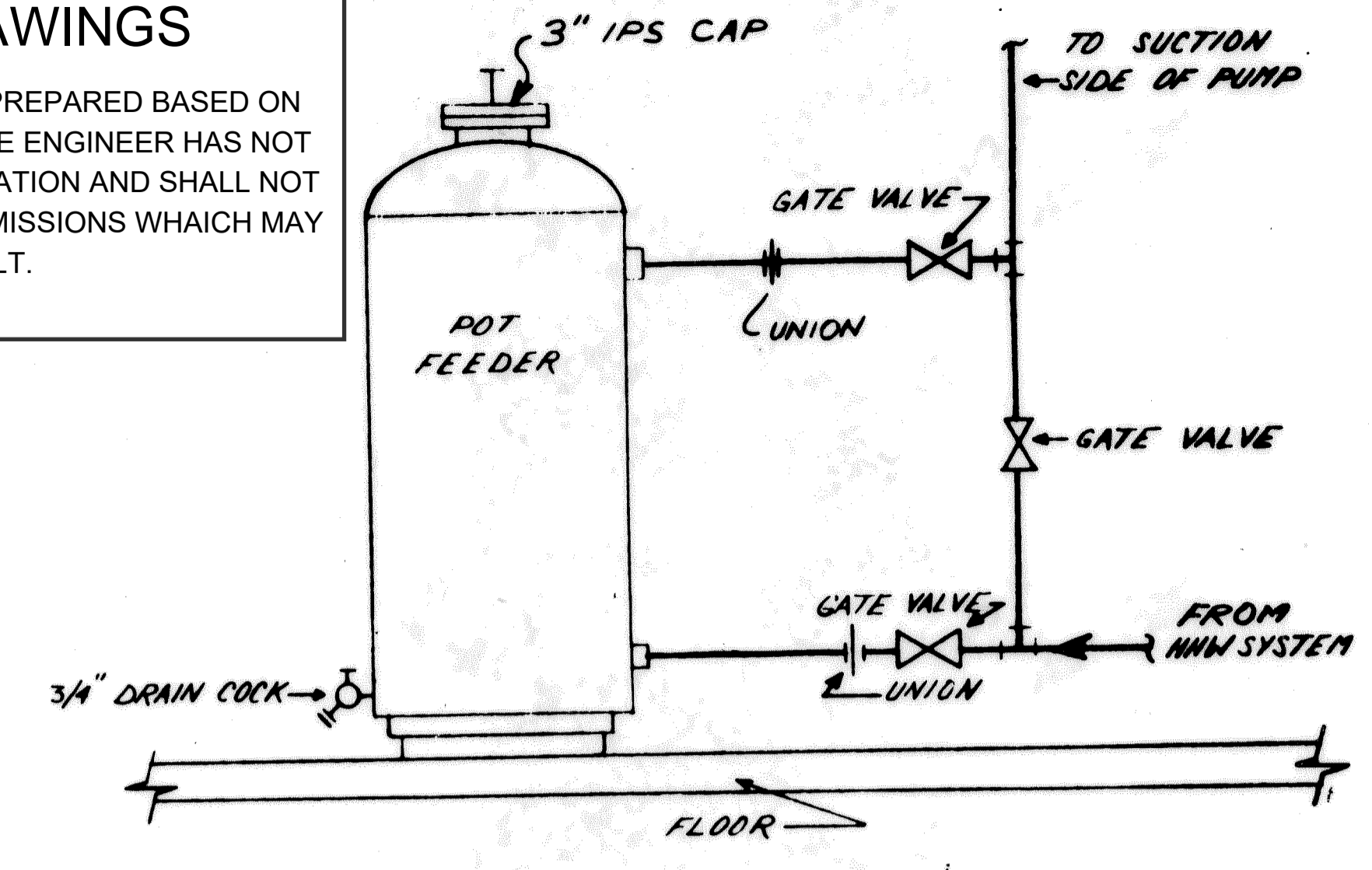
SPLIT CASE PUMP DETAIL



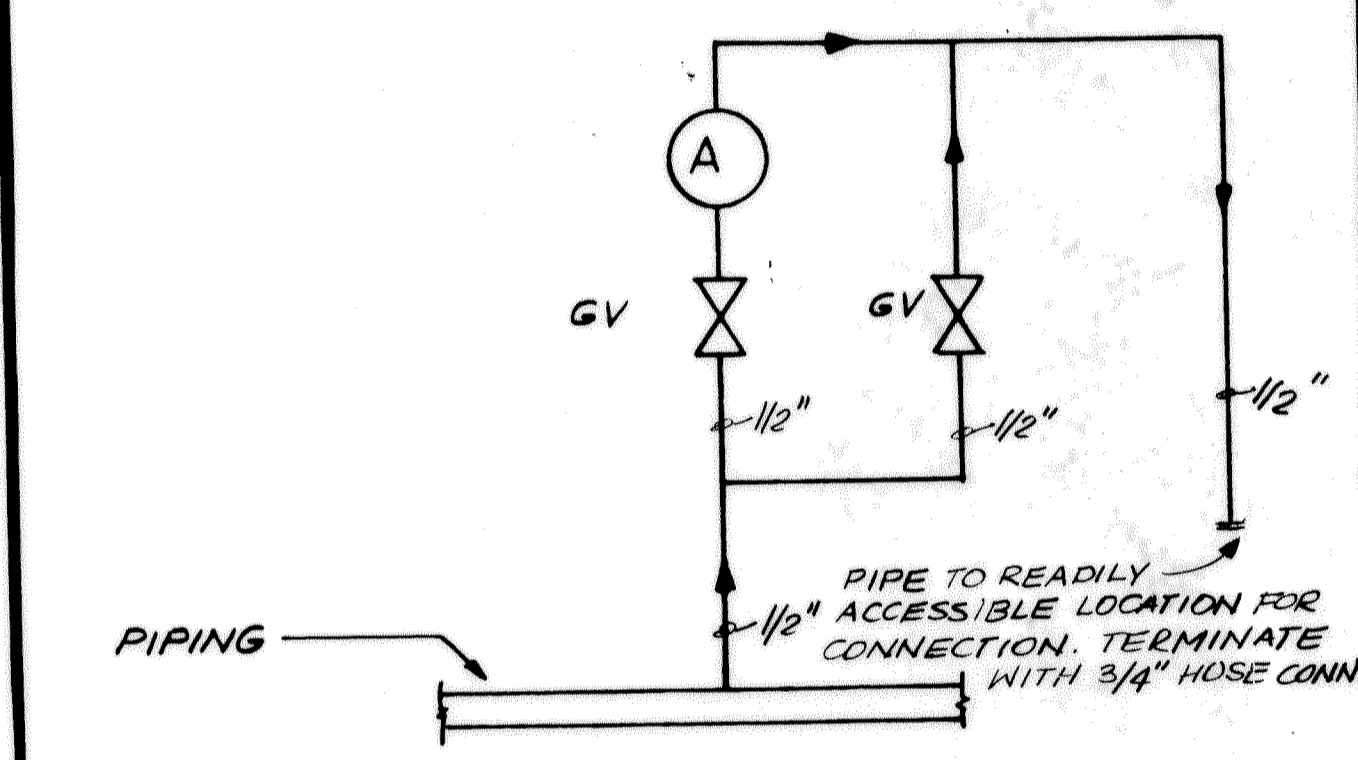
PIPING AT PUMPS

**RECORD DRAWINGS**

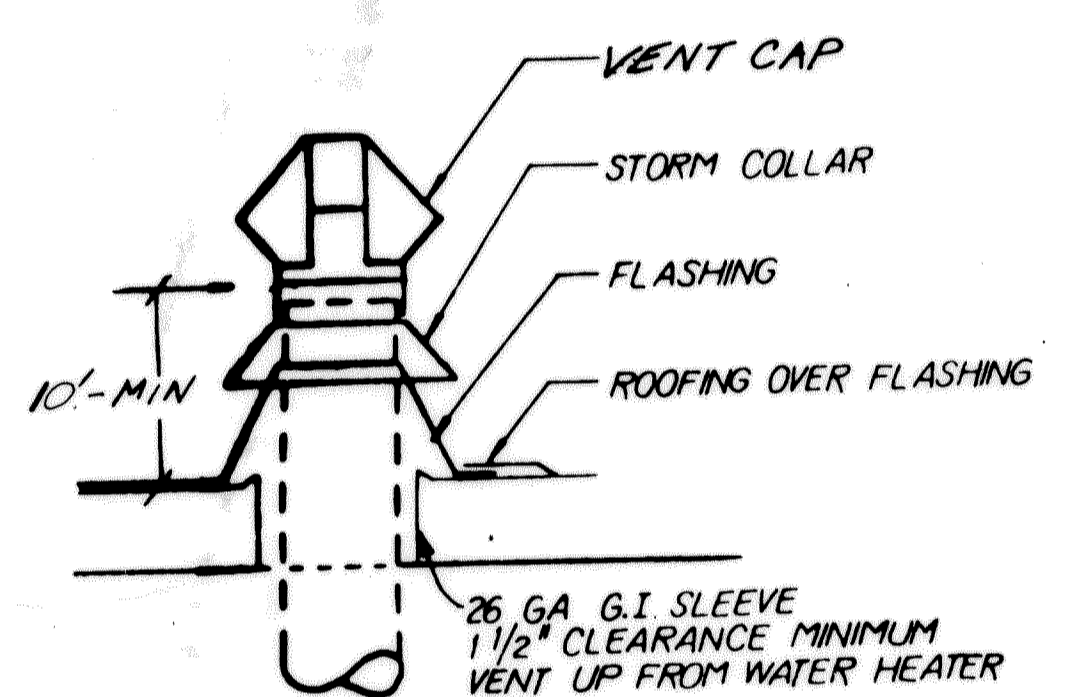
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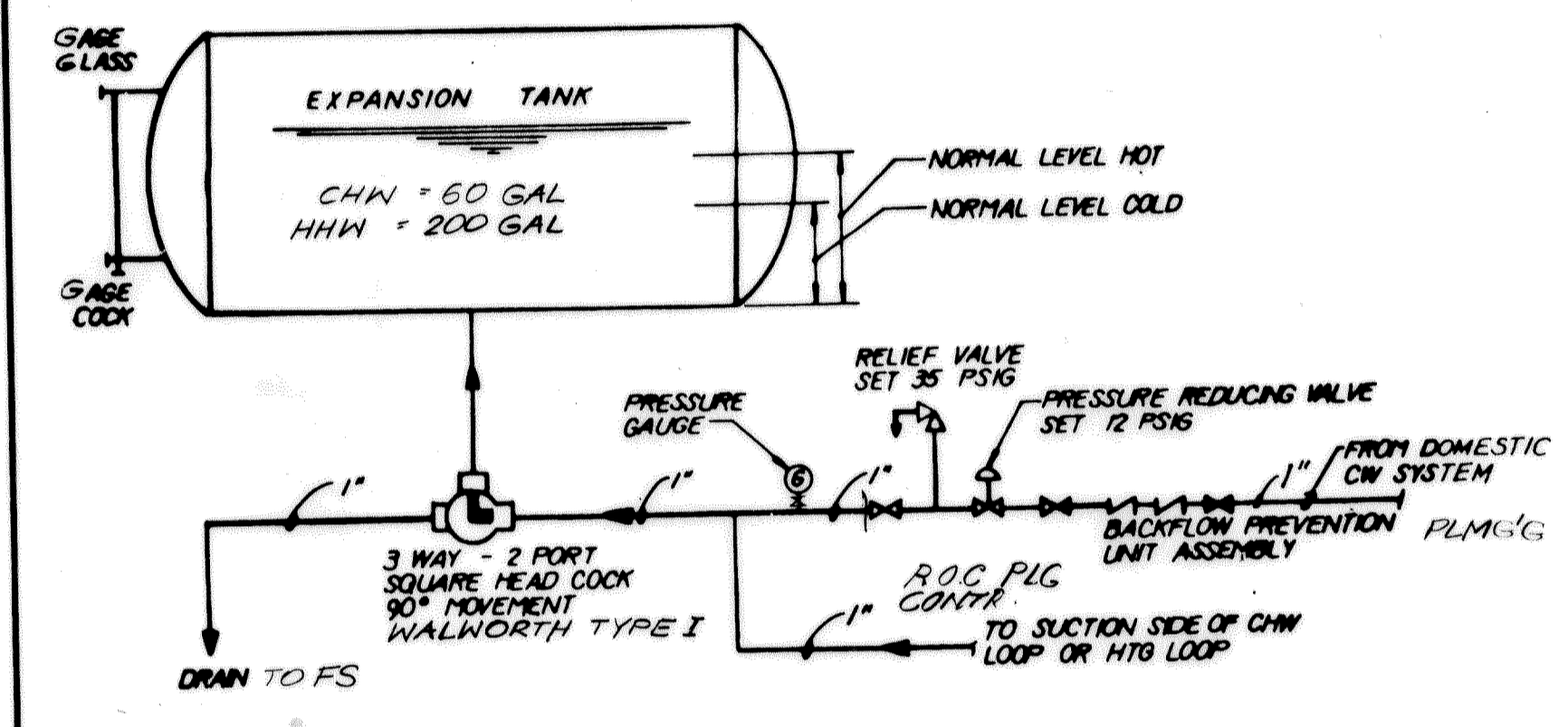
POT FEEDER



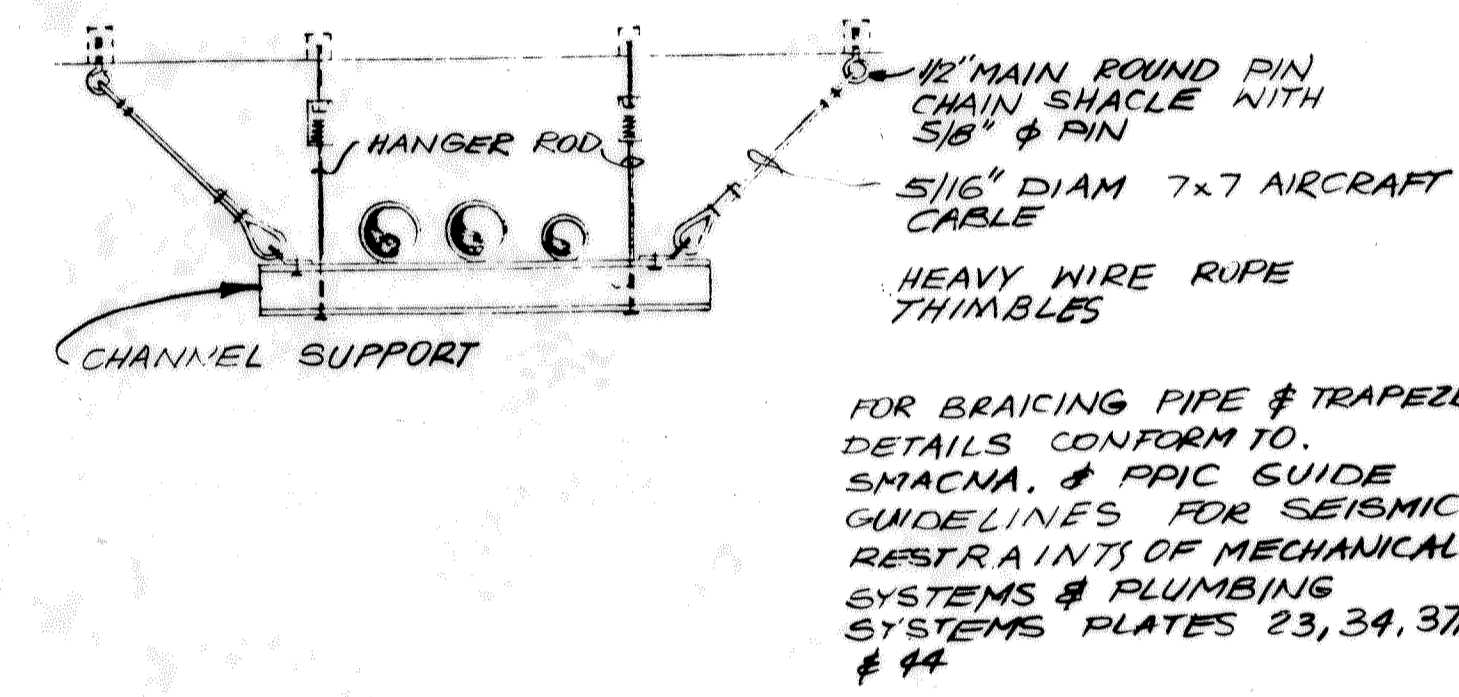
AIR VENT DETAIL



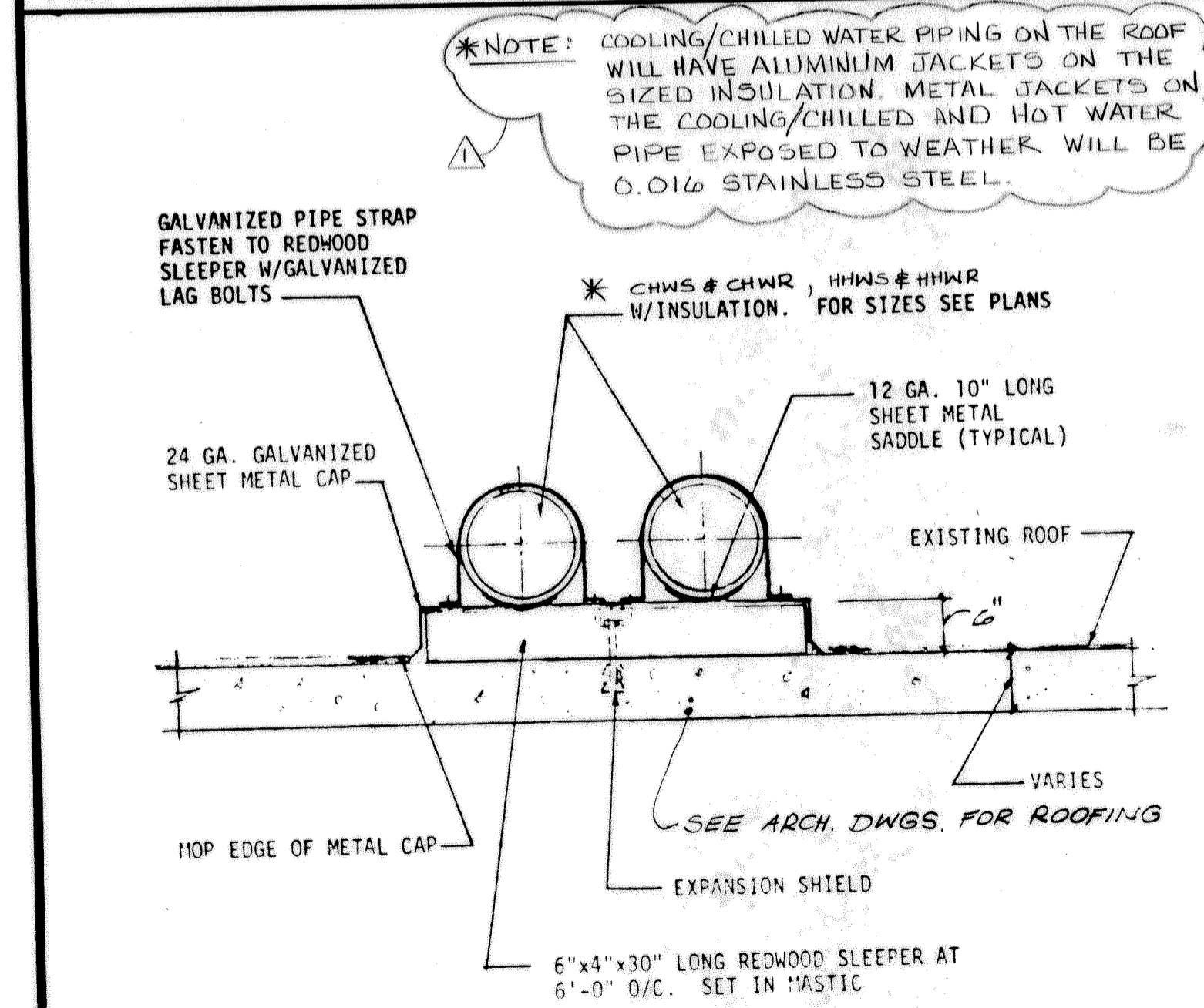
FLUE VENT THRU ROOF



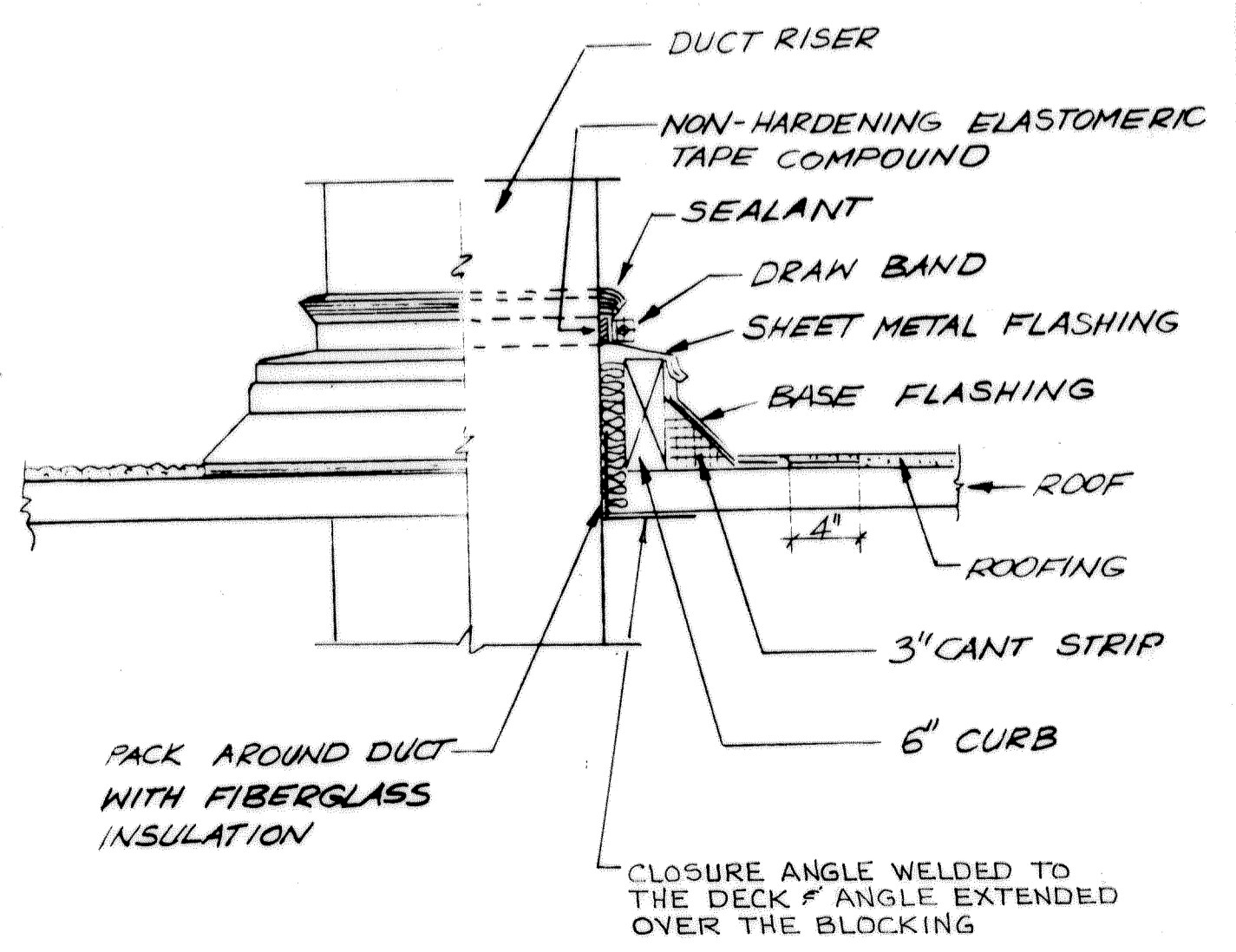
EXPANSION TANK



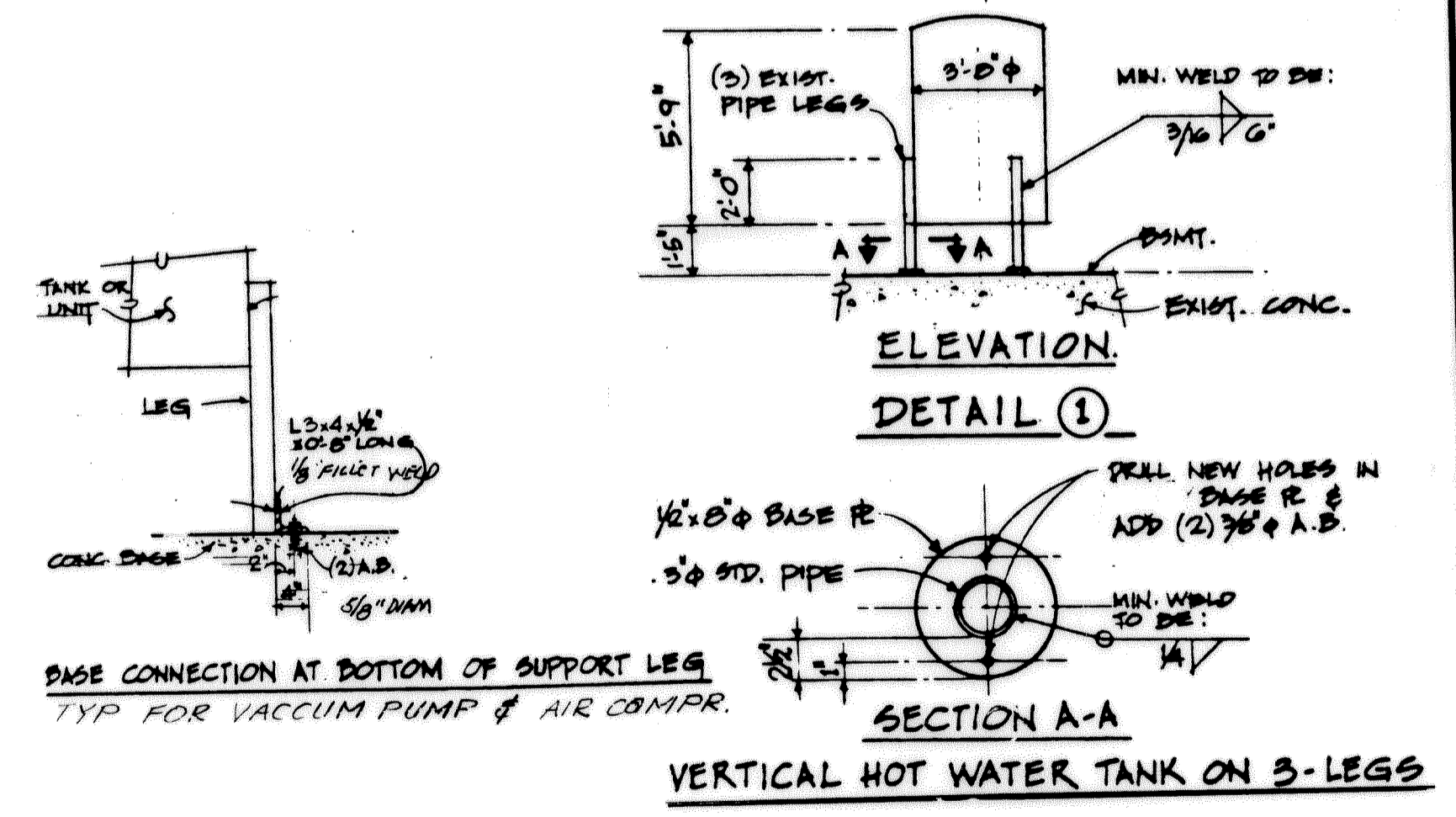
SEISMIC RESTRAINT FOR PIPING



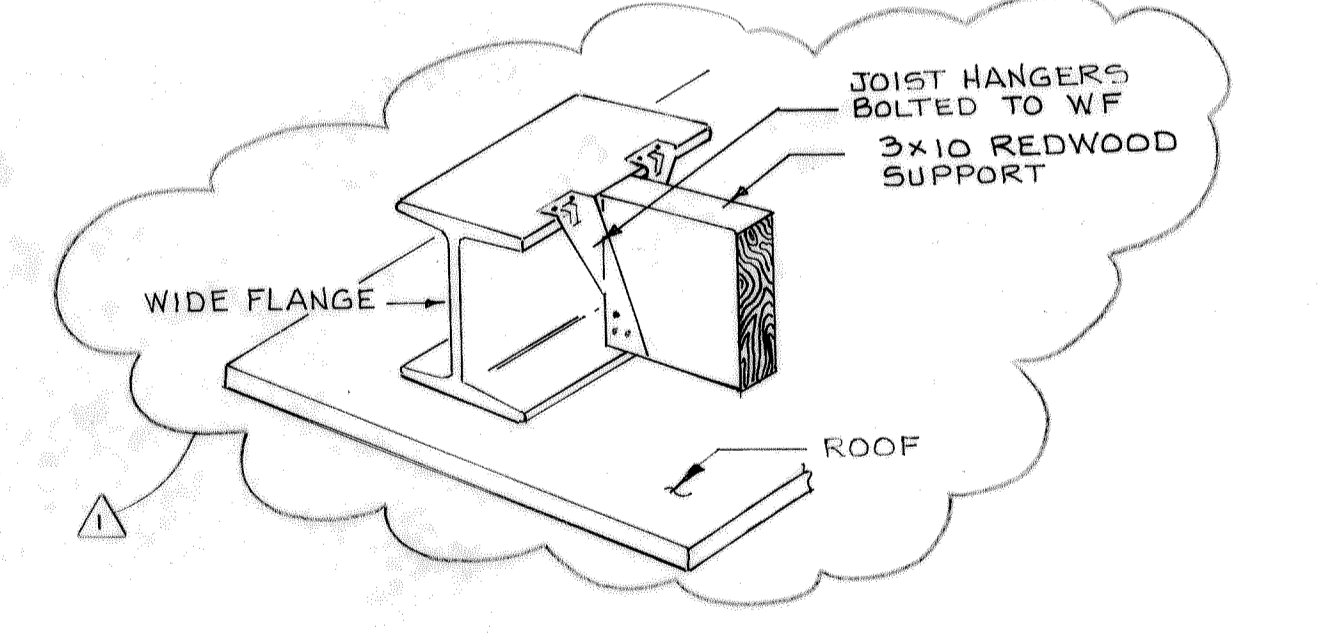
ROOF PIPE SUPPORT DETAIL



DUCT ROOF PENETRATION DETAIL



SEISMIC RESTRAINTS



SLEEPER DETAIL



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714/76-3300

RECORD DRAWING

REVISIONS		DATE	BY	APPROVED	DATE	CHECKED
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2		4-11-90				
3		7/6/91				

MECHANICAL DETAILS

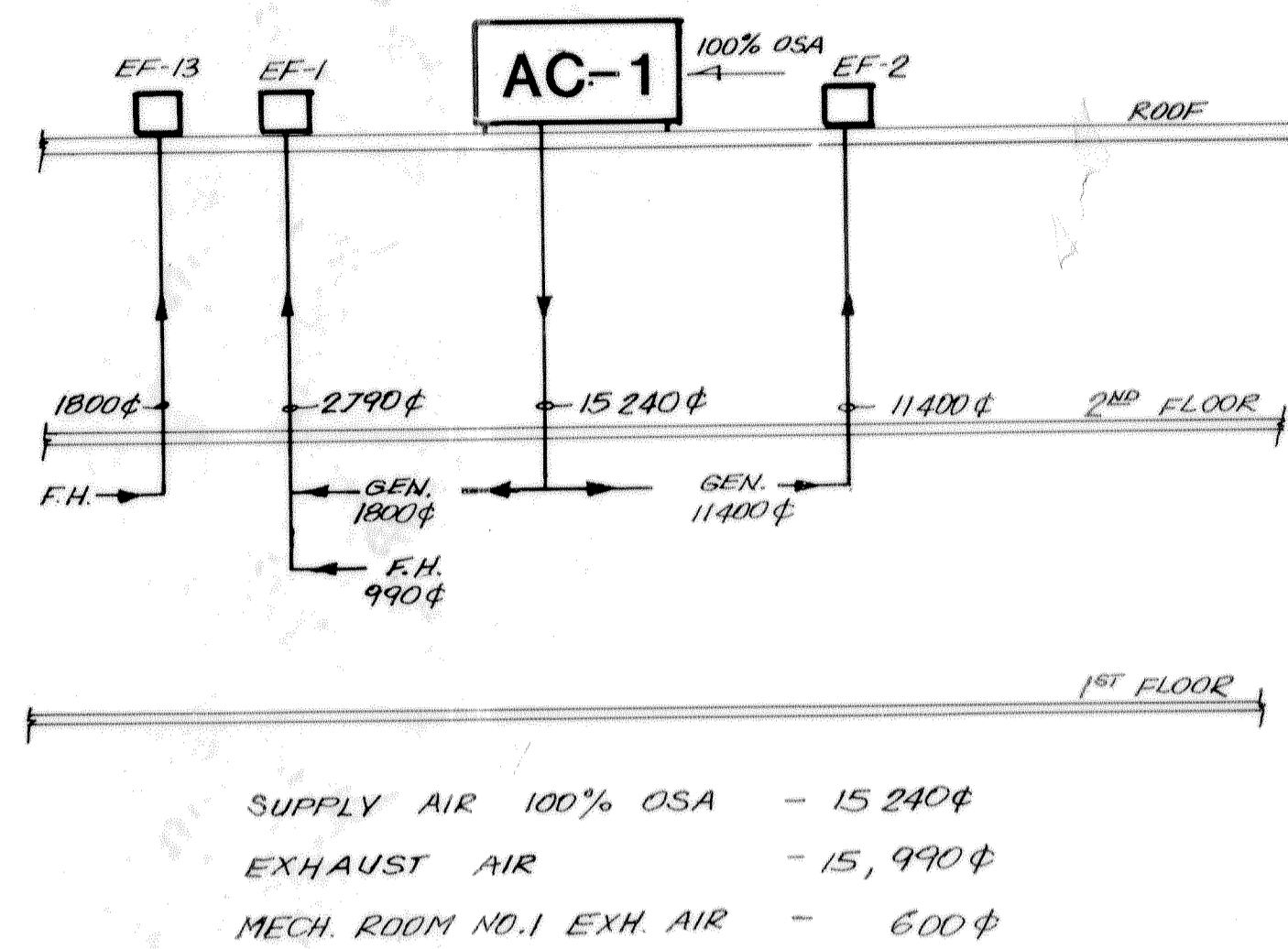
SHEET M-10

NO. 17 OF 129



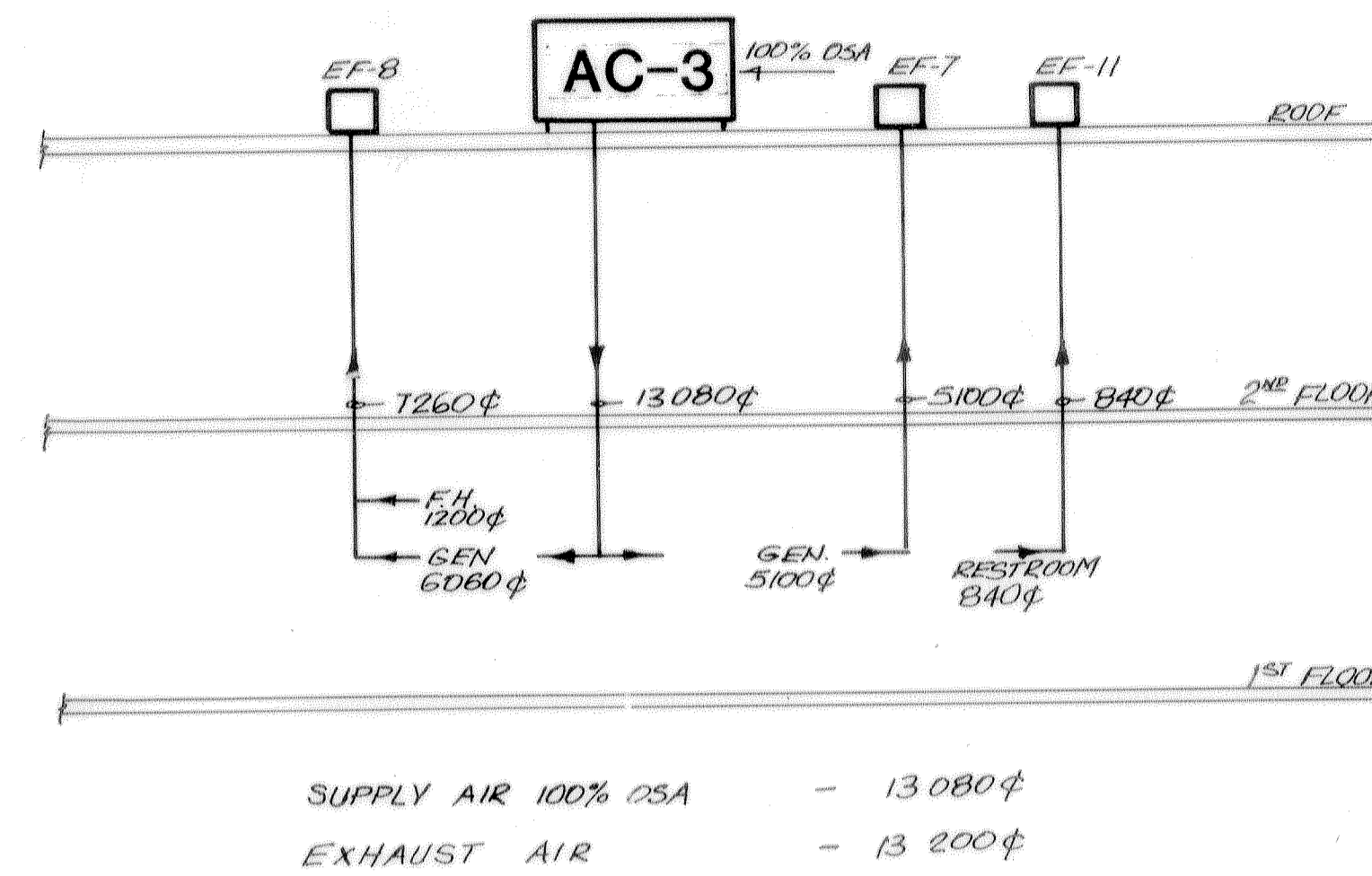
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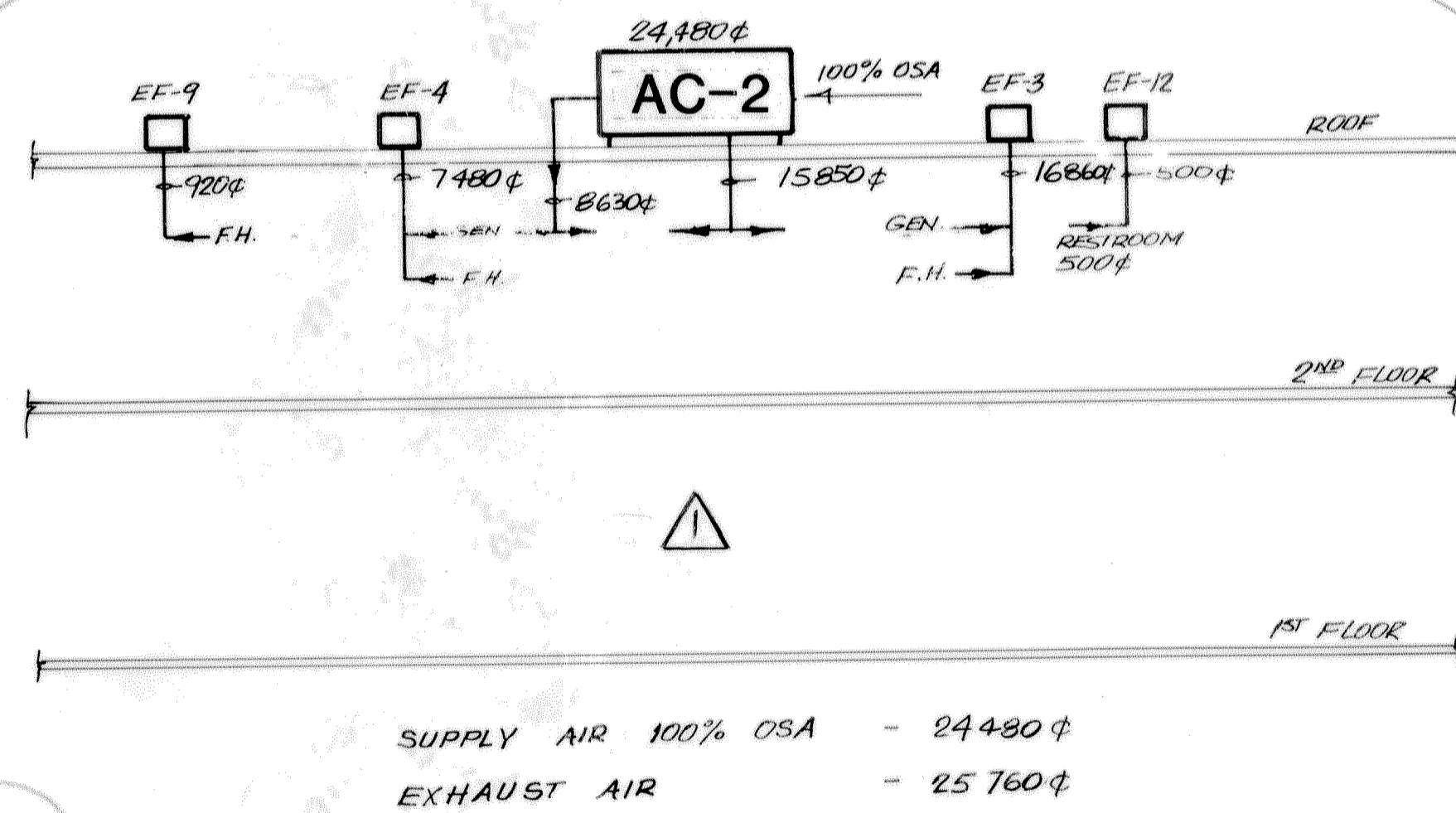
AC-1 UNIT

A



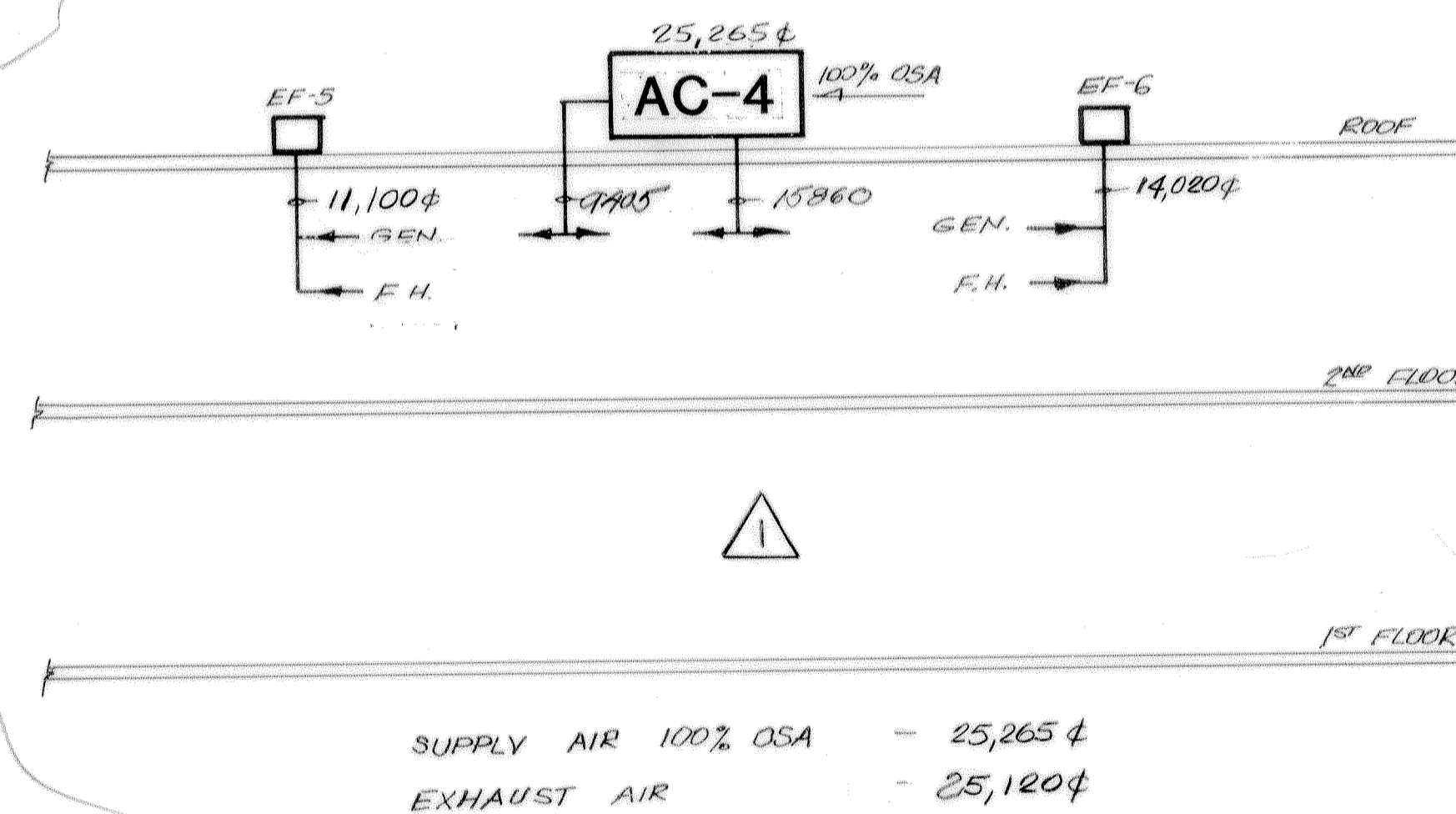
AC-3 UNIT

B



AC-2 UNIT

C



AC-4 UNIT

D

NOTE:  
F.H. - FUME HOOD  
GEN. - ROOM EXHAUST

## AIR BALANCE DIAGRAMS

## RECORD DRAWING

ONE INCH ON ORIGINAL

COUNTY SANITATION DISTRICTS OF  
ORANGE COUNTY, CALIFORNIA

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DATE	2/7/89	DRAWING NO.	M-11R								
DESIGNED	1/22/91	SHEET	78 of 129								
DRAWN		AIR BALANCE DIAGRAMS									
CHECKED											
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NO.	DESCRIPTION	APPROVED	DATE								
1	PLAN CHANGE 10										