

# City of San Diego

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T. Huang / J. Borja / LJI

## PROPOSAL DOCUMENTS



# ORIGINAL



**FOR**

## PACIFIC BEACH LIBRARY & TIERRASANTA RECREATION CENTER ROOF & HVAC REPLACEMENT

RFP NO.:	<u>K-17-1455-DB1-3-A</u>
SAP NO. (WBS/IO/CC):	<u>B-16045, B-16046</u>
CLIENT DEPARTMENT:	<u>1714, 1713</u>
COUNCIL DISTRICT:	<u>2, 7</u>
PROJECT TYPE:	<u>BE, BD</u>

**THIS CONTRACT IS SUBJECT TO THE FOLLOWING:**

- THE CITY'S SUBCONTRACTING PARTICIPATION REQUIREMENTS FOR SLBE PROGRAM.
- PREVAILING WAGE RATES: STATE  FEDERAL
- APPRENTICESHIP

**PROPOSALS DUE:**

**12:00 NOON**

**APRIL 25, 2017**

**CITY OF SAN DIEGO**

**PUBLIC WORKS CONTRACTS**

**1010 SECOND AVENUE, 14<sup>th</sup> FLOOR, MS 614C**

**SAN DIEGO, CA 92101**

**ATTN: CONTRACT SPECIALIST**

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## REQUEST FOR PROPOSAL

### 1. INTRODUCTION AND PROJECT OVERVIEW

#### 1.1. SOLICITATION

- 1.1.1. This is the City of San Diego's (City) solicitation process to acquire Design-Build services for the **Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement** Design-Build project.
  - 1.1.2. This RFP describes the Project, the required Scope of Work and Services, the Design-Builder selection process, the minimum information that shall be included in the Proposal for this Project and the terms and conditions governing the Work. Failure to submit all requested information in accordance with the requirements of this Request for Proposal (RFP) may be cause for disqualification.
  - 1.1.3. Each Proposal properly executed as required by this RFP shall constitute a firm offer, which may be accepted by the City within the time specified in the Proposal.
  - 1.1.4. This RFP will not commit the City to award a contract, to defray any costs incurred in the preparation of a Proposal pursuant to this RFP, or to procure or contract for the Work.
  - 1.1.5. Selection announcements, contract awards, and all data provided by the City shall be protected by the Design-Builder from public disclosure. The Design-Builders desiring to release information to the public, shall receive prior written approval from the City.
  - 1.1.6. The Design-Builder, by submitting a response to this RFP, agrees to provide the required services for the terms and conditions noted in this RFP and its exhibits if awarded by the City. The agreement and other terms and conditions are included in the Design-Build Contract and The GREENBOOK, The WHITEBOOK, and the Supplementary Special Provisions (SSP).
  - 1.1.7. Any architectural firms, engineering firms, specialty consultants, or individuals retained by the City to assist in drafting the RFPs or the Project's preliminary design may not be eligible to participate in the competition with any Design-Build Entity without the prior written consent of City.
- 1.2. **SUMMARY OF WORK:** This is the City solicitation process to acquire Design-Build services for a Design-Build project to design and construct the replacement of the roof and HVAC systems at **the Pacific Beach Library and Tierrasanta Recreation Center**. For additional information refer to Attachment A.

- 1.4. FULL AND OPEN COMPETITION:** This contract is open to full competition and may be bid on by Contractors who are on the City's current Prequalified Contractors' List. For information regarding the Contractors Prequalified list visit the City's web site: <http://www.sandiego.gov>.
- 1.5. PROPOSAL DUE DATE AND TIME ARE: APRIL 25 2017, at 12:00 PM.**
- 1.6. ESTIMATED PROJECT COST:** The City's estimated cost for this project is **\$2,300,000.**
- 1.7. LICENSE REQUIREMENT:** The City has determined that the following licensing classification is required for this contract: **B**
- 1.8. CONTRACT PERIOD:** The Project, including the Plant Establishment Period, shall be completed within **154** Working Days from the Notice to Proceed (NTP).
- 1.9. PREVAILING WAGE RATES APPLY TO THIS CONTRACT:** Refer to Attachment D.
- 1.10. PHASED FUNDING:** For Phased Funding Conditions, see Attachment B.
- 1.11. CONTRACTOR LICENSE AND PREQUALIFICATION STATUS:**
- 1.11.1.** The Design-Builder must possess a Class "B" California State Contractor's license.
- 1.11.2.** The Design-Builder must, at the time of submission of the proposal, be prequalified at an amount equal to or greater than the total amount proposed, including any alternates or options.
- 1.11.3.** The Design-Builder's California State License and City of San Diego prequalification status as specified herein must be valid at time of submission.
- 1.12. PRE-PROPOSAL MEETING AND SITE VISIT:**
- 1.12.1.** Those wishing to submit a Bid are **required** to attend the Pre-Bid Meeting. The purpose of the meeting is to discuss the scope of the Project, submittal requirements, the pre-qualification process and any Equal Opportunity Contracting Program requirements and reporting procedures. To request a sign language or oral interpreter for this visit, call the Public Works Contracts Division at (619) 533-3450 at least 5 Working Days prior to the meeting to ensure availability. Failure to attend the Mandatory Pre-Bid Meeting may result in the Design-Builder's Bid being deemed non-responsive. The Pre-Bid meeting is scheduled as follows:
- Date: APRIL 6, 2017**  
**Time: 11:00 AM**  
**Location: 1010 Second Avenue Suite 1400**  
**San Diego, CA 92101**

**1.12.2.** Attendance at the Pre-Submittal Meeting will be evidenced by the Bidder's representative's signature on the attendance roster. It is the responsibility of the Bidder's representative to complete and sign the attendance roster.

**Bidders may not be admitted after the specified start time of the mandatory Pre-Bid Meeting.**

**1.12.3. PRE-BID SITE VISIT:** All those wishing to submit a bid are **encouraged** to visit the Work Site with the Engineer. The purpose of the Site visit is to acquaint Bidders with the Site conditions. To request a sign language or oral interpreter for this visit, call the Public Works Contracts at (619) 533-3450 at least 5 Working Days prior to the meeting to ensure availability. The Pre-Bid Site Visit is scheduled as follows:

**Date: APRIL 5, 2017**

**Time: 9:30 AM**

**Location: Pacific Beach Library, 4275 Cass Street,  
San Diego, CA 92109**

**Date: APRIL 5, 2017**

**Time: 1:00 PM**

**Location: Tierrasant Rec. Center, 11220 Clairemont Mesa Blvd.,  
San Diego, CA 92124**

**2. SUBCONTRACTING PARTICIPATION PERCENTAGES:** Subcontracting participation percentages apply to this contract.

**2.1.1.** City has incorporated mandatory SLBE-ELBE subcontractor participation percentages to enhance competition and maximize subcontracting opportunities. For the purpose of achieving the mandatory subcontractor participation percentages, a recommended breakdown of the SLBE and ELBE subcontractor participation percentages based upon certified SLBE and ELBE firms has also been provided to achieve the mandatory subcontractor participation percentages:

- |                                  |             |
|----------------------------------|-------------|
| 1. SLBE participation            | <b>1.4%</b> |
| 2. ELBE participation            | <b>3.9%</b> |
| 3. Total mandatory participation | <b>5.3%</b> |

**2.1.2.** The Bid may be declared non-responsive if the Bidder fails to meet the following requirements:

**2.1.2.1.** Attend the Pre-Bid Meeting as described herein.

**2.1.2.2.** Include SLBE-ELBE certified subcontractors at the overall mandatory participation percentage identified in this document; **OR**

**2.1.2.3.** Submit Good Faith Effort documentation, saved in searchable Portable Document Format (PDF) and stored on Compact Disc (CD) or Digital Video Disc (DVD), demonstrating the Bidder made a good faith effort to outreach to and include SLBE-ELBE Subcontractors required in this document within 3 Working Days of the Bid opening if the overall mandatory participation percentage is not met.

**3. SELECTION AND AWARD SCHEDULE:**

**3.1.** The City anticipates that the process for selecting a Design-Builder and awarding the contract will be according to the following tentative schedule. Dates are subject to change:

- |             |                            |                       |
|-------------|----------------------------|-----------------------|
| <b>3.2.</b> | Pre-Proposal Meeting       | <b>April 6, 2017</b>  |
| <b>3.3.</b> | Proposal Due Date          | <b>April 25, 2017</b> |
| <b>3.4.</b> | Selection and Notification | <b>May 11, 2017</b>   |
| <b>3.5.</b> | Limited Notice to Proceed  | <b>May 25, 2017</b>   |

## INSTRUCTIONS TO PROPOSERS AND GENERAL CONDITIONS

### 1. PREQUALIFICATION OF CONTRACTORS:

- 1.1. Contractors submitting proposals must be pre-qualified for the total amount proposed, inclusive of all alternate items or specified Task Order limits prior to the date of submittal. Proposals from contractors who have not been pre-qualified as applicable and Proposals that exceed the maximum dollar amount at which contractors are pre-qualified may be deemed **non-responsive** and ineligible for award. Complete information and links to the on-line prequalification application are available at:

<http://www.sandiego.gov/cip/bidopps/prequalification.shtml>

- 1.2. The completed application must be submitted online no later than 2 weeks prior to the Proposal due date. For additional information or the answer to questions about the prequalification program, contact David Stucky at 619-533-3474 or [dstucky@sandiego.gov](mailto:dstucky@sandiego.gov).
- 1.3. Due to the City's fiduciary requirement to safeguard vendor data, City staff will not be able to provide information regarding contractors' prequalification status over the telephone. Contractors may access real-time information about their prequalification status via their vendor profile on [PlanetBids™](#).

### 2. ELECTRONIC FORMAT RECEIPT AND OPENING OF PROPOSALS: Proposals will be received in **electronic format (eBids) EXCLUSIVELY** at the City of San Diego's electronic bidding (eBidding) site, at: <http://www.sandiego.gov/cip/bidopps/index.shtml> and are due by the date, and time shown on the cover of this solicitation.

- 2.1. **PROPOSERS MUST BE PRE-REGISTERED** with the City's bidding system and possess a system-assigned Digital ID in order to submit an electronic proposal.
- 2.2. The City's bidding system will automatically track information submitted to the site including IP addresses, browsers being used and the URLs from which information was submitted. In addition, the City's bidding system will keep a history of every login instance including the time of login, and other information about the user's computer configuration such as the operating system, browser type, version, and more. Because of these security features, Contractors who disable their browsers' cookies will not be able to log in and use the City's bidding system.
- 2.3. Upon entry of their proposal, the system will ensure that all required fields are entered. **The system will not accept a proposal for which any required information is missing.** This includes all necessary pricing, subcontractor listing(s) and any other essential documentation and supporting materials and forms requested or contained in these solicitation documents.

- 2.4. PROPOSALS REMAIN SEALED UNTIL DUE DATE AND TIME.** eBids and eProposals are transmitted into the City's bidding system via hypertext transfer protocol secure (https) mechanism using SSL 128-256 bit security certificates issued from Verisign/Thawte which encrypts data being transferred from client to server. Proposals submitted prior to the Due Date and Time are not available for review by anyone other than the submitter, who will have until the Due Date and Time to change, rescind or retrieve its proposal should they desire to do so.
- 2.5. PROPOSALS MUST BE SUBMITTED BY DUE DATE AND TIME.** Once the deadline is reached, no further submissions are accepted into the system. Once the Due Date and Time has passed, bidders, proposers, the general public, and City staff are able to immediately see the results on line. City staff may then begin reviewing the submissions for responsiveness, Equal Opportunity Contracting Program (EOCP) compliance and other issues.
- 2.6. TECHNICAL PROPOSAL AND PRICE PROPOSAL ARE TO BE SEPARATE.** The proposer is to submit two separate proposal PDFs by the due date and time.
1. The Technical proposal, which should contain the items detailed below and in Attachment G. There is to be **NO PRICING** information within this proposal. If a Technical proposal contains pricing information, the submission may be deemed non-responsive and ineligible for further consideration, and
  2. The Price proposal, which should detail the cost structure and include any forms as required herein.
- 2.7. RECAPITULATION OF THE WORK.** Proposals shall not contain any recapitulation of the Work. Conditional proposals may be rejected as being **non-responsive**. Alternative proposals will not be considered unless called for.
- 2.8. PROPOSALS MAY BE WITHDRAWN** by the Proposer prior to, but not after, the time set as Due Date and Time.
- 2.8.1. Important Note:** Submission of the electronic proposal into the system may not be instantaneous. Due to the speed and capabilities of the user's internet service provider (ISP), bandwidth, computer hardware and other variables, it may take time for the proposer's submission to upload and be received by the City's eBidding system. It is the proposer's sole responsibility to ensure their proposals are received on time by the City's eBidding system. The City of San Diego is not responsible for proposals that do not arrive by the required date and time.
- 2.9. ACCESSIBILITY AND AMERICANS WITH DISABILITIES ACT (ADA) COMPLIANCE.** To request a copy of this solicitation in an alternative format, contact the Public Works Contract Specialist listed in the cover of this solicitation at least five (5) working days prior to the Proposal due date to ensure availability.

**3. ELECTRONIC SUBMISSIONS CARRY FULL FORCE AND EFFECT**

- 3.1.** The proposer, by submitting its electronic proposal, acknowledges that doing so carries the same force and full legal effect as a paper submission with a longhand (wet) signature.
- 3.2.** By submitting an electronic proposal, the proposer certifies that the proposer has thoroughly examined and understands the entire Contract Documents (which consist of the plans and specifications, drawings, forms, affidavits and the solicitation documents), and that by submitting the eBid as its proposal, the proposer acknowledges, agrees to and is bound by the entire Contract Documents, including any addenda issued thereto, and incorporated by reference in the Contract Documents.
- 3.3.** The Proposer, by submitting their electronic proposal, agrees to and certifies under penalty of perjury under the laws of the State of California, that the certification, forms and affidavits submitted as part of this proposal are true and correct.

- 4. PROPOSALS ARE PUBLIC RECORDS:** Upon receipt by the City, proposals shall become public records subject to public disclosure. It is the responsibility of the respondent to clearly identify any confidential, proprietary, trade secret or otherwise legally privileged information contained within the proposal's General references to sections of the California Public Records Act (PRA) will not suffice. If the Contractor does not provide applicable case law that clearly establishes that the requested information is exempt from the disclosure requirements of the PRA, the City shall be free to release the information when required in accordance with the PRA, pursuant to any other applicable law, or by order of any court or government agency, and the Contractor will hold the City harmless for release of this information.

**5. CONTRACTOR REGISTRATION AND ELECTRONIC REPORTING SYSTEM:**

- 5.1.** **Prior** to the Award of the Contract or Task Order, you and your Subcontractors and Suppliers must register with the City's web-based vendor registration and bid management system. For additional information go to:

<http://www.sandiego.gov/purchasing/bids-contracts/vendorreg.shtml>.

- 5.2.** The City may not award the contract until registration of all subcontractors and suppliers is complete. In the event this requirement is not met within the time frame specified in the Notice of Intent to Award letter, the City reserves the right to rescind the Notice of Award / Intent to Award and to make the award to the next responsive and responsible bidder / proposer.

- 6. JOINT VENTURE CONTRACTORS:** Provide a copy of the Joint Venture agreement and the Joint Venture license to the City within 10 Working Days after receiving the Contract forms. See 7-6, "The Contractors Representative" in The GREENBOOK and 7-6.1 in The WHITEBOOK.

- 6.1** Each properly signed Proposal shall constitute a firm offer that may be accepted by the City within the time frame specified herein.
- 6.2** This RFP will not commit the City to award a contract, to defray any costs incurred in the preparation of a Proposal pursuant to this RFP, or to procure or contract for the Work.
- 6.3** Upon receipt by the City, Proposals shall become public records subject to public disclosure. It is the responsibility of the respondent to clearly identify any confidential, proprietary, trade secret or otherwise legally privileged information contained within the Proposal. General references to sections of the California Public Records Act (PRA) will not suffice. If the Contractor does not provide applicable case law that clearly establishes that the requested information is exempt from the disclosure requirements of the PRA, the City shall be free to release the information when required in accordance with the PRA, pursuant to any other applicable law, or by order of any court or government agency, and the Contractor will hold the City harmless for release of this information.
- 6.4** Selection announcements, contract awards, and all data provided by the City shall be protected by the Design-Builder from public disclosure. The Design-Builders desiring to release information to the public shall receive prior written approval from the City.
- 6.5** Design-Builders who submit a response to this RFP agree to provide the required services in accordance with the terms and conditions noted in this RFP and its attachments upon award by the City. The agreement and other terms and conditions are included in the Design-Build Contract, The GREENBOOK, The WHITEBOOK, and the Supplementary Special Provisions (SSP).
- 6.6** Any architectural firms, engineering firms, specialty consultants, or individuals retained by the City to assist in drafting the RFPs or the Project's preliminary design may not be eligible to participate in the competition with any Design-Build Entity without the prior written consent of City. Any architectural firms, engineering firms, specialty consultants, or individuals retained by the City to assist in drafting any Reference Documents, such as the Water Department's Master Plan and any other document that was not prepared specifically for this contract, are considered to be eligible to participate.

## **7. EQUAL OPPORTUNITY CONTRACTING**

- 7.1** As set forth in this RFP, the City is dedicated to the principles of equal opportunity in the workplace and in subcontracting. It is the City's expectation that firms doing business with the City have, and are able to demonstrate, the same level of commitment.



**7.2** The Design-Builders are encouraged to take positive steps to diversify and expand their subcontractor solicitation base and to offer contracting opportunities to all eligible certified Subcontractors in accordance with the City's EOCP requirements included in the Contract Documents.

**7.3 Design-Builder's Work Force**

**7.3.1** The Design-Builders shall submit with its Proposal a Work Force Report (EOC Form BB05) and prior to award of contract, the successful Design-Builder shall submit to the City's EOCP office an updated Work Force Report or an Equal Employment Opportunity (EEO) Plan.

**7.3.2** If under representations are noted in the Work Force Report when compared to County Labor Force Availability data, the Design-Builder shall submit an Equal Opportunity Plan. Any Equal Employment Opportunity Plan submitted shall include the elements as outlined in the EOCP Requirements included in The WHITEBOOK.

**7.3.3** The specified Equal Opportunity Contracting Program (EOCP) forms are available for download from the City's web site at:

<http://www.sandiego.gov/eoc/forms/index.shtml>

**7.4 Nondiscrimination Ordinance (Municipal Code §§ 22.2701-22.2708)**

**7.4.1** The Design-Builder shall not discriminate on the basis of race, gender, gender expression, gender identity, religion, national origin, ethnicity, sexual orientation, age or disability in the solicitation, selection, hiring or treatment of the Subcontractors and Suppliers. The Design-Builder shall provide equal opportunity for Subcontractors to participate in subcontracting opportunities. The Design-Builder understands and agrees that violation of this clause shall be considered a material breach of the contract and may result in contract termination, debarment or other sanctions.

**7.4.2** This language shall be in contracts between the Design-Builder and any Subcontractors and Suppliers.

**7.4.3** As part of its Proposal, the Design-Builder shall provide to the City a list of all instances within the last 10 years where a complaint was filed or pending against Design-Builder in a legal or administrative proceeding alleging that Design-Builder discriminated against its employees, the Subcontractors, or Suppliers, and a description of the status or resolution of that complaint, including any remedial action taken. If there have not been any complaints filed or pending against Design-Builder, a written statement from the Design-Builder to confirm shall be included in the Proposal.

## 7.5 Contractor Registration and Electronic Reporting System

**7.5.1** Prior to the award of the Contract, the Design-Builder, Subcontractors, and Suppliers must register with the City's web-based vendor registration and bid management system, BidsOnline™ hosted by PlanetBids System. For additional information go to:

<http://www.sandiego.gov/purchasing/bids-contracts/vendorreg.shtml>.

**7.5.2** Following the award of the Contract, the Design-Builder will be required to use the City's web-based contract compliance application for EOCP reporting purposes e.g., Weekly Certified Payroll, Monthly Employment Utilization, and Monthly Payments. Online tutorials are available at:

<http://stage.prismcompliance.com/etc/vendortutorials.htm>

**7.5.3** The City may retain progress payments if:

**7.5.3.1** The non-registered Design-Builder, Subcontractors, or Suppliers fail to register,

**7.5.3.2** EOCP reporting is delinquent or inadequate, or

## 8. CONTRACTOR'S LICENSE CLASSIFICATION AND PRE-QUALIFICATION STATUS

**8.1** The Design-Builder's California State License and City of San Diego prequalification status as specified herein must be valid at time of submission. Failure to comply with these requirements may result in the proposal being deemed non responsive and ineligible for further consideration.

**8.2** Design-Builders interested in submitting a proposal for this Project shall be pre-qualified through the City's Prequalification program:

**8.2.1** The Design-Builders must submit a complete prequalification application online to the Public Works Contracts, Prequalification Program no later than 2 weeks prior to **the Proposal due date and time**. Complete information and links to the online prequalification application are available at:

<http://www.sandiego.gov/cip/bidopps/prequalification.shtml>

**8.2.2** For additional information or the answer to questions about the prequalification program, contact David Stucky at 619-533-3474 or [dstucky@sandiego.gov](mailto:dstucky@sandiego.gov).

**8.2.3** Due to the City's fiduciary requirement to safeguard vendor data, City staff will not be able to provide information regarding contractors' prequalification status over the telephone. Contractors may access real-time information about their prequalification status via their vendor profile on [PlanetBids™](#).

## 9. PRE-PROPOSAL ACTIVITIES

### 9.1 Submission of Questions

**9.1.1** The Director (or Designee) of the Public Works Department is the officer responsible for opening, examining, and evaluating the competitive Proposals submitted to the City for the acquisition, construction, and completion of any public improvement except when otherwise set forth in these documents. All questions related to this solicitation shall be submitted to:

Public Works Contracts  
1010 Second Avenue, 14<sup>th</sup> Floor  
San Diego, California, 92101  
Attention: Contract Specialist listed on the front cover of this RFP.  
OR:

To the Email address of the Contract Specialist listed on the front cover of this RFP.

**9.1.2** Questions received less than 14 Days prior to the Proposal due date may not be considered.

**9.1.3** Questions or clarifications deemed by the City to be material shall be answered via issuance of an addendum and posted to the City's online bidding service.

**9.1.4** Only questions answered by formal written addenda shall be binding. Oral and other interpretations or clarifications shall be without legal effect. It is the Design-Builder's responsibility to be informed of any Addenda that have been issued and to adjust its Proposal accordingly.

### 9.2 Revisions to the RFP

The City, at its option, may respond to any or all questions submitted in writing via the City's eBidding web site in the form of an addendum. No other responses to questions, oral or written, shall be of any force or effect with respect to this solicitation.

Any changes to the Contract Documents through addendum are made effective as though originally issued with the Proposal. The Design-Builders shall acknowledge the receipt of Addenda at the time of Proposal submission.

10. **EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE OF WORK**

**10.1** Contract Documents may be obtained by visiting the City's website: <http://www.sandiego.gov/cip/> Plans and Specifications for this contract are also available for review in the office of Public Works Contracts.

**10.2** The Design-Builders shall carefully examine the Project Site, the Plans and Specifications, and other materials as described in or referenced by this RFP. The submission of a Proposal shall be conclusive evidence that the Design-Builder has investigated and is satisfied as to the conditions to be encountered, as to the character, quality, and scope of work, the quantities of materials to be furnished, local conditions, and as to the requirements of the Contract Documents.

11. **CHANGES TO THE SCOPE OF WORK:** Once a proposal has been accepted by the City and the award has been made, the Design-Builder shall immediately notify the City in writing of any proposed or anticipated change in the scope, contract amount, or contract time; and shall obtain the City's written consent to the change(s) prior to affecting them. In no event shall the City's consent be construed to relieve the Design-Builder from its duty to render all work and services in accordance with applicable laws and accepted industry standards

12. **DESIGN SUBMITTALS:** The City's review of the Design-Builder's Design Submittals shall not relieve the Design-Builder from its responsibilities under the Contract, or be deemed to be an acceptance or waiver by City of any deviation from, or of the Design-Builder's failure to comply with, any provision or requirement of the Contract Documents, unless such deviation or failure has been identified as such in writing in the document submitted for acceptance by the Design-Builder and accepted by City. Where approval or acceptance by City is required, it is understood to be general approval only, and does not relieve the Design-Builder of responsibility for complying with all applicable laws and good professional practices as the Design-Builder shall be the Engineer of Record.

13. **BONDS AND INSURANCE:** Prior to the award of the Contract (or Task Order), the Design-Builders shall submit evidence of separate bonds and insurance as specified in Sections 2-4, "CONTRACT BONDS," 7-3, "LIABILITY INSURANCE," and 7-4, "WORKERS' COMPENSATION INSURANCE" of the City's standard specifications for public works constructions unless specified otherwise in the Contract Documents.

14. **SUBMITTAL REQUIREMENTS: PROPOSALS MUST BE RECEIVED NO LATER THAN THE DUE DATE AND TIME.** Proposals may be withdrawn by the Design-Builder only up to the proposal due date and time.

**IMPORTANT NOTE: Submission of the electronic proposals into the system may not be instantaneous. Due to the speed and capabilities of the user's internet service provider (ISP), bandwidth, computer hardware and other variables, it may take time for the bidder's submission to upload and be received by the City's eBidding system. It is the bidder's sole responsibility to ensure that their bids are received on time by the City's eBidding system. The City of San Diego is not responsible for bids that do not arrive by the required date and time.**

**14.1 TECHNICAL PROPOSAL REQUIREMENTS:** Technical Proposals submitted in response to this RFP shall be in the following order and shall include:

- Legal name of company.
- Legal form of entity (partnership, corporation, joint venture, or other). If joint venture, identify the members of the joint venture, and provide all information required under this section for each member.
- Year of establishment of entity.
- If company is subsidiary of a parent company, identify the parent company.
- Address of main office.
- Address of San Diego satellite office if applicable.
- Contact information for firm, including name, title, email address and telephone number.
- Number of employees in San Diego County.
- Applicable License(s):
- City of San Diego Business License Number, including expiration date.
- State Contractor's License Number including expiration date, and all classifications. Professional Engineering/Architect License Number, including expiration date.
- Failure to provide all required information may result in the Proposal being considered non-responsive and ineligible for further consideration.

**14.1.1** The Technical Proposal shall be concise, well organized, and demonstrate the Design-Builder's qualifications and experience applicable to the Project. The Technical Proposal shall be limited to 50 one-sided pages (8<sup>1/2</sup>" x 11"), exclusive of resumes, graphics, forms, pictures, photographs, dividers, front and back cover, etc., that address the Technical Proposal contents; and of Equal Opportunity Contracting documentation. Font Type shall be Times New Roman in a minimum 12 Point font size, with a minimum 1" margin for text pages. A cover letter may be submitted but shall not contain any information that is a required element of the Technical Proposal. Any Technical Proposal that does not comply with these formatting standards may not be considered.

**14.1.2** The Technical Proposals submitted in response to this RFP shall be in accordance with the requirements listed in ATTACHMENT G. The contents of the Technical Proposal shall be organized consistent with the format in Attachment G.

**14.1.3** Design elements which deviate from the Scope of Work, City's design guidelines, or material substitutions which differ from the Approved Material List shall be highlighted in accordance with Attachment G.

**14.1.4** Failure to comply with this section may render the Design-Builder's submittal non-responsive and ineligible for further consideration.

## **14.2 PRICE PROPOSAL REQUIREMENTS**

- 14.2.1** A clearly marked, signed PDF of the Price Proposal is to be submitted in a separate PDF. This **is not** to be included with the Technical proposal. Refer to Attachment H of this RFP for any Price Proposal forms required to be used.
- 14.2.2** The Price Proposal shall be signed by an individual or individuals authorized to execute legal documents on behalf of the Design-Builder.
- 14.2.3** The lowest proposed price is not the determining factor for award of this contract. See Attachment G for the criteria by which the proposals will be evaluated.
- 14.2.4** In the event of any discrepancies, written numbers will govern over numerical. Also, the sum of all lump sum line items, unit price line items, allowance line items and any other priced items will govern over the "Total Design-Build Proposal" line item.
- 14.2.5** The required EOCP information such as Subcontractor and Supplier listings shall be submitted as part of the Price Proposal.

## **15. SELECTION CRITERIA AND SCORING**

- 15.1** An evaluation Panel comprised of representatives from the City will be established for this Project. The Panel may also include other interested parties such as additional participating agencies, representative from the community and other appropriate agencies such as the State Water Resource Control Board.
- 15.2** Proposals will be ranked according to the selection criteria set forth in Attachment G.
- 15.3** The Panel will review all proposals received. Interviews will be conducted as needed in accordance with Attachment G.
- 15.4** Based upon this technical review, the Panel will rank the Design-Builders' proposals in accordance with the selection criteria set forth in Attachment G of this RFP.
- 15.5** Once the Technical Proposals have been ranked by the Panel, the Design-Builders' price proposals will be made available to the panel and forwarded to EOCP for review and scoring of subcontractor participation. The EOCP score will then be added to the Design-Builders' cumulative scores.

16. **AWARD**

- 16.1 After the Technical Proposals have been evaluated, scored and ranked; the Price proposals will be factored in according to the criteria set forth in Attachment G. A Design-Builder selection will then be made.
- 16.2 The City will announce in writing to all the RFP participants the selected Design-Builder. The announcement will show the results of the evaluation. This notification to the Design-Builders shall constitute the public announcement of the selected Design-Builder. In the event that the selected Design-Builder is subsequently deemed non-responsive or non-responsible, a new public announcement will be provided to all proposers with the name of the newly designated selected Design-Builder.
- 16.3 To obtain the price Proposal results, view the results on the City's web site, or request the results by U.S. mail and provide a self-addressed, stamped envelope. If requesting by mail, be sure to reference the Proposal name and number. The Proposal tabulations will be mailed to you upon their completion. The results will not be given over the telephone.

17. **ADDITIONAL POLICIES, PROCEDURES, TERMS AND CONDITIONS**

- 17.1 The Program's Selection Process is based on the policies, procedures and guidelines set forth in the City Municipal Code Chapter 2, Article 2, Division 33.
- 17.2 **Protests.** A Design-Builder may protest the award of the Contract to another Design-Builder in accordance with San Diego Municipal Code.
- 17.3 **Changes to Key Personnel and Substitution of Subcontractors.** The Design-Builder shall not change or substitute any individual that is identified in its proposal as "key personnel" without the written consent of the City. The Design-Builder shall not change or substitute any material, supplier, or subcontractor identified in its Proposal without written consent of the City. The City's consent will not be unreasonably withheld.
- 17.4 **Project Team.** The Design-Builder shall maintain all representations, team members, and proposed tasks and work elements as valid, except for the schedule which may be adjusted as mutually agreed upon by the City and the Design-Builder.
- 17.5 **Submittal of "Or Equal" Items.** See 4-1.6, "Trade Names or Equals" in the SSP and as modified by the Scope of Work ATTACHMENT A.
- 17.6 **Subcontract Limitations.** The Design-Builder's attention is directed to Standard Specification for Public Works Construction, Section 2-3, "SUBCONTRACTS" which requires the Design-Builder to perform not less than the specified amount under this RFP. Failure to comply shall render the Proposal non-responsive.

**17.7 San Diego Business Tax Certificate.** All Contractors, including Subcontractors, not already having a City of San Diego Business Tax Certificate for the work contemplated shall secure the appropriate certificate from the City Treasurer, Civic Center Plaza, first floor, before the Contract can be executed.

**17.8 City Standard Provisions.** The work resulting from this RFP is subject to the following standard provisions. See The WHITEBOOK for details.

**17.8.1** The City of San Diego Resolution No. R-277952 adopted on May 20, 1991 for a Drug-Free Workplace.

**17.8.2** The City of San Diego Resolution No. R-282153 adopted on June 14, 1993 related to the Americans with Disabilities Act.

**17.8.3** The City of San Diego Municipal Code §22.3004 for Pledge of Compliance.

**17.8.4** The City of San Diego’s Labor Compliance Program and the State of California Labor Code §§1771.5(b) and 1776.

**17.8.5** Sections 1777.5, 1777.6, and 1777.7 of the State of California Labor Code concerning the employment of apprentices by contractors and subcontractors performing public works contracts.

**17.8.6** The City’s Equal Benefits Ordinance (EBO), Chapter 2, Article 2, Division 43 of The San Diego Municipal Code (SDMC).

**17.8.7** The City’s Information Security Policy (ISP) as defined in the City’s Administrative Regulation 90.63.

**17.9 Prevailing Wage Rates Apply:** Refer to Attachment D.

**17.10 Reference Standards:** Except as otherwise noted or specified, the Work shall be completed in accordance with the following standards:

Title	Edition	Document Number
Standard Specifications for Public Works Construction (“The GREENBOOK”) <a href="http://www.greenbookspecs.org/">http://www.greenbookspecs.org/</a>	2015	PWPI070116-01
City of San Diego Standard Specifications for Public Works Construction (“The WHITEBOOK”)* <a href="https://www.sandiego.gov/publicworks/edocref/greenbook">https://www.sandiego.gov/publicworks/edocref/greenbook</a>	2015	PWPI070116-02
City of San Diego Standard Drawings* <a href="https://www.sandiego.gov/publicworks/edocref/standarddraw">https://www.sandiego.gov/publicworks/edocref/standarddraw</a>	2016	PWPI070116-03



Title	Edition	Document Number
Citywide Computer Aided Design and Drafting (CADD) Standards <a href="https://www.sandiego.gov/publicworks/edocref/drawings">https://www.sandiego.gov/publicworks/edocref/drawings</a>	2016	PWPI092816-04
California Department of Transportation (CALTRANS) Standard Specifications – <a href="http://www.dot.ca.gov/des/oe/construction-contract-standards.html">http://www.dot.ca.gov/des/oe/construction-contract-standards.html</a>	2015	PWPI092816-05
CALTRANS Standard Plans <a href="http://www.dot.ca.gov/des/oe/construction-contract-standards.html">http://www.dot.ca.gov/des/oe/construction-contract-standards.html</a>	2015	PWPI092816-06
California Manual on Uniform Traffic Control Devices Revision 1 (CA MUTCD Rev 1) - <a href="http://www.dot.ca.gov/trafficops/camutcd/">http://www.dot.ca.gov/trafficops/camutcd/</a>	2014	PWPI092816-07
<p><b>NOTE:</b> *Available online under Engineering Documents and References at: <a href="http://www.sandiego.gov/publicworks/edocref/index.shtml">http://www.sandiego.gov/publicworks/edocref/index.shtml</a></p>		

## ATTACHMENTS

**ATTACHMENT A**

**PROJECT DESCRIPTION, SCOPE OF WORK, TECHNICAL SPECIFICATIONS, AND  
BRIDGING DOCUMENTS**

## **Attachment A Table of Contents**

- 1.** Project Description
- 2.** Scope of Work
  - 2.1.** Roof
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    - 2.1.2.** Pacific Beach Library
  - 2.2.** HVAC
    - 2.2.1.** Tierrasanta Rec Center
    - 2.2.2.** Pacific Beach Library
- 3.** Commissioning Work Plan
- 4.** Roof Technical Specifications
  - 4a.** TRC- TPA Spec
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  - 4c.** PBL- Metal Roof Specifications T-238
  - 4d.** PBL- Metal Roof Specifications T-138
  - 4e.** PBL - Batten Seam Metal Specifications
  - 4f.** PBL - Non-Metal Areas Specifications
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- 5.** HVAC Technical Specifications
  - 5a.** Pacific Beach & Tierrasanta Recreation Center HVAC Technical Specifications.
  - 5b.** Facilities Division Construction Standards and Specifications
- 6.** Roof Bridging Documents
  - 6a.** TRC- Roof Requirements
  - 6b.** TRC - Plan markup
  - 6c.** PBL - Roof Requirements
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- 7.** HVAC Bridging Documents
  - 7a.** TRC- Bridging Documents
  - 7b.** PBL- Bridging Documents
- 8.** As-builts
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- 9.** Environmental Documents
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## ATTACHMENT A

### PROJECT DESCRIPTION, SCOPE OF WORK, TECHNICAL SPECIFICATIONS, AND/OR BRIDGING DOCUMENTS

#### 1. **Project Description:**

Design and construct the replacement of the roof and HVAC systems at the Tierrasanta Recreation Center and Pacific Beach Library.

#### 2. **Scope of Work:**

- Examine site and review record drawings to ascertain existing conditions.
- Full mechanical, architectural, plumbing, electrical and structural system design, including drawings, specifications, schedules and details as required to accurately describe the scope of work. Drawings are to be signed and stamped by the design/build contractor and submitted to the City of San Diego for review and permitting. The Design/Build contractor will be responsible for all permit applications.
- The minimum scope of work associated with each roof replacement, HVAC equipment and controls is described below. Provide a fully functional system which meets the energy goals of the project.

#### **Required Submittals**

The successful bidder shall provide the following submittals for City and CxA review at a minimum during the design and construction process. Submittals shall include site specific selections with capacities based on the project's design conditions.

- 50% Construction Documents, Final Construction Documents, and As-Built Drawings.

#### **Warranty**

The Contractor must warranty all HVAC products, work, and services provided for a period of one year after project acceptance. The Contractor must warranty all roofing products, work and services provided for a period of two years after project acceptance. The Contractor must turn over all equipment warranties to the Resident Engineer. Additional equipment specific warranties are listed in the project specifications.

#### 2.1 **Roof Replacement:**

##### 2.1.1. **Tierrasanta Recreation Center Roof Replacement**

#### **Demolition:**

- Remove and dispose of the existing modified bitumen roof covering as non-asbestos containing materials.
- Remove and dispose of the existing roof ladder that connects higher roof to the lower roof.
- Remove and dispose of the three existing skylights.
- Remove and dispose all flashing, downspouts, scuppers and splash pans throughout roof.

### **New Construction:**

- Provide and install new modified bitumen TPA roof covering.
- No work will be done in the roof framing system supporting the roof covering as well as the ceiling system.
- Provide and install two new ladders that connect higher roof to the lower roof and lower roof to the middle roof.
- Provide and install three new skylights at roof top.
- Install new flashing, downspouts, scuppers and splash pans throughout roof.
- Assess the condition of the existing roof deck and notify Resident Engineer of existing defects. Replace existing damaged roof deck segments where directed by the Resident Engineer. Replacement cost will be paid via the Roof Deck Replacement allowance.
- Additive alternate #1: Provide and install Cal-OSHA compliant galvanized steel fall protection grating for all rooftop openings.
- Additive Alternate #2: Provide and install Cal-OSHA compliant galvanized steel wall-mounted equipment access platform manufactured by Engineering Access Solutions (EAS) or equivalent.

### **2.1.2 Pacific Beach Library Roof Replacement**

#### **Demolition**

- Remove and dispose of the existing standing seam metal roof covering.
- Remove and dispose existing roof gutters and downspouts.
- Remove and dispose all existing non-metal roof covering.
- Remove and dispose existing skylights and roof covering above skylights.
- Protect in place all vertical glass windows on roof. Remove all window seals and window frame sealant for all vertical windows on roof.
- Inspect all roof drain pipes located within the building walls and provide a written report to the Resident Engineer indicating the condition of the pipes.

#### **New Construction:**

- Provide and install new standing seam metal roof covering at same locations as existing.
- Provide and install new non-metal roof covering at same locations as existing.
- Provide and install new gutters and downspouts.
- No work will be done in the roof framing system supporting the roof covering as well as the ceiling system.

- Provide and install new skylights per Kalwall Specifications.
- Replace in kind with new materials all window seals and window frame sealant for all vertical glass windows on roof to assure a water-tight installation.
- Provide and install new in kind skylights roof covering.
- Assess the condition of the existing roof deck and notify Resident Engineer of existing defects. Replace existing damaged roof deck segments where directed by the Resident Engineer. Replacement cost will be paid via the Roof Deck Replacement allowance.
- Additive alternate: Provide and install new access roof ladder.

## **2.2. HVAC Replacement:**

### **2.2.1. Tierrasanta Recreation Center HVAC Replacement:**

- Replacement of the existing HVAC system that includes nine exhaust fans, four supply fans, two split system heat pumps and two condensing units on roof and associated refrigerant piping.
- Replacement of two gas fired make-up air units located in the mezzanine level of gymnasium.
- The access to the existing make-up air unit is limited and requires a 30' man lift for City personnel. The Contractor is responsible for demolition of existing two units and the selection
- and installation replacement units to match the existing unit capacity.
- Secure units electrically and lockout power system.
- The HVAC equipment is currently controlled by a combination of switches, timers, and relays. The Contractor shall assess the condition of the all exhaust fans, supply fans, make-up air unit's starters and wires. Provide additive alternate cost to replace controls to match existing.
- Provide convenience electrical outlets at each exhaust fan and supply fan on the roof with outdoor rated weather tight outlet.
- Provide roof curbs for replacement units. The facility will be undergoing a concurrent roof replacement project. Coordinate the required roof curb and penetration flashing details with the roofing contractor.
- Provide and install independent disconnect switch for all the equipment to be installed on roof.
- Provide install programmable, Wi-Fi enabled thermostats.

- Provide test and balance (TAB) by an AABC or NEBB accredited contractor.
- Support the City's Commissioning Authority in the Commissioning activities. Refer to the Commissioning Plan for a summary of the DB contractor's Cx related responsibilities.
- Start, test, and check system operations.
- Record all system operating parameters on start-up file.
- Review proper operational settings with owner/facilities.
- Complete warranty start-up documents to ensure manufacturer's warranty obligation.

### **2.2.2. Pacific Beach Library HVAC Replacement:**

- Replacement of the existing HVAC system that includes a chiller plant, heating hot water boiler, two pumps, two expansion tanks, air separators, ten fan coil units, three split system heat pumps and four exhaust fans.
- All of the chilled water and heating hot water piping in mechanical yard enclosure shall be replaced.
- Demo and replace all exposed conduits.
- Replace branch wires back to the panel.
- Replace all disconnects.
- Replace wires between disconnect and mechanical unit.
- Provide and install all needed piping modifications to the supply and return water piping at the chiller and boiler to match new equipment layout.
- Provide and install two new pumps with associated premium inverter duty motors.
- Provide and install variable frequency drives (VFD's) on both of the pumps.
- Provide and install expansion tank and air separator sized for the new chiller and boiler.
- Reinsulate replaced piping as needed with aluminum jacketing for outdoor use.
- Reconnect existing gas line, line voltage wiring and control wiring to new boiler, including modifications as necessary.
- Provide and install outdoor vent package for new boiler.
- Remove existing ten 4-pipe fan coil units and associated supply and return air plenum. Replace fan coils with identical capacity and stainless steel supply and return air plenum.



- Provide and install all needed piping modifications to the chilled water and heating hot water piping for the fan coil units to match new equipment layout.
- If available, provide fan coil units with external grease port for the fan motor bearings.
- Provide and install balancing valves, strainers, isolation valves, and automatic control valves at each of the ten fan coil units.
- Perform chemical treatment system on chilled water and heating hot water system with Trident Technologies or equal.
- Provide and install coupon sample racks on the HHW and CHW systems.
- Replace domestic water shut-off valve in chiller yard.
- Balance and level all equipment.
- Start, test, and check system operations.
- Provide test and balance (TAB) by an AABC or NEBB accredited contractor.
- Support the City's Commissioning Authority in the Commissioning activities. Refer to the Commissioning Plan for a summary of the DB contractor's Cx related responsibilities.
- Record all system operating parameters on start-up file.
- Review proper operational settings with owner/facilities.
- Complete warranty start-up documents to ensure manufacturer's warranty obligation.
- Area cleanup upon completion of each day's work.

**Test and Balance:**

- Test and Balance airside and water side system for Tierrasanta and Pacific Beach Library.

**Controls**

The City of San Diego has an existing Carrier iVu server located at the Rancho Penasquitos Library. The project controls scope of work includes a complete DDC system replacement for the Pacific Beach Library building. A native BACnet system shall be provided, and shall communicate all network points and trends to the Rancho Penasquitos Library Carrier iVu server. The contractor shall use plenum rated low voltage wiring in the concealed areas. The low voltage wiring in exposed areas shall be installed within conduit. Existing line voltage power sources to each controller can be utilized. Provide additional transformers as required.

A remote monitoring system is not required for Tierrasanta Rec Center.

### **Required Submittals**

The successful bidder shall provide the following submittals for City and CxA review at a minimum during the design and construction process. Submittals shall include site specific selections with capacities based on the project's design conditions.

- 50% Construction Documents, Final Construction Documents, and As-Built Drawings.
- Controls Submittal including Sequence of operation for chiller, boiler, pumps, fan coil units, make-up air unit and split system heat pumps.
- Product Data Submittal for:
  - Tierrasanta Rec Center
    - Make-up Air Unit
    - Exhaust Fans
    - Supply Fans
    - Split System Heat Pumps
    - WiFi Thermostats
  - Pacific Beach Library
    - Air Cooled Chiller
    - Pumps
    - Boiler
    - Fan Coil Units
    - Exhaust Fans
    - Split System
    - DDC controls product submittal
    - DDC controls shop drawings.
    - DDC controls graphics submittal
- Training program.
- Operators and Maintenance (O&M) manuals.

### **Guarantee and Service Contract**

The successful bidder will be required to guarantee that all work shall remain free of defects for one (1) full year after the start of new cooling system. A one-year service contract should be included in the proposal. Service contracts should cover periodic maintenance and emergency calls as required. Bidders shall describe in detail what is included in their proposed service contract.

### **Warranty**

The Contractor must warranty all products, work and services provided for a period of one year after the punch list is completed. Minimum compressor warranty even if optional to be no less than 5 years provided by either manufacture or installing contractor. This includes Recip., scroll and semi hermitic compressors. The Contractor must turn over all equipment warranties to City project manager. Additional equipment specific warranties are listed in the project specifications.

### **Documentation and Training**

The Contractor will be responsible for complete training of City maintenance staff on the operation, maintenance and service of the HVAC system and equipment. A manual will be required that includes operation and upkeep instructions, drawings, diagrams and equipment lists and vendors. This should be supplied in CD - PC form and minimum of two paper copies. A second manual, with simplified operations and "fix-its" for floor staff, is also required.

### **Other Work**

If a bidder has identified a scope of work not listed in "Project Scope" that the bidder feels is required to complete the project, then the bidder should assume that scope falls within the bidder's responsibilities. Any work identified as such must be listed and described separately in the Request for Proposals response and detailed estimates of costs provided.

# COMMISSIONING WORK PLAN

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## Tierrasanta Rec Center HVAC Replacement & Pacific Beach Library HVAC Replacement

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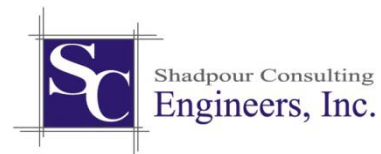
San Diego, CA



Prepared For:



Prepared By:



September 1, 2016

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## 1. COMMISSIONING OVERVIEW

Commissioning is a designed process of documentation, training, adjustment, testing, and verification performed to ensure that the finished facility operates as intended, providing for complete and operational commissioned energy systems. The commissioning requirements of this Work Plan are in addition to the requirements specified in other sections of the specifications for this project. The project team shall review all sections of the specification and this Commissioning Work Plan to determine the applicable requirements and deliverables. This Commissioning Work Plan and related requirements identify applicable Commissioning requirements and provide the basis for verifying the design, installation, and functional performance of the building energy systems.

The commissioning process is a team effort and encompasses and coordinates the traditionally separate functions of system documentation, system installation, equipment start-up, control system calibration, testing, balancing, verification, and performance checkouts.

The intent of the Commissioning Work Plan is to provide a framework to expose critical issues and resolve them with input from the commissioning and construction team prior to start-up and operation of the energy systems and equipment. Each component of the Commissioning Team shall submit issues to the Commissioning Authority for coordination with the commissioning team with sufficient time for coordination and resolution without impacting construction critical path schedule.

The main goals of the commissioning process are to:

1. Help facilitate the design and construction teams deliver the best possible product.
2. Reduce costs to the design and construction teams as well as the owner by identifying and resolving issues as early as possible
3. Reduce “New Building Syndrome”. A term used by facility and maintenance staff to refer to the bugs that need to be worked out of a new building. Through extensive testing the systems will be operating near prime when the building is turned over. By ensuring comprehensive owner training and complete O&M Manuals, the building will be put into service under the best possible conditions.

## 2. INTRODUCTION

The City of San Diego has requested that SC Engineers provide direction and oversight for the commissioning of the City of San Diego Task 14ME02 - Pacific Beach Library Roof and HVAC Replacement and Task 14ME03 - Tierrasanta Rec Center Roof & HVAC Replacement.

Project Name:	City of San Diego Task 14ME02 - Pacific Beach Library Roof and HVAC Replacement and Task 14ME03 - Tierrasanta Rec Center Roof & HVAC Replacement
Project Location:	11220 Clairemont Mesa Blvd., San Diego, CA 92124 & 4275 Cass St, San Diego, CA 92109
Square Footage:	12,500
No. of Stories:	1
Type of Building:	Recreational Center & Library

## 3. PROJECT TEAM

### Project Directory

The following firms are involved in this project:

Discipline	Firm Name	Contact
<b>Commissioning Team</b>		
Owner/Owner Rep	City of San Diego	Tina Huang (619) 533-3863 THuang@sandiego.gov
Commissioning Authority (CxA)	SC Engineers, Inc. 17075 Via Del Campo San Diego, CA 92127	Tom Cartier, PE (858) 946-0333 <a href="mailto:Tom@scengineers.net">Tom@scengineers.net</a>
		Joseph Kilcoyne, PE CxA (858) 946-0333 <a href="mailto:John@scengineers.net">John@scengineers.net</a>
		Lyle Willis, PE CxA (858) 946-0333 <a href="mailto:Lyle@scengineers.net">Lyle@scengineers.net</a>
<b>Design/Build Construction Team</b>		
Electrical Engineer of Record (EEOR)		
Mechanical Engineer of Record (MEOR)		
General Contractor(GC)		
Controls Contractor (CC)		
Electrical Contractor (EC)		
Mechanical Contractor (MC)		
Test, Adjust and Balance (TAB)		

## **Project Directory Descriptions**

### *Commissioning Team*

**The Owner/Owner Rep:** This term shall mean the owner's designated representatives.

**Commissioning Authority (CxA):** The CxA is the designated representative that oversees the overall commissioning procedures for each system. The CxA represents the Owner for this project. The CxA approval shall be required for final acceptance of the step-by-step commissioning process.

### *Design/ Build Construction Team*

**The Design Team (ARCH, EE, ME):** Includes the Architect, Engineers, Designer(s) of Record, and their consultants.

**General Contractor and Sub-contractors (GC, MC, EC, PL, CC, TAB):** The general contractor installing and/or furnishing equipment and systems, including their sub-contractors, supplier, vendors, and the Control and Test and Balance (TAB) Contractors.

**Project Manager (PM):** The project manager is responsible for the completion of the project and overseeing and the contractors.

**Superintendent:** The superintendent runs the day-to-day operations on the construction site and controlling the short-term schedule. The role also includes important quality control and subcontractor coordination responsibilities.

## **Team Responsibilities**

### *Design Team*

- Provides the Basis of Design, plans, sequence of operations, specifications, reviews submittals and attends walkthroughs.
- Attends selected commissioning meetings.
- Input may be required for resolution of system deficiencies.

### *Owner*

- Attends selected commissioning meetings and activities.
- Provides the final approval on commissioning work.
- Input may be requested to resolve some issues.

### *Commissioning Authority*

- Coordinates and directs commissioning activities. The CxA works in coordination with the GC, contractors and Owner.
- Responsible for tracking and completing commissioning activities and deliverables.
- Creates and maintains the Commissioning Work Plan.
- Conducts commissioning kick-off meeting to outline the commissioning process to all members involved.
- Creates and maintains a master Issues Log, to track deficiencies and their resolutions.
- Organizes and leads Commissioning Meetings as necessary.
- Clearly identifies each subcontractor's responsibilities in each verification test and during the commissioning process.



- Reviews construction submittals.
- Conducts Construction Observations and writes observation reports as necessary.
- Reviews Pre-functional Checklists and start-up documents.
- Creates Functional Performance Tests.
- Verifies that the Functional Performance Tests are completed by the contractor and are performing in conformity with the design intent.
- Requests and reviews data trends.
- Designs Performance Verification Tests.
- Coordinates, directs and documents the performance verification testing of each system performed by the installing contractors.
- Coordinates re-testing of equipment that has failed during Performance Verification Testing.
- Reviews O & M manuals.
- Prepares Final Commissioning Report.

#### *General Contractor*

- Attends kick-off and selected commissioning meetings and activities.
- Helps facilitate the commissioning process by coordinating the CxA activities with the appropriate parties.
- Integrates the commissioning process/schedule into the construction schedule.
- Ensures that the commissioning process/schedule is executed by the contractors per the Commissioning Work Plan.
- Provides the required documentation to the CxA, including: Construction documents, submittals, addenda, change orders and shop drawings.
- Prepares O & M manuals according to the specifications.

#### *Contractors*

- Attends kick-off and selected commissioning meetings and activities.
- Prepares Pre-Functional checklists, submits them for review and revises as necessary.
- Provides the CxA with clarification or additional documentation to assist in creating commissioning testing documents.
- Completes the Pre-Functional Checklists.
- Performs Functional Performance Testing and provides the completed Tests to the CxA.
- Performs the System Performance Verification tests under the direction of the CxA.
- Corrects deficiencies found during testing and retests as required to resolve issue.
- Provides written responses to items on Issues Log in areas of responsibility.

#### *Manufacturers*

- Provides equipment and documentation to facilitate the commissioning process.
- Performs startup and demonstrates their equipment, where applicable.

## Summary of Team Responsibilities

### Design Team

- Basis of Design, plans, sequence of operations, specifications, reviews submittal.
- Construction Observations.
- Meeting Attendance.

### Owner

- Meeting Attendance.
- Final Approval.

### Commissioning Authority

- Creates Commissioning Work Plan.
- Performs Commissioning Submittal Review of Related HVAC Equipment.
- Leads Cx Meetings.
- Tracks Issues and Maintains Issues Log.
- Conducts Construction Site Observations and Authors Reports.
- Reviews Contractor's Pre-functional Checklists and Start-up Documents Review.
- Reviews Contractor's TAB and 72 Hour Data Trends.
- Coordinates Verification of Functional Performance Testing.
- Reviews Contractor's O & M Manuals Review.
- Writes Final Commissioning Report.
- Assists Architect with LEED Documentation.

### General Contractor

- Meeting Attendance.
- Integrates of Commissioning schedule into Construction Schedule.
- O & M manuals.

### Contractors

- Meeting Attendance.
- Author and Provide Pre-Functional Checklists.
- Functional Performance Testing.
- System Performance Verification Testing.
- Retesting, if required.
- Provides Written responses to Issues Log
- Coordinates Owner Training

### Manufacturers

- Equipment and documentation.
- Equipment Startup, Demonstration, and Reporting
- As Needed Site Startup and Report
- Equipment Training Resources and Material Documentation

#### 4. COMMISSIONING PROCESS

##### Scope of Work

The systems to be commissioned in the Scope of Work are listed below. In this report any general reference to equipment or systems will pertain to these items.

Systems	Description
HVAC Systems	Includes systems that are involved in controlling indoor air quality and occupant comfort. Verifying TAB procedures, ductwork testing and system performance are all aspect of commissioning HVAC.
Sequence of Operations for HVAC Systems	The Sequence of Operations is commissioned as it pertains to the HVAC and Central Plant.
DDC Systems	The Direct Digital Control (DDC) system includes the controllers, linkages and sensors as they relate to the HVAC system.
Chilled Water and Hot Water Systems	The chilled water/hot water systems include the boilers and chillers, as well as all system components as they relate to the HVAC system.

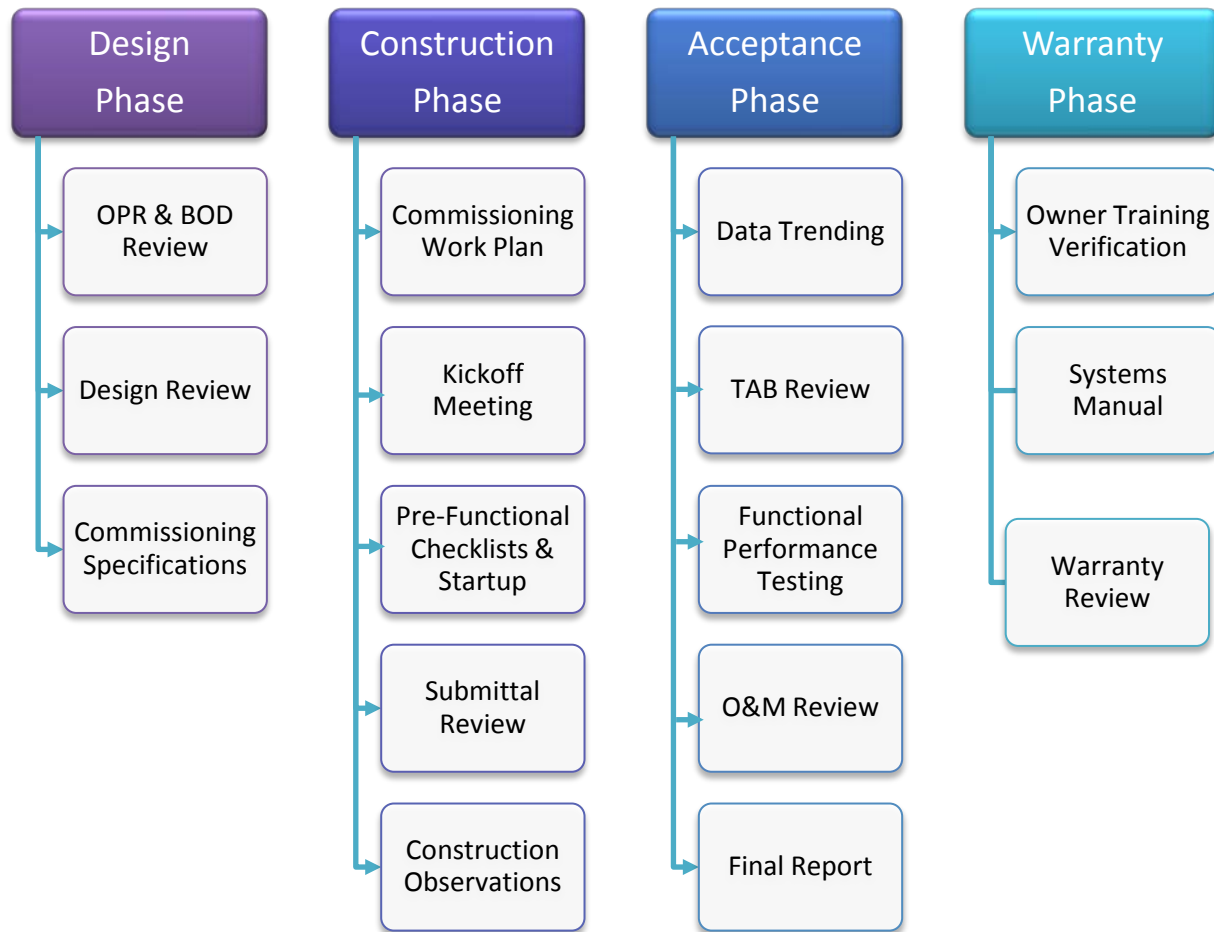
##### Commissioning Criteria

The mechanical systems are commissioned as a whole system. The system cannot operate correctly without each component. The commissioning process accounts for all targeted equipment to be tested both individually and as a system. A successfully commissioned system will both perform by itself and perform as designed while interacting within the system. The testing process is designed to address these needs by documenting the following:

- Sequence of Operation
- Programmed interaction of equipment and interlocks
- Interaction of integrated controls and central building controls, including monitored points and controlled points
- Sequence of control for packaged units
- Capacity control and staging of equipment (duty-standby, Lead-Lag)
- Temperature and pressure control (setbacks, resets, set points)
- Set points and sequencing of controls (economizing, demand control ventilation, lockout, reset, and setback strategies)
- Alarms and shutdowns
- Power failure modes
- Overall system inspection

When these strategies do not apply, a testing or verifying approach will be developed to meet the requirements of the project.

## Commissioning Deliverables and Activities



### Design Phase

**Commissioning Work Plan:** The Commissioning Work Plan is prepared by the CxA and presented to the commissioning team at the kick-off meeting. The purpose is to define the scope of the project, the deliverables and activities performed by the CxA and the different members of the commissioning team. The Commissioning Work Plan outlines how the commissioning activities will be integrated into the design, construction and acceptance schedule. The Commissioning Work Plan is a working document and will expand to include commissioning testing documents and checklists, updated schedules and a complete project directory as the project progresses.

**Design Review:** A commissioning design review should be done as early in the design process as possible. The intent of the review is to identify areas with potential problems before the construction documents are finalized. Systems that are reviewed are checked for functionality, energy performance, maintainability and indoor environmental quality. The design is then checked against the BOD to ensure that the original design intent is still being met.

If commissioning starts early enough during the design phase, potential problems have a higher probability to be exposed and will be more easily and less expensive to correct. A design review conducted during the later stages of the design phase should be completed to review for issues pertaining to installation, operation and performance. Issues found before the Construction Documents are complete can be corrected on the final drawings.

**Submittal Review:** Construction submittals related to the scope of work will be reviewed by the CxA. The review intent is to ensure the specified equipment, meets the requirements of the design, specifications or other specific needs of the project.

**Issues Log:** The Issues Log is a comprehensive list of observations, review comments and/or deficiencies found during the commissioning process. The Issues Log is continuously updated as issues are resolved or added. These items are tracked by the CxA and are regularly distributed to the commissioning team. Items on the Issues Log may be derived from any of the commissioning activities, reviews, construction observations, Pre-Functional Checklists, Functional Testing or deficiencies brought to the CxA's attention. The information in the Issues Log includes: a description of the issue, responsible party, date opened, date closed, notes and recommended action. ***The CxA does not have the authority to provide direction to the Contractors.*** Any issues arising during the commissioning process which impact schedules, costs, or contractual obligations should be addressed to the General Contractor for resolution.

#### *Construction Phase*

**Commissioning Kick-Off Meeting:** The commissioning kick-off meeting will be held with all members of the commissioning team. The purpose of the meeting is to discuss the commissioning process. The systems to be commissioned, scope of work, team member responsibilities, timelines and deliverables will all be agreed upon and incorporated into the Commissioning Work Plan. After the commissioning kick-off meeting, the commissioning team should have a clear understanding for what is to be expected of all members in order to assist in facilitating the commissioning process.

**Construction Observations:** Construction Observations are done onsite during the construction process. Depending on the size and complexity of the project, the CxA will schedule visits as necessary. The purpose of the visit is to verify that construction and installation of equipment is being done in accordance with the design intent, manufacturer's instructions and to ensure equipment is not installed in a way that hinders future operations and maintenance requirements.

**Pre-Functional Inspection and Start-Up Checklists:** Pre-functional checklists (PFC) are created by the CxA for mechanical and electrical contractor unless otherwise specified in the contract documents. These checklists are to be completed by the contractors during initial equipment start up, and then reviewed by commissioning team. The CxA will note any issues and document them in the form of comments for the Issues Log. Each checklist is equipment specific and will be completed onsite by the appropriate contractor. In cases where multiple disciplines are involved, each contractor completes their portion of the checklist. For example, the MC installs a pump, the EC connects power, and the CC programs the control of the pump. Point to Point verification by the MC and CC should be documented during this phase of commissioning. The purpose of the point to point process is to verify the controls input/output connections are valid by simulating local actuator signals and verifying the device in question responds as intended. The PFC and Start-Up documents are collected by the GC and distributed to the CxA for review and comment.

## *Acceptance Phase*

**Trending:** Trending begins when all the components in the system are functioning and the sequence of operations is fully programmed and executed properly. The controls contractor is responsible for setting up and starting the trends. Trends run for a minimum for 48 hours before they are made available to the CxA. The CxA will analyze the data and review the behavior of the system over the course trending period. The trends will be analyzed to ensure the system's autonomy throughout the modes of operation and occupancy. This type of analysis is also useful when looking for broken sensors and faulty automation. Deficiencies found during this phase of testing are entered in to the Issues Log and are to be resolved before system performance testing starts.

**System Performance Verification:** Also referred to as Functional Performance Testing (FPT). These tests are written by the CxA and are distributed to the commissioning team for review before testing. Once the Functional Testing, Trending and TAB are complete, the CxA will lead the Performance Verification Testing. Under the supervision of the CxA, the installing contractors demonstrate the performance of their equipment. The contractor will control the equipment or software as necessary to run the system through all testing modes. If the system or components fail a test the contractor will be responsible for resolving the issues. There may be a re-testing day scheduled to test failed equipment.

Test and Balance Verification will occur simultaneously with PVTs. The final TAB report will be verified by re-measuring a sampling of flows at points chosen by the CxA. The actual measurements, procedures and equipment used will be reviewed by the CxA to verify compliance with the project requirements.

Functional Testing is verified during these visits as well. The appropriate contractor will demonstrate the testing procedure on a sample of equipment chosen by the CxA.

**Operations and Maintenance Manual:** The CxA will verify arrangement and completeness of Operations and Maintenance Manuals. O & M manuals shall be provided for each system and equipment components. Manuals will include specific tag names, manufacturer names and model numbers and contractor names and service agency contacts.

**Owner Training:** The general contractor creates the training agenda and coordinates the training sessions with the appropriate participants. Before training occurs, the CxA reviews the agenda. The training agenda should be comprehensive and highlight the importance of system interaction, troubleshooting and long term preventative maintenance. Training materials will include sign-in sheets and meeting minutes and if required, the training may be videotaped for viewing by future O & M staff. It is encouraged for the owners and maintenance staff to attend Performance Verification Testing as an addition opportunity to learn the equipment.

**Final Commissioning Report:** The CxA will create a Final Commissioning Report summarizing the entire commissioning process. This report will be a benchmark and can be used in future re-commissioning efforts. Topics of the report include a narrative of the commissioning process, highlights of the issues found and how they were resolved and what, if any, issues are outstanding. Included in the final report is a compilation of the entire commissioning process and deliverables.

## **Commissioning Disclaimer**

The commissioning process does not reduce the responsibility of the installing contractors to provide a finished and fully functional product. The commissioning process also does not alter any obligation the contractors have for O & M Manuals, training or any other contractual requirements.

***The CxA does not have the authority to provide direction to the Contractors.*** Any issues arising during the commissioning process which impact schedules, costs, or contractual obligations should be addressed to the General Contractor for resolution.

The CxA's commissioning procedures shall be coordinated with the Contractor's Quality Control procedures. The CxA's commissioning is not a substitute for the Contractor's Quality Control and Commissioning requirements and procedures, and shall be provided in addition to Contractor's Quality Control procedures, documentations, and inspection requirements.

The Commissioning Authority assures applicable forms and documentations are submitted and are complete for each applicable section of Divisions 23. The commissioning performed under this Plan is intended to verify and document that the systems and equipment are operating correctly as designed and is in addition to the commissioning performed by the manufacturers and contractors for each system or each piece of equipment.

## 5. COMMISSIONING SCHEDULE

Commissioning Activity	Duration	Estimated Start Date	Estimated Completion Date
<b>Construction Phase</b>			
Create Cx Work Plan	3 weeks		
Cx Schedule Integrated into Master Schedule by GC	3 days		
Construction Kickoff Meeting	3 days		
Submittals Review	2 weeks		
Create Pre-Function Checklists	5 days		
Cx Review of Construction Documents	5 days		
Create Component Functional Tests	2 weeks		
Create System Performance Verification Tests	1 week		
<b>Acceptance Phase</b>			
Physical Equipment Observation	On Going		
Witness and Review Pre-Function Checklists	1 week		
Verify Contractor of Start-up and Functional Testing Documents are Complete	1 week		
Review Controls Contractor Point-to-Point Documents	3 days		
Cx Trending Data Review	1 week		
TAB Review	1 week		
System Performance Verification	3 days		
Witness Controls Functional Testing	1-3 weeks		
Review O&M Manuals	1 week		
Cx Final Report	3 weeks		
<b>Warranty Phase</b>			
Verify Owner Training	2 days		



Technical Specifications  
Tierrasanta Recreation Center Roof Replacement-TPA

**SECTION 01010  
SUMMARY OF WORK**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Provide all labor, materials, transportation, equipment, appliances, and services necessary for, and incidental to, the execution and completion of all work indicated in the Contract Documents for the removal and replacement of the roof in the project entitled:



- B. In general, the scope of work includes, but shall not be limited to, the following sections of the specifications which are more fully described herein:

**DIVISION 1 - GENERAL REQUIREMENTS**

01010 Summary of Work

**DIVISION 2 - SITE WORK**

02070 Demolition

**DIVISION 7 - THERMAL AND MOISTURE PROTECTION**

07532 Adhered Tri-Polymer Alloy Membrane Roofing  
07600 Flashing and Sheet Metal.

- D. Applicable portions of Section 01010 apply to all other sections of these specifications, therefore these applicable portions are not specifically referred to in those other sections.

**END OF SECTION**

**SECTION 02070  
DEMOLITION**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. General provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

**1.02 DESCRIPTION OF WORK**

- A. Extent of demolition work as noted on pre-bid walkthrough.
- B. Types of Demolition Work: Demolition requires the selective removal and **subsequent offsite disposal** of the following:

Existing roofing and flashing to substrate.

**1.03 SUBMITTALS**

- A. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of CITY's on-site operations, with the exception of limited disruption of on-site operations during the period specified by CITY.

**1.04 JOB CONDITIONS**

- A. Occupancy: CITY will be continuously occupying areas of the building immediately adjacent to and below the areas of demolition. Conduct demolition work in manner that will minimize need for disruption of CITY's normal operations. Provide minimum of 72 hours advance notice to CITY of demolition activities which will affect CITY's normal operations.
- B. Condition of Structures: CITY assumes no responsibility for actual condition of items or structures to be demolished.

**1.05 PROTECTIONS**

- A. Provide temporary barricades and other forms of protection as required to protect CITY's personnel and general public from injury due to demolition work.
- B. Provide protective measures as required to provide free and safe passage of CITY's personnel and general public to and from occupied portions of

- building.
- C. Protect walks, paving, landscaping, etc. with suitable coverings when necessary.
- D. Remove barricades and protections at completion of work.
- E. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to CITY.

**1.06 TRAFFIC**

- A. Conduct demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
- B. Do not close, block, or otherwise obstruct streets, walks or other occupied or used facilities without written permission from CITY or authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

**1.8 UTILITY SERVICES**

- A. Maintain existing utilities indicated to remain; keep in service, and protect against damage during demolition operations.
- B. Do not interrupt any existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to CITY.
- C. Coordinate any disconnect / reconnections of service lines on roof top with CITY's designated H.V.A.C. / Mechanical Contractor's.
- D. Protect in place existing rooftop camera.

**1.09 ENVIRONMENTAL CONTROLS**

- A. Use water sprinkling and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.

**1.10 DEMOLITION MATERIALS AND DEBRIS**

- A. Fully contain all demolition materials and debris, and use CITY approved methods for removal of tear off.

**PART 3 – EXECUTION**

Removal Items:

Existing roofing and flashing's to substrate. Drain rings and covers, designated flashings and designated obsolete roof top equipment.

- A. The Contractor shall assume full responsibility and liability for compliance with all applicable Federal, State and local regulations pertaining to work practices, hauling, disposal, and protection of workers, visitors to the site and building occupants. The Contractor shall hold CITY and CITY representatives harmless for failure to comply with any applicable work, handling, disposal, safety, health or other regulation on the part of himself, his employees or his subcontractors.

**3.04 MATERIAL AND DEBRIS STORAGE**

- A. Provide suitable containers to hold debris and all material from selective demolition, so that all debris and material from selective demolition will occupy only areas authorized by CITY.

**3.05 DEMOLITION**

- A. Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated in Specifications in accordance with demolition schedule and governing regulations. Schedule demolition work to minimize risk of exposure to rain or other unfavorable weather conditions.

**3.08 CLEAN-UP AND REPAIR**

- A. Upon completion of demolition work, remove tools, equipment, and demolished materials from site. Remove protections and leave interior areas broom clean.
  - 1. Repair demolition performed in excess of that required. Repair and restore structures and surfaces to remain to condition existing prior to commencement of selective demolition work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

**END OF SECTION**

**SECTION 07532**  
**ADHERED TPA MEMBRANE ROOFING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. The attached are components of this section:
1. General Conditions

**1.02 SCOPE OF WORK**

- A. Furnish and install specified roofing and related components for the Roof Replacement of the Tierrasanta Gymnasium / Recreation Center Upper and lower roof levels.
- B. Work includes:
1. Proper preparation of existing roof surface including removal and disposal of existing roof membrane and flashing's to substrate.
  1. Installation of the following:
    - a. Mechanically fastened 2 layers of 2.5" Polyisocyanurate insulation per FM requirements. Minimum 1 fastener every 2 square feet.
    - b. Tapred iso crickets in designated areas to provide positive slope to drain, set in low rise foam adhesive.
    - c. 1/2" Asphalt coated wood fiber cover board set in low rise foam insulation adhesive.
    - d. Install Fully Adhered 60 Mil Tremco TPA Fleece Back Membrane system over base insulation heat weld all laps, mechanically secure at all perimeter and projection base flashings.
    - e. Install TPA membrane flashings @ all perimeter and projection flashing details. New TPA Clad primary scuppers, core walls and install 1 overflow relief scupper at each primary scupper / drain location per local building code requirement.
    - f. New 24 gage galvanized metal coping cap secured with 22 gage continuous cleat.
    - g. New double domed acrylic curb mounted skylights with Cal-OSHA approved fall protection screen covers.
    - h. New Cal-OSHA approved roof access hatch with Tremco Kee Safety Cal OSHA safety rail system with gate.
    - i. TPA Membrane flashings for all through roof penetrations.
    - j. Replace all blocking supports with new set on TPA protective walkmat. Properly support all service lines.
    - k. Install new 156 mil Safety Yellow walkmats, fully weld perimeter edges, and provide gaps every 10' to allow for water flow, bid shall include 360 lineal feet.
    - l. Install PVC safety yellow perimeter warning line @ 6' from edge, heat

- weld to new roof membrane.
- m. Remove all obsolete roof top equipment and equipment supports.
- n. Install new kynar scuppers and downspouts.
- o. Protect in place existing ground-to-high-roof access ladder. Remove and replace high-roof to lower-roof ladder. Provide and install new lower-roof to medium-roof ladder. All new ladders shall be OSHA compliant, galvanized steel, and shall be attached to building using 316 stainless steel bolts.

**E. Roofing material manufacturer shall furnish 20 year quality assurance warranty and maintenance service agreement as specified in the warranty section.**

**1.03 QUALITY CONTROL**

**A. Contractor shall:**

1. Be experienced in specified membrane system.
  - a. Three (3) years minimum.
2. Be acceptable to CITY.
3. Be a manufacturer Certified Contractor.
4. Has not been in Chapter 7 during the last ten (10) years.
5. Provide a list of at least five (5) projects available for inspection employing similar type system within a 50-mile radius of project.
6. Has no outstanding complaints with California Contracting License Board during the last four (4) years.

**B. Roofing material manufacturer shall:**

1. Be an Associate Member in good standing with the National Roofing Contractors' Association (NRCA) for at least five (5) years.
2. Be nationally recognized in roofing, waterproofing, and moisture survey industry.
3. Be approved by CITY.
4. Has not been in Chapter 11 during the last five (5) years.
5. CITY is desirous of working with a financially strong organization which has the ability to protect and insulate the building CITY from both product liability and warranty claims, relating to roofing, that could be brought before the building CITY during the course of the roofing warranty period.
6. CITY is a supporter of responsible Health, Safety and Environmental (HS&E) issues and requires all manufacturers to have similar concerns, convictions, and commitments. To this end, the primary manufacturers of materials used on building CITY roof must submit a formalized Corporate HS&E Policy and demonstrate active participation in such a policy.
- 7. Provide a Project Close-out Report upon delivery of the project warranty. This report shall include the following sections:**
  - a. Project Specifications**
  - b. Project Summary**
  - c. Daily Project reports as a result of roof inspections.**
  - d. Job progress photos.**

- e. **Warranty document.**
  - f. **Owner's Manual describing maintenance and emergency repair.**
  - g. **Inspection Report to be completed by the roofing material manufacturer on an annual basis for the duration of the warranty period.**
8. The roofing material manufacturer will be ISO 9001 Certified.
- a. Manufacturer will provide proof of ISO 9001 Certification by submitting copy of the Certificate of Registration or similar type of quality documentation.
  - b. Manufacturer's products will be produced per specifications developed under design control procedures per ISO 9001 requirements or similar type requirements.
  - c. The assessment body providing certification of the manufacturer's quality management system will be nationally recognized agency with sufficient knowledge and experience in the manufacturer's industry to permit a credible assessment of the manufacturer's quality system.
9. Provide local Field Representative to make daily site visits, report work quality and job progress.
10. Provide list of at least ten (5) projects available for inspection employing same roofing system within a 50-mile radius of project.
11. The presence and activity of the manufacturer's representative and/or CITY's representative shall in no way relieve the contractor of contractual responsibilities of duties.
- C. Random sampling:
- 1. Roofing material:
    - a. During course of work, CITY's Representative may secure samples according to ASTM D140-93 of materials being used from containers at job site and submit them to an independent laboratory for comparison to specified material.
    - b. Should test results prove that a material is not functionally equal to specified material:
      - 1) Contractor shall pay for all testing.
      - 2) Roofing installed and found not to comply with the specifications shall be removed and replaced at no change in the contract price.
- E. Regulatory requirements:
- 1. Uniform Building Code.
  - 2. UL Classified Fire Rating - UL 790.
    - a. Class A.
  - 3. All products shall be FM approved.



- F. Plans and specifications:
1. Contractor shall notify CITY of any omissions, contradictions, or conflicts seven (7) days before bid date. CITY shall provide necessary corrections or additions to plans and specifications by addendum. If Contractor does not so notify CITY of any such condition, it will be assumed that the Contractor has included the necessary items in the bid to complete this specification.
  2. It is the intent that this be a completed project as far as the contract documents set forth. It is not the intent that different phases of work on this project be delegated to various trades and subcontractors by the contract documents. Contractor must make own contracts with various subcontractors, setting forth the work these subcontractors will be held responsible for. The Contractor alone will be held responsible by CITY for the completed project.
  3. If the Contractor feels a conflict exists between what is considered good roofing practice and these specifications, contractor shall state in writing all objections prior to submitting quotations.
  4. It is the Contractor's responsibility during the course of the work to bring to the attention of CITY's representative any defective membrane, insulation or deck discovered where not previously identified.

## **1.05 SUBMITTALS**

- A. Submit prior to contract award date:
1. UL Listing of Fire Resistance Rating:
    - a. Copy of UL Listing for the specified roof system from the current UL Roofing Materials and Systems Directory or from letters issued by UL to the manufacturer.
  2. Product compatibility:
    - a. Written verification from roofing material manufacturer that major roofing components, including (but not limited to) coatings, cold process adhesives; roofing ply sheets; reinforcement fabric felts and mats; mastics; and sealants are all compatible with each other.
  3. Test reports:
    - a. Written verification from roofing material manufacturer that roofing system meets or exceeds regulatory agency's requirements specifically U.L. Class A Fire Rating. All products shall be FM approved.
  4. Red label products:
    - a. Written verification from roofing material manufacturer that cold

- process coatings are not flammable (red label).
  - b. Verification that all adhesives/mastics are in compliance with San Diego County V.O.C. requirements.
5. Product data:
- a. Product data sheets.
  - b. Material safety data sheets.
  - c. Samples of coatings, adhesives, and roofing ply sheets.
  - d. Samples of each material specified, properly labeled.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery of materials:
- 1. Deliver materials to job site in new, dry, unopened, and well-marked containers showing product and manufacturer's name.
  - 2. Deliver materials in sufficient quantity to allow continuity of work.
  - 3. Coordinate delivery with CITY.
- B. Do not order project materials or start work before receiving written approval from CITY.
- C. Storage of materials:
- 1. Store roll goods on ends only. Discard rolls which have been flattened, creased, or otherwise damaged. Place materials on pallets. Do not stack pallets.
  - 2. For insulation, remove plastic packaging shrouds. For felt rolls, slit the top of the plastic shrink wrap only. Cover top and sides of all stored materials with tarpaulin (not polyethylene). Secure tarpaulin.
  - 3. Rooftop storage: Disperse material to avoid concentrated loading.
  - 4. No materials may be stored in open or in contact with ground or roof surface.
  - 5. Should Contractor be required to quickly cover material temporarily, such as during an unanticipated rain shower, all materials shall be stored on a raised platform covered with secured canvas tarpaulin (not polyethylene), top to bottom.
  - 6. Contractor shall assume full responsibility for the protection and safekeeping of products stored on premises.

- D. Material handling:
1. Handle materials to avoid bending, tearing, or damage during transportation and installation.
  2. Material handling equipment shall be selected and operated so as not to damage existing construction or applied roofing. Do not operate or situate material handling equipment in locations that will hinder smooth flow of vehicular or pedestrian traffic.

## **1.07 SITE CONDITIONS**

- A. Field measurements and material quantities:
1. Contractor shall have SOLE responsibility for accuracy of all measurements, estimates of material quantities and sizes, and site conditions that affect work
- B. Existing conditions:
1. Building space directly under roof area covered by this specification will be utilized by ongoing operations. Do not interrupt CITY operations unless prior written approval is received from CITY.
  2. Access to roof shall be from exterior only.
  3. Air conditioning units and other equipment shall be moved as required to install roofing materials complete and in accordance with plans and specifications. When units and equipment are to be moved, they shall be carefully disconnected and removed to a protected area so as not to damage any part or component thereof, and shall be reconnected in such a way that they are restored to a prior-work operating condition. Appropriate measures shall be taken to prevent dust, vapors, gases, or odors from entering the building during roof removal, replacement, or repair. Notify and receive approval from Resident Engineer before disconnecting any rooftop accessories that would interfere with the operation of the facility.
  4. All disconnection and re-connection shall be performed by a mechanical and/or electrical company licensed to perform such work.
- C. Safety requirements:
1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
  2. Comply with federal, state, local, and CITY fire and safety requirements.
  3. Advise CITY whenever work is expected to be hazardous to any persons of CITY community, employees, and/or operators.
  4. Maintain a crewman as a floor area guard whenever roof decking is being repaired or replaced.
  5. Maintain fire extinguisher within easy access at all times for the duration

of the project.

D. Waste disposal:

1. Do not re-use, re-cycle or dispose of material manufacturers product containers except in accordance with all applicable regulations. The user of manufactured products is responsible for proper use and disposal of product containers

E. Environmental requirements:

1. Do not work in rain, or in presence of water.

F. Security requirements:

1. Comply with CITY security requirements.
2. Provide CITY with current list of persons on the job site.

### **1.11 WARRANTY/GUARANTEE**

A. Guarantee

1. Upon project completion and CITY acceptance, effective upon complete payment, Contractor shall issue CITY a guarantee against defective workmanship and materials for a period of Two (2) years.

B. Warranty

1. Upon project completion, Manufacturer acceptance, and once complete payment has been received, by both Contractor and Manufacturer, Manufacturer shall deliver to CITY a Twenty (20)-year manufacturer Roofing System Quality Assurance Warranty and maintenance agreement. Manufacturer will perform housekeeping and preventative maintenance as follows: **Inspections will be performed at year 2, year 5, year 10 and year 15 of the warranty period.**

Warranty Coverage Includes:

- The Roof Membrane.
- The Flashings.
- Insulation and adhesive.
- Edge components
- Metal Components and flashing details.

Warranty shall be an entire system warranty and include roof insulation, membrane, surfacing, flashing, and sheet metal terminations. **Manufacturer to provide written reports after each inspection.**

**PART 2 - PRODUCTS**

**2.1 GENERAL**

- A. Comply with quality control, references, specifications, and manufacturer's data. Products containing asbestos are prohibited on this project. Use only asbestos-free products.
- B. Use all products with appropriate personal protection. User must read container label and material safety data sheets prior to use.

**2.3 ROOF DECKING**

- A. Plywood Sheeting
  - 1. Remove and replace defective plywood sheeting with 15/32" APA Rated CDX plywood sheeting.

**2.4 WOOD BLOCKING AND CURBS**

- A. Exposed Sleepers
  - 1. Use recycled rubber block supports.

**2.5 INSULATION**

- A. Base Layers / Tapered: ASTM C 1289-11, Type II, Class I, Grade 2 Polyisocyanurate Insulation with a black, non-asphaltic fiber facer.  
2 layers 2.5" 4' x 8', tapered in designated areas.
- B. Fasteners #1211 fasteners with approved 3" plates.
- C. Cover Board: ASTM C 208 Type II, Grade 2, High Density Wood Fiber Insulation Board. 1/2" thick 4' x 8' board. Cover Board Adhesive: Low Rise Foam.  
Insulation R-Value ( minimum R-30 )  
2 Layers 2.5" Polyisocyanurate aged R Value 14.4 per layer 28.8  
1 Layer 1/2" asphalt coated wood fiber R Value 1.3 1.3  
Total System R Value: 30.1

**2.6 MECHANICAL FASTENERS**

- A. Wood to wood:
  - 1. Galvanized, common, annular ring nail. Length: sufficient to penetrate underlay blocking 1 1/4 inches.

**2.7 ROOFING MATERIALS**

- A. Adhesives:
  - 1. Tremco TPA WB Membrane Adhesive.
  - 2. Tremco TPA LV Flashing Adhesive.

- B. Membrane:
  - 1. TPA 60 MIL FB Membrane

Thermoplastic tri-polymer alloy blended with CPE and PVC, polyester reinforced with wick resistant non-woven polyester fleece backed. Contains a minimum 25% by weight of Preconsumer recycled content.

Energy Star rated / Title 24 Compliant

- C. Flashing: Tremco TPA 60 Mil Membrane.
- D. Caulking: Tremseal D
- E. Walkway: TPA Walkway Rolls 156 mil - Color: Safety Yellow
- F. Clad Metal: TPA Clad Metal.

## **2.09 METAL FLASHINGS**

- A. Coping Metal / Downspouts.
  - a. 24 gage kynar set on 22 gage continuous cleat.
  - b. All embedded metal (edge metal / scuppers) shall be TPA clad.
- C. Work shall be in accordance with Architectural Sheet Metal Manual, as issued by Sheet Metal and Air Conditioning Contractor's National Association, Inc. (SMACNA).

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Verify conditions as satisfactory to receive work.
- B. Do not begin roofing until all unsatisfactory conditions are corrected. Beginning work constitutes acceptance of conditions.
- C. Verify that work of other trades penetrating roof deck or requiring men and equipment to traverse roof deck has been approved by CITY, manufacturer, and roofing contractor.
- D. Check projections, curbs, and deck for inadequate anchorage, foreign material, moisture or unevenness that would prevent quality and execution of new roofing system.

### **3.02 GENERAL WORKMANSHIP**

- A. Substrate shall be free of foreign particles prior to laying roof membrane.
- B. Phased application is not permitted. All plies shall be completed each day.
- C. Traffic and equipment shall be kept off completed plies until adhesive has set.
- D. Wrapper and packaging materials shall not be included in roofing system.

- E. Entrapped aggregate shall not be permitted within new membrane. Discovery of entrapped aggregate is sufficient cause for rejection.
- F. Ply shall never touch ply, even at roof edges, laps, tapered edge strips, and cants.
- G. Fit plies into roof drain rims; install lead flashing and finishing plies; secure clamping collars; and install domes.
- H. Extend roofing membrane to top edge of cant at wall and projection bases.

### **3.03 PREPARATION**

#### **A. Protection:**

1. Contractor shall be responsible for protection of property during course of work. Lawns, shrubbery, pavement areas, and buildings shall be protected from damage. Repair damage at no extra cost to CITY.
2. Prior to commencing removal of debris, provide at the site, a dumpster or dump truck to be located adjacent to building as directed by CITY.
3. At start of each work day, drains within daily work area shall be plugged. Plugs to be removed at end of each work day or before arrival of inclement weather.
4. Arrange work sequence to avoid use of newly constructed roofing for storage, walking surface, and equipment movement. Move equipment and ground storage areas as work progresses.
5. Protect building surfaces at set-up areas with tarpaulin. Secure tarpaulin. Remove dumpster from premises when full and empty at approved dumping or refuse area. Deliver empty dumpster to site for further use. Upon job completion, dumpster shall be removed from premises. Spilled or scattered debris shall be cleaned up immediately. Removed material to be disposed from roof as it accumulates.
6. At the end of each working day, removal area shall be sealed with water stops along edges to prevent water entry.
7. Provide clean plywood walkways and take other precautions required to prevent tracking of aggregate/debris from existing membrane into new work area where aggregate/debris pieces can be trapped within new roofing membrane. Contractor shall instruct and police workmen to ensure that aggregate/debris is not tracked into new work areas on workmen's shoes or equipment wheels. Discovery of entrapped aggregate/debris within new membrane is sufficient cause for its rejection.

#### **B. Surface preparation:**

1. Properly remove and dispose of existing roofing and flashing's to substrate.

### **3.09 INSULATION**

- A. Install 2 layers of 2.5" isocyanate insulation over metal deck, stagger layers and end laps per warranty detail requirements, ensure insulation joints on bottom layer are fully supported by metal deck). Secure with #1211 fasteners 1 fastener every 2 square feet.
- B. Install tapered crickets in low rise foam as needed to provide positive slope to drains.
- C. Install 1/2" asphalt coated wood fiber cover board in low rise foam insulation adhesive.

### **3.11 ROOF SYSTEM APPLICATION**

- A. Starting at drain locations, Install 60 mil Fleece Back T.P.A. membrane over cover board insulation, install field membrane in a manner so that water flows over and along, but never against field membrane laps.
- B. Heat weld all side / end laps per Manufacturer Field Requirements for heat welding of single ply membrane. All laps will be field tested to ensure complete and continuous weld /seal. Minimum 2" weld on all hand welds required, 1.5" on automatic welders. Heat welding of seams:
  - a. Wipe both sides of lap with approved solvent.
  - b. Adjust welding equipment air temperature prior to start.
  - c. Maintain air nozzle temperature and nozzle speed when joining laps together.
  - d. Remove lap sample from roof and test lap areas to assure proper bonding. When cool, pull test lap apart. When torn, the reinforcing scrim should become exposed. Patch test areas with new T.P.A. of the same color and style, using a minimum 2" lap area.
  - e. Weld cover strips on end laps per warranty detail requirements.

Cut and weld end laps with non-fleece back 45 Mil membrane strips per manufacturer warranty detail requirements.

### **3.08 FLASHINGS**

- A. General flashing requirements:
  1. Elastomeric flashing (And Expansion Joints):
    - a. Install boots to plumbing vent supports and through roof penetrations per Tremco warranty detail requirements. All curbs



shall be completely roofed in with single ply. Non-Fleece Back Membrane may be used for perimeter and projection flashings, set in V.O.C. Compliant Bonding Adhesive. Secure at top with Termination Bar and caulk with Tremseal D before installing surface / counterflashing metal.

2. Heat welding of seams:
  - a. Wipe both sides of lap with approved solvent.
  - b. Adjust welding equipment air temperature prior to start.
  - c. Maintain air nozzle temperature and nozzle speed when joining laps together.
  - d. Remove lap sample from roof and test lap areas to assure proper bonding. When cool, pull test lap apart. When torn, the reinforcing scrim should become exposed. Patch test areas with new T.P.A. of the same color and style, using a minimum 2” lap area.

**B. Roof Scuppers.**

1. Install new primary and overflow TPA Clad Scuppers.

**Flashings**

1. Install new vents / projection flashings per warranty detail requirements.

**Skylights**

1. Install new double domed acrylic roof mounted skylights, mount to existing curb and then install Cal-OSHA approved. Fall protection screens.

**Hatch / Safety Rails**

1. Install new CAL-OSHA approved roof access hatch with Tremco Kee Safety Cal-OSHA safety rails with gate.

**Perimeter warning line**

1. Heat weld safety yellow PVC warning line 6' from perimeter edge.

**3.09 WALKWAYS**

**A. Install walkway panels from roof access hatches to and around service areas on units**

1. Secure walkway panels to roofing, spot weld center and fully weld perimeter edges. Gap where appropriate to allow for water flow.

**3.11 ADJUSTING AND CLEANING**

A. Repair of deficiencies:

1. Installations of details noted as deficient during final inspection must be repaired and corrected by applicator and made ready for re-inspection within five (5) working days.

B. Clean-up:

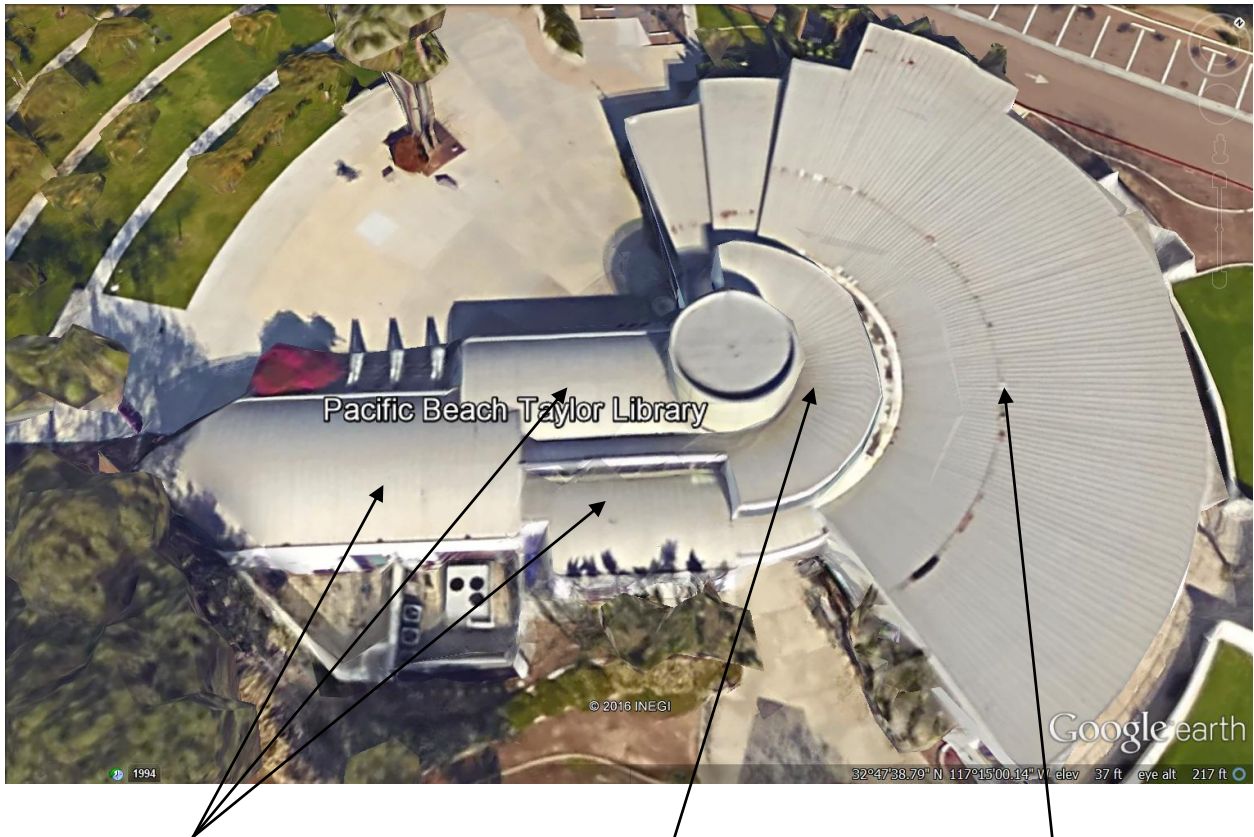
1. Immediately upon completion, roof membrane and flashing surfaces shall be cleaned of debris.
1. Clean job site of debris.

**END OF SECTION**

**SECTION 07600**

Install new 24 gage kynar coping metal secured with 22 gage continuous cleats new downspouts and sheet metal pans.

**END OF SECTION.**



SPEC SECTION A ( METAL )

SPEC SECTION C ( METAL )

SPEC SECTION B ( METAL )

**PACIFIC BEACH TAYLOR LIBRARY  
4275 CASS STREET SAN DIEGO, CA 92109**

**ROOF REPLACEMENT SPECIFICATIONS**

- SPEC SECTION 074113 A CURVED BARREL VAULTED ROOF'S**
- SPEC SECTION 074113 B OUTER CIRCLE WITH TAPERED PANELS.**
- SPEC SECTION 074113 C INNER CIRCLE WITH CURVED / TAPERED PANELS.**
- SPEC SECTION 07532 TRI-POLYMER ALLOY MEMBRANE SYSTEM - ALL VALLEYS / EXPOSED ROOF AREAS ( NON METAL ).**

**PACIFIC BEACH LIBRARY METAL ROOF SPECIFICATIONS T-238****SECTION 07 41 13 - STANDING SEAM METAL ROOF PANELS: Section B: Outer Circle with Tapered Panels**

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

## A. Section Includes:

1. Architectural standing-seam metal roof panels.
2. Metal roof accessories.

## B. Related Sections:

1. Division 01 Section "Sustainable Design Requirements" for additional LEED requirements.
2. Division 06 rough carpentry section for wood nailers, curbs, and blocking.
3. Division 07 Section "Sheet Metal Flashing and Trim" for field- or shop- formed fasciae, copings, flashings, roof drainage systems, and other sheet metal work not part of metal roof panel assemblies.
4. Division 07 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.

- C. **Allowances:** Refer to Division 01 Section "Allowances" for description of Work in this Section affected by allowances.

- D. **Unit Prices:** Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

## 1.3 DEFINITIONS

- A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weathertight roofing system.

## 1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, metal roof panel Installer, metal roof panel manufacturer's representative, substrate Installer, and installers whose work interfaces with or affects metal roof panels including installers of roof accessories and roof-mounted equipment.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

3. Review methods and procedures related to metal roof panel installation, including manufacturer's written instructions.
4. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
5. Review structural loading limitations of substrate during and after roofing.
6. Review flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
7. Review governing regulations and requirements for insurance, certificates, and testing and inspecting if applicable.
8. Review temporary protection requirements for metal roof panel assembly during and after installation.
9. Review roof observation and repair procedures after metal roof panel installation.
10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

### 1.5 ACTION SUBMITTALS

- A. **Product Data:** For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of roof panel and accessory.

LEED Submittals:

- B.
1. **Product Data for Credit MR 4:** Indicating percentages by weight of postconsumer and preconsumer recycled content for products having recycled content.
    - a. Include statement indicating costs for each product having recycled content.
- C. **Shop Drawings:** Show fabrication and installation layouts of metal roof panels; details of edge conditions, side-seam and endlap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details specific to project, signed and sealed by the qualified professional engineer responsible for their preparation. Distinguish between factory- and field-assembled work.
- D. **Accessory Details:** Include details of the following items:
1. Flashing and trim.
  2. Pipe penetration flashings.
  3. **Roof curbs.**
  4. **Gutters.**
  5. **Downspouts.**
- E. **Delegated-Design Submittal:** For metal roof panel assembly indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the metal roof panel manufacturer's qualified professional engineer responsible for their preparation. Include the following:
1. Structural analysis data indicating compliance with Performance Requirements Article.
- F. **Samples for Initial Selection:** For each type of metal roof panel indicated with factory-applied color finishes.
1. Include similar Samples of trim and accessories involving color selection.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer, Installer [, professional engineer], and manufacturer's technical representative.
  - 1. Submit Installer qualifications in the form of an original letter on manufacturer's letterhead signed by authorized manufacturer representative.
- B. Material Certificates: For thermal insulation, from manufacturer.
- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product. Indicate compliance with requirements in Performance Requirements Article:
  - 1. Air Infiltration.
  - 2. Water Penetration.
  - 3. Hydrostatic-Head Resistance.
  - 4. Wind-Uplift Resistance.
  - 5. Solar Reflectance.
  - 6. Minimum Emissivity Rating.
- D. Field Quality Control Reports.
- E. Sample Warranties: For special warranties.

## 1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal roof panels to include in maintenance manuals.

## 1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer of plant-fabricated metal roof panel systems listed in this Section and meeting performance requirements, with a minimum of [five] years' experience providing metal roof panel systems for projects of similar type and scope, offering engineering, warranty, technical inspection, and maintenance inspection services specified.
- B. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of (Three) years' experience installing similar work, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to furnish warranty of type specified.
  - 1. Manufacturer's On-Site Roll Former Operators: Experienced full-time employees of metal roof panel manufacturer.
- C. **Professional Engineer Qualification:** A qualified professional engineer licensed in the project state, and experienced in metal roof panel system design similar to that required for Project.
- D. Manufacturer's Technical Representative Qualifications: An authorized full-time employee representative of manufacturer, certified as a Registered Roof Observer by the Roof Consultants Institute, and experienced in the installation and maintenance of the specified roof panel system and qualified to determine Installer's compliance with the requirements of this Project.
- E. Source Limitations: Obtain metal roof panels and accessories [and related engineered structural support members] from a single source supplied or approved by metal roof panel manufacturer.

## 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, metal roof panels, and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.
- B. Unload, store, and erect metal roof panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Protect strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for period of metal roof panel installation.
- E. Protect foam-plastic insulation as follows:
  - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
  - 2. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.
  - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

## 1.10 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed according to manufacturer's written instructions and warranty requirements.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

## 1.11 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- B. Coordinate metal roof panels with rain drainage work, flashing, trim, and construction of substrate, parapets, walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

## 1.12 WARRANTY

- A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Roof System Warranty, General: Warranties specified in this Section include the following components and systems specified in other sections supplied by the metal roof panel manufacturer:
  - 1. Roof curbs, hatches, and penetration flashings.
  - 2. Roof expansion joint assemblies.
  - 3. Low slope-roofing system.
  - 4. Penetration flashings.
  - 5. Wall expansion joint assemblies.



- C. Special Warranty for Metal Roof Panels: Written warranty in which Manufacturer agrees to repair or replace metal roof panels that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
    - a. Structural failures including rupturing, cracking, or puncturing.
    - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  2. Warranty Period: 5 years from date of Substantial Completion.
- D. Special System Weather tightness Warranty for Metal Roof Panels: Written warranty in which Manufacturer agrees to repair or replace metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.
1. Warranty Period: 20 years from date of Substantial Completion.
  2. Limit of Warranty Coverage: Not to exceed original installed cost of metal roof panel assembly including labor and materials.
  3. Qualified Installer Requirement: Installer must meet requirements in Quality Assurance Article.
  4. Installation Inspection Requirement: By manufacturer's technical representative in accordance with requirements of Part 3 Field Quality Control Article.
  5. Annual Manufacturer Inspection Requirement: By qualified manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's annual inspections is included in the Contract Sum. Inspections to occur in Years 2, 5, 10, and 15 following Substantial Completion.
- E. Special Warranty on Panel Finishes: Written warranty in which Manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes under normal atmospheric conditions within specified warranty period.
1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  2. Finish Warranty Period: 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. **Basis of Design Manufacturers/Products:** Subject to compliance with requirements, provide products by one of the following manufacturers comparable to the Basis of Design product specified:
1. Tremco, Inc., Beachwood, OH, (800) 562-2728, [www.tremcoroofing.com](http://www.tremcoroofing.com).

## 2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. **Delegated Design:** Design metal roof panel assembly, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. **Recycled Content of Steel Products:** Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent
- D. Structural Performance: Provide metal roof panel assemblies [and related engineered structural support members specified in Division 05 Section "Cold-Formed Metal Framing"] withstanding the effects of the following loads, based on testing according to ASTM E 1592:
  - 1. Wind Loads: As indicated on Drawings.
  - 2. Other Design Loads: [As indicated on Drawings].
  - 3. Deflection Limits: For wind loads, no greater than 1/240 of the span.
- E. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
  - 1. Uplift Rating: UL 90.
- F. Hail Resistance: Provide metal roof panel assemblies listed with UL as Class 4 hail resistant panels.
- G. Air Infiltration: Air leakage through assembly of not more than the following when tested according to ASTM E 1680, based upon 16 inch wide panel:
  - 1. Maximum .0001 cfm/sq. ft. of roof area at test-pressure difference of -1.57 lbf/sq. ft.
  - 2. Maximum .0028 cfm/sq. ft. of roof area at test-pressure difference of -20.00 lbf/sq. ft.
- H. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 1646 at the following test-pressure difference:
  - 1. Test-Pressure Difference: 20.00 lbf/sq. ft.
- I. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.
- J. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change (Range): [120 deg F, ambient; 180 deg F], material surfaces.

## 2.3 ARCHITECTURAL STANDING-SEAM METAL ROOF PANELS

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
  - 1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.

- B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Factory-formed with vertical ribs at panel edges and flat pan between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels, and mechanically seaming panels together.
1. **Basis-of-Design Product: Tremco, Inc., TremLock T-238.**
  2. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 50, [pre-painted by the coil-coating process to comply with ASTM A 755/A 755M] [with chromate acrylic coating]; structural quality.
    - a. Thickness: 0.0236-inch/24 ga.
    - b. Surface: Smooth, flat finish.
    - c. **Exposed Coil-Coated Finish:** 2-Coat Fluoropolymer Retain optional paragraph below in lieu of above to describe metal panels with exposed Galvalume Plus metallic coating without applied fluoropolymer finish.
    - d. Color: As selected by Architect from manufacturer's standard colors [meeting energy performance requirements].
  3. Clips: Fixed clips that accommodate thermal movement and hold the panel up above the ribs of the existing metal roof panel; intermittent or continuous clips as required to meet performance requirements; and with clip bearing plate where required.
    - a. Material: 0.064-inch- nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
  4. Joint Type: Field mechanically seamed.
  5. Seam Cap: Match panel material and finish; provide with two rows of integral factory hot-applied sealant.
  6. Panel Pan Configuration: Striated
  7. Panel Seam Height: Not less than 2-3/8 inch
  8. Panel Coverage: 18 inches

#### 2.4 METAL ROOF ACCESSORIES

- A. Metal Roof Accessories, General: Provide components approved by roof panel manufacturer and as required for a complete metal roof panel assembly including trim, copings, fasciae, corner units, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal roof panels.
  2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
- B. Panel Sealants: Provide one of the following identical to that used in test panels meeting performance requirements:
1. Sealant Tape: Pressure-sensitive, 99 percent solids, gray polyisobutylene or butyl rubber compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1 inch wide and 1/8 inch thick, with nylon spacer beads to prevent overcompression of the sealant tape.
  2. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311, with nylon spacer beads to prevent overcompression of the sealant tape.

- C. Flashing and Trim: Formed from same material as roof panels, prepainted with coil coating, minimum 0.0236 inch thick. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal roof panels.
- D. Pipe Penetration Flashings: Flexible boot type, with stainless steel compression ring, and stainless steel pipe strap. Use silicone-type boot at hot pipes
- E. **Downspouts:** Formed from same material as roof panels. Fabricate in 10-foot- long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.
- F. **Pipe Penetration Flashing:** Premolded EPDM pipe collar with flexible aluminum ring bonded to base and stainless steel pipe clamp to secure collar to pipe.
- G. **Roof Curbs:** Fabricated from aluminum sheet, minimum 0.080 inch thick; with bottom of skirt profiled to match roof panel profiles, and welded top box, integral internal fastener flange, and water diverter. Fabricate curb subframing of minimum 0.0598-inch- thick, angle-, C-, or Z-shaped galvanized steel sheet. Fabricate curb and subframing to withstand indicated loads, of size and height indicated. Finish roof curbs to match metal roof panels.
  - 1. Insulate roof curb with 1-inch- thick, rigid insulation.

## 2.5 UNDERLAYMENT MATERIALS

- A. **Self-Adhering, High-Temperature Sheet** 40 mils thick minimum, consisting of slip-resisting, polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
  - 1. Thermal Stability: Stable after testing at 240 deg F; ASTM D 1970.
  - 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D 1970.

## 2.6 MISCELLANEOUS METAL FRAMING

## 2.7 MISCELLANEOUS MATERIALS

- A. Panel Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers.

## 2.8 FABRICATION

- A. Fabricate and finish metal roof panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site portable roll-forming equipment operated by factory personnel..
- C. Provide tapered panel profile, for full length of panel.

- D. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.
1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  2. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  3. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal roof panel manufacturer for application, but not less than thickness of metal being secured.

## 2.9 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Steel Panels and Accessories:
1. **Two-Coat Fluoropolymer:** AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  2. **Concealed Finish:** Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal roof panel supports, and other conditions affecting performance of the Work.
1. **Examine primary and secondary roof framing** to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
  2. **Examine solid roof substrate** to verify that substrate joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
  3. Examine roughing-in for components and systems penetrating metal roof panels to verify actual locations of penetrations relative to seam locations of metal roof panels before metal roof panel installation.
  4. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
  5. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove existing roof panels and trim.
- B. Replace rotted plywood.
- C. Install new stainless steel internal gutters and crickets. Joints soldered.
- D. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.

### 3.3 UNDERLAYMENT INSTALLATION

- A. **Self-Adhering Sheet Underlayment:** Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. **[Extend underlayment into gutter trough.]** Roll laps with roller. Cover underlayment within 14 days.
  - 1. Apply over **entire roof surface**.
- B. Install flashings to cover underlayment to comply with requirements specified in Division 07 Section "Sheet Metal Flashing and Trim."

### 3.4 METAL ROOF PANEL INSTALLATION, GENERAL

- A. Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
- B. Thermal Movement. Rigidly fasten metal roof panels to structure at one and only one location for each panel. Allow remainder of panel to move freely for thermal expansion and contraction. Pre-drill panels for fasteners.
  - 1. Point of Fixity: Fasten each panel along a single line of fixing located at **ridge**.
  - 2. Avoid attaching accessories through roof panels in a manner that will inhibit thermal movement.
- C. Install metal roof panels as follows:
  - 1. Commence metal roof panel installation and install minimum of 300 sq. ft. in presence of factory-authorized representative.
  - 2. Field cutting of metal panels by torch or abrasive saw is not permitted.
  - 3. Locate and space fastenings in uniform vertical and horizontal alignment.
  - 4. Provide metal closures at rake edges, rake walls, and each side of ridge and hip caps.
  - 5. Flash and seal metal roof panels with weather closures at eaves, rakes, and perimeter of all openings.
  - 6. Install ridge and hip caps as metal roof panel work proceeds.
  - 7. Install metal flashing to allow moisture to run over and off metal roof panels.
- D. Fasteners:
  - 1. Steel Roof Panels: Use stainless-steel fasteners for surfaces exposed to the exterior and galvanized-steel fasteners for surfaces exposed to the interior.

- E. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.
- F. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.
- G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal roof panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal roof panel manufacturer.
  - 1. Seal metal roof panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal roof panel manufacturer.
  - 2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

### 3.5 METAL ROOF PANEL INSTALLATION

- A. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.
  - 1. Install clips to supports with self-tapping fasteners.
  - 2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
  - 3. Erection Tolerances: Shim and align metal roof panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of splices and alignment of matching profiles.
  - 4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
  - 5. Watertight Installation:
    - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
    - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.

### 3.6 ACCESSORY INSTALLATION

- A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
  - 1. Install components required for a complete metal roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
- B. Flashing and Trim: Comply with performance requirements and manufacturer's written installation instructions. Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
  - 1. Form trim and transition joints using compressed joints with captive butyl sealant capable of resisting static water pressure. Cleated joints and exposed joint sealants do not meet this requirement.
  - 2. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.

3. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

- C. **Gutters:** Join sections with riveted and soldered joints. Provide for thermal expansion.
- D. **Roof Curbs:** Install curbs at locations indicated on Drawings. Install flashing around bases where they meet metal roof panels.
- E. **Pipe Flashing:** Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

### 3.7 FIELD QUALITY CONTROL

- A. **Manufacturer's Technical Representative:** Engage a qualified manufacturer's technical representative acceptable to Owner for a minimum of 7 full-time days on site to perform substrate examination, interim observations, and final roof inspections, and to prepare reports.
- B. Remove and replace applications of metal roof panels where inspections indicate that they do not comply with specified requirements.
- C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.8 CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal roof panel installation, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal roof panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 41 13



**PACIFIC BEACH LIBRARY METAL ROOF SPECIFICATIONS T-138****SECTION 07 41 13 - STANDING SEAM METAL ROOF PANELS-Section A Curved Barrel Vault Roofs**

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Architectural standing-seam metal roof panels.
  - 2. Metal roof accessories.
  - 3. Roof insulation.
  - 4. Miscellaneous metal framing.
- B. Related Sections:
  - 1. Division 01 Section "Sustainable Design Requirements" for additional LEED requirements.
  - 2. Division 05 Section "Steel Decking" for steel roof deck supporting metal roof panels.
  - 3. Division 06 rough carpentry section for wood nailers, curbs, and blocking.
  - 4. Division 07 Section "Sheet Metal Flashing and Trim" for field- or shop- formed fasciae, copings, flashings, roof drainage systems, and other sheet metal work not part of metal roof panel assemblies.
  - 5. Division 07 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section
- C. **Allowances:** Refer to Division 01 Section "Allowances" for description of Work in this Section affected by allowances.
- D. **Unit Prices:** Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

## 1.3 DEFINITIONS

- A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, stainless steel flashing, thermal insulation, and accessories necessary for a complete weathertight roofing system.

## 1.4 PREINSTALLATION MEETINGS

- A. Pre-installation Conference: Conduct conference at Project site.
  - 1. Meet with Owner, [Architect,] Owner's insurer if applicable, testing and inspecting agency representative, metal roof panel Installer, metal roof panel manufacturer's representative, substrate Installer, and installers whose work interfaces with or affects metal roof panels including installers of roof accessories and roof-mounted equipment.
  - 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - 3. Review methods and procedures related to metal roof panel installation, including manufacturer's written instructions.

4. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
5. Review structural loading limitations of substrate during and after roofing.
6. Review flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
7. Review governing regulations and requirements for insurance, certificates, and testing and inspecting if applicable.
8. Review temporary protection requirements for metal roof panel assembly during and after installation.
9. Review roof observation and repair procedures after metal roof panel installation.
10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

#### 1.5 ACTION SUBMITTALS

- A. **Product Data:** For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of roof panel and accessory.
- B. **LEED Submittals:**
  1. **Product Test Reports for Credit SS 7.2:** For roof panels, indicating that panels comply with solar reflectance index requirement.
  2. **Product Data for Credit MR 4:** Indicating percentages by weight of postconsumer and preconsumer recycled content for products having recycled content.
    - a. Include statement indicating costs for each product having recycled content.
- C. **Shop Drawings:** Show fabrication and installation layouts of metal roof panels; details of edge conditions, side-seam and end lap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details specific to project, signed and sealed by the qualified professional engineer responsible for their preparation. Distinguish between factory- and field-assembled work.
- D. **Accessory Details:** Include details of the following items:
  1. Flashing and trim.
  2. Pipe penetration flashings.
  3. Roof curbs.
  4. Gutters.
  5. Downspouts.
- E. **Delegated-Design Submittal:** For metal roof panel assembly indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the metal roof panel manufacturer's qualified professional engineer responsible for their preparation. Include the following:
  1. Structural analysis data indicating compliance with Performance Requirements Article.
- F. **Samples for Initial Selection:** For each type of metal roof panel indicated with factory-applied color finishes.
  1. Include similar Samples of trim and accessories involving color selection.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. **Qualification Data:** For manufacturer, Installer and manufacturer's technical representative.
  1. Submit Installer qualifications in the form of an original letter on manufacturer's letterhead signed by authorized manufacturer representative.
- B. **Material Certificates:** For thermal insulation, from manufacturer.

- C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product. Indicate compliance with requirements in Performance Requirements Article:
  - 1. Air Infiltration.
  - 2. Water Penetration.
  - 3. Hydrostatic-Head Resistance.
  - 4. Wind-Uplift Resistance.
  - 5. Solar Reflectance.
  - 6. Minimum Emissivity Rating.
- D. Field Quality Control Reports.
- E. Sample Warranties: For special warranties.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal roof panels to include in maintenance manuals.

#### 1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer of plant-fabricated metal roof panel systems listed in this Section and meeting performance requirements, with a minimum of [five] years' experience providing metal roof panel systems for projects of similar type and scope, offering engineering, warranty, technical inspection, and maintenance inspection services specified.
- B. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of [three] years' experience installing similar work, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to furnish warranty of type specified.
  - 1. Manufacturer's On-Site Roll Former Operators: Experienced full-time employees of metal roof panel manufacturer.
- C. **Professional Engineer Qualification:** A qualified professional engineer licensed in the project state, and experienced in metal roof panel system design similar to that required for Project.
- D. Manufacturer's Technical Representative Qualifications: An authorized full-time employee representative of manufacturer, certified as a Registered Roof Observer by the Roof Consultants Institute, and experienced in the installation and maintenance of the specified roof panel system and qualified to determine Installer's compliance with the requirements of this Project.
- E. Source Limitations: Obtain metal roof panels and accessories [and related engineered structural support members] from a single source supplied or approved by metal roof panel manufacturer.
- F. **Mockups:** Build mockups to verify selections made under sample submittals and to demonstrate aesthetic effects and set quality standards for fabrication and installation.
  - 1. Build mockup of typical roof eave, including fascia and gable trim[, as shown on Drawings]; approximately four panels wide by full eave width, including insulation, underlayment, attachments, and accessories.
  - 2. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless **Architect** specifically approves such deviations in writing.
  - 3. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, metal roof panels, and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.

- B. Unload, store, and erect metal roof panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Protect strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for period of metal roof panel installation.
- E. Protect foam-plastic insulation as follows:
  - 1. Do not expose to sunlight, except to extent necessary for period of installation and concealment.
  - 2. Protect against ignition at all times. Do not deliver foam-plastic insulation materials to Project site before installation time.
  - 3. Complete installation and concealment of plastic materials as rapidly as possible in each area of construction.

#### 1.10 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed according to manufacturer's written instructions and warranty requirements.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

#### 1.11 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.
- B. Coordinate metal roof panels with rain drainage work, flashing, trim, and construction of substrate, parapets, walls, and other adjoining work to provide a leak proof, secure, and noncorrosive installation.

#### 1.12 WARRANTY

- A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Roof System Warranty, General: Warranties specified in this Section include the following components and systems specified in other sections supplied by the metal roof panel manufacturer:
  - 1. Manufactured copings, roof edge, counterflashings, and reglets.
  - 2. Roof curbs, hatches, and penetration flashings.
  - 3. Roof expansion joint assemblies.
  - 4. Low slope-roofing system.
  - 5. Penetration flashings.
  - 6. Wall expansion joint assemblies.
- C. Special Warranty for Metal Roof Panels: Written warranty in which Manufacturer agrees to repair or replace metal roof panels that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including rupturing, cracking, or puncturing.
    - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 2. Warranty Period: [5] years from date of Substantial Completion.

- D. **Special System Weather-tightness Warranty for Metal Roof Panels:** Written warranty in which Manufacturer agrees to repair or replace metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.
1. **Warranty Period:** 20 years from date of Substantial Completion.
  2. **Limit of Warranty Coverage:** Not to exceed original installed cost of metal roof panel assembly including labor and materials.
  3. **Qualified Installer Requirement:** Installer must meet requirements in Quality Assurance Article.
  4. **Installation Inspection Requirement:** By manufacturer's technical representative in accordance with requirements of Part 3 Field Quality Control Article.
  5. **Annual Manufacturer Inspection Requirement:** By qualified manufacturer's technical representative, to report maintenance responsibilities to Owner necessary for preservation of Owner's warranty rights. The cost of manufacturer's annual inspections is included in the Contract Sum. Inspections to occur in Years 2, 5, 10, and 15 following Substantial Completion.
- E. **Special Warranty on Panel Finishes:** Written warranty in which Manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes under normal atmospheric conditions within specified warranty period.
1. **Exposed Panel Finish:** Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  2. **Finish Warranty Period:** 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. **Basis of Design Manufacturers/Products:** Subject to compliance with requirements, provide products by one of the following manufacturers comparable to the Basis of Design product specified:
1. Tremco, Inc., Beachwood, OH, (800) 562-2728, [www.tremcoroofing.com](http://www.tremcoroofing.com)

### 2.2 PERFORMANCE REQUIREMENTS

- A. **General Performance:** Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. **Delegated Design:** Design metal roof panel assembly, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.
- C. **Recycled Content of Steel Products:** Postconsumer recycled content plus one-half of pre-consumer recycled content not less than [25] percent.
- D. **Energy Performance:** Provide roof panels that are listed on the U.S. Department of Energy's ENERGY STAR Roof Products Qualified Product List for [low-slope] [steep-slope] roof products.
- E. **Structural Performance:** Provide metal roof panel assemblies [and related engineered structural support members specified in Division 05 Section "Cold-Formed Metal Framing"] withstanding the effects of the following loads, based on testing according to ASTM E 1592:
1. **Wind Loads:** As indicated on Drawings.
  2. **Other Design Loads:** [As indicated on Drawings].
  3. **Deflection Limits:** For wind loads, no greater than [1/180] [1/240] of the span.
- F. **Wind-Uplift Resistance:** Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: UL 90.
- G. Hail Resistance: Provide metal roof panel assemblies listed with UL as Class 4 hail resistant panels.
- H. Air Infiltration: Air leakage through assembly of not more than the following when tested according to ASTM E 1680, based upon 16 inch wide panel:
  1. Maximum .0001 cfm/sq. ft. of roof area at test-pressure difference of -1.57 lbf/sq. ft.
  2. Maximum .0028 cfm/sq. ft. of roof area at test-pressure difference of -20.00 lbf/sq. ft.
- I. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 1646 at the following test-pressure difference:
  1. Test-Pressure Difference: 20.00 lbf/sq. ft.
- J. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.
- K. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  1. Temperature Change (Range): [120 deg F, ambient; 180 deg F], material surfaces.

### 2.3 ARCHITECTURAL STANDING-SEAM METAL ROOF PANELS

- A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.
  1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.
- B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Factory-formed with vertical ribs at panel edges and flat pan between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels and engaging opposite edge of adjacent panels, and mechanically seaming panels together.
  1. Basis-of-Design Product: Tremco, Inc., TremLock T-138.
  2. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 50, [pre-painted by the coil-coating process to comply with ASTM A 755/A 755M] [with chromate acrylic coating]; structural quality.
    - a. Thickness: 0.0236-inch/24 ga. minimum thickness.
    - b. Surface: Smooth, flat finish.
    - c. **Exposed Coil-Coated Finish:** [2-Coat Fluoropolymer].
    - d. Color: As selected by Architect from manufacturer's standard colors [meeting energy performance requirements].
  3. Clips: Fixed clips that accommodate thermal movement; intermittent or continuous clips as required to meet performance requirements; and with clip bearing plate where required.
    - a. Material: 0.064-inch- nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
      - 1) Standard Clip: 4"long with 1/4" offset
  4. Joint Type: Field mechanically seamed.
  5. Seam Cap: Match panel material and finish; provide with two rows of integral factory hot-applied sealant.
  6. Panel Pan Configuration: [Flat pan] [Striated] [Stiffener Ribbed] [Pencil Ribbed] [Planked].
  7. Panel Seam Height: Not less than 1-3/8 inch.
  8. Panel Coverage: 16 inches.

## 2.4 METAL ROOF ACCESSORIES

- A. **Metal Roof Accessories, General:** Provide components approved by roof panel manufacturer and as required for a complete metal roof panel assembly including trim, copings, fasciae, corner units, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
1. **Closures:** Provide closures at eaves and ridges, fabricated of same metal as metal roof panels.
  2. **Backing Plates:** Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
- B. **Panel Sealants:** Provide one of the following identical to that used in test panels meeting performance requirements:
1. **Sealant Tape:** Pressure-sensitive, 99 percent solids, gray polyisobutylene or butyl rubber compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1 inch wide and 1/8 inch thick, with nylon spacer beads to prevent overcompression of the sealant tape.
  2. **Butyl-Rubber-Based, Solvent-Release Sealant:** ASTM C 1311, with nylon spacer beads to prevent overcompression of the sealant tape.
- C. **Flashing and Trim:** Formed from same material as roof panels, pre-painted with coil coating, minimum 0.0236 inch thick. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal roof panels.
- D. **Pipe Penetration Flashings:** Flexible boot type, with stainless steel compression ring, and stainless steel pipe strap. Use silicone-type boot at hot pipes.
- E. **Exterior Gutters** Formed from same material roof panels. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch-long sections, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Furnish gutter supports spaced a maximum of 36 inches O.C., fabricated from same metal as gutters. Provide wire ball strainers of compatible metal at outlets. Finish gutters to match metal roof panels.
- F. **Downspouts:** Formed from same material as roof panels. Fabricate in 10-foot- long sections, complete with formed elbows and offsets, of size and metal thickness according to SMACNA's "Architectural Sheet Metal Manual." Finish downspouts to match gutters.
- G. **Pipe Penetration Flashing:** Premolded EPDM pipe collar with flexible aluminum ring bonded to base and stainless steel pipe clamp to secure collar to pipe.
- H. **Roof Curbs:** Fabricated from aluminum sheet, minimum 0.080 inch thick; with bottom of skirt profiled to match roof panel profiles, and welded top box, integral internal fastener flange, and water diverter. Fabricate curb sub framing of minimum 0.0598-inch- thick, angle-, C-, or Z-shaped galvanized steel sheet. Fabricate curb and sub framing to withstand indicated loads, of size and height indicated. Finish roof curbs to match metal roof panels.
1. **Insulate roof curb with 1-inch- thick, rigid insulation.**

## 2.5 UNDERLAYMENT MATERIALS

- A. **Self-Adhering, High-Temperature Sheet:** 40 mils thick minimum, consisting of slip-resisting, polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
1. **Thermal Stability:** Stable after testing at 240 deg F; ASTM D 1970.

2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D 1970.

## 2.6 MISCELLANEOUS METAL FRAMING

## 2.7 MISCELLANEOUS MATERIALS

- A. Panel Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers.

## 2.8 FABRICATION

- A. Fabricate and finish metal roof panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
- B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using portable roll-forming equipment operated by factory personnel. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.
- C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- D. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.
  1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  2. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
  3. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal roof panel manufacturer for application, but not less than thickness of metal being secured.

## 2.9 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Steel Panels and Accessories:
  1. **Two-Coat Fluoropolymer:** AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.



## PART 3 - EXECUTION

## 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal roof panel supports, and other conditions affecting performance of the Work.
  - 1. **Examine primary and secondary roof framing** to verify that rafters, purlins, angles, channels, and other structural panel support members and anchorages have been installed within alignment tolerances required by metal roof panel manufacturer.
  - 2. **Examine solid roof substrate** to verify that substrate joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
  - 3. Examine roughing-in for components and systems penetrating metal roof panels to verify actual locations of penetrations relative to seam locations of metal roof panels before metal roof panel installation.
  - 4. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
  - 5. Proceed with installation only after unsatisfactory conditions have been corrected.

## 3.2 PREPARATION

- A. Remove existing roof panels and trim.
- B. Replace rotted plywood.
- C. Install new stainless steel internal gutters and crickets. Joints soldered.
- D. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.

## 3.3 UNDERLAYMENT INSTALLATION

- A. **Self-Adhering Sheet Underlayment:** Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than 3-1/2 inches. [**Extend** underlayment into gutter trough.] Roll laps with roller. Cover underlayment within 14 days.
  - 1. Apply over entire roof surface.
- B. Install flashings to cover underlayment to comply with requirements specified in Division 07 Section "Sheet Metal Flashing and Trim."

## 3.4 METAL ROOF PANEL INSTALLATION, GENERAL

- A. Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.
- B. Thermal Movement. Rigidly fasten metal roof panels to structure at one and only one location for each panel. Allow remainder of panel to move freely for thermal expansion and contraction. Pre-drill panels for fasteners.
  - 1. Point of Fixity: Fasten each panel along a single line of fixing located at **ridge**.
  - 2. Avoid attaching accessories through roof panels in a manner that will inhibit thermal movement.
- C. Install metal roof panels as follows:

1. Commence metal roof panel installation and install minimum of 300 sq. ft. in presence of factory-authorized representative.
2. Field cutting of metal panels by torch or abrasive saw is not permitted.
3. Locate and space fastenings in uniform vertical and horizontal alignment.
4. Provide metal closures at rake edges, rake walls, and each side of ridge and hip caps.
5. Flash and seal metal roof panels with weather closures at eaves, rakes, and perimeter of all openings.
6. Install ridge and hip caps as metal roof panel work proceeds.

7. Install metal flashing to allow moisture to run over and off metal roof panels.

D. Fasteners:

1. Steel Roof Panels: Use stainless-steel fasteners for surfaces exposed to the exterior and galvanized-steel fasteners for surfaces exposed to the interior.

E. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

F. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal roof panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal roof panel manufacturer.

1. Seal metal roof panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal roof panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

### 3.5 METAL ROOF PANEL INSTALLATION

A. Standing-Seam Metal Roof Panels: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended by manufacturer.

1. Install clips to supports with self-tapping fasteners.
2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Erection Tolerances: Shim and align metal roof panel units within installed tolerance of 1/4 inch in 20 feet on slope and location lines as indicated and within 1/8-inch offset of splices and alignment of matching profiles.
4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
5. Watertight Installation:
  - a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
  - b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.

### 3.6 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
- B. Flashing and Trim: Comply with performance requirements and manufacturer's written installation instructions. Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Form trim and transition joints using compressed joints with captive butyl sealant capable of resisting static water pressure. Cleated joints and exposed joint sealants do not meet this requirement.
  2. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
  3. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- C. **External Gutters:** Join sections with lapped, riveted, and sealed joints. Attach gutters to eave with gutter hangers spaced not more than 36 inches O.C. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.
- D. **Internal Gutters: Gutters:** Join sections with riveted and soldered joints.
- E. **Downspouts:** Join sections with telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch away from walls; locate fasteners at top and bottom and at approximately 60 inches O.C. in between.
1. Provide elbows at base of downspouts to direct water away from building.
  2. Connect downspouts to underground drainage system indicated.
- F. **Roof Curbs:** Install curbs at locations indicated on Drawings. Install flashing around bases where they meet metal roof panels.
- G. **Pipe Flashing:** Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

### 3.7 FIELD QUALITY CONTROL

- A. Manufacturer's Technical Representative: Engage a qualified manufacturer's technical representative acceptable to Owner for a minimum of [5] [7] [10] full-time days on site to perform substrate examination, interim observations, and final roof inspections, and to prepare reports.
- B. Remove and replace applications of metal roof panels where inspections indicate that they do not comply with specified requirements.
- C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.8 CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal roof panel installation, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.

- B. Replace metal roof panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 41 13

**PACIFIC BEACH LIBRARY BATTEN SEAM METAL SPECIFICATIONS****SECTION 07 41 13 - METAL ROOF PANELS, BATTEN-SEAM-Roof Area C: Inside Circle Curved and Tapered Panels**

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

## A. Section Includes:

1. Batten-seam metal roof panels.
2. Metal roof panel accessories.

B. **Related Sections:**

1. Division 01 Section "Sustainable Design Requirements" for additional LEED requirements.
2. .
3. Division 06 rough carpentry section for wood nailers, curbs, blocking, and roof sheathing.
4. Division 07 Section "Sheet Metal Flashing and Trim" for field-formed fasciae, copings, flashings, roof drainage systems, and other sheet metal work not part of metal roof panel assemblies.
5. Division 07 Section "Joint Sealants" for field-applied sealants not otherwise specified in this Section.

- C. **Allowances:** Refer to Division 01 Section "Allowances" for description of Work in this Section affected by allowances.

- D. **Unit Prices:** Refer to Division 01 Section "Unit Prices" for description of Work in this Section affected by unit prices.

## 1.3 DEFINITIONS

- A. Metal Roof Panel Assembly: Metal roof panels, attachment system components, miscellaneous metal framing, thermal insulation, and accessories necessary for a complete weathertight roofing system.

## 1.4 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, metal roof panel Installer, metal roof panel manufacturer's representative, substrate Installer, and installers whose work interfaces with or affects metal roof panels including installers of roof accessories and roof-mounted equipment.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal roof panel installation, including manufacturer's written instructions.
4. Examine substrate conditions for compliance with requirements, including flatness and attachment to structural members.
5. Review structural loading limitations of substrate during and after roofing.

6. Review flashings, special roof details, roof drainage, roof penetrations, equipment curbs, and condition of other construction that will affect metal roof panels.
7. Review governing regulations and requirements for insurance, certificates, and testing and inspecting if applicable.
8. Review temporary protection requirements for metal roof panel assembly during and after installation.
9. Review roof observation and repair procedures after metal roof panel installation.
10. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

#### 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of roof panel and accessory.

**LEED Submittals:**

- B.
1. Product Data for Credit MR 4: Indicating percentages by weight of postconsumer and preconsumer recycled content for products having recycled content.
    - a. Include statement indicating costs for each product having recycled content.
- C. Shop Drawings: Show fabrication and installation layouts of metal roof panels; details of edge conditions, side-seam and endlap joints, panel profiles, corners, anchorages, trim, flashings, closures, and accessories; and special details specific to project. Distinguish between factory- and field-assembled work.
- D. Accessory Details: Include details of the following items:
1. Flashing and trim.
  2. Roof curbs.
  3. Pipe penetration flashings.
  4. **Gutters.**
  5. **Downspouts.**
- E. Samples for Initial Selection: For each type of metal roof panel indicated with factory-applied color finishes.
1. Include similar Samples of trim and accessories involving color selection.

#### 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For manufacturer, Installer, professional engineer, and manufacturer's technical representative.
1. Submit Installer qualifications in the form of an original letter on manufacturer's letterhead signed by authorized manufacturer representative.
- B. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each product. Indicate compliance with requirements in Performance Requirements Article:
1. Wind-Uplift Resistance.
  2. **Solar Reflectance.**
  3. **Minimum Emissivity Rating.**
- C. Field Quality Control Reports.

- D. Sample Warranties: For special warranties.

#### 1.7 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal roof panels to include in maintenance manuals.

#### 1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A manufacturer of plant-fabricated metal roof panel systems listed in this Section and meeting performance requirements, with a minimum of five years experience providing metal roof panel systems for projects of similar type and scope, offering engineering, warranty, technical inspection, and maintenance inspection services specified.
- B. Installer Qualifications: An employer of workers trained and certified by manufacturer, including a full-time on-site supervisor with a minimum of five years experience installing similar work, able to communicate verbally with Contractor, Architect, and employees, and qualified by the manufacturer to furnish warranty of type specified.
- C. Manufacturer's Technical Representative Qualifications: An authorized full-time employee representative of manufacturer, certified as a Registered Roof Observer by the Roof Consultants Institute, and experienced in the installation and maintenance of the specified roof panel system and qualified to determine Installer's compliance with the requirements of this Project.
- D. Source Limitations: Obtain each type of metal roof panels and accessory and related engineered structural support members from a single source supplied or approved by metal roof panel manufacturer

#### 1.9 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, sheets, metal roof panels, and other manufactured items so as not to be damaged or deformed. Package metal roof panels for protection during transportation and handling.
- B. Unload, store, and erect metal roof panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal roof panels on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal roof panels to ensure dryness. Do not store metal roof panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Protect strippable protective covering on metal roof panels from exposure to sunlight and high humidity, except to extent necessary for period of metal roof panel installation.

#### 1.10 PROJECT CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit metal roof panel work to be performed according to manufacturer's written instructions and warranty requirements.
- B. Field Measurements: Verify actual dimensions of construction contiguous with metal roof panels by field measurements before fabrication.

#### 1.11 COORDINATION

- A. Coordinate sizes and locations of roof curbs, equipment supports, and roof penetrations with actual equipment provided.

- B. Coordinate metal roof panels with rain drainage work, flashing, trim, and construction of substrate, parapets, walls, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

#### 1.12 WARRANTY

- A. Warranty, General: Warranties specified shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal roof panels that show evidence of deterioration of factory-applied finishes under normal atmospheric conditions within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.
    - b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. **Basis of Design Manufacturers/Products:** Subject to compliance with requirements, provide products by one of the following manufacturers comparable to the Basis of Design product specified:
  - 1. Tremco, Inc., Beachwood, OH, (800) 562-2728, [www.tremcoroofing.com](http://www.tremcoroofing.com).

#### 2.2 PERFORMANCE REQUIREMENTS

- A. General Performance: Metal roof panels shall comply with performance requirements without failure due to defective manufacture, fabrication, installation, or other defects in construction.
- B. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of preconsumer recycled content not less than 25 percent.
- C. **Energy Performance:** Provide roof panels with solar reflectance index not less than 29 when calculated according to ASTM E 1980 based on testing identical products by a qualified testing agency.
- D. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.
  - 1. Uplift Rating: UL 90.
- E. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change (Range): [120 deg F, ambient; 180 deg F], material surfaces.



### 2.3 BATTEN-SEAM METAL ROOF PANELS

- A. General: Provide field-formed tapered and curved metal roof panel assembly designed to be installed by covering vertical side edges of adjacent panels with battens and mechanically attaching panels to plywood decks using concealed clips. Include battens and accessories required for weathertight installation.
1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.
- B. Narrow-Profile, Snap-on-Batten-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and [a flat pan between ribs; designed for independent installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging the opposite edge of adjacent panels, and installing 3/8- to 1/2-inch- wide, snap-on battens over panel joints.
1. **Basis-of-Design Product: Tremco, Inc., TremLock NB.**
  2. Metallic-Coated Steel Sheet: Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, Class AZ50 coating designation, Grade 50; [pre-painted by the coil-coating process to comply with ASTM A 755/A 755M] [with chromate acrylic coating]; structural quality.
    - a. Nominal Thickness: [0.0236-inch/24 ga.]
    - b. Surface: Smooth, flat finish.
    - c. **Exposed Coil-Coated Finish:** 2-Coat Fluoropolymer
    - d. Color: As selected by Architect from manufacturer's standard colors [meeting energy performance requirements].
  3. Batten Material: Same material, finish, and color as roof panels.
  4. Clips: Fixed clips that accommodate thermal movement.
    - a. Material: 0.0236 inch- nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
  5. Panel Shape: Curved and tapered to radius indicated.
  6. Panel Pan Configuration: Flat pan.
  7. Panel Coverage: 16 inches .
  8. Panel Height: 1.5 inch

### 2.4 ROOF PANEL SYSTEM ACCESSORIES

- A. Roof Panel Accessories: Provide components approved by roof panel manufacturer and as required for a complete metal roof panel assembly including trim, copings, fasciae, corner units, ridge closures, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.
1. Closures: Provide closures at ridges, fabricated of same metal as metal roof panels.
  - 2.
- B. Panel Sealants: Provide one of the following identical to that used in test panels meeting performance requirements:
1. Sealant Tape: Pressure-sensitive, 99 percent solids, gray polyisobutylene or butyl rubber compound sealant tape with release-paper backing. Provide permanently elastic, nontoxic, nonstaining tape 1 inch wide and 1/8 inch thick, with nylon spacer beads to prevent overcompression of the sealant tape.
  2. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311, with nylon spacer beads to prevent overcompression of the sealant tape.

- C. Flashing and Trim: Formed from same material as roof panels, prepainted with coil coating, minimum 0.0236 inch thick. Provide flashing and trim as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal roof panels.
- D. **Pipe Penetration Flashing:** Premolded EPDM pipe collar with flexible aluminum ring bonded to base and stainless steel pipe clamp to secure collar to pipe.
- E. **Roof Curbs:** Fabricated from aluminum sheet, minimum 0.080 inch thick; with bottom of skirt profiled to match roof panel profiles, and welded top box, integral internal fastener flange, and water diverter. Fabricate curb subframing of minimum 0.0598-inch- thick, angle-, C-, or Z-shaped galvanized steel sheet. Fabricate curb and subframing to withstand indicated loads, of size and height indicated. Finish roof curbs to match metal roof panels.
  - 1. Insulate roof curb with 1-inch- thick, rigid insulation.

## 2.5 SUBSTRATE BOARDS

- A. **Plywood Sheathing:** DOC PS-1, Exterior, Structural I or Exterior sheathing.
  - 1. Nominal Thickness: Not less than 5/8 inch.
- B. Substrate-Board Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FMG 4470, designed for fastening substrate board to substrate.

## 2.6 UNDERLAYMENT MATERIALS

- A. **Self-Adhering, High-Temperature Sheet:** 40 mils thick minimum, consisting of slip-resisting, polyethylene-film top surface laminated to layer of butyl or SBS-modified asphalt adhesive, with release-paper backing; cold applied. Provide primer when recommended by underlayment manufacturer.
  - 1. Thermal Stability: Stable after testing at 240 deg F; ASTM D 1970.
  - 2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F; ASTM D 1970.

## 2.7 MISCELLANEOUS MATERIALS

- A. Panel Fasteners: Self-tapping screws, bolts, nuts, self-locking rivets and bolts, end-welded studs, and other suitable fasteners designed to withstand design loads. Provide exposed fasteners with heads matching color of metal roof panels by means of plastic caps or factory-applied coating. Provide EPDM, PVC, or neoprene sealing washers.

## 2.8 FABRICATION

- A. Fabricate and finish metal roof panels and accessories in the field, by manufacturer's standard procedures and processes and as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Sheet Metal Accessories: Fabricate flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of item indicated.
  - 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
  - 2. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.

3. Fabricate cleats and attachment devices of size and metal thickness recommended by SMACNA's "Architectural Sheet Metal Manual" or by metal roof panel manufacturer for application, but not less than thickness of metal being secured.

## 2.9 FINISHES

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. Steel Panels and Accessories:
  1. **Two-Coat Fluoropolymer:** AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  2. **Concealed Finish:** Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal roof panel supports, and other conditions affecting performance of the Work.
  1. Examine solid roof substrate to verify that substrate joints are supported by framing or blocking and that installation is within flatness tolerances required by metal roof panel manufacturer.
  2. Examine roughing-in for components and systems penetrating metal roof panels to verify actual locations of penetrations relative to seam locations of metal roof panels before metal roof panel installation.
  3. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
  4. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove existing roof panels and trim.
- B. Replace rotted plywood.
- C. Install new stainless steel internal gutters and crickets. Joints soldered.
- D. Clean substrates of substances harmful to insulation, including removing projections capable of interfering with insulation attachment.

### 3.3 UNDERLAYMENT INSTALLATION

- A. **Self-Adhering Sheet Underlayment:** Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated

below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches staggered 24 inches between courses. Overlap side edges not less than **3-1/2 inches**. Roll laps with roller. Cover underlayment within 14 days.

1. Apply over the entire roof surface.

B. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

### 3.4 METAL ROOF PANEL INSTALLATION, GENERAL

A. Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

B. Thermal Movement. Rigidly fasten metal roof panels to structure at one and only one location for each panel. Allow remainder of panel to move freely for thermal expansion and contraction. Pre-drill panels for fasteners.

1. Point of Fixity: Fasten each panel along a single line of fixing located at ridge.

2. Avoid attaching accessories through roof panels in a manner that will inhibit thermal movement.

C. Install metal roof panels as follows:

1. Commence metal roof panel installation and install minimum of 300 sq. ft. in presence of factory-authorized representative.

2. Field cutting of metal panels by torch or abrasive saw is not permitted.

3. Locate and space fastenings in uniform vertical and horizontal alignment.

4. Provide metal closures at rake edges, rake walls, and each side of ridge and hip caps.

5. Flash and seal metal roof panels with weather closures at eaves, rakes, and perimeter of all openings.

6. Install ridge and hip caps as metal roof panel work proceeds.

7. Install metal flashing to allow moisture to run over and off metal roof panels.

D. Fasteners:

1. Steel Roof Panels: Use stainless-steel fasteners for surfaces exposed to the exterior and galvanized-steel fasteners for surfaces exposed to the interior.

E. Anchor Clips: Anchor metal roof panels and other components of the Work securely in place, using manufacturer's approved fasteners according to manufacturers' written instructions.

F. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

G. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal roof panel assemblies. Provide types of gaskets, fillers, and sealants indicated or, if not indicated, types recommended by metal roof panel manufacturer.

1. Seal metal roof panel end laps with double beads of tape or sealant, full width of panel. Seal side joints where recommended by metal roof panel manufacturer.

2. Prepare joints and apply sealants to comply with requirements in Division 07 Section "Joint Sealants."

### 3.5 METAL ROOF PANEL INSTALLATION

- A. **Batten-Seam Metal Roof Panel Installation:** Fasten metal roof panels to plywood deck with concealed clips at each batten-seam joint at location, spacing, and with fasteners recommended by manufacturer.
1. Install clips to deck with self-drilling fasteners.
  2. Apply battens to metal roof panel seams, fully engaged to provide weathertight joints.

### 3.6 ACCESSORY INSTALLATION

- A. **General:** Install accessories with positive anchorage to building and weathertight mounting and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal roof panel assembly including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
- B. **Flashing and Trim:** Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.
1. Form trim and transition joints using compressed joints with captive butyl sealant capable of resisting static water pressure. Cleated joints and exposed joint sealants do not meet this requirement.
  2. Install exposed flashing and trim that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
  3. **Expansion Provisions:** Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).
- C. **Gutters:** Join sections with riveted and soldered. Provide for thermal expansion.
- D. **Roof Curbs:** Install curbs at locations indicated on Drawings. Install flashing around bases where they meet metal roof panels.
- E. **Pipe Flashing:** Form flashing around pipe penetration and metal roof panels. Fasten and seal to metal roof panels as recommended by manufacturer.

### 3.7 FIELD QUALITY CONTROL

- A. **Manufacturer's Technical Representative:** Engage a qualified manufacturer's technical representative acceptable to Owner for a minimum of 5 full-time days on site to perform substrate examination, interim observations, and final roof inspections, and to prepare reports.
- B. Remove and replace applications of metal roof panels where inspections indicate that they do not comply with specified requirements.
- C. Additional inspections, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.8 CLEANING

- A. Remove temporary protective coverings and strippable films, if any, as metal roof panels are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of metal roof panel installation, clean finished surfaces as recommended by metal roof panel manufacturer. Maintain in a clean condition during construction.
- B. Replace metal roof panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07 41 13

PACIFIC BEACH LIBRARY NON-METAL AREAS SPECIFICATIONS

SECTION 01010  
SUMMARY OF WORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Provide all labor, materials, transportation, equipment, appliances, and services necessary for, and incidental to, the execution and completion of all work indicated in the Contract Documents for the removal and replacement of the roof in the project entitled:

Replace Roof, CITY OF SAN DIEGO PACIFIC BEACH LIBRARY.

- B. In general, the scope of work includes, but shall not be limited to, the following sections of the specifications which are more fully described herein:

DIVISION 1 - GENERAL REQUIREMENTS

01010 Summary of Work

DIVISION 2 - SITE WORK

02070 Demolition

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

07532 Adhered TPA Membrane Roofing

07600 Flashing and Sheet Metal .

- D. Applicable portions of Section 01010 apply to all other sections of these specifications, therefore these applicable portions are not specifically referred to in those other sections.

END OF SECTION

**SECTION 02070  
DEMOLITION**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. General provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

**1.02 DESCRIPTION OF WORK**

- A. Extent of demolition work as noted on pre-bid walkthrough.
- B. Types of Demolition Work: Demolition requires the selective removal and **subsequent offsite disposal** of the following:
  - 1. Existing roofing materials, flashing, and insulation **Properly remove and dispose of existing roof and flashings to substrate including any identified hazardous materials.**

**1.03 SUBMITTALS**

- A. Provide detailed sequence of demolition and removal work to ensure uninterrupted progress of Owner's on-site operations, with the exception of limited disruption of on-site operations during the period specified by Owner.

**1.04 JOB CONDITIONS**

- A. Occupancy: Owner will be continuously occupying areas of the building immediately adjacent to and below the areas of demolition. Conduct demolition work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities which will affect Owner's normal operations.
- B. Condition of Structures: Owner assumes no responsibility for actual condition of items or structures to be demolished.



**1.05 PROTECTIONS**

- A. Provide temporary barricades and other forms of protection as required to protect Owner's personnel and general public from injury due to demolition work.
- B. Provide protective measures as required to provide free and safe passage of Owner's personnel and general public to and from occupied portions of building.
- C. Protect walks, paving, landscaping, etc. with suitable coverings when necessary.
- D. Remove barricades and protections at completion of work.
- E. Damages: Promptly repair damages caused to adjacent facilities by demolition work at no cost to Owner.

**1.06 TRAFFIC**

- A. Conduct demolition operations and debris removal in a manner to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities.
- B. Do not close, block, or otherwise obstruct streets, walks or other occupied or used facilities without written permission from Owner or authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.

**1.8 UTILITY SERVICES**

- A. Maintain existing utilities indicated to remain; keep in service, and protect against damage during demolition operations.
- B. Do not interrupt any existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services during interruptions to existing utilities, as acceptable to Owner.
- C. Coordinate any disconnect / reconnections of service lines on roof top with Owner's designated H.V.A.C. / Mechanical Contractor's. Provide and install replacement Air Filters for roof mounted H.V.A.C. upon project completion.

**1.09 ENVIRONMENTAL CONTROLS**

- A. Use water sprinkling and other suitable methods to limit dust and dirt rising and scattering in air to lowest practical level. Comply with governing regulations pertaining to environmental protection.

**1.10 DEMOLITION MATERIALS AND DEBRIS**

- A. Fully contain all demolition materials and debris, use crane to control movement of materials. **NO MATERIALS OF ANY KIND SHALL BE THROWN FROM THE ROOF OF ANY BUILDING.**

**PART 3 – EXECUTION**

### **3.04 MATERIAL AND DEBRIS STORAGE**

- A. Provide suitable containers to hold debris and all material from selective demolition, so that all debris and material from selective demolition will occupy only areas authorized by owner.

### **3.05 DEMOLITION**

- A. Perform selective demolition work in a systematic manner. Use such methods as required to complete work indicated in Specifications in accordance with demolition schedule and governing regulations. Schedule demolition work to minimize risk of exposure to rain or other unfavorable weather conditions.

### **3.08 CLEAN-UP AND REPAIR**

- A. Upon completion of demolition work, remove tools, equipment, and demolished materials from site. Remove protections and leave interior areas broom clean.
  - 1. Repair demolition performed in excess of that required. Repair and restore structures and surfaces to remain to condition existing prior to commencement of selective demolition work. Repair adjacent construction or surfaces soiled or damaged by selective demolition work.

**END OF SECTION**

**SECTION 07532  
ADHERED TPA MEMBRANE ROOFING**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. The attached are components of this section:
  - 1. General Conditions

**1.02 SCOPE OF WORK**

- A. Furnish and install specified roofing and related components for the Penthouse Roof Areas:
- B. Work includes:
  - 1. Proper removal and disposal of existing roofing / insulation / flashings down to structural deck:
  - 1. Installation of the following in non metal roof areas ( internal gutters / waterways, flat roof areas )
    - a. Loose lay rosin sheet. Nail G2 Base sheet.
    - b. Install 2 plies Thermglass VI set in Premium Type IV asphalt.
    - c. Install Fully Adhered 60 Mil TPA Fleece Back Membrane system over base sheet set in TPA membrane adhesive. heat weld all laps, mechanically secure at all perimeter and projection flashing. Broom / roll membrane into TPA WB Adhesive.
    - d. Install TPA membrane flashings @ all perimeter and projection flashing details per warranty detail requirements.
    - e. TPA Membrane flashings for all through roof penetrations.
    - f. Install protective TPA walkpads, fully welded perimeter at roof access points and in areas of anticipated foot traffic.
- C. Roofing material manufacturer shall furnish 20 year quality assurance warranty**

### 1.03 QUALITY CONTROL

- A. Contractor shall:
1. Be experienced in specified membrane system.
    - a. Three (3) years minimum.
  2. Be acceptable to owner.
  3. Be a manufacturer Certified Contractor.
  4. Has not been in Chapter 7 during the last ten (10) years.
  5. Provide a list of at least five (5) projects available for inspection employing similar type system within a 50-mile radius of Owner.
  6. Has no outstanding complaints with California Contracting License Board during the last four ( 4 ) years.
- B. Roofing material manufacturer shall:
1. Be an Associate Member in good standing with the National Roofing Contractors' Association (NRCA) for at least five (5) years.
  2. Be nationally recognized in roofing, waterproofing, and moisture survey industry.
  3. Be approved by Owner.
  4. Has not been in Chapter 11 during the last five (5) years.
  5. Owner is desirous of working with a financially strong organization which has the ability to protect and insulate the building owner from both product liability and warranty claims, relating to roofing, that could be brought before the building owner during the course of the roofing warranty period.
  6. Owner is a supporter of responsible Health, Safety and Environmental (HS&E) issues and requires all manufacturers to have similar concerns, convictions, and commitments. To this end, the primary manufacturers of materials used on building owner roof must submit a formalized Corporate HS&E Policy and demonstrate active participation in such a policy.
  7. ***Provide a Project Close-out Report upon delivery of the project warranty. This report shall include the following sections:***
    - a. ***Project Specifications***
    - b. ***Project Summary***
    - c. ***Project reports as a result of roof inspections.***
    - d. ***Job progress photos.***
    - e. ***Warranty document.***
    - f. ***Owner's Manual describing maintenance and emergency repair.***
    - g. ***Inspection Report to be completed by the roofing material manufacturer on an annual basis for the duration of the warranty period.***

8. The roofing material manufacturer will be ISO 9001 Certified .
  - a. Manufacturer will provide proof of ISO 9001 Certification by submitting copy of the Certificate of Registration or similar type of quality documentation.
  - b. Manufacturer's products will be produced per specifications developed under design control procedures per ISO 9001 requirements or similar type requirements.
  - c. The assessment body providing certification of the manufacturer's quality management system will be nationally recognized agency with sufficient knowledge and experience in the manufacturer's industry to permit a credible assessment of the manufacturer's quality system.
9. Provide local Field Representative to make daily site visits, report work quality and job progress.
10. Provide list of at least ten (10) projects available for inspection employing same roofing system within a 75-mile radius of Owner.
11. The presence and activity of the manufacturer's representative and/or Owner's representative shall in no way relieve the contractor of contractual responsibilities of duties.

D. Project meetings:

1. Mandatory Pre-Bid Conference:  
Attendance: Contractor, Owner Manufacturer's Rep
  - a. Review of bid specifications / drawings.
  - b. Walkover inspection of job site / existing conditions.
2. Pre-Construction Meeting:  
Attendance: Contractor, Owner, Manufacturer's Rep.
  - a. Designation of responsible personnel.
  - b. Walkover inspection.
  - c. Proposed project schedule / timeline.
3. Progress Meetings:
  - a. Will be scheduled bi-weekly or more frequently as project requires:  
  
Attendance: Contractor, Owner Manufacturer's Rep,  
Agenda:
    - a. Review of work progress.
    - b. Field observations, problems, and decisions.
    - c. Maintenance of quality and work standards.
1. Final inspection:
  - a. Will be scheduled by owner upon job completion.

- 1) Contractor.
  - 2) Roofing material manufacturer.
  - 3) Owner's representative.
  - c. Minimum agenda:
    - 1) Walkover inspection.
    - 2) Identification of problems which may impede issuance of warranty.
- D. Random sampling:
1. Roofing material:
    - a. During course of work, Owner's Representative may secure samples according to ASTM D140-93 of materials being used from containers at job site and submit them to an independent laboratory for comparison to specified material.
    - b. Should test results prove that a material is not functionally equal to specified material:
      - 1) Contractor shall pay for all testing.
      - 2) Roofing installed and found not to comply with the specifications shall be removed and replaced at no change in the contract price.
- E. Regulatory requirements:
1. Uniform Building Code.
  2. UL Classified Fire Rating - UL 790.
    - a. Class A.
- F. Plans and specifications:
1. Contractor shall notify Owner of any omissions, contradictions, or conflicts seven (7) days before bid date. Owner shall provide necessary corrections or additions to plans and specifications by addendum. If Contractor does not so notify Owner of any such condition, it will be assumed that the Contractor has included the necessary items in the bid to complete this specification.
  2. It is the intent that this be a completed project as far as the contract documents set forth. It is not the intent that different phases of work on this project be delegated to various trades and subcontractors by the contract documents. Contractor must make own contracts with various subcontractors, setting forth the work these subcontractors will be held responsible for. The Contractor alone will be held responsible by Owner for the completed project.
  3. If the Contractor feels a conflict exists between what is considered good roofing practice and these specifications, contractor shall state in writing all objections prior to submitting quotations.

4. It is the Contractor's responsibility during the course of the work to bring to the attention of Owner's representative any defective membrane, insulation or deck discovered where not previously identified.

## **1.05 SUBMITTALS**

### **A. Submit prior to contract award date:**

1. **UL Listing of Fire Resistance Rating:**
  - a. Copy of UL Listing for the specified roof system from the current UL Roofing Materials and Systems Directory or from letters issued by UL to the manufacturer.
2. **Product compatibility:**
  - a. Written verification from roofing material manufacturer that major roofing components, including (but not limited to) coatings, cold process adhesives; roofing ply sheets; reinforcement fabric felts and mats; mastics; and sealants are all compatible with each other.
3. **Test reports:**
  - a. Written verification from roofing material manufacturer that roofing system meets or exceeds regulatory agency's requirements specifically U.L. Class A Fire Rating. All products shall be FM approved.
4. **Red label products:**
  - a. Written verification from roofing material manufacturer that cold process coatings are not flammable (red label).
  - b. Verification that all adhesives/mastics are in compliance with new San Diego County V.O.C.requirements.
5. **Product data:**
  - a. Product data sheets.
  - b. Material safety data sheets.
  - c. Samples of coatings, adhesives, and roofing ply sheets.
  - d. Samples of each material specified, properly labeled.
  - e. List of local projects within 50 mile radius of job site where the specified roof system has been installed. Provide location, contact name, and telephone number.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

### **A. Delivery of materials:**

1. Deliver materials to job site in new, dry, unopened, and well-marked containers showing product and manufacturer's name.

2. Deliver materials in sufficient quantity to allow continuity of work.
  3. Coordinate delivery with Owner.
- B. Do not order project materials or start work before receiving written approval from Owner.
- C. Storage of materials:
1. Store roll goods on ends only. Discard rolls which have been flattened, creased, or otherwise damaged. Place materials on pallets. Do not stack pallets.
  2. For insulation, remove plastic packaging shrouds. For felt rolls, slit the top of the plastic shrink wrap only. Cover top and sides of all stored materials with tarpaulin (not polyethylene). Secure tarpaulin.
  3. Rooftop storage: Disperse material to avoid concentrated loading.
  4. No materials may be stored in open or in contact with ground or roof surface.
  5. Should Contractor be required to quickly cover material temporarily, such as during an unanticipated rain shower, all materials shall be stored on a raised platform covered with secured canvas tarpaulin (not polyethylene), top to bottom.
  6. Contractor shall assume full responsibility for the protection and safekeeping of products stored on premises.
- D. Material handling:
1. Handle materials to avoid bending, tearing, or damage during transportation and installation.
  2. Material handling equipment shall be selected and operated so as not to damage existing construction or applied roofing. Do not operate or situate material handling equipment in locations that will hinder smooth flow of vehicular or pedestrian traffic.

## **1.07 SITE CONDITIONS**

- A. Field measurements and material quantities:
1. Contractor shall have SOLE responsibility for accuracy of all measurements, estimates of material quantities and sizes, and site conditions that affect work
- B. Existing conditions:
1. Building space directly under roof area covered by this specification will be utilized by ongoing operations. Do not interrupt Owner operations



unless prior written approval is received from Owner.

2. Access to roof shall be from exterior only.
3. Air conditioning units and other equipment shall be moved as required to install roofing materials complete and in accordance with plans and specifications. When units and equipment are to be moved, they shall be carefully disconnected and removed to a protected area so as not to damage any part or component thereof, and shall be reconnected in such a way that they are restored to a prior-work operating condition. Appropriate measures shall be taken to prevent dust, vapors, gases, or odors from entering the building during roof removal, replacement, or repair.
4. All disconnection and re-connection shall be performed by mechanical and/or electrical company licensed to perform such work.

C. Safety requirements:

1. All application, material handling, and associated equipment shall conform to and be operated in conformance with OSHA safety requirements.
2. Comply with federal, state, local, and Owner fire and safety requirements.
3. Advise Owner whenever work is expected to be hazardous to any persons of Owner community, employees, and/or operators.
4. Maintain a crewman as a floor area guard whenever roof decking is being repaired or replaced.
5. Maintain fire extinguisher within easy access at all times for the duration of the project.

D. Waste disposal:

1. Do not re-use, re-cycle or dispose of material manufacturers product containers except in accordance with all applicable regulations. The user of manufactured products is responsible for proper use and disposal of product containers

E. Environmental requirements:

1. Do not work in rain, or in presence of water.

F. Security requirements:

1. Comply with Owner security requirements.
2. Provide Owner with current list of persons on the job site.

## **1.09 PAYMENT SECURITY**

B. Progress payments:

2. Partial or progress payments shall not relieve Contractor of performance

obligations under this contract, nor shall such payments be viewed as approval or acceptance of work performed.

3. Final payment shall be withheld until all provisions of the specifications are met..

### **1.11 WARRANTY/GUARANTEE**

#### **A. Guarantee**

1. Upon project completion and Owner acceptance, effective upon complete payment, Contractor shall issue Owner a guarantee against defective workmanship and materials for a period of two ( 2) years.

#### **B. Warranty**

1. Upon project completion, Manufacturer acceptance, and once complete payment has been received, by both Contractor and Manufacturer, Manufacturer shall deliver to Owner a Twenty (20)-year manufacturer Roofing System Quality Assurance Warranty. Manufacturer will perform limited housekeeping and inspections **at year 2, year 5 , year 10 and year 15 of the warranty period.**

Warranty Coverage Includes:

- The Roof Membrane.
- The Flashings.
- Insulation and adhesive.
- Edge components
- Metal Components and flashing details.

## **PART 2 - PRODUCTS**

### **2.01 GENERAL**

- A. Comply with quality control, references, specifications, and manufacturer's data. Products containing asbestos are prohibited on this project. Use only asbestos-free products.
- B. Use all products with appropriate personal protection. User must read container label and material safety data sheets prior to use.

### **2.02 ACCEPTABLE MANUFACTURERS**

- A. Tremco Inc. 3060 E. 44th Street Vernon, CA 90058

## **2.03 ROOF DECKING**

- a.** Plywood deck.
  - 1. Replace any damaged /defective plywood to match existing.

## **2.04 WOOD BLOCKING AND CURBS**

- A.** Lumber:
  - 1. Use pressure treated / fire treated wood blocking, pressure treated according to AWWA Standard C2 for lumber and timber to a retention of 4.0 kg/m<sup>3</sup> for above ground use.

## **2.06 MECHANICAL FASTENERS**

- A.** Wood to wood:
  - 1. Galvanized, common, annular ring nail. Length: sufficient to penetrate underlay blocking 1 ¼ inches.

## **2.07 ROOFING MATERIALS**

- A.** Base sheet: G2 Base  
  
Thermglass Type VI fiberglass ply sheets set in Premium Type IV asphalt.
  
- A.** Adhesives:
  - 1. TPA WB Membrane Adhesive.
  - 2. TPA LV Flashing Adhesive.
  
- B.** Membrane:
  - 1 TPA 60 MIL FB Membrane  
Thermoplastic tri-polymer alloy blended with CPE and PVC, polyester reinforced with wick resistant non-woven polyester fleece backed.  
  
Energy Star rated / Title 24 Compliant
  
- C.** Flashing: TPA 60 Mil Membrane.
- D.** Caulking: Tremseal D
- E.** Butyl Tape: TF tape.
- F.** Walkway: TPA Walkway Rolls - Color: Safety Yellow.

## 2.09 METAL FLASHINGS

- A. Counterflashing
  - 1. Sheet Metal:
    - a. Install new 24 gage new surface mounted galvanized counterflashing @ parapet wall details secured 12" on center with appropriate fasteners with neoprene washers. Secure top edge of flashing membrane with termination bar / butyl tape detail secured 6" on center and caulk with Tremseal D. Install new 24 gage flat metal counterflashing to divorce TPA membrane from new metal underlayment, TPA shall run a minimum of 12" under edge of new metal roof panels.
- B. TPA Clad Metal: For all scuppers, edge metal details.
- C. Work shall be in accordance with Architectural Sheet Metal Manual, as issued by Sheet Metal and Air Conditioning Contractor's National Association, Inc. (SMACNA).

## PART 3 - EXECUTION

### 3.01 EXAMINATION

- A. Verify conditions as satisfactory to receive work.
- B. Do not begin roofing until all unsatisfactory conditions are corrected. Beginning work constitutes acceptance of conditions.
- C. Verify that work of other trades penetrating roof deck or requiring men and equipment to traverse roof deck has been approved by Owner, manufacturer, and roofing contractor.
- D. Check projections, curbs, and deck for inadequate anchorage, foreign material, moisture or unevenness that would prevent quality and execution of new roofing system.

### 3.02 GENERAL WORKMANSHIP

- A. Substrate shall be free of foreign particles prior to laying roof membrane.
- B. Phased application is not permitted. All plies shall be completed each day.
- C. Traffic and equipment shall be kept off completed plies until adhesive has set.
- D. Wrapper and packaging materials shall not be included in roofing system.
- E. Entrapped aggregate shall not be permitted within new membrane. Discovery of

entrapped aggregate is sufficient cause for rejection.

- F. Ply shall never touch ply, even at roof edges, laps, tapered edge strips, and cants.
- G. Fit plies into roof drain rims; install lead flashing and finishing plies; secure clamping collars; and install domes.
- H. Extend roofing membrane to top edge of cant at wall and projection bases.

### **3.03 PREPARATION**

A. Protection:

1. Contractor shall be responsible for protection of property during course of work. Lawns, shrubbery, pavement areas, and buildings shall be protected from damage. Repair damage at no extra cost to Owner.
2. Prior to commencing removal of debris, provide at the site, a dumpster or dump truck to be located adjacent to building as directed by Owner.
3. At start of each work day, drains within daily work area shall be plugged. Plugs to be removed at end of each work day or before arrival of inclement weather.
4. Arrange work sequence to avoid use of newly constructed roofing for storage, walking surface, and equipment movement. Move equipment and ground storage areas as work progresses.
5. Protect building surfaces at set-up areas with tarpaulin. Secure tarpaulin. Remove dumpster from premises when full and empty at approved dumping or refuse area. Deliver empty dumpster to site for further use. Upon job completion, dumpster shall be removed from premises. Spilled or scattered debris shall be cleaned up immediately. Removed material to be disposed from roof as it accumulates.
6. At the end of each working day, removal area shall be sealed with water stops along edges to prevent water entry.
7. Provide clean plywood walkways and take other precautions required to prevent tracking of aggregate/debris from existing membrane into new work area where aggregate/debris pieces can be trapped within new roofing membrane. Contractor shall instruct and police workmen to ensure that aggregate/debris is not tracked into new work areas on workmen's shoes or equipment wheels. Discovery of entrapped aggregate/debris within new membrane is sufficient cause for its rejection.

- B. Surface preparation:
  - 1. Remove existing roofing / flashings / insulation down to plywood deck.
  - 2. Remove obsolete roof top penetrations.

### **3.09 ROSIN / BASE SHEET**

- A. Loose lay rosin paper then mechanically fasten G2 base sheet 9" on laps and 18" on center staggered 12".

### **3.10 TEMP ROOF / BASE PLIES**

- A. Starting at low point of roof, install 2 plies ThermGlass VI Fiberglass ply sheets set in Premium IV asphalt @ 22-25 lbs per square per ply, broom plies into place. run 2" above perimeter and curb cant strip flashing.

### **3.11 ROOF SYSTEM APPLICATION**

- A. Install TPA 60 mil Fleece Back in designated mechanical areas set in TPA WB adhesive @ 100 square feet / gallon, broom / roll membrane into adhesive immediately using a weighted roller.
- B. Heat weld all side / end laps per Manufacturer Field Requirements for heat welding of single ply membrane. All laps will be field tested to ensure complete and continuous weld /seal. Minimum 2" weld on all hand welds required, 1.5" on automatic welders. Heat welding of seams:
  - a. Wipe both sides of lap with approved solvent.
  - b. Adjust welding equipment air temperature prior to start.
  - c. Maintain air nozzle temperature and nozzle speed when joining laps together.
  - d. Remove lap sample from roof and test lap areas to assure proper bonding. When cool, pull test lap apart. When torn, the reinforcing scrim should become exposed. Patch test areas with new T.P.A.of the same color and style, using a minimum 2" lap area.
  - e. Weld cover strips on end laps per warranty detail requirements.

Cut and weld end laps with non-fleece back 45 Mil membrane strips per manufacturer warranty detail requirements.

### **3.08 FLASHINGS**

A. General flashing requirements:

1. Elastomeric flashing ( And Expansion Joints ):
  - a. Install boots to plumbing vent supports and through roof penetrations per Tremco warranty detail requirements. All curbs shall be completely roofed in with single ply. Non-Fleece Back Membrane may be used for perimeter and projection flashings, set in V.O.C. Compliant Bonding Adhesive. Secure at top with Termination Bar and caulk with Tremseal D before installing surface / counterflashing metal.
2. Heat welding of seams:
  - a. Wipe both sides of lap with approved solvent.
  - b. Adjust welding equipment air temperature prior to start.
  - c. Maintain air nozzle temperature and nozzle speed when joining laps together.
  - d. Remove lap sample from roof and test lap areas to assure proper bonding. When cool, pull test lap apart. When torn, the reinforcing scrim should become exposed. Patch test areas with new T.P.A.of the same color and style, using a minimum 2” lap area.

B. Roof Drains

1. Properly flash in roof drains and include water block sealant per warranty detail requirements

### **3.09 WALKWAYS**

- A. Install walkway panels from roof access area and in areas of anticipated foot traffic.

### **3.11 ADJUSTING AND CLEANING**

A. Repair of deficiencies:

1. Installations of details noted as deficient during final inspection must be repaired and corrected by applicator and made ready for re-inspection within five (5) working days.

B. Clean-up:

1. Immediately upon completion, roof membrane and flashing surfaces shall be cleaned of debris.
1. Clean job site of debris.

**END OF SECTION**

**SECTION 07600**

**Contractor shall provide all ancillary sheet metal include 24 gage clad metal, termination bar, projection flashings, counterflashing metal, gutters and downspouts per warranty detail requirements and as noted in metal roof spec sections 074113.**

**END OF SECTION.**



# Pacific Beach Library Skylights Kalwall Specifications

Earl and Bride Taylor Library  
11 June 2014

## SECTION 08 45 23

### INSULATING TRANSLUCENT SANDWICH PANEL SKYLIGHT SYSTEM

#### PART 1 - GENERAL

##### 1.1 SUMMARY

- A. Section includes the insulated translucent sandwich panel skylight system and accessories as shown and specified. Work includes providing and installing:
  - 1. Factory prefabricated structural translucent sandwich panels
  - 2. Aluminum installation system
  - 3. Aluminum flashing attached to skylights
- B. Related Sections:
  - 1. Structural Steel/Concrete/Rough Carpentry: Section \_\_\_\_\_
  - 2. Roofing: Section \_\_\_\_\_
  - 3. Flashing and Sheet Metal: Section \_\_\_\_\_
  - 4. Sealants: Section \_\_\_\_\_
  - 5. Glazing: Section \_\_\_\_\_

##### 1.2 SUBMITTALS

- A. Submit manufacturer's product data. Include construction details, material descriptions, profiles and finishes of skylight components.
- B. Submit shop drawings. Include elevations and details.
- C. Submit manufacturer's color charts showing the full range of colors available for factory-finished aluminum.
  - 1. When requested, submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below. If finishes involve normal color variations, include sample sets consisting of two or more units showing the full range of variations expected.
    - a. Sandwich panels: 14" x 28" units
    - b. Factory finished aluminum: 5" long sections
- D. Submit Installer Certificate, signed by installer, certifying compliance with project qualification requirements.
- E. Submit product reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed reports will be acceptable if for current manufacturer and indicative of products used on this project.
  - 1. Reports required are:

- a. International Building Code Evaluation Report
- b. Flame Spread and Smoke Developed (UL 723) – Submit UL Card
- c. Burn Extent (ASTM D 635)
- d. Color Difference (ASTM D 2244)
- e. Impact Strength (UL 972)
- f. Bond Tensile Strength (ASTM C 297 after aging by ASTM D 1037)
- g. Bond Shear Strength (ASTM D 1002)
- h. Beam Bending Strength (ASTM E 72)
- i. Fall Through Resistance (ASTM E 661)
- j. Insulation U-Factor (NFRC 100)
- k. NFRC System U-Factor Certification (NFRC 700)
- l. Solar Heat Gain Coefficient (NFRC or Calculations)
- m. Condensation Resistance Factor (AAMA 1503)
- n. Air Leakage (ASTM E 283)
- o. Structural Performance (ASTM E 330)
- p. Water Penetration (ASTM E 331)
- q. Class A Roof Covering Burning Brand (ASTM E 108)
- r. UL Listed Class A Roof System (UL 790) – Submit UL Card
- s. LEED Credits
- t. Daylight Autonomy Study and analysis
- u. California Department of Forestry listing 4175

### 1.3 QUALITY ASSURANCE

#### A. Manufacturer's Qualifications

1. Material and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten consecutive years and which can show evidence of those materials being satisfactorily used on at least six projects of similar size, scope and location. At least three of the projects shall have been in successful use for ten years or longer.
2. Panel system must be listed by an ANSI accredited Evaluation Service, which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an accredited agency.
3. Quality control inspections shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with AC177 "Translucent Fiberglass Reinforced Plastic (FRP) Faced Panel Wall, Roof and Skylight Systems" as issued by the ICC-ES.

#### B. terminate manufacturers seeking prior approve must provide the following documentation:

1. Provide computer simulation similar to RADIANCE by Lawrence Berkeley National Laboratory showing that the % specified by City Engineer of the project receive greater than or equal to specified foot candles of natural daylight at 9:00 AM and 3:00 PM on September 21st at desired task level above the floor.
2. These daylight requirements must be achieved while providing specified "U" value or better. System which achieve the foot candle requirement but at a "U" value worse than specified will not be acceptable.

- IC. Installer's Qualifications: Installation shall be by an experienced installer, which has been in the business of installing specified skylight systems for at least two consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.

#### 1.4 PERFORMANCE REQUIREMENTS

- A. The manufacturer shall be responsible for the configuration and fabrication of the complete skylight panel system. The fiberglass face sheets are to be manufactured by the Skylight manufacture.
  - 1. When requested, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
  - 2. Standard skylight system shall have less than 0.01 cfm/ft<sup>2</sup> air leakage by ASTM E 283 at 6.24 PSF (50 mph) and no water penetration by ASTM E 331 at 15 PSF; and structural testing by ASTM E 330.
  - 3. Structural Loads; Provide skylight system capable of handling the following loads:
    - a. Live Load: 20-psf
    - b. Snow Load: 0-psf; Drift Load: 0-psf
    - c. Wind Load: 25-psf

#### 1.5 DELIVERY STORAGE AND HANDLING

- A. Deliver panel system, components and materials in manufacturer's standard protective packaging.
- B. Store panels on the long edge; several inches above the ground, blocked and under cover in accordance with manufacturer's storage and handling instructions.

#### 1.6 WARRANTY

- A. Submit manufacturer's and installer's written warranty agreeing to repair or replace panel system work, which fails in materials or workmanship within one year of the date of delivery. Failure of materials or workmanship shall include leakage, excessive deflection, and deterioration of finish on metal in excess of normal weathering and defects in accessories, insulated translucent sandwich panels and other components of the work.
- B. Extended Warranty: Manufacturer's standard 10-year extended warranty against color change or fiberbloom of the exterior face sheets.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURER

- A. The basis for this specification is for products manufactured by Kalwall Corporation. Other manufacturers may bid this project provided they comply with all of the performance requirements of this specification and submit evidence thereof. Listing other manufacturers' names in this specification does not constitute approval of their products or relieve them of compliance with all the performance requirements contained herein.
- B. Kalwall Corporation, as represented locally by Architectural Systems Inc, tel (858) 679-9760

#### 2.2 PANEL COMPONENTS

- A. Face Sheets

1. Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.
  - a. Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
  - b. Face sheets shall not deform, deflect or drip when subjected to fire or flame.
  
2. Interior face sheets:
  - a. Flame spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than 10 and smoke developed no greater than 250 when tested in accordance with UL 723.
  - b. Burn extent by ASTM D 635 shall be no greater than 1".
  
3. Exterior face sheets:
  - a. Color stability: Full thickness of the exterior face sheet shall not change color more than 3 CIE Units DELTA E by ASTM D 2244 after 3 years outdoor South Florida weathering at 5° facing south, determined by the average of at least three white samples with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.
  - b. Strength: Exterior face sheet shall be uniform in strength, impenetrable by hand held pencil and repel an impact minimum of 70 ft. lbs. without fracture or tear when impacted by a 3-1/4" diameter, 5 lb. free-falling ball per UL 972.
  
4. Appearance:
  - a. Exterior face sheets: Smooth, 0.070" thick and "crystal" in color.
  - b. Interior face sheets: Smooth, 0.045" thick and "white" in color.
  - c. Face sheets shall not vary more than ± 10% in thickness and be uniform in color.

#### B. Grid Core

1. Aluminum I-beam grid core shall be of 6063-T6 or 6005-T5 alloy and temper with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I-beam shall be no less than 7/16".
2. I-beam Thermal break: Minimum 1", thermoset fiberglass composite.

#### C. Laminate Adhesive

1. Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council "Acceptance Criteria for Sandwich Panel Adhesives".
2. Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two exposures to six cycles each of the aging conditions prescribed by ASTM D 1037.
3. Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure to four separate conditions:
  - a. 50% Relative Humidity at 68° F: 540 PSI
  - b. 182° F: 100 PSI
  - c. Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI
  - d. Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI

## 2.3 PANEL CONSTRUCTION

- A. Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.
  - 1. Thickness: 2-3/4"
  - 2. Light transmission: 20%
  - 3. Solar heat gain coefficient 0.28.
  - 4. Panel U-factor by NFRC certified laboratory: 2-3/4" aluminum grid U=0.29.
  - 5. Complete insulated panel system shall have NFRC certified U-factor of U=0.44.
  - 6. Grid pattern: Nominal size 12x24; pattern shoji.
- B. Standard panels shall deflect no more than 1.9" at 30 PSF in 10' 0" span without a supporting frame by ASTM E 72.
- C. Standard panels shall withstand 1200° F fire for minimum one hour without collapse or exterior flaming.
- D. Thermally broken panels: Minimum Condensation Resistance Factor of 80 by AAMA 1503 measured on the bond line.
- E. Skylight System:
  - 1. Skylight system shall pass Class A Roof Burning Brand Test by ASTM E 108.
  - 2. Skylight system shall also be UL listed as a Class A Roof by UL 790, which requires periodic unannounced inspections and retesting by Underwriters Laboratories.
- F. Skylight System shall meet the fall through requirements of OSHA 1910.23 as demonstrated by testing in accordance with ASTM E661, thereby not requiring supplemental screens or railings.

## 2.4 BATTENS AND PERIMETER CLOSURE SYSTEM

- A. Closure system:
  - 1. Extruded aluminum 6063-T6 and 6063-T5 alloy and temper clamp-tite screw type closure system.
  - 2. Curved closure system may be roll formed.
  - 3. Skylight perimeter closures at curbs shall be factory sealed to panels.
- B. Sealing tape: Manufacturer's standard, pre-applied to closure system at the factory under controlled conditions.
- C. Fasteners: 300 series stainless steel screws for aluminum closures, excluding final fasteners to the building.
- D. Finish:
  - 1. Manufacturer's factory applied finish, which meets the performance requirements of AAMA 2604.
  - 2. Color to be "#85Bronze".

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Installer shall examine substrates, supporting structure and installation conditions.

- B. Do not proceed with panel installation until unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

#### A. Metal Protection:

1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
2. Where aluminum will contact concrete, masonry or pressure treated wood, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by manufacturer.

### 3.3 INSTALLATION

#### A. Install the skylight system in accordance with the manufacturer's installation recommendations and approved shop drawings.

1. Anchor component parts securely in place by permanent mechanical attachment system.
2. Accommodate thermal and mechanical movements.
3. Set perimeter framing in a full bed of sealant compound, or with joint fillers or gaskets to provide weather-tight construction.

#### B. Install joint sealants at perimeter joints and within the panel system in accordance with manufacturer's installation instructions.

### 3.4 FIELD QUALITY CONTROL

#### A. Water Test: Installer to test skylights according to procedures in AAMA 501.2.

#### B. Repair or replace work that does not pass testing or that is damaged by testing and retest work.

### 3.5 CLEANING

#### A. Clean the skylight system inside and outside, immediately after installation.

#### B. Refer to manufacturer's written recommendations.

END OF SECTION 08 45 23

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**DIVISION 23 MECHNAICAL**

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**END OF SECTION**

## SECTION 230500 - HVAC GENERAL REQUIREMENTS

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. The General Conditions and Supplementary Conditions shall apply to and form part of this Division.

## 1.2 SUMMARY

- A. Work includes, but is not limited to, the following:
1. Design, local authority approval, labor, material, equipment, and transportation to complete the Work as shown on the drawings, specified herein and/or implied thereby.
  2. A requirement of the mechanical sections shall be to provide drains and final connections to systems and equipment.
  3. It is the intent of the project that the installation be coordinated to provide a complete and usable facility.
- B. Work not included in this division:
1. Painting, except as hereinafter specified. See Division 9 for painting.
  2. Electrical, except for controls hereinafter specified. See Division 26 for electrical.

## 1.3 DEFINITIONS

- A. Unless otherwise specified, "all clarification from," "field direction by," "submittals to," "approved by," "processed by," "permission from," and like mentioned herein shall mean from/by/to Architect.
- B. "Provide" means furnish and install referenced item with all appurtenances.
- C. "Shall" indicates a mandatory requirement.
- D. "Air conditioning" is defined as the treatment and/or handling of any air to any degree by the systems shown on the drawings and herein specified and is not restricted to refrigerated cooling.

## 1.4 DELIVERY AND STORAGE OF MATERIALS

- A. Provide for the safety and good condition of all materials and equipment until final acceptance by the Owner. Protect all materials and equipment from damage from any cause whatever, and provide adequate and proper storage facilities during the progress of the work. Replace all damaged and defective work, material, or equipment prior to filing application for final acceptance. Properly protect all openings to equipment, piping, ductwork, accessories, etc. from dirt, dust, and debris prior to and during installation of the work. Ductwork and piping stored at the jobsite shall be covered and capped to protect from dirt, dust, debris, fire proofing, etc.



## 1.5 CODES AND STANDARDS

- A. Work and materials shall be in full accordance with the latest rules and regulations of the State Fire Marshal; the California Electric Code (NEC); the California Plumbing Code; the California Mechanical Code; California Administrative Code, Title 24, (CAL/OSHA); Local Building Codes; Vol. II of the Uniform Building Code; Volume I and II of the California Building Code; SMACNA “Guidelines for Seismic Restraints of Mechanical Systems”; and other applicable codes, laws or regulations of bodies lawfully empowered and having jurisdiction over this project. Nothing in the plans or specifications shall be construed to permit work not conforming to these codes. When codes conflict with one another, comply with the larger, higher or more restrictive standards without additional costs.

## 1.6 PERMITS

- A. Obtain all permits, patent rights, and licenses that are required for the performing of this work by all laws, ordinances, rules and regulations, or orders of any officer and/or body having jurisdiction. Provide all notices necessary in connection therewith, and pay all fees relating thereto and all costs and expenses incurred on account thereof. No work shall be covered before inspection by the jurisdictional authorities and observation by the Architect or the owner’s designated representatives.

## 1.7 EXPLANATION AND PRECEDENCE OF DRAWINGS

- A. Drawings and specifications are intended to be read together so that any work mentioned in one and not the other shall be executed the same as if mentioned in both.
- B. For purposes of clearness and legibility, drawings are essentially diagrammatic. The size and location of equipment is drawn to scale wherever possible. Contractor shall make use of data in the contract documents and shall verify this information at the building site.
- C. Where the contract specifications and/or drawings are in conflict, obtain clarification of such during bidding. Where addenda for clarification of such is not timely, base the bid on the higher standards or more restrictive requirements; prior to fabrication, obtain written clarification.
- D. The drawings indicate required size and points of termination of pipes, and suggest proper routes to conform to structure, avoid obstructions, and preserve clearances. It is not intended that drawings indicate necessary offsets, transitions, fittings, supports, or other components required to accommodate the required routing. The Contractor shall make the installation in such a manner as to conform to the structure, avoid obstructions, conceal work, preserve headroom, and keep openings and passageways clear, without further instructions or costs to the Owner.
- E. It is intended that apparatus be located symmetrical and aligned with architectural elements. Refer to architectural plans and details in completing the correlating work.
- F. The Contractor shall study all drawings and specifications including, and not limited to, architectural, civil, structural, mechanical, plumbing, fire protection, and electrical to determine conflict with ordinances and statutes. Conflicts, errors, or omissions shall be reported in writing, and changes shall be included in the as-built drawings and the additional work performed at no additional cost to the Owner.

- G. Submittal of bid shall indicate the Contractor has examined the site and drawings and has included required allowances in his bid. Contractor's Bid shall include all costs for the required mechanical work, coordination, drawings, and changes as outline above. No allowance or additional compensation shall be allowed after Bid for any error or work resulting from Contractor's failure to visit job site and to review drawings and specifications as require herein.

#### 1.8 RECORD DRAWINGS

- A. In addition to requirements for shop drawings specified elsewhere, provide and maintain on the job one complete set of blue line prints of the record drawings for all the mechanical and plumbing work. Carefully record on this set of prints, work including piping, valves, etc., which is installed differently from that indicated in the specifications and on the drawings; locate dimensionally from fixed points. The depth and location shall be indicated for all plugged wyes, tees and capped lines.
- B. These record drawings shall be continuously kept up-to-date, and shall be available for inspection at all times. Existing lines discovered shall be indicated on these drawings.
- C. At completion of work, provide a neat and legible reproducible set of these up-to-date record drawings which shall be individually signed and dated by the Contractor and the job inspector stating that the documents are accurate and reflect the as-built condition of the construction.
- D. Record drawings shall be submitted for acceptance and approval to the Architect and Mechanical Engineer before final certificate of acceptance will be issued.
- E. Record drawings shall show the exact location of all valves, balancing devices, access doors, and control sensors and devices.

#### 1.9 CUTTING AND PATCHING

- A. Perform all cutting and fitting required for work of this division in rough construction of the building. Obtain permission of the Structural Engineer prior to cutting any structural building elements.
- B. All patching of finished construction of building shall be performed under the sections of specifications covering these materials by the trades at no additional cost to the Owner.
- C. All cutting of concrete work by Contractor shall be by core drilling or concrete saw. No cutting or coring shall be done without first obtaining the permission of the Architect and Owner.
- D. All patching of existing surfaces shall match existing material and finish.

#### 1.10 DAMAGE BY LEAKS

- A. Contractor shall be responsible for damage to the grounds, walks, roads, buildings, finishes, surfaces, materials, equipment, piping systems, electrical systems and their equipment and contents, caused by leaks in the piping systems being installed or having been installed herein. Contractor shall repair at his expense all damage so caused. All repair work shall be done as directed by the Architect and Owner.

### 1.11 EMERGENCY REPAIRS

- A. The Owner reserves the right to make emergency repairs as required to keep equipment in operation without voiding the Contractor's guarantee bond or relieving the Contractor of his responsibilities.

### 1.12 LOCATIONS

- A. Coordinate in advance of the work, requirements for openings, equipment maintenance clearances, offsets, supports, expansion and contraction, recesses, and chases in the walls, partitions, equipment housekeeping pads, framing or openings. Should furnishing this information be neglected, delayed, or incorrect and additional cutting is found to be required, the cost of same shall be borne by the Contractor. Nothing in this paragraph shall be construed to relieve the Contractor of the responsibility for providing and paying for the required core drilling and openings in existing work.
- B. Diagrammatic Indications on Drawings are:
  - 1. Approximate only. The contractor shall review the drawings, including architectural, civil, structural, mechanical, plumbing, fire protection, electrical, and other related elements of the construction documents, to identify specific requirements for off-sets, transitions, anchorages, and attachments necessary to provide the mechanical systems as diagrammatically indicated in the construction documents.
  - 2. At various locations shown distorted for clarity.
- C. Exact Locations Shall:
  - 1. Be as required for proper installation in available space.
  - 2. Avoid interference with architectural, electrical, fire protection, structural and other construction features.
  - 3. Be coordinated with the work of other trades toward the general purpose of having the work progress rapidly and smoothly without interference between one trade and another.
  - 4. Preserve headroom and keep openings and passageways clear.
  - 5. Have a neat arrangement symmetrical to the building lines, light and tile patterns.
  - 6. Be reasonably accessible for suspended ceiling areas for maintenance from the floor below. Adequate access for all equipment, valves, and other items requiring maintenance, adjustment, and/or observation shall be provided.

### 1.13 SUPPORTS, EQUIPMENT PADS, STAGING, ETC.

- A. Construction supports required for the proper installation of equipment shall be in accordance with the drawings, manufacturer's requirements, seismic requirements, and applicable codes. Check architectural and structural drawings for equipment pads by others. Provide staging, scaffolds, platforms, ladders, and similar facilities required to properly install the work.

### 1.14 INTERRUPTION OF UTILITIES

- A. This project includes elements of work which will require disconnection and modification of existing systems, with resultant outages. These outages must be strictly limited and controlled. No outage affecting any portion of the existing facilities will be allowed without specified written authorization by the Owner, Architect, and Engineer. Coordinate all work with project phasing requirements to maintain access and operation of portions of the work outside the specific area of the Phase under construction.

- B. The Contractor shall schedule and coordinate all interruptions of utilities with the Architect and Owner within 30 days after award of contract. The Contractor shall submit to the Owner a schedule of proposed interruptions. At least 144 hours prior to the interruption, the contractor shall submit a request indicating the proposed date and duration of interruption, the work to be accomplished, the areas which will be affected and a proposed contingency plan to be followed in the event that normal service or facilities cannot be restored on schedule. Do not commence work until the time, date, and contingency have been approved in writing by the Architect and Owner.
- C. Provide all labor and materials necessary to restore services on a contingency basis should normal service or facilities not be restored on schedule.

#### 1.15 SUBSTITUTIONS

- A. If substitutions of materials, controls, or equipment impact or require any changes in the architectural, structural, mechanical, plumbing, electrical, other equipment, or other work from that specified and shown on the drawings, the extra cost of the equipment or architectural, structural, mechanical, plumbing, electrical or other work shall be the responsibility of the Contractor requesting the substitution. All substitutions shall be approved by the Architect before purchase by the contractor.
- B. If the Contractor proposes substitutions of any equipment specified herein or on the drawings, it shall be the Contractor's responsibility to obtain approval from the Architect for such equipment as well as approval for anchorage of such equipment from the Architect, Structural Engineer, Mechanical Engineer, and governing approval agencies including the Office of Statewide Health Planning and Development (OSHPD) and the Department of State Architects (DSA). All costs required for such approval shall be the responsibility of the Contractor requesting the substitution.

#### 1.16 PREPARATION OF SUBMITTALS

- A. Refer to Division 1. In addition to the requirements of Division 1, comply with the additional requirements specified herein.
- B. Prior to commencement of work and in accordance with the General Requirements, submit for review six copies of proposed equipment and material submittals. The Contractor shall verify the delivery dates are compatible with the specified construction schedule; and verify the equipment is sized to accommodate the conditions specified, will fit within the available space, and allow for required clearances for service and maintenance. Submittals shall include manufacturer's names and model numbers, specific drawing and specification paragraph reference, and shall comply with specifications and drawings. Contractor's submittal shall be taken as evidence that the required review, coordination and verification has been completed.
- C. Provide formal submittal to the Architect. Review of the formal submittal is only for general conformance with design concept of project and general compliance with the information given in the contract documents. The Contractor is responsible for confirmation and correlation of the dimensions, quantities, and sizes for information that pertains to fabrication methods or construction techniques, and for coordination of work of all trades. Any deviations from the Drawings and Specifications shall be clearly and completely indicated (by a separate letter) in the formal submittals. Reviewed Submittals shall not relieve the Contractor of responsibility for errors or deviations or the requirement for compliance with the contract documents.
  - 1. Where specific model numbers and/or manufacturers are specified or shown, it is the intent of the contract documents to procure the specified item(s). Alternate equipment

may not be used unless data is submitted for consideration as a substitution in accordance with General Requirements and this section.

2. Model numbers used may not indicate all features, options, or other specific components required for this specific installation. Modify the specified models to comply with the requirements, as specified or shown.
  3. Product Data for Proposed Substitutions:
    - a) Submit copies of complete data, with drawings and samples as appropriate, including:
      - 1) Comparison of the qualities of the proposed substitution with that specified.
      - 2) Changes required in other elements of the work because of the substitution.
      - 3) Affect on construction schedule.
      - 4) Cost data comparing the proposed substitution with the product specified.
      - 5) Availability of maintenance service and source of replacement materials.
      - 6) Reference to three projects similar to this where such equipment is installed and operating to two or more years. All references shall include the name and telephone number of personnel point of contact who is familiar with the operation of the referenced item.
    - b) Acceptance of substitutions is entirely at the discretion of the Architect and the Owner.
- D. Formal submittals shall be complete with catalog data and information properly marked to indicate equality of material (where substitution is allowed and desired) and adequacy in capacity and performance to meet minimum capacities or performance as specified or indicated. Arrange the submittals in the same sequence as these Specifications and indicate the Section and specific Paragraph number (in the upper right-hand side with tabs) for which each submittal page is intended. Incomplete submittals shall be rejected.
- E. Do not fabricate, order, or deliver materials or equipment until formal submittals have been approved. Where material or equipment is used without such permission, it is deemed that the material or equipment shall be in complete compliance with drawings and specifications. Where such materials or equipment are found to be not in compliance with the contract documents, the said items shall be removed and replaced with complying materials or equipment without additional cost.
- F. Submittals shall be bound and shall include, at a minimum, the following:
1. Complete bill of materials listing materials and equipment furnished.
  2. Catalog cut sheets of each component being provided. Each item included in the submittal shall be highlighted or otherwise specifically identified. Any items that do not specifically apply to the submittal shall be crossed out.
  3. Provide completed black-line shop drawings of equipment detailing all field connection points.
  4. Dimensions, clearance requirements, weights, and capacities.
  5. Indication/certification of compliance with indicated or specified codes and standards.
  6. Wiring and control diagrams showing control interface as applicable.
  7. Warranty sheets.
  8. Pressure drops, velocities, temperatures, gages, and other requirements as applicable.
- G. All submittals shall be reviewed and approved by the Commissioning Authority prior to submittal to assure design intent is met and proper coordination is maintained.

- H. Contractor shall incur all costs for time spent by Engineer for review of more than two submittals on each item. Costs shall be based on Engineer's hourly billing rate schedule at the time of review. Rate schedule available upon request. Engineer shall invoice the contractor upon completion of review and shall be paid by the contractor within 30 days of date of invoice. Failure to remit payment will withdraw approval (if any) of the submittals in question.

#### 1.17 SHOP DRAWINGS

- A. Comprehensive Shop Drawings: Proceed with the preparation of comprehensive shop drawings immediately upon receiving an authorization to proceed for the project. Shop drawings shall be originally prepared by the contractor. Provide minimum 1/4" scale shop drawings in AutoCAD version 2005. Submit a complete and comprehensive set of Shop Drawings in one package within 60 days of contract award and prior to material fabrication, order, and installation. Comprehensive Shop Drawings shall include but are not limited to:
1. Architectural, structural, electrical, plumbing, and other work specified under Divisions outside Division 23.
  2. Duct and pipe elevations.
  3. Double line ductwork and double line piping for sizes 4" and larger. Piping smaller than 4" shall be single line.
  4. Actual size of purchased equipment.
  5. Access panels including ceiling panels.
  6. Access clearances for equipment.
  7. Actual locations of diffusers, registers, and grilles.
  8. Actual locations of manual volume dampers including extractors and splitters.
  9. Locations of structural penetrations such as beams.
  10. Actual location of control panels and power connections to equipment.
  11. Color coded duct and piping based on material used.
  12. Label and tag schedule for equipment.
  13. Duct and piping off-sets and transitions to clear building architecture, structure, electrical, fire protection, or other tight or congested areas.
  14. Room temperature sensor locations.
  15. Point of connection to utilities outside the building.
  16. Sections or 3-dimensional drawings of congested areas.
  17. Gridlines.
- B. Coordinate with other trades.
- C. Submit a copy of shop drawings to General Contractor for distribution to other trades, including but not limited to the electrical, structural and fire sprinkler trades.
- D. All shop drawings shall be reviewed and approved by the Commissioning Authority prior to submittal to assure design intent is met and proper coordination is maintained.
- E. Prior to fabrication and upon receiving approval from commissioning authority, submit a complete set of shop drawings at one time to the mechanical engineer.

## 1.18 COMMISSIONING

- A. Comprehensive Commissioning is an integral part of the work required. Provide comprehensive Commissioning of Mechanical systems in accordance with Division 1 Section "Commissioning" and as specified elsewhere in these Specifications. The work required for all Division 22 and 23 Sections includes cooperation and assistance with the Commissioning Authority to provide a fully Commissioned system. Review the commissioning requirements of the project and provide required support, including but not limited to, systems operation and adjustment, material and equipment submittals and documentation, systems start-up and testing, attendance at regular Commissioning meetings, cooperation with the Commissioning Authority and other trades in addressing and solving questions, conflicts and other issues that occur during the construction process.

## 1.19 ELECTRICAL REQUIREMENTS

- A. Coordinate the following items with Division 26:
1. Power wiring
  2. Power Supply Voltage Requirements
  3. Safety switches
  4. Combination controllers
  5. Disconnect switches
  6. Motor starters
  7. Circuit breakers
  8. Motor-control equipment forming part of motor control centers or switchgear assemblies
  9. Electrical connections of the mechanical equipment to the electrical power source shall be coordinated with and provided under Division 26.

## 1.20 MOTORS

- A. Before order is placed for electrical devices, the Contractor shall check with the Electrical contractor and verify requirements as to type, mounting, and current characteristics as well as to any special delivery instructions.

## 1.21 TESTS

- A. Contractor shall make tests required by legally constituted authorities, required under other Division 23 sections, and as listed below.
1. Tests shall be made in the presence of the Owner or his representative, a duly authorized inspector, and the Commissioning Authority. The Owner or his representative shall be notified 5 days before tests are made.
  2. Concealed work and insulated work shall remain uncovered until required testing has been performed and approved by the Owner. If work to be tested is covered before the approval of the Owner or his authorized representative has been obtained, it shall be uncovered for testing at the Contractor's expense.
  3. Obtain required documents of certification indicating approval, acceptance, and compliance with the requirements of all administrative authorities having jurisdiction over the work. No final payment shall be made until all such certificates are delivered to the Owner.
  4. Furnish labor, materials, instruments, and bear other costs in connection with all tests.
  5. Piping systems, except as hereinafter noted, shall be given hydrostatic (with water) test of a least 150% of the maximum operating pressure but no less than 150 psig.
  6. Before making test, remove or valve off from the system, gauges, traps, and other apparatus or equipment which may be damaged by test pressure.

7. Install a calibrated test pressure gauge in the system to observe any loss in pressure. Maintain the required test pressure for a sufficient length of time to enable an inspection to be made of all joints and connections, but not less than 4-hours. Perform tests after installation and prior to acceptance.
8. Prepare and submit a valve line-up diagram and verify that the entire system is subject to test pressure. Indicate line-up and area to be tested on a system diagram and submit to the Engineer, the Owner, and the Commissioning Authority.
9. Final pressures at the end of the test period shall be no more or less than that caused by expansion or contraction of the test medium due to temperature changes.
10. After tests have been made and leaks repaired, clean and flush systems as hereinafter specified. Water piping shall be left under supply main pressure for the balance of the construction period.
11. Additional tests for mechanical, plumbing, and fire protection systems are specified within their own section. Equipment and ductwork system tests are specified in the test and balance section.
12. Provide necessary provisions and tests for maintaining the operational condition and cleanliness of existing systems as well as systems provided under this Contract.

#### 1.22 LABOR AND MATERIALS

- A. Labor shall be carefully skilled for this kind of work, and under the direction of a competent foreman.
- B. Materials shall be new, in perfect condition and of domestic manufacturer. Materials for similar uses shall be of the same type and manufacturer.
- C. Equipment shall bear the manufacturer's label showing performance characteristics as well as model numbers. Identifying size number shall be given only when it is not practicable or customary to show performance characteristics.
- D. Valves, pipe, fittings, etc., shall bear the manufacturer's name or trademark and model.
- E. Unless otherwise specified herein, equipment and fixtures shall be installed in accordance with the manufacturer's recommendations, including recommended service and removal clearances.

#### 1.23 PROTECTION AND CLEAN-UP

- A. Protection: Provide for the safety and good condition of materials and equipment until final acceptance of the Architect and Owner. Protect materials and equipment from dirt, dust, debris, and damage from any cause whatever, and provide adequate and proper storage facilities during the progress of the work. Properly protect all openings to equipment, piping, ductwork, accessories, etc. from dirt, dust, and debris prior to, during, and after installation of the work. Ductwork and piping stored at the jobsite shall be covered and capped to protect from dirt, dust, debris, fire proofing, etc. Replace all damaged and defective material, equipment or work precedent to filing application for final acceptance.
- B. Cleaning:
  1. Unless a more stringent requirement is specified, thoroughly clean all parts of the piping, ductwork, fixtures, apparatus, and equipment. All parts shall be vacuumed and thoroughly cleaned of dirt, dust, debris, cement, plaster and other materials, and all grease and oil spots removed. Such surfaces shall be carefully wiped and all cracks and corners scraped out and cleaned.



2. Exposed rough metal work shall be carefully brushed down with steel brushes to remove rust and other spots and left in clean condition to receive painter's finish. Where factory prime coat has been damaged, the work shall be repaired and restored under this section.

#### 1.24 ACCESS PANELS

##### A. Access Doors and Panels:

1. Wherever volume dampers, fire dampers, smoke fire dampers, controls, valves or other items or parts of the installation which require periodic inspection or adjustments are concealed by permanent non-removable construction, an access door or panel shall be provided. Rating of access doors and panels shall be determined by the rating of the wall or ceiling in which panel is installed. Types to be as approved and as appropriate for the surface and construction in which it is installed. Verify all locations with Architect and other trades for access doors and related components requiring access prior to installation.
2. Access doors and panels shall be of sufficient size and shall be located properly to assure access and service to the intended item.

#### 1.25 MAINTENANCE, OPERATION INSTRUCTION

A. General: Thoroughly instruct the Owner's operators in every detail of operation of the system. Provide the Owner with a list of all equipment, giving the manufacturer's name, model number, serial number, parts list and complete internal wiring diagrams. All directions for operation furnished by the manufacturer shall be carefully saved and turned over to the Owner, together with written sequence of operation, operating and maintenance instructions for each system and its equipment. Instruction shall consist of a minimum of three 8-hour periods over consecutive days and shall be 30% classroom and 70% at site location. Coordinate scheduling of instruction times and the number of attendees with Owner's operators.

B. Specific Data: Submit four complete sets of the following data to the Owner for approval prior to acceptance of the installation, complete and at one time; (partial or separate data will not be accepted) data shall consist of the following:

1. Valve Directory: Indicating valve number, location, function, and normal operating position for each valve. Include diagrams and plans indicating valve locations.
2. Color code schedule for piping, ductwork, labeling, and other items or systems specified to be color coded.
3. Equipment: List of name plates, including name plate data.
4. Manufacturer's Literature: Copies of manufacturer's instructions for operation and maintenance of all mechanical equipment, including replacement parts lists and drawings. Mark or highlight brochure literature indicating the models, sizes, capacities, curve operating points, etc., in a manner to clearly indicate the equipment installed. Remove all pages or sheets from the bulletin and catalogs that do not pertain to equipment installed on the project.
5. Written Instructions: Typewritten instructions for operation and maintenance of the system composed of OPERATING INSTRUCTIONS, MAINTENANCE INSTRUCTIONS, and a MAINTENANCE SCHEDULE.
  - a) OPERATING INSTRUCTIONS shall contain a brief description of the system. Adjustments requiring the technical knowledge of the service agency personnel shall not be included in the operating instructions. The fact such adjustments are required, however, shall be noted.
  - b) MAINTENANCE INSTRUCTIONS shall list each item of equipment requiring inspection, lubrication, or service and describe the performance of such maintenance.

- c) MAINTENANCE SCHEDULE shall list each item of equipment requiring maintenance, shall show the exact type of maintenance on every component of each item of equipment, and shall show when each item of equipment should be inspected or services.
- 6. Instructions: Operating personnel shall be instructed in the operation of the system in accordance with typewritten, approved instructions.

- C. Binders: Provide complete sets of the above data in loose-leaf ring-type binders with permanent covers, with identification on front and on spine.

## 1.26 SPECIAL REQUIREMENTS

- A. During the guarantee period and as directed by the Owner, make any additional tests, adjustment, etc., that may be required and correct any defects or deficiencies arising from operation of the systems. Operational tests shall be made during both heating and cooling seasons and on all systems.
- B. Completion:
  - 1. The entire mechanical system shall be commissioned in accordance with ASHRAE Guideline 1-1996 and the requirements of this specification. The Commissioning process shall occur throughout the construction with periodic reports submitted monthly or more frequently when required. A final commissioning report shall be submitted by the Contractor and approved by the Owner, Architect, and Mechanical Engineer prior to final acceptance of the work.
  - 2. When the installation is complete and adjustments specified herein have been made, the system shall be operated for a period of one week, during which time it shall be demonstrated to the Owner or his representative as being completed and operating in conformance with these specifications. The Contractor shall schedule all work so that this time period, which is to confirm a "bug-free" system, will occur before the total project is accepted for substantial completion by Owner.
  - 3. The work hereunder shall not be reviewed for final acceptance until operating and maintenance data, manufacturer's literature, valve directories, piping identification code directory, nameplates, and Commissioning specified herein have been approved and properly posted in the building.

## 1.27 WARRANTY / GUARANTEE

- A. The contractor shall warranty/guarantee that materials, apparatus, and equipment furnished and installed under the mechanical division of these specifications shall be new and free from all defects. Should any defects develop, within two years (unless a longer period is listed in other sections of the specifications) from the date of final acceptance by the owner or from the date of certificate of substantial completion, whichever is earlier, due to inferior or faulty materials and/or workmanship, the trouble shall be corrected by this Contractor without expense to the Owner. Any defective materials or inferior workmanship noticed at the time of installation or during the guarantee period shall be corrected immediately to the entire satisfaction of the Owner.
- B. The work shall be installed of such materials and in such a manner that:
  - 1. The operation of all parts of the system shall be noiseless to the extent that no objectionable sound of operation will be heard outside of the rooms enclosing the apparatus or equipment.
  - 2. Apparatus or equipment shall operate in accordance with detailed specifications covering each item.

3. Contractor shall, at his own expense, make any adjustments or changes required to produce a condition of quietness satisfactory to the Engineer or his representative. Such adjustments or changes shall not reduce the performance or quantities called for on the drawings.
4. Contractor shall guarantee that his installation of all materials and equipment will meet the performance requirements of these specifications and that all equipment will deliver the specified or required capacities.
5. The Owner reserves the right to make temporary or emergency repairs as necessary to keep equipment in operating condition without voiding the guarantee contained herein or relieving the Contractor of his responsibilities during the guarantee period.
6. Contractor shall be responsible for all damage to any part of the premises caused by leaks or break in pipe lines, fixtures or equipment furnished and installed under his contract for a period of two years after date of acceptance of the project by Owner. He shall replace in kind, at his own expense, any and all items so damaged to the complete satisfaction of the Owner.

END OF SECTION 230500

## SECTION 230513 - COMMON MOTOR REQUIREMENTS FOR HVAC EQUIPMENT

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes general requirements for single-phase and polyphase, general-purpose, horizontal, small and medium, squirrel-cage induction motors for use on ac power systems up to 600 V and installed at equipment manufacturer's factory or shipped separately by equipment manufacturer for field installation.

## 1.2 COORDINATION

- A. Coordinate features of motors, installed units, and accessory devices to be compatible with the following:
  1. Motor controllers.
  2. Torque, speed, and horsepower requirements of the load.
  3. Ratings and characteristics of supply circuit and required control sequence.
  4. Ambient and environmental conditions of installation location.

## PART 2 - PRODUCTS

## 2.1 GENERAL MOTOR REQUIREMENTS

- A. Comply with requirements in this Section except when stricter requirements are specified in HVAC equipment schedules or Sections.
- B. Comply with NEMA MG 1 unless otherwise indicated.

## 2.2 MOTOR CHARACTERISTICS

- A. Duty: Continuous duty at ambient temperature of 40 deg C and at altitude of 3300 feet above sea level.
- B. Capacity and Torque Characteristics: Sufficient to start, accelerate, and operate connected loads at designated speeds, at installed altitude and environment, with indicated operating sequence, and without exceeding nameplate ratings or considering service factor.

## 2.3 POLYPHASE MOTORS

- A. Description: NEMA MG 1, Design B, medium induction motor.
- B. Efficiency: Energy efficient, as defined in NEMA MG 1.

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- C. Service Factor: 1.15.
- D. Multispeed Motors: Variable torque.
  - 1. For motors with 2:1 speed ratio, consequent pole, single winding.
  - 2. For motors with other than 2:1 speed ratio, separate winding for each speed.
- E. Rotor: Random-wound, squirrel cage.
- F. Bearings: Regreasable, shielded, antifriction ball bearings suitable for radial and thrust loading.
- G. Temperature Rise: Match insulation rating.
- H. Insulation: Class F.
- I. Code Letter Designation:
  - 1. Motors 15 HP and Larger: NEMA starting Code F or Code G.
  - 2. Motors Smaller than 15 HP: Manufacturer's standard starting characteristic.
- J. Enclosure Material: Cast iron for motor frame sizes 324T and larger; rolled steel for motor frame sizes smaller than 324T.

#### 2.4 POLYPHASE MOTORS WITH ADDITIONAL REQUIREMENTS

- A. Motors Used with Reduced-Voltage and Multispeed Controllers: Match wiring connection requirements for controller with required motor leads. Provide terminals in motor terminal box, suited to control method.
- B. Motors Used with Variable Frequency Controllers: Ratings, characteristics, and features coordinated with and approved by controller manufacturer.
  - 1. Windings: Copper magnet wire with moisture-resistant insulation varnish, designed and tested to resist transient spikes, high frequencies, and short time rise pulses produced by pulse-width modulated inverters.
  - 2. Energy- and Premium-Efficient Motors: Class B temperature rise; Class F insulation.
  - 3. Inverter-Duty Motors: Class F temperature rise; Class H insulation.
  - 4. Thermal Protection: Comply with NEMA MG 1 requirements for thermally protected motors.
  - 5. Shaft Grounding:
    - a. Provide circumferential, conductive fiber shaft grounding ring (AEGIS SGR Bearing Protection Ring or approved equal) installed on the motor to discharge shaft currents to ground.
    - b. Bearing protection ring shall be suitable for installation on either the drive end or the non-drive end of the motor in accordance with the manufacturer's installation instructions.
    - c. Motors over 100 horsepower shall be provided with an insulated bearing on the non-drive end and a shaft grounding ring on the drive end of the motor.
    - d. Install a colloidal silver shaft coating to improve shaft conductivity at the shaft grounding ring location.

## 2.5 SINGLE-PHASE MOTORS

- A. Motors larger than 1/20 hp shall be one of the following, to suit starting torque and requirements of specific motor application:
  - 1. Permanent-split capacitor.
  - 2. Split phase.
  - 3. Capacitor start, inductor run.
  - 4. Capacitor start, capacitor run.
- B. Multispeed Motors: Variable-torque, permanent-split-capacitor type.
- C. Bearings: Prelubricated, antifriction ball bearings or sleeve bearings suitable for radial and thrust loading.
- D. Motors 1/20 HP and Smaller: Shaded-pole type.
- E. Thermal Protection: Internal protection to automatically open power supply circuit to motor when winding temperature exceeds a safe value calibrated to temperature rating of motor insulation. Thermal-protection device shall automatically reset when motor temperature returns to normal range.

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 230513

## SECTION 232113 - HYDRONIC PIPING

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. This Section includes pipe and fitting materials, joining methods, special-duty valves, and specialties for the following:
  - 1. Hot-water heating piping.
  - 2. Chilled-water piping.
  - 3. Makeup-water piping.
  - 4. Condensate-drain piping.
  - 5.
- B. See Division 23 Section "Hydronic Pumps" for pumps, motors, and accessories for hydronic piping.

## 1.2 PERFORMANCE REQUIREMENTS

- A. Hydronic piping components and installation shall be capable of withstanding the following minimum working pressure and temperature:
  - 1. Hot-Water Heating Piping: 300 psig at 200 deg F .
  - 2. Chilled-Water Piping: 300 psig at 200 deg F .
  - 3. Makeup-Water Piping: 80 psig at 150 deg F .
  - 4. Condensate-Drain Piping: 150 deg F .

## 1.3 SUBMITTALS

- A. Product Data: For each type of the following:
  - 1. Plastic pipe and fittings with solvent cement.
  - 2. Pressure-seal fittings.
  - 3. Valves. Include flow and pressure drop curves based on manufacturer's testing for calibrated-orifice balancing valves and automatic flow-control valves.
  - 4. Air control devices.
  - 5. Chemical treatment.
  - 6. Hydronic specialties.
- B. Field quality-control test reports.
- C. Operation and maintenance data.

## 1.4 QUALITY ASSURANCE

- A. ASME Compliance: Comply with ASME B31.9, "Building Services Piping," for materials, products, and installation. Safety valves and pressure vessels shall bear the appropriate ASME label. Fabricate and stamp air separators and expansion tanks to comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

## PART 2 - PRODUCTS

### 2.1 COPPER TUBE AND FITTINGS

- A. Drawn-Temper Copper Tubing: ASTM B 88, Type L , Type K .
- B. Annealed-Temper Copper Tubing: ASTM B 88, Type K .
- C. DWV Copper Tubing: ASTM B 306, Type DWV.
- D. Wrought-Copper Fittings: ASME B16.22.
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Anvil International, Inc.
    - b. S. P. Fittings; a division of Star Pipe Products.

### 2.2 STEEL PIPE AND FITTINGS

- A. Steel Pipe: ASTM A 53/A 53M, black steel with plain ends; type, grade, and wall thickness as indicated in Part 3 "Piping Applications" Article.
- B. Cast-Iron Threaded Fittings: ASME B16.4; Classes 125 and 250 as indicated in Part 3 "Piping Applications" Article.
- C. Malleable-Iron Threaded Fittings: ASME B16.3, Classes 150 and 300 as indicated in Part 3 "Piping Applications" Article.
- D. Malleable-Iron Unions: ASME B16.39; Classes 150, 250, and 300 as indicated in Part 3 "Piping Applications" Article.
- E. Cast-Iron Pipe Flanges and Flanged Fittings: ASME B16.1, Classes 25, 125, and 250; raised ground face, and bolt holes spot faced as indicated in Part 3 "Piping Applications" Article.
- F. Wrought Cast- and Forged-Steel Flanges and Flanged Fittings: ASME B16.5, including bolts, nuts, and gaskets of the following material group, end connections, and facings:
  - 1. Material Group: 1.1.
  - 2. End Connections: Butt welding.
  - 3. Facings: Raised face.



## 2.3 JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
  - 1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch (3.2-mm) maximum thickness unless thickness or specific material is indicated.
    - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
    - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
- B. Flange Bolts and Nuts: ASME B18.2.1, carbon steel, unless otherwise indicated.
- C. Solder Filler Metals: ASTM B 32, lead-free alloys. Include water-flushable flux according to ASTM B 813.
- D. Brazing Filler Metals: AWS A5.8, BCuP Series, copper-phosphorus alloys for joining copper with copper; or BAg-1, silver alloy for joining copper with bronze or steel.
- E. Gasket Material: Thickness, material, and type suitable for fluid to be handled and working temperatures and pressures.

## 2.4 DIELECTRIC FITTINGS

- A. General Requirements: Assembly of copper alloy and ferrous materials with separating nonconductive insulating material. Include end connections compatible with pipes to be joined.
- B. Dielectric Unions:
  - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Capitol Manufacturing Company.
    - b. Central Plastics Company.
    - c. Hart Industries International, Inc.
    - d. Jomar International Ltd.
    - e. Matco-Norca, Inc.
    - f. McDonald, A. Y. Mfg. Co.
    - g. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
    - h. Wilkins; a Zurn company.
  - 2. Description:
    - a. Standard: ASSE 1079.
    - b. Pressure Rating: 250 psig minimum at 180 deg F .
    - c. End Connections: Solder-joint copper alloy and threaded ferrous.

## 2.5 VALVES

- A. Gate, Globe, Check, Ball, and Butterfly Valves: Comply with requirements specified in Division 23 Section "General-Duty Valves for HVAC Piping."
- B. Automatic Temperature-Control Valves, Actuators, and Sensors: Comply with requirements specified in Division 23 Section "Instrumentation and Control for HVAC."
- C. Bronze, Calibrated-Orifice, Balancing Valves:
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Armstrong Pumps, Inc.
    - b. Bell & Gossett Domestic Pump; a division of ITT Industries.
    - c. Flow Design Inc.
    - d. Gerand Engineering Co.
    - e. Griswold Controls.
    - f. Taco.
    - g. Tour & Andersson; available through Victaulic Company.
  - 2. Body: Bronze, ball or plug type with calibrated orifice or venturi.
  - 3. Ball: Brass or stainless steel.
  - 4. Plug: Resin.
  - 5. Seat: PTFE.
  - 6. End Connections: Threaded or socket.
  - 7. Pressure Gage Connections: Integral seals for portable differential pressure meter.
  - 8. Handle Style: Lever, with memory stop to retain set position.
  - 9. CWP Rating: Minimum 125 psig .
  - 10. Maximum Operating Temperature: 250 deg F .
- D. Cast-Iron or Steel, Calibrated-Orifice, Balancing Valves:
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
    - a. Armstrong Pumps, Inc.
    - b. Bell & Gossett Domestic Pump; a division of ITT Industries.
    - c. Flow Design Inc.
    - d. Gerand Engineering Co.
    - e. Griswold Controls.
    - f. Taco.
  - 2. Body: Cast-iron or steel body, ball, plug, or globe pattern with calibrated orifice or venturi.
  - 3. Ball: Brass or stainless steel.
  - 4. Stem Seals: EPDM O-rings.
  - 5. Disc: Glass and carbon-filled PTFE.
  - 6. Seat: PTFE.

7. End Connections: Flanged or grooved.
8. Pressure Gage Connections: Integral seals for portable differential pressure meter.
9. Handle Style: Lever, with memory stop to retain set position.
10. CWP Rating: Minimum 125 psig .
11. Maximum Operating Temperature: 250 deg F .

E. Diaphragm-Operated, Pressure-Reducing Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Amtrol, Inc.
  - b. Armstrong Pumps, Inc.
  - c. Bell & Gossett Domestic Pump; a division of ITT Industries.
  - d. Conbraco Industries, Inc.
  - e. Spence Engineering Company, Inc.
  - f. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
2. Body: Bronze or brass.
3. Disc: Glass and carbon-filled PTFE.
4. Seat: Brass.
5. Stem Seals: EPDM O-rings.
6. Diaphragm: EPT.
7. Low inlet-pressure check valve.
8. Inlet Strainer: steel, removable without system shutdown.
9. Valve Seat and Stem: Noncorrosive.
10. Valve Size, Capacity, and Operating Pressure: Selected to suit system in which installed, with operating pressure and capacity factory set and field adjustable.

F. Diaphragm-Operated Safety Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Amtrol, Inc.
  - b. Armstrong Pumps, Inc.
  - c. Bell & Gossett Domestic Pump; a division of ITT Industries.
  - d. Conbraco Industries, Inc.
  - e. Spence Engineering Company, Inc.
  - f. Watts Regulator Co.; a division of Watts Water Technologies, Inc.
2. Body: Bronze or brass.
3. Disc: Glass and carbon-filled PTFE.
4. Seat: Brass.
5. Stem Seals: EPDM O-rings.
6. Diaphragm: EPT.
7. Wetted, Internal Work Parts: Brass and rubber.
8. Inlet Strainer: steel, removable without system shutdown.
9. Valve Seat and Stem: Noncorrosive.

10. Valve Size, Capacity, and Operating Pressure: Comply with ASME Boiler and Pressure Vessel Code: Section IV, and selected to suit system in which installed, with operating pressure and capacity factory set and field adjustable.

G. Automatic Flow-Control Valves:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - a. Flow Design Inc.
  - b. Griswold Controls.
2. Body: Brass or ferrous metal.
3. Piston and Spring Assembly: Stainless steel, tamper proof, self cleaning, and removable.
4. Combination Assemblies: Include bronze or brass-alloy ball valve.
5. Identification Tag: Marked with zone identification, valve number, and flow rate.
6. Size: Same as pipe in which installed.
7. Performance: Maintain constant flow, plus or minus 5 percent over system pressure fluctuations.
8. Minimum CWP Rating: 300 psig .
9. Maximum Operating Temperature: 250 deg F .

## 2.6 AIR CONTROL DEVICES

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Amtrol, Inc.
2. Armstrong Pumps, Inc.
3. Bell & Gossett Domestic Pump; a division of ITT Industries.
4. Taco.

B. Manual Air Vents:

1. Body: Bronze.
2. Internal Parts: Nonferrous.
3. Operator: Screwdriver or thumbscrew.
4. Inlet Connection: NPS 1/2 .
5. Discharge Connection: NPS 1/8 .
6. CWP Rating: 150 psig .
7. Maximum Operating Temperature: 225 deg F .

C. Expansion Tanks:

1. Tank: Welded steel, rated for 125-psig working pressure and 375 deg F maximum operating temperature, with taps in bottom of tank for tank fitting and taps in end of tank for gage glass. Tanks shall be factory tested with taps fabricated and labeled according to ASME Boiler and Pressure Vessel Code: Section VIII, Division 1.

2. Air-Control Tank Fitting: Cast-iron body, copper-plated tube, brass vent tube plug, and stainless-steel ball check, 100-gal. unit only; sized for compression-tank diameter. Provide tank fittings for 125-psig working pressure and 250 deg F maximum operating temperature.
3. Tank Drain Fitting: Brass body, nonferrous internal parts; 125-psig working pressure and 240 deg F maximum operating temperature; constructed to admit air to compression tank, drain water, and close off system.
4. Gage Glass: Full height with dual manual shutoff valves, 3/4-inch- diameter gage glass, and slotted-metal glass guard.

D. In-Line Air Separators:

1. Tank: One-piece cast iron with an integral weir constructed to decelerate system flow to maximize air separation.
2. Maximum Working Pressure: Up to 175 psig .
3. Maximum Operating Temperature: Up to 300 deg F .

## 2.7 CHEMICAL TREATMENT

A. Bypass Chemical Feeder: Welded steel construction; 125-psig working pressure; 5-gal. capacity; with fill funnel and inlet, outlet, and drain valves.

1. Chemicals: Specially formulated, based on analysis of makeup water, to prevent accumulation of scale and corrosion in piping and connected equipment.

B. Ethylene and Propylene Glycol: Industrial grade with corrosion inhibitors and environmental-stabilizer additives for mixing with water in systems indicated to contain antifreeze or glycol solutions.

## 2.8 HYDRONIC PIPING SPECIALTIES

A. Y-Pattern Strainers:

1. Body: ASTM A 126, Class B, cast iron with bolted cover and bottom drain connection.
2. End Connections: Threaded ends for NPS 2 and smaller; flanged ends for NPS 2-1/2 and larger.
3. Strainer Screen: 60-mesh startup strainer, and perforated stainless-steel basket with 50 percent free area.
4. CWP Rating: 125 psig .

B. Stainless-Steel Bellow, Flexible Connectors:

1. Body: Stainless-steel bellows with woven, flexible, bronze, wire-reinforcing protective jacket.
2. End Connections: Threaded or flanged to match equipment connected.
3. Performance: Capable of 3/4-inch misalignment.
4. CWP Rating: 150 psig .
5. Maximum Operating Temperature: 250 deg F .

- C. Expansion fittings are specified in Division 23 Section "Expansion Fittings and Loops for HVAC Piping."

## PART 3 - EXECUTION

### 3.1 PIPING APPLICATIONS

- A. Hot-water heating piping, aboveground, NPS 2.5 and smaller, shall be the following:
  - 1. Type L , drawn-temper copper tubing, wrought-copper fittings, and brazed joints.
- B. Hot-water heating piping, aboveground, NPS 3 and larger, shall be the following:
  - 1. Type L , drawn-temper copper tubing, wrought-copper fittings, and brazed joints.
- C. Chilled-water piping, aboveground, NPS 2.5 and smaller, shall be the following:
  - 1. Type L , drawn-temper copper tubing, wrought-copper fittings, and brazed joints.
- D. Chilled-water piping, aboveground, NPS 3 and larger, shall be the following:
  - 1. Schedule 40 steel pipe, wrought-steel fittings and wrought-cast or forged-steel flanges and flange fittings, and welded and flanged joints.
- E. Makeup-water piping installed aboveground shall be the following:
  - 1. Type L , drawn-temper copper tubing, wrought-copper fittings, and brazed joints.
- F. Condensate-Drain Piping: Type M , drawn-temper copper tubing, wrought-copper fittings, and soldered joints.

### 3.2 VALVE APPLICATIONS

- A. Install shutoff-duty valves at each branch connection to supply mains, and at supply connection to each piece of equipment.
- B. Install throttling-duty valves at each branch connection to return main.
- C. Install calibrated-orifice, balancing valves in the return pipe of each heating or cooling terminal.
- D. Install check valves at each pump discharge and elsewhere as required to control flow direction.
- E. Install safety valves at hot-water generators and elsewhere as required by ASME Boiler and Pressure Vessel Code. Install drip-pan elbow on safety-valve outlet and pipe without valves to the outdoors; and pipe drain to nearest floor drain or as indicated on Drawings. Comply with ASME Boiler and Pressure Vessel Code: Section VIII, Division 1, for installation requirements.
- F. Install pressure-reducing valves at makeup-water connection to regulate system fill pressure.

### 3.3 PIPING INSTALLATIONS

- A. Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Indicate piping locations and arrangements if such were used to size pipe and calculate friction loss, expansion, pump sizing, and other design considerations. Install piping as indicated unless deviations to layout are approved on Coordination Drawings.
- B. Install piping in concealed locations, unless otherwise indicated and except in equipment rooms and service areas.
- C. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- D. Install piping above accessible ceilings to allow sufficient space for ceiling panel removal.
- E. Install piping to permit valve servicing.
- F. Install piping at indicated slopes.
- G. Install piping free of sags and bends.
- H. Install fittings for changes in direction and branch connections.
- I. Install piping to allow application of insulation.
- J. Select system components with pressure rating equal to or greater than system operating pressure.
- K. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
- L. Install drains, consisting of a tee fitting, NPS 3/4 ball valve, and short NPS 3/4 threaded nipple with cap, at low points in piping system mains and elsewhere as required for system drainage.
- M. Install piping at a uniform grade of 0.2 percent upward in direction of flow.
- N. Reduce pipe sizes using eccentric reducer fitting installed with level side up.
- O. Install branch connections to mains using mechanically formed tee fittings in main pipe, with the branch connected to the bottom of the main pipe. For up-feed risers, connect the branch to the top of the main pipe.
- P. Install valves according to Division 23 Section "General-Duty Valves for HVAC Piping."
- Q. Install unions in piping, NPS 2 and smaller, adjacent to valves, at final connections of equipment, and elsewhere as indicated.
- R. Install flanges in piping, NPS 2-1/2 and larger, at final connections of equipment and elsewhere as indicated.

- S. Install strainers on inlet side of each control valve, pressure-reducing valve, solenoid valve, in-line pump, and elsewhere as indicated. Install NPS 3/4 nipple and ball valve in blowdown connection of strainers NPS 2 and larger. Match size of strainer blowoff connection for strainers smaller than NPS 2 .
- T. Install expansion loops, expansion joints, anchors, and pipe alignment guides as specified in Division 23 Section "Expansion Fittings and Loops for HVAC Piping."
- U. Identify piping as specified in Division 23 Section "Identification for HVAC Piping and Equipment."
- V. Install sleeves for piping penetrations of walls, ceilings, and floors. Comply with requirements for sleeves specified in Division 23 Section "Sleeves and Sleeve Seals for HVAC Piping."
- W. Install sleeve seals for piping penetrations of concrete walls and slabs. Comply with requirements for sleeve seals specified in Division 23 Section "Sleeves and Sleeve Seals for HVAC Piping."
- X. Install escutcheons for piping penetrations of walls, ceilings, and floors. Comply with requirements for escutcheons specified in Division 23 Section "Escutcheons for HVAC Piping."

### 3.4 HANGERS AND SUPPORTS

- A. Hanger, support, and anchor devices are specified in Division 23 Section "Hangers and Supports for HVAC Piping and Equipment." Comply with the following requirements for maximum spacing of supports.
- B. Seismic restraints are specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."
- C. Install the following pipe attachments:
  1. Adjustable steel clevis hangers for individual horizontal piping less than 20 feet (6 m) long.
  2. Adjustable roller hangers and spring hangers for individual horizontal piping 20 feet (6 m) or longer.
  3. Pipe Roller: MSS SP-58, Type 44 for multiple horizontal piping 20 feet (6 m) or longer, supported on a trapeze.
  4. Spring hangers to support vertical runs.
  5. Provide copper-clad hangers and supports for hangers and supports in direct contact with copper pipe.
  6. On plastic pipe, install pads or cushions on bearing surfaces to prevent hanger from scratching pipe.
- D. Install hangers for steel piping with the following maximum spacing and minimum rod sizes:
  1. NPS 3/4 : Maximum span, 7 feet ; minimum rod size, 1/4 inch .
  2. NPS 1 (DN 25): Maximum span, 7 feet (2.1 m); minimum rod size, 1/4 inch (6.4 mm).
  3. NPS 1-1/2 (DN 40): Maximum span, 9 feet (2.7 m); minimum rod size, 3/8 inch (10 mm).



4. NPS 2 (DN 50): Maximum span, 10 feet (3 m); minimum rod size, 3/8 inch (10 mm).
  5. NPS 2-1/2 (DN 65): Maximum span, 11 feet (3.4 m); minimum rod size, 3/8 inch (10 mm).
  6. NPS 3 (DN 80): Maximum span, 12 feet (3.7 m); minimum rod size, 3/8 inch (10 mm).
  7. NPS 4 (DN 100): Maximum span, 14 feet (4.3 m); minimum rod size, 1/2 inch (13 mm).
- E. Install hangers for drawn-temper copper piping with the following maximum spacing and minimum rod sizes:
1. NPS 3/4 (DN 20): Maximum span, 5 feet (1.5 m); minimum rod size, 1/4 inch (6.4 mm).
  2. NPS 1 (DN 25): Maximum span, 6 feet (1.8 m); minimum rod size, 1/4 inch (6.4 mm).
  3. NPS 1-1/2 (DN 40): Maximum span, 8 feet (2.4 m); minimum rod size, 3/8 inch (10 mm).
  4. NPS 2 (DN 50): Maximum span, 8 feet (2.4 m); minimum rod size, 3/8 inch (10 mm).
  5. NPS 2-1/2 (DN 65): Maximum span, 9 feet (2.7 m); minimum rod size, 3/8 inch (10 mm).
  6. NPS 3 (DN 80): Maximum span, 10 feet (3 m); minimum rod size, 3/8 inch (10 mm).
- F. Support vertical runs at roof, at each floor, and at 10-foot (3-m) intervals between floors.

### 3.5 PIPE JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 23 Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Brazed Joints: Construct joints according to AWS's "Brazing Handbook," "Pipe and Tube" Chapter, using copper-phosphorus brazing filler metal complying with AWS A5.8.
- E. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:
  1. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
  2. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.
- F. Flanged Joints: Select appropriate gasket material, size, type, and thickness for service application. Install gasket concentrically positioned. Use suitable lubricants on bolt threads.
- G. Mechanically Formed, Copper-Tube-Outlet Joints: Use manufacturer-recommended tool and procedure, and brazed joints.

### 3.6 HYDRONIC SPECIALTIES INSTALLATION

- A. Install manual air vents at high points in piping, at heat-transfer coils, and elsewhere as required for system air venting.
- B. Install piping from boiler air outlet, air separator, or air purger to expansion tank with a 2 percent upward slope toward tank.
- C. Install in-line air separators in pump suction. Install drain valve on air separators NPS 2 (DN 50) and larger.
- D. Install bypass chemical feeders in each hydronic system where indicated, in upright position with top of funnel not more than 48 inches above the floor. Install feeder in minimum NPS 3/4 bypass line, from main with full-size, full-port, ball valve in the main between bypass connections. Install NPS 3/4 pipe from chemical feeder drain, to nearest equipment drain and include a full-size, full-port, ball valve.
- E. Install expansion tanks above the air separator. Install tank fitting in tank bottom and charge tank. Use manual vent for initial fill to establish proper water level in tank.
  - 1. Install tank fittings that are shipped loose.
  - 2. Support tank from floor or structure above with sufficient strength to carry weight of tank, piping connections, fittings, plus tank full of water. Do not overload building components and structural members.

### 3.7 TERMINAL EQUIPMENT CONNECTIONS

- A. Sizes for supply and return piping connections shall be the same as or larger than equipment connections.
- B. Install control valves in accessible locations close to connected equipment.
- C. Install bypass piping with globe valve around control valve. If parallel control valves are installed, only one bypass is required.
- D. Install ports for pressure gages and thermometers at coil inlet and outlet connections according to Division 23 Section "Meters and Gages for HVAC Piping."

### 3.8 CHEMICAL TREATMENT

- A. Fill system with fresh water and add liquid alkaline compound with emulsifying agents and detergents to remove grease and petroleum products from piping. Circulate solution for a minimum of 24 hours, drain, clean strainer screens, and refill with fresh water.
- B. Add initial chemical treatment and maintain water quality in ranges noted above for the first year of operation.

### 3.9 FIELD QUALITY CONTROL

#### A. Prepare hydronic piping according to ASME B31.9 and as follows:

1. Leave joints, including welds, uninsulated and exposed for examination during test.
2. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
3. Flush hydronic piping systems with clean water; then remove and clean or replace strainer screens.
4. Isolate equipment from piping. If a valve is used to isolate equipment, its closure shall be capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
5. Install safety valve, set at a pressure no more than one-third higher than test pressure, to protect against damage by expanding liquid or other source of overpressure during test.

#### B. Perform the following tests on hydronic piping:

1. Use ambient temperature water as a testing medium unless there is risk of damage due to freezing. Another liquid that is safe for workers and compatible with piping may be used.
2. While filling system, use vents installed at high points of system to release air. Use drains installed at low points for complete draining of test liquid.
3. Isolate expansion tanks and determine that hydronic system is full of water.
4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the system's working pressure. Test pressure shall not exceed maximum pressure for any vessel, pump, valve, or other component in system under test. Verify that stress due to pressure at bottom of vertical runs does not exceed 90 percent of specified minimum yield strength or 1.7 times "SE" value in Appendix A in ASME B31.9, "Building Services Piping."
5. After hydrostatic test pressure has been applied for at least 10 minutes, examine piping, joints, and connections for leakage. Eliminate leaks by tightening, repairing, or replacing components, and repeat hydrostatic test until there are no leaks.
6. Prepare written report of testing.

#### C. Perform the following before operating the system:

1. Open manual valves fully.
2. Inspect pumps for proper rotation.
3. Set makeup pressure-reducing valves for required system pressure.
4. Inspect air vents at high points of system and determine if all are installed and operating freely (automatic type), or bleed air completely (manual type).
5. Set temperature controls so all coils are calling for full flow.
6. Inspect and set operating temperatures of hydronic equipment, such as boilers, chillers, to specified values.
7. Verify lubrication of motors and bearings.

END OF SECTION 232113

## SECTION 232123 - HYDRONIC PUMPS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes:
  - 1. Close-coupled, in-line centrifugal pumps.
  - 2. Close-coupled, end-suction centrifugal pumps.

## 1.2 ACTION SUBMITTALS

- A. Product Data: For each type of pump.
- B. Shop Drawings: For each pump.
  - 1. Show pump layout and connections.
  - 2. Include setting drawings with templates for installing foundation and anchor bolts and other anchorages.
  - 3. Include diagrams for power, signal, and control wiring.

## 1.3 CLOSEOUT SUBMITTALS

- A. Operation and maintenance data.

## PART 2 - PRODUCTS

## 2.1 CLOSE-COUPLED, IN-LINE CENTRIFUGAL PUMPS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Armstrong Pumps Inc.
  - 2. Grundfos Pumps Corporation.
  - 3. ITT Corporation; Bell & Gossett.
  - 4. PACO Pumps.
- B. Description: Factory-assembled and -tested, centrifugal, overhung-impeller, close-coupled, in-line pump as defined in HI 1.1-1.2 and HI 1.3; designed for installation with pump and motor shafts mounted horizontally or vertically.
- C. Pump Construction:

1. Casing: Radially split, cast iron, with threaded gage tappings at inlet and outlet[, replaceable bronze wear rings, and threaded companion-flange connections.
2. Impeller: ASTM B 584, cast bronze; statically and dynamically balanced, keyed to shaft, and secured with a locking cap screw. For constant-speed pumps, trim impeller to match specified performance.
3. Pump Shaft: Steel, with copper-alloy shaft sleeve.
4. Seal: Mechanical seal consisting of carbon rotating ring against a ceramic seat held by a stainless-steel spring, and Buna-N bellows and gasket. Include water slinger on shaft between motor and seal.
5. Seal: Packing seal consisting of stuffing box with a minimum of four rings of graphite-impregnated braided yarn with bronze lantern ring between center two graphite rings, and bronze packing gland.
6. Pump Bearings: Permanently lubricated ball bearings.

D. Motor: Single speed and rigidly mounted to pump casing.

1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."
  - a. Enclosure: Open, dripproof.
  - b. Enclosure Materials: Cast iron.
  - c. Motor Bearings: Permanently lubricated ball bearings.
  - d. Unusual Service Conditions:
    - 1) Ambient Temperature: 120 Deg F.
  - e. Efficiency: Premium efficient.

E. Capacities and Characteristics:

1. Capacity: As indicated on drawings.

## 2.2 CLOSE-COUPLED, END-SUCTION CENTRIFUGAL PUMPS

- A. Manufacturers: Subject to compliance with requirements available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  1. Armstrong Pumps Inc.
  2. ITT Corporation; Bell & Gossett.
  3. PACO Pumps.
- B. Description: Factory-assembled and -tested, centrifugal, overhung-impeller, close-coupled, end-suction pump as defined in HI 1.1-1.2 and HI 1.3; designed for installation with pump and motor shafts mounted horizontally.
- C. Pump Construction:

1. Casing: Radially split, cast iron, with replaceable bronze wear rings, drain plug at bottom and air vent at top of volute, threaded gage tappings at inlet and outlet, and threaded companion-flange connections.
2. Impeller: ASTM B 584, cast bronze; statically and dynamically balanced, keyed to shaft, and secured with a locking cap screw. For constant-speed pumps, trim impeller to match specified performance.
3. Pump Shaft: Steel, with copper-alloy shaft sleeve.
4. Mechanical Seal: Carbon rotating ring against a ceramic seat held by a stainless-steel spring, and Buna-N bellows and gasket. Include water slinger on shaft between motor and seal.
5. Pump Bearings: Permanently lubricated ball bearings.

D. Motor: Single speed and rigidly mounted to pump casing with integral pump support.

1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Comply with NEMA designation, temperature rating, service factor, and efficiency requirements for motors specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."
  - a. Enclosure: Open, dripproof.
  - b. Enclosure Materials: Cast iron.
  - c. Motor Bearings: Permanently lubricated ball bearings.
  - d. Unusual Service Conditions:
    - 1) Ambient Temperature: 120 deg F.
  - e. Efficiency: Premium efficient.
  - f. HOA (Hand /Off/Auto) switch to override controls

E. Capacities and Characteristics: As indicated in drawings.

## 2.3 PUMP SPECIALTY FITTINGS

A. Suction Diffuser:

1. Angle pattern.
2. 300-psig pressure rating, cast-iron body and end cap, pump-inlet fitting.
3. Bronze startup and bronze or stainless-steel permanent strainers.
4. Bronze or stainless-steel straightening vanes.
5. Drain plug.
6. Factory-fabricated support.

## PART 3 - EXECUTION

### 3.1 PUMP INSTALLATION

- A. Comply with HI 1.4.
- B. Install pumps to provide access for periodic maintenance including removing motors, impellers, couplings, and accessories.
- C. Independently support pumps and piping so weight of piping is not supported by pumps and weight of pumps is not supported by piping.
- D. Automatic Condensate Pump Units: Install units for collecting condensate and extend to open drain.
- E. Equipment Mounting: Install base-mounted pumps on cast-in-place concrete equipment bases.
  - 1. Coordinate sizes and locations of concrete bases with actual equipment provided.
  - 2. Construct bases to withstand, without damage to equipment, seismic force required by code.
  - 3. Construct concrete bases 4 inches high and extend base not less than 6 inches in all directions beyond the maximum dimensions of base-mounted pumps unless otherwise indicated or unless required for seismic-anchor support.
  - 4. Minimum Compressive Strength: 5000 psi at 28 days.
- F. Equipment Mounting: Install in-line pumps with continuous-thread hanger rods and elastomeric hangers of size required to support weight of in-line pumps.

### 3.2 ALIGNMENT

- A. Engage a factory-authorized service representative to perform alignment service.
- B. Comply with requirements in Hydronics Institute standards for alignment of pump and motor shaft. Add shims to the motor feet and bolt motor to base frame. Do not use grout between motor feet and base frame.
- C. Comply with pump and coupling manufacturers' written instructions.
- D. After alignment is correct, tighten foundation bolts evenly but not too firmly. Completely fill baseplate with nonshrink, nonmetallic grout while metal blocks and shims or wedges are in place. After grout has cured, fully tighten foundation bolts.

### 3.3 CONNECTIONS

- A. Comply with requirements for piping specified in Division 23 Section "Steam and Condensate Heating Piping." Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Where installing piping adjacent to pump, allow space for service and maintenance.

- C. Connect piping to pumps. Install valves that are same size as piping connected to pumps.
- D. Install suction and discharge pipe sizes equal to or greater than diameter of pump nozzles.
- E. Install check, shutoff, and throttling valves on discharge side of pumps.
- F. Install suction diffuser and shutoff valve on suction side of pumps.
- G. Install flexible connectors on suction and discharge sides of base-mounted pumps between pump casing and valves.
- H. Install pressure gages on pump suction and discharge or at integral pressure-gage tapping, or install single gage with multiple-input selector valve.
- I. Install check valve and gate or ball valve on each condensate pump unit discharge.

END OF SECTION 232123



## SECTION 235233 - WATER-TUBE BOILERS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. This Section includes packaged, factory-fabricated and -assembled, gas-fired, finned water-tube boilers, trim, and accessories for generating hot water.

## 1.2 SUBMITTALS

- A. Product Data: Include performance data, operating characteristics, furnished specialties, and accessories.
  - 1. Wiring Diagrams: Power, signal, and control wiring.
- B. Manufacturer Seismic Qualification Certification: Submit certification that boiler, accessories, and components will withstand seismic forces defined in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."
- C. Source quality-control test reports.
- D. Field quality-control test reports.
- E. Operation and maintenance data.
- F. Warranty: Special warranty specified in this Section.

## 1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. ASME Compliance: Fabricate and label boilers to comply with ASME Boiler and Pressure Vessel Code.
- C. ASHRAE/IESNA 90.1 Compliance: Boilers shall have minimum efficiency according to "Gas and Oil Fired Boilers - Minimum Efficiency Requirements."
- D. DOE Compliance: Minimum efficiency shall comply with 10 CFR 430, Subpart B, Appendix N, "Uniform Test Method for Measuring the Energy Consumption of Furnaces and Boilers."
- E. I=B=R Compliance: Boilers shall be tested and rated according to HI's "Rating Procedure for Heating Boilers" and "Testing Standard for Commercial Boilers," with I=B=R emblem on a nameplate affixed to boiler.

- F. Boilers shall be listed and labeled by a testing agency acceptable to authorities having jurisdiction.

#### 1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace heat exchangers damaged by thermal shock and vent dampers of boilers that fail in materials or workmanship within specified warranty period.
  1. Warranty Period for Heat Exchangers: 10 years from date of Substantial Completion.
  2. Warranty Period for Vent Dampers: Five years from date of Substantial Completion.
- B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace drums, tubes, headers, cabinets, atmospheric gas burners, and pressure vessels of boilers that fail in materials or workmanship within specified warranty period.
  1. Warranty Period for Drums, Tubes, Headers, Cabinets, and Atmospheric Gas Burner: Five years from date of Substantial Completion, pro rata.
  2. Warranty Period for Pressure Vessel: 20 years from date of Substantial Completion, for thermal shock.

### PART 2 - PRODUCTS

#### 2.1 FINNED WATER-TUBE BOILERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1.
  2. Laars Heating Systems; a division of Waterpik Technologies, Inc.
  3. Lochinvar Corporation.
  4. Raypak.
- B. Description: Factory-fabricated, -assembled, and -tested boiler with tubes sealed into headers pressure tight, and set on a steel base; including insulated jacket, flue-gas vent, combustion-air intake connections, water supply and return connections, and controls.
- C. Heat Exchanger:
  1. Finned copper tubing with stainless-steel baffles.
  2. Bronze headers.
  3. Multi-pass Tubes shall be sealed in header with silicone O-ring gaskets by mechanically rolling tubes in header.
- D. Combustion Chamber Internal Insulation: Interlocking panels of refractory insulation, high-temperature cements, mineral fiber, and ceramic refractory tile for service temperatures to 2000 deg F .
- E. Casing:

1. Jacket: Sheet metal, with snap-in or interlocking closures.
2. Control Compartment Enclosure: NEMA 250, Type 1A.
3. Finish: Powder coated.
4. Insulation: Minimum 1-inch thick, mineral-fiber insulation surrounding the heat exchanger.
5. Combustion-Air Connection: Inlet duct collar and sheet metal closure over burner compartment.
6. Mounting base to secure boiler with accessory for mounting on combustible surface.

F. Burner:

1. Burner Tubes and Orifices: Stainless steel, for natural gas. Mount burner tubes in a slide-out burner drawer for ease of inspection.
  - a. Sealed Combustion: Factory-mounted centrifugal fan to draw outside air into boiler and discharge into burner compartment.
  - b. Direct Vent: Factory-mounted centrifugal fan to draw flue gas out of boiler and discharge into boiler vent.
2. Vertical Burner:
  - a. High-temperature stainless steel to fire in a 360-degree pattern.
  - b. Burner shall have a viewing port for observation of burner operation and a factory-mounted centrifugal fan to supply outside air through a replaceable 99 percent efficient (1-micrometer particles) filter to boiler burner.
  - c. Fan shall be controlled to prepurge and postpurge the combustion chamber before firing.
3. Gas Train: Control devices and full-modulation control sequence shall comply with requirements in ASME CSD-1. In addition to these requirements, include shutoff cock, pressure regulator, and control valve.
4. Gas Train: Combination gas valve with manual shutoff, pressure regulator, and pilot adjustment.
5. Pilot: Intermittent-electric-spark pilot ignition with 100 percent main-valve and pilot-safety shutoff with electronic supervision of burner flame.
6. Flue-Gas Recirculation Fans: Centrifugal fans on burner assembly to recirculate flue gas to decrease oxides of nitrogen emissions to less than 30 ppm.
  - a. Motors: Comply with requirements specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."

G. Trim:

1. Aquastat Controllers: Operating, firing rate, and high limit.
2. Safety Relief Valve: ASME rated.
3. Pressure and Temperature Gage: Minimum 3-1/2-inch- (89-mm-) diameter, combination water-pressure and -temperature gage. Gages shall have operating-pressure and -temperature ranges so normal operating range is about 50 percent of full range.
4. Boiler Air Vent: Automatic.
5. Drain Valve: Minimum NPS 3/4 hose-end gate valve.

6. Circulation Pump: Non-overloading, in-line pump with split-capacitor motor having thermal-overload protection and lubricated bearings; designed to operate at specified boiler pressures and temperatures.

H. Controls:

1. Boiler operating controls shall include the following devices and features:
  - a. Control transformer.
  - b. Motorized Vent Damper: Interlocked with burner to open before burner starts. If damper fails to open, stop burner operation.
  - c. Set-Point Adjust: Set points shall be adjustable.
  - d. Sequence of Operation: Electric, factory-fabricated and field-installed panel to control burner firing rate to maintain space temperature in response to thermostat with heat anticipator located in heated space.
2. Burner Operating Controls: To maintain safe operating conditions, burner safety controls limit burner operation.
  - a. High Cutoff: [Automatic reset stops burner if operating conditions rise above maximum boiler design temperature.
  - b. Water Flow Switch: Automatic-reset paddle-switch shall prevent burner operation on low water flow.
  - c. Blocked Vent Safety Switch: Manual-reset switch factory mounted on draft diverter.
  - d. Rollout Safety Switch: Factory mounted on boiler combustion chamber.
  - e. Audible Alarm: Factory mounted on control panel with silence switch; shall sound alarm for above conditions.
3. Building Automation System Interface: Factory install hardware and software to enable building automation system to monitor, control, and display boiler status and alarms.
  - a. A communication interface with building automation system shall enable building automation system operator to remotely control and monitor the boiler from an operator workstation. Control features available, and monitoring points displayed, locally at boiler control panel shall be available through building automation system.
4. Operator Station Display: Indicate the following on operator workstation display terminal (minimum requirements):

- a. System graphic(s).
- b. Outside temperature.
- c. Boiler enable/disable indications.
- d. Operating Schedule
- e. Holiday/Special Event Schedule
- f. Boiler run status (gas firing).
- g. Boiler hot water setpoint.
- h. HHW pump on-off indication, run status, alarm, and speed (Hz and percentage) for each pump.
- i. HHW temperatures as indicated on the drawings.
- j. HHWS temperature set point.
- k. Integrated boiler points.
- l. All alarms.

## 2.2 ELECTRICAL POWER

- A. Controllers, Electrical Devices, and Wiring: Electrical devices and connections are specified in Division 26 Sections.
- B. Single-Point Field Power Connection: Factory-installed and -wired switches, motor controllers, transformers, and other electrical devices necessary shall provide a single-point field power connection to boiler.
  1. House in NEMA 250, Type 1 enclosure.
  2. Wiring shall be numbered and color-coded to match wiring diagram.
  3. Install factory wiring outside of an enclosure in a metal raceway.
  4. Field power interface shall be to fused disconnect switch.
  5. Provide branch power circuit to each motor and to controls with disconnect switch or circuit breaker.
  6. Provide each motor with overcurrent protection.

## 2.3 VENTING KITS

- A. Vent Damper: Motorized, UL listed for use on atmospheric burner boiler equipped with draft hood; motor to open and close damper; stainless-steel vent coupling and damper blade; keyed wiring harness connector plug; and dual-position switches to permit burner operation.
- B. Kit: Complete system, ASTM A 959, Type 29-4C stainless steel, pipe, vent terminal, thimble, indoor plate, vent adapter, condensate trap, and sealant.
- C. Combustion-Air Intake: Stainless steel, pipe, vent terminal with screen, inlet air coupling, and sealant.

## 2.4 CAPACITIES AND CHARACTERISTICS

- A. As indicated in drawings.

## PART 3 - EXECUTION

### 3.1 BOILER INSTALLATION

- A. Install boilers level on concrete base. Concrete base is specified in Division 23 Section "Common Work Results for HVAC," and concrete materials and installation requirements are specified in Division 03.
- B. Install gas-fired boilers according to NFPA 54.
- C. Assemble and install boiler trim.
- D. Install electrical devices furnished with boiler but not specified to be factory mounted.
- E. Install control wiring to field-mounted electrical devices.

### 3.2 CONNECTIONS

- A. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to boiler to allow service and maintenance.
- C. Connect gas piping to boiler gas-train inlet with union. Piping shall be at least full size of gas train connection. Provide a reducer if required.
- D. Connect hot-water piping to supply- and return-boiler tappings with shutoff valve and union or flange at each connection.
- E. Install piping from safety relief valves to nearest floor drain.
- F. Install piping from equipment drain connection to nearest floor drain. Piping shall be at least full size of connection. Provide an isolation valve if required.
- G. Boiler Flue Venting:
  - 1. Install venting kit and combustion-air intake.

### 3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections and prepare test reports.
  - 1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.
- B. Tests and Inspections:
  - 1. Perform installation and startup checks according to manufacturer's written instructions.

2. Leak Test: Hydrostatic test. Repair leaks and retest until no leaks exist.
  3. Operational Test: Start units to confirm proper motor rotation and unit operation. Adjust air-fuel ratio and combustion.
  4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
    - a. Check and adjust initial operating set points and high- and low-limit safety set points of fuel supply, water level, and water temperature.
    - b. Set field-adjustable switches and circuit-breaker trip ranges as indicated.
- C. Remove and replace malfunctioning units and retest as specified above.
- D. Occupancy Adjustments: When requested within 12 months of 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.

### 3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain boilers.

END OF SECTION 235233

## SECTION 236423 - SCROLL WATER CHILLERS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section Includes: Packaged, air-cooled, electric-motor-driven, scroll water chillers.

## 1.2 PERFORMANCE REQUIREMENTS

- A. Seismic Performance: Scroll water chillers shall withstand the effects of earthquake motions determined according to SEI/ASCE 7.
  - 1. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified and the unit will be fully operational after the seismic event."

## 1.3 SUBMITTALS

- A. Product Data: Include refrigerant, rated capacities, operating characteristics, furnished specialties, and accessories.
- B. Certificates: For certification required in "Quality Assurance" Article.
- C. Seismic Qualification Certificates: For water chillers, accessories, and components from manufacturers.
  - 1. Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation.
  - 2. Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
  - 3. Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
- D. Startup service reports.
- E. Operation and maintenance data.
- F. Warranty.

## 1.4 QUALITY ASSURANCE

- A. ARI Certification: Certify chiller according to ARI 590 certification program.
- B. ARI Rating: Rate water chiller performance according to requirements in ARI 550/590, "Water Chilling Packages Using the Vapor Compression Cycle."



- C. ASHRAE Compliance: ASHRAE 15 for safety code for mechanical refrigeration.
- D. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6 - "Heating, Ventilating, and Air-Conditioning."
- E. ASME Compliance: Fabricate and stamp water chiller heat exchangers to comply with ASME Boiler and Pressure Vessel Code.
- F. Comply with NFPA 70.

## 1.5 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of water chillers that fail in materials or workmanship within specified period.
  - 1. Compressor Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PACKAGED AIR-COOLED WATER CHILLERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Trane
  - 2. Carrier Corporation; a United Technologies company.
  - 3. York International Corporation.
- B. Description: Factory-assembled and run-tested water chiller complete with base and frame, condenser casing, compressors, compressor motors and motor controllers, evaporator, condenser coils, condenser fans and motors, electrical power, controls, and accessories.
- C. Fabricate base, frame, and attachment to water chiller components strong enough to resist movement during a seismic event when water chiller base is anchored to field support structure.
- D. Cabinet:
  - 1. Base: Galvanized-steel base extending the perimeter of water chiller. Secure frame, compressors, and evaporator to base to provide a single-piece unit.
  - 2. Frame: Rigid galvanized-steel frame secured to base and designed to support cabinet, condenser, control panel, and other chiller components not directly supported from base.
  - 3. Casing: Galvanized steel.
  - 4. Finish: Coat base, frame, and casing with a corrosion-resistant coating capable of withstanding a 2000-hour salt-spray test according to ASTM B 117.
  - 5. Sound-reduction package consisting of the following:
    - a. Acoustic enclosure around compressors.

- b. Reduced-speed fans with acoustic treatment.
  - c. Designed to reduce sound level without affecting performance.
6. Security Package: Provide security grilles with fasteners for additional protection of compressors, evaporator, and condenser coils. Grilles shall be coated for corrosion resistance and shall be removable for service access.
- E. Compressors:
- 1. Description: Positive-displacement direct drive with hermetically sealed casing.
  - 2. Each compressor provided with suction and discharge service valves, crankcase oil heater, and suction strainer.
  - 3. Operating Speed: Nominal 3600 rpm for 60-Hz applications.
  - 4. Capacity Control: On-off compressor cycling, two stage, plus hot-gas bypass.
  - 5. Oil Lubrication System: Automatic pump with strainer, sight glass, filling connection, filter with magnetic plug, and initial oil charge.
  - 6. Vibration Isolation: Mount individual compressors on vibration isolators.
- F. Compressor Motors:
- 1. Hermetically sealed and cooled by refrigerant suction gas.
  - 2. High-torque, two-pole induction type with inherent thermal-overload protection on each phase.
- G. Compressor Motor Controllers:
- 1. Across the Line: NEMA ICS 2, Class A, full voltage, nonreversing.
- H. Refrigeration:
- 1. Refrigerant: R-410a. Classified as Safety Group A1 according to ASHRAE 34.
  - 2. Refrigerant Compatibility: Parts exposed to refrigerants shall be fully compatible with refrigerants, and pressure components shall be rated for refrigerant pressures.
  - 3. Refrigerant Circuit: Each circuit shall include a thermal-expansion valve, refrigerant charging connections, a hot-gas muffler, compressor suction and discharge shutoff valves, a liquid-line shutoff valve, a replaceable-core filter-dryer, a sight glass with moisture indicator, a liquid-line solenoid valve, and an insulated suction line.
  - 4. Refrigerant Isolation: Factory install positive shutoff isolation valves in the compressor discharge line and the refrigerant liquid-line to allow the isolation and storage of the refrigerant charge in the chiller condenser.
- I. Evaporator:
- 1. Brazed-plate or shell-and-tube design, as indicated.
  - 2. Shell and Tube:
    - a. Description: Direct-expansion, shell-and-tube design with fluid flowing through the shell and refrigerant flowing through the tubes within the shell.
    - b. Code Compliance: Tested and stamped according to ASME Boiler and Pressure Vessel Code.
    - c. Shell Material: Carbon steel.

- d. Shell Heads: Removable carbon-steel heads with multipass baffles designed to ensure positive oil return and located at each end of the tube bundle.
  - e. Shell Nozzles: Fluid nozzles located along the side of the shell and terminated with mechanical-coupling end connections for connection to field piping.
  - f. Tube Construction: Individually replaceable copper tubes with enhanced fin design, expanded into tube sheets.
3. Brazed Plate:
- a. Direct-expansion, single-pass, brazed-plate design.
  - b. Type 316 stainless-steel construction.
  - c. Code Compliance: Tested and stamped according to ASME Boiler and Pressure Vessel Code.
  - d. Fluid Nozzles: Terminate with mechanical-coupling end connections for connection to field piping.
4. Heater: Factory-installed and -wired electric heater with integral controls designed to protect the evaporator to minus 20 deg F .
5. Remote Mounting: Designed for remote field mounting where indicated. Provide kit for field installation.
- J. Air-Cooled Condenser:
- 1. Plate-fin coil with integral subcooling on each circuit, rated at 450 psig (3103 kPa).
    - a. Construct coils of copper tubes mechanically bonded to copper with pre-coated epoxy-phenolic fins.
    - b. Coat coils with a baked epoxy corrosion-resistant coating after fabrication.
    - c. Hail Protection: Provide condenser coils with louvers, baffles, or hoods to protect against hail damage.
  - 2. Fans: Direct-drive propeller type with statically and dynamically balanced fan blades, arranged for vertical air discharge.
  - 3. Fan Motors: Totally enclosed nonventilating (TENV) or totally enclosed air over (TEAO) enclosure, with permanently lubricated bearings, and having built-in overcurrent- and thermal-overload protection.
  - 4. Fan Guards: Steel safety guards with corrosion-resistant coating.
- K. Electrical Power:
- 1. Factory-installed and -wired switches, motor controllers, transformers, and other electrical devices necessary shall provide a single-point field power connection to water chiller.
  - 2. House in a unit-mounted, NEMA 250, Type 3R enclosure with hinged access door with lock and key or padlock and key.
  - 3. Wiring shall be numbered and color-coded to match wiring diagram.
  - 4. Install factory wiring outside of an enclosure in a raceway.
  - 5. Field power interface shall be to NEMA KS 1, heavy-duty, nonfused disconnect switch.
  - 6. Provide branch power circuit to each motor and to controls with one of the following disconnecting means:

- a. NEMA KS 1, heavy-duty, fusible switch with rejection-type fuse clips rated for fuses. Select and size fuses to provide Type 2 protection according to IEC 60947-4-1.
  - b. NEMA KS 1, heavy-duty, nonfusible switch.
  - c. NEMA AB 1, motor-circuit protector (circuit breaker) with field-adjustable, short-circuit trip coordinated with motor locked-rotor amperes.
- 7. Provide each motor with overcurrent protection.
  - 8. Overload relay sized according to UL 1995, or an integral component of water chiller control microprocessor.
  - 9. Phase-Failure and Undervoltage: Solid-state sensing with adjustable settings.
  - 10. Provide power factor correction capacitors to correct power factor to 0.90 at full load.
  - 11. Transformer: Unit-mounted transformer with primary and secondary fuses and sized with enough capacity to operate electrical load plus spare capacity.
    - a. Power unit-mounted controls where indicated.
    - b. Power unit-mounted, ground fault interrupt (GFI) duplex receptacle.
  - 12. Control Relays: Auxiliary and adjustable time-delay relays.
  - 13. Indicate the following for water chiller electrical power supply:
    - a. Current, phase to phase, for all three phases.
    - b. Voltage, phase to phase and phase to neutral for all three phases.
    - c. Three-phase real power (kilowatts).
    - d. Three-phase reactive power (kilovolt amperes reactive).
    - e. Power factor.
    - f. Running log of total power versus time (kilowatt hours).
    - g. Fault log, with time and date of each.

L. Controls:

- 1. Stand-alone, microprocessor based.
- 2. Enclosure: Share enclosure with electrical power devices or provide a separate enclosure of matching construction.
- 3. Operator Interface: Keypad or pressure-sensitive touch screen. Multiple-character, backlit, liquid-crystal display or light-emitting diodes.
- 4. Operator Station Display : Indicate the following on operator workstation display terminal( minimum requirement:
  - a. Date and time.
  - b. Operating or alarm status.
  - c. Operating hours.
  - d. Holiday/special event schedule.
  - e. Outside-air temperature required for chilled-water reset.
  - f. Temperature and pressure of operating set points.
  - g. Entering and leaving temperatures of chilled water.
  - h. Refrigerant pressures in evaporator and condenser.
  - i. Saturation temperature in evaporator and condenser.
  - j. No cooling load condition.
  - k. Elapsed time meter (compressor run status).
  - l. Pump status.

- m. Antirecycling timer status.
  - n. Percent of maximum motor amperage.
  - o. Current-limit set point.
  - p. Number of compressor starts.
5. Control Functions:
- a. Manual or automatic startup and shutdown time schedule.
  - b. Entering and leaving chilled-water temperatures, control set points, and motor load limit. Chilled-water leaving temperature shall be reset based on outside-air temperature.
  - c. Current limit and demand limit.
  - d. External water chiller emergency stop.
  - e. Antirecycling timer.
  - f. Automatic lead-lag switching.
6. Manual-Reset Safety Controls: The following conditions shall shut down water chiller and require manual reset:
- a. Low evaporator pressure or high condenser pressure.
  - b. Low chilled-water temperature.
  - c. Refrigerant high pressure.
  - d. High or low oil pressure.
  - e. High oil temperature.
  - f. Loss of chilled-water flow.
  - g. Control device failure.
- 7.
- M. Insulation:
- 1. Material: Closed-cell, flexible elastomeric, thermal insulation complying with ASTM C 534, Type I, for tubular materials and Type II, for sheet materials.
  - 2. Thickness: 3/4 inch .
  - 3. Factory-applied insulation over cold surfaces of water chiller components.
    - a. Adhesive: As recommended by insulation manufacturer and applied to 100 percent of insulation contact surface. Seal seams and joints.
  - 4. Apply protective coating to exposed surfaces of insulation.
- N. Accessories:
- 1. Factory-furnished, chilled- water flow switches for field installation.
  - 2. Individual compressor suction and discharge pressure gages with shutoff valves for each refrigeration circuit.
  - 3. Factory-furnished neoprene or spring isolators for field installation.
- O. Capacities and Characteristics:
- 1. As indicated in drawings..

## 2.2 SOURCE QUALITY CONTROL

- A. Perform functional test of water chillers before shipping.
- B. Factory test and inspect evaporator according to ASME Boiler and Pressure Vessel Code: Section VIII, Division 1. Stamp with ASME label.
- C. For water chillers located outdoors, rate sound power level according to ARI 370 procedure.

## PART 3 - EXECUTION

### 3.1 WATER CHILLER INSTALLATION

- A. Install water chillers on support structure indicated.
- B. Equipment Mounting: Install water chiller on concrete bases using elastomeric pads.
  1. Minimum Deflection: 1/4 inch .
  2. Install dowel rods to connect concrete base to concrete floor. Unless otherwise indicated, install dowel rods on 18-inch (450-mm) centers around the full perimeter of concrete base.
  3. For supported equipment, install epoxy-coated anchor bolts that extend through concrete base and anchor into structural concrete floor.
  4. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
  5. Install anchor bolts to elevations required for proper attachment to supported equipment.
- C. Maintain manufacturer's recommended clearances for service and maintenance.
- D. Charge water chiller with refrigerant if not factory charged and fill with oil if not factory installed.
- E. Install separate devices furnished by manufacturer and not factory installed.

### 3.2 CONNECTIONS

- A. Comply with requirements in Division 23 Section "Hydronic Piping" Drawings indicate general arrangement of piping, fittings, and specialties.
- B. Install piping adjacent to chiller to allow service and maintenance.
- C. Evaporator Fluid Connections: Connect to evaporator inlet with shutoff valve, strainer, flexible connector, thermometer, and plugged tee with pressure gage. Connect to evaporator outlet with shutoff valve, balancing valve, flexible connector, flow switch, thermometer, plugged tee with pressure gage, flow meter, and drain connection with valve. Make connections to water chiller with a union, flange, or mechanical coupling.
- D. Connect each drain connection with a union and drain pipe and extend pipe, full size of connection, to floor drain. Provide a shutoff valve at each connection if required.

### 3.3 STARTUP SERVICE

- A. Engage a factory-authorized service representative to perform startup service.
- B. Inspect field-assembled components, equipment installation, and piping and electrical connections for proper assemblies, installations, and connections.
- C. Complete installation and startup checks according to manufacturer's written instructions and perform the following:
  - 1. Verify that refrigerant charge is sufficient and water chiller has been leak tested.
  - 2. Verify that pumps are installed and functional.
  - 3. Verify that thermometers and gages are installed.
  - 4. Operate water chiller for run-in period.
  - 5. Check bearing lubrication and oil levels.
  - 6. Verify proper motor rotation.
  - 7. Verify static deflection of vibration isolators, including deflection during water chiller startup and shutdown.
  - 8. Verify and record performance of chilled-water flow and low-temperature interlocks.
  - 9. Verify and record performance of water chiller protection devices.
  - 10. Test and adjust controls and safeties. Replace damaged or malfunctioning controls and equipment.
- D. Prepare a written startup report that records results of tests and inspections.

END OF SECTION 236423

## SECTION 238126 - SPLIT-SYSTEM AIR-CONDITIONERS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Section includes split-system air-conditioning and heat-pump units consisting of separate evaporator-fan and compressor-condenser components.

## 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include plans, elevations, sections, details, and attachments to other work.
  - 1. Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
- C. Operation and maintenance data.
- D. Warranty: Sample of special warranty.

## 1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. ASHRAE Compliance:
  - 1. Fabricate and label refrigeration system to comply with ASHRAE 15, "Safety Standard for Refrigeration Systems."
  - 2. Applicable requirements in ASHRAE 62.1-2004, Section 4 - "Outdoor Air Quality," Section 5 - "Systems and Equipment," Section 6 - "Procedures," and Section 7 - "Construction and System Start-Up."
- C. ASHRAE/IESNA Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004.

## 1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of split-system air-conditioning units that fail in materials or workmanship within specified warranty period.
  - 1. Warranty Period:



- a. For Compressor: Five year(s) from date of Substantial Completion.
- b. For Parts: Five year(s) from date of Substantial Completion.
- c. For Labor: Five year(s) from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
  - 1. Carrier Corporation; Home Comfort and HVAC Building & Industrial Systems.
  - 2. Lennox International Inc.
  - 3. Trane; a business of American Standard companies.
  - 4. YORK; a Johnson Controls company.

### 2.2 INDOOR UNITS

- A. Concealed Evaporator-Fan Components:
  - 1. Chassis: Galvanized steel with flanged edges, removable panels for servicing, and insulation on back of panel. Provide powder coated paint and oven baked panels for exterior installation.
  - 2. Insulation: Faced, glass-fiber duct liner.
  - 3. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and thermal-expansion valve. Comply with ARI 210/240.
  - 4. Fan: Forward-curved, double-width wheel of galvanized steel; directly connected to motor.
  - 5. Fan Motors:
    - a. Comply with NEMA designation, temperature rating, service factor, enclosure type, and efficiency requirements specified in Division 23 Section "Common Motor Requirements for HVAC Equipment."
    - b. Multitapped, multispeed with internal thermal protection and permanent lubrication.
    - c. Wiring Terminations: Connect motor to chassis wiring with plug connection.
  - 6. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.
  - 7. Filters: Permanent, cleanable.
  - 8. Condensate Drain Pans:
    - a. Fabricated with two percent slope in at least two planes to collect condensate from cooling coils (including coil piping connections, coil headers, and return bends) and humidifiers, and to direct water toward drain connection.
      - 1) Length: Extend drain pan downstream from leaving face to comply with ASHRAE 62.1-2004.

- 2) Depth: A minimum of 2 inches deep.
- b. Single-wall, galvanized-steel sheet.
- c. Drain Connection: Located at lowest point of pan and sized to prevent overflow. Terminate with threaded nipple on both ends of pan.
  - 1) Minimum Connection Size: NPS 2 .
- d. Pan-Top Surface Coating: Asphaltic waterproofing compound.
- e. Units with stacked coils shall have an intermediate drain pan to collect condensate from top coil.

## 2.3 OUTDOOR UNITS

### A. Air-Cooled, Compressor-Condenser Components:

- 1. Casing: Steel, finished with baked enamel in color selected by Architect, with removable panels for access to controls, weep holes for water drainage, and mounting holes in base. Provide brass service valves, fittings, and gage ports on exterior of casing.
- 2. Compressor: Hermetically sealed with crankcase heater and mounted on vibration isolation device. Compressor motor shall have thermal- and current-sensitive overload devices, start capacitor, relay, and contactor.
  - a. Compressor Type: Scroll.
  - b. Two-speed compressor motor with manual-reset high-pressure switch and automatic-reset low-pressure switch.
  - c. Refrigerant Charge: R-410A.
  - d. Refrigerant Coil: Copper tube, with mechanically bonded aluminum fins and liquid subcooler. Comply with ARI 210/240.
- 3. Heat-Pump Components: Reversing valve and low-temperature-air cutoff thermostat.
- 4. Fan: Aluminum-propeller type, directly connected to motor.
- 5. Motor: Permanently lubricated, with integral thermal-overload protection.
- 6. Low Ambient Kit: Permits operation down to 45 deg F .
- 7. Mounting Base: Polyethylene.

## 2.4 ACCESSORIES

- A. Thermostat: Low voltage with subbase to control compressor and evaporator fan.
- B. Thermostat: Wireless infrared functioning to remotely control compressor and evaporator fan, with the following features:
  - 1. Compressor time delay.
  - 2. 24-hour time control of system stop and start.
  - 3. Liquid-crystal display indicating temperature, set-point temperature, time setting, operating mode, and fan speed.
  - 4. Fan-speed selection including auto setting.

- C. Automatic-reset timer to prevent rapid cycling of compressor.
- D. Refrigerant Line Kits: Soft-annealed copper suction and liquid lines factory cleaned, dried, pressurized, and sealed; factory-insulated suction line with flared fittings at both ends.
- E. Drain Hose: For condensate.
- F. Economizer Mixing Plenum: for units over 4.5 tons nominal. Provide a stainless steel mixing box with control dampers.
- G. Additional Monitoring:
  - 1. Monitor constant and variable motor loads.
  - 2. Monitor variable-frequency-drive operation.
  - 3. Monitor economizer cycle.
  - 4. Monitor cooling load.
  - 5. Monitor air distribution static pressure and ventilation air volumes.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install units level and plumb.
- B. Install evaporator-fan components using manufacturer's standard mounting devices securely fastened to building structure.
- C. Install ground-mounted, compressor-condenser components on 4-inch- thick, reinforced concrete base that is 4 inches larger, on each side, than unit.
- D. Install ground-mounted, compressor-condenser components on polyethylene mounting base.
- E. Install roof-mounted, compressor-condenser components on equipment supports specified in Division 07 Section "Roof Accessories." Anchor units to supports with removable, cadmium-plated fasteners.
- F. Install seismic restraints.
- G. Install and connect precharged refrigerant tubing to component's quick-connect fittings. Install tubing to allow access to unit.

### 3.2 CONNECTIONS

- A. Where piping is installed adjacent to unit, allow space for service and maintenance of unit.

### 3.3 FIELD QUALITY CONTROL

- A. Perform tests and inspections.

1. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

B. Tests and Inspections:

1. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
2. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

C. Remove and replace malfunctioning units and retest as specified above.

D. Prepare test and inspection reports.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain units.

END OF SECTION 238126

## SECTION 238219 - FAN COIL UNITS

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. This Section includes fan-coil units and accessories.

## 1.2 SUBMITTALS

- A. Product Data: Include rated capacities, operating characteristics, furnished specialties, and accessories.
- B. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
  - 1. Wiring Diagrams: Power, signal, and control wiring.
- C. Field quality-control test reports.
- D. Operation and maintenance data.

## 1.3 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. ASHRAE Compliance: Applicable requirements in ASHRAE 62.1-2004, Section 5 - "Systems and Equipment" and Section 7 - "Construction and Startup."
- C. ASHRAE/IESNA 90.1-2004 Compliance: Applicable requirements in ASHRAE/IESNA 90.1-2004, Section 6 - "Heating, Ventilating, and Air-Conditioning."

## PART 2 - PRODUCTS

## 2.1 MANUFACTURERS

- A. In the Fan-Coil-Unit Schedule where titles below are column or row headings that introduce lists, the following requirements apply to product selection:
  - 1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

2. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.
3. Basis-of-Design Product: The design for each fan-coil unit is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

## 2.2 DUCTED FAN-COIL UNITS

- A. Description: Factory-packaged and -tested units rated according to ARI 440, ASHRAE 33, and UL 1995.
- B. Coil Section Insulation: 1-inch thick coated glass fiber complying with ASTM C 1071 and attached with adhesive complying with ASTM C 916.
  1. Fire-Hazard Classification: Insulation and adhesive shall have a combined maximum flame-spread index of 25 and smoke-developed index of 50 when tested according to ASTM E 84.
  2. Airstream Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2004.
- C. Drain Pans: Stainless steel. Fabricate pans and drain connections to comply with ASHRAE 62.1-2004.
- D. Chassis: Galvanized steel where exposed to moisture, with baked-enamel finish and removable access panels.
- E. Cabinets: Steel with baked-enamel finish in manufacturer's standard paint color.
  1. Supply-Air Plenum: Stainless steel plenum finished and insulated to match the chassis .
  2. Return-Air Plenum: Stainless steel s plenum finished to match the chassis.
  3. Mixing Plenum: Stainless steel plenum finished and insulated to match the chassis with outdoor- and return-air, formed-steel dampers.
  4. Dampers: Galvanized steel with extruded-vinyl blade seals, flexible-metal jamb seals, and interlocking linkage.
- F. Filters: Minimum arrestance according to ASHRAE 52.1, and a minimum efficiency reporting value (MERV) according to ASHRAE 52.2.
  1. Pleated Cotton-Polyester Media: 90 percent arrestance and 7 MERV.
- G. Hydronic Coils: Copper tube, with mechanically bonded aluminum fins spaced no closer than 0.1 inch (2.5 mm), rated for a minimum working pressure of 200 psig (1378 kPa) and a maximum entering-water temperature of 220 deg F (104 deg C). Include manual air vent and drain.
- H. Belt-Driven Fans: Double width, forward curved, centrifugal; with permanently lubricated, single-speed motor installed on an adjustable fan base resiliently mounted in the cabinet. Aluminum or painted-steel wheels, and painted-steel or galvanized-steel fan scrolls.
  1. Motors: Comply with requirements in Division 23 Section "Common Motor Requirements for HVAC Equipment."

- I. Factory, Hydronic Piping Package: ASTM B 88, Type L copper tube with wrought-copper fittings and brazed joints. Label piping to indicate service, inlet, and outlet.

1. Modulating control valve for chilled-water coil.
2. Modulating control valve for heating coil.
3. Hose Kits: Minimum 400-psig working pressure, and operating temperatures from 33 to 211 deg F . Tag hose kits to equipment designations.
  - a. Length: 24 inches .
  - b. Minimum Diameter: Equal to fan-coil-unit connection size.
4. Three-Piece Ball Valves: Bronze body with full-port, chrome-plated bronze ball; PTFE or TFE seats; and 600-psig minimum CWP rating and blowout-proof stem.
5. Calibrated-Orifice Balancing Valves: Bronze body, ball type; 125-psig working pressure, 250 deg F maximum operating temperature; with calibrated orifice or venturi, connections for portable differential pressure meter with integral seals, threaded ends, and equipped with a memory stop to retain set position.
6. Automatic Flow-Control Valve: Brass or ferrous-metal body; 300-psig working pressure at 250 deg F ; with removable, corrosion-resistant, tamperproof, self-cleaning piston spring; factory set to maintain constant indicated flow with plus or minus 10 percent over differential pressure range of 2 to 80 psig .
7. Y-Pattern Hydronic Strainers: Cast-iron body (ASTM A 126, Class B); 125-psig working pressure, with threaded connections, bolted cover, perforated stainless-steel basket, and bottom drain connection. Include minimum NPS 1/2 hose-end, full-port, ball-type blowdown valve in drain connection.
8. Wrought-Copper Unions: ASME B16.22.

J. Basic Unit Controls:

1. Control voltage transformer.
2. Wall-mounting temperature sensor.
3. Unoccupied-period-override push button.
4. Data entry and access port.
  - a. Input data includes room temperature set points and occupied and unoccupied periods.
  - b. Output data includes room temperature, supply-air temperature, entering-water temperature, operating mode, and status.

K. DDC Terminal Controller:

1. Scheduled Operation: Occupied and unoccupied periods on seven-day clock with a minimum of four programmable periods per day.
2. Unoccupied Period Override Operation: Two hours.
3. Unit Supply-Air Fan Operation:
  - a. Occupied Periods: Fan runs continuously.
  - b. Unoccupied Periods: Fan cycles to maintain room setback temperature.
4. Hydronic-Cooling-Coil Operation:

- a. Occupied Periods: Modulate control valve to maintain room temperature.
  - b. Unoccupied Periods: Close control valve.
5. Heating-Coil Operation:
- a. Occupied Periods: Modulate control valve to provide heating if room temperature falls below thermostat set point.
  - b. Unoccupied Periods: Start fan and modulate control valve if room temperature falls below setback temperature.
6. Outdoor-Air Damper Operation:
- a. Occupied Periods:
    - 1) Outdoor-Air Temperature below Room Temperature: If room temperature is above room-temperature set point, modulate outdoor- and return-air dampers to maintain room-temperature set point (outdoor-air economizer). If room temperature is below set point, position damper to fixed minimum setting.
    - 2) Outdoor-Air Temperature above Room Temperature: Position damper to fixed minimum position for 25 percent outdoor air.
  - b. Unoccupied Periods: Close outdoor-air damper and open return-air damper.
7. Controller shall have volatile-memory backup.
- L. Operator Station Display: Indicate the following on operator workstation display terminal (minimum requirements):
- 1. System graphic(s).
  - 2. Operating Hours
  - 3. Holiday/Special Event Schedule.
  - 4. Outside air temperature and humidity.
  - 5. Supply fan on-off indication, run status, alarms.
  - 6. Supply temperature setpoint and reset range
  - 7. Filter Status
  - 8. Air temperature sensors.
  - 9. CHW and HHW Control-valve positions.
  - 10. Economizer positions.
  - 11. CO<sub>2</sub> level (where required by code)
  - 12. Smoke detector(s) status. (where required by code)
  - 13. All alarms.
- M. Electrical Connection: Factory wire motors and controls for a single electrical connection.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Install fan-coil units to comply with NFPA 90A.



- B. Suspend fan-coil units from structure with elastomeric hangers. Vibration isolators are specified in Division 23 Section "Vibration and Seismic Controls for HVAC Piping and Equipment."
- C. Verify locations of thermostats and other exposed control sensors with Drawings and room details before installation. Install devices 48 inches above finished floor.
- D. Install new filters in each fan-coil unit within two weeks after Substantial Completion.
- E. Piping installation requirements are specified in other Division 23 Sections. Drawings indicate general arrangement of piping, fittings, and specialties. Specific connection requirements are as follows:
  - 1. Install piping adjacent to machine to allow service and maintenance.
  - 2. Connect piping to fan-coil-unit factory hydronic piping package. Install piping package if shipped loose.
  - 3. Connect condensate drain to indirect waste.
    - a. Install condensate trap of adequate depth to seal against the pressure of fan. Install cleanouts in piping at changes of direction.
- F. Connect supply and return ducts to fan-coil units with flexible duct connectors specified in Division 23 Section "Air Duct Accessories." Comply with safety requirements in UL 1995 for duct connections.

### 3.2 FIELD QUALITY CONTROL

- A. Perform the following field tests and inspections and prepare test reports:
  - 1. Operational Test: After electrical circuitry has been energized, start units to confirm proper motor rotation and unit operation.
  - 2. Operate electric heating elements through each stage to verify proper operation and electrical connections.
  - 3. Test and adjust controls and safety devices. Replace damaged and malfunctioning controls and equipment.
- B. Remove and replace malfunctioning units and retest as specified above.

END OF SECTION 238219

## **Facilities Division Construction Standards and Specifications**

### **Division 16 Electrical**

#### **PART 1**

##### **1 P.V.C.**

- 1.1.1 All conduits in the ground will be P.V.C. schedule #40, (minimum) 3/4 inch or larger in diameter.
- 1.1.2 All P.V.C. will be buried below ground level and NEVER be in a concrete slab or concrete floor.
- 1.1.2 All stub-ups in P.V.C. will be changed to E.M.T. in walls. Exceptions are outside block walls can be P.V.C. No flexible conduit will be used.

##### **1.2 E.M.T. Conduit**

- 1.2.1 All wiring inside the building will be in E.M.T. conduit.
- 1.2.2 All E.M.T. connector, coupling, and other fittings will be non- cast steel compression type.
- 1.2.3 No BX or MC cables allowed.

##### **1.3 Rigid Conduit**

- 1.3.1 All conduit exposed on salt air to be PVC coated.
- 1.3.2 All conduits exposed below 4 feet of finish grade on walls shall be rigid conduit.

##### **1.4 Flexible Steel Conduit**

- 1.4.1 Only on motor connection and fixture tails, not over 6 feet in length.

##### **1.5 Boxes**

- 1.5.1 Any exposed wiring device box will be cast iron only. No cast aluminum.
- 1.5.2 Any exposed light fixture junction boxes will be cast iron only. No cast aluminum.
- 1.5.3 All outdoor outlets will be installed in a recessed stainless steel box with a flush, lockable cover with a 20 amp G.F.C.I. receptacle and on a separate circuit. For gazebos and outside public areas.
- 1.5.4 Inside wiring device boxes and junction boxes will be at least 4" square by 1 1/8 inch deep.
- 1.5.5 Electrical, phone, and data floor boxes will be brass type (RFB style Walker) with tamper – proof screw cap only. All brass covers will be flush with the floor. Floor monuments are not acceptable.
- 1.5.6 Flat wiring will not be used.

##### **Wire**

- 1.6.1 All wiring will be stranded, copper THHN type, including all #12 A.W. wire.
- 1.6.2 Minimum wiring size will be #12 A.W.G. stranded.
- 1.6.3 One neutral for every one circuit pulled. No sharing on neutral wires anywhere.

##### **Marking and Names Plates:**

- 1.7.1 Name plates: Furnish and install a minimum size of 1" high and 3" wide by 3/32" thick matte white (for normal power) and red (for emergency power) laminated phenolic nameplates with 1/4" white characters engraved in the plastic for all items of electrical equipment including, but not limited to switchboards, panel boards, automatic transfer switches, motor control centers, feeder circuit breakers, relays, time switches, disconnect switches, exposed pull or junction boxes, and all control equipment. Name plates will be attached with 2 cadmium-plated screws. Adhesive attachment will not be acceptable. Punch strip tape type name plates with card holders in any form are prohibited.

- 1.7.2 Provide wire marker on each conductor in electrical panel pull box, outlet, and junction box. This includes all disconnects a connections. \*If more than one neutral conductor is present, mark each related circuit and panel number.
- 1.7.3 Label outside of all cover plates of wiring devices and junction boxes with circuit and panel number. Each branch circuit device cover plate will be labeled (engraved or silk screen) to indicate the branch circuit and panel number. Devices will include, but not be limited to, the following: toggle switches, dimmer switches and receptacle.

**Grounding:**

- 1.8.1 All raceways will include a full size green insulated ground wire terminated at each outlet box, device enclosure, etc. and connected back at the panel boards, switchboard or cabinet on the appropriate ground bus.
- 1.8.2 The green insulated ground (bond) wire will be spliced together within the outlet box. A green insulated bonding jumper will be provided from the splice to the box body. Attachment to the box body will be provided using a tapped #10-32 x 3/8" screw minimum. A green insulated bonding jumper will be provided from the splice to the receptacle ground screw even with self-grounding receptacles. Devices and Cover Plates
- 1.9.1 Wall switches - 20 AMP 120v/277v Industrial Type Specify:
  - a. Hubbell: HBL 1221 or equal.
  - b. Decorator Type: Hubbell DS 120-20 amp
- 1.9.2 Duplex Receptacle 20 AMP 120v/277v Industrial Type Specify:
  - a. Hubbell - (20 AMP) # HBL 5362 or equal.
  - b. Decorator Type DR 20DR
- 1.9.3 All devices are to have clamp style side/ back connections for stranded wire only. All receptacles shall be pigtailed out so only one Color wire, a neutral wire, and a ground wire is connected to the back of the receptacles.
- 1.9.4 All receptacles and switches on emergency power will be RED.
- 1.9.5 All receptacles in public areas shall be tamper-proof.
  - a. Hubbell - HBL 8300SGA
  - b. Decorator Type DR20TR

## Tierrasanta Recreation Center –Roof Requirements

### Additive Alternate #1: Roof Opening Fall Protection:

- During construction, Contractor shall install temporary fall protection at all roof openings, and warning signs.
- Contractor shall install galvanized steel Cal-OSHA compliant permanent fall protection heavy duty grating on all rooftop openings.

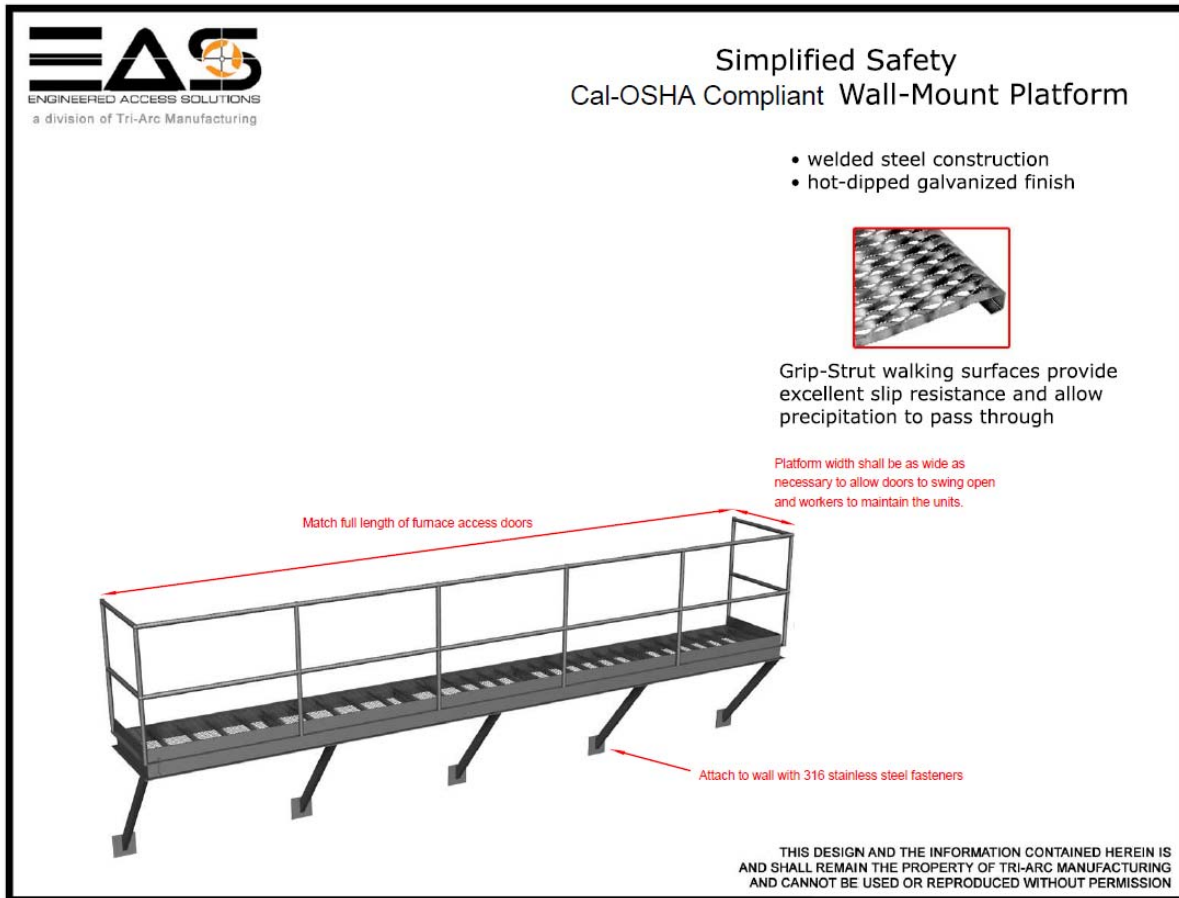


Install permanent fall protection grating on all rooftop openings.



Additive Alternate #2: Wall-mounted Platform:

- Contractor shall install Cal-OSHA compliant galvanized steel wall-mounted equipment access platform manufactured by Engineering Access Solutions (EAS) or equivalent.
- Installation of the wall-mounted platform shall be the full length of the utilities access doors.
- Mount the platform into the concrete wall at a height to be determined by the Resident Engineer.
- Work platform shall be designed so that maintenance personnel can bring their own portable extension ladder to gain access to the work platform. Wall platform shall have a Cal-OSHA gated opening to accommodate the extension ladder.





Wall-mounted platform to be full length of utilities access doors.



Install wall-mounted platform equivalent to EAS specifications.



Tierrasanta Recreation Center Roof Replacement markup plan

Where overflow relief scuppers do not exist, core drill and install new overflow relief scuppers next to all existing scuppers.

Note: all new improvements are shown in red text. This markup plan shall be used in conjunction with all other specifications in the RFP.

Install PVC safety yellow perimeter warning line 6' from roof edge of entire roof perimeter, heat weld to new roof membrane.

Remove all obsolete roof top equipment and equipment supports.

Provide and install new walkway pads to access all major equipment.

Remove and dispose three existing skylights. Provide and install three new double domed acrylic curb mounted skylights with OSHA compliant fall protection.

Install new OSHA compliant roof ladder that connects the lower roof to the middle roof.

Remove existing roof covering to roof deck. Install new TPA roof covering system.

REGISTERED ARCHITECT  
 MICHAEL R. BERRY  
 STATE OF CALIFORNIA  
 8848 BAYVIEW COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92123-4311

REV. TDEC 88 PLAN CHECK

TIERRASANTA RECREATION CENTER  
 CITY OF SAN DIEGO, CALIFORNIA  
 PARK AND RECREATION DEPARTMENT  
 SHEET 12 OF 70 SHEETS

PROJECT OFFICER: [Signature] DATE: 2/16/09  
 APPROVALS: [Signature] DIRECTOR  
 [Signature] DIVISION HEAD

CONSTRUCTION DEPT  
 242-1743  
 LATEST COORDINATES  
 24814 12-D

AS BUILT

CONTRACTOR: LISC DATE STARTED: 2/16/09 DATE COMPLETED: 2/20/09

Replace all flue vents.

Provide galvanized steel OSHA compliant fall protection grates for all roof openings.

Replace all scuppers, downspouts, and splash pans.

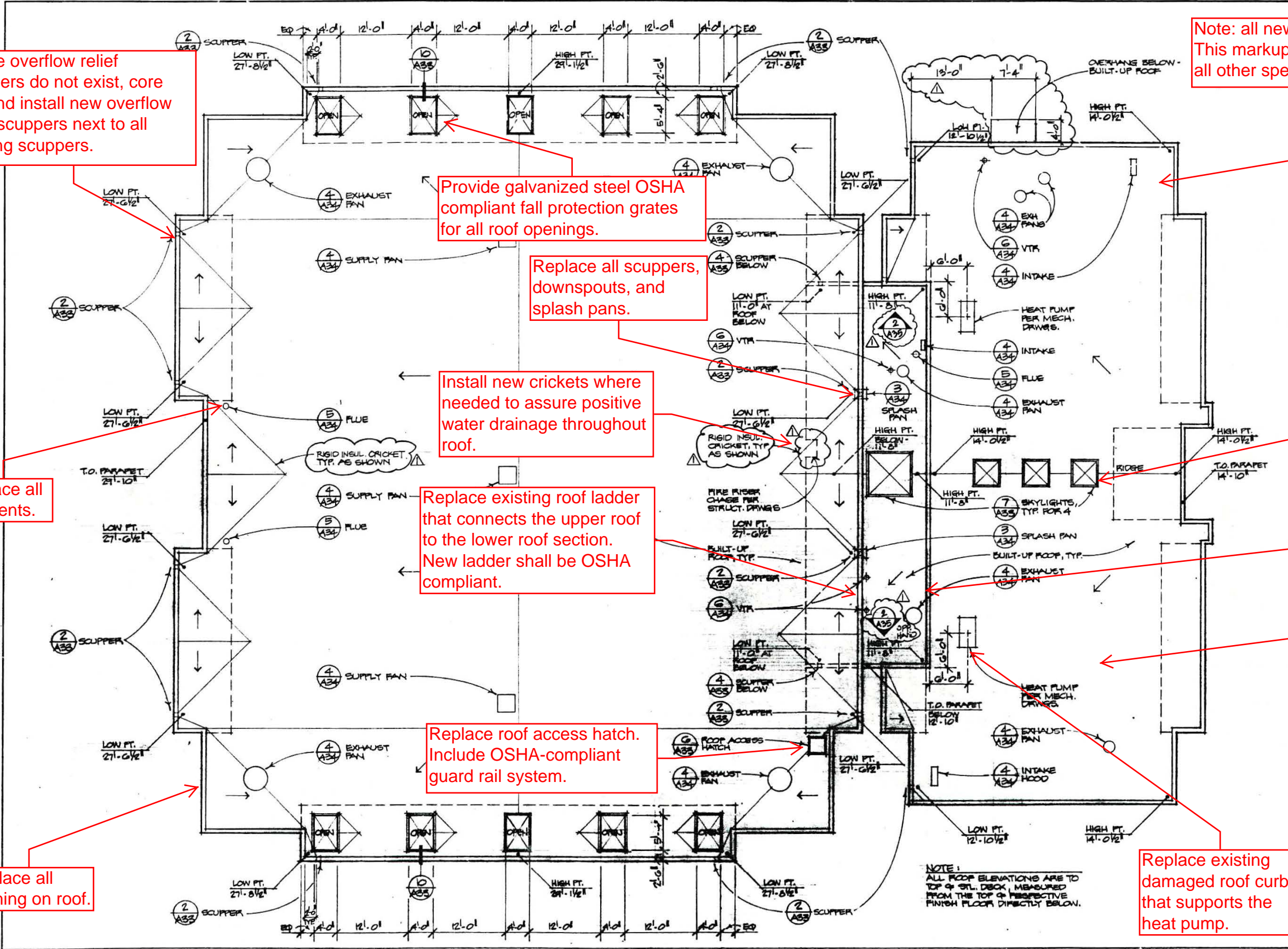
Install new crickets where needed to assure positive water drainage throughout roof.

Replace existing roof ladder that connects the upper roof to the lower roof section. New ladder shall be OSHA compliant.

Replace roof access hatch. Include OSHA-compliant guard rail system.

Replace all flashing on roof.

Replace existing damaged roof curb that supports the heat pump.



ROOF PLAN

1/8" = 1'-0" A

AS BUILTS



# Pacific Beach Library Roof Requirements

- Contractor shall protect in place all rooftop glass windows and frames.
- Contractor shall remove and replace in kind with new materials all window seals and window frame sealant for all vertical windows on roof, to ensure a water-tight installation.









Remove and replace all window glazing seals on both sides of glass with in kind new material for a water-tight installation.

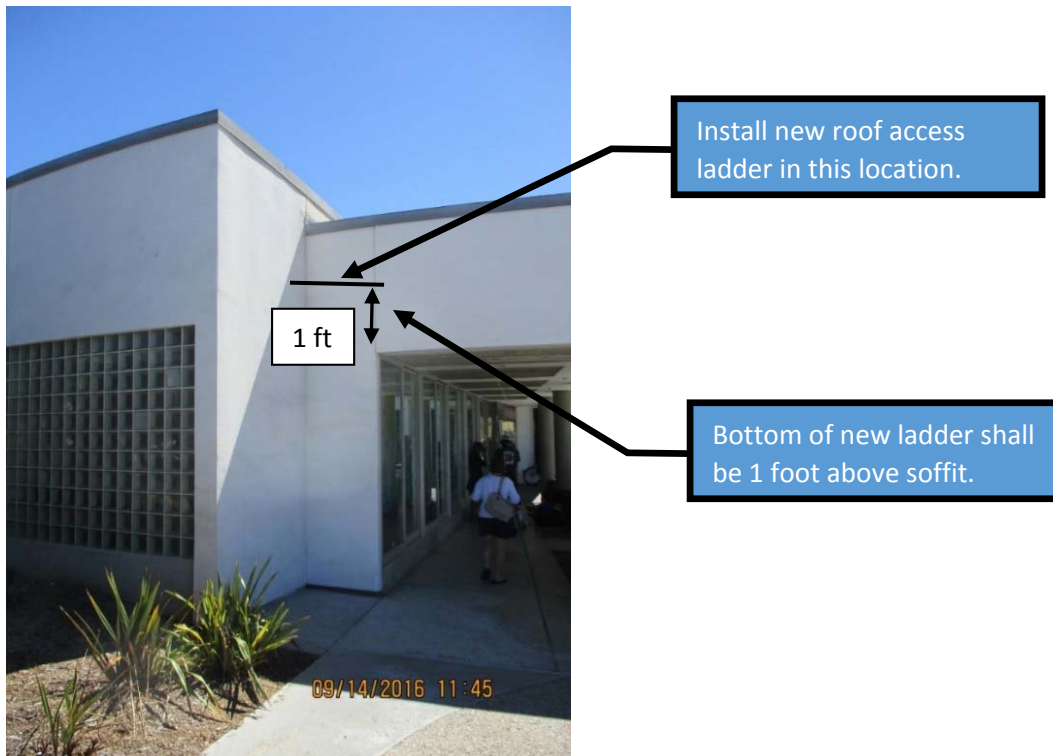
- Contractor shall protect in place existing security camera and ensure camera is operational during construction.



Additive Alternate #1: Ladder Installation:

- Install Cal-OSHA compliant wall-mounted galvanized steel ladder.
- Bottom of new ladder shall be 1 foot above soffit.
- All anchor bolts used for ladder installation should be type 316 stainless steel bolts.

- Contractor shall paint new ladder to match the building with minimum of two coats of paint to match building with high performance coating system suitable for continuous exposure to the marine environment.

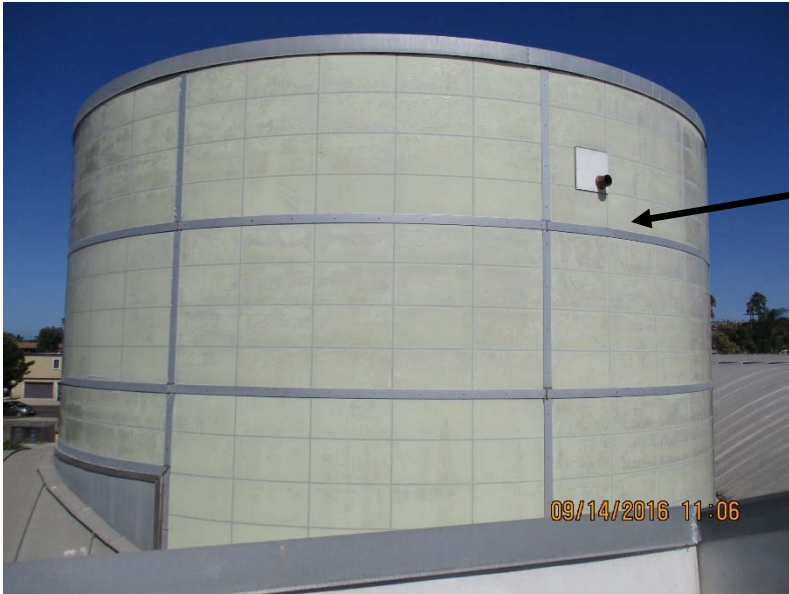


#### Skylights:

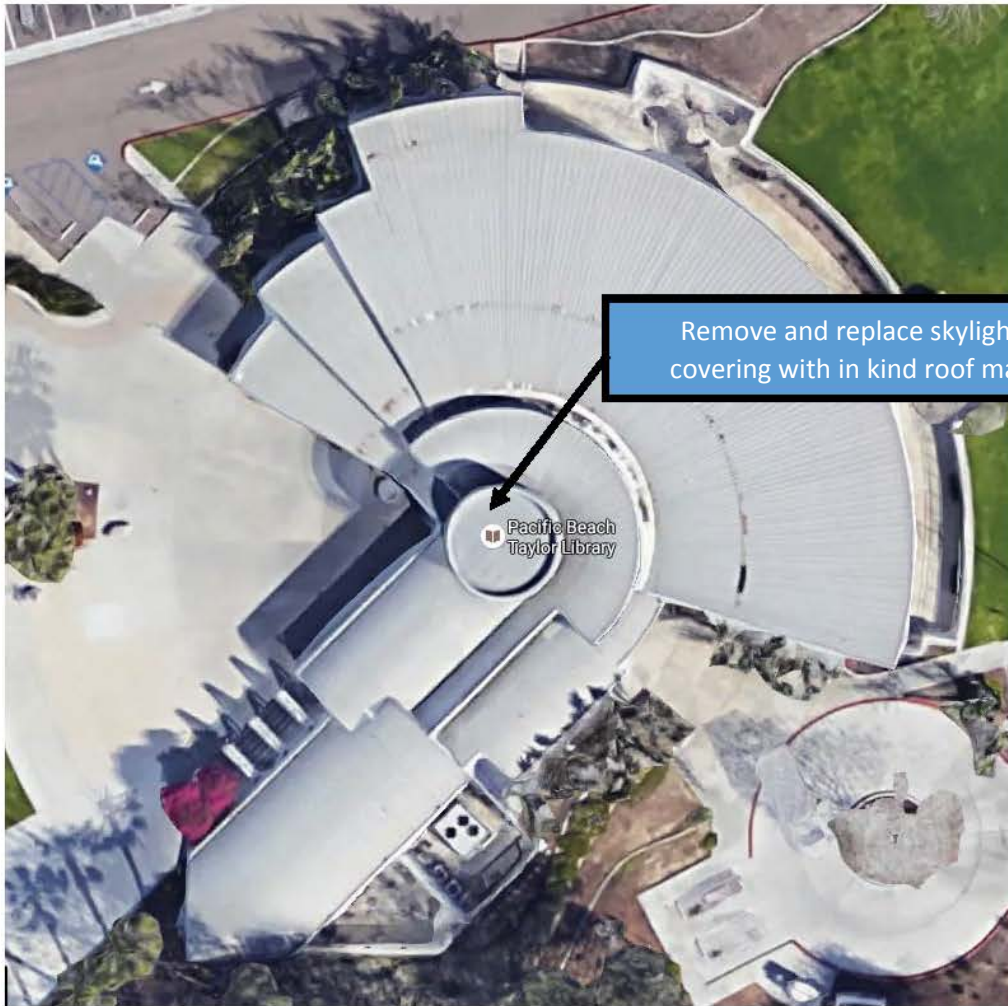
- Contractor shall remove and replace in kind building skylights per Kalwall's Specifications.
- Contractor shall remove and replace skylight's roof covering with in kind roof materials.



Remove and replace in kind building skylights per Kalwall's Specifications.



Kalwall Skylights





Pacific Beach Library Roof Replacement markup plan

- NOTES.
1. ROOF COVERING SHALL BE CLASS 'A' PER TABLE NO 32-A UBC
  2. OVERFLOW DRAINS MUST BE CONNECTED TO DRAIN LINE INDEPENDENT FROM ROOF DRAIN & BE 2" HIGHER THAN THE LOW POINT OF THE ROOF
  3. ALL GUTTERS SHALL HAVE ALL JOINTS SOLDERED
  4. ALL MTL ROOFING SHALL BE UNDERLAIN WITH "JIFFY SEAL ICE AND SNOW GUARD" AS SPECIFIED.

Note: all new improvements are shown in red text. This markup plan shall be used in conjunction with all other specifications in the RFP.

Remove and replace standing seam metal roof at all existing locations on roof.

Remove and replace all roof drain inlets.

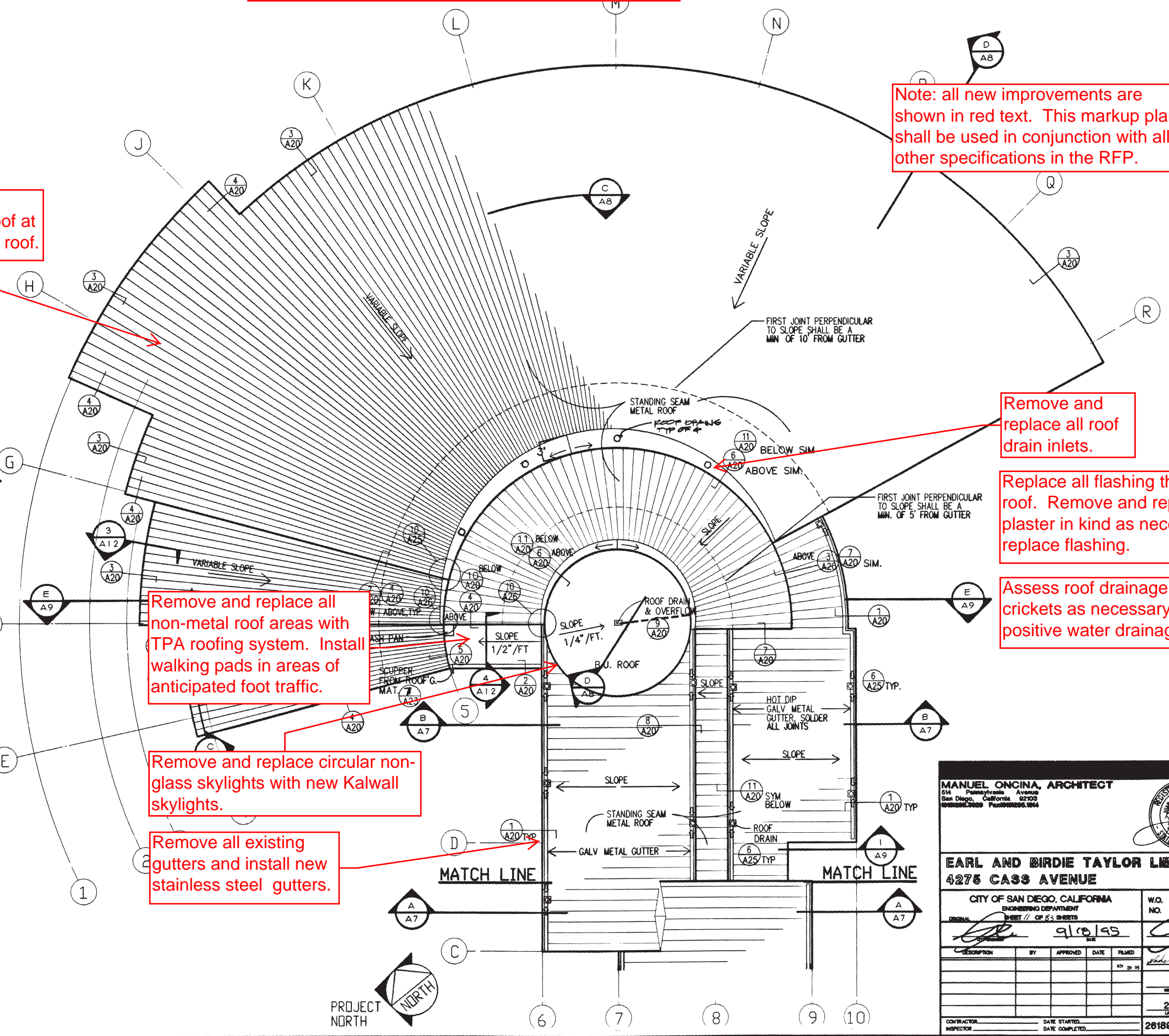
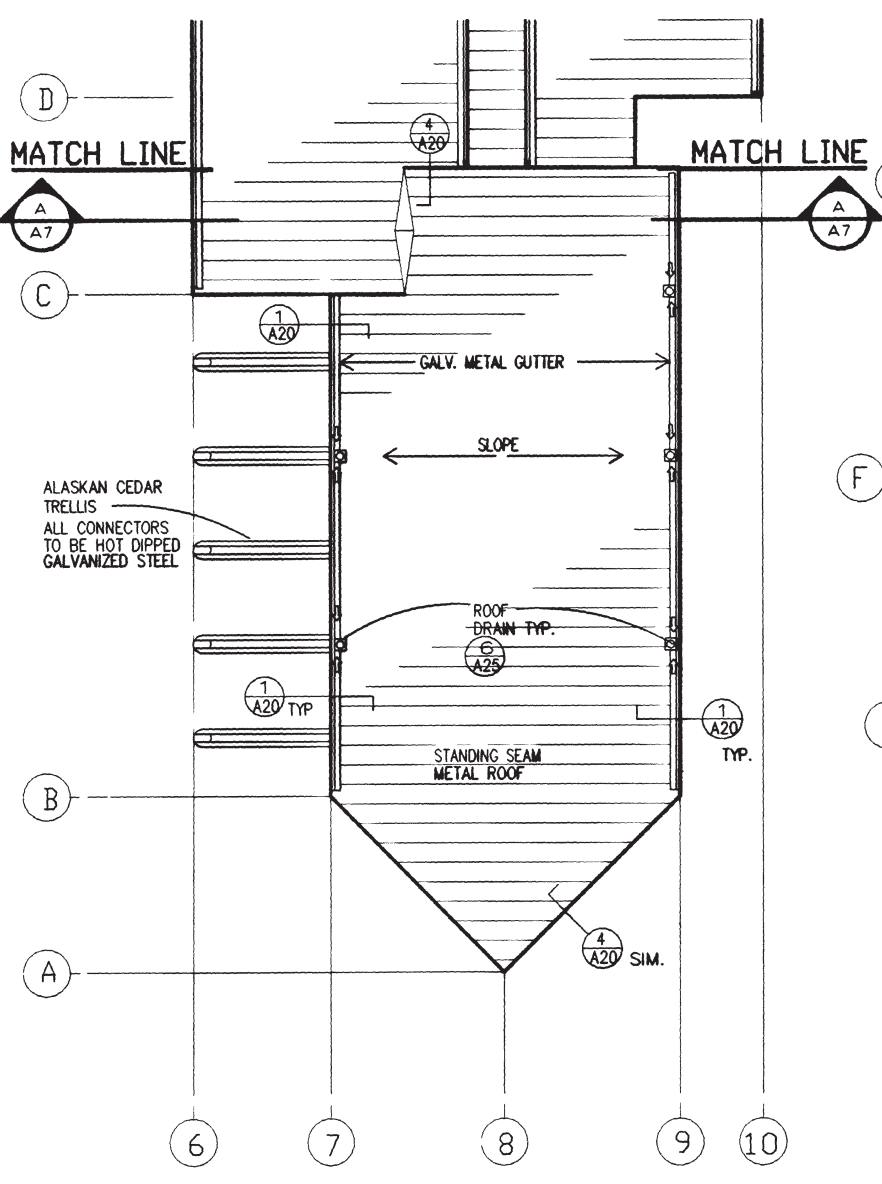
Replace all flashing throughout roof. Remove and replace plaster in kind as necessary to replace flashing.

Assess roof drainage and add crickets as necessary to assure positive water drainage.

Remove and replace all non-metal roof areas with TPA roofing system. Install walking pads in areas of anticipated foot traffic.

Remove and replace circular non-glass skylights with new Kalwall skylights.

Remove all existing gutters and install new stainless steel gutters.



**MANUEL ONCINA, ARCHITECT**  
 514 Pennsylvania Avenue  
 San Diego, California 92103  
 (619) 594-1944 Fax (619) 594-1944

**EARL AND BIRDIE TAYLOR LIBRARY**  
 4275 CASS AVENUE

CITY OF SAN DIEGO, CALIFORNIA  
 ENGINEERING DEPARTMENT  
 SHEET 11 OF 23 SHEETS

DATE: 9/18/95

W.O. NO. 119418

DESCRIPTION	BY	APPROVED	DATE	FILED

CONTRACTOR: DATE STARTED: 228-1692  
 INSPECTOR: DATE COMPLETED: 26189- 11-D



# C S D T r r R C r



## DESIGN - BUILD PROJECT FOR HVAC REPLACEMENT

### SHEET INDEX

GENERAL	
TO.1	TITLE SHEET
MECHANICAL	
M0.1	MECHANICAL LEGEND AND GENERAL NOTES
M0.2	MECHANICAL SCHEDULE
M1.1	MECHANICAL DEMOLITION FLOOR PLAN
M1.2	MECHANICAL DEMOLITION ROOF PLAN
M1.3	MECHANICAL PHOTOS
M2.1	MECHANICAL FLOOR PLAN
M2.2	MECHANICAL ROOF PLAN

### PROJECT DIRECTORY

<b>PROJECT ADDRESS</b>	TIERRASANTA REC CENTER
	CONTACT: THOMAS SMITH 12220 CLAIREMONT MESA BLVD. SAN DIEGO CA - 92124 OFFICE: (619) 533-3753
<b>ENGINEER OF RECORD</b>	EBA ENERGY
	CONTACT: ESKINDER "ALEX" BERHANU 10679 WESTVIEW PARKWAY, 2ND FLOOR, SAN DIEGO, CA 92126 OFFICE: (619) 338-9395 FAX: (858) 946-0334
<b>MECHANICAL DESIGN CRITERIA CONSULTANT</b>	SC ENGINEERS, INC.
	CONTACT: JOSEPH KILCOYNE 17075 VIA DEL CAMPO, FIRST FLOOR SAN DIEGO, CA 92127 OFFICE: (858) 946-0333 FAX: (858) 946-0334

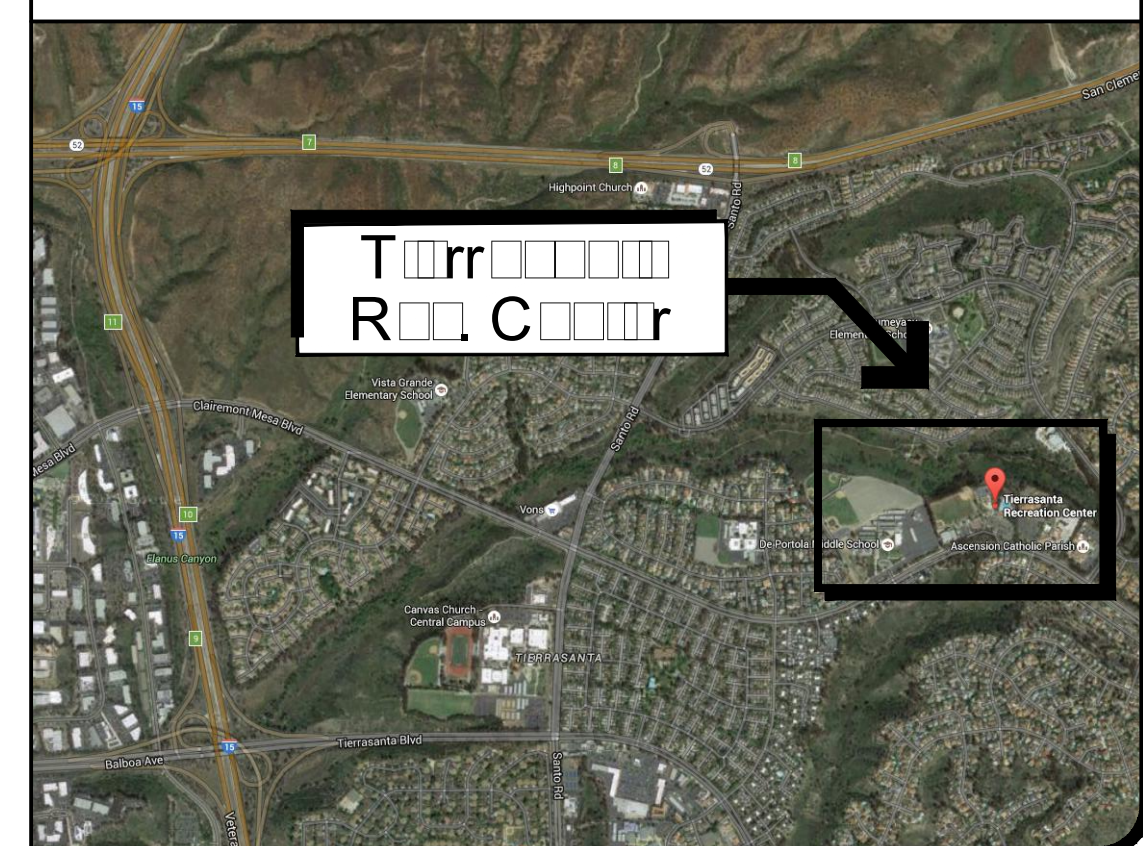
### SCOPE OF WORK SUMMARY

1. REPLACE THE FACILITY'S TWO NOMINAL 7.5 TON SPLIT SYSTEM AND HEAT PUMPS.
2. REPLACE FACILITY'S ROOFTOP SUPPLY AND EXHAUST FANS.
3. REPLACE THE FACILITY'S TWO NOMINAL 3,000 CFM GAS FIRED MAKEUP AIR UNITS.
4. COORDINATE WORK WITH THE ROOFING PROJECT WHICH WILL BE OCCURRING SIMULTANEOUSLY.
5. PROVIDE COMMISSIONING SUPPORT TO THE PROJECT COMMISSIONING AUTHORITY (CxA).

### BID ALTERNATE SUMMARY

1. REPLACE ELECTRIC AND ELECTRONIC CONTROLS SERVING EXHAUST/SUPPLY FANS AND MAKEUP AIR UNITS.
2. PROVIDE ROOF HATCH ABOVE MAU-1 AND MAU-2.

### VICINITY MAP



BRIDGING  
DOCUMENT-NOT  
FOR CONSTRUCTION

16126

ISSUED/REVISIONS	DATE
50% SCHEMATIC DESIGN	07/29/2016
100% SCHEMATIC DESIGN	09/02/2016

C S D  
14ME03 - T r r  
R C r HVAC  
R

11220 CLAIREMONT  
MESA BLVD  
SAN DIEGO, CA 92124

BRIDGING  
DOCUMENTS

SHEET TITLE	
TITLE SHEET	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET  
**T0.1**



## MECHANICAL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION	SYMBOL	ABBREVIATION	DESCRIPTION
		REMOVE EXISTING EQUIPMENT OR PIPING SHOWN HATCHED		TV	SQUARE ELBOW WITH TURNING VANES
	POC	POINT OF CONNECTION			RADIUS ELBOW
	POD	POINT OF DISCONNECT		MVD	MANUAL VOLUME DAMPER
		COORDINATE WITH ELECTRICAL		MOD	MOTOR OPERATED DAMPER
		PIPE DOWN		BDD	BACKDRAFT DAMPER
		PIPE UP		SD	DUCT MOUNTED SMOKE DETECTOR
		PIPE RISE (OR DN FOR DROP)		SFD	AUTOMATIC SMOKE AND FIRE DAMPER
		DIRECTION OF FLOW IN PIPE		FLEX	FLEXIBLE DUCT
	SOV	SHUTOFF VALVE		FLEX	FLEXIBLE CONNECTION OR SEISMIC JOINT (DUCT)
	AV	AIR VENT (VALVE)			DUCT RISE IN DIRECTION OF FLOW
	CV	CHECK VALVE			DUCT DROP IN DIRECTION OF FLOW
	SD	SUCTION DIFFUSER			DUCT TRANSITION
	CV (2W)	CONTROL VALVE (2-WAY)			ROUND DUCT DOWN
	CV (3W)	CONTROL VALVE (3-WAY)			ROUND DUCT UP
	ACD	AUTOMATIC FLOW CONTROL DEVICE			SUPPLY DUCT UP
	GV	GATE VALVE			SUPPLY DUCT DOWN
		GLOBE/BALL/BUTTERFLY VALVE		RA/OA	RETURN AIR DUCT/OUTSIDE AIR DUCT UP
	BV	COMBINATION BALANCING & SHUT-OFF VALVE			RETURN AIR DUCT/OUTSIDE AIR DUCT DOWN
	FEV	FLOW ELEMENT VENTURI			EXHAUST AIR DUCT UP
	CL	CAPPED LINE			EXHAUST AIR DUCT DOWN
	STR	STRAINER		SA	SUPPLY AIR
	RV	PRESSURE RELIEF VALVE		RR	RETURN REGISTER
	PG	PRESSURE GAUGE WITH BALL VALVE		ER	EXHAUST REGISTER
	R	ECCENTRIC REDUCER		T'STAT	THERMOSTAT OR TEMPERATURE SENSOR (NUMBER INDICATES EQUIPMENT OR ZONE SERVED)
	R	CONCENTRIC REDUCER		H'STAT	HUMIDISTAT
	FC	FLEXIBLE CONNECTION (PIPE)		CFM	CUBIC FEET PER MINUTE
	TW	TEST WELL (PETE'S PLUG - PRESSURE AND/OR TEMPERATURE)			SYMBOL, SEE EQUIPMENT SCHEDULE
	TI	THERMOMETER			
	PA	PIPE ANCHOR			
	U	UNION			
	DN	DOWN OR DROP			
	UP	RISE OR RISER			
		VALVE ON RISE OR DROP			
		PRESSURE REDUCING VALVE			
		PRESSURE GAUGE			
		PUMP			
	HHWS	HEATING HOT WATER SUPPLY			
	HHWR	HEATING HOT WATER RETURN			
	CHWS	CHILLED WATER SUPPLY			
	CHWR	CHILLED WATER RETURN			

## MECHANICAL ABBREVIATIONS

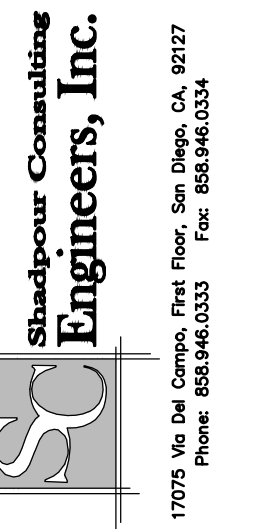
ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
(A)	ABANDONED	LRA	LOCKED ROTOR AMPS
AFMS	AIR FLOW MEASUREMENT STATION	MCA	MINIMUM CIRCUIT AMPACITY
AH	AIR HANDLER	MD	MOTORIZED DAMPER
AMB	AMBIENT	MECH	MECHANICAL
AMPS	AMPERES	MIN	MINIMUM, MINUTE
AP	ACCESS PANEL	MOCF	MAXIMUM OVER CURRENT PROTECTION
AS	AIR SEPARATOR	MOD	MODULATING
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	MTG	MOUNTING
ATM	ATMOSPHERE, ATMOSPHERIC	MVD	MANUAL VOLUME DAMPER
AUX	AUXILIARY	NC	NORMALLY CLOSED, NOISE CRITERIA
BDD	BACKDRAFT DAMPER	NIC	NOT IN CONTRACT
BHP	BRAKE HORSEPOWER	NO	NORMALLY OPEN, NUMBER
BLDG	BUILDING	NPSH	NET POSITIVE SUCTION HEAD
BTU	BRITISH THERMAL UNIT	NPSHA	NET POSITIVE SUCTION HEAD AVAILABLE
BTUH	BRITISH THERMAL UNIT PER HOUR	NPSHR	NET POSITIVE SUCTION HEAD REQUIRED
CAP	CAPACITY	NTS	NOT TO SCALE
CAV	CONSTANT AIR VOLUME	OA	OUTSIDE AIR
CD	CONDENSATE DRAIN (A/C)	OB	OPPOSED BLADE DAMPER
CFM	CUBIC FEET PER MINUTE	OD	OUTSIDE DIAMETER or DIMENSION
CFC	CALIFORNIA FIRE CODE	OPD	OVERCURRENT PROTECTIVE DEVICE
CHW	CHILLED WATER	OPER	OPERATING
CLG	CEILING	OSA	OUTSIDE AIR
CONC	CONCRETE	Δ P	PRESSURE DIFFERENTIAL
CONT	CONTINUATION	P	PUMP
COP	COEFFICIENT OF PERFORMANCE	PD	PRESSURE DROP
CW	CONDENSER WATER	PG	PRESSURE GAGE
DB	DESIGN BUILD	PH	PHASE
DDC	DIRECT DIGITAL CONTROL	PI	PRESSURE INDICATOR
DIA. (Ø)	DIAMETER	POC	POINT OF CONNECTION
DIST	DISTRIBUTION	POS	POSITION
DN	DOWN	PRESS	PRESSURE
DP	DIFFERENTIAL PRESSURE	PSI	POUNDS PER SQUARE INCH
DS	DISCONNECT SWITCH	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
DTL	DETAIL	PSIG	POUNDS PER SQUARE INCH GAGE
DTR	DUCT THRU ROOF	QTY	QUANTITY
EA	EXHAUST AIR	RA	RETURN AIR
EAT	ENTERING AIR TEMPERATURE	REQ'D	REQUIRED
EER	ENERGY EFFICIENCY RATIO	RG	RETURN GRILLE
EFF	EFFICIENCY	RH	RELATIVE HUMIDITY
ELEV	ELEVATION	RHC	REHEAT COIL
EMER	EMERGENCY	RLA	RUNNING LOAD AMPS
ENT	ENTERING	RPM	REVOLUTIONS PER MINUTE
EOR	ENGINEER OF RECORD	SCHED	SCHEDULE
EQUIP	EQUIPMENT	SD	SMOKE DAMPER, SMOKE DETECTOR
ESP	EXTERNAL STATIC PRESSURE	SEER	SEASONAL ENERGY EFFICIENCY RATIO
ET	EXPANSION TANK	SENS	SENSIBLE
EXT	EXTERNAL	SF	SQUARE FEET
F	DEGREE FAHRENHEIT	SI	INTERNATIONAL SYSTEM OF UNITS
(F) or F	FUTURE	SP	STATIC PRESSURE
FC	FAN COIL	SS	STAINLESS STEEL
FD	FIRE DAMPER	Δ T	TEMPERATURE DIFFERENTIAL
FF	FINISHED FLOOR	TEMP	TEMPERATURE, TEMPORARY
FLA	FULL LOAD AMPS	THERM	THERMOMETER
FLR	FLOOR	THRU	THROUGH
FPM	FEET PER MINUTE	TI	TEMPERATURE INDICATOR
FS	FLOW SWITCH	TK	THICKNESS
FSD	FIRE SMOKE DAMPER	TP	TOTAL PRESSURE
FT	FEET	TSP	TOTAL STATIC PRESSURE
GAL	GALLON(S)	T'STAT	THERMOSTAT
GEN	GENERATOR	TYP	TYPICAL
GPM	GALLONS PER MINUTE	UNO	UNLESS NOTED OTHERWISE
HD	HEAD	UTR	UP THRU ROOF
HHW	HEATING HOT WATER	V	VOLTS
HORIZ	HORIZONTAL	VERT	VERTICAL
HP	HORSEPOWER	VFD	VARIABLE FREQUENCY DRIVE
HR	HOUR	W	WATTS
HTG	HEATING	W/	WITH
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING	WB	WET BULB TEMPERATURE
Hz	HERTZ	WC	WATER COLUMN
IN	INCHES	WG	WATER GAUGE
IN WC	INCHES WATER COLUMN	W/O	WITHOUT
Kw	KILOWATTS	WT	WEIGHT
LAT	LEAVING AIR TEMPERATURE		
LBS	POUNDS		

## GENERAL NOTES

- THESE DRAWINGS REPRESENT A SCHEMATIC DESIGN INTENDED TO ASSIST DESIGN/BUILD CONTRACTORS PREPARE COMPETITIVE BIDS. THE AWARDED DESIGN/BUILD CONTRACTOR WILL BE RESPONSIBLE FOR A FULLY COORDINATED PROJECT DESIGN AND INSTALLATION. THE INTENT OF THE BRIDGING DOCUMENTS INCLUSIVE OF SCHEMATIC DRAWINGS, SPECIFICATIONS, AND SCOPE OF WORK DOCUMENTS IS TO IDENTIFY NOMINAL CAPACITIES, QUANTITIES, AND QUALITY REQUIREMENTS.
- THESE DRAWINGS ARE A GENERAL GRAPHIC PRESENTATION OF THE WORK. PIPING AND EQUIPMENT, AS SHOWN, ARE SCHEMATIC DESIGN, FABRICATE AND INSTALL BASED ON ACTUAL FIELD MEASUREMENT. COORDINATE WITH OTHER TRADES. MAINTAIN AN UP TO DATE SET OF AS-BUILT DRAWINGS AT THE JOB SITE.
- COMPLY WITH CALIFORNIA MECHANICAL CODE (CMC), CALIFORNIA PLUMBING CODE (CPC), AND NATIONAL FIRE PROTECTION AGENCY (NFPA), AND GOVERNING CODES. THERE SHALL BE NO EXCEPTION. REPORT DEFICIENCIES WITHIN THIRTY (30) DAYS UPON AUTHORIZATION TO PROCEED.
- ALL THE DRAWINGS SHALL BE REVIEWED. ANY QUESTIONS SHALL BE BROUGHT UP IN WRITING, TO THE ATTENTION OF THE ENGINEER BEFORE THE START OF DESIGN AND CONSTRUCTION.
- PROVIDE ACCESS AND CLEARANCE FOR MAINTENANCE OF MECHANICAL EQUIPMENT AND COMPONENTS AS RECOMMENDED BY EQUIPMENT MANUFACTURER AND APPLICABLE CODES.
- HANDLE, STORE AND INSTALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.
- BRACE AND SUPPORT PIPES AND CONDUIT IN ACCORDANCE TO SMACNA GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL PIPING SYSTEM. (SEISMIC HAZARD LEVEL A)
- INSULATION AND FLEXIBLE DUCT SHALL COMPLY WITH STATE FIRE MARSHALL CRITERIA AND SHALL NOT EXCEED FLAME SPREAD OF 25 AND SMOKE DEVELOPED OF 50 PER ASTM-84, NFPA-223, AND UL 723.
- INSULATE PIPING AND DUCTWORK IN ACCORDANCE TO THE GOVERNING CODES AND PROJECT SPECIFICATIONS.
- COMMISSION AND START-UP THE MECHANICAL SYSTEMS TO ASSURE A COMPLETE AND OPERATIONAL HVAC SYSTEM IN ACCORDANCE TO ASHRAE AND NEBB.
- ESP DATA PROVIDED ON EQUIPMENT SCHEDULES DOES NOT INCLUDE ANY ALLOWANCE FOR SYSTEM EFFECTS, DRIVE LOSSES, OR OTHER APPLIED MATERIALS AND/OR COMPONENTS PROVIDED WITH, OR FIELD INSTALLED WITHIN MANUFACTURED EQUIPMENT. EXCEPT AS NOTED OTHERWISE, FINAL FAN AND MOTOR SELECTIONS SHALL INCLUDE THE ABOVE, AS WELL AS ALLOWANCES FOR ACCUMULATIONS ON FILTERS AND COILS. ESP INCLUDES ONLY THOSE ITEMS "EXTERNAL" TO EQUIPMENT. MANUFACTURER'S SELECTION OF FANS AND MOTORS SHALL BE BASED UPON CALCULATED TSP AND BHP MAY NOT EXCEED 85% OF NOMINAL HP.
- CONTRACTOR SHALL COMPLY WITH CFC CHAPTER 33-FIRE SAFETY DURING DEMOLITION AND CONSTRUCTION.
- ALL WORK SHALL CONFORM TO TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
- THE INTENT OF THIS DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CHANGE ORDER, OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED REPAIR WORK SHALL BE SUBMITTED TO AND APPROVED BY CITY OF SAN DIEGO BEFORE PROCEEDING WITH THE REPAIR WORK.

## TITLE 24 NOTES

- HVAC EQUIPMENT AND APPLIANCES SHALL MEET THE LATEST REQUIREMENTS OF 2013 ENERGY EFFICIENCY STANDARDS. 2013 TITLE 24 STANDARDS ARE THE CURRENT STANDARDS THAT ARE APPLICABLE TO THIS PROJECT.
- ALL HVAC SYSTEMS SHALL MEET THE LATEST CONTROL REQUIREMENTS PER SECTION 110.2 & 120.2 PER 2013 ENERGY EFFICIENCY STANDARDS.
- ALL WORK SHALL BE IN ACCORDANCE WITH CITY CODES, CALIFORNIA ENERGY CONSERVATION STANDARDS, TITLE-24, AND ALL OTHER APPLICABLE CODES.
- ALL PIPING SHALL MEET THE LATEST REQUIREMENTS OF 2013 ENERGY EFFICIENCY STANDARDS AND 2012 UNIFORM MECHANICAL CODE.
- ALL PIPING AND DUCTWORK SHALL BE INSULATED CONSISTENT WITH THE REQUIREMENTS OF SECTIONS 120.3, 120.4 AND 120.7 TITLE 24 ENERGY STANDARDS AND CHAPTER 6 OF CMC.
- ALL HVAC EQUIPMENT AND APPLIANCES SHALL MEET THE REQUIREMENTS PER SECTION 110.1-11.3, 110.5, 120.1-120.4 TITLE 24 ENERGY STANDARDS.



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16126

ISSUED/REVISIONS	DATE
50% SCHEMATIC DESIGN	07/29/2016
100% SCHEMATIC DESIGN	09/02/2016

C 14ME03 - T  
R HVAC  
R

11220 CLAIREMONT  
MESA BLVD  
SAN DIEGO, CA 92124

**BRIDGING  
DOCUMENTS**

SHEET TITLE  
**MECHANICAL LEGEND  
AND GENERAL NOTES**

DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET

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**SPLIT SYSTEM HEAT PUMP SCHEDULE**

INDOOR FAN SECTION										OUTDOOR SECTION							COMBINED CAPACITY						REMARKS						
SYMBOL	MANUFACTURER	AREA SERVED	MOTOR		ELECTRICAL DATA				EFF. (EER)	OPER. WEIGHT (LBS)	SYMBOL	DESCRIPTION	FAN HP	COMPRESSOR		ELECTRICAL DATA			EFFICIENCY (EER)	OPER. WEIGHT (LBS)	COOLING					HEATING		MIN OSA CFM	
			NOMINAL CFM	DRIVE	MIN HP	V	Ø	Hz						QTY.	RLA	V	Ø	Hz			TOTAL CAP (MBH)	SENSIBLE CAP (MBH)		AMB (°F)	ENT DB (°F)	ENT WB (°F)	AMB (°F)		OUTPUT (MBH)
FC 1	TRANE-TWE-090E OR EQUAL	NORTH WING	3000	BELT	2	480	3	60	11.0	400	CU 1	TRANE-TWA-090E OR EQUAL	0.5	2	7	480	3	60	12.5	500	93	77	92	78	64	42	78	480	① ② ③ ④
FC 2	TRANE-TWE-090E OR EQUAL	SOUTH WING	3000	BELT	2	480	3	60	11.0	400	CU 2	TRANE-TWA-090E OR EQUAL	0.5	2	7	480	3	60	12.5	500	93	77	92	78	64	42	78	480	① ② ③ ④

① PROVIDE PROGRAMMABLE NIGHT SETBACK THERMOSTAT WITH BUILT IN WIFI COMPATIBILITY. VENSTAR T8850 EQUAL. ② PROVIDE ANTI-CORROSION EPOXY COATING ON CONDENSING UNIT. ③ PROVIDE SINGLE ZONE VARIABLE AIR VOLUME UNIT. ④ PROVIDE 0-100% DIFFERENTIAL ENTHALPY ECONOMIZER.

**MAE-UP AIR UNIT**

SYMBOL	MANUFACTURER	AREA SERVED	CFM	MOTOR			INPUT CAP. (MBH)	EFF (%)	FUEL TYPE	OPER. WEIGHT (LBS.)	REMARKS
				MIN HP	V	Ø					
MAU 1	REZNOR OR EQUAL	GYM	3000	3	480	3	150	80%	NG	335	①
MAU 2	REZNOR OR EQUAL	GYM	3000	3	480	3	150	80%	NG	335	①

① UL 762 COMPLIANT.

**EXHAUST FAN SCHEDULE**

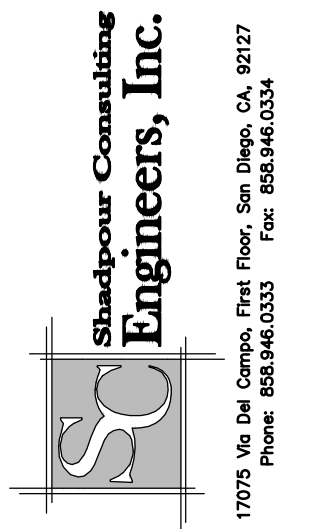
SYMBOL	MANUFACTURER	AREA SERVED	CFM	DRIVE	MOTOR				MAX INLET SOUND LEVEL (db)	OPER. WEIGHT (LBS)	REMARKS
					MIN HP	V	Ø	Hz			
EF 1	GREENHECK G-163-VG OR EQUAL	GYM	3240	DIRECT	3/4	120	1	60	68	100	① ②
EF 2	GREENHECK G-163-VG OR EQUAL	GYM	3240	DIRECT	3/4	120	1	60	68	100	① ②
EF 3	GREENHECK G-163-VG OR EQUAL	GYM	3240	DIRECT	3/4	120	1	60	68	100	① ②
EF 4	GREENHECK G-163-VG OR EQUAL	GYM	3240	DIRECT	3/4	120	1	60	68	100	① ②
EF 5	GREENHECK G-143-VG OR EQUAL	STORAGE 104	1500	DIRECT	1/2	120	1	60	68	75	① ②
EF 6	GREENHECK G-097-VG OR EQUAL	ELECT. ROOM	300	DIRECT	1/4	120	1	60	58	60	① ②
EF 7	GREENHECK G-097-VG OR EQUAL	STORAGE 214	250	DIRECT	1/4	120	1	60	53	60	① ②
EF 8	GREENHECK G-097-VG OR EQUAL	STORAGE 204	250	DIRECT	1/4	120	1	60	53	60	① ②
EF 9	GREENHECK CUE-099-VG OR EQUAL	KITCHEN HOOD	300	DIRECT	1/4	120	1	60	51	60	① ② ③

① PROVIDE W/ PREFABRICATED ROOF CURB. ② PROVIDE SPEED CONTROL ACCESSORY. ③ PROVIDE UL762 LISTED FAN WITH GREASE COLLECTION CUP.

**SUPPLY FAN SCHEDULE**

SYMBOL	MANUFACTURER	AREA SERVED	CFM	DRIVE	MOTOR				OPER. WEIGHT (LBS)	REMARKS
					MIN HP	V	Ø	Hz		
SF 1	GREENHECK RSF-100 OR EQUAL	GYM	2700	BELT	1.0	480	3	60	260	② ③
SF 2	GREENHECK RSF-100 OR EQUAL	GYM	2700	BELT	1.0	480	3	60	260	② ③
SF 3	GREENHECK RSF-100 OR EQUAL	GYM	2700	BELT	1.0	480	3	60	260	② ③
SF 4	GREENHECK AS-12-420 OR EQUAL	FOOD PREP AREA	300	DIRECT	1/4	①	①	60	75	② ③

① CONTRACTOR SHALL FIELD VERIFY THE AVAILABLE POWER SUPPLY. ② PROVIDE W/PREFAB ROOF CURB. ③ PROVIDE SPEED CONTROL ACCESSORY.



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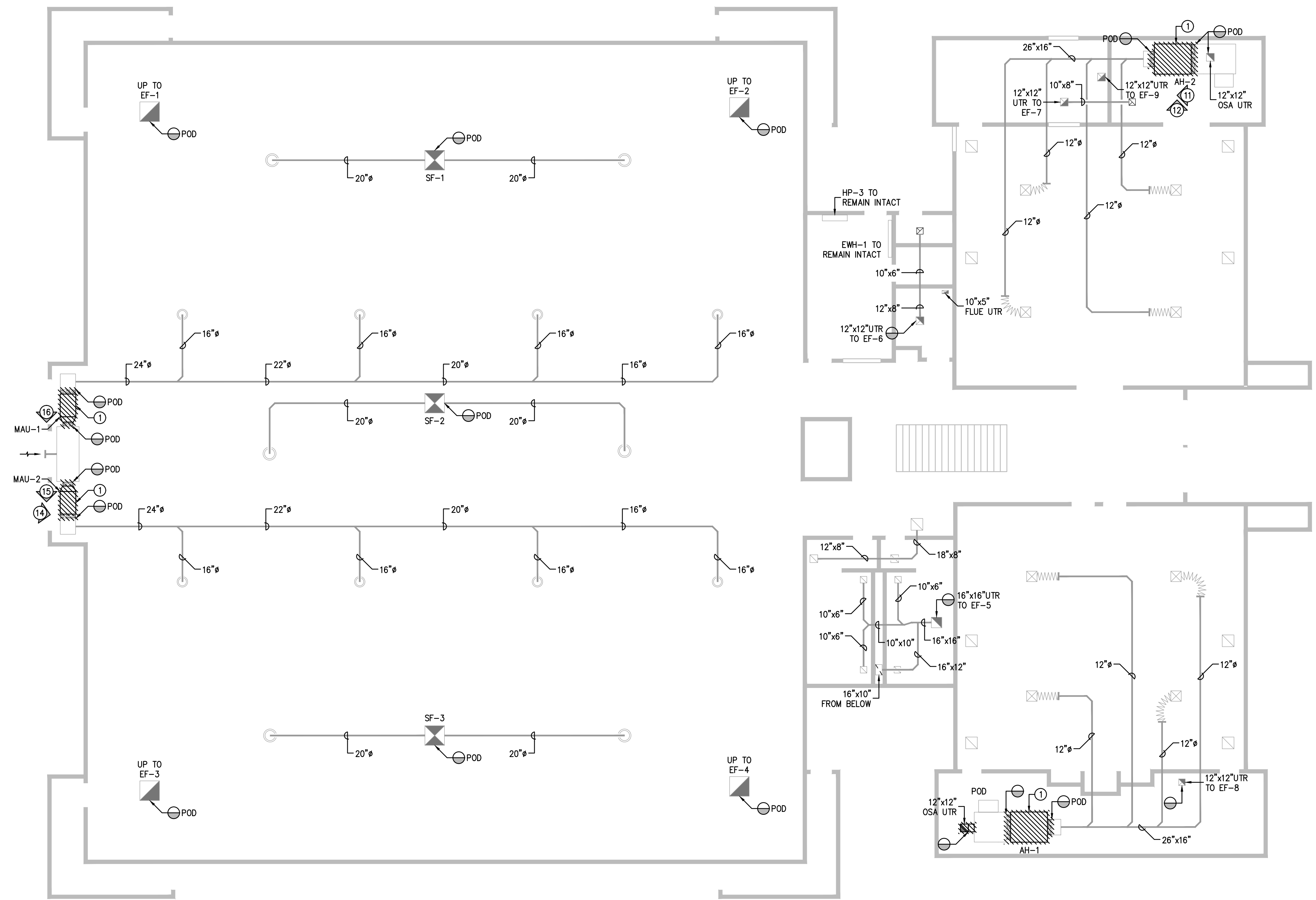
11220 CLAIREMONT MESA BLVD SAN DIEGO, CA 92124

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SHEET TITLE	
MECHANICAL SCHEDULE	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET

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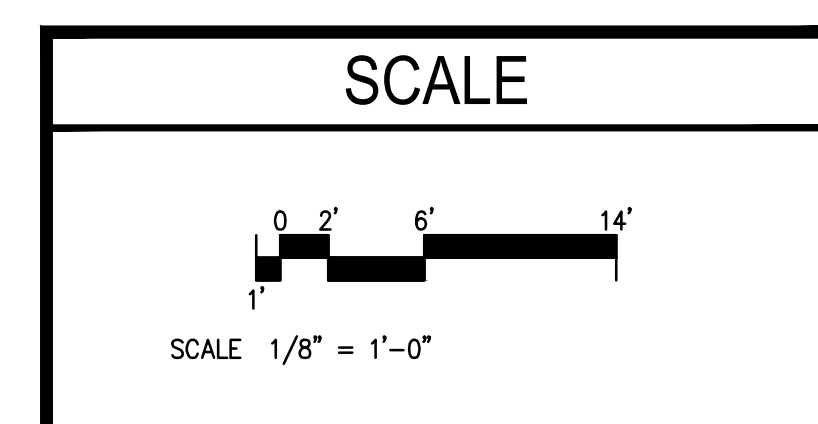
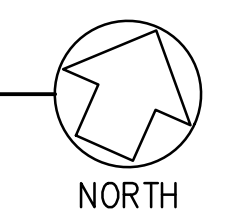
### GENERAL NOTES

- CONTRACTOR SHALL ASSESS THE CONDITION OF THE EXISTING EF/SF/MAU FAN CONTROLS INCLUDING THE TIMERS, SWITCHES, RELAYS, STARTERS AND WIRES. PROVIDE ADD ALTERNATE COST TO REPLACE TO MATCH EXISTING.
- THE CONDITIONS SHOWN ARE BASED ON AVAILABLE AS-BUILT DRAWINGS AND NON-DESTRUCTIVE SURVEY. FIELD VERIFY (E) CONDITIONS PRIOR TO COMMENCEMENT OF WORK.

### EYED NOTES

① ACCESS TO EXISTING EQUIPMENT IS EXTREMELY LIMITED. CONTRACTOR SHALL FIELD VERIFY EXISTING UNIT DIMENSIONS AND UNIT CONFIGURATION IN ORDER TO SELECT A COMPATIBLE REPLACEMENT UNIT.

**1 MECHANICAL DEMOLITION FLOOR PLAN**  
SCALE: 1/8" = 1'-0"



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R  C  r  HVAC  
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SAN DIEGO, CA 92124

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SHEET TITLE  
**MECHANICAL DEMO FLOOR PLAN**

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 DOCUMENTS

SHEET TITLE MECHANICAL DEMO ROOF PLAN	
DESIGNED BY: SG	JOB NUMBER: 16126
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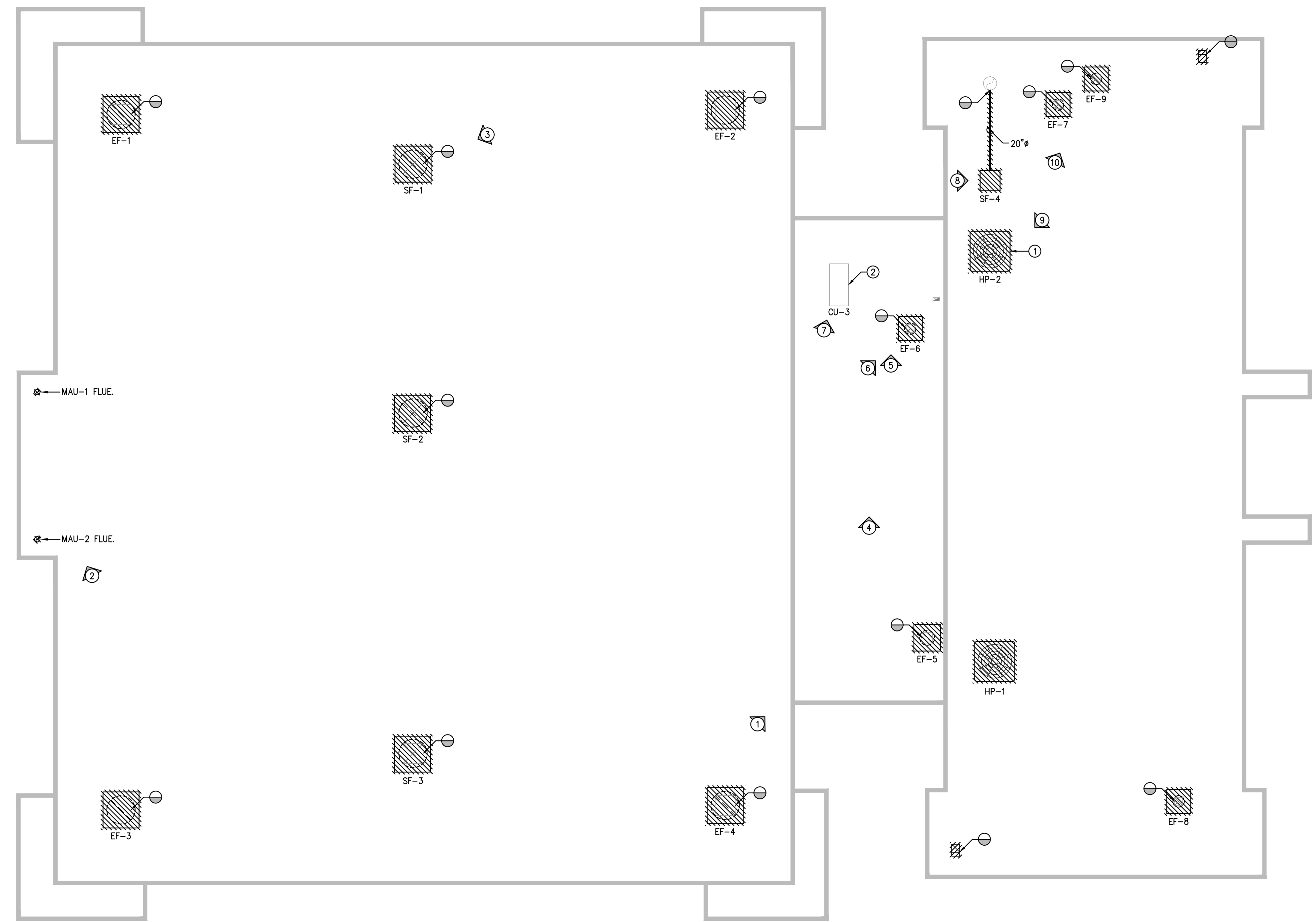
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GENERAL NOTES

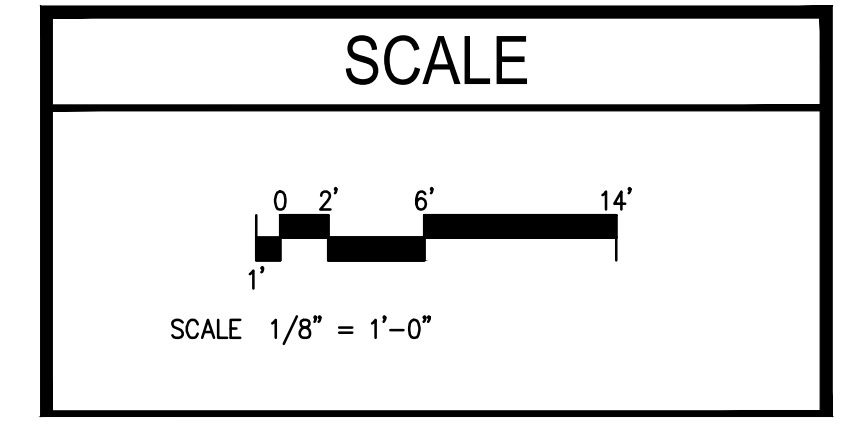
- CONTRACTOR SHALL ASSESS THE CONDITION OF THE EXISTING EF/SF/MAU FAN CONTROLS INCLUDING THE SWITCHES, RELAYS, STARTERS AND WIRES. PROVIDE ADD ALTERNATE COST TO REPLACE TO MATCH EXISTING.
- THE CONDITIONS SHOWN ARE BASED ON AVAILABLE AS-BUILT DRAWINGS AND NON-DESTRUCTIVE SURVEY. FIELD VERIFY (E) CONDITIONS PRIOR TO COMMENCEMENT OF WORK.
- DEMO ELECTRICAL DISCONNECTS TO ALL EF, SF AND CONDENSING UNITS ON ROOF.

EYED NOTES

- CONTRACTOR SHALL SALVAGE CONDENSING UNIT AND DELIVER IT TO OWNER.
- RETAIN CU-3. REMOVAL AND REPLACEMENT MAY BE REQUIRED FOR CONCURRENT ROOFING PROJECT. COORDINATE WITH ROOFING CONTRACTOR.



1 MECHANICAL DEMO ROOF PLAN  
 SCALE: 1/8" = 1'-0"







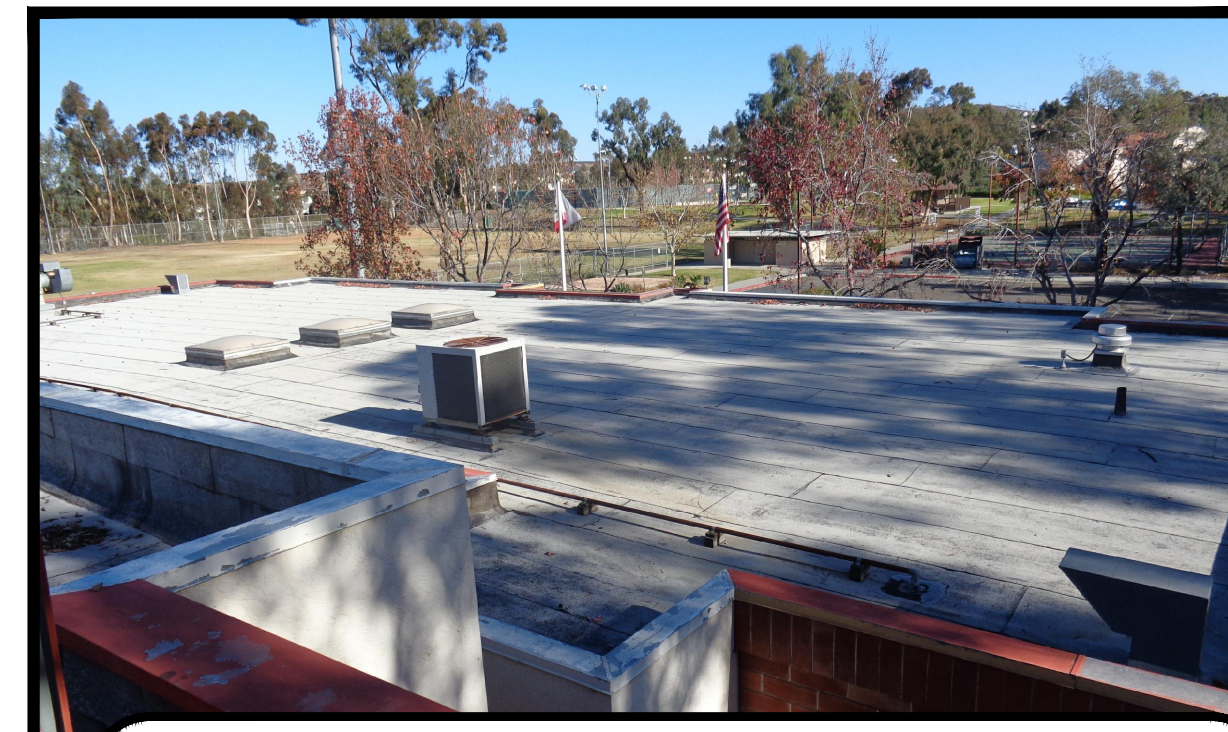
13 ACCESS DOOR FOR MAKE-UP AIR UNITS.



9 CONDENSING UNIT HP-2 TO BE SALVAGED AND DELIVERED TO OWNER.



5 EXHAUST FAN EF-6 AND CONDENSING UNIT.



1 HP-1 AND EF-8 TO BE REPLACED.



14 MAKE-UP AIR UNIT MAU-1 TO BE REPLACED.



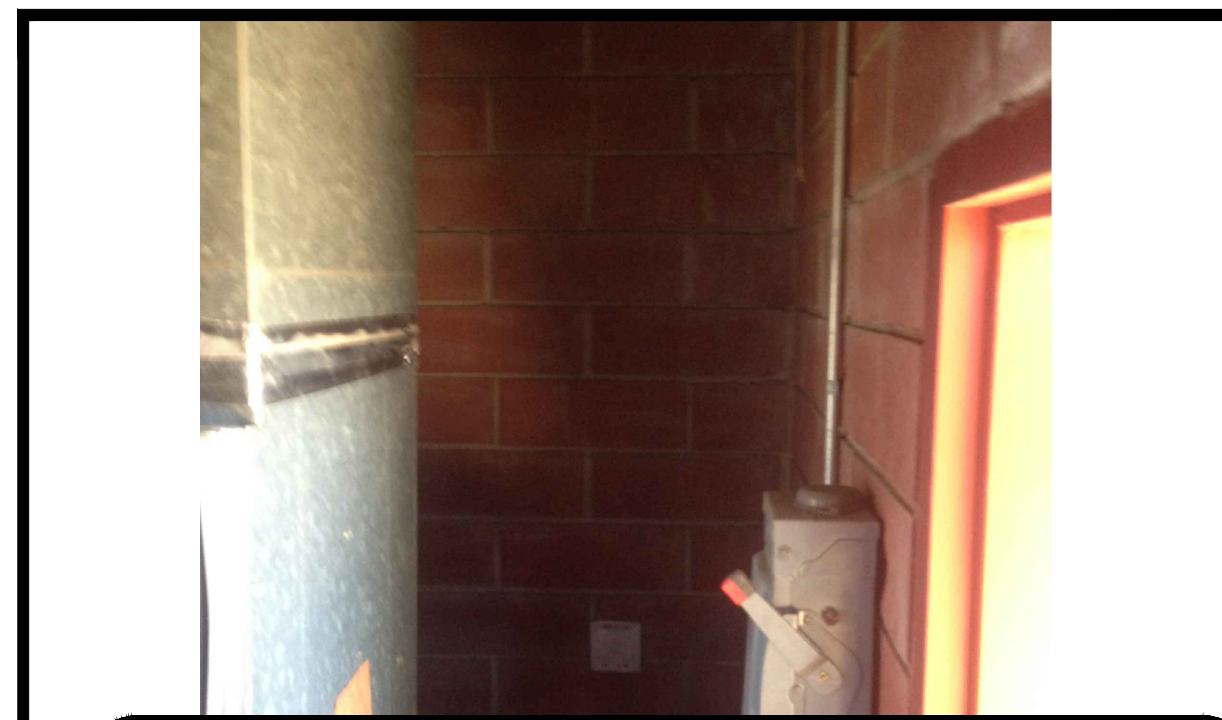
10 EXHAUST FAN EF-7 AND EF-9 TO BE REPLACED.



6 TYPICAL ROOF MOUNTED EXHAUST FAN TO BE REPLACED.



2 VENT FROM MAKE UP AIR UNIT, MAU-1 AND MAU-2 TO BE REPLACED.



15 MAKE-UP AIR UNIT MAU-2 TO BE REPLACED.



11 AIR HANDLING UNIT AH-1 TO BE REPLACED.



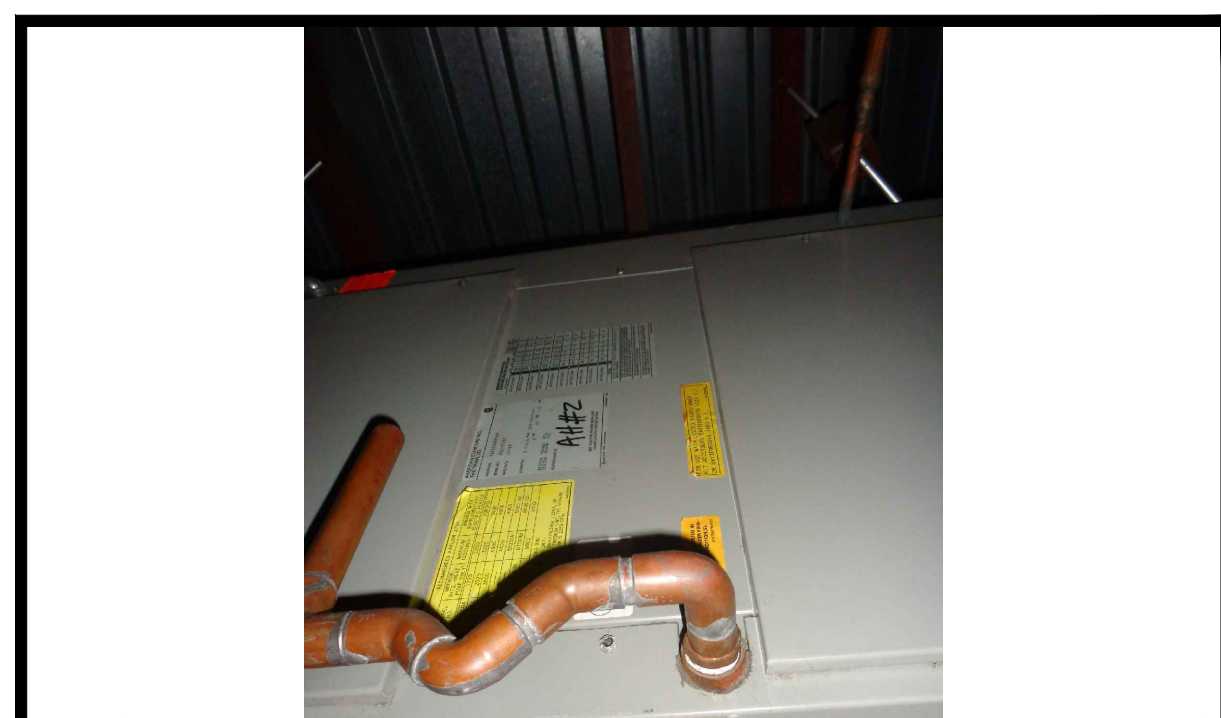
7 EXISTING MINI SPLIT CONDENSING UNIT TO REMAIN UN PLACE.



3 TYPICAL SUPPLY FAN SERVING GYM TO BE REPLACED.



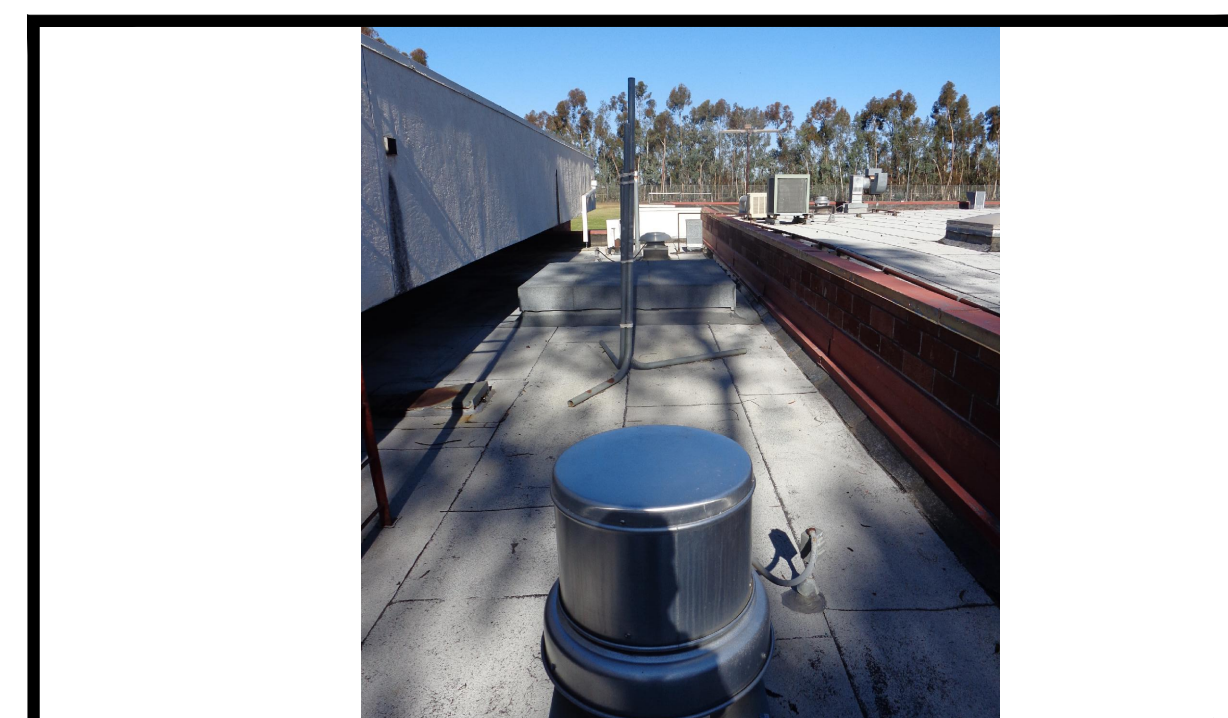
16 MAKE-UP AIR UNIT, MAU-2 TO BE REPLACED.



12 AIR HANDLING UNIT AH-2 TO BE REPLACED.



8 SWAMP COOLER TO BE REPLACED WITH SUPPLY FAN.



4 EXHAUST FAN EF-5 TO BE REPLACED.

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 MESA BLVD  
 SAN DIEGO, CA 92124

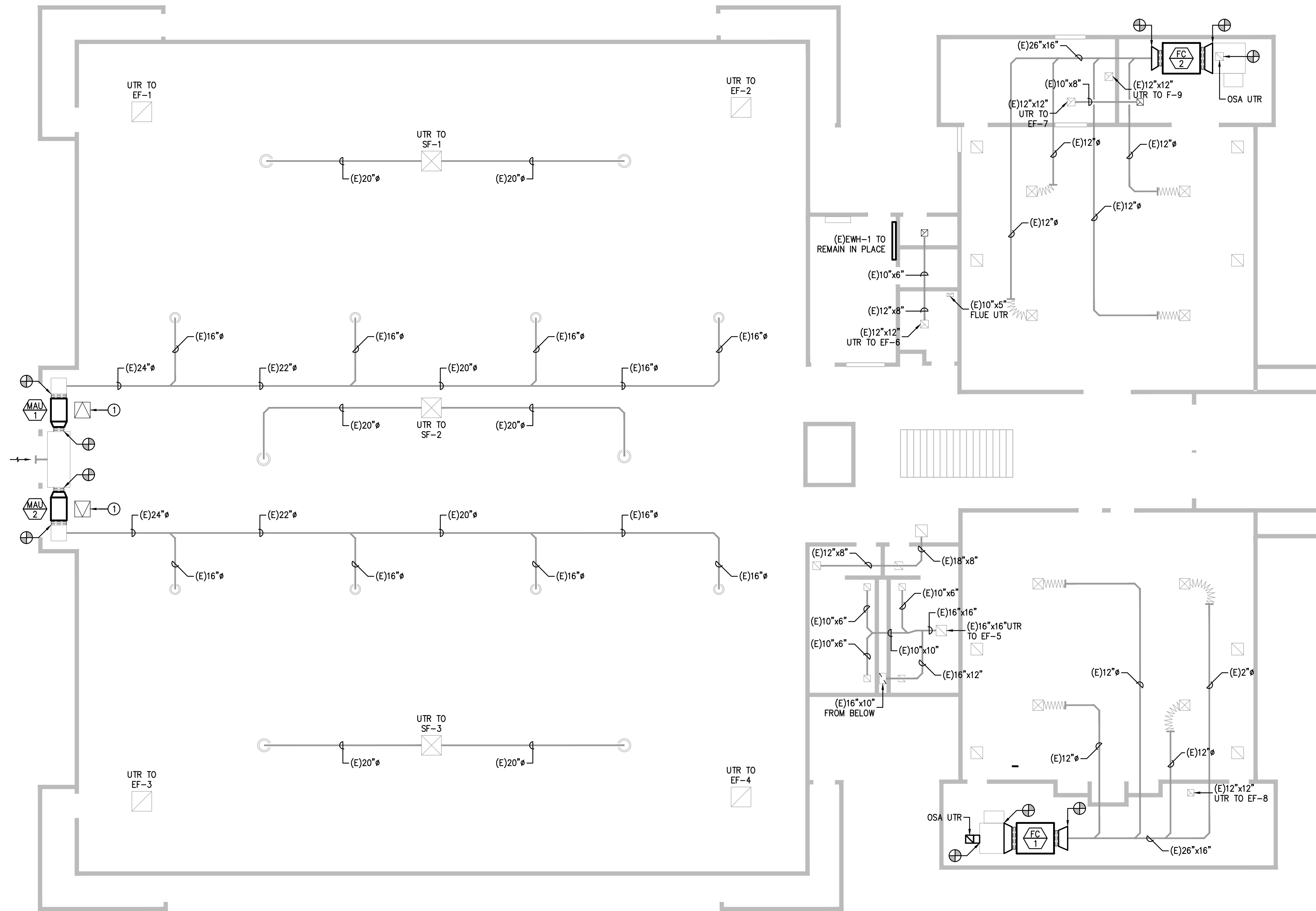
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SHEET TITLE	
MECHANICAL PHOTOS	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

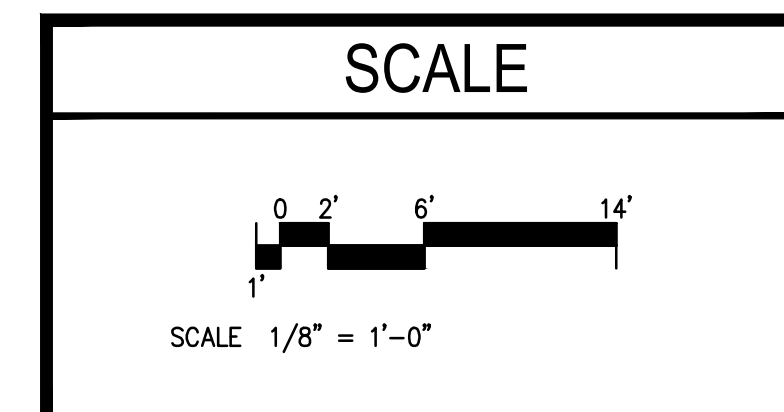
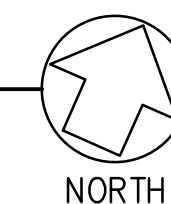
SHEET  
**M1.3**



FILENAME: M2.1\_MECHANICAL FLOOR PLAN.DWG



**1** MECHANICAL FLOOR PLAN  
SCALE: 1/8" = 1'-0"



**GENERAL NOTES**

1. THE CONDITIONS SHOWN ARE BASED ON AVAILABLE AS-BUILT DRAWINGS AND NON-DESTRUCTIVE SURVEY. FIELD VERIFY (E) CONDITIONS PRIOR TO COMMENCEMENT OF WORK.
2. PROVIDE NEBB OR AABC TEST AND BALANCE TO THE DB ENGINEER'S CALCULATED AIRFLOW.

**EYED NOTES**

- ① ADD ALTERNATE 2: PROVIDE A ROOF HATCH ABOVE MAU-1 AND MAU-2.

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**M2.1**

**GENERAL NOTES**

1. PROVIDE ROOF MOUNTED ELECTRICAL DISCONNECT TO ALL THE EQUIPMENT TO BE INSTALLED UNDER THIS PROJECT.
2. PROVIDE/REPLACE EXISTING FLEXIBLE DUCT CONNECTION TO ALL THE EQUIPMENT TO BE REPLACED UNDER THIS PROJECT.
3. COORDINATE DUCT AND CURB FLASHING DETAILS WITH THE ROOFING CONTRACTOR.

**EYED NOTES**

- ① RELOCATE EXISTING SEWER VENT 10' AWAY FROM COMBUSTION AIR INTAKE.
- ② PROVIDE FRAMED ROOF PLATFORM WITH SHEET METAL CAP. MOUNT CONDENSING UNITS ON SPRING ISOLATORS.
- ③ PROVIDE OSA INTAKE SIZED TO MEET THE ECONOMIZER REQUIREMENT.

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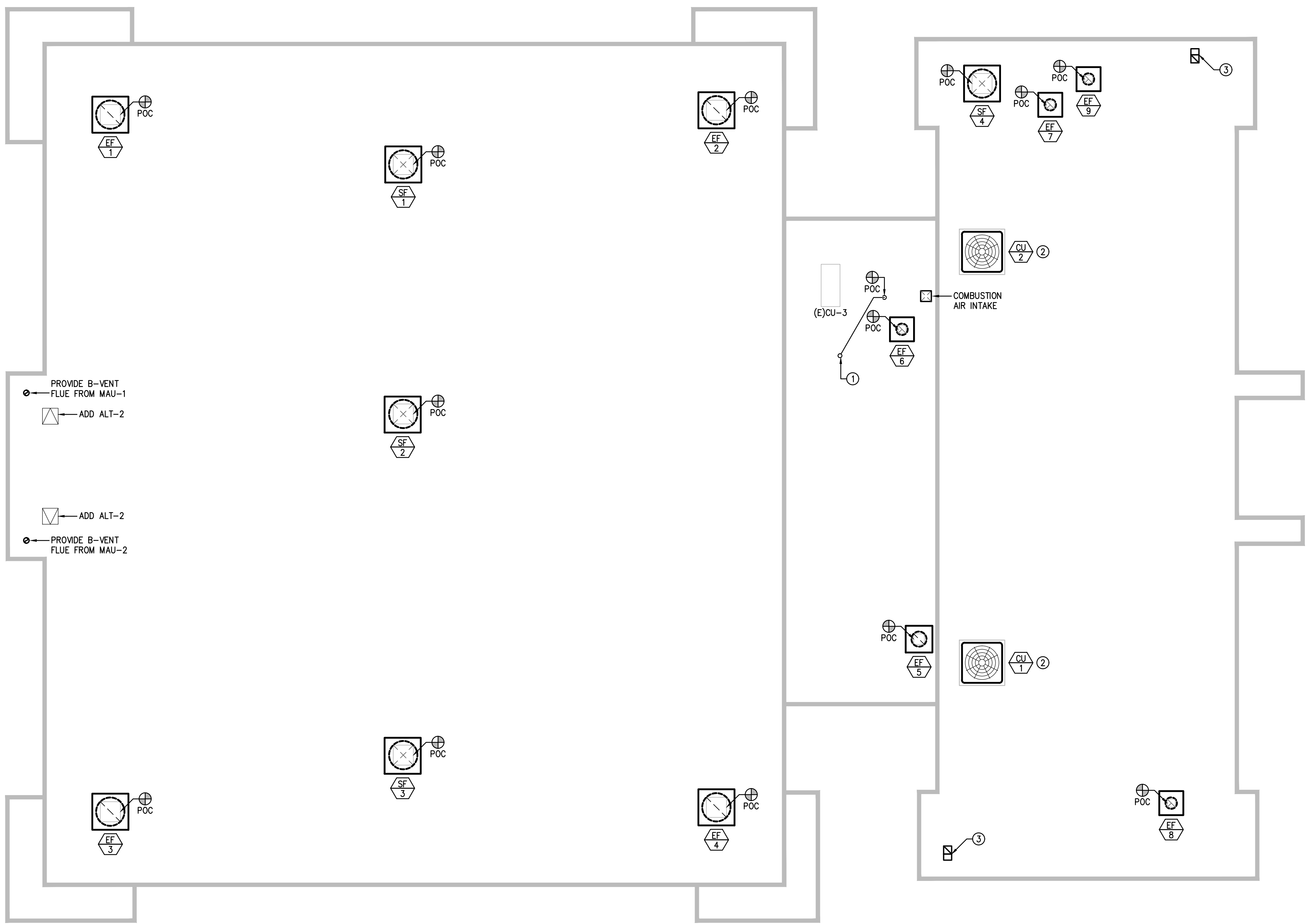
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11220 CLAIREMONT  
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 SAN DIEGO, CA 92124

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SHEET TITLE <b>MECHANICAL    ROOF PLAN</b>	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
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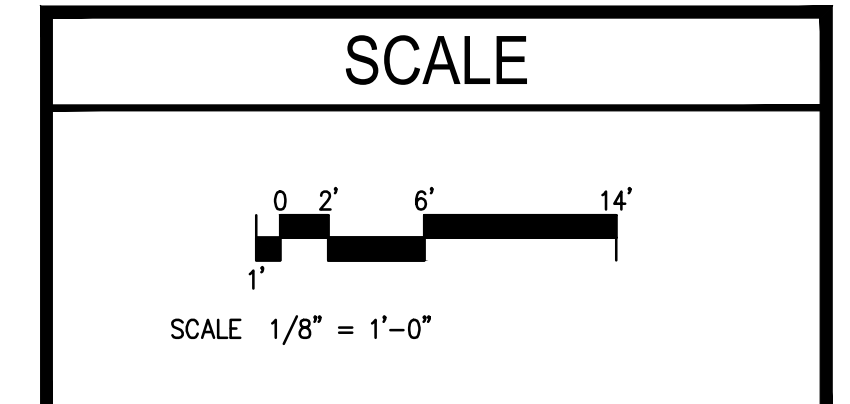
SHEET  
**M2.2**



PROVIDE B-VENT  
 FLUE FROM MAU-1  
 ADD ALT-2

ADD ALT-2  
 PROVIDE B-VENT  
 FLUE FROM MAU-2

**1 MECHANICAL ROOF PLAN**  
 SCALE: 1/8" = 1'-0"





C S D  
P B L



# DESIGN - BUILD PROJECT FOR HVAC REPLACEMENT

## SHEET INDEX

GENERAL	
TO.1	TITLE SHEET
MECHANICAL	
MO.1	MECHANICAL LEGEND AND GENERAL NOTES
MO.2	MECHANICAL SCHEDULE
MO.3	MECHANICAL SCHEDULE
M1.1	MECHANICAL DEMOLITION FLOOR PLAN
M1.2	MECHANICAL PIPING DEMOLITION PLAN
M1.3	MECHANICAL PHOTOS
M2.1	MECHANICAL FLOOR PLAN
M2.2	MECHANICAL PIPING FLOOR PLAN
M3.1	MECHANICAL ENLARGED PLAN
M4.1	MECHANICAL SYSTEM ARCHITECTURE

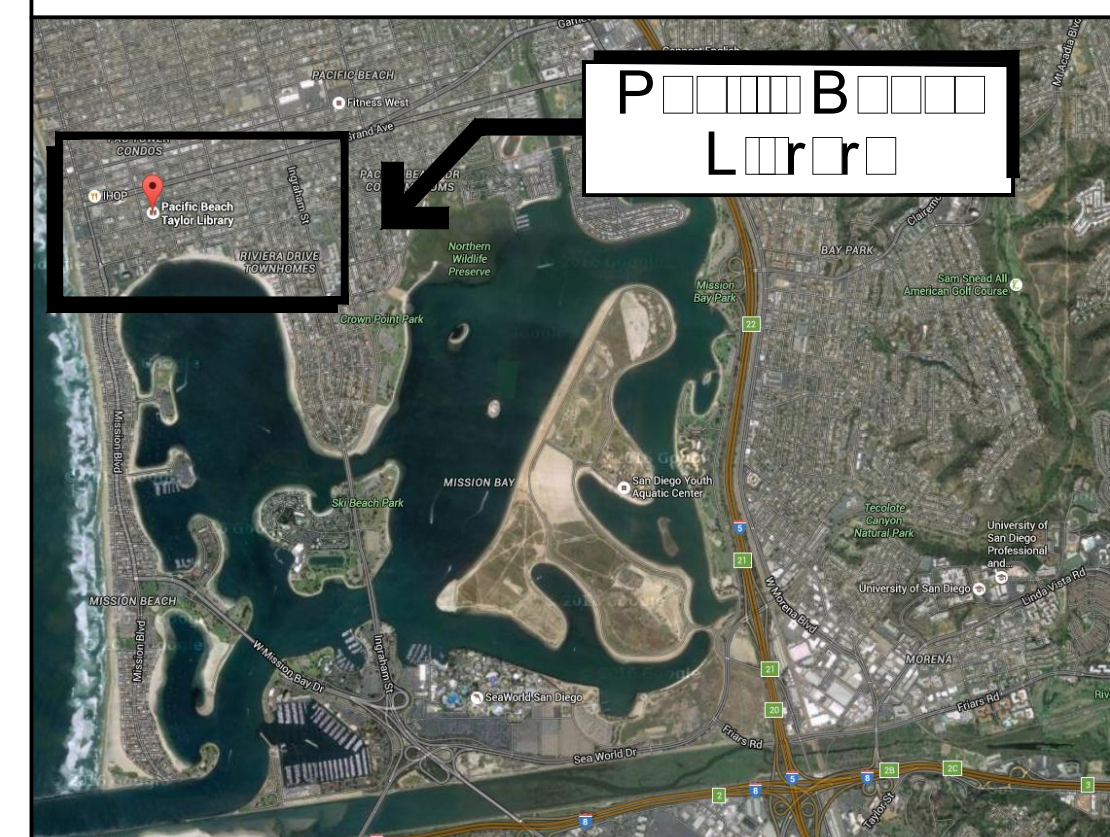
## PROJECT DIRECTORY

<b>PROJECT ADDRESS</b>	TIERRASANTA REC CENTER
	CONTACT: THOMAS SMITH 12220 CLAIREMONT MESA BLVD. SAN DIEGO CA - 92124 OFFICE: (619) 533-3753
<b>ENGINEER OF RECORD</b>	EBA ENERGY
	CONTACT: ESKINDER "ALEX" BERHANU 10679 WESTVIEW PARKWAY, 2ND FLOOR, SAN DIEGO, CA 92126 OFFICE: (619) 338-9395 FAX: (858) 946-0334
<b>MECHANICAL DESIGN CRITERIA CONSULTANT</b>	SC ENGINEERS, INC.
	CONTACT: JOSEPH KILCOYNE 17075 VIA DEL CAMPO, FIRST FLOOR SAN DIEGO, CA 92127 OFFICE: (858) 946-0333 FAX: (858) 946-0334

## SCOPE OF WORK SUMMARY

1. REPLACE THE 40 TON CHILLED WATER PLANT IN ITS ENTIRETY.
2. REPLACE THE 300 MBH HEATING HOT WATER PLANT IN ITS ENTIRETY.
3. REPLACE TEN OUTDOOR FOUR-PIPE HYDRONIC FAN COIL UNITS.
4. REPLACE FOUR EXHAUST FANS.
5. REPLACE THREE SPLIT SYSTEM DX HEAT PUMPS.
6. REPLACE THE DDC CONTROL SYSTEM SERVING THE FACILITY.

## VICINITY MAP



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SHEET TITLE	
TITLE SHEET	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

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## MECHANICAL LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION	SYMBOL	ABBREVIATION	DESCRIPTION
		REMOVE EXISTING EQUIPMENT OR PIPING SHOWN HATCHED		TV	SQUARE ELBOW WITH TURNING VANES
	POC	POINT OF CONNECTION			RADIUS ELBOW
	POD	POINT OF DISCONNECT		MVD	MANUAL VOLUME DAMPER
		COORDINATE WITH ELECTRICAL		MOD	MOTOR OPERATED DAMPER
		PIPE DOWN		BDD	BACKDRAFT DAMPER
		PIPE UP		SD	DUCT MOUNTED SMOKE DETECTOR
		PIPE RISE (OR DN FOR DROP)		SFD	AUTOMATIC SMOKE AND FIRE DAMPER
		DIRECTION OF FLOW IN PIPE		FLEX	FLEXIBLE DUCT
	SOV	SHUTOFF VALVE		FLEX	FLEXIBLE CONNECTION OR SEISMIC JOINT (DUCT)
	AV	AIR VENT (VALVE)			DUCT RISE IN DIRECTION OF FLOW
	CV	CHECK VALVE			DUCT DROP IN DIRECTION OF FLOW
	SD	SUCTION DIFFUSER			DUCT TRANSITION
	CV (2W)	CONTROL VALVE (2-WAY)			ROUND DUCT UP
	CV (3W)	CONTROL VALVE (3-WAY)			ROUND DUCT DOWN
	FGD	AUTOMATIC FLOW CONTROL DEVICE			SUPPLY DUCT UP
	GV	GATE VALVE			SUPPLY DUCT DOWN
		GLOBE/BALL/BUTTERFLY VALVE		RA/OA	RETURN AIR DUCT/OUTSIDE AIR DUCT UP
	BV	COMBINATION BALANCING & SHUT-OFF VALVE			RETURN AIR DUCT/OUTSIDE AIR DUCT DOWN
	FEV	FLOW ELEMENT VENTURI			EXHAUST AIR DUCT UP
	CL	CAPPED LINE			EXHAUST AIR DUCT DOWN
	STR	STRAINER		SA	SUPPLY AIR
	RV	PRESSURE RELIEF VALVE		RR	RETURN REGISTER
	PG	PRESSURE GAUGE WITH BALL VALVE		ER	EXHAUST REGISTER
	R	ECCENTRIC REDUCER		T'STAT	THERMOSTAT OR TEMPERATURE SENSOR (NUMBER INDICATES EQUIPMENT OR ZONE SERVED)
	R	CONCENTRIC REDUCER		H'STAT	HUMIDISTAT
	FC	FLEXIBLE CONNECTION (PIPE)		CFM	CUBIC FEET PER MINUTE
	TW	TEST WELL (PETE'S PLUG - PRESSURE AND/OR TEMPERATURE)			SYMBOL, SEE EQUIPMENT SCHEDULE
	TI	THERMOMETER			
	PA	PIPE ANCHOR			
	U	UNION			
	DN	DOWN OR DROP			
	UP	RISE OR RISER			
		VALVE ON RISE OR DROP			
		PRESSURE REDUCING VALVE			
		PRESSURE GAUGE			
		PUMP			
	HHWS	HEATING HOT WATER SUPPLY			
	HHWR	HEATING HOT WATER RETURN			
	CHWS	CHILLED WATER SUPPLY			
	CHWR	CHILLED WATER RETURN			

## MECHANICAL ABBREVIATIONS

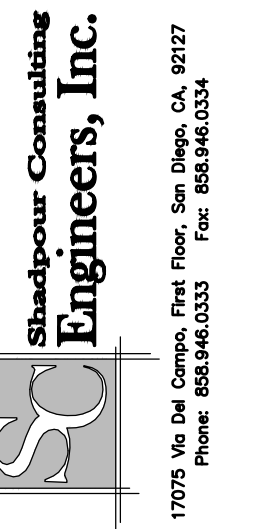
ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
(A)	ABANDONED	LRA	LOCKED ROTOR AMPS
AFMS	AIR FLOW MEASUREMENT STATION	MCA	MINIMUM CIRCUIT AMPACITY
AH	AIR HANDLER	MD	MOTORIZED DAMPER
AMB	AMBIENT	MECH	MECHANICAL
AMPS	AMPERES	MIN	MINIMUM, MINUTE
AP	ACCESS PANEL	MOCF	MAXIMUM OVER CURRENT PROTECTION
AS	AIR SEPARATOR	MOD	MODULATING
ASME	AMERICAN SOCIETY OF MECHANICAL ENGINEERS	MTG	MOUNTING
ATM	ATMOSPHERE, ATMOSPHERIC	MVD	MANUAL VOLUME DAMPER
AUX	AUXILIARY	NC	NORMALLY CLOSED, NOISE CRITERIA
BDD	BACKDRAFT DAMPER	NIC	NOT IN CONTRACT
BHP	BACKDRAFT DAMPER	NO	NORMALLY OPEN, NUMBER
BLDG	BRAKE HORSEPOWER BUILDING	NPSH	NET POSITIVE SUCTION HEAD
BTU	BRITISH THERMAL UNIT	NPSHA	NET POSITIVE SUCTION HEAD AVAILABLE
BTUH	BRITISH THERMAL UNIT PER HOUR	NPSHR	NET POSITIVE SUCTION HEAD REQUIRED
CAP	CAPACITY	NTS	NOT TO SCALE
CAV	CONSTANT AIR VOLUME	OA	OUTSIDE AIR
CD	CONDENSATE DRAIN (A/C)	OB	OPPOSED BLADE DAMPER
CFM	CUBIC FEET PER MINUTE	OD	OUTSIDE DIAMETER or DIMENSION
CFC	CALIFORNIA FIRE CODE	OPD	OVERCURRENT PROTECTIVE DEVICE
CHW	CHILLED WATER	OPER	OPERATING
CLG	CEILING	OSA	OUTSIDE AIR
CONC	CONCRETE	Δ P	PRESSURE DIFFERENTIAL
CONT	CONTINUATION	P	PUMP
COP	COEFFICIENT OF PERFORMANCE	PD	PRESSURE DROP
CW	CONDENSER WATER	PG	PRESSURE GAGE
DB	DESIGN BUILD	PH	PHASE
DDC	DIRECT DIGITAL CONTROL	PI	PRESSURE INDICATOR
DIA. (ø)	DIAMETER	POC	POINT OF CONNECTION
DIST	DISTRIBUTION	POS	POSITION
DN	DOWN	PRESS	PRESSURE
DP	DIFFERENTIAL PRESSURE	PSI	POUNDS PER SQUARE INCH
DS	DISCONNECT SWITCH	PSIA	POUNDS PER SQUARE INCH ABSOLUTE
DTL	DETAIL	PSIG	POUNDS PER SQUARE INCH GAGE
DTR	DUCT THRU ROOF	QTY	QUANTITY
EA	EXHAUST AIR	RA	RETURN AIR
EAT	ENTERING AIR TEMPERATURE	REQ'D	REQUIRED
EER	ENERGY EFFICIENCY RATIO	RG	RETURN GRILLE
EFF	EFFICIENCY	RH	RELATIVE HUMIDITY
ELEV	ELEVATION	RHC	REHEAT COIL
EMER	EMERGENCY	RLA	RUNNING LOAD AMPS
ENT	ENTERING	RPM	REVOLUTIONS PER MINUTE
EOR	ENGINEER OF RECORD	SCHED	SCHEDULE
EQUIP	EQUIPMENT	SD	SMOKE DAMPER, SMOKE DETECTOR
ESP	EXTERNAL STATIC PRESSURE	SEER	SEASONAL ENERGY EFFICIENCY RATIO
ET	EXPANSION TANK	SENS	SENSIBLE
EXT	EXTERNAL	SF	SQUARE FEET
F	DEGREE FAHRENHEIT	SI	INTERNATIONAL SYSTEM OF UNITS
(F) or F	FUTURE	SP	STATIC PRESSURE
FC	FAN COIL	SS	STAINLESS STEEL
FD	FIRE DAMPER	Δ T	TEMPERATURE DIFFERENTIAL
FF	FINISHED FLOOR	TEMP	TEMPERATURE, TEMPORARY
FLA	FULL LOAD AMPS	THERM	THERMOMETER
FLR	FLOOR	THRU	THROUGH
FPM	FEET PER MINUTE	TI	TEMPERATURE INDICATOR
FS	FLOW SWITCH	TK	THICKNESS
FSD	FIRE SMOKE DAMPER	TP	TOTAL PRESSURE
FT	FEET	TSP	TOTAL STATIC PRESSURE
GAL	GALLON(S)	T'STAT	THERMOSTAT
GEN	GENERATOR	TYP	TYPICAL
GPM	GALLONS PER MINUTE	UNO	UNLESS NOTED OTHERWISE
HD	HEAD	UTR	UP THRU ROOF
HHW	HEATING HOT WATER	V	VOLTS
HORIZ	HORIZONTAL	VERT	VERTICAL
HP	HORSEPOWER	VFD	VARIABLE FREQUENCY DRIVE
HR	HOUR	W	WATTS
HTG	HEATING	W/	WITH
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING	WB	WET BULB TEMPERATURE
Hz	HERTZ	WC	WATER COLUMN
IN	INCHES	WG	WATER GAUGE
IN WC	INCHES WATER COLUMN	W/O	WITHOUT
Kw	KILOWATTS	WT	WEIGHT
LAT	LEAVING AIR TEMPERATURE		
LBS	POUNDS		

## GENERAL NOTES

- THESE DRAWINGS REPRESENT A SCHEMATIC DESIGN INTENDED TO ASSIST DESIGN/BUILD CONTRACTORS PREPARE COMPETITIVE BIDS. THE AWARDED DESIGN/BUILD CONTRACTOR WILL BE RESPONSIBLE FOR A FULLY COORDINATED PROJECT DESIGN AND INSTALLATION. THE INTENT OF THE BRIDGING DOCUMENTS INCLUSIVE OF SCHEMATIC DRAWINGS, SPECIFICATIONS, AND SCOPE OF WORK DOCUMENTS IS TO IDENTIFY NOMINAL CAPACITIES, QUANTITIES, AND QUALITY REQUIREMENTS.
- THESE DRAWINGS ARE A GENERAL GRAPHIC PRESENTATION OF THE WORK. PIPING AND EQUIPMENT, AS SHOWN, ARE SCHEMATIC DESIGN, FABRICATE AND INSTALL BASED ON ACTUAL FIELD MEASUREMENT. COORDINATE WITH OTHER TRADES. MAINTAIN AN UP TO DATE SET OF AS-BUILT DRAWINGS AT THE JOB SITE.
- COMPLY WITH CALIFORNIA MECHANICAL CODE (CMC), CALIFORNIA PLUMBING CODE (CPC), AND NATIONAL FIRE PROTECTION AGENCY (NFPA), AND GOVERNING CODES. THERE SHALL BE NO EXCEPTION. REPORT DEFICIENCIES WITHIN THIRTY (30) DAYS UPON AUTHORIZATION TO PROCEED.
- ALL THE DRAWINGS SHALL BE REVIEWED. ANY QUESTIONS SHALL BE BROUGHT UP IN WRITING, TO THE ATTENTION OF THE ENGINEER BEFORE THE START OF CONSTRUCTION.
- PROVIDE ACCESS AND CLEARANCE FOR MAINTENANCE OF MECHANICAL EQUIPMENT AND COMPONENTS AS RECOMMENDED BY EQUIPMENT MANUFACTURER AND APPLICABLE CODES.
- HANDLE, STORE AND INSTALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.
- BRACE AND SUPPORT PIPES AND CONDUIT IN ACCORDANCE TO SMACNA GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL PIPING SYSTEM. (SEISMIC HAZARD LEVEL A)
- INSULATION AND FLEXIBLE DUCT SHALL COMPLY WITH STATE FIRE MARSHALL CRITERIA AND SHALL NOT EXCEED FLAME SPREAD OF 25 AND SMOKE DEVELOPED OF 50 PER ASTM-84, NFPA-223, AND UL 723.
- INSULATE PIPING AND DUCTWORK IN ACCORDANCE TO THE GOVERNING CODES AND PROJECT SPECIFICATIONS.
- COMMISSION AND START-UP THE MECHANICAL SYSTEMS TO ASSURE A COMPLETE AND OPERATIONAL HVAC SYSTEM IN ACCORDANCE TO ASHRAE AND NEBB.
- ESP DATA PROVIDED ON EQUIPMENT SCHEDULES DOES NOT INCLUDE ANY ALLOWANCE FOR SYSTEM EFFECTS, DRIVE LOSSES, OR OTHER APPLIED MATERIALS AND/OR COMPONENTS PROVIDED WITH, OR FIELD INSTALLED WITHIN MANUFACTURED EQUIPMENT. EXCEPT AS NOTED OTHERWISE, FINAL FAN AND MOTOR SELECTIONS SHALL INCLUDE THE ABOVE, AS WELL AS ALLOWANCES FOR ACCUMULATIONS ON FILTERS AND COILS. ESP INCLUDES ONLY THOSE ITEMS "EXTERNAL" TO EQUIPMENT. MANUFACTURER'S SELECTION OF FANS AND MOTORS SHALL BE BASED UPON CALCULATED TSP AND BHP MAY NOT EXCEED 85% OF NOMINAL HP.
- CONTRACTOR SHALL COMPLY WITH CFC CHAPTER 33-FIRE SAFETY DURING DEMOLITION AND CONSTRUCTION.
- ALL WORK SHALL CONFORM TO TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR).
- THE INTENT OF THIS DRAWINGS AND SPECIFICATIONS IS THAT THE WORK OF THE ALTERATION, REHABILITATION OR RECONSTRUCTION IS TO BE IN ACCORDANCE WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS. SHOULD ANY EXISTING CONDITIONS SUCH AS DETERIORATION OR NON-COMPLYING CONSTRUCTION BE DISCOVERED WHICH IS NOT COVERED BY THE CONTRACT DOCUMENTS WHEREIN THE FINISHED WORK WILL NOT COMPLY WITH TITLE 24, CALIFORNIA CODE OF REGULATIONS, A CHANGE ORDER, OR A SEPARATE SET OF PLANS AND SPECIFICATIONS, DETAILING AND SPECIFYING THE REQUIRED REPAIR WORK SHALL BE SUBMITTED TO AND APPROVED BY CITY OF SAN DIEGO BEFORE PROCEEDING WITH THE REPAIR WORK.

## TITLE 24 NOTES

- HVAC EQUIPMENT AND APPLIANCES SHALL MEET THE LATEST REQUIREMENTS OF 2013 ENERGY EFFICIENCY STANDARDS. 2013 TITLE 24 STANDARDS ARE THE CURRENT STANDARDS THAT ARE APPLICABLE TO THIS PROJECT.
- ALL HVAC SYSTEMS SHALL MEET THE LATEST CONTROL REQUIREMENTS PER SECTION 110.2 & 120.2 PER 2013 ENERGY EFFICIENCY STANDARDS.
- ALL WORK SHALL BE IN ACCORDANCE WITH CITY CODES, CALIFORNIA ENERGY CONSERVATION STANDARDS, TITLE-24, AND ALL OTHER APPLICABLE CODES.
- ALL PIPING SHALL MEET THE LATEST REQUIREMENTS OF 2013 ENERGY EFFICIENCY STANDARDS AND 2012 UNIFORM MECHANICAL CODE.
- ALL PIPING AND DUCTWORK SHALL BE INSULATED CONSISTENT WITH THE REQUIREMENTS OF SECTIONS 120.3, 120.4 AND 120.7 TITLE 24 ENERGY STANDARDS AND CHAPTER 6 OF CMC.
- ALL HVAC EQUIPMENT AND APPLIANCES SHALL MEET THE REQUIREMENTS PER SECTION 110.1-11.3, 110.5, 120.1-120.4 TITLE 24 ENERGY STANDARDS.



BRIDGING  
DOCUMENTS-NOT  
FOR CONSTRUCTION

16126

ISSUED/REVISIONS	DATE
50% SCHEMATIC DESIGN	07/29/2016
100% SCHEMATIC DESIGN	09/02/2016

C: [ ] S: [ ] D: [ ] T: [ ]  
14ME02 - P: [ ] B: [ ]  
L: [ ] HVAC  
R: [ ] [ ] [ ] [ ]

42 [ ] CASS AVE  
SAN DIEGO, CA [ ] 210 [ ]

BRIDGING  
DOCUMENTS

SHEET TITLE  
MECHANICAL LEGEND  
AND GENERAL NOTES

DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET

M0.1



### CHILLER SCHEDULE WATER COOLED

SYMBOL	DESCRIPTION	MANUFACTURER & MODEL	CAPACITY (TONS)	REFRIGERANT	EVAPORATOR DATA				CONDENSER DATA		ELECTRICAL DATA					MAX IPLV KW/TON	MAX SOUND POWER LEVEL (dBA)	OPER. WT. (LBS.)	REMARKS
					GPM	EW (°F)	LWT (°F)	MAX PD (FT)	NO. OF COMPRESSORS	NO. OF FANS	V	Ø	HZ	MCA	MOCP				
CH1	AIR COOLED SCROLL	TRANE - CGAM OR EQUAL	40	R410A	95	55	45	20	4	4	208	3	60	197.3	225	1.17	89	4000	① ② ③ ④

① PROVIDE CONDENSER SECTION WITH COPPER TUBE AND COPPER FIN COILS WITH PHENOLIC COATING. ② PROVIDE SINGLE POINT CONNECTION. ③ PROVIDE BAGNET MSTP INTERFACE MODULE. ④ PROVIDE ELECTRONIC EXPANSION VALVE.

### HOT WATER BOILER SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER & MODEL	SERVICE	FUEL	INPUT (MBH)	MIN. EFFICIENCY	GPM	ENT. WATER TEMP.	LVG. WATER TEMP.	ELECTRICAL DATA				OPER. WT.	ASME PRESSURE RATING	REMARKS	
										BOILER AMPS	PUMP HP	V	Ø				HZ
B1	WATER TUBE BOILER	LAARS - MT2H0300 OR EQUAL	HEATING HOT WATER	NG	300	85%	30	162.5	180	15	1/6	120	1	60	400	125	① ② ③

① OUTDOOR UNIT. ② PROVIDE LOW NOX BURNER. ③ PROVIDE INTEGRAL PUMP ACCESSORY FOR PRIMARY/SECONDARY FLOW.

### PUMP SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER & MODEL	SERVICE	FLOW (GPM)	ELECTRICAL DATA				MIN. EFF. (%)	OPER. WEIGHT (LBS.)	REMARKS	
					MIN. HP	V	Ø	HZ				VFD
CHWP1	BASE MOUNTED END SUCTION	BELL & GOSSETT OR EQUAL	CHILLED WATER	95	7.5	208	3	60	YES	60%	400	① ②
HHWP1	IN-LINE CENTRIFUGAL	BELL & GOSSETT OR EQUAL	HEATING HOT WATER	30	5	208	3	60	YES	38%	230	① ②

① PROVIDE PREMIUM EFFICIENCY MOTOR. ② PROVIDE VFD WITH INTEGRAL DISCONNECT AND BYPASS.

### EXPANSION TANK SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER & MODEL	SERVICE	CAPACITY (GALLONS)	ACCEPTANCE (GALLONS)	ASME RATED PRESSURE (PSI)	OPER. WT. (LBS)	CHARGE PRESS (PSIG)	REMARKS
ET1	HORIZONTAL BLADDER TYPE	TACO OR EQUAL	CHILLED WATER	15	15	125	200	20	①
ET2	HORIZONTAL BLADDER TYPE	TACO OR EQUAL	HEATING HOT WATER	15	15	125	200	20	①

① FULL ACCEPTANCE TYPE.

### AIR DIRT SEPARATOR SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER & MODEL	SERVICE	GPM	DIMENSIONS CONNECTION SIZE (IN)	MAX PD (FT)	OPER WEIGHT (LBS)	REMARKS
AS1	TANK TYPE	TACO OR EQUAL	CHILLED WATER	95	3"	2	200	①
AS2	TANK TYPE	TACO OR EQUAL	HEATING HOT WATER	30	2"	1	100	①

① PROVIDE WITH REMOVABLE COVER AND INTEGRAL STRAINER.

### CHEMICAL POT FEEDER SCHEDULE

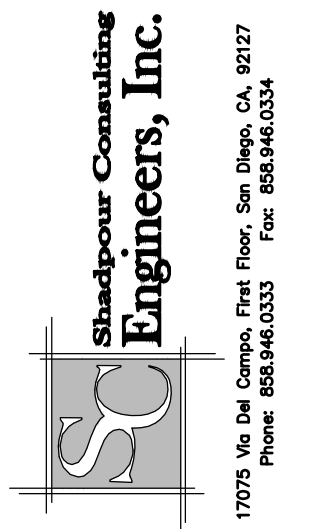
SYMBOL	DESCRIPTION	MANUFACTURER & MODEL	SERVICE	(CAPACITY) GALLONS	MAXIMUM WORKING PRESSURE (PSI) (MAX.)	MAXIMUM WORKING TEMPERATURE (DEG. F.) (MAX.)	DRAIN (IN)	OPER WEIGHT (LBS)	REMARKS
CPE1	BYPASS TYPE	J. L. WINGERT OR EQUAL	CHILLED WATER	5	200	200	3/4"	150	①
CPE2	BYPASS TYPE	J. L. WINGERT OR EQUAL	HEATING HOT WATER	5	200	200	3/4"	150	①

① PROVIDE WITH SUPPORT STANDS.

### FAN COIL UNIT SCHEDULE

SYMBOL	DESCRIPTION	MANUFACTURER & MODEL	SUPPLY FAN							COOLING COIL										HEATING COIL					FILTER		OPER WEIGHT (LBS)	REMARKS						
			CFM	OSA CFM	MIN. HP	V	Ø	Hz	DRIVE	CAPACITY (MBH)		MIN. NO. OF ROWS	ENT AIR (°F)		LVG AIR (°F)		GPM	ENT WATER (°F)	LVG WATER (°F)	MAX WATER PD (FT H2O)	MIN. BRANCH PIPE SIZE (IN)	CAPACITY TOTAL (MBH)	MIN. NO. OF ROWS	GPM	ENT WATER (°F)	LVG WATER (°F)			WATER PD (FT H2O)	ENT AIR (°F)	LVG AIR (°F)	BRANCH PIPE SIZE (IN)	EFFICIENCY (MERV)	THICKNESS (INCH)
										TOTAL	SENS		DB	WB	DB	WB																		
FC01	HORIZONTAL 4-PIPE	DAIKIN HCBB OR EQUAL	850	150	0.75	208	3	60	BELT	26	20	6	78	65	55	53	5.2	45	55	5	1	16	2	1.6	180	160	2	63	90	3/4	8	1	240	① ② ③
FC02	HORIZONTAL 4-PIPE	DAIKIN HCBB OR EQUAL	1630	525	1.50	208	3	60	BELT	54	43	6	79	65	55	53	10.6	45	55	5	1-1/4	37	2	3.6	180	160	2	63	90	1	8	1	400	① ② ③ ④
FC03	HORIZONTAL 4-PIPE	DAIKIN HCBB OR EQUAL	760	115	0.75	208	3	60	BELT	25	20	6	79	65	55	53	5.0	45	55	5	1	15	2	1.5	180	160	2	63	90	3/4	8	1	250	① ② ③
FC04	HORIZONTAL 4-PIPE	DAIKIN HCBB OR EQUAL	1150	215	0.75	208	3	60	BELT	34	27	6	79	64	55	53	6.7	45	55	5	1-1/4	24	2	2.4	180	160	2	63	90	3/4	8	1	385	① ② ③
FC05	HORIZONTAL 4-PIPE	DAIKIN HCBB OR EQUAL	2000	300	1.00	208	3	60	BELT	59	46	6	77	64	55	53	11.7	45	55	5	1-1/4	38	2	3.8	180	160	2	63	90	1	8	1	640	① ② ③ ④
FC06	HORIZONTAL 4-PIPE	DAIKIN HCBB OR EQUAL	1450	215	1.00	208	3	60	BELT	45	37	6	77	64	55	53	8.9	45	55	5	1-1/4	28	2	2.7	180	160	2	63	90	3/4	8	1	400	① ② ③
FC07	HORIZONTAL 4-PIPE	DAIKIN HCBB OR EQUAL	1450	215	1.00	208	3	60	BELT	45	37	6	77	64	55	53	8.9	45	55	5	1-1/4	28	2	2.7	180	160	2	63	90	3/4	8	1	400	① ② ③
FC08	HORIZONTAL 4-PIPE	DAIKIN HCBB OR EQUAL	2500	675	1.50	208	3	60	BELT	85	63	6	77	64	55	53	17.0	45	55	5	1-1/2	50	2	5.0	180	160	2	63	90	1	8	1	685	① ② ③ ④ ⑤
FC09	HORIZONTAL 4-PIPE	DAIKIN HCBB OR EQUAL	1530	525	1.00	208	3	60	BELT	56	44	6	81	66	55	53	11.1	45	55	5	1-1/4	39	2	3.8	180	160	2	63	90	1	8	1	400	① ② ③ ④
FC10	HORIZONTAL 4-PIPE	DAIKIN HCBB OR EQUAL	1140	170	1.00	208	3	60	BELT	35	27	6	79	65	55	53	6.9	45	55	5	1-1/4	22	2	2.2	180	160	2	63	90	3/4	8	1	385	① ② ③

① PROVIDE PREMIUM EFFICIENCY MOTOR. ② FINAL CAPACITIES TO BE BASED OFF OF DESIGN-BUILD EOR'S LOAD CALCULATIONS AND PRESSURE CALCULATIONS. ③ PROVIDE LOCAL MAGNETIC MOTOR STARTER CONTROLLED BY DDC. ④ PROVIDE 0-100% DIFFERENTIAL ENTHALPY ECONOMIZER. ⑤ PROVIDE VARIABLE SPEED FAN CONTROL PER CODE REQUIREMENTS.



BRIDGING DOCUMENTS-NOT FOR CONSTRUCTION

16126

ISSUED/REVISIONS	DATE
50% SCHEMATIC DESIGN	07/29/2016
100% SCHEMATIC DESIGN	09/02/2016

C: [ ] S: [ ] D: [ ] T: [ ]  
 14ME02 - P: [ ] B: [ ]  
 L: [ ] HVAC  
 R: [ ] [ ] [ ]

42 CASS AVE  
 SAN DIEGO, CA 92101

**BRIDGING DOCUMENTS**

SHEET TITLE	
MECHANICAL SCHEDULE	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET

M0.2

FILENAME: M0.2\_MECHANICAL\_SCHEDULE.DWG

## EXHAUST FAN SCHEDULE

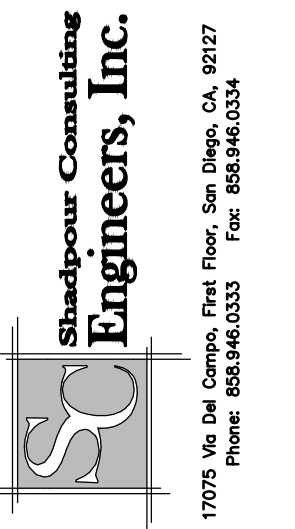
SYMBOL	DESCRIPTION	MANUFACTURER & MODEL	AREA SERVED	CFM	DRIVE	ELECTRICAL DATA				MAX. OPER WEIGHT (LBS)	MAX. SOUND POWER (SONES)	REMARKS
						MIN. HP	V	Ø	HZ			
EF 1	CEILING MOUNTED	GREENHECK SP-A510 OR EQUAL	WOMEN'S RESTROOM	400	DIRECT	224 WATTS	120	1	60	35	4.5	①
EF 2	CEILING MOUNTED	GREENHECK SP-A510 OR EQUAL	WOMEN'S RESTROOM	400	DIRECT	224 WATTS	120	1	60	35	4.5	①
EF 3	CEILING MOUNTED	GREENHECK SP-B90 OR EQUAL	STAFF RESTROOM	80	DIRECT	21 WATTS	120	1	60	15	1.0	①
EF 4	IN-LINE	GREENHECK SQ-120-VG OR EQUAL	COMMUNITY ROOM	900	DIRECT	0.5	120	1	60	95	6.2	① ②

① PROVIDE MANUFACTURER EQUIPPED BACKDRAFT DAMPER. ② PROVIDE SPEED CONTROL ACCESSORY.

## SPLIT SYSTEM SCHEDULE

SYMBOL	DESCRIPTION	INDOOR SECTION							OUTDOOR SECTION				COMBINED CAPACITY							REMARKS					
		INDOOR FAN MOTOR			ELEC.		EFF (MERV)	FILTERS TK.	OPER. WT. LBS.	SYMBOL	DESCRIPTION	OUTDOOR FAN			OPER. WT. LBS.	COOLING					HEATING	MIN. OSA CFM	MIN. SEER		
		CFM	NO. FANS	MIN. HP	NORMAL POWER	V						Ø	NO. FANS	V		Ø	TOTAL CAP. (MBH)	SENSIBLE CAP. (MBH)	AMB °F					ENT DB°F	ENT WB°F
FC 11	CARRIER FV4C OR EQUAL	1300	1	1/2	YES	208	1	8	1"	150	HP 11	CARRIER 25HCB6 O EQUAL	1	208	1	280	40	32	85	78	64	37	260	16.0	①
FC 12	CARRIER FV4C OR EQUAL	1400	1	3/4	YES	208	1	8	1"	170	HP 12	CARRIER 25HCB6 O EQUAL	1	208	1	280	50	35	85	82	68	42	675	16.0	①
FC 13	CARRIER FV4C OR EQUAL	1400	1	3/4	YES	208	1	8	1"	170	HP 13	CARRIER 25HCB6 O EQUAL	1	208	1	280	45	32	85	82	67	42	675	16.0	①

① PROVIDE ANTI-CORROSION EPOXY COATING ON CONDENSING UNIT.



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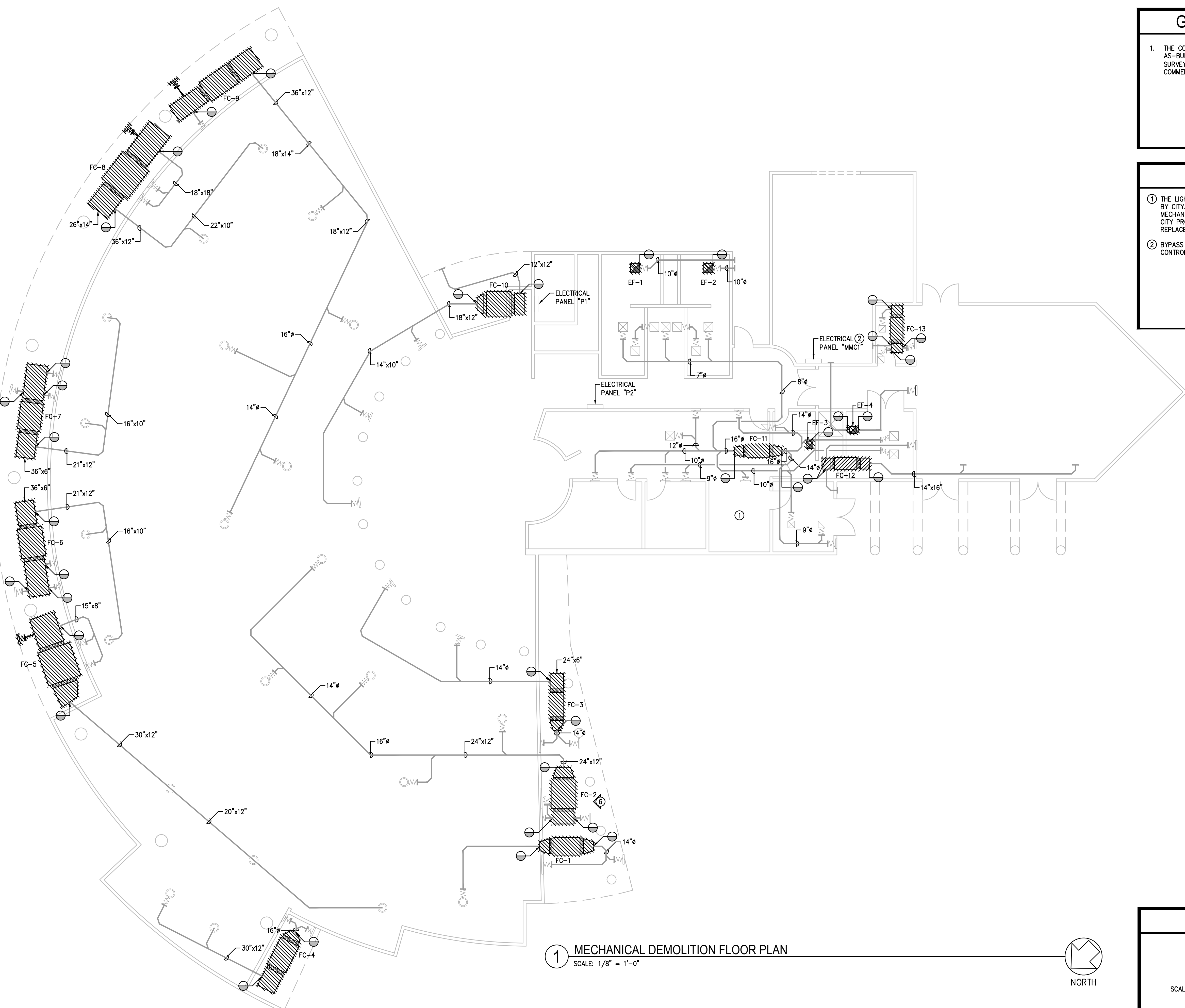
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SAN DIEGO, CA 92101

BRIDGING DOCUMENTS

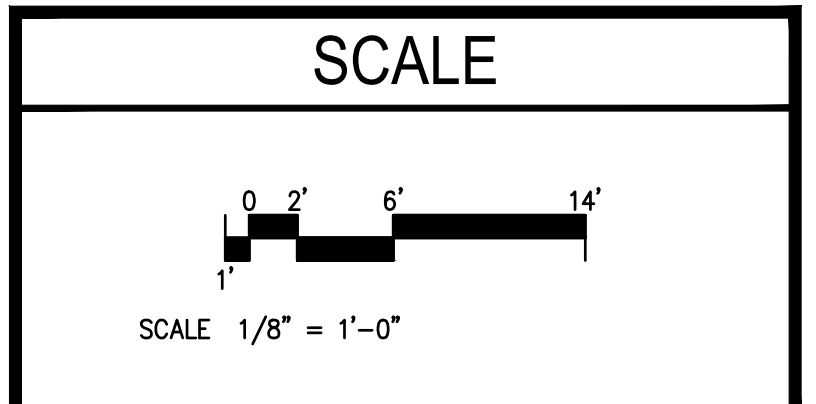
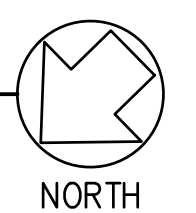
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MECHANICAL SCHEDULE	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET

M0.3



1 MECHANICAL DEMOLITION FLOOR PLAN  
SCALE: 1/8" = 1'-0"



**GENERAL NOTES**

- THE CONDITIONS SHOWN ARE BASED ON AVAILABLE AS-BUILT DRAWINGS AND NON-DESTRUCTIVE SURVEY. FIELD VERIFY (E) CONDITIONS PRIOR TO COMMENCEMENT OF WORK.

**EYED NOTES**

- THE LIGHT FIXTURES IN THIS AREA TO BE REPLACED BY CITY. CONTRACTOR SHALL COORDINATE THE MECHANICAL DEMOLITION WORK IN THIS AREA WITH CITY PROJECT MANAGER, SO THAT CITY CAN REPLACE LIGHT FIXTURES AT SAME TIME.
- BYPASS FAN COIL UNIT STARTERS IN MOTOR CONTROL CENTER.

**BRIDGING DOCUMENTS-NOT FOR CONSTRUCTION**

16126

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C:  S:  D:  T:   
 14ME02 - P:  B:   
 L:  HVAC  
 R:

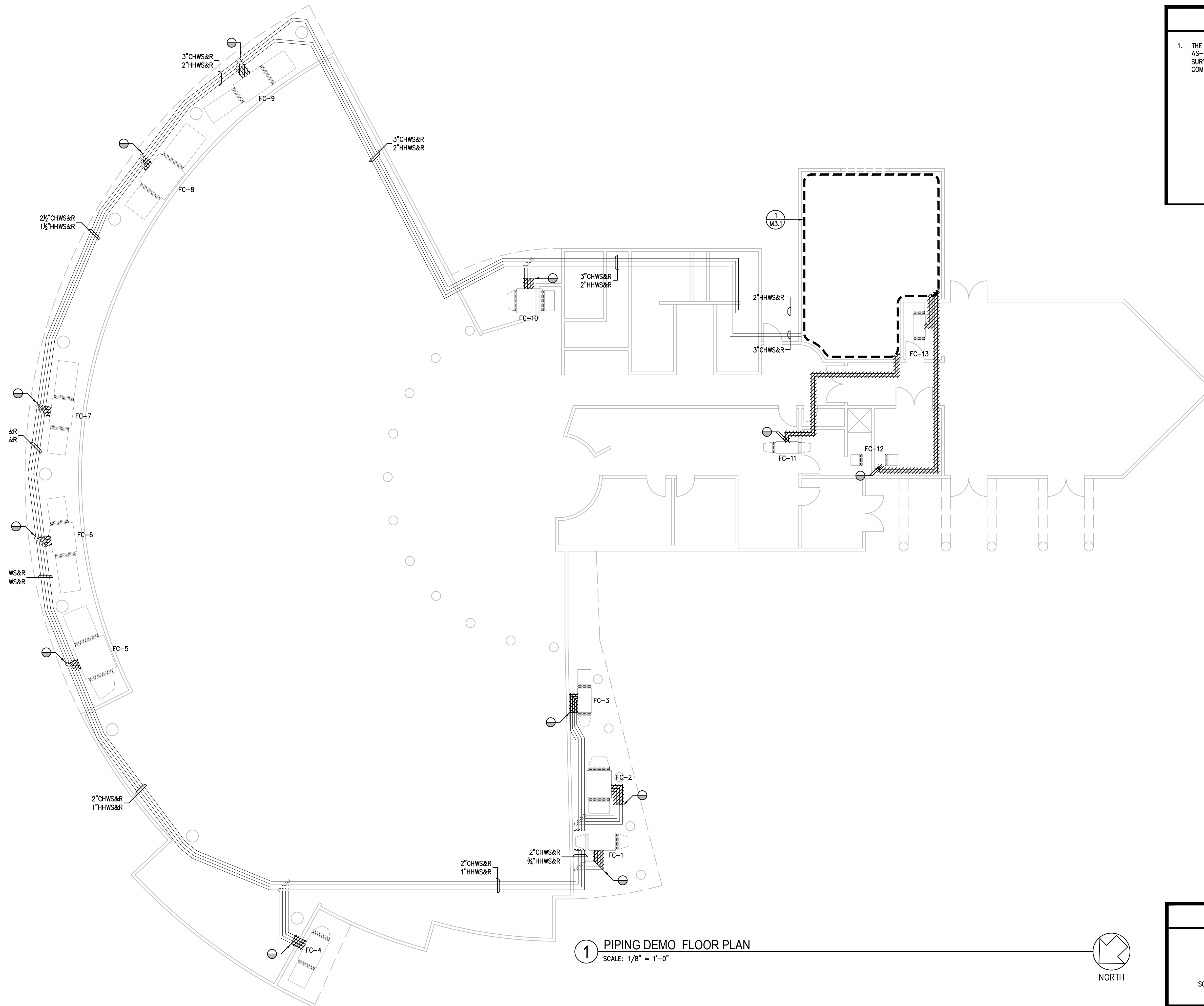
42 CASS AVE  
SAN DIEGO, CA 92101

**BRIDGING DOCUMENTS**

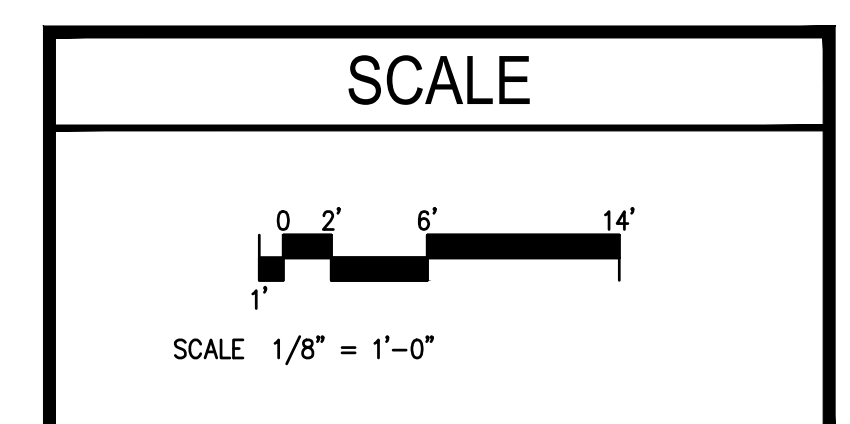
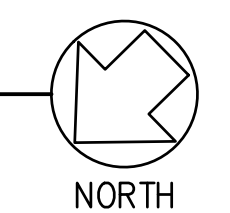
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DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET  
**M1.1**

FILENAME: M1.2\_PIPING DEMO FLOOR PLAN.DWG

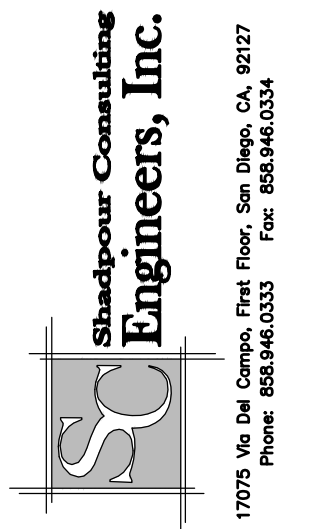


**1 PIPING DEMO FLOOR PLAN**  
SCALE: 1/8" = 1'-0"



**GENERAL NOTES**

1. THE CONDITIONS SHOWN ARE BASED ON AVAILABLE AS-BUILT DRAWINGS AND NON-DESTRUCTIVE SURVEY. FIELD VERIFY (E) CONDITIONS PRIOR TO COMMENCEMENT OF WORK.



**BRIDGING DOCUMENTS-NOT FOR CONSTRUCTION**

16126

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C:  S:  D:  T:   
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 R:

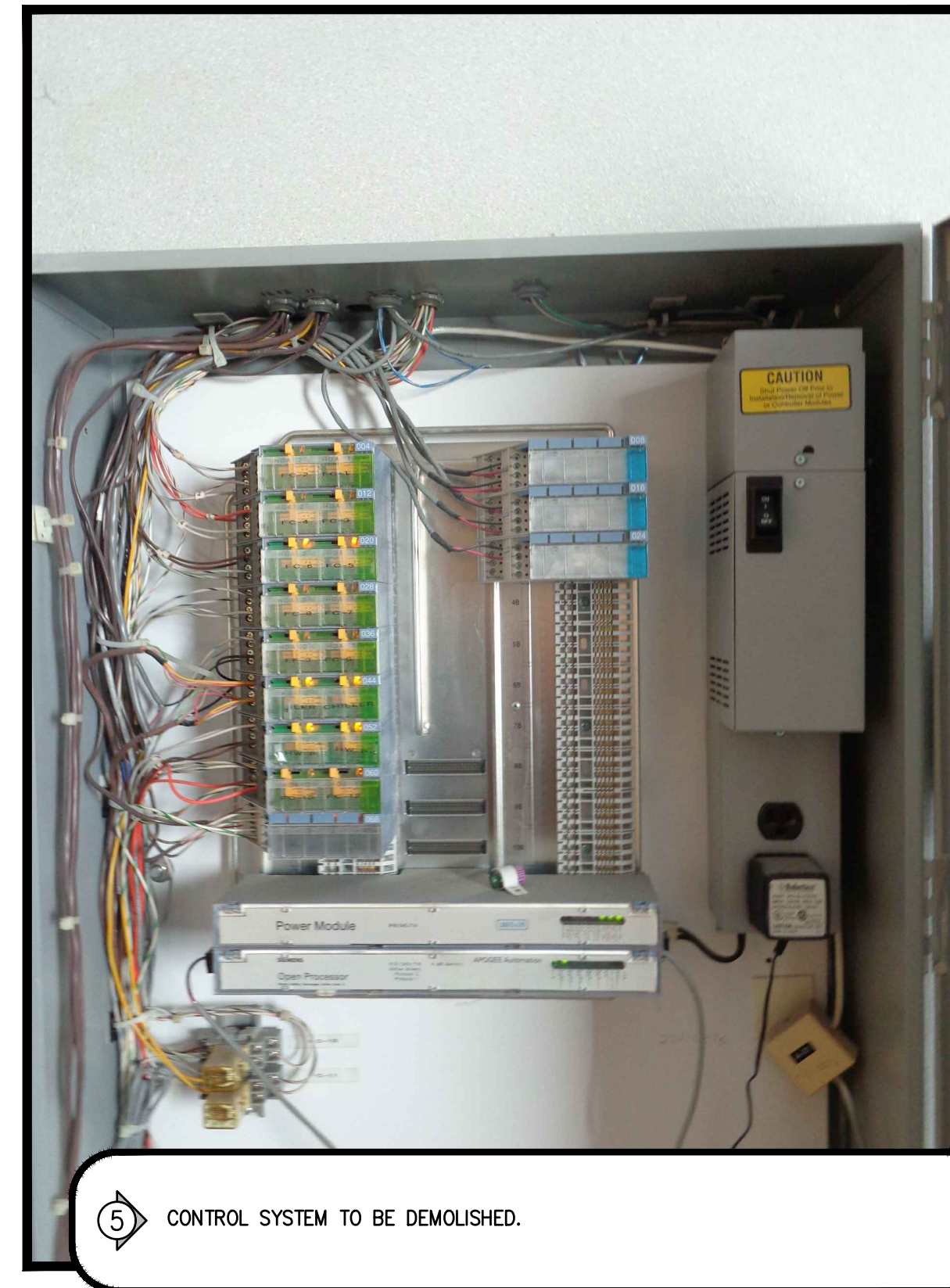
42 CASS AVE  
 SAN DIEGO, CA 92101

**BRIDGING DOCUMENTS**

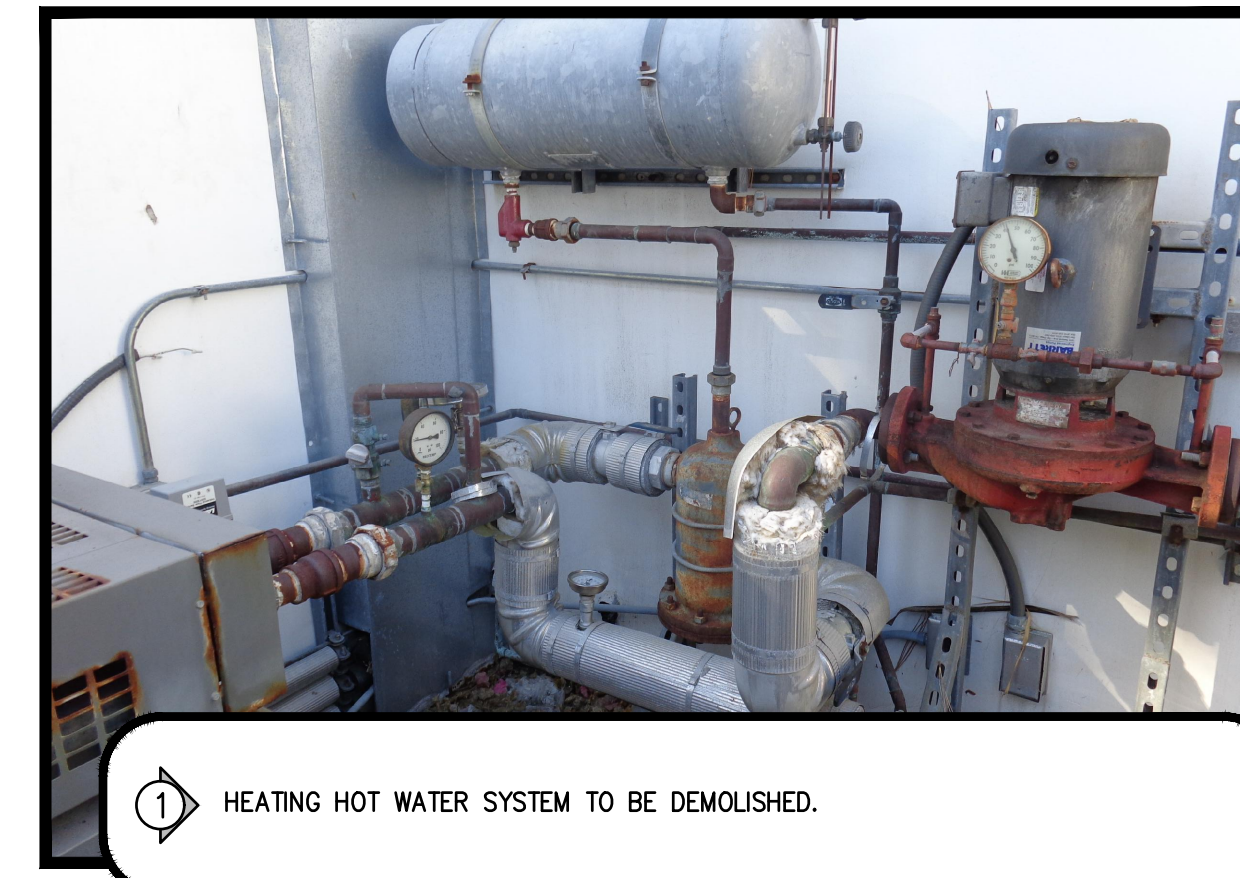
SHEET TITLE <b>MECHANICAL PIPING DEMO FLOOR PLAN</b>	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET  
**M1.2**





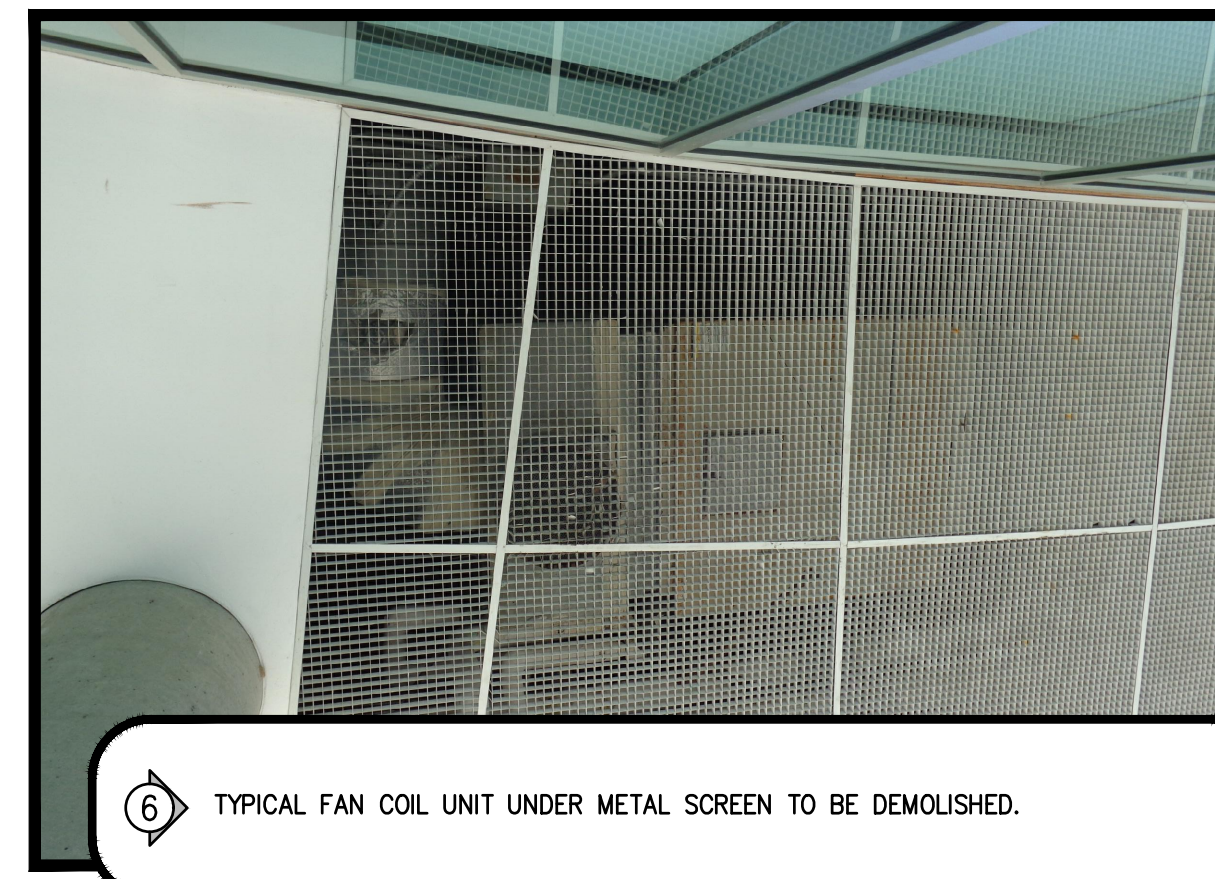
5 CONTROL SYSTEM TO BE DEMOLISHED.



1 HEATING HOT WATER SYSTEM TO BE DEMOLISHED.



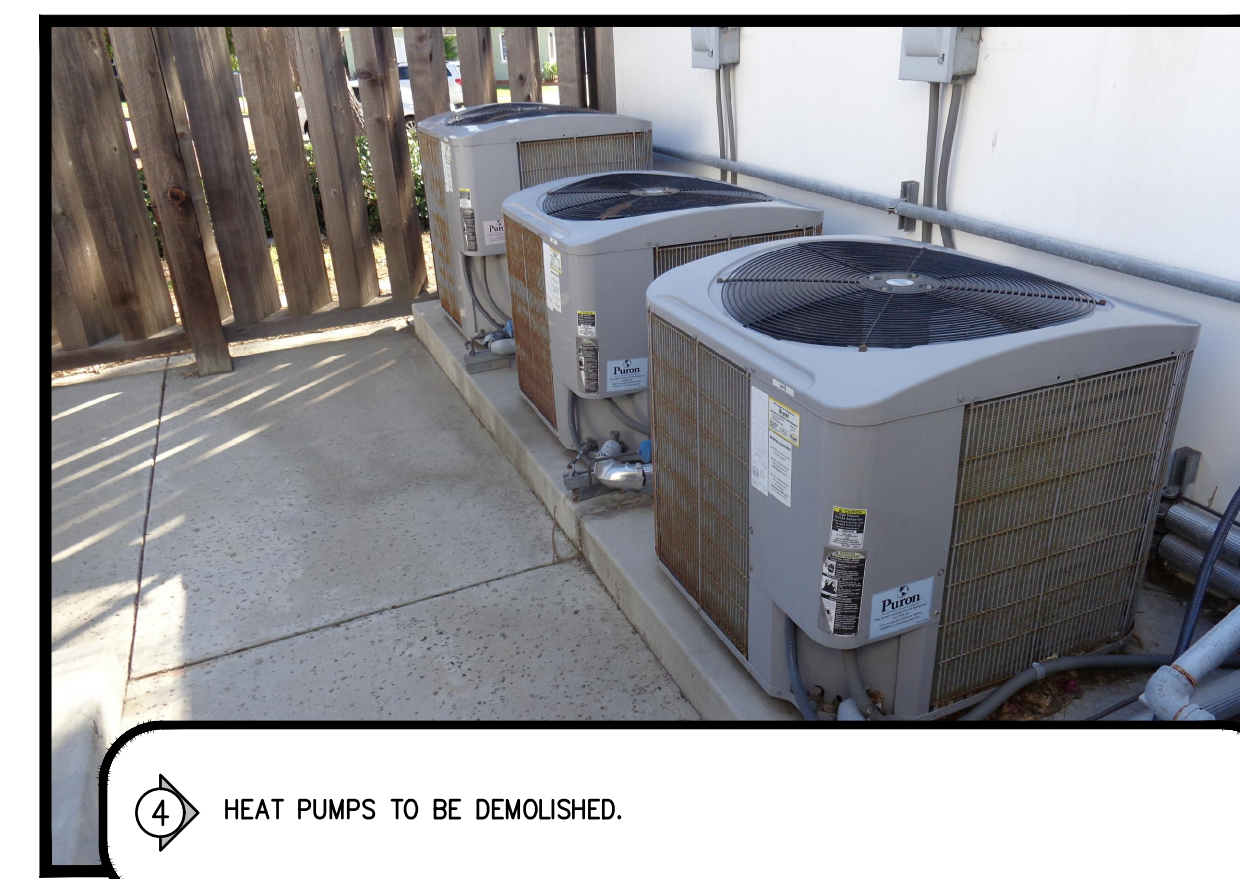
2 BOILER TO BE DEMOLISHED.



6 TYPICAL FAN COIL UNIT UNDER METAL SCREEN TO BE DEMOLISHED.



3 CHILLED WATER PUMP AND PIPING TO BE DEMOLISHED.



4 HEAT PUMPS TO BE DEMOLISHED.

ISSUED/REVISIONS	DATE
50% SCHEMATIC DESIGN	07/29/2016
100% SCHEMATIC DESIGN	09/02/2016

C:  S:  D:  T:   
 14ME02 - P:  B:   
 L:  HVAC  
 R:

42 CASS AVE  
 SAN DIEGO, CA 92101

**BRIDGING  
 DOCUMENTS**

SHEET TITLE MECHANICAL PHOTOS	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET  
**M1.3**



BRIDGING  
 DOCUMENTS-NOT  
 FOR CONSTRUCTION

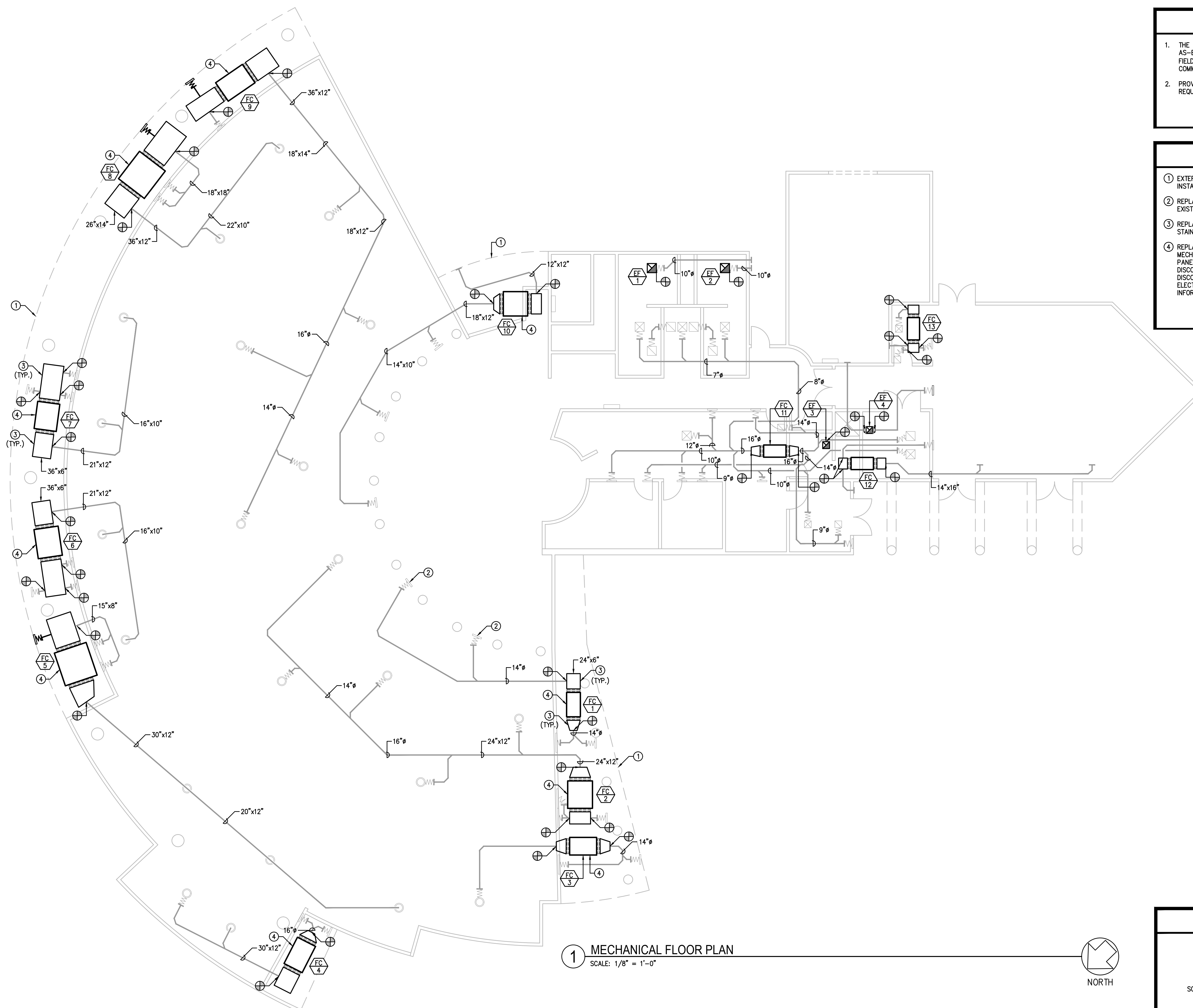
16126

**GENERAL NOTES**

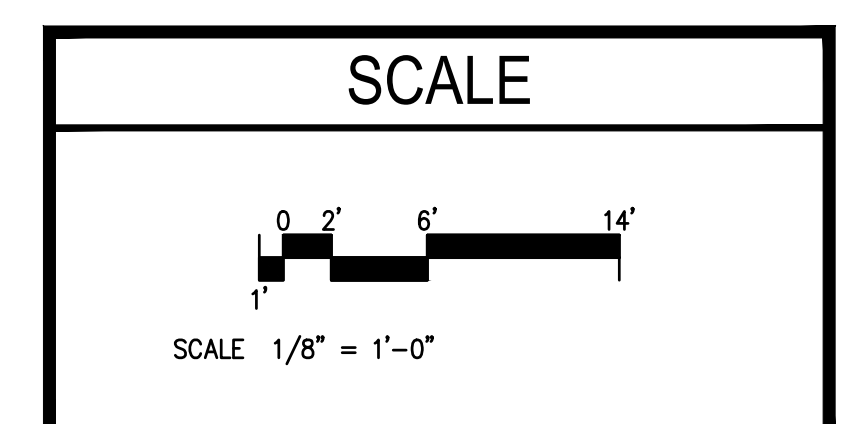
1. THE CONDITIONS SHOWN ARE BASED ON AVAILABLE AS-BUILT DRAWINGS AND NON-DESTRUCTIVE SURVEY. FIELD VERIFY (E) CONDITIONS PRIOR TO COMMENCEMENT OF WORK.
2. PROVIDE CLEAR SERVICE ACCESS TO ALL COMPONENTS REQUIRING MAINTENANCE OR INSPECTION.

**EYED NOTES**

- 1 EXTERIOR METAL SCREEN SHALL BE CLEANED AFTER INSTALLATION OF FAN COIL UNITS.
- 2 REPLACE RUSTED SUPPLY AIR DIFFUSER TO MATCH EXISTING.
- 3 REPLACE SUPPLY AND RETURN AIR PLENUM WITH STAINLESS STEEL DUCT PLENUM.
- 4 REPLACE ALL BRANCH WIRING ASSOCIATED TO MECHANICAL EQUIPMENT UP TO THE ELECTRICAL PANEL. REPLACE ALL EXPOSED CONDUITS. REPLACE DISCONNECT SWITCH AND WIRING REFER TO ELECTRICAL AS-BUILTS FOR ADDITIONAL INFORMATION.



**1 MECHANICAL FLOOR PLAN**  
 SCALE: 1/8" = 1'-0"



ISSUED/REVISIONS	DATE
50% SCHEMATIC DESIGN	07/29/2016
100% SCHEMATIC DESIGN	09/02/2016

C:  S:  D:  T:   
 14ME02 - P:  B:   
 L:  HVAC  
 R:

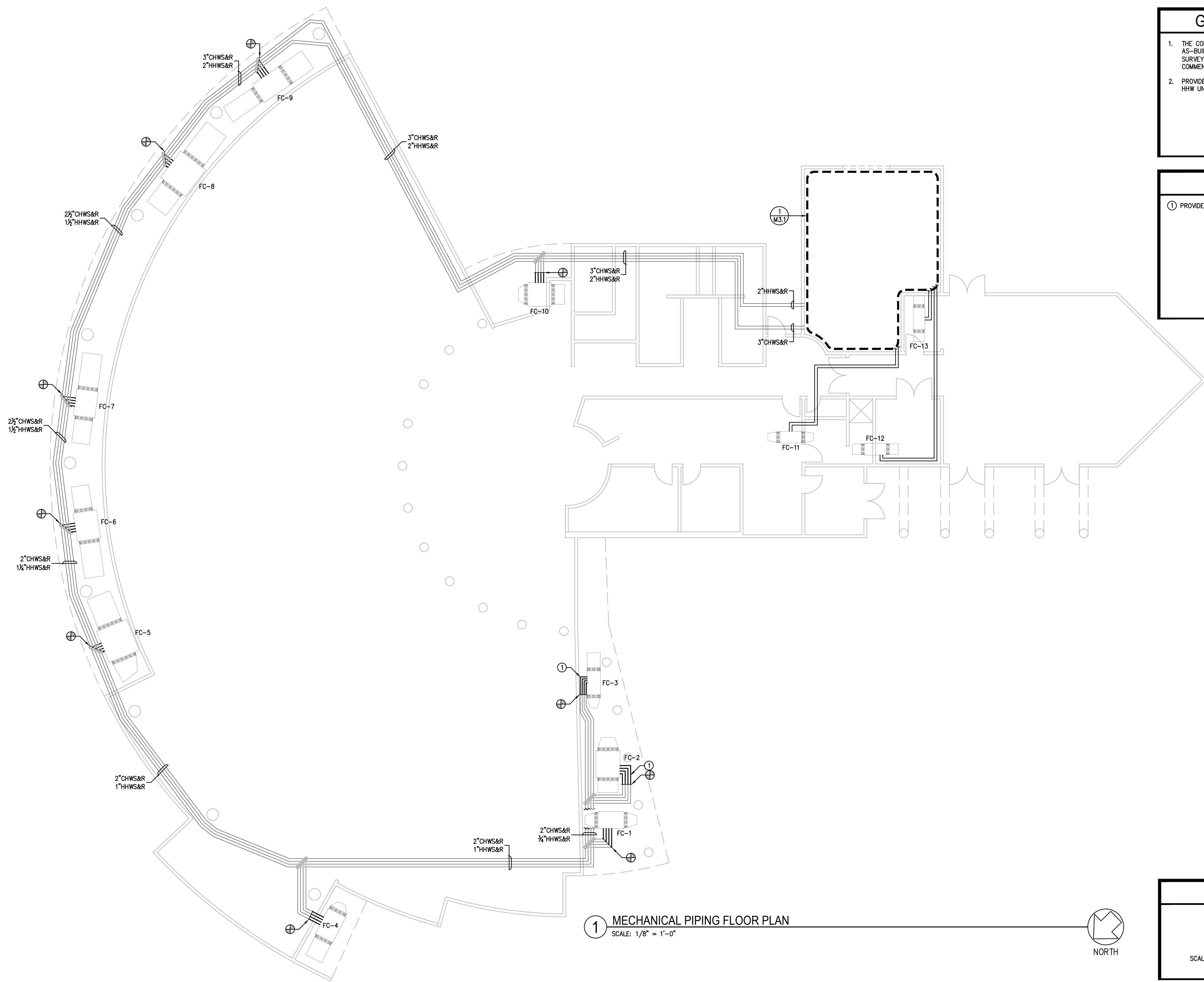
42 CASS AVE  
 SAN DIEGO, CA 92101

**BRIDGING  
 DOCUMENTS**

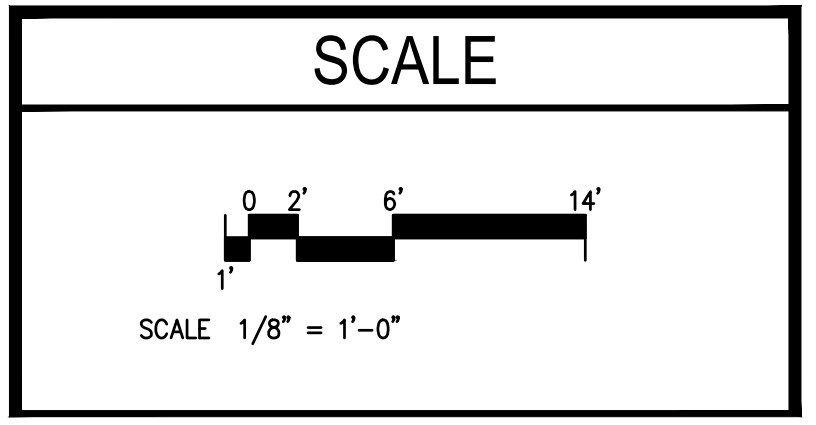
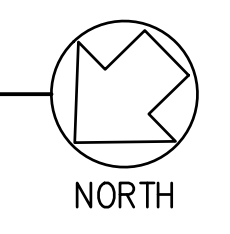
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MECHANICAL FLOOR PLAN	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET  
**M2.1**

FILENAME: M2.2\_PIPING FLOOR PLAN.DWG



**1** MECHANICAL PIPING FLOOR PLAN  
SCALE: 1/8" = 1'-0"

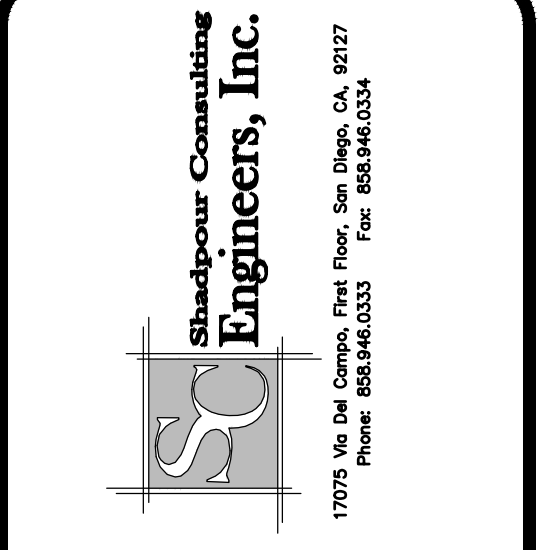


**GENERAL NOTES**

1. THE CONDITIONS SHOWN ARE BASED ON AVAILABLE AS-BUILT DRAWINGS AND NON-DESTRUCTIVE SURVEY. FIELD VERIFY (E) CONDITIONS PRIOR TO COMMENCEMENT OF WORK
2. PROVIDE TWO-WAY CONTROL VALVES FOR CHW AND HHW UNLESS NOTED OTHERWISE.

**EYED NOTES**

① PROVIDE THREE-WAY CONTROL VALVE



BRIDGING DOCUMENTS-NOT FOR CONSTRUCTION

16126

ISSUED/REVISIONS	DATE
50% SCHEMATIC DESIGN	07/29/2016
100% SCHEMATIC DESIGN	09/02/2016

C: [ ] S: [ ] D: [ ] T: [ ]  
 14ME02 - P: [ ] B: [ ]  
 L: [ ] HVAC  
 R: [ ] [ ] [ ] [ ] [ ] [ ]  
 42 CASS AVE  
 SAN DIEGO, CA 92101

**BRIDGING DOCUMENTS**

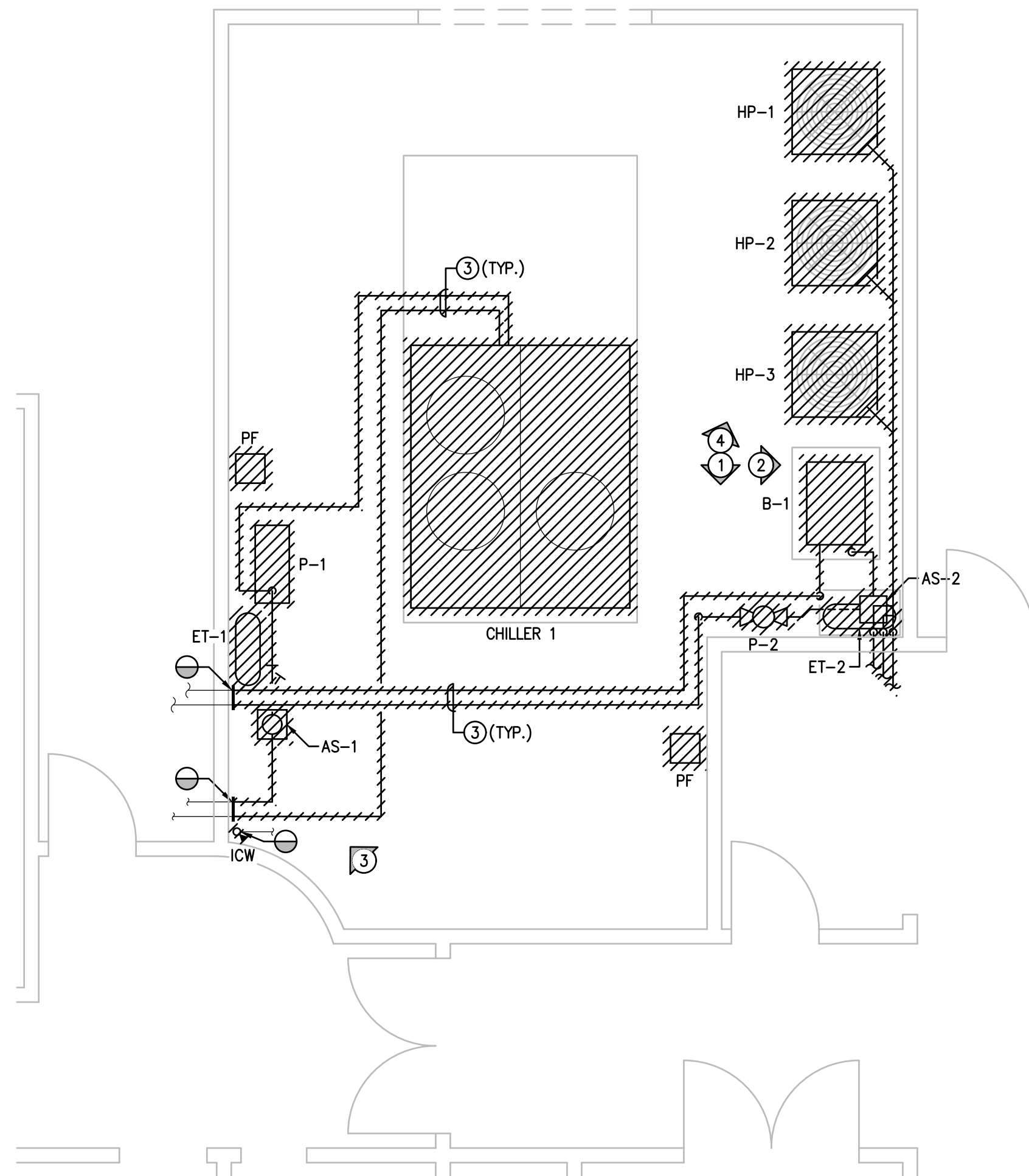
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**MECHANICAL PIPING FLOOR PLAN**

DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

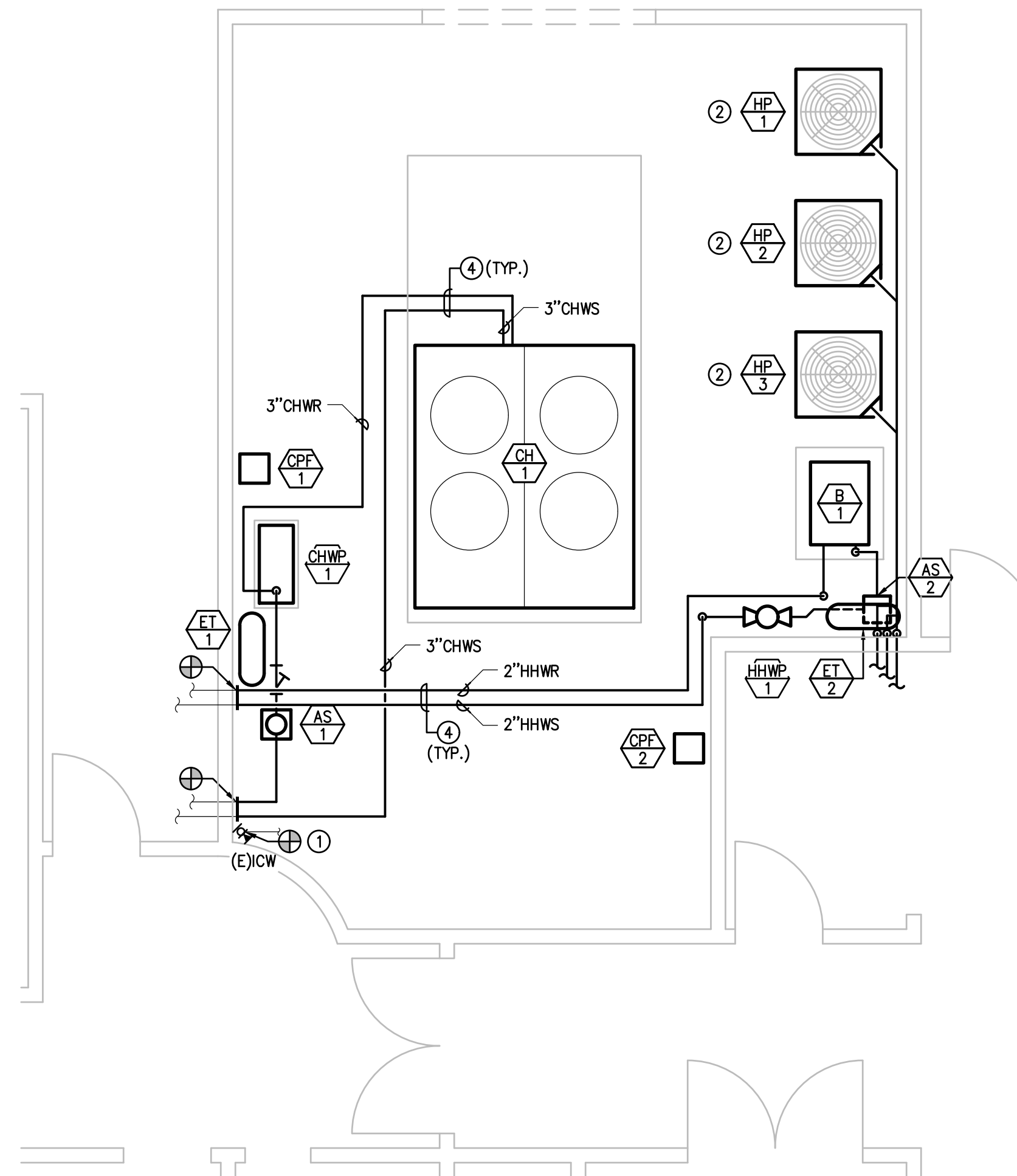
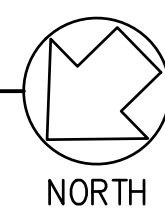
SHEET  
**M2.2**

**EYED NOTES**

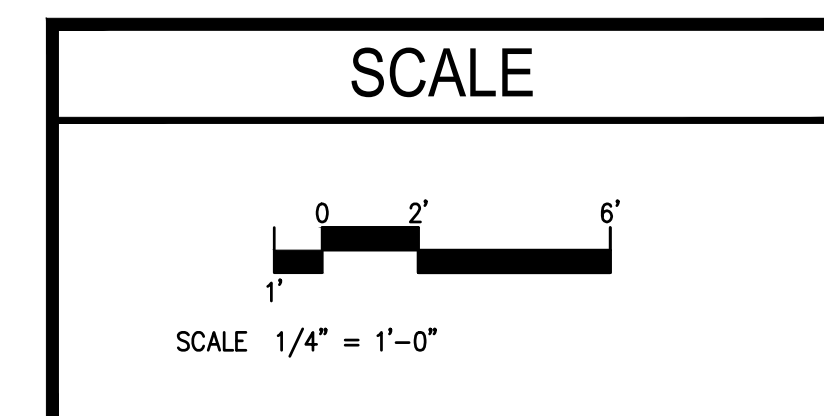
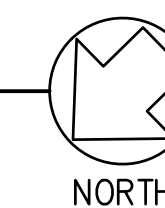
- ① REPLACE DOMESTIC WATER SUPPLY SHUTOFF VALVE.
- ② PROVIDE REFRIGERANT PIPING BETWEEN INDOOR FAN COIL UNIT AND CONDENSING UNIT PER MANUFACTURERS RECOMMENDATIONS.
- ③ ALL THE CHW & HHW PIPING, AND ASSOCIATED VALVES, ACTUATORS, INSULATION AND SUPPORTS IN THE CHILLED YARD SHALL BE DEMOLISHED.
- ④ PROVIDE CHW AND HHW PIPING VALVES, ACTUATORS, AND SUPPORT. PROVIDE MINIMUM 3" THICK MINERAL FIBER INSULATION WITH 0.032 INCH THICK STUCCO EMBOSSED ALUMINUM FIELD APPLIED JACKET.



**1** MECHANICAL DEMOLITION ENLARGED FLOOR PLAN  
 SCALE: 3/8" = 1'-0"



**2** MECHANICAL ENLARGED FLOOR PLAN  
 SCALE: 3/8" = 1'-0"



ISSUED/REVISIONS	DATE
50% SCHEMATIC DESIGN	07/29/2016
100% SCHEMATIC DESIGN	09/02/2016

C: [ ] S: [ ] D: [ ] T: [ ]  
 14ME02 - P: [ ] B: [ ]  
 L: [ ] HVAC  
 R: [ ] [ ] [ ]

42 CASS AVE  
 SAN DIEGO, CA 92101

**BRIDGING  
 DOCUMENTS**

SHEET TITLE MECHANICAL ENLARGED PLAN	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

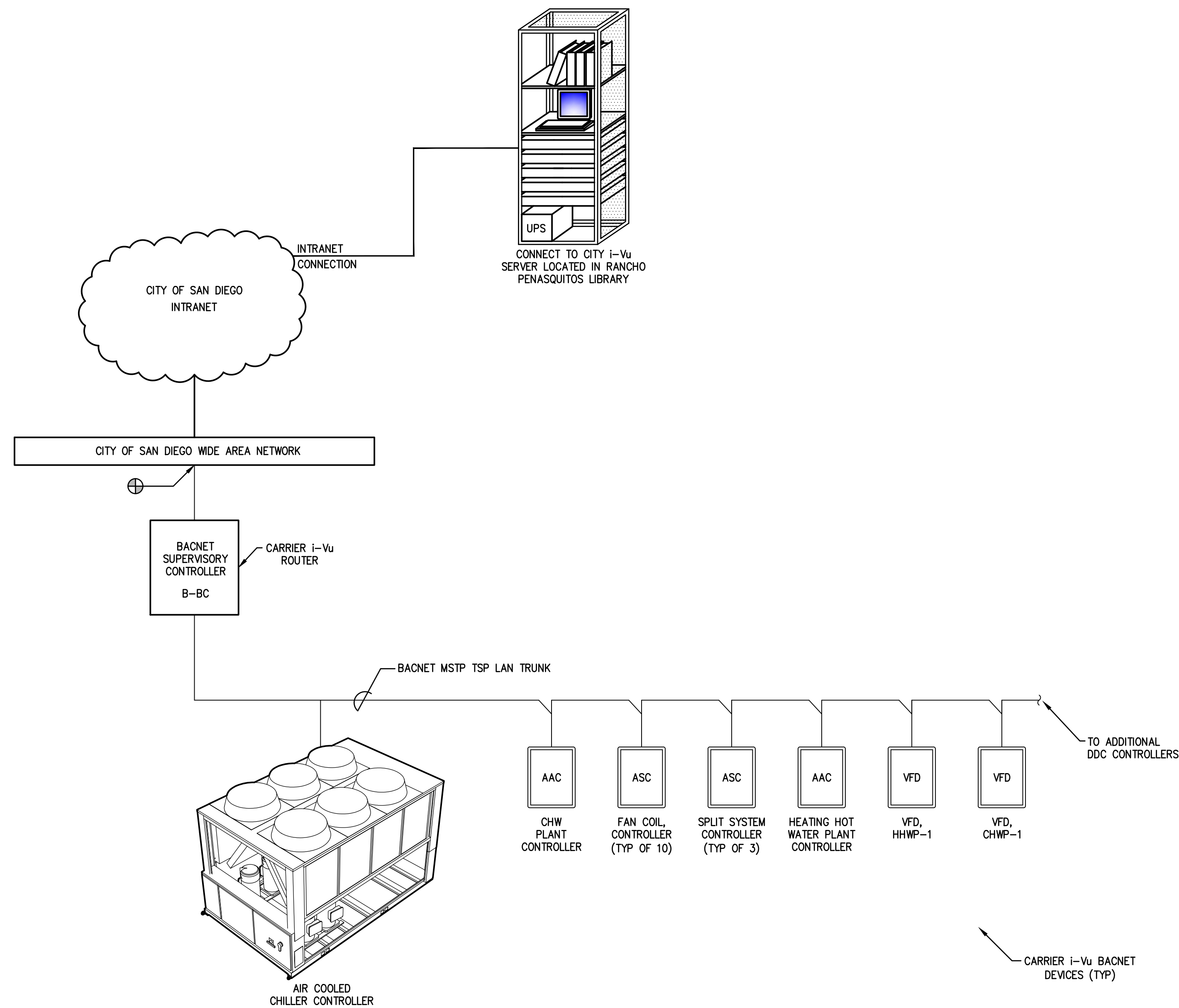
SHEET

**M3.1**



# CONTROLS LEGEND

SYMBOL	DESCRIPTION
AI	DDC ANALOG INPUT POINT W/ ADJUSTABLE PID GAIN CONTROL
AO	DDC ANALOG OUTPUT POINT W/ ADJUSTABLE PID GAIN CONTROL
DI	DDC DIGITAL INPUT POINT W/ INDICATING LIGHT ON DDC PANEL
DO	DDC DIGITAL OUTPUT POINT W/ MANUAL OVERRIDE AND INDICATING LIGHT ON DDC PANEL
T	TEMPERATURE SENSOR W/ PIPING WELL
F	FLOW METER
FS	FLOW SWITCH - PROVIDE DIRECT HARDWARE CONNECTION TO BOILER, CHILLER OR ASSOCIATED EQUIPMENT
P	PRESSURE SENSOR
DPS	DIFFERENTIAL PRESSURE SENSOR
CSR	CURRENT SENSING RELAY
S.D.	DUCT SMOKE DETECTOR - COORDINATE WITH ELECTRICAL CONTRACTOR FOR POWER SUPPLY
	DAMPER ACTUATOR
HPS	HIGH LIMIT STATIC PRESSURE SWITCH WITH MANUAL RESET HARD WIRE DIRECTLY TO VFD SAFETY CIRCUIT AND PROVIDE DI POINT
LPS	LOW LIMIT STATIC PRESSURE SWITCH WITH MANUAL RESET HARD WIRE DIRECTLY TO VFD SAFETY CIRCUIT AND PROVIDE DI POINT
SP	STATIC PRESSURE SENSOR
AF	AIR FLOW MEASURING STATION
	TWO-WAY CONTROL VALVE - VERIFY & PROVIDE A VALVE SCHEDULE
	THREE-WAY CONTROL VALVE - VERIFY & PROVIDE A VALVE SCHEDULE
VPS	VELOCITY PRESSURE SENSOR
	PROVIDE DIRECT CONTROL CONNECTION OR GATEWAY TO THE REFERENCED CONTROL SYSTEM OR EQUIPMENT. SEE DETAILS. ADDITIONAL HARDWIRE POINTS ARE REQUIRED.
E	COORDINATE WITH ELECTRICAL
CFM	AIR FLOW SENSOR (PIEZOMETER TYPE)
CO2	CARBON DIOXIDE SENSOR
VFD	PROVIDE DIRECT CONTROL CONNECTION OR GATEWAY TO THE VFD. SEE DETAILS. ADDITIONAL HARDWIRE POINTS ARE REQUIRED.
LAN	LOCAL AREA NETWORK
DDC	DIRECT DIGITAL CONTROL
ASC	APPLICATION SPECIFIC CONTROLLER
AAC	ADVANCED APPLICATION CONTROLLER
VFD	VARIABLE FREQUENCY DRIVE
RTS	ROOM TEMPERATURE SENSOR
VPS	VELOCITY PRESSURE SENSOR
VFD	VARIABLE FREQUENCY DRIVE
B-BC	BACNET BUILDING CONTROLLER



**1 DDC SYSTEM ARCHITECTURE**  
SCALE: NONE

ISSUED/REVISIONS	DATE
50% SCHEMATIC DESIGN	07/29/2016
100% SCHEMATIC DESIGN	09/02/2016

C:  S:  D:  T:   
 14ME02 - P:  B:   
 L:  HVAC  
 R:

4200 CASS AVE  
 SAN DIEGO, CA 92100

**BRIDGING DOCUMENTS**

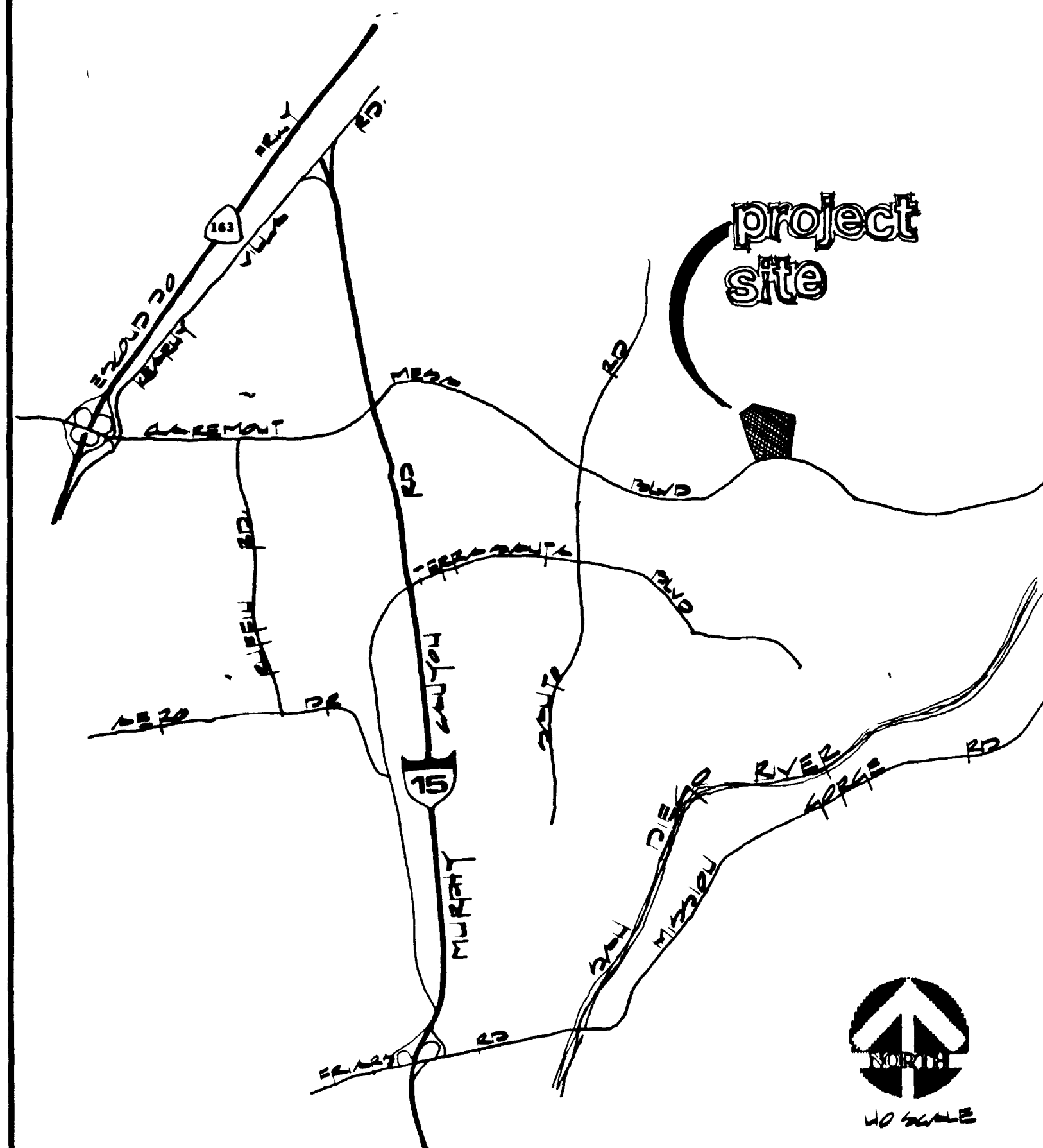
SHEET TITLE	
MECHANICAL SYSTEM ARCHITECTURE	
DESIGNED BY: SG	JOB NUMBER: 16126
DRAWN BY: GA	DATE: 06/30/2016
CHECKED BY: JK	SHEET SIZE: 22x34

SHEET  
**M4.1**

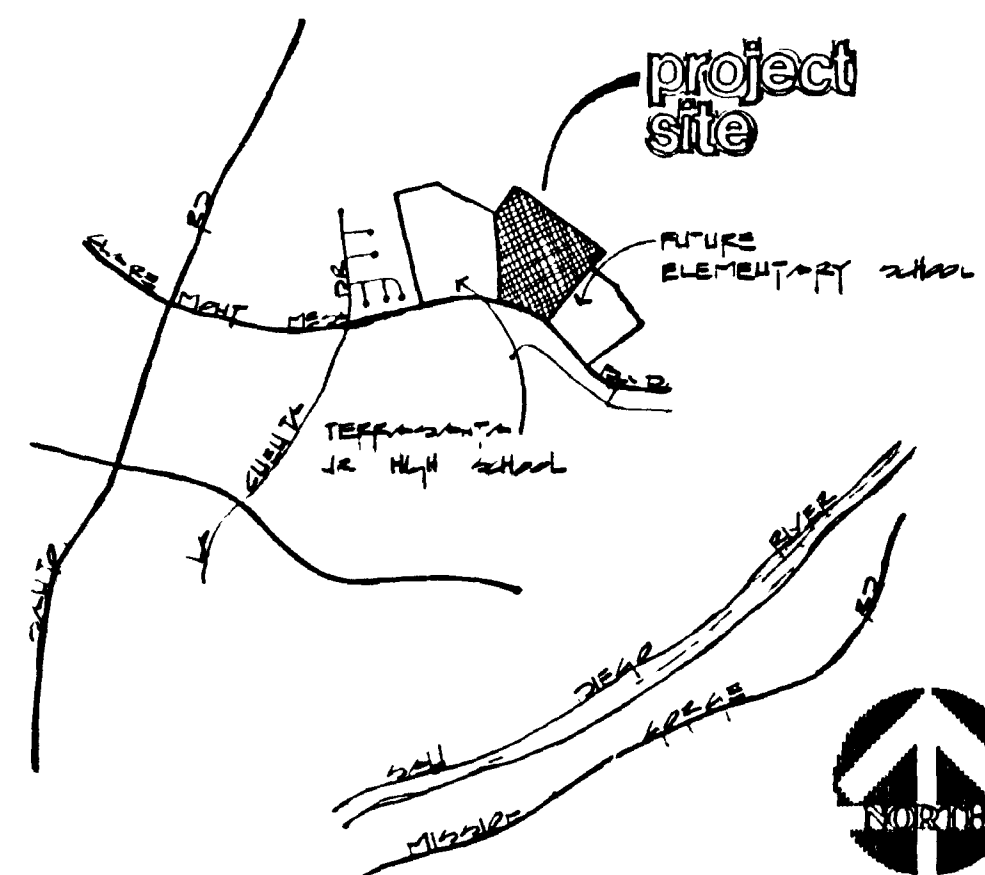
# tierrasanta community park and recreation center

## san diego, california

### vicinity map



### location map



### sheet index

SHEET TITLE	SHEET NO.
TITLE SHEET & GENERAL NOTES	1-D
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SEWER AND WATER PLAN	3- 5-D
STORM DRAIN PLAN	5-D
CONSTRUCTION DETAILS	6-D
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IRRIGATION PLAN	13-14-D
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PLANTING NOTES AND LEGEND	18-D
GENERAL NOTES	18-D
PLANTING SPECIFICATIONS	19-D
HYDROSEED SPECIFICATIONS	20-D

**SURVEY NOTES**  
 CHIEF: SHOREY  
 COORD 242-1740  
 J.O. #117523  
 DATES: 10-16-78 & 10-23-78  
 (AERIAL SURVEY)

**BENCH MARK**  
 SUBP CLAIREMONT MESA BLVD  
 AND PROMESA COURT  
 ELEV. = 496.837 NSL

**BEFORE EXCAVATING VERIFY LOCATION OF UNDERGROUND UTILITIES - CONTACT**

GAS & ELECTRIC CO 238-6323  
 TELEPHONE CO & FIRE ALARM 1-800-422-4133  
 WATER & SEWER 238-5680  
 COMMUNICATIONS DIVISION 238-5505  
 BUILDINGS AND IRRIGATION 238-5500

### general notes

- 1 THESE LANDSCAPE AND IRRIGATION PLANS HAVE BEEN CHECKED ONLY FOR COMPLIANCE WITH THE REQUIREMENTS OF THE CITY OF SAN DIEGO. THE ENGINEER'S SIGNATURE OR APPROVAL DOES NOT CONSTITUTE APPROVAL OF ADDITIONAL LANDSCAPE AND IRRIGATION WHICH IS NOT COVERED BY THESE REQUIREMENTS. ANY ADDITIONAL IRRIGATION SYSTEMS, OR ALTERATIONS THERETO, WILL REQUIRE PARK AND RECREATION DEPARTMENT CHECK AND APPROVAL.
- 2 NOTIFY THE CITY AND LANDSCAPE ARCHITECT OF ANY DISCREPANCIES IN EXISTING CONDITIONS OR WITHIN THE PLANS PRIOR TO BEGINNING THE WORK.
- 3 THE CONTRACTOR SHALL NOTIFY THE LANDSCAPE ARCHITECT PRIOR TO BEGINNING THE WORK AND SHALL BE RESPONSIBLE FOR COORDINATING WITH THE LANDSCAPE ARCHITECT AND THE CITY.
- 4 ALL MATERIAL SHALL BE NEW UNLESS OTHERWISE SPECIFIED.
- 5 THE CONTRACTOR SHALL, IMMEDIATELY UPON BEING AWARDED THE CONTRACT, MAKE ANY ARRANGEMENTS NECESSARY TO INSURE THAT ALL MATERIALS AND SUPPLIES, INCLUDING PLANTS, WILL BE AVAILABLE WHEN NEEDED FOR THIS PROJECT.
- 6 ADDITIONS AND/OR DELETIONS OF MATERIAL AND/OR LABOR SHALL BE MADE AT UNIT PRICES ESTABLISHED WITH THE CITY PRIOR TO BEGINNING THE WORK.
- 7 ANY REFERENCES TO THE OWNER AND LANDSCAPE ARCHITECT ARE ALSO MEANT TO INCLUDE THE CITY OF SAN DIEGO.
- 8 LANDSCAPE ARCHITECT SHALL BE NOTIFIED NO LESS THAN 24 HOURS IN ADVANCE OF ANY INSPECTIONS OR MEETINGS.
- 9 INSPECTIONS AND MEETINGS SHALL INCLUDE BUT ARE NOT LIMITED TO.
  - A. PRE-JOB MEETING
  - B. SOIL AMENDING AND GRADING
  - C. CONSTRUCTION
  - D. IRRIGATION COVERAGE AND PRESSURE TEST
  - E. PLANT MATERIAL INSPECTION AND LOCATION
  - F. PRE-MAINTENANCE
  - G. POS.-MAINTENANCE (FINAL)
10. CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR AND PAY ALL COSTS FOR WATER, SEWER, AND ELECTRIC SERVICES.

### legal description

TIERRASANTA COMMUNITY PARK AND RECREATION CENTER, A 26 ACRE PARK WITH ATTENDANT FACILITIES ON CITY OWNED PROPERTY BETWEEN THE PROPOSED TIERRA SANTA JUNIOR HIGH SCHOOL AND ELEMENTARY SCHOOL, LOCATED IMMEDIATELY NORTH OF CLAIREMONT MESA BLVD. IN THE ELLIOTT COMMUNITY PLAN AREA.

PORTION OF LOTS 70 - 73, ROSEDALE TRACT, MAP NO 825.  
 CITY OF SAN DIEGO PARK AND RECREATION DEPARTMENT.

city contract, C.I.P. No. 23-590

tierrasanta community park and recreation center

DRAWN BY <i>WLB</i>	DATE 12-3-79	CITY OF SAN DIEGO, CALIFORNIA PARK AND RECREATION DEPARTMENT SHEET 1 of 20 SHEETS	NO. 117523
CHK'D BY <i>RD</i>	PROJECT 12-3-79	PROJECT OFFICER <i>E.H. Johnson</i>	APPROVALS
PREPARED FOR: the city of san diego, ca.	LICENSE NO. 1270	DESCRIPTION BY APPROVED DATE FILMED	CONSTRUCTION DEPT
ROGER DEWEASE INC. & ASSOCIATES landscape architecture and planning 1585 SORRENTO VALLEY ROAD SUITE 103 SAN DIEGO CALIFORNIA (714) 483 7371	PRINT DATE	AS BUILT CONTRACTOR VALLEY ROBOT DATE STARTED 7-14-80 RESIDENT ENG. DIBDELL DATE COMPLETED 1-24-81	LABORATORY COORDINATES 242-1740 18560-1-D

AS BUILT

TIERRASANTA COMMUNITY PARK AND RECREATION CENTER



# EQUIPMENT SCHEDULE

SYMBOL	DESCRIPTION	MAKE & MODEL	ELECTRICAL DATA				SPEED	CAPACITIES				TEMPERATURES				AIR FILTERS		REMARKS								
			HP	RLA	LEA	VOLTS		PHASE	COOLING		HEATING		CFM	SP	COOLING		HEATING		WEIGHT (LBS)							
									BTUH TOTAL	BTUH SEAS.	INPUT	OUTPUT			EDB	EWB	LDB			LWB	EDB	LDB				
-P1 & 2	SPLIT HEAT PUMP OUTDOOR UNIT	TRANE BWA090C400M (1) COMP (2) FAN	—	1/3	74	480	3	—	—	—	—	—	—	—	—	—	—	570	COOLING - 92°F AMP. EER - 8.0 BTUH/WATT @ A.R.I. CONDITIONS. HEATING - 42°F AMP. MIN. CIRCUIT AMPCAPACITY - 19							
AH1 & 2	SPLIT HEAT PUMP AIR HANDLER	TRANE BWE090C400G	1/2	25RA	—	480	3	1750	599	93400	70125	—	76200	2400	3/8"	78	64	54	53	64	935	—	415	MIN. CIRCUIT AMPCAPACITY - 3.1, EXTERNAL S.P. LISTED		
MUA1 & 2	MAKE-UP AIR UNIT	REZNOR CXE-175	3	—	—	480	3	1750	1905	—	—	150,000	120,000	3000	3/4"	—	—	—	—	58.5	88.5	2	20x25x1	335	NATURAL GAS ⚠	
EW-1	ELECTRIC WALL HEATER	ELECTROMODE EWA 15 L	—	—	—	120	1	—	—	—	—	—	5122	65	—	—	—	—	—	—	—	—	20	RECESSED MOUNTED 1'-6" A.F.F. 1.5 KW		
EF-1,2 & 3	ROOF MOUNTED SUPPLY FAN	GREENHECK RGF-12	1	—	—	480	3	1750	621	—	—	—	—	2700	1/4"	—	—	—	—	—	—	—	4	16x25x1	350	PROVIDE W/PRE-FAB CURB, EXTERNAL S.P. LISTED
EF-1,2,3 & 4	ROOF MOUNTED EXHAUST FAN	GB-30	1/3	—	—	120	1	—	280	—	—	—	—	3240	1/8"	—	—	—	—	—	—	—	—	210	PROVIDE W/PRE-FAB SOUND CURB RECESSED MOUNTED & BACKDRAFT DAMPER	
EF-5		GB-14	1/4	—	—	—	—	—	1070	—	—	—	—	1505	3/8"	—	—	—	—	—	—	—	—	—	85	PROVIDE W/PRE-FAB CURB & BACKDRAFT DAMPER
EF-6		GB-9	1/4	—	—	—	—	—	890	—	—	—	—	340	1/4"	—	—	—	—	—	—	—	—	—	50	
EF-7 & 8	ROOF MOUNTED EXHAUST FAN	GB-8	1/4	—	—	—	—	—	1750	840	—	—	—	250	1/8"	—	—	—	—	—	—	—	—	—	50	PROVIDE W/PRE-FAB ROOF CURB & BACKDRAFT DAMPER
EF-9	ROOF MOUNTED EXHAUST FAN	GREENHECK GB-8	1/4	—	—	120	1	1750	1140	—	—	—	—	300	1/8"	—	—	—	—	—	—	—	—	—	50	PROVIDE W/PRE-FAB ROOF CURB

### GENERAL NOTES ⚠

1. INSULATION MATERIAL SHALL MEET THE CALIFORNIA QUALITY STANDARD PER SECTION 2.5311 B.E.E.S.-1986
2. ALL PIPING AND DUCTWORK SHALL BE INSULATED CONSISTENT WITH THE REQUIREMENTS OF SECTION 2.5312 B.E.E.S.-1986 AND TABLE 10.2 1985 U.M.C.
3. ALL HVAC SYSTEMS SHALL MEET THE CONTROL REQUIREMENTS PER SECTION 2.5315 AND 2.5316 B.E.E.S.-1986.
4. ALL HVAC EQUIPMENT AND APPLIANCES SHALL MEET THE REQUIREMENTS PER SECTION 2.5314 B.E.E.S.-1986.

⚠ FOR CONT. OF GENERAL NOTES SEE SHEET M-3

### DIFFUSER, GRILLE & REGISTER SCHEDULE

SYMBOL	DESCRIPTION	SIZE	REMARKS
A	KRIEGER RA-4	20" φ	ROUND DIFFUSER W/O.B.D.
B	KRIEGER RA-4	16" φ	ROUND DIFFUSER W/O.B.D.
C	KRIEGER 1200	16x16	CALIBRO ROUND GRILLE W/O.B.D.
AM	KRIEGER S585	8x8	SURFACE MOUNTED RETURN GRILLE W/ VANES 1/2" O.C. 35° DEFLECTION & O.B.D.
BM		10x10	
CM		12x12	
DM	KRIEGER S585	48x30	SURFACE MOUNTED RETURN GRILLE W/ VANES 1/2" O.C. 35° DEFLECTION & O.B.D.
EM	KRIEGER EAC-5	24x24	SURFACE MOUNTED RETURN GRILLE W/ 1/4" SQUARES & O.B.D.
FM	KRIEGER S585	18x18	SURFACE MOUNTED RETURN GRILLE W/ VANES 1/2" O.C. 35° DEFLECTION & O.B.D.

### LEGEND

SA	SECTION-SUPPLY AIR DUCTWORK	FC	FLEXIBLE CONNECTION
RA	SECTION-RETURN AIR DUCTWORK	FD	FLEXIBLE DUCTWORK
OSA	SECTION-OUTSIDE AIR DUCTWORK	L	LINED DUCTWORK
M	MANUAL VOLUME DAMPER	CFM	CUBIC FEET PER MINUTE
MD	MOTORIZED DAMPER	T	THERMOSTAT
RT	RECTANGULAR TO ROUND TRANSITION	DL	DOOR LOUVER
TV	TURNING VANES	O.B.D.	OPPOSED BLADE DAMPER
E	EXTRACTOR	A.F.F.	ABOVE FINISHED FLOOR

STATEMENT OF DESIGN COMPLIANCE

DIVISIONS 5 & 6 OF THE CALIFORNIA ENERGY CONSERVATION STANDARDS FOR NON-RESIDENTIAL BUILDINGS HAVE BEEN REVIEWED AND THE BUILDING DESIGN DESCRIBED ON THIS PAGE (THESE PAGES) IS IN SUBSTANTIAL CONFORMANCE.

ENGINEER: H. Douglas Hill      CS 3330      DATE: DEC 6 1988  
 ENGR. CERT. NO.      DATE



MELE ANANTHA ARCHITECTS AIA

### EQUIPMENT SCHEDULE

## M1

8848 SKYWAY COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92128-4811

REV	DATE	BY	DESCRIPTION
1	7/28/88	MANAGER	

### TIERRASANTA RECREATION CENTER

CITY OF SAN DIEGO, CALIFORNIA  
PARK AND RECREATION DEPARTMENT  
PROJECT NO. 118276  
SHEET 51 OF 78 SHEETS

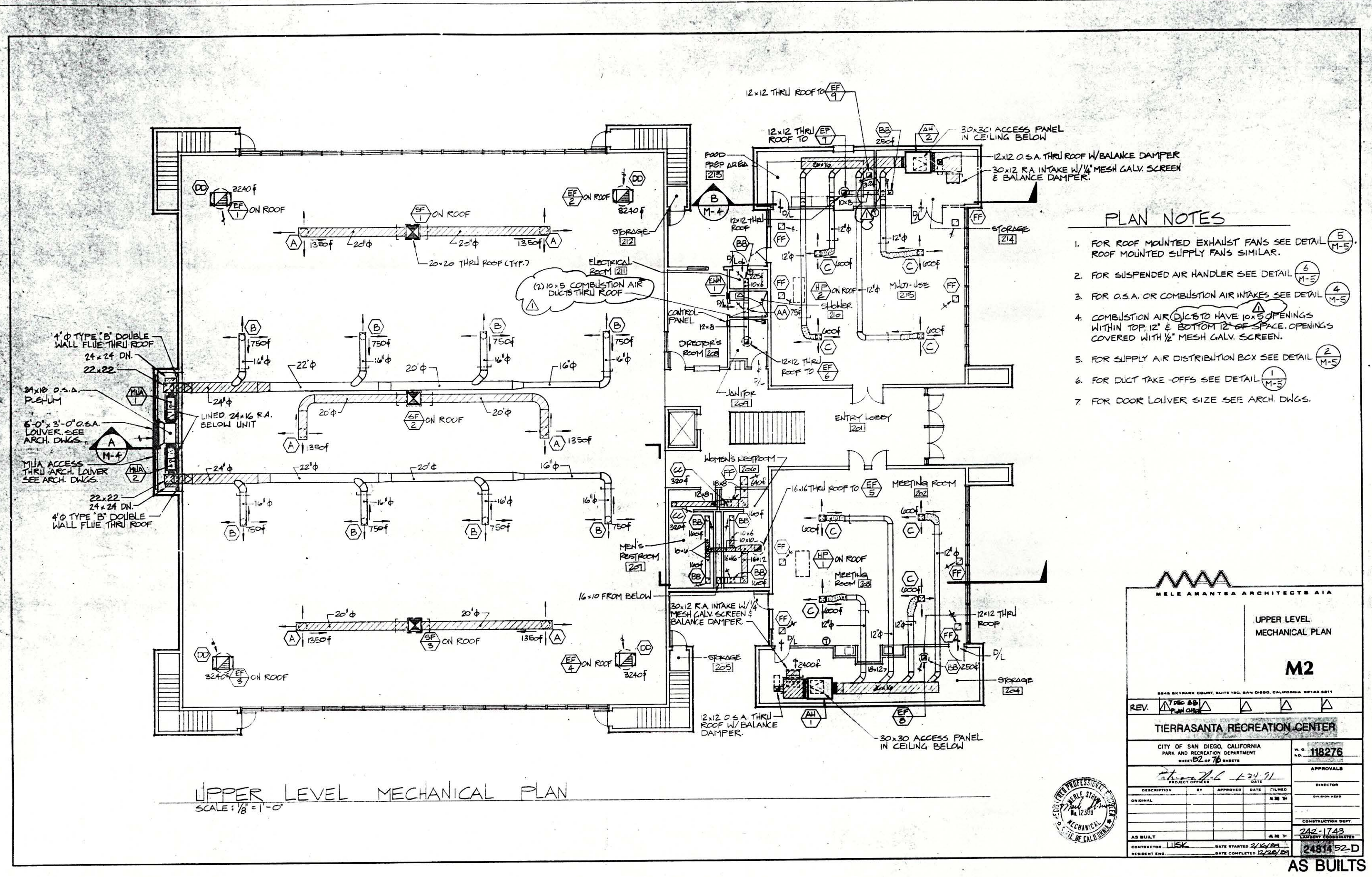
DESCRIPTION	BY	APPROVED	DATE	FILMED	APPROVALS
ORIGINAL					

CONSTRUCTION SET

AS BUILT: 242-1743  
 CONTRACTOR: LUSK      DATE STARTED: 2/16/89      LICENSED CONTRACTOR  
 RESIDENT ENG.      DATE COMPLETED: 12/28/88      24814 51-D







- PLAN NOTES**
1. FOR ROOF MOUNTED EXHAUST FANS SEE DETAIL (5) (M-E). ROOF MOUNTED SUPPLY FANS SIMILAR.
  2. FOR SUSPENDED AIR HANDLER SEE DETAIL (6) (M-E).
  3. FOR O.S.A. OR COMBUSTION AIR INTAKES SEE DETAIL (4) (M-E).
  4. COMBUSTION AIR DUCTS TO HAVE 10x5 OPENINGS WITHIN TOP 12" & BOTTOM 12" OF SPACE. OPENINGS COVERED WITH 1/2" MESH GALV. SCREEN.
  5. FOR SUPPLY AIR DISTRIBUTION BOX SEE DETAIL (2) (M-E).
  6. FOR DUCT TAKE-OFFS SEE DETAIL (1) (M-E).
  7. FOR DOOR LOUVER SIZE SEE ARCH. DWGS.

**UPPER LEVEL MECHANICAL PLAN**  
SCALE: 1/8" = 1'-0"

MELE AMANTEA ARCHITECTS AIA

UPPER LEVEL MECHANICAL PLAN

**M2**

8848 BALYRAN COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92123-4311

REV.	DATE	BY	DESCRIPTION
1	7/16/91	ME	PLAN CHG.

**TIERRASANTA RECREATION CENTER**

CITY OF SAN DIEGO, CALIFORNIA  
PARK AND RECREATION DEPARTMENT  
SHEET 152 OF 178 SHEETS

NO. 118276

APPROVALS

PROJECT OFFICER	DATE	FILMED
APPROVED	DATE	FILMED
DIRECTOR	DATE	FILMED

CONSTRUCTION SET

AS BUILT: 242-1743

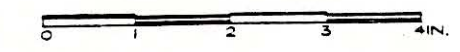
CONTRACTOR: LITEX DATE STARTED: 2/16/91

REGENT ENG. DATE COMPLETED: 12/28/91 24814 52-D

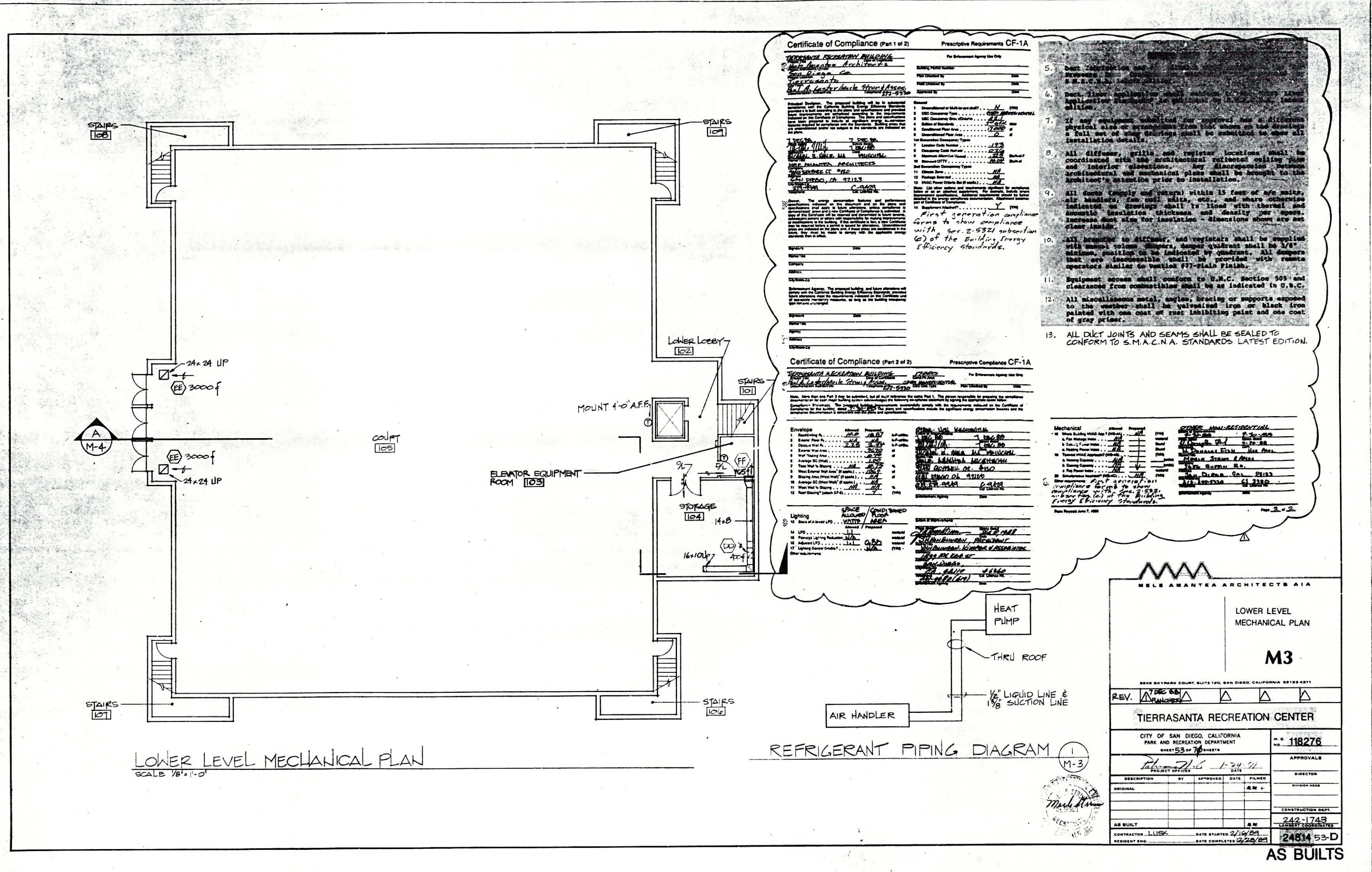
**AS BUILTS**



PLINED FROM THE ORIGINAL  
BEST QUALITY REPRODUCIBLE







**Certificate of Compliance (Part 1 of 2)** Prescriptive Requirements CF-1A

MECHANICAL SYSTEMS

1. Mechanical System Type	CF-1A
2. Mechanical System Design	CF-1A
3. Mechanical System Installation	CF-1A
4. Mechanical System Operation	CF-1A
5. Mechanical System Maintenance	CF-1A
6. Mechanical System Safety	CF-1A
7. Mechanical System Efficiency	CF-1A
8. Mechanical System Noise	CF-1A
9. Mechanical System Air Quality	CF-1A
10. Mechanical System Water Quality	CF-1A
11. Mechanical System Energy	CF-1A
12. Mechanical System Environmental	CF-1A
13. Mechanical System Health	CF-1A
14. Mechanical System Safety	CF-1A
15. Mechanical System Security	CF-1A

**Certificate of Compliance (Part 2 of 2)** Prescriptive Compliance CF-1A

MECHANICAL SYSTEMS

1. Mechanical System Type	CF-1A
2. Mechanical System Design	CF-1A
3. Mechanical System Installation	CF-1A
4. Mechanical System Operation	CF-1A
5. Mechanical System Maintenance	CF-1A
6. Mechanical System Safety	CF-1A
7. Mechanical System Efficiency	CF-1A
8. Mechanical System Noise	CF-1A
9. Mechanical System Air Quality	CF-1A
10. Mechanical System Water Quality	CF-1A
11. Mechanical System Energy	CF-1A
12. Mechanical System Environmental	CF-1A
13. Mechanical System Health	CF-1A
14. Mechanical System Safety	CF-1A
15. Mechanical System Security	CF-1A

1. All ductwork shall be installed in accordance with the applicable provisions of the Mechanical Code.
2. All ductwork shall be supported in accordance with the applicable provisions of the Mechanical Code.
3. All ductwork shall be insulated in accordance with the applicable provisions of the Mechanical Code.
4. All ductwork shall be sealed in accordance with the applicable provisions of the Mechanical Code.
5. All ductwork shall be labeled in accordance with the applicable provisions of the Mechanical Code.
6. All ductwork shall be installed in accordance with the applicable provisions of the Mechanical Code.
7. All ductwork shall be supported in accordance with the applicable provisions of the Mechanical Code.
8. All ductwork shall be insulated in accordance with the applicable provisions of the Mechanical Code.
9. All ductwork shall be sealed in accordance with the applicable provisions of the Mechanical Code.
10. All ductwork shall be labeled in accordance with the applicable provisions of the Mechanical Code.
11. All ductwork shall be installed in accordance with the applicable provisions of the Mechanical Code.
12. All ductwork shall be supported in accordance with the applicable provisions of the Mechanical Code.
13. All ductwork shall be insulated in accordance with the applicable provisions of the Mechanical Code.
14. All ductwork shall be sealed in accordance with the applicable provisions of the Mechanical Code.
15. All ductwork shall be labeled in accordance with the applicable provisions of the Mechanical Code.

MELE AMANTEA ARCHITECTS AIA

LOWER LEVEL MECHANICAL PLAN

**M3**

7000 BAYVIEW COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92128-2811

REV. 1/24/21

TIERRASANTA RECREATION CENTER

CITY OF SAN DIEGO, CALIFORNIA  
PARK AND RECREATION DEPARTMENT

NO. 118276

SHEET 53 OF 70 SHEETS

APPROVALS

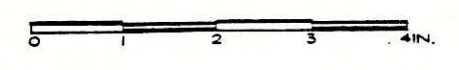
CONSTRUCTION COST

242-1743

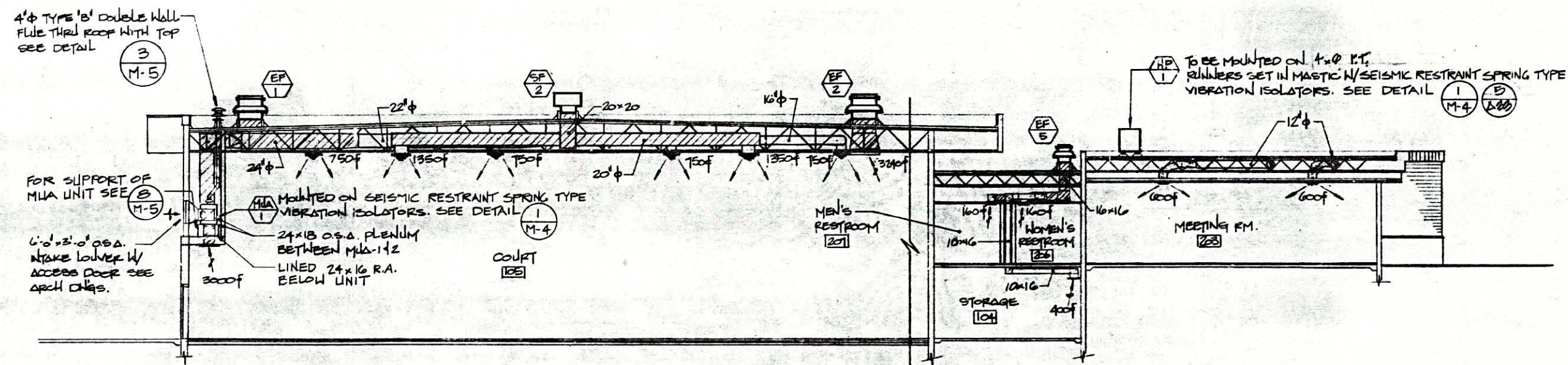
CONTRACTOR: L. LUSK DATE STARTED: 2/14/21

AS BUILTS

MADE FROM THE ORIGINAL  
BEST QUALITY OBTAINABLE

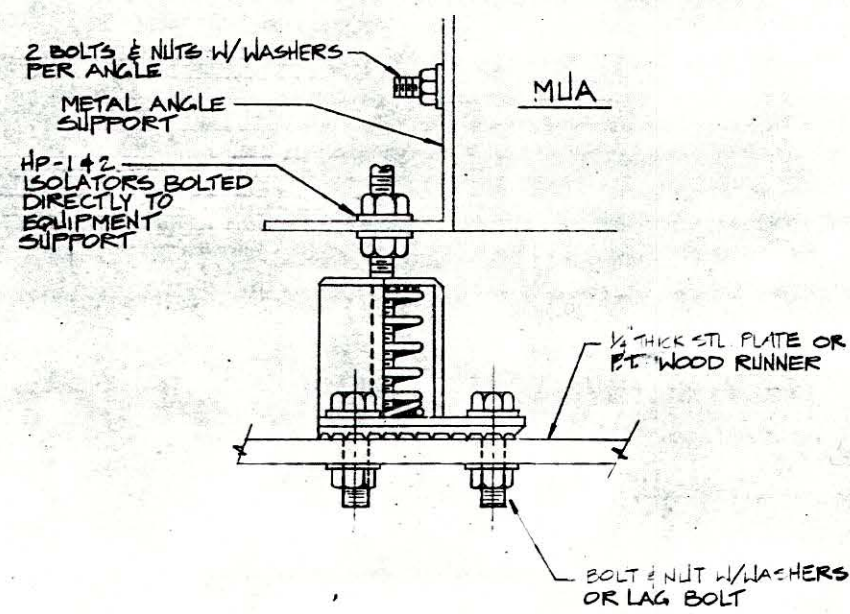






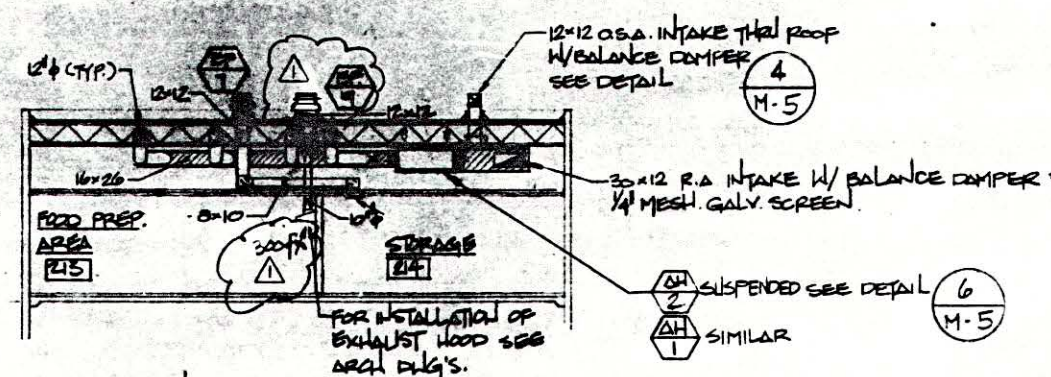
SECTION  
SCALE: 1/8" = 1'-0"

A  
M-4



VIBRATION ISOLATOR  
NO SCALE

1  
M-4



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

B  
M-4



**MELLE AMANTEA ARCHITECTS, AIA**

SECTIONS

**M4**

BASE BETWEEN COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92101-2011

REV: 1/24/99

**TIERRASANTA RECREATION CENTER**

CITY OF SAN DIEGO, CALIFORNIA  
PARK AND RECREATION DEPARTMENT  
SHEET 54 OF 72 SHEETS

PROJECT NO. 118276

APPROVALS:

DESCRIPTION	BY	APPROVED	DATE	FILED	DATE
AS BUILT					

CONTRACTOR: LUSK  
DATE STARTED: 1/16/99  
DATE COMPLETED: 2/25/99

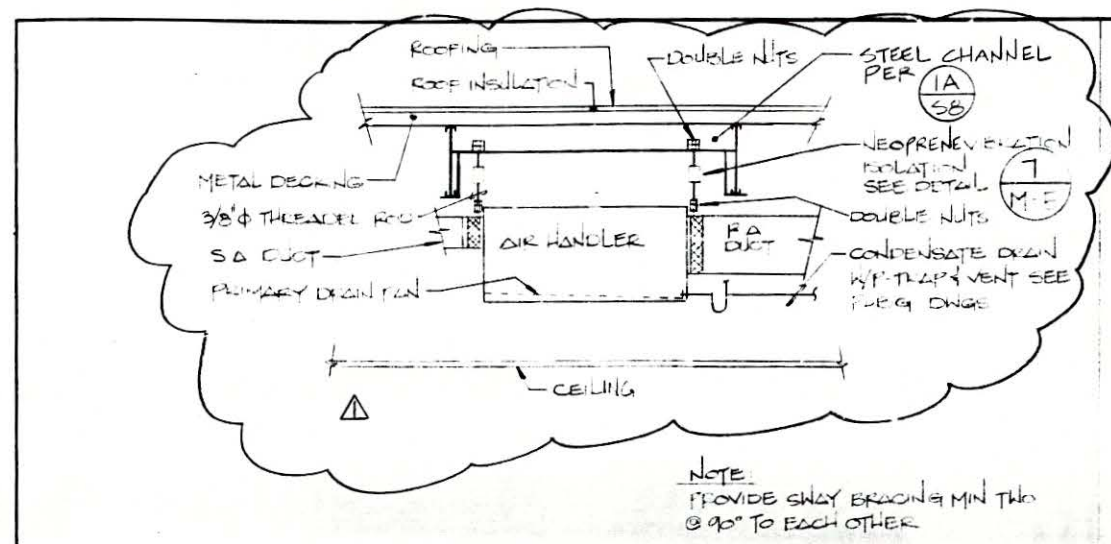
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SHEET 54 OF 72 SHEETS

**AS BUILTS**

PLUMB FROM THE ORIGINAL  
SET. QUALITY UNLESS NOTED

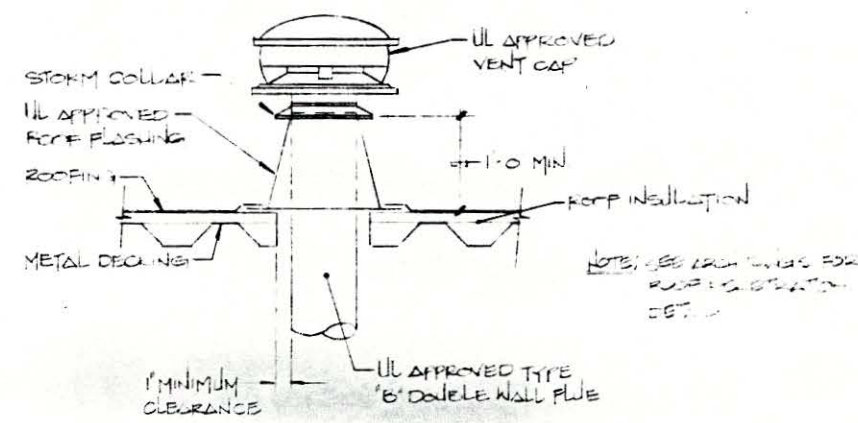






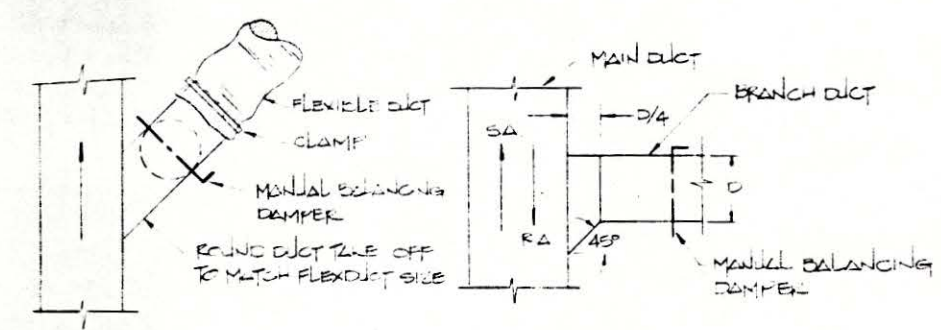
**SUSPENDED AIR HANDLER**  
NO SCALE

6  
M-E



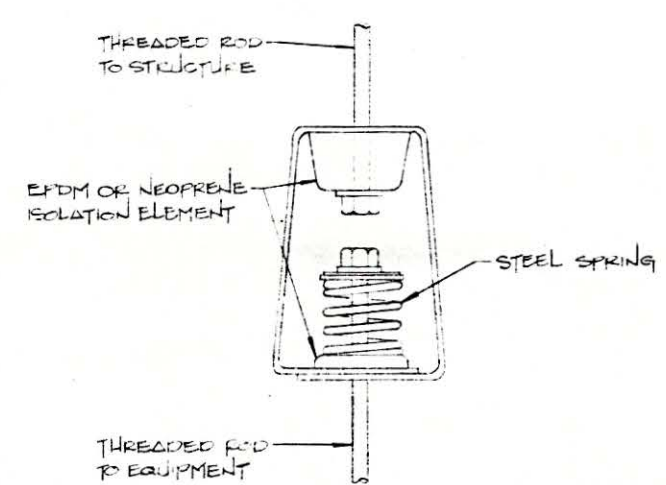
**FLUE THROUGH ROOF**  
NO SCALE

3  
M-E



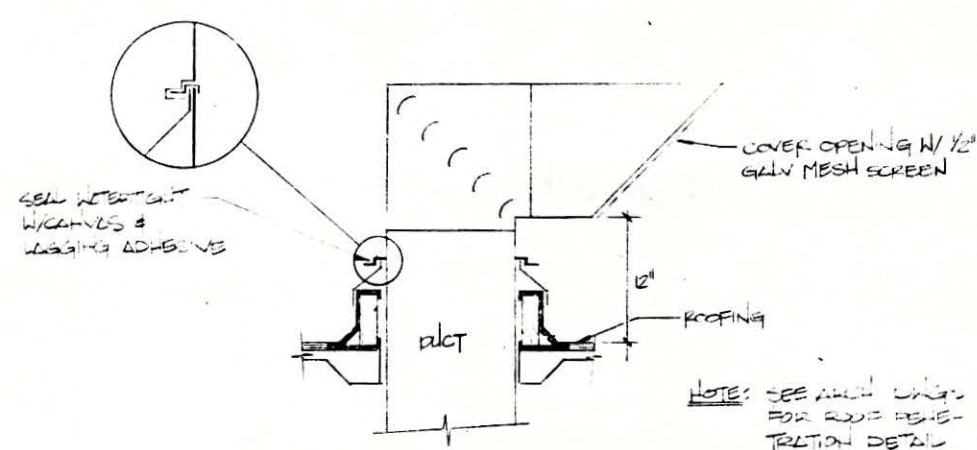
**DUCT TAKE-OFF**  
NO SCALE

1  
M-E



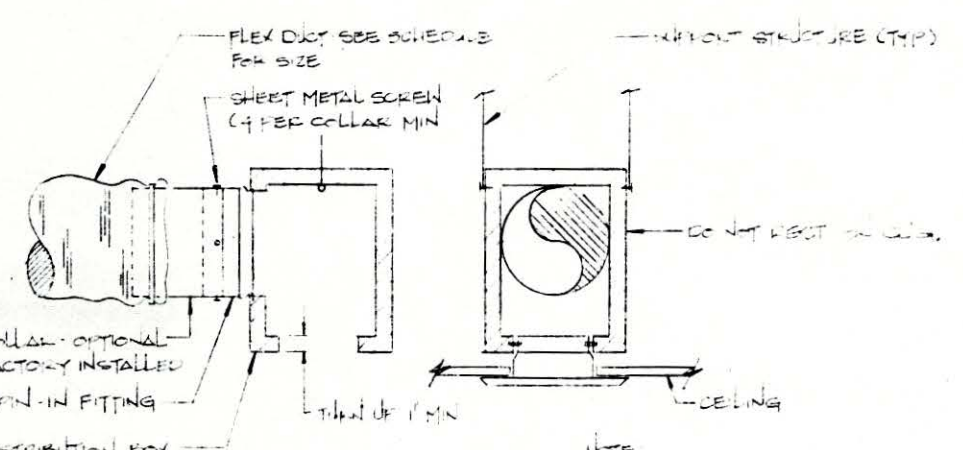
**VIBRATION ISOLATOR - TYPE B**  
NO SCALE

1  
M-E



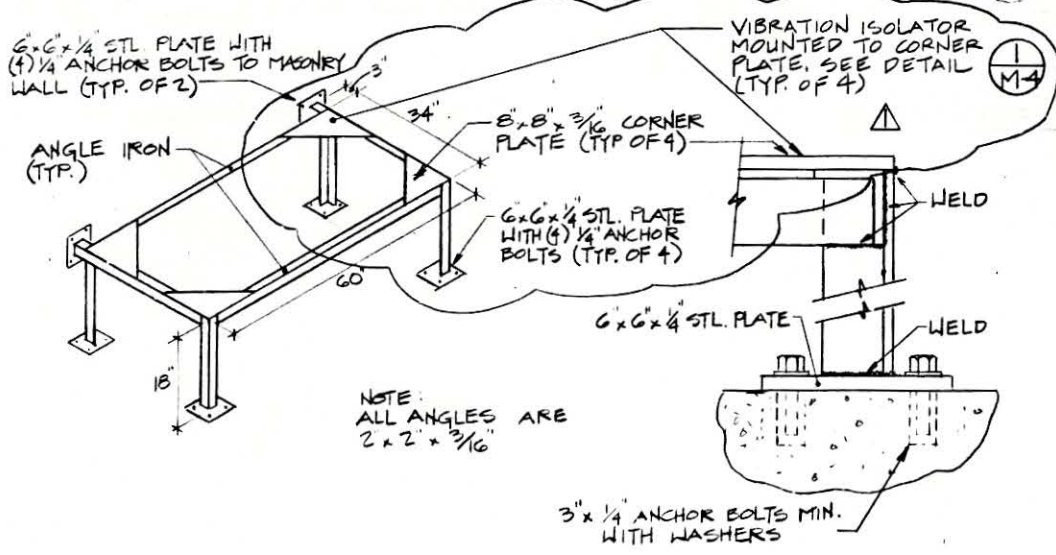
**INTAKE/RELIEF HOOD**  
NO SCALE

4  
M-E



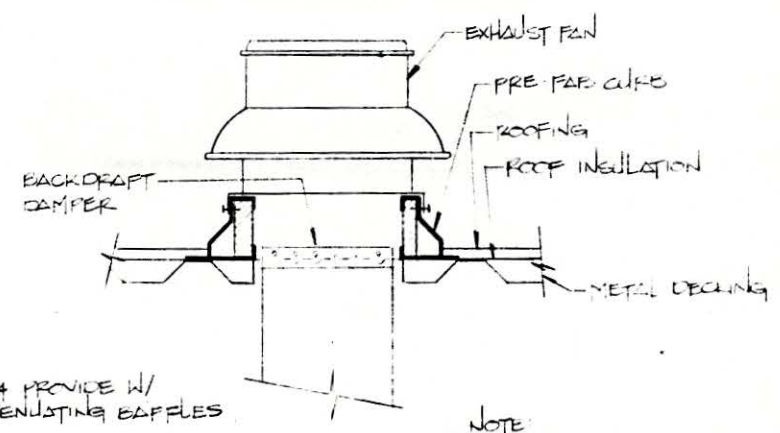
**SUPPLY AIR DISTRIBUTION BOX**  
NO SCALE

2  
M-E



**MAKE-UP AIR UNIT SUPPORT**  
NO SCALE

8  
M-E

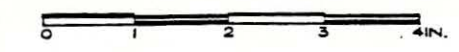


**ROOF MOUNTED EXHAUST FAN**  
NO SCALE

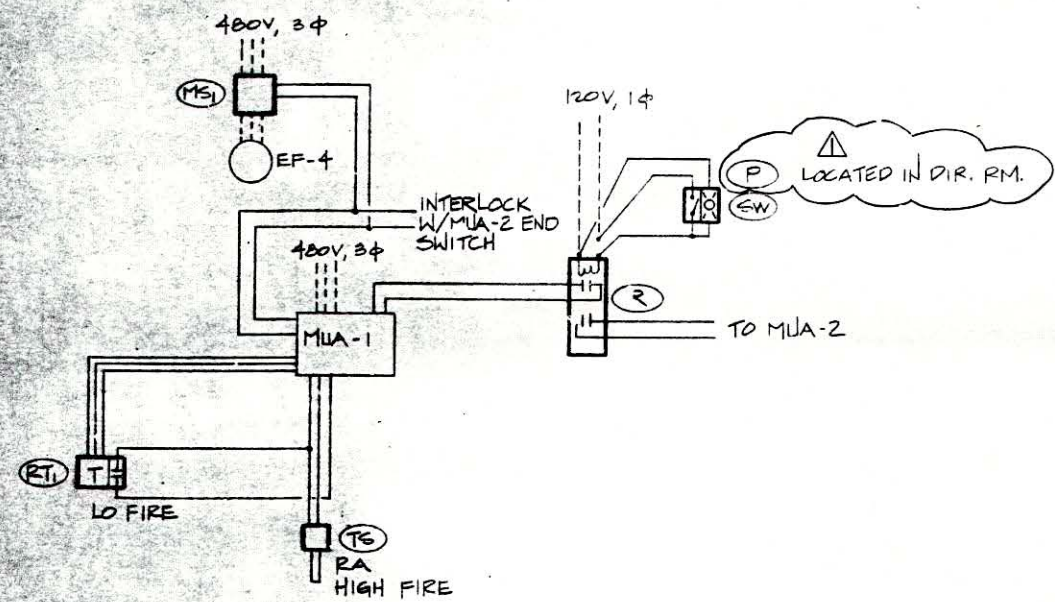
5  
M-E

<b>MELE AMANTEA ARCHITECTS AIA</b>	
DETAILS	
<b>M5</b>	
TIERRASANTA RECREATION CENTER	
CITY OF SAN DIEGO, CALIFORNIA PARK AND RECREATION DEPARTMENT SHEET 24814 55-D	
NO. 118276	DATE 12/28/01
PROJECT OFFICER	DATE
APPROVED	DATE
DESCRIPTION	BY
ORIGINAL	APPROVED
AS BUILT	DATE
CONTRACTOR	DATE
REVISIONS	DATE
CONSTRUCTION SET	
242-1743	
24814 55-D	
<b>AS BUILTS</b>	

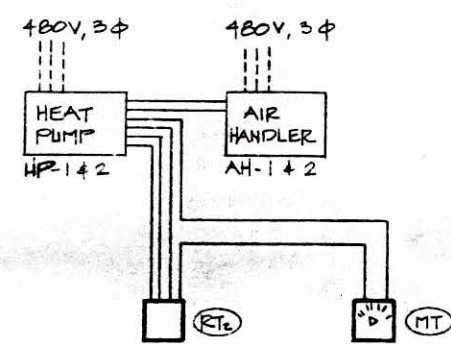
ATTACHED FROM THE ORIGINAL  
BEST QUALITY OBTAINABLE



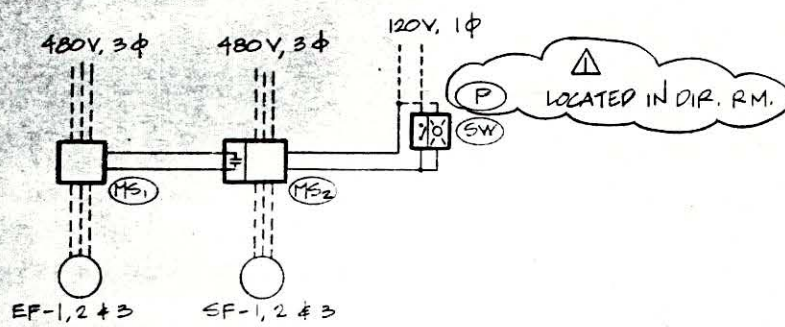




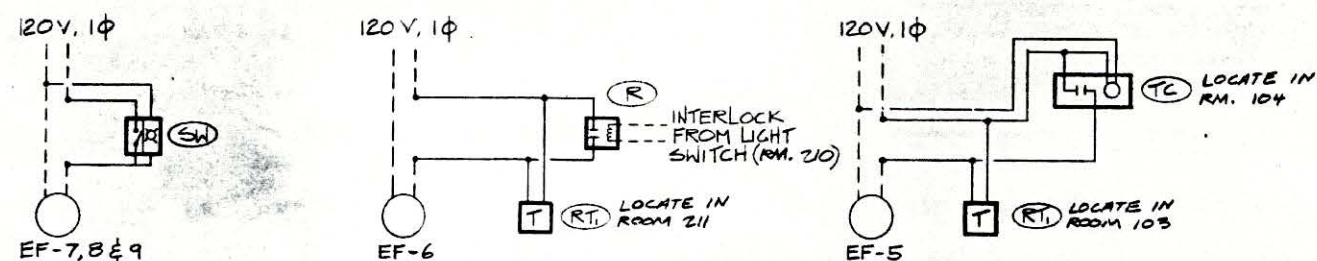
**MAKE-UP AIR UNIT CONTROL**  
NO SCALE



**SPLIT SYSTEM HEAT PUMP CONTROL**  
NO SCALE



**SUPPLY FAN CONTROL**  
NO SCALE



**EXHAUST FAN CONTROL**  
NO SCALE

**LEGEND**

(MS)	MAGNETIC STARTER W/H.O.A. 120V XFMR & COIL
(MS <sub>2</sub> )	MAGNETIC STARTER W/H.O.A. 120V COIL & AUX. CONTACTOR
(R)	RELAY
(SW)	SWITCH W/PILOT LITE
(TG)	TEMPERATURE SENSOR
(RT)	ROOM THERMOSTAT
(TC)	TIME CLOCK (7-DAY)
(○)	
(RT <sub>2</sub> )	ROOM THERMOSTAT
(MT)	MANUAL TIMER
(P)	PANEL MOUNTED

**MMA**  
MELE AMANTEA ARCHITECTS AIA

CONTROL DIAGRAMS

**M6**

8888 SHYRANK COURT SUITE 100, SAN DIEGO, CALIFORNIA 92131-0111

REV. *7/26/05* *11/24/05* *1/24/06* *1/24/06* *1/24/06*

**TIERRASANTA RECREATION CENTER**

CITY OF SAN DIEGO, CALIFORNIA  
PARK AND RECREATION DEPARTMENT  
SHEET 56 OF 78 SHEETS

NO. 118278

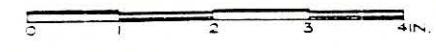
*Elmer D. ...* 1-24-06  
PROJECT OFFICER DATE

DESCRIPTION	BY	APPROVED	DATE	FILED	DIRECTOR
ORIGINAL					

CONTRACTOR: **LUCK** DATE STARTED: 2/16/05  
RESIDENT ENG. DATE COMPLETED: 12/28/05

242-1743  
248166-D

**AS BUILTS**





# TIERRASANTA RECREATION CENTER

## SAN DIEGO, CALIFORNIA

**TS** TITLE SHEET

**C1** GENERAL NOTES  
**C2** EXISTING TOPOGRAPHY & DEMOLITION  
**C3** SITE PLAN  
**C4** GRADING & DRAINAGE PLAN  
**C5** UTILITY PLAN  
**C6** TRAFFIC CONTROL PLAN

**A1** UPPER LEVEL FLOOR PLAN  
**A2** LOWER LEVEL FLOOR PLAN  
**A3** UPPER LEVEL REFLECTED CEILING PLAN  
**A4** LOWER LEVEL REFLECTED CEILING PLAN  
**A5** ROOF PLAN  
**A6** EXTERIOR ELEVATIONS  
**A7** EXTERIOR ELEVATIONS  
**A8** BUILDING SECTIONS  
**A9** BUILDING SECTIONS  
**A10** WALL SECTIONS  
**A11** WALL SECTIONS  
**A12** WALL SECTIONS  
**A13** WALL SECTIONS  
**A14** FOOD PREPARATION AREA PLAN  
**A15** MEN'S RESTROOM PLAN/INTERIOR ELEVATIONS  
**A16** WOMEN'S RESTROOM PLAN/INTERIOR ELEVATIONS  
**A17** SHOWER PLAN/INTERIOR ELEVATIONS  
**A18** STAIR PLANS/SECTIONS  
**A19** STAIR PLANS/SECTIONS  
**A20** INTERIOR ELEVATIONS - LOBBY  
**A21** INTERIOR ELEVATIONS - MULTI-USE  
**A22** DOOR SCHEDULE  
**A23** WINDOW SCHEDULE  
**A24** ROOM FINISH SCHEDULE  
**A25** MATERIAL & COLOR SCHEDULE  
**A26** COORD. STEERING PLAN/POLYMER BALL MARKING PLAN  
**A27** MARKETING PLAN/PAVING PLAN  
**A28** DETAILS  
**A29** DETAILS  
**A30** DETAILS  
**A31** DETAILS  
**A32** DETAILS  
**A33** DETAILS  
**A34** DETAILS  
**A35** DETAILS

**S1** GENERAL NOTES & TYPICAL DETAILS  
**S2** LOWER FOUNDATION PLAN  
**S3** UPPER FOUNDATION PLAN  
**S4** ROOF FINISHES PLAN  
**S5** DETAILS  
**S6** DETAILS  
**S7** DETAILS  
**S8** DETAILS

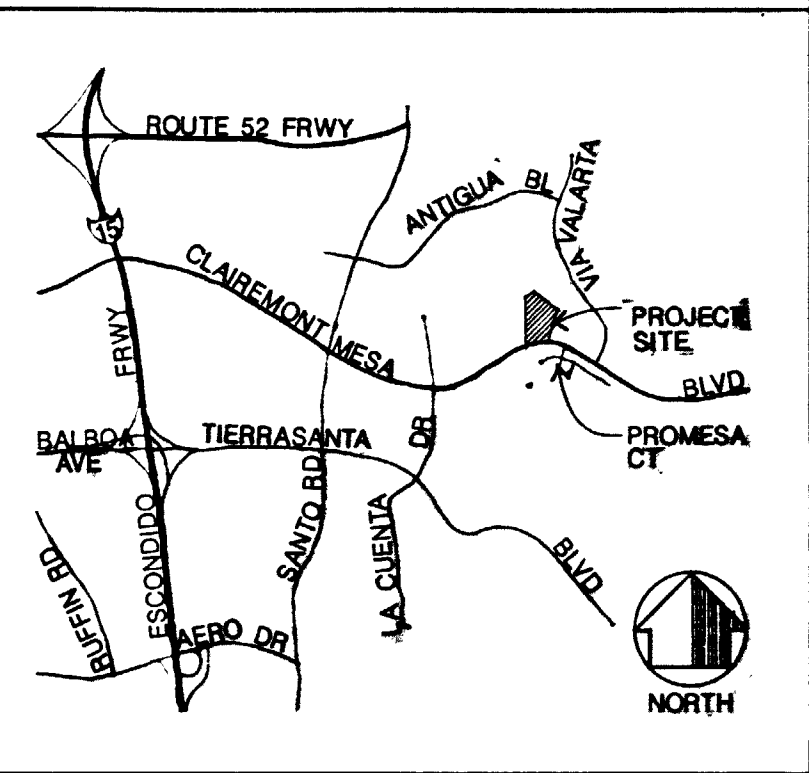
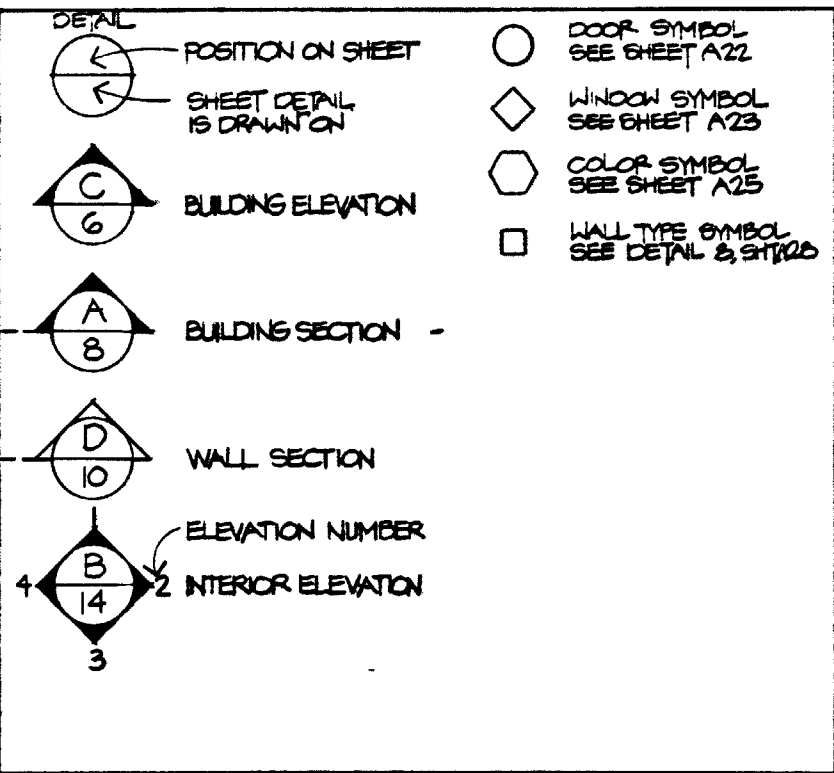
**E1** EQUIPMENT SCHEDULE  
**E2** UPPER LEVEL MECHANICAL PLAN  
**E3** LOWER LEVEL MECHANICAL PLAN  
**E4** SECTIONS  
**E5** DETAILS  
**E6** CONTROL DIAGRAMS

**P1** PLUMBING FIXTURES & EQUIPMENT LEGEND  
**P2** PLUMBING SITE PLAN  
**P3** LOWER LEVEL PLUMBING PLAN  
**P4** UPPER LEVEL PLUMBING PLAN

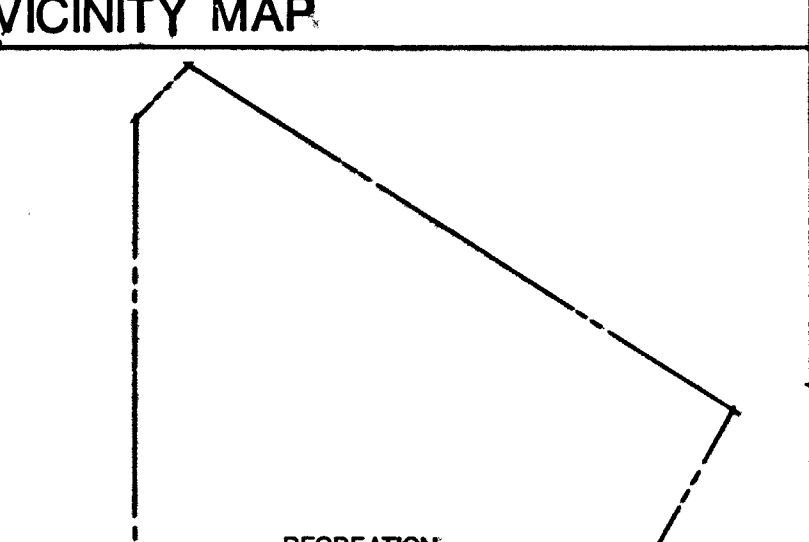
**E1** ELECTRICAL - SITE PLAN  
**E2** PANEL SCHEDULES, SINGLE LINE DIAGRAM  
**E3** LOWER LEVEL ELECTRICAL PLAN  
**E4** UPPER LEVEL ELECTRICAL PLAN  
**E5** UPPER LEVEL POWER PLAN  
**E6** SOUND AND SECURITY SYSTEM

**L1** CONSTRUCTION & PLUMBING PLAN  
**L2** IRRIGATION PLAN  
**L3** DETAILS  
**L4** SPECIFICATION & NOTES

ABBREVIATIONS		ABBREVIATIONS		ABBREVIATIONS		ABBREVIATIONS	
AC	ACCORDS	ASB	ASBESTOS	CA	GADGE	WB	WATERPROOF
AD	ADJUSTABLE	ASB	ASBESTOS	GA	GALVANIZED	WR	WATER RESISTANT
ADJ	ADJUSTABLE	ASB	ASBESTOS	GB	GRAB BAR	WSCT	WAINSCOT
AF	AGGREGATE	ASB	ASBESTOS	GB	GRAB BAR	W	WELDED
AL	ALUMINUM	ASB	ASBESTOS	GD	GARBAGE DISPOSAL	WM	WELDED WIRE MESH
APPR	APPROXIMATE	ASB	ASBESTOS	GFCI	GOVERNMENT FURNISHED		
ARC	ARCHITECTURAL	ASB	ASBESTOS	GFCI	GOVERNMENT FURNISHED		
ASB	ASBESTOS	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
BITUM	BITUMINOUS	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
BLK	BLOCK	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
BLKG	BLOCKING	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
BM	BEAM	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
BRD	BOARD	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
BUR	BUILT-UP ROOF	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
C/G	CORNER GUARD	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CAB	CABINET	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CB	CATCH BASIN	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CB	CERAMIC	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CB	CERAMIC	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CG	CLEAR GLASS	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CI	CAST IRON	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CJ	CONSTRUCTION JOINT	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CLG	CEILING	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CLG	CEILING	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CLG	CEILING	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CLG	CEILING	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CMU	CONCRETE MASONRY UNITS	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CO	CLEAR-OUT	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CO	COLD WATER	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CO	COLD WATER	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CO	COLD WATER	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CO	COLD WATER	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CO	COLD WATER	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CO	COLD WATER	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CO	COLD WATER	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CO	COLD WATER	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		
CO	COLD WATER	ASB	ASBESTOS	GT	GOVERNMENT INSTALLED		



- GENERAL NOTES**
- CONTRACTOR SHALL MAINTAIN OR REPLACE ANYTHING ON SITE DAMAGED DURING THE COURSE OF CONSTRUCTION TO HIS REPORT.
  - WHITEN DIMENSIONS SHALL TAKE PRECEDENCE OVER GRAPHIC SCALE.
  - CONTRACTOR SHALL THOROUGHLY FAMILIARIZE HIMSELF WITH EXISTING CONDITIONS PRIOR TO STARTING ANY WORK.
  - IF SHOULD BE NOTED THAT, WHILE EXISTING UTILITY DRAWINGS ARE AVAILABLE, THERE IS NO ASSURANCE THAT ALL UTILITIES ARE SHOWN. THE CONTRACTOR SHALL EXERCISE HIS CAUTION TO ensure THAT ALL UTILITIES ARE LOCATED, WHETHER ON HOT OR COLD, SHALL BE PROTECTED FROM DAMAGE. THE CONTRACTOR SHALL ALSO TAKE PRECAUTIONS NECESSARY TO PROTECT HIMSELF AND ALL WORKERS FROM HAZARDOUS MATERIALS THAT MAY BE ENCOUNTERED BY CONTACT WITH UTILITIES SERVICE LINES.
  - ELEVATOR MUST COMPLY WITH UPC CHAPTER 31.
  - ALL EITV DOORS SHALL BE OUVENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL MECHANISM OR DEVICE.
  - INTERIOR FINISHES SHALL COMPLY WITH UPC APPENDIX VI-C AND UPC CHAPTER 43.
  - ALL DECORATIVE MATERIALS SHALL BE MAINTAINED IN A FINE SEASONABLE CONDITION.
  - BUILDING OCCUPANT SHALL SECURE PERMITS PROVIDED BY THE FIRE DEPARTMENT FROM THE FIRE PREVENTION BUREAU PRIOR TO OCCUPANCY OF THE BUILDING.
  - BUILDING NUMBERS SHALL BE EASILY VISIBLE AND LEGIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY.
  - SEE CONSTRUCTION PERMITS OR DENOTATION OF A BUILDING SHALL COMPLY WITH UPC ARTICLE 67.



Owner:	CITY OF SAN DIEGO
Architect:	MELLE AMANTHA ARCHITECTS, AIA
Civil & Structural Engineers:	BURKETT & WONG ENGINEERS
Electrical Engineers:	VAN BUUREN, KIMPER & ASSOCIATES
Landscape Architect:	ONA, INC
Mechanical Engineers:	MELLE STRUM & ASSOCIATES

<b>PROJECT DATA</b>
LEGAL DESCRIPTION: ROSEDALE TRACT, LOT 15, PORTION
CONSTRUCTION TYPE: II, 1-HOUR, SPARKLE-PROOF
OCCUPANCY TYPE: A, 2.1
BUILDING AREA: 17,644 SF
SEISMIC ZONE: 4
BUILDING CODE: 1995 UBC

**ABBREVIATIONS**

**DIRECTORY**

**PROJECT DATA**

**SHEET INDEX**

**MELLE AMANTHA ARCHITECTS AIA**

**TITLE SHEET**

**TS**

CITY OF SAN DIEGO, CALIFORNIA  
 PARK AND RECREATION DEPARTMENT  
 SHEET 1 OF 7

**TIERRASANTA RECREATION CENTER**

CITY OF SAN DIEGO, CALIFORNIA  
 PARK AND RECREATION DEPARTMENT  
 SHEET 1 OF 7

**APPROVALS**

DESIGNER: [Signature]

CONTRACTOR: [Signature]

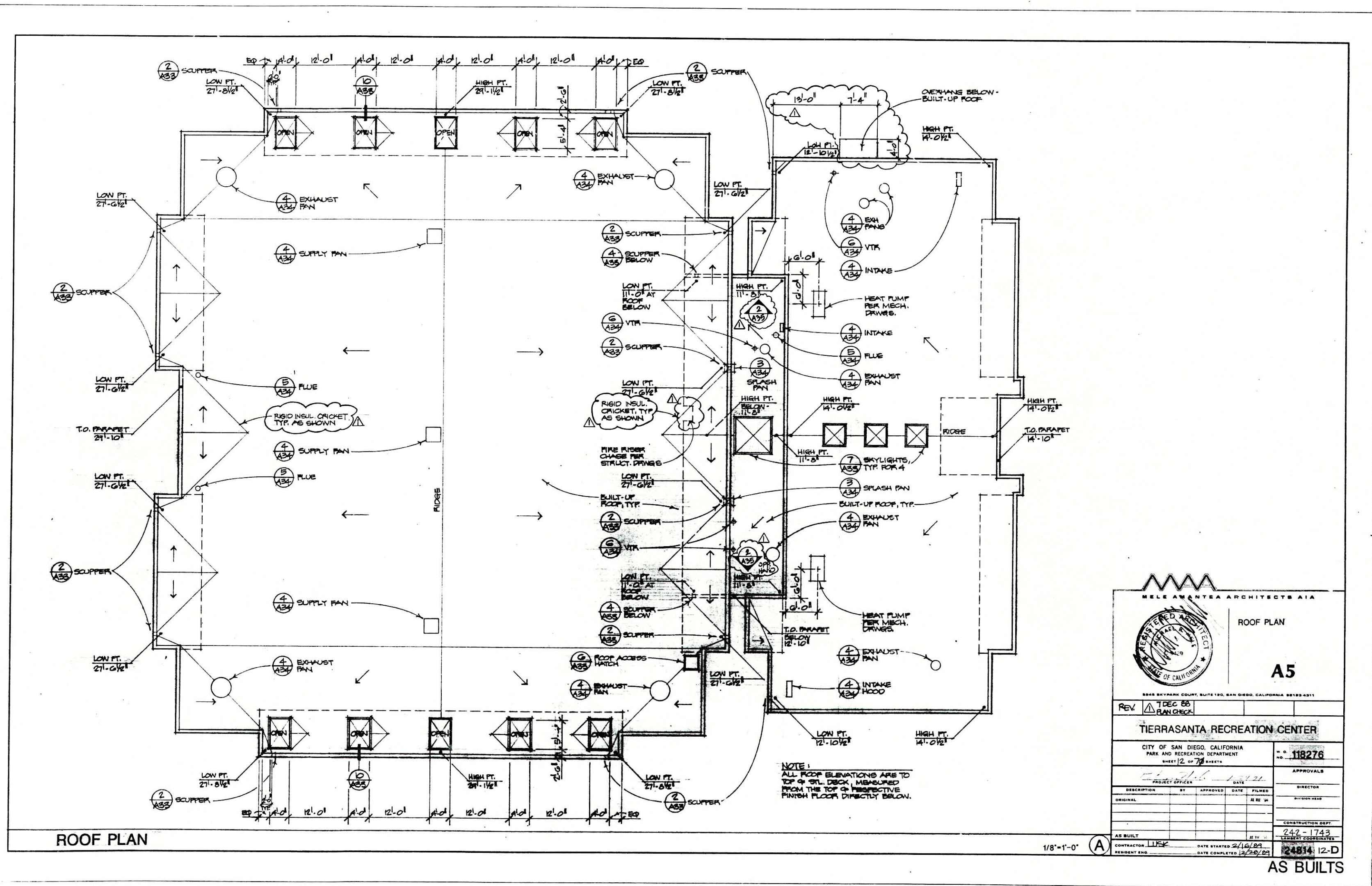
DATE STARTED: 11/16/01  
 DATE COMPLETED: 12/26/01

**24814-1-D**

TIERRASANTA RECREATION CENTER AS BUILTS 24814-D

**AS BUILTS**





ROOF PLAN

BELE ANANTEA ARCHITECTS AIA  
REGISTERED ARCHITECT  
STATE OF CALIFORNIA

ROOF PLAN  
**A5**

1888 BAYVIEW COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92108-2811

REV: TREC 88  
BAN CHECK

**TIERRASANTA RECREATION CENTER**  
CITY OF SAN DIEGO, CALIFORNIA  
PARK AND RECREATION DEPARTMENT  
SHEET 12 OF 78 SHEETS

PROJECT OFFICER: [Signature]  
DATE: 1/13/03

APPROVALS:  
DIRECTOR: [Signature]  
CONSTRUCTION DEPT.: [Signature]

AS BUILT: [Signature]  
CONTRACTOR: LUSK  
DATE STARTED: 2/16/03  
DATE COMPLETED: 12/29/03

118276  
242-1743  
24814 12-D

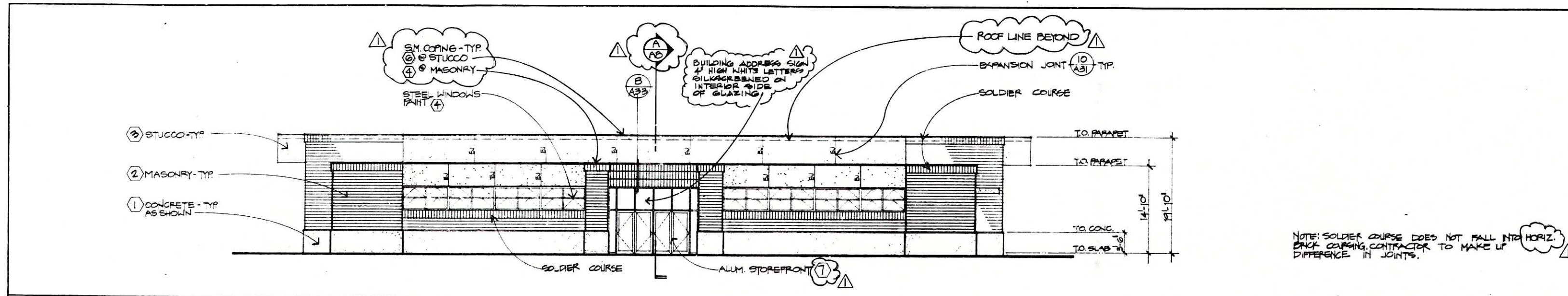
AS BUILTS

NOTE:  
ALL ROOF ELEVATIONS ARE TO  
TOP OF CUR. DECK, MEASURED  
FROM THE TOP OF RESPECTIVE  
FINISH FLOOR DIRECTLY BELOW.

1/8"=1'-0" (A)

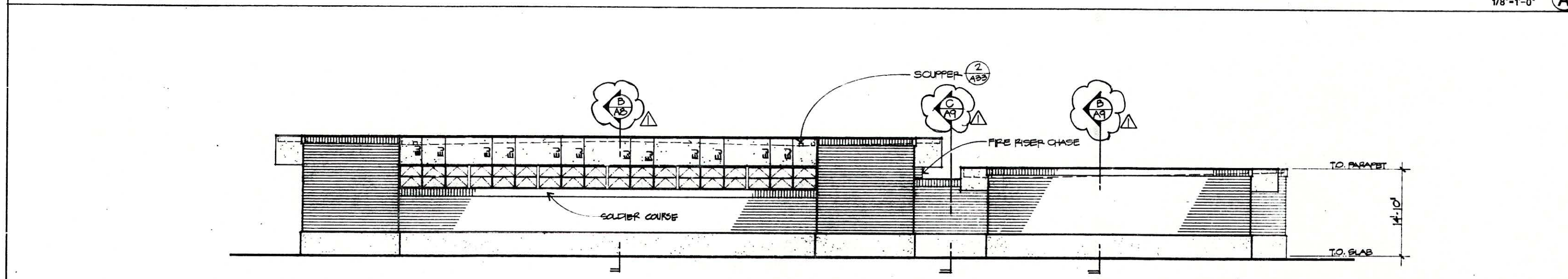






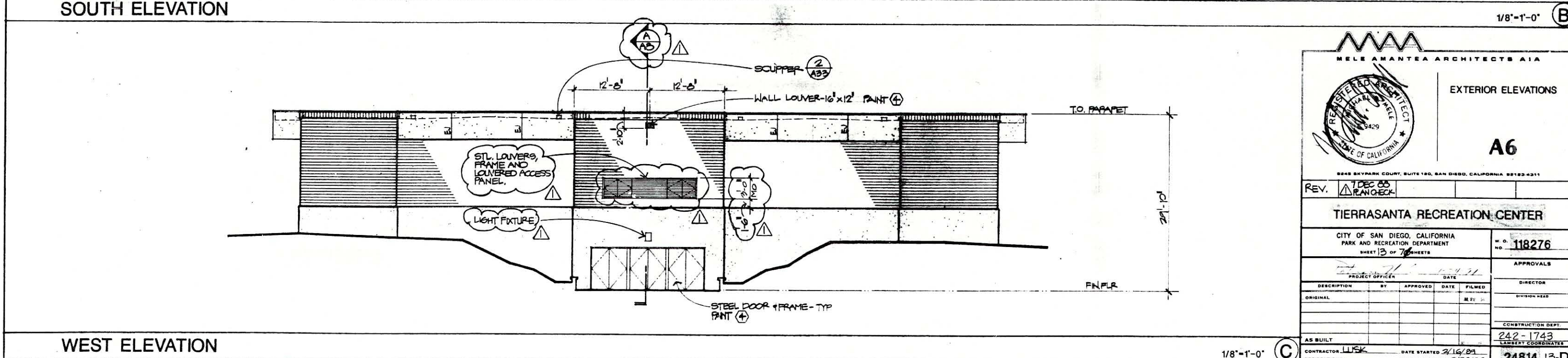
EAST ELEVATION

1/8"=1'-0" A



SOUTH ELEVATION

1/8"=1'-0" B



WEST ELEVATION

1/8"=1'-0" C

HELE AMANTEA ARCHITECTS AIA

EXTERIOR ELEVATIONS

**A6**

2422 BAYVIEW COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92122-2211

REV. 1 DEC 05

**TIERRASANTA RECREATION CENTER**

CITY OF SAN DIEGO, CALIFORNIA  
PARK AND RECREATION DEPARTMENT  
SHEET 15 OF 76 SHEETS

NO. 118276

DESCRIPTION	BY	APPROVED	DATE	TYPED	DATE
ORIGINAL					

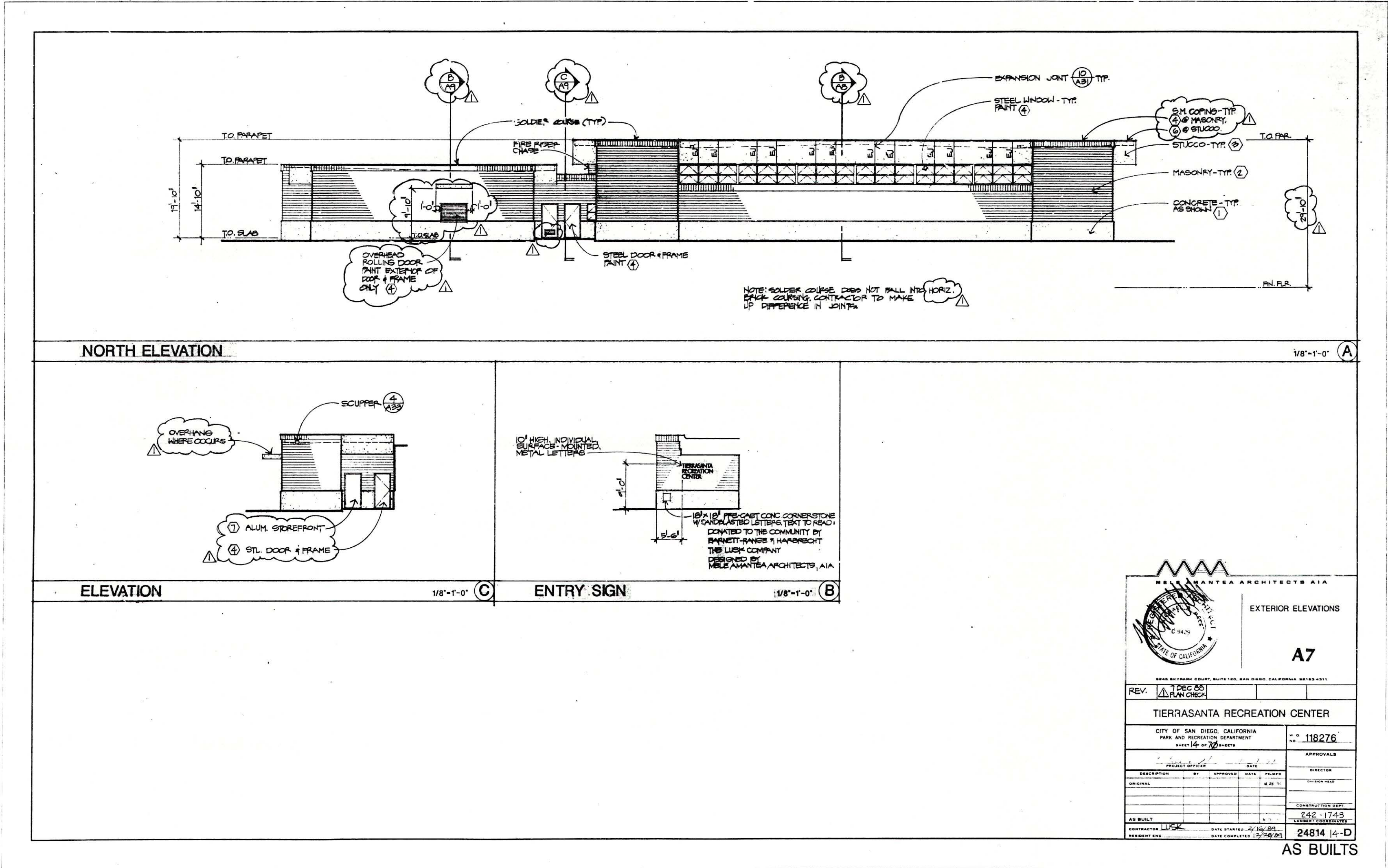
CONTRACTOR: LLPSK  
DATE STARTED: 2/16/05  
DATE COMPLETED: 2/23/05

242-1743  
24814 13-D

AS BUILTS

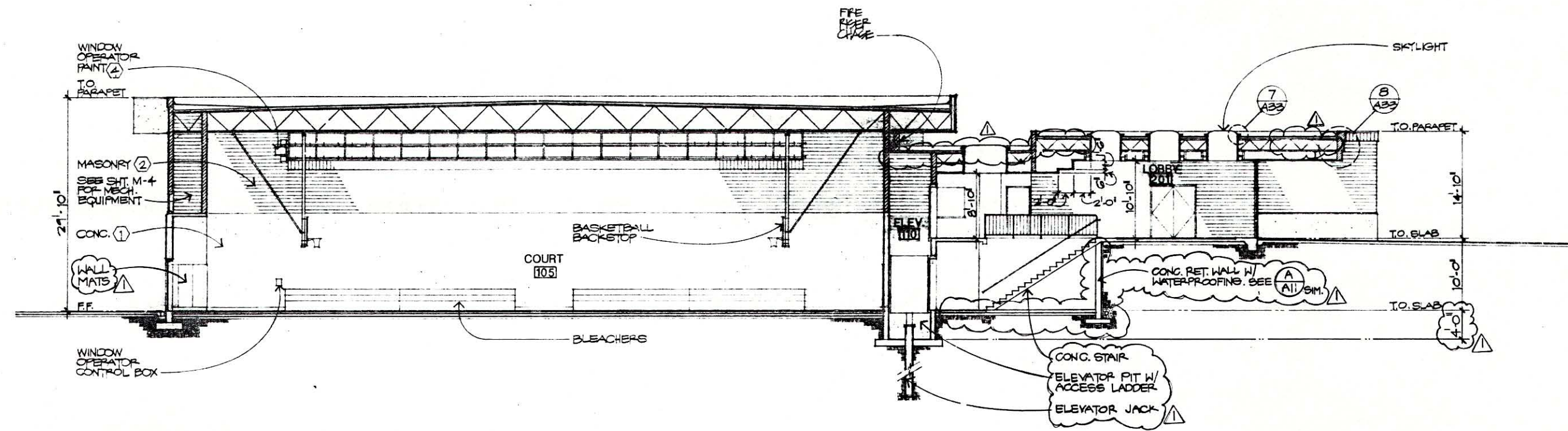






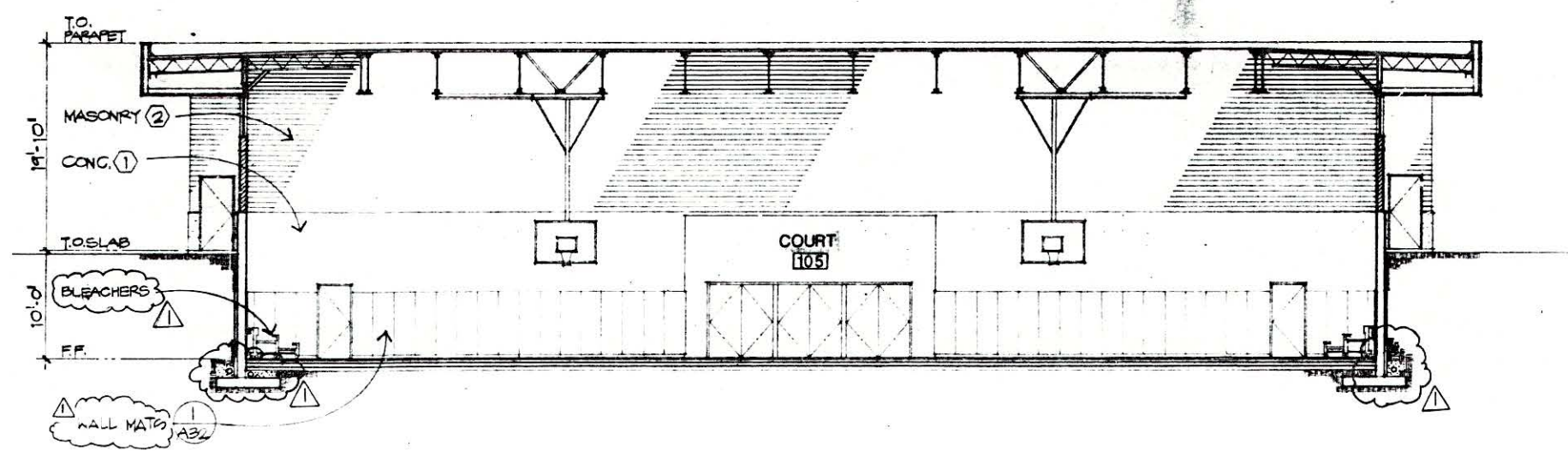
MELI AMANTEA ARCHITECTS AIA  
 EXTERIOR ELEVATIONS  
**A7**  
 3000 BAYVIEW COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92123-0011  
 REV. 1 DEC 05 PLAN CHECK  
**TIERRASANTA RECREATION CENTER**  
 CITY OF SAN DIEGO, CALIFORNIA  
 PARK AND RECREATION DEPARTMENT  
 SHEET 14-D OF 70 SHEETS  
 NO. 118276  
 APPROVALS  
 PROJECT OFFICER: [Signature] DATE: 12/15/05  
 DIRECTOR: [Signature]  
 AS BUILT: LUSH  
 CONTRACTOR: LUSH  
 DATE STARTED: 4/16/05  
 DATE COMPLETED: 12/28/05  
 242-1743  
 24814 14-D  
**AS BUILT**





BUILDING SECTION

1/8"=1'-0" (A)



BUILDING SECTION

1/8"=1'-0" (B)

MEYER MANTEA ARCHITECTS AIA  
 BUILDING SECTIONS  
**A8**  
 8848 BAYPARK COURT, SUITE 120, SAN DIEGO, CALIFORNIA 92123-3111

REV. 1 DEC 05  
 TPC/SS  
 PLANO/EC

**TERRASANTA RECREATION CENTER**  
 CITY OF SAN DIEGO, CALIFORNIA  
 PARK AND RECREATION DEPARTMENT  
 SHEET 15 OF 16 SHEETS

NO. 118276

DESCRIPTION	BY	APPROVED	DATE	FILED	DIRECTOR
ORIGINAL					

CONSTRUCTION DEPT.  
 242-1743  
 EXHIBIT SUBMITTALS

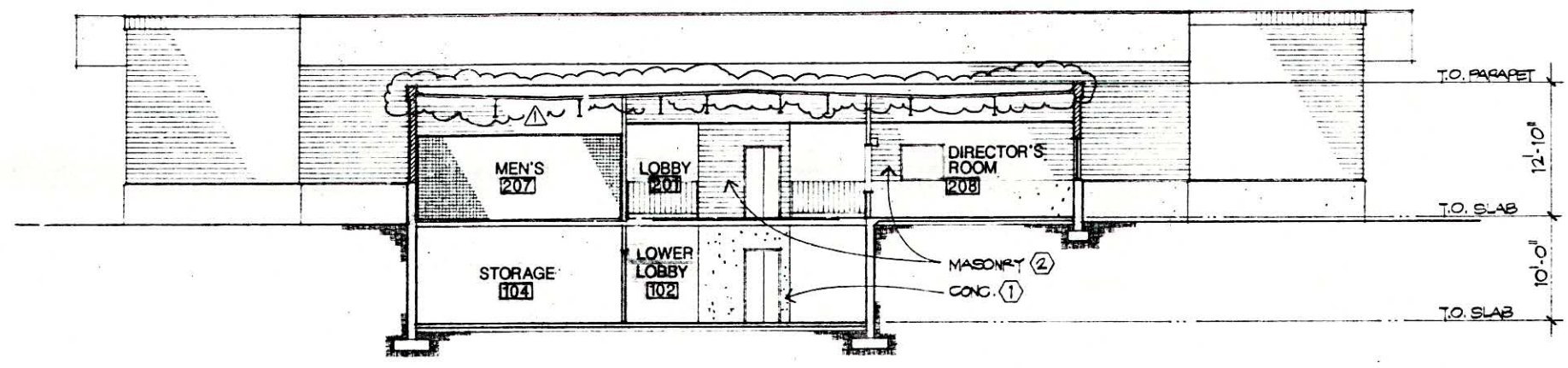
AS BUILT  
 CONTRACTOR LUSK  
 RESIDENT ENG.

DATE STARTED 2/16/09  
 DATE COMPLETED 2/28/09

24814 15-D

AS BUILTS

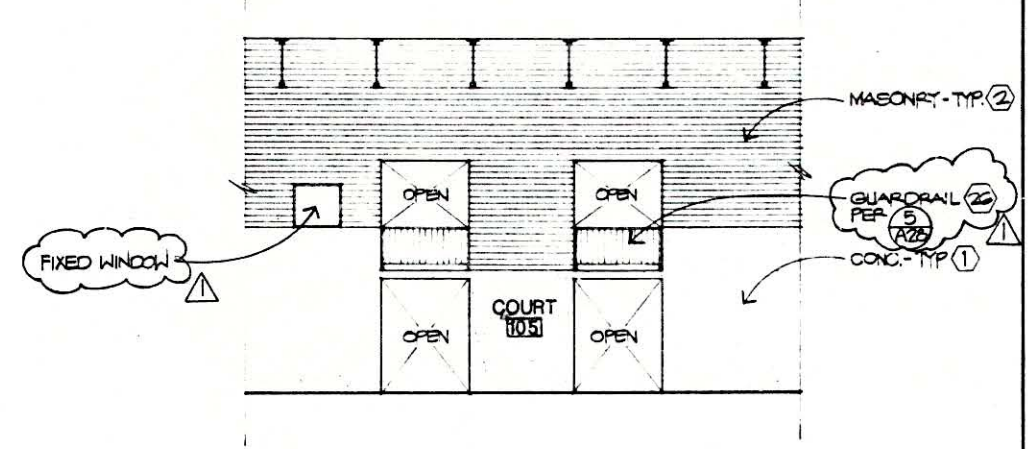




NOTE: SEE MECHANICAL DRAWINGS FOR MECH. EQUIP.

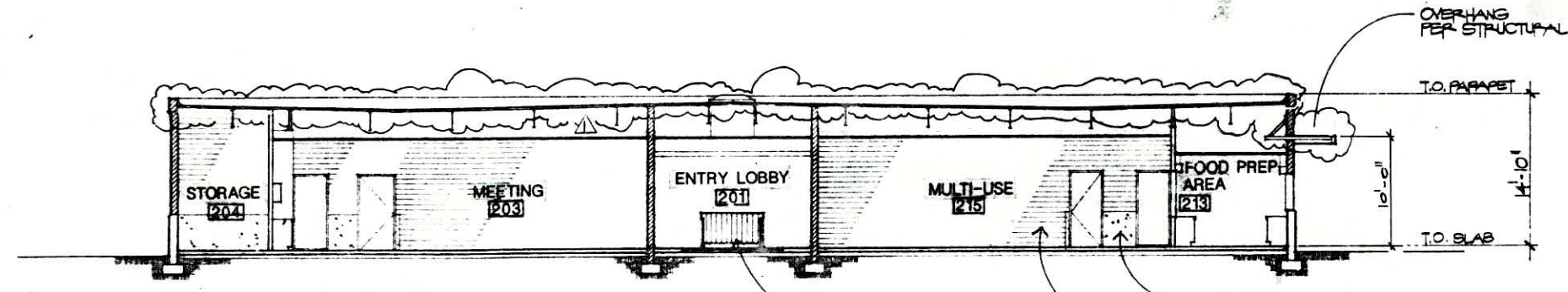
BUILDING SECTION

1/8"=1'-0" (C)



SECTION/ELEVATION

1/8"=1'-0" (A)



NOTE: SEE MECHANICAL DRAWINGS FOR MECH. EQUIP.

BUILDING SECTION

1/8"=1'-0" (B)

MELISSA AMANTEA ARCHITECTS AIA

BUILDING SECTIONS

**A9**

3848 54<sup>TH</sup> PARK COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92121-4311

REV. 1 DEC 05

**TIERRASANTA RECREATION CENTER**

CITY OF SAN DIEGO, CALIFORNIA  
PARK AND RECREATION DEPARTMENT  
SHEET 16 OF 78 SHEETS

NO. 118276

DESCRIPTION	BY	APPROVED	DATE	FILED	DIRECTOR
ORIGINAL					

CONSTRUCTION COST: 242-1743

AS BUILT

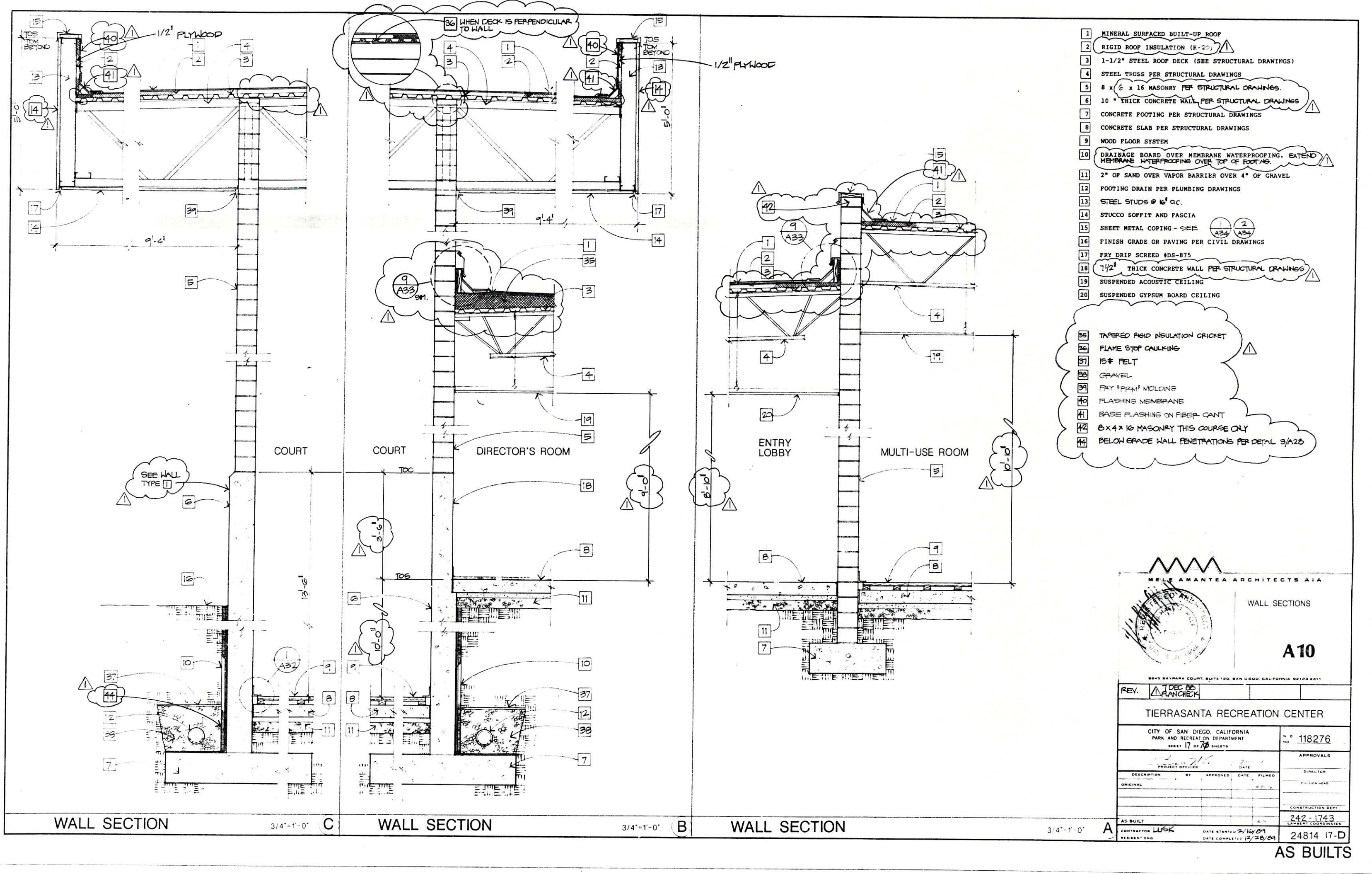
CONTRACTOR: L.J.F.K. DATE STARTED: 3/16/01

RESIDENT ENG. DATE COMPLETED: 12/28/01

24814 16-D

AS BUILTS





- 1 MINERAL SURFACED BUILT-UP ROOF
  - 2 RIGID ROOF INSULATION (R-20)
  - 3 1-1/2" STEEL ROOF DECK (SEE STRUCTURAL DRAWINGS)
  - 4 STEEL TRUSS PER STRUCTURAL DRAWINGS
  - 5 8 x 6 x 16 MASONRY PER STRUCTURAL DRAWINGS
  - 6 10" THICK CONCRETE WALL PER STRUCTURAL DRAWINGS
  - 7 CONCRETE FOOTING PER STRUCTURAL DRAWINGS
  - 8 CONCRETE SLAB PER STRUCTURAL DRAWINGS
  - 9 WOOD FLOOR SYSTEM
  - 10 DRAINAGE BOARD OVER MEMBRANE WATERPROOFING. EXTEND MEMBRANE WATERPROOFING OVER TOP OF FOOTING.
  - 11 2" OF SAND OVER VAPOR BARRIER OVER 4" OF GRAVEL
  - 12 FOOTING DRAIN PER PLUMBING DRAWINGS
  - 13 STEEL STUDS @ 16" O.C.
  - 14 STUCCO SOFFIT AND FASCIA
  - 15 SHEET METAL COPING - SEE (1) (2)
  - 16 FINISH GRADE OR PAVING PER CIVIL DRAWINGS
  - 17 FRY DRIP SCREED 10S-875
  - 18 1 1/2" THICK CONCRETE WALL PER STRUCTURAL DRAWINGS
  - 19 SUSPENDED ACOUSTIC CEILING
  - 20 SUSPENDED GYPSUM BOARD CEILING
- 
- 36 TAPERED FIBER INSULATION CRICKET
  - 37 FLAME STOP CAULKING
  - 38 15# FELT
  - 39 GRAVEL
  - 40 FRY "FRAM" MOLDING
  - 41 FLASHING MEMBRANE
  - 42 BASE FLASHING ON FIBER CANT
  - 43 8x4x16 MASONRY THIS COURSE ONLY
  - 44 BELOW GRADE WALL PENETRATIONS PER DETAIL 3/A/25

MEL AMANTEA ARCHITECTS AIA

WALL SECTIONS

**A10**

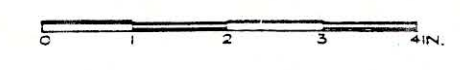
242-1743

24814 17-D

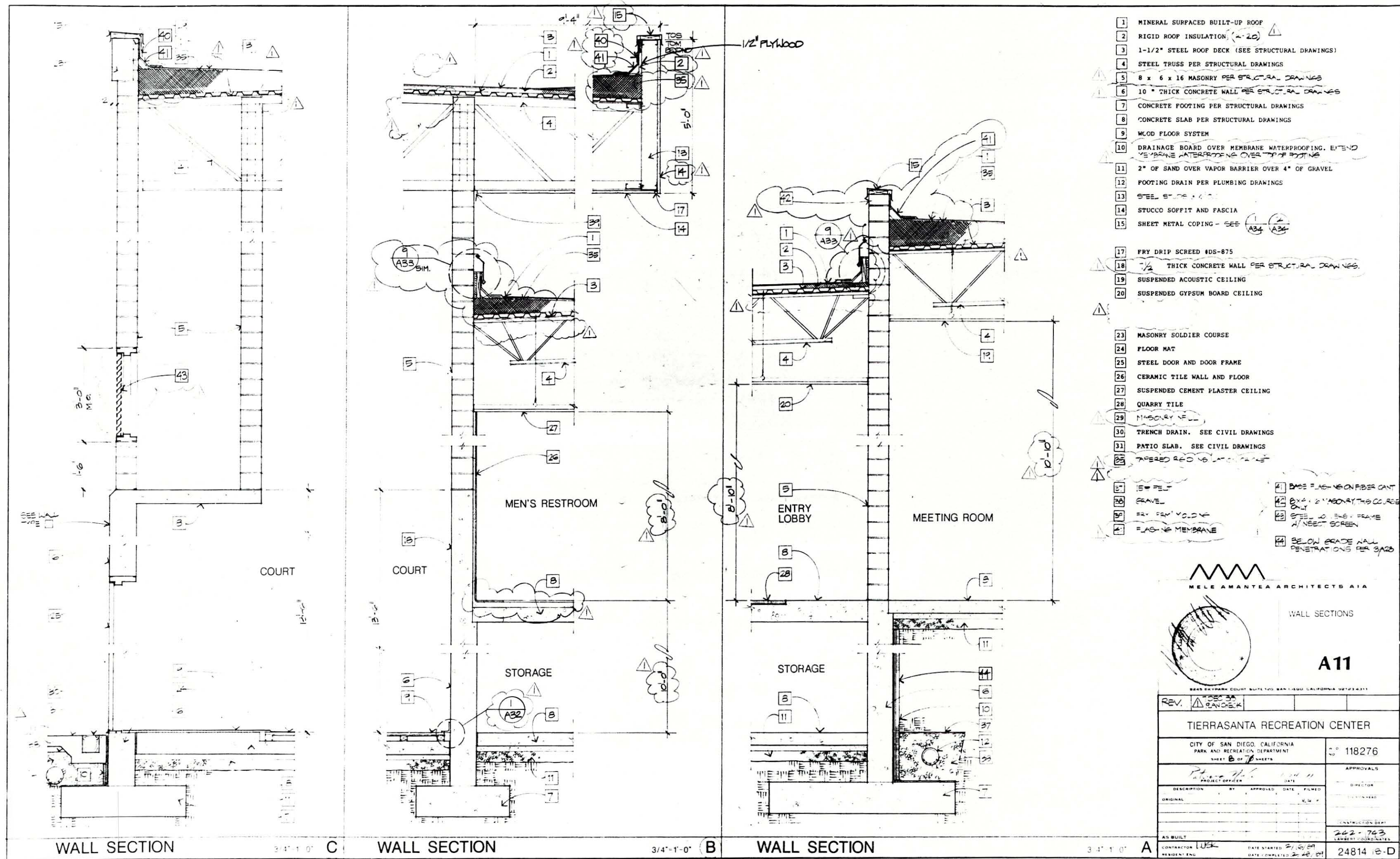
AS BUILTS

REV.	DEC 06	FLANIGAN
TIERRASANTA RECREATION CENTER		
CITY OF SAN DIEGO, CALIFORNIA PARK AND RECREATION DEPARTMENT		NO. 118276
PROJECT OFFICE		APPROVALS
DESCRIPTION	BY	DATE
ORIGINAL		
AS BUILT	DATE STARTED 2/16/01	242-1743
CONTRACTOR LUSK	DATE COMPLETED 12/28/04	24814 17-D

ADDED FROM THE ORIGINAL  
BEST QUALITY UNAVAILABLE







- 1 MINERAL SURFACED BUILT-UP ROOF
- 2 RIGID ROOF INSULATION (1" 20)
- 3 1-1/2" STEEL ROOF DECK (SEE STRUCTURAL DRAWINGS)
- 4 STEEL TRUSS PER STRUCTURAL DRAWINGS
- 5 8 x 6 x 16 MASONRY PER STRUCTURAL DRAWINGS
- 6 10" THICK CONCRETE WALL PER STRUCTURAL DRAWINGS
- 7 CONCRETE FOOTING PER STRUCTURAL DRAWINGS
- 8 CONCRETE SLAB PER STRUCTURAL DRAWINGS
- 9 WOOD FLOOR SYSTEM
- 10 DRAINAGE BOARD OVER MEMBRANE WATERPROOFING. EXTEND MEMBRANE WATERPROOFING OVER TOP OF FOOTING
- 11 2" OF SAND OVER VAPOR BARRIER OVER 4" OF GRAVEL
- 12 FOOTING DRAIN PER PLUMBING DRAWINGS
- 13 STEEL STUDS & JOISTS
- 14 STUCCO SOFFIT AND FASCIA
- 15 SHEET METAL COPING - SEE A34, A36
- 17 FRY DRIP SCREED #DS-875
- 18 1/2" THICK CONCRETE WALL PER STRUCTURAL DRAWINGS
- 19 SUSPENDED ACOUSTIC CEILING
- 20 SUSPENDED GYPSUM BOARD CEILING
- 23 MASONRY SOLDIER COURSE
- 24 FLOOR MAT
- 25 STEEL DOOR AND DOOR FRAME
- 26 CERAMIC TILE WALL AND FLOOR
- 27 SUSPENDED CEMENT PLASTER CEILING
- 28 QUARRY TILE
- 29 MASONRY NE
- 30 TRENCH DRAIN. SEE CIVIL DRAWINGS
- 31 PATIO SLAB. SEE CIVIL DRAWINGS
- 32 IMPERMEABLE RED LAMINATE
- 33 15# FIBER
- 34 2" DRAINAGE MAT
- 35 GRAVEL
- 36 2" SAND
- 37 4" CONCRETE
- 38 1/2" CONCRETE
- 39 FLASHING MEMBRANE
- 40 DRAINAGE MAT
- 41 2" SAND
- 42 4" CONCRETE
- 43 1/2" CONCRETE
- 44 BELOW GRADE WALL PENETRATIONS PER SABS

MELE AMANTEA ARCHITECTS AIA

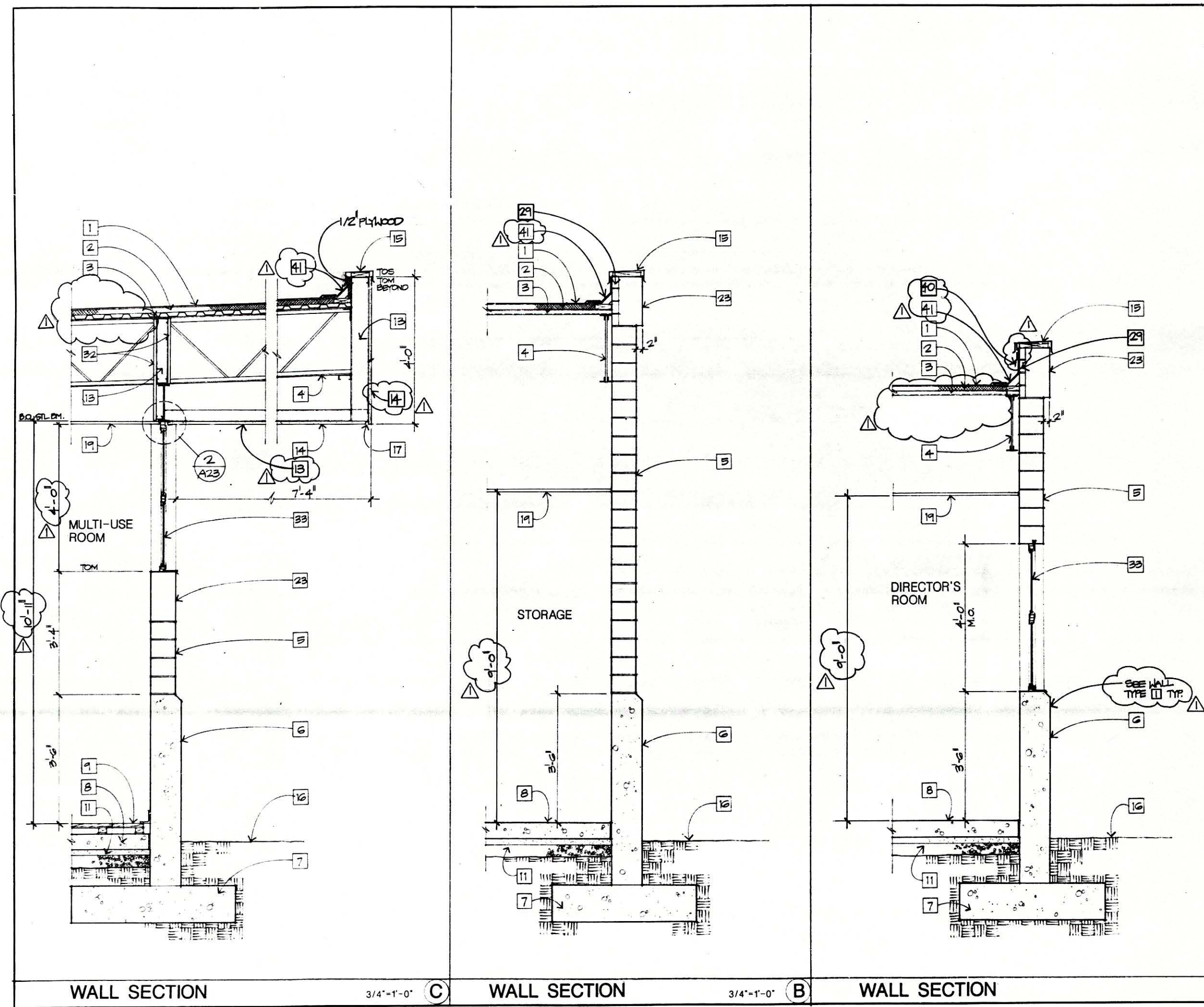
WALL SECTIONS

**A11**

REV. <b>A</b> <b>2024.08.01</b>		CITY OF SAN DIEGO, CALIFORNIA	
TIERRASANTA RECREATION CENTER			
CITY OF SAN DIEGO, CALIFORNIA PARK AND RECREATION DEPARTMENT		NO. 118276	
PROJECT OFFICER: <b>Paul H. [Signature]</b>		APPROVALS:	
DESIGNER: <b>[Signature]</b>	DATE: <b>08/01/24</b>	PROJECT OFFICER: <b>[Signature]</b>	DATE: <b>08/01/24</b>
CONTRACTOR: <b>LUK</b>	DATE STARTED: <b>07/15/24</b>	CONTRACTOR: <b>LUK</b>	DATE COMPLETED: <b>08/01/24</b>
AS BUILT		24814 10-D	

**AS BUILTS**





- 1 MINERAL SURFACED BUILT-UP ROOF
- 2 RIGID ROOF INSULATION (R-20)
- 3 1-1/2" STEEL ROOF DECK (SEE STRUCTURAL DRAWINGS)
- 4 STEEL TRUSS PER STRUCTURAL DRAWINGS
- 5 8 x 6 x 16 MASONRY PER STRUCTURAL DRAWINGS
- 6 10" THICK CONCRETE WALL PER STRUCTURAL DRAWINGS
- 7 CONCRETE FOOTING PER STRUCTURAL DRAWINGS
- 8 CONCRETE SLAB PER STRUCTURAL DRAWINGS
- 9 WOOD FLOOR SYSTEM
- 10 2" OF SAND OVER VAPOR BARRIER OVER 4" OF GRAVEL
- 11 STEEL STUDS @ 16" O.C.
- 12 STUCCO SOFFIT AND FASCIA
- 13 SHEET METAL COPING - SEE 1, 2
- 14 FINISH GRADE OR PAVING PER CIVIL DRAWINGS
- 15 FRY DRIP SCREED SDS-875
- 16 SUSPENDED ACOUSTIC CEILING
- 17 MASONRY SOLDIER COURSE
- 18 MASONRY INFILL
- 19 5/8" TYPE 'X' GIP. DO EACH SOB. FIT AROUND TRUSS AND ROOF DECK. SEAL ALL EDGES W/ FLAME STOP GULKING.
- 20 STEEL FRAME WINDOW
- 21 FLASHING MEMBRANE
- 22 BASE FLASHING ON FIBER CANT

WALL SECTIONS

**A 12**

SEAN AMANTEA ARCHITECTS AIA  
11111 PACIFIC BEACH BLVD., SUITE 100, SAN DIEGO, CALIFORNIA 92121-4211

REV.  1 DEC 05 PLAN CHECK

**TIERRASANTA RECREATION CENTER**

CITY OF SAN DIEGO, CALIFORNIA  
PARK AND RECREATION DEPARTMENT  
SHEET 12 OF 20 SHEETS

NO. 118276

APPROVALS	
DESCRIPTION	DATE

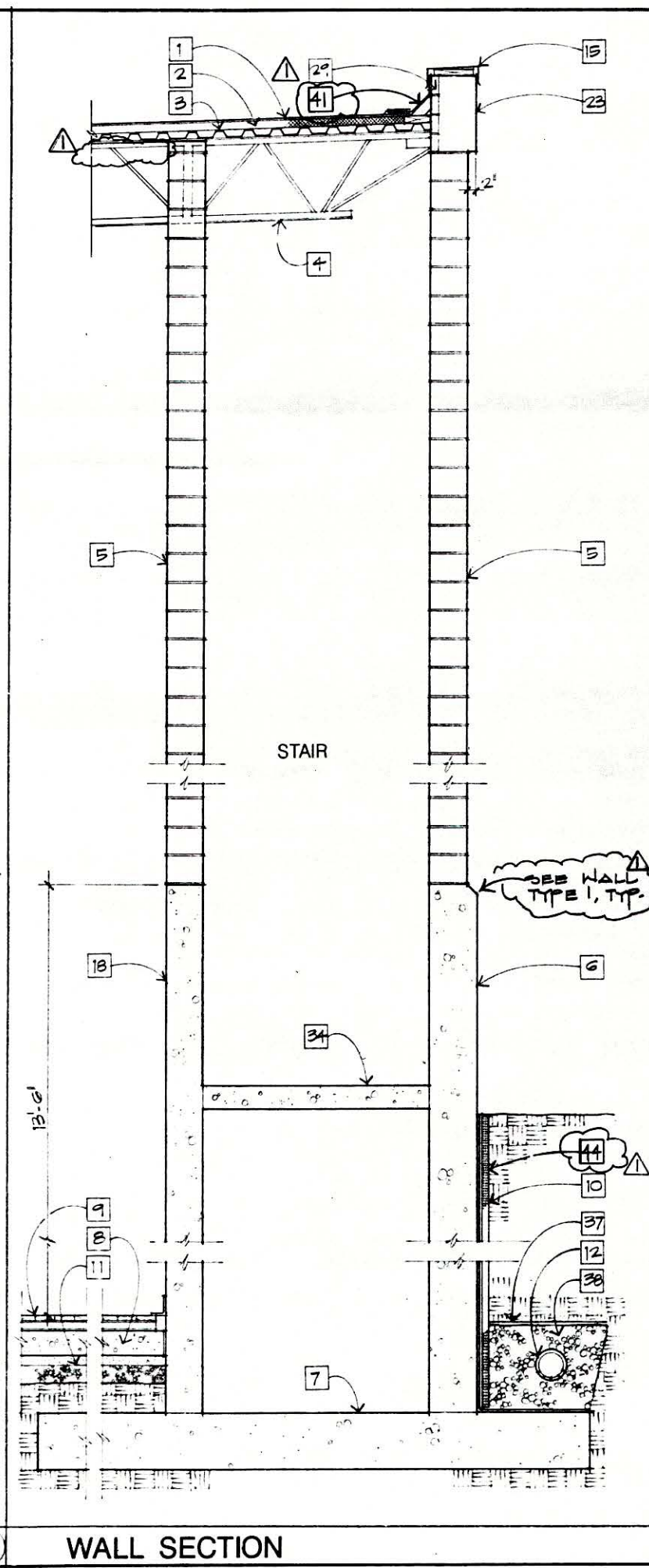
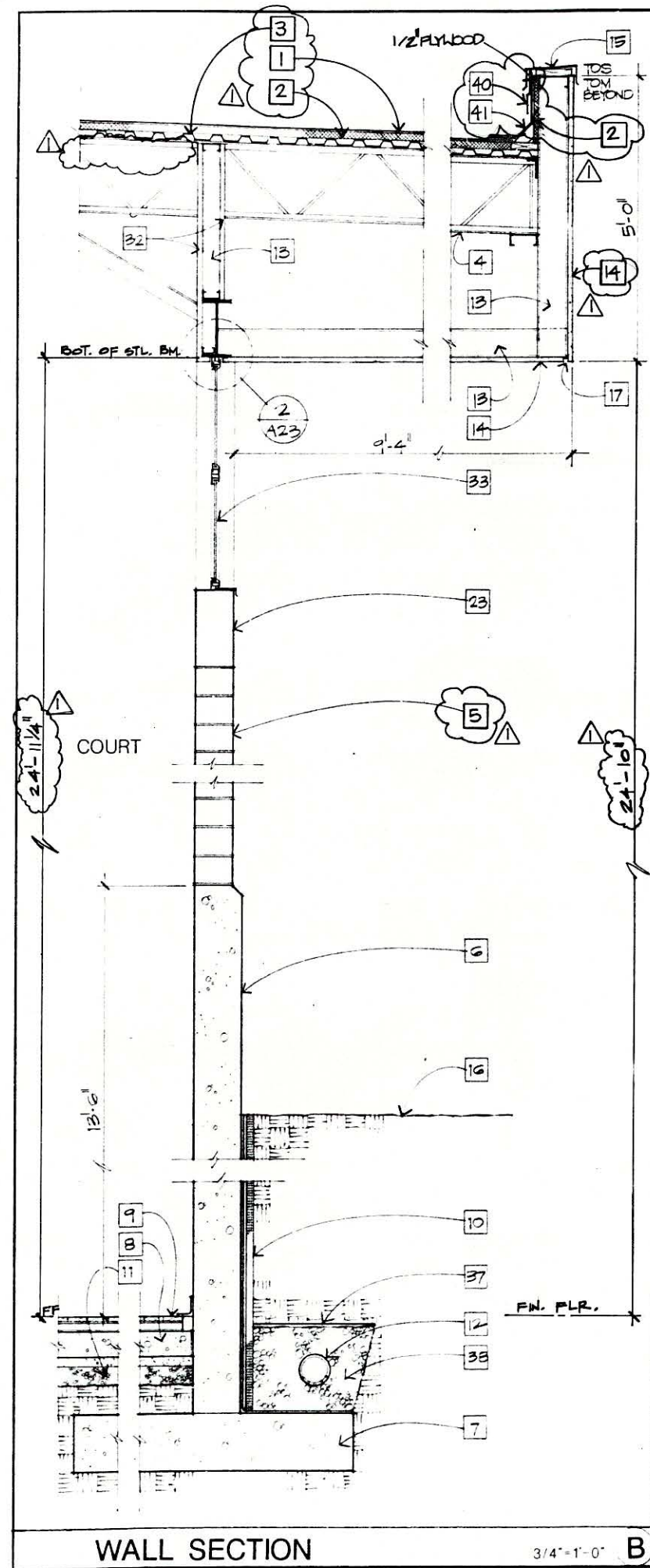
AS BUILT CONTRACTOR: **LUK** DATE STARTED: 9/16/04 DATE COMPLETED: 12/28/04

24814 19-D

AS BUILTS

FILMED FROM THE ORIGINAL  
BEST QUALITY OBTAINABLE





- 1 MINERAL SURFACED BUILT-UP ROOF
- 2 RIGID ROOF INSULATION (R=20)
- 3 1-1/2" STEEL ROOF DECK (SEE STRUCTURAL DRAWINGS)
- 4 STEEL TRUSS PER STRUCTURAL DRAWINGS
- 5 8 x 6 x 16 MASONRY PER STRUCTURAL DRAWINGS
- 6 10" THICK CONCRETE WALL PER STRUCTURAL DRAWINGS
- 7 CONCRETE FOOTING PER STRUCTURAL DRAWINGS
- 8 CONCRETE SLAB PER STRUCTURAL DRAWINGS
- 9 WOOD FLOOR SYSTEM
- 10 DRAINAGE BOARD OVER MEMBRANE WATERPROOFING. EXTEND MEMBRANE WATERPROOFING OVER TOP OF FOOTING.
- 11 2" OF SAND OVER VAPOR BARRIER OVER 4" OF GRAVEL
- 12 FOOTING DRAIN PER PLUMBING DRAWINGS
- 13 STEEL STUDS @ 16" O.C.
- 14 STUCCO SOFFIT AND FASCIA
- 15 SHEET METAL COPING - SEE 1, 2
- 16 FINISH GRADE OR PAVING PER CIVIL DRAWINGS
- 17 FRY DRIP SCREED #8S-875
- 18 7/8" THICK CONCRETE WALL PER STRUCTURAL DRAWINGS
- 19 MASONRY SOLDIER COURSE
- 20 MASONRY INFILL
- 21 5/8" TYPE X GYP BO EACH SIDE, FIT AROUND TRUSS AND ROOF DECK. SEAL ALL EDGES W/ FLAME STOP CHANNEL
- 22 STEEL FRAME WINDOW
- 23 CONCRETE STAIR. SEE D/AB.
- 24 15# FELT
- 25 GRAVEL
- 26 FLASHING MEMBRANE
- 27 BASE FLASHING ON FIBER GANT
- 28 BELOW GRADE WALL PENETRATIONS PER DETAIL 3/A20

MELLE AMANTEA ARCHITECTS AIA

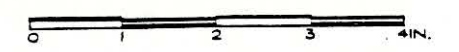
WALL SECTIONS

A13

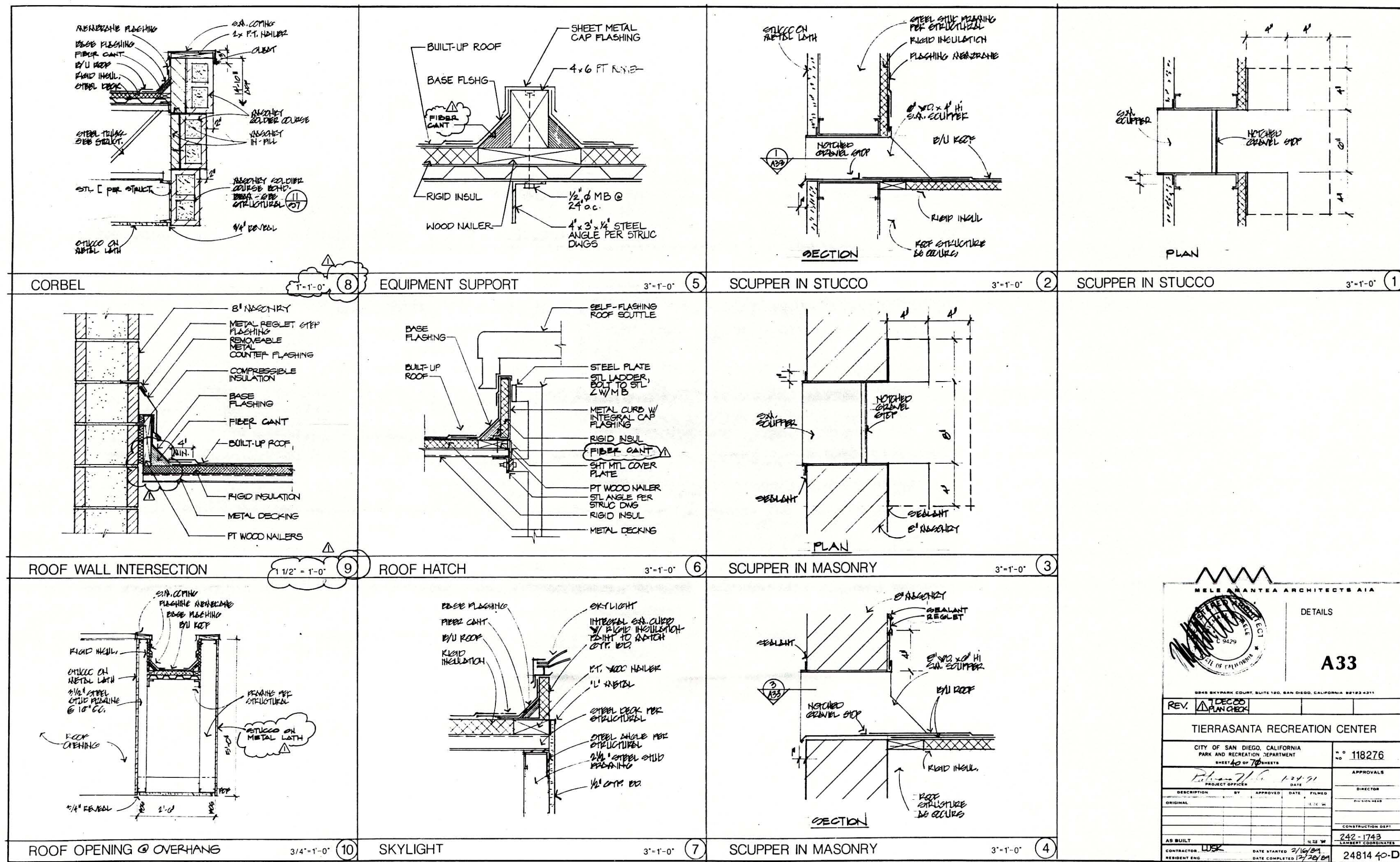
3888 BAYVIEW COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92123-4311

REV. <b>12/08/09</b>	BY <b>PLANCHER</b>
<b>TIERRASANTA RECREATION CENTER</b>	
CITY OF SAN DIEGO, CALIFORNIA PARK AND RECREATION DEPARTMENT SHEET 20 OF 77 SHEETS	
PROJECT OFFICE: <b>PLANCHER</b>	NO. <b>118276</b>
DESCRIPTION: <b>TIERRASANTA RECREATION CENTER</b>	APPROVALS
ORIGINAL	DIRECTOR
AS BUILT	ELECTRICIAN
CONTRACTOR: <b>LLSK</b>	CONSTRUCTION DEPT.
RESIDENT ENG.	242-1743
DATE STARTED: <b>2/16/09</b>	24814 20-D
DATE COMPLETED: <b>12/28/09</b>	AS BUILTS

FILMED FROM THE ORIGINAL  
BEST QUALITY OBTAINABLE







MELE MANTEA ARCHITECTS AIA

DETAILS

**A33**

3048 BRYAN COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92122-2011

REV.  DECOO  PLAN CHECK

TIERRASANTA RECREATION CENTER

CITY OF SAN DIEGO, CALIFORNIA  
PARK AND RECREATION DEPARTMENT  
SHEET 40 OF 70 SHEETS

NO. 118276

APPROVALS

CONTRACTOR: LUSK  
DATE STARTED: 2/10/94  
DATE COMPLETED: 12/26/94

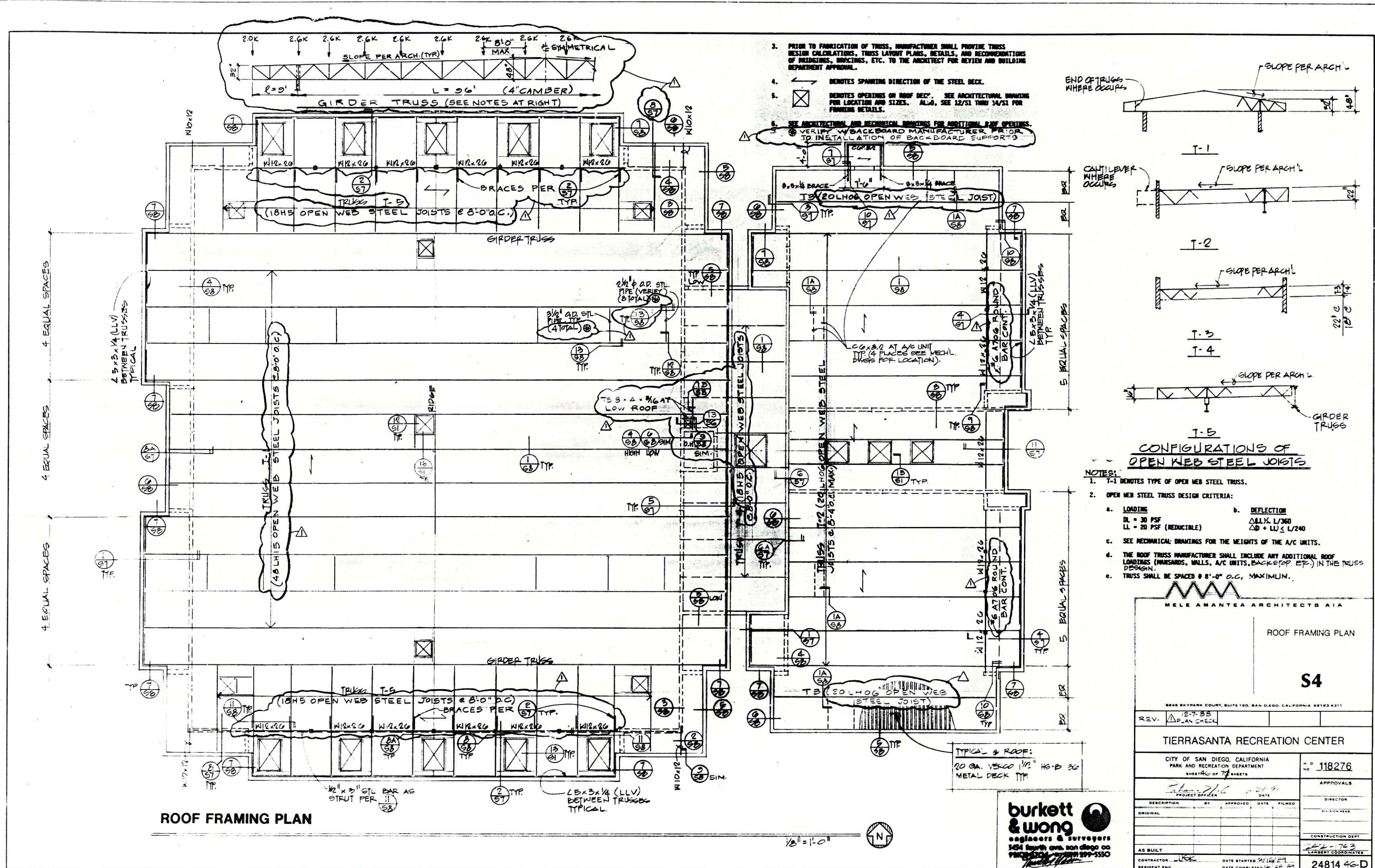
242-1743  
24814 40-D

AS BUILTS

FILMED FROM THE ORIGINAL  
BEST QUALITY OBTAINABLE

0 1 2 3 4 IN.





ROOF FRAMING PLAN

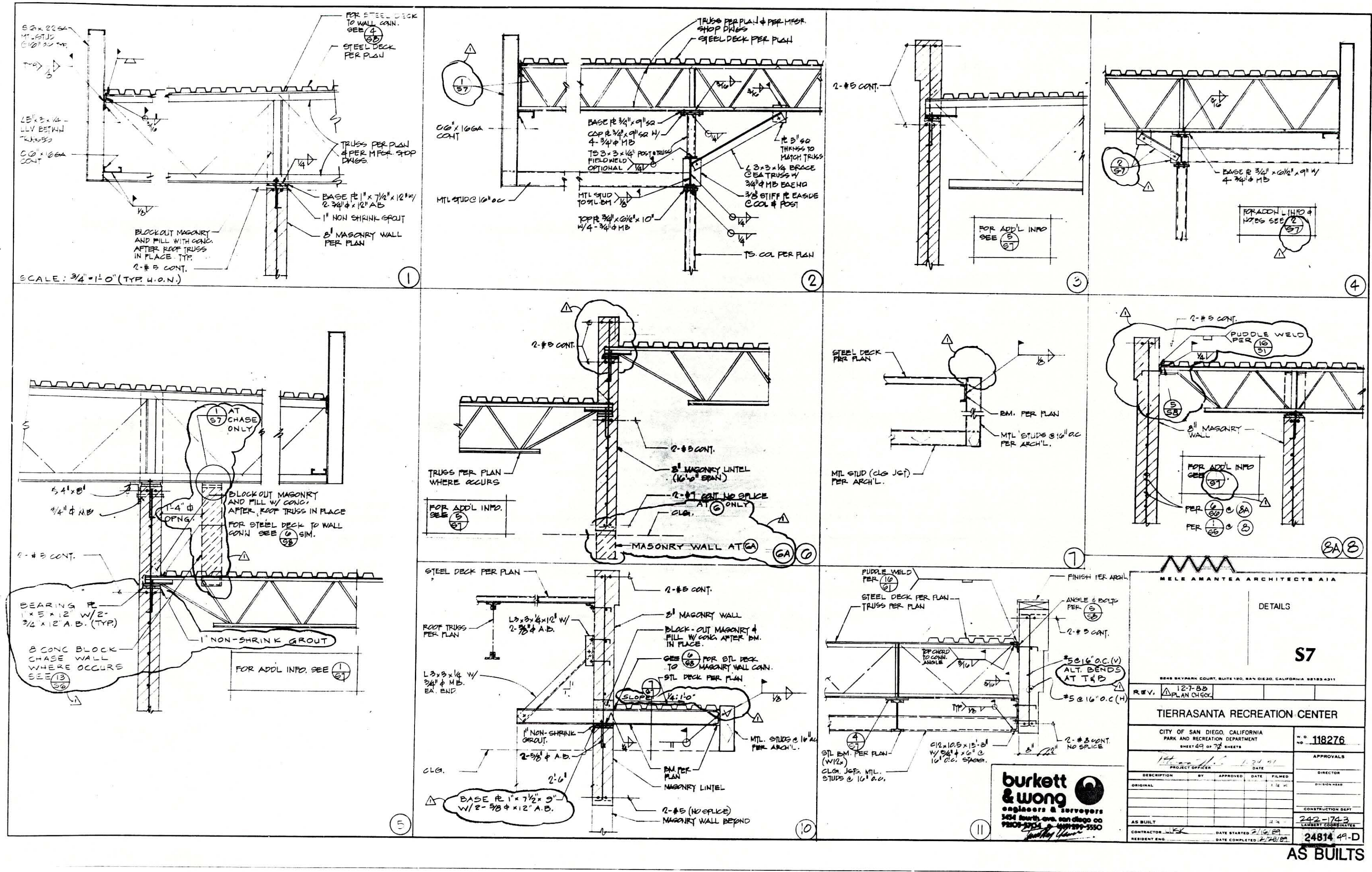
**burkett & wong**  
 architects & engineers  
 1424 fourth ave. san diego ca  
 92101-4402 phone 619-599-5550

MELE AMANTEA ARCHITECTS AIA	
ROOF FRAMING PLAN	
<b>S4</b>	
8880 PARK COURT, SUITE 180, SAN DIEGO, CALIFORNIA 92123-8211	
REV. $\Delta$ 2-7-05	PLAN CHECK
TIERRASANTA RECREATION CENTER	
CITY OF SAN DIEGO, CALIFORNIA PARK AND RECREATION DEPARTMENT ARCHITECT: MELE AMANTEA	
PROJECT NO. 118276	DATE 2-7-05
APPROVALS	DIRECTOR
DESCRIPTION	DATE
APPROVED BY	APPROVED DATE FILED
ORIGINAL	
AS BUILT	CONSTRUCTION DEPT.
CONTRACTOR: LUCE	DATE STARTED: 01/16/04
DESIGNER: LUCE	DATE COMPLETED: 02/25/04
	24814 4G-D

AS BUILTS







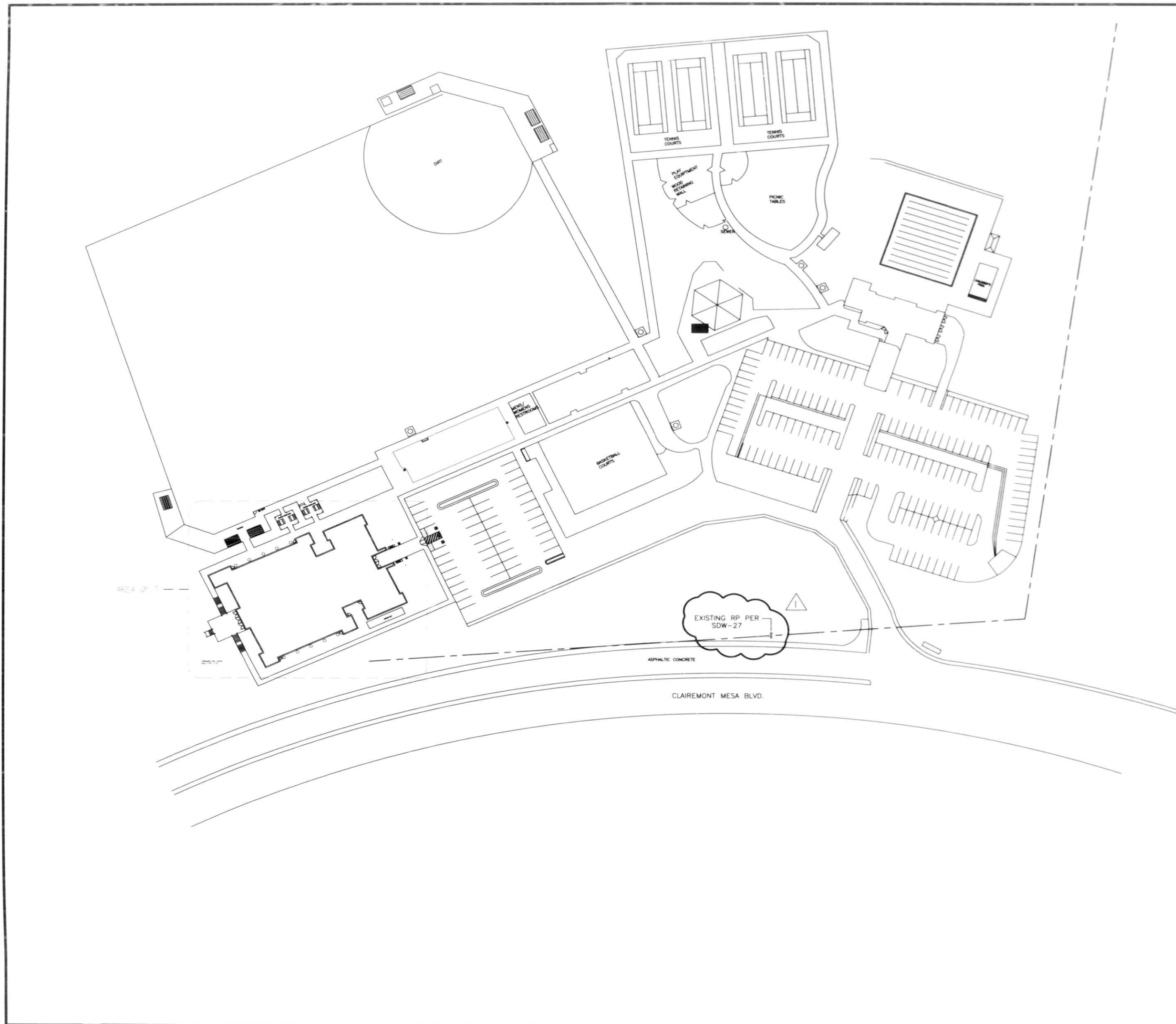
MELE AMANTEA ARCHITECTS AIA	
DETAILS	
<b>S7</b>	
8888 84 PARK COURT, SUITE 100, SAN DIEGO, CALIFORNIA 92123-0211	
REV.	12-7-88
TIERRASANTA RECREATION CENTER	
CITY OF SAN DIEGO, CALIFORNIA PARK AND RECREATION DEPARTMENT 5845 GIGAWATT BLVD.	
NO. 118276	
APPROVALS	
DESCRIPTION	DATE
ORIGINAL	1-12-88
AS BUILT	2-22-88
CONTRACTOR	DATE STARTED 2/16/88
RESIDENT ENG.	DATE COMPLETED 2/7/88
24814 49-D	
<b>AS BUILTS</b>	







T I E R R A S A N T A R E C R E A T I O N C E N T E R



**SYMBOL LEGEND**

	DEMO
	HANDRAIL
	DIRECTION OF RAMP/STAIRS
	NEW CONCRETE
	KEY NOTE
	ELEVATION REFERENCE
	WALL TYPE DETAIL REFERENCE

*Annal Christine*

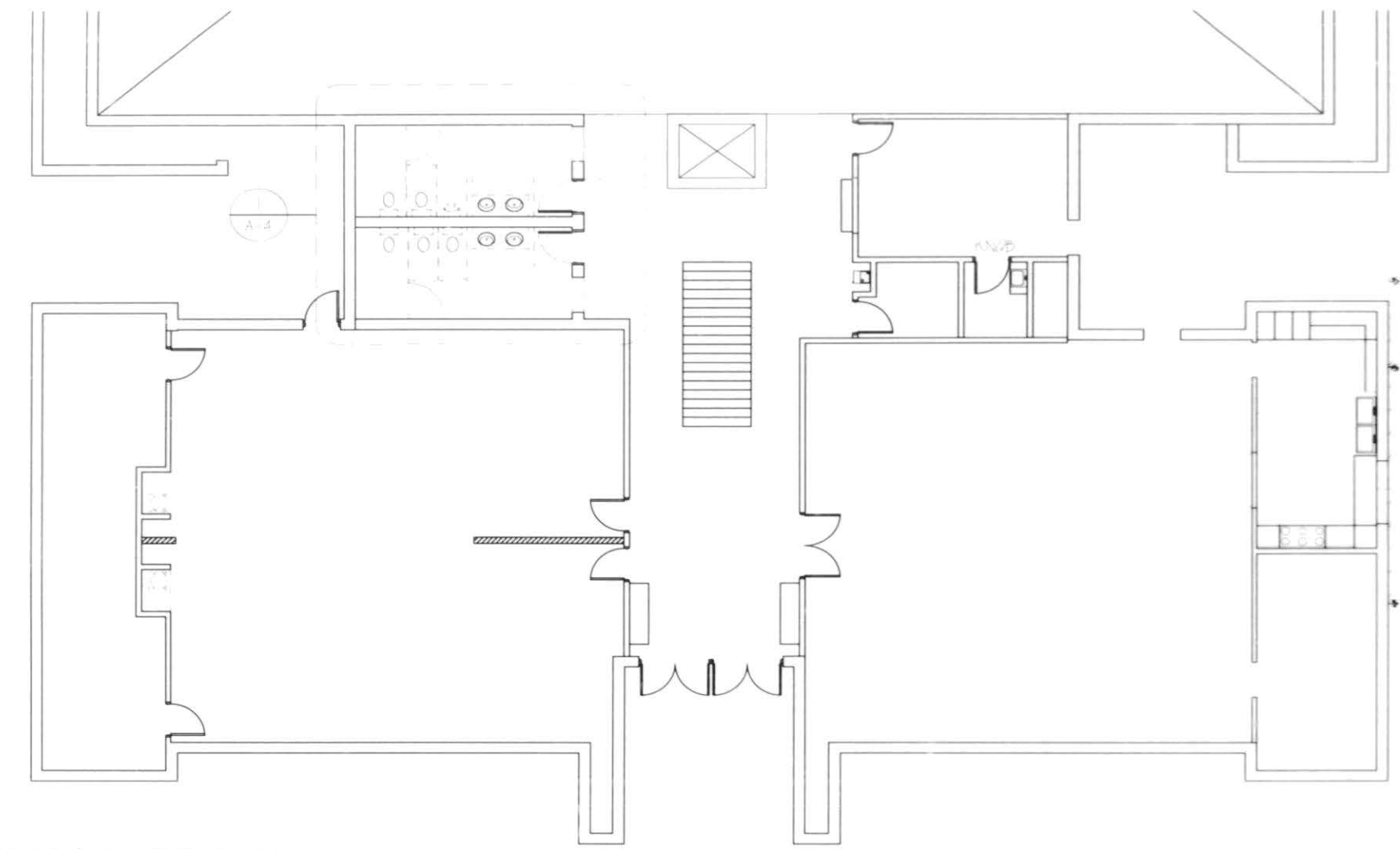
DRAWN BY ANNAL CHRISTINE	JOB NUMBER 4561
DATE 02/02/2007	SCALE AS SHOWN
<b>DESIGN/BUILD TENANT IMPROVEMENTS</b>	
SITE PLAN A-1	
ADA/TITLE 24 PROJECT IV TIERRASANTA REC CENTER 222 CLAIEMONT MESA BLVD #1000 SAN DIEGO, CA 92124	
CITY OF SAN DIEGO, CALIFORNIA PLANNING & CAPITAL PROJECTS DEPARTMENT SHEET 2 OF 15 SHEETS	
DESIGNED BY <i>Neil Basso</i>	DATE 9/14/06
DESIGNED BY RB	DATE 10/1/06
DATE STARTED 10-21-06	DATE COMPLETED 12-18-06
PROJECT NO. 2006-1759	PROJECT NO. 2006-1759

**AS-BUILT**

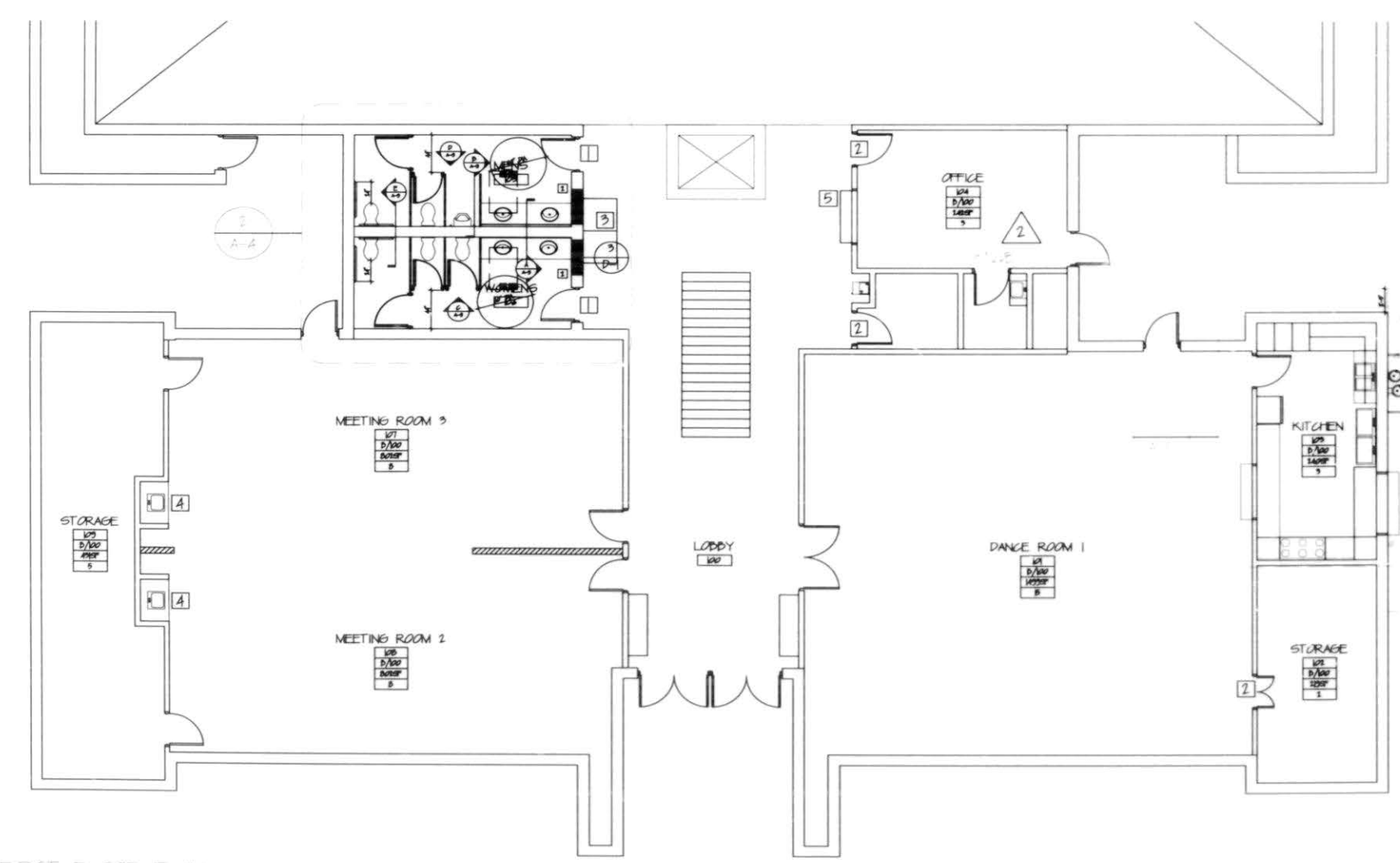
FILED FROM THE ORIGINAL. BEST QUALITY OBTAINABLE. EXCESSIVE GRAY BACKGROUND MAY CAUSE A POOR QUALITY REPRODUCTION.



TIERRASANTA RECREATION CENTER



1 DEVELOPMENT PLAN FIRST FLOOR  
SCALE 1/8" = 1'-0"



2 FIRST FLOOR PLAN  
SCALE 1/8" = 1'-0"

- ELEVATOR NOTES**
1. RELOCATE STAR INDICATOR IN THE ELEVATOR TO COMPLY WITH SECTION 1001.9 OF THE CBC.
  2. INSTALL BRILLE DOORJAMB SIGNS IN THE ELEVATOR TO COMPLY WITH SECTION 1001.14 OF THE CBC.
  3. REPLACE ELEVATOR HANDRAIL WITH AN ACCESSIBLE MODEL PER SECTION 1001.11 OF THE CBC.
  4. ADJUST DOOR AUTOMATIC REOPENING DEVICE TO COMPLY WITH SECTION 1001.5 OF THE CBC.
  5. INSTALL EMERGENCY PHONE LIGHT TO COMPLY WITH SECTION 1007.6.3 OF THE CBC.
  6. INSTALL A HANDLE TO ELEVATOR PHONE CABINET TO COMPLY WITH ASME A17.1 & SECTION 1001.5 OF THE CBC.

- DOOR NOTES**
1. ADJUST DOOR CLOSERS THROUGHOUT TO BE COMPLIANT PER SECTION 1002.5 & 1004.5 OF THE CBC.
  2. REPLACE DOOR HOLD OPEN DEVICE WITH AN ACCESSIBLE MODEL WHERE NECESSARY.

- INTERIOR KEY NOTES**
1. REMOVE NON-COMPLIANT SIGNAGE AND INSTALL SIGNAGE PER SECTION 1009.5 OF THE CBC - ALL PERMANENT ROOMS INCLUDE PICTOGRAMS AND ISA SYMBOLS.
  2. REPLACE DOOR HARDWARE WITH ADA COMPLIANT HARDWARE PER 1009.5.2.
  3. RELOCATE EXISTING VENDING MACHINES TO THIS LOCATION.
  4. REMOVE AND REPLACE CABINETRY, SEE [Symbol] FOR MORE INFORMATION.
  5. REMOVE AND REPLACE TRANSACTION COUNTER AT LOWER HEIGHT, SEE [Symbol] FOR MORE INFORMATION.

**WALL LEGEND**


[Symbol]	EXISTING WALL TO REMAIN
[Symbol]	EXISTING WALL TO BE DEMISED
[Symbol]	TYP. DEMISING PARTITION PER 1/D
[Symbol]	TYP. INTERIOR PARTITION PER 2/D
[Symbol]	TYP. INTERIOR PARTITION PER 3/D
[Symbol]	TYP. INTERIOR PARTITION PER 4/D
[Symbol]	TYP. INTERIOR PARTITION PER 5/D
[Symbol]	MASONRY PARTITION @ 5'-0" PER 10/D

**SYMBOL LEGEND**

[Symbol]	ROOM NAME
[Symbol]	ROOM NUMBER
[Symbol]	OCCUPANCY TYPE OCCUPANCY LOAD FACTOR
[Symbol]	SOURCE FOOTING
[Symbol]	OCCUPANCY LOAD PER CBC TABLE 10-A
[Symbol]	GLAZING REFERENCE
[Symbol]	DOOR REFERENCE
[Symbol]	KEY NOTE
[Symbol]	ELEVATION REFERENCE
[Symbol]	WALL TYPE DETAIL REFERENCE

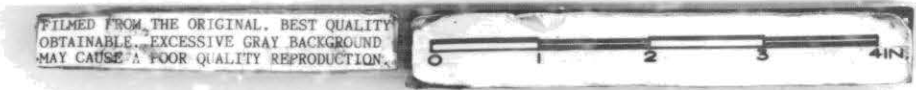
**EXTERIOR SYMBOL LEGEND**

[Symbol]	CONCRETE TO BE REMOVED
[Symbol]	NEW 4" THICK CITY MIX CONCRETE - GROSS SLOPE NOT TO EXCEED 15%
[Symbol]	DIRECTION OF SLOPE

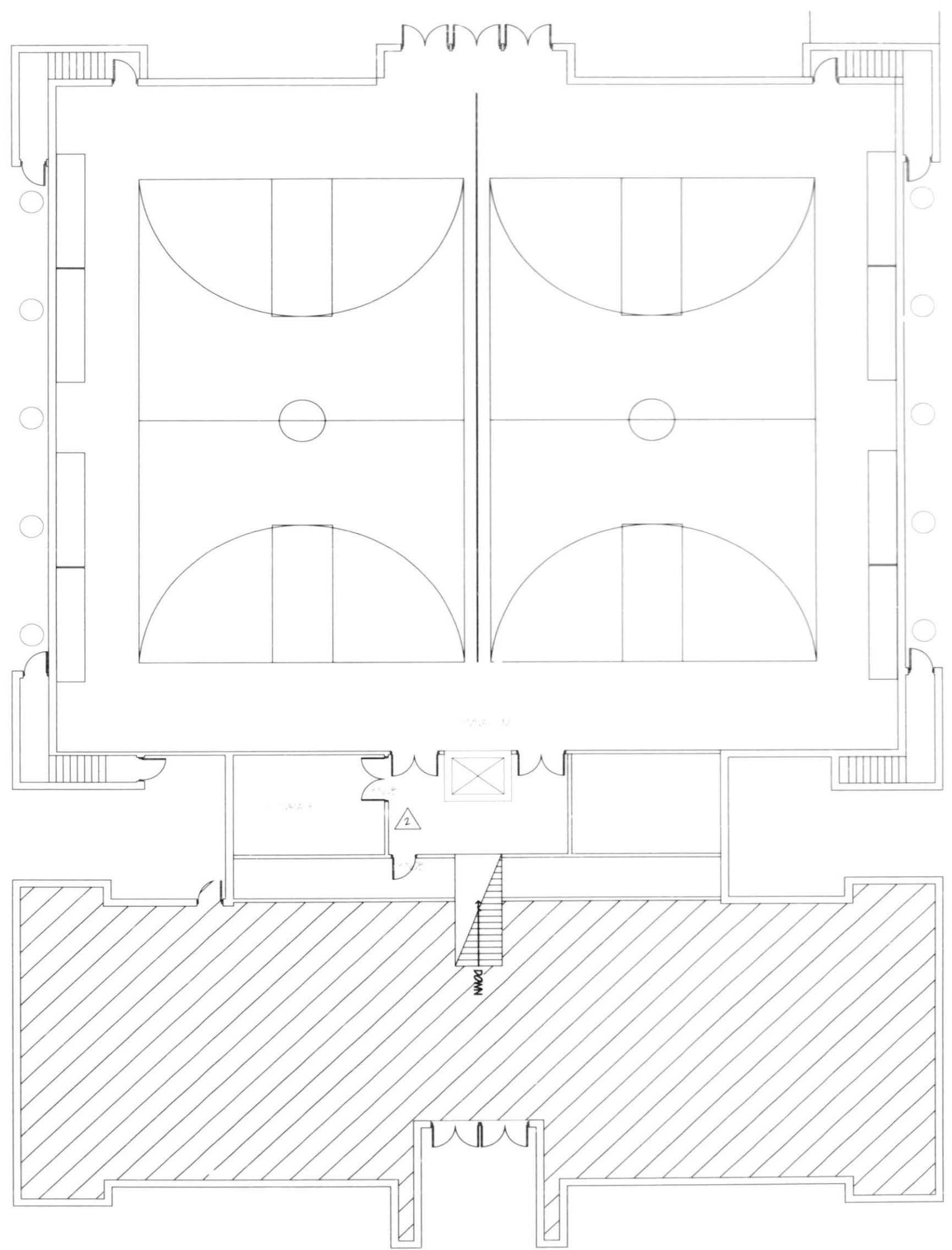
  
*Annual Durkin*

DRAWN BY: [Name]	DATE: 2/26/2009	JOB NUMBER: 4561
SCALE: AS NOTED		
<b>DESIGN/BUILD TENANT IMPROVEMENTS</b>		
1ST FLOOR PLAN A-2 ADA/TITLE 24 PROJECT IV TIERRASANTA REC CENTER 1232 BLAKEMAN MESA BLVD #5000 SAN DIEGO, CA 92124		
CITY OF SAN DIEGO, CALIFORNIA ENGINEER & ARCHITECT PROJECTS DEPARTMENT SHEET 4 OF 10 SHEETS		V.E. NO. [Blank] PROJECT NO. [Blank]
DESCRIPTION BY: [Name]	APPROVED BY: [Name]	DATE: [Blank]
DESIGNER: [Name]	DATE: [Blank]	242-1237
AS-BUILT BY: [Name]	DATE STARTED: [Blank]	CONTRACT COORDINATOR: [Blank]
CONTRACTOR: [Name]	DATE COMPLETED: [Blank]	25248-A-D

**AS-BUILT**



TERRASANTA RECREATION CENTER



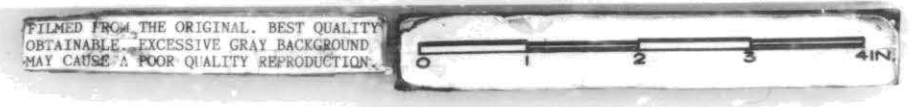
1 SECOND FLOOR PLAN  
SCALE 1/8"=1'-0"



Samuel Christensen

DRAWN BY P.H.N.	DATE 2-1-2009	DATE REVISION NO NOTED	DESIGNER NUMBER 4561
<b>DESIGN/BUILD TENANT IMPROVEMENTS</b>			
<small>870 CARROLL CENTER ROAD, SUITE C, SAN DIEGO, CA 92108 P 619.594.8100 F 619.594.1776 LICENSE NUMBER 44889</small>			
SECOND FLOOR PLAN		A-3	
ADA/TITLE 24 PROJECT IV TERRASANTA REC CENTER 1330 CLAREMONT MESA BLVD #1000 SAN DIEGO, CA 92124			
CITY OF SAN DIEGO, CALIFORNIA ENGINEER & ARCHITECT PROJECTS GROUP INC SHEET 5 OF 13 SHEETS			WP NO. 10000 PROJECT NO.
<i>Andreas</i> <i>Christensen</i> DESCRIPTION BY APPROVE DATE ORIGINAL MKG <i>Christensen</i> 2-1-2009 AS-BUILT MKG <i>Christensen</i> 10-21-13 CONTRACTOR DATE STARTED DATE COMPLETE INSPECTOR DATE COMPLETE		V.P.M. 247-1957 7025 EXISTING COORDINATES 20248-5	

**AS-BUILT**



*Pacific Beach Library HVAC Replacement*

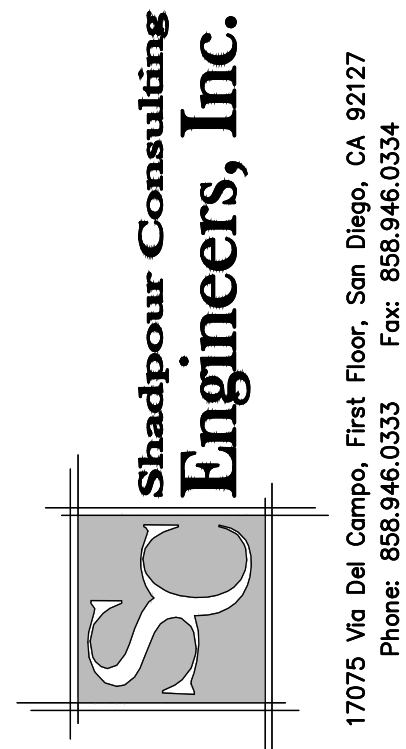
**Exhibit 2**

Available As-built Documentation



# EARL AND BIRDIE TAYLOR BRANCH LIBRARY

## 4275 CASS STREET, SAN DIEGO, CALIFORNIA 92109



EARL AND BIRDIE TAYLOR LIBRARY  
CITY OF SAN DIEGO, CALIFORNIA  
CHILLER AND HEAT PUMP REPLACEMENT

ISSUED/REVISIONS	DATE
CITY SUBMITTAL	10.14.08

PROJECT ENGINEER: FRANK SHADPOUR

### PROJECT DATA

**OWNER**  
CITY OF SAN DIEGO

**PROJECT ADDRESS**  
4725 CASS AVENUE  
SAN DIEGO, CA

**LEGAL DESCRIPTION**  
PACIFIC BEACH BLK 264 LTS 1-40  
MAP NO 853

**SITE AREA**  
3.1 ACRES

**OCCUPANCY GROUP**  
LIBRARY B-2  
COMMUNITY ROOM A-3

**NUMBER OF STORIES**  
ONE STORY

**PROPERTY ZONE**  
R-1500 AND C-1

### CONSULTANTS

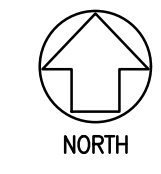
**MECHANICAL ENGINEER**  
SHADPOUR CONSULTING ENGINEERS, INC.  
17075 VIA DEL CAMPO, FIRST FLOOR  
SAN DIEGO, CALIFORNIA 92127

**MECHANICAL CONTRACTOR**  
EMCOR/FULLER GROUP, INC.  
6550 FEDERAL BLVD.  
LEMON GROVE, CALIFORNIA 91945

### SHEET INDEX

- T0.0 VICINITY MAP, PROJECT DATA, SHEET INDEX
- M0.1 MECHANICAL LEGEND, GENERAL NOTES AND ABBREVIATIONS
- M1.1 MECHANICAL SCHEDULES
- M1.2 MECHANICAL T-24
- M2.1 MECHANICAL FIRST FLOOR DEMOLITION PLAN
- M3.1 MECHANICAL FIRST FLOOR PLAN
- M4.1 MECHANICAL DETAILS

### VICINITY MAP



SHEET TITLE

**TITLE SHEET**

DESIGNED BY: CG	JOB NUMBER: 08177
DRAWN BY: CG	DATE: 10.14.08
CHECKED BY: JC	SHEET SIZE: 30X42

SHEET

**T0.0**  
OF

# MECHANICAL LEGEND

SYMBOL	ABBREV.	DESCRIPTION
		REMOVE EXISTING EQUIPMENT OR PIPING SHOWN HATCHED
		REMOVE AND RELOCATE EXISTING EQUIPMENT OR PIPING SHOWN HATCHED
	POC	POINT OF CONNECTION
	POD	POINT OF DISCONNECT
		COORDINATE WITH ELECTRICAL
	HHWS	HEATING HOT WATER SUPPLY
	HHWR	HEATING HOT WATER RETURN
	CHW	CHILLED WATER
	CHWR	CHILLED WATER RETURN
	CHWS	CHILLED WATER SUPPLY
	CD	CONDENSATE DRAIN (A.C)
	D	DRAIN
	RD	REFRIGERANT DISCHARGE
	RL&RS	REFRIGERANT LIQUID & REFRIGERANT SUCTION
		PIPE DOWN
		PIPE UP
		PIPE RISE (OR DN. FOR DROP)
		DIRECTION OF FLOW IN PIPE
	AV	AIR VENT (VALVE)
	CHV	CHECK VALVE
	SD	SUCTION DIFFUSER
	CV (2W)	CONTROL VALVE (2-WAY)
	CV (3W)	CONTROL VALVE (3-WAY)
	AFCD	AUTOMATIC FLOW CONTROL DEVICE
	GV	GATE VALVE
		GLOBE/BALL/BUTTERFLY VALVE
	BV	COMBINATION BALANCING & SHUT-OFF VALVE
	FEV	FLOW ELEMENT VENTURI
		VALVE ON RISE OR DROP
	STR.	STRAINER
	CL	CAPPED LINE
	DN	DOWN OR DROP
	UP	RISE OR RISER
	RV	PRESSURE RELIEF VALVE
	PG	PRESSURE GAUGE WITH BALL VALVE
	R.	ECCENTRIC REDUCER
	R.	CONCENTRIC REDUCER
	FC	FLEXIBLE CONNECTION (PIPE)
	TW	TEST WELL (PETE'S PLUG - PRESSURE AND/OR TEMPERATURE)
	TI	THERMOMETER
	PA	PIPE ANCHOR
	U	UNION
	TV	SQUARE ELBOW WITH TURNING VANES
		RADIUS ELBOW
	MVD	MANUAL VOLUME DAMPER
	MOD	MOTOR OPERATED DAMPER
	BDD	BACKDRAFT DAMPER
	FD	FIRE DAMPER
	SD	DUCT MOUNTED SMOKE DETECTOR
	SFD	AUTOMATIC SMOKE AND FIRE DAMPER
	FLEX	FLEXIBLE CONNECTION (DUCTWORK)
	FLEX	FLEXIBLE CONNECTION OR SEISMIC JOINT
		LINED DUCTWORK (OR PLENUM)
		DUCT RISE IN DIRECTION OF FLOW
		DUCT DROP IN DIRECTION OF FLOW
		ROUND DUCT UP
		ROUND DUCT DOWN
		SUPPLY DUCT UP
		SUPPLY DUCT DOWN
	RA/OA	RETURN AIR DUCT/OUTSIDE AIR DUCT UP
		RETURN AIR DUCT/OUTSIDE AIR DUCT DOWN
		EXHAUST AIR DUCT UP
		EXHAUST AIR DUCT DOWN
		DUCT TRANSITION
	CD	CEILING DIFFUSER
	RR	RETURN REGISTER
	ER	EXHAUST REGISTER
	T/STAT	THERMOSTAT OR TEMPERATURE SENSOR (NUMBER INDICATES EQUIPMENT OR ZONE SERVED)
	H/STAT	HUMIDISTAT
	CFM	CUBIC FEET PER MINUTE
		SYMBOL, SEE EQUIPMENT SCHEDULE

ABBREV.	DESCRIPTION
ABV	ABOVE
ABF	ABOVE FINISHED FLOOR
AD	ACCESS DOOR
AP	ACCESS PANEL
ACH	AIR CHANGES PER HOUR
AC OR A/C	AIR CONDITIONING
AES	AIR FLOW MEASUREMENT STATION
AHU	AIR HANDLING UNIT
AS	AIR SEPARATOR
AMBT	AMBIENT
AMPS	AMPERES
ARON	ARGON
ATM	ATMOSPHERE
ATV	ATMOSPHERIC VENT
AV	AUTOMATIC AIR VENT
AUX	AUXILIARY
BDD	BACKDRAFT DAMPER
BG	BLAST GATE
BBD	BOILER BLOWDOWN
BFW	BOILER FEED WATER
BF	BOTTOM FLAT
BDF	BLIND FLANGE
BDD	BOTTOM OF DUCT
BOP	BOTTOM OF PIPE
BHP	BRAKE HORSEPOWER
BTU	BRITISH THERMAL UNIT
BTH	BRITISH THERMAL UNIT PER HOUR
BLDG	BUILDING
CAP	CAPACITY
CLG	CEILING
CD	CEILING DIFFUSER, CONDENSATE DRAIN (A/C) CHEMICAL FEED SYSTEM
CFS	CHILLED WATER
CHW	CHILLED WATER
CRC	CIRCUIT
CB	CIRCUIT BREAKER
CDA	CLEAN DRY AIR
COP	COEFFICIENT OF PERFORMANCE
A	COMPRESSED AIR
CRU	COMPUTER ROOM UNIT
CONC	CONCRETE
CONT.	CONTINUATION
COND	CONDENSATE (STEAM)
CW	CONDENSER WATER
CV	CONSTANT VOLUME
CP	CONTROL PANEL
CFM or I	CUBIC FEET PER MINUTE
°C	DEGREE CELSIUS
°F	DEGREE FAHRENHEIT
DI	DEIONIZED
DP	DIFFERENTIAL PRESSURE
DDC	DIRECT DIGITAL CONTROL
DISCH	DISCHARGE
DS	DISCONNECT SWITCH
DCW	DOMESTIC (POTABLE) COLD WATER
D/L	DOOR LOUVER
DN	DOWN
DR	DRAIN
DIA. Ø	DIAMETER
DTR	DUST THRU ROOF
DWG	DRAWING
DB	DRY BULB TEMPERATURE
EFF	EFFICIENCY
EGCR	EGGCRATE GRILLE
EDH	ELECTRIC DUCT HEATER
EC	ELECTRICAL CONTRACTOR
ELEV	ELEVATION
EER	ENERGY EFFICIENCY RATIO
EAT	ENTERING AIR TEMPERATURE
EWT	ENTERING WATER TEMPERATURE
EQUIP	EQUIPMENT
ECW	EQUIPMENT COOLING WATER
EVAP	EVAPORATIVE
EA	EXHAUST AIR
EG	EXHAUST GRILLE
ER	EXHAUST REGISTER
(E) or E	EXISTING
ESP	EXTERNAL STATIC PRESSURE
FCU	FAN COIL UNIT
FF	FINISHED FLOOR
FFU	FAN FILTER UNIT
FT	FEET
FPM	FEET PER MINUTE
FRP	FIBERGLASS REINFORCED PLASTIC
FD	FIRE DAMPER
F/L	FIRE/LIFE SAFETY
F/S	FIRE SMOKE DAMPER
FLR	FLOOR
FD	FLOOR DRAIN
FIN.	FINISH
FS	FLOOR SINK
FOR	FLOW SWITCH
FOS	FUEL OIL RETURN
FE	FUEL OIL SUPPLY
FLA	FULL LOAD AMPS
FE	FUME EXHAUST
FEX	FUME EXHAUST VALVE (PHOENIX)
(F) or F	FUTURE
GPH	GALLONS PER HOUR
GPM	GALLONS PER MINUTE
GC	GENERAL CONTRACTOR
GEX	GENERAL EXHAUST VALVE (PHOENIX)
GR	GLYCOL RETURN
GS	GLYCOL SUPPLY
HD	HEAD
HX	HEAT EXCHANGER
HE	HEAT EXHAUST
HTG	HEATING
HW	HEATING HOT WATER
HVAC	HEATING, VENTILATING, AND AIR CONDITIONING
HZ	HERTZ
HPC	HIGH-PRESSURE CONDENSATE
HPS	HIGH-PRESSURE STEAM
HORIZ	HORIZONTAL
HP	HORSEPOWER
HV	HOUSEKEEPING VACUUM
H/STAT	HUMIDISTAT
H2	HYDROGEN GAS
HQ	REFRIGERANT HOT GAS
HQA	HAND-OFF-AUTOMATIC
IN	INCHES
ICW	INDUSTRIAL COLD WATER
IHW	INDUSTRIAL HOT WATER
ID	INSIDE DIAMETER or DIMENSION
KV	KILOVOLTS
KVA	KILOVOLT-AMPERES
KW	KILOWATTS
LVC	LEAVING
LAT	LEAVING AIR TEMPERATURE
LWT	LEAVING WATER TEMPERATURE
(L)	LINED
LN 2	LIQUID NITROGEN
LRA	LOCKED ROTOR AMPS
LPC	LOW-PRESSURE CONDENSATE
LPS	LOW-PRESSURE STEAM
LBS	POUNDS
LD	LINEAR DIFFUSER
MUA	MAKE UP AIR
MAU	MAKE UP AIR UNIT
MH	ONE THOUSAND B.T.U.'s PER HOUR
MV	MANUAL AIR VENT
MAX	MAXIMUM
MCB	MAXIMUM CIRCUIT BREAKER
MFS	MAXIMUM FUSE SIZE
MOP	MAXIMUM OVERCURRENT PROTECTION
MECH	MECHANICAL
MC	MECHANICAL CONTRACTOR
MER	MECHANICAL EQUIPMENT ROOM
MCHW	MEDIUM TEMPERATURE CHILLED WATER
MS	MEMORY STOP (ON A VALVE)
MEZZ	MEZZANINE
MIN	MINIMUM
MINUTE	MINUTE
MCA	MINIMUM CIRCUIT AMPACITY
MA	MIXED AIR
MOD	MODULATING
MCC	MOTOR CONTROL CENTER
MD	MOTORIZED DAMPER
MTD	MOUNTED
MH	THOUSAND BTUH
NG	NATURAL GAS
NPSH	NET POSITIVE SUCTION HEAD
NPSHA	NET POSITIVE SUCTION HEAD AVAILABLE
NPSHR	NET POSITIVE SUCTION HEAD REQUIRED
(N) or N	NEW
N2	NITROGEN GAS
NC	NOISE CRITERIA
NFW	NON-POTABLE WATER
N C	NORMALLY CLOSED
N O	NORMALLY OPEN
NIC	NOT IN CONTRACT
NTS	NOT TO SCALE
NO	NUMBER
ON	ON CENTER
ODP	OPEN DRIP PROOF
OBD	OPPOSED BLADE DAMPER
OSA	OUTSIDE AIR
OD	OUTSIDE DIAMETER or DIMENSION
OPD	OVERCURRENT PROTECTIVE DEVICE
O2	OXYGEN GAS
OA	OUTSIDE AIR
PPM	PARTS PER MILLION
PH	PHASE
PC	PLUMBING CONTRACTOR
POC	POINT OF CONNECTION
PPP	POLYPROPYLENE
PVC	POLYVINYL CHLORIDE
PVDF	POLYVINYLIDENE FLUORIDE
POS	POSITION
PSI	POUNDS PER SQUARE INCH
PSIA	POUNDS PER SQUARE INCH ABSOLUTE
PSIG	POUNDS PER SQUARE INCH GAGE
PRESS	PRESSURE
ΔP	PRESSURE DIFFERENTIAL
PCV	PRESSURE CONTROL VALVE
PG	PRESSURE GAGE
PI	PRESSURE INDICATOR
PRS	PRESSURE REDUCING STATION
PRV	PRESSURE REDUCING VALVE
PSV	PRESSURE RELIEF (SAFETY) VALVE
POHW	PRIMARY CHILLED WATER
PCR	PUMPED CONDENSATE RETURN
PD	PRESSURE DROP
RAU	RE-CIRCULATION AIR UNIT
RDE	RECOMMENDED DUAL ELEMENT FUSE
R	REDUNDANT
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
RHC	REHEAT COIL
RH	RELATIVE HUMIDITY
RV	RELIEF VENT
(R)	RELOCATED
REQ'D	REQUIRED
RA	RETURN AIR
RG	RETURN GRILLE
RR	RETURN REGISTER
RO	REVERSE OSMOSIS
RPM	REVOLUTIONS PER MINUTE
RM	ROOM
RA	RUNNING LOAD AMPS
REG.	REGISTER
RR	RETURN REGISTER
SAV	SUPPLY AIR VALVE (PHOENIX)
SI	INTERNATIONAL SYSTEM OF UNITS
SCHE	SCHEDULE
SCE	SCRUBBED EXHAUST
SC	SCRIBBER
SOHW	SECONDARY CHILLED WATER
SHT	SHEET
SD	SMOKE DAMPER, SMOKE DETECTOR
SCW	SOFT COLD WATER
SE	SOLVENT EXHAUST
SA	SOUND ATTENUATOR, SUPPLY AIR
S/S	STAINLESS STEEL
SP	STATIC PRESSURE
STM	STEAM
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
SG	SUPPLY GRILLE
SR	SUPPLY REGISTER
ΔT	TEMPERATURE DIFFERENTIAL
TI	TEMPERATURE INDICATOR
THERM	THERMIST
T/STAT	THERMOSTAT
TF	TOP FLAT
TDH	TOTAL DYNAMIC HEAD
TP	TOTAL PRESSURE
TSP	TOTAL STATIC PRESSURE
TEFC	TOTALLY ENCLOSED FAN COOLED
TC	TRANSFER GRILLE
TYP	TYPICAL
U/C	UNDERCUT
UNO	UNLESS NOTED OTHERWISE
URS	UP THRU ROOF
UTR	UNLESS OTHERWISE SPECIFIED
VD	MANUAL VOLUME DAMPER
VAV	VARIABLE AIR VOLUME
VTR	VENT THROUGH ROOF
VERT	VERTICAL
VOC	VOLATILE ORGANIC COMPOUND
V	VOLTS
VAC	VOLTS ALTERNATING CURRENT
VDC	VOLTS DIRECT CURRENT
VFD	VARIABLE FREQUENCY DRIVE
VTR	VENT THRU ROOF
WG	WATER GAUGE
WC	WATER CLOSET
WFI	WATER FOR INJECTION
W	WATTS
WRPS	WEATHERPROOF DISCONNECT SWITCH
WGT	WEIGHT
WB	WET BULB TEMPERATURE
WSA	WIRE SIZING AMPS
W/	WITH
W/O	WITHOUT
XMER	TRANSFORMER

ABBREV.	DESCRIPTION
MUA	MAKE UP AIR
MAU	MAKE UP AIR UNIT
MH	ONE THOUSAND B.T.U.'s PER HOUR
MV	MANUAL AIR VENT
MAX	MAXIMUM
MCB	MAXIMUM CIRCUIT BREAKER
MFS	MAXIMUM FUSE SIZE
MOP	MAXIMUM OVERCURRENT PROTECTION
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MCHW	MEDIUM TEMPERATURE CHILLED WATER
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MEZZ	MEZZANINE
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MCC	MOTOR CONTROL CENTER
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MTD	MOUNTED
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NG	NATURAL GAS
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OA	OUTSIDE AIR
PPM	PARTS PER MILLION
PH	PHASE
PC	PLUMBING CONTRACTOR
POC	POINT OF CONNECTION
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PVC	POLYVINYL CHLORIDE
PVDF	POLYVINYLIDENE FLUORIDE
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ΔP	PRESSURE DIFFERENTIAL
PCV	PRESSURE CONTROL VALVE
PG	PRESSURE GAGE
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PRV	PRESSURE REDUCING VALVE
PSV	PRESSURE RELIEF (SAFETY) VALVE
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PCR	PUMPED CONDENSATE RETURN
PD	PRESSURE DROP
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RDE	RECOMMENDED DUAL ELEMENT FUSE
R	REDUNDANT
RL	REFRIGERANT LIQUID
RS	REFRIGERANT SUCTION
RHC	REHEAT COIL
RH	RELATIVE HUMIDITY
RV	RELIEF VENT
(R)	RELOCATED
REQ'D	REQUIRED
RA	RETURN AIR
RG	RETURN GRILLE
RR	RETURN REGISTER
RO	REVERSE OSMOSIS
RPM	REVOLUTIONS PER MINUTE
RM	ROOM
RA	RUNNING LOAD AMPS
REG.	REGISTER
RR	RETURN REGISTER
SAV	SUPPLY AIR VALVE (PHOENIX)
SI	INTERNATIONAL SYSTEM OF UNITS
SCHE	SCHEDULE
SCE	SCRUBBED EXHAUST
SC	SCRIBBER
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SHT	SHEET
SD	SMOKE DAMPER, SMOKE DETECTOR
SCW	SOFT COLD WATER
SE	SOLVENT EXHAUST
SA	SOUND ATTENUATOR, SUPPLY AIR
S/S	STAINLESS STEEL
SP	STATIC PRESSURE
STM	STEAM
SCADA	SUPERVISORY CONTROL AND DATA ACQUISITION
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SR	SUPPLY REGISTER
ΔT	TEMPERATURE DIFFERENTIAL
TI	TEMPERATURE INDICATOR
THERM	THERMIST
T/STAT	THERMOSTAT
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TDH	TOTAL DYNAMIC HEAD
TP	TOTAL PRESSURE
TSP	TOTAL STATIC PRESSURE
TEFC	TOTALLY ENCLOSED FAN COOLED
TC	TRANSFER GRILLE
TYP	TYPICAL
U/C	UNDERCUT
UNO	UNLESS NOTED OTHERWISE
URS	UP THRU ROOF
UTR	UNLESS OTHERWISE SPECIFIED
VD	MANUAL VOLUME DAMPER
VAV	VARIABLE AIR VOLUME
VTR	VENT THROUGH ROOF
VERT	VERTICAL
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VAC	VOLTS ALTERNATING CURRENT
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VTR	VENT THRU ROOF
WG	WATER GAUGE
WC	WATER CLOSET
WFI	WATER FOR INJECTION
W	WATTS
WRPS	WEATHERPROOF DISCONNECT SWITCH
WGT	WEIGHT
WB	WET BULB TEMPERATURE
WSA	WIRE SIZING AMPS
W/	WITH
W/O	WITHOUT
XMER	TRANSFORMER

# GENERAL NOTES

- THESE DRAWINGS ARE A GENERAL GRAPHIC PRESENTATION OF THE WORK. DUCTWORK, PIPING, AND EQUIPMENT, AS SHOWN, ARE SCHEMATIC, FABRICATE AND INSTALL BASED ON ACTUAL FIELD MEASUREMENT. COORDINATE WITH OTHER TRADES. PROVIDE A COMPLETE SET OF SHOP DRAWINGS REFLECTING ACTUAL DIMENSIONS, ACCESS REQUIREMENTS, AND DETAILS BASED UPON THE ACTUAL EQUIPMENT PROVIDED. MAINTAIN AN UP TO DATE SET OF AS-BUILT DRAWINGS AT THE JOB SITE.
- COMPLY WITH CALIFORNIA MECHANICAL CODE (CMC), CALIFORNIA PLUMBING CODE (CPC), AND NATIONAL FIRE PROTECTION AGENCY (NFPA), AND GOVERNING CODES. THERE SHALL BE NO EXCEPTION. REPORT DEFICIENCIES WITHIN THIRTY (30) DAYS UPON AUTHORIZATION TO PROCEED.
- REVIEW ALL DRAWINGS AND SPECIFICATIONS INCLUDING ARCHITECTURAL, STRUCTURAL, CIVIL, MECHANICAL, PLUMBING, AND ELECTRICAL. ANY QUESTIONS SHALL BE BROUGHT UP, IN WRITING, TO THE ATTENTION OF THE ENGINEER BEFORE THE START OF CONSTRUCTION.
- PROVIDE ACCESS AND CLEARANCE FOR MAINTENANCE FOR MECHANICAL EQUIPMENT AND COMPONENTS AS RECOMMENDED BY EQUIPMENT MANUFACTURER AND APPLICABLE CODES.
- HANDLE, STORE AND INSTALL EQUIPMENT PER MANUFACTURER'S INSTRUCTIONS.
- BRACE AND SUPPORT PIPES, CONDUIT, AND DUCTWORK IN ACCORDANCE TO SMACNA GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL AND PLUMBING PIPING SYSTEM.
- ALL DUCT DIMENSIONS, AS SHOWN ON MECHANICAL DRAWINGS ARE CLEAR INSIDE DIMENSIONS.
- INSULATION AND FLEXIBLE DUCT SHALL COMPLY WITH STATE FIRE MARSHALL CRITERIA AND SHALL NOT EXCEED FLAME SPREAD OF 25 AND SMOKE DEVELOPED OF 50 PER ASTM-84, NFPA-225, AND U.L. 723.
- INSULATE MODIFIED OR CHANGED PIPING AND DUCTWORK IN ACCORDANCE TO THE GOVERNING CODES.
- COMMISSION AND START-UP THE MECHANICAL SYSTEMS TO ASSURE A COMPLETE AND OPERATIONAL HVAC SYSTEM IN ACCORDANCE TO ASHRAE AND NEBB.

# PROJECT SCOPE

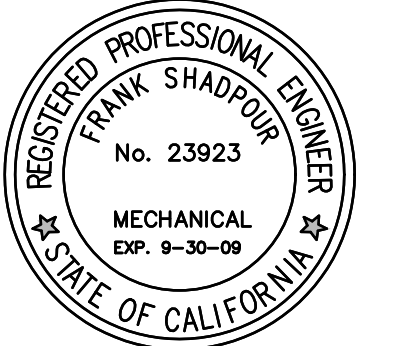
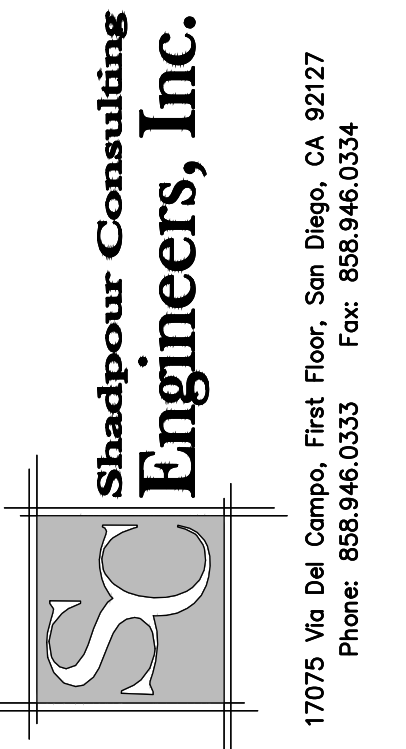
- THE SCOPE OF THE PROJECT IS TO REPLACE THE EXISTING CHILLER, THREE SPLIT SYSTEM HEAT PUMPS, HWW PUMP AND SELECTED MISCELLANEOUS ACCESSORIES IN KIND.
- A PRESUMPTIVE T-24 CALCULATION IS REQUIRED. A LOAD CALCULATION CONFIRMING THE EQUIPMENT SIZING IS NOT A PART OF THIS PROJECT. ALL EQUIPMENT IS REPLACED IN KIND AT THE DIRECTION OF THE OWNER.
- THE FOLLOWING SERVICES ARE NOT WITHIN THE SCOPE OF SC ENGINEERS AND SHALL BE PERFORMED UNDER THE DIRECTION OF THE OWNER BY OTHERS AS REQUIRED:
  - ELECTRICAL ENGINEERING DESIGN
  - ACOUSTIC ENGINEERING
  - ARCHITECTURAL DESIGN
  - STRUCTURAL ENGINEERING AND ANALYSIS
  -

SPLIT SYSTEM SCHEDULE																																	
SYMBOL	DESCRIPTION	INDOOR SECTION												OUTDOOR SECTION										COMBINED CAPACITY				REMARKS					
		INDOOR FAN MOTOR						ELEC.						OUTDOOR FAN						COOLING				MIN. CSA CFM	SEER								
		CFM	E.S.P.	NO. FANS	H.P.	NORMAL POWER	V	Ø	REHEAT (KW)	FLA	TK.	OPER. WT. LBS.	MOUNTING DETAIL	NORMAL POWER	NO. FANS	V	Ø	FLA	MCA	MAX FUSE	OPER. WT. LBS.	MOUNTING DETAIL	TOTAL CAP. (MBH)			SENSIBLE CAP. (MBH)	ENT DBT		ENT WBT	HEATING TOTAL MBH			
FC 11	CARRIER FX4CNF042000	1300	0.5	1	1/2	YES	208	1	NA	4.1	1"	150	1/M4.1	HP 1	CARRIER 25HB4442A003	YES	1	208	1	1.2	26.0	40	280	3/M4.1	40.43	32.28	85	78.2	64.3	36.5	260	14.0	①
FC 12	CARRIER FX4CNF048000	1400	0.4	1	3/4	YES	208	1	NA	6.0	1"	170	1/M4.1	HP 2	CARRIER 25HB4442A003	YES	1	208	1	1.2	-	-	280	3/M4.1	49.22	34.74	85	81.5	67.6	41.7	675	14.0	①
FC 13	CARRIER FX4CNF048000	1400	0.4	1	3/4	YES	208	1	NA	6.0	1"	170	1/M4.1	HP 3	CARRIER 25HB4442A003	YES	1	208	1	1.2	-	-	280	3/M4.1	44.4	31.8	85	81.5	67.1	41.7	675	10.1	①

① POLYURETHANE CONDENSER COIL COATING, PROGRAMMABLE THERMOSTAT (MODEL 33 CS)

CHILLER SCHEDULE AIR COOLED																			
SYMBOL	DESCRIPTION	CAPACITY (TONS)	REFRIGERANT	EVAPORATOR DATA				CONDENSER DATA				COMP. ELECT. DATA				EER	OPER. WT. (LBS.)	REMARKS	
				GPM	EWI	LWT	MAX PD	kW	V	Ø	MCA	MOCP	V	Ø	HZ				
CH 1	CARRIER 30RA040	38.4	R22	92.1	55	45	8.4	1.2	208	3	161.5	200.0	208	3	60	9.8	2950	SINGLE POINT POWER. POLYURETHANE CONDENSER COIL COATING, REMOTE START/STOP, CONDENSER AND FAN STAGING, RECONNECT (E) CHILLER ENABLE CONTROLS TO CHILLER.	

PUMP SCHEDULE														
SYMBOL	DESCRIPTION	SERVICE	FLOW GPM	HEAD FT.	INLET WATER TEMP.	MOTOR				MIN. EFF.	OPER. WT. (LBS.)	REMARKS		
						MAX HP	V	Ø	RPM					
P 1	TACO MODEL F1511	CHILLED WATER	92.1	100	45	7 1/2	208	3	60	1750	49.5	550	TEFC PREMIUM EFFICIENCY MOTOR, RECONNECT (E) PUMP ENABLE AND STATUS CONTROLS TO PUMP.	



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CHILLER AND HEAT PUMP REPLACEMENT

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CITY SUBMITTAL	10.14.08

PROJECT: Design/Support/Detail Fabric for Logistics

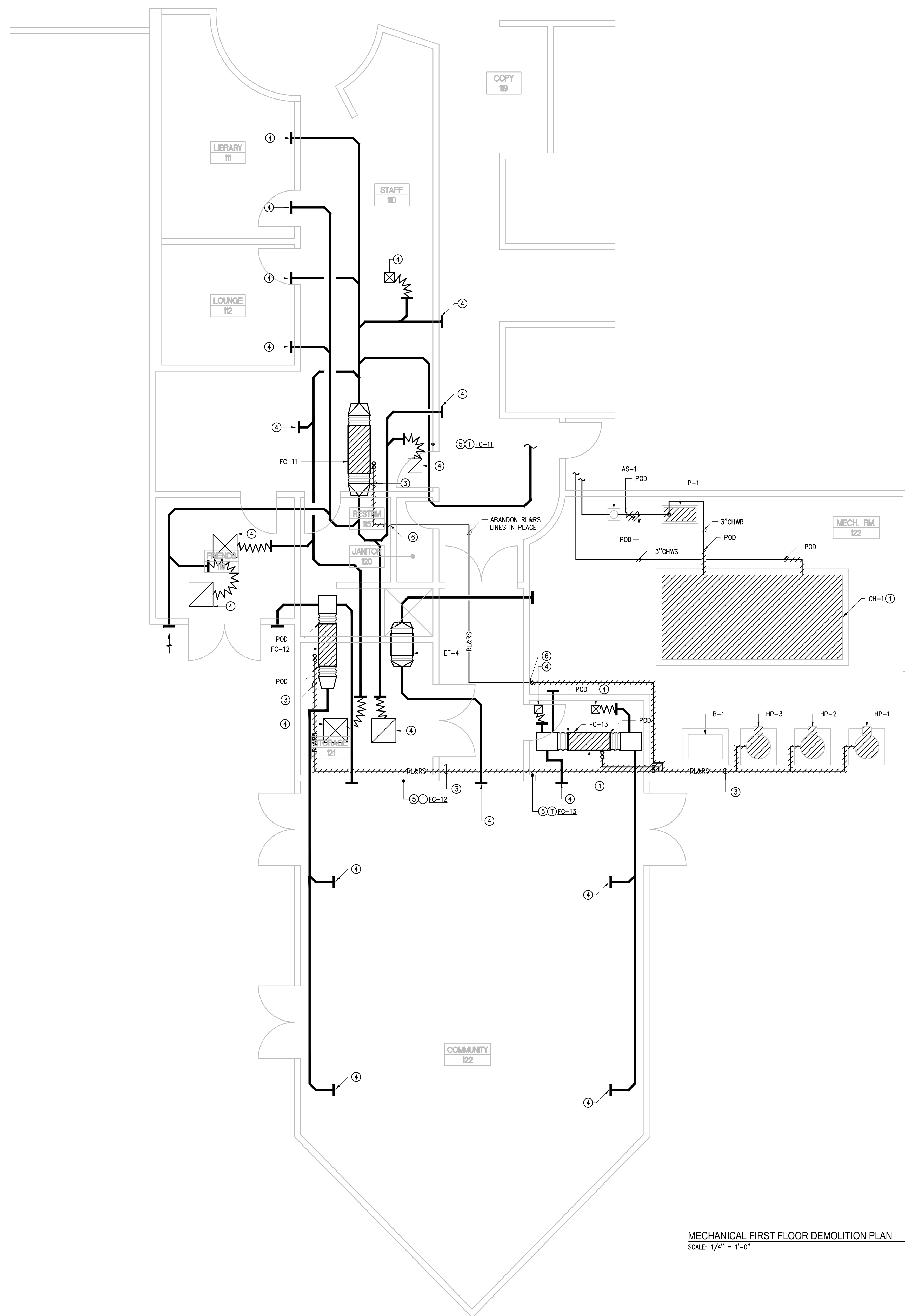
SHEET TITLE  
**MECHANICAL SCHEDULES**

DESIGNED BY: CG	JOB NUMBER: 08177
DRAWN BY: CG	DATE: 10.14.08
CHECKED BY: JC	SHEET SIZE: 30X42

SHEET  
**M1.1**  
OF







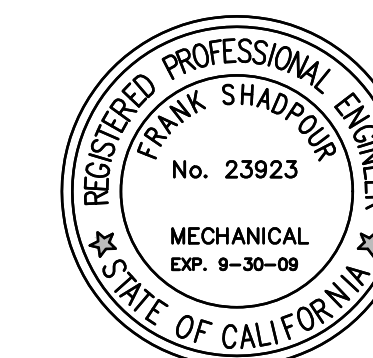
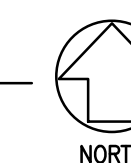
**GENERAL DEMOLITION NOTES**

1. PRIOR TO DEMOLITION, MEASURE AND RECORD EXISTING AIRFLOW AND STATIC PRESSURE READINGS OF SUPPLY, RETURN AND EXHAUST MAINS SERVING THIS FLOOR. SUBMIT FOR APPROVAL PRIOR TO DEMOLITION.
2. PRIOR TO DEMOLITION, MEASURE AND RECORD EXISTING SUPPLY DIFFUSER, RETURN AND EXHAUST GRILLE AIRFLOW QUANTITIES FOR ALL EXISTING AREAS. SUBMIT FOR APPROVAL PRIOR TO DEMOLITION.
3. EXISTING CONDITIONS SHOWN ARE BASED ON AVAILABLE AS-BUILT DRAWINGS. VERIFY ALL EXISTING CONDITIONS PRIOR TO DEMOLITION AND NOTIFY THE OWNER OF ANY CONDITIONS THAT DIFFER.
4. PRIMARY CONDENSATE LINES FOR FAN COILS TO REMAIN FOR FUTURE CONNECTION TO REPLACEMENT FAN COILS.
5. CLEAN ALL EXISTING DUCTWORK CONNECTED TO FC-11, FC-12, AND FC-13.

**DEMO KEYNOTES**

- ① DEMO AIR COOLED WATER CHILLER.
- ② DEMO FAN COIL UNIT, HANGERS, SECONDARY DRAIN PAN AND ALL ASSOCIATED APPURTENANCES.
- ③ DEMO R/LARS PIPING, HANGERS AND ALL ASSOCIATED APPURTENANCES.
- ④ SUPPLY DIFFUSER, RETURN AND EXHAUST GRILLE TO REMAIN.
- ⑤ DEMO THERMOSTATS.
- ⑥ PURGE REFRIGERANT PIPING AND CAP.

MECHANICAL FIRST FLOOR DEMOLITION PLAN  
SCALE: 1/4" = 1'-0"



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 CITY OF SAN DIEGO, CALIFORNIA  
 CHILLER AND HEAT PUMP REPLACEMENT

ISSUED/REVISIONS	DATE
CITY SUBMITTAL	10.14.08

PROJECT ENGINEER/SEAL/DATE: Frank Shadpour/10/14/08

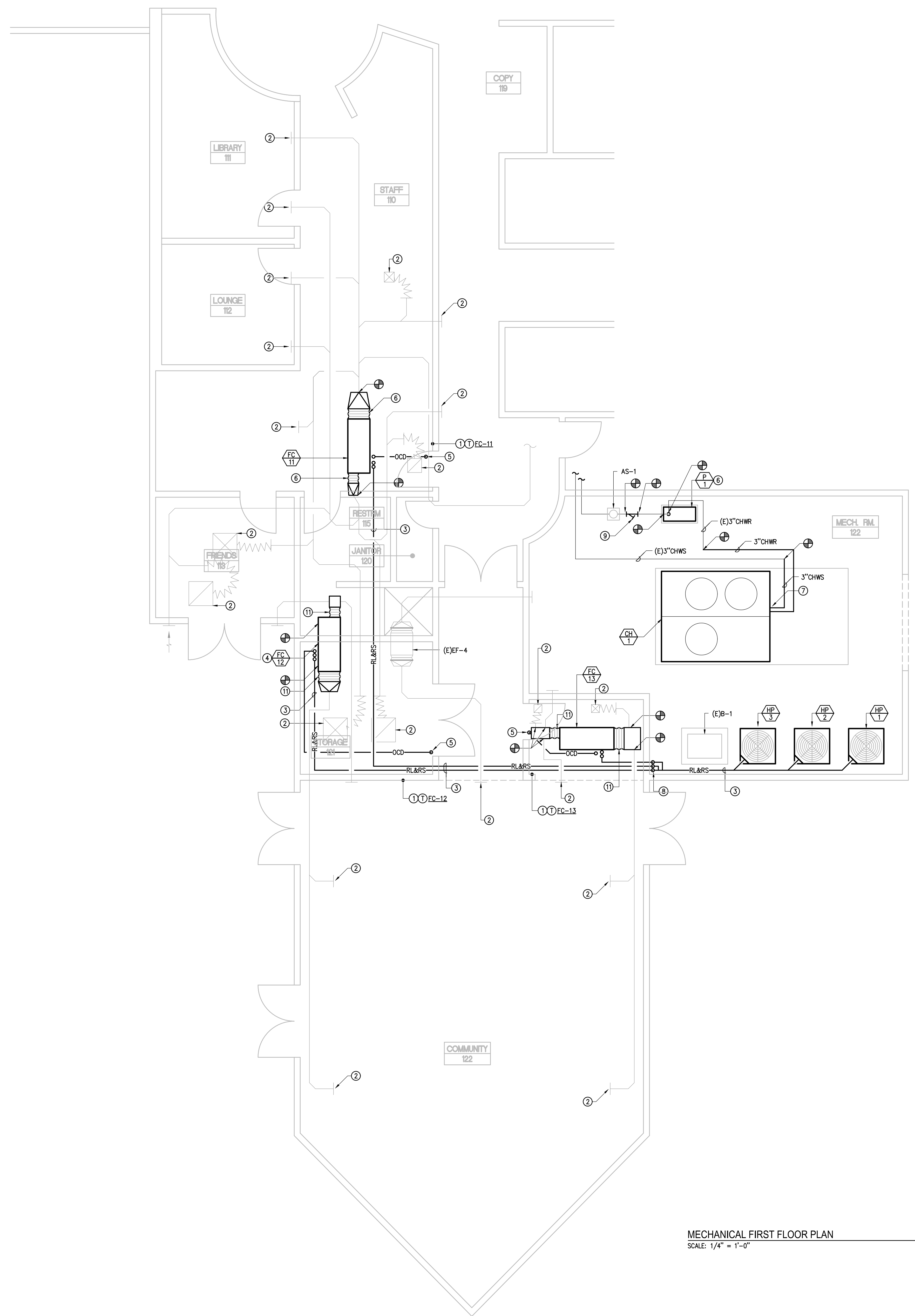
**SHEET TITLE**  
**MECHANICAL FIRST FLOOR DEMOLITION PLAN**

DESIGNED BY: CG	JOB NUMBER: 08177
DRAWN BY: CG	DATE: 10.14.08
CHECKED BY: JC	SHEET SIZE: 30X42

SHEET

**M2.1**

OF



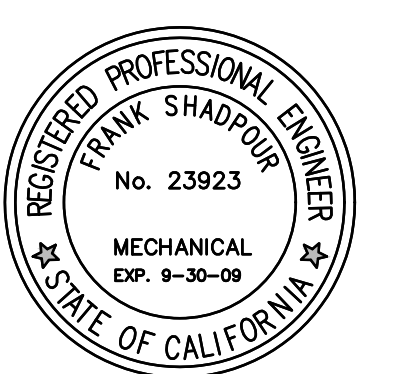
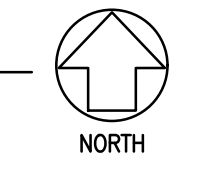
**GENERAL NOTES**

1. ZONING, DUCT LAYOUT AND AIR DISTRIBUTION SYSTEMS ARE NOT TO BE MODIFIED UNDER THIS CONTRACT AND SHALL REMAIN AS IS.
2. TEST AND BALANCE SHALL BE PER THE ORIGINAL CONSTRUCTION DOCUMENTS.
3. EXISTING CHILLER CONTROLS, SAFETIES AND COMPONENTS SHALL REMAIN AS IS.
4. PROVIDE ACOUSTICALLY LINED SHEET METAL PLENUM SAME SIZE AS FAN COIL CONNECTION.

**KEYNOTES**

- ① INSTALL THERMOSTATS.
- ② REBALANCE TO PRE-DEMOLITION AIR FLOWS.
- ③ INSTALL AND SIZE REFRIGERANT PIPING PER MANUFACTURERS RECOMMENDATIONS.
- ④ CONNECT FAN COIL CONDENSATE TO EXISTING CONDENSATE LINES.
- ⑤ DISCHARGE 3/4" OVER FLOW CONDENSATE DIRECTLY ABOVE DOOR.
- ⑥ REPLACE PUMP, REUSE EXISTING FLEXIBLE PIPE CONNECTORS AND PROVIDE REDUCER TO CONNECT TO PUMP.
- ⑦ CONNECT TO CHILLER, REUSE EXISTING FLEXIBLE PIPE CONNECTORS AND PROVIDE REDUCER TO CONNECT TO CHILLER.
- ⑧ ROUTE REFRIGERANT PIPING ON EXTERIOR WALL. PENETRATE EXTERIOR WALL INTO CEILING PLENUM.
- ⑨ REPLACE STRAINER SAME SIZE AS PIPE.
- ⑩ NOT USED.
- ⑪ FLEXIBLE DUCT CONNECTION TO FAN COIL, SAME SIZE AS FAN COIL CONNECTION.

MECHANICAL FIRST FLOOR PLAN  
SCALE: 1/4" = 1'-0"



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CITY OF SAN DIEGO, CALIFORNIA  
CHILLER AND HEAT PUMP REPLACEMENT

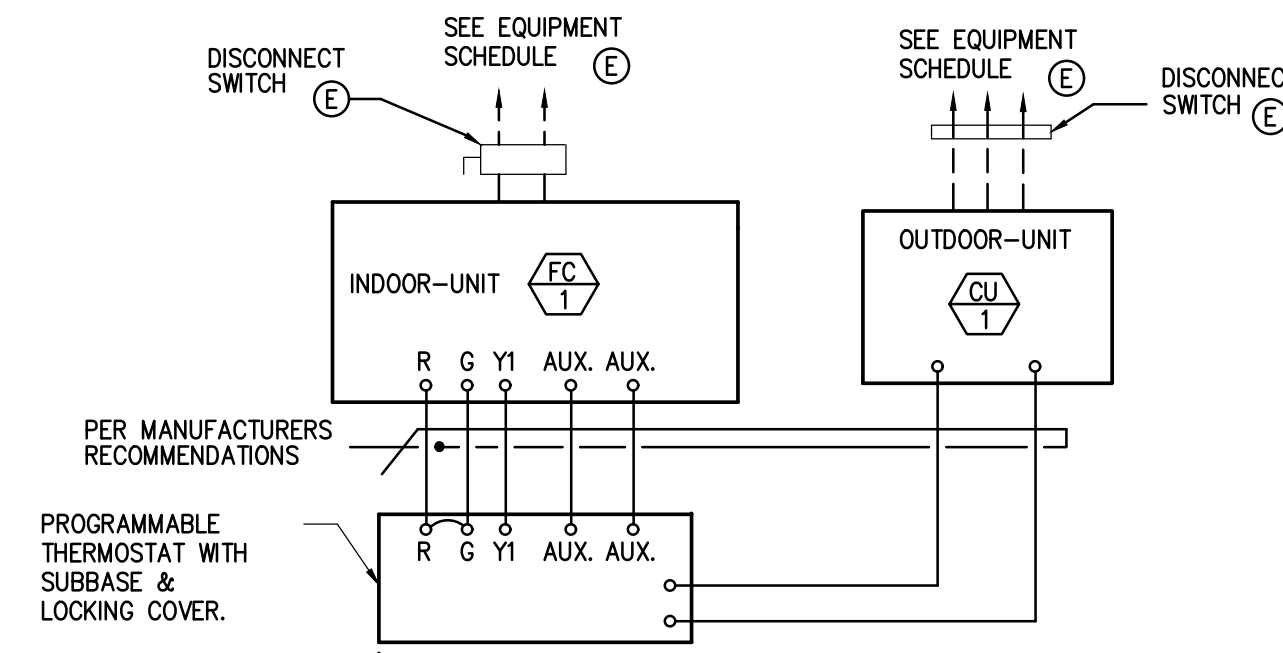
ISSUED/REVISIONS	DATE
CITY SUBMITTAL	10.14.08

SHEET TITLE  
**MECHANICAL FIRST FLOOR PLAN**

DESIGNED BY: CG	JOB NUMBER: 08177
DRAWN BY: CG	DATE: 10.14.08
CHECKED BY: JC	SHEET SIZE: 30X42

SHEET  
**M3.1**  
OF





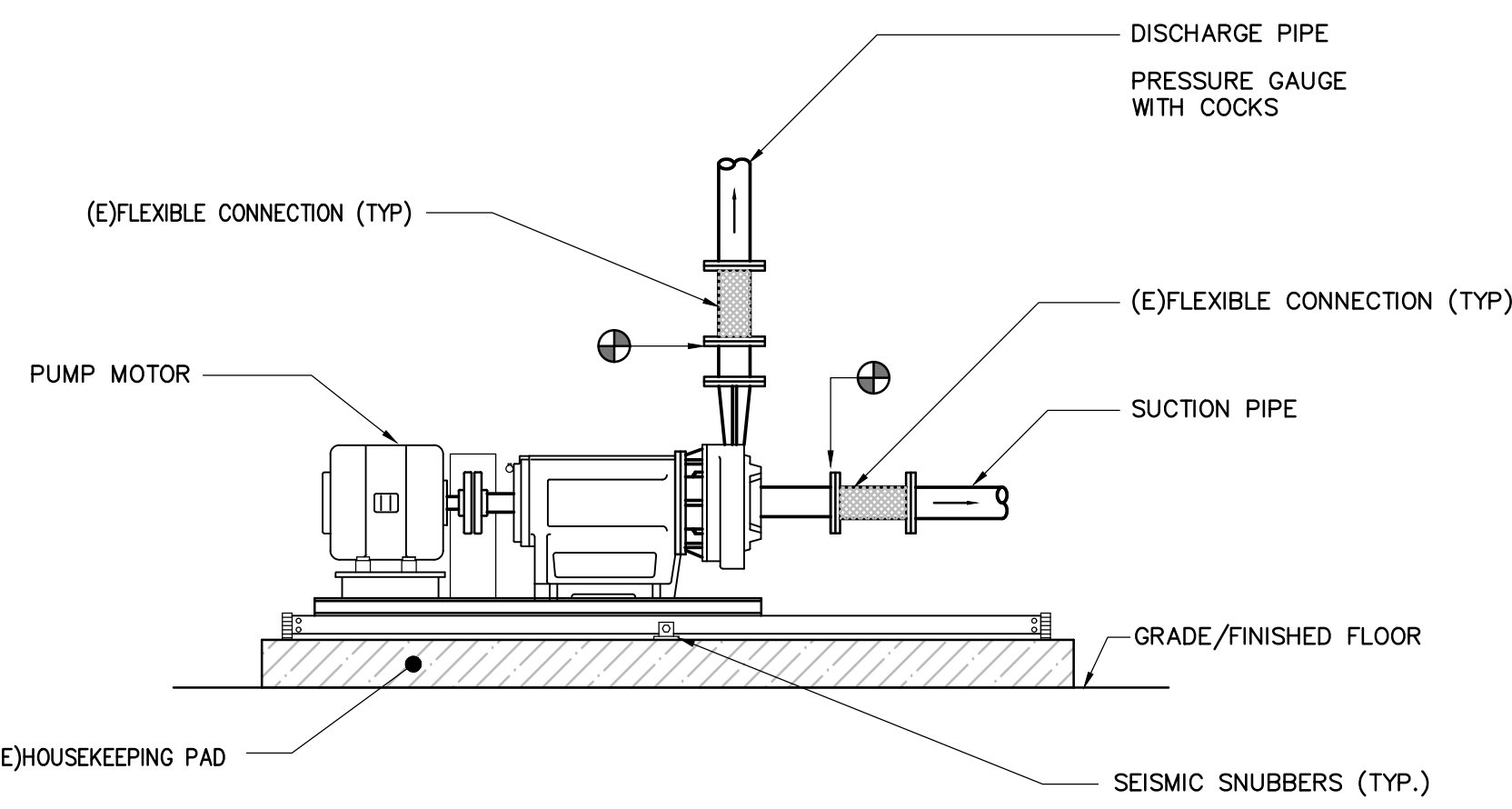
**SEQUENCE OF OPERATION**  
**START-STOP:** SYSTEM'S START-STOP TIMES SHALL BE CONTROLLED BY THE PROGRAMMABLE THERMOSTAT  
**COOLING:** ON A CALL FROM THE THERMOSTAT, THE UNIT SHALL ENABLE COOLING TO SATISFY THE THERMOSTAT SET POINT.  
**HEATING:** ON A CALL FROM THE THERMOSTAT, THE UNIT SHALL ENABLE HEATING TO SATISFY THE THERMOSTAT SET POINT.  
**FAN:** THE FAN SHALL CYCLE WITH COOLING AND HEATING MODE

**SPLIT SYSTEM HEAT PUMP UNIT CONTROL DIAGRAM**

SCALE: NONE

4

M4.1



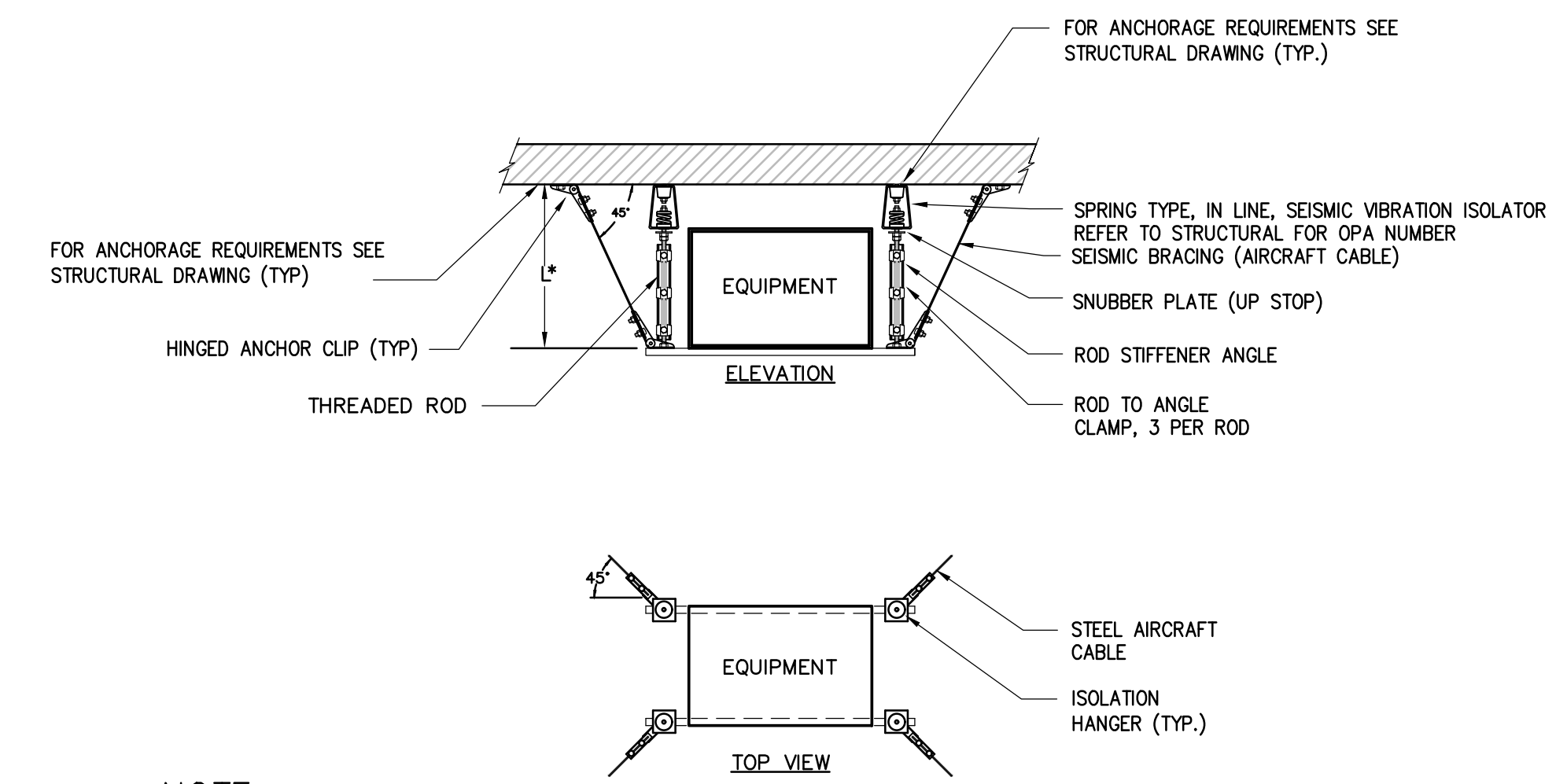
**NOTE:**  
 PIPING WEIGHT SHALL NOT BE SUPPORTED BY PUMP.  
 FLEXIBLE CONNECTION SHALL NOT BE COMPRESSED.

**TYPICAL PUMP INSTALLATION DETAIL**

SCALE: NONE

5

M4.1



**NOTE:**

\* IF "L" EXCEEDS 50 TIMES THE DIAMETER OF THE ROD, THEN A VERTICAL STIFFENER IS REQUIRED.

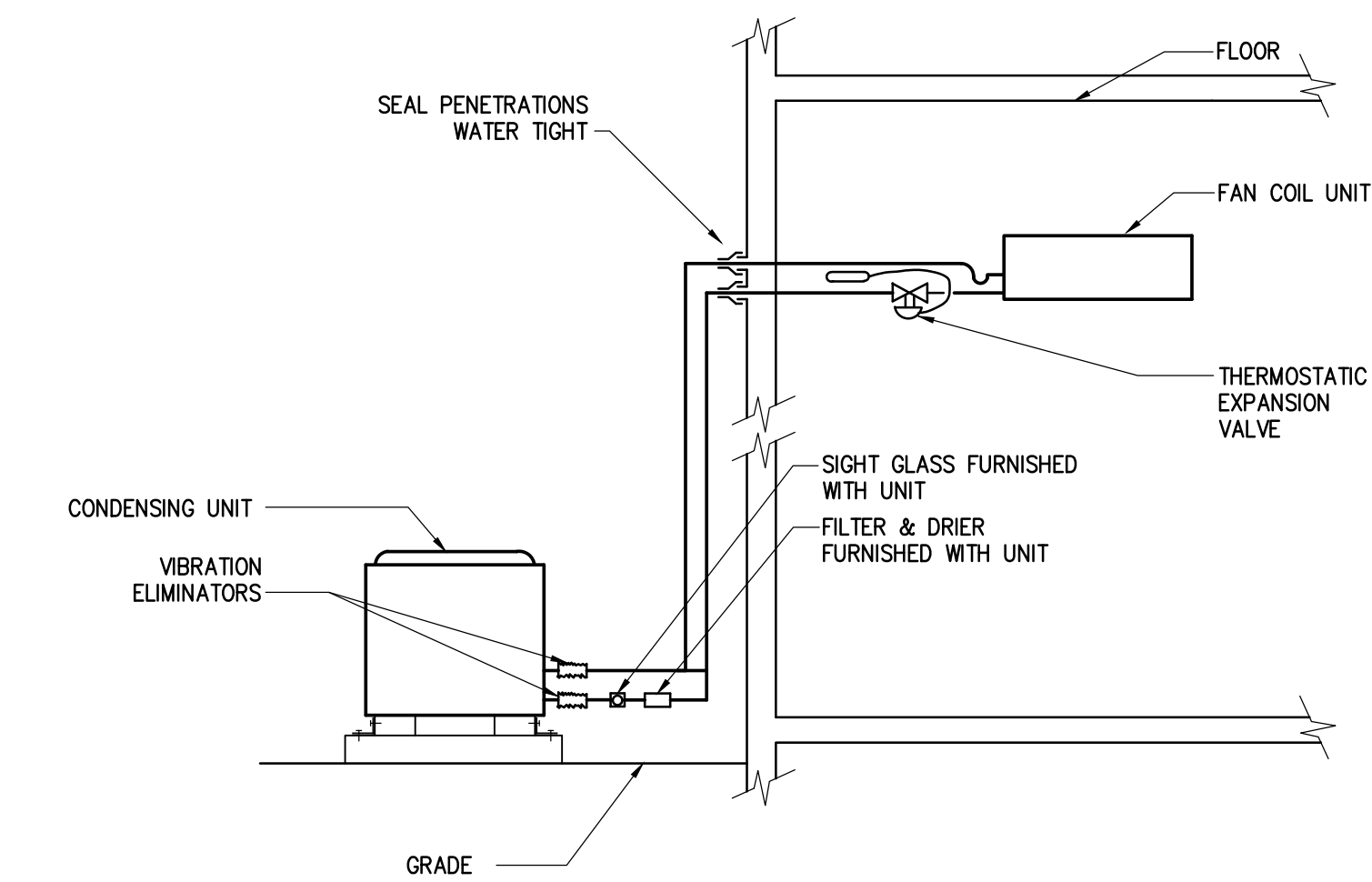
1. INSTALL UNDER STRICT INSTRUCTION OF VIBRATION ISOLATOR MFR.
2. REFER TO STRUCTURAL DRAWINGS FOR ANCHORAGE DETAILS.

**FAN COIL UNIT MOUNTING DETAIL**

SCALE: NONE

1

M4.1

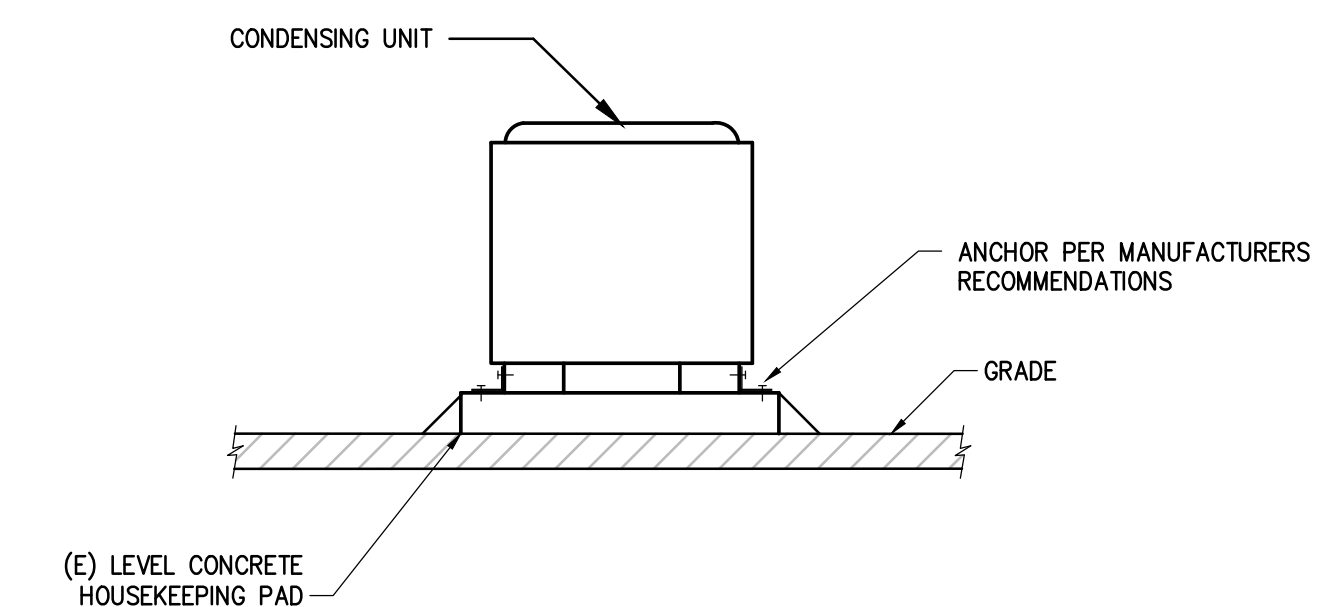


**REFRIGERANT PIPING DETAIL**

SCALE: NONE

2

M4.1



**CONDENSING UNIT MOUNTING DETAIL**

SCALE: NONE

3

M4.1

ISSUED/REVISIONS	DATE
CITY SUBMITTAL	10.14.08

PROJECT: Shadpour/Support/Chiller, Heat Pump, Earls

SHEET TITLE

**MECHANICAL DETAILS**

DESIGNED BY: CG	JOB NUMBER: 08177
DRAWN BY: CG	DATE: 10.14.08
CHECKED BY: JC	SHEET SIZE: 30X42

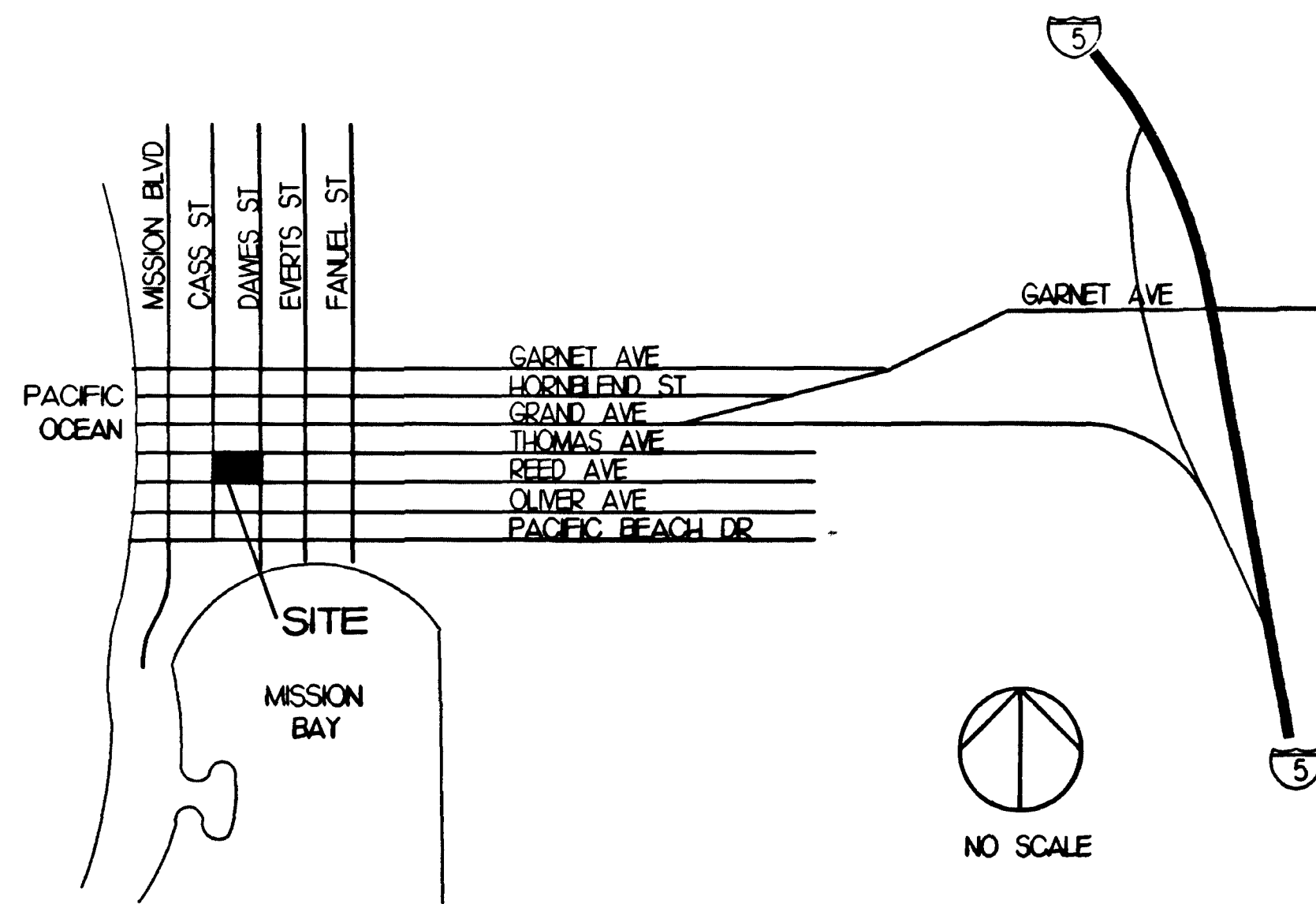
SHEET

**M4.1**

OF

# THE EARL AND BIRDIE TAYLOR LIBRARY

## VICINITY MAP



## PROJECT DATA

**OWNER**  
CITY OF SAN DIEGO

**PROJECT ADDRESS**  
4275 CASS AVENUE  
SAN DIEGO, CA

**LEGAL DESCRIPTION**  
PACIFIC BEACH BLK 264 LTS 1-40  
MAP NO 853

**ASSESSOR'S PARCEL NUMBER**  
423-153-01

**SITE AREA**  
3.1 ACRES

**OCCUPANCY GROUP**  
LIBRARY B-2  
COMMUNITY ROOM A-3

**CONSTRUCTION TYPE**  
TYPE V NON RATED (SPRINKLERED)

**NUMBER OF STORIES**  
ONE STORY

**ALLOWABLE AREA**

ALLOWABLE BUILDING AREA	8,000 S.F.	(NOTE: A-3 IS LESS THAN 10% OF TOTAL FLOOR AREA - USE B-2 MAJOR USE)
INCREASE PER SEPARATION (4 SIDES)	8,000 S.F.	
TOTAL	16,000 S.F.	ALLOWABLE AREA

**ACTUAL BUILDING AREA**  
12,484 S.F.

**PROPERTY ZONE**  
R-1500 AND C-1

**STANDARD DRAWINGS AND SPECIFICATIONS**  
"STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION" (GREEN BOOK), 1994 EDITION, INCLUDING 1994, "REGIONAL SUPPLEMENT AMENDMENTS" AND 1994, "CITY OF SAN DIEGO SUPPLEMENT AMENDMENTS", (DOCUMENT NO. 769818 FILED FEBRUARY 2, 1995

"CITY OF SAN DIEGO STANDARD DRAWINGS", INCLUDING ALL REGIONAL STANDARDS DRAWINGS, (DOCUMENT NO. 769819, FILED FEBRUARY 3, 1995

"DISABLED ACCESS REGULATIONS", TITLE 24, LATEST EDITION, AND CALIFORNIA STATE ACCESSIBILITY STANDARDS INTERPRETIVE MANUAL, LATEST EDITION, PREPARED BY THE OFFICE OF THE STATE ARCHITECT AND THE DEPARTMENT OF REHABILITATION.

CALIFORNIA DEPARTMENT OF TRANSPORTATION, "MANUAL OF TRAFFIC CONTROLS, WARNING SIGNS, LIGHTS AND DEVICES FOR USE IN PERFORMANCE OF WORK UPON HIGHWAYS, 1990 EDITION (DOCUMENT NO. 769159), FILED APRIL 16, 1990.

UNIFORM BUILDING CODE (1994)

UNIFORM PLUMBING CODE (1991)

NATIONAL ELECTRICAL CODE (1993)

### CAUTIONARY NOTES

AT LEAST TWO DAYS PRIOR TO EXCAVATION, THE CONTRACTOR SHALL REQUEST MARKOUT OF UNDERGROUND UTILITIES BY CALLING THE BELOW LISTED REGIONAL NOTIFICATION CENTER FOR AN INQUIRY IDENTIFICATION NUMBER:

**UNDERGROUND SERVICE ALERT: 1-800-422-4133**

BIDDING AND/OR CONSTRUCTION DOCUMENTS MAY BE REDUCED FROM ORIGINAL SIZE. VERIFY ALL PLANS, SCALES BY COMPARING TO GRAPHIC SCALE.

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A1.1	HARDSCAPE PLAN
A1.2	ENLARGED PAVING PLAN
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A11	WALL SECTION
A12	WALL SECTIONS
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A23	DOOR & FRAME SCHEDULE & DETAILS
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E3	POWER & SIGNAL FLOOR PLAN
E4	ELECTRICAL LIGHTING PLAN
E5	PANEL SCHEDULES & DETAILS
E6	MECHANICAL EQUIPMENT YARD & DETAILS
E7	TITLE 24 DOCUMENTATION
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L2	IRRIGATION PLAN
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F4	NOT USED
F5	CABINET DETAILS
G1	SIGNAGE PLAN
G2	SIGNAGE DETAILS
G3	SIGNAGE DETAILS

## CONSULTANTS

<b>ARCHITECT</b>		
MANUEL ONCINA, ARCHITECT 514 PENNSYLVANIA AVENUE SAN DIEGO, CA 92103	MANUEL ONCINA	TEL 295-3929 FAX 295-1614
<b>LANDSCAPE ARCHITECT</b>		
MARLM ASSOCIATES 3914 MURPHY CANYON RD., SUITE A243 SAN DIEGO, CA 92123	CHARLIE DANIELS	TEL 292-5141 FAX 292-5173
<b>CIVIL ENGINEER</b>		
REF/HOLDERS AND SANFORD 3569 FIFTH AVENUE SAN DIEGO, CA 92103	RICK RUBIN	TEL 299-7272 FAX 298-4518
<b>SOILS ENGINEER</b>		
BENTON ENGINEERING 5540 RUFFIN ROAD SAN DIEGO, CA 92123	JOHN BENTON	TEL 565-1955 FAX 565-8719
<b>STRUCTURAL ENGINEER</b>		
JOSEPHSON WERDOWATZ 6640 LUSK BLVD., SUITE A200 SAN DIEGO, CA 92121	TOD MARTIN	TEL 558-2181 FAX 558-2188
<b>MECHANICAL ENGINEER</b>		
EVIC ENGINEERING 1816 LINCOLN AVENUE SAN DIEGO, CA 92103	CURT DEAN	TEL 297-8411 FAX 297-4890
<b>ELECTRICAL ENGINEER</b>		
VAN BUREN, KIMPER ENGINEERING 5030 CAMINO DE LA SESTA, SUITE 301 SAN DIEGO, CA 92108	CHRIS MURPHY	TEL 291-9980 FAX 291-6389
<b>SPECIFICATIONS</b>		
WILLIAM C KELLEY, C.S.I. 3422 STATE STREET SAN DIEGO, CA 92103	BILL KELLEY	TEL 291-0629 FAX 291-2508
<b>COST ESTIMATOR</b>		
CONSTRUCTION ANALYSTS, INC. 2225 FARADAY AVE., SUITE A CARLSBAD, CA 92008	BOB GFFIN	TEL 431-9555 FAX 431-7512
<b>INTERIOR DESIGN CONCEPT</b>		
ENVIRONMENTS 711 EIGHTH AVE., SUITE A SAN DIEGO, CA 92101	MICHELE NEEDLE	TEL 239-0911

### FIRE DEPARTMENT NOTES

- ALL EXIT DOORS SHALL BE OPENABLE FROM THE INSIDE WITHOUT THE USE OF A KEY OR ANY SPECIAL KNOWLEDGE OR EFFORT. NO DEADBOLTS, NO SLIDING BOLTS, ETC. (U.B.C. SEC. 3304(C) AND U.F.C. SEC 12.104(B))
- CONTRACTOR SHALL SECURE PERMITS REQUIRED BY THE FIRE DEPARTMENT FROM THE FIRE PREVENTION BUREAU PRIOR TO OCCUPYING THE BUILDING, INCLUDING BUT NOT LIMITED TO THE FIRE SPRINKLER SYSTEM AND THE FIRE ALARM SYSTEM.
- BUILDING NUMBERS SHALL BE EASILY VISIBLE AND LEGIBLE FROM THE STREET OR ROAD FRONTING THE PROPERTY. (U.F.C. SEC 10.208)
- FIRE HYDRANTS SHALL COMPLY WITH FIRE DEPARTMENT REQUIREMENTS FOR ON-SITE FIRE HYDRANTS (U.F.C. SEC 0.301)
- EXIT SIGNS MUST BE INTERNALLY ILLUMINATED (U.F.C. SEC 12.07(A) AND U.B.C. SEC 3314(A))
- PROVIDE TWO SEPARATE SOURCES OF POWER FOR EXIT SIGNS CONFORMING TO CODE SECTIONS AS FOLLOWS U.B.C. SEC 3314.
- PROVIDE OCCUPANT LOAD SIGN COMPLYING WITH U.F.C. SEC 25.114, C.A.C. T-19, SEC 3.30, U.B.C. 3302(A)
- THE INSTALLATION OF AUTOMATIC FIRE SPRINKLER SYSTEMS SHALL COMPLY WITH U.B.C. STANDARD NO. 38-1.
- PROVIDE A MINIMUM OF ONE 2A10BC CLASSIFICATION FIRE EXTINGUISHER WITHIN 75 FEET TRAVEL DISTANCE FOR EACH 6,000 SQUARE FEET OR PORTION THEREOF ON EACH FLOOR. (U.F.C. ARTICLE 10, DIVISION V, U.F.C. STANDARDS 10-1 AND C.A.C. T-19, SEC 3.29)

### SPECIAL NOTES

COASTAL DEVELOPMENT PERMIT DEP NO. 91-0066 (NEGATIVE DECLARATION).

A QUALIFIED ARCHEOLOGIST SHALL BE ON SITE TO MONITOR ALL GROUND DISTURBANCE ACTIVITIES AND TO INSPECT FOR (ADDITIONAL) IN SITU ARCHEOLOGICAL DEPOSITS.

IN THE EVENT THAT (ADDITIONAL) ARCHEOLOGICAL DEPOSITS ARE DISCOVERED, THE ARCHEOLOGIST SHALL HAVE THE AUTHORITY TO TEMPORARILY HALT, DIRECT OR DIVERT ANY GROUND DISTURBANCE OPERATIONS IN THE AREA OF DISCOVERY TO ALLOW EVALUATION OF POTENTIALLY SIGNIFICANT ARCHEOLOGICAL RESOURCES.

THE SIGNIFICANCE OF THE DISCOVERED RESOURCES SHALL BE DETERMINED BY THE ARCHEOLOGIST, IN CONSULTATION WITH DEP STAFF. DEP MUST CONCUR WITH THE EVALUATION PROCEDURES TO BE PERFORMED BEFORE CONSTRUCTION ACTIVITIES ARE ALLOWED TO RESUME.

### SPECIAL SPECIFICATION #8145

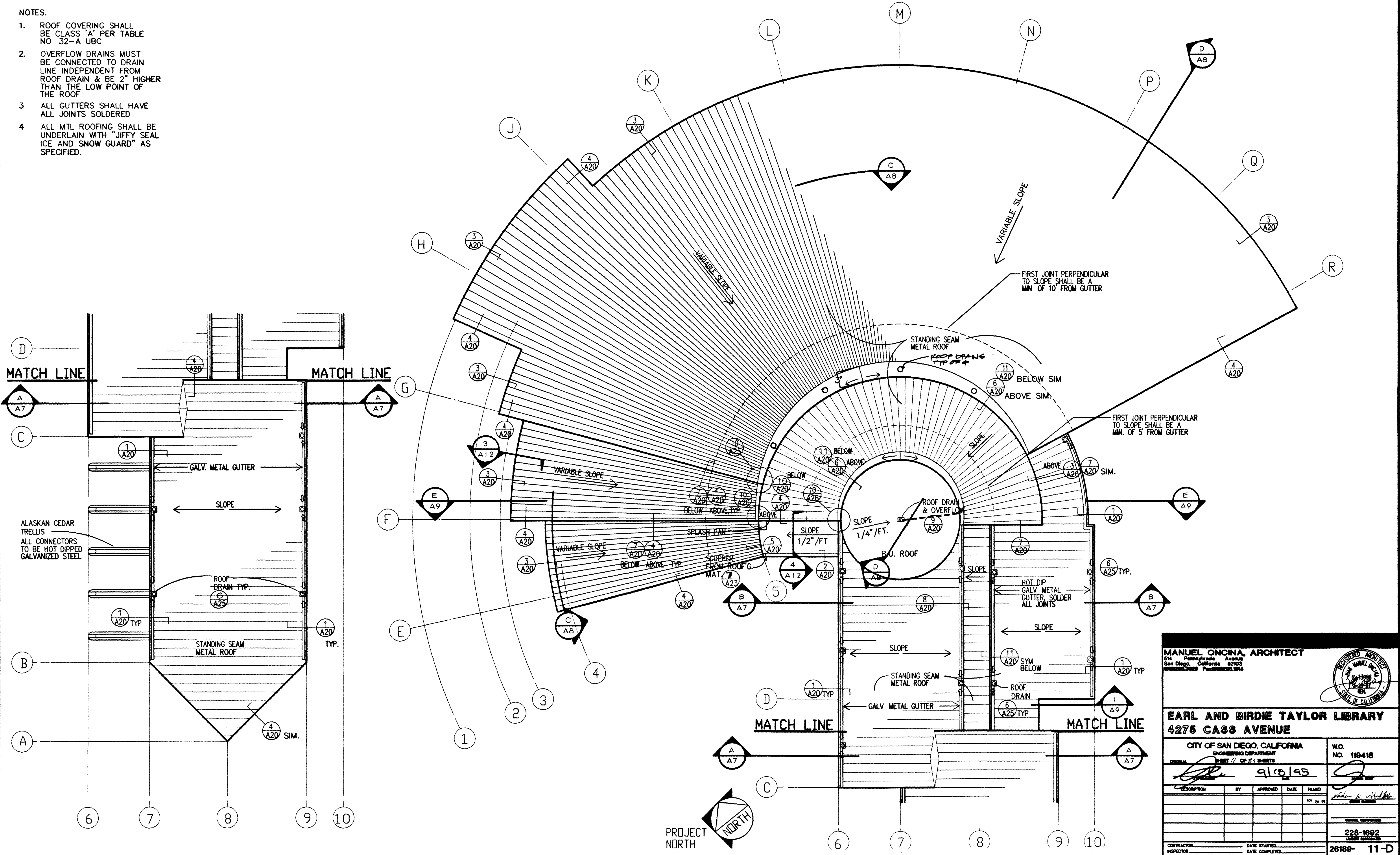
<b>MANUEL ONCINA, ARCHITECT</b> 514 Pennsylvania Avenue San Diego, California 92103 438-2224, 3422 Fax 438-2224		
<b>EARL AND BIRDIE TAYLOR LIBRARY</b> 4275 CASS AVENUE		
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT		W.O. NO. 119418
DESIGNED BY <i>[Signature]</i>	DATE 9/18/95	APPROVED BY <i>[Signature]</i>
DESCRIPTION	BY	APPROVED
CONTRACTOR	DATE STARTED	DATE COMPLETED
INSPECTOR		26189- 1-D

VICINITY MAP, PROJECT DATA, CONSULTANTS, SHEET INDEX TS



NOTES.

1. ROOF COVERING SHALL BE CLASS 'A' PER TABLE NO 32-A UBC
2. OVERFLOW DRAINS MUST BE CONNECTED TO DRAIN LINE INDEPENDENT FROM ROOF DRAIN & BE 2" HIGHER THAN THE LOW POINT OF THE ROOF
3. ALL GUTTERS SHALL HAVE ALL JOINTS SOLDERED
4. ALL MTL ROOFING SHALL BE UNDERLAIN WITH "JIFFY SEAL ICE AND SNOW GUARD" AS SPECIFIED.



**MANUEL ONCINA, ARCHITECT**  
 614 Pennsylvania Avenue  
 San Diego, California 92103  
 (619) 594-3333 Fax: (619) 594-3344

**EARL AND BIRDIE TAYLOR LIBRARY**  
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CITY OF SAN DIEGO, CALIFORNIA  
 ENGINEERING DEPARTMENT  
 SHEET 77 OF 83 SHEETS

DATE: 9/18/95

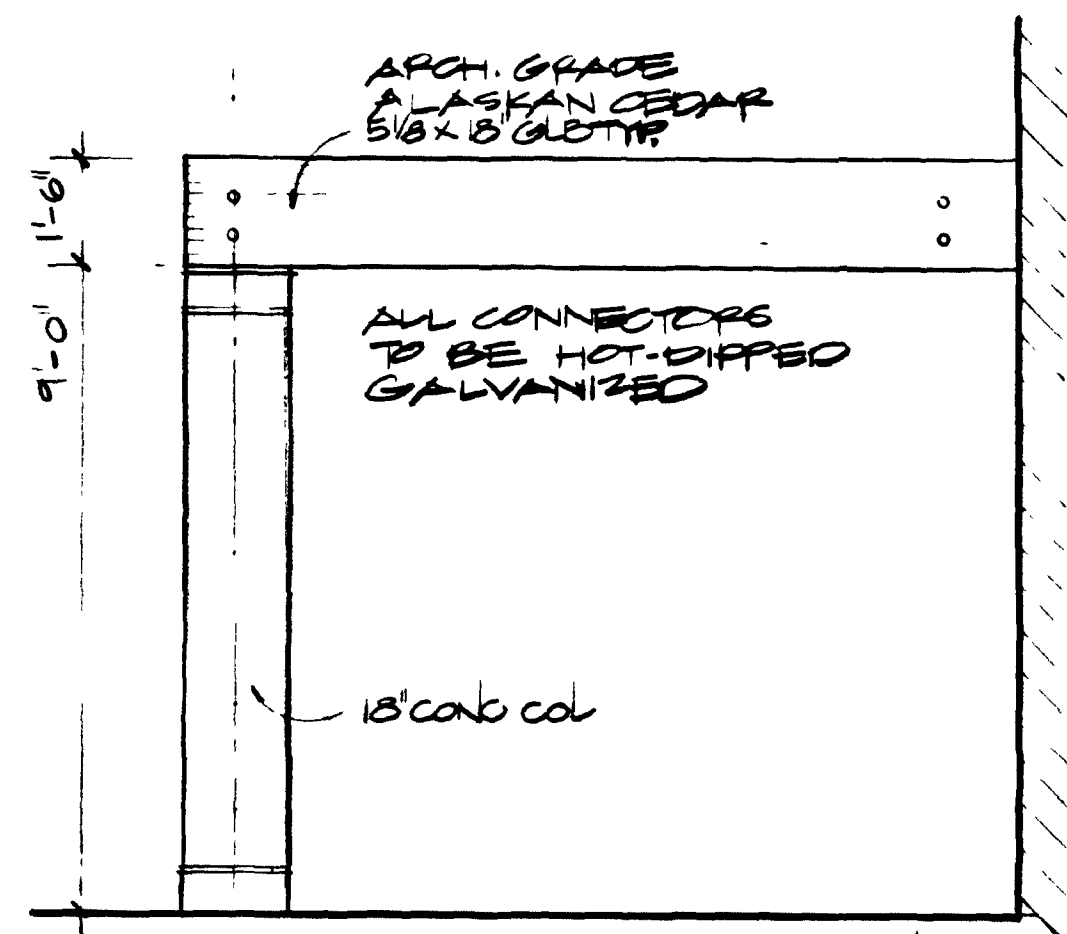
DESCRIPTION	BY	APPROVED	DATE	FILED

CONTRACTOR: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_  
 INSPECTOR: \_\_\_\_\_ DATE COMPLETED: \_\_\_\_\_

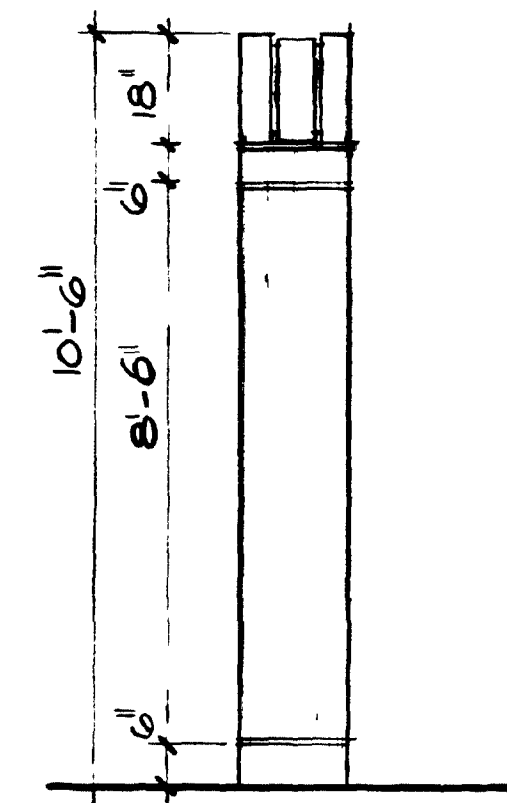
228-1692  
 26189- 11-D

ROOF PLAN 1/8"=10' **A4**

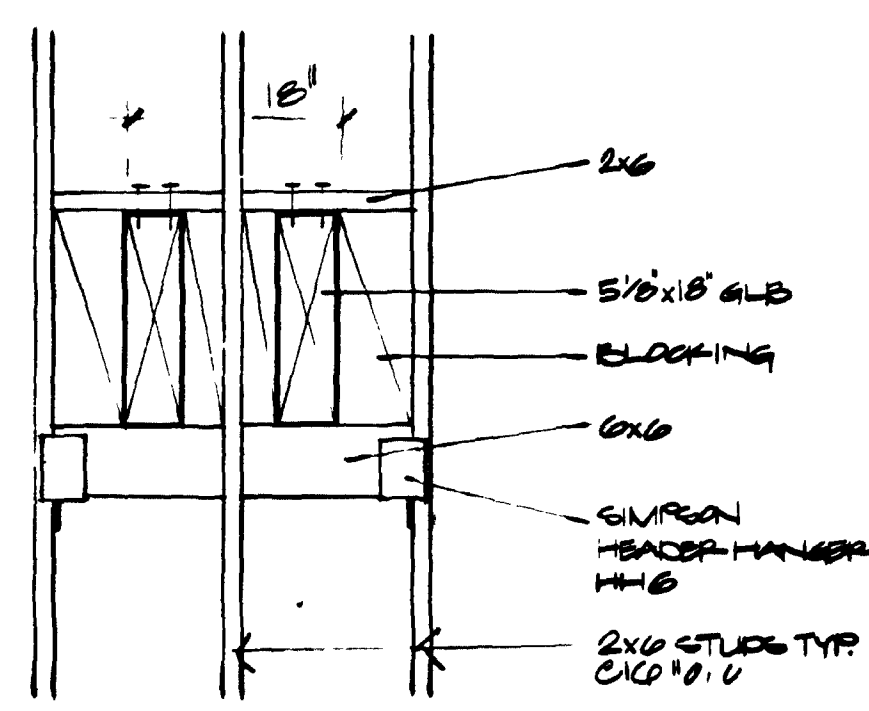




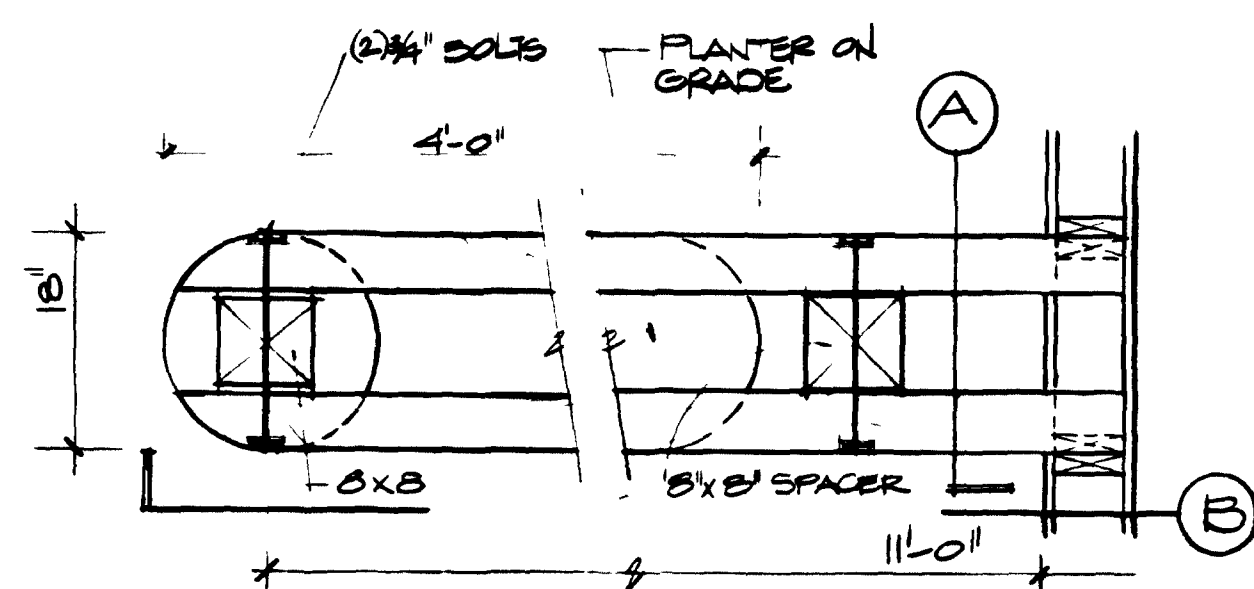
FRONT ELEVATION  
3/8" = 1'-0"



LATERAL ELEVATION  
3/8" = 1'-0"

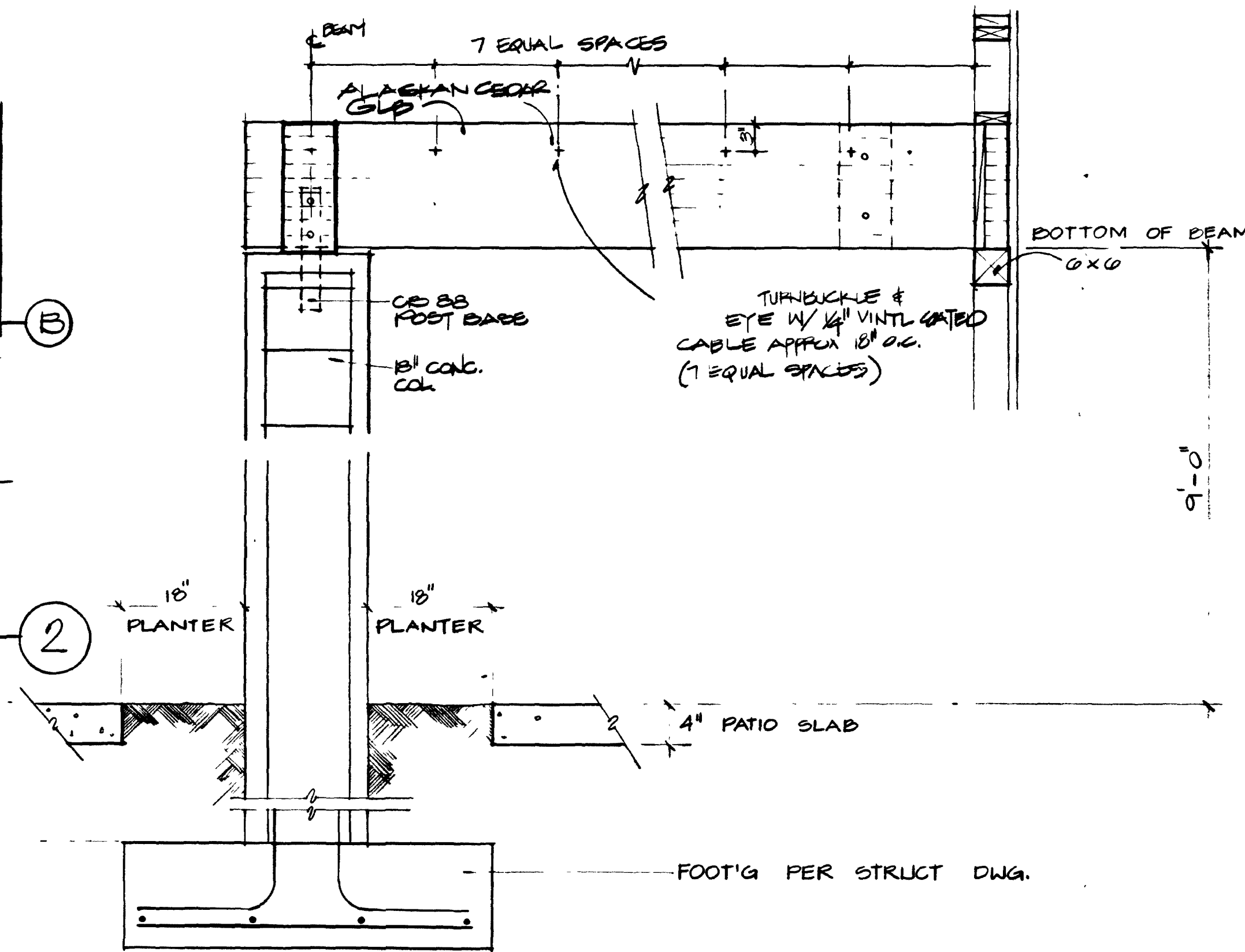


SECTION  
3/4" = 1'-0" (A)

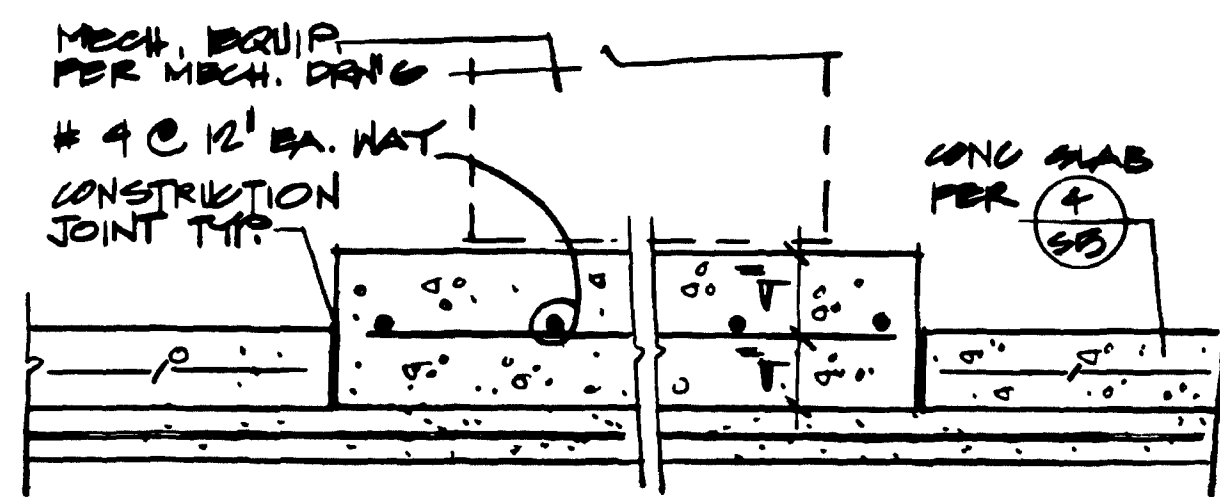


PLAN VIEW  
3/4" = 1'-0"

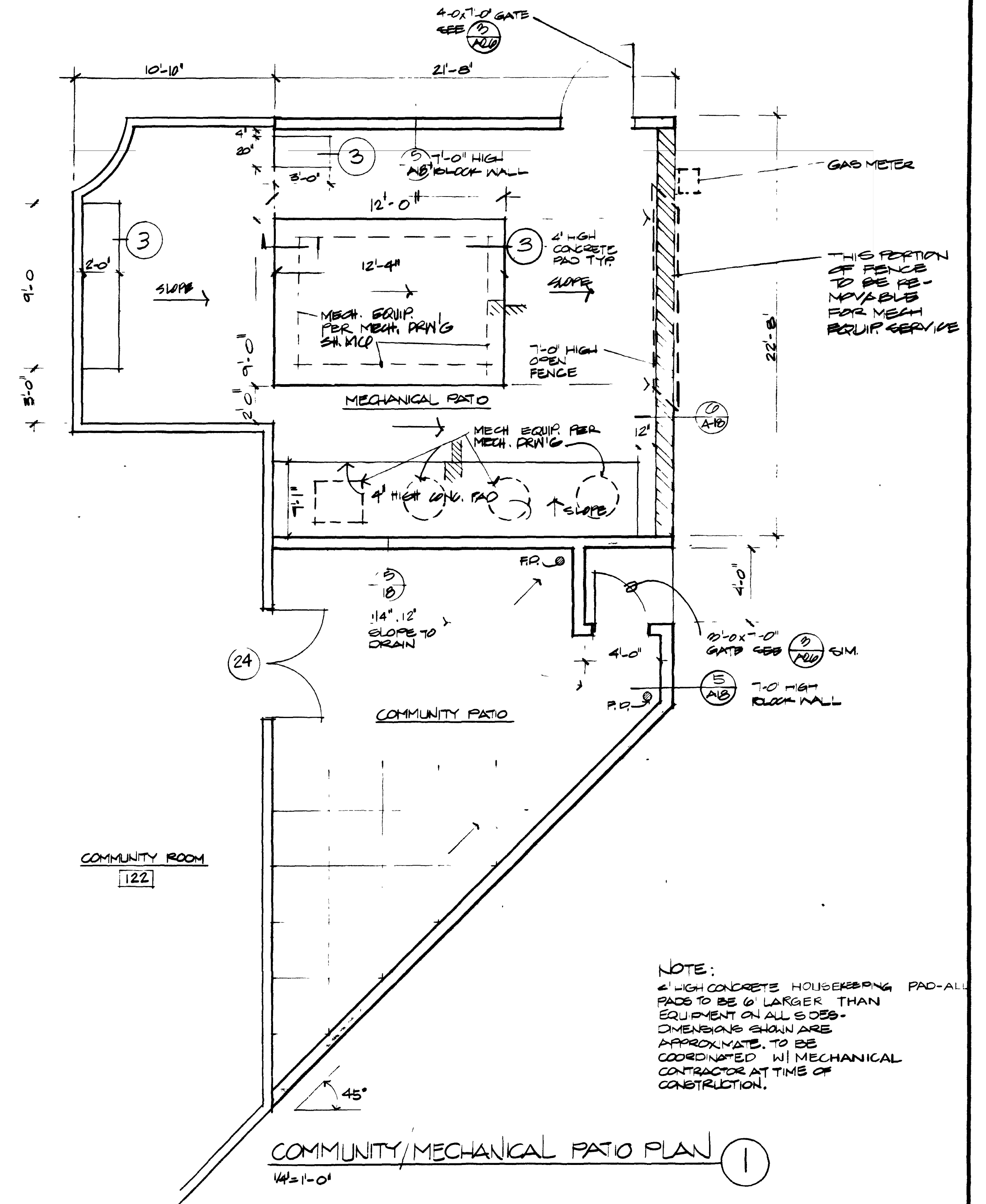
DETAILS AT TRELLIS



SECTION  
3/4" = 1'-0" (B)

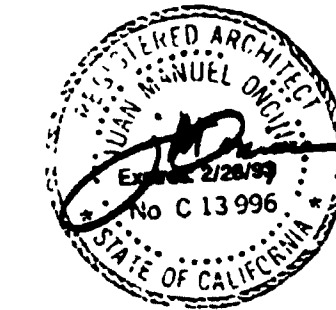


TYP. MECHANICAL PAD (3)



COMMUNITY/MECHANICAL PATIO PLAN (1)  
1/4" = 1'-0"

NOTE:  
4" HIGH CONCRETE HOUSEKEEPING PAD-ALL PADS TO BE 6" LARGER THAN EQUIPMENT ON ALL SIDES- DIMENSIONS SHOWN ARE APPROXIMATE, TO BE COORDINATED W/ MECHANICAL CONTRACTOR AT TIME OF CONSTRUCTION.

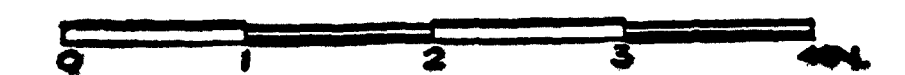


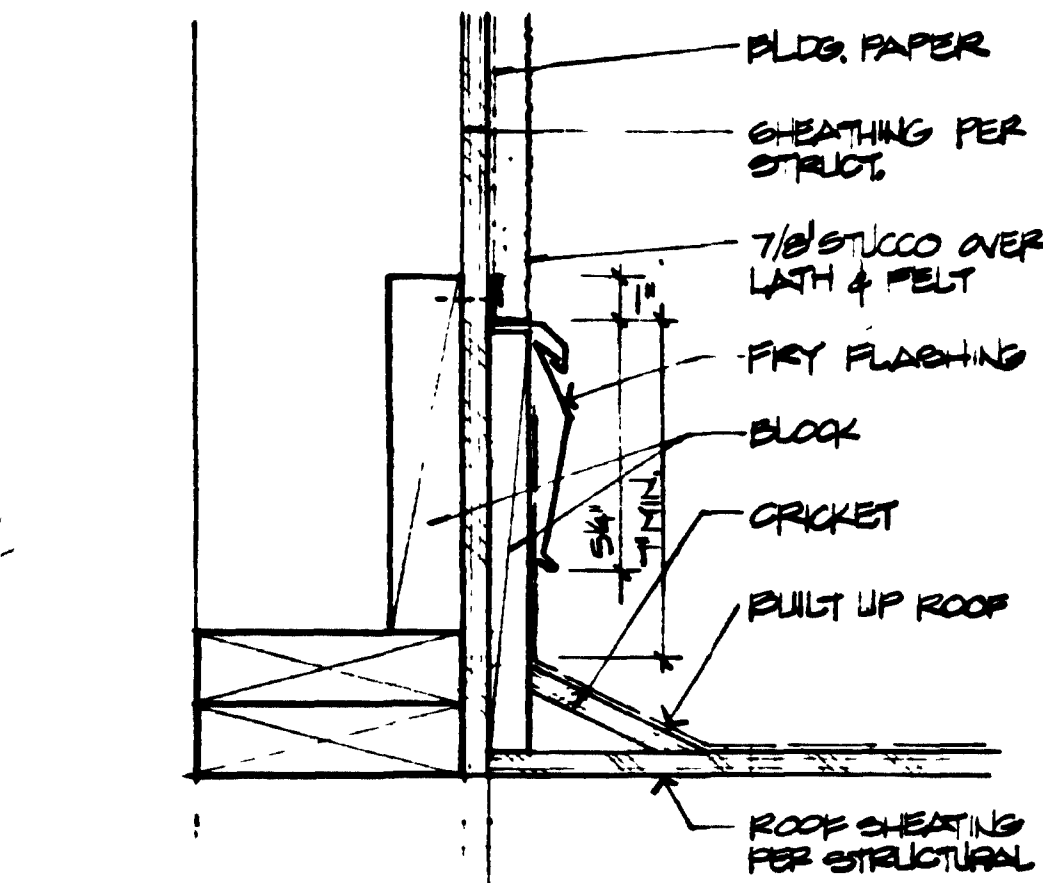
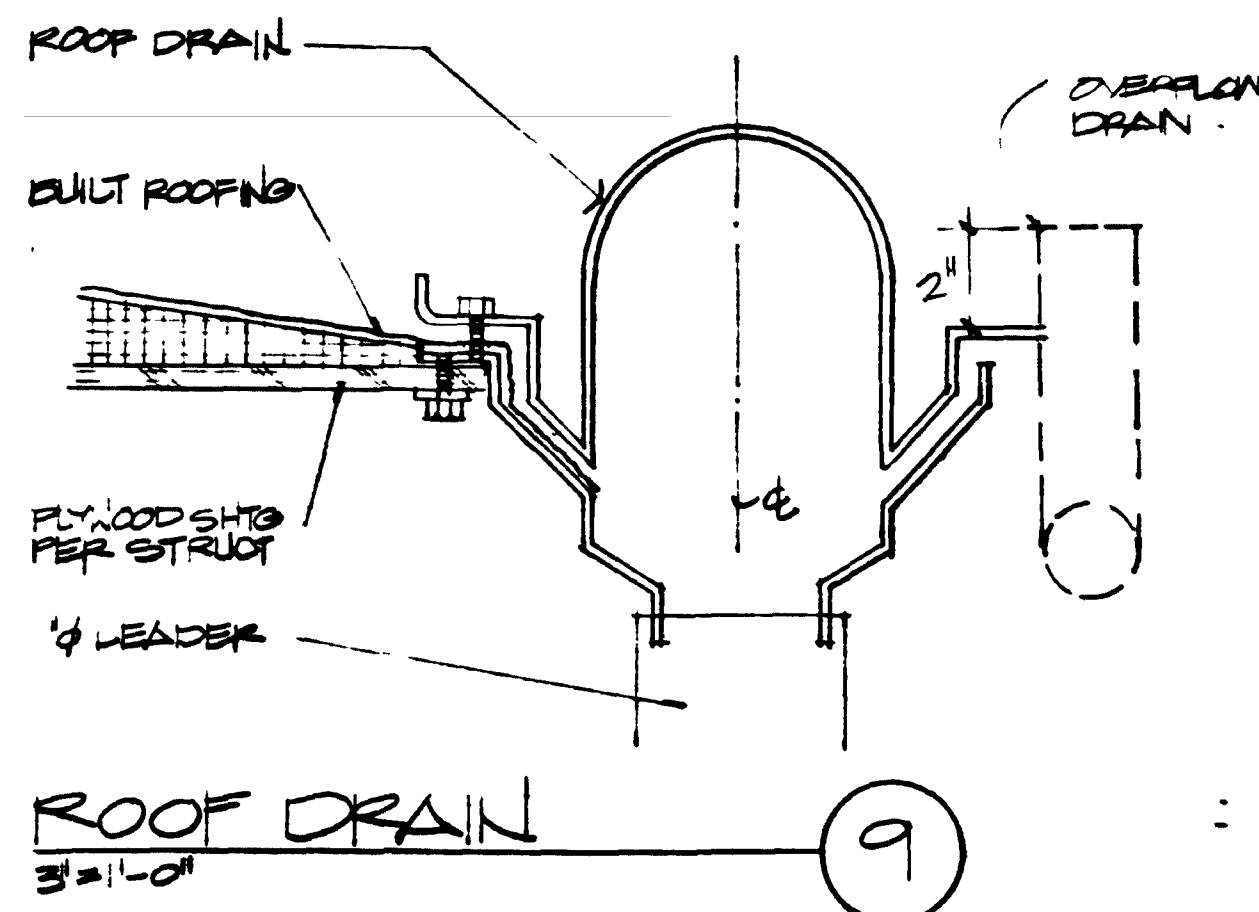
MANUEL ONOFRA, ARCHITECT

514 Pennsylvania Avenue  
San Diego, CA 92103  
(619) 295-3229 Fax 295-1014

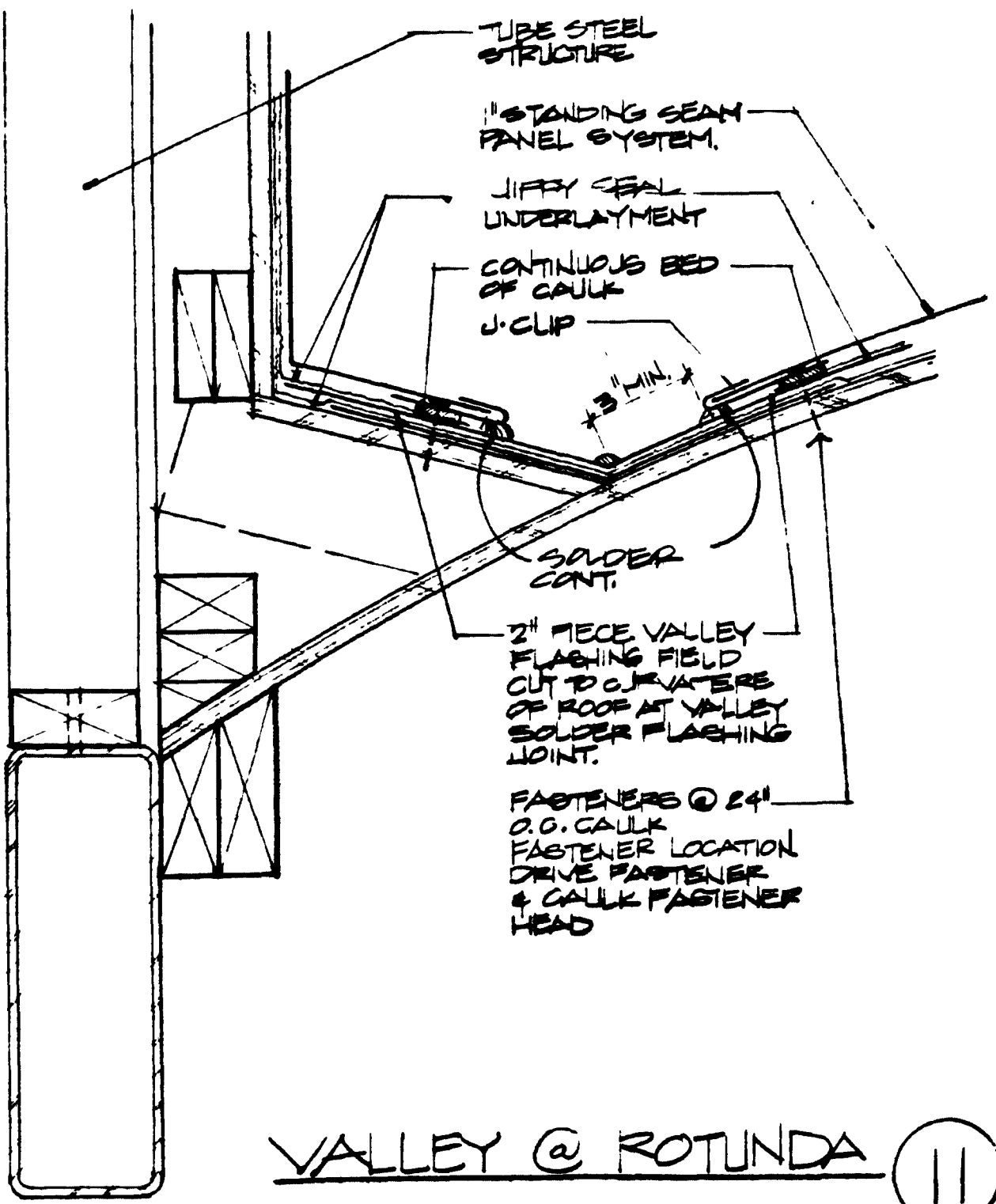
EARL & BIRDIE TAYLOR LIBRARY				W/O NO. 119418
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 24 OF 83 SHEETS				
CITY ENGINEER		DATE		DESIGN ENGINEER
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL				
CONTRACTOR				CONTROL CERTIFICATION
INSPECTOR				228-1692
DATE STARTED				LARGEST COORDINATOR
DATE COMPLETED				26189-24-D

TRELLIS DETAILS & COMMUNITY/MECHANICAL PATIO PLAN

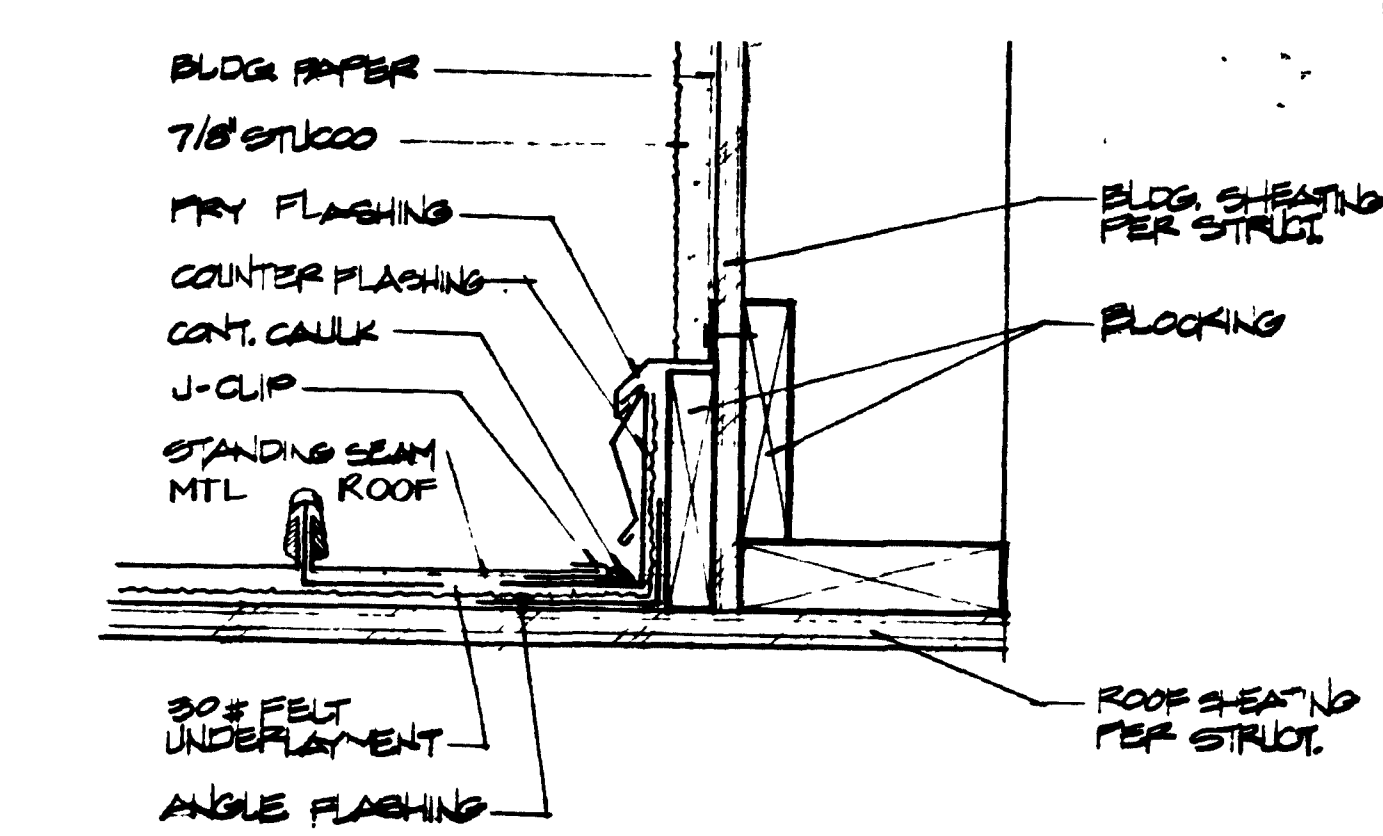
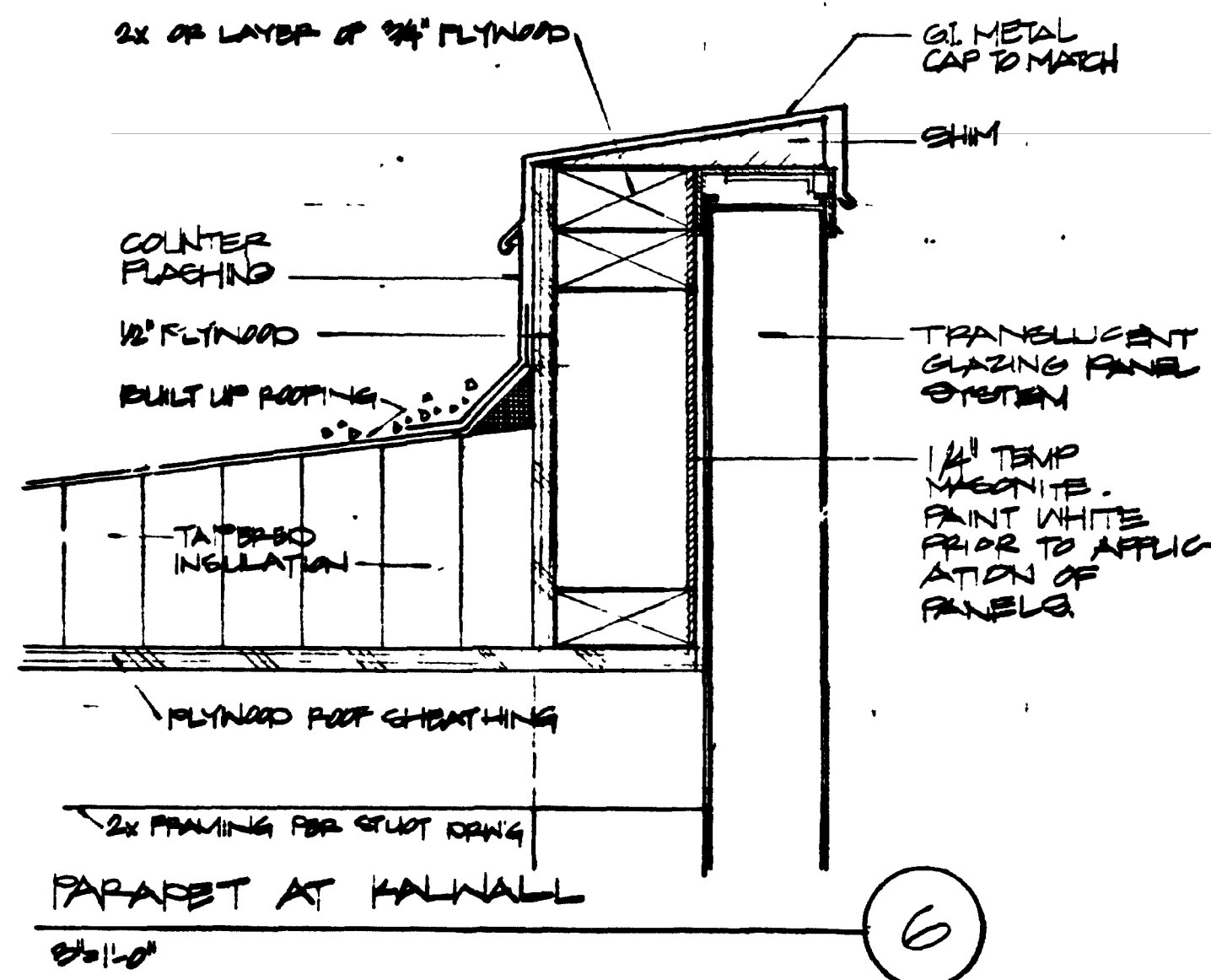




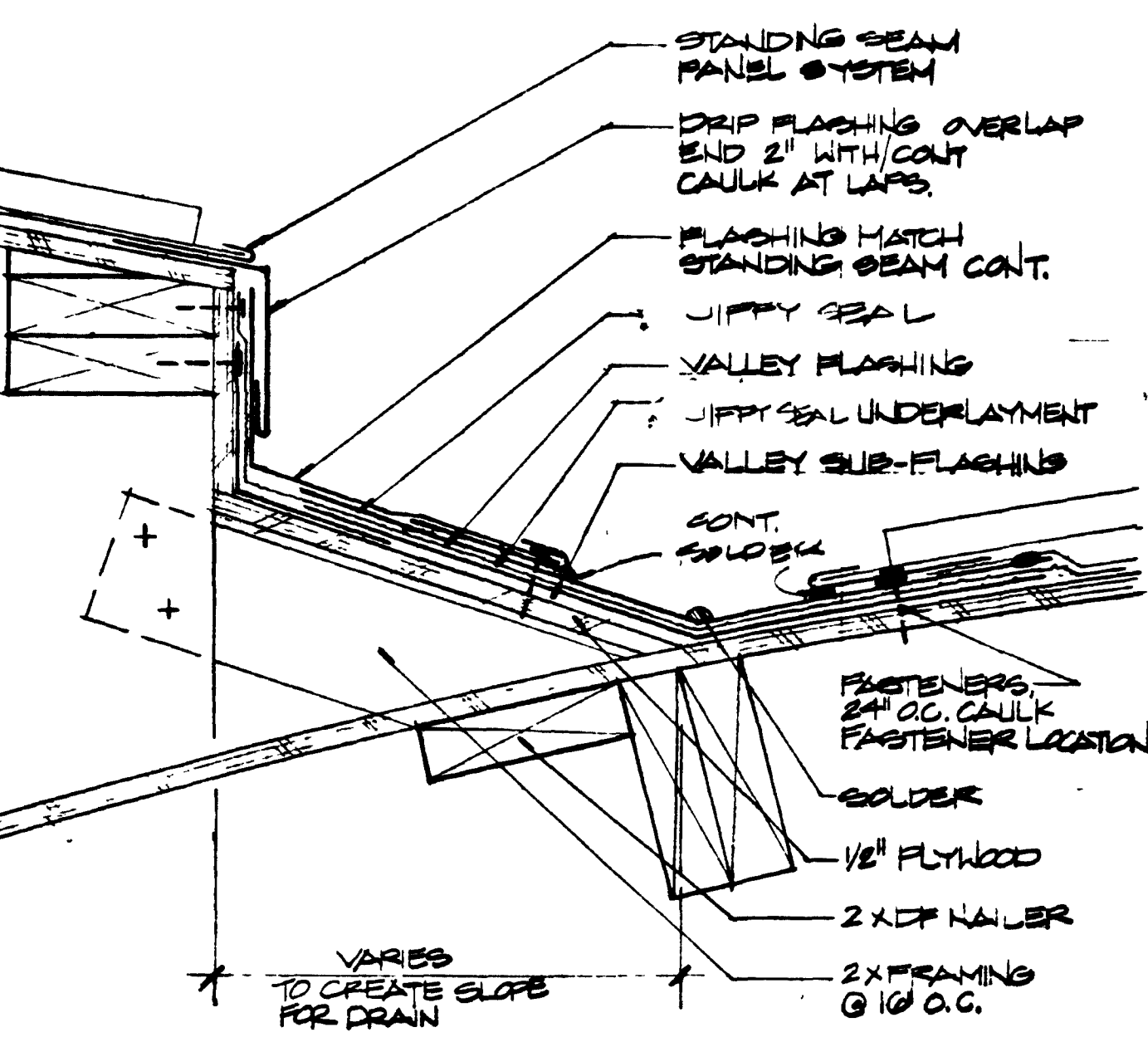
**BUILT UP ROOF AT STUCCO**  
3/8"=1'-0"



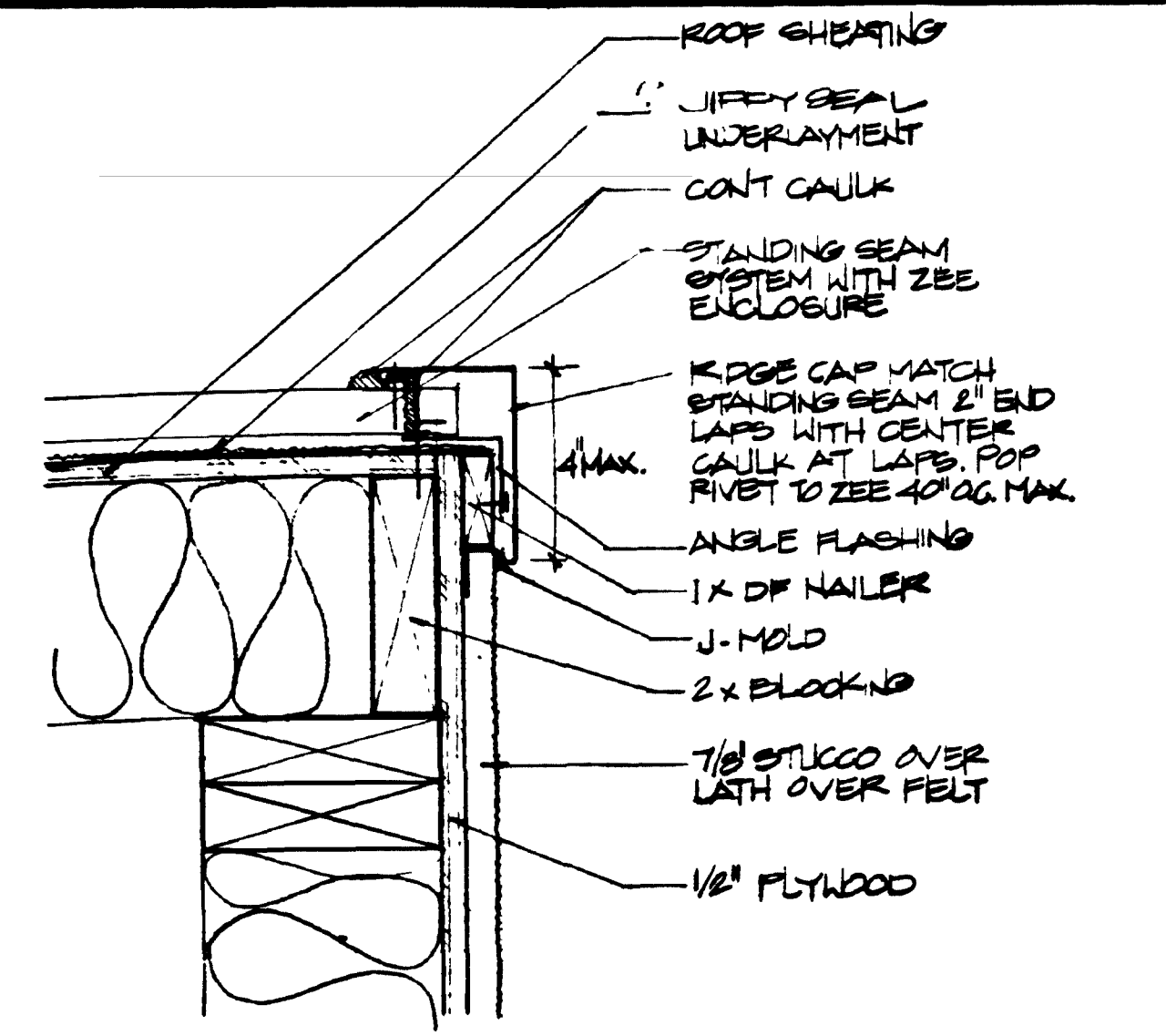
**VALLEY @ ROTUNDA**  
3/8"=1'-0"



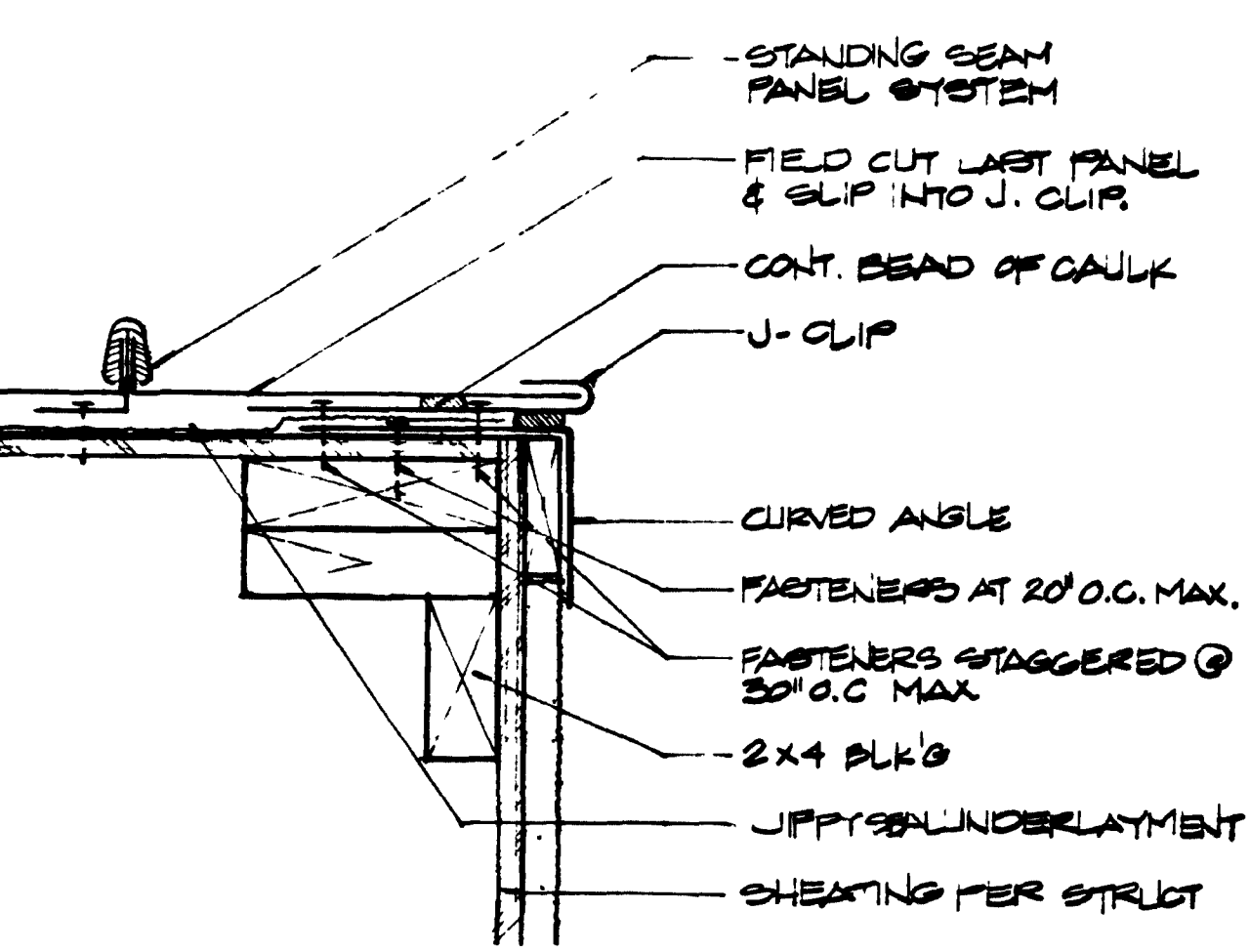
**RAKE WALL AT ROOF**  
3/8"=1'-0"



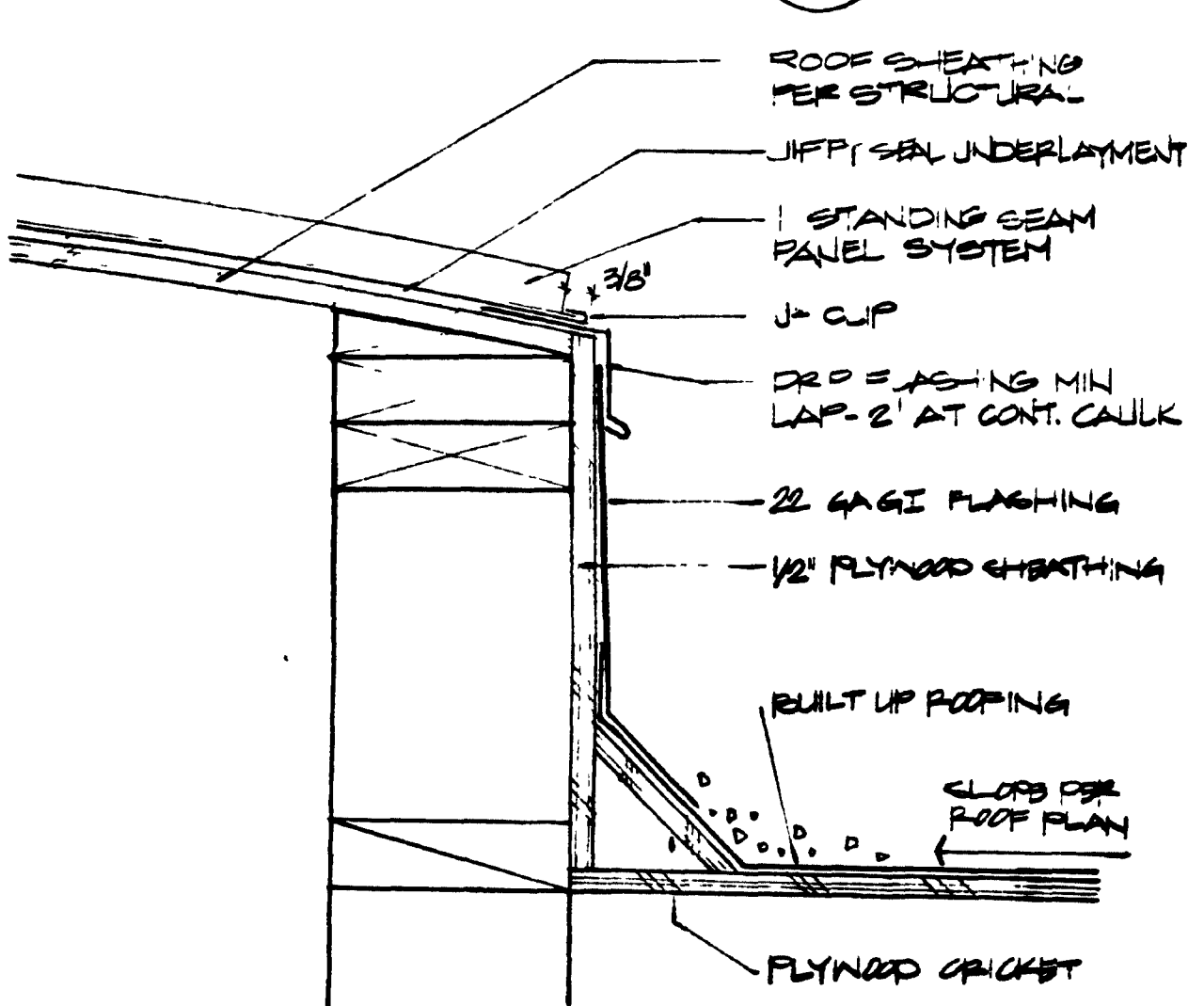
**VALLEY FLASHING AT STANDING SEAM ROOF**  
3/8"=1'-0"



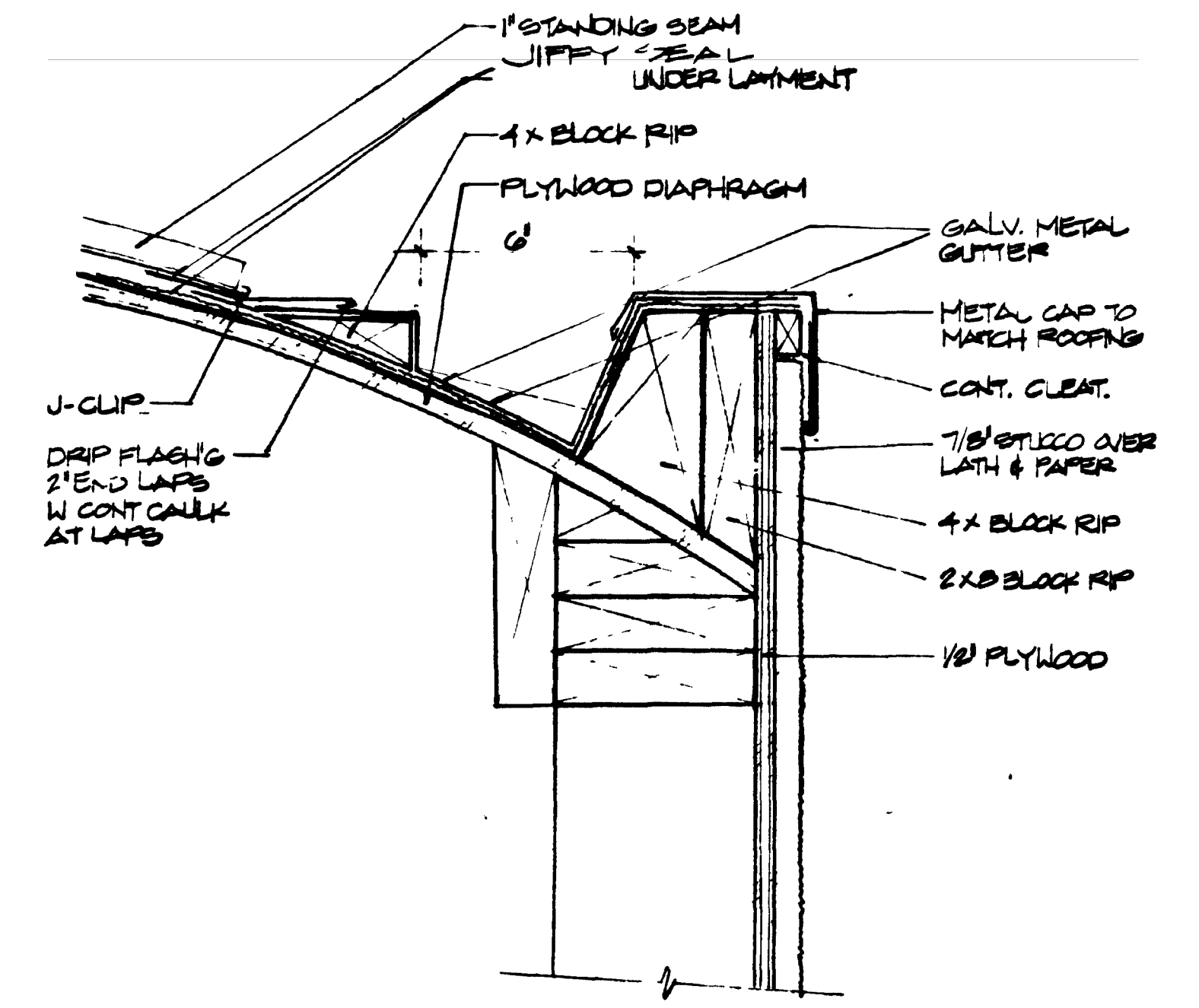
**CAP RIDGE TYP.**  
3/8"=1'-0"



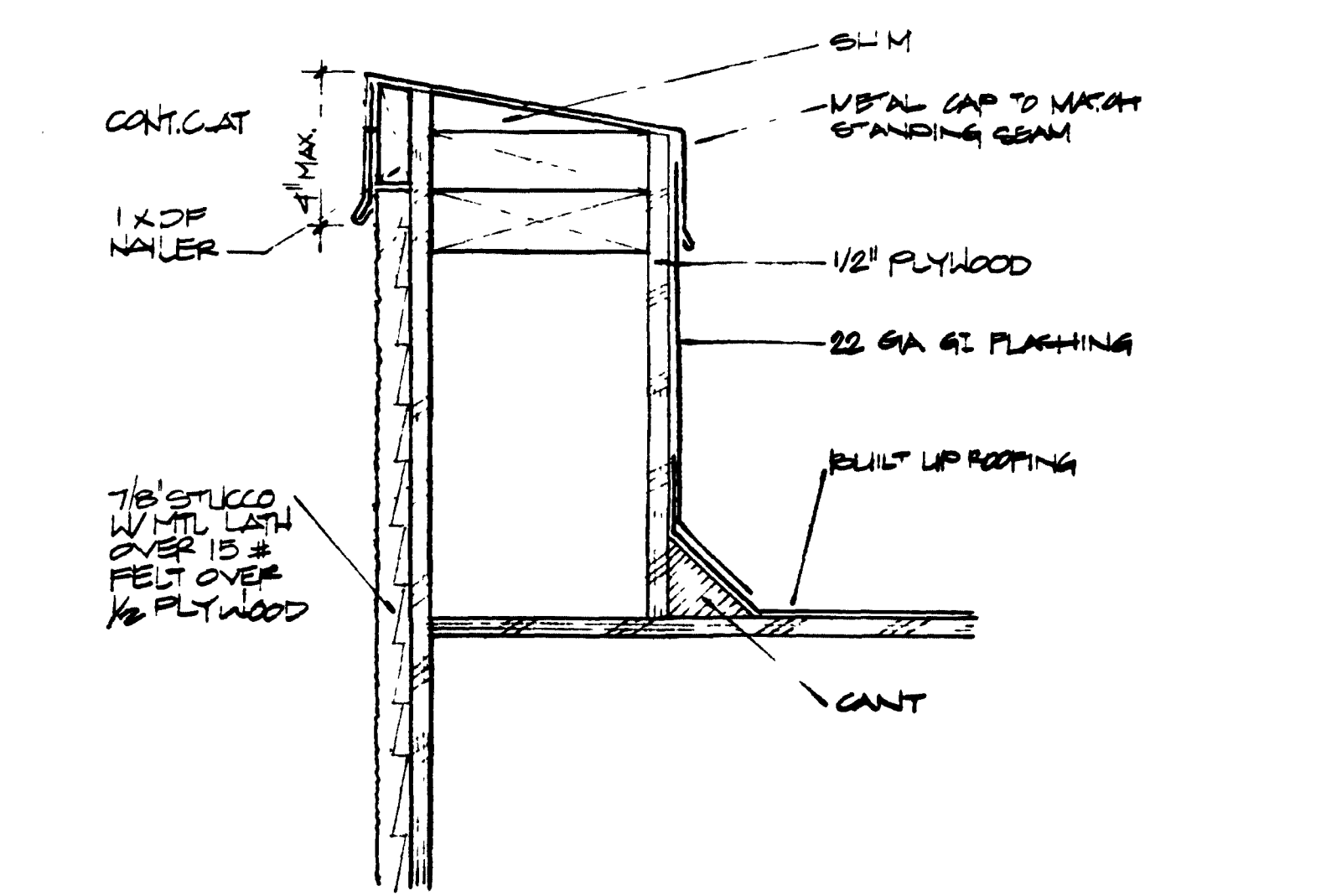
**CONVEX GABLE**  
3/8"=1'-0"



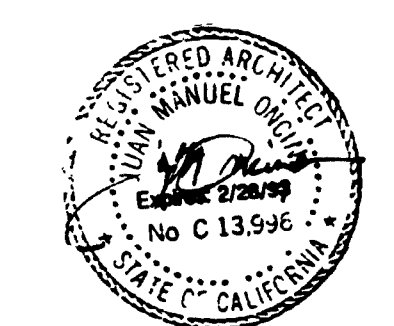
**OVER HANG AT ENTRY TO BUILT ROOF**  
3/8"=1'-0"



**GUTTER AT VAULTED ROOF**  
3/8"=1'-0"



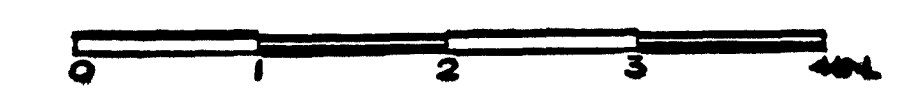
**PARAPET @ ENTRY - BUILT UP ROOF**  
3/8"=1'-0"



MANUEL ONOFRA, ARCHITECT

EARL & BRIDE TAYLOR LIBRARY					CITY OF SAN DIEGO, CALIFORNIA		ENGINEERING DEPARTMENT		SHEET 27 OF 23 SHEETS		W.D. NO. 119418	
DESCRIPTION	BY	APPROVED	DATE	FILMED								
ORIGINAL												
CONTRACTOR											DATE STARTED	
INSPECTOR											DATE COMPLETED	
											228-1692	
											26189-27-D	

ROOF DETAILS





**CERTIFICATE OF COMPLIANCE** Part 1 OF 2 ENV-1

PROJECT NAME: THE EARL AND BIRDIE TAYLOR LIBRARY DATE: 6-30-95  
 PROJECT ADDRESS: 4275 CASS AVE, SAN DIEGO, CA  
 PRINCIPAL DESIGNER-ENVELOPE: MANUEL ONCINA TELEPHONE: 735-3929  
 DOCUMENTATION AUTHOR: CURTIS DEAN TELEPHONE: 291-8411

BUILDING CONDITIONED FLOOR AREA: 11652 CLIMATE ZONE: 7

DATE OF PLANS: 6-15-95

BUILDING TYPE:  NONRESIDENTIAL  HIGH RISE RESIDENTIAL  HOTEL/MOTEL GUEST ROOM

PHASE OF CONSTRUCTION:  NEW CONSTRUCTION  ADDITION  ALTERATION  UNCONDITIONED (File Afterload)

METHOD OF ENVELOPE COMPLIANCE:  COMPONENT  OVERALL ENVELOPE  PERFORMANCE

STATEMENT OF COMPLIANCE: This Certificate of Compliance lists the building features and performance specifications needed to comply with Title 24, Parts 1 and 8 of the California Code of Regulations. This certificate applies only to building envelope requirements.

The Principal Envelope Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building has been designed to meet the envelope requirements contained in sections 110.116 through 118, and 143 or 149 of Title 24, Part 6, Chapter 1.

Please check one:  
 I hereby affirm that I am eligible under the Provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am a civil engineer or architect.  
 I affirm that I am eligible under the exemption to division 3 of the Business and Professions Code by Section 5637.2 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am a licensed contractor preparing documents for work that I have contracted to perform.  
 I affirm that I am eligible under the exemption to division 3 of the Business and Professions Code by section \_\_\_\_\_ of the \_\_\_\_\_ Code to sign this document as the person responsible for its preparation; and for the following reason: \_\_\_\_\_

PRINCIPAL ENVELOPE DESIGNER-NAME: MANUEL ONCINA SIGNATURE: [Signature] LIC. NO.: DATE: 6/30/95

ENVELOPE MANDATORY MEASURES: Indicate location on plans of Note Block for Mandatory Measures: SHEET M-1

INSTRUCTIONS TO APPLICANT: For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential manual published by the California Energy Commission.

ENV-1 Required on plans for all submittals. Part 2 may be incorporated in schedules on plans.  
 ENV-2 Used for all submittals, choose appropriate version depending on method of envelope compliance.  
 ENV-3 Optional. Use if default U-values are not used. Choose appropriate version for assembly U-value to be calculated.

Nonresidential Compliance Form December 1997

**CERTIFICATE OF COMPLIANCE** Part 2 OF 2 ENV-1

PROJECT NAME: THE EARL AND BIRDIE TAYLOR LIBRARY DATE: 6-30-95

OPaque ENVELOPE

ASSEMBLY NAME (eg. Wall-1, Floor-1)	INSULATION R-VALUE (eg. R-19, R-22, etc.)	CONSTRUCTION TYPE (eg. Wood, Steel, Mason)	LOCATION/COMMENTS (eg. Suspended Ceiling, Ductwork, etc.)	NOTE TO FIELD
WALL-1	R-19	WOOD	WALLS	
ROOF-1	R-19	WOOD	ROOF	

WINDOW TABLE

WINDOW NAME (eg. Window-1)	NO. OF PANE	FRAME TYPE (eg. Wood, Metal, etc.)	EXTERIOR SURF.	OVERHANG CREDIT	GLAZING TYPE (eg. Clear, Tinted)	NOTE TO FIELD
H-WINDOW-1	2	METAL	NO	NO	TINTED	
S-WINDOW-1	2	METAL	NO	NO	TINTED	
E-WINDOW-1	2	METAL	NO	NO	TINTED	
W-WINDOW-1	2	METAL	NO	NO	TINTED	
N-WINDOW-2	2	METAL	NO	NO	TINTED	

SKYLIGHT TABLE

SKYLIGHT NAME (eg. Sky-1)	NO. OF PANE	FRAME TYPE (eg. Wood, Metal, etc.)	SKYLIGHT MATERIAL (eg. Glass, Plastic, etc.)	GLAZING TYPE (eg. Clear, etc.)	NOTE TO FIELD
N/A					

MECHANICAL MANDATORY MEASURES: Indicate location on plans of Note Block for Mandatory Measures: SHEET M-1

INSTRUCTIONS TO APPLICANT: For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential manual published by the California Energy Commission.

MECH-1 Required on plans for all submittals. Parts 2 & 3 may be incorporated in schedules on plans.  
 MECH-2 Required for all submittals, choose appropriate version depending on method of mechanical compliance.  
 MECH-3 and MECH-4 Required for all submittals.

Nonresidential Compliance Form December 1997

**CERTIFICATE OF COMPLIANCE** Part 1 OF 3 MECH-1

PROJECT NAME: THE EARL AND BIRDIE TAYLOR LIBRARY DATE: 6-30-95

PRINCIPAL DESIGNER-MECHANICAL: MARK R. BENDER TELEPHONE: (619) 291-8411

DATE OF PLANS: 6-15-95 BUILDING CONDITIONED FLOOR AREA: 11652 CLIMATE ZONE: 7

BUILDING TYPE:  NONRESIDENTIAL  HIGH RISE RESIDENTIAL  HOTEL/MOTEL GUEST ROOM

PHASE OF CONSTRUCTION:  NEW CONSTRUCTION  ADDITION  ALTERATION

METHOD OF MECHANICAL COMPLIANCE:  PREScriptive  PERFORMANCE

PROOF OF ENVELOPE COMPLIANCE:  PREVIOUS ENVELOPE PERMIT  ENVELOPE COMPLIANCE ATTACHED

STATEMENT OF COMPLIANCE: This Certificate of Compliance lists the building features and performance specifications needed to comply with Title 24, Parts 1 and 8 of the California Code of Regulations. This certificate applies only to building mechanical requirements.

The Principal Mechanical Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building has been designed to meet the mechanical requirements contained in sections 110 through 118, 120 through 124, 140 through 142, 144 and 145.

Please check one:  
 I hereby affirm that I am eligible under the Provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am a civil engineer, mechanical engineer, or architect.  
 I affirm that I am eligible under the exemption to division 3 of the Business and Professions Code by Section 5637.2 of the Business and Professions Code to sign this document as the person responsible for its preparation; and that I am a licensed contractor preparing documents for work that I have contracted to perform.  
 I affirm that I am eligible under the exemption to division 3 of the Business and Professions Code by section \_\_\_\_\_ of the \_\_\_\_\_ Code to sign this document as the person responsible for its preparation; and for the following reason: \_\_\_\_\_

PRINCIPAL MECHANICAL DESIGNER-NAME: MARK R. BENDER SIGNATURE: [Signature] LIC. NO.: 124209 DATE: 6/30/95

MECHANICAL MANDATORY MEASURES: Indicate location on plans of Note Block for Mandatory Measures: SHEET M-1

INSTRUCTIONS TO APPLICANT: For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential manual published by the California Energy Commission.

MECH-1 Required on plans for all submittals. Parts 2 & 3 may be incorporated in schedules on plans.  
 MECH-2 Required for all submittals, choose appropriate version depending on method of mechanical compliance.  
 MECH-3 and MECH-4 Required for all submittals.

Nonresidential Compliance Form December 1997

**CERTIFICATE OF COMPLIANCE** Part 2 OF 3 MECH-1

PROJECT NAME: THE EARL AND BIRDIE TAYLOR LIBRARY DATE: 6-30-95

MECHANICAL SYSTEMS

SYSTEM NAME	FC-1	FC-2/FC-4/FC-6	FC-1/FC-3/FC-10	NOTE TO FIELD
TIME CONTROL	S	S	S	
SETBACK CONTROL	B	B	B	
ISOLATION ZONES	NA	NA	NA	
HEAT PUMP THERMOSTAT	N	N	N	
ELECTRIC HEAT	N	N	N	
FAN CONTROL	NA	NA	NA	
VAV MINIMUM POSITION CONTROL?	NA	NA	NA	
SIMULTANEOUS HEAT/COOL?	N	N	N	
HEAT AND COOL SUPPLY RESET	NA	NA	NA	
VENTILATION	B	B	B	
OUTDOOR DAMPER CONTROL?	G	G	G	
ECONOMIZER TYPE	NA	NA	NA	
OUTDOOR AIR CFM	150	525/215/215	215/525/170	
HEATING EQUIP. TYPE HIGH EFFIC?	FAN COIL N	FAN COIL N	FAN COIL N	
MAKE AND MODEL NUMBER	MCQUAY SCB21	MCQUAY SCB16	MCQUAY SCB16	
COOLING EQUIP. TYPE HIGH EFFIC?	FAN COIL N	FAN COIL N	FAN COIL N	
MAKE AND MODEL NUMBER	MCQUAY SCB21	MCQUAY SCB16	MCQUAY SCB16	

CODE TABLES: Enter code from table below into columns above.

HEAT PUMP THERMOSTAT?	TIME CONTROL	SETBACK CONTR.	ISOLATION ZONES	FAN CONTROL
S: Prog. Switch E: Occupancy Sensor M: Manual Timer	H: Heating C: Cooling B: Both	Enter number of Isolation Zones.	Enter number of VAV Vents V: VFD C: Other	Enter Outdoor Air CFM Note: This shall be no less than Column 5 on MECH-4.

VENTILATION: A: Auto, B: Gravity, C: Outside Air Cont., D: Demand Control, E: Natural

OUTDOOR DAMPER: A: Auto, B: Gravity

ECONOMIZER: A: Air, B: Water, C: Not Required

MECH-1 Required on plans for all submittals. Parts 2 & 3 may be incorporated in schedules on plans.  
 MECH-2 Required for all submittals, choose appropriate version depending on method of mechanical compliance.  
 MECH-3 and MECH-4 Required for all submittals.

Nonresidential Compliance Form December 1997

**CERTIFICATE OF COMPLIANCE** Part 2 OF 3 MECH-1

PROJECT NAME: THE EARL AND BIRDIE TAYLOR LIBRARY DATE: 6-30-95

MECHANICAL SYSTEMS

SYSTEM NAME	FC-3	FC-5/FC-8	FC-1/FC-2/FC-13	NOTE TO FIELD
TIME CONTROL	S	S	S	
SETBACK CONTROL	B	B	B	
ISOLATION ZONES	NA	NA	NA	
HEAT PUMP THERMOSTAT	N	N	N	
ELECTRIC HEAT	N	N	N	
FAN CONTROL	NA	NA	NA	
VAV MINIMUM POSITION CONTROL?	NA	NA	NA	
SIMULTANEOUS HEAT/COOL?	N	N	N	
HEAT AND COOL SUPPLY RESET	NA	NA	NA	
VENTILATION	B	B	B	
OUTDOOR DAMPER CONTROL?	G	G	G	
ECONOMIZER TYPE	NA	NA	NA	
OUTDOOR AIR CFM	115	300/675	260/675/675	
HEATING EQUIP. TYPE HIGH EFFIC?	FAN COIL N	FAN COIL N	HEAT PUMP N	
MAKE AND MODEL NUMBER	MCQUAY SCB21	MCQUAY SCB30	BUHAE8/PBY04G	
COOLING EQUIP. TYPE HIGH EFFIC?	FAN COIL N	FAN COIL N	HEAT PUMP N	
MAKE AND MODEL NUMBER	MCQUAY SCB21	MCQUAY SCB30	BUHAE8/PBY04G	

CODE TABLES: Enter code from table below into columns above.

HEAT PUMP THERMOSTAT?	TIME CONTROL	SETBACK CONTR.	ISOLATION ZONES	FAN CONTROL
S: Prog. Switch E: Occupancy Sensor M: Manual Timer	H: Heating C: Cooling B: Both	Enter number of Isolation Zones.	Enter number of VAV Vents V: VFD C: Other	Enter Outdoor Air CFM Note: This shall be no less than Column 5 on MECH-4.

VENTILATION: A: Air, B: Gravity, C: Outside Air Cont., D: Demand Control, E: Natural

OUTDOOR DAMPER: A: Auto, B: Gravity

ECONOMIZER: A: Air, B: Water, C: Not Required

MECH-1 Required on plans for all submittals. Parts 2 & 3 may be incorporated in schedules on plans.  
 MECH-2 Required for all submittals, choose appropriate version depending on method of mechanical compliance.  
 MECH-3 and MECH-4 Required for all submittals.

Nonresidential Compliance Form December 1997

**CERTIFICATE OF COMPLIANCE** Part 3 OF 3 MECH-1

PROJECT NAME: THE EARL AND BIRDIE TAYLOR LIBRARY DATE: 6-30-95

DUCT INSULATION

SYSTEM NAME	DUCT TYPE (Supply Return, etc.)	DUCT LOCATION (Roof, Plenum, etc.)	DUCT TAPE ALLOWED? (Y/N)	DUCT INSULATION R-VALUE	NOTE TO FIELD
FC-1 THRU FC-13	SUP./RET.	PLENUM	<input checked="" type="checkbox"/>	50	

PIPE INSULATION

SYSTEM NAME	PIPE TYPE (Supply Return, etc.)	INSULATION REQUIRED (Y/N)	NOTE TO FIELD
HOT AND CHILLED WATER PIPING	SUPPLY / RETURN	<input checked="" type="checkbox"/>	

MECH-1 Required on plans for all submittals. Parts 2 & 3 may be incorporated in schedules on plans.  
 MECH-2 Required for all submittals, choose appropriate version depending on method of mechanical compliance.  
 MECH-3 and MECH-4 Required for all submittals.

Nonresidential Compliance Form December 1997

- EQUIPMENT AND SYSTEMS EFFICIENCY
  - ANY APPLIANCE FOR WHICH THERE IS A CALIFORNIA STANDARD ESTABLISHED IN THE APPLIANCE EFFICIENCY STANDARDS MAY BE INSTALLED ONLY IF THE MANUFACTURER HAS CERTIFIED TO THE COMMISSION, AS SPECIFIED IN THOSE REGULATIONS, THAT THE APPLIANCE COMPLIES WITH THE APPLICABLE STANDARD FOR THAT APPLIANCE. INCLUDED ARE ROOM AIR CONDITIONERS, CENTRAL AIR CONDITIONING HEAT PUMPS (REGARDLESS OF CAPACITY, EXCEPT THAT REQUIREMENTS FOR CENTRAL AIR CONDITIONING HEAT PUMPS WITH COOLING CAPACITY OF 135,000 BTU/HR OR MORE APPLY TO HEATING PERFORMANCE BUT NOT COOLING PERFORMANCE), OTHER CENTRAL AIR CONDITIONERS WITH A COOLING CAPACITY LESS THAN 135,000 BTU/HR, FAN TYPE CENTRAL FURNACES WITH INPUT RATE LESS THAN 400,000 BTU/HR, BOILERS, WALL FURNACES, FLOOR FURNACES, ROOM HEATERS, UNIT HEATERS, AND DUCT FURNACES SHALL HAVE BEEN CERTIFIED TO THE CALIFORNIA ENERGY COMMISSION BY ITS MANUFACTURER TO COMPLY WITH THE APPLIANCE EFFICIENCY STANDARDS.
  - PIPING, EXCEPT THOSE CONVEYING FLUIDS AT TEMPERATURES BETWEEN 60 °F AND 105 °F, OR WITH HVAC EQUIPMENT, SHALL BE INSULATED IN ACCORDANCE WITH STANDARDS SECTION 123.
  - AIR HANDLING DUCT SYSTEMS SHALL BE CONSTRUCTED, INSTALLED, SEALED, AND INSULATED AS PROVIDED IN CHAPTER 10 OF THE UNIFORM MECHANICAL CODE.
- CONTROLS
  - EACH SPACE CONDITIONING SYSTEM SHALL BE INSTALLED WITH AN AUTOMATIC TIME SWITCH WITH AN ACCESSIBLE MANUAL OVERRIDE THAT ALLOWS OPERATION OF THE SYSTEM DURING OFF-HOURS FOR UP TO 4 HOURS. THE TIME SWITCH SHALL BE CAPABLE OF PROGRAMMING DIFFERENT SCHEDULES FOR WEEKDAYS AND WEEKENDS, INCORPORATE AN AUTOMATIC HOLIDAY "SHUT-OFF" FEATURE THAT TURNS OFF ALL LOADS FOR AT LEAST 24 HOURS, THEN RESUMES THE NORMALLY SCHEDULED OPERATION; AND HAS PROGRAM BACKUP CAPABILITIES THAT PREVENT THE LOSS OF THE DEVICE'S PROGRAM AND TIME SETTING FOR AT LEAST 10 HOURS IF POWER IS INTERRUPTED.
  - VENTILATION
    - CONTROLS SHALL BE PROVIDED TO ALLOW OUTSIDE AIR DAMPERS OR DEVICES TO BE OPERATED AT THE VENTILATION RATES AS SPECIFIED IN THESE PLANS.
    - GRAVITY OR AUTOMATIC DAMPERS INTERLOCKED AND CLOSED ON FAN SHUTDOWN SHALL BE PROVIDED ON THE OUTSIDE AIR INTAKES AND DISCHARGES OF ALL SPACE CONDITIONING AND EXHAUST SYSTEMS.

- ENERGY CONSERVATION NOTES
- INSULATION MATERIAL SHALL MEET THE CALIFORNIA QUALITY STANDARD PER SECTION 118 E.E.S
  - DOORS AND WINDOWS SHALL MEET THE MINIMUM INFILTRATION REQUIREMENTS PER SECTION 118 E.E.S.
  - ALL PIPING AND DUCTWORK SHALL BE INSULATED CONSISTENT WITH THE REQUIREMENTS OF SECTION 118, 123 AND 124 E.E.S. AND TABLE 10 D U.M.C.
  - ALL HVAC SYSTEMS SHALL MEET THE CONTROL REQUIREMENTS PER SECTIONS 112 AND 122 E.E.S.
  - ALL HVAC EQUIPMENT AND APPLIANCES SHALL MEET THE REQUIREMENTS PER SECTIONS 111-113, 115 AND 120-129 E.E.S
  - PROVIDE SMOKE DETECTORS AT HVAC EQUIPMENT EXCEEDING 2000 CFM
  - LAVATORY FAUCETS IN RESTROOMS SHALL BE THE SELF CLOSING TYPE
  - PROVIDE VACUUM BREAKERS AT HOSE BIBBS.
  - FAUCETS TO BE 2.2 GPM MAX.
  - URINALS TO BE 1.0 GPF MAX.
  - PROVIDE ULTRA LOW FLUSH TOILETS.
  - WHERE PLUMBING PENETRATES THE AREA SEPARATION WALL SURFACE, THE SECTION PASSING THROUGH THE WALL SURFACE, AND THE FIXTURE CONNECTIONS ATTACHED THERETO, SHALL BE ONLY OF METAL.
  - NO RANGE HOOD VENTS, DRYER VENTS, COMBUSTION VENTS OR HEATING DUCTS ARE PERMITTED IN AREA SEPARATION WALLS
  - WATER HEATER / BOILER WILL COMPLY WITH SECTION 1007(C) U.P.C. 91 FOR THERMAL EXPANSION REQUIREMENTS
  - LOCATE PERMANENT LADDER TO ROOF IN ELECTRICAL ROOM OR AS SHOWN ON PLANS.
  - IF SUBSTITUTE EQUIPMENT IS USED, CONTRACTOR'S SUBMITTALS SHALL CONTAIN A COPY OF THE ENERGY COMPLIANCE CERTIFICATION, OR THE MANUFACTURER'S PUBLISHED DATA CLEARLY SHOWING THE SUBMITTED ITEM IS AS EFFICIENT AS THAT USED IN THE DESIGN.
  - SHOULD CONTRACTOR PROPOSE AND/OR INSTALL ALTERNATIVE EQUIPMENT OR SYSTEMS, IT WILL BE HIS RESPONSIBILITY TO SECURE APPROVALS OF ALL REVIEWING AGENCIES AS REGARDS TO PLAN CHECK, CODE COMPLIANCE AND TITLE 24 COMPLIANCE.
  - A MAINTENANCE LABEL SHALL BE AFFIXED TO MECHANICAL EQUIPMENT, AND A MAINTENANCE MANUAL SHALL BE PROVIDED FOR THE OWNER'S USE.



EARL & BIRDIE TAYLOR LIBRARY

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 49 OF 70 SHEETS

W.O. NO. 119418

DATE: 11/15/95

CONTRACTOR: [Signature] DATE STARTED: [Blank] DATE COMPLETED: [Blank]

228-1692

26189-49-D

TITLE 24 AND NOTES 26189-D M1

FILMED FROM BLACKLINE. QUALITY OBTAINABLE.

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MECHANICAL LEGEND		
SYMBOL	ABBREY.	DESCRIPTION
	10X4	NEW DUCTWORK (1ST NUMBER INDICATES SIDE SHOWN)
		ROUND ELBOW
	T.V.	SQUARE ELBOW WITH TURNING VANES
	M.V.D.	MANUAL VOLUME DAMPER
	B.D.D.	BACKDRAFT DAMPER
	F.D.	FIRE DAMPER
	F.C.	FLEXIBLE CONNECTION (DUCT)
		FLEXIBLE DUCTWORK
	S.A.	SUPPLY AIR DUCT
	RA/O.A.	RETURN AIR DUCT/OUTSIDE AIR DUCT
	E.A.	EXHAUST AIR DUCT
	C.D.	SQUARE CEILING DIFFUSER
	C.D.	ROUND CEILING DIFFUSER
	RR/R.G.	RETURN REGISTER/RETURN GRILLE
	ER/E.G.	EXHAUST REGISTER/EXHAUST GRILLE
	S.R.	SUPPLY REGISTER
	W.S.R.G.	WALL SUPPLY REGISTER/GRILLE
	W.R.R.G.	WALL RETURN REGISTER/GRILLE
	W.E.R.G.	WALL EXHAUST REGISTER/GRILLE
	T.G.-1	TRANSFER GRILLE (WALL)
		ROUND DUCT UP
		ROUND DUCT DOWN
		RECTANGULAR DUCT UP
		RECTANGULAR DUCT DOWN
		DUCT TRANSITION (RECTANGULAR OR ROUND)
		DUCT TRANSITION (RECTANGULAR TO ROUND)
	T'STAT	THERMOSTAT (NUMBER INDICATES UNIT SERVED)
	B.O.	BLOW-OFF
	B.F.W.	BOILER FEEDWATER
	C.F.	CHEMICAL FEED

MECHANICAL LEGEND		
SYMBOL	ABBREY.	DESCRIPTION
	CHWR	CHILLED WATER RETURN
	CHWS	CHILLED WATER SUPPLY
	C.D.	CONDENSATE DRAIN (A.C.)
	C.B.D.	CONTINUOUS BLOW DOWN
	HWR	HOT WATER RETURN
	HWS	HOT WATER SUPPLY
	B.V.	BALL VALVE
	BF.V.	BUTTERFLY VALVE
	CK.V.	CHECK VALVE
	C.V. (2W)	CONTROL VALVE (2-WAY)
	C.V. (3W)	CONTROL VALVE (3-WAY)
	GL.V.	GLOBE VALVE
	T.D.V.	TRIPLE DUTY VALVE
	DN.	DOWN OR DROP
	E.C.	EXPANSION COMPENSATOR (PIPE)
	F.C.	FLEXIBLE CONNECTION
	H.B.	HOSE BIBB
	P.G.	PRESSURE GAUGE
	UP	RISE OR RISER
	STR	STRAINER W/DRAIN VALVE
	S.D.	SUCTION DIFFUSER
	TH.	THERMOMETER
	T.W.	TEST WELL
	U.	UNION
		DUCT RISE
		DUCT DROP

MECHANICAL LEGEND		
SYMBOL	ABBREY.	DESCRIPTION
	A.A.F.	ABOVE FINISHED FLOOR
	ABV.	ABOVE
	A.C.	AIR CONDITIONING
	BEL.	BELOW
	B.O.D.	BOTTOM OF DUCT
	CLG.	CEILING
	CLR.	CLEAR
	CONC.	CONCRETE
	CONN.	CONNECT OR CONNECTION
	CONT.	CONTINUATION
	CONTR.	CONTRACTOR
	CFM.	CUBIC FEET PER MINUTE
	DPR.	DAMPEN
	DN.	DOWN
	EA.	EACH
	ELEV.	ELEVATION
	E.W.T.	ENTERING WATER TEMPERATURE
	EXH.	EXHAUST
	F.C.	FLEX CONNECTION
	FLR.	FLOOR
	G.P.M.	GALLONS PER MINUTE
	GALV.	GALVANIZED
	GA.	GAUGE
	HTG.	HEATING
	L.W.T.	LEAVING WATER TEMPERATURE
	LVR.	LOUVER
	MAX.	MAXIMUM
	MIN.	MINIMUM
	N.P.S.H.	NEW POSITIVE SUCTION HEAD
	O.A.	OUTSIDE AIR
	P.S.I.	POUNDS PER SQUARE INCH
	RET.	RETURN
	R.S.	REFRIGERANT SUCTION LINE
	RL.	REFRIGERANT LIQUID LINE
	S.P.	STATIC PRESSURE
	SP.D.	SPLITTER DAMPER
	SUP.	SUPPLY
	T.D.H.	TOTAL DISCHARGE HEAD
	TYP.	TYPICAL
	U.O.N.	UNLESS OTHERWISE NOTED
	VOL.	VOLUME
	W.P.D.	WATER PRESSURE DROP
	W.M.S.	WIRE MESH SCREEN

MANUEL ONCINA, ARCHITECT

514 Pennsylvania Avenue  
San Diego, CA 92103  
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CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 62 OF 13 SHEETS			W.O. NO. <b>119418</b>
DESCRIPTION		BY	APPROVED
ORIGINAL			
DATE STARTED			DATE COMPLETED
CONTRACTOR			INSPECTOR
228-1692			26189-50

MECHANICAL LEGEND

M2

### FAN COIL UNIT SCHEDULE

UNIT	CFM	O.A. CFM	TOTAL S.P.	EXT S.P.	RPM	BHP	COOLING COIL							HEATING COIL							ELECTRICAL		APPROX. WEIGHT (LBS.)	250 HZ SOUND POWER LEVEL	MANUFACTURER AND MODEL	REMARKS	
							MBH		EAT °F		LAT °F		ROWS	GPM	WATER PD	MBH	E.A.T. DB	L.A.T. DB	ROWS	GPM	WATER PD	MOTOR H.P.					VOLTS/PH
							TOTAL	SENS	DBF	WB°F	DBF	WB°F															
FC 1	850	150	1.12	0.60	1211	0.33	25.9	20.4	78.4	64.6	56.4	54.4	3	5.2	4.3	16.4	67.1	85.0	1	1.6	2.2	1/2	208/3+	240	64	MCQUAY SCB-121B	MANUFACTURER SUPPLIED 1" THICK DISPOSABLE FILTER
FC 2	1630	525	1.85	0.85	1511	0.99	53.1	43.4	79.0	65.0	54.7	54.2	6	10.6	8.2	36.8	64.1	85.0	1	3.6	2.1	1/2	208/3+	400	58	MCQUAY SCB-161B	MANUFACTURER SUPPLIED 1" THICK DISPOSABLE FILTER
FC 3	760	115	1.44	0.60	1327	0.35	24.7	20.2	78.8	64.7	54.2	53.8	6	5.0	5.3	14.6	67.2	85.0	1	1.5	1.0	1/2	208/3+	250	61	MCQUAY SCB-081B	MANUFACTURER SUPPLIED 1" THICK DISPOSABLE FILTER
FC 4	1150	215	1.44	0.67	1195	0.45	33.7	27.4	78.5	64.3	56.7	54.5	3	6.7	1.4	23.6	66.0	85.0	1	2.4	5.3	3/4	208/3+	385	58	MCQUAY SCB-161B	MANUFACTURER SUPPLIED 1" THICK DISPOSABLE FILTER
FC 5	2000	300	1.16	0.73	1062	0.80	58.5	45.7	77.1	64.1	56.2	54.3	3	11.7	1.3	38.4	67.2	85.0	1	3.8	6.7	1	208/3+	640	66	MCQUAY SCB-301B	MANUFACTURER SUPPLIED 1" THICK DISPOSABLE FILTER
FC 6	1450	215	1.54	0.72	1380	0.74	44.4	36.7	77.1	63.9	53.9	53.5	6	8.9	6.0	27.7	67.3	85.0	1	2.7	3.8	1	208/3+	400	58	MCQUAY SCB-161B	MANUFACTURER SUPPLIED 1" THICK DISPOSABLE FILTER
FC 7	1450	215	1.54	0.72	1380	0.74	44.4	36.7	77.1	63.9	53.9	53.5	6	8.9	6.0	27.7	67.3	85.0	1	2.7	3.8	1	208/3+	400	58	MCQUAY SCB-161B	MANUFACTURER SUPPLIED 1" THICK DISPOSABLE FILTER
FC 8	2500	675	1.45	0.71	1175	1.17	84.9	62.5	77.0	64.4	54.1	52.9	6	17.0	2.0	50.4	66.2	85.0	1	5.0	8.3	1/2	208/3+	685	66	MCQUAY SCB-301B	MANUFACTURER SUPPLIED 1" THICK DISPOSABLE FILTER
FC 9	1530	525	1.67	0.76	1435	.84	55.4	44.3	81.0	66.0	54.5	54.1	6	11.1	8.9	38.8	61.5	85.0	1	3.8	1.9	1	208/3+	400	58	MCQUAY SCB-161B	MANUFACTURER SUPPLIED 1" THICK DISPOSABLE FILTER
FC 10	1140	170	1.15	0.69	1201	0.45	34.5	27.4	78.8	64.7	56.8	54.6	3	6.9	1.5	21.9	67.2	85.0	1	2.2	2.0	3/4	208/3+	385	58	MCQUAY SCB-161B	MANUFACTURER SUPPLIED 1" THICK DISPOSABLE FILTER

CHILLED WATER EWT 45°F LWT 55°F HOT WATER EWT 180°F LWT 160°F

### SPLIT SYSTEM SCHEDULE

MARK	CFM	O.A. CFM	EXT. S.P.	COOLING				HEATING				SEER	HSPF	FAN COIL				HEAT PUMP				MANUFACTURER AND MODEL
				MBH		EAT		TOTAL	DB	TOTAL	DB			MOTOR H.P.	MOTOR VOLTS/PH	WEIGHT (LBS.)	COMP. RLA	FAN FLA	VOLTS/PH	MIN. CIRCUIT AMPS	WEIGHT (LBS.)	
				TOTAL	SENSIBLE	DB	WB															
FC 11 HP 1	1300	260	0.50	39.1	30.0	78.2	64.3	40.0	67.1	10.05	12	1/2	208/230 1φ	180	17.1	2.3	208/230 1φ	23.7	220	COMFORT MAKER F.C. BUHA48G HP FBY042G		
FC 12 HP 2	1400	675	0.40	44.4	31.8	81.5	67.6	47.0	58.5	10.05	12	3/4	208/230 1φ	180	21.8	2.3	208/230 1φ	28.5	245	COMFORT MAKER F.C. BUHA48G HP FBY048G		
FC 13 HP 3	1400	675	0.40	44.4	31.8	81.5	67.1	47.0	58.5	10.05	12	3/4	208/230 1φ	180	21.8	2.3	208/230 1φ	28.5	245	COMFORT MAKER F.C. BUHA48G HP FBY048G		

AMBIANT AIR TEMPERATURE 80°F SUMMER & 38°F WINTER. EACH EVAPORATOR COIL SHALL BE EQUIPPED WITH A THERMOSTATIC EXPANSION VALVE METERING DEVICE

### FAN SCHEDULE

MARK	SERVICE	TYPE	CFM	S.P.	RPM	BHP	HP	VOLTS/PH	SONES	WEIGHT	MANUFACTURER & MODEL NO.	REMARKS
EF 1	WOMENS RESTROOM	CEILING MOUNTED	392	0.375	1070	—	224 WATTS	120 V. 1φ	5.4	31	GREENHECK SP-152	MANUFACTURER EQUIPPED BACKDRAFT DAMPER
EF 2	MENS RESTROOM	CEILING MOUNTED	392	0.375	1070	—	224 WATTS	120 V. 1φ	5.4	31	GREENHECK SP-152	MANUFACTURER EQUIPPED BACKDRAFT DAMPER
EF 3	STAFF RESTROOM	CEILING MOUNTED	81	0.150	1070	—	41 WATTS	120 V. 1φ	1.20	15	GREENHECK SP-15	MANUFACTURER EQUIPPED BACKDRAFT DAMPER
EF 4	COMMUNITY ROOM	IN-LINE	300	.50	1150	.17	1/4	120 V. 1φ	8.3	95	GREENHECK B8Q-120	MANUFACTURER SUPPLIED DISCONNECT & BACKDRAFT DAMPER & VIBRATION ISOLATORS



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DATE	BY	APPROVED	DATE	FILED	
228-1692				26188-51 -D	

EQUIPMENT SCHEDULES

M3

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QUALITY GUARANTEED

### AIR COOLED CHILLER SCHEDULE

MARK	SERVICE	TONS OF CAPACITY	AMB. TEMP.	UNIT KW	C.O.P.	EVAPORATOR						CONDENSER			MCA	VOLTS/PH	WEIGHT	MANUFACTURER & MODEL NO.
						GPM	EWT	LWT	FD FT. HD.	FOLING FACTOR	NO. OF FANS	HP	RLA					
CH 1	CHILLED WATER COILS	39.58	95 F	51.1	2.11	95	55	45	4.6	0.005	4	1	4	196	208/3	4850	MCQUAY ALR-040-D	

### BOILER SCHEDULE

MARK	SERVICE	CAPACITY (MBH)		EWT F	LWT F	GPM	PRESS DROP FT. HD.	WEIGHT	MANUFACTURER & MODEL NO.	REMARKS
		INPUT	OUTPUT							
B 1	HEATING HOT WATER COILS	325	263	180	162.5	30	3.4	492	TELEDYNE LAARS HH325	

### PUMP SCHEDULE

MARK	SERVICE	TYPE	GPM	T.D.H.	% EFF	RPM	BHP	HP	VOLTS/PH	WEIGHT	MANUFACTURER & MODEL NO.	REMARKS
F 1	COOLING CHILLED WATER	FLOOR MOUNTED	95	91	60.6	1750	3.84	7½	208/3	234	BELL & GOSSETT 1510 1½ BC 2' X 1½' CONNECTIONS	
F 2	HEATING HOT WATER	INLINE	30	92	39.0	1750	1.83	5	208/3	200	BELL & GOSSETT SERIES 80 1½ X 1½ X 9½	

PUMPS SHALL BE EQUIPPED WITH U.S. UNIMOUNT 125 SERVICE FACTOR T.E.F.C. MOTORS

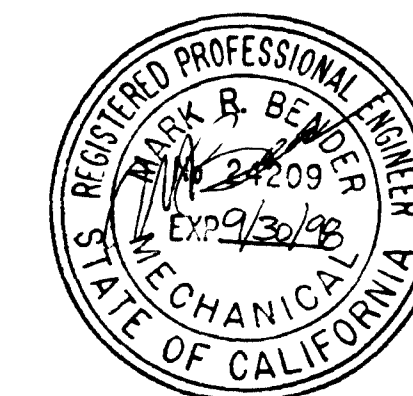
### SOUND ATTENUATOR SCHEDULE

MARK	CFM	VELOCITY	dB CLASS	AREA SQ. FT.	MAX. P.D. IN WG.	SOUND ATTENUATION IN OCTAVE BAND						SIZE H X W/DIA	WEIGHT (LBS)	MANUFACTURER & MODEL NO.	REMARKS
						125	250	500	1000	2000	4000				
SA 1	850	1075	17	0.79	0.02	14	22	35	43	42	30	12'*	90	RINK AX-B1236B	
SA 2	1630	815	13	2.0	0.11	7	11	15	15	12	10	12' X 24'	54	RINK B36	
SA 3	760	962	17	0.79	0.02	14	22	35	43	42	30	12'*	90	RINK AX-B1236B	
SA 4	1150	766	13	1.25	0.10	7	12	16	16	12	10	12' X 18'	43	RINK B36	
SA 5	2000	800	13	2.5	0.11	7	11	15	15	12	10	12' X 30'	65	RINK B36	
SA 6	1450	828	13	1.75	0.11	7	11	15	15	12	10	12' X 21'	49	RINK B36	
SA 7	1450	828	13	1.75	0.11	7	11	15	15	12	10	12' X 21'	49	RINK B36	
SA 8	2500	833	13	3.0	0.12	6	10	14	15	12	12	12' X 36'	76	RINK B36	
SA 9	1530	765	13	2.0	0.10	7	11	15	15	12	10	12' X 24'	54	RINK B36	
SA 10	1140	760	13	1.5	0.10	7	12	16	16	12	10	12' X 18'	43	RINK B36	

SOUND ATTENUATORS SHALL BE 3' IN LENGTH

### EQUIPMENT SCHEDULE

SYMBOL	DESCRIPTION
ET 1	EXPANSION TANK: BELL & GOSSETT 15 GAL. CAPACITY, GALVANIZED TANK 176 LBS. FOR CHILLED WATER SYSTEM
ET 2	EXPANSION TANK: BELL & GOSSETT, 15 GAL. CAPACITY, GALVANIZED TANK 176 LBS. FOR HEATING HOT WATER SYSTEM
AS 1	AIR SEPARATOR: BELL & GOSSETT MODEL RL-3, 190 GAL. CAPACITY 3" INLET AND OUTLET, 183 LBS. FOR CHILLED WATER SYSTEM
AS 2	AIR SEPARATOR: BELL & GOSSETT MODEL RL-3, 56 GAL. CAPACITY 2" INLET AND OUTLET, 71 LBS. FOR HOT WATER SYSTEM



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CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 52 OF 73 SHEETS		W.O. NO. 119418
DESIGNED BY	APPROVED DATE FILED	
CONTRACTOR	DATE STARTED	DATE COMPLETED
		228-1692
		26189-52-D

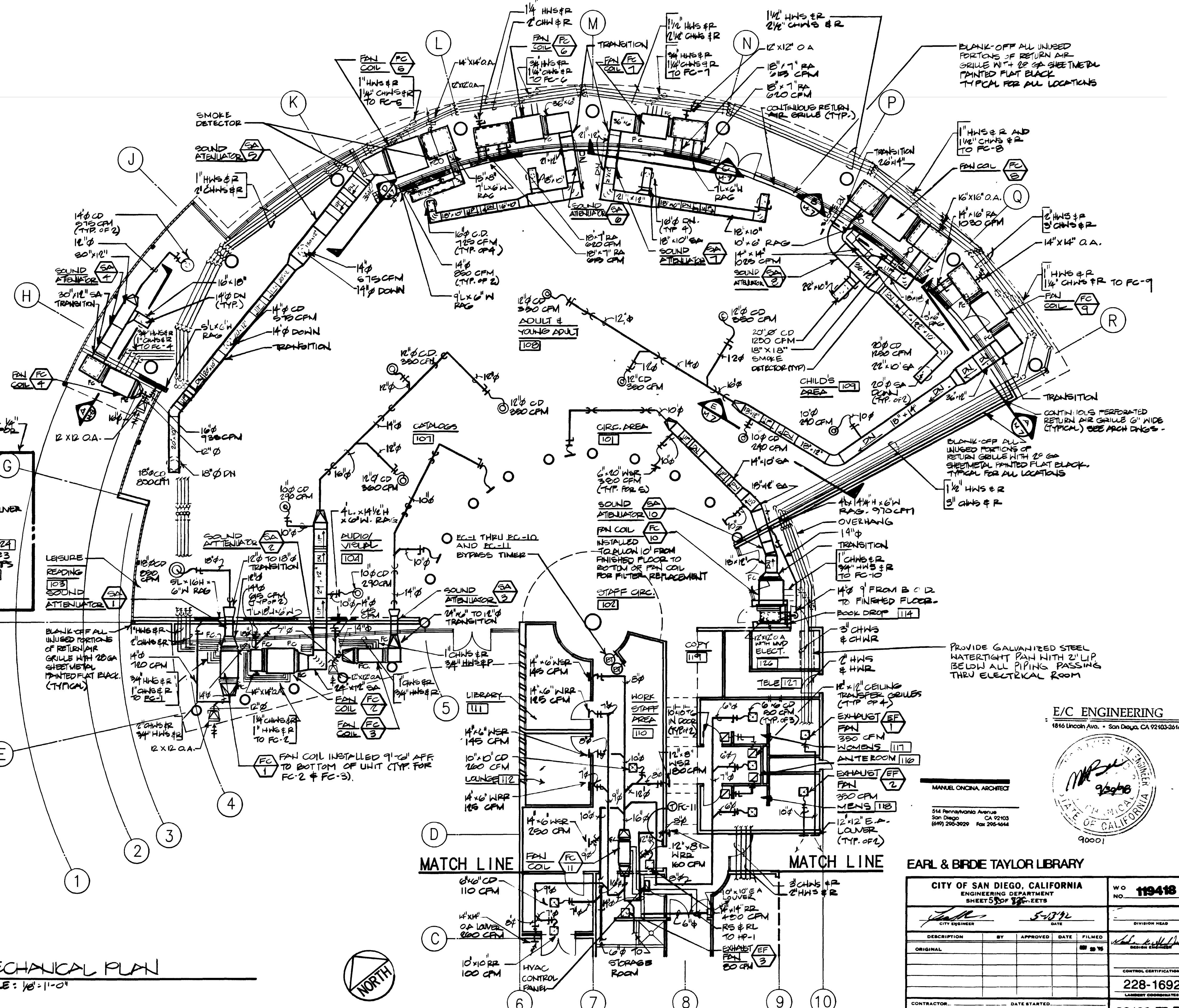
SCHEDULES

M4



**NOTES**

1. CONTRACTOR SHALL FURNISH & INSTALL ALL NECESSARY COMPONENTS, DEVICES TRAPS & SIZE REFRIGERANT PIPING AS PER MANUFACTURERS RECOMMENDATIONS.
2. CAULK AROUND ALL DUCTS & PIPES WHERE PASSING THRU DRAFT STOPS. SEE ARCH. DRAWINGS FOR DRAFT STOP LOCATIONS.
3. AN ATTEMPT HAS BEEN MADE TO SHOW THE REQUIRED DUCT OFFSETS. DUE TO THE COMPLEXITY OF THE CEILING CONFIGURATION, ADDITIONAL OFFSETS MAY BE REQUIRED. CONTRACTOR TO ALLOW IN HIS BID TO PROVIDE ADDITIONAL OFFSETS, CHANGES IN DIRECTION, ETC. OF DUCTS AS REQUIRED BY ACTUAL FIELD CONDITIONS.
4. LINE RETURN AIR PLENUMS & DUCTS FOR FAN COILS | THRU 10 WITH 1" DUCT LINER.
5. ALL RA & SA PLENUM SIZES NOT SHOWN ON PLANS SHALL BE THE SAME SIZE AS UNIT OPENINGS.
6. PROVIDE TRANSITIONS AT EXHAUST FANS WHERE NECESSARY
7. CONTRACTOR SHALL PROVIDE "RUSKIN" MODEL C82Z BACKDRAFT DAMPERS AT ALL OUTSIDE INTAKE DUCTS.
8. SEE ARCHITECTURAL DRAWINGS FOR EXACT LOCATION OF CEILING DIFFUSERS AND REGISTERS.




**MECHANICAL PLAN**  
SCALE: 1/8" = 1'-0"

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**MANUEL ONYIA ARCHITECT**  
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(619) 295-9929 Fax 295-4644

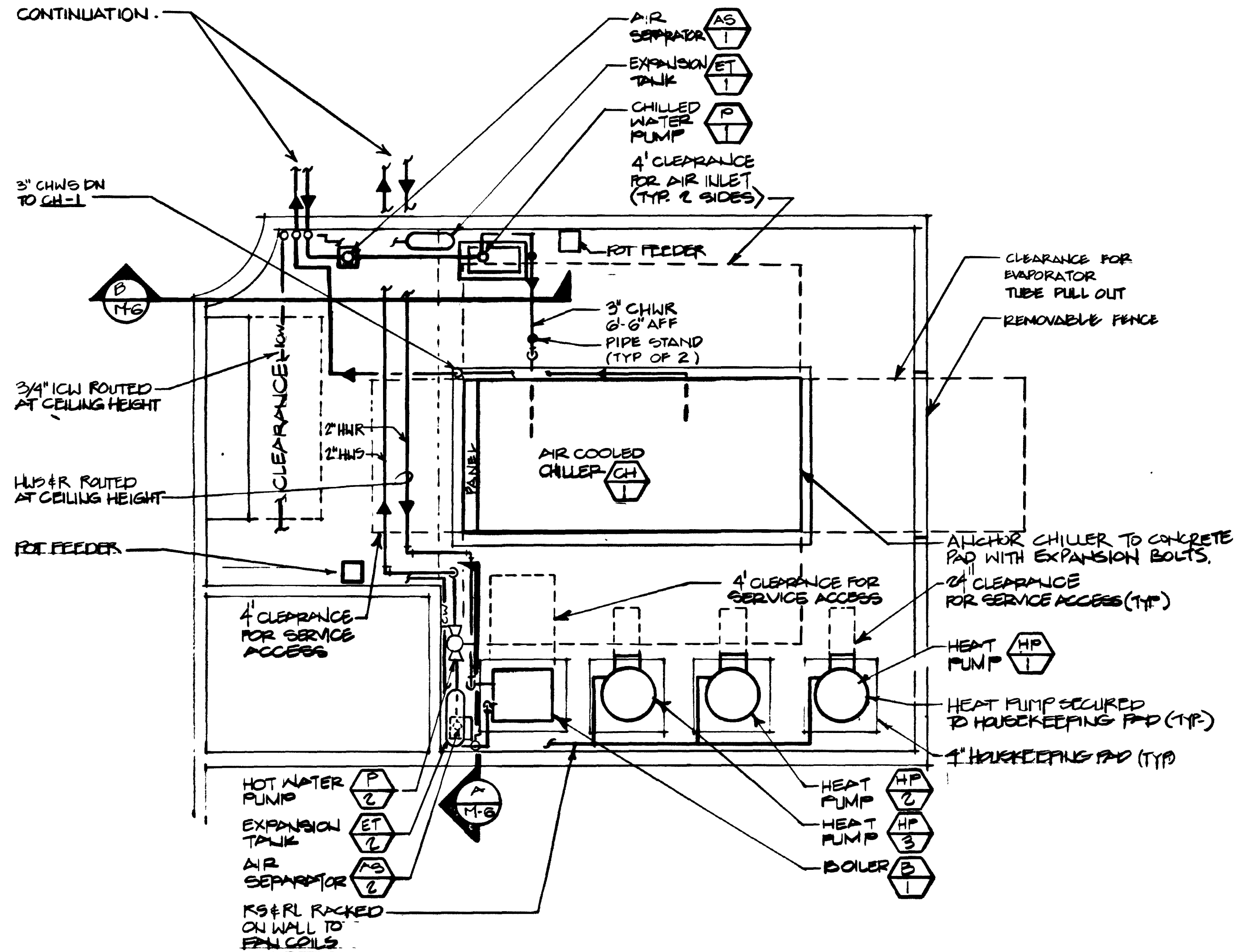
**EARL & BIEDE TAYLOR LIBRARY**

CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 5 OF 12 - ETS				WO NO. <b>119418</b>
 CITY ENGINEER				DATE <b>5-17-92</b>
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL				<input checked="" type="checkbox"/>
CONTRACTOR: _____ DATE STARTED: _____				CONTROL CERTIFICATION
INSPECTOR: _____ DATE COMPLETED: _____				<b>228-1692</b> LIBRARY COORDINATOR
				<b>26189-53-D</b>

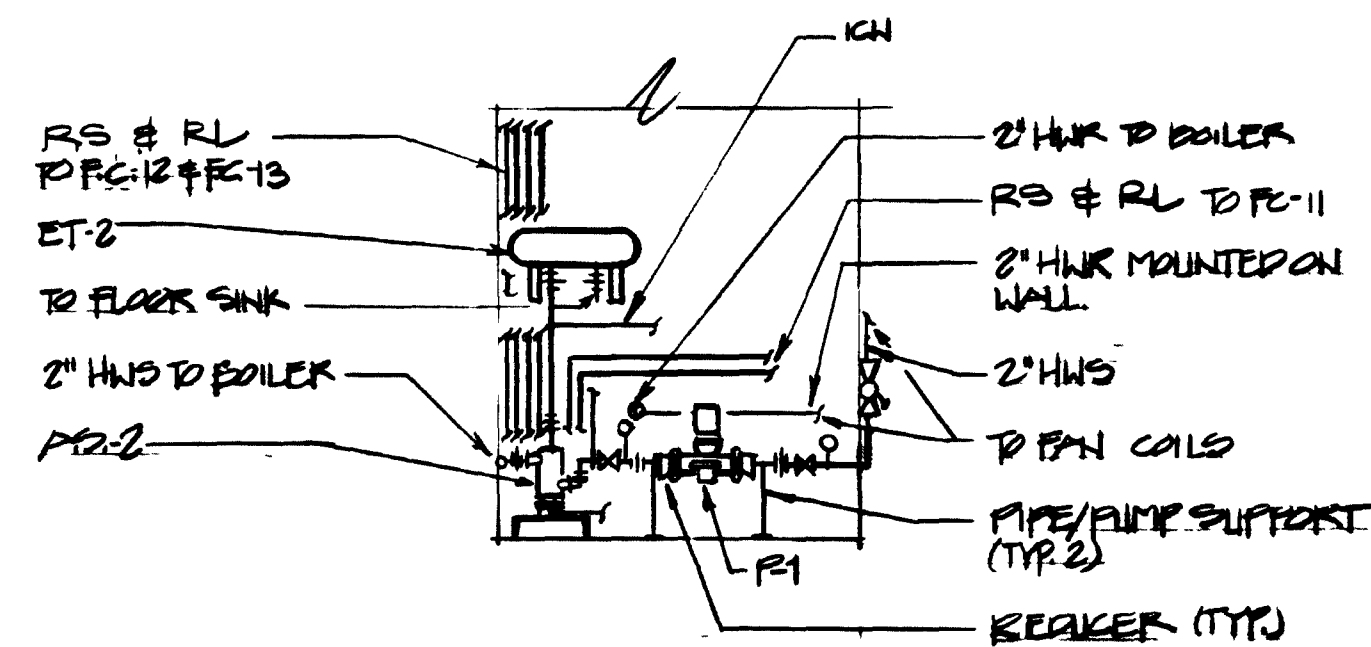
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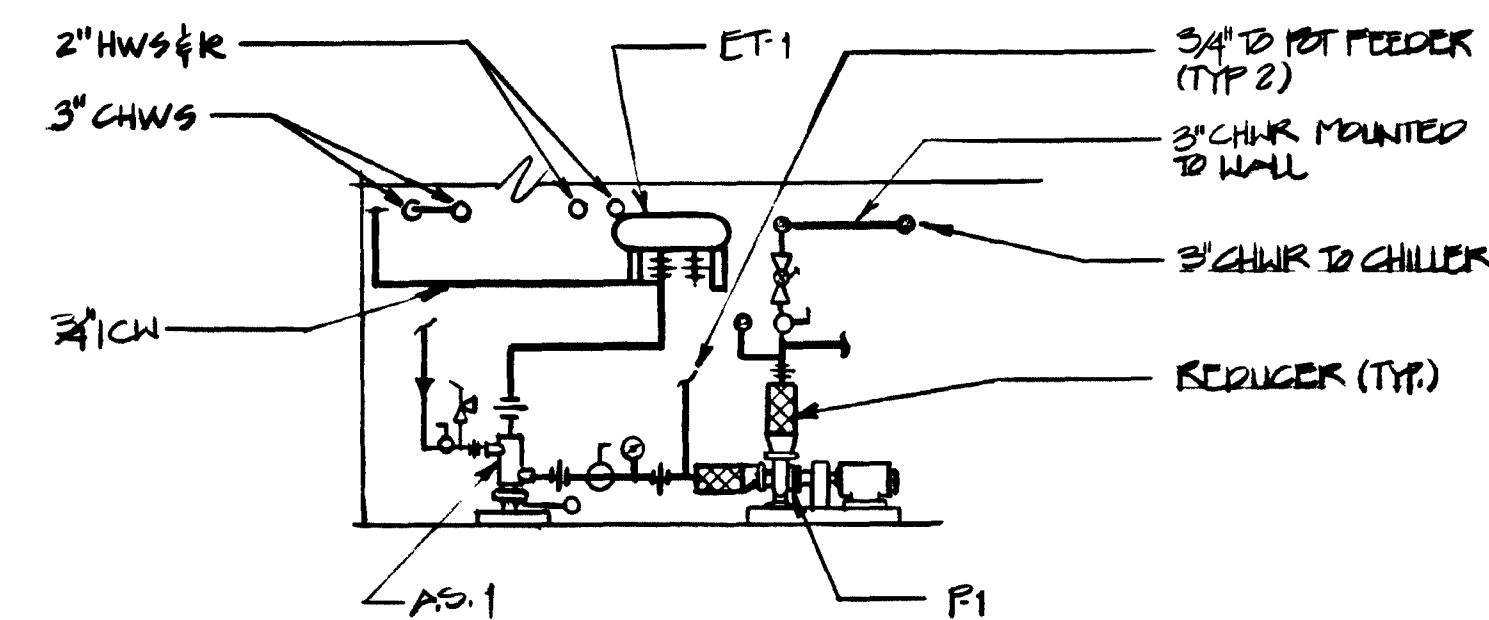
3" CHWS/R, 2" CHWS/R  
SEE SHEET M-5 FOR  
CONTINUATION.



MECHANICAL EQUIPMENT AREA  
SCALE: 1/4" = 1'-0"



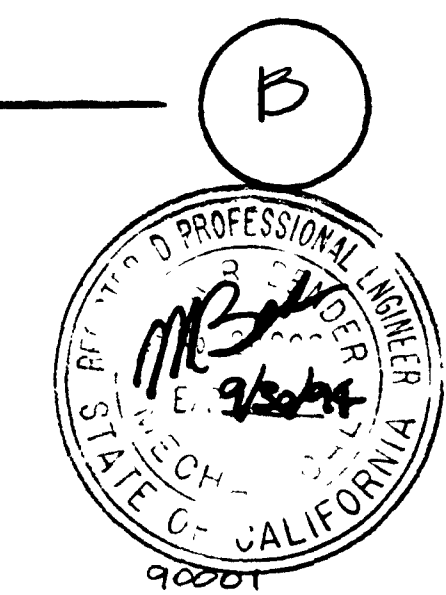
SECTION A  
SCALE: 1/4" = 1'-0"



SECTION B  
SCALE: 1/4" = 1'-0"

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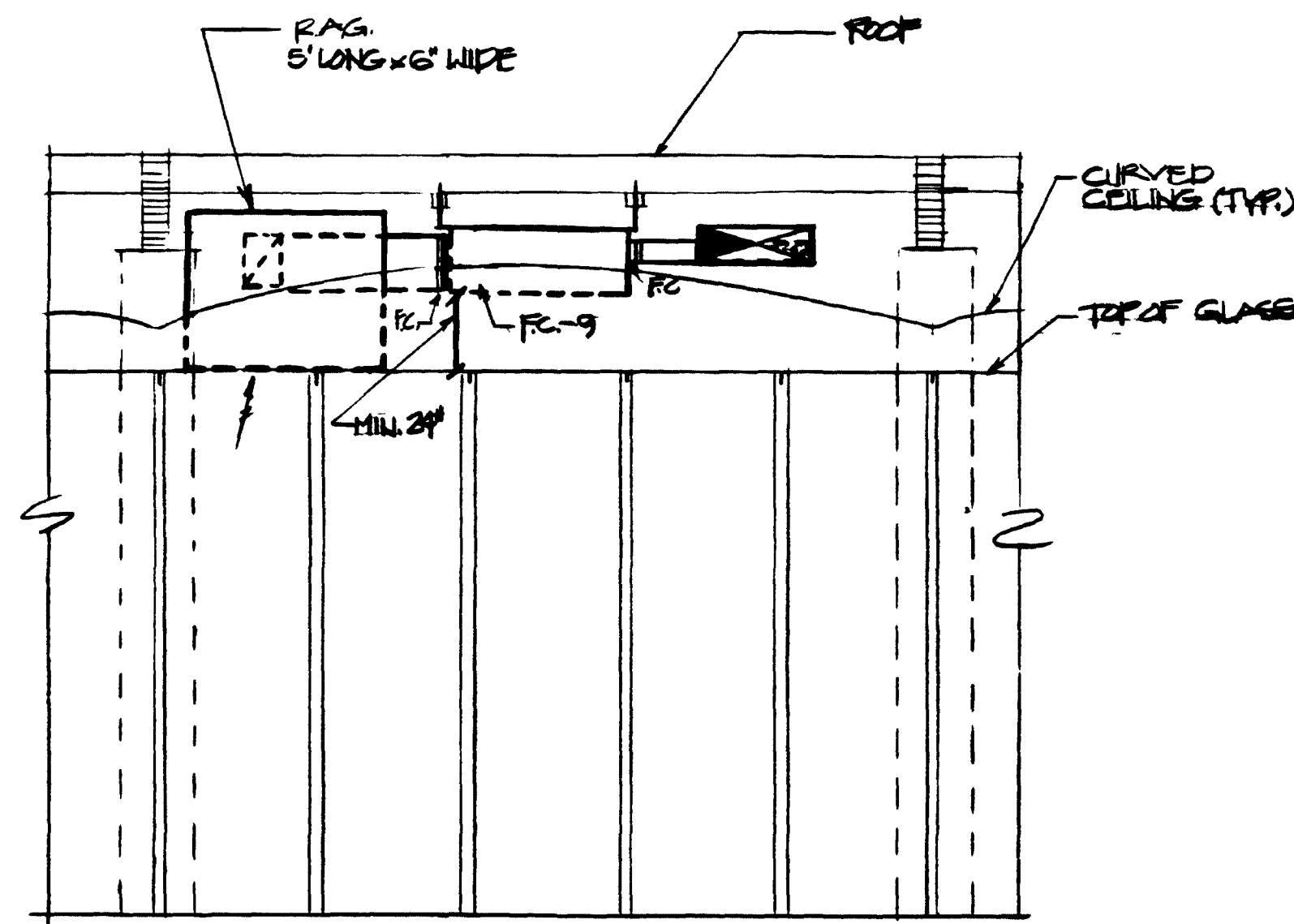
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CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 56 OF 73 SHEETS		WO NO <b>119418</b>
CITY ENGINEER <i>Manuel Oncina</i>	DATE 5-19-92	DIVISION HEAD
DESCRIPTION	BY	APPROVED
ORIGINAL		
CONTRACTOR		DATE COMPLETED
INSPECTOR		DATE COMPLETED
		26189-54-D

SCHMATIC DIAGRAMS

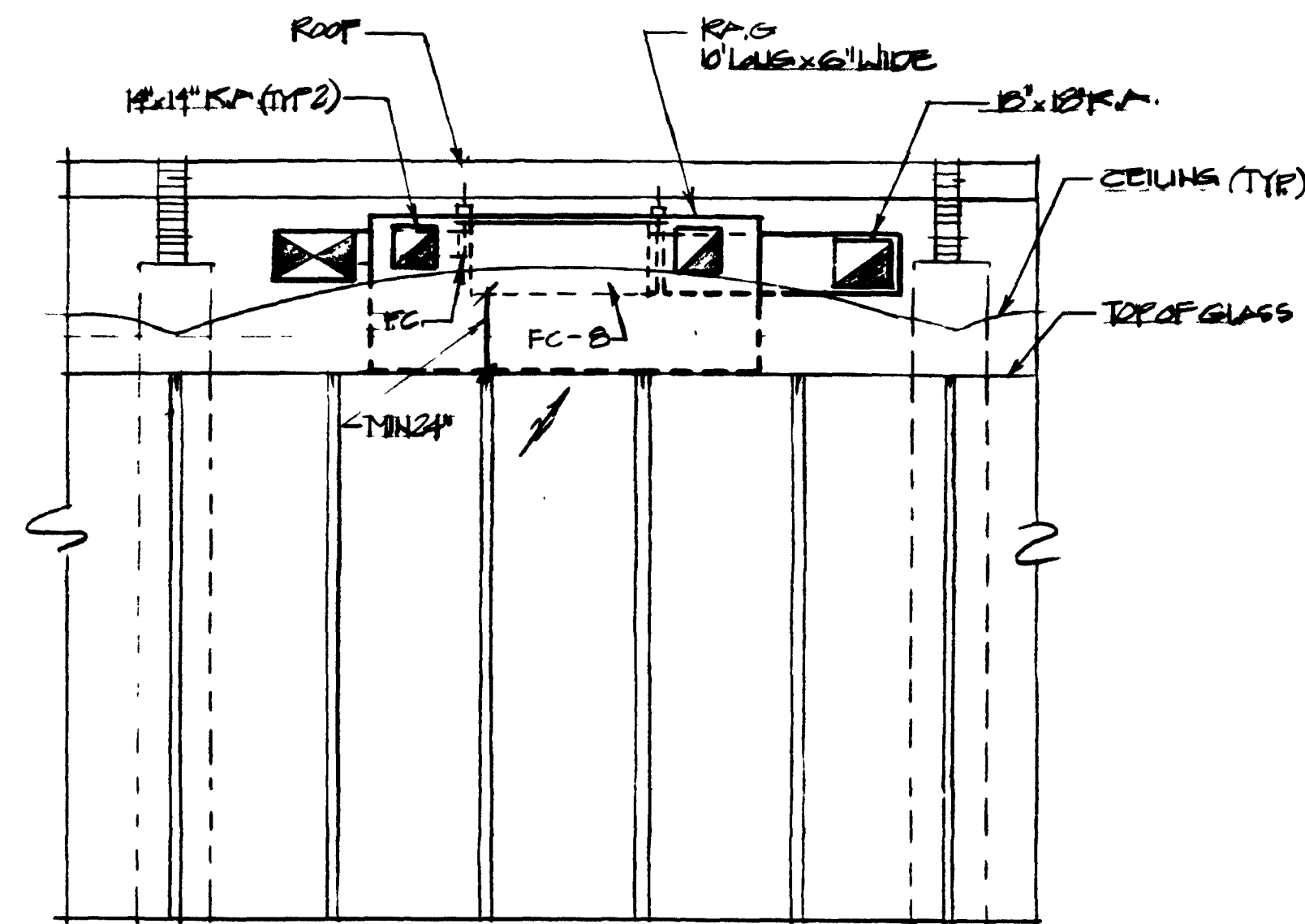
M6





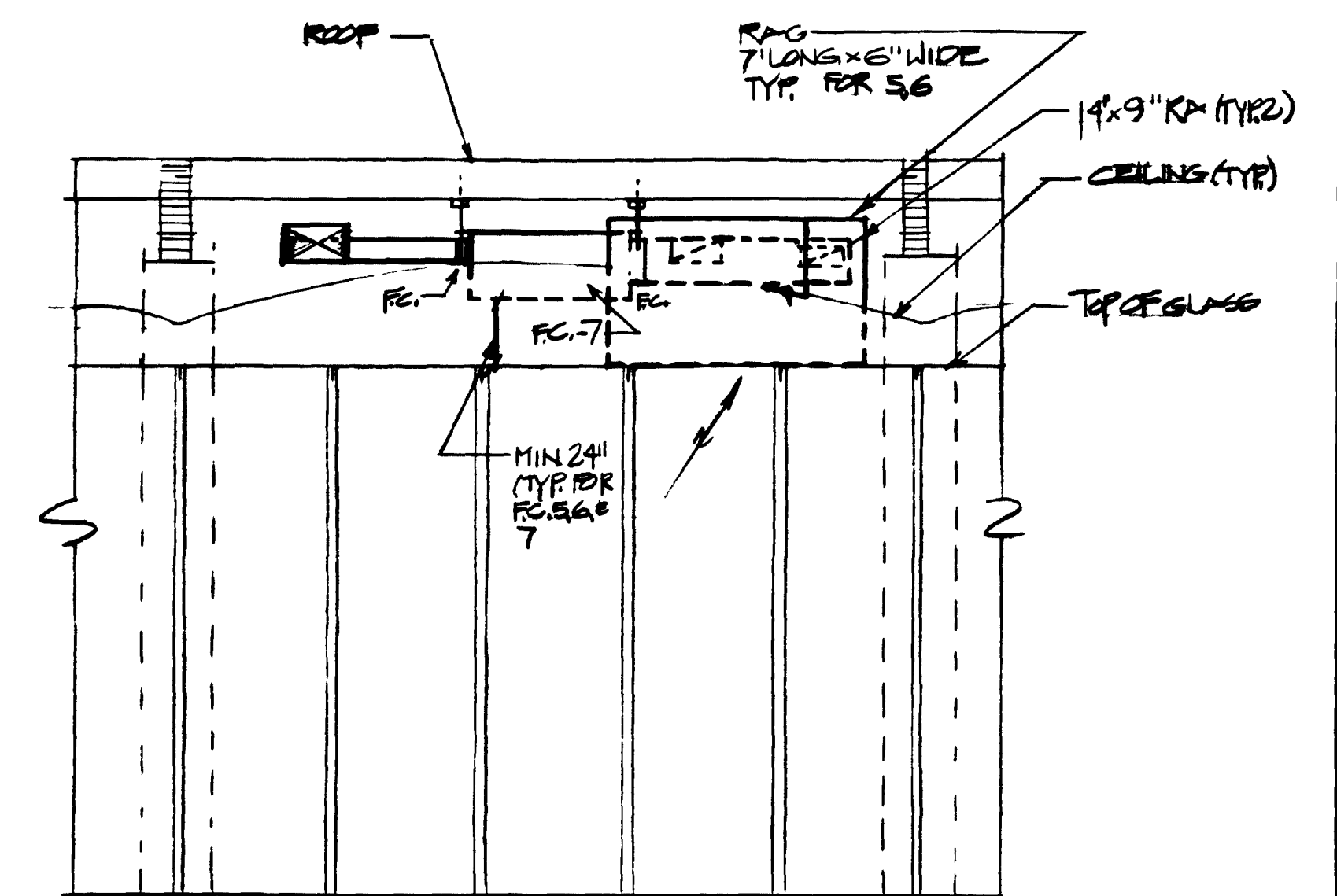
SECTION  
SCALE: 1/4" = 1'-0"

(A)



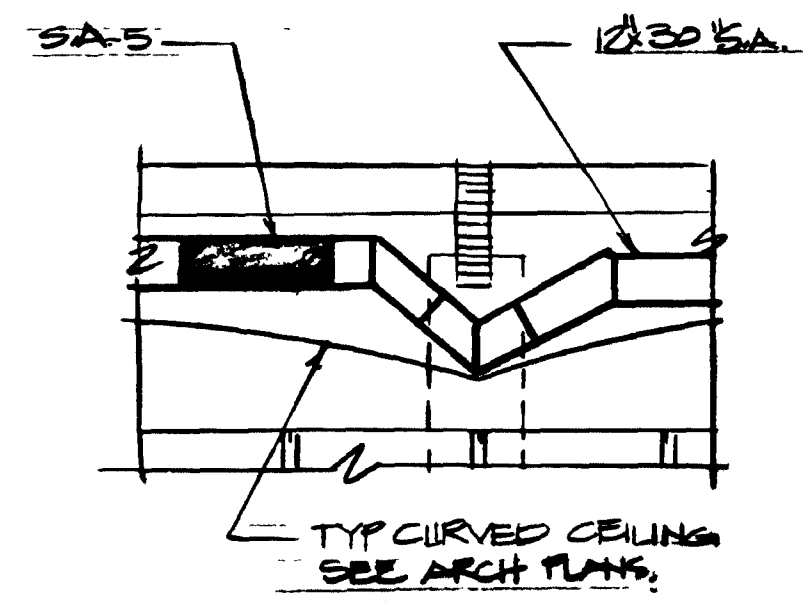
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(B)



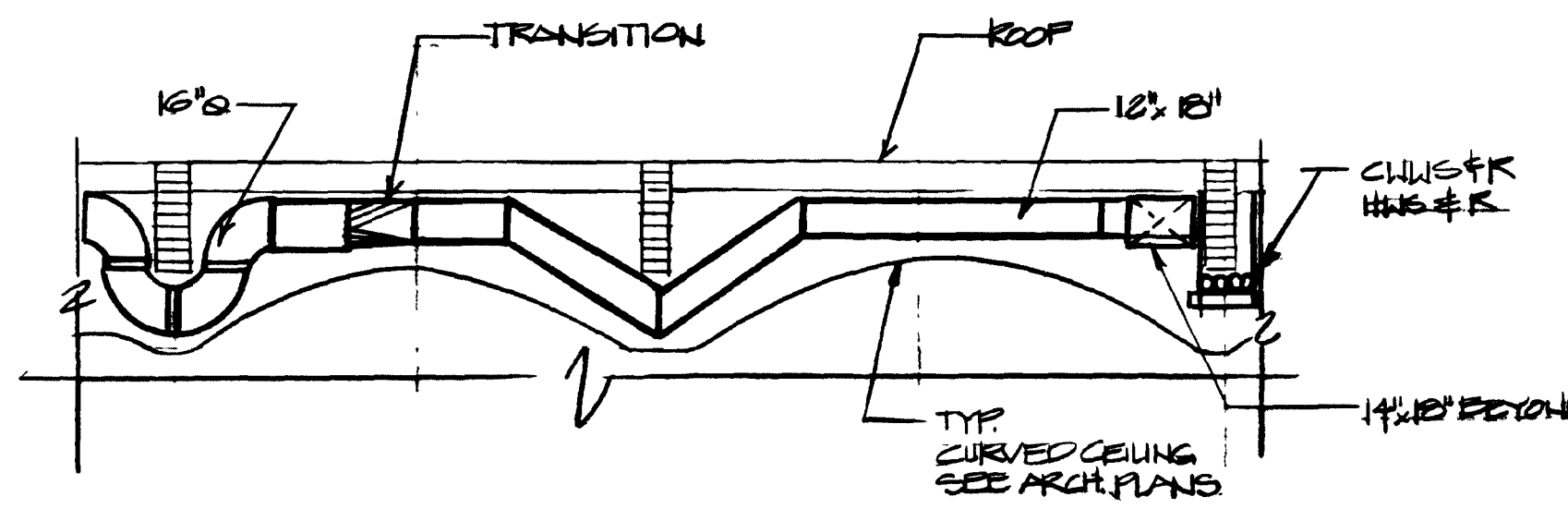
SECTION  
SCALE: 1/4" = 1'-0"

(C)



SECTION  
SCALE: 1/4" = 1'-0"

(D)



SECTION  
SCALE: 1/4" = 1'-0"

(E)

MANUEL ONONA, ARCHITECT

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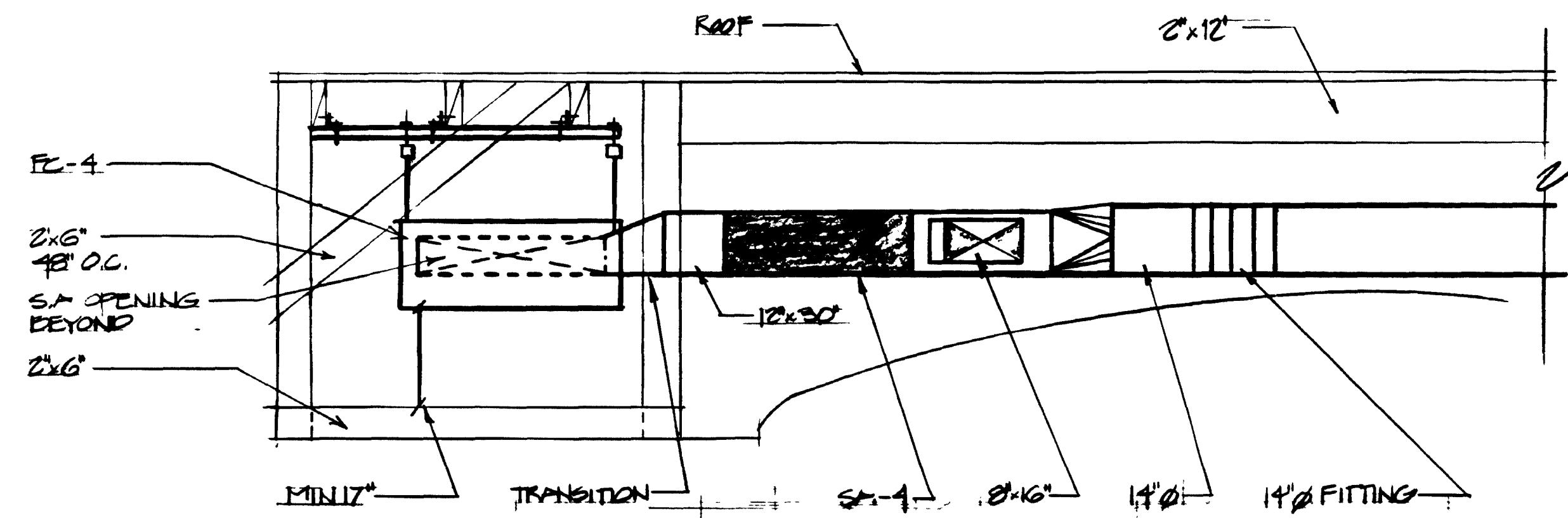
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CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 56 OF 73 SHEETS		W O NO 119418
PROJECT OFFICER: <i>[Signature]</i> APPROVED: <i>[Signature]</i> DATE: <i>[Date]</i> DIRECTOR: <i>[Signature]</i>		APPROVALS
DESCRIPTION	BY	APPROVED
DATE	FILMED	
ORIGINAL		IN 9/15
AS BUILT		
CONTRACTOR	DATE STARTED	228-1692
RESIDENT ENG	DATE COMPLETED	LABORER COORDINATOR
		26189-55-D

SECTIONS

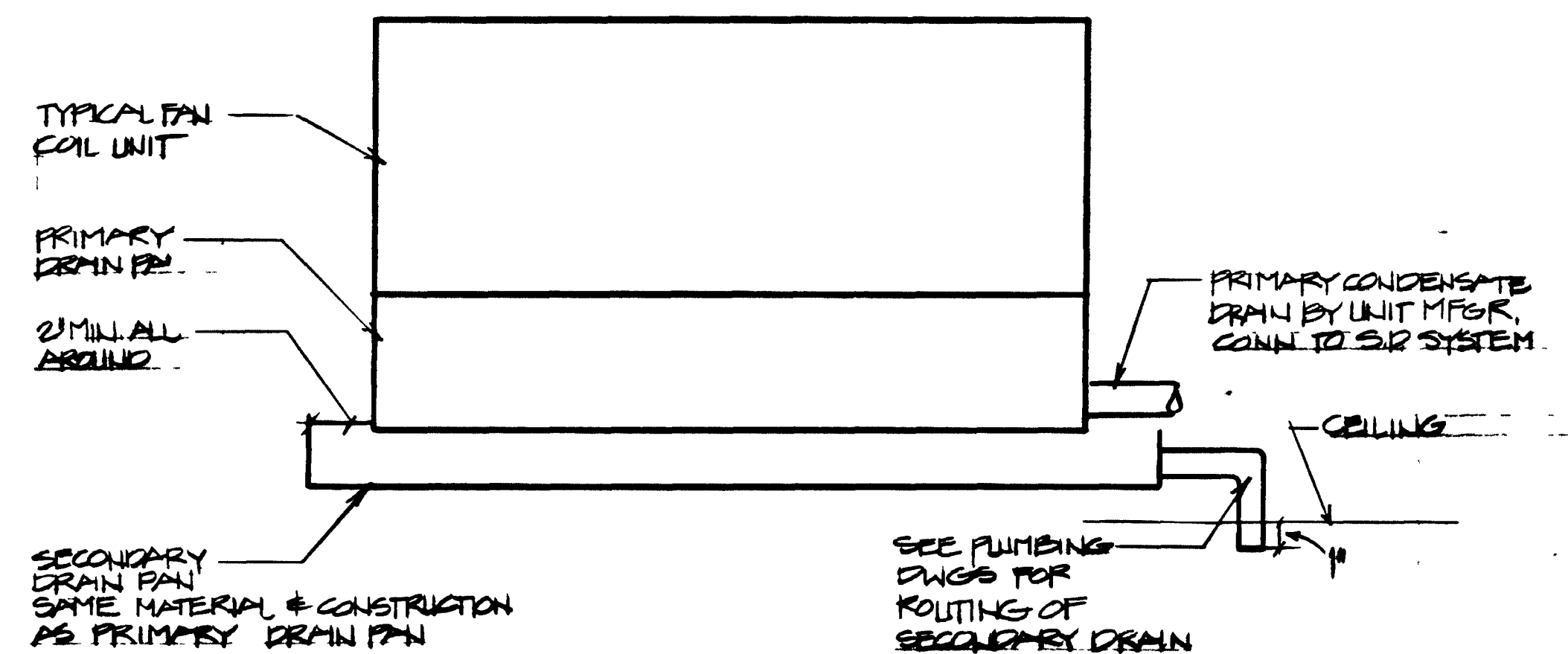
MZ





SECTION  
SCALE: 1/2" = 1'-0"

A



FAN COIL 11, 12, 13 CONDENSATE DETAIL  
NOT TO SCALE

MANUE ONCINA, ARCHITECT

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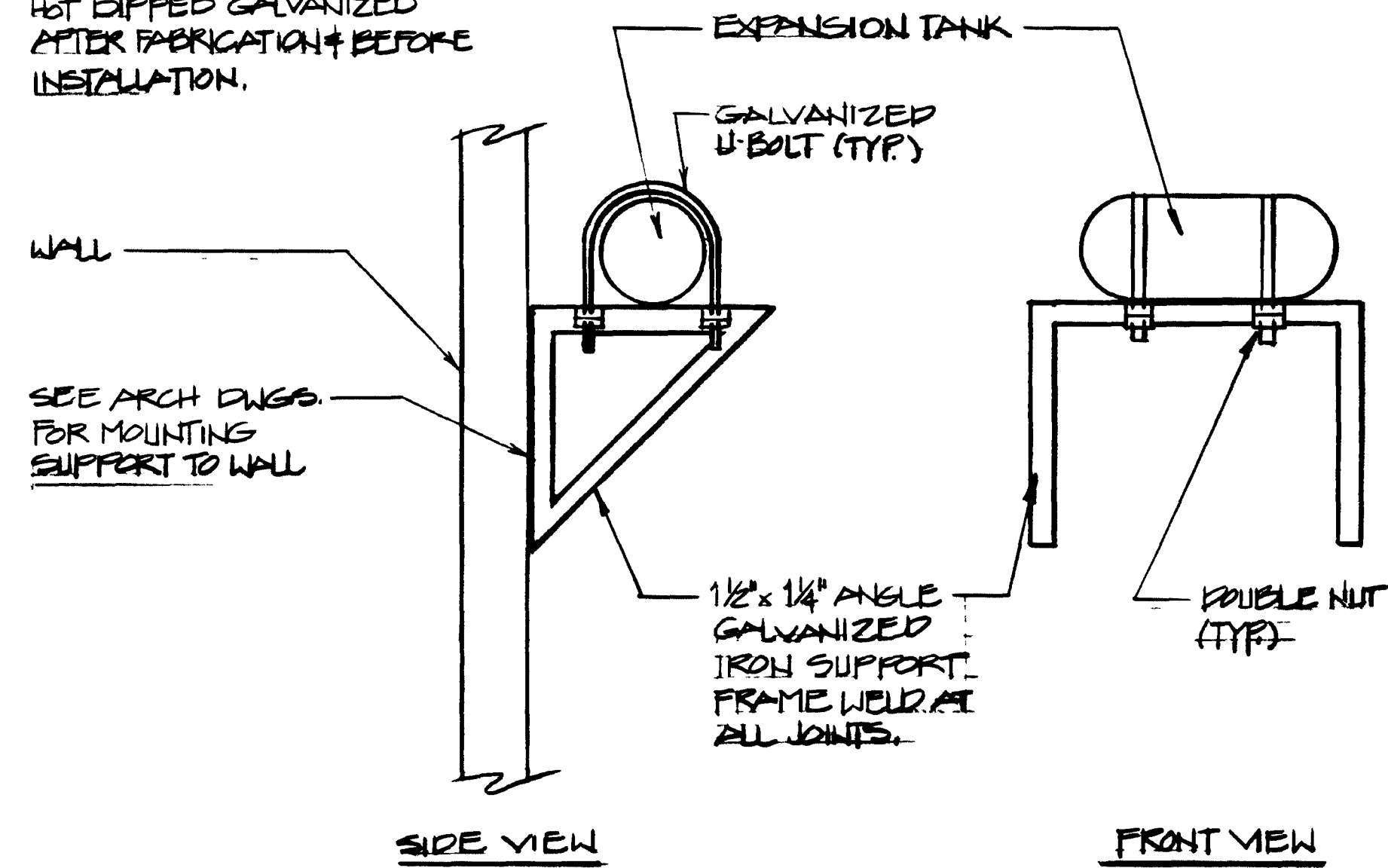
CITY OF SAN DIEGO - CALIFORNIA ENGINEERING DEPARTMENT SHEET 56 OF 83 SHEETS				W O NO <b>110418</b>
PROJECT OFFICER: <i>[Signature]</i> DATE: 5-11-99				APPROVALS
DESCRIPTION	BY	APPROVED	DATE	DIRECTOR
ORIGINAL				DIVISION HEAD
AS BUILT				228-1692 LAMBERT COORDINATES
CONTRACTOR	DATE STARTED	RESIDENT ENG		26189-56-D

SECTIONS & DETAILS

M8/7



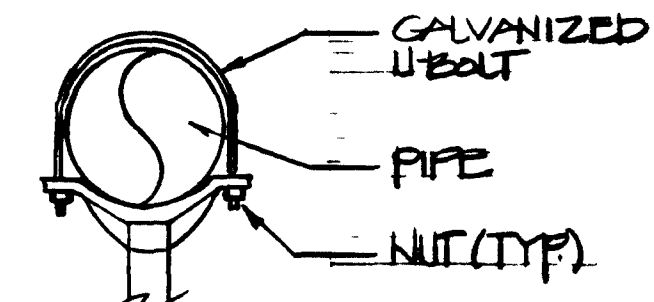
NOTES:  
1. FRAME & U-BOLT SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION & BEFORE INSTALLATION.



**EXPANSION TANK SUPPORT DETAIL**

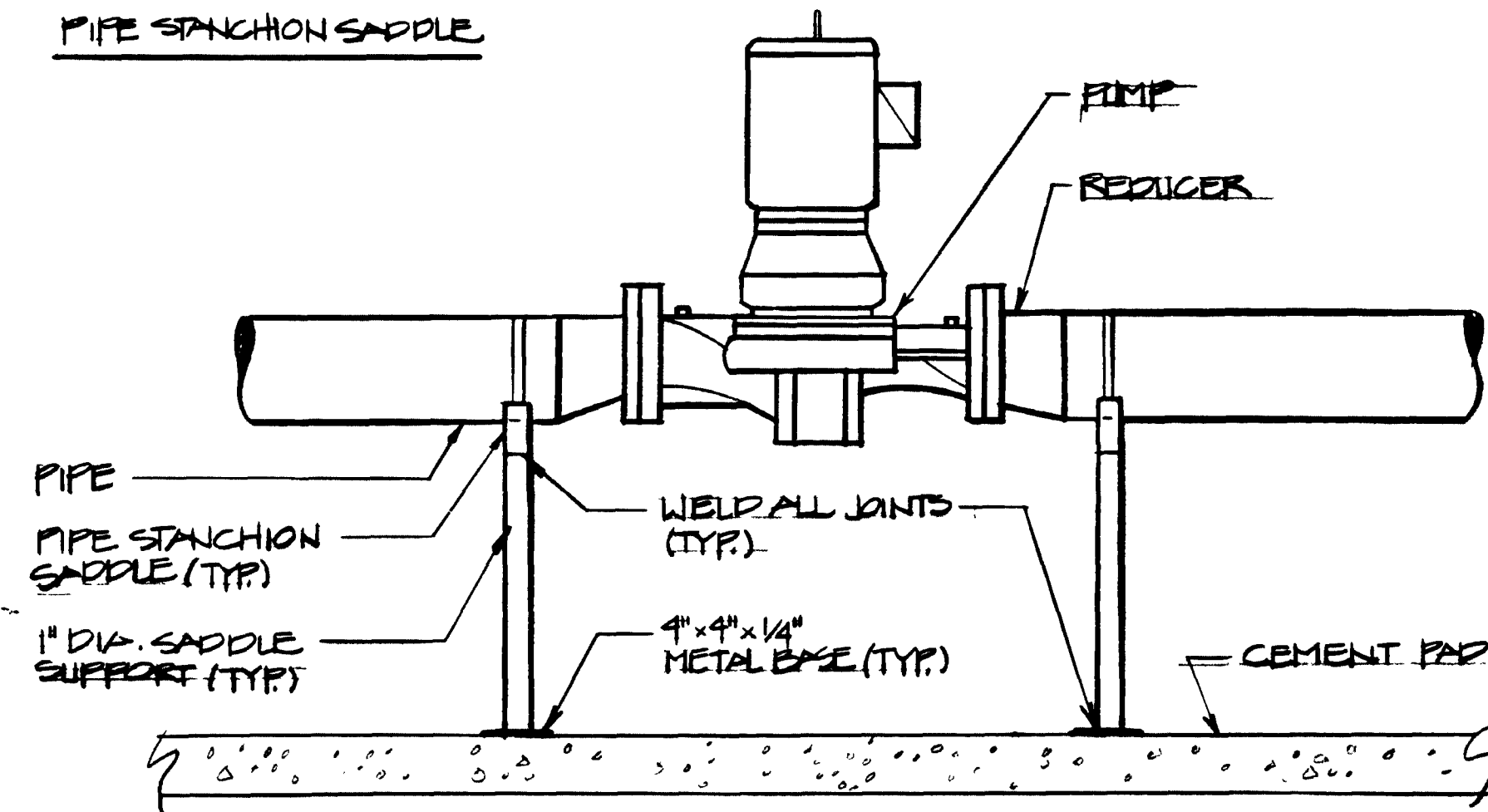
NOT TO SCALE

1



PIPE STANCHION SADDLE

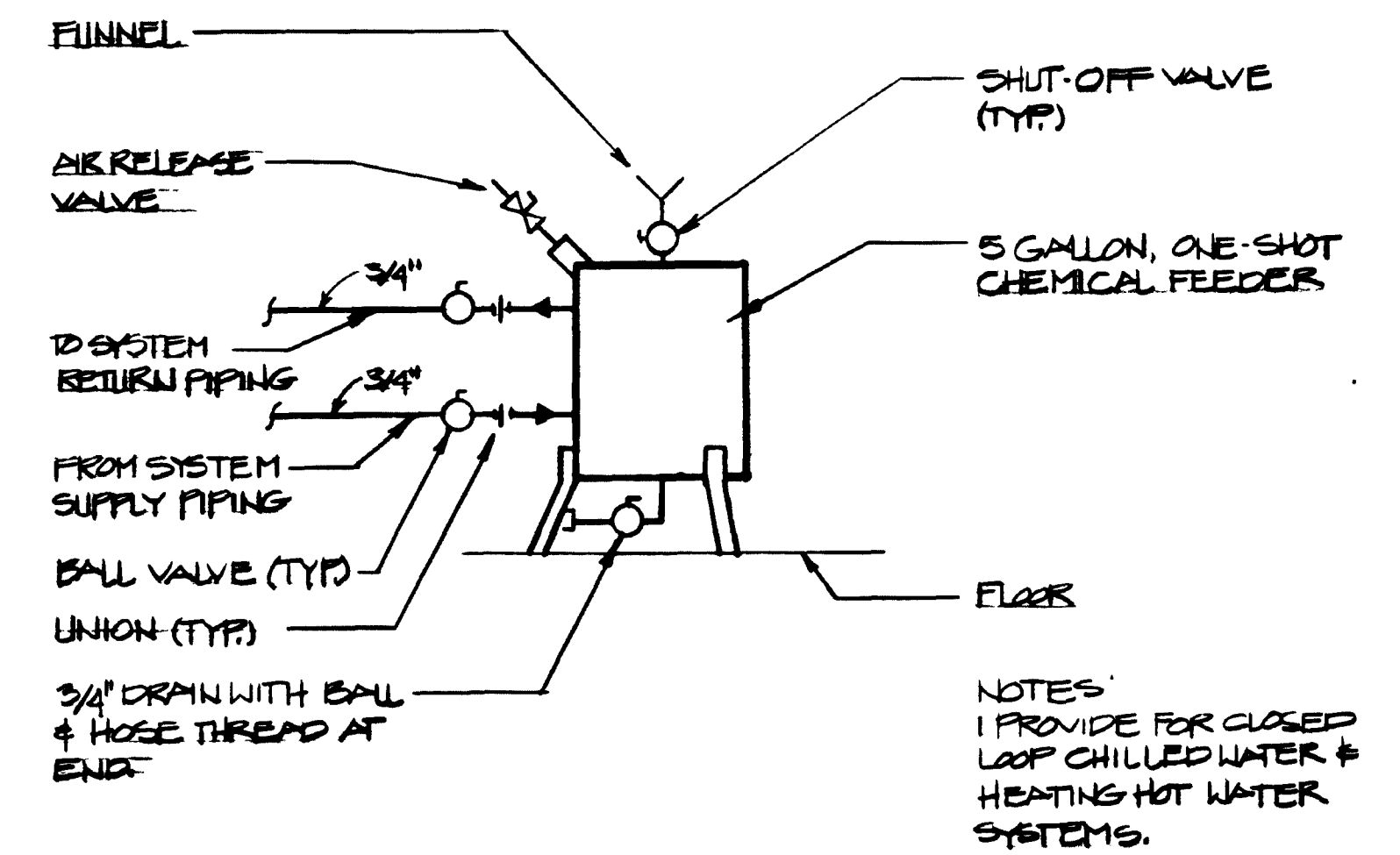
NOTES:  
1. SUPPORT & U-BOLT SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION & BEFORE INSTALLATION.



**HEATING HOT WATER PUMP SUPPORT DETAIL**

NOT TO SCALE

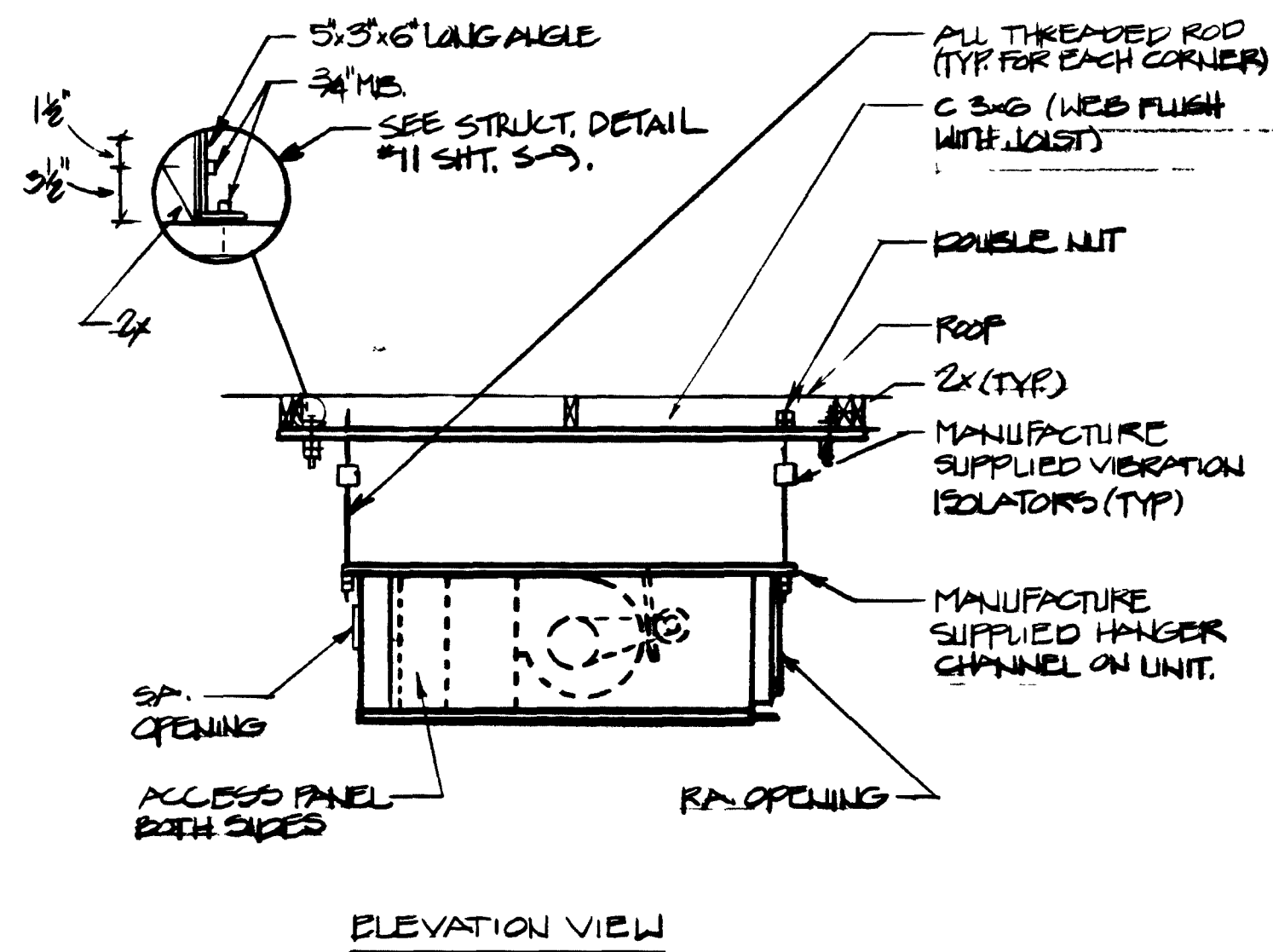
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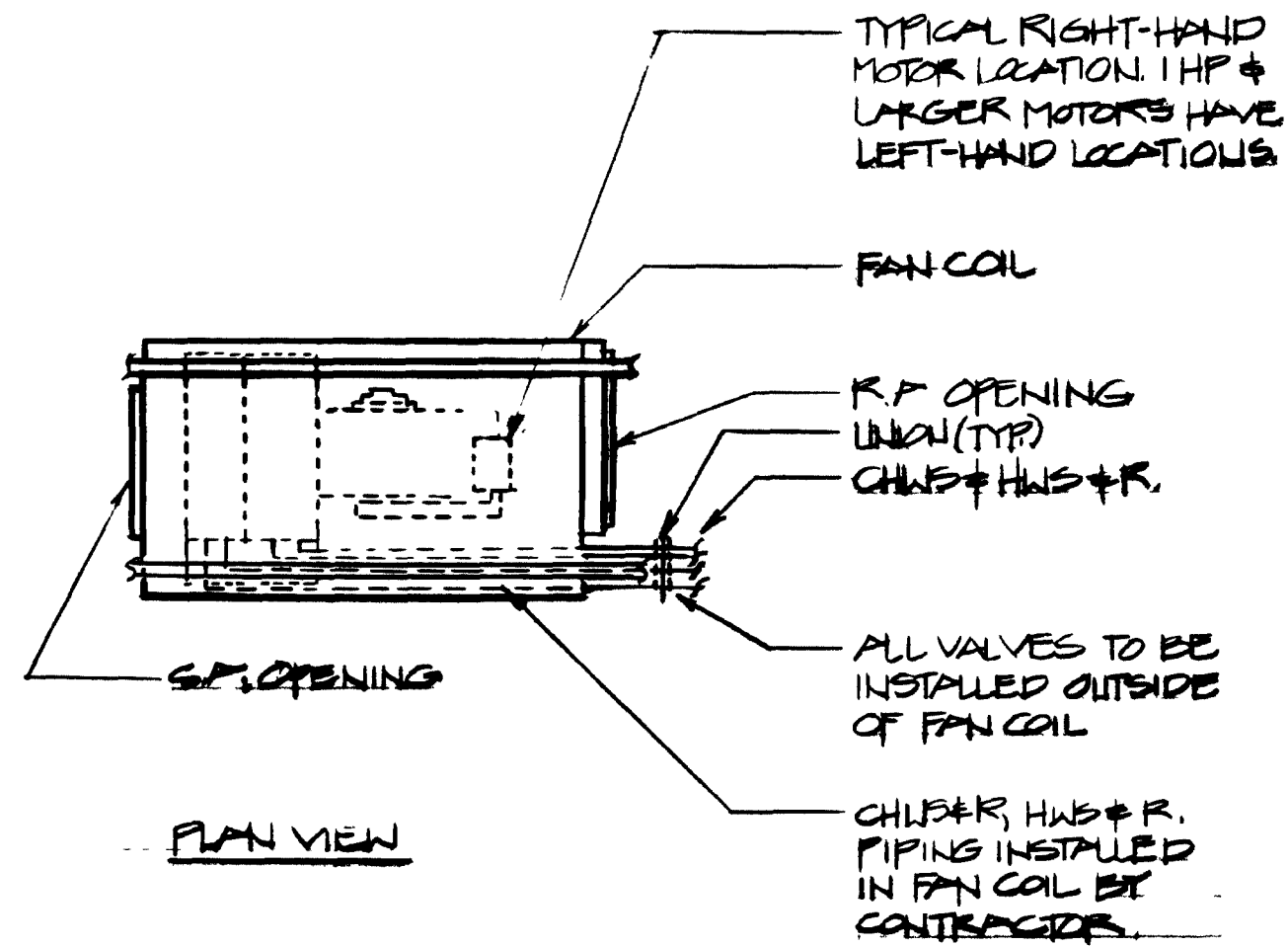
**WATER TREATMENT DETAIL**

NOT TO SCALE

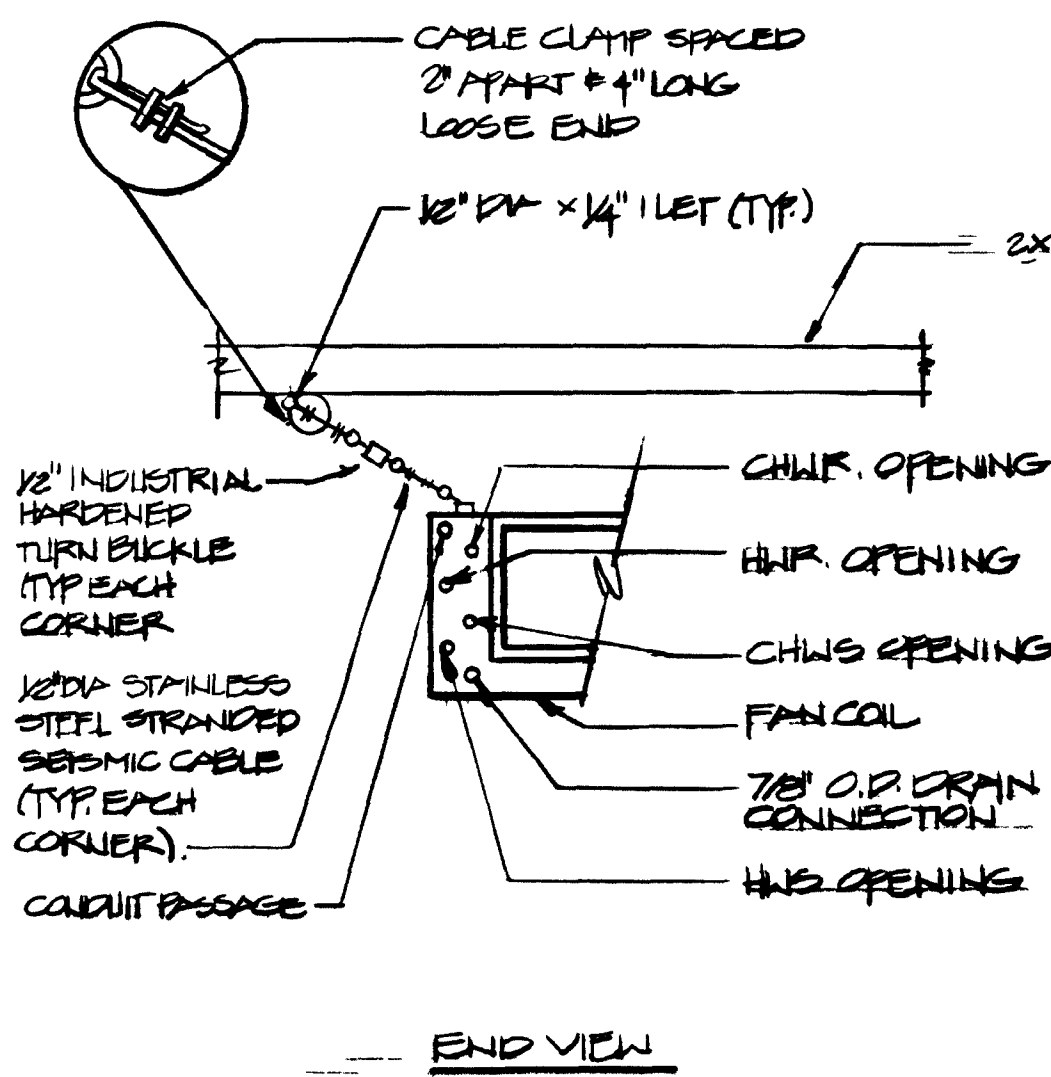
5



ELEVATION VIEW



PLAN VIEW



END VIEW

NOTES:  
1. UNIT SIZES 161B, 201B & 301B HAVE TWO FANS  
2. FAN COILS 11, 12, 13 & E/F4 SHALL BE HUNG WITH SAME METHOD AS FAN COILS 1 THRU 10

**FAN COIL FC-1 THRU FC-10 DETAIL**

NOT TO SCALE

4

**RETURN AIR BOOT TO GRILL DETAIL**

NOT TO SCALE

3

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CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 58 OF 93 SHEETS				W O NO 119418
PROJECT OFFICER: <i>Manuel Oncina</i> DATE: 5-27-92				APPROVALS
DESCRIPTION	BY	APPROVED	DATE	FILMED
ORIGINAL				NO 2 27
AS BUILT				228-1692 LAMBERT COORDINATES
CONTRACTOR	DATE STARTED	RESIDENT ENG	DATE COMPLETED	26189-58-D

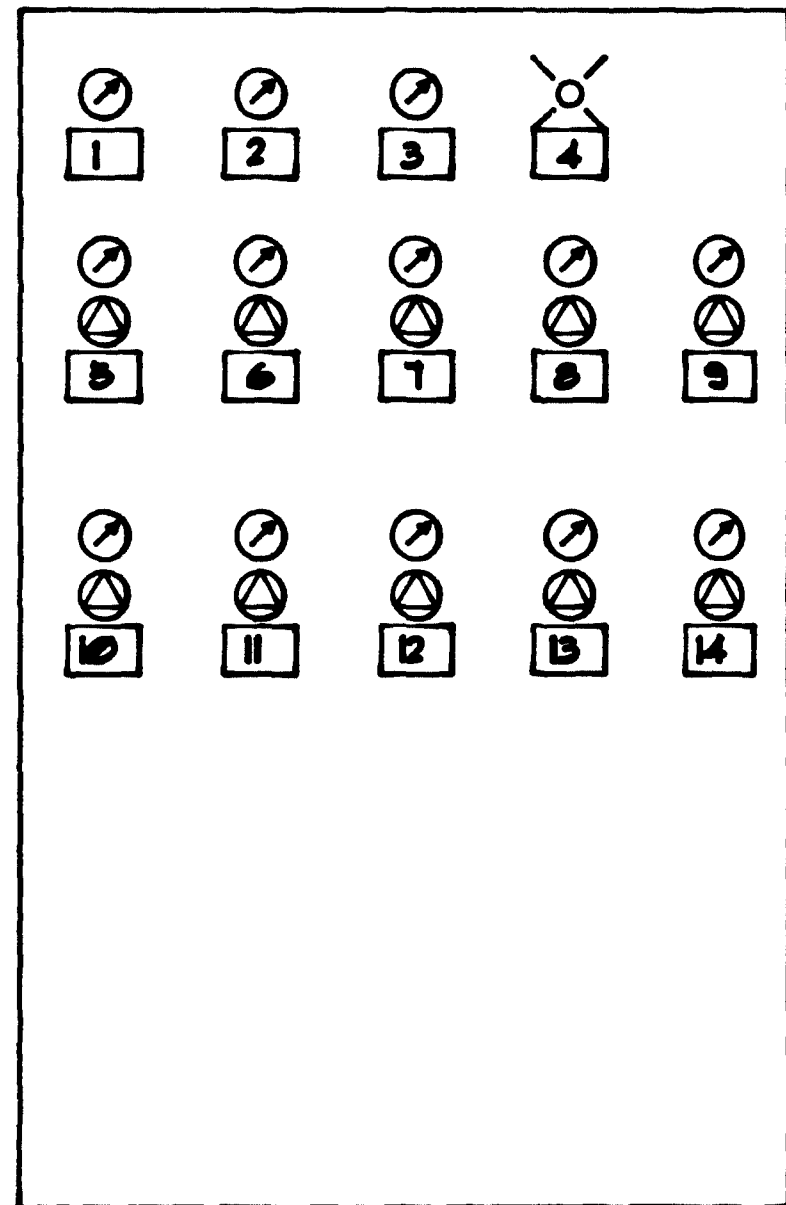
MECHANICAL DETAILS

M10



**CONTROL LEGEND**

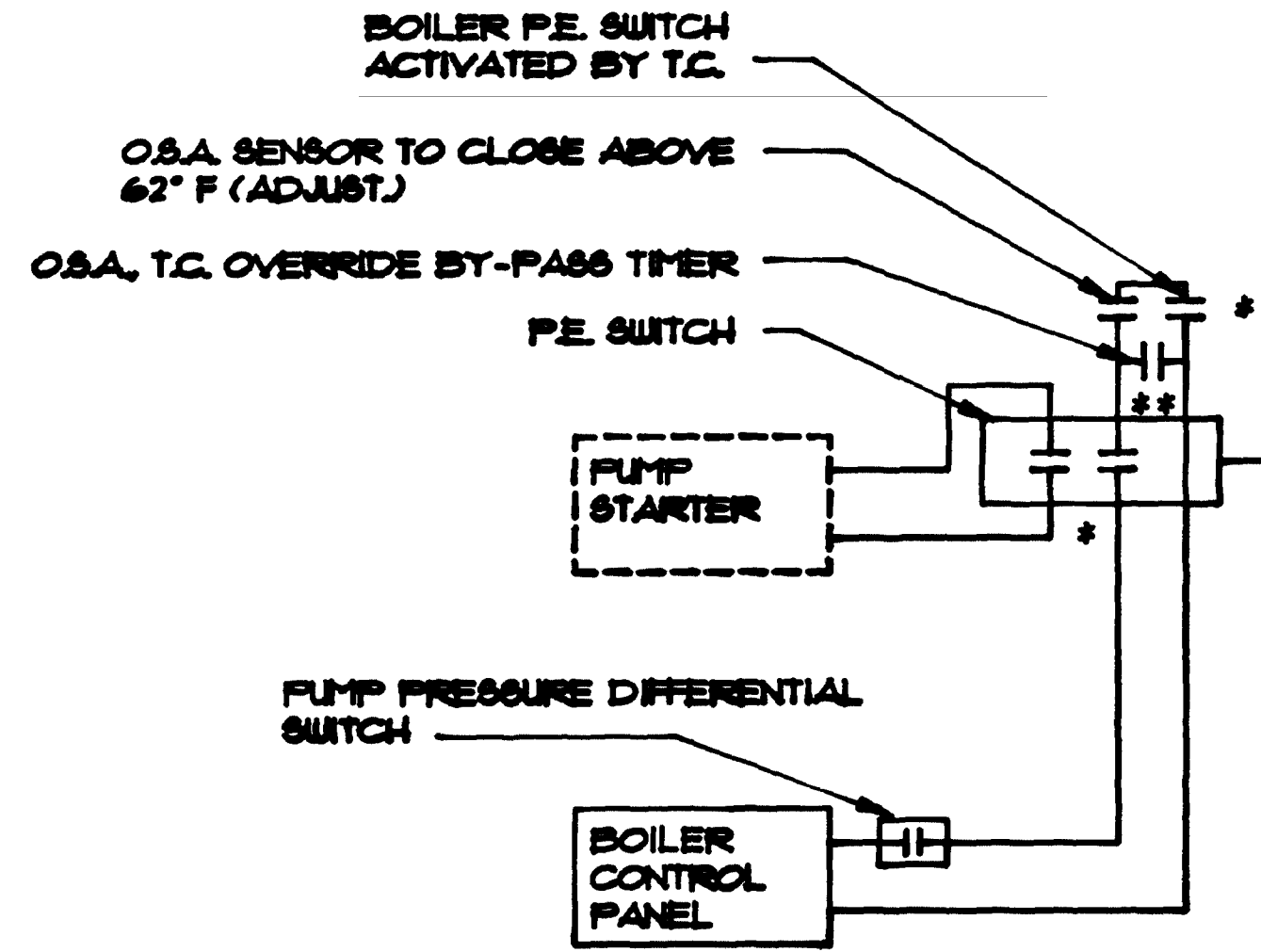
- WIRE & CONDUIT BY DIV. 16
- WIRE & CONDUIT BY DIV. 15
- (M) MAIN AIR SUPPLY
- R/C RECEIVER/CONTROLLER
- ⊕ PRESSURE INDICATOR
- |— CONTACT
- PE PRESSURE/ELECTRIC SWITCH
- EP ELECTRIC/PRESSURE SWITCH
- ⊗ PILOT LITE
- \* DEVICE INSIDE CONTROL PANEL
- \*\* DEVICE ON FACE OF CONTROL PANEL



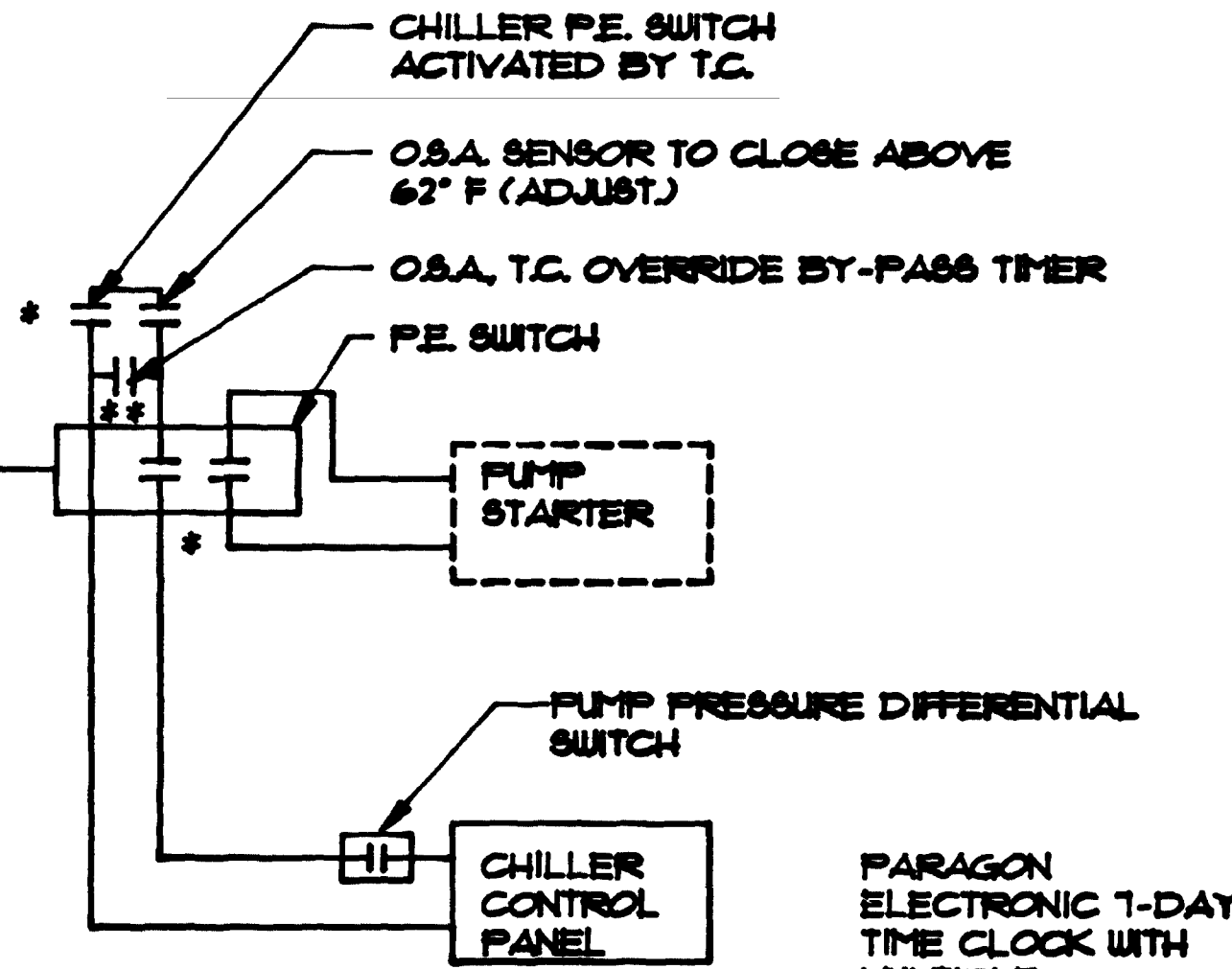
**TAG DESIGNATIONS**

1. MAIN AIR SUPPLY
2. CHILLER OVERRIDE
3. BOILER OVERRIDE
4. SYSTEM 'ON'
- 5-14. F.C.U. DESIGNATION

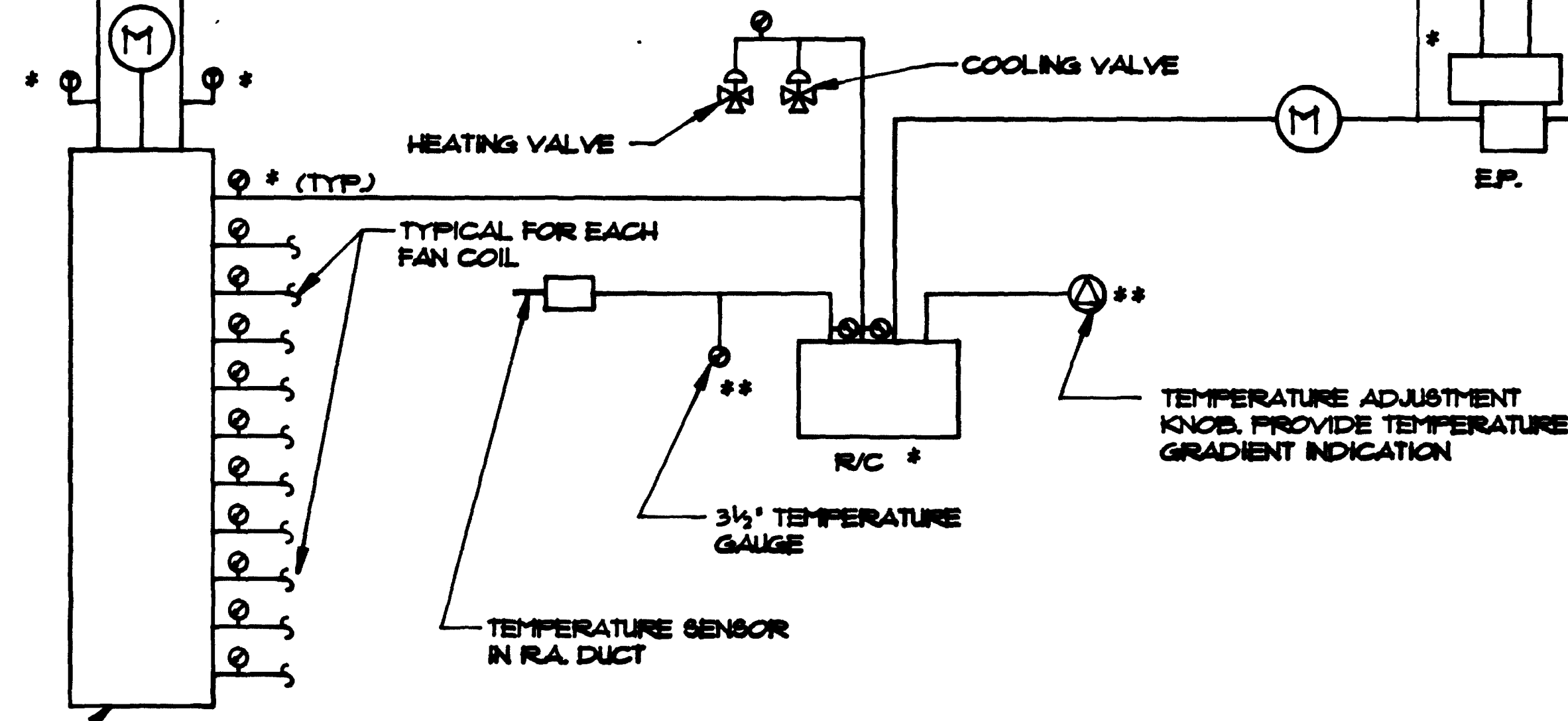
**CONTROL PANEL**



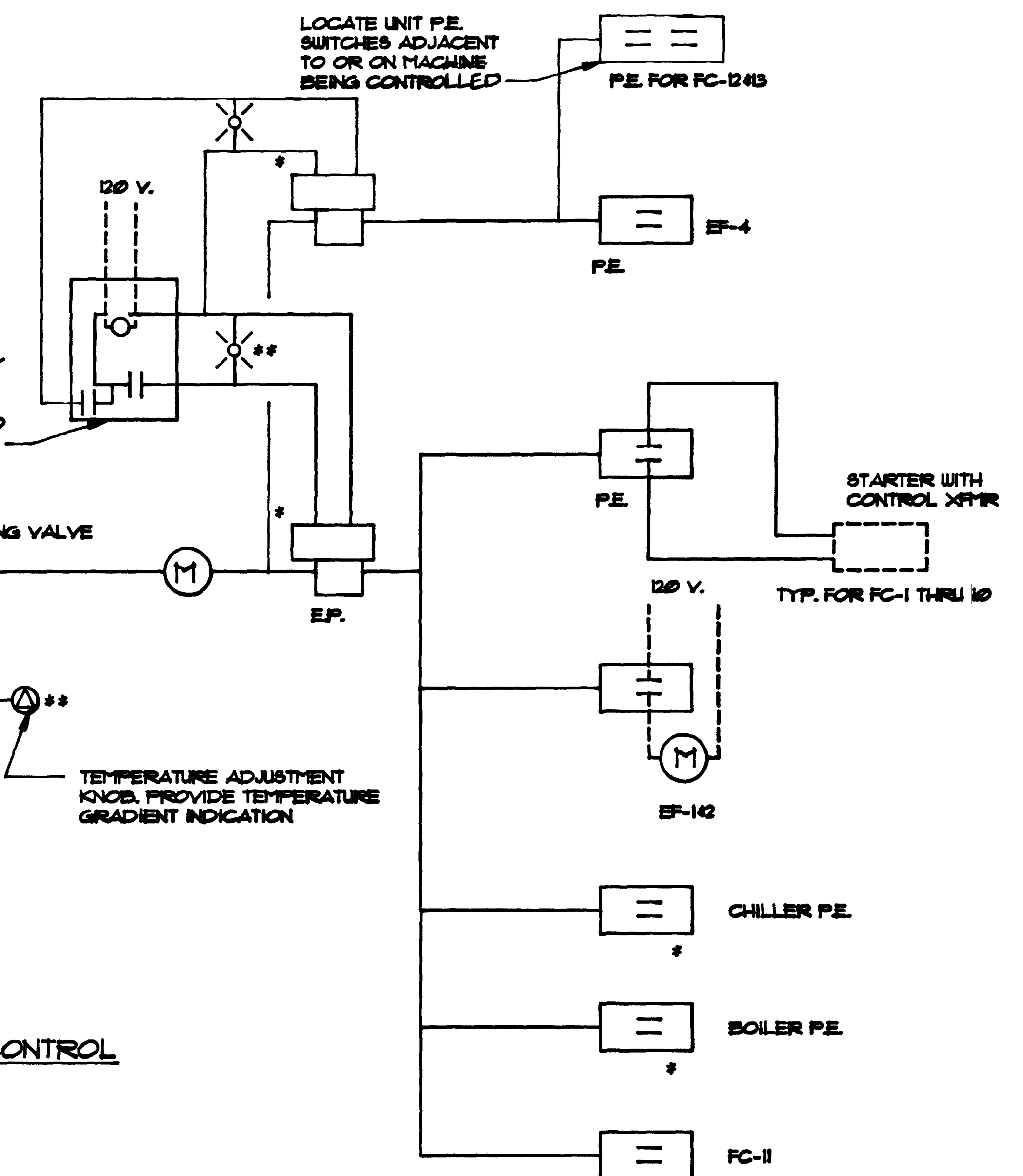
**BOILER CONTROL**



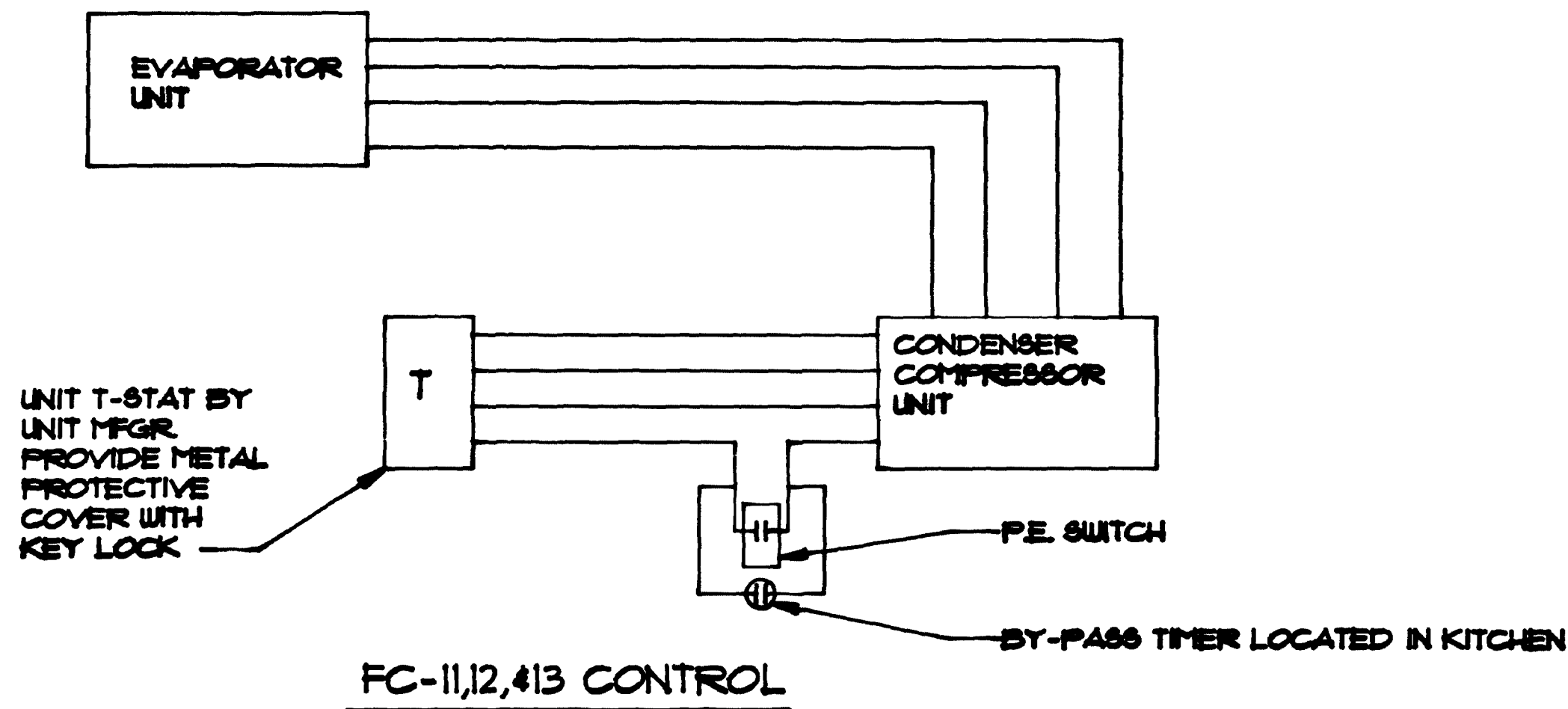
**CHILLER CONTROL**



**TYPICAL FAN COIL UNIT CONTROL**



**SYSTEM CONTROL**



**FC-11, 12, 13 CONTROL**

**CONTROL DIAGRAMS**

NO SCALE

MANUEL ONCINA, ARCHITECT

514 Pennsylvania Avenue  
San Diego, CA 92103  
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CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 5 OF 13 SHEETS				W.O. NO. <b>119418</b>
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DESCRIPTION	BY	APPROVED	DATE	CONTROL CERTIFICATION
ORIGINAL				228-1692
CONTRACTOR... DATE STARTED...				LATEST CROSSING
INSPECTOR... DATE COMPLETED...				26189-59-D

**CONTROL DIAGRAMS**

M11

# SYMBOLS AND ABBREVIATIONS

- FLUORESCENT LIGHT FIXTURE, LETTER INDICATES TYPE 'A', SYMBOL INDICATES (2) TYPE 'A' FIXTURES, '2' INDICATES CIRCUIT NUMBER, 'A' INDICATES SWITCH DESIGNATION CONTROLLING FIXTURES. DOT INDICATES FIXTURE CONNECTED TO EMERGENCY POWER WITH EMERGENCY POWER PACK, 'NL' INDICATES FIXTURE ON (UNSWITCHED) NIGHT LIGHT CIRCUIT.
- LIGHT FIXTURE, LETTER INDICATES TY, 'E' 'B', '2' INDICATES CIRCUIT NUMBER, 'A' INDICATES SWITCH DESIGNATION CONTROLLING FIXTURES
- EXIT LIGHT FIXTURE, SHADING INDICATES FACE WITH DIRECTIONAL ARROW (IF REQUIRED).
- PLUG/MO WITH OUTLETS ON CENTER AS INDICATED
- LIGHT SWITCH, 'a' AND 'b' INDICATE NUMBER OF SWITCHES AND FIXTURES CONTROLLED BY SWITCHES
- LIGHT SWITCH, THREE-WAY, 'a' AND 'b' INDICATE NUMBER OF SWITCHES AND LIGHT FIXTURES CONTROLLED BY SWITCHES.
- DIMMER SWITCH, 'a' AND 'b' INDICATE NUMBER OF SWITCHES AND FIXTURES CONTROLLED BY SWITCHES.
- JUNCTION BOX WITH COVER
- DUPLEX RECEPTACLE, 'S' INDICATES SAFETY RECEPTACLES (SEE SPECIFICATIONS).
- DUPLEX RECEPTACLE IN FLUSH FLOOR BOX, 'S' INDICATES SAFETY RECEPTACLE.
- FOURPLEX RECEPTACLE
- DUPLEX RECEPTACLE IN PEDESTAL
- CLOCK OUTLET
- TELEPHONE OUTLET, WALL AT 42" FOR DESK PHONE.
- PAY TELEPHONE OUTLET.
- TELEPHONE FLOOR OUTLET IN FLUSH FLOOR BOX.
- FIRE ALARM CONTROL PANEL
- FIRE ALARM MANUAL FULL STATION
- FIRE ALARM BELL W/STROBE LIGHT.
- FIRE ALARM CHIME W/STROBE LIGHT.
- SMOKE DETECTOR.
- CONDUIT AND WIRE RUN UNDER FLOOR OR UNDERGROUND.
- CONDUIT AND WIRE RUN EXPOSED
- CONDUIT AND WIRE RUN CONCEALED IN FLOOR OR CEILING
- HOMERUN TO PANELBOARD 'A', '2' INDICATES CIRCUIT NUMBER
- SLASH MARKS INDICATE NUMBER OF #2 AWG WIRES, NO SLASH MARKS INDICATE 2 #2 AWG WIRES, U.O.N. CHEVRON MARKS INDICATE NUMBER OF #0 AWG WIRES, U.O.N.
- GROUND WIRE.
- FLEXIBLE CONDUIT
- CONDUIT STUB-OUT W/CAP
- DISCONNECT (SAFETY) SWITCH, 'F' INDICATES FUSED, 'BLANK' INDICATES NON-FUSED.
- COMBINATION CIRCUIT CONTROLLER/MAGNETIC MOTOR STARTER '1' INDICATES NEMA STARTER SIZE.
- PHOTOCELL
- FRACTIONAL HORSEPOWER MANUAL MOTOR STARTER
- MOTOR CONNECTION, NUMBER INDICATES HORSEPOWER
- TELEVISION OUTLET.
- SWITCH, SIZE, FUSE SIZE, AND TYPE AS INDICATED
- CIRCUIT BREAKER, MOLDED CASE, TRIP SIZE AND \* POLES AS INDICATED.
- FUSE, TYPE AND STYLE AS INDICATED.
- TRANSFORMER, SIZE, VOLTAGE, PHASE AS INDICATED.
- NORMALLY OPEN CONTACTS.
- NORMALLY CLOSED CONTACTS.
- GROUND.
- BOOK THEFT, DETECTOR PANELS, 3M #3402
- REFERENCE SYMBOL, A = DETAIL LETTER E-2 = SHEET ON WHICH DETAIL IS DRAWN.
- WALL MOUNTED KEY PAD, FOR INTRUSION DETECTION SYSTEM
- INFRARED MOTION DETECTOR, FOR INTRUSION DETECTION SYSTEM (ADD ALTERNATE).
- ANNUNCIATOR BELL, FOR INTRUSION DETECTION SYSTEM
- COMBINATION TELEPHONE/COMPUTER OUTLET
- COMBINATION TELEPHONE/COMPUTER OUTLET IN FLUSH FLOOR BOX.
- ABOVE FINISHED FLOOR
- ABOVE FINISHED GRADE
- AMERICAN WIRE GAUGE
- BELOW FINISHED GRADE
- BREAKER
- CIRCUIT BREAKER
- CONDUIT
- CONDUIT ONLY
- COPPER
- CURRENT LIMITING FUSE
- CURRENT TRANSFORMER
- DUPLEX RECEPTACLE, 'I' INDICATES ISOLATED GROUND RECEPTACLE.

- EF EXHAUST FAN
- ELEC ELECTRIC, ELECTRICAL
- EXIST EXISTING
- FA FIRE ALARM
- FAAP FIRE ALARM ANNUNCIATOR PANEL
- FAFP FIRE ALARM CONTROL PANEL
- G GROUND BUS OR WIRE
- GFI GROUND FAULT INTERRUPTER
- GND GROUND
- HP HORSEPOWER
- KAIC THOUSAND AMPS INTERRUPTING CAPACITY
- KVA KILO-VOLTAMP
- LTG LIGHTING
- MECH MECHANICAL
- MTD MOUNTED
- MTG MOUNTING
- NC NORMALLY CLOSED
- NO NORMALLY OPEN
- NOT IN CONTRACT
- NIC PANEL
- PNLBD PANELBOARD
- SHT SHEET
- SWBD SWITCHBOARD
- T, TELE TELEPHONE
- TYP TYPICAL
- UG UNDERGROUND
- UON UNLESS OTHERWISE NOTED
- VA VOLTAMP
- WP WEATHERPROOF
- XPTR TRANSFORMER

## NOTES

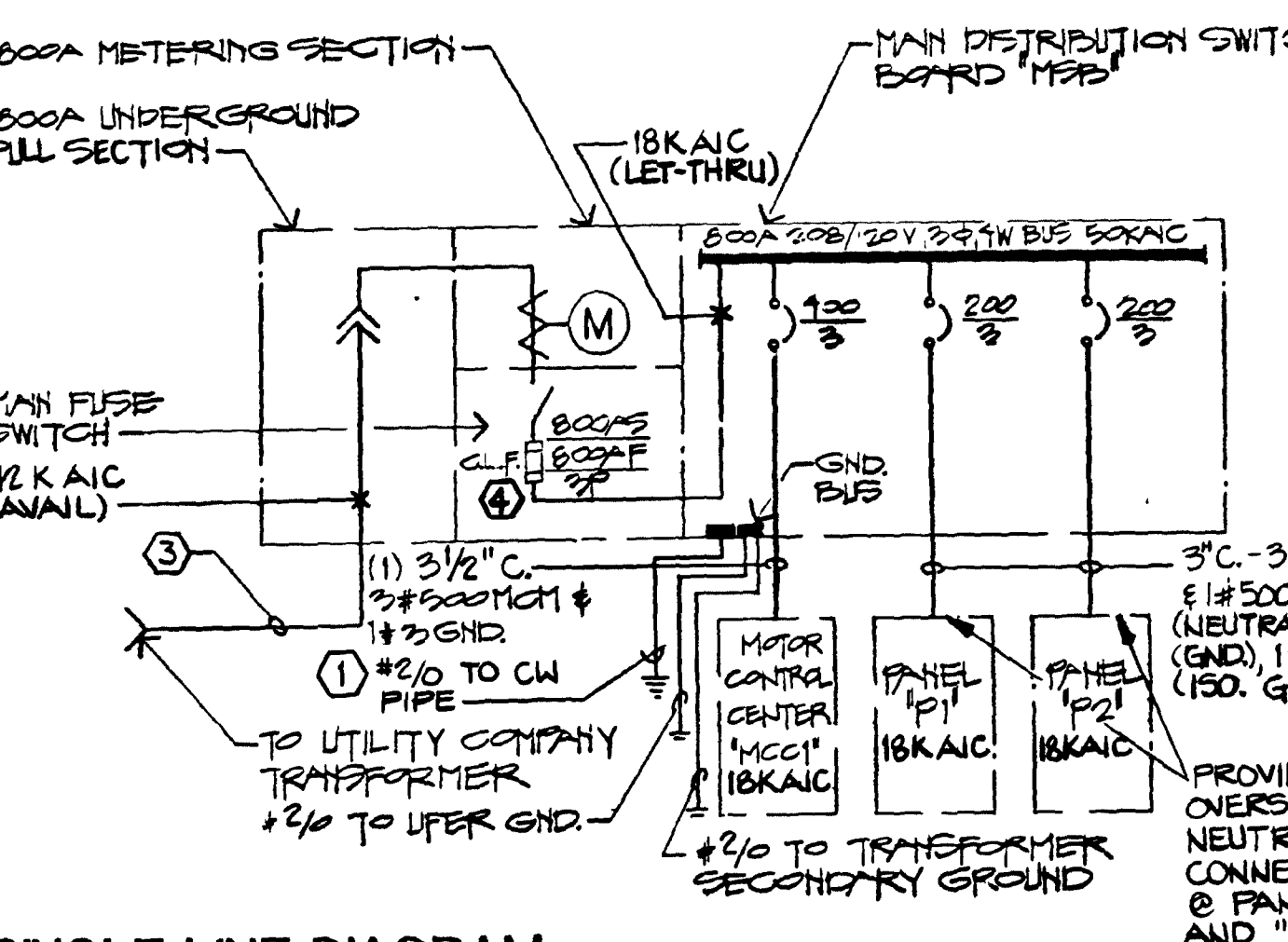
- GROUND WIRE TO CLOSET METAL CW PIPE IN CONTACT WITH EARTH.
- NOT USED.
- PROVIDE CONCRETE ENCASED SCHEDULE 40 PVC CONDUIT BELOW GRADE PER UTILITY COMPANY REQUIREMENTS, CONDUCTORS TO BE PROVIDED BY UTILITY COMPANY.
- PROVIDE 800AMP FUSES, HI-CAP, CLASS L, CURRENT LIMITING TYPE KTU, AS MANUFACTURED BY BUSS.
- CHEVRON INDICATES #10 NEUTRAL WIRE TO BE PROVIDED.

## LOAD CALCULATIONS

800 AMP, 120/280V., 3 PHASE, 4 WIRE MAIN DISTRIBUTION BOARD "MSB"

"MCC1" = 270.1 AMPS  
 PANEL "P1" = 148.4 AMPS  
 PANEL "P2" = 79.0 AMPS  
 TOTAL = 497.5 AMPS

CONCLUSION: 800 AMP METER AND MAIN DISTRIBUTION BOARD WITH 800 AMP, 3 POLE MAIN BREAKER IS SUFFICIENT.



**SINGLE LINE DIAGRAM**  
NO SCALE

# LIGHT FIXTURE SCHEDULE

TYPE	MTG	LUMINAIRE DESCRIPTION	MANUFACTURER & CATALOG NUMBER	LAMP #/TYPE WATTS CT/COR	BALLAST #/TYPE PF BF CIRCUIT	INPUT VOLTS VA	REC DEPTH REF NOTES
A	REC	2' X 4' GRID FLUORESCENT TROFFER W/ 12" THICK ACRYLIC PRISMATIC LENS STEEL HOUSING ELECTRONIC (2-LAMP) BALLASTS (TRAD) WHITE POLYESTER POWDER PAINT, AND MASTER/SLAVE WIRING FOR TITLE 24 COMPLIANCE), AND 2" INTERCONNECTING CABLE	LITHONIA #22P-G-3-2E-A12125-120-TUBI-PAF-OR APPROVED EQUAL.	3PL 32 35K/84 F32T8	2EL - RAP	120	4.5'
B	REC	2' X 2' GRID FLUORESCENT TROFFER W/ 12" THICK ACRYLIC PRISMATIC LENS STEEL HOUSING, ELECTRONIC BALLASTS (TRAD), WHITE POLYESTER POWDER PAINT	LITHONIA #22P-G-2-LJ2-A12125-120-TUBI-PAF-OR APPROVED EQUAL.	2PL 32 35K/84 F32T8	1EL - RAP	120	4.5'
B1	REC	SIMILAR TO TYPE 'B' FIXTURE EXCEPT WITH EMERGENCY BATTERY PACK	LITHONIA #22P-G-2-LJ2-A12125-120-TUBI-PAF-OR APPROVED EQUAL.	2PL 32 35K/84 F32T8	1EL - RAP	120	4.5'
O	REC	1' X 4' FLANGED FLUORESCENT TROFFER W/ 12" THICK ACRYLIC PRISMATIC LENS STEEL HOUSING, ELECTRONIC BALLASTS (TRAD) WHITE POLYESTER POWDER PAINT	LITHONIA #22P-F-3-3E-A12125-120-TUBI-PAF-OR APPROVED EQUAL.	2PL 32 35K/84 F32T8	1EL - RAP	120	5'
C1	REC	SIMILAR TO TYPE 'O' FIXTURE EXCEPT WITH EMERGENCY BATTERY PACK	LITHONIA #22P-F-3-3E-A12125-120-TUBI-PAF-OR APPROVED EQUAL.	2PL 32 35K/84 F32T8	1EL - RAP	120	5'
D	SURE	1' X 4' OPEN INDUSTRIAL FLUORESCENT REFLECTOR BAFFLE, ELECTRONIC BALLAST (TRAD) STEEL HOUSING, WHITE POLYESTER POWDER PAINT, AND WIRE GUARD	LITHONIA #41F-2-32-120-TUBI-PAF-WG3 OR APPROVED EQUAL.	2PL 32 35K/84 F32T8	1EL - RAP	120	-
E	PEND	1' X 4' FLUORESCENT FIXTURE W/PARABOLIC REFLECTOR BAFFLE, ELECTRONIC BALLAST (TRAD) STEEL HOUSING, WHITE POLYESTER POWDER PAINT, STAINLESS STEEL FIELD ADJUSTABLE AIRCRAFT CABLE ASSEMBLY, 2" DIA CANOPY 5" DIA CANOPY AND COILED CORD AT POWER DROPS, BATHING LIGHT DISTRIBUTION, TANGENT WIRE, PHOTOC. IF FIXTURE LENGTHS WHERE POSSIBLE.	LITECONTROL #PD-3024-T8-PARSS-CHM-TW-120-ELB-FAIACC-ACCFF (POWER DROPS) OR APPROVED EQUAL.	2PL 32 35K/84 F32T8	1EL - RAP	120	-
E1		SIMILAR TO TYPE 'E' FIXTURE EXCEPT W/EMERGENCY BATTERY PACK	LITECONTROL #PD-3024-T8-PARSS-CHM-TW-120-ELB-EP-FAIACC-ACCFF (POWER DROPS) OR APPROVED EQUAL.	2PL 32 35K/84 F32T8	1EL - RAP	120	-
F		CONTINUOUS FLUORESCENT (PL9) COVE FIXTURE W/ LAMPS MOUNTED ON 8" CENTERS ON 2" SQUARE ALUMINUM RACEWAY HPF INTEGRAL BALLASTS, (SEE ARCH REFLECTED CEILING PLAN FOR EXACT FIXTURE LENGTHS)	NORBERT BELFER # 280180R-20123 OR APPROVED EQUAL.	6PL (PL9) (PER 4L7)	6MAG (PER 4L7)	72 WATTS (4L7)	-
G	REC	8" DIA FLUORESCENT DOWNLIGHT FIXTURE WITH ELECTRONIC DIMMING BALLASTS (LUTRON HI-LUME), WHITE ALUMINUM TRIM RING CEILING SLOPE ADAPTER, CHAMPAGNE GOLD REFLECTOR	LITHONIA #AF2262DT-8CR-120-TWR-DIML-SCR APPROVED EQUAL.	2PL 32 35K/84 T4 (4-PB)	2EL (DIM) - RAP	50	6.5'
G1	REC	8" DIA FLUORESCENT DOWNLIGHT FIXTURE WITH ELECTRONIC BALLAST WHITE ALUMINUM TRIM RING AND CHAMPAGNE GOLD REFLECTOR	LITHONIA #AF-1262DT-8CR-120-TWR-GEB OR APPROVED EQUAL.	1PL 32 35K/84 T4 (4-PB)	1EL - RAP	28	6.5'
G2	REC	SIMILAR TO TYPE 'G' FIXTURE EXCEPT WITH EMERGENCY BATTERY PACK	LITHONIA #AF-2262DT-8CR-120-TWR-DIML-EL-SCREVERY SLOPE OR APPROVED EQUAL.	2PL 32 35K/84 T4 (4-PB)	2EL - RAP	50	6.5'
G3	REC	SIMILAR TO TYPE 'G1' FIXTURE EXCEPT WITH EMERGENCY BATTERY PACK	LITHONIA #AF-1262DT-8CR-120-TWR-GEB OR APPROVED EQUAL.	2PL 32 35K/84 T4 (4-PB)	1EL - RAP	28	6.5'
H	REC	9" DIA HIGH PRESSURE SODIUM DOWN LIGHT FIXTURE WITH WHITE TRIM RING FRESNEL LENS, SUITABLE FOR DAMP LOCATIONS.	LITHONIA #LGH-3SS-TRW-PFL-120 OR APPROVED EQUAL.	1/PS 35	1/MAG -	50	10'
K	WALL	8" DIA FLUORESCENT (TUBE) FIXTURE WITH DIRECT AND INDIRECT LIGHT, WHITE ENAMEL PAINT, ELECTRONIC BALLAST (TRAD), LINEAR ACRYLIC LENS FOR UP AND DOWN LIGHT ELEMENT	PEERLESS #LD8-201200-78-D-120-ELB-005 OR APPROVED EQUAL.	1PL 32 35K/84 F32T8	1EL - RAP	32	120
K1	WALL	SIMILAR TO TYPE 'K' FIXTURE EXCEPT WITH EMERGENCY POWER PACK	PEERLESS #LD8-201200-78-D-120-ELB-005-EM OR APPROVED EQUAL.	1PL 32 35K/84 F32T8	1EL - RAP	32	120
M	POLE	180 WATT LOW PRESSURE SODIUM PARKING LOT LUMINAIRE MOUNTED ON A 28" (Ø) STEEL POLE, 180 MPH WINDING, DARK BRONZE POLE AND LUMINAIRE	LSI (OUTDOOR) #CY-3-180-LPS-FP-208-BR2-ND5058-5013-28-3-3-8R2-C8C-DA OR APPROVED EQUAL.	1/LPS 180	1/MAG -	240	30'
P	GR	FLUORESCENT (LANDSCAPE) FLOOD LIGHT FIXTURE ALUMINUM HOUSING, BRONZE FINISH U.L. LISTED FOR WET LOCATIONS, TEMPERED GLASS LENS	HYDREL #4798A-PL13/120 OR APPROVED EQUAL.	1PL 13	1/MAG - RAP	17	120
EXT		LED EXIT SIGN FIXTURE WITH EMERGENCY BATTERY PACK, GREEN LETTERS, AND WHITE COLOR.	LITHONIA #LE-S-W-1-G-120-ELM OR APPROVED EQUAL.	LED 7	- -	7	120
S	PEND	8" DIA FLUORESCENT (TUBE) FIXTURE WITH ELECTRONIC BALLAST (TRAD) WHITE ENAMEL PAINT, LINEAR ACRYLIC LENS STAINLESS STEEL FIELD ADJUSTABLE AIRCRAFT CABLE ASSEMBLY 2" DIA CANOPY 5" DIA CANOPY AND COILED CORD AT POWER DROP	PEERLESS #LD8-201200-78-P-120-ELB-005 OR APPROVED EQUAL.	2PL 32 35K/84 F32T8	1EL - RAP	62	120
S1	PEND	SIMILAR TO TYPE 'S' FIXTURE EXCEPT WITH EMERGENCY POWER PACK	PEERLESS #LD8-201200-78-P-120-ELB-005-EM OR APPROVED EQUAL.	2PL 32 35K/84 F32T8	1EL - RAP	62	120
T	GR	HIGH PRESSURE SODIUM (LANDSCAPE) UP-LIGHT FIXTURE U.L. LISTED FOR WET LOCATIONS, FLUSH IN GRADE, ENCLOSED AND GASKETED	HYDREL #9100A-HPSS0-120-WW-34 OR APPROVED EQUAL.	1/PS 50	1/MAG - CWA	65	120
U	WALL	7" DIA ROUND INCANDESCENT LIGHT FIXTURE WITH UP AND DOWN LIGHT, TEMPERED (TOP) GLASS LENS, U.L. LISTED FOR WET LOCATIONS, BLACK FINISH.	DEVINE #8721-S-INC OR APPROVED EQUAL.	2/INC 50	- -	100	120

TYPE	MTG	LUMINAIRE DESCRIPTION	MANUFACTURER & CATALOG NUMBER	LAMP #/TYPE WATTS CT/COR	BALLAST #/TYPE PF BF CIRCUIT	INPUT VOLTS VA	REC DEPTH REF NOTES
V	REC	10" DIA FLUORESCENT DOWN LIGHT FIXTURE WITH ELECTRONIC DIMMING BALLASTS (LUTRON HI-LUME), WHITE ALUMINUM TRIM RING CEILING SLOPE ADAPTER, CHAMPAGNE GOLD REFLECTOR	LITHONIA #AF-3262DT-10CR-120-TWR-DIML-GEB-EL-SC10 (VERY SLOPE) OR APPROVED EQUAL.	3PL 26 35K/84 T4 (4-PB)	3EL - RAP	120	7-1/2'
V1	REC	SIMILAR TO TYPE 'V' FIXTURE EXCEPT WITH EMERGENCY POWER PACK	LITHONIA #AF-3262DT-10CR-120-TWR-DIML-GEB-EL-SC10 (VERY SLOPE) OR APPROVED EQUAL.	3PL 26 35K/84 T4 (4-PB)	3EL - RAP	120	7-1/2'
W	REC	HIGH PRESSURE SODIUM STEP LIGHT FIXTURE, CAST ALUMINUM FACE OPAL GLASS LENS, BLACK ENAMEL PAINT	DEVINE #LM3200-30HP-120V-EPBK OR APPROVED EQUAL.	1/PS 25	1/MAG -	50	4-1/2'
Y	WALL	VAPOR TIGHT FLUORESCENT LIGHT FIXTURE WITH GLOBE AND GUARD	RIG-A-LITE #CVPD-28-12-G-G-W OR APPROVED EQUAL.	1PL 28 35K/84 T4 (4-PB)	1EL - RAP	28	120
Z	REC	METAL HALIDE STEP LIGHT FIXTURE RECESSED MOUNTED (ON ANGLE) IN TOP OF ROTONDA SOFFIT, TEMPERED DIFFUSED LENS, UNIVERSAL BURN LAMP	DEVINE #819V12-SOHM	1/MH 50	1/CWA -	62	4-1/2'

MTG: COVE, FLOOR GROUND PEND, POLE, RECESSED SURFACE WALL  
 LAMP: # NUMBER OF LAMPS/LUMINAIRE, TYPE FLUORESCENT HPS INCANDESCENT, INDICATOR LPS HMI HPS  
 BALLAST: # NUMBER OF BALLASTS PER LUMINAIRE, TYPE ELECTRONIC HYBRID MAGNETIC, PF MINIMUM BALLAST FACTOR, WATTS LAMP WATTS CT COLOR TEMP IN DEGREES KELVIN, CR MINIMUM COLOR RENDERING INDEX CODE ORDERING CODE OR OTHER INFO

## SEISMIC NOTE

"ALL MECHANICAL AND ELECTRICAL EQUIPMENT SHALL BE BRACED OR ANCHORED TO RESIST A HORIZONTAL FORCE ACTING IN ANY DIRECTION USING THE FOLLOWING CRITERIA:

FIXED EQUIPMENT ON GRADE 33% OF OPERATING WEIGHT  
 FIXED EQUIPMENT ON STRUCTURE 50% OF OPERATING WEIGHT  
 EMERGENCY POWER AND COMMUNICATION EQUIPMENT ON GRADE 50% OF OPERATING WEIGHT  
 EMERGENCY POWER AND COMMUNICATION EQUIPMENT ON STRUCTURE 75% OF OPERATING WEIGHT

FOR FLEXIBLY MOUNTED EQUIPMENT USE 2 X THE ABOVE VALUES SIMULTANEOUS VERTICAL FORCE - USE 1/3 X HORIZONTAL FORCE. WHERE ANCHORAGE DETAILS ARE NOT SHOWN ON DRAWINGS.

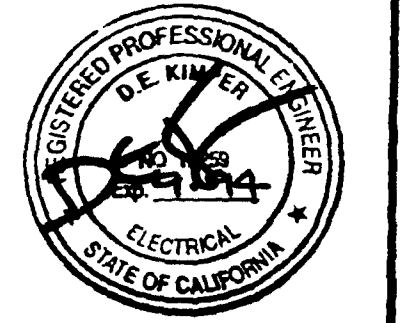
THE SMACNA "GUIDELINES FOR SEISMIC RESTRAINTS OF MECHANICAL SYSTEMS AND PLUMBING PIPING SYSTEMS" OR NO. R-0003, THE "SUPERSTRUT SEISMIC RESTRAINT SYSTEM" FOR PIPES AND CONDUITS ONLY OR NO. R-0071, THE "KIN-LINE SEISMIC RESTRAINT SYSTEM" FOR PIPES AND CONDUITS ONLY.

## SFM NOTES

RULES AND REGULATIONS SHALL BE COMPLIED WITH AS SET FORTH IN ALL APPLICABLE NATIONAL AND LOCAL REGULATIONS, ORDINANCES, AND STATUTES, INCLUDING, BUT NOT LIMITED TO THE LATEST EDITIONS OF THE FOLLOWING PUBLICATIONS, AND ALL SUPPLEMENTS THERETO THAT MAY BE IN EFFECT.

NATIONAL ELECTRIC CODE (NEC) 1990, PUBLISHED BY THE NATIONAL BOARD OF FIRE UNDERWRITERS'S, HEREINAFTER REFERRED TO AS THE "CODE".

LIST OF ELECTRICAL FITTINGS, PUBLISHED BY THE UNDERWRITER'S LABORATORIES, INC



CALIFORNIA ADMINISTRATIVE CODE, TITLE 24, PART 2.  
 UNIFORM BUILDING CODE (UBC), 1988 WITH CALIFORNIA AMENDMENTS.  
 NATIONAL ELECTRICAL SAFETY CODE (NEC).

**EARL AND BIRDIE TAYLOR LIBRARY**

CITY OF SAN DIEGO, CALIFORNIA  
 ENGINEERING DEPARTMENT  
 SHEET 18 OF 23 SHEETS

DATE: DEC 8, 1990  
 CITY ENGINEER: [Signature]  
 DESIGNER: [Signature]

CONTRACTOR: [Blank] DATE STARTED: [Blank] DATE COMPLETED: [Blank]

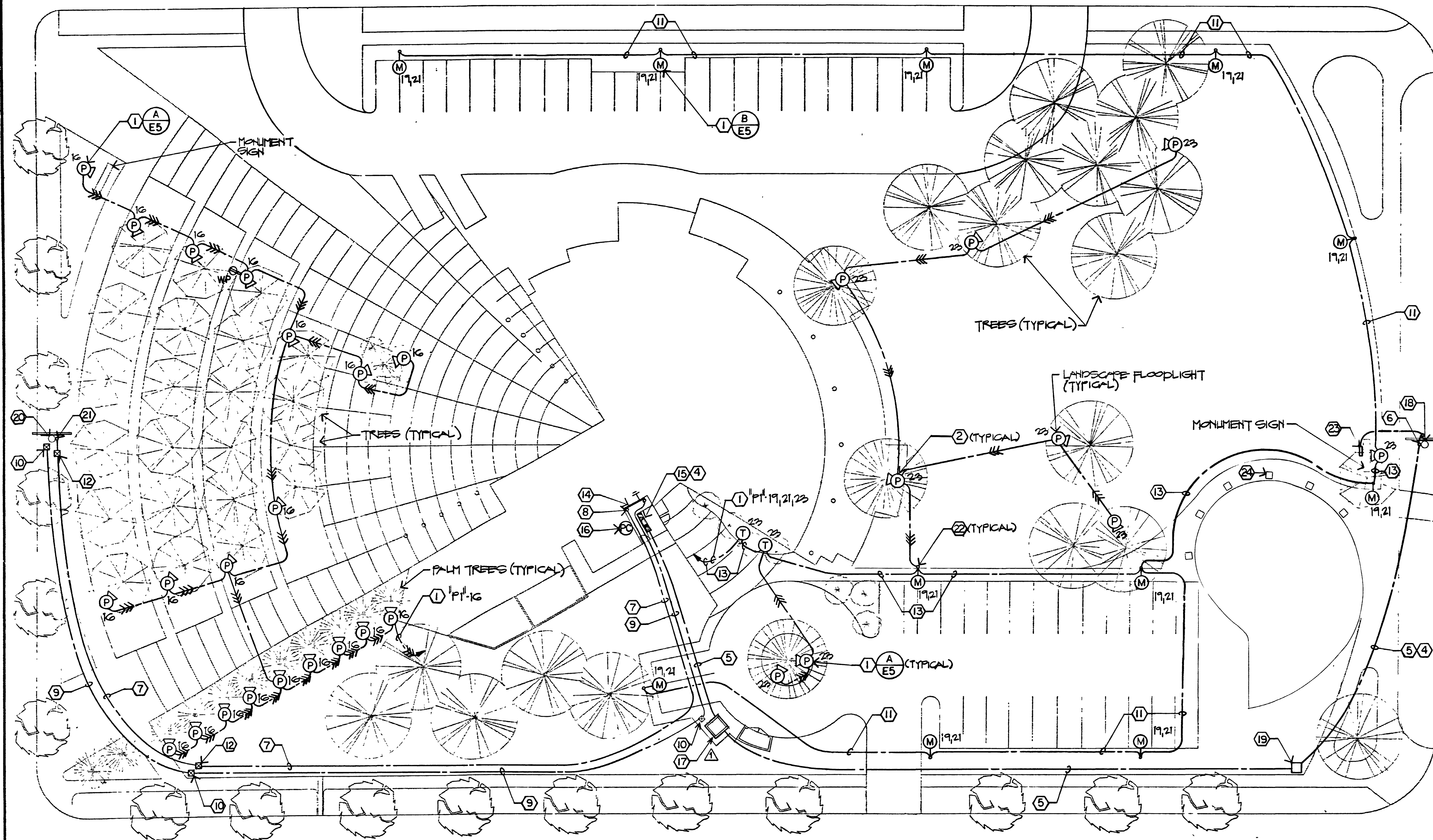
PROJECT NO: 119418  
 SHEET NO: 18 OF 23 SHEETS  
 CONTROL IDENTIFICATION: 228-1692  
 LIBRARY COORDINATES: 26189.64-D

## SYMBOLS/ABBREV., LIGHT FIXTURE SCHEDULE & SINGLE LINE DIAGRAM



THOMAS

AVENUE

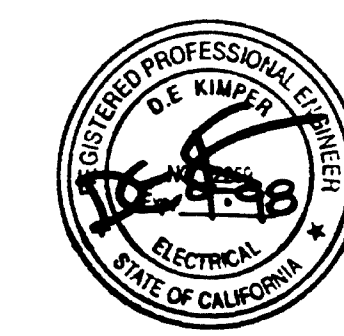


### ELECTRICAL SITE PLAN

SCALE: 1"=20'-0"

### NOTES

- 1 SEE EXTERIOR LIGHTING CONTROL WIRING DIAGRAM <sup>(D)</sup><sub>E5</sub> FOR CONNECTION REQUIREMENTS FOR ALL EXTERIOR LIGHT FIXTURES, CIRCUIT VIA TIMECLOCK/PHOTOCELL.
- 2 CONTRACTOR SHALL VERIFY ALL CONDUIT STUB-UP LOCATIONS, FIXTURE LOCATIONS WITH LANDSCAPING PLANS. ALL LANDSCAPE LIGHTING FIXTURE LOCATIONS SHALL HAVE APPROVAL OF LANDSCAPE ARCHITECT PRIOR TO INSTALLATION. ANY FIXTURES INSTALLED WITHOUT PRIOR APPROVAL ARE SUBJECT TO RELOCATION AT NO COST TO OWNER.
- 3 VERIFY EXACT ROUTING OF UNDERGROUND ELECTRICAL UTILITY LINES. COORDINATE WORK WITH ALL OTHER TRADES FOR LOCATION AND ELEVATION OF ALL BURIED UTILITIES, I.E., STORM SEWER, COLD WATER, SANITARY SEWER, ETC.
- 4 CONTRACTOR SHALL SUBMIT ALL DRAWINGS REQUIRED FOR ELECTRICAL SERVICE, TO SDG&E PLANNING DEPARTMENT, PRIOR TO BEGINNING SITE WORK, SEE SPECIFICATIONS
- 5 PROVIDE CONCRETE ENCASED PVC CONDUIT PER SPECIFICATIONS AND SDG&E UNDERGROUND UTILITY STANDARDS. MINIMUM 24" BELOW GRADE.
- 6 PROVIDE PVC CONDUIT UP UTILITY POLE PER SDG&E REQUIREMENTS.
- 7 PROVIDE 1-1/2" C.O. FOR SOUTHWESTERN CABLE T.V., VERIFY TERMINATION LOCATION AND REQUIREMENTS PRIOR TO BEGINNING WORK.
- 8 STUB-UP 1-1/2" C.O., FOR CABLE T.V. SERVICE, TO MAIN TELEPHONE TERMINAL BOARD. CABLE PROVIDED BY OTHERS.
- 9 PROVIDE 4" C.O. FOR PACIFIC BELL TELEPHONE COMPANY PER UTILITY COMPANY STANDARDS. VERIFY EXACT LOCATION AND TERMINATION REQUIREMENTS WITH TELEPHONE COMPANY PRIOR TO BEGINNING WORK.
- 10 TELCO PEDESTAL, PROVIDE CONDUIT STUB-UPS PER TELCO STANDARDS.
- 11 PROVIDE 1" C.-2#6 + 1#10 GND.
- 12 CABLE TELEVISION PEDESTAL (BY OTHERS) STUB-UP CONDUIT PER UTILITY COMPANY STANDARDS.
- 13 PROVIDE 1" C.-2#6 + 1#10 GND., AND 2#10 + 1#10 GND.
- 14 4'x8'x3/4" PLYWOOD TELEPHONE TERMINAL BACKBOARD (PROVIDE 1#6 CU. GROUND TO BUILDING GROUND)
- 15 800 AMP, 120/208 VOLT, 3 PHASE, 4 WIRE MAIN SWITCHBOARD "MSB".
- 16 PHOTOCELL ON ROOF ABOVE MAIN SWITCHBOARD ROOM (FACING NORTH).
- 17 TRANSFORMER PROVIDED BY UTILITY COMPANY, PROVIDE TRANSFORMER PAD PER UTILITY COMPANY STANDARDS.
- 18 EXISTING UTILITY COMPANY POWER POLE, VERIFY ALL WORK TO BE DONE WITH UTILITY COMPANY.
- 19 PROVIDE PRIMARY HANDHOLE PER UTILITY COMPANY REQUIREMENTS.
- 20 EXISTING UTILITY COMPANY POWER POLE #22970P69275.
- 21 PROVIDE 1-1/2" C.O. TO POLE PER CABLE TELEVISION COMPANY STANDARDS.
- 22 PROVIDE CONCRETE HANDHOLE, SEE <sup>(B)</sup><sub>E5</sub>
- 23 EXISTING POWER PEDESTAL, TO REMAIN.
- 24 EXISTING CONCRETE BENCH, TO REMAIN.



MANUEL ONCINA, ARCHITECT  
 514 Pennsylvania Avenue  
 San Diego, CA 92103  
 (619) 296-3020 Fax: 296-4044

### EARL & BIEDE TAYLOR LIBRARY

# E2

CITY OF SAN DIEGO, CALIFORNIA  
 ENGINEERING DEPARTMENT  
 SHEET 6 OF 10 SHEETS

WO NO. 119418  
 DATE 8-11-86

DESCRIPTION	BY	APPROVED	DATE	FILED
ORIGINAL				

CONTROL CERTIFICATION NO.  
 228-1692  
 LAMBERT COORDINATES  
 26189-65-D

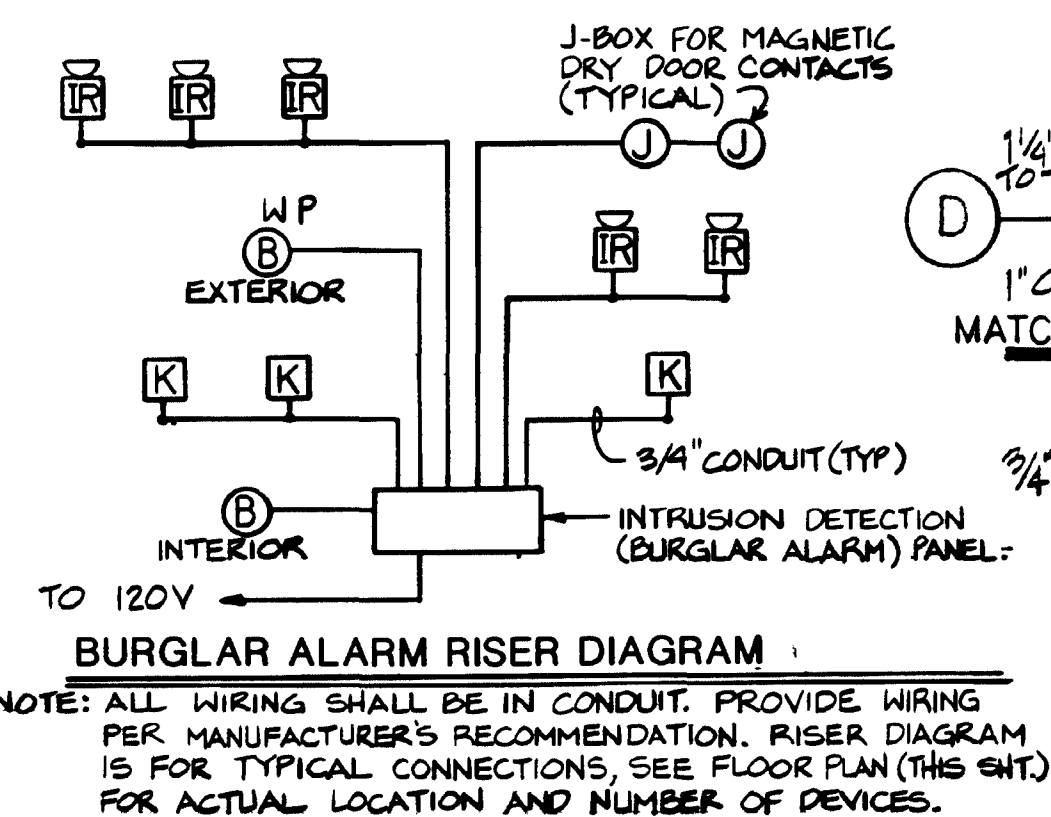
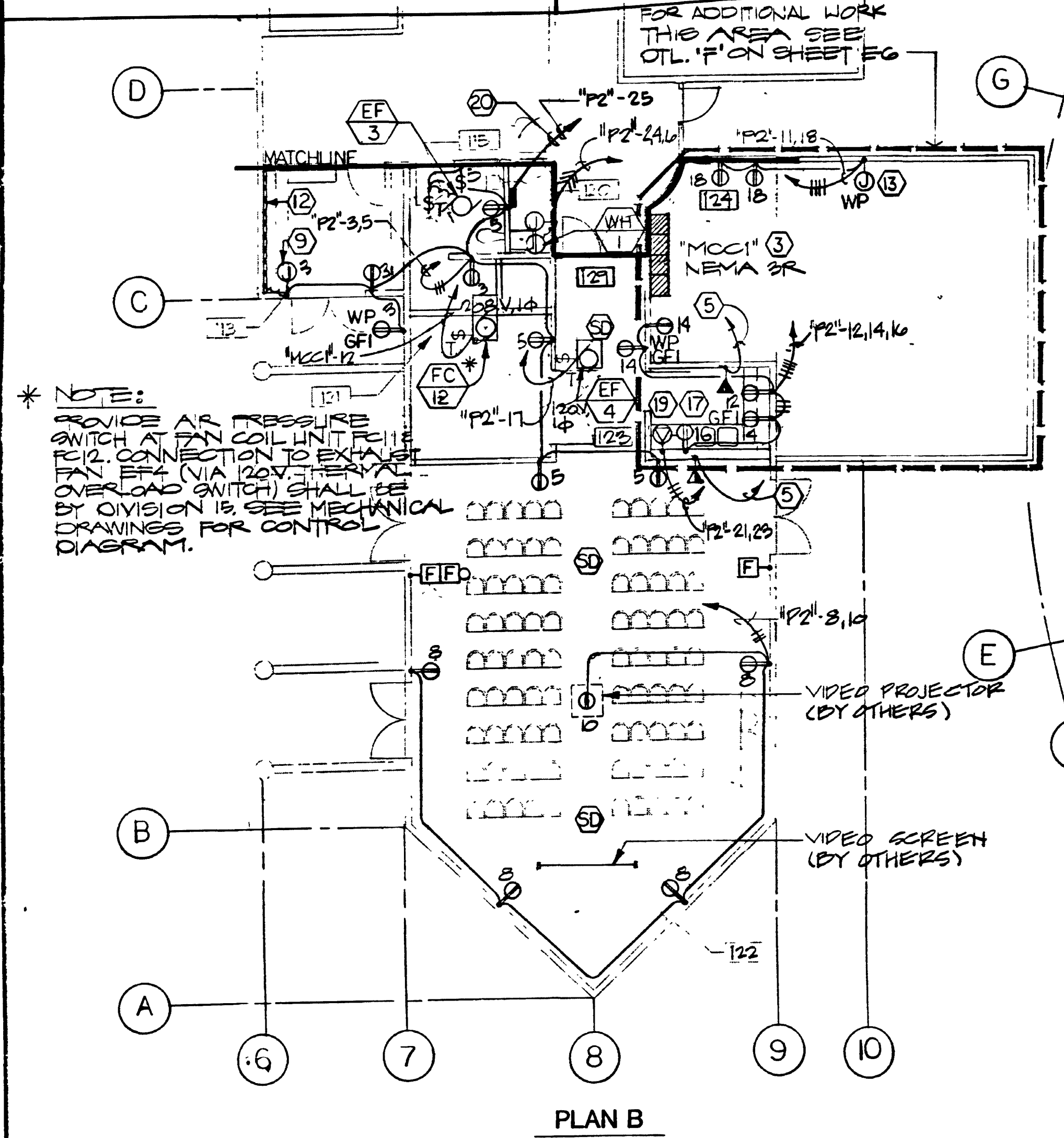
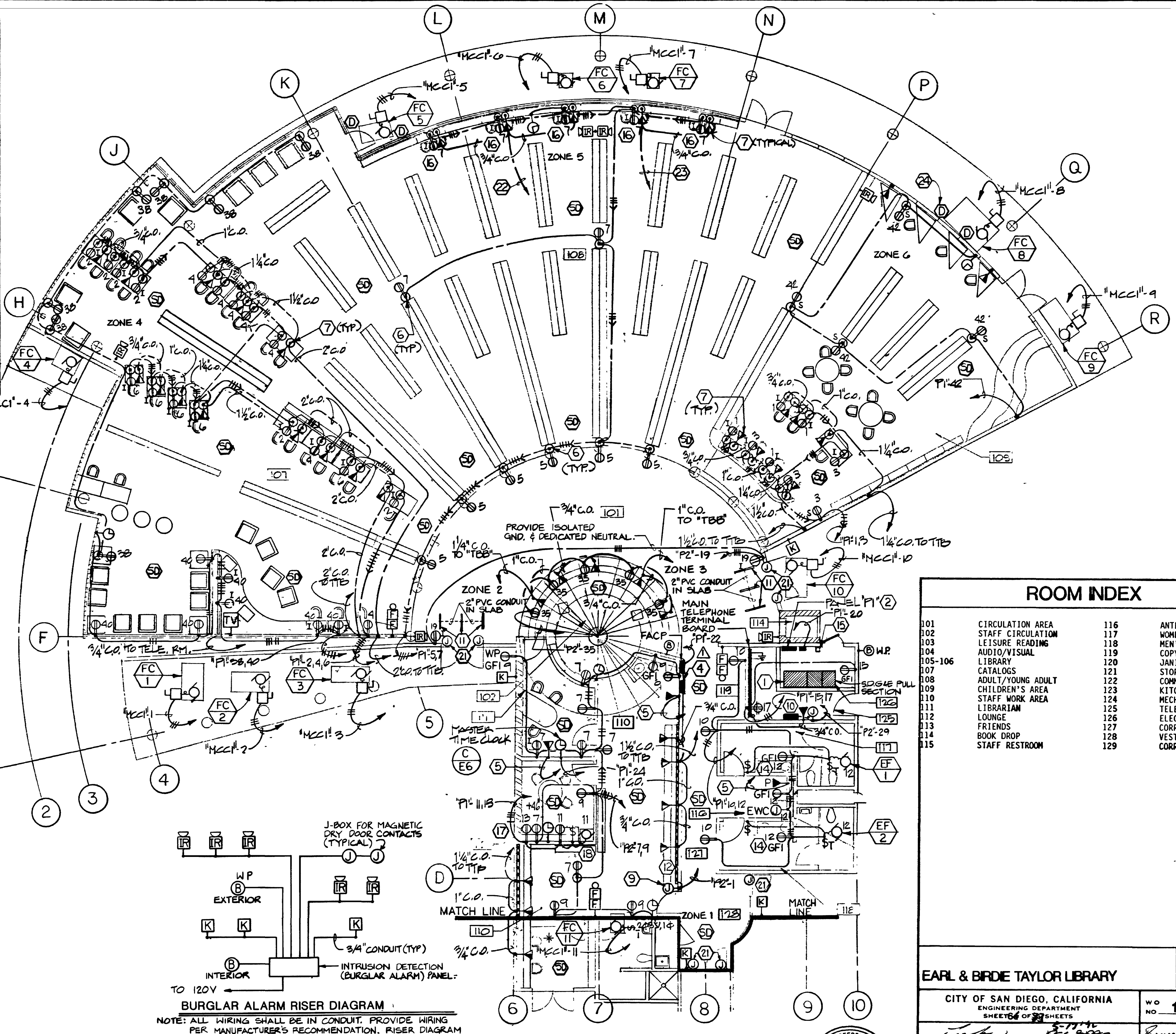
### ELECTRICAL SITE PLAN





**NOTES**

- 1 800 AMP, 120/208 VOLT, 3 PHASE, 4 WIRE MAIN SWITCHBOARD "MSB" CONTRACTOR SHALL MAINTAIN MINIMUM 3' CLEAR IN FRONT OF SWITCHBOARD, AND 5' CLEAR IN FRONT OF SOG&E PULL SECTION.
- 2 225 AMP, 120/208 VOLT, 3 PHASE, 4 WIRE PANEL "P1".
- 3 600 AMP, 208 VOLT, 3 PHASE, 3 WIRE MOTOR CONTROL CENTER "MCC1".
- 4 225 AMP, 120/208 VOLT, 3 PHASE, 4 WIRE PANEL "P2".
- 5 PROVIDE 3/4" C.O. TO TELEPHONE BACKBOARD.
- 6 PROVIDE FLUSH MOUNTED FLOOR OUTLET, OUTLET BOX WITH COVER PLATE AND 20 AMP 125V. DUPLEX RECEPTACLE. VERIFY EXACT STUB UP LOCATIONS WITH FURNITURE INSTALLER.
- 7 PROVIDE FLUSH MOUNTED TELEPHONE/DATA OUTLET, OUTLET BOX WITH COVER PLATE AND RUBBER GROMMET OPENING BETWEEN COVER PLATE AND BOX.
- 8 MOUNT DUPLEX RECEPTACLE FLUSH WITH FINISH CEILING.
- 9 PROVIDE FLUSH J-BOX AT END OF SURFACE MOUNTED PLUG STRIP, ROUTE CONDUIT CONCEALED FROM J-BOX UP STUD WALL.
- 10 SECURITY ACCESS (BURGLAR ALARM) PANEL, MAKE FINAL ELECTRICAL CONNECTION. PROVIDE ISOLATED GROUND. SEE BURGLAR ALARM RISER DIAGRAM THIS SHEET.
- 11 PROVIDE BOOK THEFT DETECTION PANELS AT DOOR LOCATION INDICATED. PROVIDE 2" PVC CONDUIT IN FLOOR SLAB BETWEEN DETECTION PANELS. INSTALL PANELS PER MANUFACTURER'S INSTRUCTION, MAINTAIN MINIMUM 2 FEET CLEARANCE FROM DOOR.
- 12 PROVIDE PLUGMOLD WITH 15A 125V. OUTLETS 12" ON CENTER. PLUGMOLD SHALL BE WIREMOLD 2000 SERIES, CONTRACTOR SHALL PROVIDE ALL CONNECTORS, COVERS, AND FITTINGS.
- 13 PROVIDE 2#12 & 1#12 GND. COILED INSIDE A FLUSH MOUNTED JUNCTION BOX ON EXTERIOR OF BUILDING FOR IRRIGATION CONTROLLER. VERIFY EXACT LOCATION WITH EQUIPMENT INSTALLER, PRIOR TO BEGINNING WORK.
- 14 PROVIDE 1/2" C. 2#12 & 1#12 GND. TO LOW VOLTAGE (24V. SEC /120V PRI) TRANSFORMER FOR INFRARED SENSOR SCAM WATER FAUCETS. (PROVIDED BY DIVISION 15) CONTRACTOR SHALL MAKE ALL FINAL 120V AND 24 VOLT ELECTRICAL CONNECTIONS. 120V. POWER SHALL BE "P1"-14 CIRCUIT.
- 15 TIME CLOCK FOR EXTERIOR LIGHTING.
- 16 VERIFY EXACT LOCATION PRIOR TO INSTALLATION.
- 17 ABOVE COUNTER MICROWAVE OVEN VERIFY EXACT MOUNTING HEIGHT OF DUPLEX OUTLET WITH ARCHITECTURAL ELEVATIONS.
- 18 PROVIDE ABOVE COUNTER TOGGLE SWITCH FOR GARBAGE DISPOSAL.
- 19 PROVIDE 208V , 4 WIRE OUTLET FOR STOVE. VERIFY EXACT NEMA CONFIGURATION WITH EQUIPMENT SUPPLIER.
- 20 TEMPERATURE CONTROL PANEL BY DIV. 15. MAKE FINAL ELECTRICAL CONNECTIONS.
- 21 PROVIDE MAGNETIC POINT OF ENTRY DRY CONTACTS IN DOOR AND DOOR JAMB. COORDINATE WORK WITH GENERAL CONTRACTOR. FOR WIRING SEE BURGLAR ALARM RISER DIAGRAM.
- 22 PROVIDE 1-1/4" C.O. TO TELEPHONE BACKBOARD.
- 23 PROVIDE 1" C.O. TO TELEPHONE BACKBOARD.
- 24 FIRE ALARM SYSTEM DUCT DETECTOR (TYPICAL), FURNISHED AND TESTED BY DIVISION 16, INSTALLED BY DIVISION 15.



**POWER & SIGNAL PLAN**  
SCALE: 1/8"=1'-0"

ROOM INDEX		
101	CIRCULATION AREA	116 ANTE ROOM
102	STAFF CIRCULATION	117 WOMEN'S RESTROOM
103	LEISURE READING	118 MEN'S RESTROOM
104	AUDIO/VISUAL	119 COPY/TYPING
105-106	LIBRARY	120 JANITOR
107	CATALOGS	121 STORAGE
108	ADULT/YOUNG ADULT	122 COMMUNITY ROOM
109	CHILDREN'S AREA	123 KITCHEN
110	STAFF WORK AREA	124 MECHANICAL
111	LIBRARIAN	125 TELEPHONE ROOM
112	LOUNGE	126 ELECTRICAL ROOM
113	FRIENDS	127 CORRIDOR
114	BOOK DROP	128 VESTIBULE
115	STAFF RESTROOM	129 CORRIDOR

**EARL & BERDE TAYLOR LIBRARY** **E3**

CITY OF SAN DIEGO, CALIFORNIA  
ENGINEERING DEPARTMENT  
SHEET 66 OF 85 SHEETS

W.D. NO. **119418**

DESIGNER	BY	APPROVED	DATE	FILED
ORIGINAL				

CONTRACTOR: \_\_\_\_\_ DATE STARTED: \_\_\_\_\_  
INSPECTOR: \_\_\_\_\_ DATE COMPLETED: \_\_\_\_\_

CONTROL CERTIFICATION  
**228-1692**  
LICENSING COORDINATOR  
**26189-66-D**



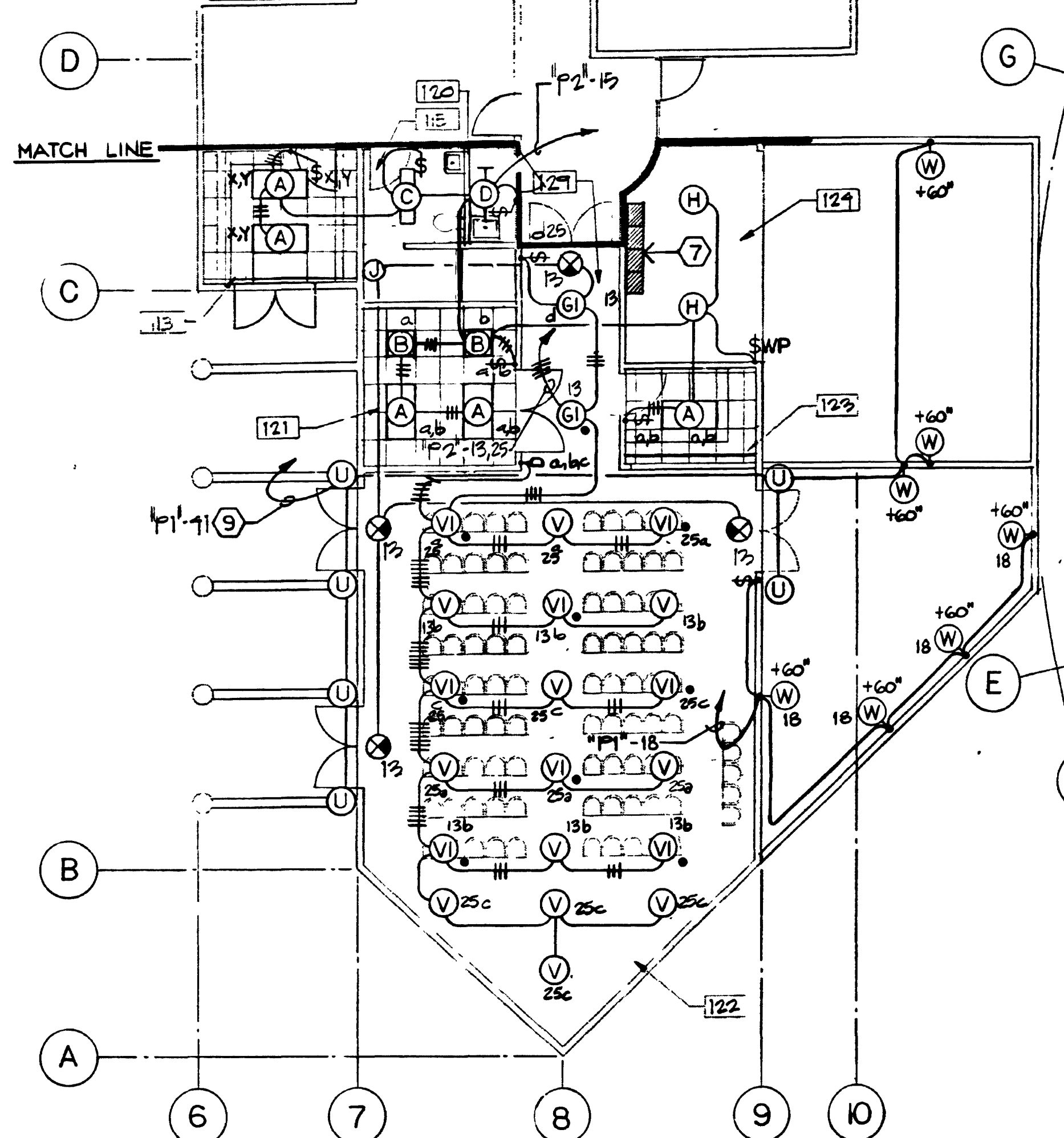
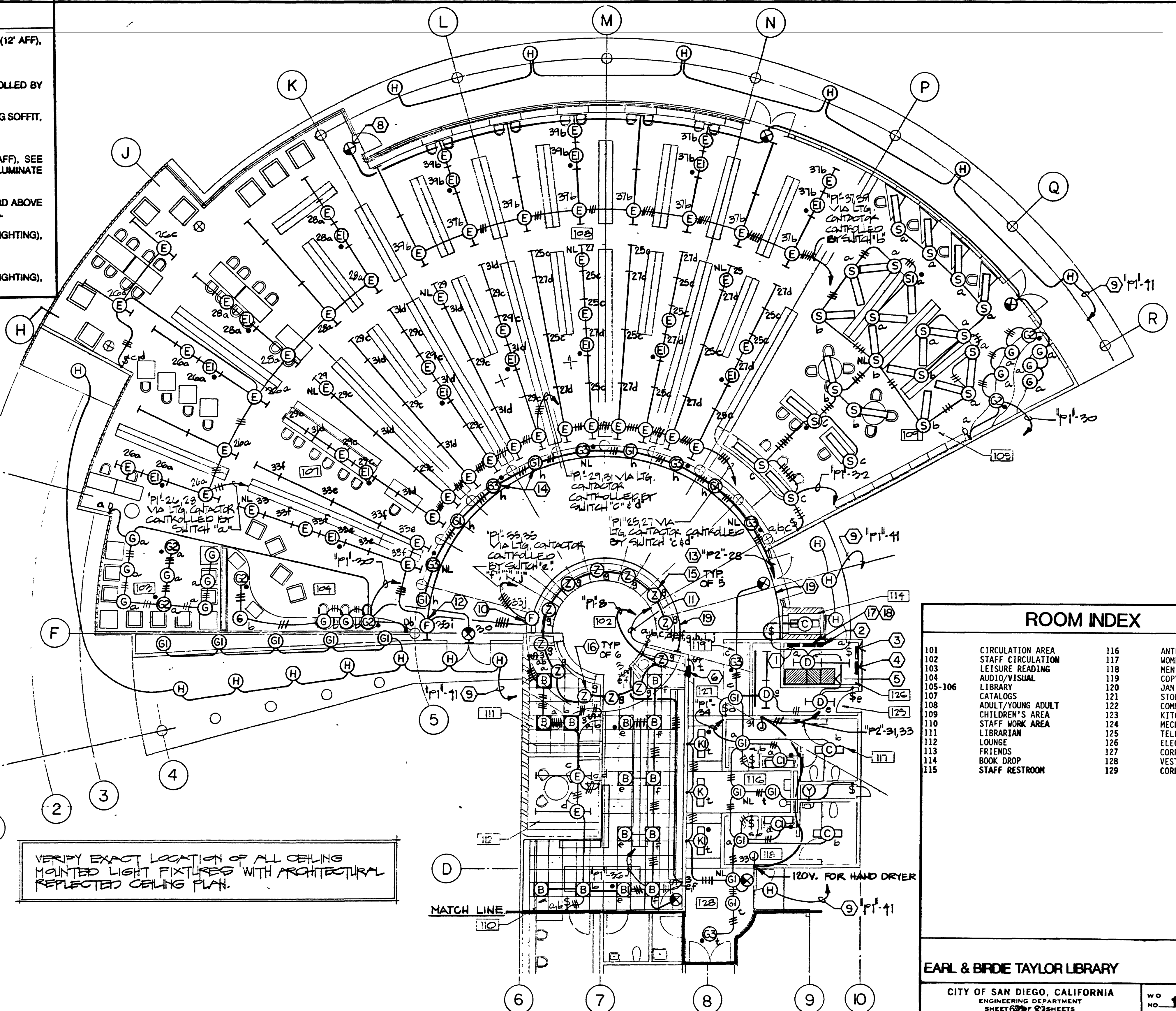
MANUEL ONCINA, ARCHITECT  
514 Pennsylvania Avenue  
San Diego, CA 92103  
(619) 295-3929 Fax 295-1614

**POWER & SIGNAL PLAN**



**NOTES**

- ① PANEL "P1", 225A-208/120V-3PH-4W, SEE PANEL SCHEDULE SHEET E5.
- ② TIME CLOCK "TC1" (EXTERIOR LTG), SEE  $\frac{D}{E6}$  AND SPECIFICATIONS.
- ③ FIRE ALARM CONTROL PANEL "FACP", SEE  $\frac{H}{E6}$ .
- ④ SECURITY SYSTEM PANEL.
- ⑤ MAIN SWITCHBOARD "MSB", 800A-208/120V-3PH-4W PROVIDE MINIMUM 5'-0" CLEAR IN FRONT OF SDG&E PER SDG&E REQUIREMENTS.
- ⑥ PANEL "P2", 225A-208/120V-3PH-4W, SEE PANEL SCHEDULE SHEET E5.
- ⑦ MOTOR CONTROL CENTER "MCC1", SEE SHEET E5.
- ⑧ PROVIDE CEILING MOUNTED PENDANT FOR EXIT SIGN (THIS LOCATION ONLY), MOUNT FIXTURE AT 8" AFF, PROVIDE 1/2" DIA. CONDUIT STEM, PAINT TO MATCH SURROUNDING FINISH.
- ⑨ TO PANEL "P1" VIA EXTERIOR LIGHTING CONTRACTOR PANEL "LCP2", SEE  $\frac{D}{E6}$ .
- ⑩ PROVIDE TYPE "F" LIGHT FIXTURE IN (CUSTOM) PENDANT MOUNTED LIGHTING TROUGH OVER CIRCULATION COUNTER, SEE ARCHITECTURAL DETAIL  $\frac{I}{A16}$ .
- ⑪ PROVIDE 3/4" C-11#12 TO INTERIOR LIGHTING CONTRACTOR PANEL "LCP1", SEE  $\frac{C}{E5}$ .
- ⑫ PROVIDE TYPE "F" LIGHT FIXTURE IN LIGHT SOFFIT (12" AFF), SEE ARCHITECTURAL DETAIL  $\frac{2}{A11}$ .
- ⑬ TO PANEL "P2" VIA LIGHTING CONTRACTOR CONTROLLED BY SWITCH "H".
- ⑭ LIGHT FIXTURE MOUNTED IN UNDERSIDE OF LIGHTING SOFFIT, SEE ARCHITECTURAL DETAIL  $\frac{2}{A11}$ .
- ⑮ LIGHT FIXTURE MOUNTED IN LIGHT SOFFIT (15" AFF), SEE ARCHITECTURAL DETAIL  $\frac{1}{A11}$ . FIXTURE TO ILLUMINATE ROTUNDA AREA.
- ⑯ LIGHT FIXTURE RECESSED MOUNTED IN GYP. BOARD ABOVE OFFICES. FIXTURE TO ILLUMINATE ROTUNDA AREA.
- ⑰ LIGHTING CONTRACTOR PANEL "LCP1" (INTERIOR LIGHTING), SEE  $\frac{C}{E5}$ .
- ⑱ LIGHTING CONTRACTOR PANEL "LCP2" (EXTERIOR LIGHTING), SEE  $\frac{D}{E6}$ .
- ⑳ PROVIDE CONTINUOUS ROW OF LIGHT FIXTURES IN SOFFIT OR TROUGH.



VERIFY EXACT LOCATION OF ALL CEILING MOUNTED LIGHT FIXTURES WITH ARCHITECTURAL REFLECTED CEILING PLAN.

ROOM INDEX		
101	CIRCULATION AREA	116 ANTE ROOM
102	STAFF CIRCULATION	117 WOMEN'S RESTROOM
103	LEISURE READING	118 MEN'S RESTROOM
104	AUDIO/VISUAL	119 COPY/TYPING
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110	STAFF WORK AREA	124 MECHANICAL
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112	LOUNGE	126 ELECTRICAL ROOM
113	FRIENDS	127 CORRIDOR
114	BOOK DROP	128 VESTIBULE
115	STAFF RESTROOM	129 CORRIDOR

**ELECTRICAL LIGHTING PLAN**  
SCALE: 1/8"=1'-0"

<b>EARL &amp; BERDE TAYLOR LIBRARY</b>		<b>E4</b>
CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 67 OF 83 SHEETS		WO NO. <b>119418</b>
DESCRIPTION	BY	APPROVED
ORIGINAL	<i>[Signature]</i>	<i>[Signature]</i>
CONTRACTOR		DATE STARTED
INSPECTOR		DATE COMPLETED
CONTROL COPY LOCATION		<b>228-1692</b>
LANSBET COORDINATES		<b>26189-67-D</b>



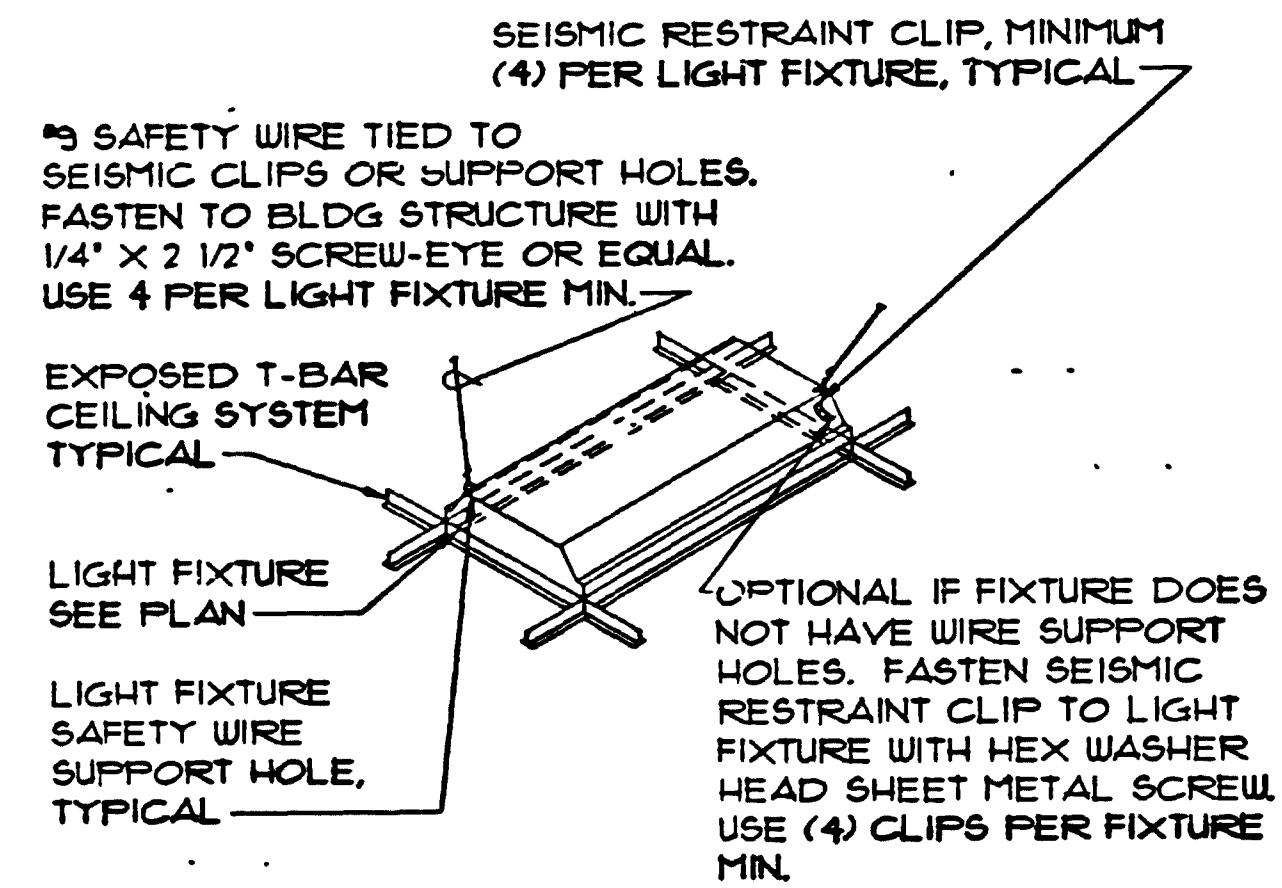
MANUEL GONZALEZ, ARCHITECT  
514 Pennsylvania Avenue  
San Diego, CA 92103  
(619) 295-3929 Fax 295-1644

**ELECTRICAL LIGHTING PLAN**



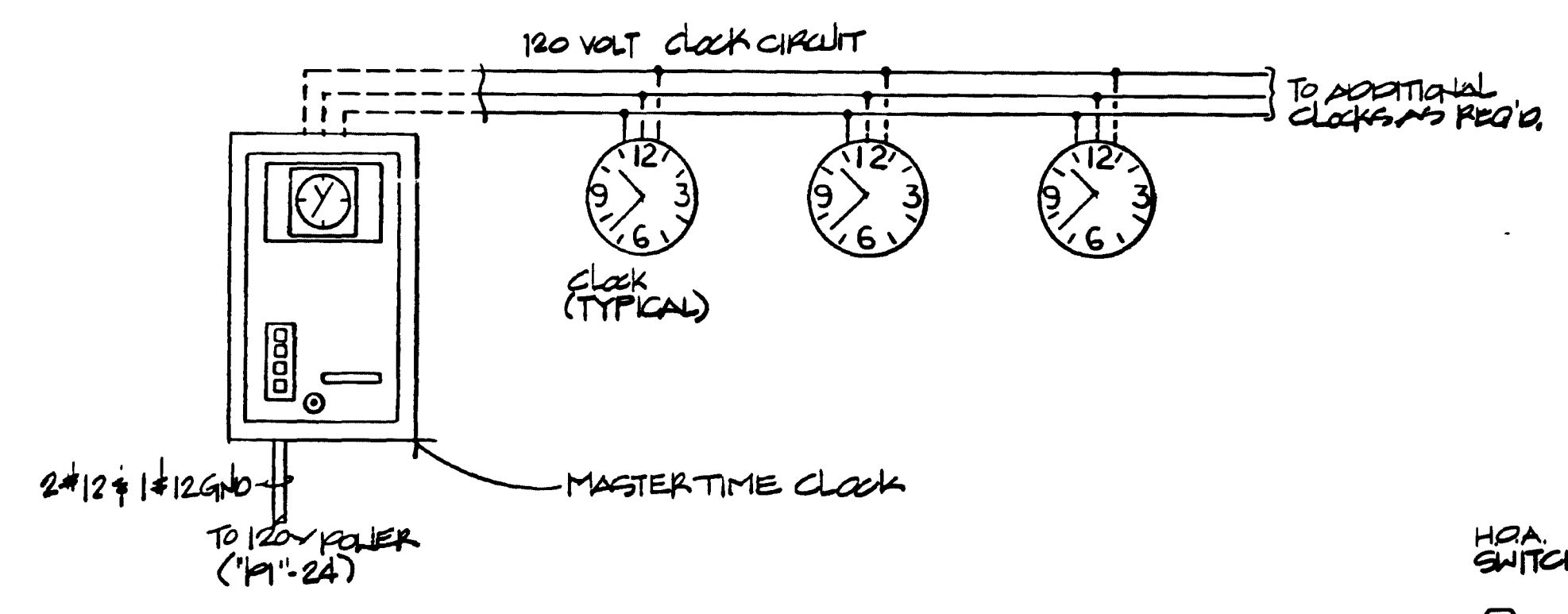






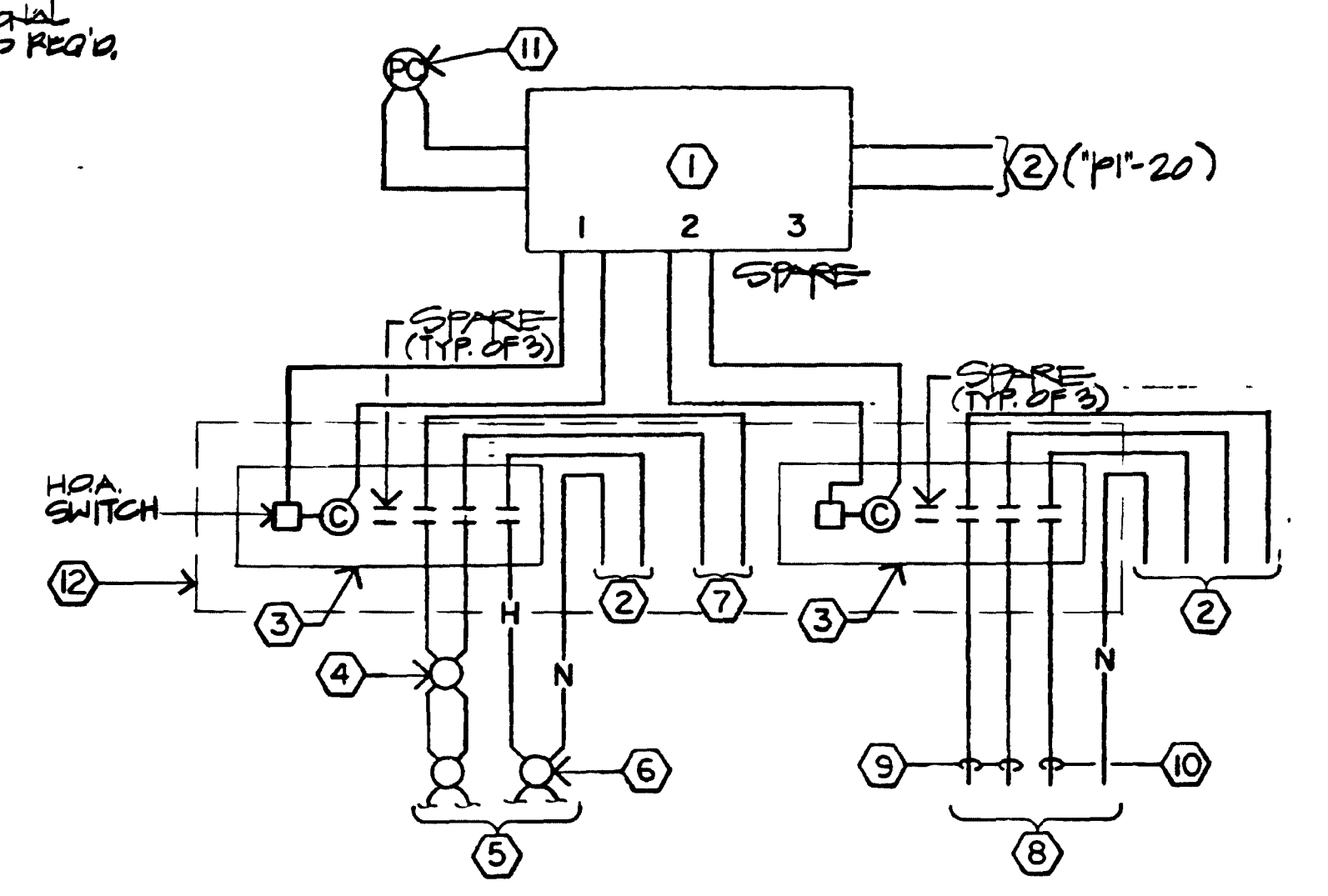
**LIGHT FIXTURE SEISMIC RESTRAINT DETAIL**  
NO SCALE

A  
E6



**TIME CLOCK CONTROL WIRING DIAGRAM**  
NO SCALE

C  
E6

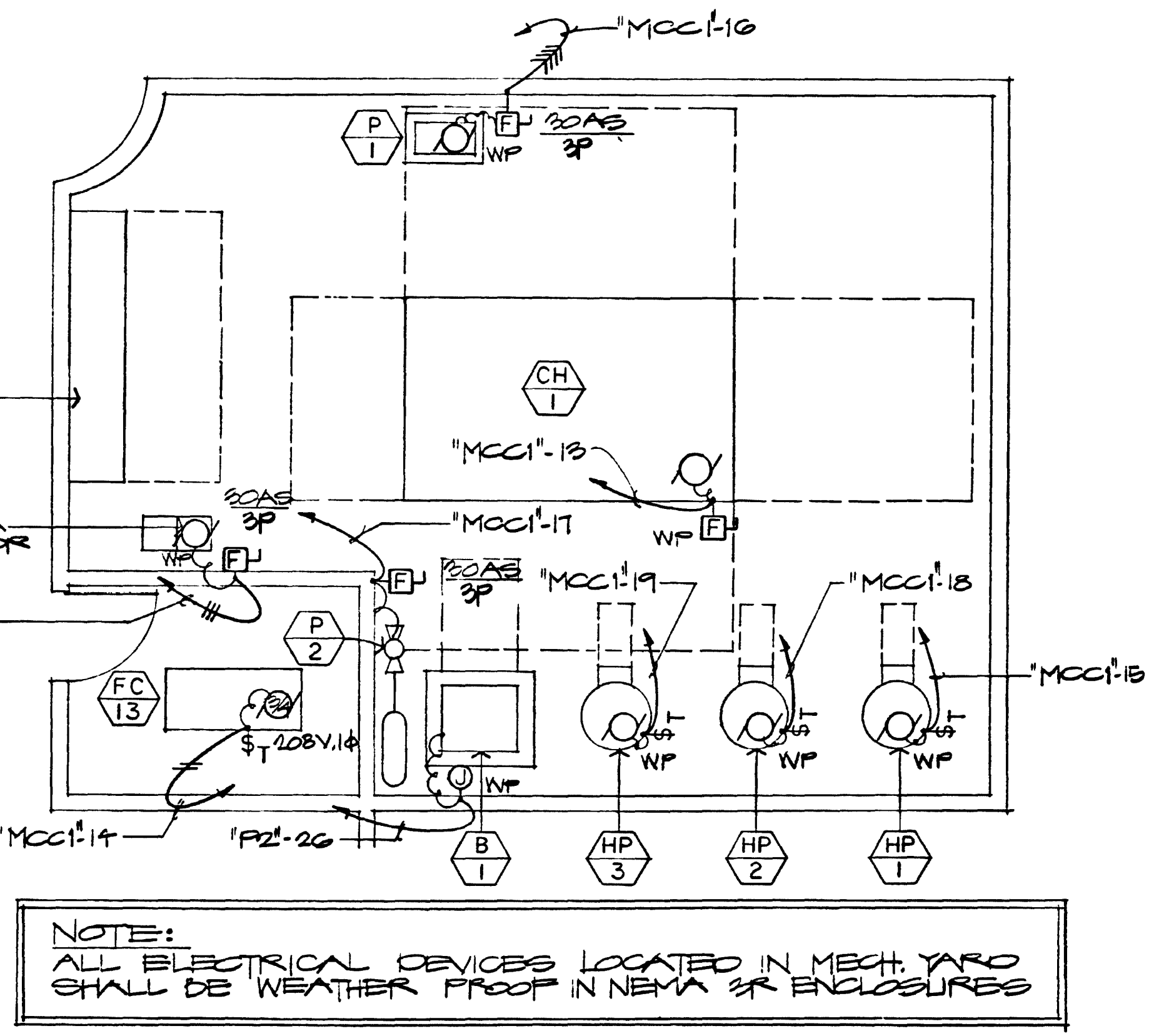


**EXTERIOR LIGHTING WIRING DIAGRAM**  
NO SCALE

D  
E6

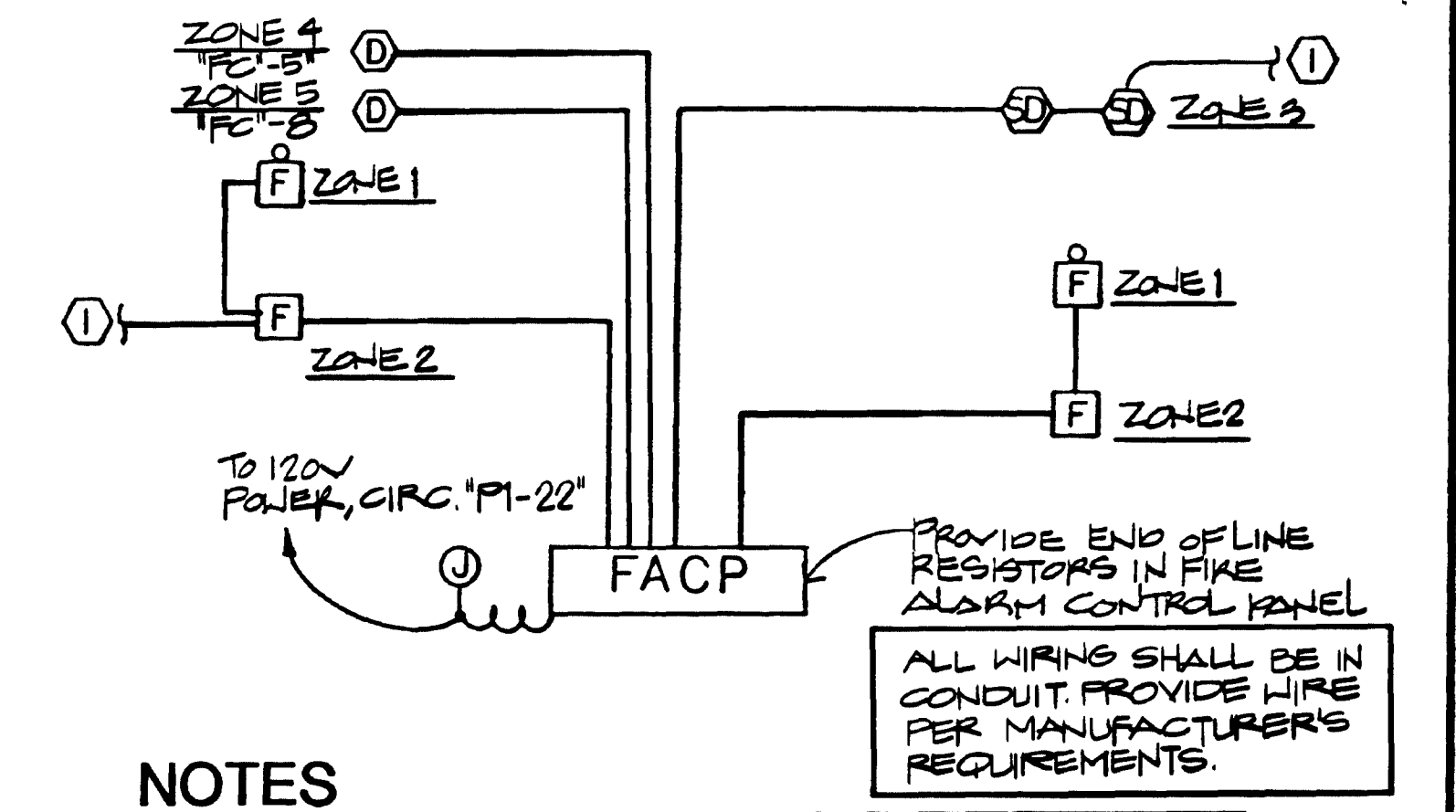
**NOTES**

- |   |   |    |  |
|---|---|----|--|
| 1 | ELECTRONIC TIMECLOCK, SEE SPECIFICATIONS.   | 7  | TO 208 VOLT, SINGLE PHASE POWER CIRCUIT.   |
| 2 | TO 120 VOLT, SINGLE PHASE POWER CIRCUIT(S).   | 8  | LIGHTS ARE ON FROM DUSK TO DAMN.   |
| 3 | LIGHTING CONTACTOR, 20A-120V, ELECTRICALLY HELD, OPEN TYPE WITH SIX (6) 20A NORMALLY OPEN CONTACTS, 120VAC COIL AND HAND-OFF AUTO SWITCH. | 9  | TO LANDSCAPE FLOOD LIGHTS.   |
| 4 | PARKING LOT LIGHTING FIXTURES (TYPICAL).  | 10 | TO SOFFIT DOWN LIGHTS  |
| 5 | LIGHTS ARE ON FROM DUSK TO PRESET TIME.   | 11 | PROVIDE PHOTOCELL ON ROOF (FACING NORTH).  |
| 6 | WALL WASHER UP LIGHT (TYPICAL).   | 12 | LIGHTING CONTACTOR PANEL "LCP2", 12"(W) X 18"(H) X 6"(D) GALVANIZED STEEL CABINET WITH HINGED (LOCKABLE) DOOR. |



**NOTE:**  
ALL ELECTRICAL DEVICES LOCATED IN MECH. YARD SHALL BE WEATHER PROOF IN NEMA 3R ENCLOSURES

**MECHANICAL EQUIPMENT YARD**  
SCALE 1/4" = 1' = 0"

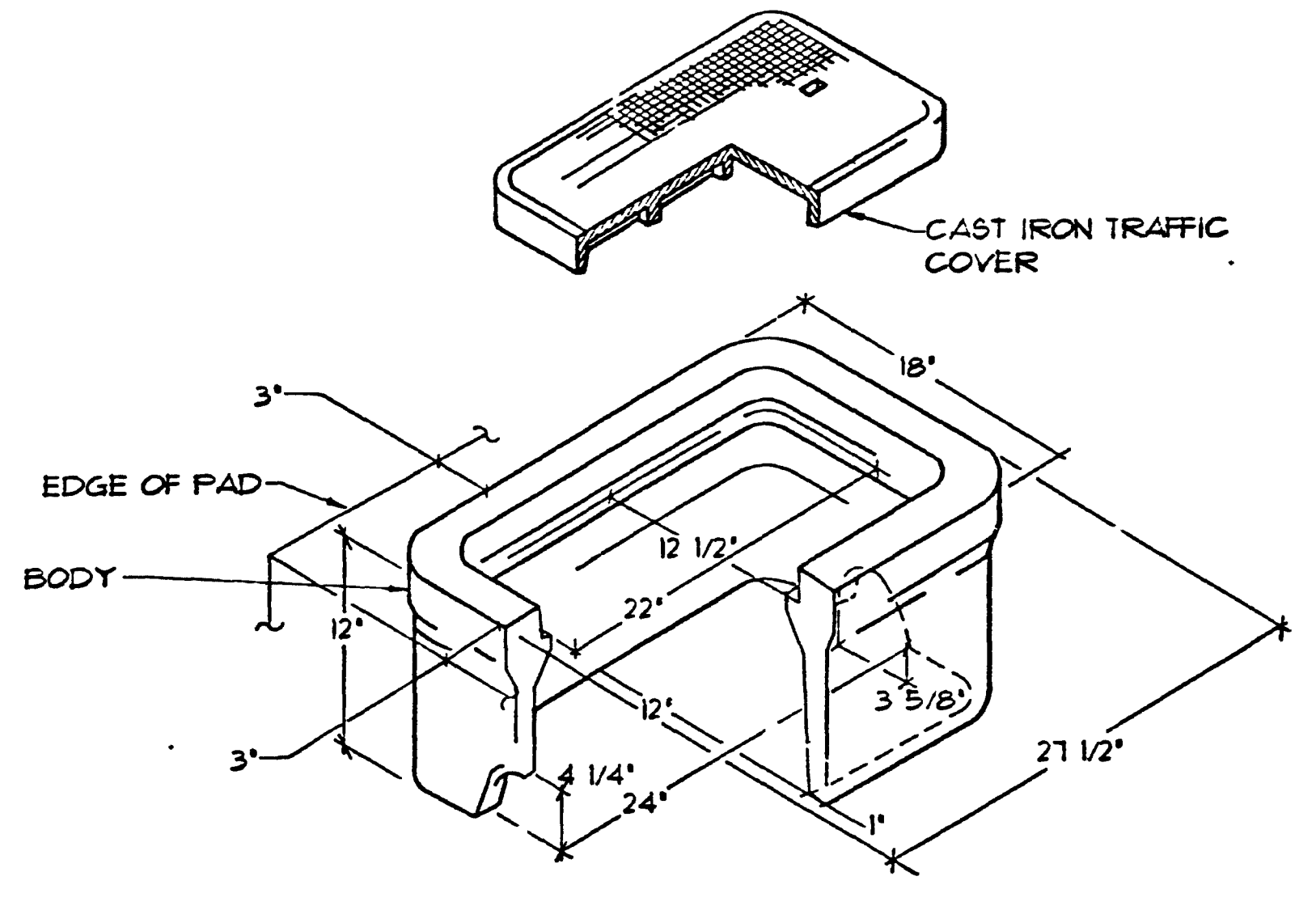


**NOTES**

- 1 TO ADDITIONAL DEVICES, FOR EXACT NUMBER OF DEVICES SEE SHEET E3.

**FIRE ALARM RISER DIAGRAM**  
NO SCALE

H  
E6



**HANDHOLE DETAIL**  
NO SCALE

E  
E6

MANUEL ONCAL ARCHITECT		EARL & BRIDE TAYLOR LIBRARY		<b>E6</b>
514 Pennsylvania Avenue San Diego, CA 92103 (619) 295-3929 Fax: 295-4644		CITY OF SAN DIEGO, CALIFORNIA ENGINEERING DEPARTMENT SHEET 68 OF 88 SHEETS		
DATE: 5/11/90	DATE: 5/11/90	DATE: 5/11/90	DATE: 5/11/90	NO. 119418
DESCRIPTION	BY	APPROVED	DATE	FILED
ORIGINAL				
CONTRACTOR: DATE STARTED:				CONTROL CERTIFICATION
INSPECTOR: DATE COMPLETED:				228-1692
				LARGEST ENGINEERED
				26189-69-D

**MECHANICAL EQUIPMENT YARD & DETAILS**



**CERTIFICATE OF COMPLIANCE - Lighting Part 1 of 2 LTG-1**

PROJECT NAME: EARL & BIRDIE TAYLOR LIBRARY DATE: JUNE 30, 1995  
 PROJECT ADDRESS: 4275 CASS AVENUE, SAN DIEGO, CA 92109  
 PRINCIPAL DESIGNER - LIGHTING: VAN BUUREN KIMPER ENGINEERING (619) 291-9980 Building Permit #  
 DOCUMENTATION AUTHOR: VAN BUUREN KIMPER ENGINEERING (619) 291-9980 Checked by Date  
 Enforcement Agency Use

**GENERAL INFORMATION**  
 DATE OF PLANS: JUNE 30, 1995 BUILDING CONDITIONED FLOOR AREA: 12,484 SQUARE FEET  
 BUILDING TYPE:  NONRESIDENTIAL  HIGH RISE RESIDENTIAL  HOTEL/MOTEL GUEST ROOM  
 PHASE OF CONSTRUCTION:  NEW CONSTRUCTION  ADDITION  ALTERATION  
 METHOD OF LIGHTING COMPLIANCE:  COMPLETE BUILDING  AREA CATEGORY  TAILORED  PERFORMANCE

**STATEMENT OF COMPLIANCE**  
 This Certificate of Compliance lists the building features and performance specifications needed to comply with Title 24, Parts 1 and 6 of the California Code of Regulations. This certificate applies only to building lighting requirements.

The Principal Lighting Designer hereby certifies that the proposed building design represented in this set of construction documents is consistent with the other compliance forms and worksheets, with the specifications, and with any other calculations submitted with this permit application. The proposed building has been designed to meet the lighting requirements contained in sections 110, 119, 130 through 132, and 146 or 149.

Please check one:  
 I hereby affirm that I am eligible under the provisions of Division 3 of the Business and Professions Code to sign this document as the person responsible for its preparation, and that I am a civil engineer, electrical engineer or architect.  
 I affirm that I am eligible under the exemption to Division 3 of the Business and Professions Code by Section 5537.2 of the Business and Professions Code to sign this document as the person responsible for its preparation, and that I am a licensed contractor preparing documents for work that I have contracted to perform.  
 I affirm that I am eligible under the exemption to Division 3 of the Business and Professions Code by Section of the Code to sign this document as the person responsible for its preparation, and for the following reason:

PRINCIPAL LIGHTING DESIGNER - NAME: DONALD E. KIMPER SIGNATURE: [Signature] LIC NO: 12259 DATE: JUNE 30, 1995

**LIGHTING MANDATORY MEASURES**  
 Indicate location on plans of Note Block for Mandatory Measures: E7

**INSTRUCTIONS TO APPLICANT**  
 For detailed instructions on the use of this and all Energy Efficiency Standards compliance forms, please refer to the Nonresidential Manual published by the California Energy Commission.  
 LTG-1 Required on plans for all submittals Part 2 may be  
 LTG-2 Required for all submittals  
 LTG-3 Optional Use only if lighting control credits are taken.  
 LTG-4 Optional Use only if Tailored Method is used. Parts 2 and 3 used only if applicable.  
 Nonresidential Compliance Form December 1991

**LIGHTING COMPLIANCE SUMMARY LTG-2**

PROJECT NAME: EARL & BIRDIE TAYLOR LIBRARY (1 OF 2) DATE: JUNE 30, 1995

LUMINAIRE NAME	DESCRIPTION	NUMBER OF LUMINAIRES	WATTS PER LUMINAIRE (Including Ballast)	CEC DEFAULT [Y] [N]	TOTAL WATTS
A	2 X 4, 3-LAMP FLUORESCENT	7	93	<input checked="" type="checkbox"/> [Y]	651
B, B1	2 X 2, 2-LAMP FLUORESCENT, "ENT"	15	62	<input checked="" type="checkbox"/> [Y]	930
C, C1	1 X 4, 2-LAMP FLUORESCENT	6	62	<input checked="" type="checkbox"/> [Y]	372
D	1 X 4, 2-LAMP FLUORESCENT	6	62	<input checked="" type="checkbox"/> [Y]	372
E, E*	1 X 4, 2-LAMP FLUORESCENT	166	62	<input checked="" type="checkbox"/> [Y]	10292
F	COMPACT FLUOR. COVE FIXTURE	29	72	<input checked="" type="checkbox"/> [Y]	2088
G, G*	8" DIA., 2-LAMP COMPACT FLUOR.	21	50	<input checked="" type="checkbox"/> [Y]	1050
G1, G*	8" DIA., 1-LAMP COMPACT FLUOR.	26	28	<input checked="" type="checkbox"/> [Y]	728
K, K*	6" DIA. FLUOR. DIRECT/INDIRECT	3	32	<input checked="" type="checkbox"/> [Y]	96
S, S1	6" DIA., 2-LAMP FLUOR. TUBE	22	62	<input checked="" type="checkbox"/> [Y]	1364
SUBTOTAL FROM THIS PAGE					17943
PLUS SUBTOTAL FROM CONTINUATION PAGE					2254
LESS CONTROL CREDIT WATTS (FROM LTG-3)					--
ADJUSTED ACTUAL WATTS					20197

**ALLOWED LIGHTING POWER (Choose One Method)**

**COMPLETE BUILDING METHOD**  
 BUILDING CATEGORY (From Table 2-53M): SCHOOL  
 WATTS PER SF: 18 COMPLETE BLDG. AREA: 12484 ALLOWED WATTS: 22471

**AREA CATEGORY METHOD**  
 AREA CATEGORY (From Table 2-53M):  
 WATTS PER SF: AREA (SF): ALLOWED WATTS:  
 TOTALS: AREA: WATTS:

**TAILORED OR PERFORMANCE METHOD**  
 TAILORED  PERFORMANCE  
 TOTAL ALLOWED WATTS (From LTG-4 or from computer run):  
 Nonresidential Compliance Form December 1991

**CERTIFICATE OF COMPLIANCE - Lighting Part 2 of 2 LTG-1**

PROJECT NAME: EARL & BIRDIE TAYLOR LIBRARY (1 OF 2) DATE: JUNE 30, 1995

**INSTALLED LIGHTING SCHEDULE**

LUMINAIRE NAME (eg. Type-1, Type-2, etc.)	LAMPS				BALLASTS			NOTE TO FIELD
	I	F	H	M	S	E*	O*	
A	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
B, B1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
C, C1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
D	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
E, E1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
F	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	6
G, G2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	2
G1, G3	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
K, K1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
S, S1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1
V, V1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3
Y	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1

**MANDATORY AUTOMATIC CONTROLS**

CONTROL LOCATION (Room #)	CONTROL IDENTIFICATION	CONTROL TYPE (Auto Time Switch, Extensor, etc.)	SPACE CONTROLLED	NOTE TO FIELD
102, 107, 108	S, a, b, c, d, e, f, a, b, c, d	MULTI-LEVEL SWITCHING	ENTIRE SPACE	
109	S, a, b, c	MULTI-LEVEL SWITCHING	ENTIRE SPACE	
110-113, 117, 118, 121	S, a, b	BI-LEVEL SWITCHING	ENTIRE SPACE	
122	D, a, b, c	MULTI-LEVEL DIMMING	ENTIRE SPACE	

**CONTROLS FOR CREDIT**

CONTROL LOCATION (Room # or Desc. #)	CONTROL IDENTIFICATION	CONTROL TYPE (Occupant, Daylight, Dimming, etc.)	LUMINAIRES CONTROLLED TYPE # OF LUMIN.	NOTE TO FIELD

**NOTES TO FIELD - For Building Department Use Only**

Nonresidential Compliance Form December 1991

**LIGHTING COMPLIANCE SUMMARY LTG-2**

PROJECT NAME: EARL & BIRDIE TAYLOR LIBRARY (2 OF 2) DATE: JUNE 30, 1995

**ACTUAL LIGHTING POWER**

LUMINAIRE NAME	DESCRIPTION	NUMBER OF LUMINAIRES	WATTS PER LUMINAIRE (Including Ballast)	CEC DEFAULT [Y] [N]	TOTAL WATTS
V, V1	10" DIA. COMPACT FLUOR. DOWNLIGHT	19	78	<input checked="" type="checkbox"/> [Y]	1482
Y	VAPOR TIGHT FLUORESCENT	1	28	<input checked="" type="checkbox"/> [Y]	28
Z	METAL HALIDE STEP LIGHT	12	62	<input checked="" type="checkbox"/> [Y]	744
SUBTOTAL FROM THIS PAGE					2254
PLUS SUBTOTAL FROM CONTINUATION PAGE					
LESS CONTROL CREDIT WATTS (FROM LTG-3)					
ADJUSTED ACTUAL WATTS					

**ALLOWED LIGHTING POWER (Choose One Method)**

**COMPLETE BUILDING METHOD**  
 BUILDING CATEGORY (From Table 2-53M):  
 WATTS PER SF: COMPLETE BLDG. AREA: ALLOWED WATTS:

**AREA CATEGORY METHOD**  
 AREA CATEGORY (From Table 2-53M):  
 WATTS PER SF: AREA (SF): ALLOWED WATTS:  
 TOTALS: AREA: WATTS:

**TAILORED OR PERFORMANCE METHOD**  
 TAILORED  PERFORMANCE  
 TOTAL ALLOWED WATTS (From LTG-4 or from computer run):  
 Nonresidential Compliance Form December 1991

**CERTIFICATE OF COMPLIANCE - Lighting Part 2 of 2 LTG-1**

PROJECT NAME: EARL & BIRDIE TAYLOR LIBRARY (2 OF 2) DATE: JUNE 30, 1995

**INSTALLED LIGHTING SCHEDULE**

LUMINAIRE NAME (eg. Type-1, Type-2, etc.)	LAMPS				BALLASTS			NOTE TO FIELD
	I	F	H	M	S	E*	O*	
Z	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	1

**MANDATORY AUTOMATIC CONTROLS**

CONTROL LOCATION (Room #)	CONTROL IDENTIFICATION	CONTROL TYPE (Auto Time Switch, Extensor, etc.)	SPACE CONTROLLED	NOTE TO FIELD

**CONTROLS FOR CREDIT**

CONTROL LOCATION (Room # or Desc. #)	CONTROL IDENTIFICATION	CONTROL TYPE (Occupant, Daylight, Dimming, etc.)	LUMINAIRES CONTROLLED TYPE # OF LUMIN.	NOTE TO FIELD

**NOTES TO FIELD - For Building Department Use Only**

Nonresidential Compliance Form December 1991

**NONRESIDENTIAL ENERGY EFFICIENCY STANDARDS MANDATORY LIGHTING MEASURES**

- BUILDING LIGHT SHUT-OFF (NOT APPLICABLE FOR THIS PROJECT)**
- VERRIDE FOR BUILDING LIGHTING SHUT-OFF (NOT APPLICABLE FOR THIS PROJECT)**
- AUTOMATIC CONTROL DEVICES CERTIFIED (NOT APPLICABLE FOR THIS PROJECT)**
- FLUORESCENT BALLAST AND LUMINAIRES CERTIFIED**  
 All fluorescent fixtures specified for the project are certified and listed in the directory. All installed fixtures shall be certified.
- TANDEM WIRING FOR TWO-LAMP BALLASTS**  
 All one and three lamp fluorescent fixtures are tandem wired with two (2) lamp ballast where required by Standards subsection 132.
- INDIVIDUAL ROOM/AREA CONTROLS**  
 Each room and area in this building is equipped with a separate switch or occupancy sensor device for each area with floor-to-ceiling walls.
- UNIFORM REDUCTION FOR INDIVIDUAL ROOMS**  
 All rooms and areas greater than 100 square feet and more than 1 2 watts per square foot of lighting load shall be controlled with shall be controlled with Bi-level switching for uniform reduction of lighting within the room.
- DAYLIT AREA CONTROL (NOT APPLICABLE FOR THIS PROJECT)**
- CONTROL OF EXTERIOR LIGHTS**  
 Exterior mounted fixtures and served from the electrical panel inside the building are controlled with a directional photo cell control on the roof and a corresponding relay in the electrical or contactor panel.

**KIRLIN** 3401 EAST JEFFERSON AVENUE • DETROIT, MI 48207-4232  
 313-259-5400 • FAX 313-259-9409 OR 313-259-3121  
 USE WITH KIRLIN Century Series Compact Fluorescent CATALOG  
**FLUORESCENT BALLAST ELECTRICAL DATA**

LAMP WATTS	TWIN - T4 (PFP) <sup>2</sup>		TWIN - T4 (PFP) <sup>2</sup>		PL-T ELECTRONIC (PFP) <sup>2</sup>	
	7/9 WATT	7/9 WATT	13 WATT	13 WATT	26 WATT	32 WATT
VOLTAGE	120	277	120	277	120	277
TOTAL INPUT WATTS - 1 lamp	15	16	12	13	17	21
2 lamp	24	32	24	26	34	42
MAX/START MAPS - 1 lamp	215	185	1220	180	250	360
2 lamp	430	370	240	360	500	720
OPERATING AMPS - 1 lamp	170	180	100	950	150	990
2 lamp	340	360	200	360	300	480
MIN. START TEMP. - F/C	25/-4	0/-18	25/-4	0/-18	25/-4	0/-18

KIRLIN A Century of Lighting Innovation 1895 - 1995 1194

**EARL & BIRDIE TAYLOR LIBRARY** **E7**

CITY OF SAN DIEGO, CALIFORNIA  
 ENGINEERING DEPARTMENT  
 SHEET 78 OF 82 SHEETS

FOR CITY PROJECT: 911495

DESCRIPTION: BY: APPROVED: DATE: FILMED: [Signature]  
 ORIGINAL: 1904-6255  
 264-1695  
 CONTRACTOR: DATE STARTED: 26189-70-D  
 INSPECTOR: DATE COMPLETED:

REGISTERED PROFESSIONAL ENGINEER  
 D. E. KIMPER  
 No. 12259  
 Exp. 3-96  
 ELECTRICAL  
 STATE OF CALIFORNIA

TITLE 24 DOCUMENTATION



City of San Diego  
 Development Services  
 1222 First Ave., MS-302  
 San Diego, CA 92101  
 (619) 446-5000

# Storm Water Requirements Applicability Checklist

FORM  
**DS-560**  
 FEBRUARY 2016

Project Address: Pacific Beach Library: 4275 Cass St. San Diego, CA Project Number (for City Use Only):  
Tierrasanta Recreation Center: 11226 Clairemont Mesa Blvd. B-16045, B-16046

**SECTION 1. Construction Storm Water BMP Requirements:**  
 All construction sites are required to implement construction BMPs in accordance with the performance standards in the Storm Water Standards Manual. Some sites are additionally required to obtain coverage under the State Construction General Permit (CGP)<sup>1</sup>, which is administered by the State Water Resources Control Board.

**For all project complete PART A: If project is required to submit a SWPPP or WPCP, continue to PART B.**

**PART A: Determine Construction Phase Storm Water Requirements.**

1. Is the project subject to California's statewide General NPDES permit for Storm Water Discharges Associated with Construction Activities, also known as the State Construction General Permit (CGP)? (Typically projects with land disturbance greater than or equal to 1 acre.)

- Yes; SWPPP required, skip questions 2-4       No; next question

2. Does the project propose construction or demolition activity, including but not limited to, clearing, grading, grubbing, excavation, or any other activity that results in ground disturbance and contact with storm water runoff?

- Yes; WPCP required, skip 3-4       No; next question

3. Does the project propose routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of the facility? (Projects such as pipeline/utility replacement)

- Yes; WPCP required, skip 4       No; next question

4. Does the project only include the following Permit types listed below?

- Electrical Permit, Fire Alarm Permit, Fire Sprinkler Permit, Plumbing Permit, Sign Permit, Mechanical Permit, Spa Permit.
- Individual Right of Way Permits that exclusively include only ONE of the following activities: water service, sewer lateral, or utility service.
- Right of Way Permits with a project footprint less than 150 linear feet that exclusively include only ONE of the following activities: curb ramp, sidewalk and driveway apron replacement, pot holing, curb and gutter replacement, and retaining wall encroachments.

Yes; no document required

Check one of the boxes to the right, and continue to PART B:

- If you checked "Yes" for question 1, a **SWPPP is REQUIRED. Continue to PART B**
- If you checked "No" for question 1, and checked "Yes" for question 2 or 3, a **WPCP is REQUIRED**. If the project proposes less than 5,000 square feet of ground disturbance AND has less than a 5-foot elevation change over the entire project area, a Minor WPCP may be required instead. **Continue to PART B.**
- If you checked "No" for all questions 1-3, and checked "Yes" for question 4 **PART B does not apply and no document is required. Continue to Section 2.**

1. More information on the City's construction BMP requirements as well as CGP requirements can be found at: [www.sandiego.gov/stormwater/regulations/index.shtml](http://www.sandiego.gov/stormwater/regulations/index.shtml)



**PART B: Determine Construction Site Priority**

This prioritization must be completed within this form, noted on the plans, and included in the SWPPP or WPCP. The city reserves the right to adjust the priority of projects both before and after construction. Construction projects are assigned an inspection frequency based on if the project has a “high threat to water quality.” The City has aligned the local definition of “high threat to water quality” to the risk determination approach of the State Construction General Permit (CGP). The CGP determines risk level based on project specific sediment risk and receiving water risk. Additional inspection is required for projects within the Areas of Special Biological Significance (ASBS) watershed. **NOTE:** The construction priority does **NOT** change construction BMP requirements that apply to projects; rather, it determines the frequency of inspections that will be conducted by city staff.

**Complete PART B and continued to Section 2**

- 1.  **ASBS**  
a. Projects located in the ASBS watershed.
- 2.  **High Priority**  
a. Projects 1 acre or more determined to be Risk Level 2 or Risk Level 3 per the Construction General Permit and not located in the ASBS watershed.  
b. Projects 1 acre or more determined to be LUP Type 2 or LUP Type 3 per the Construction General Permit and not located in the ASBS watershed.
- 3.  **Medium Priority**  
a. Projects 1 acre or more but not subject to an ASBS or high priority designation.  
b. Projects determined to be Risk Level 1 or LUP Type 1 per the Construction General Permit and not located in the ASBS watershed.
- 4.  **Low Priority**  
a. Projects requiring a Water Pollution Control Plan but not subject to ASBS, high, or medium priority designation.

**SECTION 2. Permanent Storm Water BMP Requirements.**

Additional information for determining the requirements is found in the Storm Water Standards Manual.

**PART C: Determine if Not Subject to Permanent Storm Water Requirements.**

Projects that are considered maintenance, or otherwise not categorized as “new development projects” or “redevelopment projects” according to the Storm Water Standards Manual are not subject to Permanent Storm Water BMPs.

**If “yes” is checked for any number in Part C, proceed to Part F and check “Not Subject to Permanent Storm Water BMP Requirements”.**

**If “no” is checked for all of the numbers in Part C continue to Part D.**

- 1. Does the project only include interior remodels and/or is the project entirely within an existing enclosed structure and does not have the potential to contact storm water?  Yes  No
- 2. Does the project only include the construction of overhead or underground utilities without creating new impervious surfaces?  Yes  No
- 3. Does the project fall under routine maintenance? Examples include, but are not limited to: roof or exterior structure surface replacement, resurfacing or reconfiguring surface parking lots or existing roadways without expanding the impervious footprint, and routine replacement of damaged pavement (grinding, overlay, and pothole repair).  Yes  No

**PART D: PDP Exempt Requirements.**

**PDP Exempt projects are required to implement site design and source control BMPs.**

**If “yes” was checked for any questions in Part D, continue to Part F and check the box labeled “PDP Exempt.”**

**If “no” was checked for all questions in Part D, continue to Part E.**

1. Does the project ONLY include new or retrofit sidewalks, bicycle lanes, or trails that:
  - Are designed and constructed to direct storm water runoff to adjacent vegetated areas, or other non-erodible permeable areas? Or;
  - Are designed and constructed to be hydraulically disconnected from paved streets and roads? Or;
  - Are designed and constructed with permeable pavements or surfaces in accordance with the Green Streets guidance in the City’s Storm Water Standards manual?

Yes; PDP exempt requirements apply       No; next question
2. Does the project ONLY include retrofitting or redeveloping existing paved alleys, streets or roads designed and constructed in accordance with the Green Streets guidance in the City’s Storm Water Standards Manual?
 

Yes; PDP exempt requirements apply       No; project not exempt. PDP requirements apply

**PART E: Determine if Project is a Priority Development Project (PDP).**

Projects that match one of the definitions below are subject to additional requirements including preparation of a Storm Water Quality Management Plan (SWQMP).

**If “yes” is checked for any number in PART E, continue to PART F.**

**If “no” is checked for every number in PART E, continue to PART F and check the box labeled “Standard Development Project”.**

1. **New Development that creates 10,000 square feet or more of impervious surfaces collectively over the project site.** This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.  Yes  No
2. **Redevelopment project that creates and/or replaces 5,000 square feet or more of impervious surfaces on an existing site of 10,000 square feet or more of impervious surfaces.** This includes commercial, industrial, residential, mixed-use, and public development projects on public or private land.  Yes  No
3. **New development or redevelopment of a restaurant.** Facilities that sell prepared foods and drinks for consumption, including stationary lunch counters and refreshment stands selling prepared foods and drinks for immediate consumption (SIC 5812), and where the land development creates and/or replace 5,000 square feet or more of impervious surface.  Yes  No
4. **New development or redevelopment on a hillside.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site) and where the development will grade on any natural slope that is twenty-five percent or greater.  Yes  No
5. **New development or redevelopment of a parking lot that creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).**  Yes  No
6. **New development or redevelopment of streets, roads, highways, freeways, and driveways.** The project creates and/or replaces 5,000 square feet or more of impervious surface (collectively over the project site).  Yes  No

- 7. **New development or redevelopment discharging directly to an Environmentally Sensitive Area.** The project creates and/or replaces 2,500 square feet of impervious surface (collectively over project site), and discharges directly to an Environmentally Sensitive Area (ESA). "Discharging directly to" includes flow that is conveyed overland a distance of 200 feet or less from the project to the ESA, or conveyed in a pipe or open channel any distance as an isolated flow from the project to the ESA (i.e. not commingled with flows from adjacent lands).  Yes  No
- 8. **New development or redevelopment projects of a retail gasoline outlet (RGO) that create and/or replaces 5,000 square feet of impervious surface.** The development project meets the following criteria: (a) 5,000 square feet or more or (b) has a projected Average Daily Traffic (ADT) of 100 or more vehicles per day.  Yes  No
- 9. **New development or redevelopment projects of an automotive repair shops that creates and/or replaces 5,000 square feet or more of impervious surfaces.** Development projects categorized in any one of Standard Industrial Classification (SIC) codes 5013, 5014, 5541, 7532-7534, or 7536-7539.  Yes  No
- 10. **Other Pollutant Generating Project.** The project is not covered in the categories above, results in the disturbance of one or more acres of land and is expected to generate pollutants post construction, such as fertilizers and pesticides. This does not include projects creating less than 5,000 sf of impervious surface and where added landscaping does not require regular use of pesticides and fertilizers, such as slope stabilization using native plants. Calculation of the square footage of impervious surface need not include linear pathways that are for infrequent vehicle use, such as emergency maintenance access or bicycle pedestrian use, if they are built with pervious surfaces or if they sheet flow to surrounding pervious surfaces.  Yes  No

**PART F: Select the appropriate category based on the outcomes of PART C through PART E.**

- 1. The project is **NOT SUBJECT TO STORM WATER REQUIREMENTS.**
- 2. The project is a **STANDARD DEVELOPMENT PROJECT.** Site design and source control BMP requirements apply. See the Storm Water Standards Manual for guidance.
- 3. The project is **PDP EXEMPT.** Site design and source control BMP requirements apply. See the Storm Water Standards Manual for guidance.
- 4. The project is a **PRIORITY DEVELOPMENT PROJECT.** Site design, source control, and structural pollutant control BMP requirements apply. See the Storm Water Standards Manual for guidance on determining if project requires a hydromodification plan management

Name of Owner or Agent (Please Print): \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



**ATTACHMENT B**  
**INTENTIONALLY LEFT BLANK**

**ATTACHMENT C**  
**INTENTIONALLY LEFT BLANK**

**ATTACHMENT D**  
**PREVAILING WAGES**



## ATTACHMENT D

### PREVAILING WAGES

1. **PREVAILING WAGE RATES:** Pursuant to San Diego Municipal Code section 22.3019, construction, alteration, demolition, repair and maintenance work performed under this Contract is subject to State prevailing wage laws. For construction work performed under this Contract cumulatively exceeding \$25,000 and for alteration, demolition, repair and maintenance work performed under this Contract cumulatively exceeding \$15,000, the Contractor and its subcontractors shall comply with State prevailing wage laws including, but not limited to, the requirements listed below.
  - 1.1. **Compliance with Prevailing Wage Requirements.** Pursuant to sections 1720 through 1861 of the California Labor Code, the Contractor and its subcontractors shall ensure that all workers who perform work under this Contract are paid not less than the prevailing rate of per diem wages as determined by the Director of the California Department of Industrial Relations (DIR). This includes work performed during the design and preconstruction phases of construction including, but not limited to, inspection and land surveying work.
    - 1.1.1. Copies of such prevailing rate of per diem wages are on file at the City and are available for inspection to any interested party on request. Copies of the prevailing rate of per diem wages also may be found at <http://www.dir.ca.gov/OPRL/DPreWageDetermination.htm>. Contractor and its subcontractors shall post a copy of the prevailing rate of per diem wages determination at each job site and shall make them available to any interested party upon request.
    - 1.1.2. The wage rates determined by the DIR refer to expiration dates. If the published wage rate does not refer to a predetermined wage rate to be paid after the expiration date, then the published rate of wage shall be in effect for the life of this Contract. If the published wage rate refers to a predetermined wage rate to become effective upon expiration of the published wage rate and the predetermined wage rate is on file with the DIR, such predetermined wage rate shall become effective on the date following the expiration date and shall apply to this Contract in the same manner as if it had been published in said publication. If the predetermined wage rate refers to one or more additional expiration dates with additional predetermined wage rates, which expiration dates occur during the life of this Contract, each successive predetermined wage rate shall apply to this Contract on the date following the expiration date of the previous wage rate. If the last of such predetermined wage rates expires during the life of this Contract, such wage rate shall apply to the balance of the Contract.
  - 1.2. **Penalties for Violations.** Contractor and its subcontractors shall comply with California Labor Code section 1775 in the event a worker is paid less than the prevailing wage rate for the work or craft in which the worker is employed.

- 1.3. Payroll Records.** Contractor and its subcontractors shall comply with California Labor Code section 1776, which generally requires keeping accurate payroll records, verifying and certifying payroll records, and making them available for inspection. Contractor shall require its subcontractors to also comply with section 1776. Contractor and its subcontractors shall submit weekly certified payroll records online via the City's web-based Labor Compliance Program. Contractor is responsible for ensuring its subcontractors submit certified payroll records to the City.
- 1.3.1.** For contracts entered into on or after April 1, 2015, Contractor and their subcontractors shall furnish records specified in Labor Code section 1776 directly to the Labor Commissioner in the manner required by Labor Code section 1771.4.
- 1.4. Apprentices.** Contractor and its subcontractors shall comply with California Labor Code sections 1777.5, 1777.6 and 1777.7 concerning the employment and wages of apprentices. Contractor is held responsible for the compliance of their subcontractors with sections 1777.5, 1777.6 and 1777.7.
- 1.5. Working Hours.** Contractor and their subcontractors shall comply with California Labor Code sections 1810 through 1815, including but not limited to: (i) restrict working hours on public works contracts to eight hours a day and forty hours a week, unless all hours worked in excess of 8 hours per day are compensated at not less than 1½ times the basic rate of pay; and (ii) specify penalties to be imposed on design professionals and subcontractors of \$25 per worker per day for each day the worker works more than 8 hours per day and 40 hours per week in violation of California Labor Code sections 1810 through 1815.
- 1.6. Required Provisions for Subcontracts.** Contractor shall include at a minimum a copy of the following provisions in any contract they enter into with a subcontractor: California Labor Code sections 1771, 1771.1, 1775, 1776, 1777.5, 1810, 1813, 1815, 1860 and 1861.
- 1.7. Labor Code Section 1861 Certification.** Contractor in accordance with California Labor Code section 3700 is required to secure the payment of compensation of its employees and by signing this Contract, Contractor certifies that "I am aware of the provisions of Section 3700 of the California Labor Code which require every employer to be insured against liability for workers' compensation or to undertake self-insurance in accordance with the provisions of that code, and I will comply with such provisions before commencing the performance of the work of this Contract."
- 1.8. Labor Compliance Program.** The City has its own Labor Compliance Program authorized in August 2011 by the DIR. The City will withhold contract payments when payroll records are delinquent or deemed inadequate by the City or other governmental entity, or it has been established after an investigation by the City or other governmental entity that underpayment(s) have occurred. For questions or assistance, please contact the City of San Diego's Equal Opportunity Contracting Department at 619-236-6000.

**1.9. Contractor and Subcontractor Registration Requirements.** This project is subject to compliance monitoring and enforcement by the DIR. As of March 1, 2015, no contractor or subcontractor may be listed on a bid or proposal for a public works project unless registered with the DIR pursuant to Labor Code section 1725.5. As of April 1, 2015, a contractor or subcontractor shall not be qualified to bid on, be listed in a bid proposal, or enter into any contract for public work, unless currently registered and qualified to perform public work pursuant to Labor Code section 1725.5. By submitting a bid or proposal to the City, Contractor is certifying that he or she has verified that all subcontractors used on this public work project are registered with the DIR in compliance with Labor Code sections 1771.1 and 1725.5, and Contractor shall provide proof of registration to the City upon request.

**1.9.1.** A Contractor's inadvertent error in listing a subcontractor who is not registered pursuant to Labor Code section 1725.5 in response to a solicitation shall not be grounds for filing a bid protest or grounds for considering the bid non-responsive provided that any of the following apply: (1) the subcontractor is registered prior to bid opening; (2) within twenty-four hours after the bid opening, the subcontractor is registered and has paid the penalty registration fee specified in Labor Code section 1725.5; or (3) the subcontractor is replaced by another registered subcontractor pursuant to Public Contract Code section 4107.



**ATTACHMENT E**  
**SUPPLEMENTARY SPECIAL PROVISIONS**

## **SUPPLEMENTARY SPECIAL PROVISIONS**

The following Supplementary Special Provisions (SSP) modifies the following documents:

1. The **2015 Edition** of the Standard Specifications for Public Works Construction (The "GREENBOOK") currently in effect.
2. The **2015 Edition** of the City of San Diego Standard Specifications for Public Works Construction (The "WHITEBOOK") including the following:
  - a) General Provisions (A) for all Contracts.
  - b) General Provisions (C) for Design-Build Contracts

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### **SECTION 1 – TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS**

- 1-2 TERMS AND DEFINITIONS.** To the "WHITEBOOK", item 54, "Normal Working Hours", ADD the following:

The **Normal Working Hours** are **7:00 AM to 3:30 PM**.

1. If access is needed inside the buildings beyond building standard business hours, Contractor shall coordinate with the Resident Engineer for building access at least 3 working days in advance.
2. Both Facilities will remain in operation during construction. Contractor shall coordinate with the Resident Engineer and phase construction activities to assure that disruption is minimized to building occupants during construction.
3. If either building must be closed to the public for a portion of construction, Contractor must request and obtain approval from Resident Engineer minimum 30 working days in advance of requested closure.

### **SECTION 2 - SCOPE AND CONTROL OF WORK**

- 2-3.2 Self Performance.** To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. The self performance percentage requirement will be waived for Contracts when a "B" License is required or allowed.

### **SECTION 3 – CHANGES IN WORK**

- 3-5.1 Claims.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

**ADD:  
3-5.1**

**Claims.**

1. A Claim is a written demand by you that seeks an adjustment in the Contract Price, Contract Time, or other relief associated with a dispute arising under or relating to the Contract, including a breach of any provision thereof. A voucher, invoice, or other routine request for payment is not a Claim.
2. A Claim shall conform to these specifications and may be considered after the City has previously denied a request by you for a Change Order seeking the demanded relief.
3. You shall submit a Claim to the Engineer if a dispute occurs that arises from or relates to the Contract. The Claim shall seek all relief to which you assert you are entitled as a result of the event(s) giving rise to the dispute. Your failure to process a Claim in accordance with these specifications shall constitute a waiver of all relief associated with the dispute. Claims are subject to 6-11, "Right to Audit".
4. You shall continue to perform the Services and Work and shall maintain the Schedule during any dispute proceedings. The Engineer will continue to make payments for undisputed Services and Work.
5. The City's Claims process specified herein shall not relieve you of your statutory obligations to present claims prior to any action under the California Government Code.

**3-5.1.1 Initiation of Claim.**

1. You shall promptly, but no later than 30 Days after the event(s) giving rise to the Claim, deliver the Claim to the Engineer.
2. You shall not process a Claim unless the Engineer has previously denied a request by you for a Change Order that sought the relief to be pursued in the claim.

**3-5.1.1.1 Claim Certification Submittal.**

1. If your Claim seeks an increase in the Contract Price, the Contract Time, or both, submit with the Claim an affidavit certifying the following:
  - a) The Claim is made in good faith and covers all costs and delays to which you are entitled as a result of the event(s) giving rise to the Claim.
  - b) The amount claimed accurately reflects the adjustments in the Contract Price, the Contract Time, or both to which you believe you are entitled.
  - c) All supporting costs and pricing data are current, accurate, and complete to the best of your knowledge. The cost breakdown per item of Work shall be supplied.
  - d) You shall ensure that the affidavit is executed by an official who has the authority to legally bind you.



**3-5.1.2 Initial Determination.**

1. The Engineer will respond in writing to your Claim within 30 Days of receipt of the Claim.

**3-5.1.3 Settlement Meeting.**

1. If you disagree with the Initial Determination, you shall request a Settlement Meeting within 30 Days. Upon receipt of this request, the Engineer will schedule the Settlement Meeting within 15 Working Days.

**3-5.1.7 City's Final Determination.**

1. If a settle agreement is not reached, the City shall make a written Final Determination within 10 Working Days after the Settlement Meeting.
2. If you disagree with the City's Final Determination, notify the Engineer in writing of your objection within 15 Working Days after receipt of the written determination and file a "Request for Mediation" in accordance with 3-5.2, "Dispute Resolution Process".
3. Failure to give notice of objection within the 15 Working Days period shall waive your right to pursue the Claim.

**3-5.1.8 Mandatory Assistance.**

1. If a third party dispute, litigation, or both arises out of or relates in any way to the Services provided under the Contract, upon the City's request, you shall agree to assist in resolving the dispute or litigation. Your assistance includes, but is not limited to the following:
  - a) Providing professional consultations.
  - b) Attending mediations, arbitrations, depositions, trials, or any event related to the dispute resolution and litigation.

**3-5.1.8.1 Compensation for Mandatory Assistance.**

1. The City will reimburse you for reasonable fees and expenses incurred by you for any required assistance rendered in accordance with 3-5.1.8, "Mandatory Assistance" as Extra Work.
2. The Engineer will determine whether these fees and expenses were necessary due to your conduct or failure to act.
3. If the Engineer determines that the basis of the dispute or litigation in which these fees and expenses were incurred were the result of your conduct or your failure to act in part or in whole, you shall reimburse the City for any payments made for these fees and expenses.
4. Reimbursement may be through any legal means necessary, including the City's withholding of your payment.

**3-5.2.3 Selection of Mediator.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. A single mediator, knowledgeable in construction aspects and acceptable to both parties, shall be used to mediate the dispute.
2. To initiate mediation, the initiating party shall serve a Request for Mediation at the American Arbitration Association (AAA) on the opposing party.
3. If AAA is used, the initiating party shall concurrently file with AAA a "Request for Mediation" along with the appropriate fees, a copy of requested mediators marked in preference order, and a preference for available dates.
4. If AAA is selected to coordinate the mediation (Administrator), within 10 Working Days from the receipt of the initiating party's Request for Mediation, the opposing party shall file the following:
  - a) A copy of the list of the preferred mediators listed in preference order after striking any mediators to which they have any objection.
  - b) A preference for available dates.
  - c) Appropriate fees.
5. If the parties cannot agree on a mediator, then each party shall select a mediator and those mediators shall select the neutral third party to mediate the matter.

**3-5.3 Forum of Litigation.** To the "WHITEBOOK", DELETE in its entirety and SUBSTITUTE with the following:

1. It is the express intention that all legal actions and proceedings related to the Contract or Agreement with the City or to any rights or any relationship between the parties arising therefrom shall be solely and exclusively initiated and maintained in courts of the State of California for the County of San Diego.

## **SECTION 4 - CONTROL OF MATERIALS**

**4-1.3.1 General.** To the "WHITEBOOK", ADD the following:

1. Steel pipe in sizes larger than 18 inches shall require inspection at the source of production.
2. City lab staff or a qualified inspection agency approved by the Engineer shall witness all welding, lining, coating, and testing. You shall incur additional inspection costs outlined in 4-1.3.3, "Inspection of Items Not Locally Produced".
3. All parts of production (including but not limited to product fabrication, welding, testing, lining, and coating of straight pieces and specials) shall be performed or produced in the United States.
4. Welding and all testing shall be performed by certified welders and testing staff with credentials traceable in the United States.

## SECTION 5 - UTILITIES

**5-2 PROTECTION.** To the "WHITEBOOK", item 2, ADD the following:

- g) Refer to **Appendix H** for more information on the protection of AMI devices.

## SECTION 6 - PROSECUTION, PROGRESS AND ACCEPTANCE OF WORK

**ADD:**

**6-3.2.1.1 Environmental Document.**

1. The City of San Diego Development Services Department has prepared a **Notice of Right to Appeal Environmental Determinations (NORAs)** for **Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement** (Pacific Beach Library Roof Replacement and Tierrasanta Recreation Center Roof and HVAC Replacement), as referenced in the Contract Appendix. You shall comply with all requirements:
2. **NORAs** as set forth in **Appendix A**.
3. Compliance with the City's environmental document shall be included in the Contract Price, unless separate bid items have been provided.

## SECTION 7 - RESPONSIBILITIES OF THE CONTRACTOR

**7-3 INSURANCE.** To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

**7-3 INSURANCE.**

1. The insurance provisions herein shall not be construed to limit your indemnity obligations contained in the Contract.

**7-3.1 Policies and Procedures.**

1. You shall procure the insurance described below, at its sole cost and expense, to provide coverage against claims for loss including injuries to persons or damage to property, which may arise out of or in connection with the performance of the Work by you, your agents, representatives, officers, employees or Subcontractors.
2. Insurance coverage for property damage resulting from your operations is on a replacement cost valuation. The market value will not be accepted.



3. You shall maintain this insurance for the duration of this Contract and at all times thereafter when you are correcting, removing, or replacing Work in accordance with this Contract. Your liabilities under the Contract, e.g., your indemnity obligations, is not deemed limited to the insurance coverage required by this Contract.
4. The payment for insurance shall be included in the Contract Price as bid by you. Except as specifically agreed to by the City in writing, you are not entitled to any additional payment. Do not begin any Work under this Contract until you have provided and the City has approved all required insurance.
5. Policies of insurance shall provide that the City is entitled to 30 Days (10 Days for cancellation due to non-payment of premium) prior written notice of cancellation or non-renewal of the policy. Maintenance of specified insurance coverage is a material element of the Contract. Your failure to maintain or renew coverage or to provide evidence of renewal during the term of the Contract may be treated by the City as a material breach of the Contract.

**7-3.2 Types of Insurance.**

**7-3.2.1 Commercial General Liability Insurance.**

1. Commercial General Liability Insurance shall be written on the current version of the ISO Occurrence form CG 00 01 07 98 or an equivalent form providing coverage at least as broad.
2. The policy shall cover liability arising from premises and operations, XCU (explosions, underground, and collapse), independent contractors, products/completed operations, personal injury and advertising injury, bodily injury, property damage, and liability assumed under an insured's contract (including the tort liability of another assumed in a business contract).
3. There shall be no endorsement or modification limiting the scope of coverage for either "insured vs. insured" claims or contractual liability. You shall maintain the same or equivalent insurance for at least 10 years following completion of the Work.
4. All costs of defense shall be outside the policy limits. Policy coverage shall be in liability limits of not less than the following:

<u>General Annual Aggregate Limit</u>	<u>Limits of Liability</u>
Other than Products/Completed Operations	\$2,000,000
Products/Completed Operations Aggregate Limit	\$2,000,000
Personal Injury Limit	\$1,000,000
Each Occurrence	\$1,000,000

**7-3.2.2 Commercial Automobile Liability Insurance.**

1. You shall provide a policy or policies of Commercial Automobile Liability Insurance written on the current version of the ISO form CA 00 01 12 90 or later version or equivalent form providing coverage at least as broad in the amount of \$1,000,000 combined single limit per accident, covering bodily injury and property damage for owned, non-owned, and hired automobiles (“Any Auto”).
2. All costs of defense shall be outside the limits of the policy.

**7-3.2.5 Contractors Builders Risk Property Insurance.**

1. You shall provide at your expense, and maintain until Final Acceptance of the Work, a Special Form Builders Risk Policy or Policies. This insurance shall be in an amount equal to the replacement cost of the completed Work (without deduction for depreciation) including the cost of excavations, grading, and filling. The policy or policies limits shall be 100% of this Contract value of the Work plus 15% to cover administrative costs, design costs, and the costs of inspections and construction management.
2. Insured property shall include material or portions of the Work located away from the Site but intended for use at the Site and shall cover material or portions of the Work in transit. The policy or policies shall include as insured property scaffolding, falsework, and temporary buildings located at the Site. The policy or policies shall cover the cost of removing debris, including demolition.
3. The policy or policies shall provide that all proceeds thereunder shall be payable to the City as Trustee for the insured, and shall name the City, the Contractor, Subcontractors, and Suppliers of all tiers as named insured. The City, as Trustee, will collect, adjust, and receive all monies which may become due and payable under the policy or policies, may compromise any and all claims thereunder, and will apply the proceeds of such insurance to the repair, reconstruction, or replacement of the Work.
4. Any deductible applicable to the insurance shall be identified in the policy or policies documents and responsibility for paying the part of any loss not covered because of the application of such deductibles shall be apportioned among the parties except for the City as follows: if there is more than one claimant for a single occurrence, then each claimant shall pay a pro-rata share of the per occurrence deductible based upon the percentage of their paid claim to the total paid for insured. The City shall be entitled to 100% of its loss. You shall pay the City any portion of that loss not covered because of a deductible at the same time the proceeds of the insurance are paid to the City as trustee.

5. Any insured, other than the City, making claim to which a deductible applies shall be responsible for 100% of the loss not insured because of the deductible. Except as provided for under California law, the policy or policies shall provide that the City is entitled to 30 Days prior written notice (10 Days for cancellation due to non-payment of premium) of cancellation or non-renewal of the policy or policies.

**7-3.3 Rating Requirements.** Except for the State Compensation Insurance Fund, all insurance required by this Contract as described herein shall be carried only by responsible insurance companies with a rating of, or equivalent to, at least "A-, VI" by A.M. Best Company, that are authorized by the California Insurance Commissioner to do business in the State, and that have been approved by the City.

**7-3.3.1 Non-Admitted Carriers.** The City will accept insurance provided by non-admitted, "surplus lines" carriers only if the carrier is authorized to do business in the State and is included on the List of Approved Surplus Lines Insurers (LASLI list).

All policies of insurance carried by non-admitted carriers shall be subject to all of the requirements for policies of insurance provided by admitted carriers described herein.

**7-3.4 Evidence of Insurance.** Furnish to the City documents e.g., certificates of insurance and endorsements evidencing the insurance required herein, and furnish renewal documentation prior to expiration of this insurance. Each required document shall be signed by the insurer or a person authorized by the insurer to bind coverage on its behalf. We reserve the right to require complete, certified copies of all insurance policies required herein.

**7-3.5 Policy Endorsements.**

**7-3.5.1 Commercial General Liability Insurance.**

**7-3.5.1.1 Additional Insured.**

1. You shall provide at your expense policy endorsement written on the current version of the ISO Occurrence form CG 20 10 11 85 or an equivalent form providing coverage at least as broad.
2. To the fullest extent allowed by law e.g., California Insurance Code §11580.04, the policy shall be endorsed to include the City and its respective elected officials, officers, employees, agents, and representatives as additional insured.
3. The additional insured coverage for projects for which the Engineer's Estimate is \$1,000,000 or more shall include liability arising out of:
  - a) Ongoing operations performed by you or on your behalf,
  - b) your products,



- c) your Work, e.g., your completed operations performed by you or on your behalf, or
  - d) premises owned, leased, controlled, or used by you.
4. The additional insured coverage for projects for which the Engineer's Estimate is less than \$1,000,000 shall include liability arising out of:
- a) Ongoing operations performed by you or on your behalf,
  - b) your products, or
  - c) premises owned, leased, controlled, or used by you.

**7-3.5.1.2 Primary and Non-Contributory Coverage.** The policy shall be endorsed to provide that the coverage with respect to operations, including the completed operations, if appropriate, of the Named Insured is primary to any insurance or self-insurance of the City and its elected officials, officers, employees, agents and representatives. Further, it shall provide that any insurance maintained by the City and its elected officials, officers, employees, agents and representatives shall be in excess of your insurance and shall not contribute to it.

**7-3.5.1.3 Project General Aggregate Limit.** The policy or policies shall be endorsed to provide a Designated Construction Project General Aggregate Limit that will apply only to the Work. Only claims payments which arise from the Work shall reduce the Designated Construction Project General Aggregate Limit. The Designated Construction Project General Aggregate Limit shall be in addition to the aggregate limit provided for the products-completed operations hazard.

**7-3.5.2 Commercial Automobile Liability Insurance.**

**7-3.5.2.1 Additional Insured.** Unless the policy or policies of Commercial Auto Liability Insurance are written on an ISO form CA 00 01 12 90 or a later version of this form or equivalent form providing coverage at least as broad, the policy shall be endorsed to include the City and its respective elected officials, officers, employees, agents, and representatives as additional insured, with respect to liability arising out of automobiles owned, leased, hired or borrowed by you or on your behalf. This endorsement is limited to the obligations permitted by California Insurance Code §11580.04.

**7-3.5.5 Builders Risk Endorsements.**

**7-3.5.5.1 Waiver of Subrogation.** The policy or policies shall be endorsed to provide that the insurer will waive all rights of subrogation against the City, and its respective elected officials, officers, employees, agents, and representatives for losses paid under the terms of the policy or policies and which arise from Work performed by the Named Insured for the City.

- 7-3.5.5.2 Builders Risk – Partial Utilization.** If the City desires to occupy or use a portion or portions of the Work prior to Acceptance in accordance with this Contract, the City will notify you and you shall immediately notify your Builder's Risk insurer and obtain an endorsement that the policy or policies shall not be cancelled or lapse on account of any such partial use or occupancy. You shall obtain the endorsement prior to the City's occupation and use.
- 7-3.6 Deductibles and Self-Insured Retentions.** You shall pay for all deductibles and self-insured retentions. You shall disclose deductibles and self-insured retentions to the City at the time the evidence of insurance is provided.
- 7-3.7 Reservation of Rights.** The City reserves the right, from time to time, to review your insurance coverage, limits, deductibles and self-insured retentions to determine if they are acceptable to the City. The City will reimburse you, without overhead, profit, or any other markup, for the cost of additional premium for any coverage requested by the Engineer but not required by this Contract.
- 7-3.8 Notice of Changes to Insurance.** You shall notify the City 30 Days prior to any material change to the policies of insurance provided under this Contract.
- 7-3.9 Excess Insurance.** Policies providing excess coverage shall follow the form of the primary policy or policies e.g., all endorsements.
- 7-3.10 Architects and Engineers Professional Insurance (Errors and Omissions Insurance).**
1. For Contracts with required engineering services (e.g., Design-Build, preparation of engineered Traffic Control Plans (TCP), and etc) by you, you shall keep or require all of your employees or Subcontractors, who provide professional engineering services under this contract, Professional Liability coverage with a limit of **\$1,000,000** per claim and **\$2,000,000** annual aggregate in full force and effect.
  2. You shall ensure the following:
    - a) The policy retroactive date is on or before the date of commencement of the Project.
    - b) The policy will be maintained in force for a period of 3 years after completion of the Project or termination of this Contract, whichever occurs last. You agree that for the time period specified above, there will be no changes or endorsements to the policy that affect the specified coverage.
  3. If professional engineering services are to be provided solely by the Subcontractor, you shall:
    - a) Certify this to the City in writing and
    - b) Agree in writing to require the Subcontractor to procure Professional Liability coverage in accordance with the requirements set forth above.

**7-4** **NOT USED.** To the "GREENBOOK", DELETE in its entirety and SUBSTITUTE with the following:

**7-4** **WORKERS' COMPENSATION INSURANCE AND EMPLOYERS LIABILITY INSURANCE.**

1. In accordance with the provisions of §3700 of the California Labor Code, you shall provide at your expense Workers' Compensation Insurance and Employers Liability Insurance to protect you against all claims under applicable state workers compensation laws. The City, its elected officials, and employees will not be responsible for any claims in law or equity occasioned by your failure to comply with the requirements of this section.

2. Limits for this insurance shall be not less than the following:

<u>Workers' Compensation</u>	<u>Statutory Employers Liability</u>
Bodily Injury by Accident	\$1,000,000 each accident
Bodily Injury by Disease	\$1,000,000 each employee
Bodily Injury by Disease	\$1,000,000 policy limit

3. By signing and returning the Contract you certify that you are aware of the provisions of §3700 of the Labor Code which requires every employer to be insured against liability for worker's compensation or to undertake self-insurance in accordance with the provisions of that code and you shall comply with such provisions before commencing the Work as required by §1861 of the California Labor Code.

**7-4.1** **Waiver of Subrogation.** The policy or policies shall be endorsed to provide that the insurer will waive all rights of subrogation against the City and its respective elected officials, officers, employees, agents, and representatives for losses paid under the terms of the policy or policies and which arise from Work performed by the Named Insured for the City.

**7-5** **PERMITS, FEES, AND NOTICES.** To the "WHITEBOOK", ADD the following:

Contractor shall obtain ministerial permits from DSD (Electrical, Mechanical, Regional Haz Mat etc.). Cost of permits will be reimbursed from Field Order Allowance.

**SECTION 10 – GREEN BUILDINGS AND STORM WATER MANAGEMENT**

**10-3** **STORM WATER MANAGEMENT DISCHARGE CONTROL.**

1. You shall comply with Chapter 4, Article 3, Division 3 of the San Diego Municipal Code, Storm Water Management and Discharge Control, Municipal Storm Water Permit (MS4), California Regional Water Quality Control Board Order No. R9-2013-0001 (amended by R9-2015-0001 and R9-2015-0100), Storm Water Standards Manual, as amended from time to time, and any and all Best Management Practice (BMP) guidelines and pollution



elimination requirements as may be established by the Enforcement Official. You warrant and certify that any and all Plans, reports, and specifications prepared for the City in accordance with this agreement shall meet all requirements of the San Diego Municipal Code and Storm Water Standards Manual. You understand that while the City will be reviewing your designs for storm water permit compliance prior to acceptance of Design-Builder's designs, you shall also understand and agree that the City's Storm Water review process and its acceptance of your designs in no way limits the your obligations under this agreement to prepare designs that comply with all requirements of the San Diego Municipal Code and MS4 Permit.

2. You shall complete and update the Storm Water Applicability Checklist (DS-560) to confirm the project's appropriate storm water requirements. For all applicable projects, and to the maximum extent practicable, you shall incorporate and include Source Control and Low Impact Development (LID) design features or Site Design BMPs on the construction plans. Additionally, for Priority Development projects, you shall prepare a Storm Water Quality Management Plan (SWQMP) in accordance with the requirements of the Storm Water Standards Manual. You shall prepare a SWQMP Drainage Management Area Map showing all LID site design, source control and treatment control BMPs, hydromodification management plan facilities, and tabulated calculations. Include sufficient details and cross sections for construction. The Drainage Management Area Map shall be included as part of the construction Plans in addition to the Storm Water Infrastructure cover sheet. A template of the Storm Water Infrastructure cover sheet will be provided by the City.
3. You shall attend the Pre-construction meeting. You shall inspect and confirm that the permanent BMP was installed in accordance with the details on the Plans and that the permanent BMP functions meet the requirements of the MS4 Permit. Upon notification by the Engineer, the Design-Builder Engineer of Work shall sign and stamp the Permanent BMP Self Certification on the Plans or the Permanent BMP Self Certification Form (DS-563) prior to final acceptance by the City.
4. For projects requiring soil-disturbance Work such as geotechnical borings, street coring, and potholing as component of the design, you shall complete a Minor Water Pollution Control Plan (DS-570), if applicable.

## **SECTION 601 - TEMPORARY TRAFFIC CONTROL FOR CONSTRUCTION AND MAINTENANCE WORK ZONES**

**601-2.1.2 Engineered Traffic Control Plans (TCP).** To the "WHITEBOOK", ADD the following:

If needed, contractor shall prepare a TCP at no additional cost to the City.

**EQUAL OPPORTUNITY CONTRACTING PROGRAM (EOCP) SECTION A – GENERAL  
REQUIREMENTS**

- 4.1 Nondiscrimination in Contracting Ordinance.** To the “WHITEBOOK”, subsection 4.1.1, paragraph (2), sentence (1), DELETE in its entirety and SUBSTITUTE with the following:

You shall not discriminate on the basis of race, gender, gender expression, gender identity, religion, national origin, ethnicity, sexual orientation, age, or disability in the solicitation, selection, hiring, or treatment of subcontractors, vendors, or suppliers.

**END OF SUPPLEMENTARY SPECIAL PROVISIONS (SSP)**

## **SUPPLEMENTARY SPECIAL PROVISIONS**

### **APPENDICES**



**APPENDIX A**

**NOTICE OF RIGHT TO APPEAL ENVIRONMENTAL DETERMINATIONS**



THE CITY OF SAN DIEGO

Date of Notice: November 19, 2015

# NOTICE OF RIGHT TO APPEAL ENVIRONMENTAL DETERMINATION

PUBLIC WORKS DEPARTMENT

WBS No. S-16045.01.01

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**PROJECT NAME/NUMBER:** Pacific Beach Library Roof Replacement

**COMMUNITY PLAN AREA:** Pacific Beach

**COUNCIL DISTRICT:** 2

**LOCATION:** 4275 Cass Street, San Diego, CA

**PROJECT DESCRIPTION:** This project is the in-kind replacement of the roof and HVAC system at the existing, fully-operational Pacific Beach Library, which is located in a built-out, urbanized setting. No grading, ground-disturbing, or other construction activities are proposed, and no work will occur in the building's frame or ceiling system. The project is consistent with the Pacific Beach Community Plan.

**ENTITY CONSIDERING PROJECT APPROVAL:** City of San Diego

**ENVIRONMENTAL DETERMINATION:** Categorically exempt from CEQA pursuant to CEQA State Guidelines Section 15301

**ENTITY MAKING ENVIRONMENTAL DETERMINATION:** City of San Diego Public Works Department

**STATEMENT SUPPORTING REASON FOR ENVIRONMENTAL DETERMINATION:** The City of San Diego conducted an environmental review which determined that the improvements proposed qualify for State CEQA Guideline §15301 "Existing Facilities" which allows for minor alteration of existing structures, facilities, mechanical equipment, or topographical features. This project does not trigger any of the exceptions to categorical exemptions found in State CEQA Guideline §15300.2.

**CITY CONTACT:** Jason Grani, Associate Engineer-Civil

**MAILING ADDRESS:** 525 B Street, Suite 750, MS 908A  
San Diego, CA 92101  
**PHONE NUMBER:** (619) 533-7525

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On November 19, 2015 the City of San Diego made the above-referenced environmental determination pursuant to the California Environmental Quality Act (CEQA). This determination is appealable to the City Council. If you have any questions about this project, contact the City Project Manager listed above.

Applications to appeal CEQA determination made by staff to the City Council must be filed in the office of the City Clerk within 10 business days from the date of the posting of this Notice (December 7, 2015). The appeal application can be obtained from the City Clerk, 202 'C' Street, Second Floor, San Diego, CA 92101.

This information will be made available in alternative formats upon request.





THE CITY OF SAN DIEGO

DATE OF NOTICE: September 23, 2016

# NOTICE OF RIGHT TO APPEAL ENVIRONMENTAL DETERMINATION

## DEVELOPMENT SERVICES DEPARTMENT

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**PROJECT NO:** B-16046.02.06  
**PROJECT NAME:** Tierrasanta Recreation Center Roof and HVAC Replacement  
**COMMUNITY PLAN AREA:** Tierrasanta  
**COUNCIL DISTRICT:** 7  
**LOCATION:** 11200 Clairemont Mesa Boulevard

**PROJECT DESCRIPTION:** This project is the in-kind replacement of the roof and the HVAC units with the same capacity at the existing, fully-operational Tierrasanta Recreation Center. No grading, ground-disturbance, or other construction activities are proposed, and no work will occur in the building's frame or ceiling system.

**ENTITY CONSIDERING PROJECT APPROVAL:** City of San Diego

**ENVIRONMENTAL DETERMINATION:** CEQA exemption Section 15301 (Existing Facilities).

**ENTITY MAKING ENVIRONMENTAL DETERMINATION:** City of San Diego

**STATEMENT SUPPORTING REASON FOR ENVIRONMENTAL DETERMINATION:** The City of San Diego conducted an environmental review which determined that the improvements proposed qualify for State CEQA Guideline Section 15301 "Existing Facilities" which allows for minor alteration of existing structures, facilities, mechanical equipment, or topographical features. The project would not result in impacts to biological or cultural resources, and is not located in or adjacent to Multi-Habitat Planning Area (MHPA). This project does not trigger any of the exceptions to categorical exemptions found in State CEQA Guideline, Section 15300.2.

**CITY PROJECT MANAGER:** Thomas Smith, City of San Diego Public Works Department  
**MAILING ADDRESS:** 525 B Street, Suite 750  
**PHONE NUMBER/E-MAIL:** (619) 533-3753 / TWSmith@sandiego.gov

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On September 23, 2016 the City of San Diego made the above-referenced environmental determination pursuant to the California Environmental Quality Act (CEQA). This determination is appealable to the City Council. If you have any questions about this determination, contact the City Development Project Manager listed above.

Applications to appeal CEQA determination made by staff (including the City Manager) to the City Council must be filed in the office of the City Clerk within 10 business days from the date of the posting of this Notice, October 7, 2016. The appeal application can be obtained from the City Clerk, 202 'C' Street, Second Floor, San Diego, CA 92101.

This information will be made available in alternative formats upon request.

**APPENDIX B**  
**FIRE HYDRANT METER PROGRAM**



<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 1 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

1. **PURPOSE**

1.1 To establish a Departmental policy and procedure for issuance, proper usage and charges for fire hydrant meters.

2. **AUTHORITY**

2.1 All authorities and references shall be current versions and revisions.

2.2 San Diego Municipal Code (NC) Chapter VI, Article 7, Sections 67.14 and 67.15

2.3 Code of Federal Regulations, Safe Drinking Water Act of 1986

2.4 California Code of Regulations, Titles 17 and 22

2.5 California State Penal Code, Section 498B.0

2.6 State of California Water Code, Section 110, 500-6, and 520-23

2.7 Water Department Director

**Reference**

2.8 State of California Guidance Manual for Cross Connection Programs

2.9 American Water Works Association Manual M-14, Recommended Practice for Backflow Prevention

2.10 American Water Works Association Standards for Water Meters

2.11 U.S.C. Foundation for Cross Connection Control and Hydraulic Research Manual

3. **DEFINITIONS**

3.1 **Fire Hydrant Meter:** A portable water meter which is connected to a fire hydrant for the purpose of temporary use. (These meters are sometimes referred to as Construction Meters.)

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 2 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

- 3.2 **Temporary Water Use:** Water provided to the customer for no longer than twelve (12) months.
- 3.3 **Backflow Preventor:** A Reduced Pressure Principal Assembly connected to the outlet side of a Fire Hydrant Meter.

4. **POLICY**

- 4.1 The Water Department shall collect a deposit from every customer requiring a fire hydrant meter and appurtenances prior to providing the meter and appurtenances (see Section 7.1 regarding the Fees and Deposit Schedule). The deposit is refundable upon the termination of use and return of equipment and appurtenances in good working condition.
- 4.2 Fire hydrant meters will have a 2 ½" swivel connection between the meter and fire hydrant. The meter shall not be connected to the 4" port on the hydrant. All Fire Hydrant Meters issued shall have a Reduced Pressure Principle Assembly (RP) as part of the installation. Spanner wrenches are the only tool allowed to turn on water at the fire hydrant.
- 4.3 The use of private hydrant meters on City hydrants is prohibited, with exceptions as noted below. All private fire hydrant meters are to be phased out of the City of San Diego. All customers who wish to continue to use their own fire hydrant meters must adhere to the following conditions:
  - a. Meters shall meet all City specifications and American Water Works Association (AWWA) standards.
  - b. Customers currently using private fire hydrant meters in the City of San Diego water system will be allowed to continue using the meter under the following conditions:
    - 1. The customer must submit a current certificate of accuracy and calibration results for private meters and private backflows annually to the City of San Diego, Water Department, Meter Shop.

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 3 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

2. The meter must be properly identifiable with a clearly labeled serial number on the body of the fire hydrant meter. The serial number shall be plainly stamped on the register lid and the main casing. Serial numbers shall be visible from the top of the meter casing and the numbers shall be stamped on the top of the inlet casing flange.
3. All meters shall be locked to the fire hydrant by the Water Department, Meter Section (see Section 4.7).
4. All meters shall be read by the Water Department, Meter Section (see Section 4.7).
5. All meters shall be relocated by the Water Department, Meter Section (see Section 4.7).
6. These meters shall be tested on the anniversary of the original test date and proof of testing will be submitted to the Water Department, Meter Shop, on a yearly basis. If not tested, the meter will not be allowed for use in the City of San Diego.
7. All private fire hydrant meters shall have backflow devices attached when installed.
8. The customer must maintain and repair their own private meters and private backflows.
9. The customer must provide current test and calibration results to the Water Department, Meter Shop after any repairs.
10. When private meters are damaged beyond repair, these private meters will be replaced by City owned fire hydrant meters.



<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 4 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

11. When a private meter malfunctions, the customer will be notified and the meter will be removed by the City and returned to the customer for repairs. Testing and calibration results shall be given to the City prior to any re-installation.
  12. The register shall be hermetically sealed straight reading and shall be readable from the inlet side. Registration shall be in hundred cubic feet.
  13. The outlet shall have a 2 ½ “National Standards Tested (NST) fire hydrant male coupling.
  14. Private fire hydrant meters shall not be transferable from one contracting company to another (i.e. if a company goes out of business or is bought out by another company).
- 4.4 All fire hydrant meters and appurtenances shall be installed, relocated and removed by the City of San Diego, Water Department. All City owned fire hydrant meters and appurtenances shall be maintained by the City of San Diego, Water Department, Meter Services.
- 4.5 If any fire hydrant meter is used in violation of this Department Instruction, the violation will be reported to the Code Compliance Section for investigation and appropriate action. Any customer using a fire hydrant meter in violation of the requirements set forth above is subject to fines or penalties pursuant to the Municipal Code, Section 67.15 and Section 67.37.
- 4.6 **Conditions and Processes for Issuance of a Fire Hydrant Meter**
- Process for Issuance
- a. Fire hydrant meters shall only be used for the following purposes:
    1. Temporary irrigation purposes not to exceed one year.

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 5 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

2. Construction and maintenance related activities (see Tab 2).
  - b. No customer inside or outside the boundaries of the City of San Diego Water Department shall resell any portion of the water delivered through a fire hydrant by the City of San Diego Water Department.
  - c. The City of San Diego allows for the issuance of a temporary fire hydrant meter for a period not to exceed 12 months (365 days). An extension can only be granted in writing from the Water Department Director for up to 90 additional days. A written request for an extension by the consumer must be submitted at least 30 days prior to the 12 month period ending. No extension shall be granted to any customer with a delinquent account with the Water Department. No further extensions shall be granted.
  - d. Any customer requesting the issuance of a fire hydrant meter shall file an application with the Meter Section. The customer must complete a "Fire Hydrant Meter Application" (Tab 1) which includes the name of the company, the party responsible for payment, Social Security number and/or California ID, requested location of the meter (a detailed map signifying an exact location), local contact person, local phone number, a contractor's license (or a business license), description of specific water use, duration of use at the site and full name and address of the person responsible for payment.
  - e. At the time of the application the customer will pay their fees according to the schedule set forth in the Rate Book of Fees and Charges, located in the City Clerk's Office. All fees must be paid by check, money order or cashiers check, made payable to the City Treasurer. Cash will not be accepted.
  - f. No fire hydrant meters shall be furnished or relocated for any customer with a delinquent account with the Water Department.
  - g. After the fees have been paid and an account has been created, the

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
<b>SUBJECT  FIRE HYDRANT METER PROGRAM (FORMERLY: CONSTRUCTION METER PROGRAM)</b>	<b>PAGE 6 OF 10</b>	<b>EFFECTIVE DATE  October 15, 2002</b>
	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

meter shall be installed within 48 hours (by the second business day). For an additional fee, at overtime rates, meters can be installed within 24 hours (within one business day).

#### 4.7 Relocation of Existing Fire Hydrant Meters

- a. The customer shall call the Fire Hydrant Meter Hotline (herein referred to as “Hotline”), a minimum of 24 hours in advance, to request the relocation of a meter. A fee will be charged to the existing account, which must be current before a work order is generated for the meter’s relocation.
- b. The customer will supply in writing the address where the meter is to be relocated (map page, cross street, etc). The customer must update the original Fire Hydrant Meter Application with any changes as it applies to the new location.
- c. Fire hydrant meters shall be read on a monthly basis. While fire hydrant meters and backflow devices are in service, commodity, base fee and damage charges, if applicable, will be billed to the customer on a monthly basis. If the account becomes delinquent, the meter will be removed.

#### 4.8 Disconnection of Fire Hydrant Meter

- a. After ten (10) months a “Notice of Discontinuation of Service” (Tab 3) will be issued to the site and the address of record to notify the customer of the date of discontinuance of service. An extension can only be granted in writing from the Water Department Director for up to 90 additional days (as stated in Section 4.6C) and a copy of the extension shall be forwarded to the Meter Shop Supervisor. If an extension has not been approved, the meter will be removed after twelve (12) months of use.
- b. Upon completion of the project the customer will notify the Meter Services office via the Hotline to request the removal of the fire hydrant meter and appurtenances. A work order will be generated



<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
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for removal of the meter.

- c. Meter Section staff will remove the meter and backflow prevention assembly and return it to the Meter Shop. Once returned to the Meter Shop the meter and backflow will be tested for accuracy and functionality.
- d. Meter Section Staff will contact and notify Customer Services of the final read and any charges resulting from damages to the meter and backflow or its appurtenance. These charges will be added on the customer's final bill and will be sent to the address of record. Any customer who has an outstanding balance will not receive additional meters.
- e. Outstanding balances due may be deducted from deposits and any balances refunded to the customer. Any outstanding balances will be turned over to the City Treasurer for collection. Outstanding balances may also be transferred to any other existing accounts.

5. **EXCEPTIONS**

- 5.1 Any request for exceptions to this policy shall be presented, in writing, to the Customer Support Deputy Director, or his/her designee for consideration.

6. **MOBILE METER**

- 6.1 Mobile meters will be allowed on a case by case basis. All mobile meters will be protected by an approved backflow assembly and the minimum requirement will be a Reduced Pressure Principal Assembly. The two types of Mobile Meters are vehicle mounted and floating meters. Each style of meters has separate guidelines that shall be followed for the customer to retain service and are described below:

- a) **Vehicle Mounted Meters:** Customer applies for and receives a City owned Fire Hydrant Meter from the Meter Shop. The customer mounts the meter on the vehicle and brings it to the Meter Shop for

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
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	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

inspection. After installation is approved by the Meter Shop the vehicle and meter shall be brought to the Meter Shop on a monthly basis for meter reading and on a quarterly basis for testing of the backflow assembly. Meters mounted at the owner's expense shall have the one year contract expiration waived and shall have meter or backflow changed if either fails.

b) **Floating Meters:** Floating Meters are meters that are not mounted to a vehicle. **(Note: All floating meters shall have an approved backflow assembly attached.)** The customer shall submit an application and a letter explaining the need for a floating meter to the Meter Shop. The Fire Hydrant Meter Administrator, after a thorough review of the needs of the customer, (i.e. number of jobsites per day, City contract work, lack of mounting area on work vehicle, etc.), may issue a floating meter. At the time of issue, it will be necessary for the customer to complete and sign the "Floating Fire Hydrant Meter Agreement" which states the following:

- 1) The meter will be brought to the Meter Shop at 2797 Caminito Chollas, San Diego on the third week of each month for the monthly read by Meter Shop personnel.
- 2) Every other month the meter will be read and the backflow will be tested. This date will be determined by the start date of the agreement.

If any of the conditions stated above are not met the Meter Shop has the right to cancel the contract for floating meter use and close the account associated with the meter. The Meter Shop will also exercise the right to refuse the issuance of another floating meter to the company in question.

Any Fire Hydrant Meter using reclaimed water shall not be allowed use again with any potable water supply. The customer shall incur the cost of replacing the meter and backflow device in this instance.

<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
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7. **FEE AND DEPOSIT SCHEDULES**

7.1 **Fees and Deposit Schedules:** The fees and deposits, as listed in the Rate Book of Fees and Charges, on file with the Office of the City Clerk, are based on actual reimbursement of costs of services performed, equipment and materials. These deposits and fees will be amended, as needed, based on actual costs. Deposits, will be refunded at the end of the use of the fire hydrant meter, upon return of equipment in good working condition and all outstanding balances on account are paid. Deposits can also be used to cover outstanding balances.

All fees for equipment, installation, testing, relocation and other costs related to this program are subject to change without prior notification. The Mayor and Council will be notified of any future changes.

8. **UNAUTHORIZED USE OF WATER FROM A HYDRANT**

8.1 Use of water from any fire hydrant without a properly issued and installed fire hydrant meter is theft of City property. Customers who use water for unauthorized purposes or without a City of San Diego issued meter will be prosecuted.

8.2 If any unauthorized connection, disconnection or relocation of a fire hydrant meter, or other connection device is made by anyone other than authorized Water Department personnel, the person making the connection will be prosecuted for a violation of San Diego Municipal Code, Section 67.15. In the case of a second offense, the customer's fire hydrant meter shall be confiscated and/or the deposit will be forfeited.

8.3 Unauthorized water use shall be billed to the responsible party. Water use charges shall be based on meter readings, or estimates when meter readings are not available.

8.4 In case of unauthorized water use, the customer shall be billed for all applicable charges as if proper authorization for the water use had been obtained, including but not limited to bi-monthly service charges, installation charges and removal charges.



<b>CITY OF SAN DIEGO CALIFORNIA DEPARTMENT INSTRUCTIONS</b>	<b>NUMBER DI 55.27</b>	<b>DEPARTMENT Water Department</b>
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	<b>SUPERSEDES DI 55.27</b>	<b>DATED April 21, 2000</b>

- 8.5 If damage occurs to Water Department property (i.e. fire hydrant meter, backflow, various appurtenances), the cost of repairs or replacements will be charged to the customer of record (applicant).

**Larry Gardner  
Water Department Director**

- Tabs: 1. Fire Hydrant Meter Application  
2. Construction & Maintenance Related Activities With No Return To Sewer  
3. Notice of Discontinuation of Service

### **APPENDIX**

**Administering Division:** Customer Support Division

**Subject Index:** Construction Meters  
Fire Hydrant  
Fire Hydrant Meter Program  
Meters, Floating or Vehicle Mounted  
Mobile Meter  
Program, Fire Hydrant Meter

**Distribution:** DI Manual Holders



# Application for Fire Hydrant Meter (EXHIBIT A)

(For Office Use Only)

NS REQ	FAC#
DATE	BY

METER SHOP (619) 527-7449

## Meter Information

Application Date	Requested Install Date:
------------------	-------------------------

Fire Hydrant Location: (Attach Detailed Map//Thomas Bros. Map Location or Construction drawing.) Zip:	T.B.	G.B. (CITY USE)
Specific Use of Water:		
Any Return to Sewer or Storm Drain, If so, explain:		
Estimated Duration of Meter Use:	<input type="checkbox"/>	Check Box if Reclaimed Water

## Company Information

Company Name:			
Mailing Address:			
City:	State:	Zip:	Phone: ( )
*Business license#		*Contractor license#	
A Copy of the Contractor's license OR Business License is required at the time of meter issuance.			
Name and Title of Billing Agent: <small>(PERSON IN ACCOUNTS PAYABLE)</small>			Phone: ( )
Site Contact Name and Title:			Phone: ( )
Responsible Party Name:			Title:
Cal ID#			Phone: ( )
Signature:		Date:	
<small>Guarantees Payment of all Charges Resulting from the use of this Meter. Insures that employees of this Organization understand the proper use of Fire Hydrant Meter</small>			

<b>Fire Hydrant Meter Removal Request</b>	Requested Removal Date:
Provide Current Meter Location if Different from Above:	
Signature:	Title: Date:
Phone: ( )	Pager: ( )

City Meter	Private Meter
Contract Acct #:	Deposit Amount: <b>\$ 936.00</b> Fees Amount: <b>\$ 62.00</b>
Meter Serial #	Meter Size: <b>05</b> Meter Make and Style: <b>6-7</b>
Backflow #	Backflow Size: Backflow Make and Style:
Name:	Signature: Date:

**WATER USES WITHOUT ANTICIPATED CHARGES FOR RETURN TO SEWER**

Auto Detailing  
Backfilling  
Combination Cleaners (Vactors)  
Compaction  
Concrete Cutters  
Construction Trailers  
Cross Connection Testing  
Dust Control  
Flushing Water Mains  
Hydro Blasting  
Hydro Seeing  
Irrigation (for establishing irrigation only; not continuing irrigation)  
Mixing Concrete  
Mobile Car Washing  
Special Events  
Street Sweeping  
Water Tanks  
Water Trucks  
Window Washing

**Note:**

1. If there is any return to sewer or storm drain, then sewer and/or storm drain fees will be charges.



Date

Name of Responsible Party  
Company Name and Address  
Account Number: \_\_\_\_\_

Subject: Discontinuation of Fire Hydrant Meter Service

Dear Water Department Customer:

The authorization for use of Fire Hydrant Meter # \_\_\_\_\_, located at *(Meter Location Address)* ends in 60 days and will be removed on or after *(Date Authorization Expires)*. Extension requests for an additional 90 days must be submitted in writing for consideration 30 days prior to the discontinuation date. If you require an extension, please contact the Water Department, or mail your request for an extension to:

City of San Diego  
Water Department  
Attention: Meter Services  
2797 Caminito Chollas  
San Diego, CA 92105-5097

Should you have any questions regarding this matter, please call the Fire Hydrant Hotline at (619) \_\_\_\_\_ - \_\_\_\_\_.

Sincerely,

Water Department

## APPENDIX C

### MATERIALS TYPICALLY ACCEPTED BY CERTIFICATE OF COMPLIANCE

## Materials Typically Accepted by Certificate of Compliance

1. Soil amendment
2. Fiber mulch
3. PVC or PE pipe up to 16 inch diameter
4. Stabilizing emulsion
5. Lime
6. Preformed elastomeric joint seal
7. Plain and fabric reinforced elastomeric bearing pads
8. Steel reinforced elastomeric bearing pads
9. Waterstops (Special Condition)
10. Epoxy coated bar reinforcement
11. Plain and reinforcing steel
12. Structural steel
13. Structural timber and lumber
14. Treated timber and lumber
15. Lumber and timber
16. Aluminum pipe and aluminum pipe arch
17. Corrugated steel pipe and corrugated steel pipe arch
18. Structural metal plate pipe arches and pipe arches
19. Perforated steel pipe
20. Aluminum underdrain pipe
21. Aluminum or steel entrance tapers, pipe downdrains, reducers, coupling bands and slip joints
22. Metal target plates
23. Paint (traffic striping)
24. Conductors
25. Painting of electrical equipment
26. Electrical components
27. Engineering fabric
28. Portland Cement
29. PCC admixtures
30. Minor concrete, asphalt
31. Asphalt (oil)
32. Liquid asphalt emulsion
33. Epoxy



**APPENDIX D**  
**SAMPLE CITY INVOICE**

City of San Diego, Field Engineering Div., 9485 Aero Drive, SD CA 92123		<b>Contractor's Name:</b>	
<b>Project Name:</b>		Contractor's Address:	
Work Order No or Job Order No.			
City Purchase Order No.		Contractor's Phone #:	<b>Invoice No.</b>
Resident Engineer (RE):		Contractor's fax #:	<b>Invoice Date:</b>
RE Phone#:	Fax#:	Contact Name:	Billing Period: ( to

Item #	Item Description	Contract Authorization				Previous Totals To Date		This Estimate		Totals to Date	
		Unit	Price	Qty	Extension	%/QTY	Amount	% / QTY	Amount	% / QTY	Amount
1					\$ -		\$ -		\$ -	0.00%	\$ -
2					\$ -		\$ -		\$ -	0.00%	\$ -
3					\$ -		\$ -		\$ -	0.00%	\$ -
4					\$ -		\$ -		\$ -	0.00%	\$ -
5					\$ -		\$ -		\$ -	0.00%	\$ -
6					\$ -		\$ -		\$ -	0.00%	\$ -
7					\$ -		\$ -		\$ -	0.00%	\$ -
8					\$ -		\$ -		\$ -	0.00%	\$ -
9					\$ -		\$ -		\$ -	0.00%	\$ -
10					\$ -		\$ -		\$ -	0.00%	\$ -
11					\$ -		\$ -		\$ -	0.00%	\$ -
12					\$ -		\$ -		\$ -	0.00%	\$ -
13					\$ -		\$ -		\$ -	0.00%	\$ -
14					\$ -		\$ -		\$ -	0.00%	\$ -
15					\$ -		\$ -		\$ -	0.00%	\$ -
16					\$ -		\$ -		\$ -	0.00%	\$ -
17	<b>Field Orders</b>				\$ -		\$ -		\$ -	0.00%	\$ -
18					\$ -		\$ -		\$ -	0.00%	\$ -
	<b>CHANGE ORDER No.</b>				\$ -		\$ -		\$ -	0.00%	\$ -
					\$ -		\$ -		\$ -	0.00%	\$ -
Total Authorized Amount (including approved Change Order)					\$ -		\$ -		\$ -	<b>Total Billed</b>	\$ -

**SUMMARY**

A. Original Contract Amount	\$ -
B. Approved Change Order #00 Thru #00	\$ -
C. Total Authorized Amount (A+B)	\$ -
D. Total Billed to Date	\$ -
E. Less Total Retention (5% of D )	\$ -
F. Less Total Previous Payments	\$ -
<b>G. Payment Due Less Retention</b>	<b>\$0.00</b>
H. Remaining Authorized Amount	\$0.00

**I certify that the materials  
have been received by me in  
the quality and quantity specified**

\_\_\_\_\_  
**Resident Engineer**

\_\_\_\_\_  
**Construction Engineer**

**Retention and/or Escrow Payment Schedule**

Total Retention Required as of this billing (Item E)	\$0.00
Previous Retention Withheld in PO or in Escrow	\$0.00
<b>Add'l Amt to Withhold in PO/Transfer in Escrow:</b>	<b>\$0.00</b>
<b>Amt to Release to Contractor from PO/Escrow:</b>	

Contractor Signature and Date: \_\_\_\_\_

**APPENDIX E**  
**LOCATION MAPS**



The City of  
**SAN DIEGO** Public Works

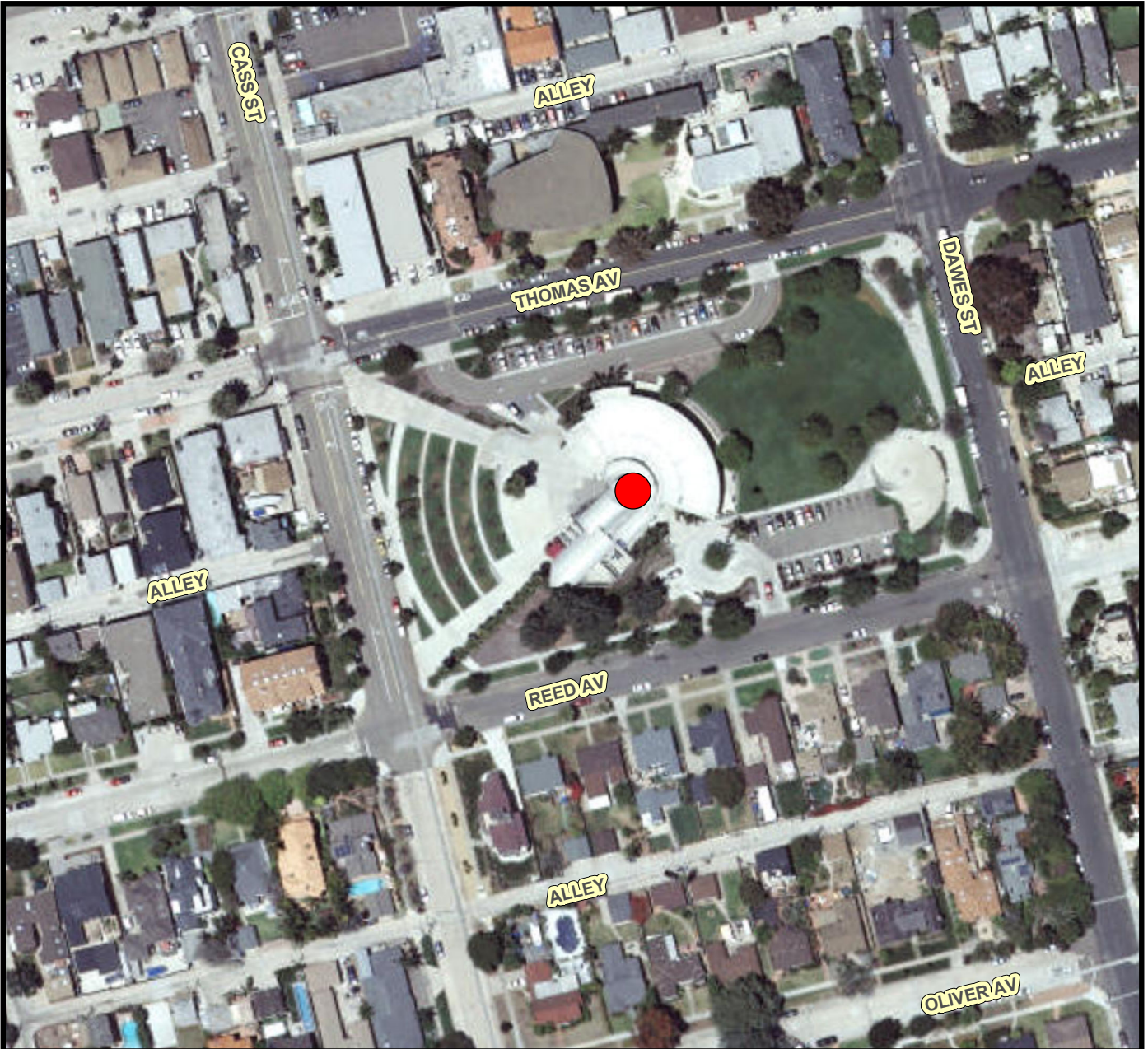
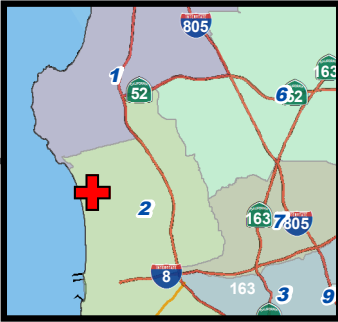
**PACIFIC BEACH LIBRARY EARL & BIRDIE  
 TAYLOR - ROOF & HVAC REPLACEMENT**

SENIOR ENGINEER  
 Cynthia Meinhardt  
 619-533-5259

PROJECT MANAGER  
 Tina Huang  
 619-533-3863

PROJECT ENGINEER  
 Jouliana Soulaqa  
 619-533-5457

FOR QUESTIONS ABOUT THIS PROJECT  
 Call: 619-533-4207  
 Email: [engineering@sandiego.gov](mailto:engineering@sandiego.gov)



**Legend**

 **Project Location**



No Scale

S:\PITS\PITS-CIP-Preliminary-Engineering-and-Program-Coordination\Sect\_Preliminary\_Engineering\Buildings\Pacific Beach Library Earl Birdie & Taylor\CIPTracking

COMMUNITY NAME: PACIFIC BEACH

COUNCIL DISTRICT: 02

SAP ID: XXXXX

Date: January 11, 2017  
 Appendix E - Location Maps



THIS MAP/DATA IS PROVIDED WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Note: This product may contain information reproduced with permission granted by RAND McNALLY & COMPANY to SanGIS. This map is copyrighted by RAND McNALLY & COMPANY. It is unlawful to copy or reproduce all or any part thereof, whether for personal use or resale, without the prior, written permission of RAND McNALLY & COMPANY.



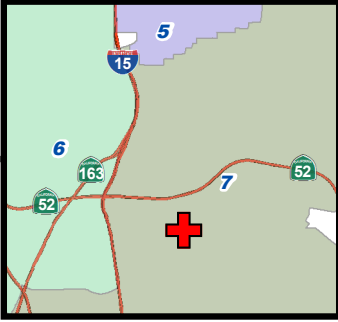
**TIERRASANTA RECREATION CENTER  
ROOF & HVAC REPLACEMENT**

SENIOR ENGINEER  
Cynthia Meinhardt  
619-533-5259

PROJECT MANAGER  
Tina Huang  
619-533-3863

PROJECT ENGINEER  
Jouliana Soulaqa  
619-533-5457

FOR QUESTIONS ABOUT THIS PROJECT  
Call: 619-533-4207  
Email: [engineering@san Diego.gov](mailto:engineering@san Diego.gov)



**Legend**

 Project Location



No Scale



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**APPENDIX F**  
**SAMPLE OF PUBLIC NOTICE**



# FOR SAMPLE REFERENCE ONLY



## CONSTRUCTION NOTICE

### PROJECT TITLE

Work on your street will begin within one week to replace the existing water mains servicing your community.

#### The work will consist of:

- Saw-cutting and trench work on Ingulf Street from Morena Boulevard to Galveston Street to install new water mains, water laterals and fire hydrants.
- Streets where trenching takes place will be resurfaced and curb ramps will be upgraded to facilitate access for persons with disabilities where required.
- This work is anticipated to be complete in your community by December 2016.

#### How your neighborhood may be impacted:

- Water service to some properties during construction will be provided by a two-inch highline pipe that will run along the curb. To report a highline leak call 619-515-3525.
- Temporary water service disruptions are planned. If planned disruptions impact your property, you will receive advance notice.
- Parking restrictions will exist because of the presence of construction equipment and materials.
- "No Parking" signs will be displayed 72 hours in advance of the work.
- Cars parked in violation of signs will be TOWED.

#### Hours and Days of Operation:

Monday through Friday X:XX AM to X:XX PM.

#### City of San Diego Contractor:

Company Name, XXX-XXX-XXXX



## CONSTRUCTION NOTICE

### PROJECT TITLE

Work on your street will begin within one week to replace the existing water mains servicing your community.

#### The work will consist of:

- Saw-cutting and trench work on Ingulf Street from Morena Boulevard to Galveston Street to install new water mains, water laterals and fire hydrants.
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- "No Parking" signs will be displayed 72 hours in advance of the work.
- Cars parked in violation of signs will be TOWED.


#### Hours and Days of Operation:

Monday through Friday X:XX AM to X:XX PM.

#### City of San Diego Contractor:

Company Name, XXX-XXX-XXXX

To contact the City of San Diego:  Public Works  
619-533-4207 | [engineering@sandiego.gov](mailto:engineering@sandiego.gov) | [sandiego.gov/CIP](http://sandiego.gov/CIP)

 This information is available in alternative formats upon request.

Appendix F - Sample of Public Notice

Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement

To contact the City of San Diego:  Public Works  
619-533-4207 | [engineering@sandiego.gov](mailto:engineering@sandiego.gov) | [sandiego.gov/CIP](http://sandiego.gov/CIP)

 This information is available in alternative formats upon request. 318 | Page

## **APPENDIX G**

### **ASBESTOS AND LEAD MANAGEMENT PROGRAM (ALMP)**

RECEIVED  
OCT 14 2015

RECEIVED  
OCT 15 '15  
Env Svs Dept  
ESEP Div

4805

CITY of SAN DIEGO

WORK REQUEST FOR ASBESTOS & LEAD MANAGEMENT PROGRAM

BY:

Department Public Works - Engineering Dept# 2112 Division Project Implementation

Work Requested By Julian Espinoza MS# 611 Phone/Fax 619-533-3071

Facility Name/Address Pacific Beach Library Earl & Birdie Taylor Roof & HVAC Replacement

Facility # 010138 Age of Facility: 1997 Plans Attached?  YES  NO Target Start: 10/19/15

Description of Proposed Work (explain detail of work as well as what part of facility)

This project includes the replacement in kind of roof coverings. The facility was built in 1997. Roof covering are standing seam vaulted metal which are in poor condition. No work will be done in the roof framing system supporting the roof covering as well as the ceiling system. The Heating, Ventilation, and Cooling (HVAC) system is predominately a centralized cooling/heating system, which are original and in poor condition. The terminal and packaged units that are located in the mechanical yard will all be replaced.

Have internal order or WBS # opened to ALMP for labor cost. ALMP cost center 2115111111; fund 100000; revenue acct 424071. The following accounting #s are for laboratory, abatement, and/or other NPE. Request estimate if needed.

Accounting Numbers:	<u>2112140018</u>	<u>400860</u>	<u>WBS# B-16045.62-d</u>
	Cost Center	Fund	Internal Order/WBS #

I have the authority to authorize ALMP to bill hourly inspection labor and laboratory expenses to the accounting numbers above for work related to this project.

Signature [Signature] Title Project Manager Date 10/14/15

Print Name Julian Espinoza Div. Analyst Name Cindy Delino

Send completed form to: ASBESTOS & LEAD MANAGEMENT PROGRAM - 9601 Ridgehaven Court, Suite 320, San Diego, CA 92123 or MS 1103-A or Fax (858)492-5089

FOR OFFICE USE ONLY

Date Received 10/14/15 Inspector GEORGE KATSIKARIS

Records/Inspection Information DUE TO THE RATE OF CONSTRUCTION THE ONLY POTENTIAL ASBESTOS CONTAINING MATERIAL WOULD BE ROOF MASTICS. THESE WERE TESTED AND DO NOT CONTAIN ASBESTOS. \*RESULTS ATTACHED -

Impact on Project NONE. WORK MAY PROCEED UNRESTRICTED

<u>[Signature]</u>	<u>11-16-15</u>	<u>[Signature]</u>	<u>11-16-15</u>
ASBESTOS & LEAD PROGRAM INSPECTOR	DATE	ASBESTOS & LEAD PROGRAM MANAGER	DATE

Asbestos & Lead Management Program -- (858) 573-1262 (FAX) (858) 492-5089





# H.M. Pitt Labs, Inc.

4901 Morena Blvd · Ste 203 · San Diego, CA 92117

# Lab Number: 146389-193905

Tel: 619-474-8548 · Fax: 619-474-6128

**Company:**

City of San Diego Environmental Services  
Department  
9601 Ridgehaven Court, Suite 310  
San Diego, CA 92123

**Date Entered:** 11/12/2015

**Analyzed By:** Edina Zakar

**Date Analyzed:** 11/13/15

**Customer PO / Claim#:**

**Contract Number:**

**Job Site:** Project #7206

**Date Sampled**

**Who Sampled**

11/12/2015

Client

**Lab Notes:**

---

**POLARIZED LIGHT MICROSCOPY ANALYSIS REPORT - EPA-600/R-93/116 AND EPA-600/M4-82-020**

---

**Analysis Number:** 146389-1

**Customer Number:** B-001

**Classification:**

**Description:** Roof Seam Mastic

**Results:** Non-Asbestos: Non-Fibrous Black Mastic

---

- All samples tested as submitted to the lab. H.M. PITT LABS, INC. does not assume responsibility for the accuracy of the information submitted with the samples unless done by an employee of H.M. PITT LABS, INC.
- These test results relate only to the sample(s) identified above.
- This report may not be used to claim endorsement by NVLAP or any agency of the Federal Government.
- This report shall not be reproduced, except in full, without written approval of H.M. Pitt Labs, Inc.
- Samples are archived for 2 years from date of receipt and will be disposed of properly following this period.
- Quantitative value is based on PLM CVES (Calibrated Visual Estimates) with a detection limit of <1%.

**APPROVED BY:**

LELANO S. PITT, CIH

**Dated:** 11/13/2015

**REVIEWED BY:**

Page 1 of 1

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OCT 14 2015

RECEIVED

OCT 15 15

Env Svs Dept  
ESEP Div

4808

CITY of SAN DIEGO

BY: .....WORK REQUEST FOR ASBESTOS & LEAD MANAGEMENT PROGRAM

Department Public Works - Engineering Dept# 2112 Division Project Implementation

Work Requested By Julian Espinoza MS# 611 Phone/Fax 619-533-3071

Facility Name/Address Tierrasanta Recreation Center Roof & HVAC Replacement

Facility # 009951 Age of Facility: 1990 Plans Attached?  YES  NO Target Start: 10/19/15

Description of Proposed Work (explain detail of work as well as what part of facility)

This project includes the replacement in kind of roof coverings. The facility was built in 1990. Roof covering are modified bitumen which are in poor condition. No work will be done in the roof framing system supporting the roof covering as well as the ceiling system. The Heating, Ventilation, and Cooling (HVAC) system is predominately split DX units which are original and in poor condition. The terminal and packaged units to be replaced are located in the roof.

Have internal order or WBS # opened to ALMP for labor cost. ALMP cost center 2115111111; fund 100000; revenue acct 424071. The following accounting #s are for laboratory, abatement, and/or other NPE. Request estimate if needed.

Accounting Numbers:	<u>2112140018</u>	<u>400860</u>	<u>WBS# B-160460201</u>
	Cost Center	Fund	Internal Order/WBS #

I have the authority to authorize ALMP to bill hourly inspection labor and laboratory expenses to the accounting numbers above for work related to this project.

Signature [Signature] Title Project Manager Date 10/14/15

Print Name Julian Espinoza Div. Analyst Name Cindy Delino

Send completed form to: ASBESTOS & LEAD MANAGEMENT PROGRAM - 9601 Ridgeway Court, Suite 320, San Diego, CA 92123 or MS 1103-A or Fax (858)492-5089

FOR OFFICE USE ONLY

Date Received 10/14/15 Inspector GEORGE KATSIKARIS

Records/Inspection Information NO ASBESTOS IDENTIFIED AS A RESULT OF THIS INSPECTION.

Impact on Project NONE

<u>[Signature]</u>	<u>12-2-15</u>	<u>[Signature]</u>	<u>12-3-15</u>
ASBESTOS & LEAD PROGRAM INSPECTOR	DATE	ASBESTOS & LEAD PROGRAM MANAGER	DATE

Asbestos & Lead Management Program -- (858) 573-1262 (FAX) (858) 492-5089

7208



# H.M. Pitt Labs, Inc.

4901 Morena Blvd · Ste 203 · San Diego, CA 92117

# Lab Number: 146677-194406

Tel: 619-474-8548 · Fax: 619-474-6128

**Company:**

City of San Diego Environmental Services  
Department  
9601 Ridgehaven Court, Suite 310  
San Diego, CA 92123

**Date Entered:** 12/02/2015  
**Analyzed By:** Edina Zakar

**Date Analyzed:** 12/02/15  
**Customer PO / Claim#:**  
**Contract Number:**

**Job Site:** Project #7208

**Date Sampled**     **Who Sampled**  
12/01/2015     George K

**Lab Notes:** RUSH

---

## POLARIZED LIGHT MICROSCOPY ANALYSIS REPORT - EPA-600/R-93/116 AND EPA-600/M4-82-020

---

**Analysis Number:** 146677-1

**Customer Number:** B-001

**Classification:**

**Description:** Roofing Mastic - Black

**Results:** Non-Asbestos: 2% Cellulose Fibers in Gray/Black Penetration Mastic

---

**Analysis Number:** 146677-2

**Customer Number:** B-002

**Classification:**

**Description:** Roofing Mastic - White

**Results:** Non-Asbestos: 5% Glass Fibers in Black Penetration Mastic

---

- All samples tested as submitted to the lab. H.M. PITT LABS, INC. does not assume responsibility for the accuracy of the information submitted with the samples unless done by an employee of H.M. PITT LABS, INC.
- These test results relate only to the sample(s) identified above.
- This report may not be used to claim endorsement by NVLAP or any agency of the Federal Government.
- This report shall not be reproduced, except in full, without written approval of H.M. Pitt Labs, Inc.
- Samples are archived for 2 years from date of receipt and will be disposed of properly following this period.
- Quantitative value is based on PLM CVES (Calibrated Visual Estimates) with a detection limit of <1%.

**APPROVED BY:**

LELANO S. PITT, CIH

**Dated:** 12/02/2015

**REVIEWED BY:**

Page 1 of 1



## APPENDIX H

### ADVANCED METERING INFRASTRUCTURE (AMI) DEVICE PROTECTION

## Protecting AMI Devices in Meter Boxes and on Street Lights

The Public Utilities Department (PUD) has begun the installation of the Advanced Metering Infrastructure (AMI) technology as a new tool to enhance water meter reading accuracy and efficiency, customer service and billing, and to be used by individual accounts to better manage the efficient use of water. **All AMI devices shall be protected per Section 5-2, "Protection", of the 2015 Whitebook.**

AMI technology allows water meters to be read electronically rather than through direct visual inspection by PUD field staff. This will assist PUD staff and customers in managing unusual consumption patterns which could indicate leaks or meter tampering on a customer's property.

Three of the main components of an AMI system are the:

- A. Endpoints, see Photo 1:

**Photo 1**



B. AMI Antenna attached to Endpoint (antenna not always required), see Photo 2:

**Photo 2**



Network Devices, see Photo 3:

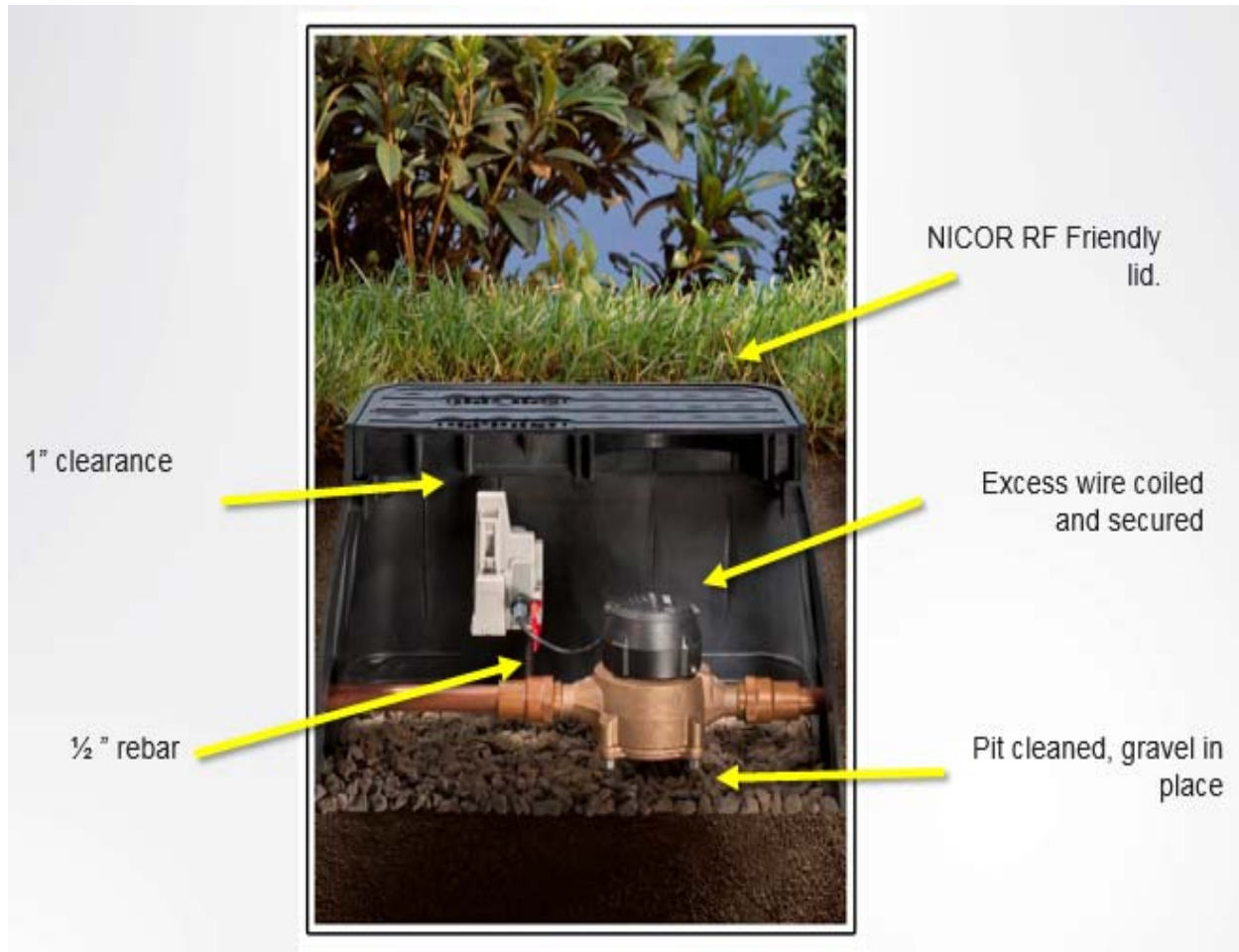
**Photo 3**





AMI endpoints transmit meter information to the AMI system and will soon be on the vast majority of meters in San Diego. These AMI devices provide interval consumption data to the PUD's Customer Support Division. If these devices are damaged or communication is interrupted, this Division will be alerted of the situation. The endpoints are installed in water meter boxes, coffins, and vaults adjacent to the meter. A separate flat round antenna may also be installed through the meter box lid. This antenna is connected to the endpoint via cable. The following proper installation shall be implemented when removing the lid to avoid damaging the antenna, cable, and/or endpoint. Photo 4 below demonstrates a diagram of the connection:

**Photo 4**



The AMI device ERT/Endpoint/Transmitter shall be positioned and installed as discussed in this Appendix. If the ERT/Endpoint/Transmitter is disturbed, it shall be re-installed and returned to its original installation with the end points pointed upwards as shown below in Photo 5.

**The PUD's code compliance staff will issue citations and invoices to you for any damaged AMI devices that are not re-installed as discussed in the Contract Document**

Photo 5 below shows a typical installation of an AMI endpoint on a water meter.

**Photo 5**

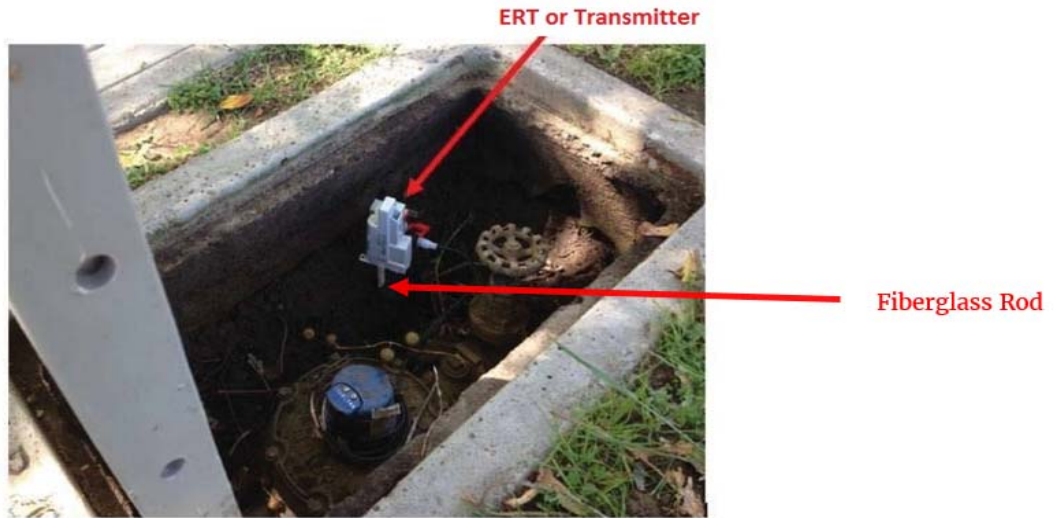


Photo 6 below is an example of disturbance that shall be avoided:

**Photo 6**



**You are responsible when working in and around meter boxes.** If you encounter these endpoints, use proper care and do not disconnect them from the registers on top of the water meter. If the lid has an antenna drilled through, do not change or tamper with the lid and inform the Resident Engineer immediately about the location of that lid. Refer to Photo 7 below:

**Photo 7**



Another component of the AMI system are the Network Devices. The Network Devices are strategically placed units (mainly on street light poles) that collect interval meter reading data from multiple meters for transmission to the Department Control Computer. **If you come across any of these devices on street lights that will be removed or replaced (refer to Photos 8 and 9 below), notify AMI Project Manager Arwa Sayed at (619) 362-0121 immediately.**

Photo 8 shows an installed network device on a street light. On the back of each Network Device is a sticker with contact information. See Photo 9. **Call PUD Water Emergency Repairs at 619-515-3525 if your work will impact these street lights.** These are assets that belong to the City of San Diego and you shall be responsible for any costs of disruption of this network.



**Photo 8**



**Network Device**

**Photo 9**



**If you encounter any bad installations, disconnected/broken/buried endpoints, or inadvertently damage any AMI devices or cables, notify the Resident Engineer immediately. The Resident Engineer will then immediately contact the AMI Project Manager, Arwa Sayed, at (619) 362-0121.**

**ATTACHMENT F**  
**INTENTIONALLY LEFT BLANK**

**ATTACHMENT G**  
**EVALUATION AND SELECTION**



**ATTACHMENT G**  
**EVALUATION AND SELECTION**

Proposals will be ranked according to the criteria described below:

**1. Addenda to this RFP – Pass / Fail**

- 1.1. The Proposer shall acknowledge each addendum issued in connection with this RFP, by listing all issued addenda on an Addenda Acknowledgement sheet to be submitted with the Proposal. Failure to acknowledge all issued addenda may result in the Proposal being considered **non-responsive** and ineligible for further consideration.
- 1.2. Including copies of addenda with the Proposal shall not constitute acknowledgement of issued addenda.

**2. Proposer Exceptions to this RFP – Pass / Fail**

- 2.1. If the Proposer takes exception to any portion of the contract terms, the Proposer must identify and explain to the City in writing the basis for the exception. The Proposer must submit any claimed exception a minimum of 10 calendar days prior to the due date for submission of Proposals. Exceptions taken after the submission period for this RFP may be cause for rejection of the Proposal as being **non-responsive**.

**3. Summary of Proposal (5 Points Max)**

- 3.1. Each Proposer must submit a one to two page summary of its Proposal.

**4. Project Team (5 Points Max)**

- 4.1. Describe the proposed management plan for this Project. Describe the qualifications of key proposed construction and technical personnel, and subcontractors, from applicable fields including the following:
  - 4.1.1. Architectural
  - 4.1.2. Structural
  - 4.1.3. Mechanical
  - 4.1.4. Electrical

**5. Technical Approach and Design Concept (30 Points Max)**

- 5.1. Describe in detail the proposed design concept for this Project. Include detailed descriptions, conceptual design drawings, schematics, a list of major equipment, and any other information deemed necessary to allow the City to make an informed evaluation of the Proposer’s technical approach. The completeness and technical merit of the design concept will be evaluated.

## 6. Construction Plan (30 Points Max)

- 6.1. Describe the proposed construction plan for this Project, including the following, at a minimum:
  - 6.1.1. Construction approach and methods
  - 6.1.2. Plan for operation of facility during construction
  - 6.1.3. Plan for phasing of construction activities
  - 6.1.4. General plan for functional testing and start-up.
  - 6.1.5. Proposed safety program
  - 6.1.6. Proposed emergency response plan
  - 6.1.7. Proposed construction schedule
  - 6.1.8. Traffic Control Management
  - 6.1.9. Community Impact

## 7. Equal Employment and Contracting Opportunity (25 Points Max)

- 7.1. Failure to submit the required EOCP information will result in Proposal being determined as **non-responsive**.
- 7.2. Subcontractor Documentation
  - 7.2.1. The Proposer shall, at a minimum, provide with its Price Proposal a listing of at least 3 of the largest Subcontractors (constructors only) for the Project and all other Subcontractors (design professionals, etc.) that are known at the time it submits its Proposal using form AA05 and AA25. **Note:** Subcontractors include design professionals, as well.
  - 7.2.2. Work which requires Subcontractors that are not listed by Proposer at time of Award shall be let by Proposer in accordance with a competitive bidding process performed solely at Proposer's expense. Proposer shall provide public notice of the availability of the Work to be subcontracted, obtain competitive bids, and provide a fixed date and time on which the subcontracted work will be awarded. Subcontractors bidding on subcontracts pursuant to this provision shall be afforded the protection of all applicable laws, including Public Contract Code sections 4100 through 4114, inclusive.
  - 7.2.3. The Proposer may select Subcontractors and Suppliers in one of 3 competitive ways i.e., lowest responsible bidder, best value for price and qualifications, or highest qualifications. Prior to construction NTP, the Proposer shall do the following:

- 7.2.3.1. Submit the selection method used to the City in accordance with 2-5.3, "Submittals."
- 7.2.3.2. Pre-qualify Subcontractors and Suppliers, in a manner at least as stringent as the City's pre-qualification standards.
- 7.2.3.3. Review the Subcontractors and Suppliers ultimately chosen to verify that that they have not been debarred and are in good standing as a licensed contractor in California.
- 7.2.4. Open all Subcontract bids and provide to the City one copy without reservation or redaction. All records relevant to the award and performance of Subcontractors and Suppliers shall be public and provided to the City upon request and without redaction. The City may administer bidding itself for Subcontractors and Suppliers, or to direct the bidding procedures to be used by the Proposer.
- 7.2.5. The Proposer may use its corporate-generated subcontractor agreement to retain Subcontractors or Suppliers, provided the subcontractor agreement contains the terms required to be included in Subcontracts by this Contract.
- 7.2.6. The points will be awarded according to the chart below, based upon actual subcontract award amounts, as set forth in the price proposals.

OUTCOME		MAXIMUM POSSIBLE POINTS
1	5% - 9% participation SLBE, ELBE or DVBE	5
2	10%-14% participation SLBE, ELBE or DVBE	10
3	15%-19% participation SLBE, ELBE or DVBE	15
4	20%-24% participation SLBE, ELBE or DVBE	20
5	25% participation SLBE, ELBE or DVBE	25
In no case the points shall exceed 25.		

**8. Reference Checks (5 Points Max)**

**Contractor to provide minimum of two references.**

**TOTAL POINTS: 100**



## 9. Review of Technical Proposal

- 9.1. Following the receipt of the Technical Proposal, the City anticipates allotting 2 weeks for review of the Technical Proposals.

## 10. Final Selection Based on Weighted Criteria

- 10.1. Based on the Design-Builders' Proposals and using the Project's Evaluation Criteria, the Panel will continue to rank the Design-Builder's Proposals by determining an overall score which shall be calculated as follows:
- 10.2. A maximum of 80 points will be assigned for the Contract Price as proposed. The lowest total Contract Price of all the Proposals that meet the requirements of this RFP will receive the maximum assigned points to this category. The other Price Proposals will be scored based on how much higher their total Contract Prices compare to the lowest:
- 10.3. 
$$\left(1 - \frac{(\text{Contract Price} - \text{Lowest Contract Price})}{(\text{Lowest Contract Price})}\right) \times \text{Max Pts} = \text{Pts Rcvd}$$
- 10.4. A maximum of 20 points will be assigned for the qualitative criteria described in the RFP. All Proposals shall receive scores based on 40 times the average of the composite ratings provided by the Panel.
- 10.5. The Selected Design-Builder will be the team with the highest total score earned. Design-Builders will be notified in writing of the City's final decision.
- 10.6. For example, if the lowest total Contract Price of all proposals is \$100, that Proposal would receive the maximum allowable points for the price category. If the total Contract Price of another proposal is \$105 and the maximum allowable points is 80 points, then that Proposal would receive  $(1 - ((105 - 100) / 100) \times 80 = 76$  points, or 95% of the maximum points. The lowest score a Proposal can receive for this category is zero points - the score cannot be a negative number. The below example using the same 80/20 split illustrates the calculation outcomes with Firm A winning the competition even though Firm A did not have the highest rated proposal or the lowest price:

Firm	Avg. Composite Rating	Qualitative Score (20Max)	Price Proposal	Price Score (80 Max)	Total Score (100 Max)
A	85.00	17.00	\$105	76.00	93.00
<b>B</b>	<b>88.00</b>	<b>17.60</b>	<b>\$130</b>	<b>56.00</b>	<b>73.60</b>
C	50.00	14.60	\$100	80.00	90.00
Note: All figures will be rounded off to two decimal places.					

# ATTACHMENT H

## PRICE FORMS



**PRICE PROPOSAL FORMS**

The Design-Builder agrees to the design and construction of **Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement**, for the City of San Diego, in accordance with these contract documents for the lump sum price listed below. The Design-Builder guarantees the proposed prices for a period of 120 Days from the date Proposals are due. The duration of the price guarantee may be extended as required by mutual consent.

Item No.	NAICS CODE	Description	Quantity	D*	Unit	Unit Price	Extension
<b>BASE PROPOSAL</b>							
1	524126	TRC - Bonds (Payment and Performance)	1		LS	<del>                    </del>	\$2,256.00
2	524126	PB - Bonds (Payment and Performance)	1		LS	<del>                    </del>	\$4,369.00
3	541330	TRC - Engineering and Design Services	1	D	LS	<del>                    </del>	\$34,831.00
4	541330	PB - Engineering and Design Services	1	D	LS	<del>                    </del>	\$42,256.00
5	238160	TRC - Roof Replacement Construction	1		LS	<del>                    </del>	\$513,942.00
6	238220	TRC - HVAC Replacement Construction	1		LS	<del>                    </del>	\$225,416.00
7	238160	PB - Roof Replacement Construction	1		LS	<del>                    </del>	\$867,314.00
8	238220	PB - HVAC Replacement Construction	1		LS	<del>                    </del>	\$591,040.00
9	238160	TRC -Roof Deck Replacement Allowance (EOC Type I)	1		AL	<del>                    </del>	\$5,000.00
10	238160	PB - Roof Deck Replacement Allowance (EOC Type I)	1		AL	<del>                    </del>	<del>\$30,000.00</del> \$25,000.00
11	334290	TRC - City Contingency (EOC Type II)	1		AL	<del>                    </del>	<del>\$50,000.00</del> \$45,000.00

Item No.	NAICS CODE	Description	Quantity	D*	Unit	Unit Price	Extension
12	334290	PB - City Contingency (EOC Type II)	1		AL	<del>                    </del>	<del>\$50,000.00</del> \$45,000.00
13	541330	TRC - WPCP Development	1	D	LS	<del>                    </del>	\$2,511.00
14	541330	PB - WPCP Development	1	D	LS	<del>                    </del>	\$2,511.00
15	237990	TRC - WPCP Implementation	1		LS	<del>                    </del>	\$3,608.00
16	237990	PB - WPCP Implementation	1		LS	<del>                    </del>	\$3,608.00
<b>TOTAL BASE PROPOSAL</b>							<b>\$2,419,854.00</b>
<b>ADDITIVE ALTERNATE 1</b>							
1	238190	Work Platform - TRC	1		LS	<del>                    </del>	\$20,173.00
<b>TOTAL ADDITIVE ALTERNATE 1:</b>							<b>\$20,173.00</b>
<b>ADDITIVE ALTERNATE 2</b>							
1	238160	Short Ladder - PB	1		LS	<del>                    </del>	\$5,927.00
<b>TOTAL ADDITIVE ALTERNATE 2:</b>							<b>\$5,927.00</b>
<b>ADDITIVE ALTERNATE 3</b>							
1	238160	Fall Protection - TRC	1		LS	<del>                    </del>	\$19,950.00
<b>TOTAL ADDITIVE ALTERNATE 3:</b>							<b>\$19,950.00</b>

Item No.	NAICS CODE	Description	Quantity	D*	Unit	Unit Price	Extension
<b>ADDITIVE ALTERNATE 4</b>							
1	238220	Replace Electric and Electronic Controls Serving Exhaust/Supply Fans and Makeup Air Units - TRC	1		LS	<del>                    </del>	\$20,284.00
<b>TOTAL ADDITIVE ALTERNATE 4:</b>							\$20,284.00
<b>ADDITIVE ALTERNATE 5</b>							
1	238160	Provide Roof Hatch above MAU-1 and MAU-2 - TRC	1		LS	<del>                    </del>	\$5,000.00
<b>TOTAL ADDITIVE ALTERNATE 5:</b>							\$5,000.00
<b>TOTAL DESIGN-BUILD BASE PROPOSAL (ITEMS NO. 1 THROUGH 16 PLUS ADDITIVE ALTERNATE 1, ITEM 1, ADDITIVE ALTERNATE 2, ITEM 1, ADDITIVE ALTERNATE 3, ITEM 1, ADDITIVE ALTERNATE 4, ITEM 1 AND ADDITIVE ALTERNATE 5, ITEM 1, INCLUSIVE):</b>							\$2,491,188.00

\* Design Element (For City Use)



Total Price For Design-Build Proposal, (items No. 1 through 16 PLUS Additive Alternate 1, item 1, Additive Alternate 2, item 1, Additive Alternate 3, item 1, Additive Alternate 4, item 1 and Additive Alternate 5, item 1, inclusive) amount written in words:

two million four hundred ninety-one thousand one hundred eighty-eight

Design-Builder: Johnson Controls, Inc.

Title: Branch General Manager

Signature: 

The names of all persons interested in the foregoing proposal as principals are as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

IMPORTANT NOTICE: If Design-Builder or other interested person is a corporation, state secretary, treasurer, and manager thereof; if a co-partnership, state true name of firm, also names of all individual co-partners composing firm; if Design-Builder or other interested person is an individual, state first and last names in full.

NOTES:

- A. The Contract Price to be used in the selection process as described in Attachment G of the RFP will be determined by the base proposal plus all the Alternates.
- B. After the selected Design-Builder has been determined, the City may, at its sole discretion, award the contract for the Base Proposal alone or for the Base Proposal plus one or more alternates.
- C. Proposals shall not contain any recapitulation of the Work. Conditional Proposals may be rejected as being **non-responsive**. Alternative proposals will not be considered unless called for.
- D. Subcontractors' License Numbers must be filled in. Failure to provide the information specified may deem the bidder **non-responsive**.
- E. Blank spaces must be filled in. The Design-Builder's failure to submit a price may render the Proposal non-responsive and ineligible for award.
- F. Unit prices shall be entered for all unit price items. Unit prices shall not exceed two (2) decimal places. If the Unit prices entered exceed two (2) decimal places, the City will only use the first two digits after the decimal points without rounding up or down.
- G. All extensions of the unit prices bid will be subject to verification by the City. In the case of conflict between the Product of the Quantity x Unit Price and the written Extension, the Product shall govern.
- H. In the case of conflict, between the sum of the Extensions and the Bid Total, the sum of the Extensions shall govern.

**DESIGN-BUILD LIST OF SUBCONTRACTORS TO BE INCLUDED IN THE PRICE PROPOSAL ONLY**  
**ADDITIVE/DEDUCTIVE ALTERNATE**  
 (USE ONLY WHEN ADDITIVE ALTERNATES ARE REQUIRED)

**ALTERNATE 1**

The Design-Builder shall list all Subcontractors described in the Design-Builder's Base Bid whose percentage of work will increase or decrease if alternates are selected for award. The Design-Builder shall also list additional Subcontractors not described in the Design-Builder's Base Bid who, as a result of the alternates, will perform work or labor, or render services, or specially fabricate and install a portion [type] of work or improvements in an amount in excess of 0.5%. Failure to comply with this requirement shall result in the Bid being rejected as non-responsive and ineligible for award. The Design-Builder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors that Design-Builder are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

ADDITIVE/DEDUCTIVE ALTERNATE	NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB	WHERE CERTIFIED	CHECK IF JOINT VENTURE PARTNERSHIP
	Name: <u>NONE</u> Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						

① As appropriate, Design-Builder shall identify Vendor/Supplier as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):

- |   |        |  |         |
|---|--------|--|---------|
| Certified Minority Business Enterprise        | MBE    | Certified Woman Business Enterprise            | WBE     |
| Certified Disadvantaged Business Enterprise   | DBE    | Certified Disabled Veteran Business Enterprise | DVBE    |
| Other Business Enterprise                     | OBE    | Certified Emerging Local Business Enterprise   | ELBE    |
| Certified Small Local Business Enterprise     | SLBE   | Small Disadvantaged Business                   | SDB     |
| Woman-Owned Small Business                    | WoSB   | HUBZone Business                               | HUBZone |
| Service-Disabled Veteran Owned Small Business | SDVOSB |  |         |

② As appropriate, Design-Builder shall indicate if Vendor/Supplier is certified by:

- |  |        |  |          |
|--|--------|--|----------|
| City of San Diego                                    | CITY   | State of California Department of Transportation       | CALTRANS |
| California Public Utilities Commission               | CPUC   | San Diego Regional Minority Supplier Diversity Council | SRMSDC   |
| State of California's Department of General Services | CADoGS | City of Los Angeles                                    | LA       |
| State of California                                  | CA     | U.S. Small Business Administration                     | SBA      |

The Design-Builder will not receive any subcontracting participation percentages if the Design-Builder fails to submit the required proof of certification (except for OBE, SLBE and ELBE).



**DESIGN-BUILD LIST OF SUBCONTRACTORS TO BE INCLUDED IN THE PRICE PROPOSAL ONLY**  
**ADDITIVE/DEDUCTIVE ALTERNATE**  
 (USE ONLY WHEN ADDITIVE ALTERNATES ARE REQUIRED)

**ALTERNATE 2**

The Design-Builder shall list all Subcontractors described in the Design-Builder's Base Bid whose percentage of work will increase or decrease if alternates are selected for award. The Design-Builder shall also list additional Subcontractors not described in the Design-Builder's Base Bid who, as a result of the alternates, will perform work or labor, or render services, or specially fabricate and install a portion [type] of work or improvements in an amount in excess of 0.5%. Failure to comply with this requirement shall result in the Bid being rejected as non-responsive and ineligible for award. The Design-Builder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors that Design-Builder are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

ADDITIVE/DEDUCTIVE ALTERNATE	NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB	WHERE CERTIFIED	CHECK IF JOINT VENTURE PARTNERSHIP
	Name: <u>NONE</u> Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						

① As appropriate, Design-Builder shall identify Vendor/Supplier as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):

- |   |        |  |         |
|---|--------|--|---------|
| Certified Minority Business Enterprise        | MBE    | Certified Woman Business Enterprise            | WBE     |
| Certified Disadvantaged Business Enterprise   | DBE    | Certified Disabled Veteran Business Enterprise | DVBE    |
| Other Business Enterprise                     | OBE    | Certified Emerging Local Business Enterprise   | ELBE    |
| Certified Small Local Business Enterprise     | SLBE   | Small Disadvantaged Business                   | SDB     |
| Woman-Owned Small Business                    | WoSB   | HUBZone Business                               | HUBZone |
| Service-Disabled Veteran Owned Small Business | SDVOSB |  |         |

② As appropriate, Design-Builder shall indicate if Vendor/Supplier is certified by:

- |  |        |  |          |
|--|--------|--|----------|
| City of San Diego                                    | CITY   | State of California Department of Transportation       | CALTRANS |
| California Public Utilities Commission               | CPUC   | San Diego Regional Minority Supplier Diversity Council | SRMSDC   |
| State of California's Department of General Services | CADoGS | City of Los Angeles                                    | LA       |
| State of California                                  | CA     | U.S. Small Business Administration                     | SBA      |

The Design-Builder will not receive any subcontracting participation percentages if the Design-Builder fails to submit the required proof of certification (except for OBE, SLBE and ELBE).

**DESIGN-BUILD LIST OF SUBCONTRACTORS TO BE INCLUDED IN THE PRICE PROPOSAL ONLY**  
**ADDITIVE/DEDUCTIVE ALTERNATE**  
 (USE ONLY WHEN ADDITIVE ALTERNATES ARE REQUIRED)

**ALTERNATE 3**

The Design-Builder shall list all Subcontractors described in the Design-Builder's Base Bid whose percentage of work will increase or decrease if alternates are selected for award. The Design-Builder shall also list additional Subcontractors not described in the Design-Builder's Base Bid who, as a result of the alternates, will perform work or labor, or render services, or specially fabricate and install a portion [type] of work or improvements in an amount in excess of 0.5%. Failure to comply with this requirement shall result in the Bid being rejected as non-responsive and ineligible for award. The Design-Builder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors that Design-Builder are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

ADDITIVE/DEDUCTIVE ALTERNATE	NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB	WHERE CERTIFIED	CHECK IF JOINT VENTURE PARTNERSHIP
	Name: <u>NONE</u> Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						

① As appropriate, Design-Builder shall identify Vendor/Supplier as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):

- |   |        |  |         |
|---|--------|--|---------|
| Certified Minority Business Enterprise        | MBE    | Certified Woman Business Enterprise            | WBE     |
| Certified Disadvantaged Business Enterprise   | DBE    | Certified Disabled Veteran Business Enterprise | DVBE    |
| Other Business Enterprise                     | OBE    | Certified Emerging Local Business Enterprise   | ELBE    |
| Certified Small Local Business Enterprise     | SLBE   | Small Disadvantaged Business                   | SDB     |
| Woman-Owned Small Business                    | WoSB   | HUBZone Business                               | HUBZone |
| Service-Disabled Veteran Owned Small Business | SDVOSB |  |         |

② As appropriate, Design-Builder shall indicate if Vendor/Supplier is certified by:

- |  |        |  |          |
|--|--------|--|----------|
| City of San Diego                                    | CITY   | State of California Department of Transportation       | CALTRANS |
| California Public Utilities Commission               | CPUC   | San Diego Regional Minority Supplier Diversity Council | SRMSDC   |
| State of California's Department of General Services | CADoGS | City of Los Angeles                                    | LA       |
| State of California                                  | CA     | U.S. Small Business Administration                     | SBA      |

The Design-Builder will not receive any subcontracting participation percentages if the Design-Builder fails to submit the required proof of certification (except for OBE, SLBE and ELBE).

**DESIGN-BUILD LIST OF SUBCONTRACTORS TO BE INCLUDED IN THE PRICE PROPOSAL ONLY**  
**ADDITIVE/DEDUCTIVE ALTERNATE**  
 (USE ONLY WHEN ADDITIVE ALTERNATES ARE REQUIRED)

**ALTERNATE 4**

The Design-Builder shall list all Subcontractors described in the Design-Builder's Base Bid whose percentage of work will increase or decrease if alternates are selected for award. The Design-Builder shall also list additional Subcontractors not described in the Design-Builder's Base Bid who, as a result of the alternates, will perform work or labor, or render services, or specially fabricate and install a portion [type] of work or improvements in an amount in excess of 0.5%. Failure to comply with this requirement shall result in the Bid being rejected as non-responsive and ineligible for award. The Design-Builder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors that Design-Builder are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

ADDITIVE/DEDUCTIVE ALTERNATE	NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB	WHERE CERTIFIED	CHECK IF JOINT VENTURE PARTNERSHIP
	Name: <u>NONE</u> Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
	Name: _____ Address: _____ : _____ State: _____ Zip: _____ Phone: _____ Email: _____						

① As appropriate, Design-Builder shall identify Vendor/Supplier as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):

- |   |        |  |         |
|---|--------|--|---------|
| Certified Minority Business Enterprise        | MBE    | Certified Woman Business Enterprise            | WBE     |
| Certified Disadvantaged Business Enterprise   | DBE    | Certified Disabled Veteran Business Enterprise | DVBE    |
| Other Business Enterprise                     | OBE    | Certified Emerging Local Business Enterprise   | ELBE    |
| Certified Small Local Business Enterprise     | SLBE   | Small Disadvantaged Business                   | SDB     |
| Woman-Owned Small Business                    | WoSB   | HUBZone Business                               | HUBZone |
| Service-Disabled Veteran Owned Small Business | SDVOSB |  |         |

② As appropriate, Design-Builder shall indicate if Vendor/Supplier is certified by:

- |  |        |  |          |
|--|--------|--|----------|
| City of San Diego                                    | CITY   | State of California Department of Transportation       | CALTRANS |
| California Public Utilities Commission               | CPUC   | San Diego Regional Minority Supplier Diversity Council | SRMSDC   |
| State of California's Department of General Services | CADoGS | City of Los Angeles                                    | LA       |
| State of California                                  | CA     | U.S. Small Business Administration                     | SBA      |

The Design-Builder will not receive any subcontracting participation percentages if the Design-Builder fails to submit the required proof of certification (except for OBE, SLBE and ELBE).



**DESIGN-BUILD LIST OF SUBCONTRACTORS TO BE INCLUDED IN THE PRICE PROPOSAL ONLY  
ADDITIVE/DEDUCTIVE ALTERNATE  
(USE ONLY WHEN ADDITIVE ALTERNATES ARE REQUIRED)**

**ALTERNATE 5**

The Design-Builder shall list all Subcontractors described in the Design-Builder's Base Bid whose percentage of work will increase or decrease if alternates are selected for award. The Design-Builder shall also list additional Subcontractors not described in the Design-Builder's Base Bid who, as a result of the alternates, will perform work or labor, or render services, or specially fabricate and install a portion [type] of work or improvements in an amount in excess of 0.5%. Failure to comply with this requirement shall result in the Bid being rejected as non-responsive and ineligible for award. The Design-Builder shall list all SLBE, ELBE, DBE, DVBE, MBE, WBE, OBE, SDB, WoSB, HUBZone, and SDVOSB Subcontractors that Design-Builder are seeking recognition towards achieving any mandatory, voluntary, or both subcontracting participation percentages.

ADDITIVE/ DEDUCTIVE ALTERNATE	NAME, ADDRESS AND TELEPHONE NUMBER OF SUBCONTRACTOR	CONSTRUCTOR OR DESIGNER	TYPE OF WORK	DOLLAR VALUE OF SUBCONTRACT	MBE, WBE, DBE, DVBE, OBE, ELBE, SLBE, SDB, WoSB, HUBZone, OR SDVOSB	WHERE CERTIFIED <input type="checkbox"/>	CHECK IF JOINT VENTURE PARTNERSHIP
Additive	Name: <u>C&amp;E Roofing</u> Address: <u>9239 Olive Dr.</u> City: <u>Spring Valley</u> State: <u>CA</u> Zip: <u>91977</u> Phone: <u>619-416-3137</u> Email: _____	constructor	Roof Hatch	\$5,000	SB	CA	
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						
	Name: _____ Address: _____ City: _____ State: _____ Zip: _____ Phone: _____ Email: _____						

ⓐ As appropriate, Design-Builder shall identify Vendor/Supplier as one of the following and shall include a valid proof of certification (except for OBE, SLBE and ELBE):

- |   |        |  |         |
|---|--------|--|---------|
| Certified Minority Business Enterprise        | MBE    | Certified Woman Business Enterprise            | WBE     |
| Certified Disadvantaged Business Enterprise   | DBE    | Certified Disabled Veteran Business Enterprise | DVBE    |
| Other Business Enterprise                     | OBE    | Certified Emerging Local Business Enterprise   | ELBE    |
| Certified Small Local Business Enterprise     | SLBE   | Small Disadvantaged Business                   | SDB     |
| Woman-Owned Small Business                    | WoSB   | HUBZone Business                               | HUBZone |
| Service-Disabled Veteran Owned Small Business | SDVOSB |  |         |

ⓑ As appropriate, Design-Builder shall indicate if Vendor/Supplier is certified by:

- |  |        |  |          |
|--|--------|--|----------|
| City of San Diego                                    | CITY   | State of California Department of Transportation       | CALTRANS |
| California Public Utilities Commission               | CPUC   | San Diego Regional Minority Supplier Diversity Council | SRMSDC   |
| State of California's Department of General Services | CADoGS | City of Los Angeles                                    | LA       |
| State of California                                  | CA     | U.S. Small Business Administration                     | SBA      |

The Design-Builder will not receive any subcontracting participation percentages if the Design-Builder fails to submit the required proof of certification (except for OBE, SLBE and ELBE).

## ATTACHMENT I

### CERTIFICATIONS AND FORMS

**The Bidder / Proposer, by submitting its electronic bid or proposal, agrees to and certifies under penalty of perjury under the laws of the State of California, that the certifications, forms and affidavits submitted as part of this submission are true and correct.**

**DESIGN-BUILD PROPOSAL**


The undersigned The Design-Bullder proposes and agrees, if this Proposal is accepted, to enter into an agreement with the City in the form included In the Contract Documents to perform the Work as specified or indicated in said Contract Documents entitled **Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement Design-Build Contract.**

1. The Design-Bullder accepts all of the terms and conditions of the Contract Documents, including without limitation those in the RFP.
2. This Proposal will remain open for the period stated in the RFP unless otherwise required by law. The Design-Bullder will enter into an agreement within the time and in the manner required in the RFP and will furnish the insurance certificates, Payment Bond, and Performance Bond required by the Contract Documents.
3. The Design-Bullder has familiarized itself with the nature and extent of the Contract Documents, Work, site, locality where the Work is to be performed, the legal requirements (federal, state and local laws, ordinances, rules, and regulations), and the conditions affecting cost, progress or performance of the Work and has made such independent investigations as The Design-Bullder deems necessary.

To all the foregoing, and including all Proposal schedule(s) and information required of the Design-Bullder contained in this Proposal Form, said The Design-Bullder further agrees to complete the Work and Services required under the Contract Documents within the Contract Time stipulated in said Contract Documents, and to accept in full payment therefore the Contract Price based on the Total Proposal Price(s) named in the aforementioned Proposal schedule(s).

Dated: May 4, 2017

The Design-Bullder: Johnson Controls, Inc.

By: 

(Signature)

Title: Branch General Manager



## PROPOSAL

### Design-Builder's General Information

To the City of San Diego:

Pursuant to the "Request for Proposal", specifications, and requirements on file with the City Clerk, and subject to all provisions of the Charter and Ordinances of the City of San Diego and applicable laws and regulations of the United States and the State of California, the undersigned hereby proposes to furnish to the City of San Diego, complete at the prices stated herein, the items or services hereinafter mentioned. The undersigned further warrants that this proposal is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the proposal is genuine and not collusive or sham; that the proposer has not directly or indirectly induced or solicited any other proposer to put in a false or sham proposal, and has not directly or indirectly colluded, conspired, connived, or agreed with any proposer or anyone else to put in a sham proposal, or that anyone shall refrain from proposing; that the proposer has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the proposal price of the proposer or any other proposer, or to fix any overhead, profit, or cost element of the proposal price, or of that of any other proposer, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the proposal are true; and, further, that the proposer has not, directly or indirectly, submitted his or her proposal price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company, association, organization, proposal depository, or to any member or agent thereof to effectuate a collusive or sham proposal. The undersigned proposer(s) further warrants that proposer(s) has thoroughly examined and understands the entire Contract Documents (plans and specifications) and the Proposal Documents therefore, and that by submitting said Proposal Documents as its proposal, proposer(s) acknowledges and is bound by the entire Contract Documents, including any addenda issued thereto, as such Contract Documents incorporated by reference in the Proposal Documents.

#### **IF A SOLE OWNER OR SOLE CONTRACTOR SIGN HERE:**

- (1) Name under which business is conducted \_\_\_\_\_
- (2) Signature (Given and surname) of proprietor \_\_\_\_\_
- (3) Place of Business (Street & Number) \_\_\_\_\_
- (4) City and State \_\_\_\_\_ Zip Code \_\_\_\_\_
- (5) Telephone No. \_\_\_\_\_ Facsimile No. \_\_\_\_\_
- (6) Email Address \_\_\_\_\_

**IF A PARTNERSHIP, SIGN HERE:**

(1) Name under which business is conducted \_\_\_\_\_

(2) Name of each member of partnership, indicate character of each partner, general or special (limited):  
\_\_\_\_\_  
\_\_\_\_\_

(3) Signature (Note: Signature must be made by a general partner)  
\_\_\_\_\_

Full Name and Character of partner  
\_\_\_\_\_  
\_\_\_\_\_

(4) Place of Business (Street & Number) \_\_\_\_\_

(5) City and State \_\_\_\_\_ Zip Code \_\_\_\_\_

(6) Telephone No. \_\_\_\_\_ Facsimile No. \_\_\_\_\_

(7) Email Address \_\_\_\_\_

**IF A CORPORATION, SIGN HERE:**

(1) Name under which business is conducted Johnson Controls, Inc.

(2) Signature, with official title of officer authorized to sign for the corporation:

  
\_\_\_\_\_

(Signature)

Archibald Makatini  
\_\_\_\_\_

(Printed Name)

Branch General Manager  
\_\_\_\_\_

(Title of Officer)

(Impress Corporate Seal Here)

(3) Incorporated under the laws of the State of Wisconsin

(4) Place of Business (Street & Number) 9430 Ridgeway Ct., Ste. A

(5) City and State San Diego, CA. Zip Code 92123  
(6) Telephone No. 616.283.4733 Facsimile No. \_\_\_\_\_  
(7) Email Address Archibald.F.Makatini@jci.com

**THE FOLLOWING SECTIONS MUST BE FILLED IN BY ALL PROPOSERS:**

In accordance with the "Request for Proposal", the proposer holds a California State Contractor's license for the following classification(s) to perform the work described in these specifications:

LICENSE CLASSIFICATION B, C38, C36, A, C20, C10, C-4, C-7

LICENSE NO. 22445 EXPIRES 5/31/18

DEPARTMENT OF INDUSTRIAL RELATIONS (DIR) REGISTRATION NUMBER: \_\_\_\_\_

100000593

This license classification must also be shown on the front of the proposal envelope. Failure to show license classification on the proposal envelope may cause return of the proposal unopened.

TAX IDENTIFICATION NUMBER (TIN): [REDACTED]

E-Mail Address: Archibald.F.Makatini@jci.com

**THIS PROPOSAL MUST BE NOTARIZED BELOW:**

I certify, under penalty of perjury, that the representations made herein regarding my State Contractor's license number, classification and expiration date are true and correct.

Signature [Signature] Title GENERAL MANAGER

SUBSCRIBED AND SWORN TO BEFORE ME, THIS \_\_\_\_\_ DAY OF \_\_\_\_\_

Notary Public in and for the County of \_\_\_\_\_, State of \_\_\_\_\_

(NOTARIAL SEAL)

**SEE ATTACHED  
FOR NOTARY CERTIFICATE**

**PERFORMANCE BOND AND LABOR AND MATERIAL MEN'S BOND**

---

**FAITHFUL PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND:**

Johnson Controls, Inc., 5757 North Green Bay Avenue; Milwaukee, WI 53209, a corporation, as principal, and Liberty Mutual Insurance Company, 175 Berkeley Street; Boston, MA 02116, a corporation authorized to do business in the State of California, as Surety, hereby obligate themselves, their successors and assigns, jointly and severally, to The City of San Diego a municipal corporation in the sum of for the faithful performance of the annexed contract, and in the sum of Two Million Four Hundred \* for the benefit of laborers and materialmen designated below.

**Conditions:**

If the Principal shall faithfully perform the annexed contract **Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement**, RFP Number **K-17-1455-DB1-3-A**, San Diego, California then the obligation herein with respect to a faithful performance shall be void; otherwise it shall remain in full force.

If the Principal shall promptly pay all persons, firms and corporations furnishing materials for or performing labor in the execution of this contract, and shall pay all amounts due under the California Unemployment Insurance Act then the obligation herein with respect to laborers and materialmen shall be void; otherwise it shall remain in full force.

The obligation herein with respect to laborers and materialmen shall inure to the benefit of all persons, firms and corporations entitled to file claims under the provisions of Article 2. Claimants, (iii) public works of improvement commencing with Civil Code Section 9100 of the Civil Code of the State of California.

Changes in the terms of the annexed contract or specifications accompanying same or referred to therein shall not affect the Surety's obligation on this bond, and the Surety hereby waives notice of same.



**PERFORMANCE BOND AND LABOR AND MATERIALMEN'S BOND (Cont.)**

The Surety shall pay reasonable attorney's fees should suit be brought to enforce the provisions of this bond.

Dated June 27, 2017

Approved as to Form

JOHNSON CONTROLS, INC.

Principal

By

Pieter Lens; Attorney-In-Fact

Printed Name of Person Signing for  
Principal

Mara W. Elliott, City Attorney

By

Deputy City Attorney

LIBERTY MUTUAL INSURANCE COMPANY

Surety

By

Attorney-in-fact Cathy Hutson

Approved:

By

Stephen Samara  
Principal Contract Specialist  
Public Works Department

Liberty Mutual Insurance Company

Local Address of Surety

790 The City Drive S, Suite 200; Orange, CA 92868

Local Address (City, State) of Surety

714-634-3311

Local Telephone No. of Surety

Premium \$ \$6,228.00

Bond No. 268009819

Johnson Controls International plc  
Registered Office: 1 Albert Quay, Cork, Ireland  
Tel +[ 414 524 4100 ] Fax +[414 524 3232 ]



## DELEGATION OF AUTHORITY

The undersigned, Chief Executive Officer of Johnson Controls International plc, a public limited company incorporated and validly existing under the laws of Ireland with registered number 543654 (the "Company"), pursuant to the authority vested in him by a certain resolution adopted by the Board of Directors of the Company on November 30, 2016, hereby authorizes:

Pieter Lens  
Senior Treasury Manager

to perform, on behalf of the Company, and any wholly-owned subsidiaries, the acts described below:

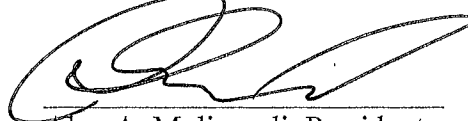
To execute and deliver, as attorney-in-fact for the Company, any and all surety bonds necessary and proper in carrying on the business of the Company.

This authority does not extend to:

- a. The execution of contracts for the performance of work, sale of goods, and furnishing of services;
- b. The collection, receipt and recovery of monies due or to become due to the Company and the issuance of receipts and releases for the payment thereof;
- c. The signing of any notes, contracts, or any other agreement to borrow money in the name of the Company; and
- d. The signing, on behalf of the Company, of any deeds, abstracts, offers to purchase, or any other instruments pertaining to the purchase or sale of real property.


This authority shall remain in full force and effect for one (1) year from the date of issue.

Signed at Milwaukee, Wisconsin, this 27<sup>th</sup> day of June, 2017.



Alex A. Molinaroli, President

Attest:



Brian J. Stief, Executive Vice President

Registered in Ireland, No. 543654

Directors: D. Abney (USA), N. Black (USA), M. Daniels (USA), B. Duperreault (Bermuda), J. Joerres (USA), A. Molinaroli (USA), G. Oliver (USA), J. Perochena (Mexico), J. Tinggren (Switzerland), M. Vergnano (USA), R. Yost (USA)

**THIS POWER OF ATTORNEY IS NOT VALID UNLESS IT IS PRINTED ON RED BACKGROUND.**

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Certificate No. 7661191

Liberty Mutual Insurance Company  
The Ohio Casualty Insurance Company West American Insurance Company

**POWER OF ATTORNEY**

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Cathy Hutson; Daniel J. Kwiecinski; Daniel J. Sapiro; Kathleen A. Crary; Lisa M. Slakes; Lucy A. Hantzsch; Sarah E. DeYoung; Tracy K. Matthews; Wendy S. Miller

all of the city of MILWAUKEE, state of WI each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 9th day of March, 2017.



The Ohio Casualty Insurance Company  
Liberty Mutual Insurance Company  
West American Insurance Company

By: David M. Carey  
David M. Carey, Assistant Secretary

STATE OF PENNSYLVANIA ss  
COUNTY OF MONTGOMERY

On this 9th day of March, 2017, before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA  
Notarial Seal  
Teresa Pastella, Notary Public  
Upper Merion Twp., Montgomery County  
My Commission Expires March 28, 2021  
Member, Pennsylvania Association of Notaries

By: Teresa Pastella  
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

**ARTICLE IV – OFFICERS** – Section 12. Power of Attorney. Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

**ARTICLE XIII – Execution of Contracts – SECTION 5. Surety Bonds and Undertakings.** Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

**Certificate of Designation** – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

**Authorization** – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 27th day of June, 2017.



By: Renee C. Llewellyn  
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

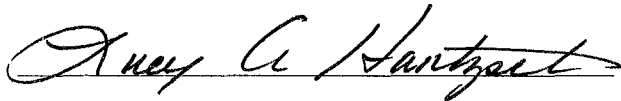
**ACKNOWLEDGEMENT BY SURETY**

STATE OF WISCONSIN )  
                          ) SS  
COUNTY OF MILWAUKEE)

On this 27<sup>th</sup> day of June, 2017 before me personally appeared Cathy Hutson known to me to be the Attorney-in-Fact of Liberty Mutual Insurance Company, the corporation that executed the within instrument and acknowledged to me that such corporation executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal, at my office in the aforesaid County, the day and year in this certificate first above written.

My Commission Expires May 29, 2018



(SEAL)

Lucy A. Hantzsch  
Notary Public in the State of Wisconsin  
County of Milwaukee



**NON-COLLUSION AFFIDAVIT TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID  
UNDER 23 UNITED STATES CODE 112 AND PUBLIC CONTRACT CODE 7106**

State of California

County of San Diego

The bidder, being first duly sworn, deposes and says that he or she is authorized by the party making the foregoing bid that the bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation; that the bid is genuine and not collusive or sham; that the bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid, and has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or that anyone shall refrain from bidding; that 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, or to secure any advantage against the public body awarding the contract of anyone interested in the proposed contract; that all statements contained in the bid are true; and further, that the bidder has not, directly or indirectly, submitted his or her bid price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any corporation, partnership, company association, organization, bid depository, or to any member or agent thereof to effectuate a collusive or sham bid.

**CONTRACTORS CERTIFICATION OF PENDING ACTIONS**

As part of its bid or proposal (Non-Price Proposal in the case of Design-Build contracts), the Bidder shall provide to the City a list of all instances within the past 10 years where a complaint was filed or pending against the Bidder in a legal or administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers, and a description of the status or resolution of that complaint, including any remedial action taken.

CHECK ONE BOX ONLY.

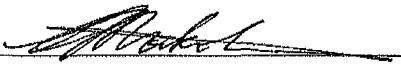
- The undersigned certifies that within the past 10 years the Bidder has NOT been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers.
- The undersigned certifies that within the past 10 years the Bidder has been the subject of a complaint or pending action in a legal administrative proceeding alleging that Bidder discriminated against its employees, subcontractors, vendors or suppliers. A description of the status or resolution of that complaint, including any remedial action taken and the applicable dates is as follows:

DATE OF CLAIM	LOCATION	DESCRIPTION OF CLAIM	LITIGATION (Y/N)	STATUS	RESOLUTION/REMEDIAL ACTION TAKEN

Contractor Name: Johnson Controls, Inc.

Certified By Archibald Makatini  
Name

Title Branch General Manager

  
Signature

Date 5/1/2017

**USE ADDITIONAL FORMS AS NECESSARY**

## **CONTRACTOR CERTIFICATION**

---

### **DRUG-FREE WORKPLACE**

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-17 regarding Drug-Free Workplace as outlined in the WHITEBOOK, Section 7-13.3, "Drug-Free Workplace", of the project specifications, and that;

This company has in place a drug-free workplace program that complies with said policy. I further certify that each subcontract agreement for this project contains language which indicates the subcontractor's agreement to abide by the provisions of subdivisions a) through c) of the policy as outlined.

## CONTRACTOR CERTIFICATION

---

### AMERICAN WITH DISABILITIES ACT (ADA) COMPLIANCE CERTIFICATION

I hereby certify that I am familiar with the requirements of San Diego City Council Policy No. 100-4 regarding the American With Disabilities Act (ADA) outlined in the WHITEBOOK, Section 7-13.2, "American With Disabilities Act", of the project specifications, and that:

This company has in place workplace program that complies with said policy. I further certify that each subcontract agreement for this project contains language which indicates the subcontractor's agreement to abide by the provisions of the policy as outlined.



## **CONTRACTOR CERTIFICATION**

---

### **CONTRACTOR STANDARDS – PLEDGE OF COMPLIANCE**

I declare under penalty of perjury that I am authorized to make this certification on behalf of the company submitting this bid/proposal, that as Contractor, I am familiar with the requirements of City of San Diego Municipal Code § 22.3004 regarding Contractor Standards as outlined in the WHITEBOOK, Section 7-13.4, ("Contractor Standards"), of the project specifications, and that Contractor has complied with those requirements.

I further certify that each of the Contractor's subcontractors whose subcontracts are greater than \$50,000 in value has completed a Pledge of Compliance attesting under penalty of perjury of having complied with City of San Diego Municipal Code § 22.3004.

## **CONTRACTOR CERTIFICATION**

---

### **Equal Benefits Ordinance Certification**

I declare under penalty of perjury that I am familiar with the requirements of and in compliance with the City of San Diego Municipal Code § 22.4300 regarding Equal Benefits Ordinance.

**AFFIDAVIT OF DISPOSAL**

(To be submitted upon completion of Construction pursuant to the contracts Certificate of Completion)

**WHEREAS**, on the \_\_\_\_\_ DAY OF \_\_\_\_\_, 2\_\_\_\_ the undersigned entered into and executed a contract with the City of San Diego, a municipal corporation, for:

**Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement**

(Name of Project)

as particularly described in said contract and identified as Bid No. **K-17-1455-DB1-3-A**; SAP No. (WBS/IO/CC) **B-16045, B-16046**; and **WHEREAS**, the specification of said contract requires the Contractor to affirm that "all brush, trash, debris, and surplus materials resulting from this project have been disposed of in a legal manner"; and **WHEREAS**, said contract has been completed and all surplus materials disposed of:

\_\_\_\_\_  
\_\_\_\_\_  
**NOW, THEREFORE**, in consideration of the final payment by the City of San Diego to said Contractor under the terms of said contract, the undersigned Contractor, does hereby affirm that all surplus materials as described in said contract have been disposed of at the following location(s)

\_\_\_\_\_  
\_\_\_\_\_  
and that they have been disposed of according to all applicable laws and regulations.

Dated this \_\_\_\_\_ DAY OF \_\_\_\_\_, \_\_\_\_\_.

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

**ATTEST:**

State of \_\_\_\_\_ County of \_\_\_\_\_

On this \_\_\_\_\_ DAY OF \_\_\_\_\_, 2\_\_\_\_, before the undersigned, a Notary Public in and for said County and State, duly commissioned and sworn, personally appeared \_\_\_\_\_ known to me to be the \_\_\_\_\_ Contractor named in the foregoing Release, and whose name is subscribed thereto, and acknowledged to me that said Contractor executed the said Release.

Notary Public in and for said County and State

**ATTACHMENT J**  
**DESIGN-BUILD AGREEMENT**



## DESIGN-BUILD AGREEMENT

This Design-Build agreement [Contract] is made and entered into this 29<sup>th</sup> day of August, 2017, by and between The City of San Diego [City], a municipal corporation, and Johnson Controls, for the purpose of designing and constructing the **Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement** (Project) in the amount of **Two Million Four Hundred Ninety-One Thousand One Hundred Eighty-Eight Dollars and Zero Cents**. The City and Design-Builder are referred to herein as the "Parties".

### RECITALS

- A. The City desires to construct the Project located in the City of San Diego, California.
- B. The City desires to contract with a single entity for design and construction of the Project, as set forth in this Agreement.
- C. The City has issued Request for Proposal (RFP) number **K-17-1455-DB1-3-A** for **Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement**, pursuant to which the City solicited Proposals from design-build teams to design, rehabilitate, and build the Project.
- D. In accordance with City's RFP, Design-Builder submitted a Proposal for the Project and is prepared to enter into this Agreement.
- E. The City has selected the Design-Builder to perform, either directly or pursuant to Subcontracts, hereinafter defined, the design, engineering, and construction services set forth in this Agreement and the Contract Documents, hereinafter defined.
- F. The Design-Builder is ready, willing, and able to perform the services required in accordance with the terms and conditions of this Agreement.
- G. Execution of this Agreement by the Design-Builder is a representation that the Design-Builder has visited the Site, become familiar with the local conditions under which the Work is to be performed and correlated personal observations with requirements of the Contract Documents.

In consideration of the above recitals and the mutual covenants and conditions set forth herein, and for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties hereby set forth their mutual covenants and understandings as follows.

### AGREEMENT

- A. Recitals and Attachments. The above referenced recitals are true and correct and are incorporated into this Agreement by this reference. All attachments referenced in this Agreement section are incorporated into the Contract by this reference.
- B. Contract Performance. The Design-Builder shall design and construct the Project in a good and workmanlike manner to the satisfaction of the City, lien free and in compliance with the Contract Documents and within the time specified, in return for timely payment by the City in accordance with the Contract.
- C. Attachments. All attachments e.g., Reference Standards in the RFP, Supplementary Special Provisions (SSP), the attached Faithful Performance and Payment Bonds, Agreement and

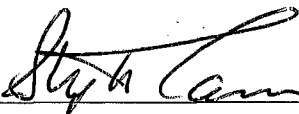
Supplemental Agreements, and the attached Proposal included in the Proposal documents by the Contractor are incorporated into the Contract by this reference.


- D. Contract Documents. This Contract incorporates the 2015 Edition of the Standard Specifications for Public Works Construction [The GREENBOOK], including amendments set forth in the 2015 edition of the San Diego Specifications for Public Works Construction [The WHITEBOOK]. The Contract Documents shall include the items mentioned in section 2-5.2 of The WHITEBOOK and shall follow that order of precedence.

**IN WITNESS WHEREOF**, this Agreement is signed by the City of San Diego, acting by and through its Mayor or designee, pursuant to Municipal Code §22.3102 authorizing such execution.

**THE CITY OF SAN DIEGO**

**APPROVED AS TO FORM**

By 

Mara W. Elliott, City Attorney  
By 

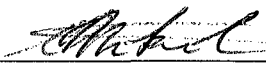
Print Name: Stephen Samara  
Principal Contract Specialist  
Public Works Department

Print Name: Bonny Hsu  
Deputy City Attorney

Date: 8-23-2017

Date: 8/29/17

**CONTRACTOR**

By 

Print Name: Archibald Makatini

Title: Branch General Manager

Date: 6/30/17

City of San Diego License No.: B1974003455

State Contractor's License No.: 22445

# City of San Diego

**CITY CONTACT:** Michelle Muñoz, Contract Specialist, Email: MichelleM@sandiego.gov  
Phone No. (619) 533-3482, Fax No. (619) 533-3633

## ADDENDUM "1"

## PROPOSAL DOCUMENTS

## FOR



## PACIFIC BEACH LIBRARY & TIERRASANTA RECREATION CENTER ROOF & HVAC REPLACEMENT

RFP NO.: K-17-1455-DB1-3-A  
SAP NO. (WBS/IO/CC): B-16045, B-16046  
CLIENT DEPARTMENT: 1714, 1713  
COUNCIL DISTRICT: 2, 7  
PROJECT TYPE: BE, BD

### PROPOSAL DUE:

**12:00 NOON**

**MAY 2, 2017**

**CITY OF SAN DIEGO**

**PUBLIC WORKS CONTRACTS**

**1010 SECOND AVENUE, 14<sup>th</sup> FLOOR, MS 614C**

**SAN DIEGO, CA 92101**

**A. CHANGES TO CONTRACT DOCUMENTS**

The following changes to the RFP are hereby made effective as though originally issued with the RFP. The Design-Builders are reminded that all previous requirements to this solicitation remain in full force and effect.

THE SUBMITTAL DATE FOR THIS PROJECT HAS BEEN **EXTENDED AS STATED ON THE COVER PAGE.**

For clarification where applicable, **ADDITIONS**, if any, have been **Underlined** and **DELETIONS**, if any, have been **~~Stricken out.~~**

**B. CHANGES TO THE REQUEST FOR PROPOSALS**

1. To Attachment H, the Price Proposal Forms, pages 339 through 342, **DELETE** in their entirety and **SUBSTITUTE** with pages 3 through 7 of this Addendum.

James Nagelvoort, Director  
Public Works Department

Dated: *April 20, 2017*  
San Diego, California

JN/JB/lji



**PRICE PROPOSAL FORMS**

The Design-Builder agrees to the design and construction of **Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement**, for the City of San Diego, in accordance with these contract documents for the lump sum price listed below. The Design-Builder guarantees the proposed prices for a period of 120 Days from the date Proposals are due. The duration of the price guarantee may be extended as required by mutual consent.

Item No.	NAICS CODE	Description	Quantity	D*	Unit	Unit Price	Extension
<b>BASE PROPOSAL</b>							
1	524126	TRC - Bonds (Payment and Performance)	1		LS	<del>                    </del>	\$
2	524126	PB - Bonds (Payment and Performance)	1		LS	<del>                    </del>	\$
3	541330	TRC - Engineering and Design Services	1	D	LS	<del>                    </del>	\$
4	541330	PB - Engineering and Design Services	1	D	LS	<del>                    </del>	\$
5	238160	TRC - Roof Replacement Construction	1		LS	<del>                    </del>	\$
6	238220	TRC - HVAC Replacement Construction	1		LS	<del>                    </del>	\$
7	238160	PB - Roof Replacement Construction	1		LS	<del>                    </del>	\$
8	238220	PB - HVAC Replacement Construction	1		LS	<del>                    </del>	\$
9	238160	TRC -Roof Deck Replacement Allowance (EOC Type I)	1		AL	<del>                    </del>	\$5,000.00
10	238160	PB - Roof Deck Replacement Allowance (EOC Type I)	1		AL	<del>                    </del>	<del>\$30,000.00</del> <del>\$25,000.00</del>
11	334290	TRC - City Contingency (EOC Type II)	1		AL	<del>                    </del>	<del>\$50,000.00</del> <del>\$45,000.00</del>

Item No.	NAICS CODE	Description	Quantity	D*	Unit	Unit Price	Extension
12	334290	PB - City Contingency (EOC Type II)	1		AL	<del>                    </del>	<del>\$50,000.00</del> \$45,000.00
13	541330	TRC - WPCP Development	1	D	LS	<del>                    </del>	\$
14	541330	PB - WPCP Development	1	D	LS	<del>                    </del>	\$
15	237990	TRC - WPCP Implementation	1		LS	<del>                    </del>	\$
16	237990	PB - WPCP Implementation	1		LS	<del>                    </del>	\$
<b>TOTAL BASE PROPOSAL</b>							\$
<b>ADDITIVE ALTERNATE 1</b>							
1	238190	Work Platform - TRC	1		LS	<del>                    </del>	\$
<b>TOTAL ADDITIVE ALTERNATE 1:</b>							\$
<b>ADDITIVE ALTERNATE 2</b>							
1	238160	Short Ladder - PB	1		LS	<del>                    </del>	\$
<b>TOTAL ADDITIVE ALTERNATE 2:</b>							\$
<b>ADDITIVE ALTERNATE 3</b>							
1	238160	Fall Protection - TRC	1		LS	<del>                    </del>	\$
<b>TOTAL ADDITIVE ALTERNATE 3:</b>							\$

Item No.	NAICS CODE	Description	Quantity	D*	Unit	Unit Price	Extension
<b>ADDITIVE ALTERNATE 4</b>							
1	238220	Replace Electric and Electronic Controls Serving Exhaust/Supply Fans and Makeup Air Units - TRC	1		LS	<del> </del>	\$
<b>TOTAL ADDITIVE ALTERNATE 4:</b>							\$
<b>ADDITIVE ALTERNATE 5</b>							
1	238160	Provide Roof Hatch above MAU-1 and MAU-2 - TRC	1		LS	<del> </del>	\$
<b>TOTAL ADDITIVE ALTERNATE 5:</b>							\$
<b>TOTAL DESIGN-BUILD BASE PROPOSAL (ITEMS NO. 1 THROUGH 16 PLUS ADDITIVE ALTERNATE 1, ITEM 1, ADDITIVE ALTERNATE 2, ITEM 1, ADDITIVE ALTERNATE 3, ITEM 1, ADDITIVE ALTERNATE 4, ITEM 1 AND ADDITIVE ALTERNATE 5, ITEM 1, INCLUSIVE):</b>							\$

\* Design Element (For City Use)

Total Price For Design-Build Proposal, (items No. 1 through 16 **PLUS** Additive Alternate 1, item 1, Additive Alternate 2, item 1, Additive Alternate 3, item 1, Additive Alternate 4, item 1 and Additive Alternate 5, item 1, inclusive) amount written in words:

---

Design-Builder: \_\_\_\_\_

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

The names of all persons interested in the foregoing proposal as principals are as follows:

---

---

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IMPORTANT NOTICE: If Design-Builder or other interested person is a corporation, state secretary, treasurer, and manager thereof; if a co-partnership, state true name of firm, also names of all individual co-partners composing firm; if Design-Builder or other interested person is an individual, state first and last names in full.



NOTES:

- A. The Contract Price to be used in the selection process as described in Attachment G of the RFP will be determined by the base proposal plus all the Alternates.
- B. After the selected Design-Builder has been determined, the City may, at its sole discretion, award the contract for the Base Proposal alone or for the Base Proposal plus one or more alternates.
- C. Proposals shall not contain any recapitulation of the Work. Conditional Proposals may be rejected as being **non-responsive**. Alternative proposals will not be considered unless called for.
- D. Subcontractors' License Numbers must be filled in. Failure to provide the information specified may deem the bidder **non-responsive**.
- E. Blank spaces must be filled in. The Design-Builder's failure to submit a price may render the Proposal non-responsive and ineligible for award.
- F. Unit prices shall be entered for all unit price items. Unit prices shall not exceed two (2) decimal places. If the Unit prices entered exceed two (2) decimal places, the City will only use the first two digits after the decimal points without rounding up or down.
- G. All extensions of the unit prices bid will be subject to verification by the City. In the case of conflict between the Product of the Quantity x Unit Price and the written Extension, the Product shall govern.
- H. In the case of conflict, between the sum of the Extensions and the Bid Total, the sum of the Extensions shall govern.



Technical Proposal  
for the City of San Diego  
Pacific Beach Library & Tierrasanta  
Recreation Center Roof & HVAC  
Replacement

RFP No.: K-17-1455-DB1-3-A



2017

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City of San Diego  
Public Works Contracts  
1010 Second Avenue, 14<sup>th</sup> Floor, MS 614C  
San Diego, CA 92101



May 2nd, 2017

Dear Michelle Munoz,

Johnson Controls is pleased to submit this response to the City of San Diego, California, for **Pacific Beach Library & Tierrasanta Recreation Center Roof & HVAC Replacement RFP No.: K-17-1455-DB1-3-A**.

By selecting Johnson Controls, the City of San Diego will gain experienced managerial and engineering teams that provide the following benefits:

- The financial stability of a Fortune 100 company
- Local experts experienced in local government projects
- An experienced and qualified team selected specifically to meet the needs of your project
- Unparalleled product, installation, and service capabilities from Johnson Controls San Diego branch office
- A partnering relationship with the most experienced Energy Services Company (ESCO) in North America

This proposal outlines our qualifications and contains all information requested in the RFP.

We are ready to meet the challenge of helping the City of San Diego achieve a project that provides the best return on investment, least amount of risk over the contract term, and least amount of disruption to your operations.

We thank you in advance for giving us the opportunity to be considered for the design build project, and we look forward to working with the City of San Diego on future projects.

Yours sincerely,

Melissa Allen

Owner Account Representative  
9630 Ridgehaven Court, Suite A  
San Diego, CA. 92123  
619.980.3227 Cell  
858.614.8508 Office  
Melissa.M.Allen@jci.com

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## Technical Proposal Requirements

The following section provides details for the information requested in RFP Section 14.1, Instructions to Proposers and General Conditions.

Requirement	Requested Information		
Legal name of company	Johnson Controls, Inc.		
Legal form of entity	C Corp		
Year of establishment of entity	Johnson Controls was initially formed and began doing business in 1885; however, it was incorporated in the State of Wisconsin on Tuesday, July 31, 1900.		
If company is subsidiary of a parent company, identify the parent company	Johnson Controls, Inc. is an indirect wholly owned subsidiary of Johnson Controls International plc. Johnson Controls International plc's shares are traded on the New York Stock Exchange (NYSE: JCI).		
Address of main office	5757 North Green Bay Avenue P. O. Box 591 Milwaukee, Wisconsin 53201-0591		
Address of San Diego satellite office if applicable	<b>San Diego Branch Office:</b> 9630 Ridgehaven Court, Suite A San Diego, CA 92123		
Contact information for firm, including name, title, email address and telephone number	<table border="0"> <tr> <td><b>Account Representative:</b> Melissa Allen (619) 980-3227 melissa.m.allen@jci.com</td> <td><b>Branch General Manager:</b> Archibald Makatini (858) 357-6324 Archibald.f.makatini@jci.com</td> </tr> </table>	<b>Account Representative:</b> Melissa Allen (619) 980-3227 melissa.m.allen@jci.com	<b>Branch General Manager:</b> Archibald Makatini (858) 357-6324 Archibald.f.makatini@jci.com
<b>Account Representative:</b> Melissa Allen (619) 980-3227 melissa.m.allen@jci.com	<b>Branch General Manager:</b> Archibald Makatini (858) 357-6324 Archibald.f.makatini@jci.com		
Number of employees in San Diego County	176		
Applicable License(s):			
City of San Diego Business License Number / exp. date	<b>License #:</b> B1974003455 <b>Exp. Date:</b> 6/30/2017		
State Contractor's License Number / exp. Date / classifications	<b>License #:</b> 22445 <b>Exp. Date:</b> 5/31/2018 <b>Classifications:</b> B, C38, C36, A, C20, C10, C-4, C-7		
Professional Engineering & Architect License Number / exp. date	See Project Team section for the qualifications of our subcontractors.		

## 1. Addenda to This RFP

Johnson Controls acknowledges receipt of the following addendums:

- Addendum 1 released April 20, 2017

## 2. Proposer Exceptions to This RFP

Johnson Controls does not take exception to any of the terms proposed in the RFP.

## 3. Summary of Proposal

This Design/Build HVAC & Roof Replacement project provides the City of San Diego with an opportunity to realize long-term energy cost savings and ensure the highest return on investment by selecting a firm with the most experience and expertise designing, installing, commissioning, and servicing municipalities and their facilities.

### A Project Team Designed for Your Project

We have assembled a project team with the single-minded goal of meeting and exceeding the City's goals for the project. Johnson Controls, Inc. (Johnson Controls) will operate as the Prime Contractor, providing the City with a single point of contact and a single point of authority for the entire project.

As the Prime Contractor, Johnson Controls will manage all aspects of the roof and HVAC replacements activities, including design, installation, commissioning, and servicing. We are uniquely well qualified for this project because we design, manufacture, install, and service HVAC mechanical systems and their controls.

We have brought in an engineering firm, **Turpin and Rattan**, to work on the design engineering aspects of the Pacific Beach Library and the Tierrasanta Recreation Center. Johnson Controls will oversee these design efforts and assist with procurement, design, and planning.

We have engaged the expertise of a construction management firm, **Jaime Partners**, who will manage the day-to-day construction activities from start to finish. Johnson Controls will oversee these efforts and incorporate the scheduling of all trades including mechanical, electrical, and roofing.

### Exceeding SLBE and ELBE Requirements

Our team exceeds the minimum requirements for SLBE and ELBE subcontractor participation. Our team will feature **4.6% SLBE** participation and **10% ELBE** participation.

### HVAC and Roofing Replacements

Based on the schematic design, we will be providing materials and equipment that meets or exceeds the City of San Diego's requirements. Our offer includes all roofing materials, HVAC equipment, and alternate items.

We manufacture award-winning York HVAC equipment and we have negotiated agreements with other major suppliers. This agreement allows us to deliver lower cost products for your project.

As a **vendor neutral partner**, Johnson Controls has experience installing, servicing, and integrating with equipment and systems from other companies. We seek to leverage your existing investments in energy efficiency wherever possible. This experience helps us evaluate your system and provide you with research on different types of manufacturers and equipment to allow you to make the best decision for you and your constituents.

As a manufacturer and technology developer, we dedicate time and money to research and development to stay ahead of the industry. The knowledge we gain from this investment allows us to make long-range recommendations that help our customers avoid investing in inefficient, outdated, or redundant technologies. We embrace open systems fully and have solutions across all major protocols. This ensures that our system integrates with controls and equipment from other vendors.

Our roofing subcontractors are C&I Roofing Company, Inc. and RGB Group, Inc. Both contractors are certified in the use of Tremco Commercial Sealants and Waterproofing.

## Servicing Your Equipment

Johnson Controls San Diego Branch is one of the largest owner direct service and construction organization in the County with 120 service technicians serving our Customers.



Although Johnson Controls has a large national and international footprint, we understand the importance of having a local presence in the communities we serve. This local presence allows us to provide local decision-making authority and respond to the needs of customers in a timely manner.

Johnson Controls understands our customers at the local level and is committed to being the best competitor in each local market. Local employees will be dedicated to your project to ensure its successful development and implementation.



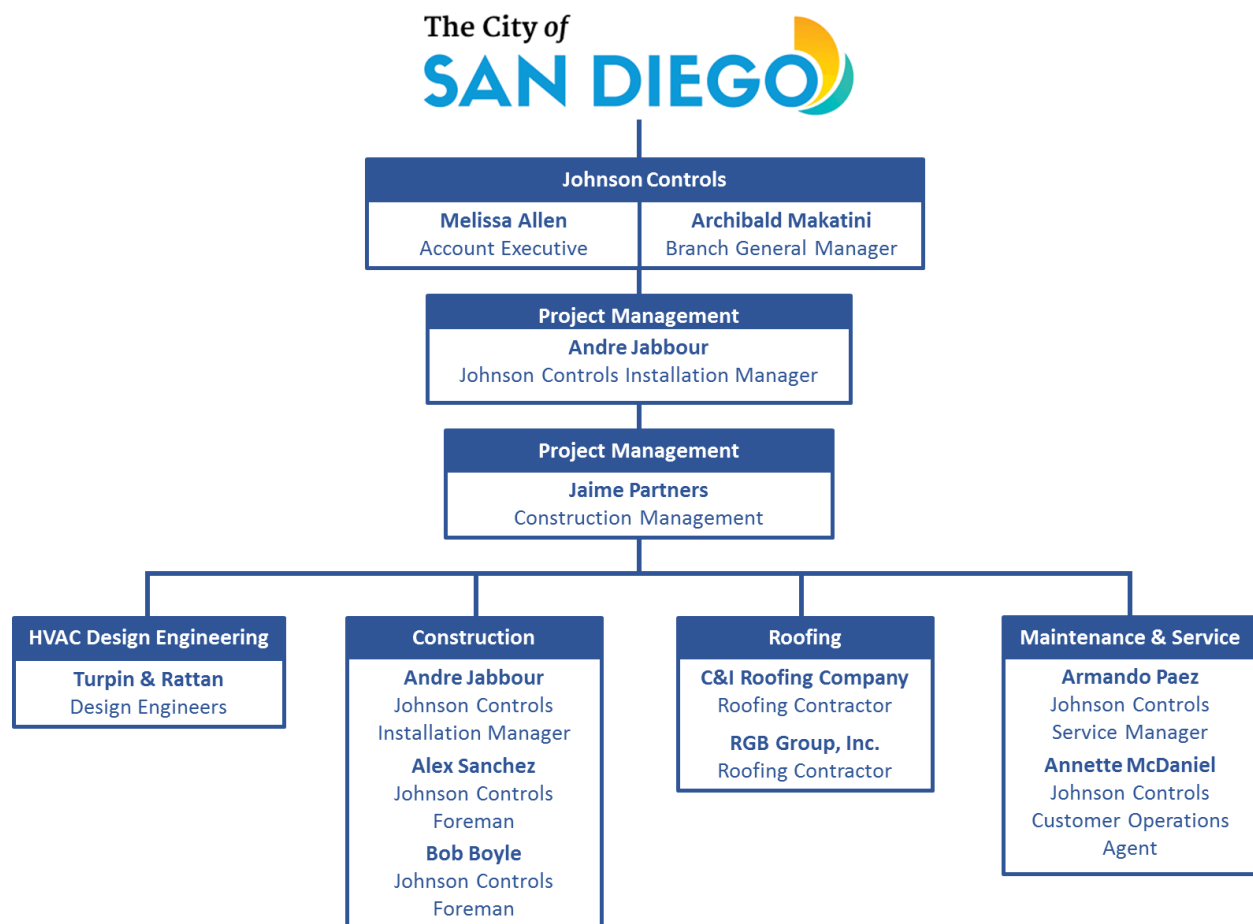
## 4. Project Team

Johnson Controls has assembled a strong team of diverse subcontractors and key suppliers, each bringing its unique capabilities to form a comprehensive unit able to meet the City of San Diego’s needs.

When building the team, we carefully assessed the project scope and identified local partners able to meet each key element of that scope. We strive to use minority businesses as much as possible. As an energy services company and solutions and systems integrator, we have a long history of engaging specialized subcontractors and equipment providers in a total program effort.

We take responsibility for coordinating the proper integration of systems and support labor. At the same time, we allow our partners to focus on the technologies and services they do best. In addition to selecting partners with the right technical credentials, we considered their experience with the City and their ability to understand the specific requirements of this project scope.

On this project, Johnson Controls will provide the City of San Diego with a single point of contact and a single point of authority. We will oversee and manage all aspects of the project including our subcontracting partners **Turpin & Rattan Engineering, Inc.** (Turpin & Rattan) and **Jaime Partners, Inc.** (Jaime Partners).



## Proposed Management Plan

We are committed to providing a team structure that best meets the demands of the City of San Diego. To do this, we will assemble a robust, experienced professional team encompassing the required skill sets for the Project with leadership by an experienced Project/Construction Management firm, Jaime Partners. Jaime Partners has extensive technical experience delivering end-to-end project and construction management services for a multitude of clients.

## Project Management Tools

Jaime Partners strives to keep its technology and office equipment up to date to meet all current demands of our clients. Their resources, in-house and outsourced, are competitive, efficient and reliable. They are fully equipped with the computer and software capabilities to provide superior project management. They are fully integrated utilizing the following programs to enhance our abilities in the pre-construction and construction phases.

- Microsoft Office 2016 – a cloud-based software giving us the most up-to-date version of Microsoft Office at all times.
- Microsoft Project Management - project management software program designed to assist a project manager in developing a plan, assigning resources to tasks, tracking progress, managing the budget and analyzing workloads.
- RS Mean – an estimate software that delivers dependable cost data that is locally relevant, accurate and up-to-date.
- Sage 100 Contractor – a complete cost accounting program specifically designed for the construction industry.
- AutoCAD – a design software that creates stunning designs with innovative collaboration tools.
- reproHaus – a plotting company for printing and scanning construction plans, signage, banners, etc.
- GoToMeeting – online meetings with HD video conferencing for collaborating in real time.
- Internet – DSL connection provide instantaneous communication keeping team members accessible to expedite the transfer of information.
- Raken Daily Reporting – a construction software that allows users to complete daily, weekly, monthly and special reports. Allows documentation in real time and streaming of videos.
- Dapulse Project Management – online software that serves as a tool for collaboration and communication. It provides a place for people to have the ability to work as one company across various places. A functional project tracking, task management, document sharing, mobile access tool.
- Basecamp: Document archive system. Basecamp is a web-based project management tool that offers to-do lists, web-based text documents, milestone management, file sharing, time tracking and messaging system.

## End-to-End Management

Jaime Partners' project management services cover the entire process including planning, design, construction management, and renovation. They provide end-to-end management service to program and project management clients, including managing internal vendors, national suppliers, and contractors.

They continually measure best practice processes and design methods across their entire client base, and share and discuss successful projects and challenging items through regularly scheduled account management meetings. From these discussions, they continually develop best practices and identify areas for improvement in order to identify and eliminate pitfalls so they are not duplicated elsewhere.

## Capabilities and Management Approach

Jaime Partners will provide Project Management services to plan, implement, and complete the project for the City of San Diego. Their Project Management delivery system minimizes project risk and reduces the delivery schedule through the integration and management of design and construction tasks. Their extensive management experience provides the following significant advantages:

**Pre-Construction Phase** – Jaime Partners offers the most comprehensive pre-construction services and technical support staff for your project. Their extensive knowledge of local construction requirements, governmental approvals, project estimation, and scheduling helps eliminate delays in the design and construction phases and helps ensure accurate budgeting. During this phase, they involve construction experts to provide helpful insights on construction materials and methods that can make the design more efficient and less costly to construct.

**Bidding Phase** – Their planning and management activities in the bidding process assure the quality of construction, the bid price, and the schedule. For this project, they will use only pre-qualified local subcontractors and suppliers to lessen the risk to clients and guarantee an exceptional level of quality.

**Construction Phase** – To generate cost savings, they emphasize the incorporation of innovative technologies and efficient building materials.

**Site Management** – Full time site managers will supervise all activities as well as monitor quality control. Their construction management procedures ensure minimal impact to facility operations, existing services/utilities, nearby businesses, and residents.

## Cost and Schedule Control

Jaime Partners fully understands the special importance of meeting cost and time requirements on their projects. Their reputation for keeping costs within budget and minimizing change orders stems from their ability to manage costs. Their extensive experience managing construction projects has shown that by constantly reviewing the costs and schedule, they can make accurate estimations and control the costs of a project.

## Value Engineering Process

Daily involvement in the construction industry as a builder provides an in depth knowledge of the products used and costs associated. This allows the builder to evaluate their first time cost versus useful life. Jaime Partners uses this knowledge prior to construction to select products with lower first time costs that will not significantly affect project aesthetics and intended use. These cost saving measures can thus be implemented without affecting appearance, function, or useful life.

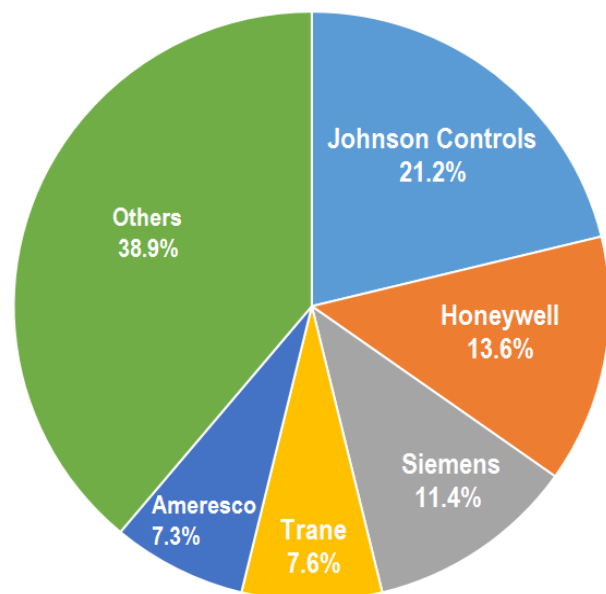
## Planning Throughout the Project

Planning throughout the project is premised by the fact that building construction is a dynamic, ever changing business. Jaime Partners provides construction management services with the knowledge that quick reaction to unforeseen changes is of the utmost importance. Their intermediary relationship allows them to receive information quickly from all sources and make decisions as to the best alternative or course of action. They can then review these decisions immediately with the staff or critical groups.

## Johnson Controls, Prime Contractor

Our company has its roots in the HVAC business. Warren S. Johnson, a professor at the State Normal School in Whitewater, Wisconsin, received a patent for the electric room thermostat in 1883. His invention launched the building control industry and was the impetus for the Johnson Electric Service Company, which he founded in 1885 to manufacture, install, and service automatic temperature regulation systems for buildings. This foundation ignited a culture of customer-focused innovation for 130 years. That passion continues today, as Johnson Controls is the leading supplier of HVAC systems and service, and energy management solutions.

By selecting Johnson Controls, Inc. (Johnson Controls), the City of San Diego will engage an industry leader that has implemented over **3,000** energy efficiency projects over the past 30+ years. We are the national leader in Energy Saving Performance Contracts with a 21.2% market share.



*Energy Saving and Performance Contracting Market: Percent of Sales, North America 2015, Frost and Sullivan*

We are currently managing 151 projects for municipalities that are guaranteed to save them more than \$1 billion. We have developed specialized energy efficiency upgrades for municipal facilities that go well beyond the basic facility improvement measures. We maximize the amount of energy savings and the equipment upgraded so our municipal customers will benefit from as much high-efficiency equipment as possible.



## Service and Maintenance

Our extensive branch network is 100% company owned and operated. Full ownership of our branch network benefits our customers because we are able to provide:

- *Consistent* processes and procedures
- *Consistent* service standards
- *Consistent* on-time delivery
- *Consistent* pricing and training
- *Consistent* long-term support and resources

We are a global leader in HVAC technology with significant in-house and field service expertise to support any design, implementation, and service needs. Our technicians are field-trained experts that specialize in improving the reliability and efficiency of customers' plants and systems. Our services optimize assets and achieve measurable life-cycle results through reliable proven processes, facility experts, and technology.



*San Diego Branch Office*  
 9630 Ridgehaven Court, Ste A  
 San Diego, CA 92123  
 24-Hour Service:  
 (866) 283-6733

As a factory-direct service provider, Johnson Controls has the most expertise and resources to develop a customized service approach for a given facility. No other company offers the level of building knowledge, facility equipment expertise, or resources that you will get from a Johnson Controls branch office. We provide:

- Extended building system and equipment life
- Control of existing operating costs
- Reduced redundancy with respect to current staff and subcontractors
- Better compliance with health and safety codes
- Reports that analyze current and future operations effectiveness
- Improved productivity through more complete facility utilization
- Protection of the value of each facility and its assets
- Facilities that meet the needs of facility occupants

## Emergency Service

Johnson Controls service team provides emergency and/or call-as-needed service. Dispatched through our 24-hour operation center, professional tradesmen and technicians are available whenever and wherever needed. We have the capabilities to answer emergency calls within two hours of the original call if required by the customer. We also provide next day service for routine service calls.

In addition to the service required, our technicians will suggest ways to improve conditions, as well as alternate methods of operations. If needed, they will contact other specialists to assist with the issues at hand and provide you with written documentation.

## Vendor Neutral Service

We deliver unparalleled OEM service support for our industry-leading YORK chillers and Metasys building management system, as well as the expertise to service **any competitive brand** of equipment, including chillers, boilers, HVAC mechanical equipment, and controls systems.

When it comes to servicing HVAC equipment or controls system, we will provide customers with the expertise, resources, professionalism, and results expected from a global industry leader – with the attention to detail and commitment to community of a local service provider.

Our service branches are certified to service a wide range of facility infrastructures including the following:

- Building automation control systems
- Chiller and refrigeration equipment
- Boilers and associated heating systems
- Air handling equipment and large fans
- Hydronic equipment including pumps and cooling towers
- Pneumatic air systems (control and process)
- Fire alarm systems
- Security and card access control systems
- Low and high voltage electrical systems
- Packaged rooftop units and unitary heat/cooling equipment

### Scheduled Preventative Maintenance

In order to protect your investment in its equipment and facilities, it is prudent to perform regular service/maintenance as outlined by the manufacturers. With an optimal maintenance strategy, one can expect reduction in downtime, maintenance, and operating costs. Especially in a stringent cost-reduction environment – and with increasing demands placed upon facility managers and staff – it is more important than ever to find ways to simplify, expedite, and improve one’s job, while finding cost efficiencies along the way.



We can customize a facility maintenance plan to address the manufacturer’s recommended preventative maintenance tasks for all of your equipment. An effective strategy applies an optimum mix of different approaches based on the risk impact or cost and consequences of failure. Establishing this proper mix and focusing on continuous improvement are equally important in a successful strategy.

Our service team provides:

- Expertise delivered by highly skilled and trained technicians
- Project managers and engineers who develop solutions to reduce operational costs and improve environmental conditions
- Fast response times
- Consistent service delivery, accountability, and communication
- Flexible service solutions that meet your requirements and budget
- Innovative, industry-leading technologies
- Risk mitigation to protect your investments

### Reactive Maintenance

Fixing or replacing equipment only when they fail. Assets will be out of service until fixed. Significant overtime and expedited delivery costs incurred.

### Preventative Maintenance

Scheduling maintenance at specific times offers a first line of defense against failure.

### Predictive Maintenance

Checking the condition of equipment as it operates. Equipment condition, rather than time intervals, determines the need for service.

### Proactive Maintenance

Addresses root causes identified by predictive methods. It isolates and corrects the sources of failure altogether.

## Jaime Partners, Construction Management

Jaime Partners’ highly skilled construction management team has extensive experience with diversified projects of all types. Their team has the working knowledge of the processes involved in working together as a team during design, value engineering, and contract administration in order to make your vision a reality.



Jaime Partners thoroughly understands the construction market in the San Diego region and is familiar with local construction requirements in addition to the capabilities and limitations of local subcontractors and suppliers. Their management team is well versed in governmental agency approval procedures and the requirements necessary to achieve an ambitious schedule.

Their team of experts understands the specialized systems and requirements of the City of San Diego’s project. They understand the importance of quickly providing accurate cost data, scheduling information, and construction input to help make the customer make long-term decisions and help keep the project on time.

A majority of Jaime Partners’ projects are located in Downtown San Diego. Jaime Partners has gain valuable working experience with the City of San Diego, SDG&E, and different property owners. Projects like: BNIM Offices, Puesto at The Headquarters Seaport Village, Craft & Commerce Restaurant, and Sky Free Shop have been completed with our technical expertise working with different architects, engineers, and interior design teams as well as very diverse consultants and subcontractors.

Jaime Partners remains up-to-date with all the City of San Diego building codes and permits. From energy and fire codes to ADA requirements and occupancy limitations, Jaime Partners construction management services assist our clients with all the legal and safety components of commercial construction. Our team has over 45 years of combined experience in the construction industry, and we remain vigilant when it comes to the latest building codes and state regulations. Whether our client is seeking to break ground on a brand new restaurant, or if they are wishing to remodel and expand an existing office or retail space, our team helps eliminate red tape and ensure their projects adhere to all legal requirements and safety standards.

Jaime Partners, Inc. and its associates has the combined experience of having filed over 200 building permits with the City of San Diego, valuating over \$10 million.

Requirement	Requested Information
Legal name of company	Jaime Partners, Inc.
Legal form of entity	Corporation
Address of main office	Jaime Partners, Inc. 925 B St Ste 601 San Diego CA 92101
Number of years company has maintained an office in San Diego	5
Number of employees in San Diego County	13
Applicable Fields	Project Management
Applicable License(s):	
City of San Diego Business License Number / exp. date	B2011029786
State Contractor's License Number / exp. Date / classifications	License #: 981925 Exp. Date: 03/31/2019 Classifications: B License
Professional Engineering & Architect License Number / exp. date	N/A

## Relevant Project History

The following projects demonstrate Jaime Partners' project management and construction management experience and capabilities.

### *Puesto at The Headquarters Seaport Village*

Jaime Partners served as the prime consultant for Mexican Street Food LLC in their Puesto at The Headquarters Seaport village project. The project began in March of 2013 and was completed in November of 2013.



Jaime Partners provided construction management including the overall planning, coordination, and control of the project from beginning to completion. Their services included: (I) specifying



the project’s objective and planning such as defining the scope, budgeting, scheduling, setting performance requirements and selecting project participants; (II) maximizing the resource efficiency through the procurement of labor, materials and equipment; (III) implementing various operations through proper coordination and control of planning, design, estimating, contracting and construction in the entire process; and (IV) developing effective communication for resolving conflicts.

During this project, Jaime Partners negotiated several change orders from the electrical subcontractor due to modifications made to the layout during construction. For each change order, we documented all instructions sent to the subcontractor and filed it with the Construction Bulletin including descriptions of tasks and drawings. The subcontractor presented change orders totaling \$63K. However, due to the documentation we submitted to the Construction Bulletins, we found and eliminated nearly 23% redundancy in the change orders.

### *Sky Free Shop*

Jaime Partners served as the prime consultant for Sky Free Shop, S.A. De C.V. in their Sky Free Shop project, a 4,500 square-foot retail store selling high end duty free products to travelers from the United States and Mexico. The project began in October of 2015 and was completed in December of 2015.



Jaime Partners served as the design builder and general contractor. We were responsible for (I) the project design (II) permit approvals (III) the day-to-day oversight of the construction site, (IV) management of vendors and trades and (V) the communication of information to all involved parties throughout the course of the project. We were able to coordinate all our project team members from Spain, Brazil, Mexico, and the United States.

For the Sky Free Shop project, Jamie Partners was approached when the client’s designs were rejected a week before construction was scheduled to begin. We were able to have new design plans drawn up and approved by the city in only five days and completed the final project inspections in only seven weeks following - from start to finish. The Sky Free Shop project was a fast track project that was complete on time and on budget – \$0.6M.

### *Craft and Commerce*

Jaime Partners served as the prime construction manager for Allegro Towers, LLP & Ariel Suites Towers at Little Italy in their Craft & Commerce project in an overhaul of the 2,500 square-foot restaurant. The project began in February 2014 and is scheduled to be completed in July of 2016.

Jaime Partners served as the construction management including the overall planning, coordination, and control of the project from beginning to completion. Our services included: (I) specifying the project’s objective and planning such as defining the scope, budgeting, scheduling, setting performance requirements and selecting project participants; (II) maximizing the resource

efficiency through the procurement of labor, materials and equipment; (III) implementing various operations through proper coordination and control of planning, design, estimating, contracting and construction in the entire process; and (IV) developing effective communication for resolving conflicts.

### ***BNIM Offices***

Jaime Partners served as the prime consultant for BNIM in their Downtown San Diego office space project. The project began in September 2015 and was completed in December 2015.



Jaime Partners provided construction management including the overall planning, coordination, and control of the project from beginning to completion. Our services included: (I) specifying the project’s objective and planning such as defining the scope, budgeting, scheduling, setting performance requirements and selecting project participants; (II) maximizing the resource efficiency through the procurement of labor, materials and equipment; and (III) implementing various operations through proper coordination and control of planning, design, estimating, contracting and construction in the entire process.

We coordinated all the work with minimum disruption to the condo owners. The BNIM project was completed on scheduled and on budget – \$500K.

### **Turpin & Rattan, Engineering and Construction**

Turpin & Rattan Engineering, Inc. is a full service Mechanical, Electrical, Plumbing and Technology (MEPT) consulting engineering firm providing

**TURPIN & RATTAN**  
ENGINEERING, INC.

design services for small to large size built environments including new construction, renovations, tenant improvements, and modernization for various types of buildings and facilities.

Sustainable services feature Leadership in Energy and Environmental Design (LEED®), Collaborative for High Performance Schools (CHPS), SDG&E Savings by Design, and Photovoltaic integration along with all client based sustainable objectives.

Beyond being well versed in the traditional AutoCAD software, Turpin & Rattan Engineering, Inc. offers design with the latest version of Revit MEP Building Information Modeling (BIM) software.

Requirement	Requested Information
Legal name of company	Turpin & Rattan Engineering, Inc.
Legal form of entity	C Corporation
Address of main office	2441 Honolulu Avenue, Suite 200 Montrose, CA 91020
Number of years company has maintained an office in San Diego	33
Number of employees in San Diego County	29
Applicable Fields	Architectural, Structural, Mechanical, Electrical, Plumbing Technology
Applicable License(s):	
City of San Diego Business License Number / exp. date	City of La Mesa – 009646 / Exp. 12-31-2017 City of San Diego – B2017000086 / Exp. 01-31-2018
Professional Engineering & Architect License Number / exp. date	Cesar Rodriguez - Mechanical License - PE California #33447 Dale M. Franchak – Electrical License - PE California #E11533

## Relevant Project History

### *San Diego Unified School District Prop S Modernizations*

These projects included building additions, renovations, and campus modernization projects at numerous schools throughout the San Diego Unified School District. Recent projects include Hoover High School, Kroc Middle School, Scripps Ranch High School, and a District wide Data Center located adjacent to Serra High School.

### *CPMA School - Performing Media Art Center and Whole Site Modernization*

This project included a new 20,600 square foot, state-of-the-art Performing Arts Center at CPMA Middle School located within the San Diego Unified School District. Design was completed using Autodesk Revit® Building Information Modeling (BIM) software. The project also included modernization design services for the entire campus.

### *Padre Dam Water District - Operations Offices/Warehouses and Yard Improvements*

This is a \$5,000,000 plus renovation project to add a new combination warehouse/garage building, renovations to outdoor storage canopies with provisions for future photovoltaic, the addition of a new heavy vehicle covered storage shed with provisions for future photovoltaic, a new wash bay and sand-blast unit, and a new emergency generator to support new and existing facilities. In

addition, the existing multiple SDG&E overhead services will be consolidated into just two new underground services. This project is currently in the design phase.

### ***Additional Projects in San Diego***

- City of San Diego San Ysidro Athletic Area - San Ysidro, California
- City of San Carlos Library ADA Improvements - San Diego, California
- City of San Diego Home Avenue Pistol Range - San Diego, California
- City of San Diego Villa Montezuma Feasibility Study - San Diego, California
- City of San Diego Colina Del Sol Rec Center ADA - San Diego, California
- City of San Diego Crown Point Comfort Station - San Diego, California
- City of San Diego Police Station Improvements - San Diego, California
- City of San Diego Fire Station 38 - San Diego, California
- City of San Diego Santa Clara Point Rec Center - San Diego, California
- City of San Diego Alzheimers Family Center - San Diego, California
- City of San Diego Oak Park Library Upgrades - San Diego, California
- City of San Diego Torrey Pines North Golf Course - San Diego, California

## **5. Technical Approach and Design Concept**

Our team's approach to the project at the Pacific Beach Library and the Tierrasanta Recreation Center focuses on:

- Equipment selection based on energy efficiency and lifecycle costs
- Close coordination between team members with oversight by an experienced Project Management firm
- An open and collaborative process facilitating the easy exchange of information, schedules, customer needs, potential problems, and desired outcomes for the City and site stakeholders

### **Planning and Design Phase Activities**

Upon selection and after receiving a signed Project Development Agreement (PDA), our team will begin the pre-construction phase that ends with the City's approval of the recommended scopes of work, along with projected costs and timelines.

During this phase, we pull together the complete development team. This team will conduct a formal kick-off meeting to introduce each member and refine the development schedule to meet your requirements and expectations.

### **Planning Sessions**

When it comes to planning, our engineers work around your schedule. We understand that your facilities cannot shut down for maintenance or installation work. In addition, we understand that our work cannot disrupt the operations of the City. We schedule all work in advance with your maintenance staff to ensure we avoid disrupting community activities.

Before our team begins construction, we conduct various meetings and information gathering activities to ensure our design takes into consideration all possible factors including customer needs, avoiding disruption of operations, and coordination of team members.



The project kickoff meeting will include City of San Diego representatives and the entire project team. The purpose of this meeting is to determine the specific scope requirements, client design/drafting standards, project schedule, and client expectations. We will develop interdisciplinary project milestones that are critical to the project's success. Additionally, our team will prepare written documentation of how the design meets the energy-related expectations of the Owner (2016 Title 24 requirement).

## Preliminary Design Development

Our approach to engineering and design in community facilities revolves around supporting the City, the staff on site, and city residents. The team will establish an accurate baseline of existing conditions and develop the actual project with scopes of work, costs, subcontractors, and a final schedule.

When designing our solutions, we use a life cycle impact approach. We consider the long-term impact (optimal learning conditions, safety, first cost, equipment selection, operational cost, energy savings, and reliability) that a specific improvement will have on your facilities, staff, and visitors. In all cases, we prioritize our work around your needs and your budget.

The scope of services for this phase of work will consist of plans and specifications suitable for permitting and construction purposes. The contract documents will conform to the standard of care for a project of this type, size, and complexity. The design and engineering for this phase of the work will comply with accepted mechanical engineering practices.

During this phase, Andre Jabbour, the Johnson Controls Installation Manager in coordination with Jaime Partners will:

- Be on call and available to visit the site as needed or as requested by City officials
- Facilitate a design review kick-off meeting with written documentation of how the design meets the energy-related expectations of the City of San Diego (2016 T24 requirement)
- Request a space planning development from the proposed consultants
- Review conceptual designs
- Provide advice on site use and improvements, selection of materials, building systems, equipment, feasibility, materials, and labor and time requirements for construction
- Prepare a project budget for City approval as soon as major project requirements have been identified
- Ensure all equipment is properly procured and available when needed
- Investigate and recommend a schedule for purchase of all materials and equipment requiring long lead procurement
- Create detailed HVAC equipment schedules
- Acquire from the City all equipment lists and associated catalog cut sheets for any Owner furnished equipment that requires MEP connections
- Assist in obtaining all building permits and special permits for permanent improvements
- Assist in obtaining approvals from all the authorities having jurisdiction

During this phase, Turpin & Rattan engineers will:

- Perform technical, economic feasibility, and lifecycle cost analysis for each improvement
- Consider the energy cost impact, the useful life of the improvement, the effect on building maintenance and operation cost, and emission and carbon reductions

- Make decisions that consider the implementation timeline, the City’s priority list of improvements, positive effects on staff comfort, system reliability, and the potential energy savings for the City
- Provide consultation on all mechanical, plumbing, electrical and code compliance requirements
- Upon completion of schematic design, prepare an estimate of construction cost based on a quantity survey of drawings and specifications
- Update and refine estimates as the development of the drawings and specifications proceeds
- Perform a code search to ensure the design and construction complies with all code requirements
- Perform a field investigation to confirm information shown on the provided as-built drawings and determine visible as-built conditions as they relate to the project area
- Visually inspect existing HVAC support systems to determine suitability for reuse
- Prepare Title 24 Energy Code Envelope and Mechanical Compliance forms based on the prescriptive approach to select the mechanical systems
- Calculate building heating and cooling loads to ensure replacement equipment is properly sized for the expected load
- Create and share plans for demolition and new work
- Develop a detailed installation plan
- Develop controls sequence-of-operation and control diagrams for programmable, Wi-Fi enabled thermostats

## Scheduling and Coordination

The team will ensure open communication and coordination between team members and between our team and the City of San Diego to ensure adherence to requirements, customer needs, and both schedule and cost estimations. Submittal to the Building Department will be performed by the Architect.

During this phase, Andre Jabbour, the Johnson Controls Installation Manager in coordination with Jaime Partners will:

- Develop a project schedule that coordinates and integrates the architect/engineer's design efforts with construction schedules
- Consider a multitude of factors when preparing the construction schedules, including site size, structure, finishes, and outside influences
- Coordinate the development and acceptance of contract documents
- Review the drawings and specifications, and recommend alternative solutions whenever design details affect construction feasibility or schedules
- Ensure the contract includes the requirements and assignment of responsibilities for safety, temporary project facilities, equipment, materials, and services for common use of contractors.
- Update contract documents at each milestone to reflect the Architect’s and the City’s review comments
- Facilitate coordination between our team and the City’s commissioning authority

The last step is to present the final plan to the City of San Diego for approval and signatures.

## Construction Phase Activities

Jaime Partners will coordinate the work of the contractors to complete the project in general accordance with the owner's objectives on cost, time, and quality. Through regular progress meetings, the contractors, owner, architect, and construction manager will discuss matters such as procedures, progress, coordination, and scheduling. Construction Administration is excluded from this proposal to be negotiated as a change order if required.

As the Construction Managers, Jaime Partners will:

- Provide a detailed schedule for the operations of contractors on the project, including realistic updated activity sequences and timing, allocation of labor and materials, processing of shop drawings and samples, and delivery of products requiring long lead procurement
- Provide regular monitoring of the schedule as construction progresses, identifying potential variances between scheduled and probable completion dates
- Establish and implement procedures for expediting the processing and approval of shop drawings and samples in collaboration with the architect
- Inspect the work of contractors to assure that the work is being performed in accordance with the requirements of the contract documents
- Reject work that does not conform to the requirements of the contract documents
- Record the progress of the project
- Maintain records at the project site of all contracts, shop drawings, samples, materials, equipment, applicable handbooks, all federal, commercial and technical standards and specifications, maintenance, instruction and operating manuals, and any other related documents and revisions which arise out of the contract or the work
- Ensure that safety controls are a priority agenda item at all job meetings and is constantly observed by site managers
- Use Sage 100 Contractor to provide regular monitoring of the approved estimate of construction cost, showing actual costs for activities in process and estimates for uncompleted tasks
- Revise and refine the approved estimate of construction cost when necessary, incorporate approved changes as they occur, and develop cash flow reports and forecasts as needed
- Implement a system for review and processing of change orders
- The project superintendent will provide summary reports of each monitoring and document all changes in schedule using Raken Daily Reports, an extremely useful tool that makes possible the real time communication of what is happening at the construction site with fewer emails

## Project Closeout Activities

The scope of services for the Project Closeout Phase will include preparation of record drawings using field marked-up drawings prepared by the mechanical sub-contractor. The "record drawings" revisions will be computer drafted and incorporated into the record drawings. We will not be responsible for "tracking" the changes, creating markups for the contractor, or visiting the site to verify the accuracy of the contractor's markups.

Upon reaching substantial completion, Jaime Partners will prepare with the architect a list of incomplete or unsatisfactory items and a schedule for their completion. They will also supervise the correction and completion of work.

At final completion/close out, Andre Jabbour, the Johnson Controls Installation Manager in coordination with Jaime Partners will:

- Provide written notice to the owner and architect/engineer
- Compile required guarantees, affidavits, releases, bonds, and waivers
- Turn over to the owner all keys, manuals, record drawings, and maintenance stocks
- Prepare all documentation for final close out of project
- Meet with the Owner's maintenance operation personnel to direct the checkouts of utilities, operations systems, and equipment for readiness
- Assist in the initial start-up and testing by the trade contractors
- Coordinate contractors to ensure that all warranty work is performed in an expedient manner

## Quality Control Plan

The team's quality control plan consists of quality assurance, quality control, and configuration management. Each component represents an interactive and interrelated discipline that when effectively executed ensures the success of the project. To achieve a superior quality project for the City of San Diego, we have developed a comprehensive quality program that will be tailored specifically for your project.

For the City of San Diego, we will use dual-inspections to ensure the quality of all construction throughout the building process. Turpin & Rattan initially provide quality control by ensuring the subcontractors/suppliers use the proper materials and methods. Our project management staff will review submittals to ensure compliance, and the project superintendent will then verify submittal compliance and proper installation.

Turpin & Rattan's designers will then provide verification of all materials and the installation itself through submittal review and onsite observation of all construction phases. We thoroughly document quality control through submittal logs, daily construction logs, and design entity reports. Additionally, we hold weekly project meetings to review any documents or issues.

The quality control plan establishes a formal program to ensure that we implement the scope of work identified in the contract in accordance with contract requirements. Only by monitoring the quality of the design, procurement, installation, and final commissioning of each system can we assure the quality of the project. It is the goal of this plan not only to delineate individual personal responsibilities, but also to reinforce with each worker that attention to quality is paramount at all times.

For the City of San Diego, we will perform inspections and tests of all items of work, including that of subcontractors, to ensure the quality of materials, workmanship, and the functional performance of each project. We will establish periodic reviews on a weekly, bi-weekly, or monthly basis.



## Proposed Mechanical Equipment

We propose the following equipment for installation at the Pacific Beach Library and the Tierrasanta Recreation Center.



### Pacific Beach Library

**Equipment:** York Chiller Model YCAL0043, Net Cooling Capacity (ton.R) 40.14, R-410A Refrigerant (Fully Charged), BACnet/Modbus/N2 (Native), Ultra Quiet Fans, Post- Coated Dipped Coils (tube and fin)

**Quantity:** 1

**Equipment:** York Model YZH04812C 4 Ton, Heat Pump, R-410A, Single Circuit 2 Stage Cooling with Scroll Compressor, 208/230-1-60

**Quantity:** 2

**Equipment:** JCI Belt Drive CW/HW Horiz Fan Coil  
INCLUDES: 6-Row CW Coil & 2-Row HW Coil, SS Drain Pan, Belt Drive Blower, 24V Transformer

**Quantity:** 10



### Tierrasanta Recreation Center

**Equipment:** York Model PC090C00A4AAA4 7.5 Ton, York Predator Split System R-410A Heat Pump, 2-Pipe R-410A, No Factory Installed Heat, 460-3-60, Copper Tube/Aluminum Fin Condenser Coil, Simplicity® SE Control

**Quantity:** 2

**Equipment:** York Model NC090C00C6AAA2 7.5 Ton, York Predator Split System R-410A Air Handler, 2-Pipe, No Factory Installed Heat, 2.0 HP Motor, 208/230/460-3-60, Composite Drain Pan

**Quantity:** 2

As a leader in providing HVAC systems and services, Johnson Controls has an outstanding record of service nationally and locally from our more than 160 branch offices. Additionally, we have a corporate commitment to create a more comfortable, safe and sustainable world that touches every aspect of our work.

We understand the high expectations of municipalities and the increased need for upgraded, more efficient infrastructure as well as the need for quality and trust worthy partners in fast track projects. As a result, we are confident in our ability to perform in a manner that meets your requirements.

Specifically, we feel that the qualifications highlighted below, among others detailed in the body of this document, distinctly define why we are the best partner for the City of San Diego:

- Johnson Controls is one of the largest Mechanical and Controls Service Companies in the world. We are the manufacturer of York HVAC equipment that has been in existence since the 1880's.
- We have the largest chiller vibration signature database in the world with over 500,000 signatures. This provides you with more representative signature comparisons to improve asset life and minimize downtime interruptions (no implementation costs – included in our Planned Service Agreement PSA)
- Our truck-based services are 100% company owned and operated, and have expanded to more than 160 branch locations and thousands of front-line service providers nationwide.
- Our latest technology deployment is *Connected Services*. All microprocessor-based York chillers can be connected to our Remote Operations Center and monitored 24/7. This information will better prepare our chiller technicians during their service visits and alert them during abnormal operating conditions. Our team will truly be connected to your member's operations resulting in improved performance.
- Johnson Controls E Service tool: Through the Johnson Controls customer portal, you can access information related to their building(s) and service jobs, including details about service history, service requests, agreements, and invoices. From the main portal page, you can also review news articles and connect directly to various offerings.
- Our technicians are fully trained professionals, qualified to work on all manufacturers' equipment and CFC Certified - will service all refrigerants
- Johnson Controls' partnership atmosphere with its employees has enabled us to build one of the most experienced team of service technicians and field hands.
- With our diverse portfolio of projects, we have gained extensive experience in selecting and managing qualified consultants and subcontractors and have developed a network of proven partners in all of our Branch Office cities.

## 6. Construction Plan

This section contains detailed highlights of the proposed construction plan.

### Construction Approach and Methods

For both sites, the team understands that the HVAC upgrades and roof replacement must not disrupt the patrons and employees of the facilities.

We have identified the following potential areas of impact:

Pacific Beach Library	Tierrasanta Recreation Center
Roof	Roof
Northwest courtyard area	North gymnasium exit (interior and exterior)
East breezeway	Storage areas adjacent to the community rooms
Central plant yard on the south side of the building	
Additionally, the installation of HVAC controls will require access within the occupied space	

Most of the work will take place on the exterior of building. The team will perform all work according to industry best practices for each of the trades associated with the scope of work.

### Plan for Operation during Construction

During construction, the team will make every effort to minimize the impact to the employees and patrons and ensure that access to both facilities is not impacted. We will implement safety measures to protect the employees and patrons from accessing areas of work that could create a safety hazard. Work shall be performed in a phased approach so that interruptions in comfort ventilation will only affect small areas.

The team has identified the following areas that may need to be temporarily closed to ensure the safety of patrons and staff.

Pacific Beach Library	Tierrasanta Recreation Center
During the replacement of HVAC equipment on the Northwest-West unit replacement the courtyard area should be closed for the safety and ease of construction activities.	During the replacement of HVAC equipment in the community room, storage areas should be closed for the safety and ease of construction activities.
Replacement of Kalwall skylight feature will affect check-in/check-out desk during demolition and installation.	

### Plan for Phasing of Construction Activities

As mentioned above, the team will perform the work in phases in order to minimize disruptions to the operations of the facility. Because the comfort of the occupants is of utmost importance, we will reduce disruptions caused by replacement of systems by working on a maximum of two air handling systems (fan coils) at a time. The schedule will reduce time duration of the replacement of central type equipment to minimize disruption of cooling and heating capability.

## Functional Testing and Start-Up

Factory-authorized representatives will perform all equipment startup and functional testing according to specific equipment and the design criteria. All equipment startup and functional testing activities will be coordinated with the Owner's representative for any witnessing participation. Written summary reports with tested values and startup results will be submitted to the Owner representative for review and approval. All summary reports will be included in the Owner's Operations and Maintenance Manual.

## Proposed Safety Program

We will work in a manner that ensures the safety of City personnel, patrons, Johnson Controls and subcontractor employees, and the environment. Our Corporate Safety Department will audit the project periodically for compliance with our company, City of San Diego, and OSHA safety guidelines.

The major elements of the safety program are as follows:

- The implementation and enforcement of the Johnson Controls & OSHA safety policies
- Documentation, investigation and reporting of occupational injuries in accordance with Johnson Controls & OSHA guidelines
- Posting of OSHA worker safety guidelines and right to know information
- Content and conduct of weekly site safety meetings
- Training personnel on the site safety policy, right to know, use and maintenance of personal protective equipment
- The issuance and control of safety related work permits
- Control of work site access to alleviate work area congestion
- Maintains an all-inclusive record of Material Safety Data Sheets and a log of all hazardous materials on site
- Lock out and tag out procedure implementation
- Fall protection education and enforcement
- Confined space identification and monitoring
- Hazardous material identification and abatement coordination
- Conduct site projects safety meetings

For all of our projects, our safety program ensures our subcontractors follow the safety program guidelines:

- A. All Subcontractors (including all subcontractors working through subcontractor; hereinafter "Subcontractor") shall comply with all federal, state/provincial and local safety laws, rules and regulations.
- B. All Subcontractors will prepare a written safety program that applies to the specific work they are performing at the site.
- C. All Subcontractors shall follow all posted safety rules and those rules described in the Johnson Controls (JC) Project Safety Manual.
- D. All Subcontractors who hire lower-tier subcontractors to perform work at the site shall ensure that all lower tier subcontractors follow JC Subcontractor Safety Specifications.



- E. Any Subcontractor who creates a hazard shall eliminate the hazard before any further work may proceed.
- F. Hazards observed, but not created by the Subcontractor, shall be reported to Johnson Controls immediately. All Subcontractors shall avoid the hazard until it has been eliminated.
- G. Subcontractors shall participate in a pre-job safety meeting with the JC project manager/engineer before they are allowed to execute their job tasks.

Whenever an imminent danger is present to any person including, but not limited to Johnson Controls employees, subcontractor employees and third parties, the authorized Johnson Controls employees and subcontractor's employees have the right to stop work so that all hazards are abated, or until safe work practices are incorporated.

For the purposes of this policy, an imminent danger includes, but is not limited to:

- A situation for which the individual is not properly trained or experienced
- A situation for which the individual is not equipped (i.e. safety or personal protective equipment)
- A hazard that is not typical to the individual's work activities or job
- A worker unfit for work due to the influence of alcohol or illegal or mind-altering substances
- A danger that would normally stop work in the affected area

Subcontractor's employees are required to report all "stop work" actions immediately to their supervisor for investigation. During the investigation, the employee refusing to work will not leave the site or return to the work activity without authorization. If the "stop work" action is used for legitimate safety reasons, the individual initiating the action (employee or subcontractor) is protected from discipline, retribution, or discrimination by Johnson Controls.

## **Proposed Emergency Response Plan**

Johnson Controls takes a very serious stance when it comes to safety, whether that be for an employee, subcontractor, customer, or any individual. We have a crisis team specifically in place for emergencies and an around the clock national call center. Depending on the seriousness of the crisis/emergency, all individuals are urged to dial 9-1-1 if there is any doubt.

## What do I do when a crisis occurs?

### WHEN A CRISIS OCCURS:

- 1 Take care of any victims and/or safety issues
- 2 Take any action that will immediately minimize the crisis
- 3 **IMMEDIATELY CONTACT THE JOHNSON CONTROLS CALL CENTER IN ATLANTA:**

**866/444-1414** (toll free)

*Not sure if your situation is a crisis?  
When in doubt, call!*

We value your judgment. If you believe there may be a crisis, we want to know about it. Err on the side of caution—call!

### THE NATIONAL CALL CENTER IS STAFFED EVERY DAY, AROUND THE CLOCK. TRAINED PERSONNEL THERE WILL:

- Ask you about the nature and severity of the event.
- Find out what kind of help you need.
- Remind you of things you may need to do immediately.
- Notify the Johnson Controls Crisis Management Team, which will analyze the situation, formulate a response, notify management and direct the necessary resources to help you.

*The Crisis Management Team maintains relationships with security, investigatory and public relations firms throughout the world that can be quickly applied to local crisis situations.*

## Proposed Construction Schedule

The following schedules show the expected duration of all major tasks for the projects.

## Pacific Beach Library

Item	Task Name	Duration
1	Notice to proceed	1 day
2	Construction documents	6 weeks
3	City plancheck	4 weeks
4	Mobilization	1 week
5	Selective Demolition	1 week
6	Construction	8 weeks
7	Closeout	2 weeks

## Tierrasanta Recreation Center

Item	Task Name	Duration
1	Notice to proceed	1 day
2	Construction documents	5 weeks
3	City plancheck	4 weeks
4	Mobilization	4 week
5	Selective Demolition	1 week
6	Construction	5 weeks
7	Closeout	2 weeks

## Traffic Control Management

Traffic control impact should be minimized to the parking areas at both sites. Small areas will be required for temporary roll off containers for on-site material storage and waste disposal that may impact the closure of parking spaces. This will be coordinated with city and consideration to be taken into account to minimize the impact. When crane lifts are required, the areas will be closed for vehicle and pedestrian traffic on property. We do not anticipate traffic restrictions on local thruways.

## Community Impact

All work shall be performed during normal business hours (7am-4pm). Noise will be limited to acceptable levels to the activities required to perform the tasks in a safe and trade-craft methods.

Johnson Controls emphasizes sustainable design options on all projects, with life cycle and economic considerations always being a part of the design and construction decision-making process. In all cases, plant efficiency and O&M concerns are measured and total project life is

considered. In some cases, our recommendations include modifying equipment or system specifications to create greater client value by lowering the total cost of operations.

## 7. Equal Employment and Contracting Opportunity

We are not a SLBE or ELBE, but we endeavor to maximize participation from small and minority-owned businesses for every project we undertake. This is an increasingly important goal for many of our customers, and benefits Johnson Controls by expanding our pool of available talent in each marketplace.

### SLBE-ELBE Participation Percentages

Our team exceeds the minimum requirements for SLBE and ELBE subcontractor participation. Our team will feature **4.6% SLBE** participation and **10% ELBE** participation. The Price Proposal identifies each SLBE and ELBE subcontractor and their certification information.

#### **Buescher Electric, Inc.**

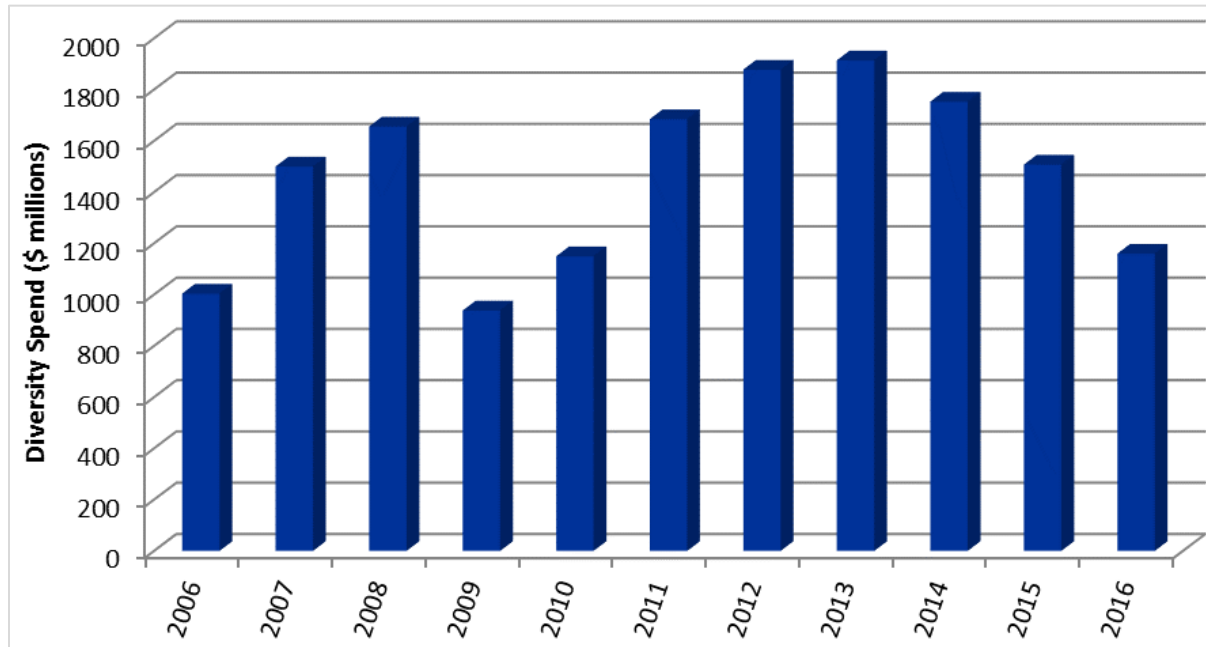
Buescher Electric, Inc. is a certified ELBE that provides electrical contracting services in the San Diego area. Located in Imperial Beach, Buescher Electric will perform all electrical work for this project.

### Equal Opportunity Hiring and Contracting

Johnson Controls is committed to being a leader in supplier diversity. By incorporating certified minority-owned suppliers, as well as small or disadvantaged businesses, into our customer solutions, we economically equip entire communities and gain a competitive advantage.

We have more than 700 diverse suppliers representing more than 50 product and service categories. Approximately 7% of Johnson Controls' outside purchases are made with diverse suppliers and contractors with minority purchases making up approximately 80% of the spend. The remaining external purchases are from woman-owned firms and firms designated by government agencies as small or disadvantaged businesses.





Because of these efforts, Johnson Controls has joined the elite **Billion Dollar Roundtable**, an organization comprised of only 24 U.S. corporations that spend more than \$1 billion annually with minority- and women-owned businesses.



Additionally, Johnson Controls is sincerely dedicated to providing an equal opportunity to all job applicants and employees by providing an environment free of discrimination.

We are committed to assuring employment, training, compensation, benefits, promotion, and other conditions of employment without regard to race, color, sex, sexual orientation, religion, national origin, disability, age, status as a special disabled veteran, veteran of the Vietnam era, or other covered veteran, or other protected categories. Included in this effort is our intolerance of harassment, including sexual harassment, a form of sex discrimination. Discrimination in any form underutilizes valuable human resources and deprives us of our full potential.

Johnson Controls' business is dedicated to excellence in its work. We will apply this same commitment to excellence to fair treatment of all employees.

The following text is our official statement of policy on equal opportunity and discrimination in hiring.

*It is the policy of Johnson Controls, Inc. to employ and advance in employment qualified persons without discrimination against any employee or applicant for employment because of race, creed, color, religion, sex, age, national origin, sexual orientation, marital status, disability status, status as a protected veteran (including disabled veteran or special disabled veteran, veteran of the Vietnam era, recently separated veteran, armed forces service medal veteran or other protected veteran) or any other characteristic protected by national or state/provincial law.*

*To effectuate our commitment to this policy, the Company has established affirmative action programs under which we will:*

- 1. Recruit, hire, train and promote qualified persons in all job titles, and ensure that all other personnel actions are administered without regard to race, color, religion, sex, national origin, disability or status as a protected veteran.*
- 2. Ensure that all employment decisions are based on valid job requirements so as to further the principle of equal employment opportunity.*
- 3. Ensure that promotion decisions are in accord with principles of equal employment opportunity by imposing only valid requirements for promotional opportunities.*
- 4. Ensure that all personnel actions, such as compensation, benefits, hiring, promotions, terminations, transfers, layoffs, return from layoff, Company-sponsored training, education, tuition assistance, social and recreational programs, will be administered without regard to race, color, religion, sex, or national origin.*
- 5. Take affirmative action to employ and advance in employment women and minorities, qualified individuals with a disability and protected veterans at all levels of employment, including the executive level.*
- 6. Ensure employees and applicants shall not be subjected to harassment, intimidation, threats, coercion or discrimination because they have engaged in or may engage in any protected activity or exercised any protected right under equal employment opportunity or affirmative action laws or regulations.*

*The Line Management of each facility shall ensure the implementation of this policy in accordance with national and state/provincial law. The Corporate Vice President of Human Resources shall monitor the implementation and compliance to this policy.*

## **Work Force Report**

The Price Proposal contains our fully completed Work Force Report (EOC Form BB05).

## **Under Representation in the Work Force Report**

Our Work Force report does not show an under representation. Johnson Controls does not discriminate in hiring employees or in selecting subcontractors. Please see the **Equal Opportunity**

**Hiring and Contracting** section above for a description of our corporate policies and diversity initiatives.

## **Non-Discrimination in our Contracts with Subcontractors**

Our subcontracts ensure that subcontractors are held to the same standards as we are. As the sole source of authority, we are responsible for ensuring that our subcontractors live up to the spirit and letter of our agreement with our customers. Subcontractors are held to the same non-discrimination and equal opportunity employment standards defined in any agreement we sign with the City of San Diego. Subcontracting does not absolve Johnson Controls from any requirement or standard defined the contract. Our local subcontractors understand this and demonstrate the same commitment to quality ethics. Most of our subcontractors have worked with us before, are fully aware of our requirements, and actively involved with our processes.

## **Legal or Administrative Proceedings Regarding Discrimination**

Johnson Controls, Inc. is an indirect, wholly owned subsidiary of a publicly listed company with annual revenue of \$30 billion and operations throughout the United States and the world. As such, Johnson Controls, Inc. routinely enters into contracts with local, state, and federal entities. Thus, while it may be possible there are administrative proceedings or civil actions pending, it would be difficult (if not impossible) to provide a definitive response to the question posed. In the event of such occurrences, Johnson Controls, Inc. endeavors to quickly correct or resolve such situations. The Form 10-K annual report of Johnson Controls International plc identifies any such proceedings that are material to the Company's financial condition. A copy of the Form 10-K is available through the Company's website:

<http://www.johnsoncontrols.com/investors/financial-reports>

## **Subcontractor Selection**

We select subcontractors based on the quality of their work, the timeliness of their deliveries, the soundness of their business, their safety record, staff certifications and training, their experience with similar jobs, and their overall capability to completing the work. Our collaborative subcontractor selection process enables customers to provide recommendations and input throughout the process. Additionally, we are willing to work with your preferred subcontractors.

Subcontractor selection begins with screening and selection through a competitive bid process, while maximizing usage of diverse suppliers such as businesses owned by veterans, disabled veterans, minorities, women, and Historically Underutilized Businesses (HUB). The selection of subcontracting firms is conducted on a client-specific basis to ensure we choose the best match for each customer. This approach gives us the flexibility to reach subcontractor agreements that provide the greatest benefit to each specific client and site. Recognizing that each customer has a specific culture, we seek to find vendors that will complement and align to the customer to ensure the greatest working relationship. We select the supplier that can provide the best value for our customer in terms of quality, cost, and responsiveness.

As part of our policy, we notify customers in writing of our intention to subcontract prior to entering into a subcontract with any firm. This notification will identify the work to be performed and the name of the proposed subcontractor. We will not enter into a contract with a subcontracting

firm if our customer objects to the firm. We recognize and accept that a subcontract does not relieve Johnson Controls from any obligation under the contract or impose any liability on our customers.

### Providing the City with Our Subcontract Bids

As stated in the RFP, we will provide the City with copies of our subcontract bids upon request and without redaction.

### Prevailing Wage

Johnson Controls understands that this project has prevailing wage requirements. We often work on projects that require a prevailing wage, including all projects we perform with the City of San Diego.

## 8. Reference Checks

This section provides short descriptions of similar projects completed by Johnson Controls in the region.

### City of Sanger, California

In 2013, the City of Sanger selected Johnson Controls to identify and implement energy saving solutions for city facilities. We implemented numerous improvements at various city buildings, including HVAC replacements and roof replacements similar to the proposed scope of work for the City of San Diego.

We also implemented improvements to lighting, solar, water meters, and sewage treatment pumps. This project required that Johnson Controls use 75% local labor, and Johnson Controls exceeded that requirement.



**Project Cost:** \$10.7 million

**Client Contact:** John Mulligan, Public Works Director (559) 876-6300



## California Science Center

Johnson Controls was selected to implement a \$10 million performance contracting project for the California Science Center in 2015. Our scope of work in the facility includes:

- Lighting (office interior, museum, exterior, and parking)
- Controls Upgrade
- Chiller Plant upgrade and expansion (phase 3 expansion)
- Transformers
- Pump Controls

Combined, these measures will deliver annual savings of \$345,037 – guaranteed by Johnson Controls. Johnson Controls started construction in January 2016 and will complete construction by summer of 2017. The California Science Center project is unique in that both the State of California and the California Science Center Foundation maintained a true successful partnership with Johnson Controls throughout the development and construction stages. This partnership became the cornerstone to ensure that the California Science Center remained open to the public without any interruption or disruption to their daily activities and events throughout the construction period.



**Project Cost:** \$10M

**Client Contact:** Laurie Sowd, COO & Executive VP, 310-892-2280

## City of Barstow, California

The City of Barstow partnered with Johnson Controls to address critical infrastructure and rising energy costs, and to develop a sustainability plan. Following a comprehensive audit, we implemented 13 energy conservation measures at several municipal facilities.

The city hall and the police department received new rooftop heating and A/C units, other City-owned buildings received new cool roofs no-glare window film. The project included retrofitting interior and exterior lighting fixtures, installing intersection safety pole lighting at city-owned intersections, upgrading to low flow water fixtures, and installing a solar PV system at the senior center.

We replaced the aging blowers at the wastewater treatment plant with three new Neuros blowers to ensure continuous operation and energy savings and installed a new 15 hp pool pump with a variable speed drive so that the pump could be turned down to run more efficient when not occupied.



**Project Cost:** \$5.4 million

**Guaranteed Savings:** \$120,000 annually

**Client Contact:** Curt Mitchell, City Manager (760) 255-5101

## California Coast Credit Union

With a currently leased office building located in downtown San Diego, Johnson Controls successfully retrofitted California Coast Credit Union’s downtown branch with new, energy-efficient YORK rooftop units.

This project cut the California Coast Credit Union’s energy bill in half.



**Client Contact:** Gary Oster, 858-636-5182

## Scripps Health

Johnson Controls partners with Scripps Health at numerous facilities throughout San Diego County, including office properties, medical office buildings (MOBs), hospitals, and central utility plants.

In 2015-2016, Johnson Controls performed a complete design-build mechanical contractor role at a three-story office building in Rancho Bernardo.



**Client Contact:** Glenn Conte, Project Manager, 858.554.3159

Our team designed, manufactured, installed, and performed startup of numerous energy-efficient YORK rooftop units and split systems, as well as the installation of a Metasys building management system (BMS).

## LPL Financial at La Jolla Commons

LPL Financial at La Jolla Commons is a 13-story, 415,575-square-foot office building developed through a joint venture between managing partner Hines and institutional investors advised by J.P. Morgan Asset Management.

LPL Financial at La Jolla Commons is the firm’s first net-zero project, and the nation’s largest carbon-neutral office building to date. The building achieves carbon neutrality on an annual basis through high-performance building design, directed biogas and on-site fuel cells that annually generates more electricity than the building and tenant uses.

The building’s exterior is predominately glass curtainwall system incorporating highly efficient, insulated double-paned glass with a clear, low-emissivity coating. LPL Financial at La Jolla Commons is targeting LEED-CS® Platinum certification. The building incorporates many sustainable features including the YORK Flexsys under-floor air distribution, a Metasys building management system, and extensive use of reclaimed water.



**Client Contact:** Nick Gavras  
858-587-4747