SPECIFICATIONS AND OTHER BIDDING AND CONTRACT DOCUMENTS

ALAMEDA COUNTY PROJECT No. 17033
GLENN DYER DETENTION FACILITY BOILER UPGRADE PROEJCT
550 6th Street
Oakland, CA 94607

MANDATORY PRE-BID SITE VISIT AND MEETING
You Must Be Prequalified To Respond To This Bid
Tuesday, July 10, 2018 at 10:00am
Location:
550 6th Street, Oakland, California

ALAMEDA COUNTY GENERAL SERVICES AGENCY
CAPITAL PROGRAMS
1401 LAKESIDE DRIVE, #800
OAKLAND, CALIFORNIA
COUNTY MANAGER CONTACT: Seri Traver
PHONE: 510-208-9468 FAX: 510-208-3995

SECTION 00 01 10

TABLE OF CONTENTS

PROJECT MANUAL
INTRODUCTORY INFORMATION

BRIDGING DOCUMENTS - SPECIFICATIONS

Architectural, Civil, Landscape, Structural, Mechanical and Electrical Bridging Documents Outline Specifications under separate cover. All bridging documents are included as a reference and are not to be used in construction.

DIVISION 0 - BIDDING AND CONTRACTING REQUIREMENTS

PROCUREMENT AND CONTRACTING REQUIREMENTS

SOLICITATION

PROCUREMENT MEETING

EXISTING SITE CONDITIONS

PROCUREMENT FORMS AND SUPPLEMENTS

CONTRACTING FORMS AND SUPPLMENTS

PROJECT CERTIFICATES AND OTHER FORMS

CONDITIONS OF THE CONTRACT

DIVISION 1 – GENERAL REQUIREMENTS

DIVISION 1 – GENERAL REQUIREMENTS (Continued)

DIVISION 2 – EXISTING CONDITIONS

DIVISION 3 – CONCRETE

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

DIVISION 9 – FINISHES

DIVISION 23 – HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

DIVISION 26 – ELECTRICAL

END OF SECTION

DOCUMENT 00 01 15

BRIDGING/ASBUILTS LIST

ALL DRAWINGS ARE FOR REFERENCE ONLY – NOT FOR CONSTRUCTION

DRAWING SET FROM 15042 – HVAC UPGRADE PROJECT
FOR REFERENCE ONLY – NOT FOR CONSTRUCTION

SHEET #	DRAWING TITLE	ADDED/REVISED
105 Pages	Oakland-Piedmont Municipal Court_1977	1977

END OF DOCUMENT

DOCUMENT 00 11 19

REQUEST FOR PROPOSALS
FROM PRE-QUALIFIED DESIGN-BUILD ENTITIES

The COUNTY OF ALAMEDA, acting by and through its GENERAL SERVICES AGENCY ("County"), will receive competitive sealed Proposals from pre-qualified Design-Build Entities ("DBEs") for the following public work:

GDDF Boiler Upgrade (Project Number 17033)

1. PROJECT DESCRIPTION AND SCOPE OF WORK

The Glenn Dyer Detention Facility (GDDF) is a County-owned building located at 550 6th Street, Oakland. GDDF is a 250,000 square-foot, seventeen-story building that was built around 1977. The jail is a critical facility that houses approximately 800 inmates.

The main heating plant is located in the basement of the Wiley W. Courthouse located at 661 Washington Street, Oakland. The plant serves both the Courthouse and GDDF. The existing boilers have reached the end of their useful life and require replacement.

Work of Contract includes, but is not limited to, the design and engineering, procurement, and construction/installation of the **GDDF Boiler Upgrade Project.** The Contract requires Design Builder to complete all Work on the **GDDF Boiler Upgrade Project** in accordance with the terms and conditions of the Contract Documents. The Work is briefly described below.

1.1 DBE shall provide, furnish and perform all necessary planning, engineering, and all other design services of any type, procurement, permitting and support services, construction, landscaping, clean-up, and all other building services of any type, provide and furnish all necessary supplies, materials and equipment, and all necessary supervision, labor, and services required for the complete engineering, design, procurement, installation, quality assurance, construction and all necessary installation, start-up and testing required for a complete, operational, and fully functional **GDDF Boiler Upgrade** Project as described in all of the Contract Documents. The performance specifications and plans/design drawings shall be prepared by a design professional who is duly licensed and registered in California. Contractor shall fully commission and turn over the operational Building to the County as a "Turnkey" Project.

1.2 This work includes replacing three heating hot water boilers with TWO (2) new Superior Iroquois boilers and installing an on-demand tempered water system. Review the design and performance specifications included in Contract Document 01 11 13 (Work Covered by Contract Documents). In addition to the mechanical work, all new systems and equipment will be integrated into the County existing energy management control system including all the programming, graphics, network infrastructure, and coordination with the manufacture to implement for a facility integrated boiler and on-demand system.

1.3 All communications regarding the Project shall be sent to the County at the address set forth in Paragraph 3.2 below.

1.4 The budgetary estimate for the scope of work is **$1,750,000.**

1.5 The Project Site is located at **661 Washington Street, Oakland, 94607.**

1.6 Unless provided otherwise in the Contract Documents, all risk of loss to Work covered by the Contract Documents shall rest with Design Builder until Final Completion and Acceptance of the Work or termination of the Design Build Contract.

1.7 SITE HISTORY:

1.7.1 Underground portions of structures may still be present at the Site; however their extent and location are unknown.

1.7.2 The County may be performing work at the Site concurrently with this Project under separate contracts during the Project. Design Builder will be required to coordinate and schedule all work to minimize conflicts with other contractors and government agencies.

1.8 SITE HAZARDOUS MATERIALS REMEDIATION

1.8.1 The Scope of Site Hazardous Materials Remediation is described in Document 00 31 26 (Hazardous Materials Surveys).

1.8.2 Hazardous materials may be encountered during performance of the Work. Refer to Sections 01 88 19 (Asbestos Containing Materials Performance Requirements) for hazardous material removal requirements.

1.9 The Project must meet the requirements of the detailed Space Program, which is included in the Project Manual. Compliance with the general intent of the Bridging Documents and specifications is required.

1.10 Section 01 11 13 (Summary of Work), Section 01 11 14 (Design Services and Deliverables), and the Bridging Documents set forth more completely information describing the County's requirements.

2. **SUMMARY OF SELECTION PROCESS**.

2.1 The County intends to award a contract for the Work based upon a "low-bid" set forth in this Request for Proposals ("RFP"), in accordance with Public Contract Code Section 22164(e). The award of the Contract shall be made to the Design Builder whose proposal is determined to be the lowest responsive, responsible bidder.

2.2 The County has completed the required prequalification process and has prequalified **ONE (1)** design-build teams.

2.3 The design-build competition is being conducted in two Phases.

2.3.1 Phase I: The County evaluated Qualifications using a combination of Pass/Fail and Scored Factors. The **THREE (3)** highest ranked prequalified DBEs may submit a Proposal (Phase II) for design and construction of the Project.

2.3.1.1 The DBEs that received the THREE (3) highest scores on the prequalification phase are invited to submit Proposals for the Project; the

other DBEs will not be eligible to participate in the RFP process or compete for the contract to design and construct the Project.

2.3.2 Phase II: The DBEs that qualified will be invited to submit a Proposal for design and construction of the Project may do so. The County will evaluate the Proposals based on low-bid.

2.3.2.1 When a contract for the Work is awarded, County staff will recommend to the Board of Supervisors for award of the Contract the DBE whose proposal is the apparent "low-bid, as those terms are used in Public Contract Code Section 22164.

3. **CONTACT INFORMATION**. All inquiries and requests for information shall be addressed in writing (e-mail is acceptable) to the County's Project Manager.

3.1 Mailing and street address of the County:

County of Alameda – General Services Agency
Capital Programs Department
1401 Lakeside Drive, Suite 1115
Oakland, CA 94612

3.2 County's Project Manager:

Seri Traver, Energy Project Manager
GSA – Capital Programs
1401 Lakeside Drive, Suite 1115
Oakland, CA 94612
Telephone: 510-208-9648
Email: seri.traver@acgov.org

4. **DUE DATE AND RECEIPT OF PROPOSALS.**

4.1 Sealed Proposals must be submitted to the County – General Services Agency at the address in Paragraph 4.4. below no later than **2:00 P.M.** on the following dates:

4.1.1.1 Phase I: Qualifications were due **Thursday, May 10, 2018.**

4.1.1.2 Phase II: Proposals shall be due, on **August 7, 2018.**

4.2 Each Proposal Package will be time and dated stamped by County's receptionist upon receipt.

4.3 The time of receipt will be determined by the Receptionist's date stamp at the office of the County. County may reject any Proposals received after the specified time and may return such Proposals to DBEs unopened.

4.4 Each DBE shall submit its Proposal in one or more sealed envelopes, boxes, or other containers (referred to herein as a "Proposal Package"). Proposal Packages shall be hand-delivered to County's receptionist at the **General Services Agency, Capital Programs, Suite 800, 1401 Lakeside Drive, Oakland, California 94612**. All Proposal Packages should be marked as follows:

PROPOSAL FOR COUNTY OF ALAMEDA GDDF BOILER UPGRADE PROJECT (PROJECT NO. 17033)
Package ___ of ___

4.5 Proposals shall include one original, one (1) hard copies, and one (1) electronic copy of the Proposal Package (on compact disc) as outlined in this Article.

4.6 Proposal Packages shall be organized as outlined in the RFP Master Deliverable List (Document 00 21 00)

4.7 Each Proposal must contain at a minimum the following, fully completed:

4.7.1 Pass/Fail Factors: Each DBE must respond to all of these items in the appropriate Paragraphs 12.2 below using the appropriate version of the Bidder Certifications (Documents 00 45 40.02).

4.7.2 Certification Regarding Material Changes. Each DBE shall either certify that (a) all information in, and provided with, the Pre-Qualification Questionnaire it submitted to County remains true and correct in all material respects as of the date of submitting the Proposal, as applicable, or (b) if there have been any material changes thereto, such material changes are reflected on a DBE's Material Changes List, submitted in accordance with Document 00 45 40.02 (Bidder Certifications).

4.7.3 Non-Collusion Declaration. DBE's must submit Document 00 45 19 (Non-Collusion Declaration) with Proposals. County may reject as non-responsive any Proposal submitted without a Non-Collusion Declaration. No DBE may make or file or be interested in more than one Proposal for the same supplies, services or both.

5. OTHER INFORMATION AND PROCEDURES APPLICABLE TO PROPOSALS

5.1 INTERACTION WITH GOVERNING AGENCIES

5.1.1 Prohibited Contacts. DBEs are prohibited from contacting elected or appointed officials, staff or personnel of the County of Alameda, except the Project Manager, on any matter related to the Project prior to the award of the Contract. Direct communication with the agencies identified above by the DBE will be grounds for disqualification.

5.1.2 Contact with Alameda County staff or personnel will be strictly limited to the protocols established by this RFP.

5.1.3 The County will provide an opportunity for DBEs to meet with appropriate agency representatives during the Proposal process.

5.1.4 Other Authorities Having Jurisdiction: The DBEs should be familiar with the requirements of the Other Authorities Having Jurisdiction. The DBE should understand the process, timeline, and fees for their regulatory review and approval.

5.1.5 Utility Companies: The DBEs should be familiar with the requirements of companies that will provide utility services to the Project. These include, but are

not limited to PG&E, AT&T and EBMUD. The DBE should understand their process, timeline, and fees for utility service design and installation and any upgrades required by the Project.

5.2 **COUNTY OF ALAMEDA SUBCONTRACTOR OUTREACH PROGRAMS.**

5.2.1 The County's Enhanced Construction Outreach Program ("ECOP") and Small Local Emerging Business ("SLEB") Program shall apply to this Contract. ECOP and SLEB forms are included in the Documents 00 62 38 (Enhanced Construction Outreach Program Design-Build) and 00 62 40 (Small Local Emerging Businesses Program) and must be submitted by DBEs in accordance with the requirements of those Documents and Document 00 62 30 (Subconsultant/Subcontractor Procurement).

5.2.2 The County has implemented a Contractor Bonding Assistance Program ("CBAP") that will apply to this Project. The program seeks to increase the ability of small contractors to participate in this and other projects by providing them with, among other things, assistance in obtaining required bonds. The CBAP is described in Document 00 62 20.

5.2.3 County Public Arts Program. INTENTIONALLY LEFT BLANK.

5.3 **DEFINITIONS.** Except as otherwise set forth herein, all abbreviations and definitions of terms used in this Document are set forth in Section 01 42 13 (Abbreviations) and Section 01 42 16 (Definitions).

5.4 **SUBSTITUTIONS.**

5.4.1 Proposals shall be based on products and systems specified in the Bridging Documents. Except as provided in Subparagraph 5.4.6, below, listed materials, products, systems, and equipment are provided as examples of required quality levels. DBEs are encouraged to seek alternative manufacturers for equipment or materials which provide equal or better quality, competitive pricing, or other benefits to the Project.

5.4.2 The County is not responsible or liable in any way for a DBE's damages or claims related, in any way, to DBE basing its Proposal on any requested substitution that the County has not approved. DBEs will be held responsible for: (a) all costs and claims arising from any cost or schedule impact resulting from the County's approval of a requested substitution and (b) all costs and claims arising from any cost or schedule impact resulting from any substitution not approved by the County. Substitution Procedures are described more fully in Section 01 61 00 (Product Requirements).

5.4.3 DBEs and materials suppliers who submit requests for substitutions prior to the award of the Contract must do so in writing and in accordance with Public Contract Code § 3400. All such requests must comply with the following:

5.4.3.1 DBEs may submit a Request for Substitution **no later than ten (10) Business Days before the due date for Proposal submissions**. The County reserves the right not to act upon a Request for Substitution until

after Proposals have been submitted. Any Request for Substitution shall contain sufficient information, as set forth in Document 01 60 00 (Product Requirements), to allow the County to assess the acceptability of the product or system. Insufficient information shall be grounds for rejection of any Request for Substitution. In addition to the other substitution information, DBE shall specify any impacts to Green Building performance that may result in the reduction of points awarded to the Project under the current LEED New Construction rating system.

5.4.4 The County will issue Addenda listing substitutions approved, if any, before the applicable Proposal submittal date.

5.4.5 Except as is provided for in Document 00 72 53 (General Conditions) and Section 01 61 00 (Product Requirements), DBEs may submit a Request for Substitution after the issuance of Document 00 51 00 (Notice of Award) only at the sole discretion of the County.

5.4.6 Items Which May Not Be Substituted. In accordance with Public Contract Code § 3400 the County has found that certain items may not be substituted because they are either necessary to the Project and only available from one source, or are required in order to match other products in use by the County.

5.5 ADDENDA

5.5.1 DBEs must direct all questions about the meaning or intent of any documents related to this Document 00 11 19 (Request for Proposals from DBEs) or the Contract Documents to the County in writing. The County will issue by formal written Addendum any interpretations or clarifications it considers necessary in response to such questions. The County will send all Addenda by electronic mail to all pre-qualified DBEs at the e-mail address supplied to the County by the DBE in its Pre-Qualification Questionnaire. DBEs shall acknowledge receipt from that e-mail address **within two (2) business days**. The process for addenda which are too large for submittal via electronic mail will be described via a preliminary addendum.

5.5.2 Submit questions promptly, and **no later than 10 Business Days before the due date for Proposals.** The County will not respond to questions received less than 10 Business Days before the due date for Proposals.

5.5.3 Only information provided by the County in an Addendum shall be binding on the County; oral responses or any other interpretation or clarification will be without legal effect.

5.5.4 At the County's sole discretion, it may also issue Addenda to modify any documents related to this Document 00 11 19.

5.5.5 The DBE shall acknowledge its receipt of any Addenda in Document 00 42 53 (Proposal Form). DBEs may obtain a complete list of Addenda from the County.

5.6 INFORMATION REGARDING DBEs

5.6.1 In evaluating Proposals, County will consider the information provided in DBE's Response to Request for Statements of Qualifications, the DBE's compliance with the prescribed requirements, and such other data as may be requested in this Document 00 11 19 (Request for Proposals from DBEs), DBE's presentation or interview, and any other information provided or discovered.

5.6.2 The County may conduct any investigations the County deems necessary to assist it in its evaluation of any Proposal and to establish the DBE's responsibility, qualifications and financial ability (and that of its proposed sub-consultants, subcontractors, suppliers, and other persons and organizations) to perform and furnish the Work in accordance with the Contract Documents and DBE's Proposal, to County's satisfaction, and within the prescribed time. County shall have the right to communicate directly with DBE's surety regarding DBE's bonds.

5.6.3 DBEs must respond in a timely manner to all questions from the County regarding their Proposal. A DBE's failure to provide prompt and complete responses may result in rejection of its Proposal and terminate the DBEs participation in the selection process.

5.7 ELECTRONIC DOCUMENTS.

5.7.1 County may, in its sole discretion, and solely as a convenience to DBEs, elect to provide various RFP Documents and/or other information on CD-ROMs or other electronic forms ("Electronic Copy"), in addition to hardcopy paper documents ("Hardcopy"). In all cases, the Hardcopy shall be referred to, and shall control, in the event of any inconsistency between a Hardcopy and an Electronic Copy.

5.7.2 DBEs are advised to check all electronic media for computer viruses before loading any files therefrom. DBEs are fully responsible for intercepting and disabling viruses, if any, that may be inadvertently transmitted with an Electronic Copy. Also, files distributed electronically are subject to data erosion, erasure and/or alteration, and computer systems and software become obsolete in time (together, "Data Erosion"). By taking any step to open or otherwise use any electronic file, each DBE acknowledges these risks and releases County, and its officers, employees, consultants, representatives, and agents harmless from and against all claims of any type or nature arising from or relating to any virus inadvertently transmitted or any Data Erosion. In addition, the composition of electronic files and the adjuncts to them were created for the use and convenience of the County, and may not be compatible with other users. DBEs acknowledge that Electronic Copies may not match Hardcopies, and that it is the responsibility of the DBEs to adapt Electronic Copies for their own use.

5.8 EXISTING CONDITIONS AND RELATED DATA.

5.8.1 DBEs may examine any available existing conditions information by giving County reasonable advance notice. Documents 00 31 26 (Hazardous Materials Surveys) and 00 31 32 (Geotechnical Data and Existing Conditions) apply to all existing drawings, geotechnical reports and hazardous material surveys supplied by County as well as any other information supplied regarding existing conditions above ground or below ground.

5.8.2 DBEs may request access to the Site to conduct investigations or testing. Before a DBE is allowed to access the Site, it must meet all requirements, including but not limited to insurance and indemnity, of that Document. All requests for Site access must be made **at least 10 Business Days before Proposals are due.**

5.9 **WAGE RATES**. The Project is a public work subject to the requirements of Labor Code Sections 1720, et seq. DBEs are required to comply with all applicable prevailing wage requirements and regulations. Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to design and construct the Project, as determined by Director of the State of California Department of Industrial Relations, are on file at the Office of the County and are deemed included in the Proposal Documents. Upon request, County will make available copies to any interested DBE.

5.10 **PROJECT STABILIZATION AGREEMENT**. On June 11, 2013, the County's Board of Supervisors authorized the County to enter into a Project Stabilization Agreement ("PSA") (also known as a Project Labor Agreement or "PLA") for this Project. DBE Proposals shall account for inclusion of the PSA and DBEs shall agree to be bound by and comply with the conditions of the PSA. After execution by the parties, a copy of the PSA will be provided to the DBE and further amendments will be made to this RFP and the Project Manual to incorporate the requirements of the PSA. DBEs are reminded that Section 2500(a)(3) of the California Public Contract Code requires a public entity PLA to include an agreed-upon protocol concerning drug testing for workers employed on the project. Accordingly, any PLA or PSA for this Project will contain a drug testing protocol, which may consist of the adoption of the applicable Master Labor Agreement drug testing protocol, should the MLA contain one or, if not, the DBE protocol but in either case the drug testing protocol must be consistent.

5.11 **PUBLIC RECORDS ACT REQUESTS**.

5.11.1 Pursuant to the Public Records Act, County will make available to the public after negotiations with the apparent successful Proposer are complete, but prior to award of Contract: DBE's Proposals (to the extent opened), all correspondence and written questions submitted during the Proposal period, all Proposal submissions opened in accordance with the procedures of this Document 00 11 19 (Request for Proposals from DBEs), and all subsequent Proposal evaluation information. Any submissions not opened will remain sealed and will be returned to the submitting DBE.

5.11.2 Except as otherwise required by law, County will not disclose information DBEs consider trade secrets or proprietary financial information that a DBE has designated confidential (including but not limited to the Technical Proposal). Any such trade secrets or proprietary financial information that a DBE believes should be exempted from disclosure must be specifically identified and marked as such by DBE. Blanket-type identification by designating whole pages or sections shall not be permitted and shall be invalid. The specific information must be clearly identified as such.

5.11.3 Upon a request for records regarding a Proposal, County will notify the DBE involved **within ten (10) Business Days from** receipt **of the request** of the date on which the records will be made available for inspection. If the DBE timely identifies any additional proprietary, trade secret, or confidential commercial or

financial information that DBE contends is not subject to public disclosure, and requests County to refuse to comply with the records request, DBE shall take all appropriate legal action and defend, at its sole cost and expense, County's refusal to produce the information in all forums; otherwise, County will without restriction make such information available to the extent required by Applicable Law.

5.11.4 Information disclosed in the Proposals and related materials are the property of County except data DBE identifies as proprietary. Subject to the requirements of the Public Records Act, reasonable efforts will be made to prevent the disclosure of information except on a need-to-know basis during the evaluation process.

5.12 **RIGHTS RESERVED TO COUNTY**.

5.12.1 County will determine at its sole discretion whether a Proposal is responsive and whether a DBE is responsible.

5.12.2 County may reject any and all Proposals and may waive, to the fullest extent permitted by law, any informalities or minor irregularities therein. County also reserves the right, in its sole discretion, to reject all Proposals and issue a further request for Proposals for the Project or to prequalify additional DBEs.

5.12.3 County reserves the right: (i) to reject any nonconforming, non-responsive, unbalanced or conditional Proposal, (ii) to request other Proposals, and (iii) to reject a Proposal of any DBE if County believes that for any reason it would not be in the best interest of Project to give further consideration to a particular DBE. For purposes of this paragraph, an "unbalanced Proposal" is a Proposal having nominal/low prices for some work items and enhanced prices for other work items.

5.13 **PROTEST PROCEDURE**.

5.13.1 Any Bid protest by any Bidder regarding any other Bid must be submitted in writing to the County's GSA–Office of Acquisition Policy, ATTN: Contract Compliance Officer, located at 1401 Lakeside Drive, 10th Floor, Oakland, CA 94612, Fax: (510) 208-9720, before 5:00 p.m. of the FIFTH (5th) business day following the date of issuance of the Notice of Intent to Award, not the date received by the Bidder. A Bid protest received after 5:00 p.m. is considered received as of the next business day.

5.13.2 The Bid protest must contain a complete statement of the reasons and facts for the protest.

5.13.3 The protest must refer to the specific portions of all documents that form the basis for the protest.

5.13.4 The protest must include the name, address, email address, fax number and telephone number of the person representing the protesting party.

5.13.5 The County Agency/Department will notify all bidders of the protest as soon as possible.

5.13.6 Upon receipt of written protest, GSA–Office of Acquisition Policy, or designee, will review and evaluate the protest and issue a written decision. The GSA–Office

of Acquisition Policy, may, at its discretion, investigate the protest, obtain additional information, provide an opportunity to settle the protest by mutual agreement, and/or schedule a meeting(s) with the protesting Bidder and others (as appropriate) to discuss the protest. The decision on the bid protest will be issued at least ten (10) business days prior to the Board hearing or GSA award date.

5.13.7 The decision will be communicated by e-mail, fax, or US Postal Service mail, and will inform the bidder whether or not the recommendation to the Board of Supervisors or GSA in the Notice of Intent to Award is going to change. A copy of the decision will be furnished to all Bidders affected by the decision. As used in this paragraph, a Bidder is affected by the decision on a Bid protest if a decision on the protest could have resulted in the Bidder not being the apparent successful Bidder on the Bid.

5.13.8 The decision of the GSA-Office of Acquisition Policy on the bid protest may be appealed to the Auditor-Controller's Office of Contract Compliance & Reporting (OCCR) located at 1221 Oak St., Room 249, Oakland, CA 94612, Fax: (510) 272-6502 unless the OCCR determines that it has a conflict of interest in which case an alternate will be identified to hear the appeal and all steps to be taken by OCCR will be performed by the alternate. The Bidder whose Bid is the subject of the protest, all Bidders affected by the GSA-Office of Acquisition Policy's decision on the protest, and the protestor have the right to appeal if not satisfied with the GSA-Office of Acquisition Policy's decision. All appeals to the Auditor-Controller's OCCR shall be in writing and submitted within five (5) business days following the issuance of the decision by the GSA-Office of Acquisition Policy, not the date received by the Bidder. An appeal received after 5:00 p.m. is considered received as of the next business day. An appeal received after the FIFTH (5th) business day following the date of issuance of the decision by the GSA-Office of Acquisition Policy shall not be considered under any circumstances by the GSA or the Auditor-Controller OCCR.

5.13.9 The appeal shall specify the decision being appealed and all the facts and circumstances relied upon in support of the appeal.

5.13.10 In reviewing protest appeals, the OCCR will not re-judge the proposal(s). The appeal to the OCCR shall be limited to review of the procurement process to determine if the contracting department materially erred in following the Bid or, where appropriate, County contracting policies or other laws and regulations.

5.13.11 The appeal to the OCCR also shall be limited to the grounds raised in the original protest and the decision by the GSA-Office of Acquisition Policy. As such, a Bidder is prohibited from stating new grounds for a Bid protest in its appeal. The Auditor-Controller (OCCR) shall only review the materials and conclusions reached by the GSA-Office of Acquisition Policy or department designee, and will determine whether to uphold or overturn the protest decision.

5.13.12 The Auditor’s Office may overturn the results of a bid process for ethical violations by Procurement staff, County Selection Committee members, subject matter experts, or any other County staff managing or participating in the competitive bid process, regardless of timing or the contents of a bid protest.

5.13.13 The decision of the Auditor-Controller's OCCR is the final step of the appeal process. A copy of the decision of the Auditor-Controller's OCCR will be furnished to the protestor, the Bidder whose Bid is the subject of the Bid protest, and all Bidders affected by the decision.

5.13.14 The County will complete the Bid protest/appeal procedures set forth in this paragraph before a recommendation to award the Contract is considered by the Board of Supervisor or GSA.

5.13.15 The procedures and time limits set forth in this paragraph are mandatory and are each Bidder's sole and exclusive remedy in the event of Bid Protest. A Bidder's failure to timely complete both the Bid protest and appeal procedures shall be deemed a failure to exhaust administrative remedies. Failure to exhaust administrative remedies, or failure to comply otherwise with these procedures, shall constitute a waiver of any right to further pursue the Bid protest, including filing a Government Code Claim or legal proceedings.

6. PHASE I PROCESS AND SCORING

6.9 **LIMITED PARTICIPATION**. Only DBEs the County has pre-qualified pursuant to the process described in the document entitled "Request for Pre-Qualification Submittals from Design-Build Entities for the County of Alameda **GDDF Boiler Upgrade Project** dated **March 23, 2018**, and any amendments, modifications or supplements thereto (the "Pre-Qualification Information"), are eligible to submit a Proposal.

6.10 **SELECTION OF DESIGN BUILD ENTITIES (DBEs)**.

6.10.1 The County reserves the right to deem non-responsive any Pre-Qualifications submittal which does not address and respond to all of the Pre-qualification requirements.

6.10.2 The three (3) DBEs with the highest point score on pre-qualifications, as determined by the County, will be invited to submit Proposals.

6.11 **PROPOSAL-RELATED CONFERENCES**.

6.11.1 Mandatory Pre-Phase I Proposal Conferences. County conducted a mandatory Phase I Pre-submittal Conference. A representative from the Mechanical Contractor and Engineer of the DBE were required to be present at the Phase I Pre-submittal Conference. Other members of the DBE's team may have attended as the DBE required.

6.11.2 Phase I Pre-submittal Conference was held: **Tuesday, April 10, 2018, 2:30 - 3:30 P.M. at the Wiley M. Courthouse,** 661 Washington Street, Oakland, CA 94607

6.11.3 Phase I Pre-submittal Networking Conference was held: **Wednesday, April 11, 2018, 10:00 - 11:00am at Alameda County Offices, 1401 Lakeside Drive, Oakland, CA 94612**. The Networking Conference was held to provide an opportunity for small and local and emerging businesses (SLEBs), minority owned

business enterprises (MBE), woman owned business enterprises (WBE), local business enterprises (LBE) and small local business enterprises (SLBE) and large firms to network and develop partnering relationships in order to participate in the contracts that may result from this Request for Proposals.

6.11.4 Addendums. County issued addendums of the Phase I Pre-submittal Conferences, which constituted the sole and exclusive record and statement of the results of the Phase I Pre-submittal Conferences. The addendums issued by County are not Contract Documents and do not change any of the requirements of this Request for Proposals.

6.12 **OTHER REQUIREMENTS PRIOR TO SUBMITTING PROPOSALS**.

6.12.1 Submission of Phase I Qualifications and Proposal signifies the DBEs careful examination of the Request for Proposal, Contract Documents, and all related documents and complete understanding of the nature, extent, and location of the Work to be performed.

6.13 **COSTS OF PREPARING PHASE I QUALIFICATIONS**.

6.13.1 DBEs are solely responsible for all costs associated with preparing their Phase I Qualifications

6.14 **PHASE I QUALIFICATIONS RECEIPT AND EVALUATION**.

6.14.1 Phase I Qualifications Packages will not be opened publicly and will be held in confidence during the Qualifications evaluation period prior to the Contract award. Phase I Qualifications Packages may become public later as described in Paragraph 5.11.

6.14.2 The County performed a preliminary completeness review to identify any patently defective or non-responsive Phase I submittals. Phase I submittals not meeting the requirements of the Request for Prequalification Submittals were considered non-responsive. County action on a defective or non-responsive Phase I submittal may include refusal to evaluate the Phase I submittal and elimination of the DBE from the evaluation process. The County reserves the right to take any action consistent with the requirements of this Document 00 11 19 (Request for Proposals from DBEs) including, without limitation, requesting additional information after receipt and opening of any Phase I submittal and waiving any inconsequential Phase I submittal defects.

6.14.3 DBEs who submit a complete and responsive Phase I package may be required to give presentations regarding the design described in their Proposals to the County's Proposal review team.

6.15 **CRITERIA FOR EVALUATING PHASE I QUALIFICATIONS**.

6.15.1 The County evaluated each Phase I submittal based on two categories of "Factors" as described below. The first group of Factors, identified in Article 12.3 below, were evaluated on a "Pass/Fail" basis. A DBE must "pass" each "Pass/Fail" Factor for the Phase I submittal to be considered for scoring. The second group of Factors,

identified in Paragraph 12.4 below, were evaluated and scored on a point accumulation basis.

6.16 **Factors Evaluated on a "Pass/Fail" Basis.**

6.16.1 The following Factors were evaluated on a "Pass/Fail" basis. The required Certifications for these "Pass/Fail" Factors are contained in Document 00 45 40.02 (Bidder Certifications).

6.16.2 Compliance with Outreach Programs (ECOP/SLEB/CBAP). The DBE must include a statement that the DBE will comply with the County's Enhanced Construction Outreach Program ("ECOP"), Small Local Emerging Business Program ("SLEB"), and Contractor Bonding Assistance Program ("CBAP").

6.16.3 Acceptance of Fixed Contract Terms. The DBE must include a statement that the DBE accepts the contract provisions the County has designated as non-negotiable. The County will not accept any exceptions or modifications to the following documents or language:

Contract Document Reference	**Title**
Document 00 61 13.13 (Construction Performance Bond) and 00 61 13.16 (Construction Labor and Material Payment Bond)	Payment and Performance Bond forms; Dual Obligee Rider forms
Documents 00 62 38 (ECOP), 00 62 40 (SLEB), and 00 62 20 (CBAP)	ECOP/SLEB/CBAP
Document 00 65 30 (Guaranty)	Warranty – 2 year period
Document 00 72 53, Paragraph 13.3 (General Conditions)	Indemnification
Document 00 43 45 (Project Stabilization/Community Benefits Agreement).	Project Stabilization Agreement

6.16.4 Statement of Compliance with Project Stabilization Agreement. The DBE must include a statement that the DBE will execute the Project Stabilization Agreement negotiated by the County and comply with the provisions, terms and conditions of that agreement throughout the Project. Prior to the submission for Proposals the County will issue the Project Stabilization Agreement (Document 00 43 45).

6.17 **Scored Factors Used in Evaluating Phase I Submittals.**

6.17.1 In accordance with Public Contract Code Section 22164, the County evaluated the following Factors to determine which Phase I submittals provided the highest-ranked qualifications to be shortlisted for participation in Phase II. The maximum points available for each scored Factor in Phase I were as follows:

Part	Evaluation Factor Categories	Maximum Points
III.A	Mechanical Contractor	80
III.B	Engineer	37
IV.A	DBE and GC Experience	40
IV.B	Engineer Experience	20
V.	Key Personnel	33
Total		**210**

6.18 **Factors to be used in Evaluation Proposals.**

6.18.1 In accordance with Public Contract Code Section 22164, the County intends to award the contract on a competitive "low-bid" basis.

6.19 **ANNOUNCEMENT OF DBEs SELECTED TO PARTICIPATE IM THE PROPOSAL**.

6.19.1 The DBEs with the three (3) highest scores are invited to submit a Proposal.

6.20 **NOTICE OF DBEs SELECTED TO PARTICIPATE IN PHASE II AND DEADLINE FOR PROTEST**.

6.20.1 County used reasonable effort to deliver the Notice of Selection to participate and submit Proposals by e-mail to all DBEs who submitted Phase I Qualifications no later than the first business Day after the County issues that Notice. Any delay or failure to do so did not extend the Phase I protest deadline. Protests must conform to the protest requirements set forth in Paragraph 5.13 above.

7. **PROPOSAL PROCESS**

7.1 **LIMITED PARTICIPATION.**

7.1.1 Only DBEs who have been notified of their selection to submit Proposals pursuant to the process described above, and any amendments, modifications or supplements thereto, are eligible to submit Proposals.

7.2 **RECEIPT OF PROPOSALS FROM DBEs**.

7.2.1 Sealed Proposals from selected DBEs must be submitted to the Office of the County and by the date and time set forth in section 4: **DUE DATE AND RECEIPT OF PROPOSALS.** above.

7.3 **AWARD TO DBE THAT PRESENTS THE LOW BID PROPOSAL**. When the Contract is awarded, the County will award the Contract to the qualifying DBE that submits the Proposal that is the lowest responsive, responsible bidder.

7.3.1 The County reserves the right to deem non-responsive any Proposal with a proposed Contract Price greater than the published budget, as well as any Proposal that does not address and respond to all of the requirements of this Request for Proposals, including but not limited to general conformance with the Bridging Documents.

7.3.2 For a Proposal to be responsive, the DBE must, among other things, meet all Pass/Fail requirements.

7.3.3 The DBE that submits the lowest responsive bid on its Phase II submittal will be recommended to receive the award of the Contract.

7.4 **REQUIRED PROPOSAL SECURITY**.

7.4.1 DBEs must submit with their Proposal a certified check or cashier's check from a responsible bank in the United States, or a corporate surety bond furnished by a surety authorized to do surety business in the State of California, having an A.M. Best Company financial rating of A-7 or better, of not less than ten percent (10%) of the DBE's Proposal amount, payable to "County of Alameda". The required form of corporate surety bond is Document 00 61 13 (Bond Accompanying Proposal). County will reject as non-responsive any Proposal submitted without the required Proposal security. County may elect to retain the Proposal securities and Proposal bonds of the DBEs until the later of (a) one hundred twenty (120) Days after Proposal opening or (b) the execution of the Contract and deposit of all necessary bonds and other items, at which time the County shall return Proposal securities and Proposal bonds to the DBEs that are not selected for award of the Contract.

7.4.2 If the DBE to whom the Contract is awarded fails to comply with the requirements of Article 27 (Post-Notice of Award Requirements), County may, in its sole discretion, deposit the DBE's surety bond, cashier's check, or certified check for collection and retain the proceeds as liquidated damages for DBE's failure to enter into the Contract. By submitting a Proposal, DBE agrees that calculating the damages County may suffer as a result of the selected DBE's failure to execute and deliver all required Contract Documents and other required documents would be extremely difficult and impractical and that the amount of the DBE's required Proposal security shall be the agreed and presumed amount of County's damages for such a failure by DBE.

7.5 **PROPOSAL-RELATED CONFERENCES**.

7.5.1 Mandatory Pre-Proposal Conferences. County will conduct one mandatory Pre-Proposal Conference. A representative from the Mechanical Contractor and Lead Engineer members of each DBE must be present at the Pre- Proposal Conference. Other members of the DBE's team may attend. The proposed time and location listed below are subject to change.

7.5.2 Mandatory Pre-Proposal Conference: **Tuesday, July 10, 2018, 10:00 A.M. - 12:00 P.M.** at the **Glenn Dyer Detention Facility, 661 Washington Street, Oakland, 94607**

7.5.3 Additional Pre-Proposal Conferences. Additional meetings following the Mandatory Pre- Proposal Conference and prior to the submission of Proposals may be scheduled by the County as required. Addenda will be issued as the County deems necessary to address clarifications or comments resulting from the Pre-Proposal Conference.

7.5.4 Addenda. In response to questions arising at the Mandatory Pre- Proposal Conference, the County will transmit to DBEs participating in Phase II any Addenda the County in its discretion considers necessary.

7.5.5 Minutes. County may issue Agenda Minutes of the Mandatory Pre-Proposal Conference, which shall constitute the sole and exclusive record and statement of the results of the Mandatory Pre-Proposal Conference. The minutes issued by County are not Contract Documents and do not change any of the requirements of this Request for Proposals.

7.5.6 Confidential Meetings. If all DBEs participating in the Proposal process agree and request in writing to the County PM, the County may hold confidential Pre-Proposal meetings with each Bidder separately in order to facilitate each Bidder's independent understanding of the Bridging Documents and to facilitate each Bidder's development of a unique and competitive Proposal offering the lowest bid to the County. See Document 00 25 16 (Pre-Proposal Meeting Agreement and Waiver of Claims).

7.6 **OTHER REQUIREMENTS PRIOR TO SUBMITTING PROPOSALS**. Submission of a Proposal signifies the DBEs careful examination of Request for Proposal Documents and complete understanding of the nature, extent, and location of the Work to be performed. DBEs must complete the tasks listed in Article 5 (Design Builder's Representations and Warranties) of Document 00 52 53 (Agreement) and submit Document 00 45 40.02 (Bidder Certifications) as a condition precedent to submitting a Proposal, and submission of a Proposal shall constitute the DBE's express representation to County that DBE has fully completed these tasks.

7.7 **COUNTY'S RIGHTS IN PROPOSALS**.

7.7.1 By submitting a Proposal, DBEs agree that the County may use any ideas or information contained in the Proposals in connection with any contract awarded for the Project or in connection with a subsequent procurement, without any obligation to pay any additional compensation to the DBE. As used herein, the term "Proposal" includes all technical information submitted in response to the County's Request for Proposals, including (without limitation), plans, drawings, designs, calculations, specifications, and alternative technical concepts.

7.7.2 The DBEs shall, and hereby do, grant the County an irrevocable, perpetual, royalty-free, fully paid-up, sole and exclusive license and right to use and exercise any and all of the copyrights or other intellectual property rights that DBE may author or create, alone or jointly with others, in or with respect to the Proposal, including without limitation all drawings, designs and graphic representations. County's license shall include the right to sub-license, shall be for all purposes with respect to each right of copyright, and shall be without restriction, except that County may not build or sub-license others to build an additional work of improvement that embodies DBE's copyright protected designs without DBE's prior written consent, which consent DBE may condition solely upon additional payment to DBE which shall be determined through reasonable and good faith negotiations between DBE and County.

7.7.3 DBE shall cause to be included in all subcontracts and agreements with respect to

the Proposal, language which is consistent with this Section 21.

7.8 **RECEIPT AND EVALUATION OF PROPOSALS**.

7.8.1 Except as provided for in Section 5 OTHER INFORMATION AND PROCEDURES APPLICABLE TO PROPOSALS above, the County will retain the Proposals in strict confidence until completion of the County's evaluation of all Proposals

7.8.2 The County reserves the right to conduct negotiations with any or all of the DBEs that submit Proposals. Negotiations, if any, will be conducted in accordance with Document 00 25 19 (Rules and Procedures for Discussions and Negotiations).

7.8.3 The County will determine at its sole discretion whether a Proposal is responsive and whether a DBE is responsible.

7.8.4 The County will resolve any discrepancies between (a) the indicated sum of any column of figures and the correct sum of those figures in favor of the correct sum, and (b) written words and figures, or written words and numerals, in favor of the written words.

7.9 **CRITERIA FOR EVALUATING PROPOSALS**.

7.9.1 The County will evaluate each Proposal based on two categories of "Factors," as described below.

7.9.1.1 The first group of Factors, identified in Paragraph 23.2 below, will be evaluated on a "Pass/Fail" basis, with a DBE needing to achieve "Pass" ratings for each Factor to be considered for award of Contract. Any DBE not achieving Pass ratings for all of the Factors identified in Paragraph 23.2 below shall be deemed nonresponsive, the Proposal will not be reviewed further, and the DBE shall be ineligible for award of Contract.

7.9.1.2 The Proposals that are deemed responsive will be evaluated to determine the apparent "low-bid, as those terms are used in Public Contract Code Section 22164.

7.9.1.3 Staff will recommend the qualifying DBE with the lowest bid for Phase II to the County Board of Supervisors for award of the Contract.

7.9.2 **"Pass/Fail"** Factors**:** The Factors to be evaluated on a "Pass / Fail" basis in Phase II are as follows:

7.9.2.1 Proposal Security. Submit Proposal Security. The required form of corporate surety bond is Document 00 61 13 (Bond Accompanying Proposal).

7.9.2.2 Certifications. Complete the tasks listed in Article 5 (Design Builder's Representations and Warranties) of Document 00 52 53 (Agreement Form) and execute and submit Document 00 45 40.02 (Bidder Certifications).

7.9.2.3 Proposal Form. Execute and submit Document 00 42 53 (Proposal Form).

7.9.2.4 Outreach. Submit a Subconsultant/Subcontractor Procurement Plan satisfying all requirements of Document 00 62 30 (Subconsultant/Subcontractor Procurement) and showing how the DBE will comply with the County's Outreach Programs.

7.9.2.5 Certification Regarding Material Changes. Each DBE shall either certify that (a) all information in, and provided with, the Pre-Qualification Questionnaire it submitted to County remains true and correct in all material respects as of the date of submitting the Proposal, as applicable, or (b) if there have been any material changes thereto, such material changes are reflected on a DBE's Material Changes List, submitted in accordance with Document 00 45 40.02 (Bidder Certifications).

7.9.2.6 Non-Collusion Declaration. DBE's must submit Document 00 45 19 (Non-Collusion Declaration) with Proposals. County may reject as non-responsive any Proposal submitted without a Non-Collusion Declaration. No DBE may make or file or be interested in more than one Proposal for the same supplies, services or both.

7.9.2.7 Statement of Compliance with Project Stabilization Agreement. The DBE must include a statement that the DBE will execute the Project Stabilization Agreement negotiated by the County and comply with the provisions, terms and conditions of that agreement throughout the Project. Prior to the submission for Proposals the County will issue the Project Stabilization Agreement (Document 00 43 45).

7.10 **NOTICE OF INTENT TO AWARD; PROPOSAL PROTEST.** If County issues Document 00 51 00.01 (Notice of Intent to Award), the County will use reasonable effort to deliver by electronic mail a copy thereof to all DBEs who submitted satisfactory Proposals no later than the first Business Day after issuance, although any delay or failure to do so will not extend the protest deadline, set forth in Subparagraph 5.13.3, above.

7.11 **ANNOUNCEMENT OF AWARD**. When the award is made, County shall publicly announce the award of the Contract by issuing Document 00 51 00 (Notice of Award), by posting the same in the Office of the County, and by mailing a copy of Document 00 51 10 to all parties who requested that the County provide such notice. The Notice of Award shall include, at a minimum, all of the following: (1) the name of the DBE to whom the award was made; (2) a written statement supporting the Contract award which states the basis of the award; and (3) the County's second and third ranked DBEs.

7.12 **POST-NOTICE OF AWARD REQUIREMENTS**. After issuance of Document 00 51 10 (Notice of Award), the successful DBE must submit the following documents to County **by 5:00 p.m. of the tenth (10th) Day following DBEs receipt of the Notice of Award**. Execution of the Contract depends upon receipt and approval of these documents:

7.12.1 Document 00 52 53 (Agreement): To be executed by the successful DBE. Submit three (3) copies, **each** bearing all required original signatures.

7.12.2 Document 00 61 13.13 (Construction Performance Bond): To be executed by the successful DBE and its surety, in the form set forth in Document 00 61 13.13.

7.12.3 Document 00 61 13.14 (Dual Obligee Rider - Construction Performance Bond): To be executed by the successful DBE and its surety, in the form set forth in Document 00 61 13.14.

7.12.4 Document 00 61 13.16 (Construction Labor and Material Payment Bond): To be executed by the successful DBE and its surety, in the form set forth in Document 00 61 13.16.

7.12.5 Document 00 61 13.17 (Dual Obligee Rider - Construction Labor and Material Payment Bond): To be executed by the successful DBE and its surety, in the form set forth in Document 00 61 13.17.

7.12.6 Document 00 65 30 (Guaranty): To be executed by the successful DBE, in the form set forth in Document 00 65 30.

7.12.7 Insurance forms, documents, certificates and endorsements required by Document 00 73 16 (Insurance).

7.12.8 Any other item specified in Document 00 51 00 (Notice of Award).

7.12.9 County shall have the right to confirm the Construction Performance Bond, Construction Labor and Material Payment Bond, Dual Obligee Rider - Construction Performance Bond, and Dual Obligee Rider - Construction Labor and Material Payment Bond by communicating directly with the performance bond and payment bond surety proposed by the successful DBE. DBE's surety must be satisfactory to County. Corporate sureties on these bonds and on bonds accompanying Proposals must be duly licensed to do business in the State of California and must have an A.M. Best Company financial strength rating of A- (Excellent) and a Class VII or better Financial Size Category rating.

END OF DOCUMENT

DOCUMENT 00 21 00

RFP MASTER DELIVERABLE LIST

Note: Proposals shall be submitted in the following format. The Proposal Package includes but is not limited to the items listed below. This list is provided for the convenience of the bidders and the County, if there is any discrepancy between this list and the Request for Proposals (Document 00 11 19), the Request for Proposals shall prevail.

1. **Certifications.** Execute and submit Document 00 45 40.02 (Bidder Certifications – Phase I).

2. **Proposal Security.** Submit Phase II Proposal Security. The required form of corporate surety bond is Document 00 61 13 (Bond Accompanying Proposal).

3. **Proposal Form**. Execute and submit Document 00 42 53 (Proposal Form).

4. **Outreach**. Submit a Subconsultant/Subcontractor Procurement Plan satisfying all requirements of Document 00 62 30 (Subconsultant/Subcontractor Procurement) and showing how the DBE will comply with the County's Outreach Programs.

5. **Certification Regarding Material Changes.** Each DBE shall either certify that (a) all information in, and provided with, the Pre-Qualification Questionnaire it submitted to County remains true and correct in all material respects as of the date of submitting the Proposal, as applicable, or (b) if there have been any material changes thereto, such material changes are reflected on a DBE's Material Changes List, submitted in accordance with Document 00 45 40.02 (Bidder Certifications).

6. **Non-Collusion Declaration.** DBE's must submit Document 00 45 19 (Non-Collusion Declaration) with Proposals. County may reject as non-responsive any Proposal submitted without a Non-Collusion Declaration. No DBE may make or file or be interested in more than one Proposal for the same supplies, services or both.

7. **Statement of Compliance with Project Stabilization Agreement.** The DBE must include a statement that the DBE will execute the Project Stabilization Agreement negotiated by the County and comply with the provisions, terms and conditions of that agreement throughout the Project. Prior to the submission for Proposals the County will issue the Project Stabilization Agreement (Document 00 43 45).

8. **Schedule Compliance.** Bidder shall provide County with a Proposed Schedule in accordance with Document 01 32 26 (Schedules and Reports) showing a realistic plan to complete the Project within the time set forth in Document 00 52 53 (Agreement) and Section 01 12 16 (Work Sequence)

END OF DOCUMENT

DOCUMENT 00 25 16

PRE-PROPOSAL MEETING AGREEMENT AND WAIVER OF CLAIMS

This Agreement and Waiver of Claims ("Agreement and Waiver") is made and entered into by and between the COUNTY OF ALAMEDA, acting by and through its GENERAL SERVICES AGENCY ("County"), and pre-qualified bidders who are eligible to submit Proposals (hereinafter "Bidder(s)").

RECITALS

1. Pursuant to its Request for Pre-Qualification of Design-Build Entities for the County of Alameda **GDDF Boiler Upgrade Project**, dated **March 23, 2018**, County pre-qualified three Design-Build Entities, the Bidders, to submit Proposals to procure, design, and construct the **GDDF Boiler Upgrade Project** No. **17033** (the "Project").

2. On **June 22, 2018** the County issued to Bidders a "Request for Proposals From Bidders" for the Project. In that Request, County listed a mandatory pre-proposal conference to be attended by all Bidders. County also stated that additional pre-proposal meetings may be scheduled as required by County (See Articles 8 and 19 of Document 00 11 19 Request for Proposals From Bidders). The purpose of this Agreement and Waiver is to define and enable such additional pre-proposal meetings.

3. NOT USED.

4. The County has determined that confidential pre-Proposal meetings are likely to increase Bidders' independent understanding of the County's intent for the Project as expressed by and through the Bridging Documents and may help refine Project requirements and specifications. Accordingly, County finds that such confidential meetings are likely to increase competition among the Bidders and deliver the lowest bid to the County for the Project.

Therefore, County and Bidders mutually agree as follows:

AGREEMENT

5. County will hold one confidential pre-proposal meetings ("Meetings") independently with each pre-qualified Bidder eligible to submit Proposals. County will give each Bidder an equal opportunity for the same number of Meetings.

6. In order to provide consistency of information and responses to Bidder questions, County will identify a core group of County representatives and will exercise best efforts to cause that core group to attend each Meeting requested by each Bidder. To the extent Bidders request Meetings addressing a specific system or aspect of Project design that requires the attendance of additional County representatives or consultants, County will exercise best efforts to cause the same additional County representatives or consultants attend each such Meeting.

7. Meetings. The County will schedule Meetings at the written request of Bidders. Meetings may be held at the Project Site or off-site. Bidders agree that off-site Meetings may be held at the offices of the County. One Meeting for each Bidder may be held during the week of **June 25, 2018.** Additional Meetings, normally limited to one per Bidder, may be scheduled at the written request

of Bidders. A Bidder's written request for an additional Meeting will be shared with the other Bidders.

8. Confidentiality. County will exercise best efforts to cause all information and discussion exchanged during each Meeting to remain confidential between the County and the Bidder present at that Meeting. To that end, County will cause each individual present at each Meeting to sign a joint Confidentiality Agreement in the form attached as Exhibit A to this Agreement and Waiver. However, County and Bidders agree that issues relating to compliance with program, design criteria, Project Manual, or Bridging Documents, or relating to changes to Project requirements, that arise out of Meetings will be documented in written form and distributed to all Bidders as Addenda pursuant to Article 5.5 (Addenda) of Document 00 11 19 (Request for Proposals From Bidders).

9. Waiver of Claims. In order to induce the County to hold Meetings, Bidders hereby waive their right, individually and collectively, to object to or protest the Design Builder selection process for the Project because of such Meetings, or because of anything related in any way to such Meetings.

*** * * CAUTION: THIS IS A WAIVER - READ BEFORE EXECUTING * * ***

BY: _____ BY: _____

Its: _____ Its: _____

BY: _____

Its: _____

COUNTY OF ALAMEDA, acting by and through its GENERAL SERVICES AGENCY

BY: _____

Its: _____

END OF DOCUMENT

(EXHIBIT A FOLLOWS NEXT PAGE)

Exhibit A

Pre-Proposal Meeting Confidentiality Agreement

1. **CONFIDENTIAL AND PROPRIETARY NATURE OF THE INFORMATION**. The undersigned each agree, by affixing their signatures below, to treat all ideas or information discussed, displayed, or exchanged during the Meeting described in paragraph 4 below as confidential and proprietary to the single Bidder listed in paragraph 4 below.
2. **RESTRICTED USE OF CONFIDENTIAL INFORMATION.** Except as among themselves to the extent required to perform or respond to Document 00 11 19 (Request for Proposals from Design-Build Entities), the undersigned each agree not to reproduce, transmit, use, or disclose any ideas or information discussed, displayed, or exchanged during the Meeting described in paragraph 4 below without the advance written consent of both the County and the single Bidder listed in paragraph 4 below.
3. **EXCEPTIONS.** The obligations and restrictions above do not apply to information that: (a) was or becomes generally available to the public prior to, and other than as a result of, a disclosure by the undersigned or the undersigned's representative(s) or (b) was available, or becomes available to the undersigned on a non-confidential and non-proprietary basis prior to its disclosure to the undersigned during the Meeting described below.
4. **MEETING INFORMATION:**

   Date of Meeting: _____

   Location of Meeting: _____

   Name of Bidder: _____

I have read paragraphs 1 through 4 above and, with my signature below, I hereby agree that I will not reproduce, transmit, use, or disclose any ideas or information discussed, displayed, or exchanged during the Meeting described in paragraph 4 above, except as is permitted by this Confidentiality Agreement.

Signature	Printed Full Name	Organization / Entity

I have read paragraphs 1 through 4 above and, with my signature below, I hereby agree that I will not reproduce, transmit, use, or disclose any ideas or information discussed, displayed, or exchanged during the

Meeting described in paragraph 4 above, except as is permitted by this Confidentiality Agreement.

Signature	Printed Full Name	Organization / Entity

END OF DOCUMENT

DOCUMENT 00 25 19

RULES AND PROCEDURES FOR DISCUSSIONS AND NEGOTIATIONS

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Document provides the rules and procedures by which the County will discuss and negotiate a design build contract with the Bidder whose proposal is initially determined by the County to be the most advantageous pursuant to the low bid method.

1.1.2 Pursuant to Document 00 11 19 (Request for Proposals from Design Build Entities), the Bidders acknowledged and agreed by signing their proposal that County reserved for itself the right to discuss and negotiate with the lowest responsive Bidders.

1.2.3 Upon reserving this right, County is required under California Public Contract Code Section 22164(d)(4)to provide the rules and procedures it shall observe to ensure that any discussions or negotiations to determine the most advantageous proposal are conducted in good faith.

1.2 RULES AND PROCEDURES

1.2.1 General.

1.2.1.1 In accordance with Public Contract Code section 22164(e), the County will utilize low bid as the final selection method, the competitive bidding process shall result in lump-sum bids by the requalified or short-listed design-build entities, and award shall be made to the design-build entity that is the lowest responsible bidder.

1.2.2 Proposal Review. As part of the preliminary completeness review process, the County may, in its sole discretion, discuss any apparently patently defective or non-responsive Proposal with the submitting Bidder to clarify or correct any errors by the County in reviewing the proposal, to request additional clarifying, instructive, advisory, or corrective information, and to otherwise determine whether a defect may be waived as inconsequential.

1.3. CONE OF SILENCE.

1.3.1 "Cone of Silence" means a prohibition on any communication, oral or written, regarding particular Requests for Proposals (RFP), bids, proposals, contract negotiations, or other competitive solicitation between:

1.3.1.1 Any person who seeks an award of the **GDDF Boiler Upgrade Project** from the County, including a Bidder or Bidder's representative, and

1.3.1.2 Any person appointed to evaluate or recommend selection in such procurement process, including members of the Interview Presentation and other evaluators described in Document 00 11 19 (Request for Proposals).

1.3.2 Notwithstanding the foregoing, the Cone of Silence shall not apply to communications with, among or between the Project Manager, Construction Manager, and County Counsel and their respective staff, or with designated staff who are not serving on an Evaluation Panel or the Interview/Presentation Panel, to obtain clarification or information concerning the subject solicitation. Further, nothing herein shall prohibit County employees or representatives from communicating with each other. For purposes of this section, "Bidder's Representative" means an employee, partner, officer, or director of a potential bidder, or consultant, lobbyist, or actual or potential subcontractor or sub-consultant of a Bidder.

1.3.3 A Cone of Silence applies to this procurement as of the date the County first issues a Request for Proposals (Document 00 11 19). The Cone of Silence shall terminate at the time the County Board of Supervisors votes to award or approve a contract, to reject all bids or responses, or otherwise take action that ends the solicitation.

1.3.4 Nothing contained herein shall prohibit any prequalified Bidder or any Bidder's representative:

1.3.4.2 from engaging in contract negotiations with the County;

1.3.4.3 from making a public presentation to the Board of Supervisors during any duly noticed public meeting; or

1.3.4.4 from communicating in writing with any County employee or official for purposes of seeking clarification or additional information, subject to the provisions of the applicable RFP, or bid Documents.

1.3.5 Nothing contained herein shall prohibit the Project Manager or other staff from initiating contact with a prequalified Bidder or Bidder's representative and subsequent communications related thereto for the purpose of obtaining further information regarding the RFP, bid, or competitive solicitation or as otherwise permitted by this Section. For purposes of this Document and when not otherwise precluded by the operation of this Document from doing so, the Project Manager or designee shall accept communications from prequalified Bidders or Bidder's representatives while a Cone of Silence is applicable to this competitive solicitation. Such contact shall be in writing and shall be provided to the members of the applicable evaluation, including any response thereto.

1.3.6 The County Counsel shall be informed of any person who is alleged to have failed to observe the Cone of Silence or requirements of this Section. In each such instance, an investigation shall be performed.

1.3.6.1 If there is a determination of violation, the County reserves the right to reprimand, penalize in the form of lower ranking or points, or entirely disqualify the Bidder who failed to observe the Cone of Silence or requirements of this Section from further consideration for the pending competitive solicitation.

1.3.6.2 A written notice of a determination of a failure to observe the Cone of Silence or requirements of this Section, if any, and notice of the penalty imposed as provided

for in this Section, if any, shall be immediately furnished or mailed to the Bidder or person who has been investigated.

1.3.6.3 A Bidder or person who is determined to have failed to observe the Cone of Silence or requirements of this section may appeal such determination in the same manner and using the same procedure established for a Proposal Protest in Paragraph 5.13 of Document 00 11 19 (Request for Proposals from Design Build Entities).

END OF DOCUMENT

DOCUMENT 00 31 19

EXISTING CONDITIONS INFORMATION

1. Summary

This document describes existing conditions at or near the Project, and use of information available regarding existing conditions. This document is **not** part of the Contract Documents. See General Conditions for definition(s) of terms used herein.

2. Reports and Information on Existing Conditions

2.1. Documents providing a general description of the Site and conditions of the Work may have been collected by County, its consultants, contractors, and tenants. These documents may include previous contracts, contract specifications, tenant improvement contracts, as-built drawings, utility drawings and information regarding underground facilities.

2.2. Information regarding existing conditions may be inspected at the County offices or the Construction Manager's office, if any, and copies may be obtained at cost of reproduction and handling upon Bidder's agreement to pay for such copies. These reports, documents and other information are **not** part of the Contract Documents.

2.3. Information regarding existing conditions may also be included in the Project Manual, but shall **not** be considered part of the Contract Documents.

3. Use of Information

3.1. Information regarding existing conditions was obtained only for use of County and its consultants, contractors, and tenants for planning and design and is **not** part of the Contract Documents.

3.2. County does not warrant, and makes no representation regarding, the accuracy or thoroughness of any information regarding existing conditions. Bidder represents and agrees that in submitting a bid it is not relying on any information regarding existing conditions supplied by County.

3.3. Under no circumstances shall County be deemed to warrant or represent existing above-ground conditions, as-built conditions, or other actual conditions, verifiable by independent investigation. These conditions are verifiable by Contractor by the performance of its own independent investigation, which Contractor must perform as a condition to bidding, and Contractor should not and shall not rely on this information or any other information supplied by County regarding existing conditions.

3.4. Any information shown or indicated in the reports and other data supplied herein with respect to existing underground facilities at or contiguous to the Project may be based upon information and data furnished to County by the County's employees and/or consultants, builders of such underground facilities or others. County does not assume responsibility for the completeness of

this information, and Bidder is solely responsible for any interpretation or conclusion drawn from this information.

3.5. County shall be responsible only for the general accuracy of information regarding underground facilities, and only for known underground facilities that are owned by County , and only where Bidder has conducted the independent investigation required of it pursuant to the Instructions to Bidders, and discrepancies are not apparent.

4. Investigations/Site Examinations

4.1. Before submitting a Bid, each Bidder is responsible for conducting or obtaining any additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and underground facilities) at or contiguous to the Site or otherwise, that may affect cost, progress, performance, or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by Bidder and safety precautions and programs incident thereto or that Bidder deems necessary to determine its Bid for performing and furnishing the Work in accordance with the time, price, and other terms and conditions of the Contract Documents.

4.2. On request, County will provide each Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies, as each Bidder deems necessary for submission of a Bid. Bidders must fill all holes and clean up and restore the Site to its former condition upon completion of its explorations, investigations, tests and studies. Such investigations and Site examinations may be performed during any and all Site visits indicated in the Notice to Bidders and only under the provisions of the Contract Documents, including, but not limited to, proof of insurance and obligation to indemnify against claims arising from such work, and County's prior approval.

END OF DOCUMENT

DOCUMENT 00 31 26

HAZARDOUS MATERIAL SURVEYS

1. This Document describes Hazardous Material surveys included with the Project Manual, use of data therein and Hazardous Materials expected to be found at the Site. Reports and Information provided in this Document 00 31 26 are subject to the same conditions and limitations on the use of information set forth in Document 00 31 32 (Geotechnical Data and Existing Conditions).

2. RELATED SECTIONS.

2.1 DBEs are directed to the following materials for further information and contract requirements on site conditions, Hazardous Materials, and related matters:

2.1.1 Document 00 31 32 (Geotechnical Data and Existing Conditions)

3. REPORTS AND INFORMATION.

3.1 County, its consultants, and prior contractors have prepared documents providing a general description of the Site and identifying and locating known hazardous materials related to the Work. These documents consist of surveys included in or with the Project Manual, or otherwise made available for review and copying.

4. USE OF DATA.

4.1 Data regarding the locations and types of Hazardous Materials was obtained for use of County and its consultants, and contractors for planning are not part of the Contract Documents.

4.2 The DBE may rely upon the accuracy of the "technical data" contained in the hazardous material reports identified above, but only insofar as it relates to subsurface conditions and only if DBE has conducted a thorough review of such technical data and discrepancies were not apparent. The term "technical data" in the referenced reports and drawings shall be limited as follows:

The term "technical data" shall include actual reported depths, reported quantities, reported materials, conditions, equipment or structures that were encountered during subsurface exploration, if any.

4.2.1 The term "technical data" shall include actual reported depths, reported quantities, reported soil types, reported soil conditions, and reported material, equipment or structures that were encountered during subsurface exploration, if any.

4.2.2 The term "technical data" does not include, and the DBE may not rely upon, any other data, interpretations, opinions, or information shown or indicated in such drawings or reports that otherwise relate to subsurface conditions or described structures.

4.2.3 The term "technical data" shall not include the location of Underground Facilities.

4.2.4 The DBE may not rely on the completeness of reports and drawings for the purposes of design or construction. The DBE may rely upon the general accuracy of the "technical data" contained in such reports or drawings.

4.2.5 The DBE is responsible for making reasonable interpretations of technical data and reports. The DBE is solely responsible for any interpretation or conclusion drawn from any "technical data" or any other data, interpretations, opinions or information contained in supplied hazardous material data.

4.2.6 County does not warrant and makes no representation regarding the accuracy, completeness or thoroughness of any information verifiable by visual inspection. By submitting a Proposal, DBE represents and agrees that in submitting a Proposal it has reviewed the data regarding existing conditions supplied by County concerning the general location of potentially hazardous materials.

5. INVESTIGATIONS.

6. Before submitting a Proposal, each DBE shall conduct its own visual inspection of the Site and will be responsible for performing all other investigations that DBE deems are necessary to make its Proposal and for performing and furnishing Work in accordance with the time, price and other terms and conditions of the Contract Documents.

7. ACCESS TO SITE.

7.1 Subject to County approval and reasonable scheduling, County will provide each DBE access to the Site to conduct such examinations and investigations as each DBE deems necessary for submission of its Proposal.

END OF DOCUMENT

DOCUMENT 00 31 32

GEOTECHNICAL DATA AND EXISTING CONDITIONS

1. SUMMARY.

1.1 This document sets forth the terms and conditions under which a Design Build Entity may review, study, use or rely upon geotechnical data for, or areas near, the Site and information regarding Hazardous Materials and other conditions existing at the Site. Geotechnical data and other information provided in Reference Documents are not part of the Contract Documents.

2. RELATED SECTIONS.

2.1 Design Build Entities are directed to the following materials for further information and contract requirements on site conditions, Hazardous Materials, and related matters:

2.1.1 Document 00 31 26 (Hazardous Materials Surveys)

2.1.2 Section 01 73 32 (Selective Demolition)

3. REPORTS AND INFORMATION.

3.1 County, its consultants and prior contractors may have documents that provide a general description of the Site and conditions of the Work and at the Site. These documents may include geotechnical reports for and around the Site, environmental Site assessment reports, hazardous materials mitigations reports, Site surveys, legal descriptions, direct County contracts, contract specifications, utility drawings, and information regarding Underground Facilities. These reports, documents and other information are <u>not</u> part of the Contract Documents.

3.2 Design Build Entities must inspect all available geotechnical reports and all information regarding existing conditions that may have been provided or made available by the County.

4. USE OF INFORMATION ON EXISTING CONDITIONS.

4.1 <u>Above-Ground Existing Conditions</u>. Under no circumstances shall County be deemed to make a warranty or representation of visible existing above-ground conditions, as-built conditions, or other above-ground actual conditions verifiable by reasonable independent investigation. These conditions are verifiable by the DBE by the performance of its own independent investigation, which the DBE must perform prior to submitting a Proposal. The DBE must not rely on the information supplied by County regarding existing above-ground conditions. By submitting a Proposal, DBE represents and agrees that in submitting its Proposal, it is not relying on any information regarding existing above-ground conditions supplied by County to the extent such conditions are verifiable by reasonable independent investigation.

4.2 Below Ground Existing Conditions. The Reports and Information above provide information regarding existing conditions below ground, including but not limited to structures and Hazardous Materials DBE may encounter in performing the Work. DBE shall demolish existing structures and remove Hazardous Materials as described in the Contract Documents.

4.3 DBE is responsible for understanding and interpreting all information on below ground conditions and is responsible for conducting an independent review of the information provided by the County. In reviewing any information regarding below ground conditions, DBE is responsible for making all reasonable interpretations and drawing all reasonable conclusions from that information and shall be solely responsible for any interpretations or conclusions drawn from those materials.

4.4 In accordance with Public Contract Code Section 7104, the Contract Price and Contract Times will be adjusted if DBE incurs additional costs or time on account of Hazardous Materials and/or below ground site conditions that differ materially from those indicated in information about the Project or the Site made available to DBE's prior to the deadline for submitting proposals (including but not limited to Reference Documents) or that DBE could, or in the exercise of reasonable diligence should, have anticipated based on that information.

5. LIMITED RELIANCE PERMITTED ON CERTAIN INFORMATION.

5.1 Geotechnical Data and other Site Information. By submitting a Proposal, DBE represents and agrees that in submitting its Proposal, it is not relying on any geotechnical or other data regarding Site conditions supplied by County, except as specifically set forth herein.

5.2 The DBE may rely upon the accuracy of the "technical data" contained in the Reports and Information identified above, but only insofar as it relates to subsurface conditions and only if DBE has conducted a thorough review of such technical data and discrepancies were not apparent. The term "technical data" in the referenced reports and drawings shall be limited as follows:

5.2.1 The term "technical data" shall include actual reported depths, reported quantities, reported soil types, reported soil conditions, and reported material, equipment or structures that were encountered during subsurface exploration.

5.2.2 The term "technical data" does not include, and the DBE may not rely upon, any other data, interpretations, opinions, or information shown or indicated in such drawings or reports that otherwise relate to subsurface conditions or described structures.

5.2.3 The term "technical data" shall not include the location of Underground Facilities.

5.2.4 The DBE may not rely on the completeness of reports and drawings for the purposes of design or construction. The DBE may rely upon the general accuracy of the "technical data" contained in such reports or drawings.

5.2.5 The DBE is responsible for making reasonable interpretations of technical data and reports. The DBE is solely responsible for any unreasonable interpretation or conclusion drawn from any "technical data" or any other data, interpretations, opinions or information contained in supplied geotechnical data.

6. INVESTIGATIONS.

6.1 Before submitting a Proposal, each DBE shall conduct its own visual inspection of the Site and will be responsible for performing all other investigations that DBE deems are necessary to make its Proposal and for performing and furnishing Work in accordance with the time, price and other terms and conditions of the Contract Documents. DBE may rely upon the technical data in geotechnical and existing conditions data provided by the County only to the extent the DBE's geotechnical engineer deems appropriate in the exercise of its professional judgment. The design shall not be developed based solely upon the information provided by the County. Each DBE will be responsible for obtaining and reviewing such additional or supplementary examinations, investigations, explorations, tests, studies and data concerning conditions (surface, subsurface and Underground Facilities) at or contiguous to the Site or otherwise, as deemed necessary by its geotechnical engineer, that may affect structural design, cost, progress, performance or furnishing of Work or that relate to any aspect of the means, methods, techniques, sequences or procedures of construction to be employed by the DBE and safety precautions and programs incident thereto, and for performing reasonable on-site inspections for visible conditions, which the DBE deems necessary to make its Bid and for performing and furnishing the Work in accordance with the time, price and other terms and conditions of Contract Documents.

7. ACCESS TO SITE.

7.1 Subject to County approval and reasonable scheduling, County will provide each DBE access to the Site to conduct such examinations and investigations as each DBE deems necessary for submission of its Proposal. To request access to the Site before submitting a Proposal or before receiving a Notice to Proceed, DBEs must complete Document 00 25 17 (Access Request Form and Agreement) and meet all requirements therein.

END OF DOCUMENT

DOCUMENT 00 42 53

PROPOSAL FORM

To: HONORABLE BOARD OF SUPERVISORS OF THE COUNTY OF ALAMEDA

Re: **PROJECT NO. 17033 DESIGN/BUILD SERVICES WITH OWNER PROVIDED EQUIPMENT FOR THE ALAMEDA COUNTY GDDF BOILER UPGRADE PROJECT**

1. The undersigned Bidder, _____, proposes and agrees that, if this Proposal is accepted, Bidder will enter into an agreement with the COUNTY OF ALAMEDA, acting by and through its GENERAL SERVICES AGENCY ("County") in the form included in the Contract Documents and Document 00 52 53 (Agreement) , to perform and furnish all Work specified or indicated in the Contract Documents for the Contract Price and within the Contract Time indicated in this Proposal and in accordance with all other terms and conditions of the Contract Documents.

2. The Bidder accepts all of the terms and conditions of the Contract Documents. The Bidder accepts all of the terms and conditions of Document 00 11 19 (Request for Proposals from Design Build Entities) and all Addenda thereto, including without limitation, those dealing with the disposition of Proposal security. This Proposal will remain subject to acceptance **for ninety (90) Days after the Date of Bidder's submittal of its Proposal**, unless a greater period is authorized by Document 00 11 19, and may not be withdrawn during that time period. The Bidder will sign and submit the Agreement, bond commitments and other documents required by Document 00 11 19 by the time and in the manner set forth therein.

3. In submitting this Proposal Form, the Bidder represents that:

   3.1 Bidder has examined all of the Contract Documents, and

   3.2 Based on that examination, Bidder proposes and agrees to fully perform the Work within the time stated and in strict accordance with the Contract Documents for the following sum of money listed in the following Schedule of Proposal Prices.

4. Bidder must provide the following price breakdown information for proposal evaluation purposes. Price categories are based on the Level 2 National Institute of Standards and Technology Uniformat II Classification System and Bidder is to allocate cost based on this system. The amounts included in the following breakdown must accurately reflect the Bidders estimated costs and shall not exceed the total price identified in Document 00 11 19, Paragraph 12.2.4. This information is for proposal evaluation purposes and will not be used as a schedule of values. The "Total Design Services" amount listed below shall be used to determine the Bidder's Small, Local Emerging Business (SLEB) Program (Document 00 62 40) participation requirements. The "Construction Total" amount listed below shall be used to establish the penal sum for the Construction Performance Bond (Document 00 61 13.13) and determine the Bidder's goals in the Enhanced Construction Outreach Program (Document 00 62 38).

   All proposal items must be filled in completely. Proposal items are described in Sections 01 11 13 (Summary of Work). The price breakdown information included in this Document is intended for proposal evaluation and does not reflect the work sequencing requirements described in

Section 01 12 16 (Work Sequence). Construction must be performed in accordance with the requirements of Section 01 12 16. Quote in numerals only, unless words are specifically requested.

DESIGN SERVICES	**COST (FIGURES)**
Design Development	$
Mechanical/Electrical/Plumbing	$
Structural	$
Construction Administration	$

EQUIPMENT	**COST (FIGURES)**
Heating Hot Water Boilers	$
On-Demand Boilers	$

CONSTRUCTION	**COST (FIGURES)**
Heating Hot Water System Installation	$
On-Demand System Installation	$
Foundations/House Keeping Pads	$
Systems Testing and Balancing	$
Controls and Instrumentation	$
Commissioning	$
Selective Building Demolition	$
Roofing - Coverings/Openings/Repair	$
Utilities	$
Bonds/Insurance	$
Mobilization	$
Overhead	$
General Construction	$

General Conditions & Profit	$

SERVICES	**COST (FIGURES)**
DESIGN SERVICES TOTAL	**$**
EQUIPMENT TOTAL	**$**
CONSTRUCTION TOTAL	**$**
TOTAL CONTRACT PRICE	**$**

5. The undersigned understands that County reserves the right to reject this Proposal, or all proposals, in its sole discretion.

6. If written notice of the acceptance of this Proposal, referred to as the Notice of Award, is mailed or delivered to the undersigned Bidder within the time described in paragraph 2 above or at any other time thereafter before it is withdrawn, the undersigned agrees to execute and deliver the documents required by Document 00 11 19 (Request for Proposals from Bidders) including, but not limited to, Documents 00 52 53 (Agreement), 00 61 13.13 (Construction Performance Bond), 00 61 13.16 (Construction Labor and Material Payment Bond), 00 65 30 ,(Guaranty), and 00 73 16 (Insurance) all within the time and in the manner specified in Document 00 11 19 and 00 51 00 (Notice of Award).

7. Notice of Award or request for additional information may be addressed to the undersigned Bidder at the electronic mail (e-mail) and regular mail address set forth below.

8. The undersigned Bidder agrees to commence work under the Contract Documents on the date established by Document 00 55 00 (Notice to Proceed) and to complete all work within the Contract Times specified in Document 00 52 53 (Agreement).

9. The undersigned Bidder agrees that, in accordance with Document 00 72 53 (General Conditions), liquidated damages for failure to complete all Work under the Contract Documents within the time specified therein shall be as set forth in Document 00 52 53 (Agreement).

10. Bidder is a duly licensed Contractor by the State of California, and with a C20 license having number: _____.

Name of Bidder: _____

By: _____

Title: _____

NOTE: If the Bidder is a corporation, set forth the legal name of the corporation together with the signature of the officer or officers authorized to sign contracts on behalf of the corporation. If the Bidder is a partnership, set forth the name of the firm together with the signature of the partner or

partners authorized to sign contracts on behalf of the partnership. By signing this Proposal, all signers represent and warrant that they are authorized to sign this Proposal on behalf of Bidder.

Business Address: _____

_____

_____

Telephone Number: _____

Electronic Mail Address: _____

Fax Number: _____

Date of Proposal: _____

END OF DOCUMENT

DOCUMENT 00 43 43

LABOR COMPLIANCE PROGRAM

1. PROGRAM REQUIRED.

1.1. In accordance with Public Contract Code Section 20133(a)(3)(B) and Labor Code Section 1771.5(f) the **GDDF Boiler Upgrade** Project will be subject to a Labor Compliance Program monitored and enforced by the California, Department of Industrial Relations ("DIR").

1.2. All contractors and subcontractors are required to comply with all Labor Code Sections pertaining to the payment of prevailing wages and employment of apprentices, including, but not limited to: pay not less than the prevailing rate of wages as determined by the Director of the DIR, to keep certified payroll reports in accordance with Labor Code Section 1776, and, at least monthly, submit certified payroll reports.

1.3. Effective July 1, 2007, the Alameda County Contract Compliance System will be implemented to monitor contract and labor compliance for County contracts through the use an interactive website, Elation Systems. The Bidder and all participating Subcontractors who are awarded contracts as a result of the bid process for this project, are required to use this secure web-based system to submit information including, but not limited to, weekly certified payrolls, monthly progress payment reports and other related information.

1.4. Upon award of contract, it is the Bidder's responsibility to ensure that they and their Subcontractors are registered and trained as required to utilize the Alameda County Contract Compliance System https://www.elationsys.com/app/Registration/ or call Elation Systems at (925) 924-0340.

2. PROJECT LABOR AGREEMENT.

2.1. In accordance with Public Contract Code Section 20133(a)(3)(A), the requirement to have a Labor Compliance Program does not apply to a design-build public works project where the County or the design build entity has entered into a collective bargaining agreement that binds all of the contractors performing work on the Project.

2.2 As stated in Paragraph 5.10 of Document 00 11 19 (Request for Proposals from Design Build Entities), on July 24, 2012, the County's Board of Supervisors authorized the County to enter into a Project Stabilization/ Community Benefit Agreement ("PS/CBA")(also known as a Project Labor Agreement or "PLA") for this Project. After execution by the parties, a copy of the PSA will be provided to the DBE and further amendments will be made to the RFP and the Project Manual to incorporate the requirements of the PSA into the Contract Documents. The PS/CBA (a collective bargaining agreement) may eliminate the requirement for a Labor Compliance Program and this Document 00 43 43 may become inoperative.

END OF DOCUMENT

DOCUMENT 00 45 19

NON-COLLUSION DECLARATION

Public Contract Code Section 7106

TO BE EXECUTED BY BIDDER AND SUBMITTED WITH BID

STATE OF CALIFORNIA)
) ss.
COUNTY OF _____)

The undersigned declares:

I am the _____ of _____, the party making the foregoing Bid.

The Bid is not made in the interest of, or on behalf of, any undisclosed person, partnership, company, association, organization, or corporation. The Bid is genuine and not collusive or sham. The Bidder has not directly or indirectly induced or solicited any other bidder to put in a false or sham bid. The Bidder has not directly or indirectly colluded, conspired, connived, or agreed with any bidder or anyone else to put in a sham bid, or to refrain from bidding. The Bidder has not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the Bid price of the Bidder or any other bidder, or to fix any overhead, profit, or cost element of the Bid price, or of that of any other bidder, or to secure any advantage against the County of anyone interested in the proposed Contract. All statements contained in the bid are true. 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, to any corporation, partnership, company, association, organization, bid depository, or to any member or agent thereof, to effectuate a collusive or sham bid, and has not paid, and will not pay, any person or entity for such purpose. Any person executing this declaration on behalf of a bidder that is a corporation, partnership, joint venture, limited liability company, limited liability partnership, or any other entity, hereby represents that he or she has full power to execute, and does execute, this declaration on behalf of the bidder.

I declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct and that this declaration is executed on _____ [date], at _____[city], _____[state]."

Date: _____

Proper Name of Declarant: _____

Signature: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DOCUMENT 00 45 40.02

BIDDER CERTIFICATIONS

TO BE EXECUTED BY ALL BIDDERS AND SUBMITTED WITH PROPOSAL

The undersigned Bidder certifies to the COUNTY OF ALAMEDA, acting by and through its GENERAL SERVICES AGENCY ("County"), as set forth in paragraphs 1 through 15 below all under the penalty of perjury that:

1. CERTIFICATE OF NON-DISCRIMINATION.

There will be no discrimination in employment with regard to race, color, religion, gender, sexual orientation, or national origin; that all federal, state, and local laws, regulations, directives, and executive orders regarding non-discrimination in employment will be complied with; and that the principle of equal opportunity in employment will be demonstrated positively and aggressively.

2. STATEMENT OF CONVICTIONS.

No final, unappealable finding of contempt of court by a Federal Court has been issued against Bidder within the past two years because of failure to comply with an order of a Federal Court or to comply with an order of the National Labor Relations Board.

3. PREVIOUS DISQUALIFICATIONS.

Neither the below indicated Bidder or any of its officers or employees with a proprietary interest in such Bidder has ever been disqualified, removed or otherwise prevented from bidding on, or completing a Federal, State, or local government project because of a violation of law or a safety regulation except as indicated on the separate sheet attached hereto entitled "Previous Disqualifications." If such exceptions are attached, please explain the circumstances.

4. CERTIFICATION OF WORKER'S COMPENSATION INSURANCE.

I am aware of the provisions of Labor Code § 3700 which requires 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.

5. CERTIFICATION OF PREVAILING WAGE RATES AND RECORDS.

I am aware of the provisions of Labor Code § 1773, which requires the payment of prevailing wage on public projects. Also, that the Design Builder and all of its Subcontractors shall comply with Labor Code § 1776, regarding wage records, and with Labor Code § 1777.5, regarding the employment and training of apprentices. It is the Design Builder's responsibility to ensure compliance by any and all subcontractors performing work under this Contract.

6. CERTIFICATION OF APPRENTICESHIP PROGRAM PARTICIPATION.

Bidder is a party to an agreement with a registered apprenticeship program approved by the California Apprenticeship Council which has graduated apprentices in each of the preceding five years (provided that this graduation requirement shall not apply to programs providing apprenticeship training for any craft that has been deemed by the Department of Labor and the Department of Industrial Relations to be an apprenticable craft in the five years prior to enactment of Public Contract Code § 20133), and that attached hereto is a copy of that agreement, which is true and correct and in full force and effect.

7. CERTIFICATION OF ACCEPTABLE SAFETY RECORD.

Bidder's experience modification rate for the most recent three-year period is an average of 1.00 or less, and its average Total Recordable Injury/Illness rate and average lost work rate for the most recent three-year period does not exceed the applicable statistical standards for its business category or if the Bidder is a party to an alternative dispute resolution system as provided for in Labor Code § 3201.5.

8. CERTIFICATION REGARDING SELECTION PROCESS.

Please check and/or complete <u>one</u> of the following

_____ Bidder has no objections or protests to any Design Builder selection procedure, process or requirement, or any other aspect of the Design Builder selection process, and does not object to any aspect of the Design Builder selection process.

_____ Attached as an appendix to its Proposal consisting of _____ pages, is a detailed description of all of Bidder's objections or protests regarding any aspect of the Bidder selection process. **Bidder must attach an appendix to its Proposal if this item is checked and comply with paragraph 2 of Document 00 11 19 (Request for Proposals from Design-Build Entities).**

9. CERTIFICATION REGARDING MATERIAL CHANGES.

Please check and/or complete <u>one</u> of the following

_____ All information Bidder submitted to County in connection with the Pre-Qualification process, including without limitation its Pre-Qualification Questionnaire, and any modifications, amendments or supplements thereto remains true and correct in all material respects as of the date of submitting its Proposal. All financial information Bidder submitted to County in connection with the Pre-Qualification process remains an accurate representation of the financial strength of Bidder.

_____ Except as identified in Bidder's Material Changes List submitted with Bidder's Proposal, submitted as provided in Document 00 11 19 (Request for Proposals From Design-Build Entities), all information Bidder submitted to County in connection with the Pre-Qualification process, including without limitation its Pre-Qualification Questionnaire, and any modifications, amendments or supplements thereto remains true and correct in all material respects as of the date of submitting its Proposal. All financial information Bidder submitted to County in connection with the Pre-Qualification process remains an accurate representation of the financial strength of Bidder.

10. CERTIFICATION REGARDING USE AND OWNERSHIP OF INFORMATION.

All rights to information developed, disclosed or provided in the undersigned's Proposal and the attendant submissions are the property of County, unless Bidder makes specific reference to data that is considered proprietary. To the extent the undersigned Bidder claims any copyright, patent or other property right in any portion of its Proposal, submission of a Proposal constitutes Bidder's express (a) grant and assignment of a perpetual, transferable (in whole or in part), non-exclusive, royalty-free license to County for all such portions, and (b) agreement that County may use any such intellectual property without charge for any lawful purpose in connection with its **JJC Boiler Upgrade Project** or other County project, including without limitation the creation of derivative works and issuance of sublicenses.

11. CERTIFICATION REGARDING GOVERNMENT CODE SECTION 4420.

Bidder does not have serious or willful violations of Part 1 (commencing with § 6300) of Division 5 of the Labor Code, during the past five-year period or Bidder is taking appropriate corrective action to prevent further violations of Part 1 of Division 5 of the Labor Code; Bidder's workers' compensation experience modification factor is below 1.25 or Bidder's experience modification rate is 1.25 to 1.75 and Bidder is taking all appropriate action to reduce employee workplace injuries, illnesses and workers' compensation losses; and Bidder has an injury prevention program in place pursuant to Labor Code § 3201.5 or § 6401.7.

12. CERTIFICATION REGARDING HAZARDOUS MATERIALS

12.1 Bidder hereby certifies that no Asbestos, or Asbestos-Containing Materials, polychlorinated biphenyl (PCB), or any material listed by the federal or state Environmental Protection Agency or federal or state health agencies as a hazardous material, or any other material defined as being hazardous under federal or state laws, rules, or regulations ("New Hazardous Material"), shall be furnished, installed, or incorporated in any way into the Project or in any tools, devices, clothing, or equipment used to effect any portion of Bidder's work on the Project for County.

12.2 Bidder further certifies that it has instructed its employees with respect to the above-mentioned standards, hazards, risks, and liabilities.

12.3 Asbestos and/or asbestos-containing material shall be defined as all items containing but not limited to chrysotile, crocidolite, amosite, anthophyllite, tremolite, and actinolite. Any or all material containing greater than one-tenth of one percent (.1%) asbestos shall be defined as asbestos-containing material.

12.4 Any disputes involving the question of whether or not material is New Hazardous Material shall be settled by electron microscopy or other appropriate and recognized testing procedure, at the County's determination. The costs of any such tests shall be paid by Bidder if the material is found to be New Hazardous Material.

12.5 All Work or materials found to be New Hazardous Material or Work or material installed with equipment containing "New Hazardous Material" will be immediately rejected and this Work will be removed at Bidder's expense at no additional cost to the County.

13. PROPOSAL PASS/FAIL ITEM

13.1 LEFT INTENTIONALLY BLANK.

14. CERTIFICATION RE: IRAN CONTRACTING ACT OF 2010

IRAN CONTRACTING ACT CERTIFICATION (Public Contract Code Section 2200 *et seq.*)

As required by California Public Contract Code Section 2204, the Bidder certifies subject to penalty for perjury that the option checked below relating to the Bidder's status in regard to the Iran Contracting Act of 2010 (Public Contract Code Section 2200 *et seq.*) is true and correct:

☐ The Bidder is not:

(i) identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203; or

(ii) a financial institution that extends, for 45 days or more, credit in the amount of $20,000,000 or more to any other person or entity identified on the current list of persons and entities engaging in investment activities in Iran prepared by the California Department of General Services in accordance with subdivision (b) of Public Contract Code Section 2203, if that person or entity uses or will use the credit to provide goods or services in the energy sector in Iran.

☐ Agency has exempted the Bidder from the requirements of the Iran Contracting Act of 2010 after making a public finding that, absent the exemption, Agency will be unable to obtain the goods and/or services to be provided pursuant to the Contract.

or

☐ The amount of the Contract payable to the Bidder for the Project does not exceed $1,000,000.

Note: In accordance with Public Contract Code Section 2205, false certification of this form shall be reported to the California Attorney General and may result in civil penalties equal to the greater of $250,000 or twice the Contract amount, termination of the Contract and/or ineligibility to bid on contracts for three years.

15. FALSE CLAIMS ACT CERTIFICATION

Bidder certifies under penalty of perjury under the laws of the State of California that any and all applications for payment will represent the true and correct statement of the work performed and the materials and supplies purchased. "Bidder acknowledges that it is a violation of the False Claims Act (Government Code § 12650, et seq.) to knowingly present or cause to be presented a false claim for payment or approval."

16. **DEFINITIONS.**

All capitalized terms not otherwise defined in these Bidder Certifications shall have the meanings provided in Document 00 11 19 (Request for Proposals from Bidders), Section 01 42 00 (References) or Section 01 42 16 (Definitions).

Bidder _____
[Name of Bidder]

By: _____
[Signature]

Name: _____
[Printed Name]

Its: _____
[Title]

Dated: _____

END OF DOCUMENT

DOCUMENT 00 51 00

NOTICE OF AWARD

Dated _____, 2018

TO: _____

ADDRESS: _____

_____

_____

COUNTY PROJECT NO. **17033**

PROJECT: **GDDF BOILER UPGRADE**

COUNTY CONTRACT NO.: _____

CONTRACT FOR: DESIGN-BUILD SERVICES FOR THE GLENN DYER DETENTION FACILITY BOILER UPGRADE PROJECT

The Contract Price of your contract is the Contract Price provided in Document 00 52 53 (Agreement), which is _____ Dollars (**$_____**), subject to any additions and deductions by Change Order, as provided in the Contract Documents.

Upon commencement of the Work, you and each of your subcontractors shall certify and make available for inspection payroll records on forms provided by the Division of Labor Standards Enforcement, in accordance with Section 1776 of the California Labor Code.

In accordance with Article 26 of Document 00 11 19 (Request for Proposals from Bidders), you must comply with the following conditions precedent **within ten (10) Days of the date of this Notice of Award**, that is by _____, 2018:

1. Deliver to the County six fully executed counterparts of Document 00 52 53 (Agreement) each bearing your original signatures where required.

2. Deliver to the County Document 00 61 13.13 (Construction Performance Bond) executed by you and your surety, bearing original signatures, Power of Attorney, and verifications.

3. Deliver to the County Document 00 61 13.16 (Construction Labor and Material Payment Bond) executed by you and your surety, bearing original signatures, Power of Attorney, and verifications.

4. Deliver to the County Document 00 65 30 (Guaranty) executed by you.

5. Deliver to the County all insurance information and certificates required by Document 00 73 16 (Insurance).

6. Deliver to the County the materials received or generated by you in preparation of your Proposal, as set forth in Document 00 61 31 (Escrow Bid Documents) **within 15 days of the date of this Notice of Award.**

Failure to comply with these conditions within the time specified will entitle County to consider your Proposal abandoned, to annul this Notice of Award, and to declare your Proposal Security forfeited. Alternatively, the County may, in its sole discretion, commence the Contract Time, if Design Build Entity fails to submit all of the items required in this Document 00 51 00 within the specified time.

Within ten (10) Days after you comply with those conditions, County will return to you one fully signed counterpart of the Agreement with the Contract Documents attached.

COUNTY OF ALAMEDA, acting by and through its GENERAL SERVICES AGENCY

By: _____

Name/Title: _____

END OF DOCUMENT

DOCUMENT 00 51 00.01

NOTICE OF INTENT TO AWARD

DATE ISSUED: **_____, 2018**

PROJECT NUMBER: **17033**

PROJECT TITLE: **GDDF Boiler Upgrade**

CONTRACT FOR: **DESIGN-BUILD SERVICES FOR THE GLENN DYER DETENTION FACILITY BOILER UPGRADE PROJECT**

I, Willie Hopkins Jr., the Director of the General Service Agency**,** intend to recommend to the Board of Supervisors of the County of Alameda the award of the above-referenced project to

_____.
(Name of Design Build Entity)

Any Proposal protest must be submitted in writing to County's office at the address in Paragraph 5.13 (Protest Procedure) of Document 00 11 19 (Request for Proposals from Design Build Entities), **before 5:00 pm on the fifth (5th) Business Day following issuance of this Notice of Intent to Award**. Protests must conform to the requirements of Paragraph 5.13 of Document 00 11 19.

SIGNATURE _____ DATE _____

Willie Hopkins Jr., DIRECTOR
GENERAL SERVICES AGENCY
COUNTY OF ALAMEDA

END OF DOCUMENT

DOCUMENT 00 52 53

AGREEMENT

FOR DESIGN BUILD SERVICES WITH OWNER PROVIDED EQUIPMENT
ON THE
GDDF Boiler Upgrade PROJECT

THIS AGREEMENT, made this _____ day of _____, 2018, by and between **[DESIGN BUILDER**] whose place of business is at **[ADDRESS]** hereinafter called ("Design Builder"), and the COUNTY OF ALAMEDA, acting by and through its GENERAL SERVICES AGENCY, hereinafter referred to as ("County").

In consideration of the mutual covenants hereinafter set forth, Design Builder and County agree as follows:

1. **WORK.** Design Builder shall provide, furnish, and perform all necessary planning, architectural, engineering, all other design services of any type, procurement, permitting and support services, construction, landscaping, clean-up, all other construction services of any type, and shall provide and furnish all necessary supplies, materials and equipment (except those to be provided by County, if any) and all necessary supervision, labor, and services required for the complete engineering, design, procurement, quality assurance, construction and all necessary installation, start-up and testing required for the Work to be a complete, operational, and fully functional Project, as further described in Sections 01 11 13 (Work Covered by Contract Documents) and 01 11 20 (Design Services and Deliverables). Hereinafter, the all-inclusive obligations of the Design Builder set forth in the Contract Documents shall be referred to as the "Work". Design Builder shall fully commission and deliver the Work to the County as a complete, operational, and fully functional portion of the Project. Without limiting the generality of this Document 00 52 53, Design Builder shall provide the following work and Services:

   1.1 Design Builder shall prepare complete designs, engineering, working drawings, shop drawings and generate documents, drawings and/or engineering analysis setting forth in detail the specifications and requirements for the purchasing and procurement of the services, materials and equipment and for construction of the Work, and shall furnish the services of all necessary supervisors, engineers, designers, draftsmen, and other personnel necessary for the preparation of those drawings and specifications required for the Work, including the pertinent information for natural gas, water supply, and any other utilities, as required.

   1.2 Design Builder shall provide, install and complete as specified and pay for all labor, materials and equipment, tools, supplies, construction equipment and machinery, construction, start-up and testing, utilities, transportation, and other facilities and services (including any temporary materials, equipment, supplies and facilities) necessary for the proper execution and completion of the Work, including the permanent interconnection for electricity, natural gas, water supply, waste drainage systems and any other utilities and demonstration of fully satisfactory operation of all systems and equipment.

   1.3 Design Builder shall supervise and direct the Work, and shall furnish the services of all supervisors, forepersons, skilled and unskilled labor, and all other personnel necessary to design and construct the complete, operational, and fully functional Project. Design

Builder shall provide, manage and organize such personnel as necessary to complete the Work in accordance with all requirements of the Contract Documents.

1.4 Design Builder shall obtain all governmental and private approvals, licenses, and permits required to complete the Work; and be responsible for paying the cost of all such approvals, licenses, and permits including any County imposed fees. Design Builder shall design and construct the Work to be a complete, operational, and fully functional part of the Project in full compliance with all Legal Requirements (both public and private), including but not limited to, the standards included and warranties expressed in the Contract Documents and manufacturers' recommendations pertaining to individual items of equipment or systems.

2. PROJECT REPRESENTATIVES.

2.1 County may assign all or part of its rights, responsibilities and duties to a County Representative. County shall inform Design Builder in writing of such assignment and the extent of its representative's authority.

2.2 All notices or demands to County under the Contract Documents shall be to County's Representative at:

County of Alameda
Seri Traver, Energy Project Manager
General Services Agency
1401 Lakeside Drive, Suite 1115
Oakland, CA 94612

or to such other person(s) and address(es) as County shall provide to Design Builder.

2.3 All notices or demands to Design Builder under the Contract Documents shall be to Design Builder's Representative at:

_____
_____
_____
_____
_____

or to such other person(s) and address(es) as Design Builder shall provide to County.

3. CONTRACT TIME(S) AND LIQUIDATED DAMAGES.

3.1 Design Builder shall complete the Work within the following schedule reflecting the date the Contract Time(s) commences to run as set forth in Section 00 55 00 (Notice to Proceed) and Section 00 72 53 (General Conditions).

3.2 Design Builder acknowledges that it is responsible for obtaining all required approvals from Other Authorities Having Jurisdiction related to the Project and that Design Builder accepts all time- and cost-related risk relating to those approvals.

3.3 Design Builder acknowledges that time is of the essence with respect to the Project, and that the County and its Project Partners will be damaged by any delay in achieving those deadlines.

3.4 Contract Time(s)s are as follows:

3.4.1 Design Builder shall achieve Final Completion of the Project **within TWO HUNDRED SEVENTY (270) Days of the issuance of the Notice to Proceed with Construction.** Design Builder agrees it shall obtain all necessary approvals from Other Authorities Having Jurisdiction that are required to operate the Project within the Contract Time(s).

3.5 Liquidated Damages.

3.5.1 The County and Design Builder recognize that time is of the essence in this Agreement and that the County and/or its Project Partners may suffer financial loss in the form of additional contract administration expenses (including but not limited to project management and consultants' expenses, other losses, such as facility lease costs, capitalized interest on bond funding, and delay and loss of public use if the Work is not completed within the time specified in paragraph 3.3 above plus any extensions thereof allowed in accordance with the Contract Documents. Consistent with Article 15 (Time Allowances) of Section 00 72 53 (General Conditions) and paragraph 3.3 above, Design Builder and County agree that because of the nature of the Project, it would be impractical or extremely difficult to fix the amount of actual damages incurred by County and/or its Project Partners because of a delay in completion of the Work.

Accordingly, If the Design Builder fails to achieve Completion of the construction within the times specified in paragraph 3.4, Design Builder shall pay County as liquidated damages and not as a penalty, the following sum of money per Day for each Day after the Contract Time that the Design Builder **does not achieve Substantial Completion of the Work: Two Thousand Dollars ($2,000)** per Day.

3.6 Liquidated damages for delay shall cover and be in lieu of the actual damages suffered by County and/or it's Project Partners as a result of delay. Liquidated damages are intended to compensate County for damages it incurs as a result of delay, but do not cover the cost of completion of the Work or any other damages not arising solely from delay.

4. CONTRACT PRICE.

4.1 County shall pay the Design Builder _____ Dollars ($_____) as the "Contract Price" for performance of Work in accordance with the Contract Documents, subject to adjustment as provided in the Contract Documents.

4.2 The Contract Price is all inclusive and includes all required approvals from Other Authorities Having Jurisdiction, fees, permits, work; all federal, state, and local taxes on materials and equipment, and labor furnished by Design Builder, its Subcontractors, Subconsultants, architects, engineers, and vendors or otherwise arising out of Design

Builder's performance of the Work, including any increases in any such taxes during the term of this Agreement. The taxes covered hereby include (but are not limited to) occupational, sales, use, excise, unemployment, FICA, and income taxes, customs, duties, and any and all other taxes on any item or service that is part of the Work, whether such taxes are normally included in the price of such item or service or are normally stated separately. Notwithstanding the foregoing, each party shall bear such state or local inventory, real property, personal property or fixtures taxes as may be properly assessed against it by applicable taxing authorities.

4.3 Design Builder will provide insurance coverage as outlined in Document 00 73 16 (Insurance). The Contract Price will exclude all costs for insurance the Design Builder is required by the Contract Documents to carry.

5. **DESIGN BUILDER'S REPRESENTATIONS AND WARRANTIES.** In order to induce County to enter into this Agreement, Design Builder makes the following representations and warranties:

5.1 Design Builder has visited the Site and has examined the nature and extent of the Work, Site, locality, actual conditions, as-built conditions, labor availability and all local conditions and Applicable Laws that in any manner may affect cost, progress, performance or furnishing of Work or which relate to any aspect of the design and the means, methods, techniques, sequences or procedures of construction to be employed by Design Builder and safety precautions and programs incident thereto.

5.2 Design Builder has examined all reports of exploration and tests of subsurface conditions, as-built drawings, drawings or reports, available for design and construction purposes, of physical conditions that have been provided by the County, including those which are identified in Documents 00 31 26 (Hazardous Materials Surveys) or 00 31 32 (Geotechnical Data and Existing Conditions), or conditions that may be apparent at the Site.

5.3 After contract award, Design Builder will conduct or obtain any additional examinations, investigations, explorations, tests, reports and studies, including but not limited to geotechnical investigations upon which the design will be based, that pertain to the surface and subsurface conditions, as-built conditions, Underground Facilities and all other physical conditions at or contiguous to the Site as Design Builder considers necessary for the performance or furnishing of Work at the Contract Price, within the Contract Time(s) and in accordance with the other terms and conditions of the Contract Documents.

5.4 Design Builder has correlated its knowledge and the results of all such observations, examinations, investigations, explorations, tests, reports and studies with the terms and conditions of the Contract Documents.

5.5 Design Builder has given County prompt written notice of all conflicts, errors, ambiguities, or discrepancies that it has discovered before contract award in or among the Contract Documents and as-built drawings and actual conditions and acknowledges that the written resolution thereof through Addenda issued by County is acceptable to Design Builder.

5.6 Design Builder is a _____ [type of business entity] duly organized, existing, and in good standing under the laws of the State of California, and is duly qualified and licensed to conduct business in the State of California. Design Builder is a duly licensed contractor, holding an active Class B (General Building Contractor) license issued by the State of California Contractors License Board.

5.7 Design Builder has duly authorized the execution, delivery and performance of this Agreement, the other Contract Documents and the Work to be performed herein. The Contract Documents do not violate or create a default under any instrument, agreement, order or decree binding on Design Builder.

5.8 Design Builder confirms its intent to engage the following pre-qualified Subcontractors, who were listed in the Design Builder's Response to Request for Proposal. Design Builder acknowledges its responsibility to provide County with a complete and updated list of Subcontractors as they become known, and that such listing shall be in accordance with the requirements of Public Contract Code §§ 4100, et seq. and 22164.

Name of Subcontractor and Location of Mill or Shop	Description of Work: Reference To Proposal Items	

6. KEY INDIVIDUALS

6.1 The individuals Design Builder and its Core Organizations named in the Response to Request for Statements of Pre-Qualification and/or Proposal were a material element of the County's selection of Design Builder to receive the award of the Contract, and performance by those individuals on the Project in their designated roles is of paramount importance to the County. Those individuals designated as Key Individuals are listed in Attachment One to this Agreement, which Attachment is hereby incorporated into this Agreement. Design Builder understands, has ascertained and agrees that the County will actually sustain damages if any Key Individuals are transferred or assigned to other

projects or duties materially different than those for which they were identified. Accordingly, Design Builder will:

6.1.1 Provide County with a **minimum TEN (10) days prior written notice of any changes** of one or more Key Individuals assigned to the Project,

6.1.2 Provide a resume or statement of the experience of any person proposed to replace a Key Individual **at least FIFTEEN (15) days before the Key Individual leaves the Project.** If County determines, in its sole discretion, that the proposed replacement is not a suitable replacement, Design Builder shall promptly present other suitable candidates until County agrees to a replacement.

6.1.3 Not replace any Key Individual with any person to whom the County has a reasonable objection.

6.1.4 Pay County the amounts specified below as liquidated damages, and not as a penalty, if Design Builder transfers any Key Individual off the Project, or assigns a Key Individual to other projects or to duties materially different than those for which they were listed in the Proposal without County's prior written approval, which may be given or withheld in the County's sole discretion. The amounts will be paid per month, per person, until County is satisfied, in its sole discretion, that the replacement person is performing at a standard equivalent to that of the Key Individual replaced, transferred or reassigned. The Design Builder and the County agree that such specified measures of liquidated damages shall be presumed to be the damages actually sustained by the County as defined below, and that because of the nature of the Project, it would be impracticable or extremely difficult to fix the actual damages.

Position with DBE or Core Organizations	**Damages (per person)**
1. Design Builder's Project Manager 2. Engineer's Principal-in-Charge 3. Engineer's Project Engineer 4. Mechanical Contractor's Superintendent 5. Mechanical Contractor's Safety Officer	$5,000/month 2 month minimum

6.2 The provisions of paragraph 6.1, above will not apply if a Key Individual is no longer employed by Design Builder or the Core Organizations, dies, or is disabled from performing his or her duties, as determined by a qualified physician and confirmed in a writing delivered to County.

7. CONTRACT AND OTHER DOCUMENTS.

7.1 The Contract Documents which comprise the entire agreement between County and Design Builder concerning the Project consist of the following, each of which is incorporated herein by this reference, including all changes, addenda and modifications thereto:

7.1.1 Request for Proposals from Design-Build Entities (dated _____, 2018) and including all addenda, attachments and appendices)

7.1.2 Bridging Documents include existing as-built conditions and equipment performance specifications to be used as a reference and not for construction.

7.1.3 Contract Requirements

Division 00 (Alameda County Document) as listed in the Table of Contents
Division 01 (Alameda County Document) as listed in the Table of Contents
Division 02 (Alameda County Document) as listed in the Table of Contents
Division 03 (Alameda County Document) as listed in the Table of Contents
Division 05(Alameda County Document) as listed in the Table of Contents
Division 06 (Alameda County Document) as listed in the Table of Contents
Division 07 (Alameda County Document) as listed in the Table of Contents
Division 09 (Alameda County Document) as listed in the Table of Contents
Division 23 (Alameda County Document) as listed in the Table of Contents
Division 26 (Alameda County Document) as listed in the Table of Contents
Division 28 (Alameda County Document) as listed in the Table of Contents

7.1.4 PS/CBA, dated (fill in date)

7.1.5 Design Build Entity's Proposal dated _____, as amended by _____ and accepted by County, including all addenda.

7.1.6 Request for Prequalification Submittals from Design Build Entities, dated March 23, 2018, including all addenda

7.1.7 Design Build Entity's Prequalification Submittal package, including all attachments and appendices

7.1.8 Change orders and Contract Modifications executed in accordance with the Contract Requirements

7.2 The Contract Documents define the requirements for design and construction unless otherwise specifically excluded, modified or amended by the Design Builder's Proposal, and accepted by County.

7.3 Any conflict between or among Contract Documents shall be resolved pursuant to paragraph 5.8 (Order of Precedence) of Document 00 72 53 (General Conditions).

7.4 Construction Documents produced by the Design Builder may serve as contract documents between the Design Builder and a Subcontractor. As to the County and Design Builder, however, the Construction Documents are prepared as part of the Work and do not replace the Contract Documents.

7.5 There are no Contract Documents other than those listed above in paragraph 6.1 of this Document 00 52 53 (Agreement). The Contract Documents may only be amended, modified, or supplemented as is provided in Document 00 72 53 (General Conditions).

7.6 The Project Manual also includes Reference Documents, which contain information relevant to the Project but are not part of the Contract Documents. The following documents are Reference Documents provided for the Design Builder's convenience:

8. MISCELLANEOUS.

8.1 Terms used in this Agreement are defined in Document 00 72 53 (General Conditions) and Section 01 42 16 (Definitions), and will have the meaning indicated therein.

8.2 It is understood and agreed that in no instance is any person signing this Agreement for or on behalf of County or acting as an employee or representative of County liable on this Contract or upon any warranty of authority, or otherwise, and it is further understood and agreed that liability of County is limited and confined to such liability as authorized or imposed by the Contract Documents or applicable law.

8.3 Design Builder shall not assign any portion of the Contract Documents, and may subcontract portions of the Contract Documents only in compliance with Section 00 62 30 (Subcontractor/Subconsultant Procurement) and the subcontractor listing requirements of Public Contract Code §§ 4100 et seq. and 22164.

8.4 The Contract Price includes all Allowances (if any).

8.5 In entering into a public contract or a subcontract to supply goods, services or materials pursuant to a public contract, the Design Builder or subcontractor irrevocably offers and agrees to assign to the awarding body all rights, title and interest in and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. § 15) or under the Cartwright Act, (Chapter 2 (commencing with § 16700) of Part 2 of Division 7 of the Business and Professions Code), arising from purchases of goods, services or materials pursuant to the public works contract or the subcontract. This assignment shall be made and become effective at the time County tenders final payment to the Design Builder, without further acknowledgment by the parties.

8.6 Copies of the general prevailing rates of per diem wages for each craft, classification, or type of worker needed to execute the Contract, as determined by Director of the State of California Department of Industrial Relations, are on file at County's office, and shall be made available to any interested party on request. Pursuant to Labor Code § 1861, Design Builder represents that it is aware of the provisions of Labor Code § 3700 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 Design Builder shall comply with such provisions before commencing the performance of the Work of the Contract Documents.

8.7 Should any part, term or provision of this Agreement or any of the Contract Documents, or any document required herein or therein to be executed or delivered, be declared invalid, void or unenforceable, all remaining parts, terms and provisions shall remain in full force and effect and shall in no way be invalidated, impaired or affected thereby. If the provisions of any law causing such invalidity, illegality or unenforceability may be waived, they are hereby waived to the end that this Agreement and the Contract Documents may be deemed valid and binding agreements, enforceable in accordance with their terms to the greatest extent permitted by applicable law. In the event any provision not otherwise included in the Contract Documents is required to be included by any applicable law, that provision is deemed included herein by this reference (or, if such provision is required to be included in any particular portion of the Contract Documents,

that provision is deemed included in that portion).

8.8 This Agreement shall be deemed to have been entered into in the State of California, County of Alameda, and shall be governed in all respects by California law (excluding conflicts of laws).

8.9 Design Builder accepts the claims procedures established by Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions) and Government Code §§ 930 through 930.6.

8.10 County shall have the right to fully review and approve all phases of Design Builder's design including, but not limited to, drawings, specifications, shop drawings, samples, submittals, reports, and other Contract Documents, as specified in the Contract Documents. Such review, approval and other action shall not relieve Design Builder of its responsibility for a complete, coordinated design complying with the requirements of the Contract Documents; but rather, such review and approval shall be in furtherance of County's monitoring and accepting the design as developed and issued by the Design Builder, consistent with these Contract Documents. Design Builder's responsibility to design and construct the Project in conformance with the Contract Documents is absolute.

CONTRACTORS ARE REQUIRED BY LAW TO BE LICENSED AND REGULATED BY THE CONTRACTORS' STATE LICENSE BOARD WHICH HAS JURISDICTION TO INVESTIGATE COMPLAINTS AGAINST CONTRACTORS IF A COMPLAINT REGARDING A PATENT ACT OR OMISSION IS FILED **WITHIN FOUR YEARS OF THE DATE OF THE ALLEGED VIOLATION.** A COMPLAINT REGARDING A LATENT ACT OR OMISSION PERTAINING TO STRUCTURAL DEFECTS MUST BE FILED **WITHIN 10 YEARS OF THE DATE OF THE ALLEGED VIOLATION.** ANY QUESTIONS CONCERNING A CONTRACTOR MAY BE REFERRED TO THE REGISTRAR, CONTRACTORS' STATE LICENSE BOARD, P.O. BOX 26000, SACRAMENTO, CALIFORNIA 95826.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement the day first mentioned above.

"County"	COUNTY OF ALAMEDA, acting by and through its GENERAL SERVICES AGENCY By: _____ Title: _____
"Design Builder"	DESIGN BUILDER By: _____ Its: _____

APPROVED AS TO FORM:
DONNA R. ZIEGLER, COUNTY COUNSEL

BY: _____
NAME: _____
TITLE: _____

END OF DOCUMENT

ATTACHMENT ONE

LIST OF KEY INDIVIDUALS

POSITION: KEY INDIVIDUAL

Design Builder's Project Manager: _____

Engineer's Principal-in-Charge: _____

Engineer's Project Engineer: _____

Mechanical Contractor's Superintendent: _____

Mechanical Contractor's Safety Officer: _____

SECTION 00 55 00

NOTICE TO PROCEED

TO BE SENT IN MANNER REQUIRED BY CONTRACT DOCUMENTS

Dated _____, 2018

TO: _____

ADDRESS: _____

_____

_____

COUNTY PROJECT NO.: **17033**

PROJECT: **GDDF BOILER UPGRADE**

COUNTY CONTRACT NO.: _____

CONTRACT FOR: **DESIGN-BUILD SERVICES FOR THE GLENN DYER DETENTION FACILITY BOILER UPGRADE PROJECT**

You are notified that the Contract Time under the above contract will commence to run on _____, **2018.** By that date, you are to start performing your obligations under the Contract Documents. In accordance with Article 3 (Contract Time and Liquidated Damages) of Document 00 52 53 (Agreement):

1. Design Builder shall achieve Final Completion of the Project **within TWO HUNDRED SEVENTY (270) Days of the issuance of the Notice to Proceed.** Design Builder agrees it shall obtain all necessary approvals from Other Authorities Having Jurisdiction that are required to operate the Project within the Contract Time(s).

Before you may start any Work at the site, you must: (add conditions)

1. Deliver three (3) fully executed copies of Document 00 52 53 (Agreement), each bearing all required original signatures.

2. Deliver fully executed original of Document 00 61 13.13 (Construction Performance Bond).

3. Deliver fully executed original of Document 00 61 13.16 (Construction Labor and Material

Payment Bond).

4. Deliver fully executed original of Document 00 65 30 (Guaranty).

5. Deliver all Insurance forms, documents, certificates and endorsements required for Design Builder and all Subcontractors that will be performing work at the Site.

6. Other

COUNTY OF ALAMEDA, acting by and through its
GENERAL SERVICES AGENCY

By: _____

Print Name: _____

Title: _____

END OF DOCUMENT

DOCUMENT 00 61 13

BOND ACCOMPANYING PROPOSAL

KNOW ALL PERSONS BY THESE PRESENTS:

That, _____ [**Design Builder],** hereinafter called the PRINCIPAL, and _____ **[Surety],** a corporation duly organized under the laws of the State of _____, having its principal place of business at _____ in the State of _____ and authorized to transact surety business in the State of California, hereinafter call the SURETY, are held and firmly bound unto the **COUNTY OF ALAMEDA acting by and through its GENERAL SERVICES AGENCY** (COUNTY), hereinafter called the OBLIGEE, on order, in the sum of _____ Dollars ($_____) (being at least ten percent (10%) of the total amount of PRINCIPAL'S Proposal Contract Price, including all alternates, if any) lawful money of the United States, for the payment of which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITIONS OF THIS OBLIGATION ARE SUCH THAT:

WHEREAS, the PRINCIPAL has submitted its Proposal for the project entitled **GDDF Boiler Upgrade Project No. 17033,** to the OBLIGEE, the Proposal, is hereby incorporated into and made part of this Bond.

NOW, THEREFORE, if PRINCIPAL'S Proposal is rejected or, in the alternate, if the Proposal is accepted and the PRINCIPAL signs and delivers Document 00 52 53 (Agreement) and furnishes a fully executed Payment Bond (Document 00 61 13.16) and Performance Bond (Document 00 61 13.13), evidence of the insurance and other documents required under the Contract Documents in the forms and within the time required by the Contract Documents, then this obligation shall become null and void, otherwise the same shall remain in full force and effect and if PRINCIPAL fails and/or refuses to execute and deliver those documents, this Bond will be charged with the costs of the damages the COUNTY incurs as a result of PRINCIPAL's failure or default, including but not limited to the amount, in dollars, of the difference between the Principal's Proposal Contract Price and the amount for which COUNTY may contract for performance of the Project, as liquidated damages. Such forfeiture and liquidated damages under this bond shall be without prejudice to the OBLIGEE'S right to pursue any excess actual damages from the PRINCIPAL for breach of contract or otherwise.

The SURETY, for value received, hereby agrees that the obligations of the SURETY and its bond shall not be impaired or affected by any extension of the time within which the OBLIGEE may accept such Proposal, and the SURETY hereby waives notice of any such extension.

REST OF THIS PAGE IS BLANK

In the event suit is brought upon this bond by the OBLIGEE and judgment is recovered, the SURETY shall pay, in addition to the sum set forth above, all costs incurred by the OBLIGEE in such suit, including reasonable attorney's fees and expert witness fees, to be fixed by the court.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals this _____ day of _____, **2018**, the name and corporate seal of each corporate party being hereto affixed and these presents duly assigned by its undersigned representative, pursuant to authority of its governing body.

DESIGN BUILDER AS PRINCIPAL	**SURETY**
[affix corporate seal]	[affix corporate seal]
By: _____	By: _____
Name and Title: _____	Name and Title: _____
Address:	Address:
_____	_____
_____	_____
_____	_____
_____	_____

Note: Signature of person executing for SURETY must be notarized and evidence of corporate authority attached.

END OF DOCUMENT

DOCUMENT 00 61 13.13

CONSTRUCTION PERFORMANCE BOND

The County of Alameda, California, acting by and through its General Services Agency, ("County" or "Obligee"), and _____[name of Design Builder] ("Principal" or "Design Builder"), have entered into a written contract dated _____, **2018** for furnishing of all labor, materials, equipment, transportation and services for the design and construction of the **GDDF Boiler Upgrade Project No. 17033** ("Contract") the terms and conditions of which Contract are incorporated herein by reference; and the terms and conditions of the Contract require the Principal to furnish performance security.

NOW, THEREFORE, Principal and _____ ("Surety"), are hereby held and firmly bound unto the County in the amount of $_____, which is the sum of all construction work, including bonds, insurance, permits and fees ("Construction Work") required under the Contract for the Work and is entered into by and between the parties listed below to ensure the faithful performance of the Contract, for payment of which Principal and Surety hereby bind themselves, their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

This Bond consists of this page and the Bond Terms and Conditions, Articles 1 through 14, attached to this page and incorporated herein by this reference. Any singular reference to the County, or Principal, or Surety, or other party shall be considered plural where applicable.

COUNTY OF ALAMEDA GDDF BOILER UPGRADE PROJECT NO. 17033

Attn: _____
at **550 6th Street, Oakland, CA**

DATED _____, **2018** in
the amount of $ _____

DESIGN BUILDER AS PRINCIPAL	**SURETY**
By: _____	By: _____
Name and Title: _____	Name and Title: _____
Address:	Address:
_____	_____
_____	_____
_____	_____
_____	_____

Note: Signature of person executing for SURETY must be notarized and evidence of corporate authority attached.

BOND TERMS AND CONDITIONS

1. The Design Builder and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to County for the complete and proper performance of the Contract, which is incorporated herein by reference.

2. If the Design Builder completely and properly performs all of its obligations under the Contract, including but not limited to the obligations to defend, indemnify and hold harmless the County and other parties named in the Contract, and the two-year guarantee of all materials and workmanship, the Surety and the Design Builder shall have no obligation under this Bond, otherwise it shall be and remain in full force and effect.

3. The Surety's obligation under this Bond shall arise after:

   3.1 County has declared a Design Builder Default under the Contract pursuant to the terms of the Contract; and

   3.2 County has provided written notice to Surety and the Design Builder of the Default in accordance with Section 13.9 of the General Conditions

4. When County has satisfied the conditions of Article 3 above, the Surety shall promptly (**within fifteen (15) Days of the date County gives Notice of Default**) and at the Surety's expense, remedy the Default pursuant to the Contract Documents, or shall promptly, at the County's option take one of the following actions:

   4.1 Arrange for the Design Builder, with consent of County, to perform and complete the Construction Work under the Contract unless the County, in its sole discretion, expresses its objection; or

   4.2 Undertake to perform and complete the Contract itself, through an independent contractor fully qualified to perform and complete the Contract and to which the County does not reasonably object. In order to be fully qualified under this Article 4.2, an independent contractor may not be in any way, presently or formerly, associated with or related to the Design Builder in any form, or to its officers or employees. County may reject, in its sole discretion, use of the Design Builder as an agent or subcontractor of an independent contractor.

   4.3 Obtain bids from qualified contractors acceptable to County for a contract for performance and completion of the Construction Work under the Contract (other than the original Design Builder), and, upon determination by County of the most qualified contractor offering the greatest value, arrange for a contract to be prepared for execution by County and the contractor selected with County's concurrence, to be secured with performance and payment bonds executed by a qualified surety on the same forms of the bonds issued on the Contract; and, make available as work progresses sufficient funds to pay the cost of completion of the Project, less the Balance of the Contract Price, including other costs and damages for which Surety may be liable; or

   4.4 Permit the County to complete the Project in any manner consistent with California law and make available as work progresses sufficient funds to pay the cost of completion of the Contract, less the Balance of the Contract Price, including other costs and damages for which Surety may be liable. After investigation and consultation with County,

determine in good faith its monetary obligation for which it may then be liable to County under Article 6, below, for the performance and completion of the Contract and, as soon as practicable after the amount is determined, tender payment therefor to County with full explanation of the payment's calculation. If County exercises this option, County may still hold Surety liable for future damages then unknown or liquidated or unliquidated damages resulting from the Design Builder Default, and County may exercise all remedies available to it at law to enforce the Surety's liability under Article 6, below.

5. If the Surety does not proceed as provided in Article 4 above, then the Surety shall be deemed to be in Default on this Bond **ten (10) Days after receipt of an additional written notice from County** to the Surety demanding that the Surety perform its obligations under this Bond. At all times County shall be entitled to enforce any remedy available to County at law, in equity, or under the Contract including, without limitation, and by way of example only, rights to perform work, protect work, mitigate damages, or coordinate work with other consultants or contractors.

6. The Surety's monetary obligation under this Bond is limited to the amount(s) required by the terms and conditions of this Bond and applicable law. Subject to these limits, the Surety's obligations under this Bond are commensurate with the obligations of the Design Builder for the Construction Work under the Contract. The Surety's obligations shall include, but are not limited to:

   6.1 The responsibilities of the Design Builder under the Contract for completion of the Construction Work under the Contract and correction of defective work;

   6.2 The responsibilities of the Design Builder under the Contract to pay liquidated damages, and other damages for which no liquidated damages are specified in the Contract, actual damages caused by non-performance of the Construction Work under the Contract, including but not limited to, all valid and proper backcharges, offsets, payments, indemnities, or other damages;

   6.3 Additional legal costs including reasonable attorney's fees, incurred by County in enforcing Surety's obligations, costs of design professional services not included in the scope of the Contract Documents, and delay costs resulting from the Design Builder Default or resulting from the actions or failure to act of the Surety under Article 4, above.

7. No right of action shall accrue on this Bond to any person or entity other than County or its heirs, executors, administrators, or successors.

8. The Surety hereby waives notice of any change, alteration or addition to the Contract or to related subcontracts, purchase orders and other obligations, including changes of time. The Surety consents to all terms of the Contract, including provisions on changes to the Contract. No extension of time, change, alteration, modification, deletion, or addition to the Contract Documents, or of the work required thereunder, shall release or exonerate Surety on this Bond or in any way affect the obligations of Surety on this Bond, and Surety does hereby waive notice of any such change, extension of time, alteration, modification, deletion or addition to the terms of the Contract or to the Work and the provisions of Section 2819 and 2845 of the California Civil Code.

9. The obligations of Surety hereunder shall continue so long as any obligation of the Design Builder remains. Nothing herein shall limit the County's rights or the Design Builder's or

Surety's obligations under the Contract, law or equity, including, but not limited to, California Code of Civil Procedure section 337.15.

10. Any proceeding, legal or equitable, under this Bond shall be instituted in any court of competent jurisdiction where a proceeding is pending between County and the Design Builder regarding the Contract, or in the courts of the County of Alameda.

11. Notice to the Surety, County or the Design Builder shall be mailed or delivered to the address shown on the signature page.

12. Any provision in this Bond conflicting with any statutory or regulatory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein.

13. **DEFINITIONS.**

13.1 Balance of the Contract Price: The total amount payable by County to the Design Builder for Construction Work under the Contract pursuant to the terms of the Contract after all proper adjustments have been made under the Contract, for example, deductions for progress payments made, increases/decreases for approved modifications to the Contract, valid and proper backcharges, offsets, indemnities or other damages.

13.2 Contract: The agreement between County and the Design Builder identified on the signature page, including all Contract Documents and changes thereto.

13.3 Design Builder Default: Material failure of the Design Builder, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract concerning Construction Work under the Contract, including but not limited to, the provisions of paragraph 13.9 (Termination of Contract for Cause and Written Adequate Assurances of Performance) of Document 00 72 53 (General Conditions).

END OF DOCUMENT

DOCUMENT 00 61 13.16

CONSTRUCTION LABOR AND MATERIAL PAYMENT BOND

The County of Alameda, California, acting by and through its General Services Agency, ("County"), and _____ [name of Design Builder] ("Principal" or "Design Builder"), have entered into a written contract dated _____ for furnishing of all labor, materials, equipment, transportation and services for the design and construction of the **GDDF Boiler Upgrade Project No. 17033** ("Contract"), the terms and conditions of which Contract are incorporated herein by reference.

This Bond consists of this page and the Bond Terms and Conditions, Articles 1 through 16, attached to this page and incorporated herein by this reference.

Any singular reference to Principal, Surety, the County or any other party shall be considered plural where applicable.

COUNTY OF ALAMEDA
GDDF BOILER UPGRADE PROJECT
PROJECT NO. 17033

Attn: **[_____]**
at **550 6th Street, Oakland, CA**

DATED _____, 2018 in
the amount of $ **[_____]**

DESIGN BUILDER AS PRINCIPAL **[affix corporate seal]**	**SURETY** **[affix corporate seal]**
By: _____	By: _____
Name and Title: _____	Name and Title: _____
Address:	Address:
_____	_____
_____	_____
_____	_____
_____	_____

Note: Signature of person executing for SURETY must be notarized and evidence of corporate authority attached.

BOND TERMS AND CONDITIONS

1. Design Builder is required by law and by the terms of the Contract to furnish a bond to secure payment for all work, labor, materials, equipment and services furnished for use under the Contract.

2. NOW, THEREFORE, Design Builder, as principal, and Surety, as surety, are held and firmly bound unto County and the Claimants, as defined herein, in the total penal sum of _____ _____ Dollars ($_____), lawful money of the United States, for the payment of which sum well and truly to be made as provided in this Payment Bond in accordance with the requirements of Civil Code § 9550, et seq.

3. The Design Builder and the Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors and assigns to County and to Claimants to pay for work, labor, materials, equipment and services furnished for use in under the Contract.

4. With respect to County, this obligation shall be null and void if the Design Builder:

    4.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and

    4.2 Defends, indemnifies and holds harmless County and any other entities as provided in the Contract from all claims, demands, liens or suits by any person or entity who furnished labor, materials or equipment for use in the performance of the Contact, provided County has promptly notified the Design Builder and the Surety at the address set forth on the signature page of any claims, demands, liens or suits and tendered defense of such claims, demands, liens or suits to the Design Builder and the Surety.

5. With respect to Claimants, this obligation shall be null and void if the Design Builder promptly makes payment, directly or indirectly through its Subcontractors, for all sums due Claimants. However, if Design Builder or its Subcontractors fail to pay any of the persons named in Civil Code § 9554, or amounts due under the Unemployment Insurance Code with respect to work or labor performed under the Contract, or for any amounts required to be deducted, withheld, and paid over to the Employment Development Department from the wages of employees of Design Builder or Subcontractors pursuant to Unemployment Insurance Code § 13020, with respect to such work and labor, then Surety will pay for the same, and also, in case suit is brought upon this bond, a reasonable attorney's fee, to be fixed by the court.

6. As provided in Code §§ 9550, et seq., the Surety shall have no obligation to Claimants under this Bond unless the Claimant has satisfied all applicable notice requirements.

7. The Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by the Surety under this Bond.

8. Amounts due the Design Builder under the Contract shall be applied first to satisfy claims, if any, under any Construction Performance Bond and second, to satisfy obligations of the Design Builder and the Surety under this Bond.

9. County shall not be liable for payment of any costs, expenses, or attorney's fees of any Claimant under this bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. It is further stipulated and agreed that:

    10.1 The Surety on this bond shall not be exonerated or released from the obligation of this bond by:

        10.1.1 Any change, extension of time for performance, addition, alteration or modification in, to, or of any contract, plans, specifications, or agreement pertaining or relating to the Contract, or pertaining or relating to the furnishing of labor, materials, or equipment therefore, nor

        10.1.2 By any change or modification of any terms of payment or extension of the time for any payment pertaining or relating to the Contract, nor

        10.1.3 By any rescission or attempted rescission of the Contract or bond, nor

        10.1.4 By any conditions precedent or subsequent in the bond attempting to limit the right of recovery of claimants otherwise entitled to recover under any such contract or agreement or under the bond, nor

        10.1.5 By any fraud practiced by any person other than the Claimant seeking to recover on the bond.

    10.2 That this bond be construed most strongly against the Surety and in favor of all persons for whose benefit such bond is given, and

    10.3 Under no circumstances shall Surety be released from liability to those for whose benefit such bond has been given, by reason of any breach of contract between the County and the Design Builder or on the part of any obligee named in such bond, but the sole conditions of recovery shall be that Claimant is a person described in Section 9550 et seq. of the Civil Code, and has not been paid the full amount of his/her claim.

    10.4 The Surety hereby waives notice of any such change, including changes of time, to the Contract or to related subcontracts, purchase orders and other obligations and the provisions of Sections 2819 and 2845 of the California Civil Code.

11. Suit against Surety on this Payment Bond may be brought by any Claimant, or its assigns, at any time after the Claimant has furnished the last of the labor or materials, or both but, pursuant to Civil Code § 9558 must be commenced before the expiration of six months after the period in which stop notices may be filed as provided in Civil Code § 9356.

12. Notice to the Surety, County or the Design Builder shall be mailed or delivered to the address shown on the signature page. Actual receipt of notice by Surety, County or the Design Builder, however accomplished, shall be the date received at the address shown on the signature page above.

13. This Bond has been furnished to comply with California law including, but not limited to, Civil Code § 9550, et seq. Any provision in this Bond conflicting with these statutory requirements shall be deemed deleted and provisions conforming to such statutory or other legal requirements shall be deemed incorporated herein. This Bond shall be construed as a statutory bond and not as a common law bond.

14. Upon request by any person or entity appearing to be a potential beneficiary of this Bond, the Design Builder shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. DEFINITIONS.

    a. Claimant: An individual or entity having a direct contract with this Design Builder or with a subcontractors of the Design Builder to furnish labor, materials or equipment for use in the performance of the Contract, as further defined in Civil Code Section 9100. The intent of this Bond shall be to include without limitation in the terms "labor, service, equipment or material" that part of water, gas, power, light, heat, oil, gasoline, telephone service or rental equipment used in the Contract, architectural and engineering services required for performance of the work of the Design Builder and the Design Builder's subcontractors, and all other items for which a stop notice might be asserted. The term Claimant shall also include obligations arising under the Unemployment Insurance Code and the Employment Development Department as referred to in Civil Code § 9554.

    b. Contract: The agreement between County and the Design Builder identified on the signature page, including all Contract Documents and changes thereto.

END OF DOCUMENT

DOCUMENT 00 61 31

ESCROW BID DOCUMENTS

1. REQUIREMENTS FOR ESCROW BID DOCUMENTS.

1.1 The Design Builder shall submit, within the time period established in Document 00 51 00 (Notice of Award), a set of all then-existing Escrow Bid Documents as defined below, and shall subsequently submit **within fifteen (15) Business Days of their preparation or receipt** all Escrow Bid Documents subsequently prepared or received by Design Builder. The Escrow Bid Documents will be examined by County and will be used only for the resolution of price adjustments, change orders, and claims or disputes.

1.2 The submission of the Escrow Bid Documents, as with the bonds and insurance documents required and other Contract award submittals, is an essential part of the Contract award.

1.3 If the above required information is not submitted in its entirety and approved as required, Design Builder agrees that County may, in addition to any other right under the Contract Documents, **withhold from the Design Builder the sum of $50,000** in Contract funds otherwise due until the above required information is submitted, at which time the $50,000 shall be released to Design Builder.

1.4 The Escrow Bid Documents shall be submitted in person by an authorized representative of the Design Builder to County.

1.5 Prior to award, Escrow Bid Documents will be examined, organized and inventoried by representatives of County together with members of the Design Builder's staff knowledgeable in how the Proposals were prepared.

1.6 This examination is to ensure that the Escrow Bid Documents are authentic, legible and complete. It will not include review of, and will not constitute approval of proposed construction methods, estimating assumptions, or interpretation of Contract Documents. Examination will not alter any condition(s) or term(s) of the Contract Documents.

2. SCOPE OF ESCROW BID DOCUMENTS.

2.1 Design Builder shall submit one copy of all proposals, estimates and quotes received or generated by Design Builder in preparation of its Proposals, and such additional prices determined following submission of its Proposals as the scope of the work is defined through design development, as specified in Articles 5 (Format and Contents of Escrow Bid Documents) and 6 (Submittal of Escrow Bid Documents) below. This material is hereinafter referred to as "Escrow Bid Documents." The Escrow Bid Documents shall be submitted for both the design and the construction activities, and shall relate to each contract entered into and/or bid package issued by Design Builder. The Escrow Bid Documents will be held in escrow for the duration of the Contract.

2.2 Design Builder agrees that the Escrow Bid Documents constitute all written information

used in the preparation of its Proposals, including the Contract Price, and that no other written information shall be considered. Design Builder also agrees that nothing in the Escrow Bid Documents shall change or modify the terms or conditions of the Contract Documents.

3. OWNERSHIP OF ESCROW BID DOCUMENTS.

3.1 The Escrow Bid Documents are, and shall always remain, the property of Design Builder, subject to joint review by County and Design Builder, as provided herein.

3.2 County agrees that Escrow Bid Documents may: constitute trade secrets; not be known outside Design Builder's business; be known only to a limited extent and only by a limited number of employees of Design Builder; be safeguarded while in Design Builder's possession, be extremely valuable to Design Builder; and be extremely valuable to Design Builder's competitors by virtue of it reflecting Design Builder's contemplated techniques of construction. Should the use of this information be necessary to resolve disputes, County will stipulate to the terms of a reasonable protective order.

3.3 If County receives a demand for disclosure of the Escrow Bid Documents from a third party, it will follow the procedure set forth in paragraph 5.11 of Document 00 11 19 (Request for Proposals from Design-Build Entities). Design Builder shall, at its sole discretion and expense, take whatever actions it deems appropriate to protect the Escrow Bid Documents from disclosure. County shall not be liable to Design-Builder for damages arising from disclosure of the Escrow Bid Documents as required by law. DBE shall take all appropriate legal action and defend, at its sole cost and expense, County's refusal to produce the information in all forums; otherwise, County will without restriction make such information available to the extent required by applicable law.

4. FORMAT AND CONTENTS OF ESCROW BID DOCUMENTS.

4.1 Design Builder may submit Escrow Bid Documents in its usual cost estimating format; a standard format is not required. The Escrow Bid Documents shall be submitted in the English language.

4.2 Escrow Bid Documents must clearly itemize the estimated costs of performing each item of the Work, separating Work items into sub-items as required to present a detailed cost estimate and allow a detailed cost review. The Escrow Bid Documents shall include all designer, engineer, architect or subcontractor bids, proposals or quotes, supplier bids or quotes, quantity takeoffs, crews, equipment, calculations of rates of production and progress, copies of quotes from subcontractors and suppliers, and memoranda, narratives, add/deduct sheets, and all other information used by the Design Builder to arrive at the Contract prices for the Contract. Estimated costs should be broken down into Design Builder's usual estimate categories such as direct labor, equipment ownership and operation, expendable materials, permanent materials and subcontract costs as appropriate. Plant, equipment, and indirect costs should be detailed in the Design Builder's usual format. The Design Builder's allocation of indirect costs, contingencies, markup, and other items to each work item shall be identified.

4.3 All costs shall be identified. For work **items amounting to less than $10,000**, estimated unit costs are acceptable without a detailed cost estimate, provided that labor, equipment, materials and subcontracts, as applicable, are included and provided that indirect costs, contingencies and markup, as applicable, are allocated.

5. SUBMITTAL OF ESCROW BID DOCUMENTS.

5.1 The Escrow Bid Documents shall be submitted by the Design Builder in a sealed container within the time described in paragraph 1.1 above. The container shall be clearly marked on the outside with the Design Builder's name, date of submittal, Project name and the words "Escrow Bid Documents - Open only in the presence of Authorized Representatives of both County and [**NAME OF DESIGN BUILDER**]."

5.2 By submitting Escrow Bid Documents, Design Builder represents that the material in the Escrow Bid Documents constitutes all the documentary information used in preparation of the portion or portions of the Contract price referred to in the Escrow Bid Documents submitted and that the Design Builder has personally examined the contents of the Escrow Bid Documents container and has found that the documents in the container are complete.

5.3 If Design Builder's Proposal is based upon subcontracting any part of the work, each subcontractor listed in Design Builder's Proposal, or whose **total subcontract price exceeds five percent (5%) of the total Contract price** proposed by Design Builder, shall provide separate Escrow Bid Documents to be included with those of Design Builder. Such documents shall be opened and examined in the same manner and at the same time as the examination described below for Design Builder.

6. STORAGE, EXAMINATION AND FINAL DISPOSITION OF ESCROW BID DOCUMENTS.

6.1 The Escrow Bid Documents will be placed in escrow for the life of the Contract in a mutually agreeable institution. The cost of storage will be paid by the Design Builder for the duration of the Project until final Contract payment and the final resolution of all claims and disputes arising out of or relating to the Work or the Contract. The storage facilities shall be the appropriate size for all the Escrow Bid Documents and located conveniently to both County's and Design Builder's offices.

6.2 The Escrow Bid Documents shall be examined by both County and Design Builder, at any time deemed necessary by either County or Design Builder, to assist in the negotiation of price adjustments and change orders or the settlement of disputes and claims. Examination of the Escrow Bid Documents is subject to the following conditions:

6.2.1 County acknowledges that Design Builder considers the Escrow Bid Documents to contain trade secrets, such that the Escrow Bid Documents are proprietary and confidential.

6.2.2 County and Design Builder shall each designate, in writing to the other party,

and **seven (7) Days prior to any examination**, representatives who are authorized to examine the Escrow Bid Documents. No other person shall have access to the Escrow Bid Documents.

6.2.3 Access to the documents may take place only in the presence of duly designated representatives of both County and Design Builder. If Design Builder fails to designate a representative or appear for joint examination on **seven (7) Days notice**, then County representative may examine the Escrow Bid Documents **upon an additional three (3) Days' notice.**

6.3 The Escrow Bid Documents will be returned to Design Builder at such time as the Contract has been completed and final resolution, by settlement or otherwise, of all claims and disputes has been achieved.

END OF DOCUMENT

DOCUMENT 00 61 32

ESCROW AGREEMENT FOR SECURITY DEPOSITS IN LIEU OF RETENTION

Public Contract Code § 22300

This Escrow Agreement ("Escrow Agreement") is made and entered into this **[DATE]** day of **[MONTH]**, **2018,** by and between the COUNTY OF ALAMEDA, acting by and through its GENERAL SERVICES AGENCY ("County"), and **[NAME OF DESIGN BUILDER]** whose place of business is _____ _____ hereinafter called ("Design Builder"), and **[INSERT EITHER]**, as escrow agent **[OR] [NAME OF BANK]**, a state or federally chartered bank in the state of California, whose place of business is located at _____ ("Escrow Agent"). This Escrow Agreement is intended to incorporate the requirements of Public Contract Code § 22300.

For the consideration hereinafter set forth, County, Design Builder and Escrow Agent agree as follows:

1. Pursuant to Public Contract Code § 22300, Design Builder has the option to deposit securities with Escrow Agent as a substitute for retention earnings required to be withheld by County pursuant to the Contract No. **[INSERT CONTRACT #]** entered into between County and Design Builder for the **GDDF Boiler Upgrade** Project in the amount of **[CONTRACT SUM]** dated **[DATE OF CONTRACT]** (the "Contract"). Alternatively, on written request of Design Builder, County shall make payments of the retention earnings directly to Escrow Agent. When Design Builder deposits the securities as a substitute for Contract earnings, Escrow Agent shall **notify County within ten (10) Days of the deposit**. The market value of the securities at the time of substitution shall be at least equal to the cash amount then required to be withheld as retention under terms of Contract between County and Design Builder. Securities shall be held in name of _____, and shall designate Design Builder as beneficial owner.

2. County shall make progress payments to Design Builder for those funds which otherwise would be withheld from progress payments pursuant to Contract provisions, provided that Design Builder deposits and Escrow Agent holds securities in form and amount specified above.

3. When County makes payment of retention earned directly to Escrow Agent, Escrow Agent shall hold those funds for the benefit of Design Builder until the time that the escrow created under this Escrow Agreement is terminated. Design Builder may direct the investment of the payments into securities. All terms and conditions of this Escrow Agreement and the rights and responsibilities of the Parties shall be equally applicable and binding when County pays Escrow Agent directly.

4. Design Builder shall be responsible for paying all fees for the expenses incurred by Escrow Agent in administering the Escrow Account, and all expenses of County. Such expenses and payment terms shall be determined by County, Design Builder and Escrow Agent.

5. Interest earned on securities or money market accounts held in escrow and all interest earned on that interest shall be for sole account of Design Builder and shall be subject to withdrawal by Design Builder at any time and from time to time without notice to County.

6. Design Builder shall have the right to withdraw all or any part of the principal in the Escrow Account only by written notice to Escrow Agent accompanied by written authorization from County to Escrow Agent that County consents to withdrawal of amount sought to be withdrawn by Design Builder.

7. County shall have the right to draw upon the securities in event of default by Design Builder. **Upon seven (7) Days' written notice to Escrow Agent from County** of the default, Escrow Agent shall immediately convert the securities to cash and shall distribute the cash as instructed by County.

8. Upon receipt of written notification from County certifying that the Contract is final and complete, and that Design Builder has complied with all requirements and procedures applicable to the Contract, Escrow Agent shall release to Design Builder all securities and interest on deposit less escrow fees and charges of the Escrow Account. The escrow shall be closed immediately upon disbursement of all monies and securities on deposit and payments of fees and charges.

9. Escrow Agent shall rely on written notifications from County and Design Builder pursuant to paragraphs 5 through 8, inclusive, of this Escrow Agreement and County and Design Builder shall hold Escrow Agent harmless from Escrow Agent's release and disbursement of securities and interest as set forth above.

10. Names of persons who are authorized to give written notice or to receive written notice on behalf of County and on behalf of Design Builder in connection with the foregoing, and exemplars of their respective signatures are as follows:

On behalf of County:	On behalf of Design Builder:
_____	_____
Title	Title
_____	_____
Name	Name
_____	_____
Signature	Signature
_____	_____
Address	Address

On behalf of Escrow Agent:

_____
Title

_____
Name

_____
Signature

_____
Address

At the time the Escrow Account is opened, County and Design Builder shall deliver to Escrow Agent a fully executed counterpart of this Agreement.

IN WITNESS WHEREOF, the parties have executed this Agreement by their proper officers on the date first set forth above.

County	Design Builder
_____	_____
_____	_____
Title	Title
_____	_____
Name	Name
_____	_____
Signature	Signature

Escrow Agent

_____
Company Name

_____
Title

_____
Name

_____
Signature

END OF DOCUMENT

SECTION 00 62 20

CONTRACTOR BONDING ASSISTANCE PROGRAM (CBAP)

1. PURPOSE.

1.1 Program Description. The Contractor Bonding Assistance Program ("CBAP") is designed to assist small local contractors obtain bid, payment and performance bonds and/or increase their bonding capacity for work on Alameda County contracts. The CBAP is sponsored by the County's Risk Management Unit in the County Administrator's Office ("CAO") and is administered by a County Consultant (Merriwether & Williams Insurance Services).

1.2. CBAP Resources. CBAP assembles a team of professionals to assist small local contractors in preparing for the bonding process and to help them grow their businesses. CBAP guides the contractor through the bonding process with one-on-one consultations and contactor-focused group workshops and seminars. CBAP will also work with small local contractors to help them improve their existing relationships with surety providers. Guarantees **up to forty percent (40%) of the bond amount or $750,000, whichever is less**, will be available to qualified contractors.

1.3. TPFA Agreement. Contractors participating in CBAP ("CBAP Contractor") may receive a bond guarantee. Bond guarantee recipients will be required to enroll in third party funds administration ("TPFA") and enter into a TPFA agreement. TPFA is a surety's risk mitigation tool to assure proper payment disbursement to avoid bond default. TPFA requires the CBAP Contractor and the higher tier contractor who pays the CBAP Contractor (the "Paying Contractor") to execute a disbursement agreement. A CBAP Contractor's surety company may require TPFA even when there is no County bond guarantee. When TPFA is required, the CBAP Contractor and the Paying Contractor must comply with the TPFA agreement requirements. The TPFA agreement is pre-approved by the County's CBAP surety partners and is not subject to revisions. The TPFA agreement is available for review upon request.

1.4. DBE Participation. The Design Build Entity is required to provide subcontractors who may be eligible to participate in the CBAP with general information about the Program. This obligation may be satisfied by providing copies of this Document 00 62 20. The Design Build Entity shall fully cooperate with the County in the implementation of the CBAP and will not discriminate against any contractor participating in the Program.

2. CBAP PROCESS

2.1 Once eligibility of the CBAP Contractor has been established, the program participant receives a description of the bonding process and a one-on-one confidential assessment of their company's financial strengths and needs with regard to obtaining bonding for an Alameda County contract. Technical assistance and strategies are then provided to address the CBAP Contractors' specific needs. County Consultant program staff will assist program participants in preparing documentation for bonding applications and make necessary referrals to program partners. There is no charge to the program participant for enrolling in the program or for CBAP-sponsored workshops and seminars. Program participants are responsible for payment of bond premiums.

2.2. The Directive of Draw-Sub, a disbursement agreement required in Section 1.3 TPFA Agreement, outlines the obligations and responsibilities of the parties regarding payments into the TPFA and must be executed when the CBAP contractor is a sub of any level and the payor is not the County.

2.3. The CBAP Contractor and their Paying Contractor will be required to provide periodic contract status reports to the County Consultant.

3. CBAP ELIGIBILITY

3.1. To be eligible to participate in the CBAP, contractors must be located in Alameda County and eligible to participate in one of the following programs:

- Alameda County Small Local Emerging Business (SLEB) Program
- State of California Small Business Enterprise (SBE)
- US Department of Transportation Disadvantaged Business Enterprise (DBE)

3.2. For information about the SLEB program contact the Auditor Controller Agency - Office of Contract Compliance at (510) 891-5500 or visit the Alameda County SLEB Program website at (http://www.acgov.org/auditor/sleb/index.htm). For information about the SBE program contact the County General Service Agency – Office of Acquisition Policy at (510) 208–9617. For information about the DBE program contact the County Public Works Agency at (510) 670-5243.

4. PARTICIPATION.

4.1. For more information about the Alameda County Contractor Bonding Assistance Program please complete the attached CBAP Enrollment Form and contact:

Carol Henry, Program Manager
Phone: 510-879-3285
Fax: 510-740-6921
E-mail: carol@imwis.com

END OF DOCUMENT

ATTACHMENT TO DOCUMENT 00 62 20

COUNTY OF ALAMEDA

CONTRACTOR BONDING ASSISTANCE PROGRAM

CONTRACTOR ENROLLMENT FORM

1. Participant's Name & Address: Date: _____

Company Name: _____

Address: _____

City, State and Zip Code: _____

Name of owner: _____ Name of manager: _____

Phone Number: _____ Fax Number: _____

E-mail: _____

2. Company Information:

a. Trade Specialty: _____ b. License Number/Class: _____

c. Type of Entity: □ Corporation □ Partnership □ Sole Proprietorship

d. Date Business Established:_____ e. Annual Business Volume: $_____

3. Work History with County. Check all that apply:

- In the last three (3) years, I have bid on County jobs as a: □ Prime □ Sub □ Both □ Neither
- In the last three (3) years, I have been awarded County jobs as a:□ Prime □ Sub □ Both □ Neither

4. Business Relationships:

a. Current surety: _____ b. Current surety agent: _____

c. Current bond line: $_____ d. Current bank: _____

e. Current credit line: $_____ f. Current CPA: _____

5. Certification and Business Profile (Check all that apply):

a. □ County of Alameda – LOCAL

b. □ County of Alameda – SLEB

c. □ COP

d. □ ECOP

e. □ DBE

6. Regarding the Contractor Bonding Assistance Program (Check all that apply): I am interested in using the Program to assist with

a. □ Bonding ($_____)

b. □ Bidding/job estimating

c. □ Accounting

d. □ Business Management

e. □ Other desired areas (specify) _____

Signature: _____ Date: _____

PRINT NAME: _____

PRINT TITLE: _____

END OF DOCUMENT

DOCUMENT 00 62 30

SUBCONSULTANT/SUBCONTRACTOR PROCUREMENT

1. GENERAL.

1.1 Design Builder shall use only subconsultants and Subcontractors selected in accordance with the requirements of this Document 00 62 30. Design Builder shall comply with the County's Enhanced Construction Outreach Program (ECOP), Small Local Emerging Businesses (SLEB) Program, Contractor Bonding Assistance Program (CBAP) and First Source Agreement in selecting Subcontractors and subconsultants, see Documents 00 62 38 (Enhanced Construction Outreach Program), 00 62 40 (Small Local Emerging Businesses Program), 00 62 20 (Contract Bonding Assistance Program), and 00 62 40.05 (First Source Agreement).

1.2 Design Builder must use the mechanical contractor and engineer (and if the Design Builder is a partnership, limited partnership, or other association, the partners, general partners, and association members) Design Builder identified in its responses to the document entitled "Request for Pre-Qualification of Design-Build Entities for the County of Alameda **GDDF Boiler Upgrade** Project, dated **March 23, 2018** ("RFQ"), and any amendments, modifications or supplements thereto (the "Pre-Qualification Information"). Design Builder may not substitute or replace its mechanical contractor or lead engineer (or any of its partners, general partners, association members) except upon providing the County with satisfactory evidence of the party's default or other good cause. Any substitute or replacement entity must meet the minimum Pre-Qualification requirements for the position for which it is proposed. Design Builder may make such a substitution or replacement only with prior written approval of the County.

1.3 Any subconsultant or Subcontractor identified in the Pre-Qualification Information is eligible to perform Work as provided in the Pre-Qualification Information, provided that subconsultant or Subcontractor is otherwise eligible to perform Work as provided in the Contract Documents.

1.4 With the prior approval of the County, Design Builder may substitute or replace a subconsultant or Subcontractor identified in the Pre-Qualification Information (other than the mechanical contractor or lead engineer) in the same manner as it procures other subconsultants and subcontractors, as provided for herein. For any such substitution or replacement, the Design Builder shall submit to the County, for its review and approval, all information on the new Subcontractor that was required for Subcontractors in the RFQ.

2. SUBCONSULTANT/SUBCONTRACTOR PROCUREMENT PLAN.

2.1 As required by Document 00 11 19 (Request for Proposals from Design-Build Entities), Design Builder's Proposal shall include a Subconsultant/Subcontractor Procurement Plan ("Procurement Plan").

2.2 The Procurement Plan shall, in narrative form, detail Design Builder's planned approach to packaging the Work for bidding to Subcontractors and its selection method for all subconsultants and Subcontractors, excluding only subconsultants and Subcontractors identified in paragraphs 1.2 and 1.3 above, to be used by Design Builder. This plan shall include, but is not limited to, the following:

2.2.1 A list of all expected or anticipated subconsultant/Subcontractor bid packages or contracts, broken down by category of service, including pre-construction, design, and construction phases.

2.2.2 A description of the scope of Work for each Subcontract.

2.2.3 The qualification criteria to be used in selecting the subconsultant/Subcontractor for each Subcontract.

2.2.4 The estimated costs to complete the scope of Work for each package or Subcontract.

2.2.5 The proposed method of selection (i.e., low bid, informal bid, competitive negotiation, best value, etc.), including all items described in Paragraph 3.0 below (to the extent applicable).

2.2.6 A description of how the proposed manner of awarding subcontracts will further the best interests of the County and promote best value design and construction.

2.2.7 In separate sections of the proposed Procurement Plan, confirmation that the Procurement Plan represents a committed and realistic plan to achieve compliance with the County's Enhanced Construction Outreach Program, Small Local and Emerging Business Program, and First Source Program as required by Documents 00 62 38 (Enhanced Construction Outreach Program) and 00 62 40 (Small Local Emerging Businesses Program) and to comply with the requirements of Document 00 62 20 (Contractor Bonding Assistance Program). As part of each such section of its proposed Procurement Plan, Design Builder shall submit the all forms required by Documents 00 62 38 and 00 62 40 through 00 62 40.05.

2.2.8 A description of any Subcontract commercial terms that differ from the Contract Documents, and of any intended subconsultant/ Subcontractor liquidated damage measures.

2.3 The Design Builder shall make any revisions to its Procurement Plan reasonably requested by the County. Following receipt of a finally accepted Procurement Plan, the Design Builder shall implement the Procurement Plan.

3. OTHER REQUIREMENTS.

3.1 As required by Public Contract Code § 20133(f), all subcontractors bidding on contracts to perform Work, other than those described in paragraphs 1.2 and 1.3 above,

shall be afforded the protections contained in Chapter 4 (commencing with § 4100) of Part 1 of the Public Contract Code. Without limiting the foregoing, Design Builder shall do both of the following:

3.1.1 Provide public notice of the availability of work to be subcontracted in accordance with the publication requirements applicable to the competitive bidding process of the County.

3.1.2 Provide a fixed date and time on which the subcontracted work will be awarded in accordance with the procedure established in the Procurement Plan.

END OF DOCUMENT

DOCUMENT 00 62 38

ENHANCED CONSTRUCTION OUTREACH PROGRAM (ECOP) – DESIGN-BUILD

PART 1 GENERAL

1. PURPOSE

1.1. It is the express purpose of the Enhanced Construction Outreach Program (ECOP) to encourage the participation of

- Minority Owned Business Enterprises (MBE),
- Woman Owned Business Enterprises (WBE),
- Local Business Enterprises (LBE) and
- Small Local Business Enterprises (SLBE)

In the County of Alameda, General Services Agency (GSA) capital projects to ensure that all contracting firms receive an equal opportunity to bid and receive work for this Project. The ECOP encourages the inclusion of small businesses in this construction contract in accordance with Public Contract Code Section 2002.

1.2. It is also the purpose of this program to encourage businesses to locate and remain in Alameda County, to employ residents of Alameda County, and to spend County funds for County construction projects within the County.

1.3. In addition, for this project, the County is interested in contracting with those businesses that can demonstrate the ability and willingness to provide jobs required to complete this project to local apprentices, youth, unemployed and under-employed County residents.

1.4. In the event of conflict between the terms of this Document 00 62 38 and any other Sections of the bid documents for this Project, the terms of this Document 00 62 38 shall take priority.

1.5. By responding to this request for proposal, DBE acknowledge and agree to all Document 00 62 38 ECOP provisions contained herein.

1.6. Contractor shall meet the agreed upon ECOP requirements **within 15 Business Days of the date non-compliance began** or pursuant to written notice from the County notifying Contractor that it is no longer in compliance with the program. County will be under no obligation to pay contractor for the percent committed to an ECOP subcontractor if the work is not performed by the listed ECOP business.

2. APPLICATION

2.1. The provisions outlined in this Document 00 62 38 apply to the Design Build Agreement for construction of the **GDDF Boiler Upgrade Project** and to each non-design services subcontractor procurement package included in the Design Builder's Subconsultant/Subcontractor Procurement Plan (Document 00 62 30). This Project is funded solely with local dollars and these provisions shall apply to all work performed under

any contract awarded as a result of this competitive process.

2.2. To be considered for a contract award, any DBE who fails to meet the Enhanced Construction Outreach Program (ECOP) goals identified herein for prequalified and known (listed) subcontractors as of the date of Phase II Proposal submissions shall be required to demonstrate to the satisfaction of the County that a good faith effort (GFE) was made in accordance with the GFE requirements criteria listed in Paragraph 6.9 (GFE 1-9), below.

2.3. Subcontractors of all tiers may contribute toward achieving the ECOP goals.

2.4. The calculation of ECOP goals achieved during the term of the Contract will be based on the net confirmed payments received, as evidenced in the Elation Systems. All payments made to ECOP subcontractors contributing toward the goals must be documented in the Elation Systems. Payments to non-ECOP contributing subcontractors need not be included unless they, or one of their lower tier subcontractors, make a payment to a subcontractor contributing toward achieving the ECOP goals (or if otherwise required to comply with the Labor Compliance Program).

2.5. To be considered compliant with the DBE's obligation to satisfy the ECOP goals in its Procurement Plan (Document 00 62 30 (Subconsultant/Subcontractor Procurement)), for each subcontractor Procurement Package the DBE must either show that it has met the ECOP goals identified herein for that Procurement Package or it shall demonstrate to the satisfaction of the County that a GFE was made in accordance with the GFE requirements criteria listed in Paragraph 6 below for the applicable Procurement Package; provided, however, that if the aggregate of all Subcontractor Procurement Packages combined with the ECOP goal percentages for the prequalified DBE subcontractors and other subcontractors listed in the DBE's Phase II Proposal meets the ECOP goals identified herein then the DBE will have satisfied the ECOP Program goals.

3. DEFINITIONS

3.1 Local Business Enterprise (LBE). For the purposes of this program, a Local Business Enterprise means a business that is a firm or dealer with fixed offices located in and having a street address within the County for at least six (6) months prior to the date upon which the Request for Proposals (Document 00 11 19) is issued and which holds a valid business license issued by the County or a city within the County.

3.2 Minority or Women Business Enterprise (M/WBE). An M/WBE, for the purposes of this program, is a Small Business Enterprise (SBE) as defined by the State of California that meets both of the following criteria:

- At least fifty-one percent (51%) of the business is owned by one or more minority persons or women, or in the case of any business whose stock is publicly held, at least fifty-one percent (51%) of the stock is owned by one or more minority persons or women; and
- Whose management and daily business operations are controlled by one or more such individuals.

An M/WBE must be certified as such or recognized as such by organizations whose certification is accepted by and/or meets the State Department of Transportation requirements or by local agencies identified by the County of Alameda as having effective certification programs. Validation of the current certification by one of the following local

agencies (or such other agencies that the County may subsequently recognize) must be provided with the bid response:

When a State SBE definition is met:

Bay Area Rapid Transit (BART)
The (CPUC) Supplier Clearinghouse
Western Regional Minority Supplier Development Council (WRMSDC)
Women's' Business Enterprise National Council (WBENC)

3.3 Minority Person. Minority person, for purposes of this section, means Black Americans, Hispanic Americans, Native Americans (including American Indians, Eskimos, Aleuts and Native Hawaiians), Asian-Pacific Americans (including persons whose origins are from Japan, China, the Philippines, Vietnam, Korea, Samoa, Guam, the United States Trust Territories of the Pacific, Northern Marianas, Laos, Cambodia and Taiwan).

3.4 Responsible Bidder. A responsible bidder is one that meets all of the requirements and provisions of the bid specifications and related documents, including those in this Document 00 62 38 that require DBE to meet ECOP goals or make a good faith effort to do so.

3.5 Small Business Enterprise (SBE). For the purposes of this program an SBE meets the current State of California definition of a small business, which is one that:

- Must be independently owned and operated;
- Cannot be dominant in its field of operation;
- Must have its principal office located in California;
- Must have its owners (or officers in the case of a corporation) domiciled in California; and
- Together with its affiliates, be either:
    - A business with 100 or fewer employees, and average annual gross receipts of $14 million or less over the previous three tax years, or
    - A manufacturer with 100 or fewer employees.

An SBE must be certified as such or recognized as such by organizations whose certification is accepted by the State Department of Transportation or by local agencies identified by the County to have effective certification programs. Validation of the current certification by one of the following local agencies must be provided with the bid response:

Alameda County Transportation Commission (Alameda CTC)
California Department of General Services (DGS)
Port of Oakland
and, when the State SBE definition is met, Alameda County (SLEB certification)

3.6 Small Local Business Enterprise (SLBE). For the purposes of this program, a Small Local Business Enterprise is defined by the County and means a business that meets the SBE definition above and is a firm or dealer with fixed offices located in and having a street address within the County and which holds a valid business license issued by the County or a city within the County.

4. ENHANCED CONSTRUCTION OUTREACH PROGRAM (ECOP) GOALS

4.1. MBE Participation Subcontracting – 15% Goal. This program shall include Subcontractors, suppliers and truckers. Any DBE at the time of submitting Phase II Proposals for the Design Build contract who fails to meet the MBE goals described herein with its prequalified and listed subcontractors must demonstrate to the satisfaction of the County that a good faith effort was made and/or will be made as a part of its Procurement Plan to meet these goals in order to be considered for a contract award.

4.1.1. The County shall require that in order to be awarded a contract; a DBE must show that a good faith effort was made and/or will be made in its Procurement Plan to provide at least fifteen percent (15%) of the total "Construction Total" amount listed in the DBE's Proposal Form (Document 00 42 53) to MBE sub-contractor firms. In the event of a change in the "Construction Total," by contract modification or otherwise, the DBE's MBE participation goal will be recalculated to reflect that change.

4.1.2. The MBE goals must be achieved by the use of MBE subcontractors, suppliers and/or truckers. If the DBE plans to perform all the work with the DBE's own forces, the goal will still apply and will be made up by the use of suppliers, manufacturers, and/or truckers.

4.1.3. A certified MBE DBE may not apply the percentage of the DBE's work toward meeting the goals set forth above. An MBE Subcontractor meeting the definition of both an MBE and a WBE may not be applied to both required goals. The percentage of MBE firms utilized for the Project can only be applied to either MBE or WBE required goals. For purposes of meeting the MBE goals for this Project, each participating MBE must be identified as an MBE.

4.1.4. DBEs are strongly encouraged to sub-contract with S/LBE certified MBEs to meet the goals.

4.1.5. An MBE contracted with a DBE for purposes of compliance with paragraph 4.1 that is a certified MBE on the date the entity signs a subcontract with the DBE for work required by these Contract Documents shall be considered an MBE for the duration of that subcontract.

4.2. WBE Participation Subcontracting – 5% Goal. This program shall include Subcontractors, suppliers and truckers. Any DBE at the time of submitting Phase II Proposals for the Design Build contract who fails to meet the WBE goals described herein with its prequalified and listed Subcontractors must demonstrate to the satisfaction of the County that a good faith effort was made and/or will be made as part of its Procurement Plan to meet these goals in order to be considered for a contract award.

4.2.1. The County shall require that in order to be awarded a contract; a DBE must show that a good faith effort was made and/or will be made in its Procurement Plan to provide at least five percent (5%) of the total "Construction Total" amount listed in the DBE's Proposal Form (Document 00 42 53) to WBE subcontractor firms. In the event of a change in the "Construction Total," by contract modification or otherwise, the DBE's WBE participation goal will be recalculated to reflect that change.

4.2.2. The WBE goals must be achieved by the use of WBE subcontractors, suppliers, manufacturers, and/or truckers. If the Bidder plans to perform all the work with the DBE's own forces, the goal will still apply and will be made up by the use of suppliers, manufacturers and/or truckers.

4.2.3. A certified WBE DBE **may not** apply the percentage of the DBE's work toward meeting the goals as set forth above. A WBE subcontractor meeting the definition of both an MBE and a WBE **may not** be applied to both required goals. The percentage of WBE firms utilized for the Project can only be applied to either MBE or WBE required goals. For purposes of meeting the WBE goals for this Project, each participating WBE must be identified as a WBE.

4.2.4. DBEs are strongly encouraged to sub-contract with SLBE certified WBEs to meet the goals.

4.2.5. A WBE contracted with a DBE for purposes of compliance with paragraph 4.2 that is a certified WBE on the date the entity signs a subcontract with the DBE for work required by these Contract Documents shall be considered a WBE for the duration of that subcontract.

4.3. Local Business Enterprise Participation Goals – 60% Goal. This program shall include subcontractors, suppliers and truckers. Any DBE at the time of submitting Phase II Proposals for the Design Build contract who fails to meet the LBE goals described herein with its prequalified and listed subcontractors must demonstrate to the satisfaction of the County that a good faith effort was made and/or will be made as part of its Procurement Plan to meet these goals in order to be considered for a contract award.

4.3.1. The County shall require that in order to be awarded a contract; a DBE must show that a good faith effort was made and/or will be made as part of its Procurement Plan to provide at least sixty percent (60%) of the total "Construction Total" amount from DBE's Proposal Form (Document 00 42 53) to LBE. In the event of a change in the "Construction Total," by contract modification or otherwise, the DBE's LBE participation goal will be recalculated to reflect that change.

4.3.2. The DBE may count a portion or all of its work towards meeting the goal and/or the LBE goal may be achieved by the use of Subcontractors.

4.4. Small Local Business Enterprise Participation - 20% Goal. This program shall include Subcontractors, suppliers and truckers. Any DBE at the time of submitting Phase II Proposals for the Design Build contract who fails to meet the SLBE goals described herein with its prequalified and listed subcontractors must demonstrate to the satisfaction of the County that a good faith effort was made and/or will be made as part of its Procurement Plan to meet these goals in order to be considered for a contract award.

4.4.1. The County shall require that in order to be awarded a contract a DBE must show that a good faith effort was made and/or will be made as part of its Procurement Plan to provide at least twenty percent (20%) of the total "Construction Total" amount in DBE's Proposal Form (Document 00 42 53) to SLBE. In the event of a change in the "Construction Total," by contract modification or otherwise, the DBE's SLBE participation goal will be recalculated to reflect that change.

4.4.2. The DBE may count a portion or all of its work towards meeting the goal and/or the SLBE goal may be achieved by the use of Subcontractors. For purposes of meeting this goal the twenty percent (20%) may be a part of the sixty percent (60%) LBE participation goal and/or a part of the DBE's participation.

5. HIRING OF LOCAL APPRENTICES, YOUTH, UNEMPLOYED AND UNDEREMPLOYED RESIDENTS

5.1. Purpose. The County strongly encourages the hiring of local apprentices, youth, unemployed and under-employed County residents to complete the work required for this Project. Those firms that can demonstrate the ability and willingness to provide jobs required to complete this Project to local apprentices, youth, unemployed and underemployed County residents should include such evidence in their Proposal.

6. GOOD FAITH EFFORTS, ECOP PACKAGE SUBMITTALS, AND EVALUATION PROCEDURES

6.1. It is required that ALL DBE exercise a good faith effort to secure the participation, as set forth in this Document 00 62 38, of M/W/S/LBE subcontractors, suppliers and/or truckers on the Project. Achievement of the ECOP goals set forth herein at the time of submitting proposals for the Design Build contract by the DBE's prequalified and listed Subcontractors shall constitute prima facie evidence of a Good Faith Effort (GFE). The failure of any DBE to make a good faith effort (at the time of bid submission and/or as a part of its Procurement Plan) to achieve the specified participation of M/W/S/LBE subcontractors, suppliers, manufacturers, and/or truckers shall be grounds for determining that the DBE's Proposal is non-responsive or for the County to declare a breach of contract.

6.2. Documentation to support the ECOP goals met and the GFE's made must be submitted to the County upon request by the County for any Procurement Plan package. This documentation shall be referred to as the ECOP Package.

6.3. ECOP Forms 101A, 101B, 102A and 102B (provided at the end of this Document 00 62 38) shall be used by Contractor to identify firms utilized to satisfy the ECOP requirements.

6.3.1. The total dollar amount to be subcontracted, including trucking, manufacturers, and suppliers will be listed on ECOP Form 102A.

6.3.2. The individual dollar amounts to the M/W/S/LBE listed in the bidder's proposal will be listed on the M/WBE Subcontractor Participation Information ECOP Form 101A and S/LBE Participation Information ECOP Form 101B.

6.3.3. The information supplied by the bidders shall be certified by a principal of the firm. Dollar amounts will be treated as proprietary, and will be solely for the use of County or its agents.

6.3.4. ECOP Forms 101A, 101B, 102A and 102B and supporting documentation for Procurement Packages shall be delivered to the County.

6.4. M/W/S/LBE subcontractors, suppliers, manufacturers, and/or trucking firms who bid to the DBE for the Design Build contract or to the DBE as part of a Procurement Plan package may be required to provide the amounts of their bids to the County for the purposes of

verification. This information shall be certified by a principal of the firm. The information will be treated as proprietary, and will be solely for the use of County or its agents.

6.5. A bidder must meet all the ECOP goals ***OR*** make the GFE (see section 6.9).

6.6. The ECOP Package must be complete and contain legible documents fastened together in the following order:

6.6.1. Attached ECOP Forms 101A, 101B, 102A, and 102B completed and signed.

6.6.2. Supporting certification documentation for the bidder and the subcontractors, suppliers, manufacturers, and/or trucking M/W/S/LBEs submitted in the order they are listed on above ECOP forms.

6.6.2.1. To be considered towards meeting the ECOP goals bidders must submit acceptable certifying documentation for themselves, subcontractors, suppliers, manufacturer, and truckers as is applicable (i.e., local business license with proof of issue and expiration date, certification letters with expiration date). Evidence supporting that suppliers and/or truckers are providing goods or services to subcontractors (e.g., letter of intent, agreement).

6.6.3. Documentation evidencing that good faith efforts were made and submitted in the order listed in the table below with the corresponding item number (1-9) noted on each document.

6.6.4. Evidence of M/W/S/LBE participation (copies of bids, agreements, etc.) for all listed subcontractors, suppliers, manufacturers, and/or truckers that are *not* directly contracting with them (e.g., material suppliers to subcontractors).

6.7. The County reserves the right, as may be deemed appropriate and necessary by the County, to contact the bidders during the evaluation process for clarification and/or submission of additional ECOP or GFE documentation.

6.8. ECOP Goals/Good Faith Efforts Required. Below are examples of acceptable documentation to support that ECOP goals were met:

	ECOP GOALS	EXAMPLES OF ACCEPTABLE DOCUMENTATION
1	**60% Local Business Enterprise (LBE)** LBE participation may consist of the DBE and Subcontractors and may count towards the LBE, SBE, MBE and/or WBE ECOP goals.	• Business license issued by the County of Alameda or a city within the County of Alameda and proof of date issued (which is at least 6 months prior to the date bids were solicited). • Certification letter from an acceptable certifying agency* showing a local address and issuance/expiration dates.
2	**20% Certified Small Business Enterprise (SBE)** Certified SBEs **must be** Local (SLBE) to be considered.	• Same as LBE *PLUS*

	SLBE participation may consist of the DBE and Subcontractors and may count towards the LBE, SBE, MBE and/or WBE ECOP goals. An SBE meets the LBE definition above and the current State definition of a small business which is <100 employees and <$14 Million annual gross revenues (over the last three years).	• Current certification document or letter with SBE designation*
3	**15% Minority Owned Business Enterprise (MBE) Subcontractors** MBEs are defined per PCC 2000(e)(1), (e)(2) and (f) and are not required to be LBEs. An MWBE may count towards only MBE or WBE participation (not both), however, a local MBE may count towards both LBE and SLBE ECOP goals. An MBE is a minority-owned business certified by one of the agencies listed below. An MBE can also be an SBE or LBE for purposes of meeting the SBE or LBE subcontracting goals, but an MBE cannot also be considered a WBE.**	• Current certification document, letter, etc. with MBE designation**
4	**5% Woman-Owned Business Enterprise (WBE) Subcontractors** WBEs are defined per PCC 2000(e)(1), (e)(2) and (f) and are not required to be LBEs. An MWBE may count towards only MBE or WBE participation (not both), however, a local WBE may count both towards the LBE and SLBE ECOP goals. A WBE is a minority-owned business certified by one of the agencies listed below. A WBE can also be an SBE or LBE for purposes of meeting the SBE or LBE subcontracting goals, but a WBE cannot also be considered an MBE.**	• Current certification document, letter, etc. with WBE designation**

*** SBE certification from the following agencies is accepted:** Alameda County Transportation Commission (Alameda CTC), California Department of General Services (DGS, Port of Oakland, and when the State SBE definition is met, Alameda County (SLEB certification).

****When the State SBE definition is met, current MWBE acceptable certifying agencies are**: Bay Area Rapid Transit (BART), the (CPUC) Supplier Clearinghouse, Western Regional Minority Supplier Development Council (WRMSDC), Women's' Business Enterprise National Council (WBENC)

6.9 GFEs listed herein and suggested samples are not meant to be mandatory or exclusionary. Other documentation may also be acceptable as long as it satisfies the evidence of such GFE. For additional information regarding the ECOP Package submittals contact the County's Contracts Compliance Officer listed in Part IV below.

Required Good Faith Effort Indicators	Examples of Acceptable Documentation
1. The bidder attended mandatory pre-solicitation or pre-bid meetings that were scheduled by the local agency to inform all bidders of the ECOP requirements for the	• Copy of pre-bid meeting sign in sheet (which is e-mailed to attendees and available on County Current Contracting Opportunities website listed below). The name of the firm must be listed.

	project for which the contract will be awarded.	http://www.acgov.org/gsa_app/gsa/purchasing/bid_content/contractopportunities.jsp
2.	The bidder identified and selected specific items of the project for which the contract will be awarded to be performed by M/W/S/LBEs to provide an opportunity for participation by those enterprises.	• Copy of advertisements, certified letters, successfully completed faxes and/or other notices to M/W/S/LBEs with selected specific items identified.
3.	The bidder advertised, not less than ten (10) calendar days before the date the bids are opened, in one or more local daily or weekly newspapers, trade association publications, minority or trade oriented publications, trade journals, or other media specified by the local agency for M/W/S/LBEs that are interested in participating in the project.	• Copy of advertisements placed showing publication name and date, and dated receipts. • Dated receipt with ad copy.
4.	The bidder provided written notice of his or her interest in bidding on the contract to the number of M/W/S/LBEs required to be notified by the project specifications not less than ten (10) calendar days prior to the opening of bids. The bidder may utilize the list of certified minority or women business enterprises prepared by the Department of Transportation pursuant to Section 14030.5 of the Government Code and the list of local business enterprises in the on-line County Small Local Emerging Business (SLEB) Vendor Query System located at http://www.acgov.org/sleb_query_app/gsa/sleb/query/slebmenu.jsp. **The minimum number of M/W/S/LBE firms required to be notified is three (3) for each item of the project selected to be performed by an M/W/S/LBE**, where an M/W/S/LBE subcontractor has not been secured for that item.	• Copy of dated notice, complete distribution list(s) and evidence of distribution (proof of faxes, e-mails sent etc.) • Undelivered faxes do not count toward the effort to meet the minimum requirement • Trades and specialties, in addition to M/W/S/LBE designation, must be clearly identified to meet the minimum requirement by using certification letter or source documentation
5.	The bidder followed up initial solicitations of interest by contacting the enterprises to determine with certainty whether the enterprises were interested in performing specific items of the project.	• Successfully completed telephone log containing specific dates, name of caller, person contacted and comments (i.e., why not bidding, information sent to/date).
6.	The bidder provided interested M/W/S/LBEs with information about the plans, specifications, and requirements for the selected subcontracting or material supply work.	• Copy of published advertisements, letters, successfully completed faxes, etc. with M/W/S/LBE name/contact information including the required information or directions on how to obtain it and the date the information was provided • Agenda, meeting notes, etc. including specific topics discussed, M/W/S/LBE firm names and

	contact persons in attendance that received information, and the location and date information was provided.
7. The bidder requested assistance from local and small business and minority and women community organizations; local and small, minority and women contractor groups, local, state, or federal M/W/S/LBE assistance offices, or other organizations that provide assistance in recruitment and placement of M/W/S/LBEs.	• Copy of dated written request and response (letter, successfully completed fax, e-mail, etc.) or 2nd written request to follow-up, if needed. Contractor must attempt to contact at least two organizations. • Phone log is not acceptable.
8. The bidder negotiated in good faith with the M/W/S/LBEs and did not unjustifiably reject as unsatisfactory bids prepared by any M/W/S/LBEs as determined by GSA.	• Copies or list of all bids and a spreadsheet listing all bids with firm name, contact person, bid items(s), bid price, M/W/S/LBE classification, and comments re: selection or rejection • M/W/S/LBE bids accepted and included in bid response
9. Where applicable, the bidder advised and made efforts to assist interested M/W/S/LBEs in obtaining bonds, lines of credit, or insurance required by either the GSA or the contractor.	• Copy of advertisements or other notices with specifics referencing willingness to assist M/W/S/LBEs • Agenda, meeting notes including presenter's name and title, specific topics discussed, hand outs etc., name of M/W/S/LBE firms in attendance, contact persons who received advice, location and date advice was provided

6.10 The performance by a bidder of the Indicators specified in the table above shall create a rebuttable presumption, affecting the burden of producing evidence, that a bidder has made a good faith effort to comply with the goals and requirements relating to participation by M/W/S/LBEs established pursuant to Article 4 above.

7. JOINT VENTURES

7.1. Whenever a joint venture occurs involving either a prime or non-prime (i.e., subcontractors and suppliers) M/W/S/LBE firm at any level of contracting, trucking, manufacturing, or supplying, the prime contractor shall provide the County with a full account of the nature of ownership interests, the basis for creation of the joint venture, and the particular financial participation and administrative responsibilities of the interested parties. In evaluating the prime contractor's effort, the M/W/S/LBE percentage which is to be attributed to a joint venture shall be determined by multiplying the percentage of the total "Construction Total" amount in the DBE's Proposal Form (Document 00 42 53) which is to be performed by the joint venture times the percentage of actual financial participation in the joint venture which the M/W/S/LBE business represents.

PART 2 LABOR AND CONTRACT COMPLIANCE REQUIREMENTS

8. APPLICATION

8.1. The following provisions shall apply to all contracts subject to the provisions of Part 1 and/or Part 4.

9. ALAMEDA COUNTY CONTRACT COMPLIANCE SYSTEM

9.1. The County utilizes the Elation System contract compliance application as part of its commitment to assist contractors to conveniently comply with legal and contractual requirements. Elation Systems, a secure web-based system, was implemented to monitor compliance and to track and report M/W/S/LBE participation in County contracts.

9.2. The DBE and all participating local and M/W/S/LBE Subcontractors awarded contracts as a result of the bid processes for this Project are required to use Elation to submit ECOP information including, but not limited to, weekly certified payrolls, monthly progress payment reports and other information related to M/W/S/LBE participation. Use of Elation Systems, support and training is available at no charge to prime and subcontractors participating in County contracts.

9.3. Upon contract award

9.3.1. The County will provide the Design Builder and its Subcontractors a code that will allow them to register and use the Elation Systems free of charge.

9.3.2. The Design Builder and its Subcontractors should schedule a representative from their office/company, along with each of their subcontractors, to attend Elation training.

9.3.3. Free multi-agency Elation Systems one-hour training sessions require reservations and are held monthly in the Pleasanton, California area.

9.4. It is the Design Builder's responsibility to ensure that they and their Subcontractors are registered and trained and utilize Elation Systems as required.

9.5. For further information, please see the Elation Systems training schedule online at http://www.elationsys.com/elationsys/support_1.htm or call Elation Systems at (925) 924-0340.

9.6. It is the Contractor's responsibility to ensure that they and their subcontractors are registered and trained as required to utilize Elation Systems.

9.6.1 For systems support visit Elation Systems online at http://www.elationsys.com/ or contact them at (925) 924-0340.

9.6.2 If you have questions regarding the utilization of the Elation Systems, please contact the Project Manager.

10. INFORMATION AND RECORDS

10.1. For the purposes of determining compliance with this program, the Design Builder shall provide the County with access to all records and documents that relate to M/W/S/LBE participation, and to all records of employment advertisements, application forms, tests and other selection techniques used to hire, transfer, promote, train or retain personnel, and other pertinent records and data pertaining to the project under consideration. Proprietary information will be safeguarded.

10.2. Upon request, the Design Builder must submit the following information on County approved forms. All Subcontractor submittals must be through the Design Builder.

10.2.1. M/WBE Subcontractor Participation Information and S/LBE Participation Information, (ECOP Forms 101A and 101B attached).

10.2.2. Subcontractor Information (ECOP Form 102A attached).

10.2.3. Checklist for Review of Good Faith Efforts (ECOP Form 102B attached).

10.2.4. Certified weekly payroll records (AAP Form 103 and 103A) showing the wages paid to each employee, the employee's job classification, gender and ethnic code. Payrolls will be submitted by the Design Builder and each Subcontractor via the Design Builder. **This provision applies to all classifications, including truckers**. A Fringe Benefits Statement (AAP Form 105A) must be submitted by the Design Builder and each Subcontractor with the first certified payroll.

10.2.5. Prevailing Wage Information Sheet (AAP Form 104) for prevailing wage rates for both the Design Builder and its Subcontractors.

10.2.6. M/W/S/LBE Utilization, when required (AAP Form 106-106A).

10.2.7. Equal Employment Policy (AAP Form 107) completed by both the Design Builder and its Subcontractors.

11. SUBSTITUTION OF M/W/S/LBE FIRMS

11.1. Substitution of other firms (subcontractors at any level, suppliers and/or truckers) for those listed in the DBE's and/or subcontractor's proposals on the sheet entitled M/WBE Subcontractor Participation Information or S/LBE Participation Information shall not be made without prior approval of the County, and shall be in accordance with State or Federal law where applicable.

PART 3 NON-COMPLIANCE WITH CONSTRUCTION OUTREACH PROGRAM

12. APPLICATION

12.1. The following provisions shall apply to all contracts subject to Part 1 and/or Part 4.

13. DETERMINATION OF NON-COMPLIANCE

13.1. During the performance of the contract, if the County finds that the DBE has not met or is not meeting the ECOP requirements in the contract based on any individual Procurement Package or the aggregate of several or all Procurement Packages, the County shall hold a meeting with the DBE for the purpose of determining whether the DBE is out of compliance. If after the meeting the DBE is found to be out of compliance, the DBE will be notified of a public hearing. The public hearing will be held before the Board of Supervisors with a minimum five (5) Day notice to the DBE. If the Board of Supervisors finds that there has been a violation, the County will notify the DBE in writing of the sanctions to be imposed.

13.2. In addition, the County shall deem a finding by the Fair Employment Practice Commission that there was willful violation of the California Fair Employment Act also to be a violation by the DBE of the ECOP requirements of the contract, and such violation shall be subject to the sanctions provided herein.

14. SANCTIONS

14.1 A finding at the public hearing that there has been a violation of the ECOP requirements of the contract shall be cause for the Board of Supervisors to impose any or all of the following sanctions:

14.1.1 Withhold an additional five percent (5%) of all further contract progress payments until the DBE provides evidence satisfactory to the Board of Supervisors that the condition of noncompliance has been corrected.

14.1.2 Suspend the contract until such time as the DBE provides evidence satisfactory to the Board of Supervisors that the condition of noncompliance has been corrected.

14.1.3 Terminate the contract and collect appropriate damages from the DBE.

14.1.4 Declare that the DBE is a non-responsive bidder, and is ineligible to make bids on future County contracts for a stated period of time or until the DBE can demonstrate to the satisfaction of the Board of Supervisors that the violation has been corrected.

PART 4 ADDITIONAL INFORMATION

15. NOTICE AND NETWORKING

15.1 To promote the ECOP goals and assist the DBE and its Subcontractors in their efforts to develop the relationships they may require to meet the ECOP goals for this Project, the County will, upon request by the DBE for its Procurement Plan procurements:

15.1.1. E-mail the Notice to Bidders to vendors in the County Vendor Database and other sources. Advertise the project once a week for at least 2 consecutive weeks in a newspaper of general circulation in the county where the project is located, trade organizations and chambers of commerce, and plan rooms. Notice of this project will also be posted on the County Current Contracting Opportunities and Calendar of Events websites (see website URL addresses below).

15.1.2. Incorporate a networking and informational component into the mandatory bid walk/site visit for Procurement Plan packages.

15.1.3. Provide information about the Project, the ECOP, and other current and upcoming Procurement Plan packages at the bid conference/networking meeting.

15.1.4. Send by electronic mail the list of attendees from the mandatory bid walk attendee list to each attendee when issuing the Addendum and post the list and Addendum on the Current Contracting Opportunities website.

16. SOURCES FOR M/W/S/LBE SUB-CONTRACTORS, LOCAL APPRENTCIES/

HIRING ASSISTANCE

16.1. The following sources may be contacted for assistance in soliciting M/W/S/LBE participation:

Asian American Contractors Association
Juliana Choy Sommer, President
(415) 642-1818
www.aaca-sf.com

Western Regional Minority Supplier Development Council (WRMSDC) – MBE certifications only
80 Swan Way, Suite 245
Oakland, CA 94621
(510) 686-2555
www.wrmsdc.org

Women's Business Enterprise National Council (WBENC)
WBE certifications only – www.wbenc.org

16.2. Sources for assistance in hiring local apprentices, youth, unemployed and under-employed County residents:

Cypress/Mandela Inc. Training Center
Contact: Art Shanks
E-mail: artshanks@yahoo.com
(510) 208-7350
www.cypressmandela.org

Youth Employment Partnership Program
Contact: Michele Clark-Clau
E-mail: mcc@yep.org
(510) 533-3447, x3344
www.yep.org

16.3. For information regarding apprenticeship programs, related forms, complete laws, regulations and Labor Code provisions contact:

Department of Industrial Relations, Division of Apprenticeship Standards (DAS) San Francisco Office
455 Golden Gate Avenue, 10th Floor, San Francisco, CA 94120
Phone: (415) 703-1128 FAX: (415)/703-5427
Website: www.dir.ca.gov

16.4. Visit the following County of Alameda GSA websites for

CERTIFIED SMALL LOCAL VENDORS	http://www.acgov.org/sleb_query_app/gsa/sleb/query/slebresultlist.jsp?smEmInd=C
CURRENT CONTRACT OPPORTUNITIES	http://www.acgov.org/gsa_app/gsa/purchasing/bid_content/contractopportunities.jsp
UPCOMING CONTRACT OPPORTUNITIES	http://www.acgov.org/gsa_app/gsa/purchasing/bid_content/futurecontractopportunities.jsp
CALENDAR OF EVENTS	http://www.acgov.org/calendar_app/DisplayListServlet?site=Inte

	rnet&ag=GSA&ty=PUR
COUNTY OF ALAMEDA HOME PAGE	http://www.acgov.org/index.htm

16.5. For further information regarding the Enhanced Construction Outreach Program (ECOP) contact:
Mel Go, Contract Compliance Officer
General Services Agency, Office of Acquisition Policy
Phone: (510) 208-9617 Fax: (510) 208-9720
E-mail: melbourne.go@acgov.org

END OF DOCUMENT

ECOP FORM 101A

COUNTY OF ALAMEDA
ENHANCED CONSTRUCTION OUTREACH PROGRAM (ECOP)

M/WBE SUBCONTRACTOR PARTICIPATION INFORMATION

Bid Opening Date: _____ Project #: **17033**

Bidder: _____ Project Name: **GDDF Boiler Upgrade**

Address: _____

Completed by: _____ Telephone: _____

Name of M/WBE Subcontractor	M/WBE Location (City)	Certified By*	Certification File Number	Description of Work	MBE (X)	WBE (X)	Construction Dollar Value of Contract	Percent
15% Goal - TOTAL MBE PARTICIPATION								
5% Goal - TOTAL WBE PARTICIPATION								

This form is required to provide M/WBE information for the Project. Copy this form as needed to list additional M/WBEs.
*M/WBE must have current and valid certification from acceptable agencies identified in paragraph 3.2 on the date bids are opened. **Attach M/WBE certifications to this form**.

THIS FORM MUST BE SUBMITTED WITH EACH SUBCONTRACTOR PROCUREMENT PACKAGE

Bidder Signature: Date:

ECOP FORM 101B

COUNTY OF ALAMEDA
ENHANCED CONSTRUCTION OUTREACH PROGRAM (ECOP)

S/LBE PARTICIPATION INFORMATION

Bid Opening Date: _____ Project #: **17033**

Bidder: _____ Project Name: **GDDF Boiler Upgrade**

Address: _____

Completed by: _____ Telephone: _____

Name of S/LBE Prime or Subcontractor	S/LBE Location (City)	Certified By*	SLBE Certification Number	Description of Work	SBE (X)	LBE (X)	Construction Dollar Value of Contract	Percent
20% GOAL - TOTAL SBE PARTICIPATION								
60% GOAL - TOTAL LBE PARTICIPATION								

This form is required to provide S/LBE information for the Project. Copy this form as needed to list additional S/LBEs.
*SBE must have current and valid certification from acceptable agencies identified in paragraph 3.5 on the date bids are opened. LBEs must meet the Local definition in Section 3.1. A**ttach Copy of all certifications and current and valid business license issued by the County or a city within the County.**

THIS FORM MUST BE SUBMITTED WITH EACH SUBCONTRACTOR PROCUREMENT PACKAGE

Bidder Signature: Date:

COUNTY OF ALAMEDA
ENHANCED CONSTRUCTION OUTREACH PROGRAM (ECOP)

SUBCONTRACTOR INFORMATION

Project Name: _____ Contract Number: _____

Contractor: _____ Estimated Start Date: _____

Address: _____ Estimated Completion Date: _____

_____ Contractor's License Number: _____

Telephone: _____ Payroll Clerk/Office Manager: _____

FOR THE DESIGN BID PHASE II PROPOSAL LIST BELOW ALL PREQUALIFIED AND KNOWN SUBCONTRACTORS FOR THE PROJECT

FOR SUBCONTRACTOR PROCUREMENT PACKAGES LIST ALL SUBCONTRACTORS FOR THE PACKAGE

SUBCONTRACTOR	BID PRICE	SBE	LBE	STREET ADDRESS	DESCRIPTION OF WORK	LICENSE #	FED. TAX ID	PHONE
		MBE	WBE	EMAIL ADDRESS				FAX
SUBCONTRACTOR		**SBE**	**LBE**	**STREET ADDRESS**	**DESCRIPTION OF WORK**	**LICENSE #**	**FED. TAX ID**	**PHONE**
		MBE	WBE	EMAIL ADDRESS				FAX

SUBCONTRACTOR		SBE	LBE	STREET ADDRESS	DESCRIPTION OF WORK	LICENSE #	FED. TAX ID	PHONE
		MBE	WBE	EMAIL ADDRESS				FAX
SUBCONTRACTOR	BID PRICE	SBE	LBE	STREET ADDRESS	DESCRIPTION OF WORK	LICENSE #	FED. TAX ID	PHONE
		MBE	WBE	EMAIL ADDRESS				FAX
SUBCONTRACTOR	BID PRICE	SBE	LBE	STREET ADDRESS	DESCRIPTION OF WORK	LICENSE #	FED. TAX ID	PHONE
		MBE	WBE	EMAIL ADDRESS				FAX
SUBCONTRACTOR	BID PRICE	SBE	LBE	STREET ADDRESS	DESCRIPTION OF WORK	LICENSE #	FED. TAX ID	PHONE
		MBE	WBE	EMAIL ADDRESS				FAX

SUBCONTRACTOR	BID PRICE	SBE	LBE	STREET ADDRESS	DESCRIPTION OF WORK	LICENSE #	FED. TAX ID	PHONE
		MBE	WBE	EMAIL ADDRESS				FAX

Form Completed by: _____ Date: _____
Signature and Title

THIS FORM MUST BE SUBMITTED WITH THE DBE'S PHASE II PROPOSAL AND WITH EACH SUBCONTRACTOR PROCUREMENT PACKAGE

ECOP 102B

CHECKLIST FOR REVIEW OF GOOD FAITH EFFORTS

1. Did you attend the scheduled mandatory pre-bid conference?
( ) Yes ( ) No (Where and date) (Indicate how this was done and attach proof marked with the number "1")

2. Have you identified and selected specific items of the project for which the contract will be awarded to be performed by M/W/S/ LBEs to provide an opportunity for participation by those enterprises?
( ) Yes ( ) No (Indicate how this was done and attach proof marked with the number "2")

3. Have you advertised not less than 10 calendar days before the date bids are opened in one or more local daily or weekly newspapers, trade association publications, minority or trade oriented publications, trade journals, or other media specified by GSA, for M/W/S/LBEs that are interested in participating in this project?
( ) Yes ( ) No (Indicate where and when ads were placed and attach proof marked with the number "3")

4. Have you provided written notice of your interest in bidding on the contract to the number of M/W/S/LBEs required to be notified by the project specifications not less than ten (10) calendar days prior to the opening of bids?
( ) Yes ( ) No (Indicate how, when and to whom and attach proof marked with the number "4")

5. Did you follow up initial solicitations of interest by contacting the enterprises to determine with certainty whether the enterprises were interested in performing specific items of the project?
( ) Yes ( ) No (Indicate how, when and to whom, and attach proof marked with the number "5")

6. Have you provided interested M/W/S/LBEs with information about the plans, specifications, and requirements for the selected subcontracting or material supply work?
( ) Yes ( ) No (Indicate how, when, and to whom and attach proof marked with the number "6")

7. Have you requested assistance from local and small business and minority and women community organizations; local and small, minority and women contractor groups, local, state, or federal M/W/S/LBE assistance offices, or other organizations that provide assistance in recruitment and placement of M/W/S/LBEs?
( ) Yes ( ) No (Indicate how, when and to whom and attach proof marked with the number "7")

8. Have you negotiated in good faith the M/W/S/LBEs and not unjustifiably rejected as unsatisfactory bids prepared by any M/W/S/LBEs?
( ) Yes ( ) No (Indicate when and to whom and attach proof marked with the number "8")

9. Have you advised and made efforts to assist interested M/W/S/LBEs in obtaining bonds, lines of credit, or insurance required by either GSA or the contractor?
( ) Yes ( ) No (Indicate how, when and to whom and attach proof marked with the number "9")

_____ _____

Contractor Signature Title

IF THE DESIGN BUILD ENTITY DOES NOT MEET THE ECOP GOALS WITH ITS PREQUALIFIED AND PARTICIPATING (LISTED) SUBCONTRACTORES, THEN THIS FORM MUST BE SUBMITTED WITH THE PHASE II PROPOSAL

FOR SUBCONTRACTOR PROCUREMENT PACKAGES, IF THE DESIGN BUILD ENTITY DOES NOT MEET THE ECOP GOALS FOR A GIVEN SUBCONTRACTOR PROCUREMENT, THEN THIS FORM MUST BE SUBMITTED TO THE COUNTY WITH THAT PROCUREMENT PACKAGE.

DOCUMENT 00 62 40

SMALL LOCAL EMERGING BUSINESS (SLEB) PROGRAM

1. SMALL LOCAL EMERGING BUSINESS (SLEB) PARTICIPATION.

1.1. Small Local Emerging Business (SLEB) Program: The County has implemented the SLEB Program in order to develop and promote economic growth in the community it serves. In order to be awarded the Contract for this Project, a Design Build Entity (DBE) must either be a SLEB or meet the requirements of paragraph 1.1.1 below. A SLEB is a local business that is either small or emerging and has been certified as such by the County:

- Local Business: A business having a fixed office with a street address in Alameda County and having a valid business license issued by the County or by a City within Alameda County.

- Small Business: A business which has been certified by the County as local and which meets the U.S. Small Business Administration (U.S.S.B.A.) small-business size standards for its classification.

- Emerging Business: A business which has been certified by the County as local and which meets one-half (1/2) of the U.S.S.B.A. small-business size standards for its classification and which has been in business less than five (5) years. A local business may qualify as an emerging business for a maximum of five (5) years.

A certification application package (consisting of Instructions (Document 00 62 40.01) and Application (Document 00 62 40.02) are included in this RFP and may be used by each DBE or its subconsultants to apply for SLEB certification.

1.1.1 DBE who do not meet the SLEB requirements set forth above must partner, joint venture, or subcontract with one or more County-certified SLEBs for at least twenty percent (20%) of the amount listed as "Total Design Services" in Paragraph 4 of the Proposal Form (Document 00 42 53) in order to be considered for the contract award. Such a DBE must submit as part of its Proposal written documentation evidencing a firm contractual commitment to meet this minimum SLEB participation requirement. Participation for SLEB subconsultants who have been identified by the DBE at the time of Proposal submissions shall be documented by submitting completed copies of Document 00 62 40.04 (SLEB Program Partnering Information Sheet) for each participating SLEB subconsultant. Participation for other SLEB subconsultants must be described in the DBE's Subconsultant/Subcontractor Procurement Plan (Document 00 62 30).

1.1.2 Evidence of participation shall be provided immediately upon request at any time during the term of such contract. DBE shall provide participation reports during the term of said contract and a final account statement at the end of the contract to the County.

1.1.3. DBE shall utilize County's contract compliance application (Elation Systems) in accordance with Paragraph 6, below, to report SLEB subconsultant participation during the term of the Contract. Evidence of participation shall be provided immediately upon request at any time during the term of the Contract. All SLEB participation, except for a SLEB DBE, must be tracked and monitored utilizing the Elation compliance system. DBE and DBE's small and/or emerging local businesses participating as subconsultants on the

awarded contract are required to use the Elation web-based compliance system to report and validate payments received and made to certified small and/or emerging local businesses. It is the DBE's responsibility to ensure that it and its subconsultants are registered and trained as required to utilize the Elation System. SLEB DBE with SLEB subconsultants must enter payments made to each lower tier subconsultant in the Elation System and ensure that SLEB subconsultants confirm payments received.

1.1.4. DBE shall not substitute or add any small and/or emerging local business(s) during the term of the Contract without prior written approval from the County. Requests to substitute or add a small and/or emerging local business shall be submitted in writing to the Project Manager. DBE will not be able to substitute the Subconsultant without prior written approval from the County's Auditor Controller Agency, Office of Contract Compliance (OCC).

1.1.5. The County reserves the right to waive these SLEB participation requirements for this Project, if the additional estimated cost to the County, which may result from inclusion of these requirements, exceeds five percent (5%) of the total estimated contract amount or Ten Thousand Dollars ($10,000), whichever is less.

1.1.6 Contractor shall meet the agreed upon SLEB requirements within 15 Business Days of the date non-compliance began or pursuant to written notice from the County notifying Contractor that it is no longer in compliance with the program. County will be under no obligation to pay contractor for the percent committed to a SLEB subcontractor if the work is not performed by the listed small and/or emerging local business.

1.1.7 The following entities are exempt from the SLEB requirements as described above and are not required to subcontract with a SLEB:

1.1.7.1 non-profit community based organizations (CBO);

1.1.7.2 non-profit churches or non-profit religious organizations (NPO)

1.1.7.3 public schools; and universities; and

1.1.7.4 government agencies.

1.1.8 Non-profits must provide proof of their tax exempt status. These are defined as organizations that are certified by the U.S. Internal Revenue Service as 501(c)3.

1.1.9. For further information regarding the Small Local Emerging Business participation requirements and utilization of the Alameda County Contract Compliance System (Elation Systems) contact the County Auditor- Controller's Office of Contract Compliance (OCC) located at 1221 Oak St., Rm. 249, Oakland, CA 94612 at Tel: (510) 891-5500, Fax: (510) 272-6502 or via E-mail at ACSLEBcompliance@acgov.org.

1.2 First Source Program: The First Source Program will apply to this Project. The First Source Program has been developed to create a public/private partnership that links CalWORKs job seekers, unemployed and under employed County residents to sustainable employment through the County's relationships/connections with business, including contracts that have been awarded through the competitive process, and economic development activity in the County. Welfare reform policies and the new Workforce Investment Act require the County to do a better job of connecting historically disconnected potential workers to employers. The First Source Program will allow the County to create and sustain these connections.

1.2.1 At least ten (10) Business Days before advertising to the public any new or vacant position that is necessary to fulfill its obligations to the County under the Contract Documents, the DBE and its subcontractors must give notice to the County of the new or vacant position in order to permit the County to refer to the DBE and its subcontractors potential candidates for that position. Potential candidates referred by County to DBE or its subcontractors will be pre-screened and qualified based on DBE's or its subcontractor's specifications for the new or vacant position. DBE or its subcontractors agree to use their best efforts to fill their employment vacancies with candidates referred by County but the final decision of whether or not to offer employment, and the terms and conditions thereof, rest solely within the discretion of the DBE or its subcontractor.

1.2.2 All DBE are required to complete, sign and submit as part of their Proposal (see Documents 00 11 19 (Request for Proposals from Design-Build Entities) and 00 62 30 (Subconsultant/Subcontractor Procurement)), the First Source Agreement that has been attached hereto as Document 00 62 40.05 (First Source Agreement) whereby each DBE and its subcontractors agree to notify the County's First Source Program office of job openings on the Project prior to advertising elsewhere in accordance with paragraph 1.2.1 above in the event that DBE is awarded the Contract for this Project. Document 00 62 40.05 (First Source Agreement) will be completed and signed by County upon contract award and will then become part of the final Contract Documents.

1.2.3 Once a contract has been awarded, the DBE and each Subcontractor must call the EASTBAY Works One-Stop Career Center network at 1-888-411-HIRE (or Ed McMillan at 510-768-4450) with job descriptions and requirements for contract-related jobs located in Alameda, Contra Costa, Marin, Napa, Sonoma, Solano, Sacramento, San Francisco, San Mateo and Santa Clara Counties. Your One-Stop Career Center Business Representative will advertise your company's available positions, and will contact you when job seekers matching your stated qualifications have been located. East Bay Works is a collaboration of public agencies (PICs, EDDs, SSA, and others) with locations throughout Alameda County. For more information, please visit the website at www.acgov.org/auditor/sleb/sourceprogram

1.2.4. Project Labor Agreement. As stated in Paragraph 5.10 of Document 00 11 19 (Request for Proposals from Design Build Entities), the County intends to enter into a Project Labor Agreement ("PLA") or Project Stabilization Agreement ("PSA") for the Project. Once approved by the County's Board of Supervisors, and included in the Contract Documents, the requirements of the PLA/PSA (a collective bargaining agreement) will take precedence over the requirements of the First Source Program and Paragraph 1.2 of this Document 00 62 40 will be modified accordingly.

2. APPLICATION.

2.1. This Project is funded solely with local dollars and these SLEB provisions shall apply to all non-construction work performed under any contract awarded as a result of this competitive process.

2.2. To be considered for a contract award, DBE must meet the SLEB Program requirements identified herein for known (listed) Subconsultants as of the date of Proposals submissions.

2.3 Subconsultants of all tiers may contribute toward the SLEB program requirements.

2.4 The calculation of achieved SLEB utilization during the Contract Term will be based on the net confirmed payments received by the listed SLEBs, as evidenced in Elation Systems. All payments made to SLEB Subconsultants must be documented in Elation Systems.

2.5 Payment delays may occur if the DBE or its subconsultants are not in compliance with required SLEB utilization, as evidenced in Elation Systems.

3. NONDISCRIMINATION.

3.1 Purpose.

3.1.1 The DBE shall comply with the Americans with Disabilities Act and Title VII of the Civil Rights Act of 1964 and shall not, in regard to any position for which an employee or applicant for employment is qualified, discriminate against any employee or applicant for employment because of race, creed, color, disability, sex, sexual orientation, political affiliation, or by any other non-merit factors be otherwise subjected to discrimination. The Bidder shall apply SLEB to ensure that applicants are employed, and that employees are treated during employment without regard to their race, age, religion, Vietnam Era Veteran's status, political affiliation, or any other non-merit factors. Such action shall include, but not be limited to, the following: employment, upgrading, demotion or transfer; recruitment or recruiting advertising; layoff or termination; rates of pay or other terms of compensation; and selection for training, including apprenticeship. The DBE agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this nondiscrimination clause.

3.1.2 The DBE shall, in all solicitations or advertisements for employees for the Project, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, disability, sex, sexual orientation or national origin, age, religion, Vietnam Era Veteran's status, political affiliation, or any other non-merit factors.

4. MEETINGS.

After award of the contract and prior to beginning work, the General Services Agency may hold a SLEB conference at which a representative of the DBE and of each SLEB subconsultant must attend. As it becomes necessary during the course of the contract, the General Services Agency may call meetings of the DBE and pertinent SLEB subconsultants.

5. INFORMATION AND RECORDS.

For the purposes of determining compliance with this program, the DBE shall provide the County with access to all records and documents that relate to SLEB participation, and to all records of employment advertisements, application forms, tests and other selection techniques used to hire, transfer, promote, train or retain personnel, and other pertinent records and data pertaining to the Project. Proprietary information will be safeguarded.

6. ALAMEDA COUNTY CONTRACT COMPLIANCE SYSTEM.

6.1. Alameda County utilizes the Elation Systems contract compliance application as part of its commitment to assist contractors to comply with legal and contractual requirements. Elation Systems, a secure web-based system, was implemented to monitor compliance and to track and report SLEB participation in County contracts.

6.2. The DBE and all participating SLEB Subconsultants awarded contracts as a result of this procurement process for this Project are required to use Elation Systems to submit SLEB information including, but not limited to, weekly certified payrolls, monthly/progress payments made to lower tier subconsultants, confirmation of payments received and other information related to SLEB participation. Although it is not required for contract compliance monitoring,

subconsultants are encouraged to enter information for all of their lower tier participating local subcontractors/subconsultants for County reporting purposes only. DBE and subconsultants participating in County contracts will be provided training, support, and use of Elation Systems at no charge.

6.3. Upon contract award:

6.3.1. The County will provide DBE and participating subconsultants a code that will allow them to register and use Elation Systems free of charge.

6.3.2. Subconsultants should schedule a representative from their office/company, along with each of their subconsultants, to attend Elation Systems training. Free multi-agency Elation Systems one-hour training sessions require reservations and are held monthly in the Pleasanton, California area.

6.4. It is the DBE's responsibility to ensure that it and its Subconsultants are registered and trained and utilize Elation Systems as required.

6.5. For further information, please see the Elation Systems training schedule online at http://www.elationsys.com/elationsys/support_1.htm or call Elation Systems at (510) 764-1870.

6.6 If you have any other questions regarding Elation Systems you should contact the Project Manager at the address listed in paragraph 3.2 of Document 00 11 19 (Request for Proposals) or the Auditor-Controller's Office of Contract Compliance (OCC) located at 1221 Oak Street, Room 249, Oakland, California 94612, Telephone (510) 891-5500, Fax: (510) 272-6502 or via E-mail at ACSLEBcompliance@acgov.org

END OF DOCUMENT

DOCUMENT 00 62 40.01

SMALL LOCAL AND EMERGING BUSINESS (SLEB) PROGRAM

CERTIFICATION INSTRUCTIONS

1. Complete the application form

Program Definitions

Local Business: *A business having a fixed office with a street address in Alameda County for a minimum period of 6 months and a valid business license issued by the County or a City within Alameda County*

Small Business: *A business which has been certified by the County, is local and meets the U.S. Business Administration (SBA) size standards for its classification. Size standards and classification codes information available at http://www.naics.com/search.htm*

Emerging Business: *A business which has been certified by the County, is local and meets one half of the U.S. SBA size standards for its classification and has been in business less than 5 years.*

If you own less than 51% interest in your business, please indicate other owner(s) name(s), title(s) and percentage of ownership. List all current business and professional licenses. If you have been in business for less than three years, please provide your actual gross receipts received for the period that you have been in business. If you have not been in business for a complete tax year, please provide actual gross receipts to date. If any item on the application form is not applicable, please put "N/A" in the designated area. If additional space is needed, please attach additional sheet(s).

2. Please sign* and mail Application to:

Alameda County Auditor-Controller Agency
Office of Contract Compliance
1221 Oak Street, Room 249
Oakland, CA 94612

*The application form must be signed by the owner, principal partner or authorized officer of the corporation. We will contact you within 10 days to schedule a site visit upon receipt of your application.

3. On-site Visit

The following items must be available for our review during the visit to your business address:

- Signed Federal Tax Returns showing Gross Business Receipts for the last 3 years**
- Business Licenses
- Current Identification (i.e. Driver's License, Identification Card)
- Deed, Rental or Lease Agreement showing Business Address

**Personal Net Worth Statement (if the business has never filed taxes)

If you have questions regarding your certification, please contact:

Office of Contract Compliance Tel: (510) 891-5500 Fax: 510-272-6502 or Email:
ACSLEBcompliance@acgov.org

Thank you for your interest in doing business with Alameda County.

DOCUMENT 00 62 40.04

SMALL LOCAL EMERGING BUSINESS (SLEB)
PARTNERING INFORMATION SHEET

In order to meet the Small Local Emerging Business (SLEB) program requirements for this Project, Design Build Entities (DBE) must complete this form as required below. DBE not meeting the definition of a SLEB in Document 00 62 40, paragraph 1.1 (Small Local Emerging Business Program) are required to subcontract (or commit to subcontract) with one or more certified SLEB for at least twenty percent (20%) of the amount listed as "Total Design Services" in paragraph 4 of the Proposal Form (Document 00 42 53) in order to be considered for contract award. SLEB subconsultants must be independently owned and operated from the DBE with no employees of either entity working for the other. This form must be submitted for each SLEB subconsultant that the DBE will work with, evidencing a firm contractual commitment to meeting the SLEB participation goal. (Copy this form as needed.) DBE are encouraged to subcontract with SLEBs that can participate directly with this contract. One of the benefits of subcontracting will be economic, but subcontracting will also assist the SLEB to grow and build capacity to bid as a prime contractor.

Once a contract has been awarded, the DBE will not be able to substitute the listed subconsultant without prior written approval from the County's General Services Agency and Auditor-Controller, Office of Contract Compliance ("OCC"). GSA and the OCC will use the web-based Elation Systems to monitor contract compliance with the SLEB program (Elation Systems: http://www.elationsys.com/elationsys/index.htm). Upon award, the DBE and all SLEB subconsultants that receive contracts as a result of this bid process must register and use the secure web-based ELATION SYSTEMS. ELATION SYSTEMS will be used to submit SLEB subconsultant participation including, but not limited to, subconsultant contract amounts, payments made, and confirmation of payments received.

☐ **DBE IS A CERTIFIED SLEB (sign below)**

SLEB BIDDER BUSINESS NAME: _____

SLEB Certification #: _____ **SLEB Certification Expiration Date:** ____/____/____

NAICS Codes Included in Certification: _____

OR

☐ **DBE is NOT a certified SLEB and will subcontract: _____% of Total Design Services with the SLEB named below for the following goods/services:** _____

SLEB Subcontractor Business Name: _____

SLEB Certification #: _____ **SLEB Certification Expiration Date:** ___/___/___

SLEB Certification Status: ☐ **Small** ☐ **Emerging**

NAICS Codes Included in Certification: _____

DBE/Principal Name: _____

SLEB Subcontractor Principal Signature: _____**Date:** _____

DBE Signature: _____ **Date:** _____

END OF DOCUMENT

DOCUMENT 00 62 40.05

FIRST SOURCE AGREEMENT

ALCOLINK Vendor Number (if known): 00000 SLEB Vendor Number:

Full Legal Name:

DBA

Type of Entity: ☐ Individual ☐ Sole Proprietor ☐ Partnership
☐ Corporation ☐ Tax-Exempted ☐ Government or Trust

Check the boxes that apply:
☐ Goods Only ☐ Goods & Services ☐ Rents/Leases ☐ Legal Services
☐ Rents/Leases paid to you as the agent ☐ Medical Services ☐ Non-Medical Services –
Describe _____
☐ Other _____

Federal Tax ID Number (required): _____

P.O. Box/Street Address: _____

_____

_____

Vendor Contact's Name: _____

Vendor Contact's Telephone: _____ Fax: _____

Vendor Contact's E-mail address: _____

Please check all that apply:

LOC	☐	Local Vendor (Holds business license within Alameda County)
SML	☐	Small Business (as defined by Small Business Administration)
I	☐	American Indian or Alaskan Native (>50%)
A	☐	Asian (>50%)
B	☐	Black or African American (>50%)
F	☐	Filipino (>50%)
H	☐	Hispanic or Latino (>50%)
N	☐	Native Hawaiian or other Pacific Islander (>50%)
W	☐	White (>50%)

Number of Entry Level Positions available through the life of the contract: _____

Number of other positions available through the life of the contact: _____

This information to be completed by County:
Contract #_____

Contract Amount: _____

Contract Term: _____

Design Build Entity (DBE) agrees that DBE and its subcontractors will provide Alameda County (through East Bay Works and Social Services Agency), ten (10) working days to refer to DBE or its subcontractors, potential candidates to be considered by DBE or its subcontractors to fill any new or vacant positions that are necessary to fulfill their contractual obligations to the County, that DBE or its subcontractors have available on the Project during the life of the contract before advertising to the general public. DBE and its subcontractors will also provide the County with specific job requirements for new or vacant positions. DBE and its subcontractors agree to use their best efforts to fill their employment vacancies with candidates referred by County, but final decision of whether or not to offer employment, and the terms and conditions thereof, to the candidate(s) rest solely within the discretion of the DBE or its subcontractors.

Alameda County (through East Bay Works and Social Services Agency) agrees to only refer pre-screened qualified applicants, based on DBE or its subcontractors' specifications, to DBE or its subcontractors, as appropriate, for interviews for prospective employment by DBE or its subcontractors (see Incentives for Contractor Participation under Contractor/First Source Program located on the Small Local Emerging Business (SLEB) Website, http://www.acgov.org/auditor/sleb/

_____ _____
(DBE Signature) (Date)

_____
(Company Name)

_____ _____
(Alameda County Representatives Signature) (Date)

END OF DOCUMENT

DOCUMENT 00 65 10

AGREEMENT AND RELEASE OF ANY AND ALL CLAIMS UPON FINAL PAYMENT

This Agreement and Release of Claims ("Agreement and Release"), made and entered into this **[DATE]** day of **[MONTH]**, **2018**, by and between the COUNTY OF ALAMEDA, acting by and through its GENERAL SERVICES AGENCY ("County"), and **[NAME OF DESIGN BUILDER]**, whose place of business is at **[_____]** hereinafter called "Design Builder".

RECITALS

1. County and Design Builder entered into Contract No. _____ in the County of Alameda, State of California.

2. The Work under Contract No. _____ has been completed.

Now, therefore, it is mutually agreed between County and Design Builder as follows:

AGREEMENT

3. Design Builder will not be assessed liquidated or other damages except as detailed below:

Original Contract Price	$ _____
Modified Contract Price	$ _____
Payment to Date	$ _____
Liquidated Damages	$ _____
Other Damages	$ _____
Payment Due Design Builder	$ _____

4. Subject to the provisions of this Agreement and Release, County shall forthwith pay to Design Builder the sum of **[_____]** Dollars and **[_____]** Cents ($**[_____]**) under **Contract No. [XXXXX]**, less any amounts withheld under the Contract or in response to any Stop Notice on file with County as of the date of such payment.

5. Design Builder acknowledges and hereby agrees that there are no unresolved or outstanding claims in dispute against County arising from **Contract No. [XXXXX]**, the Work or the Project, except for the claims described in paragraph 6, and continuing obligations described in paragraph 8, below. It is the intention of the parties in executing this Agreement and Release that this Agreement and Release shall be effective as a full, final and general release of all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities of Design Builder against County, all its respective agents, employees, inspectors, assignees and transferees except for the Disputed Claims set forth in paragraph 6, and continuing obligations described in paragraph 8, below.

6. The following claims submitted under Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions) are disputed (hereinafter, the "Disputed Claims") and are specifically excluded from the operation of this Agreement and Release:

Claim No.	Date Submitted	Description of Claim	Amount of Claim

[Insert information, including attachment if necessary]

7. Consistent with Public Contract Code § 7100, Design Builder hereby agrees that, in consideration of the payment set forth in paragraph 4, above, Design Builder hereby releases and forever discharges County, all its agents, employees, inspectors, assignees and transferees from any and all liability, claims, demands, actions or causes of action of whatever kind or nature arising out of or in any way concerned with **Contract [XXXXX**], the Work or the Project except those set forth in paragraph 6, above.

8. Guarantees and warranties for the Work, and any other continuing obligation of Design Builder shall remain in full force and effect as specified in the Contract Documents.

9. Design Builder shall immediately defend, indemnify and hold harmless the County of Alameda, all of their officers, directors, representatives, attorneys, agents, employees and consultants, including but not limited to the County Board of Supervisors, County Representatives, (collectively "Indemnitees") from any and all claims, demands, actions, causes of action, obligations, costs, expenses, damages, losses and liabilities that may be asserted against them by any of Design Builder's suppliers and/or subcontractors of any tier and/or any suppliers to them for any and all labor, materials, supplies and equipment used, or contemplated to be used in the performance of **Contract No. [XXXXX]**, except for the Disputed Claims set forth in paragraph 6 above.

10. Design Builder hereby waives the provisions of Civil Code § 1542 which provides as follows:

> A general release does not extend to claims which the creditor does not know or suspect to exist in his or her favor at the time of executing the release, which if known by him or her, must have materially affected his or her settlement with the debtor.

11. The provisions of this Agreement and Release are contractual in nature and not mere recitals and shall be considered independent and severable, and if any such provision or any part thereof shall be at any time held invalid in whole or in part under any federal, state, county, municipal or other law, ruling or regulations, then such provision, or part thereof shall remain in force and effect only to the extent permitted by law, and the remaining provisions of this Agreement and Release shall also remain in full force and effect, and shall be enforceable.

12. All rights of County shall survive completion of the Work or termination of Contract, and execution of this Release.

*** * * CAUTION: THIS IS A RELEASE - READ BEFORE EXECUTING * * ***

COUNTY OF ALAMEDA	DESIGN BUILDER
BY: _____	BY: _____
Its: _____	Its: _____

*** * * CAUTION: THIS IS A RELEASE - READ BEFORE EXECUTING * * ***

END OF DOCUMENT

DOCUMENT 00 65 30

GUARANTY

TO THE COUNTY OF ALAMEDA, ACTING BY AND THROUGH ITS GENERAL SERVICES AGENCY ("County"), for construction of the

GDDF BOILER UPGRADE PROJECT

550 6th STREET, OAKLAND, CALIFORNIA

The undersigned guarantees all construction performed on this Project and also guarantees all material and equipment incorporated therein.

Design Builder hereby grants to County, for a period of **two (2) years following the date of Substantial Completion**, as defined in Section 01 42 16 (Definitions), unless a longer period is specified in the Contract Documents, its unconditional warranty of the quality and adequacy of all of the Work including, without limitation, all labor, materials and equipment provided by Design Builder and its Subcontractors of all tiers in connection with the Work. In addition, pursuant to paragraph 9.10 of the General Conditions (Document 00 72 53), during the **two (2) year warranty period**, Design Builder will provide or perform all manufacturer's recommended maintenance on the following systems: all HVAC systems; plumbing; natural gas systems; fire sprinkler systems; electrical systems; HVAC and lighting control systems; fire alarm system; paging and speaker systems; communications/data systems and security systems.

Neither final payment nor use or occupancy of the Work performed by the Design Builder shall constitute an acceptance of Work not done in accordance with the Contract Documents or relieve Design Builder of liability in respect to any express warranties or responsibilities for faulty materials or workmanship. Design Builder shall remedy any defects in the Work and pay for any damage resulting therefrom, which shall appear within two (2) years, or longer if specified, from the date of Substantial Completion.

If within two (2) years after the date of Substantial Completion, or such longer period of time as may be prescribed by Applicable Law, or by the terms of Contract Documents, any Work is found to be defective, Design Builder shall promptly, without cost to County and in accordance with County's written instructions, correct such defective Work. Design Builder shall correct any defective Work rejected by County and replace it with Work that is not defective, and satisfactorily correct any damage to other Work or the work of others resulting therefrom. If Design Builder fails to promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, County may have the defective Work corrected without allowing Design Builder an opportunity to do so. Design Builder shall pay for all claims, costs, losses and damages caused by or resulting from such removal and replacement. Where Design Builder fails to correct defective Work, or defects are discovered outside the correction period, County shall have all rights and remedies granted by law.

Inspection of the Work shall not relieve Design Builder of any of its obligations under the Contract Documents. Even though equipment, materials, or Work required to be provided under the Contract Documents have been inspected, accepted, and included in payments made by County, Design Builder shall, at its own expense, replace or repair any such equipment, material, or Work found to be defective or otherwise not to comply with the requirements of the Contract Documents up to the end of the guaranty period.

All abbreviations and definitions of terms used in this Agreement shall have the meanings set forth in the Contract Documents, including, without means of limitation, Section 01 42 16 (Definitions).

The foregoing Guaranty is in addition to any other warranties or contract obligations of Design Builder contained in the Contract Documents and not in lieu of any and all other liability imposed on Design Builder under the Contract Documents or Applicable Law with respect to Design Builder's duties, obligations, and performance under the Contract Documents. In the event of any conflict or inconsistency between the terms of this Guaranty and any warranty or contract obligation of the Design Builder under the Contract Documents or at law, such inconsistency or conflict shall be resolved in favor of the higher level of obligation of the Design Builder.

_____
[DATE]

"Design Builder" [DESIGN BUILDER]

By: _____

Print Name: _____

Its: _____

END OF DOCUMENT

DOCUMENT 00 72 53

GENERAL CONDITIONS

1. INVESTIGATIONS AND SUBCONTRACTORS.

1.1 Investigation Required.

1.1.1 Prior to submitting a Phase II Proposal for the contract to design and construct the Work and prior to proceeding with the design or construction, the Design Builder must do all things referred to in Document 00 52 53 (Agreement) regarding the Design Builder's representations and warranties contained in Article 5 thereof. The Design Builder is charged with all information and knowledge that a reasonable contractor would ascertain from having performed this required pre-Proposal review, research and analysis. The Contract Price must include the entire cost of all work "incidental" to completion of the Work, as that term is defined in paragraph 2.1 (Description of Work) of this Document 00 72 53 (General Conditions).

1.1.2 The conditions and limitations on Design Builder's use of information in the Project Manual are set forth in Document 00 31 32 (Geotechnical Data and Existing Conditions), and Document 00 31 26 (Hazardous Materials Surveys).

1.1.2.1 As to above-ground conditions or visible as-built conditions, there is no warranty, express or implied, or any representation express or implied, that such information is correctly shown or indicated, so long as such information is reasonably verifiable by pre-proposal investigation. The Design Builder is required to make an independent investigation and verify existing above-ground conditions. In proceeding with the Work, the Design Builder shall rely on the results of its own independent investigation.

1.1.2.2 As to any subsurface condition shown or indicated in the Contract Documents, as well as those subsurface conditions identified in Documents 00 31 32 and (Geotechnical Data and Existing Conditions) and Document 00 31 26 (Hazardous Materials Surveys), the Design Builder may rely only upon the accuracy of actual reported depths, actual reported character of materials, actual reported soil types, actual reported water conditions, or actual obstructions shown or indicated to the extent provided for in Document 00 31 32. The County is not responsible for any unreasonable opinions or conclusions drawn from such information. Compensation for unknown differing Site conditions shall be allowed as provided in the Contract Documents.

1.1.3 Reference is made to Document 00 31 32 (Geotechnical Data and Existing Conditions) for identification of:

1.1.3.1 Subsurface Conditions: Those reports of explorations and tests of subsurface conditions at or contiguous to the Site that have been made available for informational purposes; and

1.1.3.2 Physical Conditions: Those reports of physical conditions in or relating to existing surface or known subsurface structures at or

contiguous to the Site that have been made available for informational purposes.

1.1.3.3 These reports and drawings are not Contract Documents but as provided in Documents 00 31 32 (Geotechnical Data and Existing Conditions), the Design Builder may use the information in these reports and drawings. However, the Design Builder shall independently verify the information provided in the reports in developing the design of the Project and performing the Work.

1.1.4 Design-Builder shall perform whatever additional studies and investigations it deems appropriate and necessary for design and construction of the Project.

1.1.5 Except as described above, the Design Builder may not rely upon or make any claim against the County, or any of its consultants, with respect to the interpretation of such technical data. Records of existing structures on or in the vicinity of the Site may be supplied in Document 00 31 32 (Geotechnical Data and Existing Conditions), or may be on file in the County's offices and may be examined by Design Builder (but subject to the conditions of Document 00 31 32). The Design Builder should note that existing structures or facilities may differ from records on file, or may have been altered, and that no representation is made, nor responsibility taken nor warranty given either express or implied, by the County as to the accuracy of locations and other data shown on records, except as otherwise provided in the Contract Documents. After contract award, the Design Builder shall conduct all necessary investigations and become familiar with any and all actual as-built conditions.

1.1.6 See paragraph 13.5 (Notice of Concealed or Unknown Conditions) of this Document 00 52 53 concerning notice of concealed or unknown conditions.

1.2 Design Builder and Subcontractors.

1.2.1 The Design Builder must list with its Proposal and provide required information for the major Subcontractors, subconsultants and specifically identified designers (together for purposes of this Document 00 72 53, "Subcontractors") who will perform a portion of Work, as far as such persons or entities are known on the day Proposals are submitted. The Design Builder shall submit updated Subcontractor Lists to the County as they become available following contract award or the Notice to Proceed. The Design Builder shall provide the following information:

1.2.1.1 Name of Subcontractor.

1.2.1.2 Business address of Subcontractor.

1.2.1.3 Telephone numbers and e-mail addresses of Subcontractor.

1.2.1.4 Brief description of portion of Work to be performed under subcontract.

1.2.1.5 Amount to be paid for Subcontractor's work, labor, or service.

1.2.1.6 The Subcontractor's California Contractor's State License Number or Professional License Numbers.

1.2.2 The Design Builder shall constantly give personal attention to faithful prosecution of Work, whether performed by the Design Builder's own forces or under subcontract, and shall keep the Work under personal control and shall not assign by power of attorney or otherwise, nor subcontract the whole or any part thereof, except as herein provided.

1.2.3 Consistent with Public Contract Code §§ 4101 et seq., the Design Builder shall not substitute any other person or firm as a Subcontractor or subconsultant in place of any of those listed in Proposal or later (for actual building design or construction), nor shall any Subcontractor assign or transfer subcontract, or permit the same to be performed in whole or in part by any other Subcontractor without written approval of the County. Should the Design Builder thereafter let out or subcontract any portion of the Work in violation of this requirement, County shall have the right to assess the Design Builder a penalty of ten percent (10%) of the amount of the subcontract involved. The Design Builder shall provide the County with a complete copy of all executed subcontracts or final commercial agreements with Subcontractors and /or suppliers along with any modifications, amendments, or addenda thereto.

1.2.4 The Design Builder shall provide the County with a copy of any bid qualification forms to be utilized in bid packages prior to issuance of the bid package. The County will have the right to review and request inclusion of any qualification requirements it deems necessary to insure the qualifications of the bidders. The Design Builder and the County shall agree on a final form of the bid qualification forms. The Design Builder shall provide the County with all completed bid qualification forms submitted by each Subcontractor to which the Design Builder intends to award any subcontract. At the time the Design Builder provides the County with completed bid qualifications forms submitted by each Subcontractor to which the Design Builder intends to award any subcontract, the Design Builder shall advise the County in writing of the date by which the Design Builder intends to enter each subcontract with each Subcontractor. The County shall review the completed bid qualification forms submitted by each Subcontractor and, prior to the date by which the Design Builder intends to enter each subcontract with each Subcontractor, County shall advise the Design Builder in writing of its disapproval of any such Subcontractor(s). The Design Builder shall upon request provide the County with a copy of each contract which the Design Builder proposes to enter into for subcontracting or assigning any portion of Work. Within the County's sole discretion, any Subcontractor may be deemed not qualified to perform work if the County determines that the Subcontractor fails to meet the requirements of the Contract Documents, or for any other reason, at any time, however, the County shall not have a duty to exercise this discretion for the benefit of any party other than itself.

1.2.5 Subcontract agreements and assignments shall preserve and protect the rights of the County under the Contract Documents so that subcontracting and

assignments will not prejudice such rights. To the extent of the Work to be performed by a Subcontractor, the Design Builder shall require the Subcontractor's written agreement (1) to be bound to the terms of Contract Documents; (2) to provide access to and the right to audit and the right to copy all of Subcontractor's books, records, contracts, correspondence, instructions, drawings, receipts, vouchers, purchase orders, and memoranda relating to the Work; and (3) to assume vis-à-vis the Design Builder all the obligations and responsibilities that the Design Builder assumes toward the County under the Contract Documents. The County shall be a designated intended third party beneficiary of all subcontracts.

1.2.6 The Design Builder shall provide for the assignment to the County of all rights any Subcontractor may have against any manufacturer, supplier, or distributor for breach of warranties and guarantees relating to the Work performed by the Subcontractor under the Contract Documents.

1.2.7 Each Subcontractor shall be reliable and responsible and fully able to perform its portion of the Work covered by the proposed subcontract or assignment, and able to complete the Work in accordance with the Contract Documents. The Design Builder may not use unqualified, inexperienced or non-responsive Subcontractors. At a minimum, each Subcontractor and its proposed superintendent must have prior experience on at least two subcontracts of similar scope and complexity. In addition, Subcontractors must not have been terminated for default on any project within the previous three (3) years, and must never have submitted a false claim to any public entity.

1.2.8 No subcontract or assignment of this Contract or any part thereof shall relieve the Design Builder or Sureties of liabilities or obligations under this Contract.

1.2.9 No assignment by the Design Builder of the Contract or any part thereof, or funds to be received there under by the Design Builder, will be recognized unless such assignment has written approval of the County and Surety has been given due notice and approved of such assignment in writing.

1.2.10 The Design Builder shall require each of its Subcontractors to execute agreements containing indemnity provisions coextensive with those in this Contract.

1.2.11 The County has the right to request all documentation that supports the Design Builder's selection of a Subcontractor. The County shall have the right of final approval as to the qualification(s) of a Subcontractor to perform its designated scope of work. Within the County's sole discretion, any Subcontractor may be deemed not qualified to perform work on the Project if the County or County's Representative determines that the Subcontractor fails to meet the requirements of the Contract Documents, or for any other reason, however, the County has no obligation to exercise this discretion for the benefit of any party other than itself.

1.2.12 The County reserves the right to issue payments to the Design Builder and Subcontractor jointly for Work performed under this Agreement.

1.2.13 No contractor or Subcontractor who is ineligible to bid work on, or be awarded, a public works project under Labor Code sections 1771.1 or 1777.7 can bid on, be awarded or perform work as a Subcontractor on the Project. The Design Builder is prohibited from performing work on the Project with a Subcontractor who is ineligible to perform work on a public works project under these sections of the Labor Code.

2. SCOPE OF DESIGN BUILD RESPONSIBILITY.

2.1 Description of Work. The Design Builder shall deliver the Work to the County as a complete, operational, and fully functional portion of the Project. in accordance with the Contract Documents, including providing, furnishing, and performing all Services and providing and furnishing all necessary supplies, Materials and Equipment, and all necessary supervision, labor, and Services required for the engineering, architectural design, procurement, quality assurance and inspection, construction, installation, Startup, Checkout, Commissioning, Testing, Maintenance, site cleanup, and the training of the County's personnel, all in conformity with the requirements, Legal Requirements, criteria, Performance Guarantees, and warranties set forth in the Contract Documents. As part of providing a complete and operable Project, Design Builder shall, among other things, coordinate and provide all necessary tie-ins to existing site utilities, and shall coordinate and provide all necessary tie-ins to off-site utilities. Design Builder will pay all fees associated with any such connection except as is provided in paragraph 13.2.1 of Document 00 72 53 (General Conditions). The signature and seal of a licensed engineer or architect shall be obtained as necessary for compliance with the Legal Requirements.

2.2 All-Inclusive Design Build Obligation. Without limiting the generality of paragraph 2.1 (Description of Work) hereof, the Design Builder shall provide, at a minimum, the following Services and Materials and Equipment as further specified and described in Sections 01 11 13 (Work Covered by Contract Documents) and 01 11 20 (Design Services and Deliverables) provided, however, that these sections shall not be construed in any way to limit the Design Builder's obligations hereunder to deliver the Work to the County as a complete, operational, and fully functional portion of the Project.

2.2.1 The Design Builder shall provide and manage all architectural and engineering services and design, which will set forth in detail specifications, drawings and requirements for the procurement of the Materials and Equipment and for the construction of the entire Work. The Design Builder shall furnish the services of all personnel, including supervisors, engineers, designers and draftsmen necessary for the preparation of all drawings and specifications required for the Work.

2.2.2 The Design Builder shall provide all equipment and materials and furnish the services of all supervisors, buyers, inspectors, expeditors, and other personnel necessary to procure all Materials and Equipment for the construction of the Project. The Design Builder shall provide, install, complete and pay for all labor, Materials and Equipment, tools, supplies, construction equipment and machinery, construction utilities (including all water, power and sanitary facilities), transportation (including specified infrastructure and improvements on and off the Site), customs clearance, quality assurance, and other facilities and services (including any temporary or consumable materials, water, fuels, and electricity

necessary for the proper execution and completion of the Work, including any of the utilities, as required). Up to the time of Final Completion, as defined in Section 01 42 16 (Definitions), the Design Builder shall maintain all Materials and Equipment in accordance with manufacturer's requirements while such Materials and Equipment are in transit or in the care and custody of the Design Builder. Should the Design Builder cause damage to public or private roadways in its performance of the Work, the Design Builder shall make repairs as necessary without cost to the County.

2.2.3 The Design Builder shall supervise and direct the Work, and shall furnish the services of all supervisors, foremen, skilled and unskilled labor, and all other personnel in sufficient quantities and with sufficient skills necessary to perform the Services in accordance with the Contract Documents. At the County's request, the Design Builder shall replace, at the Design Builder's expense, any individual if it is determined by the County that such individual's continued presence would jeopardize the quality or timely completion of the Work. Whenever required by Applicable Laws or the Contract Documents, the Design Builder shall employ licensed personnel as necessary to perform engineering, design, architectural, or other professional services in the performance of the Work.

2.2.4 All such professional services shall be performed with the degree of care, skill, and responsibility customary among such licensed personnel that specialize in public works similar in size, scope and complexity to the Work and the Project. The Design Builder shall be responsible for all labor relations matters relative to the Work on the Site and shall at all times use all reasonable efforts to maintain harmony among all workers employed in connection with the Work on the Site. The Design Builder shall adopt and implement reasonable policies and practices, including but not limited to those in the Project Labor Agreement or Project Stabilization Agreement, if any, designed to avoid work stoppage, slow downs, disputes and strikes.

2.2.5 The Design Builder shall be solely responsible for all construction means, methods, techniques, sequences, and procedures and for coordinating all portions of the Work, and the County shall not be responsible for or exercise any control over the actions or omissions of the Design Builder, any Subcontractor, supplier, or any of their employees or agents performing any of the Work or the Design Builder's warranty obligations. The Design Builder shall prosecute the Work continuously and diligently and complete the Work in accordance with all requirements of this Agreement.

2.2.6 Design Builder shall coordinate ingress and egress to and from the Site so as to minimize disruption to the Work and to traffic in the vicinity of the Site.

2.2.7 Design Builder shall be responsible for the layout of the Work and shall perform all necessary surveying during the construction of the Project. The accuracy of all grades, elevations, alignments, and plumbing of any structures and the location of all Facilities described in the final plans and specifications shall be the responsibility of the Design Builder. The Design Builder shall preserve all permanent survey construction monuments and benchmarks. Prior to Final

Completion, the Design Builder shall prepare Record Documents to accurately show as-built conditions and deliver to the County these as-built documents in accordance with the Contract Documents. Such documents shall show the location of the Project (including tie-ins to utility facilities) and shall show all related easements, improvement, utilities and rights of way above and below ground, on and off the Site, as of the date of delivery of such documents. Such documents shall also show the dimensions and the distances to the nearest benchmarks.

2.2.8 The Design Builder shall provide appropriate installation and startup representatives from suppliers of major equipment and control systems, all necessary supervising personnel, all equipment, tools, construction and temporary material, and all labor for Checkout, Startup, Commissioning and Testing. The Design Builder shall be responsible for Startup, Commissioning and Testing of the Project and shall carry out those activities in accordance with all applicable codes and Legal Requirements, Startup, Checkout and Commissioning requirements and procedures as set forth in the Contract Documents.

2.2.9 Prior to establishment of on-site office facilities, the Design Builder shall provide, upon request of the County, reasonable temporary facilities at the Design Builder's off-site offices to allow the County to review, inspect, and evaluate the Work in accordance with the Contract Documents.

2.2.10 Except for safety and warning signs, the Design Builder shall not install any signs on the Site without the express written consent of the County.

2.2.11 The Design Builder shall be responsible for all Site security until Final Completion, as defined in Section 01 42 16 (Definitions), or termination of the Agreement. Such security shall comply with Document 00 73 19 (Insurance), and shall include, to the extent reasonably necessary, barriers, lighting, controlled access, and other measures required to prevent vandalism, theft, and danger to personnel, the Project, Materials and Equipment. After responsibility for Site security is transferred to the County, Design Builder will be subject to the County's Site security regulations and restrictions.

2.2.12 The Design Builder shall prepare or cause to be prepared and shall furnish to County all drawing logs, drawings, manufacturers' drawings and data, supplier manuals and operating manuals in accordance with the Contract Documents.

2.2.13 The Design Builder shall ensure that the County and its representatives shall, at all times, have access to the Site for all purposes. In order to allow the County and its representatives to be present, the Design Builder shall give the County at least three (3) Days advance notice of any system or equipment Checkout, Commissioning or Testing activities. If the County desires access to any places where Work is being performed or from which Materials and Equipment are being obtained, the Design Builder shall provide or arrange reasonable access thereto and shall provide County reasonable advanced notice of any factory tests or other off site tests. The Design Builder shall maintain the Site in a safe condition to permit the County and any person authorized in writing by the County to inspect and review all field work during working hours, including

Materials and Equipment, installation, calibration, Startup, Commissioning and Testing.

2.2.14 As part of the procurement of equipment, the Design Builder shall provide to the County a list of recommended operating spare parts, which list shall include all relevant costs and ordering lead time information with terms and conditions.

2.2.15 When any equipment or portion of the Work is damaged, the Design Builder shall inform the County as soon as possible and provide the County a damage report detailing such occurrence, any required repairs, and the estimated duration of such repairs. Design Builder shall give all required notices and provide all assistance and documentation as needed to seek compensation through any applicable insurance policies.

2.2.16 The Design Builder shall provide to the County all tests and measurements, laboratory analyses, and reports made or prepared in connection with the Work.

2.2.17 The Design Builder agrees that, in light of the high degree of confidence and trust that the County has reposed in the Design Builder: the Design Builder has the duty to act in the County's best interests at all times throughout the course and performance of its design responsibilities pursuant to this Agreement.

2.2.18 The Design Builder agrees that it has single point responsibility for the design and construction of the Work, and agrees to utilize the highest standard of excellent design, engineering and construction practices. If the Design Builder performs any design and/or construction activity which it knows, or should know, involves an error, inconsistency, or omission without notifying and obtaining the written consent of the County, the Design Builder shall be responsible for the resultant Losses, including, without limitation, the costs of correcting Defective Work.

2.2.19 The standard of care for all professional design services Design Builder performs to execute the Work shall be that of the care and skill ordinarily used by members of the design profession with experience in the design and construction of landmark civic structures similar to the Project in size and complexity, and practicing under similar conditions at the same time and locality of the Project.

3. CONTRACT AWARD AND COMMENCEMENT OF THE WORK.

3.1 Commencement of Work.

3.1.1 The Contract Times will commence to run on the day indicated in Document 00 55 00 (Notice to Proceed). As a condition to the County signing Document 00 52 53 (Agreement), however, the Design Builder shall deliver to County the executed agreements, forms, bonds, and insurance documents required by Document 00 11 19 (Request for Proposals from Design-Build Entities) in the required quantities and within the required times. A Notice to Proceed may be given at any time within thirty (30) Days after the County's execution of Document 00 52 53. See also Article 15 (Time Allowances) of this Document 00 72 53.

3.1.2 The Design Builder shall start to perform the Work on the date when the Contract Times commence to run; no work shall be done at the Site prior to the date on which the Contract Times commence to run. Design Builder and its Subcontractors shall be enrolled in the OCIP before they perform any element of the Work at the Site.

3.2 Mobilization.

3.2.1 Mobilization shall include moving onto the Site of all plant and equipment; furnishing and erecting plants, temporary buildings, and other construction facilities; all as required for the proper performance and completion of the Work. Mobilization shall be undertaken in compliance with the requirements of the Contract and any staging plan approved by the County and shall include, but not be limited to, the following principal items:

3.2.1.1 Moving onto the Site the Design Builder's plant and equipment as required.

3.2.1.2 Installing temporary construction power and wiring.

3.2.1.3 Establishing fire protection system for its temporary facilities.

3.2.1.4 Developing construction water supply.

3.2.1.5 Providing field office trailers for the Design Builder with all specified furnishings and utility services including telephones. The Design-Builder may locate its field office trailers at location as determined by the DBE and approved by the County.

3.2.1.6 Providing connections to onsite sanitary facilities and potable water facilities as specified, or providing portable toilets/port-a-potties as needed.

3.2.1.7 Arranging for and erection of the Design Builder's work and storage yard(s).

3.2.1.8 Submittal to the County of all required Subcontractor insurance certificates and bonds, if required.

3.2.1.9 Posting all OSHA required notices and establishment of safety programs.

3.2.2 **Within fifteen (15) Days following issuance by the County of a Notice of Award**, the Design Builder shall submit to the County, for its review and concurrence, a mobilization plan and schedule.

3.2.2.1 The mobilization plan and schedule shall be subject to review and concurrence by the County prior to, and as a condition precedent to, execution of the Contract.

3.2.2.2 The mobilization plan and schedule shall be developed in both narrative and graphic format, and shall include, at a minimum, the following:

3.2.2.2.1 A mobilization plan and schedule for initial construction activities, which include but are not limited to interior and exterior demolition, any proposed site excavation and perimeter structural shoring, parking and traffic control, temporary facilities and staging, followed by construction of interior improvements.

3.2.2.2.2 A detailed sequential plan for commencement of construction consistent with the scheduling requirements of this Contract for all design, construction and other activities to be undertaken **during the first sixty (60) Days following execution of the Contract.**

4. BONDS AND INSURANCE.

4.1 Bonds.

4.1.1 Within the time period specified in Document 00 11 19 (Request for Proposals from Design-Build Entities), the Design Builder must provide to the County the following bonds for all phases of the Work, as described in Section 01 12 16 (Work Sequence). Design Builder shall provide two (2) bonds pursuant to paragraphs 4.1.1.1 and 4.1.1.2:

4.1.1.1 Provide one (1) corporate surety bond and dual obligee rider in the form and amount specified in Document 00 61 13.13 (Construction Performance Bond) to guarantee faithful performance of all construction work, including bonds, insurance, permits and fees under the Contract ("Performance Bond"). This Performance Bond must have an initial sum not less than one hundred percent (100%) of the amount of the value of non-design Work. The Performance Bond shall obligate the surety to faithfully perform not less than one hundred percent (100%) of the amount of the value of non-design Work.

4.1.1.2 Provide one (1) corporate surety bond and dual oblige rider in the form and amount specified in Document 00 61 13.16 (Construction Labor and Material Payment Bond) to guarantee payment of wages for services engaged and of bills contracted for services, materials, supplies, and equipment used in performance of the Contract for the Work ("Labor and Material Bond"). In accordance with Civil Code § 9554, this Construction Labor and Material Payment Bond shall obligate a surety to guarantee payment in an amount equal to the entire Contract Price for the Project.

4.1.2 Corporate sureties on these bonds and on bonds accompanying Bids must be duly licensed and legally authorized to engage in the business of furnishing

surety bonds in the State of California. Sureties must be satisfactory to the County and shall have an A.M. Best Company financial rating of A-7 or better.

4.1.3 In the event of increases in the Contract Price by Change Orders, or otherwise, aggregating to ten percent (10%) of the Contract Price or more, and by all such subsequent increases in the Contract Price thereafter, the Design Builder shall submit to the County evidence of additional bond coverage for such increases in the Contract Price. The Design Builder shall be compensated for such additional bond coverage as part of the markups provided in 01 26 00 (Contract Modification Procedures).

4.2 Insurance.

4.2.1 Within the time period specified in Document 00 11 19 (Request for Proposals from Design-Build Entities) and in Document 00 51 00 (Notice of Award), the Design Builder must provide to the County the evidence of insurance and other materials and information required in Document 00 73 16 (Insurance) and all Attachments to Document 00 73 16.

5. INTERPRETATION OF AND COMPLIANCE WITH CONTRACT DOCUMENTS.

5.1 Intent. The Contract Documents are complementary; what is called for by one is as binding as if required by all. It is the intent of the Contract Documents to describe a functionally complete Project and individual systems therein to be designed and constructed in accordance with the requirements of the Contract Documents. Each of the Contract Documents is an essential part of the Contract, and a requirement occurring in one is as binding as though occurring in all. The Contract Documents are those documents listed in Section 6 of the Agreement Form (Document 00 52 53), including all exhibits thereto. Any Work, materials or equipment that may reasonably be inferred from the requirements of the Contract Documents, Applicable Laws, or from prevailing custom or trade usage as being required to produce the intended result shall be furnished and performed whether or not specifically required. When words, phrases or abbreviations that have a well-known technical or construction industry or trade meaning are used to describe Work, materials or equipment, such words, phrases or abbreviations shall be interpreted in accordance with that meaning. Any non-technical words, phrases or abbreviations shall be interpreted in accordance with their commonly understood meanings.

5.2 Order of Precedence. Except as provided in paragraph 5.3 below, in the event of any conflict among the Contract Documents, the order of precedence, from highest to lowest, shall be as set forth below:

5.2.1 Amendments, Change Orders or other modifications to the Contract Documents, as executed by the County in accordance with the requirements of the Contract Documents.

5.2.2 Contract Requirements:

Division 00 (Alameda County Document) as listed in the Table of Contents

Division 01 (Alameda County Document) as listed in the Table of Contents

5.2.3 Request for Proposals from Design-Build Entities (including all addenda, attachments and appendices)

5.2.4 Bridging and Asbuilt Documents

5.2.5 Design Builder's Phase II Proposal, dated _____, as amended by _____ and accepted by County

5.2.6 Design Builder's Phase I Submittal as modified and accepted by County

5.2.7 Request for Prequalification Submittals from Design Build Entities, including all addenda,

5.2.8 Design Builder's Prequalification Submittal package, including all addenda, attachments and appendices.

5.2.9 Written numbers over figures, unless obviously incorrect.

5.2.10 Figured dimensions over scaled dimensions.

5.2.11 Large-scale Drawings over small-scale Drawings.

5.2.12 Any conflict between the Contract Documents will be resolved in favor of the document of the latest date (i.e., the most recent document), and if the dates are the same or not determinable, then in favor of Specifications.

5.2.13 Any conflict between a bill or list of materials shown in the Contract Documents and the actual quantities required to complete the Work required by Contract Documents, will be resolved in favor of the actual quantities, date (i.e., the most recent document), and if the dates are the same or not determinable, then in favor of Specifications.

5.3 Conflicts Among Contract Document Provisions. Notwithstanding the order of precedence among Contract Documents set forth in this Section 5, in the event of any conflict, ambiguity or inconsistency between or among any of the provisions in this Contract, or between provisions in this Contract and any other Contract Document, the provisions that establish the higher quality, manner or method of performing the Work, exceed good industry practice or use more stringent standards will prevail. If Design Builder's Proposal includes statements, terms, concepts or designs that can reasonably be interpreted as offering to provide higher quality items than otherwise required the Contract Documents or to perform services or meet standards in addition to or better than those otherwise required, then Design-Builder's obligations hereunder shall include compliance with all such statements, terms, concepts and designs. Additional details in a lower priority Contract Document shall be given effect except to the extent they irreconcilably conflict with requirements, provisions and practices contained in the higher priority Contract Document.

5.4 Specifications and Drawings Do Not Control Division of Work. The Divisions and Sections of the Specifications and the identifications of any Drawings shall not control Design Builder in dividing the Work among Subcontractors or suppliers or delineating the work to be performed by any specific trade.

5.5 Interpretation of Contract Documents.

5.5.1 Should any discrepancy or ambiguity appear or any misunderstanding arise as to the meaning of anything contained in the Contract Documents, Design Builder or County may issue a Request for Information (RFI). See also Section 01 26 00 (Contract Modification Procedures).

5.5.2 If Design Builder discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any Applicable Law or of any standard, specification, manual, or code, Design Builder shall at once issue a Request for Information (RFI). Design Builder shall not proceed with the Work affected by an RFI (except in an emergency) until a response, Clarification, Field Order, or Change Order has been issued. RFI's shall be submitted to the County only from the Design Builder, and not from any Subcontractor, Subconsultant or supplier. Before submitting any RFI Design Builder shall determine that the information requested is not clearly provided in the Contract Documents.

5.5.3 The party to whom the RFI is directed shall respond with reasonable promptness so as not to delay the Work and issue such written clarifications or interpretations of the requirements, which shall be consistent with the intent of and reasonably inferable from the Contract Documents.

5.5.4 It is the intent of the Contract Documents that the Design Builder shall have responsibility to provide a complete and comprehensive design (and construction thereof) for the Project in accordance with the Contract Documents. The County's review of the Design Builder's designs, shop drawings, samples and submittals shall not relieve the Design Builder of its responsibility for a complete design complying with the Contract Documents; but rather, such review shall be in furtherance of the County's monitoring and accepting the design as developed and issued by the Design Builder, consistent with these Contract Documents.

5.5.5 The Contract Documents may omit modifying words such as "all" and "any," and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement. The use of the word "including," when following any general statement, shall not be construed to limit such statement to specific items or matters set forth immediately following such word or to similar items or matters, whether or not non-limiting language (such as "without limitation," "but not limited to," or words of similar import) is used with reference thereto, but rather shall be deemed to refer to all other items or matters that could reasonably fall within the broadest possible scope of such general statement.

5.5.6 Whenever the context so requires, the use of the singular number shall be deemed to include the plural and vice versa. Each gender shall be deemed to include any other gender, and each shall include corporation, partnership, trust, or other legal entity, whenever the context so requires. The captions and headings of the various subdivisions of the Contract Documents are intended only for reference and convenience and in no way define, limit, or prescribe the scope or intent of the Contract Documents or any subdivision thereof.

5.6 Construction Documents.

5.6.1 Upon receipt of the Notice to Proceed, the Design Builder shall instruct the Architect to commence the design of the building systems and the preparation of the Construction Documents. The Construction Documents shall at all times conform to the requirements of the Contract Documents. The Construction Documents shall provide information customarily necessary in documents for projects of similar size, complexity, and quality. The Construction Documents shall include all information required by the building trades to complete the construction of the Project, other than such details customarily developed by others during construction, and shall provide sufficient information for County to determine whether the Construction Documents meet the design requirements of the Contract Documents and will result in a Project that meets the County's needs and expectations as set forth in the Contract Documents. The County's review of the Construction Documents shall be conducted in accordance with the approved Contract Schedule and with the procedures set forth in the Contract Documents. Such review shall not relieve the Design Builder from its responsibilities under the Contract Documents. Such review shall not be deemed an approval or waiver by the County 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 by the Design Builder and expressly approved by the County in writing.

5.6.2 It is acknowledged by the parties hereto that inherent in a design build concept, bridging or otherwise, the production and review of Construction Documents may be a continuing process with portions thereof completed at different times. The Design Builder will limit the Construction Document packages for construction to a reasonable number to be submitted for review and approval in writing by the County. The Contract Schedule shall indicate the times for the County to review each such portion of the Construction Documents and a reasonable time for review of same.

5.6.3 The Design Builder shall submit completed packages of the Construction Documents for review by the County, the California State Fire Marshal, and Other Authorities Having Jurisdiction at the times indicated on the Contract Schedule and as defined in the Scheduling Specification. Review meetings between the Design Builder and the County to review the Construction Document packages shall be scheduled and held so as not to delay the Work. After reviewing the Construction Documents packages for conformance to the Contract Documents, the County will issue a Construction Notice to Proceed to the Design Builder.

5.6.4 The Construction Documents for hazardous and/or toxic abatement efforts and demolition activity shall be of sufficient clarity to confirm compliance with Legal Requirements and shall be fully detailed when submitted to the County for review.

5.6.5 The Design Builder shall retain and pay expenses of a civil engineer or land surveyor to establish on the Site the required control points, including but not limited to benchmarks, establish building lines and elevations, check for building framing, plumbness, and establish the required basic grid lines. The engineer or land surveyor shall be licensed in the State of California. Subsequent surveying and layout may be performed by the Design Builder's qualified personnel.

5.6.6 The Design Builder shall locate and protect control points prior to starting Work on the Project site and preserve permanent reference points during construction, and shall require the engineer or surveyor to replace control points which become lost or destroyed.

5.6.7 The Design Builder shall verify the location and depth (elevation) of all Underground Facilities before performing any excavation Work.

5.6.8 Checking/Updating of Construction Documents. The Design Builder shall develop the final design and Construction Documents for the Work and, thereafter, during design and construction, shall continuously check the Construction Documents for conformance to actual conditions and update the Construction Documents to maintain complete and current as-built drawings as construction progresses.

5.7 Necessary and Incidental Work. The Design Builder shall perform reasonably implied parts of Work as "incidental work" although absent from the Contract Documents. Incidental Work includes any work not explicitly required by the Contract Documents that is normally or customarily required as a part of the Work. Incidental work shall be treated as if fully described in the Contract Documents, and the expense of incidental work shall be included in Proposal and Contract Price.

5.7.1 Standards to Apply Where Detailed and/or Performance Specifications Are Not Furnished. Wherever in the Contract Documents, or in any orders given by the County, it is provided that the Design Builder shall furnish materials or manufactured articles or shall do work for which no detailed or performance specifications are set forth, the following general specifications shall apply.

5.7.1.1 Design and construction shall meet the standards required by the Contract Documents to provide the County with a fully functional Project, designed and constructed in a manner consistent with the standards, equipment, materials and design, found in comparable, fully functional, contemporary public facilities with functions similar to those of the Project.

5.7.1.2 Materials or manufactured articles shall be of the grade, in quality and workmanship, consistent with the requirements of the Contract Documents and obtainable in the market from firms of established

good reputation, or, if not ordinarily carried in stock, shall conform to the usual standards for materials or articles of the kind required, with due consideration of the use to which they are to be put. The Work for which no detailed specifications are set forth herein shall conform to the requirements of this paragraph 5.7. All such Work shall be consistent with the Contract Documents.

5.8 Design Deliverables, Shop Drawings and Submittals to be Furnished by Design Builder in Addition to Construction Documents.

5.8.1 The Design Builder shall submit to the County for review a schedule of all deliverables required in Section 01 11 20 (Design Services and Deliverables), identifying each required deliverable and the date on which it will be submitted to the County ("Schedule of Deliverables"). A preliminary Schedule of Deliverables will be submitted within sixty (60) Days of the Notice to Proceed. The County understands that a more complete Schedule of Deliverables will not be available until the beginning of the Construction Documents Phase as defined in Section 01 11 20. A more complete Schedule of Deliverables will be submitted to the County when the final design is submitted to the County at the end of the Design Development Phase as defined in Section 01 11 20.

5.8.2 Due to the design-build nature of the Project, the Design Builder and the County will jointly develop a list of submittals and shop drawings which are to be submitted to the County. The Design Builder shall submit to the County for review a preliminary schedule of shop drawings and submittals ("Schedule of Submittals"), which will list each required submittal in order by specification section and the times for submitting, reviewing and processing such submittal. A preliminary Schedule of Submittals will be submitted within thirty (30) Days of the Notice to Proceed. The County understands that a more complete Schedule of Submittals will not be available until thirty (30) Days after approval of one hundred percent (100%) Construction Documents or the final bid package for Subcontractor procurement, whichever is later. Design Builder will endeavor to provide updated partial Schedules of Submittals as available every thirty (30) Days through the course of the Project. Shop drawings and submittals shall be in addition to the Design Builder's design developed pursuant to this Agreement.

5.8.3 The Design Builder shall submit submittals, Product Data, Samples and Shop Drawings to the County for review in strict accordance with Section 01 33 00 (Submittal Procedures). Submission of a Submittal or shop drawing shall constitute the Design Builder's representation that all requirements of Section 01 33 00 have been complied with. All Submittals and Shop Drawings will be identified as the County may require and made in the number of copies specified in Section 01 33 00. The Design Builder shall coordinate all submittals and review them for accuracy, completeness, and compliance with the requirements of the Contract Documents and the Design Builder's Construction Documents and shall indicate its approval thereon as evidence of such coordination and review. The Design Builder shall submit Shop Drawings samples that relate to finish materials and products that have been approved by the Architect of Record.

5.8.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate, for those portions of the Work for which submittals are required, how Design Builder proposes to conform to the information given and the design concept expressed in the Contract Documents. The Design Builder shall review, approve, and submit to the County Shop Drawings, Product Data, Samples, and similar Submittals required by the Contract Documents with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of County or of Separate Contractors. Submittals made by the Design Builder that are not required by the Contract Documents may be returned without action by County. The Design Builder shall perform no portion of the Work requiring Submittal and review of Shop Drawings, Product Data, Samples, or similar Submittals until the respective submittal has been reviewed by County and no exceptions have been taken by the County. Such Work shall be in accordance with approved Submittals and the Contract Documents. By approving and submitting Shop Drawings, Product Data, Samples, and similar Submittals, Design Builder represents that it has determined or verified materials and field measurements and conditions related thereto, and that it has checked and coordinated the information contained within such Submittals with the requirements of the Contract Documents and Shop Drawings for related Work.

5.8.5 If the Design Builder discovers any conflicts, omissions, or errors in Shop Drawings or other Submittals, Design Builder shall notify the County's Representative and receive instruction before proceeding with the affected Work. The Design Builder shall be responsible to correct to the satisfaction of the County any conflicts, omissions, or errors in Shop Drawings or other Submittals.

5.8.6 The Design Builder shall not be relieved of responsibility for deviations from requirements of the Contract Documents by County's review of Shop Drawings, Product Data, Samples, or similar Submittals, unless the Design Builder has specifically informed the County in writing of such deviation at the time of submittal and the County has given written approval of the specific deviation. The Design Builder shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar Submittals by County's review, acceptance, comment, or approval thereof. The Design Builder shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar Submittals, to revisions other than those requested by County on previous Submittals. The County will review first resubmittal of Shop Drawing at its cost. The County reserves the right to reduce the Contract Price by Change Order for its cost, including but not limited to the cost of third party reviews, for any subsequent reviews of Shop Drawings or other resubmittals.

5.8.7 Wherever the name or brand of manufacturer or an article is listed in the Contract Documents, it is to be used in the Work as the standard, unless the item is designated as one for which no substitutions will be accepted, see Section 01 61 00 (Product Requirements). Any variation in quality must be approved by the County.

5.8.8 Materials and equipment incorporated in the Work shall match the approved samples within tolerances appropriate to the items, and as may be described in the Contract Documents.

5.8.9 The Design Builder shall not perform work requiring submission of a Submittal, Product Data, Sample or Shop Drawing prior to favorable review by the County of the Submittal, Product Data, Sample or Shop Drawing. The County's review of Submittals, Product Data, Sample or Shop Drawings shall be performed so as not to delay the Design Builder's performance. Where a Submittal, Product Data, Sample or Shop Drawing is required by the Contract Documents, any related Work performed prior to favorable review of the pertinent Submittal, Product Data, Sample or Shop Drawing will be at the sole expense, responsibility and risk of the Design Builder. The County's review of Shop Drawings,, Product Data, Samples and Submittals shall not relieve the Design Builder of its responsibility for a complete design complying with the requirements of the Contract Documents; but rather, such review shall be in furtherance of the County's monitoring and accepting the design as developed and issued by the Design Builder, consistent with these Contract Documents.

6. CONSTRUCTION BY THE COUNTY OR BY SEPARATE CONTRACTORS.

6.1 The County's Right to Perform Construction and to Award Separate Contracts.

6.1.1 The County or its Project Partners may perform with its own forces, construction or operations related to the Project. The County or its Project Partners may also award separate contracts in connection with other portions of the Project or other construction or operations, on the Site or areas contiguous to the Site, under conditions similar to these Contract Documents, or may have utility owners perform other work.

6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the Site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate contract with the County or its Project Partners.

6.1.3 When separate contracts are awarded for different portions of the Project or other construction or operations on the Site, County shall notify the Design Builder of such separate contracts before work on the Site pursuant to those contracts begins. County shall give such notice to the Design Builder with enough time to reasonably allow Design Builder to coordinate as required by paragraph 6.2 (Coordination and Cooperation) below.

6.2 Coordination and Cooperation

6.2.1 The Design Builder shall afford all other separate contractors, utility owners, the County (if the County is performing work with its own forces), and its Project Partners proper and safe access to the Site, including such access to other lands and facilities designated in the Contract Documents for use by the Design Builder and reasonable opportunity for the installation and storage of their materials, shall ensure that the execution of its Work properly connects and coordinates

with their work, and shall cooperate with them to facilitate the progress of the Work.

6.2.2 The Design Builder shall coordinate its work with the work of other separate contractors, the County, its Project Partners, and utility owners, including, at a minimum, holding monthly coordination meetings with them. The County shall have the right to participate in these coordination meetings, and shall be advised of the results of these coordination meetings at the monthly Progress Meeting.

6.2.3 Unless otherwise provided in the Contract Documents, the Design Builder shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work. The Design Builder shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of the County and the others whose work will be affected.

6.2.4 The duties and responsibilities of the Design Builder under paragraphs 6.2.1 through 6.2.3 above are for the benefit of the County and its Project Partners and also for the benefit of such utility owners and other contractors working at the Site.

6.2.5 To the extent that any part of the Design Builder's Work is to interface with Work performed or installed by others, the Design Builder shall inspect and measure the in-place work and promptly report in writing to the County any defect in such in-place work that will impede or increase the cost of the Design Builder's interface unless corrected. The County will require the contractor responsible for the defective work to make corrections so as to conform to the Contract Documents. If the Design Builder fails to measure, inspect and/or report defects that are reasonably discoverable, all costs of accomplishing the interface acceptably shall be borne by the Design Builder. This provision shall be included in any and all other contracts or subcontracts for the Work to be performed where such a conflict could exist.

6.3 County Authority Over Coordination.

6.3.1 The County shall have authority over coordination of the activities of multiple contractors in those cases where the County or its Project Partners contract with others for the performance of other work on the Project, the County performs work with its own forces, or utilities perform work on the Site. (The authority of the County with respect to coordination of the activities of multiple prime contractors and utility owners, however, shall not in any manner relieve the Design Builder of its obligation to other contractors and utility owners to coordinate its work with utility owners and other contractors as specified above.) The Design Builder shall promptly notify the County in writing when another contractor on this Project fails to coordinate its work with the Work of this Contract.

6.3.2 The Design Builder shall suspend any part of the Work herein specified or shall carry on the same in such manner if directed by the County when such suspension or prosecution is necessary to facilitate the work of other contractors

or workers. No damages or Claims, as defined in Article 12 (Claims by Design Builder) below, by the Design Builder will be allowed therefore to the extent the suspension or work change is due to the Design Builder's failure to perform its obligation to coordinate its work with utility owners and other contractors. If the suspension or work change is due in whole or in part to the failure of another contractor retained by the County or its Project Partners to coordinate its work with the Design Builder and other contractors and utility owners, then resulting damages or Claims by Design Builder will be evaluated. The County reserves the right to back charge the Design Builder for any damages or claims of other contractors incurred as a result of the Design Builder's failure to perform its obligations to coordinate its work with other contractors and utility owners, and in its discretion, the County may deposit the funds retained with a Court of competent jurisdiction pursuant to applicable interpleader procedures and the Design Builder releases the County of any further liability regarding such funds.

6.3.3 The County may at any time and in its sole discretion, designate a person, firm or corporation other than the County, to have authority over the coordination of the activities among the other contractors.

7. THE COUNTY AND PAYMENT.

7.1 The County's Representatives.

7.1.1 The designated authorized representative(s) of the County, or the County Representative will provide limited administration of the Contract as provided in the Contract Documents and will have limited authority to act on behalf of the County as set forth in the Contract Documents.

7.1.2 The County shall designate in the Contract Documents or otherwise in writing, from time to time, one or more County Representative (referred to herein as "County's Representative" or "County Representative") authorized to act on the County's behalf with respect to the Project, together with the scope of his/her respective authority. Functions that this Contract provides will be performed by the County may be delegated by the County to its Representative only by written notice to the Design Builder from the County. The Design Builder shall not be entitled to rely on directions (nor shall it be required to follow the directions) from anyone outside the scope of that person's authority as set forth in written authorization pursuant to this Contract. Directions and decisions made by the County's authorized representatives within the scope of this authorization shall be binding on the County.

7.1.3 During the term of this Contract, the County's Representative shall have the right to review Design Builder's Work at such intervals as deemed appropriate by the Representative. However, no actions taken during such review or site visit by the County Representative shall relieve the Design Builder of any of its obligations of single-point responsibility for the design and construction of this Project nor form the basis for a Claim if such actions extend the Contract Completion Date beyond the Contract Times.

7.1.4 The County's Representative will not have control over, will not be in charge of, and will not be responsible for design or construction means, methods, techniques, sequences, or procedures, or for safety precautions and programs in connection with the Work, since these are solely the Design Builder's responsibility.

7.1.5 Except as otherwise provided in the Contract Documents or when direct communications have been specifically authorized, the County and the Design Builder shall communicate through the County's Representative. Communications by Design Builder with County's consultants and County's Representative's consultants shall be through the County's Representative. Communications by the County and the County's Representative with Subcontractors will be through the Design Builder. Communications by the Design Builder and Subcontractors with Separate Contractors shall be through County's Representative. Should any direct communications between Design Builder and County's consultants, architects or engineers not identified in Article 2 of Document 00 52 53 (Agreement) occur during field visits or by telephone, Design Builder shall immediately confirm them in a written document copied to the County. The Design Builder shall not rely on oral or other non-written communications.

7.1.6 Based on the County's Representative's Site visits, review of the Work, and evaluations of Design Builder's Applications For Payment, the County's Representative will recommend amounts, if any, to be paid the Design Builder and will issue Certificates For Payment in such amounts.

7.1.7 The County's Representative will have the authority to reject the Work, or any portion thereof, which does not conform to the Contract Documents. The County's Representative will have the authority to stop the Work, or any portion thereof, whenever the County's Representative considers it necessary, or advisable, for implementation of the intent of the Contract Documents, the County's Representative will have the authority to require additional inspection or testing of the Work in accordance with the Contract Documents, whether or not such Work is fabricated, installed, or completed. However, no authority of the County's Representative conferred by the Contract Documents, nor any decision made in good faith either to exercise, or to not exercise such authority, will give rise to a duty or responsibility, of the County or the County's Representative to the Design Builder, or any person or entity claiming under, or through, the Design Builder.

7.1.8 The County's Representative (a) will have the authority to conduct inspections in connection with any Beneficial Occupancy pursuant to paragraph 13.25 (Beneficial Occupancy) below, and to determine the dates of Substantial Completion and Final Completion; (b) will receive for review any records, written warranties, and related documents required by the Contract Documents and assembled by the Design Builder; and (c) will issue a final Certificate For Payment upon the Design Builder's full satisfaction of the requirements of the Contract Documents.

7.1.9 The County's Representative will be, in the first instance, the interpreter of the requirements of the Contract Documents and the judge of performance thereunder by the Design Builder. Should the Design Builder discover any conflicts, omissions, or errors in the Construction Documents or the Contract Documents; have any questions about the interpretation or clarification of the Contract Documents; or question whether the Work is within the scope of the Contract Documents; then, before proceeding with the Work affected, the Design Builder shall notify the County's Representative in writing and request interpretation or clarification. The County's Representative's response to questions and requests for interpretations, clarifications, instructions, or decisions will be made with reasonable promptness. Should the Design Builder proceed with the Work affected before receipt of a response from the County's Representative, any portion of the Work which is not done in accordance with the County's Representative interpretations, clarifications, instructions, or decisions shall be removed or replaced at the direction of the County's Representative and Design Builder shall be responsible for all resultant costs.

7.2 Means and Methods of Design and Construction.

7.2.1 Subject to those rights specifically reserved in the Contract Documents, the County shall not supervise, direct, or have control over, or be responsible for, the Design Builder's design or means, methods, techniques, sequences or procedures of construction or for the safety precautions and programs incident thereto, or for any failure of the Design Builder to comply with laws and regulations applicable to the furnishing or performance of the Work.

7.2.2 The County shall not be responsible for the Design Builder's failure to perform or furnish the Work in accordance with Contract Documents.

7.3 Receipt and Processing of Applications for Payment. As required by Section 01 29 00 (Payment Procedures), the Design Builder shall prepare and submit Applications for Payment and warrant title to all Work covered by each Application for Payment. The County will review the Design Builder's Applications for Payment and make payment thereon, and the Design Builder shall make payments to Subcontractors, subconsultants suppliers and others, as required by Section 01 29 00 (Payment Procedures).

7.4 Election re: Public Contract Code Section 22300. Not later than twenty (20) Days before submitting the first Application for Payment, Design Builder shall inform County, in writing, whether it chooses to substitute securities in lieu of retention or have retention paid directly into an escrow account as provided in Public Contract Code §22300. If Design Builder elects to do so, it will comply with all requirements of that statute, including but not limited to executing an Escrow Agreement for Security Deposits in Lieu of Retention in the form set forth in Document 00 61 32 (Escrow Agreement for Security Deposits in Lieu of Retention).

8. CONTROL OF THE WORK.

8.1 Supervision of Work by Design Builder.

8.1.1 The Design Builder shall manage, supervise and direct design and construction of the Work competently and efficiently, devoting such attention thereto and applying such personal skills and expertise as may be required and necessary to perform the Work in accordance with the Contract Documents. The Design Builder shall be solely responsible for the design and means, methods, techniques, sequences and procedures of construction and for the safety precautions and programs incident thereto. The Design Builder shall be responsible to see that the completed Work complies with the Contract Documents and accepted Construction Documents.

8.1.2 The Design Builder shall keep on the Site at all times during Work progress on the Site a competent resident Superintendent, who shall not be replaced without the express written consent of the County. The Superintendent may not perform the Work of any trade, pick up materials, or perform any Work not directly related to the supervision and coordination of the Construction Work at the Project site when work is in progress. The Superintendent shall be the Design Builder's representative at the Site and shall have complete authority to act on behalf of the Design Builder. All communications given to, and received from, the Superintendent shall be binding on the Design Builder. Failure to maintain a Superintendent on the Project site at all times Work is in progress shall be considered a material breach of this Contract, entitling the County to terminate the Contract or, alternatively, suspend the Work until the Superintendent is on the Site.

8.1.3 The Design Builder shall have and maintain at the Site a full-time Quality Control Manager, who will have duties in addition to quality control, and a full-time project manager whose duties shall include providing quality control documents to the County showing that the Work has been reviewed and either found to meet the terms and conditions of the Contract Documents or has been found deficient and corrective action will be taken promptly.

8.2 Observation of Work by County. The County may observe and monitor the design and construction through its representatives, agents, employees, consultants or others. The Design Builder in no way is relieved of any responsibility by the activities of the County in this regard.

8.3 Access to Site. During performance of Work, the County and its respective agents, representatives, consultants, and employees may at any time enter upon the Site, shops or offices where any part of Work may be in preparation, or factories where any materials for use in Work are being or are to be manufactured, and the Design Builder shall provide proper and safe facilities therefore, and shall make arrangements with manufacturers to facilitate inspection of their processes and products to such extent as the County's interests may require. Other contractors performing work for the County may also, for all purposes required by their respective contracts, enter upon the Site. Furthermore, Design Builder shall permit other agencies with jurisdiction, to have access to the project staff and facilities whenever project activities are in progress and ensure that all of Design Builder's Subcontractors and Subconsultants will provide proper facilities for access, monitoring, and inspection.

8.4 Existing Utilities. Drawings may indicate above and below grade structures, drainage lines, storm drains, sewers, water, gas, electrical, chemical, hot water, and other similar items and utilities, and additional information may be on file at the regional notification center, "Underground Service Alert" ("USA"). Design Builder shall locate these known existing installations before proceeding with trenching or other operations that may cause damage, shall maintain them in service where appropriate, and shall repair any damage to them caused by the Work, at no increase in Contract Price. Additional Underground Facilities whose locations are unknown to the County may exist. Design Builder shall be alert to their existence; if they are encountered, The Design Builder shall immediately report to County for disposition of the same. In addition to reporting if any utility is damaged, the Design Builder shall take appropriate action as provided in this Document 00 72 53. Additional compensation or extension of time on account of utilities not shown or otherwise brought to the Design Builder's attention, including reasonable action taken to protect or repair damage, shall be determined as provided in this Document 00 72 53.

8.4.1 At no additional cost to the County, the Design Builder shall incorporate into the Work main or trunk line utilities identified in the Contract Documents and other utilities or underground structures known or reasonably discernible and that will remain in service, including reasonable adjustments to the design location (including minor relocations) of the existing or new installations. The Design Builder shall take immediate action to restore any in-service installations damaged by the Design Builder's operations. Should the County determine that the Design Builder has not responded in a timely manner or not diligently pursued completion of the Work, the County may restore service and deduct the costs of such action by the County from the amounts due under the Contract.

8.4.2 Consistent with Government Code § 4215, as between the County and the Design Builder, the County will be responsible for the timely removal, relocation, or protection of existing main or trunk line utility facilities located on the Site only if such utilities are not identified in the Contract Documents. The County will compensate for the cost of locating and repairing damage not due to the Design Builder's failure to exercise reasonable care in the removing and relocating such main or trunk line utility facilities not indicated in the Contract Documents with reasonable accuracy, and equipment on the Project necessarily idled during such work.

8.4.3 Prior to performing Work at the Site, the Design Builder shall lay out the locations of known underground utilities that are to remain in service and other significant known underground installations. At no additional cost to the County, prior to commencing other Work in proximity to such known underground utilities or installations that can be readily inferred from adjacent surface improvements, the Design Builder shall further locate, by carefully excavating with small equipment, potholing and principally by hand, such utilities or installations that are to remain and that are subject to damage. This obligation applies to all utilities.

8.4.4 Nothing in this Document 00 72 53 shall be deemed to require the County to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the Site can be inferred by the Design Builder from the presence of an underground transmission main or other visible facilities, such

as buildings, new asphalt, meters and junction boxes, on or adjacent to the Site. The Design Builder shall immediately secure all available information and notify the County and utility, in writing, of its discovery, while performing Work under the Contract Documents, of any utility facilities not identified in the Contract Documents.

8.5 Underground Facilities.

8.5.1 Before commencing work of digging trenches or excavation, the Design Builder shall review all information available regarding subsurface conditions, including but not limited to information supplied in Document 00 31 32 (Geotechnical Data and Existing Conditions), and subject to the terms and conditions of these documents, Design Builder shall also comply with Government Code §§ 4216 through 4216.9, and in particular § 4216.2 which provides, in part:

8.5.1.1 "Except in an emergency, every person planning to conduct any excavation shall contact the appropriate regional notification center **at least two (2) Business Days, but no more than fourteen (14) Days, prior to commencing that excavation**, if the excavation will be conducted in an area which is known, or reasonably should be known, to contain subsurface installations other than the underground facilities owned or operated by the excavator, and, if practical, the excavator shall delineate with white paint or other suitable markings the area to be excavated. The regional notification center shall provide an inquiry identification number to the person who contacts the center and shall notify any member, if known, who has a subsurface installation in the area of the proposed excavation."

8.5.2 The Design Builder shall contact USA, and schedule the Work to allow ample time for the center to notify its members and, if necessary, for any member to field locate and mark its facilities. The Design Builder is charged with knowledge of all subsurface conditions reflected in USA records. Prior to commencing excavation or trenching work, the Design Builder shall provide County with copies of all USA records secured by the Design Builder. Design Builder shall advise County of any conflict between information provided in Document 00 31 32 (Geotechnical Data and Existing Conditions), the Drawings and that provided by USA records. The Design Builder's excavation shall be subject to and comply with the Contract Documents, including without limitation Article 2 (Scope of Design Build responsibility) and paragraph 8.4 (Existing Utilities) of this Document 00 72 53.

8.5.3 In the case of any Underground Facilities that are located on County property and are used to furnish services on the County property or are under the operation and control of the County, or in any other case in which the USA does not provide an inquiry notification number and notify its members that have subsurface installations of the area of the proposed excavation, then the Design Builder shall be fully responsible for locating the Underground Facilities and protecting such Underground Facilities during excavation. In locating the Underground Facilities the Design Builder shall investigate all records available at the County and all other records available to it relative to the location of such

Underground Facilities and shall make use of all necessary industry locating techniques and/or engage qualified locating service to perform such services for the Design Builder. The Design Builder shall undertake no excavation Work until such time that the Underground Facilities are located and field marked or determined not to be in the area of excavation. Thereafter, subject to any further requirements in the Contract Documents, the Design Builder shall determine the exact location of the Underground Facilities by excavating with hand tools within the area of the location of the Underground Facilities. Design Builder shall provide the County with adequate prior written notice of its proposed excavation work in an area containing County owned Underground Facilities, and shall submit for the County's approval its plan for locating and protecting the Underground Facility from damage due to the excavation work. The County's favorable review of such plan shall in no way limit or restrict the responsibility of the Design Builder under the Contract Documents and at law and the Design Builder shall not rely on the County's review as a representation of the location of the Underground Facility, the suitability of the plan or its compliance with law.

8.5.4 The cost of all of the following will be included in the Contract Price and the Design Builder shall have full responsibility for (a) reviewing and checking all available information and data including, but not limited to, Document 00 31 32 (Geotechnical Data and Existing Conditions) and information on file at USA; (b) locating all Underground Facilities shown or indicated in the Contract Documents, available information, or indicated by visual observation including, but not limited to, and by way of example only, engaging qualified locating services and all necessary back-hoeing and pot-holing; (c) coordination of the Work with the owners of such Underground Facilities during construction; and (d) the safety and protection of all such Underground Facilities and repairing any damage thereto resulting from the Work.

8.5.5 If an Underground Facility is uncovered or revealed at or contiguous to the Site which was not shown or indicated in the materials supplied by County or in information on file at USA or otherwise reasonably available to the Design Builder, then the Design Builder shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby (and **in no event later than seven (7) Days**), and prior to performing any Work in connection therewith (except in an emergency as required by paragraph 16.4 (Emergencies) of this Document 00 72 53), identify the owner of such Underground Facility and give written notice to that owner and to County. During such time, the Design Builder shall be responsible for the safety and protection of such Underground Facility.

8.5.6 The Design Builder shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, to the extent that they are attributable to the existence of any Underground Facility if the Underground Facility:

8.5.6.1 Was not shown or indicated in the Contract Documents or in the information supplied pursuant to Document 00 31 32 (Geotechnical Data and Existing Conditions) or in information on file at USA; and

8.5.6.2 The Design Builder did not know of it; and

8.5.6.3 The Design Builder could not reasonably have been expected to be aware of it or to have anticipated it from the information available. (For example, if surface conditions such as pavement repairs, valve covers, or other markings, indicate the presence of an Underground Facility, then an increase in the Contract Price or an extension of the Contract Times will not be due, even if the Underground Facility was not indicated in the Contract Documents, in the information supplied to the Design Builder pursuant to Document 00 31 32 (Geotechnical Data and Existing Conditions), in information on file at USA, or otherwise reasonably available to the Design Builder.).

8.5.7 Underground Facilities are inherent in construction involving digging of trenches or other excavations and the Design Builder is to apply its skill and industry expertise to verify the information available. Underground Facilities are often in different locations and elevations that existing information indicates, and such differences shall constitute a differing site condition only if such difference is clearly material and is not discoverable through reasonable investigation, including but not limited to the locating techniques above.

9. WARRANTY AND GUARANTEE; INSPECTION AND MAINTENANCE OF WORK.

9.1 Warranty and Guarantee.

9.1.1 General Representations and Warranties: the Design Builder represents and warrants that it, and its Subcontractors and designers of every tier are, and at all times will be, capable of performing every element of the Work, and possesses or will timely obtain all necessary licenses and/or permits required to perform the Work, as necessary to complete the Work in accordance with the terms of the Contract Documents.

9.1.2 The Design Builder warrants that all design, engineering, design related services, construction work and construction services shall be performed in accordance with generally accepted professional standards of good and sound design and construction practices observed by builders and designers with specific experience and specialized expertise in the type of Work included in the Contract Documents.

9.1.3 Design Builder warrants to the County that all Work will be performed in accordance with the professional standards and degree of care applicable to those design professionals who specialize in designing and providing services for projects of the type, scope, quality and complexity of the Project utilizing the design/build contracting mode.

9.1.4 Design Builder warrants to the County that all labor, materials, equipment and furnishings used in, or incorporated into, the Construction Work will be of good quality, new (unless otherwise required or permitted by the Contract Documents), and all Work will be free of liens, claims and security interests of third parties; that the Work will be of the highest quality and free from defects and that all Work will conform with the requirements of the Contract Documents. If

required by the County, the Design Builder shall furnish satisfactory evidence of compliance with this warranty.

9.1.5 Design Builder warrants that the Work shall be fit for its intended purpose, watertight and meeting current standards for work similar to the Project, shall be of suitable grade of its respective kind for its intended use, shall be free from defects in design, engineering, materials, construction and workmanship, and shall conform in all respects with all Legal Requirements, licenses, and permits, the Contract Documents, and all descriptions set forth therein, applicable construction codes and standards, and all other requirements of the Contract Documents including the standard of care specified herein. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective.

9.1.6 Extended Guarantees: If **any guaranty exceeding two (2) years** is provided by the supplier or manufacturer of any equipment used in the Work, then the Design Builder shall use best efforts to assist the County in pursuing such extended guarantees for such materials. The Design Builder shall supply and assign to the County all warranty and guarantee documents relative to equipment and materials incorporated in the job and guaranteed by its suppliers or manufacturers.

9.1.7 Environmental and Toxics Warranty: The covenants, warranties and representations contained in this paragraph 9.1 (Warranty and Guarantee) are effective continuously during Design Builder's Work on the Project and following cessation of labor for any reason including, but not limited to, Project completion. Design Builder covenants, warrants and represents to County that:

9.1.7.1 No litigation regarding environmental or toxics conditions is pending or, to the Design Builder's knowledge, proposed, threatened or anticipated with respect to any matter affecting the Project or the operation thereof.

9.1.7.2 To the Design Builder's knowledge after due inquiry, no lead or asbestos-containing materials were installed or were discovered in the Project at any time during the Design Builder's construction thereof. If any such materials were discovered, Design Builder made immediate written disclosure to the County.

9.1.7.3 To the Design Builder's knowledge after due inquiry, no electrical transformers, light fixtures with ballasts or other equipment containing PCB's are or were located on the Project at any time during the Design Builder's construction thereof. If any such materials were discovered, the Design Builder made immediate written disclosure to the County.

9.1.7.4 To the Design Builder's knowledge after due inquiry, no storage tanks for gasoline or any other toxic substance are or were located on the Project at any time during the Design Builder's construction thereof except as required to be installed by the Contract Documents.

If any such materials were discovered, the Design Builder made immediate written disclosure to the County.

9.1.7.5 The Design Builder's operations concerning the Project are not and were not in violation of any applicable environmental federal, state, or local statute, law, ordinance, code, rule, order or regulation dealing with hazardous or toxic materials or substances, and no notice from any governmental body has been served upon the Design Builder claiming any violation of any such statute, law, ordinance, code, rule, order or regulation, or requiring or calling attention to the need for, any work, repairs, construction, alteration, or installation on or in connection with the Project in order to comply with any such statute, law, ordinance, code, rule, order or regulation, with which the Design Builder has not complied. If there were or are any such notices, Design Builder has provided or shall provide the County with copies thereof.

9.2 Inspection of Work.

9.2.1 All materials, equipment and workmanship used in the Work shall be subject to inspection, testing or evaluation at all times during construction and/or manufacture in accordance with the terms of the Contract Documents. Work and materials, and manufacture and preparation of materials, from beginning of construction until final completion and acceptance of the Work, shall be subject to inspection and rejection by the County, its agents, or independent contractors retained by the County to perform inspection services, or governmental agencies with jurisdictional interests. The Design Builder shall provide them proper and safe conditions for such access and advise them of the Design Builder's Site safety procedures and program so that they may comply therewith as applicable. Upon request or where specified, the County shall be afforded access for inspection at the source of supply, manufacture or assembly of any item of material or equipment, with reasonable accommodations supplied for making such inspections.

9.2.2 The Design Builder shall give the County a **minimum of three (3) Business Days' notice of readiness of the Work for all required inspections, tests or approvals**, and shall cooperate with inspection and testing personnel to facilitate required inspections or tests.

9.2.3 If Legal Requirements require any Work (or part thereof) specifically to be inspected, tested or approved by an employee or other representative of a public body, the Design Builder shall assume full responsibility for arranging and obtaining such inspections, tests or approvals, and furnish the County with the required certificates of inspection, or approval. The County retains the right to inspect, test and evaluate the Work without relieving the Design Builder of its obligations under this Contract. The County will pay the cost of initial testing and Design Builder shall pay all costs in connection with any follow-up or additional testing. The Design Builder shall also be responsible for arranging and obtaining and shall pay all costs in connection with any inspections, tests or approvals required for the acceptance of materials or equipment to be

incorporated in the Work, or of materials, mix designs, or equipment submitted for approval prior to the Design Builder's purchase thereof for incorporation in the Work.

9.2.3.1 County reserves the right, in its sole discretion, to conduct air monitoring, earth monitoring, Work monitoring, and any other tests to monitor Contract requirements of safe and statutorily compliant work methods with respect to hazardous waste or materials and, where applicable, safe re-entry level air standards under state and federal law upon completion of the Work, and compliance of the Work with periodic and final inspection by public and quasi-public entities having jurisdiction.

9.2.3.2 Design Builder acknowledges that County has the right to perform, or cause to be performed, various activities and tests including, but not limited to, pre-abatement, during abatement, and post-abatement air monitoring, that County shall have no obligation to perform said activities and tests, and that a portion of said activities and tests may take place prior to the completion of the Work by Design Builder. In the event County elects to perform such activities and tests, Design Builder shall afford County access to the Site and all areas of the Work as may be necessary for the performance of such activities and tests.

9.2.3.3 Notwithstanding County's rights reserved and acknowledged by this paragraph 9.2.3, Design Builder may retain its own industrial hygiene consultant at Design Builder's own expense and may collect samples and may perform tests including, but not limited to, pre-abatement, during abatement, and post-abatement personal air monitoring, and County reserves the right to request documentation of all such activities and tests performed by Design Builder relating to the Work and Design Builder shall immediately provide that documentation upon request.

9.2.4 If any Work (or the work of others) that is required to be inspected, tested or approved is covered by the Design Builder prior to such inspection, testing or approval, without written approval of County, it must, if requested by County, be uncovered. Uncovering Work shall be at Design Builder's expense unless the Design Builder has given the County timely notice of Design Builder's intention to cover the same and the County has given its written approval of the covering of the Work prior to such inspection, testing or approval. If a portion of the Work has been covered, which is not required by the Contract Documents to be observed or inspected prior to its being covered and which County's Representative has not specifically requested to observe prior to its being covered, the County may request to see such Construction Work and it shall be uncovered and recovered by Design Builder. If such Work is in accordance with the Contract Documents, the costs of uncovering and recovering the Work shall be added to the Contract Price by Change Order; and if the uncovering and recovering of the Work delays the critical path of the Work on the Project, an appropriate adjustment of the Contract Times shall be made by Change Order. If

such uncovered Work is not in accordance with the Contract Documents and accepted Construction Documents, the Design Builder shall pay such costs and shall not be entitled to an adjustment of the Contract Times or the Contract Price.

9.2.5 In any case where the Work is covered contrary to the written request of the County, it must, if requested by the County, be uncovered for the County's observation or inspection at the Design Builder's expense.

9.2.6 Whenever required by the County, the Design Builder shall furnish tools, labor and materials necessary to make examination of Work that may be completed or in progress, including uncovering or taking down portions of finished Work.

9.2.7 Inspection of the Work by or on behalf of the County, or the County's failure to do so, shall not under any circumstances be deemed a waiver or approval of any non-conforming aspect of the Work. The Design Builder shall have an absolute duty, in the absence of a written Change Order signed by the County, to perform the Work in conformance with the Contract Documents and accepted Construction Documents and correct defective work promptly upon knowledge thereof.

9.2.8 Any inspection, evaluation, or test performed by or on behalf of the County relating to the Work is solely for the benefit of the County, and shall not be relied upon by the Design Builder. The Design Builder shall not be relieved of the obligation to perform the Work in accordance with the Contract Documents and accepted Construction Documents, nor relieved of any guaranty, warranty, or other obligation, as a result of any inspections, evaluations, or tests performed by the County, whether or not such inspections, evaluations, or tests are permitted or required under the Contract Documents. The Design Builder shall be solely responsible for testing and inspecting Work already performed to determine whether such Work is in proper condition to receive later Work.

9.3 Correction of Defective Work.

9.3.1 "Defective Work" includes, without limitation, any element of the Work, design services or construction that does not meet the requirements of the Contract Documents or accepted Construction Documents, is incomplete, or that fails to perform as represented by Design Builder.

9.3.2 If the Design Builder fails to supply sufficient skilled workers, suitable materials or equipment, or to furnish or perform the Work in such a way that the completed Work will conform to Contract Documents, the County may order the Design Builder to replace any Defective Work, or stop any portion of Work to permit the County (at the Design Builder's expense) to replace such Defective Work. The County is not obligated to exercise these rights for the benefit of the Design Builder or any other party.

9.3.3 If required by the County, the Design Builder shall promptly, as directed, either correct all Defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by the County, remove it from the Site and replace it with Work that is not defective. The Design Builder shall pay all claims, costs,

losses and damages County incurs that are caused by or result from such correction or removal (including but not limited to all costs of repair or replacement of work of others) provided that County makes reasonable efforts to have the work performed at prices that do not exceed local market costs under the circumstances. Any extraordinary costs incurred in the examination, evaluation and determination that such Defective Work should be corrected or removed and replaced will be the responsibility of the Design Builder. The Design Builder shall pay costs of re-inspection and re-testing. If the parties are unable to agree on the amount of an appropriate decrease in the Contract Price, the County may deduct from monies due or to become due the Design Builder all claims, costs, losses, and damages caused by or resulting from such correction or removal (including but not limited to all costs of repair or replacement of work of others) as well as all costs of the County incurred in exercising such rights and remedies (including, but not limited to, the costs incurred in the examination, evaluation and determination that such Defective Work should be corrected or removed and replaced). If the Design Builder disagrees with the County's calculation, it may make a claim as provided in Article 12 (Claims by Design Builder) below. The County's rights under this paragraph 9.3 (Correction of Defective Work) shall be in addition to any other rights it may have under the Contract Documents or by law.

9.3.4 Correction Period: If **within two (2) years after the date of Final Completion** or such longer period of time as may be prescribed by laws or regulations or by the terms of any applicable special warranty or guarantee required by the Contract Documents or supplied with regard to the Work or required by any specific provision of the Contract Documents, any Work is found to be defective, the Design Builder shall promptly, without cost to the County and in accordance with the County's written instructions, (i) correct such defective Work or, if it has been rejected by the County, remove it from the Site and replace it with Work that is not defective, and (ii) satisfactorily correct or remove and replace any damage to other Work or the work of others resulting there from. If the Design Builder does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the County may have the Defective Work corrected or the rejected Work removed and replaced, and all claims, costs, losses and damages caused by or resulting there from (including but not limited to all costs of repair or replacement of work of others) shall be paid by Design Builder. Where Design Builder fails to correct Defective Work, or defects are discovered outside the correction period, County shall have all the rights and remedies granted by the Contract Documents or by law.

9.3.5 In special circumstances where a part of the Work is occupied by the County or a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that part of the Work or that item shall start to run from the date such work is occupied, or the date such item is placed in continuous service. Additionally, for equipment and systems having extended guarantees or warranties beyond the two (2) year obligation described in this paragraph 9.3 (Correction of Defective Work), the correction period shall commence on the later of (a) the County's actual use of the item for the purpose intended (i.e., not merely for testing, commissioning, etc.), and (b)

when the County's commissioning agent indicates in writing to the County that the item is ready to be used for the purpose intended.

9.3.6 Where defective or rejected Work (and damage to other work resulting there from) has been corrected, removed or replaced under this provision, and the commencement of the original correction, removal or replacement began during the first year of the original correction period, the revised correction period hereunder with respect to such Work will be **for an additional period of two (2) years after such correction or removal and replacement has been satisfactorily completed.** Where defective or rejected Work (and damage to other work resulting there from) has been corrected, removed or replaced under this provision, and the commencement of the correction, removal or replacement began during the second year of any correction period, the revised correction period hereunder with respect to such Work will be for an additional period of one (1) year after such correction or removal and replacement has been satisfactorily completed.

9.3.7 In the event of an emergency constituting an immediate hazard to health or safety of County employees, or other persons, property, or licensees, the County may undertake, at the Design Builder's expense and without prior notice, all work necessary to correct such hazardous condition(s) when it is caused by Design-Builder or Work of the Design Builder not being in accordance with the requirements of the Contract Documents.

9.4 Acceptance and Correction of Defective Work by the County.

9.4.1 If after giving the Design Builder the opportunity to repair, Design Builder does not do so, the County may accept Defective Work: If, instead of requiring correction or removal and replacement of Defective Work, the County prefers to accept it, the County may do so.

9.4.2 The Design Builder shall pay all claims, costs, losses and damages attributable to the County's evaluation of and determination to accept such defective Work. If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to Work, unless the parties are unable to agree upon an appropriate decrease in the Contract Price, in which case the County may deduct from monies due or to become due to the Design Builder the amount of such claims, costs, losses (including diminution in value), damages, expenses and liabilities attributable to the acceptance of the Defective Work. If the Design Builder disagrees with the deduction, the Design Builder may make a Claim as provided in Article 12 (Claims by Design Builder). If the acceptance occurs after Final Payment, an appropriate amount shall be paid by the Design Builder as determined by the County.

9.4.3 The County may correct Defective Work: If the Design Builder fails **within five (5) Days after written notice from the County** to begin to correct defective Work or to begin to remove and replace rejected Work as required by the County in accordance with paragraph 9.3 (Correction of Defective Work) above, or to provide a plan for correction of defective Work acceptable to the County, or if

the Design Builder otherwise fails to perform the Work in accordance with Contract Documents and accepted Construction Documents, the County may, **after seven (7) Days written notice to Design Builder**, correct and remedy any deficiency. In connection with such corrective and remedial action, the County may exclude the Design Builder from all or part of the Site, take possession of all or part of the Work, and suspend Design Builder's work related thereto, take possession of all or part of the Design Builder's materials, tools, appliances, construction equipment and machinery at the Site, and incorporate in the Work any materials and equipment stored at the Site or for which the County has paid the Design Builder but which are stored elsewhere. Design Builder shall allow the County, its representatives, agents, employees, consultants and other contractors access to the Site and materials to enable the County to exercise the rights and remedies under this paragraph 9.4 (Acceptance and Correction of Defective Work by the County). All claims, costs, losses (including diminution in value), damages, expenses and liabilities incurred or sustained by the County in exercising such rights and remedies will be the responsibility of Design Builder and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work and the Contract Price. If the parties are unable to agree on the amount of an appropriate decrease in the Contract Price, the County may deduct from monies due or to become due to the Design Builder all claims, costs, losses (including diminution in value), expenses, damages and liabilities attributable to the Defective Work, including all costs of repair or replacement of work of others destroyed or damaged by correction, removal or replacement of the Design Builder's Defective Work. If the Design Builder disagrees with the County's calculation, it may make a Claim as provided in Article 12 (Claims by Design Builder) of this Document 00 72 53.

9.4.4 If the Design Builder fails to pay the costs of such removal and storage as required by this paragraph 9.4 (Acceptance and Correction of Defective Work by the County) **within ten (10) Days after written demand**, the County may, without prejudice to other remedies, sell such materials at auction or at private sale, or otherwise dispose of such material. The Design Builder shall be entitled to the proceeds of such sale, if any, in excess of the costs and damages for which the Design Builder is liable to the County, including compensation for County Representative's services and expenses. If such proceeds of sale do not cover costs and damages for which the Design Builder is liable to County, the Contract Price shall be reduced by such deficiency. If there are no remaining payments due the Design Builder or the remaining payments are insufficient to cover such deficiency, the Design Builder shall promptly pay the difference to the County.

9.4.5 The Design Builder's obligations under this Section are in addition to and not in limitation of its warranty under paragraph 9.1 (Warranty and Guarantee) of this Document 00 72 53 or any other obligation of the Design Builder under the Contract Documents or law. Enforcement of the Design Builder's express warranties and guarantees to repair contained in the Contract Documents shall be in addition to and not in limitation of any other rights or remedies the County may have under the Contract Documents or at law for Defective Work. Nothing contained in this Paragraph shall be construed to establish a period of limitation with respect to other obligations of the Design Builder under the Contract Documents and in no way limits either the Design Builder's liability for

Defective Work or the time within which proceedings may be commenced to enforce the Design Builder's obligations under the Contract Documents or law.

9.5 Rights Upon Inspection or Correction.

9.5.1 The Design Builder shall not be allowed an extension of the Contract Times (or any milestones) because of any delay in the performance of the Work attributable to the reasonable exercise by the County of its rights and remedies under this Article 9 (Warranty, Guaranty, and Inspection of Work) of this Document 00 72 53. Where the County reasonably exercises its rights under Article 9 of this Document, it retains all other rights it has by law or under the Contract Documents, including but not limited to, the right to terminate the Design Builder's right to proceed with the Work for cause under the Contract Documents and/or make a claim or back charge where a Change Order cannot be agreed upon.

9.5.2 Inspection shall not relieve the Design Builder of its obligation to have furnished material and workmanship in accordance with Contract Documents and accepted Construction Documents. Payment for work completed through periodic progress payments or otherwise shall not operate to waive the County's right to require full compliance with the Contract Documents and shall in no way be deemed as acceptance of the Work paid therefore. The Design Builder's obligation to complete the Work in accordance with the Contract Documents and accepted Construction Documents shall be absolute, unless the County agrees otherwise in writing.

9.6 Samples and Tests of Materials and Work.

9.6.1 Samples or test specimens of all materials to be used or offered for use in connection with the Work shall be prepared at the expense of the Design Builder and furnished to the County in such quantities and sizes as may be required for proper examination, analysis and tests.

9.6.2 All samples shall be submitted in ample time to enable the County to make any tests, analyses or examinations necessary before the time at which it is desired to incorporate the material into the Work.

9.6.3 The County may refuse consideration of further samples of same brand or make of material or product previously determined as unsatisfactory for testing, analysis or examination.

9.7 Proof of Compliance with Contract Provisions. In order that the County may determine whether the Design Builder has complied or is complying with requirements of Contract Documents not readily enforceable through inspection and tests of Work and materials, the Design Builder shall at any time when requested submit to the County properly authenticated documents or other satisfactory proofs of compliance with all applicable requirements.

9.8 Acceptance. Neither inspection by the County or its authorized agents or representatives, nor any order or certificate for the payment of money, nor any payment, nor acceptance

of the whole or any part of the Work by the County, nor any extension of time, nor any verbal statements issued by the County or its authorized agents or representatives shall operate as a waiver of any provisions of this Contract, or of any power herein reserved by the County or any right to damage herein provided, nor shall any waiver of any breach of this Contract be held to be a waiver of any other subsequent breach.

9.9 Maintenance of Work. Up to the time of Final Completion, as defined in paragraph 1.1.76 of Section 01 42 16 (Definitions), the Design Builder shall maintain all Materials and Equipment in accordance with manufacturer's requirements, including but not limited to, while such Materials and Equipment are in transit or otherwise are in the care and custody of the Design Builder.

9.10 Maintenance During Warranty Period. For a period of **two (2) years following Final Completion**, the Design Builder will provide or perform all manufacturer's recommended maintenance on the following systems: elevators; all HVAC systems; plumbing; natural gas systems; fire sprinkler systems; electrical systems; fire alarm system; paging and speaker systems; communications/data systems and security systems.

10. DESIGN BUILDER'S ORGANIZATION AND EQUIPMENT.

10.1 Design Builder's Legal Address. The physical and electronic mail addresses given in Proposal are hereby designated as the legal addresses of the Design Builder, but such addresses may be changed at any time by notice in writing, delivered to the County, which in conspicuous language advises the County of a change in legal addresses or telecopy number. Delivery to the Design Builder's legal address or depositing in any post office or post office box regularly maintained by United States Postal Service, in a postpaid wrapper, directed to the Design Builder at the legal address, of any plan, notice, letter or other communication, shall be deemed legal and sufficient service thereof upon the Design Builder. Electronic mail to the Design Builder's designated electronic mail address of any letter, memorandum, or other communication, with proof of electronic mail transmission, shall also be deemed legal and sufficient service thereof upon the Design Builder.

10.2 Design Builder's Office at the Site. The Design Builder is required to maintain an office at the Site, which office shall be headquarters of representative authorized to transmit and receive instructions, drawings or other communications to and from the County. Instructions, drawings, or other communications given to the Design Builder's representative or delivered at the Site office in representative's absence shall be deemed to have been given to the Design Builder.

10.3 Design Builder's Superintendents or Forepersons. The Design Builder shall at all times be represented on Site by one or more superintendents or forepersons authorized and competent to receive and carry out any instructions that may be given to them by the County and the Design Builder shall be liable for faithful observance of instructions delivered to the Design Builder or to its authorized representative or representatives on Site.

10.4 Proficiency in English. Supervisors, forepersons, security guards, safety personnel and employees who have unescorted access to the Site must possess proficiency in the English language in order to understand, receive and carry out oral and written

communications or instructions relating to their job functions, including safety and security requirements.

10.5 Design Builder's and Subcontractors' Employees. The Design Builder shall employ, and shall permit its Subcontractors to employ, only competent and skillful personnel to do the Work. If the County notifies the Design Builder that any of its employees, or any of its Subcontractors' employees employed on the Work is incompetent, unfaithful, disorderly or profane, or fails to observe customary standards of conduct or refuses to carry out any provision of the Contract Documents, or uses threatening or abusive language to any person on the Work (including persons representing County), or violates sanitary rules, or is otherwise unsatisfactory in the reasonable opinion of the County, and if the County requests that such person be discharged from the Work, then the Design Builder or its Subcontractor shall immediately discharge such person from the Work and the discharged person shall not be re-employed on the Work except with written consent of the County.

10.6 Design Builder to Supply Sufficient Workers and Materials.

10.6.1 Unless otherwise required by the County pursuant to the terms of the Contract Documents, the Design Builder shall at all times keep on the Site a sufficient amount of equipment and materials and employ a sufficient number of qualified workers to prosecute the Work at a rate and in a sequence and manner necessary to complete the Work herein required within the Contract Times. This obligation shall remain in full force and effect notwithstanding disputes or claims of any type.

10.6.2 At any time during progress of the Work should the Design Builder directly or indirectly (through Subcontractors or subconsultants) refuse, neglect, or be unable to supply sufficient materials or employ qualified workers to prosecute the Work as required, then the County may require the Design Builder to accelerate the Work and/or furnish additional qualified workers or materials as the County may consider necessary, at no cost to County. If the Design Builder does not comply with the notice **within five (5) Business Days of date of service** thereof, the County shall have the right (but not a duty) to provide materials and qualified workers to finish the Work or any affected portion of the Work, as the County may elect. The County may, at its discretion, exclude the Design Builder from the Site, or portions of the Site or separate work elements during the time period that the County exercises this right. The County shall deduct from moneys due or become due under the Contract Documents, the sums necessary to meet expenses thereby incurred and paid to persons supplying materials and doing the Work. The County shall deduct from funds or appropriations set aside for purposes of Contract Documents the amount of such payments and charge them to the Design Builder as if paid to the Design Builder. Design Builder shall remain liable for resulting delay, including liquidated damages and indemnification of the County from claims of others.

10.6.3 Exercise by the County of the rights conferred upon it in this paragraph 10.6 (Design Builder to Supply Sufficient Workers and Materials) is entirely discretionary on the part of the County. The County shall have no duty or obligation to exercise the rights referred to in this paragraph 10.6, and the failure

to exercise such rights shall not be deemed an approval of existing work progress or a waiver or limitation of the County's right to exercise such rights in other concurrent or future similar circumstances. The rights conferred upon the County under this paragraph 10.6 are cumulative to the County's other rights under the Contract Documents and law including, but not limited to, the County's right to terminate the Contract.

10.6.4 The County may, if it deems necessary for reasons other than as described in this paragraph 10.6 (Design Builder to Supply Sufficient Workers and Materials) of this Document 00 72 53, direct the Design Builder to accelerate the Work by increasing crew sizes, working overtime (as permitted by law) and/or performing shift work. If directed to perform overtime and/or shift work, the Design Builder shall work said overtime and/or shift work, and the County shall pay the Design Builder solely for the additional premium wages paid, plus taxes imposed by law on such additional wages. Unless otherwise directed by the County, accelerated work shall be performed utilizing the most cost-effective available method. For example, the County shall not be responsible to pay the premium for overtime work if the same work could have been performed on second shift utilizing a lower premium.

10.7 Design Builder's Use of the Site.

10.7.1 The Design Builder shall not make any arrangements with any person to permit occupancy or use of any land, structure or building on the Site for any purpose whatsoever, either with or without compensation, in conflict with any agreement between the County and any owner, former owner or tenant of such land, structure or buildings. The Design Builder may not occupy County-owned property outside the limit of the Work as shown on the Drawings unless it obtains prior written approval from the County. Personnel of the Design Builder and Subcontractors shall not occupy, live upon, or otherwise make use of the Project site during any time that Work is not being performed at the Site, except as otherwise provided in the Contract Documents.

10.7.2 The Design Builder shall, during performance of the Work, keep the Site and surrounding area free from the accumulation of excess dirt, waste materials, and rubbish caused by the Design Builder. The Design Builder shall remove all excess dirt, waste material, and rubbish caused by the Design Builder; tools; equipment; machinery; and surplus materials from the Site and surrounding area at the completion of the Work.

11. PROSECUTION AND PROGRESS OF THE WORK.

11.1 Schedules and Examinations of Contract Documents.

11.1.1 Before undertaking each part of the Work, the Design Builder shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon, all applicable field and engineering measurements and all actual conditions. The Design Builder shall promptly report in writing to the County any conflict, error, ambiguity or discrepancy which the Design Builder

may discover and shall obtain a written interpretation or clarification from the County before proceeding with any of the Work affected thereby.

11.1.2 The Design Builder shall submit an operating electronic version of an original, plus Hardcopies of the following schedules to the County:

11.1.2.1 Schedules and Reports as required by Sections 01 32 26 (Schedules and Reports) and 01 33 00 (Submittal Procedures).

11.1.2.2 Preliminary Schedule of Values for all the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide each schedule of value into component activities in sufficient detail to serve as the basis for progress payments during construction, for each of the two primary components of the work (County Building and Sitework). Such Schedule of Values will include an appropriate amount of overhead and profit applicable to each item of work, will include a line item for Project Record Documents and a line item for project scheduling, and will conform to Section 01 29 00 (Payment Procedures).

11.1.3 Unless otherwise provided in the Contract Documents, **at least fifteen (15) Days before submission of the first application for payment**, a conference attended by the Design Builder, the County, and others as appropriate, will be held to review for acceptability the schedules submitted in accordance with paragraph 11.1.2 above and first reviewed at the Design Conference. Schedules shall be updated and completed as required by Sections 01 29 00 (Payment Procedures), 01 32 26 (Schedules and Reports) and 01 33 00 (Submittal Procedures). No progress payment shall be due or owing to the Design Builder until the schedules are submitted to and reasonably acceptable to the County and/or the County consultants as meeting the requirements of the Contract Documents, including Sections 01 29 00 (Payment Procedures), 01 32 26 (Schedules and Reports) and 01 33 00 (Submittal Procedures). The County's acceptance of the Design Builder's schedules will not create any duty of care or impose on the County any responsibility for the sequencing, scheduling or progress of Work nor will it interfere with or relieve the Design Builder from the Design Builder's full responsibility therefore.

11.1.4 Before commencing any portion of the Work, the Design Builder shall, to permit proper inspection of the Work and to assure measurements necessary for record and payment, inform the County in writing as to time and place at which the Design Builder wishes to commence the Work and the nature of the Work to be done. Information shall be given to the County a reasonable time in advance of time at which the Design Builder proposes to begin Work, so that the County may perform necessary preliminary work without inconvenience to the Design Builder.

11.1.5 The Design Builder shall submit submittals and shop drawings to the County for review in accordance with Section 01 33 00 (Submittal Procedures). Submission of a Shop Drawing shall constitute the Design Builder's representation that all requirements of Section 01 33 00 (Submittal Procedures) have been complied

with. All Submittals will be identified as the County may require and submitted in the number of copies specified in this Document 00 72 53 or Section 01 33 00 (Submittal Procedures).

11.1.6 The Design Builder shall not perform any Work requiring submission of a Shop Drawing or Sample or other submittal prior to submission and a favorable review thereof. Where a Shop Drawing or Sample or other Submittal is required by the Contract Documents or the final schedule of Shop Drawing and Sample submissions accepted by the County, any related Work performed prior to the County's approval of the pertinent Submittal will be at the sole expense, responsibility and risk of the Design Builder.

11.1.7 The Design Builder shall utilize the Progress Schedules in planning, scheduling, coordinating, performing and controlling the Work (including all activities of Subcontractors, equipment vendors and suppliers). The Design Builder shall update the Progress Schedules on a monthly basis for purpose of recording and monitoring the progress of the Work and evaluating and preparing the Design Builder's monthly progress payments.

11.1.8 The Design Builder's failure to submit and maintain an acceptable progress schedule may, in the County's discretion, and without limiting the materiality of the Design Builder's other obligations under the Contract Documents, constitute grounds to declare the Design Builder in material breach of the Contract Documents.

11.2 Lines and Grades, Measurements.

11.2.1 The Work shall be done to lines and grades established by the Design Builder, at the Design Builder's cost, in accordance with the Contract Documents, unless the County, in its discretion, directs in writing otherwise.

11.2.2 At times it may be necessary to discontinue portions of the Design Builder's work in order for the County to make measurements or surveys without interruptions or other interference that might impair accuracy of results. At any time, on request of the County, the Design Builder shall discontinue the Work to such extent as may be necessary for purposes of the County.

11.2.3 No direct payment will be made for cost to the Design Builder of any work or delay occasioned by establishing or checking lines and grades or making other measurements, or by inspection, and no extension of time will be allowed for such delays.

11.3 Cost Data and Other Records.

11.3.1 The Design Builder shall maintain full and correct information as to number of workers employed in connection with each subdivision of the Work, classification and rate of pay of each worker in the form of certified payrolls, cost to Design Builder of each class of materials, tools and appliances used by Design Builder in the Work, and amount of each class of materials used in each subdivision of the Work. Design Builder shall prepare and delivery to County

summaries or reports comparing actual project costs with Proposal estimates or any budgets, **no less often than monthly.**

11.3.2 The Design Builder shall maintain daily job reports as provided in Section 01 32 26 (Schedules and Reports). The Design Builder shall provide the County with copies for each day the Design Builder works on the Project, to be delivered to County either the same day or the following morning before starting work at the Site.

11.3.3 Design Builder shall take **weekly progress photographs of all areas of the Work**.

11.3.4 The Design Builder shall maintain copies of all correspondence with Subcontractors and records of meetings with Subcontractors.

11.3.5 The Design Builder shall report to the Surety promptly upon receiving requests from the Surety to provide reporting.

11.3.6 The County shall have the right to audit and copy the Design Builder's books and records of any type, nature or description relating to the Project (including but not limited to financial records reflecting in any way costs claimed on the Project), and to inspect the Site, including the Design Builder's trailer, or other job Site office, and this requirement shall be contained in the subcontracts of Subcontractors working on Site. By way of example, the County shall have the right to inspect and obtain copies of all Contract Documents, planning and design documents, Proposal documents (subject to Document 00 61 31 (Escrow Bid Documents)), cost records and job cost variance reports, design modification proposals, value engineering or other cost reduction proposals, revisions made to the original design, job progress reports, photographs, and as-built drawings maintained by the Design Builder. The Design Builder shall maintain in a safe place at the Site one record copy of all Contract Documents, accepted Construction Documents, Drawings, Specifications, Addenda, Contract Modifications, Change Orders, Work Directives, Force Account orders, and written interpretations and clarifications in good order and annotated to show all changes made during construction. These Project Record Documents, together with all approved Samples and a counterpart of all approved Shop Drawings and Submittals, shall be maintained and available to the County for reference and inspection. Upon completion of the Work, Design Builder shall deliver to the County, the Project Record Documents, Samples and Shop Drawings and as-built drawings.

11.3.7 The County and any other applicable governmental entity shall have the right to inspect all information and documents maintained under this paragraph 11.3 (Cost Data) at any time during the Project and for a period of **five (5) years following Substantial Completion.** During this five (5) year period, Design Builder may maintain information and documents in either paper or electronic form. This right of inspection shall not relieve the Design Builder of its duties and obligations under the Contract Documents. This right of inspection shall be specifically enforceable in a court of law, either independently or in conjunction with enforcement of any other rights in the Contract Documents.

12. CLAIMS BY DESIGN BUILDER.

12.1 General.

12.1.1 Contract Interpretation Disputes: Should it appear to the Design Builder that Work to be performed or any of the matters relative to Contract Documents are not satisfactorily detailed or explained therein, or should any questions arise as to the meaning or intent of Contract Documents, the Design Builder shall give written notice to the County. The Design Builder shall bear all costs incurred in giving notice. The County will render a determination regarding the issue, which shall be final. If the Design Builder disagrees with the County's decision, or if the Design Builder contends that County failed to provide a decision, Design Builder's sole and exclusive remedy is to file a claim in accordance with this Article 12 (Claims by Design Builder). Design Builder shall diligently prosecute the Disputed Work (as defined below) to Final Completion pending resolution of any claim.

12.1.2 Work Disputes: Design Builder shall give written notice to the County of any dispute arising under the Contract Documents respecting the true value of any Work performed, the performance or implementation of Work required by the Contract Documents, any Work omitted, any extra Work that the Design Builder may be required to perform, time extensions, the amount of any payment to Design Builder during the performance of the Work, or of compliance with the Contract Documents. The County shall render a determination regarding the issue, which shall be final. If the Design Builder disagrees with the County's decision, or if the Design Builder contends that the County failed to provide a decision, the Design Builder's sole and exclusive remedy is to file a claim in accordance with this Article 12 (Claims by Design Builder). Pending the resolution of any claim, the Design Builder shall diligently prosecute the Disputed Work to Final Completion.

12.1.3 The claim notice and documentation procedure described in this Paragraph 12.1 of Article 12 (Claims by Design Builder) applies to all claims and disputes arising under the Contract Documents, including without limitation any claim or dispute by any Subcontractor or material supplier. All Subcontractor and supplier claims of any type shall be brought only through the Design Builder as provided in this Paragraph 12.1 of Article 12. Under no circumstances shall any Subcontractor, subconsultant or supplier make any direct claim against the County or any of its Project Partners.

12.1.4 "Claim" means a written demand or written assertion by the Design Builder seeking, as a matter of right, the payment of money, the adjustment of Contract Time(s), or interpretation of the Contract Documents terms, or other relief arising under or relating to the Contract Documents. In order to qualify as a "claim," the written demand must state that it is a claim submitted under Article 12 (Claims by Design Builder).

12.1.5 A voucher, invoice, proposed change, Application for Payment, cost proposal, Request for Information ("RFI"), change order request, or other routine or authorized form of request for payment is not a claim under the Contract

Documents. If such request is disputed as to liability or amount, then the disputed portion of the submission may be converted to a claim under the Contract Documents by submitting a separate claim in compliance with claim submission requirements.

12.1.6 The provisions of this Article 12 (Claims by Design Builder) survive termination, breach of the Contract Documents or completion of the Work, and constitute a claims procedure by agreement under Government Code § 930.2. The Design Builder shall bear all costs incurred in the preparation and submission of a claim.

12.2 Procedure.

12.2.1 Prior to the filing of any claim, the parties shall work together in an effort to resolve issues at the lowest level of management practical, escalating issues if a solution is beyond the authority of those involved or if agreement cannot be achieved at a lower level. Escalation of issues shall occur before they affect the Work, either through time or cost.

12.2.2 Should any clarification, determination, action or inaction by the County or County consultants, Work, or any other event, in the opinion of the Design Builder, exceed the requirements of or not comply with the Contract Documents, or otherwise result in the Design Builder seeking additional compensation or additional time for any reason (collectively "Disputed Work"), then the Design Builder shall give the County written notice thereof. Design Builder shall give notice to County before commencing the Disputed Work, or **within seven (7) Days after the Design Builder's first knowledge of the Disputed Work**, whichever is earlier. The Design Builder must file a written notice and cost proposal for the Disputed Work with the County stating clearly and in detail its objection and reasons for contending the Disputed Work or interpretation is outside the requirements of the Contract Documents. The cost proposal shall provide the proposed cost of the Disputed Work, and if the cost cannot be accurately estimated within the period in which the cost proposal is required to be submitted, then the Design Builder shall provide its best estimate of the cost of the Disputed Work and provide a more definitive estimate as soon as practical, but **not later than thirty (30) Days.** If a written notice and cost proposal for the Disputed Work is not issued within this time period, or if the Design Builder proceeds with the Disputed Work without first having given the notice required by this paragraph 12.2 (Procedure), the Design Builder shall waive its rights to make a claim on the specific issue.

12.2.3 The Design Builder and the County shall make good faith attempts to resolve informally any and all such issues, claims and/or disputes. The County shall review the Design Builder's timely notice and cost proposal for Disputed Work and provide a decision. If, after receiving the decision, the Design Builder disagrees with it or still considers the Work required of it to be outside of the requirements of the Contract Documents, it shall so notify the County, in writing, **within fourteen (14) Days after receiving the decision** by submitting a notice of potential claim, that a formal claim will be issued. **Within thirty (30) Days of receiving the decision**, the Design Builder shall submit its claim in the form

specified herein and all arguments, justification, cost or estimates, schedule analysis, and detailed documentation supporting its position. The Design Builder's **failure to furnish notification within fourteen (14) Days** and all **justifying documentation within thirty (30) Days** will result in the Design Builder waiving its right to the subject claim. If **Disputed Work persists longer than sixty (60) Days**, then the Design Builder shall, **every sixty (60) Days until the Disputed Work ceases**, submit to the County a document titled "Claim Update" which shall update and quantify all elements of the Claim as completely as possible. Claims or Claim Updates stating that damages, total damages (direct and indirect), schedule input and/or any time extension will be determined at a later date shall not comply with this paragraph 12.2 (Procedure) and shall result in the Design Builder waiving its claim(s).

12.2.4 Upon receipt of the Design Builder's formal claim including all arguments, justifications, cost or estimates, schedule analysis, and detailed documentation supporting its position as previously described, the County or its designee shall review the issue and render a final determination. The County will do the same regarding any Claim Update submitted in accordance with this Article. The County may in its discretion conduct an administrative hearing on the Design Builder's claim, in which case the Design Builder shall appear, participate, answer questions and inquiries, and present any further evidence or analysis requested by the County to evaluate and decide Design Builder's claim.

12.2.5 Claims shall be calculated in the same manner as Change Orders per Section 01 26 00 (Contract Modification Procedures). THE COUNTY SHALL NOT BE LIABLE FOR SPECIAL OR CONSEQUENTIAL DAMAGES, AND CLAIMS SHALL NOT INCLUDE SPECIAL OR CONSEQUENTIAL DAMAGES. THE DESIGN BUILDER SHALL BE LIMITED IN ITS RECOVERY ON CLAIMS TO THE CHANGE ORDER CALCULATIONS SET FORTH IN SECTION 01 26 00 (CONTRACT MODIFICATION PROCEDURES).

12.3 Claim Format. The Design Builder shall submit the claim justification in the following format: (a) Cover letter and certification under penalty of perjury of the accuracy of the contents of the claim and that the claim does not violate the California False Claims Act (Government Code Section 12650 et seq.), (b) summary of claim including underlying facts, entitlement, schedule analysis, quantum calculations and the Contract Document provisions supporting relief, (c) list of documents relating to claim including specifications, Drawings, clarifications/requests for information, schedules, notices of delay, cost calculations and spreadsheets, and any others, (d) chronology of events and correspondence, (e) analysis of claim merit, (f) analysis of claim cost, and (g) attach supporting documents referenced in (c).

12.4 Mediation. If the **Design Builder's claims** submitted in accordance with this Article 12 (Claims by Design Builder) **at Project completion total more than $375,000**, then such claims shall, as a condition precedent to litigation (or if otherwise permitted by the Contract Documents, arbitration) thereon, first be mediated. Mediation shall be non-binding and utilize the services of a mediator mutually acceptable to the parties and, if the parties cannot agree, a mediator selected by the Judicial Arbitration and Mediation Services (JAMS) from its panel of approved mediators trained in construction industry mediation. All statutes of limitation shall be tolled from the date of the demand for

mediation until a date **two (2) weeks following the mediation's conclusion.** All unresolved Design Builder claims shall be submitted to the same mediator. The cost of mediation shall be equally shared.

12.5 Exclusive Remedy. The Design Builder's performance of its duties and obligations specified in this Article 12 (Claims by Design Builder) and submission of a claim and mediation as provided in this Article 12 is Design Builder's sole and exclusive remedy for disputes of all types pertaining to the payment of money, extension of time, the adjustment or interpretation of Contract Documents terms or other contractual or tort relief arising from the Contract Documents. This exclusive remedy and the limitation of liability (expressed herein and elsewhere throughout the Contract Documents) apply notwithstanding the completion, termination, suspension, cancellation, breach or rescission of the Work or Contract Documents, negligence or strict liability of the County, its representatives, consultants, agents or Project Partners, or the transfer of Work or the Project to the County for any reason whatsoever. Compliance with the notice and claim submission and mediation procedures described in Article 12 is a condition precedent to the right to commence litigation, file a Government Code Claim, or commence any other legal action. If the Design Builder fails to raise any claim(s) or issue(s) in a timely protest and timely claim submitted under this Article 12, then the Design Builder may not thereafter assert such claims(s) or issue(s) in any Government Code Claim, subsequent litigation, or legal action. The County shall not have deemed to waive any provision under this Article 12, if at County's sole discretion, a claim is accepted in a manner not in accord with this Article 12.

12.6 Final Claim Disposition. If the Design Builder's claims submitted in accordance with this Article 12 (Claims by Design Builder) at Project completion total less than $375,000, then claims resolution shall proceed in the manner prescribed by Article 1.5, Chapter 1, Part 3 of Division 2 of the Public Contract Code. **If such claims exceed $375,000**, then the Design Builder shall prepare a compendium of claims submitted and not resolved as a result of these procedures, and submit them in a claim submitted under the Government Claims Act, Govt. Code §§ 901 et seq., for final investigation and consideration of their settlement prior to initiation of any litigation thereon, as required by Government Code § 945.4. Pursuant to Government Code § 930.2, the **one-year period** in Government Code § 911.2 **shall be reduced to one hundred and fifty (150) Days.**

12.7 Subcontractor Claims. The Design Builder shall present as its claims all Subcontractor, Subconsultant, and supplier claims of any type, certify the claims as provided in 12.5, above, and prove them under the terms of the Contract Documents. The County shall not be directly liable to any Subcontractor, any subconsultant, any supplier, or any other person or organization, or to any surety or employee or agent of any of them, for damages, extra costs or claims of any type arising out of or resulting from the Project.

13. LEGAL AND MISCELLANEOUS.

13.1 Laws and Regulations.

13.1.1 The Design Builder shall keep fully informed of, shall comply with, and ensure that all Work complies with, all Applicable Laws, statutes, laws, ordinances, codes, rules, regulations and orders of any properly constituted authority affecting the Work and persons connected with Work, and shall protect and

indemnify the County of Alameda, the Judicial Council of California acting by and through the Administrative Office of the Courts, Superior Court of California, and all of their officers, directors, representatives, attorneys, agents, employees and consultants, associated with the Work, including but not limited to the County Board of Supervisors, County Representatives against any claim or liability, including attorney's fees, arising from or based on violation of any statutes, laws, ordinances, codes, rules, regulations or orders, whether by the Design Builder or by Subcontractors, employees or agents. Authorized persons may at any time enter upon any part of the Work to ascertain compliance of all applicable statutes, laws, ordinances, codes, rules, regulations and orders.

13.1.2 Whenever the Contract Documents or accepted Construction Documents require larger sizes or higher standards than are required by any applicable statute, law, ordinance, code, rule, regulation or order, the larger size or higher standard shall govern. Whenever the Contract Documents or accepted Construction Documents require something which will violate such statutes, laws, ordinances, codes, rules, regulations or orders, then such statutes, laws, ordinances, codes, rules, regulations or orders shall govern.

13.1.3 The Design Builder shall perform the Work in accordance with all Applicable Laws of all public authorities having jurisdiction over the County, the Design Builder, any Subcontractor, the Project, the Site, the Work, or the prosecution of the Work.

13.1.4 The Design Builder shall perform the Work in accordance with all requirements of any insurance company issuing insurance required thereunder.

13.1.5 The Design Builder shall comply with all applicable sections of the Labor Code in performing the Work.

13.1.6 The Design Builder shall give notices required by all laws, statutes, the most recent building codes, ordinances, rules, regulations, and lawful orders of all public authorities, including all environmental laws and all notice requirements under the State of California Safe Drinking Water and Enforcement Act of 1986 (Health & Safety Code §§ 25249.5 et seq.). The Design Builder shall promptly notify County's Representative in writing if the Design Builder becomes aware during the performance of the Work that the Contract Documents are at variance with Applicable Law.

13.1.7 If the Design Builder performs Work which it knows or should know is contrary to any laws, statutes, the most recent building codes, ordinances, rules, regulations, and lawful orders, without prior notice to the County and the County's Representative, Design Builder shall be responsible for such Work and any resulting damages including, without limitation, the costs of correcting Defective Work.

13.2 Permits And Taxes.

13.2.1 The Design Builder shall: (a) identify and procure all permits and licenses applicable to the Work (including to the extent applicable, those for

environmental matters), (b) comply with, implement and acknowledge effectiveness of all permits, (c) initiate and cooperate in securing all required notifications or approvals therefore, and (d) give all notices necessary and incident to due and lawful prosecution of the Work, unless otherwise provided herein. The Design Builder will pay all fees required in securing such permits and licenses, except as County may specifically direct. For all such permits and licenses, the Design Builder shall prepare all forms and documentation necessary for any required submittal. The Design Builder shall pay all sales and/or use taxes levied on materials, supplies, or equipment purchased and used on or incorporated into the Work, and all other taxes properly assessed against equipment or other property used in connection with the Work, without any increase in the Contract Price, including all increases in sales and/or use taxes and all other such taxes effective as of the date of Design Builder's Phase II Proposals. The Design Builder shall make necessary arrangements with proper authorities having jurisdiction over roads, streets, pipelines and other works in advance of operations, even where the County may have already obtained permits for the Work.

13.2.2 Except as is provided in paragraph 13.7 of Document 00 72 53 (General Conditions), the Design Builder will be responsible for any documentary, excise, stamp and transfer taxes and any sales, use or other taxes imposed by reason of the design, delivery, sale, transfer, or installation of the Work (or any item of the Work) regardless of which party has liability for such tax under applicable law, and any deficiency, interest or penalty asserted with respect thereto. Design Builder represents that it has, or will obtain prior to the transfer of title of Work (or any portion of the Work) the necessary seller's permit as required by the State of California. The Design Builder represents that it will collect, report, and pay all sales or use taxes to the State Board of Equalization. Upon full payment the Design Builder will issue the County a receipt pursuant to Revenue & Taxation Code § 6203, relieving the County of all liability for any tax relating to the Work or any item of the Work.

13.3 Responsibility of Design Builder and Indemnification.

13.3.1 The County of Alameda and all of their officers, directors, representatives, attorneys, agents, employees and consultants, associated with the Work, including but not limited to the County Board of Supervisors, County Representatives shall not be liable or accountable in any manner for:

13.3.1.1 loss or damage of any type that may happen to any part of the Work or any part thereof;

13.3.1.2 loss or damage of any type to materials or other things used or employed in performing the Work prior to acceptance of the Work;

13.3.1.3 injury, sickness, disease, or death of any person, including, but not limited to, workers and the public;

13.3.1.4 damage of any type to property, or

13.3.1.5 any claims or liabilities imposed or existing by virtue of the removal, abatement, and disposal of Hazardous Materials and waste that was not present on the Site at the time the Contract was awarded including, but not limited to, liabilities connected to the selection and use of a waste disposal facility, personal injury, property damage, loss of use of property, damage to the environment or natural resources, or "disposal" and "release" of materials associated with the Work (as defined in 42 U.S.C. § 960l et seq.)

13.3.1.6 Design Builder hereby releases all of the foregoing persons and entities from any and all such claims described in this paragraph 13.3.1.

13.3.2 To the furthest extent permitted by law (including without limitation Civil Code §§ 2782 and 2782.8), the Design Builder shall defend (with legal counsel reasonably acceptable to the County), indemnify and hold harmless the County of Alameda, and all of their officers, directors, representatives, attorneys, agents, employees and consultants, including but not limited to the County Board of Supervisors, County Representatives, and Shah Kawasaki Architects (collectively "Indemnitees") (collectively "Indemnitees") from and against any and all claims, loss, cost, damage, injury (including, without limitation, injury to or death of an employee of Consultant or its Subconsultants), expense and liability of every kind, nature and description (including, without limitation, incidental and consequential damages, court costs, attorneys' fees, litigation expenses and fees of expert consultants or expert witnesses incurred in connection therewith and costs of investigation) (collectively, "Liabilities"), directly or indirectly arising out of, connected with or resulting from performance of the Work, failure to perform the Work, the condition of the Work, or the Contract Documents.

13.3.3 Approval or purchase of any insurance contracts or policies shall in no way relieve from liability or limit the liability and obligations of the Design Builder, its Subcontractors of any tier, its designers or suppliers, or the officers, directors, representatives, employees, or agents of any of them.

13.3.4 Design Builder shall defend (with legal counsel reasonably acceptable to the County), indemnify and hold harmless the Indemnitees from all Liabilities that may at any time arise for any infringement of the patent rights, copyright, trade secret, trade name, trademark, service mark or any other proprietary right of any person or persons in consequence of the use by County, or any of the other Indemnitees, of documents or Services to be supplied in the performance of this Agreement.

13.3.5 To the furthest extent permitted by law (including, without limitation, Civil Code §§ 2782 and 2782.8), the indemnities, releases of liability and limitations of liability, claims procedures, and limitations of remedy expressed throughout the Contract Documents shall apply even in the event of breach of contract, negligence, fault or strict liability of the party(ies) indemnified, released, or limited in liability, and shall survive the termination, rescission, breach, abandonment, or completion of the Work, the Project, the Contract, or the terms

of the Contract Documents. If the Design Builder fails to perform any of these defense or indemnity obligations, the County may in its discretion look to the Design Builder to recover all of the County's costs and damages resulting there from. The County may withhold such sums from progress payments or other contract moneys which may become due, or pursue any and all other remedies available in law or in equity.

13.3.6 Where expressly prohibited by law, the indemnities in the Contract Documents shall not apply to any Indemnitee that is a public agency to the extent of its sole or active negligence or willful misconduct.

13.3.7 The County of Alameda, and all of their officers, directors, representatives, attorneys, agents, employees and consultants associated with the Work, including but not limited to the County Board of Supervisors, County Representatives shall not owe any duty of care to Design Builder, its Subcontractors, subconsultants or suppliers, except as set forth in this Contract.

13.4 Notice of Concealed or Unknown Conditions.

13.4.1 If any of the following conditions is encountered at the Site or in connection with the Work, the Design Builder shall promptly, and before conditions are disturbed (except in an emergency as required by paragraph 16.4 (Emergencies) of this Document 00 72 53), and **in no event later than seven (7) Days after first observing any of the following**, give County written notice of any

13.4.1.1 Material that the Design Builder believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with provisions of existing law.

13.4.1.2 Subsurface or latent physical conditions at the Site differing from those indicated by information about the site made available prior to the deadline for submitting Proposals.

13.4.1.3 Unknown physical conditions at the Site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.

13.4.2 In response to the Design Builder's written Notice of Differing Site Conditions under this paragraph 13.4 (Notice of Concealed or Unknown Conditions), the County will promptly investigate the conditions, and if it finds that the conditions do materially differ, or do involve hazardous waste as described above, and cause an increase or decrease in the Design Builder's cost of, or time required for, performance of any part of the Work, the County will issue either a Request for Proposal or a Change Order under the procedures described in the Contract Documents, including without limitation Section 01 26 00 (Contract Modification Procedures).

13.4.3 If the County determines that physical conditions at the Site are not Latent or are not materially different from those indicated in the Contract Documents or

information provided by the County; or that no change in terms of the Contract Documents is justified, the County shall so notify the Design Builder in writing, stating reasons. If the County and the Design Builder do not agree on an adjustment in Contract Price or Contract Times, the Design Builder shall proceed with the Work as directed by the County and may file a claim as provided in Article 12 (Claims by Design Builder) of this Document 00 72 53.

13.4.4 In the event that a dispute arises between the County and the Design Builder whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Design Builder's cost of, or time required for, performance of any part of the Work, the Design Builder shall not be excused from any Milestone provided for by the contract, but shall proceed with all Work. The Design Builder shall retain any and all rights provided either by contract or by law which pertain to the resolution of disputes and protests between the contracting parties.

13.4.5 The Design Builder shall not be entitled to any adjustment in the Contract Price or Contract Times regarding claimed Latent or materially different Site conditions, whether above or below grade if (a) the Design Builder knew of the existence of such conditions at the time Design Builder submitted its Proposal; or (b) the Design Builder should have known of or expected the existence of such conditions as a result of having complied with the requirements of the Contract Documents, including without limitation Article 1 (Investigations and Subcontractors) and paragraph 8.4 (Existing Utilities) of this Document 00 72 53; or (c) the information or conditions claimed by the Design Builder to be Latent or materially different consist of information, conclusions, opinions or deductions of the kind the Contract Documents, including without limitation Article 1 of this Document 00 72 53 preclude reliance upon; or (d) the Design Builder was required to give written Notice of Differing Site Conditions under the Contract and failed to do so within the time required; or (e) the Design Builder could reasonably have inferred the existence of such conditions based on its experience and expertise on similar projects.

13.4.6 If the County and the Design Builder are unable to agree on entitlement to or as to the amount or length of any adjustment in the Contract Price or Contract Times required under this paragraph 13.4, the Design Builder shall proceed with the Work as directed by the County and may make a claim as provided in Article 12 (Claims by Design Builder) of this Document 00 72 53.

13.5 Hazardous Waste or Materials Conditions.

13.5.1 Written Notice of Hazardous Materials Condition by the Design Builder shall be given to the County promptly, before any of the following conditions are disturbed (except in an emergency as required by paragraph 16.4 (Emergencies) below), and **in no event later than twenty-four (24) hours after first observance**, of any (a) material that the Design Builder believes may be material that is hazardous waste or hazardous material, as defined in § 25117 of the Health & Safety Code (including, without limitation, asbestos, lead, PCBs, petroleum and related hydrocarbons, and radioactive material) that is required to be removed to a Class I, Class II, or Class III disposal site in accordance with

provisions of existing law ("Hazardous Materials"); (b) other material which may present a substantial danger to persons or property exposed thereto in connection with Work at the Site ("other materials").

13.5.2 The Design Builder's written Notice of Hazardous Materials Conditions under this paragraph 13.5 (Notice of Hazardous Waste or Materials Conditions) shall indicate whether the Hazardous Materials or other materials were shown or indicated in the Contract Documents to be within the Scope of Work, and whether the Hazardous Materials or other materials were brought to the Site by the Design Builder, its Subcontractors, subconsultants, suppliers, or anyone else for whom the Design Builder is responsible.

13.5.3 The Design Builder shall not be entitled to any adjustment in the Contract Price or Contract Times regarding claimed Hazardous Materials if (a) the Design Builder knew or should have known of the existence of such Hazardous Materials or other conditions or materials at the time Design Builder submitted its bid; or (b) the Design Builder failed to give the written Notice of Hazardous Materials Conditions within the time required these General Conditions, or (c) if the claimed Hazardous Materials were indicated in the Project Manual.

13.5.4 Notwithstanding (a), (b) and (c), above, the Design Builder may (subject to paragraphs 13.5.2 and 13.5.3 above) be entitled to adjustment in the Contract Price or Contract Times regarding claimed Hazardous Materials if such Hazardous Material is indicated in the Project Manual or other information reasonably available to the Design Builder, visual observation or reasonable investigation. If the County determines that change in Contract Document terms is justified, then the County will either issue a Request for Proposal or an appropriate Change Order under the procedures described in the Contract Documents, including without limitation Section 01 26 00 (Contract Modification Procedures).

13.5.5 If the County determines that conditions do not involve Hazardous Materials or that no change in Contract Document terms is justified, the County shall notify the Design Builder in writing, stating the reasons for its determination. If the County and the Design Builder cannot agree on any adjustment in Contract Price or Contract Times, the Design Builder shall proceed with the Work and as directed by the County and may file a claim as provided in Article 12 (Claims by Design Builder) of this Document 00 72 53.

13.5.6 In addition to the parties' other rights, if the Design Builder does not agree to resume work based on a reasonable belief that it is unsafe, or does not agree to resume work under special conditions, the County may order the disputed portion of work deleted from the Work, or performed by others, or the County may invoke its right to terminate the Design Builder's right to proceed under the Contract Documents pursuant to paragraph 13.8 (Termination of Contract for Cause and Written Adequate Assurances of Performance) or 13.9 (Termination of Contract for Convenience) of this Document 00 72 53 as the facts may warrant. If Design Builder does not agree with the County's determination of any adjustment in the Contract Price or Contract Times as a result, the Design Builder

may make a claim as provided in Article 12 (Claims by Design Builder) of this Document 00 72 53.

13.5.7 To the furthest extent permitted by law, the County shall assume the defense of, and indemnify, and hold harmless the Design Builder, and all of its members, officers, directors, representatives, employees and consultants from and against all claims, suits, actions, losses, and liability of every kind, nature and description, including but not limited to claims and fines of regulatory agencies and reasonable attorneys' fees and consultants' fees, arising out of, connected with or resulting from the exposure of persons or property to pre-existing Hazardous Materials (as defined in Section 01 88 25, Miscellaneous Hazardous Materials Performance Requirements), pollutants, or other toxic substances or contaminants encountered at the Site or the Project during the performance of the Work which were not indicated in the Project Manual, or on the reports and information provided by the County, other information reasonably available to Design Builder, visual observation or reasonable investigation, and provided that Design Builder did not in any way contribute to or cause the exposure and used due care in performance of the Work.

13.6 Suspension of Work. The County may, with or without cause, order the Design Builder in writing to suspend, delay, or interrupt Work in whole or in part for such period of time as the County may determine. An adjustment shall be made for increases in cost of performance of the Work caused by any such suspension, delay, or interruption calculated using the measures set forth in Section 01 26 00 (Contract Modification Procedures), provided, however, no adjustment to the Contract Price shall be made to the extent that: (a) performance is, was or would have been so suspended, delayed, or interrupted by another cause for which the Design Builder is responsible; or (b) an equitable adjustment is made or denied under another provision of the Contract Documents; or (c) the suspension of work was the direct or indirect result of the Design Builder's failure to perform any of its obligations. Adjustments to the Contract Price shall be calculated in accordance with Section 01 26 00 (Contract Modifications).

13.7 Force Majeure.

13.7.1 Events. Either the County or the Design Builder shall be excused from performing any of their obligations (except payment) to the extent delay in performance or inability to perform is caused by an event that is not within either party's reasonable control or reasonable advance planning. Neither the County nor the Design Builder shall be excused to the extent such events result from that party's negligence or failure to perform any obligations under this Contract including failure to reasonably anticipate ascertainable events or its failure to utilize commercially reasonable work-around or alternate solutions. Force Majeure may include: flood; lightning; earthquake; fire; explosion; epidemic; quarantine; hurricane; tornado; storm; war (declared or undeclared); riot or similar civil disturbance; acts of nature or the public enemy (including acts of terrorism); blockade; insurrection; revolution; or unavailability of fuel, power, or raw materials if the cause thereof otherwise would qualify as a Force Majeure.

13.7.2 Exclusions. Force Majeure shall not include the following:

13.7.2.1 Strikes, work stoppages and other labor disputes (including collective bargaining disputes and lockouts) directed at Design Builder or with regard to Work by a Subcontractor on the Site, unless part of a general strike;

13.7.2.2 Shortage, cost increases or unavailability of materials and equipment, except to extent due to Force Majeure otherwise excusable hereunder;

13.7.2.3 Shortage, unavailability, or cost of labor;

13.7.2.4 Breakage or improper handling of materials and equipment;

13.7.2.5 Conduct of any Subcontractors or Design Builder suppliers;

13.7.2.6 Reasonably anticipated climatic conditions as described in Article 15.3 of this Document 00 72 53 General Conditions;

13.7.2.7 Delays in transportation, except to the extent due to an independent event of Force Majeure;

13.7.2.8 Delay or denial of any permit Design Builder is required to obtain; or

13.7.2.9 Delays of delivery of equipment by any Subcontractor for any reason (unless due to a Force Majeure event) or the failure of any such equipment to conform to the quality and specifications set forth in any subcontract.

13.7.3 Notice. Any party making a claim under this paragraph 13.7 (Force Majeure) shall give the other party notice describing the particulars of the Force Majeure promptly after its occurrence, but **in no event more than seven (7) Days after the claiming party becomes aware of such occurrence.**

13.7.3.1 **Within ten (10) Days after giving notice of the Force Majeure**, the claiming party shall give the other party an estimate of the Force Majeure's expected duration and probable impact on the Work. The claiming party shall continue to furnish the other party with timely regular reports during the continuation of the Force Majeure.

13.7.3.2 The claiming party shall give the other party notice **within seven (7) Days of the cessation** of all or part of the Force Majeure.

13.7.4 Mitigation and Management. Both the County and the Design Builder shall immediately exercise commercially reasonable efforts to mitigate or limit the impact to the Work and damages to each other as a result of the Force Majeure and shall begin activities to correct or cure the event or condition excusing performance.

13.7.4.1 Design Builder shall continue to perform any unaffected Work.

13.7.4.2 The Design Builder and the County shall meet to agree upon a course of action to manage the impact of the Force Majeure and provide information to all interested parties.

13.7.4.3 The claiming party's suspension of performance shall be of no greater scope and of no longer duration than is reasonably required by the Force Majeure.

13.7.4.4 No default of the claiming party which arose before the occurrence of the Force Majeure causing the suspension of performance shall be excused as a result of the Force Majeure.

13.7.5 Resulting Impact. If Design Builder, after performing the mitigation efforts described in paragraph 13.7.4, cannot, in the absence of incurring cost or impacting the critical path elements of the Schedule, overcome the effects of the Force Majeure, Design Builder will be entitled to a Change Order to the extent Design Builder can substantiate the adverse impact in accordance with Article 14 (Modifications of the Contract Documents) below. Changes resulting from Force Majeure are generally limited to schedule adjustments, to the extent Design Builder demonstrates actual schedule delay caused solely by the effects of Force Majeure, unless the County elects to expedite or make other adjustments instead of adjusting the schedule. The County will compensate Design Builder for the direct costs it incurs as a result of Force Majeure, to the extent that the County is satisfied that such costs are (a) part of a County-approved mitigation/recovery plan and (b) reasonable and do not include any profit/fee or overhead.

13.7.5.1 With respect to payments made by the County to the Design Builder for changes for Force Majeure, Design Builder shall reimburse such amounts to the extent such amounts are recovered from insurance coverages required under this Contract or are reduced by any savings or costs not incurred.

13.7.6 Termination for Force Majeure. For itself or at Design Builder's request, the County may, at its sole discretion, terminate this Contract for convenience if delays to the entire Project **due to a Force Majeure exceed six (6) months in the aggregate.**

13.8 Termination of Contract for Cause and Written Adequate Assurances of Performance. The Design Builder shall be in default of this Contract and the County may terminate Design Builder's right to proceed under the Contract Documents, for cause:

13.8.1 Should Design Builder [or any member of the Design Build Team] make an assignment for the benefit of creditors, admit in writing its inability to pay its debts as they become due, file a voluntary petition in bankruptcy, be adjudged a bankrupt or insolvent, be the subject of an involuntary petition in bankruptcy **which is not dismissed within sixty (60) Days**, file a petition or answer seeking for itself any reorganization, arrangement, composition, readjustment, liquidation, dissolution, or similar relief under any present or future statute, law, or regulation, file any answer admitting or not contesting the material allegations of a petition filed against the Design Builder in any such proceeding, or seek,

consent to, or acquiesce in, the appointment of any trustee, receiver, custodian or liquidator of the Design Builder or of all or any substantial part of the properties of the Design Builder, or if the Design Builder, its officers, directors or shareholders, take action to dissolve or liquidate Design Builder; or

13.8.2 Should the Design Builder commit a material breach of the Contract Documents. If the County declares the Design Builder in default due to material breach, however, the County must allow the Design Builder an opportunity to cure such breach **within five (5) Days of the date of notice** from the County to the Design Builder providing notice of the default; or, if such breach is curable but not curable within such five Day period, within such period of time as is reasonably necessary to accomplish such cure promptly. In order for the Design Builder to avail itself of a time period in excess of five Days, the Design Builder must provide the County within the five Day period with a written plan acceptable to the County to cure said breach promptly which includes, for example, evidence of necessary resources, Subcontractor commitments, schedules and recovery schedules meeting Contract Document requirements and showing a realistic and achievable plan to cure the breach promptly; the Design Builder must then diligently commence and prosecute such cure according to the written plan; or

13.8.3 Should Design Builder violate or allow a violation of any valid law, statute, regulation, rule, ordinance, permit, license or order of any governmental agency applicable to the Project or Work and does not cure such violation **within five (5) Days of the date of the notice** from the County or other public agency with jurisdiction over the Project to Design Builder demanding such cure; or, if such failure is curable but not curable within such five (5) Day period, within such period of time as is reasonably necessary to promptly accomplish such cure promptly. In order for the Design Builder to avail itself of a time period in excess of five Days, the Design Builder must provide the County within the five (5) Day period with a written plan to cure the violation acceptable to the County, and then diligently commence and prosecute performance of such cure according to the written plan.

13.8.4 If the County at any time reasonably believes that the Design Builder is or may be in default under its Contract, the County may in its sole discretion notify the Design Builder of this fact and request written assurances from the Design Builder of its ability to complete performance of the Contract and a written plan from the Design Builder to remedy any failures to perform the terms of the Contract which the County may advise the Design Builder of in writing. If requested by the County, Design Builder will provide evidence of its financial status or other ability to cure the default and complete the Work. The Design Builder shall, **within five (5) Days of the County's request**, deliver a written cure plan which meets the requirements of the written plan deliverable under paragraphs 13.8.2 or 13.8.3 above. Failure of the Design Builder to provide written adequate assurances of performance and the required written plan will constitute a material breach of this Contract.

13.8.5 In event of termination for cause, the County shall immediately serve written notice thereof upon Surety and the Design Builder. Design Builder and Surety

shall have the rights and obligations set forth in the Performance Bond. Subject to the Surety's rights under the Performance Bond (which rights are waived upon a default under the Performance Bond), the County may take over the Work and prosecute it to completion by contract or by any other methods it may deem advisable.

13.8.6 In the event of termination by the County for cause,

13.8.6.1 The County shall compensate Design Builder for the value of the Work performed in accordance with the Contract Documents and delivered to the County, but payment will be made **no earlier than the expiration of thirty five (35) Days after Final Completion** and acceptance of all Work by the County as determined in accordance with the Contract Documents, and will be subject to all rights of offset and back charges, and provided that Design Builder provides the County with updated as-built and project record documents showing the work performed up to the date of termination. However, the County shall not compensate the Design Builder for its costs in terminating the Work or any cancellation charges owed to third parties;

13.8.6.2 The Design Builder shall deliver to the County possession of the Work in its then condition, including but not limited to, all designs, engineering, project records, cost data of all types, Design Development Documents, Construction Documents, Virtual Construction and other models, contracts with vendors and Subcontractors, and all other documentation associated with the Project, and all construction materials, equipment, and supplies dedicated solely to performing Work which, in the normal course of construction, would be consumed or only have salvage value at the end of the construction period. The Design Builder shall remain fully liable for the failure of any Work completed and materials and equipment provided through the date of such termination to comply with the provisions of the Contract Documents.

13.8.6.3 The provisions of this Section 13.8 (Termination of Contract for Cause and Written Adequate Assurances of Performance) shall not be interpreted to diminish any right which the County may have to claim and recover damages for any breach of this Contract, but rather, the Design Builder shall compensate the County for all loss, cost, damage, expense, and/or liability suffered by the County as a result of such termination and failure to comply with the Contract Documents.

13.8.6.4 Except as otherwise provided in the Contract Documents, the County's rights under this paragraph 13.8 shall be specifically enforceable to the greatest extent permitted by law. The County shall, to the extent applicable, have all other rights and remedies set forth elsewhere in the Contract Documents.

13.8.7 The County may terminate for cause portions or parts of the Work. In such case, Design Builder shall cooperate with a completing contractor as required under Article 6 (Construction by the County or by Separate Contractors) of this Document 00 72 53.

13.8.8 In the event a termination for cause is later determined to have been made wrongfully or without cause, then the termination shall be treated as a termination for convenience, and the Design Builder shall have only the recovery rights specified in paragraph 13.9 (Termination of Contract for Convenience) below. Any Design Builder claim arising out of a termination for cause, however, shall be made in accordance with Article 12 (Claims by Design Builder) of this Document 00 72 53. No other loss, cost, damage, expense or liability may be claimed, requested or recovered by the Design Builder.

13.9 Termination of Contract for Convenience.

13.9.1 The County may terminate performance of the Work under the Contract Documents in accordance with this clause in whole or in part, whenever the County shall determine that termination is in the County's best interest and **upon fifteen (15) Days written notice to Design Builder.** Termination shall be effected by the County delivering to the Design Builder notice of termination specifying the extent to which performance of the Work under the Contract Documents is terminated, and the effective date of the termination.

13.9.2 After receiving a notice of termination under paragraph 13.9.1 above, and except as otherwise directed by the County, the Design Builder shall:

13.9.2.1 Stop Work under the Contract Documents on date and to extent specified in notice of termination;

13.9.2.2 Place no further orders or subcontracts for materials, services, or facilities except as necessary to complete any portion of Work under the Contract Documents which is not terminated;

13.9.2.3 If not directed by the County to assign the same, terminate all orders and Subcontracts, or assign to the County in manner, at times, and to extent directed by the County, all right, title, and interest of the Design Builder under orders and subcontracts. The County shall have the right, in its sole discretion, to settle or pay any or all claims arising out of termination of orders and subcontracts;

13.9.2.4 Settle all outstanding liabilities and all claims arising out of any termination of orders and subcontracts, with approval or ratification of the County to extent the County may require. The County's approval or ratification shall be final for purposes of this paragraph 13.9 (Termination of Contract for Convenience);

13.9.2.5 Transfer title to the County, and deliver in the manner, at the times, and to the extent, if any, directed by the County, all fabricated or unfabricated parts, Work in process, completed Work, supplies, and

all other material produced as part of, or acquired in connection with performance of, Work terminated by the notice of termination, and completed or partially completed Construction Documents, drawings, specifications, information, models and other property which, if the Project had been completed, would have been required to be furnished to the County;

13.9.2.6 Use its best efforts to sell, in manner, at times, to extent, and at price or prices that the County directs or authorizes, any property of types referred to in this paragraph 13.9.2, but the Design Builder shall not be required to extend credit to any purchaser, and may acquire any such property under conditions prescribed and at price or prices approved by the County. Proceeds of transfer or disposition shall be applied to reduce payments to be made by the County to the Design Builder under the Contract Documents or shall otherwise be credited to the price or cost of Work covered by the Contract Documents or paid in such other manner as the County may direct;

13.9.2.7 Complete performance of the part of the Work which was not terminated by the notice of termination; and

13.9.2.8 Take such action as may be necessary, or as the County may direct, to protect and preserve all property related to the Work which is in the Design Builder's possession or control and in which the County has or may acquire an interest.

13.9.3 After receipt of a notice of termination under paragraph 13.9.1 above, the Design Builder shall submit to the County its termination claim, in form and with all certifications required by the Contract Documents. The Design Builder's termination claim shall be submitted promptly, but **in no event later than two (2) months from effective date of the termination.** The Design Builder and the County may agree upon the whole or part of the amount or amounts to be paid to the Design Builder because of a total or partial termination for convenience of Work. If the Design Builder and the County fail to agree on the whole amount to be paid to the Design Builder because of the termination for convenience of the Work, County's total liability to Design Builder by reason of the termination shall be limited to the total (without duplication of any items) of:

13.9.3.1 The reasonable cost to the Design Builder for all Work performed prior to the effective date of the termination, determined in accordance with Section 1.3 of Section 01 26 00 (Contract Modifications Procedures), including the Work done to secure the Project for termination. Reasonable cost may not exceed the applicable percentage completion values derived from the progress schedule and the Schedule of Values. Deductions shall be made for cost of materials to be retained by the Design Builder, cost of Work defectively performed, amounts realized by sale of materials, and for other appropriate credits or offsets against cost of Work as allowed by the Contract Documents. Reasonable cost will include reasonable allowance for Project overhead and general administrative overhead.

13.9.3.2 When, in the County's opinion, the cost of any item of Work is excessively high due to costs incurred to remedy or replace defective or rejected Work, reasonable cost to be allowed will be the estimated reasonable cost of performing the Work in compliance with requirements of the Contract Documents and excessive actual cost shall be disallowed.

13.9.3.3 A reasonable allowance for profit on cost of Work performed as determined under paragraph 13.9.3.1 above provided that the Design Builder establishes to the County's satisfaction that the Design Builder would have made a profit had the Project been completed, and provided further that the **profit allowed shall not exceed five percent (5%) percent of the cost**, determined as provided in 13.9.3.1.

13.9.3.4 Reasonable costs to the Design Builder of handling material returned to vendors, delivered to the County or otherwise disposed of as directed by the County.

13.9.3.5 A reasonable allowance for the Design Builder's internal administrative costs in preparing termination claim.

13.9.3.6 Reasonable demobilization costs, and reasonable payments made to Subcontractors or suppliers on account of termination.

13.9.4 In no event shall the County be liable for unreasonable costs incurred by the Design Builder or Subcontractors after receipt of a notice of termination. Such non-recoverable costs include, but are not limited to, the cost of or anticipated profits on Work not performed as of the date of termination, post-termination employee salaries, unreasonable post-termination administrative expenses, post-termination overhead or unabsorbed overhead, surety costs of any type, costs of preparing and submitting the Design Builder's termination claim, attorney fees of any type, and all other costs relating to prosecution of a claim or lawsuit.

13.9.5 The County shall have no obligation to pay the Design Builder under this paragraph 13.9 (Termination of Contract for Convenience) unless and until the Design Builder provides the County with updated and acceptable as-builts and Record Documents for Work completed prior to termination.

13.9.6 In arriving at the amount due the Design Builder under this clause there shall be deducted in whole or in the appropriate part(s) if the termination is partial:

13.9.6.1 All unliquidated advances or other payments on account previously made to the Design Builder, including without limitation all payments which are applicable to the terminated portion of the Contract Documents,

13.9.6.2 Any claim the County may have against the Design Builder in connection with the Contract Documents, and

13.9.6.3 The agreed price for, or proceeds of sale of, any materials, supplies, or other things kept by the Design Builder or sold under provisions of paragraph 13.9 (Termination of Contract for Convenience), and not otherwise recovered by or credited to the County.

13.10 Contingent Assignment of Subcontracts. The Design Builder hereby assigns to the County each Subcontract, including any agreement for the provision of Project services by the Architect, now or hereafter entered into by Design Builder for performance of any part of the Work provided that:

13.10.1 The assignment is effective only after: (a) the County's termination of the Design Builder's right to proceed under the Contract Documents (or portion thereof relating to that Subcontract) pursuant to paragraphs 13.8 (Termination of Contract for Cause and Written Adequate Assurances of Performance) or 13.9 (Termination of Contract for Convenience) above;

13.10.2 The assignment is effective only for the Subcontracts which the County expressly accepts by notifying the Subcontractor in writing;

13.10.3 The assignment is subject to the prior rights, if any, of the Surety, where the Surety exercises its rights to complete the Contract;

13.10.4 After the effectiveness of an assignment, the Design Builder shall, at its sole cost and expense (except as otherwise provided in paragraphs 13.8 (Termination of Contract for Cause and Written Adequate Assurances of Performance) or 13.9 (Termination of Contract for Convenience)), sign all instruments and take all actions reasonably requested by the County to evidence and confirm the effectiveness of the assignment to the County; and

13.10.4.1 Nothing in this paragraph 13.10 (Contingent Assignment of Subcontracts) shall modify or limit any of the Design Builder's obligations to the County arising from acts or omissions occurring before the effectiveness of any Subcontract assignment, including but not limited to all defense, indemnity and hold harmless obligations arising from or related to the assigned Subcontract;

13.10.4.2 The County may accept the assignment at any time during the course of the Work and prior to Final Completion in the event of a suspension or termination of Design Builder's rights under the Contract Documents. Such assignment is part of the consideration to the County for entering into the Contract with the Design Builder and may not be withdrawn.

13.11 Remedies and Contract Integration.

13.11.1 Subject to the Contract Document provisions regarding the Design Builder claims, claim review, and claim resolution, and subject to the limitations therein, the exclusive jurisdiction and venue for resolving all claims, counter-claims, disputes and other matters in question between the County and the Design Builder arising out of or relating to Contract Documents, any breach thereof or

the Project, shall be decided in the applicable court of competent jurisdiction located in the State of California, County of Alameda. All County remedies provided in the Contract Documents shall be taken and construed as cumulative and not exclusive; that is, in addition to each and every other remedy herein provided; and in all instances the County and the Design Builder shall have any and all other equitable and legal rights and remedies which it would have according to law that are not inconsistent with the provisions of the Contract Documents.

13.11.2 The Contract Documents are the entire and integrated agreement between the County and the Design Builder regarding the subject matters hereof and thereof and shall constitute the exclusive statement of the terms of the parties' agreement. The Contract Documents supersede any and all prior negotiations, representations or agreements, written or oral, express or implied, that relate in any way to the subject matter of the Contract Documents. The County and the Design Builder represent and agree that, except as otherwise expressly provided in the Contract Documents, they are entering into the Contract Documents in sole reliance upon the information set forth or referenced in the Contract Documents and the parties are not and will not rely on any other information.

13.11.3 Either party's waiver of any breach or failure to enforce any of the terms, covenants, conditions or other provisions of the Contract Documents at any time shall not in any way affect, limit, modify or waive that party's right thereafter to enforce or compel strict compliance with every term, covenant, condition or other provision hereof, any course of dealing or custom of the trade or oral representations notwithstanding.

13.11.4 No action or failure to act by the County or the County's Representative will constitute a waiver of a right afforded them under the Contract Documents, nor will such action or failure to act constitute approval of or acquiescence in a condition or breach thereunder, except as may be specifically agreed in writing. No waiver by the County or County's Representative of any condition, breach or default will constitute a waiver of any other condition, breach or default; nor will any such waiver constitute a continuing waiver. No provision contained in the Contract Documents shall create or give to third parties any claim or right of action against the County, the County's Representative, or the Design Builder.

13.12 Patents. Fees or claims for any patented invention, article or arrangement that may be used upon or in any manner connected with performance of the Work or any part thereof shall be included in the Contract Price. The Design Builder shall defend, indemnify and hold harmless the County of Alameda, all of their elected and appointed officers, directors, representatives, judges, attorneys, agents, employees and consultants, including but not limited to the County Board of Supervisors, County Representatives (collectively "Indemnitees") from any and all damages, claims for damages, costs or expenses in law or equity, including attorney's fees, arising from or relating to any claim that any article supplied or to be supplied under the Contract Documents infringes on the patent rights, copyright, trade name, trademark, service mark, trade secret or other intellectual property right of any person or persons or that the person or entity supplying the article does not have a lawful right to use or sell the same. Such costs or expenses for which Design Builder agrees to indemnify and hold harmless the above Indemnitees include but are not

limited to any and all license fees, whether such fees are agreed upon by any Indemnitee or ordered by a court or administrative body of any competent jurisdiction.

13.13 Substitution for Patented and Specified Articles.

13.13.1 Except as noted specifically in the Contract Documents, whenever in the Contract Documents a material or process is designated by patent or proprietary name or by name of manufacturer, such designation shall be deemed to be used for purpose of facilitating description of material and process desired, and shall be deemed to be followed by the words "or equal." Design Builder may, except as provided in Section 01 61 00 (Product Requirements), offer any substitute material or process that the Design Builder considers equal in every respect to that so designated and if material or process offered by the Design Builder is, in opinion of the County, equal in every respect to the specified material or process, its use will be approved. However, the Design Builder may utilize this right only by timely submitting a substitution request consistent with Section 01 61 00 (Product Requirements) as provided in Document 00 11 19 (Request for Proposals from Design-Build Entities). A substitution will be approved only if it is permitted under Document 00 11 19 following award of the Contract and only if it is a true "equal" item in every aspect of its design and quality, including but not limited to its dimensions, weights, service requirements, durability, appearance, aesthetic effect, functioning, impact on contiguous construction elements, overall schedule and design.

13.14 Interest of Public Officers. No representative, officer, or employee of the County, no member of the governing body of the locality in which the Project is situated, no member of the locality in which the County was activated, and no other public official of such locality or localities who exercises any functions or responsibilities with respect to the Project, during the tenure of the official **or for one (1) year thereafter**, shall, as principal, agent, attorney or otherwise, be directly or indirectly interested, in the Contract Documents or the proceeds thereof.

13.15 Limit of Liability. The County of Alameda, all of their officers, directors, representatives, attorneys, agents, employees and consultants, including but not limited to the County Board of Supervisors, County Representatives SHALL HAVE NO LIABILITY TO DESIGN BUILDER FOR SPECIAL, CONSEQUENTIAL OR INCIDENTAL DAMAGES.

13.16 Severability. Any provisions or portions of these Contract Documents that are prohibited by, unlawful, or unenforceable under any Applicable Law of any jurisdiction shall as to such jurisdiction be ineffective without affecting other provisions or portions thereof in this Contract. If the provisions of such Applicable Law may be waived, they are hereby waived to the end that this Contract may be deemed to be a valid and binding agreement enforceable in accordance with its terms. If any provisions or portions thereof of this Contract are prohibited by, unlawful, or unenforceable under any Applicable Law and are therefore stricken or deemed waived, the remainder of the provisions and this Contract shall be interpreted to achieve the goals or intent of the stricken or waived provisions or portions thereof to the extent such interpretation is consistent with applicable law. All provisions of Public Contract Code § 22300 are deemed incorporated into these Contract Documents.

13.17 Contract Documents and Exercise of Contract Responsibilities.

13.17.1 The Contract Documents shall not be construed to create a contract of any kind (a) between the County or its representatives and a Subcontractor of any tier (including, but not limited to, designers, architects and engineers) or (b) between any persons or entities other than the County and the Design Builder. The Design Builder is fully responsible for all acts, omissions or negligence of its Subcontractors of any tier, suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with the Design Builder just as the Design Builder is responsible for the Design Builder's own acts, omissions or negligence.

13.17.2 The County and its agents do not, in exercising their responsibilities and authorities under the Contract Documents, assume any duties or responsibilities to any Subcontractor, subconsultant or supplier, nor does the County or its agents assume any duty of care to the Design Builder, its Subcontractors, or suppliers.

13.18 Title to Work: No Liens. Legal title to all Work shall pass to and vest in the County as Work is performed, and title to all materials and equipment shall pass to and vest in the County when such materials and equipment are delivered to the Site (or as soon as title passes from the vendor or supplier thereof). The Design Builder shall keep the Site and all materials and equipment free and clear of all liens, stop notices and charges arising out of performance of this Contract, and shall indemnify, defend and hold harmless those Indemnitees identified in paragraph 13.3.2 above from the claims, suits, actions, losses and liabilities described therein, including those which are a result of any breach of this responsibility, and shall defend any claim or suit brought against any party required to be indemnified hereunder based upon any such claim of title or lien. The Design Builder shall promptly pay each Subcontractor the amount to which that Subcontractor is entitled, and shall, by an appropriate written agreement with each Subcontractor, require each Subcontractor to make payments to its sub-Subcontractors in a similar manner.

13.19 Proprietary or Confidential Information of County. The Design Builder understands and agrees that, in the performance of the services under this Contract or in the contemplation thereof, the Design Builder may have access to private or confidential information, which may be owned or controlled by the County or its Project Partners, and that such information may contain proprietary or confidential details, the disclosure of which to third parties may be damaging to the County or its Project Partners. The Design Builder agrees that all information disclosed by the County to the Design Builder shall be held in confidence and used only in performance of the Contract. Design Builder shall exercise the same standard of care to protect such information as a reasonably prudent design professional or contractor would use to protect its own proprietary data.

13.20 Ownership of Results/Works for Hire.

13.20.1 The Contract Documents, and all copies thereof, furnished or provided to the Design Builder and its Subcontractors are and shall remain the property of the County. The County and the Design Builder explicitly agree that all materials and documents developed by or on behalf of the Design Builder in the performance of this Contract, including drafts and working copies, are the property of the County and that the County shall have unlimited rights, for the

benefit of the County, in all architectural and engineering analysis, Construction Documents, drawings, designs, specifications, notes and any other documentation and other work developed by or on behalf of Design Builder in the performance of this Contract for the Project (collectively, "Documents"), including the right to re-use details of the design on any other County work without further approval of Design-Builder and at no additional cost to the County. The Design Builder agrees to, and hereby does, grant to the County a full paid, royalty-free license to all such data that the Design Builder may cover by copyright and to all designs as to which the Design Builder may assert any right or establish any claim to under the patent or copyright laws. The Design Builder, for a period **up to ten (10) years from the date of Substantial Completion** of the Project, agrees to furnish and to provide access to the originals or copies of all such materials immediately upon the request of the County. Design Builder, its Subcontractors, and its Subconsultants, shall have the right, subject to the County's prior written approval for accuracy of representation and content, to include images or the likeness of the Project in any of its publications or marketing materials.

13.20.2 Any and all Documents, including but not limited to artwork, copy, posters, billboards, photographs, videotapes, audiotapes, systems designs, software, reports, diagrams, models, surveys, source codes or any original works of authorship created by Design Builder or its Subcontractors or designers in connection with services performed under this Contract shall be works for hire as defined under Title 17 of the United States Code, and all copyrights in such works are the property of the County. In the event that it is ever determined that any works created by Design Builder or its Subcontractors or designers under this Contract are not works for hire under U.S. law, Design Builder hereby assigns all copyrights to such works to the County and will by contract require all Subcontractors to assign all copyrights to the County. With the prior written approval of the County, Design Builder may retain and use copies of such works for reference and as documentation of its experience and capabilities.

13.20.3 The Design Builder agrees to assist the County in every proper way to secure the County's rights in any copyrights, patents, mask work rights or other intellectual property rights relating, including the disclosure to the County of all pertinent information and data with respect thereto, the execution of all applications, specifications, oaths, assignments and all other instruments which the County shall deem necessary in order to apply for and obtain such rights and in order to assign and convey to the County the sole and exclusive rights, title and interest in and to such copyrights, patents, mask work rights or other intellectual property rights relating thereto. The Design Builder further agrees that its obligation to execute or cause to be executed, any such instrument or papers shall continue after the termination of this Contract. If the County is unable to secure the Design Builder's signature to apply for or to pursue any application for any United States or foreign patents or copyright registrations covering the original works of authorship assigned to the County as above, then Design Builder hereby irrevocably designates and appoints the County as the agent and attorney in fact to execute and file any such applications and to do all other lawfully permitted acts to further the prosecution and issuance of letters patent or copyright registrations thereon with the same legal force and effect as if executed by the Design Builder.

13.20.4 County's rights under this paragraph 3.20 include the Virtual Construction Model, associated model aggregation platform, and all other electronic files and other Documents prepared by or on behalf of Design Builder to meet the requirements of Section 01 18 22 (BIM Performance Requirements).

13.21 Compliance with Americans with Disabilities Act. The Design Builder acknowledges that, pursuant to the Americans with Disabilities Act ("ADA") programs, services and other activities provided by a public entity to the public, whether directly or through a contractor, must be accessible to the disabled public. The Design Builder shall perform the Work, including but not limited to design and construction of the Project, in a manner that complies with the ADA and any and all other applicable federal, state and local disability rights legislation. The Design Builder agrees not to discriminate against disabled persons in the provision of services, benefits or activities provided under this Contract and further agrees that any violation of this prohibition on the part of the Design Builder, its Subcontractors, subconsultants, designers, employees, representatives, agents or assigns shall constitute a material breach of this Contract.

13.22 Disputes. Design Builder's failure to continue the Work during any and all disputes shall be considered a material breach of this Contract. The Design Builder agrees that the existence or continued existence of a dispute does not excuse performance under any provision of this Contract, including but not limited to, the Contract Times. The Design Builder also agrees that should the Design Builder discontinue the Work due to a dispute or disputes, the County may terminate this Contract for cause. The Design Builder further agrees that should the Design Builder not properly perform the Work due to a dispute or disputes, any and all claims, whether in law or in equity, the Design Builder may have against the County and its officers, directors, agents, representatives, consultants and employees, whether such claims are pending, anticipated or otherwise, shall be deemed to have been waived and forever foreclosed. Notwithstanding the above, the Design Builder, pursuant to paragraph 1.7.4.4 of Section 01 29 00 (Payment Procedures), will be entitled to be paid undisputed amounts by the County.

13.23 Statute of Limitations. As between the parties to this Contract: as to all acts or failures to act by either party to this Contract, any applicable statute of limitations shall commence to run no sooner than the date of issuance by County of the final Certificate for Payment, or the effective date of a termination of all of this Contract, whichever is earlier, except for warranties, indemnity obligations, and Latent defects, in which case the cause of action shall accrue on discovery and determination of cause. Nothing herein will modify any right or obligation under Code of Civil Procedure §§ 337.1 and 337.15.

13.24 Waivers. Either party's waiver of any breach, or the omission or failure of either party, at any time, to enforce any right reserved to it, or to require performance of any of the terms, covenants, conditions or other provisions of this Contract, including the timing of any such performance, shall not be a waiver of any right to which any party is entitled, and shall not in any way affect, limit, modify or waive that party's right thereafter to enforce or compel strict compliance with every term, covenant, condition or other provision hereof, any course of dealing or custom of the trade or oral representations notwithstanding.

13.25 Beneficial Occupancy. The County reserves the right, at its option and convenience, to occupy any part of the Work at any time prior to Substantial Completion or Final

Completion **upon ten (10) Days' notice to the Design Builder.** Such occupancy is herein referred to as "Beneficial Occupancy." Beneficial Occupancy shall be subject to the following conditions:

13.25.1 The County's Representative will make an inspection of the portion of the Project to be Beneficially Occupied and prepare a list of items to be completed or corrected prior to Final Completion. Prior to Beneficial Occupancy, County will issue a Certificate of Beneficial Occupancy on County's form.

13.25.2 Beneficial Occupancy by the County shall not be construed by the Design Builder as an acceptance by County of that portion of the Work which is to be occupied.

13.25.3 Beneficial Occupancy by the County shall not constitute a waiver of existing claims of the County or the Design Builder against each other.

13.25.4 Unless otherwise agreed to by the parties, Design Builder shall provide, in the areas beneficially occupied and **on a twenty-four (24) hour and seven (7) Day week basis** as required, utility services, heating, and cooling in the areas beneficially occupied and for systems in such areas which are in operable condition at the time of Beneficial Occupancy. All costs of and responsibility for the maintenance of beneficially occupied areas and for the operation and maintenance of equipment in such areas shall remain with the Design Builder during Beneficial Occupancy and while the equipment is so operated. The Design Builder shall submit to the County an itemized list of each piece of equipment so operated with the date operation commences.

13.25.5 The guarantees to repair as defined in this Contract will commence upon the first date of Beneficial Occupancy of any portion of the Construction Work actually occupied by the County pursuant to this paragraph 13.25 and equipment or systems "fully utilized" by the County. Equipment or systems shall not be considered "fully utilized" for the purpose of this paragraph 13.25.5 until all parts of the Project served by the equipment or systems are Beneficially Occupied.

13.25.6 The Design Builder and the County shall share on a pro rata basis the responsibility for any costs arising solely from County's Beneficial Occupancy, including the costs of providing security, janitorial and utility services in areas that are Beneficially Occupied by the County.

13.25.7 The County will use its best efforts to prevent its Beneficial Occupancy from interfering with the conduct of the Design Builder's the remaining Work.

13.25.8 The Design Builder shall not be required to repair damage caused by the County in its Beneficial Occupancy.

13.25.9 Except as may be required pursuant to paragraphs 13.25.4, 13.25.6 and 13.26.8 above, there shall be **no added cost to County due to Beneficial Occupancy.**

13.25.10 During Beneficial Occupancy, Design Builder shall continue to maintain all insurance required by the Contract in full force and effect.

13.26 Successors and Assigns. The County and the Design Builder respectively bind themselves and their successors, permitted assigns, and legal representatives to the other party and to the successors, permitted assigns, and legal representatives of such other party in respect to covenants, agreements, and obligations contained in the Contract Documents. Neither party to the Contract shall assign the Contract, in whole or in part, without prior written consent of the other party. Notwithstanding any such assignment, each of the original contracting parties shall remain legally responsible for all of its obligations under the Contract.

13.27 Correction of Errors and Omissions. The Design Builder agrees to correct any error or omission in the Construction Documents at no additional cost to the County.

13.27.1 Fees. Section intentionally omitted.

14. MODIFICATIONS OF THE CONTRACT DOCUMENTS.

14.1 Limitation on Change Orders. In consideration of the scope of Design Builder's Work, Design Builder will be entitled to an increase in the Contract Price or Contract Times only on account of the following: 1) a change in the Work initiated by County; 2) a change in law or regulation affecting design or construction of the Work that occurs after the Construction Documents are approved and that could not reasonably have been anticipated based upon existing law or local interpretations thereof; or 3) a differing condition or hazardous material condition that could not reasonably have been anticipated based on the Contract Documents, other information provided by County, or Design Builder's investigation, inspections or testing.

14.2 Alterations, Modifications and Force Account Work.

14.2.1 No modification or deviation from the Contract Documents will be permitted except by written Change Order or written Field Change, collectively referred to as a "Contract Modification".

14.2.2 The County may, without notice to the Sureties, make alterations, deviations, additions to, or deletions from the Contract Documents; increase or decrease the quantity of any item or portion of the Work; expand, contract or otherwise change the Contract Times; delete any item or portion of the work; and require extra work. The Design Builder shall perform such work under applicable provisions of the Contract Documents, unless specifically provided otherwise at the time the change is ordered. In the case of any ordered extra work, the County reserves the right to furnish all or portions of associated labor, material, and equipment, which the Design Builder shall accept and use without payment for costs, markup, profit, or otherwise for such County-furnished labor, materials, and equipment.

14.2.3 Changes affecting the Contract Times or Contract Price of the Work shall be set forth in a written Change Order that shall specify: (a) the work performed in connection with the change to be made; (b) the amount of the adjustment of the Contract Price, if any, and the basis for compensation for the work ordered; and (c) the extent of the adjustment in the Contract Times, if any. A Change Order will not become effective until signed by the County.

14.2.4 A Change Order will become effective when signed by the County. If the County exercises its right to decide disputed issues pertaining to changed Work as set forth in Articles 12 (Claims by Design Builder) and 14 (Modifications of the Contract Documents) of this Document 00 72 53, then the resulting Change Order shall be effective when signed by County, notwithstanding that the Design Builder has not signed it.

14.2.5 Changes not affecting the Contract Times or Contract Price of the Work, in the County's discretion, may be set forth in a written RFI-Reply executed by the County. Execution of a RFI-Reply or performance in accordance with the RFI-Reply without protest constitutes the Design Builder's agreement to make the specified change without change to the Contract Price or the Contract Times.

14.2.6 Changes or deviations from Contract Documents affecting the Contract Times or Contract Price shall not be made without the authority of an effective Change Order or Construction Change Directive as provided in Section 01 26 00 (Contract Modification Procedures), except in cases of emergency discussed in paragraph 16.4 (Emergencies) of this Document 00 72 53.

14.2.7 All Contract Modifications shall be diligently carried out by the Design Builder in accordance with the Contract Documents. If changes ordered by County in design, workmanship or materials are of such a nature as to increase or decrease the cost of any part of the Work, the price fixed in the Contract Documents shall be increased or decreased by the amount that the Design Builder and the County may agree upon as a reasonable and proper allowance for the cost increase or decrease. If an agreement cannot be reached, then the County shall reach a determination, which shall be final, subject to the Design Builder's rights under Article 12 (Claims by Design Builder) of this Document 00 72 53. In all cases the Design Builder shall perform the changed work as directed by the County subject to the Design Builder's rights under Article 12. In cases where the County reaches such a determination, a Change Order shall be effective even if signed by the County only.

14.2.8 The Design Builder shall, upon the County's request, permit inspection of the original unaltered Project estimate and other documents deposited in escrow in accordance with Document 00 61 31 (Escrow Bid Documents), subcontract agreements, purchase orders relating to the change, and documents substantiating all costs associated with its cost proposal or claims arising from changes in the Work.

14.2.9 Changes in the Work made pursuant to this Article 14 (Modifications of the Contract Documents) and extensions of Contract Times necessary by reason thereof shall not in any way release the guarantees/warranties given by the Design Builder pursuant to provisions of the Contract Documents, nor shall such changes in the Work relieve or release the Sureties of bonds executed pursuant to said provisions. The Sureties, in executing such bonds, shall be deemed to have expressly agreed to any such change in the Work and to any extension of time made by reason thereof.

14.2.10 Procedures for Modifications of Contract Documents and for calculating the cost of extra Work are given in Section 01 26 00 (Contract Modification Procedures). Regarding delay and impact costs of any nature, the Design Builder may not seek compensation for on-Site or off-Site costs for delay based on formulas, e.g., "Eichleay" or other formula. Rather, the Design Builder shall prove actual costs that were actually caused by the County caused changes or delays. If the Design Builder requests compensation for delay to the construction, then the Design Builder shall prove and document actual costs plus markup per the cost categories and procedures in Section 01 26 00 in order to request, claim or prove compensation for delay.

14.2.11 Change Orders in excess of the County's approved limit must be approved by the County Board of Supervisors and a performance bond rider covering the changed Work executed before proceeding with the changed Work. The Design Builder is charged with knowledge of the County's approved Change Order limits and procedures in effect at the applicable time.

14.3 Entire Agreement.

14.3.1 The Contract Documents, and any Contract Modifications, shall represent the entire and integrated agreement between the County and Design Builder regarding the subject matter of this Agreement and shall constitute the exclusive statement of the terms of the parties' agreement.

14.3.2 The Contract Documents, and any Contract Modifications, shall supersede any and all prior negotiations, representations or agreements, either written or oral, express or implied, that relate in any way to the subject matter of this agreement or written modifications. The County and Design Builder represent and agree that they are entering into this contract and any subsequent written modification in sole reliance upon the information set forth in the Contract Documents or Contract Modifications and the parties are not and will not rely on any other information.

14.4 Modifications. The Contract Documents may be amended or modified only by a written amendment, Change Order, Field Change, Construction Change Directive or directive issued in accord with the provisions of the Contract Documents, and particularly this Article 14 (Modifications of the Contract Documents) and Section 01 26 00 (Contract Modification Procedures). The Contract Documents may not be modified or supplemented orally or by implication. To be effective, any modification to the Contract Documents must be in writing and must be signed by an authorized representative of the County, and satisfy all other requirements of this Document 00 72 53.

15. CONTRACT TIMES.

15.1 Time for Performance of Contract.

15.1.1 When the Contract has been signed by Design Builder and the County, and funds necessary to make payments as required under Contract are available, the County will serve a Notice to Proceed upon Design Builder to that effect, either by depositing notice in a post office or post office box regularly maintained by

United States Postal Service in a pre-paid wrapper directed to Design Builder at its legal address, or (at the County's option) by delivery by other means at the Design Builder's legal address.

15.1.2 The start date for the Contract Times shall be the date indicated in the Notice to Proceed. If no date is indicated, then the start date for Contract Times shall be the fifth Day from date that Design Builder receives County's written Notice to Proceed. Total number of Days for completion of Work on Contract and other Contract Times are set forth in Document 00 52 53 (Agreement).

15.1.3 By signing the Agreement, the Design Builder represents to the County that the Contract Times are reasonable for performing the Work and that the Design Builder is able to perform the Work within the Contract Times. Design Builder agrees that the County is purchasing the right to have the Design Builder present on the Project site for the full duration of the Contract Times applicable to the Construction Phase, even if Design Builder could finish the Work in less than the Contract Times.

15.1.4 The Design Builder shall proceed expeditiously with adequate forces and shall achieve all milestones within the applicable Contract Times. If the County determines and notifies the Design Builder that the Design Builder's progress is such that the Design Builder is unlikely to achieve one or more Milestones within the Contract Times, the Design Builder shall immediately and at no additional cost to the County take all measures necessary, including working such overtime, additional shifts, Sundays, or holidays as may be required to ensure that the entire Work is completed in accordance with the Contract Times. Upon receipt of such notice from the County's Representative, the Design Builder shall immediately provide a recovery schedule and notify the County's Representative of all measures to be taken to ensure Final Completion of the Work within the Contract Times. The Design Builder shall reimburse the County for any extra costs or expenses (including the reasonable value of any services provided by County's employees) incurred by the County as the result of such measures.

15.2 Entitlement to Change of Contract Times.

15.2.1 The Contract Times may only be changed by Change Order or by Contract Modification and all time limits stated in the Contract Documents are of the essence of the Contract Documents.

15.2.2 The Contract Times will be adjusted in an amount equal to the time lost on the critical path of the Project due to the following:

15.2.2.1 Changes in the Work ordered by the County;

15.2.2.2 Acts or neglect by the County, or its agents, employees or consultants, acts or neglect of other contractors performing other Work under contract with the County or its Project Partners, provided the Design Builder has substantially performed its responsibilities under the Contract Documents, including but not limited to, its

cooperation and coordination responsibilities required by the Contract Documents;

15.2.2.3 A Force Majeure as defined in paragraph 13.7 (Force Majeure) above.

15.2.3 The Contract Times shall not be extended for any cause identified in paragraph 15.2.2 above, however, unless:

15.2.3.1 The Design Builder actually has been prevented from completing any part of the Work within the Contract Times due to delay that is beyond the Design Builder's control and due to reasons for which the Design Builder is not responsible. In this regard, delays attributable to and within the control of a Subcontractor, or its Subcontractors, or supplier shall be deemed to be delays within the control of the Design Builder;

15.2.3.2 A claim for delay is made as provided herein; and

15.2.3.3 The Design Builder submits a Time Impact Evaluation as required under Section 01 32 26 (Schedules and Reports) that demonstrates actual delay to Work activities on the critical path at the time the delay occurs that actually delay the progress of the Work in the amount of time requested.

15.3 Weather Delays.

15.3.1 Delays due to abnormal or adverse weather conditions will not be allowed for weather conditions which fall within parameters listed in this paragraph 15.3 (Weather Delays). Adverse weather delays may be allowed only if the number of days of Project delay due to adverse weather exceeds these parameters on a monthly basis and the Design Builder proves that the adverse weather actually caused delay to the completion of the Project. The Design Builder shall give written notice of intent to claim an adverse weather day **within one (1) Day of the adverse weather day occurring.** Rain parameters are as follows, pro-rated in the individual month the Design Builder starts and finishes Work:

15.3.1.1 Rain days: January, [7]; February, [6]; March, [6]; April, [3]; May, [1]; June, [0]; July, [0]; August, [0]; September, [0]; October, [2]; November, [5]; December, [6].

15.3.1.2 In order to qualify as an adverse weather day with respect to the foregoing parameters, daily rainfall must exceed one-tenth (0.10) of an inch or more (San Leandro, CA) as measured by the National Oceanic & Atmospheric Administration, and Design Builder must prove that the rain actually caused delay as set forth above.

15.3.2 The Design Builder shall include the foregoing rain parameters as a monthly activity in its progress schedule. If Work on the critical path is affected by rain, the Design Builder shall notify the County and request that the days be moved

to the affected activities. Any adverse weather days remaining shall be considered Project float.

15.3.3 Adverse weather delay for rain shall be recognized for the actual period of time the Design Builder proves the Substantial Completion of the Project was delayed by rain exceeding the specified parameters. For example, and not by way of limitation, if rain exceeding the specified parameters does not in fact delay the Design Builder's progress on the critical path, then no time extension shall be recognized; and conversely, if the Design Builder proves that rain exceeding the specified parameters causes delay to the Design Builder for a period longer than the number of rain days incurred (e.g., if it rains during grading work), then the Design Builder shall be entitled to a time extension equal to the actual period of such delay. Design Builder must verify that adverse weather prevented Design Builder from proceeding **with more than seventy-five percent (75%) of the normal labor and equipment force working on current critical path work items** on the accepted schedule **for a period of at least five hours**, and the crew is dismissed as a result thereof.

15.3.4 The Design Builder shall take reasonable steps to mitigate potential weather delays, such as de-watering the Site, and covering the Work and material that could be affected adversely by weather. Failure to do so shall be cause for the County to not grant a time extension due to adverse weather, where the Design Builder could have avoided or mitigated the potential delay by exercising reasonable care.

15.4 Notice of Delay. **Within seven (7) Days of the beginning of any delay** or of becoming aware of any delay, whichever is later, the Design Builder shall notify the County, in writing, by submitting a notice of delay that shall include a full statement of all anticipated delays resulting from the delay event in question.

15.4.1 The notice shall constitute application for an extension of time only if the notice requests an extension and sets forth the impact of the delay on the critical path and Design Builder's estimate of additional time required together with a full recital of causes of unavoidable delays relied upon. The Design Builder shall comply with Section 01 32 26 (Schedules and Reports).

15.4.2 After receipt of a request for a time extension, with verifiable supporting documents and justifications included, the County will make a decision thereon, and will advise the Design Builder in writing.

15.4.3 No time extensions shall be considered without related documents and justifications necessary for the County to make a determination.

15.4.4 No time extensions shall be granted for delays for which the Design Builder fails to give timely and proper notice and the Design Builder hereby waives any and all damages or other remedies for delay for which timely and proper notice is not given.

15.4.5 Any request for extension of time shall be accompanied by the Design Builder's written statement that the adjustment claimed is the entire adjustment to which

the claimant is entitled as a result of the occurrence of said event, and shall include a written schedule document that demonstrates delay to the critical path using a Time Impact Evaluation as specified in Section 01 32 26 (Schedules and Reports). The County will determine all claims and adjustments in the Contract Times. No claim for an adjustment in the Contract Times will be valid and such claim will be waived if not submitted in accordance with the requirements of this paragraph 15.4 (Notice of Delay).

15.5 No Damage for Design Builder Caused Delay. The Design Builder shall not be entitled to any time extension or compensation, including without limitation extended field or home office overhead, field supervision, costs of capital, interest, escalation charges, acceleration costs or other impacts for any Design Builder caused delays.

15.6 Time Extension Without Compensation. The Design Builder may receive a time extension without compensation for: (a) delays resulting from causes beyond the reasonable control of the Design Builder and the County, including a Force Majeure (see paragraph 13.7 above), (b) periods of delay caused jointly by the Design Builder and the County, or (c) periods of concurrent delay which include both delay for which Design Builder is entitled to time extension and delay for which Design Builder is not entitled to any time extension. In such cases, a time extension without compensation shall constitute the Design Builder's sole and exclusive remedy for such delays.

15.7 Compensable Delay. The Design Builder may receive a time extension and an adjustment in the Contract Price as compensation in conformance with Section 01 26 00 (Contract Modification Procedures) for delays caused by the County or by the County's contractors, except that the Design Builder shall not be entitled to damages for delay to the Work caused by the following reasons:

15.7.1 The County's enforcement of any government act or regulation, or the provisions of the Contract Documents, Design Builder's failure to perform its cooperation and coordination responsibilities required by the Contract Documents, and the County's right to sequence the Work in a manner which would avoid disruption to the County, its contractors, tenants and their contractors, and their respective Subcontractors, exercised as a result of the Design Builder's failure to perform its cooperation and coordination responsibilities required by the Contract Documents.

15.7.2 Granting of extension of Contract Times for any reason shall in no way operate as a waiver on the part of the County of its right to collect liquidated damages for other delays or of its right to collect other damages or other rights to which the County is entitled.

15.8 Liquidated Damages.

15.8.1 Execution of the Agreement by the Design Builder shall constitute acknowledgement by Design Builder that Design Builder understands, has ascertained and agrees that the County and its Project Partners will actually sustain damages in the amount fixed in the Agreement for each and every Day during which completion of a Milestone or the Work is delayed beyond the expiration of the Contract Times, as adjusted pursuant to provisions hereof. The

Design Builder and the County agree that such specified measures of liquidated damages shall be presumed to be the damages actually sustained by the County as defined below, and that because of the nature of the Project, it would be impracticable or extremely difficult to fix the actual damages.

15.8.2 Liquidated damages may be deducted from any money due or to become due to Design Builder Should Design Builder be inexcusably delayed in the performance of the Work, County may deduct liquidated damages based on its estimate of when Design Builder will achieve Final Completion or other Milestones. County need not wait until Final Completion to withhold liquidated damages from Design Builder.

15.8.3 Liquidated damages shall be considered not as a penalty but as agreed monetary damages for actual damages sustained by the County and its Project Partners for delay, including but not limited to loss of revenue and increased Project administration expenses, including extra inspection, construction management and architectural and engineering expenses. Liquidated damages do not include damages the County incurs on account of claims by third parties against the County.

15.8.4 Should money due or to become due to Design Builder be insufficient to cover liquidated damages or other offsets due, then Design Builder forthwith shall pay the remainder of the assessed liquidated damages to County.

15.8.5 Design Builder and County agree that time is of the essence for completion of the Work pursuant to these Contract Documents.

16. WORKING CONDITIONS AND PREVAILING WAGES.

16.1 Use of Site/Sanitary Rules.

16.1.1 All portions of the Work shall be maintained at all times in neat, clean and sanitary condition.

16.1.2 The Design Builder shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Site and other land or areas identified in and permitted by the Contract Documents and other land or areas permitted by applicable laws and regulations, rights of way, permits and easements, or as designated by the County, and shall not unreasonably encumber any of the foregoing premises with construction equipment or other materials or equipment. The Design Builder shall assume full responsibility for any damage to any such land or area, or any improvement located thereon, or to the owner or occupant thereof or of any adjacent areas, resulting from the performance of the Work.

16.1.3 During the progress of the Work, the Design Builder shall keep the Site and foregoing areas free from accumulations of waste materials, rubbish and other debris resulting from the Work. At the completion of the Work, the Design Builder shall remove from and about the Site and other areas all waste materials, rubbish and debris, as well as all tools, appliances, construction equipment and

machinery and surplus materials. The Design Builder shall have the Site clean and ready for occupancy by the County at Substantial Completion of Work.

16.1.4 The Design Builder shall not load nor permit any part of any structure or pavement to be loaded in any manner that will endanger the structure or pavement, nor shall the Design Builder subject any part of the Work structures or adjacent property to stresses or pressures that will endanger it. The Design Builder shall conduct all necessary existing conditions investigation regarding structural, mechanical, electrical or any other system existing, shall perform the Work consistent with such existing conditions, and shall have full responsibility for insufficiencies or damage resulting from insufficiencies of existing systems, equipment or structures to accommodate performing the Work.

16.2 Protection of Work, Persons and Property. The Design Builder shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with Work. The Design Builder shall comply with all safety requirements specified in any safety program established by County, or required by state, federal or local laws and ordinances. The Design Builder shall be responsible for all damage to Work, property or structures, all injuries to persons, and all damage and interruptions to the County's operations, arising from the performance of Work of the Contract Documents. Except as otherwise expressly approved by the County in writing, the Design Builder shall at all times perform all Work in a manner which does not interrupt, damage or otherwise adversely impact any existing County facilities or operations.

16.2.1 The Design Builder shall comply with all Applicable Laws and regulations of any public body having jurisdiction for safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. The Design Builder shall notify owners of adjacent property and of Underground Facilities and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property.

16.2.2 The Design Builder shall remedy all damage, injury or loss or interruption to any property or operations referred to in this paragraph 16.2 (Protection of Work, Persons and Property), caused, directly or indirectly, in whole or in part, by the Design Builder, any Subcontractor, supplier, or any other person or organization directly or indirectly employed by any of them to perform or furnish any Work or anyone for whose acts any of them may be liable. The Design Builder's duties and responsibility for safety and for protection of Work shall continue until such time as all the Work is completed and Final Acceptance of the Work. The County and its agents do not assume any responsibility for enforcing any rights against any person or persons causing damage to Design Builder's work.

16.2.3 The Design Builder shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

16.2.4 The County may, at its option, retain such monies due or to become due under the Contract Documents as the County deems necessary until any and all suits or claims against Design Builder for injury to persons or property or operations shall be settled and the County receives satisfactory evidence to that effect.

16.3 Responsibility for Safety and Health.

16.3.1 The Design Builder shall insure that the Design Builder (and its employees, agents and invitees), Subcontractors (and each tier of Subcontractors' employees, agents, invitees), and subconsultants (and their employees, agents and invitees) while at the Site comply with applicable health and safety laws including, without limitation, the federal Occupational Safety and Health Act of 1970 (and all rules and regulations issued pursuant thereto) and any of the County's safety regulations, as amended from time to time. The Design Builder shall further comply with any directions of the County regarding protective clothing, head covering, eye protection, etc. The County shall have no duty to issue such directions.

16.3.2 Safety of all persons employed by the Design Builder or Subcontractors or designers and their respective agents and invitees on the Site shall be the full responsibility of the Design Builder. The Design Builder shall notify the County, in writing, of the existence of hazardous conditions, property or equipment at the Site, which are not under the Design Builder's control. However, it shall be the Design Builder's responsibility to take necessary precautions against injury to persons or damage to property from recognized hazards until corrected by the responsible party.

16.3.3 Design Builder shall confine all persons under the Design Builder's employ or employ of its Subcontractors, designers or any other person acting on behalf of the Design Builder or Subcontractors or designers to that portion of the Site where the Work under the Contract Documents is to be performed, to routes to be designated by the County for ingress and egress thereto and to any other areas the County may expressly permit the Design Builder to use. Within such areas, except those routes for ingress and egress over which the Design Builder has no right of control, the Design Builder shall provide safe means of access to all places at which persons may at any time have occasion to be present.

16.4 Emergencies. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, the Design Builder, without special instruction or authorization from the County, is obligated to act to prevent threat and damage, injury or loss, until directed otherwise by the County. Design Builder shall give the County prompt written notice if the Design Builder believes that any significant changes in the Work or variations from Contract Documents have been caused thereby. If the County determines that a change in the Contract Documents is required because of the action taken by the Design Builder in response to such an emergency, a Contract Modification, Change Order or Field Change will be issued to document the consequences of such action.

16.5 Use of Roadways and Walkways. The Design Builder shall not unnecessarily interfere with use of any roadway, walkway or other facility for vehicular or pedestrian traffic by any party entitled to use it. Wherever interference becomes necessary for proper and

convenient performance of the Work, and no satisfactory detour route exists, the Design Builder shall, before beginning interference, and with the County's prior concurrence, provide a satisfactory detour, temporary bridge, or other proper facility for traffic to pass around or over the interference and shall maintain it in satisfactory condition as long as the interference continues, all without additional compensation unless otherwise provided in the Contract Documents.

16.6 Nondiscrimination. No discrimination shall be made in the employment of persons upon public works because of race, religious creed, color, national origin, ancestry, physical disability, mental disability, medical condition, marital status, sexual preference, or gender of such persons, except as provided in Government Code § 12940, and every contractor for public works violating the provisions of Labor Code § 1735 is subject to all the penalties imposed for a violation of Chapter 1, Part 7, Division 2 of the Labor Code.

16.7 Prevailing Wages.

16.7.1 Pursuant to Labor Code §§ 1770 et seq., the Design Builder and all Subcontractors shall pay to persons performing labor in and about the Work an amount not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the Work is performed, and not less than the general prevailing rate of per diem wages for legal holiday and overtime work in said locality, which per diem wages shall be not less than the stipulated rates ascertained and determined by the Director of the State Department of Industrial Relations to be the general prevailing rate of per diem wages for each craft or type of workman or mechanic needed to execute this Agreement. The Design Builder shall also cause a copy of this determination of the prevailing rate of per diem wages to be posted at the Site.

16.7.2 The Design Builder shall forfeit, as a penalty to the County, Fifty Dollars ($50.00) for each laborer, workman, or mechanic employed in performing labor in and about the work provided in the Contract Documents for each Day, or portion thereof, on which such laborer, workman or mechanic is paid less than the said stipulated rates for any work done under these Contract Documents by him or her or by any Subcontractor or designer under him or her, in violation of Articles 1 and 2 of Chapter 1 of Part 7 of Division II of the Labor Code. The sums and amounts which shall be forfeited pursuant to this paragraph 16.7.2 and the terms of the Labor Code shall be withheld and retained from payments due or to become due to the Design Builder under this Agreement and the terms of the Labor Code, but no sum shall be so withheld, retained or forfeited except from the final payment without a full investigation by either the State Department of Industrial Relations or by the County. The final amount of forfeiture shall be determined by the Labor Commissioner pursuant to Labor Code § 1775.

16.7.3 The Design Builder shall insert in every subcontract, design agreement or other arrangement which Design Builder may make for performance of work or labor on the Work provided for in the Contract Documents, a provision that the Subcontractor or designer shall pay persons performing labor or rendering service under subcontract or other arrangement not less than the general prevailing rate of per diem wages for work of a similar character in the locality

in which the Work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed as provided in the Labor Code.

16.7.4 The Design Builder stipulates that it shall comply with all applicable wage and hour laws, including without limitation Labor Code § 1813.

16.8 Environmental Controls. The Design Builder shall comply with all rules, regulations, ordinances and statutes that apply to any work performed under the Contract Documents including, without limitation, the storm water general permit, any toxic, water and soil pollution controls and air pollution controls specified in Government Code Section 11017. Design Builder shall be responsible for insuring that Design Builder's employees, subcontractors and the public are protected from exposure to airborne hazards or contaminated water, soil or other toxic materials used during or generated by activities on the Site or associated with the Project.

16.8.1 Design Builder shall fulfill all Mitigation Measures for the Project set forth in the Mitigated Negative Declaration Addendum, including but not limited to the following:

16.8.1.1 Light and Glare

16.8.1.2. Violation of Air Quality Standards:

a. Reduction of Dust During Construction.

b. Diesel Emissions Control.

16.8.1.3 Toxic Air Contaminants: Diesel Emissions Control.

16.8.1.4 Strong Seismic Shaking

16.8.1.9 Erosion: Implementation of a Storm Water Pollution Prevention Program (SWPPP).

16.8.1.10 Unstable or Expansive Soils: Deepening Building Footings/Use of Non-expansive Fill.

16.8.1.11 Public Health Hazards Related to Potential Handling of Hazardous Materials: Preparation and Implementation of a Soil Handling/Management Plan (SHMP).

16.8.1.12 Do Not Violate Water Quality Standards, Provide Substantial Additional Sources of Polluted Runoff or Otherwise Degrade Water Quality: Comply With Alameda Countywide NPDES Municipal Stormwater Permit C.3 Provisions. The Project sponsor shall demonstrate compliance with the countywide NPDES permit requirements by preparing a detailed Stormwater Management Plan

(SMP), incorporating the most appropriate post-construction source control measures into the Project design.

16.8.1.13 Do No Exceed the Capacity of the existing Stormwater Drainage System Infrastructure: Permanent Increase in Ambient Noise Levels. In the future, the County could consider the use of "quiet pavement" options such as Open Grade Asphalt Concrete or Rubberized Asphalt to reduce traffic noise in the area when resurfacing local roadways.

16.8.2 16.8.1.15 Hazardous Waste or Materials Disposal.

16.8.2.1 Design Builder has the sole responsibility for determining current waste storage, handling, transportation, and disposal regulations for the Site and for each waste disposal facility. Except for generation fees and costs to be borne by the County, Design Builder must otherwise comply fully and at its sole cost and expense with these regulations and any applicable law. County may, but is not obligated to, require submittals with this information for it to review consistent with the Contract Documents.

16.9 Shoring Safety Plan.

16.9.1 **At least five (5) Days in advance of excavating any trench five (5) feet or more in depth**, the Design Builder shall submit to the County a detailed plan showing the shoring, bracing and sloping design and other provisions to be made for worker protection from the hazard of caving ground during the excavation, as required by Labor Code § 6705. A civil or structural engineer registered in California shall prepare and sign any plan that varies from the shoring system standards established by the State Construction Safety Orders.

16.9.2 During the course of the Work, the Design Builder shall submit shoring plans to County and Other Authorities Having Jurisdiction as required. The Design Builder shall allow adequate time for County and Other Authorities Having Jurisdiction review and approval of all plans

16.9.3 During the course of the Work, the Design Builder shall be responsible for determining where sloping, shoring and/or bracing is necessary and the adequacy of the design, installation, and maintenance of all shoring and bracing for all excavation, **including any excavation less than five (5) feet in depth.** Design Builder will be solely responsible for any damage or injuries that may result from excavating or trenching. The County's acceptance of any drawings showing the shoring or bracing design or work schedule shall not relieve the Design Builder of its responsibilities under this paragraph 16.9 (Shoring Safety Plan).

END OF DOCUMENT

ALAMEDA COUNTY SHERIFF'S OFFICE
Special Projects Unit
Detention and Corrections Division

CONSULTANT/CONTRACT PERSONNEL AGREEMENT

All consultants and/or contract personnel (herein designated Agents of the Detention and Corrections Division) who are authorized entry into a jail facility, or who are in the proximity of inmates incarcerated in a jail facility, shall agree to abide by Detention and Corrections Division policies, rules, and regulations, and the requirements of confidentiality at all times. Sheriff's personnel are in absolute authority, full cooperation is expected. Failure to observe these rules shall result in immediate removal from the job site by Sheriff's personnel.

The Agents of the Detention and Corrections Division shall agree to:

- Act responsibly within the institution and follow all directions from Sheriff's personnel.
- Sign in and out at the designated control station, when applicable.
- The taking of pictures/video must be preapproved by Sheriff's Personnel and are subject to review.
- Alert detention staff if an inmate makes a statement threatening to harm him/herself or another person.
- Refrain from personal and social involvement with inmates by:
  - Refusing to deliver oral or written messages to and from inmate.
  - Not becoming involved in personal, legal, or family activities.
- Per the Prison Rape Elimination Act (PREA) of 2003, report all allegations of knowledge of sexual abuse, harassment, or any sexual misconduct involving inmates that take place within any Sheriff's office facility.
- Maintain confidentiality relative to operational procedures concerning jail safety and security issues.
- Maintain confidentiality relative to personal information concerning detention staff.
- If unable to appear for a scheduled appointment, notify the Special Projects staff.
- You may not bring any form of alcohol, drugs, drug paraphernalia, or firearms/weapons on jail property at any time.
- Do not introduce contraband into the facility.
- Leave personal items and other non-essential items in locked vehicles. Bring in only appropriate identification, keys, and materials needed to accomplish job duties and responsibilities. Vehicles and any storage compartments (ie. Toolboxes) must be locked at all times.
- Be security conscious by:
  - Reporting anything, which appears out of the ordinary
  - Complying with security procedures or decisions made by security personnel.
- You are responsible for security of your tools at all times.
  - You must have a complete inventory list of all tools carried with you or within your vehicle. This includes any equipment you are using such as ladders, hoses, hand tools, power tools, anything carried on a belt or in a bucket or tool box. Your toolbox must be locked at all times when not in use. Any Deputy at Santa Rita Jail has the right to see the list and compare it to your tools and equipment at any time.
  - Missing tools and equipment will be reported to Sheriff's Personnel immediately.
  - Never leave your tools unattended. Everything you bring to the site must be picked up and put in a locked enclosure such as you vehicle or other designated location when you go to lunch, take a break, or leave at the end of the day. *Remember, any tool can be used as a weapon!*
- Ensure the activity area is left in a clean and neat condition.

I agree to abide by the Sheriff's Office Detentions and Corrections Division policies, rules and regulations, and State Penal Code and the listed responsibilities at all times. Everyone entering the secured area is subject to search of their person and vehicle.

_____ _____

Signature Date

Revised 12/7/15

ALAMEDA COUNTY SHERIFF'S OFFICE

SECURITY SITE CLEARANCE

PLEASE TYPE OR PRINT Email Address: _____

LAST NAME: _____ FIRST: _____ MI: _____ DOB: _____

ADDRESS: _____ CITY: _____ APT: _____ ZIP: _____

RESIDENCE PHONE: _____ BUSINESS PHONE: _____ RACE: _____ SEX: _____

AGE: _____ HEIGHT: _____ WEIGHT: _____ EYES: _____ HAIR: _____

DRIVER'S LICENSE #: _____ STATE: _____ SSN: _____

CONTRACTOR EMPLOYER: _____ JOB TITLE: _____ SUPV: _____

REASON FOR VISIT: _____ DATE OF VISIT: _____

START DATE: _____ **PERMANENT POSITION:** _____ **TEMPORARY POSITION:** _____

PERSON TO NOTIFY IN CASE OF EMERGENCY: _____ PHONE: _____

DO YOU CURRENTLY KNOW **ANYONE** IN CUSTODY IN THE ALAMEDA COUNTY JAIL SYSTEM? (THIS INCLUDES FAMILY, FRIENDS, ASSOCIATES, ETC.)	YES ☐	NO ☐
HAVE YOU EVER BEEN ARRESTED BY ANY LAW ENFORCEMENT AGENCIES?	YES ☐	NO ☐
HAVE YOU EVER BEEN CHARGED OR CONVICTED ANY TYPE OF CRIMINAL OFFENSE?	YES ☐	NO ☐
HAVE YOU EVER ENGAGED IN ANY TYPE OF SEXUAL ABUSE IN ANY CONFINEMENT SETTING?	YES ☐	NO ☐
HAVE YOU EVER BEEN CONVICTED OF ANY SEX CRIME?	YES ☐	NO ☐
HAVE YOU EVER BEEN CIVILLY OR ADMINISTRATIVELY ADJUDICATED TO HAVE ENGAGED IN SEXUAL ABUSE IN ANY TYPE OF CONFINEMENT FACILITY?	YES ☐	NO ☐
HAVE YOU EVER BEEN ACCUSED OF SEXUAL ABUSE/HARRASSMENT	YES ☐	NO ☐

FAILING TO LIST AN ARREST OR CONVICTION WOULD BE BASIS FOR DENIAL.
IF YOU HAVE BEEN ARRESTED OR CHARGED WITH A CRIME EXPLAIN BELOW

DATE	CHARGE	ARRESTING AGENCY	DISPOSITION

(IF MORE SPACE IS REQUIRED USE AN ADDITIONAL SHEET OF PAPER)

I UNDERSTAND THAT I AM SUBJECT TO AND GIVE MY CONSENT TO BE SEARCHED, INCLUDING MY PERSON, AFFECTS AND VEHICLE AT ALL TIMES THAT I AM ON JAIL PROPERTY.

FURTHERMORE, IF ANYONE I KNOW COMES INTO CUSTODY WITHIN THE ALAMEDA COUNTY JAIL SYSTEM, I WILL NOTIFY THE CLASSIFICATION UNIT SERGEANT IN WRITING WITHIN 24 HOURS.

THIS STATEMENT IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND ANY FALSE STATEMENT IS CAUSE FOR MY SITE CLEARANCE TO BE REVOKED.

APPLICANT SIGNATURE: _____ DATE: _____

(APPLICANT: KEEP A COPY OF THIS FORM FOR YOUR REFERENCE)

DMV: _____ REMARKS : _____
JPQN: _____ REMARKS : _____
JPPS: _____ REMARKS : _____
WPS: _____ REMARKS : _____
CII : _____ REMARKS : _____

CLEARANCE DEPUTY: _____ BADGE#: _____ DATE: _____

SUPERVISOR: _____ BADGE#: _____ DATE: _____

APPROVED ☐ DENIED ☐ COMMENTS: _____

GDJ _____ **SRJ** _____ **CRC** _____ **ID BADGE ISSUED AT DATE:** _____

_____ FAX to Backgrounds _____

FAX COMPLETED FORM TO SANTA RITA JAIL: (925) 828-4151

REVISED 05/2015

SECTION 00 73 16

INSURANCE

1. At or before the date specified in Section 00 11 19 (Request for Proposals), Bidder shall furnish to County satisfactory proof that Bidder has in full force and effect the following classes of insurance in the form and with limits and deductibles specified below:

   1.1 Commercial General Liability insurance covering liability for personal injury, advertising injury, bodily injury and property damage and in a form providing coverage not less than that of a standard Commercial General Liability Insurance coverage form (equivalent to Insurance Services Office ("ISO") Occurrence Form 1996) providing coverage for: (a) premises and operations, (b) independent contractors, (c) products and completed operations which shall remain in force for at least ten (10) years after Final Completion and acceptance of the final payment for the Work, (d) blanket contractual liability, (e) personal and advertising injury, and (f) explosion, collapse, and underground hazards. Such insurance shall have limits of not less than one million dollars ($1,000,000) each occurrence, one million dollars ($1,000,000) Personal and Advertising Injury, two million dollars ($2,000,000) Annual General Aggregate and two million dollars ($2,000,000) Products and Completed Operations Aggregate and any applicable deductible shall not exceed fifty thousand dollars ($50,000).

   1.2 Commercial Automobile Liability Insurance covering all owned, non-owned, and hired vehicles. Such insurance shall provide coverage not less than the standard Commercial Automobile Liability ISO Form CA 00031293 with a combined single limit of not less than one million dollars ($1,000,000) each accident for Bodily Injury and Property Damage.

   1.3 Builder's Risk Insurance will be provided by the County. The Builder's Risk Insurance policy provided by the County shall include the following provision: "Design Builder and its Subcontractors of any tier, including Design Builder's Architect and Engineers, are named insureds, but not first named insureds, on the Builder's Risk Insurance policy." The County is applying for coverage in excess of four-hundred million dollars ($400,000,000), with a minimum deductible of one-hundred thousand dollars ($100,000); however, the Design Builder shall be responsible for the first ten thousand dollars ($10,000) of loss per occurrence. Coverage will include all risks of direct physical loss or damage to the insured property, with options for: delay in completion coverage (at a maximum of fifty million dollars ($50,000,000)), land movement (including earthquake), and water damage (including flood). The County intends to purchase earthquake insurance of at least five percent (5%) of the total project value, if commercially feasible. If coverage is obtained, one hundred percent (100%) of earthquake events will be covered. County will not hold the Design Builder liable under Public Contract Code § 7105 for damage due to earthquake or tidal wave, beyond the ten

thousand dollars ($10,000) deductible. The overall project limit in excess of four-hundred million dollars ($400,000,000) is subject to underwriter review. Major exclusions will include, but will not be limited to, wood frame construction projects, damage to existing property, Flood Zones A & V, reusable forms, contractor's tools and equipment, asbestos, dioxins, PCB's, mold, fungus, and testing of any used or rebuilt equipment not under manufacturer's warranty.

1.4 Workers' Compensation Insurance for all persons whom the Design Builder may employ in carrying out Work contemplated under the Contract Documents, in accordance with the laws of the State of California and including Employer's Liability insurance in the amount of one million dollars ($1,000,000) each accident, one million dollars ($1,000,000) bodily injury each employee by disease. This insurance is primary for all covered employees injuries at the Project Site.

1.5 Umbrella/Excess Liability insurance over the Employer's Liability and Commercial General Liability insurance on a following form basis, extending coverage for ten (10) years after Final Completion and acceptance of the final payment for the Work. The total umbrella/excess liability limits shall be not less than two-hundred million dollars ($200,000,000) combined single limit each occurrence and two-hundred million dollars ($200,000,000) annual aggregate. Not less than one-hundred million dollars ($100,000,000) of such limits of insurance shall be applicable to the Project only and not applicable to any other project or location.

1.6 Contractors Pollution Legal Liability Insurance with limits of at least ten million dollars ($10,000,000) each pollution incident and annual aggregate, extending to cover remediation costs and third party bodily injury and property damage resulting from pollution conditions, including mold, fungus and lead based paint, and such insurance must remain in force until one year after Final Completion and acceptance of the final payment of the Work. Such insurance shall not limit claims by County against Design Builder or any Subcontractor insured thereunder. Any deductible or self-insured retention under such insurance shall not exceed two hundred and fifty thousand dollars ($250,000).

1.7 Commercial General Liability insurance applicable to operations of the Design Builder occurring off the Project Site, covering liability for personal injury, advertising injury, bodily injury, and property damage, in a form providing coverage not less than that of a standard Commercial General Liability Insurance coverage form (equivalent to Insurance Services Office ("ISO") Occurrence Form 1996) and providing coverage for: (a) premises and operations (b) independent contractors, (c) products and completed operations, and (d) blanket contractual liability. Such insurance shall have limits of not less than one million dollars ($1,000,000) each occurrence, one million dollars ($1,000,000) Personal and Advertising Injury, two million dollars ($2,000,000) Annual General Aggregate and two million dollars ($2,000,000) Products and Completed

Operations Aggregate and shall remain in full force and effect until Final Completion and acceptance of final payment for the Work.

2. All policies of insurance placed by the Design Builder or any of its Subcontractors shall be placed with insurers acceptable to County. Such insurance policies shall be placed with A.M. Best-rated A-X (or higher) insurance companies. The insurance required by paragraphs 1.1 and 1.5, above shall be non-cancelable except for non-payment of premium and shall provide thirty (30) Days written notice to County of cancellation, non-renewal or reduction of coverage. Required minimum amounts of insurance may be increased should conditions of Work, in opinion of County, warrant such increase. Design Builder shall increase required insurance amounts upon direction by County.

   2.1 County may consider policies placed by Design Builder with higher deductibles or self-insured retentions than stated herein as meeting these requirements, subject to review by County to determine that the self-insured retention or deductible is adequately funded. Design Builder may seek such a determination by submitting, either the most recent actuarial report for the Design Builder's self-insurance plan or, if funded via a captive insurance company ("Captive"), the most recent financial statement for such Captive, a copy of the document creating or organizing the Captive, a written narrative summarizing how the Captive works and describing in detail any loss reserve fund associated with the Captive, and any reinsurance or other agreement for the Captive as well as any letter of credit or other agreement securing such reinsurance agreement. The request must be submitted to the County at the Office of the County by Design Builder and may be marked as confidential or proprietary as appropriate.

3. Required Endorsements: The policies required above shall contain the following provisions:

   3.1 Insurance policies required under paragraphs 1.1, 1.2, 1.5, and 1.6 shall provide a blanket additional endorsement to include the County of Alameda, its General Services Agency, the Alameda County Board of Supervisors, and their employees, representatives, consultants, and agents as additional insureds and each policy shall also provide for the naming of additional insureds throughout the duration of the Project.

   3.2 Such policies required under paragraphs 1.1, 1.2, 1.5, and 1.6 shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurance.

   3.3 Each such insurance policy required under paragraphs 1.1, 1.2, 1.4, 1.5, and 1.6 shall be primary and no other insurance or self-insured retention carried or held by County shall be called upon to contribute to a loss covered by insurance for the named insured.

   3.4 Each such policy required under paragraphs 1.2 and 1.4 shall provide that each insurance underwriter waives all of its rights of recovery by subrogation, or otherwise, against the County and all additional insureds described in paragraph 3.1.

4. Prior to the commencement of any Work, Design Builder shall deliver to County Certificates of Insurance for all required coverages on a standard ACORD Form 25-S, or other form as required by County, along with all required endorsements which shall have clearly typed thereon the County Contract Number and title of the Project. Written notice of cancellation, non-renewal, or reduction in coverage of any policy shall be mailed to the County (Attention: Contract Administration/Inspection) at the address for notice listed in Article 2 of Section 00 52 56 (Agreement), thirty (30) Days in advance of the effective date of the cancellation, non-renewal, or reduction in coverage. Design Builder shall maintain insurance in full force and effect during entire period of performance of Contract Documents, during warranty and guarantee periods, and for such additional periods as required more specifically herein, specifically including the requirements of paragraphs 1.1, 1.5 and 1.6. At the time of making application for an extension of time, and during all periods exceeding the Contract Time resulting from any cause, Design Builder shall submit evidence that insurance policies will be in effect during requested additional period of time. Upon County's request, Design Builder shall submit to County, within thirty (30) Days, copies of the actual insurance policies or renewals or replacements. Upon County's request, Design Builder shall submit, within thirty (30) Days, copies of all documentation that the County deems necessary to determine the ongoing funding adequacy of any self-insured retention or deductible higher than stated herein. Such documentation may include the most recent actuarial report for the Design Builder's self-insurance plan or, if funded via a Captive, the most recent financial statement for such Captive, a copy of the document creating or organizing the Captive, a written narrative summarizing how the Captive works and describing in detail any loss reserve fund associated with the Captive, and any reinsurance or other agreement for the Captive as well as any letter of credit or other agreement securing such reinsurance agreement.

5. Design Builder shall pay all insurance premiums, including any charges for required waivers of subrogation or the cost to add additional insureds. If Design Builder fails to maintain insurance, County may take out comparable insurance, and deduct and retain amount of premium from any sums due Design Builder under Contract Documents.

6. If injury occurs to any employee of Design Builder, Subcontractor of any tier for which the employee or the employee's dependents (in the event of employee's death) is entitled to compensation from County under provisions of the Workers' Compensation Insurance and Safety Act, as amended, or for which compensation is claimed from County, County may retain out of sums due Design Builder under Contract Documents, amount sufficient to cover such compensation, as fixed by the Act, as amended, until such compensation is paid, or until it is determined that no compensation is due. If County is compelled to pay compensation, County may, in its discretion, either deduct and retain from the Contract Sum the amount so paid, or require Design Builder to reimburse County.

7. Nothing in this Section 00 73 16 shall be construed as limiting in any way the extent to which Design Builder or any Subcontractor may be held responsible for payment of damages resulting from their operations.

8. If any Subcontractor is not an insured under the insurance policies of Design Builder described in paragraphs 1.1 and 1.5, above, each such Subcontractor must obtain and maintain a minimum of one million dollars ($1,000,000) of Commercial General Liability insurance and five million dollars ($5,000,000) of Umbrella/Excess Liability insurance. At the sole discretion of County, such limits for Subcontractor coverage may be reduced based on the size and scope of the subcontract. If any Subcontractor is not an insured under the insurance policy described in paragraph 1.6, each such Subcontractor whose work involves: the removal of asbestos, lead, or other toxic substance; the removal or replacement of underground tanks; or the use of toxic chemicals or substances must obtain a minimum of one million dollars ($1,000,000) in Contractors Pollution Legal Liability insurance. Except as required by the this Article 8, all Subcontractors shall otherwise maintain the same types, terms and amounts of insurance required to be maintained by Design Builder with respect to their portions of the Work and all other provisions of this Section 00 73 16 shall apply to such subcontractors. Design Builder shall cause the Subcontractors to furnish proof of such insurance to the County within ten (10) Days of the County's request.

9. The following provisions apply to any licensed professional engaged by Design Builder to perform portions of the Work ("Professional").

    9.1 Each Professional shall maintain the following insurance at its sole cost and expense:

        9.1.1 Provided such insurance is customarily required by County when professionals engaged in the profession practiced by Professional directly contract with County, Professional Liability Insurance, insuring against professional errors and omissions arising from Professional's work on the Project, in an amount not less than five million dollars ($5,000,000) per claim and annual aggregate. Professional shall provide insurance covering claims made as a result of performance of Work on this Project and shall maintain such insurance in effect for not less than five (5) years following Final Completion of the Project. Any deductible or self-insured retention on such insurance shall be in an amount acceptable to the County.

        9.1.2 Each Professional not covered by the insurance carried by Design Builder as described in paragraphs 1.1, and 1.5, shall satisfy the provisions of Article 8 with respect to Commercial General Liability limits and shall otherwise meet the requirements in paragraphs 1.2, 1.4 and 1.7. Each Professional shall satisfy all other provisions of Articles 2, 3, 4, 5 and 6 above relating to that insurance, including without limitation providing required insurance certificates (containing the required endorsements) before commencing its Work on the Project.

10. Design Builder, any Subcontractor and any Professional whose work involves the removal of asbestos, lead, or other toxic substance; removal or replacement of underground tanks; shall obtain and maintain Pollution Legal Liability insurance including coverage for loss or damage arising out of professional liability, with a limit not less than five million dollars ($5,000,000)

per pollution incident and annual aggregate in a form and from an insuring entity acceptable to the County.

END OF DOCUMENT

1531921.3

DOCUMENT 00 73 49

PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT of the COUNTY OF ALAMEDA and California Prevailing Wage Requirements

1. Summary

1.1. In addition to Labor, Wage & Hour, Apprentice, and related provisions described in Document 00 72 13 Paragraph 26; the Work performed pursuant to this Contract is subject to the requirements of the "PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA" ("PSCBA"). The Contractor agrees to be party to and bound by the "PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA". Contractor agrees to execute the "PROJECT STABILIZATION/ COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA Letter of Assent" and shall require all of its subcontractors, of whatever tier, to become similarly bound for all work within the scope of this Contract by signing an identical Letter of Assent.

2. PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT Of the COUNTY OF ALAMEDA

2.1. The PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA (PSCBA) is included for reference only in PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT for the COUNTY OF ALAMEDA Document 00 73 49B.

2.1.1. ROLES AND RESPONSIBILITIES SUBCONTRACTS

2.1.1.1. Each Contractor, which includes all subcontractors of any tier, including trucking entities performing Covered Work of this Contract, agrees that neither it nor any of its subcontractors will subcontract any Work of this Contract except to a person, firm, or corporation who is or becomes party to the PSCBA by signing the Letter of Assent attached to the PSCBA as Exhibit "A". All Contractors performing Covered Work of this Contract shall, as a condition to performing Work of this Contract, become Signatory to and perform all work under the terms of the PSCBA.

2.1.1.2. Each Contractor, which includes all subcontractors of any tier performing Work of this Contract, shall give written notice to the Union(s) of any

subcontract involving the performance of work covered by the PSCBA within either five (5) business days of executing a contract with such subcontract or before the subcontractor commences work on the Project, whichever occurs first. Such notice shall specify the name and address of the subcontractor, the California State License Board license number of the Contractors and scope of work to be performed. Written notice at a Pre-Job Conference shall be deemed written notice under this provision only for those subcontractors listed at the Pre-Job Conference

2.1.1.3. The Contractor shall be responsible for PSCBA compliance by all subcontractor and lower tier subcontractor.

2.1.2. WORK ASSIGNMENTS AND JUSIDICTIONAL DISPUTES

2.1.2.1. The assignment of the Work to subcontractors is solely the responsibility of the Contractor.

2.1.2.2. Each Contractor shall conduct a Pre-Job Conference with the Building and Construction Trades Council of Alameda County (Council) prior to commencing Work as specified in Paragraph 2.1.3 of this Document 00 73 49. The Contractor will notify the County in advance of all such conferences.

2.1.2.3. Any jurisdictional disputes regarding the assignment of the Work of this Contract will be resolved per the requirements of the PSCBA.

2.1.3. PRE-JOB CONFERENCE

2.1.3.1. A mandatory Pre-Job Conference and/or Mark-Up Meeting will be held prior to the commencement of work to establish the scope of work in each Contractor and Subcontractor contract. All meeting shall be held at the offices of the Alameda County Building and Construction Trades Council.

2.1.3.2. The Contractor performing the work shall have the responsibility for making work assignments in accordance with the PSCBA, and will be required to bring relevant plans, specifications, and blueprints to the meeting, as requested by the Union

2.1.3.3. Contractor must submit written workforce projections at the Pre-Job Conference. The workforce projections shall include projected man-hours on a craft-by-craft basis, consistent with the Contractor's bid proposal.

2.1.3.4. The County will schedule and attend all Pre-Job and Mark-Up Meetings and participate in discussions as they pertain to the terms and conditions of the PSCBA.

2.1.4. JOINT ADMINISTRATIVE COMMITTEE MEETINGS

2.1.4.1. The Joint Administrative Committee (JAC) has been established to monitor compliance with the PSCBA. The JAC meets monthly and reviews monthly reporting by the Contractor.

2.1.4.2. The Contractors shall provide progress report as described in Paragraph 2.1.8 of this Document.

2.1.5. COORDINATOR

2.1.5.1. The County will designate a Coordinator, who will be responsible for the administration and application of the PSCBA.

2.1.6. LOCAL HIRING PROGRAM

2.1.6.1. The Contractor agrees to achieve the inclusion of Residents as defined in the PSCBA in the employment and apprenticeship opportunities created by the Work of this Contract, which will be known as the Local Hiring Program (LHP) as described in the PSCBA.

2.1.6.2. The Contractor agrees to a goal that Residents of the County will perform forty percent (40%) of all hours worked on the Work of this Contract, on a craft-by-craft basis, if such workers are available, capable and willing to work on the projects, together with the apprentice goals described in Paragraph 2.1.7 of this Document.

2.1.6.3. The Contractors and subcontractors shall make good faith efforts to reach these goals, as described in the PSCBA including but not limited to the following:

2.1.6.3.1. Within one week of the issuance of the Notice to Proceed, the Contractors shall meet with the County to review and approve its compliance plan for reaching the Local Hiring Goals, using the required compliance plan form provided by the County.

2.1.6.3.2. Submit copies of hiring hall dispatch requests and responses to the County within ten (10) days of County's request at any point during the execution of the Work of this Contract.

2.1.6.3.3. Immediately contact the County if a union hiring hall dispatcher will not or cannot, upon request of the Contractor, dispatch local residents.

2.1.6.3.4. Use the "Name Call," "Rehire" or other available hiring hall procedures to reach goals and shall provide documentation of such requests to the County upon request.

2.1.6.3.5. Use community based organizations as a resource for local labor resources, if a union will not or cannot provide local Residents as requested

2.1.6.3.6. Sponsor local Residents for apprenticeship, when possible.

2.1.6.3.7. Maintain records for each Resident of Alameda County who was referred but not hired along with an explanation why the worker was not hired.

2.1.6.3.8. Document participation in any local employment training programs and submit documentation of such to the County within ten (10) days if requested by County.

2.1.6.3.9. To the extent possible, the parties agree to implement the Local Hiring Program while complying with the County's Local Vendor Preference and Enhanced Construction Outreach (ECOP) programs for the work of this Contract. To the extent that the County determines, in its sole discretion, that there is a conflict between the Local Hiring Program established in the PSCBA and the County's SLEB, ECOP, and/or Local Vendor Preference Programs, the conflict shall be resolved in favor of the Local Hiring Program of the PSCBA.

2.1.6.3.10. For the purpose of reaching the goal established in Paragraph 2.1.6.2 of this Document, a Contractor may qualify for full credit toward the goal by employing Alameda County Residents for other work the Contractor is performing in any of the nine Bay Area counties of: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Marin, Solano, Napa and Sonoma as outlined in the PSCBA.

2.1.7. APPRENTICES

2.1.7.1. Although the PSCBA states that the County shall make available to the Unions a database of apprentices qualifying under the local hiring

provision of the PSCBA, the County has not developed this database. Contractor is to contact the Unions for available apprentices.

2.1.7.1.1. For each Covered Project, the Contractors will be responsible to ensure that it and/or its subcontractors hire at least one (1) new apprentice for the first $1 million of construction value and for each succeeding $5 million of construction contract value, the Contractors and/or their subcontractors will be required to hire at least one (1) additional new apprentice. All such apprentices may be graduates of pre apprenticeship programs with known and successful track record of apprentice placement into jobs. All the pre apprenticeship program graduates must be Residents of Alameda County and members of a Disadvantaged Population, as described in the PSCBA.

2.1.7.2. Contractors shall exercise their best efforts to recruit apprenticeship program applicants from Residents and who are members of a Disadvantaged Population as described in the PSCBA

2.1.7.3. The Contractor shall request dispatch of apprentices in writing from the local Unions and/or Joint Apprenticeship Training Committee in which the Contractor participates. Copies of the written requests shall be provided to the County within ten (10) days of request by the Coordinator.

2.1.7.4. For the purposes of meeting the goal established in Paragraph 2.1.6.1 of this Document, a Contractor may qualify for full credit toward the goal by employing Alameda County Residents as apprentices for other work the Contractor is performing in any of the nine Bay Area counties of: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Marin, Solano, Napa and Sonoma as described in the PSCBA

2.1.8. DATA COLLECTION AND REPORTING

2.1.8.1. This Paragraph describes Contractor and data collection, reporting guidelines and responsibilities for the PSCBA.

2.1.8.2. On a monthly basis, Contractors must submit reports to the County on the status and progress of local hiring on a craft-by-craft basis, including utilization of apprentices as described in Document 00 73 49A “PSCBA Forms”.

2.1.9. HELMETS TO HARDHATS: VETERAN EMPLOYMENT

2.1.9.1. The Contractor agrees to utilize the series of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter

"Center") and Center's "Helmets to Hardhats" program to serve as a resources for preliminary orientations, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as described in the PSCBA.

2.1.9.2. The Contractors may also utilize the services of the "Swords to Ploughshares" program.

3. <u>California Labor Code</u>: In addition to complying with the PSCBA, Contractor shall also comply with the California Labor Code prevailing wage requirements.

3.1. Pursuant to Labor Code Section 1770, *et seq*., the Contractor shall pay to persons performing labor in and about the Work provided for in the Contract an amount equal to or more than the general prevailing rate of per diem wages for work of a similar character in the locality in which the Work is performed, and not less than the general prevailing rate of per diem wages for legal holiday and overtime work in said locality, which per diem wages shall be equal to or more than the stipulated rates contained in a schedule thereof which has been ascertained and determined by the Director of the State Department of Industrial Relations to be the general prevailing rate of per diem wages for each craft or type of workman or mechanic needed to execute this contract. The Contractor shall also cause a copy of this determination of the prevailing rate of per diem wages to be posted at each Site.

3.2. The Contractor shall forfeit, as a penalty to the County, fifty dollars ($50.00) for each laborer, workman, or mechanic employed in performing labor in and about the work provided in the Contract Documents for each day, or portion thereof, on which such laborer, workman or mechanic is paid less than the said stipulated rates for any work done under these Contract Documents by him or her or by any Subcontractor or designer under him or her, in violation of Articles 1 and 2 of Chapter 1 of Part 7 of Division II of the Labor Code. The sums and amounts which shall be forfeited pursuant to this paragraph 3.2 and the terms of the Labor Code shall be withheld and retained from payments due or to become due to the Contractor under this Contract and the terms of the Labor Code, but no sum shall be so withheld, retained or forfeited except from the final payment without a full investigation by either the State Department of Industrial Relations or by the County. The final amount of forfeiture shall be determined by the Labor Commissioner pursuant to Labor Code § 1775.

3.3. The Contractor shall insert in every subcontract or other arrangement which Contractor may make for performance of work or labor on the Work provided for in the Contract Documents, a provision that the Subcontractor shall pay persons performing labor or rendering service under subcontract or other arrangement not less than the general prevailing rate of per diem wages for work of a similar character in the locality in which the Work is performed, and not less than the general prevailing rate of per diem wages for holiday and overtime work fixed as provided in the Labor Code.

3.4. The Contractor stipulates that it shall comply with all applicable wage and hour laws, including without limitation Labor Code § 1813.

4. <u>Project Stabilization/Community Benefits Agreement/ Labor Compliance Program Monitoring</u>.

4.1. The County has elected to retain the services of a third party to monitor compliance with the PSCBA and California Labor Code Requirement.

4.2. The PSCBA/Labor Compliance Program ("PSCBA/LCP") will enforce PSCBA, prevailing wage, apprentice employment and local hiring requirements consistent with California Labor Code and the PSCBA. PSCBA/LCP services do not limit the scope of Work and do not relieve the Contractor of any responsibility for coordination of the Work with California Labor Code or the PSCBA.

4.3. The Contractor shall be responsible for any costs that the County incurs as the result of any actions taken by DIR, or by the County when exercising its enforcement duties, to address Contractor and/or Subcontractor violations related to California Labor Code or the PSCBA. If the Contractor or any of its Subcontractor are notified that they should take certain actions to be in compliance with the PSCBA or applicable state law and those actions are not taken or not taken in a timely manner, then the County shall have the right to recover the cost of all work performed by or for the County or its contractors from the date of such notice and the County shall have the right to back charge the Contractor for any and all costs associated with such work.

4.4. Certified payroll reports for the duration of the Project shall be maintained by the Contractor and submitted electronically, and are subject to all of the following conditions:

4.4.1. Certified Payroll Reports (CPR) shall be submitted to the County electronically on the web-based software system, described in Document 00 45 46.01 "Prevailing Wage and Related Labor Requirements Certification", to be utilized for collection and verification of payroll reports for the Project.

4.4.2. CPR must contain all of information required by California Labor Code section 1776 and must be organized in a manner that is similar or identical to the format in which the information is reported on the DIR "Public Works Payroll Reporting Form" (Form A-1-131);

4.4.3. Statement of Compliance. CPR shall be accompanied by a signed "Statement of Compliance" certifying that the payroll reports are correct and complete and that each laborer or mechanic has been paid not less than the proper prevailing wage rate for the work performed. The wording of the certification shall comply with California Labor Code section 1776 and 29 C.F.R. § 5.5(a)(3)(ii)(B)-(D).

4.4.4. Electronic CPR submitted to the County, the DIR Division of Labor Standards Enforcement (DLSE), or other entity within the DIR, must be in the form of a non-modifiable image or record that bears an electronic signature or includes a copy of any original certification made on paper. Printed reports submitted on paper with an original signature will be accepted as supplemental information to electronic reports, and will not relieve the Contractor or its Subcontractor from their obligation to submit electronic reports.

4.4.5. Apprenticeship Program. Reference is made to General Conditions Document 00 72 13, Paragraph 26 and the PSCBA for the Contractor and its Subcontractors obligation to comply, and be responsible for ensuring compliance, with the requirements of the California Labor Code provisions concerning the employment of apprentices, including Labor Code sections 1776, 1777.5, and 1777.6.

END OF DOCUMENT

DOCUMENT 00 73 49A

PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT of the COUNTY OF ALAMEDA FORMS

1. Summary

1.1. The Contractor and each subcontractor at all tiers must complete and submit all forms required by the Labor Compliance Program Guidebook included in this DOCUMENT 00 73 49A "PSCBA FORMS".

END OF DOCUMENT

DOCUMENT 00 73 49B

FOR INFORMATION ONLY

PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT

for the

COUNTY OF ALAMEDA

Table of Contents

PREAMBLE

This Agreement is made and entered into on this ____ day of _____ 2013, by and between the County of Alameda ("County") together with Contractors and/or subcontractors, who shall subsequently become signatory to this Agreement by signing the "Contractor Agreement To Be Bound" (Exhibit A), ("Contractors"), the Building and Construction Trades Council of Alameda County, AFL-CIO ("Council") and the Local Unions signatory hereto, all in their behalf and in behalf of the various Local Unions involved, ("Union(s)") for the construction of all Covered Projects ("Covered Projects").

Recitals

WHEREAS, the Projects described in this Agreement have been identified by the County as those in which a Project Stabilization/Community Benefits Agreement would benefit the County; and

WHEREAS, the Contractors will be engaged in construction of the project; and

WHEREAS, a skilled labor pool represented by Building Trades Unions will be required to complete the work involved; and

WHEREAS, the Building Trades Unions agree to cooperate in every way possible with employees of the Contractors; and

WHEREAS, the parties to this Agreement mutually agree that safety, quality, productivity and labor harmony are primary goals; and

WHEREAS, the County desires to provide, enhance and encourage construction training and employment opportunities for Alameda County residents and small business enterprises within the County through apprentice and pre-apprentice programs.; and

WHEREAS, the County also desires to use this Agreement as a vehicle for building the capacity of Alameda County residents and businesses and to maximize their potential to successfully participate in other large scale projects; and

WHEREAS, the parties recognize the need for safe, efficient and speedy construction in order to reduce unnecessary delays and result in timely completion of the project; and

WHEREAS, the parties desire to mutually establish and stabilize wages, hours and working conditions for the employees employed on the project by the Contractors, and further to encourage close cooperation to achieve a satisfactory, continuous and harmonious relationship between the parties to this Agreement;

WHEREAS, the County of Alameda's mission is to enrich the lives of all residents through visionary policies and accessible, responsible and effective services and historically the County

has supported contracting outreach programs that recognize the economic and workforce development potential of capital construction projects on government owned facilities; and

WHEREAS, the Parties recognize that disadvantaged individuals, families, and communities within the county experience high unemployment and are also often recipients of County services, and that these disadvantaged populations may economically benefit through participation in local hire, apprenticeship and pre-apprenticeship programs; and

WHEREAS, the Union(s), Contractors, subcontractors, and the County wish to insure labor peace at the Covered Project sites devoid of any disruption that could jeopardize the schedule and timeliness of the construction process, where both Contractors that are signatory to collective bargaining agreements of the Union(s) are supervising employees that are members of the Union(s) and where Contractors that are not Signatory to collective bargaining agreements are supervising employees;

NOW THEREFORE, the parties, in consideration of the mutual promises and covenants herein contained, mutually agree as follows:

ARTICLE 1

DEFINITIONS

1.1 For purposes of this Agreement, the following terms will have the following meanings:

"Acceptance" shall mean action by the County notifying Contractor and other entities of Completion, as required by and in accordance with contract terms and relevant applicable statutes.

"Agreement" shall mean this Project Stabilization/Community Benefit Agreement.

"Alternative Employees" shall mean an employee whose services have been obtained from other than the Union referral facilities as permitted in Section 19.6 of this Agreement.

"Apprentice" shall mean a person enrolled in a State approved apprenticeship training program administered by a Joint Labor-Management Apprenticeship Training Committee (JATC).

"Completion" means that the work of Contractors' is completed, as follows:

1. The occupation, beneficial use, and enjoyment of a work of improvement, excluding any operation only for testing, startup, or commissioning, by the public agency, or its agent, accompanied by a cessation of labor on the work of improvement.
2. The acceptance by the public agency, or its agent, of the work of improvement.

"Contractors" means all contractors and subcontractors at all tiers, any individual, firm, partnership or corporation, or combination thereof, including joint ventures, which is an

independent business enterprise and has entered into a contract with the County or any of its contractors or subcontractors at any tier, with respect to the construction work covered by this Agreement and necessary for the project or any part thereof, including construction building material delivery (if the material is for direct incorporation) and removal truckers, trucking companies and trucking brokers, including the operating of construction equipment, performance of labor and/or installation of materials.

"Coordinator" shall mean the company or individual designated or retained by the County to administer this Agreement.

"Core Employee" shall mean an individual meeting the criteria listed in Section 19.1.1-19.1.5.

"Council" shall mean the Building and Construction Trades Council of Alameda County.

"County" shall mean the County of Alameda acting by and through its Board of Supervisors, Agency and Department heads and administrative staff.

"Covered Projects" and "Projects" means projects covered by the Agreement.

"Covered Work" means work done on the project and subject to the provisions of this Agreement.

"Disadvantaged Population" shall mean those Residents of Alameda County who meet at least one of the following criteria: household income below 50% of the Alameda County median, non-minor dependent youth (AB-12 youth – emancipated foster youth), homeless, welfare recipients, have a history of involvement with the criminal justice system, are unemployed, or a single parent.

"Emergency Work" shall mean those projects undertaken when an immediate or imminent critical impact to a facility or to the ability to provide essential services is likely within 30 days should no further action be taken, or in circumstances where mandatory environmental, health and/or safety requirements will be violated without said project.

"General Prevailing Wage Determination" shall mean the decisions made by the Director of the California Department of Industrial Relations (DIR) establishing a journeyman craft or classification's prevailing wage determination, holiday, advisory scope of work, or travel and subsistence provision.

"Local Hiring Goals" shall mean the Resident and Apprentice hiring goals set forth in Article 17 and Article 18 of this Agreement.

"Local Hiring Program" shall mean the program set forth in Article 17 and Article 18 of this Agreement intended to achieve the inclusion of County Residents in the employment and apprenticeship opportunities created by the Covered Work.

"Master Labor Agreement" or "MLA" shall mean the collective bargaining agreement of each craft Union that is Signatory to this Agreement.

"New Apprentice" shall mean an Alameda County Resident who on the date that such individual is hired or assigned to perform the applicable work, is newly enrolled (less than one year) in a labor-management apprenticeship program that is currently registered with the State of California's Division of Apprenticeship Standards.

"Owner Operator" shall mean a sole individual that owns and drives/operates a maximum of one unit and who is employed in the movement or transportation of materials or goods of another. The owner operator shall be carried on the payroll of the entity that employs or otherwise uses the Owner/Operator. The Owner/Operator shall direct a maximum of one unit which he or she shall drive themselves. In addition the owner operator must provide documentation of insurance, a business license, and a valid motor carrier permit issued solely in their name.

"Post Disaster Work" shall mean County approved construction projects consistent with Post Disaster response and recovery efforts per the California Government Code Section 20168 where the public interest and necessity demand immediate expenditure of public funds to safeguard life, health, or property following a local, state or federally declared disaster per the Stafford Act.

"Project Manager" shall mean the person or persons designated by the County of Alameda Board of Supervisors to act on behalf of the County in all matters involving or related to individual Covered Projects..

"Resident" shall mean an individual who has lived or resided in Alameda County for a period of not less than thirty (30) calendar days prior to the date of dispatch/referral of that individual by the Union to a Contractor performing work on the project or for a period of not less than thirty (30) calendar days prior to applying for work or inclusion in the Local Hire Program if the individual is an Alternative Employee, a Core Employee, a member of a Disadvantaged Population, or a Local Hire Program applicant.

"Signatory" shall mean those Unions who have through their officers and or agents executed this Agreement.

"Sole Proprietor" shall mean an owner who will self-perform the designated Covered Project Work without hiring field support staff for the Project.

"Trust Agreements" shall mean the agreements between Unions and employers and or employer associations to govern trust funds contributed on behalf of covered workers for benefits for said workers.

"Union" or "Unions" shall mean the Building and Construction Trades Council of Alameda County and its affiliated local unions Signatory to the Agreement, acting on their own behalf or on behalf of their respective affiliates and member organizations.

ARTICLE 2

PURPOSE

2.1 The purposes of this Agreement are to promote efficient construction operations on the Projects, to insure an adequate supply of skilled craftspeople and to provide for peaceful, efficient and binding procedures for settling labor disputes. In so doing, the parties to this Agreement establish the foundation to promote the public interest, to provide a safe work place, to assure high quality construction, to ensure uninterrupted construction Projects, and to secure optimum productivity, on-schedule performance and County satisfaction.

2.2 It is the intent of the parties to set out uniform and fair working conditions for the efficient completion of the Projects, maintain harmonious labor/management relations and eliminate strikes, lockouts and other delays.

2.3 The parties agree that one of the primary purposes of this Agreement is to avoid the tensions that might arise on the Projects if union and nonunion workers of different employers were to work side by side on the Projects thereby leading to labor disputes that could delay completion of the Projects.

2.4 This Agreement is entered into pursuant to and consistent with California Public Contract Code ("PCC") Sections 2500 through 2502. PCC Section 2500(a)(3) requires a public entity PLA to include an agreed-upon protocol concerning drug testing for workers employed on the Projects, as set forth in Article 16.3.

ARTICLE 3

SCOPE OF AGREEMENT

3.1 The parties agree that this Agreement will cover all projects undertaken by the County of Alameda with a construction value of $1 million or more. In addition, the Agreement will cover all projects with a construction value of $1 million or more which are undertaken on behalf of the County or in circumstances where County is executing projects for Special Districts,. The parties further agree that the Board of Supervisors may at their discretion elect to include any project with a value less than $1 million under the terms of this Agreement.

3.2 This Agreement covers all on-site construction, fabrication, demolition, alteration, painting or repair of buildings, structures, landscaping, temporary fencing and other work and related activities that are within the craft jurisdiction of one of the Union(s) and that is part of the work, including site preparation, survey work, and all construction, demolition or improvements required to be performed as a condition of approval by the County.

3.3 This Agreement shall apply only to construction/craft employees, performing work on projects represented by the Signatory Unions, and shall not apply to Contractors' supervisors, technical or non-manual employees including, but not limited to, executives, engineers, office and clerical employees, drafters, architects, supervisors, timekeepers, messengers, guards, other employees above the classification of general foreman, inspectors, material testers, and/or x-ray technicians, except to the extent that such inspectors, material testers, and/or x-ray technicians are customarily covered by the MLA and as to which classification a prevailing wage determination has been published.

3.4 There shall be no limitation or restriction upon the choice of materials or upon the full use and installation of equipment, machinery, package units, factory pre-cast, prefabricated or preassembled materials, tools or other labor-saving devices. The lawful fabrication provisions of the appropriate national or local agreements shall be applicable. The covered projects include work necessary for the covered projects and/or in temporary yards or areas adjacent to and dedicated to the covered projects, and at any batch plant(s) constructed or used solely to supply materials to the Covered Projects, when those sites or processes are dedicated exclusively to the covered projects.

3.5 This Agreement covers all on-site fabrication work over which the County or Contractors possess the right of control (including work done for the covered projects in any temporary yard or area established for the Covered Projects). Additionally, any offsite work, including fabrication, necessary for the Covered Projects defined herein, that is lawfully covered by a current MLA or local addenda to a National Agreement of the applicable Union(s) that is in effect as of the execution of this Agreement shall be considered covered work under this Agreement.

3.6 This Agreement shall apply to any start-up, calibration, performance testing, repair, maintenance, operational revisions to systems and/or subsystems performed up to 9 months after Completion by the Contractors. It is understood the County reserves the right to perform any start-up, operation, repair, maintenance or revision of equipment or systems with employees of the County. If required, Contractor's personnel may make a final check and may direct their staff on site to make any necessary repairs to protect the terms of a manufacturer's guarantee or warranty of a piece of equipment.

3.7 The on-site installation or application of all items shall be performed by the craft having jurisdiction over such work as set forth under the provisions of this Agreement; provided, however, it is recognized that installation of specialty items which may be furnished by the County or a Contractor shall be performed by construction persons of the vendor or other companies where necessary to protect a manufacturer's warranty. The issue of whether it is necessary to use construction persons of the vendor or other companies to protect the manufacturer's warranty shall be subject to the grievance and arbitration clause of this Agreement.

3.8 It is recognized by the parties to this Agreement that the Coordinator designated in Article 9 below, and Contractors are acting only on behalf of said Coordinator and

Contractors, and said Coordinator and Contractors have no authority, either expressed, implied, actual, apparent or ostensible, to speak for or bind the County.

3.9 It is expressly agreed and understood that the County retains the right and ability to meet all competitive bidding requirements of public contracting law and to select the lowest responsive and responsible bidder who provides the County with best value within a stipulated sum regardless of union signatory status. Further, the County may, at its sole discretion, end, delay, and/or suspend any or all portions of the work and may combine, consolidate, modify and/or not build any one or more portions of work covered by this Agreement at any time.

3.10 It is expressly agreed and understood by the parties hereto that the County shall retain the right at all times to perform and/or subcontract all portions of the construction and related work on project sites not covered by this Agreement.

3.11 It is expressly agreed and understood by the parties hereto that the County shall have the right to purchase material and equipment from any source and the craftspersons will handle and install such material and equipment, subject to the requirements of Section 3.6.

3.12 Without limiting the foregoing, items specifically excluded from the scope of this Agreement include the following:

3.12.1 The operation of equipment and machinery owned or controlled by the County and its subcontractors and not directly related to construction of covered projects;

3.12.2 All employees of any Contractor or any other consultant of the County not performing construction craft labor within the scope of this Agreement;

3.12.3 Any work performed on or near or leading to or on to the site of work covered by this Agreement and undertaken by state, county, city or other governmental bodies, or their Contractors, or by public utilities or their Contractors, and/or by the County or its Contractors (for work which is not part of the scope of this Agreement).

3.12.4 Off-site maintenance of leased equipment and on-site supervision of such work;

3.12.5 Non-construction support services contracted by the County or any Contractor in connection with covered projects;

3.12.6 All work by employees of the County;

3.12.7 Operations or maintenance work executed by the County;

3.12.8. All work on covered projects under any contract entered into prior to the date of this Agreement;

3.12.9. All warranty functions, warranty work, corrective work, repair and maintenance work on purchased equipment performed by manufacturers' representatives or vendors after Completion and acceptance of any covered projects by the County; and

3.12.10 All Post Disaster and Emergency Work as defined in Article 1.

3.13 The Council shall assist the County and its contractors in encouraging and soliciting subcontractors in bidding on all covered projects.

ARTICLE 4

RELATIONSHIP BETWEEN PARTIES

4.1 This Agreement shall only be binding on the Signatory parties hereto, and shall not apply to parents, affiliates, subsidiaries, or other divisions of the Coordinator and Signatory Contractors unless signed by such parent, affiliate, subsidiary, or other division of such company.

4.2 Each Contractor shall alone be liable and responsible for its own individual acts and conduct and for any breach or alleged breach of this Agreement. Any alleged breach of this Agreement by a Contractor or any dispute between the Signatory Union and the Contractor respecting compliance with the terms of this Agreement, shall not affect the rights, liabilities, obligations and duties between the signatory Union and each other Contractor party to this Agreement.

4.3 It is mutually agreed by the parties that any liability by a Signatory Union(s) to this Agreement shall be several and not joint. Any alleged breach of this Agreement by a signatory Union shall not affect the rights, liabilities, obligations and duties between the Signatory Contractors and the other Unions party to this Agreement.

ARTICLE 5

ROLES AND RESPONSIBILITIES

SUBCONTRACTS

5.1 Each Contractor, which includes all subcontractors of any tier, including trucking entities performing Covered Work on the Projects, agrees that neither it nor any of its subcontractors will subcontract any work to be done on the Project except to a person, firm, or corporation who is or becomes party to this Agreement by signing the Agreement

to be Bound attached to this Agreement as Exhibit "A". All Contractors performing Covered Work on the Project shall, as a condition to performing work on the Project, become Signatory to and perform all work under the terms of this Agreement.

5.2 A Contractor includes any person, firm or corporation who agrees under contract with another Contractor of any tier, to perform on the Project any part or portion of the construction work covered by the prime contract, including the operating of construction equipment, performance of labor and/or installation of materials.

5.3 Notwithstanding any other provisions of this Agreement, the Contractor, as appropriate, in conformance with paragraph 3.7 of this Agreement shall have the absolute right to award contracts or subcontracts for this Project notwithstanding the existence or nonexistence of any collective bargaining agreements between the prospective Contractor and any Union party, and provided that such Contractor is willing, ready and able to comply with this Project Stabilization/Community Benefits Agreement and shall execute a Letter of Assent (in the form attached as Exhibit A), should such Contractor be awarded work covered by this Agreement.

5.4 The furnishing of supplies, equipment or materials which are stockpiled for later use shall in no case be considered subcontracting and shall be covered to the extent permitted by law. The delivery of ready-mix, asphalt, aggregate, sand or other fill material which are directly incorporated into the construction process as well as the off-hauling of debris and excess fill material and/or mud, shall be covered by the terms and conditions of this Agreement.

5.5 Each Contractor with a contract directly with the County has the primary obligation for performance of all conditions of this Agreement, including the performance of all of that Contractor's subcontractors. This obligation cannot be relieved, evaded or diminished by subcontracting. Should a Contractor elect to subcontract, that Contractor shall continue to have such primary obligation.

5.6 Each Contractor, which includes all subcontractors of any tier performing work on the Project, shall give written notice to the Union(s) of any subcontract involving the performance of work covered by this Agreement within either five (5) business days of entering such subcontract or before the subcontractor commences work on the Project, whichever occurs first. Such notice shall specify the name and address of the subcontractor, the California State License Board license number of the Contractors and the scope of work to be performed. Written notice at a Pre-Job Conference shall be deemed written notice under this provision only for those subcontractors listed at the Pre-Job Conference.

5.7 Signatory Contractors:

5.7.1 With regard to any Contractor that is independently signed to any Master Labor Agreement, this Agreement shall in no way supersede or prevent the enforcement of any subcontracting clause contained in such MLA, except as specifically set

forth in Section 5.7.2 below. Any such subcontracting clause in a MLA shall remain and be fully enforceable between each craft union and its signatory Contractors, and no provision of this Agreement shall be interpreted and/or applied in any manner that would give this Agreement precedence over subcontracting obligations and restrictions that exist between craft unions and their respective signatory Contractors under a MLA, except as specifically set forth in subsection 5.7.2 below.

5.7.2 If a craft union ("aggrieved union") believes that an assignment of work for this Project has been made improperly by a Contractor or subcontractor, even if that assignment was as a result of another craft union's successful enforcement of the subcontracting clause in its MLA, as permitted by subsection 5.7.1 above, the aggrieved union may submit a claim under the jurisdictional resolution procedure contained in Article 6 of this Agreement, and the decision rendered as part of that process shall be enforceable to require the Contractor or subcontractor that made the work assignment to assign that work prospectively to the aggrieved union. An award made to a craft union under the subcontracting clause of its MLA, as permitted pursuant to subsection 5.7.1 above, shall be valid and fully enforceable by that craft union unless it conflicts with a jurisdictional award made pursuant to this Agreement. If the award made under the MLA conflicts with the jurisdictional award, the award of damages under the former shall be null and void *ab initio*.

ARTICLE 6

WORK ASSIGNMENTS AND JURISDICTIONAL DISPUTES

6.1 The following language is specifically agreed to for the resolution of any Jurisdictional Disputes which may arise during the construction which is specifically covered by this Agreement. This agreement regarding resolution of jurisdictional disputes shall apply only to such disputes arising on Covered Projects.

6.2 There will be no strikes, no work stoppages, no picketing, sympathy strikes, slow downs or other interferences with the work because of jurisdictional disputes between signatory Unions. Individuals violating this section shall be subject to immediate discharge.

6.3 The assignment of Covered Work will be solely the responsibility of the Contractor performing the work involved; and such work assignments will be in accordance with the Plan for the Settlement of Jurisdictional Disputes in the Construction Industry (the "Plan") or any successor Plan.

6.4 All jurisdictional disputes on this Project between or among the Building and Construction Trades Unions and the Contractors, parties to this Agreement, shall be settled and adjusted according to the present Plan established by the Building and Construction Trades Department, or any other plan or method of procedure that may be

adopted in the future by the Building and Construction Trades Department. Decisions rendered shall be final, binding and conclusive on the Contractor and Union parties to this Agreement.

6.4.1 For the convenience of the parties, and in recognition of the expense of travel between Northern California and Washington, D.C., at the request of any party to a jurisdictional dispute under this Agreement, an Arbitrator shall be chosen by the procedures specified in Article V, Section 5, of the Plan from a list composed of John Kagel, Thomas Angelo, Robert Hirsch and Thomas Pagan, and the Arbitrator's hearing on the dispute shall be held at the applicable Building and Construction Trades Council. All other procedures shall be as specified in the Plan.

6.5 All jurisdictional disputes shall be resolved without the occurrence of any strike, work stoppage, or slow-down of any nature, and the Contractor's assignment shall be adhered to until the dispute is resolved. Individuals violating this section shall be subject to immediate discharge.

6.6 Each Contractor shall conduct a Pre-Job Conference with the Council prior to commencing Covered Work. The Prime Contractor, the County and the Coordinator will be advised in advance of all such conferences and may participate if they wish. Pre-job conferences for different Contractors may be held together.

ARTICLE 7

PRE-JOB CONFERENCE

7.1 A mandatory Pre-Job Conference with each Contractor will be held prior to the commencement of work to establish the scope of work in each Contractor's contract. When a contract has been let to Contractors covered by this Agreement, a Pre-Job Conference and/or Mark-Up Meeting shall be required and shall be held. The parties may mutually agree to waive the requirement to hold a Pre-Job Conference and/or Mark-Up Meeting for any particular contract or contractor. All meetings shall be held at the offices of the Alameda County Building and Construction Trades Council.

7.2 The Contractor performing the work shall have the responsibility for making work assignments in accordance with Section 6.3 of this Agreement, and will be required to bring relevant plans, specifications, and blueprints to the meeting, as requested by Union.

7.3 The Coordinator will schedule and attend all Pre-Job and Mark-Up Meetings and participate in discussions as they pertain to the terms and conditions of this Agreement.

ARTICLE 8

JOINT ADMINISTRATIVE COMMITTEE MEETINGS

8.1 The parties to this Agreement will form a five person Joint Administrative Committee (JAC). The Committee will be comprised of two (2) representatives selected by the Council, two (2) representatives selected by the County, and one (1) community representative, nominated by the Board of Supervisors and agreeable to the Council. The parties shall appoint an alternate. The JAC meetings will be convened by the Coordinator and chaired jointly by a representative of the Council and the County, and a quorum shall be three members, including at least one (1) from the County and one (1) from the Council. The purpose of these meetings is to promote harmonious labor/management relations, ensure adequate communications and advance the proficiency and efficiency of the employees and the Contractors for the Covered Projects. The Committee shall also monitor compliance with Article 17 and Article 18. These meetings will also include discussion of the scheduling, productivity and safety of work performed for the Covered Projects.

8.2 The JAC shall appoint a Joint Administrative Subcommittee, comprised of one (1) representative of the County and, one (1) representative of the Council for the purpose of convening to confer in an attempt to resolve any grievance that has been filed consistent with Article 23. This Subcommittee shall meet as required to resolve grievances by consensus vote. If no resolution can be mutually agreed upon, the grievance shall proceed to the grievance procedure outlined in Article 23, Step 4.

8.3 The JAC shall appoint a Joint Administrative Subcommittee, comprised of one (1) representative of the County, one (1) representative of the Council and one (1) representative of a community based organization to resolve any grievance filed consistent with Article 17 or Article 18.

8.4 The JAC shall have the initial authority to investigate and resolve by consensus vote any allegation of violations of Articles 19 and 20. If the JAC cannot resolve the allegations, then any signatory party may take the matter directly to final and binding arbitration as described in Article 23.

8.5 JAC Meetings

8.5.1 The JAC will meet monthly at the call of either chair.

8.5.2 The Coordinator will establish agenda topics with input from the Committee and send notices of meetings with the agenda in advance of the meetings.

8.5.3 The JAC will receive reports and consider work progress and practices, local hire utilization, Disadvantaged Population utilization, pre-apprentice recruitment, training and referral, and apprentice development and utilization.

8.5.4 The Coordinator and the Contractors shall report progress on these issues and provide ongoing workforce projections for their work.

8.6 Joint Administrative Subcommittee Meetings

8.6.1 Both Joint Administrative Subcommittees will meet as required to address grievances/disputes.

8.6.2 The Coordinator will establish agenda topics with input from the Subcommittee and send notices of meetings with the agenda in advance of the meetings.

ARTICLE 9

COORDINATOR

9.1 The County will designate a Coordinator, who will be responsible for the administration and application of this Agreement.

9.2 The Coordinator shall endeavor to facilitate harmonious relations between the Contractors and Unions Signatory hereto and will conduct the Joint Administrative Committee meeting at the request of either joint chair referred to in Article 8 above. The Coordinator shall not be responsible for the acts of the Contractors or Unions Signatory hereto, and will not be a party to any arbitration or litigation arising out of this Agreement.

ARTICLE 10

UNION RECOGNITION AND REPRESENTATION

10.1 The Contractors recognize the Union(s) Signatory hereto as the sole and exclusive collective bargaining representatives for all craft employees on the Project.

10.2 All employees who are employed by the Contractors shall, as a condition of employment, on or before the eighth (8^{th}) day of consecutive or cumulative employment for a construction contract subject to this Agreement, be responsible for the payment of the applicable monthly working dues and any associated fees uniformly required for union membership in the Union(s). However, there is nothing in this Agreement that would prevent non-union employees from joining the Union(s).

10.3 Authorized representatives of the Union(s) shall have access to the Project site at all times when work is being, has been or will be performed. Such representatives shall comply with the reasonable visitor safety and security rules established for the Project. Access for Union(s) representatives will not be unduly restricted.

10.4 The treatment and payment of stewards shall be in accordance with the applicable MLA.

ARTICLE 11

NO STRIKES - NO LOCKOUTS

11.1 During the life of this Agreement, the Unions and their members, agents, representatives and employees shall not incite, encourage, condone or participate in any strike, walkout, slowdown, sit-down, stay-in, boycott, wobble, sympathy strike, picketing or other work stoppage or hand-billing on the Covered Projects for any cause whatsoever, or any other type of interference of any kind, coercive or otherwise, and it is expressly agreed that any such action is a violation of this Agreement.

11.1.1 Withholding of employees for failure of a Contractor to meet its weekly payroll is not a violation of this Article 11; however, the Union shall submit documentation of the failure to pay to the Coordinator and shall give the affected Contractor and the Coordinator written notice seventy-two (72) hours prior to the withholding of employees.

11.1.2 Should a Contractor performing work for this Project be delinquent in the payment of Trust Fund contributions required under this Agreement with respect to employees represented by the Union, the Union may request, that the Contractor issue joint checks payable to the Contractor and the appropriate employee benefit Trust Fund until such delinquencies are satisfied. Any Trust Fund claiming that a Contractor is delinquent in its fringe benefit contributions to the funds will provide written notice of the alleged delinquency to the affected Contractor, with copies to the General Contractor, the Coordinator and the County. The notice will indicate the amount of delinquency asserted and the period that the delinquency covers. It is agreed, however, with respect to Contractors delinquent in trust or benefit contribution payments, that nothing in this Agreement shall affect normal contract remedies available under the local collective bargaining agreements. If the Contractor is delinquent in the payment of Trust Fund contributions for covered work performed for this Project, the Contractor agrees that the affected Trust Fund may place the County on notice of such delinquencies and the Contractor further agrees that the County may issue joint checks to the Contractor and the Trust Fund until the delinquency is satisfied.

11.2 Expiration of Local and Other Applicable Agreements. It is specifically agreed that there shall be no strike, sympathy strike, picketing, lockout, slowdown, withholding of work, refusal to work, walk-off, sick-out, sit-down, stand-in, wobble, boycott or other work stoppage of any kind as a result of the expiration of any local, regional or other applicable labor agreement having application on the Project and/or failure of the parties to that agreement to reach a new contract. If a Master Labor Agreement between a Contractor and the Union expires before the Contractor completes the performance of a construction contract and the Union or Contractor gives notice of demands for a new or modified Master Labor Agreement, the Union agrees that it will not strike or withhold labor from the Contractor for said contract for work covered under this Agreement and the Union

and the Contractor agree that the expired collective bargaining agreement shall continue in full force and effect for work covered under this Agreement until a new or modified Master Labor Agreement is reached between the Union and Contractor. If the Union and Contractors agree to an interim agreement that will apply until a new Master Labor Agreement is reached, then, the Contractor may work under the terms of the interim agreement until a new or modified Master Labor Agreement is reached between the Union and Contractor. If the new or modified Master Labor Agreement reached between the Union and Contractor provides that any terms of compensation of the Master Agreement shall be retroactive, the Contractor agrees to comply with any retroactive terms of the new or modified Master Labor Agreement to its effective date which is applicable to employees who performed work for the project during the interim period. Such compliance shall occur within seven (7) days after notification by the Union.

11.3 In consideration of the foregoing, the Contractor shall not incite, encourage or participate in any lockout or cause to be locked out any employee covered under the provisions of this Agreement. The term "lockout" does not refer to the discharge, termination or layoff of employees by the Contractor for any reasons in the exercise of its rights as set forth in any provision of this Agreement, nor does "lockout" include the County's or Contractor's decision to terminate or suspend work for the site or any portion thereof for any reason.

11.4 Any employee or employees inciting, encouraging or participating in any strike, slowdown, picketing, sympathy strike or other activity in violation of this Agreement may be subject to immediate discharge and the procedure under this Article 11, if invoked.

11.5 Upon written or electronic mail notice of a violation to the Local and/or International Union offices, the Union and its officers shall take immediate action and will use its (their) best efforts to prevent, end or avert any such aforementioned activity or the threat thereof by any of its officers, members, representatives or employees, either individually or collectively, including but not limited to, publicly disavowing any such action and ordering all such officers, representatives, employees or members who participate in such unauthorized activity to cease and desist from same immediately and to return to work and comply with its orders. The Contractor shall have the right, in the event of a work stoppage by the Union to replace the employees represented by the Union in violation of this Agreement. Nothing in this Agreement shall be construed to limit or restrict the right of any of the parties to this Agreement to pursue fully any and all remedies available under law in the event of a violation of this Article 11.

11.6 Any party to this Agreement may institute the following binding arbitration procedure when such a breach is alleged. In the event a party institutes this procedure, arbitration shall be mandatory.

11.6.1 The party invoking this procedure shall immediately notify Robert Hirsch, who the parties agree shall be the permanent Arbitrator under this procedure. Thomas Angelo shall serve as alternate in the event that the permanent Arbitrator is unavailable at any time. Notice to the Arbitrator shall be by the most expeditious

means available, with written notice by email or similar means to the party alleged to be in violation and the involved Union General President.

11.6.2 Upon receipt of said notice the Arbitrator named above or the alternate shall designate a place for, schedule and hold a hearing within twenty-four (24) hours.

11.6.3 The Arbitrator shall notify the parties by electronic mail or similar means of the place and time chosen for the session. A failure of any party or parties to attend said hearing shall not delay the hearing of evidence or issuance of an award by the Arbitrator.

11.6.4 The sole issue at the hearing shall be whether or not a violation of this Article has in fact occurred, and the Arbitrator shall have no authority to consider any matter in justification, explanation or mitigation of such violation or to award damages, which issue is reserved for court or other arbitration proceedings, if any. The award shall be issued in writing within three (3) hours after the close of the hearing and may be issued without a written opinion. If any party desires a written opinion, one shall be issued within fifteen (15) days, but its issuance shall not delay compliance with, or enforcement of, the award. The Arbitrator shall order cessation of the violation of this Article and other appropriate relief, and such award shall be served on all parties by hand or registered mail upon issuance.

11.6.5 Liquidated Damages. A party found to have violated the provisions of the No Strike-No Lockout section in this Article 11 shall cease such violation within eight (8) hours of the award of the Arbitrator. Should the violation continue past eight (8) hours, the party in violation shall pay to the affected party as liquidated damages either the actual damages incurred or the sum of ten thousand dollars ($10,000.00) per shift, or portion thereof, whichever is greater, until such violation is ceased. The Arbitrator shall retain jurisdiction to resolve any disputes regarding the liquidated damages claimed under this section.

11.6.6 The award shall be final, binding and non-reviewable as to the merits. A judgment of any court of competent jurisdiction shall be entered upon the award, which may be enforced by any such court, upon the filing of this Agreement and all other relevant documents referred to hereinabove in the following manner. Electronic mail or similar notice of the filing of such enforcement proceedings shall be given to the other party. In the proceeding to obtain a temporary order enforcing the Arbitrator's award as issued under subsection 11.6.4 of this Article, all parties waive the right to a hearing and agree that such proceedings may be ex parte. Such agreement does not waive any party's right to participate in a hearing for a final order of enforcement. The Court's order or orders enforcing the Arbitrator's award shall be served on all parties by hand or by delivery to their last known address or by registered mail.

11.6.7 Any rights created by statute or law governing arbitration or injunction proceedings inconsistent with the above procedure, or which interfere with compliance therewith, are hereby waived by the parties to whom they accrued.

11.6.8 The costs of the arbitration, including the fee and expenses of the Arbitrator, shall be borne equally by the affected Union(s) and the affected Contractors.

11.6.9 The procedures contained in this Section 11.6 shall be applicable only to alleged violations of this Article. Discharge or discipline of employees for violation of this Article shall be subject to the grievance and arbitration procedures of Article 23.

ARTICLE 12

MANAGEMENT RIGHTS

12.1 The Contractor retains full and exclusive authority for the management of their work forces for all work performed under this Agreement. This authority includes, but is not limited to, the right to:

12.1.1 Plan, direct and control the operation of all the work.

12.1.2 Decide the number and types of employees required to perform the work safely and efficiently. The lawful manning provisions of the applicable Master Collective Bargaining Agreement shall be recognized.

12.1.3 Hire, promote and layoff employees as deemed appropriate to meet work requirements and/or skills required.

12.1.4 Require all employees to observe the County's Project Rules, the Contractor's Project Rules, Security and Safety Regulations, consistent with the provisions of this Agreement. The Contractor's and County's Project Rules and Regulations shall be reviewed and mutually agreed upon at the Pre-Job meeting and supplied to all employees and/or posted on the jobsite.

12.1.5 Discharge, suspend or discipline employees under the applicable MLA.

12.1.6 Assign and schedule work at its sole discretion and determine when overtime will be worked consistent with this Agreement and the applicable MLA.

12.1.7 Utilize any work methods, procedures or techniques and select and use any type or kind of materials, apparatus or equipment regardless of source, manufacturer or designator and in accordance with this Agreement, which covers the fabrication provisions and any other conflicts that are addressed in this Agreement.

12.2 The foregoing listing of management rights shall not be deemed to exclude other functions not specifically set forth herein. The Contractors, therefore, retain all legal rights not specifically enumerated in this Agreement.

ARTICLE 13

WORK RULES

13.1 Work Rules shall be governed by the applicable MLA for each craft.

ARTICLE 14

WAGE SCALES and FRINGE BENEFITS

14.1 All employees covered by this Agreement shall be classified and paid in accordance with the classification and wage scales contained in the appropriate MLAs which have been negotiated by the historically recognized bargaining parties and in compliance with the applicable general prevailing wage determination made by the Director of Industrial Relations pursuant to the California Labor Code.

14.2 For the duration of its work on this Project, the Contractors agree to recognize and put into effect such increases in wages and recognized fringe benefits as shall be negotiated between the various Union(s) and the historically recognized local bargaining parties on the effective date as set forth in the applicable MLA. The Union(s) shall notify the Contractors in writing of the specific increases in wages and recognized fringe benefits and the date on which they become effective.

14.3 The Contractors hereby adopt and agree to be bound by the written terms of the legally established Trust Agreements specifying the detailed basis on which payments are to be made into, and benefits paid out of, such appropriately qualified employee fringe benefit funds established by such appropriate Trust Agreements. The Contractors authorize the parties to such Trust Agreements to appoint Trustees and successor Trustees to administer the trust funds, and hereby ratify and accept the Trustees so appointed as if made by the Contractors.

14.4 If a Contractor fails to pay wages or benefits, the County agrees to honor a properly submitted, legally enforceable Stop Payment Notice.

ARTICLE 15

HOURS OF WORK, OVERTIME, SHIFTS and HOLIDAYS

15.1 The hours of work, establishment of overtime and the establishment of shifts and shift pay shall be governed by the applicable MLA for each craft and in accordance with the current General Prevailing Wage Determination made by the Director of Industrial Relations pursuant to the California Labor Code. It is understood that the County may, at its discretion, establish a uniform starting time and/or ending time.

15.2 Holidays and designated days off will be in compliance with the applicable General Prevailing Wage Determination made by the Director of Industrial Relations pursuant to the California Labor Code, unless otherwise set forth in the MLA.

ARTICLE 16

HEALTH AND SAFETY

16.1 The employees covered by the terms of this Agreement shall at all times, while in the employ of the Contractor, be bound by the safety rules and regulations as established by the County and Contractors and in accordance with OSHA/Cal-OSHA. These rules and regulations will be published and posted at conspicuous places throughout the Project site.

16.2 In accordance with the requirements of OSHA/Cal-OSHA, it shall be the exclusive responsibility of each Contractors working on the Project to assure safe working conditions for its employees and compliance by them with any safety rules contained herein or established by the Contractors or the County. Nothing in this Agreement shall in any way be construed to make the Union(s), the County, liable for safety violations on the Project.

16.3 The parties agree to abide by the substance abuse policies contained in the applicable MLA, subject to the Article 12. Should the County decide that there is a need for an OCIP on a Covered Project, the parties mutually agree to the side letter attached.

ARTICLE 17

LOCAL HIRING PROGRAM

17.1 The Parties agree to achieve the inclusion of Residents in the employment and apprenticeship opportunities created by the Covered Work, which will be known as the Local Hiring Program (LHP). With day-to-day support from the Coordinator, the Joint

Administrative Committee (JAC) formed pursuant to the provisions of Article 8 shall monitor the progress of the LHP and will serve as the central forum for representatives of all interested or affected parties to exchange information and ideas and to advise the County staff and the Coordinator concerning the operation and results of the LHP and the ongoing role of this Project Stabilization/Community Benefits Agreement as an integral component of LHP. As part of these responsibilities, the JAC will assess the obstacles to success of achieving inclusion of local Residents in the construction opportunities and shall make recommendations for a program to overcome some of those obstacles.

17.2 The parties agree to a goal that Residents of the County will perform up to 40 percent (40%) of all hours worked on all covered projects, on a craft-by-craft basis, if such workers are available, capable and willing to work on the projects, together with the apprentice goals established in Article 18, below.

17.3 The Contractors shall make good faith efforts to reach these goals, as described in Article 17.4 below and to reach these goals working through the normal hiring hall procedures listed in the MLA and the procedures identified in Article 18.4 and the County and Unions shall make good faith efforts to assist the Contractor in reaching this goal. In cases of alleged noncompliance, the issue may be referred to the Coordinator and then to the JAC for resolution. If the JAC can make no resolution, the issue may then be referred to Step 4 of Section 23.2.2 of the grievance procedure described in Article 14 for submission to an arbitrator for a final and binding determination. For purposes of resolution of any dispute arising under this Section or Article 18.4, the County shall be considered a party-in-interest with full right of participation in the arbitration proceeding.

17.4 The Contractors must take, and require their subcontractors to take, the following good faith steps to demonstrate that they have made every effort to reach the Local Hiring Goals:

17.4.1. The Contractors shall attend the scheduled pre-job meetings identified in Article 7. At this meeting, the Contractor must submit written workforce projections and projected man-hours on a craft-by-craft basis, consistent with the Contractor's bid proposal. In the event the pre-job meeting is waived, the Contractor must submit written workforce projections to the Coordinator within five (5) days.

17.4.2 Within one week of the issuance of the Notice to Proceed, the Contractors shall meet with the Coordinator to review and approve its compliance plan for reaching the Local Hiring Goals, using the required compliance plan form provided by the County.

17.4.3 The Contractors shall submit copies of hiring hall dispatch requests and responses to the Coordinator within ten (10) days of Coordinator's request at any point during the execution of the Project.

17.4.4 The Contractors shall immediately contact the Coordinator if a union hiring hall dispatcher will not or cannot, upon request of the Contractor, dispatch local

Residents.

17.4.5 The Contractors shall use the "Name Call," "Rehire" or other available hiring hall procedures to reach goals and shall provide documentation of such requests to the Coordinator upon request per subsection 17.4.3.

17.4.6 The Contractors shall use community based organizations as a resource for local labor resources, if a union will not or cannot provide local Residents as requested, and in conformity with the collectively bargained union hiring hall agreement.

17.4.7 The Contractors shall sponsor local Residents as defined herein for apprenticeship, when possible.

17.4.8 The Contractors shall maintain records for each Resident of Alameda County who was referred but not hired along with an explanation why the worker was not hired. Upon request, such records shall be made available for review by the County, Coordinator, and JAC for the duration of the Covered Projects.

17.4.9 The Contractors shall document participation in any local employment training programs and submit documentation of such to the Coordinator within ten (10) days if requested by Coordinator.

17.5 The Unions will exert their utmost efforts to recruit sufficient numbers of skilled craft persons who are Residents to fulfill the requirements of the Contractors. The parties to this Agreement support the development and placement of increased numbers of skilled construction workers from the Residents within the County to meet the needs of the covered project and the requirements of the industry generally.

17.6 To the extent possible, the parties agree to implement the Local Hiring Program while complying with the County's Local Vendor Preference and Enhanced Construction Outreach (ECOP) programs for the covered project. To the extent that the County determines, in its sole discretion, that there is a conflict between the Local Hiring Program established in this Agreement and the County's SLEB, ECOP, and/or Local Vendor Preference Programs, the conflict shall be resolved in favor of the Local Hiring Program on the construction work covered by this Agreement.

17.7 For the purposes of reaching the goal established in Article 17.2, a Contractor may qualify for full credit toward the goal by employing Alameda County Residents for other work the Contractor is performing in any of the nine Bay Area counties of: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Marin, Solano, Napa and Sonoma. Credit will only be given for work performed during the life of the Covered Project. In order to receive such credit, the Contractor must submit certified payrolls as documentation to the Coordinator. No credit for off-site work will be allowed until the Contractor has demonstrated a good faith effort to reach the goal on the Covered Projects and has received approval from the JAC.

ARTICLE 18

APPRENTICES

18.1 Recognizing the need to maintain continuing support of programs designed to develop adequate numbers of competent apprentice workers in the construction industry, the Contractors will make a good faith effort to employ apprentices in the respective crafts to perform such work as is within their capabilities and which is customarily performed by the craft in which they are indentured.

18.2 For the purpose of meeting the goals of this Article 18, the parties recognize State-approved apprenticeship training programs administered by Joint Labor/Management Apprenticeship Training Committees (JATC) as the sole source for an eighteen month trial period. If after the eighteen month trial period, it has been demonstrated that the JATCs are unable to provide sufficient Residents to meet the established goals, the parties to this agreement will meet to negotiate implementation strategies to meet the established goals. If resolution is not reached within six months, then the parties may refer the item to the grievance procedure as outlined in Article 23.

18.3 The Signatory parties agree that the County shall make available to the Unions a database of apprentices qualifying under the local hiring provisions of this Agreement. The Signatory Unions agree to report in accordance within any limits set by applicable labor law, the availability and dispatch/placement of qualifying apprentices. The reports will be submitted to the Coordinator on at least a quarterly basis and more often, if requested and possible.

18.4 For each Covered Project, the Contractors will be responsible to ensure that it and/or its subcontractors hire at least one (1) new apprentice for the first $1 million of construction value and for each succeeding $5 million of construction contract value, the Contractors and/or their subcontractors will be required to hire at least one (1) additional new apprentice. All such apprentices may be graduates of pre apprenticeship programs with a known and successful track record of apprentice placement into jobs. All the pre apprenticeship program graduates must be Residents of Alameda County and members of a Disadvantaged Population, as described in Article 1.

18.4.1. Contractors will make a good faith effort to maximize the project work hours for the new hire apprentices, and shall report those hours to the JAC, which will evaluate those good faith efforts.

18.4.2 Each Signatory Union will be responsible for dispatching/referring such County Residents to the contractor if they are available, capable and willing to work on the Covered Projects. No one trade can be used to satisfy the goal by the provision of more than two (2) such first stage apprentices, unless required by the nature of the work and or agreed upon by the JAC.

18.4.3 The Signatory Unions and Contractors shall exercise, to the extent of their authority, their best efforts to recruit apprenticeship program applicants from Residents and who are members of a Disadvantaged Population, as defined in Article 1. Further, for apprentices hired to comply with Article 18.4, there will be no limitation on where such apprentices will work subsequent to being hired for the Covered Projects. Contractors will be allowed to receive credit for Article 18.4 when utilizing apprentices for non-Project work during the life of the Covered projects, regardless of the location of the work as long as it is in the nine (9) Bay Area counties described in Article 18.4.5.

18.4.4 The Contractor shall request dispatch of apprentices in writing from the local Unions and/or Joint Apprenticeship Training Committee in which the Contractor participates. Copies of the written requests shall be provided to the Coordinator within ten (10) days of request by the Coordinator. The Unions shall honor all Contractor dispatch requests for such Apprentices.

18.4.5 For the purposes of meeting the goal established in Section 18.4, a Contractor may qualify for full credit toward the goal by employing Alameda County Residents as apprentices for other work the Contractor is performing in any of the nine Bay Area counties of: Alameda, Contra Costa, San Francisco, San Mateo, Santa Clara, Marin, Solano, Napa and Sonoma. Credit will only be given for work performed during the life of the Covered projects. In order to receive such credit, the Contractor must submit certified payrolls as documentation to the Coordinator. No credit for non-Covered Projects work will be allowed until the Contractor has demonstrated a good faith effort to reach the goal on the Covered projects and has received approval from the JAC.

18.5 The Unions will cooperate with the County, the Contractors, and the Coordinator in conducting outreach activities to recruit and refer qualified Alameda County Resident applicants to apprenticeship programs. In addition, the Unions will work with designated pre-apprenticeship programs to promote graduates and enhance their entry into the Apprenticeship programs.

18.6 To the extent permitted by law and the JATC requirements, the Unions will give credit to bona fide, provable past experience to applicants, including work for non-union Contractors who become signatory to the PS/CBA. The experience and practical knowledge of applicants will be reviewed and tested by the applicable Joint Apprenticeship Training Committee. Applicants will be placed at the appropriate stage of apprenticeship or journey level as the case may be. Final decisions will be the responsibility of the applicable Joint Apprenticeship Training Committee.

ARTICLE 19

REFERRAL PROCESS

19.1 The Union(s) shall be the primary source of all craft labor employed on the Project. However, in the event that a Contractor has its own core workforce, the Contractors may request by name, and the Union(s) shall honor, referral of persons who have applied to the local union for Project work and who demonstrate the following qualifications ("Core Employees"):

19.1.1 possess any license and/or certifications required by state or federal law for the Project work to be performed;

19.1.2 have worked a total of at least one thousand (1,000) hours in the construction craft during the prior three (3) years;

19.1.3 were on the Contractors' active payroll for at least sixty (60) out of the one hundred forty (140) calendar days prior to the contract award; and

19.1.4 have the ability to perform safely the basic functions of the applicable trade.

19.1.5 be a resident of Alameda County at least six months prior to the hire date.

19.2 In the case of a Sole Proprietor/Owner Operator that is self-performing work, this Sole Proprietor/Owner Operator is not required to request a dispatch from the union hall. Sole Proprietors/Operators must be certified as such by some public agency acceptable to the County and the affected signatory unions. If the Sole Proprietor/Owner Operator hires employees subsequent to starting work on Covered Projects, all such employees would need to be requested from the union hall as described in subsection 19.3 below

19.3 The Union(s) will first refer to such Contractors one journeyman employee from the hiring hall out-of-work list for the affected trade or craft, and will thereafter refer one of such Contractors' "core" employees as a journeyman and shall repeat the process, one and one, until such Contractors' crew requirements are met or until such Contractors have hired no more than five (5) Core Employees, whichever occurs first. Thereafter, all additional employees shall be hired exclusively from the Union(s)' hiring hall out-of-work list(s). For the duration of the Contractors' work the ratio shall be maintained and when the Contractors' workforce is reduced, Employees shall be laid off in the same ratio of core employees to hiring hall referrals as was applied in the initial hiring. Contractors signatory to a Local, Regional, and/or National collective bargaining agreement(s) with Signatory Union(s) hereto shall be bound to use the hiring hall provisions contained in the relevant MLA of the affected Union(s), and nothing in the referral provisions of this Agreement shall be construed to supersede the local hiring hall provisions of the MLAs as they relate to such Contractors.

19.4 For purposes relating to "Owner/Operators" used for the hauling of workers and materials, including water or oil. It is agreed that the Owner/Operator doing such hauling work may be dispatched to the job first (as a core employee) provided that such Owner/Operator has complied with and completed all registration requirements with the Union prior to dispatch.

19.5 All Contractors shall be bound by and utilize the registration facilities and referral systems established or authorized by the Signatory Union(s) so long as such procedures are in compliance with applicable federal, state or local law. The Contractor shall have the right to determine the competency of all employees and may reject any referral for any reason, provided that the Contractor complies with Article 22, Non-Discrimination, and in accordance with the applicable MLA.

19.6 In accordance with the Master Labor Agreement and in the event that referral facilities maintained by the Union(s) are unable, despite good faith efforts, to fill the request of a Contractor for employees within a forty-eight (48) hour period after such request is made by the Contractor, Saturdays, Sundays and Holidays excluded, the Contractor shall be free to obtain work persons from any source ("Alternative Employees"). Upon hiring Alternative Employees, the Contractor shall immediately notify the appropriate Union(s) of the name and address of the Alternative Employees hired, which Alternative Employees shall be bound by the provisions of this Article and the Union(s)' hiring hall rules.

19.7 The Union(s) will exert their utmost efforts to recruit sufficient numbers of skilled craft persons to fulfill the requirements of the Contractors. The parties to this Agreement support the development of increased numbers of skilled construction workers from the Residents of Alameda County to meet the needs of the Project and the requirements of the industry generally. Accordingly, contingent upon request by the Contractor, the Unions agree to encourage the referral and utilization of Residents as journeyman and apprentices on the Project and the entrance of Residents into apprenticeships and training programs, as long such Residents possess the requisite skills and qualifications.

ARTICLE 20

DATA COLLECTION AND REPORTING

20.1 This article describes data collection, reporting guidelines and responsibilities for parties signatory to the PSCBA.

20.2 The County shall be responsible for collecting and maintaining accurate data on the availability of the Disadvantaged Population Residents available, capable and willing to work on Projects. This data will be made available and accessible to the Union.

20.3 On a monthly basis, Contractors must submit reports on the status and progress of local hiring on a craft by craft basis, including utilization of apprentices.

20.4 The signatory Unions agree to report in accordance with any limits set by applicable labor law, the availability and dispatch/placement of apprentices. These reports will be submitted to the Coordinator on at least a quarterly basis and more often, if requested and possible.

20.4.1 In advance of pre-job meetings, the Union shall assist the Coordinator with developing a current list of Disadvantaged Population first stage apprentices available to work on the project.

20.4.2 At pre-job meetings, the Coordinator shall supply contractors with a current list of Disadvantaged Population apprentices and their status of completion of their apprenticeship.

20.4.3 On a quarterly basis, the Union shall provide the County and Coordinator a report on the status of Disadvantaged Population apprentices, including but not limited to their placement and advancement

20.5 On an annual basis, the Union, County and Coordinator shall provide a report for the Board of Supervisor's review as described and required in Article 27.1. This report shall include but not be limited to the local hiring and apprentice goal performance, as well as challenges and benefits of the PSCBA.

ARTICLE 21

HELMETS TO HARDHATS: VETERAN EMPLOYMENT

21.1 The Contractors and the Unions recognize a desire to facilitate the entry into the building and construction trades of veterans who are interested in careers in the building and construction industry. The Contractors and Unions agree to utilize the services of the Center for Military Recruitment, Assessment and Veterans Employment (hereinafter "Center) and Center's "Helmets to Hardhats" program to serve as a resource for preliminary orientation, assessment of construction aptitude, referral to apprenticeship programs or hiring halls, counseling and mentoring, support network, employment opportunities and other needs as identified by the Contractors and the Unions.

21.2 The Unions and Contractors agree to coordinate with the Center to create and maintain an integrated database of veterans interested in working on the Project and of apprenticeship and employment opportunities for this Project. To the extent permitted by law, the Unions will give credit to such veterans for bona fide, provable past experience.

21.3 The Contractors may also utilize the services of the "Swords to Ploughshares" program.

ARTICLE 22

NON-DISCRIMINATION

22.1 The Unions and Contractors shall not discriminate against any employee or applicant for employment because of race, creed, color, sex, actual or perceived sexual orientation, national origin, age, religion, political affiliation, or membership or non-membership in labor organization union activity, military veteran status, and disability as identified in the Americans With Disabilities Act, or any other basis recognized by law.

ARTICLE 23

GRIEVANCE PROCEDURE

23.1 All disputes concerning the interpretation and/or application of this Agreement that do not fall within the Article 11 No-Strike/No-Lockout procedure, Article 6 Work Assignments and Jurisdictional Disputes, Article 17 Local Hiring Program, or Article 18 Apprentices, shall be governed by the following grievance and arbitration procedure.

23.2 Grievances between one or more Union(s) and one or more Contractor regarding interpretation and/or application of this Agreement shall be pursued according to the following provisions:

23.2.1 A grievance shall be considered null and void if not brought to the attention of the Contractors or the Union(s) within ten (10) working days after the grievance is alleged to have occurred but in no event more than thirty (30) days after the charging party became aware of the event giving rise to the dispute.

23.2.2 Grievances between one or more Union(s) and one or more Contractors regarding provisions of this Agreement shall be settled or otherwise resolved according to the following Steps and provisions:

Step 1: The Contractors or the Union(s)' representative and the grievant shall attempt to resolve the grievance with the craft supervisor or Steward.

Step 2: In the event the matter remains unresolved in Step 1 above, within five (5) working days, the grievance shall be reduced to writing and may then be referred by the Contractors or Union(s) to the grievant for discussion and resolution.

Step 3: In the event that the representatives are unable to resolve the dispute within the five (5) working days after its referral to Step 2, either involved party may submit it within five (5) working days to the Joint Administrative Subcommittee, established in Section 10.2, which shall meet within five (5)

working days after such referral (or such longer time as is mutually agreed upon by the representatives on the Joint Administrative Subcommittee) to confer in an attempt to resolve the grievance. Regardless of which party has initiated the grievance proceeding, prior to the meeting of the Joint Administrative Subcommittee, the Union shall notify its international union representative(s), which shall advise both parties if it intends on participating in the meeting. The participation by the International Union Representative in this Step 3 meeting shall not delay the time set herein for the meeting, unless otherwise mutually agreed by the parties. Decisions by the Joint Administrative Subcommittee shall be by majority vote with such resolutions to be final and binding on all signatories of the Agreement. If the dispute is not resolved by the Joint Administrative Subcommittee, it may be referred within five (5) working days by either party to Step 4.

Step 4: In the event the matter remains unresolved in Step 3, either Party may request, within five (5) working days, that the dispute be submitted to arbitration. The time limits set out in this procedure may, upon mutual agreement, be extended. Any request for arbitration, request for extension of time limits, and agreement to extend such time limits shall be in writing.

Step 5: Within seven (7) calendar days after referral of dispute in Step 4, the parties shall choose an arbitrator for final and binding arbitration. The parties agree that an arbitrator shall be selected by the alternate striking method from the following list. The party who shall strike the first name shall be selected by the toss of a coin (1) Carol Isen (2) Barbara Kong-Brown (3) Thomas Angelo (4) Robert Hirsch (5) William Ricker. Should a Party to the procedure fail or refuse to participate in the hearing, if the Arbitrator determines that proper notice of the hearing has been given, said hearing shall proceed to a default award. The Arbitrator's award shall be final and binding on all Parties to the arbitration. The costs of the arbitration, including the arbitrator's fee and expenses, shall be borne equally by the Parties. The Arbitrator's decision shall be confined to the question(s) posed by the grievance and the Arbitrator shall not have authority to modify amend, alter, add to, or subtract from, any provisions of this Agreement.

23.3 Grievances raised by County against one or more Union(s) and/or the Building Trades Council, or against the County by one or more Union(s) and/or the Building Trades Council, regarding provisions of this Agreement, shall be settled or otherwise resolved according to the following Steps and provisions:

23.3.1. A grievance shall be considered null and void if not brought to the attention of the County or the Union(s) within ten (10) working days after the grievance is alleged to have occurred but in no event more than ten (10) days after the charging party became aware of the event giving rise to the dispute.

Step 1: The County/Union(s) Joint Administrative Subcommittee shall attempt to resolve the grievance. The County/Union(s) Joint Administrative Subcommittee shall meet within five (5) working days after receipt of the grievance (or such longer time as is mutually agreed upon by the representatives on this Joint Administrative Subcommittee) to confer with regard to the grievance. Decisions by the Joint Administrative Subcommittee shall be by majority vote with such resolutions to be final and binding on all signatories of the Agreement. If the dispute is not resolved by the Joint Administrative Subcommittee, within the five (5) working days after meeting on the grievance, either involved party may proceed to Step 2.

Step 2: In the event the matter remains unresolved pursuant to Step 2, either Party may request that the dispute be submitted to arbitration. The time limits set out in this procedure may, upon mutual agreement, be extended. Any request for arbitration, request for extension of time limits, and agreement to extend such time limits shall be in writing.

Step 3: Within seven (7) calendar days after referral of dispute in Step 2, the parties shall choose an arbitrator for final and binding arbitration. The parties agree that an arbitrator shall be selected by the alternate striking method from the following list. The party who shall strike the first name shall be selected by the toss of a coin (1) Carol Isen (2) Barbara Kong-Brown (3) Thomas Angelo (4) Robert Hirsch (5) William Ricker. Should a Party to the procedure fail or refuse to participate in the hearing, if the Arbitrator determines that proper notice of the hearing has been given, said hearing shall proceed to a default award. The Arbitrator's award shall be final and binding on all Parties to the arbitration. The costs of the arbitration, including the arbitrator's fee and expenses, shall be borne equally by the Parties. The Arbitrator's decision shall be confined to the question(s) posed by the grievance and the Arbitrator shall not have authority to modify amend, alter, add to, or subtract from, any provisions of this Agreement.

23.4 Where an issue is addressed in this Agreement and an MLA, this Agreement shall prevail. Where an issue is addressed in an MLA and not in this Agreement, the MLA shall control.

23.5 Grievances between a Union(s) and a Union(s)' signatory contractor involving interpretation or application of the Master Agreement shall be governed by the grievance procedures contained in the Master Agreement.

ARTICLE 24

MISCELLANEOUS PROVISIONS

24.1 Counterparts. This Agreement may be executed in counterparts, such that original signatures may appear on separate pages, and when bound together all necessary signatures shall constitute an original. Facsimile signature pages transmitted to other parties to this Agreement shall be deemed equivalent to original signatures.

24.2 Warranty of Authority. Each of the persons signing this Agreement represents and warrants that such person has been duly authorized to sign this Agreement on behalf of the party indicated, and each of the parties by signing this Agreement warrants and represents that such party is legally authorized and entitled to enter into this Agreement.

24.3 Ratification by Governing Board. This Agreement shall not be binding on the County until it is ratified by the Board of Supervisors.

ARTICLE 25

ENTIRE AGREEMENT

25.1 This Agreement represents the complete understanding of the parties. The provisions of this Agreement, including the MLAs, shall in every instance exclusively apply to and control work performed on the Project. The provisions of this Agreement shall take precedence over provisions of local, area, regional or national labor agreements. Nothing contained in the MLAs, working rules, by-laws, constitution and other similar documents of the Unions, shall in any way affect, modify or add to this Agreement unless otherwise specifically indicated in this Agreement or mutually agreed to in writing and executed by the parties. Practices not part of the terms and conditions of this Agreement shall not be recognized.

25.2 The Unions agree that this Agreement covers all matters affecting wages, hours and other terms and conditions of employment, and that during the terms of this Agreement, neither the Contractors, nor the Unions will be required to negotiate on any further matters affecting these or any other subject not specifically set forth in this Agreement except by mutual agreement of the Unions involved and the County.

25.3 The parties to this Agreement understand and agree that nothing in this Agreement shall supersede or take precedence over any Board policy or requirement including, but not limited to, the construction contract, contract documents, project manual, and general conditions for the Project.

25.4 Provisions negotiated into any new or modified MLA which are less favorable to the Contractor shall not apply to work covered by this Agreement. Any disagreement between the parties regarding the application of the provisions of any new or modified

MLA shall be resolved under the dispute and grievance arbitration procedures set forth in Article 23.

25.5 This Agreement may be executed in counterparts, such that the original signatures may appear on separate pages and when bound together all necessary signatures shall constitute an original. Facsimile signature pages transmitted to other parties to this Agreement shall be deemed the equivalent to original signatures.

ARTICLE 26

GENERAL SAVINGS CLAUSE

26.1 It is not the intention of the parties to violate any laws governing the subject matter of this Agreement. If any Article or provision of this Agreement shall be declared invalid, inoperative, or unenforceable by any competent authority of the executive, legislative, judicial or administrative branch of the federal, state or local government, the parties shall suspend the operation of each such article or provision during the period of invalidity. Such suspension shall not affect the operation of any provision covered in this Agreement to which the law or regulation is not applicable. Further, parties agree that if and when any or all provisions of this Agreement are finally held or determined to be illegal or void by a Court of competent jurisdiction, the parties will promptly enter into negotiations concerning the substance affected by such decision for the purpose of achieving conformity with the requirements of an applicable law and the intent of the parties hereto.

ARTICLE 27

DURATION OF AGREEMENT

27.1 This Agreement shall become effective on the day the County Board of Supervisors ratifies this Agreement and shall continue in full force and effect for 3 years. In the event that either party wishes to amend, modify or otherwise alter this Agreement at the end of three (3) years, written notice shall be delivered between sixty (60) and thirty (30) days prior to expiration. If neither party provides said written notice, this Agreement shall remain in effect for an additional two (2) years. At the end of a total of five (5) years, if parties so desire they may enter negotiations for a new Agreement or an extension to be determined. There shall be an annual report with a presentation to the County Board of Supervisors prepared by the General Services Agency in collaboration with other applicable County Departments.

SIGNATURES

County of Alameda

By: _____
President, Board of Supervisors

Approved as to Form:
Donna R. Ziegler, County Counsel

By: _____
Deputy County Counsel

Building & Construction Trades Council of Alameda County:

By: _____
Andreas Cluver, Secretary-Treasurer

Signatory Unions:

Asbestos Workers, Local 16 By: _____

Boilermakers, Local 549 By: _____

Bricklayers & Allied Craftsmen, Local 3 By: _____

Northern California Carpenters Regional Council (on behalf of Carpenters, Local 713, Carpenters, Local 2236, Lathers, Local 68L, Millwrights, Local 102, Pile Drivers, Local 34) By: _____

Cement Masons, Local 300 By: _____

Electrical Workers, Local 595 By: _____

Elevator Constructors, Local 8 By: _____

Hod Carriers, Local 166 By: _____

Iron Workers, Local 378 By: _____

Laborers, Local 67 By: _____

Laborers, Local 304 By: _____

Operating Engineers, Local 3 By: _____

Plasterers, Local 66 By: _____

Roofers, Local 81 By: _____

Sheet Metal Workers, Local 104 By: _____

Sign Display, Local 510 By: _____

Sprinkler Fitters, Local 483 By: _____

Teamsters, Local 853 By: _____

United Association of Journeymen and Apprentices Fitting Industry, Underground Utility & Landscape, Local 355 By: _____

Cement Masons, Local 300	By: _____
Electrical Workers, Local 595	By: _____
Elevator Constructors, Local 8	By: _____
Hod Carriers, Local 166	By: _____
Iron Workers, Local 378	By: _____
Laborers, Local 67	By: _____
Laborers, Local 304	By: _____
Operating Engineers, Local 3	By: _____
Plasterers, Local 66	By: _____
Roofers, Local 81	By: _____
Sheet Metal Workers, Local 104	By: _____
Sign Display, Local 510	By: _____
Sprinkler Fitters, Local 483	By: _____
Teamsters, Local 853	By: _____
United Association of Journeymen and Apprentices Fitting Industry, Underground Utility & Landscape, Local 355	By: _____

United Association of Steamfitters, Pipefitters, Plumbers, & Gas Fitters, Local 342

By: Marcel Hernandez

District Council No. 16 Northern California International Union of Painters & Allied Trades (on behalf of Auto & Marine Painters, Local 1176, Carpet & Linoleum Layers, Local 12, Glaziers, Architectural Metal & Glassworkers, Local 169, Painters & Tapers, Local 3

By: _____

EXHIBIT A (Letter of Asqent)

PROJECT STABILIZATION/COMMUNITY BENEFITS AGREEMENT

for the

COUNTY OF ALAMEDA
CONTRACTOR AGREEMENT TO BE BOUND

The undersigned, as a Contractor or Subcontractor (CONTRACTOR) on the County of Alameda, (hereinafter PROJECTS), for and in consideration of the award to it of a contract to perform work on said PROJECTS, and in further consideration of the mutual promises made in the "Project Stabilization/Community Benefits Agreement for the County of Alameda Project" (hereinafter AGREEMENT), a copy of which was received and is acknowledged, hereby:

(1) Accepts and agrees to be bound by the terms and conditions of the AGREEMENT, together with any and all amendments and supplements now existing or which are later made thereto:

(2) The CONTRACTOR agrees to be bound by the legally established local trust agreements as set forth in Article 14 of this AGREEMENT.

(3) The CONTRACTOR authorizes the parties to such local trust agreements to appoint trustees and successor trustees to administer the trust funds and hereby ratifies and accepts the trustees so appointed as if made by the CONTRACTOR;

(4) Certifies that it has no commitments or agreements which would preclude its full and complete compliance with the terms and conditions of said AGREEMENT.

(5) Agrees to secure from any CONTRACTORS (as defined in said AGREEMENT) which is or becomes a Subcontractor (of any tier) to it, a duly executed Agreement to be Bound in form identical to this document.

Dated: _____

_____
(Name of Contractor)

_____
(Name of Prime Contractor or Higher Level Subcontractor)

_____
(Authorized Officer & Title)

CA Number _____

_____
(Address)

Contract Or Project #_____

_____
(Phone) (Fax)

MEMORANDUM OF UNDERSTANDING

COUNTY OF ALAMEDA
PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT

Notwithstanding any provision to the contrary in the County of Alameda Project Stabilization/Community Benefit Agreement ("Project Stabilization Agreement"), this memorandum will confirm that work covered by the Project Stabilization/Community Benefits Agreement within the craft jurisdiction of the Elevator Constructors will be performed under the terms of the National Agreement of the International Union of Elevator Constructors, except that Articles 6,11 and 23 of the Project Stabilization Agreement will apply to such work.

County of Alameda

_____
President, Board of Supervisor

Date_____

INTERNATIONAL UNION OF
ELEVATOR CONSTRUCTORS
LOCAL UNION NO. 8

Eric W. McClay

Date 5-20-2013

Approved as to Form:
Donna R. Ziegler, County Counsel

By: Chauncey Bramen
Deputy County Counsel

MEMORANDUM OF UNDERSTANDING

COUNTY OF ALAMEDA
PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT

In the event the County decides to cover any given Project with an Owner Controlled Insurance Program (OCIP) during the life of the PS/CBA, the following language will apply:

The County intends to implement an OCIP, or wrap up insurance, on the Project. All Contractors and employees performing work on the Project, and not otherwise excluded from the OCIP; will be bound by the requirement of the OCIP Safety Manual; provided however, discipline imposed for alleged violations of the OCIP Safety Manual is subject to the Grievance procedures in Article 23. Any drug testing protocol established by the Contractor for the Project shall satisfy the requirements of the OCIP Safety Manual and be consistent with the MLAs. In the event that there is a conflict between the MLAs and the OCIP requirements, the OCIP requirements shall prevail.

County of Alameda

By:_____
President, Board of Supervisor

Date _____

Building & Construction Trades Council of Alameda County:

By: _____
Andreas Cluver, Secretary-Treasurer

Date 5/21/13

Approved as to Form:
Donna R. Ziegler, County Counsel

By: _____
Deputy County Counsel

MEMORANDUM OF UNDERSTANDING

COUNTY OF ALAMEDA
PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT

The parties agree that the PLA to which this letter is addended shall not apply to any contracts entered into by the Alameda County Public Works Agency for a period of three years from the effective date of the PLA, except that any and all trucking, as described in Article 5.4 of said PLA, shall be covered by the PLA.

Any disputes concerning the interpretation and or application of this side letter shall be subject to the dispute resolution process set forth in Article 23 of the PLA.

County of Alameda

By:_____
President, Board of Supervisor

Date_____

Building & Construction Trades Council of Alameda County:

By: _____
Andreas Cluver, Secretary-Treasurer

Date 5/21/13

Approved as to Form:
Donna R. Ziegler, County Counsel

By: _____
Deputy County Counsel

MEMORANDUM OF UNDERSTANDING

COUNTY OF ALAMEDA
PROJECT STABILIZATION/COMMUNITY BENEFIT AGREEMENT

Notwithstanding any provision to the contrary in the County of Alameda Project Stabilization/Community Benefit Agreement ("Project Stabilization Agreement"), this memorandum will confirm that work covered by the Project Stabilization/Community Benefits Agreement within the craft jurisdiction of the Elevator Constructors will be performed under the terms of the National Agreement of the International Union of Elevator Constructors, except that Articles 6,11 and 23 of the Project Stabilization Agreement will apply to such work.

County of Alameda

President, Board of Supervisor

Date JUN 11 2013

INTERNATIONAL UNION OF
ELEVATOR CONSTRUCTORS
LOCAL UNION NO. 8

Eric W. McCloud

Date 5-20-2013

Approved as to Form:
Donna R. Ziegler, County Counsel

By: Chaney Braman
Deputy County Counsel

DOCUMENT 00 73 50

APPRENTICESHIP PROGRAM

1. Design Builder and Subcontractors shall comply, and are responsible for ensuring their compliance, with the requirements of Labor Code concerning the employment of apprentices by Design Builder and Subcontractors, including Labor Code §§ 1776, 1777.5 and 1777.6. Willful failure to comply may result in penalties, including loss of the right to bid on or receive public works contracts.

2. Labor Code § 1777.5 requires Design Builder and Subcontractors employing tradespersons in any apprenticeable occupation to apply to the joint apprenticeship committee nearest the site of a public works project and which administers the apprenticeship program in that trade for a certificate of approval. Pursuant to § 1777.5, the certificate will fix the ratio of apprentices to journeypersons that will be used in performance of the contract. The **ratio of apprentices to journeypersons in such cases shall not be less than one to five unless**:

    2.1 Unemployment for the previous three-month period in the area exceeds an average of 15 percent, or

    2.2 The number of apprentices in training in the area exceeds a ratio of 1 to 5, or

    2.3 There is a showing that the apprenticeable craft or trade is replacing at least one-thirtieth of its journeymen annually through apprenticeship training, either on a statewide basis or on a local basis, or

    2.4 Assignment of an apprentice to any work performed under a public works contract would create a condition that would jeopardize his or her life or the life, safety, or property of fellow employees or the public at large, or the specific task to which the apprentice is to be assigned is of a nature that training cannot be provided by a journeyman.

3. Design Builder and its Subcontractors are required to make contributions to funds established for administration of apprenticeship programs if Design Builder or Subcontractors employ registered apprentices or journeypersons in any apprenticeable trade on such contracts and if other contractors on the public works site are making such contributions.

4. Information relative to apprenticeship standards, wage schedules, and other requirements may be obtained from the Director of the California Department of Industrial Relations (DIR), or from the Division of Apprenticeship Standards and its branch offices.

END OF DOCUMENT

SECTION 01 11 13

WORK COVERED BY CONTRACT DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

This Section includes summary of work including:

1.1.1 Work covered by Contract Documents
1.1.2 Work under other contracts
1.1.3 Future work
1.1.4 Work sequence
1.1.5 Cooperation of Design Builder and coordination with other work
1.1.6 Maintenance
1.1.7 Occupancy requirements
1.1.8 Reference Standards
1.1.9 Products or services ordered in advance
1.1.10 County furnished products

1.2 RELATED SECTIONS:

All Contract Documents, including all Division Documents must be reviewed for applicable provisions related to the provisions in this document. Review all sections for work covered by this contract.

1.3 WORK COVERED BY CONTRACT DOCUMENTS

Work of Contract includes, but is not limited to, the design and construction of the **Glenn Dyer Detention Facility (GDDF) Boiler Upgrade Project**. The Contract requires Design Builder to complete all Work on the **GDDF Boiler Upgrade Project** in accordance with the terms and conditions all of the Contract Documents. The Work is briefly described below. This scope includes performance specifications with intent to provide guidance for the Design Builder. Design Builder may recommend changes in performance specifications.

1.3.1 Design Builder shall provide, furnish and perform all necessary planning, engineering, and all other design services of any type, construction management, procurement, permitting and support services, construction, clean-up, and all other building services of any type, provide and furnish all necessary supplies, materials and equipment, and all necessary supervision, labor, and services required for the complete engineering, design, procurement, quality assurance, construction, installation, and all necessary installation, start-up and testing required for a complete, operational, and fully functional **GDDF Boiler Upgrade Project** as described in the Contract Documents. Contractor shall fully commission and turn over the operational boiler plant to the County as a "Turnkey" Project.

1.3.2 Design Builder is required to attend a pre-design meeting to finalize the design scope prior to any starting work on the project.

1.3.3 Design Builder will engineer, procure, and install two Superior Iroquois flextube boilers outfitted with outfitted with Webster Ultra low NOX 15PPM burners to replace three heating hot water heating Bryan boiler located in the basement of the Wiley M. Manuel Courthouse at 661 Washington Street, Oakland. Heating hot water plant scope shall include, but is not limited, to the following:

1.3.3.1 Design Builder shall confirm final boiler capacity require to maintain adequate heating hot water. The County intends to install Intellihot on-demand tempered water system to serve the Court and Jail distribution system which will reduce the capacity required by the heating hot water boilers. The basis of the heating hot water design shall include 175BHP or 200BHP Superior Iroquois.

- Webster Ultra low NOX 15PPM burners

1.3.3.2 Construction will be performed in an occupied building and completed in phases. Heating hot water system shall remain operation at all times to provide heating hot water and tempered water while the new hot water heating plant is engineered, procured, and installed. The new hot water heating plant equipment will be installed, commissioned, and a permit to occupy will be released prior to starting the tempered water system construction.

- No interruption in heating hot water service is permitted on this project. If necessary, Design Builder is responsible for weekend and afterhours work to complete this work without an interruption of service. All shutdowns and subsequent work shall occur on weekends or afterhours

- Design Builder is responsible for installing a temporary heating hot water plant or phasing construction so that at least two existing boilers are in operation at all times

- Design Builder is responsible for coordinating all phases related to this task

- Design Builder shall provide a detailed work plan and schedule to perform this work in phases

1.3.3.3 Remove and dispose of THREE (3) 6,500 MMBtu/hr boilers.

- Coordinate with the building maintenance department (BMD) on which boiler shall be removed and what parts and or equipment (if any) that BMD would like to save and leave on-site prior to demoing boiler

- Demolition of all hot water heating piping and all ancillary equipment not required by the new design

1.3.3.4 Installation shall meet all manufacturer's recommendations, specifications, and requirements. A manufacturer's representative is required to inspect, verify, and approve the installation prior to start-up. Design Builder is

responsible for any corrective measures identified by the manufacturer's representative.

1.3.3.5 All Utility service upgrades required to operate the new boilers per the manufacturer's recommendations, requirements, and, specifications. All utility work shall include, but not limited to, the following:

- Coordination with local utilities on existing conditions and meter upgrades required by new and existing equipment
- Provide all testing and calculations to confirm pre and post conditions
- Engineer, procure, and install all utility upgrades required to supply new and existing equipment
- Engineer, procure, and install new appliance regulators required to operate new boiler plant including any required for the existing boiler that remains

1.3.3.6 Engineer, procure, and install insertion type water flow meters in each boiler's supply and return lines

1.3.3.7 Furnish and install insertion type water flow meters in main loop supply and return for both the GDDF and the Courthouse

1.3.3.8 Engineer, procure, and install temperature sensors in each boiler's supply and return water lines

1.3.3.9 Engineer, procure, and install new manual isolation valves on the supply and return water piping for each new boiler

1.3.3.10 Engineer, procure, and install new automated isolation valves for each new boiler. Valve control shall be integrated to boiler PLC for control.

1.3.3.11 Engineer, procure, and install Siemens LMV 51 Lead/Lag Master Panel

1.3.3.12 Engineer, procure, and install new flue stack for the new boilers

1.3.3.13 Engineer, procure, and install new flue stack gas temperature sensors for each boiler

1.3.3.14 Engineer, procure, and install a new mechanical draft system for each boiler to maintain manufacturer's recommendation and requirements for operating the boilers.

1.3.3.15 Design Builder is responsible for balancing, flushing any new piping, and testing heating hot water system.

1.3.3.16 Engineer, procure, and install new non-resettable gas meter for each boiler and network to energy management control system (EMCS) for monitoring

1.3.3.17 Design Building shall coordinate system start-up so that facility staff are present to observe start-up procedures

1.3.3.18 Provide the services of manufacturer's field representative to conduct a 6-hour training scheduled over the course of 2 days.

- Include 3 hours of in-class time to cover
  - Product Design/Construction
  - Sequence of Operation
  - Troubleshooting Procedures
  - Firing and Assembly/Disassembly of Units
  - Start-up Sequences and Checklists
- Include 3 hours of in the field to review in-class material above

1.3.4 Engineer, procure, and install insulation heating hot water and on-demand piping.

1.3.5 Design Builder will engineer, procure, and install an Intellihot on-demand tempered domestic water system to serve Wiley Manual Courthouse and Glenn Dyer Detention Facility (two separate systems) including all manufacture supplied tellibot systems. The tempered water system scope shall include, but is not limited, to the following:

1.3.5.1 The on-site facility staff would like to keep the heat-exchange system for ultimate redundancy. New system shall be engineered and piped including all transitions and isolation valves to allow the staff to manually isolate new on-demand system and use the new boiler to provide domestic tempered water. Design Builder shall engineer, procure, and install necessary piping and ancillary equipment for this task.

1.3.5.2 Installation shall meet all manufacturer’s recommendations, specifications, and requirements. A manufacturer’s representative is required to inspect, verify, and approve the installation prior to start-up. Design Builder is responsible for any corrective measures identified by the manufacturer’s representative.

1.3.5.3 Design Builder shall exceed the manufacturers sizing recommendation and provide redundancy for both systems

1.3.5.4 Design Builder shall confirm and maintain the existing operation and setpoints with the new system

1.3.5.5 Engineer, procure, and install water flow meters in the supply and return water lines for each system

1.3.5.6 Engineer, procure, and install temperature sensors in the supply and return water lines for each system

1.3.5.7 Design Builder shall pipe the on-demand system for full redundancy. If one system is off-line, the new system will allow staff to isolate and repair the system while the other is operational.

1.3.5.8 Engineer, procure, and install new non-resettable gas meter for each heater and network to energy management control system (EMCS) for monitoring. Manufacturer on-board can be used for this task.

1.3.5.9 Engineer, procure, and install new flue stack and flue stack temperature sensors for the new on-demand system including all roofing/wall modifications/repair. Flue shall be piped through adjacent wall.

1.3.5.10 On-demand system shall be installed on an existing housekeeping pad

1.3.5.11 All Utility service upgrades required to operate the new on-demand system per the manufacturer's recommendations, requirements, and, specifications. All utility work shall include, but not limited to, the following:

- Coordination with local utilities on existing conditions and meter upgrades required by new and existing equipment
- Provide all testing and calculations to confirm pre and post conditions
- Engineer, procure, and install all utility upgrades required to supply new and existing equipment
- Engineer, procure, and install new appliance regulators required to operate new boiler plant including any required for the existing boiler that remains

1.3.5.12 Construction will be performed in an occupied building and completed in phases.

- No interruption in the domestic tempered water service is permitted on this project. Design Builder is responsible for weekend and afterhours work to complete this work to minimize any service interruption
- Design Builder is responsible for coordinating all phases related to this task
- Design Builder shall provide a detailed work plan and schedule to perform this work in phases

1.3.6 Integrate of all new systems, valves, sensors, controllers, and water and gas meters installed or replaced into building energy management control system (EMCS)

1.3.7 Design Builder is responsible for all storage, staging, and parking fees at the site

1.3.8 Design Builder is responsible for all controls, programming, and graphics as described in the contract documents to integrate new and existing systems

1.3.9 Design Builder is responsible for all concrete work and the containment of dust and debris. Any demolition of concrete, brick, and or cement shall include full containment to prevent dust intrusion to adjacent spaces and to protect equipment on-site. Design Builder shall submit a detailed plan and install the necessary engineering control measures to contain dust.

1.3.10 Engineer, procure all materials, and repair all roofing/wall penetrations

1.4 SECTION INTENTIONALLY OMITTED

1.5 SECTION INTENTIONALLY OMITTED

1.6 WORK SEQUENCE

1.6.1 The Design Builder shall coordinate the work sequencing as required in Document 01 12 16 (Work Sequence).

1.6.2 The Design Builder shall construct the Work at times to accommodate County operational requirements during the construction period and shall coordinate its construction schedule and operations with County.

1.7 COOPERATION OF DESIGN BUILDER AND COORDINATION WITH OTHER WORK.

1.7.1 Should construction work, or work of any other nature, be underway by other forces or by other contractors within or adjacent to the limits of the Work at the time of executing the Contract, or should work be performed under the contracts listed in paragraphs 1.3 and 1.4 above, the Design Builder shall cooperate with all such other contractors or forces to the end that any delay or hindrance to their work will be avoided. The cost of such cooperation will be considered as included in the contract price and no additional payment will be made. Design Builder shall coordinate with such other contractors and forces as required by Document 00 72 53 (General Conditions).

1.7.2 County reserves the right to perform other or additional work, within or adjacent to the limits of the Work specified, at any time by the use of other forces. Design Builder shall coordinate with County and any of County's forces, or other forces engaged by County, as required by Document 00 72 53 (General Conditions). In the event that the performance of such other or additional work materially increases or decreases Design Builder's costs, the work and the amount to be paid will be appropriately adjusted as determined by County.

1.7.3 Design Builder shall limit use of the Site for the Work and for construction operations to allow for:

1.7.3.1 County's operations

1.7.3.2 Work by other contractors

1.7.4 Design Builder shall coordinate use of and access to the Site with other contractors, utilities, and County's forces, as required by Document 00 72 53 (General Conditions). County has final authority over coordination, use of premises, and access to the Site.

1.7.5 Design Builder shall cooperate with County and others who may occupy or begin work on Site and any adjacent building prior to completion of Work of this Contract.

1.7.6 Design Builder shall cooperate with contractors for other area work, not included in Contract, but which may take place during construction period.

1.8 MAINTENANCE

Cost of maintenance of systems and equipment prior to Substantial Completion, as defined in Section 01 42 16 (Definitions), is included in the Contract Price and no additional payment will be made therefor.

1.9 OCCUPANCY REQUIREMENTS

1.9.1 Whenever, in the opinion of County, the Work or any part thereof is in a condition suitable for use, and the best interest of County requires such use, County may take Beneficial Occupancy of and connect to, open for public use, or use the Work or such part thereof pursuant to paragraph 13.25 (Beneficial Occupancy) of Document 00 72 53 (General Conditions). In such case, County will inspect the Work or part thereof, and issue a Certificate of Beneficial Occupancy for that part of the Work.

1.9.2 Prior to date of Final Acceptance of the Work by County, all necessary repairs or renewals in Work or part thereof so used, not due to ordinary wear and tear, but due to defective design, materials or workmanship or to operations of Design Builder, shall be made at expense of Design Builder, as required in Document 00 72 53 (General Conditions).

1.9.3 Use by County of Work or part thereof as contemplated by this Section shall in no case be construed as constituting acceptance of Work or any part thereof. Such use shall neither relieve Design Builder of any responsibilities under Contract, nor act as waiver by County of any of the requirements thereof.

1.9.4 County may specify in the Contract Documents that portions of the Work, including electrical and mechanical systems or separate structures, shall be substantially completed on milestone dates prior to the Substantial Completion of all of the Work. Design Builder shall notify County in writing when Design Builder considers any such part of the Work ready for its intended use and substantially complete and request County to issue a Certificate of Substantial Completion for that part of the Work.

PART 2 - PRODUCTS

2.1 REFERENCE STANDARDS

For products specified by association or trade standards, comply with requirements of standards, except where more rigid requirements are specified or are required by applicable codes.

2.2 SECTION INTENTIONALLY OMITTED

2.3 SECTION INTENTIONALLY OMITTED

PART 3 - EXECUTION

3.1 SECTION INTENTIONALLY OMITTED

END OF SECTION

SECTION 01 11 20

DESIGN SERVICES AND DELIVERABLES

PART 1 - GENERAL

1.1 SUMMARY

This Section includes summary of work including:

1.1.1 Design Services
1.1.2 Proposal Phase
1.1.3 Design Development Phase
1.1.4 Construction Documents Phase
1.1.5 Construction Phase
1.1.6 Operation/Project Close Out

1.2 DESIGN SERVICES

1.2.1 Summary of Design and Technical Requirements

1.2.1.1 The Bridging Documents, as modified, if at all, pursuant to paragraph 7.1.2 of Document 00 52 53 (Agreement Form), set forth the County's existing as-built condition, minimum design, and construction requirements for the Project that the Design Builder shall meet in preparing designs and constructing the Project. Design Builder shall prepare designs to meet these requirements and submit deliverables as described in these requirements. The requirements of this Section supplement but do not supersede the requirements of the Bridging Documents.

1.2.1.2 Design Builder shall submit designs and deliverables for review and approval meeting the requirements of the Contract Documents **at fifty percent 50%, 90%, and one hundred percent (100%) Construction Document completion.** Design Builder may elect to create incremental packages of major building components or activities it deems advantageous towards scheduling or permitting efficiencies. If Design Builder elects to create such incremental packages, these shall also be submitted for review and approval. Design Builder shall submit designs and deliverables meeting the requirements of the Contract Documents **at ninety percent (90%) Construction Document completion for review and comment by the Commissioning Agent and or County**, as required in Section 01 91 00 (General Commissioning Requirements).

1.2.1.3 With each submittal required in 1.2.1.2, the Design Builder shall identify changes to design that potentially impact performance and program requirements, and must submit a narrative that clearly delineates any changes to the documents that impact program or performance requirements and describes the full impact of the change. Strike through and bold text in technical specifications is not an acceptable method of identification of

these changes.

1.2.1.4 Unless specifically and expressly limited, Design Builder's scope of work shall include all engineering, procurement and construction necessary to complete the Project.

1.2.2 Summary of Work

1.2.2.1 Unless specifically excluded from this Contract, Design Builder shall provide to County all professional engineering services necessary to perform Design Builder's obligations under the Contract Documents and to complete the Work.

1.2.2.2 Design Builder shall perform the Services using the persons and subconsultants listed in Design Builder's Proposal submittal, and may substitute personnel or subconsultants only upon the County's written consent, which is in County's discretion but will not be unreasonably withheld, and subject to provisions of Section 1.2 of Document 00 72 53 (General Conditions) and Section 6 of Document 00 52 53 (Agreement). Design Builder represents that it and its subconsultants possess all necessary training, qualifications, licenses and permits to perform the Services, and that their performance of the Services will conform to the standard of practice of a professional that specializes in performing professional services for public works of improvement of like nature and complexity to the Project. Design Builder's licensed subconsultants (engineering) shall owe a duty of care to the County in performing their engineering portions of the Services.

1.2.2.3 Design Builder and its subconsultants shall make an independent assessment of the accuracy of the information provided by the County concerning existing conditions (including but not limited to existing utilities and structures and tie-ins to existing or contemplated facilities) and the adequacy of available design information/technical reports. Design Builder shall rely on the results of its own independent investigations and not on information provided by County. Design Builder shall conduct such further investigations of existing conditions as are necessary for Design Builder to perform the Services and shall advise County of any further information, design or other services necessary to complete the Project.

1.2.2.4 Design Builder's design shall provide that all surfaces, fixtures and equipment are readily accessible for maintenance, repair or replacement by ladders, power lifts, cat walks, and the like without exceeding the design loads of the floors, roofs, ceilings, and that such access is in conformance with Cal OSHA. All drawings and specifications in the Construction Documents, structural and electrical design calculations, site data, cost estimates and any other deliverable required by State or Federal law shall comply with State and Federal standards. Design Builder shall comply with any other requirements of Other Agencies Having Jurisdiction, the Contract Documents, or tie-ins to the Project. Design Builder shall comply with the

applicable standard of care of a specialist when preparing Construction Documents to comply with applicable building codes, ordinances, statutes, laws, standards, governmental regulations and private restrictions, including necessary tie-ins, applicable to the Project and the Services, including, but not limited to, all environmental, energy conservation, energy tie-in, and disabled access requirements, regulations and standards of State and local Fire Marshals or Other Authorities Having Jurisdiction over the Project.

1.2.2.5 County at all times shall have the right (but not the duty) to review Design Builder's design work, whether performed by Design Builder or a subconsultant of any tier, and whether in a final or preliminary form, to determine progress and conformance to the requirements of the Contract Documents. In the event the County should ever dispute the conformance of any design work (at any stage) with the intent of the Contract Documents, then the County's determination shall control and the Design Builder and/or its subconsultants shall perform the disputed design services and/or work to completion in accord with the County's determination. The Design Builder shall, however, retain its rights under the procedure of Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions) for claims and disputes, and Design Builder may under that procedure and in its name advance any claim of a subconsultant of any tier.

1.2.2.6 All work associated with permanent and interim wayfinding is the responsibility of the Design Builder.

1.2.2.6.1 The Design Builder's Wayfinding and Signage subconsultant will work closely with the County to develop intuitive wayfinding designs that meets the needs of the clients and staff of the Project. The Wayfinding and Signage subconsultant shall address the following items while developing their design:

a. Branding – Coordinate the graphics and wayfinding to integrate with the overall branding strategy of the Project.

b. Changeability – Design must allow for the cost effective modification as the needs of the Project change over time. Signage should be specified so that the County can easily update signage on site with on site equipment to be provided under this contract.

c. Durability and Maintenance – Signage and wayfinding materials must be extremely durable and easily maintainable. In addition, materials must meet sustainability requirements.

d. Coordination with other disciplines such as architecture, interior design, lighting design, and Alameda County Arts Commission to ensure a coordinated and integrated wayfinding design.

e. Readability and Universal messages that intuitively meet the multi-lingual and multi-cultural clients and staff of the Project who are often under a high level of stress.

f. Sign quality hierarchy to appropriately address the public and service areas of the Project.

g. Code Compliance.

1.2.2.6.2 Permanent Wayfinding – Products may include, but are not limited to, the following:

a. Interior wayfinding that identifies the Project and equipment identity, department identification, room identification, and staff specific signage.

b. Section intentionally omitted.

1.2.2.6.3 Interim Wayfinding – Products may include, but are not limited to, the following:

a. Exterior and site wayfinding that identifies the Project, main entry, vehicular access, and pedestrian access.

c. Interior wayfinding that identifies the Project identity, department identification, room identification, and staff specific signage.

1.2.2.6.4 The Wayfinding and Signage consultant will submit their design for permanent and interim wayfinding to the County in accordance with the provisions of this Section.

1.2.2.7 Design Builder's Interior Design Services.

1.2.2.7.1 Design Builder's Responsibilities also include the preparation of Design Development and Construction Documents and all coordination necessary for accommodation of Furniture Fixtures and Equipment (FF&E) coordination, including coordination of finishes and infrastructure. The Project's design shall meet or exceed the design and performance criteria stipulated in the Bridging Documents.

1.2.2.7.2 The Design Builder shall prepare space plans showing all free standing furniture, equipment and modular systems furniture (MSF) workstations for the Project. Design Builder shall, in consultation with the County, indicate the re-use and placement of new and existing furniture in the space plans. The Design Builder shall coordinate with the County's furniture vendor/installer(s) to confirm dimensions, details, colors, materials and other pertinent information for the MSF

workstations, and coordinate the design and development process with the County's furniture vendor/installer(s) for furniture provided by the County.

1.2.2.7.3 The Design Builder will prepare fully dimensioned floor plans including clear dimension requirements, showing the free standing furniture and MSF requirements including work surfaces, storage units, computer related components and other accessories. The County's free standing furniture and MSF workstation vendor/installer(s) will utilize the Design Builder's drawings to prepare "installation" drawings, which will be reviewed and approved by Design Builder for conformance to the space plan drawings.

1.2.3 Coordination of Engineering Subconsultants/Other Contractors

1.2.3.1 Design Builder shall fully coordinate all engineering disciplines and subconsultants involved in completing the Work, including but not limited to, all subconsultants employed by Subcontractors or suppliers. Design Builder's subconsultants of all tiers shall fully coordinate with Design Builder and all engineering disciplines and subconsultants involved in completing the Work.

1.2.3.1.1 Design Builder shall require its subconsultants to agree in their subcontracts to coordinate with Design Builder and other subconsultants.

1.2.3.1.2 See Document 01 31 19 (Project Meetings) for minimum meeting requirements.

1.2.4 Project Master Schedule

1.2.4.1 Design Builder shall complete or cause to be completed all services required under this Agreement in accordance within Contract Time as defined in Article 3 of Document 00 52 53 (Agreement Form) as well as all approved Project schedules and updates thereto.

1.2.4.2 Design Builder shall provide County with a design and construction schedule that outlines dates and time periods for the delivery of Design Builder's services and requirements for information from the County for the performance of its services. The Project Master Schedule will include activities for completing the Project design documents (through release for construction), significant construction milestones, construction submittals and long lead item procurement, dates for decisions by County affecting schedule, and utility interruptions affecting Project operations. For more detailed information refer to Section 01 32 26 (Schedules and Reports).

1.2.4.3 The Project Master Schedule shall be updated monthly, and shall meet the following requirements:

1.2.4.3.1 The schedule shall fit within and coordinate with the overall Milestone Schedule in Document 01 12 16 (Work Sequence) including any and all design interfaces.

1.2.4.3.2 The schedule shall be in fully operational computer software format as stipulated in Section 01 32 26 (Schedules and Reports).

1.2.4.4 Design Builder shall adjust and cause its retained subconsultants and Subcontractors to adjust activities, personnel levels, and the sequence, duration and relationship of services to be performed in a manner that will comply with the requirements of Section 01 32 26 (Schedules and Reports).

1.2.4.5 Design Builder has no restraints on when it may bid or assign work to Subcontractors.

1.2.5 Deliverables Required Under This Agreement – General

1.2.5.1 All deliverables required under this Agreement shall be submitted in full compliance with the Contract Documents, shall be submitted in at least triplicate (or such greater number as the County may reasonably request) and, when contained on electronic media, shall be submitted in printed form as well as on electronic media when requested by the County. In the event of a conflict between the electronic version and hard copy versions of Design Builder's documents, the hard copy shall govern.

1.2.5.2 Deficiencies in deliverables and modifications to conform to program requirements and modifications to achieve acceptability of deliverables to County, shall be promptly performed as part of the Contract Price.

1.3 PROPOSAL & RECONCILIATION PHASE

1.3.1 Proposal Phase Documents: Design Builder shall submit all Proposal deliverables as stipulated in Document 00 11 19 (Request for Proposals from Design Build Entities) and Document 00 21 00 (RFP Master Deliverable List).

1.4 PARTNERING

This section intentionally omitted.

1.4.1 Period of Service.

1.4.1.1 After reconciliation of the Design Builder's Proposed Design, and upon written authorization from the County, Design Builder shall proceed with the performance of the services called for in the Design Development Phase. The intent of the Design Builder's Design Development Phase submittal is to obtain County approval for design revisions, refinements, and concept elaborations produced by the Design Builder during Design Development of Documents prior to Construction Document Production. Design Builder may elect to submit Design Development Documents

incrementally by major building phases, components, or areas to facilitate economy of schedule provided overall design concept is clear and adhered to.

1.4.1.2 Design Builder shall submit the deliverables required by the Design Development Phase including preliminary design documents and a revised detailed estimate and cost breakdown of Total Project Costs, within the stipulated period required in the Project Master Schedule.

1.4.1.3 Design Builder shall at the outset of this Phase make full written disclosure to County, and obtain County's express written approval of, any proposed innovative, unique, proprietary or sole source design features. County retains full discretion to disapprove such features.

1.4.2 Lifecycle and Alternates

1.4.2.1 Left Intentionally Blank

1.4.2.2 Left Intentionally Blank

1.4.3 General Scope of Project and Final Design Criteria.

1.4.3.1 After consultation with County and on the basis of the Bridging Documents, Design Builder shall determine the general scope, extent and character of the Project and establish final design criteria. Design Builder shall participate in or initiate periodic reviews or workshops as necessary with the County's Representative, County departmental and Project Partner stakeholders, and their consultants during the Design Development Phase. See Document 01 31 19 (Project Meetings) for minimum meeting requirements.

1.4.4 Design Development Documents. Design Builder shall prepare Design Development Documents consisting of final design criteria, preliminary drawings, outline specifications and written descriptions of the Project, BIM Model and as appropriate with renderings and models. These Design Development Documents shall include, but are not limited to:

1.4.4.1 General

1.4.4.1.1 A tabulation of both gross and assignable floor areas as proposed by the Design Builder showing a comparison to the program area requirements established in the Bridging Documents. Such tabulation shall be submitted in both written and electronic format. Room Data Files shall be on CD-ROM disks in either Microsoft Excel spreadsheets or Microsoft Access database files. It is encouraged that floor area tabulation files be linked to Revit and AutoCad drawing files to ensure accuracy through final design stages.

1.4.4.1.2 Where applicable, Design Builder shall provide to County's

Representative for County approval two copies of a color matrix, samples of types and size acceptable to the County's Representative of textures and finishes of all materials in the Work at the Project.

1.4.4.2 Architectural

1.4.4.2.1 Scaled, dimensioned floor plans with final room locations including all openings.

1.4.4.2.2 1/8" scale building sections and elevations showing dimensional relationships, materials and component relationships.

1.4.4.2.3 Identification of fixed equipment to be installed in contract.

1.4.4.2.4 Site plan completely drawn with beginning notes and dimensions including grading and paving.

1.4.4.2.5 Preliminary development of typical major details, wall sections, and large-scale blow-ups.

1.4.4.2.6 Legend showing symbols used on drawings.

1.4.4.2.7 Floor plans identifying location of fixed equipment and quantity and sizes of County furnished major movable equipment and furniture.

1.4.4.2.8 Outline Specification for Architectural, structural, mechanical, electrical, civil and landscape manuals, systems and equipment.

1.4.4.2.9 Typical reflected ceiling development including, as applicable, ceiling grid and heights, showing:

(a) Light fixtures
(b) Ceiling registers or diffusers
(c) Access panels

1.4.4.2.10 Identify proposed roof system, deck, and insulation system and drainage techniques.

1.4.4.2.11 Finish, door, and window schedules.

1.4.5 Structural

1.4.5.1 Structural drawing with all major members located and sized.

1.4.5.2 Establish revised building and floor elevations.

1.4.5.3 Outline specifications.

1.4.5.4 Identify foundation system(s).

1.4.6 Mechanical/Plumbing

1.4.6.1 Heating and cooling load calculations and major duct or pipe runs sized to interface with structural work.

1.4.6.2 Major mechanical equipment scheduled indicating size and capacity.

1.4.6.3 Ductwork and piping substantially located and sized.

1.4.6.4 Devices in ceiling located.

1.4.6.5 Legend showing symbols used on drawings.

1.4.6.6 Outline Specifications indicating quality level and manufacturer of equipment and fixtures.

1.4.7 Electrical

1.4.7.1 Written design criteria for electrical systems.

1.4.7.2 All lighting fixtures located and scheduled showing all types and quantities of fixtures to be used, including proposed lighting levels for each usable space.

1.4.7.3 All major electrical equipment scheduled indicating size and capacity.

1.4.7.4 Complete electrical distribution including a one-line diagram indicating final location of switchboards, communications, controls (high and low voltage), motor control centers, panels, transformers and emergency generator.

1.4.7.5 Legend showing all symbols used on drawings.

1.4.7.6 Outline Specifications indicating quality level and manufacturer.

1.4.8 Civil

1.4.8.1 Further refinement of Proposal Phase documents of onsite and offsite utility systems for sewer, electrical, telephone, water, storm drain and fire water. Includes, without limitation, pipe sizes, materials, invert elevation location and installation details.

1.4.8.2 Further refinement of Proposal Phase roadways, parking and storm drainage improvements. Includes details and large scale drawings of curb and gutter, manhole, thrust blocks, paved parking and roadway sections.

1.4.8.3 Outline Specifications indicating quality level and manufacturer.

1.4.9 Landscape

1.4.9.1 Left Intentionally Blank

1.4.9.2 Left Intentionally Blank

1.4.10 This section intentionally omitted.

1.4.11 Deliverables. Design Builder shall **provide three (3) hard copies and one (1) electronic copy** of the same on a CD for review by the County at the one hundred percent (100%) Design Development Phase.

1.4.12 Review of the Final Design by County. Design Builder shall submit final design to County (providing the County with **three (3) hard copies and one electronic copy** of the same on a CD for review). Design Builder shall participate and cooperate fully in a review of the Final Design by County and any consultants engaged by it. Design Builder shall make full written disclosure to County, and obtain County's express written approval of, any proposed innovative, unique, proprietary or sole source design features.

1.4.13 Constructability Review. The County may conduct a constructability review of the 100% Design Development documents upon the Design Builder's completion of its 100% Design Development documents. The Design Builder will provide written responses to County reviewer comments that identify how issues will be resolved by the Design Builder.

1.4.14 This section intentionally omitted.

1.5 CONSTRUCTION DOCUMENTS PHASE

1.5.1 Period of Service

1.5.1.1 After acceptance by the County of the required deliverables in the Design Development Phase, and upon written authorization from the County, Design Builder shall proceed with the performance of the services called for in the Construction Documents Phase.

1.5.1.2 Design Builder shall submit the deliverables required by the Construction Documents Phase including preliminary design documents, within the stipulated period required in the Project Master Schedule.

1.5.2 Construction Documents. On the basis of the accepted Design Development Documents, Design Builder shall prepare for incorporation in the Contract Documents final Construction Documents to show the work to be furnished and performed by Design Builder. Construction Documents shall set forth in detail the requirement for construction of all work to be performed by Design Builder. Construction Documents shall not supersede the Contract Documents where the Contract Documents contain a more stringent requirement.

1.5.2.1.1 Architectural

(a) Completed site plan.

(b) Completed floor plans, elevations, and sections.

(c) Architectural details and large blow-ups completed.

(d) Finish, door, and hardware schedules completed, including all details.

(e) Site utility plans completed.

(f) Fixed equipment details and identification completed.

(g) Reflected ceiling plans completed.

1.5.2.1.2 Structural

(a) Structural floor plans and sections with detailing completed.

(b) Structural calculations completed.

1.5.2.1.3 Mechanical

(a) Large scale mechanical details completed.

(b) Mechanical schedules for equipment completed.

(c) Completed mechanical schematic for environmental cooling and exhaust equipment.

(d) Complete energy conservation calculations and report necessary for compliance with California Title 24 energy requirements.

1.5.2.1.4 Electrical

(a) Lighting and power plan showing all switching and controls. Fixture schedule and lighting details completed.

(b) Distribution information on power consuming equipment, including lighting, power, signal and communication device(s) branch wiring completed.

(c) All electrical equipment schedules completed.

(d) Special system components plans completed.

(e) Electrical load calculations completed.

1.5.2.1.5 Civil

(a) All site plans, site utilities, parking and roadway systems completed.

1.5.2.1.6 Landscaping

(a) All landscape, hardscape, and irrigation plans completed.

1.5.3 Attend Required Meetings. Attend meetings with representatives of the County and its designated consultants, Other Agencies Having Jurisdiction, and appropriate governmental agencies and provide information and diagrams to fully describe the Project.

1.5.4 Deliverables: Design Builder shall **submit 3 hard copies and one (1) electronic copy** of the same on a CD for review **at the fifty percent (50%) and one hundred percent (100%) Construction Documents Phase.**

1.5.5 Specifications shall be prepared in conformance with the 2004 edition Master Format of the Construction Specification Institute. Design Builder shall have complete responsibility to secure timely review and approval by all Other Agencies Having Jurisdiction. The same engineering team (and team personnel) that prepared the design deliverables submitted to authorities with jurisdiction shall complete the Construction Documents, subject to the provisions of Section 1.2 of Document 00 72 53 (General Conditions) and Section 6 of Document 00 52 53 (Agreement).

1.5.6 Compliance with Codes, Regulations and Requirements. Prepare Construction Documents in full compliance with the Contract Documents, applicable building codes, ordinances, standards, governmental regulations and private restrictions, applicable to the Work.

1.5.7 Make full written disclosure to County, and obtain County's express written approval of, any proposed innovative, unique, proprietary or sole source design features.

1.5.8 Warranty. Design Builder warrants to County that the final design, as expressed in the Construction Documents:

1.5.8.1 will be constructible, workable, serviceable and within the Design Builder's detailed estimate of costs and schedule;

1.5.8.2 will comply in all respects with the requirements of the Contract Documents.

1.5.8.3 will not call for the use of hazardous or banned materials.

1.5.8.4 will fully comply with applicable building codes, ordinances, standards, governmental regulations and private restrictions, applicable to the Work.

1.5.9 Constructability Review. The County may conduct a constructability review of the 50% and 100% Construction Documents upon the Design Builder's completion of its 50% and 100% Construction Documents. The Design Builder will provide written responses to reviewer comments that identify how issues will be resolved by the Design Builder.

1.5.10 Cost Estimate. This section intentionally omitted.

1.6 CONSTRUCTION PHASE

1.6.1 Upon County's acceptance of Design Builder's Construction Documents for technical divisions or other portions of the Work as Design Builder and County may agree, Design Builder may commence construction of the Work shown.

1.6.2 General Administration of Construction. Design Builder's and any architectural, design, and engineering subconsultants, shall make regular visits to the site at intervals appropriate to the various stages of construction as necessary to assure that construction conforms to the final design of the Construction Documents as approved.

1.6.3 Quality Control and Reporting. Design Builder's and any architectural, design, and engineering subconsultants, shall participate fully in Design Builder's required quality control program and shall have a duty to advise Design Builder and County in writing of any observations of defective work, work not in conformance with Construction Documents, and lack of progress consistent with the schedule of work in areas associated with their services. See Section 01 45 00 (Quality Control).

1.6.4 Design Builder's, and any architectural, design, and engineering subconsultants, shall establish and maintain to the satisfaction of County, a computer database compatible with databases maintained by County. The Design Builder's database shall maintain complete and accurate records regarding its activities related to fulfilling the requirements of Section 01 45 00 (Quality Control). Design Builder shall make such database available to County at all reasonable times and turn over the database in both hard and electronic form to County upon completion or termination of this Agreement.

1.6.5 Together with County, Design Builder and any Design Builder's architectural, design, and engineering subconsultants, shall visit the Project to observe any apparent defects in the construction, correct such deficiencies, and supply information as needed regarding replacement, correction, or diminished value of defective work.

1.6.6 Left Intentionally Blank

1.7 OPERATION/PROJECT CLOSE-OUT PHASE

1.7.1 Operation/Close Out. During the Operation/Project Close-Out Phase, Design Builder and Design Builder's architectural, design, and engineering subconsultants shall, when requested by County, provide all necessary architectural, design and engineering services, including services of its architectural, design and engineering subconsultants, for:

1.7.1.1 Refining, adjusting and correcting of any equipment or systems.

1.7.1.2 Start-up, testing and placing in operation all equipment and systems. See Section 01 91 00 (General Commissioning Requirements).

1.7.1.3 Completion of punchlist work and observation of any apparent defects in the completed construction, correction of such deficiencies, and supply information as needed regarding replacement, correction, or diminished

value of defective work.

1.7.1.4 Training County's and Project Partner's staff to operate and maintain all equipment and systems.

1.7.1.5 Assisting County in developing systems and procedures for control of the operation and maintenance of and record keeping for the Project.

1.7.1.6 Preparation of electronic record sets and sets of reproducible record prints or Drawings showing those changes made during the construction process, based on the marked-up prints, Drawings and other data.

1.8 DESIGN BUILDER'S OBLIGATION FOR FINISHED CONSTRUCTION

1.8.1 County's right to review Design Builder's design including, but not limited to, Construction Documents, shop drawings, samples and submittals, as specified in the Contract Documents, shall not relieve Design Builder of its responsibility for a complete design and construction complying with the requirements of the Contract Documents; but rather, such review shall be in furtherance of the County's monitoring and accepting the design as developed and issued by the Design Builder, consistent with these Contract Documents. Design Builder's responsibility to design and construct the Project in conformance with the Contract Documents including, but not limited to, the applicable performance standard and any fully executed change orders, shall be absolute. Such duty may not be altered or diminished by any action other than a signed change order.

1.8.2 Auto CAD, Revit, and Other Electronic Data. Provide all electronic files of all Construction Documents drawings including as-bid, as-built, and all record Drawings, on Compact Disks. Prepare electronic record sets and sets of reproducible record prints or Drawings showing those changes made during the construction process. Electronic data shall conform to County requirements for compatibility with County equipment and software.

PART 2 - PRODUCTS

This section intentionally omitted.

PART 3 - EXECUTION

This section intentionally omitted.

END OF SECTION

SECTION 01 12 16

WORK SEQUENCE

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section discusses the sequencing of the major site preparation, construction, and project completion components of the Project.

1.1.2 Related Sections include the following:

1.1.2.1 Section 01 11 13 (Work Covered by Contract)

1.1.2.2 Section 01 11 20 (Design Services and Deliverables)

1.1.2.3 Section 01 32 16 (Construction Progress Schedule)

1.2 SEQUENCING

1.2.1 The Design Builder shall sequence the Work to accommodate site logistics, site utilization and minimize impact to County operations, neighbors, and public roadways, and facilitate the required project approvals to overlap work.

1.2.2 Design Builder shall be responsible for developing the detailed plan for phasing and sequencing for completion of the Work for the Project. Final phasing and sequencing must be approved by the County.

1.2.3 The Design Builder's phasing shall fit within and coordinate with the Contract Times specified in Section 3.4 of Document 00 52 53 Agreement Form, and within constraints outlined in the Contract Documents.

1.3 Construction Phasing or sequencing is a specified work schedule that coordinates the timing of construction activities, implementation plans, and the installation of the new work. This work will be completed in at least two phases to minimize the impact on the Environmental Health Headquarters' operations. Each phase is identified herein.

1.3.1 Design-Builder shall develop and implement a Phasing Plan and schedule, based on the information provided herein, that results in meeting or exceeding construction schedule within six months. Contractor shall submit plan for review and approval prior to a pre-construction meeting. The phasing plan shall incorporate the requirements of the Indoor Air Quality (IAQ) Management Plan. The phasing construction plan shall include, but is not limited to:

1.3.1.1 Phases with schedules for each type of work

1.3.1.2 Occupant and Workstation Transitions

1.3.1.3 Commissioning including TAB and associated reports

1.3.1.4 IAQ plan implementation

1.3.1.5 Cleaning

1.3.1.6 Order and timing of construction

1.3.2 The construction of each phase cannot be constructed and available for use until the prior phased if completed, fully commissioned, and ready to occupy and or use. Any one phase cannot be started until the IAQ plan has be review, implemented, and Contractor has written authorization to commence construction.

1.3.3 All equipment not specified in the new design shall be removed and disposed unless authorized by owner in writing.

1.3.4 Design-builder will be responsible to closely monitor and execute different phases of the project, coordination of work within different phases to avoid any demobilization and re-mobilization cost. County will not be responsible for any additional demobilization and re-mobilization cost.

1.3.5 Modification to phases may be allowed with written approval by Owner

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

SECTION 01 14 00

WORK RESTRICTIONS

PART 1 - GENERAL

1.1 Related Sections include the following: Section 01 11 13 (Work Covered by Contract Documents) for procedures regarding utility interruptions, and Design Builder's use of the Site.

1.1.1.1 Section 01 41 00 (Regulatory Requirements) for related codes.

1.1.1.2 Section 01 31 00 (Project Management and Coordination) for meeting and communication.

1.1.1.3 Section 01 45 00 (Quality Control) for QC plan and personnel.

1.1.1.4 Section 01 73 32 (Selective Demolition) for pre-demolition conference and understanding of project conditions.

1.1.1.5 Section 01 42 00 (References) for reference standards, 01 42 13 (Abbreviations) for abbreviations and 01 42 16 (Definitions) for definitions used in the Contract Documents.

1.1.1.6 Document 00 73 16 (Insurance).

1.2 SUBMITTALS

1.2.1.1 Design Builder shall make submittals as provided in Section 01 33 00 (Submittal Procedures).

1.3 TRAINING

1.3.1 Provide training and orientation regarding safety and other procedures for all personnel employed by the Design Builder, subcontractors, and any other personnel entering the Site in support of the Design Builder. Design Builder shall provide a training log during the course of the Project.

1.4 SITE SECURITY and SECURITY CLEARANCE

1.4.1 Design Builder and all Subconsultants and Subcontractors are required to follow all security procedures required by the Alameda County Sheriff's Office (ACSO) as outlined in DOCUMENT 00 73 14 SECURITY PROCEDURES. Design Builder and all Subconsultants and Subcontractors are required to submit a ACSO site clearance form and obtain and maintain clearance during the project as required by DOCUMENT 00 73 15 SITE CLEARANCE.

1.5 UTILITY INTERRUPTIONS AND PRIOR NOTIFICATION

1.5.1 Shutdown or interruption of any utility system requires **written notice a minimum of seven (7) Business Days in advance.** Design Builder is not authorized to interrupt

utility services without this advance notification and the prior approval of the County's Representative.

1.6 ENVIRONMENTAL CONTROLS

1.6.1 **Design Builder shall submit an Indoor Air Quality plan per Document 01 35 23 for County review and approval prior to any construction activities.**

1.6.2 Noise: During construction, shall disrupt county operations at the project site. The Design Builder shall develop a Construction Noise Management Plan that includes mitigation measures as described in the IAQ plan, for approval, which demonstrates noise considerations for adjacent facilities.

1.6.3 Dust: The Design Builder shall prepare an IAQ submittal that identifies source air pollution and related pollution reduction measures. The Design Builder shall immediately notify the County's Representative of contaminants. Design Builder shall stop work at their expense to resolve and mitigate an indoor air quality issues.

1.6.4 Demolition: The Design Builder shall plan any demolition activities to minimize environmental impacts on Project operations in accordance with Section 01 73 32 (Selective Demolition). The Design Builder is required to recycle demolished buried building materials, see Section 01 74 19 (Construction Waste Management and Disposal), but must do so in compliance with these Contract Documents and regulations. In addition to the above mitigation measures, the following applies to demolition activities:

1.6.4.1 Identify the material that are recyclable and if possible, send to recycling facility.

1.6.4.2 All surface area of structures shall be saturated with water prior to start of demolition.

1.6.4.3 Waste and debris shall be segregated, processed, and recycled to minimize waste volume and number of trips.

1.6.4.4 If debris is to be separated for recycling purposes, a jaw-crusher type attachment shall be used instead of a concrete breaker to separate concrete and rebar (if this is not feasible, perhaps negotiate with local concrete and other recycling facilities to meet recycling requirements).

1.6.5 Odors and Fumes: Design Builder shall install all necessary engineering control and contain odors and fumes from migrating to adjacent spaces and floors. Fumes and odors shall not be allowed to migrate to adjacent areas and floors. The Design Builder shall immediately notify the County's Representative of fumes and or odors. Design Builder shall stop work at their expense to resolve and mitigate an indoor air quality issues.

1.7 SHIPMENTS AND MATERIALS

1.7.1 Equipment and materials shall not be shipped to the Site unless specific arrangements are made for receipt and acceptance of these items. When such shipments are authorized, they are the total responsibility of the Design Builder. The County accepts no

responsibility for the receipt, storage, or protection of the Design Builder's materials and equipment.

1.8 SALVAGE AND DISPOSAL

1.8.1 All existing property of the County that is removed from the construction site and has been identified to be salvaged by the County shall be delivered to a secure site as specified by the County's Representative.

1.8.2 Construction debris, or material that has no redeemable value, is to be placed in Design Builder-furnished refuse bins for safe and legal removal from the premises.

1.9 PARKING

1.9.1 The County will meet with the Design Builder to determine parking requirements.

1.9.2 The primary parking and storage area shall be designated areas.

1.9.3 Design Builder and related personnel shall park in authorized areas only.

1.10 SANITARY

1.10.1 Design Builder shall provide temporary toilet facilities adjacent to all areas where Work is being performed.

1.10.2 Sanitary Facilities shall be in accordance with OSHA regulations.

1.11 FOOD

1.11.1 Construction personnel shall police their own areas. All cups, cans, paper, wrappers, and discarded food must be placed in trash receptacles at the end of each break.

1.11.2 Design Builder shall submit the proposed location of any break and eating areas, which shall be outside of areas under construction, to the County for approval.

1.12 PHONES

1.12.1 Construction personnel shall pay for separate phone services.

1.13 SMOKING AND TOBACCO

1.13.1 Smoking is not permitted within the facilities under construction.

1.13.2 Smoking is permitted in designated areas only and not within 50 feet of the project site. Design Builder to contact County for approved smoking areas.

1.13.3 All ashes and cigarette butts must be deposited in approved receptors.

1.13.4 No chewing tobacco or spitting of tobacco is permitted.

1.14 SAFETY

1.14.1 General

Design Builder shall prepare a Project Site Specific Safety Plan and comply with all requirements.

1.14.1.1 Operation of cranes, derricks, and hoists should be in accordance with manufacturer's recommendations and appropriate ANSI and Cal-OSHA regulations.

1.14.1.2 All construction operations and personnel are subject to Cal-OSHA and Environmental Health & Safety regulations.

1.14.2 Fire Prevention During Welding, Cutting, and Other Hot Work

1.14.2.1 Hot work includes welding, heat treating grinding, thawing pipe, powder-driven fasteners, hot riveting, and similar applications producing a spark, flame, or heat.

1.14.2.2 Hot work shall be performed in a designated area that is approved for hot work by the County.

1.14.2.3 The Design Builder shall ensure that only specialized apparatus, such as torches, manifolds, regulators, or pressure-reducing valves, and acetylene generators, are used.

1.14.2.4 The Design Builder shall ensure that all individuals involved in hot work are:

1.14.2.4.1 Trained in the safe operation of their equipment and the safe use of the process.

1.14.2.4.2 Have an awareness of the inherent risks involved and understand the emergency procedures in the event of a fire.

1.14.2.4.3 Are aware if any special risks, such a flammable materials or hazardous conditions at the hot work site.

1.14.3 Project Inspector

1.14.3.1 Provision of inspectors by the County, if any, pursuant to provisions of this section shall be subject to the following:

1.14.3.1.1 Design Builder shall allow inspectors full access to the Site and the Work at all times Work is in progress.

1.14.3.1.2 Design Builder shall not take any direction, approvals or disapprovals from inspectors.

1.14.3.1.3 Design Builder shall not rely on inspectors to ensure Work is completed in accordance with Contract Documents.

1.14.3.2 Acts or omissions of any inspector (including, without limitation, inspector's

failure to observe or report deficiencies in Design Builder's Work) shall not relieve Design Builder from its responsibility to complete Work in accordance with Contract Documents.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

SECTION 01 21 00

ALLOWANCES

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section includes administrative and procedural requirements governing allowances.

1.1.1.1 Certain items are specified in the Contract Documents by allowances. These allowances have been established to accommodate work for which specific requirements and quantities are unknown. Each allowance is for a lump sum. The allowances are for:

See paragraph 3.3 below for a complete description of each allowance.

1.1.1.2 Include in the proposed Contract Price all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or firms as County may direct.

1.1.2 Related Sections include the following:

1.1.2.1 Document 00 31 32 (Geotechnical Data and Existing Conditions)

1.1.2.2 Section 01 26 00 (Contract Modification Procedures) for procedures for submitting and executing Change Orders for allowances

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

3.1 DESIGN OF ALLOWANCE ITEMS

3.1.1 The cost of all engineering and environmental consulting services required in the Related Sections, above, associated with the allowance items is to be included in the Allowance amount stated in paragraph 3.3 (Schedule of Allowances).

3.2 PAYMENT FOR ALLOWANCE ITEMS

3.2.1 Payment for Allowance items shall be calculated by multiplying the unit prices set forth below by the actual quantity of work performed. Design Builder shall not include, or be permitted to recover, as part of any Allowance other costs arising out of or connected with the performance of the Allowance Work.

3.2.2 When Design Builder has performed any work covered by an Allowance, Design Builder shall submit a cost proposal in accordance with Section 01 26 00 (Contract Modification Procedures) as part of an application for payment. When the County has reviewed and

approved the cost proposal the amount to be paid shall be deducted from the amount of the Allowance.

3.2.3 If the total amount paid to the Design Builder for work covered by Allowance No. One exceeds the total amount of the Allowance the County will prepare a Change Order using the unit prices to calculate the amount of the change. If the total amount paid to the Design Builder for work covered by Allowance No. One is less than the total amount of the Allowance the balance will be credited to the County as a deductive Change Order.

3.3 SCHEDULE OF ALLOWANCES

3.3.1 $_____ for the additional disposal fee related to any soil containing naturally occurring asbestos above the permissible limit.

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 GENERAL

1.1.1 Only Design Builder or the County may initiate changes in scope of Work or deviation from Contract Documents.

1.1.1.1 Design Builder may initiate changes by submitting a Request for Information (RFI), Notice of Concealed or Unknown Conditions, Notice of Hazardous Waste Conditions.

1.1.1.1.1 RFIs shall be submitted to seek clarification of or request changes in the Contract Documents.

1.1.1.1.2 Notices of Concealed or Unknown Conditions shall be submitted in accordance with Document 00 72 53 (General Conditions).

1.1.1.1.3 Notices of Hazardous Waste Conditions shall be submitted in accordance with Document 00 72 53 (General Conditions).

1.1.1.2 The County may initiate changes in the Work by issuing a Supplemental Instruction, which may revise, add to or subtract from the Work.

1.1.1.3 The County may initiate changes in the Work or Contract Time by issuing RFPs to Design Builder. Such RFPs will detail all proposed changes in the Work and request a quotation of changes in Contract Price and Contract Time from Design Builder.

1.1.1.4 The County may also, by Construction Change Directive ("CCD"), order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Price and Contract Time being adjusted accordingly. A CCD shall be used in the absence of total agreement on the terms of a Change Order and may, upon notice, consist of a Change Order executed by the County only.

1.1.2 Allowances: Procedures in this Section shall be used to submit and execute Change Orders for allowances.

1.2 PROCEDURES

1.2.1 Cost Proposal and Procedures: Whenever Design Builder is required in this Section to prepare a Cost Proposal, and whenever Design Builder is entitled to submit a Cost Proposal and elects to do so, Design Builder shall prepare and submit to the County for consideration a Cost Proposal using the form attached to this Section. All Cost Proposals must contain a complete breakdown of actual, current costs of credits, deducts,

and extras; and itemizing materials, labor, taxes, overhead and profit. All Subcontractor Work shall be so indicated. Individual entries on the Cost Proposal form shall be determined as provided in paragraphs 1.3 and 1.4 of this Section. After receipt of a Cost Proposal with a detailed breakdown, the County will act promptly thereon.

1.2.1.1 If the County accepts a Cost Proposal, the County will prepare a Change Order for the County and Design Builder signatures, using the Change Order Form attached hereto.

1.2.1.2 If Cost Proposal is not acceptable to the County because it does not agree with cost and/or time included in Cost Proposal, the County will submit in a response what it believes to be a reasonable cost and/or adjustment, if any. Except as otherwise provided in this Section, Design Builder shall have **seven (7) Days in which to respond to the County with a revised Cost Proposal.**

1.2.1.3 When deadline necessity to proceed with a change does not allow the County sufficient time to conduct a proper check of a Cost Proposal (or revised Cost Proposal), the County may order Design Builder to proceed on a basis to be determined at earliest practical date. In this event, value of change, with corresponding equitable adjustment to Contract, shall not be more than increase or less than decrease proposed.

1.2.2 Request for Information: Whenever Design Builder requires information regarding the Project or Contract Documents, or receives a request for information from a Subcontractor, Design Builder may prepare and deliver an RFI to the County. Design Builder shall use RFI format provided by the County. Design Builder must submit time critical RFIs **at least thirty (30) Days before scheduled start date of the affected Work activity.** Design Builder shall reference each RFI to an activity of Progress Schedule and shall note time criticality of the RFI, indicating time within which a response is required. Design Builder's failure to reference RFI to an activity on the Progress Schedule and note time criticality on the RFI shall constitute Design Builder's waiver of any claim for time delay or interruption to the Work resulting from any delay in responding to the RFI.

1.2.2.1 The County will respond **within ten (10) Days from receipt of RFI** with a written response to Design Builder. Design Builder shall distribute response to all appropriate Subcontractors.

1.2.2.2 If Design Builder is satisfied with the response and does not request change in Contract Price or Contract Time, then the response shall be executed without a change.

1.2.2.3 If Design Builder believes the response is incomplete, Design Builder shall issue another RFI (with the same RFI number with the letter "A" indicating if it is a follow-up RFI) to the County clarifying original RFI. Additionally, the County may return RFI requesting additional information should original RFI be inadequate in describing condition.

1.2.2.4 If Design Builder believes that the response results in change in Contract Price or Contract Time, Design Builder shall notify the County in writing **within seven (7) Days after receiving the response, or within seven (7) Days of becoming aware of such changes in Contract Price or Contract Time.** If the County disagrees with Design Builder, then Design Builder may give notice of intent to submit a Claim as described in Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions), and **submit its Claim within thirty (30) Days.** If the County agrees with Design Builder, then Design Builder must submit a Cost Proposal **within seven (7) Days of receiving the County's agreement.** Design Builder's failure to deliver either the foregoing notice and Claim or Cost Proposal by the respective deadlines stated in the foregoing sentences shall result in waiver of the right to file a Cost Proposal or Claim.

1.2.3 Supplemental Instruction: the County may issue Supplemental Instruction to Design Builder.

1.2.3.1 If Design Builder is satisfied with Supplemental Instruction and does not request change in Contract Price or Contract Time, then Supplemental Instruction shall be executed without a Change Order.

1.2.3.2 If Design Builder believes that Supplemental Instruction results in change in Contract Price or Contract Time, then Design Builder must submit a Cost Proposal to the County **within twenty-one (21) Days of receiving the Supplemental Instruction.**

1.2.4 Construction Change Directives: If at any time the County believes in good faith that a timely Change Order will not be agreed upon using the foregoing procedures the County may issue a CCD with its recommended cost and/or time adjustment. Upon receipt of CCD, Design Builder shall promptly proceed with the change of Work involved and concurrently respond to the County's CCD **within ten (10) Days.**

1.2.4.1 Design Builder's response must be any one of following:

1.2.4.1.1 Return CCD signed, thereby accepting the County's response, time and cost.

1.2.4.1.2 Submit a (revised if applicable) Cost Proposal with supporting documentation (if applicable, reference original Cost Proposal number followed by letter A, B, etc. for each revision), if the County so requests.

1.2.4.1.3 Give notice of intent to submit a Claim as described in Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions), and submit its Claim **within thirty (30) Days.**

1.2.4.2 If the CCD provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

1.2.4.2.1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation.

1.2.4.2.2 Unit prices stated in the Contract Documents or subsequently agreed upon.

1.2.4.2.3 Cost to be determined in a manner agreed.

1.2.4.2.4 County directs the Design Builder to perform the work as "Force Account." Upon receiving a "Force Account' directive Design Builder shall diligently perform the work by utilizing the time and material method. Daily time and verification on all labor hours and materials shall be submitted and approved by the County.

1.2.4.3 CCD signed by Design Builder indicates the agreement of Design Builder therewith, including adjustment in Contract Price and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

1.2.4.4 If Design Builder does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the method and the adjustment shall be determined by the County on the basis of reasonable expenditures and savings of those performing the Work attributable to the change including, in case of an increase in the Contract Sum, a reasonable allowance for overhead and profit. If the parties still do not agree on the price for a CCD, Design Builder may file a Claim per Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions). Design Builder shall keep and present, in such form as the County may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this paragraph shall be limited to those provided in paragraphs 1.3 and 1.4 of this Section 01 26 00.

1.2.4.5 Pending final determination of cost to the County, amounts not in dispute may be included in Applications for Payment. The amount of credit to be allowed by Design Builder to the County for a deletion or change that results in a net decrease in the Contract Price shall be actual net cost as confirmed by the County. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase or decrease, if any, with respect to that change.

1.2.5 County RFP: Design Builder shall furnish a Cost Proposal **within seven (7) Business Days of the County's RFP.** Upon approval of RFP, the County will issue a Change Order directing Design Builder to proceed with extra Work. If the parties do not agree on the price for an RFP, the County may either issue a CCD or decide the issue per Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions). Design Builder shall perform the changed Work notwithstanding any claims or disagreements of any nature.

1.2.6 Differing Site Conditions: Design Builder shall submit Notices of Differing Site Conditions to resolve problems regarding differing underground Site conditions encountered in the execution of the Work pursuant to paragraph 13.4 (Notice of Concealed or Unknown Conditions) of Document 00 72 53 (General Conditions), which shall govern. If the County determines that a change in Contract Price or Contract Time is justified, the County will issue RFP or CCD.

1.2.7 Hazardous Waste Conditions: Design Builder shall submit Notices of Hazardous Waste Conditions to resolve problems regarding hazardous materials encountered in the execution of the Work pursuant to paragraph 13.5 (Notice of Hazardous Waste or Materials Conditions) of Document 00 72 53 (General Conditions), which shall govern. If the County determines that a change in Contract Price or Contract Time is justified, the County will issue RFP or CCD.

1.2.8 Compensation of Design Fees: For change orders resulting from County requested changes or changes resulting from differing or unknown conditions, Design Builder shall be compensated a total fee not to exceed the percentage specified herein of the direct change order costs (including allowed mark-ups) for all design services. Design service fee calculation shall not include costs associated with time extensions. Allowable not to exceed fee percentage for change orders:

Direct Change Order Cost	Not to Exceed Design Fee %
$1 - $75,000	10.00%
$75,001 - $225,000	9.00%
$225,001 - $375,000	8.00%
$375,001 - $525,000	7.00%
$525,001 - $675,000	6.00%
$675,001 - $825,000	5.00%
$825,001 - $1,000,000	4.00%

1.3 COST DETERMINATION

1.3.1 Total cost of extra Work or of Work omitted shall be the sum of labor costs, material costs, equipment rental costs, specialist costs, and all other direct and actual costs as defined herein plus overhead and profit as allowed herein. This limit applies in all cases of claims for extra Work, whether calculating Cost Proposals, Change Orders or CCDs, or calculating contract claims of all types. Design Builder may recover no other costs arising out of or connected with the performance of extra Work, of any nature. No special, incidental or consequential damages may be claimed or recovered against the County, its representatives or agents, whether arising from breach of Contract, negligence, strict liability, or any other legal or equitable theory, unless specifically authorized in the Contract Documents.

1.3.2 Overhead and Profit: Overhead shall be as defined in paragraph 1.7 of this Section 01 26 00

1.3.2.1 Overhead and profit on labor for extra Work shall be ten percent (10%).

1.3.2.2 Overhead and profit on materials for extra Work shall be ten percent (10%).

1.3.2.3 Overhead and profit on equipment rental for extra Work shall be ten percent (10%).

1.3.2.4 When extra Work is performed by a first tier Subcontractor, Design Builder shall receive a five percent (5%) markup on Subcontractor's total costs of extra Work. First tier Subcontractor's markup on its Work shall not exceed ten percent (10%).

1.3.2.5 When extra Work is performed by a lower tier Subcontractor, Design Builder shall receive a total of five percent (5%) markup on the lower tier Subcontractor's total costs of extra Work. Design Builder and first tier Subcontractors and lower tier Subcontractors shall divide the ten percent (10%) markup as mutually agreed.

1.3.2.6 Notwithstanding the foregoing, in no case shall the total markup on any extra Work exceed fifteen percent (15%) of the direct cost, notwithstanding the actual number of Contract tiers.

1.3.2.7 On proposals covering both increases and decreases in Contract Sum, overhead and profit shall be allowed on the net increase only as determined in this paragraph 1.3. When the net difference is a deletion, no percentage for overhead profit and commission shall be allowed, but rather a deduction shall apply.

1.3.2.8 The markup shall include profit, small tools, cleanup, supervision, warranties, cost of preparing the cost proposal, jobsite overhead, and home office overhead. No markup will be allowed on taxes, insurance, and bonds.

1.3.3 Taxes:

1.3.3.1 All State sales tax, use tax, and Alameda County taxes shall be included.

1.3.3.2 Federal and Excise tax shall not be included.

1.3.4 Owner-Operated Equipment: When owner-operated equipment is used to perform extra Work, Design Builder will be paid for operator as follows:

1.3.4.1 Payment for equipment will be made in accordance with paragraph 1.4.3 below.

1.3.4.2 Payment for cost of labor will be made at no more than rates of such labor established by collective bargaining agreements for type of worker and location of Work, whether or not owner-operator is actually covered by such an agreement.

1.3.5 Accord and Satisfaction: Every Change Order and accepted CCD shall constitute a full accord and satisfaction, and release, of all Design Builder (and if applicable, Subcontractor) claims for additional time, money or other relief arising from or relating to the subject matter of the change including, without limitation, impacts of all types,

cumulative impacts, inefficiency, overtime, delay, and any other type of claim. Design Builder may elect to reserve its rights to disputed claims arising from or relating to the changed Work at the time it signs a Change Order or approves a CCD, but must do so expressly in a writing delivered concurrently with the executed Change Order or approved CCD, and must also submit a Claim for the reserved disputed items pursuant to Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions) **no later than thirty (30) Days after Design Builder's first written notice of its intent to reserve rights.**

1.4 COST BREAKDOWN

1.4.1 Labor: Design Builder will be paid cost of labor for workers (including forepersons when authorized by the County) used in actual and direct performance of extra Work. Contractor shall provide hourly wage rate breakdowns for all forces prior to acceptance by the County of any change orders and/or adjustments. Labor rate, whether employer is Design Builder, Subcontractor or other forces, will be sum of following:

1.4.1.1 Actual Wages: Actual wages paid shall include any employer payments to or on behalf of workers for health and welfare, pension, vacation, and similar purposes.

1.4.1.2 Labor Surcharge: Payments imposed by local, county, state, and federal laws and ordinances, and other payments made to, or on behalf of, workers, other than actual wages as defined in paragraph 1.4.1.1 above, such as taxes and insurance. Labor surcharge shall be and shall not exceed that set forth in California Department of Transportation official labor surcharges schedule which is in effect on date upon which extra Work is accomplished and which schedule is incorporated herein by reference as though fully set forth herein.

1.4.2 Material: Only materials furnished by Design Builder and necessarily used in performance of extra Work will be paid for. Cost of such materials will be cost, including sales tax and delivery charges, to purchaser (Design Builder, Subcontractor or other forces) from supplier thereof, except as the following are applicable:

1.4.2.1 If cash or trade discount by actual supplier is offered or available to purchaser, it shall be credited to the County notwithstanding fact that such discount may not have been taken.

1.4.2.2 For materials salvaged upon completion of extra Work, salvage value of materials shall be deducted from cost, less discounts, of materials.

1.4.2.3 If County determines that cost of a material is excessive, then cost of material shall be deemed to be lowest reasonably available wholesale price at which material is available in quantities concerned delivered to Site, less any discounts as provided in paragraph 1.4.2.1 above.

1.4.3 Equipment Rental: For Design Builder- or Subcontractor-owned equipment, payment will be made at rental rates listed for equipment in California Department of Transportation official equipment rental rate schedule which is in effect on date upon

which extra Work is accomplished and which schedule is incorporated herein by reference as though fully set forth herein. If there is no applicable rate for an item of equipment, then payment shall be made for Design Builder- or Subcontractor-owned equipment at rental rate listed in the most recent edition of the Association of Equipment Distributors (AED) book. For rented equipment, payment will be made based on actual rental invoices. Equipment used on extra Work shall be of proper size and type. If, however, equipment of unwarranted size or type and cost is used, cost of use of equipment shall be calculated at rental rate for equipment of proper size and type, as determined by the County. Rental rates paid shall be deemed to cover cost of fuel, oil, lubrication, supplies, small tools, necessary attachments, repairs and maintenance of any kind, depreciation, storage, insurance, and all incidentals. Unless otherwise specified, manufacturer's ratings, and manufacturer-approved modifications, shall be used to classify equipment for determination of applicable rental rates. Individual pieces of equipment or tools not listed in said publication and having a **replacement value of $100 or less**, whether or not consumed by use, shall be considered to be small tools. Rental time will not be allowed while equipment is inoperative due to breakdowns.

1.4.3.1 For equipment on Site, rental time to be paid for equipment shall be time equipment is in operation on extra Work being performed or on standby as approved by the County. The following shall be used in computing rental time of equipment:

1.4.3.1.1 When hourly rates are listed, **less than thirty (30) minutes of operation shall be considered to be ½ hour of operation.**

1.4.3.1.2 When daily rates are listed, **less than four (4) hours of operation shall be considered to be one-half (1/2) day of operation.**

1.4.3.2 For equipment that must be brought to Site to be used exclusively on extra Work, cost of transporting equipment to Site and its return to its original location shall be determined as follows:

1.4.3.2.1 The County will pay for costs of loading and unloading equipment.

1.4.3.2.2 Cost of transporting equipment in low bed trailers shall not exceed hourly rates charged by established haulers.

1.4.3.2.3 Cost of transporting equipment shall not exceed applicable minimum established rates of California Public Utilities Commission.

1.4.3.2.4 The County will not make any payment for transporting and loading and unloading equipment if equipment is used on Work in any other way than upon extra Work.

1.4.3.3 Rental period may begin at time equipment is unloaded at Site of extra Work and terminate at end of the performance of the extra Work or day on which

the County directs Design Builder to discontinue use of equipment, whichever first occurs. Excluding Saturdays, Sundays, and the County's legal holidays, unless equipment is used to perform extra Work on such days, rental time to be paid per day shall be four (4) hours for zero (0) hours of operation, six (6) hours for four (4) hours of operation and eight (8) hours for eight (8) hours of operation, time being prorated between these parameters. Hours to be paid for equipment that is operated less than eight hours due to breakdowns, shall not exceed eight less number of hours equipment is inoperative due to breakdowns.

1.4.4 Work Performed by Special Forces or Other Special Services: When the County and Design Builder, by agreement, determine that special service or item of extra Work cannot be performed by forces of Design Builder or those of any Subcontractors, service or extra Work item may be performed by specialist. Invoices for service or item of extra Work on basis of current market price thereof may be accepted without complete itemization of labor, material, and equipment rental costs when it is impracticable and not in accordance with established practice of special service industry to provide complete itemization. In those instances wherein Design Builder is required to perform extra Work necessitating a fabrication or machining process in a fabrication or machine shop facility away from Site, charges for that portion of extra Work performed in such facility may, by agreement, be accepted as a specialist billing. The County must be notified in advance of all off-Site Work. In lieu of overhead and profit provided in paragraph 1.3.2 above, **fifteen percent (15%) will be added to specialist invoice price**, after deduction of any cash or trade discount offered or available, whether or not such discount may have been taken.

1.5 FORCE-ACCOUNT WORK

1.5.1 If it is impracticable because of nature of Work, or for any other reason, to fix an increase or decrease in price definitely in advance, the Design Builder may be directed to proceed at a not-to-exceed ("NTE") maximum price. Subject to such limitation, such extra Work shall be paid for at actual necessary cost for Force-Account Work or at the negotiated cost, as determined by the County. The cost for Force-Account Work shall be determined pursuant to paragraphs 1.3 and 1.4 above.

1.5.2 Force-Account Work shall be used when it is not possible or practical to price out the changed Work prior to the start of that Work. In these cases, Force-Account Work will be utilized during the pricing and negotiation phase of the change. Once negotiations have been concluded and a bilateral agreement has been reached, the tracking of the Work under Force-Account is no longer necessary. Force-Account Work shall also be used when negotiations between the County and Design Builder have broken apart and a bilateral agreement on the value of the changed Work cannot be reached. The County may approve other uses of Force-Account Work.

1.5.3 Whenever any Force-Account Work is in progress, definite price for which has not been agreed on in advance, Design Builder shall report to the County each Business Day in writing in detail amount and cost of labor and material used, and any other expense incurred in Force-Account Work on preceding day, by using the Cost Proposal form attached hereto. No claim for compensation for Force-Account Work will be allowed

unless report shall have been made and submitted as provided above.

1.5.4 Whenever Force-Account Work is in progress, definite price for which has not been agreed on in advance, Design Builder shall report to the County **when seventy-five percent (75%) of the NTE amount has been expended.**

1.5.5 Force-Account Work shall be paid as extra Work under this Section 01 26 00. Methods of determining payment for Work and materials provided in this paragraph 1.5 shall not apply to performance of Work or furnishings of material that, in judgment of the County, may properly be classified under items for which prices are otherwise established in Contract Documents.

1.6 COUNTY-FURNISHED MATERIALS

1.6.1 The County reserves right to furnish materials as it deems advisable, and Design Builder shall have no claims for costs and overhead and profit on such materials.

1.7 OVERHEAD DEFINED

1.7.1 The following constitutes charges that are deemed included in overhead for all Contract Modifications, including Force-Account Work or CCD Work, whether incurred by Design Builder, Subcontractors, or suppliers, and Design Builder shall not invoice or receive payment for these costs separately:

1.7.1.1 Drawings: field drawings, Shop Drawings, etc., including submissions of drawings

1.7.1.2 Routine field inspection of Work proposed

1.7.1.3 General Superintendence

1.7.1.4 General administration and preparation of cost proposals, schedule analysis, Change Orders, and other supporting documentation as necessary

1.7.1.5 Computer services

1.7.1.6 Reproduction services

1.7.1.7 Salaries of project engineer, superintendent, timekeeper, storekeeper, and secretaries

1.7.1.8 Janitorial services

1.7.1.9 Small tools, incidentals and consumables

1.7.1.10 Temporary on-Site facilities:

1.7.1.10.1 Offices

1.7.1.10.2 Telephones

1.7.1.10.3 Plumbing

1.7.1.10.4 Electrical: Power, lighting

1.7.1.10.5 Platforms

1.7.1.10.6 Fencing, etc.

1.7.1.10.7 Water

1.7.1.11 Home office expenses

1.7.1.12 Procurement and use of vehicles and fuel used coincidentally in Work otherwise included in the Contract Documents

1.7.1.13 Surveying

1.7.1.14 Estimating

1.7.1.15 Protection of Work

1.7.1.16 Handling and disposal fees

1.7.1.17 Final cleanup

1.7.1.18 Other incidental Work

1.7.1.19 Related warranties

1.8 RECORDS AND CERTIFICATION

1.8.1 Force-Account (cost reimbursement) charges shall be recorded daily and summarized in Cost Proposal form attached hereto. Design Builder or authorized representative shall complete and sign form each day. Design Builder shall also provide with the form: the names and classifications of workers and hours worked by each; an itemization of all materials used; a list by size, type, and identification number of equipment and hours operated; and an indication of all Work performed by specialists.

1.8.2 No payment for Force-Account Work shall be made until Design Builder submits original invoices substantiating materials and specialists charges.

1.8.3 The County shall have the right to audit all records in possession of Design Builder or a Subcontractor relating to activities covered by Design Builder's claims for Modification of Contract, including Force-Account Work and CCD Work.

1.8.4 Further, the County will have right to audit, inspect, or copy all records maintained in connection with this Contract, including financial records, bidding records, in possession of Design Builder relating to any transaction or activity occurring or arising out of, or by virtue of, the Contract. If Design Builder is a joint venture, right of the County shall apply collaterally to same extent to records of joint venture sponsor, and of each

individual joint venture member. This right shall be specifically enforceable, and any failure of Design Builder to voluntarily comply shall be deemed an irrevocable waiver and release of all claims then pending that were or could have been subject to the Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions).

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

COST PROPOSAL AND CHANGE ORDER FORMS FOLLOW

COST PROPOSAL (CP) FORM

Contract Number: _____

CP Number: _____

Date: _____

In Response To _____

RFP #, etc.

To: [_____]

Attention: Contract Administration/Inspection

[_____]

_____

_____

_____

Subject Ref. No: _____

(for Project Manager use only)

Phone: _____

Fax: (____) ____-_____

From: [Insert Design Builder's Name/Address]

_____

_____

This Cost Proposal is in response to the above-referenced _____ [insert RFP, etc. as applicable].

Brief description of change(s): _____

_____

ITEM DESCRIPTION	PRIME CONTR.	SUB 1	SUB 2	SUB 3	SUB 4	TOTAL
Material						
Direct Labor Cost						
Equipment						
Other (Specify) Extended Overhead						
Total Cost						
Subcontractor's Overhead & Profit (10 %)						
Design Builder's Overhead & Profit (10%)						
Overhead & Profit to Design Builder for Subcontractor's Work (5%)						
(percent of Total Cost above not including any Overhead & Profit)						
GRAND TOTAL						
REQUESTED CHANGE IN CONTRACT TIME (DAYS)						

By Design Builder: _____

Signature: _____

Date: _____

END OF FORM

CONSTRUCTION CHANGE ORDER (CO) FORM

The following format shall be used as applicable by the County and the Design Builder (e.g. Change Orders, PCO's) to communicate proposed additions and deductions to the Contract, supported by attached documentation. In no case shall the Design Builder's total mark-up exceed 26.5%.

	SUBCONTRACTOR PERFORMED WORK	**ADD**	**DEDUCT**
(a)	**Material** (attach itemized quantity and unit cost plus sales tax)	$_____	$_____
(b)	**Add Labor** (attach itemized hours and rates, fully encumbered)	$_____	$_____
(c)	**Add Equipment** (attach suppliers' invoice)	$_____	$_____
(d)	**Subtotal**	$_____	$_____
(e)	**Add Subcontractor's overhead and profit,** not to exceed ten percent (10%) of item (d)	$_____	$_____
(f)	**Subtotal**	$_____	$_____
(g)	**Add Contractor's overhead and profit**, not to exceed ten percent (10%) of Item (f)	$_____	$_____
(h)	**Subtotal**	$_____	$_____
(i)	**Add Bond and Insurance**, not to exceed one percent (1%) of Item (h)	$_____	$_____
(j)	**SUBCONTRACTOR TOTAL:**	$_____	$_____
(k)	**Time**	**_____ Days**	
	CONTRACTOR PERFORMED WORK	**ADD**	**DEDUCT**
(a)	**Material** (attach itemized quantity and unit cost plus sales tax)	$_____	$_____

(b)	**Add Labor** (attach itemized hours and rates, fully encumbered)	$_____	$_____
I	**Add Equipment** (attach suppliers' invoice)	$_____	$_____
(d)	**Subtotal**	$_____	$_____
(e)	**Add Contractor's overhead and profit,** not to exceed ten percent (10%) of item (d)	$_____	$_____
(f)	**Subtotal**	$_____	$_____
(g)	**Add Bond and Insurance**, not to exceed one percent (1%) of Item (f)	$_____	$_____
(h)	**GENERAL CONTRACTOR TOTAL:**	$_____	$_____
(i)	**Time**	**_____ Days**	
	TOTAL COST:	**$_____**	
	TOTAL TIME:	**_____ Days**	

END OF FORM

SECTION 01 29 00

PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This section describes requirements and procedures for determining amount of work done and for obtaining payment for work done.

1.1.2 Related Sections.

1.1.2.1 Section 01 11 13 (Work Covered by Contract Documents)
1.1.2.2 Section 01 11 20 (Design Services and Deliverables)
1.1.2.3 Section 01 26 00 (Contract Modification Procedures)
1.1.2.4 Section 01 32 16 (Construction Progress Schedule)
1.1.2.5 Section 01 33 00 (Submittal Procedures)
1.1.2.6 Section 01 77 00 (Closeout Procedures)

1.2 REFERENCES

California Public Contract Code

1.3 SCOPE OF WORK

Work under the Contract Documents, or under any Bid item, allowance or alternate, shall include all design services, labor, materials, transport, handling, storage, supervision, administration and all other items necessary for the satisfactory completion of Work, whether or not expressly specified or shown.

1.4 DETERMINATION OF QUANTITIES

Quantity of work to be paid for under any item for which a unit price is fixed in the Contract Documents shall be the number, as determined by County, of units of work satisfactorily completed in accordance with Contract Documents and as directed pursuant to Contract Documents. Unless otherwise provided, determination of number of units of work so completed will be based on actual measurement or count within prescribed or ordered limits, and no payment will be made for work done outside of limits. Measurements and computations will be made by methods as County may consider appropriate for class of work measured.

1.5 SCOPE OF PAYMENT

1.5.1 Except as otherwise expressly stipulated in Section 01 11 13 (Work Covered by Contract Documents), payment to Design Builder at the unit price or other price fixed in the Contract for performing the work required under any item, or (if the Contract is on a lump sum price basis) at the lump sum price fixed in the Contract for performing all work required under the Contract, and as either may be adjusted pursuant to any approved change order, shall be full compensation for completing, in accordance with

the Contract Documents, all design services and work required under the item or under the Contract, and for all expense incurred by Design Builder for any purpose in connection with the performance and completion of said work, including all incidental work necessary for completion of the Work.

1.5.2 The Contract Price, whether lump sum, unit price or otherwise, shall be deemed to include all costs necessary to complete the Work.

1.5.3 Whenever it is specified herein that Design Builder is to do work or furnish materials of any class for which no price is fixed in the Contract Documents, it shall be understood that Design Builder is to do such work or furnish such materials without extra charge or allowance or direct payment of any sort, and that cost of doing work or furnishing materials is to be included in its Proposal price, unless it is expressly specified herein, in particular cases, that work or material is to be paid for as extra work.

1.5.4 For the materials and equipment referenced in Section 01 11 13 (Work Covered by Contract Documents) as subject to payment prior to incorporation into the Work, where Design Builder requests payment on the basis of such materials and equipment not incorporated in the Work, Design Builder must satisfy the following conditions:

1.5.4.1 The materials and/or equipment shall be delivered and suitably stored at the Site or at another local location agreed to in writing (for example: a mutually acceptable warehouse). Design Builder shall load and unload all materials and equipment. County shall not be obligated, nor shall County assist in any loading or unloading of any equipment or materials;

1.5.4.2 Full title to the materials and/or equipment shall vest in County at the time of delivery to the Site, warehouse or other storage location;

1.5.4.3 Design Builder shall obtain a negotiable warehouse receipt, endorsed over to County for materials and/or equipment stored in an off-site warehouse. No payment shall be made until such endorsed receipts are delivered to County;

1.5.4.4 Stockpiled materials and/or equipment shall be available for County's inspection, but County shall have no obligation to inspect them and its inspection or failure to inspect shall not relieve Design Builder of any obligations under the Contract Documents. Materials and/or equipment shall be segregated and labeled or tagged to specifically identify them to the Project;

1.5.4.5 After delivery of materials and/or equipment, if any inherent or acquired defects are discovered, defective materials and/or equipment shall be removed and replaced with suitable materials and/or equipment at Design Builder's expense;

1.5.4.6 Design Builder's application for payment shall be accompanied by a bill of sale, invoice or other documentation warranting that County has received the materials and equipment free and clear of all liens and evidence that the materials and equipment are covered by appropriate property insurance and

other arrangements to protect County's interest therein, all of which must be satisfactory to County. This documentation shall include, but not be limited to, conditional releases of mechanics' liens and stop notices from all those providing materials and equipment as to which the application for payment relates, as well as unconditional releases of the same from the same as to the previous applications for payment for which they have not already been provided.

1.5.4.7 If required by County, Design Builder shall execute a Security Agreement and/or UCC-1 to protect County's interest in material or equipment stored off-site.

1.6 BASIS OF PAYMENT

1.6.1 Unit Pay Quantities: Are as provided in Section 01 21 00 (Allowances).

1.6.2 Lump Sum: When estimated quantity for specific portion of Work is not indicated and unit is designated as Lump Sum, payment will be on a Lump Sum basis for Work satisfactorily completed in accordance with Contract Documents.

1.6.3 Allowances: Allowance items will be paid for as provided in Sections 01 11 13 (Work Covered by Contract Documents) and/or 01 21 00 (Allowances), if any. No payment will be made unless allowance work has been authorized in writing by County and Design Builder has provided supporting documentation to establish the actual cost of the work performed under the Allowance.

1.7 PROGRESS PAYMENTS

1.7.1 If requested by Design Builder, progress payments will be made monthly.

1.7.2 Schedule of Values.

1.7.2.1 Within the time frame set in Article 11 (Prosecution and Progress of the Work) Document 00 72 53 (General Conditions), Design Builder shall submit a detailed breakdown of the Contract Price by scheduled Work items and/or activities, including design, construction, coordination responsibilities and project record document responsibilities. The Project Schedule (see Section 01 32 26 (Schedules and Reports)) shall serve as the basis for developing the Schedule of Values. Design Builder shall furnish such breakdown of the total Contract Price by assigning dollar values (cost estimates) to each applicable Progress Schedule network activity, which cumulative sum equals the total Contract Price. The format and detail of the breakdown shall correspond directly with the Project Schedule and as directed by County to facilitate and clarify future progress payments to Design Builder for direct Work under the Contract Documents. This breakdown shall be referred to as the Schedule of Values.

1.7.2.2 Design Builder's overhead, profit, insurance, cost of bonds and/or other financing, as well as "general conditions costs," (e.g., site cleanup and

maintenance, temporary power and lighting, security and the like), shall be prorated through Project duration.

1.7.2.3 County will review the breakdown in conjunction with the Progress Schedule to ensure that the dollar amounts of this Schedule of Values are, in fact, fair market cost allocations for the Work items listed. Upon favorable review by County, this Schedule of Values will be accepted for use by County. County shall be the sole judge of fair market cost allocations.

1.7.2.4 Any attempt to increase the cost of early activities, i.e., "front loading," will be rejected by County, resulting in a complete reallocation of monies until such "front loading" is corrected.

1.7.3 Payment Requests

1.7.3.1 Unless otherwise agreed, Design Builder shall submit to the County, during the final week of each payment period, a draft request for payment projected out through the end of the payment period. The County and Design Builder shall meet to review the draft request for payment to reach consensus on percentage completion. The Design Builder shall revise and resubmit request for payment to include agreed upon percentages complete.

1.7.3.2 Unless otherwise agreed, Design Builder shall submit to County, on or before the first (1st) day of each payment period, **five (5) copies of the revised request for payment for the cost of the Work** put in place during the previous one-month payment period. Such requests for progress payments shall be based upon Schedule of Values prices of all labor and materials incorporated in the Work up until midnight of the last day of that one month period, less the aggregate of previous payments. If Design Builder is late submitting its payment request, that payment request may be processed at any time during the succeeding one month period, resulting in processing of Design Builder's payment request being delayed for more than a day for day basis.

1.7.3.3 Payment requests may include, but are not necessarily limited to the following:

1.7.3.3.1 Services performed and material, equipment and labor incorporated into the Work, less any previous payments for the same;

1.7.3.3.2 **Up to one hundred percent (100%) of the cost of major equipment** identified in paragraph 1.5.4 above, if purchased and delivered to the Site or stored off site, as may be approved by County.

1.7.3.3.3 **Up to one hundred percent (100%) of the cost of materials** identified in paragraph 1.5.4 above specifically fabricated for the Project that are not yet incorporated into the Work.

1.7.3.4 Design Builder shall, at the time any payment request is submitted, certify in writing the accuracy of the payment request and that Design Builder has fulfilled all scheduling requirements of Document 00 72 53 (General Conditions) and Section 01 32 26 (Schedules and Reports), including updates and revisions. The certification shall be executed by a responsible officer of the Design Builder.

1.7.3.5 No progress payment will be processed prior to County receiving all requested, acceptable schedule update information.

1.7.3.6 Level of detail shall be consistent with the latest cost loaded schedule update. If amounts due are allocated based on a formula, the formula must be provided to and approved by County before Design Builder submits the payment request.

1.7.3.7 Each payment request shall list each Change Order executed prior to date of submission, including the Change Order Number, and a description of the work activities, consistent with the descriptions of original work activities. Design Builder shall submit a monthly Change Order status log to County with their payment request.

1.7.3.8 If County requires substantiating data, Design Builder shall submit information requested by County, with cover letter identifying Project, payment request number and date, and detailed list of enclosures. Design Builder shall submit one copy of substantiating data and cover letter for each copy Payment request submitted.

1.7.3.9 Monthly progress payments shall be made based on total value of Work completed or partially completed, as determined by County and based upon approved activity costs. Accumulated retainage will be shown as separate item in payment summary. If Design Builder fails or refuses to participate in construction progress evaluation with County, Design Builder shall not receive current payment until Design Builder has participated fully in providing construction progress information and schedule update information for County.

1.7.3.10 Legal title to all Work shall pass to and vest in County as Work is performed, and title to all materials and equipment shall pass to and vest in County when such materials and equipment are delivered to the Site or as soon as title passes from the vendor or supplier thereof. Design Builder shall keep the Site and all materials and equipment free and clear of all liens, stop notices and charges arising out of performance of the Contract Documents, and shall indemnify, defend and hold harmless all those indemnified pursuant to paragraph 13.3 (Responsibility of Design Builder and Indemnification) of Document 00 72 53 (General Conditions) from the claims, suits, actions, losses and liabilities described therein, including those which are a result of any breach of this responsibility and shall defend any claim or suit brought against any party required to be indemnified hereunder based upon any such claim of title or lien.

1.7.3.11 Design Builder shall promptly pay each Subcontractor the amount to which such Subcontractor is entitled, and shall, by an appropriate agreement with each Subcontractor, require each Subcontractor to make payments to its sub-Subcontractors in a similar manner. Design Builder shall submit on its behalf and on behalf of each Subcontractor or consultant for which payment is being requested a conditional release of stop notice in statutory form for the Work which is the subject of each progress payment request and an unconditional release of stop notice in statutory form for the immediately preceding progress payment as to the Work of each. If the unconditional release of stop notice for the amount paid for the immediately preceding month is not reasonably available, it shall be submitted with the next progress payment request, such that it is submitted **no more than two months after the date on which the conditional release of stop notice was submitted for the amount paid.**

1.7.4 Progress Payments

1.7.4.1 Upon receiving Design Builder's payment request, County will review the payment request and make adjustments to percent of completion of each activity. One copy will be returned to Design Builder with description of adjustments made. All parties will update percentage of completion values in the same manner, i.e., express value of an accumulated percentage of completion to date.

1.7.4.2 The payment request may be reviewed by County for the purpose of determining that the payment request is a proper payment request, and shall be rejected, revised or approved by County pursuant to the Schedule of Values prepared in accordance with this Section.

1.7.4.3 If it is determined that the payment request is not a proper payment request suitable for payment, County shall return it to Design Builder as soon as practicable, but **no later than seven (7) Days after receipt**, together with a document setting forth in writing the reasons why the payment request is not proper. If County determines that portions of the payment request are not proper or not due under the Contract Documents, then County may approve the other portions of the payment request, and in the case of disputed items or defective work not remedied, **may withhold up to one hundred fifty percent (150%) of the disputed amount from the progress payment.**

1.7.4.4 Pursuant to Public Contract Code § 20104.50, if County fails to make any progress payment **within thirty (30) Days after receipt of an undisputed and properly submitted payment request** from a Design Builder, County shall pay interest to Design Builder equivalent to the legal rates set forth in subdivision (a) of Code of Civil Procedure § 685.010. The thirty (30) Day period shall be reduced by the number of days by which County exceeds the seven (7) Day return requirement set forth herein.

1.7.4.5 As soon as practicable after approval of each request for progress payment,

County will pay to Design Builder in manner provided by law, an amount equal to **ninety-five percent (95%) of County's estimate**, or a lesser amount if so provided in Contract Documents, and County shall retain the amount so withheld as retention. Provided that payments may at any time be withheld if Work is not proceeding in accordance with the Contract Documents, or Design Builder is not complying with requirements of the Contract Documents, or to comply with stop notices or to offset liquidated damages accruing or expected.

1.7.4.6 Before any progress payment or final payment is made, Design Builder may be required to submit satisfactory evidence that Design Builder is not delinquent in payments to employees, Subcontractors, suppliers, federal or state tax authorities, or creditors for labor and materials incorporated into Work.

1.7.4.7 County reserves and shall have the right to withhold payment for any equipment and/or specifically fabricated materials that, in the sole judgment of County, is not adequately and properly protected against weather and/or damage, prior to or following incorporation into the Work.

1.7.4.8 Granting of progress payment or payments by County, or receipt thereof by Design Builder, shall not be understood as constituting in any sense acceptance of Work or of any portion thereof, and shall in no way reduce Design Builder's responsibility to replace unsatisfactory work or material, though unsatisfactory character of work or material may have been apparent or detected at time payment was made.

1.7.4.9 When County shall charge a sum of money against Design Builder under any provision of the Contract Documents, amount of charge shall be deducted and retained by County from amount of next succeeding progress payment or from any other moneys due or that may become due Design Builder under the Contract Documents. If, on completion or termination of the Contract Documents, such moneys due Design Builder are found insufficient to cover County's charges against it, County shall have right to recover balance from Design Builder or Sureties.

1.8 SUBSTITUTION OF SECURITIES IN LIEU OF RETENTION

Pursuant to provisions of Public Contract Code § 22300, incorporated herein by reference, substitution of securities for any monies withheld under the Contract Documents to insure performance is permitted under following the conditions:

1.8.1 At request and expense of Design Builder, securities listed in Government Code § 16430, bank or savings and loan certificates of deposit, interest bearing demand deposit accounts, standby letters of credit, or any other security mutually agreed to by Design Builder and County which are equivalent to the amount withheld under retention provisions of the Contract Documents shall be deposited with County or with a state or federally chartered bank in California, as the escrow agent, who shall then pay such monies to Design Builder. Upon satisfactory completion of the Work, securities shall be

returned to Design Builder.

1.8.2 Alternatively, Design Builder may request and County shall make payment of retentions earned directly to the escrow agent at the expense of Design Builder. At the expense of Design Builder, Design Builder may direct the investment of the payments into securities and Design Builder shall receive the interest earned on the investments upon the same terms provided for in this section for securities deposited by Design Builder. Upon satisfactory completion of the Contract Documents, Design Builder shall receive from escrow agent all securities, interest, and payments received by the escrow agent from County, pursuant to the terms of this section. Design Builder shall pay to each Subcontractor, **not later than twenty (20) days after receipt of the payment**, the respective amount of interest earned, net of costs attributed to retention withheld from each Subcontractor, on the amount of retention withheld to insure the performance of Design Builder.

1.8.3 The Design Builder shall inform the County of its election between the alternates in paragraph 1.8.1 and 1.8.2 above in the manner and within the times provided in paragraph 7.3 of the General Conditions (Document 00 72 53).

1.8.4 Design Builder shall be beneficial owner of securities substituted for monies withheld and shall receive any interest thereon. Design Builder shall submit any form W-9 or other required tax form.

1.8.5 Design Builder shall enter into escrow agreement according to Document 00 61 32 (Escrow Agreement for Security Deposits in Lieu of Retention) as authorized under Public Contract Code § 22300, specifying amount of securities to be deposited, terms and conditions of conversion to cash in case of default of Design Builder, and termination of escrow upon completion of the Contract Documents.

1.9 FINAL PAYMENT

1.9.1 After all required Work is completed in accordance with the Contract Documents, Design Builder may submit an application for final payment. County will review the application in accordance with the procedure for progress payments, above. In addition to any other payment conditions, final payment will not become due to Design Builder until Design Builder has satisfied all of the requirements of the Contract Documents, including but not limited to Section 01 33 00 (Submittal Procedures) and 01 77 00 (Closeout Procedures).

1.9.2 County will pay to Design Builder, in manner provided by law, unpaid balance of Contract Price, or whole Contract Price if no progress payment has been made, determined in accordance with terms of the Contract Documents, less sums as may be lawfully retained under any provisions of the Contract Documents or by law.

1.9.3 Prior progress payments shall be subject to correction in the final payment. County's determination of amount due as final payment shall be final and conclusive evidence of amount of Work performed by Design Builder under the Contract Documents, and shall be full measure of compensation to be received by Design Builder.

1.9.4 Design Builder and each assignee under an assignment in effect at time of final payment shall execute and deliver at time of final payment and as a condition precedent to final payment, Document 00 65 10 (Agreement and Release of Any and All Claims), discharging County, its officers, agents, employees and consultants of and from liabilities, obligations, and claims arising under the Contract Documents, except such claims as Design Building may except from the release in writing.

1.10 EFFECT OF PAYMENT

Payment will be made by County, based on County's observations of the Work, at the Site, and the data comprising the application for payment. Payment will not be a representation that County has:

1.10.1 Made exhaustive or continuous on-site inspections to check the quality or quantity of Work;

1.10.2 Reviewed construction means, methods, techniques, sequences or procedures;

1.10.3 Reviewed copies of requisitions received from Subcontractors and material suppliers and other data requested by County to substantiate Design Builder's right to payment; or

1.10.4 Made an examination to ascertain how or for what purpose Design Builder has used money previously paid on account of the Contract Price.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section describes requirements for job site administration, including:

1.1.1.1 County's Representative.
1.1.1.2 Design Builder's Project Management Team.

1.1.2 Related Sections.

1.1.2.1 Section 01 11 13 (Work Covered by Contract Documents)
1.1.2.2 Section 01 32 26 (Schedules and Reports)
1.1.2.3 Section 01 33 00 (Submittal Procedures)
1.1.2.4 Section 01 78 39 (Project Record Documents)

1.2 COUNTY'S MANAGEMENT TEAM

1.2.1 County shall be represented on this Contract by **Seri Traver,** serving as County's representative, who will act personally or through authorized designees. The County has designated **Seri Traver** to represent County in carrying out the duties of the County. The County may delegate a portion of the County representative's duties to a Construction Manager or other County representative, who will then perform a portion of the County Representative's duties specified herein.

1.2.2 Functions of the County's representative include, but are not limited to, the following:

1.2.2.1 The County's Representative functions as the primary County representative with the Design Builder in all matters concerning the Project, monitoring the Design Builder's performance in all respects to ascertain that the Work is performed in accordance with all the requirements of the Contract Documents.

1.2.2.2 The County's Representative is the primary point of contact with the Design Builder regarding the Project. The County's Representative also performs this role with regard to all agency and utility construction interfaces with the Work under this Contract.

1.2.2.3 The Design Builder is required by the Contract to provide written notice of any and all potential claims arising during the performance of the Work. The County's Representative will administer the processing and resolution of any such claims in accordance with the requirements of the Contract.

1.2.2.4 All contractual correspondence, including submittals, shall be directed and processed through the County's Representative unless otherwise

specifically directed in the Contract. Any required or requested communications between the Design Builder and County, the County's Representative, or any other representative of County, will be coordinated by the County's Representative.

1.3 DESIGN BUILDER'S PROJECT MANAGEMENT TEAM

1.3.1 The Design Builder shall staff the Project with a management team qualified and experienced in construction of a public works project of this value, nature and complexity including individuals Design Builder identified in its Proposal. This team shall possess the competency, skills and authority specified in Article 10 (Design Builder's Organization and Equipment of Document 00 72 53 (General Conditions).

1.3.1.1 The Design Builder shall submit to County prior to Notice to Proceed the names, detailed project experience, references, and proposed project position for each team member. Key team members shall have appropriate experience in the proposed position.

1.3.1.2 The Design Builder shall not replace members of the Design Builder's management team without prior written approval of the County. If, during the course of the Project, the Design Builder finds it necessary to replace a member of the Project Management Team, the name, qualifications, and experience of the proposed replacement shall be submitted to County for approval, and shall be subject to section 6 of Document 00 52 53 (Agreement).

1.3.2 The Project Management Team shall be composed of members with the necessary skills and be sufficient in number to handle all duties normal to a project of this scale and complexity. Special attention shall be given to the responsibility for coordination and scheduling.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

SECTION 01 31 19

PROJECT MEETINGS

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section describes the required project meetings for this work. These meetings include:

1.1.1.1 Predesign and Preconstruction Conferences.
1.1.1.2 Coordination Meetings.
1.1.1.3 Progress Meetings.
1.1.1.4 Scheduling Meetings.
1.1.1.5 Quality Control Meetings.
1.1.1.6 Special Meetings.

1.1.2 Related Sections.

1.1.2.1 Section 01 11 13 (Work Covered by Contract Documents)
1.1.2.2 Section 01 11 20 (Design Services and Deliverables)
1.1.2.3 Section 01 29 00 (Payment Procedures)
1.1.2.4 Section 01 32 26 (Schedules and Reports)
1.1.2.5 Section 01 33 00 (Submittal Procedures)

1.2 DESIGN & PRECONSTRUCTION CONFERENCES

1.2.1.1 County will call for and administer Design and Preconstruction Conferences at times and places to be announced. A Design Conference will occur as soon after issuance of the Notice to Proceed as can be reasonably scheduled.

1.2.1.2 Preconstruction Conferences will be scheduled **no later than 30 days prior to the start of construction** of the Work.

1.2.2 Design Builder, all Subconsultants and major suppliers shall attend the Design Conference(s). Agenda will include, without limitation, the following items:

1.2.2.1 Design Builder and County Coordination and Meeting Procedures
1.2.2.2 Design Builder's Design Coordination Plan with Subconsultants
1.2.2.3 Design Builder's Initial CPM Schedule for Design and Construction
1.2.2.4 Design Builder's Schedule of Values (including design activities)
1.2.2.5 Design Builder's Schedule of Deliverables and Agency Submittals

1.2.3 Design Builder, all Subcontractors, and all major suppliers shall attend the Preconstruction Conference(s). Agenda will include, without limitation, the following items:

1.2.3.1 Schedules

1.2.3.2 Personnel and vehicle permit procedures
1.2.3.3 Use of premises
1.2.3.4 Location of the Design Builder's on-site facilities
1.2.3.5 Location of the Construction Facilities for County Use
1.2.3.6 Security
1.2.3.7 Housekeeping
1.2.3.8 Design Builder's Quality Control Program
1.2.3.9 Submittals
1.2.3.10 Inspection and testing procedures, on-site and off-site
1.2.3.11 Utility shutdown procedures
1.2.3.12 Control and reference point survey procedures
1.2.3.13 Injury and Illness Prevention Program, Programs and procedures
1.2.3.14 Design Builder's Updated CPM Schedule
1.2.3.15 Design Builder's Schedule of Values
1.2.3.16 Design Builder's Schedule of Submittals

1.2.4 County will distribute copies of meeting record to attendees. Attendees shall have **four (4) Business Days to submit comments or additions** to meeting records. Meeting record will constitute final memorialization of results of any conference.

1.3 COORDINATION MEETINGS

1.3.1 Design Phase Coordination

1.3.1.1 County will be available to participate in Design Phase Coordination meetings or workshops as reasonably requested by the Design Builder.

1.3.1.2 Design Builder shall conduct **at least monthly design coordination meetings** with all subconsultants employed by the Design Builder. Design Builder shall invite the County or its representative to participate in these meetings.

1.3.2 Construction Phase Coordination

1.3.2.1 County will be available as necessary to participate in Construction Phase Coordination Meetings.

1.3.2.2 Design Builder Construction Phase Coordination shall be integrated with the Design Builder's Quality Control Program, see Section 01 45 00 (Quality Control).

1.3.2.3 Design Builder shall conduct **at least monthly Construction Phase Coordination Meetings** with all Subcontractors employed by Design Builder. Design Builder shall invite County or its representative to participate in these meetings. At a minimum, County will attend Design Builder's Quality Control Meetings. County may elect to attend Subcontractor coordination meetings.

1.4 PROGRESS MEETINGS

1.4.1 County will schedule and administer Progress Meetings throughout the Design and Construction Work. Progress meetings will be **held weekly unless otherwise directed by County.**

1.4.1.1 Design Phase Progress Meetings shall be held at the offices of the Design Builder's Architect or at the Office of the County as is mutually agreed on in advance by Design Builder and County to be most advantageous for progressing the work and County.

1.4.1.2 Construction Phase Meetings shall be held at the Design Builder's Site office unless otherwise agreed between Design Builder and the County.

1.4.1.3 County will prepare an agenda and distribute it to the Design Builder and any Inspector **four (4) Business Days in advance of meeting.**

1.4.1.4 County will preside at and conduct the meeting.

1.4.1.5 County will record and distribute meeting records to the Design Builder, Inspectors, all other participants, and those affected by decisions made at meeting, **within three (3) Business Days after each meeting.** Attendees shall have **four (4) Business Days to submit comments or additions** to the meeting records. Meeting records will constitute final memorialization of results of meeting.

1.5 SCHEDULING MEETINGS

1.5.1 Initial Schedule Review

1.5.1.1 Design Builder shall meet with the County and conduct initial review of the Design Builder's draft: Design Schedule, Design Deliverables Schedule, Shop Drawing and Sample Submittal Schedule, Schedule of Values, and Progress Schedule.

1.5.1.2 An authorized representative in the Design Builder's organization, designated in writing and who will be responsible for working and coordinating with County relative to preparation and maintenance of Progress Schedule, shall attend the initial review meeting.

1.5.2 Schedule Update Meetings

1.5.2.1 County will administer **scheduling update meetings monthly** and will distribute meeting records of scheduling meetings to attendees. Details for Schedule Update Meetings shall conform to description provided in Section 01 32 26 (Schedules and Reports).

1.6 QUALITY CONTROL MEETINGS

1.6.1 Design Builder shall conduct a **minimum of weekly Quality Control Meetings** as part of the Design Builder's Quality Control Program, see Section 01 45 00 (Quality Control).

1.6.2 Design Builder's attendees at Quality Control Meetings shall at a minimum include:

1.6.2.1 Design Builder's Quality Control Manager
1.6.2.2 Design Builder's Commissioning Coordinator; as required
1.6.2.3 Design Builder's Safety Officer
1.6.2.4 Subcontractors actively working on Site or soon to mobilize.
1.6.2.5 Representatives of manufacturers and fabricators; as required
1.6.2.6 Design Builder's Engineer
1.6.2.7 Subconsultant Engineers as activities dictate.

1.6.3 County's attendees at Quality Control Meetings shall at a minimum include:

1.6.3.1 County's designated project manager

1.6.4 Quality Control Meetings agenda shall include at a minimum:

1.6.4.1 Submittal Review, including approval status and schedule

1.6.4.1.1 Product Data and MSDS
1.6.4.1.2 Shop Drawings & Coordination Documents
1.6.4.1.3 Substitutions and Modifications Request
1.6.4.1.4 Manufacture's Installation Requirements & Instructions
1.6.4.1.5 Manufacture's Operating Requirements & Instructions

1.6.4.2 Distribution of Testing and Inspection Reports

1.6.4.3 Review of In-progress Activities for compliance and timeliness.

1.6.4.4 Coordination of Upcoming Testing, Inspection and Observation Procedures & Requirements

1.6.4.5 Summary of activity successes, deficiencies, and corrective measures

1.7 SPECIAL MEETINGS

1.7.1 Design Builder Safety Meetings per approved Safety Plan.

1.7.2 Preparatory Meetings as activities dictate for Testing, Inspection and Observation.

1.7.3 Commissioning Meetings pursuant to the approved Commissioning Plan and Schedule.

1.7.3.1 Pre-Commissioning Planning
1.7.3.2 Commissioning Plan Review

1.7.3.3 Commissioning Scheduling and Procedures

1.7.4 Community Meetings as directed by County.

1.7.5 Ad Hoc Meetings as directed by County.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

SECTION 01 32 26

SCHEDULES AND REPORTS

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 Design Builder shall perform scheduling of Work under these Contract Documents in accordance with requirements of this Section 01 32 26 and Section 01 33 00 (Submittal Procedures).

1.1.1.1 Development of schedule, cost and resource loading of the Project Schedule, monthly payment requests and project status reporting requirements of the Contract Documents shall employ scheduling as required in this Section 01 32 26.

1.1.1.2 Project Master Schedule, Design Schedule and Construction Schedules shall be time-scaled and cost- and resource-loaded. Monthly Schedule Updates shall be time-scaled and cost loaded. Cost loading shall be the basis of the Schedule of Values as specified in Section 01 29 00 (Payment Procedures).

1.1.1.3 All Schedules shall be in Primavera® (latest edition) computer software format compatible with County's existing computer software format, SureTrak.

1.1.1.4 All Schedules shall be submitted prior to the dates identified in Section 01 33 00 (Submittal Procedures).

1.1.2 Design Builder's obligations under paragraph 1.1.1 of this Section 01 32 26 are hereby deemed material obligations. Nothing in this paragraph 1.1.2 or the lack of an express statement that any other Contract Document provision is or is not material shall be considered in determining whether any such other provision is material.

1.1.3 Scheduling Consultant Qualifications: The Design Builder's team shall include a specialist in CPM scheduling and reporting acceptable to the County with experience performing scheduling required herein **on at least two prior, similar projects**, and with the capability of producing CPM reports and diagrams **within 48 hours of County's request.**

1.1.4 Transmit each item under form approved by County or following Section 01 33 00 (Submittal Procedures).

1.1.4.1 Identify Project with the County's Project Number, Project Name, and name of Design Builder.

1.1.4.2 Provide space for Design Builder's approval stamp and County's review stamps.

1.1.4.3 Submittals received from sources other than Design Builder will be returned to Design Builder without County's review.

1.2 GENERAL SCHEDULE REQUIREMENTS

1.2.1 Schedules: The Design Builder shall submit an operating electronic version of an original, plus hardcopy versions, of the following schedules to the County:

1.2.1.1 Proposed Schedule as included in the Design Builder's Proposal Package for the Request for Proposals as outlined in Article 23.2.1 of Document 00 11 19 (Request for Proposals). The Proposed Schedule shall be in accordance with the requirements outlined in paragraph 1.3 below. The accepted Proposed Schedule shall serve as the basis for preparing the Project Master Schedule.

1.2.1.2 Project Master Schedule as required by Section 01 11 20 (Design Services and Deliverables) and paragraph 1.4 below.

1.2.1.3 Design Schedule as required in paragraph 1.5 below.

1.2.1.4 Construction Schedule as required in paragraph 1.6 below.

1.2.1.5 Look Ahead Schedule as required in paragraph 1.6 below.

1.2.2 Acceptance Procedures for Baseline Schedules:

1.2.2.1 Submittal of the Project Master Schedule, Design Schedule, and Construction Schedules shall adhere to the schedule submittal process outlined in Document 01 33 00 (Submittal Procedures), paragraph 1.5.

1.2.2.2 Original Master Project Schedule and Design Schedule shall be reviewed at the Design Conference. **Within seven (7) Days after the Design Conference**, the County will review and either accept the Schedules or reject and provide comments, suggested changes, and revisions that must be addressed by the Design Builder to the satisfaction of the County. Design Builder shall **correct and resubmit the Schedule within seven (7) Days.**

1.2.2.3 **Within seven (7) Days of receipt of revised Project Master Schedule** and Design Schedule, the County will either accept the Schedules or reject and request further information and justification. Design Builder shall, **within three (3) Days**, provide County with a complete written narrative response to the County's request discussing how the baseline resubmittal addresses each of the contract conformance deficiencies noted in the original submittals.

1.2.2.4 Detailed Construction Schedules shall be reviewed at Pre-Construction Conferences for each major phase of work outlined in Section 01 31 19 (Project Meetings). **Within seven (7) Days after the Pre-Construction Conference**, the County will review and either accept the Schedule or reject and provide comments, suggested changes, and revisions that must be

addressed by the Design Builder to the satisfaction of the County. Design Builder shall **correct and resubmit the Schedule within seven (7) Days.**

1.2.2.5 **Within seven (7) Days of receipt of revised Detailed Construction Schedule**, the County will either accept the Schedule or reject and request further information and justification. Design Builder shall, **within three (3) Days, provide County with a complete written narrative response** to the County's request discussing how the baseline resubmittal addresses each of the contract conformance deficiencies noted in the original submittals.

1.2.3 Time of Completion: Overall time of completion and time of completion for each Milestone shown on Project Master Schedule shall adhere to times in Document 00 52 53 (Agreement) as modified by paragraph 3.3.5 of Document 00 52 53. Modification pursuant to paragraph 3.3.5 of Document 00 52 53 shall be by a no-cost Change Order which shall include modified Design, Construction and Project Master Schedules and reduce times for completion listed in paragraph 3.3 of Document 00 52 53. Notwithstanding any modification to the Contract Times pursuant to paragraph 3.3.5 of Document 00 52 53, Design Builder may otherwise choose to work to an earlier (advanced) schedule, but should it choose to do so:

1.2.3.1 It must first notify the County of its intention to work to an earlier (advanced) schedule and provide a written explanation of how it intends to improve on the Contract Times. County is not required to accept such an earlier (advanced) schedule, i.e., one that shows early completion dates for the Contract Times.

1.2.3.2 Design Builder shall not be entitled to extra compensation in the event Design Builder completes its Work, for whatever reason, beyond completion dates shown in such an earlier (advanced) schedule but within the Contract Times.

1.2.3.3 A schedule showing the work completed in less than the Contract Times shall be considered to have Project Float. The Project Float is the time between the scheduled completion of the Work and the Contract Time for completion of the Work. Project Float is a resource available to both County and Design Builder.

1.2.4 Float Ownership: Neither County nor Design Builder owns float. The Project owns the float. As such, liability for delay to the Work rests with the party whose unexcused delay, last in time, actually causes delay to the Project.

1.2.4.1 For example, if Party A incurs unexcused delay and uses some, but not all of the float and Party B later incurs unexcused delay and uses the remainder of the float as well as additional time beyond the float, Party B shall be liable for the delay that represents a delay to the Work.

1.2.4.2 Party A would not be responsible for the delay since it did not consume all the float and additional float remained; therefore, completion was unaffected by Party A.

1.2.5 The Design and Construction Progress Schedules shall be the basis for evaluating job progress, payment requests, and time extension requests. Responsibility for developing Contract schedules and monitoring actual progress as compared to Progress Schedule rests with Design Builder.

1.2.6 Failure of the Progress Schedule to include any element of the Work or any inaccuracy in Progress Schedule will not relieve Design Builder from responsibility for accomplishing the Work in accordance with the Contract Documents. The County's acceptance of the Design and Construction Progress Schedules shall be for its use in monitoring and evaluating job progress, payment requests, and time extension requests, and shall not, in any manner, impose a duty of care upon County, or act to relieve Design Builder of its responsibility for means and methods of design and construction.

1.2.7 County Review Requirements: The Design Builder shall consider the County review requirements as specified in Section 01 11 20 (Design Services and Deliverables). The Design Builder shall have the responsibility to package and submit complete and coordinated submittal documents to County.

1.2.8 The Design Builder shall specifically include in all schedules the EIR MND Addendum Mitigation Measures identified in paragraph 16.8 of Document 00 72 53 (General Conditions).

1.3 PROPOSED SCHEDULE

1.3.1 The Design Builder shall submit a Proposed Schedule as part of the Phase II Proposal in response to the requirements specified in Section 00 11 19 (Request for Proposals) . The Proposed Schedule shall fit within and coordinate with the Contract Times, including any and all design interfaces.

1.3.2 Preparation: Indicate each significant Contract activity separately. Activities to be included in the Proposed Schedule will be as follows:

1.3.2.1 Detailed activities for Design of all phases of the Work including but not limited to all design deliverables as required by Section 01 11 20 (Design Services and Deliverables), design coordination meetings, other Agency reviews, other third party reviews, and incorporation of comments, through Permit and acceptance of the Construction Documents. All activities described in this paragraph, shall be incorporated into the Proposed Schedule.

1.3.2.2 Detailed Submittal, review, and procurement activities for all critical and near-critical submittals for the Work.

1.3.2.3 Detailed plan for mobilization, execution of contracts, design as described in Section 01 11 20 (Design Services and Deliverables), submittals, procurement, and all work that must be performed prior to the start of construction of the Project.

1.3.2.4 Summarize activities related to construction for the remainder of the Work.

The remainder of the Work will include, but shall not be limited to, the following activities in reasonable detail, and indicating the probable critical path:

1.3.2.4.1 Critical lead times

1.3.2.4.2 Building structure activities

1.3.2.4.3 Finish site work

1.3.2.4.4 Building commissioning and move-in activities

1.3.2.4.5 Demolition and relocation of utilities associated with construction of the Project.

1.3.2.4.6 Final site work activities

1.4 PROJECT MASTER SCHEDULE

1.4.1 The Design Builder shall prepare the Project Master Schedule, which shall adhere to times stated in Document 00 52 53 (Agreement) and in the accepted Proposed Schedule. The Project Master Schedule will outline all dates and time periods for the delivery of all Design Builder's services and requirements for information from the County necessary for the performance of the Services. Failure to include any work item required for performance of this Contract on the Schedule shall not excuse Design Builder from completing all work within applicable completion dates, regardless of County's approval of the schedule. The Project Master Schedule will include, but not limited to, the following items:

1.4.1.1 Schedule for completing the project design documents (through release for construction), each required submittal and the times for submitting, reviewing and processing such submittal, as specified in Section 01 11 20 (Design Services and Deliverables).

1.4.1.2 Preparation and processing of Construction submittals.

1.4.1.3 Critical lead times.

1.4.1.4 Significant construction milestones (e.g., groundbreaking, rough grading and excavation, completion of site utilities, completion of foundation, completion of structural frame, completion of exterior shell, substantial completion, testing & commissioning, move-in, final completion dates, etc.).

1.4.1.5 Date for decision from County on items affecting the Design Builder's schedule.

1.4.1.6 Utility interruptions, relocation, and connections affecting Project operations.

1.4.2 The **Project Master Schedule shall be updated on a monthly basis** and submitted as

part of each Progress Payment Application.

1.5 DESIGN SCHEDULE

1.5.1 The Design Schedule shall adhere to Contract Times in Document 00 52 53 (Agreement) and specified in the accepted Proposed Schedule. The Design Schedule shall include all activity detail for completing the design of all phases of the Work. Failure to include any work item required for performance of this Contract on the Schedule shall not excuse Design Builder from completing all work within applicable completion dates, regardless of County's approval of the schedule. The Design Schedule shall include, but not be limited to the following:

1.5.1.1 Preparation and review of Design submittals and other critical design completion dates. Include all design deliverables as required by Document 01 11 20 (Design Services and Deliverables).

1.5.1.2 Design coordination meetings

1.5.1.3 Conference(s) with County and review times.

1.5.1.4 Dates for decision from County on designated items or orders affecting schedule.

1.5.1.5 Dates for reviews by Other Agencies Having Jurisdiction, Utility Companies and third parties.

1.5.1.6 Time for incorporation of comments.

1.5.1.7 Permits (if required).

1.5.1.8 Acceptance of the Construction Documents for the Project

1.5.2 Design Builder shall resubmit Original Schedule to address County comments if requested by County. Resubmittal will be delivered **no more than 5 (five) Days after receipt of County comments or request.**

1.6 CONSTRUCTION SCHEDULE

1.6.1 The Construction Schedule shall adhere to times in Document 00 52 53 (Agreement) and specified in the accepted Proposed Schedule. The Construction Schedule (Original and updates) shall indicate all separate fabrication, procurement and field construction activities required for completion of the Work. Failure to include any work item required for performance of this Contract on the Schedule shall not excuse Design Builder from completing all Work within the Contract Times, regardless of County's approval of the schedule.

1.6.2 Activities: All Design Builder, Subcontractor, and assigned Design Builder work (including engineering and other professional services) shall be shown in a logical sequence that demonstrates a coordinated plan of work. The intent is to provide a common basis of acceptance, understanding, and communication, as well as interface

among all parties involved in the Project, including but not limited to Subcontractors. Indicate the estimated time duration, sequence requirements, and relationship of each activity in relation to other activities. Show dependencies and logic between activities so that the effect of progress (or lack of progress) on related activities and the overall schedule can be monitored. The list of activities shall include, but not be limited to, the following:

1.6.2.1 Submittal Preparation and Review: Include review and resubmittal times indicated in Section 01 33 00 (Submittal Procedures), in schedule. Coordinate submittal review times in Design Builder's Contract Schedule with Submittals Schedule. Phase the submittal process to ensure that items are submitted in order of their importance to the construction process. Implement a system that staggers submittals by "start no earlier than" date, complexity and number.

1.6.2.2 Include procurement process activities for long lead items and major items requiring a **cycle of more than sixty (60) Days as separate activities** in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery. Delivery dates indicated stipulate the earliest possible delivery date.

1.6.2.3 Significant construction milestones including but not limited to:

1.6.2.3.1 Mobilization.

1.6.2.3.2 Earthwork and underground utility site work completion.

1.6.2.3.3 Structural frame completion.

1.6.2.3.4 Shell completion.

1.6.2.3.5 Plumbing installation.

1.6.2.3.6 Fire protection installation.

1.6.2.3.7 HVAC installation.

1.6.2.3.8 Electrical installation.

1.6.2.3.9 Security installation and completion.

1.6.2.3.10 Substantial Completion.

1.6.2.3.11 Beneficial Occupancy.

1.6.2.3.12 Final Project Completion.

1.6.2.3.13 Demobilization.

1.6.2.4 Date of request of designated working spaces, storage areas, access, and other facilities to be furnished by the County.

1.6.2.5 Dates for decision from County on designated items or orders affecting schedule.

1.6.2.6 Mock-up construction (if required).

1.6.2.7 Activities related to the delivery of Design Builder and County-furnished equipment to be Design Builder-installed per Contract shall be shown. Equipment requirements including, but not limited to, architecturally significant equipment, communications equipment, and security equipment. Design Builder shall include the latest date that County-furnished products are required to allow completion of the Work on schedule.

1.6.2.7.1 The latest date that installation details must be provided to the Design Builder to avoid schedule delays.

1.6.2.7.2 The latest delivery dates that will allow the project to be completed according to schedule.

1.6.2.8 Activities related to the delivery and installation of County-furnished and installed furniture to be coordinated by the Design Builder. Furniture requirements include, but are not limited to, electrical and data connections. Design Builder shall include the latest date that County-furnished products are required to allow completion of the Work on schedule.

1.6.2.8.1 The latest date that installation details must be provided to the Design Builder to avoid schedule delays.

1.6.2.8.2 The latest delivery dates that will allow the Work to be completed according to schedule.

1.6.2.9 Utility interruptions, relocation, and connections.

1.6.2.10 Show the effect of the following factors on the construction schedule:

1.6.2.10.1 Use of premises restrictions.

1.6.2.10.2 Environmental control.

1.6.2.11 Punch list preparation.

1.6.2.12 Work by County and/or by other contractors that may affect or be affected by Design Builder's activities. Include a separate activity for each contract, which may include, but are not limited to, utility companies, communications systems providers, equipment providers, and others.

1.6.2.13 Testing and commissioning. Include sufficient time to comply with the requirements of the Section 01 91 00 (General Commissioning Requirements); and any regulatory requirements; and assure completion of the Work within the Contract Time.

1.6.2.14 Licensing: allow time for administrative procedures necessary for certification of the Project.

1.6.2.15 All regulatory agency approvals (e.g., local Fire Marshal, others).

1.6.2.16 Move-in.

1.6.3 All activities shall be identified through codes or other identification to indicate the portion of the Work (i.e. County Building, site work) and Design Builder/Subcontractor responsibility to which they pertain.

1.6.4 Break up the Work schedule into activities of durations of **approximately fourteen (14) Days or less each**, except for non-field design and activities as otherwise deemed acceptable by County.

1.6.5 Critical Path Activities: Identify critical path activities, including those for interim completion dates. Scheduled start and completion dates shall be consistent with Contract milestone dates. Show the critical path in red. For each activity, show early start, late start, early finish, late finish, durations measured in Days, total and available float, resources, predecessor and successor activities, planned workday/week for the activity and scheduled/actual progress payments. "Critical path" shall mean all activities with zero float. A path with **three (3) work days or less of float** shall be considered a "near critical path" and shown in a lighter shade of red. **No more than twenty percent (20%) of the schedule activities are to be considered critical** or near critical.

1.6.6 Seasonal weather conditions (which do not constitute a delay as defined herein) shall be considered in the planning and scheduling of all work influenced by high or low ambient temperatures or presence of high moisture to avoid delays. The number of allowable days of adverse weather is outlined in Document 00 72 53, Article 15.3 (General Conditions). The Design Builder shall adhere to procedures as specified in the Contract Documents for giving notice of delays resulting from adverse weather that exceeds the allowable Days.

1.6.7 The Design Builder shall meet with the County to review and discuss each Schedule (i.e., Original Construction Schedule and each monthly update) **within seven (7) Days after each Schedule has been submitted to County.**

1.6.7.1 County's review and comment on any Schedule shall be limited to Contract conformance (with sequencing, coordination, and milestone requirements).

1.6.7.2 Design Builder shall make corrections to Schedule necessary to comply with Contract requirements and shall adjust Schedule to incorporate any missing information requested by County. Design Builder shall resubmit Initial Original Schedule and Monthly Schedules if requested by County.

1.6.8 If Design Builder is of the opinion that any of the Work included on its Schedule has been impacted such that there will be a delay in achieving any Milestone, it shall submit to County a written Time Impact Evaluation ("TIE") in accordance with paragraph 1.10 below. The TIE shall be based on the most current update of the Schedule.

1.6.9 **A three (3) week "Look Ahead Schedule"**, detailed daily bar chart schedule shall be updated and issued weekly.

1.6.9.1 Look Ahead Schedule shall cover a **twenty eight (28) Day period**,

beginning with the week preceding the 3-week detailed look ahead.

1.6.9.2 Use the Contract Schedule as the basis for generating the 3-week detailed schedule.

1.6.9.3 Format:

1.6.9.3.1 Provide bar chart using same logic as Contract Schedule, with **maximum fourteen (14 Day) construction activity duration.** Provide activity identification used on the accepted Contract Schedule.

1.6.9.3.2 Provide daily resource allocation for each trade.

1.6.9.3.3 Provide exact activity location for scheduled Work.

1.6.9.4 Provide information for each significant activity, with special care taken to describe scheduling and coordination with other contracts, and Work by the County, including but not limited to utility shutdowns, road closures, etc.

1.6.9.5 Show the status of all outstanding and pending submittals including scheduled and actual submittal dates, the durations and expiration of submittal review periods, etc.

1.7 MONTHLY SCHEDULE UPDATE SUBMITTALS

1.7.1 Following acceptance of Design Builder's Project Master Schedule, Design Schedule and Construction Schedule, Design Builder shall monitor progress of Work and update Schedules each month to reflect actual progress on each activity and any anticipated changes to planned activities. Monthly Schedule Updates shall include the following:

1.7.1.1 Design Builder's estimated percentage complete for each activity in progress.

1.7.1.2 Actual start/finish dates for all activities shown on initial Contract Schedule with all subsequent approved additions.

1.7.1.3 List of materials and/or equipment delivered for which Design Builder is requesting payment and original invoice verifying cost.

1.7.1.4 Identification of processing errors, if any, on the previous update reports.

1.7.1.5 Resolution of any conflicts between actual progress and planned progress when out-of-sequence activities arise. Design Builder shall submit revisions to schedule logic to conform to current job status and directions, without changing original activity identification.

1.7.1.6 Each update shall include a written narrative report (as specified in Paragraph 1.12.1 below) with the updated progress analysis.

1.7.1.7 CPM Reports: Concurrent with CPM schedule updates, submit **one (1)**

electronic and five (5) hardcopies of each of the following computer-generated reports. Format for each activity in reports shall contain activity number, activity description, cost and resource loading, original duration, remaining duration, early start date, early finish date, late start date, late finish date, and total float.

1.7.1.7.1 Provide printed report indicating actual versus planned resource loading for each trade and each activity. This report shall be **provided on a monthly basis.** Actual resource information shall be recorded on Design Builder's daily reports. These reports will be basis for information provided in monthly printed reports. Explain all variances and mitigation measures.

1.7.1.7.2 A Predecessor / Successor Report: List of all activities showing associated predecessor/successor activities, their logical relationships, free float, total float, early start/early finish date.

1.7.1.7.3 Total Float Report: List of all activities sorted in ascending order of total float, and then early start/early finish date.

1.7.1.7.4 Earnings Report: Compilation of Design Builder's earnings from Notice to Proceed until the most recent Application for Payment. Show all activities sorted and grouped by project phase and location. For each activity show the Activity ID, description, budgeted cost, percent completed as of the last update, percent completed to-date, cost as of the previous period, cost this period, and cost-to-date.

1.7.1.7.5 The Design Builder shall submit any other type of report as deemed necessary by the County.

1.7.1.8 The updated Contract Schedule shall accurately represent the as-built condition of all completed Work and the percentage remaining of all in-progress Work activities as of the date of the updated Contract Schedule.

1.7.1.9 The updated Contract Schedule shall incorporate all changes mutually agreed upon by Design Builder and County during preceding periodic reviews, all changes resulting from Change Orders and Field Orders, and all remaining days of the inclement weather and regulatory review durations.

1.7.1.10 Design Builder shall perform the Work in accordance with the updated Contract Schedule. Design Builder may change the Contract Schedule to modify the order or sequence of accomplishing the Work only with the County's prior agreement.

1.7.1.11 **Within the first (1st) week of each month**, the County will administer a monthly schedule update meeting. At or before the monthly schedule update meeting, Design Builder shall submit a monthly updated schedule indicating activity status through the end of the previous month. Design Builder shall

include in the monthly updated schedule any proposed schedule revisions as outlined in paragraph 1.8 below.

1.7.1.12 Procedures for review and acceptance of the monthly updated schedule are outlined in paragraph 1.8 below.

1.7.1.13 No Application for Payment will be processed, nor shall any progress payments become due~~,~~ until updated Contract Schedules are accepted by the County's Representative.

1.7.1.14 The accepted, updated Contract Schedule shall be the Contract Schedule of record for the period it is current and shall be the basis for payment during that period.

1.7.1.15 A CD ROM containing the complete Primavera Project Planner data for the **Contract Schedule update and five (5) hard copies** of computer-generated schedule and reports will be furnished to the County's Representative for processing the application for payment. The Design Builder shall provide full access to electronic Primavera schedule files for the County.

1.8 SCHEDULE REVISIONS

1.8.1 The County will administer a monthly schedule update meeting to review and discuss each monthly updated schedule submittal.

1.8.1.1 Included with each monthly updated schedule submittal, the Design Builder shall submit any proposed schedule revisions to the County's Representative, including, but not limited to, the following:

1.8.1.1.1 Actual and anticipated duration changes including revisions due to inclement weather or regulatory agency review delays;

1.8.1.1.2 TIEs for Change Orders and Time Extension Request;

1.8.1.1.3 Schedule diagrams showing resolution of conflicts between actual Work progress and schedule logic when out-of-sequence activities develop because of actual construction progress. Design Builder shall submit revisions to schedule logic to conform to current job status and directions, without changing original activity identification;

1.8.1.1.4 Actual and anticipated Design Builder delays;

1.8.1.1.5 A narrative report with the updated progress analysis, which shall include, but shall not be limited to, a description of problem areas, current and anticipated delaying factors and their impacts, and explanations of corrective action taken and any proposed revisions for a Recovery Plan as defined below.

1.8.1.2 These meetings are considered a critical component of overall monthly schedule update submittal; accordingly, Design Builder shall ensure that appropriate personnel from its organization attend. At a minimum, Design

Builder's General Superintendent and Scheduler shall attend these meetings.

1.8.1.3 Monthly Schedule update meetings will be scheduled for **no less than two (2) hours duration.**

1.8.2 **Within seven (7) Days after the monthly schedule update meeting**, the County will either accept the Schedule or reject the Schedule and provide comments, suggested changes, and revisions that must be addressed by the Design Builder to the satisfaction of the County. Design Builder shall **correct and resubmit the Schedule within seven (7) Days.**

1.8.3 Neither the updating, changing, or revising of any report, curve, schedule or narrative submitted to County by Design Builder under this Contract, nor County's review or acceptance of any such report, curve, schedule, or narrative, shall have the effect of amending or modifying, in any way, Contract Time or milestone dates or of modifying or limiting, in any way, Design Builder's obligations under this Contract.

1.8.4 For rejected schedule update resubmittals, the County may request further information and justification and Design Builder shall, **within three (3) Days, provide County with a complete written narrative response** to the County's request discussing how the resubmittal addresses each of the remaining deficiencies noted in the schedule update resubmittal.

1.8.5 If the County does not accept Design Builder's schedule update resubmittal, and Design Builder disagrees with County's position, Design Builder has **seven (7) Days from receipt of County's letter** rejecting the revision to provide a written narrative providing full justification and explanation for the revision. Design Builder's failure to respond in writing **within seven (7) Days of County's written rejection of a schedule revision** shall constitute Design Builder's acceptance of County's position, and Design Builder thereby waives its rights to subsequently dispute or file a claim regarding the County's position. If Design Builder files a timely response as provided in this paragraph, and the parties are still unable to agree, Design Builder's sole right shall be to file a Claim as provided in Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions).

1.9 RECOVERY SCHEDULE

1.9.1 If the Schedule Update or Look Ahead Schedule shows Milestone completion **more than fourteen (14) Days beyond the Contract Time**, or any individual milestone completion dates, Design Builder shall **within seven (7) Days, submit to County a Recovery Plan** to recover the lost time. As part of this submittal, Design Builder shall provide a written narrative and a Recovery Schedule to recapture the lost time. The Recovery Plan shall propose revisions to the Contract Schedule **for the next 60-day period** to show how the Design Builder intends to bring the Work back on schedule. If the Recovery Schedule includes sequence changes, Design Builder shall provide a schedule diagram comparing the original Design Builder sequence to the revised sequence of the Work. The Recovery Schedule shall show the intended critical path; Design Builder shall secure and document appropriate Subcontractor and supplier consent to the Recovery Schedule; the narrative shall explain trade flow and construction flow changes, duration changes,

added/deleted activities, critical path changes and identify all near critical paths and resource loading assumptions for major Subcontractors. The Recovery Plan shall also describe how the measures that the Design Builder intends to take to regain schedule compliance will be accomplished without additional cost to the County.

1.9.2 The Recovery Schedule shall not be incorporated into any Schedule update until County has reviewed the Recovery Schedule.

1.9.3 If County does not accept Design Builder's Recovery Schedule, County and Design Builder shall follow the procedures in paragraphs 1.8.4 and 1.8.5 above.

1.9.4 At County's discretion, Design Builder can be required to provide Subcontractor certifications for any Recovery Schedule affecting said Subcontractors.

1.9.5 Design Builder shall provide supervision, labor, equipment and materials, as necessary, to recover the lost time.

1.9.6 If Design Builder believes that any portion of the delay addressed in the Recovery Schedule is due to circumstances entitling Design Builder to additional time or money, it may seek a modification of the Contract Documents under Article 14 (Modifications of the Contract Documents) of Document 00 72 53 (General Conditions), or make a Claim for the same pursuant to Article 12 (Claims by Design Builder) of Document 00 72 53, and other applicable provisions of the Contract Documents.

1.10 TIME IMPACT EVALUATION FOR CHANGE ORDERS, AND OTHER DELAYS

1.10.1 Any request for an adjustment of the Contract Time(s) submitted by Design Builder for changes or alleged delays shall be accompanied by a complete Time Impact Evaluation ("TIE") which includes both a written narrative and a hard and fully operational electronic copy of a schedule diagram depicting how the changed work affects other schedule activities. The schedule diagram shall show how Design Builder proposes to incorporate the changed work in the schedule, and how it impacts the critical path on the current schedule update. Design Builder is responsible for requesting time extensions based on the TIE's impact on the critical path. The diagram must be tied to the main sequence of schedule activities to enable County to evaluate the impact of changed work to the scheduled critical path.

1.10.2 Design Builder shall comply with the requirements of Paragraph 1.10.1 for all types of delays such as, but not limited to, Design Builder/Subcontractor delays, claimed County or third party caused delays, adverse weather delays, strikes, procurement delays, fabrication delays, etc.

1.10.3 Design Builder shall be responsible for all costs associated with the preparation of TIEs, and the process of incorporating them into the current schedule update. Design Builder shall provide County with an **operational electronic copy and five (5) hardcopies of each TIE.** Design Builder's TIEs must be based on the as-built critical path as of the date of the alleged delay. The TIE shall also show the as-planned critical path at that time.

1.10.4 Once agreement has been reached on a TIE, the Contract Time will be adjusted accordingly. If agreement is not reached on a TIE, the Contract Time may be extended in an amount County allows, and Design Builder may submit a Claim for additional time claimed by Design Builder as provided in Document 00 72 53 (General Conditions).

1.11 TIME EXTENSIONS

1.11.1 Design Builder is responsible for requesting Contract Time extensions for events that, in the opinion of Design Builder, affect the critical path as shown on the then-current schedule update. Notice of time impacts shall be given in accord with Document 00 72 53 (General Conditions).

1.11.2 Where an event for which either Design Builder or County is responsible affects the projected Contract Time, Design Builder shall provide a written mitigation plan, including a schedule diagram, which explains how (e.g., increase crew size, overtime, etc.) the impact will be mitigated. Design Builder shall also include a detailed cost breakdown of the labor, equipment and material Design Builder would expend to mitigate the delay. Design Builder shall submit its mitigation plan to County **within seven (7) Days from the date of discovery of the impact.** Design Builder is responsible for the cost to prepare the mitigation plan.

1.11.3 Design Builder's failure to give notice of a delay, request time, provide TIE, or provide the required mitigation plan will result in Design Builder waiving its right to a time extension and recovery of cost to mitigate the delay.

1.11.4 Design Builder shall be responsible to provide timely and proper notice to the County of all events that could result in Contract Time extensions and shall comply with requirements as specified in Section 00 72 53 (General Conditions), Paragraph 4, Article 15.

1.11.5 No time will be granted under the Contract Documents for cumulative effect of impacts or changes.

1.11.6 County will not be obligated to consider any time extension request unless all requirements of Contract Documents are complied with.

1.11.7 Failure of Design Builder to perform in accordance with the current schedule update shall not be excused by submittal of time extension requests.

1.12 PROJECT STATUS REPORTING

1.12.1 Monthly. In addition to submittal requirements for scheduling identified in this Section 01 32 26, **provide a monthly project status report** (i.e., written narrative report) to be submitted in conjunction with each Schedule as specified herein in electronic and hard copy. Written status reports shall include:

1.12.1.1 Status of major Project components (percent complete, amount of time ahead or behind schedule) and an explanation of how Project will be brought back on schedule if delays have occurred.

1.12.1.2 Progress made on critical activities indicated on each Schedule, including inspections.

1.12.1.3 Explanations for any lack of work on critical path activities planned to be performed during last month.

1.12.1.4 Explanations for any schedule changes, including changes to logic or to activity durations.

1.12.1.5 List of critical activities scheduled to be performed during the next month.

1.12.1.6 Status of major material and equipment procurement.

1.12.1.7 Description of problem areas, current and anticipated delaying factors and their impacts, and an explanation of corrective action taken.

1.12.1.8 Any proposed revisions for a recovery plan.

1.12.1.9 Design Builder may include any other information pertinent to status of Project.

1.12.1.10 Design Builder shall produce additional status reports as requested by County at no additional cost.

1.12.1.11 Status reports, and the information contained therein, shall not be construed as claims, notice of claims, notice of delay, or requests for changes or compensation.

1.12.2 Daily Construction Reports: At the close of each workday provide County with report (on Design Builder's County-approved form) of a description of work activities by location for the previous work-day including the following:

1.12.2.1 List of subcontractors at Project site.

1.12.2.2 List of separate contractors at Project site.

1.12.2.3 Count of personnel at Project site.

1.12.2.4 Equipment at Project site.

1.12.2.5 Material deliveries.

1.12.2.6 High and low temperatures and general weather conditions.

1.12.2.7 Rainfall, if any.

1.12.2.8 Total number of inclement weather days to date.

1.12.2.9 Accidents.

1.12.2.10 Meetings and significant decisions.

1.12.2.11 Unusual events (refer to special reports).

1.12.2.12 Stoppages, delays, shortages, and losses.

1.12.2.13 Meter readings and similar recordings.

1.12.2.14 Inspections.

1.12.2.15 Emergency procedures.

1.12.2.16 Orders, visits and requests of authorities having jurisdiction.

1.12.2.17 Change Orders received and implemented.

1.12.2.18 Services connected and disconnected.

1.12.2.19 Equipment or system tests and startups.

1.12.2.20 Partial Completions and occupancies.

1.12.2.21 Substantial Completions authorized.

1.12.2.22 Results of construction monitoring activities including, at a minimum:

1.12.2.23 Noise control

1.12.2.24 Dust control

1.12.3 Material Location Reports: At weekly intervals, prepare and submit a comprehensive list of materials delivered to and stored at Project site. List shall be cumulative, showing materials previously reported plus items recently delivered. Include with list a statement of progress on and delivery dates for materials or items of equipment fabricated or stored away from Project site.

1.12.4 Field Condition Reports: Immediately on discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Include a detailed description of the differing conditions, together with recommendations for changing or proposed changes to the Construction Documents.

1.12.5 Reporting Unusual Events: When an event of an unusual and significant nature occurs at Project site, whether or not related directly to the Work, prepare and submit a special report. List chain of events, persons participating, response by Design Builder's personnel, evaluation of results or effects, and similar pertinent information. Advise County in advance when these events are known or predictable.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

SECTION 01 33 00

SUBMITTALS AND SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

Design Builder and County will jointly develop a list of submittals and shop drawings that are to be submitted to the County. Upon completion of the list, Design Builder will provide County with a preliminary schedule of shop drawings and submittals, which will list each submittal in order by specification section and the times for submitting, reviewing, and processing such submittal.

1.1.1 This section describes general requirements for submittals for the Construction Phase of the Work, including but not limited to:

1.1.1.1 Procedures

1.1.1.2 Schedule of Shop Drawing and Sample Submittals

1.1.1.3 Progress Schedule

1.1.1.4 Product Data

1.1.1.5 Shop drawings

1.1.1.6 Samples

1.1.1.7 Quality Control Submittals

1.1.1.7.1 Engineering Data

1.1.1.7.2 Test Reports

1.1.1.7.3 Certificates

1.1.1.7.4 Manufacturers' Instructions

1.1.1.8 Operations and Maintenance Manuals

1.1.1.9 Project Record Documents

1.1.2 Related Sections

1.1.2.1 Section 01 11 13 (Work Covered by Contract Documents)

1.1.2.2 Section 01 11 20 (Design Services and Deliverables)

1.1.2.3 Section 01 26 00 (Contract Modification Procedures)

1.1.2.4 Section 01 29 00 (Payment Procedures)

1.1.2.5 Section 01 31 19 (Project Meetings)

1.1.2.6 Section 01 32 26 (Schedules and Reports)

1.1.2.7 Section 01 45 00 (Quality Control)

1.1.2.8 Section 01 61 00 (Product Requirements)

1.1.2.9 Section 01 77 00 (Closeout Procedures)

1.1.2.10 Section 01 78 39 (Project Record Documents)

1.1.2.11 Section 01 91 00 (General Commissioning Requirements)

1.1.3 For Design Phase Deliverable Requirements, see Section 01 11 20 (Design Services and Deliverables). Submittals as described in this Document refer only to the Construction elements of the Work with the exception of Quality Control Submittals (see section 1.9.1 below), Progress Schedules and Reports which are applicable through both Design and Construction Phases.

1.2 PROCEDURES

1.2.1 Submit **one (1) set in hard copy and one (1) in electronic format** Schedule of Shop Drawing and Sample Submittals, Safety Plans, Progress Schedule, Product Data, Shop Drawings, Samples, Quality Control Data, Machine Inventory Sheets, Operations and Maintenance Manuals, Computer Programs, Project Record Documents, and other submittals required by the Contract Documents (collectively, "Submittals"). In lieu of physical copies of paper submittals, the Design Builder may request to submit electronic copies.

1.2.2 Transmit each submittal to the County with a standard letter of transmittal in form approved by County. One copy will be returned to Design Builder only when County action is required, generally where variations to the Contract Documents are proposed.

1.2.3 Identify Design Builder, Subcontractor, subconsultant, major supplier, pertinent drawing sheet and detail number, and specification section number as appropriate. Provide space for review stamps.

1.2.4 Where manufacturers' standard drawings or data sheets are used, they shall be marked clearly to show those portions of the data which are applicable to this Project.

1.2.5 Submit Submittals to County for review and action in accordance with accepted Schedule of Submittals. Also see Section 01 45 00 (Quality Control). During construction, route all Submittals to the County for review. Where a submittal represents deviations or substitutions from the accepted Construction Documents, County's review and approval is required.

1.2.6 The data shown on all Submittals shall be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to show County the materials and equipment Design Builder proposes to provide and to enable County to review the information for the limited purposes specified below. Samples shall be identified clearly as to material, supplier, pertinent data such as catalog numbers and the use for which it is intended and otherwise as County may require to enable County to review the submittal. The number of each Sample to be submitted will be as specified in the Specifications.

1.2.7 At the time of each submission, Design Builder shall give County specific written notice of all variations, if any, that the Submittal may have from the requirements of the accepted Contract Documents, and the reasons therefore. This written notice shall be in

a written communication separate from the Submittal. In addition, Design Builder shall cause a specific notation to be made on each Submittal submitted to County for review and approval of each such variation.

1.2.8 If County accepts such variation, it shall issue an appropriate Contract Modification with return to Design Builder of a reviewed set of the Submittal.

1.2.9 Submittal coordination and verification is the responsibility of Design Builder and its Subcontractors. Before submitting each Submittal, Design Builder/Subcontractor shall have determined and verified:

1.2.9.1 All field measurements (where possible), quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar information with respect thereto;

1.2.9.2 All materials with respect to intended use, fabrication, shipping, handling, storage, assembly and installation pertaining to the performance of the Work; and

1.2.9.3 All information relative to Design Builder's sole responsibilities and of design and means, methods, techniques, sequences and procedures of construction and safety precautions and programs incident thereto.

1.2.10 Design Builder shall also have reviewed and coordinated each Submittal with other Submittals and with the requirements of the Work and the Contract Documents.

1.2.11 Design Builder's submission to County of a Submittal will constitute Design Builder's representation that it has satisfied its obligations under the Contract Documents, and as set forth immediately above, with respect to Design Builder's review and approval of that Submittal.

1.2.12 Designation of work "by others", if shown in Submittals prepared by a Subcontractor, subconsultant or supplier, shall mean that work will be responsibility of Design Builder or another Subcontractor rather than the Subcontractor, subconsultant or supplier who has prepared submittals.

1.2.13 Prior to submitting to County, each of Design Builder's Submittals will have been reviewed by Design Build Architect and marked with actions defined as follows:

1.2.13.1 NO EXCEPTIONS TAKEN - Accepted subject to its compatibility with future Submittals and additional partial Submittals for portions of the Work not covered in this Submittal. Does not constitute approval or deletion of specified or required items not shown on the Submittal.

1.2.13.2 MAKE CORRECTIONS NOTED (NO RESUBMISSIONS REQUIRED) - Same as 1. above, except that minor corrections as noted shall be made by Design Builder.

1.2.13.3 AMEND AND RESUBMIT - Rejected because of major inconsistencies or errors which shall be resolved or corrected by Design Builder prior to

subsequent review by County.

1.2.13.4 REJECTED - RESUBMIT - Submitted material does not conform to Drawings and Specifications in major respect, e.g., wrong size, model, capacity, or material.

1.2.13.5 NOT REVIEWED - Submitted material has not been reviewed and is being returned to be acted upon by Design Builder without review.

1.2.14 Submittals marked REJECTED – Resubmit or Amend and Resubmit shall not be sent to the County.

1.2.15 COUNTY REVIEW & ACCEPTANCE REQUIRED - Submitted material that meets Design Builder's general acceptance but constitutes a variation from the accepted Construction Documents requires County-specific review and acceptance. County's reviewed submittal will be returned to Design Builder with actions as defined in 1 though 5 above.

1.2.16 It shall be Design Builder's responsibility to copy, conform and distribute reviewed Submittals in sufficient numbers for Design Builder's files, Subcontractors and vendors.

1.2.17 After County's review of a Submittal, revise and resubmit as required. Identify changes made since previous Submittal.

1.2.17.1 Begin no fabrication or work which requires Submittals until return of Submittals not requiring re-submittal.

1.2.17.2 Normally, Submittals will be processed and returned to Design Builder promptly and so as not to delay Design Builder's performance.

1.2.18 Distribute copies of reviewed Submittals to concerned persons. Instruct recipients to promptly report any inability to comply with Submittals.

1.3 SCHEDULE OF SHOP DRAWING AND SAMPLE SUBMITTALS

1.3.1 The Schedule of Shop Drawing and Sample Submittals will be used by County to schedule activities relating to review of submittals that may need County approval. County will need to review any shop drawing or submittal that proposes a substitution of products, systems or other deviation from accepted Construction Documents. Schedule of Shop Drawing and Sample Submittals shall show a timely distribution of Submittals and early Submittals of long lead-time items to allow sufficient time for review and comments.

1.3.2 Schedule of Shop Drawing and Sample Submittals shall be reviewed by County and shall be revised and resubmitted until accepted by County.

1.4 SITE SPECIFIC SAFETY PLAN

1.4.1 Neither Design Builder nor any Subcontractor will begin on-site work until their Site Specific Safety Plan, if required, has been reviewed and accepted by County.

Acceptance of the Site Specific Safety Plan shall not affect Design Builder's responsibility for maintaining a safe working place and instituting safety programs in connection with project. Neither the County nor any of its representatives assume any responsibility for Design Builder's safety related obligations. Design Builder shall have sole responsibility for project related safety on and off the Site.

1.4.2 The Design Builder's Safety Plan must meet approval of the County.

1.5 PROGRESS SCHEDULE

1.5.1 See Section 01 32 26 (Schedules and Reports) for schedule and report requirements.

1.5.2 Submit **one (1) operating electronic version on compact disk and five (5) print copies of the schedule** at each of the following times:

1.5.2.1 Original Project Master Schedule **at least five (5) Days prior to the Design Conference or within fourteen (14) Days of Notice to Proceed**, which ever is earliest.

1.5.2.2 Detailed Design Schedule **at least five (5) Days prior to the Design Conference or within fourteen (14) Days of Notice to Proceed**, which ever is earliest.

1.5.2.3 Detailed Construction Schedules a **minimum of ten (10) Days prior to the Pre-Construction Conference** outlined in Section 01 31 19 (Project Meetings) **or within forty (40) Days prior to start of construction**, which ever is earliest.

1.5.2.4 Construction Progress Schedule **updates monthly, submitted with each Pay Application.**

1.6 PRODUCT DATA

1.6.1 **Within thirty (30) Days after County's acceptance of completed Construction Documents** for either entire Project or each accepted phase of work as maybe defined by Design Builder submit **five (5) copies of complete list of major products** proposed for use, with name of the manufacturer, trade name, and model number of each product.

1.6.2 For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.6.3 Tabulate products by specification section number.

1.6.4 Supplemental Data:

1.6.4.1 Submit number of copies which Design Builder requires, **plus five (5) copies** which will be retained by County.

1.6.4.2 Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information

unique to the Project.

1.6.5 Provide copies for Project Record Documents described in Section 01 77 00 (Closeout Procedures).

1.7 SHOP DRAWINGS

1.7.1 Minimum Sheet Size: 8-1/2 inches by 11 inches. All others: Multiples of 8-1/2 inches by 11 inches, 34 inches by 44 inches maximum.

1.7.2 For 8-1/2 inch by 11 inch and 11 inch by 17 inch sheets, submit the number of copies which Design Builder requires, plus five (5) copies which will be retained by County.

1.7.3 For 17 inch by 22 inch through 34 inch by 44 inch sheets, submit one (1) reproducible transparency and two (2) prints. After review, reproduce and distribute.

1.7.4 The original sheet or reproducible transparency will be marked with County's review comments and returned to Design Builder when required as outlined in paragraph 1.2 above.

1.7.5 Mark each copy to identify applicable products, models, options, and other data; supplement manufacturers' standard data to provide information unique to the Work.

1.7.6 Include manufacturers' installation instructions when required by Specification section.

1.8 SAMPLES

1.8.1 Submit full range of manufacturers' standard colors, textures, and patterns when County's selection is required.

1.8.2 Submit samples to illustrate functional and aesthetic characteristics of each product, with integral parts and attachment devices. Coordinate Submittal of different categories for interfacing work.

1.8.3 Include identification on each sample, giving full information.

1.8.4 Submit five (5) samples unless otherwise specified.

1.8.5 Sizes: Unless otherwise specified, provide the following:

1.8.5.1 Paint Chips: Manufacturers' standard

1.8.5.2 Flat or Sheet Products: Minimum 6 inches square, maximum 12 inches square

1.8.5.3 Linear Products: Minimum 6 inches, maximum 12 inches long

1.8.5.4 Bulk Products: Minimum 1 pint, maximum 1 gallon

1.8.6 Full size samples may be used in the Work upon approval.

1.8.7 Mock-ups: if required.

1.9 QUALITY CONTROL SUBMITTALS

1.9.1 Design Data: Five (5) copies. One (1) copy will be marked with County's review comments and returned to Design Builder when required as outlined in paragraph 1.2 above.

1.9.1.1 Indicate that the design data conforms to or exceeds the requirements of the Contract Documents.

1.9.1.2 Submit supporting reference data, affidavits, and certifications as appropriate.

1.9.1.3 Identify conflicts with test reports, certificates, manufacturer's instructions or specific aspect(s) of the Contract Documents.

1.9.2 Test Reports: Five (5) copies. One (1) copy will be marked with County's review comments and returned to Design Builder when required as outlined in paragraph 1.2 above.

1.9.2.1 Indicate that the material or product conforms to or exceeds specified requirements.

1.9.2.2 Reports may be from recent or previous tests on material or product, but must be acceptable to County. Comply with requirements of each individual Specification.

1.9.3 Certificates: Five (5) copies. One (1) copy will be marked with County's review comments and returned to Design Builder when required as outlined in paragraph 1.2 above.

1.9.3.1 Indicate that the material or product conforms to or exceeds specified requirements.

1.9.3.2 Submit supporting reference data, affidavits, and certifications as appropriate.

1.9.3.3 Certificates may be recent or from previous test results on material or product, but must be acceptable to County.

1.9.4 Manufacturers' Instructions: Five (5) copies. One (1) copy will be marked with County's review comments and returned to Design Builder when required as outlined in paragraph 1.2 above.

1.9.4.1 Include manufacturers' printed instructions for delivery, storage, assembly, installation, startup, adjusting, and finishing.

1.9.4.2 Identify conflicts between manufacturers' instructions and Contract Documents.

1.10 MACHINE INVENTORY SHEETS

1.10.1 Not applicable.

1.11 OPERATIONS AND MAINTENANCE MANUALS

1.11.1 Refer to Section 01 78 23 (Operation and Maintenance Data) for Operation and Maintenance Manual submittal requirements.

1.12 COMPUTER PROGRAMS

When any equipment requires operation by computer program(s), submit a copy of the program on appropriate compact disk or appropriate media plus all user manuals and guides for operating the programs and making changes in the programs for upgrading and expanding the databases. Programs must be Windows XP compatible, or in a form otherwise acceptable to County. Provide required licenses to County at no additional cost.

1.13 PROJECT RECORD DOCUMENTS

Submit one (1) copy of each of the Project Record Documents listed in Section 01 77 00 (Closeout Procedures) and Section 01 78 39 (Project Record Documents).

1.14 DELAY OF SUBMITTALS

Delay of Submittals by Design Builder is considered avoidable delay and Design Builder will not be entitled to an adjustment of the Contract Price or Contract Time(s) due to delays attributed to late Submittals. Liquidated damages incurred because of late Submittals will be assessed to Design Builder.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

DOCUMENT 01 35 23

CONSTRUCTION INDOOR AIR QUALITY MANAGEMENT

PART 1 GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.02 CONSTRUCTION IAQ MANAGEMENT REQUIREMENT

A. The Work of this Project shall minimize the detrimental impacts on Indoor Air Quality (IAQ) resulting from construction activities. Minimize factors that contaminate indoor air, such as, but not limited to: Dust entering HVAC systems and ductwork, improper storage of materials on-site, and poor housekeeping.

B. Design Builder shall develop an Indoor Air Quality (IAQ) Management Plan that is based on the minimum requirements of the Sheet Metal and Air Conditioning National Design Builders Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction.

C. Permanent heating, ventilation, and air conditioning equipment shall not be used for to heat, cool, or ventilate zones, areas, and sites that are under construction. Design Builder shall include measures to provide temporary ventilation, heating, and cooling as necessary.

1.03 SUMMARY

A. This Section includes Design Builder requirements for the development and implementation of a Construction Indoor Air Quality Management Plan (IAQ Plan). Develop the IAQ Plan for review and approval by Owner. The IAQ Plan shall be implemented throughout the duration of the project construction, and shall be documented as outlined in the SUBMITTALS Article below.

B. The IAQ Management plan shall be submitted to Owner for review and approval must prior to the commencement of construction.

1.04 DEFINITIONS

A. Volatile Organic Compounds (VOC's): Chemical compounds common in and emitted by many building products, including solvents in paints, coatings, adhesives and sealants, wood preservatives; composite wood

binder, and foam insulations. Not all VOC's are harmful, but many of those contained within building products contribute to the formation of smog and irritate (at best) building occupants by their smell and/or health impact.

B. Materials that act as "sinks" for VOC contamination: Absorptive materials, typically dry and soft (such as textiles, carpeting, acoustical ceiling tiles and gypsum board) that readily absorb VOC's emitted by "source" materials and release them over a prolonged period of time.

C. Materials that act as "sources" for VOC contamination: Products with high VOC contents that emit VOC's either rapidly during application and curing (typically "wet" products, such as paints, sealants, adhesives, caulks and sealers) or over a prolonged period (typically "dry" products such flooring coverings with plasticizers and engineered wood with formaldehyde).

D. MERV: Minimum Efficiency Reporting Value.

E. SMACNA: Sheet Metal and Air Conditioning National Design Builder's Association.

1.05 REFERENCES, RESOURCES

A. "IAQ Guidelines for Occupied Buildings Under Construction", 2nd Edition, November 2007, The Sheet Metal and Air Conditioner Design Builders National Association (SMACNA), www.smacna.org.

B. ANSI/ASHRAE 52.2-1999, "Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size", www.ashrae.org.

1.06 CONSTRUCTION IAQ MANAGEMENT PLAN

A. Prepare, submit, and implement a Construction IAQ Management Plan to the Owner for review and approval for each floor during the duration on construction. The Construction IAQ Management Plan shall meet the following criteria:

1. Construction activities shall be planned to meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Design Builders' Association (SMACNA) "IAQ Guidelines for Occupied Buildings under Construction", First Edition, 1995.

2. Identify and implement IAQ controls, sources of dust, odors, other contaminants.

3. Upon periodic inspections during construction, if the ducts become contaminated due to inadequate protection, the ducts will be cleaned professionally. This activity is the responsibility of the Design Builder.

4. Furnish and install plastic barriers for dust or fumes and dirt containment, and special covers for equipment, cover any furniture and electronic equipment, and isolate from distribution system for IDF and MDF rooms.

5. Identify and implement procedures and implement necessary measures to protect any smoke detector heads from dust or fumes and potential false alarms during the demolition work. Design Builder shall provide fire watch as required by the construction activities.

6. Identify and implement construction activities likely to produce DETECTABLE odors, vapor, and dust

7. Identify and implement measures to protect the ventilation system components and air pathways against contamination during construction.

8. Identify and implement measures to positively pressurize occupied floors and negatively pressurize construction zones and areas.

9. Plans shall include cleaning procedure to be used prior to floor being occupied in the event that the ventilation system components and air pathways are not adequately protected. All areas are to be cleaned prior to a certificate to occupy the space by Owner.

10. Indicate the location, type, amount, sequence, and timing of the various control measure, including emergency procedures, and the labor, materials and the time required to implement them.

11. Absorptive materials shall be protected from moisture damage when stored on-site and after installation.

12. Identify and implement measures to protect carpet and flooring from dust and debris with heavy-duty, water-resistant Flexboard. Flexboard shall be securely fastened with tape. Tack mats shall be included when leaving a construction zone and entering occupied area.

13. Identify and implement modified work practices such as vacuum assisted saws or working weekends for extreme odor and dust generating activities.

14. Identify and implement measures for sealing and protecting all shafts, chases, and all penetrations openings that are pathways between floors in the building.

15. Plan and install temporary full-height walls from floor to floor to isolate lobbies, access pathways, and construction areas and or zones from dust and odor migration. Temporary walls or curtains shall be full-height walls from floor to floor containment for vapor and dust.

16. Identify and implement measures to protect all equipment and material stored in the construction area.

17. Design Builder shall photograph and document all IAQ controls that were installed with a brief description of the approach employed, such as protection of ducts, and on-site installed floor, wall, and absorptive materials.

18. For air handlers that are to be used for the occupied floors, filtration with a Minimum Efficiency Reporting Value (MERV) of 8 must be at each return air grill, as determined by ASHRAE 52.2-1999.

19. Filtration media shall be replaced immediately prior to occupancy. Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 13 as determined by ASHRAE 52.2-1999. Confirm that all air filters, casing, coils, fans and ducts are clean, before testing and balancing (TAB) the system, and air quality testing.

20. A “Sequence of Finish Installation Plan” shall be developed, highlighting measures to reduce the absorption of VOCs by materials that act as “sinks”.

B. Upon approval of the IAQ Plan by the Owner, it shall be implemented by the Design Builder through the duration of the construction process for both floors of this phased construction project, and documented in accordance with the SUBMITTALS Article below. The IAQ controls will be field verified by Owner prior to the commencement of work. Owner will issue a notice to commence construction when all IAQ requirements have been met.

C. Further description of the Construction IAQ Management Plan requirements is as follows:

1. SMACNA Guidelines: Chapter 3 of the referenced "IAQ Guidelines for Occupied Buildings Under Construction", outline IAQ measures in five categories as listed below. The Construction IAQ Management Plan shall be organized in accordance with the SMACNA format, and shall address measures to be implemented in each of the five categories (including subsections). All subsections shall be listed in the Plan; items that are not applicable for this project should be listed as such.
   a. HVAC Protection:
      1) Return Side.
      2) Central Filtration.
      3) Supply Side.
      4) Duct Cleaning.

   b. Source Control:
      1) Product Substitution.
      2) Modifying Equipment Operation.
      3) Changing Work Practices.
      4) Local Exhaust.
      5) Air Cleaning.
      6) Cover or Seal

   c. Pathway Interruption:
      1) Depressurize Work Area.
      2) Pressurize Occupied Space.
      3) Erect full-height Barriers to Contain Construction Areas.
      4) Relocate Pollutant Sources.
      5) Temporarily Seal the Building.
      6) Sealing air intakes and return systems

   d. Housekeeping
      1) Cleaning to reduce migration of dust or odor
      2) Covering and protecting

   e. Scheduling:
      1) Protect of Materials from Moisture Damage: As part of the "Housekeeping" section of the Construction IAQ Management Plan, measures to prevent installed materials or material stored on-site from moisture damage shall be described. This section should also describe measures to be taken if moisture damage does occur to absorptive materials during the course of construction.

      2) Replacement of Filtration Media: Under the "HVAC Protection" section of the Construction IAQ Management Plan, a description of the filtration media in all ventilation equipment shall be provided. The

description shall include replacement criteria for filtration media during construction, and confirmation of filtration media replacement for all equipment immediately prior to occupancy.

3) Sequence of Finish Installation for Materials: Where feasible, absorptive materials shall be installed after the installation of materials or finishes which have high short-term emissions of VOC's, formaldehyde, particulates, or other air-borne compounds. Absorptive materials include, but are not limited to: carpets; acoustical ceiling panels; fabric wall coverings; insulations (exposed to the airstream); upholstered furnishings; and other woven, fibrous or porous materials. Materials with high short-term emissions include, but are not limited to: adhesives, sealants and glazing compounds (specifically those with petrochemical vehicles or carriers); paints, wood preservatives and finishes; control and/or expansion joint fillers; hard finishes requiring adhesive installation; gypsum board (with associated finish processes and products); and composite or engineered wood products with formaldehyde binders.

4) Develop a separate sequencing plan that identifies feasible opportunities to meet the above-stated goals for the project. The plan shall be submitted to Owner or Owner's Representative in accordance with the SUBMITTALS Article below.

5) Implementation and Coordination: Implement the Construction IAQ Management Plan, and coordinate the Plan with all affected trades. Include provisions in the Construction IAQ Management Plan for addressing conditions in the field that do not adhere to the Plan, including provisions to implement a stop work order, or to rectify non-compliant conditions.

6) Designate one individual as the Construction IAQ Representative, who will be responsible for communicating the progress and any issues implementing the IAQ Management Plan with the Owner or Owner's Representative.

1.07 SUBMITTALS

A. Submit the following records and documents:

1. A copy of the Construction IAQ Management Plan and the Sequence Installation Plan, as defined in CONSTRUCTION IAQ MANAGEMENT PLAN Article above.

2. Product cut-sheets for all filtration media used during construction and installed immediately prior to occupancy, with MERV values highlighted.

3. Provide the Owner or Owner's Representative with a minimum of 18 photographs comprising of at least six photographs taken on three different occasions during construction. The photographs shall document the implementation of the Construction IAQ Management Plan throughout the course of the project construction. Examples include photographs of ductwork sealing and protection, temporary ventilation measures, and conditions of on-site materials storage (to prevent moisture damage). Photographs shall include integral date stamping, and shall be submitted with brief descriptions of the Construction IAQ Management Plan measure documented, or be referenced to project meeting minutes or similar project documents which reference to the Construction IAQ Management Plan measure documented.

PART 2 PRODUCTS (Not Used)

PART 3 EXECUTION

A. Procedures during construction shall use all elements of the IAQ management plan.

B. Meet or exceed the minimum requirements of the Sheet Metal and Air Conditioning National Design Builders Association (SMACNA) IAQ Guidelines for Occupied Buildings Under Construction, as applicable to new buildings. As a minimum, but not limited to, this means:
   1. Protect the ventilation system components from contamination:
      a. Store HVAC equipment in a clean, dry location.
      b. Seal all HVAC inlets and outlets.
      c. Seal HVAC components during installation.
      d. Use a temporary ventilation system during construction.
      e. Use temporary filtration media.
         1) Filtration media shall have a Minimum Efficiency Reporting Value (MERV) of 8 as determined by ASHRAE 52.2-1999) on any return air systems operational during construction. For air intakes into rooms that are very sensitive to dust contamination, such as computer rooms, filtration media should be the best that the HVAC systems fans can handle, up to an MERV rating of 17.

2) Replace all filtration media immediately prior to occupancy.

f. Clean air plenums before closing them in.

g. Inspect filters regularly.

2. Provide pollution source control:
   a. Protect on-site stored and installed absorptive materials (such as insulation, drywall, and wood) from moisture damage and from contamination by construction dust, debris, and fumes during all phases of construction, both before and after installation.
   b. Do not install moisture-damaged materials.
   c. Ensure that construction detailing will not result in moisture intrusion.
   d. Use low-emitting products (specified in appropriate sections). e. Provide strategies to avoid tracking pollutants into the work areas.
   e. Allow high-VOC materials to off-gas prior to installation. For example, all dry furnishing and materials (such as carpet, floor tile, acoustical tile, textiles, office furniture, wood shelving, etc.) shall be allowed to “air-out” in clean environments prior to installation in a building.
   f. Use the least amount of "wet" materials (such as adhesives, sealants, glazes, caulks, paints, etc.) during construction and product applications while still maintaining installation protocol required to meeting for manufacturer’s warrantee requirements.
3. Provide interruption of pollutant pathways:
   a. Provide temporary barriers to seal and isolate areas of the work to prevent contamination of clean or occupied spaces.
   b. Depressurize the work area to prevent contamination of adjacent areas.
   c. During installation of VOC emitting materials, maximize ventilation of work areas with outside air. Exhaust directly to the exterior. Do not cross contaminate.
4. Practice Healthy Housekeeping.
   a. Minimize accumulation of dust and other contaminants.
   b. Confine dust-generating activities.
   c. Suppress dust. Dry sanding allowed subject to owner approval.
   d. Clean up dust.
   e. Clean up spills.
   f. Keep work area dry.
   g. Seal containers of volatile liquids.
5. Schedule construction activities to reduce exposure to VOCs.
   a. Install porous materials only after closing in the building.
   b. Account for curing time and off-gassing when scheduling construction activities.
   c. Allow wet-spray cellulose to dry before covering.

d. Install carpeting, acoustical panels, and furnishings after interior finishes have been allowed time to cure/dry in accordance with other good building practice.

e. Provide adequate ventilation during curing period.

1) Provide supplemental (spot) ventilation for at least 72 hours after work is completed. Preferred HVAC system operation uses supply air fans and ducts only; exhaust provided through windows. Use exhaust fans to pull exhaust air from deep interior locations. Stair towers and other paths to exterior can be useful during this process.

C. Use safety meetings and signage, to communicate the goals of the construction indoor air quality management construction plan.

D. Conduct regular inspection and maintenance of indoor air quality measures including ventilation system protection, and ventilation rate.

E. Require VOC-safe masks for interior and exterior workers installing VOC-emitting products (products that contain 150 g/L or more VOCs).

F. Use low-toxic cleaning supplies for surfaces, equipment, and worker's personal use. Options include several soybean-based solvents and cleaning options and citrus-based cleaners. (SoySolv provides several soy-based solvents and cleaning options. Phone 1-800-231-4274 or www.soysolv.com.)

G. Smoking is prohibited on site and within 50 feet of the building during and after construction

END OF SECTION

SECTION 01 41 00

REGULATORY REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This section includes regulatory requirements applicable to the Work.

1.1.2 Specific reference in the Contract Documents to codes and regulations or requirements of regulatory agencies shall mean the latest printed edition of each adopted by the regulatory agency in effect at the date of award of contract, even if an earlier version was used in development of, and/or specified elsewhere in, the Project Manual or Bridging Documents.

1.1.3 Should any conditions develop not covered by the Contract Documents wherein the finished work will not comply with current codes, a change order detailing and specifying the required work shall be submitted to and approved by the County before Design Builder proceeds with the Work.

1.2 REFERENCES TO REGULATORY REQUIREMENTS

1.2.1 Codes, laws, ordinances, rules and regulations referred to shall have full force and effect as though printed in full in these specifications. Codes, laws, ordinances, rules and regulations are not furnished to the Design Builder, since the Design Builder is assumed to be familiar with their requirements. The listing herein of applicable codes, laws and regulations for hazardous waste abatement work in the Contract Documents is supplied to the Design Builder as a courtesy and shall not limit the Design Builder's responsibility for complying with all applicable laws, regulations or ordinances having application to the Work. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall be used.

1.2.2 Conform to referenced codes, laws, ordinances, rules and regulations.

1.2.3 Precedence:

1.2.3.1 Where specified requirements differ from the requirements of applicable codes, ordinances and standards, the more stringent requirements shall take precedence.

1.2.3.2 Where the Drawings, Plans or Specifications require or describe products or execution of better quality, higher standard or greater size than required by applicable codes, ordinances and standards, the Drawings, Plans and Specifications shall take precedence so long as such increase is legal.

1.2.3.3 Where no requirements are identified in the Drawings, Plans or Specifications, comply with all requirements of applicable codes, ordinances and standards of governing authorities having jurisdiction.

1.3 CODES

1.3.1 Codes which apply to the Contract Documents include, but are not limited to, the following:

1.3.1.1 California Building Code (Title 15, Part 2, Title 24, C.C.R., including, without means of limitation, sections 16A, 102A.23, 308, 420A, 504-506, 904.2.6, 1019 and 1604)

1.3.1.2 California Electrical Code (Part 5, Title 24, C.C.R.)

1.3.1.3 California Mechanical Code (Part 3, Title 24, C.C.R.)

1.3.1.4 California Plumbing Code (Part 4, Title 24, C.C.R)

1.3.1.5 Section intentionally omitted.

1.3.1.6 International Building Code

1.3.1.7 Uniform Plumbing Code

1.3.1.8 Uniform Mechanical Code

1.3.1.9 National Electrical Code

1.3.1.10 California Energy Code

1.3.1.11 California Fire Code

1.3.1.12 CALGreen Code

1.4 LAWS, ORDINANCES, RULES AND REGULATIONS

1.4.1 During prosecution of Work to be done under the Contract Documents, comply with applicable laws, ordinances, rules and regulations, including, but not limited to, the following:

1.4.2 Federal

1.4.2.1 Americans With Disabilities Act of 1990 CADAI

1.4.2.2 29 CFR, Section 1910.1001, Asbestos

1.4.2.3 40 CFR, Subpart M, National Emission Standards for Asbestos

1.4.2.4 Executive Order 11246

1.4.2.5 Federal Endangered Species Act

1.4.2.6 Clean Water Act

1.4.2.7 Federal Occupational Safety & Health Administration Act

1.4.3 State of California

1.4.3.1 California Code of Regulations, Titles 5, 8, 12, 13, 15, 17, 19, 20, 21, 22, 23 24 and 25

1.4.3.2 California Public Contract Code

1.4.3.3 California Health and Safety Code

1.4.3.4 California Government Code

1.4.3.5 California Labor Code

1.4.3.6 California Civil Code

1.4.3.7 CPUC General Order 95, Rules for Overhead Electric Line Construction

1.4.3.8 CPUC General Order 128, Rules for Construction of Underground Electric Supply and Communications Systems

1.4.3.9 California Occupational Safety and Health Administration (Cal OSHA)

1.4.3.10 Occupational Safety and Health Administration (OSHA): Hazard Communications Standards

1.4.3.11 California Endangered Species Act

1.4.3.12 Water Code

1.4.3.13 Fish and Game Code

1.4.4 State of California Agencies

1.4.4.1 Division of the State Architect (accessibility)

1.4.4.2 Office of the State Fire Marshal

1.4.4.3 California Department of Transportation

1.4.4.4 California Department of Corrections

1.4.4.5 Section intentionally omitted.

1.4.4.6 Department of Fish and Game

1.4.4.7 Section intentionally omitted.

1.4.4.8 State Water Resources Control Board

1.4.5 Local Agencies:

1.4.5.1 County of Alameda

1.4.5.2 Alameda County Fire Marshal

1.4.5.3 Bay Area Air Quality Management District

1.4.5.4 Regional Water Quality Control Board

1.4.6 Other Requirements:

1.4.6.1 National Fire Protection Association (NFPA): Pamphlet 101, Life Safety.

1.4.6.2 The following NFPA Standards apply (latest edition):

NFPA Standard

13 Installation of Sprinkler Systems

14 Installation of Standpipes and Hose Systems

20 Installation of Centrifugal Fire Pumps

24 Installation of Private Fire Service Mains

50 Bulk Oxygen Systems

72 National Fire Alarm Code (as amended)

80 Fire Doors and Fire Windows

92A Smoke Control Systems

2001 Clean Agent Fire Extinguishing Systems

1.4.6.3 The Design Builder shall comply with Standard Specifications such as California Standard Specification, ASTM, ANSI, AASHTO, AISC, Commercial Standards, Federal Specifications, NFPA, NEMA, AWWA, UL, and the like.

1.4.6.4 References on the Drawings, Plans or in the Specifications to "code" or "building code" not otherwise identified shall mean the codes specified in this Section 01 41 00, together with all additions, amendments, changes, and interpretations adopted by code authorities of the jurisdiction.

1.4.7 Design Builder shall provide access to all of the foregoing **within twenty-four (24) hours** and maintain a hardcopy of each of the above documents in the Design Builder's field office.

1.4.8 It shall be understood that manufacturers, producers, and their agents of materials are required either to have such specifications available for reference or to be fully familiar with their requirements as pertains to their project or material.

1.4.9 Other Applicable Laws, Ordinances and Regulations:

1.4.9.1 Work shall be accomplished in conformance with all applicable laws, ordinances, rules and regulations of Federal, State and local governmental agencies and jurisdictions having authority over the Project.

1.4.9.2 Work shall be accomplished in conformance with all rules and regulations of public utilities and utility districts.

1.4.9.3 Where such laws, ordinances rules and regulations require more care or greater time to accomplish Work, or require better quality, higher standards or greater size of products, Work shall be accomplished in conformance to such requirements with no change to the Contract Time and Contract Sum, except where changes in laws, ordinances, rules and regulations occur subsequent to the time of opening of the bids.

1.4.10 Change Orders and Claims:

1.4.10.1 The Public Contract Code, including but not limited to § 7105(d)(2), and Government Code § 930.2 et seq., apply to all contract procedures for changes, time extensions, change orders (time or compensation) and claims.

1.4.10.2 Any change, waiver, or omission to implement contract change order and

claim procedures shall have no legal effect unless expressly authorized in a fully executed change order approved by County and approved in writing by the County Counsel.

1.5 DEFERRED APPROVAL

1.5.1 Where noted in technical Specification sections, certain items of material may require deferred approval pending submittal of shop drawings. It is the County's intent to minimize the number of deferred submittals for this project. For these items, Design Builder shall submit details and structural calculations for anchorage, to comply with State of California Code of Regulations Title 24, including Table 16-B. Calculations shall be made by a Structural Engineer registered in the State of California.

1.6 CONFLICTS

1.6.1 Between referenced regulatory requirements: Comply with the one establishing the more stringent requirement.

1.6.2 Between referenced regulatory requirements and the Contract Documents: Comply with the one establishing the more stringent requirement.

1.7 REQUIRED PROVISIONS ON CONTRACT CLAIM RESOLUTION

1.7.1 The Public Contract Code specifies required provisions on resolving contract claims less than $375,000, which are set forth below, and constitute a part of the Contract Documents.

1.7.1.1 For the purposes of this Section 01 41 00, "Claim" means a separate demand by the Design Builder of $375,000 or less for (1) a time extension, (2) payment or money or damages arising from work done by or on behalf of the Design Builder arising under the Contract Documents and payment of which is not otherwise expressly provided for or the claimant is not otherwise entitled to, or (3) an amount the payment of which is disputed by the County. In order to qualify as a Claim, the written demand must state that it is a claim submitted under Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions) and be submitted in compliance with all of the requirements thereof. Separate claims, which total more than $375,000, do not qualify as a "separate demand of $375,000 or less", as referenced above, and are not subject to this section.

1.7.1.2 A voucher, invoice, payment application, or other routine or authorized form of request for payment is not a claim under the Contract Documents. If such request is disputed as to liability or amount, then the disputed portion of the submission may be converted to a claim under the Contract Documents by submitting a separate claim in compliance with Contract Documents claim submission requirements.

1.7.1.3 CAUTION: This section does not apply to tort claims and nothing in this section is intended nor shall be construed to change the time periods for filing tort claims or actions specified by Chapter 1 and Chapter 2 of Part 3 of

Division 3.6 of Title 1 of the Government Code.

1.7.2 PROCEDURE

1.7.2.1 The Claim must be in writing, submitted in compliance with all requirements of Article 12 (Claims by Design Builder) of Document 00 72 53 (General Conditions) including, but not limited to, the time prescribed by and including the documents necessary to substantiate the Claim, pursuant to paragraph 12.3. Claims must be filed on or before the day of final payment. Nothing in this section is intended to extend the time limit or supersede notice requirements for the filing of claims as set forth in Article 12 or elsewhere in the Contract Documents.

1.7.2.2 For Claims of fifty thousand dollars ($50,000) or less

1.7.2.2.1 The County shall respond in writing **within forty-five (45) Days of receipt of the Claim**, or

1.7.2.2.2 The County may request in writing **within thirty (30) Days of receipt of the Claim**, any additional documentation supporting the Claim or relating to any defenses or claims the County may have against Claimant.

1.7.2.3 If additional information is thereafter required, it shall be requested and provided in accordance with this section, upon mutual agreement of the County and the Claimant.

1.7.2.4 The County's written response to the Claim, as further documented, shall be submitted to Claimant **within fifteen (15) Days after receipt of further documentation** or within a period of time no greater than taken by Claimant in producing the additional information, whichever is greater.

1.7.2.5 For Claims over Fifty Thousand Dollars ($50,000) and less than or equal to Three Hundred Seventy-Five Thousand Dollars ($375,000):

1.7.2.5.1 The County shall respond in writing **within sixty (60) Days of receipt of the Claim**, or

1.7.2.5.2 The County may request in writing **within thirty (30) Days of receipt of the Claim**, any additional documentation supporting the Claim or relating to any defenses or claims the County may have against the Claimant.

1.7.2.5.2.1 If additional information is thereafter required, it shall be requested and provided in accordance with this section, upon mutual agreement of County and Claimant;

1.7.2.5.2.2 The County's written response to the Claim, as further documented, shall be submitted to the

Claimant **within thirty (30) Days after receipt of further documentation** or within a period of time no greater than taken by the Claimant in producing the additional information, whichever is greater.

1.7.2.6 Meet and Confer

1.7.2.6.1 If the Claimant disputes the County's written response, or the County fails to respond within the time prescribed above, the Claimant shall notify the County, in writing, either **within fifteen (15) Days of receipt of the County's response** or within fifteen (15) Days of the County's failure to timely respond, and demand an informal conference to meet and confer for settlement of the issues in dispute. Upon demand the County will schedule a meet and confer conference **within thirty (30) Days for settlement of the dispute.**

1.7.2.6.2 Following the meet and confer conference, if the Claim or any portion remains in dispute, Claimant may file a claim as provided in Chapter 1 (commencing with § 900) and Chapter 2 (commencing with § 910) of Part 3 of Division 3.6 of Title 1 of the Government Code. For purposes of those provisions, the running of the period of time within which a claim must be filed shall be tolled from the time Claimant submits his or her written claim for negotiation as set forth above until the time that Claim is denied as a result of the meet and confer process herein, including any period of time utilized by the meet and confer process.

1.8 COMPLIANCE WITH AMERICANS WITH DISABILITIES ACT

1.8.1 The Design Builder acknowledges that, pursuant to the Americans with Disabilities Act (ADA), programs, services and other activities provided by a public entity to the public, whether directly or through the Design Builder, must be accessible to the disabled public. The Design Builder shall provide the services specified in this Agreement in a manner that complies with the ADA and any and all other applicable federal, state and local disability rights legislation. The Design Builder shall not discriminate against disabled persons in the provision of services, benefits or activities provided under this Agreement and further agrees that any violation of this prohibition on the part of the Design Builder, its employees, agents or assigns shall constitute a material breach of this Agreement.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

SECTION 01 42 00

REFERENCES

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This section includes reference standards, abbreviations, symbols and definitions used in the Contract Documents. Abbreviations and symbols used in the Contract Documents are in Section 01 42 13 (Abbreviations). Definitions used in the Contract Documents are in Section 01 41 16 (Definitions).

1.1.2 Material and workmanship specified by reference to number, symbol, or title of specific standard such as state standard, commercial standard, federal specifications, technical society, or trade association standard, or other similar standard shall comply with requirements of standards except when more rigid requirements are specified or required by applicable codes.

1.1.3 Standards referred to, except as modified herein, shall have full force and effect as though printed in the Contract Documents. Standards are not furnished to the Design Builder, since manufacturers and trades involved are assumed to be familiar with their requirements.

1.2 REFERENCE TO STANDARDS AND SPECIFICATIONS OF TECHNICAL SOCIETIES; REPORTING AND RESOLVING DISCREPANCIES

1.2.1 Reference to standards, specifications, manuals, or codes of any technical society, organization, or association, or to the laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard, specification, manual, code, or laws or regulations in effect at the time of issuance of the Request for Proposals, except as may be otherwise specifically stated in the Contract Documents.

1.2.2 If during the performance of the Work, Design Builder discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents or between the Contract Documents and any provision of any such law or regulation applicable to the performance of the Work or of any such standard, specification, manual, or code or of any instruction of any supplier, report it in writing at once by submitting a RFI to County, and do not proceed with the Work affected thereby until consent to do so is given by County.

1.2.3 Except as otherwise specifically stated in the Contract Documents or as may be provided by Change Order, CCD, or Supplemental Instruction, the provisions of the Contract Documents shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between the provisions of the Contract Documents and:

1.2.3.1 The provisions of any such standard, specification, manual, code, or instruction (whether or not specifically incorporated by reference in the Contract Documents); or

1.2.3.2 The provisions of any such laws or regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract

Documents would result in violation of such law or regulation).

1.2.4 No provision of any such standard, specification, manual, code, or instruction shall be effective to change the duties and responsibilities of County or Design Builder or any of their subcontractors, consultants, agents, or employees, from those set forth in the Contract Documents, nor shall it be effective to assign to County or any of its consultants, agents, representatives or employees any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the Contract Documents.

1.2.5 Comply with the applicable portions of standards and specifications published by the technical societies, institutions, associations, and governmental agencies referred to in Specifications.

1.2.5.1 Comply with referenced standards and specifications; latest revision in effect at the time of opening of Proposals, unless otherwise identified by date.

1.2.5.1.1 Exception: Comply with issues in effect as listed in governing legal requirements.

1.2.6 Referenced Grades, Classes, and Types: Design Builder shall present its proposed alternative or option to the County to review for conformance with the Contract Documents and for the County to determine if the Design Builder's selection provides an acceptable grade, class, type of product or execution.

1.2.7 Jobsite Copies:

1.2.7.1 Obtain and maintain at the Site hardcopies of reference standards identified on Drawings and in Specifications in order to properly execute the Work.

1.2.7.2 At a minimum, the following shall be readily available at the Site:

1.2.7.2.1 Safety Codes: State of California, Division of Industrial Safety regulations.

1.2.8 Edition Date of References:

1.2.8.1 When an edition or effective date of a reference is not given, it shall be understood to be the current edition or latest revision published as of the date of issuance of the Request for Proposals.

1.2.8.2 All amendments, changes, errata and supplements as of the effective date shall be included.

1.2.9 ASTM and ANSI References: Specifications and Standards of the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI) are identified in the Contract Documents by abbreviation and number only and may not be further identified by title, date, revision, or amendment. It is presumed that Design Builder is familiar with and has access to these nationally- and industry-recognized specifications and standards.

END OF SECTION

SECTION 01 42 13

ABBREVIATIONS

1.1 Listed hereinafter are the various organizations or references which may appear in the Contract Documents, along with their respective acronyms and/or abbreviations:

AA	Aluminum Association
AAADM	American Association of Automatic Door Manufacturers
AABC	Associated Air Balance Council
AAMA	Architectural Aluminum Manufacturers Association
AAP	Affirmative Action Program
AASHTO	American Association of State Highway and Transportation Officials
ABMA	American Boiler Manufacturers Association
ABPA	American Board Products Association
ACI	American Concrete Institute
ACPA	American Concrete Pipe Association
ADAAG	Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities
AED	Association of Equipment Distributors
AGA	American Gas Association
AGC	Association of General Contractors
AHJ	Authorities Having Jurisdiction
AIA	American Institute of Architects
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
AITC	American Institute of Timber Construction
AMCA	Air Moving and Conditioning Association, Inc.
ANSI	American National Standards Institute (formerly American Standards Association)
APA	American Plywood Association
ARI	Air-Conditioning and Refrigeration Institute
ASHRAE	American Society of Heating, Refrigeration, and Air-Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWCI	Association of the Wall and Ceiling Industries
AWI	American Woodwork Institute
AWPA	American Wood- Preservers Association
AWPB	American Wood Preservers Bureau
AWS	American Welding Society
AWWA	American Water Works Association
BIL	Basic Insulation Level
BIM	Building Information Modeling
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	State of California, Department of Transportation
CBC	California Building Code
CCD	Construction Change Directive
CCR	California Code of Regulations
CEC	California Electric Code
CFR	Code of Federal Regulations
CGA	Compressed Gas Association

CISPI	Cast Iron Soil Pipe Institute
CLMFI	Chain Link Fence Manufacturers Institute
CMC	California Mechanical Code
CO	Change Order
CPC	California Plumbing Code
CPM	Critical Path Method
CPUC	California Public Utilities Commission
CRA	California Redwood Association
CRSI	Concrete Reinforcing Steel Institute
CS	Commercial Standards, U.S. Department of Commerce
CSA	Canadian Standards Association
CTI	Ceramic Tile Institute
DB	Design Build
DBE	Design Build Entity or Design Builder
DHI	Door and Hardware Institute
DSA	Division of State Architect (formerly known as the Office of the State Architect)
ECOP	Enhanced Construction Outreach Program
EPA	Environmental Protection Agency
FCI	Fluid Controls Institute
FF&E	Furniture Fixtures and Equipment
FG	Flat Glass Marketing Association
FM	Factory Mutual
FS	Federal Specifications
GA	Gypsum Association
GANA	Glass Association of North America
GSA	General Services Agency (Alameda County)
HPMA	Hardwood Plywood Manufacturers Association
HVAC	Heating, Ventilating and Air Conditioning
I.D.	Identification
IACS	International Annealed Copper Standards
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
ICEA	Insulated Cable Engineers Association
IEEE	Institute of Electrical and Electronic Engineers, Inc.
IES	Illuminating Engineering Society
ISA	Instrumentation Society of America
JATC	Joint Apprenticeship Training Committee
JCAHO	Joint Commission on Accreditation of Healthcare Organizations
JV	Joint Venture
LBE	Local Business Enterprise
M&C	Muller & Caulfield Architects (bridging design architect)
M.I.	Middle Initial
M/WBE	Minority and/or Woman-Owned Business Enterprise
MBE	Minority Business Enterprise
MIA	Masonry Institute of America
MIA	Marble Institute of America
MLSFA	Metal Lath/Steel Framing Association
MS	Military Specifications
MSDS	Material Safety Data Sheet

MSS	Manufacturers Standardization Society of the Valve & Fitting Industry
NAAMM	National Association of Architectural Metal Manufacturers
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NEC	National Electric Code
NEMA	National Electric Manufacturers Association
NESC	National Electrical Safety Code
NFPA	National Fire Protection Association
NFPA	National Forest Products Association
NIOSH	National Institute for Occupational Safety and Health
NIST	National Institute of Science and Technology (formerly National Bureau of Standards)
NOFMA	National Oak Flooring Manufacturers Association
NSF	National Sanitation Foundation
NTMA	National Terrazzo & Mosaic Association
NWWDA	National Wood Windows and Doors Association
OAHJ	Other Authorities Having Jurisdiction
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PCI	Pre-stressed Concrete Institute
PDI	Plumbing and Drainage Institute
PG&E	Pacific Gas and Electric Company
PM	Preventive Maintenance or Project Manager
PR	Proposal Request
PS	Product Standard, U. S. Department of Commerce
RFI	Request for Information
RFP	Request for Proposals
RFS	Request for Substitution
RIS	Redwood Inspection Service
RSI	Request for Supplemental Information
SDI	Steel Deck Institute
SFM	State of California, Office of State Fire Marshal
SIGMA	Sealed Insulating Glass Manufacturers Association
SJI	Steel Joint Institute
SLEB	Small Local Emerging Business (Alameda County)
SMACNA	Sheet Metal and Air Conditioning Contractors National Association
SPIB	Southern Pine Inspection Bureau
SSPC	Steel Structures Painting Council
SWI	Steel Window Institute
TCNA	Tile Council of North America
TIE	Time Impact Evaluation
UBC	Uniform Building Code
UFC	Uniform Fire Code
UL	Underwriters' Laboratories, Inc.
UMC	Uniform Mechanical Code
UPC	Uniform Plumbing Code
USA	Underground Service Alert or United States of America
USC	United States Code
WCLIB	West Coast Lumber Inspection Bureau
WDMA	Window and Door Manufacturers Association

WHI	Warnock Hersey International – a testing lab
WIC	Woodwork Institute of California
WWPA	Western Wood Products Association

1.2 Abbreviations in Specifications:

AWG	American Wire Gauge
accord	Accordance
Co.	Company
Corp.	Corporation
cm.	centimeter (centimeters)
cu.	Cubic
Div.	Division
dia.	Diameter
ft.	foot (feet)
g./gr.	gram (grams)
gal.	gallon (gallons)
gpd	gallons per day
gpm	gallons per minute
hr.	Hour
kg.	kilogram (kilograms)
in.	inch (inches)
Inc.	Incorporated
km.	kilometer (kilometers)
Kw	Kilowatt
l.	liter (liters)
lbs.	Pounds
m	meter (meters)
Mfg.	Manufacturing
Mg.	milligram (milligrams)
ml./mls.	milliliter (milliliters)
mm.	millimeter (millimeters)
No.	Number
o.c.	on centers
O.D.	outside diameter
psi	pounds per square inch
psf	pounds per square foot
sq.	Square
T & G	tongue and groove
U.S.	United States
yd.	yard (yards)

1.3 Abbreviations on Drawings:

Additional abbreviations, used only on drawings, are indicated thereon.

1.4 SYMBOLS

1.4.1 Symbols in Specifications:

:	"shall be" or "shall" - where used within sentences or paragraphs
#1	Number
1#	Pound
&	And
%	Percent
C	Centigrade
F	Fahrenheit
°	Degree
/	per, except where used to combine words; example: power/fuel, and in that case it means and
"	inch (inches)
'	foot (feet)
@	At

1.4.2 Symbols on Drawings:

Symbols, used only on Drawings, are indicated thereon.

END OF SECTION

SECTION 01 42 16

DEFINITIONS

1.1 Wherever any of the words or phrases defined below, regardless of capitalization, or a pronoun used in place thereof, is used in any part of the Contract Documents, it shall have the meaning here set forth:

1.1.1 ADDENDA: Written or graphic instruments issued prior to the opening of Bids, which clarify, correct or change the bidding requirements or the Contract Documents. Addenda shall not include the minutes of the Pre-bid Conference and/or Site Visit.

1.1.2 AGREEMENT (Section 00 52 53): Agreement is the basic contract document that binds the parties as to the Project. The Agreement incorporates by reference all of the Contract Documents.

1.1.3 APPLICABLE LAWS: same as Legal Requirements, below.

1.1.4 APPROVED EQUAL: Approved in writing by County as being of equivalent quality, utility and appearance.

1.1.5 ARCHITECT: Unless otherwise designated, such as the Architect of Record for a specific portion of the Project, the "Architect" refers to the Design Builder's lead architect as designated in the Design Builder's Proposal.

1.1.6 ATTORNEY: The Alameda County Counsel.

1.1.7 AutoCAD: AutoCAD software Release 12 or later.

1.1.8 BIDDER: Prequalified person, firm, entity or association who submits a Proposal. A Bidder may also be referred to as a Proposer and a Bid may be referred to as a Proposal.

1.1.9 BRIDGING ARCHITECT: The architectural firm in contract with the County for preparation of the Bridging Documents for the Project. Bridging Architect includes all of Subconsultants.

1.1.10 BRIDGING DOCUMENTS: The Bridging Documents describe the County's minimum performance and program requirements for the Project and are part of the Contract Documents. They include the following documents:

1.1.10.1 Project Narratives dated 8-16-13

1.1.10.2 Outline Specifications dated 8-16-13

1.1.10.3 Design Drawings updated 8-16-13

1.1.11 BOARD or BOS: The County's Board of Supervisors.

1.1.12 BUSINESS DAY: Any day other than Saturday, Sunday, and the following days that have been designated as holidays by County. If a holiday falls on a Saturday, the preceding Friday will be the holiday. If a holiday falls on a Sunday, the following Monday will be the holiday.

1.1.12.1 New Year's Day, January 1;

1.1.12.2 Martin Luther King Jr.'s Birthday, third Monday in January;

1.1.12.3 Lincoln's Birthday, February 12;

1.1.12.4 Presidents' Day, third Monday in February;

1.1.12.5 Memorial Day, last Monday in May;

1.1.12.6 Independence Day, July 4;

1.1.12.7 Labor Day, first Monday in September;

1.1.12.8 Veterans' Day, November 11;

1.1.12.9 Thanksgiving Day, as designated by the President of the United States;

1.1.12.10 The Day following Thanksgiving Day;

1.1.12.11 Christmas Day, December 25; and

1.1.12.12 Each day appointed by the Governor of California and formally recognized by the County as a day of mourning, thanksgiving, or special observance.

1.1.13 BY COUNTY: Work that will be performed by County, or their agents at the County's expense.

1.1.14 BY OTHERS: Work that is outside scope of Work to be performed by the Design Builder under the Contract Documents, which will be performed by County, other contractors, or other means.

1.1.15 CHANGE ORDER: A written instrument prepared by County and signed by County stating all of the following:

1.1.15.1 a change in the Work,

1.1.15.2 the amount of the adjustment in the Contract Price, if any, and

1.1.15.3 the amount of the adjustment in the Contract Time, if any.

1.1.16 CHECKOUT: "Checkout" means the process of final setup, alignment, cleaning, operation, calibration and testing of individual components, subsystems, or systems within the Facility, all prior to Startup.

1.1.17 CLOSE-OUT DOCUMENTS: means the following close-out documents, each in industry-standard or equivalent form and content: (a) copies of final permits, certificates of inspection, and certificates of occupancy; (b) operating and maintenance manuals; (c) copies of all warranties provided by the Design-Builder, Project subcontractors, suppliers and manufacturers of all appropriate tiers; (d) releases of performance and payment bonds and stop notices; (e) copies of maintenance agreements; (f) evidence of Design-Builder's continuing insurance coverages as required under the Design-Build Agreement, if any; (g) as-built drawings; and (h) all other close-out submittals, including but not limited to relevant performance tests and commissioning reports not previously submitted, which are required of the Design-Builder under the Contract Documents.

1.1.18 CONCEALED: Work not exposed to view in the finished Work, including within or behind various construction elements.

1.1.19 COMMISSIONING: "Commissioning" includes all of the services described in Section 01 19 00 (General Commissioning Requirements) and in the commissioning requirements specified in Divisions 2 through 33 of the Bridging Documents.

1.1.20 CONSTRUCTION DOCUMENTS: Material prepared by the Design Builder and accepted by County including graphic materials that show the Design Builder's design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules and diagrams, and written descriptions of materials, equipment, construction systems, standards and workmanship for the Work, and performance of related services. The Construction Documents will supplement, but not supplant, the Contract Documents. If a conflict is later discovered between the Contract Documents and the Construction Documents, the Contract Documents shall prevail.

1.1.21 CONTRACT DOCUMENTS or CONTRACT: Contract Documents consist of the documents identified as Contract Documents in Document 00 52 53 (Agreement), plus all changes, addenda and modifications thereto.

1.1.22 CONTRACT MODIFICATION: The contract can be modified only by a writing signed by the County. Contract Modifications include only Change Orders and Construction Change Directives as described in Section 01 26 00 (Contract Modification Procedures).

1.1.23 CONTRACT PRICE: The amount stated in the Agreement and, including authorized adjustments, the total amount payable by County to the Design Builder for performance of the Work and the Contract Documents. The Contract Price is also referred to as the Contract Sum or the Contract Amount.

1.1.24 CONTRACT TIMES: The number or numbers of days or the dates stated in the Agreement to achieve Completion of the Work or other designated Milestones.

1.1.25 COUNTY: The County of Alameda, a political subdivision of the State of California. For purposes of the Project, the County is acting through its General Services Agency.

1.1.26 COUNTY-FURNISHED, DESIGN BUILDER-INSTALLED: Items furnished by the County at its cost for installation by the Design Builder.

1.1.27 COUNTY REPRESENTATIVE(S): The person or persons assigned by the County to be the County's agent(s).

1.1.28 DAY: One calendar day, unless the word "Day" is specifically modified to the contrary.

1.1.29 DEFECTIVE: An adjective which, when modifying the word "Work", refers to Work that is incomplete, unsatisfactory or unsuited for the use intended, faulty, or deficient, that does not conform to the Contract Documents, or does not meet the requirements of any inspection, reference standard, test or approval referred to in the Contract Documents (including but not limited to approval of samples and "or equal" items), or has been damaged prior to final payment (unless responsibility for the protection thereof has been assumed by County). The County is the judge of whether Work is defective.

1.1.30 DESIGN BUILDER or DESIGN BUILD ENTITY: The person or entity identified as such in the Agreement and referred to throughout the Contract Documents as if singular in number and neuter in gender. The terms "Design Builder", "Design Build Entity" or "DBE" mean the Design Builder or its authorized representative.

1.1.31 DESIGN BUILDER'S EMPLOYEES: Persons engaged in execution of Work under the Contract Documents as direct employees of the Design Builder, as Subcontractors, Subconsultants, or as employees of Subcontractors or Subconsultants.

1.1.32 DRAWINGS: Graphic and pictorial representations of the Work, or parts of the Work, included in the Contract Documents.

1.1.33 EQUAL: Equal in every respect to an item or material specified in the Contract Documents in the opinion of the County. Burden of proof of equality is on the Design Builder.

1.1.34 EXPOSED: Work exposed to view in the finished Work, including behind louvers, grilles, registers and various other construction elements.

1.1.35 FACILITY: Same as Project.

1.1.36 FIELD DIRECTIVE: A written work change directive to the Design Builder from the County, ordering alterations or modifications to the Work that do not result in change in Contract Price or Contract Times, and do not substantially change the Contract Documents.

1.1.37 FINAL ACCEPTANCE or FINAL COMPLETION: requires all of the following:

1.1.37.1 All systems having been tested and accepted as having met requirements of the Contract Documents.

1.1.37.2 All required instructions and training sessions having been given by the Design Builder.

1.1.37.3 All Record Documents, operations and maintenance manuals, BIM files have been submitted by the Design Builder, reviewed by and accepted by the County.

1.1.37.4 All punch list work, as directed by the County, has been completed by the Design Builder.

1.1.37.5 The County has accepted the Work as satisfactorily completed in accordance with the Contract Documents.

1.1.37.6 All Regulatory Approvals for the project have been obtained and are final beyond all appeal periods, if any,

1.1.37.7 A final Certificate of Occupancy, or its equivalent, has been issued for the Project by all State or local authorities with jurisdiction, including but not limited to the County, and the local Fire Marshall, each indicating that the Project is suitable for occupancy and its intended use,

1.1.37.8 There is not then in effect any order of any court of competent jurisdiction against the County, prohibiting the County's occupancy or use of the County Facility, and

1.1.37.9 All improvements and work comprising the Work are complete, including all Punch List Items.

1.1.38 FINAL DESIGN**:** means the design of the Project prepared by the Design-Builder pursuant to the Design-Build Agreement and which must be accepted by the County. The Final Design will generally include a complete description, suitable for construction of all elements, of the Project, including: (a) the floor plan and elevations for the County Building, and the details and description of the size and character of the various components and systems thereof; (b) the anticipated footprint of the County Building on the Site; (c) the development of the site improvements and features, and (d) finish and fixture selections.

1.1.39 FORCE ACCOUNT: Work directed to be performed without prior agreement as to lump sum or unit price cost thereof, and which is to be billed at cost for labor, materials, equipment, taxes, and other costs, plus a specified percentage for overhead and profit, as described in Section 01 26 00 (Contract Modification Procedures).

1.1.40 FURNISH: Supply only, do not install.

1.1.41 FURNITURE, FIXTURES AND EQUIPMENT or FF&E: The furniture, fixtures and equipment identified in the FF&E Program to be procured and installed through one or more consultants or service vendors engaged and managed by the County or, for purposes of the procurement and installation of equipment, through one or more consultants or service vendors engaged and managed by the County.

1.1.42 INDICATED: Shown or noted on the Contract Documents.

1.1.43 INSPECTOR: The person engaged by the County to inspect the workmanship, materials, or manner of construction of buildings or portions of buildings, to determine if such construction complies with the Contract Documents.

1.1.44 INSTALL: Install or apply only, do not furnish.

1.1.45 LATENT: Not apparent by reasonable inspection, investigation or testing, including but not limited to, the inspections and research required as a condition to bidding under the General Conditions.

1.1.46 LEGAL REQUIREMENTS: "Legal Requirements" means laws, statutes, ordinances, rules, codes, regulations, permits, licenses, CEQA mitigation measures, and Legal Requirements of any kind, issued by governmental Authorities or private authorities with jurisdiction (including utilities), to the extent they apply to the Work.

1.1.47 MATERIAL OR MATERIALS: These words shall be construed to embrace machinery, manufactured articles, materials of construction (fabricated or otherwise), and any other classes of material to be furnished in connection with Contract, except where a more limited meaning is indicated by context.

1.1.48 MATERIALS AND EQUIPMENT: "Materials and Equipment" means all materials, supplies, apparatus, equipment, machinery, and parts required for the Facility (including, spare parts consumed before Substantial Completion, or required for Checkout, Startup or Testing, or required by the terms of supplier contractors or warranties to be at the Facility prior to the Substantial Completion date). Materials and Equipment does not include construction equipment, special testing apparatus, other spare parts, or other items that do not form a permanent part of the Facility.

1.1.49 MILESTONE: A date or principal event specified in the Contract Documents that establishes an intermediate completion date or time for completion of the Work or a specified portion of the Work.

1.1.50 MODIFICATION: Same as Contract Modification.

1.1.51 NOT IN CONTRACT: Work that is outside the scope of Work to be performed by the Design Builder under the Contract Documents.

1.1.52 NOTICE OF AWARD: A written notice given by the County to the best value, responsible bidder advising that Bidder's proposal and other qualifying information is acceptable to the County, requiring Bidder to fulfill the requirements of Article 24 of Document 00 11 19 (Request for Proposals from Bidders), see Document 00 51 00 (Notice of Award).

1.1.53 NOTICE TO PROCEED: A written notice given by the County to the Design Builder fixing the date on which the Contract Times will commence to run and on which Design Builder shall start to perform the Design Builder's obligations under the Contract Documents.

1.1.54 OFFICE OF THE COUNTY: The County's office at 1401 Lakeside Dr., Suite 800, Oakland, California 94612, Attention: Gerald Loeper, or such other office as the County may have after notice of such change of office is provided by the County.

1.1.55 OFF SITE: Outside geographical location of the Project.

1.1.56 OTHER AUTHORITIES HAVING JURISDICTION: Other Authorities Having Jurisdiction include, but are not limited to, the local Fire Marshal, Alameda County Fire Department, and the Division of State Architect (accessibility). Other Authorities Having Jurisdiction are sometimes referred to as Authorities Having Jurisdiction.

1.1.57 PERFORMANCE GUARANTEE: When used in Document 00 72 00 (General Conditions), "Performance Guarantee" means the performance criteria established by the Contract Documents.

1.1.58 PLANS: Same as Drawings.

1.1.59 PROGRESS REPORT: a periodic report submitted by the Design Builder to the County with progress payment requests accompanying actual Work accomplished. See Section 01 32 26 (Schedules and Reports).

1.1.60 PROFESSIONAL: A professionally licensed person or entity who has a direct contract with the Design Builder to perform design or engineering services or any other portion of the Work.

1.1.61 PROJECT: "Project" or "project" means the planning, design, development, financing, construction, and completion of the project for the County's exclusive and non-exclusive occupancy and use. The Project includes, but is not limited to, the Work. The Project includes work that will be performed by others directly or through separate contracts.

1.1.62 PROJECT MANUAL: Project Manual includes the Contract Documents, Reference Documents and other materials listed in Document 00 01 10 (Table of Contents).

1.1.63 PROPOSAL: The offer or proposal of the Design Builder submitted to the County in response to the County's Request for Proposals in which Design Builder offers to perform the Work and provides certain information and representations regarding that offer.

1.1.64 PROPOSAL DOCUMENTS: All documents comprising the Project Manual including all documents and specification sections listed on Section 00 01 10 (Table of Contents), the Contract Documents, and documents supplied for bidding purposes only.

1.1.65 PROVIDE: Furnish and install.

1.1.66 REGULATORY APPROVALS: All permits, licenses, certificates, authorizations, consents, easements, assessments, and approvals necessary or required for the Project, including but not limited to final, non-appealable approval of the Project under NEPA and CEQA, from those governmental authorities and public agencies having regulatory or oversight jurisdiction over all or portions of the Project, including, but not limited to, the

Division of the State Architect, the local Fire Marshal, and the County, acting in its capacity as a regulatory or oversight officer or agency, and as the lead agency for purposes of CEQA.

1.1.67 REQUEST FOR INFORMATION ("RFI"): A document prepared by the Design Builder requesting information regarding the Project or Contract Documents. The RFI system is also a means for the County to submit Contract Document clarifications or supplements to the Design Builder.

1.1.68 REQUEST FOR SUBSTITUTION ("RFS"): A document prepared by the Design Builder requesting substitution of any unlisted materials in lieu of materials named in the Specifications or approved for use in Addenda.

1.1.69 RFI-REPLY: A document consisting of supplementary details, instructions or information in written or graphic form, issued by the County which clarifies or supplements Contract Documents, and with which the Design Builder shall comply. RFI-Replies do not authorize changes in Contract Price or Contract Times except as otherwise agreed in writing by the County. RFI-Replies will be issued through the RFI administrative system.

1.1.70 SAMPLES: Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and which establish the standards by which such portion of the Work will be judged.

1.1.71 SERVICES: "Services" means all planning, design, detailed engineering, procurement, permitting for construction or otherwise required for the Work, project management and reporting, support services, construction, landscaping, cleanup, Checkout, Startup, and Testing, construction supervision, training, provision of all necessary personnel, and all other related services, all as necessary to fulfill Design Builder's obligations under the Agreement, whether such services and personnel are provided by Design Builder or its subcontractors or suppliers.

1.1.72 SHOP DRAWINGS: All drawings, diagrams, illustrations, submittals, schedules and other data or information which are specifically prepared or assembled by or for the Design Builder and submitted by the Design Builder to illustrate some portion of the Work.

1.1.73 SHOWN: As indicated on Drawings.

1.1.74 SITE: The physical location of the Project including Work performed pursuant to the Contract Documents. Also referred to as the Facility Site.

1.1.75 SPECIFICATIONS: Written descriptions of the Work, or parts of the Work, included in the Contract Documents.

1.1.76 SPECIFIED: As described in Contract Documents.

1.1.77 START DATE: The date specified by the County, in the Notice to Proceed or otherwise, for commencement of performing Work under the Contract Documents.

1.1.78 STARTUP: "Startup" means the process of starting and conducting initial operations of the aggregate of systems, subsystems and components of the Work. A necessary prerequisite of Startup is the Checkout on individual systems, subsystems, components, and auxiliaries of the Work, and on the Interconnection Facilities or other facility components with which it is connected has been completed.

1.1.79 SUBCONTRACTOR: A person or entity who has a direct contract with the Design Builder to perform a portion of the Work (and includes a consultant or Subconsultant). Where the context requires, the term "subcontractor" also includes lower-tier subcontractors. The term "subcontractor" is referred to throughout the Contract Documents as if singular in number and neuter in gender and means a subcontractor or an authorized representative of the subcontractor. The term "subcontractor" does not include a separate contractor or subcontractors of the County.

SUBCONSULTANT: A person or entity who has a direct contract with the Design Builder to perform a portion of the Work. Where the context requires, the term "subconsultant" also includes lower-tier subconsultants. The term "subconsultant" is referred to throughout the Contract Documents as if singular in number and neuter in gender and means a subconsultant or an authorized representative of the subconsultant. The term "subconsultant" does not include a separate consultant or subconsultants of the County.

1.1.80 SUBSTANTIAL COMPLETION: The Work (or a specified part thereof) has progressed to the point where, in the opinion of the County as evidenced by a Certificate of Substantial Completion, the Work is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended. Substantial Completion shall be deemed to have occurred when certificates of occupancy (or equivalent approvals) have been issued by State or local authorities with jurisdiction, including but not limited to the local Fire Marshall. The issuance of certificates of occupancy will conclusively establish that the Facility may be occupied in its entirety for its intended purpose, completion of Punch List items notwithstanding. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

1.1.81 TEST OR TESTING: "Test" or "Testing" means the execution of all activities required for the performance tests.

1.1.82 UNDERGROUND FACILITIES: All pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels or other such facilities or attachments, and any encasements containing such facilities which have been or will be installed underground to furnish any of the following services or materials: Electricity, gases, steam, liquid petroleum products, telephone or other communications, cable television, sewage and drainage removal, traffic or other control systems or water.

1.1.83 WORK: The design and construction of the parts of the Project to be furnished by Design Builder under the Contract Documents within the Contract Times. The Work includes and is the result of performing or furnishing the Services. Wherever the word "work" is used, rather than the word "Work", it shall be understood to have its ordinary and customary meaning. See Document 00 52 53 (Agreement).

1.2 Wherever words “as directed”, “as required”, “as permitted”, or words of like effect are used, it shall be understood that direction, requirements, or permission of the County is intended. Words “sufficient”, “necessary”, “proper”, determined and the like shall mean sufficient, necessary or proper in judgment of the County. Words “approved”, “acceptable”, “satisfactory”, “favorably reviewed” or words of like import, shall mean approved by, or acceptable to, or satisfactory to, or favorably reviewed by the County.

1.3 Wherever the word “may” is used, the action to which it refers is discretionary. Wherever the words “shall” or “will” are used, the action to which it refers is mandatory.

END OF SECTION

SECTION 01 45 00

QUALITY CONTROL

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section includes administrative and procedural requirements for the following:

1.1.1.1 Quality assurance and quality control.

1.1.1.2 Quality Control Plan.

1.1.1.3 Special testing and inspection.

1.1.2 Materials to be furnished under the Contract Documents are subject to testing and inspection for compliance with the Contract Documents. Testing and inspecting services are required to verify compliance with requirements specified or indicated. These services do not relieve Design Builder of responsibility for compliance with the Contract Document requirements.

1.1.2.1 Specific quality assurance and control requirements for individual construction activities are contained in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

1.1.2.2 Specified tests, inspections, and related actions do not limit Design Builder's other quality assurance and control procedures that facilitate compliance with the Contract Document requirements.

1.1.2.3 Requirements for Design Builder to provide quality assurance and control services required by County are not limited by provisions of this Section.

1.1.3 Related Sections include the following:

1.1.3.1 Section 01 32 26 (Schedules and Reports) for developing a schedule of required tests and inspections.

1.1.3.2 Section 01 73 29 (Cutting and Patching) for repair and restoration of construction disturbed by testing and inspecting activities.

1.1.3.3 Divisions 2 through 33 for specific test and inspection requirements.

1.2 DEFINITIONS

1.2.1 Quality Assurance Services: Activities, actions, and procedures performed before and during execution of the Work to guard against defects and deficiencies and substantiate that proposed construction will comply with requirements.

1.2.2 Quality Control Services: Tests, inspections, procedures, and related actions during and after execution of the Work to evaluate that actual products incorporated into the Work and completed construction comply with requirements. Services do not include contract enforcement activities performed by County.

1.2.3 NRTL: A nationally recognized testing laboratory according to 29 CFR 1910.7.

1.2.4 NVLAP: A testing agency accredited according to the National Institute of Standards and Technology's (NIST's) National Voluntary Laboratory Accreditation Program.

1.2.5 Preconstruction Testing: Tests and inspections that are performed specifically for the Project before products and materials are incorporated into the Work to verify performance or compliance with specified criteria.

1.2.6 Product Testing: Tests and inspections that are performed by an NRTL, an NVLAP, or a testing agency qualified to conduct product testing and acceptable to County, to establish product performance and compliance with industry standards.

1.2.7 Source Quality Control Testing: Tests and inspections that are performed at the source (i.e., a plant, mill, factory, or shop).

1.2.8 Field Quality Control Testing: Tests and inspections that are performed on-site for installation of the Work and for completed Work.

1.2.9 Testing Agency: An entity engaged to perform specific tests, inspections, or both that is certified as meeting the requirements applicable to the Work. Testing laboratory shall mean the same as testing agency.

1.2.10 Installer/Applicator/Erector: Design Builder or another entity engaged by Design Builder as an employee or Subcontractor of any tier to perform a particular construction operation, including installation, erection, application, and similar operations.

1.2.11 Experienced: As used herein, an individual or entity that has successfully completed a **minimum of five previous projects similar in size and scope** to this Project; being familiar with special requirements indicated; and having complied with requirements of authorities having jurisdiction to work in California.

1.3 CONFLICTING REQUIREMENTS

1.3.1 General: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to County for a decision before proceeding.

1.3.2 Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified, or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of requirements. Refer

uncertainties to County for a decision before proceeding.

1.4 QUALITY CONTROL PERSONNEL

1.4.1 Quality Control Manager: Provide a Quality Control Manager at the Site to manage and implement the Quality Control Plan. The only duties and responsibilities of the Quality Control Manager will be to manage and implement the Quality Control Plan. The Quality Control Manager's duties and responsibilities include, but are not limited to:

1.4.1.1 Attending the Coordination and Detailing Activity (CDA) meetings, Weekly Construction Progress Meetings, Preinstallation Meetings, and Commissioning Meetings.

1.4.1.2 Conducting Quality Control meetings, as necessary.

1.4.1.3 Reviewing submittals.

1.4.1.4 Preparing, monitoring and following through on Requests for Information, Change Orders, and Deferred Approvals.

1.4.1.5 Preparing, coordinating and following through on Requests for Inspection.

1.4.1.6 Ensuring testing is performed.

1.4.1.7 Preparing required Quality Control certifications and documentation.

No Work or testing may be performed unless the Quality Control Manager or a Designated Alternate Quality Control Manager is on the Site. The Quality Control Manager shall report directly to an officer of the Design Build firm who shall not be the same individual as, nor be subordinate to, the Project Manager or Superintendent.

1.4.2 Qualifications: The Quality Control Manager must be a graduate of a four year accredited college program in one of the following disciplines: engineering, architecture, construction management, engineering technology, building construction, or building science with a **minimum of ten (10) years experience** as a superintendent, inspector, Quality Control Manager, project manager, or construction manager on major and complex projects.

1.4.3 Other Quality Control Personnel: Provide additional quality control personnel (e.g., Quality Control Specialists, administrative support staff) as described in the Quality Control Plan and as required to implement the Quality Control Plan. The County, at its sole discretion, may require the Design Builder to assign additional quality control personnel to the Project if the County believes the Design Builder's assigned personnel are not capable of implementing the Quality Control Plan to the County's satisfaction. The Design Builder shall provide any additional personnel required by the County at no additional cost. Other active members of the Quality Control Program shall include a minimum of a full time architectural and engineering coordinator, Contractor's LEED Coordinator as defined in Section 01 81 13 (Sustainable Design Requirements), and Contractor's Commissioning Coordinator as defined in Section 01 91 00 (General

Commissioning Requirements). The Quality Control Manager and supporting members' responsibility is to ensure compliance with Contract Documents and is a requirement of the Contractor's Quality Control Program.

1.5 SUBMITTALS

1.5.1 Qualification Data: For testing agencies specified in Article 1.6 (Quality Assurance) below to demonstrate their capabilities and experience. Include proof of qualifications in the form of a recent report on the inspection of the testing agency by a recognized authority.

1.5.1.1 Testing, Inspection and Observation Program: Prepare according to the requirements contained in Section 7-141 of the California Building Standards Administrative Code (Part 1, Title 24, CCR). Submit to County for approval prior to issuance of the building permit, if required.

1.5.2 Reports: Reports of all tests made shall be provided to County regardless of whether test results indicate that the material tested is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Prepare and submit certified written reports that include the following:

1.5.2.1 Date of issue.

1.5.2.2 County's Project title and number.

1.5.2.3 Name, address, and telephone number of testing agency.

1.5.2.4 Dates and locations of samples and tests or inspections.

1.5.2.5 Applicable Drawing, detail, and Specification numbers.

1.5.2.6 Names of individuals making tests and inspections.

1.5.2.7 Description of the Work and test and inspection method.

1.5.2.8 Identification of product and Specification Section including specified design strength or other applicable criteria.

1.5.2.9 Complete test or inspection data.

1.5.2.10 Test and inspection results and an interpretation of test results.

1.5.2.11 Record of temperature and weather conditions at time of sample taking and testing and inspecting and/or description of controlled environment.

1.5.2.12 Comments or professional opinion on whether tested or inspected Work complies with the Contract Document requirements.

1.5.2.13 A statement that the material or materials were sampled and tested according

to the requirements of the California Code of Regulations, Title 21 or 22 and 24.

1.5.2.14 Name and signature of laboratory inspector.

1.5.2.15 Recommendations on retesting and reinspecting, if any.

1.5.3 Permits, Licenses, and Certificates: For County's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

1.5.4 Quality Control Plan: Prepare a plan describing procedures and methods the Design Builder will utilize to control the quality of the Work. At a minimum the Quality Control Plan shall include:

1.5.4.1 An organizational structure description, including Quality Control supervision, and inspection reporting structure. Delineate personnel training and qualification activities.

1.5.4.2 Plans and procedures for testing and inspections to verify attributes delineated in the Contract Documents, including those specified in referenced Codes and standards. Include documents that identify individual inspection or testing points and acceptance criteria, and include provisions for recording results and the responsible inspection/test personnel. This documentation shall be traceable to the particular material, items, processes or systems evaluated, including notification requirements.

1.5.4.3 Procedures for identifying and invoking the applicable technical and quality requirements in the Specifications on vendors supplying materials, parts and services.

1.5.4.4 Plans and procedures for receiving, inspecting and accepting material and items. These shall include examination of physical condition and compliance with purchasing requirements, including markings for class type and grade, and conformance of supplied documentation. These shall also include provisions for:

1.5.4.4.1 Identifying, controlling and processing non-conforming items, including notification of the County.

1.5.4.4.2 Inspection of materials for authenticity to preclude counterfeit parts, for items and attributes of concern identified by County.

1.5.4.4.3 Verifying for compliance and traceability, maintaining, and turnover to the County, certificates of conformance and mill certificates required by Contract Documents or codes or standards invoked, for materials received.

1.5.4.5 Provisions for identifying defective Work. Bring to County's attention, for consultation and possible relief, those cases where correction within the specified requirements may create a significant schedule impact, personnel hazard, or compromise the quality of installed items, or is otherwise impractical.

1.5.4.6 Controls to assure that only the Contract Documents and "Approved for Inspection" Construction Documents are utilized in the Work.

1.5.4.6.1 This includes provisions for removing superseded versions from the work area, except where explicitly and prominently marked "Void - For Information Only"; such as to retain annotated installation data.

1.5.4.7 Detailed formal procedures or instructions for the performance of special processes, such as welding or concrete placement. These procedures/instructions and personnel performing special processes shall be qualified and certified as required by codes and standards invoked in the Contract Documents.

1.5.4.8 Controls providing for periodic calibration of testing and measurement equipment, including unique equipment identification and calibration tracking.

1.5.4.9 Maintain records documenting the implementation of the above activities, including tests, inspections, special process qualification and execution, vendor documentation and defective Work resolution. These records shall be indexed, protected and retrievable for final submission to County.

1.5.4.10 Identify all tests and inspections that Design Builder proposes to be conducted by the County.

1.5.4.11 Approval: The Quality Control Plan **must be approved before the start of construction** and shall reflect the requirements of the approved Testing, Inspection and Observation Program. The County reserves the right to require revisions of the Quality Control Plan that are necessary to ensure the specified quality of the Work. The County may interview Quality Control personnel at any time to verify their submitted qualifications.

1.5.4.12 Changes: The Design Builder shall submit any proposed changes to the Quality Control Plan, including changes in personnel, to the County in writing. Proposed changes must be submitted **at least seven (7) Days in advance of the desired effective date** of the change. No change in the Quality Control Plan shall be implemented without the County's written approval.

1.6 QUALITY ASSURANCE

1.6.1 General: Qualifications paragraphs in this Article establish the minimum qualification

levels required; individual Specification Sections specify additional requirements.

1.6.2 Installer Qualifications: A firm or individual experienced in installing, erecting, or assembling work similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance. Installers shall be qualified by the product or equipment manufacturer, if required for warranty or other performance guarantees.

1.6.3 Manufacturer Qualifications: A firm experienced in fabricating products or systems indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units as required to meet the Project schedule.

1.6.4 Fabricator Qualifications: A firm experienced in procuring and fabricating products indicated for this Project and with a record of successful in-service performance, as well as sufficient production capacity to produce required units as required to meet the Project schedule.

1.6.5 Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in California and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of systems, assemblies, or products that are similar to those indicated for this Project in material, design, and extent.

1.6.6 Specialists: Certain sections of the Specifications require that specific construction activities shall be performed by entities who are recognized experts in those operations. Specialists shall satisfy qualification requirements indicated and shall be engaged for the activities indicated.

1.6.6.1 Requirement for specialists shall not supersede building codes and regulations governing the Work.

1.6.7 Testing Agency Qualifications: An NRTL, an NVLAP, or an independent agency with the experience and capability to conduct testing and inspecting indicated, including the requirements of ASTM D3666, D3740, E329, E543, and E548 as applicable; and with additional qualifications specified in individual Sections; and that is acceptable to County. All testing shall be performed under the supervision and control of a California registered professional engineer employed by the testing agency.

1.6.8 Factory-Authorized Service Representative Qualifications: An authorized representative of a manufacturer who is trained and approved by the manufacturer to inspect installation of the manufacturer's products that are similar in material, design, and extent to those indicated for this Project.

1.6.9 Preconstruction Testing: Where a testing agency is indicated to perform preconstruction testing for compliance with specified requirements for performance and test methods, comply with the following:

1.6.9.1 Design Builder's responsibilities include the following:

1.6.9.1.1 Provide test specimens representative of proposed products and construction.

1.6.9.1.2 Submit specimens in a timely manner with sufficient time for testing and analyzing results to prevent delaying the Work.

1.6.9.1.3 Provide sizes and configurations of test assemblies to adequately demonstrate capability of products to comply with performance requirements.

1.6.9.1.4 Build site-assembled test assemblies using installers who will perform same tasks for Project.

1.6.9.1.5 When testing is complete, remove test specimens and assemblies; do not reuse products on Project.

1.6.9.2 Testing Agency Responsibilities: Submit a certified written report of each test, inspection, and similar quality assurance service to Design Builder, with a copy to the County. Interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from the Contract Documents or accepted Construction Documents.

1.7 QUALITY CONTROL

1.7.1 County Responsibilities: Where quality control services are indicated as County's responsibility, County will engage a qualified testing agency to perform these services.

1.7.1.1 Specified inspection and testing shall be performed in accordance with Part 1, Title 24, Article 4, Paragraph 7-149, California Code of Regulations.

1.7.1.2 County will furnish Design Builder with names, addresses, and telephone numbers of testing agencies engaged and a description of the types of testing and inspections they are engaged to perform.

1.7.1.3 Payment for these services will be by the County.

1.7.1.4 Costs for retesting and re-inspecting construction that replaces or is necessitated by work that failed to comply with the Contract Documents will be charged to Design Builder, and the Contract Sum will be adjusted by Change Order.

1.7.2 Design Builder's Responsibilities: Tests and inspections not explicitly assigned to County are Design Builder's responsibility

1.7.2.1 Where services are indicated as Design Builder's responsibility, engage a qualified testing agency to perform these quality control services.

1.7.2.1.1 Design Builder shall not employ same entity engaged by County.

1.7.2.2 Notify testing agencies and the County **at least seventy-two (72) hours in advance of time when Work that requires testing or inspecting** will be performed.

1.7.2.3 Where quality control services are indicated as Design Builder's responsibility, submit a certified written report, in duplicate, of each quality control service to the County.

1.7.2.4 Testing and inspecting requested by Design Builder and not required by the Contract Documents are Design Builder's responsibility.

1.7.2.5 Submit additional copies of each written report directly to authorities having jurisdiction, when so directed by the County.

1.7.2.6 Do not cover work before required tests and inspections are performed (refer to Article 9 (Warranty, Guarantee, and Inspection of Work) of Document 00 72 53 (General Conditions).

1.7.3 Disqualified Material: Material shipped or delivered to the site by the Design Builder from the source of supply prior to satisfactorily passing required tests or inspections, or prior to the receipt of a notice from the County that such testing or inspection is not required shall not be incorporated into the Work.

1.7.4 Manufacturer's Field Services: Where indicated, engage a factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing as specified in Section 01 33 00 (Submittal Procedures).

1.7.5 Retesting/Reinspecting: Regardless of whether original tests or inspections were Design Builder's responsibility, provide quality control services, including retesting and reinspection, for construction that replaces Work that failed to comply with the Contract Documents (refer to Article 9 (Warranty, Guarantee, and Inspection of Work) of Document 00 72 53 (General Conditions)).

1.7.5.1 If such additional tests or inspections establish that such portion of the Work fails to comply with the Contract Documents, all costs of such additional tests and inspections, and all other costs resulting from such failure, including compensation for County and County's consultants shall be deducted from the Contract Sum by Change Order.

1.7.5.2 In addition, the Design Builder shall pay for:

1.7.5.2.1 Additional costs, including compensation for travel and daily living expenses which are beyond normal inspection costs, when the County's Testing Laboratory is required to conduct inspections outside of the San Francisco Bay area.

1.7.5.2.2 Cost of retesting Work revised or replaced by Design Builder, where required tests were performed on original construction.

1.7.5.2.3 Cost of retesting construction used as temporary facilities by the Design Builder.

1.7.5.2.4 Costs of testing construction required by Design Builder's substitutions.

1.7.6 Testing Agency Responsibilities: Cooperate with County and Design Builder in performance of duties. Provide qualified personnel to perform required tests and inspections:

1.7.6.1 Notify County and Design Builder promptly of irregularities or deficiencies observed in the Work during performance of services.

1.7.6.2 Determine the location(s) from which test samples will be taken and in which in-situ tests are conducted.

1.7.6.3 Conduct and interpret tests and inspections and state in each report whether tested and inspected work complies with or deviates from requirements.

1.7.6.4 Submit a certified written report, in duplicate, of each test, inspection, and similar quality control service to County through Design Builder.

1.7.6.5 Do not release, revoke, alter, or increase the Contract Document requirements or approve or accept any portion of the Work.

1.7.6.6 Do not perform any duties of Design Builder.

1.7.7 Associated Services: The Design Builder shall cooperate with agencies performing required tests, inspections, and similar quality control services, and provide reasonable auxiliary services as requested. Notify agency sufficiently in advance of operations to permit assignment of personnel. Provide the following:

1.7.7.1 Access to the Work.

1.7.7.2 Incidental labor and facilities necessary to facilitate tests and inspections.

1.7.7.3 Adequate quantities of representative samples of materials that require testing and inspecting. Assist agency in obtaining samples.

1.7.7.4 Facilities for storage and field curing of test samples.

1.7.7.5 Delivery of specified quantities of representative samples of materials proposed for use as specified to testing agencies.

1.7.7.6 Preliminary design mix proposed for use for material mixes that require control by testing agency.

1.7.7.7 Security and protection for samples and for testing and inspecting equipment at Site.

1.7.8 Coordination: Coordinate sequence of activities to accommodate required quality assurance and quality control services with a minimum of delay and to avoid of the need to remove and replace construction to accommodate testing and inspecting.

1.7.8.1 Schedule times for tests, inspections, obtaining samples, and similar activities.

1.7.8.2 Do not cover any piping, wiring, ducts, or other installations until they have been inspected and approved by the County or certified, if certification is required.

1.8 SPECIAL TESTS AND INSPECTIONS

1.8.1 Special Tests and Inspections: The County will engage a qualified special inspector to conduct special tests and inspections required by the California Building Codes. The responsibilities of the Special Inspector are as follows:

1.8.1.1 Verifying that manufacturer maintains detailed fabrication and quality control procedures and reviewing the completeness and adequacy of those procedures to perform the Work.

1.8.1.2 Notifying County promptly of irregularities and deficiencies observed in the Work during performance of its services.

1.8.1.3 Submitting a certified written report of each test, inspection, and similar quality control service to County with copy to Design Builder.

1.8.1.4 Submitting a final report of special tests and inspections at Substantial Completion, which includes a list of unresolved deficiencies.

1.8.1.5 Interpreting tests and inspections and stating in each report whether tested and inspected work complies with or deviates from the Contract Documents or approved Construction Documents.

1.8.1.6 Retesting and re-inspecting corrected work, as needed.

1.8.2 The County shall review and approve the agencies and/or individuals conducting the special tests and inspections prior to issuing the building Permit or prior to the commencement of related work.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

3.1 INSPECTION

3.1.1 The Design Builder shall provide access to the Work, including the facilities where the Work is in preparation, at all times for the purpose of inspection. The Design Builder

shall maintain proper facilities and provide safe access for such inspection at all times.

3.1.2 The County shall have the right to reject materials and workmanship that are defective, or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the Site without charge to the County.

3.1.3 The County may make an examination of work already completed by requiring the Design Builder to remove or tear out such work at any time before final acceptance of the Work. Upon request, the Design Builder shall provide all facilities, labor and materials necessary to remove the portion of the Work designated by the County. If such work is found to be defective in any respect, the Design Builder shall be responsible for all expenses of such examination and satisfactory reconstruction. If such work is found to meet the requirements of the Contract Documents, the additional cost of labor and materials involved in the examination shall be allowed to the Design Builder.

3.2 QUALITY CONTROL REPORTS

3.2.1 Frequency: Reports are required for each day that Work is performed, **for every seven (7) consecutive Days of no work**, and on the last day of a no-work period. Account for each day throughout the life of the Contract. The reporting of Work shall be identified by Specification number and title and terminology consistent with the Contract Schedule. Design Builder Quality Control Reports shall be prepared, signed and dated by the Quality Control Manager and shall contain the following information:

3.2.1.1 Identify the part or parts of the Work that is the subject of the report.

3.2.1.2 Indicate, as applicable, that for this portion of the Work, the Construction Documents have been reviewed, submittals have been approved, materials comply with approved submittals, materials are stored properly, preliminary work was done correctly, the testing plan has been reviewed, and work methods and schedule have been discussed.

3.2.1.3 Indicate, as applicable, that for this portion of the Work, the preliminary work was done correctly, samples have been prepared and approved, the workmanship is satisfactory, test results are acceptable, work is in compliance with the Contract Documents and approved Construction Documents, and the required testing has been performed. Include a list of who performed the test(s).

3.2.1.4 Results of off-site quality control work, if applicable, including actions taken.

3.2.1.5 List any rework items identified but not corrected by close of business.

3.2.1.6 List the rework items corrected from the rework items list along with the corrective action taken.

3.2.1.7 Include a “Comments” section in the report that contains pertinent information including directions received, quality control problem areas,

deviations from the Quality Control Plan, deficiencies encountered, Quality Control meetings held, acknowledgement that as-built drawings have been updated, corrective direction given by the Quality Control Manager, and corrective action taken by the Design Builder.

3.2.1.8 Contractor Quality Control Report certification.

3.2.1.9 TEST AND INSPECTION LOG

3.2.2 Prepare a sequentially numbered record of tests and inspections. Include the following:

3.2.2.1 Request for Inspection.

3.2.2.2 Date test or inspection was conducted.

3.2.2.3 Description of the Work tested or inspected.

3.2.2.4 Applicable Construction Documents.

3.2.2.5 Date test or inspection results were transmitted to County.

3.2.2.6 Identification of testing agency or special inspector conducting test or inspection.

3.2.3 Maintain log at Site. Post changes and modifications as they occur. Provide access to test and inspection log for County's reference during normal working hours.

3.3 REPAIR AND PROTECTION

3.3.1 General: On completion of testing, inspecting, sample taking, and similar services, repair damaged construction and restore substrates and finishes.

3.3.1.1 Comply with the Contract Document requirements for Section 01 73 29 (Cutting and Patching).

3.3.2 Protect construction exposed by or for quality control service activities.

3.3.3 Repair and protection are Design Builder's responsibility, regardless of the assignment of responsibility for quality control services.

3.4 GEOTECHNICAL ENGINEERING

3.4.1.1 LEFT INTENTIONALLY BLANK

3.5 CONCRETE TESTS AND INSPECTIONS

3.5.1 Tests

3.5.1.1 Notify Architect, County and testing agency of brand and type of cement and sources of aggregates in time for review, sampling and testing. Test cement

in accordance with Title 24, 1928 B.1

3.5.1.2 Aggregate: The County's testing agency will test **at least one sample for every two hundred (200) cubic yards of aggregate.** Aggregates from a known source of supply that have shown by actual service to produce concrete of the required quality will be tested only for gradation and deleterious substances.

3.5.1.3 Obtain **at least one set of samples for strength tests** of each separate design mix of concrete placed each day. Frequency of sampling shall **be not less than once per day, nor less than once for each fifty (50) cubic yards of concrete, nor less than once per 2,000 square feet of surface area** for slabs or walls. Obtain **one additional set of samples for testing at the start** of concrete work for each class of concrete, and whenever the mix or aggregate is changed.

3.5.1.4 **One set of samples consists of four cylinders.**

3.5.1.5 Cylinders will be taken so as to represent as nearly as possible the batch of concrete from which they are taken. Sampling procedures shall conform to ASTM C 172.

3.5.1.6 Test cylinders shall be made and cured in compliance with ASTM C 31, except as modified hereinafter. Tests will comply with ACI 301 for strength, slump, and air entrainment tests.

3.5.1.7 Test cylinders from respective batches, **one at age of seven (7) Days, and two at age twenty-eight (28) Days.** The fourth cylinder shall be held in reserve and tested only at the direction of the Architect or County. Cylinder testing procedures shall conform to ASTM C 39 for strength.

3.5.1.8 Slump tests shall be taken as required by Testing Laboratory to certify compliance with the Contract Documents and approved Construction Documents. Slump shall be tested in accordance with ASTM C 143.

3.5.1.9 Minimum compressive strength of test cylinders, in pounds per square inch, shall not be less than the specified required design strength.

3.5.1.10 If minimum strengths of test cylinder fall below those specified, Architect or County may require test cores from hardened concrete to be taken and tested. Each core test, if taken shall consist of three cores. The cost of such cores and tests shall be borne by the Design Builder. Cores shall be taken in accordance with ASTM C 42, from locations selected by the Architect or County. The Design Builder shall repair core holes with a non-shrinking natural aggregate grout.

3.5.1.10.1 Concrete testing by coring shall be considered acceptable if the average strength of the three cores is equal to **at least .85 of the minimum specified twenty-eight (28) day strength and if no**

single core strength is less than five hundred (500) psi below the twenty-eight (28) day strength.

3.5.2 Concrete Inspections

3.5.2.1 An authorized inspector from the testing agency shall be present at all times during placing of structural cast-in-place concrete. The inspector shall inspect and accept the accuracy of all reinforcing steel before concrete is placed. Concrete construction activities shall not proceed until inspections are complete and the inspected construction is approved.

3.5.3 Concrete Mix Designs

3.5.3.1 Refer to Specification Division 3 (Concrete)

3.5.4 Concrete Plant Inspection

3.5.4.1 Structural concrete manufacturer(s) shall deliver a certificate in accordance with ASTM C 94, Section 15.1, and all items of Section 15.2 with the addition of type and brand of cement and admixtures, source and identification of aggregates to the Inspector with each mixer truck. Certificates shall be from a public weighmaster. The inspector shall not accept concrete that is not accompanied and identified by a certificate from a batch plant inspector.

3.5.4.2 Concrete shall be mixed at certified automatic concrete batch plants and shall have quality control as follows:

3.5.4.2.1 Laboratory designed mixes using adequate cement factors.

3.5.4.2.2 The testing agency shall perform continuous batch plant inspection.

3.5.4.2.3 Compliance with California Building Code (CBC) Standard 19-3.

3.5.4.2.4 Periodic inspection of quality of materials used may be made by testing laboratory, acceptable to Architect or County.

3.6 HIGH-STRENGTH GROUT

3.6.1 This Article applies to structural grout used below base plates and similar applications.

3.6.2 The placement of grout materials will be continuously inspected by the County's testing agency.

3.6.3 Grout compressive strength testing: The County will obtain a **set of three samples from each batch.** Samples will be **tested at one (1) or three (3) days and seven (7) days following mixing.** Compressive strengths shall exceed the manufacturer's published

minimum strengths or **eighty percent (80%) of their published typical compressive strengths.**

3.7 EXPANSION ANCHOR BOLTS (TITLE 24, 1925 B.3.5)

3.7.1 Expansion type concrete anchor bolts shall be Hilti Kwik Bolt II or as indicated on the approved Construction Documents. Other brands of similar anchors will be acceptable with demonstration of equivalency. Submit manufacturer's specifications and ICBO reports. All anchors shall be installed with special inspection in accordance with the requirements of the Building Code.

3.7.2 **Fifty percent (50%) of the anchors or alternate bolts in any group** arrangement shall be proof tested in tension or torque, as specified in the Construction Documents.

3.7.3 Testing Requirements:

3.7.3.1 Anchor diameter refers to the thread size.

3.7.3.2 Apply proof test loads to anchors without removing the nut, if possible. If not possible, remove nut and install a threaded coupler to the same tightness as the original nut using a torque wrench and apply load.

3.7.3.3 Reaction loads from test fixtures may be applied close to the anchor being tested, provided the anchor is not restrained form withdrawing by the fixture(s).

3.7.3.4 Test equipment is to be calibrated by an approved testing laboratory in accordance with standard recognized procedures.

3.7.3.5 The following criteria are applicable for the approval of installed anchors:

3.7.3.5.1 Hydraulic Ram Method: The anchor should have no observable movement at the applicable test load. For wedge and sleeve type anchors, a practical way to determine observable movement is that the washer under the nut becomes loose.

3.7.3.5.2 Torque Wrench Method: The applicable test torque must be reached within the following limits:

3.7.3.5.2.1 **One half (1/2) turn of the nut.**

3.7.3.5.2.2 **One quarter (1/4) turn of the nut for the 3/8" sleeve anchor only.**

3.7.3.5.3 Testing should occur a **minimum of twenty-four (24) hours after installation** of the subject anchors.

3.8 ADHESIVE ANCHORS

3.8.1 Installation Testing: **Fifty percent (50%) of the anchors shall be pull-tested.**

3.8.2 Proof Test Load: Pull test to twice the ICBO evaluation report design tension values or as indicated on the drawings.

3.8.3 Inspection: Installation of adhesive anchors will be continuously inspected in accordance with the requirements of the California Building Code, Section 1701, and the appropriate ICBO evaluation report.

3.9 EPOXY AND CEMENTITIOUS GROUTED DOWELS

3.9.1 Initial Testing: Install **three anchors for each anchor size** and installation position planned in allocation acceptable to the Architect or County. These anchors shall not be incorporated into the finished construction. The testing agency will pull-test these anchors at **one hundred twenty-five percent (125%) of the values specified** on the drawings.

3.9.2 Testing: The testing agency will pull-test **fifty percent (50%) of the dowels** in accordance with the schedule shown on the drawings. If any failures occur, the agency will pull-test **one hundred percent (100%) of dowels** in the vicinity or placed with the same batch of grout until **at least twenty (20) tests demonstrate compliance.** The Design Builder shall bear the cost of replacing failed dowels and re-inspection.

3.9.3 Inspection: Installation of epoxy grouted dowels will be continuously inspected in accordance with the California Building Code, Section 1701, and the appropriate ICBO evaluation report.

3.10 REINFORCING STEEL

3.10.1 Tests

3.10.1.1 Tests shall be performed before the delivery of steel to the Site. Steel that does not meet specifications shall not be shipped to the Project.

3.10.1.2 Testing procedure shall conform to ASTM A 615.

3.10.1.3 Sample at the place of distribution, before shipment. Make **one tensile strength test and one bending test from samples out of 10 tons**, or fraction thereof, each size and kind of reinforcing steel, where taken from bundles as delivered from the mill and properly identified as to heat number. Mill analysis shall accompany report. Where identification number cannot be ascertained, or where random samples are taken, make **one series of tests from each two and a half (2-1/2) tons**, or fraction thereof, of each size and kind of reinforcing steel. Samples shall include **not fewer than two pieces, each eighteen (18) inches long, of each size and kind of reinforcing steel.**

3.10.1.4 Welds: Reinforcing bar welds shall be inspected. Tests of reinforcing bar welds shall be in accordance with ASTM E 709 and AWS D1.4. Chemical testing of reinforcing bars for welding shall conform to Title 24, 2603 B.5.2.

3.10.2 Inspector will inspect all reinforcement for concrete construction for size, dimensions, locations and proper placement. Special Inspector required for welding as required by Title 24, 1928 B.12. Inspector shall be present during welding of all reinforced steel.

3.11 MASONRY

3.11.1 Job Inspector

3.11.1.1 All masonry work will be continuously inspected during laying and grouting by an inspector specially trained in such inspections. The inspector shall make test samples and perform such tests as are required.

3.11.1.2 The inspector shall check the materials, details of construction and construction procedure. The inspector shall furnish a verified report that of his own personal knowledge the work covered by the report has been performed and materials used and installed are in every particular way in accordance with, and in conformity to, the Contract Documents and duly approved Construction Documents.

3.11.2 Stone Veneer

3.11.2.1 All veneer shall be continuously inspected as required by the California Code or Regulations, Title 24, Part 2, Volume I, Section 1403 A.6.

3.12 STRUCTURAL STEEL INCLUDING MISCELLANEOUS STEEL

3.12.1 Mill certificates or affidavits and manufacturers' certifications shall be supplied to the inspector for verification of steel materials. Testing agency shall be notified **at least three working days in advance of fabrication** and supplied with the reports so that the inspector can make a shop inspection of the steel.

3.12.2 Inspection requests shall be based on Title 24, Part 2, California Building Code, Volume 2, Seismic Provisions for Structural Steel Buildings of the American Institute of Steel Construction, 2002.

3.12.3 Identify and mark steel in accordance with Section 2202B. Structural steel properly identifies need not be tested.

3.12.4 Tests of Steel Materials: If structural steel cannot be identified by heat or melt numbers, or if its source is questionable, **not less than one tension test and one bend test will be made for each five tons** or fractional part thereof. The cost of such testing will be borne by the Design Builder.

3.12.5 Testing and Inspection of Structural Steel:

3.12.5.1 Testing agency will visit the fabricator's plant to verify that materials used check with the mill tests, affidavits of test reports, and that fabrication and welding procedures meet specifications.

3.12.5.2 Testing agency shall visually check fabricated steel delivered to the Project against the working and reviewed shop drawings for compliance, and make physical tests and measurements as required to meet the Specifications.

3.12.5.3 Inspection of welding shall be in accordance with the requirements of section 2212 B.5.

3.12.5.4 Erection Inspection: Testing agency will visually inspect bolted and field welded connections, perform such additional tests and inspections of the field work as are required by the Architect or County and prepare test reports for the approval.

3.12.6 Ultrasonic Testing: All complete penetration multi-pass groove welds will be ultrasonically tested:

3.12.6.1 The County's testing agency will perform ultrasonic testing immediately after welding is complete. A second ultrasonic testing will be performed near the end of field welding for **at least twenty-five percent (25%) of the field welded groove welds.**

3.12.6.2 All defective welds shall be repaired and re-tested with ultrasonic equipment.

3.12.6.3 When ultrasonic indications arising from the weld root can be interpreted as either a weld defect or the backing strip itself, the backing strip shall be removed at the Design Builder's expense and, if no root defect is visible, the weld shall be retested. If no defect is indicated on this re-test, and no significant amount of the base and weld metal haven been removed, no further repair or welding is necessary. If a defect is indicated, it shall be repaired at the Design Builder's expense.

3.12.6.4 The ultrasonic instrumentation shall be calibrated by the technician to evaluate the quality of the welds in accordance with AWS D1.1.

3.12.6.5 Should defects appear in welds tested, repairs shall be similarly inspected at the Design Builder's expense and at the direction of the Architect or County until satisfactory performance is assured.

3.12.6.6 Other methods of inspection, for example, x-ray, gamma ray, magnetic particle, or dye penetrant, may be used on welds if deemed necessary by the Architect or County.

3.12.7 The testing laboratory will review welding procedure specifications and related documentation to verify compliance with AWS and the Contract Documents.

3.13 HIGH-STRENGTH BOLTS, NUTS AND WASHERS

3.13.1 Material Tests: High-strength bolts, nuts and washers will be sampled and tested in accordance with the requirements of the specification for High-Strength Bolts for

Structural Steel Joints, including Suitable Nuts and Plain Hardened Washers, ASTM A325, or for Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints, ASTM 490, latest editions, details of construction, and installation procedure.

3.13.2 Inspection of High-Strength bolt Installation: Inspection of high-strength bolt installations shall be made in accordance with Title 24, Section 2213B by an inspector specially approved for that purpose by County. The inspector will check the materials, equipment, details of construction, and installation procedure. The inspector shall furnish the County with a report that the Work has been completed in every respect in compliance with the Contract Documents and approved Construction Documents.

3.14 METAL DECKING

3.14.1 Tests and Inspections:

3.14.1.1 Inspection by a qualified welding inspector of all deck welding will be made in accordance with CBC Chapter 17.

3.14.1.2 Materials Testing:

3.14.1.2.1 Identified Steel: Materials testing is waived for steel identified in accordance with CBC Section 2203.

3.14.1.2.2 Unidentified Steel: Steel will be sampled and testing to confirm compliance with the strength and chemical requirements of the appropriate ASTM standard. Frequency of sampling will be as determined by the Architect or County. The Design Builder shall supply samples and test pieces and provide facilities for inspection without extra charge. The Design Builder shall schedule construction activities so that costs of inspection to the Owner will be kept to a minimum.

3.14.2 Inspection shall be in accordance with the CBC Standard 27-6. Inspection of steel welding shall be made to ensure that seam welds and puddle welds are made in accordance with the Contract Documents. Inspection shall ensure that proper electrodes, current, travel, and speed are used, and that no cracks, serious undercutting, overlap, surface holes or slag inclusions occur. The provisions of inspection by the Architect or County shall not relieve the Design Builder from performing the work in accordance with the Contract Documents and approved Construction Documents.

3.15 LOAD BEARING METAL STUD, LIGHT GAGE FRAMING WELDING TESTS AND INSPECTIONS

3.15.1 All shop and field welding of cold formed metal framing members, including cold formed metal framing welded to structural steel, will be continuously inspected by the County's special inspector.

3.15.2 Framing erection will be periodically inspected by the County's inspector.

3.15.3 Acceptable or rejectable weld quality, including concavity and convexity will be determined by the County's special inspector. Repair or replace welds and welded components, as directed by the Architect or County, if any welds are deemed unacceptable by the County's special inspector at Design Builder's expense.

3.15.4 Sheet to structural steel and structural steel to sheet welding will be continuously inspected by the County's testing agency and shall comply with both AWS D1.1-98 and AWS D1.3-98. Structural steel is material whose thickness exceeds 0.18".

3.16 WELDED STUD AND REBAR CONNECTORS

3.16.1 Inspection: Perform pre-production testing, stud installation, and production testing under continuous inspection of the Testing Laboratory Welding Inspector. In addition to standard reports, inspector's report shall detail the location of all defective studs with repair or replacement action taken, damage resulting from stud installation, and all defects and unusual occurrences.

3.16.2 Exception: Inspection and testing is waived for studs connecting non-structural and non-stressed finish materials.

3.16.3 Pre-Production Testing: LEFT INTENTIONALLY BLANK

3.16.4 Production Inspection and Testing LEFT INTENTIONALLY BLANK

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 Section Includes:

1.1.1.1 Temporary Electricity
1.1.1.2 Temporary Communications
1.1.1.3 Temporary Water
1.1.1.4 Fences
1.1.1.5 Protection of Public and Private Property
1.1.1.6 Temporary Sanitary Facilities
1.1.1.7 Temporary Barriers and Enclosures
1.1.1.8 Water Control
1.1.1.9 Pollution Control
1.1.1.10 Construction Aids
1.1.1.11 Erosion Control
1.1.1.12 Noise Control
1.1.1.13 Traffic Control
1.1.1.14 Removal of Temporary Facilities and Controls
1.1.1.15 Interim Wayfinding

1.2 TEMPORARY ELECTRICITY

1.2.1 Design Builder shall provide, maintain, and pay for electrical power at the Site for construction purposes and for Design Builder's trailers. Design Builder shall be responsible to obtain and pay for power, which may be obtained from PG&E, but Design Builder must provide all necessary wiring and appurtenances for connection to PG&Es system.

1.3 TEMPORARY COMMUNICATIONS

Provide, maintain, and pay for all applicable communications and data service connections (including without limitation telephone, facsimile, e-mail and internet) to field office commencing at time of Project mobilization, including all installation and connection charges. In addition, Design Builder shall provide, maintain and pay for a high speed internet service (such as DSL) at the Site.

1.4 TEMPORARY WATER

1.4.1 Provide, maintain, and pay for suitable quality water service required for construction operations.

1.4.2 All water required for and in connection with the Work, including without limitation for dust control, shall be furnished by and at the expense of Design Builder. In coordination

with the requirements of the local water district, Design Builder shall furnish necessary pipe, hose, nozzles, meter(s), and tools and perform all necessary labor. Unnecessary waste of water will not be permitted. Special hydrant wrenches shall be used for opening and closing fire hydrants; in no case shall pipe wrenches be used for this purpose.

1.5 FENCES

1.5.1 Design Builder shall pay for any fences required to protect the site, temporary site equipment, equipment rentals, and construction site from entry. All existing fences affected by the Work shall be maintained by Design Builder until Final Completion. Fences which interfere with construction operations shall not be relocated or dismantled until County gives written permission to do so, and the period the fence may be left relocated or dismantled has been agreed upon. Where fences must be maintained across the construction easement, adequate gates shall be installed. Gates shall be kept closed and locked at all times when not in use.

1.5.2 On completion of the Work across any tract of land, Design Builder shall restore all fences to their original condition and to their original locations.

1.6 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

1.6.1 Design Builder shall protect, shore, brace, support, and maintain all underground pipes, conduits, drains, and other underground construction uncovered or otherwise affected by its construction operations. All pavement, surfacing, driveways, curbs, walks, buildings, utility poles, guy wires, fences, and other surface structures affected by construction operations, together with all sod and shrubs in yards, parkways, and medians, shall be restored to their original condition, whether within or outside the easement. All replacements shall be made with new materials.

1.6.2 Design Builder shall be responsible for all damage to streets, roads, highways, shoulders, ditches, embankments, culverts, bridges, and other public or private property, regardless of location or character, which may be caused by transporting equipment, materials, or workers to or from the Work, Site or any part thereof, whether by Design Builder or Subcontractors. Design Builder shall make satisfactory and acceptable arrangements with the County, or the agency or authority having jurisdiction over the damaged property, concerning its repair or replacement or payment of costs incurred in connection with the damage.

1.6.3 All fire hydrants and water control valves shall be kept free from obstruction and available for use at all times.

1.7 TEMPORARY SANITARY FACILITIES

1.7.1 Design Builder shall Provide and maintain required temporary buildings with sanitary toilets for use of all workers. At a minimum, sanitary facilities shall be located at trailer site, staging area, and adjacent to work area.

1.7.2 Sanitary facilities shall be of reasonable capacity, properly maintained throughout the construction period, and obscured from public view to the greatest practical extent. If

toilets of the chemically treated type are used, **at least one toilet will be furnished for each twenty (20) persons.** Design Builder shall enforce the use of such sanitary facilities by all personnel at the Site.

1.7.3 Comply with all minimum requirements of the Health Department or other public agency having jurisdiction; maintain in a sanitary condition at all times.

1.8 TEMPORARY BARRIERS AND ENCLOSURES

1.8.1 Provide barriers to prevent unauthorized entry to construction areas, to allow for County's use of Site, and to protect existing facilities and adjacent properties from damage from construction operations.

1.8.2 Provide barricades required by governing authorities for public access to existing buildings.

1.8.3 Protect vehicular traffic, stored materials, Site, and structures from damage.

1.8.4 Provide Site Plan including off-site lay down and parking areas indicating construction fencing, location of construction gates, fire access gates and locations of existing fire hydrants for approval by local Fire Department.

1.9 WATER CONTROL

1.9.1 Grade Site to drain.

1.9.2 Maintain excavations free of water.

1.9.3 Protect Site from puddling or running water.

1.9.4 Provide water barriers as required to protect Site from soil erosion.

1.9.5 Provide for drainage of storm water and such water as may be applied or discharged on the Site in performance of the Work. Drainage facilities shall be adequate to prevent damage to the Work, the Site, and adjacent property.

1.9.6 Clean, enlarge and/or supplement existing drainage channels and conduit as necessary to carry all increased runoff attributable to Design Builder's operations. Construct dikes as necessary to divert increased runoff from entering adjacent property (except in natural channels), to protect County's facilities and the Work, and to direct water to drainage channels or conduits. Provide ponding as necessary to prevent downstream flooding.

1.10 POLLUTION CONTROL

1.10.1 Design Builder shall prevent the pollution of drains and watercourses by sanitary wastes, sediment, debris, and other substances resulting from construction activities. No sanitary wastes shall be permitted to enter any drain or watercourse other than sanitary sewers. No sediment, debris, or other substance shall be permitted to enter sanitary sewers without authorization of the receiving sanitary sewer service, and all possible Best

Management Practices (BMPs) shall be taken to prevent such materials from entering any drain to watercourse.

1.10.2 Design Builder shall implement BMPs during construction activities as specified in the California Storm Water Best Management Practices Handbook (2009 Construction BMP Handbook / Portal) and/or the Manual of Standards for Erosion and Sediment Control Measures (ABAG, 1995). Erosion and sedimentation control practices shall include installation of silt fences, straw wattles, soil stabilization, re-vegetation, and runoff control to limit increases in sediment in stormwater runoff, including but not limited to, detention basins, straw bales, silt fences, check dams, geofabrics, drainage swales, and sand bag dikes.

1.10.3 In the event that dewatering of excavations is required, Design Builder shall obtain the necessary permits for discharge of the dewatering effluent from the local jurisdiction. Design Builder shall be responsible for assuring that water quality of such discharge meets the appropriate permit requirements prior to any discharge.

1.11 CONSTRUCTION AIDS

1.11.1 Design Builder and/or its Subcontractors shall furnish, install, maintain, and operate all construction aids required by it and its Subcontractors in the performance of the Work, except as otherwise provided herein. Such construction aids shall include elevators and hoists, cranes, temporary enclosures, swing staging, scaffolding and temporary stairs. In the event of conflict, Design Builder furnishing the equipment shall determine priorities in the best interest of the Project.

1.11.2 When sandblasting, spray painting, spraying of insulation, or other activities inconveniencing or dangerous to property or the health of employees or the public are in progress, the area of activity shall be enclosed adequately to contain the dust, over-spray, or other hazard. In the event there are no permanent enclosures of the area, or such enclosures are incomplete or inadequate, Design Builder shall provide suitable temporary enclosures.

1.11.3 Temporary shoring and bracing of construction shall be provided wherever necessary and shall be adequate for all loads to which the structure may be subject during construction including seismic, wind, materials, equipment and operation of same. Leave temporary shoring and bracing in place as long as may be required for safety. Design Builder shall submit temporary shoring and bracing designs, including calculations, to structural engineer of record for review and approval before installation.

1.12 EROSION CONTROL

1.12.1 Design Builder shall prevent soil erosion on the Site and adjacent property resulting from its construction activities consistent with an approved Storm Water Pollution Prevention Plan (“SWPPP”). Effective measures shall be initiated prior to the commencement of clearing, grading, excavation, or other operations that will disturb the natural protection.

1.12.2 Work shall be scheduled to expose areas subject to erosion for the shortest possible time, and natural vegetation shall be preserved to the greatest extent practicable. Temporary

storage and construction buildings shall be located, and construction traffic routed, to minimize erosion. Temporary fast-growing vegetation or other suitable ground cover shall be provided as necessary to control runoff.

1.13 NOISE CONTROL

1.13.1 When required by OSHA Standards, construction workers shall be provided with ear protection to operate equipment.

1.13.2 Design Builder shall take reasonable measures to avoid unnecessary noise. Such measures shall be appropriate for the normal ambient sound levels in the area during working hours. All construction machinery and vehicles shall be equipped with practical sound-muffling devices, and operated in a manner to cause the least noise consistent with efficient performance of the Work. During construction activities on or adjacent to occupied buildings, and when appropriate, Design Builder shall erect screens or barriers effective in reducing noise in the building and shall conduct its operations to avoid unnecessary noise which might interfere with the activities of building occupants.

1.13.3 Ensure and provide certification to County that all construction equipment and vehicles used for the Work are:

1.13.3.1 Maintained in good mechanical condition

1.13.3.2 Equipped with properly installed engine mufflers

1.14 TRAFFIC CONTROL

1.14.1 All traffic associated with the construction, including without limitation delivery and mail trucks, shall enter Design Builder's access gate and road. Design Builder shall provide signs directing construction and delivery traffic to this gate.

1.14.2 Design Builder shall take all necessary steps to minimize inconvenience to the general public throughout all work under this Contract. No driveways or private roads shall be blocked without notifying the property owner, and access must be restored during all non-working hours. Safe access must be maintained for pedestrian traffic throughout any public work area at all times.

1.14.3 **At least one lane of traffic in each direction on all roads used on the Project must be kept open at all times unless prior approval is provided** by the County and any affected agency. No roads shall be blocked or made inaccessible, due to Design Builder's work, without prior written approval of the County and the affected agencies in the form of an encroachment permit. **Design Builder shall not block or obstruct fire lanes at any time.**

1.14.4 Traffic control shall be in accordance with the California Department of Transportation Traffic Manual. Design Builder shall submit its traffic control plans to the appropriate agency for approval prior to work or public streets. Traffic control shall include signs, warning lights, reflectors, barriers, and other necessary safety devices and measures, including sufficient flaggers to direct vehicular traffic through the construction areas.

No material or equipment shall be stored/parked where it will interfere with the free and safe passage of public traffic, and at the end of each day's work, and at other times when construction operations are suspended for any reason, Design Builder shall remove all equipment and other obstructions from the public right-of-way.

1.15 REMOVAL OF TEMPORARY FACILITIES AND CONTROLS

1.15.1 Remove temporary utilities, equipment, facilities, and materials prior to final inspection.

1.15.2 Remove temporary underground installations.

1.15.3 Clean and repair damage caused by installation or use of temporary work.

1.15.4 Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.16 INTERIM WAYFINDING

1.16.1 In order to respond to the dynamic nature of the construction process, interim wayfinding shall utilize modular, movable, reusable and changeable signage elements that allow rapid deployment and removal. Cost effective materials selection and efficient use of materials shall be considered in the design process.

1.16.2 Interim Wayfinding elements may be in place for extended periods of time due to the length of demolition and construction of the Project. Therefore, all interim wayfinding will be durable, easily maintainable, readable to multi-lingual/cultural clients, and meet the Project's existing standard of quality. All interim wayfinding elements will be procured from a licensed signage company.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

SECTION 01 61 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section includes administrative and procedural requirements for selection of products for use in the Project; product delivery, storage, and handling; manufacturers' standard warranties on products; special warranties; and product substitutions.

1.1.2 Related Sections include the following:

1.1.2.1 Section 01 42 00 (References) for applicable industry standards for products specified.

1.1.2.2 Section 01 77 00 (Closeout Procedures) for submitting warranties for Contract closeout.

1.2 DEFINITIONS

1.2.1 Products: Items purchased for incorporating into the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material", "equipment", "system", and terms of similar intent.

1.2.1.1 Named Products: Items identified by manufacturer's product name, including make or model number or other designation shown or listed in manufacturer's published product literature that is current as of date of the Contract Documents.

1.2.1.2 New Products: Items that have not previously been incorporated into another project or facility, except that products consisting of recycled-content materials are allowed, unless explicitly stated otherwise. Products salvaged or recycled from other projects are not considered new products.

1.2.2 Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Design Builder.

1.2.2.1 The following are not considered substitutions:

1.2.2.1.1 Revisions to Contract Documents requested by the County's Representative.

1.2.2.1.2 Specified options of products and construction methods included in Contract Documents.

1.2.2.1.3 The Design Builder's determination of and compliance with governing regulations and orders issued by governing authorities.

1.2.2.2 Design Builder will be held responsible for: (a) all costs and claims arising from any cost or schedule impact resulting from the County's approval of a requested substitution and (b) all costs and claims arising from any cost or schedule impact resulting from any substitution not approved by the County.

1.3 SUBMITTALS

1.3.1 Product List: Submit a list, in tabular form, showing specified products. Include generic names of products required. Include manufacturer's name and proprietary product names for each product.

1.3.1.1 Coordinate product list with Design Builder's Contract Schedule and the Submittals Schedule.

1.3.1.2 Form: Tabulate information for each product under the following column headings:

1.3.1.2.1 Specification Section number and title.

1.3.1.2.2 Generic name used in the Contract Documents.

1.3.1.2.3 Proprietary name, model number, and similar designations.

1.3.1.2.4 Manufacturer's name and address.

1.3.1.2.5 Supplier's name and address.

1.3.1.2.6 Installer's name and address.

1.3.1.2.7 Projected delivery date or time span of delivery period.

1.3.1.2.8 Identification number on Contract Schedule network.

1.3.1.2.9 Identification of items that require early submittal approval for scheduled delivery date.

1.3.1.3 Product List: **Within THIRTY (30) Days after date of commencement** of the Work, submit **six printed copies of product list** or submit an electronic copy. Include a written explanation for omissions of data and for variations from Contract requirements.

1.3.1.4 County's Action: County will respond in writing to Design Builder **within fourteen (14) Days of receipt of each product list.** County's response will include a list of unacceptable product selections and a brief explanation of

reasons for this action. County's response, or lack of response, does not constitute a waiver of requirement to comply with the Contract Documents.

1.3.2 Substitution Requests: Submit **six copies of each request** for consideration. In lieu of printed copies, electronic copies may be submitted. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1.3.2.1 Substitution Request Form: Use form provided by County provided in the Standard Contract Form exhibits.

1.3.2.2 Documentation: Show compliance with requirements for substitutions and the following, as applicable:

1.3.2.2.1 Statement indicating why specified material or product cannot be provided.

1.3.2.2.2 Coordination information, including a list of changes or modifications needed on other parts of the Work and to construction performed by County and separate contractors, which will be necessary to accommodate proposed substitution.

1.3.2.2.3 Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements indicated.

1.3.2.2.4 Product Data, including drawings and descriptions of products and fabrication and installation procedures.

1.3.2.2.5 Samples, where applicable or requested.

1.3.2.2.6 List of similar installations on completed projects with project names and addresses and names and addresses of owners.

1.3.2.2.7 Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.

1.3.2.2.8 Research/evaluation reports evidencing compliance with building code in effect for Project, from a model code organization acceptable to County's Representative.

1.3.2.2.9 Detailed comparison of Design Builder's Contract Schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on

manufacturer's letterhead, stating lack of availability or delays in delivery.

1.3.2.2.10 Cost information, including a proposal of change, if any, in the Contract Price.

1.3.2.2.11 Design Builder's certification that proposed substitution complies with requirements in the Contract Documents and is appropriate for applications indicated.

1.3.2.2.12 Design Builder's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

1.3.2.3 County's Action: If necessary, County will request additional information or documentation for evaluation **within seven (7) Days of receipt of a request for substitution.** County will notify Design Builder of acceptance or rejection of proposed substitution **within twenty-one (21) Days of receipt of request, or seven (7) Days of receipt of additional information** or documentation, whichever is later.

1.3.2.3.1 Form of Acceptance: Substitution Request form indicating acceptance from the County's Representative.

1.3.2.3.2 Use product specified if County cannot make a decision on use of a proposed substitution within time allocated.

1.3.2.3.3 If any proposed substitution is deemed by the County's Representative to be unacceptable, the specified material or equipment shall be provided.

1.3.2.3.4 The decision of the County's Representative shall be final.

1.4 QUALITY ASSURANCE

1.4.1 Source Limitations: To the fullest extent possible, provide products of the same kind, from a single source.

1.4.2 Compatibility of Options: If Design Builder is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.

1.4.3 Underwriter's Laboratories, Inc. ("UL") Label: Where laboratory standards have been established and label service is available, materials and equipment for shall bear the appropriate UL, Warnock-Hersey, or Factory Mutual label.

1.4.4 Manufacturers' Trademarks and Names: County's Representative reserves the right to review and request the removal or redesign of manufacturers' trade marks and names on

items of material and equipment that will be exposed to view in the completed Work. Such removal or redesign shall be completed with no adjustment of the Contract Price.

1.4.5 If a proposed substitution requires that portions of the Work be redesigned or removed to accommodate the substituted item, submit design and engineering calculations prepared by a California licensed design professional.

1.4.6 Samples may be required for substitutions. Tests required by County's Representative for the determination of quality and utility shall be made by Design Builder's Testing Laboratory and at the expense of Design Builder, with acceptance of the test procedure first given by County's Representative.

1.4.7 In reviewing the supporting data submitted for substitutions, County's Representative will use, for purposes of comparison, all the characteristics of the specified material or equipment as they appear in the manufacturer's published data, even though all the characteristics may not have been particularly mentioned in the Specifications. If more than two submissions of supporting data are required, the cost of reviewing the additional supporting data shall be borne by Design Builder; and County will deduct the costs from the Contract Price.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

1.5.1 Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

1.5.2 Delivery and Handling:

1.5.2.1 Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.

1.5.2.2 Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

1.5.2.3 Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

1.5.2.4 Inspect products on delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

1.5.2.5 Reject delivery of damaged or defective items. Promptly remove damaged or defective products from the Project site and replace with new at no change in Contract Price.

1.5.3 Storage:

1.5.3.1 Store products to allow for inspection and measurement of quantity or counting of units.

1.5.3.2 Store materials in a manner that will not endanger Project structure.

1.5.3.3 Store products that are subject to damage by the elements under cover in a weather tight enclosure above ground, with ventilation adequate to prevent condensation.

1.5.3.4 Store cementitious products and materials on elevated platforms.

1.5.3.5 Store sand, rock, or aggregate materials in a well-drained area on solid surfaces to prevent mixing with foreign matter.

1.5.3.6 Store foam plastic from exposure to sunlight, except to extent necessary for period of installation and concealment.

1.5.3.7 Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.

1.5.3.8 Protect stored products from damage.

1.5.3.9 Periodically inspect stored products to assure that products are maintained under specified conditions and are free from damage and deterioration.

1.5.3.10 The use of mechanical or electrical rooms for storage of materials is prohibited.

1.5.4 Imported Materials and Products:

1.5.4.1 Imported materials and products require special handling in shipping crates. Document and examine materials at the following points:

1.5.4.1.1 At the origination point prior to crating.

1.5.4.1.2 At the port of embarkation (for damage to crates).

1.5.4.1.3 At the port of entry (for damage to crates).

1.5.4.1.4 Immediately following delivery to the Site.

1.5.4.2 If crates show signs of damage, open them and inspect materials and products.

1.5.4.3 Reject damaged or defective products or materials, and replace promptly.

1.5.4.4 Provide detailed Bill of Goods at each point listed above, indicating quantity and condition of each item. At port locations, Bill of Goods may be accepted unless damage is observed.

1.6 PRODUCT WARRANTIES

1.6.1 Warranties specified in other Sections 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 Design Builder of obligations under requirements of the Contract Documents.

1.6.1.1 Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to County.

1.6.1.2 Special Warranty: Written warranty required by or incorporated into the Contract Documents, either to extend time limit provided by manufacturer's warranty or to provide more rights for County.

1.6.2 Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution. Submit a draft for approval before final execution.

1.6.2.1 Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.

1.6.2.2 Specified Form: When specified forms are included with the Specifications, prepare a written document using appropriate form properly executed.

1.6.3 Submittal Time: Comply with requirements in Section 01 77 00 (Closeout Procedures).

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION PROCEDURES

2.1.1 Items Which May Not Be Substituted. In accordance with Public Contract Code ("PCC") § 3400 the County's Project Partners have found that certain items may not be substituted because they are either necessary in order to match other products in use on a particular public improvement (i.e., existing facilities) or they are only available from one source. Accordingly the County will not permit substitutions for the following items:

2.1.2 General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, that are new at time of installation.

2.1.2.1 Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.

2.1.2.2 Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.

2.1.2.3 County reserves the right to limit selection to products with warranties not in conflict with requirements of the Contract Documents.

2.1.2.4 Where products are accompanied by the term "as selected," County will make selection.

2.1.2.5 Where products are accompanied by the term "match sample," sample to be matched is County's.

2.1.2.6 Descriptive, performance, and reference standard requirements in the Specifications establish "salient characteristics" of products.

2.1.2.7 Or Equal: Where products are specified by manufacturer's name and accompanied by the term "or equal", comply with provisions in Article 2.2, Product Substitutions, to obtain approval for use of an unnamed product.

2.1.3 Product Selection Procedures:

2.1.3.1 Product: Where Specifications name a single product and manufacturer, and indicate "no known equal", provide the named product that complies with requirements.

2.1.3.2 Manufacturer/Source: Where Specifications name a single manufacturer or source, and indicates "no known equal", provide a product by the named manufacturer or source that complies with requirements.

2.1.3.3 Products: Where Specifications include a list of names of both products and manufacturers, provide one of the products listed that complies with requirements.

2.1.3.4 Manufacturers: Where Specifications include a list of manufacturers' names, provide a product by one of the manufacturers listed that complies with requirements.

2.1.3.5 Visual Matching Specification: Where Specifications require matching an established Sample, select a product that complies with requirements and matches County's sample. County's decision on whether a proposed product matches will be final.

2.1.3.5.1 When approval of a color, pattern or texture sample match by the County is required, provide the best match that complies with the specification and also provide the **two nearest in the selection range to either direction** from the same manufacturer/supplier. Application examples are:

2.1.2.5.1.1 *Color* – shall have two color hues or shades darker and two color hues or shades lighter. Total of five selections available.

2.1.2.5.1.2 *Pattern* – shall have two patterns that are less dense (or smaller) and two patterns that are more dense (or larger). Total of five selections available.

2.1.2.5.1.3 *Texture* – shall have two textures that are less rough (or smaller) and two patterns that are more rough (or larger). Total of five selections available.

2.1.3.5.2 If no product available within specified category matches and complies with other specified requirements, comply with provisions in Article 2.2 (Product Substitutions) below for proposal of product.

2.1.3.6 Visual Selection Specification: Where Specifications include the phrase "as selected from manufacturer's colors, patterns, textures" or a similar phrase, select a product that complies with other specified requirements.

2.1.3.6.1 Standard Range: Where Specifications include the phrase "standard range of colors, patterns, textures" or similar phrase, County will select color, pattern, density, or texture from manufacturer's product line that does not include premium items.

2.1.3.6.2 Full Range: Where Specifications include the phrase "full range of colors, patterns, textures" or similar phrase, County will select color, pattern, density, or texture from manufacturer's product line that includes both standard and premium items.

2.2 PRODUCT SUBSTITUTIONS

2.2.1 Timing: County will consider requests for substitution if received **within thirty (30) Days after the Notice to Proceed.** Requests received after that time may be considered or rejected at discretion of County.

2.2.2 Approval of Product Substitutions: After acceptance of the Construction Documents, no substitutions shall be allowed except as may be deemed necessary by the County's Representative because:

2.2.2.1 Previously specified or approved manufactured products are no longer manufactured.

2.2.2.2 The substitution is required due to a County-initiated Change Order.

2.2.2.3 The substitution is in the best interests of the County.

2.2.3 Conditions: County will consider Design Builder's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, County

will return requests without action, except to record noncompliance with these requirements:

2.2.3.1 Requested substitution offers County a substantial advantage in cost, time, energy conservation, or other benefits.

2.2.3.2 Requested substitution is consistent with the Contract Documents and will produce required results.

2.2.3.3 Substitution request is fully documented and properly submitted.

2.2.3.4 If requested substitution involves more than one subcontractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

2.2.3.5 One or more of the following conditions must be satisfied:

2.2.3.5.1 The specified product or method of construction cannot be provided within the Contract Time. The request for substitution will not be considered if the product or method cannot be provided due to the Design Builder's failure to plan the Work, prosecute the Work promptly or coordinate activities properly.

2.2.3.5.2 The specified product or method of construction cannot receive necessary approval by a governing authority, and the requested substitution can be approved.

2.2.3.5.3 The specified product or method of construction cannot be provided in a manner that is compatible with other materials, and where the Design Builder certifies that the substitution will overcome the incompatibility.

2.2.3.5.4 The specified product or method of construction cannot be coordinated with other materials, and where the Design Builder certifies that the proposed substitution can be coordinated.

2.2.3.5.5 The specified product or method of construction cannot provide a warranty required by the Contract Documents and where the Design Builder certifies that the proposed substitution can provide the required warranty.

2.2.3.5.6 The specified product or material has been discontinued or is no longer available.

2.2.3.6 The County's acceptance of any substitution shall not relieve the Design Builder of the responsibility to comply with the requirements of the Contract Documents.

2.2.3.7 The Design Builder shall be responsible for all costs of any changes resulting from substitutions that affect other parts of the Work or the work of Separate Contractors.

PART 3 - EXECUTION – LEFT INTENTIONALLY BLANK

END OF SECTION

SECTION 01 73 00

EXECUTION

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section includes general procedural requirements governing execution of the Work including, but not limited to, the following:

1.1.1.1 Construction layout.

1.1.1.2 Field engineering and surveying.

1.1.1.3 General installation of products.

1.1.1.4 Coordination of County-installed products.

1.1.1.5 Progress cleaning.

1.1.1.6 Starting and adjusting.

1.1.1.7 Protection of installed construction.

1.1.1.8 Correction of the Work.

1.1.2 Related Sections include the following:

1.1.2.1 Document 00 31 32 (Geotechnical Data and Existing Conditions).

1.1.2.2 Section 01 11 13 (Work Covered by Contract Documents).

1.1.2.3 Section 01 26 00 (Contract Modification Procedures).

1.1.2.4 Section 01 14 00 (Work Restrictions) regarding measures for noise and dust.

1.1.2.5 Section 01 31 00 (Project Management and Coordination) for procedures for coordinating field engineering with other construction activities.

1.1.2.6 Section 01 31 19 (Project Meetings).

1.1.2.7 Section 01 33 00 (Submittal Procedures) for submitting surveys.

1.1.2.8 Section 01 73 29 (Cutting and Patching) for procedural requirements for cutting and patching necessary for the installation or performance of other components of the Work.

1.1.2.9 Section 01 73 32 (Selective Demolition) for requirements and performance of the Work for demolition, removal and salvage of existing site utilities and structures.

1.1.2.10 Section 01 77 00 (Closeout Procedures) for submitting final property survey with Project Record Documents, recording of County-accepted deviations from indicated lines and levels, and final cleaning.

1.2 SUBMITTALS

1.2.1 Qualification Data: For land surveyor or professional engineer.

1.2.2 Certificates: Submit certificate signed by land surveyor or professional engineer certifying that location and elevation of improvements comply with requirements.

1.2.3 Certified Surveys: Submit three copies signed by land surveyor or professional engineer and one AutoCad electronic file of survey complying with County CAD Standards on CD-R.

1.2.4 Final Property Survey: Submit **three copies showing the Work** performed and record survey data **and one AutoCad electronic file of survey** complying with County CAD Standards on CD-R.

1.2.5 Contingency Plan: Submit **six copies within sixty (60) Days of Notice to Proceed** for emergency plan(s) should an existing utility be damaged.

1.3 QUALITY ASSURANCE

1.3.1 Land Surveyor Qualifications: A professional land surveyor who is legally qualified to practice in California and who is experienced in providing land-surveying services of the kind indicated.

1.3.2 Installer Qualifications.

1.3.2.1 Experienced Installers: Installers shall have a **minimum of five (5) years successful experience installing items similar** to those required for Project, except for individuals in training under the direct supervision of an experienced installer.

1.3.3 If cleaning and protection is not performed to the satisfaction of the County, the County reserves the right to have cleaning performed by others at the Design Builder's expense.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

3.1 EXAMINATION

3.1.1 Existing Utilities: The existence and location of Underground Facilities and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and locations of Underground Facilities and other construction affecting the Work.

3.1.1.1 Before construction, verify the locations and invert elevations at points of connection of sanitary sewer, storm sewer, and water-service piping; and underground electrical services.

3.1.1.2 Furnish location data for work related to Project that must be performed by public utilities serving Project site.

3.1.1.3 Locate all known existing utilities and shut-off devices before proceeding with construction operations that may cause damage to such installations. Existing utilities shall be kept in service where possible and damage to them shall be repaired with no adjustment of Contract Price.

3.1.1.4 If any other structures or utilities are encountered, notify County and request direction on how to proceed with the Work.

3.1.1.5 If any structure, utility or Underground Facility is damaged, take appropriate action to ensure the safety of persons and property, notify County and other affected parties.

3.1.1.6 Submit a contingency plan for emergency repair of all utilities to County for approval **at least five (5) days prior to commencing Work.**

3.1.2 Acceptance of Conditions: Examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Document observations.

3.1.2.1 Written Report: Where a written report listing conditions detrimental to performance of the Work is required by other Sections, include the following:

3.1.2.1.1 Description of the affected Work.

3.1.2.1.2 List of detrimental conditions, including substrates.

3.1.2.1.3 List of unacceptable installation tolerances.

3.1.2.1.4 Recommended corrections.

3.1.2.2 Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.

3.1.2.3 Examine roughing-in for mechanical and electrical systems to verify actual locations of connections before equipment and fixture installation.

3.1.2.4 Examine walls, floors, and roofs for suitable conditions where products and systems are to be installed.

3.1.2.5 Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

3.2 MANUFACTURERS' INSTRUCTIONS

3.2.1 Manufacturer's Recommendations: When work is specified to comply with manufacturers' recommendations or instructions, distribute copies to persons involved, and maintain one set in field office.

3.2.1.1 Conform with requirements specified in Section 01 33 00 (Submittal Procedures) for submittal of recommendations or instructions to County; submit to County only where specified or where specifically requested.

3.2.2 Perform work in accordance with details of recommendations and instructions and specified requirements.

3.2.2.1 Should a conflict exist between Contract Documents or accepted Construction Documents and recommendations or instructions consult with County.

3.2.3 Where manufacturer's information notes special recommendations in addition to installation instructions, comply with both recommendations and instructions.

3.3 PREPARATION

3.3.1 Existing Utility Information: Furnish public utilities with information that is necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other utility appurtenances located in or affected by construction. Coordinate with County.

3.3.2 Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

3.3.2.1 Where portions of Work are to fit to other construction, verify dimensions of other construction by field measurements before fabrication; allow for cutting and patching to avoid delaying Work.

3.3.3 Space Requirements: Verify space requirements and dimensions of items shown diagrammatically on Drawings.

3.3.4 Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents, submit a request for information to County. Include a detailed description of problem encountered, together with recommendations for changing the Contract Documents. Submit requests on Form, "Request for Information."

3.4 CONSTRUCTION LAYOUT

3.4.1 Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies

are discovered, notify County promptly.

3.4.2 General: Engage a land surveyor or professional engineer to lay out the Work using accepted surveying practices.

3.4.2.1 Establish benchmarks and control points to set lines and levels at each story of construction and elsewhere as needed to locate each element of the Work.

3.4.2.2 Establish dimensions within tolerances indicated. Do not scale Drawings to obtain required dimensions.

3.4.2.3 Inform installers of lines and levels to which they must comply.

3.4.2.4 Check the location, level, and plumb of every major element as the Work progresses.

3.4.2.5 Notify County when deviations from required lines and levels exceed allowable tolerances.

3.4.2.6 Close site surveys with an error of closure equal to or less than the standard established by County or Other Authorities Having Jurisdiction.

3.4.3 Site Improvements: Locate and lay out site improvements, including pavements, grading, fill and topsoil placement, utility slopes, and invert elevations.

3.4.4 Building Lines and Levels: Locate and lay out control lines and levels for structures, building foundations, column grids, and floor levels, including those required for mechanical and electrical work. Transfer survey markings and elevations for use with control lines and levels. Level foundations and piers from two or more locations.

3.4.5 Record Log: Maintain a log of layout control work. Record deviations from required lines and levels. Include beginning and ending dates and times of surveys, weather conditions, name and duty of each survey party member, and types of instruments and tapes used. Make the log available for reference by County.

3.5 FIELD ENGINEERING

3.5.1 Identification: County will provide reference points for horizontal and vertical control and shall provide starting points for the Work.

3.5.2 Reference Points: Locate existing permanent benchmarks, control points, and similar reference points before beginning the Work. Preserve and protect permanent benchmarks and control points during construction operations.

3.5.2.1 Do not change or relocate existing benchmarks or control points without prior written approval of County. Report lost or destroyed permanent benchmarks or control points promptly. Report the need to relocate permanent benchmarks or control points to County before proceeding.

3.5.2.2 Replace lost or destroyed permanent benchmarks and control points

promptly. Base replacements on the original survey control points.

3.5.3 Benchmarks: Establish and maintain a **minimum of two permanent benchmarks on Project site**, referenced to data established by survey control points. Comply with authorities having jurisdiction for type and size of benchmark.

3.5.3.1 Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

3.5.3.2 Where the actual location or elevation of layout points cannot be marked, provide temporary reference points sufficient to locate the Work.

3.5.3.3 Remove temporary reference points when no longer needed. Restore marked construction to its original condition.

3.5.4 Certified Survey: On completion of foundation walls, major site improvements, and other work requiring field-engineering services, prepare a certified survey showing dimensions, locations, angles, and elevations of construction and sitework.

3.5.5 Final Property Survey: Prepare a final property survey showing significant features (real property) for the Work. Include on the survey a certification, signed by land surveyor or professional engineer, that principal metes, bounds, lines, and levels of the Work are accurately positioned as shown on the survey.

3.5.5.1 Show boundary lines, monuments, streets, site improvements and utilities, existing improvements and significant vegetation, adjoining properties, acreage, grade contours, and the distance and bearing from a site corner to a legal point.

3.5.5.2 At Substantial Completion, submit the final property survey to the County for review and acceptance before having the final property survey recorded by or with Authorities Having Jurisdiction as the official “property survey”.

3.6 INSTALLATION

3.6.1 Pre-Installation Meetings: Installers and suppliers are to attend pre-installation meetings scheduled by Design Builder.

3.6.2 General: Locate the Work and components of the Work accurately, in correct alignment and elevation.

3.6.2.1 Make vertical work plumb and make horizontal work level.

3.6.2.2 Install components to maximize space available for maintenance and ease of removal for replacement.

3.6.2.3 Conceal pipes, ducts, and wiring in finished areas, unless otherwise indicated.

3.6.2.4 Doors and access panels shall be kept clear.

3.6.2.5 Before beginning any installation, make provisions to avoid interference.

3.6.2.6 Relocate installed work that does not provide adequate accessibility.

3.6.2.7 Maintain minimum headroom clearance of eight (8) feet in spaces without a suspended ceiling.

3.6.2.8 Do not obstruct spaces and installations that are required to be clear by California Building Code requirements.

3.6.3 Precedence of Installation Requirements:

3.6.3.1 Descriptive specification.

3.6.3.2 Product listing, classification or certification.

3.6.3.3 Manufacturer's installation instructions.

3.6.3.4 Trade association or referenced standards.

3.6.3.5 Most common trade practice.

3.6.4 Comply with manufacturer's written instructions and recommendations for installing products in applications indicated unless more explicit or stringent requirements are contained in Contract Documents or accepted Construction Documents.

3.6.5 Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance well after Final Completion.

3.6.6 Allow for building movement including thermal expansion and contraction.

3.6.7 Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

3.6.8 Tools and Equipment:

3.6.8.1 Maximum noise level for trenchers, graders, and trucks **shall not exceed ninety (90) dBA at fifty (50) feet** as measured under the noisiest operating conditions. For other equipment, noise levels **shall not exceed eighty-five (85) dBA at fifty (50) feet.**

3.6.8.2 Jackhammers shall be equipped with exhaust mufflers and steel muffling sleeves. Air compressors should be of a quiet type such as a "whisperized" compressor.

3.6.8.3 Machines and equipment shall not be left idling.

3.6.8.4 Where commercially feasible, electric power shall be used in lieu of internal combustion engine power wherever possible.

3.6.8.5 Schedule noisy operations so as to minimize their duration at any given location.

3.6.8.6 Equipment shall be properly maintained to reduce noise from excessive vibration, faulty mufflers, or other sources.

3.6.8.7 Provide noise barriers to comply with above criteria.

3.6.8.8 Refer to Section 01 14 00 (Work Restrictions), for additional noise control requirements.

3.6.9 Templates: Obtain and distribute to the parties involved templates for work specified to be factory prepared and field installed. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing products to comply with indicated requirements.

3.6.10 Anchors and Fasteners: Provide anchors and fasteners as required to anchor each component securely in place, accurately located and aligned with other portions of the Work.

3.6.10.1 Mounting Heights: Where mounting heights are not indicated, install individual components at standard mounting heights recognized within the industry for the particular application and as required by applicable Code requirements for accessibility. Refer questions about mounting height decisions to the County for final decision.

3.6.10.2 Allow for building movement, including thermal expansion and contraction.

3.6.10.3 Coordinate installation of anchorages. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

3.6.10.4 Comply with the California Building Code requirements for earthquake Seismic Zone 4.

3.6.11 Joints: Make joints of uniform width. Where joint locations in exposed work are not indicated, produce a sketch to arrange joints for the best visual effect and submit to the County for review. Fit exposed connections together to form hairline joints.

3.6.12 Hazardous Materials: Use products, cleaners, and installation materials that are not considered hazardous.

3.6.13 Isolate each part of the completed construction from incompatible material to prevent deterioration.

3.7 COUNTY-INSTALLED PRODUCTS

3.7.1 Site Access: Provide access to Project Site for County's construction forces.

3.7.2 Coordination: Coordinate construction and operations of the Work with work performed by County, its Project Partners, and their separate contractors (collectively, "Separate Work").

3.7.2.1 Contract Schedule: County will inform Design Builder of its proposed schedule for Separate Work. Design Builder will adjust Contract Schedule based on a mutually agreeable timetable. Notify County if changes to schedule are required due to differences in actual construction progress.

3.7.2.2 Preinstallation Conferences: Include County at pre-installation conferences covering portions of the Work that are to receive Separate Work. Attend preinstallation conferences conducted by County if portions of the Work depend on Separate Work.

3.8 PROGRESS CLEANING

3.8.1 General: Clean Project site and work areas at frequent intervals, including common areas. Coordinate progress cleaning for joint-use areas where more than one installer has worked. Enforce requirements strictly. Dispose of materials lawfully.

3.8.1.1 Comply with requirements in CFC Article 87 for removal of combustible waste materials and debris.

3.8.1.2 Do not hold materials **more than seven (7) Days during normal weather or three (3) Days if the temperature is expected to rise above eighty degrees Fahrenheit (80°F).**

3.8.1.3 Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately and dispose of legally, according to regulations.

3.8.2 Site: Maintain Project site free of waste materials and debris.

3.8.3 Work Areas: Clean areas where work is in progress to the level of cleanliness necessary for proper execution of the Work.

3.8.3.1 Remove liquid spills promptly.

3.8.3.2 Where dust would impair proper execution of the Work, broom-clean or vacuum the entire work area, as appropriate. Refer to Section 01 14 00 (Work Restrictions) regarding dust control requirements.

3.8.4 Installed Work: Keep installed work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of product installed, using only cleaning materials specifically recommended. If specific cleaning materials are not recommended, use cleaning materials that are not hazardous to health or property and that will not damage exposed surfaces.

3.8.5 Concealed Spaces: Remove debris from concealed spaces before enclosing the space.

3.8.6 Exposed Surfaces in Finished Areas: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

3.8.7 Waste Disposal: Burying or burning waste materials on-site will not be permitted. Washing waste materials down sewers or into waterways will not be permitted.

3.8.8 During handling and installation, clean and protect construction in progress and adjoining materials already in place. Apply protective covering where required to ensure protection from damage or deterioration at Substantial Completion.

3.8.9 Clean and provide maintenance on completed construction as frequently as necessary until Final Completion. Adjust and lubricate operable components to ensure operability without damaging effects.

3.8.10 Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

3.8.10.1 Excessive static or dynamic loading.

3.8.10.2 Excessive internal or external pressures.

3.8.10.3 Excessively high or low temperatures.

3.8.10.4 Thermal shock.

3.8.10.5 Excessively high or low humidity.

3.8.10.6 Air contamination or pollution.

3.8.10.7 Water or ice.

3.8.10.8 Solvents.

3.8.10.9 Chemicals.

3.8.10.10 Light.

3.8.10.11 Puncture.

3.8.10.12 Abrasion.

3.8.10.13 Heavy traffic.

3.8.10.14 Soiling, staining and corrosion.

3.8.10.15 Bacteria.

3.8.10.16 Rodent and insect infestation.

3.8.10.17 Combustion.

3.8.10.18 Electrical current.

3.8.10.19 High speed operation.

3.8.10.20 Improper lubrication.

3.8.10.21 Unusual wear or other misuse.

3.8.10.22 Contact between incompatible materials.

3.8.10.23 Destructive testing.

3.8.10.24 Misalignment.

3.8.10.25 Excessive weathering.

3.8.10.26 Unprotected storage.

3.8.10.27 Improper shipping or handling.

3.8.10.28 Theft.

3.8.10.29 Vandalism.

3.9 STARTING UP AND ADJUSTING

3.9.1 Following are minimum requirements for starting up and adjusting the Work. Design Builder is to perform starting and adjusting per manufacturer's recommendations. If more stringent requirements are described in the Contract Documents or accepted Construction Documents, the more stringent shall apply.

3.9.1.1 Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

3.9.1.2 Adjust operating components for proper operation without binding. Adjust equipment for proper operation.

3.9.1.3 Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

3.9.1.4 Manufacturer's Field Service: If a factory-authorized service representative is required to inspect field-assembled components and equipment installation, comply with qualification requirements in Section 01 45 00 (Quality Control).

3.10 PROTECTION OF INSTALLED CONSTRUCTION

3.10.1 Provide final protection and maintain conditions that ensure installed Work is without damage or deterioration at time of Final Completion.

3.10.1.1 Cover products subject to deterioration with impervious cover; provide ventilation to avoid condensation and trapping water.

3.10.1.2 Take care to use protective covering and blocking materials that do not soil, stain, or damage materials being protected.

3.10.1.3 After installation, provide coverings to protect products from damage from traffic and construction operations, remove when no longer needed.

3.10.2 Comply with manufacturer's written instructions for temperature and relative humidity.

3.10.3 Protect interior materials from water damage; immediately remove wet materials from Site to prevent growth of mold and mildew.

3.10.4 Coordinate temporary enclosures with required inspections and tests to minimize the necessity of uncovering completed construction for that purpose.

3.11 CORRECTION OF THE WORK

3.11.1 Repair or remove and replace defective construction. Restore damaged substrates and finishes. Comply with requirements in Section 01 73 29 (Cutting and Patching).

3.11.1.1 Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.

3.11.2 Restore permanent facilities used during construction to their specified condition.

3.11.3 Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

3.11.4 Repair Work that does not operate properly or meet the requirements of the Contract Documents or accepted Construction Documents. Remove and replace Work that cannot be repaired.

3.11.5 Remove and replace chipped, scratched, and broken glass or reflective surfaces.

END OF SECTION

SECTION 01 73 29

CUTTING AND PATCHING

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section includes procedural requirements for cutting and patching. Design Builder shall be responsible for cutting, fitting and patching required to complete Work and to:

1.1.1.1 Make its parts fit together properly.

1.1.1.2 Uncover work to provide for installation of out of sequence work.

1.1.1.3 Remove and replace defective work.

1.1.1.4 Remove and replace work not conforming to Contract Documents.

1.1.1.5 Patch and repair visible finish surfaces or fire rated assemblies affected by installation of products or construction.

1.1.1.6 Patch and repair roofing areas

1.1.1.7 Remove samples of installed work as required for testing.

1.1.1.8 Provide routine penetrations of non-structural surfaces for installation of piping and electrical conduit.

1.1.2 Related Sections include the following:

1.1.2.1 Document 00 72 53 (General Conditions) regarding integration of work and work by others.

1.1.2.2 Sections 01 11 13 (Work Covered by Contract Documents) and 01 14 00 (Work Restrictions) regarding the interruption of utility services.

1.1.2.3 Section 01 73 32 (Selective Demolition) for demolition of selected existing in-place site work or portions of in place construction.

1.1.2.4 Bridging Documents for specific requirements and limitations applicable to cutting and patching individual parts of the Work.

1.1.2.4.1 Cutting and patching incidental to Work specified in the Section.

1.1.2.4.2 Coordination with Work specified in other Sections for openings required to accommodate Work specified in those other Sections.

1.1.2.5 Section 07 84 00 (Penetration Fire-stopping) for patching fire-rated

construction.

1.2 DEFINITIONS

1.2.1 Cutting: Removal of in-place construction necessary to permit installation or performance of other Work.

1.2.2 Patching: Fitting and repair work required to restore surfaces to original condition after installation of other Work.

1.3 SUBMITTALS

1.3.1 Cutting and Patching Proposal: Submit a proposal describing procedures **at least twenty-one (21) Days before the time cutting and patching will be performed**, requesting approval to proceed. Include the following information:

1.3.1.1 Extent: Describe cutting and patching, show how they will be performed, and indicate why they cannot be avoided.

1.3.1.1.1 Location and description of affected Work. Include Shop Drawings as necessary to identify locations and communicate descriptions.

1.3.1.2 Changes to In-Place Construction: Describe anticipated results. Include changes to structural elements and operating components as well as changes in building's appearance and other significant visual elements.

1.3.1.2.1 Describe extent and method of refinishing to be included.

1.3.1.3 Products: List products to be used and firms or entities that will perform the Work.

1.3.1.4 Dates: Indicate when cutting and patching will be performed.

1.3.1.5 Exterior Envelope or Moisture Barriers: Where the integrity of weather-exposed or moisture-resistant elements is involved, describe the temporary measures that are to be implemented to maintain a weather tight installation during the execution of the Work. Also, describe the permanent construction to be cut and how it shall be properly patched. Provide supporting documentation by manufacturer of products and/or trade association involved.

1.3.1.6 Utility Services and Electrical Systems: List services/systems that cutting and patching procedures will disturb or affect. List services/systems that will be relocated and those that will be temporarily out of service. Indicate how long services/systems will be disrupted. Comply with the requirements of Sections 01 11 13 (Work Covered by Contract Documents) and 01 14 00 (Work Restrictions).

1.3.1.7 Structural Elements: Where cutting and patching affect the integrity of, or involve adding reinforcement to structural elements, submit details and engineering calculations prepared and signed by the Structural Engineer of Record for the new buildings showing integration of reinforcement with original construction.

1.3.1.8 County's Approval: Obtain approval of cutting and patching proposal before cutting and patching. Approval does not waive right to later require removal and replacement of unsatisfactory work.

1.4 QUALITY ASSURANCE

1.4.1 Structural Elements: Do not cut and patch structural elements in a manner that could change their load-carrying capacity or load-deflection ratio.

1.4.2 Operational Elements: Do not cut and patch operating elements and related components in a manner that results in a reduction of their capacity to perform as intended, increased maintenance, or decreased operational life or safety.

1.4.3 Visual Requirements: Do not cut and patch construction in a manner that results in visual evidence of cutting and patching. Do not cut and patch construction in a manner that would reduce, in County Representative's opinion, the building's aesthetic qualities. Remove and replace construction that has been cut and patched in a visually unsatisfactory manner.

1.5 WARRANTY

1.5.1 Warranties: Remove, replace, patch, and repair materials and surfaces cut or damaged during cutting and patching operations, by methods and with materials so as not to void warranties of installed work.

PART 2 - PRODUCTS

2.1 MATERIALS

2.1.1 General: Comply with requirements specified in other Sections.

2.1.2 Primary Products: As required for original installation and to match surrounding construction.

2.1.2.1 Where Specifications and standards have not been provided, provide materials and fabrication consistent with quality of Project.

2.1.2.2 Provide new materials for cutting and patching unless otherwise indicated.

2.1.3 In-Place Materials: Use materials identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.

2.1.3.1 Materials shall meet all manufacture's requirements, recommendations, and specifications to maintain warranties. All submittals will requires approval

from county and manufacturers prior to installation. For roofing, all details will require manufacturers approval in order to maintain new and existing warranties.

2.1.3.2 If identical materials are unavailable or cannot be used, use materials that, when installed, will match the visual and functional performance of in-place materials.

PART 3 - EXECUTION

3.1 EXAMINATION

3.1.1 Examine surfaces to be cut and patched and conditions under which cutting and patching are to be performed.

3.1.1.1 Inspect existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

3.1.1.2 After uncovering existing Work, inspect conditions affecting proper accomplishment of Work.

3.1.1.3 Report unsatisfactory or questionable conditions to County in writing; do not proceed with work until County has provided further instructions.

3.1.1.3.1 Proceed with installation only after unsafe or unsatisfactory conditions have been corrected.

3.1.1.4 Identify hazardous substances or conditions exposed during the Work to County for decision or remedy.

3.1.1.5 Compatibility: Before patching, verify compatibility with and suitability of substrates, including compatibility with in-place finishes or primers.

3.1.1.6 Beginning of cutting or patching shall be interpreted to mean that existing conditions were found by Design Builder to be acceptable.

3.2 PREPARATION

3.2.1 Temporary Support: Provide temporary support of Work to be cut. If structural elements are to be involved, comply with paragraph 1.3.1.7 above. Provide devices and methods to protect other portions of Project from damage.

3.2.1.1 Provide services of California licensed engineer for designing temporary support where required by applicable authorities for temporary supports and for shoring; submit engineering calculations directly to applicable authorities and County upon request.

3.2.2 Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.

3.2.3 Adjoining Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

3.2.4 Existing Utility Services and Mechanical/Electrical Systems: Where existing services/ systems are required to be removed, relocated, or abandoned, bypass such services/ systems before cutting.

3.3 PERFORMANCE

3.3.1 General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.

3.3.1.1 Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.

3.3.1.2 Comply with paragraph 6.2 (Mutual Responsibility) of Document 00 72 53 (General Conditions).

3.3.2 Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.

3.3.2.1 In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Pneumatic tools will not be allowed without prior approval. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Do not overcut corners. Temporarily cover openings when not in use.

3.3.2.2 Finished Surfaces: Cut or drill from the exposed or finished side into concealed surfaces.

3.3.2.3 Concrete or Masonry: Core drill holes through concrete and masonry. Cut using a cutting machine, such as an abrasive saw or a diamond-core drill. Cut masonry and concrete materials using a masonry saw.

3.3.2.4 Excavating and Backfilling: Comply with requirements in applicable Division 2 Sections where required by cutting and patching operations.

3.3.2.4.1 Execute excavating and backfilling by methods that will prevent settlement and damage to other work.

3.3.2.5 Mechanical and Electrical Services: Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after cutting.

3.3.2.6 Proceed with patching after construction operations requiring cutting are complete.

3.3.3 Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other Work. Patch with durable seams that are as invisible as possible. Provide materials and comply with installation requirements specified in other Sections.

3.3.3.1 Inspection: Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

3.3.3.2 Exposed Finishes: Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.

3.3.3.2.1 For continuous surfaces, refinish to nearest intersection or natural break.

3.3.3.2.2 For an assembly, refinish entire unit.

3.3.3.2.3 Clean piping, conduit, and similar features before applying paint or other finishing materials.

3.3.3.2.4 Restore damaged pipe covering to its original condition.

3.3.3.3 Floors and Walls: Where walls or partitions that are removed extend one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform finish, color, texture, and appearance. Remove in-place floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.

3.3.3.3.1 Where patching occurs in a painted surface, apply primer and intermediate paint coats over the patch and apply final paint coat over entire unbroken surface containing the patch. Provide additional coats until patch blends with adjacent surfaces.

3.3.3.4 Ceilings: Patch, repair, or re-hang in-place ceilings as necessary to provide an even-plane surface of uniform appearance.

3.3.3.5 Exterior Building Enclosure and Roofs: Patch components in a manner that restores enclosure to a weathertight condition and maintains any existing warranties.

3.3.4 Restoration:

3.3.4.1 Restore work that has been cut or removed; install new products to provide completed Work in accordance with requirements of Contract Documents.

3.3.4.2 Fit work neat and tight allowing for expansion and contraction. Butt new finished to existing exposed structure, pipes, ducts, conduit, and other penetrations through surfaces.

3.3.4.3 Penetrations at Fire-Rated Construction: At penetrations of fire-rated walls,

partitions, ceiling, or floor construction, completely seal voids or membrane with material in accordance with Section 07 84 00 (Penetration Firestopping) to full thickness of the penetrated element.

3.3.5 Cleaning: Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar materials.

END OF SECTION

SECTION 01 73 32

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section includes the following:

1.1.1.1 Demolition and removal of selected portions of buildings or structures.

1.1.1.2 Demolition and removal of soil and selected site elements.

1.1.1.3 Salvage of existing items to be transferred to the County

1.1.1.3.1 Confirm any existing equipment that the Alameda County Building Maintenance Department (BMD) would like to salvage. Any equipment and or parts shall be left on-site for BMD to transfer to the appropriate location.

1.1.2 Related Sections include the following:

1.1.2.1 Document 00 31 26 (Hazardous Materials Surveys).

1.1.2.2 Document 00 31 32 (Geotechnical Data and Existing Conditions).

1.1.2.3 Document 00 72 53 (General Conditions) for requirements.

1.1.2.4 Section 01 11 13 (Work Covered by Contract Documents) for use of premises, and phasing, and County's occupancy requirements.

1.1.2.5 Section 01 14 00 (Work Restrictions) for restrictions on use of the premises due to occupancies by adjacent neighbors.

1.1.2.6 Section 01 50 00 (Temporary Facilities and Controls) for temporary construction and environmental-protection measures for selective demolition operations.

1.1.2.7 Section 01 73 29 (Cutting and Patching) for cutting and patching procedures.

1.1.2.8 Section 01 74 19 (Construction Waste Management and Disposal).

1.1.2.9 Section 01 74 20 (Recycling and Waste Diversion).

1.2 DEFINITIONS

1.2.1 Remove: Detach items from Site or existing construction and legally dispose of them

off-site, unless indicated to be removed and salvaged or removed and reinstalled.

1.2.2 Remove and Salvage: Detach items from existing construction and deliver them to County ready for reuse.

1.2.3 Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

1.3 MATERIALS OWNERSHIP

1.3.1 Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to County that may be encountered during selective demolition remain County's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to County.

1.3.1.1 Coordinate with County's Representative, who will establish special procedures for removal and salvage.

1.3.2 Demolished material not claimed by the County shall be considered to be property of the Design Builder and shall be completely removed from the job site.

1.3.2.1 Materials and equipment to be salvaged shall not be placed on view to prospective purchasers or sold on site.

1.4 SUBMITTALS

1.4.1 Schedule of Selective Demolition Activities: Indicate the following:

1.4.1.1 Detailed sequence of selective demolition and removal work, with starting and ending dates for each activity. Ensure adjacent neighbors' operations are uninterrupted.

1.4.1.2 Interruption of utility services. Indicate how long utility services will be interrupted. Comply with the requirements of Sections 01 11 13 (Work Covered by Contract Documents) and 01 14 00 (Work Restrictions).

1.4.1.3 Coordination for shutoff, capping, and continuation of utility services.

1.4.1.4 Locations of proposed dust- and noise-control temporary partitions and means of egress, including for adjacent neighbors affected by selective demolition operations.

1.4.1.5 Means of protection for items to remain and items in path of waste removal.

1.4.2 Submit permits for transport and disposal of debris.

1.4.2.1 Design Builder shall secure and pay for required hauling permits and pay dumping fees and charges.

1.4.3 Submit demolition procedures and operational sequence for review and acceptance by County.

1.4.3.1 Demolition Plan: Prior to the commencement of the work of this Section, and in accordance with the provisions of the Division 1 General Specifications, submit a plan for the organization of the demolition, including salvage, demolition, removal, and disposal procedures for acceptance by County. Indicate plans for the protection of portions of the existing structure to remain. Include locations of temporary barriers.

1.4.3.2 Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of temporary work.

1.4.4 Inventory: After selective demolition is complete, submit a list of items that have been removed and salvaged.

1.4.5 Predemolition Photographs and Video: Show existing conditions and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations. Submit to County's Representative before Work begins.

1.4.6 Project Record Documents: Design Builder shall accurately record actual locations of capped utilities, subsurface construction and obstructions.

1.4.7 Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.

1.4.8 Statement of Refrigerant Recovery: A statement signed by technician responsible for recovering refrigerant, that "All refrigerant that was present was recovered and the recovery was performed under EPA regulations." Include name and address of technician and refrigerant recovered.

1.5 QUALITY ASSURANCE

1.5.1 Refrigerant Recovery Technician Qualifications: Certified by an EPA-approved certification program.

1.5.2 Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.

1.5.3 Standards: Comply with ANSI A10.6 and CFC Article 87.

1.6 PROJECT CONDITIONS

1.6.1.1 Comply with requirements specified in Section 01 11 13 (Work Covered by

Contract Documents).

1.6.1.2 Conditions existing at time of inspection for bidding purpose will be maintained by County as far as practical.

1.6.2 Notify County's Representative of discrepancies between existing conditions and Contract Documents and Reference Documents before proceeding with selective demolition.

1.6.2.1 Information shown on the Contract Documents and Reference Documents is to show existing site conditions with information developed from field surveys and County's records, and to generally show the amount and type of demolition required to prepare existing site for new work. Design Builder shall make a detailed survey of existing site conditions pertaining to the work prior to commencing demolition.

1.6.3 Hazardous Materials: Hazardous materials may be encountered in the Work. Refer to Sections 01 88 19 (Asbestos Containing Materials Performance Requirements), 01 88 22 (Soil Remediation Performance Requirements), and 01 88 25 (Miscellaneous Hazardous Materials Performance Requirements) for hazardous material removal requirements.

1.6.3.1 Section intentionally omitted.

1.6.3.2 Section intentionally omitted.

1.6.3.3 Section intentionally omitted.

1.6.4 Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

1.7. PAYMENT AND MEASUREMENT

1.7.1 Payment: Payment for work under this section shall be in accordance with unit prices set forth in Section 01 21 00 (Allowances). Design Builder shall, each morning, submit to the County a daily report indicating Design Builder's fees for the previous day's work, and backup documentation including daily work logs, weight tags, and such other documentation as County may require.

1.7.2 Measurement: Measurement units shall be in accordance with those indicated in Section 01 21 11 (Unit Prices for Allowances). Unit price work measured in terms of hours or days will generally need to be supported by daily work logs and/or time sheets. Unit price work measured in tons will need to be supported by weight tags. Certain quantities of work (e.g., additional asphalt pavement and/or additional backfill and compaction of clean soils excavated during soil remediation work) may need to be determined by field measurements. In such cases, the Design Builder shall make the initial field measurement, submit it to the County for verification, and proceed only after receiving the County's concurrence. Field measurements made in cubic yards will be converted to tons using a conversion factor of 1.36 tons/cubic yard.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

3.1 EXAMINATION

3.1.1 Verify that utilities have been disconnected and capped.

3.1.2 Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

3.1.3 Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

3.1.4 If unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to the County's Representative.

3.1.5 Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs and video.

3.1.6 Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

3.2.1 Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.

3.2.1.1 Comply with requirements for existing services/systems interruptions specified in Sections 01 11 13 (Work Covered by Contract Documents) and 01 14 00 (Work Restrictions).

3.2.2 Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished or connection point for new service.

3.2.2.1 County's Representative will arrange to shut off County services/systems when requested by Design Builder.

3.2.2.2 Arrange to shut off service utilities with utility companies.

3.2.2.3 Do not schedule shut downs until materials, manpower, and equipment are available to complete the Work with a minimum of delay.

3.2.2.4 The County's Representative may require system and utility shutdowns, power

outages, and interruption of services to be performed on weekends or off-hours with no increase in Contract Sum. Shut downs, power outages, and interruptions of services must be requested in writing to the County's Representative in accordance with Section 01 14 00 (Work Restrictions). These shut downs, power outages, and interruption of services must be approved in advance by the County's Representative prior to scheduling.

3.2.2.5 If services/systems are required to be removed, relocated, or abandoned before proceeding with selective demolition, provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to adjacent buildings.

3.3 PREPARATION

3.3.1 Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and adjacent neighbors.

3.3.1.1 Comply with requirements for access and protection specified in Section 01 50 00 (Temporary Facilities and Controls).

3.3.2 Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

3.3.2.1 Strengthen or add new supports when required during progress of selective demolition. Provide services of a California Licensed Engineer for designing temporary support where required by applicable authorities for temporary supports and for shoring; submit engineering calculations directly to applicable authorities upon request.

3.3.2.2 Prevent movement of adjacent construction, provide and place bracing and be responsible for safety and support of adjacent construction.

3.3.2.3 Assume liability for movement of adjacent construction, for damage, and for injury.

3.3.2.4 Cease operations and notify County's Representative immediately if safety of structure appears to be endangered; take precautions to properly support structure.

3.3.2.4.1 Do not resume operations until safety is restored.

3.4 SELECTIVE DEMOLITION, GENERAL

3.4.1 General: Demolish and remove existing construction only to the extent required by new construction. Perform demolition work in accordance with the submitted plan as

accepted. Use methods required to complete the Work within limitations of governing regulations and as follows:

3.4.1.1 Shut off, cap, and otherwise protect existing utility lines in accordance with the requirements of the County, public agencies or utilities having jurisdiction.

3.4.1.1.1 Do not remove utilities discovered during demolition but not indicated without first determining purpose for utility; coordinate with County's Representative.

3.4.1.1.2 Do not disrupt services to adjacent neighbors not in Project.

3.4.1.1.3 Place markers to indicate location of disconnected services; identify service lines and capping locations on Project Record Documents.

3.4.1.2 Completely remove items scheduled to be demolished and removed.

3.4.1.3 The use of explosives is not permitted.

3.4.1.4 Proceed with selective demolition systematically.

3.4.1.5 Do not use cutting torches until work area is cleared of flammable materials. Establish and maintain fire watch and portable fire-suppression devices during flame-cutting operations.

3.4.1.6 Maintain adequate ventilation when using cutting torches.

3.4.1.7 Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site at Design Builder's expense.

3.4.1.7.1 Immediately remove from site wet materials and materials with water stains, mold, and mildew.

3.4.1.8 Dispose of demolished items and materials promptly off-site at Design Builder's expense.

3.4.1.9 Spoil material that is excavated in excess of what is required for backfill, or excavated material that is unsuitable for backfill and rubbish, shall be removed from the Site and disposed of promptly off-site at Design Builder's expense.

3.4.2 Removed and Salvaged Items:

3.4.2.1 Carefully remove, store and protect materials indicated for reinstallation or retention by County. Where stored materials are damaged, repair to original condition or replace with new undamaged materials.

3.4.2.2 Clean salvaged items.

3.4.2.3 Pack or crate items after cleaning. Identify contents of containers.

3.4.2.4 Store items in a secure area until delivery to County.

3.4.2.5 Transport items to County's storage area on-site as designated by County's Representative.

3.4.2.6 Protect items from damage during transport and storage.

3.4.2.7 County will remove the following material and equipment before start of demolition:

3.4.2.7.1 Other items as indicated.

3.4.3 Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the County's Representative, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

3.4.4 Remove temporary Work.

3.5 SELECTIVE DEMOLITION PROCEDURES FOR SPECIFIC MATERIALS

3.5.1 Concrete: Demolish in sections. Cut concrete to its full depth at junctures with construction to remain and at regular intervals using a power-driven saw, then remove concrete between saw cuts.

3.5.2 Masonry: Demolish in small sections. Cut masonry at junctures with construction to remain using a power-driven saw, then remove masonry between saw cuts.

3.5.3 Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished, then break-up and remove.

3.5.4 Piping: Remove buried non-asbestos-insulated piping, other piping, small concrete utility vaults, metallic and concrete debris and pieces of old building foundations, if any.

3.6 DISPOSAL OF DEMOLISHED MATERIALS

3.6.1 General: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the County's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill at Design-Builder's expense.

3.6.1.1 Do not allow demolished materials to accumulate on-site.

3.6.1.2 Remove and transport debris in a manner that will prevent spillage on adjacent

streets, surfaces, and areas.

3.6.1.3 Section intentionally omitted.

3.6.2 Burning: Do not burn demolished materials.

3.6.3 Disposal: Transport demolished materials off County's property and legally dispose of them at Design-Builder's expense.

3.7 CLEANING

3.7.1 Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 – GENERAL

1.1 SUMMARY

1.1.1 This section specifies the requirements for the diversion of demolition (non-hazardous) and construction debris from landfill and submittal of the Waste Management Plan and Table (Section 01 74 19.01).

1.1.2 Performance Requirement: This Project has a **debris diversion goal of seventy-five percent (75%) or better.** Pursuant to the Alameda County Green Building Ordinance, a **minimum of fifty percent (50%) diversion** of construction and demolition (non-hazardous) debris from landfill is mandated.

1.2 DEFINITIONS

1.2.1 "Conversion Rate" means the rate set forth in the standardized Conversion Rate Table in paragraph 3.3 below approved by the County of Alameda for use in estimating the weight of materials identified in the Waste Management Plan and Table (see page 2 of Section 01 74 19.01).

1.2.2 "Divert" means to use material for any purpose other than disposal in a landfill or transfer facility.

1.2.3 "Good faith" shall be as defined by law.

1.2.4 "Recycling Service" means an off-site service that provides processing of material and diversion from landfill.

1.2.5 "Hauler" means the entity that transports construction and demolition debris to either a landfill or a recycling service.

1.3. QUALITY ASSURANCE

1.3.1 The Design Builder shall obtain all special permits and licenses and meet all special requirements for performance and completion of the work of this section.

1.3.2. Regulatory requirements

1.3.2.1 Approval of the Waste Management Plan and Waste Management Table by the County of Alameda is required before beginning construction or demolition.

1.3.3 Recycling service company qualifications – any of the following:

1.3.1.1 Listed in the Alameda County Waste Management Authority's "Builder's Guide to Reuse and Recycling: A Directory for Construction and Demolition Materials," latest edition. A copy of this brochure can be obtained by calling 1-877-STOPWASTE or by visiting www.BuildGreenNow.Org.

1.3.1.2 If not listed, submit certification in writing from any recycling services that accepted

waste will be diverted from landfill.

1.4 SUBMITTALS

1.4.1 Submit specified Waste Management Plan and Table, using the forms provided in Section 01 74 19.01, to indicate how waste will be diverted from landfills. Plan to include procedures and schedule for debris disposal. Submittal is required **within thirty (30) calendar days after receipt of Notice to Proceed** and prior to any waste removal.

1.4.2 Submit certification from recycling services that are not listed in the Alameda County Waste Management Authority's "Builders' Guide to Reuse & Recycling: A Directory for Construction and Demolition Materials." Written documentation must be provided identifying where the construction and demolition material is taken, what method or process is being used to recycle the material, and identifying applicable state and local permits held by the recycling service provider and recycling facility.

1.4.3 Submit completed Waste Management Plan, in accordance with this Section, **at fifty percent (50%) and at one hundred percent (100%) completion of the Work.** One hundred percent (100%) report is required before full release of retention.

1.5 WASTE MANAGEMENT PLAN

1.5.1 Plan Development: Develop a plan for diverting the specified percentage of construction debris from landfill:

1.5.1.1 Submit **within thirty (30) calendar days after receipt of Notice to Proceed** and prior to any waste removal.

1.5.1.2. Propose means and methods for collecting and separating each type of debris deemed reusable or recyclable.

1.5.1.3 Identify the off-site recycling service and hauler of each designated debris type, who has agreed to accept and divert that type of debris from landfill, in the proposed quantities anticipated. Schedule each type of debris and list off-site recycling service and hauler company name, telephone number, address, and person contacted.

1.5.1.4 Include a "good faith" estimate of each type of construction waste that would be generated if no diversion methods were implemented. Submit with calculations based upon weight of each. The following items are subject to the "good faith" estimate and diversion requirement:

a. Asphalt & Concrete

b. Brick/Masonry/Tiles

c. Building Materials (doors, windows, fixtures, etc.)

d. Cardboard and other paper products

e. Carpet/Carpet Padding/Foam

f. Ceiling Tiles (acoustic)

g. Drywall

h. Electrical Components (light fixtures, cables, etc)

i. Film Plastic & Styrofoam Blocks

j. Landscape Debris (Plant & tree trimmings)

k. Mechanical Debris (ducts, controls, plumbing fixtures, etc)

l. Scrap Metal

m. Unpainted Wood and Pallets

n. Other (painted wood & drywall, roofing, etc)

o. Mixed C&D (defined as a mixture of three or more materials from construction or demolition sites that will be taken to a "qualified" facility for recycling.)

p. Trash/garbage

1.5.1.5. Calculate quantities, and convert volume measurements to weights in accordance with the defined Conversion Rate.

1.5.2. Plan Implementation

1.5.2.1 Maintain log of each load, of each category item diverted from landfill. Log in separately debris sent to a Class III landfill and materials sent to recycling facilities.

1.5.2.1.1. Include in log, type of load, load weight, name of hauling service; recycling service or landfill, and date accepted by recycling service or by landfill.

1.5.2.1.2. Owner reserves the right to audit the log at any time. Design Builder shall retain and provide to the Owner all weight tickets, copies of receipts and invoices and any other documentation related to the disposal or recycling of generated waste/debris from demolition and construction activities.

1.5.2.1.3. Units of measure: Use same units as stated in the approved plan "good faith" estimate of construction waste that would be generated if no remedial methods were implemented.

1.5.2.2. Material handling

1.5.2.2.1 Separation facilities

a. Designate a specific on site area or areas to facilitate separation of materials for potential reuse, salvage, recycling and return.

b. Keep waste bins and pile areas neat and clean. Clearly mark bins for each

category of waste. Do not co-mingle non-recyclable waste with materials designated for reuse or recycling.

1.5.2.2.2 Environmental controls during handling, storage, or transport: Do not permit designated materials to become contaminated or to contaminate site or surrounding areas.

1.5.3. Training and coordination

1.5.3.1 Furnish copies of the Waste Management Plan to all on-site supervisors, each Subcontractor, the Owner, and the Architect.

1.5.3.2 Instruction: Provide on-site instruction on appropriate separation, handling, and recycling, salvage, reuse, and return methods to be used by all entities at the appropriate stages of the Work.

1.5.3.3 Meetings: Include construction waste management on the agenda of meetings. At a minimum, discuss waste management goals and issues at the following meetings:

1.5.3.3.1 Pre-bid meetings.
1.5.3.3.2 Pre-construction meeting.
1.5.3.3.3 Regularly scheduled job-site meetings.

PART 2 - PRODUCTS

2.1 MATERIALS, EQUIPMENT AND FACILITIES

2.1.1 Furnish all materials, tools, equipment, devices, appurtenances, facilities, and services required for performing waste management of debris covered under this Section.

2.1.2 Facilities authorized to accept mixed C&D waste for recycling and facilities that accept other types of waste are listed in the Alameda County Waste Management Authority's "Builders' Guide to Reuse and Recycling: A Directory for Construction and Demolition Materials," latest edition . A copy of this brochure can be obtained by calling 1-877-STOPWASTE or by visiting www.BuildGreenNow.Org.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

3.1.1. Perform as required in the approved Waste Management Plan.

3.2 DISPOSAL OF DEBRIS

3.2.1 Dispose of waste, trash and debris in a safe, acceptable manner, in accordance with Applicable Laws and as prescribed by Other Authorities Having Jurisdiction. Burying of trash and debris on the Site will not be permitted.

3.2.2 Remove demolished materials from Site as work progresses. Remove debris from the Site so that its presence will not delay the progress of the Work.

3.2.3 Debris shall be the property of the Design Builder and shall be removed and disposed of in a legal manner off the County's property in accordance with the approved Waste Management Plan described in this Section. Location of recycling facility or dump and length of haul shall be the Design Builder's responsibility.

3.3. CONVERSION RATES

3.3.1 The following conversion rates are estimates. The ranges vary widely, depending on how the materials are handled (compacted, loose, chipped, etc.). Use the conversion factors and receipts from previous projects to help you estimate the potential amount of materials and waste. Take into consideration the type and load of vehicles that will be used to haul the materials. Ask your hauler or recycler to assist you in estimating these numbers.

Conversion Rate Table

Material	**Lbs/cy**	**Tons/cy**
Asphalt	1,400 lbs/cy	0.7 tons/cy
Cardboard	100 lbs/cy	0.05 tons/cy
Concrete	2,600 lbs/cy (Sources range from 1,000 to 4,000)	1.3 tons/cy
Drywall	700 lbs/cy	0.35 tons/cy
Wood (chipped)	300 - 650 lbs/cy	0.15 – 0.3 tons/cy
Mixed C&D Debris	900 lbs/cy	0.45 tons/cy
Mixed Waste/Trash	100 - 350 lbs/cy	0.5 - 0.175 tons/cy

END OF SECTION

SECTION 01 74 19.01

WASTE MANAGEMENT PLAN AND TABLE

Many of the materials generated from your project can be recycled. You are required to list materials that will be reused, recycled or disposed from your project.

The performance requirement is to reuse or recycle project waste as stipulated in the Section 01 81 13.

Use **tons** to quantify total estimated waste and percentages for materials. Ask your hauler, recycler or site cleanup vendor to assist you with this plan. Receipts of all recycling and disposal must be submitted after project completion.

Project Name: 17033 GDDF Boiler Upgrade

Location: 550 6th Street, Oakland, CA

Type of Project: ☐New Construction ☐ Demolition ☐ Renovation

Square Footage: _____

Type of Construction (wood frame, concrete, steel, etc.): _____

Total Project Value: $_____

Company Name: _____ Contact: _____

Address: _____ Phone: _____

Recycler #1: _____ Contact: _____

Address: _____ Phone: _____

Recycler #2: _____ Contact: _____

Address: _____ Phone: _____

Recycler #3: _____ Contact: _____

Address: _____ Phone: _____

Questions? Call **Seri Traver, County of Alameda GSA, (510) 208-9648**

Submit this form and the attached Waste Management table to:

Seri Traver, Project Manager
County of Alameda GSA
1401 Lakeside Drive, Suite 1115
Oakland, CA 94612

Project Name: **#17033 GDDF Boiler Upgrade**

Waste Management Table

Total Estimated Waste Generated by Project: _____tons
(Ask your hauler, recycler or site cleanup vendor to assist you. Use receipts from your previous jobs for estimates)

Complete and return within 7-calendar days after receipt of Notice of Award of Bid, or prior to beginning demolition or construction, whichever occurs sooner.			**Submit completed Waste Management Plan at 50 percent and 100% completion Construction Phase described in Section 01 32 16 (Construction Progress Schedule).**		
Material Type	Estimated Reused/ Recycled	Estimated Disposed/ Landfilled	Actual Reused/ Recycled	Actual Disposed/ Landfilled	Vendor or Facility Used (Destination)
Reused & Salvaged Materials					
Asphalt & Concrete					
Bricks/Masonry/Tiles					
Building Materials (doors, windows, fixtures, etc.)					
Cardboard & other paper products					
Carpet/Carpet Padding/Foam					
Ceiling Tiles (acoustic)					
Drywall (new, unpainted)					
Electrical Components (light fixtures, cables, etc)					
Film Plastic & Styrofoam Blocks					
Landscape Debris (Plant & Tree Trimmings)					
Mechanical Debris (ducts, controls, plumbing fixtures, etc)					
Scrap Metal					
Unpainted Wood & Pallets					
Other (painted wood & drywall, roofing, etc.)					
Mixed C&D *					
Trash/Garbage					
TOTAL					

* Mixed C&D is defined as a mixture of three or more materials (e.g. wood, drywall, roofing, insulation, etc) from construction or demolition sites that will be taken to a "qualified" facility for recycling (See C&D Rebates Program Insert).

* Recycling rates for mixed C&D debris loads vary among the facilities listed on the attached sheet. For the purposes of calculating your Waste Management Table, **assume that 70% by weight of the *"mixed C&D debris"* are reused/recycled and 30% are disposed/landfilled.**

Did you have difficulties finding recycling vendors? ☐ Yes ☐ No

If the estimated amount reused/recycled is less than 50%, please explain why:

_____

If the actual amount reused/recycled is less than 50%, please explain why:

_____

Prepared by: _____ Date: _____

Signature: _____

END OF SECTION

SECTION 01 74 20

RECYCLING AND WASTE DIVERSION

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section specifies the requirements for recycling and waste diversion capacity and equipment in the functioning buildings. It is the County's intent to design, construct, commission, and operate the Project following integrated, sustainable design principles, using green building technologies and materials. The benefits are a healthy, resource-efficient, and productive work environment, along with meeting the requirements and interests of the federal government, our surrounding community, and future generations.

1.1.2 Performance Requirement: This Project has a debris diversion goal of seventy-five percent (75%). Pursuant to the Alameda County Green Building Ordinance, a minimum of fifty percent (50%) diversion of construction and demolition (non-hazardous) debris from landfill is mandated.

1.1.3 The Design Builder shall coordinate all activities of this Section with County and AOC policies.

1.2 DEFINITIONS

1.2.1 "Paper Recycling" includes all non-soiled office paper, including printing and writing paper, colored paper, envelopes, newspaper, and magazines.

1.2.2 "Mixed Recycling" includes beverage bottles and cans, metals, plastics, and glass.

1.2.3 "Compost" is inedible organic materials disposed in the preparation of food, unconsumed prepared food either in bulk or from plate scrapings, paper towels, and paper fiber food packaging.

1.2.4 "Trash" is waste that is not recyclable, compostable, or reusable.

1.2.5 "Waste" is any material that is no longer needed including recyclables, organic waste, and trash.

1.2.6 "Diversion" means the redirection of material for any purpose other than disposal in a landfill or transfer facility.

1.2.7 "Compostable" means organic material that can be composted and will decay to produce a soil amendment.

1.3 SUBMITTALS

1.3.1 The Design Builder shall submit floor plans indicating the placement and size of recycling bins and waste containers for all functional spaces, including offices , cafeteria,

eating areas, public areas, the supply areas, and the loading docks for approval by the County and AOC.

1.3.2 The Design Builder shall submit a written description and/or diagrams of the path of waste through the building from the points of generation to the compactor and/or dumpster for approval by the County.

1.4 SEPARATION OF WASTE

1.4.1 Waste will be source-separated into four bins: paper recycling, mixed recycling, compost, and trash.

1.4.2 Compost will be separated from trash only at large sites of generation such as the cafeteria, eating areas, break rooms, etc.

1.4.3 Mixed recycling will be separated from trash only at large sites of generation such as the cafeteria, kitchen, eating areas, break rooms, conference rooms, etc.

1.4.4 All waste and recycling containers must be adjacent and sized appropriately. The standard container used at County facilities has a footprint of 22 inches by 11 inches and height of 30 inches. Sufficient space shall be reserved above containers to post educational material and signage.

1.4.5 Built in cabinets for the collection of waste is not preferred. However, if cabinets are deemed necessary, cabinets shall accommodate waste and recycling containers described above. The cabinet shall have top loading openings labeled with the container types listed above, in the following order: Landfill (preferred term for labeling that means trash), Compost, Mixed Recycling, Paper Recycling. There shall be front access for loading and unloading the containers from the cabinet.

1.4.6 Accommodation shall be made for collection of mixed recyclables at each outdoor trash receptacles available for public use. This can be achieved through an integrated trash and recycling receptacle, such as a trash container with a recycling topper attached above, or by siting a separate recycling receptacle adjacent to the trash receptacle.

1.5 OUTDOOR ENCLOSURE DESIGN

1.5.1 The enclosure designed to accommodate trash from the County occupied portion of the building shall have the capacity to house four bins, one each for: landfill, recycling, compost, and mixed paper. Bin sizes are 7 ft. by 4 ft. There should be a 2 ft. space around the bins when they are positioned in the enclosure to allow for access.

1.5.2 In order to facilitate the movement of bins in and out of the enclosure, there should be sufficient doorway access to remove one bin without having to reposition the other bins. There should be no lips or barriers impeding movement of the bins in or out of the enclosure.

1.5.3 The enclosure shall be designed to prevent unauthorized entry. The walls and doors of the enclosure should be opaque so that the enclosure contents are not visible from the

outside. The enclosure should be lockable with a padlock to prevent unauthorized access. There should be a mechanism for holding the enclosure doors open while accessing the bins (such as cane bolts). Use protective measures (such as bollards) if the swinging path of the enclosure doors could damage a nearby structure or vehicle. Lighting shall sufficiently provide visibility over the path of travel to the enclosure and inside the enclosure during non-daylight hours.

1.5.4 The enclosure shall have a roof to protect the waste bins from exposure to the weather. There shall be access to potable water (such as a hose bib) within 40 feet of the enclosure to allow for cleaning the enclosure area. The drainage provided shall be consistent with local law and storm water permits.

PART 2 - PRODUCTS

Not used.

PART 3 - EXECUTION

Not used.

END OF SECTION

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This section describes contract closeout procedures including:

1.1.1.1 Removal of temporary construction facilities

1.1.1.2 Substantial completion

1.1.1.3 Final completion

1.1.1.4 Final cleaning

1.1.1.5 Project record documents

1.1.1.6 Material, equipment and finish data

1.1.1.7 Project guarantee

1.1.1.8 Warranties

1.1.1.9 Turn-in

1.1.1.10 Release of claims

1.1.1.11 Guaranty and Maintenance Bonds

1.2 REMOVAL OF TEMPORARY CONSTRUCTION FACILITIES

1.2.1 Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection. Temporary construction facilities to be removed upon Final Completion.

1.2.2 Clean and repair damage caused by installation or use of temporary facilities.

1.2.3 Restore permanent facilities used during construction to specified condition.

1.3 SUBSTANTIAL COMPLETION

1.3.1 When Design Builder considers Work or designated portion thereof as substantially complete, submit written Notice of Substantial Completion, with list of items to be completed or corrected. The term “Substantial Completion” is defined in Section 01 42 16 (Definitions).

1.3.2 Within reasonable time, County will inspect to determine status of completion.

1.3.3 Should County determine that Work is not substantially complete, County will promptly notify Design Builder in writing, and will submit a list of all defects and omissions.

1.3.4 Design Builder shall remedy deficiencies and send a second written Notice of Substantial Completion. County will reinspect the Work. If deficiencies previously noted are not corrected on reinspection, then **Design Builder shall pay the cost of the reinspection.**

1.3.5 When County concludes that Work is substantially complete, County will issue a Certificate of Substantial Completion, accompanied by Design Builder's list of items to be completed or corrected as verified by County.

1.3.6 Manufactured units, equipment and systems that require startup must have been started and run effectively for periods prescribed by County before a Certificate of Substantial Completion will be issued.

1.4 FINAL COMPLETION

1.4.1 Final Completion and Final Acceptance are defined in Section 01 42 16 (Definitions). Design Builder must meet all requirements of Final Acceptance in order to achieve Final Completion. When Design Builder considers Work is finally complete, it shall submit written Certification of Final Completion that:

1.4.1.1 Design Builder has inspected Work for compliance with the Contract Documents, and all requirements for Final Acceptance have been met.

1.4.1.2 The Work, except for Design Builder maintenance after Final Acceptance, has been completed in accordance with the Contract Documents and deficiencies listed with the Certificate of Substantial Completion have been corrected. Equipment and systems have been tested in the presence of County's representative, and are operative.

1.4.1.3 The Work is complete and ready for final inspection.

1.4.2 In addition to submittals required by the Contract Documents, Design Builder shall provide submittals required by governing authorities and submit final statement of accounting giving total adjusted Contract Price, previous payments, and sum remaining due.

1.4.3 When County finds the Work is acceptable and final submittal is complete, County will issue final change order reflecting approved adjustments to Contract Price not previously made by Change Order.

1.4.3.1 Should County determine that the Work is incomplete or defective:

1.4.3.1.1 County promptly will so notify Design Builder, in writing, and will submit a list of the incomplete or defective items.

1.4.3.1.2 Design Builder shall promptly remedy the deficiencies and notify County when the Work is ready for reinspection.

1.4.3.1.3 When County determines that the Work is acceptable under the Contract Documents, County will request Design Builder to make closeout submittals.

1.5 FINAL CLEANING

1.5.1 Cleaning: Employ professional cleaners for final cleaning. Clean each surface or unit to condition expected in a Project cleaning and maintenance program. Comply with manufacturer's written instructions.

1.5.2 Complete the following cleaning operations before requesting inspection for Certification of Final Completion for entire Project or for any phase of Project:

1.5.2.1 Conduct cleaning operations to comply with environmental regulations.

1.5.2.2 Use cleaning agents recommended by the manufacturer or fabricator of surface to be cleaned.

1.5.2.3 Do not use cleaning agents that are potentially harmful to health or property or that might damage finished surfaces.

1.5.2.4 Cleaning chemicals must be coordinated with Project maintenance staff and appropriate for use in an occupied facility.

1.5.2.5 Clean Project site, yard, and grounds in areas disturbed by construction activities including landscape development areas, of rubbish, waste material, litter, and other foreign substances.

1.5.2.6 Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign deposits.

1.5.2.7 Rake grounds that are neither planted nor paved to a smooth, even-textured surface.

1.5.2.8 Remove tools, construction equipment, machinery, and surplus material from Project site.

1.5.2.9 Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.

1.5.2.10 Horizontal surfaces: All horizontal surfaces must be dusted and/or washed until free of dust and grime.

1.5.2.11 Furnishings and equipment:

1.5.2.11.1 Remove all gum and sticky substances from all surfaces. Wash all furniture and equipment with a neutral cleaner. Use specialized cleaner appropriate for wood and/or excessively dirty surfaces.

1.5.2.11.2 Walls: Wash all wall surfaces with detergent and water.

1.5.2.11.3 All restroom walls to be washed with a disinfectant cleaner.

1.5.2.11.4 Doors: Wash all doors, frames and hardware.

1.5.2.12 Floors:

1.5.2.12.1 Clean and finish flooring using appropriate procedures and finishes/sealers per manufacturers' recommendations. Newly installed resilient floors or linoleum must have seams welded, all surface mastic removed, allowed to set for time recommended by manufacturer of mastic prior to final finish application.

1.5.2.12.2 Concrete Floors - Scrub using water and detergent.

1.5.2.12.3 Ceramic Floors – Clean and apply sealer per manufacturer's recommendations.

1.5.2.13 RESTROOMS: Thoroughly clean and disinfect all surfaces and fixtures.

1.5.2.14 Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.

1.5.2.15 Sweep concrete floors broom clean in unoccupied spaces.

1.5.2.16 Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.

1.5.2.17 Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other noticeable, vision obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.

1.5.2.18 Remove labels that are not permanent.

1.5.2.19 Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration.

1.5.2.20 Do not paint over "UL" and similar labels, including mechanical and electrical nameplates.

1.5.2.21 Wipe surfaces of mechanical and electrical equipment, elevator equipment, and similar equipment. Remove excess lubrication, paint and mortar droppings, and other foreign substances.

1.5.2.22 Replace parts subject to unusual operating conditions.

1.5.2.23 Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.

1.5.2.24 Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills.

1.5.2.25 Clean ducts, blowers, and coils if units were operated without filters during construction.

1.5.2.26 Clean all new and existing light fixtures, lamps, globes, and reflectors to function with full efficiency.

1.5.2.27 Replace burned-out light bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor light fixtures to comply with requirements for new fixtures.

1.5.2.28 Ensure that Project is clean and ready for occupancy.

1.6 MATERIAL, EQUIPMENT AND FINISH DATA

1.6.1 Submit two sets of data for primary materials, equipment and finishes as required under each specification section prior to final inspection, bound in letter size three-ring binders with durable plastic covers to County for its records and three electronic copies on CD.

1.7 MISCELLANEOUS PROJECT RECORD SUBMITTALS

1.7.1 Refer to other Specification Sections for miscellaneous record keeping requirements and submittals in connection with various construction activities. Immediately prior to Substantial Completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for use and reference. Submit to County for its records.

1.7.2 At Substantial Completion, submit the final property survey to the County for review and acceptance before having it recorded by or with Authorities Having Jurisdiction as the official “property survey”.

1.8 PROJECT GUARANTEE

1.8.1 Requirements for Design Builder’s guarantee of completed Work are included in Article 9 (Warranty, Guarantee, and Inspection of Work) of Document 00 72 53 (General Conditions). Design Builder shall guarantee Work done under Contract against failures, leaks or breaks or other unsatisfactory conditions due to defective design, equipment, materials or workmanship, and perform repair work or replacement required, at Design

Builder's sole expense, for period of **two (2) years from date of Final Acceptance.**

1.8.2 Neither Final Acceptance nor recording a Notice of Completion nor final certificate for payment nor provision of the Contract Documents nor partial or entire use or occupancy of premises shall constitute acceptance of Work not done in accordance with Contract Documents nor relieve Design Builder of liability in respect to express warranties or responsibility for faulty materials or workmanship.

1.8.3 County may make repairs to defective Work as set forth in Article 9 (Warranty, Guarantee, and Inspection of Work) of Document 00 72 53 (General Conditions) if, **within five (5) Business Days after mailing of written Notice of Defective Work** to Design Builder or authorized agent, Design Builder does not make or undertake repair with due diligence; provided, however, that in case of leak or emergency where, in opinion of County, delay would cause hazard to health or serious loss or damage, repairs may be made without notice being sent to Design Builder, and Design Builder shall pay the cost thereof.

1.8.4 If, after installation, operation or use of materials or equipment furnished under the Contract Documents proves to be unsatisfactory to County, County shall have right to operate and use materials or equipment until it can, without damage to County, be taken out of service for correction or replacement. Period of use of defective materials or equipment pending correction or replacement shall in no way decrease guarantee period required for acceptable corrected or replaced items of materials or equipment.

1.8.5 Nothing in this Section shall be construed to limit, relieve or release Design Builder's, Subcontractors' and equipment suppliers' liability to County for damages sustained as result of latent defects in the Work caused by negligence of suppliers' agents, employees or Subcontractors. Warranty contained in the Contract Documents shall not amount to, nor shall it be deemed to be, waiver by County of any rights or remedies (or time limits in which to enforce such rights or remedies) it may have for defective workmanship or defective materials under laws of this State.

1.9 WARRANTIES

1.9.1 Execute Design Builder's submittals and assemble warranty documents, and operations and maintenance manuals, executed or supplied by Subcontractors, suppliers, and manufacturers.

1.9.1.1 Provide table of contents and assemble in letter size three-ring binder with durable plastic cover, appropriately separated and organized.

1.9.1.2 Assemble in Specification Section order.

1.9.1.3 Provide two copies of completed warranty binders along with three electronic copies of the information provided in the binders on CD.

1.9.2 Submit material prior to final application for payment.

1.9.2.1 For equipment put into use with County's permission during construction,

submit **within twenty (20) Business Days after first operation.**

1.9.2.2 For items of Work delayed materially beyond Date of Substantial Completion, provide updated submittal **within ten (10) Business Days after acceptance**, and list date of acceptance as start of warranty period.

1.9.3 Warranties are intended to protect County against failure of work and against deficient, defective and faulty materials and workmanship, regardless of sources.

1.9.4 Limitations: Warranties are not intended to cover failures that result from the following:

1.9.4.1 Unusual or abnormal phenomena of the elements

1.9.4.2 Vandalism after substantial completion

1.9.4.3 Insurrection or acts of aggression including war

1.9.5 Related Damages and Losses: Remove and replace Work which is damaged as result of defective Work, or which must be removed and replaced to provide access for correction of warranted Work.

1.9.6 Warranty Reinstatement: After correction of warranted Work, where the correction requires replacement of a major component of equipment or **more than ten percent (10%) of work area**, reinstate warranty for corrected Work to date of original warranty expiration or to a date **not less than three hundred sixty-five (365) Days after corrected Work** was done, whichever is later for the affected equipment or area.

1.9.7 Replacement Cost: Replace or restore failing warranted items without regard to anticipated useful service lives.

1.9.8 Warranty Forms: Submit drafts to County for approval prior to execution. Forms shall not detract from or confuse requirements or interpretations of the Contract Documents.

1.9.8.1 Warranty shall be countersigned by manufacturers.

1.9.8.2 Where specified, warranty shall be countersigned by Subcontractors and installers.

1.9.9 Rejection of Warranties: County reserves right to reject unsolicited and coincidental product warranties which detract from or confuse requirements or interpretations of Contract Documents.

1.9.10 Term of Warranties: For materials, equipment, systems and workmanship warranty period shall be **two (2) year minimum from date of Final Completion**, as defined in Section 01 42 16 (Definitions), except where:

1.9.10.1 Detailed specifications for certain materials, equipment or systems require longer warranty periods.

1.9.10.2 Materials, equipment or systems are put into beneficial use of County prior to Final Completion as agreed to in writing by County, in which case the warranty period shall be **one (1) year.**

1.9.11 Warranty of Title: No material, supplies, or equipment for Work under the Contract Documents shall be purchased subject to any chattel mortgage, security agreement, or under a conditional sale or other agreement by which an interest therein or any part thereof is retained by seller or supplier. Design Builder warrants good title to all material, supplies, and equipment installed or incorporated in Work and agrees upon completion of all work to deliver premises, together with improvements and appurtenances constructed or placed thereon by Design Builder, to County free from any claim, liens, security interest, or charges, and further agrees that neither Design Builder nor any person, firm, or corporation furnishing any materials or labor for any Work covered by the Contract Documents shall have right to lien upon premises or improvement or appurtenances thereon. Nothing contained in this Paragraph, however, shall defeat or impair right of persons furnishing materials or labor under bond given by Design Builder for their protection or any rights under law permitting persons to look to funds due Design Builder in hands of County.

1.10 TURN-IN

1.10.1 The Contract Documents will not be closed out and final payment will not be made until all personnel Identification Media, vehicle permits and keys issued to Design Builder during prosecution of Work are turned in to County.

1.11 RELEASE OF CLAIMS

1.11.1 The Contract Documents will not be closed out and final payment will not be made until Document 00 65 10 (Agreement and Release of Any and All Claims) is completed and executed by Design Builder and County.

1.12 FIRE INSPECTION COORDINATION

1.12.1 Design Builder shall coordinate fire inspection and secure sufficient notice to County to permit convenient scheduling, if necessary.

PART 2 - PRODUCTS

Section intentionally omitted.

PART 3 - EXECUTION

Section intentionally omitted.

END OF SECTION

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section includes administrative and procedural requirements for preparing operation and maintenance manuals, including the following:

1.1.1.1 Operation and maintenance documentation directory.

1.1.1.2 Emergency manuals.

1.1.1.3 Finishes maintenance manuals for the care and maintenance of products, materials, and finishes.

1.1.1.4 Operation and maintenance manuals for systems, subsystems, and equipment.

1.1.2 Related Sections include the following:

1.1.2.1 Section 01 33 00 (Submittal Procedures) for submitting copies of submittals for operation and maintenance manuals.

1.1.2.2 Section 01 78 39 (Project Record Documents) for preparing Record Drawings for operation and maintenance manuals.

1.1.2.3 Divisions 2 through 33 Sections for specific operation and maintenance manual requirements for the Work in those Sections.

1.2 DEFINITIONS

1.2.1 System: An organized collection of parts, equipment, or subsystems united by regular interaction.

1.2.2 Subsystem: A portion of a system with characteristics similar to a system.

1.3 SUBMITTALS

1.3.1 Initial Submittal: Submit three (3) draft hard copies of each manual **at least forty-five (45) Days before requesting inspection for Substantial Completion.** Submittal shall include a complete operation and maintenance directory. County will return one copy of draft and mark whether general scope and content of manual are acceptable.

1.3.1.1 Electronic Format: Submit one (1) draft copy of each manual in computerized compact disk (CD's) of material and finish data.

1.3.2 Final Submittal: Submit three (3) hard copies of each manual in final form **at least thirty (30) Days before final inspection.** County will return one copy with comments **within fifteen (15) Days after final inspection.**

1.3.2.1 Correct or modify each manual to comply with County's comments. Submit four (4) hard copies of each corrected manual **within ten (10) Days of receipt of County's comments.**

1.3.2.2 Electronic Format: Submit two (2) final copies of each manual in computerized compact disk (CD's) of material and finish data.

1.4 COORDINATION

1.4.1 Where operation and maintenance documentation includes information on installations by more than one factory-authorized service representative, assemble and coordinate information furnished by all representatives and prepare manuals.

PART 2 - PRODUCTS

2.1 OPERATION AND MAINTENANCE DOCUMENTATION DIRECTORY

2.1.1 Organization: Include a section in the directory for each of the following:

2.1.1.1 List of systems and subsystems.

2.1.1.2 List of equipment.

2.1.1.3 Tables of contents.

2.1.2 List of Systems and Subsystems: List systems alphabetically. Include references to operation and maintenance manuals that contain information about each system.

2.1.3 List of Equipment: List equipment for each system, organized alphabetically by system. For pieces of equipment not part of system, list alphabetically in separate list.

2.1.4 Tables of Contents: Include a table of contents for each emergency, operation, and maintenance manual.

2.1.5 Identification: In the documentation directory and in each operation and maintenance manual, identify each system, subsystem, and piece of equipment with same designation used in the Contract Documents. If no designation exists, assign a designation according to ASHRAE Guideline 4, *Preparation of Operating and Maintenance Documentation for Building Systems*.

2.2 MANUALS, GENERAL

2.2.1 Organization: Unless otherwise indicated, organize each manual into a separate section for each system and subsystem, and a separate section for each piece of equipment not part of a system. Each manual shall contain the following materials, in the order listed:

2.2.1.1 Title page.

2.2.1.2 Table of contents.

2.2.1.3 Manual contents.

2.2.2 Title Page: Enclose title page in transparent plastic sleeve. Include the following information:

2.2.2.1 Subject matter included in manual.

2.2.2.2 Name and address of Project.

2.2.2.3 Date of submittal.

2.2.2.4 Name, address, and telephone number of Design Builder.

2.2.2.5 Name and address of responsible Design Professional.

2.2.2.6 Cross-reference to related systems in other operation and maintenance manuals.

2.2.2.7 Volume number (e.g. Volume 1 of 10)

2.2.3 Table of Contents: List each product included in manual, identified by product name, indexed to the content of the volume, and cross-referenced to Specification Section number in Project Manual.

2.2.3.1 If operation or maintenance documentation requires more than one volume to accommodate data, include comprehensive table of contents for all volumes in each volume of the set.

2.2.4 Manual Contents: Organize into sets of manageable size. Arrange contents alphabetically by system, subsystem, and equipment. If possible, assemble instructions for subsystems, equipment, and components of one system into a single binder.

2.2.4.1 Binders: Heavy-duty, 3-ring "D" ring, vinyl-covered, loose-leaf binders, in thickness necessary to accommodate contents, sized to hold 8-1/2-by-11-inch paper; with clear plastic sleeve on spine to hold label describing contents and with pockets inside covers to hold folded oversize sheets.

2.2.4.1.1 If two or more binders are necessary to accommodate data of a system, organize data in each binder into groupings by subsystem and related components. Cross-reference other binders if necessary to provide essential information for proper operation or maintenance of equipment or system.

2.2.4.1.2 Identify each binder on front and spine, with printed title "OPERATION AND MAINTENANCE MANUAL", Project title or name, and subject matter of contents. Indicate volume

number for multiple-volume sets (e.g. Volume 1 of 10).

2.2.4.2 Dividers: Heavy-paper dividers with plastic-covered tabs for each section. Mark each tab to indicate contents. Include typed list of products and major components of equipment included in the section on each divider, cross-referenced to Specification Section number and title of Project Manual.

2.2.4.3 Protective Plastic Sleeves: Transparent plastic sleeves designed to enclose diagnostic software diskettes for computerized electronic equipment.

2.2.4.4 Supplementary Text: Prepared on 8-1/2-by-11-inch white bond paper.

2.2.4.5 Drawings: Attach reinforced, punched binder tabs on drawings and bind with text.

2.2.4.5.1 If oversize drawings are necessary, fold drawings to same size as text pages and use as foldouts.

2.2.4.5.2 If drawings are too large to be used as foldouts, fold and place drawings in labeled envelopes and bind envelopes in rear of manual. At appropriate locations in manual, insert typewritten pages indicating drawing titles, descriptions of contents, and drawing locations.

2.2.4.5.3 Use of photographs instead of drawings, to demonstrate unusual installations, is acceptable.

2.3 EMERGENCY MANUALS

2.3.1 Content: Organize manual into a separate section for each of the following:

2.3.1.1 Type of emergency.

2.3.1.2 Emergency instructions.

2.3.1.3 Emergency procedures.

2.3.2 Type of Emergency: Where applicable for each type of emergency indicated below, include instructions and procedures for each system, subsystem, piece of equipment, and component:

2.3.2.1 Fire.

2.3.2.2 Flood.

2.3.2.3 Earthquake.

2.3.2.4 Gas leak.

2.3.2.5 Water leak.

2.3.2.6 Power failure.

2.3.2.7 Water outage.

2.3.2.8 System, subsystem, or equipment failure.

2.3.2.9 Chemical release or spill.

2.3.2.10 Section intentionally omitted.

2.3.2.11 Security emergency.

2.3.3 Emergency Instructions: Describe and explain warnings, trouble indications, error messages, and similar codes and signals. Include responsibilities of County's operating personnel for notification of installer, supplier, and manufacturer to maintain warranties.

2.3.4 Emergency Procedures: Include the following, as applicable:

2.3.4.1 Instructions on stopping.

2.3.4.2 Shutdown instructions for each type of emergency.

2.3.4.3 Operating instructions for conditions outside normal operating limits.

2.3.4.4 Required sequences for electric or electronic systems.

2.3.4.5 Special operating instructions and procedures.

2.4 PRODUCT FINISHES MAINTENANCE MANUAL

2.4.1 Content: Organize manual into a separate section for each product, material, and finish. Include source information, product information, maintenance procedures, repair materials and sources, and warranties and bonds, as described below.

2.4.2 Source Information: List each product included in manual, identified by product name and arranged to match Project Manual (Specifications) table of contents. For each product, list name, address, and telephone number of installer and/or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

2.4.3 Product Information: Include the following, as applicable:

2.4.3.1 Product name and model number.

2.4.3.2 Manufacturer's name.

2.4.3.3 Color, pattern, and texture.

2.4.3.4 Material and chemical composition.

2.4.3.5 Reordering information for specially manufactured products.

2.4.4 Maintenance Procedures: Include manufacturer's written recommendations and the following:

2.4.4.1 Inspection procedures.

2.4.4.2 Types of cleaning agents to be used and methods of cleaning.

2.4.4.3 List of cleaning agents and methods of cleaning detrimental to product.

2.4.4.4 Schedule for routine cleaning and maintenance.

2.4.4.5 Repair instructions.

2.4.5 Repair Materials and Sources: Include lists of materials and local sources of materials and related services.

2.4.6 Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.4.6.1 Include procedures to follow and required notifications for warranty claims.

2.5 SYSTEMS AND EQUIPMENT OPERATION AND MAINTENANCE MANUAL

2.5.1 Manual shall be provided in the following volumes to match the department. Some information shall be provided in more than one volume. Final contents shall be as directed by the County's Representative. The following list may not include all equipment on the Project.

2.5.1.1 Distribution shall be:

2.5.1.1.1 One (1) hard copy and one scanned electronic copy on CD to the Deputy Director of the Building Maintenance Department

2.5.1.1.2 One (1) hard copy to the County's project record files

2.5.1.1.3 One (1) hard copy and one scanned electronic copy on CD copy for the County's Project Partners.

2.5.1.1.4 Two (2) copies to the Department listed below:

No.	Department	Description of contents
1	BUILDING ENGINEER	Air Handling Units Cooling Towers Chillers Computer Room Air Conditioners Fan Coil Units HVAC Water Treatment Hydronic Specialties Motors For HVAC Equipment Vibration And Seismic Control For HVAC Piping And Equipment Steam Specialties Pumps (Hydronic, Fire & Domestic Booster) Vacuum Pumps Air Compressors Soft Water, D.I., R.O. Systems Heat Exchanger DHW Generators Filters Emergency Generators Boilers Plumbing Specialties Gas Fired Water Heaters Sewage Ejectors
2	BUILDING MAINTENANCE	Toilet Partition Toilet Accessories Finishes Manual Light Fixtures
3	BUILDING SYSTEMS	Fire Alarm Security Fire Suppression Sprinkler System
4	TSD - Environmental	Hepa Filters

No.	Department	Description of contents
5	ELECTRIC Shop	Emergency Generators Switchgear Panel Boards Transformers Light Fixtures Lighting Control Panels Occupancy Sensors
6	ELEVATOR	Not Applicable
7	BMD - Landscape	Irrigation System Planting Materials
8	HVAC Shop	Exhaust Fans Controls Package Ac Units Refrigeration (Cold Rooms)
9	LOCKSMITH Shop	Door Hardware
10	PLUMBING Shop	Water Heater Gas/Electric DHW Recirc – Pump Sewage Ejector Sump Pumps Plumbing Fixtures Electric Water Cooler And Drinking Fountains Safety Shower/Eye Wash Backflow Preventers Sterilizer Glass Washer Tunnel Washer Fire Suppression Sprinkler System Fire Hydrants Fire Pump Domestic Water Booster Pumps

2.5.2 Content: For each system, subsystem, and piece of equipment not part of a system,

include operation data, source information, manufacturers' maintenance documentation, maintenance procedures, maintenance and service schedules, spare parts list and source information, maintenance service contracts, and warranty and bond information, as described below. In addition to requirements in this Section, include operation data required in individual Specification Sections and the following information:

2.5.2.1 System, subsystem, and equipment descriptions.

2.5.2.2 Performance and design criteria.

2.5.2.3 Operating standards.

2.5.2.4 Operating procedures.

2.5.2.5 Operating logs.

2.5.2.6 Wiring diagrams.

2.5.2.7 Control diagrams.

2.5.2.8 Piped system diagrams.

2.5.2.9 Precautions against improper use.

2.5.2.10 License requirements including inspection and renewal dates.

2.5.3 Descriptions: Include the following:

2.5.3.1 Product name and model number.

2.5.3.2 Manufacturer's name.

2.5.3.3 Equipment identification with serial number of each component.

2.5.3.4 Equipment function.

2.5.3.5 Operating characteristics.

2.5.3.6 Limiting conditions.

2.5.3.7 Performance curves.

2.5.3.8 Engineering data and tests.

2.5.3.9 Complete nomenclature and number of replacement parts.

2.5.4 Operating Procedures: Include the following, as applicable:

2.5.4.1 Start-up procedures.

2.5.4.2 Equipment or system break-in procedures.

2.5.4.3 Routine and normal operating instructions.

2.5.4.4 Regulation and control procedures.

2.5.4.5 Instructions on stopping.

2.5.4.6 Normal shut-down instructions.

2.5.4.7 Seasonal and weekend operating instructions.

2.5.4.8 Required sequences for electric or electronic systems.

2.5.4.9 Special operating instructions and procedures.

2.5.5 Systems and Equipment Controls: Describe the sequence of operation, and diagram controls as installed.

2.5.6 Piped Systems: Diagram piping as installed, and identify color-coding where required for identification.

2.5.7 Source Information: List each system, subsystem, and piece of equipment included in manual, identified by product name and arranged to match manual's table of contents. For each product, list name, address, and telephone number of installer or supplier and maintenance service agent, and cross-reference Specification Section number and title in Project Manual.

2.5.8 Manufacturers' Maintenance Documentation: Manufacturers' maintenance documentation including the following information for each component part or piece of equipment:

2.5.8.1 Standard printed maintenance instructions and bulletins.

2.5.8.2 Drawings, diagrams, and instructions required for maintenance, including disassembly and component removal, replacement, and assembly.

2.5.8.3 Identification and nomenclature of parts and components.

2.5.8.4 List of items recommended to be stocked as spare parts.

2.5.9 Maintenance Procedures: Include the following information and items that detail essential maintenance procedures:

2.5.9.1 Test and inspection instructions.

2.5.9.2 Troubleshooting guide.

2.5.9.3 Precautions against improper maintenance.

2.5.9.4 Disassembly; component removal, repair, and replacement; and reassembly

instructions.

2.5.9.5 Aligning, adjusting, and checking instructions.

2.5.10 Maintenance and Service Schedules: Include service and lubrication requirements, list of required lubricants for equipment, and separate schedules for preventive and routine maintenance and service with standard time allotment.

2.5.10.1 Scheduled Maintenance and Service: Tabulate actions for daily, weekly, monthly, quarterly, semi-annual, and annual frequencies.

2.5.10.2 Maintenance and Service Record: Include manufacturers' forms for recording maintenance.

2.5.11 Spare Parts List and Source Information: Include lists of replacement and repair parts, with parts identified and cross-referenced to manufacturers' maintenance documentation and local sources of maintenance materials and related services.

2.5.12 Maintenance Service Contracts: Include copies of maintenance agreements with name and telephone number of service agent.

2.5.13 Warranties and Bonds: Include copies of warranties and bonds and lists of circumstances and conditions that would affect validity of warranties or bonds.

2.5.13.1 Include procedures to follow and required notifications for warranty claims.

PART 3 - EXECUTION

3.1 MANUAL PREPARATION

3.1.1 Operation and Maintenance Documentation Directory: Prepare a separate manual that provides an organized reference to emergency, operation, and maintenance manuals.

3.1.2 Emergency Manual: Assemble a complete set of emergency information indicating procedures for use by emergency personnel and by County's operating personnel for types of emergencies indicated.

3.1.3 Product Finishes Maintenance Manual: Assemble a complete set of maintenance data indicating care and maintenance of each product, material, and finish incorporated into the Work.

3.1.4 Operation and Maintenance Manuals: Assemble a complete set of operation and maintenance data indicating operation and maintenance of each system, subsystem, and piece of equipment not part of a system.

3.1.4.1 Engage a factory-authorized service representative to assemble and prepare information for each system, subsystem, and piece of equipment not part of a system.

3.1.4.2 Prepare a separate manual for each system and subsystem, in the form of an instructional manual for use by County's operating personnel.

3.1.5 Manufacturers' Data: Where manuals contain manufacturers' standard printed data, include only sheets pertinent to product or component installed. Mark each sheet to identify each product or component incorporated into the Work. If data include more than one item in a tabular format, identify each item using appropriate references from the Contract Documents. Identify data applicable to the Work and delete references to information not applicable.

3.1.5.1 Prepare supplementary text if manufacturers' standard printed data are not available and where the information is necessary for proper operation and maintenance of equipment or systems.

3.1.6 Drawings: Prepare drawings supplementing manufacturers' printed data to illustrate the relationship of component parts of equipment and systems and to illustrate control sequence and flow diagrams. Coordinate these drawings with information contained in Record Drawings to ensure correct illustration of completed installation.

3.1.6.1 Comply with requirements of Record Shop Drawings in Section 01 78 39 (Project Record Documents).

END OF SECTION

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 This Section includes general, administrative and procedural requirements for Project Record Documents. Design Builder shall have complete responsibility for preparation of marked-up and final Record Documents, including the following:

1.1.1.1 Record Drawings.

1.1.1.2 Record Specifications.

1.1.1.3 Record Product Data.

1.1.1.4 Miscellaneous Record Submittals.

1.1.2 Related Sections include the following:

1.1.2.1 Section 01 77 00 (Closeout Procedures) for general closeout procedures.

1.1.2.2 Section 01 78 23 (Operations and Maintenance Data) for operation and maintenance manual requirements.

1.1.2.3 Divisions 2 through 33 Sections for specific requirements for Project Record Documents of the Work in those Sections.

1.2 SUBMITTALS

1.2.1 Record Drawings: Comply with the following:

1.2.1.1 Number of Copies: Submit copies of Record Drawings as follows:

1.2.1.1.1 *Initial Submittal*: Submit four sets of prints from corrected Record Electronic CAD Drawings and three sets of marked-up Record Prints. Design Builder will initial and date each print to confirm that general scope of changes, additional information recorded, and quality of information is accurate. County will return prints with any comments to be incorporated into Record Drawings.

1.2.1.1.2 *Final Submittal*: Design Builder will address all of County's comments on the initial submittal and deliver three sets of Record Electronic Drawing files, and three sets of prints. Print each drawing, whether or not changes and additional information were applicable to the sheet.

1.2.1.2 Electronic Media: Revit, Version 2011 operating in Microsoft Windows operating system, CD-R/DVD, in compliance with Section 01 81 22 BIM Performance Requirements, two sets in portable document format (.pdf), and one AutoCAD Version 10.

1.2.2 Record Specifications: Submit three electronic file copies and three hard copies of Project Specifications, including addenda and contract modifications.

1.2.2.1 Electronic Media: Microsoft Word, Version XP, 2002 or later operating in Microsoft Windows operating system, CD-R/DVD.

1.2.3 Record Product Data: Record Product Data shall be part of operation and maintenance manuals. Insert in operation and maintenance manuals instead of a Record Product Data submittal.

PART 2 - PRODUCTS

2.1 RECORD DRAWINGS

2.1.1 Record Prints: Maintain one set of black-line white prints of the Construction Documents and Shop Drawings. Label each document (on first sheet or page) "PROJECT RECORD" in 2 in. high printed letters. Keep record documents current throughout construction. Note: A reference by number to a Change Order, RFI, RFQ, Field Order or other such document is not acceptable as sufficient record information on any record document. Do not permanently conceal any Work until required information has been recorded.

2.1.1.1 Preparation: Mark Record Prints to show the actual installation where installation varies from that shown originally. Require individual or entity who obtained record data, whether individual or entity is installer, Subcontractor, or similar entity, to prepare the marked-up Record Prints.

2.1.1.1.1 Give particular attention to information on concealed work that would be difficult to identify or measure and record later. Record sufficient information such that Work concealed in the building may be located with ease and accuracy. County will determine what constitutes sufficient information.

2.1.1.1.2 Accurately record information in an industry-standard drawing technique.

2.1.1.1.3 Record data as soon as possible after work is performed. Record and check the markup before enclosing concealed installations.

2.1.1.1.4 Update Project Record Documents daily and allow for County inspection per paragraph 3.1.1 below.

2.1.1.2 Content: Types of items requiring marking include, but are not limited to, the following:

2.1.1.2.1 Dimensional changes.

2.1.1.2.2 Revisions to details.

2.1.1.2.3 Depths of various elements of foundation in relation to main floor level or survey datum.

2.1.1.2.4 Horizontal and vertical location of underground duct banks, utilities and appurtenances referenced to permanent surface improvements.

2.1.1.2.5 Location of internal utilities and appurtenances concealed in construction referenced to visible and accessible features of structure.

2.1.1.2.6 Establish locations of underground work, points of connection with existing utilities, changes in direction, valves, manholes, catch basins, capped stub-outs, invert elevations, and similar items.

2.1.1.2.7 Provide actual numbering of each electrical circuit.

2.1.1.2.8 Field changes of dimension and detail.

2.1.1.2.9 Revisions to routing of piping and conduits.

2.1.1.2.10 Revisions to electrical circuitry.

2.1.1.2.11 Actual equipment locations.

2.1.1.2.12 Duct size and routing.

2.1.1.2.13 Changes made by Change Order.

2.1.1.2.14 Details not on Contract Documents or accepted Construction Documents.

2.1.1.3 Mark the Construction Documents or Shop Drawings, whichever is most capable of showing actual physical conditions, completely and accurately. If Shop Drawings are marked, show cross-reference on the Construction Documents.

2.1.1.4 Unless otherwise agreed by the County and Design Builder, mark record sets with erasable, red-colored pencil. Issue electronic record sets in PDF format, with marks made in red utilizing the comment tools in Adobe Acrobat Writer. Use other colors to distinguish between changes for different categories of the Work at same location.

2.1.1.5 Mark important additional information that was either shown schematically

or not included in the Contract Documents or accepted Construction Documents.

2.1.1.6 Note Alternate numbers, Change Order numbers, and similar identification, where applicable.

2.1.2 Record Electronic Drawings: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Prints with County. Prepare a full set of corrected Record Electronic Drawings of the Construction Documents, as follows:

2.1.2.1 Format: Revit, Version 2011 operating in Microsoft Windows operating system, in compliance with Section 01 81 22 BIM Performance Requirements, two sets in portable document format (.pdf), and one AutoCAD Version 10.

2.1.2.2 Incorporate changes and additional information previously marked on Record Prints. Delete, redraw, and add details and notations where applicable.

2.1.3 Record Shop Drawings: Prepare Shop Drawings instead of revising the Design Professional drawings as Record Drawings when Shop Drawings have been produced for the Work.

2.1.3.1 Revise Design Professional drawings to refer to Shop Drawing sheet for Record Drawing information for that particular product, material or equipment shown on the Shop Drawing.

2.1.3.2 Shop Drawings as Record Drawings shall detail and record the actual physical installation and its relation to other construction. Integrate Shop Drawings into Record Drawing sets; comply with procedures for formatting, organizing, copying, binding, and submitting.

2.1.4 Format: Identify and date each Record Drawing; include the designation "PROJECT RECORD DRAWING" in a prominent location.

2.1.4.1 Record Prints: Organize Record Prints and Record Shop Drawings into manageable sets. Bind each set with durable paper cover sheets. Include identification on cover sheets.

2.1.4.2 Record Electronic Drawings: Organize Revit project files into separate electronic files that correspond to the system models used to develop the Project. Further organize these files into folders that correspond to the major phases of the Project. Each folder will contain a MS Word document explaining the organizational logic of the Revit files and the system used to produce the paper drawing sheets.

2.1.4.3 Identification: As follows:

2.1.4.3.1 County's Project name and number.

2.1.4.3.2 Date.

2.1.4.3.3 Designation “PROJECT RECORD DRAWINGS”.

2.1.4.3.4 Name of Design Professionals.

2.1.4.3.5 Name of Design Builder.

2.1.4.3.6 Professional license, seal and signature.

2.2 RECORD SPECIFICATIONS

2.2.1 Preparation: Mark Specifications to indicate the actual product installation where installation varies from that indicated in Contract Documents and accepted Construction Documents.

2.2.1.1 Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2.2.1.2 Note related Change Orders and Record Drawings where applicable.

2.2.1.3 Indicate actual products used, including manufacturer, model number and options.

2.2.1.4 Update Project Record Documents daily and allow for County inspection per paragraph 3.1.1 below.

2.2.2 Record Specifications: Immediately before inspection for Certificate of Substantial Completion, review marked-up Record Specifications with County. Prepare a full set of corrected Specifications of the Contract Documents and accepted Construction Documents, as follows:

2.2.2.1 Format: Microsoft Word, Version XP, 2002 or later, operating in Microsoft Windows operating system.

2.2.2.2 Incorporate changes and additional information previously marked on Record Prints. Delete, rewrite, and add details and notations where applicable.

2.3 RECORD PRODUCT DATA

2.3.1 Preparation: Mark Product Data to indicate the actual product installation where installation varies substantially from that indicated in Product Data submittal.

2.3.1.1 Give particular attention to information on concealed products and installations that cannot be readily identified and recorded later.

2.3.1.2 Include significant changes in the product delivered to Project site and changes in manufacturer’s written instructions for installation.

2.3.1.3 Note related Change Orders, Record Specifications, and Record Drawings where applicable.

2.4 RECORD SAMPLES

2.4.1 Immediately before date of Substantial Completion, meet with County at Project site to determine which Samples maintained during the construction period shall be transmitted to County for record purposes.

2.4.2 Comply with County's instructions for packaging, identification, marking, and delivery to County's Sample storage space. Dispose of other Samples in the manner specified for disposing surplus and waste materials

2.5 MISCELLANEOUS RECORD SUBMITTALS

2.5.1 Assemble miscellaneous records required by other Specification Sections for miscellaneous record keeping and submittal in connection with actual performance of the Work. Bind or file miscellaneous records and identify each, ready for continued use and reference. Miscellaneous records include, but are not limited to, the following:

2.5.1.1 Field records on excavations and foundations.

2.5.1.2 Field records on underground construction and similar work.

2.5.1.3 Surveys showing locations and elevations of underground lines.

2.5.1.4 Invert elevations of drainage piping.

2.5.1.5 Surveys establishing building lines and levels.

2.5.1.6 Authorized measurements using unit prices or allowances.

2.5.1.7 Records of plant treatment.

2.5.1.8 Ambient and substrate condition tests.

2.5.1.9 Certifications received in lieu of labels on bulk products.

2.5.1.10 Batch mixing and bulk delivery records.

2.5.1.11 Testing and qualification of trade persons.

2.5.1.12 Documented qualification of installation firms.

2.5.1.13 Load and performance testing.

2.5.1.14 Inspections and certifications by governing authorities.

2.5.1.15 Leakage and water-penetration tests.

2.5.1.16 Fire-resistance and flame-spread test results.

2.5.1.17 Final inspection and correction procedures.

2.5.1.18 Final updated and revised BIM Model.

PART 3 - EXECUTION

3.1 RECORDING AND MAINTENANCE

3.1.1 Recording: Maintain one copy of each submittal during the construction period for Project Record Document purposes. Post changes and modifications to Project Record Documents as they occur. County shall review Record Documents in concert with the monthly Application for Payment.

3.1.2 Maintenance of Record Documents and Samples: Store Record Documents and Samples in the field office apart from the documents used for construction. Do not use Project Record Documents for construction purposes. Maintain Record Documents in good order and in a clean, dry, legible condition, protected from deterioration and loss. Provide access to Project Record Documents for County's reference during normal working hours.

END OF SECTION

SECTION 01 79 00

DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.1 SUMMARY

1.1.1 Design Builder shall provide training to cover all aspects of operational, maintenance, and control of the new system. Training shall be scheduled for the following modules:

1.1.1.1 REFER TO ARTICLE 2.12 for relevant training material. Provide the services of manufacturer's field representative to conduct a 6-hour training scheduled over the course of one day.

- Include 3 hours of in-class time to cover
  - Product Design/Construction
  - Installation Requirements
  - Sequence of Operation
  - Troubleshooting Procedures
  - Firing and Assembly/Disassembly of Units
  - Start-up Sequences and Checklist

- Include 3 hours of in the field to review in-class material above

1.1.1.2 Design Builder shall provide advanced Delta Controls training to cover the following subjects. All training modules below shall include classroom handouts that are based on county mechanical systems, training material with step by step instructions, and presented in-class (via a projector) at a county owned site.

- Controls programming training shall cover how to write and debug basic programs using the most commonly utilized programming practices and GCL commands in the enteliWeb software. This training series will demonstrate basic programming strategies for controlling the most frequently used HVAC mechanical systems (air-side and water-side equipment) in County facilities. Training content shall be submitted to county for approval and shall include, but not limited to, the following:

  - 6 hours of class-time
  - Hands-on in-class exercises with GCL programming instruction
    - GCL editor in Navigator
    - GCL execution
    - Commands
    - Functions
    - Status operators
    - Arithmetic

- Logical operators
- Conditional statements
- Subroutines
- System variables
- PI controllers

- Common HVAC strategies with GCL programming instruction
- Troubleshooting and Debugging tips

1.1.2 This Section includes administrative and procedural requirements for instructing County and Project Partner personnel, including the following:

1.1.2.1 Demonstration of operation of systems, subsystems, and equipment.

1.1.2.2 Training in operation and maintenance of systems, subsystems, and equipment.

1.1.2.3 Demonstration and training videotapes/DVDs.

1.1.3 Related Sections include the following:

1.1.3.1 Refer to related sections for additional training requirements.

1.1.3.2 Section 01 31 00 (Project Management and Coordination) for requirements for pre-instruction conferences.

1.1.3.3 Section 01 78 39 (Operations and Maintenance Data) for reference materials.

1.1.3.4 Divisions 2 through 33 for specific requirements for demonstration and training for products in those Sections.

1.2 SUBMITTALS

1.2.1 Instruction Program: Submit four copies of Basic System Training Schedule form with the outline of instructional program for demonstration and training, including a schedule of proposed dates, times, length of instruction time, intended audience, and instructors' names for each training module. Include learning objective and outline for each training module.

1.2.1.1 At completion of training, submit two complete training manual(s) for County's use.

1.2.1.2 Electronic Format: Submit copies of each manual in computerized compact disk (CD's).

1.2.2 Qualification Data: For instructors.

1.2.3 Attendance Record: For each training module, submit list of participants, date, location and length of instruction time.

1.3 QUALITY ASSURANCE

1.3.1 Instructor Qualifications: A factory-authorized service representative experienced in operation and maintenance procedures and training.

1.3.2 Pre-instruction Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 (Project Management and Coordination). Review methods and procedures related to demonstration and training including, but not limited to, the following:

1.3.2.1 Inspect and discuss locations and other facilities required for instruction.

1.3.2.2 Review and finalize instruction schedule and verify availability of educational materials, instructors' personnel, and facilities needed to avoid delays.

1.3.2.3 Identify personnel for whom training is recommended.

1.3.2.4 Review required content of instruction.

1.3.2.5 For instruction that must occur outside, review weather and forecasted weather conditions and procedures to follow if conditions are unfavorable.

1.4 COORDINATION

1.4.1 Coordinate instruction schedule with County's and Project Partner's operations. Adjust schedule as required to minimize disrupting County and Project Partner operations.

1.4.2 Coordinate instructors, including providing notification of dates, times, length of instruction time, and course content.

1.4.3 Coordinate content of training modules with content of approved emergency, operation, and maintenance manuals. Do not submit instruction program until operation and maintenance data has been reviewed and approved by County.

PART 2 - PRODUCTS

2.1 INSTRUCTION PROGRAM

2.1.1 Program Structure: Develop an instruction program that includes individual training modules for each system and equipment not part of a system, as required by individual Specification Sections. Systems and equipment listed below are minimum examples that might apply. Revise to suit Project:

2.1.1.1 Heat generation, such as boilers, feedwater equipment, pumps, steam distribution piping and water distribution piping.

2.1.1.2 Refrigeration systems, such as chillers, cooling towers, condensers, pumps and distribution piping.

2.1.1.3 HVAC systems, such as air-handling equipment, air distribution systems, and terminal equipment and devices.

2.1.1.4 HVAC instrumentation and controls.

2.1.1.5 Electrical service and distribution, such as transformers, switchboards, panel boards and motor controls.

2.1.1.6 Lighting equipment and controls.

2.1.1.7 Communication systems, such as intercommunication, surveillance, clocks and programming, voice and data, and television equipment.

2.1.2 Training Modules: Develop a learning objective and teaching outline for each module. Include a description of specific skills and knowledge that participant is expected to master. For each module, include instruction for the following:

2.1.2.1 Basis of System Design, Operational Requirements, and Criteria: Include the following:

2.1.2.1.1 System, subsystem, and equipment descriptions.

2.1.2.1.2 Performance and design criteria.

2.1.2.1.3 Operating standards.

2.1.2.1.4 Equipment function.

2.1.2.1.5 Operating characteristics.

2.1.2.1.6 Routine maintenance.

2.1.2.2 Documentation: Review the following items in detail:

2.1.2.2.1 Emergency manuals.

2.1.2.2.2 Operations manuals.

2.1.2.2.3 Maintenance manuals.

2.1.2.2.4 Project Record Documents.

2.1.2.2.5 Identification systems.

2.1.2.2.6 Warranties and bonds.

2.1.2.2.7 Maintenance service agreements and similar continuing commitments.

2.1.2.3 Emergencies: Include the following, as applicable:

2.1.2.3.1 Instructions on meaning of warnings, trouble indications, and error messages.

2.1.2.3.2 Instructions on stopping.

2.1.2.3.3 Shut-down instructions for each type of emergency.

2.1.2.3.4 Operating instructions for conditions outside of normal operating limits.

2.1.2.3.5 Sequences for electric or electronic systems.

2.1.2.3.6 Special operating instructions and procedures.

2.1.2.4 Operations: Include the following, as applicable:

2.1.2.4.1 Start-up procedures.

2.1.2.4.2 Equipment or system break-in procedures.

2.1.2.4.3 Routine and normal operating instructions.

2.1.2.4.4 Regulation and control procedures.

2.1.2.4.5 Control sequences.

2.1.2.4.6 Safety procedures.

2.1.2.4.7 Instructions on stopping.

2.1.2.4.8 Normal shutdown instructions.

2.1.2.4.9 Operating procedures for emergencies.

2.1.2.4.10 Operating procedures for system, subsystem, or equipment failure.

2.1.2.4.11 Seasonal and weekend operating instructions.

2.1.2.4.12 Required sequences for electric or electronic systems.

2.1.2.4.13 Special operating instructions and procedures.

2.1.2.5 Adjustments: Include the following:

2.1.2.5.1 Alignments.

2.1.2.5.2 Checking adjustments.

2.1.2.5.3 Noise and vibration adjustments.

2.1.2.5.4 Economy and efficiency adjustments.

2.1.2.6 Troubleshooting: Include the following:

2.1.2.6.1 Diagnostic instructions.

2.1.2.6.2 Test and inspection procedures.

2.1.2.7 Maintenance: Include the following:

2.1.2.7.1 Inspection procedures.

2.1.2.7.2 Types of cleaning agents to be used and methods of cleaning.

2.1.2.7.3 List of cleaning agents and methods of cleaning detrimental to product.

2.1.2.7.4 Procedures for routine cleaning.

2.1.2.7.5 Procedures for preventive maintenance.

2.1.2.7.6 Procedures for routine maintenance.

2.1.2.7.7 Instruction on use of special tools.

2.1.2.8 Repairs: Include the following:

2.1.2.8.1 Diagnosis instructions.

2.1.2.8.2 Repair instructions.

2.1.2.8.3 Disassembly; component removal, repair, replacement and reassembly instructions.

2.1.2.8.4 Instructions for identifying parts and components.

2.1.2.8.5 Review of spare parts needed for operation and maintenance.

2.1.2.9 Contact information for technical support and service requests.

PART 3 - EXECUTION

3.1 PREPARATION

3.1.1 Assemble educational materials necessary for instruction, including documentation and training module. Assemble training modules into a combined training manual.

3.1.2 Set up instructional equipment at instruction location.

3.2 INSTRUCTION

3.2.1 Engage qualified instructors to instruct County's personnel to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.

3.2.2 Scheduling: Provide instruction at mutually agreed on times.

3.2.2.1 Schedule training with County and Project Partners with **at least fourteen (14) Days' advance notice.**

3.2.2.2 Fill out and expand, if necessary, the schedule form attached at the end of this section to reflect equipment and systems on the Project.

3.2.2.3 Video tape or record onto DVD all training sessions, and provide the tapes/DVDs to the County for use in training other personnel.

3.2.3 Clean-up: Collect used and leftover educational materials and remove from Project site. Remove instructional equipment. Restore systems and equipment to condition existing before initial training use.

I. BASIC SYSTEMS TRAINING SCHEDULE

NOTE: Each system must be cross referenced to the Contract Documents and each component identified.

Spec. Section Number	System/Equipment Description	Plan/Schedule Identifier	Operations & Maintenance Manual Required?	Training Required?

END OF SECTION

SECTION 01 91 00

GENERAL COMMISSIONING REQUIREMENTS

PART 1 - **GENERAL**

1.1 SUMMARY

1.1.1. This Section describes the scope of the formal commissioning process and the general requirements for the building systems outlined herein.

1.2. DEFINITIONS

1.2.1. Basis of Design (BoD): The documentation of design criteria and assumptions for systems, components, and methods chosen to meet the Owner's Project Requirements and applicable regulatory requirements, standards, and guidelines. The document includes narrative descriptions of the systems to be commissioned.

1.2.2. Building Automation System (BAS): The automated building system providing control and user interaction with select building systems, such as the HVAC, DHW, and lighting systems.

1.2.3. Commissioning Authority (CxA): An independent agent hired directly by the owner and not otherwise associated with the Design Professionals or the Design Builder. The CxA assists the Design Builder with coordinating commissioning activities and witnesses the activities on behalf of the Owner.

1.2.4. Commissioning Issue (Cx Issue): A condition that affects, prevents or inhibits commissioning, and must be resolved to complete the commissioning process.

1.2.5. Commissioning Issues List (Cx Issues List): A log maintained by the CxA listing all Deficiencies and Cx Issues documented during the commissioning process. All issues require action, correction, and closure.

1.2.6. Commissioning Plan (Cx Plan): A document that outlines the organization, coordination, and requirements of the commissioning process in more detail.

1.2.7. Design Builder or Design Build Entity (DBE): The contractor directly contracted to the Owner with overall responsibility for the Project and all commissioning activities described herein.

1.2.8. Commissioning Coordinator (CxC): Individual within the Design Builder who plans, schedules, directs and coordinates all the Trade Sub-Contractors' commissioning activities, and serves as the CxA's single point of contact for all administrative, documentation and coordination functions.

1.2.9. Deferred Testing: Testing performed at a later time, due to partial occupancy, equipment, load, seasonal requirements, design, or other site conditions that disallow the test from being performed.

1.2.10. Deficiency: A condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents. A Deficiency is considered a Cx Issue and will be documented on the Cx Issues List.

1.2.11. Functional Performance Test (FPT): A test of the dynamic function, operation, and control sequences of equipment and systems to verify system performance to the

fullest extent. Systems are tested under various operating modes, such as during low cooling or heating loads, high loads, component failures, unoccupied, varying outside air temperatures, alarm, power failure, etc. The FPTs are performed using manual (direct observation) or monitoring methods.

1.2.12. Installation Verification (IV): Field verification and documentation of proper installation of system equipment, assemblies, and components prior to Startup. Process is complete when systems are ready for Startup. Installation Verifications are organized under the System Readiness Checklist (SRC) forms.

1.2.13. Monitoring: Recording of parameters (flow, current, status, pressure, etc) of equipment operation using data-loggers or the Trending capabilities of BAS or other control systems.

1.2.14. Owner's Project Requirements (OPR): A document describing the operational and functional requirements of a project, the expectations of how the facility will be used and operated, and the equipment and system expectations and requirements, as defined by the owner. This document provides an explanation of the ideas, concepts, goals, criteria, and supporting information for the Project. For sake of clarity, the Owner is the County of Alameda.

1.2.15. Percent Sampling: Witnessing the startup or testing of only a fraction of the total number of identical or near-identical pieces of equipment such as VAV boxes.

1.2.16. Pre-Functional Checks & Tests (PFC): These are various checks and tests performed on a piece of equipment or system just before, during, or after the initial Start-up and operation. They are performed to confirm that the equipment and individual components were installed correctly and are working properly. Examples include checking fan rotation, sensor calibration, actuator testing, and spot temperature, pressure and electrical measurements. They also include system specific tests such as pipe system pressure tests, duct leakage tests, mechanical system test and balance (TAB) and electrical equipment NETA testing. They are organized under the System Readiness Checklist (SRC) forms and must be completed prior to FPTs.

1.2.17. Startup: Initial starting or activating of equipment usually performed by the Trade Sub-Contractor or the Manufacturer's authorized representative.

1.2.18. System Readiness Checklist (SRC): A summary checklist, typically one page per equipment, covering the necessary commissioning tasks to verify that a system is ready for FPTs or system operation if no FPTs are performed. The tasks covered in the SRC include Installation Verification, Start-up and Pre-functional Checks & Tests, and the Trade Sub-Contractor completed forms for these tasks are attached to the equipment specific SRC. The SRC must be completed prior to conducting FPTs.

1.2.19. TAB: Testing, Adjusting, and Balancing work on the air and water systems to ensure design flow conditions are met. Performed by the TAB Trade Sub-Contractor.

1.2.20. Trade Sub-Contractor: Typically a subcontractor to the Design Builder who provides and installs specific building components and systems and/or provides certain services.

1.2.21. Trending: Monitoring using the Building Automation System (BAS) or a control system, to aid in functional testing and verify system operation and performance under actual operating conditions.

1.3. SYSTEMS TO BE COMMISSIONED

1.3.1. This specification Section is applicable to the following systems and equipment to be commissioned in this Project:

1.4.1.1 Heating hot water boilers, pumps, heat exchangers

1.4.1.2 Air Handlers Systems including supply, return and exhaust fans and associated heating/cooling equipment

1.4.1.3 VAV terminal units

1.4.1.4 Building automation system for HVAC systems (DDC controllers, electronic valves, graphical user interface)

1.4.1.5 Domestic hot water heating system

1.4.1.10 Lighting and daylighting controls

1.4.1.11 Intercommunications and programming systems

1.4. SUMMARY DESCRIPTION OF COMMISSIONING

1.4.1. Commissioning is a quality assurance process for achieving, verifying and documenting that building systems are installed and perform functionally as intended according to the OPR, BoD, and the requirements of the contract documents.

1.4.2. Commissioning during the design phase is intended to achieve the following specific objectives:

1.4.2.1. Develop the Owner's Project Requirements (OPR) and the Basis of Design (BoD). The Owner will develop the Owner's Project Requirements (OPR) and the Design Team shall develop the Basis of Design (BoD).

1.4.2.2. Commissioning Review of the OPR, BoD, and design documents prior to mid-construction phase, with back-check review in the subsequent design submission.

1.4.3. Commissioning during the construction phase is intended to achieve the following specific objectives:

1.4.3.1. Commissioning review of the Trade Sub-Contractor submittals for systems to be commissioned; concurrent with the Design Professional's review.

1.4.3.2. Finalize the commissioning specific details within the Commissioning Plan.

1.4.3.3. Verify that applicable equipment and systems are installed according to the manufacturer's recommendations and to industry-accepted minimum standards and that they receive the required operational check-out and testing by the Trade Sub-Contractors.

1.4.3.4. Verify and document proper performance of equipment and systems.

1.4.3.5. Verify that operation and maintenance documentation is provided by the Trade Sub-Contractors and is complete.

1.4.3.6. Develop a systems manual for energy-related systems (per LEED) that

provides future operating staff the information necessary to optimally operate the commissioned systems.

1.4.3.7. Verify that the owner's facilities and operations personnel are trained per the contract document requirements.

1.4.4. The commissioning process does not take away from or reduce the responsibility of the Design Builder to provide a finished and fully functioning building. The Design Builder has overall responsibility to assure that all systems are properly tested and commissioned, and that all required commissioning documents are completed and provided to the owner.

1.4.5. The Project will meet the Commissioning Requirements of the current version of LEED-NC, Energy & Atmosphere, Prerequisite 1 (Fundamental Commissioning) and Credit 3 (Enhanced Commissioning, if applicable). The Design Builder, Trade Sub-Contractors, and suppliers are responsible to ensure all requirements for commissioning are met in their respective work.

1.5. GENERAL COMMISSIONING PROCESS

1.5.1. Unless otherwise noted in the trade specific commissioning specifications, the general commissioning process is as follows. See the trade specific commissioning specifications for additional details.

1.5.2. <u>OPR and BoD Development</u>

1.5.2.1. The Owner will develop the OPR to outline the functional requirements of the Project and expectations of the building's use and operations as it relates to the systems to be commissioned. The CxA and the Design Team shall review the OPR for clarity and completeness. The Owner is responsible for updates to the OPR.

1.5.2.2. The Design Builder's Design Professionals shall develop a BoD for the systems to be commissioned to meet the requirements described in the OPR and to provide a narrative description of the system design, the design intent, and the design assumptions. The CxA and the Owner will review the BoD for clarity, completeness, and adherence to the OPR. The Design Professionals are responsible for updates to the BoD.

1.5.3. <u>Design Reviews</u>

1.5.3.1. At a minimum, **50% Construction Documents (CDs), and 90% CDs shall be issued by the Design Builder for review and comment by the CxA.** The CxA will issue design review comments to the Design Builder. The Design Builder's Design Professionals shall provide written responses to the CxA's review comments within two weeks.

1.5.4. <u>Submittal Review by the CxA</u>

1.5.4.1. The Design Builder shall include the CxA on the distribution of the Trade Sub-Contractor issued submittals to the Design Professionals for the systems to be commissioned. LEED requires that the CxA review and provide review comments to the Design Professionals.

1.5.5. <u>Cx Plan and Form Development</u>

1.5.5.1. The Commissioning Authority (CxA) prepares a Cx Plan that provides guidance

in the execution of the commissioning process during construction.

1.5.5.2. The CxA develops the SRC and FPT forms and are provided to the Design Builder and Trade Sub-Contractors for review and comment.

1.5.6. System Readiness Activities

1.5.6.1. The Trade Sub-Contractors shall perform Installation Verification, Start-up, and Pre-Functional Check & Test activities. The Trade Sub-Contractors and the CxC shall document completion of these activities on the SRC forms and attach their completed Installation Verification, Start-up, and Pre-Functional Checks and other Tests forms to the SRC.

1.5.6.2. The CxA will perform various observation inspections during the installation phase and back-checks of the completed Installation Verification. The CxA will also witness a percent sampling of the Start-ups and Pre-Functional Checks & Tests, including TAB procedures.

1.5.7. Functional Testing

1.5.7.1. Once the SRC forms are completed, the FPTs are executed by the Trade Sub-Contractors and a sample is witnessed by the CxA. The FPTs may be achieved by any combination of Manual Testing or Trending.

1.5.7.2. Any deferred FPTs will be defined in the Cx Plan.

1.5.8. Deficiencies and Commissioning Issues

1.5.8.1. Throughout the commissioning process, Commissioning Issues are recorded by the CxA on the Commissioning Issues List. The Design Builder and the Trade Sub-Contractors shall correct Commissioning Issues and retest the system(s) without delay at no additional cost to the Owner. The CxA will verify the completion of the issues and make all amendments to the issues list.

1.5.9. O&M Manuals, Training Verification and Final Documentation

1.5.9.1. The CxA will verify that complete operation and maintenance (O&M) manual documentation is provided by the Trade Sub-Contractors to the Owner.

1.5.9.2. The Design Builder shall submit to the CxA and Owner, a training schedule and specific training agendas (for each training class) for review prior to conducting any training. The CxA will also verify completion of the training by receiving a copy of the training class sign-in sheets and any training materials / handouts provided by the Design Builder.

1.5.9.3. The CxA will develop the Systems Manual (per LEED requirements) with assistance from the Design Builder and Trade Sub-Contractors. The systems to be included are the HVAC systems and controls, lighting controls, domestic hot water systems and controls, and any renewable energy systems.

1.5.9.4. The CxA will complete the Final Construction Phase Commissioning Report and documentation for the Owner with assistance from the Design Builder and Trade Sub-Contractors.

1.5.10. Post-Occupancy Warranty Phase Commissioning

1.5.10.1. No later than 90 days prior to the expiration of the first 12-month warranty period of building occupancy, the CxA will return to the facility to interview facility

O&M staff, walk the facility and review systems operation and trend data where applicable. Key representatives from the Design Builder and Trade Sub-Contractors shall attend a site walk-through and meeting, as determined by the CxA.

1.5.10.2. Any performance issues, warranty items, or problems identified will be reported by the CxA to the CxC via a Warranty Phase Commissioning Issues List for correction by the Design Builder and Trade Sub-Contractors prior to the end of the warranty period.

1.6. COMMISSIONING TEAM

1.6.1. The Commissioning Team is responsible for performing the process and achieving successful commissioning results. The Commissioning Team is comprised of the following:

1.6.1.1. Owner's Representatives

1.6.1.2. Commissioning Authority (CxA)

1.6.1.3. Design Builder including their Design Professionals

1.6.1.4. Design Builder's Commissioning Coordinator (CxC)

1.6.1.5. Trade Sub-Contractors responsible for specific types of systems being commissioned:

1.6.1.5.1. Electrical Contractor

1.6.1.5.2. AV Systems Contractor

1.6.1.5.3. Security Systems Contractor

1.6.1.5.4. Fire Alarm Contractor

1.6.1.5.5. Mechanical Contractor

1.6.1.5.6. HVAC Controls Contractor

1.6.1.5.7. Testing and Balance (TAB) Contractor

1.6.1.5.8. Plumbing Contractor

1.7. RESPONSIBILITIES

1.7.1. General:

1.7.1.1. The Commissioning Team and all others involved in the commissioning process shall follow the Commissioning Plan, attend commissioning kick-off meeting, and additional commissioning meetings as necessary.

1.7.2. Commissioning Authority (CxA)

1.7.2.1. The primary role of the CxA is to oversee, organize and lead the commissioning team and assist the Design Builder and Trade Sub-Contractors in executing the commissioning process.

1.7.2.2. Prepare the Cx Plan and develop the SRC and FPT forms.

1.7.2.3. Work with the Design Builder to schedule commissioning activities.

1.7.2.4. Leads commissioning team meetings; prepares meeting agendas, and distributes meeting minutes.

1.7.2.5. Observe on a sampling basis the system and equipment installation, start-up, check-out, and testing for compliance with the OPR, BoD, and Contract Documents; review completion of commissioning documentation.

1.7.2.6. The CxA will sample witness the execution of the FPTs by the Trade Sub-Contractors. The CxA will witness one (1) re-test of any commissioned equipment or system.

1.7.2.7. Verify completion as the authority on commissioning test results and other commissioning program elements. Prepares, maintains, and distributes the Cx Issues List.

1.7.2.8. Review and comment on training agendas and verify that training is completed and O&M manuals are delivered.

1.7.2.9. Lead the effort in developing the Systems Manual for energy-related systems per LEED.

1.7.2.10. Assemble the commissioning documents and prepare the Commissioning Report.

1.7.2.11. The CxA is not responsible for:

1.7.2.11.1. Design concept or design criteria

1.7.2.11.2. Review for code compliance

1.7.2.11.3. Inspector of record services

1.7.2.11.4. Design and construction scheduling

1.7.2.11.5. Cost estimating

1.7.2.11.6. Construction management

1.7.2.11.7. Providing tools and test equipment used for commissioning.

1.7.2.11.8. Scheduling start-up and testing

1.7.2.11.9. Coordinating the work of Trade Sub-Contractors and any special testing agents

1.7.2.11.10. Performing start-up and testing

1.7.3. Design Builder:

1.7.3.1. The Design Builder is responsible for all commissioning tasks to be performed, including tasks assigned to Trade Sub-Contractors, and ensures that all Trade Sub-Contractors execute their commissioning responsibilities according to the Contract Documents, Cx Plan, and schedule.

1.7.3.2. Include the cost for commissioning in the Project cost.

1.7.3.3. The Design Builder is responsible for reviewing the OPR document and developing a BoD that provides a narrative description of the system design, the design intent, and major design assumptions, consistent with the OPR.

1.7.3.4. The Design Builder is responsible for generating design drawings and Project specifications per the Space Program documents and the requirements of the

OPR and BoD. The Design Builder is responsible for **issuing 50% and 90% CDs for review and comment by the CxA** and having the Design Professionals respond to the CxA's written comments for both submissions.

1.7.3.5. Assign a CxC for the duration of the Project with responsibilities outlined herein.

1.7.3.5.1. The CxC shall have **at least five years' experience within the applicable disciplines of construction.**

1.7.3.5.2. The Design Builder shall submit the name of the person(s) assigned as the CxC to the CxA **within a month of contract award.**

1.7.3.6. Schedule and coordinate the commissioning meetings with the CxA.

1.7.3.7. Plan, schedule, coordinate, and facilitate the commissioning work performed by the Trade Sub-Contractors. Provide sufficient **lead-time of at least 10 days to notify the CxA in advance of commissioning activities.** Update the master construction schedule periodically with commissioning progress and activities.

1.7.3.8. Review, comment, and accept the Cx Plan prepared by the CxA.

1.7.3.9. Furnish continual updates of any construction related documents such as change orders, submittals, shop drawings, ASIs and RFIs to the CxA. Electronic files are acceptable.

1.7.3.9.1. The CxC shall ensure that the requested submittals for review by the CxA are also issued to the CxA when issued to the Design Team.

1.7.3.10. Obtain and review the Trade Sub-Contractor IV, Start-up, and PFC forms prior to use.

1.7.3.11. Using IV, Start-up, PFC, SRC, and FPT forms, document and certify that all work is complete and systems are installed, operational and functionally tested.

1.7.3.12. The Design Builder is responsible for organizing all Trade Sub-Contractor completed Cx forms to be submitted to the CxA for review.

1.7.3.13. Evaluate deficiencies identified on the Cx Issues List. Issues will be tracked according to the responsible entity. Collaborate with Trade Sub-Contractors and recommend corrective action. Assure all Cx Issues are resolved.

1.7.3.14. Prepare a training schedule along with the Trade Sub-Contractor training agendas and submit to CxA and Owner for review. Execute training of Owner's personnel per approved training schedule and agendas.

1.7.3.15. Prepare O&M Manuals in accordance with the Contract Documents.

1.7.3.16. Assist the CxA in developing the Systems Manual.

1.7.4. Trade Sub-Contractors:

1.7.4.1. See the trade specific commissioning specification sections for the Trade Sub-Contractor responsibilities.

2. PRODUCTS

2.1. TEST EQUIPMENT

2.1.1. All standard testing equipment required to perform Start-up, Pre-Functional Checks & Tests and FPTs shall be furnished by the Trade Sub-Contractor responsible for the

systems.

2.1.2. All testing equipment shall be of sufficient quality and accuracy to test and/or measure system performance with the tolerance specified in the Contract Documents. If not otherwise specified, the following minimum requirements apply:

2.1.2.1. All equipment shall be calibrated according to the manufacturer's recommended intervals (**or within one year if not otherwise specified**) and recalibrated when dropped or damaged.

2.1.2.2. Calibration tags shall be affixed or certificates readily available for all test equipment.

3. EXECUTION

3.1. SCHEDULING AND COORDINATION

3.1.1. The CxA will provide an initial list of commissioning events to the CxC for scheduling purposes.

3.1.2. The Design Builder shall develop a detailed commissioning schedule for all systems to be commissioned and coordinate with CxA to include commissioning milestones. The Design Builder shall integrate all commissioning activities and milestones into the master construction schedule with assistance from the CxA.

3.1.3. The CxC shall provide sufficient notice to the CxA and Owner for scheduling and coordinating commissioning activities. A **minimum 10-days' notice shall be provided to the CxA for witnessing equipment Start-ups, Pre-Functional Checks & Tests, and Functional Performance Testing.**

3.1.4. The Commissioning Team shall address scheduling problems and make necessary notification in a timely manner in order to expedite the commissioning process.

3.2. MEETINGS

3.2.1. When commissioning team member attendance is required, as determined by the CxA and CxC, be punctual and attentive during the meeting.

3.2.1.1. The CxA will conduct a commissioning kick-off meeting, **usually within 60 days of the commencement of construction.** All team members involved in the commissioning process and the Design Builder shall attend the kick-off meeting.

3.2.1.2. The CxA will plan other commissioning meetings as deemed necessary as construction progresses. These meetings will cover planning and coordination, and Commissioning Issues resolution.

3.2.1.3. The frequency of meetings will vary through construction, but generally increase during start-up and commissioning activities.

3.2.2. The CxA will write and distribute meeting minutes documenting the meeting discussion, conclusions, and actions for each team member.

3.3. COMMISSIONING ISSUES, BACK-CHECKS AND RE-TESTING

3.3.1. All Deficiencies and Commissioning Issues shall be corrected promptly. The responsible party shall correct the issue and inform the CxC and CxA of the resolution and completion date. The CxA will record completion on the

Commissioning Issues List once the issue is successfully back-checked or verified.

3.3.1.1. For all Commissioning Issues identified during the pre-functional system readiness activities, the CxA will back-check and verify the completion of the issues where appropriate.

3.3.1.2. For all Commissioning Issues identified during FPT, retesting is required to verify the resolution of the issue and to complete the FPT.

3.3.1.3. The CxA will **witness one (1) re-test for each equipment and will perform one (1) back-check verification of any completed system readiness issue.** The Owner may back-charge the Design Builder for any additional fees from the CxA, resulting from any re-testing or repeated system readiness issues list back-checks beyond the first re-test or back-check.

3.4. COMMISSIONING ACCEPTANCE AND PROJECT CLOSE-OUT

3.4.1. Completion of the main commissioning activities (system readiness checks, functional testing, training, and delivery of O&M manuals) shall be accomplished as a prerequisite for substantial completion. Completion of all commissioning issues and functional re-testing shall be completed prior to final acceptance of commissioning by the Owner.

3.4.2. After completion of the commissioning activities and following review of the completed commissioning documents that includes the draft Cx Report executive summary, all test results, and the latest Cx Issues List with all remaining commissioning issues and deficiencies; the Owner will provide a formal written acceptance of the Project construction phase commissioning. At that point, any remaining construction phase commissioning issues or seasonal/deferred testing will be transferred to the warranty phase and tracked by the CxA if requested by the Owner for completion as warranty items.

3.4.3. Upon completion of all commissioning activities, the CxA will prepare and submit to the Owner a Final Commissioning Report detailing all completed commissioning activities and documentation. The CxC shall support this effort by providing all Design Builder and Trade Sub-Contractor commissioning documentation.

3.4.4. The Owner's written acceptance of construction phase commissioning will be included in the Final Commissioning Report.

END OF SECTION

SECTION 02 41 16

SELECTIVE BUILDING DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Selective demolition of building elements as indicated on the Drawings and described in the contract documents, specifically Division 01 documents.

B. All specifications and provisions of the Contract apply to this Section.

1.02 REFERENCES

A. EPA - Environmental Protection Agency

1.03 DEFINITIONS

A. Demolish: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the County's property.

B. Remove: Remove and legally dispose of items except those indicated to be reinstalled, salvaged, or to remain the County's property.

C. Remove and Salvage: Items indicated to be removed and salvaged remain the County's property. Remove, clean, and pack or crate items to protect against damage. Identify contents of containers and deliver to County's designated storage area.

D. Remove and Reinstall: Remove items indicated; clean, service, and otherwise prepare them for reuse; store and protect against damage. Reinstall items in the same locations or in locations indicated.

E. Existing to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by the Design Builder, items may be removed to a suitable, protected storage location during selective demolition and then cleaned and reinstalled in their original locations.

F. Materials Ownership: Except for items or materials indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain the County's property, demolished materials shall become the Design Builder's property and shall be removed from the site with further disposition at the Design Builder's option.

1.04 SUBMITTALS

A. Schedule of selective demolition activities indicating the following:
   1. Interruption of utility services and security devices.
   2. Coordination for shutoff, capping, and continuation of utility services and security devices.
   3. Locations of temporary partitions, air locks, and means of egress.

B. Inventory of items to be removed and salvaged.

C. Photographs or videotape, sufficiently detailed, of existing conditions of adjoining construction and site improvements that might be misconstrued as damage caused by selective demolition operations.

D. Record drawings at Project closeout identifying and accurately locating capped utilities and other subsurface structural, electrical, plumbing, mechanical and security devices.

1.05 QUALITY ASSURANCE

A. Regulatory Requirements
   1. Comply with governing EPA notification regulations before starting selective demolition. Call (800) 822-1974. Comply with hauling and disposal regulations of authorities having jurisdiction.
   2. State and local code requirements shall control disposal of debris which shall be at off site location.

B. Demolition Firm Qualifications: Engage an experienced firm that has successfully completed selective building demolition Work similar to that indicated for this Project.

C. Cutting and Patching
   1. Requirements for Structural Work: Do not cut and patch structural elements in a manner that would change their load carrying capacity or load deflection ratio. Obtain approval before cutting and patching the following structural elements:
      a. Structural concrete.
      b. Structural steel.
      c. Structural decking.
      d. Miscellaneous structural metals.
      e. Equipment supports.
      f. Piping, ductwork, and equipment.
   2. Operational Limitations: Do not cut and patch operating elements or related components in a manner that would result in reducing their capacity to perform as intended. Do not cut and patch operating elements or related components in a manner that would result in increased maintenance or decreased operational life or safety. Obtain approval before cutting and patching the following operating elements or safety related systems:
      a. Primary operational systems and equipment.

b. Air or smoke barriers.
c. Water, moisture, or vapor barriers.
d. Membranes and flashings.
e. Fire protection systems.
f. Noise and vibration control elements and systems.
g. Control systems.
h. Communication systems.
i. Electrical wiring systems.

3. Visual Requirements: Do not cut and patch construction exposed on the exterior or in occupied spaces in a manner that would, in the Design Builder's opinion, reduce the building's aesthetic qualities. Do not cut and patch construction in a manner that would result in visual evidence of cutting and patching. Remove and replace construction cut and patched in a visually unsatisfactory manner.

1.06 PROJECT CONDITIONS

A. Conditions existing at time of inspection for bidding purpose will be maintained by the County as far as practical.

B. Hazardous Materials: The Design Builder shall notify the County's Representative in the event that conditions suspected of having asbestos and/or lead containing components are uncovered. The County will handle the abatement of such materials to comply with all appropriate regulations.

1.07 WARRANTY

A. Existing Warranties: Replace, patch, and repair material and surfaces cut or damaged by methods and with materials in such a manner as not to void any warranties required or existing.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Cutting and Patching Materials: Use materials identical to existing materials. For exposed surfaces, use materials that visually match existing adjacent surfaces to the fullest extent possible if identical materials are unavailable or cannot be used. Use materials whose installed performance will equal or surpass that of existing materials.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.

D. When unanticipated plumbing, mechanical, electrical, security, or structural elements that conflict with the intended function or design are encountered, investigate and measure the nature and extent of the conflict. Promptly submit a written report to the Design Builder.

E. Survey the condition of the buildings to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structures during selective demolition.

F. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

3.02 UTILITY SERVICES

A. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
   1. Do not interrupt existing utilities serving occupied or operating facilities, except when authorized by the County's Representative. Provide temporary services during interruptions to existing utilities, as acceptable to the County and to governing authorities.
      a. Provide not less than 72 hours' notice to the County's Representative if shutdown of service is required during changeover.

B. Utility Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services serving portions of the buildings to be selectively demolished.
   1. Arrange to shut off indicated utilities with utility companies.
   2. Where utility services are required to be removed, relocated, or abandoned, provide bypass connections to maintain continuity of service to other parts of the building before proceeding with selective demolition.
   3. Cut off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit after bypassing.

3.03 PREPARATION

A. Conduct demolition operations and remove debris to ensure minimum interference with streets, walks, and other adjacent occupied and used facilities.
   1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from the County and authorities having jurisdiction.

B. Conduct demolition operations to prevent injury to people and damage to adjacent buildings and facilities to remain. Ensure safe passage of people around selective demolition area.
   1. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
   2. Protect existing site improvements, appurtenances, and landscaping to remain.
   3. Provide temporary weather protection, during interval between demolition and removal of existing construction, on exterior surfaces to ensure that no water leakage or damage occurs to structure or interior areas.
   4. Protect walls, ceilings, floors, and other existing finish work that are to remain and are exposed during selective demolition operations.
   5. Cover and protect furniture, furnishings, and equipment that have not been removed.

C. Erect and maintain dustproof partitions, air locks and temporary enclosures to limit dust and dirt migration and to separate areas from fumes and noise.
   1. Construct dustproof partitions of not less than nominal 4 inch studs, and 1/2-inch fire retardant plywood on the demolition side.
   2. Seal joints and perimeter.

D. Provide and maintain interior and exterior bracing or structural support to preserve stability and prevent movement, settlement, or collapse of portions of building to be selectively demolished.
   1. Strengthen or add new supports when required during progress of selective demolition.

3.04 POLLUTION CONTROLS

A. Use water mist, temporary enclosures, and other suitable methods to limit the spread of dust and dirt. Comply with governing environmental protection regulations.

B. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
   1. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level.

C. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before start of selective demolition.

3.05 SELECTIVE DEMOLITION

A. Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete Work within limitations of governing regulations and as follows:

1. Proceed with selective demolition systematically, from higher to lower level. Complete selective demolition work above each floor or tier before disturbing supporting members on lower levels.
2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. To minimize disturbance of adjacent surfaces, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Temporarily cover openings to remain.
3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire suppression devices during flame-cutting operations.
5. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials and promptly dispose of off-site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment throughout the structure and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly.
10. Return elements of construction and surfaces to remain to condition existing before start of selective demolition operations.

B. Demolish concrete and masonry in small sections. Cut concrete and masonry at junctures with construction to remain, using power-driven masonry saw or hand tools; do not use power-driven impact tools.

3.06 PATCHING AND REPAIRS

A. General
1. Employ skilled workmen to perform cutting and patching.
2. Cut existing construction to provide for installation of other components or performance of other construction activities and the subsequent fitting and patching required to restore surfaces to their original condition.
3. Before proceeding, meet at the Project Site with parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict. Coordinate procedures and resolve potential conflicts before proceeding.
4. Examine surfaces to be cut and patched and conditions under which cutting and patching is to be performed before cutting. If unsafe or unsatisfactory conditions are encountered, take corrective action before proceeding.
5. Proceed with cutting and patching at the earliest feasible time and complete without delay.

B. Preparation
   1. Temporary Support: Provide temporary support of work to be cut.
   2. Protection: Protect existing construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of the Project that might be exposed during cutting and patching operations.
   3. Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
   4. Avoid cutting existing pipe, conduit, or ductwork serving the building but scheduled to be removed or relocated until provisions have been made to bypass them.

C. Cutting: Cut existing construction using methods least likely to damage elements retained or adjoining construction. Where possible, review proposed procedures with the original installer; comply with the original installer's recommendations.
   1. In general, where cutting, use hand or small power tools designed for sawing or grinding, not hammering and chopping. Cut holes and slots as small as possible, neatly to size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
   2. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces.
   3. Cut through concrete and masonry using a cutting machine, such as a carborundum saw or a diamond-core drill.
   4. Comply with requirements of applicable Sections where cutting and patching requires excavating and backfilling.
   5. Where services are required to be removed, relocated, or abandoned, by-pass utility services, such as pipe or conduit, before cutting. Cut-off pipe or conduit in walls or partitions to be removed. Cap, valve, or plug and seal the remaining portion of pipe or conduit to prevent entrance of moisture or other foreign matter after by-passing and cutting.

D. Patching: Patch with durable seams that are as invisible as possible. Comply with specified tolerances.
   1. Where feasible, inspect and test patched areas to demonstrate integrity of the installation.
   2. Restore exposed finishes of patched areas and extend finish restoration into retained adjoining construction in a manner that will eliminate evidence of patching and refinishing.
   3. Where removing walls or partitions extends one finished area into another, patch and repair floor and wall surfaces in the new space. Provide an even surface of uniform color and appearance. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
      a. Where patching occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing the patch after the area has received primer and second coat.

4. Patch, repair, or rehang existing ceilings as necessary to provide an even-plane surface of uniform appearance.

E. Clean areas and spaces where cutting and patching are performed. Completely remove paint, mortar, oils, putty, and similar items. Thoroughly clean piping, conduit, and similar features before applying paint or other finishing materials. Restore damaged pipe covering to its original condition.

3.07 DISPOSAL OF DEMOLISHED MATERIALS

A. General: Promptly dispose of demolished materials. Do not allow demolished materials to accumulate on-site.

B. Burning: Do not burn demolished materials.

C. Disposal: Transport demolished materials off the County's property and legally dispose of them.

3.08 CLEANING

A. Sweep the building broom clean on completion of selective demolition operation.

3.09 SELECTIVE DEMOLITION SCHEDULE

A. Remove the Following: Demolished site construction materials.

END OF SECTION

This Page Intentionally Left Blank

SECTION 03 35 00

CONCRETE FINISHING

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Design Builder is required to patch and repair of existing concrete where required and or damaged during construction.

B. All specifications and provisions of the Contract apply to this Section.

1.02 REFERENCES

A. ASTM - American Society for Testing and Materials
   1. C33 - Standard Specification for Concrete Aggregates.
   2. C94 - Standard Specification for Ready-Mixed Concrete.
   3. C109 - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or Cube Specimens).
   4. C150 - Standard Specification for Portland Cement.
   5. C219 - Standard Terminology Relating to Hydraulic Cement.
   6. C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
   7. C309 - Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
   8. C494 - Standard Specification for Chemical Admixtures for Concrete.
   9. C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
   10. C881 - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete.

1.03 SUBMITTALS

A. Product Data: For each type of manufactured material and product indicated.

B. Quality Assurance Submittals
   1. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
   2. Material Certificates: Signed by manufacturers certifying that each of the following materials complies with requirements:
      a. Cementitious materials and aggregates.
      b. Admixtures.
      c. Curing compounds.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: An experienced concrete contractor who has specialized in installing and repairing concrete similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Portland Cement: ASTM C150, Type I, color to match existing, of same type, brand, and source for entire Project.
   1. Fly Ash: ASTM C618, Class C or F.
   2. Normal-Weight Coarse Aggregate: ASTM C33, from the same source for entire Project, and as follows:
      a. Weathering Region and Class: Negligible, 1N.
      b. Nominal Maximum Aggregate Size: 3/8-inch.
      c. Gradation: Uniformly graded.
   3. Normal-Weight Fine Aggregate: ASTM C33, manufactured or natural sand, from the same source for entire Project.
   4. Water: Potable, complying with ASTM C94 except free of wash water from mixer washout operations.
   5. Chemical Admixtures: Certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.
      a. Air-Entraining Admixture: ASTM C260.
      b. Water-Reducing Admixture: ASTM C494, Type A.
      c. Water-Reducing and Accelerating Admixture: ASTM C494, Type E.

B. Curing Compound: ASTM C309, and shall conform with all applicable air pollution regulations.

C. Epoxy Bonding Adhesive: ASTM C881, 2 component epoxy resin, capable of humid curing and bonding to damp surfaces, of class and grade to suit requirements, and as follows:
   1. Type II, non-load bearing, for bonding freshly mixed concrete to hardened concrete.

D. Crack Repair Materials
   1. Filler: 2-component injectable compound, quick curing, high strength bonding for permanent repair.
   2. Sealer: As recommended by the crack filler manufacturer.

E. Self-Leveling Underlayment: Cement-based, polymer-modified, self-leveling product that shall be applied in thicknesses from 1/8-inch and that shall be feathered at edges to match adjacent floor elevations as required.

1. Cement Binder: ASTM C150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C219.
2. Primer: Underlayment manufacturer's standard product recommended for substrate, conditions, and application.
3. Aggregate: Well-graded, washed gravel, 1/8-inch to 1/4-inch or coarse sand as recommended by underlayment manufacturer.
4. Compressive Strength: Not less than 4,100 psi at floor and slab areas beneath floor coverings and not less than 5,000 psi at floor and slab areas remaining exposed; tested at 28 days according to ASTM C109.
5. Products at Floor and Slab Areas Beneath Floor Coverings: As manufactured by Ardex, Inc., "K-15 Self-Leveling Underlayment Concrete"; Maxxon Corporation, "Level-Right", or equal.

F. Rod and Wire: Stainless steel, threaded, as indicated on the Drawings.

G. Sealer: Clear liquid applied, dual barrier penetrating slab and water repellent sealer to form crystalline barrier beneath surface that is not affected by ultra-violet light or abrasion, which also creates a water repelling membrane of methylsilane at the surface to prevent penetration of moisture, oils, fuel, chloride ions and other contaminates into the substrate.
1. Product: As manufactured by Creteseal, "CS2000"; no known equal.

PART 3 - EXECUTION

3.01 CONCRETE SURFACE REPAIRS

A. General: Repair and cure damaged finished surfaces of concrete when approved by the Design Builder. Match repairs to color, texture, and uniformity of surrounding surfaces.
1. Remove and replace concrete that cannot be repaired and cured to the Design Builder's approval.
2. Protect corners, edges, and surfaces of concrete from damage; use guards and barricades.
3. Protect concrete from staining, laitance, and contamination during remainder of construction period.
4. Clean concrete surfaces after finish treatment to remove stains, markings, dust, and debris.
5. Wash and rinse surfaces according to concrete finish applicator's written recommendations. Protect other Work from staining or damage due to cleaning operations.
6. Do not use cleaning materials or processes that could change the appearance of concrete finishes.

B. Mix dry-pack mortar, consisting of 1 part portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing.

1. Cut out honeycombs, rock pockets, voids over 1/4-inch in any dimension, and holes left by tie rods and bolts down to solid concrete but in no case to a depth less than 1 inch. Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water, and brush-coat the area to be patched with bonding agent. Place patching mortar before bonding agent has dried.
2. For surfaces exposed to view, blend white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Provide test areas at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

C. Repairing Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of the Design Builder. Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes and fill with dry-pack mortar or precast cement cone plugs secured in place with bonding agent.
   1. Repair concealed formed surfaces, where possible, containing defects that affect the concrete's durability. If defects cannot be repaired, remove and replace the concrete.

D. Repairing Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface tolerances specified for each surface and finish. Correct low and high areas as specified. Test unformed surfaces sloped to drain for trueness of slope and smoothness by using a template having the required slope.
   1. Repair finished unformed surfaces containing defects that affect the concrete's durability. Surface defects include crazing and cracks in excess of 0.01-inch wide or that penetrate to the reinforcement or completely through nonreinforced sections regardless of width, spalling, popouts, honeycombs, rock pockets, and other objectionable conditions.
   2. Correct high areas in unformed surfaces by grinding after concrete has cured at least 14 days.
   3. Correct low areas in unformed surfaces during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete. Proprietary underlayment compounds may be used when acceptable to the Design Builder.
   4. Repair defective areas, except random cracks and single holes not exceeding 1 inch in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose reinforcing steel with at least 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

E. Repair isolated random cracks and single holes 1 inch or less in diameter by dry-pack method. Groove top of cracks and cut out holes to sound concrete and clean of dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Place dry-pack before bonding agent has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

F. At Existing Floors and Slabs: Provide crack repairs in accordance with crack filler manufacturer's written installation recommendations.

G. Self-Leveling Underlayment: Apply in accordance with manufacturer's written installation instructions.

H. Repair methods not specified above may be used, subject to acceptance of the Design Builder.

3.02 SEALER

A. Clean surface of concrete using a steel wire brush.

B. Apply sealer exactly in accordance with manufacturer's written instructions, using manufacturer's recommended equipment and method.

C. Apply the number of coats recommended by manufacturer.

3.03 PROTECTION

A. Restore finishes damaged during installation and construction so that no evidence remains of correction work.

END OF SECTION

SECTION 07 92 00

JOINT SEALANTS

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes: Joint sealants and backing systems are required for the following locations:
   1. Exterior and interior joints in vertical surfaces and horizontal nontraffic surfaces as indicated below:
      a. Perimeter joints of exterior and interior openings where indicated.
      b. Other joints as indicated.
   2. Interior joints in horizontal traffic surfaces as indicated.
   3. Acoustical sealant for concealed joints.

B. All specifications and provisions of the Contract apply to this Section.

1.02 REFERENCES

A. ASTM - American Society for Testing and Materials
   1. C834 - Standard Specification for Latex Sealants.
   2. C919 - Standard Practice for Use of Sealants in Acoustical Applications.
   3. C920 - Standard Specification for Elastomeric Joint Sealants.
   4. C1193 - Standard Guide for Use of Joint Sealants.
   5. D1056 - Standard Specification for Flexible Cellular Materials - Sponge or Expanded Rubber.
   6. D2240 - Standard Test Method for Rubber Property - Durometer Hardness.

B. CFR - Code of Federal Regulations
   1. 40 CFR 59 - National Volatile Organic Compound Emission Standards for Consumer and Commercial Products.

C. EPA - Environmental Protection Agency

D. FS - Federal Specifications
   1. TT-S-1543B - Sealing Compound, Silicone Rubber Base.

1.03 SYSTEM DESCRIPTION

A. Performance Requirements: Provide joint sealers that have been manufactured to establish and maintain watertight and airtight continuous seals without causing staining or deterioration of joint substrates.

1.04 SUBMITTALS

A. Product Data: Submit product data from manufacturers for each joint sealant product required.

B. Samples for verification purposes of each type and color of joint sealant required. Install joint sealant samples in 1/2-inch wide joints formed between two 6 inch long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
   1. Submit samples of all standard colors of sealant which is not paintable.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General Requirements
   1. Provide joint sealers compatible with one another and with substrates.
   2. VOC Content of Interior Sealants: Provide interior sealants and sealant primers that comply with the following limits for VOC content when calculated according to 40 CFR 59, Subpart D (EPA Method 24):
      a. Sealants: 250 g/L.
      b. Sealant Primers for Nonporous Substrates: 250 g/L.
   3. Manufacturer's standard color range shall permit matching sealants to color of contacting surfaces and future ability to paint.

B. Sealants and Caulks
   1. Type A -One Part Neutral Cure Silicone Sealant
      a. ASTM C920, non-sag, one part, low modulus, elastomeric sealant.
      b. Color: As selected by the Design Builder.
      c. Product: As manufactured by Dow-Corning, "790"; Tremco, "Spectrum 1", or equal.
   2. Type B - Polyurethane Sealant, Two Component
      a. ASTM C920, Type M; Grade P; Class 25; Use T having minimum ASTM D2240 Shore A hardness of 30 plus or minus 5.
      b. Color: As selected by the Design Builder.
      c. Product: As manufactured by Sika Corp., "Sikaflex 2cSL"; Sonneborn Building Products Division, "Sonolastic SL2", or equal.
   3. Type C - Silicone Sealant, Single Component
      a. FS TT-S-1543B, mildew resistant, chemical curing, non-sagging, non-staining, non-bleeding.
      b. Color: As selected by the Design Builder.
      c. Product: As manufactured by Dow-Corning, "786"; Tremco, or equal.
   4. Type D - Acrylic Emulsion Sealant
      a. ASTM C834 that accommodates joint movement of not more than 5 percent in both extension and compression for a total of 10 percent.
      b. Color: As selected by the Design Builder.

c. Product: As manufactured by Pecora Corp., "AC-20"; Tremco, "Tremco Acrylic Latex 834", or equal.

5. Type E - Acoustical Sealant
   a. Non-hardening, non-skinning, for use in conjunction with gypsum board.
   b. Product: As manufactured by Tremco, "Tremco Acoustical Sealant"; Pecora Corp., "BA-98 Acoustical Sealant", or equal.

2.02 ACCESSORIES

A. Primer: Non-staining type recommended by sealant manufacturer to suit application.

B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.

C. Joint Backing: ASTM D1056 round, closed cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width as recommended by manufacturer of sealant material.

D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

E. Silicone Tape: Pre-formed silicone seal for weatherproofing applications, as manufactured by Dow-Corning, "123 Silicone Seal"; Tremco, or equal.

PART 3 - EXECUTION

3.01 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint sealant manufacturer's printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C919 for use of joint sealants in acoustical applications as applicable to materials, applications, and conditions indicated.

D. Installation of Sealant Joint Backings: Install sealant joint backings to comply with the following requirements
   1. Install joint fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant

movement capability.
   a. Do not leave gaps between ends of joint fillers.
   b. Do not stretch, twist, puncture, or tear joint fillers.
   c. Remove absorbent joint fillers that have become wet prior to sealant application and replace with dry material.
2. Install bond breaker tape between sealants where backer rods are not used between sealants and joint fillers or back of joints for 2 opposing side adhesion only.

E. Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability. Install sealants at the same time sealant backings are installed.

F. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets, and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents that discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.
1. Provide concave joint configuration per Figure 5A in ASTM C1193, unless otherwise indicated.

G. Silicone Tape at Parapet Coping Joints and Other Sheet Metal Assemblies Where Indicated: Install in accordance with manufacturer's written instructions.

3.02 SCHEDULE

A. Type A, Non-Sag
1. Exterior and interior control and expansion joints in vertical surfaces of cast-in-place concrete.
2. Between metal and concrete, mortar, or portland cement plaster.
3. Interior and exterior perimeter joints between cast-in-place concrete and frames of doors and windows.
4. Control and expansion joints in exterior soffits and overhead surfaces.

B. Type B: Exterior control, expansion, and isolation joints in cast-in-place concrete slabs.

C. Type C: Not Used.

D. Type D: All other interior joints not indicated otherwise.

E. Type E: Concealed acoustical conditions.

END OF SECTION

SECTION 09 90 00

PAINTING AND COATING

PART 1 - GENERAL

1.01 SUMMARY

A. Section and Work Includes: Design Builder is responsible for all Surface preparation, painting, and finishing of exposed interior items and surfaces that are required as part of the construction or damaged due to construction. Paints and finishes shall match existing.

B. All specifications and provisions of the Contract apply to this Section.

1.02 REFERENCES

A. FM - Factory Mutual

B. SSPC - The Society for Protective Coatings
   1. SP 10 - Surface Preparation Specification No. 10: Near-White Metal Blast Cleaning.

C. UL - Underwriters Laboratories Inc.

1.03 DEFINITIONS

A. "Paint": As used herein, means coating systems materials including primers, emulsions, epoxy, enamels, sealers, fillers, and other applied materials whether used as prime, intermediate, or finish coats

1.04 SYSTEM DESCRIPTION

A. Performance Requirements
   1. Paint exposed surfaces whether or not colors are designated in the schedules, except where a surface or material is specifically indicated not to be painted or is to remain natural. Where an item or surface is not specifically mentioned, paint the same as similar adjacent materials or surfaces. If color or finish is not designated, the Design Builder will select from standard colors or finishes available.
   2. Painting is not required on prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.
   3. Do not paint over UL, FM, or other code required labels or equipment name, identification, performance rating, or nomenclature plates.

1.05 SUBMITTALS

A. Product Data: Submit manufacturer's product data for each paint system specified, including block fillers and primers.
   1. Provide manufacturer's technical information including label analysis and instructions for handling, storage, and application of each material proposed for use.
   2. List each material and cross reference the specific coating, finish system, and application. Identify each material by the manufacturer's catalog number and general classification.

B. Samples: Following the selection of colors and glosses by the Design Builder, submit samples for the Design Builder's review.
   1. Provide 3 samples of each color and each gloss for each material on which the finish is specified to be applied.
   2. Except as otherwise directed by the Design Builder, make samples approximately 8 inches by 10 inches in size.
   3. Do not commence finish painting until approved samples are on file at the job site.

C. Quality Control Submittals: Provide certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

1.06 QUALITY ASSURANCE

A. Provide primers and undercoat paint produced by the same manufacturer as finish coats.
   1. Review other Sections of these Specifications as required, verifying the prime coats to be used and assuring compatibility of the total coating system for the various substrates.
   2. Upon request, furnish information on the characteristics of the specific finish materials to assure that compatible prime coats are used.
   3. Provide barrier coats over non-compatible primers, or remove the primer and re-prime as required.
   4. Notify the Design Builder in writing of anticipated problems in using the specified coating systems over prime coatings supplied under other Sections.

B. Applicator Qualifications: Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Acceptance at Site: Deliver materials to the job site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:
   1. Product name or title of material.

2. Product description (generic classification or binder type).
3. Manufacturer's stock number and date of manufacture.
4. Contents by volume for pigment and vehicle constituents.
5. Thinning instructions.
6. Application instructions.
7. Color name and number.

B. Storage and Protection
   1. Store materials not in use in tightly covered containers in well ventilated area at minimum ambient temperature of 45 degrees Fahrenheit. Maintain containers used in storage in clean condition, free of foreign materials and residue.
   2. Protect from freezing. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.08 PROJECT CONDITIONS

A. Environmental Requirements
   1. Apply water based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 and 90 degrees Fahrenheit, unless otherwise permitted by the manufacturers' printed instructions as approved by the Design Builder.
   2. Do not apply solvent-thinned paints when the temperature of surfaces to be painted and the surrounding air temperatures are below 45 degrees Fahrenheit, unless otherwise permitted by the manufacturers' printed instructions as approved by the Design Builder.
   3. Do not apply paint in rain, fog, or mist; or when the relative humidity exceeds 85 percent. Do not apply paint to damp or wet surfaces, unless otherwise permitted by the manufacturers' printed instructions as approved by the Design Builder.
   4. Applications may be continued during inclement weather only within the temperature limits specified by the paint manufacturer as being suitable for use during application and drying periods.

1.09 MAINTENANCE

A. Upon completion of the work of this Section, deliver to the County's Representative an extra stock equaling 5 percent of each color, type, and gloss of paint used in the Work; tightly sealing each container, and clearly labeling with contents and location where used.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Acceptable Manufacturers: Kelly Moore; ICI Dulux; Pratt & Lambert; Cabot; Frazee; Tnemec; Rustoleum; Olympic, or equal.

2.02 PAINT MATERIALS

A. Paint Materials, General: Provide block fillers, primers, finish coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by the manufacturer, based on testing and field experience.

B. Material Quality: Provide manufacturer's best quality trade sale paint material of the various coating types specified. Paint material containers not displaying manufacturer's product identification will not be acceptable.

C. Colors: As selected by the Design Builder from manufacturer's full range of standard colors and as indicated on the Drawings.

2.03 APPLICATION EQUIPMENT

A. For application of the approved paint, use only such equipment as is recommended for application of the particular paint by the manufacturer of the particular paint, and as approved by the Design Builder.

B. Prior to use of application equipment, verify that the proposed equipment is actually compatible with the material to be applied, and that integrity of the finish will not be jeopardized by use of the proposed equipment.

2.04 OTHER MATERIALS

A. Provide other materials not specifically described but required for a complete and proper installation, as selected by the Design Builder.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine the areas and surface conditions under which work of this Section will be performed. Correct conditions detrimental to timely and proper completion of the Work.

B. Do not proceed until unsatisfactory conditions are corrected.

3.02 PREPARATION

A. General
   1. Mix and prepare paint materials in strict accordance with the manufacturers' recommendations as approved by the Design Builder.

2. When materials are not in use, store in tightly covered containers.
3. Maintain containers used in storage, mixing, and application of paint in a clean condition, free from foreign materials and residue.

B. Stirring
1. Stir materials before application, producing a mixture of uniform density.
2. Do not stir into the material any film which may form on the surface, but remove the film and, if necessary, strain the material before using.

C. Surface Preparation
1. General
   a. Perform preparation and cleaning procedures in strict accordance with the paint manufacturers' recommendations as approved by the Design Builder.
   b. Remove removable items which are in place and are not scheduled to receive paint finish; or provide surface applied protection prior to surface preparation and painting operations.
   c. Following completion of painting in each space or area, reinstall the removed items by using workmen who are skilled in the necessary trades.
2. Clean each surface to be painted prior to applying paint or surface treatment. Interior surfaces shall be steam cleaned prior to repainting.
3. Remove oil and grease with clean cloths and cleaning solvent of low toxicity and flash point in excess of 200 degrees Fahrenheit prior to start of mechanical cleaning.
4. Schedule the cleaning and painting so that dust and other contaminants from the cleaning process will not fall onto wet newly painted surfaces.
5. Provide barrier coats over incompatible primers or remove and reprime.

D. Cementitious Materials: Prepare concrete and concrete masonry unit or board surfaces to be painted. Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
1. Use abrasive blast-cleaning methods if recommended by paint manufacturer.
2. Determine alkalinity and moisture content of surfaces by performing appropriate tests. If surfaces are sufficiently alkaline to cause the finish paint to blister and burn, correct this condition before application. Do not paint surfaces where moisture content exceeds that permitted in manufacturer's written instructions.

E. Preparation of Wood Surfaces
1. Clean wood surfaces until free from dirt, oil, and other foreign substance.
2. Smooth finished wood surfaces exposed to view, using the proper sandpaper. Where so required, use varying degrees of coarseness in sandpaper to produce a uniformly smooth and unmarred wood surface.

3. Unless specifically approved by the Design Builder, do not proceed with painting of wood surfaces until the moisture content of the wood is 12 percent or less as measured by a moisture meter approved by the Design Builder.
4. Back prime concealed wood surfaces.

F. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC recommendations.
1. Blast steel surfaces clean as recommended by paint system manufacturer and according to requirements of SSPC SP 10.
2. Treat bare and sandblasted or pickled clean metal with a metal treatment wash coat before priming.
3. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.

G. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.

3.03 PAINT APPLICATION

A. General
1. Touch-up shop-applied prime coats which have been damaged, and touch-up bare areas prior to start of finish coats application.
2. Slightly vary the color of succeeding coats.
   a. Do not apply additional coats until the completed coat has been inspected and approved.
   b. Only the inspected and approved coats of paint will be considered in determining the number of coats applied.
3. Sand and dust between coats to remove defects visible to the unaided eye from a distance of 5 feet.
4. On removable panels and hinged panels, paint the back sides to match the exposed sides.

B. Drying
1. Allow sufficient drying time between coats, modifying the period as recommended by the material manufacturer to suite adverse weather conditions.
2. Consider oil base and oleo-resinous solvent-type paint as dry for re-coating when the paint feels firm; does not deform or feel sticky under moderate pressure of the thumb, and when the application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

C. Brush Applications
1. Brush out and work the brush coats onto the surface in an even film.

2. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections will not be acceptable.

D. Spray Application
1. Except as specifically otherwise approved by the Design Builder, confine spray application to metal framework and similar surfaces where hand brush work would be inferior.
2. Where spray application is used, apply each coat to provide the hiding equivalent of brush coats.
3. Do not double back with spray equipment to build up film thickness of 2 coats in 1 pass.
4. Protect all adjacent buildings, cars, plants, floors, etc., from over spray.

E. For completed work, match the approved samples as to texture, color, and coverage. Remove, refinish, or repaint work not in compliance with the specified requirements.

F. Miscellaneous Surfaces and Procedures
1. Exposed Mechanical Items
   a. Finish electric panels, access doors, conduits, pipes, ducts, grilles, registers, vents, and items of similar nature to match the adjacent wall and ceiling surfaces, or as directed.
   b. Paint visible duct surfaces behind vents, registers, and grilles flat black.
   c. Wash metal with solvent, prime, and apply 2 coats of alkyd enamel.
2. Exposed Pipe and Duct Insulation
   a. Apply 1 coat of latex paint on insulation which has been sized or primed under other Sections; apply 2 coats on such surfaces when unprepared.
   b. Match color of adjacent surfaces.
   c. Remove band before painting, and replace after painting.
3. Hardware
   a. Paint prime coated hardware to match adjacent surfaces.
   b. Paint metal portions of head seals, jamb seals, and astragal seals to match the color of the door frame unless otherwise directed by the Design Builder.
4. Wet Areas
   a. For oil base paints, use 1 percent phencimercuric or 4 percent tetrachlorophenol.
   b. For water emulsion and glue size surfaces, use 4 percent sodium tetrachlorophenate.
5. Interior: Use “stipple” finish where enamel is specified.
6. Exposed Vents: Apply 2 coats of heat resistant paint approved by the Design Builder.

3.04 INTERIOR PAINT SCHEDULE

A. Gypsum Board
1. Eggshell Finish: 2 finish coats over a primer where indicated.

a. Primer
   1) Latex based, interior primer/sealer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
   2) Product: Kelly Moore, "971 Acry-Plex", or equal.
b. First and Second Coats
   1) Low luster eggshell, acrylic-latex based, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.8 mils.
   2) Product: Kelly Moore, "1610 Eggshell", or equal.

2. Semigloss Acrylic Enamel Finish: 2 finish coats over a primer at "wet areas" such as restrooms, janitor closets, kitchen area.
   a. Primer
      1) Latex based, interior primer/sealer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
      2) Product: Kelly Moore, "971 Acry-Plex", or equal.
   b. First and Second Coats
      1) Semigloss, acrylic latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.
      2) Product: Kelly Moore, "1650 Acry-Plex Latex SemiGloss Enamel", or equal.

B. Ferrous Metal and Galvanized Metal: Provide the following finish systems over interior ferrous metal. Primer is not required on shop-primed items. Reprime all areas where primer has been scratched, scraped or removed.
   1. Semigloss Acrylic Enamel Finish: 2 finish coats over a primer.
      a. Primer
         1) Latex based, interior primer/sealer applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 1.2 mils.
         2) Product: Kelly Moore, "971 Acry-Plex", or equal.
      b. First and Second Coats
         1) Semigloss, acrylic latex, interior enamel applied at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.6 mils.
         2) Product: Kelly Moore, "1650 Acry-Plex Latex SemiGloss Enamel", or equal.

END OF SECTION

This Page Intentionally Left Blank

DOCUMENT 23 05 16

EXPANSION FITTINGS AND LOOPS FOR HVAC PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for designing, engineering, procuring, and installing all work related to piping and all ancillary connections, fittings, and transitions required to deliver a facility integrated heating hot water and on-demand system.

B. Work Included:

1. Flexible Expansion Loop (For Thermal and Seismic Applications), Steel Piping
2. Flexible Expansion Loop (For Thermal and Seismic Applications), Copper Piping
3. Accessories

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.
B. In addition, provide:
1. Design Data: Indicate selection calculations.
2. Expansion Joints: Indicate maximum temperature and pressure rating, and maximum expansion compensation.
3. Project Record Documents: Record installed locations of flexible pipe connectors, expansion joints, anchors, and guides.
4. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
a. Extra Packing for Packed Expansion Joints: One set for each joint.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Metraflex Company
B. Mason
C. Hyspan
D. Or approved equivalent.

2.02 FLEXIBLE EXPANSION LOOP (FOR THERMAL AND SEISMIC APPLICATIONS) - STEEL PIPING

A. Construction: Two flexible Sections of hose and braid, two 90 degree elbows and a 180 degree return designed so piping does not change direction, but maintains course along a single axis. Use Vee Loop where space is limited. No thrust loads to be imported to system support anchors or building structure.
B. Inner Hose: 304 stainless steel, close pitch, annular corrugated hose.
C. Exterior Sleeve: Single braided, 304 stainless steel.
D. Minimum Pressure Rating: 125 PSI at 70 degrees F.
E. Joint: ANSI Class 150 carbon steel flanges.
F. Size: Use pipe sized units.
G. Support: Center support at bottom of 180 degree return.
H. Drain/Air Release: At bottom of 180 degree return.
I. For Natural Gas: Approved by the CSA and complying with UL536.
J. Basis of Design: Metraflex Metraloop, for Vee configuration Mason-Mercer VFL.

2.03 FLEXIBLE EXPANSION LOOP (FOR THERMAL AND SEISMIC APPLICATIONS) - COPPER PIPING

A. Construction: Two flexible Sections of hose and braid, two 90 degree elbows and a 180 degree return designed so piping does not change direction, but maintains course along a single axis. Use Vee Loop where space is limited. No thrust loads to be imported to system support anchors or building structure.
B. Inner Hose: Bronze, close pitch, annular corrugated hose.
C. Exterior Sleeve: Braided bronze.
D. Minimum Pressure Rating: 125 PSI at 70 degrees F.
E. Joint: Sweat ends.
F. Size: Use pipe sized units.
G. Support: Center support at bottom of 180 degree return.
H. Basis of Design: Metraflex Metraloop, for Vee configuration Mason-Mercer VCPSB.

2.04 ACCESSORIES

A. Stainless Steel Pipe: ASTM A 269.
B. Pipe Alignment Guides:

1. Two piece welded steel with enamel paint, bolted, with spider to fit standard pipe, frame with four mounting holes, clearance for minimum 1-inch thick insulation, minimum 3-inches travel.

C. Swivel Joints:
   1. Fabricated steel, cast steel or bronze body, double ball bearing race, field lubricated, with rubber (Buna-N) O-ring seals.
   2. Basis of Design: OPW Engineered Systems.

PART 3 - EXECUTION

3.01 EXPANSION FITTING INSTALLATION

A. Install expansion fittings according to manufacturer's written instructions.
B. Install expansion fittings in sizes matching pipe size in which they are installed.
C. Align expansion fittings to avoid end-loading and torsional stress.
D. Install in accordance with EJMA (Expansion Joint Manufacturer's Association) Standards.

3.02 PIPE BEND AND LOOP INSTALLATION

A. Install pipe bends and loops cold-sprung in tension or compression as required to partly absorb tension or compression produced during anticipated change in temperature.
B. Attach pipe bends and loops to anchors.
   1. Steel Anchors: Attach by welding. Comply with ASME B31.9 and ASME Boiler and Pressure Vessel Code Section IX, "Welding and Brazing Qualifications."
   2. Concrete Anchors: Attach by fasteners. Follow fastener manufacturer's written instructions.

3.03 SWING CONNECTIONS

A. Connect risers and branch connections to mains with at least five pipe fittings, including tee in main.
B. Connect risers and branch connections to terminal units with at least four pipe fittings, including tee in riser.
C. Connect mains and branch connections to terminal units with at least four pipe fittings, including tee in main.

3.04 GUIDE INSTALLATION

A. Install guides on piping adjoining expansion fittings and loops.
B. Attach guides to pipe and secure to building structure.

3.05 ANCHOR INSTALLATION

A. Install anchors at locations to prevent stresses from exceeding those permitted by ASME B31.9 and to prevent transfer of loading and stresses to connected equipment.
B. Fabricate and install steel anchors by welding steel shapes, plates, and bars to piping and to structure. Comply with ASME B31.9 and AWS D1.1.
C. Construct concrete anchors of poured-in-place concrete of dimensions indicated and include embedded fasteners.
D. Install pipe anchors according to expansion fitting manufacturer's written instructions if expansion fittings are indicated.
E. Use grout to form flat bearing surfaces for expansion fittings, guides, and anchors installed on or in concrete.

3.06 PAINTING

A. Touching Up: Clean field welds and abraded areas of shop paint. Paint exposed areas immediately after erecting hangers and supports. Use same materials as used for shop painting. Comply with SSPC-PA1 requirements for touching up field-painted surfaces.
    1. Apply paint by brush or spray to provide a minimum dry film thickness of 2.0 mils (0.05 mm).
B. Galvanized surfaces: Clean welds, bolted connections, and abraded areas and apply galvanizing-repair paint to comply with ASTM A780.

END OF SECTION

DOCUMENT 23 05 19

METERS AND GAUGES FOR HVAC PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for designing, engineering, procuring, and installing all work related to meters and gauges required to deliver a facility integrated heating hot water and on-demand system.

B. Work Included:
   1. Pressure Gauges
   2. Thermometers
   3. Dial Thermometers
   4. Separable Sockets
   5. Thermometer Wells
   6. Duct Thermometer Support Flanges
   7. Differential and Filter Pressure Gauges
   8. Pressure-Gauge Fittings
   9. Test Plugs

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Pressure Gauges:
   1. Dwyer Instruments, Inc.
   2. Moeller Instrument Co., Inc.
   3. Omega Engineering, Inc.
   4. Trerice
   5. Or approved equivalent.

B. Thermometers:
   1. Ashcroft
   2. Trerice
   3. Weiss
   4. Marshaltown
   5. Weksler
   6. Or approved equivalent.

C. Differential and Filter Pressure Gauges:
   1. Dwyer
   2. Or approved equivalent.

2.02 PRESSURE GAUGES

A. ASME B40.100, phosphor-bronze bourdon type, dry type.
   1. Case: Cast aluminum, stem-mounted, flangeless.
   2. Size: 4-1/2 inch diameter.
   3. Window: Clear glass.
   4. Connector: Brass.
   5. Scale: White aluminum with black graduation and markings.
   6. Pointer: Black, adjustable.
   7. Mid-Scale Accuracy: One percent.
   8. Scale: Psi.
   9. Basis of Design: Trerice Model 600CB.

2.03 THERMOMETERS

A. Thermometers - Adjustable Angle: Red-or blue-appearing organic liquid in glass: ASTM E 1; lens front tube, cast aluminum case with enamel finish, cast aluminum adjustable joint with positive locking device; adjustable 360 degrees in horizontal plane, 180 degrees in vertical plane.
   1. Size: 9-inch scale.
   2. Window: Acrylic.
   3. Scale: Aluminum, white background, black graduations and markings.
   4. Stem: 3/4-inch NPT brass (aluminum for installation in air ducts).
   5. Accuracy: 2 percent, per ASTM E 77.
   6. Calibration: 0-160 with 2 Degrees F. graduations.
   7. Basis of Design: Trerice BX9.

2.04 DIAL THERMOMETERS

A. Thermometers: ASTM E 1, cast aluminum case, vapor or liquid actuated with brass or copper bulb, copper or bronze braided capillary, white with black markings and black pointer, glass lens, adjustable 360 degrees in horizontal plane. 180 degrees in vertical plane.
   1. Size: 4-1/2-inch diameter dial.
   2. Lens: Clear glass.
   3. Length of Capillary: Minimum 6-feet (for remote reading if required).
   4. Accuracy: 2 percent.
   5. Calibration: 2 Degrees F. graduations.
   6. Basis of Design: Trerice Model 80742.

2.05 SEPARABLE SOCKETS

A. Description: Fitting with protective socket for installation in threaded pipe fitting to hold fixed thermometer stem.
   1. Material: Brass, for use in copper piping.
   2. Material: Stainless steel, for use in steel piping.
   3. Extension-Neck Length: Nominal thickness of 2-inches, but not less than thickness of insulation. Omit extension neck for sockets for piping not insulated.
   4. Insertion Length: To extend to center of pipe.
   5. Cap: Threaded, with chain permanently fastened to socket.
   6. Heat Transfer Fluid: Oil or graphite.

2.06 THERMOMETER WELLS

A. Description: Fitting with protective well for installation in threaded pipe fitting to hold test thermometer.
   1. Material: Brass for use in copper piping.
   2. Material: Stainless steel, for use in steel piping.
   3. Extension Neck Length: Nominal thickness of 2-inches, but not less than thickness of insulation. Omit extension neck for wells for piping not insulated.
   4. Insertion Length: To extend to center of pipe.
   5. Cap: Threaded, with chain permanently fastened to socket.
   6. Heat Transfer Fluid: Oil or graphite.

2.07 DUCT THERMOMETER SUPPORT FLANGES

A. Description: Flanged fitting bracket for mounting in hole of duct, with threaded end for attaching thermometer.
   1. Extension Neck Length: Nominal thickness of 2-inches, but not less than thickness of exterior insulation.
   2. Insertion-Neck Length: Nominal thickness of 2-inches, but not less than thickness of insulation lining.

2.08 DIFFERENTIAL AND FILTER PRESSURE GAUGES

A. Service: Air and non-combustible, compatible gases (Natural Gas option available.)
B. Wetted Materials: Consult factory.
C. Housing: Die cast aluminum case and bezel, with acrylic cover. Exterior finish is coated gray to withstand 168 hour salt spray corrosion test.
D. Accuracy: Plus or minus 2 percent of full scale throughout range at 70 degrees F.
E. Pressure Limits: Minus 20 Hg to 15 PSIG.
F. Overpressure: Relief plug opens at approximately 25 PSIG standard gauges only.
G. Temperature Limits: 20 to 140 degrees F.
H. Size: 4-inch diameter dial face.
I. Mounting Orientation: Diaphragm in vertical position. Consult factory for other position orientation.
J. Process Connections: 1/8-inch female NPT duplicate high and low pressure taps, one pair side and one pair back.
K. Standard Accessories: Two 1/8-inch NPT plugs for duplicate pressure taps, two 1/8-inch pipe thread to rubber tubing adapter and three flush mounting adapters with screws.

2.09 PRESSURE-GAUGE FITTINGS

A. Valves: NPS 1/4 (DN8) brass or stainless-steel needle type.
B. Syphons: NPS 1/4 (DN8) coil of brass turbine with threaded ends.
C. Snubbers: ASME B40.5, NPS 1/4 (DN8) brass bushing with corrosion-resistant porous-metal disc of material suitable for system fluid and working pressure.

2.10 TEST PLUGS

A. Description: Nickel-plated, brass-body test plug in NPS 1/2 (DN15) fitting.
B. Body: Length as required to extend beyond insulation.
C. Pressure Rating: 500 PSIG (3450 kPa) minimum.
D. Core Inserts: One or two self-sealing valves, suitable for inserting 1/8-inch OD probe from dial-type thermometer or pressure gauge.
E. Core Material for Air, Water, Oil and Gas: 20 to 200 degrees F (Minus 7 to plus 93 Degrees Celsius), chlorosulfonated polyethylene synthetic rubber.
F. Test Plug Cap: Gasketed and threaded cap, with retention chain or strap.
G. Test Kit: Pressure gauge and adapter with probe, two bimetal dial thermometers, and carrying case.
    1. Pressure Gauge and Thermometer Ranges: Approximately two times the system's operating conditions.
    2.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install thermometers in piping systems in sockets in short couplings. Enlarge pipes smaller than 2-1/2-inch for installation of thermometer sockets. Ensure sockets allow clearance from insulation.
B. Where adequate space is not available, use turbine flow meters specifically designed for short pipe lengths. Use bi-directional turbine flow meters where indicated on piping diagrams.
C. Install turbine and thermal energy meters in accordance with manufacturer's instructions, and as shown on drawings. Provide recommended upstream and downstream straight pipe length for accurate reading.
D. Temperature Gauges:
    1. Install in vertical upright position, tilted so as to be easily read at floor.
    2. Thermometer Wells: Install in piping in vertical upright position. Fill well with oil or graphite, secure cup.
E. Pressure Gauges:
    1. General: Install pressure gauges in piping tee with pressure gauge cock, located on pipe at most readable position, visible from floor.
    2. Locations: Install in the following locations as a minimum, and elsewhere as indicated.
        a. At each pump inlet and outlet.
        b. At inlet and discharge of each pressure reducing valve.
        c. At makeup water service outlets.
        d. At inlet and discharge of each chiller and boiler.
F. Provide instruments with scale ranges selected according to service with largest appropriate scale.
G. Install gauges and thermometers in locations where they are easily read from normal operating level. Install vertical to 45 degrees off vertical.
H. Adjust gauges and thermometers to final angle, clean windows and lenses, and calibrate to zero.
I. Locate test plugs adjacent to thermometers and thermometer sockets, adjacent to pressure gauges and pressure gauge taps, adjacent to control device sockets, or where indicated.
J. Thermometer Range/Graduations:

B. System	C. Temperature (degree F)	D. Graduations (degrees F)
E. Heating Water	F. 30-240	G. 2

K. Pressure Gauge Range/Graduations:

H. System	I. Pressure (PSI)	J. Graduations (PSI)
K. Heating Water	L. 0-100	M. 1

END OF SECTION

DOCUMENT 23 05 23

GENERAL-DUTY VALVES FOR HVAC PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for designing, engineering, procuring, and installing all valves as required for maintenance and operation the existing and new heating hot water systems and on-demand systems.

B. Work Included designing, furnishing, and installing, where applicable:
   1. Valves, General
   2. Globe Valves
   3. Balancing Valves
   4. Ball Valves
   5. Butterfly Valves
   6. Swing Check Valves

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 LEFT INTENTIONALLY BLANK

1.04 SUBMITTALS

A. Submittals as required by:
   1. Section 23 00 00 HVAC Basic Requirements
   2. Division 01 Documents

1.05 QUALITY ASSURANCE

A. Quality assurance as required by the contract documents.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. As listed in Articles below.

B. Or approved equivalent.

2.02 VALVES - GENERAL

A. General:
   1. Sizes: Unless otherwise indicated, provide valves of same size as upstream pipe size.
   2. Operators: Provide handwheels, fastened to valve stem, for valves other than quarter-turn. Provide lever handle for quarter-turn valves 6-inches and smaller. Provide gear operators for quarter-turn valves 8-inches and larger and plug valves 5-inches and larger. Provide chain-operated sheaves and chains for overhead valves installed over 5-feet above finished floor.
   3. Valve Identification: Manufacturer's name (or trademark) and pressure rating clearly marked on valve body.

B. Valves in Insulated Piping: With 2-inch stem extension and following features:
   1. Ball Valves: With extended operating handle of non-thermal-conductive material, and protective sleeve that allows operation of valve without breaking the vapor seal or disturbing insulation and memory stops that are fully adjustable after insulation is applied.
      a. Basis of Design Product: Subject to compliance with requirements. Provide NIBCO Nib-seal handle extension or comparable product by one of the following.
         1) Conbraco Industries, Inc.: Apollo Div.
   2. Butterfly Valves: With extended neck.

C. Valve-End Connections:
   1. Flanged: With flanges according to ASME B16.1 for iron valves, ASME B16.5 for steel valves.
   2. Solder Joint: With sockets according to ASME B16.18.
   3. Threaded: With thread according to ASME B1.20.1.

D. Valve Bypass and Drain Connections: MSS SP-45.

E. Building Service:
   1. Shutoff and Isolation Valves:
      a. Pipe Sizes 3-inches and Smaller: Ball valve.
      b. Pipe Sizes 4-inches and Larger: Butterfly valve.
   2. Drain Service; All Pipe Sizes: Ball valves.
   3. Strainer Blow-Off: Ball valve.
   4. Bypass Around Pressure-Reducing Valves: Globe valves.
   5. Check Valves: Swing.

2.03 GLOBE VALVES

A. 3-inches and Smaller: Class 200, 200 lb. SWP, MSS SP-80, ASTM B61, cast bronze body, bronze bonnet, bronze disc, bronze packing gland, non-asbestos packing and aluminum or malleable iron hand-wheel.

2.04 BALANCING VALVES

A. Maximum 125 PSIG System Working Water Pressure.
B. Automatic Balance Valve:
    1. 1/2-inch and Larger: Construction and attachment style as required by piping system. Internal working parts and removable flow cartridge to be stainless steel. Valves be factory set and automatically limit flow to specified capacities with 5 percent plus or minus accuracy over entire operating pressure differential.
    2. Manufacturers: Flow Design Inc., Griswold, Hays, Nexus or approved equivalent.

2.05 BALL VALVES

A. 2-1/2-inches and Smaller: MSS SP-110-80, 150 PSI, bronze body, threaded ends, brass or stainless steel ball, Teflon seat, bronze stem, extended steel handle, full port. Nibco T-595-Y.

2.06 BUTTERFLY VALVES

A. Select lug type valves.
B. 6-inches and Smaller: 200 PSI, ductile iron body, extended neck, stainless steel stem with aluminum bronze disc, reinforced resilient EPDM seat, memory stop control, lever handle through 5-inches, size and worm gear operator for 6-inches and larger. Mount stem in horizontal position. Manual lever and lock Nibco LD2000, for mechanical coupling fittings. MSS SP-67, Type 1.

2.07 SWING CHECK VALVES

A. 2-inches and Smaller: Class 125, bronze body, horizontal swing, regrinding type, Y-pattern, renewable disc. Nibco 413. MSS SP-80, Type 4.
B. 2-1/2-inches and Larger: Class 125, iron body, bolted bonnet, horizontal swing, renewable seat and disc, flanged ends. Nibco F918. MSS SP-71, Type 1.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Prepare valves for shipping as follows:
    1. Protect internal parts against rust and corrosion.
    2. Protect threads, flange faces, and weld ends.
    3. Set angle and globe valves closed to prevent rattling.
    4. Set ball open to minimize exposure of functional surfaces.
    5. Set butterfly valves closed or slightly open.
    6. Block check valves in either closed or open position.
B. Use the following precautions during storage:
    1. Maintain valve end protection.

2. Store valves indoors and maintain at higher than ambient dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.
D. Do not attempt to repair defective valves; replace with new valves.
E. Install valves where required for proper operation of piping and equipment, including valves in branch lines where necessary to isolate Sections of piping. Locate valves so as to be accessible and so that separate support can be provided when necessary.
F. Install valves with stems pointed up, in vertical position where possible, but in no case with stems pointed downward from horizontal plane unless unavoidable. Install valve drains with hose end adapter and cap on chain for each valve that must be installed with stem below horizontal plane. Ensure installation provides full stem movement.
G. Insulation: Where insulation is indicated, install extended stem valves, arranged in proper manner to receive insulation.
H. Mechanical Actuators: Install with chain operators where indicated. Extend chains to 5-feet above floor and hook to clips to clear aisle passage.
I. Stem Selection: Outside screw and yoke stems, except provide inside screw, nonrising stem where space prevents full opening of OS&Y valves.
J. Seats: Renewable seats, except where otherwise indicated.
K. Boiler isolation valves with adjustable packing gland per CSD-1.
L. Installation of Check Valves:
    1. Swing Check Valves: Install in horizontal position with hinge pin horizontally perpendicular to centerline of pipe. Install for proper direction of flow. Only install where there is ten pipe diameters of straight pipe upstream of valve.

3.02 VALVE ADJUSTING AND CLEANING

A. Inspect valves for leaks. Adjust or replace packing to stop leaks. Replace valve if leak persists.
B. Valve Identification: Tag valves per Section 23 05 53, Identification for HVAC Piping, Ductwork and Equipment.

3.03 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

A. If valve applications are not indicated, use the following:
    1. Shutoff Service: Ball or butterfly valves.
    2. Butterfly Valve Dead-End Service: Single-flange (lug) type.
    3. Throttling Service: Balancing valves.
    4. Pump-Discharge Check Valves:
        a. 2-inches and Smaller: Swing or spring-loaded lift check valves with bronze disc.
        b. 2-1/2-inches and Larger: Swing check valves with lever and weight or with spring or wafer - seat check valves.
B. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

C. Valves, except wafer types, with the following end connections.
   1. For Copper Tubing: 2-inches and Smaller. Threaded ends.
   2. For Copper Tubing: 2 1/2-inches to NPS 4-inches. Flanged ends.
   3. For Copper Tubing: 5-inches and Larger: Flanged ends.
   4. For Steel Piping: 2-inches and Smaller: Threaded ends.
   5. For Steel Piping: 2 1/2-inches to NPS 4-inches: Flanged ends.
   6. For Steel Piping: 5-inches and Larger: Flanged ends.

3.04 BACKFLOW PREVENTERS

A. Install where indicated, and where required by code. Where practical, locate in same room as equipment being protected.
B. Submit product cut sheets to local AHJ for approval prior to purchase.
C. Install as close to wall as possible with clearances for access and maintenance as required by AHJ.
D. Coordinate exact location of installation and type of backflow device serving a particular piece of equipment with AHJ and Design Builder prior to purchase and installation.
E. Provide wall/floor brackets that are of fully welded, hot dipped galvanized construction, fabricated to meet field conditions. Mount backflow preventer to brackets using cadmium plated "U" type bolts and nuts.
F. Contact: Contact local water district/backflow specialist and request backflow installation literature. Install backflow devices per UPC and local water district/backflow specialist requirements.
G. Route waste piping from air gap waste fitting concealed within walls to point of air gap termination at indirect waste receptor.

3.05 PRESSURE REGULATING

A. Provide inlet and outlet ball valves, and globe valve bypass. Provide pressure gauge on valve outlet.
B. Provide factory startup on automatic control valves.

3.06 BALANCING VALVES

A. Install with flow in the direction of the arrow on the valve body and installed at least five pipe diameters downstream from any fitting, and at least ten pipe diameters downstream from any pump. Two pipe diameters downstream from the balancing valve should be free of any fittings. When installed, easy and unobstructed access to the valve handwheel and metering ports for adjustment and measurement are to be provided. Mounting of valve in piping must prevent sediment build-up in metering ports. Install devices in accordance with manufacturer's recommendations to automatically balance water flow in piping loops as indicated.
B. For venturi valves less than 1-1/2-inch pipe size, provide valve sized for flow to coil. Provide transitions on both inlet and outlet of valve if valve is less than line size.

END OF SECTION

DOCUMENT 23 05 29

HANGERS AND SUPPORTS FOR HVAC PIPING, DUCTWORK AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for designing, engineering, procuring, and installing all work related to hangers and supports for piping and low voltage (up to 600V) systems.

B. Work Included:
   1. Hangers and Supports
   2. Pipe Hangers and Supports
   3. Building Attachments
   4. Flashing
   5. Miscellaneous Metal and Materials

C. This is a performance specification and Design Builder is responsible for design task, engineering, and installation.

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by the contract documents.
B. In addition, meet the following:
   1. ASCE 7-10, Minimum Design Loads for Buildings and Other Structures.
   2. Terminology: As defined in MSS SP-90 "Guidelines on Terminology for Pipe Hangers and Supports".
   3. Install ductwork and piping per SMACNA's requirements.
   4. Hanger spacing installation and attachment to meet all manufacturer’s requirements and Code requirements.

1.04 QUALITY ASSURANCE

A. Quality assurance as required for review and approval by Owner.
B. In addition, meet the following:
   1. Welding:
      a. Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications.
   2. Welding for Hangers:

a. Qualify procedures and personnel according to AWS D9.1, Sheet Metal Welding Code for duct joint and seam welding.

3. Engineering Responsibility: Design and preparation of Shop Drawings and calculations for each multiple pipe support, trapeze, duct support equipment hangers/supports, and seismic restraint by a qualified Structural Professional Engineer.
    a. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of hangers and supports that are similar to those indicated for this Project in material, design, and extent.
4. Manufacturers regularly engaged in the manufacture of bolted metal framing support systems, whose products have been in satisfactory use in similar service for not less than 10 years.
5. Support systems to be supplied by a single manufacturer.

1.05 WARRANTY

A. Warranty of materials and workmanship as required by the contract.

1.06 PERFORMANCE REQUIREMENTS

A. General - Provide pipe, ductwork and equipment hangers and supports in accordance with the following:
    1. When supports, anchorages, and seismic restraints for equipment, and supports, anchorages, and seismic restraints for conduit, piping, and ductwork are not shown on the Drawings, the Design Builder is responsible for their design.
    2. Connections to structural framing not to introduce twisting, torsion, or lateral bending in the framing members. Provide supplementary steel as required.
B. Engineered Support Systems:
    1. Support frames such as pipe racks or stanchions for piping,ductwork and equipment which provide support from below.
    2. Equipment, ductwork and piping support frame anchorage to supporting slab or structure.
C. Provide channel support systems, for piping to support multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.
D. Provide heavy-duty steel trapezes for piping to support multiple pipes capable of supporting combined weight of supported systems, system contents, and test water.
E. Provide seismic restraint hangers and supports for piping, ductwork and equipment. See Section 23 05 48.
F. Obtain approval from AHJ for seismic restraint hanger and support system to be installed for piping and equipment. See Section 23 05 48.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Hangers and Supports:
   1. Anvil International
   2. B-Line Systems, Inc.
   3. Erico Co., Inc.
   4. Nelson-Olsen Inc.
   5. Unistrut corp.
   6. Or approved equivalent.

B. Pipe Hangers and Supports:
   1. Anvil International
   2. B-Line Systems, Inc.
   3. Erico Co., Inc.
   4. Nelson-Olsen Inc.
   5. Snappitz Thermal Pipe Shield Manufacturing
   6. Unistrut corp.
   7. Or approved equivalent.

C. Building Attachments:
   1. Anchor-It
   2. Gunnebo Fastening Corp.
   3. Hilti Corporation
   4. ITW Ramset/Red Head
   5. Masterset Fastening Systems, Inc.
   6. Or approved equivalent.

D. Flashing:
   1. Manufacturer not applicable.

E. Miscellaneous Metal and Materials:
   1. Manufacturer not applicable.

2.02 HANGERS AND SUPPORTS

A. Hanger Rods:
   1. Hanger rods continuously threaded or threaded ends only in concealed spaces and threaded ends only in exposed spaces; finish electro-galvanized or cadmium-plated in concealed spaces and prime painted in exposed spaces; sizes per MSS.

B. Hanger Rod Couplings:
   1. Anvil Figure 136, B-Line Figure B3220, or approved equivalent; malleable iron rod coupling with elongated center sight gap for visual inspection; to have same finish as hanger rods.

C. Channel Hanging System:
   1. Channel Type Pipe Hanging System: Framing members No. 12 gauge formed steel channels, 1-5/8-inch square, conforming to ASTM A570 GR33, one side of

channel to have a continuous slot within turned lips; framing nut with grooves and spring 1/2-inch size, conforming to ASTM 675 GR60; screws conforming to ASTM A307; fittings conforming to ASTM A575; parts enamel painted or electro-galvanized.

2. Concrete Inserts: Malleable iron body, hot tipped galvanized finish. Lateral adjustment. MSS Type 18.

D. Continuous Concrete Insert: Steel construction, minimum 12 gauge. Electrogalvanized finish. Pipe clamps and insert nuts to match.

2.03 PIPE HANGERS AND SUPPORTS

A. Pipe Hangers:
   1. Pipe Rings for Hanger Rods: Pipe sizes 2-inch and smaller, Adjustable swivel ring hanger, UL listed. Erico 100 or 101, Anvil Figures 69 or 104, or approved equivalent. Pipe sizes 2-1/2-inches and larger, clevis type hangers with adjustable nuts on rod, UL listed. Anvil figure 260, Erico 400, or approved equivalent. Pipe hangers to have same finish as hanger rods.

B. Pipe Saddles and Shields:
   1. Factory fabricated saddles or shields under piping hangers and supports for insulated piping.
   2. Size saddles and shields for exact fit to mate with pipe insulation. 1/2 round, 18 gauge, minimum 12-inches in length (4-inch pipe and larger to be three times longer than pipe diameter).

C. Riser Clamps:
   1. Steel, UL listed. MSS Type 8. Erico 510 or 511. Copper coated; Erico 368.

D. Pipe Slides:
   1. Anvil, reinforced Teflon slide material (3/32-inch minimum thickness) bonded to steel; highly finished steel or stainless steel contact surfaces to resists corrosion; 60-80 PSI maximum active contact surface loading; steel parts 3/16-inch minimum thickness; attachment to pipe and framing by welding.

E. Pipe Guides:
   1. Furnish and install pipe guides on continuous runs where pipe alignment must be maintained. Minimum two on each side of expansion joints, spaced per manufacturer's recommendations for pipe size. Fasten guides securely to pipe and structure. Contact with chilled water pipe not to permit heat to be transferred in sufficient quantity to cause condensation on any surface.
   2. Furnish and install guides approximately 4 pipe diameters (first guide) and 14 diameters (second guide) away from each end of expansion joints. Guides are not to be sued as supports and are in addition to other pipe hangers and supports.

F. Pipe Roller Hangers:
   1. Adjustable roller hanger. Black steel yoke, cast iron roller. MSS Type 41.

G. Below Ground Pipe Supports:

1. Pipe Hangers All Sizes: Adjustable Clevis type, Federal Specification WW-H-171 (Type 1), UL listed, stainless steel Type 304. MSS Type 1. Erico 406.
2. Rod: 5/8-inch stainless steel Type 18-8.
3. Eyebolt: Stainless steel Type 18-8.
4. Nuts and Washers: Stainless steel Type 18-8.

H. Thermal Hanger Shield Inserts:
1. 100-PSI (690-kPa) minimum compressive strength calcium silicate insulation, encased in sheet metal shield or polyisocyanurate rigid foam exceeding the load bearing weight of the pipe at the hanger point with a PVC vapor barrier.
2. Material for Cold Piping: Water-repellent-treated, ASTM C533, Type I calcium silicate with vapor barrier or polyisocyanurate rigid foam with a PVC vapor barrier.
3. Material for Hot Piping: Water-repellent-treated ASTM C533, Type 1 calcium silicate or polyisocyanurate rigid foam with a PVC vapor barrier.
4. For Trapeze or Clamped System: Insert and shield cover entire circumference of pipe.
5. For Clevis or Band Hanger: Insert and shield cover lower 180 degrees of pipe.
6. Insert Length: Extend 2-inches beyond sheet metal shield for piping operating below ambient air temperature.
7. Thermal hanger shield insulation operating temperature: Meet or exceed fluid temperature in pipe.

I. Freestanding Roof Supports:
1. Polyethylene high-density UV resistant quick "pipe" block with foam pad.

2.04 BUILDING ATTACHMENTS

A. Beam Clamps:
1. MSS Type 19 and 23, wide throat, with retaining clip.
2. Universal Side Beam Clamp: MSS Type 20.

B. Powder-Actuated Drive Pin Fasteners:
1. Powder-Actuated Drive-Pin Fasteners: Powder actuated type, drive pin attachments with pull-out and shear capacities appropriate for supported loads and building materials where used.

C. Anchor Bolts:
1. General: Anchor supports to existing masonry, block and tile walls per anchoring system manufacturer's recommendations or as modified by project structural engineer. Insert-type attachments with pull-out and shear capacities appropriate for supported loads and building materials where used.
2. Anchor Bolts (Cast-In-Place): Steel bolts, ASTM A307. Nuts to conform to ASTM A194. Design values for shear and tension not more than 80 percent of the allowable listed loads.

3. Anchor (Expansion) Bolts: Carbon steel to ASTM A307; nut to conform to ASTM A194; drilled-in type. Design values for shear and tension not more than 80 percent of the allowable listed loads.
4. Anchor (Adhesive) Bolts: Consisting of two-part adhesive cartridge and zinc-plated Type A307 steel anchor bolt rod assembly with ASTM A194 nut.

2.05 FLASHING

A. Steel Flashing: 26 gauge galvanized steel.
B. Safes: 8 mil thick neoprene.
C. Caps: Steel, 22 gauge minimum, 16 gauge at fire-resistant structures.

2.06 MISCELLANEOUS METAL AND MATERIALS

A. Miscellaneous Metal: Provide miscellaneous metal items specified hereunder, including materials, fabrication, fastenings and accessories required for finished installation, where indicated on drawings or otherwise not shown on drawings that are necessary for completion of the project. The Design Builder is responsible for their design.
    1. Fabricate miscellaneous units to size shapes and profiles indicated or, if not indicated, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars, of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.
B. Structural Shapes: Where miscellaneous metal items are needed to be fabricated from structural steel shapes and plates, provide members constructed of steel conforming with requirements of ASTM A36 or approved equivalent.
C. Steel Pipe: Provide seamless steel pipe conforming to requirements of ASTM A53, Type S, Grade A, or Grade B. Weight and size required as specified.
D. Fasteners: Provide fasteners of types as required for assembly and installation of fabricated items; surface-applied fasteners are specified elsewhere.
E. Bolts: Low carbon steel externally and internally threaded fasteners conforming with requirements of ASTM A307; include necessary nuts and plain hardened washers. For structural steel elements supporting mechanical material or equipment from building structural members or connection thereto, use fasteners conforming to ASTM A325.
F. Miscellaneous Materials: Provide incidental accessory materials, tools, methods, and equipment required for fabrication.
G. Provide hot dipped galvanized components for items exposed to weather. Use materials compatible with system being supported (i.e. aluminum for aluminum ductwork, stainless steel for stainless steel ductwork).
H. Use straps, threshold rods and wire with sizes required by SMACNA to support ductwork.
I. Grout: ASTM C1107, Grade B, factory mixed and packaged, nonshrink and nonmetallic, dry, hydraulic-cement grout.

1. Characteristics: Post hardening and volume adjusting; recommended for both interior and exterior applications.
2. Properties: Nonstaining, noncorrosive, and non gaseous.
3. Design Mix: 5000-PSI (34.5-MPa), 28-day compressive strength.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

A. Verify building materials to have hangers and attachments affixed in accordance with hangers to be used. Provide supporting calculations.
B. Examine Drawings and coordinate for verification of exact locations of fire and smoke rated walls, partitions, floors and other assemblies. Indicate, by shading and labeling on Record Drawings such locations and label as "1-Hour Wall," "2-Hour Fire/Smoke Barrier," and the like. Determine proper locations for piping penetrations. Set sleeves in place in new floors, walls or roofs prior to concrete pour or grouting.
C. Install hangers, supports, anchors and sleeves after required building structural work has been completed in areas where the work is to be installed. Coordinate proper placement of inserts, anchors and other building structural attachments.
D. Equipment Clearances: Do not route ductwork, equipment, or piping through electrical rooms, elevator equipment rooms, IT rooms, MPOE rooms, or other electrical or electronic equipment spaces and enclosures and the like. Within equipment rooms, provide minimum 3-feet lateral clearance from all sides of electric switchgear panels. Do not route ductwork, equipment, or piping above any electric power or lighting panel, switchgear, or similar electric device. Coordinate with Electrical and coordinate exact ductwork, equipment or pipe routing to provide proper clearance with such items.

3.02 HANGERS AND SUPPORTS INSTALLATION

A. Hang rectangular sheet-metal ducts with a cross Sectional area of less than 7 SF with galvanized strips of No. 16 USS gauge steel 1-inch wide, and larger ducts with steel angles and adjustable hanger rods similar to piping hangers. Support at a maximum of 8-feet on center.
B. Support horizontal ducts within 24-inches of each elbow and within 48-inches of each branch intersection.
C. Provide aluminum supports for aluminum ductwork.
D. Provide stainless steel supports for stainless steel ductwork.
E. Support vertical ducts at maximum intervals of 16-feet and at each floor.
F. Install upper attachments to structures with an allowable load not exceeding one-fourth of failure (proof-test) load.
G. Use double nuts and lock washers on threaded rod supports.
H. Floor supports in mechanical rooms to be elevated 1-inch above finish floor and void space filled with masonry grout.

I. Anchor ducts securely to building in such a manner as to prevent transmission of vibration to structure. Do not connect duct hanger straps to roof deck. Do not support ducts from other ducts, piping or equipment.
J. Attach strap hangers installed flush with end of sheet-metal duct run to duct with sheet-metal screws.
K. Construct exterior ductwork or ductwork which is otherwise exposed to weather watertight and slope 1/4-inch per foot to avoid standing water.
L. Exposed ductwork hung in clean areas such as sanitary areas, pharmaceutical areas, wash down areas or food process areas to be installed using double end, food grade trapeze hanger rods suitable for use with food grade strut.
M. Channel Support System Installation: Arrange for grouping of parallel runs of piping and support together on field-assembled channel systems.
    1. Field assemble and install according to manufacturer's written instructions.
N. Install hangers and supports complete with necessary inserts, bolts, rods, nuts, washers, and other accessories.
O. Install hangers and supports to allow controlled thermal and seismic movement of piping systems, to permit freedom of movement between pipe anchors, and to facilitate action of expansion joints, expansion loops, expansion bends, and similar units.
P. Load Distribution: Install hangers and supports so that piping live and dead loads and stresses from movement will not be transmitted to connected equipment.
Q. Adjust hangers so as to distribute loads equally on attachments. Provide grout under supports to bring piping, ductwork and equipment to proper level and elevations.
R. Prime paint ferrous nongalvanized hangers, accessories, and supplementary steel which are not factory painted.

3.03 PIPE HANGERS AND SUPPORTS INSTALLATION

A. Horizontal Piping Hangers and Supports - Horizontal and Vertical Piping, and Hanger Rod Attachments:
    1. Factory fabricated horizontal piping hangers and supports complying with MSS SP-58, to suit piping systems and in accordance with manufacturer's published product information.
    2. Use only one type by one manufacturer for each piping service.
    3. Select size of hangers and supports to exactly fit pipe size for bare piping, and to exactly fit around piping insulation with saddle or shield for insulated piping.
    4. Pipe support spacing (pipe supported in ceiling or floor-supported) to meet latest applicable Code and manufacturer's requirements.
    5. Provide copper-plated hangers and supports for uninsulated copper piping systems.
B. Plumbers Tape not permitted as pipe hangers or pipe straps.
C. Comply with MSS SP-58. Install hangers, supports, clamps, and attachments as required to properly support piping from building structure. For horizontally hung grooved-end piping, provide a minimum of 2 hangers per pipe Section.

D. Pipe Ring Diameters:
    1. Uninsulated and Insulated Pipe, except where oversized pipe rings are specified: Ring inner diameter to suit pipe outer diameter.
        a. Insulated Piping Where Oversized Pipe Rings are Specified and Vibration Isolating Sleeves: Ring inner diameter to suit outer diameter of insulation or sleeve.
E. Oversize Pipe Rings: Provide oversize pipe rings of 2-inch and larger size.
F. Pipe Support Brackets: Support pipe with pipe slides.
G. Steel Backing in Walls: Provide steel backing in walls to support fixtures and piping hung from steel stud walls.
H. Pipe Guides:
    1. Install on continuous runs where pipe alignment must be maintained. Minimum two on each side of expansion joints, spaced per manufacturer's recommendations for pipe size. Fasten guides to pipe structure. Contact with chilled water pipe does not permit heat to be transferred in sufficient quantity to cause condensation on any surface.
    2. Install approximately 4 pipe diameters (first guide) and 14 diameters (second guide) away from each end of expansion joints. Do not use as supports. Provide in addition to other required pipe hangers and supports.
I. Heavy-Duty Steel Trapeze Installation: Arrange for grouping of parallel runs of horizontal piping and support together on field fabricated, heavy-duty trapezes.
    1. Pipes of Various Sizes: Support together and space trapezes for smallest pipe size or install intermediate supports for smaller diameter pipes as specified above for individual pipe hangers.
    2. Field fabricate from ASTM A 36/A 36M, steel shapes selected for loads being supported. Weld steel according to AWS D-1.1.
J. Group parallel runs of horizontal piping to be supported together on trapeze-type hangers. Maximum spacings: MSS SP-58.
K. Where piping of various sizes is to be supported together by trapeze hangers, space hangers for smallest pipe size or install intermediate supports for smaller diameter pipe.
L. Do not support piping from other piping.
M. Fire protection piping will be supported independently of other piping.
N. Prevent electrolysis in support of copper tubing by use of hangers and supports which are copper plated.
O. Pipe Slopes: Install hangers and supports to provide indicated pipe slopes and so maximum pipe deflections allowed by ASME B31.9, "Building Services Piping" is not exceeded.
P. Insulated Piping:
    1. Attach clamps and spacers to piping.
    2. Piping Operating above Ambient Air Temperature: Clamp may project through insulation.
    3. Piping Operating below Ambient Air Temperature: Use thermal-hanger shield insert with clamp sized to match OD of insert.

4. Do not exceed pipe stress limits according to ASME B31.9.
5. Install MSS SP-58, Type 39 protection saddles, if insulation without vapor barrier is indicated. Fill interior voids with insulation that matches adjoining insulation.
6. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN100) and larger if pipe is installed on rollers.
7. Install MSS SP-58, Type 40 protective shields on cold piping with vapor barrier. Shields to span arc of 180 degrees.
8. Option: Thermal-hanger shield inserts may be used. Include steel weight-distribution plate for pipe NPS 4 (DN100) and larger if pipe is installed on rollers.
9. Shield Dimensions for Pipe, not less than the following:
10. NPS 1/4 to NPS 3-1/2 (DN8 to DN 90): 12-inches long and 0.048-inch thick.
11. NPS 4 (DN100): 12-inches long and 0.06-inch thick.
12. NPS 5 and NPS 6 (DN125 and DN150): 18-inches long and 0.06-inch thick.
13. NPS 8 to NPS 14 (DN200 to DN350): 24-inches long and 0.075-inch thick.
14. NPS 16 to NPS 24 (DN400 to DN600): 24-inches long and 0.105-inch thick.
15. Pipes NPS 8 (DN200) and Larger: Include wood inserts.
16. Insert Material: Length at least as long as protective shield.
17. Thermal-Hanger Shields: Install with insulation same thickness as piping insulation.

B. Pipe Anchors:
   1. General: Provide anchors to fasten piping which is subject to expansion and contraction, and adjacent to equipment to prevent loading high forces onto the equipment.

C. Pipe Curb Assemblies:
   1. Provide prefabricated units for roof membrane and insulation penetrations related to equipment. Coordinate with roofing system. Set supports on the structural deck. Do not set supports on insulation or roofing. Provide level supports by prefabricated pitch built into the curb.
      a. Pipe Curb Assemblies: Provide for piping and electrical conduit which penetrates the structural roof deck to service equipment above the roof level (i.e., piping, electrical power and control wiring). Meet requirements of roof warranty.

D. Escutcheon Plates: Install around horizontal and vertical piping at visible penetrations through walls, partitions, floors, or ceilings, including penetrations through closets, through below ceiling corridor walls, and through equipment room walls and floors.

E. Vertical Piping:
   1. Support with U-clamps fastened to wall to hold piping away from wall unless otherwise approved.
      a. Riser clamps to be directly under fitting or welded to pipe.
         1) Riser to be supported at each floor of penetration.

2) Provide structural steel supports at the base of pipe risers. Size supports to carry forces exerted by piping system when in operation.

F. Piping above roof to be supported with freestanding roof pipe supports unless detailed otherwise.

3.04 BUILDING ATTACHMENTS INSTALLATION

A. Factory fabricated attachments complying with MSS SP-58, selected to suit building substructure conditions and in accordance manufacturer's published product information.
B. Select size of building attachments to suit hanger rods.
C. Install concrete inserts before placing concrete.
D. Install powder-actuated concrete fasteners after concrete is placed and completely cured.
E. Do not use powder-actuated concrete fasteners for lightweight aggregate concretes or for slabs less than 4-inches thick.
F. Install within concrete or on structural steel or wood. Attachment to Wood Structure: Anvil side beam bracket Figure 202 for attachment to wooden beam or approved attachment for a wood structure.
G. Install additional building attachments where support is required for additional concentrated loads, including valves, flanges, guides, strainers, expansion joints, and at changes in direction of piping.
H. Install concrete inserts before concrete is placed; fasten insert secure to forms. Where concrete with compressive strength less than 2500 PSI is indicated, install reinforcing bars through openings at top in inserts.
I. Install building attachments within concrete slabs or attach to structural steel. Space attachments within maximum piping span length indicated in MSS SP-58. Install additional attachments at concentrated loads, including valves, flanges guides, strainers, and expansion joints, and at changes in direction of piping. Install concrete inserts before concrete is placed; fasten inserts to forms and install reinforcing bars through openings at top of inserts.
J. Install powder-actuated drive-pin fasteners in concrete after concrete is placed and completely cured. Use operators that are licensed by powder-actuated tool manufacturer. Install fasteners according to powder-actuated tool manufacturer's operating manual.
K. Install mechanical-anchor fasteners in concrete after concrete is placed and completely cured. Install fasteners according to manufacturer's written instructions.
L. Bolting:
    1. General: Provide bored, drilled or reamed holes for bolting to miscellaneous structural metals, frames or for mounts or supports. Flame cut, punched or hand sawn holes will not be accepted.
M. Anchor Bolts:

1. General: Install anchor bolts for mechanical equipment, piping and ductwork as required. Tightly fit and clamp base-supported equipment anchor bolts at equipment support points. Provide locknuts where equipment, piping and ductwork are hung.
2. Anchor bolts (Cast-In-Place): Embed anchor bolts in new cast-in-place concrete to anchor equipment. Install a pipe sleeve around the anchor bolt for adjustment of the top 1/3 of the bolt embedment; sizes and patterns to suit the installation conditions of the equipment to be anchored.

N. Testing: Test powder-actuated insert attachments with a minimum load of 100 pounds.

3.05 FLASHING INSTALLATION

A. Flash and counterflash where piping, ductwork and equipment passes through weather or waterproofed walls, floors, and roofs.
B. Provide 12-inches minimum height curbs for roof-mounted mechanical equipment. Flash and counter flash with galvanized steel, soldered and waterproofed.

3.06 MISCELLANEOUS METAL AND MATERIALS INSTALLATION

A. General: Verify dimensions prior to fabrication. Form metal items to accurate sizes and configurations as indicated on drawings and otherwise required for proper installation; make with lines straight and angles sharp, clean and true; drill, countersink, tap, and otherwise prepare items for connections with work of other trades, as required. Fabricate to detail of structural shapes, plates and bars; weld joints where practicable; provide bolts and other connection devices required. Include anchorages; clip angles, sleeves, anchor plates, and similar devices. Hot dipped galvanize after fabrication items installed in exterior locations. Set accurately in position as required and anchor securely to building construction. Construct items with joints formed for strength and rigidity, accurately machining for proper fit; where exposed to weather, form to exclude water.
B. Finishes:
    1. Ferrous Metal: After fabrication, but before erection, clean surfaces by mechanical or chemical methods to remove rust, scale, oil, corrosion, or other substances detrimental to bonding of subsequently applied protective coatings. For metal items exposed to weather or moisture, galvanize in manner to obtain G90 zinc coating in accordance with ASTM A123. Provide other non-galvanized ferrous metal with 1 coat of approved rust-resisting paint primer, in manner to obtain not less than 1.0 mil dry film thickness. Touch-up damaged areas in primer with same material, before installation. Apply zinc coatings and paint primers uniformly and smoothly; leave ready for finish painting as specified elsewhere.
    2. Metal in Contact with Concrete, Masonry and Other Dissimilar Materials:
        a. Where metal items are to be erected in contact with dissimilar materials, provide contact surfaces with coating of an approved zinc-chromate

primer in manner to obtain not less than 1.0 mil dry film thickness, in addition to other coatings specified in these specifications.

3. For Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and apply galvanizing repair paint to comply with ASTM A780.

C. Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, such as concrete inserts, sleeves, anchor bolts and miscellaneous items having integral anchors, which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

D. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; including, threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws and other connectors as required. Avoid cutting concrete reinforcing when drilling for inserts. Reference structural drawings and reinforcing shop drawings and determine locations of stirrups prior to drilling into concrete.

E. Cutting, Fitting and Placement: Perform cutting, drilling and fitting required for installation of miscellaneous metal fabrications. Set work accurately in location, alignment and elevation, plumb, level, true and free of rack, measured from established lines and levels. Provide temporary bracing or anchors in formwork for items, which are to be built into concrete masonry or similar construction.

F. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, and methods used in correcting welding work.

G. Setting Loose Plates: Clean concrete and masonry bearing surfaces of any bond reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.

H. Set loose leveling and bearing plates on wedges, or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut-off flush with edge of the bearing plate before packing with grout. Use metallic non-shrink grout in concealed locations where not exposed to moisture; use non-metallic non-shrink grout in exposed locations, unless otherwise indicated.

A. Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

B. Cut, drill, and fit miscellaneous metal fabrications for heavy-duty steel trapezes and equipment supports.

C. Fit exposed connections together to form hairline joints. Field-weld connections that cannot be shop-welded because of shipping size limitations.

D. Field Welding: Comply with AWS D1.1 procedures for shielded metal arc welding, appearance and quality of welds, and methods used in correcting welding work, and with the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.

4. Finish welds at exposed connections so no roughness shows after finishing and contours of welded surfaces match adjacent contours.

E. Provide galvanized components for items exposed to weather.

END OF SECTION

DOCUMENT 23 05 48

VIBRATION AND SEISMIC CONTROLS FOR HVAC EQUIPMENT

PART 1 - GENERAL

1.01 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.01 SUMMARY

A. Design Builder is responsible for designing, engineering, procuring, and installing all vibrations and seismic restraints are required by new design.
B. Work Included:
    1. Engineering and design of seismic restraints for the installation of the new equipment.
    2. Seismic Restraint Devices
    3. Factory Finishes
    4. Seismic-Bracing/Restraint Devices/Systems for Equipment, Piping, and Ductwork
C. General:
    1. Vibration isolation for mechanical ductwork, piping, and equipment.
    2. Seismic restraint for mechanical ductwork, piping, and equipment.
    3. Seismic Certification for equipment, hangers and systems
    4. Special inspections for systems.
D. Scope of Work:
    1. Provide engineering, design, installation of vibration isolation and seismic restraint of new equipment and systems.
    2. Vibration isolation and seismic restraint of new equipment and systems in existing buildings to points of connection with existing systems specifically the air handling units.
    3. Seismic restraint of existing systems and equipment shown on drawings, within project boundary defined in architectural drawings.
    4. Provide supplementary structural steel for seismic restraint systems.
        a. No hanging from roof deck is permitted on this project, unless specifically allowed by Structural Engineer of Record in writing prior to bid.

1.02 SUBMITTALS

A. Submittals as required for review and approval by Owner.
B. In addition, provide:
    1. Vibration Isolation:

a. Product data: Provide catalog data indicating size, type, load and deflection of each isolator; and percent of vibration transmitted based on lowest disturbing frequency of equipment.
b. Shop Drawings: Showing complete details of construction for steel and concrete bases including:
    1) Fabrication, including anchorages and attachments to structure and to supported equipment. Include auxiliary motor slides and rails, base weights, equipment static loads, power transmission, component misalignment, and cantilever loads.
    2) Equipment mounting holes.
    3) Dimensions.
    4) Size and location of concrete and steel bases and curbs.
    5) Isolation selected for each support point.
    6) Details of mounting brackets for isolator.
    7) Weight distribution for each isolator.
    8) Details of seismic snubbers.
    9) Code number assigned to each isolator.
c. Design calculations: Provide calculations for selecting vibration isolators and for designing vibration isolation bases.

2. Riser Supports: Include riser diagrams and calculations showing anticipated expansion and contraction at each support point, initial and final loads on building structure, spring deflection changes, and seismic loads. Include certification that riser system has been examined for excessive stress and that none will exist.
3. Seismic Restraint:
    a. Shop Drawings: Show compliance with requirements of Quality Assurance article of this Section. Shop drawings to be stamped by a professional Structural Engineer licensed in State of California.
    b. Calculations: Submit seismic calculations indicating restraint loadings resulting from design seismic forces. Include anchorage details and indicate quantity, diameter, and depth of penetration of anchors. Calculations certified by professional Structural Engineer licensed in State of California.
4. Seismic Restraint Details: Detail fabrication and attachment of seismic restraints and snubbers. Show anchorage details and indicate quantity, diameter, and depth of penetration of anchors.
5. Welding certificates.
6. Equipment Certification:
    a. Provide seismic certification for equipment as noted in Seismic Design Summary or schedules on Drawings.

1.03 QUALITY ASSURANCE

A. Quality assurance as required by Section 23 00 00, HVAC Basic Requirements and Division 01, General Requirements.
B. In addition, meet the following:

1. Vibration Isolation:
    a. Except for packaged equipment with integral isolators, single manufacturer selects and furnishes isolation required.
    b. Deflections indicated on drawings are minimum actual static deflections for specific equipment supported.
    c. Isolator Stability:
        1) Size springs of sufficient diameter to maintain stability of equipment being supported. Spring diameters not less than 0.8 of compressed height at rated load.
        2) Springs have minimum additional travel to solid equal to 50 percent of rated defection.
        3) Springs support 200 percent of rated load, fully compressed, without deformation or failure.
    d. Maximum Allowable Vibration Levels: Peak vibration velocities not exceed 0.08 in/sec. Correct equipment operating at vibration velocities that exceed this criteria.
2. Seismic Restraint:
    a. Code and Standard Requirements:
        1) Seismic restraint of equipment, piping, and ductwork to be in accordance with latest enacted version of ASCE 7-10 and CBC Chapter 16.
    b. Seismic Design Category:
        1) Confirm Seismic Design Category with Authority Having Jurisdiction.
    c. Building Risk Category:
        1) Confirm Building Risk Category with Authority Having Jurisdiction.
    d. Equipment Importance Factor: 1.0.
    e. Seismic restraint and anchorage of permanent equipment and associated systems listed below to building structure be designed to resist total design seismic force prescribed in local building code:
        1) Floor- or roof-mounted equipment weighing 400 pounds or greater.
        2) Suspended, wall-mounted or vibration isolated equipment weighing 20 pounds or greater.
        3) In-line duct devices connected to ductwork weighing 75 pounds or greater.
        4) Housekeeping slabs: provide reinforcement and anchorage to building structure.
    f. Where required, seismic sway bracing of suspended duct and piping meet following:
        1) Pipe and duct runs requiring seismic bracing have minimum of two traverse braces and one longitudinal brace. Longitudinal (or traverse) brace at 90 degree change in direction may act as traverse (or longitudinal) brace if located within 2-feet of change in direction.

2) Seismic bracing may not pass through seismic separation joint. Pipe or duct runs that pass through seismic separation joint must be restrained within 5-feet of both sides of separation.
3) Seismic brace assembly spacing not to exceed 40-feet transverse and 80-feet longitudinal.

g. Seismic restraints may be omitted from suspended piping and duct if following conditions are satisfied:
1) For piping or ducts supported by rod hangers 12-inches or less in length from top of duct to bottom of structural support. Top connections to structure have swivel joints, eye bolts, or vibration isolation hangers for entire length of system run.
2) Lateral motion of system will not cause damaging impact with surrounding systems or cause loss of system vertical support.
3) System must be welded steel pipe, brazed copper pipe, sheet metal duct or similar ductile material with ductile connections.

C. Seismic restraints, including anchors to building structure, be designed by registered professional Structural Engineer licensed in State of California. Design includes:
1. Number, size, capacity, and location of anchors for floor- or roof-mounted equipment. For curb-mounted equipment, provide design of attachment of both unit to curb and curb to structure.
2. Number, size, capacity, and location of seismic restraint devices and anchors for vibration-isolation and suspended equipment. Provide calculations and test data verifying horizontal and vertical ratings of seismic restraint devices.
3. Number, size, capacity, and location of braces and anchors for suspended piping and ductwork on as-built plan drawings.
4. Maximum seismic loads to be indicated on drawings at each brace location. Drawings bear stamp and signature of registered professional Structural Engineer who designed layout of braces.

1.04 WARRANTY

A. Warranty of materials and workmanship as required by Section 23 00 00, HVAC Basic Requirements and Division 01, General Requirements.

1.05 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
B. Seismic Snubber Units: Furnish replacement neoprene inserts for snubbers.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Vibration Isolation:

1. Amber/Booth
2. B-Line Systems, Inc.
3. Kinetics Noise Control, Inc.
4. Mason Industries Inc.
5. M.W. Sausse - Vibrex
6. Where Mason numbers are specified, equivalent products by listed manufacturers are acceptable.
7. Or approved equivalent.

B. Seismic Restraint Devices:
1. Amber/Booth
2. B-Line Systems, Inc.
3. Hilti, Inc.
4. Kinetics Noise Control, Inc.
5. Mason Industries, Inc.
6. California Dynamics Corporation
7. Cooper B-Line Tolco.
8. Unistrut Diversified Products Co.; Wayne Manufacturing Division.
9. M.W. Sausse - Vibrex
10. Or approved equivalent.

C. Seismic-Bracing/Restraint Devices/Systems for Equipment, Piping and Ductwork:
1. Amber-Booth
2. California Dynamics Corporation
3. Cooper B-Line, Inc.
4. Hilti, Inc.
5. Mason Industries, Inc.
6. Kinetics Noise Control.
7. Unistrut
8. ISAT, Inc.
9. Where Mason numbers are specified, equivalent products by listed manufacturers are acceptable.
10. Or approved equivalent.

2.02 VIBRATION ISOLATION

A. Type 1 - Neoprene Pad: Natural rubber waffle pads, arranged in single or multiple layers, 3/4-inch thick per layer with pattern repeating on ½-inch centers; 50 durometer hardness; maximum loading 60 PSI. 1/4-inch thick steel load distribution plate between layers and between pad and equipment, factory cut to sizes matching requirements of supported equipment. Molded bridge with neoprene anchor bolt bushing and flat washer face to prevent metal to metal contact. Number of layers required for equipment scheduled. Mason Type: Super WMH.

B. Type 2 - Neoprene Mount: Double-deflection type, with ductile-iron housing containing two separate and opposing, oil-resistant natural rubber or bridge bearing neoprene elements, factory-drilled, encapsulated top plate for bolting to equipment and with baseplate for bolting to structure. Neoprene elements to prevent metal to metal

contact during normal operation. Minimum static deflection of 0.20-inches. Mason Type: BR.

C. Type 3 - Spring: Freestanding, laterally stable, open-spring isolators.
    1. Outside Spring Diameter: Not less than 80 percent of compressed height of spring at rated load.
    2. Minimum Additional Travel: 50 percent of required deflection at rated load.
    3. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
    4. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
    5. Baseplates: Factory drilled for bolting to structure and bonded to 1/4-inch- thick, natural rubber or bridge bearing neoprene isolator pad attached to baseplate underside. Baseplates limit floor load to 100 PSIG (690 kPa).
    6. Top Plate and Adjustment Bolt: Threaded top plate with adjustment bolt and cap screw to fasten and level equipment.
    7. Brackets: Manufacturer's standard bracket, utilize height saving brackets to accommodate height restrictions.
    8. Mason Type: SLFH.

D. Type 4a - Restrained Spring Isolators: Freestanding, steel, open-spring isolators with seismic restraint.
    1. Housing: Steel with resilient vertical-limit stops (out of contact during normal operation) to prevent spring extension due to wind loads or if weight is removed; factory-drilled baseplate bonded to 1/4-inch thick, natural rubber or bridge bearing neoprene isolator pad attached to baseplate underside; and adjustable equipment mounting and leveling bolt that acts as blocking during installation. Restraining bolts have large rubber grommets to provide cushioning in vertical and horizontal directions. A minimum clearance of 3/8-inch maintained around restraining bolts so as not to interfere with spring action.
    2. Outside Spring Diameter: Not less than 80 percent of compressed height of spring at rated load.
    3. Minimum Additional Travel: 50 percent of required deflection at rated load.
    4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
    5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
    6. Brackets: Manufacturer's standard bracket, utilize height saving brackets to accommodate height restrictions.
    7. Mason Type: SLR.

E. Type 4b - Housed Spring Mounts: Housed spring isolator with integral seismic snubbers.
    1. Housing: Ductile-iron or steel housing to provide all-directional seismic restraint with neoprene acoustical cup, spring inspection ports and rebound adjustment ports.
    2. Base: Factory drilled for bolting to structure.
    3. Snubbers: Vertically adjustable to allow a maximum of 1/4-inch travel before contacting a resilient collar.
    4. Brackets: Manufacturer's standard bracket, utilize height saving brackets to accommodate height restrictions.

5. Mason Type: SSLFH.

F. Type 5a - Restrained Elastomeric Hangers: Double-deflection type, with molded, oil-resistant natural rubber or bridge bearing neoprene isolator elements bonded to steel housings with threaded connections for hanger rods. Color-code or otherwise identify to indicate capacity range. Seismic rebound steel and bonded LDS rubber washer to limit upward seismic movement. Mason Type: RWHD.

G. Type 5c - Spring Hangers with Vertical-Limit Stop: Combination coil-spring and elastomeric-insert hanger with spring and insert in compression and with a vertical-limit stop.
   1. Frame: Steel, fabricated for connection to threaded hanger rods and to allow for a maximum of 15 degrees of angular hanger-rod misalignment from vertical without binding or reducing isolation efficiency.
   2. Outside Spring Diameter: Not less than 80 percent of compressed height of spring at rated load.
   3. Minimum Additional Travel: 50 percent of required deflection at rated load.
   4. Lateral Stiffness: More than 80 percent of rated vertical stiffness.
   5. Overload Capacity: Support 200 percent of rated load, fully compressed, without deformation or failure.
   6. Elastomeric Element: Molded, oil-resistant rubber or neoprene.
   7. Adjustable Vertical Stop: Steel washer with neoprene washer "up-stop" on lower threaded rod.
   8. Mason Type: RW30.

H. Type 7 - Pipe Riser Resilient Support: All-directional, acoustical pipe anchor consisting of 2 steel tubes separated by a minimum of 1/2-inch thick, 60-durometer neoprene. Include steel and neoprene vertical-limit stops arranged to prevent vertical travel in both directions. Design support for a maximum load on isolation material of 500 PSIG (3.45 MPa) and for equal resistance in all directions. Mason Type: ADA.

I. Type 8 - Resilient Pipe Vertical Sliding Guide: Telescopic arrangement of 2 steel tubes separated by a minimum of 1/2-inch thick, 60-durometer neoprene. Factory set guide height with a shear pin to allow vertical motion due to pipe expansion and contraction. Shear pin be removable and reinsertable to allow for selection of pipe movement. Guides be capable of motion to meet location requirements. Mason Type: VSG. Provide pipe expansion hangers to control load shifts as the riser expands or contracts, Mason HES.

J. Type FC-1, Flexible duct connectors. See Specification Section 23 33 00 Air Duct Accessories.

K. Type FC-2A, Flexible Pipe Connector, Steel:
   1. 321 stainless steel, close pitch, annular corrugated hose.
   2. Exterior Sleeve: 304 stainless steel, braided.
   3. Pressure Rating: 125 PSI at 70 degrees F for 12-inch and smaller pipe.
   4. Joint: ANSI Class 150 carbon steel flanges.
   5. Size: Use pipe sized units.
   6. Minimum Allowable Offset: 3/4-inch on each side of installed center line.
   7. Basis of Design: Metraflex Model MLP.

L. Type FC-2B, Flexible Pipe Connector, Copper:
   1. Inner Hose: Bronze, close pitch, annular corrugated hose.

2. Exterior Sleeve: Braided bronze (for piping over 2-inches, to be 3 pound braided stainless steel).
3. Minimum Allowable Pressure Rating: 125 PSI at 70 degrees F.
4. Joint: Sweat ends.
5. Size: Use pipe sized units.
6. Minimum Allowable Offset: 3/8-inch on each side of installed center line.
7. Basis of Design: Metraflex Model BBS.

M. Type FC-2C, Flexible Pipe Connector, Gas:
1. Inner Hose: 304 stainless steel.
2. Exterior Sleeve: Braided, 304 stainless steel.
3. Minimum Allowable Pressure Rating: 150 PSI at 70 degrees F up to 4-inch pipe.
4. Joint: Threaded carbon steel.
5. Minimum Allowable Offset: 3/4-inch on each side of installed center line.
6. Basis of Design: Metraflex GASCT.

2.03 SEISMIC RESTRAINT DEVICES

A. Resilient Isolation Washers and Bushings: 1-piece, molded, bridge-bearing neoprene complying with AASHTO M 251 and having a durometer of 50, plus or minus 5, with a flat washer face.

B. Seismic Snubbers: Factory fabricated using welded structural-steel shapes and plates, anchor bolts, and replaceable resilient isolation washers and bushings. Mason Type: Z-1011 or Z-1225. Snubber load rating to match equipment size.
1. Anchor bolts for attaching to concrete be seismic-rated, drill-in, and stud-wedge or female-wedge type.
2. Resilient Isolation Washers and Bushings: 1-piece, molded, bridge-bearing neoprene complying with AASHTO M 251 and having a durometer of 50, plus or minus 5.

C. Restraining Cables: Galvanized steel aircraft cables with end connections made of steel assemblies that swivel to final installation angle and utilize two clamping bolts for cable engagement. Mason Type: SCB.

D. Anchor Bolts: Seismic-rated, drill-in, and stud-wedge or female-wedge type. Select anchor bolts with strength required for anchor and as tested according to ASTM E 488/E 488M.

2.04 FACTORY FINISHES

A. Provide manufacturer's standard prime-coat finish ready for field painting. Units mounted outdoors exposed to weather: Epoxy powder coated, with 1000 hour salt spray rating per ASTM B-117. For high levels of corrosion protection utilize:
1. Kynar 500 Fluoropolymer Coating:
a. Conform to AAMA 605.2.
b. Apply coating following cleaning and pretreatment.
c. Cleaning: AA-C12C42R1X.
d. Dry system before final finish application.

e. Total Dry Film Thickness: Approximately 1.2 mils, when baked at 450 degrees F for 10 minutes.

B. Finish: Manufacturer's standard paint applied to factory-assembled and -tested equipment before shipping.
   1. Powder coating on springs and housings.
   2. Hardware be electrogalvanized. Hot-dip galvanize metal components for exterior use.
   3. Baked enamel for metal components on isolators for interior use.
   4. Color-code or otherwise mark vibration isolation and seismic-control devices to indicate capacity range.

2.05 SEISMIC-BRACING/RESTRAINT DEVICES/SYSTEMS FOR EQUIPMENT, PIPING, AND DUCTWORK

A. General Requirements for Restraint Components: Rated strengths, features, and applications be as defined in reports by agency acceptable to authorities having jurisdiction.
B. Structural Safety Factor: Allowable strength in tension, shear, and pullout force of components be at least four times maximum seismic forces to which they will be subjected.
C. Anchor bolts for attaching to concrete to be seismic-rated, drill-in, and stud-wedge or female-wedge type.
D. Resilient Isolation Washers and Bushings: Oil- and water-resistant neoprene.
E. Maximum 1/4-inch air gap, and minimum 1/4-inch thick resilient cushion.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine areas and equipment to receive vibration isolation and seismic-control devices for compliance with requirements, installation tolerances, and other conditions affecting performance.
B. Examine roughing-in of reinforcement and cast-in-place anchors to verify actual locations before installation.
C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. General:
   1. Vibration isolators and seismic restraint systems must be installed in strict accordance with manufacturer's written instructions and certified submittal data.
   2. Do not install equipment or pipe which makes rigid contact with building slabs, beams, studs, walls, etc.
   3. Anchor baseplate to floor or structure. Provide rubber grommets and washers to isolate bolt from base plate. Under no circumstances is isolation efficiency to be destroyed when bolting isolators to floor.

4. Building Penetrations: Isolate water piping and ductwork penetrating wall, ceilings, floors or shafts from structure by piping isolator or by 3/8-inch thick foamed rubber insulation. Install units flush with finished structure face, using one for each side as required. Cut units to length if longer than structure thickness. Caulk around pipe or duct at equipment room wall.
5. Vibration isolators must not cause change of position of equipment or piping which would stress piping connections or misalignment shafts or bearings. Isolated equipment is to be level and in proper alignment with connecting ducts and pipes.

3.03 VIBRATION ISOLATION EQUIPMENT INSTALLATION

A. Install isolation as indicated on drawings by type and location and where indicated below.
B. Equipment Vibration Isolation Schedule:

Equipment	Size	Vibration Isolator Type	Minimum Deflection (in)
Boilers	All	Type 1 or 2, FC-2	0.2
Inline Pumps	All	Type 4A, 4B, 5B, or 5C, FC-2	1.5
Rooftop Air Handlers, AC Units	20+ tons	RC-2, FC-1,2	1.5

C. Isolation Mounts:
   1. Install minimum of four seismic snubbers on isolated equipment. Locate snubbers as close as possible to vibration isolators and bolt to equipment base and supporting structure.
   2. Install resilient bolt isolation washers on equipment anchor bolts.
   3. Provide flexible piping connection and flexible ductwork connection to equipment with isolation mounts or bases.
D. Isolating Hangers:
   1. Support piping and ductwork connected to isolated equipment within equipment rooms on isolating hangers as scheduled on drawings. Unless otherwise noted, first three hangers from isolated equipment to have a minimum of 1/2 static deflection of equipment isolators. Other isolating hangers to have a minimum of 1/4 static deflection of equipment isolators.
   2. Position isolating hanger elements as high as possible in hanger rod assembly, but not in contact with building structure. Install hangers so that hanger housing may rotate full 360 degrees about rod axis without contacting any object.
   3. Unless otherwise noted, air supply units with internally isolated fans do not require isolating hangers for connecting pipes and ductwork.
   4. Where parallel running pipes are hung together on an isolated trapeze, provide isolator deflections for largest determined by provisions for pipe isolation. Do not mix isolated and non-isolated pipes in same trapeze.
   5. Install limit stops so they are out of contact during normal operation.

3.04 SEISMIC RESTRAINTS

A. General:
   1. Install and adjust seismic restraints so that equipment, piping, and ductwork supports are not degraded by restraints.
   2. Restraints must not short circuit vibration isolation systems or transmit objectionable vibration or noise.
   3. Install restraining cables at each trapeze, individual pipe hanger and hanging vibration isolated equipment. Provide restraining cables in each of the four directions of movement. Install restraining cables no less than 45 Degrees from vertical. At trapeze anchor locations, shackle piping to trapeze. Install cables so they do not bend across sharp edges of adjacent equipment or building structure.
   4. Install steel angles or channel, sized to prevent buckling, clamped with ductile-iron clamps to hanger rods for trapeze and individual pipe hangers. At trapeze anchor locations, shackle piping to trapeze. Requirements apply equally to hanging equipment. Do not weld angles to rods.

3.05 FIELD QUALITY CONTROL

A. Testing: Perform following field quality-control testing:
   1. Isolator seismic-restraint clearance.
   2. Isolator deflection.
   3. Snubber minimum clearances.

3.06 ADJUSTING

A. Adjust isolators after piping systems have been filled and equipment is at operating weight.
B. Adjust limit stops on restrained spring isolators to mount equipment at normal operating height. After equipment installation is complete, adjust limit stops so they are out of contact during normal operation.
C. Adjust active height of spring isolators.
D. Adjust snubbers according to manufacturer's written recommendations.
E. Adjust seismic restraints to permit free movement of equipment within normal mode of operation.
F. Torque anchor bolts according to equipment manufacturer's written recommendations to resist seismic forces.

3.07 CLEANING

A. After completing equipment installation, inspect vibration isolation and seismic-control devices. Remove paint splatters and other spots, dirt, and debris.

END OF SECTION

DOCUMENT 23 05 53

IDENTIFICATION FOR PIPING, DUCTWORK AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for design, engineering, and installation to properly identify and label all new work associated with the new design.

B. Work Included:
   1. Plastic Nameplates
   2. Tags
   3. Plastic Pipe Markers
   4. Ceiling Tags

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required the Contract Documents.

1.04 SUBMITTALS

A. In addition what is required by this contract, provide:
   1. Schedules:
      a. Submit valve schedule for each piping system, in tabular format using Microsoft Word or Excel software. Tabulate valve number, piping system, system abbreviation (as shown on tag), location of valve (room or space), and variations for identification (if any). Mark valves which are intended for emergency shutoff and similar special uses by special "flags" in margin of schedule. In addition to mounted copies, furnish extra copies for maintenance manuals.
      b. For renovations or expansions of existing systems, coordinate with Owner and develop valve schedule on existing schedule naming and format.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by the contract.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by this contract.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. General: Manufacturer's standard products of categories and types required for each application as referenced in other Division 23, HVAC Sections. Where more than a single type is specified for application, provide single selection for each product category.
B. Tags:
    1. Brady Corporation
    2. Brimar
    3. Champion America
    4. Craftmark
    5. Seton
    6. Or approved equivalent.
C. Plastic Pipe Markers:
    1. Brady Corporation
    2. Brimar
    3. Champion America
    4. Craftmark
    5. Seton
    6. Or approved equivalent.
D. Ceiling Tags:
    1. Brady Corporation
    2. Brimar
    3. Champion America
    4. Craftmark
    5. Seton
    6. Or approved equivalent.

2.02 PLASTIC NAMEPLATES

A. Description: Engraving stock melamine plastic laminate in the size and thicknesses indicated, engraved with engraver's standard letter style of the sizes and wording indicated, black with white core (letter color), punched for mechanical fastening except where adhesive mounting is necessary because of substrate. Provide 1/8-inch thick material.
    1. Letter Color: White.
    2. Letter Height: 1/2-inch.
    3. Background Color: Black.
    4. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate the substrate.

5. Access Panel Markers: Manufacturer's standard 1/16-inch thick engraved plastic laminate access panel markers, with abbreviations and numbers corresponding to concealed valve or devices/equipment. Include center hole to allow attachment.

2.03 TAGS

A. Plastic Tags: Laminated three-layer plastic with engraved black letters on light contrasting background color. Tag size minimum 2-inch diameter.
B. Metal Tags: Polished Brass with stamped letters; tag size minimum 2-inch diameter with smooth edges.
C. Valve designations to be coordinated with existing valve identifications to ensure no repetitive designations are utilized.
D. Chart/Schedules: Valve Schedule Frames. For each page of a valve schedule, provide glazed display frame with removable mounting as appropriate for wall construction upon which frame is to be mounted. Provide frames of finished hardwood or extruded aluminum, with SSB-grade sheet glass.
E. Valve Tag Fasteners: Solid brass chain (wire link or beaded type), or solid brass S-hooks.
F. Warning Tags: Preprinted or partially preprinted, accident-prevention tags; of plasticized card stock with matte finish suitable for writing.
    1. Size: Approximately 4 by 7-inches.
    2. Fasteners: Brass grommet and wire.
    3. Nomenclature: Large-size primary caption such as DANGER, CAUTION, or DO NOT OPERATE.
    4. Color: Yellow background with black lettering.

2.04 PLASTIC PIPE MARKERS

A. Color: Conform to ASME A13.1 and ANSI Z535.1.
B. Plastic Pipe Markers (for external diameters of 6-inches and larger including insulation): Factory fabricated, flexible, semi- rigid plastic, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid being conveyed.
C. Plastic Tape Pipe Markers (for external diameters less than 6-inches including insulation): Flexible, vinyl film tape with pressure sensitive adhesive backing and printed markings. Minimum information indicating flow direction arrow and identification of fluid being conveyed.
D. Lettering:
    1. 3/4-inch to 1-1/4-inch Outside Diameter of Insulation or Pipe: 8-inch long color field, 1/2-inch high letters.
    2. 1-1/2-inch to 2-inch Outside Diameter of Insulation or Pipe: 8-inch long color field, 3/4-inch high letters.
    3. 2-1/2-inch to 6-inch Outside Diameter of Insulation or Pipe: 12-inch long color field, 1-1/4-inch high letters.

4. 8-inch to 10-inch Outside Diameter of Insulation or Pipe: 24-inch long color field, 2-1/2-inch high letters.
5. Over 10-inch Outside Diameter of Insulation or Pipe: 32-inch long color field, 3-1/2-inch high letters.

2.05 CEILING TAGS

A. Description: Steel with 3/4-inch diameter color coded head.
B. Color code as follows:
   1. Yellow - HVAC equipment.
   2. Red - Fire dampers/smoke dampers.
   3. Blue - Heating/cooling valves.
   4. Ceiling tile labels, machine generated, adhesive backed tape labels with black letters, clear tape.

PART 3 - EXECUTION

3.01 GENERAL - INSTALLATION

A. Identify air handling units, pumps, heat transfer equipment, tanks, and water treatment devices with plastic nameplates riveted to equipment body.
B. Identify piping, concealed or exposed, with plastic pipe markers.
C. Coordinate names, abbreviations and other designations used in mechanical identification work with corresponding designations shown, specified or scheduled. Provide numbers, lettering and wording as indicated or, if not otherwise indicated, as recommended by manufacturers or as required for proper identification and operation/maintenance of mechanical systems and equipment.
D. Multiple Systems: Where multiple systems of same generic name are shown and specified, provide identification which indicates individual system number as well as service (as examples: Chiller No. 3, Air Handling Unit No. 42, Standpipe F12, and the like).
E. Degrease and clean surfaces to receive adhesive for identification materials.
F. Coordination: Where identification is to be applied to surfaces which require insulation, painting or other covering or finish, including valve tags in finished mechanical spaces, install identification after completion of covering and painting. Install identification prior to installation of acoustical ceilings and similar removable concealment.
G. Coordinate with the facility maintenance personnel to insure consistency with the existing tagging system.
H. Install all products in accordance with manufacturer's instructions.
I. Manual Balancing Dampers: Provide 12-inch long orange marker ribbon to end of balancing damper handle.

3.02 PLASTIC NAMEPLATES

A. Install plastic nameplates with corrosive-resistant mechanical fasteners.

B. Identify control panels and major control components outside panels with plastic nameplates riveted to equipment body.
C. Identify thermostats with nameplates.

3.03 TAGS

A. Use metal tags on piping 3/4-inch diameter and smaller.
B. Tag balancing valves and major dampers with balanced GPM or CFM indicated after balancing is completed and accepted.
C. Install tags with corrosion resistant chain.
D. Small devices, such as in-line pumps, may be identified with tags.
E. Identify valves in main and branch piping with metal tags. Indicate valve function and the normally open or closed positions on the valve tag.
F. Identify air terminal units and radiator valves with numbered plastic tags.
G. Tag automatic controls, instruments, and relays. Key to control schematic.
H. Install valve schedule at each mechanical room.

3.04 PLASTIC PIPE MARKERS

A. Install plastic pipe markers complete around pipe in accordance with manufacturer's instructions.
B. Identify service, flow direction, and pressure. Install in clear view and align with axis of piping. Locate identification not to exceed 20-feet (reduced to 10-feet in congested areas and mechanical equipment rooms) on straight runs including risers and drops, adjacent to each valve and Tee, at each side of penetration of structure or enclosure, and at each obstruction. Locate near branches, valves, control devices, equipment connections, access doors, floor/wall penetrations.

3.05 CEILING TAGS

A. Provide ceiling tile labels to identify valves, dampers, and equipment above accessible ceilings.
B. Provide ceiling tags to locate valves, dampers, and equipment above accessible ceilings. Locate in corner of ceiling tee grid closest to equipment.

END OF SECTION

DOCUMENT 23 05 93

TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for designing, engineering, procuring, and performing all testing, adjusting, and balancing of HVAC equipment.

B. Work Included:
   1. Design Builder shall test, adjust, and balance all air-side and water-side equipment.
   2. General Requirements and Procedures
   3. Pre-Construction Balance (Existing Systems)
   4. Fundamental Air Systems Balancing Procedures
   5. Temperature Control Verification
   6. Variable Air Volume Systems Additional Procedures
   7. Fundamental Procedures for Hydronic Systems
   8. Pump Balancing Procedures
   9. Variable Flow Hydronic Systems Additional Procedures
   10. Vibration Testing
   11. Pre-Balance Reporting
   12. Final Reports:
      a. Report Requirements
      b. General Report Data
      c. System Diagrams
      d. Pumps
      e. Boilers
      f. Instrument Calibration
   13. Additional Tests

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required.

1.04 SUBMITTALS

A. Submittals as required
B. In addition, provide:
   1. Quality-Assurance Submittals: Submit two copies of evidence that the testing, adjusting, and balancing Agent and this Project's testing, adjusting, and

balancing team members meet the qualifications specified in the "Quality Assurance" Article below.

2. Pre-Construction Phase Report:
    a. Provide a pre-construction phase TAB Plan at least two weeks prior to the commencement of TAB work. This report is to include:
        1) A complete set of report forms intended for use on the project, with all data filled in except for the field readings. Forms to be project specific.
        2) Marked up shop drawings identifying all HVAC equipment to be balanced, and associated outlets and terminal devices.
        3) Identification of the type, manufacturer, and model of the actual instruments to be used, and clear indication of which instrument will be used to take each type of reading. Calibration certifications are to be included.
        4) A narrative of any project specific and/or non-standard TAB procedures to be used, and the equipment or systems they apply to.
3. Contract Documents Examination Report: Within 45 days from the Notice to Proceed, submit two copies of the Contract Documents review report as specified in Part 3 of this Section.
4. Strategies and Procedures Plan: Submit two copies of the testing, adjusting, and balancing strategies and step-by-step procedures as specified in Part 3 below. Include a complete set of report forms intended for use on this Project.
5. Specify reports required because of editing procedures in Part 3 of this Section.
6. Certified Testing, Adjusting, and Balancing Reports: Submit two copies of reports prepared, as specified in this Section, on approved forms certified by the testing, adjusting, and balancing Agent.
7. Sample Report Forms: Submit two sets of sample testing, adjusting, and balancing report forms.
8. Test Instrument Calibration: Submit proof of calibration within the last 6 months.
9. Final Report.
10. Provide additional submittals to commissioning authority as dictated in commissioning specifications.

1.05 QUALITY ASSURANCE

A. Quality Assurance as required by Section 23 00 00, HVAC Basic Requirements and Division 01, General Requirements.
B. In addition, meet the following:
    1. Acceptable Balance Firm:
        a. General:
            1) Procure services of independent balance and testing agency which specializes in balancing and testing of plumbing, heating, ventilating, and air conditioning systems, to balance, adjust and

test water circulating and air moving equipment and air distribution or exhaust systems. Minimum Experience: 5 years.

b. Industry Standards: Testing and Balancing will conform to NEBB, American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE), and American National Standards Institute (ANSI) as follows:
   1) NEBB: Comply with Procedural Standards for Testing, Adjusting Balancing of Environmental Systems.
   2) ASHRAE: Comply with recommendations pertaining to measurements, instruments, and testing, adjusting and balancing.
   3) ANSI:
      a) S1.4 Specifications for sound level meters.
      b) S1.11 Specifications for Octave-Band and Fractional-Octave-Band analog and digital filters.
      c) ANSI S1.13 Methods for the Measurement of Sound Pressure Levels.

c. Test Observation: If requested, conduct tests in the presence of the Design Builder or the Design Builder's representative.

2. Noise Criteria:
   a. Noise levels in all 8 octave bands due to equipment and duct systems not-to-exceed the following NC levels:

TYPE OF ROOM	**NC LEVEL**
Bathrooms and Toilet Rooms	35-40
Conference Room	30-35
Corridors (Public)	35-40
Lobbies, Waiting Areas	35-40
Offices, Large Open (3 or more occupants)	35-40
Offices, Small Private (2 or fewer occupants)	30-35
Kitchens	40-45
Classrooms (Small, Medium, Large)	30-35
Cafeteria/Dining	35-40
All Others	35-40

   b. For equipment which has no sound power ratings scheduled on the Drawings, select equipment that the foregoing noise criteria, local ordinance noise levels, and OSHA requirements are not exceeded. Selection procedure in accordance with ASHRAE Fundamentals Handbook, Chapter 7, Sound and Vibration.
   c. An allowance, not-to-exceed 5db, may be added to the measured value to compensate for the variation of the room attenuating effect between room test condition prior to occupancy and design condition after occupancy which may include the addition of sound absorbing material, such as furniture. This allowance may not be taken after occupancy. The room

attenuating effect is defined as the difference between sound power level emitted to room and sound pressure level in room.

d. In absence of specified measurement requirements, measure equipment noise levels three feet from equipment and at an elevation of maximum noise generation.

3. Allowable Vibration Tolerances for Rotating, Non-reciprocating Equipment: Not-to-exceed a self-excited vibration maximum velocity of 5 mm per second (0.20 inch per second) RMS, filter in, when measured with a vibration meter on bearing caps of machine in vertical, horizontal and axial directions or measured at equipment mounting feet if bearings are concealed. Measurements for internally isolated fans and motors may be made at the mounting feet.
4. Provide proof of testing agency having successfully completed at least five projects of similar size and scope.
5. Code Compliance: Perform tests in the presence of the Authority Having Jurisdiction (AHJ) where required by the Authority Having Jurisdiction (AHJ).
6. Owner Witness: Perform tests in the presence of the Owners representative.
7. Design Builder Witness: The Design Builder or Design Builder's representative reserves the right to observe tests or selected tests to assure compliance with the specifications.
8. Simultaneous Testing: Test observations by the Authority Having Jurisdiction (AHJ), the Owner's representative and the Design Builder's representative need not occur simultaneously.
9. Do not perform testing, adjusting, and balancing work until heating, ventilating, and air conditioning equipment has been completely installed and is operating continuously as required.
10. Conduct air testing and balancing with clean filters in place. Clean strainers prior to performing hydronic testing and balancing.
11. Agent Qualifications: Engage a testing, adjusting, and balancing agent certified by AABC or NEBB.
12. Testing, Adjusting, and Balancing Conference: Meet with the Owner's and the Design Builder's representatives on approval of the testing, adjusting, and balancing strategies and procedures plan to develop a mutual understanding of the details. Ensure the participation of testing, adjusting, and balancing team members, equipment manufacturers' authorized service representatives, HVAC controls Installer, and other support personnel. Provide 7 days advance notice of scheduled meeting time and location.
    a. Agenda Items: Include at least the following:
        1) Submittal distribution requirements.
        2) Contract Documents examination report.
        3) Testing, adjusting, and balancing plan.
        4) Work schedule and Project site access requirements.
        5) Coordination and cooperation of trades and subcontractors.
        6) Coordination of documentation and communication flow.
13. Certification of Testing, Adjusting, and Balancing Reports: Certify the testing, adjusting, and balancing field data reports. This certification includes the following:

a. Review field data reports to validate accuracy of data and to prepare certified testing, adjusting, and balancing reports.
b. Certify that the testing, adjusting, and balancing team complied with the approved testing, adjusting, and balancing plan and the procedures specified and referenced in this Specification.

14. Testing, Adjusting, and Balancing Reports: Use standard forms from AABC's "National Standards for Testing, Adjusting, and Balancing."
15. Testing, Adjusting, and Balancing Reports: Use standard forms from NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems."
16. Instrumentation Type, Quantity, and Accuracy: As described in AABC national standards.
17. Instrumentation Type, Quantity, and Accuracy: As described in NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems," Section II, "Required Instrumentation for NEBB Certification."
18. Instrumentation Calibration: Calibrate instruments at least every 6 months or more frequently if required by the instrument manufacturer.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by Section 23 00 00, HVAC Basic Requirements and Division 01, General Requirements.
B. In addition, provide:
    1. TAB Agency provides warranty for a period of 90 days following submission of completed report, during which time, Owner may request a recheck of up to 10 percent of total number of terminals, or resetting of any outlet, coil, or device listed in the final TAB report.
    2. Guarantee: Meet the requirements of the following programs:
        a. Provide a guarantee on AABC or NEBB forms stating that the agency will assist in completing the requirements of the Contract Documents if the testing, adjusting, and balancing Agent fails to comply with the Contract Documents. Guarantee includes the following provisions:
            1) The certified Agent has tested and balanced systems according to the Contract Documents.
            2) Systems are balanced to optimum performance capabilities within design and installation limits.

1.07 DEFINITIONS

A. Adjust: To regulate fluid flow rate and air patterns at the terminal equipment, such as to reduce fan speed or adjust a damper.
B. Balance: To proportion flows within the distribution system, including submains, branches, and terminals, according to design quantities.
C. Draft: A current of air, when referring to localized effect caused by one or more factors of high air velocity, low ambient temperature, or direction of airflow, whereby more heat is withdrawn from a persons skin than is normally dissipated.

D. Procedure: An approach to and execution of a sequence of work operations to yield repeatable results.
E. Report Forms: Test data sheets for recording test data in logical order.
F. Static Head: The pressure due to the weight of the fluid above the point of measurement. In a closed system, static head is equal on both sides of the pump.
G. Suction Head: The height of fluid surface above the centerline of the pump on the suction side.
H. System Effect: A phenomenon that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system.
I. System Effect Factors: Allowances used to calculate a reduction of the performance ratings of a fan when installed under conditions different from those presented when the fan was performance tested.
J. TAB: Testing and Balancing.
K. Terminal: A point where the controlled medium, such as fluid or energy, enters or leaves the distribution system.
L. Test: A procedure to determine quantitative performance of a system or equipment.
M. Testing, Adjusting, and Balancing Agent: The entity responsible for performing and reporting the testing, adjusting, and balancing procedures.
N. AABC: Associated Air Balance Council.
O. AMCA: Air Movement and Control Association.
P. CTI: Cooling Tower Institute.
Q. NEBB: National Environmental Balancing Bureau.
R. SMACNA: Sheet Metal and Air Conditioning Contractors' National Association.

1.08 COORDINATION

A. Coordinate the efforts of factory-authorized service representatives for systems and equipment, HVAC controls installers, and other mechanics to operate HVAC systems and equipment to support and assist testing, adjusting, and balancing activities.
B. Notice: Provide 7 days advance notice for each test. Include scheduled test dates and times.
C. Perform testing, adjusting, and balancing after leakage and pressure tests on air and water distribution systems have been satisfactorily completed.

PART 2 - PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS AND PROCEDURES

A. Project Conditions:
    1. Partial Owner Occupancy: The Owner may occupy completed areas of the building before Substantial Completion. Cooperate with the Owner during testing, adjusting, and balancing operations to minimize conflicts with the Owner's operations.

B. General Requirements:
   1. Where HVAC systems and/or components interface with life safety systems, including fire and smoke detection, alarm, and controls, coordinate scheduling and testing and inspection procedures with authorities having jurisdiction.
   2. Perform TAB work with doors, closed windows, and ceilings installed etc., to obtain simulated or project operating conditions. Do not proceed until systems scheduled for testing, adjusting and balancing are clean and free from debris, dirt and discarded building materials.
   3. Where Owner occupies building during the testing period, cooperate with Owner to minimize conflicts with Owner's operations.

C. Examination:
   1. Examine Contract Documents to become familiar with project requirements and existing building record documents (if available) to discover conditions in systems' designs that may preclude proper testing, adjusting, and balancing of systems and equipment.
      a. Contract Documents are defined in the General and Supplementary Conditions of the Contract.
      b. Verify that balancing devices, such as test ports, gauge cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers, are required by the Contract Documents. Verify that quantities and locations of these balancing devices are accessible and appropriate for effective balancing and for efficient system and equipment operation.
   2. Examine approved submittal data of HVAC systems and equipment.
   3. Examine project record documents described in Division 01, General Requirements.
   4. Examine Design Builder's design data, including Basis of Design, HVAC system descriptions, statements of design assumptions for environmental conditions and systems' output, and statements of philosophies and assumptions about HVAC system and equipment controls.
   5. Examine equipment performance data, including fan and pump curves. Relate performance data to project conditions and requirements, including system effects that can create undesired or unpredicted conditions that cause reduced capacities in all or part of a system. Calculate system effect factors to reduce the performance ratings of HVAC equipment when installed under conditions different from those presented when the equipment was performance tested at the factory. To calculate system effects for air systems, use tables and charts found in AMCA 201, "Fans and Systems," Sections 7 through 10; or in SMACNA's "HVAC Systems--Duct Design," Sections 5 and 6. Compare this data with the design data and installed conditions.
   6. Coordinate requirements in system and equipment with this Section.
   7. Examine system and equipment installations to verify that they are complete and that testing, cleaning, adjusting, and commissioning specified in individual Specification Sections have been performed.
   8. Examine system and equipment test reports.

9. Examine HVAC system and equipment installations to verify that indicated balancing devices, such as test ports, gauge cocks, thermometer wells, flow-control devices, balancing valves and fittings, and manual volume dampers, are properly installed, and their locations are accessible and appropriate for effective balancing and for efficient system and equipment operation.
10. Examine systems for functional deficiencies that cannot be corrected by adjusting and balancing.
11. Examine equipment for installation and for properly operating safety interlocks and controls.
12. Report deficiencies discovered before and during performance of testing, adjusting, and balancing procedures.
13. Beginning of work means acceptance of existing conditions.

D. Preparation:
   1. Prepare a testing, adjusting, and balancing plan that includes strategies and step-by-step procedures.
   2. Complete system readiness checks and prepare system readiness reports. Verify the following:
      a. Permanent electrical power wiring is complete.
      b. Hydronic systems are filled, clean, and free of air.
      c. Automatic temperature-control systems are operational.
      d. Equipment and duct access doors are securely closed.
      e. Balance, smoke, and fire dampers are open.
      f. Isolating and balancing valves are open and control valves are operational.
      g. Ceilings are installed in critical areas where air-pattern adjustments are required and access to balancing devices is provided.
      h. Windows, doors and other portions of the building envelope can be closed so design conditions for system operations can be met.
   3. Hold a pre-balancing meeting at least one week prior to starting TAB work.
      a. Attendance is required by installers whose work will be tested, adjusted, or balanced.
   4. Provide instruments required for testing, adjusting, and balancing operations. Make instruments available to Design Builder to facilitate spot checks during testing.

E. General Testing and Balancing Procedures:
   1. Perform testing and balancing procedures on each system according to the procedures contained in AABC national standards or NEBB's "Procedural Standards for Testing, Adjusting, and Balancing of Environmental Systems" and this Section.
   2. Cut insulation, ducts, pipes, and equipment cabinets for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. After testing and balancing, close probe holes and patch insulation with new materials identical to those removed. Restore vapor barrier and finish according to the insulation Specifications for this Project.

3. Mark equipment settings with paint or other suitable, permanent identification material, including damper-control positions, valve indicators, fan-speed-control levers, and similar controls and devices, to show final settings.

F. Adjustment Tolerances:
   1. Air Handling Systems: Adjust to within plus or minus 5 percent of design for supply systems and plus or minus 5 percent of design for return and exhaust systems.
   2. Air Outlets and Inlets: Adjust total to within plus 10 percent and minus 5 percent of design. Adjust outlets and inlets in space to within plus or minus 10 percent of design.
   3. Hydronic Systems: Adjust to within plus or minus 10 percent of design at coils and plus or minus 5 percent at system pumps and equipment.
   4. Adjust supply, return, and exhaust air quantities to maintain pressurization in spaces indicated on Drawings. Note and document room-to-room pressurization and maintain these relationships. Adjust pressure controlled spaces to within plus or minus 0.01 in WC.

G. Recording and Adjusting:
   1. Field Logs: Maintain written logs including:
      a. Running log of events and issues.
      b. Discrepancies, deficient or uncompleted work by others.
      c. Contract interpretation requests.
      d. Lists of completed tests.
   2. Ensure recorded data represents actual measured or observed conditions.
   3. Permanently mark settings of valves, dampers, and other adjustment devices allowing settings to be restored. Set and lock memory stops.
   4. Mark on drawings locations where traverse and other critical measurements were taken and cross reference location in final report.
   5. After adjustment, take measurements to verify balance has not been disrupted or that such disruption has been rectified.
   6. Leave systems in proper working order, replacing belt guards, closing access doors, closing doors to electrical switch boxes, and restoring thermostats to specified settings.
   7. At final inspection, recheck random selections of data recorded in report. Recheck points or areas as selected and witnessed by Owner's Representative, or Commissioning Agent.

3.02 PRE-CONSTRUCTION BALANCE (EXISTING SYSTEMS)

A. Pre-Construction Balance - Air Systems
   1. Prior to start of construction or demolition; read and record airflow to establish “as-found” conditions. Provide pitot traverse of supply, return and exhaust ductwork at locations indicated on drawings and, as minimum, at central air handlers, main branch ductwork and at each floor.
   2. Read and record static pressure conditions across existing filters, coils and fans.
   3. Read and record amp draw and motor data from each existing air handler and fan that will be modified during project.

B. Report data and observations to Design Builder.

3.03 FUNDAMENTAL AIR SYSTEMS BALANCING PROCEDURES

A. Examine air-handling equipment to ensure clean filters have been installed, bearings are greased, belts are aligned and tight, and equipment with functioning controls is ready for operation.
B. Examine terminal units, such as variable-air-volume boxes and mixing boxes, to verify that they are accessible and their controls are connected and functioning.
C. Examine plenum ceilings, utilized for supply air, to verify that they are airtight. Verify that pipe penetrations and other holes are sealed.
D. Examine heat-transfer coils for correct piping connections and for clean and straight fins.
E. Prepare test reports for both fans and inlets and outlets. Obtain manufacturer's outlet factors and recommended testing procedures. Cross check the summation of required outlet volumes with required fan volumes.
F. Prepare schematic diagrams of systems' "as-built" duct layouts.
G. Determine the best locations in main and branch ducts for accurate duct airflow measurements.
H. Check the airflow patterns from the outside-air louvers and dampers and the return- and exhaust-air dampers, through the supply-fan discharge and mixing dampers.
I. Locate start-stop and disconnect switches, electrical interlocks, and motor starters.
J. Verify that motor starters are equipped with thermal protection, sized for the connected load.
K. Check dampers for proper position to achieve desired airflow path.
L. Check for airflow blockages.
M. Check that condensate drains are installed, trapped and primed and routed to drain.
N. Check for readily observable leaks in air-handling unit components and ductwork.
O. Use sheaves and pulleys to adjust the speed of belt drive fans to achieve design flow with motors running at 60 Hertz unless noted otherwise.

3.04 TEMPERATURE CONTROL VERIFICATION

A. Examine automatic temperature system components to verify the following:
    1. Dampers, valves, and other controlled devices operate by the intended controller.
    2. Dampers and valves are in the position indicated by the controller.
    3. Integrity of valves and dampers for free and full operation and for tightness of fully closed and fully open positions. This includes dampers in multizone units, mixing boxes, and variable-air-volume terminals.
    4. Automatic modulating and shutoff valves, including 2-way valves and 3-way mixing and diverting valves, are properly connected.
    5. Thermostats and humidistats are located to avoid adverse effects of sunlight, equipment, drafts, and cold walls.
    6. Sensors are located to sense only the intended conditions.
    7. Sequence of operation for control modes is according to the Contract Documents.

8. Controller set points are set at design values. Observe and record system reactions to changes in conditions. Record default set points if different from design values.
9. Interlocked systems are operating.
10. Changeover from heating to cooling mode occurs according to design values.

B. Verify that controllers are calibrated and commissioned.
C. Check transmitter and controller locations and note conditions that would adversely affect control functions.
D. Record controller settings and note variances between set points and actual measurements.
E. Verify operation of limiting controllers (i.e., high- and low-temperature controllers).
F. Verify free travel and proper operation of control devices such as damper and valve operators.
G. Verify sequence of operation of control devices. Note air pressures and device positions and correlate with airflow and water-flow measurements. Note the speed of response to input changes.
H. Confirm interaction of electrically operated switch transducers.
I. Confirm interaction of interlock and lockout systems.
J. Verify main control supply-air pressure and observe compressor and dryer operations.
K. Note operation of electric actuators using spring return for proper fail-safe operations.

3.05 VARIABLE-AIR-VOLUME SYSTEMS ADDITIONAL PROCEDURES

A. Compensating for Diversity:
    1. When the total airflow of terminal units is more than the fan design airflow volume, place a selected number of terminal units at a maximum set-point airflow condition until the total airflow of the terminal units equals the design airflow of the fan. Select the reduced airflow terminal units so they are distributed evenly among the branch ducts.
    2. Pressure-Independent, Variable-Air-Volume Systems:
        a. After the fan systems have been adjusted, adjust the variable-air-volume systems as follows:
            1) Set outside-air dampers at minimum, and return- and exhaust-air dampers at a position that simulates full-cooling load.
            2) Select the terminal unit that is most critical to the supply-fan airflow and static pressure. Measure static pressure. Adjust system static pressure to deliver design airflow at the terminal unit.
            3) Measure total system airflow. Adjust to within 10 percent of design airflow.
            4) Set terminal units at maximum airflow and adjust controller or regulator to deliver the designed maximum airflow. Use the terminal unit manufacturer's written instructions to make this adjustment. When total airflow is correct, balance the air outlets downstream from terminal units as described for constant-volume air systems.

5) Set terminal units at minimum airflow and adjust controller or regulator to deliver the designed minimum airflow. Check air outlets for a proportional reduction in airflow as described for constant-volume air systems.

3. If air outlets are out of balance at minimum airflow, report the condition but leave the outlets balanced for maximum airflow.
    1) Remeasure the return airflow to the fan while operating at maximum return airflow and minimum outside airflow. Adjust the fan and balance the return-air ducts and inlets as described for constant-volume air systems.
    2) Measure static pressure at the most critical terminal unit and adjust the static-pressure controller at the main supply-air sensing station to ensure adequate static pressure is maintained at the most critical unit. Balance system to achieve the lowest required differential pressure for the system to minimize fan brake horsepower.
    3) Balance terminal units in variable volume systems for maximum cooling, maximum heating, and minimum ventilation (demand based ventilation systems) airflow rates.
    4) Record the final fan performance data.
4. Additional Requirements: Provide all additional procedures to compensate for diversity as prescribed in ASHRAE and/or NEBB standards.
5. Calibrate airflow measuring stations.

3.06 FUNDAMENTAL PROCEDURES FOR HYDRONIC SYSTEMS

A. Examine strainers for clean screens and proper perforations.
B. Examine 3-way valves for proper installation for their intended function of diverting or mixing fluid flows.
C. Examine open-piping-system pumps to ensure absence of entrained air in the suction piping.
D. Prepare test reports with pertinent design data and number in sequence starting at pump to end of system. Check the sum of branch-circuit flows against approved pump flow rate. Correct variations that exceed plus or minus 5 percent.
E. Prepare schematic diagrams of systems' "as-built" piping layouts.
F. Prepare hydronic systems for testing and balancing according to the following, in addition to the general preparation procedures specified above:
    1. Open manual valves for maximum flow.
    2. Check expansion tank liquid level, or air charge if bladder type.
    3. Check makeup-water-station pressure gauge for adequate pressure for highest vent.
    4. Check flow-control valves for specified sequence of operation and set at design flow.
    5. Set differential-pressure control valves at the specified differential pressure.
    6. Set system controls so automatic valves are wide open to heat exchangers and coils.

7. Check pump-motor load. If motor is overloaded, throttle main flow-balancing device so motor nameplate rating is not exceeded.
8. Check air vents for a forceful liquid flow exiting from vents when manually operated.

G. Calibrate waterflow measuring stations.

3.07 PUMP BALANCING PROCEDURES

A. Determine water flow at pumps. Use the following procedures:
1. Verify impeller size by operating the pump with the discharge valve closed. Read pressure differential across the pump. Convert pressure to head and correct for differences in gauge heights. Note the point on the manufacturer's pump curve at zero flow and confirm that the pump has the intended impeller size.
2. Check system resistance. With valves open, read pressure differential across the pump and mark the pump manufacturer's head-capacity curve. Adjust pump discharge valve until design water flow is achieved. Report flow rates that are not within plus or minus 5 percent of design.
3. Verify pump-motor amperage. Report conditions where actual amperage exceeds motor nameplate amperage.
4. Set calibrated balancing valves, if installed, at calculated presettings.
5. Measure flow at stations and adjust, where necessary, to obtain first balance. System components that have Cv rating or an accurately cataloged flow-pressure-drop relationship may be used as a flow-indicating device.
6. Measure flow at main balancing station and set main balancing device or adjust pump speed to achieve flow that is 5 percent greater than design flow.
7. Adjust balancing stations to within specified tolerances of design flow rate as follows:
    a. Determine the balancing station with the highest percentage over design flow.
    b. Adjust each station in turn, beginning with the station with the highest percentage over design flow and proceeding to the station with the lowest percentage over design flow.
    c. Record settings and mark balancing devices.
8. Measure pump flow rate and make final measurements of pump amperage, voltage, rpm, pump heads, and systems' pressures and temperatures, including outdoor-air temperature.
9. Measure the differential-pressure control valve settings existing at the conclusions of balancing.

3.08 VARIABLE FLOW HYDRONIC SYSTEMS ADDITIONAL PROCEDURES

A. Balance systems with automatic 2- and 3-way control valves by setting systems at maximum flow through heat-exchange terminals and proceed as specified above for hydronic systems.
B. Balance system to achieve the lowest required differential pressure for the system to minimize pump brake horsepower.

3.09 VIBRATION TESTING

A. Furnish instruments and perform vibration measurements. Provide measurements for all rotating HVAC equipment of 1/2 horsepower and larger, including centrifugal/screw compressors, cooling towers, pumps, fans and motors.
B. Record initial measurements for each unit of equipment on test forms and submit a report to the Design Builder. Where vibration readings exceed the allowable tolerance, correct the problem. TAB agency to verify that the corrections are done and submit a final report to the Design Builder.

3.10 PRE-BALANCE REPORTING

A. Pre-Construction Phase Report:
    1. Provide a pre-construction phase TAB Plan at least 2 weeks prior to the commencement of TAB work. This report is to include:
        a. A complete set of report forms intended for use on the project, with all data filled in except for the field readings. Forms to be project specific.
        b. Marked up shop drawings identifying all HVAC equipment to be balanced, and associated outlets and terminal devices.
        c. Identification of the type, manufacturer, and model of actual instruments to be used, and clear indication of which instrument will be used to take each type of reading. Calibration certifications are to be included.
        d. A narrative of any project specific and/or non-standard TAB procedures to be used, and the equipment or systems they apply to.
B. Initial Construction-Phase Report: Based on examination of the Contract Documents as specified in "Examination" Article above, prepare a report on the adequacy of design for systems' balancing devices. Recommend changes and additions to systems' balancing devices to facilitate proper performance measuring and balancing. Recommend changes and additions to HVAC systems and general construction to allow access for performance measuring and balancing devices.
C. Status Reports: As Work progresses, prepare reports to describe completed procedures, procedures in progress, and scheduled procedures. Include a list of deficiencies and problems found in systems being tested and balanced.

3.11 FINAL REPORTS

A. Report Requirements:
    1. General:
        a. Computer printout in letter-quality font, on standard bond paper, in 3-ring binder, tabulated and divided into Sections by tested and balanced systems.
        b. Include a certification sheet in front of binder signed and sealed by the certified testing and balancing engineer.
            1) Include a list of the instruments used for procedures, along with proof of calibration.

c. Final Report Contents: In addition to the certified field report data, include the following:
    1) Pump curves.
    2) Fan Curves
    3) Manufacturers Test Data
    4) Field test reports prepared by system and equipment installers.
    5) Other information relative to equipment performance, but do not include approved Shop Drawings and Product Data.

B. General Report Data:
1. In addition to the form titles and entries, include the following data in the final report, as applicable:
    a. Title Page
    b. Name and Address of Testing, Adjusting, and Balancing Agent
    c. Project Name
    d. Project Location
    e. Design Builder's Name and Address
    f. Engineer's Name and Address
    g. Report Date
    h. Signature of Testing, Adjusting, and Balancing Agent who Certifies the Report
    i. Summary of Contents, Including the Following:
        1) Design versus Final Performance
        2) Notable Characteristics of Systems
        3) Description of System Operation Sequence if it varies from the Contract Documents
    j. Nomenclature Sheets for Each Item of Equipment
    k. Data for Terminal Units, including Manufacturer, Type Size, and Fittings
    l. Notes to explain why certain final data in the body of reports vary from design values.
    m. Test Conditions for Fans and Pump Performance Forms, Including the Following:
        1) Settings for Outside-, Return-, and Exhaust-air Dampers
        2) Conditions of Filters
        3) Cooling Coil, Wet- and Dry-bulb Conditions
        4) Face and Bypass Damper Settings at Coils
        5) Fan Drive Settings, including Settings and Percentage of Maximum Pitch Diameter
        6) Inlet Vane Settings for Variable-Air-Volume Systems
        7) Settings for Supply-air, Static-pressure Controller
        8) Other System Operating Conditions that affect Performance

C. System Diagrams:
1. Include schematic layouts of air and hydronic distribution systems. Present with single-line diagrams and include the following:
    a. Quantities of Outside, Supply, Return, and Exhaust Airflows
    b. Water and Steam Flow Rates
    c. Duct, Outlet, and Inlet Sizes

d. Pipe and Valve Sizes and Locations
e. Terminal Units
f. Balancing Stations

D. Air Handling Units:
1. For air-handling units, packaged rooftop unit air handlers, split systems, fan coils, heat pumps, and evaporator units with coils, include the following:
a. Unit Data: Include the following:
1) Unit Identification
2) Location
3) Make and Type
4) Model Number and Unit Size
5) Manufacturer's Serial Number
6) Unit Arrangement and Class
7) Discharge Arrangement
8) Sheave Make, Size in inches, and Bore
9) Sheave Dimensions, Center-to-center and Amount of Adjustments in Inches
10) Number of Belts, Make, and Size
11) Number of Filters, Type, and Size
b. Motor Data: Include the following:
1) Make and Frame Type and Size
2) Horsepower and rpm
3) Volts, Phase, and Hertz
4) Full-load Amperage and Service Factor
5) Sheave Make, Size in Inches, and Bore
6) Sheave Dimensions, Center-to-center and Amount of Adjustments in Inches
c. Test Data: Include design and actual values for the following:
1) Total Airflow Rate in cfm (L/s)
2) Total System Static Pressure in Inches wg (Pa)
3) Fan rpm
4) Discharge Static Pressure in Inches wg (Pa)
5) Filter Static-pressure Differential in Inches wg (Pa)
6) Cooling Coil Static-pressure Differential in Inches wg (Pa)
7) Outside Airflow in cfm (L/s)
8) Return Airflow in cfm (L/s)
9) Outside-air Damper Position
10) Return-air Damper Position
11) Vortex Damper Position

E. Duct Traverses:
1. Include a diagram with a grid representing the duct cross-Section and record the following:
a. Report Data: Include the following:
1) System and Air-handling Unit Number
2) Location and Zone
3) Traverse Air Temperature in Degrees F

4) Duct Static Pressure in Inches wg
5) Duct Size in Inches
6) Duct Area in SF
7) Design Airflow Rate in cfm
8) Design Velocity in fpm
9) Actual Airflow Rate in cfm
10) Actual Average Velocity in fpm
11) Barometric Pressure in PSIG

F. Diffusers/Registers/Grilles:
1. For diffusers, registers and grilles, include the following:
a. Unit Data: Include the following:
1) System and Air-handling Unit Identification
2) Location and Zone
3) Test Apparatus Used
4) Area Served
5) Air-terminal-device Make
6) Air-terminal-device Number from System Diagram
7) Air-terminal-device Type and Model Number
8) Air-terminal-device Size
9) Air-terminal-device Effective Area in SF
b. Test Data: Include design and actual values for the following:
1) Airflow Rate in cfm
2) Air Velocity in fpm
3) Preliminary Airflow Rate as Needed in cfm
4) Preliminary Velocity as Needed in fpm
5) Final Airflow Rate in cfm
6) Final Velocity in fpm
7) Space Temperature in Degrees F

G. Pumps:
1. For pumps, include the following data. Calculate impeller size by plotting the shutoff head on pump curves.
a. Unit Data: Include the following:
1) Unit Identification
2) Location
3) Service
4) Make and Size
5) Model and Serial Numbers
6) Water Flow Rate in gpm
7) Water Pressure Differential in Feet of Head or PSIG
8) Required Net Positive Suction Head in Feet of Head or PSIG
9) Pump rpm
10) Impeller Diameter in Inches
11) Motor Make and Frame Size
12) Motor Horsepower and rpm
13) Voltage at Each Connection
14) Amperage for Each Phase

15) Full-load Amperage and Service Factor
16) Seal Type

b. Test Data: Include design and actual values for the following:
1) Static Head in Feet of Head or PSIG
2) Pump Shutoff Pressure in Feet of Head or PSIG
3) Actual Impeller Size in Inches
4) Full-open Flow Rate in gpm
5) Full-open Pressure in Feet of Head or PSIG
6) Final Discharge Pressure in Feet of Head or PSIG
7) Final Suction Pressure in Feet of Head or PSIG
8) Final Total Pressure in Feet of Head or PSIG
9) Final Water Flow Rate in gpm
10) Voltage at Each Connection
11) Amperage for Each Phase

H. Boilers:
1. For boilers, include the following:
a. Unit Data: Include the following:
1) Unit Identification
2) Location
3) Service
4) Make and Type
5) Model and Serial Numbers
6) Fuel Type and Input in Btuh
7) Number of Passes
8) Ignition Type
9) Burner-control Types
10) Voltage at Each Connection
11) Amperage for Each Phase
12) Flue-gas Analysis

b. Test Data: Include design and actual values for the following:
1) Operating Pressure in PSIG
2) Operating Temperature in Degrees F
3) Entering-water Temperature in Degrees F
4) Leaving-water Temperature in Degrees F
5) Number of Safety Valves and Sizes in NPS (DN)
6) Safety Valve Settings in PSIG
7) High-limit Setting in PSIG
8) Operating-control Setting
9) High-fire Set Point
10) Low-fire Set Point
11) Voltage at Each Connection
12) Amperage for Each Phase
13) Draft Fan Voltage at Each Connection
14) Draft Fan Amperage for Each Phase
15) Manifold Pressure in PSIG

I. Instrument Calibration:

1. For instrument calibration, include the following:
    a. Report Data: Include the following:
        1) Instrument Type and Make
        2) Serial Number
        3) Application.
        4) Dates of Use
    b. Dates of Calibration.

3.12 ADDITIONAL TESTS

A. Within 90 days of completing testing, adjusting, and balancing, perform additional testing and balancing to verify that balanced conditions are being maintained throughout and to correct unusual conditions.
B. Seasonal Periods: If initial testing, adjusting, and balancing procedures were not performed during near-peak summer and winter conditions, perform additional inspections, testing, and adjusting during near-peak summer and winter conditions.

END OF SECTION

DOCUMENT 23 07 00

HVAC INSULATION

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for designing, engineering, procuring, and installing all work related to insulating equipment and or piping.

B. Work Included:
   1. Engineering and install new insulation new work.
   2. Engineering and installation of new insulation on heating hot water piping
   3. Type A, Flexible Fiberglass Blanket
   4. Type 1, Fiberglass Pipe Insulation
   5. Jacketing
   6. Accessories
   7. Duct Insulation Accessories
   8. Duct Insulation Compounds

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required
B. In addition, meet the following:
   1. Piping and duct insulation products to contain less than 0.1 percent by weight PBDE in all insulating materials.

1.04 SUBMITTALS

A. Submittals as required
B. In addition, provide:
   1. Installer qualifications.
   2. Product Data: Identify thermal conductivity, thickness, and jackets (both factory and field applied, if any) for each type of product indicated.
   3. Material Test Reports: From a qualified testing agency acceptable to authorities having jurisdiction indicating, interpreting, and certifying test results for compliance of insulation materials, sealers, attachments, cements, and jackets with requirements indicated. Include dates of tests.
   4. Installer Certificates: Signed by the Design Builder certifying that installers comply with requirements.
   5. Submit manufacturer's installation instructions.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by Section 23 00 00, HVAC Basic Requirements and Division 01, General Requirements.
B. In addition, meet the following:
    1. Installer to have minimum 5 years experience in the business of installing insulation.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by Section 23 00 00, HVAC Basic Requirements and Division 01, General Requirements.

1.07 FIRE HAZARD CLASSIFICATION

A. Maximum fire hazard classification of the composite insulation construction as installed to be not more than a flame spread of 25, fuel contributed of 50 and smoke developed of 50 as tested by current edition of ASTM E84 (NFPA 255) method.
B. Test pipe insulation in accordance with the requirements of current edition of UL "Pipe and Equipment Coverings R5583 400 8.15."
C. Test duct insulation in accordance with current edition of ASTM E84, UL 723, NFPA 255, NFPA 90A and NFPA 90B.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Type A, Flexible Fiberglass Blanket:
    1. Certainteed
    2. Johns Manville
    3. Knauf
    4. Owens-Corning
    5. PPG
    6. Or approved equivalent.
B. Type 1, Fiberglass Pipe Insulation:
    1. Certainteed
    2. Johns Manville
    3. Knauf
    4. Owens-Corning
    5. PPG
    6. Or approved equivalent.

2.02 TYPE A, FLEXIBLE FIBERGLASS BLANKET

A. ASTM C553, Type 1, Class B-2; flexible blanket.
B. 'K' Value: 0.27 BTU*in/(hr*sf*F) at 75 degrees F installed, maximum service temperature: 250 degrees F.

C. Density: 0.75 pounds per cubic foot.
D. Vapor Barrier Jacket: FSK aluminum foil reinforced with fiberglass yarn and laminated to fire resistant Kraft, secured with UL listed pressure sensitive tape or outward clinched expanded staples and vapor barrier mastic as needed.

2.03 TYPE 1, FIBERGLASS PIPE INSULATION

A. Glass Fiber: ASTM C547; rigid molded, noncombustible.
   1. Thermal Conductivity Value: As indicated in the insulation tables below.
   2. Maximum Service Temperature: 850 degrees F.
   3. Vapor Retarder Jacket: White Kraft paper reinforced with glass fiber and bonded to aluminum foil, secure with self sealing longitudinal laps and butt strips or vapor barrier mastic.

2.04 JACKETING

A. Stainless Steel Jacket: Type 304 stainless steel, 0.010-inch, smooth finish.

2.05 ACCESSORIES

A. General: Provide staples, bands, wire, wire netting, tape corner angles, anchors, stud pins and metal covers as recommended by insulation manufacturer for applications indicated. Accessories, i.e., adhesives, mastics, cements and tape to have the same flame and smoke component ratings as the insulation materials with which they are used. Shipping cartons to bear a label indicating that flame and smoke ratings do not exceed those listed above. Provide permanent treatment of jackets or facings to impart flame and smoke safety. Provide nonwater soluble treatments. Provide UV protection recommended by manufacturer for outdoor installation.

2.06 DUCT INSULATION ACCESSORIES

A. Staples, bands, wires, tape, anchors, corner angles and similar accessories as recommended by insulation manufacturer for applications indicated.

2.07 DUCT INSULATION COMPOUNDS

A. Cements, adhesives, coatings, sealers, protective finishes and similar accessories as recommended by insulation manufacturer for applications indicated.

PART 3 - EXECUTION

3.01 VERIFICATION OF CONDITIONS

A. Do not apply insulation until pressure testing of the ducts and piping has been completed. Do not apply to pipe with heat tracing until system has been tested. Do not apply insulation until the duct has been inspected.
B. Examine areas and conditions under which duct and pipe insulation will be installed. Do not proceed with work until unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. Clean and dry surfaces to be insulated.

3.03 INSTALLATION

A. Insulation: Continuous through walls, floors, partitions except where noted otherwise.
B. Piping and Equipment:
    1. Install insulation over clean, dry surfaces with adjoining Sections firmly butted together and covering surfaces. Fill voids and holes. Seal raw edges. Install insulation in a manner such that insulation may be split, removed, and reinstalled with vapor barrier tape on strainer caps and unions. Do not install insulation until piping has been leak tested and has passed such tests. Do not insulate manholes, equipment manufacturer's nameplates, handholes, and ASME stamps. Provide beveled edge at such insulation interruptions. Repair voids or tears.
C. Ductwork:
    1. Install insulation in conformance with manufacturer's recommendations to completely cover duct.
    1. Butt insulation joints firmly together and install jackets and tapes smoothly and securely.
    2. Apply duct insulation continuously through sleeves and prepared openings, except as otherwise specified. Apply vapor barrier materials to form complete unbroken vapor seal over insulation.
    3. Coat staples and seals with vapor barrier coating.
    4. Cover breaks in jacket materials with patches of same material as vapor barrier. Extend patches not less than 2-inches beyond break or penetration on all directions and secure with adhesive and staples. Seal staples and joints with vapor barrier coating.
    5. Fill jacket penetrations. i.e., hangers, thermometers and damper operating rods, and other voids in insulation with vapor barrier coating. Seal penetration with vapor barrier coating. Insulate Hangers and Supports for cold duct in un-conditioned spaces to extent to prevent condensation on surfaces.
    6. Seal and flash insulation terminations and pin punctures with reinforced vapor barrier coating.
    7. Continue insulation at fire dampers and fire/smoke dampers up to and including those portions of damper frame visible at outside of the rated fire barrier. Insulating terminations at fire dampers in accordance with this Section.

8. Do not conceal duct access doors with insulation. Install insulation terminations at access door in accordance with this Section.
9. Duct Wrap: Cover air ducts per insulation table except ducts internally lined where internal duct lining is adequate to achieve adequate insulating values to meet local Energy Codes (indicate on shop drawings, locations where duct wrap is planned to be omitted and indicate internal duct lining insulating values to confirm they will meet the Energy Code.) Wrap tightly with circumferential joints butted and longitudinal joints overlapped minimum of 2-inches. Adhere insulation with 4-inch strips of insulating bending adhesive at 8-inches on center. On ducts over 24-inches wide, additionally secure insulation with suitable mechanical fasteners at 18-inches on center. Circumferential and longitudinal joints stapled with flare staples 6-inches on center and covered with 3-inch wide, foil reinforced tape.

3.04 PROTECTION AND REPLACEMENT

A. Installed insulation during construction. Replace damaged insulation which cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.

3.05 FIBERGLASS INSULATION

A. Lap seal insulation with waterproof adhesive. Do not use staples or other methods of attachment which would penetrate the vapor barrier. Apply fitting covers with seated tacks and vapor barrier tape.
B. Apply insulation to pipe and seal with self-sealing lap. Use self-sealing butt strips to seal butt joints. Insulate fittings, valves and unions with single or multiple layers of insulation and cover to match pipe or use performed PVC molded insulation covers.

3.06 LABELING AND MARKING

A. Provide labels, arrows and color on piping and ductwork. Attach labels and flow direction arrows to the jacketing per Section 23 05 53, Identification for HVAC Piping, Ductwork and Equipment.

3.07 PIPING SURFACES TO BE INSULATED

A. California:

Item to be Insulated	System Insulation Type	Conductivity Range (Btu-inch per hour per SF per degrees F)	Pipe Size (inches)	Indoor Location Insulation Thickness (inches)	Outdoor Location Insulation Thickness (inches)

Pipe containing fluid 150 to 200 degrees F	1	0.25-0.29 at a mean rating temperature of 125 degrees F	<1 1 to <1.5 1.5 to <4 4 to < 8 >= 8	1.5 1.5 2.0 2.0 2.0	2.5 2.5 3.0 3.0 3.0

B. Note: Insulation thickness shown is a minimum. If state code requires additional thickness, then provide insulation thickness per code requirements.

3.08 DUCTWORK SURFACES TO BE INSULATED

Item to be Insulated	System Insulation Type	Duct Size	Insulation Thickness
Supply ductwork where duct is not specified to be lined.	A	All	1-1/2-inch
Return ductwork where duct is not specified to be lined or where ductboard is not utilized.	--	All	None

A. Note: Insulation thickness shown is a minimum. If state codes require additional thickness, then provide insulation thickness per code requirements.

3.09 INSULATED PIPE EXPOSED TO WEATHER

A. Where piping is exposed to weather, cover insulation with aluminum jacket. Seal watertight jacket per manufacturer's recommendations. Install metal jacket with 2-inch overlap at longitudinal and butt joints with exposed lap pointing down. Secure jacket with stainless-steel draw bands 12-inches on center and at butt joints.

3.10 INSULATION SHIELDS

A. Provide hangers and shields (18 gauge minimum) outside of insulation for cold piping (<60 degrees F). Hot water piping hangers may penetrate insulation to contact pipe directly. Provide 18-inch long, noncompressible insulation Section at insulation shields for lines 2-inches and larger for steam and chilled water piping.

3.11 PROTECTION AND REPLACEMENT

A. Protect installed insulation during construction. Replace damaged insulation which cannot be repaired satisfactorily, including units with vapor barrier damage and moisture saturated units.

END OF SECTION

DOCUMENT 23 08 00

COMMISSIONING OF HVAC

PART 1 - GENERAL

1.01 SUMMARY

A. This is a performance specification and Design Builder is responsible for designing, engineering, procuring, and performing commissioning all new equipment.

B. Work Included:
   1. Definitions, warranties, test equipment requirements, and mechanical commissioning requirements.
   2. Design Builder is responsible for functional testing and commissioning of all equipment, including, but not limited to:
      a. Domestic Hot Water System
      b. Heating Hot Water Boilers and System

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents

1.04 SUBMITTALS

A. Submittals as required by contract documents
B. In addition, provide:
   1. Certificates of readiness.
   2. Certificates of completion of installation, prestart, and startup activities.
   3. Operation and Maintenance Manuals.
   4. Test reports.
   5. Control Drawings Submittal
      a. Provide a key to abbreviations.
      b. Provide graphic schematic depictions of the systems and each component.
      c. Include the system and component layout of any equipment that the control system monitors, enables or controls, even if the equipment is primarily controlled by packaged or integral controls.
      d. Provide a full points list with at least the following included for each point:
         1) Controlled system

2) Point abbreviation
3) Point description
4) Display unit

6. Design team sends consolidated response to submittals and copies to Commissioning Agent.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by Section 23 00 00, HVAC Basic Requirements and Division 01, General Requirements.
B. In addition, meet the following:
   1. Test Equipment Calibration Requirements: Design Builders will comply with test manufacturer's calibration procedures and intervals. Recalibrate test instruments immediately after instruments have been repaired resulting from being dropped or damaged. Affix calibration tags to test instruments. Furnish calibration records to Commissioning Authority upon request.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by Section 23 00 00, HVAC Basic Requirements and Division 01, General Requirements.
B. In addition, provide:
   1. Commissioning, inspecting, and testing will not modify terms or time periods of mechanical equipment, systems, and controls warranties including related equipment and systems, and adjacent work.
   2. Control system warranty period starts from date of Commissioning Agent acceptance.

1.07 COORDINATION

A. Reference Section 01 91 13 for requirements pertaining to coordination during the commissioning process.

PART 2 - PRODUCTS

2.01 TEST EQUIPMENT

A. Provide standard testing equipment required to perform startup, initial checkout and functional performance testing for the equipment being tested. For example, the Design Builder of Division 23, HVAC will ultimately be responsible for standard testing equipment for the HVAC&R system and controls system in Division 23, HVAC, except for the equipment specific to and used by TAB in their commissioning responsibilities. Provide a sufficient quantity of two-way radios by each subcontractor.
B. Include special equipment, tools and instruments (specific to a piece of equipment and only available from vendor) required for testing in the base bid price to the Owner and

leave on site, except for stand-alone data logging equipment that may be used by the Commissioning Authority.

C. Manufacturer of equipment to provide proprietary test equipment and software required for programming and/or start-up, whether specified or not. Manufacturer provides the test equipment, demonstrates its use, and assists in the commissioning process as needed. Proprietary test equipment (and software) become the property of the Owner upon completion of the commissioning process.

D. Data logging equipment and software required to test equipment will be provided by the Commissioning Authority, and will not become the property of the Owner.

E. Use only testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified in the specifications. If not otherwise noted, the following minimum requirements apply: Temperature sensors and digital thermometers have a certified calibration within the past year to an accuracy of 0.5 degree F and a resolution of plus or minus 0.1 degree F. Pressure sensors have an accuracy of plus or minus 2.0 percent of the value range being measured (not full range of meter) and have been calibrated within the last year.

PART 3 - EXECUTION

3.01 GENERAL DOCUMENTATION REQUIREMENTS

A. With assistance from the installing contractors, the Commissioning Authority will prepare prefunctional checklists for commissioned components, equipment, and systems

B. Red-Lined Drawings:
   1. Verify equipment, systems, instrumentation, wiring and components are shown correctly on red-lined drawings.
   2. Preliminary red-lined drawings must be made available to the Commissioning Team for use prior to the start of Functional Performance Testing.
   3. Changes, as a result of Functional Testing, must be incorporated into the final as-built drawings, which will be created from the red-lined drawings.
   4. The contracted party, as defined in the Contract Documents will create the as-built drawings.

C. Operation and Maintenance Data:
   1. Design Builder will provide a copy of O&M literature within 45 days of each submittal acceptance for use during the commissioning process for commissioned equipment and systems.

B. Demonstration and Training:
   1. Design Builder will provide demonstration and training as required by the specifications.
   2. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain specific equipment.
   3. Train Owner's maintenance personnel on procedures and schedules for starting and stopping, trouble shooting, servicing, and maintaining equipment.
   4. Review data in O&M Manuals.

3.02 CONTRACTOR'S RESPONSIBILITIES

A. Mechanical, Controls and TAB Contractors. The commissioning responsibilities applicable to each of the mechanical, controls and TAB contractors of Division 23, HVAC are as follows (references apply to commissioned equipment only):
   1. Perform commissioning tests at the direction of the Commissioning Authority.
   2. Attend construction phase controls coordination meetings.
   3. Attend testing, adjusting, and balancing review and coordination meetings.
   4. Participate in HVAC&R systems, assemblies, equipment, and component maintenance orientation and inspection as directed by the Commissioning Authority.
   5. Provide information requested by the Commissioning Authority for final commissioning documentation.
   6. Include requirements for submittal data, operation and maintenance data, and training in each purchase order or subcontract written.
   7. Prepare preliminary schedule for mechanical system orientations and inspections, operation and maintenance manual submissions, training sessions, pipe and duct system testing, flushing and cleaning, equipment start-up, testing and balancing and task completion for owner. Distribute preliminary schedule to commissioning team members.
   8. Update schedule as required throughout the construction period.
   9. During the startup and initial checkout process, execute the related portions of the prefunctional checklists for commissioned equipment.

B. Coordinate with the Owner to provide 48 hour advance notice so that the witnessing of equipment and system start-up and testing can begin.

C. Participate in, and schedule vendors and contractors to participate in the training sessions.

D. Provide written notification to the Design Builder (DB) that the following work has been completed in accordance with the Contract Documents, and that the equipment, systems, and sub-system are operating as required.
   1. HVAC&R equipment including fans, air handling units, ductwork, dampers, terminals, and other equipment furnished under this Division.
   2. Fire stopping in the fire rated construction, including fire and smoke damper installation, caulking, gasketing and sealing of smoke barriers.
   3. Fire detection and smoke detection devices furnished under other divisions of the specification.

E. Equipment supplier to document the performance of his equipment.

F. Test, Adjust and Balance Contractor:
   1. Participate in verification of the testing and balancing report, which will consist of repeating measurements contained in the testing and balancing reports. Assist in diagnostic purposes when directed.

G. Provide training of the Owner's operating staff using expert qualified personnel, as specified.

H. Equipment Suppliers:
   1. Provide requested submittal data, including detailed start-up procedures and specific responsibilities of the Owner, to keep warranties in force.
   2. Assist in equipment testing per agreements with contractors.

3. Provide information requested by Commissioning Authority regarding equipment sequence of operation and testing procedures.

I. Reference Section 01 91 13, General Commissioning Requirements for additional contractor responsibilities.

3.03 OWNER'S RESPONSIBILITIES

A. Reference Section 01 91 13, General Commissioning Requirements for Owner's Responsibilities.

3.04 DESIGN PROFESSIONAL'S RESPONSIBILITIES

A. Reference Section 01 91 13, General Commissioning Requirements for Design Professional's Responsibilities.

3.05 RESPONSIBILITIES

A. Reference Section 01 91 13, General Commissioning Requirements for Commissioning Authority's Responsibilities.

3.06 TESTING PREPARATION

A. Certify in writing to the Owner that HVAC&R systems, subsystems, and equipment have been installed, calibrated, and started and are operating according to the Contract Documents.
B. Certify in writing to the Owner that HVAC&R instrumentation and control systems have been completed and calibrated, that they are operating according to the Contract Documents, and that pretest set points have been recorded.
C. Certify in writing that testing, adjusting, and balancing procedures have been completed and that testing, adjusting, and balancing reports have been submitted, discrepancies corrected, and corrective work approved.
D. Place systems, subsystems, and equipment into operating mode to be tested (e.g., normal shutdown, normal auto position, normal manual position, unoccupied cycle, emergency power, and alarm conditions).
E. Inspect and verify the position of each device and interlock identified on checklists.
F. Check safety cutouts, alarms, and interlocks with smoke control and life-safety systems during each mode of operation.
G. Testing Instrumentation: Install measuring instruments and logging devices to record test data as directed by the Commissioning Authority.

3.07 TESTING, ADJUSTING AND BALANCING VERIFICATION

A. Prior to performance of Testing, Adjusting and Balancing work, provide copies of reports, sample forms, checklists, and certificates to the Commissioning Authority.

B. Notify the Commissioning Authority at least 10 days in advance of testing and balancing Work, and provide access for the Commissioning Authority to witness testing and balancing Work.
C. Provide technicians, instrumentation, and tools to verify testing and balancing of HVAC&R systems at the direction of the Commissioning Authority.
    1. The Commissioning Authority will notify testing and balancing subcontractor 10 days in advance of the date of field verification. Notice will not include data points to be verified.
    2. Testing and balancing subcontractor to use the same instruments (by model and serial number) that were used when original data were collected.
    3. Failure of an item includes, other than sound, a deviation of more than 10 percent. Failure of more than 10 percent of selected items to result in rejection of final testing, adjusting, and balancing report. For sound pressure readings, a deviation of 3 dB to result in rejection of final testing. Variations in background noise must be considered.
    4. Remedy the deficiency and notify the Commissioning Authority so verification of failed portions can be performed.

3.08 GENERAL TESTING REQUIREMENTS

A. Provide technicians, instrumentation, and tools to perform commissioning test at the direction of the Commissioning Authority.
B. Scope of HVAC&R testing to include entire HVAC&R installation, from central equipment for heat generation and refrigeration through distribution systems to each conditioned space. Testing to include measuring capacities and effectiveness of operational and control functions.
C. Test operating modes, interlocks, control responses, and responses to abnormal or emergency conditions, and verify proper response of building automation system controllers and sensors.
D. The Commissioning Authority along with the HVAC&R contractor, testing and balancing Subcontractor, and HVAC&R Instrumentation and Control Subcontractor to prepare detailed testing plans, procedures, and checklists for HVAC&R systems, subsystems, and equipment.
E. Tests will be performed using design conditions whenever possible.
F. Simulated conditions may need to be imposed using an artificial load when it is not practical to test under design conditions. Before simulating conditions, calibrate testing instruments. Provide equipment to simulate loads. Set simulated conditions as directed by the Commissioning Authority and document simulated conditions and methods of simulation. After tests, return settings to normal operating conditions.
G. The Commissioning Authority may direct that set points be altered when simulating conditions is not practical.
H. The Commissioning Authority may direct that sensor values be altered with a signal generator when design or simulating conditions and altering set points are not practical.
I. If tests cannot be completed because of a deficiency outside the scope of the HVAC&R system, document the deficiency and report it to the Owner. After deficiencies are resolved, reschedule tests.

J. If the testing plan indicates specific seasonal testing, complete appropriate initial performance tests and documentation and schedule seasonal tests.

3.09 HVAC&R SYSTEMS, SUBSYSTEMS, AND EQUIPMENT TESTING PROCEDURES

A. Equipment Testing and Acceptance Procedures: Testing requirements are specified in individual Division 23, HVAC Sections. Provide submittals, test data, inspector record, and certifications to the Commissioning Authority.

B. HVAC&R Instrumentation and Control System Testing: Field testing plans and testing requirements are specified in Division 23, HVAC Sections "Instrumentation and Control for HVAC" and "Sequence of Operations for HVAC Controls." Assist the Commissioning Authority with preparation of testing plans.

C. Pipe System Cleaning, Flushing, Hydrostatic Tests, and Chemical Treatment: Test requirements are specified in Division 23, HVAC piping Sections. HVAC&R Contractor to prepare a pipe system cleaning, flushing, and hydrostatic testing plan. Provide cleaning, flushing, testing, and treating plan and final reports to the Commissioning Authority. Plan to include the following:
    1. Sequence of testing and testing procedures for each Section of pipe to be tested, identified by pipe zone or sector identification marker. Markers keyed to Drawings for each pipe sector, showing the physical location of each designated pipe test Section. Provide drawings keyed to pipe zones or sectors formatted to allow each Section of piping to be physically located and identified when referred to in pipe system cleaning, flushing, hydrostatic testing, and chemical treatment plan.
    2. Description of equipment for flushing operations.
    3. Minimum flushing water velocity.
    4. Tracking checklist for managing and ensuring that pipe Sections have been cleaned, flushed, hydrostatically tested, and chemically treated.

D. Refrigeration System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of chillers, cooling towers, refrigerant compressors and condensers, heat pumps, and other refrigeration systems. The Commissioning Authority to determine the sequence of testing and testing procedures for each equipment item and pipe Section to be tested.

E. HVAC&R Distribution System Testing: Provide technicians, instrumentation, tools, and equipment to test performance of air, steam, and hydronic distribution systems; special exhaust; and other distribution systems, including HVAC&R terminal equipment and unitary equipment.

F. Vibration and Sound Tests: Provide technicians, instrumentation, tools, and equipment to test performance of vibration isolation and seismic controls.

G. Sampling: Sampling is permissible on terminal units, fan coil units, split-system air conditioning units, packaged air conditioning units, unit heaters, and condensate pumps as long the minimum sample size is 20 percent but no less than 30 units fully tested. Refer to specification 01 91 13 General Commissioning Requirements for acceptance criteria.

H. The work included in the commissioning process involves a complete and thorough evaluation of the operation and performance of components, systems and sub-systems. Evaluate the following equipment and systems:
   1. HVAC Equipment and Systems (all)
   2. Boiler
   3. Building Automation System
   4. Pumps
   5. VFDs

3.10 DEFICIENCIES/NONCONFORMANCE, COST OF RETESTING, FAILURE DUE TO MANUFACTURER DEFECT

A. Reference Division 01, General Requirements for requirements pertaining to deficiencies/nonconformance, cost of retesting, or failure due to manufacturer defect.

3.11 OPERATION AND MAINTENANCE MANUALS

A. The Operation and Maintenance Manuals to conform to Contract Documents requirements as stated in Division 23, HVAC.
B. Provide an updated as-built version of the control drawings and sequences of operation in the final controls O&M manual submittal.

3.12 TRAINING OF OWNER PERSONNEL

A. Mechanical Contractor's Training Responsibilities:
   1. Provide designated Owner personnel with comprehensive orientation and training in the understanding of the systems and the operation and maintenance of each piece of HVAC equipment including, but not limited to, HVAC equipment (i.e. pumps, heat exchangers, chillers, heat rejection equipment, air conditioning units, air handling units, fans, terminal units, controls and water treatment systems, etc.)
   2. Training starts with classroom sessions followed by hands-on training on each piece of equipment to illustrate the various modes of operation, including startup, shutdown, fire/smoke alarm, power failure, etc.
   3. During any demonstration, should the system fail to perform in accordance with the requirements of the O&M manual or sequence of operations, the system will be repaired or adjusted as necessary and the demonstration repeated.
   4. The appropriate trade or manufacturer's representative provides the instructions on each major piece of equipment. This person may be the start-up technician for the piece of equipment, the installing contractor or manufacturer's representative. Practical building operating expertise as well as in-depth knowledge of modes of operation of the specific piece of equipment are required. More than one party may be required to execute the training.

5. Controls contractor to attend sessions other than the controls training, as requested, to discuss the interaction of the controls system as it relates to the equipment being discussed.
6. The training sessions follow the outline in the Table of Contents of the operation and maintenance manual and illustrate whenever possible the use of the O&M manuals for reference.
7. Training Includes:
    a. Use of the printed installation, operation and maintenance instruction material included in the O&M manuals.
    b. A review of the written O&M instructions emphasizing safe and proper operating requirements, preventative maintenance, special tools needed and spare parts inventory suggestions. Training to include start-up, operation in all modes possible, shut-down, seasonal changeover and any emergency procedures.
    c. Discussion of relevant health and safety issues and concerns.
    d. Discussion of warranties and guarantees.
    e. Common troubleshooting problems and solutions.
    f. Explanatory information included in the O&M manuals and the location of plans and manuals in the facility.
    g. Discussion of any peculiarities of equipment installation or operation.
8. Schedule training after functional testing is complete, unless approved otherwise by the Owner.

B. Controls Contractor's Training Responsibilities:
1. Provide designated Owner personnel training on the control system in this facility. The intent is to clearly and completely instruct the Owner on the capabilities of the control system.
2. Training manuals. The standard operating manual for the system and any special training manuals will be provided for each trainee, with three extra copies left for the O&M manuals. In addition, copies of the system technical manual will be demonstrated during training and three copies submitted with the O&M manuals. Manuals include detailed description of the subject matter for each session. Manuals to cover control sequences and have a definitions Section that fully describes relevant words used in the manuals and in software displays. Manuals will be approved by the Commissioning Authority and A/E. Deliver copies of audiovisuals to the Owner.
3. The trainings will be tailored to the needs and skill-level of the trainees.
4. The trainers will be knowledgeable on the system and its use in buildings. For the on-site sessions, the most qualified trainer(s) will be used. Owner to approve the instructor prior to scheduling the training.
5. During any demonstration, should the system fail to perform in accordance with the requirements of the O&M manual or sequence of operations, the system will be repaired or adjusted as necessary and the demonstration repeated.
6. Attend sessions other than the controls training, as requested, to discuss the interaction of the controls system as it relates to the equipment being discussed.
7. Three Training Sessions, as Follows:

a. Training I - Control System. The first training consists of 4 hours of actual training. This training may be held on-site or in the supplier's facility. If held off-site, the training may occur prior to final completion of the system installation. Upon completion, each student, using appropriate documentation, should be able to perform elementary operations and describe general hardware architecture and functionality of the system.
b. Training II - Building Systems. The second session held on-site for a period of 4 hours of actual hands-on training after the completion of system commissioning. The session includes instruction on:
    1) Specific hardware configuration of installed systems in this building and specific instruction for operating the installed system, including HVAC systems, lighting controls and any interface with security and communication systems.
    2) Security levels, alarms, system start-up, shut-down, power outage and restart routines, changing set points and alarms and other typical changed parameters, overrides, freeze protection, manual operation of equipment, optional control strategies that can be considered, energy savings strategies and set points that if changed will adversely affect energy consumption, energy accounting, procedures for obtaining vendor assistance, etc.
    3) Trending and monitoring features (values, change of state, totalization, etc.), including setting up, executing, downloading, viewing both tabular and graphically and printing trends. Trainees will actually set-up trends in the presence of the trainer.
    4) Completely discuss every screen, allowing time for questions.
    5) Use of keypad or plug-in laptop computer at the zone level.
    6) Use of remote access to the system via phone lines or networks.
    7) Setting up and changing an air terminal unit controller.
    8) Graphics generation
    9) Point database entry and modifications
    10) Understanding DDC field panel operating programming (when applicable)
c. Training III - The third training will be conducted on-site six months after occupancy and consist of 4 hours of training. The session will be structured to address specific topics that trainees need to discuss and to answer questions concerning operation of the system.

END OF SECTION

DOCUMENT 23 09 00

INSTRUMENTATION AND CONTROL PERFORMANCE SPECIFICATIONS

PART 1 - GENERAL

1.01 SUMMARY

Work included in this section.

A. Design Builder is responsible for design, engineering, procuring, and installing new energy management controls systems controllers, sensors, transmitters, wiring, programming, graphics, conduit, power, and communication bus to integrate new and existing heating hot water boilers and the new on-demand system.

B. Design Builder is required to have a pre-design meeting to define the scope of the controls work prior to starting any work on the programming, graphics, procuring and installing equipment, wiring, etc.

C. Design Builder shall develop the sequences of operations for each system and equipment that is covered scope in this Contract, herein. The sequences shall be written to optimize operations and equipment efficiency while meeting all the manufacturers operating and control requirements. The controls sequences shall also improve upon what is currently installed at the site; therefore, the Design Builder is required to recommend improvements to the existing equipment control.

D. All new and existing work will be integrated into the county's existing energy management control system – enteliWeb and Historian.

E. All controls equipment shall match the site's existing energy management control system manufacturer Delta Controls. Specifications for the controllers will not be provided with this contract; therefore, Design Builder is required to coordinate all necessary work and equipment with a Delta Controls Representative.

F. Systems Included in this contract:
   1. Review all relevant contract documents and sections below required by this scope.

   2. Design and installation of a new energy management control system, including, but not limited to, all programming, I/O points, labor, graphics, control and power wiring, control devices, and all ancillary devices for a complete and facility integrated control system to control and monitor, but not limited to, the following equipment:
      a. Heating hot water boilers including ancillary equipment
      b. On-demand system including ancillary equipment
      c. All software and virtual points that are required to achieve proper execution of the sequence of operation are required as well as all specified points listed in this document.
      d. Integrate into the County existing Delta Controls enteliWEB and Historian Servers (no additional license is required)

3. Develop, create, and install BAS Graphics – **See Article 2.06 BAS GRAPHICS**
4. Develop, create, and install all sequences of operation – **See Article 3.09 SEQUENCES OF OPERATION AND POINTS LISTS**
5. Communications
6. Operator Interface
7. Controller Software
8. Web Based Access
9. Building Controllers
10. Application Specific Controllers
11. Advanced Application Controllers
12. Application Specific Controller - Terminal Unit Controllers
13. Input/Output Interface
14. Power Supplies and Line Filtering
15. Control Panels
16. Auxiliary Control Devices
17. Wiring and Raceways
18. Smoke Detection for Projects with a Building Fire Alarm System
19. Safe off and hand over all existing iNET DDC controls to Owner
20. Safe off air compressor located on the roof and hand over to the county
21. Communications
22. Operator Interface
23. Controller Software
24. Web Based Access
25. BAS Graphics
26. Building Controllers
27. Application Specific Controllers
28. Advanced Application Controllers
29. Application Specific Controller - Terminal Unit Controllers
30. Input/Output Interface
31. Power Supplies and Line Filtering
32. Control Panels
33. Auxiliary Control Devices
34. Wiring and Raceways
35. Smoke Detection for Projects with a Building Fire Alarm System

G. This is a performance specification and Design Builder is responsible for the design, engineering, and installation of a new energy management control system.

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document, including without limitation:

A. Division 00 - Contract Documents
B. Division 01 - General Requirements

C. Division 23 - Heating, Ventilating and Air-conditioning (HVAC)
D. Division 26 - Electrical

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by this contract
B. In addition, meet the following:
    1. Current edition of ANSI/ASHRAE Standard 135 and addendum, BACnet.
    2. Current edition of UL 916 Underwriters Laboratories Standard for Energy Management Equipment, Canada and the US.
    3. Current edition of FCC Part 15, Subpart J, Class A.
    4. Current edition of BACnet Testing Laboratories (BTL).

1.04 SUBMITTALS

A. Submittals as required by this contract.
B. In addition, provide:
    1. Prepare and submit a detailed schedule of work. Schedule to identify milestones such as equipment submittals, control panel diagrams, color graphic panel displays, Interlock.
    2. Wiring diagrams, control program sequence software flow chart diagrams, conduit layout diagrams, device location diagrams, equipment and component deliveries, installation sequencing, controller startup, point to point startup, control programming, sequence testing, commissioning/acceptance testing and training.
    3. Submit design drawings, sequences of operation, program listings, software flow charts and details for each typical piece of equipment and system being controlled. No work to be initiated or fabrication of any equipment started prior to the Owner's Representatives return of REVIEWED submittals.
        a. Sequence of Operation:
            1) The sequence of operation included in the design documents is intended only to communicate the control intent and is not to be used as a direct reference for programming of the EMCS system. Verbatim duplication of the Sequence of Operation on the submittals is discouraged and may result in non-approval of the submittal.
            2) Sequence of operation on submittals to accurately detail the system’s intended programming, and include details of all enhancements, adjustments, or deviations from the sequence of operation described herein.
            3) Submitted sequence of operation to be written in English language with a logical and organized format and flow.
            4) Programming shall be in an English language
            5) Each line of programming shall include a description within the programming that describes the aim or purpose of the programming.
            6) Provide detailed, clear and unambiguous sequence of operation language.

7) Point descriptors and point nomenclature referenced in the submitted sequence of operation to match those (to be) actually programmed
8) As-built submittal Sequence of Operation to include all modifications to the programming made as a result of any addendum, bulletins, RFI's, change orders, and commissioning.

4. Format: Make each submittal in one complete and contiguous package. Partial or unmarked submittals will be rejected without review.
5. Submit Manufacturers Data as Follows:
    a. Complete materials list of items proposed to be furnished and installed. A complete Bill of Materials, listing materials, components, devices, wire and equipment are required for this work. The Bill of Materials to be separate for each controller on its own page(s) and to contain the following information for each item listed:
        1) Manufacturer's Name and Model number with furnished options highlighted.
        2) Quantity of each by controller location.
        3) Description of product (generic).
        4) Specified item.
        5) Operating range or span.
        6) Operating point or set point.
    b. Manufacturer's specifications and other data required demonstrating compliance with the specified requirements, including but not limited to: Catalog cuts, technical data and descriptive literature on hardware, software, and system components to be furnished.
    c. The data to be clearly marked and noted to identify specific ranges, model numbers, sizes, and other pertinent data. Submit printed manufacturer's technical product data for each control device furnished, indicating dimensions, capacities, performance characteristics, electrical characteristics, finishes of materials and including printed installation instructions and start-up instructions.
    d. Unless specifically called for otherwise, provide bound copies of catalog cuts for standard products, not requiring specifically prepared Shop Drawings, for the following:
        1) Wire and Cable, Class II
        2) Face Plates for Devices
        3) Disconnect Switches for Power Control
    e. Where more than one item, size, rating or other variations appear on a catalog cut sheet, clearly identify items to be provided. These items to be properly indexed and referenced to identification numbers, designations and/or details on the Drawings.
6. Shop Drawings: Submit shop drawings for each controlled system, depicting the following information:
    a. Schematic flow diagram of system showing fans, pumps, coils, dampers, valves and other control/monitoring devices.

b. Label each control device with initial setting or adjustable range of control. Label points in schematic diagrams with termination at corresponding controller.
c. Electrical Wiring: Clearly differentiate between portions of wiring that are factory installed and portions of be field-installed.
d. Details of control panel faces, including controls, instruments, and labeling.
e. Interfaces to equipment furnished under other Sections identifying numbers of wires, termination location, voltages and pertinent details. Responsibility for each end of the interfaces to be noted on these drawings whether or not they are a part of this Section.

7. Equipment locations, wiring and piping schematics, details, panel configurations, sizes, damper motor mounting details, valve schedules, and a points list keyed to specific hardware submittals. Control wiring depicted as fully annotated ladder diagrams with terminations identified, completely configured as to the exact panel, wiring, relay, switch, and component configuration.
8. Tag Number Lists: Develop instruments tag number system and submit list for approval. Coordinate methods and number block with the Owner Representative.
9. Format the Shop and Field Drawings to Include:
    a. A Title Sheet containing a drawing list, abbreviations list, symbols list, site and vicinity maps for project location and schedules.
    b. Floor Plans showing proposed device locations and device nomenclatures.
    c. A Riser Diagram illustrating conduit relationships between devices shown on the Floor Plans. Show device nomenclatures.
    d. A Single-Line Diagram for each system showing signal relationships of devices within the system. Show device nomenclatures.
    e. A Wiring Diagram for each assembly, enclosure or free standing device, showing:
        1) The Devices Within
        2) Wiring Connections
        3) Wire Identification
        4) Voltage Levels
        5) Fuse Ratings
    f. Operations and Maintenance Manuals:
        1) Following approval of Shop Drawings of control equipment and prior to acceptance of control work, prepare Operating and Maintenance manuals describing operating, servicing, and maintenance requirements of control systems and equipment installed under this Section, in accordance the General and Special Conditions of these Specifications.
        2) Information contained in the manual for the above equipment to include the following:
            a) Manufacturer's catalog cuts and printed descriptive bulletins.

b) Manufacturer's installation, operating, and maintenance instruction booklets. Complete instructions regarding the operation and maintenance of equipment involved.
c) Instrument calibration certificates.
d) Parts list and costs.
e) Complete nomenclature of replaceable parts, list of recommended spare parts for 12 months operation, their part numbers, current cost and name and address of the nearest vendor of replacement parts.
f) Name, address and telephone number for closest source of spare parts.
g) Wiring and schematic diagrams.
h) Include final record copies of shop drawings.
i) Copy of guarantees and warranties issued for the various items of equipment, showing dates of expiration.
j) Reduced plans, diagrams, and control schematics.
k) Copies of test results.
l) Control System Operating Manual including: point of summary and point data base; complete printout of program listings; magnetic tape CD or DVD backup of Field Control Cabinet programs; cabinet layout; hard copy of graphic screens; hard copy of specified reports.

g. A final Bill of Quantities including a separate schedule for portable equipment, if delivered as part of this work.
h. Performance, Test and Adjustment Data: Comprehensive documentation of performance verification according to parameters specified in these specifications.
i. Record Drawings: Provide complete as-built submittals including "as-programmed" sequence of operation as well as final occupancy schedules.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by Section 23 00 00, HVAC Basic Requirements and Division 01, General Requirements.
B. In addition, meet the following:
    1. Installer Qualifications: Company specializing in performing work of the type specified in this Section with minimum five year's experience in the local area. Installers required to have successfully completed manufacturer's control system factory training.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by Section 23 00 00, HVAC Basic Requirements and Division 01, General Requirements.

1.07 SYSTEM DESCRIPTION

A. Control system referenced throughout specifications and drawings as Building Automation System (BAS), Building Management System (BMS), or Energy Management System (EMS) interchangeably consists of high-speed, peer-to-peer network of DDC controllers, control system server, and operator workstation.
B. System software based on server/thin-client architecture, designed around open standards of web technology. Control system server accessed using a web browser over control system network, Owner's local area network, and remotely over Internet (through Owner's LAN).
C. Intent of thin-client architecture is to provide operators complete access to control system via web browser. No special software other than web browser required to access graphics, point displays, and trends.
D. Local Area Network (LAN) either 10 or 100 Mpbs Ethernet network.
E. System will consist of open architecture that is capable of:
    1. High speed Ethernet communication using TCP/IP protocol
    2. Native BACnet communications according to ANSI / ASHRAE Standard 135, latest edition.
        a. Provide necessary BACnet-compliant hardware and software to meet the system's functional specifications. Controller devices must be BTL tested and listed by an official BACnet Testing Laboratory and have the BTL mark issued.
    3. OPC server communications according to OPC Data Access 2.0 and Alarms and Events 1.0.
F. Complete temperature control system to be DDC with electronic sensors and electronic/electric actuation valves and dampers.
G. Prepare individual hardware layouts, interconnection drawings, building riser/architecture diagram and sequence of control from the project design data. Any architecture diagrams on design drawings have been included as schematics only and are not meant to portray quantity of devices or power/data requirements.
H. Design, provide, and install equipment cabinets, panels, data communication network infrastructure (including cables, conduits, outlets, connections, etc.) needed, and associated hardware.
I. Provide complete manufacturer's specifications for items that are supplied. Include vendor name and model number of every item supplied.
J. Provide a comprehensive operator and technician training program as described in these specifications.
K. Provide as-built documentation, operator's terminal software, diagrams, and other associated project operational documentation (such as technical manuals) on approved media, the sum total of which accurately represents the final system.
L. Provide 120V power, low voltage power, transformers, etc. for control panels, transformer panels, and BAS devices. Install per Division 26, Electrical specifications. Power for devices within this specification Section are solely the responsibility of the BAS Contractor.
M. Conduit and raceway systems. Install per Division 26, Electrical specifications.

N. All devices, components, controllers, and software to be manufacturer's most current version at the time of installation.

1.08 SYSTEM PERFORMANCE

A. Performance Standards - System conforms to following minimum standards over network connections:
   1. Graphic Display: Graphic with 20 dynamic points display with current data within 10 seconds.
   2. Graphic Refresh: Graphic with 20 dynamic points update with current data within 8 seconds.
   3. Object Command: Devices react to command of binary object within 2 seconds. Devices begin reacting to command of analog object within 2 seconds.
   4. Object Scan: Data used or displayed at controller or workstation have been current within previous 6 seconds.
   5. Alarm Response Time: Object that goes into alarm be annunciated at workstation within 45 seconds.
   6. Program Execution Frequency: Custom and standard applications be capable of running as often as once every 5 seconds. Select execution times consistent with mechanical process under control.
   7. Performance: Programmable controllers be able to completely execute DDC PID control loops at frequency adjustable down to once per second. Select execution times consistent with mechanical process under control.
   8. Multiple Alarm Annunciation: Each workstation on network receive alarms within 5 seconds of other workstations.

B. Reporting Accuracy: System reports values with minimum end-to-end accuracy listed in Reporting Accuracy Table below.
   1. Reporting Accuracy Table:

Measure Variable	**Reported Accuracy**
Space Temperature	Plus or Minus 1 degree F
Ducted Air	Plus or Minus 1 degrees F
Outside Air	Plus or Minus 2 degrees F
Dew Point	Plus or Minus 3 degrees F
Water Temperature	Plus or Minus 1 degree F
Delta-T	Plus or Minus 0.25 degree F
Relative Humidity	Plus or Minus 5 percent RH
Water Flow	Plus or Minus 2 percent of full scale

   2. Note 1: Accuracy applies to 10 percent-100 percent of scale
   3. Note 2: For both absolute and differential pressure
   4. Note 3: Not including utility-supplied meters

C. Control Stability and Accuracy. Control loops maintain measured variable at set point within tolerances listed in Control Stability and Accuracy Table below.
   1. Control Stability and Accuracy Table:

Controlled Variable	Control Accuracy	Range of Medium
Air Pressure	Plus or minus 0.2 inch wg	0-6 inch wg
	Plus or minus 0.01 inch wg	-0.1 to 0.1 inch wg
Airflow	Plus or minus 10 percent of full scale	
Space Temperature	Plus or minus 2.00 degrees F	
Duct Temperature	Plus or minus 3.0 degrees F	
Humidity	Plus or minus 5 percent RH	
Fluid Pressure	Plus or minus 1.5 PSI	1-150 PSI
	Plus or minus 1.0 inch wg	0-50 inch wg differential

PART 2 - PRODUCTS

2.01 MANUFACTURERS/INSTALLERS

A. Delta Controls/Delta Controls Inc
B. Duct/Spot-Type Smoke Detectors (Project with Fire Alarm System):
    1. See Division 28 for Products.

2.02 COMMUNICATIONS

A. Each controller to have communication port for connection to operator interface.
    1. Internetwork operator interface and value passing to be transparent to internetwork architecture.
    2. Operator interface connected to controller to allow operator to interface with each internetwork controller as if directly connected. Controller information such as data, status, reports, system software, and custom programs to be viewable and editable from each internetwork controller.
B. Inputs, outputs, and control variables used to integrate control strategies across multiple controllers to be readable by each controller on internetwork.
C. Operator Workstation to be capable of simultaneous direct connection and communication with BACnet/IP, OPC and TCP/IP networks without use of interposing devices such as PC or gateway with hard drive.
D. Workstations, Building Control Panels and Controllers with real-time clocks use time synchronization service. System automatically synchronizes system clocks daily from operator-designated device via internetwork. System automatically adjusts for daylight savings and standard time as applicable.

2.03 OPERATOR INTERFACE

A. Operator Interface: PC-based workstations reside on high-speed network with building controllers. Each workstation or each standard browser connected to server be able to access system information.

B. Hardware: Each operator workstation or web server consists of the following:
   1. Computer: Provided by Owner
   2. Modem: Provided by Owner
   3. Portable Operator's Terminal: NOT REQUIRED

C. System Software:
   1. Operating System: Furnish concurrent multi-tasking operating system. Acceptable operating systems are Windows 10.
   2. Dynamic Color Graphics:
      a. Real-time color graphic displays dynamic and able to update displays.
      b. Provide operator ability to change values (set points) and states in system controlled equipment directly from graphic display.
      c. Custom Graphics. Provide custom graphics generation package.
      d. Graphics Library. Furnish library of standard HVAC equipment graphics and include standard symbols for fans, pumps, coils, valves, piping, dampers, and ductwork.
   3. All software to be manufacturer's most current version at the time of installation.

D. System Applications: Each workstation provides operator interface and off-line storage of system information. Provide following applications at each workstation:
   1. Automatic System Database Save and Restore: Each workstation stores on hard disk copy of current database of each Building Controller. This database automatically updated whenever change is made in any system panel.
   2. Manual Database Save and Restore: System operator able to manually save or clear database and initiate download of specified database from/to any panel.
   3. System Configuration: Workstation software provides method of configuring system to allow for changes or additions by users and performs following tasks:
      a. Create, delete or modify control strategies.
      b. Add/delete objects to system.
      c. Tune control loops through adjustment of control loop parameters.
      d. Enable or disable control strategies.
      e. Generate hard copy records of control strategies on printer.
      f. Select points to be alarmed and define alarm state.
      g. Select points to be trended and initiate automatic recording of values.
      h. Start/Stop binary objects and adjust analog objects.
   4. Security: Operator required to log on to system with user name and password in order to view, edit, add, or delete data. System security selectable for each operator.
   5. System Diagnostics: System automatically monitor operation of workstations, printers, modems, network connections, building management panels, and controllers. Failure of any device to be annunciated.
   6. Alarm Indication and Handling:
      a. Workstation provides visual means of alarm indication. Alarm indication becomes highest priority regardless of application(s) running.
      b. System provides and archive log of alarm messages to hard drive. Alarm messages to include description of event-initiating object, source, location and time/date of alarm.

7. Trend Logs: Operator able to define custom trend log for any data object and include interval, start time, and stop time. Trend data sampled and stored on building controller panel, be archived on hard disk, and be retrievable for use in spreadsheets and standard database programs.
    a. System server to periodically gather historically recorded data stored in the building controllers and archive the information. Archived files to be appended with new sample data, allowing samples to be accumulated.
    b. Software to be included that is capable of graphing the trend logged object data. Software capable of creating two-axis (x,y) graphs that display object values relative to time.
    c. Operator able to change trend log setup information. This includes the information to be logged as well as the interval at which it is to be logged. Input, output, and value object types in the system may be logged. Provide operations password protected. Setup and viewing may be accessed directly from any and all graphics on which object is displayed.
    d. BAS Contractor to enable trending for any and all system points (physical or virtual) as directed by the Design Builder, Owner or Commissioning Authority (Commissioning Authority). There will be no limit on the number of trended points the BAS Contractor is to set up. BAS Contractor will modify trend setup parameters as directed by the Commissioning Authority during testing. BAS Contractor to be proactive and enable trending for all major system points during system startup/programming. BAS Contractor is not to wait for direction to begin trending points. Trend data for each point to be archived on the main server for a minimum of one year. Trend data archiving to be enabled immediately upon trend setup, or as soon as communication between the field panel and sever is established. Trend data uploads from field panel to server set up to be automatically performed with sufficient frequency to ensure no data gaps or loss of trend data.
    e. Trend points as identified in the points list. Provide system specific trend data in two-axis (x,y) graphs that display object values relative to time to Design Builder, Owner, or Commissioning Authority.
8. Standard Reports: Standard system reports provided for this project. Provide ability for Owner to readily customize these reports for this project:
    a. Objects: System (or subsystem) objects and their current values.
    b. Logs:
        1) Alarm History
        2) System Messages
        3) System Events
        4) Trends

E. Interfaces to Third Party Systems: BAS connects to third party systems (VFDs, chillers, emergency generators, rooftop AC units, etc.). Communication protocol specified for third party system, and BAS provides compatible protocol to assure proper two way communication. Points, alarms, and commands displayed on BAS as indicated.

F. Workstation Applications Editors: Each PC workstation supports editing of system applications, which downloaded and executed at one or more controller panels.

2.04 CONTROLLER SOFTWARE

A. Furnish following applications software for building and energy management. Software applications reside and operate in system controllers. All software to be manufacturer's most current version at the time of installation. All software and associated functions (scheduling, optimum start/stop, etc.) noted in this specification are to be configured and enabled for this project. Incorporate into sequence of operation submittals for review prior to installation.

B. System Security:
   1. User access secured using individual security passwords and user names.
   2. Restrict user passwords to objects, applications, and system functions as assigned by system manager. Provide monitoring only access to Design Builder and Commissioning Authority for period of one year for trouble shooting purposes.
   3. Record user Log On/Log Off attempts.
   4. Provide passwords, user names, and access assignments adjustable at the operator's terminal. Each user to have a set security level, which defines access to displays and individual objects the user may control. System to include 10 separate and distinct security levels for assignment to users.
   5. System to include an Auto Logout Feature that will automatically logout user when there has been no keyboard or mouse activity for a set period of time. Time period to be adjustable by system administrator. Auto Logout may be enabled and disabled by system administrator. Operator terminal to display message on screen that user is logged out after Auto Logout occurs.

C. Scheduling: Provide capability to schedule each object or group of objects in system. Coordinate schedule with Owner and program accordingly. Each schedule consists of:
   1. Operator's workstation to show information in easy-to-read daily format. Priority for scheduling: Events, holidays and daily with events being the highest.
   2. Holiday and special event schedules to display data in calendar format. Operator able to schedule holidays and special events directly from these calendars.
   3. Operator able to change information for a given weekly or exception schedule if logged on with the appropriate security access.

D. Optimum Start/Stop: Provide software and program system to start equipment on sliding schedule based upon indoor and outdoor conditions. Determine minimum time of HVAC system operation needed to satisfy space environmental requirements and also determine earliest possible time to stop mechanical systems (i.e. hut down cooling/heating and only provide ventilation one hour prior to scheduled unoccupied period.) Optimum start/stop program operates in conjunction with scheduled start/stop and night setback programs.

E. Alarms:
   1. Operator's workstation to provide visual means of alarm indication. The alarm dialog box to always become the top dialog box regardless of the application(s), currently running.

2. System to provide log of alarm messages. Alarm log to be archived to the hard disk of the system operator's terminal. Each entry to include a description of the event-initiating object generating the alarm. Entry to include time and date of alarm occurrence.
3. Alarm messages in user-definable text and entered either at the operator's terminal or via remote communication.
4. Each binary object set to alarm based on operator-specified state.
5. Each analog object have both high and low alarm limits.
6. Alarms must be able to be automatically and manually disabled.
7. Alarms be routed to appropriate workstations based on time and other conditions. An alarm able to start programs, print, be logged in event log, generate custom messages, and display graphics.
8. System have ability to dial out in event of alarm.

F. Demand Limiting:
   1. System to include demand limiting program that includes two types of load shedding. One type of load shedding to shed/restore equipment in binary fashion based on energy usage when compared to shed and restore settings. The other type of shedding to adjust operator selected control set points in an analog fashion based on energy usage when compared to shed and restore settings. Shedding may be implemented independently on each and every zone or piece of equipment connected to system. The minimum systems to include in the demand limiting program:
      a. Occupied Space temperature setback
      b. Supply Temperature Increase
      c. RTU Fan Speed
   2. Status of each and every load shed program capable of being displayed on every operator terminal connected to system. Status of each load assigned to an individual shed program displayed along with the description of each load.
   3. Demand-limiting program monitor building power consumption from signals generated by pulse generator (provided by BAS contractor) mounted at building power meter or from watt transducer or current transformer attached to building feeder lines.
   4. Demand-limiting program predicts probable power demand so that when demand exceeds demand limit, action will be taken to reduce loads in predetermined manner. When demand limit will not be exceeded, action will be taken to restore loads in predetermined manner.

G. Maintenance Management: System monitors equipment status and generate maintenance messages based upon user-designated run-time, starts, and/or calendar date limits. Coordinate settings with Owner.
H. Sequencing: Provide application software based upon sequences of operation specified to properly sequence designated systems. Provide all points to achieve specified sequences.
I. Staggered Start: This application prevents controlled equipment from simultaneously restarting after a power outage. Order in which equipment (or groups of equipment) is started, along with time delay between starts to be user-selectable.

J. Energy Calculations: Provide software to allow instantaneous power (9e.g. kW) or flow rates (e.g. L/s (gpm)) to be accumulated and converted to energy usage data.
K. Anti-Short Cycling: Binary output objects protected from short cycling by allowing minimum on-time and off-time to be selected.
L. On/Off Control with Differential: Provide algorithm that allows binary output to be cycled based on controlled variable and set point. Algorithm direct-acting or reverse-acting and incorporate adjustable differential.
M. Run-Time Totalization: Provide software to totalize run-times for binary input objects.

2.05 WEB BASED ACCESS

A. General Description: BAS supplier to provide web-based access to the system as part of standard installation. Provide access to user of displays of real-time data that are part of the BAS via a standard Web browser. Web browser to tie into the network via Ethernet network connection. Provide web-page host that resides on the BAS network. Web-page software not to require a per user licensing fee or annual fees. The web-page host must be able to support at least 50 simultaneous users with the ability to expand the system to accommodate an unlimited number of users. Software to be manufacturer's most current version at time of installation.
B. Browser Technology: Browser to be standard version of Microsoft Internet Explorer, Chrome, or Firefox (latest edition). No special vendor-supplied software needed on computers running browser. Displays viewable and the Web-page host to directly access real-time data from the BAS network. Data displayed in real time and update automatically without user interaction. User able to change data on displays if logged in with the appropriate user name and password.
C. Display of Data: Web page graphics shown on browser to be replicas of the BAS displays. User to need no additional training to understand information presented on Web pages when compared to what is shown on BAS displays. Web page displays to include animation just as BAS displays. Fans to turn, pilot lights to blink, and coils to change colors, and so on. Real-time data shown on browser Web pages. This data must be directly gathered via the BACnet network and automatically updated on browser Web page displays without any user action. Data on the browser to automatically refresh as changes are detected without re-drawing the complete display. User to be able to change data from browser Web page to if the user is logged on with the appropriate password. Clicking on a button or typing in a new value to change digital data. Using pull-down menus or typing in a new value to change analog data. Data displays navigated using pushbuttons on the displays that are simply clicked on with the mouse to select a new display. Alternatively, the standard back and forward buttons of the browser can be used for display navigation.
D. Web Page Generation: Web pages generated automatically from the BAS displays that reside on the BAS server. User to access Web-page host via the network and initiate a web page generation utility that automatically takes the BAS displays and turns them into Web pages. The Web pages generated are automatically installed on the Web page host for access via any computer's standard browser. Any system that requires use of an HTML editor for generation of Web pages will not be considered.

E. Password Security and Activity Log: Access via Web browser to utilize the same hierarchical security scheme as BAS system. User asked to log in once the browser makes connection to Web-page host. Once the user logs in, any and all changes that are made to be tracked by the BAS system. User able to change only those items that the user has authority to change. A user activity report to show any and all activity of the users that have logged in to the system regardless of whether those changes were made using a browser or via the BAS workstation.
F. Communication: Web-page host to communicate using the specified protocol standard to devices on the BAS network.

2.06 BAS GRAPHICS

A. Develop customized graphics showing the project building(s) and their floor plans, mechanical, and electrical equipment, flow and control diagrams, and other relevant features on Workstation graphic screens. Associated input, output, and virtual objects (e.g., temperature and pressure set points) listed in the Sequence of Operation, and shown on the Input/Output Objects List included in the graphic screens and bound to the database. Real-time value of objects updated on the display of each graphic automatically. For projects where existing campus and/or building controls systems exist, replicate graphics used in the existing BAS graphics screens.
B. All points shall be user adjustable
C. All points shall have only one decimal place
D. Graphics to have links to the Print function and to display a Standard Legend in the corner of the graphic. Graphics, except pop-ups, to have the date and time displayed in the upper corner of the graphic. Each graphic titled.
E. Weather: Graphics to have the outdoor temperature and humidity in the upper corner of the graphic.
F. Alarms: System and component summary alarms located in each relevant graphic screen and all alarms tabulated in a performance settings graphic. Provide links to the associated system/component as part of these tags to assist trouble shooting. Other alarms placed near the associated system/device as depicted in the graphic. Provide text and color of information tags that describe each object and alarm value consistent with a graphics color legend.
G. Design Builder shall provide the following graphics as a minimum:
    1. Required Graphic Pages:
        a. For new controls installation, refer to 1111 Jackson Street and Peralta Oaks sites to confirm layouts and style.
        b. For modifying or upgrading controls systems, match the sites existing layout and style
        c. Update existing graphic page links, information, and or IO points to include the new equipment required for this project
            1) Site Plans
            2) Home Pages
            3) Equipment Pages
            4) Summary Pages
            5) Floor, Mechanical, and Roof Plans

a) Graphic shall include existing plant

6) Performance Pages
7) Settings Pages

d. Heating Hot Water Plant
1) Main Loop Isolation Valves (percent open/closed)
2) Command and Status of all boilers
3) Alarm annunciation stating
4) Outside air temperature
5) Boiler lockout setpoint
6) Boiler Firing rate
7) Annunciated boiler alarm
8) Lead/standby status
9) Primary and secondary pump status and command
10) Secondary pump VFD frequency and load
11) Secondary pump control setpoints such differential pressure, flow, etc
12) Heating hot water supply and return flow and temperatures
13) Water quality information – TDS, ORP, PH
14) Water makeup flow instantaneous and accrued
15) Mode – local or manual
16) Natural Gas instantaneous and accrued use

e. Heating Hot Water Plant Performance for each new boiler (tabular form)
1) Stack gas temperature
2) Boiler and combustion efficiency, calculated or by some other means
3) Water supply and return temperatures
4) Valve position
5) Pump status and command
6) Heating hot water pump VFD frequency, load, status, and command
7) Firing rate
8) Outside air temperature
9) Status
10) Load/Capacity as a percentage of full load
11) Pump speed and status
12) Enabled/Disabled
13) Fan power
14) Annunciated alarm codes and fault name
15) Water flow – supply and return
16) Run time
17) Water Section to include
a) Water quality information – TDS, ORP, PH
b) Water makeup flow instantaneous and accrued

f. On-Demand System
1) Main Loop Isolation Valves (percent open/closed)
2) Command and Status

3) Alarm annunciation stating description of alarm
4) Outside air temperature
5) Firing rate
6) Alarm code and definition of code
7) Lead/standby status
8) Inlet and outlet temperatures
9) Supply and return flow
10) Water quality information – TDS, ORP, PH
11) Water use instantaneous and accrued
12) Unit ID/Name
13) On/Off Status
14) Louvre feedback and power status
15) Natural Gas instantaneous and accrued use
16) tellibot information

g. On-Demand System Performance/Settings (tabular form)
1) Stack gas temperature
2) Flame off and on
3) Unit ID/Name
4) Supply temperature setpoint
5) Efficiency, calculated or by some other means
6) Water supply and return temperatures
7) Water supply and return temperatures
8) Valve position
9) Pump status and command
10) Firing rate
11) Outside air temperature
12) Status
13) Load/Capacity as a percentage of full load
14) Pump speed and status
15) Enabled/Disabled
16) Fan power
17) Annunciated alarm codes and fault name
18) Water flow – supply and return
19) Unit ID/Name
20) Run time
21) tellibot information
22) Water Section to include
a) Water quality information – TDS, ORP, PH
b) Water makeup flow instantaneous and accrued

h. Links shall appear as tabs at the top of the graphic.
i. Home with Site Plan, Equipment, Floorplans, Power Monitoring tabs located at the top of the graphic.
j. Home page with outside air and time
k. Equipment Graphic listing all equipment by level and with links to equipment graphic

l. Settings Tab for water-side and air-side equipment displaying all relevant operational I/O points
m. VAV summary by zone name served with mode, supply temperature, zone temperature and setpoint, office name, airflow setpoint, airflow, reheat valve position, CO2, etc.
n. Floor Graphics with heat maps with heat map legend
o. Lighting Graphics including layout, locations of sensors, command, and status of lights. Include color scheme for lights that are either on or off
p. Rooftop Graphic indicating name and location of all equipment on the roof including solar
q. Heating Hot Water boilers, including skids mounted systems, performance settings
r. VAV graphic for each type VAV
s. Solar System Graphic
t. Domestic Hot Water Graphic
u. Exhaust Fan Graphics

2. All equipment controlled shall have all relevant control points on a graphic page, including, but not limited to, the following:
   a. Valve and damper command and position
   b. Command and status/control,
   c. Alarms
   d. Equipment names/labels
   e. Percent open or closed
   f. Percent capacity and speed
   g. Reset tables
   h. Requests and requests ignored
   i. Runtime hours
   j. Lead and standby information
   k. Enable/Disable
   l. Actual airflow and airflow setpoint
   m. Duct static pressure setpoint and control
   n. CO2 setpoint and control
   o. Equipment or zone mode
   p. Actual temperatures and temperature setpoints
3. Layouts and background shall match graphics installed at 1111 Jackson Street, Oakland and the Peralta Oaks site.
4. A building graphic, typically a photograph of the building, with links to each floor and roof plan and other links as defined below.
5. A central plant graphic with equipment including, but not limited to, the following:
   a. Chillers
   b. Boilers
   c. Pumps
   d. Heat exchangers
   e. Storage tanks
   f. Temperature sensors

g. Pressure sensors
h. Flow sensors
i. Refrigeration leak detectors.
j. Air-side equipment
k. Water-side equipment
l. Central plant graphic shall have links to each building on the campus.

6. A roof top and mechanical and equipment room graphic showing the actual location of equipment including, but not limited to, the following:
   a. Air handler
   b. Packaged rooftop equipment
   c. Supply fans
   d. Exhaust fans
   e. Smoke control systems
   f. Solar System
   g. Roof top units
   h. Chilled water equipment
   i. Heating hot water equipment
   j. On-demand equipment
   k. Piping layouts
   l. Drains
   m. Controls
   n. VFDs
   o. Water Equipment
   p. Chemical treatment equipment
7. A floor plan graphic based on actual layout with equipment including, but not limited to, the following:
   a. Temperature sensors
   b. Pressure sensors
   c. Temperature control zones
   d. Heating/cooling zones
   e. Ventilation zones
   f. VAV boxes
   g. Diffusers
   h. Supply air zones identified on the floor plan
   i. Rooms grouped on a graphic only to the extent that detailed and complete sensing information can be comfortably viewed by an operator and the bound points updated in less than 10 seconds.
   j. Zone with a temperature symbol that changes color of the entire zone over the range from low (blue) through normal (green) to high (red) and indicate an alarm (flashing red).
   k. Zone temperature and or pressure symbol(s) to be a link to a zone control pop-up graphic.
   l. Individual floor plan graphics to provide links to related mechanical systems.

8. Pop-up graphics provided for each zone control system showing a flow diagram and related monitoring and control points and system parameters.
9. Pop-up graphics provided for each piece of equipment that is not shown on a flow and control graphic.
10. Flow and control diagrams for each system including but not limited to packaged equipment, heating hot water systems, pumps, zone terminal units, combination fire and smoke dampers status, ventilation systems.
11. The flow and control graphics to have parameters grouped in the lower portion of the graphics. Standard equipment graphics used. Pumps, fans, dampers and other elements to dynamically indicate their state (i.e. pumps and fans to rotate when on and damper positions to dynamically adjust and be shown in their current position, etc.).
12. System flow and control graphics displayed in a general left to right flow or loop arrangement. Return and exhaust air flow shown on top and return water shown on the bottom of the graphic.
13. Individual equipment/component screens showing sensing and control information available for each device provided.
14. Graphics Package shall include the following:
    a. Refer to 1111 Jackson Street and Peralta Oaks Graphics
    b. Links shall appear as tabs at the top of the graphic.
    c. Home with Site Plan, Equipment, Floorplans, Power Monitoring tabs located at the top of the graphic.
    d. Home page with outside air and time
    e. Equipment Graphic listing all equipment by level and with links to equipment graphic
    f. Settings Tab for water-side and air-side equipment displaying all relevant operational I/O points
    g. VAV summary by zone name served with mode, supply temperature, zone temperature and setpoint, office name, airflow setpoint, airflow, reheat valve position, CO2, etc.
    h. Floor Graphics with heat maps with heat map legend
    i. Lighting Graphics indicating locations of sensors, command, and status
    j. Rooftop Graphic indicating name and location of all equipment on the roof including solar
    k. Heating Hot Water Skids, including performance settings
    l. VAV graphic for each type VAV
    m. Solar System Graphic
    n. Domestic Hot Water Graphic
    o. Exhaust Fan Graphics

H. Penetration: The graphic interface to consistently apply a convention whereby a left-click to always penetrate to more detailed information. The text windows to represent the deepest level of penetration. A right-click to always produce a menu of options that are specific to the item selected.

I. Navigation: Graphics organized to provide a "branching structure" that allows an operator to move from a "macro view" to a "micro view" and return. These links to other associated graphics, or allow a return to a previous macro view, provided and

arranged horizontally along the bottom of each graphic screen. From left to right, the graphic links as follows: site/building map, building/trailer floor plans, and major mechanical systems at each building. Pop-up right click menus provided as needed on the lower button bar to allow for uncluttered navigation.

J. Clutter Minimization: Each graphic to have separate check boxes in the lower right corner that show/hide set points, alarms/safeties, and devices/equipment.
K. Templates: To the maximum extent possible, use standard graphics as templates to provide a consistent look throughout the interface.
L. Color Scheme: The graphics to use dynamic color changes to communicate equipment type, or object status consistent with the graphics color legend.
M. Symbols and Animations: Fans, pumps, dampers, coils, and generation equipment to be dynamic symbols indicating rotation, state, or position, movement, flow, etc.
N. Macros: When macros are used to add functionality to the graphics, detailed documentation provided.
O. Configure Mode: Access to "Configure Mode" for editing of the graphics password protected to prevent unauthorized changes to the graphics. This password supplied to the appropriate personnel.
P. Graphics Version: Graphics provided in the most current format available at time of control system programming.
Q. Points and graphics checked for the proper binding and graphic programming, settings to ensure that the correct system, location, point values and dynamics are shown in the proper location and rotate in the proper directions.
R. After graphics have been accepted, provide, on a CD ROM in an agreed upon file structure. If the graphics have active-x controls or other files that must be placed outside the graphics folder structure a set-up program provided on the disk to place the files in the correct locations.

2.07 BUILDING CONTROLLERS

A. General: Provide adequate number of building controllers to achieve performance specified. Panels to meet the following requirements.
    1. Building Automation System (BAS) to be composed of one or more independent, stand-alone, microprocessor-based building controllers to manage global strategies described in Controller Software Section.
    2. Provide sufficient memory to support operating system, database, and programming requirements.
    3. Share data between networked building controllers.
    4. Distributed controllers to share real and virtual object information and allow for central monitoring and alarms.
    5. Controllers that perform scheduling have real-time clock.
    6. Continually check status of its processor and memory circuits and if abnormal operation is detected, controller:
        a. Assume predetermined failure mode.
        b. Generate alarm notification.
    7. Building Controller communicates with other devices on internetwork including BACnet communications according to specified protocol.

8. All controllers must have a unique device ID on entire county's network (Nav tree on graphics).

B. Communication:
   1. Each building controller resides on network using ISO 8802-3 (Ethernet) Data Link/Physical layer protocol and performs routing to network of custom application and application specific controllers.
   2. Controller provides a service communication port for connection to a portable operator's terminal.

C. Environment:
   1. Controllers used outdoors and/or in wet ambient conditions mounted within NEMA waterproof enclosures and rated for operation at 0 degrees F to 150 degrees F.
   2. Controllers used in conditioned space be mounted in NEMA dust-proof enclosures and rated for operation at 32 degrees F to 120 degrees F.

D. Serviceability: Provide diagnostic LEDs for power, communication, and processor. Wiring connections be made to modular terminal strips or to termination card connected by ribbon cable.

E. Memory: Building controller maintains BIOS and programming information in event of power loss for at least 72 hours.

F. Immunity to power and noise. Controller able to operate at 90 percent to 110 percent of nominal voltage rating and performs an orderly shutdown below 80 percent nominal voltage. Operation be protected against electrical noise of 5 to 120 Hz and from keyed radios up to 5 W at 3-feet.

G. Controller to have a battery to provide power for orderly shutdown of controller and storage of data in nonvolatile flash memory. Battery backup to maintain real-time clock functions for a minimum of 10 days.

2.08 APPLICATION SPECIFIC CONTROLLERS

A. Application specific controllers (ASCs) are microprocessor-based DDC controllers, which through hardware or firmware design are dedicated to control a specific piece of equipment. Controllers to be fully programmable using graphical programming blocks.
   1. ASC controllers communicate with other devices on internetwork.
   2. Each ASC capable of stand-alone operation without being connected to network.
   3. Each ASC will contain sufficient I/O capacity to control target system.
   4. Application controllers to include universal inputs with minimum 10-bit resolution that accept thermistors, 0-10VDC, 0-5 VDC, 4-20 mA and dry contact signals. Any input on a controller may be either analog or digital with at least 1 input that accepts pulses. Controller to also include support and modifiable programming for interface to intelligent room sensor with digital display. Controller to include binary and analog outputs on board. Provide analog outputs switch selectable as either 0-10VDC or 0-20mA. Software to include scaling features for analog outputs. Application controller to include 24VDC voltage supply for use as power supply to external sensors.
   5. Program sequences stored on board application controller in EEPROM. No batteries needed to retain logic program. Program sequences executed by

controller 10 times per second and capable of multiple PI and PID loops for control of multiple devices. Calculations completed using floating-point math and system to support display of information in floating-point nomenclature at operator's terminal. Programming of application controller completely modifiable in the field over installed BAS LANs or remotely via modem interface. Operator to program logic sequences by graphically moving function blocks on screen and tying blocks together on screen.

6. Application controller to include support for room sensor. Display on room sensor programmable at application controller and include an operating mode and a field service mode. Provide button functions and display data programmable to show specific controller data in each mode based on which button is pressed on the sensor. See sequence of operation for specific display requirements at intelligent room sensor.

B. Communication:
   1. Controller resides on network using MS/TP Data Link/Physical layer protocol.
   2. Each controller connected to building controller.
   3. Each controller capable of connection to laptop computer or portable operator's tool.

C. Environment:
   1. Controllers used outdoors and/or in wet ambient conditions mounted within NEMA waterproof enclosures and rated for operation at 0 degrees F to 150 degrees F.
   2. Controllers used in conditioned space mounted in NEMA dust-proof enclosures and rated for operation at 32 degrees F to 120 degrees F.

D. Serviceability: Provide diagnostic LEDs for power, communication, and processor.

E. Memory: ASC use nonvolatile memory and maintains BIOS and programming information in event of power loss.

2.09 ADVANCED APPLICATION CONTROLLERS

A. General:
   1. Expandable application controller capable of providing control strategies for the system based on information from any or all connected inputs. Provide program implementing these strategies completely flexible and user definable. Provide program execution of controller a minimum of once per second.
   2. Programming: Object-oriented using control program blocks. Controller to support a minimum of 500 Analog Values and 500 Binary Values. Each and every analog and binary value to support standard specified protocol priority arrays.
   3. Provide means to graphically view inputs and outputs to each program block in real-time as program is executing. This function may be performed via the operator's terminal or field computer.
   4. Controller to have adequate data storage to ensure high performance and data reliability. Battery to retain static RAM memory and real-time clock functions for a minimum of 1.5 years (cumulative). Provide field-replaceable battery (non-rechargeable) lithium type. Unused battery life: 10 years.

5. The onboard, battery-backed real time clock must support schedule operations and trend logs.
6. Global control algorithms and automated control functions should execute via 32-bit processor.
7. Controller to include both on-board Ethernet specified protocol communication over twisted pair cable (UTP) and to include specified protocol IP communication. In addition, controller to include specified protocol PTP connection port.
8. The base unit of the controller to host up to 8 expansion modules with various I/O combinations. These inputs and outputs to include universal 12-bit inputs, binary triac outputs, and 8-bit switch selectable analog outputs (0-10V or 0-20 mA). Inputs to support thermistors, 0-5VDC, 0-10VDC, 4-20mA, dry contacts and pulse inputs directly.
9. Outputs must have onboard Hand-Off-Auto switches and a status indicator light. HOA switch position to be monitored. Each analog output to include a potentiometer for manually adjusting the output when the HOA switch is in the Hand position.
10. The position of each and every HOA switch to be available system wide as a specified protocol object. Expandable Controller to provide up to 176 discreet inputs/outputs per base unit.

B. Schedules: Each controller to support a minimum of 50 Schedule Objects.
C. Logging Capabilities: Each controller to support a minimum of 200 trend logs. Any object in the system (real or calculated) may be logged. Sample time interval adjustable at the operator's workstation.
D. Alarm Generation:
    1. Alarms may be generated within the system for any object change of value or state either real or calculated. This includes things such as analog object value changes, binary object state changes, and various controller communication failures.
    2. Alarm log provided for alarm viewing. Log may be viewed on-site at the operator's terminal or off-site via remote communications.
    3. Controller must be able to handle up to 200 alarm setups stored as event enrollment objects - system destination and actions individually configurable.

2.10 APPLICATION SPECIFIC CONTROLLER - TERMINAL UNIT CONTROLLERS

A. Provide one application controller for each terminal unit that adequately covers objects listed in object list for unit. Controllers to interface to building controller via LAN using specified protocol. Controllers to include on board flow sensor, inputs, outputs and programmable, self-contained logic program as needed for control of units.
B. Application controllers to include universal inputs with 10-bit resolution that can accept thermistors, 0-5 VDC, and dry contact signals. Inputs on controller may be either analog or digital. Controller to also include support and modifiable programming for interface to intelligent room sensor with digital display (digital display to indicate set point only). Controller to also include binary outputs on board. For applications using variable speed parallel fans, provide a single analog output selectable for 0-10 V or 0-

20 mA control signals. Application controller to include microprocessor driven flow sensor for use in pressure independent control logic. Terminal units controlled using pressure independent control algorithms and flow readings to be in CFM.

C. Program sequences stored on board application controller in EEPROM. No batteries needed to retain logic program. Program sequences executed by controller 10 times per second and capable of multiple PI loops for control of multiple devices. Provide programming of application controller completely modifiable in the field over installed specified protocol LANs or remotely via modem interface. Operator to program logic sequences by graphically moving function blocks on screen and tying blocks together on screen. Application controller programmed using the same programming tool as Building Controller and as described in operator workstation Section.
D. Application controller to include support for intelligent room sensor. Display on room sensor programmable at application controller and include an operating mode and a field service mode. Button functions and display data programmable to show specific controller data in each mode based on which button is pressed on the sensor. See sequence for specific display requirements for intelligent room sensor.
E. Provide duct temperature sensor at discharge of each terminal unit that is connected to controller for reporting back to operator workstation. Provide analog inputs for the duct temperatures.

2.11 INPUT/OUTPUT INTERFACE

A. Input/output points protected such that shorting of point to itself, to another point, or to ground will cause no damage to controller. Input and output points protected from voltage up to 24 V.
B. Binary inputs (BI or DI) allow monitoring of On/Off signals from remote devices. Binary inputs sense “dry contact” closure without external power (other than that provided by controller) being applied.
C. Pulse accumulation input objects accept up to 10 pulses per second for pulse accumulation.
D. Analog inputs (AI) allow monitoring of low-voltage (0 to 10 VDC), current (4 to 20 mA), or resistance signals (thermistor, RTD).
E. Binary outputs (BO or DO) provide for On/Off operation or pulsed low-voltage signal for pulse width modulation control. Binary outputs on building and custom application controllers have three-position (On/Off/Auto) override switches and status lights. Outputs selectable for either normally open or normally closed operation.
F. Analog outputs (AO) provide a modulating signal for control of end devices. Outputs provide either a 0 to 10 VDC or a 4 to 20 mA signal as required to provide proper control of the output device. Analog outputs on building controllers have status lights and two-position (AUTO/MANUAL) switch and adjustable potentiometer for manual override. Analog outputs not exhibit drift of greater than 0.4 percent of range per year.
G. Tri-State Outputs. Provide tri-state outputs (two coordinated binary outputs) for control of three-point floating type electronic actuators without feedback. Use of three-point floating devices limited to zone control and terminal unit control applications (VAV terminal units, duct-mounted heating coils, zone dampers, radiation, etc.). Control

algorithms run zone actuator to one end of its stroke once every 24 hours for verification of operator tracking.

2.12 POWER SUPPLIES AND LINE FILTERING

A. Control transformers UL listed. Furnish Class 2 current-limiting type or furnish over-current protection in both primary and secondary circuits. Limit connected loads to 80 percent of rated capacity.
B. DC power supply output match output current and voltage requirements. Unit operates between 32 degrees F and 120 degrees F.
C. Line voltage units UL listed and CSA approved.
D. Power line filtering. Provide transient voltage and surge suppression for workstations and controllers.

2.13 CONTROL PANELS

A. Control Panels:
    1. Enclosures may be NEMA 1 when located in a clean, dry, indoor environment. Indoor enclosures to be NEMA 12 when installed in other than a clean environment. Outdoor enclosures must be NEMA 3R. Provide (hinged door) key-lock latch and removable subpanels. Single key common to field panels and subpanels. In existing campus or building settings, key lock to match existing keys.
    2. Interconnections between internal and face-mounted devices prewired with color-coded stranded conductors neatly installed in plastic troughs and/or tie-wrapped. Terminals for field connections UL listed for 600 volt service, individually identified per control/ interlock drawings, with adequate clearance for field wiring. Control terminations for field connection individually identified per control drawings.
    3. Provide ON/OFF power switch with overcurrent protection for control power sources to each local panel.
    4. Provide laminated plastic nameplates for enclosures in any mechanical room or electrical room labeled with TCP number. Laminated plastic to be 1/8-inch thick sized appropriately to make label easy to read.

2.14 AUXILIARY CONTROL DEVICES

A. Temperature Instruments:
    1. Room Temperature Sensor: Thermistor or platinum RTD type with accuracy of plus or minus 0.5 degrees F at 70 degrees F; operating range 30-120 degrees F; linear signal; single point sensing element in wall-mounted ventilated enclosure with insulating back plate if mounted on exterior wall; push button for occupancy override; digital set point adjustment plus or minus 2 degrees F in both directions; LCD temperature display indicating set point only. set point adjustment to revert to building programmed standard temperature upon next

building occupancy schedule change (user adjustable). Room temperature sensor may have integral space carbon dioxide sensor with minimum performance characteristics identified within this specification. Include integral occupancy sensor for public rooms but not in offices.

2. Averaging Duct Temperature Sensors: Thermistor or platinum RTD element with accuracy of plus or minus 0.5 degrees F at 32 degrees F, consisting of array of single point sensing elements, securely mounted in duct or plenum; operating range 20-120 degrees F; linear signal; 1-foot element per 2 SF of duct cross Sectional area. Use when duct is 9 SF or larger or where air is subject to temperature stratification.
3. Probe Duct Temperature Sensors: Thermistor or platinum RTD element with accuracy of plus or minus 0.5 degrees F at 32 degrees F, consisting of single point sensing elements, securely mounted in duct or plenum; operating range 20-120 degrees F; linear signal; 24-inch rigid probe. Use where duct is less than 9 SF cross Sectional area.
4. Outside Air Temperature Sensor: Thermistor or platinum RTD element with accuracy of plus or minus 0.5 degrees F at 32 degrees F; Range -58 to 120 degrees F, single element, linear, with weather and sun shield for exterior mounting.
5. Low Temperature Limit Thermostat: Minimum 20 foot capillary sensing element, triggering on low temperature as sensed by any 12-inch segment; snap acting, normally open contacts, manual reset, line voltage.
6. Liquid Immersion Temperature Sensor: Thermistor or platinum RTD element, with accuracy of plus or minus 0.5 degrees F at 32 degrees F, stainless steel well and assembly, range 30 to 250 degrees F.

B. Pressure Transmitters and Transducers:

1. Transducer have linear output signal; field adjustable zero and span. Sensing elements withstand continuous operating conditions of positive or negative pressure 50 percent greater than calibrated span without damage.
2. Differential Pressure Switch: set point adjustable with operating range of 0.5 to 12-inch WG for fans, and 5 to 30-feet WC for pumps. Switches UL listed; SPDT snap-acting; pilot duty rated (125 VA minimum); NEMA 1 enclosure; scale range and differential suitable for intended application.
3. Filter Differential Pressure Switch: set point adjustable with operating range of 0.1 to 5-inch WG; auto reset. Contactor to close when pressure differential setting is met or exceeded. Provide mounting bracket, metallic tubing and appropriate fittings for connection to duct or air-handling unit.
4. Duct Static Differential Pressure Transducer: Operating range 0 to 5-inch WC for duct mounted transmitter; ceramic capacitive sensing element with probe securely mounted in duct; digital input terminal and push button to zero output. Accuracy plus or minus 1 percent of full scale; maximum response time 2 seconds.
5. Building Static Pressure Transducer: Operating range of -0.1 to 0.1-inch WC, linear signal. Sensing tubes located inside and outside building use shielding and/or surge tanks to minimize effects of wind. Accuracy plus or minus 1 percent of full scale.

6. Piping Pressure Transmitter: Operating range 0 to 50 PSIG, linear signal; stainless steel diaphragm; digital input terminal and push button to zero output. Accuracy plus or minus 1 percent of full scale.

C. Motorized Control Dampers:
   1. Performance: Maximum leakage of 3 CFM/SF at 1-inch WG differential pressure, AMCA Class 1A, maximum pressure rating of 13-inch WG differential pressure, maximum velocity of 6,000 fpm, -72 degrees F to 275 degrees F temperature rating.
   2. Multi-blade type, except where either dimension is less than 10-inch single blade may be used. Maximum blade length to be 48-inch.
   3. Provide parallel blades for modulating mixing service and opposed blades for throttling service.
   4. Blades to be interlocking; minimum 16 gauge galvanized steel; compression type edge seals and side seating stops. In copper, aluminum and stainless steel duct work, damper material matches duct work material.
   5. Damper blades be reinforced, have continuous full length axle shafts, axle to axle linkage, and/or operating "jackshafts" as required to provide coordinated tracking of blades.
   6. Bearings: Self-lubricating stainless steel sleeve or Celcon bearing.
   7. Dampers over 25 SF in area to be in two or more sections, with interconnected blades.
   8. Provide remote damper blade position status with binary input.
   9. Tested in accordance with AMCA Standard No. 500.

D. Motorized Control Valves:
   1. Body pressure rating and connection type construction conforms to pipe, fitting and valve schedules.
   2. Fluid valve close-off ratings and spring ranges operate at maximum flows and maximum available pump heads scheduled without leakage.
   3. Screwed ends except 2-1/2-inch and larger valves with flanged ends.
   4. Pressure Independent Modulating Control Valves:
      a. Description: Valve consists of pressure compensating cartridge, actuated ball or Y pattern globe valve, and multiple pressure/temperature test ports in a single valve housing.
      b. Construction: Rated for no less than 125 PSI and 250 degrees F. 2-inch and Smaller: brass with threaded connections. 2-1/2-inch and larger: cast iron with flanged connections.
      c. Performance: Flow rate controlled linearly to within 5 percent of target flow rate, for any actuator position (0 to 100 percent), over an operating differential pressure range of 6 to 50 PSI across the valve. Provide valve with integral test ports to verify pressure differential.
      d. Manufacturers: Belimo, Danfoss, Flow Control Industries, Griswold, Tour and Andersson or approved equivalent.
   5. Fluid three-way valves globe valves with linear plug with composition disc for tight shutoff.

6. Pressure drop equal to twice pressure drop through heat exchanger (load), 50 percent of pressure difference between supply and return mains, or 5 PSI, whichever is greater, except two-position valves be line size.
7. Bubble-tight line size butterfly valves acceptable on 2-1/2-inch lines and above for two-position action only; cast iron body; aluminum bronze disc; EPDM seat, 200 PSI wg

E. Electric Damper/Valve Actuators:
1. Provide mechanical or electronic stall protection for each actuator.
2. Where indicated provide internal mechanical, spring-return mechanism or provide uninterruptible power supply (UPS). Non-spring-return actuators have external manual gear release to position damper/valve when actuator is not powered.
3. Proportional actuators accepts 0 to 10 VDC or 0 to 20 mA control signal and provide 2 to 10 VDC or 4 to 20 mA operating range.
4. Actuator sized for torque required plus 25 percent; UL or CSA listed; electronic current overload protection.
5. VAV Actuators: Actuators proportional 24 VAC actuators using a 4 to 20 mA range of control signals; stops automatically at end of travel; include permanently lubricated gear train.

F. Water Flow Meter:
1. Provide a Turbine Flow Meter (reference 23 05 19) complete with installation hardware necessary to enable insertion and removal of the meter without system shutdown. The flow meter hand-insertable up to 400 PSI. The flow meter to have two contra-rotating axial turbines, with electronic impedance-based sensing and an averaging circuit to reduce measurement errors due to swirl and flow profile distortion. Wetted metal components nickel-plated brass. Provide 316L SS construction for hot water applications operating over 250 degrees F, and for any application in non-metallic pipe. The maximum operating temperature 280 degrees F, 300 degrees F peak. Each flow meter individually wet-calibrated against a primary volumetric standard that is accurate to within 0.1 percent and traceable to NIST*. Manufacturer's certificate of calibration provided with each flow meter. Accuracy within plus or minus 0.5 percent of rate at the calibrated velocity, within plus or minus 1 percent of rate over a 10:1 turndown (3.0 to 30 ft/s) and within plus or minus 2 percent of rate over a 50:1 turndown (from 0.4 to 20 ft/s). The flow meter to include integral analog output(s), 4-20 mA, 0-10V, or 0-5V. Flow meter covered by the manufacturer's two year warranty.

G. Wall Mounted Space Carbon Dioxide Sensor:
1. Sensor to employ non-dispersive infrared technology. (N.D.I.R.)
2. Sensor Repeatability: Plus or minus 20 ppm. 0-2000.
3. Sensor Accuracy: Less than or equal to 75 ppm over 0-1500 ppm range.
4. Sensor Response Time: Less than 1 minute.
5. Sensor to employ reference channel design for long-term stability.
6. Sensor to have field selectable 0-10VDC, or 4-20mA outputs.
7. Sensor power requirement less than 3W.
8. Sensor Input Voltage: 20 to 30VAC/DC.
9. Sensor Operating Temperature Range: 0 degrees C to 50 degrees C.

10. Sensor to have models for wall mounting or duct mounting.
11. Sensor to provide at least a 1-year factory warranty from date of purchase.
12. Sensor to match cover in color and look to temperature sensor.
13. Sensor to have display.
14. Manufacturers:
    a. Telaire
    b. Vaisala
    c. Veris

H. Occupancy Sensor: Dual technology infrared and ultrasonic sensing device, ceiling or wall mounted, built-in self-adjusting settings, timer settings of 30 seconds to 30 minutes, with manual and automatic modes. Provide multiple devices in parallel when area served is greater than a single device sensing capability. Provide integral power pack, 120 VAC input, 24 VDC output, with manual override switch. Leviton OSC-MOW series.

I. Relays:
   1. Control relays UL listed plug-in type with dust cover and LED "energized" indicator. Contact rating, configuration, and coil voltage be suitable for application.
   2. Time delay relays UL listed solid-state plug-in type with adjustable time delay. Delay adjustable plus or minus 200 percent (minimum) from set point or as indicated. Contact rating, configuration, and coil voltage be suitable for application. Provide NEMA 1 enclosure when not installed in local control panel.

J. Current Transmitters:
   1. AC current transmitters be self-powered, combination split-core current transformer type with built-in rectifier and high-gain servo amplifier with 4 to 20 mA two-wire output. Unit ranges 10 A full scale, with internal zero and span adjustment and plus or minus 1 percent full-scale accuracy at 500 ohm maximum burden.
   2. Transmitter meets or exceeds ANSI/ISA S50.1 requirements and UL/CSA recognized.
   3. Unit split-core type for clamp-on installation on existing wiring.

K. Current Transformers: AC current transformers UL/CSA recognized and completely encased (except for terminals) in approved plastic material; plus or minus 1 percent accuracy at 5 A full-scale.

L. Voltage Transmitters: AC voltage; self-powered single-loop (two-wire) type; 4 to 20 mA output with zero and span adjustment; UL/CSA recognized at 600 VAC rating and meet or exceed ANSI/ISA S50.1. Ranges include 100 to 130 VAC, 200 to 250 VAC, 250 to 330 VAC, and 400 to 600 VAC full-scale, adjustable, with plus or minus 1 percent full-scale accuracy with 500 ohm maximum burden.

M. Voltage Transformers: AC voltage transformers UL/CSA recognized, 600 VAC rated; built-in fuse protection; suitable for ambient temperatures of 40 degrees F to 130 degrees F; plus or minus 0.5 percent accuracy at 24 VAC and a 5 VA load.

N. Power Monitors: Selectable rate pulse output for kWh reading; 4-20 mA output for kW reading; N.O. alarm contact; ability to operate with 5.0 amp current inputs or 0-0.33 volt inputs; plus 1.0 percent full-scale true RMS power accuracy; plus 0.5 Hz, voltage

input range 120-600 V, and auto range select; NEMA 1 enclosure. Current transformers having a 0.5 percent FS accuracy, 600 VAC isolation voltage with 0-0.33 V output. If 0-5 A current transformers are provided, a three-phase disconnect/shorting switch assembly is required.

O. Overflow Switch: Insertion flow sensor, brass, impeller flow design with analog transmitter unit. Data Industrial Model 220BR.

P. Ultrasonic Level Transmitter: Non-contact measuring device for liquid level; distance ranges from 4-feet to 32-feet; fail-safe intelligence with diagnostic feedback for troubleshooting; automatic temperature compensation; 24VDC; accuracy plus 0.15 percent of span in air. Kele LU Series.

Q. End Switches: Turret head Type SPDT. Square D Class 9007, Type C54B2, or equal.

2.15 WIRING AND RACEWAYS

A. General: Provide copper wiring, plenum cable, and raceways as specified in applicable Sections of Division 26, Electrical.

B. Insulated wire to be copper conductors, UL labeled for 90 degrees C minimum service.

C. Run control wiring as follows:
   1. Mechanical Rooms: In conduit.
   2. Exposed in Building Spaces: In conduit.
   3. Concealed in Building Walls and Ceilings: Plenum rated cable.
   4. Concealed in Building Ceilings: Plenum rated cable in cable tray.

D. Field and Subfield Panels: Voltage in panels not-to-exceed 120 volts.

E. Motor Control Centers: Responsibility for correct voltage of holding coils and starter wiring in pre-wired motor control centers interfacing with automatic controls is included hereunder.

F. Wiring for BAS systems communications buses two conductor minimum 18 gauge foil-shielded, stranded twisted pair cable rated at 300 VDC or more than 80 degrees C.

2.16 SMOKE DETECTION (FOR PROJECTS WITH A FIRE ALARM SYSTEM)

A. See Division 28 for Products.

PART 3 - EXECUTION

3.01 DEMOLITION

A. Terminal Devices: Remove terminal sensors, actuators and controls as indicated on drawings and as required to accommodate scope of mechanical work shown on drawings and described in specifications. Remove pneumatic piping and cap with hardware as appropriate. Remove wiring and conduit associated with devices. Do not leave any unused abandoned piping or wiring in space.

B. Graphics and Programming: Remove symbols from control system graphics associated with deleted terminal elements. Modify programming code to delete alarms, control loops, etc., associated with deleted terminal devices.

3.02 EXAMINATION

A. Prior to starting work, carefully inspect installed work of other trades and verify that such work is complete to the point where work of this Section may properly commence.
B. Notify the Owners' representative in writing of conditions detrimental to the proper and timely completion of the work.
C. Do not begin work until unsatisfactory conditions are resolved.

3.03 CONTROL SYSTEM CHECKOUT AND TESTING

A. Testing completed before Owner's representative is notified of system demonstration.
B. Calibrate and prepare for service of instruments, controls, and accessory equipment furnished under this specification.
C. Verify that control wiring is properly connected and free of shorts and ground faults.
D. Enable control systems and verify calibration and operation of input and output devices.
E. Verify that system operation adheres to sequences of operation.
F. Commissioning and Verification: In addition to commissioning requirements specified elsewhere, provide the following commissioning on the HVAC instrumentation and controls system:
    1. Control systems completely commissioned to ensure aspects of the system are operating as intended and at optimum tuning.
    2. Wiring connections verified and traced from field device to panel to ensure proper connections.
    3. Measured values verified by a hand held calibrated device to validate that value indicated by the control system is in fact the actual measured value.
    4. Loops properly tuned to obtain the desired control value. Each loop to be "upset" and put back in control to demonstrate its ability to stabilize quickly.
    5. Provide a final point-by-point report submitted that indicates the date of each verification, the results, and initialed on each page by the person performing the reading.

3.04 ACCEPTANCE TESTING AND TRAINING

A. Site Testing:
    1. Contractor provides personnel, equipment, instrumentation, and supplies necessary to perform testing. Owner or Owner's representative will witness and sign off on acceptance testing.
    2. Contractor demonstrates compliance of completed control system with Contract Documents. Using approved test plan, physical and functional requirements of project demonstrated.
B. Training:
    1. General: Contractor conducts training courses for personnel in operation and maintenance of system. Training manuals provided for each trainee, with two additional copies provided for archival at project site. Manuals include detailed description of subject matter for each lesson. Copies of audiovisuals delivered to Owner. Training day is defined as 8 hours of classroom instruction, including

two 15-minute breaks and excluding lunch time, Monday through Friday, during normal first shift in effect at training facility. Notification of any planned training given to Owner's representative at least 15 days prior to training.

2. Operator's Training I: First course taught at supplier's facility for period of one consecutive training days. Upon completion, each student should be able to perform elementary operations with guidance and describe general hardware architecture and functionality of system.
3. Operator's Training II: Second course taught at project site for a period of one training day after completion of contractor's field testing. Course includes instruction on specific hardware configuration of installed system and specific instructions for operating installed system. Upon completion, each student should be able to start system, operate the system, recover system after failure, and describe specific hardware architecture and operation of system.
4. Operator's Training III: Third course taught at project site for period of one training day no later than six months after completion of the acceptance test. Course will be structured to address specific topics that students need to discuss and to answer questions concerning operation of system. Upon completion, students should be fully proficient in system operation and have no unanswered questions regarding operation of installed system.

3.05 WIRING

A. Provide electrical wiring required to control systems specified in this Section. Control and interlock wiring complies with national, state and local electrical codes and Division 26, Electrical of this specification.
B. Power wiring required for building control panel(s) to be dedicated circuit(s).
C. Verify location of operator work station with Owner prior to installation.
D. NEC Class 1 (line voltage) wiring UL Listed in approved raceway according to NEC and Division 26, Electrical requirements.
E. Low-voltage wiring meets NEC Class 2 requirements. (Low-voltage power circuits subfused when required to meet Class 2 current limit.)
F. Where NEC Class 2 (current-limited) wires are in concealed and accessible locations, including ceiling return air plenums, approved cables not in raceway may be used provided that cables are UL listed for intended application.
G. Do not install Class 2 wiring in raceway containing Class 1 wiring. Boxes and panels containing high-voltage wiring and equipment may not be used for low-voltage wiring except for purpose of interfacing (e.g., relays and transformers).
H. Where Class 2 wiring is run exposed, wiring run parallel along surface or perpendicular to it and tied at 10 foot intervals.
I. Where plenum cables are used without raceway, support from structural members. Do not support cables with ductwork, electrical raceways, piping, or ceiling suspension systems.
J. Make wire-to-device connections at terminal block or terminal strip. Make wire-to-wire connections at terminal block.
K. Maximum allowable voltage for control wiring 24 V. If only higher voltages are available, provide step-down transformers.

L. Wiring installed as continuous lengths, with no splices permitted between termination points.
M. Install plenum wiring in sleeves where it passes through walls and floors. Maintain fire rating at penetrations.
N. Include one pull string in each raceway 1-inch or larger.
O. Control and status relays are to be located in designated enclosures. Enclosures include packaged equipment control panels unless they also contain Class 1 starters.
P. Install raceway to maintain a minimum clearance of 6-inches from high-temperature equipment (e.g., steam pipes or flues).
Q. Secure raceways with raceway clamps fastened to structure and spaced according to code requirements. Raceways and pull boxes may not be hung on flexible duct strap or tie rods. Raceways may not be run on or attached to ductwork.
R. Install insulated bushings on raceway ends and openings to enclosures. Seal top end of vertical raceways.
S. Flexible metal raceways and liquid-tight, flexible metal raceways not-to-exceed 3-feet in length and be supported at each end. In areas exposed to moisture, including chiller and boiler rooms, liquid-tight, flexible metal raceways to be used.
T. Raceway must be rigidly installed, adequately supported, properly reamed at both ends, and left clean and free of obstructions. Raceway Sections joined with couplings. Terminations made with fittings at boxes.
U. Input and output terminations to be labeled at the controller to identify if they are AI, DI, AD, DO, and function (i.e. pump start, OM Sensor.)

3.06 COMMUNICATION WIRING

A. Follow manufacturer's installation recommendations for communication cabling.
B. Verify integrity of network following cable installation.
C. Communication wiring unspliced length when that length is commercially available; labeled to indicate origination and destination data.
D. Grounding of coaxial cable in accordance with NEC regulations article on “Communications Circuits, Cable, and Protector Grounding.”

3.07 INSTALLATION OF AUXILIARY CONTROL DEVICES

A. General:
    1. Install sensors and thermostats in accordance with manufacturer's recommendations.
    2. Room sensors and thermostats installed at 48-inches AFF to midline of sensor on concealed junction boxes properly supported by wall framing at the locations shown on the Drawings.
    3. Low-limit sensors used in mixing plenums installed in a serpentine manner horizontally across duct.
    4. Pipe-mounted temperature sensors installed in wells with heat-conducting fluid in thermal wells.

5. Install outdoor air temperature sensors on north facing wall or screen, complete with sun shield at designated location.

B. Flow Switch: Use correct paddle for pipe diameter. Adjust flow switch in accordance with manufacturer's instructions.

C. Actuators:
   1. General:
      a. Mount and link control damper actuators according to manufacturer's instructions.
      b. Check operation of damper/actuator combination to confirm that actuator modulates damper smoothly throughout stroke to both open and closed positions.
   2. Actuator Mounting for Damper and Valve Arrangements to Comply with the Following:
      a. Damper Actuators: Do not install in the air stream.
      b. Use a weather proof enclosure (clear and see through) if actuators are located outside.
      c. Damper or valve actuator ambient temperature not-to-exceed 122 degrees F through any combination of medium temperature or surrounding air. Provide appropriate air gaps, thermal isolation washers or spacers, standoff legs, or insulation as necessary. Mount per manufacturer's recommendations.
      d. Actuator cords or conduit to incorporate a drip leg if condensation is possible. Do not allow water to contact actuator or internal parts. Location of conduits in temperatures dropping below dew point to be avoided to prevent water from condensing in conduit and running into actuator.
      e. Damper mounting arrangements to comply with the following:
         1) Furnish and install damper channel supports and sheet metal collars.
         2) Jack shafting of damper Sections not allowed.
         3) Multi-Section dampers arranged so that each damper Section operates individually. Provide one electronic actuator direct shaft mounted per Section.
      f. Size damper Sections based on actuator manufacturers specific recommendations for face velocity, differential pressure and damper type. In general: Damper Section not-to-exceed 24 ft-sq. with face velocity 1500 FPM.
      g. Multiple Section dampers of two or more arranged to allow actuators to be direct shaft mounted on the outside of the duct.
      h. Multiple Section dampers of three or more Sections wide arranged with a 3-sided vertical channel (8-inch wide by 6-inch deep) within the duct or fan housing and between adjacent damper Sections. Vertical channel anchored at the top and bottom to the fan housing or building structure for support. Connect sides of each damper frame to the channels. Holes in the channel to allow damper drive blade shafts to pass through channel

for direct shaft mounting of actuators. Face open side of channel downstream of the airflow, except for exhaust air dampers.

i. Multiple Section dampers to be mounted flush within a wall or housing opening to receive either vertical channel supports as described above or sheet metal standout collars. Sheet metal collars (12-inch minimum) to bring each damper Section out of the wall to allow direct shaft mounting of the actuator on the side of the collar.

D. Control Valve:
   1. Valves installed in accordance with manufacturer's recommendations.
   2. Slip-stem control valves installed so that stem position is not more than 60 degrees from vertical up position. Ball type control valves installed with stem in horizontal position.
   3. Control valves accessible and serviceable.
   4. Install isolation valves so that control valve may be serviced without draining supply/return side piping system. Install unions at connections to screw-type control valves.
   5. Valve Sizing for Water Coil:
      a. On/Off Control Valves: Line size.
      b. Modulating Control Valve Body Size may be reduced at most two pipe sizes from the line size or not less than 1/2 the pipe size. BAS contractor to size all water coil control valves for the application as follows:
         1) Booster-heat valves sized not-to-exceed 4-9 PSI differential pressure. Size valve for 50 percent Valve Authority. Valve design pressure drop is equal to the sum of coil drop plus the balance valve drop.
         2) Primary valves sized not-to-exceed 5-15 PSI differential pressure. Size valve for 50 percent Valve Authority. Valve design pressure drop is equal to the sum of coil drop plus the balance valve drop.
         3) Butterfly valves sized for modulating service at 60-70 degree rotation. Design velocity 12-feet per second or less when used with standard EPDM seats.
      c. Valve Mounting Arrangements to Comply with the Following:
         1) Provide unions on all ports of two-way and three-way valves.
         2) Install three-way equal percentage Characterized Control valves in a mixing configuration with the “A” port piped to the coil.
         3) Install 2½-inch and above, Three-Way globe valves, as manufactured for mixing or diverting service to the coil.

E. Control Damper:
   1. Dampers installed in accordance with manufacturer's instructions. Unless specifically designed for vertical blade application, dampers must be mounted with blade axis horizontal.
   2. After installation of low-leakage dampers with seals, caulk between frame and duct or opening to prevent leakage around perimeter of damper.

F. Air Flow Station: Install where indicated in ductwork and/or equipment with manufacturer's recommended straight ductwork upstream and downstream of air flow station or as shown on drawings, whichever is greater. Where equipment

manufacturer's standard airflow measuring station cannot read airflows at required design velocities, provide appropriate air flow measuring station to provide accurate reading throughout system design operations range.

3.08 SMOKE DETECTION (FOR PROJECTS WITH A FIRE ALARM SYSTEM)

A. Smoke detector furnished and powered/wired under Division 28, Electronic Safety and Security. Coordinate with fire alarm equipment supplier. Installation of duct smoke detector housing and sampling tube under Division 23, HVAC.
B. Install smoke detectors in supply air systems greater than 2000 CFM.
C. Install smoke detectors at each story prior to connection to return air riser in systems greater than 15,000 CFM and serving more than one story.

3.09 SEQUENCES OF OPERATION AND POINTS LISTS

A. Where local energy code dictates certain sequences (such as night setback, night flush, pressure and temperature reset, terminal unit sequences, etc.), the sequences are not necessarily repeated in the documents. It is not the intent of this specification or documentation to reiterate the energy code. Provide all energy code mandated sequences and document in sequence of operations submittals at no additional cost to the Owner. Provide all required points to achieve the appropriate sequences.
B. All points shall be adjustable by owner.
C. See control diagrams and sequences on drawings.
D. When any type of air distribution equipment is not in operation, control devices to remain in their "off" positions. "Off" positions may differ from the "normal" (meaning failed) position. Except as specified otherwise, "off" and "normal" positions of control devices to be as follows:

Device	**"Off" Position**	**"Normal" Position**
Heating and Chilled Water Coil Valves	closed	open
Outside Air Damper	closed	closed
Return Air Damper	open	open
Exhaust/Relief Air Damper	closed	closed
Fire and Smoke Dampers	closed	open

E. Variable Frequency Drives: For a VFD dependent on an external input for its output setting (e.g., the VFD gets “Frequency” as an input), loss of that external input to result in the VFD holding its last value. If the VFD is running its own PID loop and the external input to the VFD is a setpoint (e.g. duct static pressure setpoint), the VFD to hold the last setpoint. If the VFD loses its process variable (e.g. duct static pressure), the VFD to go to its minimum speed setting.
F. Except as specified otherwise, throttling ranges, proportional bands, and cycle differentials to be centered on the associated setpoint. All modulating feedback control loops to include the capability of having proportional, integral, and derivative action.

Unless the loop is specified "proportional only" or "P+I", Contractor to apply appropriate elements of integral and derivative gain to each control loop to result in stable operation, minimum settling time and maintain the primary variable within the specified maximum allowable variance.

G. Provide a real time clock and schedule controller with sufficient scheduling capability to schedule all required controllers and sequences. Schedule functionality may reside in a controller. If a controller is used, document scheduling functionality including names and types on controller points list submittal. Set up initial schedules in coordination with Owner.

H. Scheduling Terminology: When air handlers are scheduled throughout the day, the following defines the terminology used:
   1. Occupied Period: Period of time when the building is in use and occupied. Confirm schedule with Owner. Exclude all national holidays. Generally systems will be fully operational throughout this period and ventilation air to be continuously introduced. Space temperature setpoints will generally be in the "normal" range of 68 degrees to 78 degrees F.
   2. Unoccupied period: Period of time when the building or zone is not in use and unoccupied. Ventilation air not to be introduced.
   3. Preoccupancy Period: Time prior to the Occupied period when the systems are returning the space temperatures from setback to "normal" or occupied setpoints (warm-up and cool-down). Ventilation air shall not be introduced unless outside air conditions permit free-cooling or to support a pre-occupancy purge sequence. Time period to be determined by an optimum start strategy unless otherwise specified.
   4. Setback Period: Setback will typically start with the end of the occupied period and end with the start of the preoccupancy period, however it shall be provided with its own schedule. Generally systems will be off except to maintain a "setback" temperature, economization may be enabled to maintain "setback" cooling setpoint when applicable.

I. Where any sequence or occupancy schedule calls for more than one motorized unit to start simultaneously, the BAS start commands to be staggered by 5 second (adj.) intervals to minimize inrush current.

J. Wherever a value is indicated as adjustable (adj.), it shall be modifiable, with the proper password level. For these points, it is unacceptable to have to modify programming statements to change the setpoint.

K. When a power failure is detected in any phase, the BAS start commands to be retracted immediately from all electrically powered units served by the failed power source. If the associated controller is powered by normal or emergency power, it may monitor its own power source as an indication of power status. If the controller is powered by uninterruptible power supply (UPS), or if it is not capable of monitoring its own power for use in sequences, provide at least one voltage monitor (three phase when applicable) per building. When the BAS detects that normal or emergency power has been restored, all equipment for which the BAS start command had been retracted to be automatically restarted in an orderly manner on staggered 5 second intervals to minimize inrush current

L. Design Builder shall provide the following sequences for owner review and approval. The list below is not comprehensive in such that all equipment listed below may not be covered work by all Contract documents will require control:
    1. All sequence shall be included in a tab at the top of the graphic for a quick reference.
    2. Heating hot water temperature reset
    3. Steam pressure control
    4. Optimized boiler staging based on capacity and best operating efficiency point
    5. All equipment requires scheduling
    6. Trim and Respond Duct static pressure reset
    7. Trim and Respond Supply air temperature reset
    8. Optimum start/stop: heating, cooling, ventilation
    9. Morning Purge
    10. Air-side economizing mode shall be utilized fully
    11. Equipment Outside Air Lockout for heating and cooling
    12. Heating hot water temperature reset based on demand
    13. Schedules for all equipment
    14. CO2 control – max concentration, adjustable, shall be 900 ppm
    15. Night Temperature Setbacks
    16. At a minimum, alarms for all equipment controlled includes, but is not limited to the following:
        a. High/Low static pressure, temperature, CFM, heating hot water temp, CO2
        b. Damper failures
        c. Damper Stuck or inoperable alarms
        d. All manufacture boiler and air handler alarms
        e. Airflow above or below setpoint
        f. Command OFF, Status ON – all equipment
        g. Command ON, Status Off – all equipment
        h. Above or Below Setpoint – all equipment
        i. Scheduling Alarms – all equipment
        j. High/low zone temperature alarms
        k. VFD operational alarms
        l. Boiler off, pump on
        m. Boiler On, pump off
        n. Lead/lag Alarms
        o. Maintenance Alarms
        p. Burner alarms
        q. Status alarms
        r. Efficiency Alarm
        s. High/Low Water
        t. High/Low Steam Pressure
        u. Buner alarms
        v. Efficiency Alarm

M. Where “prove operation” of a device (generally controlled by a digital output) is indicated in the sequence, it shall require that the BAS, after an adjustable time delay after the device is commanded to operate (feedback delay), confirm that the device is operational via the status input. If the status point does not confirm operation after the time delay or anytime thereafter for an adjustable time delay (debounce delay) while the device is commanded to run, an alarm to be enunciated audibly. Upon failure, run command to be removed and the device to be locked out until the alarm is manually acknowledged unless specified otherwise.

N. BAS to provide for adjustable maximum rates of change for increasing and decreasing output from the following analog output points:
   1. Speed control of variable speed drives
   2. Control Reset Loop
   3. Valve Travel Limit

O. Wherever a value is indicated to be dependent on another value (i.e., setpoint plus 5 degrees F) BAS to use that equation to determine the value. Simply providing a virtual point that the operator must set is unacceptable. In this case three virtual points to be provided. One to store the parameter (5 degrees F), one to store the setpoint, and one to store the value which is the result of the equation.

P. Trend points as identified in the points list. Trends to be grouped system specific and setup in two-axis (x,y) graphical format that display object values relative to time. Setup trends to record data in 5 minute increments.

Q. Boiler and equipment points lists that is required as part of this project. Each IO point listed must be made available and visible on the county enteliWEB server for county use for each boiler. The tables below are for one boiler. Where there is more than boiler or piece of equipment cover by this scope, the Design Builder is required to provide all points for each piece of equipment and make ready for use for the county.

   1. All valves, flow, and temperatures
   2. Tables on following pages.

INTELLIHOT - This applies to the Courthouse and Jail						
Point Name	**Readable**	**Writable**	**Point Type: Hardwired I/O or Integrated**		**Number of points**	**Required On Graphics**
GDDF_Boiler Enable	X	X	AO	AV	1	X
GDDF_Boiler Setpoint	X	X	AO	AV	1	X
GDDF_Boiler Status	X		AI	AV	1	X
GDDF_Actual Boiler Setpoint	X	X	AI	AV	1	X
GDDF_SysAlarmCode	X			AV	1	X
GDDF_Manifold_Tank_Temperature	X		AI	AV	1	X
GDDF_Unitstatus (Flame, Blower, Flow)	X		AI	AV	3	X
GDDF_Boiler_Flue_Temperature	X		AI	AV	1	X
GDDF_LLH_Temperature	X		AI	AV	1	
GDDF_Inlet_Temp	X		AI	AV	1	X
GDDF_Outlet_Temp	X		AI	AV	1	X
GDDF_Flow GPM	X		AI	AV	1	X
GDDF_Boiler Firing Rate	X	X	AI	AV	1	X
Error Code Blower Speed Fault	X		AI	AV	1	X
Error Code Blocked Flue	X		AI	AV	1	X
Error Code Ignition Failure	X		AI	AV	1	X
Error Code Temperature Sensor Shorted	X		AI	AV	1	X
Error Code Temperature Sensor Open Circuit	X		AI	AV	1	X
Error Code Flue Temperature Exceeded	X		AI	AV	1	X
Error Code Heat Exchanger Outlet Temperature Exceeded	X		AI	AV	1	X

GDDF HHW Plant Boilers - Superior Iroquois						
Point Name	**Readable**	**Writable**	**Point Type: Hardwired I/O or Integrated**		**Number of points**	**Required On Graphics**
GDDF_Boiler Command and Status	X	X	BO	BV	1	Y
GDDF_Boiler Temp SP	X	X		AV	1	Y
GDDF_Boiler Alarm	X		BI	BV	1	Y
GDDF_Boiler Status (Flame)	X		BI	BV	1	Y
GDDF_Boiler Isolation valve	X	X	AO	AV	1	Y
GDDF_Boiler Outlet Temp	X		AI	AV	1	Y
GDDF_Boiler Inlet Temp	X		AI	AV	1	Y
GDDF_Boiler Flue Temp	X			AV	1	Y
GDDF_Boiler Firing Rate	X	X	AI	AV	1	Y
GDDF_Boiler HOA Switch	X	X	BI	BV	1	Y
GDDF_Gas Valve Status	X			BV	1	Y
GDDF_Blower Speed	X			AV	1	Y
GDDF_Boiler Mode	X			BV	1	Y
GDDF_ Flow switch	X			BV	1	Y
GDDF_Fan status	X			BV	1	Y
GDDF_System pump status	X			BV	1	Y
GDDF_System pump speed	X			BV	1	Y
GDDF_Boiler Pump	X			BV	1	y
GDDF_Outdoor Temperature	X		AI	AV	1	Y
GDDF_HHWAlarms (All Available)	X		AI	AV	1	Y
GDDF_HHWSup Temp BLR1	X		AI	AV	1	Y
GDDF_HHWRetTemp BLR1	X		AI	AV	1	Y
GDDF_HHWSup Temp BLR2	X		AI	AV	1	Y
GDDF_HHWRetTemp BLR2	X		AI	AV	1	Y
GDDF_HHWSetPoint	X	X	AI	AV	1	Y
GDDF_HHWSupTemp_Courts	X		AI	AV	1	Y
GDDF_HHWSupTemp_Courts	X		AI	AV	1	Y
GDDF_HHWSupFlow_Main	X		AI	AV	1	Y
GDDF_HHWRetFlow_Main	X		AI	AV	1	Y
GDDF_HHWSupFlow_Courts	X		AI	AV	1	Y
GDDF_HHWSupFlow_Courts	X		AI	AV	1	Y
GDDF_HHWSupTemp_GDDF	X		AI	AV	1	Y
GDDF_HHWSupTemp_GDDF	X		AI	AV	1	Y
GDDF_HHWRetFlow_GDDF	X		AI	AV	1	Y
GDDF_HHWRetFlow_GDDF	X		AI	AV	1	Y
GDDF_HHWValvePos BLR1	X		AI	AV	1	Y
GDDF_HHWValvePos BLR2	X		AI	AV	1	Y
GDDF_DH1 HHWS to Tank	X		AI	AV	1	Y
GDDF BLR Emergency Shut Down	X	X	BO	BV	1	Y
GDDF_Overall Boilers Efficiency	X			AV	1	Y
GDDF_Instanteneous Boiler Efficiency	X			AV	1	Y
Points necessary to calculate Efficiency	X	X	AI/BI	AV	1	Y
GDDF_Flue Gas Temp	X				1	Y
GDDF_Combustion Air Temp	X				1	Y
GDDF_ Boiler Alarms (ALL)					TBD	
GDDF_BMS HWS Reset	X	X		AV	1	Y
Heating Energy Load	System shall utilize supply and return temperature sensors and flow meters to calculate the system energy load, displayed as MMBtu/hr					Y

END OF SECTION

DOCUMENT 23 11 23

NATURAL GAS PIPING AND SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for design, engineering, procuring, and installation required natural gas piping and system equipment for the proper operation of new and existing equipment.

B. Work Included:
   1. Design Builder is responsible for upgrading natural gas system from the meter (load-side) to the equipment to meet boiler and on-demand system manufacturer's specification and requirements for operating the equipment.
   2. Engineering and calculations to determine design of new natural gas distribution piping requirements
   3. Engineer, procure, and install appliance regulators are required
   4. Engineer, procure, and install new gas meter per boiler and network to existing energy management system for monitoring
   5. Engineering and calculations for pressure and flow requirements.
   6. Installation of new natural gas system, including, but not limited to, all piping, roof penetrations and supports, excavation and underground work, transitions, etc.
   7. Coordinating with the local utility on upgrading the service
   8. Fuel Pipe and Pipe Fittings - General
   9. Steel Pipe (Above Grade)
   10. Natural Gas Valves
   11. Natural Gas Pressure Regulators
   12. Flexible Pipe Connectors - Gas Piping (CSA Listed)

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by related contract documents

1.04 SUBMITTALS

A. Submittals as required by related contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by related contract documents

1.06 WARRANTY

A. Warranty of materials and workmanship as required related contract documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Fuel Pipe and Pipe Fittings - General:
    1. Flange Gaskets:
        a. Buna-N (Nitrile)
        b. NBR
        c. Viton
        d. Or approved equivalent.
B. Steel Pipe (Above Grade):
    1. American Piping Products
    2. US Steel
    3. Or approved equivalent.
C. Natural Gas Valves:
    1. Apollo
    2. Jenkins Bros.
    3. Lunkenheimer Co.
    4. Nibco
    5. Watts
    6. Or approved equivalent.
D. Natural Gas Pressure Regulators:
    1. Maxitrol
    2. Equimeter
    3. Or approved equivalent.
E. Flexible Pipe Connectors - Gas Piping (CSA Listed):
    1. Pormont
    2. Proflex
    3. Or approved equivalent.
F. As specified in Articles below, or approved equivalent.

2.02 FUEL PIPE AND PIPE FITTINGS - GENERAL

A. Flange Gaskets: Gaskets to be constructed from elastomeric materials.
B. Install per manufacturers recommended installation requirements.

2.03 STEEL PIPE (ABOVE GRADE)

A. Steel Pipe (Above Grade Installation):
   1. 2-inches and Smaller: Schedule 40, A53 black steel pipe and threaded black malleable threaded fittings.
   2. 2-1/2-inches and Larger: Schedule 40, A53 black pipe with Schedule 40 butt weld fittings.
   3. ASTM A53, electric-resistance welded Type E Grade B, black, Schedule 40 pipe, manufactured for welded pipe connections.

B. Fittings for Steel Pipe (Above Grade Installations):
   1. General: Mark fittings, unions, and other products recognized as regularly available products in accordance with MSS SP-25. Marking on products of small size or shape may be omitted from sequence allowed by MSS SP-25, except for manufacturer's name or trademark.
   2. Threaded Fittings: Conforming to ANSI B2.1, ASTM A47, 150 PSI rating, except where otherwise specified or prevailing codes or requirements dictate use of 300 PSI ratings. Fittings to be fabricated from standard malleable iron with dimensions conforming to ANSI B16.3.
   3. Welded Fittings: Wrought carbon steel fittings, ASTM A234, ANSI B16.9, B16.28. Butt-welding type unless otherwise indicated to be socket welding type.
   4. Flanges: Carbon steel conforming to ASTM A105, ANSI B16.5, and factory forged in USA. Flanges which have been machined, remade, painted, or are non-domestic origin are not acceptable. Provide raised or full face ends wherever indicated or required.
   5. Flange Gaskets: Gaskets to be constructed from elastomeric materials.
   6. Flange Hardware: Bolting materials to be corrosion resistant carbon steel bolts and hex nuts conforming to ASTM A307. Provide bolting materials used in containment sumps below grade applications, stainless steel bolts and hex nuts conforming to ASTM A453. Threads and dimensions to be in accordance with ANSI B1.1 and B18.2.
   7. Unions: Conform to ANSI B16.39, ASTM A47 and fabricated from malleable iron with bronze-to-iron ground joints rated at 150 percent design operating pressure. Threads to conform to ANSI B2.1.
   8. Threaded Pipe Plugs: Conforming to ANSI B16.14.
   9. Thread Lubricant: Meet or exceed CGA ratings and compliant with Federal Specification TT-S-1732, manufactured compatible with fuel oil.

2.04 NATURAL GAS VALVES

A. 2-inches and Smaller: MSS SP-110 ball valves constructed in compliance with ASME B16.33. UL listed, FM approved, two-piece construction, threaded, bronze or brass body, full port, chrome plated brass ball, blowout-proof stem design, 125 PSI WOG working pressure.

B. 2-1/2-inches and Larger: 100 to 125 PSI rated, all bronze or iron body/bronze trimmed plug cock type, square head or tee/lever handle operation. CSA listed.

2.05 NATURAL GAS PRESSURE REGULATORS

A. Natural Gas: Diaphragm and spring actuated type, with ventless or vented relief feature. Construction, pressure range and venting features suitable for intended service. Regulator to meet code and serving utility requirements. Pipe vented type to atmosphere in approved location.

2.06 FLEXIBLE PIPE CONNECTORS - GAS PIPING (CSA LISTED)

A. Inner Hose: Type 304 stainless steel.
B. Exterior Sleeve: Braided, Type 304 stainless steel.
C. Pressure Rating: 175 PSI at 70 degrees F up to 4-inch pipe.
D. Joint: Threaded carbon steel.
E. Maximum Offset: 3/4-inch on each side of installed center line.
F. Flexible Connectors: Flexible connectors used in LP and LPG piping systems compliant with following:
    1. Install in accordance with manufacturer's instructions.
    2. Flexible connectors and hose used as flexible connectors not exceed 3-feet in length where used with liquid or vapor piping on portable or stationary tanks.
    3. Hose permitted to be used if flexibility is required for liquid or vapor transfer.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. Inspection: Examine areas and conditions under which fuel systems materials and products are to be installed. Do not proceed with work until unsatisfactory conditions have been corrected.
B. Identification: Install mechanical identification in accordance with Section 22 05 53, Identification for Plumbing Piping and Equipment.
C. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
D. Remove scale and dirt on inside and outside before assembly.
E. Prepare piping connections to equipment with flanges or unions.
F. Keep open ends of pipe free from scale and dirt. Whenever work is suspended during construction protect open ends with temporary plugs or caps.
G. Install piping systems in accordance with manufacturer's instructions.
H. Route piping in orderly manner, plumb and parallel to building structure, and maintain gradient.
I. Install piping to conserve building space and avoid interference with use of space.
J. Sleeve pipe passing through partitions, walls, and floors.
K. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
L. Provide piping mains, branches and runouts installed to allow for free expansion and contraction without developing leaks or undue stressing of pipe. Provide stresses within allowable limits of ANSI B31.1 for pressure piping.

M. Equipment Connections: Connect gas piping to each gas-fired equipment item, with drip leg and shutoff gas cock. Comply with equipment manufacturer's instructions. Flexible connections where required per ASCE 7-10 or shown on Drawings.
N. Piping Tests: Test natural gas piping in accordance with applicable mechanical code requirements, ANSI B31.2, and local utility requirements.

3.02 FUEL PIPE AND PIPE FITTINGS - GENERAL

A. Black Steel: See 3.01 General Installation Requirements above and install per local code pressure test system to 100 psig for 24 hours.
B. Fuel Piping Installation:
    1. General: Install pipe, tube and fittings in accordance with recognized industry practices which will achieve permanently leakproof piping systems, capable of performing each indicated service without piping failure. Install each route with a minimum of joints and couplings, but with adequate and accessible unions or flanges for disassembly, maintenance, and replacement of valves and equipment. Reduce sizes by use of reducing fittings. Align piping accurately at connections, within 1/16-inch misalignment tolerance. Comply with ANSI B31.9 Code for Pressure Piping. Provide shutoff valves, pressure regulators and unions at connections to gas-fired equipment. Provide dirt legs at low points.
    2. Installed piping not to interfere with maintenance of equipment, opening of doors or other moving parts nor be directly above or near any portion of electrical equipment.
    3. Support piping such that connected equipment does not bear weight of piping.
    4. Adequately support vertical lines at their bases or by suitable hanger placed in horizontal line near riser or, preferably, by base fitting set on a pedestal.
    5. Ream steel pipes after cutting to full bore. Remove foreign matter from inside of pipe before installing. Keep installed piping free from dirt and scale and protect open ends from foreign matter. Use temporary plugs or other approved methods for opening and closure.
    6. Remake or replace defective, leaking, or otherwise unsatisfactory joints or material. Peening, caulking, or doping of piping is not permitted.
    7. Sealants: Use sealants on metal fuel piping threads which are chemically resistant to fuel. Use sealants sparingly and apply only to male threads of metal joints.
    8. Maintain electrically continuous piping system; provide grounding jumper where required to maintain continuity. Provide grounding connection; install per requirements of Division 26, Electrical.
    9. Install dirt legs in gas piping where indicated and where required by code or regulation. Do not rest dirt leg on surface of roof, floor or deck.
    10. Support gas piping above roof on preformed pipe stands. Guide pipes with clamp one size larger than pipe. Provide supports at intervals per code manufacturer, and details and at each change in direction. Wood blocks are not approved supports.

11. Gas Regulator Vent Piping: Provide Schedule 40, A53 black steel pipe and threaded black malleable threaded fittings for vent piping. Paint piping exposed to weather with primer and two coats of Safety Yellow Rustoleum.
12. Piping: Paint piping exposed to weather with primer and two coats of Safety Yellow Rustoleum.

3.03 STEEL PIPE (ABOVE GRADE) INSTALLATION

A. See 3.01 General Installation Requirements above and install per current version of manufacturers installation guidelines. Test system in accordance with requirements of local code and ANSI LC-1.

3.04 NATURAL GAS VALVE INSTALLATION

A. Prepare valves for shipping as follows:
   1. Protect internal parts against rust and corrosion.
   2. Set ball valves open to minimize exposure of functional surfaces.
B. Use the following precautions during storage:
   1. Maintain valve end protection.
   2. Store valves indoors and maintain at higher than ambient dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.
C. Do not attempt to repair defective valves; replace with new valves.
D. Gas Cocks: Provide at connection to gas train for each gas-fired equipment item, and on risers and branches where indicated.
E. Locate gas valves where easily accessible and protected from possible damage.

3.05 NATURAL GAS PRESSURE REGULATORS INSTALLATION

A. Install in strict accordance with manufacturers written instructions and approved submittals.
B. Vent regulators to outdoors as required.
C. Pressure Regulating Valves: Install as required at gas-fired appliances; comply with utility/code requirements. Pipe atmospheric vent to outdoors, full size outlet with 90 degree elbow downturn. Install gas shutoff valve upstream of each pressure regulating valve. Install in accordance with manufacturer's instructions to prevent freezing.

3.06 FLEXIBLE PIPE CONNECTORS - GAS PIPING (CSA LISTED) INSTALLATION

A. Install in strict accordance with manufacturers written instructions and approved submittals.

END OF SECTION

DOCUMENT 23 21 13

HVAC PIPING

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for designing, engineering, procuring, and installing all work related to piping.

B. Work Included:
   1. Heating Water Piping, Above Ground
   2. Equipment Drains and Overflows
   3. Unions

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required be related contract documents.

1.04 SUBMITTALS

A. Submittals as required by related contract documents
B. In addition, provide:
   1. Welding Certificates: Copies of certificates for welding procedures and personnel.
   2. Field Test Reports: Written reports of tests specified in Part 3 of this Section. Include the following:
      a. Test procedures used.
      b. Test results that comply with requirements.
      c. Failed test results and corrective action taken to achieve requirements.
   3. Water Analysis: Submit a copy of the water analysis to illustrate water quality available at project site.
   4. Buried piping manufacturer to submit thrust block (chilled water) and anchor plate (heating hot water) layout and details including anchorage and seismic calculations.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by related contract documents.
B. In addition, meet the following:

1. Installer Qualifications: Company specializing in performing work of the type specified in this Section, with minimum 3 years of experience.
2. Welder Qualifications: Certify in accordance with ASME (BPV IX).
3. ASME Compliance: Comply with ASME B31.9 "Building Services Piping" for materials, products, and installation. Provide safety valves and pressure vessels with the appropriate ASME label. Fabricate and stamp air separators and expansion tanks to comply with the ASME Boiler and Pressure Vessel Code, Section VIII, Division 01.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by related contract documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. As specified in Articles below.
B. Or approved equivalent.

2.02 HEATING WATER PIPING, ABOVE GROUND

A. Copper Tube: ASTM B 88 (ASTM B 88M), Type L (B), drawn.
    1. Fittings: ASME B16.18, cast brass, or ASME B16.22, solder wrought copper.
    2. Joints: Solder, lead free ASTM B32, HB alloy (95-5 tin antimony), or tin and silver.
    3. Joints: Brazed, AWS A5.8, Classification BAg-1 (silver). Pipes 2-1/2-inches or larger or piping routed over computer rooms, telecommunications rooms, and electrical rooms.

2.03 EQUIPMENT DRAINS AND OVERFLOWS

A. Copper Tube: ASTM B 88 (ASTM B 88M), Type L (B), drawn.
    1. Fittings: ASME B16.18, cast brass, or ASME B16.22 solder wrought copper.
    2. Joints: Solder, lead free, ASTM B 32, HB alloy (95-5 tin-antimony), or tin and silver.
    3. Joints: Brazed, AWS A5.8, Classification BAg-1 (silver). Pipes 2-1/2-inch or larger or piping routed over computer rooms, telecommunications rooms, and electrical rooms.

2.04 UNIONS

A. Unions for Pipe 2-inches and Under:
    1. Copper Pipe: Bronze, soldered joints, ASME B16.22.

B. Dielectric Connections: Provide dielectric waterway or brass nipple fitting with threaded ends. Dielectric unions are not allowed.

PART 3 - EXECUTION

3.01 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
B. Remove scale and dirt on inside and outside before assembly.
C. Prepare piping connections to equipment with flanges or unions.
D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

3.02 INSTALLATION

A. Install in accordance with manufacturer's instructions.
B. Install heating water piping to ASME B31.9 requirements.
C. Route piping in orderly manner, parallel to building structure, and maintain gradient.
D. Install piping to conserve building space and to avoid interference with use of space.
E. Install groups of pipes parallel to each other, spaced to permit applying insulation and servicing of valves.
F. Sleeve pipe passing through partitions, walls and floors allowing adequate space for pipe insulation.
G. Slope piping at 0.2 percent upward in direction of flow and arrange to drain at low points.
H. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
I. 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.
J. Unless otherwise indicated, install branch connections to mains using tee fittings in main pipe, with the takeoff coming out the bottom of the main pipe. For up-feed risers, install the takeoff coming out the top of the main pipe.
K. Anchor piping for proper direction of expansion and contraction.
L. Inserts:
    1. Provide inserts for placement in concrete formwork.
    2. Provide inserts for suspending hangers from reinforced concrete slabs and sides of reinforced concrete beams.
    3. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut flush with top of slab.
M. Pipe Hangers and Supports:
    1. Install in accordance with Division 23, HVAC, Hangers and Supports.
    2. Install hangers to provide minimum1/2-inch space between finished covering and adjacent work.
    3. Place hangers within 12-inches of each horizontal elbow.

4. Use hangers with 1-1/2-inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
5. Support vertical piping at every floor. Support riser piping independently of connected horizontal piping.
6. Where several pipes can be installed in parallel and at same elevation, provide multiple or trapeze hangers.
7. Prepare unfinished pipe, fittings, supports, and accessories, ready for finish painting.
8. Provide sheet lead packing between hanger or support and piping.

N. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.
O. Provide access where valves and fittings are not exposed.
P. Use eccentric reducers to maintain top of pipe level.
Q. Where pipe support members are welded to structural building framing, scrape, brush clean, and apply one coat of zinc rich primer to welds.
R. Prepare unfinished pipe, fittings, supports, and accessories, ready for finish painting.

3.03 FIELD QUALITY CONTROL

A. Leave joints, including welds, uninsulated and exposed for examination during test.
B. Provide temporary restraints for expansion joints that cannot sustain reactions due to test pressure. If temporary restraints are impractical, isolate expansion joints from testing.
C. Flush system with clean water. Clean strainers.
D. Isolate equipment from piping. If a valve is used to isolate equipment, provide closure capable of sealing against test pressure without damage to valve. Install blinds in flanged joints to isolate equipment.
E. 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.
F. 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 trapped air. Use drains installed at low points for complete draining of liquid.
    3. Check expansion tanks to determine that they are not air bound and that system is full of water.
    4. Subject piping system to hydrostatic test pressure that is not less than 1.5 times the design pressure. Test pressure not-to-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 either 90 percent of specified minimum yield strength or 1.7 times "SE" value in Appendix A of ASME B31.9, "Building Services Piping."
    5. After hydrostatic test pressure has been applied for at least four hours, 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.

3.04 FLUSHING AND CLEANING OF PIPING SYSTEMS

A. Clean piping systems thoroughly. Purge pipe of construction debris and contamination before placing the piping systems in service. Provide temporary connections for cleaning, purging, and circulating fluids through the piping system.

B. Use temporary strainers and temporary pumps that can create fluid velocities up to 10 feet per second to flush and clean the piping systems. Do not use Owner's permanent strainers to trap debris during pipe flushing operations. Fit the temporary construction strainers with a line size blowoff valve.

C. When constructing minor piping modifications or additions, verify with Owner if the Owner's pumps and strainers can be used for flushing and chemical cleaning operations. When the flushing and cleaning operations are complete, insure the strainer baskets and screens installed int he piping systems permanent strainers are replaced with clean elements. Keep temporary strainers in service until the equipment has been tested, then replace straining element with a new strainer and clean and deliver the old straining elements to Owner. Fit the Owner's strainers with a line size blowoff valve.

D. Install bypass piping or hoses at the supply and return piping connections at pumps, and cooling coils, etc., to prevent debris from being caught or causing damage to equipment which will be connected to the piping system.

E. Circulate a chemical cleaner in heating water piping systems to remove mill scale, grease, oil, and silt. Cleaner to be selected by chemical treatment vendor on project. Circulate for 48 hours, flush system and replace with clean water. Dispose of chemical solution in accordance with local codes. The heating water system should then be treated with chemicals and inhibitors to be selected by chemical treatment vendor on project. When the chemical cleaning is complete, remove, clean, and reinstall all permanent screens. Notify Owner so that the reinstallation of clean strainer screens may be witnessed.

3.05 FIELD CONDITIONS

A. Do not install underground piping when bedding is wet or frozen.

END OF SECTION

DOCUMENT 23 21 16

HYDRONIC PIPING SPECIALTIES

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for designing, engineering, procuring, and installing equipment as required to meet manufacturer's specifications and for the safe and proper operation affected equipment.

B. Work Included:
   1. Bladder Type Expansion Tanks
   2. Air Vents
   3. Centrifugal Air Separator
   4. Pressure Reducing Valves
   5. Liquid Flow Switches
   6. Instrument Probe Fittings
   7. Strainers
   8. Relief Valves

1.02 RELATED DOCUMENTS AND PROVISIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by related contract documents
B. In addition, meet the following:
   1. ASME (BPV VIII, 1) - Boiler and Pressure Vessel Code, Section VIII, Division 01 - Rules for Construction of Pressure Vessels; The American Society of Mechanical Engineers.

1.04 SUBMITTALS

A. Submittals as required by related contract documents
B. In addition, provide:
   1. Product Data: Provide product data for manufactured products and assemblies required for this project. Include component sizes, rough-in requirements, service sizes, and finishes. Include product description, model and dimensions.
   2. Certificates: Inspection certificates for pressure vessels from Authority Having Jurisdiction (AHJ).
   3. Manufacturer's Installation Instructions: Indicate hanging and support methods, joining procedures.
   4. Project Record Documents: Record actual locations of flow controls.

a. Maintenance Data: Include installation instructions, assembly views, lubrication instructions, and replacement parts list.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by related contract documents
B. In addition, meet the following:
   1. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this Section, with minimum 10 years of documented experience.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by related contract documents

1.07 DELIVERY, STORAGE, AND HANDLING

A. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
B. Provide temporary protective coating on cast iron and steel valves.
C. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.
D. Protect piping systems from entry of foreign materials by temporary covers, completing Sections of the work, and isolating parts of completed system.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Bladder Type Expansion Tanks:
   1. Wessels
   2. Or approved equivalent.
B. Air Vents:
   1. Armstrong International, Inc.
   2. ITT Bell & Gossett.
   3. Taco, Inc.
   4. Amtrol
   5. Metraflex
   6. Or approved equivalent.
C. Centrifugal Air Separator:
   1. ITT Bell and Gossett
   2. Or approved equivalent.
D. Pressure Reducing Valves:
   1. Armstrong
   2. ITT Bell and Gossett
   3. Taco, Inc.
   4. Amtrol

5. Or approved equivalent.

E. Liquid Flow Switches:
   1. McDonnell & Miller
   2. Dwyer
   3. Or approved equivalent.

F. Instrument Probe Fittings:
   1. Pete's Plug
   2. Or approved equivalent.

G. Strainers:
   1. Armstrong International
   2. Mueller
   3. Keckley
   4. Hoffman
   5. Wheatly
   6. Or approved equivalent.

H. Relief Valves:
   1. Armstrong
   2. ITT Bell & Gossett
   3. Taco
   4. Amtrol
   5. Kunkle
   6. Or approved equivalent.

2.02 BLADDER TYPE EXPANSION TANKS

A. High pre-charged steel expansion tank with replaceable heavy duty butyl rubber bladder. The tank is to have a system and drain NPT connection. The tank is to also have a standard Schrader valve to facilitate on-site charging of the tank to meet system requirements. The tank is to be constructed in accordance with Section VIII of the ASME Boiler and Pressure Vessel Code and stamped 125 PSI working pressure.

2.03 AIR VENTS

A. Manual Type: Short vertical Sections of pipe to form air chamber, with 1/8-inch brass needle valve at top of chamber.

B. Automatic Float Type:Brass or semi-steel body, copper, polypropylene, or solid non-metallic float, stainless steel valve and valve seat; suitable for system operating temperature and pressure; with isolating valve.

2.04 CENTRIFUGAL AIR SEPARATOR

A. Description: Fabricated steel tank stamped in accordance with Section VIII of ASME Boiler and Pressure Vessel Code for Unfired Vessels, stamped for 150 PSI at 350 degrees F, with tangential inlet and outlet connections, internal perforated stainless steel air collector tube and blowdown connection.

2.05 PRESSURE REDUCING VALVES

A. Brass body, adjustable range, inlet check valves, removable inlet strainer, noncorrosive valve seat and stem, 3/4-inch size unless otherwise shown, factory set at fill pressure as indicated on drawings.

2.06 LIQUID FLOW SWITCHES

A. Description: Brass for wetted parts with packless construction, paddle with removable segments for pipe size and flow velocity, vapor proof electrical compartment for switches mounted on cold hydronic piping systems, switches for 115V, 60 Hz, 1-phase with 7.4A rating.

2.07 INSTRUMENT PROBE FITTINGS

A. Brass or stainless steel body and cap, high pressure rated, valve material neoprene, Nordal or Viton to suit temperature range, 1/4-inch or 1/2-inch NPT tailpiece.

2.08 STRAINERS

A. Size 2-inches and Under: Screwed brass or iron body for 175 PSI working pressure, Y pattern with 1/16-inch stainless steel perforated screen.
B. Size 2-1/2-inches and Larger: Flanged or grooved and above: iron body for 175 PSI working pressure, Y pattern with 1/16 stainless steel perforated screen.
C. Basket Pattern: Flanged iron body for 175 PSI working pressure, basket pattern with 1/8-inch stainless steel perforated screen, clamped or bolted cover.

2.09 RELIEF VALVES

A. Size and capacity as selected by installer for proper relieving capacity, in accordance with ASME Boiler and Pressure Vessel Code.
B. Combined Pressure-Temperature Relief Valves: Bronze body, test lever, thermostat, complying with ANSI Z21.22 listing requirements for temperature discharge capacity. Provide temperature relief at 210F, and pressure relief at 125 PSI.
C. Pressure Relief Valves: Bronze body, test lever, ASME rated. Provide pressure relief as indicated on drawings.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install specialties in accordance with manufacturer's instructions.
B. Where large air quantities can accumulate, provide enlarged air collection standpipes.
C. Provide valved drain and hose connection on strainer blow down connection.
D. Provide pump suction fitting on suction side of base mounted centrifugal pumps. Remove temporary strainers after cleaning systems.

E. Support pump fittings with floor mounted pipe and flange supports. Provide vibration isolation, same as pump, to avoid short circuiting.
F. Select system relief valve capacity so that it is greater than make-up pressure reducing valve capacity. Select equipment relief valve capacity to exceed rating of connected equipment.
G. Pipe relief valve outlet to nearest floor drain.
H. Where one line vents several relief valves, make cross Sectional area equal to sum of individual vent areas.
I. Air Separators: Install in pump suction lines and as indicated. Run piping to expansion tank with 1/4-inch per foot (2 percent) upward slope towards tank. Install drain valve on units 2-inches and over.
J. Expansion Tanks: Install tank in accordance with manufacturer's instructions. Charge tank with air per manufacturer's instructions. Prior to making connection from the tank to the system, check the air charge. Valve is to be opened to the system when it is determined that the air pressure is equal to the minimum system pressure at the tank location.
K. Liquid Flow Switches: Install on inlet to water chiller as indicated. Install in horizontal pipe with switch mounted in tee on top of pipe with minimum of 24-inches of straight pipe with no fitting both upstream and downstream of switch. Remove segments of paddle to fit in accordance with manufacturer's instructions.
L. Water Relief Valves: Install as indicated, and on expansion tanks, hot water tanks and pressure vessels. Pipe discharge to floor drain. Comply with ASME Boiler and Pressure Vessel Code.
M. Pressure Reducing Valves: Install as indicated, and in accordance with manufacturer's instructions with 3 valve bypass.
N. Test Plugs: Install where indicated and in accordance with the manufacturer's recommendations.
O. Water Filters: Install per manufacturer's recommendations where shown. After system is accepted by Owner, provide 1 set of filters for each filter station.
P. Differential Pressure Regulating Valve: Install per manufacturer's recommendations where shown on Drawings.

3.02 AIR VENTS

A. Automatic: Furnish and install automatic air vents in mechanical equipment rooms and outdoors only. Install at high points of system piping, at heat transfer coils, and elsewhere as required for system air venting. Vents: 3/4-inch with 1/2-inch IPS drain piping to the nearest floor drain or other approved location. Provide a ball valve and union ahead of all automatic air vents. Do not install above ceilings or locations where discharge may occur and cause damage.
B. Manual Vents: Provide at high points of system piping, at heat transfer coils, and elsewhere as required for system venting where automatic air vents are not to be installed. Provide 10-inch length of 1/4-inch copper tube with 180 degree bend down to discharge into hand-held bucket.

END OF SECTION

DOCUMENT 23 52 00

HEATING HOT WATER BOILERS

PART 1 - GENERAL

1.01 SUMMARY

A. Design Builder is responsible for designing, engineering, procuring, and installing TWO (2) new Superior Iroquois boilers (175/200 BHP) to replace the existing heating hot water plant.

B. Work Included, but not limited to, this contract to deliver a facility integrated heating hot water system:

1. Engineer, procure, and install Webster Ultra Low NOX 15PPM burner
2. Demolition and disposal of three boilers. Confirm with owner what parts and equipment shall stay on site.
3. Electrical Design and related construction
4. Structural Design and related construction
5. Mechanical Design and related construction
6. Roof Repair and modification due to project requirements and construction
7. Electrical (Power) upgrades to meet equipment requirements
8. Controls and Sequences of Operation and Integration into the existing Owner's Network
9. Start-up and Commissioning
10. Anchoring
11. Make-up water piping and connections
12. Natural Gas Piping system upgrade, include piping, coordinate with utility on pressure requirements, to meet manufacturers specification and requirements for natural gas volume and pressure.
13. Heating Hot Water piping
14. Water Balance and system flushing
15. Heating hot water supply and return loop temperature sensors
16. Boiler Isolation shall include both manual and automatic at each boiler
17. Piping insulation
18. Piping supports, transitions, and unions necessary to for a facility integrated system.
19. Engineer, procure, and install boiler flue venting including all ancillary equipment to meet burner and boiler draft recommendations, requirements, and specifications. Design Builder shall coordinate the breeching and stack design (diameter and height) with the draft requirements of the boiler/burner.
20. Design and installation shall meet exceed all manufacturers required clearance for maintenance operations.

C. Boiler operating trim shall consist of not less than the following:

1. At a minimum, a probe type primary low water cut-off shall be provided and mounted to boiler.
2. Additional low water cutoff(s) or flow switches

3. Relief valves set at a minimum of 13% higher than the operating pressure of the boiler, but no higher than the boiler design pressure shall be provided.
4. A high limit with manual reset shall be provided in addition to the operating control.
5. A firing rate controller shall be provided if the burner is low-hi-low or modulating.
6. A pressure gauge with an inspector's test cock shall be provided.
7. A water temperature gauge shall be provided.

D. SOURCE QUALITY CONTROL
1. Burner and Hydrostatic Test: Field adjust burner to eliminate excess oxygen, carbon dioxide, oxides of nitrogen emissions, and carbon monoxide in flue gas and to achieve combustion efficiency; perform hydrostatic test.
2. Allow Owner access to source quality-control testing of boilers. Notify Owner 14 days in advance of testing.

1.02 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by related contract documents.

1.04 SUBMITTALS

A. Submittals as required by related contract documents
B. In addition, provide:
1. Product Data: Provide data indicating general assembly, components, controls, safety controls, flue venting system, and wiring diagrams with electrical characteristics and connection requirements, and service connections.
2. Shop Drawings: Indicate general assembly, components, controls, flue venting, safety controls, and wiring diagrams with electrical characteristics and connection requirements, and service connections.
3. Manufacturer's Instructions: Indicate assembly, support details, connection requirements, and include start-up instructions.
4. Manufacturer's Field Reports: Indicate condition of equipment after start-up including control settings and performance chart of control system.
5. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.
6. Provide documentation indicating compliance with local air quality management district.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by related contract documents

B. In addition, meet the following:
   1. Manufacturer Qualifications: Company specializing in manufacturing the type of products specified in this Section, with minimum 10 years of documented experience.
   2. Air Quality: Provide documentation showing compliance with local Air Quality Management District.
   3. Equipment must meet local air quality management district requirements. Do not bid equipment that does not comply.

1.06 WARRANTY

A. Warranty of materials and workmanship as required related contract documents.
B. In addition, provide:
   1. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Superior Iroquois 6,500 MBH input

2.02 LEFT INTENTIONALLY BLANK

2.03 EMERGENCY STOP PUSHBUTTON SWITCH

A. Provide 40mm diameter turn-reset red pushbutton operator with contact blocks to disconnect power to the boiler burner controls and gas service. Basis-of-Design: Square D Class 9001 Family XB5.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install boiler in accordance with manufacturer’s instructions.
B. Provide connection of natural gas service in accordance with requirements of NFPA 54 and applicable codes, and fuel oil tanks. Pipe gas vents to atmosphere.
C. Provide piping connections and accessories as indicated in drawing and in specifications.
D. Provide for connection to electrical service.
E. Provide all wiring between control panels and devices and unit.
F. Mount thermometer in boiler breeching within 12 inches of flue nozzle.
G. Pipe condensate connections from boiler to neutralization system and from there to nearest floor drain.
H. Provide boiler within pre-manufactured skid including: Outdoor enclosure, pumps, piping and appurtenances, meters and gauges and vibration isolation devices.

3.02 CONNECTIONS

A. Piping installation requirements are specified in other 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 as applicable 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 oil piping as applicable full size to burner inlet with shutoff valve and union.
E. Connect hot water and condensate piping to supply-, return-, and blowdown-boiler tappings with shutoff valve and union or flange at each connection.
F. Install piping from safety valves to drip-pan elbow to nearest floor drain.
G. 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.
H. Boiler Flue Venting:
    a. Design Builder shall coordinate the breeching and stack design (diameter and height) with the draft requirements of the boiler/burner. The contract drawings must show breeching and stacks in plan and sections and show diameters and heights.
    b. Where multiple boilers are connected to a common breeching and stack, the design should be based on boilers operating at the required steam output to serve peak load conditions plus a standby boiler in the pre-purge cycle. In this situation, the media in the breeching and stack is a mixture of hot flue gas and relatively cool purge air.

3.03 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:

    2. Perform installation and startup checks according to manufacturer's written instructions.
    3. Operational Test: Start units to confirm proper motor rotation and unit operation.
    4. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
        a. Burner Test: Adjust burner to eliminate excess oxygen, carbon dioxide, oxides of nitrogen emissions, and carbon monoxide in flue gas and to achieve combustion efficiency.
        b. Check and adjust initial operating set points and high- and low-limit safety set points of fuel supply, water level, and hot water pressure.
        c. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

C. Remove and replace malfunctioning units and retest as specified above.
D. Performance Tests:

1. Engage a factory-authorized service representative to inspect component assemblies and equipment installations, including connections, and to conduct performance testing.

2. Boilers shall comply with performance requirements indicated, as determined by field performance tests. Adjust, modify, or replace equipment in order to comply.
3. Perform field performance tests to determine the capacity and efficiency of the boilers.
   a. For dual-fuel boilers, perform tests for each fuel.
   b. Test for full capacity.

4. Repeat tests until results comply with requirements indicated.
5. Provide analysis equipment required to determine performance.
6. Provide temporary equipment and system modifications necessary to dissipate the heat produced during tests if building systems are not adequate.
7. Notify Architect in advance of test dates.
8. Document test results in a report and submit to Architect.

3.05 DEMONSTRATION

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

3.06 SYSTEM START-UP

A. Provide the services of manufacturer's field representative for starting and testing unit.
B. After installation and pipe flushing, boil out boilers using chemical and procedure as recommended and supervised by boiler manufacturer.
C. Manufacturer shall provide report verifying that boilers have been inspected, cleaned and tested according to their recommendations.

3.07 CLOSEOUT ACTIVITIES

A. Train operating personnel in operation and maintenance of units.
B. Provide the services of manufacturer's field representative to conduct training.

3.08 BOILER SHUTDOWN

A. If not included on skid, furnish and install a remote switch: Install shutdown switch to disconnect power to the boiler burner controls and gas service in room. Install pushbutton under clear, impact-resistant flip lid. Provide red phenol label "Emergency

Shutdown" locate label above pushbutton. Pushbutton to be mounted by latch side of each boiler/mechanical room door within interior of the room, unless otherwise directed by AHJ. Provide electrical wiring and raceway as necessary for installation. Provide additional relays and wiring to cut power to gas solenoid valves in the room not integral to boilers. Reference drawings for gas solenoid valve locations.

END OF SECTION

DOCUMENT 23 52 01

HIGH EFFICIENCY GAS DOMESTIC WATER HEATER: iQ751

PART 1 - GENERAL

1 RELATED DOCUMENTS

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

2 SUMMARY

A. This Section includes packaged, factory-fabricated and assembled, gas-fired, high efficiency condensing domestic water heaters, trim and accessories for generating hot potable water.

B. Design Builder will engineer, procure, and install a new on-demand system to serve the laundry/kitchen and Courts/Supports building. System will be designed to exceed manufacturers sizing recommendation and provide redundancy.

3 SUBMITTALS

A. Product Data: Include performance data, operating characteristics, furnished specialties and accessories.

B. Pressure Drop Curve: Submit pressure drop curve for flows ranging from 0 GPM to maximum value of water heater.

C. Shop Drawings: For water heaters, water heater trim and accessories, include:

1. Elevations, sections, details
2. Wiring Diagrams for power

D. Operation and Maintenance Data: Data to be included in water heater emergency, operation and maintenance manuals.

E. Warranty: Standard warranty specified in this Section.

F. Made in America Certification

G. Other Informational Submittals.

1. ASME Stamp Certification and Report

4 QUALITY ASSURANCE

A. ASME Compliance: Condensing water heaters must be constructed in accordance with ASME Water heater and Pressure Vessel Code, Section IV (HLW) Potable Water Heaters.

B. ETL Compliance. Condensing water heaters must be tested for compliance with ETL , "Commercial-Industrial Gas Heating Equipment." Condensing water heaters shall be listed and labeled by a testing agency acceptable to authorities having jurisdiction.

C. CO Emission Standards. When installed and operated in accordance with manufacturer's instructions.

5 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement and formwork requirements are specified in Division 03.

6 WARRANTY

A. Standard Warranty: Water heaters shall include manufacturer's standard form in which manufacturer agrees to repair or replace components of water heaters that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Condensing Water heaters:

   a. The heat exchanger coil shall carry a 10 year from shipment, non-prorated, limited warranty against any failure due to waterside corrosion, mechanical defects, or workmanship. The heat exchanger coil shall carry a 10 year from shipment, non-prorated, limited warranty against any failure due to condensate corrosion, thermal stress, mechanical defects, or workmanship.

   b. Manufacturer labeled control panels are conditionally warranted against failure for two (2) years from shipment.

   c. All other components, including the electronic igniter and electrode, are conditionally guaranteed against any failure for 24 months from shipment.

PART 2 - PRODUCTS

1 MANUFACTURERS

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:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide Intellihot Model iQ751 or a comparable product by one of the following:

1. AERCO
2. Lochinvar
3. PVI

2 CONSTRUCTION

A. General: Design Builder is responsible for engineering, procuring, and installing a new on-demand system to exceed manufacturer's recommendation and provide redundancy for both systems.

B. Specifications provided as a reference.

C. The water heating plant shall have a recovery of _____ GPH, (_____ GPM) at a _____°F temperature rise. Each water heater shall be ETL Listed; ASME Section IV (HLW) coded and stamped and shall incorporate a negative Pressure gas valve on each exchanger capable of full fire operation at of 2.5" WC of Gas pressure. Each unit shall achieve a minimum turn down 8.3 per 250,333 BTU of input. The total water content in the system shall be less than 2 Gallons per 250,333 BTU/hr of input. System shall consist of a quantity of __ Water Heaters Model:_____

_____IQ 751 each with an input of 751 MBH, output of 706 MBH, 828 GPH, (13.8 GPM) at 40-140 °F when fired with natural gas, turndown ratio 25:1, CO emissions of less than 400 PPM.) 3 - 250,333 Btu Heat Exchangers

D. Description: Water heater shall be direct fired, fully condensing, water-tube design. Power burner shall have full modulation. The minimum firing rate shall not exceed 30,000 BTU/HR input. Water heaters that have an input greater than 30,000 BTU/Hr at minimum fire will not be considered equal. The water heater shall have the capability of discharging into a positive pressure vent. Water heater thermal efficiency shall increase with decreasing load (output), while maintaining set point. Water heater shall have an operational set point capability of 100 °F to 185 °F and shall maintain the outlet temperature within an accuracy of +/- 4 °F during load changes of up to 30% rated capacity. Water heater shall be factory-fabricated, factory-assembled and factory-tested, fire-tube condensing water heater with heat exchanger sealed pressure-tight, built on a steel base, including a sealed insulated sheet metal enclosure that acts as combustion-air intake plenum with a built in serviceable air filter

E. Heat Exchanger: The heat exchanger shall be constructed with 316L stainless steel helical water tube, fully floating with no welded joints in the exchanger. The exchanger will have a single-pass unitary design (no separate primary and secondary heat exchanger). The water tubes shall be 0.75" ID, with no less than 0.0472" wall thickness. The heat exchanger shall be ASME Sect IV (HLW) stamped for a working pressure not less than 160 psig.

F. Modulating Air/Fuel Valve and Burner: The water heater burner shall be capable of a - 25-to-1, turndown ratio of the firing rate without loss of combustion efficiency or staging of gas valves. The burner shall be stainless fiber mesh covering a stainless steel body with spark ignition and flame rectification. All burner material exposed to the combustion zone shall be of stainless steel construction. There shall be no moving parts within the burner itself. A modulating air/fuel valve shall meter the air and fuel input. A variable frequency drive

(VFD), controlled pre-mix blower shall be used to ensure the optimum mixing of air and fuel between the air/fuel valve and the burner.

G. The exhaust manifold shall be of polypropylene with a 6" diameter flue connection.

H. Ignition: Ignition shall be via spark ignition with 100 percent main-valve shutoff and dual electronic flame supervision.

3 CONTROLS

A. Refer to Division 23, Section "Instrumentation and Control of HVAC."

B. The water heater control system shall be a Masterless Cascading design with no-master - slave designation. The entire system shall have built-in usage optimization routine.

C. The control panel shall consist of one individual circuit. The circuit boards shall include:

1. A LED display to indicate temperature
2. A CPU board housing all control functions

Each board shall be individually field replaceable.

D. The combustion safeguard/flame monitoring system shall use spark ignition and a rectification-type flame sensor.

E. The unit shall have a selectable exhaust temperature limit suitable for venting with PVC or CPVC/Polypropylene

F. The controls shall annunciate water heater and sensor status and include extensive self-diagnostic capabilities.

1. Set point High Limit: Set point high limit allows for a selectable maximum water heater outlet temperature and acts as temperature limiting governor. Setpoint limit is based on a closed loop function that automatically limits firing rate to maintain outlet temperature.

G. The water heater control system shall incorporate the following additional features for enhanced external system interface:

1. Temperature set point
2. High Exhaust temp monitor and control. Turn down the Gas valve until the exhaust temp is kept below selected material (PVC or CPVC).
3. Cascading via RS232
4. Error Code Display -
    a. Fan Speed Fault
    b. Blocked Flue Fault
    c. Ignition Failure
    d. Temp Sensor Short
    e. Temp Sensor Wiring Fault

f. Flue Temp Fault

g. Heat Exchanger Temp Fault

H. Water Heater Management: the water heater control system shall incorporate onboard multi-unit sequencing logic that would allow Masterless Cascading (Not Lead/Lag) functionality & sequencing between multiple water heaters operating in parallel and must have the following capabilities:

a. Efficiently sequence 2 up to 16 (~4,000,000 Btu) heat exchangers on the same system to meet the load requirement.

b. Individual heat exchanger logic to enable accurate temperature control.

c. Operate one motorized valve per heat exchanger as an element of the load sequencing, Valves shall close with decreased load as heaters turn off, minimum of one (depending upon Mode selection) must always stay open for recirculation.

d. Automatically rotate Start/Stop amongst the heat exchangers in the chain based upon an internal calculation of run hours, water through put, burner starts and stops and length of time each burner has been firing. Sequencing is not based upon next in line (Lead/Lag), it is based upon the most logical (least used) heat exchanger in an effort to equalize unit run hours.

e. Automatic bump-less transfer of sequencing in case of heat exchanger failure. All systems must be able to fail all but one heat exchanger in any order or for any reason and the last will continue to operate.

f. Each heat exchanger will default to individual control upon failure of the sequencing chain.

g. Automatic isolation of heat exchanger module from water circuit in case of failure and prevention of cold water from exiting the system

h. Masterless control, change any parameter in any one of the units and all the rest in the series will automatically adjust to the most recent parameter change.

4 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 factory-wired switches, motor controllers, transformers and other electrical devices shall provide a single-point field power connection to the water heater.

C. Electrical Characteristics:
1. Voltage: 120 V
2. Phase: Single
3. Frequency: 60 Hz

4. Full-Load Current 5 Amps or less per 250,333 BTU of heat input

5 CONDENSATE

A. Condensate traps, manufactured from only non-corrosive materials.

6 VENTING

A. The exhaust vent must be PVC, CPVC, Poly Propylene compatible with positive pressure, condensing flue gas service.

B. The minimum exhaust vent duct size for each water heater is six-inch diameter.

C. Combustion-Air Intake: Water heaters shall be capable of drawing combustion air from the outdoors via a metal or PVC duct connected between the water heater and the outdoors.

D. The minimum sealed combustion air duct size for each water heater is 6” diameter.

E. Common Vent and Common Combustion Air up to 4 units. Depending upon the application and number of elbows there can be as much as 200 ft of intake and exhaust ducting. Consult manufacturer for common vent and combustion air sizing.

7 SOURCE QUALITY CONTROL

A. Burner and Hydrostatic Test: Factory adjust burner to eliminate excess oxygen, carbon dioxide, oxides of nitrogen emissions and carbon monoxide in flue gas, and to achieve combustion efficiency.

B. Live-fire Test and inspect factory-assembled water heaters, before shipping.

C. Allow Owner access to source quality-control testing of water heaters.

PART 3 - EXECUTION

1 EXAMINATION

A. Before water heater installation, examine roughing-in for concrete equipment bases, anchor-bolt sizes and locations. Examine piping and electrical connections to verify actual locations, sizes and other conditions affecting water heater performance, maintenance and operations.

1. Final water heater locations indicated on Drawings are approximate. Determine exact locations before roughing-in for piping and electrical connections.

B. Examine mechanical spaces for suitable conditions where water heaters will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

2 WATER HEATER INSTALLATION

A. Install water heaters level on concrete bases. 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 water heaters in accordance with
1. Local, states, provincial, and national codes, laws, regulations, and ordinances.
2. National Fuel Gas Code, ANSI Z223.1/NFPA 54 – latest edition.
3. National Electrical Code, ANSI/NFPA 70 - latest edition.
4. Canada only: CAN/CGA B149 Installation Code and CSA C22.1 CEC Part 1.
5. Manufacturer's installation instructions, including required service clearances and venting guidelines.

C. Assemble and install water heater trim.

D. Install electrical devices furnished with water heater but not specified to be factory mounted.

E. Install control wiring to field-mounted electrical devices.

3 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 water heater to permit service and maintenance.

C. 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.

D. Connect gas piping to water heater gas valve with unions. Piping shall be at least full size of gas train connection. Provide a reducer if required.

E. Connect hot-water piping to supply and return water heater tappings with shutoff valve and union or flange at each connection.

F. Multiple heaters shall be piped such that all cold water entering the system will go through the heat exchanger first. A series of approved piping installation examples are shown in the installation and maintenance manuals provided with the unit. Each water heater shall have individual isolation valves for servicing and a hot water hose connection for start-up and field testing.

G. Install piping from safety relief valves to nearest floor drain.

H. Water heater Venting

1. Install flue venting kit and combustion-air intake.
2. Connect venting full size to water heater connections. [Comply with requirements in Division 23 Section "Breechings, Chimneys and Stacks."]

I. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

J. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

4 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. Installation and Startup Test: Perform installation and startup checks according to manufacturer's written instructions.
2. Leak Test: Perform 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, if necessary.
4. Controls and Safeties: 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 2 months of date of Substantial Completion, provide on-site assistance adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.

E. Performance Tests

The water heater manufacturer is expected to provide partial load thermal efficiency curves. These thermal efficiency curves must include at least three separate curves at various BTU input levels. If these curves are not available, it is the responsibility of the water heater manufacturer to complete the following performance tests:

1. Engage a factory-authorized service representative to inspect component assemblies and equipment installations, including connections, and to conduct performance testing.
2. Water heaters shall comply with performance requirements indicated, as determined by field performance tests. Adjust, modify, or replace equipment to comply.
3. Perform field performance tests to determine capacity and efficiency of water heaters.
    a. Test for full capacity.
    b. Test for water heater efficiency at [low fire, 20, 40, 60, 80, 100, 80, 60, 40 and 20] percent of full capacity. Determine efficiency at each test point.
4. Repeat tests until results comply with requirements indicated.
5. Provide analysis equipment required to determine performance.
6. Provide temporary equipment and system modifications necessary to dissipate the heat produced during tests if building systems are not adequate.
7. Notify Architect in advance of test dates.
8. Document test results in a report and submit to Architect.

END OF SECTION

DOCUMENT 23 52 02

HIGH EFFICIENCY GAS DOMESTIC WATER HEATER: iQ1001

PART 1 - GENERAL

1 RELATED DOCUMENTS

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

2 SUMMARY

A. This Section includes packaged, factory-fabricated and assembled, gas-fired, high efficiency condensing domestic water heaters, trim and accessories for generating hot potable water.

B. Design Builder will engineer, procure, and install a new on-demand system to serve the laundry/kitchen and Courts/Supports building. System will be designed to exceed manufacturers sizing recommendation and provide redundancy.

3 SUBMITTALS

A. Product Data: Include performance data, operating characteristics, furnished specialties and accessories.

B. Pressure Drop Curve: Submit pressure drop curve for flows ranging from 0 GPM to maximum value of water heater.

C. Shop Drawings: For water heaters, water heater trim and accessories, include:

1. Elevations, sections, details
2. Wiring Diagrams for power

D. Operation and Maintenance Data: Data to be included in water heater emergency, operation and maintenance manuals.

E. Warranty: Standard warranty specified in this Section.

F. Made in America Certification

G. Other Informational Submittals.

1. ASME Stamp Certification and Report

4 QUALITY ASSURANCE

A. ASME Compliance: Condensing water heaters must be constructed in accordance with ASME Water heater and Pressure Vessel Code, Section IV (HLW) Potable Water Heaters.

B. ETL Compliance. Condensing water heaters must be tested for compliance with ETL , "Commercial-Industrial Gas Heating Equipment." Condensing water heaters shall be listed and labeled by a testing agency acceptable to authorities having jurisdiction.

C. CO Emission Standards. When installed and operated in accordance with manufacturer's instructions.

5 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement and formwork requirements are specified in Division 03.

6 WARRANTY

A. Standard Warranty: Water heaters shall include manufacturer's standard form in which manufacturer agrees to repair or replace components of water heaters that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Condensing Water heaters:

   a. The heat exchanger coil shall carry a 10 year from shipment, non-prorated, limited warranty against any failure due to waterside corrosion, mechanical defects, or workmanship. The heat exchanger coil shall carry a 10 year from shipment, non-prorated, limited warranty against any failure due to condensate corrosion, thermal stress, mechanical defects, or workmanship.

   b. Manufacturer labeled control panels are conditionally warranted against failure for two (2) years from shipment.

   c. All other components, including the electronic igniter and electrode, are conditionally guaranteed against any failure for 24 months from shipment.

PART 2 - PRODUCTS

1 MANUFACTURERS

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:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide Intellihot Model IQ1001; or a comparable product by one of the following:

1. AERCO
2. Lochinvar
3. PVI

2 CONSTRUCTION

A. General: Design Builder is responsible for design a new on-demand system to exceed manufacturer's recommendation and provide redundancy for both systems.

B. Specifications provided as a reference.

C. The water heating plant shall have a recovery of _____ GPH, (_____ GPM) at a _____^{o}F temperature rise. Each water heater shall be ETL Listed; ASME Section IV (HLW) coded and stamped and shall incorporate a negative Pressure gas valve on each exchanger capable of full fire operation at of 2.5" WC of Gas pressure. Each unit shall achieve a minimum turn down 8.3 per 250,250 BTU of input. The total water content in the system shall be less than 2 Gallons per 250,250 BTU/hr of input. System shall consist of a quantity of __ Water Heaters Model:_____

_____IQ 1001 each with an input of 1001 MBH, output of 940 MBH, 1200 GPH, (20 GPM) at 40-140 ^{o}F when fired with natural gas, turndown ratio 33:1, CO emissions of less than 12.5 ppm) 4 - 250,250 Btu Heat Exchangers

D. Description: Water heater shall be direct fired, fully condensing, water-tube design. Power burner shall have full modulation. The minimum firing rate shall not exceed 30,000 BTU/HR input. Water heaters that have an input greater than 30,000 BTU/Hr at minimum fire will not be considered equal. The water heater shall have the capability of discharging into a positive pressure vent. Water heater thermal efficiency shall increase with decreasing load (output), while maintaining set point. Water heater shall have an operational set point capability of 100 ^{o}F to 185 ^{o}F and shall maintain the outlet temperature within an accuracy of +/- 4 ^{o}F during load changes of up to 30% rated capacity. Water heater shall be factory-fabricated, factory-assembled and factory-tested, fire-tube condensing water heater with heat exchanger sealed pressure-tight, built on a steel base, including a sealed insulated sheet metal enclosure that acts as combustion-air intake plenum with a built in serviceable air filter

E. Heat Exchanger: The heat exchanger shall be constructed with 316L stainless steel helical water tube, fully floating with no welded joints in the exchanger. The exchanger will have a single-pass unitary design (no separate primary and secondary heat exchanger). The water tubes shall be 0.75" ID, with no less than 0.0472" wall thickness.. The heat exchanger shall be ASME Sect IV (HLW) stamped for a working pressure not less than 160 psig.

F. Modulating Air/Fuel Valve and Burner: The water heater burner shall be capable of a - 33.2 to 1 turndown ratio of the firing rate without loss of combustion efficiency or staging of gas valves. The burner shall be stainless fiber mesh covering a stainless steel body with spark ignition and flame rectification. All burner material exposed to the combustion zone shall be of stainless steel construction. There shall be no moving parts within the burner itself. A modulating air/fuel valve shall meter the air and fuel input. A variable frequency drive (VFD), controlled pre-mix blower shall be used to ensure the optimum mixing of air and fuel between the air/fuel valve and the burner.

G. The exhaust manifold shall be of polypropylene with 6" diameter flue connection.

H. Ignition: Ignition shall be via spark ignition with 100 percent main-valve shutoff and dual electronic flame supervision.

3 CONTROLS

A. Refer to Division 23, Section "Instrumentation and Control of HVAC."

B. The water heater control system shall be a Masterless Cascading design with no-master - slave designation. The entire system shall have built-in usage optimization routine.

C. The control panel shall consist of one individual circuit. The circuit boards shall include:

1. A LED display to indicate temperature
2. A CPU board housing all control functions

Each board shall be individually field replaceable.

D. The combustion safeguard/flame monitoring system shall use spark ignition and a rectification-type flame sensor.

E. The unit shall have a selectable exhaust temperature limit suitable for venting with PVC or CPVC/Polypropylene

F. The controls shall annunciate water heater and sensor status and include extensive self-diagnostic capabilities.

1. Set point High Limit: Set point high limit allows for a selectable maximum water heater outlet temperature and acts as temperature limiting governor. Setpoint limit is based on a closed loop function that automatically limits firing rate to maintain outlet temperature.

G. The water heater control system shall incorporate the following additional features for enhanced external system interface:

1. Temperature set point
2. High Exhaust temp monitor and control. Turn down the Gas valve until the exhaust temp is kept below selected material (PVC or CPVC).
3. Cascading via RS232

4. Error Code Display -
    a. Fan Speed Fault
    b. Blocked Flue Fault
    c. Ignition Failure
    d. Temp Sensor Short
    e. Temp Sensor Wiring Fault
    f. Flue Temp Fault
    g. Heat Exchanger Temp Fault

H. Water Heater Management: the water heater control system shall incorporate onboard multi-unit sequencing logic that would allow Masterless Cascading (Not Lead/Lag) functionality & sequencing between multiple water heaters operating in parallel and must have the following capabilities:

a. Efficiently sequence 2 up to 16 (4,000,000 Btu) heat exchangers on the same system to meet the load requirement.

b. Individual heat exchanger logic to enable accurate temperature control.

c. Operate one motorized valve per heat exchanger as an element of the load sequencing, Valves shall close with decreased load as heaters turn off, minimum of one (depending upon Mode selection) must always stay open for recirculation.

d. Automatically rotate Start/Stop amongst the heat exchangers in the chain based upon an internal calculation of run hours, water through put, burner starts and stops and length of time each burner has been firing. Sequencing is not based upon next in line (Lead/Lag), it is based upon the most logical (least used) heat exchanger in an effort to equalize unit run hours.

e. Automatic bump-less transfer of sequencing in case of heat exchanger failure. All systems must be able to fail all but one heat exchanger in any order or for any reason and the last will continue to operate.

f. Each heat exchanger will default to individual control upon failure of the sequencing chain.

g. Automatic isolation of heat exchanger module from water circuit in case of failure and prevention of cold water from exiting the system

h. Masterless control, change any parameter in any one of the units and all the rest in the series will automatically adjust to the most recent parameter change.

4 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 factory-wired switches, motor controllers, transformers and other electrical devices shall provide a single-point field power connection to the water heater.

C. Electrical Characteristics:
1. Voltage: 120 V
2. Phase: Single
3. Frequency: 60 Hz
4. Full-Load Current 5 Amps or less per 250,000 BTU of heat input

5 CONDENSATE

A. Condensate traps, manufactured from only non-corrosive materials.

6 VENTING

A. The exhaust vent must be PVC, CPVC, Poly Propylene compatible with positive pressure, condensing flue gas service.

B. The minimum exhaust vent duct size for each water heater is six-inch diameter.

C. Combustion-Air Intake: Water heaters shall be capable of drawing combustion air from the outdoors via a metal or PVC duct connected between the water heater and the outdoors.

D. The minimum sealed combustion air duct size for each water heater is 6” diameter.

E. Common Vent and Common Combustion Air up to 4 units. Depending upon the application and number of elbows there can be as much as 200 ft of intake and exhaust ducting. Consult manufacturer for common vent and combustion air sizing.

7 SOURCE QUALITY CONTROL

A. Burner and Hydrostatic Test: Factory adjust burner to eliminate excess oxygen, carbon dioxide, oxides of nitrogen emissions and carbon monoxide in flue gas, and to achieve combustion efficiency.

B. Live-fire Test and inspect factory-assembled water heaters, before shipping.

C. Allow Owner access to source quality-control testing of water heaters.

PART 3 - EXECUTION

1 EXAMINATION

A. Before water heater installation, examine roughing-in for concrete equipment bases, anchor-bolt sizes and locations. Examine piping and electrical connections to verify actual locations, sizes and other conditions affecting water heater performance, maintenance and operations.

1. Final water heater locations indicated on Drawings are approximate. Determine exact locations before roughing-in for piping and electrical connections.

B. Examine mechanical spaces for suitable conditions where water heaters will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

2 WATER HEATER INSTALLATION

A. Install water heaters level on concrete bases. 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 water heaters in accordance with
1. Local, states, provincial and national codes, laws, regulations, and ordinances.
2. National Fuel Gas Code, ANSI Z223.1/NFPA 54 – latest edition.
3. National Electrical Code, ANSI/NFPA 70 - latest edition.
4. Canada only: CAN/CGA B149 Installation Code and CSA C22.1 CEC Part 1.
5. Manufacturer’s installation instructions, including required service clearances and venting guidelines.

C. Assemble and install water heater trim.

D. Install electrical devices furnished with water heater but not specified to be factory mounted.

E. Install control wiring to field-mounted electrical devices.

3 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 water heater to permit service and maintenance.

C. 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.

D. Connect gas piping to water heater gas valve with unions. Piping shall be at least full size of gas train connection. Provide a reducer if required.

E. Connect hot-water piping to supply and return water heater tappings with shutoff valve and union or flange at each connection.

F. Multiple heaters shall be piped such that all cold water entering the system will go through the heat exchanger first. A series of approved piping installation examples are shown in the installation and maintenance manuals provided with the unit. Each water heater shall have individual isolation valves for servicing and a hot water hose connection for start-up and field testing.

G. Install piping from safety relief valves to nearest floor drain.

H. Water heater Venting

1. Install flue venting kit and combustion-air intake.

2. Connect venting full size to water heater connections. [Comply with requirements in Division 23 Section "Breechings, Chimneys and Stacks."]

I. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

J. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

4 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. Installation and Startup Test: Perform installation and startup checks according to manufacturer's written instructions.

2. Leak Test: Perform 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, if necessary.

4. Controls and Safeties: 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 2 months of date of Substantial Completion, provide on-site assistance adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.

E. Performance Tests

The water heater manufacturer is expected to provide partial load thermal efficiency curves. These thermal efficiency curves must include at least three separate curves at various BTU input levels. If these curves are not available, it is the responsibility of the water heater manufacturer to complete the following performance tests:

1. Engage a factory-authorized service representative to inspect component assemblies and equipment installations, including connections, and to conduct performance testing.
2. Water heaters shall comply with performance requirements indicated, as determined by field performance tests. Adjust, modify, or replace equipment to comply.
3. Perform field performance tests to determine capacity and efficiency of water heaters.
    a. Test for full capacity.
    b. Test for water heater efficiency at [low fire, 20, 40, 60, 80, 100, 80, 60, 40 and 20] percent of full capacity. Determine efficiency at each test point.
4. Repeat tests until results comply with requirements indicated.
5. Provide analysis equipment required to determine performance.
6. Provide temporary equipment and system modifications necessary to dissipate the heat produced during tests if building systems are not adequate.
7. Notify Architect in advance of test dates.
8. Document test results in a report and submit to Architect.

END OF SECTION

DOCUMENT 23 52 02

HIGH EFFICIENCY GAS DOMESTIC WATER HEATER: iQ1501

PART 1 - GENERAL

1 RELATED DOCUMENTS

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

2 SUMMARY

A. This Section includes packaged, factory-fabricated and assembled, gas-fired, high efficiency condensing domestic water heaters, trim and accessories for generating hot potable water.

B. Design Builder will engineer, procure, and install a new on-demand system to serve the laundry/kitchen and Courts/Supports building. System will be designed to exceed manufacturers sizing recommendation and provide redundancy.

3 SUBMITTALS

A. Product Data: Include performance data, operating characteristics, furnished specialties and accessories.

B. Pressure Drop Curve: Submit pressure drop curve for flows ranging from 0 GPM to maximum value of water heater.

C. Shop Drawings: For water heaters, water heater trim and accessories, include:

1. Elevations, sections, details
2. Wiring Diagrams for power

D. Operation and Maintenance Data: Data to be included in water heater emergency, operation and maintenance manuals.

E. Warranty: Standard warranty specified in this Section.

F. Made in America Certification

G. Other Informational Submittals.

1. ASME Stamp Certification and Report

4 QUALITY ASSURANCE

A. ASME Compliance: Condensing water heaters must be constructed in accordance with ASME Water heater and Pressure Vessel Code, Section IV (HLW) Potable Water Heaters.

B. ETL Compliance. Condensing water heaters must be tested for compliance with ETL , "Commercial-Industrial Gas Heating Equipment." Condensing water heaters shall be listed and labeled by a testing agency acceptable to authorities having jurisdiction.

C. CO Emission Standards. When installed and operated in accordance with manufacturer's instructions.

5 COORDINATION

A. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases. Concrete, reinforcement and formwork requirements are specified in Division 03.

6 WARRANTY

A. Standard Warranty: Water heaters shall include manufacturer's standard form in which manufacturer agrees to repair or replace components of water heaters that fail in materials or workmanship within specified warranty period.

1. Warranty Period for Condensing Water heaters:

a. The heat exchanger coil shall carry a 10 year from shipment, non-prorated, limited warranty against any failure due to waterside corrosion, mechanical defects, or workmanship. The heat exchanger coil shall carry a 10 year from shipment, non-prorated, limited warranty against any failure due to condensate corrosion, thermal stress, mechanical defects, or workmanship.

b. Manufacturer labeled control panels are conditionally warranted against failure for Two (2) years from shipment.

c. All other components, including the electronic igniter and electrode, are conditionally guaranteed against any failure for 24 months from shipment.

PART 2 - PRODUCTS

1 MANUFACTURERS

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:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

C. Basis-of-Design Product: Subject to compliance with requirements, provide Intellihot Model IQ1501; or a comparable product by one of the following:

1. AERCO

2. Lochinvar

3. PVI

2 CONSTRUCTION

A. General: Design Builder is responsible for design a new on-demand system to exceed manufacturer's recommendation and provide redundancy for both systems.

B. Specifications provided as a reference.

C. The water heating plant shall have a recovery of _____ GPH, (_____ GPM) at a _____°F temperature rise. Each water heater shall be ETL Listed; ASME Section IV (HLW) coded and stamped and shall incorporate a negative Pressure gas valve on each exchanger capable of full fire operation at of 2.5" WC of Gas pressure. Each unit shall achieve a minimum turn down 8.3 per 250,167 BTU of input. The total water content in the system shall be less than 2 Gallons per 250,167 BTU/hr of input. System shall consist of a quantity of ___ Water Heaters Model:_____

_____IQ 1501 each with an input of 1501 MBH, output of 1395 MBH, 1681 GPH, (28 GPM) at 40-140 °F when fired with natural gas, turndown ratio 50:1, CO emissions of less than 12.5 ppm) 6 - 250,167 Btu Heat Exchangers

D. Description: Water heater shall be direct fired, fully condensing, water-tube design. Power burner shall have full modulation. The minimum firing rate shall not exceed 30,000 BTU/HR input. Water heaters that have an input greater than 30,000 BTU/Hr at minimum fire will not be considered equal. The water heater shall have the capability of discharging into a positive pressure vent. Water heater thermal efficiency shall increase with decreasing load (output), while maintaining set point. Water heater shall have an operational set point capability of 100 °F to 185 °F and shall maintain the outlet temperature within an accuracy of +/- 4 °F during load changes of up to 30% rated capacity. Water heater shall be factory-fabricated, factory-assembled and factory-tested, fire-tube condensing water heater with heat exchanger sealed pressure-tight, built on a steel base, including a sealed insulated sheet metal enclosure that acts as combustion-air intake plenum with a built in serviceable air filter

E. Heat Exchanger: The heat exchanger shall be constructed with 316L stainless steel helical water tube, fully floating with no welded joints in the exchanger. The exchanger will have a single-pass unitary design (no separate primary and secondary heat exchanger). The water tubes shall be 0.75" ID, with no less than 0.0472" wall thickness.. The heat exchanger shall be ASME Sect IV (HLW) stamped for a working pressure not less than 160 psig.

F. Modulating Air/Fuel Valve and Burner: The water heater burner shall be capable of a - 50 to 1 turndown ratio of the firing rate without loss of combustion efficiency or staging of gas valves. The burner shall be stainless fiber mesh covering a stainless steel body with spark ignition and

flame rectification. All burner material exposed to the combustion zone shall be of stainless steel construction. There shall be no moving parts within the burner itself. A modulating air/fuel valve shall meter the air and fuel input. A variable frequency drive (VFD), controlled pre-mix blower shall be used to ensure the optimum mixing of air and fuel between the air/fuel valve and the burner.

G. The exhaust manifold shall be of polypropylene with 6" diameter flue connection.

H. Ignition: Ignition shall be via spark ignition with 100 percent main-valve shutoff and dual electronic flame supervision.

3 CONTROLS

A. Refer to Division 23, Section "Instrumentation and Control of HVAC."

B. The water heater control system shall be a Masterless Cascading design with no-master - slave designation. The entire system shall have built-in usage optimization routine.

C. The control panel shall consist of one individual circuit. The circuit boards shall include:

1. A LED display to indicate temperature
2. A CPU board housing all control functions

Each board shall be individually field replaceable.

D. The combustion safeguard/flame monitoring system shall use spark ignition and a rectification-type flame sensor.

E. The unit shall have a selectable exhaust temperature limit suitable for venting with PVC or CPVC/Polypropylene

F. The controls shall annunciate water heater and sensor status and include extensive self-diagnostic capabilities.

1. Set point High Limit: Set point high limit allows for a selectable maximum water heater outlet temperature and acts as temperature limiting governor. Setpoint limit is based on a closed loop function that automatically limits firing rate to maintain outlet temperature.

G. The water heater control system shall incorporate the following additional features for enhanced external system interface:

1. Temperature set point
2. High Exhaust temp monitor and control. Turn down the Gas valve until the exhaust temp is kept below selected material (PVC or CPVC).
3. Cascading via RS232
4. Error Code Display -
   a. Fan Speed Fault
   b. Blocked Flue Fault

c. Ignition Failure

d. Temp Sensor Short

e. Temp Sensor Wiring Fault

f. Flue Temp Fault

g. Heat Exchanger Temp Fault

H. Water Heater Management: the water heater control system shall incorporate onboard multi-unit sequencing logic that would allow Masterless Cascading (Not Lead/Lag) functionality & sequencing between multiple water heaters operating in parallel and must have the following capabilities:

a. Efficiently sequence 2 up to 24 (6,000,000 Btu) heat exchangers on the same system to meet the load requirement.

b. Individual heat exchanger logic to enable accurate temperature control.

c. Operate one motorized valve per heat exchanger as an element of the load sequencing, Valves shall close with decreased load as heaters turn off, minimum of one (depending upon Mode selection) must always stay open for recirculation.

d. Automatically rotate Start/Stop amongst the heat exchangers in the chain based upon an internal calculation of run hours, water through put, burner starts and stops and length of time each burner has been firing. Sequencing is not based upon next in line (Lead/Lag), it is based upon the most logical (least used) heat exchanger in an effort to equalize unit run hours.

e. Automatic bump-less transfer of sequencing in case of heat exchanger failure. All systems must be able to fail all but one heat exchanger in any order or for any reason and the last will continue to operate.

f. Each heat exchanger will default to individual control upon failure of the sequencing chain.

g. Automatic isolation of heat exchanger module from water circuit in case of failure and prevention of cold water from exiting the system

h. Masterless control, change any parameter in any one of the units and all the rest in the series will automatically adjust to the most recent parameter change.

4 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 factory-wired switches, motor controllers, transformers and other electrical devices shall provide a single-point field power connection to the water heater.

C. Electrical Characteristics:
1. Voltage: 120 V
2. Phase: Single
3. Frequency: 60 Hz
4. Full-Load Current 5 Amps or less per 250,000 BTU of heat input

5 CONDENSATE

A. Condensate traps, manufactured from only non-corrosive materials.

6 VENTING

A. The exhaust vent must be PVC, CPVC, Poly Propylene compatible with positive pressure, condensing flue gas service.

B. The minimum exhaust vent duct size for each water heater is six-inch diameter.

C. Combustion-Air Intake: Water heaters shall be capable of drawing combustion air from the outdoors via a metal or PVC duct connected between the water heater and the outdoors.

D. The minimum sealed combustion air duct size for each water heater is 6” diameter.

E. Common Vent and Common Combustion Air up to 4 units. Depending upon the application and number of elbows there can be as much as 200 ft of intake and exhaust ducting. Consult manufacturer for common vent and combustion air sizing.

7 SOURCE QUALITY CONTROL

A. Burner and Hydrostatic Test: Factory adjust burner to eliminate excess oxygen, carbon dioxide, oxides of nitrogen emissions and carbon monoxide in flue gas, and to achieve combustion efficiency.

B. Live-fire Test and inspect factory-assembled water heaters, before shipping.

C. Allow Owner access to source quality-control testing of water heaters.

PART 3 - EXECUTION

1 EXAMINATION

A. Before water heater installation, examine roughing-in for concrete equipment bases, anchor-bolt sizes and locations. Examine piping and electrical connections to verify actual locations, sizes and other conditions affecting water heater performance, maintenance and operations.

1. Final water heater locations indicated on Drawings are approximate. Determine exact locations before roughing-in for piping and electrical connections.

B. Examine mechanical spaces for suitable conditions where water heaters will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

2 WATER HEATER INSTALLATION

A. Install water heaters level on concrete bases. 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 water heaters in accordance with
1. Local, states, provincial and national codes, laws, regulations, and ordinances.
2. National Fuel Gas Code, ANSI Z223.1/NFPA 54 – latest edition.
3. National Electrical Code, ANSI/NFPA 70 - latest edition.
4. Canada only: CAN/CGA B149 Installation Code and CSA C22.1 CEC Part 1.
5. Manufacturer’s installation instructions, including required service clearances and venting guidelines.

C. Assemble and install water heater trim.

D. Install electrical devices furnished with water heater but not specified to be factory mounted.

E. Install control wiring to field-mounted electrical devices.

3 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 water heater to permit service and maintenance.

C. 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.

D. Connect gas piping to water heater gas valve with unions. Piping shall be at least full size of gas train connection. Provide a reducer if required.

E. Connect hot-water piping to supply and return water heater tappings with shutoff valve and union or flange at each connection.

F. Multiple heaters shall be piped such that all cold water entering the system will go through the heat exchanger first. A series of approved piping installation examples are shown in the installation and maintenance manuals provided with the unit. Each water heater shall have individual isolation valves for servicing and a hot water hose connection for start-up and field testing.

G. Install piping from safety relief valves to nearest floor drain.

H. Water heater Venting

1. Install flue venting kit and combustion-air intake.

2. Connect venting full size to water heater connections. [Comply with requirements in Division 23 Section "Breechings, Chimneys and Stacks."]

I. Ground equipment according to Division 26 Section "Grounding and Bonding for Electrical Systems."

J. Connect wiring according to Division 26 Section "Low-Voltage Electrical Power Conductors and Cables."

4 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. Installation and Startup Test: Perform installation and startup checks according to manufacturer's written instructions.

2. Leak Test: Perform 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, if necessary.

4. Controls and Safeties: 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 2 months of date of Substantial Completion, provide on-site assistance adjusting system to suit actual occupied conditions. Provide up to two visits to Project during other than normal occupancy hours for this purpose.

E. Performance Tests

The water heater manufacturer is expected to provide partial load thermal efficiency curves. These thermal efficiency curves must include at least three separate curves at various BTU input levels. If these curves are not available, it is the responsibility of the water heater manufacturer to complete the following performance tests:

1. Engage a factory-authorized service representative to inspect component assemblies and equipment installations, including connections, and to conduct performance testing.
2. Water heaters shall comply with performance requirements indicated, as determined by field performance tests. Adjust, modify, or replace equipment to comply.
3. Perform field performance tests to determine capacity and efficiency of water heaters.
    a. Test for full capacity.
    b. Test for water heater efficiency at [low fire, 20, 40, 60, 80, 100, 80, 60, 40 and 20] percent of full capacity. Determine efficiency at each test point.
4. Repeat tests until results comply with requirements indicated.
5. Provide analysis equipment required to determine performance.
6. Provide temporary equipment and system modifications necessary to dissipate the heat produced during tests if building systems are not adequate.
7. Notify Architect in advance of test dates.
8. Document test results in a report and submit to Architect.

END OF SECTION

DOCUMENT 23 52 33

WATER TUBE BOILERS

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. This Section includes packaged, flex water-tube boilers, trim, and accessories for generating hot water with the following configurations, burners, and outputs:

1. Factory assembled heat exchanger.
2. Forced-draft gas

1.3 INFORMATIONAL SUBMITTALS

A. General arrangement drawing which clearly shows weight, dimensions, and lists all connections and trim to be supplied with boiler.

B. Ladder type wiring diagram for package boiler.

C. Specification sheets which list all boiler trims and any special items that must be added to the project.

D. Warranty: Special warranty specified in this Section.

E. Boiler material list indicating what type of materials are to be supplied on major pressure vessel parts.

F. Cutsheets for each supplied component highlighted to show specifically which component is to be supplied.

1.4 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For boilers, components, and accessories to include in emergency, operation, and maintenance manuals.

1.5 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. UL Compliance: Boilers shall comply with applicable UL standards and the burner shall carry a UL label.

1.6 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace heat exchangers damaged by thermal shock and boilers that fail in materials or workmanship within specified warranty period.
   1. Warranty Period for Drums, Tubes, Cabinets, and Burner: 12 months from startup or 18 months from shipment whichever occurs first.
   2. With proper water chemistry per ABMA standards: Extended warranty of 12 months on major pressure parts (drums, tubes, and headers) is offered as standard, subject to review of water chemistry.
   3. Warranty Period for Pressure Vessel: Twenty five (25) years from date of Substantial Completion for thermal shock.

PART 2 - PRODUCTS

2.1 GENERAL BOILER DESIGN - FLEXIBLE 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:

B. Basis-of-Design Product: Subject to compliance with requirements, provide Iroquois Boiler by Superior Boiler Works, Inc. or a comparable product which meets or exceeds base specifications by one of the following:

C. Description:

   1. Supply and install (qty) steel bent water tube boiler(s) of the size and capacities as outlined in the equipment schedule. Boiler(s) shall be of the 4 sided water wall furnace in addition the rear wall of the furnace shall also be of the water-cooled design with tangentially arranged tubes creating 5 gas passages travelling the full length of the boiler. Each boiler shall be completely factory assembled including forced draft burner, controls, components

and safety devices as specified herein. Complete boiler assembly shall be tested prior to shipment by the manufacturer.

2. Boiler(s) shall be designed and manufactured to have a rating of 6,500 MBH input and _ with a minimum combustion efficiency of 82%. Boiler(s) shall be designed and constructed as per ASME code, section (IV) and shall be stamped for a maximum allowable working pressure of 160 PSIG and a maximum allowable supply temperature of 250 F.

3. Boilers shall comply with UL standards. It is the contractor's responsibility to ensure that the packaged boilers comply with any / all local, state and city codes.

D. Pressure Vessel Design – Heat Exchanger:

1. Boiler(s) shall be of the flexible water tube type with dual drums. Boiler(s) shall have a 4-side tangent water wall furnace. The water-cooled furnace shall consist of the boiler roof, floor, both side walls and the furnace rear wall. 2600 degree Fahrenheit thermal ceramic board with a metal case shall be used to insulate the sidewall and shall be removable without welding.

2. Top, bottom and rear side of the furnace shall be made up of water-cooled surfaces and shall be comprised of straight tube runs only. No furnace seal shall be made by the meeting of two tube hairpin bends.

3. The flue gas side of the boiler shall have multiple gas passes, travelling the full length of the boiler. The installation of the boiler tubes in the convention bank is staggered, and complies with the conventional 5 pass flue gas requirement. The staggered arrangement optimizes heat transfer and minimizes the overall foot print of the boiler. Products of combustion shall flow horizontally through the boiler across boiler tubes.

4. Cross flow baffles shall be installed in the boiler gas passes to provide increased hot gas turbulence and improved flue outlet temperature control.

5. All tubes shall be exposed to radiant luminous heat in the boiler furnace to create high water flow rates at all loads and substantially increase heat transfer in the convection zones outside the furnace.

6. Boiler tubes shall be SA 178 Grade A and shall be no less than 1 1/4" dia.; no greater than 2" dia.; and no less than 0.095 minimum all thickness; comply with Federal Buy American statutes and shall be easily removed and replaced if necessary without need for any welding or rolling. Tubes directly beneath the flue gas outlet shall be easily removable without the need to disconnect, move or modify the flue outlet cover arrangement, or raise / remove any part of the boiler roof panels unless the integral flue gas/boiler feedwater economizer option is selected. There shall be no more than one (1) 187 deg. bend in any single boiler tube. All tube bends shall be made with a mandrel type industrial bender to insure maximum I.D. opening at each bend.

7. The furnace volumetric heat release shall not exceed 85,000 BTU/hr per cubic foot of heating surface. The radiant btu/hr per square foot shall be based on the diameter times the length of the tube. Boilers with heat releases greater than 85,000 BTU/hr per cubic foot shall not be permitted.

8. Mud drums shall be minimum inlet and outlet headers shall not be less than 6" NPS Sch 40 carbon steel pipe x 0.500 wall thickness pipe with weld neck flanges and blind flanges on both ends.

9. The upper header shall have weld neck flanges with blind flanges on each end of the upper and lower headers in lieu of hand holes and other type of inspection openings. Threaded pipe type openings will not be accepted. Lower header shall have a 90˚, threaded drain opening at the rear of the vessel at the lowest point as standard.

10. The boiler base shall be constructed of heavy gauge steel. Base shall have factory installed high temperature insulation and heavy duty jacket.

11. The rear target wall shall be of industrial grade heavy-duty construction. Wall shall comprise of no less than 10" thickness of 2800˚F ceramic fiber material. Factory insulation around all wall penetrations, furnace access door and observation ports, shall be minimum 3" thickness of ceramic fiber board followed by minimum 7" thickness of 2700F castable refractory

12. The front wall shall be constructed of the same industrial grade materials as the rear wall described above.

13. Boiler inner casing shall be fabricated of not less than 11-gauge reinforced steel. Inner casing is insulated using 2" of 2700 ˚F mineral wool insulation. The outer casing is backed by ¾" of 1900 ˚F fiberglass insulation. There shall be an air gap between inner and outer casing insulation. Each panel shall be easily removable and replaceable with standard hand tools. Boiler casing shall be certified for up to 5" Wc. furnace pressure.

14. The combustion chamber shall be easily accessed through the rear wall with an opening no smaller than 15" x 18". All boiler and jacket panels shall be easily removed for access to all boiler tubes.

15. The boiler's exhaust outlet can be located at either the burner end or the rear of the boiler as required by the site conditions or specifications.

16. An optional stack economizer may be supplied by the boiler manufacturer and installed within the framework of the boiler casing, not requiring additional space above the boiler.

E. Boiler Trim & Controls:

1. Shall comply with the requirements of ASME CSD-1 requirements.

2. Safety relief valve(s) shall be in accordance with the appropriate ASME code and local requirements.

3. Boiler operating trim shall consist of not less than the following:

    i. At a minimum, a probe type primary low water cut-off shall be provided and mounted to boiler.
    ii. Additional low water cutoff(s) or flow switches can be added on plant preference().
    iii. Relief valves set at a minimum of 13% higher than the operating pressure of the boiler, but no higher than the boiler design pressure shall be provided.
    iv. A high limit with manual reset shall be provided in addition to the operating control.
    v. A firing rate controller shall be provided if the burner is low-hi-low or modulating.
    vi. A pressure gauge with an inspector's test cock shall be provided.
    vii. A water temperature gauge shall be provided.

F. Burner:

1. Horizontal Burner Assembly:

    1. Burner shall be a separate UL listed and approved assembly for burning natural gas as noted on the plans. Burner shall be mounted on the boiler assembly once in place on permanent supporting base. Gas burners shall be equipped to fire on rate with the existing supply natural gas pressure. Design Builder to field verify natural gas pressure and make the necessary upgrade for proper burner operation.

    2. Burner shall be supplied and approved by boiler manufacturer for insertion and firing within boiler at maximum combustion efficiency without flame impingement while firing with a zero smoke rating.

    3. For boilers less than 8000 MBH input, burner shall be mounted on a swing out style door for easy access to all fireside components. For boilers of 8000 MBH input and greater, burner shall be mounted directly to front wall of combustion chamber, with a supporting leg for burners extended weight.

    4. Burner shall have a viewing port for observation of burner operation.

    5. Fan shall be controlled to pre-purge and post-purge the combustion chamber before firing.

2. Gas Train: Control devices and low-high-low control sequence shall comply with requirements of ASME CSD-1. In addition to these requirements, include shutoff cock, pressure regulator, and control valve for incoming fuel supply pressures noted and for utility requirements having jurisdiction.

3. Pilot: Intermittent-electric-spark pilot ignition with 100 percent main-valve and pilot-safety shutoff with electronic supervision of burner flame.

    1. Motors: Comply with requirements specified in Section 230513 "Common Motor Requirements for HVAC Equipment."

G. Controls:

1. Refer to Section 230900 "Instrumentation and Control for HVAC."

2. Boiler operating controls shall include the following devices and features:

    1. Control transformer
    2. Temperature Adjustment: Operating temperature shall be adjustable.
    3. Sequence of Operation: Upon activation by the Building Automation System, the boiler plant shall maintain water temperature as adjusted.
    4. Include automatic, alternating-firing sequence for multiple boilers to ensure maximum system efficiency throughout the load range and to provide equal runtime for boilers.

3. Burner Operating Controls: To maintain safe operating conditions, burner safety controls limit burner operation.
    1. Sequence of Operation: Electric controls and field-installed to control burner firing rate to maintain a constant hot water pressure. Maintain pressure set point plus or minus 10 percent.
    2. Alarm contacts: SPST N.O. Factory mounted on control panel shall close alarm for above conditions.

4. Building Automation System Interface: Factory install hardware and/or software to enable building automation system to monitor, control, and display boiler status and alarms.

    1. Monitoring: On/off status, common trouble alarm, and low water level alarm
    2. Control: On/off operation

2.2 ELECTRICAL POWER

A. Controllers, Electrical Devices, and Wiring: Electrical devices and connections are specified in electrical Sections.

2.3 CAPACITIES AND CHARACTERISTICS

A. Heating Medium: Water.

B. Design Pressure and Temperature Ratings: 160 psig and 250 F.

C. Safety Relief Valve Setting: <Insert psig .>

D. Water Operating Pressure: <Insert psig.>

E. Minimum Thermal Efficiency: 84.5% based upon Lower Heating Value (LHV) method.

F. Minimum Combustion Efficiency: 85% based upon Lower Heating Value (LHV) method.

G. Number of Passes: Five (5)

H. DOE Output Capacity: <Insert Mbh.>

I. Burner Blower:

1. Motor Horsepower: <Insert value.>
2. RPM: <Insert value.>

J. Electrical Characteristics:

1. Volts: [115] [208] [230] [460] <Insert value> V.
2. Phase: [Single] [Three].
3. Hertz: 60
4. Full-Load Amperes: <Insert value.>
5. Minimum Circuit Ampacity: <Insert value.>

2.4 SOURCE QUALITY CONTROL

A. Burner and Hydrostatic Test: Field adjust burner to eliminate excess oxygen, carbon dioxide, oxides of nitrogen emissions, and carbon monoxide in flue gas and to achieve combustion efficiency; perform hydrostatic test.

B. Allow Owner access to source quality-control testing of boilers. Notify Architect 14 days in advance of testing.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Before boiler installation, examine roughing-in for concrete equipment bases, anchor-bolt sizes and locations, and piping and electrical connections to verify actual locations, sizes, and other conditions affecting boiler performance, maintenance, and operations.

1. Final boiler locations indicated on Drawings are approximate. Determine exact locations before roughing-in for piping and electrical connections.

B. Examine mechanical spaces for suitable conditions where boilers will be installed.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 BOILER INSTALLATION

A. Install boilers level on concrete base. Concrete materials and installation requirements are specified with concrete.

B. Install gas-fired boilers according to NFPA 54.

C. Install oil-fired boilers according to NFPA 31.

D. Assemble and install boiler trim.

E. Install electrical devices furnished with boiler but not specified to be factory mounted.

F. Install control wiring to field-mounted electrical devices.

3.3 CONNECTIONS

A. Piping installation requirements are specified in other 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 as applicable 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 oil piping as applicable full size to burner inlet with shutoff valve and union.

E. Connect hot water and condensate piping to supply-, return-, and blowdown-boiler tappings with shutoff valve and union or flange at each connection.

F. Install piping from safety valves to drip-pan elbow to nearest floor drain.

G. 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.

H. Boiler Flue Venting:
   1. Connect full size to boiler connections. Comply with requirements in Section 235100 Breechings, Chimneys, and Stacks

I. Connect breeching to full size of boiler outlet. Comply with requirements in Section 235100 Breechings, Chimneys, and Stacks for venting materials.

J. Ground equipment according to Section 260526 Grounding and Bonding for Electrical Systems

K. Connect wiring according to Section 260519 Low-Voltage Electrical Power Conductors and Cables

3.4 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. Operational Test: Start units to confirm proper motor rotation and unit operation.
3. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

    1. Burner Test: Adjust burner to eliminate excess oxygen, carbon dioxide, oxides of nitrogen emissions, and carbon monoxide in flue gas and to achieve combustion efficiency.
    2. Check and adjust initial operating set points and high- and low-limit safety set points of fuel supply, water level, and hot water pressure.
    3. Set field-adjustable switches and circuit-breaker trip ranges as indicated.

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

D. Performance Tests:

1. Engage a factory-authorized service representative to inspect component assemblies and equipment installations, including connections, and to conduct performance testing.
2. Boilers shall comply with performance requirements indicated, as determined by field performance tests. Adjust, modify, or replace equipment in order to comply.
3. Perform field performance tests to determine the capacity and efficiency of the boilers.

    1. For dual-fuel boilers, perform tests for each fuel.
    2. Test for full capacity.

4. Repeat tests until results comply with requirements indicated.
5. Provide analysis equipment required to determine performance.
6. Provide temporary equipment and system modifications necessary to dissipate the heat produced during tests if building systems are not adequate.
7. Notify Architect in advance of test dates.
8. Document test results in a report and submit to Architect.

3.5 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain boilers. Video training sessions - refer to Section 017900 "Demonstration and Training."

END OF SECTION

DOCUMENT 26 00 00

ELECTRICAL BASIC REQUIREMENTS

PART 1 - GENERAL

1.01 SECTION INCLUDES

A. Design Builder to provide materials, labor, tools, permits, incidentals, and other services to provide and make ready for Owner's use of electrical systems for proposed project.

1.02 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

1.07 COORDINATION DOCUMENTS

A. Prior to construction, coordinate installation and location of HVAC equipment, ductwork, grilles, diffusers, piping, plumbing equipment/fixtures, fire sprinklers, plumbing, lights, cable tray and electrical services with architectural and structural requirements, and other trades (including ceiling suspension and tile systems), and provide maintenance access requirements. Coordinate with submitted architectural systems (i.e. roofing, ceiling, finishes) and structural systems as submitted, including footings and foundation. Identify zone of influence from footings and ensure systems are not routed within the zone of influence.

B. Advise Owner in event a conflict occurs in location or connection of equipment. Bear costs resulting from failure to properly coordinate installation or failure to advise Owner of conflict.

C. Verify in field exact size, location, and clearances regarding existing material, equipment and apparatus, and advise Owner of discrepancies between that indicated on Drawings and that existing in field prior to installation related thereto.
D. Submit final Coordination Drawings with changes as Record Drawings at completion of project.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Provide like items from one manufacturer.

2.02 MATERIALS

A. Base contract upon furnishing materials as specified. Materials, equipment, and fixtures used for construction are to be new, latest products as listed in manufacturer's printed catalog data and are to be UL approved or have adequate approval or be acceptable by state, county, and city authorities. Equipment/fixture supplier is responsible for obtaining State, County, and City acceptance on equipment/fixtures that are not UL approved or are not listed for installation.
B. Articles, fixtures, and equipment of a kind to be standard product of one manufacturer.
C. Names and manufacturer's names denote character and quality of equipment desired and are not to be construed as limiting competition.
D. Hazardous Materials:
    1. Comply with local, State of California, and Federal regulations relating to hazardous materials.
    2. Comply with Division 00, Procurement and Contracting Requirements and Division 01, General Requirements for this project relating to hazardous materials.
    3. Do not use any materials containing a hazardous substance. If hazardous materials are encountered, do not disturb; immediately notify Owner. Hazardous materials will be removed by Owner under separate contract.

2.03 ACCESS PANELS

A. See Division 01, General Requirements and Division 08, Openings for products and installation requirements.
B. Confirm Access Panel requirements in Division 01, General Requirements and individual Division 26, Electrical Sections. In the absence of specific requirements, comply with the following:
    1. Provide flush mounting access panels for service of systems and individual components requiring maintenance or inspection. Where access panels are located in fire-rated assemblies of building, rate access panels accordingly.
        a. Ceiling access panels to be minimum of 24-inch by 24-inch.
        b. Wall access panels to be minimum of 12-inch by 12-inch.
        c. Provide screwdriver operated catch.

d. Manufacturers and Models:
    1) Drywall: Karp KDW.
    2) Plaster: Karp DSC-214PL.
    3) Masonry: Karp DSC-214M.
    4) 2 hour rated: Karp KPF-350FR.
    5) Manufacturers: Milcor, Elmdor, Acudor, or approved equivalent.

PART 3 - EXECUTION

3.01 ACCESSIBILITY AND INSTALLATION

A. Confirm Accessibility and Installation requirements in contract documents.
B. Install equipment requiring access (i.e., junction boxes, light fixtures, power supplies, motors, etc.) so that they may be serviced, reset, replaced or recalibrated by service people with normal service tools and equipment. Do not install equipment in passageways, doorways, scuttles or crawlspaces which would impede or block the intended usage.
C. Install equipment and products complete as directed by manufacturer's installation instructions. Obtain installation instructions from manufacturer prior to rough-in of equipment and examine instructions thoroughly. When requirements of installation instructions conflict with Contract Documents, request clarification from Owner prior to proceeding with installation. This includes proper installation methods, sequencing, and coordination with other trades and disciplines.
D. Firestopping:
    1. Confirm requirements in contract documents and the following:
        a. Coordinate location and protection level of fire and/or smoke rated walls, ceilings, and floors. When these assemblies are penetrated, seal around piping and equipment with approved firestopping material. Install firestopping material complete as directed by manufacturer's installation instructions. Meet requirements of ASTM E814, Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
E. Plenums:
    1. In plenums, provide plenum rated materials that meet the requirements to be installed in plenums. Immediately notify Design Builder of discrepancy.
F. Start up equipment, in accordance with manufacturer's start-up instructions, and in presence of manufacturer's representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
G. Provide miscellaneous supports/metals required for installation of equipment and conduit.

3.02 SEISMIC CONTROL

A. Confirm Seismic Control requirements in contract documents.
B. Equipment Importance Factor: 1.0.
C. General:

1. Confirm Building Occupancy Category and Seismic Design Category with Authority Having Jurisdiction.
2. Earthquake resistant designs for Electrical (Division 26, Electrical) equipment and distribution, i.e. power distribution equipment, generators, UPS, etc. to conform to regulations of jurisdiction having authority.
3. Restraints which are used to prevent disruption of function of piece of equipment because of application of horizontal force to be such that forces are carried to frame of structure in such a way that frame will not be deflected when apparatus is attached to a mounting base and equipment pad, or to structure in normal way, utilizing attachments provided. Secure equipment and distribution systems to withstand a force in direction equal to value defined by jurisdiction having authority.
4. Provide stamped shop drawings from licensed Structural Engineer of seismic bracing and seismic movement assemblies for conduit and equipment. Submit shop drawings along with equipment submittals.
5. Provide stamped shop drawings from licensed Structural Engineer of seismic flexible joints for conduit crossing building expansion or seismic joints. Submit shop drawings along with seismic bracing details. Coordinate exact design requirements with project Structural Engineer.

D. Equipment:
   1. Provide means to prohibit excessive motion of electrical equipment during earthquake.

3.03 REVIEW AND OBSERVATION

A. Confirm Review and Observation requirements in contract documents.
B. Notify Owner, in writing, at following stages of construction so that they may, at their option, visit site for review and construction observation:
   1. Underground conduit installation prior to backfilling.
   2. Prior to covering walls.
   3. Prior to ceiling cover/installation.
   4. When main systems, or portions of, are being tested and ready for inspection by AHJ.
C. Final Punch:
   1. Costs incurred by additional trips required due to incomplete systems will be the responsibility of the Design Builder.

3.04 CONTINUITY OF SERVICE

A. Confirm requirements in contract documents and the following:
   1. During remodeling or addition to existing structure, while existing structure is occupied, present services to remain intact until new construction, facilities or equipment is installed.
   2. Prior to changing over to new service, verify that every item is thoroughly prepared. Install new wiring, and wiring to point of connection.

3. Coordinate transfer time to new service with Owner. If required, perform transfer during off-peak hours. Once changeover is started, pursue to its completion to keep interference to a minimum.
    a. If overtime is necessary, there will be no allowance made by Owner for extra expense for such overtime or shift work.
4. No interruption of services to any part of existing facilities will be permitted without express permission in each instance from Owner. Requests for outages must state specific dates, hours and maximum durations, with outages kept to these specific dates, hours and maximum durations. Obtain written permission from Owner for any interruption of power, lighting or signal circuits and systems.
    a. Organize work to minimize duration of power interruption.
    b. Coordinate utility service outages with utility company.

3.05 CUTTING AND PATCHING

A. Confirm requirements in contract documents and the following:
    1. Proposed floor cutting/core drilling/sleeve locations to be approved by project Structural Engineer. Submit proposed locations to Owner/Project Structural Engineer. Where slabs are of post tension construction, perform x-ray scan of proposed penetration locations and submit scan results including proposed penetration locations to Owner for approval. Where slabs are of waffle type construction, show column cap extent and cell locations relative to proposed penetration(s).
    2. Cutting, patching and repairing for work specified in this Division including plastering, masonry work, concrete work, carpentry work, and painting included under this Section will be performed by skilled craftsmen of each respective trade in conformance with appropriate Division of Work.
    3. Additional openings required in building construction to be made by drilling or cutting. Use of jack hammer is specifically prohibited. Patch openings in and through concrete and masonry with grout.
    4. Restore new or existing work that is cut and/or damaged to original condition. Patch and repair specifically where existing items have been removed. This includes repairing and painting walls, ceilings, etc. where existing conduit and devices are removed as part of this project. Where alterations disturb lawns, paving, and/or walks, surfaces to be repaired, refinished and left in condition matching existing prior to commencement of work.
    5. Additional work required by lack of proper coordination will be provided at no additional cost to the Owner.

3.06 EQUIPMENT SELECTION AND SERVICEABILITY

A. Replace or reposition equipment which is too large or located incorrectly to permit servicing, at no additional cost to Owner.

3.07 DELIVERY, STORAGE AND HANDLING

A. Confirm requirements in contract documents and the following:
   1. Handle materials delivered to project site with care to avoid damage. Store materials on site inside building or protected from weather, dirt and construction dust. Products and/or materials that become damaged due to water, dirt, and/or dust as a result of improper storage and handling to be replaced before installation.
   2. Protect equipment to avoid damage. Close conduit openings with caps or plugs. Keep motors and bearings in watertight and dustproof covers during entire course of installation.
   3. Protect bus duct and similar items until in service.

3.08 DEMONSTRATION

A. Confirm Demonstration requirements in contract documents.
B. Upon completion of work and adjustment of equipment, test systems and demonstrate to Owner's Representative and Design Builder that equipment furnished and installed or connected under provisions of these Specifications functions in manner required. Provide field instruction to Owner's Maintenance Staff as specified in contract documents.
C. Manufacturer's Field Services: Furnish services of a qualified person at time approved by Owner, to instruct maintenance personnel, correct defects or deficiencies, and demonstrate to satisfaction of Owner that entire system is operating in satisfactory manner and complies with requirements of other trades that may be required to complete work. Complete instruction and demonstration prior to final job site observations.

3.09 CLEANING

A. Confirm Cleaning requirements in contract documents.
B. Upon completion of installation, thoroughly clean electrical equipment, removing dirt, debris, dust, temporary labels and traces of foreign substances. Throughout work, remove construction debris and surplus materials accumulated during work.

3.10 INSTALLATION

A. Confirm Installation requirements in contract documents.
B. Install equipment and fixtures in accordance with manufacturer's installation instructions, plumb and level and firmly anchored to vibration isolators. Maintain manufacturer's recommended clearances.
C. Start up equipment, in accordance with manufacturer's start-up instructions, and in presence of manufacturer's representative. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.
D. Provide miscellaneous supports/metals required for installation of equipment.

3.11 PAINTING

A. Confirm requirements in contract documents and the following:
   1. Ferrous Metal: After completion of work, thoroughly clean and paint exposed supports constructed of ferrous metal surfaces (i.e., hangers, hanger rods, equipment stands, etc.) with one coat of black asphalt varnish for exterior or black enamel for interior, suitable for hot surfaces.
   2. In Electrical Room, on roof or other exposed areas, equipment not painted with enamel to receive two coats of primer and one coat of rustproof enamel, colors as selected by Design Builder.
   3. See individual equipment Specifications for other painting.
   4. Structural Steel: Repair damage to structural steel finishes or finishes of other materials damaged by cutting, welding or patching to match original.
   5. Conduit: Clean, primer coat and paint interior/exterior conduit exposed in public areas with two coats paint suitable for metallic surfaces. Color selected by Design Builder.
   6. Covers: Covers such as manholes, vaults and the like will be furnished with finishes which resist corrosion and rust.

3.12 ACCESS PANELS

A. Confirm Access Panel requirements in contract documents and the following:
   1. Coordinate locations/sizes of access panels with Owner prior to work.

3.13 DEMOLITION

A. Confirm requirements in contract documents and the following:
   1. It is the intent of these documents to provide necessary information and adjustments to electrical system required to meet code, and accommodate installation of new work.
   2. Coordinate with Owner so that work can be scheduled not to interrupt operations, normal activities, building access or access to different areas. Owner will cooperate to best of their ability to assist in coordinated schedule, but will remain final authority as to time of work permitted.
   3. Examination:
      a. Determine exact location of existing utilities and equipment before commencing work, compensate Owner for damages caused by failure to locate and preserve utilities. Replace damaged items with new material to match existing.
      b. Verify that abandoned wiring and equipment serve only abandoned facilities.
      c. Demolition drawings are based on casual field observation and existing record documents.
         1) Verify accuracy of information shown prior to bidding and provide such labor and material as is necessary to accomplish work.

2) Verify location and number of electrical outlets, luminaires, panels, etc. in field.

d. Report discrepancies to Owner before disturbing existing installation.
   1) Promptly notify Owner if utilities are found which are not shown on Drawings.

4. Execution:
   a. Remove existing luminaires, switches, receptacles, and other electrical equipment and devices and associated wiring from walls, ceilings, floors, and other surfaces scheduled for remodeling, relocation, or demolition unless shown as retained or relocated on Drawings.
   b. Provide temporary wiring and connections to maintain electrical continuity of existing systems during construction. Remove or relocate electrical boxes, conduit, wiring, equipment, and luminaires, as encountered in removed or remodeled areas in existing construction affected by this work.
   c. Remove and restore wiring which serves usable existing outlets clear of construction or demolition.
   d. If existing junction boxes will be made inaccessible, or if abandoned outlets serve as feed through boxes for other existing electrical equipment which is being retained, provide new conduit and wire to bypass inaccessible junction boxes and abandoned outlets.
   e. If existing conduits pass through partitions or ceiling which are being removed or remodeled, provide new conduit and wire to reroute clear of construction or demolition and maintain service to existing load.
   f. Extend circuiting and devices in existing walls to be furred out.
   g. Remove abandoned wiring to source of supply.
   h. Remove exposed abandoned conduit, including abandoned conduit above accessible ceiling finishes. Cut conduit flush with walls and floors, and patch surfaces.
   i. Disconnect abandoned outlets and remove devices. Remove abandoned outlets if conduit servicing them is abandoned and removed. Provide blank cover for abandoned outlets which are not removed.
   j. Disconnect and remove abandoned panelboards and distribution equipment.
   k. Disconnect and remove electrical devices and equipment serving utilization equipment that has been removed.
   l. Existing lighting which is to remain, leave luminaires in proper working order.
   m. Repair adjacent construction and finishes damaged during demolition work.
   n. Maintain access to existing electrical installations which remain active. Modify installation or provide access panel as appropriate.

3.14 ACCEPTANCE

A. Confirm requirements in contract documents and the following:

1. System cannot be considered for acceptance until work is completed and demonstrated to Design Builder that installation is in strict compliance with Specifications, Drawings and manufacturer's installation instructions, particularly in reference to following:
    a. Cleaning
    b. Operation and Maintenance Manuals
    c. Training of Operating Personnel
    d. Record Drawings
    e. Warranty and Guaranty Certificates
    f. Start-up/Test Document and Commissioning Reports

3.15 FIELD QUALITY CONTROL

A. Confirm Field Quality Control requirements in contract documents.
B. Tests:
    1. Conduct tests of equipment and systems to demonstrate compliance with requirements specified. Reference individual Specification Sections for required tests. Document tests and include in operation and maintenance manuals.
    2. During site evaluations by Design Builder, provide appropriate personnel with tools to remove and replace trims, covers, and devices so that proper evaluation of installation can be performed.

3.16 LETTER OF CONFORMANCE

A. Provide Letter of Conformance, copies of manufacturers' warranties and extended warranties with a statement that Electrical items were installed in accordance with manufacturer's recommendations, UL listings and FM Global approvals. Include Letter of Conformance, copies of manufacturers' warranties and extended warranties in Operation and Maintenance Manuals.

3.17 SALVAGED EQUIPMENT AND RECYCLED MATERIAL

A. Salvage the following equipment not being reused and return to Owner:
    1. Breakers
B. Electrical equipment that cannot be salvaged for reuse sell/give to recycling company. Recycle following excess, removed, or demolished electrical material:
    1. Copper or aluminum conductors, buses, and motor/transformer windings.
    2. Steel and aluminum from raceways, boxes, enclosures, and housings.
    3. Acrylic and glass from luminaire lenses/refractors.
C. Provide separate on-site storage space for recycled, recycled and salvaged, or salvaged material. Clearly label space.
D. Confirm additional salvaged equipment and recycled materials in the Contract Documents.

END OF SECTION

SECTION 26 05 09

EQUIPMENT WIRING

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Design Builder is responsible for the engineering, calculation, design, and installation of all upgrades to equipment wiring.
   2. Equipment grounding.

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials and Equipment for Equipment Wiring: As specified in individual Sections.

2.02 GENERAL

A. Unless otherwise noted, the following voltage and phase characteristics apply to motors:
   1. 3/4 HP and Under: 120 volt, 1 phase.
   2. 1 HP and Over: 208 volt, 3 phase.
   3. 1 HP and Over: 480 volt, 3 phase.

B. Safety Switches: Provide as required by NEC and as specified in Section 26 28 16, Enclosed Switches and Circuit Breakers.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Prior to submittal of product data for electrical distribution equipment, obtain and examine product data and shop drawings for equipment furnished by the Owner and by other trades on the project. Update the schedule of equipment electrical connections accordingly, noting proper ratings for overcurrent devices, fuses, safety disconnect switches, conduit and wiring, and the like. As a minimum, this requirement applies to equipment furnished by Owner and equipment furnished under other divisions of work under this contract.

3.02 INSTALLATION

A. Do not install unrelated electrical equipment or wiring on mechanical equipment without prior approval of Owner.

B. Provide moisture tight equipment wiring and switches in ducts or plenums used for environmental air.

C. Connect motor and appliance/utilization equipment complete from panel to motor/equipment as required by code.

D. Install motor starters and controllers for equipment furnished by others.

E. Appliance/Utilization Equipment:
   1. Provide appropriate cable and cord cap for final connection unless equipment is provided with same. Provide receptacle configured to receive cord cap.
   2. Verify special purpose outlet NEMA configuration and ampere rating with equipment supplier prior to ordering wiring devices and coverplates.

3.03 FIELD QUALITY CONTROL

A. Perform field inspection and testing in accordance with Division 01, General Requirements.

3.04 SYSTEMS STARTUP

A. Provide field representative to prepare and start equipment.
   1. Test and correct for proper rotation of polyphase motors.

B. Adjust for proper operation within manufacturer's published tolerances.

C. Demonstrate proper operation of equipment to Owner's designated representative.

END OF SECTION

SECTION 26 05 19

LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Design Builder is responsible for the engineering, calculation, design, and installation of all upgrades to low-voltage wiring for all equipment in the project.
   2. Wires and Cables
   3. Connectors
   4. Lugs and Pads

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Wires and Cables:
   1. Carol
   2. General Cable
   3. Okonite
   4. Southwire
   5. Alcan/Stabiloy
   6. Nexans/Energex 8000
   7. Raychem
   8. Or approved equivalent.

B. Connectors:
   1. Stranded conductors by Anderson.
   2. Burndy
   3. Ilsco
   4. 3M
   5. Thomas & Betts
   6. Or approved equivalent.

C. Splices:
   1. Branch Circuit Splices:
      a. Ideal
      b. Scotch-Lock
      c. 3M
      d. Or approved equivalent.
   2. Feeder Splices:
      a. Compression barrel splice with two layers Scotch 23 and four layers of Scotch 33+ as vapor barrier.
      b. Not allowed.

D. Connectors:
   1. Construction:
      a. T & B Series 60200
      b. Or approved equivalent.
   2. Aluminum cable connection to mechanical lugs and equipment identified as not suitable for aluminum conductor termination:
      a. T & B Series 61900
      b. Or approved equivalent.
   3. Aluminum Cable Connection to Dry-Type Transformer Lugs:
      a. Burndy Type YA-A-KIT Series
      b. Or approved equivalent.
   4. Oxide-Inhibiting Joint Compounds:
      a. PENETROX A-13
      b. Or approved equivalent.
   5. Fluorescent Luminaire Disconnect:
      a. Thomas & Betts Sta-Kon
      b. Lithonia
      c. Or approved equivalent.

E. Lugs:
   1. Anderson
   2. Ilsco
   3. Panduit
   4. Thomas & Betts
   5. 3M
   6. Or approved equivalent.

2.02 WIRES AND CABLES

A. Copper, 600 volt rated throughout. Conductors 12 AWG and 10 AWG, solid or stranded. Conductors 8 AWG and larger, stranded. 12 AWG minimum conductor size. Minimum insulation rating of 90 degrees C. Insulation Type: THWN-2, XHHW-2 or THHN-2.

B. Annealed copper, Class "B" strand, designed to ensure tensile strength under fire conditions. 2-hour fire-resistive cable. 600 volt rated throughout. Conductors 14 AWG and larger. Insulation type: Thermoset, low smoke zero halogen silicone rubber.

C. Aluminum, 600 volt rated throughout. Conductors 4 AWG and larger, compact stranded. Aluminum Association 8000(AA-8000) Series alloy conductor material built to ASTM B801 specifications. Connectors and terminations to be those listed by Underwriters Laboratories Standard 486-B and marked “AL7CU” for 60C and 75C rated circuits. Connections and terminations to be installed strictly in accordance with manufacturers recommendations.

D. Phase color to be consistent at feeder terminations; A-B-C, top to bottom, left to right, front to back.

E. Color Code Conductors as Follows:

PHASE	**208 VOLT WYE**	**240 VOLT DELTA**	**480 VOLT**
A	Black	Black	Brown
B	Red	Orange (High Leg)	Orange
C	Blue	Blue	Yellow
Neutral	White	White	Gray or White w/colored strip
Ground	Green	Green	Green
Isolated Ground	Green w/yellow trace	N/A	N/A

F. SO Cord: Annealed copper conductors, 600 volt rated. Minimum size No. 12 AWG with ground wire. Maximum of six conductors and ground per cable. 90 degrees C rated thermoset jacket.

G. Service Entrance Cable: Copper conductor, 600 volt insulation, XHHW, Type SE.

2.03 CONNECTORS

A. Copper Pads: Drilled and tapped for multiple conductor terminals.

B. Lugs: Compression type for use with stranded branch circuit or control conductors; mechanical lugs for use with solid branch and feeder circuit conductors.

C. Split bolt connectors not allowed.

D. Aluminum Cable Compression Connections:
   1. Provide UL-listed compression lugs that are marked AL7CU or AL7CU and have passed UL 486B or UL 486C testing procedures.
   2. Construction: Electro tin plated high conductivity aluminum. Connector marked with wire size, die index, color-coded and the proper number and location of crimps. Factory pre-filled with oxide inhibiting compound.

3. Aluminum cable connection to aluminum bus bar: Use 2-hole aluminum compression lug and aluminum hardware. Apply UL-listed lubricant to hardware and surfaces before tightening.
4. Aluminum cable connection to copper bus bar: Use 2-hole aluminum compression lug, plated steel hardware and Belleville washer. Apply UL-listed lubricant to hardware and surfaces before tightening.
5. Aluminum cable connection to mechanical lugs and equipment identified as not suitable for aluminum conductor termination: Provide aluminum compression lug with stranded copper wire/cable pigtail. Equip lug compression body with insulating cover.
6. Aluminum cable connection to dry-type transformer lugs.
7. Aluminum Termination Hardware:
    a. Bolts: Anodized alloy 2023-T4 and conforming to ANSI B18.2.1 and to ASTM B211 or B221 chemical and mechanical property limits.
    b. Nuts: Aluminum alloy 6061-T6 or 6262-T9 and conforming to ANSI B18.2.2.
    c. Washers: Flat aluminum alloy Alclad 2024-T4, Type A plain, standard wide series conforming to ANSI B27.2. SAE or narrow series washers are not permitted.

E. Conductor Branch Circuits: Wire nuts with integral spring connectors for conductors 12 AWG through 8 AWG. Push-in type connectors where conductors are not required to be twisted together are not acceptable.

F. Fluorescent Luminaire Disconnect: polycarbonate housing, tin-plated brass contacts, insulated 18 AWG, factory-installed solid copper leads, 105C temperature rating, UL94-V2 flammability, 4A, 600V. NEC Article 410 compliant. Finger-safe line side. Push-and-click connector.

2.04 LUGS AND PADS

A. Ampacity: Cross-Sectional area of pad for multiple conductor terminations to match ampere rating of panelboard bus or equipment line terminals.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Wires and Cables:
1. Conductor Installation:
    a. Install conductors in raceways having adequate, code size cross-Sectional area for wires indicated.
    b. Install conductors with care to avoid damage to insulation.
    c. Do not apply greater tension on conductors than recommended by manufacturer during installation.
    d. Use of pulling compounds is permitted. Clean residue from exposed conductors and raceway entrances after conductor installation. Do not use pulling compounds for installation of conductors connected to GFCI circuit breakers or GFCI receptacles.

e. Do not use aluminum wire to make connections to mechanical equipment.

2. Aluminum Conductor Splices, Joints and Terminations:
   a. Join conductors using compression splice barrels or bolted compression lugs. Terminate conductors using compression lugs. Apply number of compression indents as directed by the manufacturer instructions.
3. Conductor Size and Quantity:
   a. Install no conductors smaller than 12 AWG unless otherwise shown.
   b. Provide required conductors for a fully operable system.
4. Provide dedicated neutrals (one neutral conductor for each phase conductor) in all 120V circuits
5. Conductors in Cabinets:
   a. Cable and tree wires in panels and cabinets for power and control. Use plastic ties in panels and cabinets.
   b. Tie and bundle feeder conductors in wireways of panelboards.
   c. Hold conductors away from sharp metal edges.
6. Homeruns:
   a. Do not change intent of branch circuit homeruns without approval. Homeruns for 20A branch circuits may be combined to a maximum of six current carrying conductors including neutral conductors in homeruns. Apply derating factors as required per NEC. Increase conductor size as needed.
7. Identify wire and cable under the provisions of Section 26 05 53, Identification for Electrical Systems. Identify each conductor with its panel and circuit number as indicated.
8. Use of MC Cable is limited to the following conditions. Installations that do not comply with the following conditions are to be removed and replaced with no additional expense to the Owner.
   a. 20 and 30 amp branch wiring where following conditions apply:
      1) Where there is a suspended ceiling with accessible space above (example: suspended acoustic ceiling tile).
      2) For drops to ceiling mounted luminaires in areas with accessible ceiling space.
      3) In residential units where allowed by the NEC.
      4) Do not use for homeruns from branch circuit panel to first device or luminaire in circuit.
      5) Do not use in walls in areas where MC cable cannot be fished into the walls after construction is completed. For example: walls with glazing or solid beams overhead, partial height walls, etc.
      6) No single run of MC cable longer than 50-feet.
9. Exposed cable is not allowed.
10. Exposed cable must be run parallel or perpendicular to building lines and hidden from view when possible.

3.02 FIELD QUALITY CONTROL

A. Test conductor insulation on feeders of 100 amp and greater for conformity with 1000 volt megohmmeter. Use Insulated Cable Engineers Association testing procedures.

Minimum insulation resistance acceptable is 1 megohm for systems 600 volts and below. Notify Architect if insulation resistance is less than 1 megohm.

B. Test Report: Prepare a typed tabular report indicating the testing instrument, the feeder tested, amperage rating of the feeder, insulation type, voltage, the approximate length of the feeder, conduit type, and the measured resistance of the megohmmeter test. Submit test reports with project closeout documents.

C. Inspect and test in accordance with NETA Standard ATS, except Section 4.

D. Perform inspections and tests listed in NETA Standard ATS, Section 7.3.2.

END OF SECTION

SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Connectors and Accessories
   2. Grounding Conductor

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Grounding Connectors:
   1. Burndy Hyground Compression System
   2. Erico/Cadweld
   3. Amp Ampact Grounding System
   4. Or approved equivalent.

B. Pipe Grounding Clamp:
   1. Burndy GAR Series
   2. O Z Gedney
   3. Thomas & Betts
   4. Or approved equivalent.

2.02 CONNECTORS AND ACCESSORIES

A. Grounding Connectors: Hydraulic compression tool applied connectors or exothermic welding process connectors or powder actuated compression tool applied connectors.

B. Pipe Grounding Clamp: Mechanical ground connector with cable parallel or perpendicular to pipe.

2.03 GROUNDING CONDUCTOR

A. Grounding Electrode Conductor: Soft-draw bare stranded copper for wire sizes larger than #10 AWG Bare. Solid copper for wire sizes #10 AWG and smaller.

B. Equipment Grounding Conductor: Green insulated, insulation type to match that of associated feeder or branch circuit wiring, size as indicated on drawings.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verify site conditions prior to beginning work.

B. Verify that final backfill and compaction have been completed before driving rod electrodes.

3.02 INSTALLATION

A. Concrete-Encased Electrode ("Ufer ground"):
   1. From service equipment ground bus provide grounding electrode conductor to footing/foundation rebar.
   2. Bond #4 grounding electrode conductor to one minimum 20-foot long, 0.5-inch diameter independent steel rebar(s).
   3. Protect grounding electrode conductor from footing/foundation to service equipment grounding bus with rigid PVC conduit where grounding electrode conductor passes through concrete floor or other concrete structure. Do not use rigid metal conduit for grounding electrode conductor protection.
   4. Coordinate bonding of rebar in base of building concrete footing with installer prior to placement of concrete.

B. Ground Rod Electrode:
   1. Bond #6 grounding electrode conductor to driven ground rods as indicated on Drawings.
   2. Tap at center ground rod and extend grounding electrode conductor to service grounding bus. Install grounding electrode conductor to service grounding bus in rigid PVC conduit for physical protection where grounding electrode conductor passes through concrete floor or other concrete structure.

C. Metal Underground Water Service: Bond water service pipe to service equipment ground bus or to the grounding electrode system. Connect to water pipe on utility side of isolating fittings or meters, bond across water meters.

D. Other Metal Piping Systems: Bond gas piping system, fire sprinkler piping system and other metal piping systems to service equipment ground bus or to the grounding electrode system.

E. Raceways:
   1. Ground metallic raceway systems. Bond to ground terminal with code size jumper except where code size or larger equipment grounding conductor is included with circuit, use grounding bushing with lay-in lug.
   2. Connect metal raceways, which terminate within an enclosure but without mechanical connection to enclosure, by grounding bushings and ground conductor to grounding bus.
   3. Where equipment supply conductors are in flexible metallic conduit, install stranded copper equipment grounding conductor from outlet box to equipment frame.
   4. Install equipment grounding conductor, code size minimum unless noted on drawings, in metallic and nonmetallic raceway systems.

F. Feeders and Branch Circuits:
   1. Provide continuous green insulated copper equipment grounding conductors for feeders and branch circuits.
   2. Where installed in a continuous solid metallic raceway system and larger sizes are not detailed, provide insulated equipment grounding conductors for feeders and branch circuits sized in accordance with the latest adopted edition of NEC Article 250, Table 250-122.

G. Boxes, Cabinets, Enclosures and Panelboards:
   1. Bond equipment grounding conductors to enclosure with specified conductors and lugs. Install lugs only on thoroughly cleaned contact surfaces.
   2. Bond Sections of service equipment enclosure to service ground bus.

H. Motors, Equipment and Appliances: Install code size equipment grounding conductor to (motor) equipment frame or manufacturer's designated ground terminal.

I. Receptacles: Connect ground terminal of receptacle and associated outlet box to equipment grounding conductor. Self grounding nature of receptacle devices does not eliminate equipment grounding conductor bolted to outlet box.

J. Separately Derived Systems: Ground each separately derived system per NEC Article 250.

K. Corrosion inhibitors: Apply a corrosion inhibitor to contact surfaces when making grounding and bonding connections. Use corrosion inhibitor appropriate for protecting a connection between metals used.

3.03 FIELD QUALITY CONTROL

A. Grounding system resistance to ground not to exceed 5 ohms. Make necessary modifications or additions to grounding electrode system for compliance. Submit final tests to assure that this requirement is met.

B. Resistance of grounding electrode system: measure using a four-terminal fall-of-potential method as defined in IEEE 81. Take ground resistance measurements before

electrical distribution system is energized and in normally dry conditions, not less than 48 hours after last rainfall. Take resistance measurements of separate grounding electrode systems before systems are bonded together below grade. Combined resistance of separate systems may be used to meet required resistance, but specified number of electrodes must still be provided.

C. Inspect and test in accordance with NETA Standard ATS, Except Section 4.

D. Perform inspections and tests listed in NETA Standard AB, Section 7.13.

END OF SECTION

SECTION 26 05 29

HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS AND EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Hangers, Supports, Anchors, Threaded Rod and Fasteners
   2. Support Channel
   3. Rooftop Conduit Supports

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents.

B. In addition, meet the following:
   1. Manufacturers regularly engaged in the manufacture of bolted metal framing support systems, whose products have been in satisfactory use in similar service for not less than 10 years.
   2. Support systems to be supplied by a single manufacturer.
   3. Engineering Responsibility: Design and preparation of Shop Drawings and calculations for each multiple pipe support, trapeze, equipment hangers/supports, and seismic restraint by a qualified Structural Professional Engineer.
      a. Professional Engineer Qualifications: A professional engineer who is legally qualified to practice in jurisdiction where Project is located and who is experienced in providing engineering services of the kind indicated. Engineering services are defined as those performed for installations of hangers and supports that are similar to those indicated for this Project in material, design, and extent.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

1.07 PERFORMANCE REQUIREMENTS

A. General: Provide conduit and equipment hangers and supports in accordance with the following:
   1. When supports, anchorages, and seismic restraints for equipment and supports, anchorages and seismic restraints for conduit, cable tray and equipment are not shown on the Drawings, the Contractor is responsible for their design.
   2. Connections to structural framing shall not introduce twisting, torsion, or lateral bending in the framing members. Provide supplementary steel as required.

B. Engineered Support Systems: The following support systems to be designed, detailed, and bear the seal of a professional engineer registered in the State of California.
   1. Support frames such as conduit racks or stanchions for conduit and equipment which provide support from below.
   2. Equipment and piping support frame anchorage to supporting slab or structure.

C. Provide channel support systems, for conduits to support multiple conduits capable of supporting combined weight of support systems and system contents.

D. Provide heavy-duty steel trapezes for piping to support multiple conduit capable of supporting combined weight of supported systems and system contents.

E. Provide seismic restraint hangers and supports for conduit and equipment.

F. Obtain approval from AHJ for seismic restraint hanger and support system to be installed for piping and equipment.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Support Channel:
   1. B-Line
   2. Kindorf
   3. Superstrut
   4. Unistrut
   5. Or approved equivalent.

B. Anchors:
   1. Anchor It
   2. Epcon System
   3. Hilti-Hit System
   4. Power Fast System
   5. Or approved equivalent.

C. Rooftop Supports:
   1. Cooper B-Line Dura-Block Rooftop Support Base
   2. Or approved equivalent.

2.02 MATERIALS

A. Hangers, Supports, Anchors, Threaded Rod and Fasteners - General: Corrosion-resistant materials of size and type adequate to carry the loads of equipment and conduit, including weight of wire in conduit.
   1. Channel Material: Carbon steel.
   2. Coating: Hot dip galvanized.

B. Concrete Inserts: Cast in concrete for support fasteners for loads up to 800 lbs.

C. Pipe Straps: Two-hole galvanized or malleable iron.

D. Luminaire Chain: 90 lb. test with steel hooks.

E. Anchor Bolts for Area Luminaire Poles: As supplied by area luminaire pole manufacturer.

F. Anchors and Fasteners:
   1. Do not use powder-actuated anchors.
   2. Obtain permission from Design Builder before using powder-actuated anchors.
   3. Concrete Structural Elements: Use precast inserts.
   4. Steel Structural Elements: Use beam clamps.
   5. Concrete Surfaces: Use self-drilling anchors.
   6. Hollow Masonry, Plaster, and Gypsum Board Partitions: Use toggle bolts.
   7. Solid Masonry Walls: Use expansion anchors.
   8. Sheet Metal: Use sheet metal screws.
   9. Wood Elements: Use wood screws.

G. Rooftop Conduit Supports:
   1. Curb base made of 100 percent recycled rubber and polyurethane prepolymer with a uniform load
   2. Capacity of 500 pounds per linear foot of support.
   3. UV resistant.
   4. Steel Frame: Steel, 14 gauge strut galvanized per ASTM A653 or 12 gauge strut galvanized per ASTM A653 for bridge series.
   5. Continuous block channel supports with 1-inch gaps to allow water flow, bridge channel supports, extendable height channel supports and elevated single conduit supports.
   6. Attaching Hardware: Zinc-plated threaded rod, nuts and attaching hardware per ASTM B633 fastened directly into rubber material with weather resistant Type 12 lag screws.
   7. Provide load distribution plates when required for heavy loads.
   8. Finish: Black with safety yellow striping.

2.03 MISCELLANEOUS METAL

A. Miscellaneous Metal: Provide miscellaneous metal items specified hereunder, including materials, fabrication, fastenings and accessories required for finished installation, where indicated on Drawings or otherwise not shown on drawings that are necessary for completion of the project. The Contractor is responsible for their design.

1. Fabricate miscellaneous units to size shapes and profiles indicated or, if not indicated, of required dimensions to receive adjacent other work to be retained by framing. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars, of welded construction using mitered joints for field connection. Cut, drill and tap units to receive hardware and similar items.

B. Structural Shapes: Where miscellaneous metal items are needed to be fabricated from structural steel shapes and plates, provide members constructed of steel conforming with requirements of ASTM A36 or approved equivalent.

C. Steel Pipe: Provide seamless steel pipe conforming to requirements of ASTM A53, Type S, Grade A, or Grade B. Weight and size required as specified.

D. Fasteners: Provide fasteners of types as required for assembly and installation of fabricated items; surface-applied fasteners are specified elsewhere.

E. Bolts: Low carbon steel externally and internally threaded fasteners conforming with requirements of ASTM A307; include necessary nuts and plain hardened washers. For structural steel elements supporting mechanical material or equipment from building structural members or connection thereto, use fasteners conforming to ASTM A325.

F. Miscellaneous Materials: Provide incidental accessory materials, tools, methods, and equipment required for fabrication.

G. Provide hot dipped galvanized components for items exposed to weather.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install hangers and supports as required to adequately and securely support electrical system components, in a neat and workmanlike manner, as specified in NECA 1.

B. Safety factor of 4 required for every fastening device or support for electrical equipment installed. Supports to withstand four times the weight of equipment it supports.

C. Verify mounting height of luminaires prior to installation when heights are not detailed.

D. Install vertical support members for equipment and luminaires, straight and parallel to building walls.

E. Install horizontal support members straight and parallel to ceilings or finished floor unless otherwise noted.

F. Provide independent supports to structural member for electrical luminaires, materials, or equipment installed in or on ceiling, walls or in void spaces or over suspended ceilings.

G. Do not use other trade's fastening devices as supporting means for electrical luminaires, equipment or materials.

H. Do not fasten supports to pipes, ducts, mechanical equipment, or conduit.

I. Do not use supports or fastening devices to support other than one particular item.

J. Support conduits within 18-inches of outlets, boxes, panels, cabinets and deflections unless more stringently required by CEC.

K. Maximum distance between supports not to exceed 8 foot spacing unless otherwise required by CEC.

L. Support flexible conduits within 12-inches of outlets, boxes, panels, cabinets and deflections unless otherwise required by CEC.

M. Maximum distance between supports for flexible conduits not to exceed 48-inches spacing unless otherwise required by CEC.

N. Maximum distance between supports for rigid PVC conduits unless otherwise required by CEC is as follows:
   1. 1/2-inch or 3/4-inch and 1-inch conduit, 3-feet apart.
   2. 1-1/4-inch or 1-1/2-inch and 2-inch conduit, 4-feet apart.
   3. 2-1/2-inch and 3-inch conduit, 5-feet apart.
   4. 4-inch and 5-inch conduit, 6-feet apart.
   5. 6-inch conduit, 7-feet apart.

O. Maximum distance between supports for auxiliary gutters and wireways unless otherwise required by CEC is as follows:
   1. Sheet metal auxiliary gutters and wireways - 4-feet apart horizontally and 10-feet vertically.
   2. Non-metallic auxiliary gutters and wireways - 30-inches apart horizontally and 3-feet vertically.

P. Install strut hangers as instructed by strut manufacturer. Suspended strut hangers as instructed by strut manufacturer for the load, with a maximum spacing of 8-feet on center and within 2-feet of outlet box, cabinet, junction box or other channel raceway termination unless otherwise required by CEC.

Q. Coordinate routing of conduit racks with materials and equipment installed by other trades. Where conduit racks are exposed to view, coordinate location and installation with Design Builder for optimal appearance.

R. Securely suspend junction boxes, pull boxes or other conduit terminating housings located above suspended ceiling from floor above or roof structure to prevent sagging and swaying.

S. Provide seismic bracing per CBC requirements.

T. Where service disconnects are mounted on building exterior, physically attach service disconnect to the building or structure served.

U. Install surface-mounted cabinets and panelboards with minimum of four anchors.

V. Use sheet metal channel to bridge studs above and below cabinets and panelboards recessed in hollow partitions.

W. Use spring lock washers under fastener nuts for strut.

3.02 CUTTING AND DRILLING

A. Do not drill or cut structural members without prior permission from Design Builder.

3.03 WET AND DAMP LOCATIONS

A. In wet and damp locations use steel channel supports to stand cabinets and panelboards 1-inch off wall.

3.04 ROOFTOP SUPPORTS

A. Consult roofing manufacturer for roof membrane compression capacities. If necessary, provide a compatible sheet of roofing material (rubber pad) under rooftop support to disperse concentrated loads and add further membrane protection.

B. Do not use supports that will void roof warranty.

C. Install supports per manufacturer's instructions and recommendations.

D. Use properly sized clamps to suit conduit sizes.

E. Install supports for rooftop raceways to raise raceways a minimum of 4-inches above the roof structure unless otherwise noted.

3.05 FABRICATION - MISCELLANEOUS METALS

A. General: Verify dimensions prior to fabrication. Form metal items to accurate sizes and configurations as indicated on Drawings and otherwise required for proper installation; make with lines straight and angles sharp, clean and true; drill, countersink, tap, and otherwise prepare items for connections with work of other trades, as required. Fabricate to detail of structural shapes, plates and bars; weld joints where practicable; provide bolts and other connection devices required. Include anchorages; clip angles, sleeves, anchor plates, and similar devices. Hot dipped galvanize after fabrication items installed in exterior locations. Set accurately in position as required and anchor securely to building construction. Construct items with joints formed for strength and rigidity, accurately machining for proper fit; where exposed to weather, form to exclude water.

B. Finishes:

1. Ferrous Metal: After fabrication, but before erection, clean surfaces by mechanical or chemical methods to remove rust, scale, oil, corrosion, or other substances detrimental to bonding of subsequently applied protective coatings. For metal items exposed to weather or moisture, galvanize in manner to obtain G90 zinc coating in accordance with ASTM A123. Provide other non-galvanized ferrous metal with one coat of approved rust-resisting paint primer, in manner to obtain not less than 1.0 mil dry film thickness. Touch-up damaged areas in primer with same material, before installation. Apply zinc coatings and paint primers uniformly and smoothly; leave ready for finish painting as specified elsewhere.
2. Metal in contact with Concrete, Masonry and Other Dissimilar Materials: Where metal items are to be erected in contact with dissimilar materials, provide contact surfaces with coating of an approved zinc-chromate primer in manner to obtain not less than 1.0 mil dry film thickness, in addition to other coatings specified in these specifications.

3. For Galvanized Surfaces: Clean field welds, bolted connections, and abraded areas and apply galvanizing repair paint to comply with ASTM A780.

END OF SECTION

SECTION 26 05 33

RACEWAYS

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Rigid Metal Conduit (RMC)
   2. Rigid Aluminum Conduit
   3. Electrical Metallic Tubing (EMT)
   4. Liquidtight Flexible Metal Conduit (LFMC)
   5. Conduit Fittings

B. Provide a complete system of conduit and fittings, with associated couplings, connectors, and fittings, as shown on drawings and described in these specifications.

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

1.07 DEFINITIONS

A. Raceway system is defined as consisting of conduit, tubing, duct, and fittings including but not limited to connectors, couplings, offsets, elbows, bushings, expansion/deflection fittings, and other components and accessories. Complete electrical raceway installation before starting the installation of conductors and cables.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Rigid Metal Conduit (RMC):

1. Allied Tube & Conduit
2. Beck Manufacturing Inc.
3. Picoma
4. Wheatland Tube Company
5. Or approved equivalent.

B. Rigid Aluminum Conduit:
1. Allied Tube & Conduit
2. Beck Manufacturing WL
3. Picoma
4. Wheatland Tube Company
5. Or approved equivalent.

C. Electrical Metallic Tubing (EMT):
1. Allied Tube & Conduit
2. Beck Manufacturing WL
3. Picoma
4. Wheatland Tube Company
5. Or approved equivalent.

D. Liquidtight Flexible Metal Conduit (LFMC):
1. AFC Cable Systems Inc.
2. Electri-Flex Company
3. International Metal Hose
4. Or approved equivalent.

E. Conduit Fittings:
1. Bushings:
   a. Insulated Type for Threaded Rigid IMC Conduit Without Factory Installed Plastic Throat Conductor Protection:
      1) Thomas & Betts 1222 Series
      2) O-Z Gedney B Series
      3) Or approved Equivalent.
2. Insulated Grounding Type for Threaded Rigid IMC Conduit:
   a. O-Z Gedney BLG Series
   b. Or approved Equivalent.
3. Expansion/Deflection Fittings:
   a. EMT, O-Z Gedney Type TX
   b. RMC, O-Z Gedney Type AX, DX and AXDX, Crouse & Hinds XD
   c. Or approved equivalent.

2.02 RIGID METAL CONDUIT (RMC)

A. UL 6, ANSI C80.1. Hot dipped galvanized steel conduit after thread cutting.
1. Fittings: NEMA FB2.10.

2.03 RIGID ALUMINUM CONDUIT

A. ANSI C80.5. Threaded at each connection.

2.04 ELECTRICAL METALLIC TUBING (EMT)

A. Description: UL 797, ANSI C80.3; steel galvanized tubing.

B. Fittings: NEMA FB 1; steel, compression type.

2.05 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

A. Description: UL 360, inner core made from spiral wound strip of heavy gauge, hot dipped galvanized low carbon steel. 3/4-inch through 1-1/4-inch trade sizes have a square lock core and contain an integral bonding strip of copper. 1-1/2-inch and larger have fully interlocked core. Jacket material is moisture, oil and sunlight resistant flexible PVC.

B. Fittings: NEMA FB 2.20.

2.06 CONDUIT FITTINGS

A. Bushings:
   1. Insulated type for threaded rigid IMC conduit without factory installed plastic throat conductor protection.
   2. Insulated grounding type for threaded rigid IMC conduit.

B. Raceway Connectors and EMT Couplings:
   1. Steel connectors, couplings, and conduit bodies, with hot-dip galvanized.
   2. Connector locknuts are steel, with threads meeting ASTM tolerances. Locknuts are hot-dip galvanized.
   3. Connector throats (EMT, flexible conduit, metal clad cable and cordset connectors) have factory installed plastic inserts permanently installed. For normal cable or conductor exiting angles from raceway, the cable jacket or conductor insulation bears only on plastic throat insert.
   4. Steel gland, Tomic or Breagle connectors and couplings are recognized for this Contract as having acceptable raceway to fitting electrical conductance.
   5. Set screw connectors and couplings, without integral compression glands, are recognized for this contract as not having acceptable raceway to fitting electrical conductance. A ground conductor sized per this Specification must be included and bonded within raceway assembly utilizing this type connector or coupling.

C. Provide expansion/deflection fittings for RMC.

PART 3 - EXECUTION

3.01 SEQUENCING AND SCHEDULING

A. Finished Surfaces: Schedule raceway installation to avoid conflict with installed wall and ceiling surfaces. If unavoidable, coordinate work and repairs with Design Builder.

3.02 CONDUIT REQUIREMENTS

A. Conduit Size:

1. Minimum Size: 1/2-inch for power and control, unless otherwise noted. 3/4-inch for communication/data, unless otherwise noted. 1/2-inch for signal systems, unless otherwise noted.

B. Outdoor Locations Above Grade: Use RMC.

C. In Slab Above Grade:
   1. Use PVC.
   2. Maximum Size Conduit in Slab: Contact Structural Engineer for maximum outside diameter of conduit.

D. Damp Locations: RMC up to 2-inches in diameter.

E. Dry Locations:
   1. Concealed: EMT.
   2. Exposed: RMC.

F. Dry, Protected: EMT.

G. In areas exposed to severe mechanical damage: RMC.

H. For security conduits installed exposed and subject to tampering: RMC.

I. In hazardous areas per CEC 501: RMC.

J. Provide two pull strings/tapes in empty conduits. Types:
   1. Utility Company Conduit: Polyester measure/pulling tape, Greenlee 4436 or approved equivalent. Coordinate exact requirements with utility company.
   2. Feeders: Polyester measure/pulling tape, Greenlee 4436 or approved.
   3. Branch circuits and low voltage: Greenlee Poly Line 431 or approved.
   4. If fish tape is used for pulling line or low voltage wiring, fiberglass type to be used. Metal fish tapes will not be allowed.
   5. Secure pull string/tape at each end.
   6. Provide caps on ends of empty conduit to be used in future.
   7. Label both ends of empty conduits with location of opposite end.

K. Elbow for Low Energy Signal Systems: Use long radius factory ells where linking sections of raceway for installation of signal cable.

L. Elbow for Medium Voltage Systems: Use long radius factory ells where linking sections of raceway per NEC Article 300.34.

M. Use PVC coated RMC 36-inch radius ells for power service conduits and 48-inch radius ells for telephone service conduits.

N. For Dry Areas: Motors, recessed luminaires and equipment connections subject to movement or vibration, use flexible metallic conduit.

O. Motors and equipment connections subject to movement or vibration and subjected to any of following conditions; exterior location, moist or humid atmosphere, water spray, oil, or grease use PVC coated liquidtight flexible metallic conduit.

3.03 EXAMINATION

A. Verify that field measurements are as shown on drawings.

B. Plan locations of conduit runs in advance of the installation and coordinate with ductwork, plumbing, ceiling and wall construction in the same areas.

C. Locate penetrations and holes in advance where they are proposed in the structural sections such as footings, beams, and walls. Penetrations are acceptable only when the following occurs:
   1. Where shown on the structural drawings.
   2. As approved by the Structural Engineer prior to construction, and after submittal of drawing showing location, size, and position of each penetration.

D. Verify routing and termination locations of conduit prior to rough-in.

E. Conduit routing is shown on drawings in approximate locations unless dimensioned. Route as required to complete wiring system.

3.04 INSTALLATION

A. Install raceways securely, in neat and workmanlike manner, as specified in NECA 1, Standard Practices for Good Workmanship in Electrical Construction.

B. Install steel conduit as specified in NECA 101, Standard for Installing Steel Conduits.

C. Install nonmetallic conduit in accordance with manufacturer's instructions.

D. Inserts, anchors and sleeves.
   1. Coordinate location of inserts and anchor bolts for electrical systems prior to concrete pour.
   2. Coordinate location of sleeves with consideration for other building systems prior to concrete pour.

E. Conduit Supports:
   1. Arrange supports to prevent misalignment during wiring installation.
   2. Support conduit using coated steel or malleable iron straps, lay-in adjustable hangers, clevis hangers, and split hangers.
   3. Group related conduits; support using conduit rack. Construct rack using steel channel. Provide space on each for 25 percent additional conduits.
   4. Do not support conduit with wire or perforated pipe straps. Remove wire used for temporary supports.
   5. Do not attach conduit to ceiling support wires.

F. Flexible steel conduit length not-to-exceed 6-feet, 3-feet in concealed walls. Provide sufficient slack to reduce the effect of vibration.

G. Install conduit seals at boundaries where ambient temperatures differ by 10 degrees F or more as shown on the drawings. Install seals on warm side of partition.

H. Seal raceways stubbing up into electrical equipment. Plug raceways with conductors with duct-seal. Cap spare raceways and plug PVC raceway products with plastic plugs as made by Underground Products, or equal, shaped to fit snugly into the stubup.

I. Seal raceways penetrating an exterior building wall to prevent moisture and vermin from entering into the electrical equipment.

J. Use suitable caps on spare and empty conduits to protect installed conduit against entrance of dirt and moisture.

K. Only conduit servicing elevator equipment can be installed through elevator shafts or equipment rooms. These conduits may only enter the room and go directly to the equipment being supplied.

L. Keep 277/480 volt wiring independent of 120/208 volt wiring, and power wiring. Keep power wiring independent of communication system wiring.

M. Keep emergency system wiring independent of other wiring systems per NEC 700.

N. Installation of conduit in structural concrete that is less than 3-inches thick is prohibited without the approval of the Structural Engineer. Maintenance pads, and curbs are exempted.

O. Conduit Joints: Assemble conduits continuous and secure to boxes, panels, luminaires and equipment with fittings to maintain continuity. Provide watertight joints where embedded in concrete, below grade or in damp locations. Seal PVC conduit joints with solvent cement and metal conduit with metal thread primer. Rigid conduit connections to be threaded, clean and tight (metal to metal). Threadless connections are not permitted for RMC and IMC. Seal conduits where penetrating below raised floor area.

P. Join nonmetallic conduit using cement as recommended by manufacturer. Wipe nonmetallic conduit dry and clean before joining. Apply full even coat of cement to entire area inserted in fitting. Allow joint to cure for 20 minutes, minimum.

Q. Arrange conduit to maintain headroom and present neat appearance.

R. Do not install conduits on surface of building exterior, along vapor barrier, across roof, on top of parapet walls, or across floors, unless otherwise noted on drawings.

S. Exposed conduits are permitted only in following areas:
   1. Mechanical rooms, electrical rooms or spaces where walls, ceilings and floors will not be covered with finished material.
   2. Existing walls that are concrete or block construction.
   3. Where specifically noted on Drawings.
   4. Route exposed conduit parallel and perpendicular to walls, tight to finished surfaces and neatly offset into boxes.

T. Do not install conduits or other electrical equipment in obvious passages, doorways, scuttles or crawl spaces which would impede or block area passage's intended usage.

U. Install continuous conduit and raceways for electrical power wiring.

V. Route conduit installed above accessible ceilings parallel and perpendicular to walls.

W. Maintain adequate clearance between conduit and piping.

X. Keep conduits a minimum of 12-inches away from steam or hot water radiant heating lines (at or above 104 degrees F) or 3-inches away from waste or water lines.

Y. Cut conduit square using saw or pipecutter; deburr cut ends.

Z. Bring conduit to shoulder of fittings; fasten securely.

AA. Use conduit hubs to fasten conduit to cast boxes in damp and wet locations.

AB. Install no more than the equivalent of three 90 degree bends between boxes. Use conduit bodies to make sharp changes in direction, as around beams. Use hydraulic one

shot bender to fabricate factory elbows for bends in metal conduit larger than 2-inch size.

AC. Avoid moisture traps; provide junction box with drain fitting at low points in conduit system.

AD. Provide suitable fittings to accommodate expansion and deflection where conduit crosses seismic, control, and expansion joints.

AE. Conduit Terminations for Signal Systems: Provide a plastic bushing on the end of conduit used for signal system wiring.

AF. Flexible Conduit: Install 12-inch minimum slack loop on flexible metallic conduit and liquidtight flexible metallic conduit.

AG. Feeders: Do not combine or change feeder runs.

3.05 CONDUIT FITTINGS

A. Use set screw type fittings only in dry locations. When set screw fittings are utilized provide insulated continuous equipment ground conductor in conduit, from overcurrent protection device to outlet.

B. Use compression fittings in dry locations, damp and rain-exposed locations. Maximum size permitted in damp locations and locations exposed to rain is 2-inches in diameter.

C. Use threaded type fittings in wet locations, and damp or rain-exposed locations where conduit size is greater than 2-inches.

D. Use PVC coated RMC 36-inch radius ells for power service conduits and 48-inch radius ells for telephone service conduits.

E. Use insulated type bushings with ground provision at switchboards, panelboards, safety disconnect switches, junction boxes that have feeders 60 amperes and greater.

F. Condulets and Conduit Bodies:
   1. Do not use condulets and conduit bodies in conduits.
   2. Do not use condulets and conduit bodies.

G. Sleeves and Chases - Floor, Ceiling and Wall Penetrations: Provide necessary rigid conduit sleeves, openings and chases where conduits or cables are required to pass through floors, ceilings or walls.

H. Expansion Joints:
   1. Provide conduits crossing expansion joints where cast in concrete with expansion-deflection fittings, equivalent to OZ/Gedney AXDX, installed per manufacturer’s recommendations.
   2. Secure conduits 3-inches and larger to building structure on opposite sides of a building expansion joint with an expansion-deflection fitting across joint installed per manufacturer's recommendations.
   3. Provide conduits less than 3-inches where not cast in concrete with junction boxes securely fastened on both sides of expansion joint, connected together with 15-inches of slack (minimum of 15-inches longer than straight line length) flexible conduit and copper green ground bonding jumper. In lieu of this flexible conduit,

an expansion-deflection fitting, as indicated for conduits 3-inch and larger may be installed.

4. Verify expansion/deflection requirements with Structural Engineer prior to installation.

I. Seismic Joints:
   1. No conduits cast in concrete allowed to cross seismic joint.
   2. Provide conduits with junction boxes securely fastened on both sides of seismic joint, connected together with 15-inches of slack (minimum of 15-inches longer than straight line length) flexible conduit and copper green ground bonding jumper. Prior to installation, verify with Design Builder that 15-inches is adequate for designed movement, and if not, increase this length as required.
   3. Provide conduits less than 3-inches where not cast in concrete with junction boxes securely fastened on both sides of expansion joint, connected together with 15-inches of slack (minimum of 15-inches longer than straight line length) flexible conduit and copper green ground bonding jumper. In lieu of this flexible conduit, an expansion-deflection fitting, as indicated for conduits 3-inch and larger may be installed.

J. Provide rigid conduit coupling flush with surface of slab or wall for conduit stubbed in concrete slab or wall to serve electrical equipment or an outlet under table or to supply shop tool, etc. Provide plug where conduit is to be used in future.

3.06 INTERFACE WITH OTHER PRODUCTS

A. Install conduit to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 07, Thermal and Moisture Protection.

B. Route conduit through roof openings for piping and ductwork wherever possible. Where separate roofing penetration is required, coordinate location and installation method with roofing installation and installer.

END OF SECTION

SECTION 26 05 34

BOXES

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Outlet Boxes
   2. Pull and Junction Boxes
   3. Conduit Fittings
   4. Weatherproof Outlet Boxes

B. Provide electrical boxes and fittings for a complete installation. Include but not limited to outlet boxes, junction boxes, pull boxes, bushings, locknuts and other necessary components.

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Outlet Boxes:
   1. Bowers
   2. Hubbell
   3. Raco
   4. Steel City
   5. Thomas & Betts
   6. Or approved equivalent.

B. Pull and Junction Boxes:
   1. B-Line
   2. Hoffman
   3. Or approved equivalent.

C. Conduit Fittings:
   1. Killark
   2. O-Z Gedney
   3. Raco
   4. Steel City
   5. Thomas & Betts
   6. Or approved equivalent.

D. Weatherproof Outlet Boxes:
   1. Pass and Seymour
   2. Bell
   3. Red Dot
   4. Carlon
   5. Or approved equivalent.

2.02 OUTLET BOXES

A. Luminaire Outlet: 4-inch octagonal box, 1-1/2-inches deep with 3/8-inch luminaire stud if required. Provide raised covers on bracket outlets and on ceiling outlets.

B. Device Outlet: Installation of one or two devices at common location, minimum 4-inches square, minimum 1-1/2-inches deep. Single- or two-gang flush device raised covers.

C. Telecom Outlet: Provide 4-inches square, minimum 2-1/8-inch deep box with two-gang plaster ring.

D. Multiple Devices: Three or more devices at common location. Install one-piece gang boxes with one-piece device cover. Install one device per gang.

E. Masonry Boxes: Outlets in concrete.

F. Construction: For interior locations, provide galvanized steel outlet wiring boxes, of the type, shape and size, including depth of box, to suit each respective location and installation; constructed with stamped knockouts in back and sides, and with threaded holes with screws for securing box covers or wiring devices.

G. Accessories: Provide outlet box accessories for each installation, including mounting brackets, wallboard hangers, extension rings, luminaire studs, cable clamps and metal straps for supporting outlet boxes, compatible with outlet boxes being used and meeting requirements of individual wiring situations.

H. Noise Control: Provide acoustic putty pad to back side of each outlet box installed in acoustic rated walls.

2.03 PULL AND JUNCTION BOXES

A. Construction: Provide ANSI 49 gray enamel painted sheet steel junction and pull boxes, with screw-on covers; of type shape and size, to suit each respective location and installation; with welded seams and equipped with stainless steel nuts, bolts, screws and washers.

B. Location:
   1. Provide junction boxes above accessible ceilings for drops into walls for receptacle outlets from overhead.
   2. Provide junction boxes and pull boxes to facilitate installation of conductors and limiting accumulated angular sum of bends between boxes, cabinets and appliances to 270 degrees.

2.04 CONDUIT FITTINGS

A. Requirements: Provide corrosion-resistant punched-steel box knockout closures, conduit locknuts and plastic conduit bushings of the type and size to suit each respective use and installation.

2.05 WEATHERPROOF OUTLET BOXES

A. Construction: Provide corrosion-resistant cast metal weatherproof outlet wiring boxes, of the type, shape and size, including depth of box, with threaded conduit ends, cast metal faceplate with spring-hinged waterproof cap suitably configured for each application, including faceplate, gasket, blank plugs and corrosion proof fasteners. Weatherproof boxes to be constructed to have smooth sides, gray finish.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Coordinate locations of floor boxes and wall mounted wiring device boxes with architectural and structural floor plans prior to rough-in.

3.02 INSTALLATION

A. Install boxes securely, in a neat and workmanlike manner, as specified in NECA 1, Standard Practice of Good Workmanship in Electrical Construction.

B. Secure boxes rigidly to substrate upon which they are being mounted, or solidly embed boxes in concrete or masonry.

C. Install in locations as shown on Drawings, and as required for splices, taps, wire pulling, equipment connections, and as required by NFPA 70. Locate boxes and conduit bodies so as to ensure accessibility of electrical wiring.

D. Set wall mounted boxes at elevations to accommodate mounting heights shown on Architectural Elevations.

E. Electrical boxes are shown on Drawings in approximate locations unless dimensioned.
   1. Adjust box locations up to 10-feet if required to accommodate intended purpose.

F. Mount outlet boxes, unless otherwise required by ADA, or noted on drawings, following distances above finished floor:
   1. Control Switches:
      a. 48-inches to the top of outlet box.
      b. 4-inches above top of backsplash at countertops/workstations, not-to-exceed 44-inches above finished floor to the top of outlet box per ADA requirements.
   2. Receptacles: 15-inches to the bottom of outlet box.
   3. Other Outlets: As indicated in other Sections of specifications or as detailed on drawings.

G. Install pull boxes and junction boxes above accessible ceilings and in unfinished areas only.

H. Inaccessible Ceiling Areas: Install outlet and junction boxes no more than 6-inches from ceiling access panel or from removable recessed luminaire.

I. Flush Outlets in Insulated Spaces: Maintain integrity of insulation and vapor barrier.

J. Install boxes to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Division 07, Thermal and Moisture Protection.

K. Coordinate electrical device locations and elevations (switches and receptacles) with architectural drawings to prevent mounting devices in mirrors, back splashes, and behind cabinets.

L. Locate outlet boxes to allow luminaires positioned as shown on reflected ceiling plan.

M. Align adjacent wall mounted outlet boxes for switches, thermostats, and similar devices. Adjacent boxes not aligned vertically to be adjusted at no additional cost to Owner.

N. Use flush mounting outlet box in finished areas.

O. Locate flush mounting box in masonry wall to require cutting of masonry unit corner only. Coordinate masonry cutting to achieve neat opening.

P. Do not install flush mounting box back-to-back in walls; provide minimum 6-inches separation. Provide minimum 24-inches in acoustic rated walls.

Q. Apply acoustic putty pad on outlet box prior to installation of acoustical blanket.

R. Secure flush mounting box to interior wall and partition studs. Accurately position to allow for surface finish thickness.

S. Use stamped steel bridges to fasten flush mounting outlet box between studs.

T. Install flush mounting box without damaging wall insulation or reducing its effectiveness.

U. Use adjustable steel channel fasteners for hung ceiling outlet box.

V. Do not fasten boxes to ceiling support wires.

W. Support boxes independently of conduit, except cast box that is connected to two rigid metal conduits both supported within 12-inches of box.

X. Use gang box where more than one device is mounted together. Do not use Sectional box.

Y. Use gang box with plaster ring for single device outlets.

Z. Use cast outlet box in exterior locations exposed to the weather and wet locations.

AA. Large Pull Boxes: Use hinged enclosure in interior dry locations, surface-mounted cast metal box in other locations.

AB. Box Color Coding and Marking: Reference Section 26 05 53, Identification for Electrical Systems.

3.03 ADJUSTING

A. Adjust floor boxes flush with finish flooring material.

B. Adjust flush-mounting outlets to make front flush with finished wall material.

C. Adjust boxes to be parallel with building lines. Boxes not plumb to building lines are not acceptable.

D. Install knockout closures in unused box openings.

3.04 CLEANING

A. Clean interior of boxes to remove dust, debris, and other material.

B. Clean exposed surfaces and restore finish.

END OF SECTION

SECTION 26 05 53

IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Nameplates and Labels
   2. Equipment Nameplates
   3. Device Labels

1.02 RELATED SECTIONS

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents.

B. In addition, meet the following:
   1. Manufacturer's Qualifications: Firms regularly engaged in manufacture of identification devices of types and sizes required.
   2. Codes and Standards: Comply with ANSI A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices unless otherwise indicated.

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. General: Manufacturer's standard products of categories and types required for each application as referenced in other Division 26, Electrical Sections. Where more than a single type is specified for application, provide single selection for each product category.

B. Equipment Nameplates:

1. B & I Nameplates
2. Intellicum
3. JBR Associates
4. Or approved equivalent.

C. Device Labels:
1. Kroy
2. Brady
3. Or approved equivalent.

2.02 NAMEPLATES AND LABELS

A. Nameplates: Engraving stock melamine or lamicoid plastic laminate in the size and thicknesses indicated, engraved with engraver's standard letter style of the sizes and wording indicated, black with white core (letter color), punched for mechanical fastening except where adhesive mounting is necessary because of substrate. Provide 1/8-inch thick material.
1. Letter Color: White.
2. Letter Height: 1/2 inch.
3. Background Color: Black.
4. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate the substrate.
5. Access Panel Markers: Manufacturer's standard 1/16-inch thick engraved plastic laminate access panel markers, with abbreviations and numbers corresponding to concealed valve or devices/equipment. Include center hole to allow attachment.
6. Locations:
   a. Each electrical distribution and control equipment enclosure.
   b. Communication cabinets.
   c. Transformers.
   d. Disconnect switches and starters.

B. Labels: Adhesive tape, with 3/16-inch black letters on clear background. Use only for identification of individual wall switches and receptacles and control stations. Indicate device name, source panel, and source circuits. Panel and circuit designation written in permanent marker on the back of the plate and inside the back-box. Do not provide Dymo tape style labels.

C. Device plates to have panel and circuit designation engraved in face, and highlighted in a contrasting color, and the circuit written in permanent marker on the back of the plate and inside the back-box.

2.03 EQUIPMENT NAMEPLATES

A. Engraved phenolic plastic, 1/16-inch thick with beveled edge border matching letter color. All upper case letters in engraver standard letter style. Embossed tape or dymo style labels, or similar, are not acceptable.

B. Color:
1. Normal (Utility): White letters on black background.

2. Life Safety/Critical (Emergency Systems): Black letters on orange background per WAC 296-46B-700.9.
3. Equipment Branch (Legally Required Standby Systems): Black letters on yellow background.
4. X-Ray Branch (Optional Standby Systems): Black letters on white background.

C. Letter Size:
1. Use 1/2-inch letters minimum for identifying major equipment and loads, including switchgear, switchboards, etc.
2. Use 1/4-inch letters minimum for identifying panels, breakers, etc.
3. Use 3/16-inch minimum for identifying source, voltage, current, phase, and wire configurations.

D. The Architect, Engineer, Commissioning Agent, and Owner reserve the right to make modifications to the nameplates as necessary.

E. Nameplates: Engraving stock melamine or lamicoid plastic laminate, Federal Specification L-P-387, in the size and thicknesses indicated, engraved with engraver's standard letter style of the sizes and wording indicated, black with white core (letter color), punched for mechanical fastening except where adhesive mounting is necessary because of substrate. Provide 1/8-inch thick material.
1. Letter Color: White.
2. Letter Height: 1/2-inch.
3. Background Color: Black.
4. Fasteners: Self-tapping stainless steel screws, except contact-type permanent adhesive where screws cannot or should not penetrate the substrate.

2.04 DEVICE LABELS

A. Extra strength, laminated, adhesive tape, with 3/16-inch black letters on clear background. Use only for identification of individual wall switches, receptacles, control device stations, etc. Indicate source panel and circuits. Wall switches with engraved buttons do not require labeling. Embossed tape style labels, or similar, are not acceptable.

B. Label all junction boxes to show system identification, source circuit, or raceway origin. In finished areas, utilize device label. In unfinished areas or above ceilings, use of permanent ink marker is acceptable.

C. Where labels are provided, write identical information in permanent ink marker on the backside of the cover.

PART 3 - EXECUTION

3.01 PREPARATION

A. Degrease and clean surfaces to receive nameplates and labels.

B. Coordinate designations used on Drawings with equipment labels.

3.02 INSTALLATION

A. Install nameplates and labels parallel to equipment lines.

B. Secure nameplates to equipment front using rivets or adhesives.

C. Secure nameplates to inside surface of door on panelboard that is recessed in finished locations.

D. Identify underground raceways using underground warning tape. Install one continuous tape per underground raceway at 6- to 8-inches below finish grade. Where multiple underground raceways are buried in a common trench and exceeds 16-inch width, install multiple warning tapes not over 10-inches apart (edge to edge) over the entire group of underground raceways.

E. Identify empty conduit and boxes with intended use.

F. Provide wire markers on each conductor for power, control, signalling and communications circuits.

G. On the back of receptacle and switch finish plates and inside the back-box, legibly write with permanent ink marker, the circuit that each device is connected to.

H. On the front of receptacle and switch finish plates, provide label with the circuit that each device is connected to.

I. Verify emergency system distribution equipment nameplate colors with Architect/Owner.

J. Locations:
   1. Switchgear, switchboards, sub-distribution switchboards, distribution panels, and branch panels.
   2. Main breakers and distribution breakers in switchgear, switchboards, and distribution panels.
   3. Equipment including, but not limited to, motor controllers, disconnects, and VFD's.
   4. Low-voltage equipment enclosures including, but not limited to, control panels.

K. Provide master nameplate at each incoming utility service to identify the following (each on a separate line):
   1. Serving Utility Transformer (ex. Utility Service #1.)
   2. Project
   3. Serving Utility Company
   4. Consulting Engineering Firm of Record
   5. Month and Year of Completion
   6. Voltage, Phase, and Wire Configuration.

L. Switchgear, switchboards, and panels to include name source, voltage, current phase, wire configuration and fault current rating. Transformers to include source KVA, and secondary voltage, phase, and wire configuration.

M. Provide nameplates for flush mounted branch panelboards identifying name on front door. On inside of door provide nameplate as noted above.

N. Provide a second label at branch panelboards listing the means of identification of branch circuit conductors. This identification legend to consist of the color code used

for each voltage system (208Y/120V and 480Y/277V). See specification Section 26 05 19, Low-Voltage Electrical Power Conductors and Cables, for required conductor color code for this project. Include identification of both voltage systems on each label, regardless of the voltage of the panelboard to which the label is affixed. Comply with requirements of NEC 210.5.

O. Provide engraved nameplate similar to distribution panelboards for transformers, lighting control panels, contactors, relays, time switches, etc. identifying name, service point and circuit number.

P. For flush mounted panelboards verify label location (inside or outside panelboard door) with Architect/Owner.

Q. Provide typewritten branch panel schedules with protective clear transparent covers accounting for every breaker installed. Use actual room designations assigned by name or number near completion of the work, and not the designations shown on drawings.

R. Where changes are made in existing panels, distribution boards, etc., provide new labeling and typewritten schedules to accurately reflect the changes.

S. Provide labeling where switches control remote lighting or power outlets or where multiple switches are located in the same location.

T. Where switches control remote lighting or power outlets, or where switches or outlets in same location serve different purposes, such as light, power, intercom, etc. or different areas, such as corridor and outside, plates with 1/8-inch black letters indicating function of each switch or outlet. Also label function light switches where two or more are mounted in same locations.

U. Provide receptacle device plates with panel and circuit designation labeled on the face, with Dymo-type label, and with circuit written in permanent marker on back of plate and back-box. Provide switch device plates with panel and circuit designation written in permanent marker on back of plate and back-box.

END OF SECTION

SECTION 26 27 26

WIRING DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included: Provision of materials, installation and testing of:
   1. Wall Switches
   2. Receptacles
   3. Finish Plates
   4. Surface Covers

1.02 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

B. In addition, provide:
   1. Wall switches and Dimmers
   2. Receptacles
   3. Wall Plates
   4. In-Use Cover

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Wall Switches:
   1. Toggle Type Characteristics:
      a. Leviton 1221

b. Pass & Seymour PS20AC1
c. Hubbell HBL 1221
d. Or approved equivalent.

2. Decorative AC Rocker Switch Characteristics:
   a. Hubbell
   b. Leviton
   c. Pass and Seymour
3. Timer Switches:
   a. WattStopper TS-400
   b. Or approved equivalent.
4. Momentary Center Off:
   a. Leviton 1257
   b. Or approved equivalent.
5. Pilot Light Switches:
   a. Leviton 1221-PL
   b. Pass & Seymour PS20AC1CPL
   c. Hubbell HBL 1221-PL
   d. Or approved equivalent.
6. Lighted Handle Switches:
   a. Hubbell
   b. Leviton
   c. Cooper
   d. Pass & Seymour
   e. Or approved equivalent.
7. Key Switches:
   a. Pass & Seymour PS20AC1-L
   b. Hubbell HBL 1221-L
   c. Leviton 1221-2L
   d. Or approved equivalent.

B. Receptacles:
1. Industrial Grade:
   a. Cooper 5362
   b. Hubbell HBL5362
   c. Bryant FRY5362
   d. Leviton 5362
   e. Pass & Seymour 5362A
   f. Or approved equivalent.
2. Commercial Grade - 20 Amp:
   a. Cooper 5362
   b. Hubbell 5362
   c. Bryant 5352
   d. Leviton 5362S
   e. Pass & Seymour 5362
   f. Or approved equivalent.

3. Commercial Grade - 15 Amp:
    a. Cooper 5262
    b. Hubbell 5262
    c. Bryant 5252
    d. Leviton 525
    e. Pass & Seymour 5362
    f. Or approved equivalent.
4. Light Duty Commercial Grade:
    a. 20 Amp:
        1) Hubbell BR20
        2) Bryant BRS20
        3) Or approved Equivalent.
    b. 15 Amp:
        1) Hubbell BR15
        2) Bryant BRS15
        3) Or approved equivalent.
    c. Decorative Type - 20 Amp:
        1) Cooper 6362
        2) Hubbell DR20
        3) Leviton 16342
        4) Pass & Seymour 26852
        5) Or approved equivalent.
5. Specification Grade USB Charger Tamper-Resistant Duplex - 20 Amp:
    a. Cooper TR 7746
    b. Hubbell USB2OX2
    c. Leviton T5832-T
    d. Or approved equivalent.
6. Hospital Grade:
    a. Cooper 8300
    b. Hubbell HBL 8300
    c. Bryant BRY8300
    d. Leviton 8300
    e. Pass & Seymour 8300
    f. Or approved equivalent.
7. Hospital Grade USB Charger Tamper-Resistant Duplex - 20 Amp:
    a. Cooper TR8345
    b. Hubbell USB 8300
    c. Leviton T5632-HG
    d. Or approved equivalent.
8. Isolated Ground Receptacle:
    a. Hubbell CR53621G
    b. Cooper IG5362
    c. Leviton 5362-IG
    d. Pass & Seymour IG5362
    e. Or approved equivalent.

9. Ground Fault Circuit Interrupter (GFCI) Receptacle:
    a. Hubbell GFR5362SB
    b. Cooper WRVGF20
    c. Pass & Seymour 2095TRWR
    d. Or approved equivalent.
10. Hospital Grade Ground Fault Circuit Interrupter (GFCI) Receptacle:
    a. Hubbell GFR8300SB
    b. Leviton T7899-HG
    c. Pass & Seymour 2095-HG
    d. Or approved equivalent.
11. Hospital Grade Tamper-Resistant Receptacle:
    a. Cooper TR8300
    b. Hubbell HBL8300SGA
    c. Leviton 8300-SG
    d. Pass & Seymour 2095HGTR
    e. Or approved equivalent.
12. Residential Grade Receptacles:
    a. Tamper Resistant, 15 amp:
        1) Cooper TR270
        2) Hubbell RR15STR
        3) Bryant RR15STR
        4) Leviton T5320
        5) Pass & Seymour 3232-TR
        6) Or approved equivalent.
    b. Tamper Resistant Decora Style:
        1) Cooper TR1107
        2) Hubbell RRD15STR
        3) Bryant RRD15STR
        4) Leviton T5325
        5) Pass & Seymour 885-TR
        6) Or approved equivalent.
    c. Tamper Resistant with USB Port(s), 15 amp:
        1) Pass & Seymour TM8USB
        2) Leviton T5630
        3) Hubbell USB15X
        4) Cooper TR7746
        5) Or approved equivalent.
    d. GFCI, 20 amp:
        1) Cooper TWRVGF20
        2) Hubbell GFTR20
        3) Pass & Seymour 2095TRWR
        4) Or approved equivalent.
    e. AFCI, Tamper Resistant, 15 amp:
        1) Hubbell AFR15R
        2) Leviton AFTR-K

3) or approved equivalent.

13. While-in-Use Weatherproof Cover:
    a. UV Stabilized Polycarbonate Cover:
        1) Pass & Seymour
        2) Intermatic
        3) Hubbell
        4) Cooper
        5) Or approved equivalent.
    b. Thermoplastic Cover:
        1) Leviton
        2) Hubbell
        3) Or approved equivalent.
    c. Die Cast Cover:
        1) Intermatic
        2) Hubbell
        3) Cooper
        4) Or approved equivalent.
14. Hospital Grade Surge Protector Type Receptacles:
    a. Cooper 8200S Series
    b. Hubbell HBL8262
    c. Pass & Seymour 8300 Series
    d. Or approved equivalent.

C. Surface Covers:
1. Aluminum with Gasket, Blanks, Single Gang:
    a. Bell 240-ALF
    b. Carlon
    c. Or approved equivalent.
2. 2-Gang:
    a. Bell 236-ALF
    b. Carlon
    c. Or approved equivalent.

D. Provide lighting switches and receptacles of common manufacturer and appearance.

2.02 WALL SWITCHES

A. Characteristics: Toggle type, quiet acting, 20 amp, 120/277 volt, UL listed for motor loads up to 80 percent of rated amperage, extra heavy duty.

B. Finish: White.

2.03 RECEPTACLES

A. Duplex Receptacles Characteristics: Straight parallel blade, 125 volt, 2 pole, 3 wire grounding.
1. Commercial Grade: Riveted. Back and side wired. Brass ground contact on steel strap. Nylon face and nylon base. 20 amp.

B. Ground Fault Circuit Interrupter (GFCI) Receptacle: Feed through type, back-and-side wired, tamper-resistant, weather resistant self-testing, 20 amp, 125VAC.

C. While-in-Use Weatherproof Cover: NEMA 3R when closed over energized plug. Vertical mount for duplex receptacle. Provide continuous use cover with cover capable of closing over energized cord cap with bottom aperture for cord exit.
   1. Die cast cover with closed cell neoprene foam gasket: Capable of being locked closed to prevent tampering or unauthorized use.

D. Special Purpose Receptacles: Reference Drawings for NEMA Standard Specification.

E. Finish:
   1. Same exposed finish as switches.

2.04 FINISH PLATES

A. Finish Plates: Type 302 stainless steel. Smooth satin finish.

2.05 SURFACE COVERS

A. Material: Galvanized steel, 1/2-inch raised industrial type with openings appropriate for devices installed on surface outlets.

B. Cast Box and Extension Adaptors: Aluminum with gasket, blanks single gang.

PART 3 - EXECUTION

3.01 PREPARATION

A. Protection:
   1. Devices: Upon installation of finish plates and receptacles, adhere to proper and cautious use of convenience outlets. At time of substantial completion, replace those items which have been damaged, including those burned and scored by faulty receptacles or cord caps.
   2. Finish Plates and Devices: Do not install items until finish painting is complete. Scratched or splattered finish plates and devices not acceptable.

3.02 INSTALLATION

A. See Architectural elevations for location and mounting height of wiring devices. Review Architectural elevations prior to rough-in and contact Design Builder immediately if conflicts are found between Architectural and Electrical Drawings. Do not rough-in devices until conflicts are resolved.

B. Install wiring devices and finish plates plumb with building lines, equipment cabinets and adjacent devices. Devices not plumb will be fixed at no additional cost to Owner.

C. Orientation:
   1. Wall-Mounted Receptacles: Install with long dimension oriented vertically at centerline height shown on drawings or as specified.

2. Vertical Alignment: When more than one outlet is shown on drawings in close proximity to each other, but at different elevations, align outlets on a common vertical center line for best appearance. Verify with Design Builder.
3. Horizontal Alignment: When more than one outlet is shown on Drawings to be stacked in wall vertically, align outlets on a common horizontal center line for best appearance. Verify with Design Builder.

D. GFCI Outlets: One GFCI receptacle may not be used to provide GFCI protection to downstream duplex receptacles on the same branch circuit.

3.03 LABELING

A. Provide receptacle device plates with panel and circuit designation labeled on the face, with Dymo-type label, and with circuit written in permanent marker on back of plate and back-box. Provide switch device plates with panel and circuit designation written in permanent marker on back of plate and back-box.

3.04 TESTING

A. Submit report of compliance and results of receptacle and equipment tests:

B. Test wiring devices to ensure electrical continuity of grounding connections, and after energizing circuitry, to demonstrate compliance with requirements. Test receptacles for line to neutral, line to ground and neutral to ground faults. Correct any defective wiring.

END OF SECTION

SECTION 26 28 00

OVERCURRENT PROTECTIVE DEVICES

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Molded Case Circuit Breakers

1.02 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

B. In addition, provide:
   1. Product data and instantaneous let-through current curves and average melting time current curves for fuses supplied to project.
   2. Product data and time/current trip curves for circuit breakers supplied to project.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Circuit Breakers:
   1. Eaton Electrical
   2. General Electric
   3. Square D
   4. Or approved equivalent.

2.02 MOLDED CASE CIRCUIT BREAKERS

A. 1-, 2- or 3-pole bolt-on, single handle common trip, 600VAC or 250VAC as indicated on Drawings.

B. Overcenter toggle-type mechanism, quick-make, quick-break action. Trip indication is by handle position.

C. Calibrate for operation in 40 degrees C ambient temperature.

D. 15 to 150 Amp Breakers: Permanent trip unit containing individual thermal and magnetic trip elements in each pole.

E. 151 to 400 Amp Breakers: Adjustable magnetic trip elements. Provide push-to-trip button on cover of breaker for mechanical tripping.

F. Greater than 401 Amp: Electronic trip type with adjustments for long-time, instantaneous, and short-time functions.

G. Provide ground fault function for breakers greater than 800 amps where applied at 480 volts line-to-line; and where indicated on drawings.

H. Combination AFCI Breaker: UL 1699 compliant. Integral 30mA GFCI trip. Manual test button for AFCI mechanism.

PART 3 - EXECUTION

3.01 COORDINATION

A. Obtain and review the submitted product data for equipment furnished by the Owner, and furnished under other Divisions of this contract, particularly under Divisions 22 and 23.

B. Confirm the equipment nameplate maximum overcurrent protection (MOCP) and make accommodations and adjustments to overcurrent protective devices as necessary to coordinate with the nameplate rating.

3.02 INSTALLATION

A. Provide testing of ground fault interrupting breakers.

B. Circuit Breakers:
   1. Provide circuit breakers, as specified and on Drawings, for installation in panelboards, individual enclosures or combination motor starters.
   2. Provide ground fault interrupter circuit breakers for equipment in damp or wet locations.
   3. Provide device on handle to lock breaker in "ON" position for breakers feeding time switches, night lights and similar circuits required to be continuously energized.
   4. Shunt Trip Circuit Breakers: Provide wiring to remote trip switch/contacts as indicated on Drawings.

5. Provide multi-pole branch circuit breakers for multi-wire branch circuits for simultaneous disconnection of circuits.

END OF SECTION

DOCUMENT 26 28 16

ENCLOSED SWITCHES AND CIRCUIT BREAKERS

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Toggle Type Disconnect Switches
   2. Manual Motor Starters
   3. Safety Switches

1.02 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Toggle Type Disconnect Switches:
   1. Cooper
   2. Hubbell
   3. Leviton
   4. Pass & Seymour
   5. Slater
   6. Or approved equivalent.

B. Manual Motor Starters:

1. Eaton Electrical
2. General Electric
3. Square D
4. Or approved equivalent.

C. Safety Switches:
1. Eaton Electrical
2. GE Industrial
3. Square D
4. Or approved equivalent.

2.02 TOGGLE TYPE DISCONNECT SWITCHES

A. Rating: 120 volt, 1 or 2 pole, 20 amp, 1 hp maximum.
B. Enclosure:
1. NEMA 1: Dry locations/Indoors.
2. NEMA 3R: Damp or wet locations/Outdoors.
C. Handle lockable in 'off' position.

2.03 MANUAL MOTOR STARTERS

A. Quick-Make, Quick-Break. Thermal overload protection. Device labeled with maximum voltage, current, and horsepower.
B. Enclosure:
1. NEMA 1: Dry locations/Indoors.
2. NEMA 3R: Damp or wet locations/Outdoors.

2.04 SAFETY SWITCHES

A. Heavy duty fusible type and non-fusible type (as indicated on drawings), dual rated, quick-make, quick-break with fuse rejection feature for use with Class R fuses only, unless other fuse type is specifically noted.
B. Clearly marked for maximum voltage, current, and horsepower.
C. Operable handle interlocked to prevent opening front cover with switch in 'on' position.
D. Switches rated for maximum available fault current.
E. Handle lockable in 'off' position.
F. Enclosure:
1. NEMA 1: Dry locations/Indoors.
2. NEMA 3R: Damp or wet locations/Outdoors.

PART 3 - EXECUTION

3.01 COORDINATION

A. Obtain and review the submitted product data for equipment furnished by the Owner, and furnished under other Divisions of this contract, particularly under Divisions 22 and 23.
B. Confirm the equipment nameplate maximum overcurrent protection (MOCP) and make accommodations and adjustments to switches, fuses and circuit breakers as necessary to coordinate with the nameplate rating

3.02 INSTALLATION

A. Provide disconnecting means within sight of each motor controller and of each motor. Motor controller disconnecting means equipped with lock-out/tag-out padlock provisions do not require a disconnect switch at the controlled motor location. Locate disconnect means in view of and not inside of equipment, such that tools are not needed to remove covers to access the disconnecting means.
B. Install in accordance with manufacturer's instructions.
C. Install fuses in fusible disconnect switches. Coordinate fuse ampere rating with installed equipment. Do not provide fuses of lower ampere rating than motor starter thermal units.
D. Apply neatly typed adhesive tag on inside door of each fusible switch indicating NEMA fuse class and size installed.

END OF SECTION

DOCUMENT 26 29 13

ENCLOSED CONTROLLERS

PART 1 - GENERAL

1.01 SUMMARY

A. Work Included:
   1. Manual Motor Controllers

1.02 RELATED DOCUMENTS AND PROVISIONS:

All Contract Documents must be reviewed for applicable provisions related to the provisions in this document.

1.03 REFERENCES AND STANDARDS

A. References and Standards as required by contract documents.

1.04 SUBMITTALS

A. Submittals as required by contract documents.

1.05 QUALITY ASSURANCE

A. Quality assurance as required by contract documents

1.06 WARRANTY

A. Warranty of materials and workmanship as required by contract documents

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Eaton Electrical
B. General Electric
C. Square D
D. Or approved equivalent.

2.02 MANUAL MOTOR CONTROLLERS

A. Quick-make, Quick-break.
B. Thermal overload protection.
C. Clearly label device for maximum voltage, current, and horsepower.

D. Handle lockable in 'off' position.
E. Enclosure: NEMA 1 in dry locations. NEMA 3R in damp or wet locations.
F. BACnet communication interface.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install enclosed controllers where indicated, in accordance with manufacturer's instructions.
B. Install securely, in a neat and workmanlike manner.
C. Height: 5-feet to operating handle.
D. Provide fuses for fusible switches; Reference Section 26 28 00 for product requirements.
E. Select and install overload heater elements in motor controllers to match installed motor characteristics.
F. Provide engraved plastic nameplates.
G. Neatly type label inside each motor controller door identifying motor served, nameplate horsepower, full load amperes, code letter, service factor, and voltage/phase rating. Place label in clear plastic holder.

3.02 FIELD QUALITY CONTROL

A. Perform inspections and tests in accordance with manufacturer's recommendations.

END OF SECTION

FAN SCHEDULE

TAG	SERVICE	LOCATION	MFR & MODEL NO.	TYPE	CFM O/S AIR	SP-IN W.G.	O.V. FPM	FAN RPM	MOTOR HP	MOTOR V	MOTOR PH	MOTOR CY	UNIT WT-LBS	REMARKS
S-1	AC SUPPLY WEST HALF	PENTHOUSE	JOY 60-26-1170	AXIAL VANE	94475	4.8"	4800	1770	150	400	3	60	2300	CONTROLLABLE PITCH BLADES
S-2	AC SUPPLY EAST HALF	PENTHOUSE	JOY 60-26-1170	AXIAL VANE	89600	4.8"	4550	1770	150	400	3	60	2300	CONTROLLABLE PITCH BLADES
RE-1	RETURN AIR FOR S-1	PENTHOUSE	JOY 60-220-1170	AXIAL VANE	76500	1⅛"	3950	1170	40	400	3	60	1900	CONTROLLABLE PITCH BLADES
RE-2	RETURN AIR FOR S-2	PENTHOUSE	JOY 60-220-1170	AXIAL VANE	76500	1⅛"	3950	1170	40	400	3	60	1900	CONTROLLABLE PITCH BLADES
E-1	TOILET EXHAUST	PENTHOUSE	TRANE 30 B1	UTILITY	10610	1"	2660	784	5	400	3	60	1100	
E-2	TOILET EXHAUST	PENTHOUSE	TRANE 30 B1	UTILITY	11095	1"	2154	808	7½	400	3	60	1100	WEATHERPROOF
E-3	TOILET EXHAUST	PENTHOUSE	TRANE 27 B1	UTILITY	7190	1"	1704	781	3	400	3	60	900	
E-4	CHILLER ROOM	BASEMENT MECH. RM	TRANE 19 Q	AXIAL FLOW	3580	1"	1551	1749	1½	400	3	60	200	
S-3	TRANSFORMER VAULT	B5MT-TRANS VAULT	TRANE #10 CAB'T FAN	CAB'T FAN	6000	½"	1786	532	2	400	3	60	600	

AIR OUTLET SCHEDULE

TAG	SERVICE	MANUFACTURER & MODEL NO.	DESCRIPTION	REMARKS
A	SUPPLY	T&B TYPE TO LUMINAIRE	DUAL SIDE LIGHT TROFFER DIFFUSER FOR 2'x4' FIXTURE	TOP OR SIDE INLET AS INDICATED ON PLANS. W/ IJ INSULATION
B	SUPPLY	T&B TYPE TO LUMINAIRE	SINGLE SIDE LIGHT TROFFER DIFFUSER FOR 4' LG FIXTURE	WITH IJ INSULATION
C	SUPPLY	TEMPMASTER TYPE 100	LINEAR INDUCTION CEILING DIFFUSER	PROVIDE WITH CENTER INLET CONNECTION ONLY INCLUDE SOUNDLINED PLENUM PROVIDE MODEL TBF 'T' BAR FRAME AS REQUIRED
D	RETURN AIR	T&B MODEL CTRE	PERFORATED FACE DIFFUSER WITH OVERLAP MARGIN	CT-7 MANUAL DAMPER
E	SUPPLY	T&B TYPE TO LUMINAIRE	SINGLE LIGHT TROFFER DIFFUSER FOR 2' LG FIXTURE	WITH IJ INSULATION
F	SUPPLY	TEMPMASTER TYPE TF 0	LINEAR CEILING SUPPLY DIFFUSER	ARRANGEMENT, NO OF SLOTS & LENGTH AS INDICATED ON DWGS. INCLUDE SOUNDLINED PLENUM
G	SUPPLY	T&B CTED	PERFORATED FACE, PERIMETER CEILING DIFFUSER	M-7 DAMPER & M-G GRID
H	RETURN OR EXHAUST	T&B TYPE T77D	FIXED HORIZONTAL FACE BLADE, W/ 45° DEFLECTION	OPPOSED BLADE DAMPER
J	SUPPLY	T&B TYPE ME W/ STAMPED STEEL FACE	SPECIAL CLG DIFFUSER W/ STAMPED LATTICE GRILLE WELDED TO FACE	TAMPER & VANDAL PROOF, M7 DAMPER, M-G GRID
K	RETURN OR EXHAUST	T&B TYPE #7908	STAMPED LATTICE GRILLE, ⅛" THK	TAMPER & VANDAL PROOF W/ OPPOSED BLADE DAMPER
L	SUPPLY	T&B TYPE T77D	DOUBLE DEFLECTION REGISTER W/ HORIZONTAL FACE BLADES	OPPOSED BLADE DAMPER
M	SUPPLY	T&B TYPE TD LUMINAIRE	DUAL SIDE LIGHT TROFFER DIFFUSER FOR 2'x2' FIXTURE	TOP OR SIDE INLET AS INDICATED ON PLANS WITH IJ INSULATION
N	SUPPLY OR RETURN	T&B TYPE T117G	HEAVY DUTY TYPE REGISTER WITH FIXED BARS	TAMPER & VANDAL PROOF W/ OPPOSED BLADE DAMPER
O	SUPPLY	TEMPMASTER TYPE TFD, SPECIAL	LINEAR CEILING SUPPLY DIFFUSER	ARRANGEMENT, NO OF SLOTS & LENGTH AS INDICATED ON DWGS. INCLUDE SOUNDLINED PLENUM W/ SPECIAL PARTITIONS & SEPARATE HTG & COOLING AIR SUPPLY CONNECTIONS. PROVIDE MODEL TDF 'T' BAR FRAME AS REQUIRED.

NOTE: FOR ADDITIONAL DATA ON TAG 'C', 'F' & 'O' DIFFUSERS, SEE (3/15)

LEGEND & ABBREVIATIONS

SYMBOL	ABBR.	DESCRIPTION
—CDR—	LPR	CONDENSER WATER RETURN
— CDR —	LPR	CONDENSER WATER SUPPLY
—CHS—	CHS	CHILLED WATER SUPPLY
— CHR —	CHR	CHILLED WATER RETURN
—HWS—	HWS	HOT WATER SUPPLY
— HWR —	HWR	HOT WATER RETURN
—D—	D	DRAIN
—A—		TEMPERATURE CONTROL AIR
	GV	GATE VALVE
		GLOBE VALVE
	BC	BALANCING COCK
		CHECK VALVE
		UNION
		STRAINER
		TEMPERATURE CONTROL VALVE
		TEMPERATURE CONTROL VALVE
		MANUAL AIR VENT
		CONSTANT FLOW VALVE
		THERMOMETER W/NEEDLE VALVE
	PG	PRESSURE GAUGE W/NEEDLE VALVE
T		ROOM THERMOSTAT
		CONTROL AIR SOURCE

TEMPERATURE CONTROL VALVE SCHEDULE

TAG	EQUIP SERVED	SERVICE	CAP GPM	P.D. PSIG	REMARKS	TAG	EQUIP SERVED	SERVICE	CAP GPM	P.D. PSIG	REMARKS
TCV-1	CC-1	CHILLED WATER	449	5.0	2WAY MODULATING	TCV-7	AC-2	CHILLED WATER	216	1.0	3WAY MODULATING
TCV-2	HC-1	HTG. HOT WATER	50	1.0	3WAY MODULATING	TCV-8	AC-2	HTG. HOT WATER	464	1.0	3WAY MODULATING
TCV-3	AC-1	CHILLED WATER	156	1.0	3WAY MODULATING						
TCV-4	AC-1	HTG. HOT WATER	37.9	1.0	3WAY MODULATING						
TCV-5	CC-2	CHILLED WATER	424	5.0	2WAY MODULATING						
TCV-6	HC-2	HTG. HOT WATER	50	1.0	3WAY MODULATING						

NOTE: TEMPERATURE CONTROL VALVES SERVING TERMINAL BOX REHEAT COILS TO BE SIZED FOR 1½ PSIG PRESSURE DROP. SEE (6T/15) FOR VALVE TYPE

EQUIPMENT VIBRATION ISOLATION SCHEDULE

UNIT SERVED	MANUFACTURER & MODEL NO.	ISOLATOR TYPE	FRAME TYPE	DEFLECTION	EARTHQUAKE RESTRAINT QUANTITY	EARTHQUAKE RESTRAINT MFR. MODEL NO.	REMARKS
S-1, S-2	MASON INDUSTRIES TYPE SLF	MS	A	2"	4	MASON INDUSTRIES MODEL 2-1011	SEE DETAIL (9T/15) (9G/15)
RE-1, RE-2	MASON INDUSTRIES TYPE SLF	MS	A	1"	4	MASON INDUSTRIES MODEL 2-1011	SEE DETAIL (9T/15) (9G/15)
E1, E2, E-3	MASON INDUSTRIES TYPE SLF	MS	A	2"	4	MASON INDUSTRIES MODEL 2-1011	SEE DETAIL (9T/15) (9G/15)
E-4	MASON INDUSTRIES TYPE W30	HS	-	1"	—	— —	SUSPENDED - SEE DETAIL (9D/15) (10B/15)
AC-1, AC-2	MASON INDUSTRIES TYPE SLF	MS	A	2"	4	MASON INDUSTRIES MODEL 2-1011	SEE DETAIL (9T/15) (9G/15)
P-1, 2, 3, E-4	MASON INDUSTRIES TYPE SLF	MS	A	1"	4	MASON INDUSTRIES MODEL 1011	SEE DETAIL (9T/15) (9G/15)
P5 THRU P-10	MASON INDUSTRIES TYPE SLF	MS	A	1"	4	MASON INDUSTRIES MODEL 2-1011	SEE DETAIL (9T/15) (9G/15)
CT-1	MASON INDUSTRIES TYPE SLR	MSL	A	3"	4	MASON INDUSTRIES MODEL 2-1011	SEE DETAIL (9A/15) (9G/15) (9B/15)
CH-1 CH-2	MASON INDUSTRIES TYPE W	RN	-	.12"	4	MASON INDUSTRIES MODEL -1011	SEE DETAIL (9B/15) C
BOILER B1, 2, 3	MASON INDUSTRIES TYPE W	RN	-	.06"	4	MODEL INDUSTRIES MODEL 2-1011	SEE DETAIL (9A/15) C
AIR COMPRESSOR	MASON INDUSTRIES TYPE SLF	MS	A	1"	4	MODEL INDUSTRIES MODEL 2-1011	SEE DETAIL (9T/15) (9G/15)
EXP. TANK FRAME	MASON INDUSTRIES TYPE W	RN	—	.03"	——	——	SEE DETAIL (9B/15) C

SOUND TRAP SCHEDULE

TAG	SERVICE	CFM	IAC MODEL NO.	TRAP AREA (FT²)	DESIGN FACE VELOCITY	OVERALL SIZE-INCHES	P.D. INCHES W.G.	REMARKS
ST-1	S-1 SUPPLY (DISCH.)	94475	5MS	80	1180	96x120	.18	
ST-2	S-1 SUPPLY (INLET)	94475	7MS	80	1180	96x120	.22	
ST-3	RE-1 RET. AIR (INLET)	76500	7MS	80	955	96x120	.15	
ST-4	RE-1 RET. AIR (DISCH.)	76500	7MS	80	955	96x120	.15	
ST-5	S-2 SUPPLY (DISCH)	89600	5MS	80	1120	96x120	.15	
ST-6	S-2 SUPPLY (INLET)	89600	7MS	80	1120	96x120	.19	
ST-7	RE-2 RET. AIR (INLET)	76500	7MS	80	955	96x120	.15	
ST-8	RE-2 RET. AIR (DISCH.)	76500	7MS	80	955	96x120	.15	

FILTER SCHEDULE

TAG	UNIT SERVED	CFM	CAMBRIDGE MODEL NO.	NO. REQ.	SIZE EACH	TYPE	REMARKS
F-1	S-1	94475	HI FLO PERMANENT	48	24 x 24 x 2	UL CLASS 1, DEEP BED GLASS FIBER FILTERS 90% EFF.	FIELD ERECTED FILTER BANK
F-2	S-2	89600	HI FLO PERMANENT	48	24 x 24 x 2		
F-3	AC-1	10170	HI FLO PERMANENT	6	24 x 24 x 2		
F-4	AC-2	17800	HI FLO PERMANENT	12	24 x 24 x 2		

COIL SCHEDULE

TAG	SYSTEM SERVED	MANUFACTURER & MODEL NO.	NO. COILS	SIZE EACH	TOTAL CFM	AIR TEMP °F ENT DB	ENT WB	LVG DB	LVG WB	FACE AREA SF	FACE VEL FPM	P.D. IN. W.G.	WATER GPM	WATER P.D. FT	WATER ENT °F	WATER LVG °F	NO. ROWS	TOTAL CAP. MBH	REMARKS
CC-1	S-1	TRANE W/ CERSEN TIP	6	90"L x 42"H	94275	77.2	62.3	53.5	52	10.8	873	1.15	449	7.0	42°	56°	6	2693.3	WT: 9000#
CC-2	S-2		6		89396	77.2	62.3	53.5	52	10.8	908	1.05	424	7.0	42°	54°	6	2546.6	WT: 9000#
HC-1	S-1		6		94475	60	—	70.0	—	10.8	862	0.3"	50	1.0	160°	119°	2	1022.0	FOR WARM-UP CYCLE ONLY - HT: 3000#
HC-2	S-2		6		89600	60	—	70.0	—	10.8	833	0.3"	50	1.0	176°	131°	2	975.0	FOR WARM-UP CYCLE ONLY - HT: 3000#

PIPING VIBRATION ISOLATION

SYSTEM	DESCRIPTION		DESIGN DEFLECTION (IN)	ISOLATOR TYPE	ISOLATOR DETAIL
CHILLED WATER	HORIZONTAL RUNS	SUSPENDED IN MECH. ROOMS	1.0"	HST	(8B/15)
		SUSPENDED ELSEWHERE	1.0"	HS	(9D/15)
		UNISTRUT PIPE LADDER IN TUNNEL	0.8"	MN, PN	(9A/15) (10A/15) (9Z/15)
	VERTICAL RISERS	SUPPORT AT ROOF LEVELS ONLY	1.0"	MSL	(9B/15) (9T/15)
		GUIDE AT LEVELS 5 & 8*	——	MN	(9B/15)
CONDENSER WATER	HORIZONTAL RUNS	SUSPENDED IN MECH. RMS.	1.0"	HST	(8B/15)
		SUSPENDED ELSEWHERE	1.0"	HS	(9D/15)
		SUPPORTED ON ROOF	1.0"	MSL	(8A/15) (9A/15)
	VERTICAL RISERS	SUPPORTED AT ROOF LEVEL ONLY	1.0"	MSL	(9T/15) (9A/15)
		GUIDE AT LEVELS 5 & 8	——	MN, PN	(9Z/15)
HEATING HOT WATER	HORIZONTAL RUNS	SUSPENDED IN MECH. RMS.	1.0"	HST	(8B/15)
		SUSPENDED LINES ELSEWHERE, 1¼" OR LARGER	1.0"	HS	(9D/15)
		UNISTRUT PIPE LADDER IN TUNNEL	0.8"	MN, PN	(9A/15) (10A/15) (9Z/15)
	VERTICAL RISERS	SUPPORT AT LEVEL 7	1.0"	MSL	(9B/15) (9T/15)
		GUIDE AT LEVELS 4 & 10*	——	MN, PN	(9B/15)
EMERGENCY GENERATOR EXHAUST	HORIZONTAL RUNS		1.0"	HS	(9D/15)
	VERTICAL RISERS	SUPPORT AT LEVEL 7	0.8"	MN	(10A/15) (9T/15)
		GUIDE (SLEEVE PROVIDED)	——	——	——
BOILER STACK	BREECHING	SUSPENDED IN BOILER RM	1.0"	HST	(8Z/15)
	VERTICAL STACK	SUPPORT AT LEVELS: 4, 5, 7, 8, & 10	.060"	PN	(9Z/15)
GENERAL	PENETRATION OF ALL PIPING DESCRIBED ABOVE				(9B/15)

* FOR ADDITIONAL GUIDES IN EAST SHAFT SEE (5G/15) (5T/15)

PACKAGED AIR CONDITIONING UNIT SCHEDULE

TAG	TYPE OF SYSTEM	MFR. & MODEL NO.	FAN CFM O/S AIR	FAN S.P. IN W.G.	FAN O.V. FPM	FAN RPM	MOTOR HP	MOTOR V	MOTOR PH	MOTOR CY	COOLING COIL NO. ROWS	COOLING COIL SIZE	COOLING COIL FACE AREA SF	COOLING COIL CFM O/S AIR	COOLING COIL FACE VEL FPM	COOLING COIL AIR TEMP °F ENT DB	COOLING COIL AIR TEMP °F ENT WB	COOLING COIL AIR TEMP °F LVG DB	COOLING COIL AIR TEMP °F LVG WB	COOLING COIL CAPACITY BTU/HR	COOLING COIL WATER ENT °F	COOLING COIL WATER LVG °F	COOLING COIL WATER GPM	COOLING COIL WATER P.D. FT	HEATING COIL NO. ROWS	HEATING COIL SIZE	HEATING COIL FACE AREA SF	HEATING COIL CFM O/S AIR	HEATING COIL FACE VEL FPM	HEATING COIL AIR TEMP °F ENT	HEATING COIL AIR TEMP °F LVG	HEATING COIL CAPACITY BTU/HR	HEATING COIL WATER ENT °F	HEATING COIL WATER LVG °F	HEATING COIL WATER GPM	HEATING COIL WATER P.D. FT	WEIGHT LBS.	REMARKS
AC-1	HORIZONTAL DRAW THRU	TRANE S & L CLIMATE CHANGER	10170	3"	1816	1195	15	460	3	60	4	30x99	20.6	10170	494	76	61.8	61.5	58.7	98240	54	42	15.6		2	30x99	20.6	10170	444	72	124	569,160	200	170	379		3000	MEDIUM PRESSURE
AC-2	HORIZONTAL DRAW THRU	TRANE S & L CLIMATE CHANGER	17800	3"	1594	1269	15	460	3	60	4	2-24x105	35.0	17800	510	76	61.8	61.9	58.9	156,195	54	42	26.0		2	2-24x105	33.0	17800	510	72	124	990,192	200	170	664		4000	MEDIUM PRESSURE

DUCT SYMBOLS

	RECTANGULAR SUPPLY DUCT SECTION
	RECTANGULAR RETURN OR EXHAUST DUCT SECTION
	DUCT RISE IN DIRECTION OF FLOW
	DUCT DROP IN DIRECTION OF FLOW
TR, BR	HIGH SIDEWALL REGISTER OR LOW SIDEWALL REGISTER
CD	CEILING DIFFUSER WITH DIRECTION OF FLOW INDICATED (2-WAY BLOW SHOWN)
CR	CEILING REGISTER
AFD	AUTOMATIC FIRE DAMPER
MVD	MANUAL VOLUME DAMPER
MOD	MODULATING DAMPER
	SMOKE DAMPER
FC	FLEXIBLE CONNECTION
SDL	SOUNDLINED DUCTWORK. DIMENSIONS SHOWN ARE NET INSIDE DIMENSIONS
	ROUND DUCT CONNECTION
	CON-TEE TAKE-OFF
	FLEXIBLE DUCT
	SMOKE DETECTOR (SEE ELEC. DWGS)
	SLEEVE THRU BEAM

ABBR.	DESCRIPTION
E OR EXH.	EXHAUST
MFR	MANUFACTURER
NO	NUMBER
STD	STANDARD
S.P.	STATIC PRESSURE
IN.	INCHES
WG	WATER GAUGE
OV	OUTLET VELOCITY
FPM	FEET PER MINUTE
RPM	REVOLUTIONS PER MINUTE
HP	HORSEPOWER
V	VOLT
PH	PHASE
CY	CYCLE
WT	WEIGHT
LBS	POUNDS
VEL	VELOCITY
SF	SQUARE FEET
°F	DEGREES FAHRENHEIT
ENT	ENTERING
LVG	LEAVING
DB	DRY BULB
WB	WET BULB
BTU	BRITISH THERMAL UNIT
HR	HOUR

ABBR.	DESCRIPTION
CFM	CUBIC FEET PER MINUTE
PD	PRESSURE DROP
MIN	MINIMUM
MVD	MANUAL VOLUME DAMPER
MOD	MODULATING
OSA	OUTSIDE AIR
SUP	SUPPLY
AD	ACCESS DOOR
AP	ACCESS PANEL
N.O.	NORMALLY OPEN
N.C.	NORMALLY CLOSED
CAP	CAPACITY
HD	HEAD
BM	BOARD MOUNTED

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT FACILITIES

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — MARK TAMMARO — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 4-1-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

SCHEDULES

DRAWING NUMBER 1
CATEGORY 15

PUMP SCHEDULE

TAG	MANUFACTURER & MODEL NO.	SERVICE	TYPE	GPM	TOTAL HEAD FT	MOTOR HP	MOTOR V	MOTOR ø	MOTOR N	UNIT WT LBS	REMARKS
P-1	BACO TYPE KP 5012	CHILLED WATER	BASE MTD. DOUBLE SUCTION CENTRIF.	764	100	30	460	3	60	1100	
P-2		CHILLED WATER		764	100						
P-3		CONDENSER WATER		1100	80						
P-4		CONDENSER WATER		1100	80						
P-5	BACO MODEL 1595-5 SIZE 11 2½"X 12" X 11⅞"	HIGH TEMP WATER HEATING BLDG	BASE MTD. END SUCTION CENTRIF.	92	60	3				250	
P-6		" "		92	60						
P-7		HIGH TEMP. WATER CIRCULATING PUMP		80	70						
P-8		" "		80	70						
P-9	BACO MODEL 5095-1 5"X 4" X 9½"	DOMESTIC WTR. HTR.		288	50	7½				330	
P-10	"	"		288	50	7½				330	
P-11	BACO MODEL 1510-5 11½ X 11½ X 7"	HIGH HOT WATER COURT BLDG.	IN-LINE CENTRIFUGAL	50	27	¾	460	3	60	90	
P-12	BACO MODEL 1510-5 11½ X 11½ X 7"	HIGH HOT WATER COURT BLDG	IN-LINE CENTRIFUGAL	50	27	¾	460	3	60	90	

CONSTANT VOLUME TERMINAL REHEAT BOX SCHEDULE

TAG	T&B MODEL NO.	SIZE	MAX CFM	MIN. S.P. IN W.G.	MAX N.C @ 3" S.P.	INLET DIA.	OUTLET SIZE	COIL	REMARKS
(A-1)	MPMC - MVC	A	175	.85	40	5	11 X 6	SEE FL. PLANS	FOR ADDITIONAL DATA, SEE FL. PLANS.
(A-2)		AB	250	.90	40	5	11 X 6		
(B-1)		B	375	1.00	40	6	17 X 6		
(B-2)		C	550	1.00	35	7	23 X 6		
(C-1)		D	750	1.00	40	8	29 X 6		
(C-2)		E	1100	1.00	35	10	29 X 9		
(D-1)		F	1700	1.10	40	12	35 X 9		
(D-2)		G	2600	1.10	30	18/6	42 X 15		

VARIBLE VOLUME TERMINAL BOX SCHEDULE

TAG	T & B MODEL NO.	SIZE	MAX CFM	MIN. S.P. IN W.G.	MAX. N.C. @ 3" S.P.	INLET DIA.	OUTLET SIZE	REMARKS
(A-1)	MPM - VV	A	220	.85	40	5	10 X 4	FOR ADDITIONAL DATA, SEE FLOOR PLANS.
(A-2)		AB	300	.90	40	5	10 X 4	
(B-1)		B	450	1.00	40	6	12 X 5	
(B-2)		C	700	1.00	35	7	15 X 6	
(C-1)		D	900	1.00	40	8	18 X 8	
(C-2)		E	1500	1.00	40	10	20 X 10	
(D-1)		F	2000	1.00	45	12	24 X 12	
(D-2)		G	2800	1.00	35	18/10	36 X 14	

VARIABLE CONSTANT VOLUME TERMINAL REHEAT BOX SCHEDULE

TAG	T & D MODEL NO.	SIZE	MAX. CFM	MIN. S.P. IN W.G.	MAX. N.C. AT 3.0 S.P.	INLET DIA.	OUTLET SIZE	COIL	REMARKS
(A-1)	MPMC-VCV	A	175	.85	40	5	11 X 6	SEE FL. PLAN	FOR ADDITIONAL DATA, SEE FL. PLANS.
(A-2)		AB	250	.90	40	5	11 X 6		
(B-1)		B	375	1.00	40	6	17 X 6		
(B-2)		C	550	1.00	35	7	23 X 6		
(C-1)		D	750	1.00	40	8	29 X 6		
(C-2)		E	1100	1.00	35	10	29 X 9		
(D-1)		F	1700	1.10	40	12	35 X 9		
(D-2)		G	2600	1.10	30	18/10	42 X 15		

DIFFUSER NOISE SCHEDULE

TYPE 'F 32 'D' LINEAR DIFFUSERS

Nº OF SLOTS	CFM/FT	MAX LW-NC/PWL re 10^{-12} WATTS/LENGTH AS INDICATED ON DRAWINGS
1	20	32
1	30	36
1	40	40
2	40	33
2	60	37
2	80	41
3	60	34
3	90	38
3	120	42
4	80	35
4	120	39
4	160	43

AIR HANDLING LIGHT TROFFERS

TYPE	CFM	MIN. INLET DIAM. - IN.	LENGTH - FT	MAX LW-NC/PWL 10-12 WATTS)
DUAL DIFFUSER TOP INLET	60	6	2 OR 4	28
	80	6	2	33
	90	6	4	28
	100	8	2	33
	110	8	4	28
	120	8	2	38
	130	8	4	28
	140	6	2	38
	150	8	4	33
	160	8	2	43
	170	8	4	33
	180	8	4	38
	190	8	4	38
DUAL DIFFUSER SIDE INLET	60	6	2 OR 4	33
	80	6	2	33
	90	6	4	28
	100	6	2	38
	110	6	4	28
	120	6	2	40
	130	6	4	33
	140	6	4	38
	150	6	4	38
	160	6	4	43
	170	6	4	43
	180	6	4	43

MISCELLANEOUS EQUIPMENT SCHEDULE

BOILERS: B-1, B-2, & B-3

EACH PACKAGED, WATER TUBE, LOW PRESSURE HOT WATER BOILER EQUAL TO BYRAN STEAM CORPORTION MODEL LM G50 EQUIPPED WITH PEABODY, GORDON-PIATT TURBO RING FORCED DRAFT BURNER MODEL R12.1-0-50-GP 201 U-F 1.2, SUITABLE FOR OPERATION WITH NO. 2 FUEL OIL. CAPACITY: 6,500,000 BTUH INPUT, 5,200,000 BTUH OUTPUT, WHEN FIRED WITH 47 GPH, OIL HEATING SURFACE 797 S.F. REMOTE MOUNTED PRESSURE ATOMIZING OIL PUMP - 50 GPH, 1 HP, 480V, 3Ø, 60N FORCED DRAFT FAN - 5 HP, 480V, 3Ø, 60N. UNIT OPER. WT. - 18920

CHILLERS: CH-1 & CH-2:

EACH, PACKAGED, DIRECT DRIVE, CENTRIFUGAL WATER CHILLER EQUAL TO TRANE MODEL NO. CVHA-38-HA-JG1-GI5-1, WITH CAPACITY TO COOL 764 GPM CHILLED WATER FROM 53.6°F TO 42°F USING 1100 GPM CONDENSER WATER ENTERING 82°F & LEAVING @ 91.92°F. UNIT CAPACITY - 370 TNS. EVAPORATOR - 2 PASS, .0005 FOULING FACTR, 15.1 FT. P.D., CONDENSER - 2 PASS. .0005 FOULING FACTR, 14.2 FT. P.D. ELECTRICAL CHARACTERISTICS: COMPRESSER - 291 KW INPUT, 395 FLA, 429 CUT. 848 LRA. WITH STAR - DELTA CLOSED TRANSITION STARTER, 460 V, 3Ø, 60N, OIL PUMP MOTOR - 1/4 HP, 460 V, 3Ø, 60N, .65 FLA, 3.0 LRA: CONTROL PANEL - 115 V, 1Ø, 60N, 2KVA - UNIT OPER. WT. 19600 LBS.

COOLING TOWER: CT-1

PACKAGED COUNTERFLOW, BLOW-THRU COOLING TOWER EQUAL TO BALTIMORE AIR COIL MODEL VST-5500, WITH CAPACITY TO COOL 2200 GPM CONDENSER WATER FROM 91.92°F TO 82°F WITH AMBIENT AIR AT 68°F W.B. TOTAL AIR FLOW - 107,200 CFM AT 0" ESP, MOTORS 20 HP, 2SPEED DOUBLE WINDING, 460V, 3Ø, 60N, PROVIDE WITH FACTRY INSTALLED CAPACITY CONTROL DAMPERS LESS CONTROLS UNIT OPERATING WT. 17,080#

EXPANSION TANK: ET-1:

48"Ø X 10'-2"L, 850 GALLON CAPACITY, ASME 125 PSIG CONSTRUCTION, WITH REFRIGERATION TYPE GAUGE GLASS. OPERATING WT. 8525 LBS.

EXPANSION TANK: ET-2:

24"Ø X 7'-3"L, 155 GALLON CAPACITY, ASME 125 PSIG CONSTRUCTION, WITH REFRIGERATION TYPE GAUGE GLASS. OPERATING WT. - 1560 LBS.

OIL SUPPLY PUMP SET

PACKAGED DUPLEX OIL CIRCULATING PUMP SYSTEM, PEABODY GORDON-PIATT MODEL LD 2D-1100, EACH PUMP TO CIRCULATE 1100 GPH, Nº 2-DIESEL OIL AT 15 PSIG MAXIMUM DISCHARGE PRESSURE. MOTOR, EACH 1 HP, 1725 RPM, 460V, 3Ø, 60N. PROVIDE PREPIPED ON MOUNTING BASE WITH ALL NECESSARY VALVES, CONTROLS, GAUGES, ETC. OPERATING WT. - 1000#

OIL STORAGE TANKS: OT-1 & OT-2:

UNDERGROUND TANKS, EACH EQUAL TO OWENS/CORNING MODEL O-5, 10,000 GALLON CAPACITY, U.L. LABELED FIBERGLASS-REINFORCED POLYESTER OIL STORAGE TANK. SIZE EACH - 7'-11" DIA. X 30'-2 3/4" LONG.

TEMPERATURE CONTROL AIR COMPRESSOR AND TANK

TWO BASE MOUNTED RECIPROCATING AIR COMPRESSOR UNITS EQUAL TO POWERS REGULATOR CO. MODEL Nº D390 WITH V-BELT DRIVE, INTAKE FILTERS, TOTALLY ENCLOSED BELT GUARD. 3'-0" ø x 9'-0" HIGH, 600 GALLON RECEIVER TANK INCLUDING SUPPORT LEGS, A.S.M.E. RATED AT 150 PSIG. COMPRESSORS, EACH 40 CFM, 7½ HP, 500 RPM, 460 V, 3Ø, 60N. PROVIDE FACTORY PREWIRED CONTROL PANEL INCLUDING STARTERS, ELECTRIC ALTERNATOR, PRESSURE SWITCH, UNIT WTS. - COMPRESSORS EACH 1325#

REFRIGERATED AIR DRYER

HANKINSON MODEL E-50, FLOOR MOUNTED REFRIGERATED AIR DRYER ½ HP, 115V, 1Ø, 60N. UNIT WT. 200#

HELLMUTH, OBATA & KASSABAUM, INC. - ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT COURT
MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — MECHANICAL — No. 11242 — STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

SCHEDULES

DRAWING NUMBER 2

CATEGORY 15

PERIMETER DIFFUSERS/PLENUM						
TAG	TEMPMASTER MODEL	LENGTH DIFFUSER	LENGTH PLENUM	MAX. CFM	INLET DUCT DIA.	REMARKS
C-1	IDP-A	SEE PLANS	24"	35	5"	SEE SCHEDULE SHT. 1/15
C-2	IDP-A	"	30"	44	5"	
C-3	IDP-A	"	48"	70	5"	
C-4	IDP-A	"	60"	88	5"	
C-5	IDP-B	"	48"	100	6"	
C-6	IDP-B	"	60"	125	6"	
C-7	IDP-B	"	24"	60	5"	

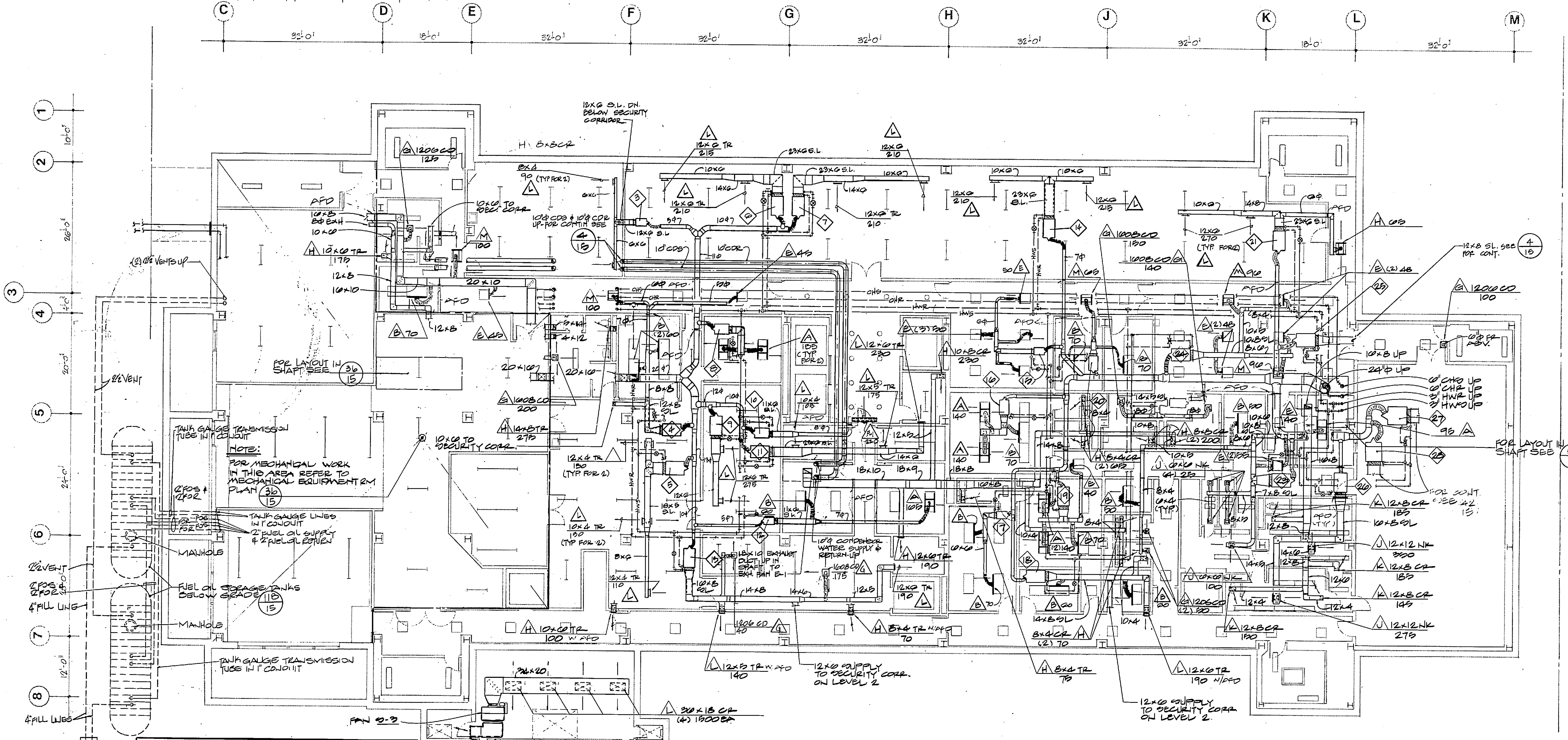
NOTE: APPLIES TO ALL FLOOR PLANS

LINEAR DIFFUSERS/PLENUMS							
TAG	TEMPMASTER MODEL	No. OF SLOTS	LENGTH DIFFUSER	LENGTH PLENUM	MAX. CFM	INLET DUCT DIA.	REMARKS
F-1	TFD	1	SEE PLANS	48"	160	7"	SEE SCHEDULE SHT. 1/15
F-2	"	1	"	60"	250	7"	
F-3	"	4	"	60"	950	12"	
F-4	"	4	"	30"	415	9"	
F-5	"	2	"	60"	400	9"	
F-6	"	3	"	60"	600	10"	
F-7	"	1	"	24"	600	5"	

NOTE: APPLIES TO ALL FLOOR PLANS

LINEAR DIFFUSERS/PLENUMS								
TAG	TEMPMASTER MODEL	No. OF SLOTS	LENGTH DIFFUSER	LENGTH PLENUM	MAX. TOTAL CFM	INLET DIA. COOLING	INLET DIA. HEATING	REMARKS
O-1	TFD-HK	2	SEE PLANS	60	430	9"	5"	UNLESS INDICATED OTHERWISE ON PLANS, DIFFUSER LENGTH EQUALS PLENUM LENGTH.
O-2	"	2	"	48	330	8"	5"	
O-3	"	3	"	60	600	10"	5"	
O-4	"	3	"	48	480	9"	5"	

NOTE: APPLIES TO ALL FLOOR PLANS



ROOM THERMOSTAT SCHEDULE					
ZONE No BOX SERVED	THERMOSTAT LOCATION ROOM No	REMARKS	ZONE No BOX SERVED	THERMOSTAT LOCATION ROOM No	REMARKS
2	1-03	SEE NOTE 2	14	1-34	
3	1-15		15	1-33	
4	1-13		16	1-29	SEE NOTE 2
5	1-10		17	1-27	
6	1-34		18	1-44	
7	1-34		19	1-26	
8	1-12		20	1-36	
9	1-11		21	1-34	
10	1-17		22	1-37	
11	1-20		23	1-52	SEE NOTE 2
12	1-22		24	1-54	
13	1-23		25	2-07	
			26	SEE NOTE 3	

1- EXACT LOCATION OF ALL ROOM THERMOSTATS TO BE VERIFIED BY ARCHITECT WITH APPROVED SHOP DWGS.

2- REPRESENTATIVE ROOM THERMOSTAT. SIGNAL IS USED TO RESET POINT OF SUPPLY UNIT LEAVING AIR TEMP.

3- DUCTSTAT LOCATED BEHIND RETURN OR EXHAUST AIR GRILLE

TERMINAL BOX SCHEDULE													
				REHEAT COIL									
NO.	TAG	CFM	TYPE	CFM	SIZE FLxFW	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	WATER GPM	TOT CAP BTUH	REMARKS
3	B_2	180	VCV	90	11x5	55	91	200	186	0.5	3500	
4	B_4	265	VCV	136	23x5	55	80	200	182.6	0.5	3045	
5	B_5	710	VCV	355	29x5	55	80	200	170	0.6	9585	
6	B_4	425	VCV	215	23x5	55	82	200	175	0.5	6270	
7	B_4	425	VCV	215	23x5	55	82	200	175	0.5	6270	
8	B_3	310	VCV	155	17x5	55	75	200	186.6	0.5	3350	
9	B_4	550	VCV	275	23x5	55	76	200	175	0.5	6240	
10	B_2	220	VCV	110	11x5	55	82	200	187.2	0.5	3210	
11	C_4	510	CV	510	23x5	55	74	200	170	0.7	10405	
12	B_2	225	VCV	115	11x5	55	80	200	187.6	0.5	3105	
13	B_5	695	VCV	350	29x5	55	81	200	170	0.7	9830	

TERMINAL BOX SCHEDULE													
				REHEAT COIL									
NO.	TAG	CFM	TYPE	CFM	SIZE FLxFW	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	WATER GPM	TOT CAP BTUH	REMARKS
14	B_4	425	VCV	215	23x5	55	82	200	175	0.5	6270	
15	B_2	200	VCV	100	11x5	55	81	200	188.8	0.5	2810	
16	B_3	350	CV	350	17x5	55	74	200	171.3	0.5	7180	
17	B_1	140	VCV	70	11x5	55	81	200	192.1	0.5	1970	
18	B_5	570	VCV	285	29x5	55	78	200	171.7	0.5	7080	
19	B_4	390	VCV	195	23x5	55	76	200	182.3	0.5	4420	
20	B_2	205	VCV	105	11x5	55	80	200	188.7	0.5	2835	
21	B_5	605	VCV	305	29x5	55	81	200	170	0.6	8500	
22	C_3	290	CV	290	17x5	55	74	200	176.2	0.5	5950	
23	B_5	605	VCV	300	29x5	55	80	200	170	0.5	8100	
24	B_4	384	VCV	192	23x5	55	81	200	178.4	0.5	5390	
25	B_4	520	VCV	260	23x5	55	83	200	170	0.5	7800	
26	C_5	625	CV	625	29x5	55	74	200	170	0.9	12825	
27	B_7	1200	VCV	630	35x8	55	75	200	170	0.9	13010	
28	B_6	1340	VCV	670	29x8	55	81	200	170	1.3	18810	

LEVEL 1 BASEMENT (3)

SCALE: 1/16" = 1'-0"

NOTES:

1- REFER TO ARCHITECTURAL DWG'S FOR ROOM NAMES & NOS.

2- FOR RETURN AIR DUCT OPENING'S IN CEILING'S OR RETURN AIR THRU LIGHT FIXTURES SEE 6/15

3. ALL EXPOSED SUPPLY DUCTWORK TO BE SOUNDLINED.

4. ALLOW A MINIMUM CLEARANCE OF 18" BETWEEN CEILING AND BOTTOM OF TERMINAL BOXES.

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

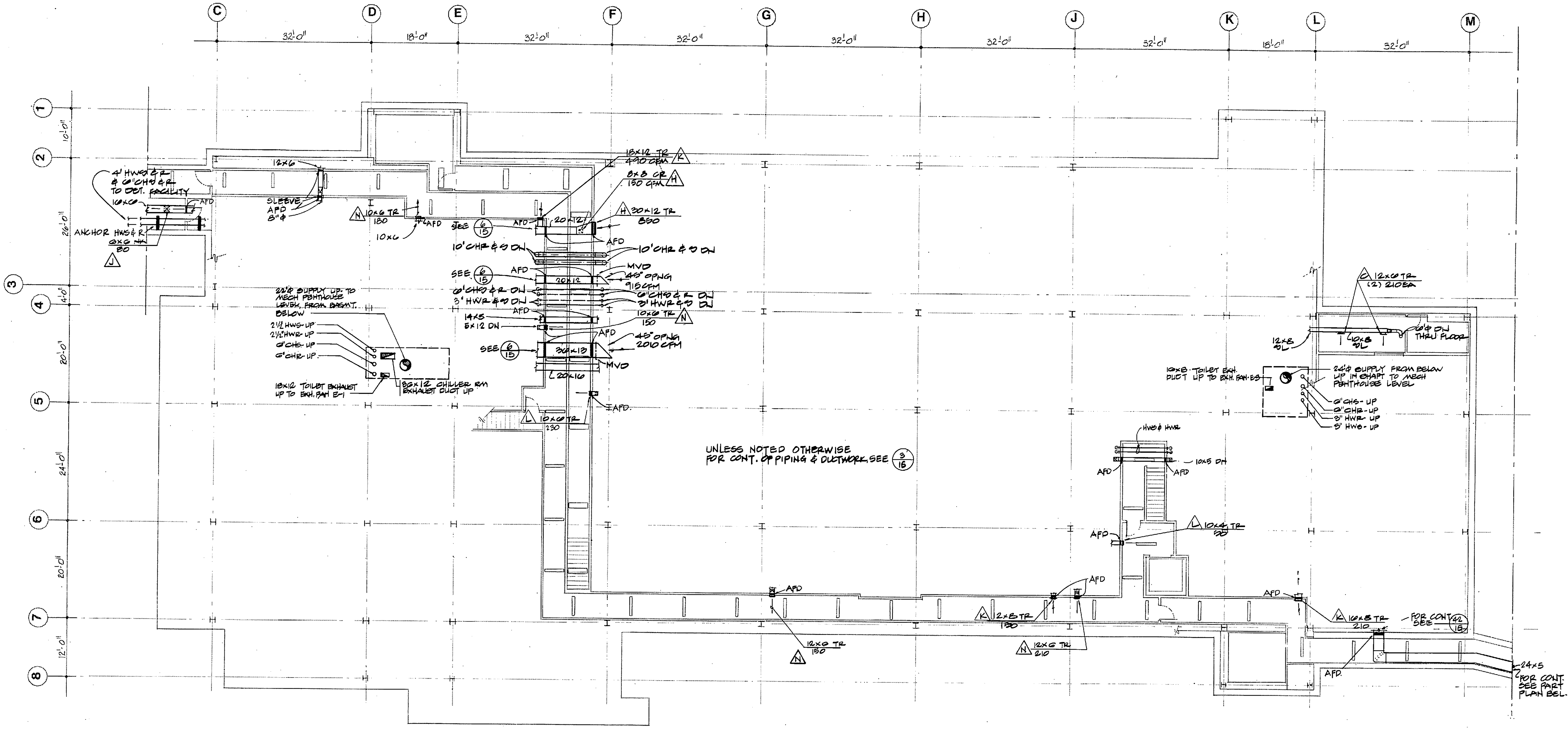
REGISTERED PROFESSIONAL ENGINEER — WATARU TAKAHASHI — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

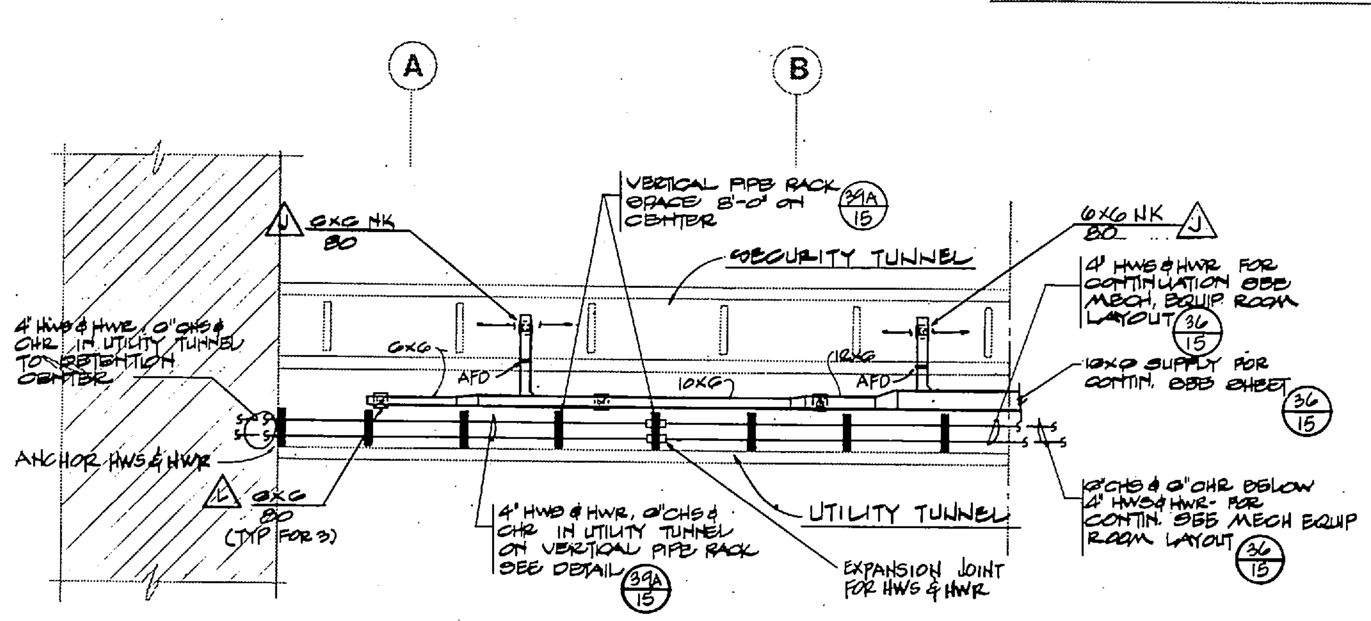
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77
REVISIONS BY DATE
1 2 3 4 5 6 7

LEVEL 1
BASEMENT

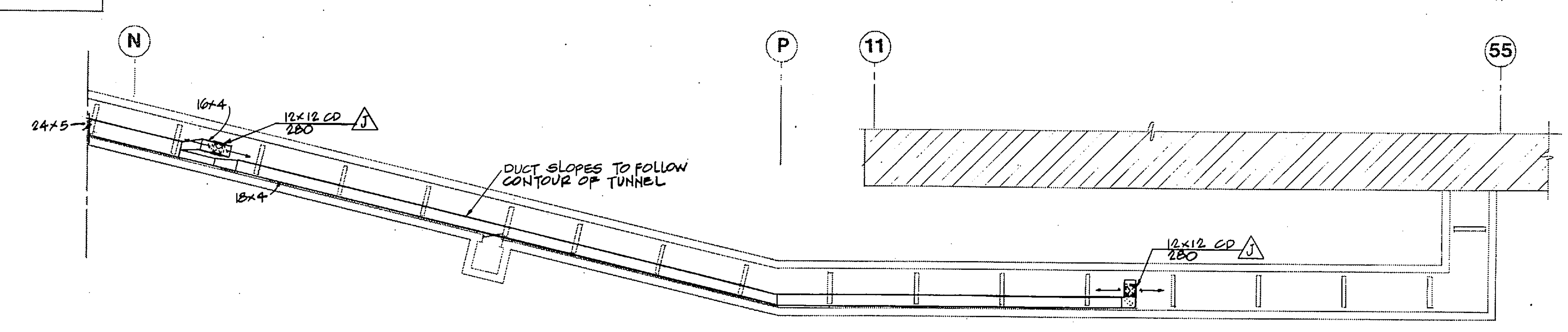
DRAWING NUMBER 3

CATEGORY 15





LEVEL 2 BASEMENT MEZZANINE TUNNELS (5)
SCALE: 1/16" = 1'-0"



LEVEL 2 BASEMENT MEZZANINE (4)
SCALE: 1/16" = 1'-0"

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

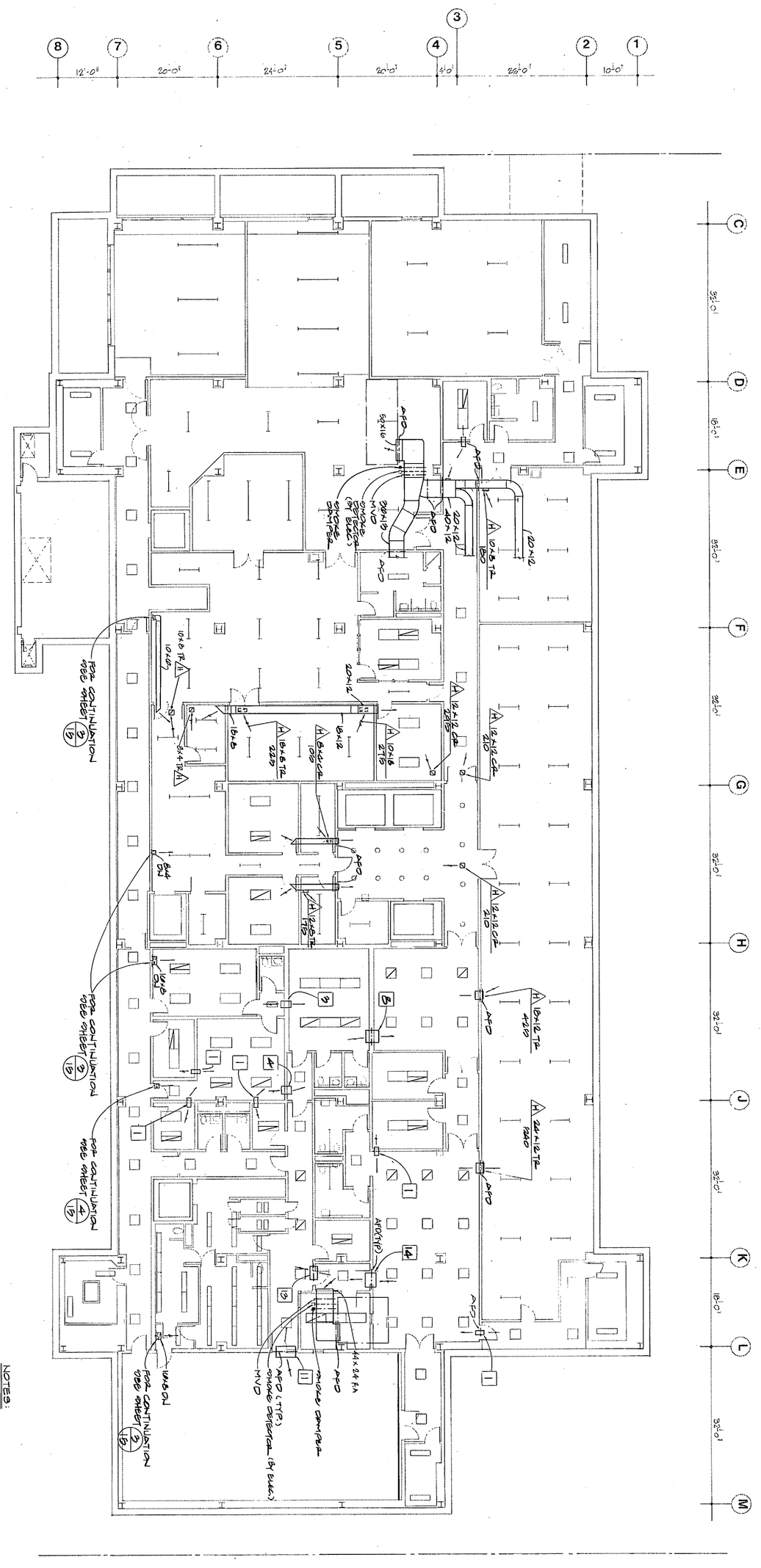
REGISTERED PROFESSIONAL ENGINEER · WATARU TAKAHASHI · No. 11242 · MECHANICAL · STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LEVEL 2
BASEMENT
MEZZANINE

DRAWING NUMBER 4-5
CATEGORY 15



LEVEL 1 - BASEMENT RETURN AIR

SCALE: 1/16"=1'-0"

NOTES:

1. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOTS ALL SIDES
2. INDICATES LIGHT FIXTURES WITH ACTIVE RETURN AIR SLOT ON ONE LONG SIDE AND BOTH ENDS
3. ALL UNUSED AIR SLOTS IN LIGHT FIXTURES TO BE MADE INACTIVE
4. FOR DETAIL AND SIZES OF TRANSFER DUCTS SEE (15)
5. FOR ROOM NOS. SEE ARCH. DWGS.

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

DRAWING NUMBER 6

CATEGORY 15

REGISTERED PROFESSIONAL ENGINEER MASAO TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

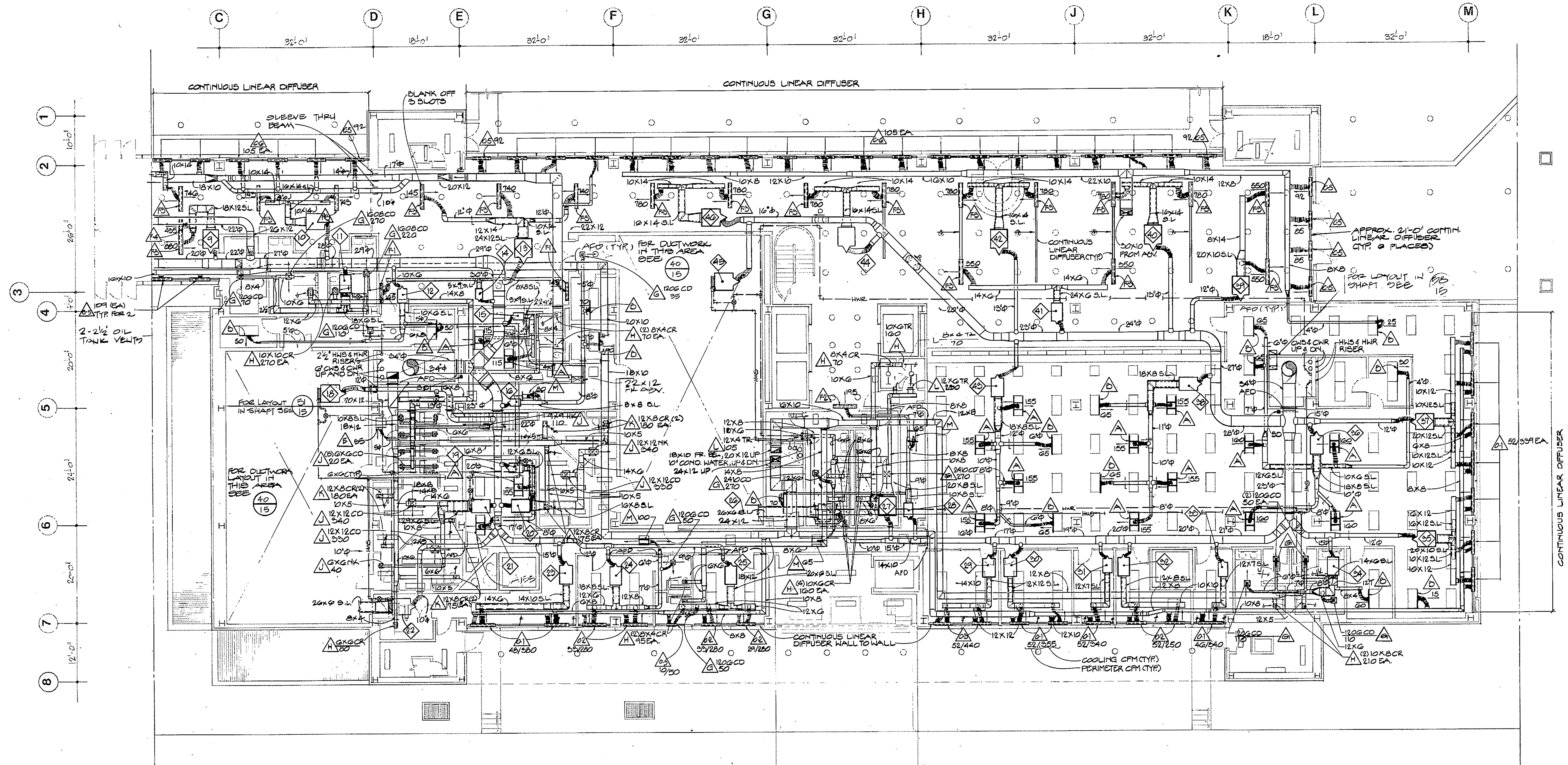
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



TERMINAL BOX SCHEDULE

NO. ◇	TAG ⬡	CFM	TYPE	REHEAT COIL CFM	SIZE FL x FW	AIR ENT °F	AIR LVG °F	WATER ENT °F	WATER LVG °F	WATER GPM	TOT. CAP BTUH	REMARKS
9	A/6	1235	VV	—	—	—	—	—	—	—	—	
10	A/6	1486	VV	—	—	—	—	—	—	—	—	
11	C/5	560	CV	560	29x5	55	72	200	170	0.7	10280	
12	A/2	230	VV	—	—	—	—	—	—	—	—	
13	A/4	1625	VV	—	—	—	—	—	—	—	—	
14	A/1	190	VV	—	—	—	—	—	—	—	—	
15	C/2	230	CV	230	11x5	55	72	200	183.1	0.5	4220	
16	A/2	260	VV	—	—	—	—	—	—	—	—	
17	A/3	325	VV	—	—	—	—	—	—	—	—	
18	B/7	1265	VCV	680	35x8	55	74	200	170	0.9	12930	
19	A/3	310	VV	—	—	—	—	—	—	—	—	
20	C/5	670	CV	670	29x5	55	72	200	170	0.8	12300	
21	C/5	710	CV	710	29x5	55	72	200	170	0.9	13040	
22	B/6	780	VCV	390	29x8	55	78	200	170	0.6	9690	
23	A/5	700	VV	—	—	—	—	—	—	—	—	
24	A/5	710	VV	—	—	—	—	—	—	—	—	

TERMINAL BOX SCHEDULE

NO. ◇	TAG ⬡	CFM	TYPE	REHEAT COIL CFM	SIZE FL x FW	AIR ENT °F	AIR LVG °F	WATER ENT °F	WATER LVG	WATER GPM	TOT. CAP BTUH	REMARKS
26	B/6	780	VCV	390	29x8	55	72	200	171.4	0.5	7160	
27	C/6	940	CV	940	29x8	55	72	200	170	1.2	17260	
28	A/3	380	VV	—	—	—	—	—	—	—	—	
29	A/5	880	VV	—	—	—	—	—	—	—	—	
30	A/5	710	VV	—	—	—	—	—	—	—	—	
31	A/3	340	VV	—	—	—	—	—	—	—	—	
32	A/4	500	VV	—	—	—	—	—	—	—	—	
33	A/3	340	VV	—	—	—	—	—	—	—	—	
34	C/3	380	CV	380	17x5	55	72	200	172.1	0.5	6980	
35	A/6	1017	VV	—	—	—	—	—	—	—	—	
36	A/5	800	VV	—	—	—	—	—	—	—	—	
37	A/6	1356	VV	—	—	—	—	—	—	—	—	
38	A/5	750	VV	—	—	—	—	—	—	—	—	
39	A/6	1100	VV	—	—	—	—	—	—	—	—	
40	A/7	1560	VV	—	—	—	—	—	—	—	—	
41	A/4	700	VV	—	—	—	—	—	—	—	—	
42	A/7	1560	VV	—	—	—	—	—	—	—	—	
43	A/5	750	VV	—	—	—	—	—	—	—	—	
44	A/7	1560	VV	—	—	—	—	—	—	—	—	
45	B/7	1260	VCV	680	35x8	55	72	200	170	0.8	11570	
46	A/7	1560	VV	—	—	—	—	—	—	—	—	

ROOM THERMOSTAT SCHEDULE

ZONE NO. (BOX SERVED)	THERMOSTAT LOCATION ROOM NO'S	REMARKS	ZONE NO. (BOX SERVED)	THERMOSTAT LOCATION ROOM NO'S	REMARKS
9	3-01		29	3-44	
10	3-01		30	3-45	
11	3-04		31	3-46	
12	3-06, 3-07		32	3-47	
13	3-55		33	3-48	
14	3-55		34	3-49	
15	3-12		35	3-52	
16	3-15, 3-27		36	3-52	
17	SEE NOTE 3		37	3-52	
18	3-08		38	3-52	
19	3-29		39	3-55	
20	SEE NOTE 3		40	3-55	
21	SEE NOTE 3		41	3-55	
22	3-08		42	3-55	
23	3-31		43	3-52	
24	3-33		44	3-55	
25	3-36		45	3-26	
26	3-26		46	3-55	
27	3-42				
28	3-38				

1. EXACT LOCATION OF ALL ROOM THERMOSTATS TO BE VERIFIED BY ARCHITECT WITH APPROVED SHOP DRAWINGS.
2. REPRESENTATIVE ROOM THERMOSTAT SIGNAL IS USED TO RESET SET POINT OF SUPPLY UNIT LEAVING AIR TEMPERATURE
3. DUCTSTAT. LOCATE BEHIND RETURN OR EXHAUST AIR GRILLE.

LEVEL 3 - FIRST FLOOR (7)

SCALE: 1/16" = 1'-0"

NOTES:

1. REFER TO ARCHITECTURAL DWGS FOR ROOM NAMES AND NUMBERS.
2. FOR RETURN AIR OPENINGS IN CEILINGS OR RETURN AIR THRU LIGHT FIXTURES SEE 9/15
3. ALLOW A MINIMUM CLEARANCE OF 18" BETWEEN CEILING & BOTTOM OF TERMINAL BOXES
4. WHERE DUCTWORK PENETRATES FIRE RATED WALL AT OTHER THAN 90°, PROVIDE FIRE RATED ENCLOSURE AROUND DUCT TO AFD LOCATION TO MAINTAIN INTEGRITY OF SEPARATION

HELLMUTH, OBATA & KASSABAUM, INC. ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

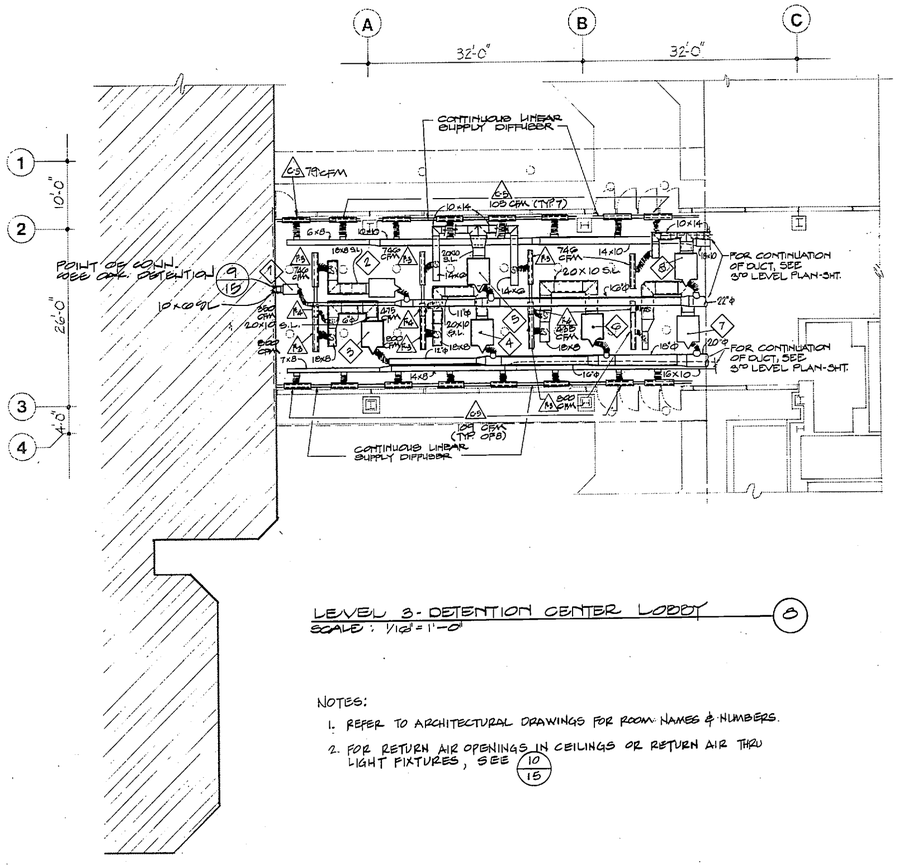
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77
REVISIONS

LEVEL 3
FIRST FLR

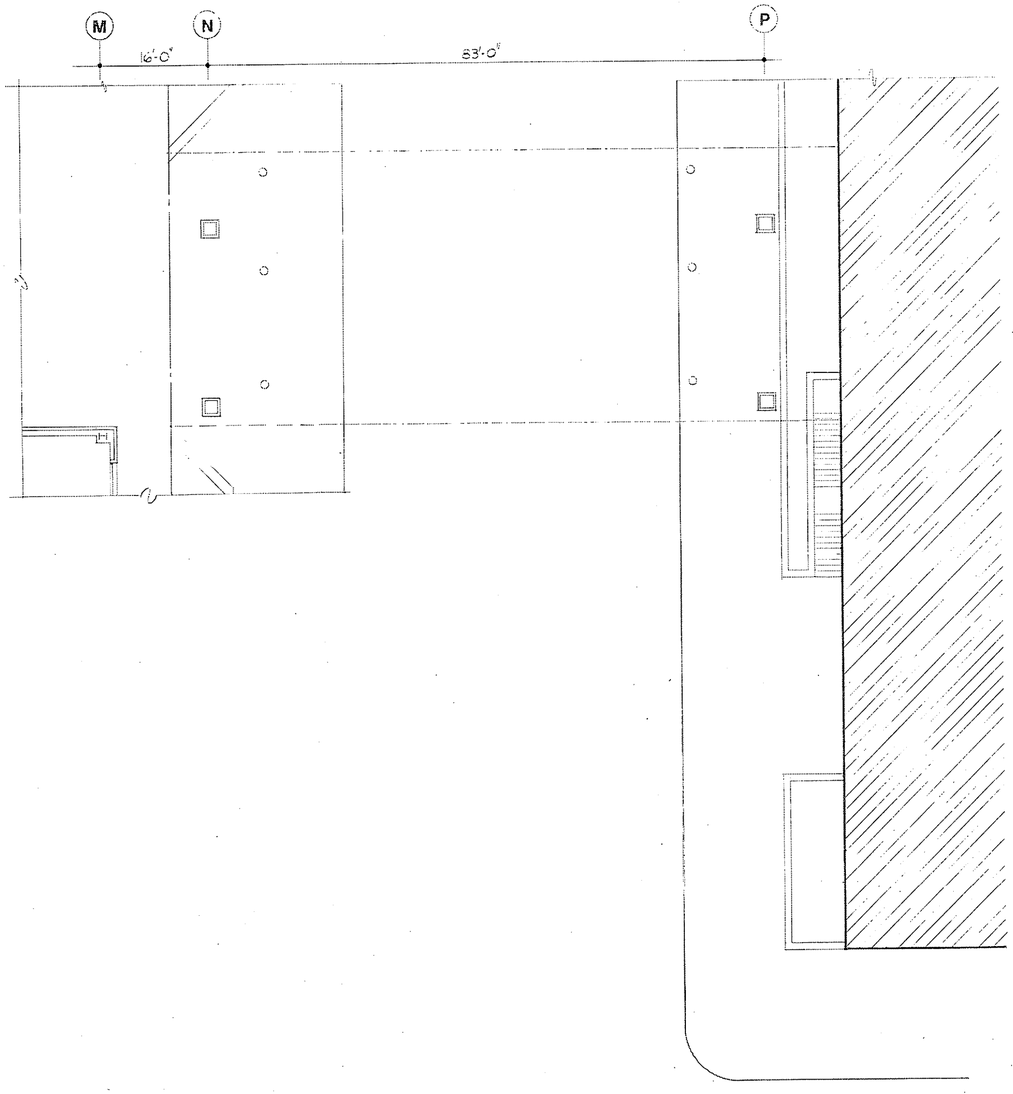
DRAWING NUMBER 7
CATEGORY 15

TERMINAL BOX SCHEDULE

No ◇	TAG ⬡	CFM	TYPE	REHEAT COIL CFM	REHEAT COIL SIZE	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	WATER GPM	TOT CAP BTUH	REMARKS
1	A/2	250	VV	-	-	-	-	-	-	-	-	
2	A/3	746	VV	-	-	-	-	-	-	-	-	
3	A/6	1150	VV	-	-	-	-	-	-	-	-	
4	A/6	1275	VV	-	-	-	-	-	-	-	-	
5	A/6	1492	VV	-	-	-	-	-	-	-	-	
6	A/6	1235	VV	-	-	-	-	-	-	-	-	
7	A/6	1295	VV	-	-	-	-	-	-	-	-	
8	A/6	1492	VV	-	-	-	-	-	-	-	-	



LEVEL 3 - DETENTION CENTER LOBBY (8)
SCALE: 1/8" = 1'-0"



NOTES:

1. REFER TO ARCHITECTURAL DRAWINGS FOR ROOM NAMES & NUMBERS.
2. FOR RETURN AIR OPENINGS IN CEILINGS OR RETURN AIR THRU LIGHT FIXTURES, SEE (10/15)

ROOM THERMOSTAT SCHEDULE

ZONE NO. OF BOX SERVED	THERMOSTAT LOCATION ROOM NO.	REMARKS	ZONE NO. OF BOX SERVED	THERMOSTAT LOCATION ROOM NO.	REMARKS
1	SEE DETENTION CENTER DWG'S		3,4,6&7	3-01	SEE NOTE 2
2,5&8	3-01				

1. EXACT LOCATION OF ALL ROOM THERMOSTATS TO BE VERIFIED BY ARCHITECT WITH APPROVED SHOP DWGS
2. REPRESENTATIVE ROOM THERMOSTAT SIGNAL IS USED TO RESET SET POINT OF SUPPLY UNIT LEAVING AIR TEMPERATURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

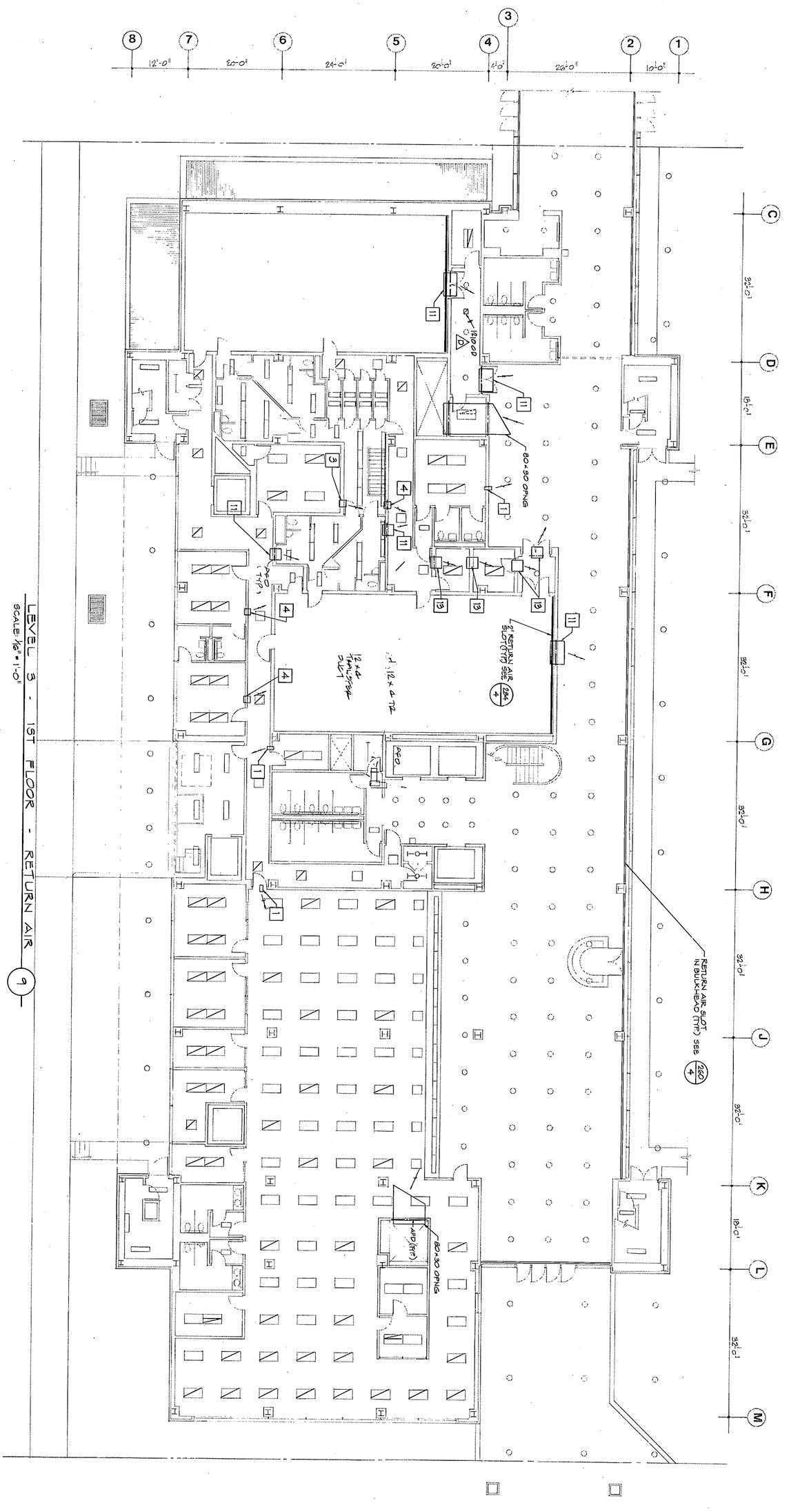
REGISTERED PROFESSIONAL ENGINEER — MASAHIRO TAKAHASHI — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

JOB NO. 7673-00
DRAWN BY
CHECKED BY
DATE 7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LEVEL 3
D.C. LOBBY

DRAWING NUMBER 8
CATEGORY 15



LEVEL 3 - 1ST FLOOR - RETURN AIR (9)

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

NOTES:

1. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOTS ALL SIDES.
2. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOT ON ONE LONG SIDE AND BOTH ENDS.
3. ALL UNUSED AIR SLOTS IN LIGHT FIXTURES TO BE MADE INACTIVE.
4. FOR DETAIL AND SIZES OF TRANSFER DUCTS SEE 15/15
5. FOR ROOM NOS. SEE ARCH. DWGS.

DRAWING NUMBER 9

CATEGORY 15

LEVEL 3 1ST. FL. PLAN RETURN AIR

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER HATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

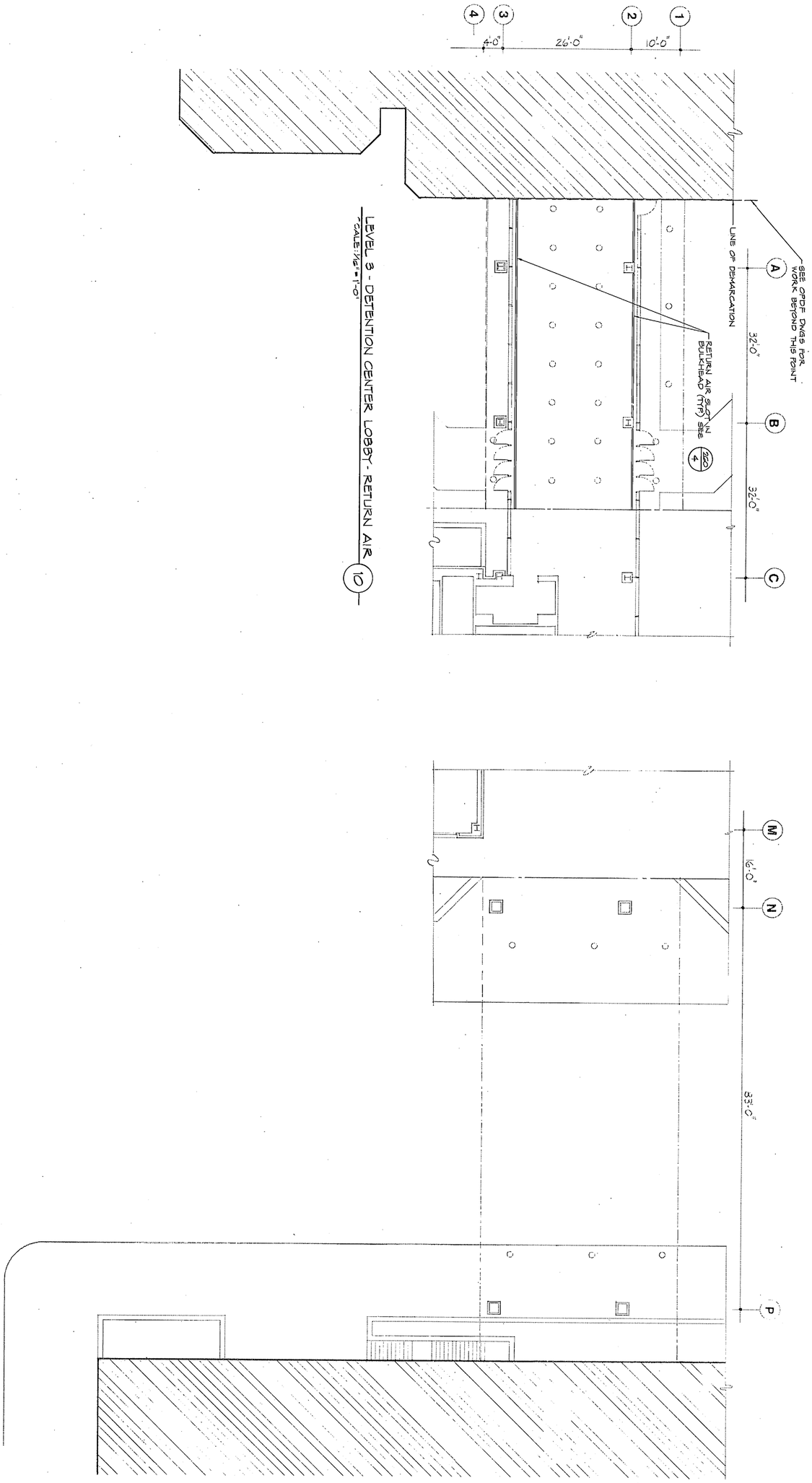
OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



LEVEL 3 - DETENTION CENTER LOBBY - RETURN AIR

SCALE: 1/16" = 1'-0"

10

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — MASARU TAKABAYASHI — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

DRAWING NUMBER 10

CATEGORY 15

LEVEL 3 DETENTION CENTER LOBBY RETURN AIR

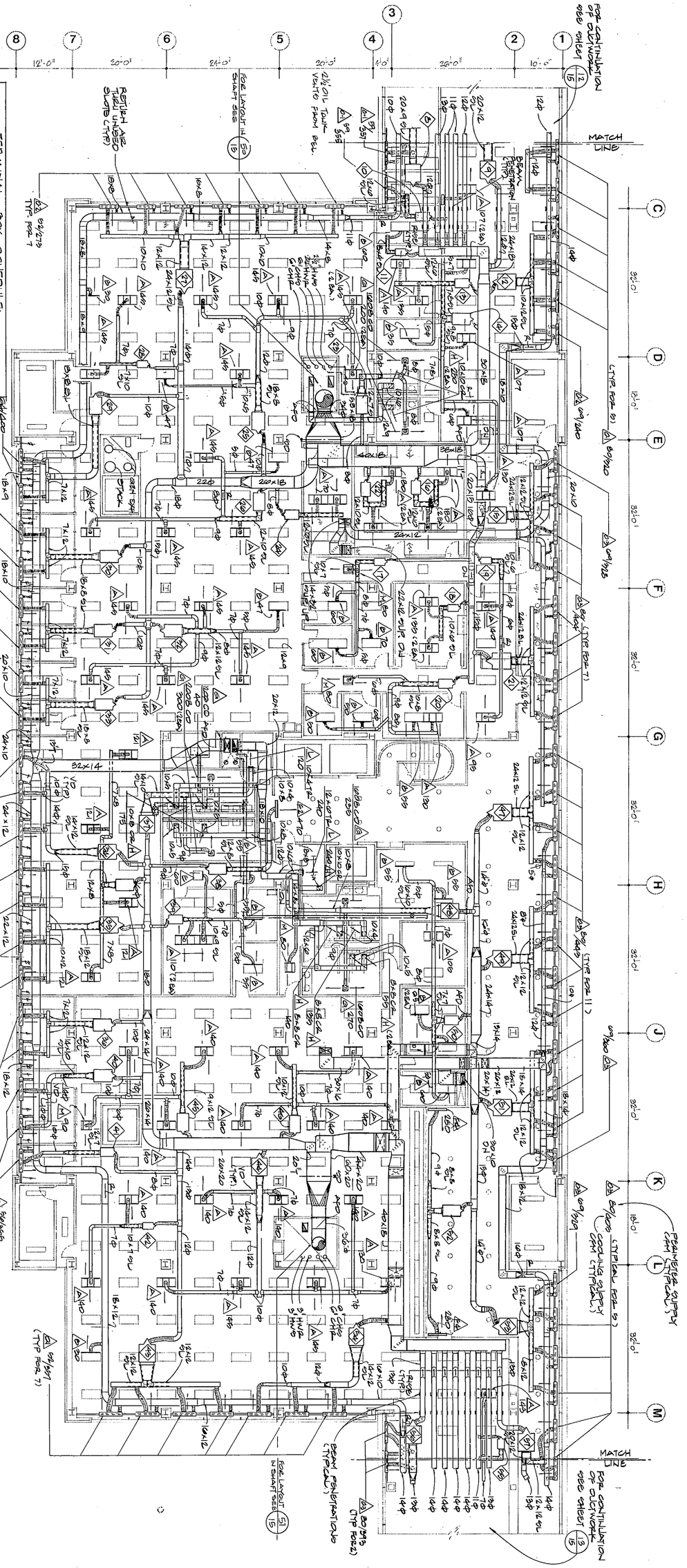
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



TERMINAL BOX SCHEDULE

NO	TAG	CFM	TYPE	SIZE	REHEAT COIL AIR FLOW	REHEAT COIL ENTER TEMP	REHEAT COIL LEAVE TEMP	WASTE AIR	WASTE ENTER TEMP	WASTE LEAVE TEMP	ESP IN. H2O	REMARKS
8	A6	1130	VV	—	—	—	—	—	—	—	—	
9	A6	1350	VV	—	—	—	—	—	—	—	—	
10	A5	355	VV	—	—	—	—	—	—	—	—	
11	A1	20	VV	—	—	—	—	—	—	—	—	
12	A6	1200	VV	—	—	—	—	—	—	—	—	
13	A4	310	VV	—	—	—	—	—	—	—	—	
14	A4	255	VV	—	—	—	—	—	—	—	—	
15	A1	1350	VV	—	—	—	—	—	—	—	—	
16	A5	300	VV	—	—	—	—	—	—	—	—	
17	A4	210	VV	—	—	—	—	—	—	—	—	
18	A4	270	VV	—	—	—	—	—	—	—	—	
19	A4	225	VV	—	—	—	—	—	—	—	—	
20	A5	525	VV	—	—	—	—	—	—	—	—	
21	A1	1910	VV	—	—	—	—	—	—	—	—	
22	A5	300	VV	—	—	—	—	—	—	—	—	
23	A4	400	CV	400	295	55	72	220	170	0.3	7344	
24	A5	340	VV	—	—	—	—	—	—	—	—	
25	A5	775	VV	—	—	—	—	—	—	—	—	
26	A4	621	VV	—	—	—	—	—	—	—	—	
27	A1	1911	VV	—	—	—	—	—	—	—	—	
28	A4	290	VV	—	—	—	—	—	—	—	—	
29	A5	880	VV	—	—	—	—	—	—	—	—	
30	A5	710	VV	—	—	—	—	—	—	—	—	
31	A5	710	VV	—	—	—	—	—	—	—	—	
32	A5	775	VV	—	—	—	—	—	—	—	—	
33	A5	710	VV	—	—	—	—	—	—	—	—	

TERMINAL BOX SCHEDULE

NO	TAG	CFM	TYPE	SIZE	REHEAT COIL AIR FLOW	REHEAT COIL ENTER TEMP	REHEAT COIL LEAVE TEMP	WASTE AIR	WASTE ENTER TEMP	WASTE LEAVE TEMP	ESP IN. H2O	REMARKS
34	A6	1244	VV	—	—	—	—	—	—	—	—	
34A	A6	1484	VV	—	—	—	—	—	—	—	—	
35	A1	1992	VV	—	—	—	—	—	—	—	—	
36	A5	850	VV	—	—	—	—	—	—	—	—	
37	A6	760	CV	760	295	55	72	220	170	0.9	13,750	
38	A4	470	VV	—	—	—	—	—	—	—	—	
39	A5	425	VV	—	—	—	—	—	—	—	—	
40	A5	710	VV	—	—	—	—	—	—	—	—	
41	A3	355	VV	—	—	—	—	—	—	—	—	
42	A2	180	VV	—	—	—	—	—	—	—	—	
43	A2	1408	VV	—	—	—	—	—	—	—	—	
44	A6	1800	VV	—	—	—	—	—	—	—	—	
45	A4	510	VV	—	—	—	—	—	—	—	—	
46	A4	700	VV	—	—	—	—	—	—	—	—	
47	A1	1772	VV	—	—	—	—	—	—	—	—	
48	A6	1825	CV	825	295	55	72	220	170	1.0	15,150	
49	A1	1772	VV	—	—	—	—	—	—	—	—	
50	A3	405	VV	—	—	—	—	—	—	—	—	
51	A1	1689	VV	—	—	—	—	—	—	—	—	
52	A4	560	VV	—	—	—	—	—	—	—	—	
53	A1	1544	VV	—	—	—	—	—	—	—	—	
54	A6	1271	VV	—	—	—	—	—	—	—	—	
55	A1	1289	VV	—	—	—	—	—	—	—	—	
56	A1	1912	VV	—	—	—	—	—	—	—	—	
57	A1	1260	VV	—	—	—	—	—	—	—	—	

ROOM THERMOSTAT SCHEDULE

NO. THERMOSTAT IN BOX SERVED	THERMOSTAT LOCATIONS ROOM NOS	REMARKS	ZONE IN THERMOSTAT LOCATION BOX SERVED	THERMOSTAT LOCATION ROOM NOS	REMARKS
8	4-07		34	4-24	
9	4-06		34A	4-24	
10	4-08		35	4-29	
11	4-09		36	4-51	
12	4-04		37	4-51	
13	4-02	SEE NOTE 2	38	4-43	
14	4-10		39	4-43	
15/24	4-02		40	4-52	
16	4-02		41	4-53	
17	4-17		42	4-50	
18	4-23		43	4-50	
19	4-21		44	4-50	
20	4-18		45	4-50	
21	4-20/4-21/4-18		46	4-50	
22	4-15		47	4-50	SEE NOTE 4
23	4-19		48	4-47	
25	4-29		49	4-47	
26	4-29	SEE NOTE 4	50	4-47	
27	4-29		51	4-47	
28	4-29		52	4-54	
29	4-30		53/57	4-54	
30	4-28		54	4-50	
31	4-34, 4-35		55	4-50	
32	4-25		56	4-50	
33	4-30, 4-31				

NOTES:
1. EXACT LOCATION OF ALL ROOM THERMOSTATS TO BE VERIFIED BY ARCHITECT WITH APPROVED SHOP DWGS.
2. REPRESENTATIVE ROOM THERMOSTAT SIGNAL IS USED TO RESET SET POINT OF SUPPLY UNIT LEAVING AIR TEMP.
3. DUCTSTAT LOCATE BEHIND RETURN OR EXHAUST GRILLE.

NOTES:
1. REFER TO ARCHITECTURAL DWGS FOR ROOM NAMES & NUMBERS
2. FOR RETURN AIR OPENINGS IN CEILINGS OR RETURN AIR THRU LIGHT FIXTURES SEE (14/15)
3. ALLOW A MINIMUM CLEARANCE OF 18" BETWEEN CEILING & BOTTOM OF TERMINAL BOXES WHEREVER POSSIBLE.

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77
REVISIONS BY DATE
1
2
3
4
5
6
7

REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL

DRAWING NUMBER 11
CATEGORY 15

LEVEL 4 SECOND FLOOR

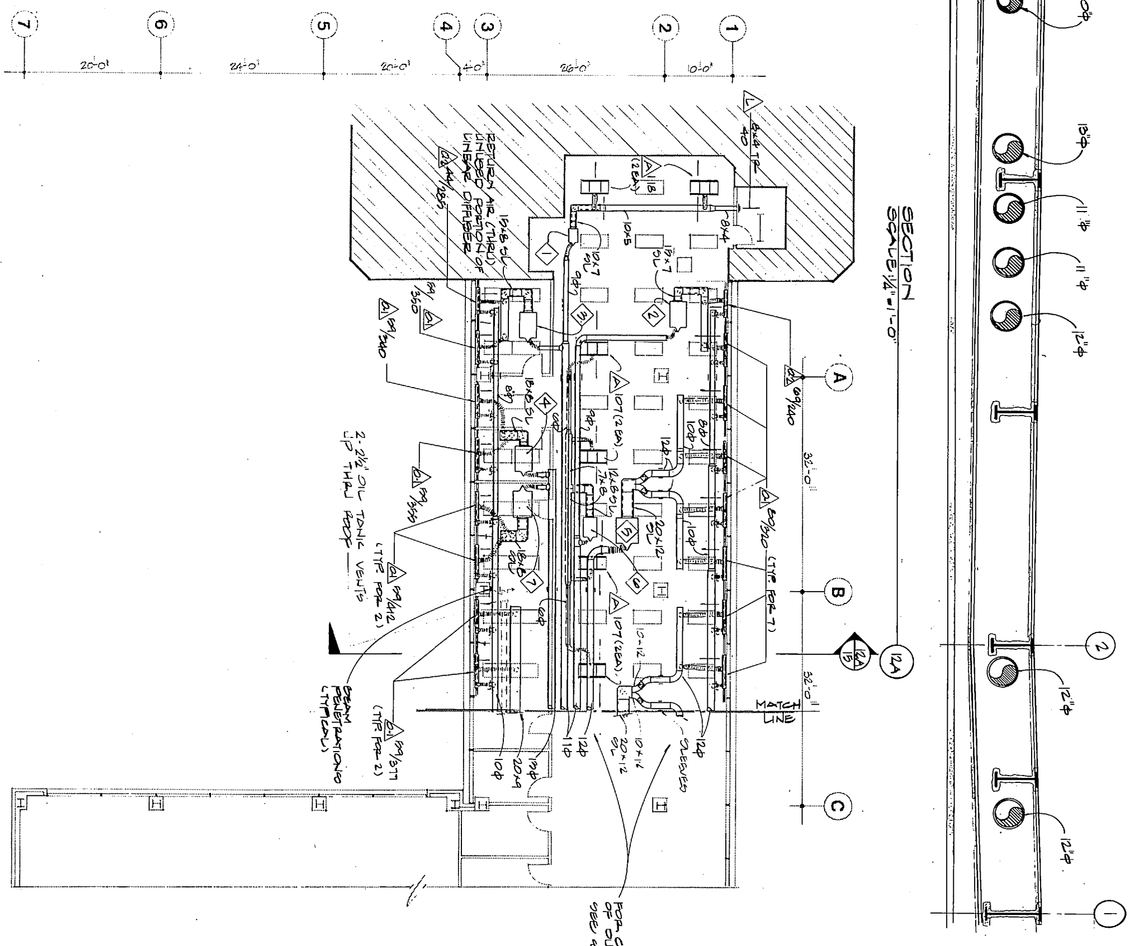
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



TERMINAL BOX SCHEDULE

NO.	TAG	CFM	TYPE	CFM	SIZE	REHEAT COIL AIR ENT/LVG	REHEAT COIL WATER ENT/LVG	GPM	TOT CAP BTUH	REMARKS
1	P1/4	1740	VV	—	—	—	—	—	—	
2	P1/4	1540	VV	—	—	—	—	—	—	
3	P1/4	1235	VV	—	—	—	—	—	—	
4	P1/4	1115	VV	—	—	—	—	—	—	
5	P1/3	1280	VV	—	—	—	—	—	—	
6	P1/3	1220	VV	—	—	—	—	—	—	
7	P1/3	870	VV	—	—	—	—	—	—	

ROOM THERMOSTAT SCHEDULE

ZONE # THERMOSTAT BOX LOCATION SERVED ROOM NOS	REMARKS	ZONE # THERMOSTAT BOX LOCATION SERVED ROOM NOS	REMARKS
1 4-02		4-09	SEE NOTE 2
2 4-04	SEE NOTE 2	4-07	SEE NOTE 2
3 4-03		4-08	
4 4-01			
5 4-02			
6 4-04			
7 4-09			

1. EXACT LOCATION OF ALL ROOM THERMOSTATS TO BE VERIFIED BY ARCHITECT WITH OWNER'S REPRESENTATIVE. ROOM THERMOSTAT SHALL BE USED TO RESET SET POINT OF SUPPLY UNIT LEAVING AIR TEMPERATURE.

TERMINAL BOX SCHEDULE

NO.	TAG	CFM	TYPE	CFM	SIZE	REHEAT COIL AIR ENT/LVG	REHEAT COIL WATER ENT/LVG	GPM	TOT CAP BTUH	REMARKS
88	A1/4	1620	VV	—	—	—	—	—	—	
91	A1/4	1235	VV	—	—	—	—	—	—	
90	A1/4	1652	VV	—	—	—	—	—	—	
91	A1/4	1620	VV	—	—	—	—	—	—	
92	A1/4	1652	VV	—	—	—	—	—	—	
93	A1/3	784	VV	—	—	—	—	—	—	
94	P1/2	1110	VV	—	—	—	—	—	—	

NOTES:
1. REFER TO ARCHITECTURAL DWGS. FOR ROOM NAMES & NUMBERS
2. FOR RETURN AIR OPENINGS IN CEILINGS OR RETURN AIR THRU LIGHT FIXTURES, SEE (15) (15) (16) (15)

LEVEL 4 - SECOND FLOOR WEST BRIDGE (12)
SCALE: 1/16" = 1'-0"

LEVEL 4 - SECOND FLOOR EAST BRIDGES (13)

DRAWING NUMBER	12-13	
CATEGORY	15	
LEVEL 4 SECOND FLOOR BRIDGES		

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — MASARU TAKAKAWA — No. 11242 — MECHANICAL

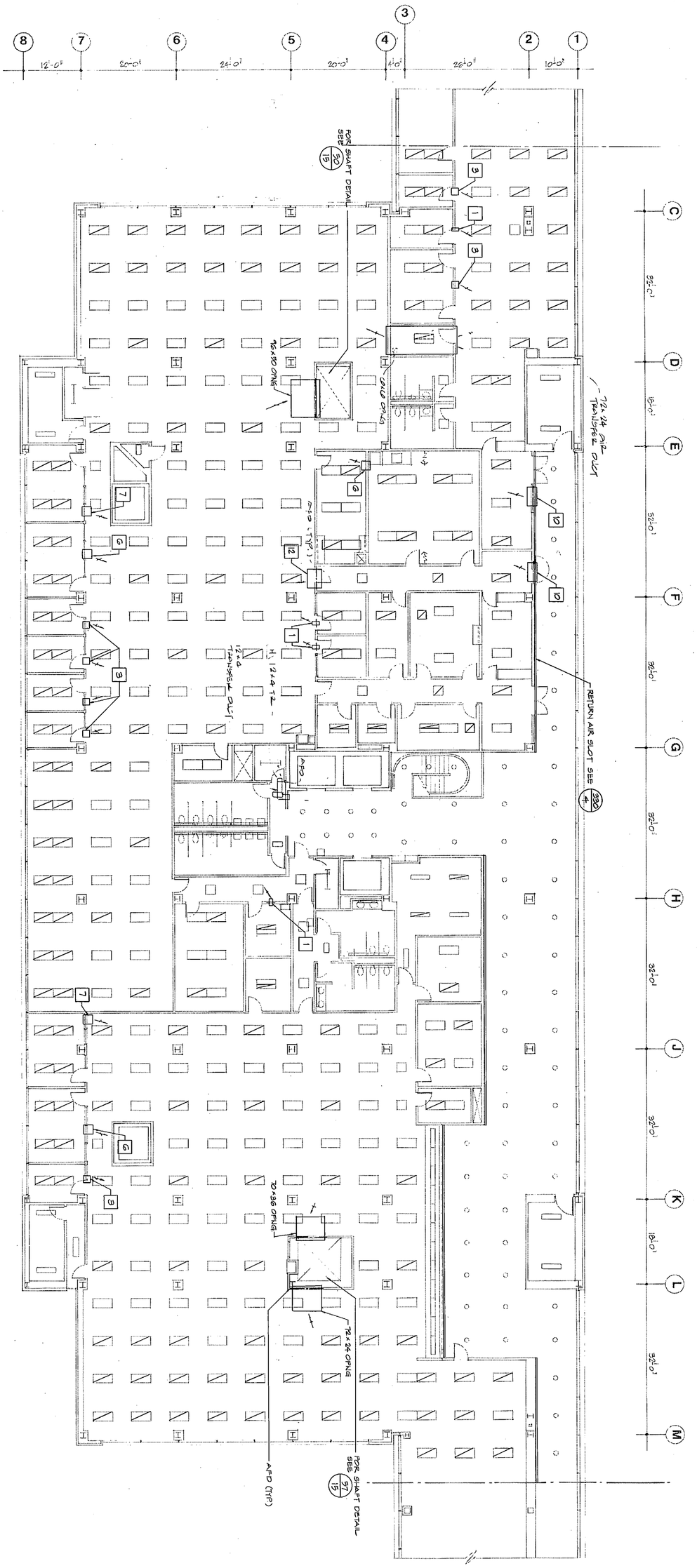
OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



LEVEL 4 - 2ND FLOOR - RETURN AIR (14)

SCALE: 1/16" = 1'-0"

NOTES:

1. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOTS ALL SIDES
2. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOTS ON ONE LONG SIDE AND BOTH ENDS
3. ALL UNUSED AIR SLOTS IN LIGHT FIXTURES TO BE MADE INACTIVE
4. FOR DETAIL AND SIZES OF TRANSFER DUCTS SEE 5/A2.1 (15)
5. FOR ROOM NOS SEE ARCH. DWGS.

LEVEL 4
2ND FL. PLAN
RETURN AIR

DRAWING NUMBER 14

CATEGORY 15

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-1-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER HARU TAKASAMI No. 11242 MECHANICAL HIGH PLUMBING

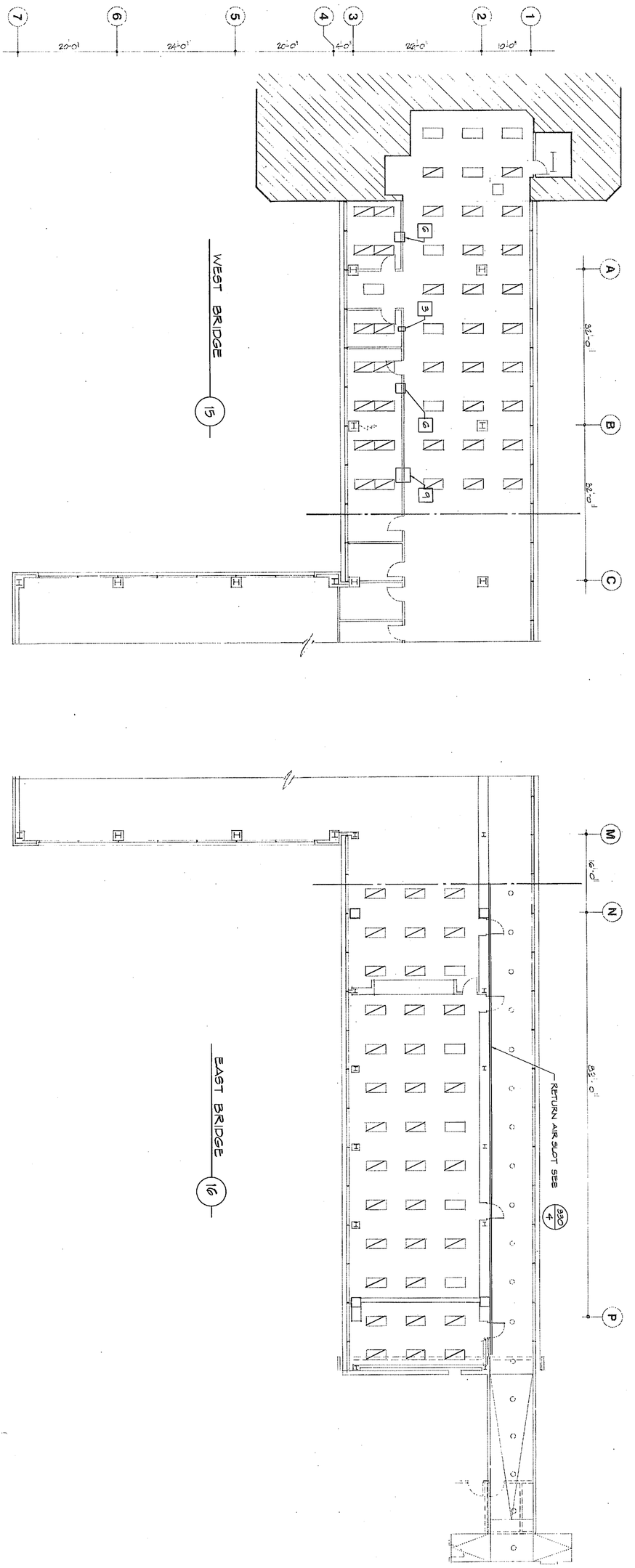
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



LEVEL 4 - 2ND FLOOR - BRIDGES - RETURN AIR

SCALE 1/8" = 1'-0"

NOTES:

1. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOTS ALL SIDES
2. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOT ON ONE LONG SIDE AND BOTH ENDS
3. ALL UNUSED AIR SLOTS IN LIGHT FIXTURES TO BE MADE INACTIVE
4. FOR DETAIL AND SIZES OF TRANSFER DUCTS SEE 15/15
5. FOR ROOM NOS. SEE ARCH. DWGS.

DRAWING NUMBER	15-16
CATEGORY	15

LEVEL 4 2ND FLOOR BRIDGES RETURN AIR

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — HAJARU TAKAHASHI — No. 11242 — STATE OF CALIFORNIA — MECHANICAL

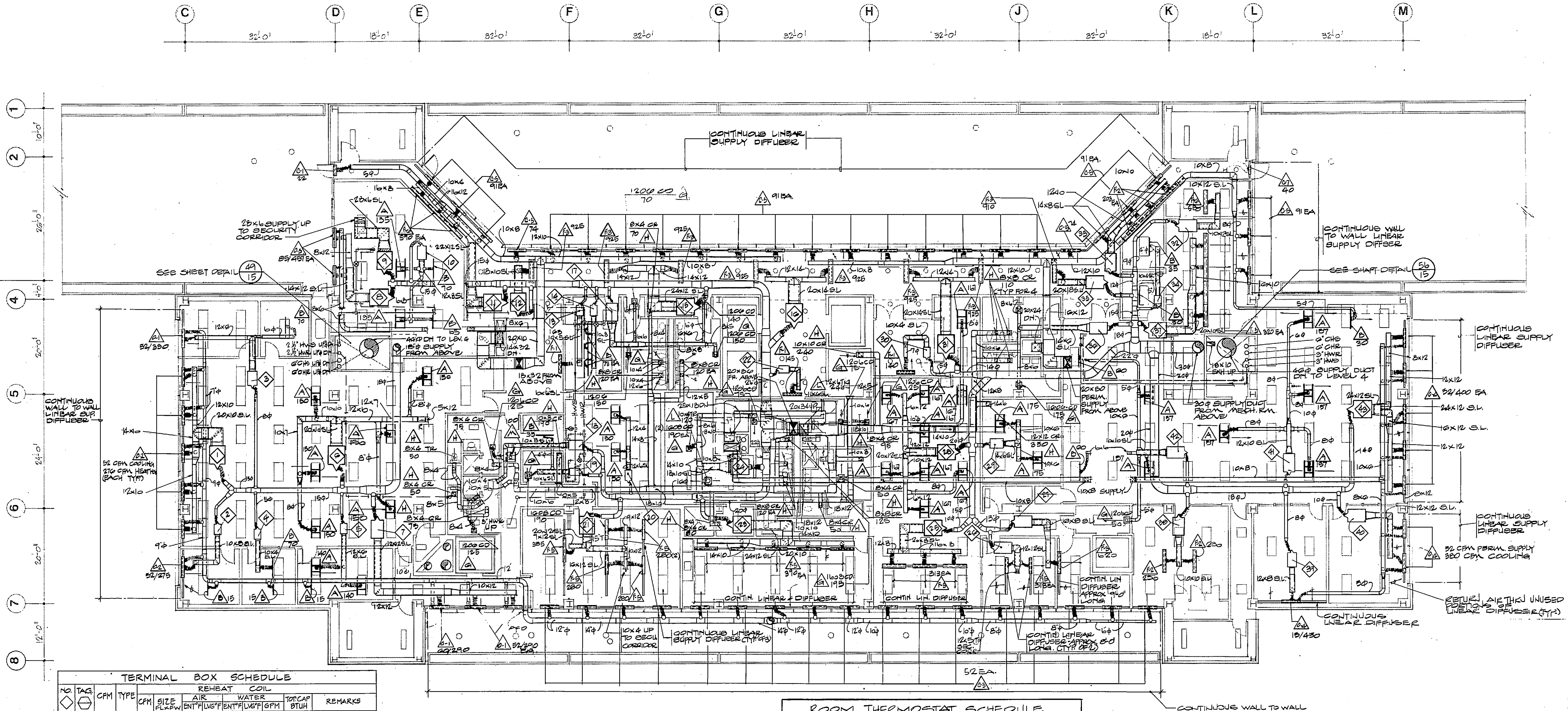
OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



TERMINAL BOX SCHEDULE

NO. ◇	TAG ⬡	CFM	TYPE	REHEAT COIL CFM	SIZE FLxFW	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	GPM	TOT.CAP BTUH	REMARKS
1	A/6	1380	VV	—	—	—	—	—	—	—	—	
2	A/2	275	VV	—	—	—	—	—	—	—	—	
3	A/3	400	VV	—	—	—	—	—	—	—	—	
4	A/1	70	VV	—	—	—	—	—	—	—	—	
5	A/2	280	VV	—	—	—	—	—	—	—	—	
6	A/6	1120	VV	—	—	—	—	—	—	—	—	
7	A/5	810	VV	—	—	—	—	—	—	—	—	
8	A/6	914	VV	—	—	—	—	—	—	—	—	
9	C/6	850	CV	850	29x8	55	91°	200	170	202	35050	
10	A/3	405	VV	—	—	—	—	—	—	—	—	
11	A/7	1770	VV	—	—	—	—	—	—	—	—	
12	A/6	925	VV	—	—	—	—	—	—	—	—	
13	A/1	165	VV	—	—	—	—	—	—	—	—	
14	A/2	219	VV	—	—	—	—	—	—	—	—	
15	A/7	1850	VV	—	—	—	—	—	—	—	—	
16	A/7	1850	VV	—	—	—	—	—	—	—	—	
17	C/4	510	CV	510	23x6	55°	72°	200	170	0.6	9405	
18	C/3	350	CV	350	17x5	55°	72°	200	174.3	0.5	6425	
19	C/2	225	CV	225	11x5	55°	72°	200	183.5	0.5	4130	
20	A/2	300	VV	—	—	—	—	—	—	—	—	
21	A/6	1635	VV	—	—	—	—	—	—	—	—	
22	A/1	145	VV	—	—	—	—	—	—	—	—	
23	A/7	1950	VV	—	—	—	—	—	—	—	—	
24	C/6	1110	CV	1110	29x8	55	72°	200	170	1.4	20380	

TERMINAL BOX SCHEDULE

NO. ◇	TAG ⬡	CFM	TYPE	REHEAT COIL CFM	SIZE FLxFW	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	GPM	TOT.CAP BTUH	REMARKS
25	A/6	959	VV	—	—	—	—	—	—	—	—	
26	A/5	876	VV	—	—	—	—	—	—	—	—	
27	A/4	620	VV	—	—	—	—	—	—	—	—	
28	A/6	1503	VV	—	—	—	—	—	—	—	—	
29	A/3	350	VV	—	—	—	—	—	—	—	—	
30	A/1	140	VV	—	—	—	—	—	—	—	—	
31	A/7	1850	VV	—	—	—	—	—	—	—	—	
32	A/4	580	VV	—	—	—	—	—	—	—	—	
33	A/4	609	VV	—	—	—	—	—	—	—	—	
34	A/1	85	VV	—	—	—	—	—	—	—	—	
35	A/5	910	VV	—	—	—	—	—	—	—	—	
36	C/3	350	CV	350	17x5	55°	72°	200	174.3	0.5	6430	
37	A/6	1280	VV	—	—	—	—	—	—	—	—	
38	A/4	460	VV	—	—	—	—	—	—	—	—	
39	A/3	1450	VV	—	—	—	—	—	—	—	—	
40	A/3	1760	VV	—	—	—	—	—	—	—	—	
41	A/4	1628	VV	—	—	—	—	—	—	—	—	
42	A/4	1484	VV	—	—	—	—	—	—	—	—	
43	A/7	2000	VV	—	—	—	—	—	—	—	—	

ROOM THERMOSTAT SCHEDULE

ZONE Nº BOX SERVED	THERMOSTAT LOCATION ROOM Nº	REMARKS	ZONE Nº BOX SERVED	THERMOSTAT LOCATION ROOM Nº	REMARKS
1	5-07	SEE NOTE 2	23	5-35	
2	5-03		24	5-33	
3	5-07		25	5-31	
4	5-09		26	5-36	
5	5-10		27	5-37	
6	5-07		28	5-31	SEE NOTE 2
7	5-17		29	5-49	
8	5-01		30	5-30	
9	SEE NOTE 3		31,35	5-41	
10	5-01		32	5-44	
11	5-41		33	5-41	
12	5-41		34	5-45	
13	5-02		36	5-47	
14	5-03		37	5-46	
15,16	5-41		38	5-32	
17	5-23		39	5-55	
18	5-15		40	5-36	
19	5-20		41	5-51	
20	5-19		42	5-51	
21	5-22		43	5-51	SEE NOTE 2
22	5-25				

1- EXACT LOCATION OF ALL ROOM THERMOSTATS TO BE VERIFIED BY ARCHITECT WITH APPROVED SHOP DRAWINGS
2- REPRESENTATIVE ROOM THERMOSTAT SIGNAL IS USED TO RESET SET POINT OF SUPPLY UNIT LEAVING AIR TEMPERATURE
3- LOCATE DUCTSTATS BEHIND RETURN OR EXHAUST AIR GRILLE

(17) LEVEL 5 · THIRD FLOOR

SCALE 1/16" = 1'-0"

NOTES:

1. REFER TO ARCHITECTURAL DWG'S FOR ROOM NAMES & NOS.
2. FOR RETURN AIR OPENINGS IN CEILINGS OR RETURN AIR THRU LIGHT FIXTURES SEE 18/15
3. ALLOW A MINIMUM CLEARANCE OF 18" BETWEEN CEILING & BOTTOM OF TERMINAL BOXES

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE. OAKLAND. CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

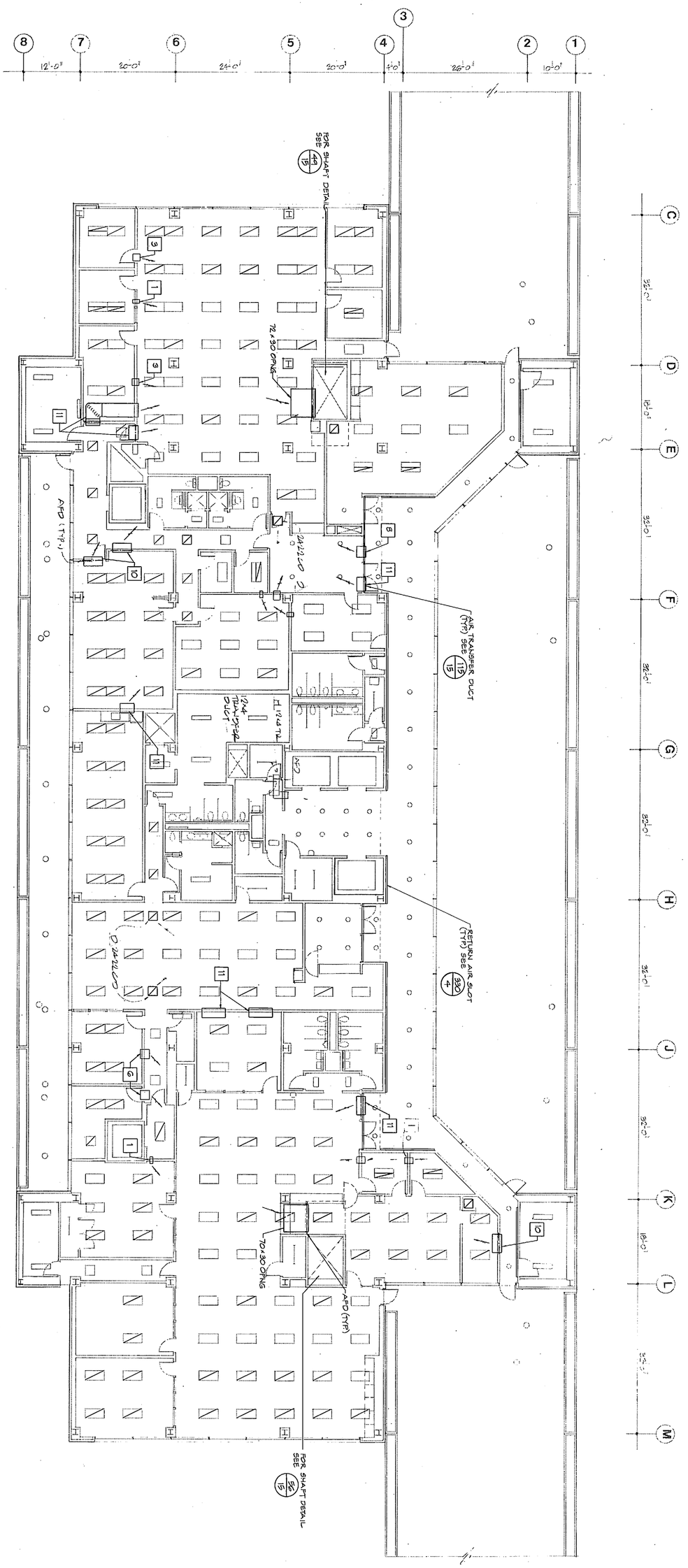
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

JOB NO. 7873-00		
DRAWN BY		
CHECKED BY		
DATE 7/4/77		
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LEVEL 5
THIRD FLR

DRAWING NUMBER 17
CATEGORY 15



LEVEL 5 - 3RD FLOOR - RETURN AIR 18

SCALE: 1/16" = 1'-0"

NOTES:

1. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOTS ALL SIDES
2. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOTS ON ONE LONG SIDE AND BOTH ENDS
3. ALL UNUSED AIR SLOTS IN LIGHT FIXTURES TO BE MADE INACTIVE
4. FOR DETAIL AND SIZES OF TRANSFER DUCT SEE 11B/15
5. FOR ROOM NOS. SEE ARCH. DWGS.

DRAWING NUMBER 18

CATEGORY 15

LEVEL 5 3RD FL PLAN RETURN AIR

JOB NO. 7873-00		
DRAWN BY		
CHECKED BY		
DATE 7/14/77		
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER HAYAKAWA TAKAHARU No. 11242 MECHANICAL STATE OF CALIFORNIA

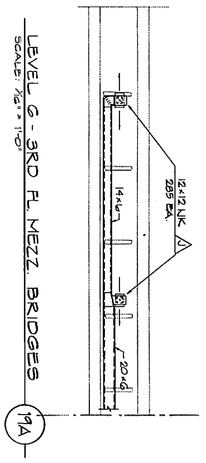
OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

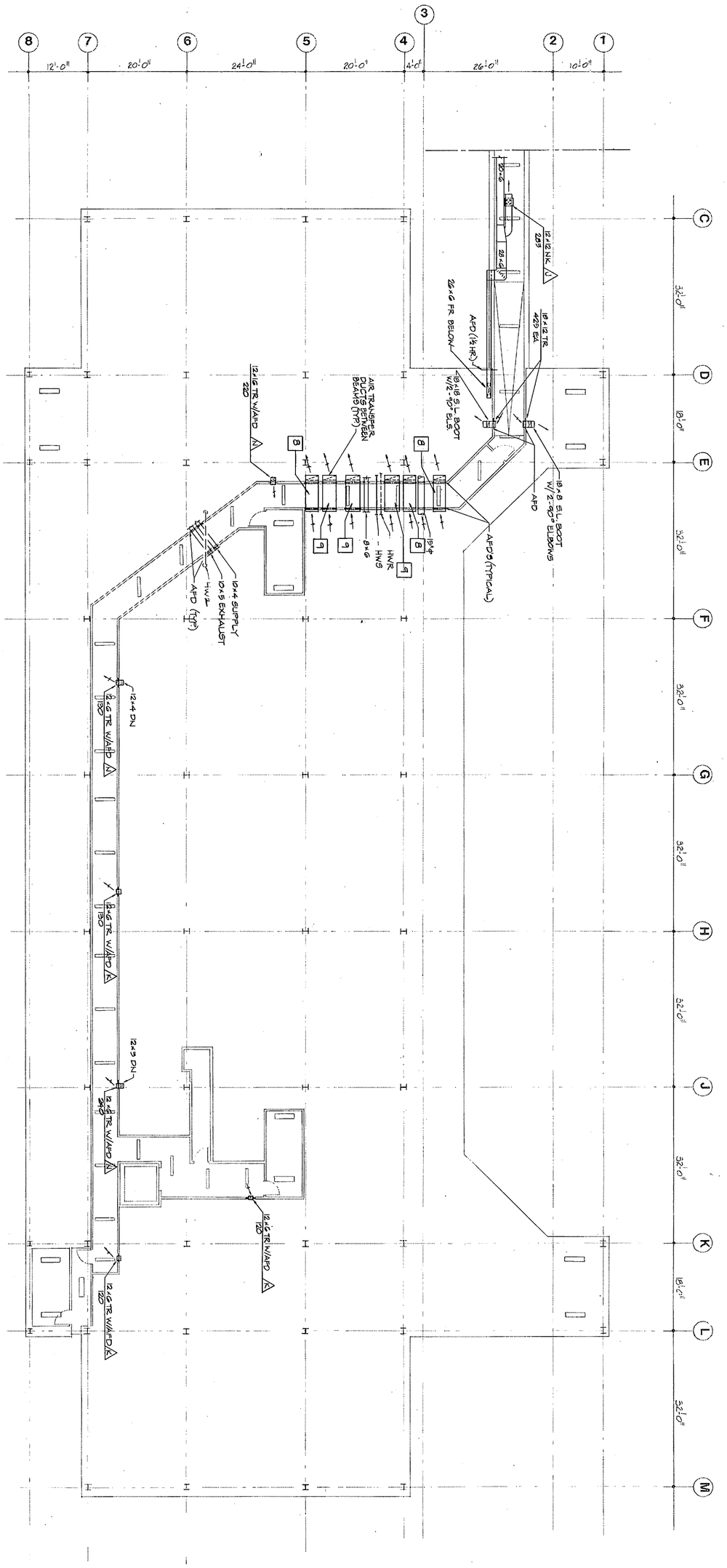
HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



LEVEL 6 - 3RD FL. MEZZ. BRIDGES
SCALE: 1/16" = 1'-0"



LEVEL 6 - 3RD FLOOR MEZZANINE
SCALE: 1/16" = 1'-0"

DRAWING NUMBER	19-19A
CATEGORY	15
	LEVEL 6 3RD FLOOR MEZZANINE

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER
HAYAKU TAKAHASHI
No. 11242
MECHANICAL
STATE OF CALIFORNIA

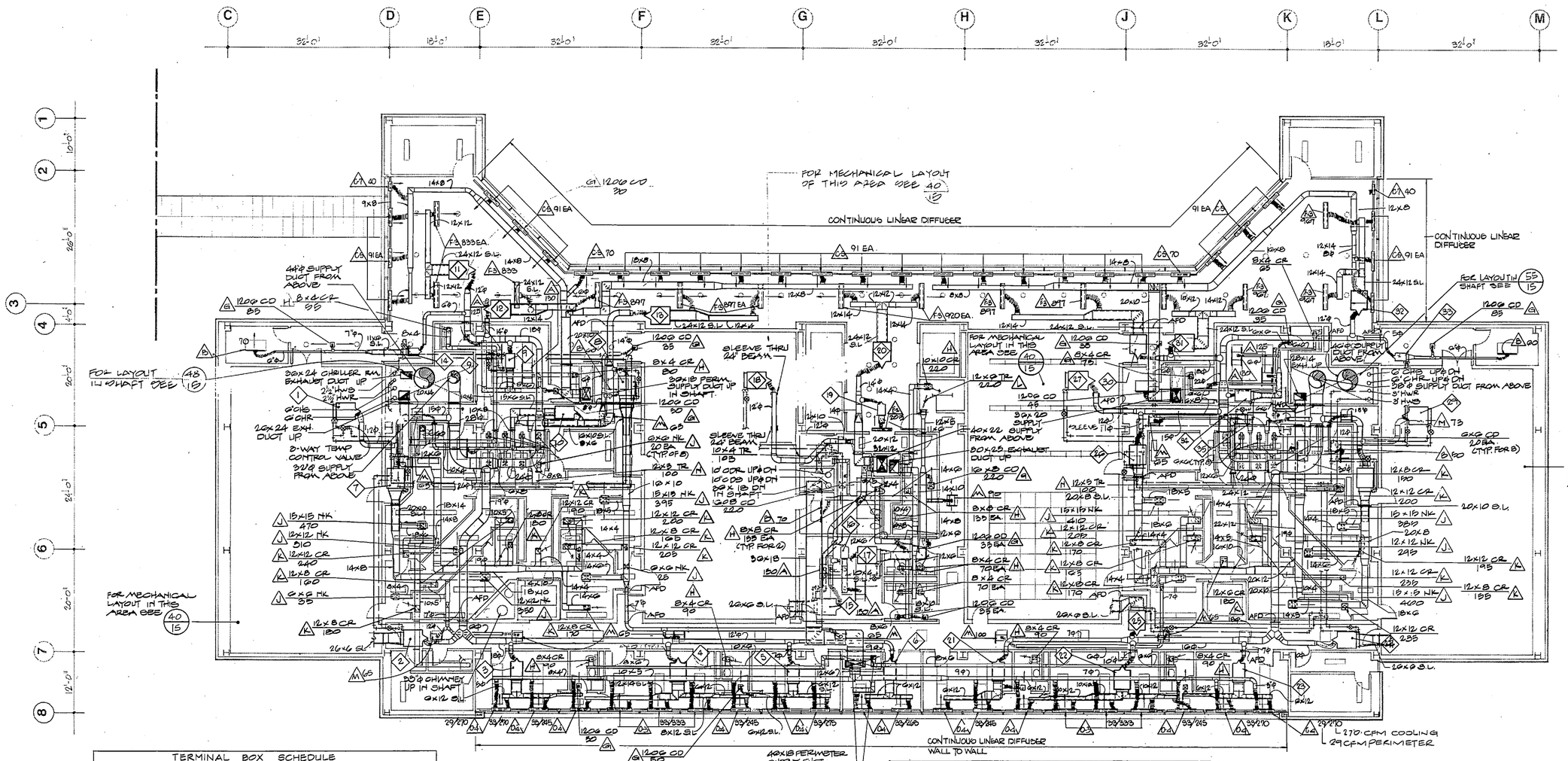
OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



TERMINAL BOX SCHEDULE

NO	TAG	CFM	TYPE	REHEAT COIL								REMARKS
				CFM	SIZE FLxFW	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	WATER GPM	TOT CAP BTUH	
1	B/7	1260	VCV	630	35x8	55	74	200	170	0.9	12930	
2	B/6	780	VCV	390	29x8	55	78	200	170	0.7	9690	
3	A/4	590	VV	—	—	—	—	—	—	—	—	
4	A/6	1489	VV	—	—	—	—	—	—	—	—	
5	A/4	600	VV	—	—	—	—	—	—	—	—	
6	A/4	580	VV	—	—	—	—	—	—	—	—	
7	C/7	1315	CV	1315	35x8	55	72	200	170	1.6	24140	
8	C/6	875	CV	875	29x8	55	72	200	170	1.1	16065	
9	C/3	335	CV	335	17x5	55	72	200	175.4	0.5	6150	
10	A/4	535	VV	—	—	—	—	—	—	—	—	
11	A/7	1669	VV	—	—	—	—	—	—	—	—	
12	A/7	1730	VV	—	—	—	—	—	—	—	—	
13	A/7	1794	VV	—	—	—	—	—	—	—	—	
14	B/1	155	VCV	80	11x5	55	85	200	189.6	0.5	2590	
15	B/6	780	VCV	390	29x8	55	72	200	171.4	0.5	7160	
16	A/2	300	VV	—	—	—	—	—	—	—	—	
17	C/6	1063	CV	1063	29x8	55	72	200	170	1.3	19550	
18	B/7	1260	VCV	630	35x8	55	72	200	170	0.8	11570	
19	A/2	225	VV	—	—	—	—	—	—	—	—	
20	A/7	1860	VV	—	—	—	—	—	—	—	—	

TERMINAL BOX SCHEDULE

		CFM	TYPE	REHEAT COIL								REMARKS
				CFM	SIZE FLxFW	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	WATER GPM	TOT CAP BTUH	
21	A/4	580	VV	—	—	—	—	—	—	—	—	
22	A/6	1489	VV	—	—	—	—	—	—	—	—	
23	A/4	590	VV	—	—	—	—	—	—	—	—	
24	B/6	780	VCV	390	29x8	55	78	200	170	0.7	9690	
25	B/6	780	VCV	390	29x8	55	72	200	171.4	0.5	7160	
26	C/6	900	CV	900	29x8	55	72	200	170	1.1	16520	
27	B/7	1260	VCV	630	35x8	55	72	200	170	0.8	11570	
28	C/7	1205	CV	1205	35x8	55	72	200	170	1.5	22120	
29	B/7	1260	VCV	630	35x8	55	74	200	170	0.9	12930	
30	A/7	1794	VV	—	—	—	—	—	—	—	—	
31	A/7	1864	VV	—	—	—	—	—	—	—	—	
32	A/7	1924	VV	—	—	—	—	—	—	—	—	
33	B/1	145	VCV	73	11x5	55	87	200	189.6	0.5	2590	
34	C/3	335	CV	335	17x5	55	72	200	175.4	0.5	6150	
35	A/4	591	VV	—	—	—	—	—	—	—	—	

ROOM THERMOSTAT SCHEDULE

ZONE NO BOX SERVED	THERMOSTAT LOCATION ROOM NO	REMARKS	ZONE NO BOX SERVED	THERMOSTAT LOCATION ROOM NO	REMARKS
1	7-04		19	7-26	
2	7-04		21	7-43	
3	7-40		22	7-51	
4	7-43		23	7-54	
5	7-40		24	7-77	
6	7-67		25	7-58	
7	SEE NOTE 3		26	SEE NOTE 3	
8	SEE NOTE 3		27	7-58	
9	7-08	SEE NOTE 2	28	SEE NOTE 3	
10	7-07		29	7-77	
11	7-25		30	7-25	
12	7-25		31	7-25	
13, 20	7-25		32	7-25	
14	7-03		33	7-78	
15	7-22		34	7-62	SEE NOTE 2
16	7-32		35	7-69, 7-69A	
17	7-29				
18	7-22				

1- EXACT LOCATION OF ALL ROOM THERMOSTATS TO BE VERIFIED BY ARCHITECT WITH APPROVED SHOP DWG'S.
2- REPRESENTATIVE ROOM THERMOSTAT SIGNAL IS USED TO RESET SET POINT OF SUPPLY UNIT LEAVING AIR TEMPERATURE.
3- LOCATE DUCTSTATS BEHIND RETURN OR EXHAUST AIR GRILLE

(20) LEVEL 7 FOURTH FLOOR
SCALE 1/16" = 1'-0"

NOTES:
1- REFER TO ARCHITECTURAL DRAWINGS FOR ROOM NAMES AND NOS.
2- FOR RETURN AIR OPENINGS IN CEILINGS OR RETURN AIR THRU LIGHT FIXTURES SEE 21/15
3- ALLOW AS MUCH CLEARANCE AS POSSIBLE BETWEEN CEILING AND BOTTOM OF TERMINAL BOXES

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VERIEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

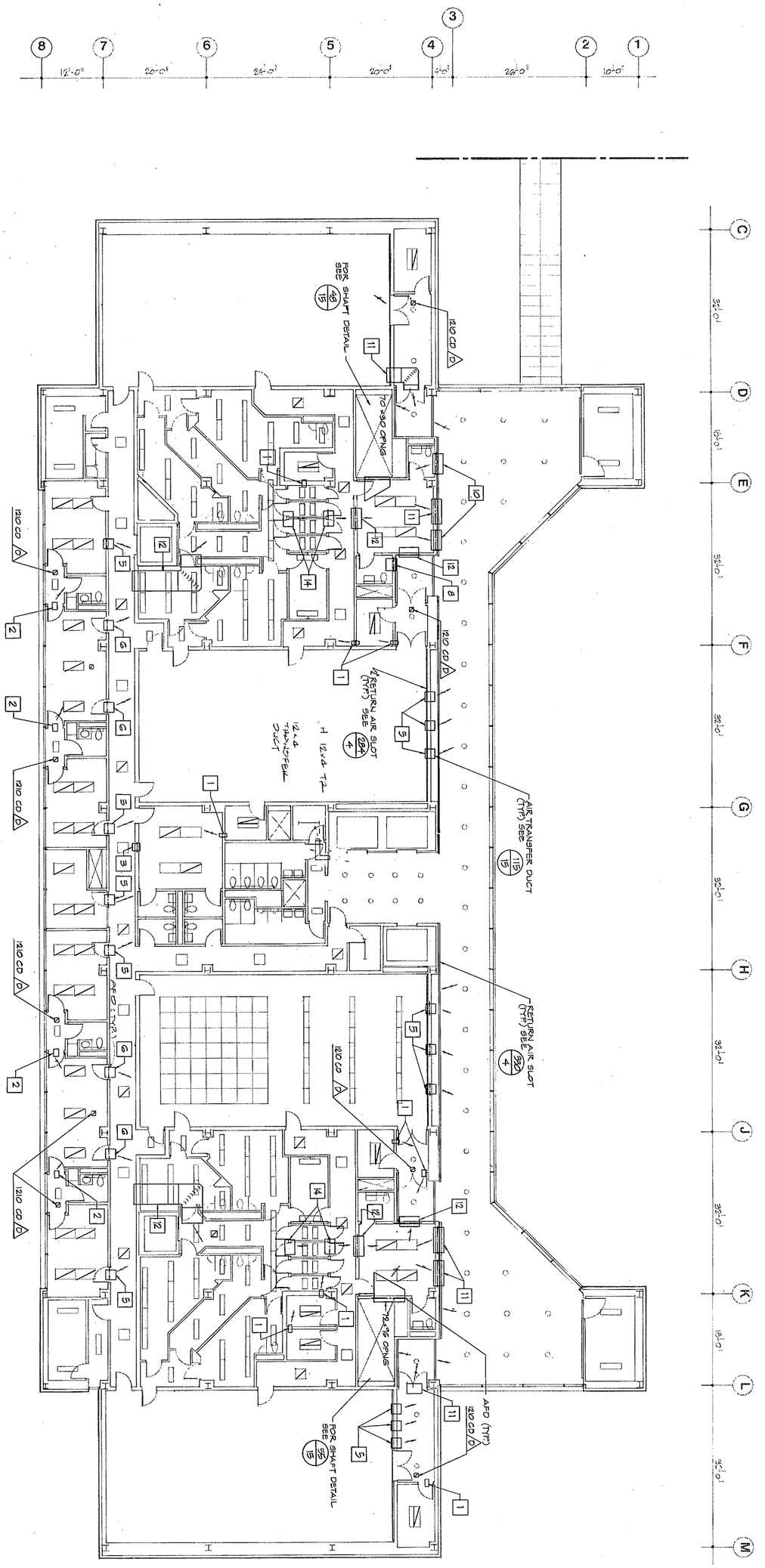
REGISTERED PROFESSIONAL ENGINEER — MECHANICAL — No. 11242 — STATE OF CALIFORNIA

JOB NO. 787300
DRAWN BY
CHECKED BY
DATE 7-24-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LEVEL 7
FOURTH FL.

DRAWING NUMBER 20
CATEGORY 15



LEVEL 7 - 4TH FLOOR - RETURN AIR (21)

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

NOTES:

1. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOTS ALL SIDES
2. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOT ON ONE LONG SIDE AND BOTH ENDS
3. ALL UNUSED AIR SLOTS IN LIGHT FIXTURES TO BE MADE INACTIVE
4. FOR DETAIL AND SIZES OF TRANSFER DUCTS SEE 15/15
5. FOR ROOM NOS SEE ARCH. DWGS.

DRAWING NUMBER	21
CATEGORY	15

LEVEL 7
4TH FL PLAN
RETURN AIR

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — MASARU TAKAKAWA — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

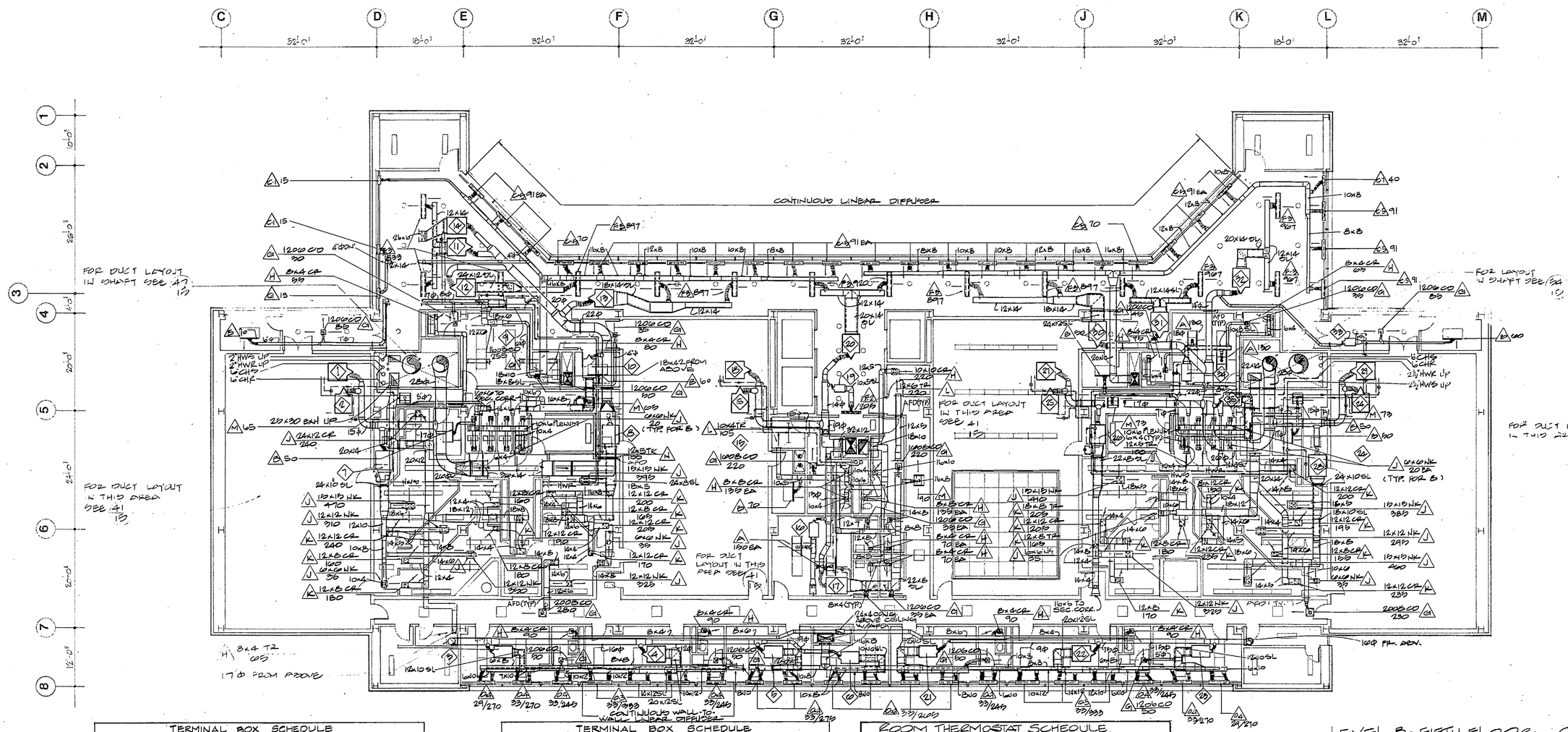
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



TERMINAL BOX SCHEDULE

NO. ◇	TAG ⬡	CFM	TYPE	REHEAT COIL CFM	SIZE FLR FW	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	WATER GPM	TOT CAP BTUH	REMARKS
1	B/1	1260	VCV	630	35x8	55°	74°	200°	170°	0.9	12930	
2	B/6	780	VCV	390	29x8	55°	78°	200°	170°	0.7	9690	
3	A/2	590	VV	—	——	——	——	——	——	——	——	
4	A/6	1439	VV	—	——	——	——	——	——	——	——	
5	A/4	600	VV	—	——	——	——	——	——	——	——	
6	A/4	530	VV	—	——	——	——	——	——	——	——	
7	C/1	1165	CV	1165	35x8	55°	72°	200°	170°	1.4	21390	
8	C/6	876	CV	875	29x8	55°	72°	200°	170°	1.1	16065	
9	C/4	490	CV	490	23x5	55°	72°	200°	170°	0.6	9000	
10	A/3	715	VV	—	——	——	——	——	——	——	——	
11	A/1	1606	VV	—	——	——	——	——	——	——	——	
12	A/1	1130	VV	—	——	——	——	——	——	——	——	
13	A/1	1796	VV	—	——	——	——	——	——	——	——	
14	C/6	850	CV	850	29x8	55°	91°	200°	170°	2.2	33050	
15	B/6	780	VCV	390	29x8	55°	72°	200°	171.4	0.5	7160	
16	A/3	415	VV	—	——	——	——	——	——	——	——	
17	C/1	1065	CV	1065	35x8	55°	72°	200°	170°	1.3	19550	
18	B/1	1260	VCV	630	35x8	55°	72°	200°	170°	0.8	11570	
19	A/2	205	VV	—	——	——	——	——	——	——	——	
20	A/1	1840	VV	—	——	——	——	——	——	——	——	

TERMINAL BOX SCHEDULE

NO. ◇	TAG ⬡	CFM	TYPE	REHEAT COIL CFM	SIZE FLR FW	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	WATER GPM	TOT CAP BTUH	REMARKS
21	A/4	580	VV	—	——	——	——	——	——	——	——	
22	A/6	1689	VV	—	——	——	——	——	——	——	——	
23	A/4	590	VV	—	——	——	——	——	——	——	——	
24	B/6	780	VCV	390	29x8	55°	78°	200°	170°	0.7	9690	
25	B/6	780	VCV	390	29x8	55°	72°	200°	171.4	0.5	7160	
26	C/1	1140	CV	1140	35x8	55°	72°	200°	170°	1.4	20930	
27	B/1	1260	VCV	630	35x8	55°	78°	200°	170°	0.8	11570	
28	C/1	1205	CV	1205	35x8	55°	72°	200°	170°	1.5	22120	
29	B/1	1260	VCV	630	35x8	55°	74°	200°	170°	0.9	12930	
30	A/1	1794	VV	—	——	——	——	——	——	——	——	
31	A/1	1864	VV	—	——	——	——	——	——	——	——	
32	A/1	1934	VV	—	——	——	——	——	——	——	——	
33	B/1	165	VCV	75	11x5	55°	81°	200°	189.6	0.5	8590	
34	C/3	335	CV	335	17x5	55°	72°	200°	174.9	0.5	450	
35	A/4	591	VV	—	——	——	——	——	—	——	——	

ROOM THERMOSTAT SCHEDULE

ZONE VAV BOX SERVED	THERMOSTAT LOCATION ROOM NO	REMARKS	ZONE VAV BOX SERVED	THERMOSTAT LOCATION ROOM NO	REMARKS
1	8-04		19	8-26	
2	8-04		21	8-43	
3	8-40		22	8-31	
4	8-43		23	8-54	
5	8-46		24	8-71	
6	8-47		25	8-58	
7	SEE NOTE 3		26	SEE NOTE 3	
8	SEE NOTE 3		27	8-58	
9	8-08		28	SEE NOTE 3	
10	8-23, 8-01		29	8-71	
11	8-25		30	8-25	
12	8-25		31	8-25	
13, 20	8-25		32	8-25	
14	SEE NOTE 3		33	8-78	
15	8-22		34	8-62	
16	8-32		35	8-56, 8-69, 8-69A	
17	8-29				
18	8-22				

1. EXACT LOCATION OF ALL ROOM THERMOSTATS TO BE VERIFIED BY ARCHITECT WITH APPROVED SHOP DRAWINGS
2. REPRESENTATIVE ROOM THERMOSTAT SIGNAL IS USED TO RESET SET POINT OF SUPPLY UNIT LEAVING AIR TEMPERATURE
3. DUOSTAT LOCATE BEHIND RETURN OR EXHAUST AIR GRILLE

LEVEL 8 - FIFTH FLOOR (22)

SCALE 1/16"=1'-0"

NOTES:
1. REFER TO ARCHITECTURAL DRAWINGS FOR ROOM NAMES AND NUMBERS.
2. FOR RETURN AIR OPENINGS IN CEILINGS OR RETURN AIR THRU LIGHT FIXTURES SEE (13/15)
3. FOR DUCT LAYOUTS IN COURTROOMS SEE (41/15)
4. ALLOW A MINIMUM CLEARANCE OF 15" BETWEEN CEILING AND BOTTOM OF TERMINAL 30X30

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

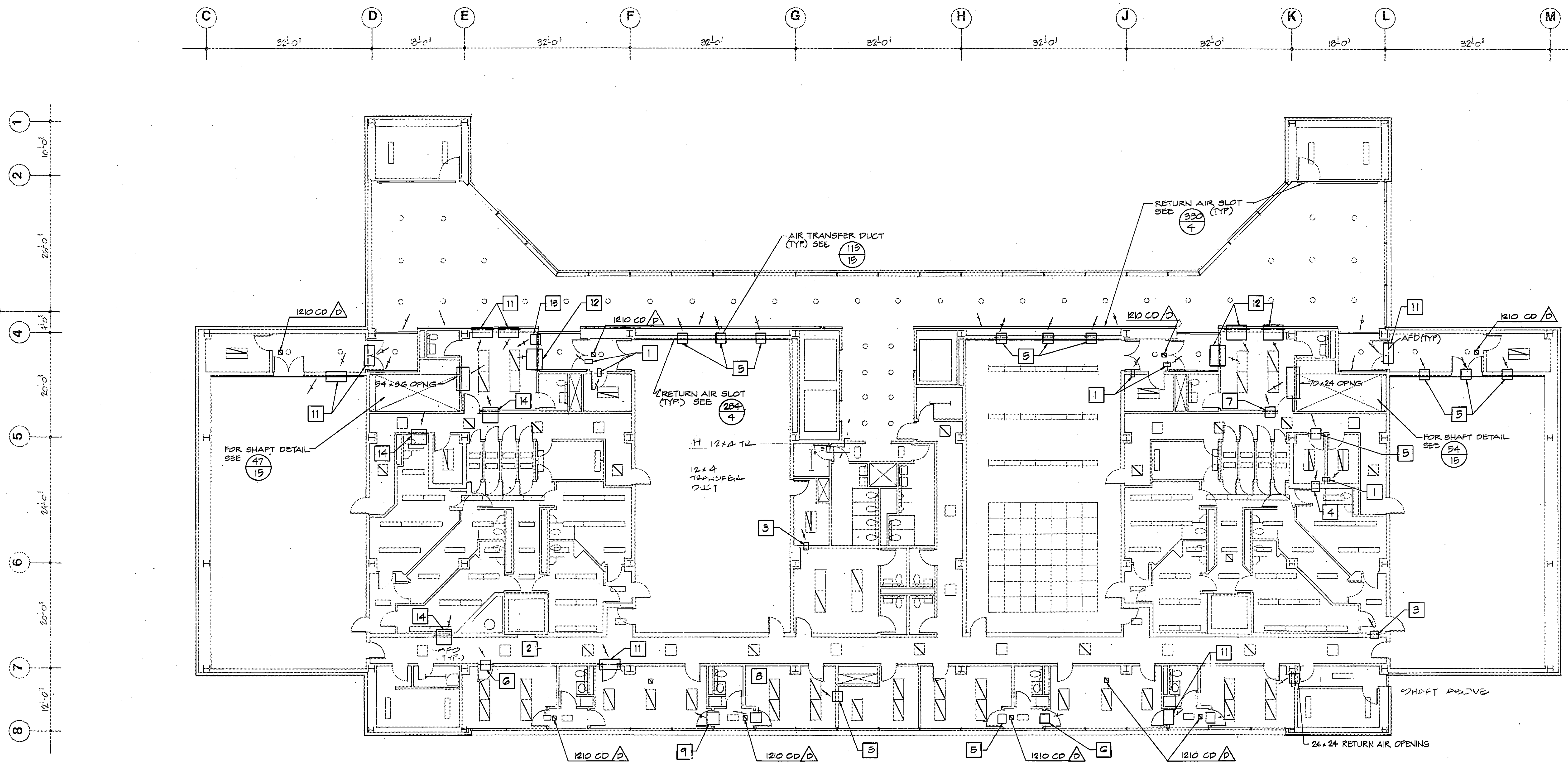
REGISTERED PROFESSIONAL ENGINEER — MECHANICAL — No. 11242 — STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77
REVISIONS

NO.	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LEVEL 8
FIFTH FLOOR

DRAWING NUMBER 22
CATEGORY 15



LEVEL 8 - 5TH FLOOR - RETURN AIR (23)

SCALE: 1/16" = 1'-0"

NOTES:

1. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOTS ALL SIDES
2. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOT ON ONE LONG SIDE AND BOTH ENDS
3. ALL UNUSED AIR SLOTS IN LIGHT FIXTURES TO BE MADE INACTIVE
4. FOR DETAIL AND SIZES OF TRANSFER DUCTS SEE 115/15
5. FOR ROOM NOS. SEE ARCH. DWGS.

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

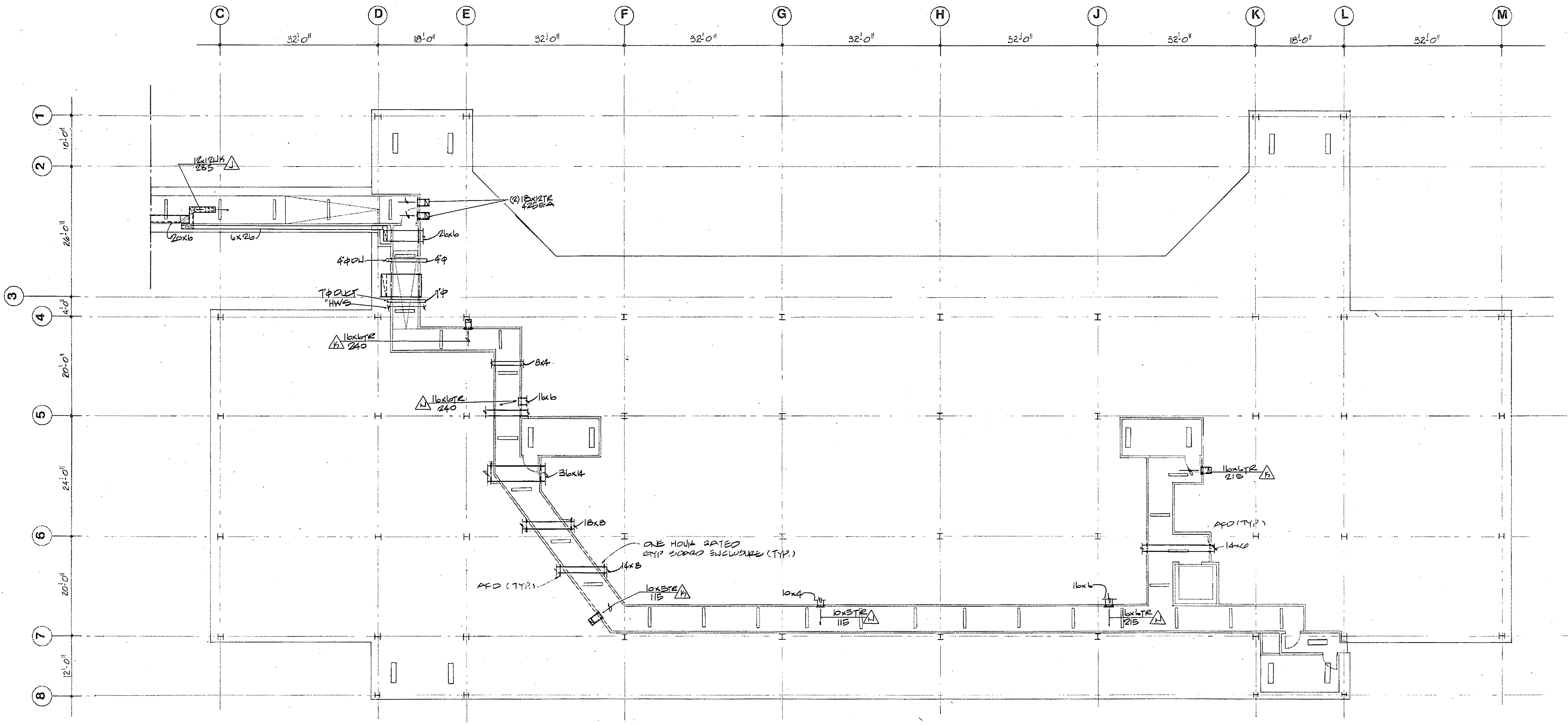
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

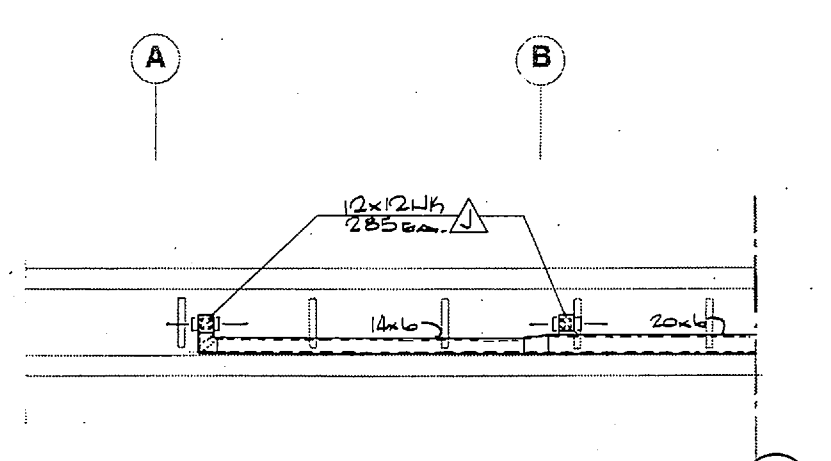
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77
REVISIONS BY DATE
1
2
3
4
5
6
7

LEVEL 8
5TH FL. PLAN
RETURN AIR

DRAWING NUMBER 23
CATEGORY 15



LEVEL 9 - 5TH FLOOR MEZZANINE (24)
SCALE: 1/16" = 1'-0"



LEVEL 9 - 5TH FL. MEZZ. BRIDGES (24A)
SCALE: 1/16" = 1'-0"

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

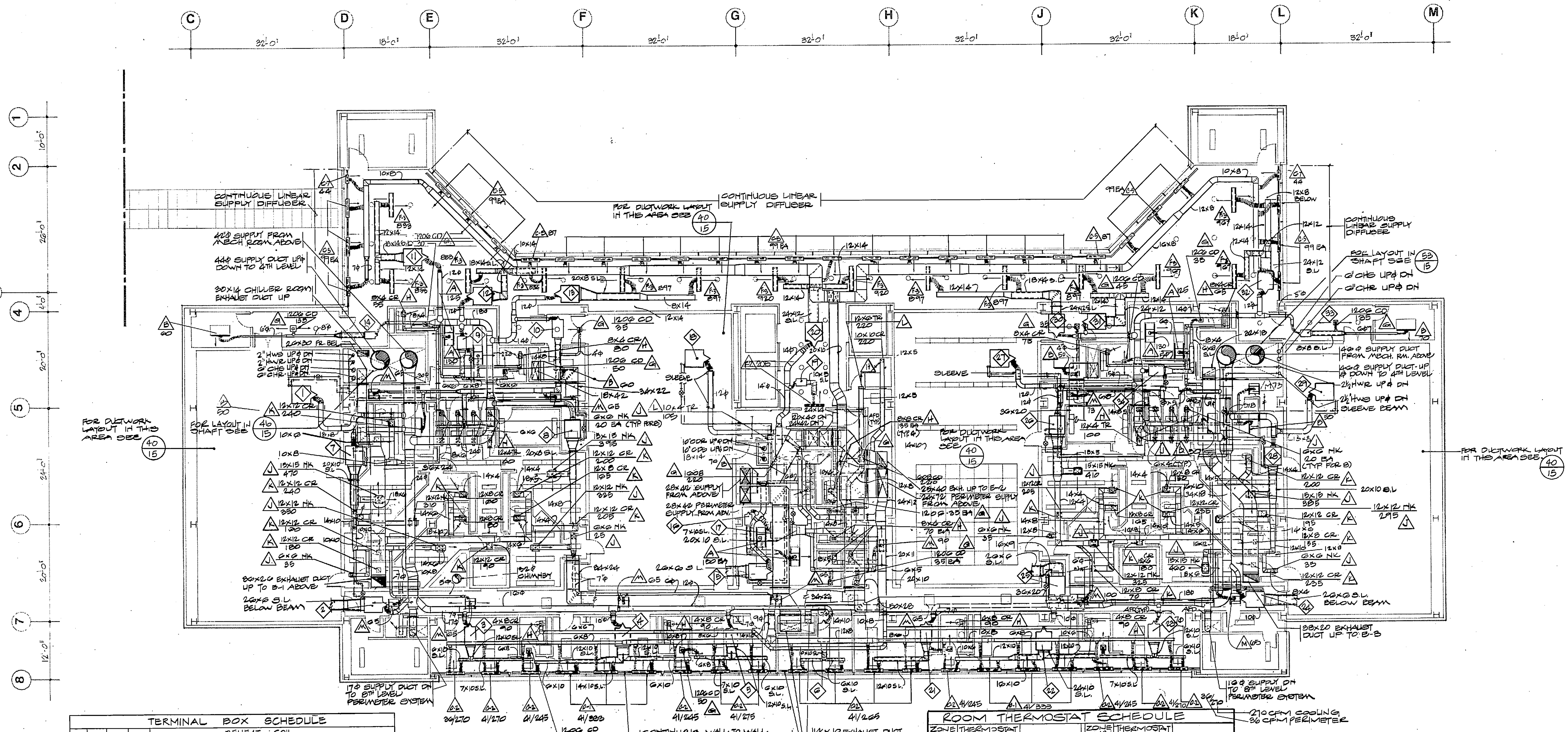
REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LEVEL 9
5TH FLOOR
MEZZANINE

DRAWING NUMBER 24-24A
CATEGORY 15



25 LEVEL 10 - SIXTH FLOOR

SCALE 1/16" = 1'-0"

TERMINAL BOX SCHEDULE

NO. ◇	TAG ⬡	CFM	TYPE	REHEAT COIL CFM	SIZE FLxFW	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	GPM	TOT.CAP BTUH	REMARKS
1	B/7	1260	VCV	630	35x8	55	76	200	170	1.0	14290	
2	B/6	780	VCV	390	29x8	55	85	200	170	0.8	12640	
3	A/4	590	VV	—	—	—	—	—	—	—	—	
4	A/6	1489	VV	—	—	—	—	—	—	—	—	
5	A/4	600	VV	—	—	—	—	—	—	—	—	
6	A/4	530	VV	—	—	—	—	—	—	—	—	
7	C/7	1315	CV	1315	35x8	55	72	200	170	1.6	24140	
8	C/6	875	CV	895	29x8	55	72	200	170	1.1	16430	
9	C/3	335	CV	335	17x5	55	72	200	175.4	0.5	6150	
10	A/4	535	VV	—	—	—	—	—	—	—	—	
11	A/7	1666	VV	—	—	—	—	—	—	—	—	
12	A/7	1667	VV	—	—	—	—	—	—	—	—	
13	A/7	1794	VV	—	—	—	—	—	—	—	—	
14	B/2	195	VCV	100	11x5	55	88	200	185.7	0.5	3564	
15	B/6	780	VCV	390	29x8	55	78	200	170	0.7	9690	
16	A/2	300	VV	—	—	—	—	—	—	—	—	
17	C/6	1065	CV	1065	29x8	55	72	200	170	1.3	19530	
18	B/1	1260	VCV	630	35x8	55	75	200	170	0.9	13610	
19	A/2	205	VV	—	—	—	—	—	—	—	—	
20	A/7	1940	VV	—	—	—	—	—	—	—	—	

TERMINAL BOX SCHEDULE

NO. ◇	TAG ⬡	CFM	TYPE	REHEAT COIL CFM	SIZE FLxFW	AIR ENT°F	AIR LVG°F	WATER ENT°F	WATER LVG°F	GPM	TOT.CAP BTUH	REMARKS
21	A/4	580	VV	—	—	—	—	—	—	—	—	
22	A/6	1489	VV	—	—	—	—	—	—	—	—	
23	A/4	590	VV	—	—	—	—	—	—	—	—	
24	B/6	780	VCV	390	29x8	55	85	200	170	0.8	12640	
25	B/6	780	VCV	390	29x8	55	78	200	170	0.7	9690	
26	C/6	870	CV	870	29x8	55	72	200	170	1.1	15970	
27	B/7	1260	VCV	630	35x8	55	75	200	170	0.9	13610	
28	C/7	1270	CV	1270	35x8	55	72	200	170	1.5	22670	
29	B/7	1260	VCV	630	35x8	55	76	200	170	1.0	14290	
30	A/7	1764	VV	—	—	—	—	—	—	—	—	
31	A/7	1864	VV	—	—	—	—	—	—	—	—	
32	A/7	1934	VV	—	—	—	—	—	—	—	—	
33	B/2	205	VCV	105	11x5	55	88	200	185	0.5	3740	
34	C/3	335	CV	335	17x5	55	72	200	175.4	0.5	6150	
35	A/4	591	VV	—	—	—	—	—	—	—	—	

ROOM THERMOSTAT SCHEDULE

ZONE Nº BOX SERVED	THERMOSTAT LOCATION ROOM Nº	REMARKS	ZONE Nº BOX SERVED	THERMOSTAT LOCATION ROOM Nº	REMARKS
1	10-04		19	10-26	SEE NOTE 2
2	10-04		21	10-48	SEE NOTE 2
3	10-40		22	10-51	
4	10-43	SEE NOTE 2	23	10-54	
5	10-46	SEE NOTE 2	24	10-77	
6	10-47		25	10-58	
7	SEE NOTE 3		26	SEE NOTE 3	
8	SEE NOTE 3		27	10-58	
9	10-08		28	SEE NOTE 3	
10	10-07, 10-23		29	10-77	
11	10-25	SEE NOTE 2	30	10-25	SEE NOTE 2
12	10-25		31	10-25	
13	10-25	SEE NOTE 2	32	10-25	SEE NOTE 2
14	10-03		33	10-18	
15	10-22		34	10-62	
16	10-32		35	10-56, 10-69, 10-69A	
17	10-29				
18	10-22				

1- EXACT LOCATION OF ALL THERMOSTATS TO BE VERIFIED BY ARCHITECT WITH APPROVED SHOP DWGS.
2- REPRESENTATIVE ROOM THERMOSTAT. SIGNAL IS USED TO RESET SET POINT OF SUPPLY UNIT LEAVING AIR TEMPERATURE.
3- DUCTSTAT LOCATE BEHIND RETURN OR EXHAUST AIR GRILLE

NOTES:

1. REFER TO ARCHITECTURAL DWGS FOR ROOM NAMES & NUMBERS.
2. FOR RETURN AIR OPENINGS IN CEILINGS OR RETURN AIR THRU LIGHT FIXTURES SEE 26/15
3. ALLOW AS MUCH CLEARANCE AS POSSIBLE BETWEEN CEILING AND BOTTOM OF TERMINAL BOXES

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

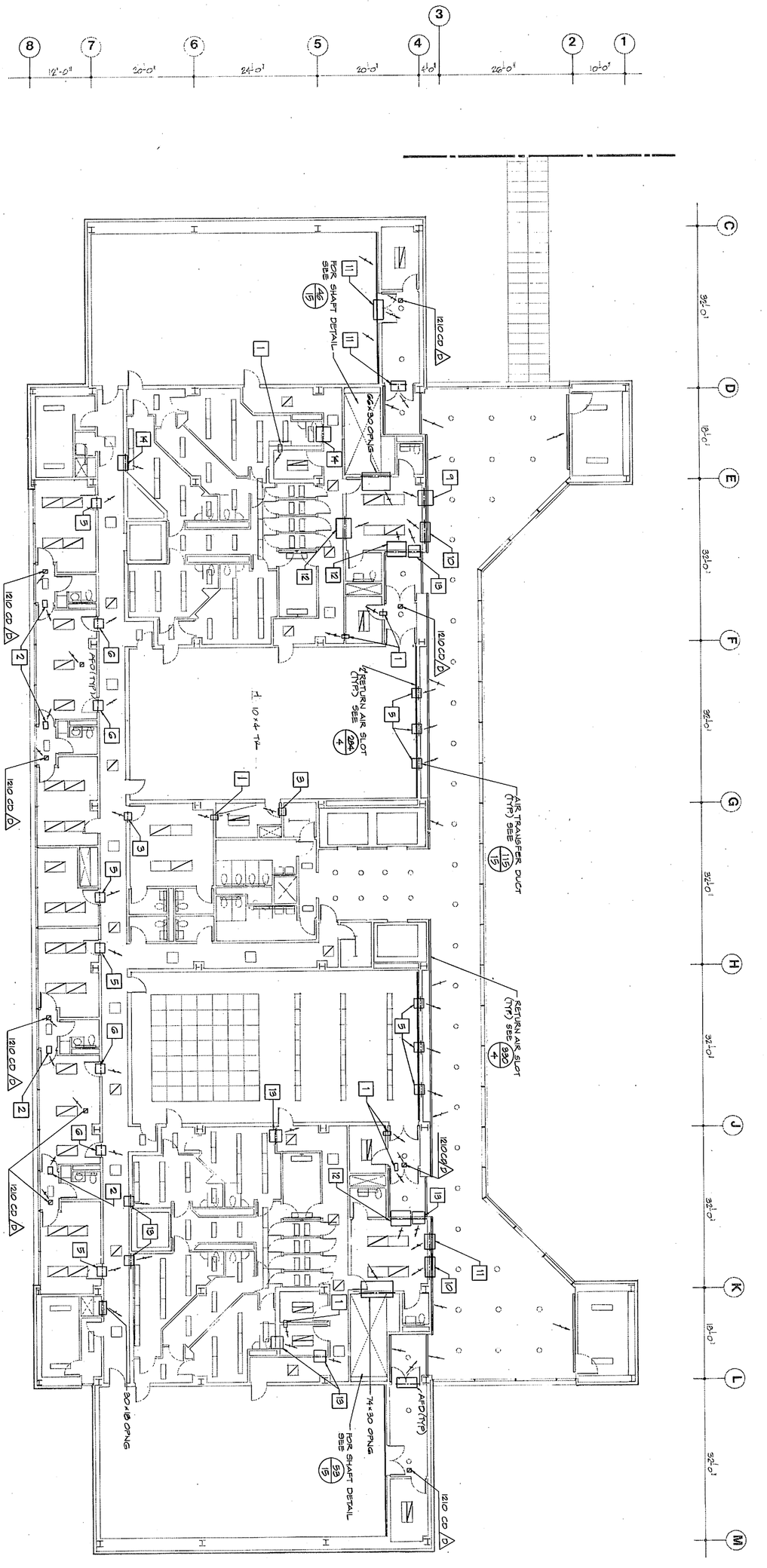
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77
REVISIONS 1 2 3 4 5 6 7 — BY — DATE

LEVEL 10
SIXTH FLR.

DRAWING NUMBER 25
CATEGORY 15



LEVEL 10 - 6TH FLOOR - RETURN AIR 26

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

NOTES:

1. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOTS ALL SIDES
2. INDICATES LIGHT FIXTURE WITH ACTIVE RETURN AIR SLOT ON ONE LONG SIDE AND BOTH ENDS
3. ALL UNUSED AIR SLOTS IN LIGHT FIXTURES TO BE MADE INACTIVE
4. FOR DETAIL AND SIZES OF TRANSFER DUCTS SEE 11B/15
5. FOR ROOM NOS. SEE ARCH. DWGS.

DRAWING NUMBER 26

CATEGORY 15

LEVEL 10 6TH FL. PLAN RETURN AIR

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER MASARU TAKAMIYA No. 11242 MECHANICAL STATE OF CALIFORNIA

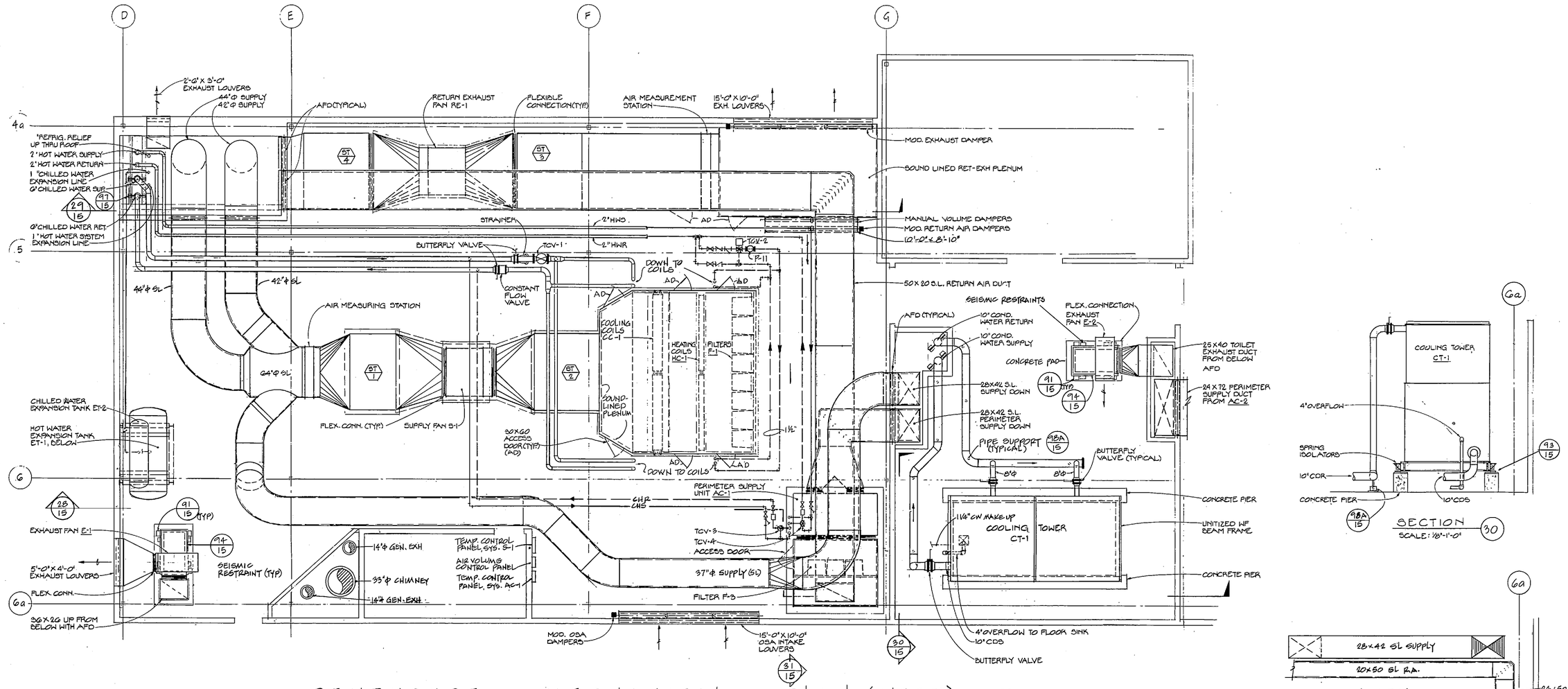
OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

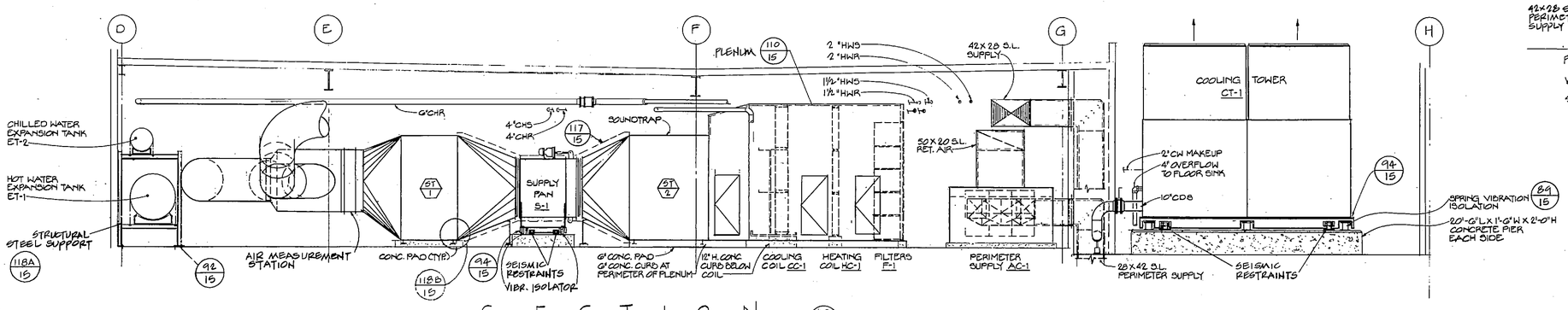
HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



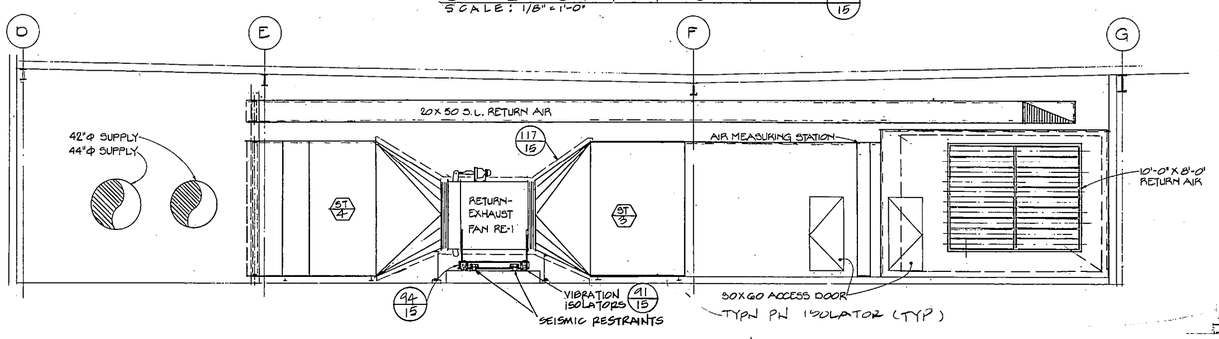
PENTHOUSE MECHANICAL PLAN (WEST)

SCALE: 1/8"=1'-0" (27)



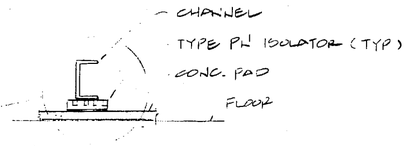
SECTION

SCALE: 1/8"=1'-0" (28)



SECTION

SCALE: 1/8"=1'-0" (29)



HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — MECHANICAL — No. 11242 — STATE OF CALIFORNIA

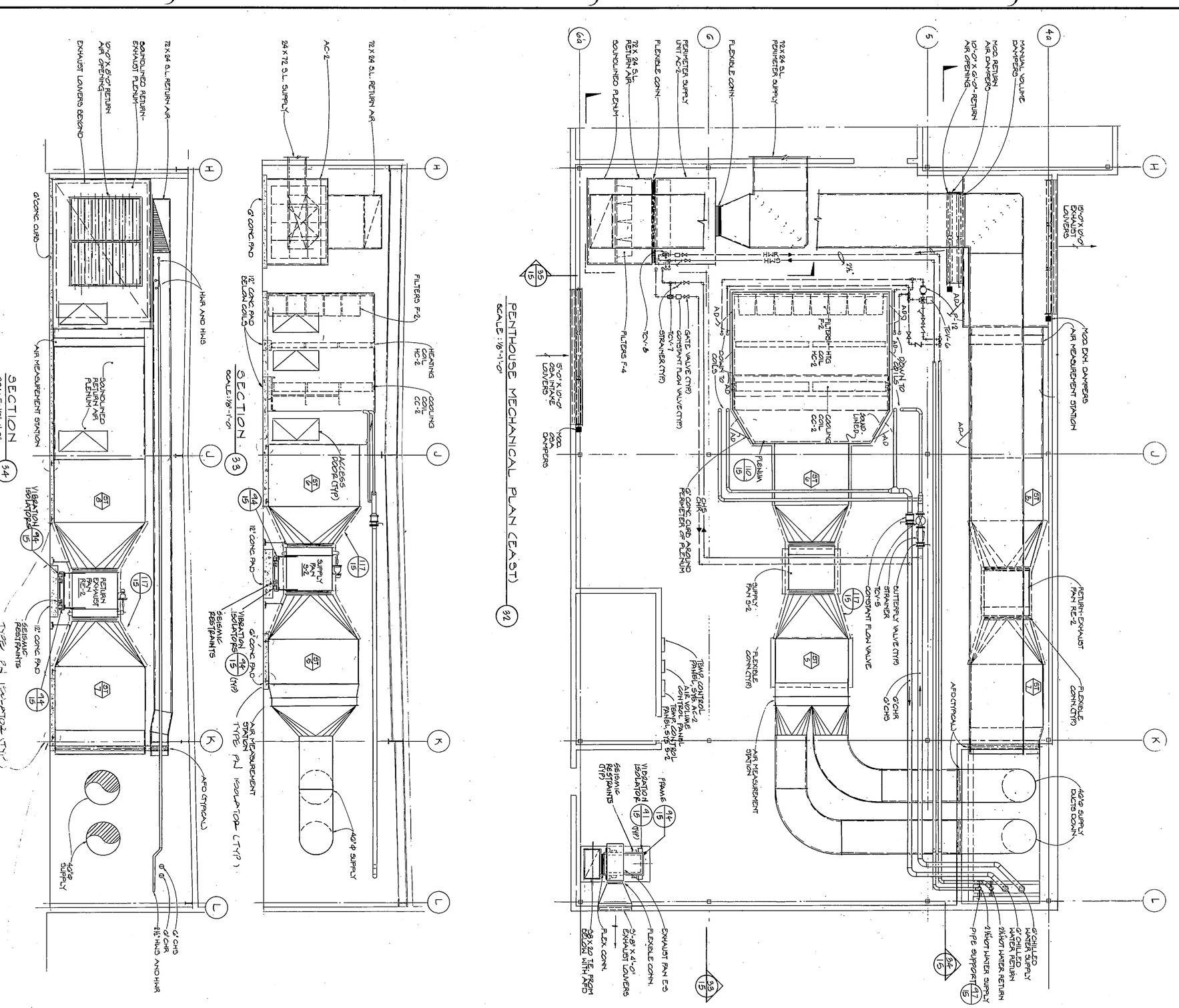
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77

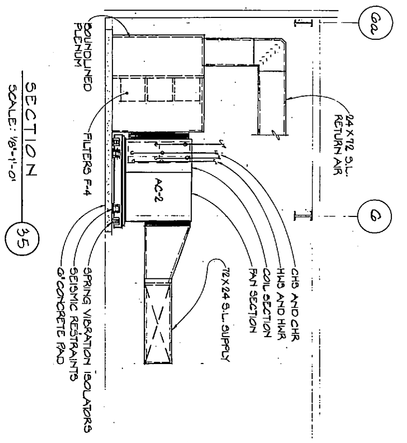
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LEVEL 11A PENTHOUSE

DRAWING NUMBER 27-31

CATEGORY 15





DRAWING NUMBER	92-35
CATEGORY	15
	LEVEL 11B PENTHOUSE

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — MASARU TAKAGAWA — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

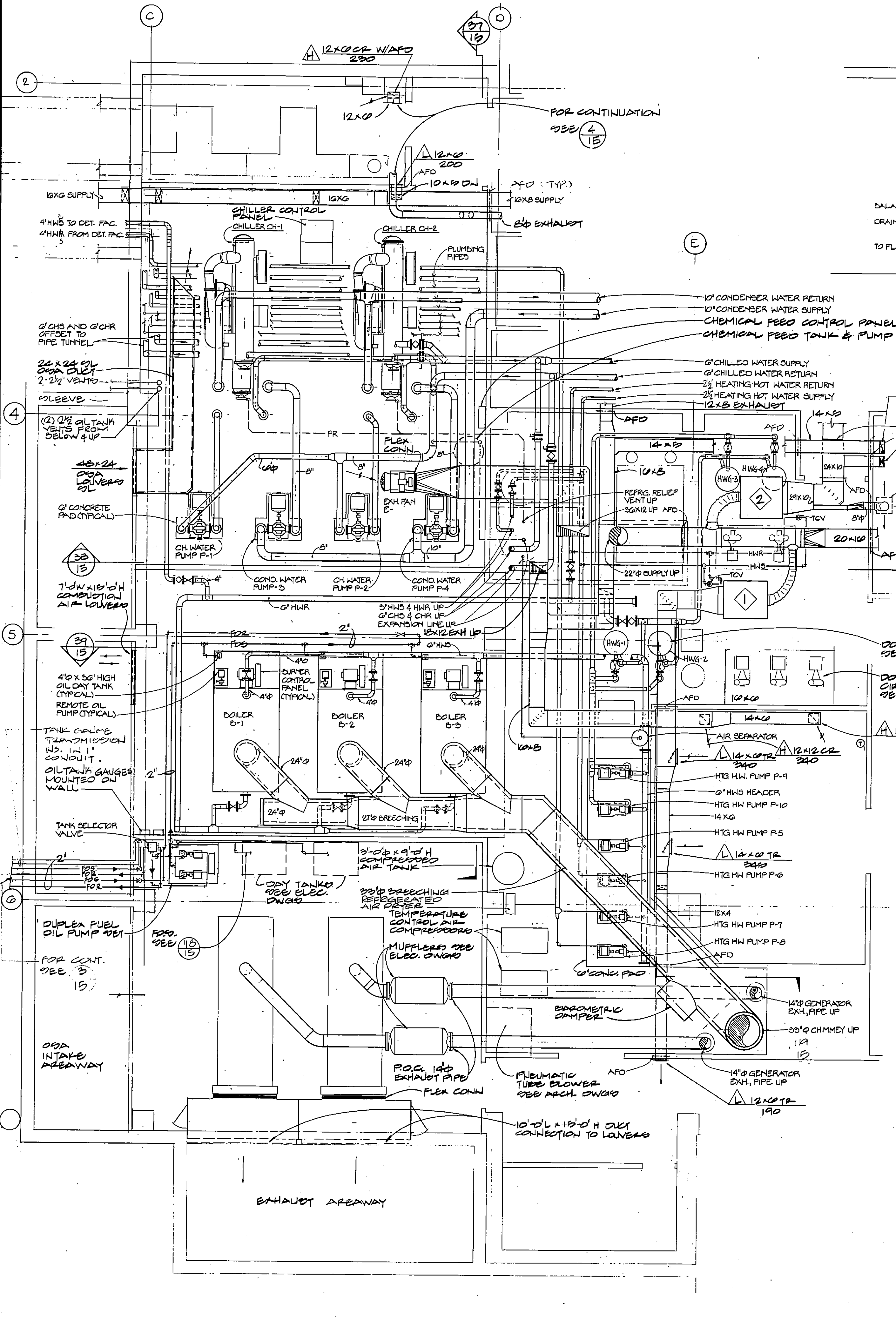
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
KE
A JOINT VENTURE

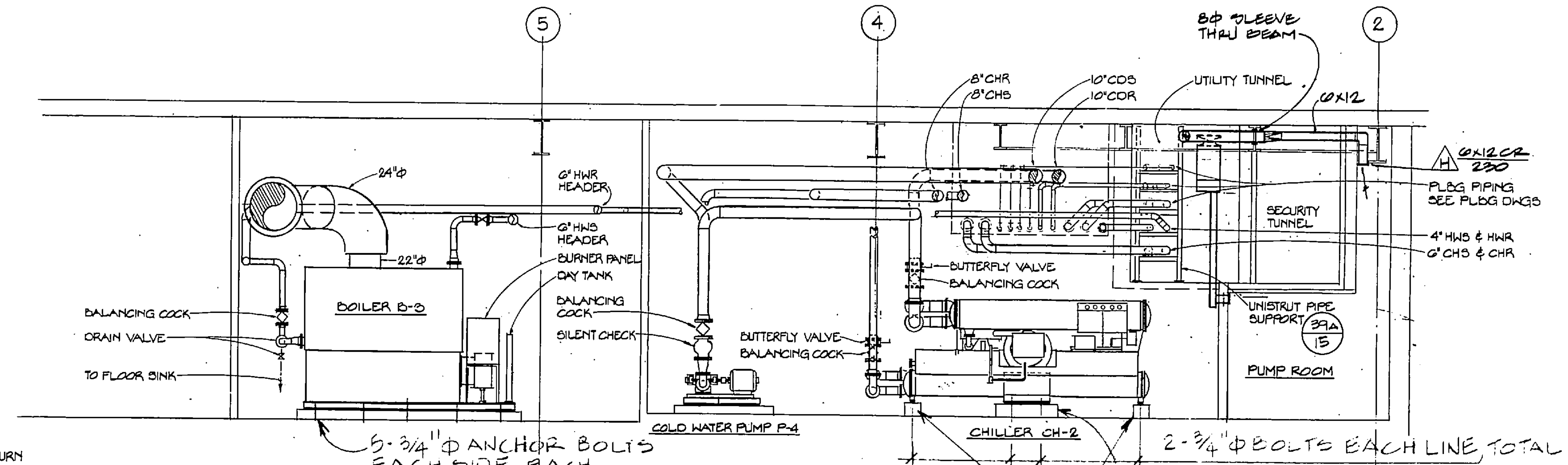
HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



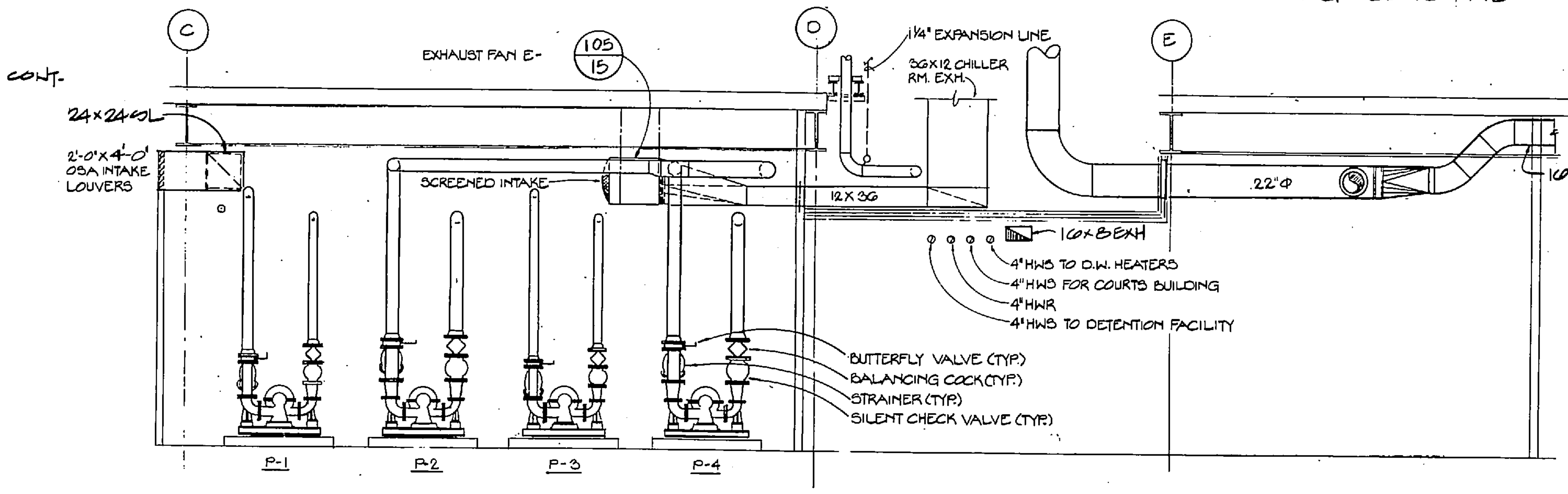
LEVEL 1 : MECHANICAL EQUIPMENT ROOM PLAN (36)

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



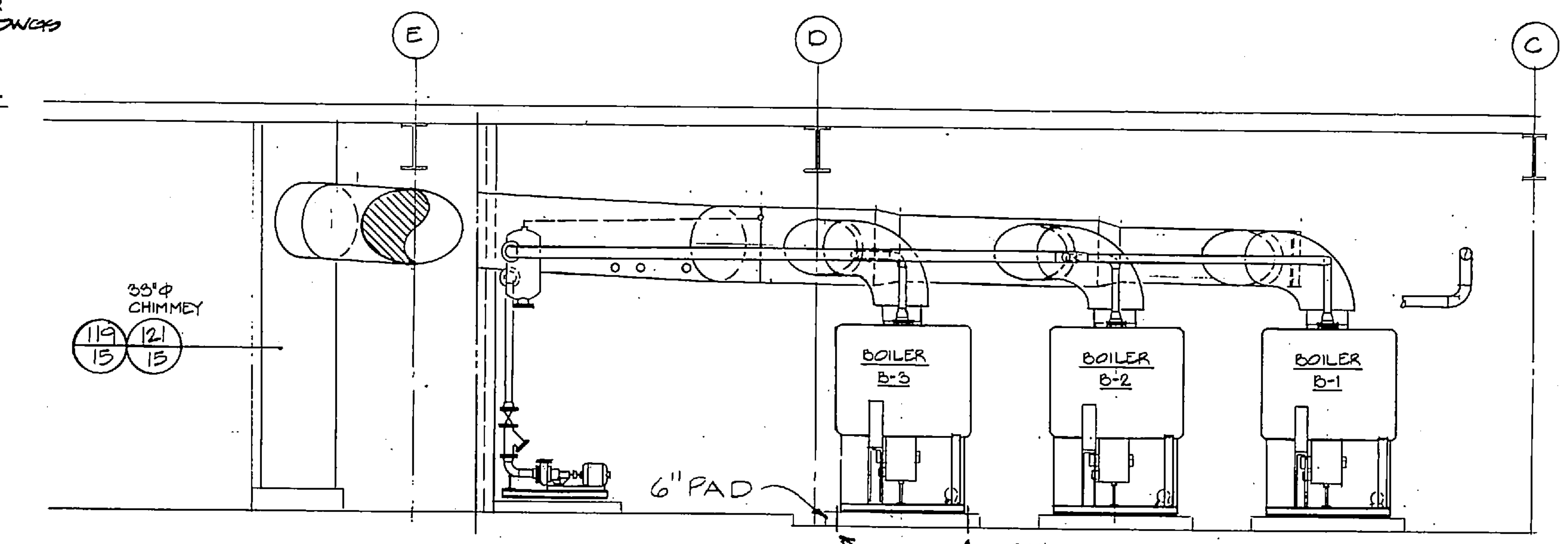
SECTION (37)

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



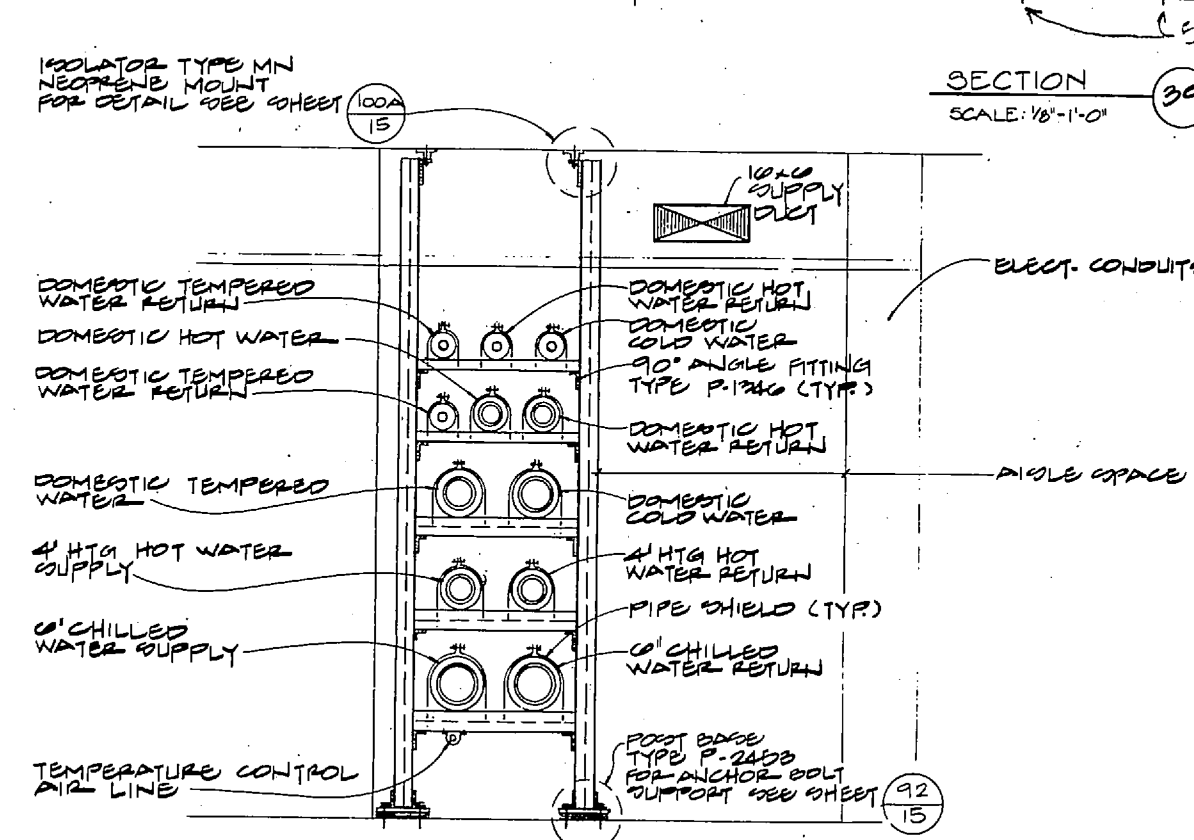
SECTION (38)

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



SECTION (39)

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



NOTE: REFER TO PLMB. DWGS FOR PLMB. PIPE SIZES.

PIPE SUPPORT LADDER DETAIL (39A)

SCALE: 3/8" = 1'-0"

TERMINAL BOX SCHEDULE

No	TAG	CFM	TYPE	REHEAT COIL CFM	SIZE FLxFW	AIR ENT °F	AIR LVG °F	WATER ENT °F	WATER LVG °F	GPM	TOTAL CAP BTUH	REMARKS
1	6/6	815	CV	875	29x8	55°	65°	200	170	0.6	945	
2	5/4	1400	CV	875	35x8	55°	72°	200	170	1.7	25100	

NOTE: FOR DETAIL OF CONCRETE PAD SEE DETAIL 4 DRAWING 2/7

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

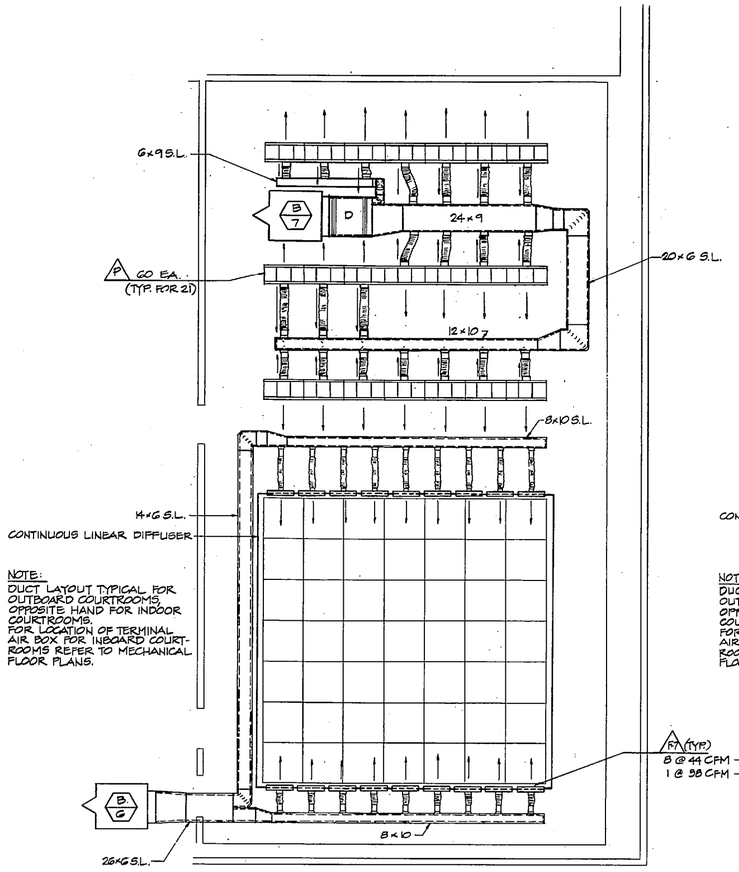
REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77
REVISIONS BY DATE
1 2 3 4 5 6 7

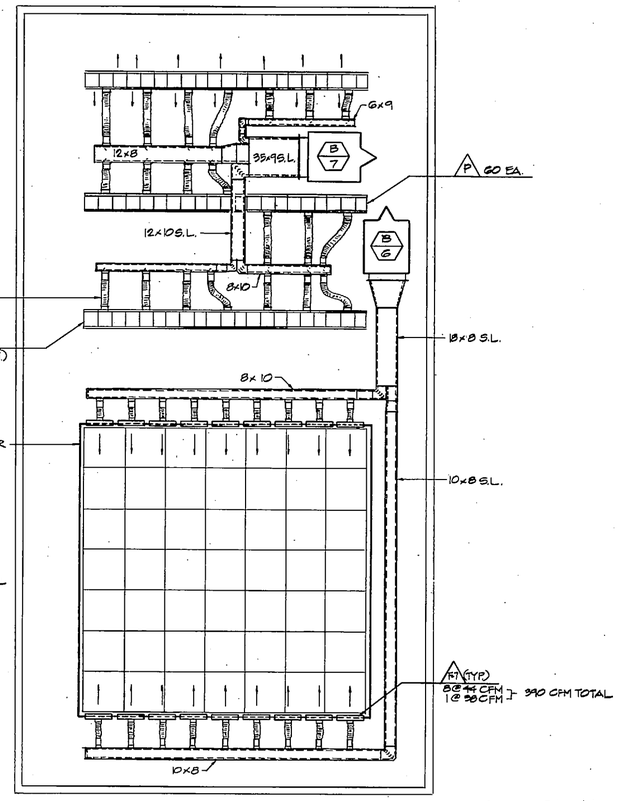
LEVEL 1
MECHANICAL
EQUIPMENT RMS
& SECTIONS

DRAWING NUMBER 36-39A

CATEGORY 15

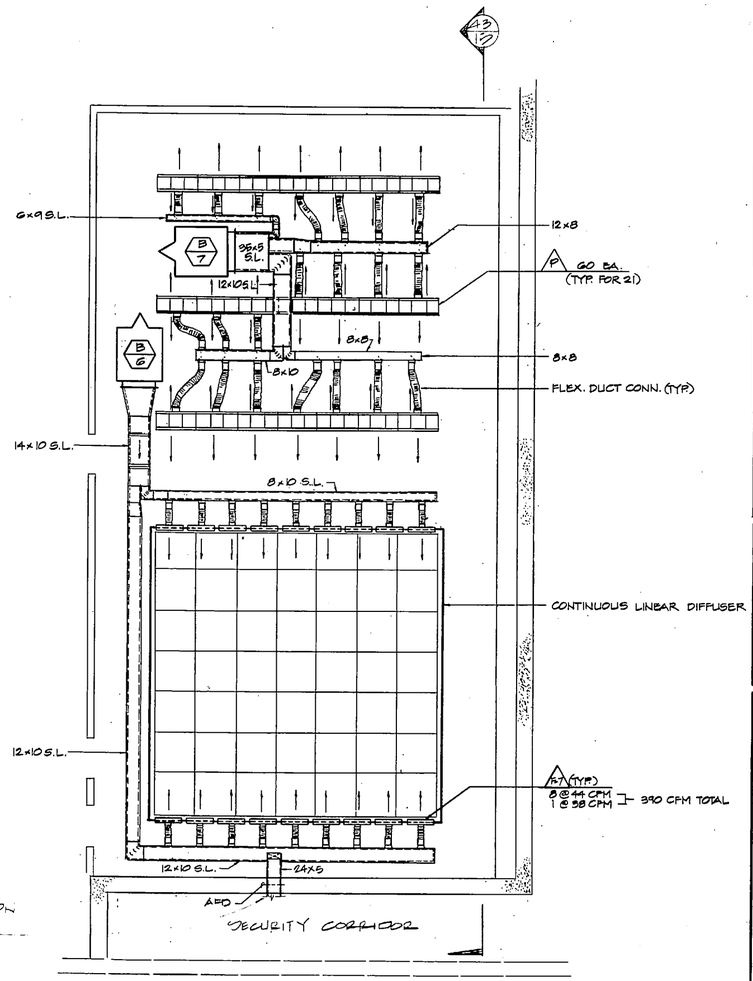


COURTROOM LAYOUT - LEVELS 7 & 10 (40)
SCALE: 1/8" = 1'-0"

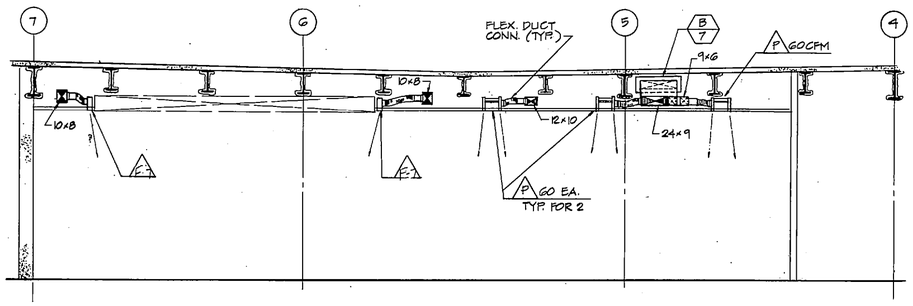


COURTROOM LAYOUT - LEVEL 8 (41)
SCALE: 1/8" = 1'-0"

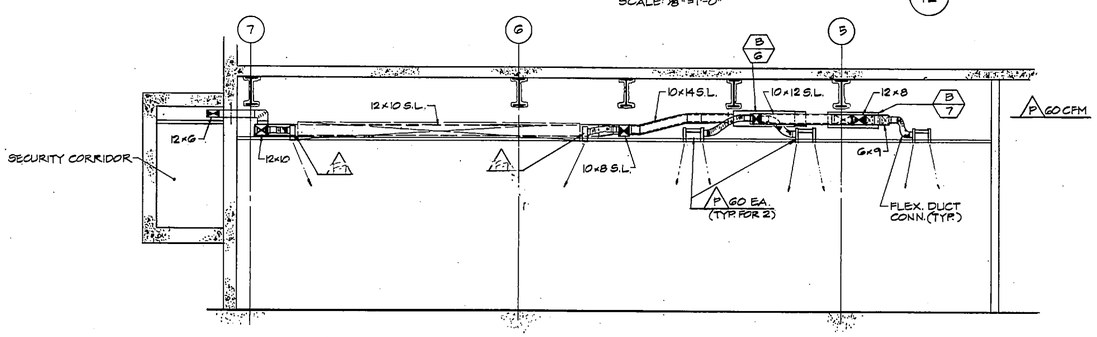
FULL CONTINUATION SEE (4/15)



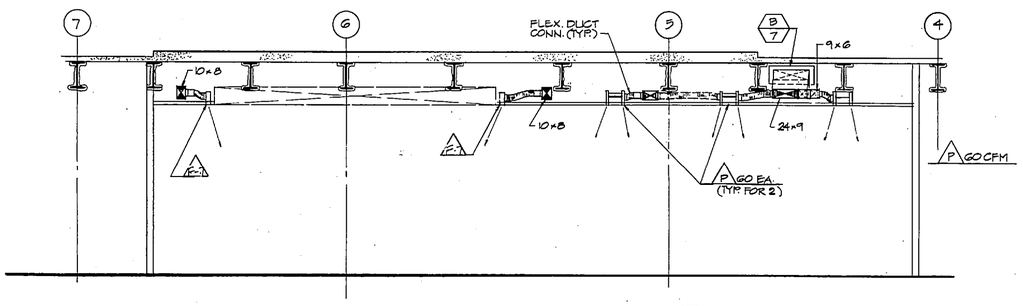
COURTROOM LAYOUT - LEVEL 1 (42)
SCALE: 1/8" = 1'-0"



SECTION - COURTROOM LEVEL 10 - OUTBOARD (43)
SCALE: 1/8" = 1'-0"



SECTION - COURTROOM LEVEL 1 (45)
SCALE: 1/8" = 1'-0"



SECTION - COURTROOM LEVEL 10 - INBOARD (44)
SCALE: 1/8" = 1'-0"

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT COURT
MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — WALTER D. TAKAHASHI — No. 11242 — MECHANICAL

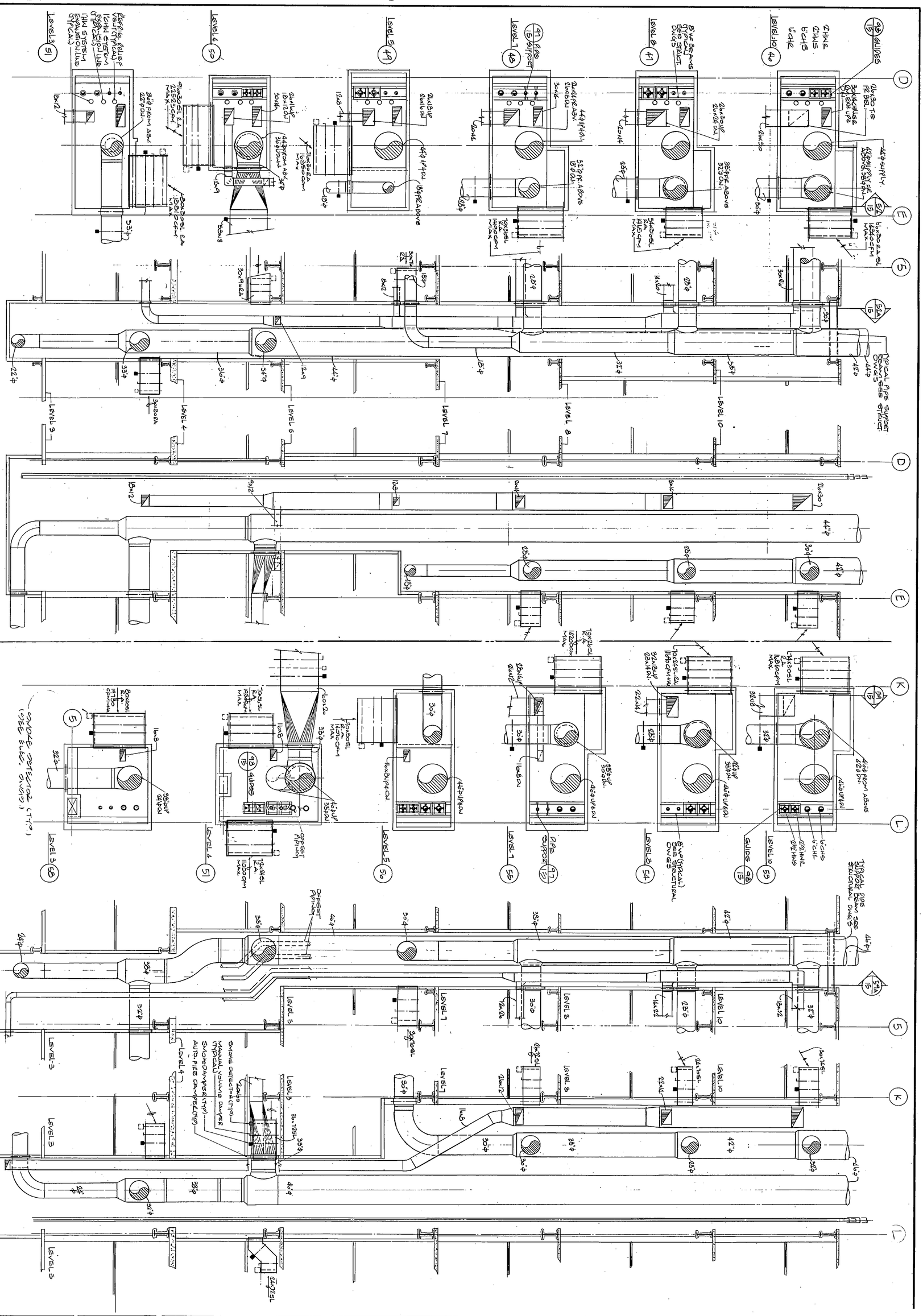
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

COURTROOM PLANS & SECTIONS

DRAWING NUMBER 40-45

CATEGORY 15



DRAWING NUMBER	41-59A
CATEGORY	15

SHAFT DETAILS

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — HARUKI TAKAHASHI — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

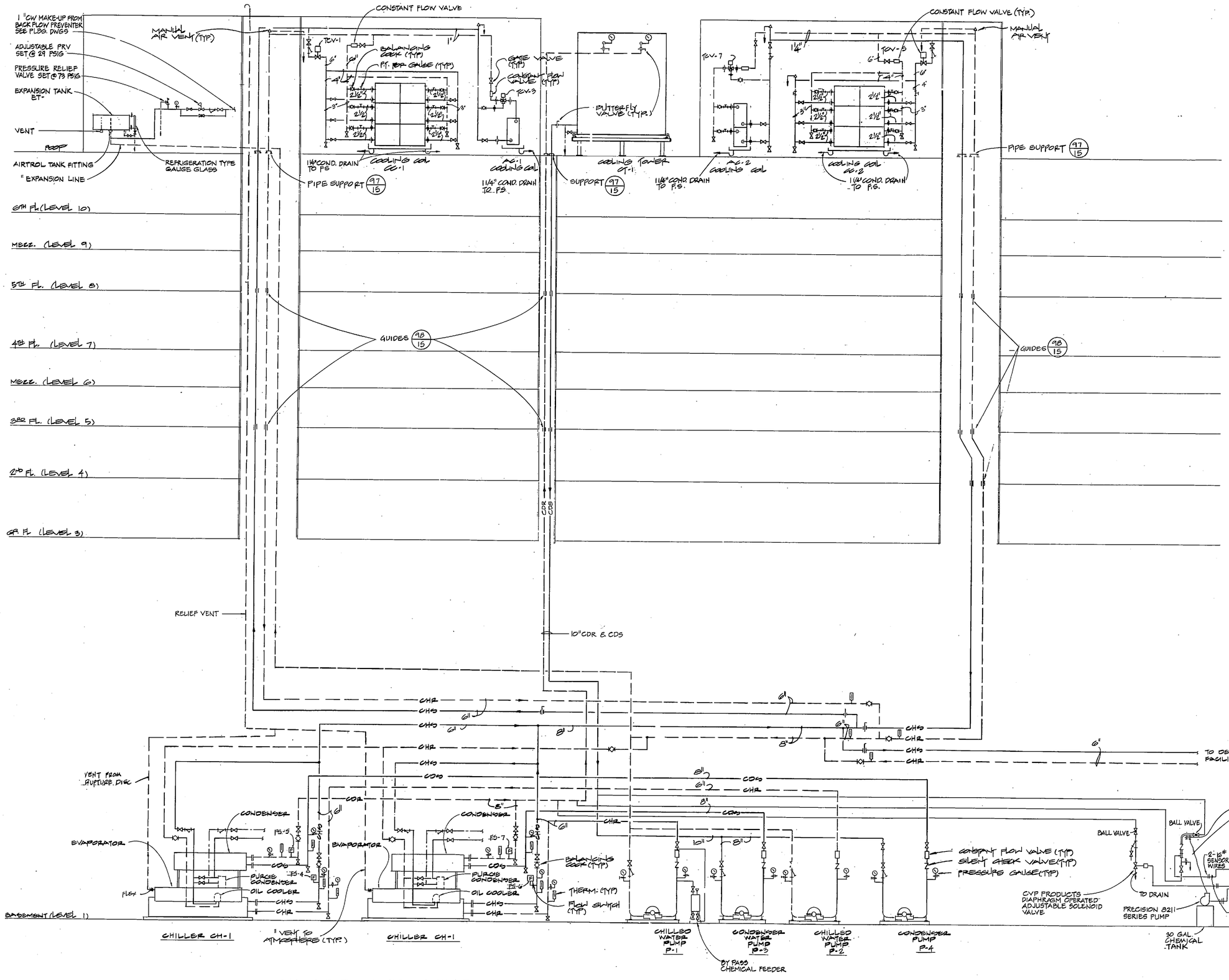
OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



CHILLED AND CONDENSER WATER FLOW DIAGRAM (60)

NOT TO SCALE

HELLMUTH. OBATA & KASSABAUM. INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE. OAKLAND. CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

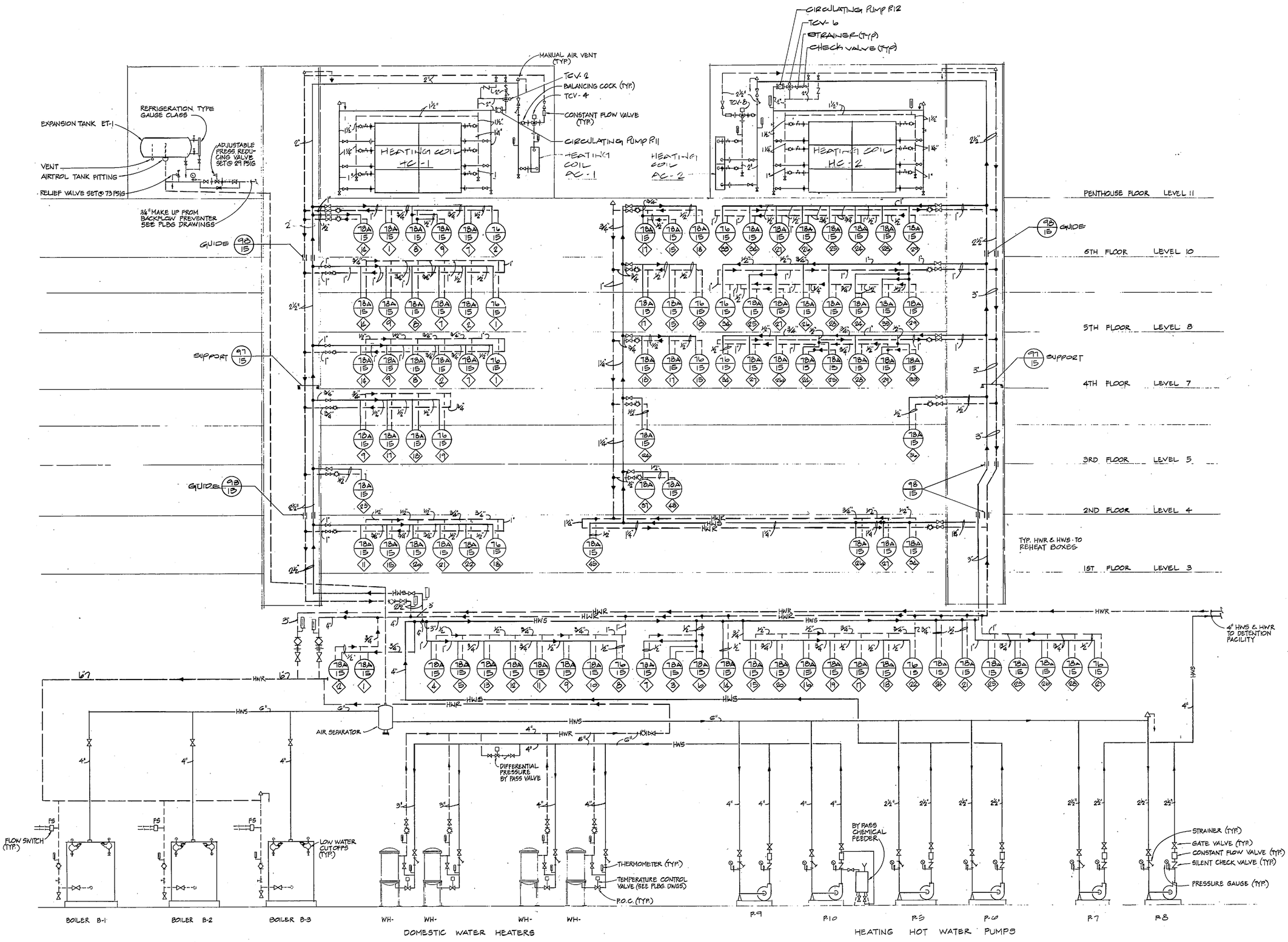
REGISTERED PROFESSIONAL ENGINEER — MECHANICAL — No. 11242 — STATE OF CALIFORNIA

JOB NO. 7873-00								
DRAWN BY								
CHECKED BY								
DATE 7/4/77								
REVISIONS	1	2	3	4	5	6	7	
BY								
DATE								

CHILLED AND CONDENSER WATER FLOW DIAGRAM

DRAWING NUMBER 60

CATEGORY 15



HEATING HOT WATER FLOW DIAGRAM (61)

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — WAYNE T. YAMASHIRO — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

JOB NO. 7873.00
DRAWN BY
CHECKED BY
DATE 7/14/77

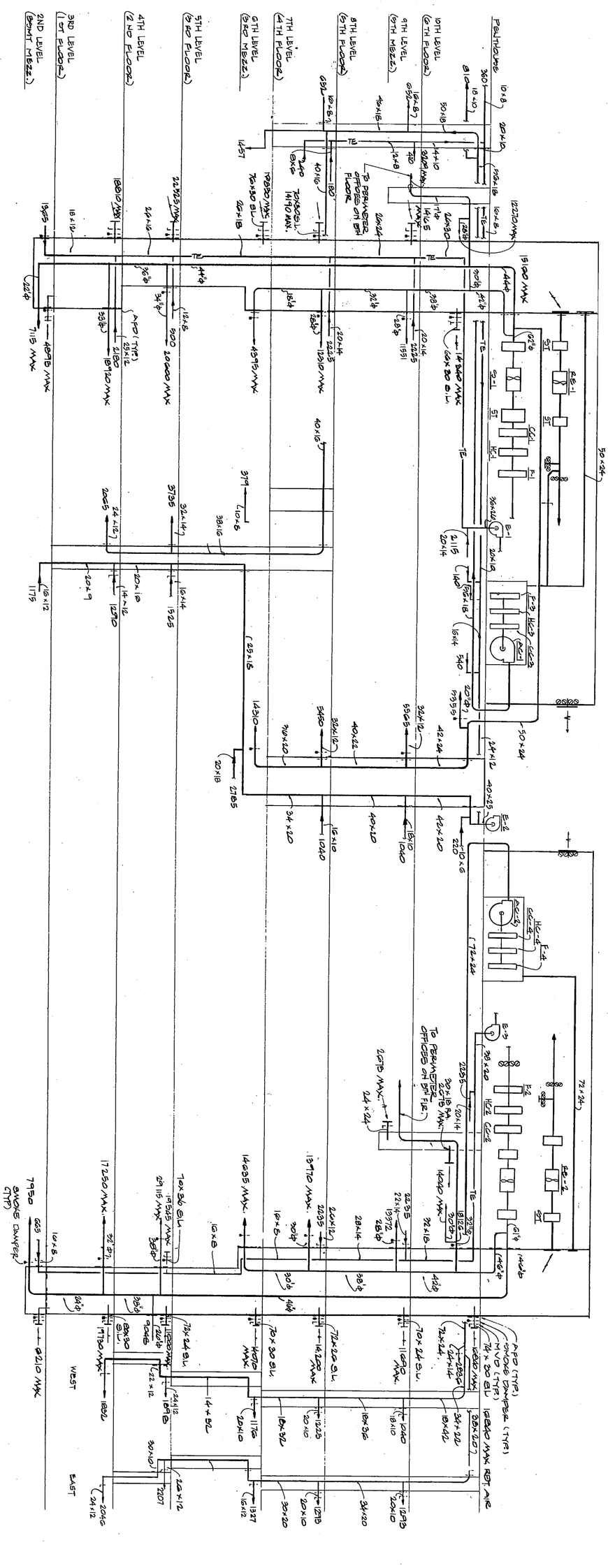
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

HEATING HOT WATER FLOW DIAGRAM

DRAWING NUMBER 61
CATEGORY 15

DUCT RISER DIAGRAM

SCALE: NONE



NOTES:

1. FOR SMOKE DETECTORS & SMOKE DAMPER CONTROLS; SEE (4C/15) - (6A/15) & (7C/15)

DRAWING NUMBER 62	CATEGORY 15	DUCT RISER DIAGRAM	

JOB NO. 7873-00		
DRAWN BY		
CHECKED BY		
DATE 7/4/77		
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — MAHMUD TAHAMSEBI — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

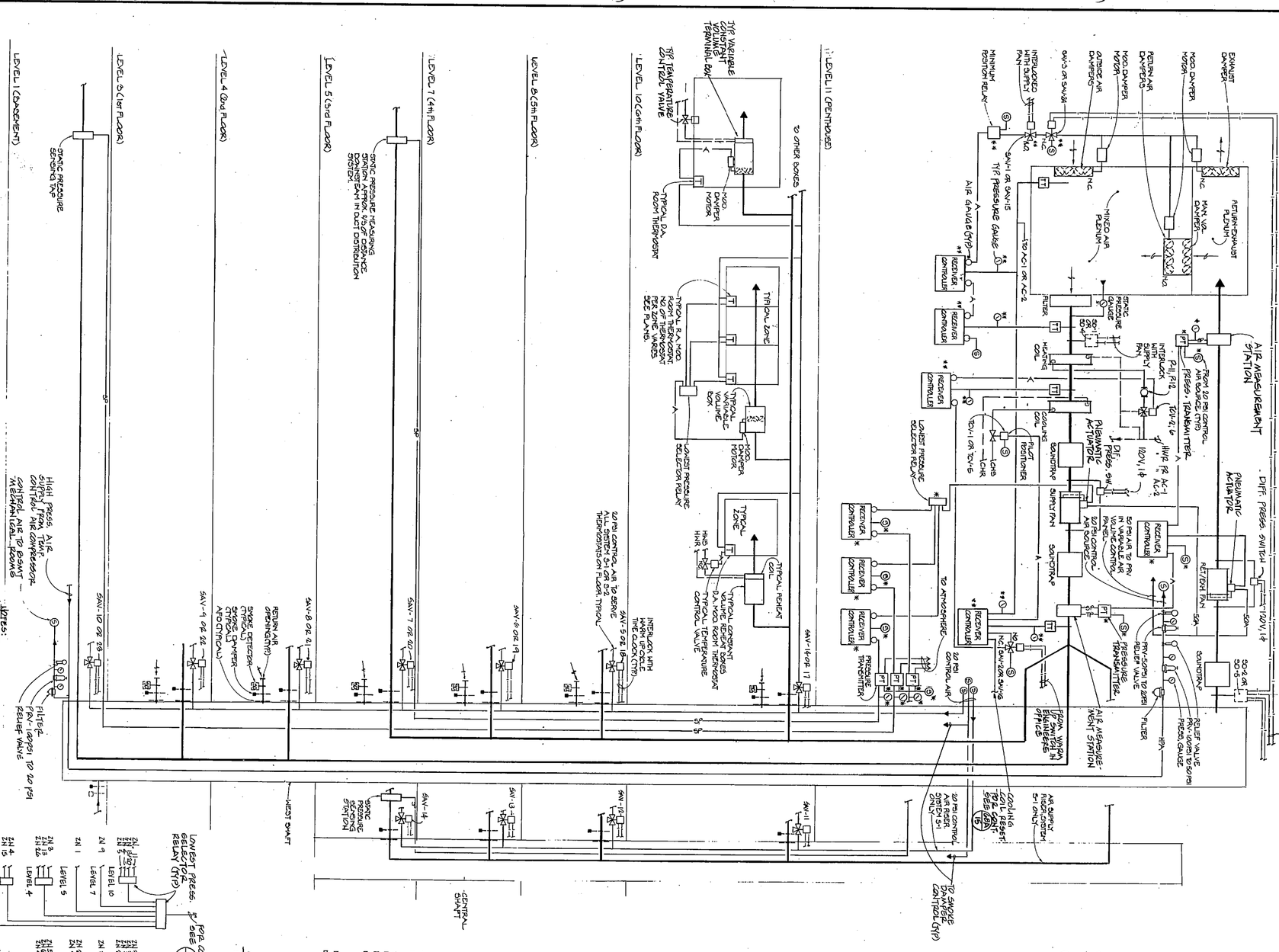
HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

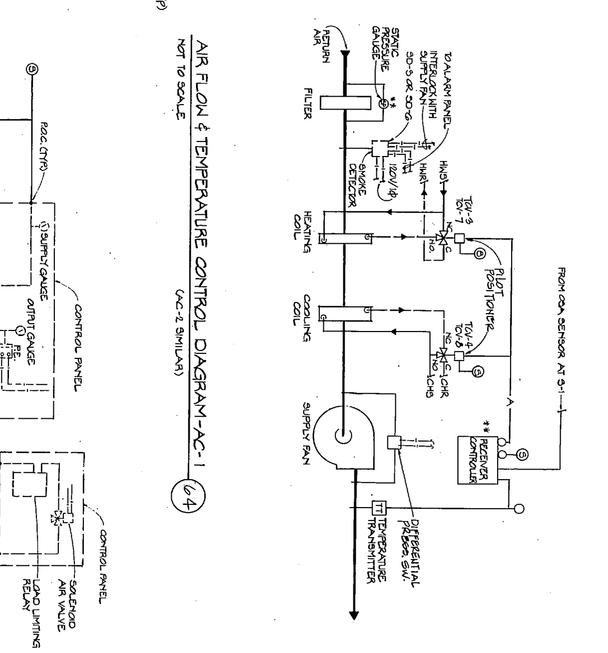
AIR FLOW AND TEMPERATURE CONTROL DIAGRAM - S-1 & RE-1 (69)

NOT TO SCALE (TYPICAL FOR S-2 & RE-2)



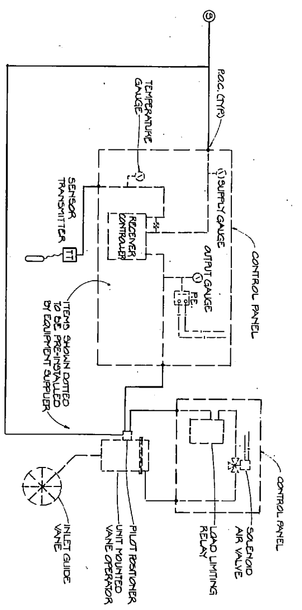
AIR FLOW & TEMPERATURE CONTROL DIAGRAM - AC-1 (64)

NOT TO SCALE (AC-2 SIMILAR)



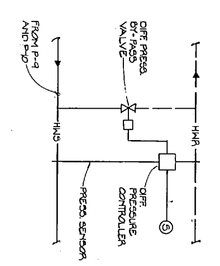
CHILLER CONTROL DIAGRAM (66)

NOT TO SCALE



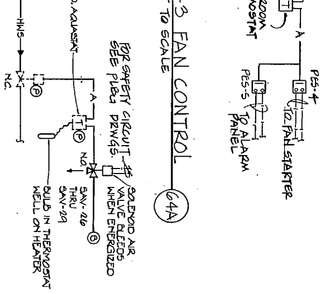
HOT WATER PUMP BY-PASS CONTROL (67)

NOT TO SCALE



DOMESTIC WATER HEATER CONTROL (65)

NOT TO SCALE (TYPICAL FOR 4)

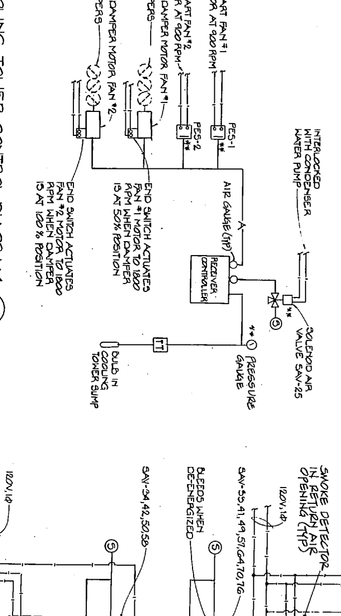


S-3 FAN CONTROL (64A)

NOT TO SCALE

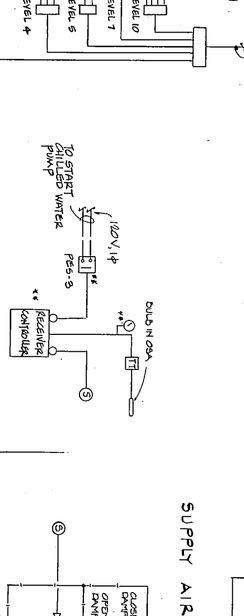
COOLING TOWER CONTROL DIAGRAM (68)

NOT TO SCALE

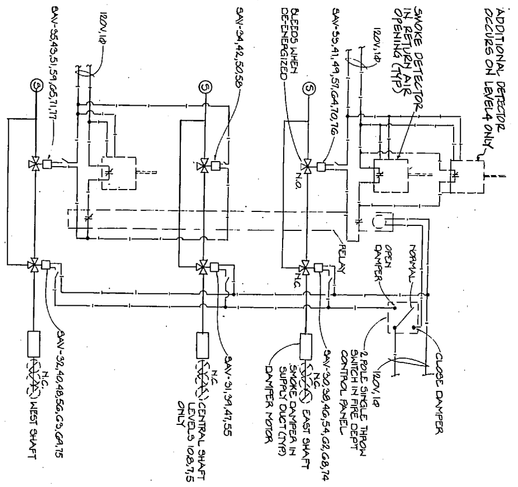


COOLING CYCLE CONTROL (69)

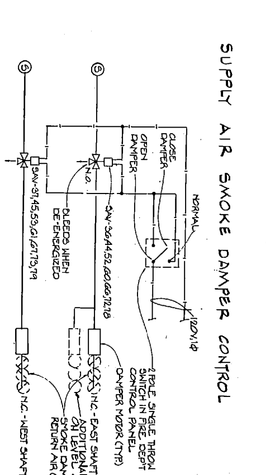
NOT TO SCALE



SUPPLY AIR SMOKE DAMPER CONTROL



RETURN AIR SMOKE DAMPER CONTROL



SMOKE DAMPER CONTROL DIAGRAMS

NOT TO SCALE (TYP. FOR LEVELS 1, 3, 4, 5, 7 & 10)

(70)

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — HAYAKU TAKAKASHI — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

DRAWING NUMBER: 63-70

CATEGORY: 15

CONTROL DIAGRAMS

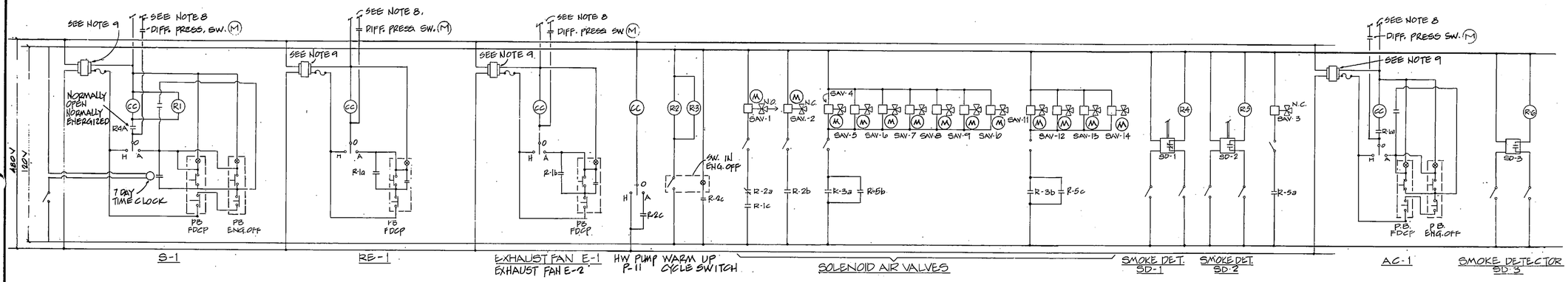
OAKLAND · PIEDMONT MUNICIPAL COURT

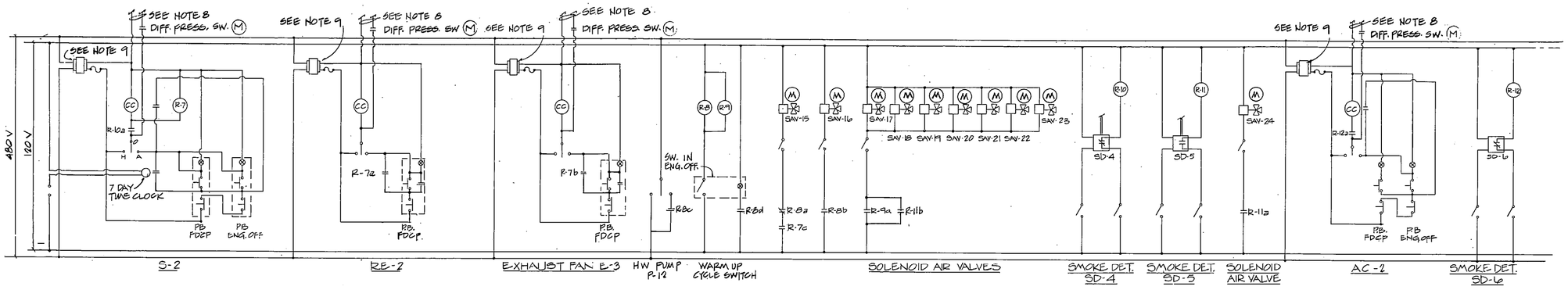
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

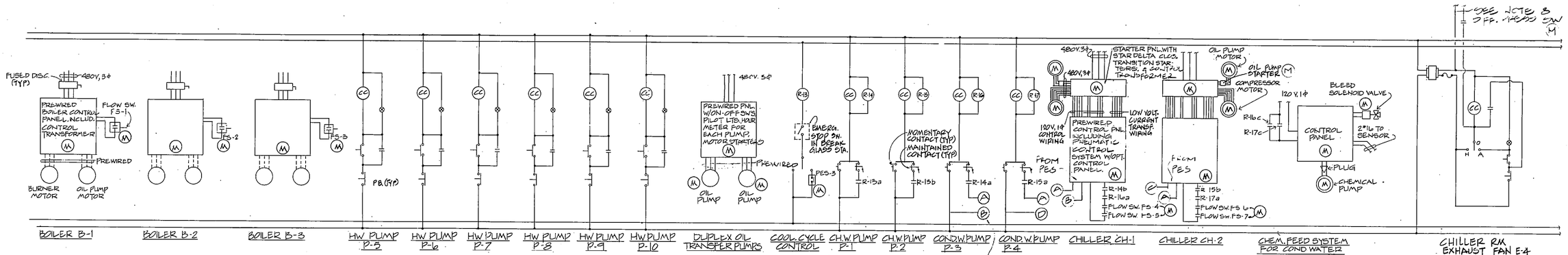
HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

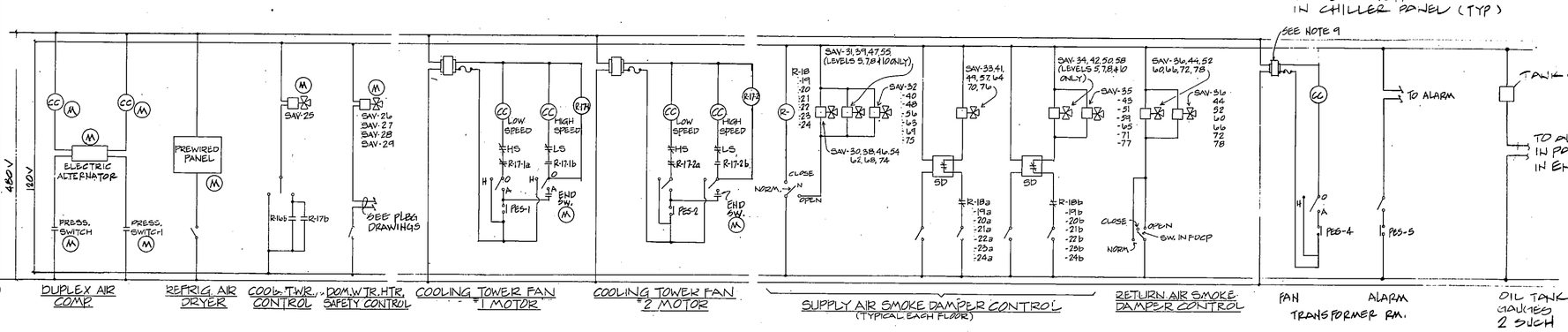
HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO







TO BE SWITCH IN CHILLER PANEL (TYP)



NOTES:
1. (M) INDICATES ITEMS OR EQUIPMENT FURNISHED UNDER MECHANICAL WORK. CONDUIT & WIRING UNDER ELECTRICAL WORK.
2. UNLESS NOTED OTHERWISE, ALL ITEMS FURNISHED, INSTALLED & WIRED UNDER ELECTRICAL WORK.
3. FDCP- FIRE DEPARTMENT CONTROL PANEL.
4. PB- PUSHBUTTON
5. ⊗ PL- PILOT LIGHT
6. CC - CLOSING COIL
7. SD - SMOKE DETECTOR
8. ALARM CIRCUIT- EXTEND TO ALARM PANEL
9. ▯ 480 V/120 V. CONTROL TRANSFORMER IN STARTER

ELECTRIC INTERLOCK DIAGRAMS

NOT TO SCALE.

71

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

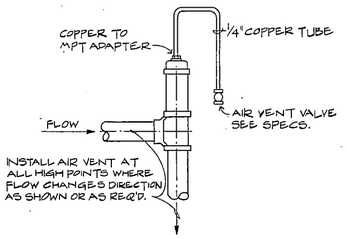
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — WAYNE TAKAMINE — No. 11242 — MECHANICAL

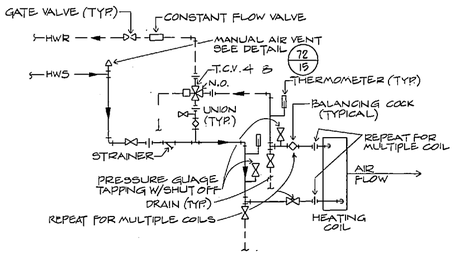
JOB NO. 7873-00			
DRAWN BY			
CHECKED BY			
DATE 7/4/77			
REVISIONS	BY	DATE	
1			
2			
3			
4			
5			
6			
7			

INTERLOCK DIAGRAMS

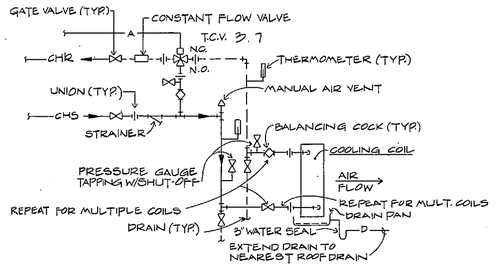
DRAWING NUMBER	CATEGORY
71	15



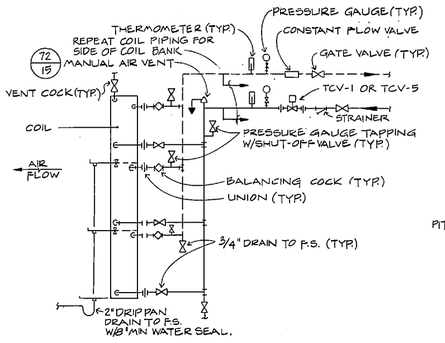
MANUAL AIR VENT DETAIL (72)



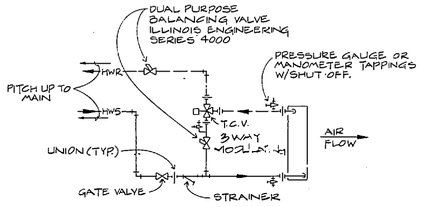
HOT WATER COIL PIPING DIAGRAM (73)
NO SCALE (AC-1 & AC-2)



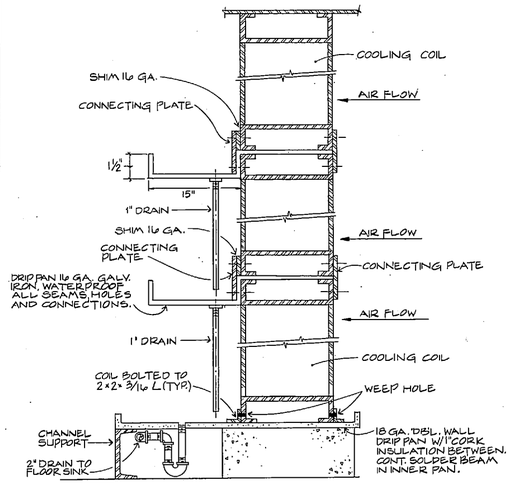
CHILLED WATER COIL PIPING DIAGRAM (74)
NO SCALE (AC-1 & AC-2)



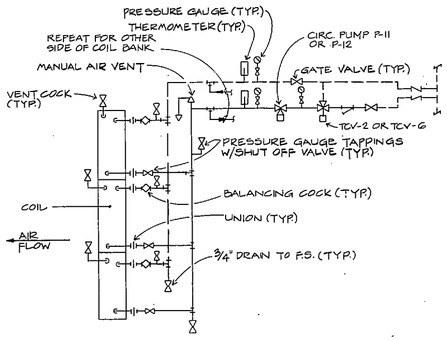
CHILLED WATER COIL PIPING DETAIL (75)
NO SCALE (CC-1 & CC-2)



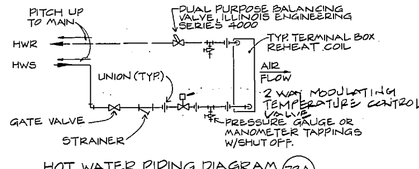
HOT WATER PIPING DIAGRAM (76)
NO SCALE (REHEAT COILS)



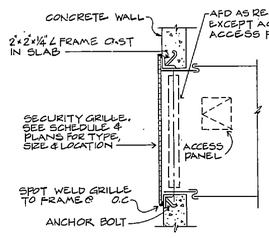
COOLING COIL DETAIL (77)
NO SCALE



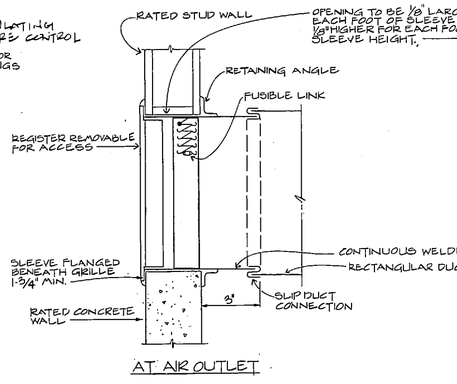
HEATING COIL PIPING DETAIL (78)
NO SCALE (HC-1 & HC-2)



HOT WATER PIPING DIAGRAM (78A)
NO SCALE (REHEAT COILS)

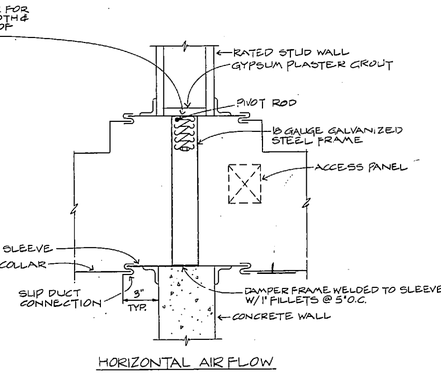


SECURITY GRILLE DETAIL (79)
NO SCALE



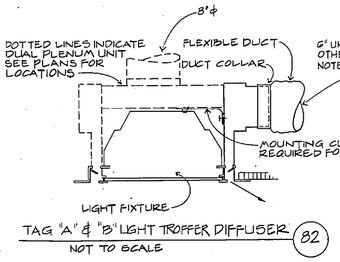
AT AIR OUTLET

AUTOMATIC FIRE DAMPER DETAIL (80)
NO SCALE

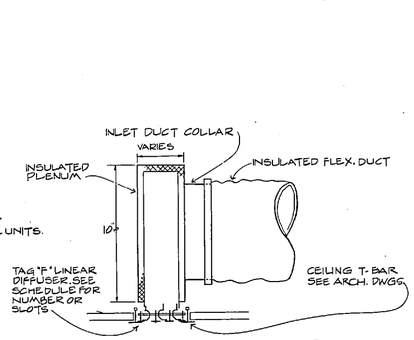


HORIZONTAL AIR FLOW

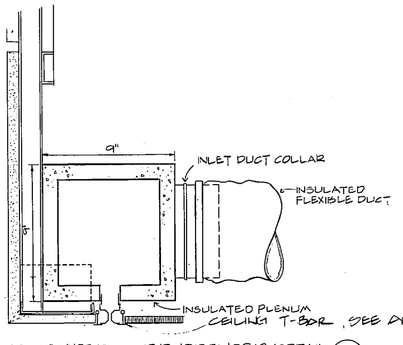
AUTOMATIC FIRE DAMPER DETAIL (81)
NO SCALE



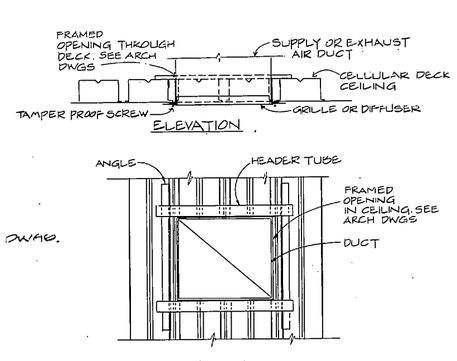
TAG "A" & "B" LIGHT TROFFER DIFFUSER (82)
NOT TO SCALE



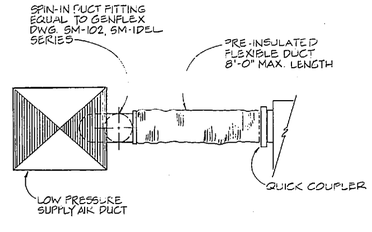
TAG "F" LINEAR DIFFUSER (83)
NO SCALE



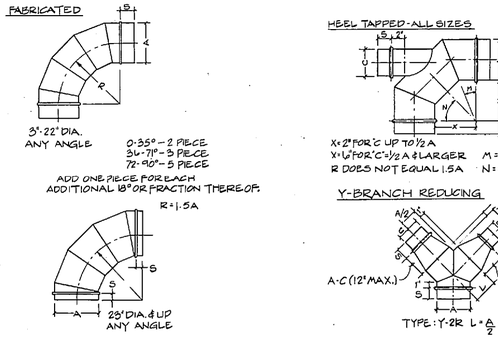
TAG "C" PERIMETER DIFFUSER DETAIL (84)
NO SCALE.



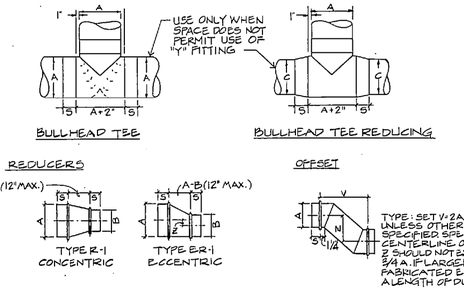
AIR OUTLET DETAIL AT CELLULAR DECK CEILING (85)
NOT TO SCALE

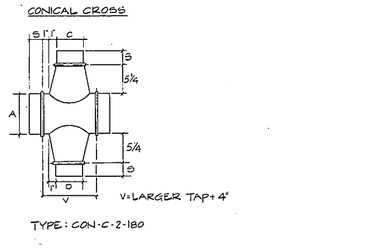


LOW PRESSURE FLEXIBLE DUCT TAKE-OFF TO DIFFUSER (86)
NOT TO SCALE



TYPICAL FITTINGS FOR HIGH PRESSURE DUCTWORK (87)





HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

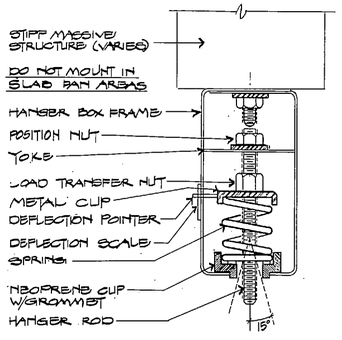
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — MECHANICAL — No. 11242 — STATE OF CALIFORNIA

JOB NO. 7873.00							
DRAWN BY							
CHECKED BY							
DATE 7/4/77							
REVISIONS	1	2	3	4	5	6	7
BY							
DATE							

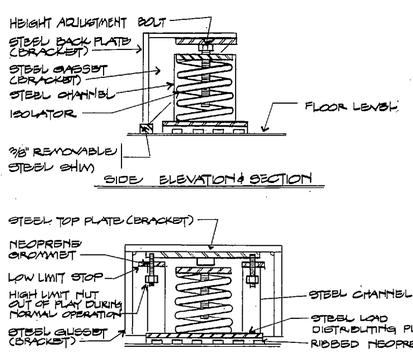
DETAILS

DRAWING NUMBER	CATEGORY
72-87	15



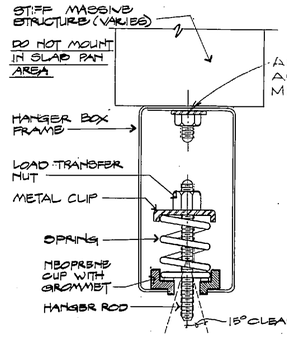
NOTES:
1. WHEN MOUNTING EQUIPMENT, ALIGN HANGER ROD TO CLEAR HANGER BOX
2. MOUNT HANGER BOX DIRECTLY AGAINST STRUCTURAL ELEMENT. DO NOT SUPPORT HANGER FROM SLAB DIAPHRAGMS
3. DO NOT TRANSFER LOAD TO SPRING UNTIL ENTIRE SYSTEM IS UNDER OPERATIONAL LOAD. POSITION NUT TAKES FULL SYSTEM LOAD DURING ROUGH-IN AND FILL.
4. WHEN SYSTEM IS OPERATIONAL, ADJUST LOAD TRANSFER NUT TO TRANSFER LOAD TO SPRING. TURN ONLY UNTIL POSITION NUT CLEARS HANGER YOKE, INDICATING POINTER SHOULD GIVE DESIGN DEFLECTION.

ISOLATOR TYPE H.S.T - SPRING HANGER (88)
SCALE: NONE



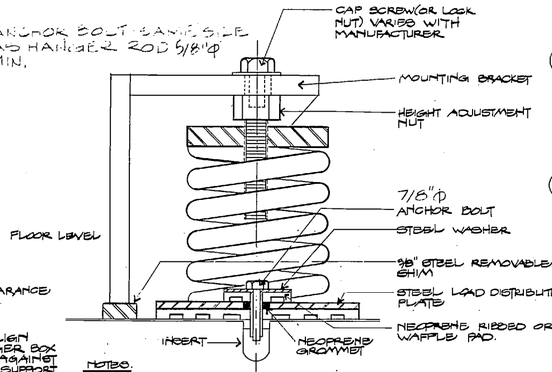
NOTES:
1. DO NOT TRANSFER LOAD TO SPRING UNTIL ENTIRE SYSTEM IS UNDER OPERATIONAL LOAD. STEEL SHIM IN PLACE DURING PIPING ROUGH-IN AND FILLING.
2. WHEN SYSTEM OPERATIONAL, ADJUST HEIGHT ADJUSTING BOLT TO TRANSFER THE LOAD TO SPRING. TURN ONLY UNTIL MOUNTING BRACKET JUST CLEAR SHIM. REMOVE SHIM, RETAIN FOR FUTURE INSPECTION CHECK.
3. BACK OFF HIGH LIMIT NUTS FOR 3/8" CLEARANCE.
4. ALL EQUIPMENT ISOLATORS SHALL BE ANCHORED TO FLOOR SLAB OR CONCRETE MOUNTING PAD.

ISOLATOR TYPE-MSL SPRING MOUNT WITH LIMIT STOP (89)
SCALE: NONE



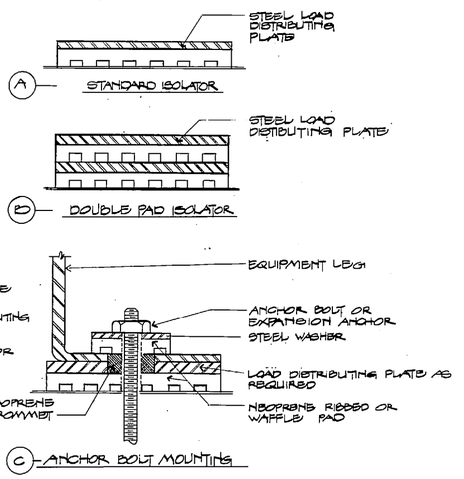
NOTES:
1. WHEN MOUNTING EQUIPMENT, ALIGN HANGER ROD TO CLEAR HANGER BOX
2. MOUNT HANGER BOX DIRECTLY AGAINST STRUCTURAL ELEMENT. DO NOT SUPPORT HANGER FROM SLAB DIAPHRAGMS

ISOLATOR TYPE H.S. SPRING HANGER (90)
SCALE: NONE

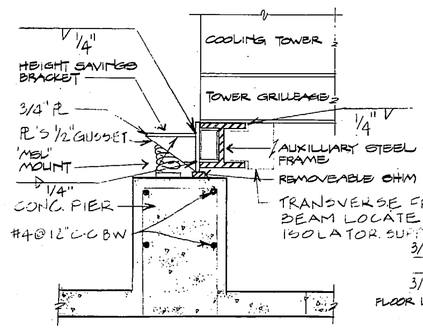


NOTES:
1. DO NOT TRANSFER LOAD TO SPRING UNTIL ENTIRE SYSTEM IS UNDER OPERATIONAL LOAD. STEEL SHIM TO BE IN PLACE DURING PIPING ROUGH IN AND FILLING.
2. WHEN SYSTEM IS OPERATIONAL ADJUST HEIGHT ADJUSTING BOLT TO TRANSFER LOAD TO SPRING. TURN ONLY UNTIL MOUNTING BRACKET JUST CLEARS SHIM. REMOVE SHIM, RETAIN FOR FUTURE INSPECTION CHECK.

ISOLATOR TYPE MS - SPRING MOUNT (91)
SCALE: NONE

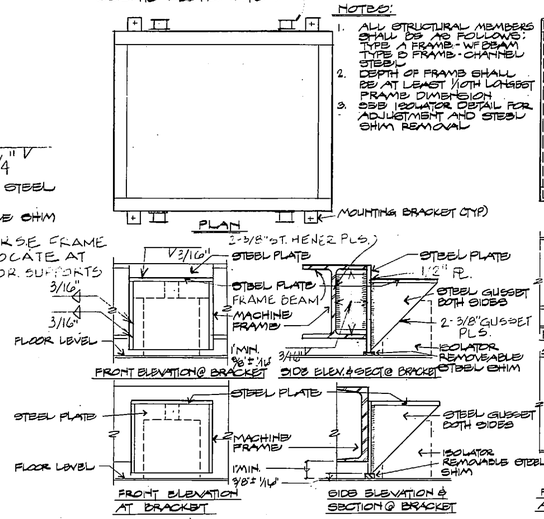


ISOLATOR TYPE PN: NEOPRENE PAD (92)
SCALE: NONE

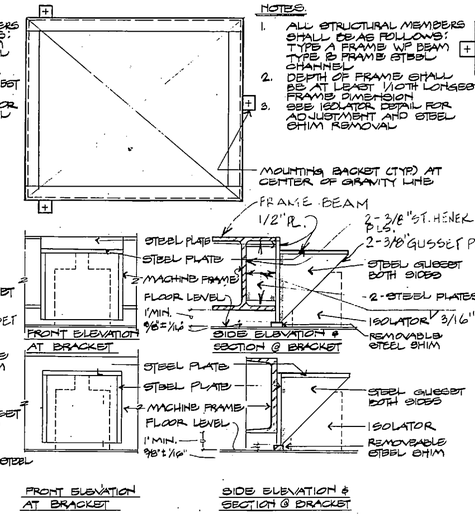


COOLING TOWER SUPPORT
(PROVIDE 3 EACH SIDE)

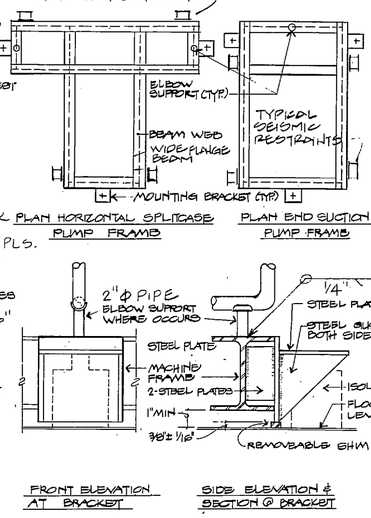
COOLING TOWER PIER DETAIL (93)
SCALE: NONE



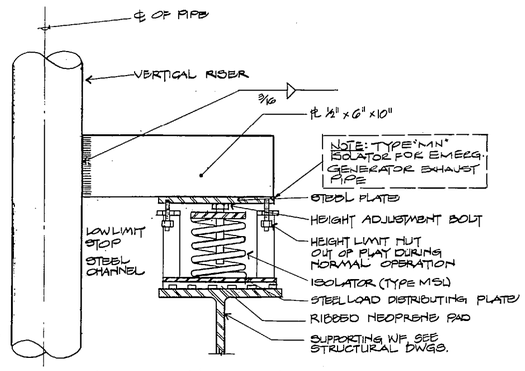
FRAME - GENERAL PURPOSE 4 POINT SUSPENSION (94)
SCALE: NONE



FRAME - GENERAL PURPOSE 2 POINT SUSPENSION (95)
SCALE: NONE

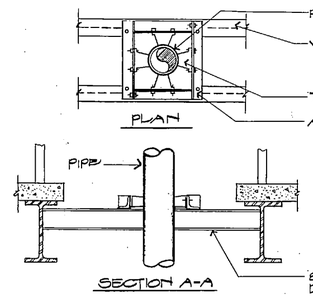


FRAME - PUMP DETAIL (96)
SCALE: NONE

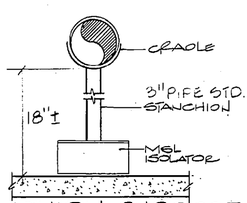


NOTES:
1. ALL EQUIPMENT ISOLATORS SHALL BE ANCHORED TO FLOOR SLAB, CONCRETE MOUNTING PAD OR STRUCTURAL STEEL.
2. DO NOT TRANSFER LOAD TO SPRING UNTIL ENTIRE SYSTEM IS UNDER OPERATIONAL LOAD.
3. WHEN SYSTEM OPERATIONAL ADJUST HEIGHT ADJUSTING BOLT TO TRANSFER THE LOAD TO SPRINGS.
4. BACK OFF HIGH LIMIT NUTS FOR 3/8" CLEARANCE

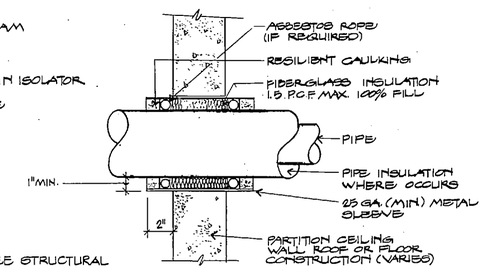
PIPE SUPPORT - VERTICAL RISER (97)
SCALE: NONE



PIPE GUIDE - VERTICAL RISER (98)
SCALE: NONE

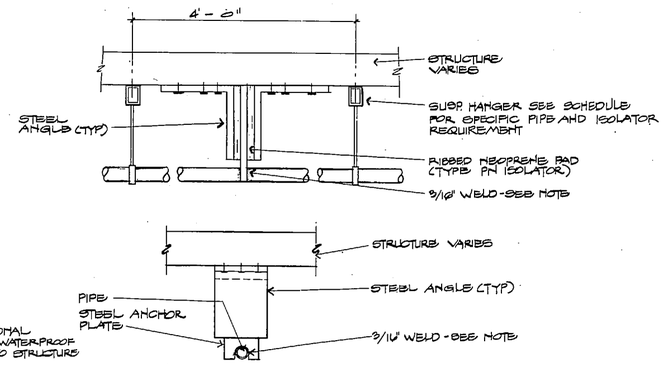


PIPE STANCHION SUPPORT (98A)
SCALE: NONE



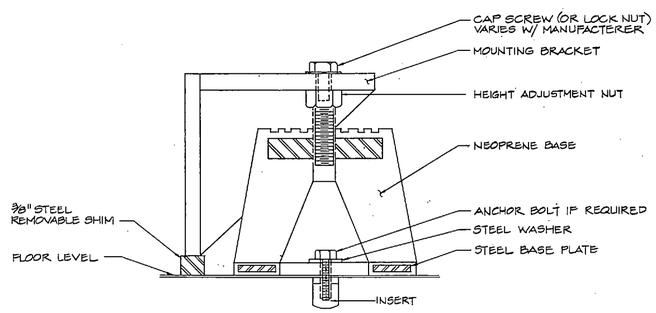
NOTES:
1. PROVIDE PITCH POCKET CONSTRUCTION, ADDITIONAL FLASHING, OR WEATHER CAP AS REQUIRED FOR WATERPROOF CONSTRUCTION. DO NOT MECHANICALLY TIE PIPE TO STRUCTURE IN ANY WAY.
2. SPACE BETWEEN PIPE AND SLEEVE SHALL BE FREE OF ANY FOREIGN MATERIALS.
3. PIPE SHALL NOT CONTACT STRUCTURE AT ANY TIME. WEDGES SHALL NOT BE USED TO MAINTAIN PIPE IN POSITION
4. PIPE MUST BE APPROXIMATELY CENTERED IN OPENING. PROVIDE ADDITIONAL CLEARANCE FOR POSITIONAL OPERATION OF SYSTEM

ISOLATED PIPE PENETRATIONS (99)
SCALE: NONE



NOTES:
1. SIZE OF STEEL ANGLE ANCHOR BOLT AND MOUNTING HARDWARE SEE MECHANICAL ENGINEER.
2. PIPE CLAMP ARRANGEMENT MAY BE PREFERRED TO 3/16" WELD AS SHOWN. FOR DETAIL SEE MECHANICAL ENGINEER.

PIPE ANCHORS (100)
SCALE: NONE



NOTES:
1. DO NOT TRANSFER LOAD TO MOUNT UNTIL ENTIRE SYSTEM IS UNDER OPERATIONAL LOAD. STEEL SHIM TO BE IN PLACE DURING PIPING ROUGH-IN AND FILLING.
2. WHEN SYSTEM OPERATIONAL, ADJUST HEIGHT ADJUSTING BOLT TO TRANSFER LOAD TO MOUNT. TURN ONLY UNTIL MOUNTING BRACKET JUST CLEARS SHIM. REMOVE SHIM, RETAIN FOR FUTURE INSPECTION CHECK.

ISOLATOR TYPE MN - NEOPRENE MOUNT (100A)
SCALE: NONE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT COURT MUNICIPAL COMPLEX

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER MECHANICAL CALIFORNIA No. 11242

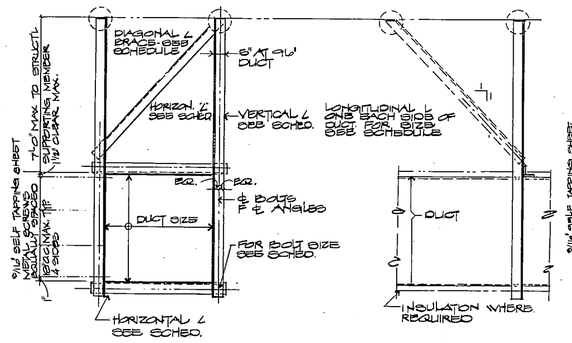
JOB NO. 7873-00			
DRAWN BY			
CHECKED BY			
DATE 7-14-77			
REVISIONS	BY	DATE	
1			
2			
3			
4			
5			
6			
7			

DETAILS

DRAWING NUMBER 88-100A

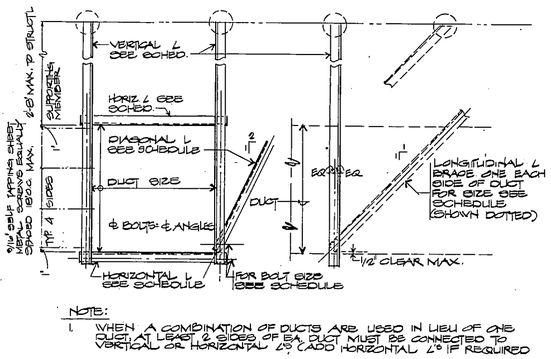
CATEGORY 15

CONN. TO STRUCTURAL SUPPORTING MEMBER TO BE SAME FOR VERTICAL DIAGONAL & LONGITUDINAL L'S SEE SCHEDULE



TYPICAL CENTER BRACING FOR RECTANGULAR DUCTS (101)

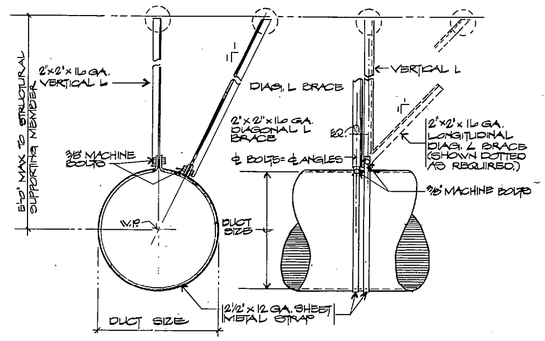
CONN. TO STRUCTURAL SUPPORTING MEMBER TO BE SAME FOR VERTICAL, DIAGONAL & LONGITUDINAL L'S SEE SCHEDULE



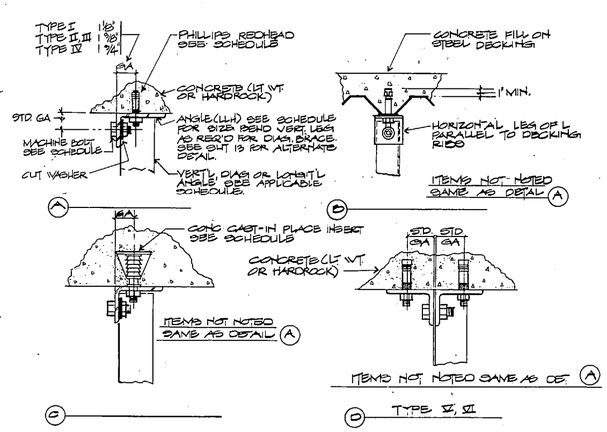
NOTE:
1. WHEN A COMBINATION OF DUCTS ARE USED IN LIEU OF ONE DUCT AT LEAST 2 SIDES OF EA. DUCT MUST BE CONNECTED TO VERTICAL OR HORIZONTAL L'S (ADD HORIZONTAL L'S IF REQUIRED

TYPICAL SIDE BRACING FOR RECTANGULAR DUCTS (102)

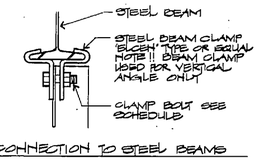
CONN TO STRUCT'L SUPPORTING MEMBER TO BE SAME FOR VERTICAL, DIAGONAL & LONGITUDINAL L'S USE TYPE I AT 28'-0", TYPE II AT 30'-0" DUCT SEE SCHEDULE



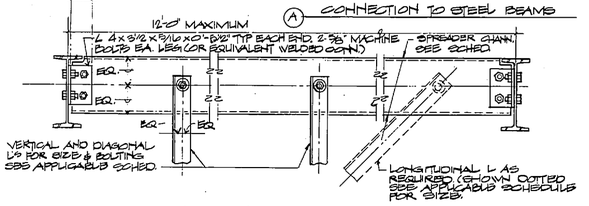
TYPICAL BRACING FOR 28'-0" & 30'-0" DIAMETER DUCT (103)



CONNECTIONS TO CONCRETE (104)



CONNECTION TO STEEL BEAMS (A)



CONNECTION TO SPREADERS
USE WITH VERTICAL, DIAGONAL AND LONGITUDINAL L'S

CONNECTIONS TO STEEL (106)

TYPICAL NOTES FOR BRACING OF DUCTS

1. DETAILS SHOWN PROVIDE A LATERAL BRACING SYSTEM. A TYPICAL VERTICAL SUPPORT SYSTEM MUST ALSO BE USED. HOWEVER, WHERE BRACING OCCURS, THE VERTICAL ANGLE SHOWN MAY REPLACE A TYPICAL VERTICAL SUPPORT. THIS INCLUDES A TRAPEZE VERTICAL SUPPORTING SYSTEM.
2. BRACE ALL RECTANGULAR DUCTS 6 SQ. FT. OR AREA AND LARGER. BRACE ALL ROUND DUCTS 28" IN DIAMETER AND LARGER.
3. TRANSVERSE BRACING TO OCCUR 30'-0" O.C. MAX. (EXCEPT FOR RECTANGULAR DUCTS 14" AND LARGER IN EITHER DIRECTION) MAY BE BRACED AT 22'-0" O.C. TRANSVERSE BRACING SHALL BE INSTALLED AT EACH DUCT TURN AND AT EACH END OF A DUCT RUN.
   LONGITUDINAL BRACING SHALL OCCUR AT 60'-0" O.C. MAX. TRANSVERSE BRACING FOR ONE DUCT SECTION MAY ALSO ACT AS LONGITUDINAL BRACING FOR A DUCT SECTION CONNECTED PERPENDICULAR TO IT, IF THE BRACING IS INSTALLED WITHIN FOUR FEET OF THE INTERSECTION OF BOTH DUCTS AND THE BRACING IS SIZED FOR THE LARGER DUCT.
4. NO BRACING IS REQUIRED IF THE TOP OF THE DUCT IS SUSPENDED 12" OR LESS FROM THE SUPPORTING STRUCTURAL MEMBER AND ATTACHED TO TOP OF DUCT.
5. A GROUP OF DUCTS MAY BE COMBINED IN A LARGER SIZE FRAME USING THE OVERALL DIMENSIONS WITH MAX WT FOR SELECTION OF THE MEMBERS FROM THE SCHEDULE.
6. WALL (INCLUDING GYP-BOARD NON-BEARING PARTITIONS) WHICH HAVE DUCTS RUNNING THRU THEM MAY REPLACE A TYPICAL TRANSVERSE BRACE.
7. WHERE IT IS PRACTICAL TO DO SO, DUCTS NOT BRACED SHALL BE INSTALLED WITH A 6" MIN CLEARANCE TO VERTICAL CEILING HANGER WIRES.
8. ALL SHEET METAL FOR BRACINGS TO BE F_y = 58 KSI MIN. GA. FOR SHEET METAL FOR BRACINGS TO BE AS FOLLOWS:
   14" GA. (.0359" INCH)
   16 GA. (.0747 INCH)
   12 GA. (.1046 INCH)

SCHEDULE OF SIDE BRACING FOR RECTANGULAR DUCTS

DUCT SIZE * * *	VERTICAL AND LONGIT'L L'S	DIAGONAL L'S	HORIZONTAL L'S	BOLT SIZE	CONN. TO STRUCT'L SUPPORTING MEMBER *	WT. PER LINEAR FOOT * *
20" SQ.	2"x2"x 16 GA.	2"x2"x 16 GA.	2"x 2"x 16 GA.	¼"Φ	TYPE I	15
42" SQ.	2½"x2½"x16GA.	2½"x2½"x16GA.	2½" x 2½"x16GA.	¼"Φ	TYPE I	20
54" SQ.	2½"x2½"x14GA.	2½"x2½"x14GA.	2½"x 2½"x14GA.	⅜"Φ	TYPE II	27
60" SQ.	3"x3"x14GA.	3"x3"x14GA.	3"x 3"x 14 GA.	⅜"Φ	TYPE II	31
66" SQ.	4"x4"x 14GA.	4"x4"x 14GA.	4"x 4"x 14 GA.	⅜"Φ	TYPE II	33
96" SQ.	4"x4"x12GA.	4"x4"x12GA.	4"x 4"x 12 GA.	½"Φ	TYPE II	80

* SEE SCHEDULE FOR TYPICAL CONNECTION TO STRUCTURAL SUPPORTING MEMBER

** MAX. WEIGHTS OF DUCT OR COMBINATION OF DUCTS PER LINEAR FOOT.

*** THE DUCTS MAX. DIMENSION SHALL GOVERN WHAT BRACING IS REQUIRED EXAMPLE: A 9'0"x 1'0" DUCT SHALL BE BRACED AS A 1'0" SQ. DUCT.

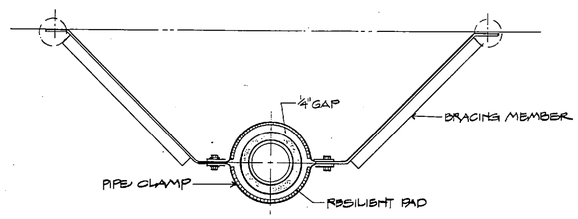
SCHEDULE OF CENTER BRACING FOR RECTANGULAR DUCTS

DUCT SIZE	VERTICAL L'S	DIAGONAL L'S	HORIZONTAL L'S	LONGITUDINAL L'S	BOLT SIZE	CONN TO STRUCT'L SUPPORTING MEMBER	WT. PER L.F.
30" SQ.	2½"x2"x11 GA.	2½"x2"x11 GA.	2½"x2"x11 GA.	3"x 3"x11 GA.	¼"Φ	TYPE I	18
42" SQ.	4"x4"x11 GA.	2½"x2"x11 GA.	2½"x 2½"x11 GA.	DO	⅜"Φ	TYPE II	20
54" SQ.	4"x4"x12 GA.	2½"x2"x11 GA.	2½"x2"x11 GA.	DO	⅜"Φ	TYPE II	27
60" SQ.	4"x4"x 12 GA.	3"x3"x11 GA.	3"x 3"x 11 GA.	DO	½"Φ	TYPE II	36
84" SQ.	4"x4"x ¼	4"x 4"x 11 GA.	4"x 4"x 11 GA.	DO	⅜"Φ	TYPE II	53
96" SQ.	5"x 3"x ½	4"x 4"x 12 GA.	4"x 4"x 12 GA.	DO	½"Φ	TYPE II	80

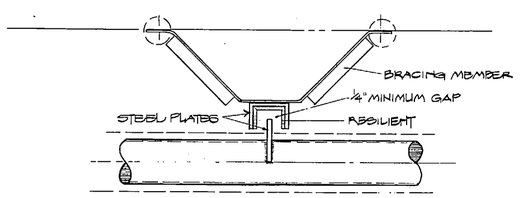
"L" DENOTES ANGLE
ALL HOLES IN L'S 1/16" OVERSIZE MAX.
PLACE STANDARD CUT WASHERS BETWEEN SHEET METAL L'S & NUT

MIN. EDGE DISTANCE FOR BOLTS
½"Φ — 1"
⅝"Φ — 1"
¾"Φ — 1"
⅞"Φ — 1⅛"
1"Φ — 1¼"
1⅛"Φ — 1½"

DUCT BRACING DETAILS (105)
SCALE: NONE



TRANSVERSE BRACING



LONGITUDINAL BRACING

GENERAL NOTES FOR BRACING PIPES

1. BRACE ALL PIPES WITH 2½" I.D. AND LARGER.
2. DETAILS SHOWN PROVIDE A LATERAL BRACING SYSTEM
3. TRANSVERSE BRACING AT 40'-0" O.C. MAX.
4. LONGITUDINAL BRACING AT 80'-0" O.C. MAX.
5. TRANSVERSE BRACING FOR ONE PIPE SECTION MAY ALSO ACT AS LONGITUDINAL BRACING FOR THE PIPE SECTION CONNECTED PERPENDICULAR TO IT, IF THE BRACING IS INSTALLED WITHIN 24" OF THE ELBOW OR TEE AND SIMILAR SIZE.
6. DO NOT USE BRANCH LINES TO BRACE MAIN LINES.
7. PROVIDE FLEXIBILITY IN JOINTS WHERE PIPES PASS THROUGH BUILDING SEISMIC OR EXPANSION JOINTS, OR WHERE RIGIDLY SUPPORTED PIPES CONNECT TO EQUIPMENT WITH VIBRATION ISOLATORS.
8. AT VERTICAL PIPE RISERS, WHEREVER POSSIBLE, SUPPORT THE WEIGHT OF THE RISERS AT A POINT OR POINTS ABOVE THE CENTER OF GRAVITY OF THE RISER. PROVIDE LATERAL GUIDES AT THE TOP AND BOTTOM OF THE RISER AND AT INTERMEDIATE POINTS NOT TO EXCEED 80'-0" ON CENTER.
9. PROVIDE LARGER ENOUGH PIPE SLEEVES THRU WALLS OR FLOORS TO ALLOW FOR ANTICIPATED DIFFERENTIAL MOVEMENTS.
10. DO NOT FASTEN ONE RIGID PIPING SYSTEM TO TWO DISSIMILAR PARTS OF A BUILDING THAT MAY RESPOND IN A DIFFERENT MODE DURING AN EARTHQUAKE; FOR EXAMPLE, A WALL AND A ROOF.
11. BRACING DETAILS, SCHEDULE AND NOTES ARE TO BE USED WITH THE FOLLOWING TYPES OF PIPE: STEEL PIPE SCHEDULE 40 AND 80, COPPER PIPE TYPE K, L, M (ONLY SILVER SOLDERED BRAZED JOINTS TO BE USE WITH COPPER PIPE)
12. IN BOILER AND MECHANICAL EQUIPMENT ROOMS, BRACING OF ALL TYPES OF PIPE INCLUDED IN SCHEDULE SHALL BE EXTENDED TO INCLUDE 1¼" Φ, 1½" Φ AND 2" Φ, BRACED AS REQUIRED FOR 2½" Φ PIPE.

SCHEDULE FOR BRACING PIPES

PIPE SIZE	ELCEN OR EQUAL HANGER TYPE	BOLTS TO 'L' **	TRANSVERSE ANGLES	LONGITUDINAL ANGLES	TOP CONN OF TRANS. & LONG. L'S *
2½"	CLEVIS TYPE	⅜"Φ	2"x2"x 16 GA^	2½"x 2½"x 16 GA	TYPE I
3"	CLEVIS TYPE	⅜"Φ	2½"x2½"x 16 GA	2½"x 2½"x 16 GA	TYPE II
3½"	CLEVIS TYPE	⅜"Φ	2½"x2½"x 16 GA	2½"x 2½"x 16 GA	TYPE II
4"	CLEVIS TYPE	⅜"Φ	2"x2"x 16 GA	2½"x 2½"x 16 GA	TYPE II
5"	CLEVIS TYPE	½"Φ	2"x2"x 16 GA	2½"x 2½"x 16 GA	TYPE III
6"	CLEVIS TYPE	½"Φ	2½"x 2½"x 16 GA	2½"x 2½"x 16 GA	TYPE III
8"	CLEVIS TYPE	⅝"Φ	2½"x2½"x 12 GA	2½"x 2½"x 12 GA	TYPE VI
10"	CLEVIS TYPE	⅝"Φ	3"x 3"x 12 GA	3"x 3"x 12 GA	TYPE VI

"L" DENOTES ANGLE
SEE SCHEDULE FOR TYP. CONN. TO STRUCTURAL SUPPORTING
* MEMBER.
** PLACE STANDARD CUT WASHERS BETWEEN SHEET METAL L'S & NUT

PIPE BRACING DETAIL (107)
SCALE: NONE

SCHEDULE FOR TYP CONNECTION TO STRUCTURAL SUPPORTING MEMBER

TYPE	MAX. LOAD CAPACITY POUNDS	PHILLIPS REDHEAD ANCHORS TO CONC. LT. WT	PHILLIPS REDHEAD ANCHORS TO CONC. HARD ROCK	CONC CAST-IN PLACE INSERT		BOLT OF STL BY CLAMP	SPREADER SIZE	BOLT AT WOOD	SPAN-ANGLES TO SUPPORTING STRUCT MEMBER	ROD SIZE FOR PIPES
I	500	⅜"	⅜"	⅜"		⅜"	C4x5.4	½"	⅜"	⅜"x2"x¼"x0'-3" LLH	½"Φ
II	1000	½"	⅜"	½"		⅜"	C5x6.7	⅝"	⅜"	⅜"x2"x2"x¼"x0'-3" LLH	½"Φ
III	1500	⅝"	½"	½"		½"	C6x8.5		½"	⅜"x2"x2"x¼"x0'-4" LLH	⅝"Φ
IV	2000	⅜"	½"	⅝"		½"	C8x11.5		½"	⅝"x3"x¼"x 0'-4" LLH	⅜"Φ
V	3000	2-⅝"	2-½"	2-½"		⅝"	C9x13.4			2-½"x2"x2"x¼"x 0'-4"	⅞"Φ x
VI	4000	2-¾"	2-⅝"	2-⅝"		⅝"	C10x15.3			2'-5"x3"x½"x 0'-4"	⅞"Φ **

NOTES:
1. FOR SLABS LESS THAN 5" THICK ONLY. THIN SLAB INSERTS MAY BE USED
2. * FOR USE W/CONC CAST-IN PLACE INSERTS OR PHILLIPS REDHEAD IN HARDROCK ONLY
3. ** FOR USE WITH CONC. CAST IN PLACE INSERTS ONLY
4. FOR ESSENTIAL FACILITIES WHERE CONC. ANCHOR BOLTS OF THE "REDHEAD" EXPANSION TYPE ARE LOADED IN PULL OUT 50 PER CENT OF THE BOLTS (ALTERNATE BOLTS IN ANY GROUP ARRANGEMENT) SHALL BE PROOF TESTED TO TWICE THE ALLOWABLE LOAD. IF THERE ARE FAILURES, THE IMMEDIATELY ADJACENT BOLTS MUST THEN ALSO BE TESTED.
6. THE MECHANICAL ENGINEER SHALL BE RESPONSIBLE FOR SUBMITTING TO THE STRUCTURAL ENGINEER ALL PERTINENT MECHANICAL DATA SO THAT THE STRUCTURAL ENGINEER CAN DESIGN THE STRUCTURE TO SUPPORT THE MECHANICAL SYSTEM

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENERKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

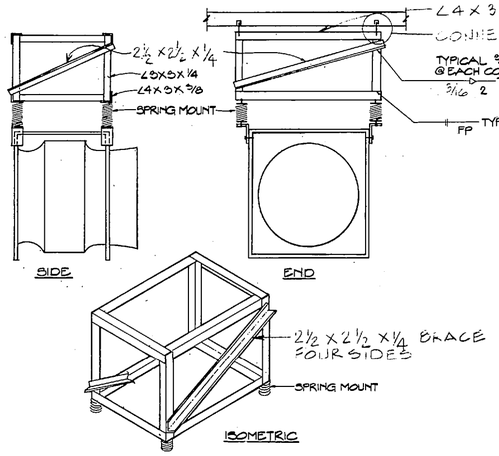
REGISTERED PROFESSIONAL ENGINEER — ANTHONY M. GUZZARDO — No. 11242 — CALIFORNIA

JOB NO. 7873.00								
DRAWN BY								
CHECKED BY								
DATE 7/4/77								
REVISIONS	1	2	3	4	5	6	7	
BY								
DATE								

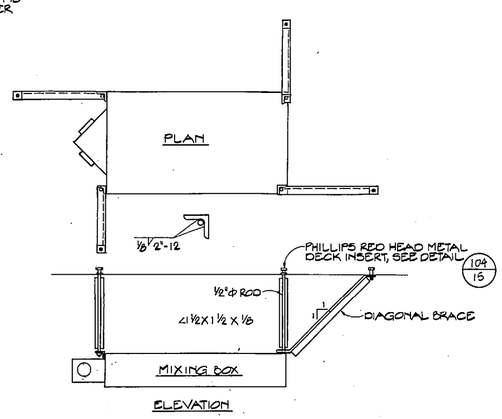
DETAILS

DRAWING NUMBER 101-107

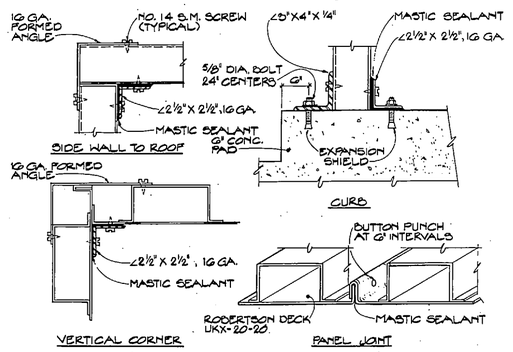
CATEGORY 15



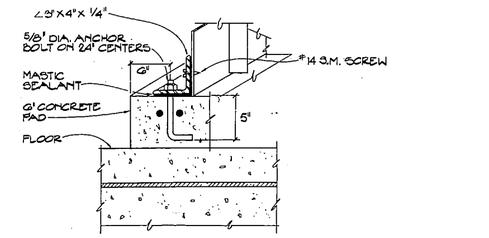
FAN SUPPORT DETAIL (108)
NOT TO SCALE



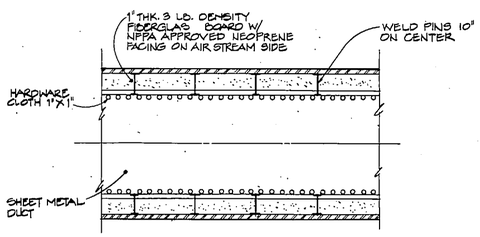
MIXING BOX SUPPORT DETAIL (109)
NOT TO SCALE



TYPICAL CELLULAR DECK DETAILS FOR PLENUM (110)
NOT TO SCALE

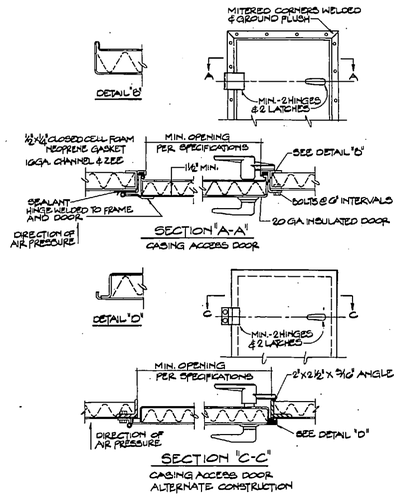


TYPICAL PLENUM ATTACHMENT TO CURB DETAIL (111)
NOT TO SCALE

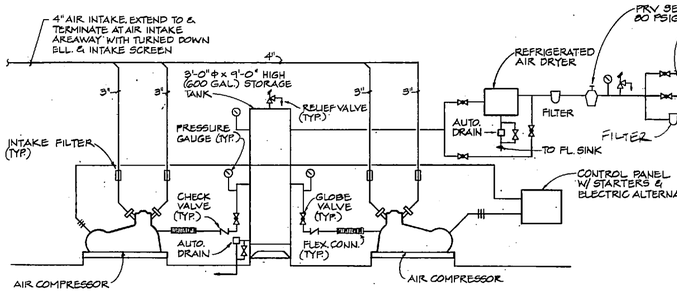


MEDIUM PRESSURE DUCT LINING DETAIL (112)
NOT TO SCALE

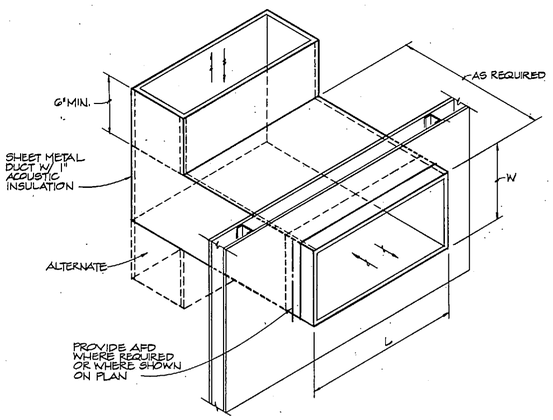
TRANSFER DUCT SIZE SCHEDULE					
TAG □	CFM (MAX.)	SIZE L x W (NET INSIDE)	TAG □	CFM (MAX.)	SIZE L x W (NET INSIDE)
1	140	10" x 4"	8	1250	30" x 12"
2	250	12" x 6"	9	1450	36"x12" OR 30" x 14"
3	450	16" x 8"	10	1900	48" x 12"
4	560	20" x 8"	11	2300	60"x12" OR 36"x16" 48" x 14"
5	660	24" x 8"	12	3000	48" x 20"
6	850	24" x 10"	13	3000	30" x 20".
7	1020	24" x 12"	14	4000	36" x 20"



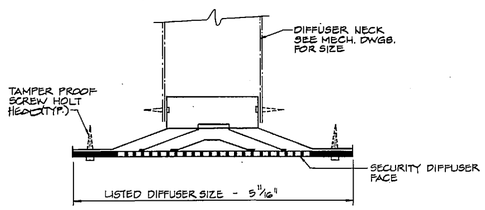
CASING ACCESS DOORS (113)
NOT TO SCALE



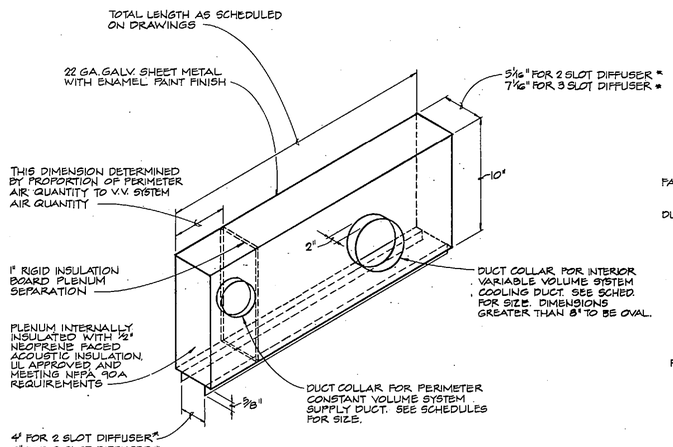
TEMPERATURE CONTROL AIR COMPRESSOR DIAGRAM (114)
NOT TO SCALE



TRANSFER DUCT DETAIL (115)
NOT TO SCALE

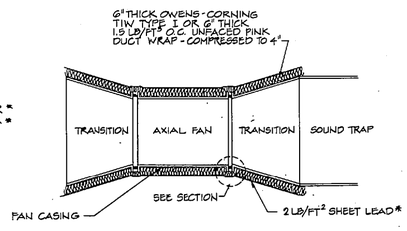


TAG "J" - SECURITY DIFFUSER (116)
NOT TO SCALE



NOTE:
DIMENSIONS BASED ON TEMPMASTER TYPE TFD-HK DIFFUSERS AS SPECIFIED

DETAIL OF PLENUM FOR TYPE "O" DIFFUSERS (116A)
NOT TO SCALE



NOTES:
1. TAPE SHEET LEAD SEAMS W/ DUCT TAPE. SECURE W/ BANDING TAPE.
2. 6" THICKNESS MAY BE ACHIEVED W/ 3-2" THICKNESS, ETC. BY SIMPLY WRAPPING
3. AVOID DIRECT CONTACT BETWEEN SHEET LEAD & DUCT OR FAN
4. DEPENDING ON FAN SOUND POWER LEVEL, LAGGING MAY TERMINATE AT END OF TRANSITION - I.E. OMIT OVER SOUND TRAP

REQUIRED LAGGING AND FLEXIBLE CONNECTION COVER @ AXIAL FLOW FAN (117)
NOT TO SCALE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

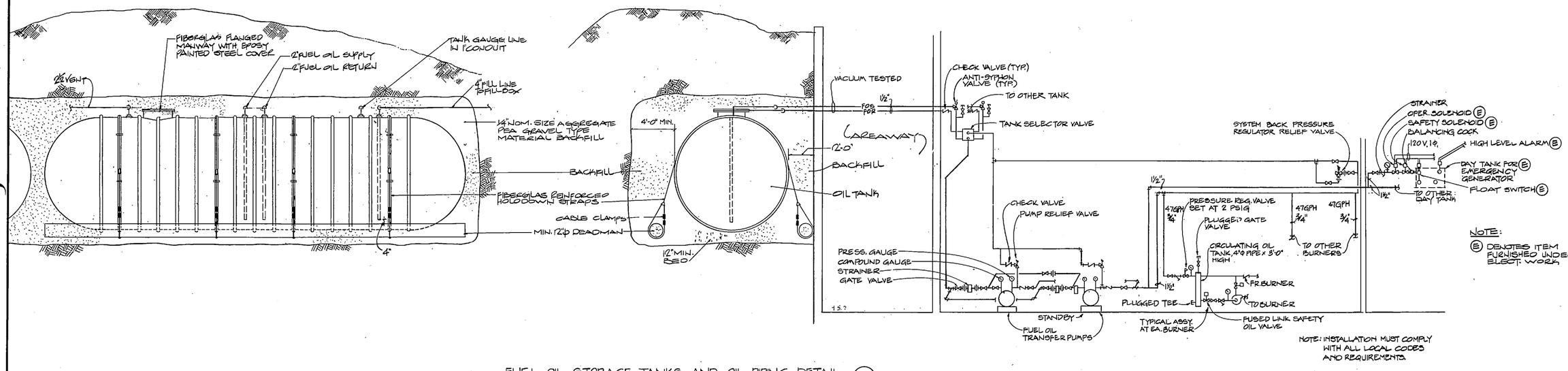
REGISTERED PROFESSIONAL ENGINEER — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

JOB NO. 7673.00
DRAWN BY
CHECKED BY
DATE 7/14/77

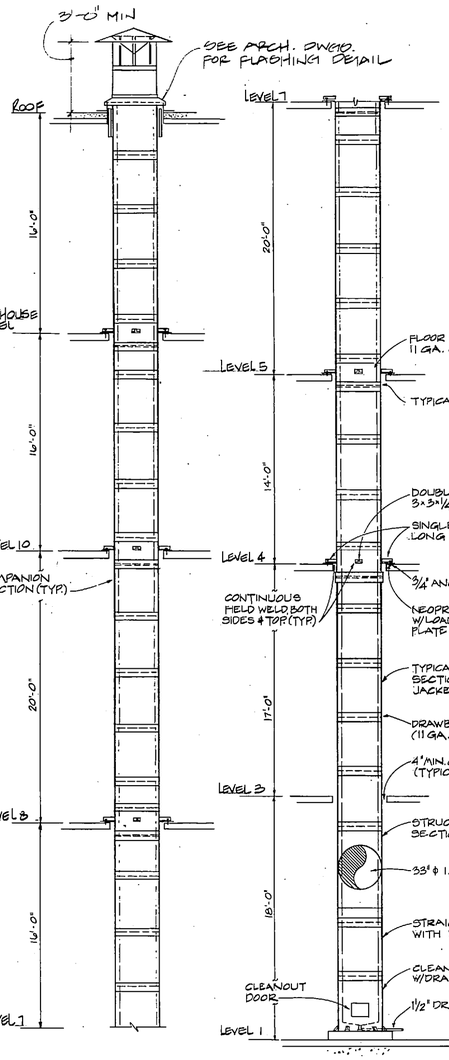
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

DETAILS

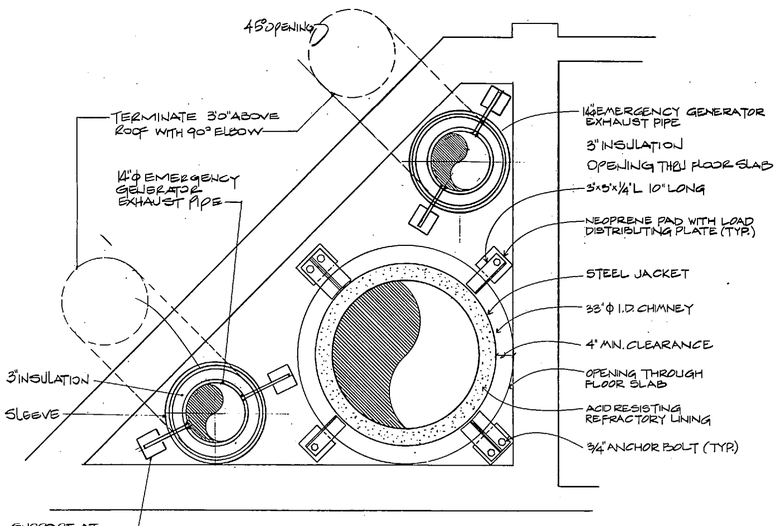
DRAWING NUMBER 108-117
CATEGORY 15



FUEL OIL STORAGE TANKS AND OIL PIPING DETAIL (118)
NO SCALE

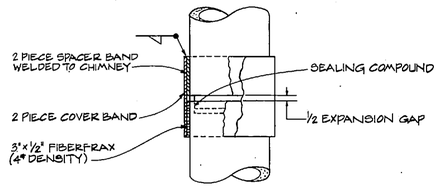


CHIMNEY ELEVATION (121)



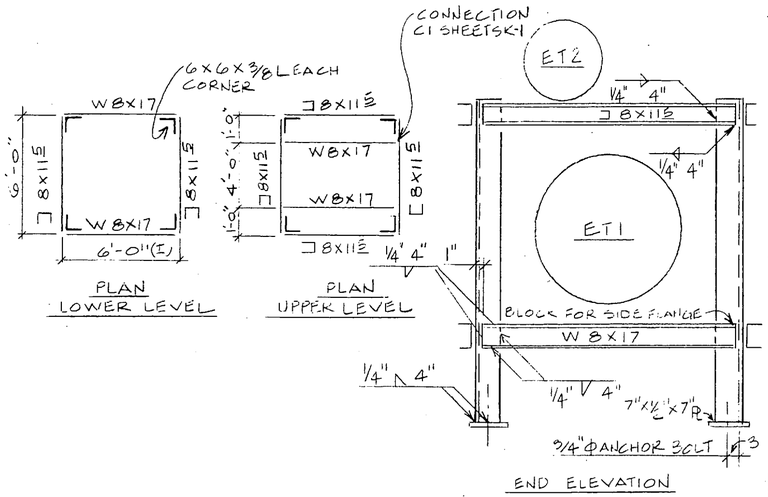
PLAN
NO SCALE (119)

BOILER CHIMNEY DETAILS
NO SCALE

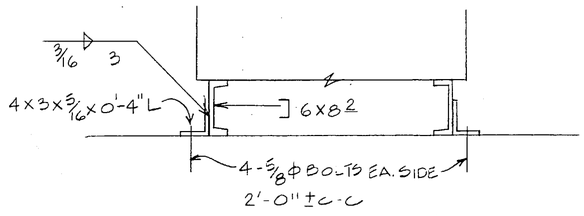


EXPANSION JOINT DETAIL (120)
NO SCALE

NOTES:
1. CHIMNEY TO BE VAN PACKER TYPE HT OR APPROVED EQUAL.
2. ALL JOINTS (EXCEPT EXPANSION JOINTS) TO BE SEALED WITH SILICONE JOINT SEALER & COVERED WITH DRAWBANDS.
3. ALL EXPANSION JOINTS TO BE SMOKE TIGHT.



SUPPORT DETAIL FOR ET1 & ET2 (118A)
NO SCALE



SUPPORT DETAIL FOR SOUND TRAP (118B)
NO SCALE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666
HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO
HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

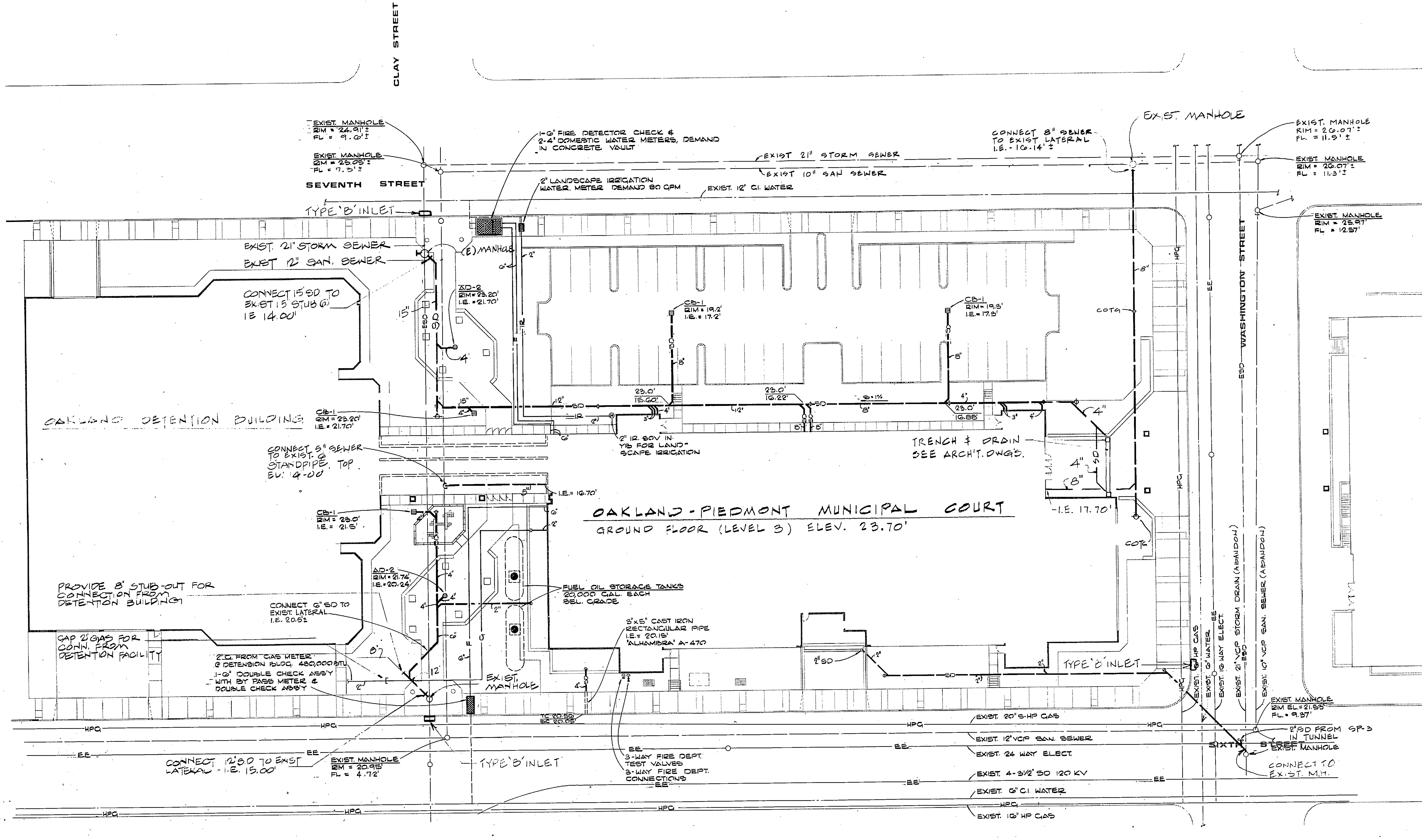
ALAMEDA COUNTY CRIMINAL JUSTICE SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — WAYNE TAKAHASHI — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/14/77
REVISIONS — BY — DATE
1 2 3 4 5 6 7

DETAILS

DRAWING NUMBER 118-121
CATEGORY 15



1 SITE PLAN
SCALE: 1/32" = 1'-0"

NOTE: 1. TYPE 'B' INLET LOCATIONS INDICATED ON SITE PLAN ARE FOR REFERENCE ONLY.

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

SITE PLAN
1/32" = 1'-0"

DRAWING NUMBER	CATEGORY
1	16

HOT WATER GENERATOR SCHEDULE

NO.	SERVICE	LOCATION	MAKE & MODEL	TYPE	RECOVERY CAPACITY	SQ. FT. HTG. SURF.	HTG. H.W TEMP.	HTG. H.W. GPM.	TEMP. REG. SIZE		REMARKS
HWG-1	DOM. H.W. SYSTEM.	BOILER RM # 1-05	AERCO #1012 HTW/BP	SEMI-INSTANTANEOUS SHELL & COIL	42.7 GPM @ 80°F RISE	60	200-177°F	168	2½"		EL-2 AR. SAFETY SYS, SEE DETAIL.
HWG-2	" " "	" " "	AERCO # 1012 HTW/BP	DITTO	DITTO	60	200-177°F	168	2½"		DITTO
HWG-3	DOM. T.W. SYSTEM.	" " "	AERCO # 1009 HTW/BP	DITTO	72 GPM @ 55° F RISE	45	200-165°F	140	2½"		DITTO
HWG-4	" " "	" " "	AERCO # 1009 HTW/BP	DITTO	DITTO	45	200-165°F	140	2½"		DITTO

PUMP SCHEDULE

NO.	SERVICE	LOCATION	MAKE & MODEL	TYPE	GPM	TDH	MOTOR HP	RPM	V.	Φ	Hz	REMARKS
FP-1 & FP-2	CSP & AFS SYSTEM	FIRE PUMP RM # 1-01	PEERLESS 4ABF 10	DBL. SUCT. HORIZ. SPLIT CASE, 1 STAGE, CENTRIF.	750	231'	75	3540	460	3	60	SEE DETAIL
JP-1	" " "	" " " # 1-01	" TMU	MULTI-STAGE, VERTICLE CENTRIFUGAL	24	250'	5	3500	460	3	60	SEE DETAIL
CP-1	T.W. SYSTEM RECIRC.	BOILER R.M. # 1-05	PACIFIC TYPE "L" #1250-5	CLOSE COUPLED, END SUCT., HORIZ., CENTRIF.	30	36'	1	3500	460	3	60	ALL BRONZE
CP-2	" " "	" " "	" MODEL 15	REGENERATIVE TURBINE	5	140	½	3500	460	3	60	ALL BRONZE
CP-3	HW SYSTEM RECIRC.	" " "	" TYPE "L" #1070-1	CLOSE COUPLED END SUCT., HORIZ., CENTRIF.	5	28	⅓	1780	115	1	60	ALL BRONZE
CP-4	" " "	" " "	" MODEL 15	REGENERATIVE TURBINE	5	140	½	3500	460	3	60	ALL BRONZE
CP-5	" " "	" " "	" TYPE "L" #1070-1	CLOSE COUPLED, END SUCT, HORIZ., CENTRIF.	16	21'	⅓	1750	115	1	60	ALL BRONZE
CP-6	" " "	" " "	" TYPE "L" #1250-5	DITTO	25	24'	⅓	1750	115	1	60	ALL BRONZE
BP-1	C.W. SYSTEM BOOSTER	" " "	" TYPE "L" 1570-1	DITTO	164	167'	15	3500	460	3	60	FACTORY PACKAGED UNIT, 3 PUMP BOOSTER SYSTEM, W/ CONTROL PANEL. SEE DETAIL.
BP-2	" " "	" " "	" TYPE "L" 3015-5	DITTO	328	167'	25	1750	460	3	60	
BP-3	" " "	" " "	" TYPE "L" 3015-5	DITTO	328	167'	25	1750	460	3	60	
SE-1	SEWAGE EJECTOR	" " "	PACIFIC MODEL # 4701 SCREEN-FLO	VERT. ENCLOSED SHAFT, CENTRIF. WET BASIN, STRAINER	100	25'	1½	1750	460	3	60	DUPLEX UNIT W/ CONTROL PANEL, CAST IRON BASIN, SEE DETAIL
SE-2	" "	" " "	DITTO	DITTO	100	25'	1½	1750	460	3	60	
SE-3	" "	UN-ASSIGNED # 1-34	DITTO	DITTO	100	25'	1½	1750	460	3	60	DITTO
SE-4	" "	" " "	DITTO	DITTO	100	25'	1½	1750	460	3	60	
SP-1	SUMP PUMP	AREAWAY (WEST SIDE)	ENPO #151-0	SUBMERSIBLE SEMI-OPEN IMPELLER	79	25'	1½	3450	208	3	60	CONTROL PANEL C-1. BASIN
SP-2	" "	" (SOUTH SIDE)	ENPO #151-5	DITTO	54	25'	¾	3450	115	1	60	" " " "
SP-3	" "	SEG. TUNNEL 2-06	ENPO #AU-H-DR	DITTO	20	20'	⅓	1725	115	1	60	W/ BUILT-IN CONTROL

TANK SCHEDULE

NO.	SERVICE	LOCATION	MAKE & MODEL	TYPE	SIZE	CAPACITY	RATING	LINING	REMARKS
TK-1	DOM. HW SYSTEM	BOILER RM # 1-05	ACE	VERTICAL 3/16 THICK STEEL	24" ϕ x 63" H.	115 GAL.	150 PSI W.P. ASME LABELED	PHENOLIC (MIN. 8 MIL.)	11"ϕ MANHOLE, TAPPINGS, LEGS, CATHODIC PROTECTION

ELEVATOR PIT SUMP PUMP SCHEDULE

SYMBOL	LOCATION	GPM	TDH	RPM	MOTOR HP	V	Ø	~	MAKE-MODEL	SPECIFICATIONS
EP-1	LEVEL 1 1-10	60	26'	1750	¾	480	3	60	"PACO" 3MS-7 WITH WATER LEVEL CONTROL	SUBMERSIBLE, FULLY AUTOMATIC CAST IRON HOUSING, BRONZE IMPELLER. STAINLESS STEEL SHAFT, MECHANICAL SEAL, MOTOR WITH THERMAL OVERLOAD PROTECTION, NEMA 4 CONTROL PANEL COMPLETE WITH, PILOT LIGHT, HOA SWITCH, STARTER, DISCONNECT SWITCH, 115V CONTROL CIRCUIT. PREWIRED, U.L. AND CITY OF OAKLAND APPROVED.
EP-2	LEVEL 1 UNDER 1.17	66	25'							
EP-3	LEVEL 1 1.24	66	25'							
EP-4	LEVEL 1 UNDER ELEV #5	60	26'							

MANUFACTURER: PACO OR EQUAL BY WEIL OR ENPO

PLUMBING FIXTURE SCHEDULE

MARK NO.	FIXTURE	CONNECTION SIZE W	V	HW	C W	REMARKS
WC-1	WATER CLOSET	4"	2"	-	1¼"	TANK TYPE WALL HUNG
WC-2	WATER CLOSET	4"	2"	-	1¼"	FLUSH VALVE, WALL HUNG
WC-3	WATER CLOSET	4"	2"	-	1¼"	SECURITY TYPE, FLUSH VALVE, WALL HUNG
UR-1	URINAL	¾"	2"	-	1"	FLUSH VALVE, WALL HUNG
L-1	LAVATORY	2"	1½"	½"	½"	WALL HUNG
L-2	LAVATORY	2"	1½"	½"	½"	COUNTER TOP, PUBLIC
L-3	LAVATORY	2"	1½"	½"	½"	COUNTER TOP, PRIVATE
L-4	LAVATORY	2"	1½"	⅜"	⅜"	SECURITY TYPE, CORNER, * T.W.
SV-1	SHOWER VALVE			½"	½"	THERMOSTATIC W/SHOWER HEAD
TMV-1	THERMOSTATIC MIXING VALVE			¾"	¾"	R.S. W/ ACCESSORIES
S-1	SINK 6/6 COUNTER TOP	2"	1½"	½"	½"	GOOSENECK SPOUT
S-2	SINK 6/6 COUNTER	2"	1½"	½"	½"	2-½" GOOSENECK SPOUT & BUBBLER
S-3	SINK, 5/5, 2-COMP	2"	1½"	½"	½"	W/ DISPOSAL, ½ HP, 115 V.
SS-1	SERVICE SINK	3"	2"	¾"	¾"	WALL TYPE, TRAP STANDARD, V.B.
EDF-1	ELECTRIC DRINKING FOUNTAIN	2"	1½"	-	½"	SURFACE MOUNTED, 115 V.
HB-1	HOSE BIBB	-	-	-	¾"	C.P., WALL FLG, VAC. BKR.
HB-2	HOSE BIBB	-	-	-	¾"	RECESSED, WALL TYPE, VAC. BKR.
HB-3	HOSE BIBB	-	-	-	¾"	SAME AS HB-1 LESS WALL FLANGE
C B-1	CATCH BASIN	-	-	-	-	SEE DETAIL 4G/1G
FD-1	FLOOR DRAIN	-	-	-	-	FOR SIZES SEE PLANS
FD-2	FLOOR DRAIN	-	-	-	-	FOR SIZES SEE PLANS,
RD-1	ROOF DRAIN	-	-	-	-	FOR SIZES SEE PLANS
OD-1	OVER-FLOW DRAIN	-	-	-	-	FOR SIZES SEE PLANS
FS-1	FLOOR SINK	-	-	-	-	FOR SIZES SEE PLANS
FD-3	FLOOR DRAIN	-	-	-	-	FOR SIZES SEE PLANS
AD-1	AREA DRAIN	-	-	-	-	FOR SIZES SEE PLANS
AD-2	AREA DRAIN	-	-	-	-	" " " "
AD-3	AREA DRAIN	-	-	-	-	" " " "
AD-4	AREA DRAIN	-	-	-	-	" " " "
TD-1	TRENCH DRAIN	-	-	-	-	" " " * LOADING DOCK
EGW-1	EMERGENCY EYE WASH & SHOWER	¼"	1¼"	-	1¼"	FLR. STANDING SHOWER HEAD, EYE WASH BASIN

NOTES: WATER SIZES ON SCHEDULE ARE CONNECTION SIZES ONLY, FOR BRANCH SIZES REFER TO PLANS AND RISER DIAGRAM.

PLUMBING LEGEND

SYMBOL	ABBREVIATION	DESCRIPTION
	W.OR S.	WASTE OR SOIL PIPE ABOVE FLOOR OR GRADE
	W.OR S.	WASTE OR SOIL PIPE BELOW FLOOR OR GRADE
SD	S.D.	STORM DRAIN PIPE ABOVE FLOOR OR GRADE
SD	S.D.	STORM DRAIN PIPE BELOW FLOOR OR GRADE
	V.	VENT
	C.W.	COLD WATER
	H.W.	HOT WATER
TW	T.W.	TEMPERED WATER
	H.W.R.	HOT WATER RETURN
TWR	T.W.R.	TEMPERED WATER RETURN
G	G.	NATURAL GAS
AFS	A.F.S.	AUTOMATIC FIRE SPRINKLER
CSP	C S P	COMBINED STANDPIPE
F	F.	FIRE SERVICE SUPPLY LINE
FCO YCO	FCO. YCO	FLOOR CLEANOUT, YARD CLEANOUT
CO WCO	CO, WCO	CLEANOUT, WALL CLEANOUT
	G.V.	GATE VALVE
OS&Y	OS&Y	OUTSIDE SCREW & YOKE
CH.V.	CH.V.	CHECK VALVE
BV	B.V.	BALANCING VALVE
POC	P.O.C.	POINT OF CONNECTION
BWV	BW.V.	BACKWATER VALVE
	A BV.	ABOVE
	A. P.	ACCESS PANEL
	BEL.	BELOW
	CONN.	CONNECT
	CONT.	CONTINUATION
	DN.	DOWN
	GR.	GROUND OR GRADE
I.C.W.	I.C.W.	INDUSTRIALIZED COLD WATER
D.	D.	INDIRECT DRAIN
	B.F.V.	BACK-FLOW PROTECTION VALVE ASSEMBLY
	I.E.	INVERT ELEVATION
	F.L.	FLOW LINE
	T.R.	THROUGH ROOF.
	V.B.	VACUUM BREAKER
	R.P.B.P.	REDUCED PRESSURE BACKFLOW PREVENTER
	(P.W.)	WORK OR EQUIP. FURNISHED UNDER PLUMBING SECT.
	(G.W.)	" " " " " GENERAL "
	(A.C.W.)	" " " " " AIR CONDITIONING "
	(E.W.)	" " " " " ELECTRICAL "

VIBRATION ISOLATION SCHEDULE

DESCRIPTION	TYPE	DESIGN DEFLECTION	REMARKS
DOMESTIC WATER BOOSTER PUMPS (BP-1, BP-2, BP-3)	MN	0.35"	NEOPRENE MOUNT W/ STEEL MOUNT BRACKET BOLT ISOLATOR TO SLAB
DOMESTIC HOT WATER CIRCULATING PUMPS CP-1, 2, 3, 4, 5 & 6 & JOCKEY PUMP JP-1	MN	0.35"	
DOMESTIC HOT & COLD WATER PIPING FROM DOMESTIC WATER BOOSTER PUMPS HORIZONTAL PIPING SUSPENSION UP TO AND INCLUDING 6TH LEVEL DISTRIBUTION PIPING. CITY MAIN TO PUMP SUCTION. DISTRIBUTION TO DETENTION CENTER	HG	1.0"	SPRING W/ METAL BOX
VERTICAL PIPING RISER SUPPORT FROM 7TH LEVEL TO 11TH LEVEL COOLING TOWER MAKE UP	MN	0.30"	
FROM CITY MAIN (NON-PUMPED) HORIZONTAL PIPING SUSPENSION (UNINSULATED COLD WATER)	TRIGOLATOR	-	
SANITARY WASTE & STORM DRAIN PIPING PUMPED DISCHARGE FROM SE-1&2, 3&4 & SP-1&2 HORIZONTAL PIPING SUSPENSION FROM 1ST LEVEL SLAB.	PN	0.06"	
PRV STATION SUPPORT	PN	0.20"	

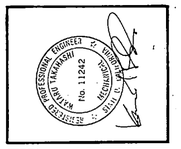
HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

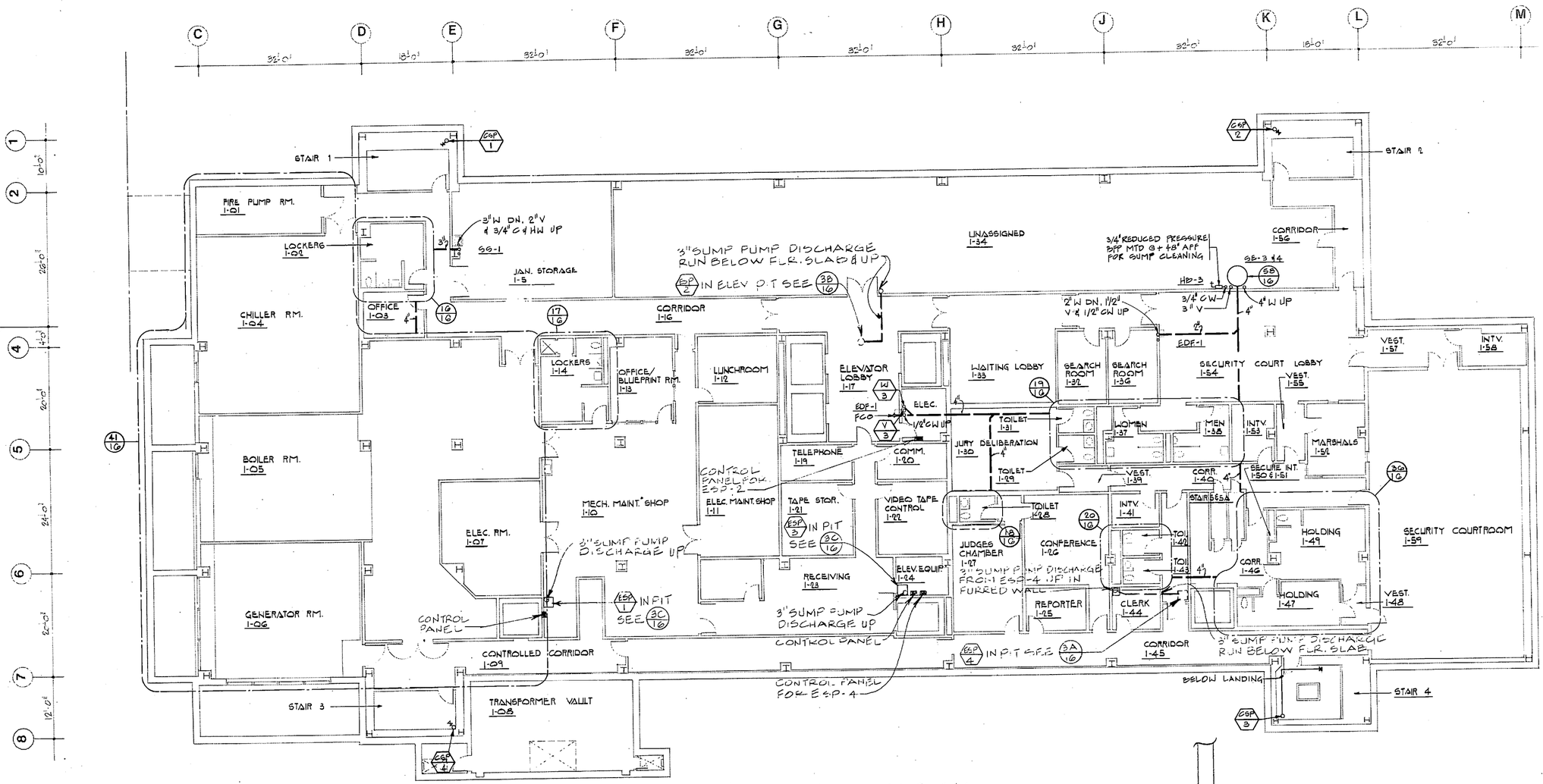


JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77

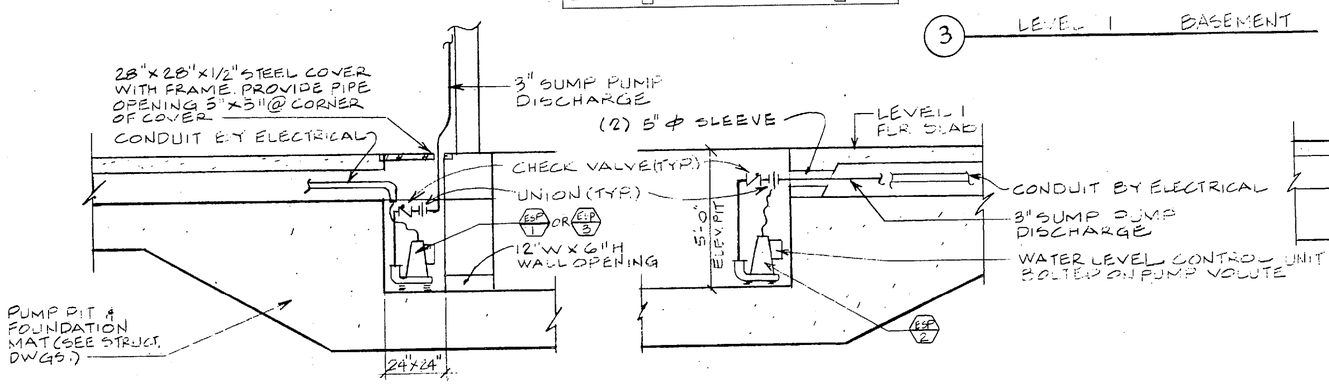
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LEGEND & SCHEDULES
NO SCALE

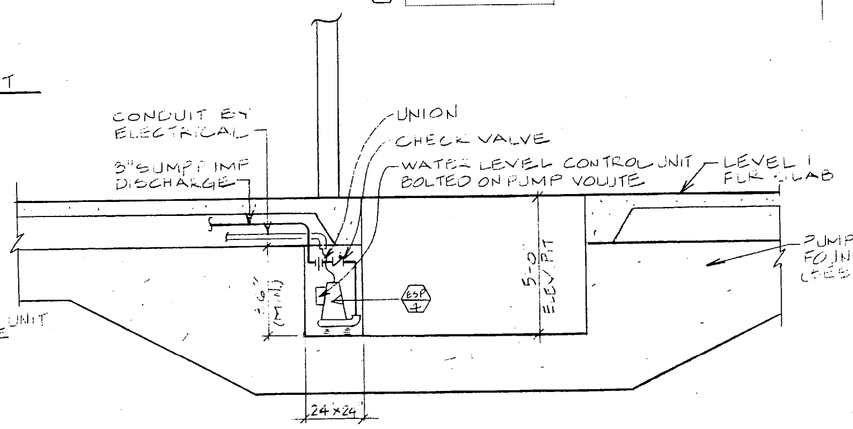
DRAWING NUMBER 2
CATEGORY 16



3 LEVEL 1 BASEMENT



3C TYP. ELEVATOR PIT SUMP PUMP DETAIL
SCALE: 1 1/4" = 1'-0"



3B ELEVATOR PIT SUMP PUMP DETAIL
SCALE: 1/4" = 1'-0"

3A ELEVATOR PIT SUMP PUMP DETAIL
SCALE: 1/4" = 1'-0"

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

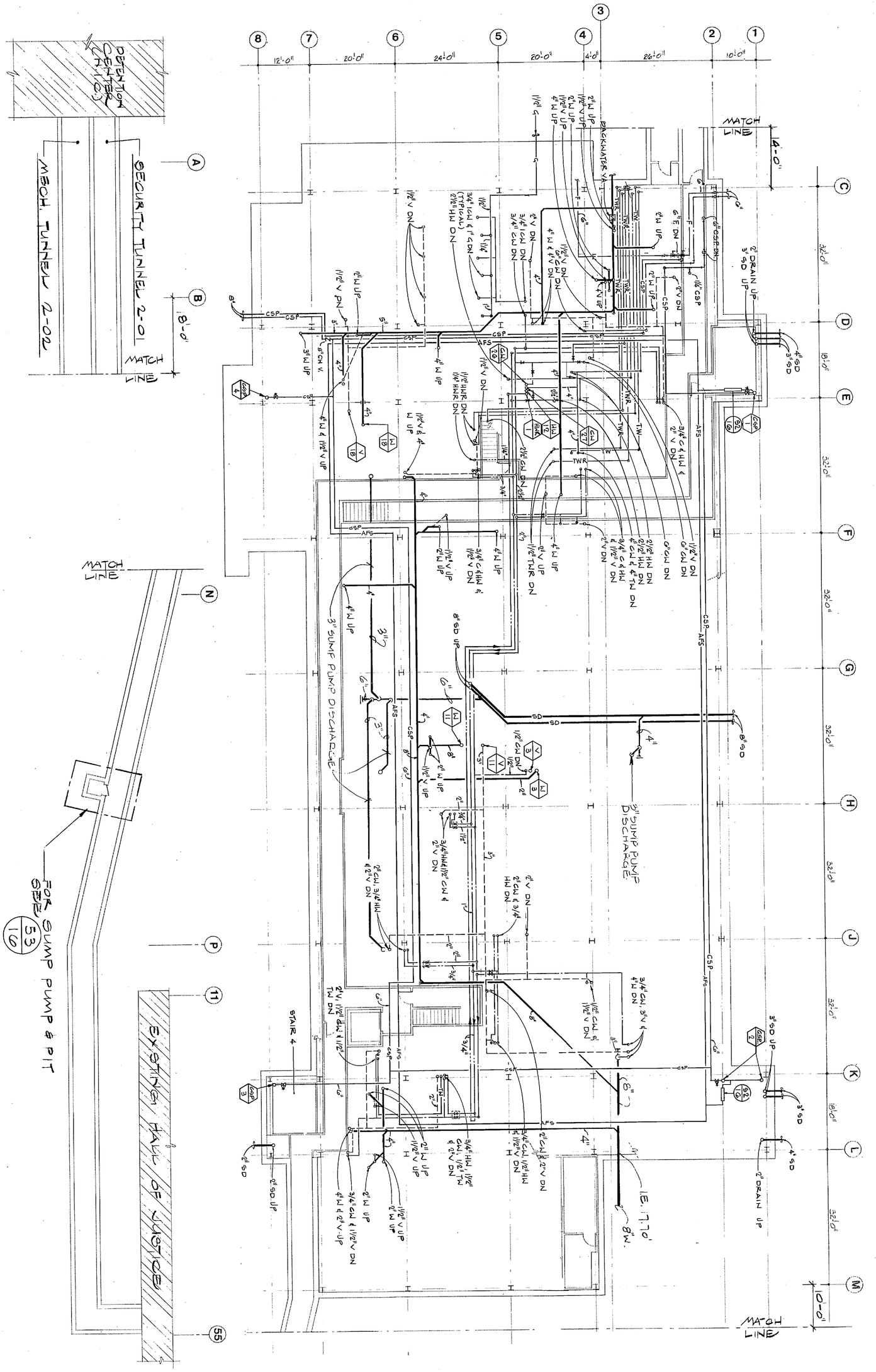
FACILITIES
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — WAYNE TAKAHASHI — No. 11242 — STATE OF CALIFORNIA

JOB NO. 787300			
DRAWN BY			
CHECKED BY			
DATE 7/24/77			
REVISIONS	BY	DATE	
1			
2			
3			
4			
5			
6			
7			

LEVEL 1 BASEMENT
1" = 16'-0"

DRAWING NUMBER 3-3C
CATEGORY 16



4 LEVEL 2 - BASEMENT MEZZANINE

OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

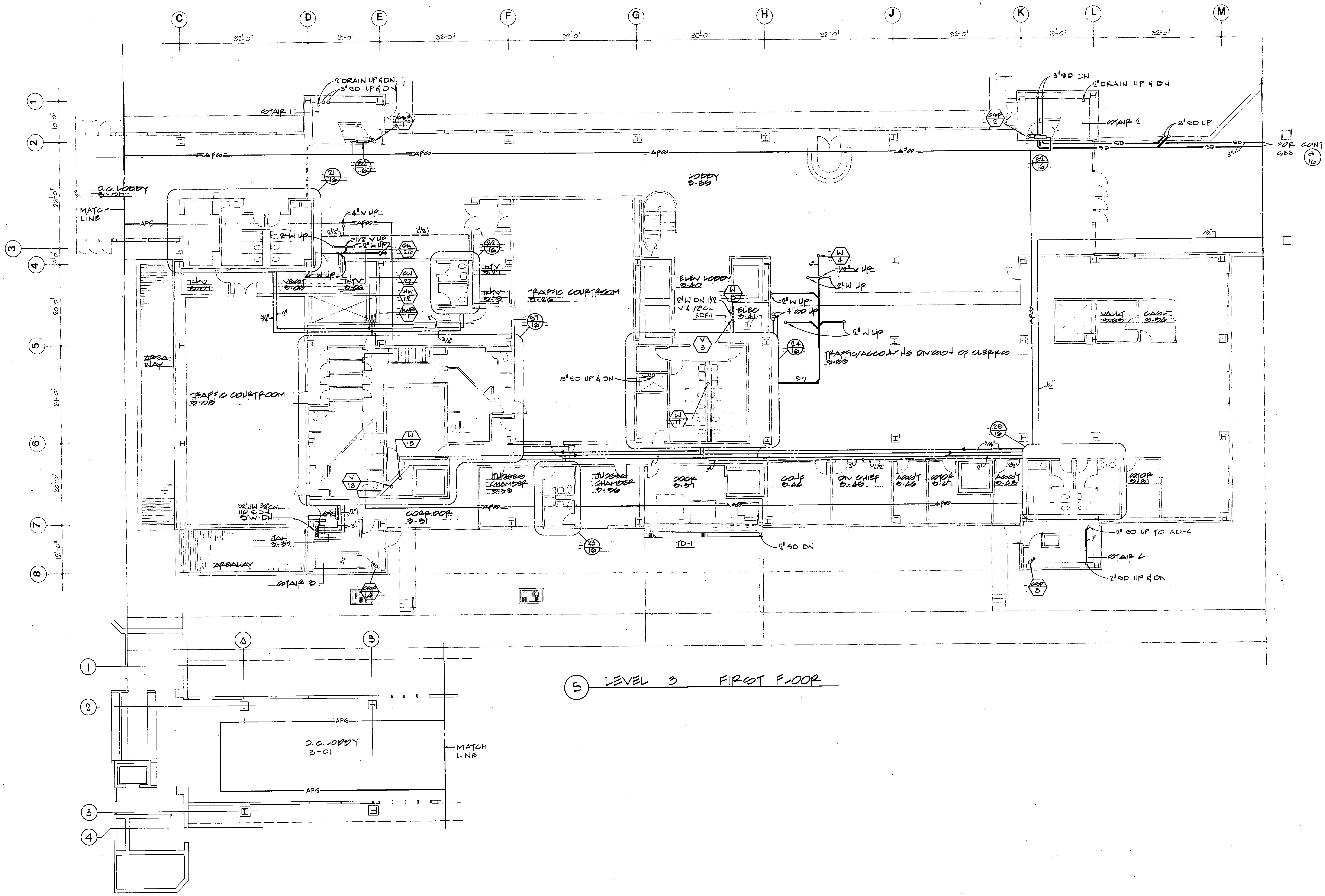
DRAWING NUMBER 4
CATEGORY 16

LEVEL 2 BASEMENT MEZZANINE
1" = 16'-0"

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — MASARU TAKAKAWA — No. 11242 — MECHANICAL — STATE OF CALIFORNIA



5 LEVEL 3 FIRST FLOOR

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

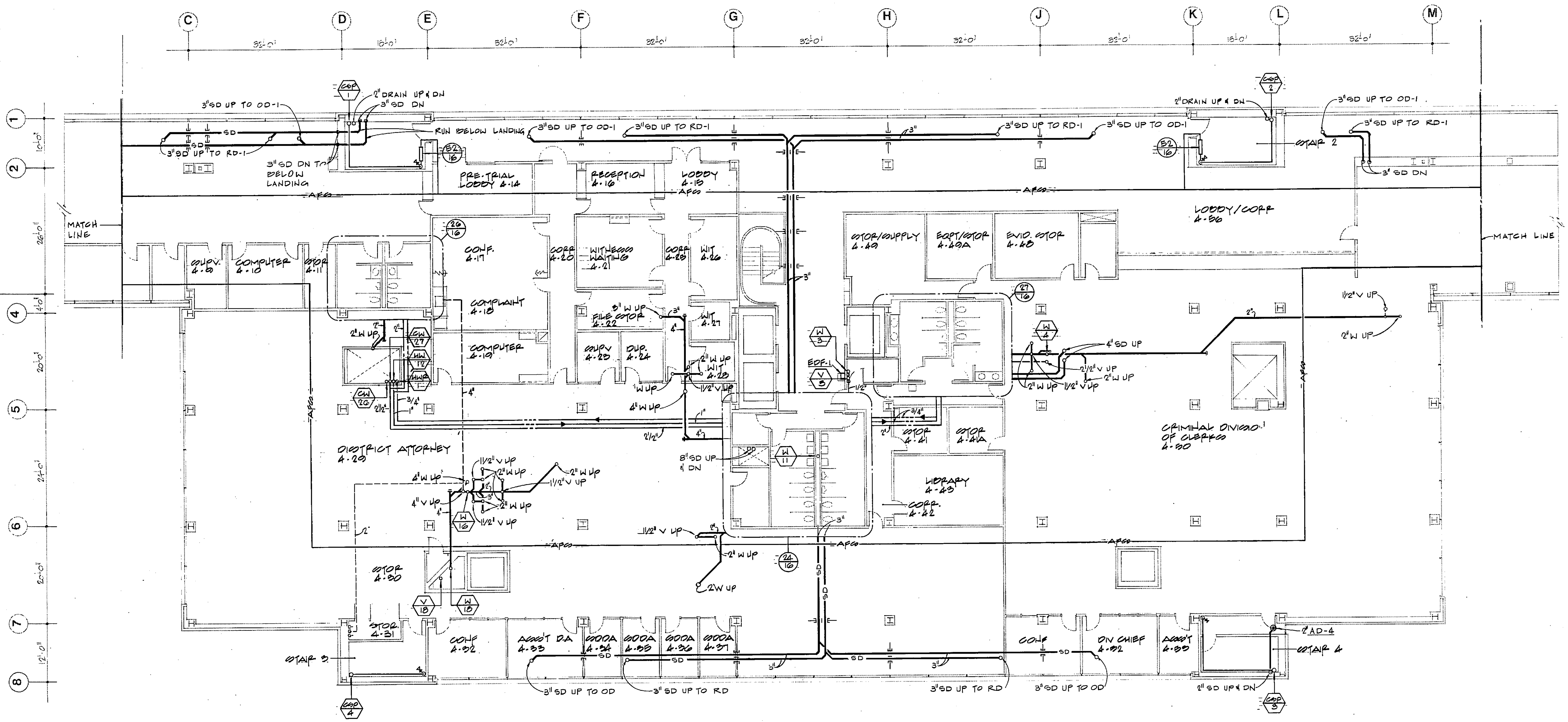
REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

JOB NO. 7873-00	
DRAWN BY	
CHECKED BY	
DATE 7/4/77	
REVISIONS	BY DATE
1	
2	
3	
4	
5	
6	
7	

LEVEL 3 FIRST FLOOR 1" = 16'-0"

DRAWING NUMBER 5

CATEGORY 16



6 LEVEL 4 SECOND FLOOR

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

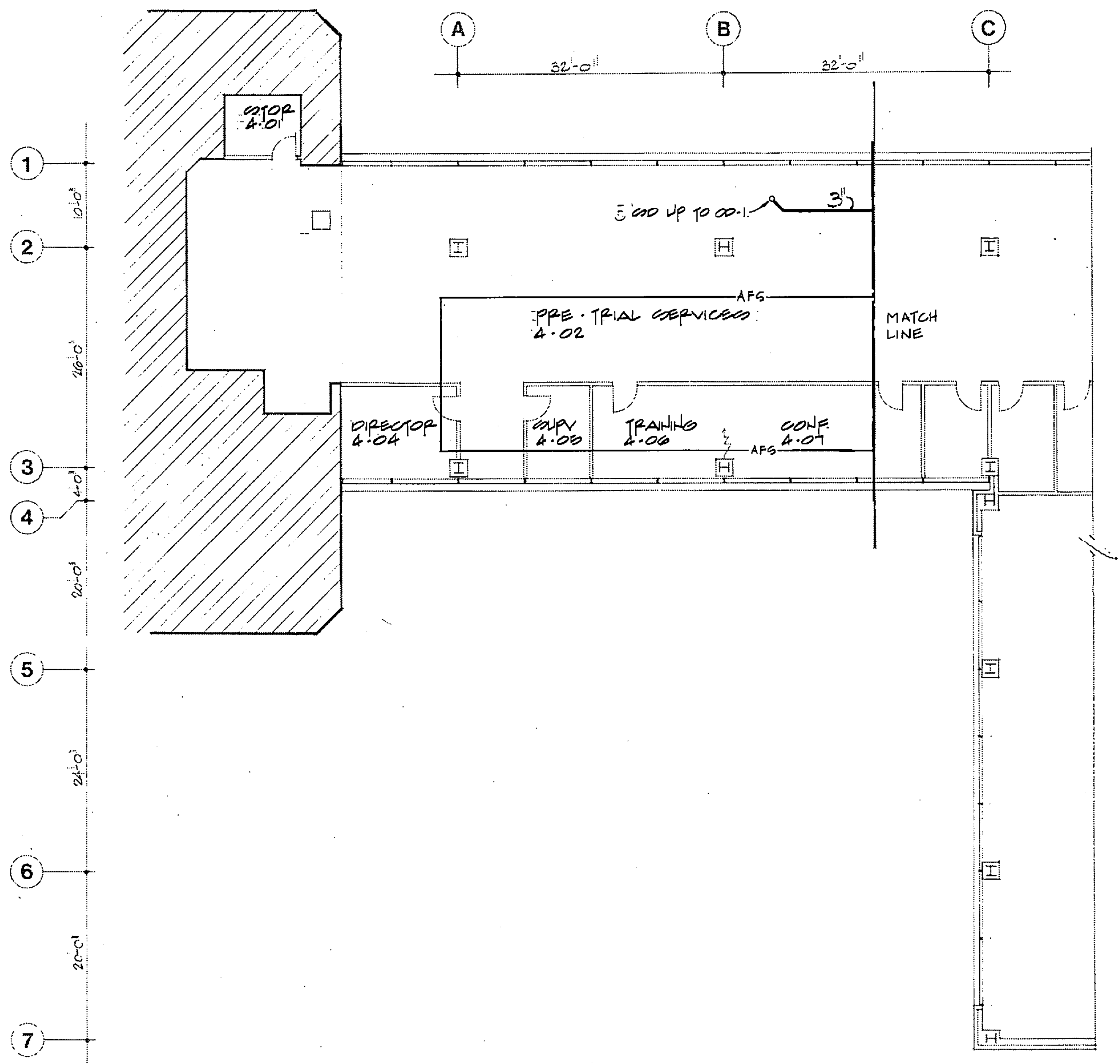
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

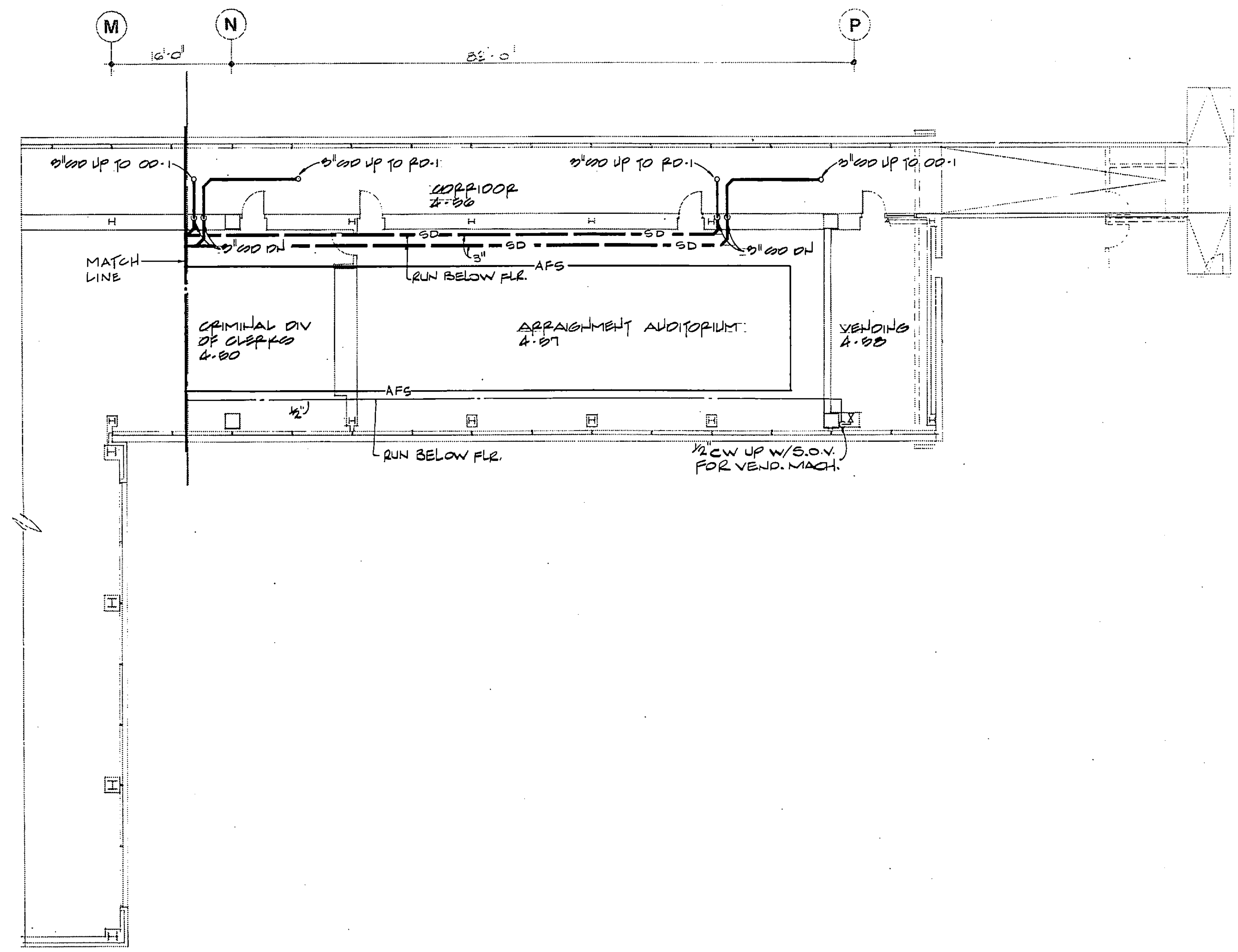
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77
REVISIONS BY DATE
1
2
3
4
5
6
7

LEVEL 4
SECOND FLOOR
1" = 16'-0"

DRAWING NUMBER 6
CATEGORY 16



7 LEVEL 4 SECOND FLOOR WEST BRIDGE



8 LEVEL 4 SECOND FLOOR EAST BRIDGE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
WATARU TAKAHASHI
No. 11242
MECHANICAL
STATE OF CALIFORNIA

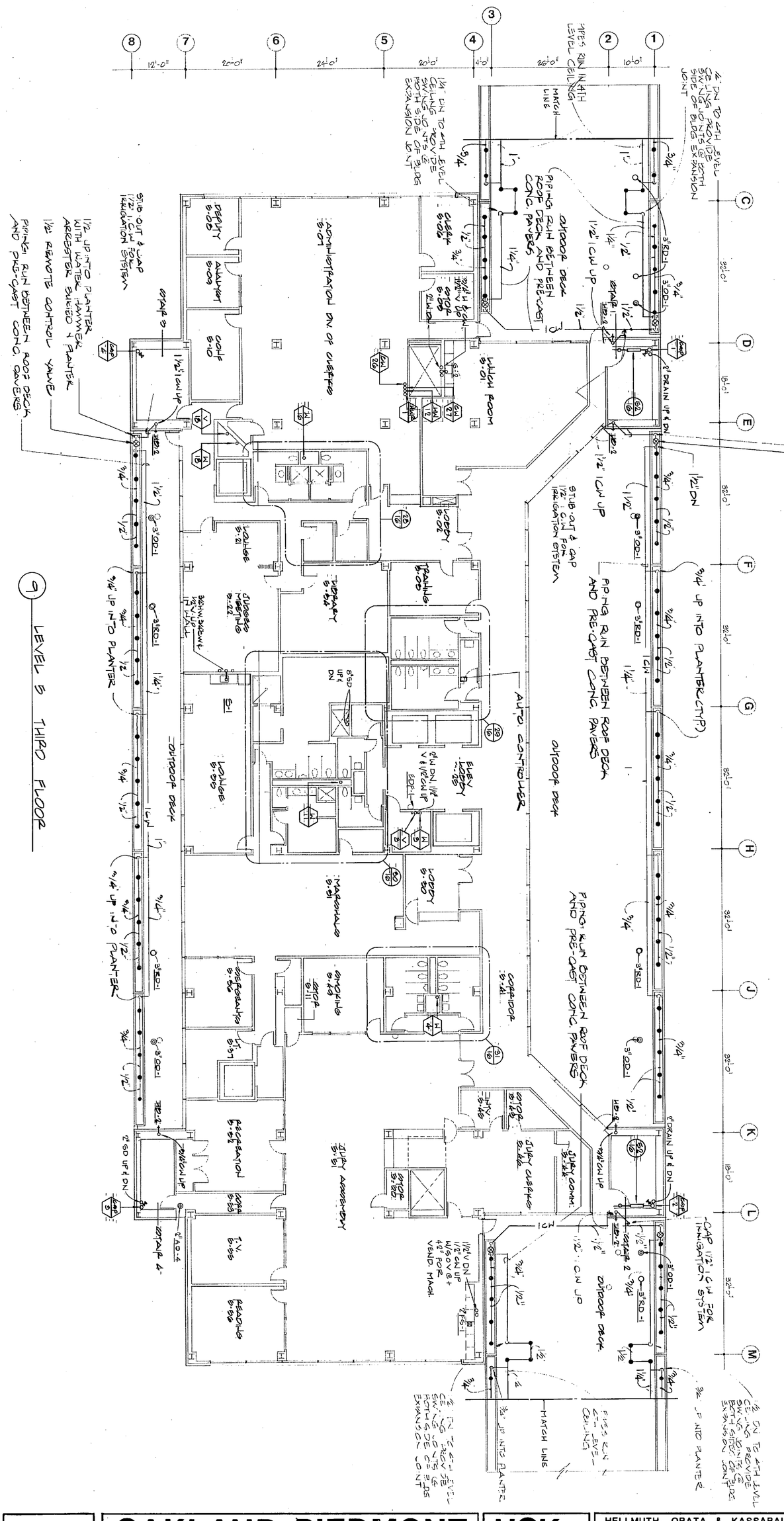
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LEVEL 4
SECOND FLR
BRIDGE'S
1" = 16'-0"

DRAWING NUMBER 7-8

CATEGORY 16



9 LEVEL 5 THIRD FLOOR

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

DRAWING NUMBER 9

CATEGORY 16

LEVEL 5 THIRD FLOOR 1/8"=1'0"

REGISTERED PROFESSIONAL ENGINEER HAYARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

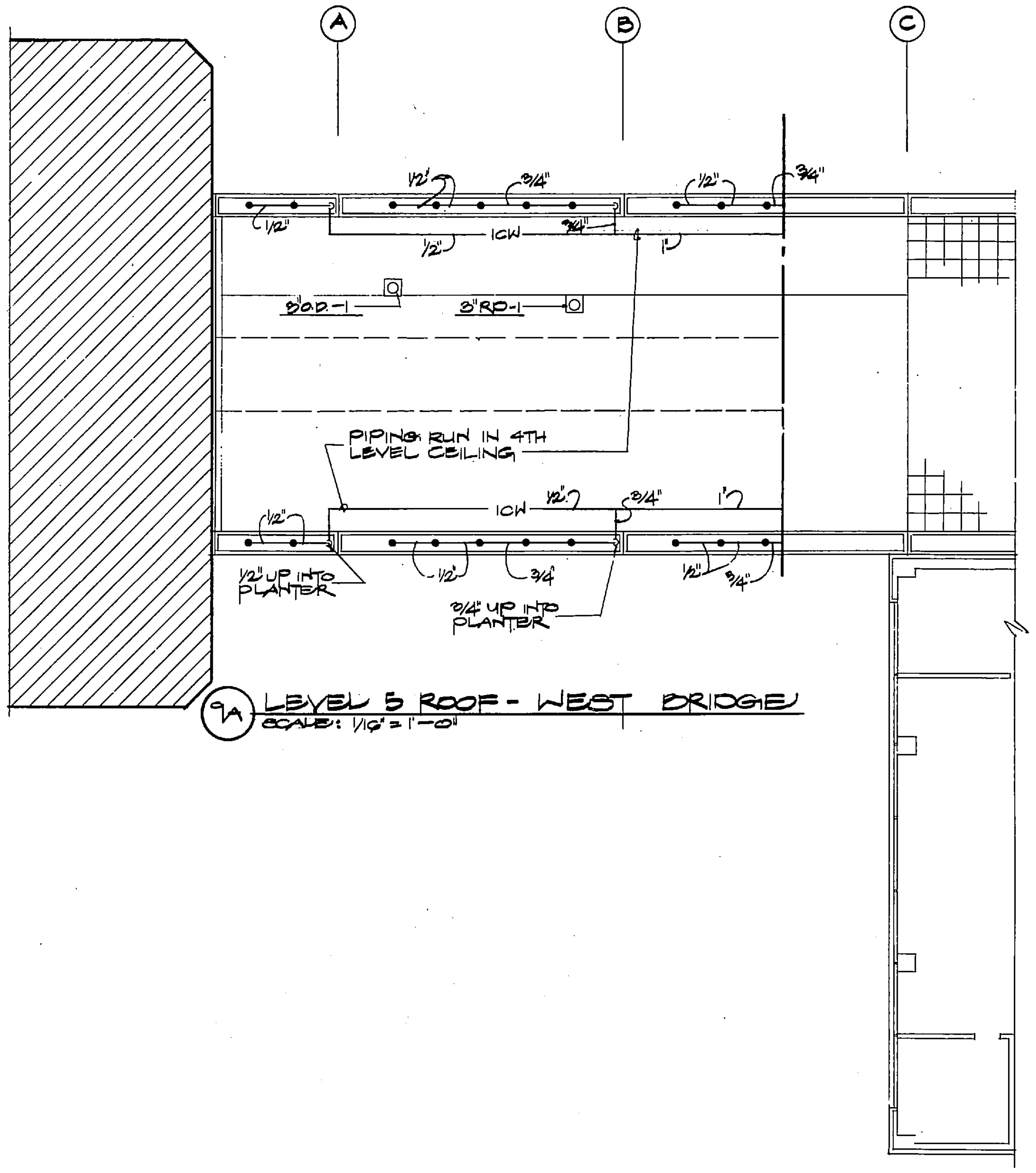
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

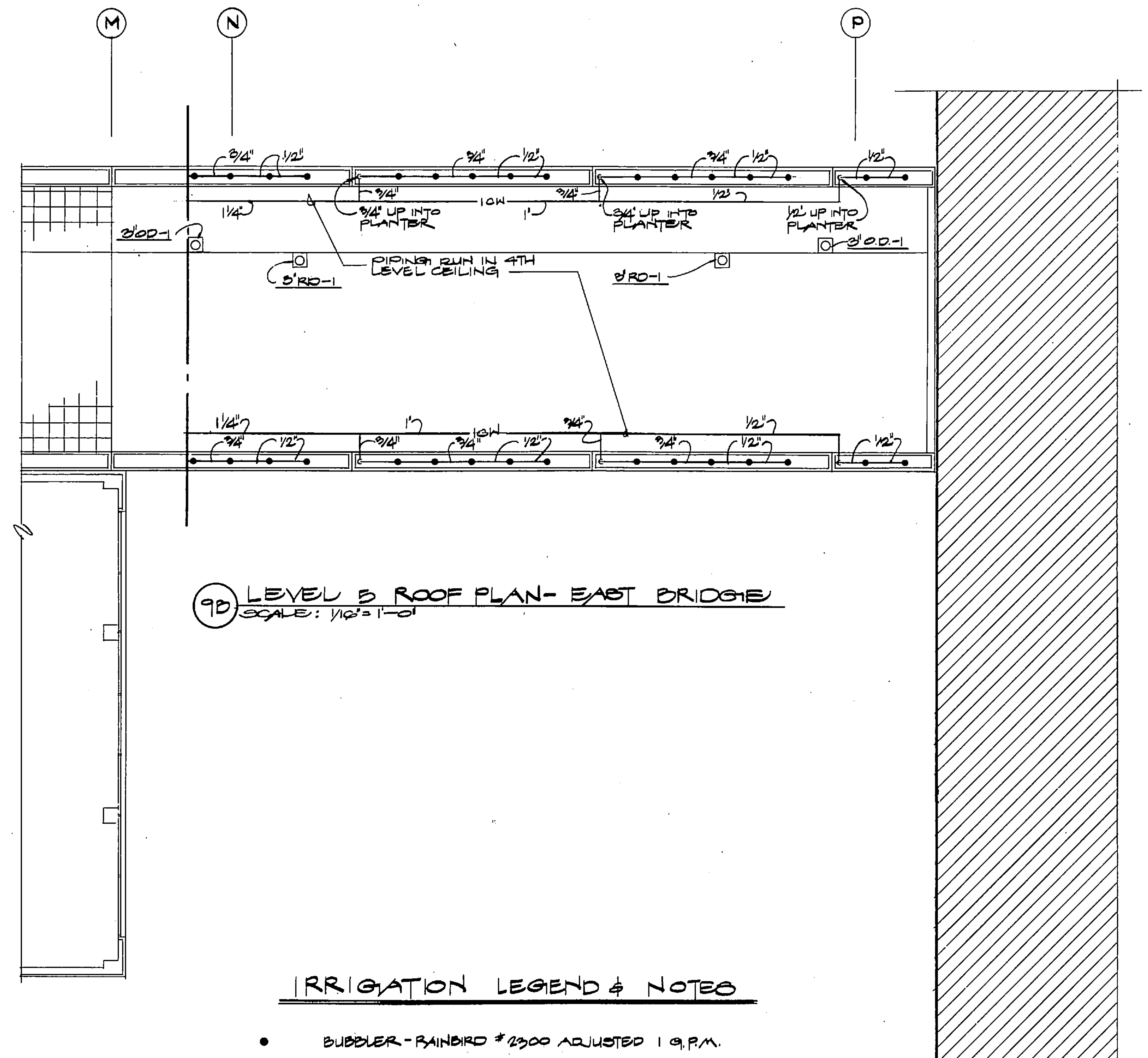
HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



9A LEVEL 5 ROOF - WEST BRIDGE
SCALE: 1/16" = 1'-0"



9B LEVEL 5 ROOF PLAN - EAST BRIDGE
SCALE: 1/16" = 1'-0"

IRRIGATION LEGEND & NOTES

- ● BUBBLER - RAINBIRD #2300 ADJUSTED 1 G.P.M.
- ⊗ REMOTE CONTROL VALVE GRISWOLD S-SERIES
- ▮ AUTOMATIC CONTROLLER GRISWOLD SR-12, WALLMOUNT
- —ICW— INDUSTRIAL COLD WATER

1. — BUBBLER SHALL BE SPACED AT 5'-0" O.C.
2. — REMOTE CONTROL VALVE SHALL BE INSTALLED IN A GREEN AMATEK PLASTIC VALVE BOX WITH COVER
3. — ALL PIPING, BUBBLERS, VALVES & EQUIPMENT FOR THE IRRIGATION SYSTEMS FROM CAPPED STUB-OUTS TO BUBBLERS IN PLANTERS ARE FURNISHED & INSTALLED UNDER LANDSCAPE SECTION OF WORK, SEE LANDSCAPE SPECIFICATIONS.
4. — PROVIDE WATER PROOFING SEALANT AROUND OPENINGS WHERE PIPE PENETRATES THRU PLANTER & ROOF SLAB.
5. — AUTOMATIC CONTROLLER SHALL BE SO PROGRAMMED THAT NO MORE THAN ONE CONTROL VALVE TO BE TURNED ON AT THE SAME TIME
6. — NO SPRINKLER SYSTEM SHALL BE IN OPERATION DURING REGULAR OFFICE HOURS.
7. — WHERE PIPES RUN BETWEEN ROOF DECK & CONCRETE PAVERS, SUPPORT PIPE ON ROOF DECK AS REQUIRED. (BY LANDSCAPE CONTRACTOR)
8. — FOR PLANTER DRAIN SEE ARCHITECTURAL DRAWINGS.

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

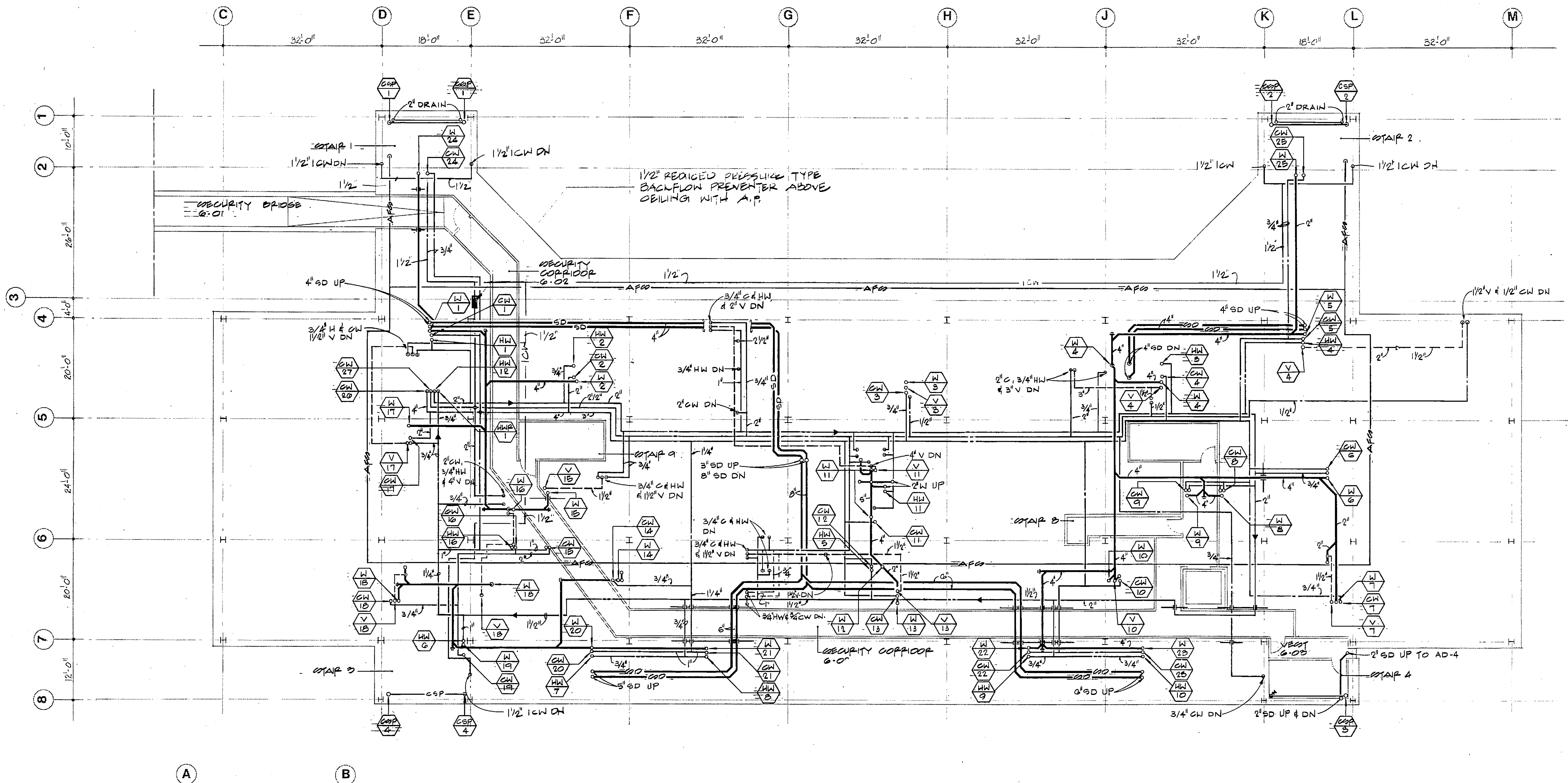
OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77
REVISIONS

LEVEL 5 ROOF PLANS-BRIDGES

DRAWING NUMBER 9A-9B
CATEGORY 16



(10) LEVEL 6 THIRD FLOOR MEZZANINE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

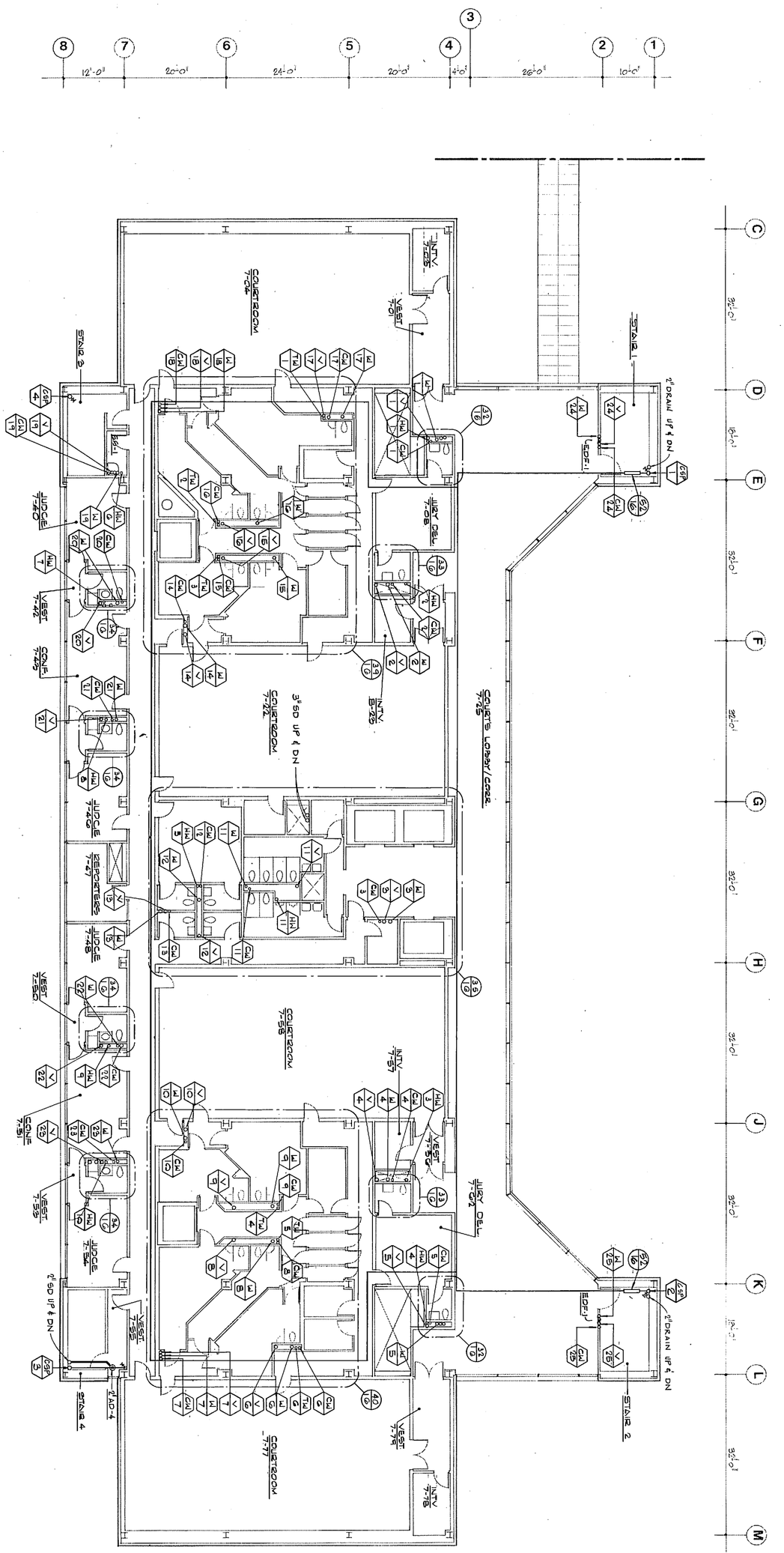
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LEVEL 6
THIRD FLR. MEZZ
1" = 16'-0"

DRAWING NUMBER 10

CATEGORY 16



11 LEVEL 7 FOURTH FLOOR

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77
REVISIONS	BY DATE
1	
2	
3	
4	
5	
6	
7	

DRAWING NUMBER 11

CATEGORY 16

1" = 16'-0"

REGISTERED PROFESSIONAL ENGINEER HAYAKAWA TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

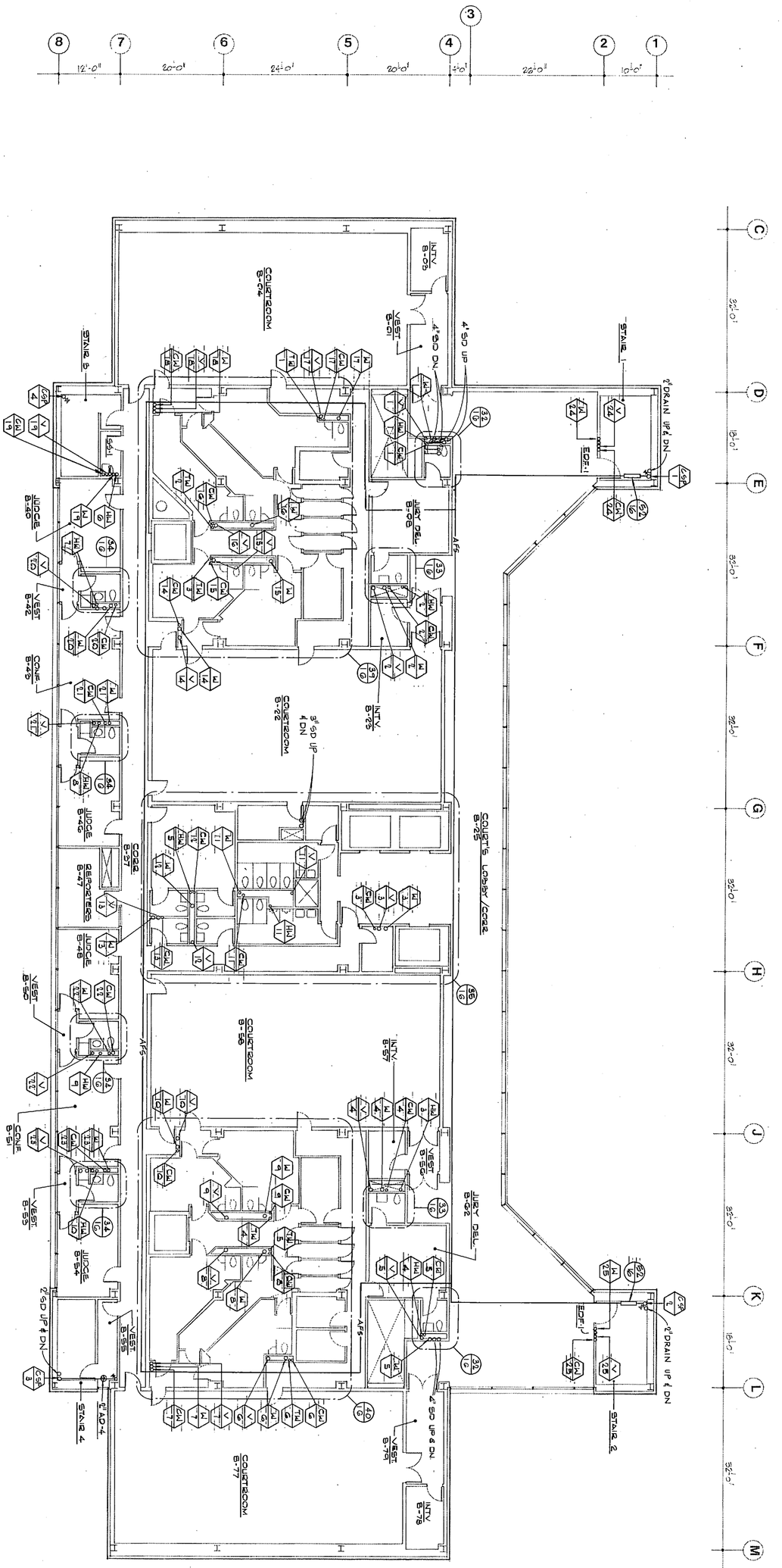
OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



12 LEVEL 8 FIFTH FLOOR

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/14/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

DRAWING NUMBER 12

CATEGORY 16

LEVEL 8 FIFTH FLOOR 1"=16'-0"

REGISTERED PROFESSIONAL ENGINEER MASARU TAKAMIYA No. 11242 MECHANICAL STATE OF CALIFORNIA

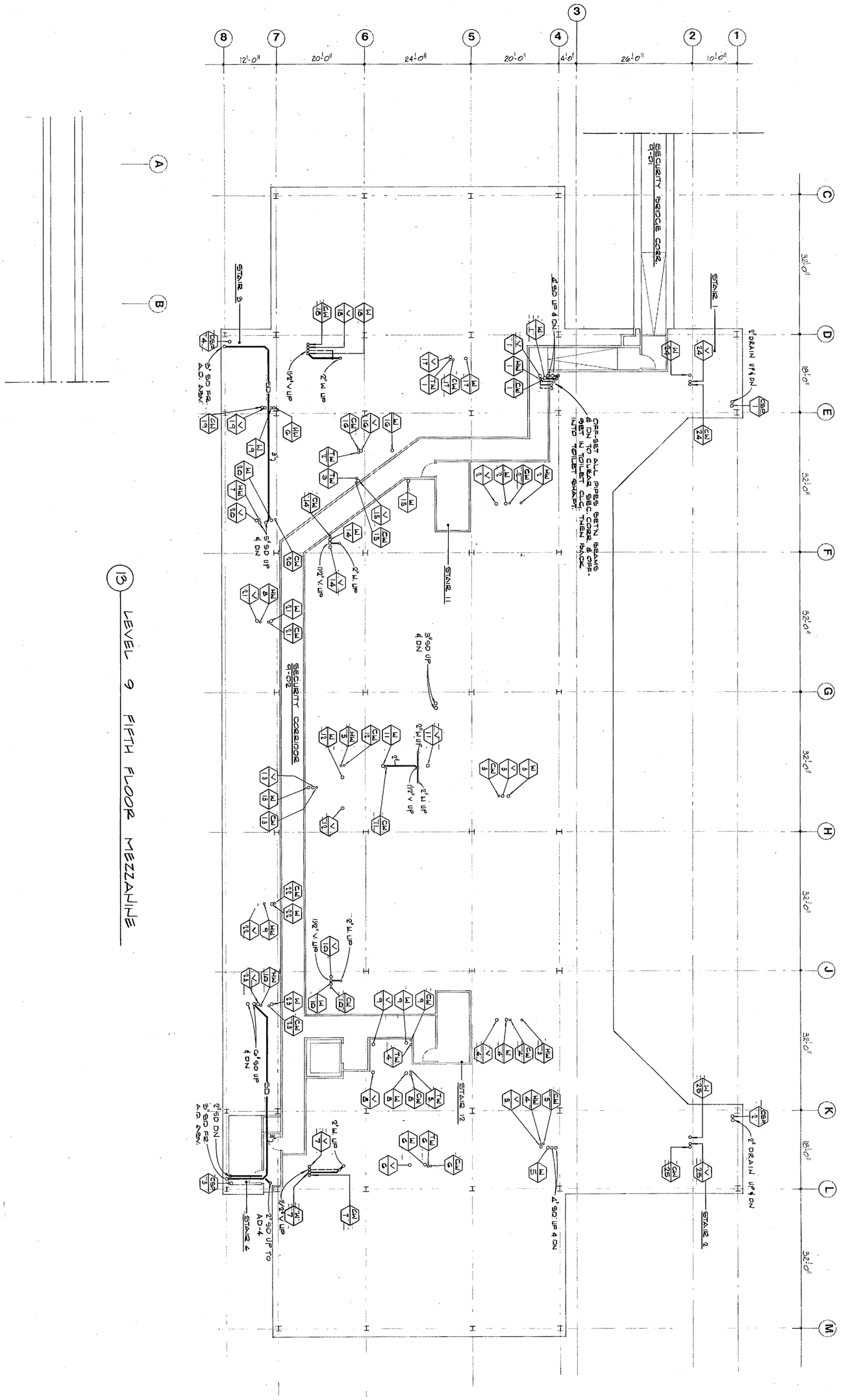
OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



13 LEVEL 9 FIFTH FLOOR MEZZANINE

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/14/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

DRAWING NUMBER 13
CATEGORY 16

LEVEL 9 FIFTH FLR. MEZZ. 1/16"=1'-0"

REGISTERED PROFESSIONAL ENGINEER HAYAKAWA TAKAMASA No. 11242 MECHANICAL STATE OF CALIFORNIA

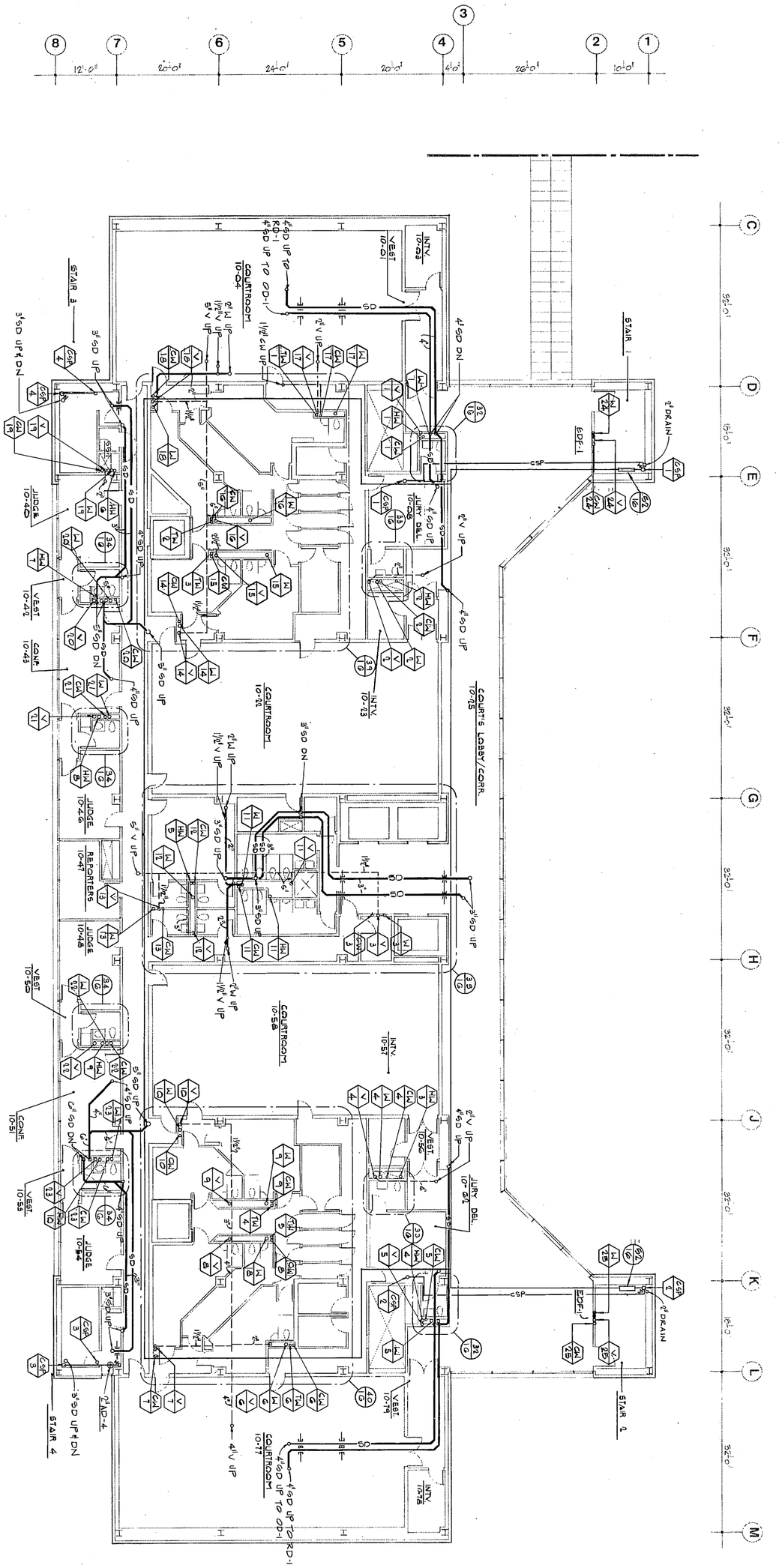
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



14 LEVEL 10 SIXTH FLOOR

NOTE

ALL STORM DRAIN PIPING RUN ABOVE COURT ROOMS AND JUDGES CHAMBERS SHALL BE INSULATED WITH 1" THICK FIBERGLASS PIPE INSULATION WITH VAPOR BARRIER.

DRAWING NUMBER	14
CATEGORY	16

LEVEL 10
SIXTH FLR.
1" = 16'-0"

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER
MASARU TAKAHASHI
No. 11242
MECHANICAL
STATE OF CALIFORNIA

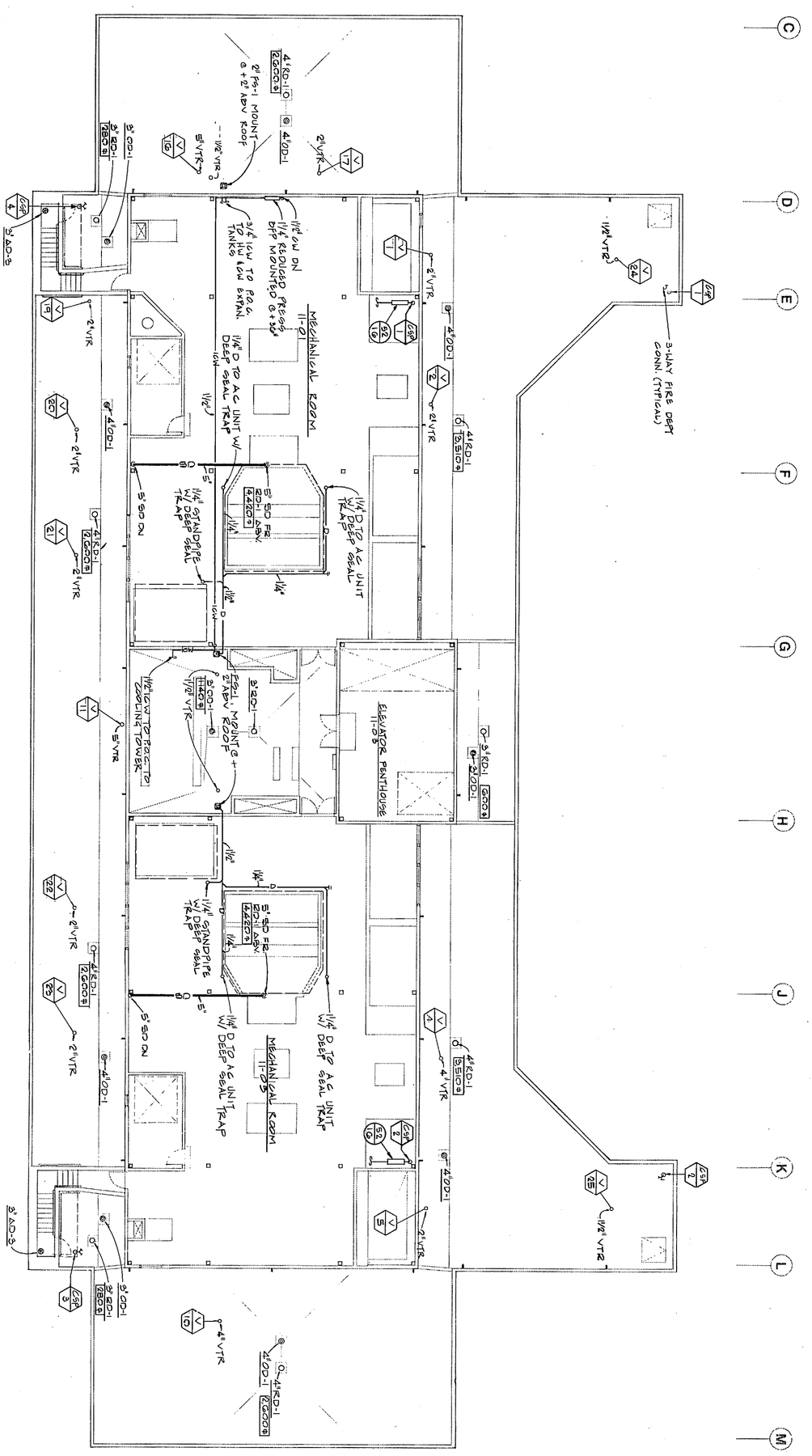
OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



15 LEVEL 11 ROOF PLAN & PENTHOUSE FLOOR PLAN

DRAWING NUMBER 15
CATEGORY 16

LEVEL 11 ROOF PLAN & PENTHOUSE PLAN
1/16"=1'-0"

JOB NO.	7673-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — MASARU TAKAHASHI — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

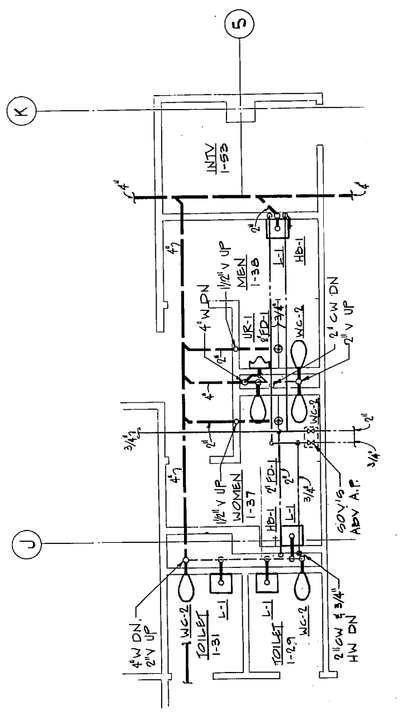
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

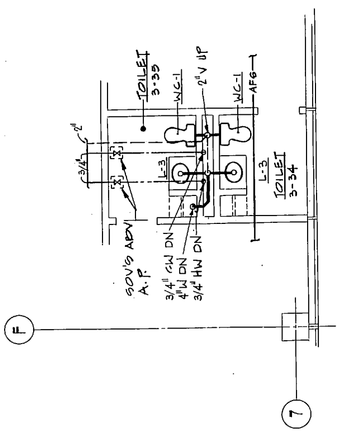
HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

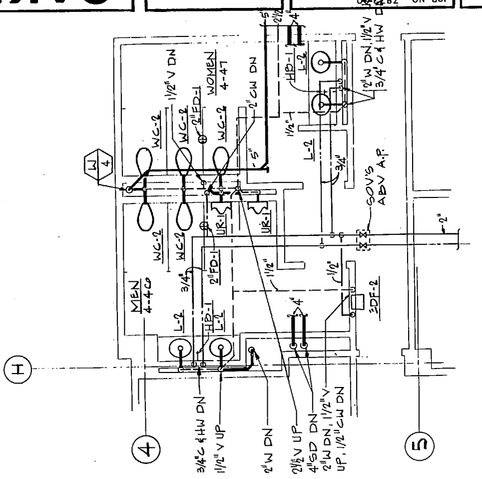


(19) SECURITY COURT PUBLIC TOILETS & J.D. TOILETS



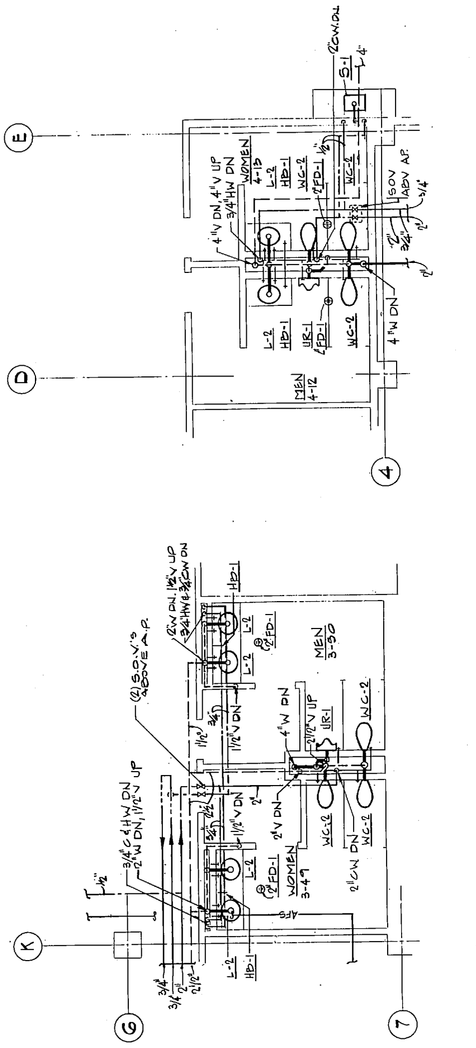
(23) JUDGES TOILETS @ 1ST FLOOR CHAMBER

(22) JURY TOILET @ TRAFFIC CT.



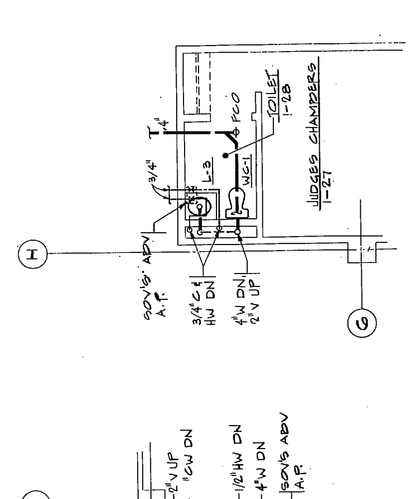
(27) STAFF TOILETS @ CRIMINAL DIV.

(26) STAFF TOILET @ PRE-TRIAL



(25) TRAFFIC/ACCT CLERKS-STAFF TOILETS

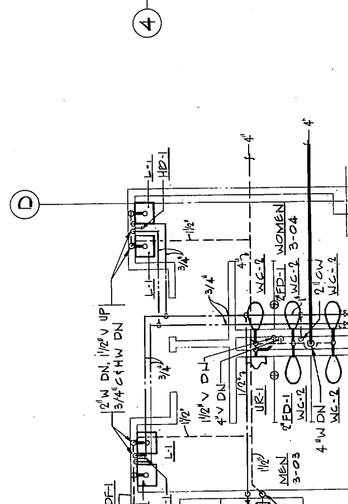
(24) PUBLIC TOILETS @ 1ST FLOOR



(18) JUDGES TOILET @ SEC. CT.

(17) MAINTENANCE LOCKERS

(16) JANITORS LOCKERS



(20) STAFF TOILET @ SEC. CT.

(21) VENDING & TOILET @ DETENTION CENTER LOBBY

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HOK KE
A JOINT VENTURE

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

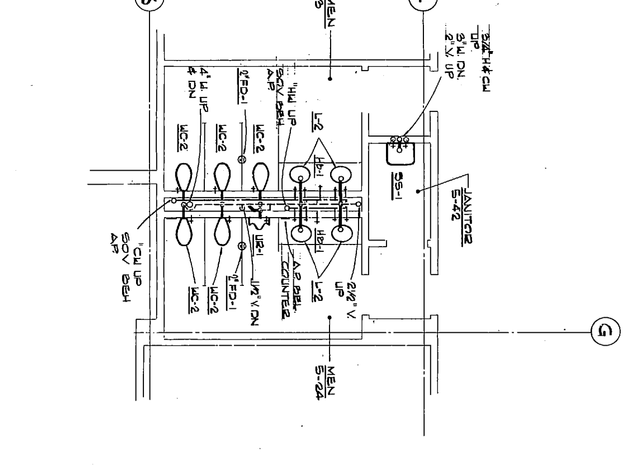
REGISTERED PROFESSIONAL ENGINEER — WILLIAM C. WILKINSON — No. 11242

NO.	REVISIONS	BY	DATE
1			
2			
3			
4			
5			
6			
7			

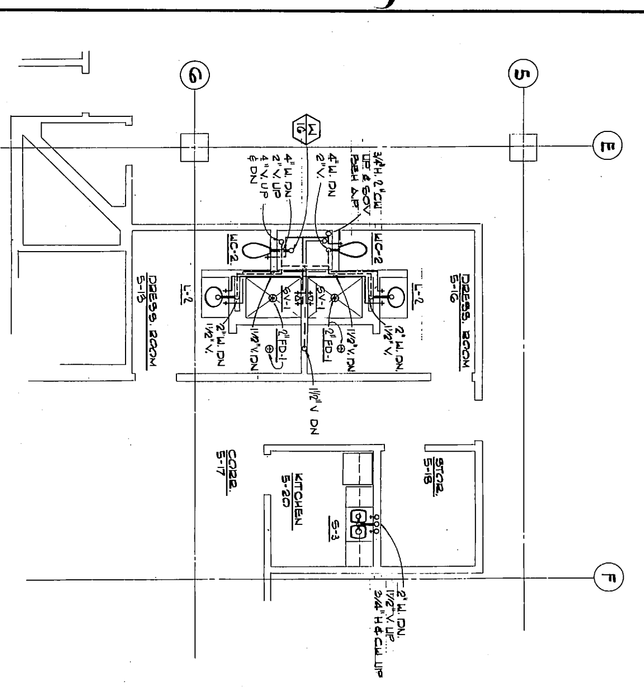
JOB NO. 7820
DRAWN BY
CHECKED BY
DATE 7/4/77

TOILET PLANS
1/8"=1'-0"

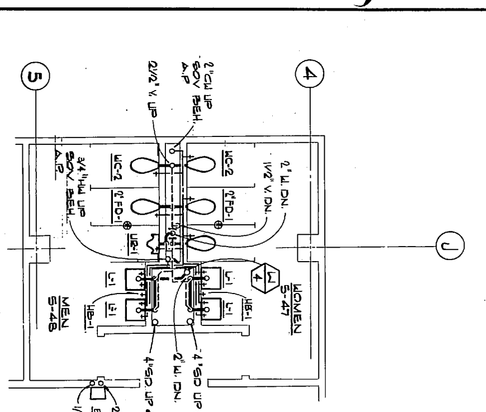
DRAWING NUMBER 16-27
CATEGORY 16



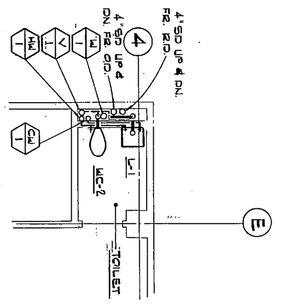
29 STAFF TOILET @ THIRD FLOOR



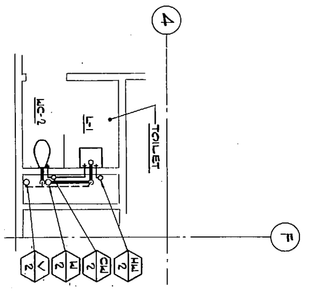
28 JUDGES TOILETS & KITCHEN



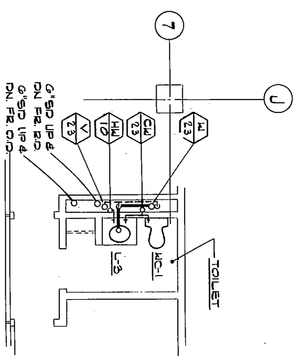
31 TOILET @ JURY ASSEMBLY



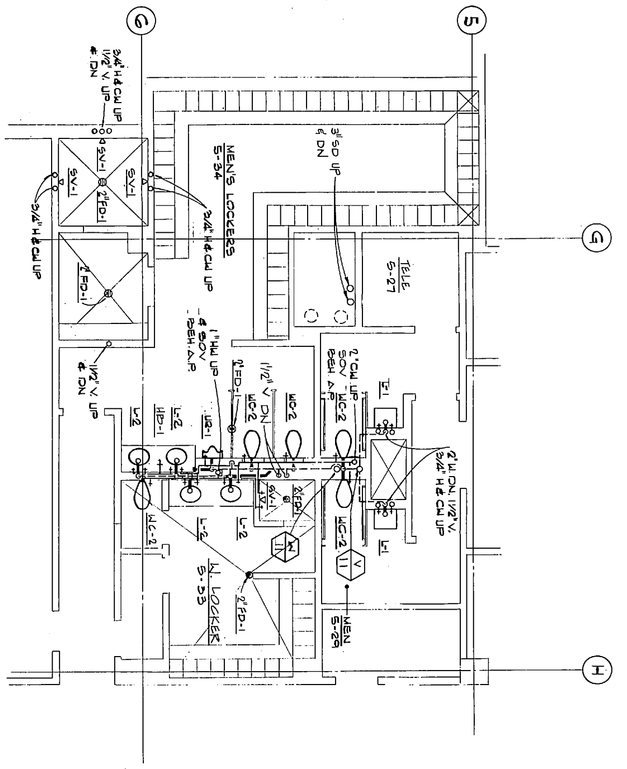
32 WOMEN'S TOILET @ JURY DELIBERATION



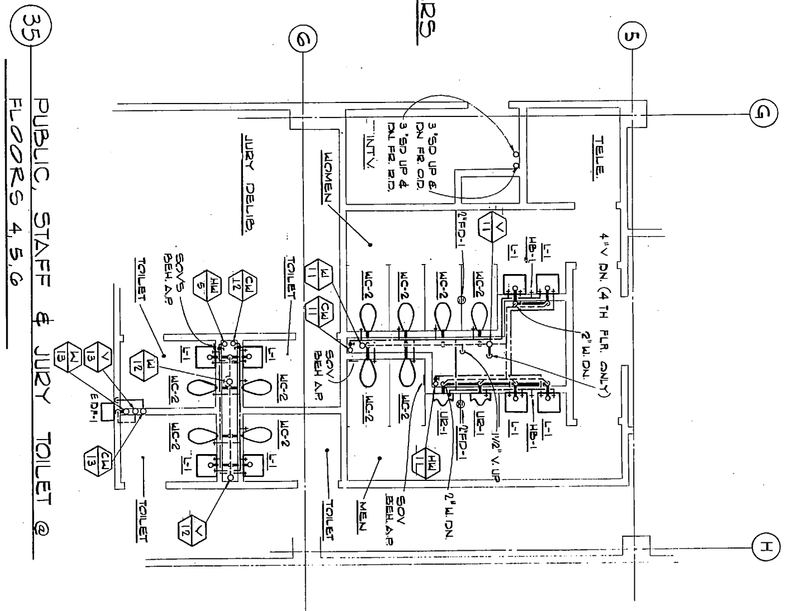
33 MEN'S TOILET @ JURY DELIBERATION



34 JUDGE'S TOILET @ CHAMBERS



30 PUBLIC TOILETS & MARSHALS' LOCKER ROOMS



35 PUBLIC, STAFF & JURY TOILET @ FLOORS 4, 5, 6

	28-35	TOILET PLANS 1/8"=1'-0"	JOB NO. 7873-00 DRAWN BY CHECKED BY DATE 7/4/77 REVISIONS BY DATE 1 2 3 4 5 6 7

DRAWING NUMBER | CATEGORY

REGISTERED PROFESSIONAL ENGINEER WATARU TAKABAYASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

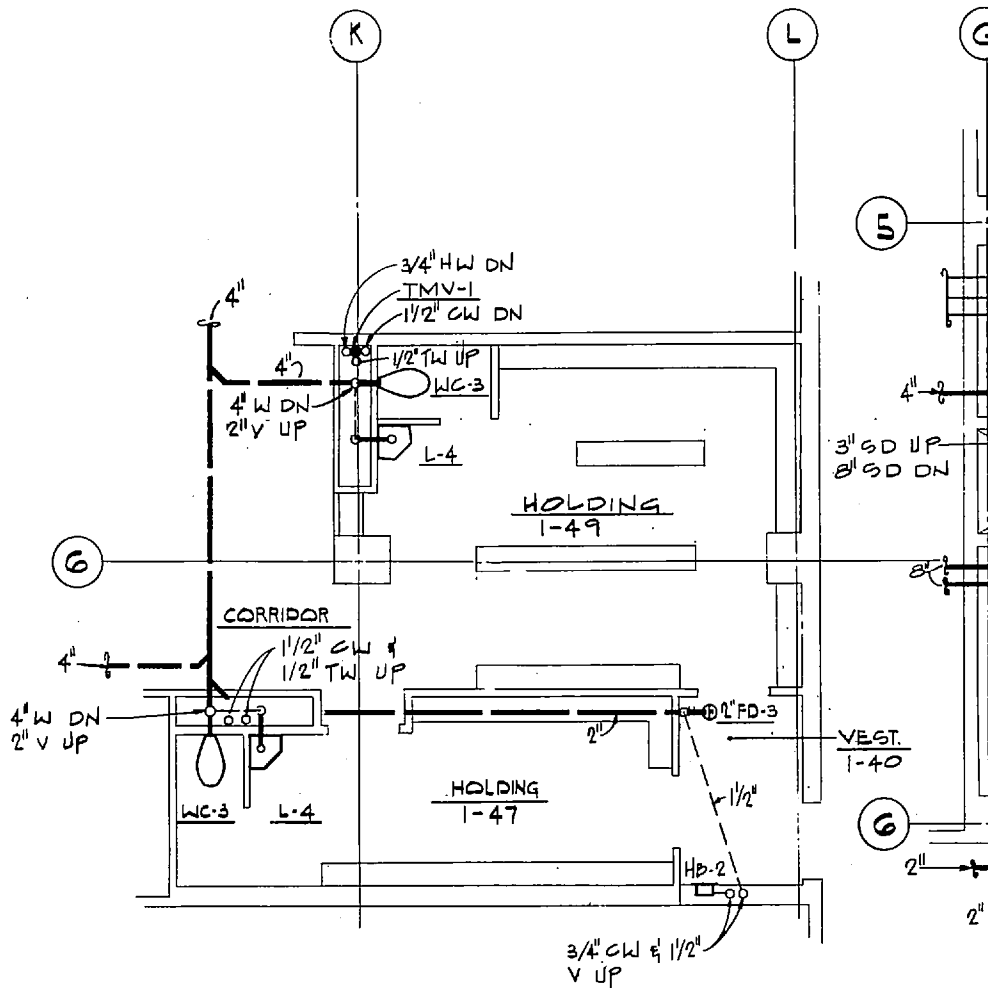
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

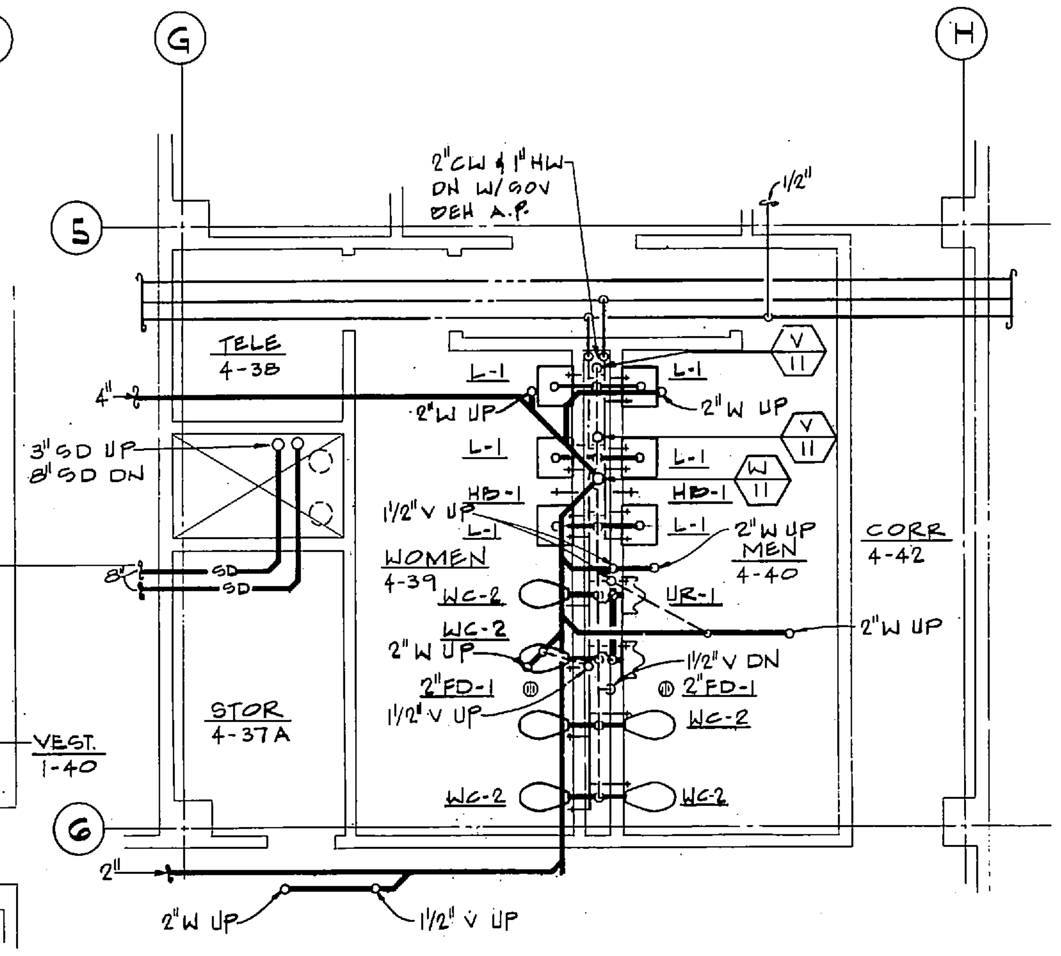
HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

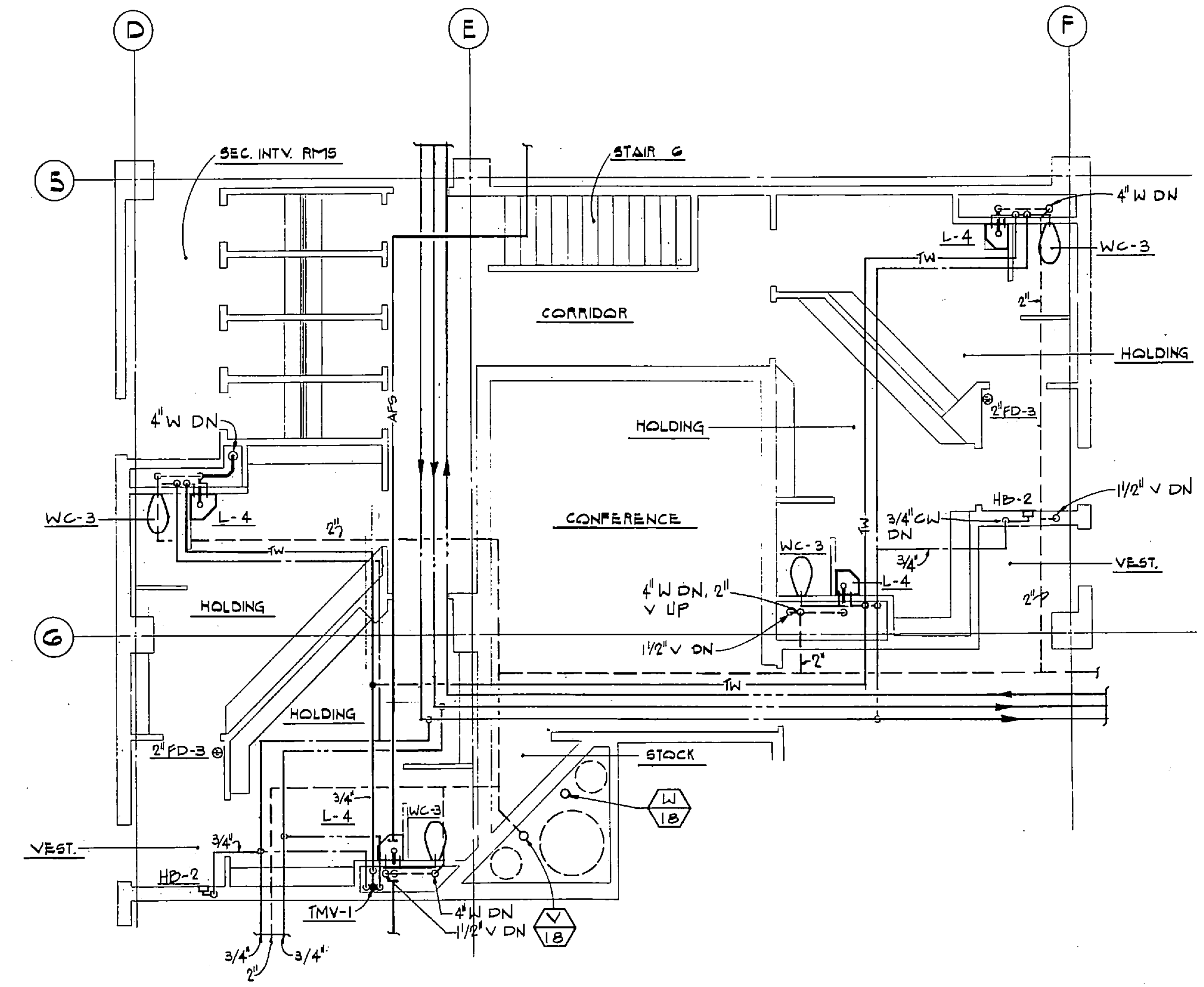
HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



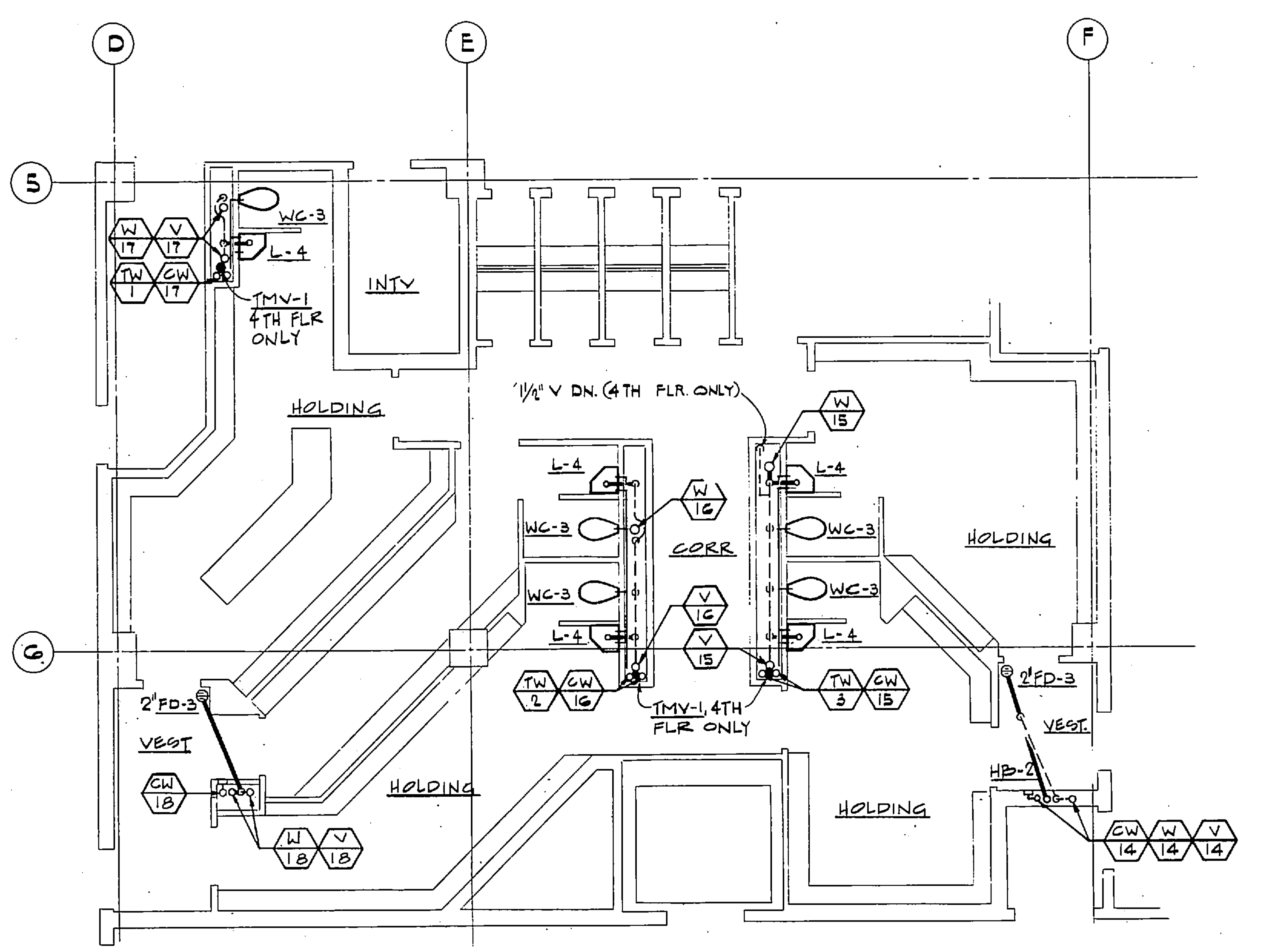
(36) HOLDING @ SECURITY COURT



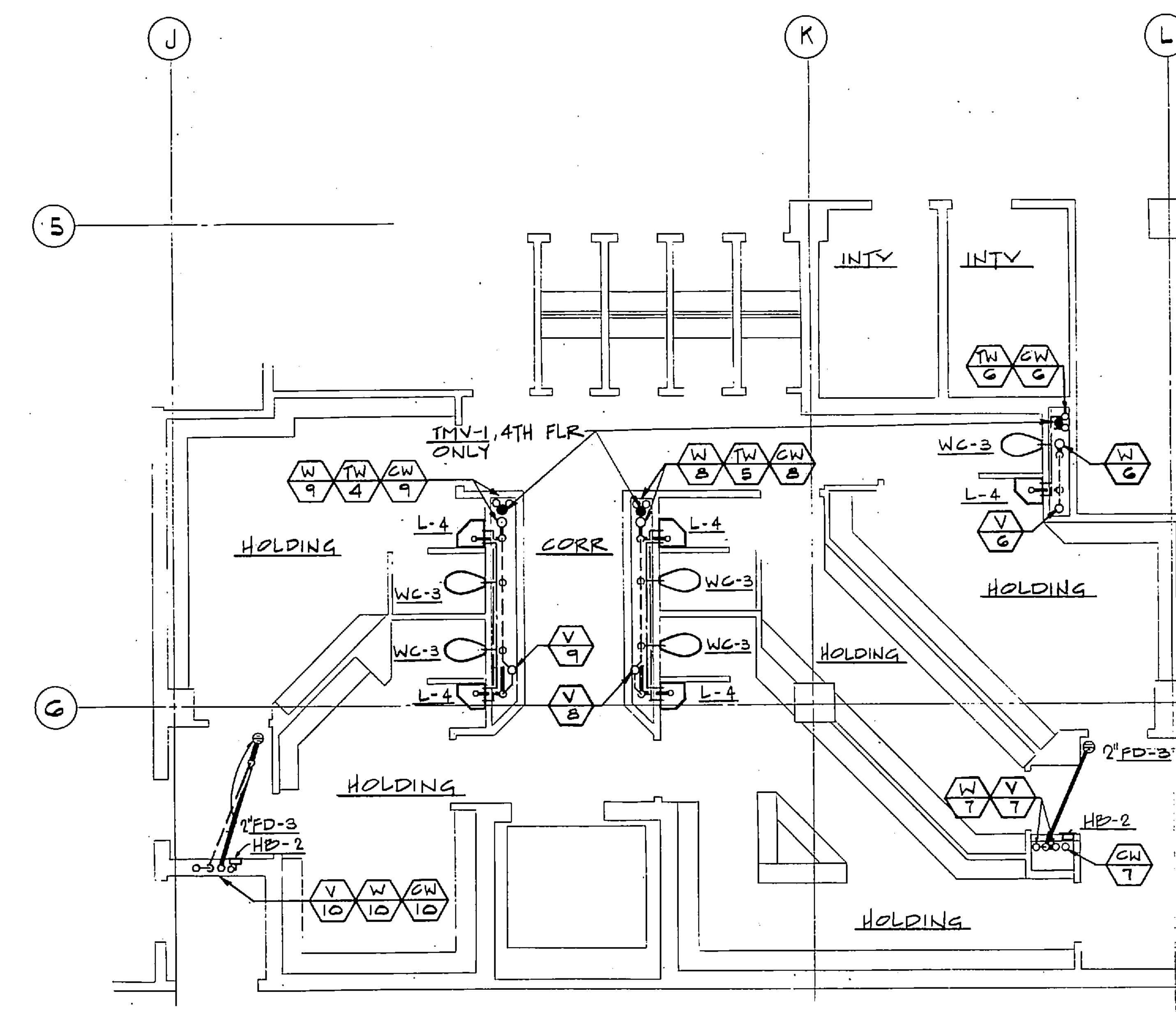
(37) PUBLIC TOILETS @ 2ND FLOOR



(38) HOLDING @ TRAFFIC COURTS



(39) HOLDING @ FLOORS 4, 5, 6



(40) HOLDING @ FLOORS 4, 5, 6

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

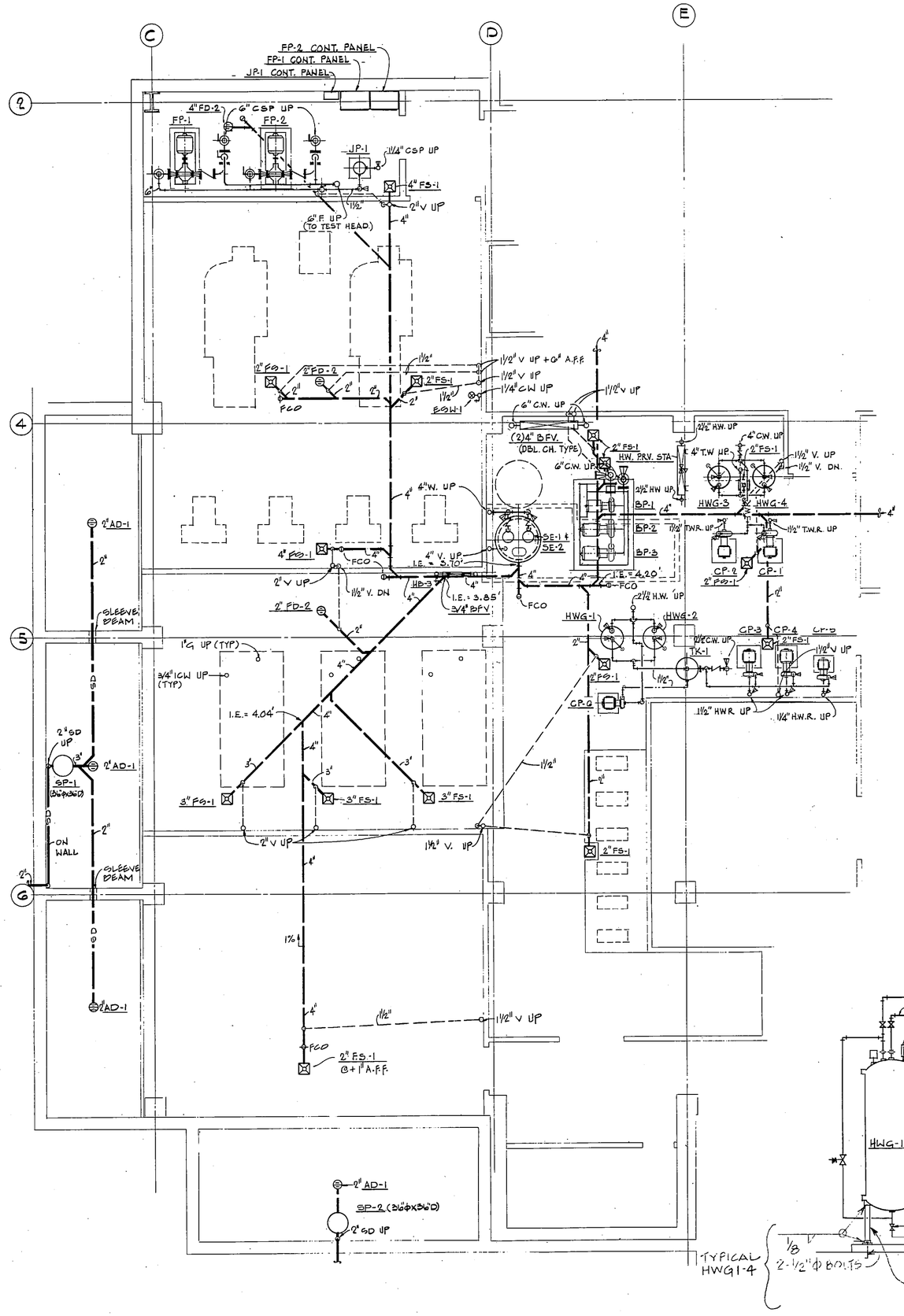
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER WATARU TAKAHASHI No. 11242 MECHANICAL STATE OF CALIFORNIA

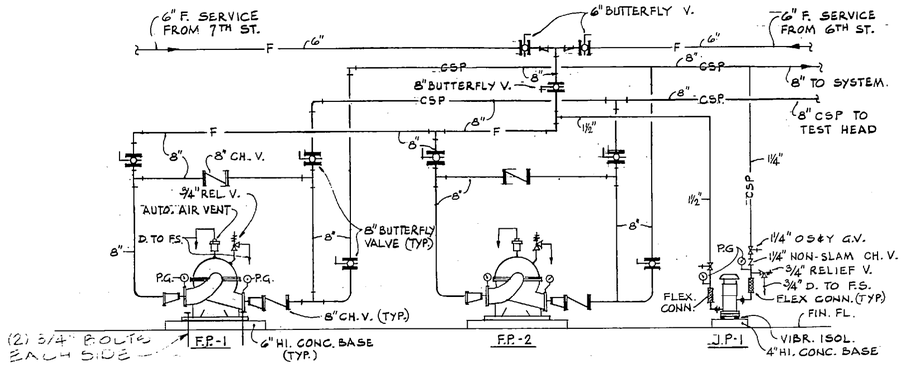
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77
REVISIONS BY DATE
1 2 3 4 5 6 7

TOILET PLANS
1/8" = 1'-0"

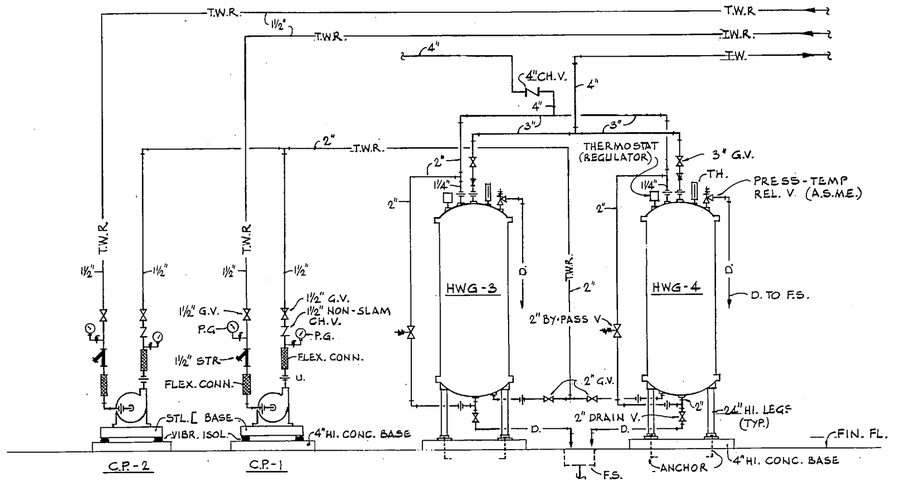
DRAWING NUMBER 36-40
CATEGORY 16



41 LEVEL 1, MECHANICAL EQUIPMENT ROOM PLAN.
SCALE: 1/8" = 1'-0"

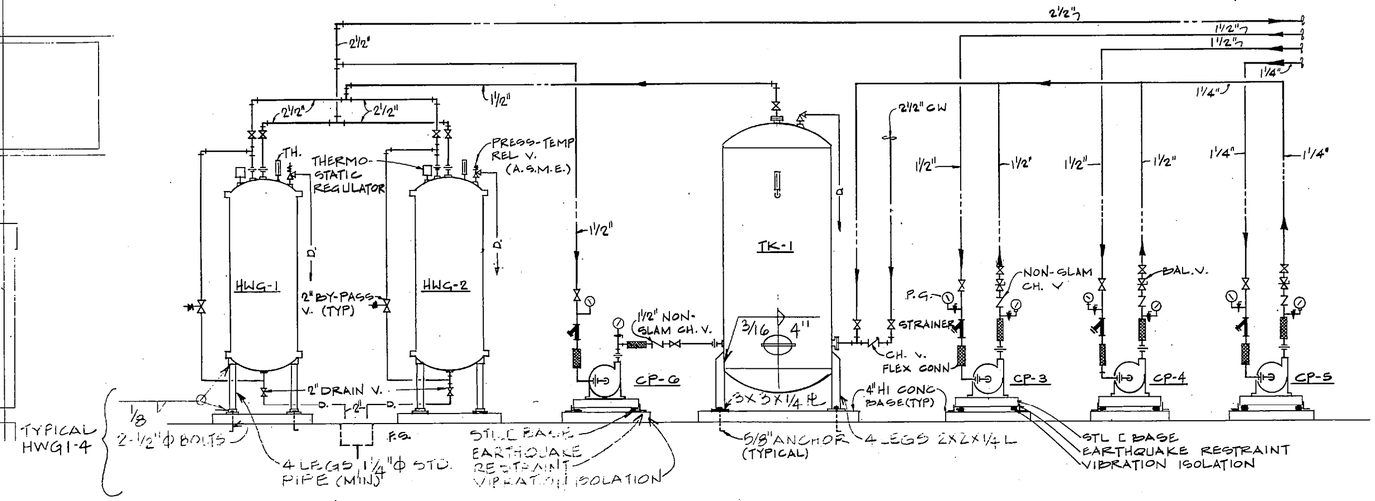


42 PIPING AT FIRE PUMPS FP-1, F.P-2 AND JOCKEY PUMP JP-1
NOT TO SCALE



NOTE: LABELS & SIZES FOR CP-2 & HWG-3 ARE THE SAME AS FOR CP-1 & HWG-4.

43 PIPING AT T.W. SYSTEM EQUIPMENT
NOT TO SCALE



44 PIPING AT 140° H W SYSTEM EQUIPMENT
NOT TO SCALE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

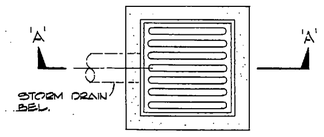
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — WALTER HERB YAMAMOTO — No. 11242 — REGISTERED — CALIFORNIA

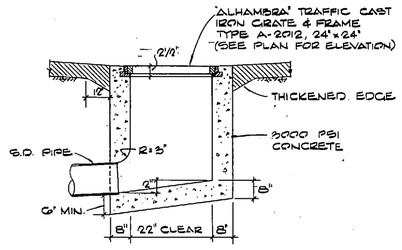
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7-26-77
REVISIONS — BY — DATE
1 2 3 4 5 6 7

DETAILS

DRAWING NUMBER 41-45
CATEGORY 16



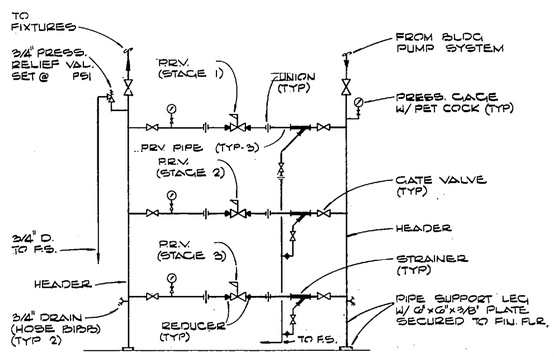
PLAN



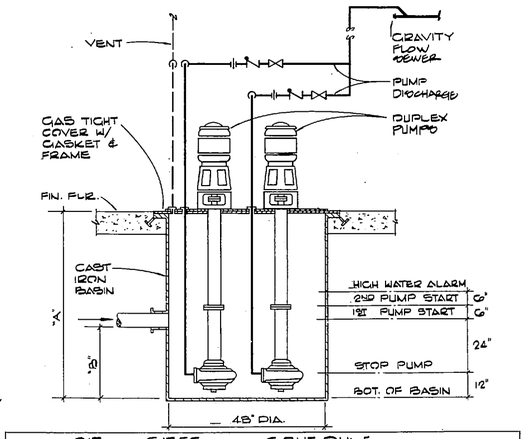
SECTION 'A'-'A'

46 CATCH BASIN
NO SCALE

PRESSURE REGULATOR VALVE SCHEDULE							
SYSTEM	STAGE	HEADER SIZE	PRV SIZE	PRV PIPE SIZE	INLET PRESS.	OUTLET PRESS	REMARKS
HOT WATER	1	2½"	1"	1¼"	105 PSI	80 PSI	
HOT WATER	2	2½"	1½"	2"	105 PSI	78 PSI	
HOT WATER	3	2½"	1½"	2"	105 PSI	76 PSI	

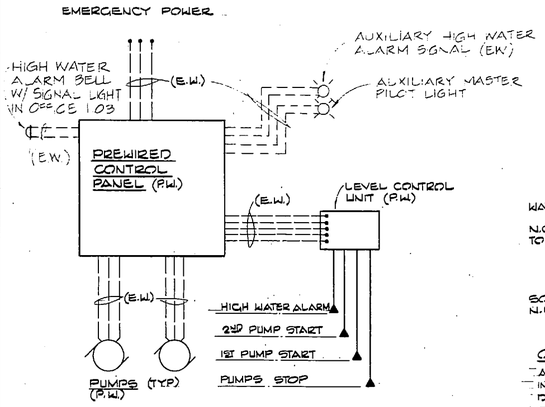


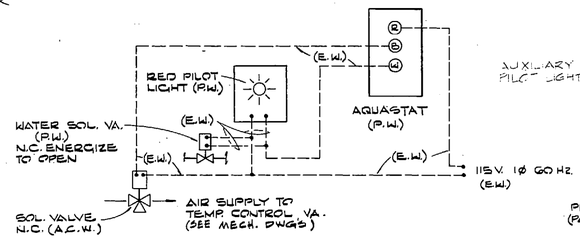
47 HOT & COLD WATER PRESSURE REG. VALVES STATION
NO SCALE



PIT SIZES SCHEDULE					
PUMPS	FIN. FLR. ELEV.	INLET INTO BASIN	BOTTOM OF BASIN	'A'	'B'
SE 1 & 2	5.70'	3.70'	-5½"	6'-2"	4'-2"
SE 3 & 4	5.70'	3.70'	-5½"	6'-2"	4'-2"

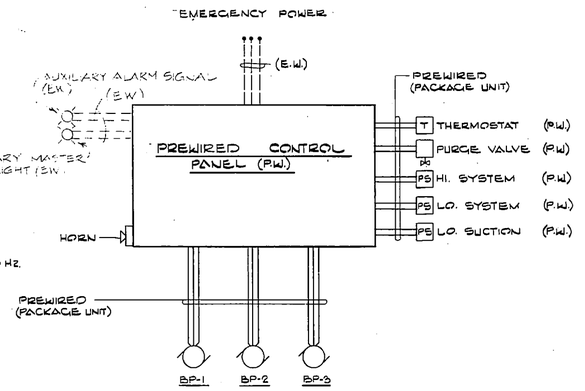
48 TYP DETAIL OF SUMP & SEWAGE PUMPS
NO SCALE

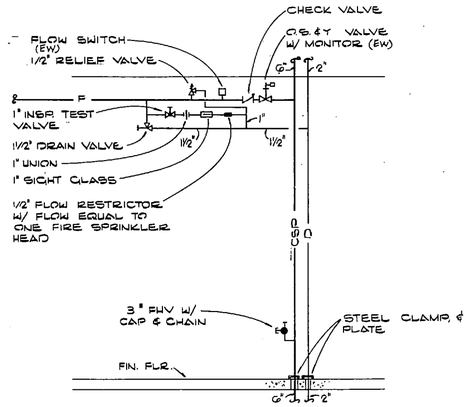




OPERATION OF ELECTRICAL SAFETY SYSTEM:

AQUASTAT IS SET AT APPROX. 15°F ABOVE DESIRED WATER TEMP. IN EVENT OF OVERRIDE, AQUASTAT ENERGIZES RED LIGHT AND DE-ENERGIZES AIR SOLENOID VALVE, THEREBY CLOSING TEMP. CONTROL VALVE. IN CASE OF ELECTRICAL FAILURES, TEMP. CONTROL VALVE SHUTS OFF. WATER SOLENOID VALVE OPENS AND DISCHARGES OVERHEATED DOMESTIC WATER TO FLOOR SINK.



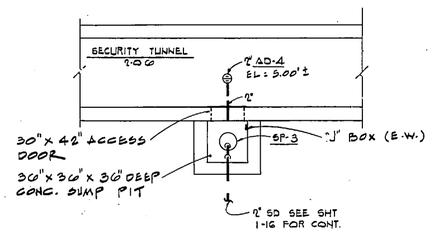


49 WIRING DIAGRAM FOR DUPLEX SUMP & SEWAGE PUMPS
NO SCALE

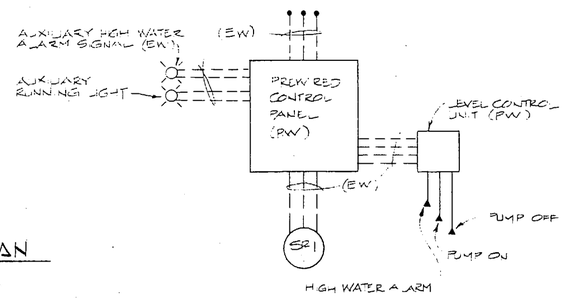
50 WIRING DIAGRAM FOR HWG-1, 2, 3 & 4 SAFETY SYSTEM
NO SCALE

51 WIRING DIAGRAM FOR WATER BOOSTER SYSTEM
NO SCALE

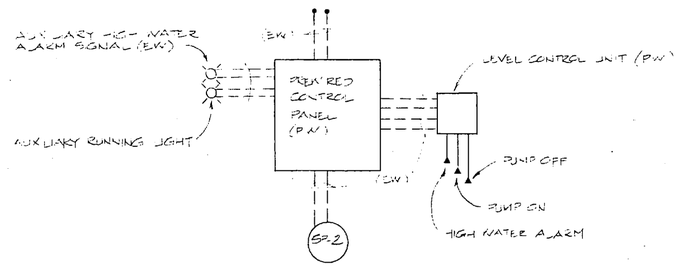
52 FIRE SPRINKLER FLOOR CONTROL ASSEMBLY
NO SCALE



53 PARTIAL SECURITY TUNNEL 2.06 PLAN
SCALE 1/8"=1'-0" NOTE: SEE ARCH. DWG'S. FOR EXACT LOCATION OF TUNNEL



34 WIRING DIAGRAM FOR SIMPLEX SUMP PUMP



35 WIRING DIAGRAM FOR SIMPLEX SUMP PUMP

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER WILLIAM THARPE No. 11242 STATE OF CALIFORNIA

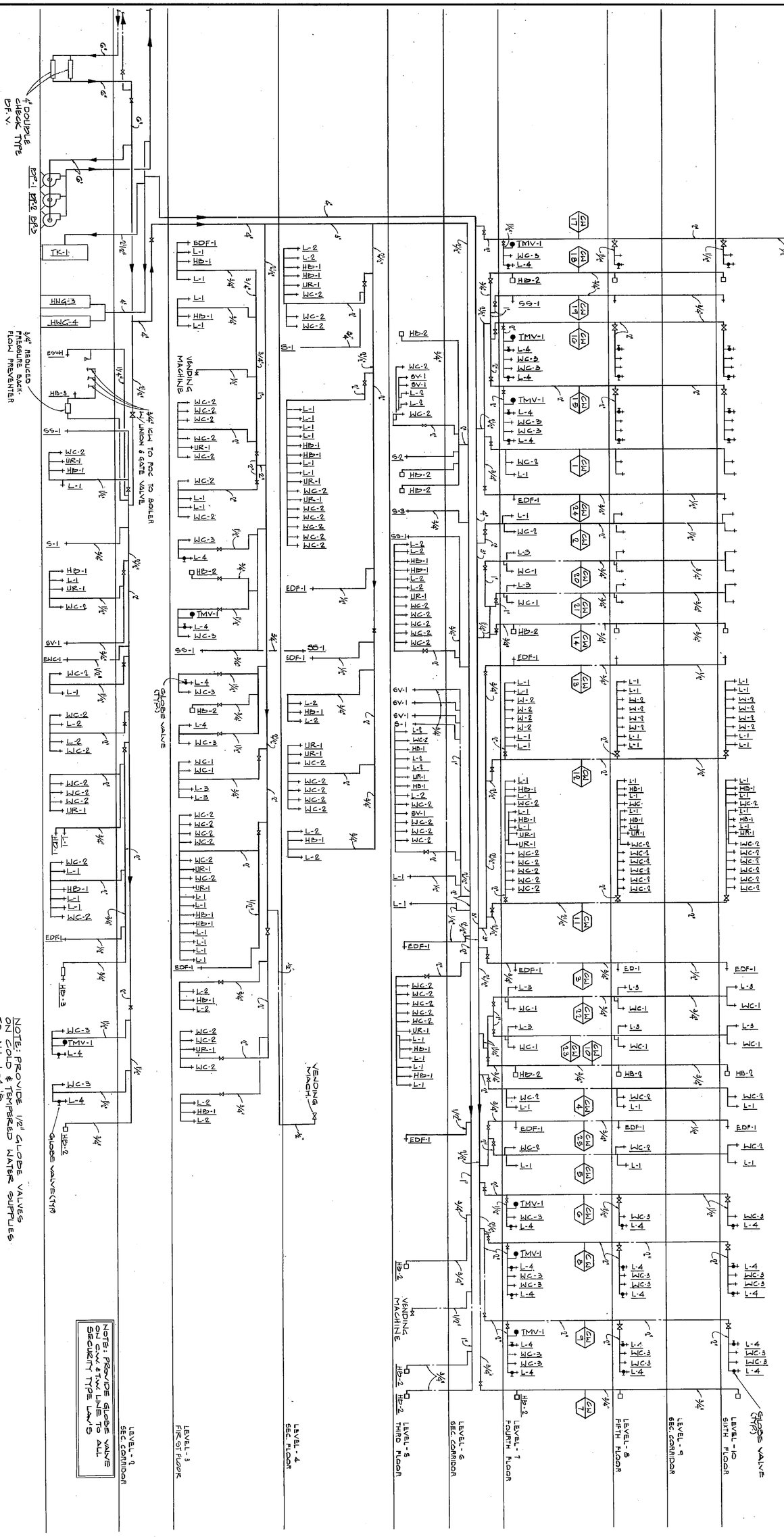
JOB NO. 7873-00			
DRAWN BY			
CHECKED BY			
DATE 1/14/77			
REVISIONS	BY	DATE	
1			
2			
3			
4			
5			
6			
7			

DETAILS
NO SCALE

DRAWING NUMBER 46-55

CATEGORY 16

56 COLD WATER RISER DIAGRAM



DRAWING NUMBER	56
CATEGORY	16

COLD WATER RISER DIAGRAM
SCALE

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	11-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER HARU TAKASAKI No. 11242 MECHANICAL

OAKLAND·PIEDMONT MUNICIPAL COURT

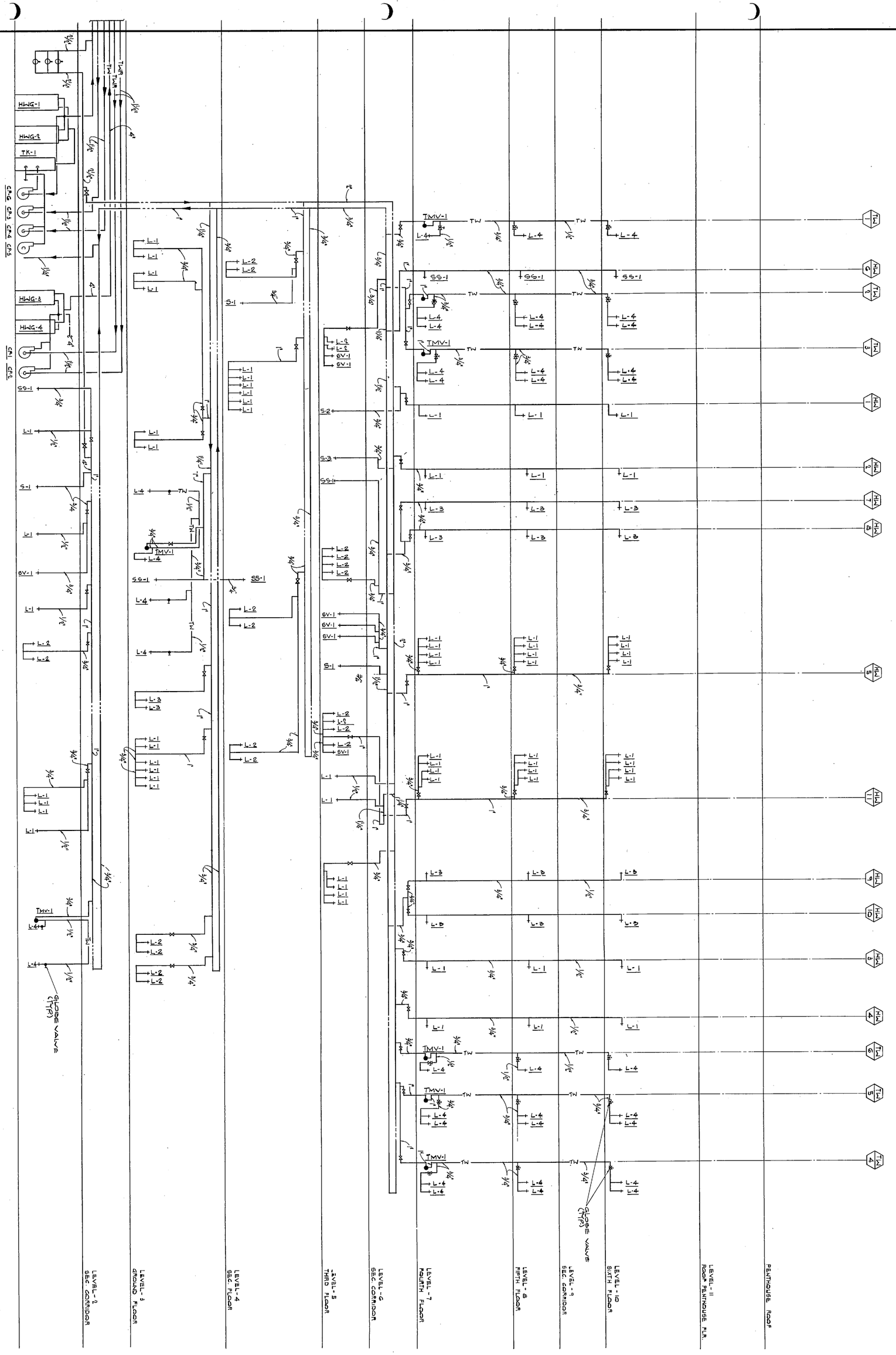
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

57 HOT WATER RISER DIAGRAM



JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

DRAWING NUMBER 57

HOT WATER RISER DIAGRAM
NO SCALE

CATEGORY 16

REGISTERED PROFESSIONAL ENGINEER — MASARU TAKAMIYA — No. 11242 — MECHANICAL

OAKLAND · PIEDMONT MUNICIPAL COURT

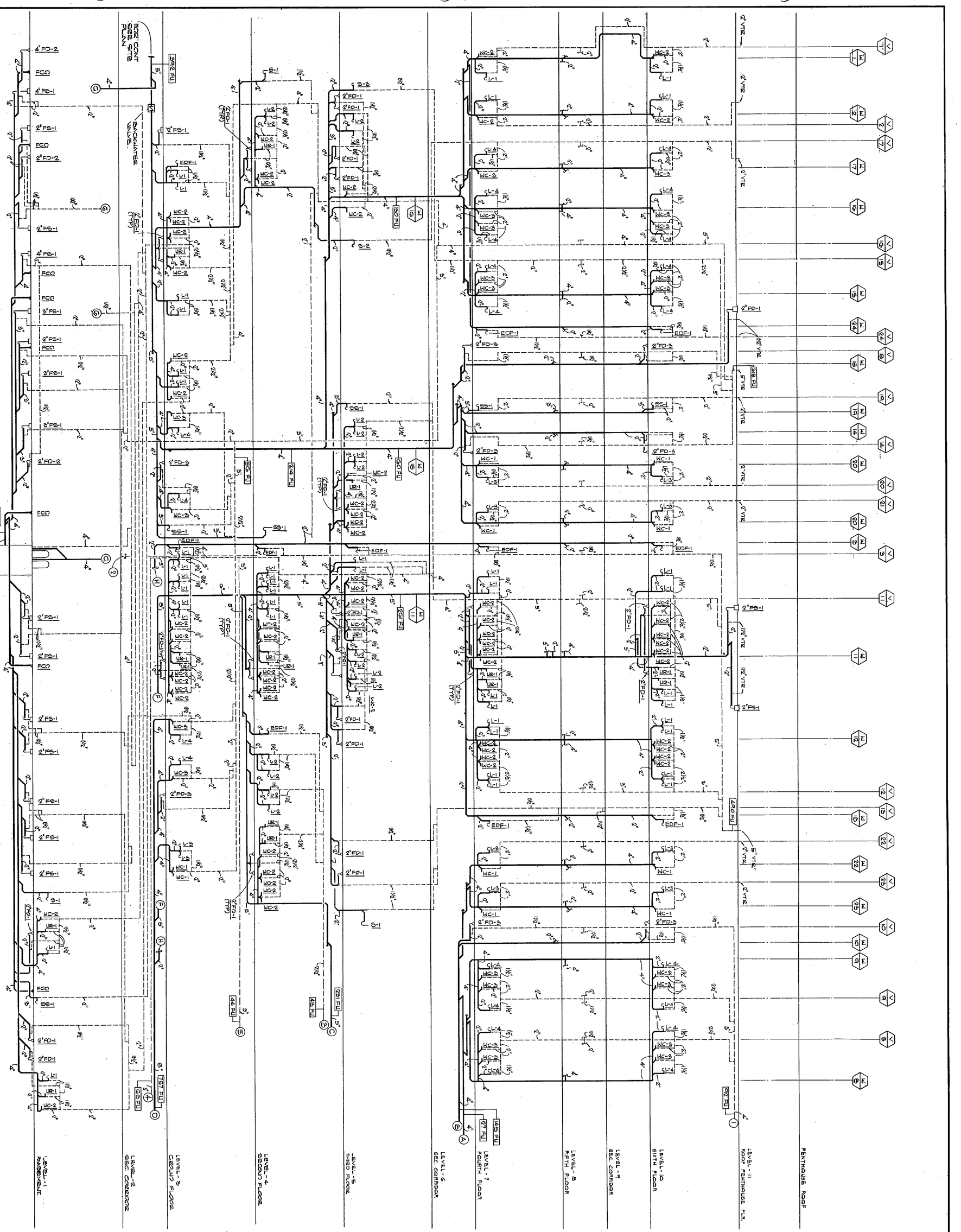
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

58 WASTE & VENT STACKS DIAGRAM



DRAWING NUMBER	58
EXTCOORT	16

WASTE & VENT DIAGRAM
NO SCALE

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7/14/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — HARUO TAKAHASHI — No. 11242 — MECHANICAL — STATE OF CALIFORNIA

OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAVAKAWA ASSOCIATES	MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS — SAN FRANCISCO

REGISTERED PROFESSIONAL ENGINEER — WILLARD TAKAHASHI — No. 11242 — STATE OF CALIFORNIA — MECHANICAL

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7/4/77

WASTE & VENT DIAGRAM
NO SCALE

DRAWING NUMBER 59
CATEGORY 16

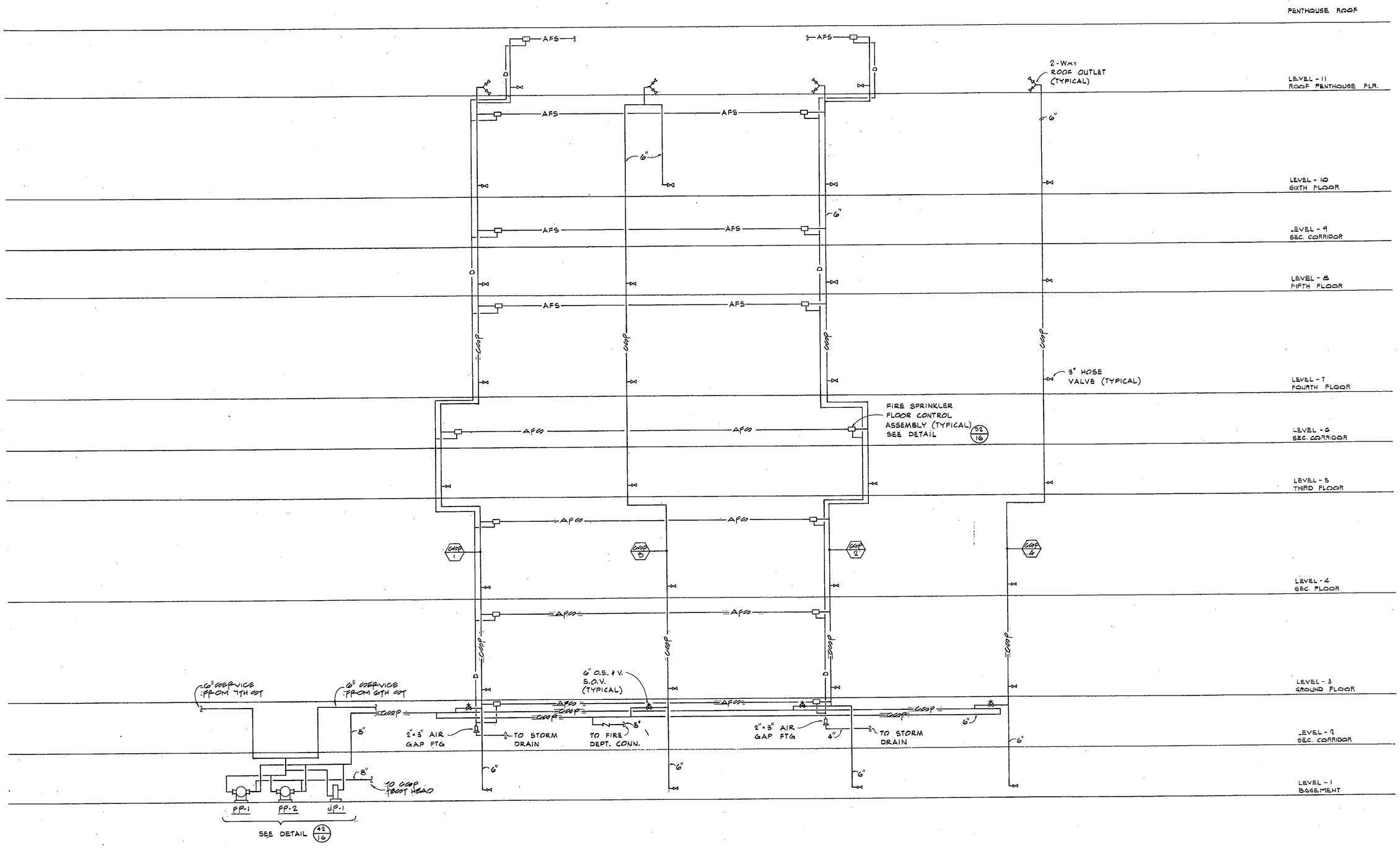
PENTHOUSE ROOF
LEVEL - 11 ROOF PENTHOUSE FLR.
LEVEL - 10 SIXTH FLOOR
LEVEL - 9 SEC. CORRIDOR
LEVEL - 8 FIFTH FLOOR
LEVEL - 7 FOURTH FLOOR
LEVEL - 6 SEC. CORRIDOR
LEVEL - 5 THIRD FLOOR
LEVEL - 4 SEC. FLOOR
LEVEL - 3 GROUND FLOOR
LEVEL - 2 BASEMENT
LEVEL - 1 BASEMENT

FOR CONT. SEE SITE PLAN

SEE 3 & SE-4

WASTE & VENT STACKS DIAGRAM

59



59 COMBINED STANDPIPE RISER DIAGRAM

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO	
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO	
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA	
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO	

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER WAYNE TAKAMACHI No. 11242 MECHANICAL

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 1/21/77
REVISIONS

	BY	DATE
1		
2		
3		
4		
5		
6		
7		

CSP RISER DIAGRAM
NO SCALE

DRAWING NUMBER 60
CATEGORY 16

① LEGEND

	FLUORESCENT FIXTURE AND OUTLET, CEILING.
	INCANDESCENT FIXTURE AND OUTLET, CEILING MOUNTED, WALL BRACKET.
	EXIT LIGHT FIXTURE AND OUTLET, CEILING.
	FLOOD OR SPOTLIGHT ASSEMBLY AND OUTLET.
ONL	OUTLET ON NIGHT LIGHT CIRCUIT, E = EMERGENCY CIRCUIT.
FA-1 2/40	FIXTURE IDENTIFICATION TAG. LETTER INDICATES TYPE; NUMBER INDICATES NUMBER OF LAMPS AND WATTAGE.
S	SWITCH, ONE POLE, 15/20A, 120/277 VOLT, UP 52".
S_2	SWITCH, TWO POLE, DITTO
S_3	SWITCH, THREE WAY, DITTO
S_4	SWITCH, FOUR WAY, DITTO
S_K	SWITCH, KEYED, DITTO
S_P^2	SWITCH, 2-POLE, 20A, 120/277V. WITH PILOT LIGHT
S_M	SWITCH, MOMENTARY, 15/20A, 120/277 VOLT, UP 52".
$	DOOR STATUS SWITCH
	DOORLOCK WITH STATUS SWITCH & REMOTE DOOR STATUS SWITCH, SUBSCRIPT INDICATES INTERLOCK.
$_D	DOOR SWITCH, 1P, 15A, 120V.
DS	DIMMER WITH SWITCH.
D	DIMMER
TS	TIME SWITCH WITH RESERVE POWER FEATURE.
	SPECIAL DEVICE AS DESCRIBED.
	SINGLE RECEPTACLE, 20A, 125V, 2P, 3WG, NEMA 5-20R.
	DUPLEX RECEPTACLE, 15A, 125V, 2P, 3WG, NEMA 5-15R.
	EWC ELECTRICAL WATER COOLER
	DUPLEX RECEPTACLE, 20A, 125V, 2P, 3WG, NEMA 5-20R.
	FLOOR RECEPTACLE, SINGLE 15A, 2P, 3WG, 125V.
	PEDESTAL WITH DUPLEX RECEPTACLE AND OUTLET, 2P, 3WG, 15A, 125V.
	PEDESTAL WITH 2-DUPLEX RECEPTACLES (BACK TO BACK) AND OUTLET.
	30A, 250V, 3P, 3W RECEPTACLE, NEMA 14-30R.
	50A, 250V, 4PG RECEPTACLE, NEMA 14-50R.
L6-20R	TWISTLOCK RECEPTACLE, SINGLE, 20A, 250V, 2P, 3WG, NEMA L 6-20R.
L16-20R	TWISTLOCK RECEPTACLE, SINGLE, 20A, 480V, 2P, 3WG, NEMA L16-20R.
L16-30R	TWISTLOCK RECEPTACLE, SINGLE, 30A, 480V, 3P, 4WG, NEMA L16-30R.
J J	JUNCTION BOX OR OUTLET BOX WITH BLANK COVER, CEILING, WALL.
	FLOOR BOX WITH BLANK COVER, FLUSH.
	FLOOR BOX WITH SERVICE FITTINGS; REFER TO THE FOLLOWING SCHEDULE:
A	SINGLE 15A, 125V, RECEPTACLE, FLUSH
B	DUPLEX 15A, 125V, RECEPTACLE, FLUSH, WITH FLIP COVER
C	DUPLEX 15A, 125V, RECEPTACLE, PEDESTAL SERVICE FITTING
	DUPLEX RECEPTACLE, CEILING MOUNTED.
P	METAL PLUG-IN STRIP WITH J.B. AND RECEPTACLE ASSEMBLY.
	UNDERFLOOR DUCT SYSTEM ASSEMBLY AND SERVICE FITTINGS. REFER TO THE FOLLOWING SCHEDULE:
	POWER SERVICE FITTING WITH 15A, 125V, 3PG DUPLEX RECEPT.
	INTERCOMM SYSTEM SERVICE FITTING WITH DESK PHONE
	P.T. AND T. PHONE SYSTEM SERVICE FITTING
G	GROUND WELL.
	GROUND ROD.
	TELEPHONE WALL OUTLET WITH ONE-HOLE COVER.
	TELEPHONE FLOOR OUTLET WITH SERVICE FITTING, FLUSH.
C.O.	CONDUIT ONLY.
	CONDUIT UP.
	CONDUIT DOWN.
P.C.	PULL CHAIN.
W.P.	WEATHERPROOF.
X.P.	EXPLOSION-PROOF.
—E—	EMERGENCY POWER BRANCH CIRCUIT WIRING AND CONDUIT
—N—	NURSES CALL SYSTEM, CONDUIT AND WIRING.
—F—	FIRE ALARM SYSTEM CONDUIT AND WIRING.
—S—	SOUND SYSTEM CONDUIT AND WIRING (3/4"C. MINIMUM).
—TV—	TELEVISION ANTENNA SYSTEM CONDUIT.
—T—	TELEPHONE SYSTEM CONDUIT ONLY (3/4"C. MINIMUM).
—T—	HOME RUN TO TELEPHONE SYSTEM TERMINAL CABINET. TYPICAL ALSO FOR: F = FIRE ALARM

	BRANCH CIRCUIT WIRING IN CONDUIT CONCEALED IN CEILING OR WALLS.
	BRANCH CIRCUIT WIRING IN CONDUIT CONCEALED UNDERGROUND OR IN FLOORS.
	BRANCH CIRCUIT WIRING IN CONDUIT — EXPOSED.
	HOME RUN TO PANEL — MIN. 1/2"C. 2#12 UNLESS NOTED.
8	HOME RUN TO PANEL OTHER THAN 1/2"C. 2#12. CROSS LINES INDICATE NUMBER OF WIRES; NUMBER INDICATES SIZE.
G	BARE COPPER GROUND WIRE #4/0 OR AS NOTED.
N	NURSES CALL SYSTEM — DUTY STATION.
NC	NURSES CALL SYSTEM — ANNUNCIATOR PANEL.
N	NURSES CALL SYSTEM — EMERGENCY CALL BUTTON.
BPI	BED PATIENT STATION.
	NURSES CALL SYSTEM — CORRIDOR DOME LIGHT.
M	MOTOR OUTLET WITH COMPLETE CONNECTION TO MOTOR AND CONTROLS.
G	GENERATOR
	DISCONNECT SWITCH.
	MAGNETIC STARTER.
S_T	MANUAL STARTER WITH THERMAL O.L. PROTECTION.
S_T^P	MANUAL STARTER WITH PILOT LIGHT AND THERMAL O.L. PROTECTION.
A	AQUASTAT.
T	LINE VOLTAGE THERMOSTAT.
P	PUSHBUTTON-MOMENTARY, START, START-STOP, START-STOP WITH PILOT LIGHT.
H	MAINTAINED CONTACTS.
	CONTROL DEVICE -- SEE FOLLOWING DESCRIPTIONS:
PE	PNEUMATIC ELECTRIC SWITCH
SV	SOLENOID VALVE, CONTROL
EP	ELECTRIC PNEUMATIC RELAY
T	TEMPERATURE ACTUATED (THERMOSTAT)
PS	PRESSURE SWITCH
FS	FLOW SWITCH
GF	GROUND FAULT
HOA	HAND-OFF-AUTOMATIC SWITCH.
R	RELAY.
C	CONTACTOR.
V	SHOWER SOLENOID VALVE.
T	TRANSFORMER.
	277/480V. PANEL - RECESSED/SURFACE (LIGHTING).
	120/208V. PANEL - RECESSED/SURFACE (RECEPTACLES).
	MOTOR CONTROL CENTER, NOTED.
	TERMINAL CABINET, AS DESCRIBED.
	SYSTEMS TERMINAL CABINET.
	MASTER CLOCK
C	PROGRAM CLOCK, SINGLE FACE, 2-FACE.
	FIRE ALARM STATION.
	FIRE ALARM HORN, 1-WAY, 2-WAY.
SD FT	FIRE DETECTOR, FIXED TEMP.
SD D	FIRE DETECTOR, PRODUCTS OF COMBUSTION — D = DUCT DETECTOR
FS	FLOW SWITCH OUTLET (AND CONNECTION).
FV	FIRE SPRINKLER VALVE STATUS SWITCH.
FT	FIREMAN'S TELEPHONE AND OUTLET (JACK).
S F	SPEAKER, FIRE PUBLIC ADDRESS.
S	SPEAKER, BACK BOX AND GRILLE, CEILING, WALL.
S	WALL SPEAKER, BACK BOX AND GRILLE, SURFACE-MOUNTED.
S COL	COLUMN TYPE SPEAKER.
	INTERCOMM WALL PHONE AND REQUIRED OUTLET. D= DESK PHONE.
	FLOOR BOX, SERVICE FITTING AND INTERCOMM DESK PHONE.
M	MICROPHONE FLOOR OUTLET, FLOOR OR DESK, WALL-MOUNTED.
V	AUDIO-VISUAL OUTLET, FLOOR, WALL.
A	AMPLIFIER.
VC	VOLUME CONTROL.
	TALK-BACK PUSHBUTTON.
TV	TELEVISION ANTENNA SYSTEM OUTLET.
98°	CLOSED CIRCUIT TV CAMERA; NUMBER INDICATES LENS ANGLE.
TV M	CLOSED CIRCUIT TV MONITOR.
	BUZZER WITH INDICATOR LIGHT
S MS	MASKING NOISE LOUDSPEAKER

NOTE: FOR ABBREVIATIONS SEE DWG. 34C/18

② LIGHTING FIXTURE SCHEDULE

SKETCH	TYPE	LAMPS	SIZE	MFRS. CAT. NO.	DESCRIPTION
	FA-1 FA-2 FA-3 FA-4 FA-5 FA-6	2/40 4/40 2/40 'U' 1/40 'U' 2/40 3/40	1X4 2X4 2X2 1X2 2X4 2X4	SEE SPECIFICATIONS	RECESSED 'LAY-IN' TYPE, INJECTION MOULDED ACRYLIC PRISMATIC DIFFUSER SET IN HINGEABLE, FLUSH ALUMINUM FRAME DOOR W/BLACK REGRESS ALL AROUND GIVING ILLUSION OF A FLOATING DIFFUSER. HEAT EXTRACT WITH AIR SUPPLY AND RETURN. SEE SPECIFICATIONS. NOTES ①②③④
	FB-1 FB-2 FB-3 FB-4 FB-5 FB-6	2/40 4/40 2/40 'U' 2/40 1/40 'U' 3/40	1X4 2X4 2X2 2X4 1X2 2X4	SEE SPECIFICATIONS	SIMILAR TO 'FA' SERIES - EXCEPT WITH TRIM TO BUTT FLUSH WITH CONCEALED SPLINE CEILING. SEE SPECIFICATIONS. NOTES ①②③④
	FC-1 FC-2	2/40 1/40 'U'	1X4 1X 2	WESTINGHOUSE "AF2BCF" SERIES; LIGHTOLIER "6200" SER. MOD.; COLUMBIA "S4468" SER.; GLOBE "QCU-9152-4R-TP"; GUTH "FG1—1POK-TPS" SER.; ACME "14000" SER.	SECURITY RECESSED UNIT - SIMILAR TO 'FB' SERIES EXCEPT FLANGED TRIM, HIGH IMPACT ACRYLIC DIFFUSER, STATIC, 20 GA. HOUSING, HINGEABLE ALUMINUM FRAME, TAMPERPROOF CLOSING SCREWS. NOTES ①②③⑤ DITTO EXCEPT GASKETED
	FD-1 FD-2	2/40 2/40 'U'	1X4 2X2	WESTINGHOUSE 'AH' SER. MOD. LIGHTOLIER "5472/482" SER. MOD.; COLUMBIA "6136-40" SER.: GLOBE "QIH3/16-8000 SER.; GUTH "AIM/1/680" SER.; ACME "41600" SERIES.	SIMILAR TO 'FA' SERIES - EXCEPT STATIC, SURFACE MOUNTED, 4" DEEP, METAL SIDES. NOTES ①②③④
	FE-1 FE-2	2/40 1/40 'U'	1X4 1X2	WESTINGHOUSE "JM" SER. MOD.; LIGHTOLIER "SDH-9000" SER. MOD.; COLUMBIA "1315B-B" SER. MOD.; GLOBE "QCV-8100" SER., MOD.; ACME "1600" SERIES, (MODIFIED).	SECURITY SURFACE UNIT - SIMILAR TO 'FD' SERIES - EXCEPT MIN. 16 GA. HOUSING, POLYCARBONATE OR HERCULITE GLASS, 16 GA. LENS FRAME, PIANO HINGE, AND TAMPERPROOF SCREWS. NOTES ②③⑥
	FF-1 FF-2 FF-3 FF-4	2/8 2/8 2/8 2/8	6" X 12" X 3-7/8" D MAXIMUM DITTO DITTO DITTO	MC PHILBEN 93 LINE; COLE "SF-2156" SERIES, MODIFIED; ACME "2700" SERIES; LIGHTOLIER "SDH-9600" SERIES COLE "SF-2156-LDX-TP-D"	SECURITY 2-LAMP FLUORESCENT FIXTURE RECESSED IN CONCRETE CEILING, 16 GA. GALV. STEEL OR HEAVY CAST, PROTECTED, ALUM. BODY, CAST BRASS OR STAINLESS STEEL TRIM WITH TAMPERPROOF SCREWS, PRISMATIC 1/8" 'HERCULITE' PRISMATIC GLASS OR POLYCARBONATE DIFFUSER. PROVIDE CONCRETE INSERTS TO RETAIN FIXTURE. EXTRUDED ALUMINUM TRIM. NOTE ② SAME EXCEPT GASKETED. SAME AS FF-1 EXCEPT WITH STANDARD SCREWS AND DIFFUSER. SAME AS FF-1 EXCEPT SURFACE MOUNTED.
	FG-1 FG-2	2/40 2/20	1X4 1X2	LIGHTOLIER "1350" SER.; COLUMBIA "H213-52" SER.; GLOBE "5730" SER.; GUTH "AGR-6780" SER.; ACME "540" SER.; WESTINGHOUSE "WR" SER.	STAIR LIGHTING FIXTURE, SURFACE, CEILING MOUNTED, EXTRUDED PRISMATIC ACRYLIC, SEMI-WRAP AROUND DIFFUSER. NOTES ①②④
	FH-1 FH-2 FH-3 FH-4	2/40 4/40 1/40 2/40	4' LG. 8' LG. 4' LG. 8' LG.	LIGHTOLIER "1102" SER.; COLUMBIA "FS—M" SER.; GLOBE "1200 & 1600" SER.; GUTH "M6500" SERIES: ACME "220" SERIES; WESTINGHOUSE "MP" SER.	STRIP LIGHT, SURFACE OR PENDANT MOUNTED. NOTES ①②
EXIT	FI-1 FI-2 FI-3 FI-4	2/6 2/6 2/6 2/6	12" X 8" X 3-3/4" D DITTO DITTO DITTO	PRESCOLITE "7000" SER.; MARCO 2" SERIES; COLE "F195-6" SER. AND "FD-195-6" SERIES; PERFECLITE "P800" SER.	'EXIT SIGN' SURFACE, SINGLE-FACE UNIT WITH 6" LETTER METAL STENCIL & GREEN FIBREGLASS BACKING. DOWNLIGHT PANEL WITH PRISMATIC ACRYLIC LENS CLOSURE, UNIVERSAL MOUNTING FOR BACK, TOP & END MOUNT & UNIVERSAL DIRECTIONAL ARROW TABS. SIMILAR TO FI-1 - EXCEPT DOUBLE FACE. SIMILAR TO FI-1 - EXCEPT RECESSED WALL, NO DOWNLIGHT. SIMILAR TO FI-3 - EXCEPT RECESSED IN CONCRETE, HEAVY METAL STENCIL FACE AND TAMPERPROOF SCREWS.
	FJ-1	3/40	4' LG.	PEERLESS MC INTYRE SEE SPECIFICATIONS	SECURITY 'HOLDING' UNIT - SURFACE, 4" WALL MOUNTED, 'UP' & 'DOWN' LIGHTING UNIT. NOTES ②⑤ SEE SPECIFICATIONS AND DETAIL.
	FK-1 FK-2	2/40 4/40	4' LG. 8' LG.	WESTINGHOUSE "H" SER.; "SYLVANIA "QP-25" SER.; GLOBE "2560" SER.; GUTH "M1400" SER.; ACME "1310" SERIES; LIGHTOLIER "2372" SER.	INDUSTRIAL TYPE WITH PORCELAIN ENAMEL REFLECTOR SLOTTED FOR 20% UPLIGHT COMPLETE WITH SWIVEL STEMS AS REQUIRED. NOTES ①②
	FL-1 FL-2	1/40 'U' 4/40	1X2 2X4	SIM. FA & FB SERIES PER SPECIFICATIONS. COLUMBIA "FA5446" SER.; GLOBE "6250" SER.; GUTH "PFSI-AIM" SER.; LIGHTOLIER "5200" SER. MOD.; ACME "2400" SER.; WESTINGHOUSE "AF-S-TOPA" SERIES	SIMILAR TO 'FA-1' EXCEPT 'STATIC' TYPE WITH CLEAR PRISMATIC GLASS DIFFUSER (SMOOTH SIDE DOWN), FULL FRAME (NO FLOATING DOOR). NOTES ①②③⑦
	FM-1 FM-2 FM-3	1/20 1/30 1/40	2' LG. 3' LG. 4' LG.	COLUMBIA "S4543" SER.; DAYBRITE "107" SER.; GLOBE "AUP/100" SER.; LIGHTOLIER "QPS/CD4" SERIES	TOILET AREA FIXTURE, ONE LAMP, 6"X6", RECESSED, WITH DEEP CELL SILVERED PARABOLIC LOUVER WITH POSITIVE ACTING STEEL HINGES & LATCHES, FLANGED TRIM FOR PLASTER CEILINGS. NOTES ①②③④

SKETCH	TYPE	LAMPS	SIZE	MFRS. CAT. NO.	DESCRIPTION
	FN-1 FN-2 FN-3 FN-4 FN-5	2/40 OPEN 2/20 3/40 3/20	1X4 NOT USED 1X2 2X4 2X2	SEE SPECIFICATIONS	RECESSED 'AIR HANDLING' HEAT EXTRACT UNIT WITH DEEP CELL, SILVERED PARABOLIC LOUVER WITH POSITIVE ACTING STEEL HINGES & LATCHES, HOUSING 6-3/4"D WITH TRIM FOR BUTT FITTING TO CONCEALED SPLINE CEILING. DAMPER SO SUPPLY AIR MAY BE SHUT OFF. SEE SPECIFICATIONS. NOTES ①②③
	FO-1 FO-2	3/40 3/20	2X4 2X2	SEE SPECIFICATIONS	DITTO 'FN', EXCEPT RECESSED "LAY-IN".
	FP-1	2/40	4' LG.	GLOBE "7300" SER.; PRUDENTIAL "P-1222" SER.; LIGHTOLIER "1022M" SER.; KEENE "K16-2M" SER.	WALL-MOUNTED BRACKET WITH BALLAST AND LAMPS AND WITH 1-PIECE INJECTION MOULDED OPAL ACRYLIC HINGED DIFFUSER. RECTANGULAR SHAPE.
	FQ-1 FQ-2 FQ-3 FQ-4 FQ-5 FQ-6	2/40 2/30 2/20 1/40 1/30 1/20	4' LG. 3' LG. 2' LG. 4' LG. 3' LG. 2' LG.	SEE SPECIFICATIONS	6" TO 10"W X 44"D EXTRUDED ALUMINUM TRIM FIXTURE INTEGRATED WITH "ACOUSTADECK" STEEL SECURITY CEILING TO MAINTAIN INTEGRITY OF CEILING, CONCEALED HINGES, TAMPERPROOF SCREWS. SEE SPECIFICATIONS. NOTES ②③⑤
	FR-1 FR-2	2/40 2/30	8" X 50" 8" X 38"	KEENE "CW8X" SER.; DAYBRITE "TRANQUILITE" SERIES	WALL BRACKET, 2-LAMP WITH OPAL VIRGIN ACRYLIC SEMI-WRAPAROUND CLEAR PRISMATIC DIFFUSER AND FLAT CLEAR PRISMATIC UPLIGHT DIFFUSER. SMOOTH RECTANGULAR SHAPE. NOTES ①②④
	FS-1 FS-2	2/40 1/40 'U'	1X4 1X2	SIM. FA & FB SERIES PER SPECIFICATIONS; COLUMBIA "S5446" SER.; GLOBE "6158" SER.; GUTH "FS1-F-4LB" SER.; LIGHTOLIER "6252/6" SER.; ACME "24000" SERIES.	SIMILAR TO 'FA' SERIES EXCEPT FLANGE TYPE, STATIC, WITH CLEAR PRISMATIC GLASS DIFFUSER (SMOOTH SIDE DOWN). NOTES ①②③⑦ DITTO, EXCEPT WITH GASKETS.
	FU-1	2/40	8¼" X 4'		SECURITY STAIR FIXTURE, WALL OR CEILING MOUNTED WITH ONE PIECE INJECTION MOULDED CLEAR PRISMATIC LEXAN POLYCARBONATE LENS, BODY, DIE-FORMED OF 16 GA. COLD ROLLED STEEL
	A-1	150	6"Φ X 9" H	PRESCOLITE AX7071	PENDANT DOWNLIGHT OVER SERVING LINE. METAL CYLINDER, SATIN CHROME (BRUSHED ALUMINUM) FINISH ON CYLINDER, STEM AND ESCUTCHEON PLATE, WITH SWIVEL MOUNTING TO ALLOW 20 DEGREE SWING.
	B-1	2/15	6" X 12"±	KODAK COLE "6355PC"	SAFELITE, UPLIGHT & DOWNLIGHT, PULL-CHAIN OPERATED. TWO 3½" X 4½" FILTERS, KODAK #1. PROVIDE 2 ADDITIONAL FILTERS AS SPECIFIED BY OWNER.
	C-1 C-2	60/100 60/100	5"Φ X 7" D 5"Φ X 7" D	CROUSE-HINDS VG SERIES, BOX MTG., APPLETON VGA SERIES	CYLINDER DIFFUSER WALL BRACKET LIGHTING FIXTURE, CAST IRON OR ALUMINUM BRACKET, CLEAR GLASS SCREWED ON GLOBE (PLENUM). -DITTO - EXCEPT CEILING MOUNTED PLENUMS. NOTE ⑦
	D-1	60/100		ALABAX BRYANT "5228"	PORCELAIN SOCKET, KEYLESS, WALL OR CEILING MOUNTED.
	HA-1	175 HG.	10"Φ X 12"H WESTGHSE. "STYLE-TONE"	LIGHTOLIER; IAAL "HCU" SERIES; GUTH "B12-122"; MARCO "SP1-T441/99-125"; LIGHTOLIER "YSH1034" MOD.	DAY ROOM, 10" DIA. X 12" HIGH MERCURY DOWNLIGHT, SURFACE-MOUNTED FIXTURE WITH BUILT-IN REFLECTORS, QUIET BUILT-IN BALLAST.
	HB-1	100 HG. WESTGHSE. "STYLE-TONE"	12"H X 12"	HOLOPHANE	WALL-MOUNTED UNIT WITH PRISMATIC GLASS LENS FOR WIDE ANGLE DISTRIBUTION, CAST ALUMINUM HOUSING, INTEGRAL BALLAST ASSEMBLY, GASKETED. NOTE ⑦
	HC-1 HC-2	100 HPS. 250 HPS.	19¾" X 29" X 9" 19¾" X 29" X 9"	PRESCOLITE "COMPACT 80"; GARDCO PSRM 10 MOD.; LIGHTOLIER "DDK7342" MOD; KIM "EKG" MOD; CROUSE-HINDS "ASL" MOD; HOLOCAST "2267-A-HPS" SERIES.	OUTDOOR FIXTURE WITH METAL TOP & SIDES, BUILT-IN REFLECTORS & BALLAST, MITERED CORNERS, EXTRUDED HINGED DOOR, FLAT WHITE GLASS/ACRYLIC DIFFUSER, MOUNTED FLUSH WITH BOTTOM OF BEAM WITH SPECIAL WIREGUARD OVER DIFFUSER.
	HD-1 HD-2 HD-3	100 HG. 75 HG. WESTGHSE. "STYLE-TONE" 100W HG.	8"Φ X 10"D	LIGHTOLIER "3342J-A8"; PRESCOLITE "1227M"; SER.; MARCO "MD31216/99" SER.; HOLOCAST "C2719" SER.; PERFECLITE "DOWN-LITER" SERIES	RECESSED BLACK MULTI-GROOVE DOWNLIGHT, WITH BUILT-IN REFLECTORS, QUIET, REMOTE BALLAST PREWIRED ON MOUNTING ASSEMBLY. DITTO EXCEPT GASKETED WITH DAMP LABEL.
	HE-1	75 HG. WESTGHSE. "STYLE-TONE"	8"Φ X 12"H SEMI-REC.	LIGHTOLIER "MES-1932"; PRESCOLITE	SEMI-RECESSED DOWNLIGHT, BLACK MULTI-GROOVE INCLUDING BALLAST. ADAPT FOR CEILING MOUNT. SPECIAL CONSIDERATIONS FOR MAKING BALLAST QUIET.

LIGHTING NOTES — SPECIFIC

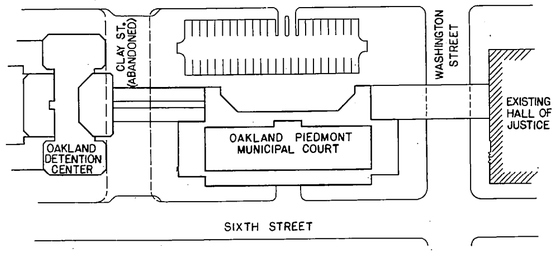
1. LIGHTING FIXTURE HOUSING SHALL BE MINIMUM 20 GAUGE DIE-FORMED STEEL. 22 GAUGE DIE-FORMED STEEL, CRIMPED TO ACHIEVE COMPARABLE RIGIDITY WILL BE CONSIDERED PROVIDED ACCEPTABLE LAB TESTS PROVING EQUIVALENCE ACCOMPANIES FIXTURE SUBMITTAL.
2. BALLAST SHALL BE THERMALLY PROTECTED "P" RATED, HPF, C&M CERTIFIED AND SHALL BEAR UL AND IBEW UNION LABELS AND SHALL BE 277V EXCEPT NOTED OTHERWISE.
3. LIGHTING FIXTURE DIFFUSER SHALL BE SET IN AN EXTRUDED ALUMINUM FRAME DOOR WITH CONCEALED HINGES.
4. DIFFUSER SHALL BE INJECTION MOLDED, CLEAR, PRISMATIC, VIRGIN ACRYLIC, .187 NOMINAL THICKNESS.
5. DIFFUSER SHALL BE .250" THICK HIGH IMPACT POLYCARBONATE WITH .125 ACRYLIC DIFFUSER IN BACK, OR SHALL BE 2 LAYERS OF CLEAR 1/8" 'HERCULITE' GLASS.
6. DIFFUSER SHALL BE INJECTION MOLDED, HIGH IMPACT, CLEAR, PRISMATIC, VIRGIN ACRYLIC, 1/8" NOMINAL THICKNESS.
7. FIXTURE IN OUTDOORS, IN KITCHEN, OR IN DAMP LOCATIONS SHALL BE DOUBLE GASKETED.

FIXTURE NOTES — GENERAL

1. FIXTURE SUPPLIER SHALL CONFIRM EXACT CEILING TYPE SUPPLIED IN EACH AREA AND SHALL FURNISH FIXTURES WITH TRIM TO MATCH THE CEILING.

* FIXTURES NOT USED IN COURTS BUILDING.

SEVENTH STREET



SIXTH STREET

③ KEY PLAN
NOT TO SCALE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

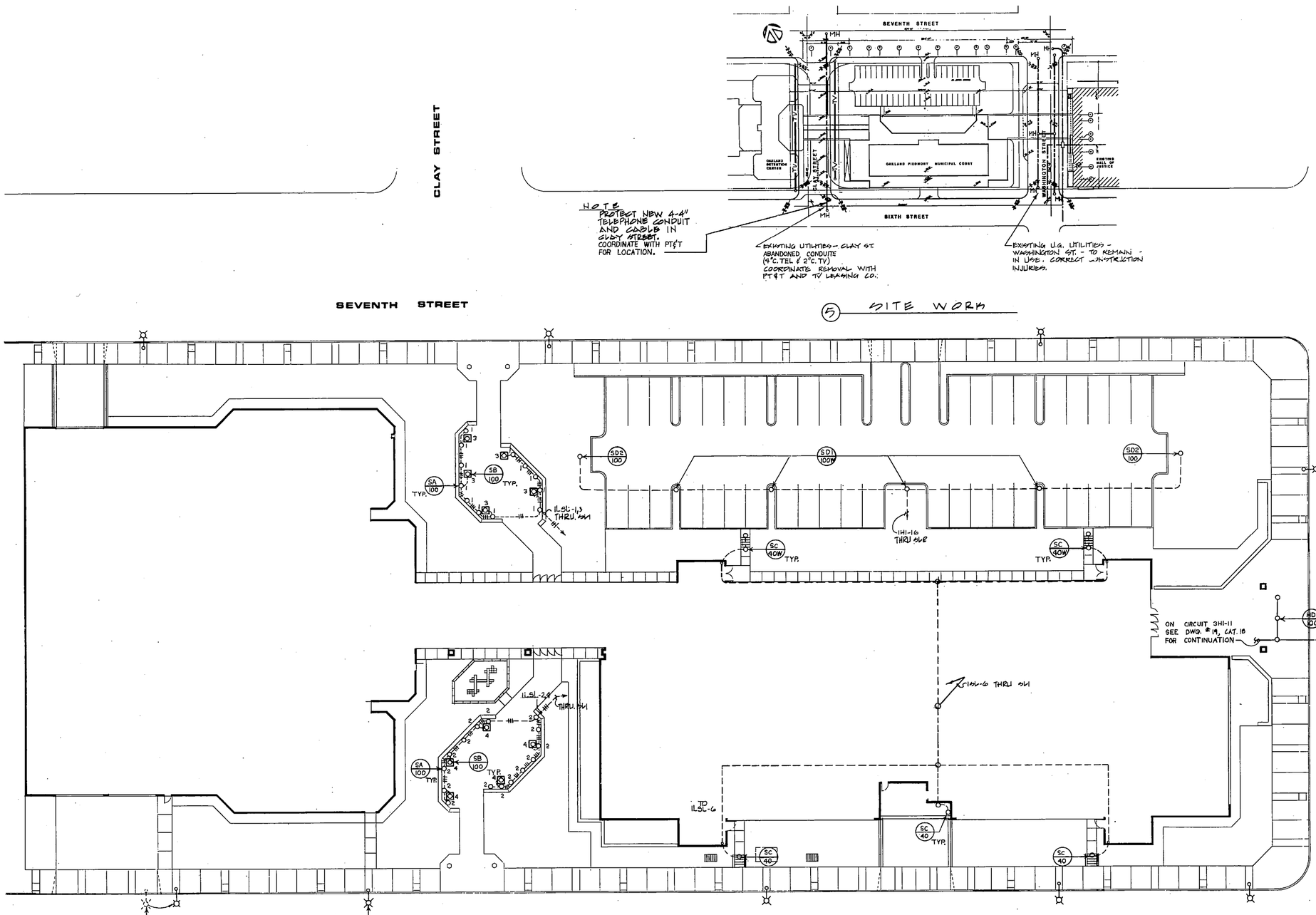
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 5-6-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

ELECTRICAL KEY PLAN, LEGEND AND SCHEDULES

DRAWING NUMBER 1-3
CATEGORY 18



NOTES:

1. REFER TO DRAWINGS 12B-13I FOR MOUNTING OF FIXTURES.
2. ALL WIRING TO BE RUN IN RIGID CONDUIT, MINIMUM 1" DIA.
3. HOME RUN WIRING TO BE #10 THWN.
4. DISCONNECT LUMINAIRE - REMOVE WIRING (MAINTAIN CIRCUIT) CUT CONDUITS BELOW STREET LEVEL & PLUG. PROVIDE ALL WORK REQ'D. TO INSURE OPERATION OF RELOCATED LUMINAIRE.

6

LIGHTING FIXTURE SCHEDULE

SKETCH	TYPE	ANSI LAMPS	SIZE	MFRS. CAT. NO.	DESCRIPTION
	SA	100A21/99 IF EXTENDED SERVICE 2500 HRS. (100W A21)		CROUSE-HINDS VXM 299 W/VM80 POLYCARBONATE GLOBE	CAST JUNCTION BOX WITH 3/4" CONDUIT HUBS, SCREW TYPE GLOBE & ONE 100W INCANDESCENT LAMP. REFER TO LANDSCAPE DETAIL #18 DRAWING # 20 FOR MOUNTING POSITION IN POURED CONCRETE WALL.
	SB	H388P-100/N, 100W, RAD STYLETONE (100W RAD HG.)		HUBBELL #532-MV2	FLUSH-MTD. MERC. VAPOR TREE UPLIGHT W/GALV. C.I. BALLAST BOX, CAST BRONZE FIXTURE BODY, IMPACT RESISTANCE GLASS LENS, MEDIUM BASE PORCELAIN SOCKET, CAST ALUM. BURIAL WELL GRILLE AND 9" DIA. TRANSITE BURIAL WELL WITH 120V MPF BALLAST.
	SC	40 IF T10		MC PHILBIN #93-04AE	INCANDESCENT STEPLIGHT W/CAST ALUM. BODY, CAST ALUM. FACEPLATE, WHITE OPAL GLASS LENS AND CAST ALUM. EXTERNAL SPLICE BOX. STEPLIGHT SHALL BE CAST IN FRONT FACE OF 9" STEP RISER, CENTERED ON RISER. COAT ALL EXTERNAL SURFACES OF FIXTURE BODY & SPLICE COMPARTMENT WITH 2 COATS OF ASPHALTUM COATING COMPOUND.
	SD1	H38-MP-100/N		MOLDCAST #3172-277V	MERC. VAPOR BOLLARD FIXTURE WITH EXTRUDED ALUM. 42" HIGH, 8-3/4" DIA., 5/32" WALL HOUSING W/MEDIUM BRONZE ANODIZED FINISH; 2/4" THICK CLEAR ACRYLIC WINDOW SECTION & SPECULAR ALZAK REFLECTOR. SYMMETRICAL LIGHT DISTRIBUTION. 120V BALLAST. MOUNT FIXTURE ON 10" DIA. CONCRETE FOUNDATION, TOP OF FOUNDATION FINISHED FLUSH W/GRADE. LOCATE FIXTURE CENTERED ON RADIUS OF CURB.

LIGHTING FIXTURE SCHEDULE

SKETCH	TYPE	ANSI LAMPS	SIZE	MFRS. CAT. NO.	DESCRIPTION
SEE SD1	SD2	H38MP-100/N		MOLDCAST #3176-30"-277V	SAME BASIC DESCRIPTION AS TYPE-SD1, EXCEPT FIXTURE TO HAVE DIRECTIONAL LIGHT DISTRIBUTION, INTEGRAL ALZAK SHIELD FOR 120° CUT-OFF AND 30" HIGH HOUSING. SET TOP OF FOUNDATION FLUSH W/GRADE LEVEL, 5'-6" BACK FROM FACE OF CURB.
	SE	H388P-100/N (100W, RAD HG.)			MERC. VAPOR DOWNLIGHT W/BLACK MILLIGROOVE BAFFLE. FIXTURE TO BE LABELED FOR DAMP LOCATION. MTG. FIXTURE BODY TO BE CAST ALUM. IF BRIDGE STRUCTURE IS POURED CONCRETE VERIFY BRIDGE CONSTRUCTION & SELECT FIXTURE TYPE. ALIGN FIXTURE WITH DOWNLIGHTS ON OPPOSITE SIDE (MAIN ENTRY TO COURTS BLDG.).
	SF	H38MP-100/N (100W, A23 HG.)			MERC. VAPOR DOWNLIGHT MTD. FLUSH IN CEILING ABOVE EMPLOYEE ENTRY DOOR. FIXTURE TO HAVE DAMP LOCATION LABEL AND OPEN GLASS DIFFUSER.

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

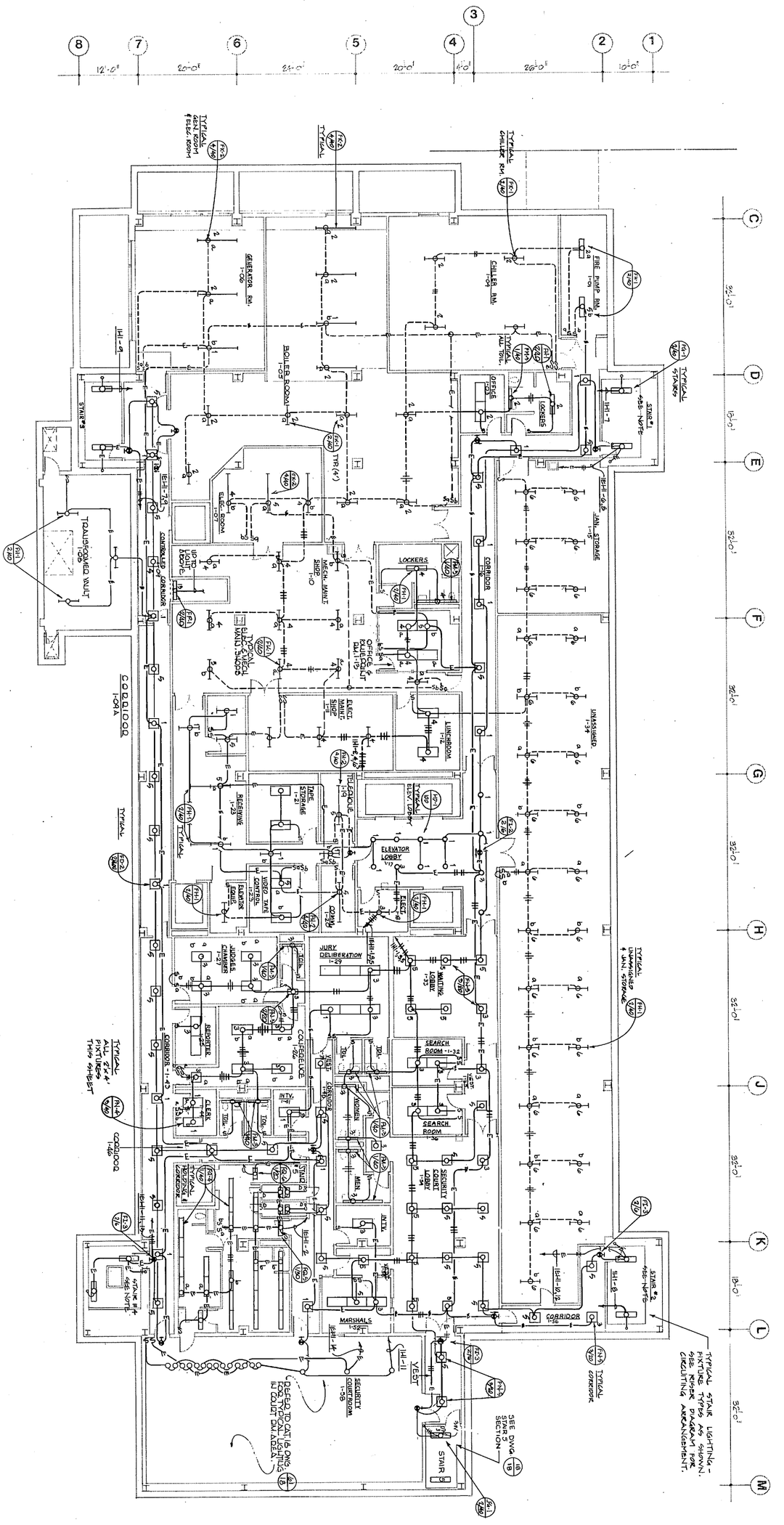
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

ELECTRICAL SITE LIGHTING

DRAWING NUMBER 4-6

CATEGORY 18



7 LEVEL 1 PLAN - LIGHTING

DRAWING NUMBER	7
CATEGORY	18

ELECTRICAL
LEVEL 1 PLAN
LIGHTING

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — LEONARD M. WAYMAN — ELECTRICAL — STATE OF CALIFORNIA

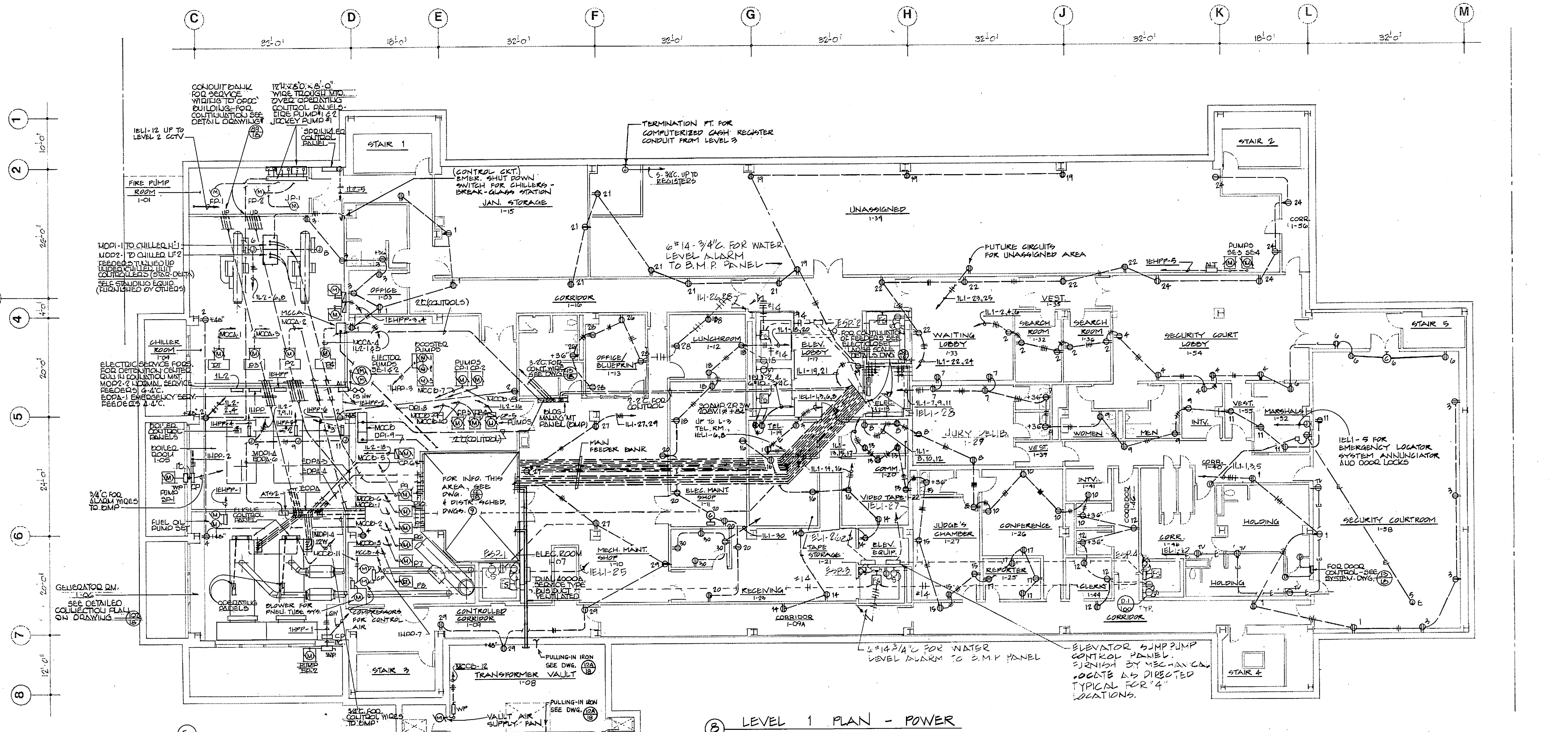
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

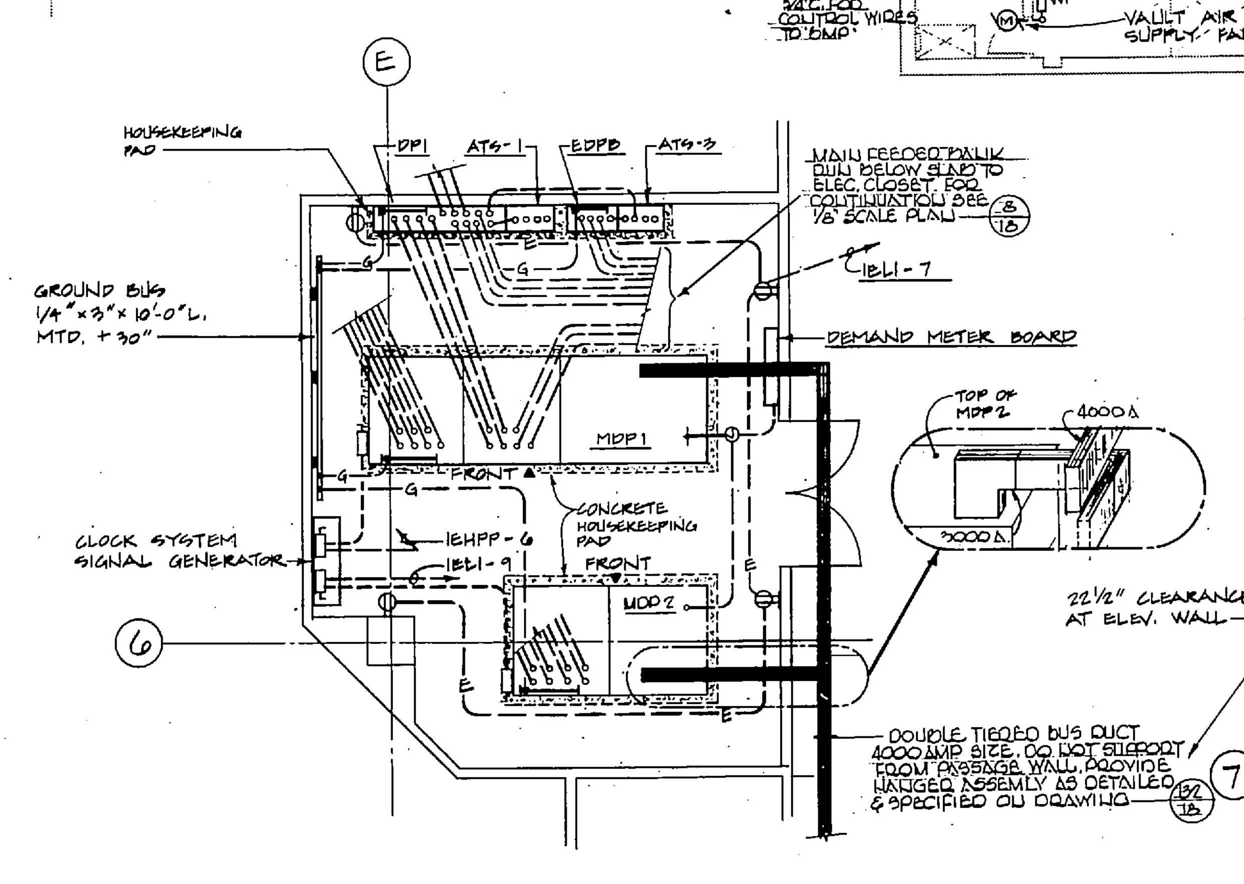
HOK
KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

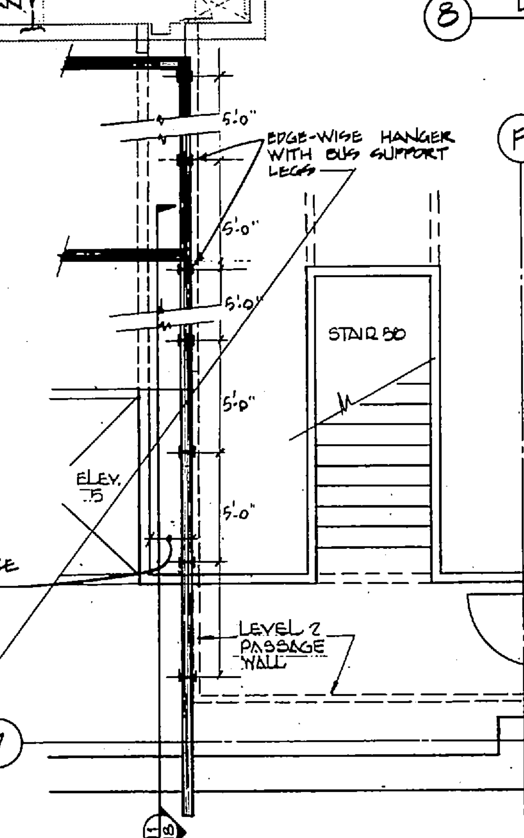
HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



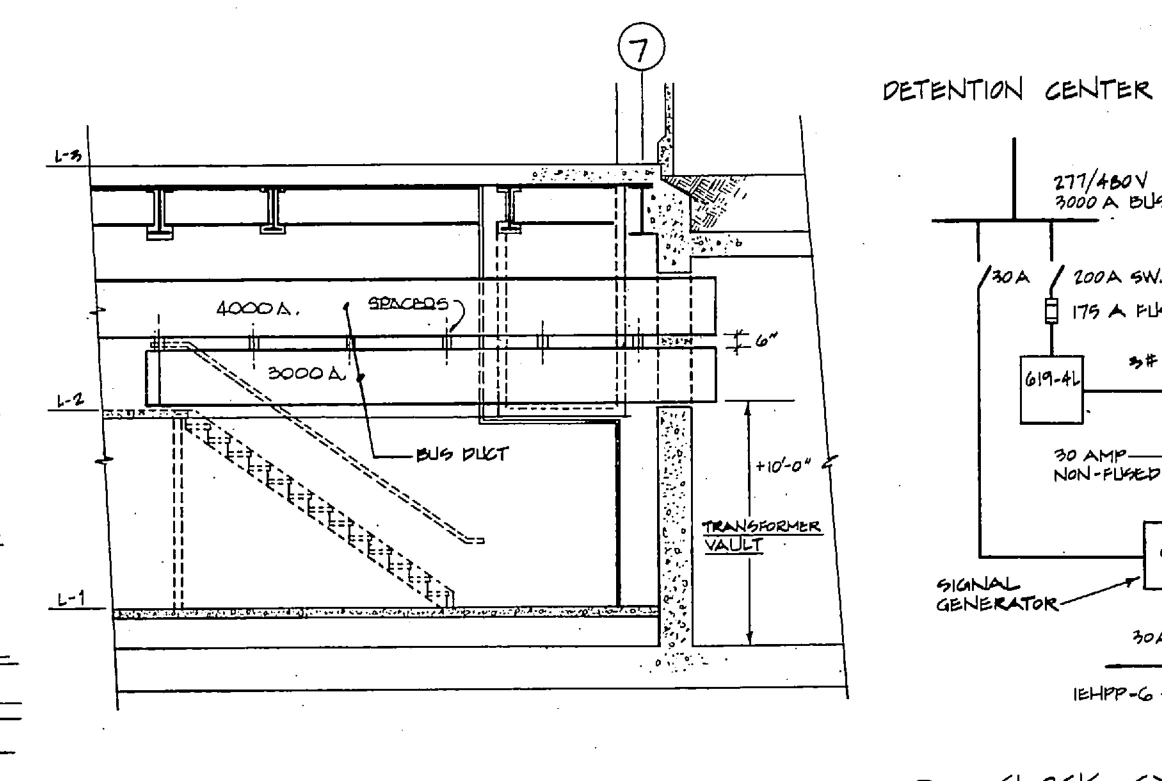
8 LEVEL 1 PLAN - POWER



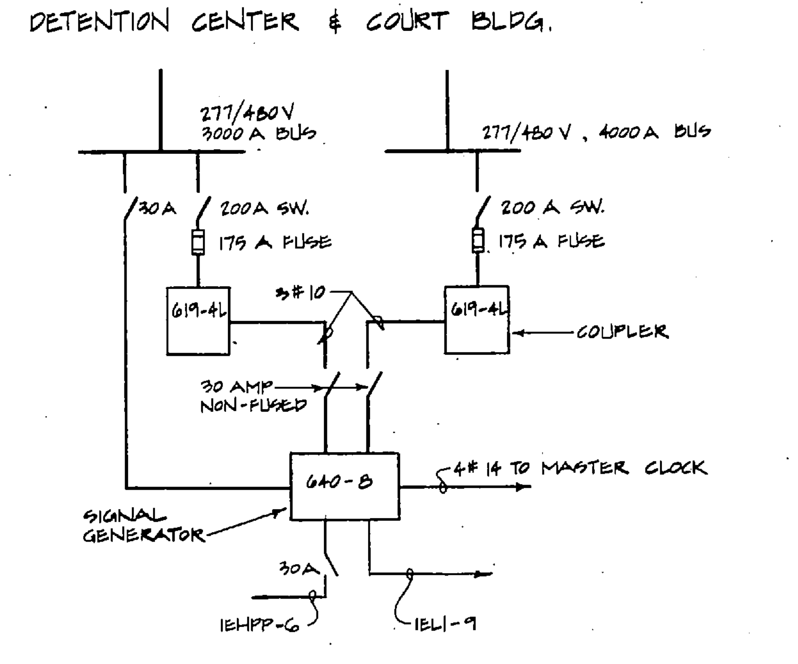
9 ELEC. ROOM 1-07
SCALE: 1/8"=1'-0"



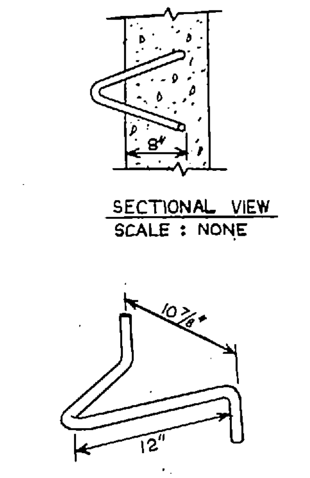
10 PART PLAN
SCALE: 1/8"=1'-0"



11 SECTION
SCALE: 1/8"=1'-0"



12 CLOCK SYSTEM CONTROL DIAGRAM
NOT TO SCALE



12A PULLING-IN IRON FOR TRANSFORMER VAULT
SCALE: NONE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

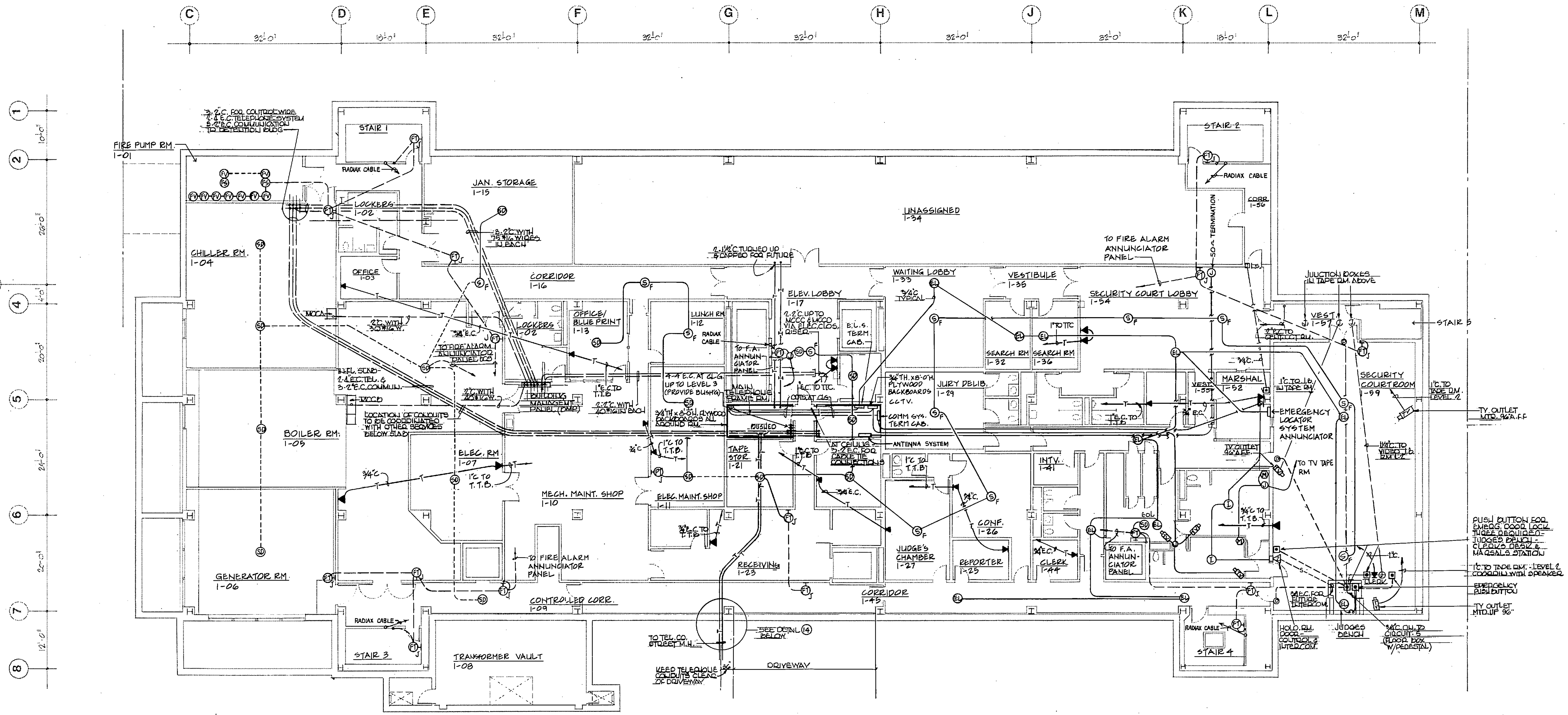
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER EDWARD M. WALKER ELECTRICAL STATE OF CALIFORNIA

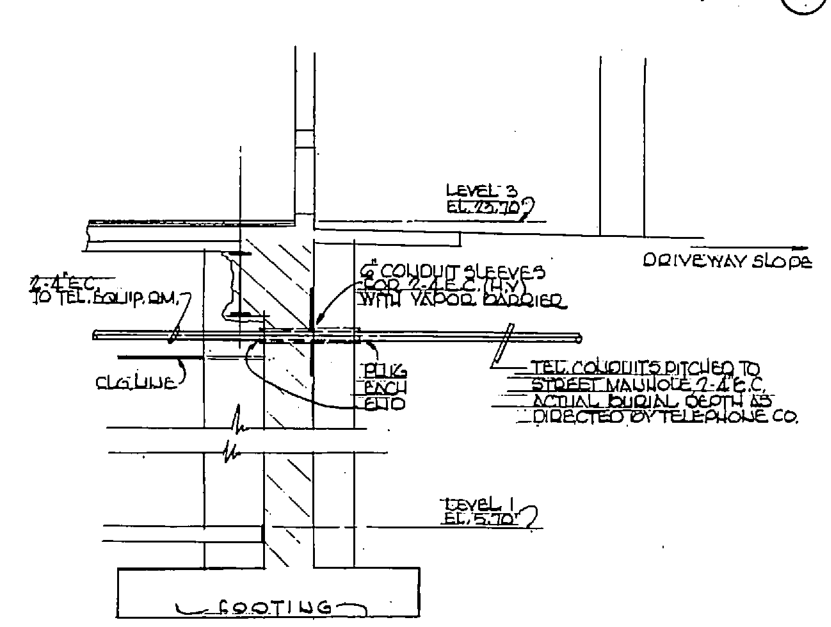
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7-4-77
REVISIONS BY DATE
1 2 3 4 5 6 7

ELECTRICAL
LEVEL 1 PLAN
POWER

DRAWING NUMBER 8-12A
CATEGORY 18



13 LEVEL 1 PLAN - SYSTEMS



14 INCOMING TELEPHONE SERVICE

NOT USED 15

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

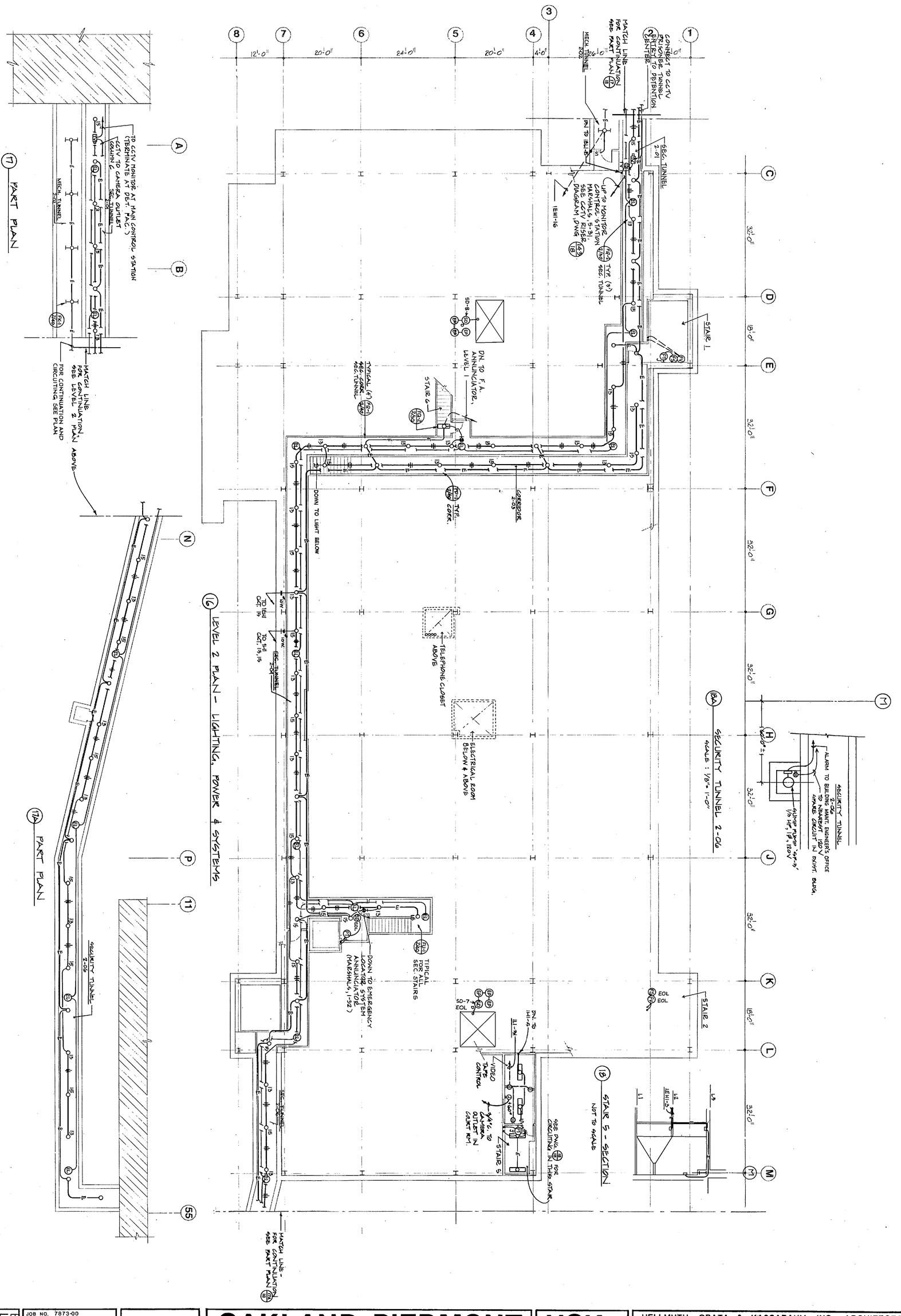
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER EDWARD M. WALKER ELECTRICAL STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7-4-77
REVISIONS BY DATE
1
2
3
4
5
6
7

ELECTRICAL
LEVEL 1 PLAN
SYSTEMS

DRAWING NUMBER 13-15
CATEGORY 18



17 PART PLAN

TO CCTV MONITOR AT MAIN CONTROL STATION (TERMINATE AT PAN & TILT)

CAMERA OUTLET

SEC. TUNNEL

MECH. TUNNEL 203

MATCH LINE FOR CONTINUATION SEE LEVEL 2 PLAN ABOVE

FOR CONTINUATION AND CIRCUITING SEE PLAN

16 LEVEL 2 PLAN - LIGHTING, POWER & SYSTEMS

11A PART PLAN

SECURITY TUNNEL 2-06

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER EDMUND M. WALKER ELECTRICAL STATE OF CALIFORNIA

DRAWING NUMBER 16-18A

CATEGORY 18

ELECTRICAL LEVEL 2 PLAN LIGHTING, POWER AND SYSTEMS

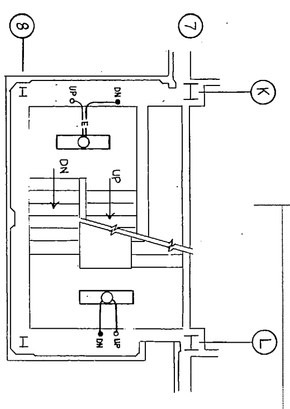
OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

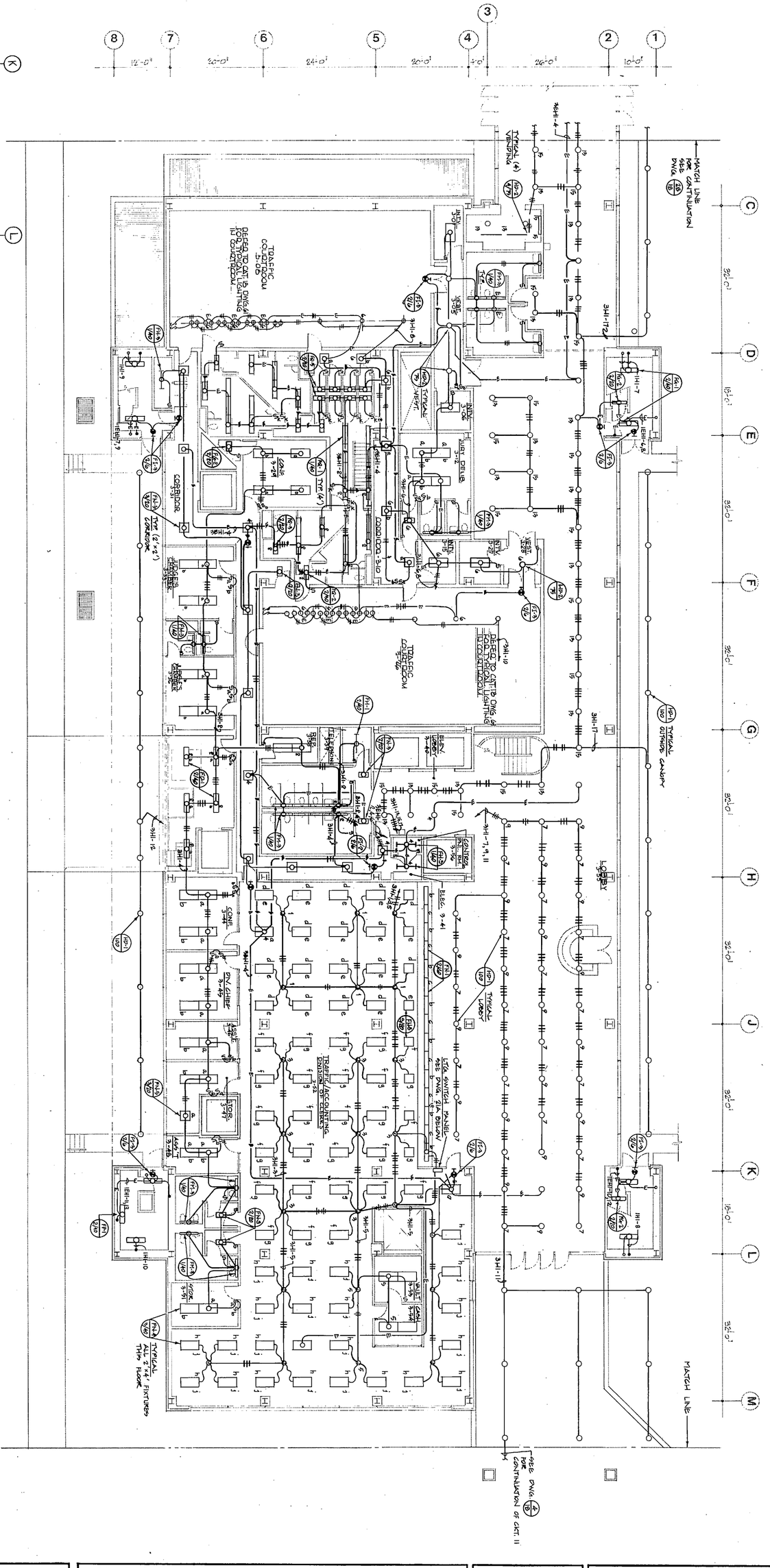
HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

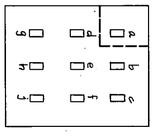


(20) STAIR NO. 4
LANDING BETWEEN
LEVELS 3 & 4



(19) LEVEL 3 PLAN - LIGHTING

(21A) LIGHTING SWITCH PANEL FOR TRAFFIC/ACCOUNTING DIVISION OF CLERKS AREA



(21) NOTE
1. LIGHTING IN OFFICE AREAS TO BE DIVIDED WITH HI-LO CONTROL LADDERED TO BE PROVIDED WITH HI-LO CONTROL AND SWITCHED AS FOLLOWS: FOR ALL 2'x4' 4 LAMP FIXTURES: 1 & 3 LAMPS ON ONE BALLAST, 2 & 4 LAMPS ON OTHER BALLAST. FOR ALL 1'x4' 2 LAMP FIXTURES: 1 LAMP ON ONE BALLAST, 2 LAMPS ON OTHER BALLAST. IN EACH FIXTURE SWITCHED TO CENTER, THIRD LAMP WIRED AND SWITCHED WITH THIRD LAMP IN ADJACENT FIXTURE & SWITCHED TO LOW LEVEL.

DRAWING NUMBER	19-21	
CATEGORY	18	

ELECTRICAL
LEVEL 3 PLAN
LIGHTING

JOB NO. 7873-00		
DRAWN BY		
CHECKED BY		
DATE 7-4-77		
REVISIONS	BY	DATE
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER EDWARD M. KAZANJIAN ELECTRICAL STATE OF CALIFORNIA

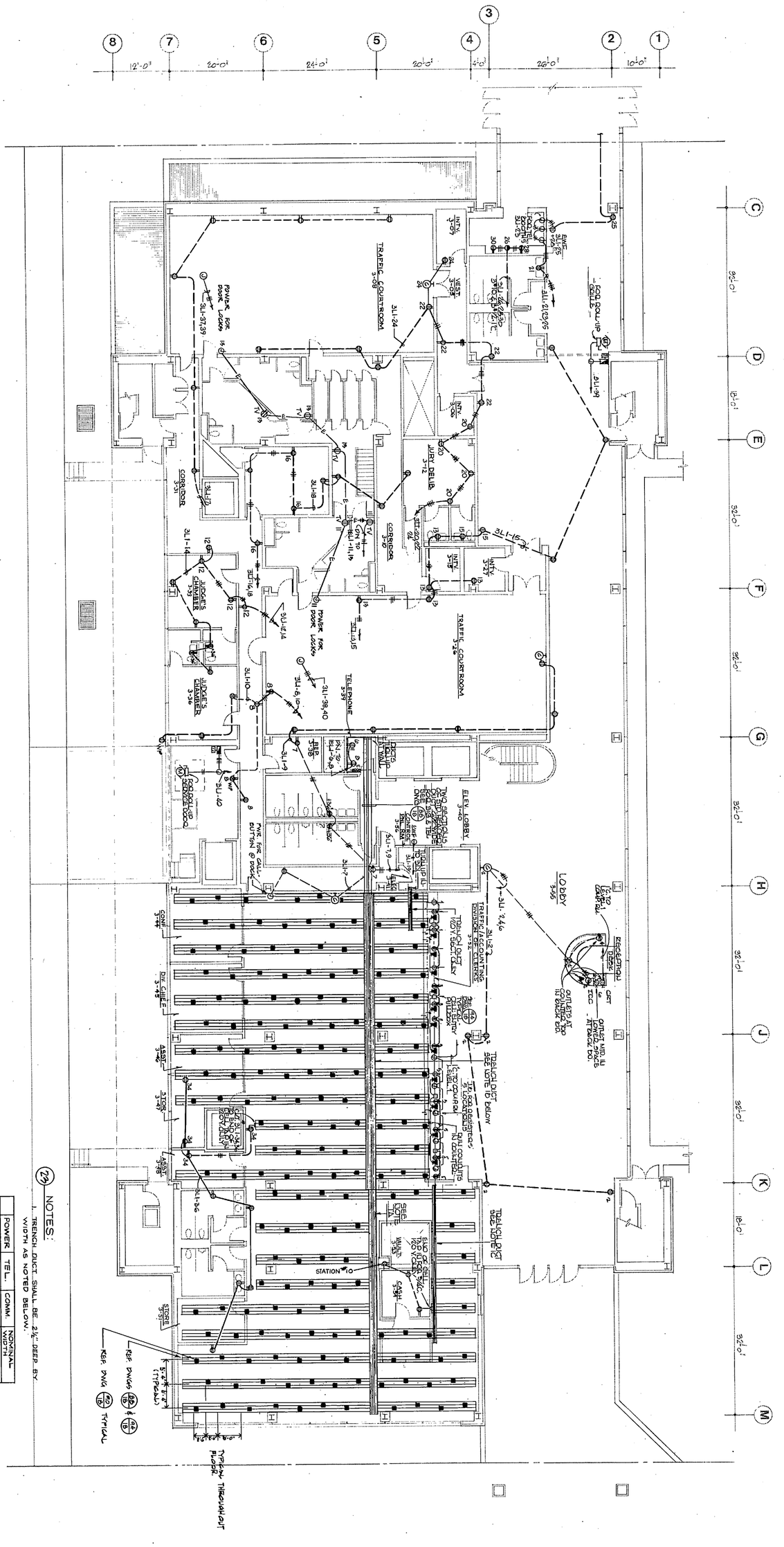
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



(22) LEVEL 3 PLAN - POWER

(22) NOTES:

1. TRENCH DUCT SHALL BE 2½" DEEP. BY WIDTH AS NOTED BELOW.

	POWER	TEL.	COMM.	NOMINAL WIDTH
A	3	9	3½	18
B	3	16	5½	27
C	12	24	12	9

2. SEE NOTES ON 5TH LEVEL DWG (22/E8)

3. FLOOR SLAB ON LEVEL 3 IS 6½" THICK.

NOT USED 24

DRAWING NUMBER	22-24		
CATEGORY	18		

ELECTRICAL
LEVEL 3 PLAN
POWER

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER EDWARD W. WEAVER STATE OF CALIFORNIA

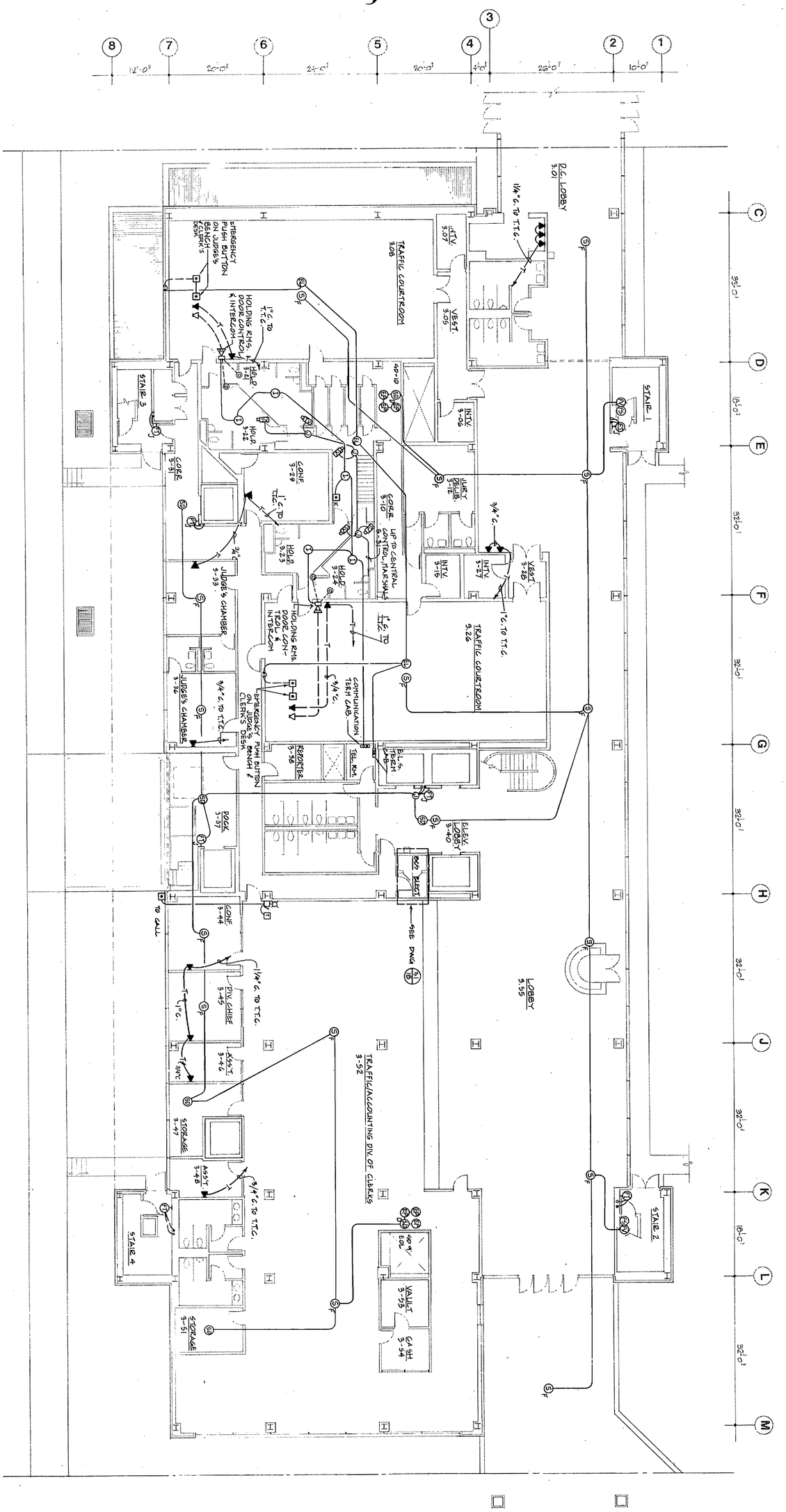
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



(15) LEVEL 3 PLAN - SYSTEMS

NOT USED 26-27

DRAWING NUMBER	25-27
CATEGORY	18

ELECTRICAL LEVEL 3 PLAN SYSTEMS

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	2-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER EDWARD M. WALSH ELECTRICAL STATE OF CALIFORNIA

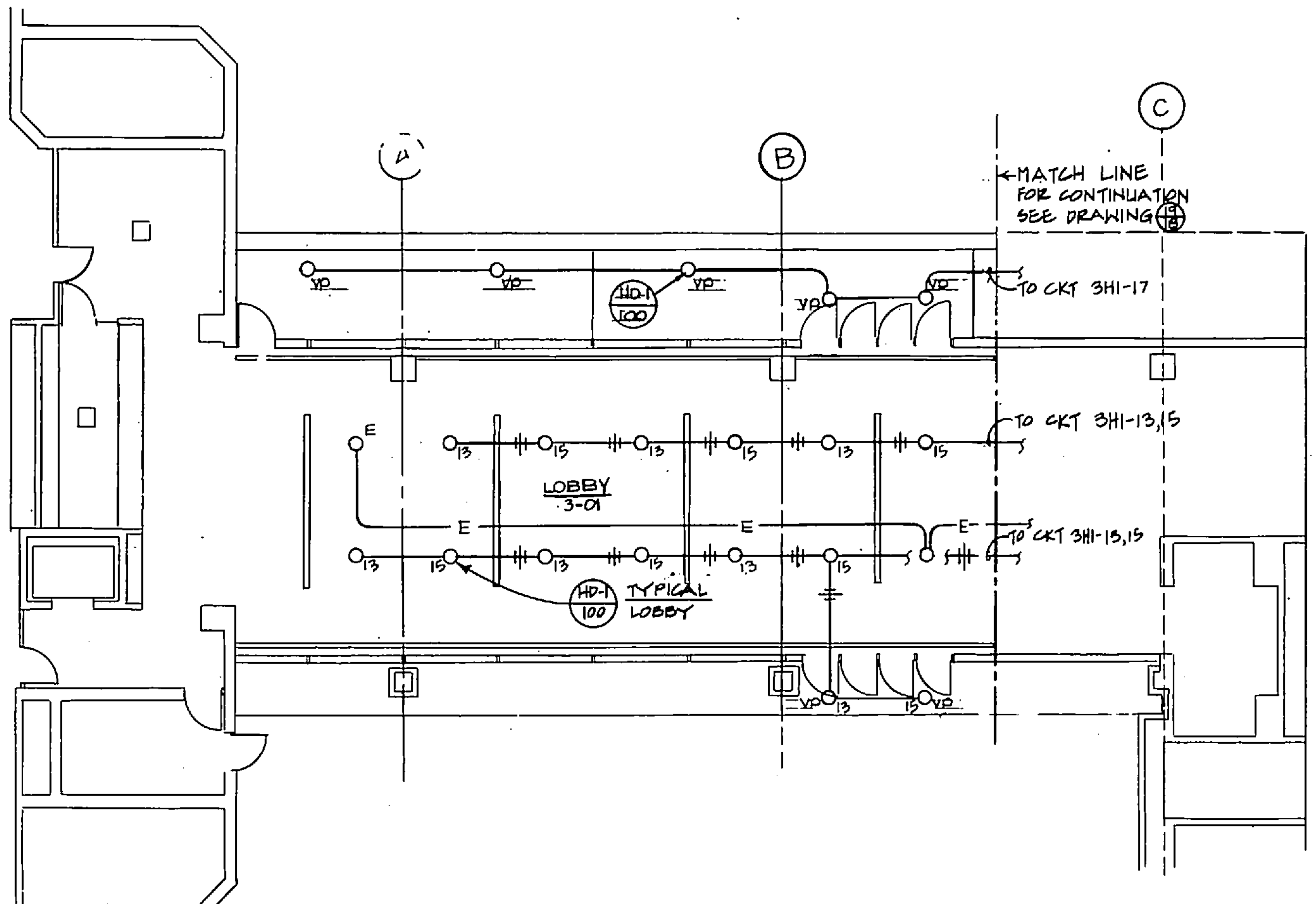
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

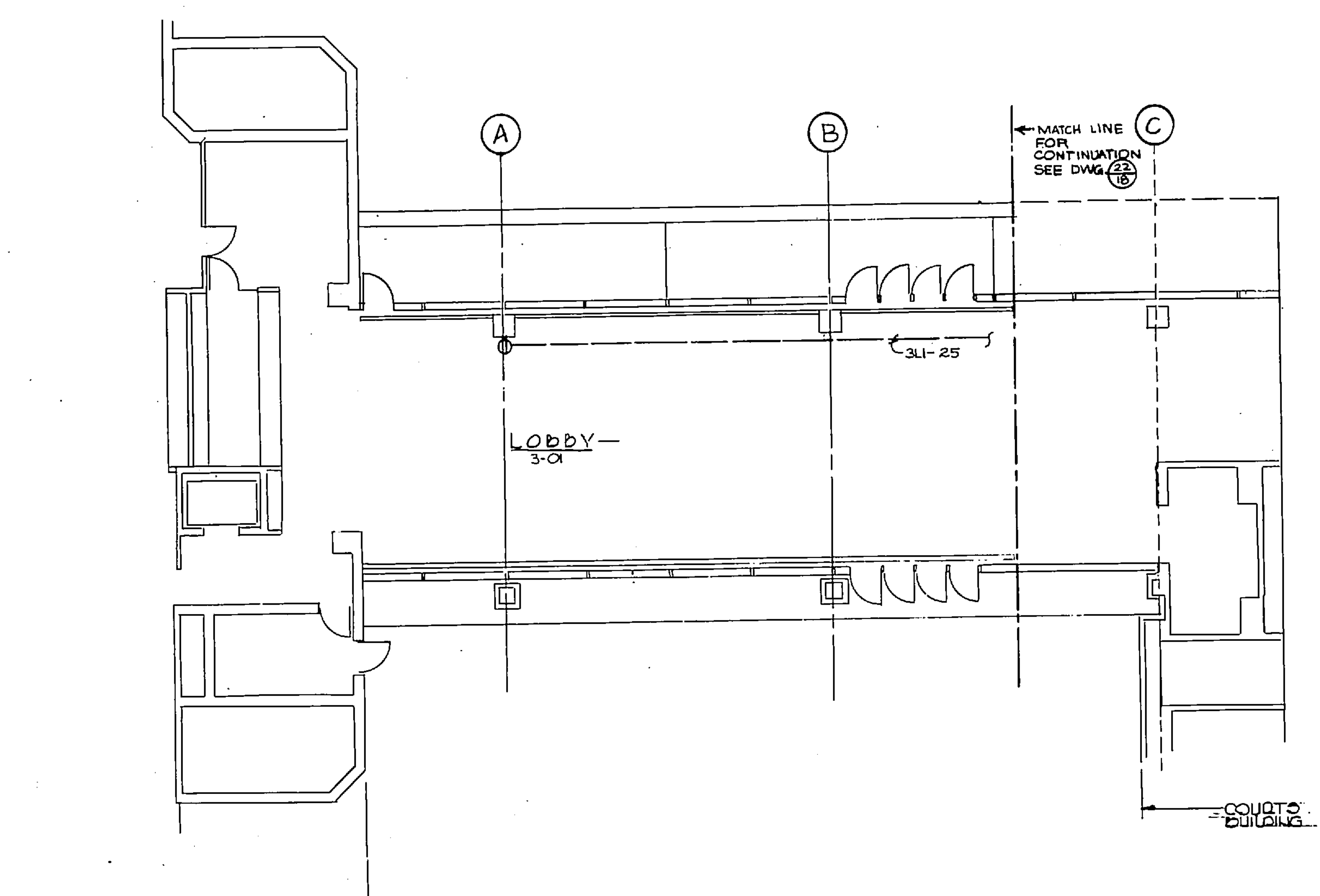
HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

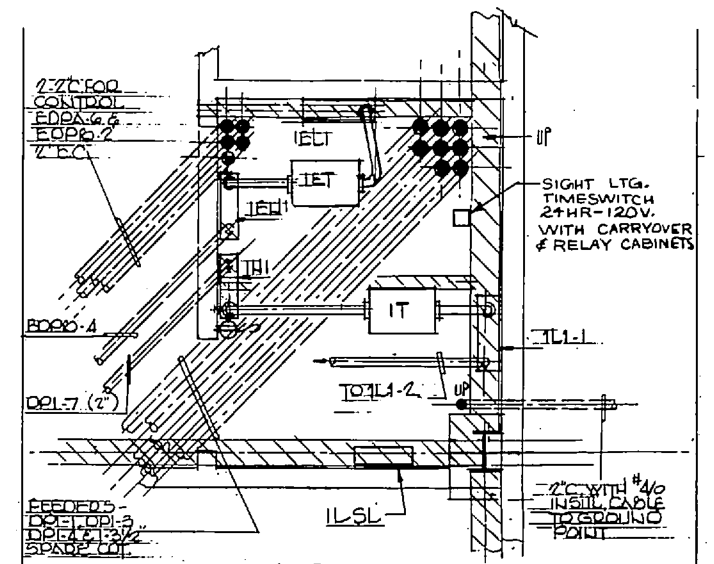
HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



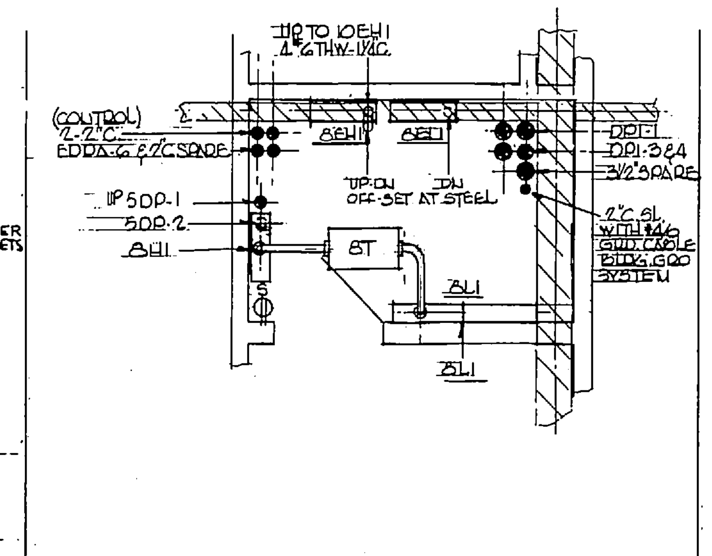
28/18 LEVEL 3 PLAN LIGHTING



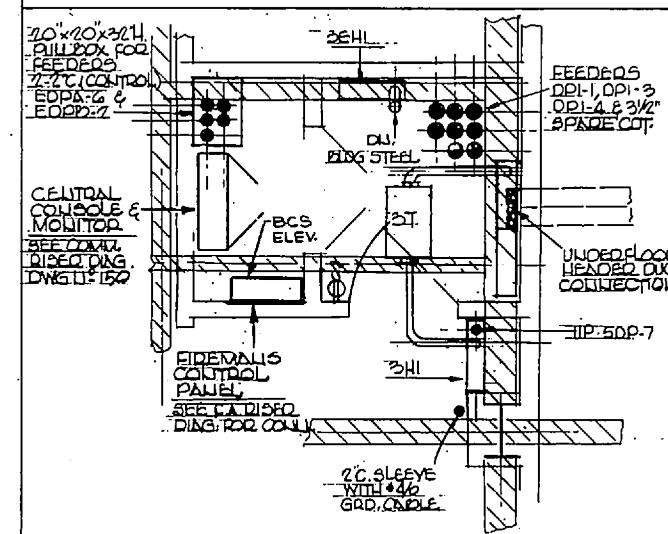
29/18 LEVEL 3 PLAN POWER & SYSTEMS



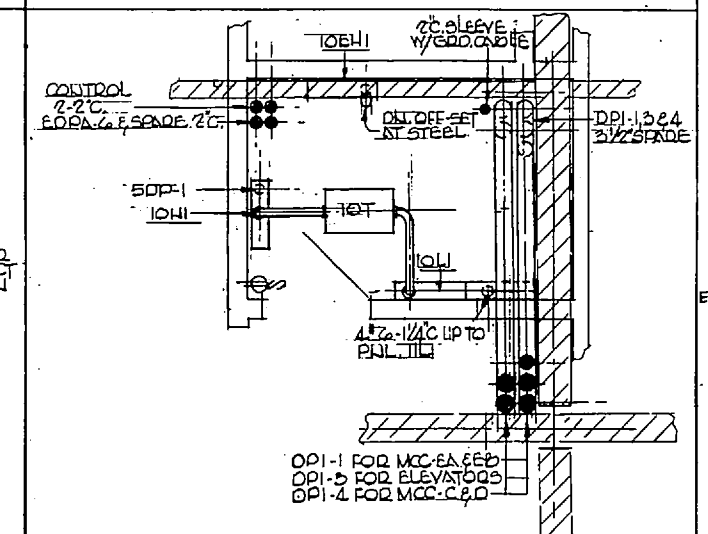
30/18 ELEC. ROOM - LEVEL 1
SCALE : 3/8" = 1'-0"



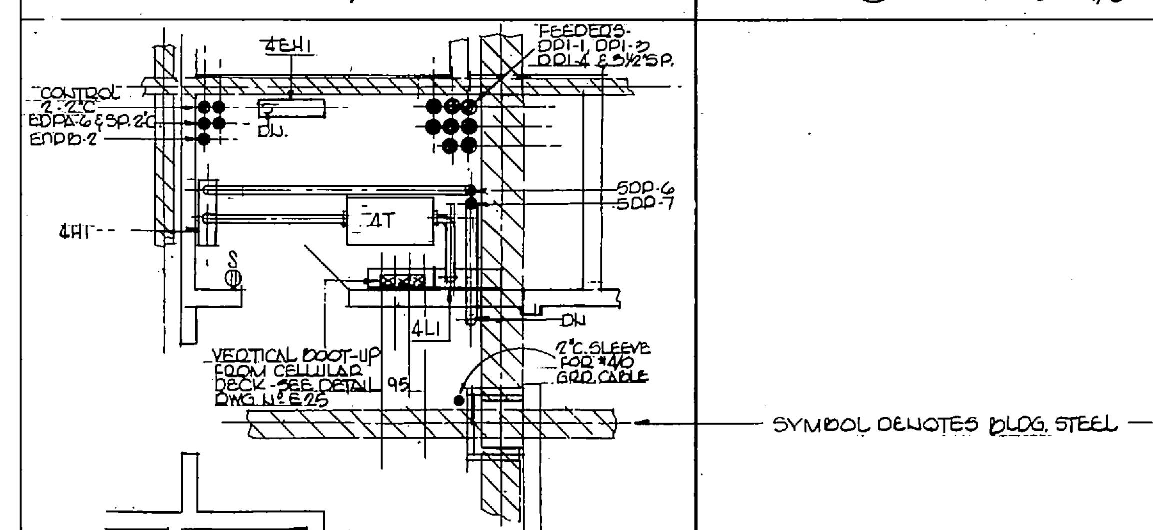
35/18 ELEC. ROOM - LEVEL 8
SCALE : 3/8" = 1'-0"



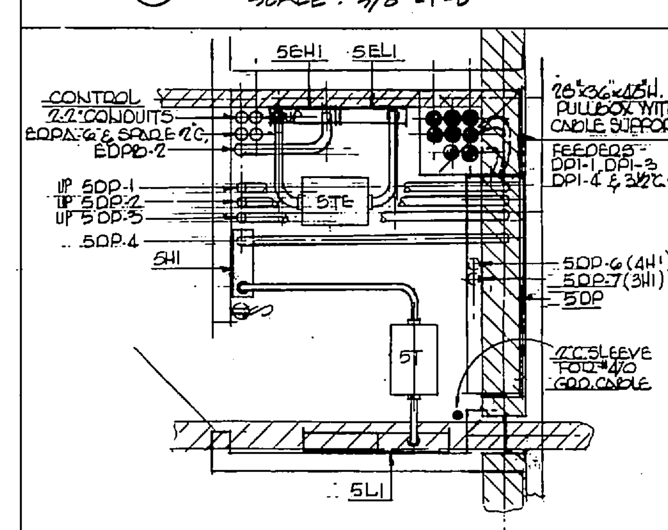
31/18 ELEC. ROOM - LEVEL 3
SCALE : 3/8" = 1'-0"



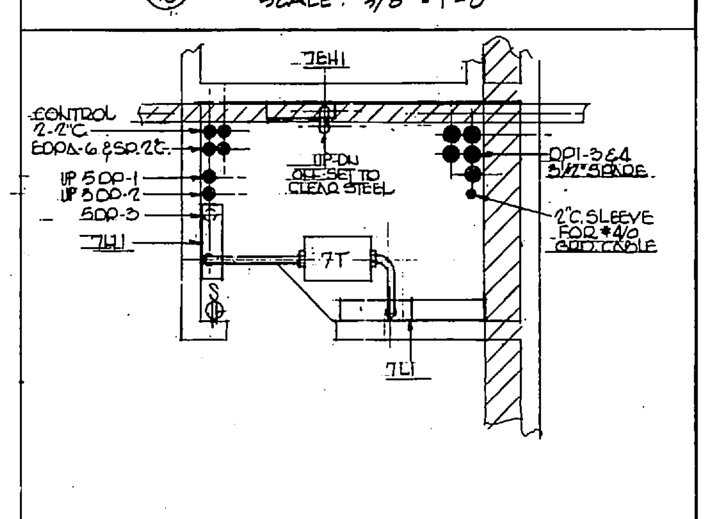
36/18 ELEC. ROOM - LEVEL 10
SCALE : 3/8" = 1'-0"



32/18 ELEC. ROOM - LEVEL 4
SCALE : 3/8" = 1'-0"



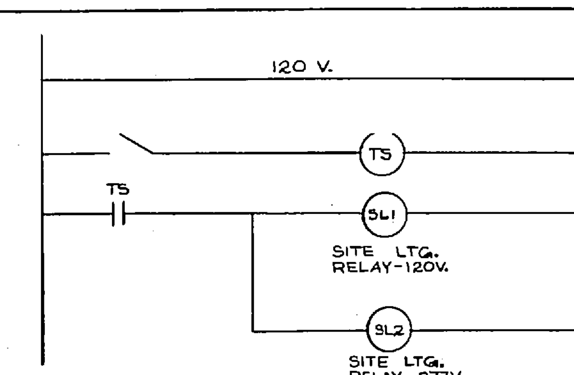
33/18 ELEC. ROOM - LEVEL 5
SCALE : 3/8" = 1'-0"



34/18 ELEC. ROOM - LEVEL 7
SCALE : 3/8" = 1'-0"

36A/18 NOTE

1. CONDUIT CONNECTIONS TO PANELBOARDS, TRANSFORMERS AND CONTROLLERS REQUIRE FLEXIBLE CONDUIT LINKS, LENGTHS TO SUIT.
2. PROVIDE SUITABLE GROUND CABLE TAP PROVISIONS IN ELEC. CLOSETS ON EACH LEVEL. COMPLETE ALL GROUND CONNECTIONS TO ALL ELECTRICAL EQUIPMENT SERVING ELECTRICAL SYSTEM THRU-OUT BLDG.
3. ALL GENERAL PURPOSE TRANSFORMERS LOCATED IN ELEC. CLOS. ARE 3φ DRY TYPE 480/120/208 VOLT UNITS. SIZES 75 KVA AND LARGER TO BE FLOOR MOUNTED, SMALLER UNITS TRAPEZE MTD. ON APPROVAL OF ARCHITECT.



36B/18 SITE LIGHTING CONTROL ELEMENTARY WIRING DIAGRAM

36C/18 ELECTRICAL ABBREVIATIONS

J.B.	JUNCTION BOX
P.T.&T.	PACIFIC TELEPHONE AND TELEGRAPH
MIN.	MINIMUM
O.L.	OVER LOAD
C.O.	CONDUIT ONLY
P.C.	PULL CHAIN
W.P.	WEATHER PROOF
X.P.	EXPLOSION PROOF
MFR(S).	MANUFACTURER(S).
CAT.	CATALOG/CATEGORY
GA.	GAUGE
GALV.	GALVANIZED
ST.	STREET
CO.	COMPANY
MH.	MANHOLE
U.G.	UNDERGROUND
DIA.	DIAMETER
THWN.	
MT./MTD.	MOUNT/MOUNTED
MERC., Hg.	MERCURY
DWG.	DRAWING
TYP.	TYPICAL
EXIST.	EXISTING
LTG.	LIGHTING
ALUM.	ALUMINUM
HPF.	HIGH POWER FACTOR
MTG.	MOUNTING
BLDG.	BUILDING
GEN.	GENERATOR
RM.	ROOM
ELEC./ELECT.	ELECTRICAL
MECH.	MECHANICAL
MAINT.	MAINTENANCE
JAN.	JANITOR
STOR.	STORAGE
EQUIP.	EQUIPMENT
COMM.	COMMUNICATION
ELEV.	ELEVATOR
VEST.	VESTIBULE
NO.	NUMBER
PNEU.	PNEUMATIC
SYS.	SYSTEM
MGMT.	MANAGEMENT
PNL.	PANEL
BMS.	BUILDING MANAGEMENT SYSTEM
SERV.	SERVICE
FDRS.	FEEDERS
CCTV.	CLOSED CIRCUIT TELEVISION
PT.	POINT
E, EM, EMER./EMERG.	EMERGENCY
AMP.	AMPERE/AMPLIFIER
TEL.	TELEPHONE
INTV.	INTERVIEW
SW.	SWITCH
E.C.	EMPTY CONDUIT
T.T.B.	TELEPHONE TERMINAL
F.A.	FIRE ALARM
CLG.	CEILING
DN.	DOWN
SEC.	SECURITY/SECONDARY
CKT.	CIRCUIT
REP.	REPORTER
DIV.	DIVISION
ASS'T.	ASSISTANT
DELIB.	DELIBERATION
BD.	BOARD
EWF.	ELECTRIC WATER FOUNTAIN
V.	VOLT
COMP.	COMPUTER
STD.	STANDARD
C./COND./CDT.	CONDUIT
CRT.	
ICC.	
D.C.	DETENTION CENTER
CORR.	CORRIDOR
TERM.	TERMINAL
CAB.	CABINET
GRD./GND./GRND.	GROUND
INSUL.	INSULATED
THW.	
CLOS./CLO.	CLOSET
DIAG.	DIAGRAM
CONN.	CONNECTION
SUPV.	SUPERVISOR
WIT.	WITNESS
D.A.	DISTRICT ATTORNEY
S.D.D.A.	SENIOR DEPUTY, DISTRICT ATTORNEY
CONF.	CONFERENCE
EVID.	EVIDENCE
SQ.	SQUARE
FT.	FOOT
RECEPT.	RECEPTACLE
REQ'D.	REQUIRED
DUP.	DUPLICATE
MS.	MASKING SOUND
℄.	CENTER LINE
φ.	PHASE
F.T.	FIRE TELEPHONE
LT.	LIEUTENANT
T.V.	TELEVISION
REFRIG.	REFRIGERATOR
DIR.	DIRECTOR
TOIL.	TOILET
CU.	COPPER
MCM.	THOUSAND CIRCULAR MILS
BCW.	BARE COPPER WIRE
C.W.	COLD WATER
AFF.	ABOVE FINISHED FLOOR
DIM.	DIMENSION
U.F.	UNDERFLOOR
T.	TELEPHONE
P.	POWER
T./S.	TELEPHONE/SYSTEMS
O.D.	OUTSIDE DIAMETER
TH.	THICK
N.E.C.	NATIONAL ELECTRIC CODE
O.C.	ON CENTER
EMT.	ELECTRICAL METALLIC TUBING
FIN. FL.	FINISHED FLOOR
SIM.	SIMILAR
OPP.	OPPOSITE
FMC.	FLEXIBLE METAL CONDUIT
F.O.R.	FUEL OIL RETURN
F.O.S.	FUEL OIL SUPPLY
KW.	KILOWATT
BRKR.	BREAKER
V.P.	VAPOR PROOF
GYP. BD.	GYPSUM BOARD
INFO.	INFORMATION
APPROX.	APPROXIMATE
ACOUS.	ACOUSTICAL
ACCORD.	ACCORDANCE
FURN.	FURNISHED
MDP.	MAIN DISTRIBUTION PANEL
EDP.	EMERGENCY DISTRIBUTION PANEL
MCC.	MOTOR CONTROL CENTER
FIX.	FIXTURE
DP.	DISTRIBUTION PANEL
EG.	EMERGENCY GENERATOR
XFORMER.	TRANSFORMER
ATS.	AUTOMATIC TRANSFER SWITCH
NEUT.	NEUTRAL
GF.	GROUND FLOOR
P.G.&E.	PACIFIC GAS AND ELECTRIC
SH.	SHIELDED
TW.	TWISTED
EOL.	END OF LINE RESISTOR
MHZ.	MEGAHERTZ
MISC.	MISCELLANEOUS
TEMP.	TEMPERATURE
C.T.	COOLING TOWER
CH.	CHILLER/CHILLED
START.	STARTER
COND.	CONDENSER
PWR.	POWER
H.P.	HORSEPOWER
FR.	FRAME
DISC.	DISCONNECT
PRI.	PRIMARY
EA.	EACH
C.T.	CURRENT TRANSFER
F.L.	FULL LOAD
N./NOR.	NORMAL
SPEC.	SPECIFICATION
QT'Y.	QUANTITY
EXH.	EXHAUST
HTR.	HEATER
ELS.	EMERGENCY LOCATOR SYSTEM
AM.	AMMETER
VM.	VOLTMETER
V.U.	
G.F.I.C.B.	
MAX.	MAXIMUM

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

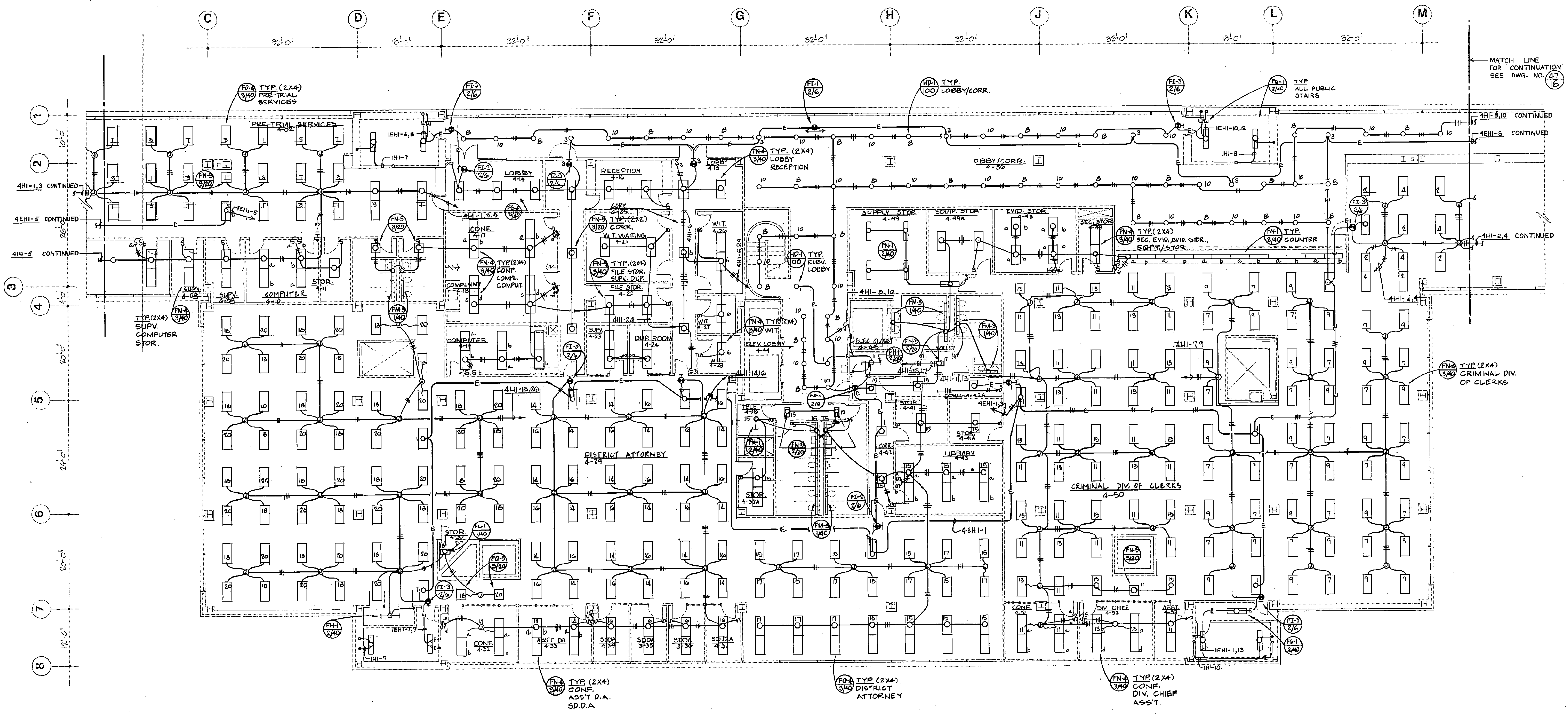
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7-4-77
REVISIONS 1 2 3 4 5 6 7 BY DATE

ELECTRICAL
LEVEL 3 PLAN
LTG., PWR., SYS.
AND DETAILS

DRAWING NUMBER 28-36
CATEGORY 18



(37) LEVEL 4 PLAN - LIGHTING

(38) LIGHTING

LIGHTING IN OFFICE AREAS 1000# AND LARGER TO BE PROVIDED WITH 'HI-LO' SWITCHING CONTROL.
a) USE ONE & TWO LAMP BALLASTS (FOR ALL 2'x4' 3 LAMP FIXTURES) WIRED AS FOLLOWS.
b) TWO LAMPS IN EACH FIXTURE SWITCHED TOGETHER. THIRD LAMP WIRED & SWITCHED WITH THIRD LAMP IN ADJACENT FIXTURE AND NOW SWITCHED FOR LO-LEVEL.

NOT USED 39

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

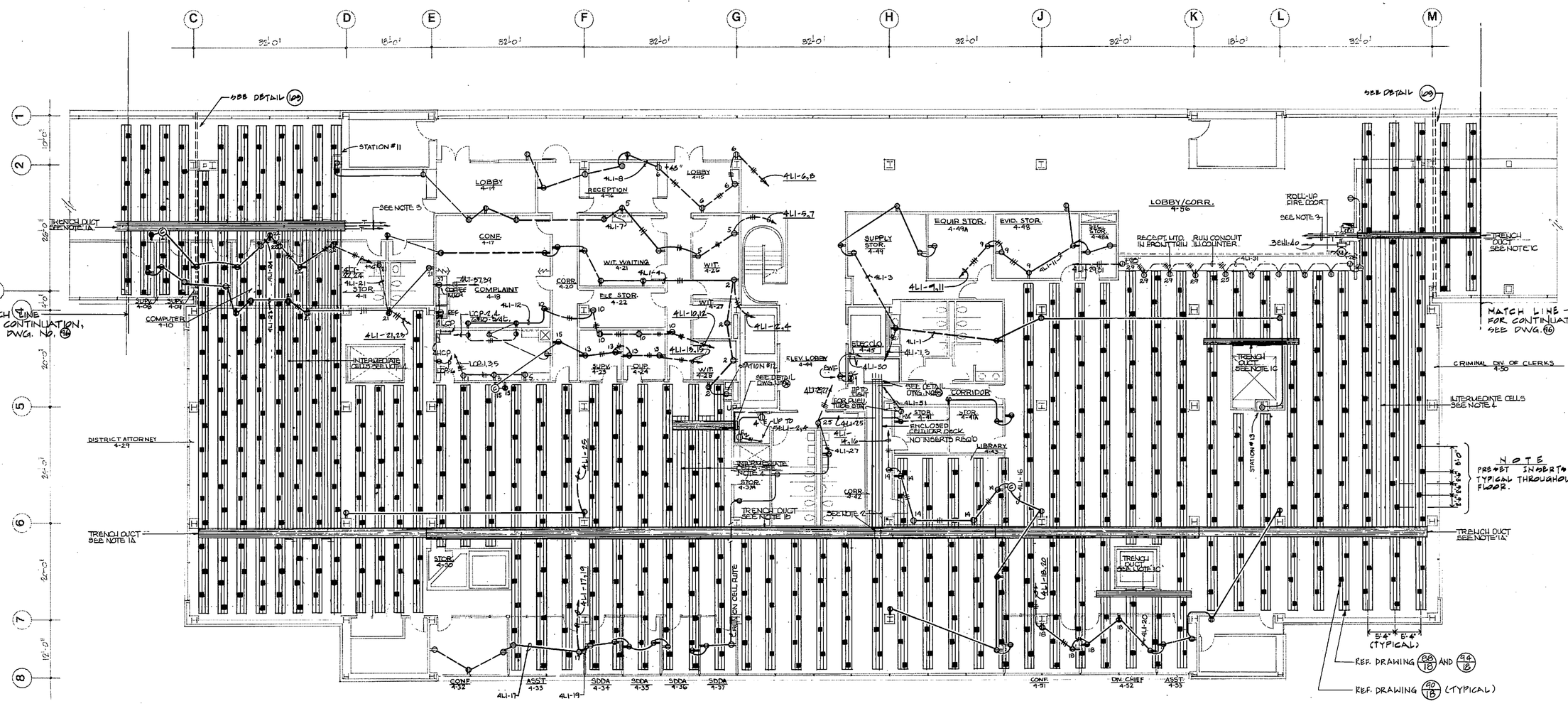
OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 2-4-77
REVISIONS BY DATE

ELECTRICAL
LEVEL 4 PLAN
LIGHTING

DRAWING NUMBER 37-39
CATEGORY 18



40 LEVEL 4 PLAN - POWER

41 NOTES:

1- TRENCH DUCT SHALL BE 2½" DEEP BY WIDTH AS NOTED BELOW

	POWER	TEL.	COMM.	NOMINAL WIDTH
A	3	11	7½	24
B	3	18	3½	27
C	3	5	4½	15
D	—	—	—	—

2- PROVIDE 2-3/4" Ø GROUND HOLES IN TRENCH DUCT (POWER SECTION) ACTIVATING 2 CELLS FOR 120 VOLT CIRCUITS TO ELEC. CLOSET. NO INSERTS REQUIRED.

3- TRENCH DUCT RELIEF CONDUITS - RUN IN CEILING BELOW PROVIDE 2-1½" CONDUITS (1 TEL., 1 SIGNAL) TO 'A' & 'C' FOR POWER (WEST BRIDGE) TO RESPECTIVE CLOSETS PROVIDE 2-2" CONDUITS (1 TEL., 1 SIGNAL) AND 1-1¼" FOR POWER (EAST BRIDGE) TO RESPECTIVE CLOSETS.

4- ENCLOSED INTERMEDIATE CELL SECTIONS AS SHOWN. NO INSERTS REQUIRED.

5- PROVIDE REQUIRED HARDWARE AND DEVICES TO ELECTRIFY PRESET INSERTS (BOTH HIGH & LOW TENSION FITTINGS) LOCATIONS TO BE DETERMINED BY ARCHITECT.
a) FURNISH ONE 120 VOLT DUPLEX RECEPTACLE (5262) (GROUNDED TYPE) PER 100 SQ. FT.
b) FURNISH ONE TELEPHONE/SIGNAL OUTLET PER 150 SQ. FT.

NOT USED 42

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT FACILITIES

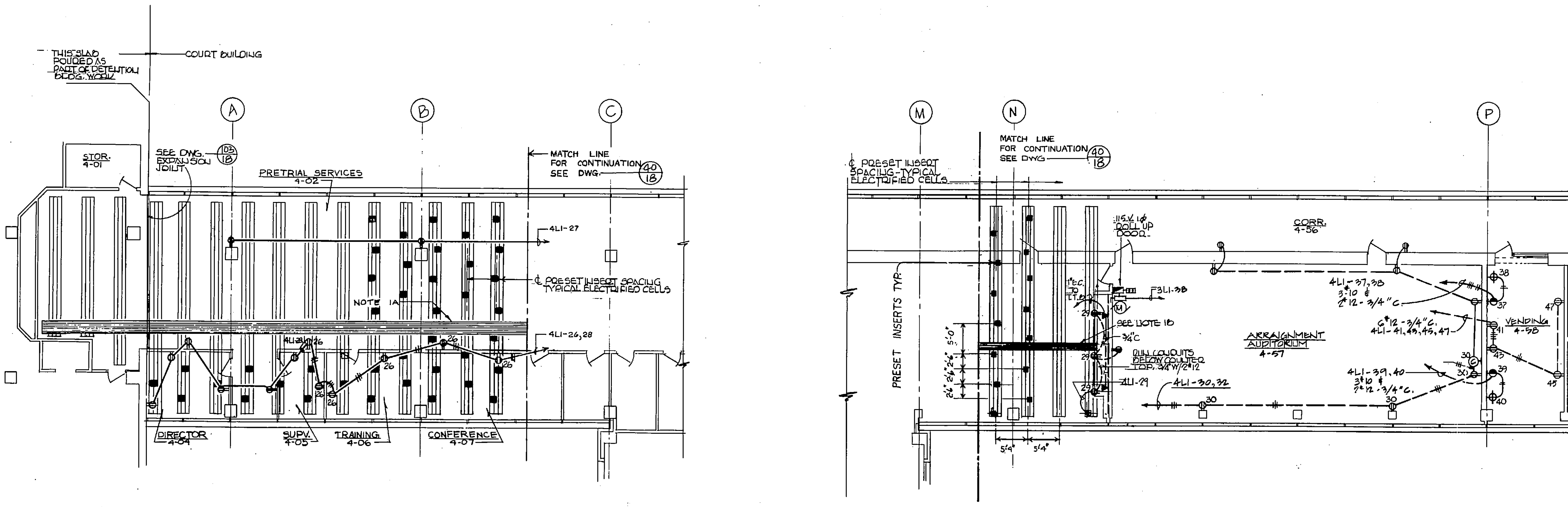
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — EDWARD H. MAKER — CIVIL — STATE OF CALIFORNIA

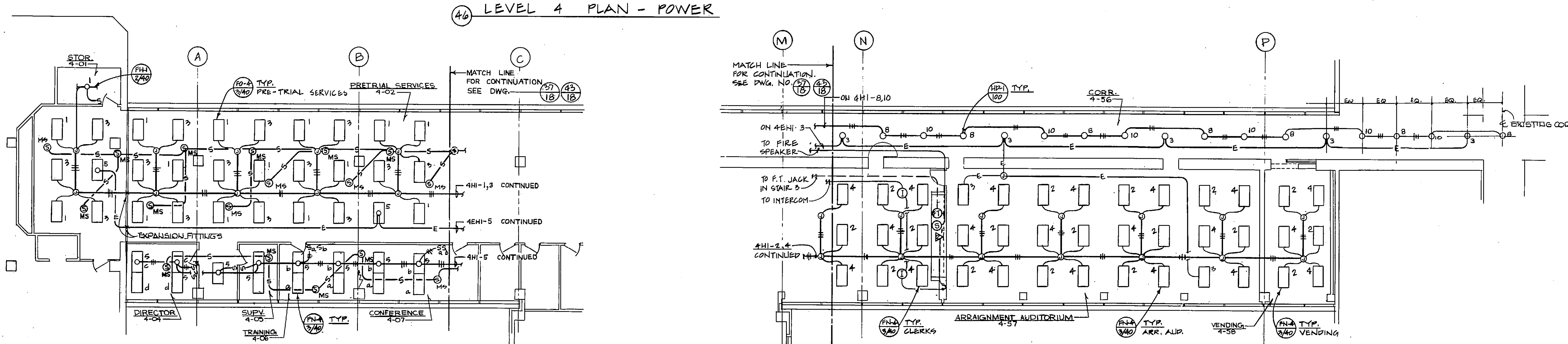
JOB NO. 7673-00
DRAWN BY
CHECKED BY
DATE 7-4-77
REVISIONS — BY — DATE
1 2 3 4 5 6 7

ELECTRICAL
LEVEL 4 PLAN
POWER

DRAWING NUMBER 40-42
CATEGORY 18



46 LEVEL 4 PLAN - POWER



47 LEVEL 4 PLAN - LIGHTING, SYSTEMS

48 NOTES:

1- TRENCH DUCT SHALL BE 2½" DEEP BY WIDTH AS NOTED BELOW.

	POWER	TEL.	COMM.	NOMINAL WIDTH
A	3	11	7½	24
B	3	5	4½	15

LIGHTING -

1. LIGHTING IN OFFICE AREAS 1000# AND LARGER TO BE PROVIDED WITH "HI-LO CONTROL
   a) USE 1 & 2 LAMP BALLASTS (FOR 2'x4'-3 LAMP FIXTURES) WIRED AS FOLLOWS.
   b) TWO LAMPS IN EACH FIXTURE SWITCHED TOGETHER, THIRD LAMP WIRED & SWITCHED WITH THIRD LAMP IN ADJACENT FIXTURE AND SWITCHED FOR LO-LEVEL.

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

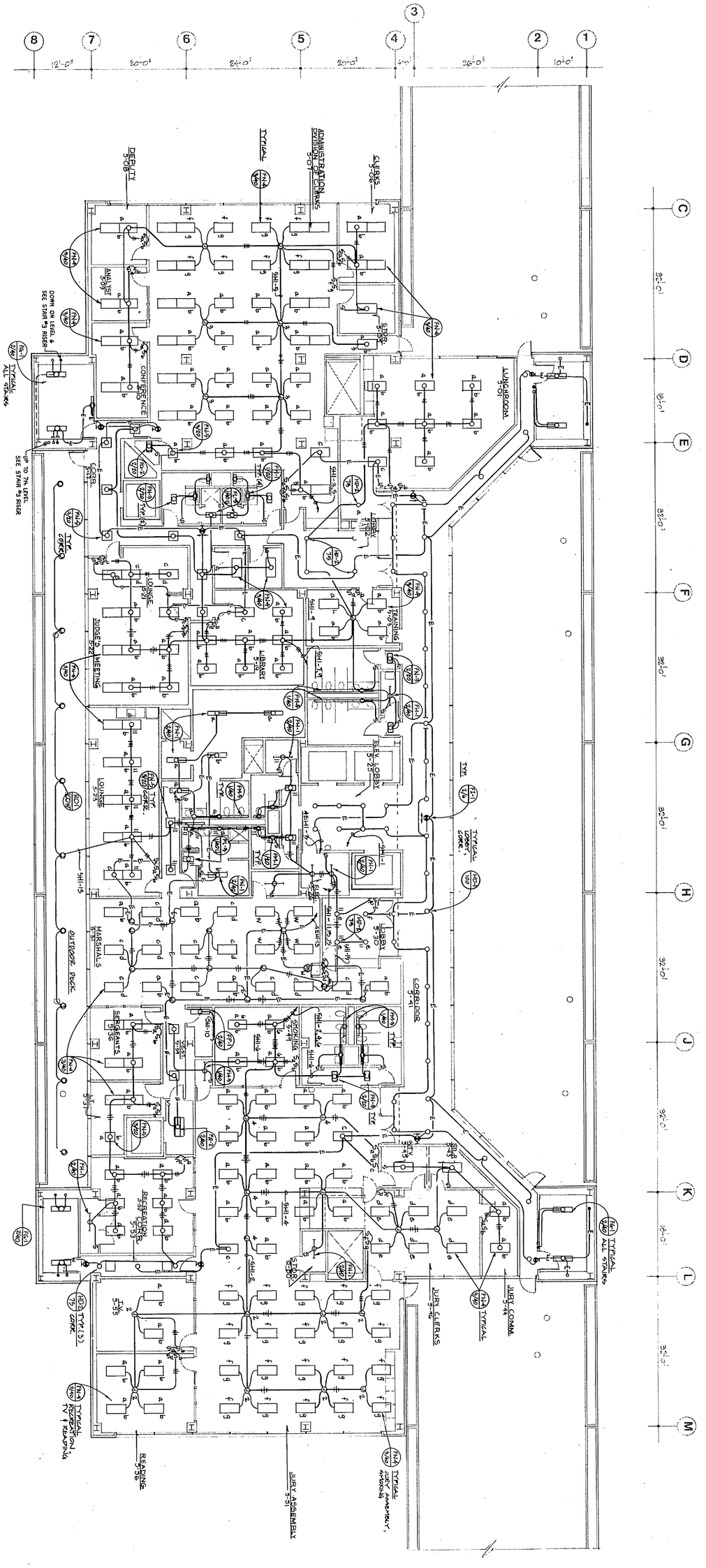
OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7-4-77
REVISIONS BY DATE

ELECTRICAL
LEVEL 4 PLAN
LIGHTING, POWER AND SYSTEMS

DRAWING NUMBER 46-48
CATEGORY 18



(4) LEVEL 5 PLAN - LIGHTING

(5) LIGHTING

LIGHTING IN OFFICE AREAS TO BE ACCOMPLISHED WITH HIGH EFFICIENCY LAMPS AND LARGER TO BE PROVIDED WITH HIGH & LOW SWITCHING CONTROL AS FOLLOWS:
a) TWO LAMP FIXTURES SHALL BE SWITCHED AS FOLLOWS
b) TWO LAMPS IN EACH FIXTURE SWITCHED WITH THIRD LAMP IN EACH FIXTURE SWITCHED WITH SWITCHED FOR LO LEVEL.

NOT USED 5

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-4-77
REVISIONS	BY DATE
1	
2	
3	
4	
5	
6	
7	

ELECTRICAL LEVEL 5 PLAN LIGHTING

DRAWING NUMBER 49-51

CATEGORY 18

REGISTERED PROFESSIONAL ENGINEER EDWARD M. HAYAKAWA STATE OF CALIFORNIA

OAKLAND·PIEDMONT MUNICIPAL COURT

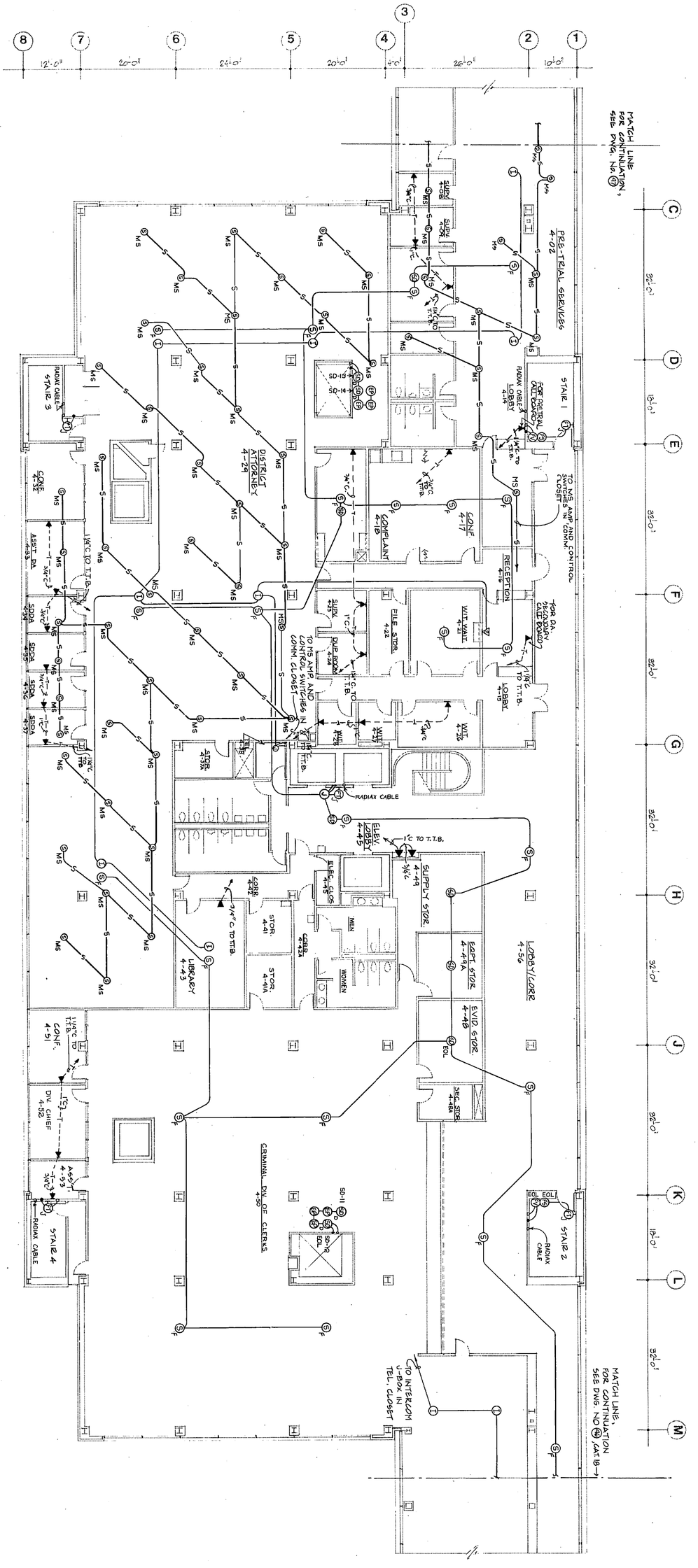
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

(43) LEVEL 4 PLAN - SYSTEMS



NOT USED 44-45

DRAWING NUMBER	43-45
CATEGORY	18

ELECTRICAL LEVEL 4 PLAN SYSTEMS

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — EDWARD M. WATSON — ELECTRICAL — STATE OF CALIFORNIA

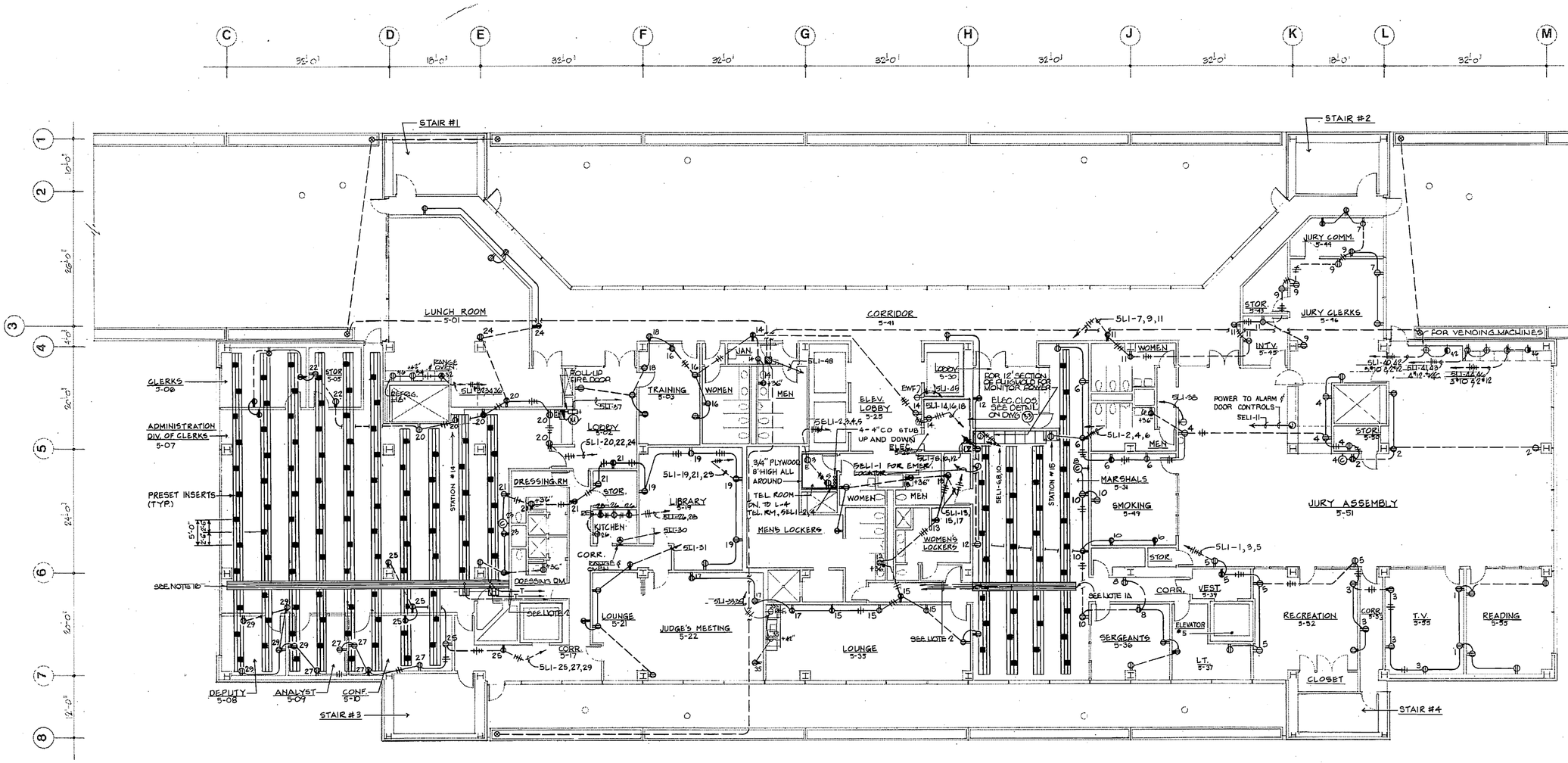
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS · DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



NOTE:
⊗-(6) REMOTE CONTROL VALVES (GRISWOLD S-SERIES) IN VALVE BOX IN PLANTER.
▨-(1) AUTOMATIC CONTROLLER (GRISWOLD SR-12) WALL MOUNT.

52 LEVEL 5 PLAN - POWER

53 NOTES:

1. TRENCH DUCT 2½" DEEP × WIDTH AS SCHEDULED BELOW.

	POWER	TEL.	COMM.	NOMINAL WIDTH
A	3	6	6½	18
B	3	9	3½	18

2. TRENCH DUCT RELIEF CONDUITS, RUN IN CEILING BELOW, CUT 2-2" & 1-1¼" CONDUIT OPENING IN UNDER-SIDE OF CELLULAR DECK. PROVIDE 2" CONDUITS (ONE EACH) FOR TEL. & COMMUNICATIONS AND 1-1¼" CONDUIT FOR POWER. TERMINATE CONDUITS IN RESPECTIVE CLOSETS.

3. PROVIDE NECESSARY HARDWARE AND DEVICES TO "ELECTRIFY" PRESET INSERTS, (BOTH HIGH AND LOW TENSION FITTINGS) LOCATIONS TO BE DETERMINED BY ARCHITECT.
   a) FURNISH ONE 120 VOLT DUPLEX RECEPTACLE (GROUNDED TYPE) PER 100 SQ. FT.
   b) FURNISH ONE TELEPHONE/SIGNAL OUTLET PER 150 SQ. FT.

NOT USED 54

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

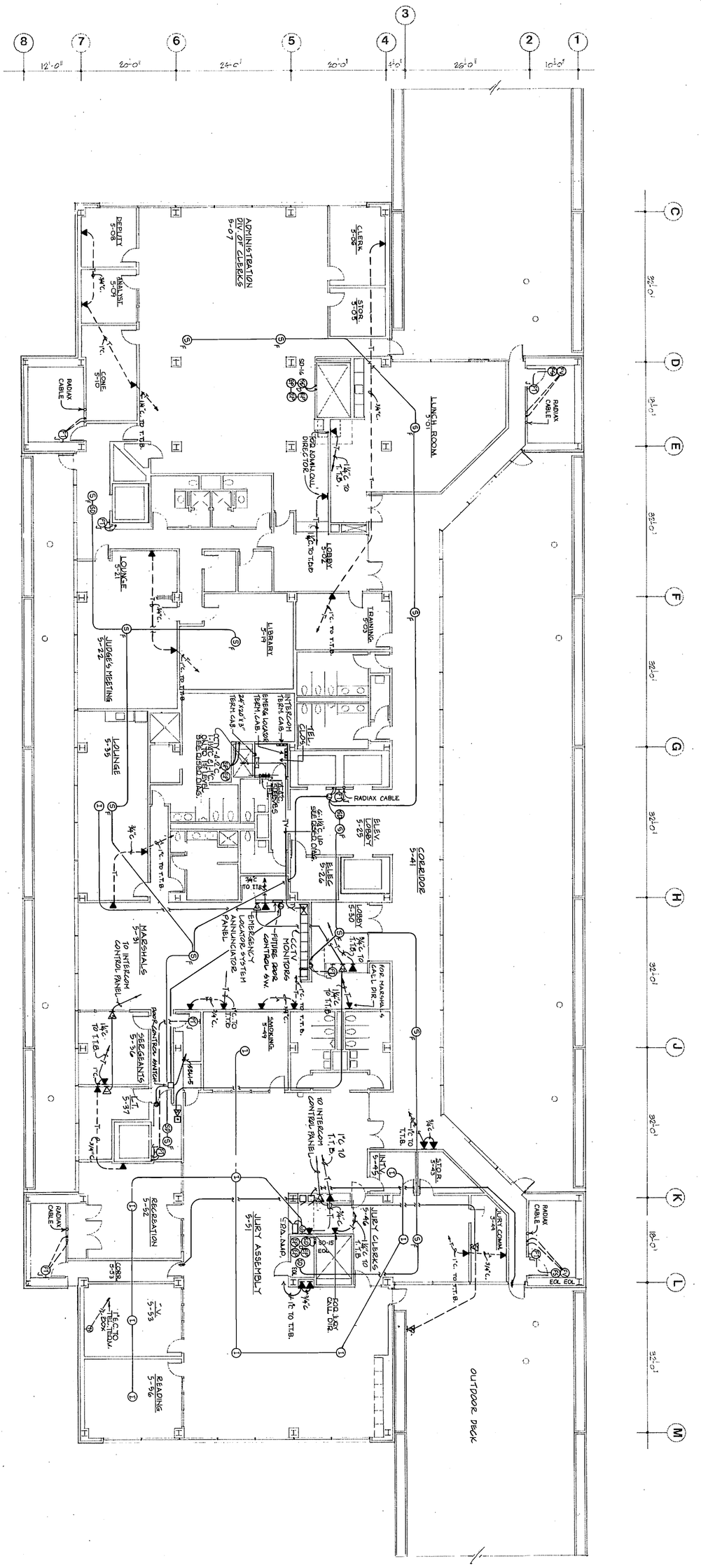
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

EDWARD N. MALLER — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

JOB NO. 7873-00								
DRAWN BY								
CHECKED BY								
DATE	2-4-72							
REVISIONS	1	2	3	4	5	6	7	
BY								
DATE								

ELECTRICAL
LEVEL 5 PLAN
POWER

DRAWING NUMBER	CATEGORY
52-54	18



NOTE: CONTROLS AND CONNECTIONS FOR RISER DIAGRAMS SEE
a. FIRE ALARM (14/E)
b. COMMUNICATIONS (14/B)

(55) LEVEL 5 PLAN - SYSTEMS

NOT USED 56-57

ELECTRICAL
LEVEL 5 PLAN
SYSTEMS

DRAWING NUMBER 55-57

CATEGORY 18

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-6-72

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — EDWARD M. WAKEFIELD — ELECTRICAL — STATE OF CALIFORNIA

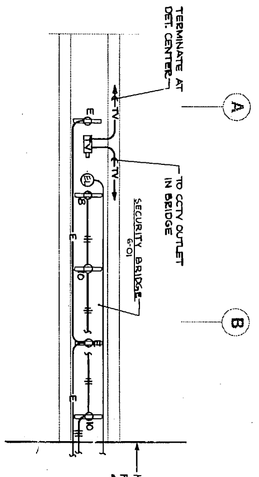
OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

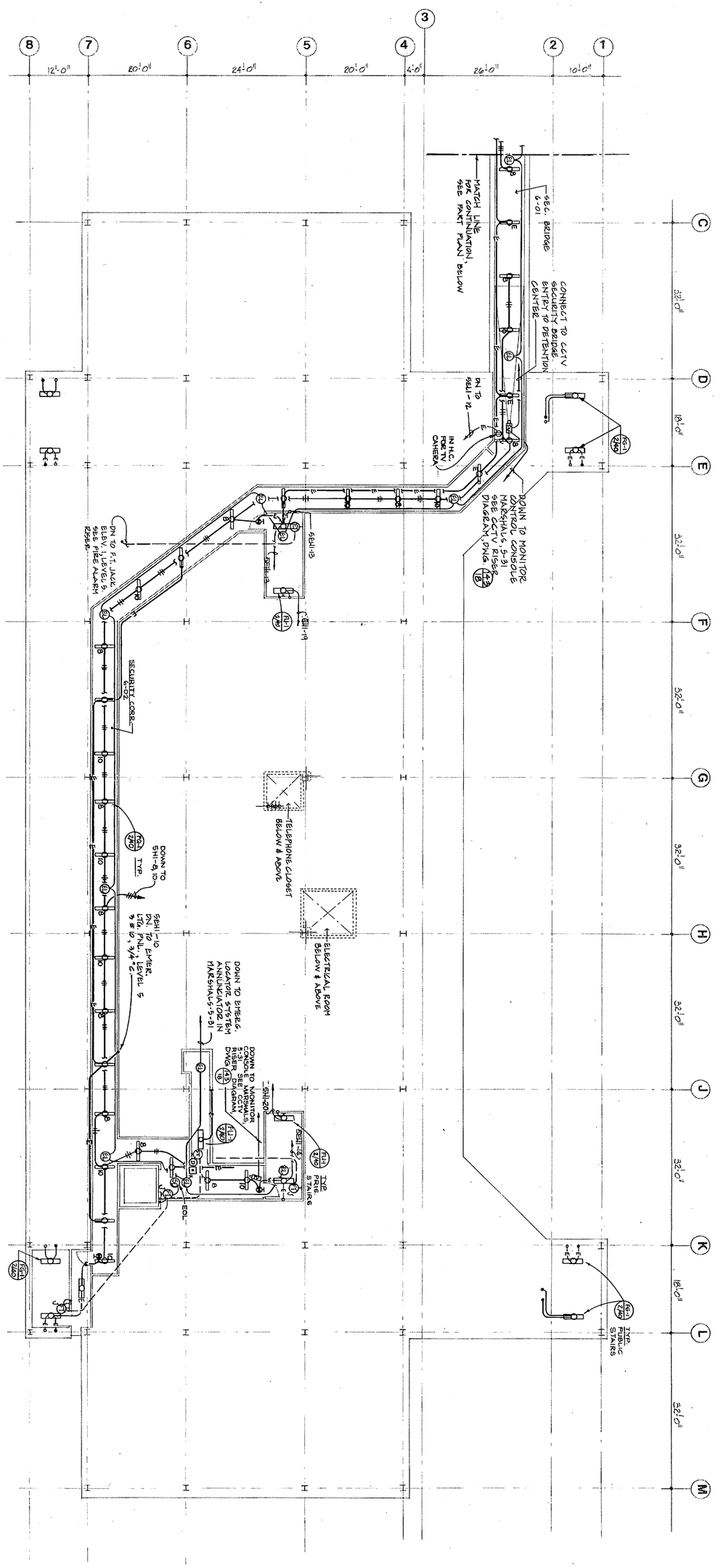
HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



59 PART PLAN



58 LEVEL 6 PLAN - LIGHTING, POWER & SYSTEMS

NOT USED 60

DRAWING NUMBER	58-60
CATEGORY	18

ELECTRICAL
LEVEL 6 PLAN
LIGHTING, POWER
AND SYSTEMS

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-4-72

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER EDWARD M. WATCH ELECTRICAL STATE OF CALIFORNIA

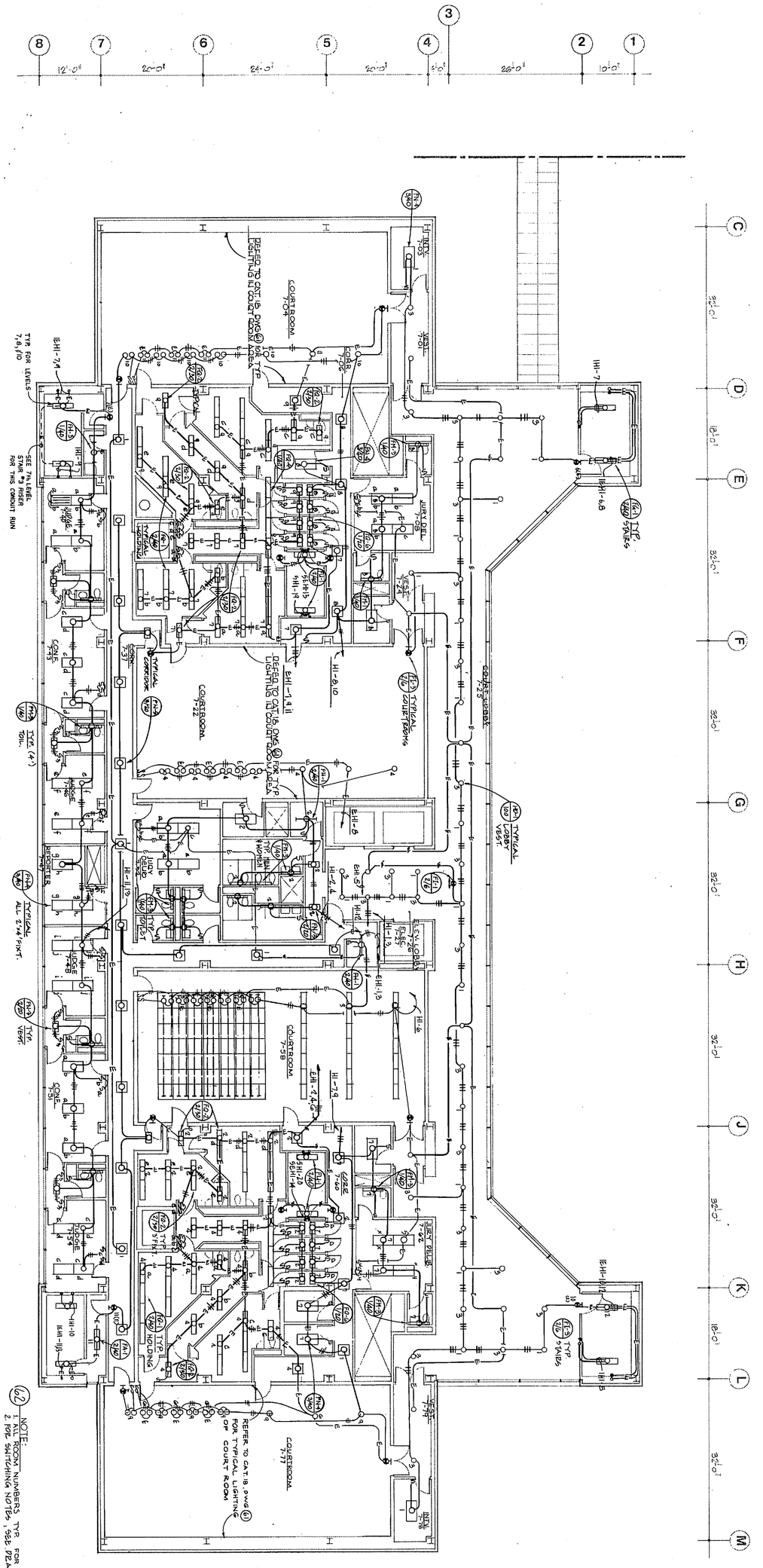
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



(61) LEVEL 7, 8 & 10 PLAN - LIGHTING

NOT USED 63

DRAWING NUMBER	61-63	
CATEGORY	18	
	ELECTRICAL LEVEL 7, 8 & 10 PLAN LIGHTING	

JOB NO. 7873-00		
DRAWN BY		
CHECKED BY		
DATE	7-4-77	
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER — DONALD M. WALKER — ELECTRICAL — STATE OF CALIFORNIA

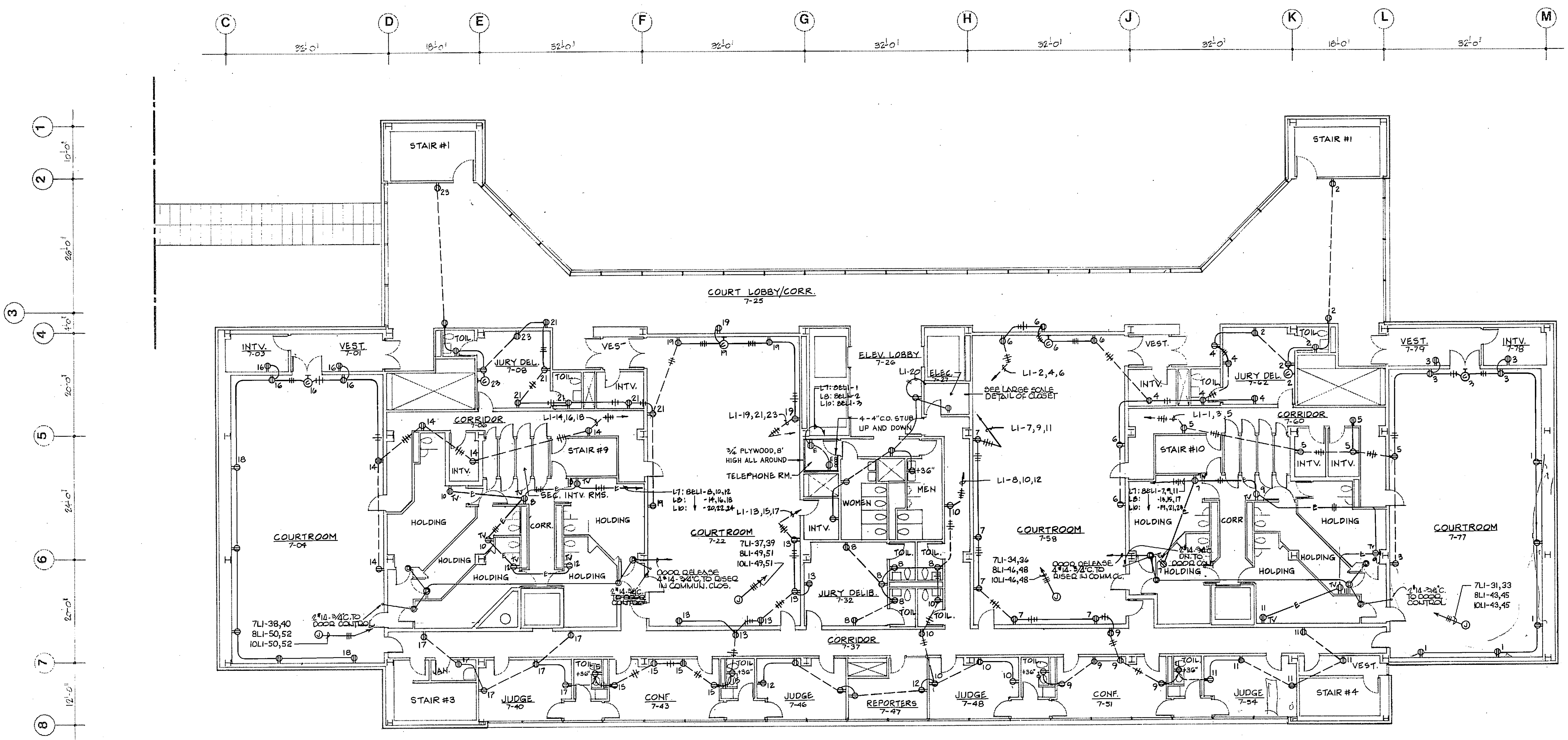
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



(65) NOTE:
1. ALL ROOM NUMBERS TYP. FOR LEVEL 8 & 10
2. ON POWER CIRCUITING, 'L1' STANDS FOR:
LEVEL 7 - 7L1
LEVEL 8 - 8L1
LEVEL 10 - 10L1

(64) LEVEL 7, 8, 10 PLAN - POWER

NOT USED 66

HELLMUTH, OBATA & KASSABAUM, INC. ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

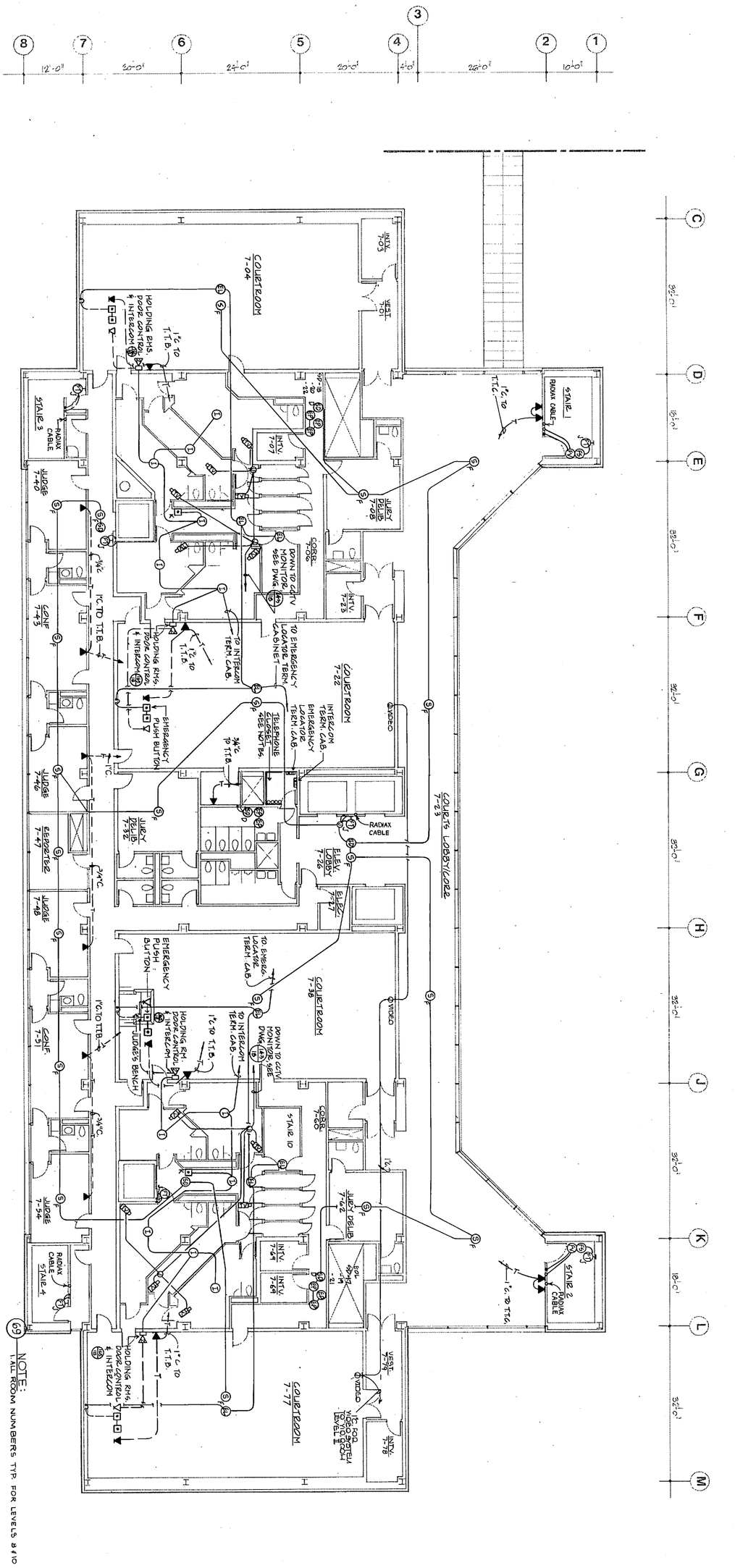
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873.00
DRAWN BY
CHECKED BY
DATE 7-4-77
REVISIONS BY DATE

ELECTRICAL
LEVEL 7,8,10 PLAN
POWER

DRAWING NUMBER	CATEGORY
64-66	18

(68) TELEPHONE CLOSETS:
1. PROVIDE 3/4"T H×4'-8" PLYWOOD BACKBOARDS ON 3 FULL VVALLS FOR EQUIPMENT (PRIME PAINTED)
2. STUB UP ALL BRANCH CONDUITS AND TERMINATE 6" ABOVE FIN. FLOOR WITH PLASTIC BUSHINGS



(67) LEVEL 7, 8, 10 PLAN - SYSTEMS

(69) NOTE:
1. ALL ROOM NUMBERS TYP. FOR LEVELS 8 & 10

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-1-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

ELECTRICAL
LEVEL 7, 8 & 10
PLAN
SYSTEMS

DRAWING NUMBER 67-69

CATEGORY 18

REGISTERED PROFESSIONAL ENGINEER EDWARD M. WATKINS STATE OF CALIFORNIA

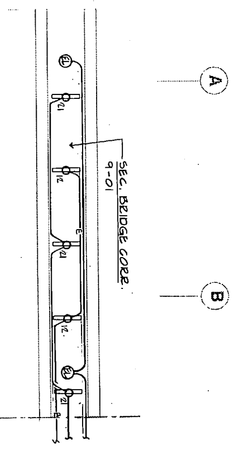
OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

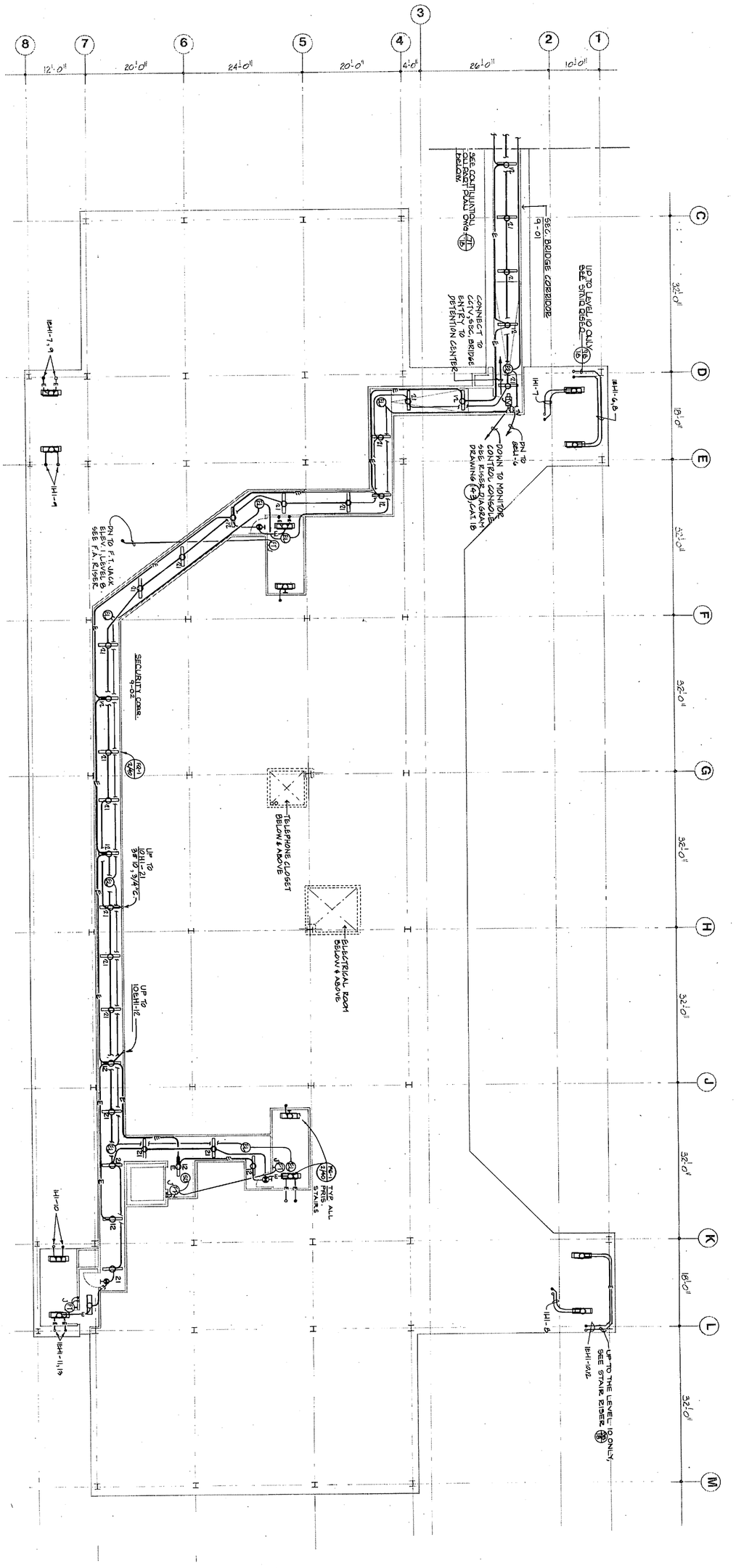
HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



(71) LEVEL 9 LIGHTING (CONTINUED)



(72) LEVEL 9 PLAN - LIGHTING, POWER & SYSTEMS

NOT USED 72

DRAWING NUMBER	70-72
CATEGORY	18

ELECTRICAL LEVEL 9 PLAN LIGHTING, POWER AND SYSTEMS

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	3-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER EDWARD M. HAYAKAWA STATE OF CALIFORNIA

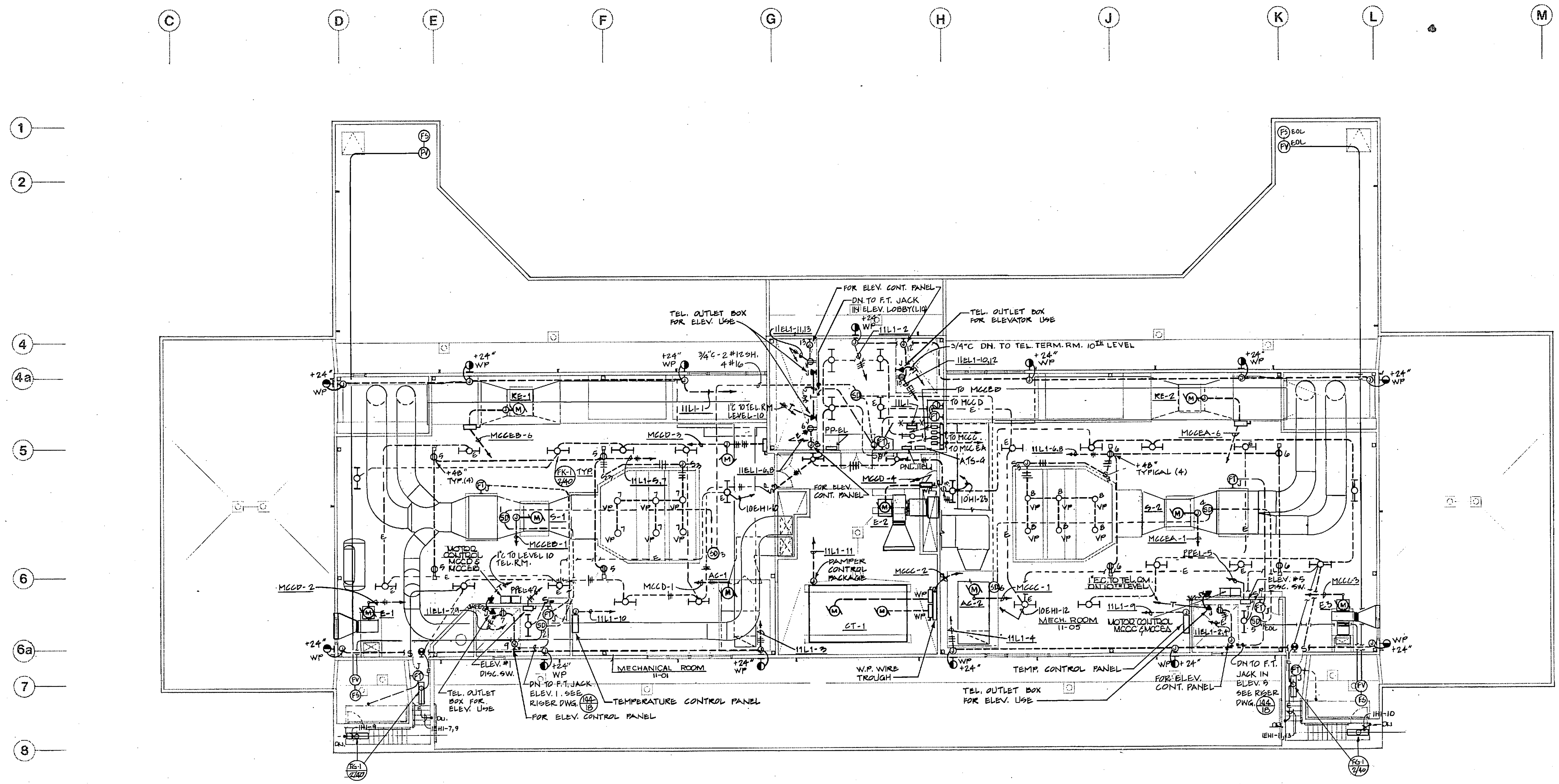
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



(73) LEVEL 11 PLAN - LIGHTING, POWER & SYSTEMS

NOT USED 74-75

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER EDWARD M. WALKER ELECTRICAL STATE OF CALIFORNIA

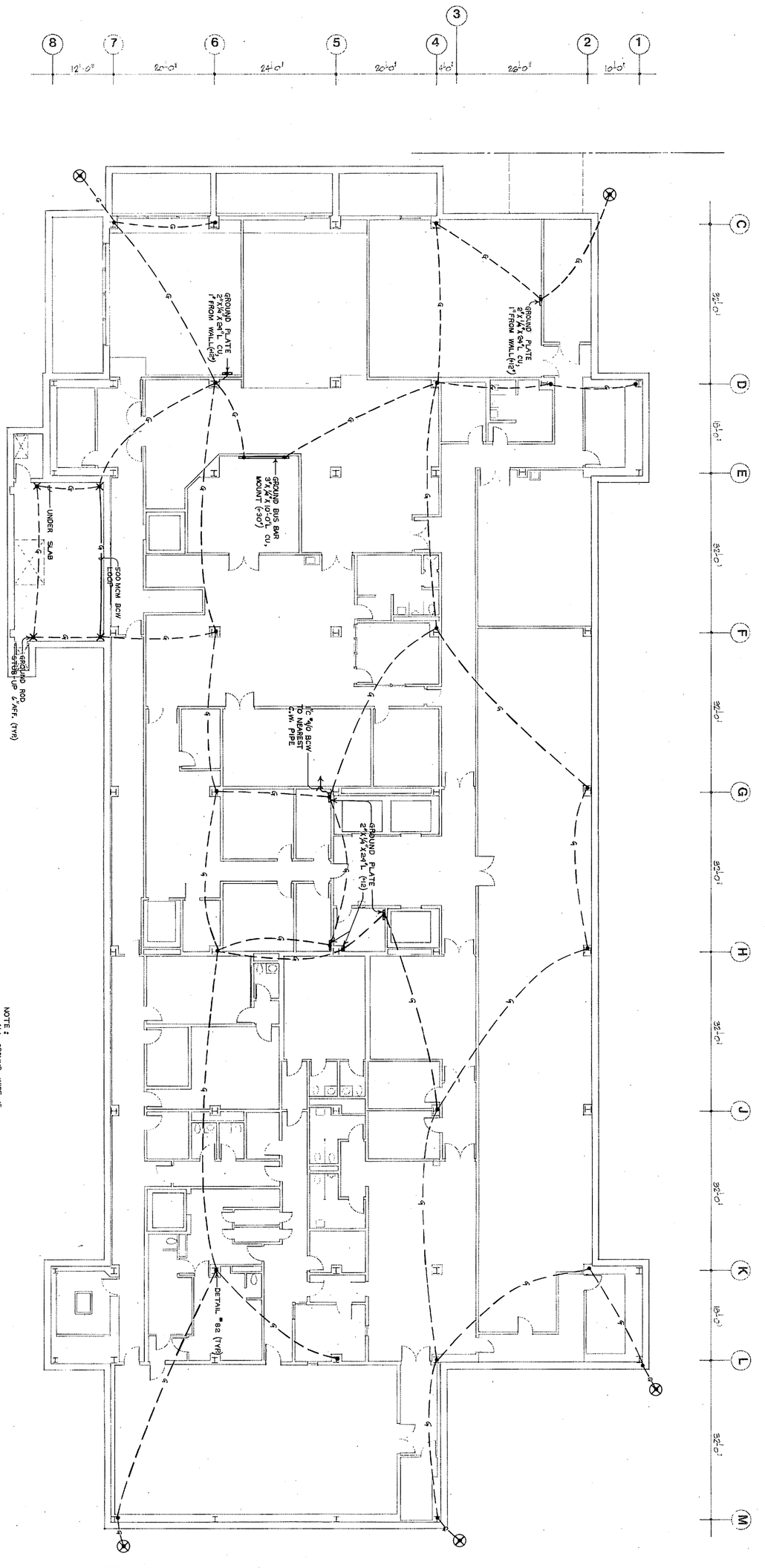
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

ELECTRICAL
LEVEL 11 PLAN
LIGHTING, POWER
AND SYSTEMS

DRAWING NUMBER 73-75

CATEGORY 18



76 BUILDING GROUND SYSTEM

NOTE : ALL GROUND WIRE IS #4/0 BCW UNLESS NOTED OTHERWISE

NOT USED 77-80

DRAWING NUMBER	76-80
CATEGORY	18

LEVEL 1&2 PLAN GROUNDING

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED PROFESSIONAL ENGINEER EDWARD M. HAAS No. 7873 ELECTRICAL STATE OF CALIFORNIA

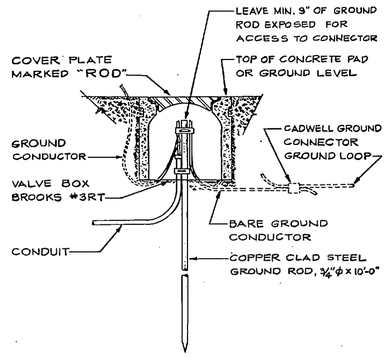
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

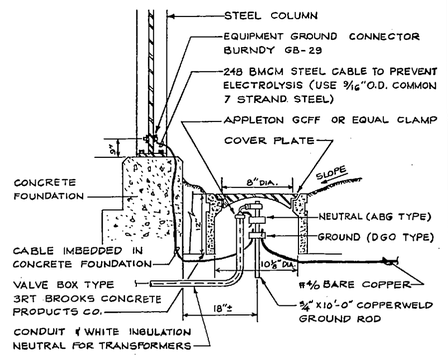
HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

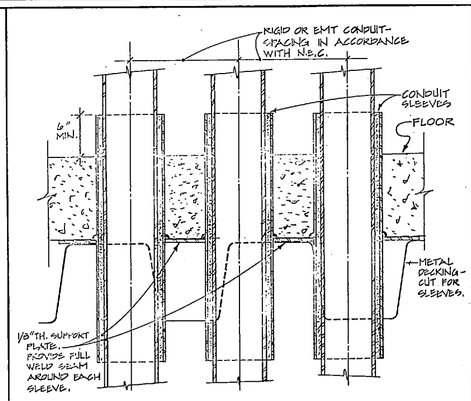
HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



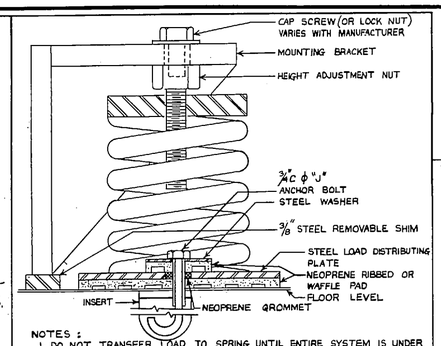
(81) DETAIL - TYPICAL GROUND ROD WITH WELL
NOT TO SCALE



(82) DETAIL - GROUND ROD & BUILDING TAP INSTALLATION
NOT TO SCALE

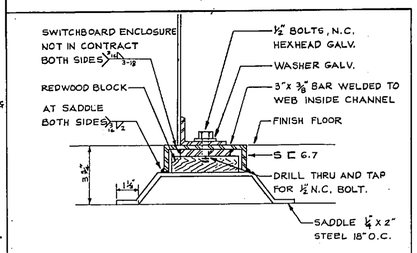


(83) DETAIL - TYPICAL CONDUIT PENETRATION THRU FLOORS
NOT TO SCALE

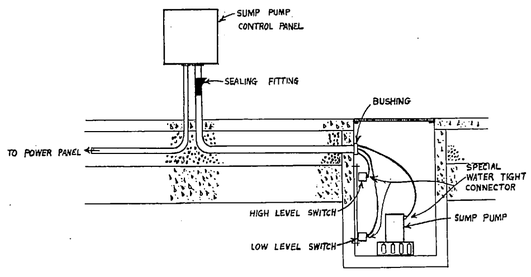


NOTES :
1. DO NOT TRANSFER LOAD TO SPRING UNTIL ENTIRE SYSTEM IS UNDER OPERATIONAL LOAD. STEEL SHIM TO BE IN PLACE DURING PIPING ROUGH-IN AND FILLING.
2. WHEN SYSTEM OPERATIONAL, ADJUST HEIGHT ADJUSTING BOLT TO TRANSFER LOAD TO SPRING. TURN ONLY UNTIL MOUNTING BRACKET JUST CLEARS SHIM. REMOVE SHIM, RETAIN FOR FUTURE INSPECTION CHECK.

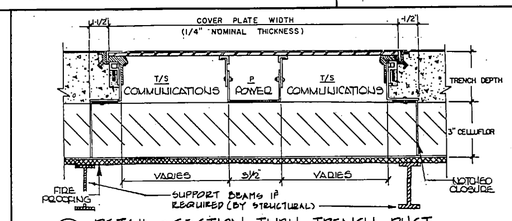
(84) DETAIL - ENGINE GENERATOR SET ISOLATOR TYPE "MS" - SPRING MOUNT
NOT TO SCALE



(85) DETAIL - SWITCHGEAR/PANEL MOUNTING
NOT TO SCALE

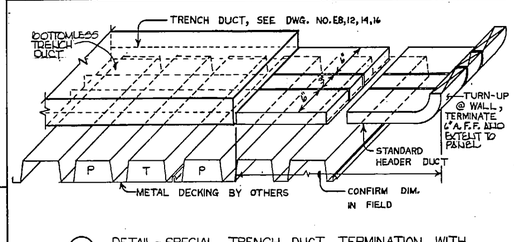


(86) DETAIL - SUMP PUMP IN AREA WAY
NOT TO SCALE

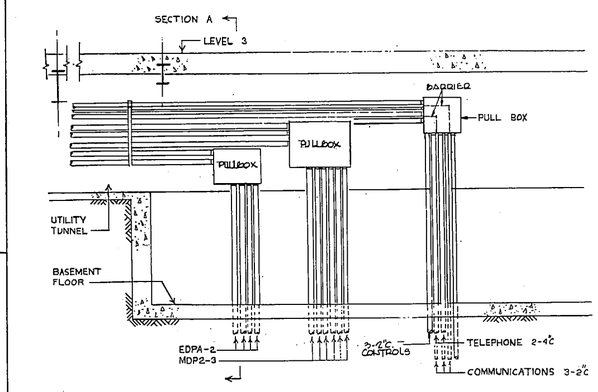


(87) DETAIL - SECTION THRU TRENCH DUCT
NOT TO SCALE

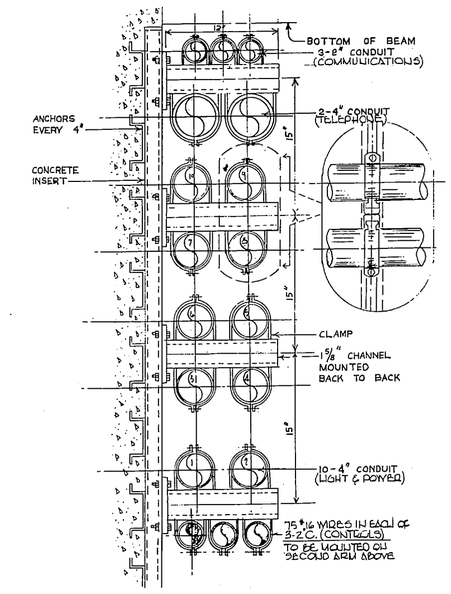
NOTE
FOR DIMENSIONS SEE SCHEDULES ON PLANS



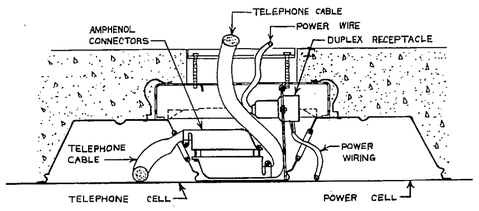
(88) DETAIL - SPECIAL TRENCH DUCT TERMINATION WITH HEADER DUCT EXTENSION
NOT TO SCALE



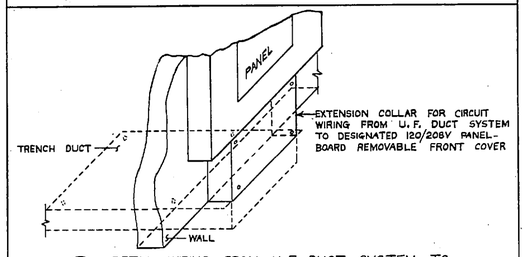
(89) DETAIL - CONDUIT RUN IN CHILLER ROOM
NOT TO SCALE



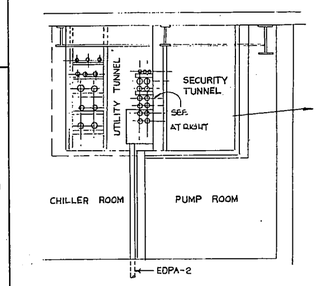
(93) DETAIL - ELECTRICAL CONDUIT RACK IN UTILITY TUNNEL
NOT TO SCALE



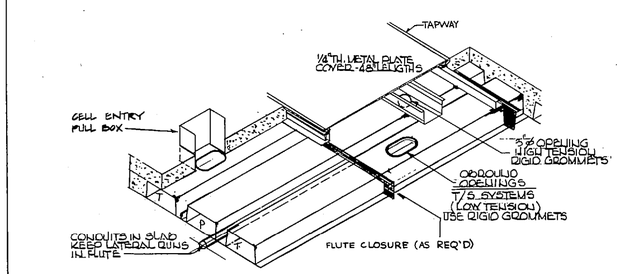
(90) TYPICAL UNDERFLOOR BOX
NOT TO SCALE



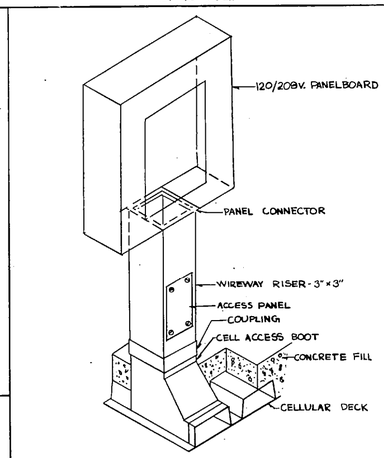
(91) DETAIL - WIRING FROM U.F. DUCT SYSTEM TO 120/208V PANELS IN CLOSET
NOT TO SCALE



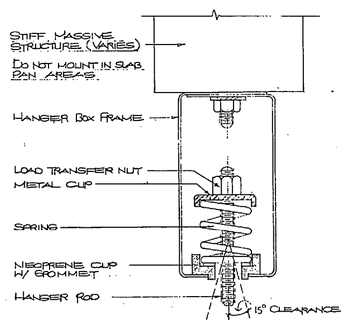
(92) SECTION A
NOT TO SCALE



(94) WIRING SYSTEMS IN UNDERFLOOR RACEWAYS WITH TYPICAL CELL ACCESS TO TRENCH
NOT TO SCALE

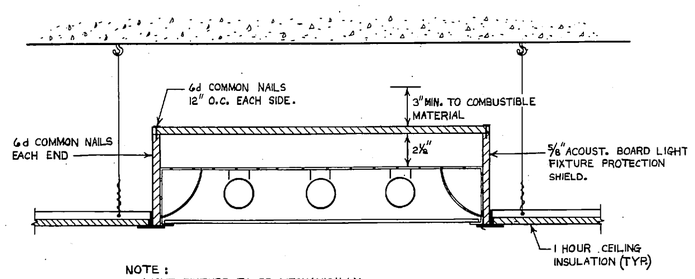


(95) DETAIL - WIREWAY ENTRY FROM CELLULAR DECK TO 120/208V. PANELBOARD
NOT TO SCALE



NOTES:
1. WHEN MOUNTING EQUIPMENT, ALIGN HANGER ROD TO CLEAR HANGER BOX.
2. MOUNT HANGER BOX DIRECTLY AGAINST STRUCTURAL ELEMENT. DO NOT SUPPORT HANGER FROM SLAB DIAPHRAGMS.

(96) SPRING HANGER
NOT TO SCALE



NOTE :
LIGHT FIXTURE TO BE MECHANICALLY & POSITIVELY CONNECTED TO "T" BAR CEILING SYSTEM.

(97) LIGHT FIXTURE ENCLOSURE IN 1 HOUR CEILING
SCALE : NONE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

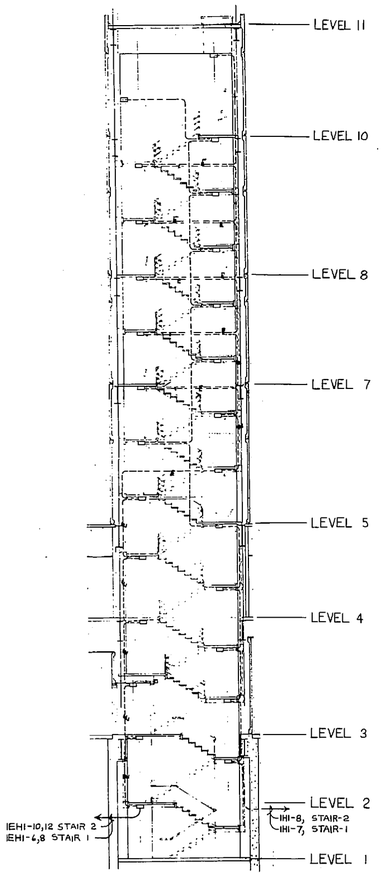
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7823-00
DRAWN BY
CHECKED BY
DATE 7-4-77

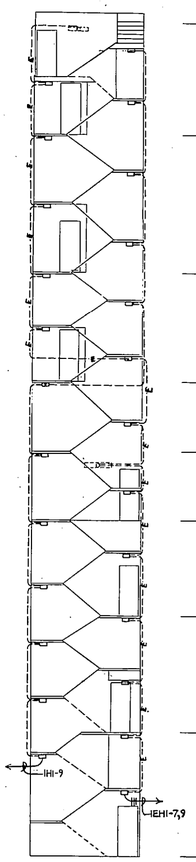
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

ELECTRICAL GENERAL DETAILS

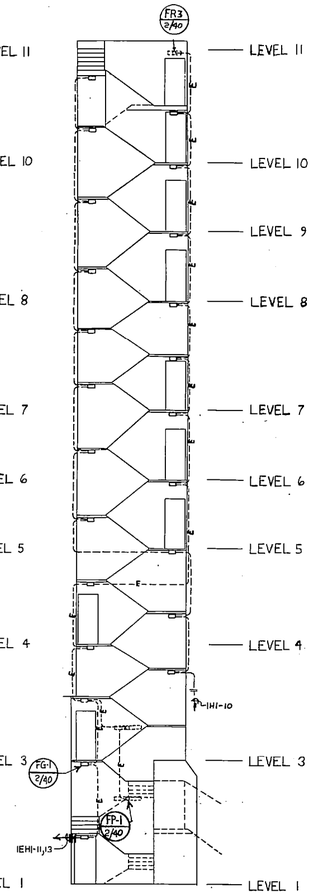
DRAWING NUMBER 81-97
CATEGORY 18



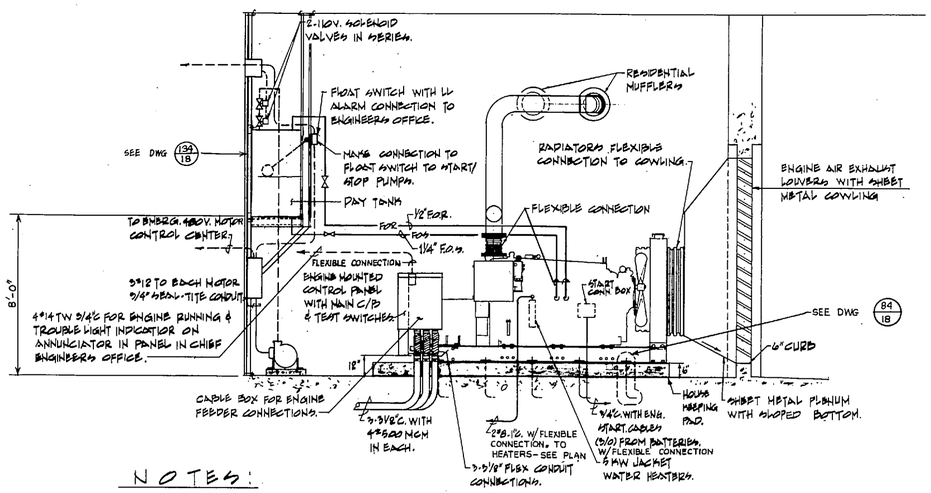
(98) STAIR NO. 2 SECTION
STAIR NO.1 SIM. OPP. HAND



(99) STAIR NO. 3 SECTION



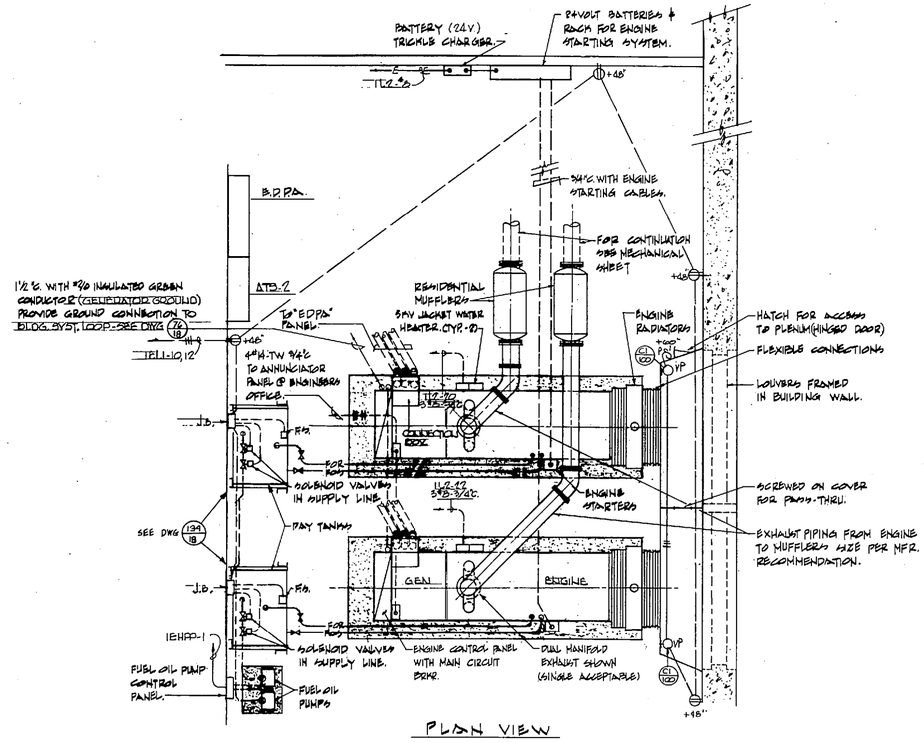
(100) STAIR NO. 4 SECTION



NOTES:

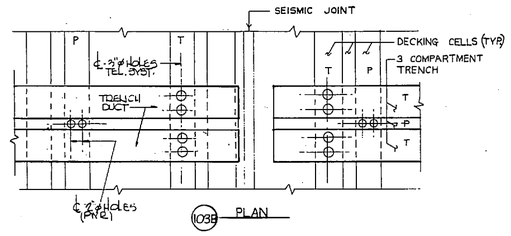
1. THE CONTRACTOR SHALL CONTACT UTILITY CO. AND CONFIRM SERVICE VOLTAGE. AUTOMATIC TRANSFER SWITCHES TO SUPPLY SENSING RELAYS IN ACCORDANCE.
2. CONNECTION LOCATIONS TO ENGINE WILL VARY BY MANUFACTURER SELECTION. CONFIRM ALL DIMENSIONS AND SIZES REQUIRED FOR COMPLETE HOOK-UP.
3. MAKE ALL ELECTRICAL CONNECTIONS TO ENGINES WITH FLEXIBLE CONDUITS ONLY. 3 1/2" CONNECTIONS CAN BE MADE UP WITH GREEN FIELD. BUT PROVIDE SEPARATE GROUND CABLE TO BUILDING SYSTEM.

(101) SECTION 'AA'

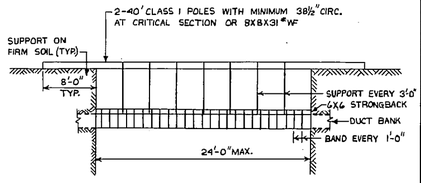


PLAN VIEW

(102) EMERGENCY GENERATOR SET
SCALE: NONE

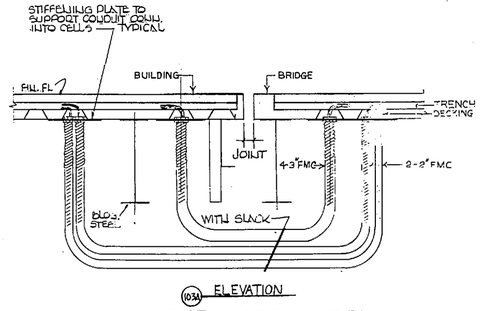


(103B) PLAN



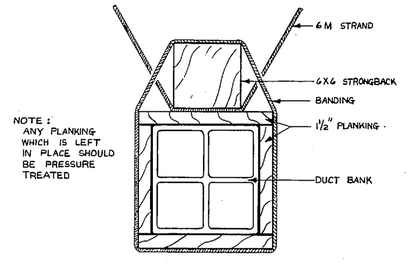
(104) TELEPHONE DUCT SUPPORT
NOT TO SCALE

NOTE:
SUPPORT SIMILAR FOR POWER DUCT SUPPORT - FOR EXACT SUPPORT SEE PG#E



(103A) ELEVATION

(103) DETAIL SEISMIC JOINT
SCALE: NONE



(104A) TELEPHONE DUCT BANK PROTECTION
NOT TO SCALE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

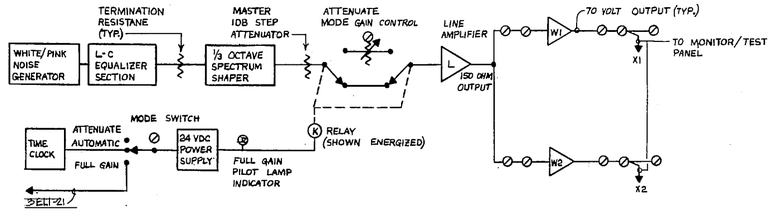
REGISTERED PROFESSIONAL ENGINEER EDWARD W. KNIGHT STATE OF CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 2-4-77

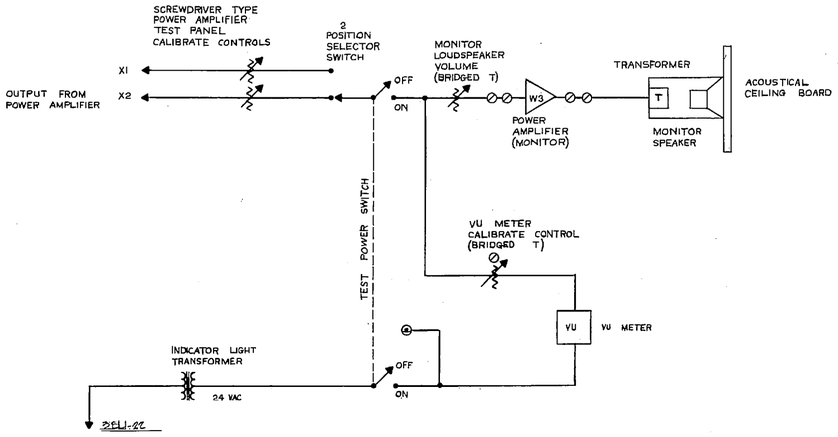
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

ELECTRICAL DETAILS

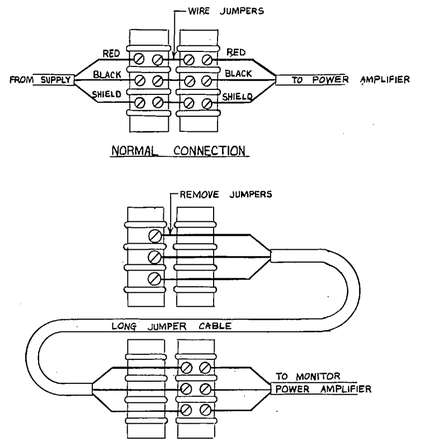
DRAWING NUMBER 98-104
CATEGORY 18



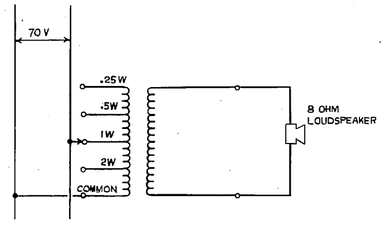
(105) BLOCK DIAGRAM OF MASKING ELECTRONICS



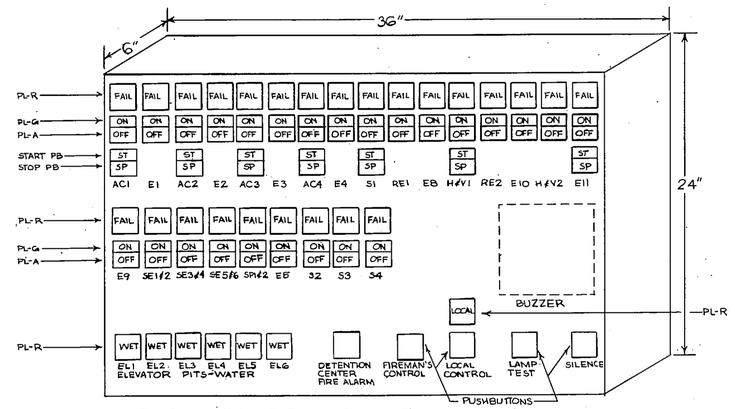
(107) BLOCK DIAGRAM OF MONITOR/TEST PANEL



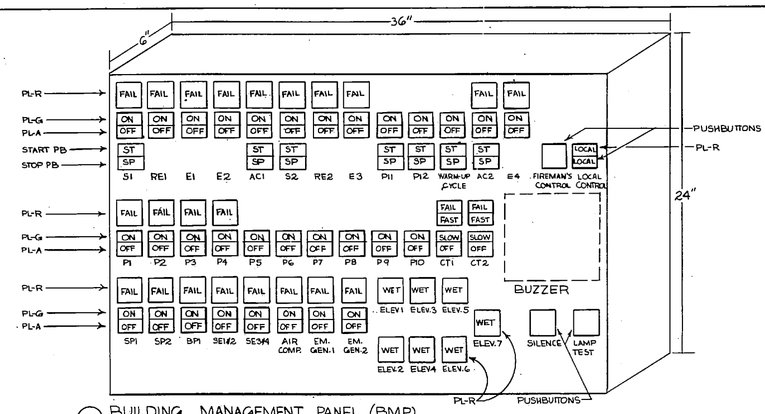
(106) AMPLIFIER INPUT TERMINALS



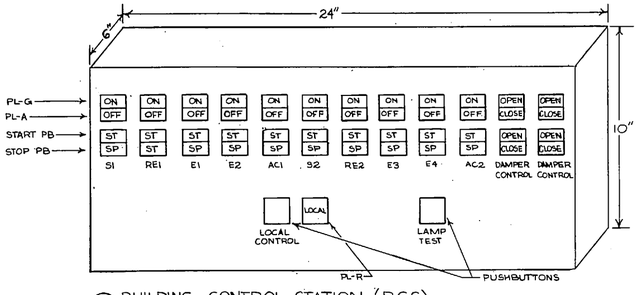
(108) TYPICAL LOUDSPEAKER CONNECTION



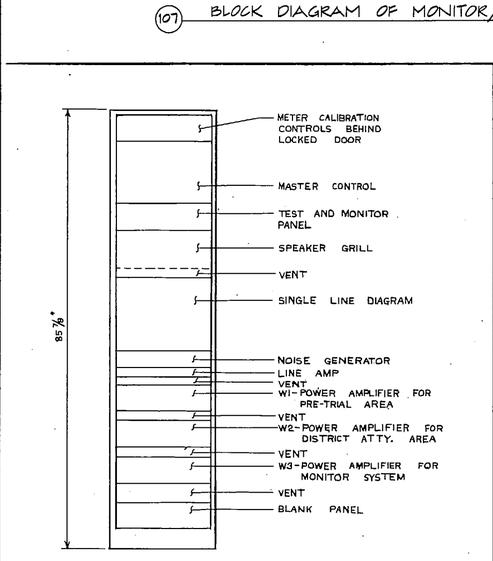
(115) BUILDING MANAGEMENT PANEL (BMP)
(FOR OAKLAND PRETRIAL DETENTION FACILITY BUILDING)
USE CUTLER-HAMMER TYPE E30 PUSHBUTTONS & LONG LIFE LOW VOLTAGE PILOT LIGHTS WITH TRANSFORMER



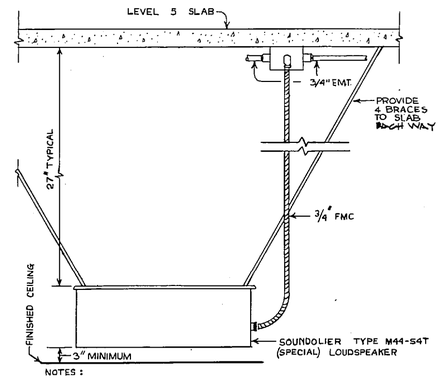
(116) BUILDING MANAGEMENT PANEL (BMP)
(FOR OAKLAND-PIEDMONT MUNICIPAL COURTS BUILDING)
USE CUTLER-HAMMER TYPE E30 PUSHBUTTONS & LONG LIFE LOW VOLTAGE PILOT LIGHTS WITH TRANSFORMER



(117) BUILDING CONTROL STATION (BCS)
(FOR OAKLAND-PIEDMONT MUNICIPAL COURTS BUILDING)
USE CUTLER-HAMMER TYPE E30 PUSHBUTTONS & LONG LIFE LOW VOLTAGE PILOT LIGHTS WITH TRANSFORMER



(109) MASKING NOISE SYSTEM EQUIPMENT RACK LAYOUT
NOT TO SCALE

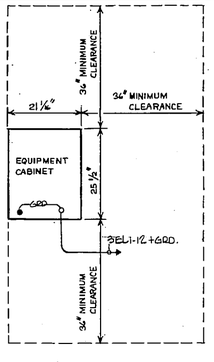


NOTES:
(1) LOUDSPEAKER TO BE MODIFIED AS FOLLOWS
(a) .25, .50, 1, 2 WATT POWER TAPS
(b) ENCLOSURE TO ACCEPT ¾" FMC
(2) EXACT LOCATION OF LOUDSPEAKER SHOULD AVOID LIGHT FIXTURES, STRUCTURAL COMPONENTS, AIR CONDITIONING HARDWARE, ETC.

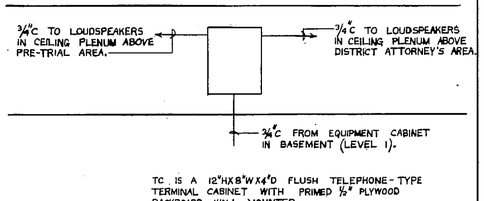
(110) LOUDSPEAKER SUSPENSION IN LEVEL 4 CEILING PLENUM

POWER AMPLIFIER SERVICE				
SYMBOL	AREA SERVED		NO. OF SPEAKERS	SPEAKER TAPS
W1	PRE TRIAL	OPEN PLAN	22	1W
		ENCLOSED OFFICES	9	.25W
W2	DISTRICT ATTORNEY	OPEN PLAN	41	1W
		ENCLOSED OFFICES	6	.25W
W3	MONITOR		MONITOR	2W

(111) SCHEDULE

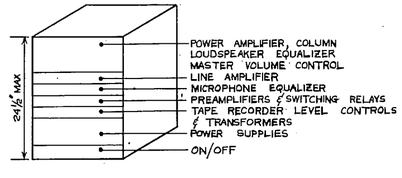


(114) PLAN VIEW FOR MASKING NOISE SYSTEM EQUIPMENT CABINET — 4TH FLOOR TEL.CL.



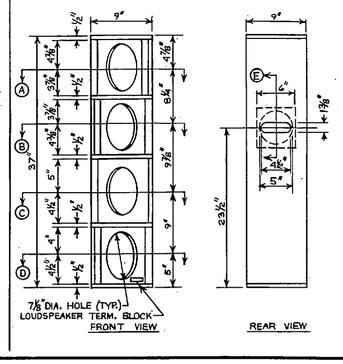
TC IS A 12"H x 8"W x 4"D FLUSH TELEPHONE-TYPE TERMINAL CABINET WITH PRIMED ½" PLYWOOD BACKBOARD - WALL MOUNTED.

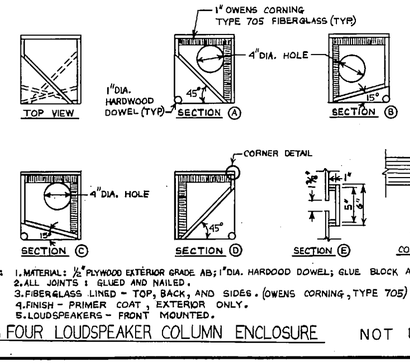
(112) CONDUIT RISER DIAGRAM FOR LEVEL 4



COURTROOM SOUND EQUIPMENT RACK LAYOUT
SCALE : NONE

(113)





NOTES: 1. MATERIAL: ½" PLYWOOD EXTERIOR GRADE AB; 1" DIA. HARDOOD DOWEL; GLUE BLOCK AS REQUIRED.
2. ALL JOINTS : GLUED AND NAILED.
3. FIBERGLASS LINED - TOP, BACK, AND SIDES. (OWENS CORNING, TYPE 705)
4. FINISH - PRIMER COAT, EXTERIOR ONLY.
5. LOUDSPEAKERS - FRONT MOUNTED.

(118) FOUR LOUDSPEAKER COLUMN ENCLOSURE

NOT USED 119 & 120

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

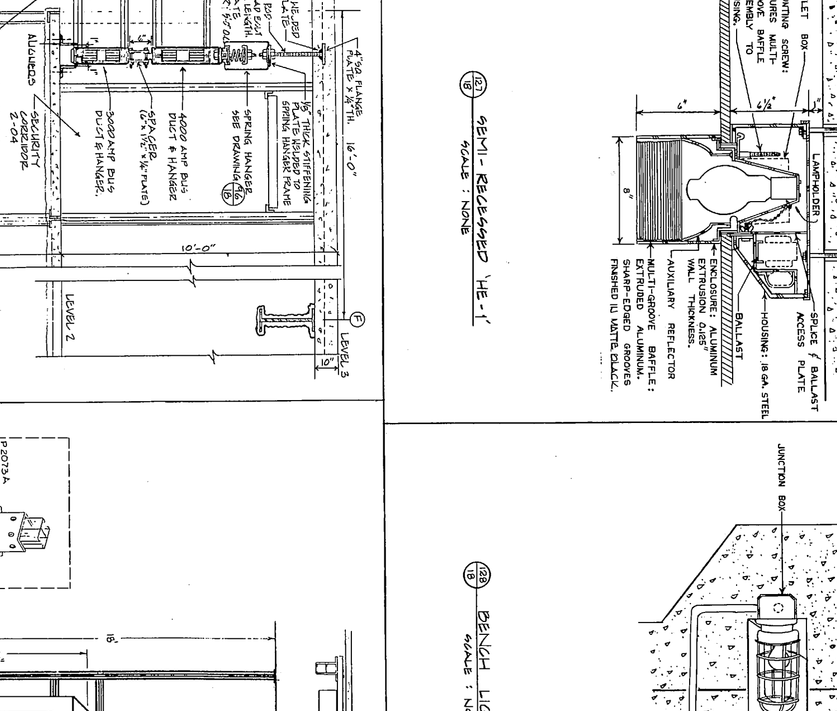
OAKLAND-PIEDMONT MUNICIPAL COURT FACILITIES

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

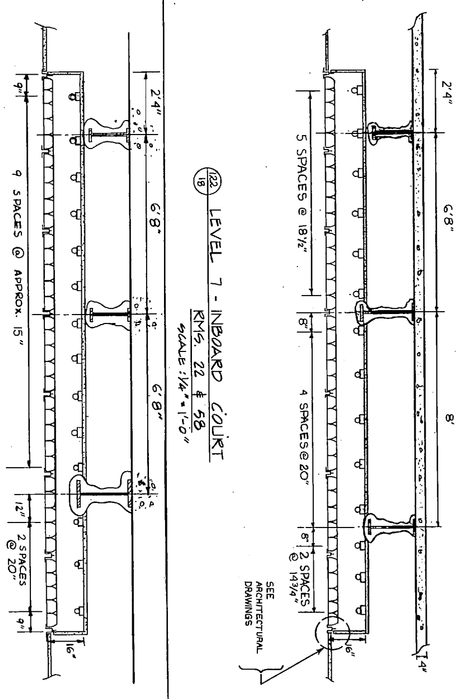
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE
REVISIONS 1 2 3 4 5 6 7 DATE BY

ELECTRICAL COMMUNICATION DETAILS

DRAWING NUMBER 105-120
CATEGORY 18



(18/18A) LEVEL 10 - INBOARD COURT
RMS. 22 & 58
SCALE: 1/4" = 1'-0"

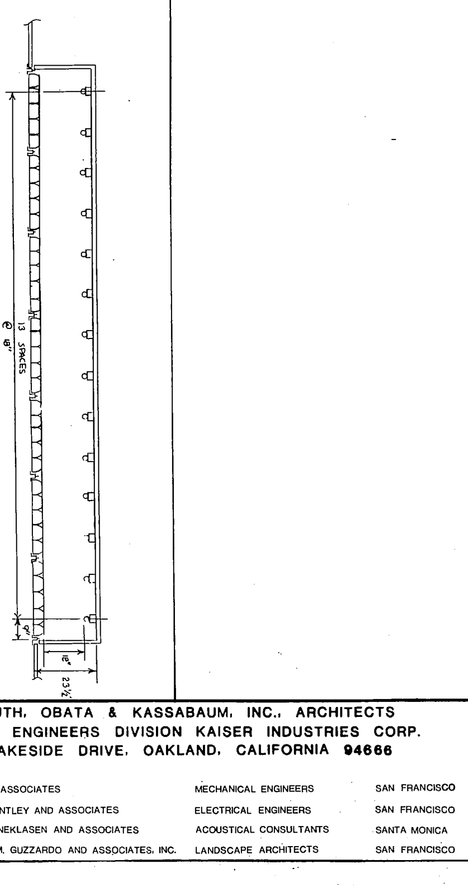


(18/18A) LEVEL 7 - INBOARD COURT
RMS. 22 & 58
SCALE: 1/4" = 1'-0"

(18/18A) LEVEL 10 - OUTBOARD COURT
RMS. 77 & 04
SCALE: 1/4" = 1'-0"

(18/18A) LEVEL 7 - OUTBOARD COURT
RMS. 77 & 04
SCALE: 1/4" = 1'-0"

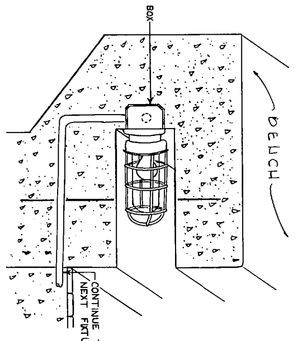
(18/18A) TYPICAL COURTROOM
NOT TO SCALE



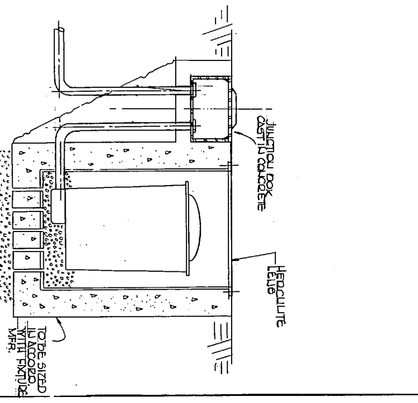
(18/18A) SEMI-RECESSED 'HE-1'
SCALE: NONE

(18/18A) LEVEL 10 - OUTBOARD COURT
RMS. 77 & 04
SCALE: 1/4" = 1'-0"

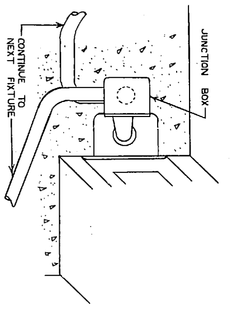
(18/18A) BENCH LIGHT 'SA'
SCALE: NONE



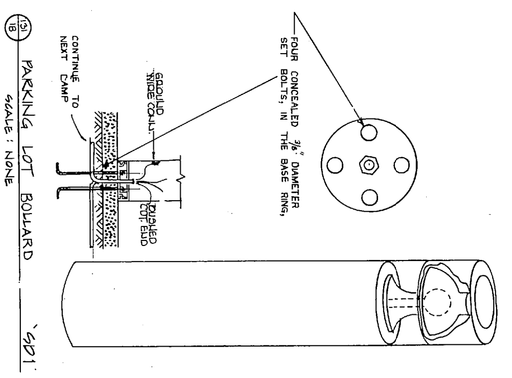
(18/18A) TREE UPLIGHT 'SB'
SCALE: NONE



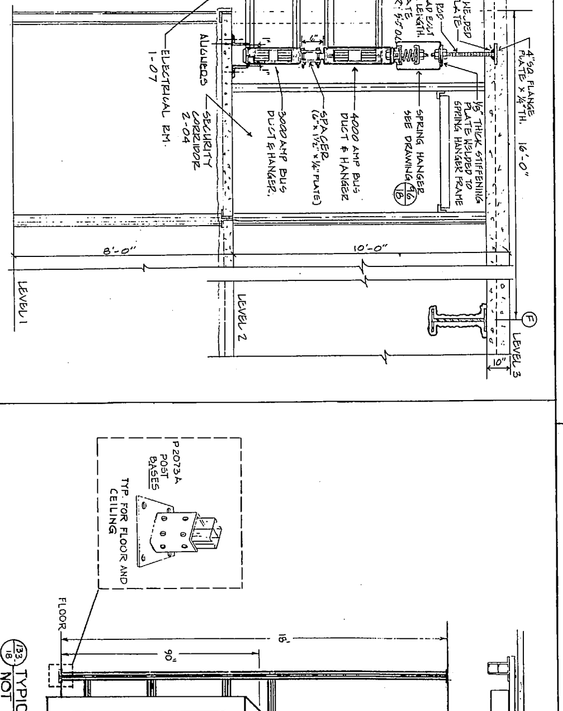
(18/18A) STEP LIGHT 'SC'
SCALE: NONE



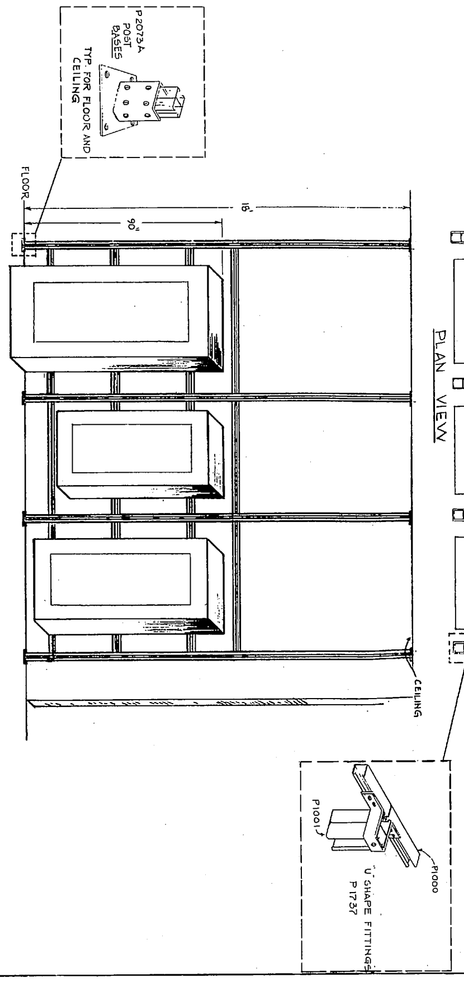
(18/18A) PARKING LOT BOLLARD 'SD'
SCALE: NONE



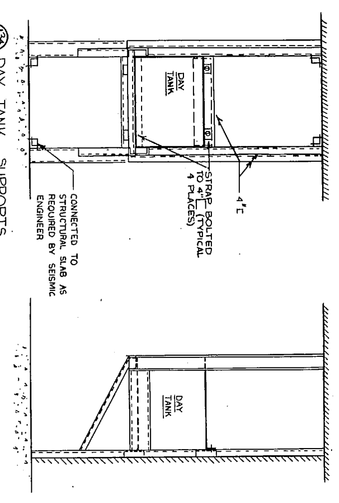
(18/18A) BUS DUCT MOUNTING
NOT TO SCALE



(18/18A) TYPICAL PANEL MOUNTING SUPPORT
NOT TO SCALE



(18/18A) DAY TANK SUPPORTS
NOT TO SCALE



NOT USED 123, 135, 136

JOB NO.	7873-00
DRAWN BY	
CHECKED BY	
DATE	7-4-77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

DRAWING NUMBER 121-136

CATEGORY 18

ELECTRICAL LIGHTING, GENERAL DETAILS

EDWARD M. WALKER — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

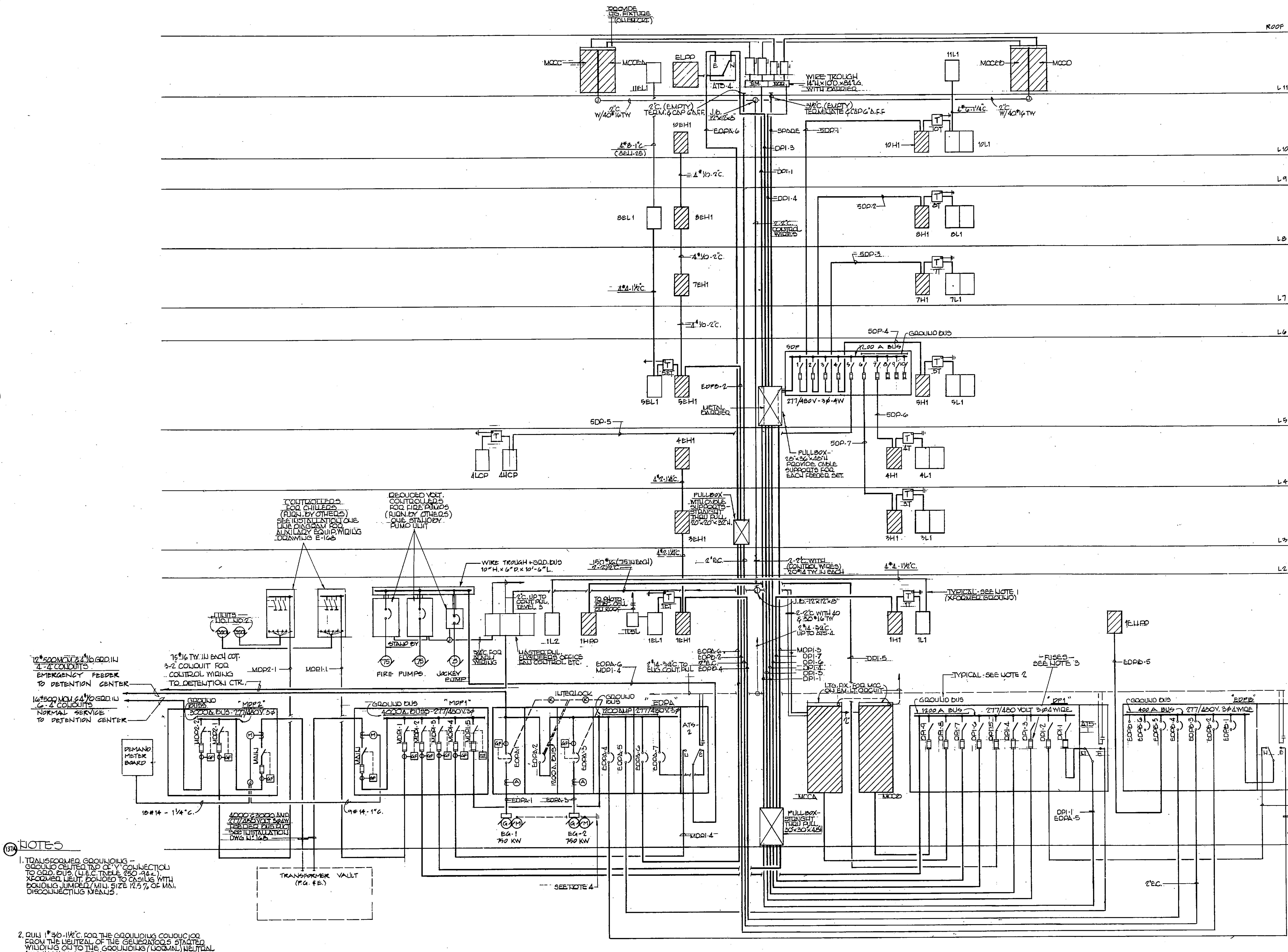
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



137 COURT BUILDING - SINGLE LINE DIAGRAM
NOT TO SCALE

NOTES

1. TRANSFORMER GROUNDING - GROUND CENTER TAP OF 'Y' CONNECTION TO GRD. BUS (N.E.C. TABLE 250-94a). XFORMER NEUT. BONDED TO CASING WITH BONDING JUMPER (MIN. SIZE 12.5% OF MAIN DISCONNECTING MEANS.

2. RUN 1#3/0-1½"C. FOR THE GROUNDING CONDUCTOR FROM THE NEUTRAL OF THE GENERATORS STARTED WINDING ON TO THE GROUNDING (NORMAL) NEUTRAL BUS IN MAIN SWITCHBOARD, MAIN SERVICE SWITCH.

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

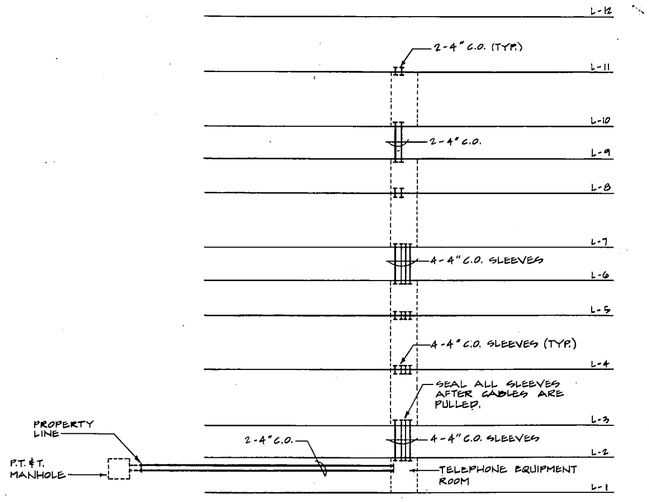
OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

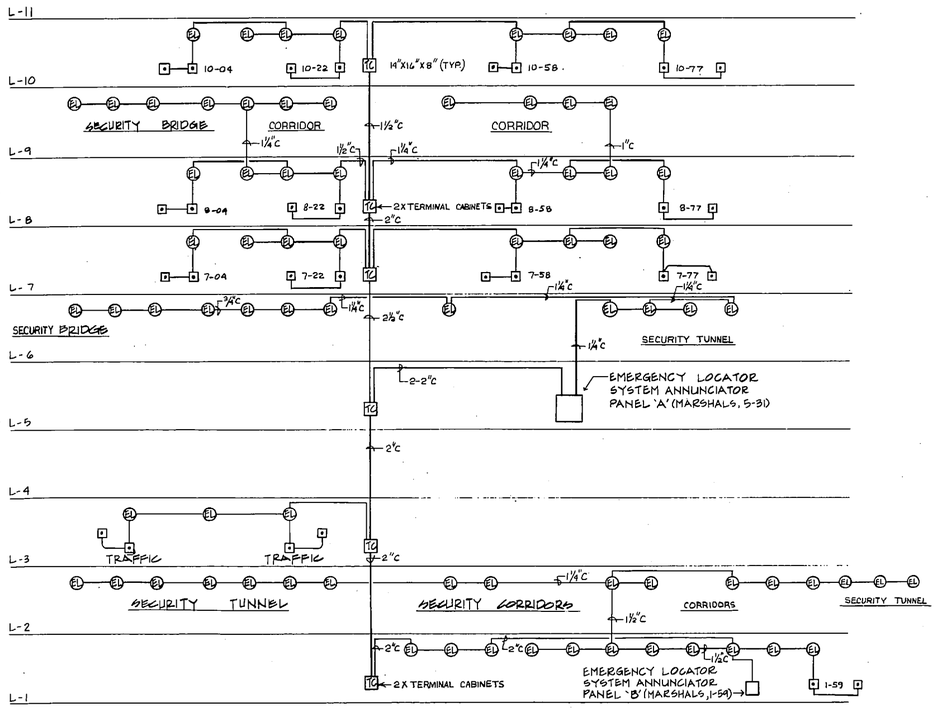
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7-4-77
REVISIONS

ELECTRICAL SINGLE LINE DIAGRAM

DRAWING NUMBER 137
CATEGORY 18



(138) TELEPHONE RISER DIAGRAM
NOT TO SCALE

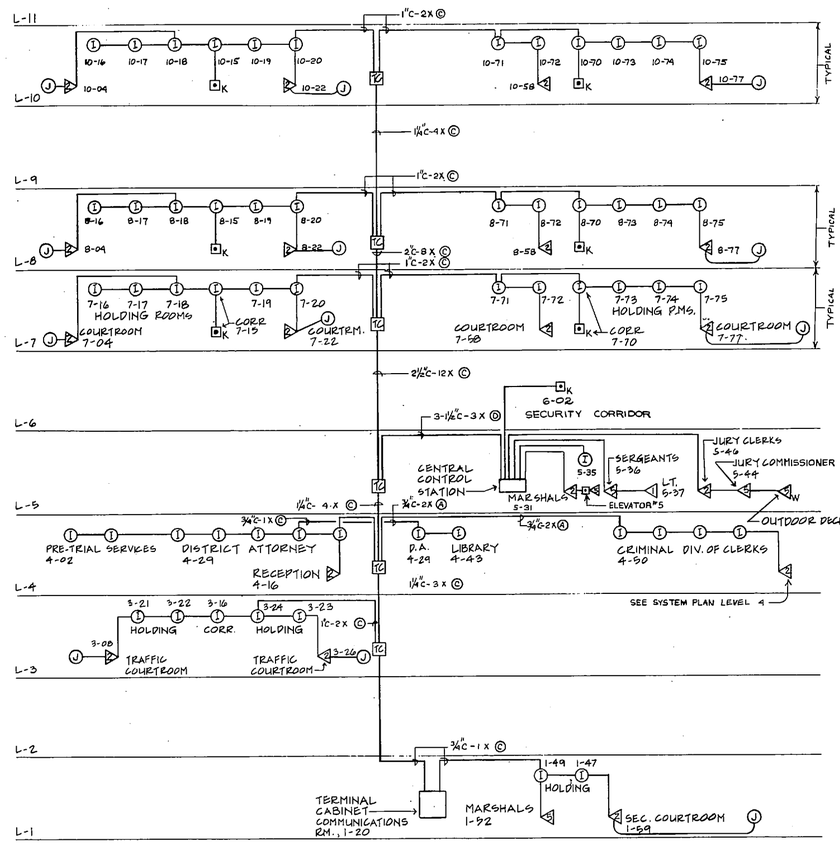


NOTE: SEE SYSTEM PLANS FOR LOCATIONS

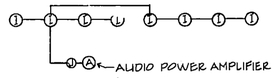
(139) EMERGENCY LOCATOR SYSTEM RISER DIAGRAM
NOT TO SCALE

(140) LEGEND

- TV — TV CAMERA
- (M) — CLOSED CIRCUIT TV MONITOR
- ▷ — INTERCOM MASTER DESK MOUNTED
- ▷ — INTERCOM MASTER FLUSH MOUNTED
- ▷ — INTERCOM SPEAKER/MICROPHONE FLUSH MOUNTED
- ▷ — INTERCOM SPEAKER/MIC, WEATHER PROOF ENCLOSURE
- ▣K — INTERCOM CALL KEY-ACTUATED
- (I) — INTERCOM SPKR/MIC., FLUSH MOUNTED IN CEILING.
- (A) — AUDIO POWER AMPLIFIER
- (J) — JUNCTION BOX
- (EL) — EMERGENCY LOCATOR SYSTEM
- ▣ — EMERGENCY PUSH BUTTON
- (A) — BELDEN 8741 - 2PR.
- (C) — BELDEN 8795 - 15PR.
- (D) — BELDEN 8796 - 27PR.

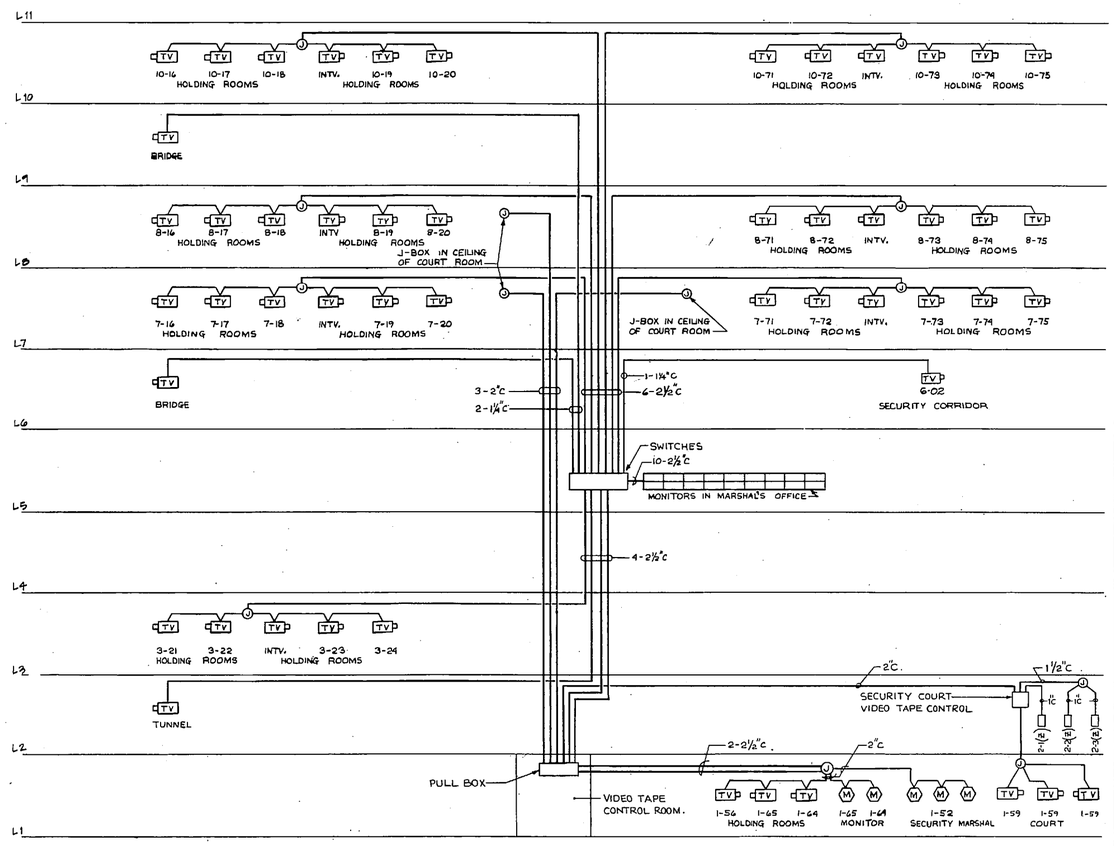


(141) COMMUNICATION SYSTEM - RISER DIAGRAM
NOT TO SCALE



JURY ASSEMBLY AREA
LEVEL 5

(142) INDEPENDENT SYSTEMS
NOT TO SCALE



(143) CLOSED CIRCUIT TELEVISION SYSTEM - RISER DIAGRAM
NOT TO SCALE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

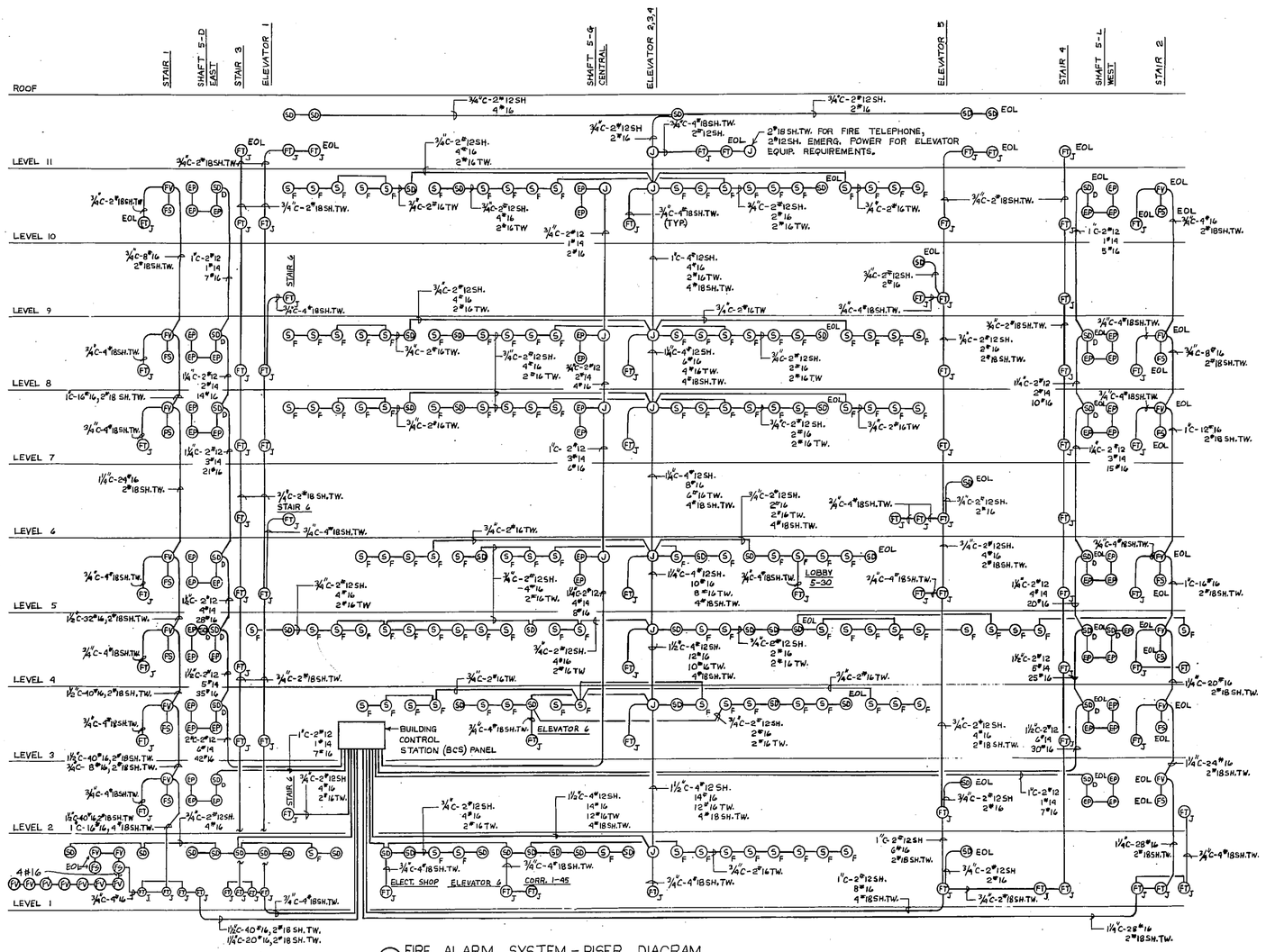
OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873.00
DRAWN BY
CHECKED BY
DATE 4-22
REVISIONS 1 2 3 4 5 6 7 BY DATE

ELECTRICAL
E L S, COMM., CCTV AND TEL.
RISER DIAGRAM

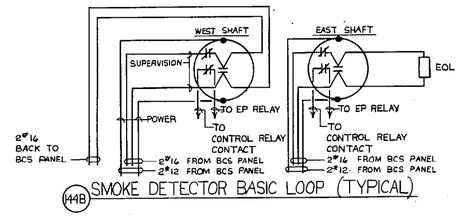
DRAWING NUMBER	CATEGORY
138-143	18



144 FIRE ALARM SYSTEM - RISER DIAGRAM

144A LEGEND :

- (EP) ELECTRIC PNEUMATIC RELAY FOR DAMPER CONTROL
- (SD) AREA SMOKE DETECTOR
- (SD)D DUCT SMOKE DETECTOR
- (FT) FIRE TELEPHONE
- (FT)J FIREMAN'S TELEPHONE JACK
- (FV) SPRINKLER VALVE SWITCH
- (FS) SPRINKLER FLOW SWITCH
- (S)F FIRE SPEAKER
- (J) JUNCTION BOX
- SH: SHIELDED
- TW TWISTED
- EOL END OF LINE RESISTOR
- SAV SOLENOID AIR VALVE

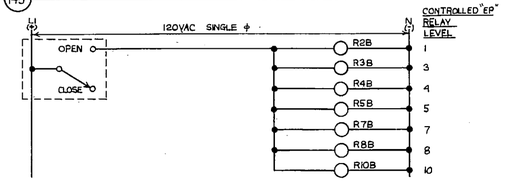


144B SMOKE DETECTOR BASIC LOOP (TYPICAL)

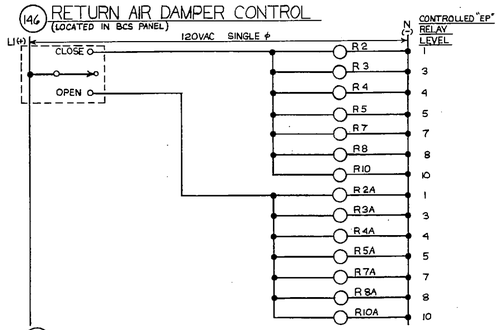
SMOKE DETECTOR	DWG. 17 RELAY NO.	DAMPER CONTROL	FAN CONTROL	FAN ON/OFF BCS PANEL
SD-1	R4	——	S-1	S-1
SD-2	R5	SAV-3 SAVES THRU SAV-8	——	——
——	——	——	——	RE-1
——	——	——	——	E-1
SD-3	R6	——	AC-1	AC-1
SD-4	R10	——	S-2	S-2
SD-5	R11	SAV-17 THRU SAV-24	——	——
——	——	——	——	RE-2
SD-6	R12	——	AC-2	AC-2

NOTE : SEE DWG. 71/CAT. 15

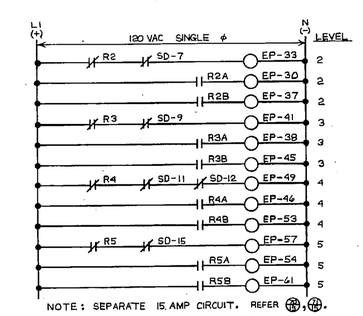
145 EMERGENCY HVAC AIR HANDLING REQUIREMENTS



146 RETURN AIR DAMPER CONTROL (LOCATED IN BCS PANEL)

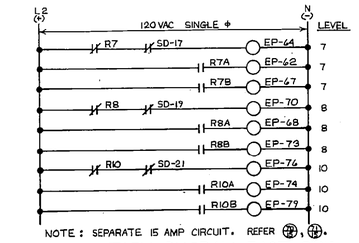


147 SUPPLY AIR DAMPER CONTROL (LOCATED IN BCS PANEL)



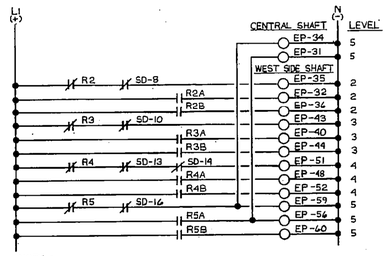
NOTE: SEPARATE 15 AMP CIRCUIT. REFER (SD), (EP).

148 ELEMENTARY DIAGRAM EAST SIDE SHAFT DAMPER CONTROL



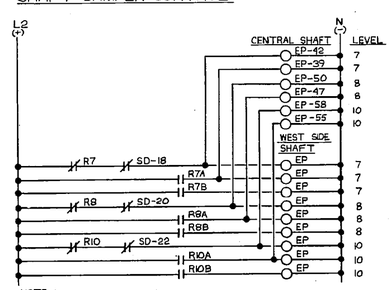
NOTE : SEPARATE 15 AMP CIRCUIT. REFER (SD), (EP).

148A ELEMENTARY DIAGRAM EAST SIDE SHAFT DAMPER CONTROL



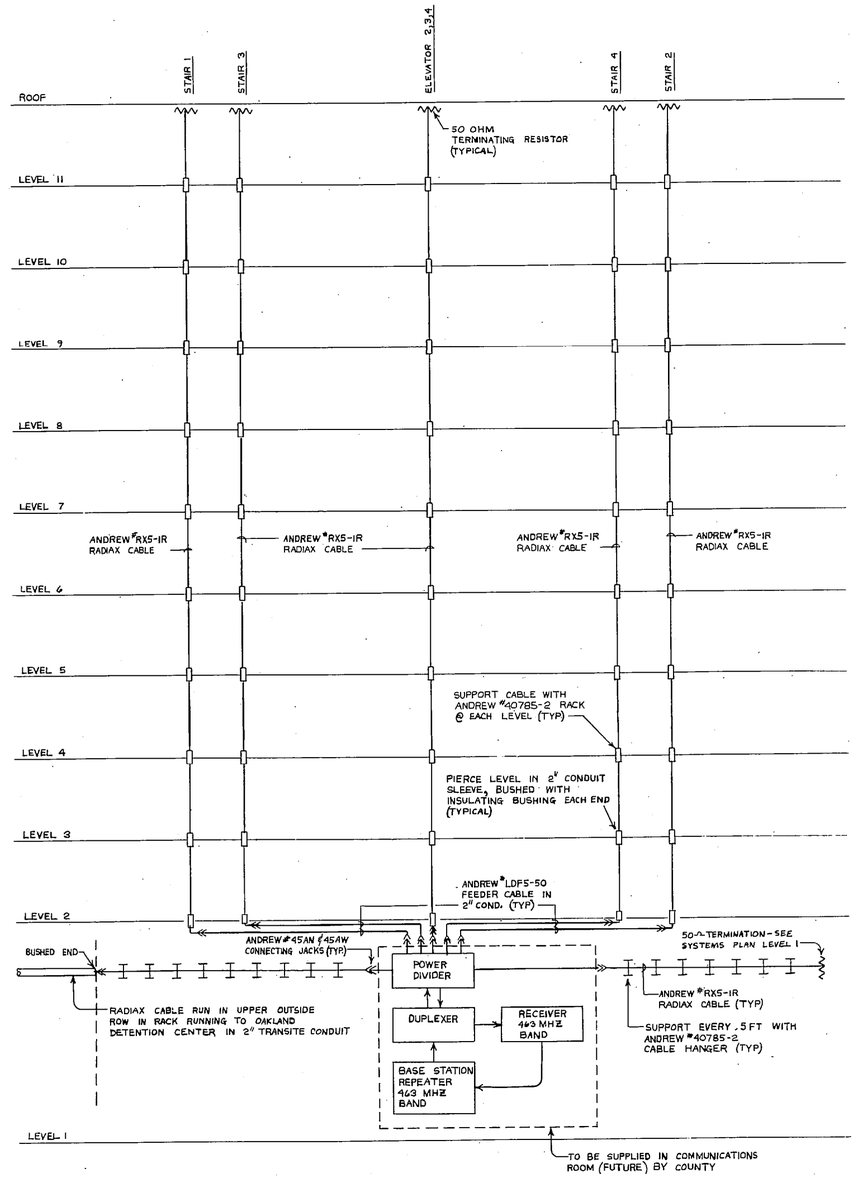
NOTE :
1. SEPARATE 15 AMP CIRCUIT.
2. REFER TO DWG'S 70 & 71/CAT. 15.

147 ELEMENTARY DIAGRAM WEST SIDE SHAFT DAMPER CONTROL



NOTE :
1. SEPARATE 15 AMP CIRCUIT.
2. REFER TO DWG'S 70 & 71/CAT. 15.

147A ELEMENTARY DIAGRAM WEST SIDE SHAFT DAMPER CONTROL



150 ANTENNA SYSTEM RISER DIAGRAM

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

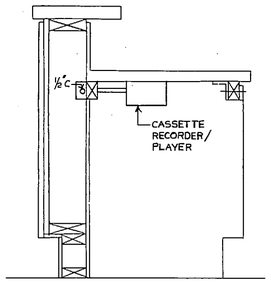
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 2-4-77
REVISIONS

	1	2	3	4	5	6	7
BY							
DATE							

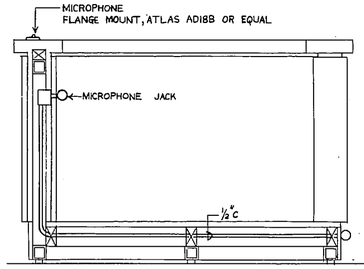
ELECTRICAL FIRE ALARM RISER DIAG.

DRAWING NUMBER 144-150

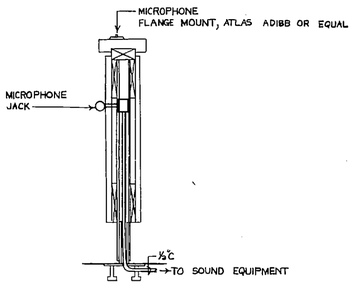
CATEGORY 18



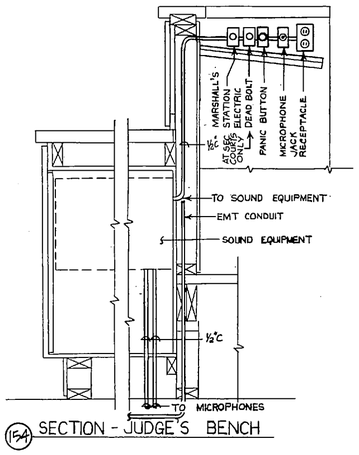
151 SECTION - CLERK'S DESK



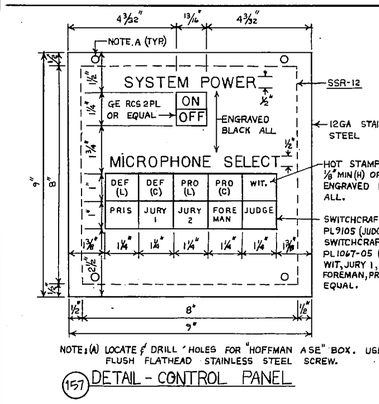
152 SECTION - WITNESS STAND



153 SECTION - JURY RAIL

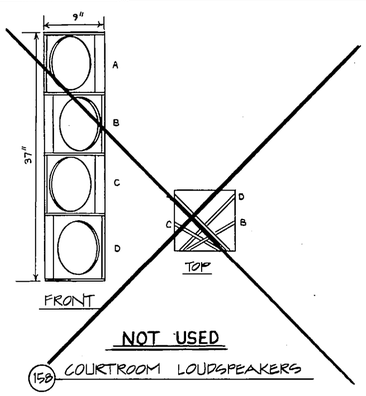


154 SECTION - JUDGE'S BENCH



NOTE: (A) LOCATE ∱ DRILL ∱ HOLES FOR "HOFFMAN ASE" BOX. USE FLUSH FLATHEAD STAINLESS STEEL SCREW.

157 DETAIL - CONTROL PANEL

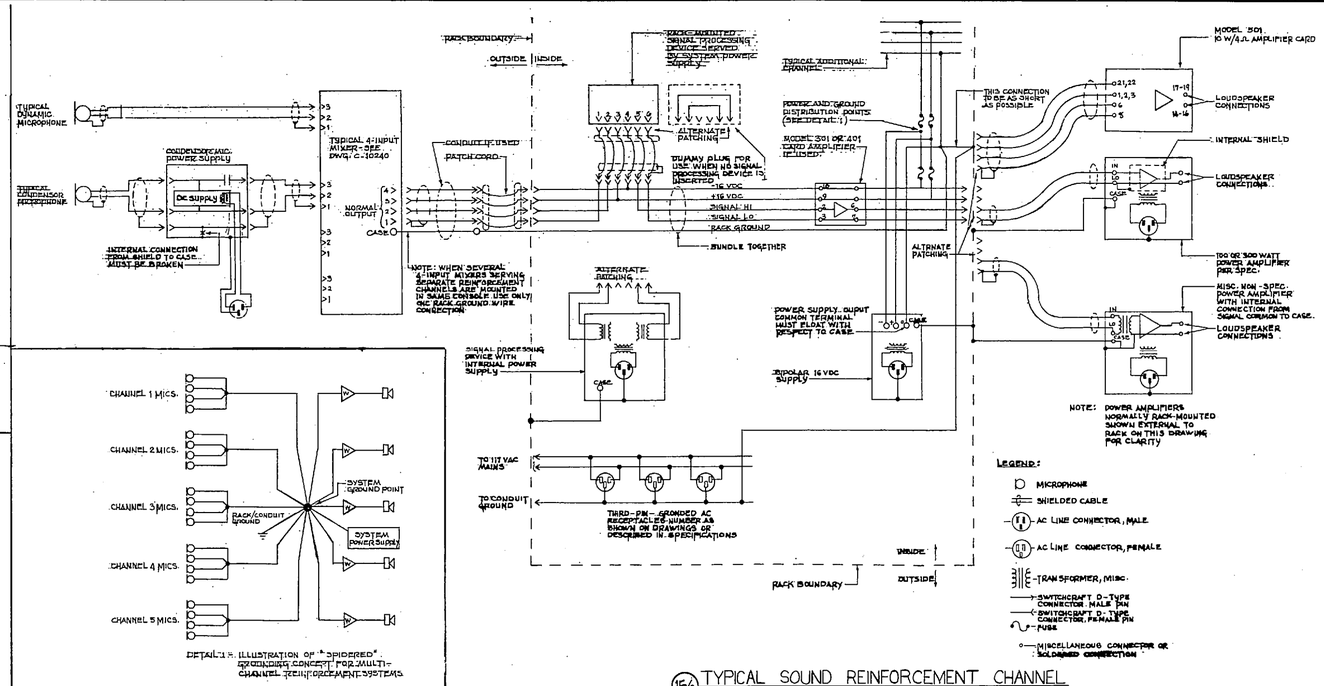


NOT USED

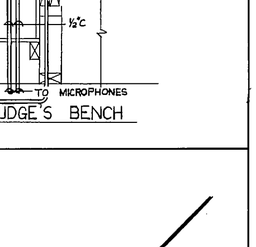
158 COURTROOM LOUDSPEAKERS

DETAIL: ILLUSTRATION OF "SPIDERED" GROUNDING CONCEPT FOR MULTI-CHANNEL REINFORCEMENT SYSTEMS

155 MULTI-CHANNEL REINFORCEMENT SYSTEMS

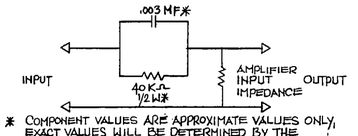


156 TYPICAL SOUND REINFORCEMENT CHANNEL



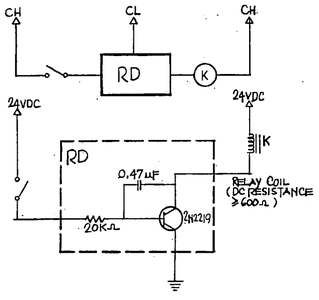
EQUALIZATION STEPS:
FLAT
125, NO SHELF
250, NO SHELF
500, WITH 20dB SHELF
1K, WITH 20 dB SHELF
2K, WITH 20dB SHELF

159 DETAIL - MICROPHONE EQUALIZER

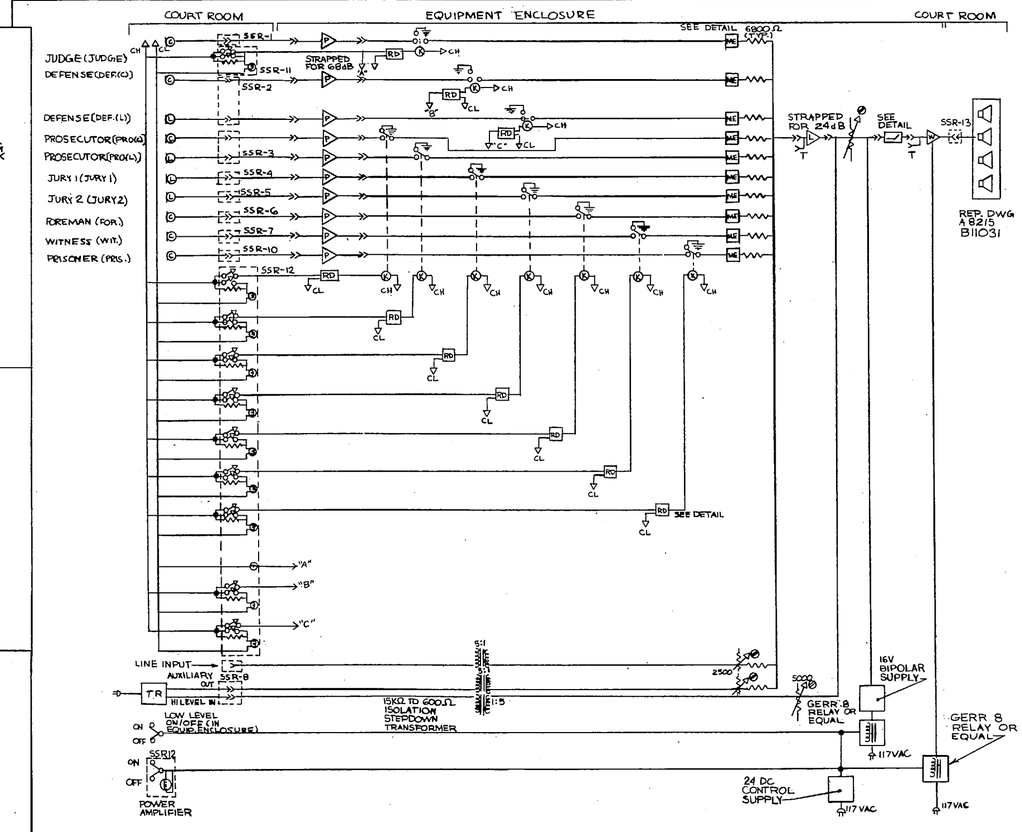


* COMPONENT VALUES ARE APPROXIMATE VALUES ONLY, EXACT VALUES WILL BE DETERMINED BY THE ACOUSTICAL CONSULTANT DURING SYSTEM INSTALLATION. HIGH PASS FILTER TO PRECEDE POWER AMPLIFIER FEEDING COLUM LOUDSPEAKER.

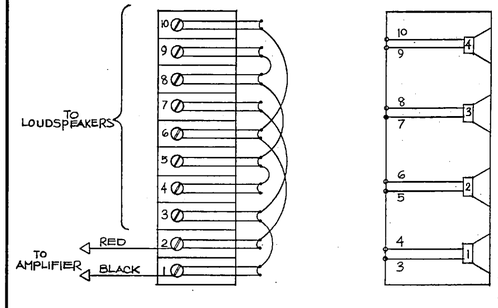
160 DETAIL - COLUMN LOUDSPEAKER EQUALIZER



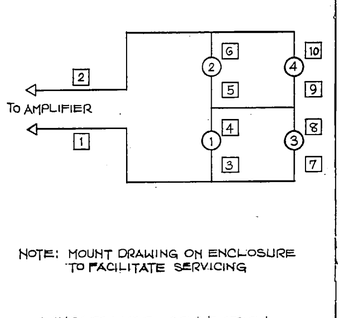
163 DETAIL - RELAY DRIVER



164 SOUND SYSTEM BLOCK DIAGRAM



161 DETAIL - LOUDSPEAKER CONNECTION



NOTE: MOUNT DRAWING ON ENCLOSURE TO FACILITATE SERVICING

162 LOUDSPEAKER CONNECTION

LEGEND:

- TR → TAPE RECORDER
- C → MICROPHONE (CARDIOID)
- L → MICROPHONE (LAVALIER)
- P → MICROPHONE PREAMP
- RD → RELAY DRIVER
- ME → MICROPHONE EQUALIZER
- L → 1 WATT/50Ω DRIVER
- LOUDSPEAKER ENCLOSURE EQUALIZER
- W → 50 WATT/8Ω POWER AMPLIMIER

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

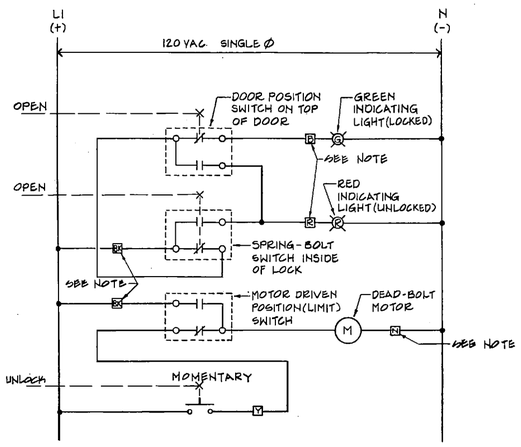
EDWARD M. WALKER REGISTERED PROFESSIONAL ENGINEER ELECTRICAL STATE OF CALIFORNIA 15219

JOB NO. 7873-00							
DRAWN BY							
CHECKED BY							
DATE 7-4-77							
REVISIONS	1	2	3	4	5	6	7
BY							
DATE							

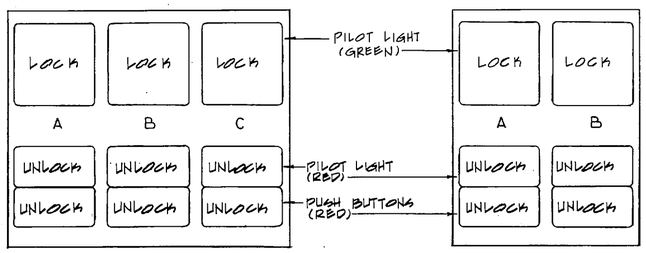
ELECTRICAL
COURT ROOM
SOUND SYSTEM

DRAWING NUMBER 151-164

CATEGORY 18



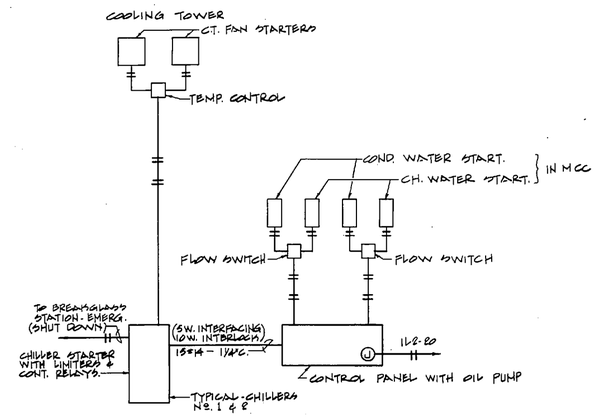
(168) ELEMENTARY DIAGRAM
INDIVIDUAL HOLDING ROOM DOOR LOCK/UNLOCK CONTROL (TYPICAL)



NOTE:
PILOT LIGHTS TO BE 24VOLT WITH INDIVIDUAL TRANSFORMER MTD. BEHIND PILOT LIGHT.

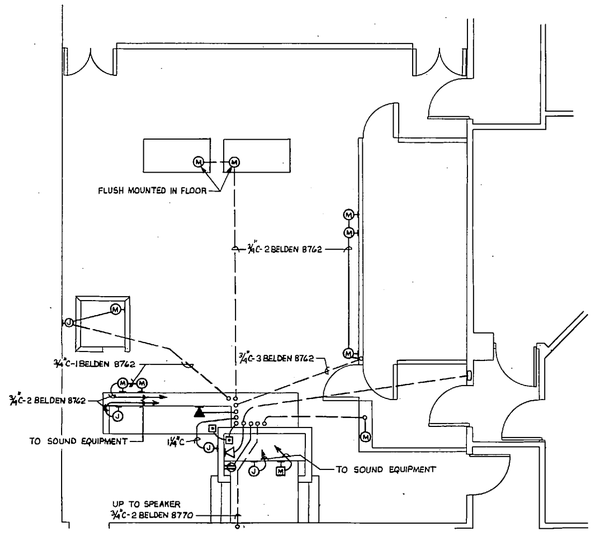
(166) TYPICAL 3 HOLDING ROOM PUSH BUTTON CONTROL CONFIGURATION

(167) TYPICAL 2 HOLDING ROOM PUSH BUTTON CONTROL CONFIGURATION



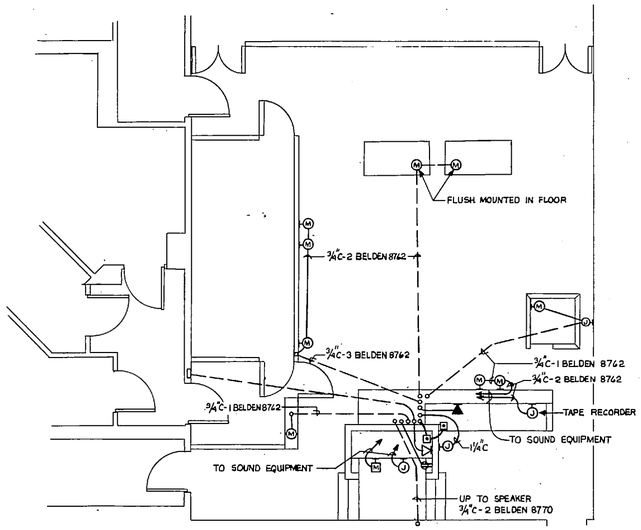
(168) WIRING DIAGRAM FOR REFRIGERATION CONTROLS
SCALE : NONE

NOTE:
TERMINAL BLOCK DESIGNATIONS AND NUMBERS AT PUSH-BUTTONS REFER TO MANUFACTURER'S (FOLGER-ADAMS) WIRING DIAGRAM.



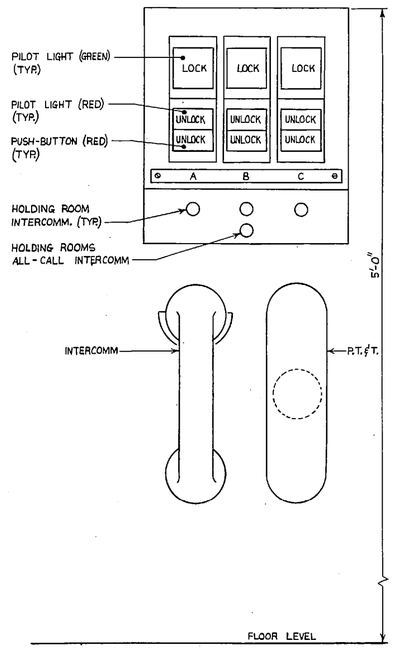
NOTE:
1. (M) - FEMALE MICROPHONE RECEPTACLE
2. SEE DWG'S (151/18) (152/18) (153/18) (154/18) (167/18) (158/18)
3. COURTROOMS: 7-58, 8-58, 10-58, 3-08; OPP. HAND 1-58, 3-26, 7-22, 8-22, 10-22.

(167) TYPICAL COURTROOM CONDUIT LAYOUT
SCALE: 1/8"= 1'-0"

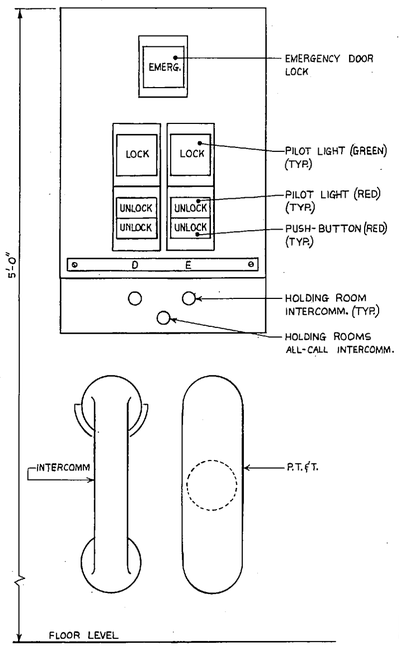


NOTE:
1. (M) - FEMALE MICROPHONE RECEPTACLE
2. SEE DWG'S (151/18) (152/18) (153/18) (154/18) (157/18) (158/18)
3. COURTROOMS: 7-77, 8-77, 10-77; OPP. HAND 7-04, 8-04, 10-04.

(170) TYPICAL COURTROOM CONDUIT LAYOUT
SCALE: 1/8"= 1'-0"



(171) COURT HOLDING ROOMS INTERCOMM. & DOOR CONTROLS (TYP.)
SCALE: NONE



(172) SECURITY COURT HOLDING ROOMS INTERCOMM. & DOOR CONTROLS
SCALE: NONE

NOT USED 173-179

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS, — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

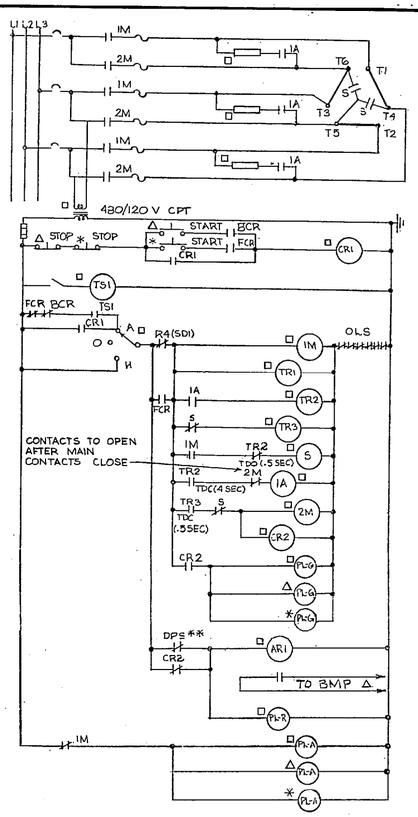
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

EDWARD M. WALKER — REGISTERED PROFESSIONAL ENGINEER — STATE OF CALIFORNIA

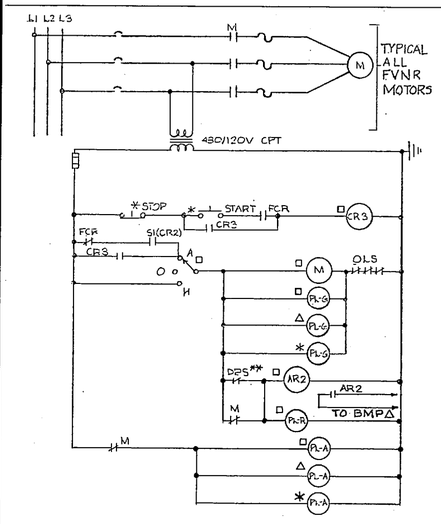
JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE
REVISIONS 4-22 BY DATE
1 2 3 4 5 6 7

ELECTRICAL CONTROL DIAGRAMS AND PANELS

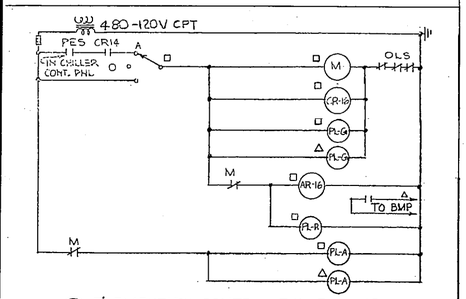
DRAWING NUMBER 165-179
CATEGORY 18



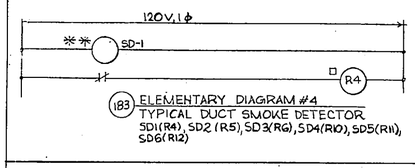
180 ELEMENTARY CONTROL DIAGRAM #1
REDUCED VOLTAGE Y-Δ CLOSED TRANSITION WITH CONTROL BY TS, FIREMAN (BCS) & BLDG. MAINT. (BMP) SUPPLY FANS S1 & S2



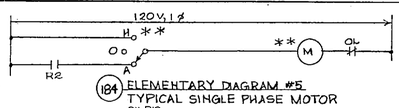
181 ELEMENTARY CONTROL DIAGRAM #2
TYPICAL FOR MOTOR INTERLOCKED TO START WITH ANOTHER DEVICE & WITH CONTROL BY FIREMAN (BCS) & BMP
-TYPICAL FANS E1, E2, E3, E4, RE1, RE2



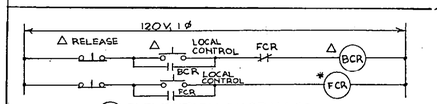
182 ELEMENTARY CONTROL DIAGRAM #3
CONDENSER WATER PUMP P3, P4



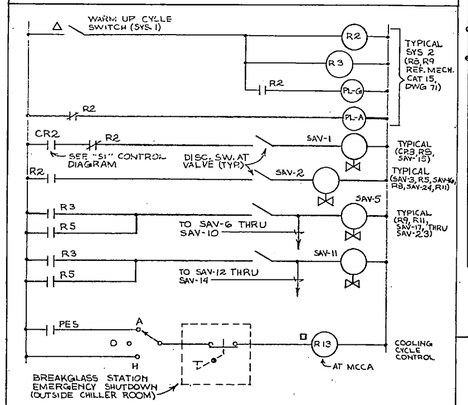
183 ELEMENTARY DIAGRAM #4
TYPICAL DUCT SMOKE DETECTOR
SD1(R4), SD2 (R5), SD3(RG), SD4(R10), SD5(R11), SD6(R12)



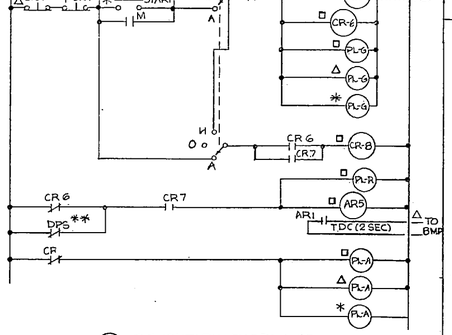
184 ELEMENTARY DIAGRAM #5
TYPICAL SINGLE PHASE MOTOR
P11, P12



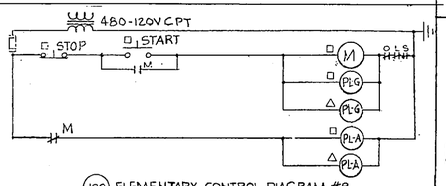
185 ELEMENTARY DIAGRAM #6
TYPICAL FIREMAN & BUILDING MGMT.-LOCAL CONTROL AQUISITION



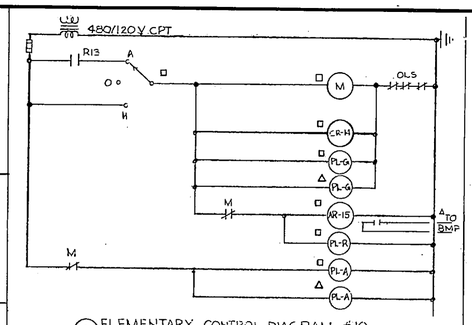
186 ELEMENTARY DIAGRAM #7
WARM-UP CYCLE, COOLING CYCLE CONTROL



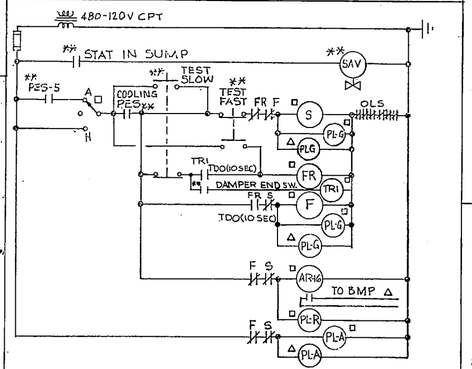
187 ELEMENTARY DIAGRAM #8
TYP. ST-SP @ BCS & BMP W/S D SHUTDOWN & DPS ALARM
UNITS AC1, AC2



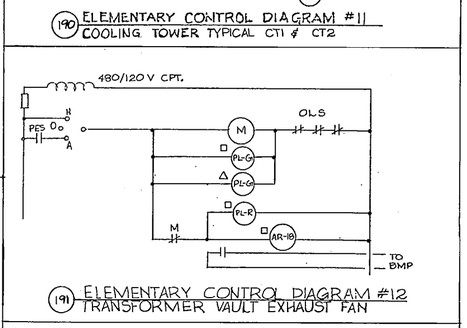
188 ELEMENTARY CONTROL DIAGRAM #9
TYPICAL P5, P6, P7, P8, P9, P10



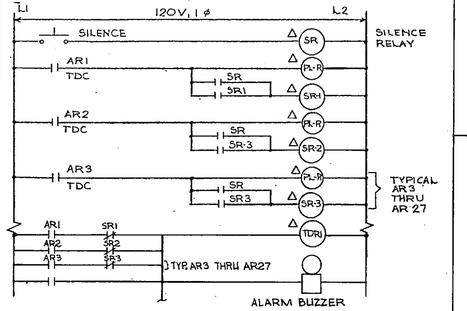
189 ELEMENTARY CONTROL DIAGRAM #10
CHILLED WATER PUMP P1, P2



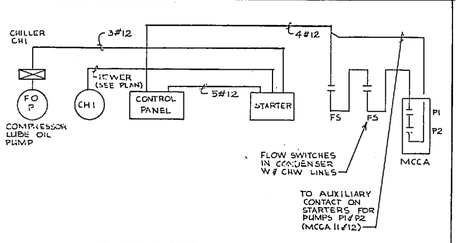
190 ELEMENTARY CONTROL DIAGRAM #11
COOLING TOWER TYPICAL CT1 & CT2



191 ELEMENTARY CONTROL DIAGRAM #12
TRANSFORMER VAULT EXHAUST FAN

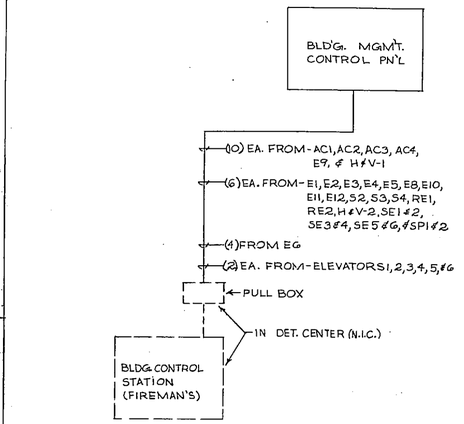


192 ELEMENTARY ALARM DIAGRAM
ALARM/SILENCE CONTROL

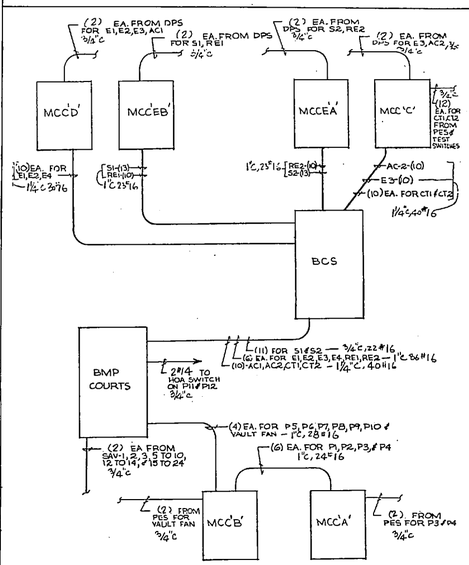


193 CONNECTION DIAGRAM
CHILLER CH-1

□ AT MOTOR CONTROL CENTER
* AT BLDG. CONT. STATION (BCS) (FIREMAN'S)
△ AT BLDG. MAINT. CONTROL PANEL
** REMOTE AT OR NEAR MOTOR OR UNIT



194 INTERCONNECTION DIAGRAM
FOR DETENTION CENTER
NO. IN PARENTHESES INDICATES QUANTITY OF #14 AWG



195 INTERCONNECTION RISER DIAGRAM
NUMBER IN PARENTHISES INDICATES QUANTITY OF #16 AWG

196 CONTROLS AND INTERLOCKS

UNIT OR MOTOR	DISCONN	FIREMAN'S PNL. (BCS) PUSHBUTTONS	FIREMAN'S PNL. (BCS) PILOT LTS.	FIREMAN'S PNL. (BCS) MISC.	BLDG. MGMT. PANEL (BMP) PUSHBUTTONS	BLDG. MGMT. PANEL (BMP) PILOT LTS.	BLDG. MGMT. PANEL (BMP) RELAYS	MOTOR CONTROL CENTER NUMBER	MOTOR CONTROL CENTER PUSHBUTTONS	MOTOR CONTROL CENTER PILOT LTS.	MOTOR CONTROL CENTER CONTROL RELAYS	REMARKS, INTERLOCKS, ETC.
S-1	1	ST SP	G A		ST SP	G A R		EB	HOA	G A R	CR1, CR2 TIME SW 1, TR1, TR2, TR3, AR1	SHUT DOWN BY SD1 THRU R4. CONTROLS SAV-1 RE1, E1 AND E2.
RE-1	2	ST SP	G A			G A R		EB	HOA	G A R	CR3 AR2	START WITH S1 (CR2).
E-1	2	ST SP	G A			G A R		D	HOA	G A R	CR4 AR3	START WITH S1 (CR2).
E-2	2	ST SP	G A			G A R		D	HOA	G A R	CR5 AR4	START WITH S1 (CR2)
P-11	5				ON OFF SW	G A			HOA		R2	HOA SW. AT MOTOR. START ON WARM-UP CYCLE (R2).
AC-1	8	ST SP	G A		ST SP	G A R		D	HOA	G A R	CR6, CR7 AR5	SHUT DOWN BY SD3 THRU R6.
S-2	1	ST SP	G A		ST SP	G A R		EA	HOA	G A R	CR8, CR9 TIME SW 2, TR5, TR6, TR7, AR6	SHUT DOWN BY SD4 THRU R10. CONTROLS SAV-15, RE2 AND E3.
RE-2	2	ST SP	G A			G A R		EA	HOA	G A R	CR10 AR7	START WITH S2 (CR9).
E-3	2	ST SP	G A			G A R		C	HOA	G A R	CR11 AR8	START WITH S2 (CR9).
P-12	5				ON OFF SW	G A			HOA		R8	HOA SW. AT MOTOR. START ON WARM-UP CYCLE (R8).
AC-2	8	ST SP	G A		ST SP	G A R		C	HOA	G A R	CR12, CR13 AR9	SHUT DOWN BY SD6 THRU R12.
P-5	9					G A R		B	ST SP	G A		
P-6	9					G A R		B	ST SP	G A		
P-7	9					G A R		B	ST SP	G A		
P-8	9					G A R		B	ST SP	G A		
P-9	9					G A R		B	ST SP	G A		
P-10	9					G A R		B	ST SP	G A		
P-1	10					G A R		A	HOA	G A R	CR14 AR10	
P-2	10					G A R		A	HOA	G A R	CR15 AR11	
P-3	3					G A R		A	HOA	G A R	CR16 AR13	START WITH P1.
P-4	3					G A R		A	HOA	G A R	CR16 AR14	START WITH P2.
E-4	2	ST SP	G A			G A R		D	HOA	G A R	CR18 AR15	
CT-1	11					G A R		C	HOA	G A R	FR AR16	
CT-2	11					G A R		C	HOA	G A R	AR17	
VAULT FAN	12					G A R		B	HOA	G A R	AR18	

197 SYMBOLS & ABBREVIATIONS (CONTROL DIAGRAM ONLY)

AR	ALARM RELAY
BCS	BLDG. CONTROL STATION (FIREMAN'S PANEL)
BMP	BLDG. MAINTENANCE PANEL
CR-1	CONTROL RELAY # 1 (SIM # 2, ETC.)
DPS	DIFFERENTIAL PRESSURE SWITCH
FVNR	FULL VOLTAGE NON-REVERSING
HOA	HAND-OFF-AUTOMATIC SWITCH
NO, NC	NORMALLY OPEN, NORMALLY CLOSED
PES	PNEUMATIC ELECTRIC SWITCH
PL-A	PILOT LIGHT, AMBER = OFF
PL-G	PILOT LIGHT, GREEN = RUN
PL-R	PILOT LIGHT, RED = TROUBLE
SAV	SOLENOID AIR VALVE
SD	SMOKE DAMPER, SMOKE DETECTOR
SR	SILENCING RELAY
ST, SP	START - STOP
TDO, TDC	TIME DELAY OPEN, TIME DELAY CLOSE (SUGGESTED TIME)
TDR	TIME DELAY RELAY
TR-1	TIMING RELAY # 1 (SIM # 2, ETC.)
TS	TIME SWITCH 2P 2T 30A W/CARRYOVER
	PUSHBUTTONS - NORMALLY CLOSED, NORMALLY OPEN
	CONTACTS NORMALLY CLOSED, NORMALLY OPEN
	PILOT LIGHT, RED SIM GREEN & AMBER
	FUSE
	SWITCH
	CIRCUIT BREAKER
	SOLENOID VALVE
	OVERLOAD HEATER
	HAND-OFF-AUTO SWITCH
	BUZZER

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VEMERLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

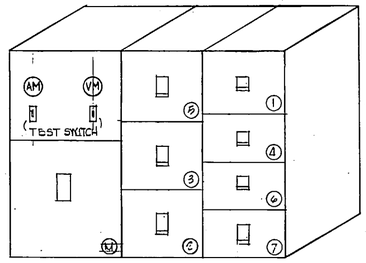
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

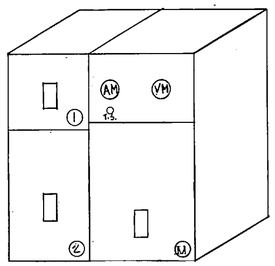
JOB NO. 7873.00
DRAWN BY
CHECKED BY
DATE 7-4-77
REVISIONS — BY — DATE
1 2 3 4 5 6 7

ELECTRICAL ELEMENTARY DIAGRAMS & SCHEDULES

DRAWING NUMBER 180-197
CATEGORY 18



MDP-1.



MDP-2

MAIN DISTRIBUTION PANEL "MDP-1"

MAXIMUM AVAILABLE FAULT CURRENT
MAIN BUS 4,000 A, 480/277 V, 3φ, 4W.
BRACING

NO.	NAMEPLATE	FUSIBLE SWITCH POLE	SIZE	FUSE	FEEDER CONDUIT	WIRES	MAX. LET-THRU CURRENT	REMARKS
M	MAIN SWITCH	3	4M	3.5M	BUS	4000 AMP. BUS		2CT's, AM, & AM SW.
1	CHILLED W-1	3	600	800	2-3"	6*250 MCM+GRD.		
2	DPI	3	1600	1600	4-3½"	12*500 MCM+GRD.		
3	DP5	3	1200	800	3-3½"	12*500 MCM.		
4	FIRE & JOCKEY PUMPS	3	200	200	1½"	3*4/0 THW+GRD.		
5	EDPA	3	1200	1000	4-3½"	12*350 MCM		
6	SPACE	3	400	—		—		
7	SPACE	3	400	—				

MAIN DISTRIBUTION PANEL "MDP-2"

MAXIMUM AVAILABLE FAULT CURRENT
MAIN BUS 3000 A., 480/277V, 3φ, 4W.
BRACING

M	MAIN SWITCH	3	3000	2500	-	3,000 A. BUS		2CT's, AM, & AM SW.
1	CHILLED W-2	3	600	500	2-3"	3-250 MCM & 1*2 GND. EA.		
2	DETENTION BLDG SERVICE	3	2000	2000	6-4"	4-500 MCM & 1*#6 GND. EA.		

(180) MAIN DISTRIBUTION PANELS

(181) AUTOMATIC TRANSFER SWITCH SCHEDULE

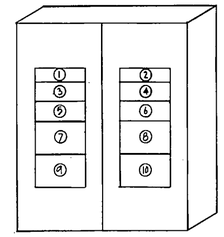
NO.	LOCATION	AMP. RATING	POLE	VOLTAGE & PHASE	SERVES	REMARKS
ATS-1	LEVEL I	400	4	480V, 3φ, 4 WIRES		*
ATS-2	"	200	↓	↓		*
ATS-3		400	↓	↓		*
ATS-4	LEVEL II					

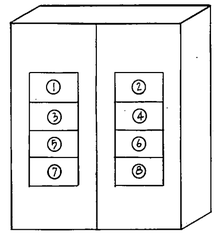
* PROVIDE BY-PASS AND PHASE BALANCING FEATURE

(182) TRANSFORMER SCHEDULE

NO.	SIZE KVA	VOLTAGE	PHASE	SERVES PANEL	FEEDER CIRC. NO.	FEEDER PRIMARY	FEEDER SECONDARY	MOUNTING
1T	45	480-208Y/120	3	1LI		3#6 & 1#8, 1¼"C	4#1 & 1#8, 2"C	TRAPEZE
1ET	25			1ELI		3#8 & 1#10-1¼"C.	4#4 & 1#8-1½"C.	
3T	45			3LI		3#6 & 1#8-1¼"C.	4#1 & 1#6-2"C.	
4T	↓			4LI		↓	↓	
5T	↓			5LI		↓	↓	
5ET	25			5ELI		3#8 & 1#10-1¼"C	4#4 & 1#8-1½"C.	
7T	45			7LI		3#6 & 1#8-1¼"C.	4#1 & 1#6-2"C	
8T	↓			8LI		↓	↓	
10T	↓			10LI		↓	↓	

NOTE - USE FLEXIBLE METAL CONDUITS FOR PRI. & SEC. CONNECTIONS.





DISTRIBUTION PANEL "DPI"

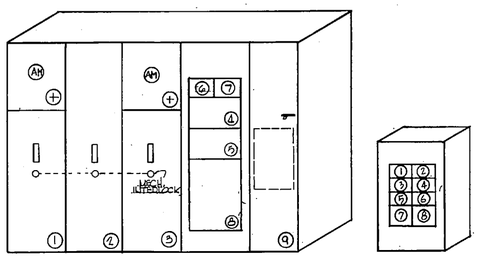
MAXIMUM AVAILABLE FAULT CURRENT
1200 A. BUS, 480/277V., 3φ, 4W.
FED FROM - MDP1-3, BRACING -

NO.	NAMEPLATE	FUSIBLE SWITCH POLE	SIZE	FUSES	FEEDER COND.	WIRES	REMARKS
1	MCCEA & MCCED	3	600	600	10-3"	6*300 MCM	NOR. PWR.
2	EDPD - LOCAL W.L. ATS-3	3	400	400	2-2½"	3*#6	
3	ELEVATOR PWR. PNL.	3	200	200	2"	3*#6 + GRD.	
4	MCCC & MCCD	3	400	250	2½"	4*250 MCM	
5	PANEL 1HPP	3	200	200	2"	3*4/0 THW.	
6	SPARE	3	400	—		—	
7	LTG. PNL. 1H1	3	200	125	2"	4*1/0 THW	
8	MCCA	3	400	250	2½"	3*250 MCM	
9	MCCD	3	200	125	2"	3*1/0 THW	
10	SPARE	3	400	—	—	—	

DISTRIBUTION PANEL "5DP"

1000 AMP. BUS ... 277/480V. 3φ 4W.

		SWITCH POLE	SIZE	FUSE	FEEDER COT.	WIRES	REMARKS
1	PANEL 10H1	3	200	150	2"	4*2/0 THW	
2	PANEL 8H1	3	200	150	2"	4*2/0 THW	
3	PANEL 7H1	3	200	150	2"	4*2/0 THW	
4	PANEL 9H1	3	200	150	2"	4*2/0 THW	
5	PANEL 4LTCP (COMPT. PWR.)	3	200	125	2"	4*2/0 THW	
6	PANEL 3H1	3	200	150	2"	4*2/0 THW	
7	PANEL 4H1	3	200	150	2"	4*2/0 THW	
8	SPARE	3	200	—	—		
9	SPARE	3	200	—	—		
10	SPARE	3	200	—	—		



(183) SECONDARY DISTRIBUTION PANELS

EMERGENCY DISTRIBUTION PANEL "EDPA"

1200 AMP. BUS ... 277/480V. 3φ 4W.

		CIRCUIT BKR. POLE	FR.	TRIP	FEEDER COT.	WIRES	REMARKS
—	METERING COMPARTMENT						
1	EM. GEN. SET NO. 1 MAIN SW.	3	1200	1200	4-4"	16*500 MCM	
2	TIE BREAKER						1200 AMP. BUS
—	METERING COMPARTMENT						
3	EM. GEN. SET NO. 2 MAIN SW.	3	1200	1200	4-4"	16*500 MCM	
4	EDPD	3	600	400	4"	4*500 MCM	
5	MCCEA & MCCED (600A. ATS)	3	600	400	2-3"	6*300 MCM	EM. PWR.
6	ELEVATORS (TWO ONLY)	5	225	100	2"	3*1/0	
7	FIRE PUMP (75 HP) OLIC STANDBY	3	225	150	1½"	3*3/0 + GRD	RECEPT. START'G
8	SPARE	3	400	—	—	—	
9	ATS-2 FOR FIRE PUMP	3	400	—	—	—	200 A. SW

EMERGENCY DISTRIBUTION PANEL "EDPD"

400 AMP. BUS ... 277/480V. 3φ 4W.

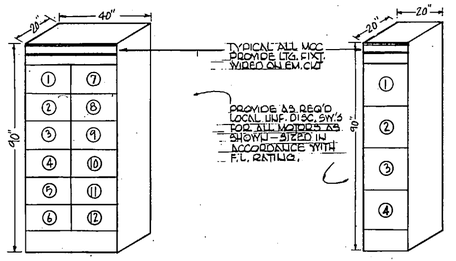
		CIRCUIT BKR. POLE	FR.	TRIP	FEEDER COT.	WIRES	REMARKS
1	SPARE						
2	5EH1 - 7EH1 - 8EH1 - 10EH1	3	200	175	2"	4#0 THW.	
3	SPARE						
4	1EH1 - 3EH1 - 4EH1	3	200	125	2"	4#2 THW.	
5	1EHPP	3	200	100	2"	4#4 THW.	
6	SPARE	3	200	—			
—	ATS-3 FOR EDPD 400 AMP.	3	200	-		4*500 MCM	WITH BY-PASS

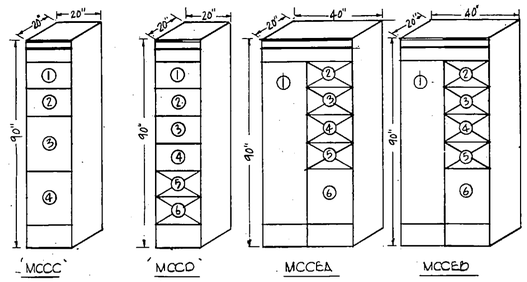
PROVIDE (N.E.C.) GROUND CONDUCTOR IN ALL FEEDERS

ELEVATOR POWER PANEL "ELPP"

225 AMP. BUS ... 277/480V. 3φ 4W

		H.P.	SWITCH POLE	SIZE	FUSE	FEEDER COT.	WIRES	REMARKS
1	ELEVATOR NO. 1	25	3	100	90	1¼"	3*#4 + GRD.	FOR DISC.
2	" NO. 2	25	3	100	90	1¼"	3*#4 + GRD.	" "
3	" NO. 3	25	3	100	90	1¼"	3*#4 + GRD.	" "
4	" NO. 4	25	3	100	90	1¼"	3*#4 + GRD.	" "
5	" NO. 5	25	3	100	90	1¼	3*#4 + GRD	" "
6								
7								
8								





(184) MOTOR CONTROL CENTERS

MOTOR CONTROL CENTER SCHEDULES

MOTOR CONTROL CENTER "A"

BUS 600A, 480V, 3φ BRACING 20,000A.

NO.	DESIGNATION	H.P.	AMPS	CIRC. BREAKER POLE	CIRC. BREAKER FRAME	CIRC. BREAKER TRIP	STARTER SIZE	STARTER NEMA O.L. HTRS	CONTROL DEVICES	FEEDER COND.	FEEDER WIRES	REMARKS
1	CH. W. PUMP P1	30	40	3	100	80	3	46		1"	3#6 + GRD.	
2	CH. W. PUMP P2	30	40	3	100	80	3	46		1"	3#6 + GRD.	
3	COND. W. PUMP P3	30	40	3	100	80	3	46		1"	3#6 + GRD.	
4	COND. W. PUMP P4	30	40	3	100	80	3	46		1"	3#6 + GRD.	

MOTOR CONTROL CENTER "B"

BUS 400A, 480V, 3φ BRACING 20,000A

1	PUMP P5	3	4.8	3	100	15	1	5.5		3/4"	3#12 + GRD	
2	PUMP P6	3	4.8	3	100	15	1	5.5		3/4"	3#12 + GRD	
3	PUMP P7	3	4.8	3	100	15	1	5.5		3/4"	3#12 + GRD	
4	PUMP P8	3	4.8	3	100	15	1	5.5		3/4"	3#12 + GRD	
5	PUMP P9	7.5	11	3	100	20	1	12.7		3/4"	3#12 + GRD	
6	PUMP P10	7.5	11	3	100	20	1	12.7		3/4"	3#12 + GRD	
7	PUMP CP1	3	4.8	3	100	15	1	5.5		3/4"	3#12 + GRD	
8	PUMP CP2	3	4.8	3	100	15	1	5.5		3/4"	3#12 + GRD	
9	PUMP CP3	3	4.8	3	100	15	1	5.5		3/4"	3#12 + GRD	
10	PUMP CP4	3	4.8	3	100	15	1	5.5		3/4"	3#12 + GRD	
11	PHELL TUBE BLOWER	5	7.6	3	100	15	1	8.7		3/4"	3#12 + GRD	
12	ELEC. VAULT FAN	2	3.4	3	100	15	1	3.9		3/4"	3#12 + GRD	

MOTOR CONTROL CENTER "C"

BUS 400A, 480V, 3φ BRACING - 20,000A.

1	SYSTEM AC2	15	21	3	100	40	2	24		3/4"	3#10 + GRD	
2	FAN E3	3	4.8	3	100	15	1	5.5		3/4"	3#12 + GRD	
3	C.T. FAN CELL 1	40	52	3	100	90	3	59.8		1½"	6#4 + GRD	TWO SPEED
4	C.T. FAN CELL 2	40	52	3	100	90	3	59.8		1½"	6#4 + GRD	TWO SPEED

MOTOR CONTROL CENTER "D"

BUS 400A, 480V, 3φ BRACING - 20,000A.

1	SYSTEM AC-1	15	21	3	100	40	2	24		3/4"	3#10 + GRD	
2	FAN E1	5	7.6	3	100	20	1	8.7		3/4"	3#12 + GRD	
3	FAN E4	1½	2.6	3	100	15	1	3.0		3/4"	3#12 + GRD	
4	FAN E2	5	7.6	3	100	20	1	8.7		3/4"	3#12 + GRD	
5,6	SPACES											

MOTOR CONTROL CENTER "EA"

BUS 400 A, 480V, 3φ BRACING 20,000 A.

1	SYSTEM S2	150	180	3	400	250	5	207		3	6#4/0 + GRD	Y-Δ CLOSED TRANSITION
2-5	SPACES											
6	FAN RE-2	40	52	3	100	90	3	59.8		1"	3#4 + GRD	

MOTOR CONTROL CENTER "EB"

BUS 400A, 480V, 3φ BRACING 20,000A.

1	SYSTEM S1	150	180	3	400	250	5	207		3	6#4/0 + GRD	Y-Δ CLOSED TRANSITION
2-5	SPACES											
6	FAN RE-1	40	52	3	100	90	3	59.8		1"	3#4 + GRD	

POWER PANEL "1HPP"

225 AMP BUS 3φ 3W ... 277/480V. 3φ 4 WIRE

		H.P.	CIRCUIT BKR. POLE	FR.	TRIP	FEEDER COT.	WIRE	REMARKS
1	SUMP PUMP SP-2	1½	3	100	15	¾"	3#12 + GRD.	WITH CONTROL PNL.
2	SUMP PUMP SP-1	1½	3	100	15	¾"	3#12 + GRD.	" " "
3	BOOSTER PUMP 3	65	3	225	125	1¼"	3#1 + GRD.	" " "
4	BOILER #1	3	3	100	30	¾"	3#10 + GRD.	" " "
5	BOILER #2	3	3	100	30	¾"	3#10 + GRD.	" " "
6	BOILER #3	3	3	100	30	¾"	3#10 + GRD.	" " "
7	CONTROL AIR COMP.	15	3	100	70	1"	3#6 + GRD	
8-12	SPARES	-	3	100	20			

(185) PANELBOARD SCHEDULES

PANELBOARD SCHEDULES

120/208 VOLT 3 PHASE 4 WIRE 60 Hz

PANEL NO.	MTG.	MAINS AMPS	MAINS BKR.	BRANCH CIRCUITS POLE	AMP.	QTY	NUMBER	SPARES	SPACES	REMARKS
1LL1	SURFACE	100A / 80A		2	20 / 30	24 / 4	1-24 / 1-4	15-20	21-24	
10L1	SURFACE	1200A / 125A		1	20	60	1-60	22,24-54	55-60	2 SECTION
8L1	SURFACE	1200A / 125A		1	20	60	1-60	22,24-54	55-60	2 SECTION
7L1	SURFACE	1200A / 125A		1	20	60	1-60	22,24-54	55-60	2 SECTION
5L1	SURFACE	1200A / 125A		1 / 2	20 / 50	58 / 2	1-31,33-46,48-60 / 32,47	48-60 / —	— / —	2 SECTION
4L1	SURFACE	1200A / 125A		1 / 2 / 2	20 / 30 / 20	56 / 1 / 1	1-30,32-36,38 #48, 45-60 / 37 / 44 / 31,41	51-60 / — / —	— / — / —	2 SECTION
3L1	SURFACE	200A / 125A		1 / 1	20 / 30	59 / 1	1-29, 27-60 / 26	11, 33, 35, 37-48	49-60	2 SECTION W/ 10 WITH GF.I.C.B.
1L1	SURFACE	200A / 125A		1 / 3	20 / 50	41 / 1	1-30, 32-42 / 31	32-42	— / —	
1L2	SURFACE	200A / 125A		1	20	30	1-30	14,15,17,19-30	—	
4LCP	SURFACE	200A / 125A		1 / 2 / 3	20 / 15 / 15	10 / 4 / 2	1-10 / 11-14 / 15,16	— / — / —	— / — / —	
8EL1	SURFACE	200A / 125A		1 / 3	20 / 50	36 / 2	1-36 / 37	4,5,25-36 / —	— / 38	
5EL1	SURFACE	200A / 125A		1	20	24	1-24	17-24	—	
11EL1	SURFACE	100A / 70		1	20	18	1-18	13-18	—	
1EL1	SURFACE	200A / 125A		3 / 1 / 1	15 / 20 / 30	4 / 23 / 2	25-28 / 13,19-24 / 2,4	— / 13,15,17-19 / —	— / 20-24 / —	
1L5L TBL 205	SURFACE	50A / —		1	20	12	1-12	7-12	—	1 POLE CONTACTOR

277/480 VOLT 3 PHASE 4 WIRE 60 Hz

10H1	SURFACE	1200A / 125A	1 / 3	20 / 60	30 / 2	1-30 / 31,32	21-24	25-30 / 32	
8H1	SURFACE	1200A / 125A	1 / 3	20 / 60	30 / 2	1-30 / 31,32	20-24	25-30 / 32	
7H1	SURFACE	1200A / 125A	1 / 3	20 / 60	30 / 2	1-30 / 31,32	—	25-30 / 32	
5H1	SURFACE	1200A / 125A	1 / 3	20 / 60	30 / 2	1-30 / 31,32	19-23	26-30 / 32	
4H1	SURFACE	1200A / 125A	1 / 1	20 / 60	30 / 2	1-24 / 31,32	25-30	— / 32	
3H1	SURFACE	1200A / 125A	1 / 3	20 / 60	30 / 2	1-30 / 31,32	21-24 / —	25-30 / 32	
1H1	SURFACE	1200A / 125A	1 / 3	20 / 60	30 / 2	1-30 / 31,32	16-24	25-30 / 32	
10EH1	SURFACE	100A / 60A	1	20	24	1-24	12-20	21-24	
8EH1	SURFACE	100A / 60A	1	20	24	1-24	12-20	21-24	
7EH1	SURFACE	100A / 60A	1	20	24	1-9, 11	10, 12-24	—	
5EH1	SURFACE	100A / 80A	1 / 3	20 / 40	24 / 2	1-24 / 25	13-19	20-24 / 26	
4EH1	SURFACE	100A / 60A	1	20	24	1-24	13-20	21-24	
3EH1	SURFACE	100A / 60A	1	20	24	1-24	13-19	20-24	
1EH1	SURFACE	100A / 80A	1 / 3	20 / 40	24 / 2	1-24 / 25	16-24	— / 26	
4HCP	SURFACE	200A / 100A	1 / 3 / 3	20 / 30 / 60	9 / 2 / 7	1-9 / 10, 11 / 12-18		13-18	

POWER PANEL 1EHPP

100 AMP BUS ... 277/480V. 3φ 3W

		H.P.	CIRCUIT BKR. POLE	FR.	TRIP	FEEDER COT.	WIRE	REMARKS
1	FUEL OIL PUMP SET	1-1½	3	100	15	¾"	3#12 + GRD.	W/CONTROL PNL.
2	EJECTOR PUMPS #1 & 2	2-2	3	100	15	¾"	3#12 + GRD.	"
3	CHEMICAL PUMPS	3	3	100	15	¾"	3#12 + GRD.	"
4	CHILL. AM. EXH. FAN	1½	3	100	15	¾"	3#12 + GRD.	"
5	EJECTOR PUMP #3 & 4	2-2	3	100	15	¾"	3#12 + GRD.	"
6	CLOCK SYSTEM GEN.	?	3	100	15	¾"	3#12 - GRD.	SEE SPEC.
7-12	SPACES	-	3	100	-	-		

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

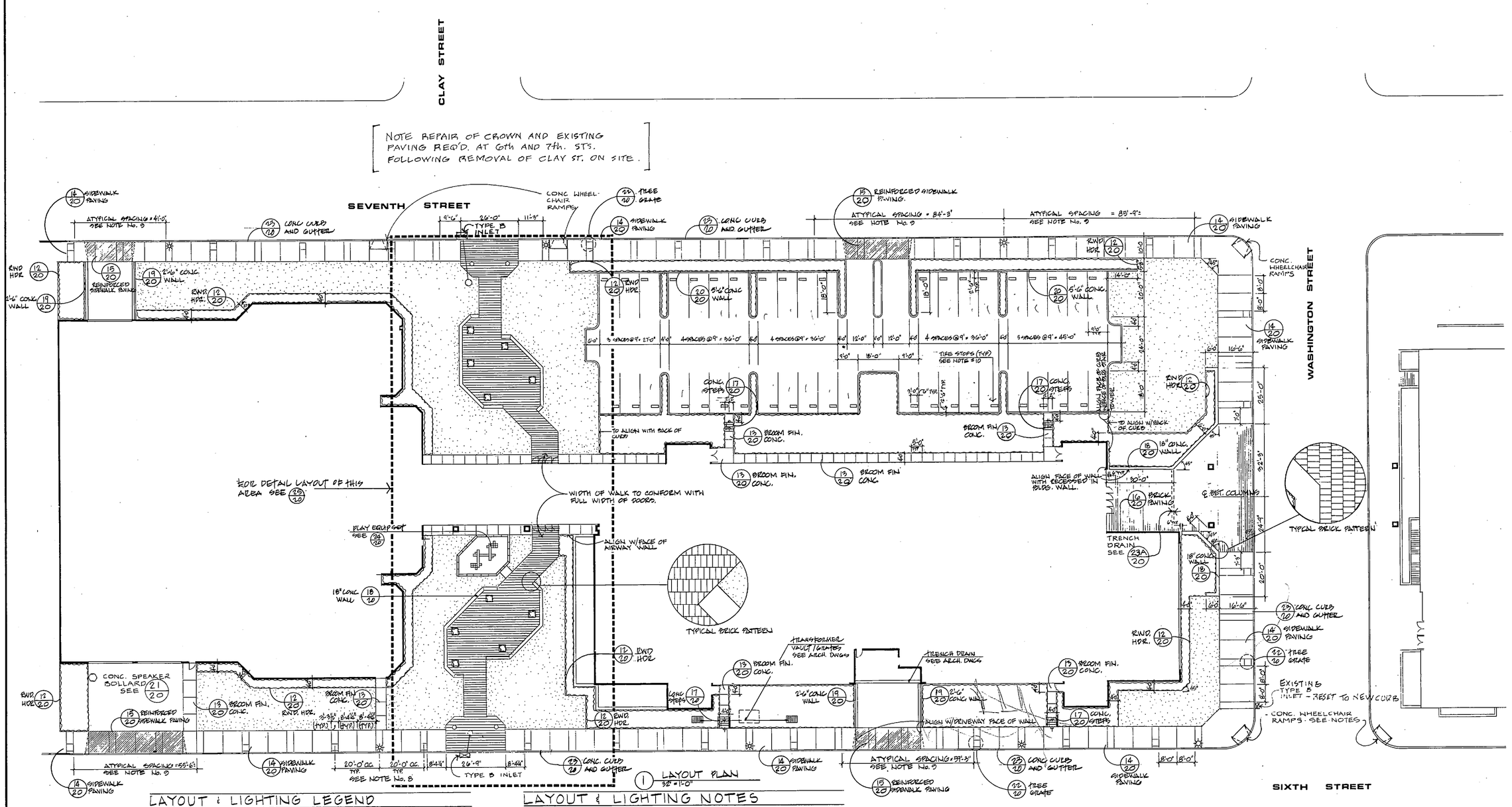
OAKLAND-PIEDMONT MUNICIPAL COURT FACILITIES

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873-00
DRAWN BY
CHECKED BY
DATE 7-4-77
REVISIONS — BY — DATE
1 2 3 4 5 6 7

ELECTRICAL DISTRIBUTION, MCC'S AND PANELBOARDS

DRAWING NUMBER 198-203
CATEGORY 18



1 LAYOUT PLAN
32'-1'-0"

LAYOUT & LIGHTING LEGEND

- EXISTING STREET LIGHT TO REMAIN
- + RECESSED WALL LIGHTS
- STEP LIGHTS
- CODES NOT INDICATE CIRCUITRY - FOR BASIS IN LOCATING LIGHTS
- INDICATES LAWN
- INDICATES PLANTING
- AREA OF BRICK PAVING
- AREA OF REINFORCED SIDEWALK PAVING

LAYOUT & LIGHTING NOTES

1- THE CONTRACTOR SHALL VERIFY ALL DISTANCES AND DIMENSIONS IN THE FIELD AND BRING ANY DISCREPANCIES TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR A DECISION BEFORE PROCEEDING WITH THE WORK.

2- ALL WRITTEN DIMENSIONS SUPERSEDE SCALED DISTANCES AND DIMENSIONS.

3- DIMENSIONS ARE TAKEN FROM FACE OF CURB, EDGE OF WALK, FACE OF BUILDINGS, FACE OF WALLS, HEADERS OR UNLESS OTHERWISE SHOWN.

4- SCORE LINES IN WALK ARE TO BE LOCATED AS SHOWN ON PLAN OR AS ADJUSTED IN FIELD UNDER THE SUPERVISION OF THE LANDSCAPE ARCHITECT.

5- FOR LAYOUT OF BUILDINGS, PARKING, ROADS AND CURBS SEE ARCH. DRAWINGS.

6- ALL SITE LIGHTING TO BE ON A PHOTOCELL AND COORDINATED WITH THE ARCHITECTURAL LIGHTING.

7- ALL LIGHTING FIXTURES TO BE INSTALLED PER MANUFACTURERS SPECIFICATION AND ALL INSTALLED IN ACCORDANCE WITH LOCAL CODES AND ORDINANCES.

8- TREE WELL SPACING IN SIDEWALK IS TO BE 40'-0" O.C. WITH EXISTING STREET LIGHT CENTERED BETWEEN. THIS OCCURS AT ALL EXISTING STREET LIGHTS. FOR ATYPICAL SPACING OF SCORE LINES SEE NOTE NO. 9.

9- AREAS INDICATED AS BEING ATYPICAL SPACING WILL STILL HAVE 3'-9½" WIDE BANDS OF EXPOSED AGG. PAVING WITH SCORE LINES EQUALLY SPACED BETWEEN.

10- ALL STALLS TO HAVE A CONCRETE TIRE STOP (WITHOUT PIN HOLES) AS MANUFACTURED BY THE MONEAL COMPANY, P.O. BOX 1380, SAN RAFAEL, CA. 94903 TEL. 415/459-7102 FASTEN TO PAVING WITH EPOXY MASTIC PER MANUFACTURERS SPECIFICATIONS.

11. ALL WHEELCHAIR RAMPS ARE TO COMPLY WITH THE LATEST APPROVED CITY OF OAKLAND ENGINEERING DEPARTMENT DOCUMENTS

12. ALL TYPE B INLETS ARE TO COMPLY WITH THE LATEST APPROVED CITY OF OAKLAND ENGINEERING DEPARTMENT DRAWINGS, INCLUDING CONNECTIONS TO EXISTING MANHOLES

13 SEE DETAIL 23-20 AND SITE PLAN 1-1 FOR GENERAL NOTES, DEMOLITION NOTES, AND REPLACEMENT OF EXISTING CURB, GUTTER, AND STREET PAVING AROUND PERIMETER OF SITE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VEÑEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

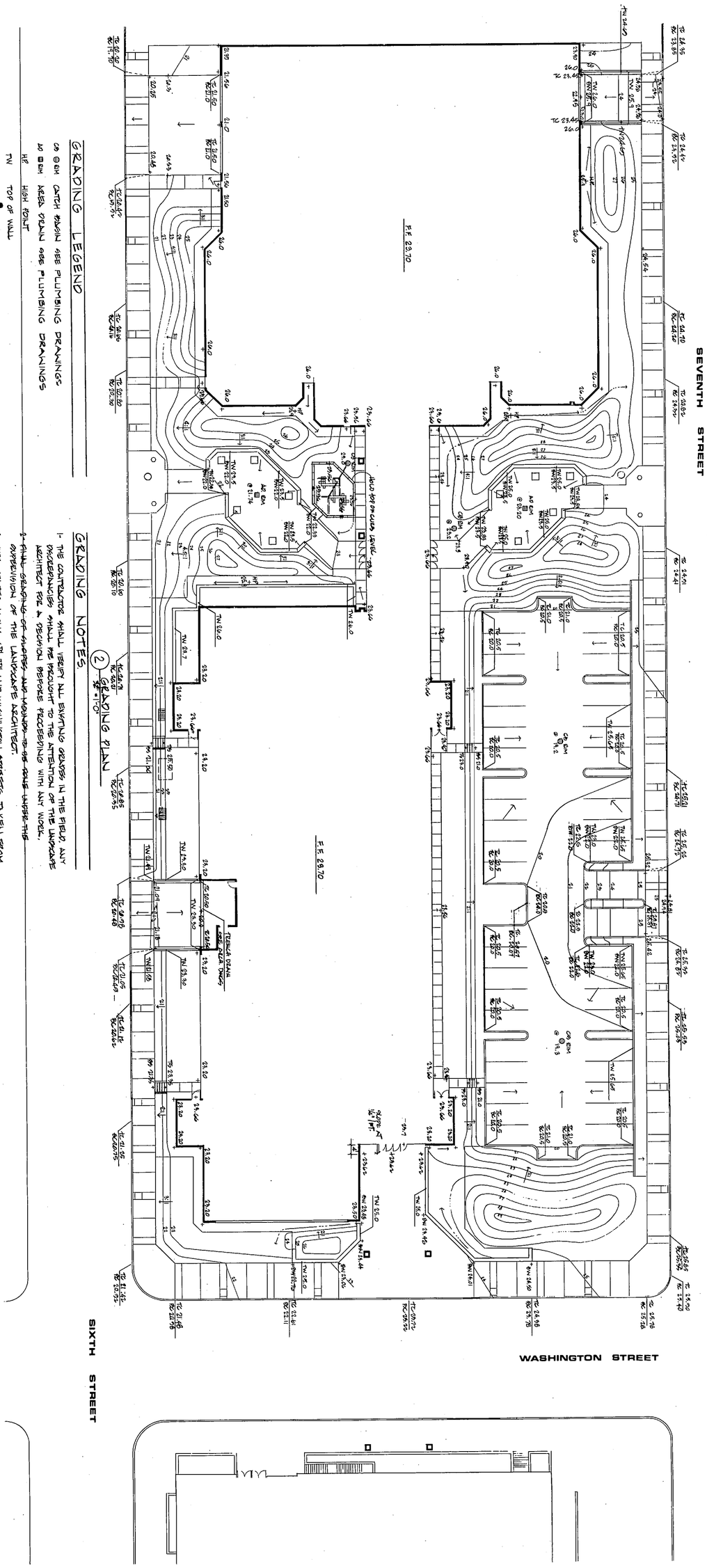
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873-00
DRAWN BY HC
CHECKED BY
DATE 5/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

LAYOUT/LIGHTING PLAN

DRAWING NUMBER 1
CATEGORY 20



GRADING LEGEND

CB @ EM CATCH BASIN SEE PLUMBING DRAWINGS

AD @ EM AREA DRAIN SEE PLUMBING DRAWINGS

HP HIGH POINT

TW TOP OF WALL

BW BOTTOM OF WALL

TC TOP OF CURB

BC BOTTOM OF CURB

FF FINISH FLOOR

\+ SPOT ELEVATION

DIRECTION & LOCATION OF SURFACE DRAINAGE

PROPOSED CONTOURS @ 1' INTERVALS

TS TOP OF STEPS

BS BOTTOM OF STEPS

5:1 ANGLE AND DIRECTION OF SLOPE

GRADING NOTES

1- THE CONTRACTOR SHALL VERIFY ALL EXISTING GRADES IN THE FIELD, ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT FOR A DECISION BEFORE PROCEEDING WITH ANY WORK.

2- FINAL GRADING OF SLOPES AND MOUNDS TO BE DONE UNDER THE SUPERVISION OF THE LANDSCAPE ARCHITECT.

3- CURB GRADES ALONG 6TH, 7TH, AND WASHINGTON STREETS TAKEN FROM DRAWING BY THE ALAMEDA COUNTY PUBLIC WORKS AGENCY-ROAD DEPT. TITLED TOPOGRAPHIC MAP OF BLOCKS 67 & 68 KELLERSBERGER'S MAP OF OAKLAND FOR THE OAKLAND PRE-TRIAL DETENTION CENTER", DATED JULY 1975 - FILE NO. T-4088 SHEET NO. 1 AS REVISED. BEING FIELD VERIFIED.

4- GENERAL GRADING CONTRACTOR TO STRIP 6" OF SOIL FROM SITE. ALL STRIPPED AND EXCAVATED MATERIAL TO BE WASTED OFF SITE. FINISH GRADES SHOWN ON PLAN, TO WITHIN ±.01', ACHIEVED BY USING SPECIFIED TOPSOIL.

5- SEE MECHANICAL AND PLUMBING PLANS FOR TYPES OF CATCH BASINS & AREA DRAINS.

(2) GRADING PLAN

1/8" = 1'-0"

DRAWING NUMBER	2
CATEGORY	20

GRADING PLAN

JOB NO.	7873-00
DRAWN BY	TG
CHECKED BY	
DATE	7/4/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

ANTHONY M. GUZZARDO No. 1047 REGISTERED LANDSCAPE ARCHITECT STATE OF CALIFORNIA

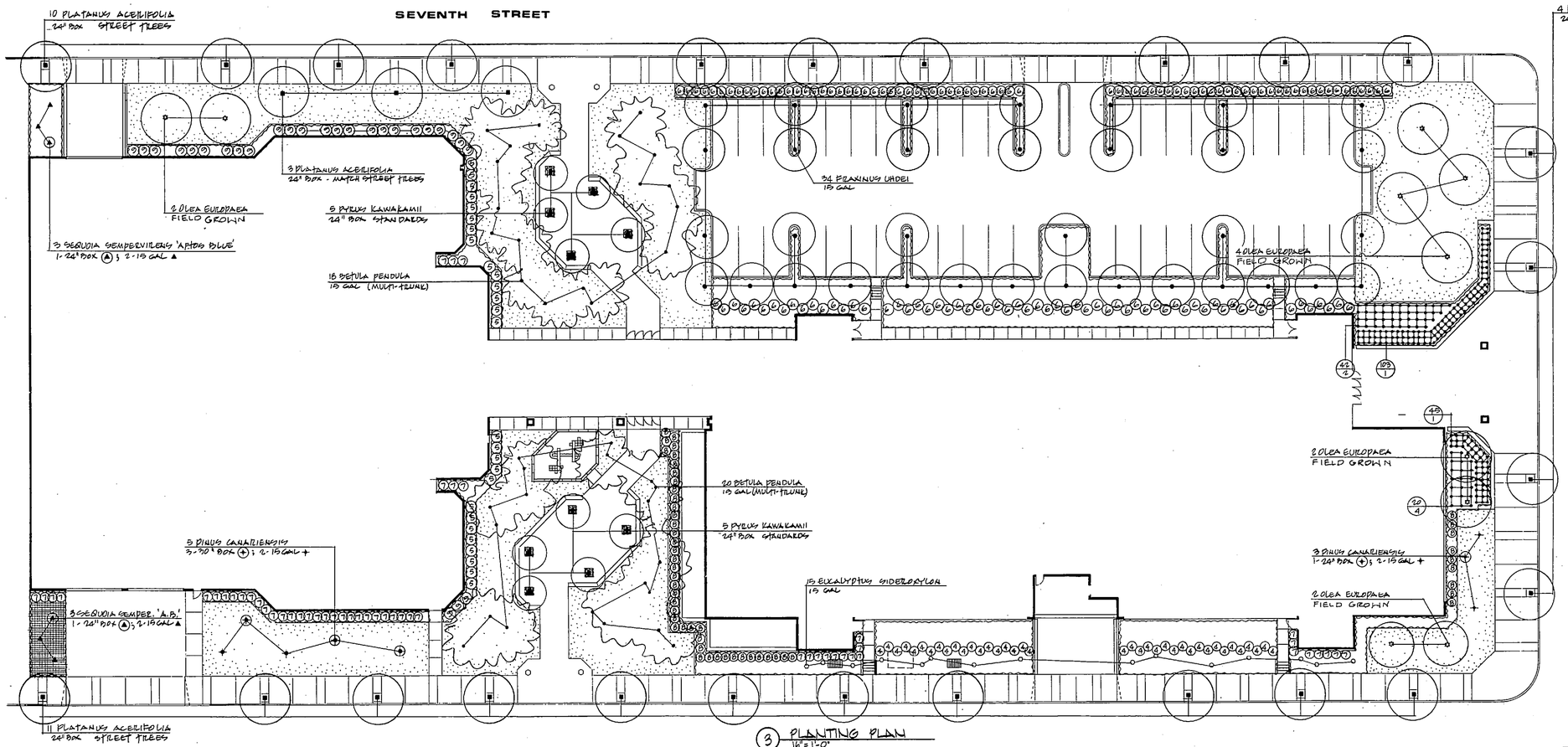
OAKLAND·PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK KE
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO



3 PLANTING PLAN
16"=1'-0"

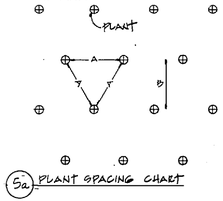
PLANT LIST

	KEY	15 GAL	5 GAL	OTHER	BOTANICAL NAME	COMMON NAME
TREES	•	38	-	-	BETULA PENDULA (MULTI-TRUNK)	WHITE BIRCH
	●	34	-	-	FRAXINUS UHDEI	SHAMEL ASH
	+	-	-	3-36" BX	PINUS CANARIENSIS	CANARY ISLAND PINE
	♦	-	-	11-36" BX	PYRUS KAWAKAMII (STDS.)	EVERGREEN PEAR
	■	-	-	38-24" BX	PLATANUS ACERIFOLIA	LONDON PLANE TREE
	▲	4	-	2-24" BX	SEQUOIA SEMPERVIRENS	REDWOOD 'APTOS BLUE'
	¤	-	-	10 FIELD GROWN	OLEA EUROPAEA 12'-14' WIDTH	OLIVE 14'-15' HEIGHT
	o	15	-	-	EUCALYPTUS SIDEROXYLON	RED IRONBARK
		5 GAL	1 GAL			
SHRUBS	①	-	148		AGAPANTHUS AFRICANUS	LILY-OF-THE-NILE (BLUE)
	②	47	-		AZALEA BELGIAN INDICA	AZALEA (MIXED VARIETIES)
	③	-	-		HEBE MENZIESII	HEBE
	④	58	-		RAPHIOLEPIS INDICA 'SPRINGTIME'	INDIA HAWTHORN
	⑤	27	-		RHODODENDRON 'PINK PEARL'	RHODODENDRON
	⑥	148	-		XYLOSMA CONGESTUM	SHINY XYLOSMA
	⑦	50	-		PITTOSPORUM EUGENIOIDES	TARATA
	⑧	51	-		ABELIA GRANDIFLORA	GLOSSY ABELIA
	⑨	27	-		PRUNUS LAUROCERASUS	ENGLISH LAUREL
GROUND COVERS				1" PLANTS @ADDED	GAZANIA R. 'COPPER KING'	GAZANIA 12" O.C.
				1" PLANTS @ADDED	HEDERA HELIX	ENGLISH IVY 12" O.C.
				@ADDED	GRASS	SEE NOTE # B

PLANTING NOTES

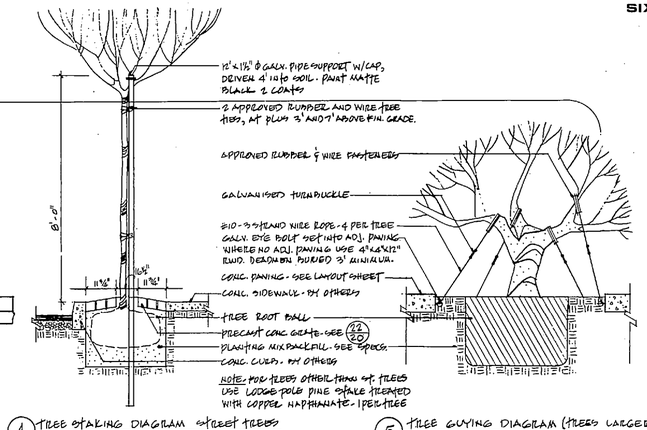
1. ALL WORK SHALL BE PERFORMED BY PERSONS FAMILIAR WITH THIS TYPE OF WORK AND UNDER THE SUPERVISION OF A QUALIFIED PLANTING FOREMAN.
2. PLANT MATERIAL LOCATIONS SHOWN ARE DIAGRAMMATIC AND MAY BE SUBJECT TO CHANGE IN THE FIELD BY THE LANDSCAPE ARCHITECT.
3. ALL TREES SHALL BE STAKED OR GUYED AS SHOWN IN THE DIAGRAMS ON THIS SHEET.
4. STREET TREE PLANTING SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF OAKLAND.
5. PLANT COUNT IS ONLY FOR THE CONVENIENCE OF THE LANDSCAPE CONTRACTOR. IN CASE OF DISCREPANCY, THE PLAN SHALL GOVERN.
6. FOR GROUND COVER PLANTING SEE SPACING DIAGRAM BELOW.
7. THE CONTRACTOR IS TO CAREFULLY TRANSPLANT THE 10 EXISTING OLIVE TREES INTO SUITABLE BOX BOXES & FOSTER AND MAINTAIN THEM UNTIL THE SITE IS READY TO BE PLANTED. HE IS THEN TO PLANT AND GUARANTEE THEM FOR ONE YEAR.
8. LAWN TO BE PENINSULA BLEND SOD AVAILABLE FROM CAL-TURF, INC., CAMARILLO, CA.
9. FOR PLANTING AT LEVEL 5 - PRECAST CONCRETE PLANTERS SEE 96/5

FOR USE WHEN PLANTS ARE SPACED EQUIDISTANT FROM EACH OTHER AS SHOWN.



SPACING 'A'	LOW B	NO. OF PLANTS	AREA UNIT
6" O.C.	5.2"	4.6	1 SQ. FT.

5a PLANT SPACING CHART



4 TREE STAKING DIAGRAM @ STREET TREES
NOT TO SCALE

5 TREE GUYING DIAGRAM (TREES LARGER THAN 15 GAL)
NOT TO SCALE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

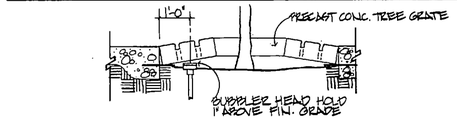
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873-00
DRAWN BY LVE
CHECKED BY
DATE 7/4/77

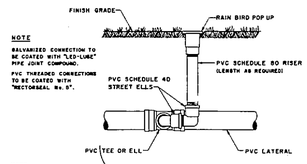
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

PLANTING PLAN & DETAILS

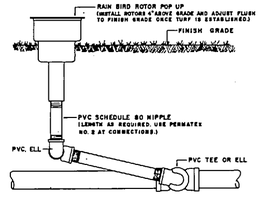
DRAWING NUMBER 3·5a
CATEGORY 20



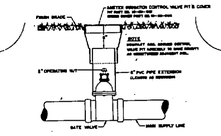
(7) BUBBLER AT TREE GRATES
1/2"=1'-0"



(8) TYPICAL SPRAY HEAD OR SHRUB HEAD DETAIL
NO SCALE



(9) SWING JOINT RISER ASSEMBLY DETAIL
NO SCALE



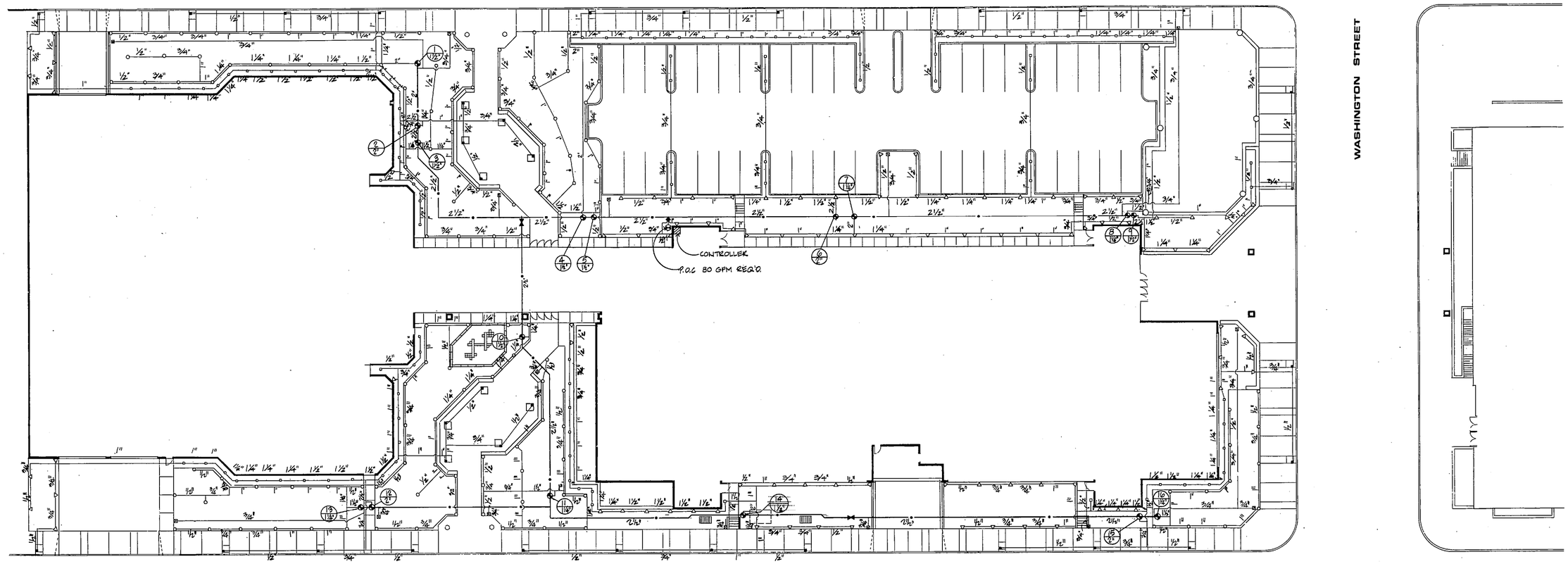
(10) GATE VALVE ASSEMBLY DETAIL
NO SCALE

CLAY STREET

SEVENTH STREET

WASHINGTON STREET

SIXTH STREET



(6) IRRIGATION PLAN
3/32"=1'-0"

IRRIGATION LEGEND

○	RAINBIRD	No. 27 5½" RC	LAWN ROTOR
○	RAINBIRD	No. 1800	LAWN SPRAY
△	SAFE-T-LAWN	No. GL-71 BODY W/ 6B0 NOZ.	SHRUB SPRAY
○	SAFE-T-LAWN	No. GL-71 BODY W/ 6B0 CS NOZ.	STRIP SPRAY
▪	RAINBIRD	No. 2300 ADJ.	BUBBLER
⊠	RAINBIRD	No. 33 GCV	QUICK COUPLING VALVE
⊖	GRISWOLD	No PC 800 -2"	DOUBLE CHECK VALVE ASSEMBLY
▨	GRISWOLD	CC-18 WALL MOUNT	AUTOMATIC CONTROLLER
◉	GRISWOLD	S-SERIES	REMOTE CONTROL VALVE
—•—	2" AND LARGER	SCHEDULE 80 TYPE 1120-1220 PVC. MAINLINE PIPE-MIN. BURIAL 24"	
—•—	1½" AND SMALLER	SCHEDULE 40 TYPE 1120-1220 PVC. MAINLINE PIPE-MIN BURIAL 24"	
———	CLASS 160 TYPE 1120-1220 PVC LATERAL PIPE. MIN. BURIAL 18"		
—◆—	GRISWOLD	No 2220 -2"	PRESSURE REDUCING & CONTROL VALVES W/ RANGE 30-90
—⋈—	KENNEDY	2"	GATE VALVE

IRRIGATION NOTES.

1- SYSTEM DESIGNED TO OPERATE ON 60 PSI FROM POINT OF CONNECTION TO PRESSURE REDUCING VALVE.

2- INSTALL A PRESSURE REDUCING VALVE AT DISCHARGE SIDE OF DOUBLE CHECK VALVE ASSEMBLY AND SET FOR 60 PSI. ENCLOSE IN GAME VAULT AS DCV ASSEMBLY. CONNECT SOLENOID OF VALVE TO PUMP START CIRCUIT OF CONTROLLER.

3- VERIFY ALL EXISTING CONDITIONS AND PRESSURE. IF ANY DISCREPANCY EXISTS BETWEEN DESIGN PRESSURE AND ACTUAL FIELD PRESSURE NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY IN WRITING FOR A DECISION BEFORE PROCEEDING WITH INSTALLATION.

4- INSTALL A DOUBLE CHECK VALVE ASSEMBLY AT POINT OF CONNECTION TO DOMESTIC WATER STUB-OUT AND GATE VALVE (PROVIDED BY OTHERS). INSTALL IN A PRECAST CONCRETE VAULT (25"x36") BY BROOKS, CHRISTY OR APPROVED EQUAL.

5- INSTALL ALL SAFE-T-LAWN POP-UP SHRUB HEADS WITH AN FR SERIES FLEX RISER AND ½" SCH. 80 PVC. T.B.E. NIPPLE. INSTALL HEADS 2" ABOVE FIN. GRADE AND 6" FROM HEADERS, CURBS OR PAVING.

6- IRRIGATION SYSTEM TO BE INSTALLED IN ACCORDANCE WITH ALL LOCAL CODES AND ORDINANCES

7- INSTALL SCH. 80 PVC UNDER ALL PAVING SURFACES AND IN SLEEVES AS SHOWN ON CIVIL ENGINEERS DRAWINGS.

8- INSTALL ALL REMOTE CONTROL VALVES PER MFG'S SPECIFICATION AND HOUSE IN A GREEN AMATEK PLASTIC VALVE BOX WITH COVER OR EQUAL. NO MORE THAN ONE VALVE PER BOX, GROUP WHERE POSSIBLE, AND PLACE NO CLOSER THAN ONE FOOT TO WALK OR HEADERS.

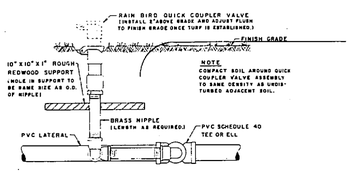
9- CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETE AND EFFECTIVE COVERAGE OF ALL PLANTED AREAS. BALANCE ALL SYSTEMS TO OPTIMUM COVERAGE, ADJUST EACH ARC, RADIUS, AND NOZZLE AS DIRECTED ON SITE BY LANDSCAPE ARCHITECT.

10- 120 VOLT SUPPLY TO CONTROLLER LOCATION IS BY THE ELECTRICAL CONTRACTOR. ALL 120 & 24 VOLT CONNECTIONS TO THE CONTROLLER ARE BY THE LANDSCAPE CONTR.

11- IRRIGATION CONTRACTOR MUST COORDINATE WITH GENERAL CONTRACTOR FOR SLEEVES THROUGH PLANTER WALLS AND UNDER PAVING. NO IRRIGATION PIPE TO BE VISIBLE ON EXTERIOR OF PLANTER WALLS.

12- INSTALL WALL MOUNT CONTROLLER PER MFG'S SPECIFICATIONS.

13. FOR IRRIGATION SYSTEM @ LEVEL 5 PRECAST CONCRETE PLANTERS SEE PLUMBING DRAWINGS CATEGORY #16



(11) QUICK COUPLER VALVE DETAIL
NO SCALE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES — MECHANICAL ENGINEERS — SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES — ELECTRICAL ENGINEERS — SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES — ACOUSTICAL CONSULTANTS — SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC. — LANDSCAPE ARCHITECTS — SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND-PIEDMONT MUNICIPAL COURT

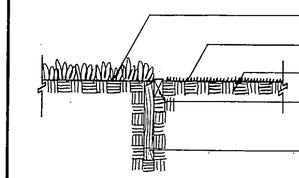
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS. OAKLAND, CALIFORNIA

JOB NO. 7873.00
DRAWN BY AG
CHECKED BY
DATE 7/25/77

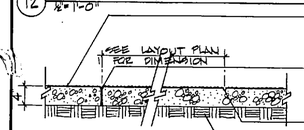
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

IRRIGATION PLAN & DETAILS

DRAWING NUMBER 6.11
CATEGORY 20

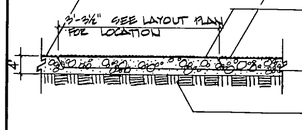


(12) REDWOOD HEADER
½"=1'-0"



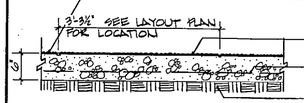
NOTE:
SEE CONC. SIDEWALK SPECS.

(13) BROOM FINISH CONCRETE PAVING
½"=1'-0"



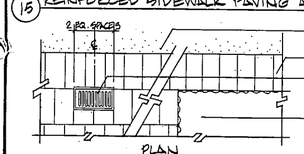
NOTE:
- FOR TREE CREATES AND CUT-OUTS SEE 22/20
- SEE CONC. SIDEWALK SPECS.

(14) SIDEWALK PAVING WITH EXPOSED AGGREGATE BAND
½"=1'-0"

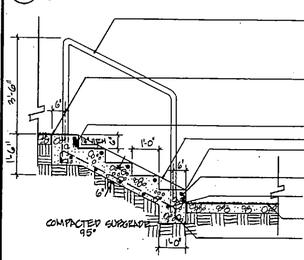


NOTE:
SEE CONC. SIDEWALK SPECS.

(15) REINFORCED SIDEWALK PAVING AT DRIVEWAYS

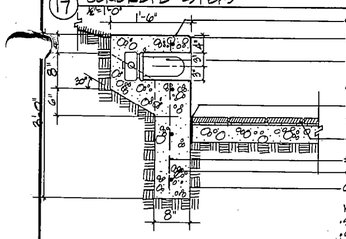


(16) BRICK PAVING
½"=1'-0"



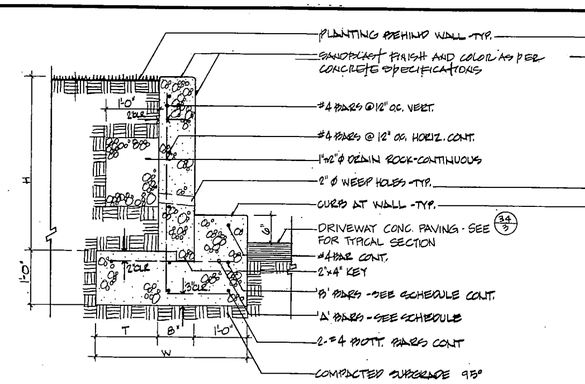
NOTE:
- SEE CONC. SIDEWALK SPECS. FOR COLOR.
- TREADS (RISERS TO BE BROOM FINISH

(17) CONCRETE STEPS
⅜"=1'-0"



NOTE:
- SEE CONC. SIDEWALK SPECS. FOR COLOR OF CONC.
- SANDBLAST FINISH PER CONC. SPECS. TO MATCH DETENTION CENTER.

(18) 18" CONCRETE WALL
½"=1'-0"

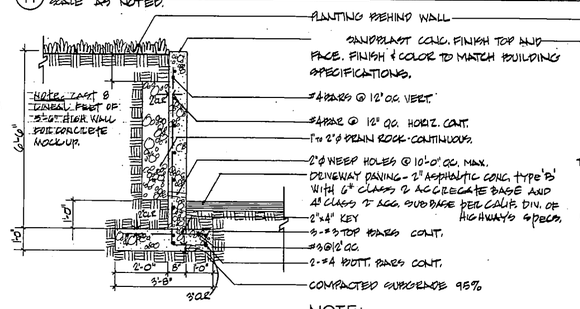


SECTION
1"=1'-0"

RETAINING WALL SCHEDULE

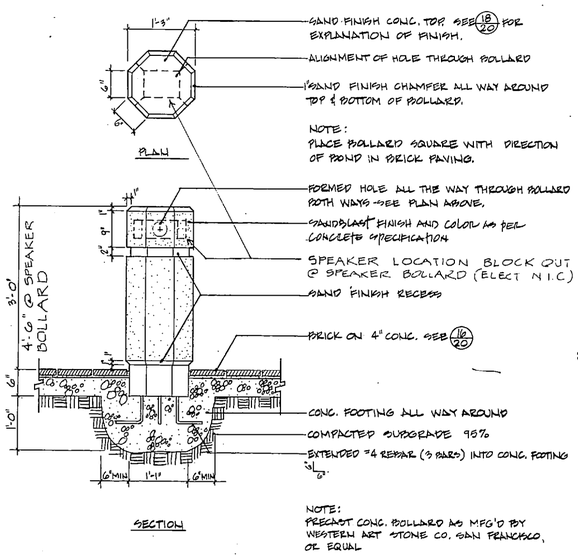
MAX. HT H	DIMENSIONS W	T	RE BARS A	B
WALL 'A' - 2'-4"	1'-8"	6"	—	—
WALL 'B' - 5'-3"	2'-8	1'-2"	#5@12"	3-#5

(19) 2'-6"+ CONCRETE WALL
SCALE AS NOTED.



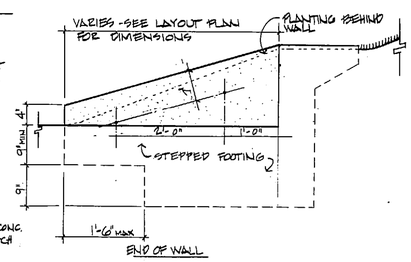
NOTE:
CAST 8 LINEAL FEET OF 5'-6" HIGH WALL WITH REINFORCING AS DETAILED FOR CONCRETE MOCK-UP

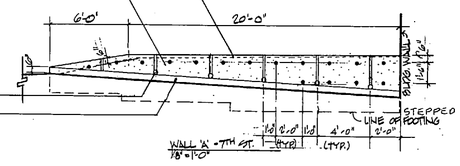
(20) 5'-6" CONCRETE WALL
¼"=1'-0"

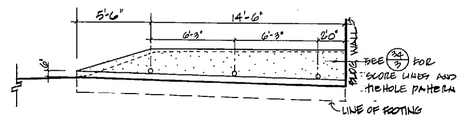


NOTE:
PRECAST CONC. BOLLARD AS MFG'D BY WESTERN ART STONE CO. SAN FRANCISCO, OR EQUAL

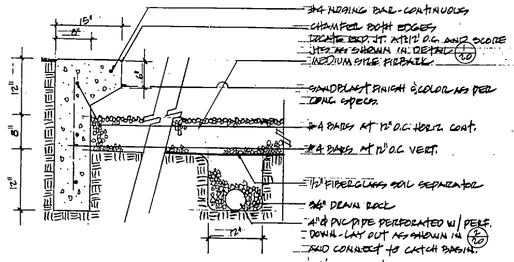
(21) CONCRETE BOLLARD
½"=1'-0"



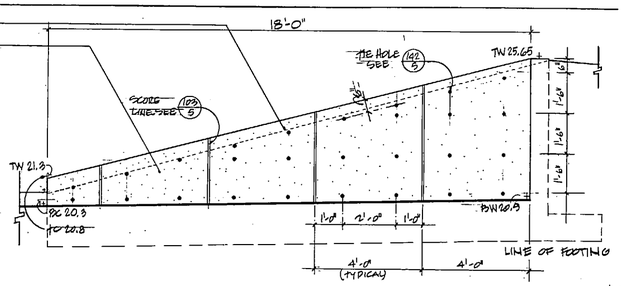




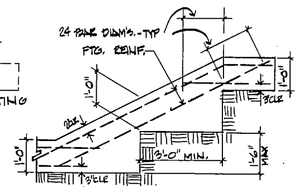
WALL 'B' GTH CST.
⅛"=1'-0"



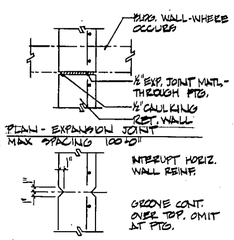
(24) TOT LOT
SCALE 1"=1'-0"



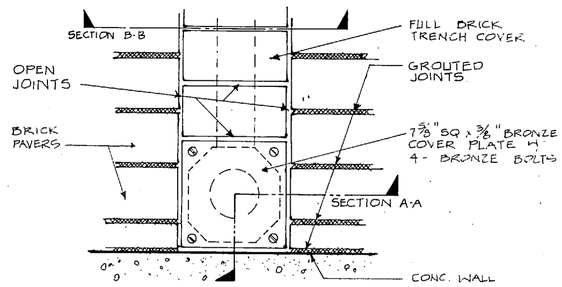
TAPERED WALL SECTION @ PARKING LOT ENTRY
¼"=1'-0"



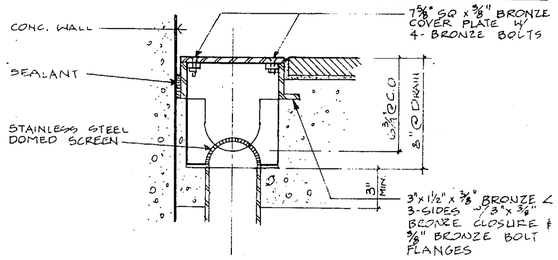
TYP. STEPPED FTG.
NO SCALE



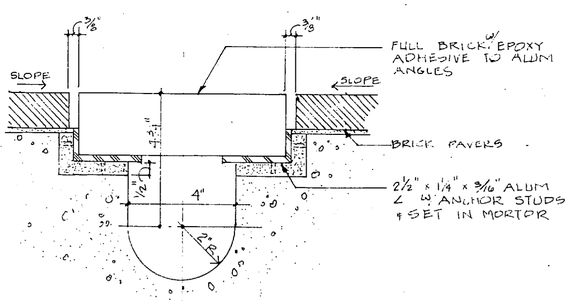
PLAN - WEAKENED PLANE JOINT
MAX SPACING 20'-0"



PLAN
1½"=1'-0"



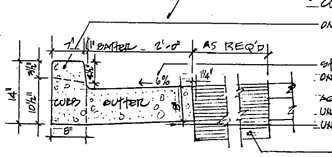
SECTION A-A
1½"=1'-0"



SECTION B-B
3"=1'-0"

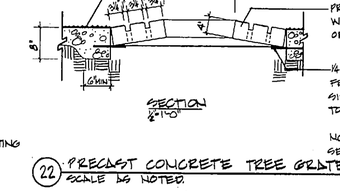
(23A) BRICK TRENCH DRAIN & ACCESS COVER

(23) CONCRETE CURB AND GUTTER
SCALE 1"=1'-0"



STANDARD SLOPE EXCEPT AS SHOWN ON CONTRACT PLANS
AGGREGATE SUBBASE TO BE CONSTRUCTED UNDER CURB, GUTTER AND SIDEWALKS UNLESS OTHERWISE DIRECTED BY ENGINEER.
REMOVE AND REPLACE EXISTING STREET PAVING WITH 12" THICK A.C. AS REQ'D. TO BLEND NEW GUTTER TO EXISTING PAVING

(22) PRECAST CONCRETE TREE GRATES
SCALE AS NOTED.



NOTE:
SEE PLANTING PLAN FOR TREE STAKES.

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

HOK KE
A JOINT VENTURE

OAKLAND·PIEDMONT MUNICIPAL COURT

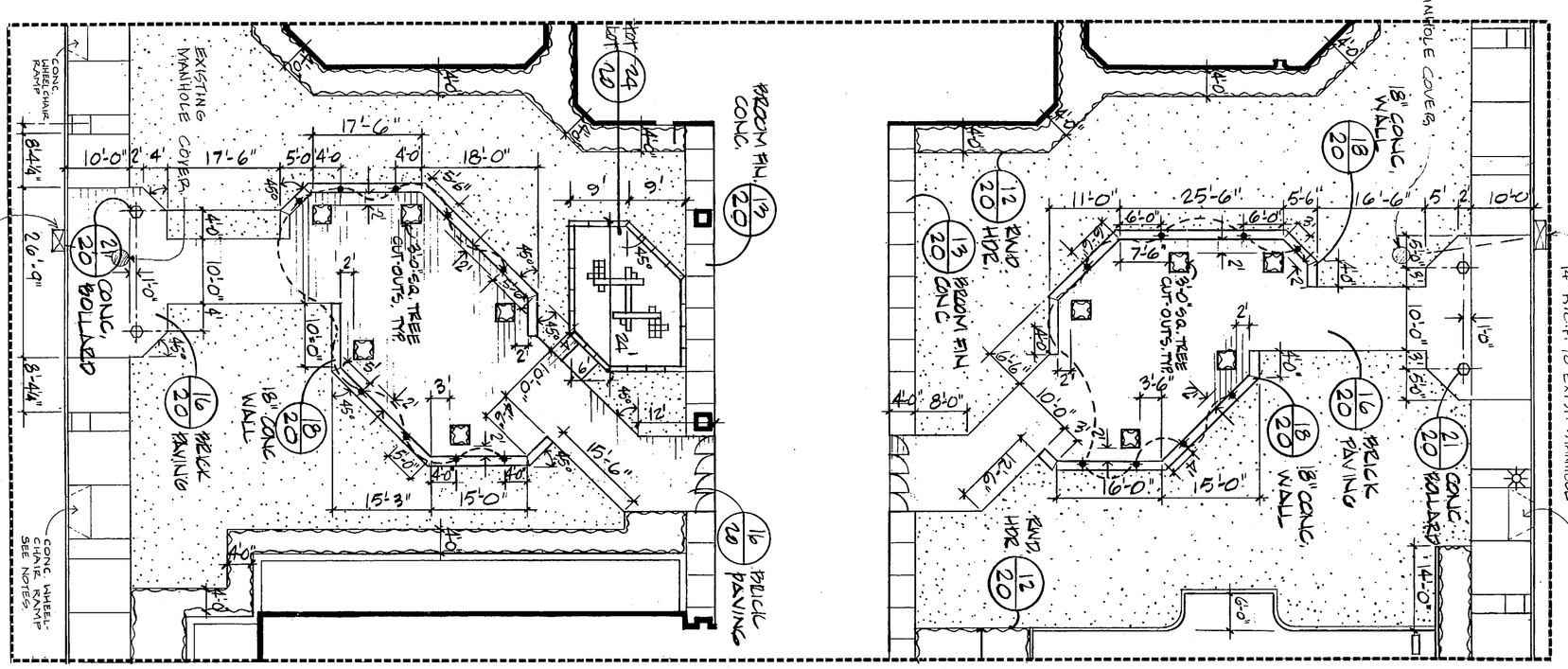
ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

JOB NO. 7873.00
DRAWN BY T.G.
CHECKED BY J.T.
DATE 9/1/77

REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

CONSTRUCTION DETAILS

DRAWING NUMBER 12·24
CATEGORY 20



35 DETAIL LAYOUT
1/16" = 1'-0"

DETAIL LAYOUT

JOB NO. 7873-00		
DRAWN BY		
CHECKED BY		
DATE 7/4/77		
REVISIONS	BY	DATE
1		
2		
3		
4		
5		
6		
7		

REGISTERED LANDSCAPE ARCHITECT — Anthony M. Guzzardo — Signature — Date — STATE OF CALIFORNIA

DRAWING NUMBER 25

CATEGORY 20

OAKLAND · PIEDMONT MUNICIPAL COURT

ALAMEDA COUNTY CRIMINAL JUSTICE FACILITIES
SIXTH AND CLAY STREETS, OAKLAND, CALIFORNIA

HOK
A JOINT VENTURE

HELLMUTH, OBATA & KASSABAUM, INC., ARCHITECTS
KAISER ENGINEERS DIVISION KAISER INDUSTRIES CORP.
300 LAKESIDE DRIVE, OAKLAND, CALIFORNIA 94666

HAYAKAWA ASSOCIATES	MECHANICAL ENGINEERS	SAN FRANCISCO
DONALD BENTLEY AND ASSOCIATES	ELECTRICAL ENGINEERS	SAN FRANCISCO
PAUL S. VENEKLASEN AND ASSOCIATES	ACOUSTICAL CONSULTANTS	SANTA MONICA
ANTHONY M. GUZZARDO AND ASSOCIATES, INC.	LANDSCAPE ARCHITECTS	SAN FRANCISCO

LEGEND

STANDARD MONUMENT USED FOR CONTROL
CROSS CUT FOR CONTROL
MANHOLE:
TELEPHONE
WESTERN UNION
P.G.I.E.
SANITARY SEWER
STORM SEWER
DROP INLET
WATER METER
WATER VALVE
GAS VALVE
ROADWAY SIGN
STREET NAME SIGN
POLE
FIRE HYDRANT
PARKING METER
ELECTROLIER
CONCRETE
DRIVEWAY OPENING IN CURB
TOP OF CURB ELEVATION
GUTTER ELEVATION

BENCH MARK

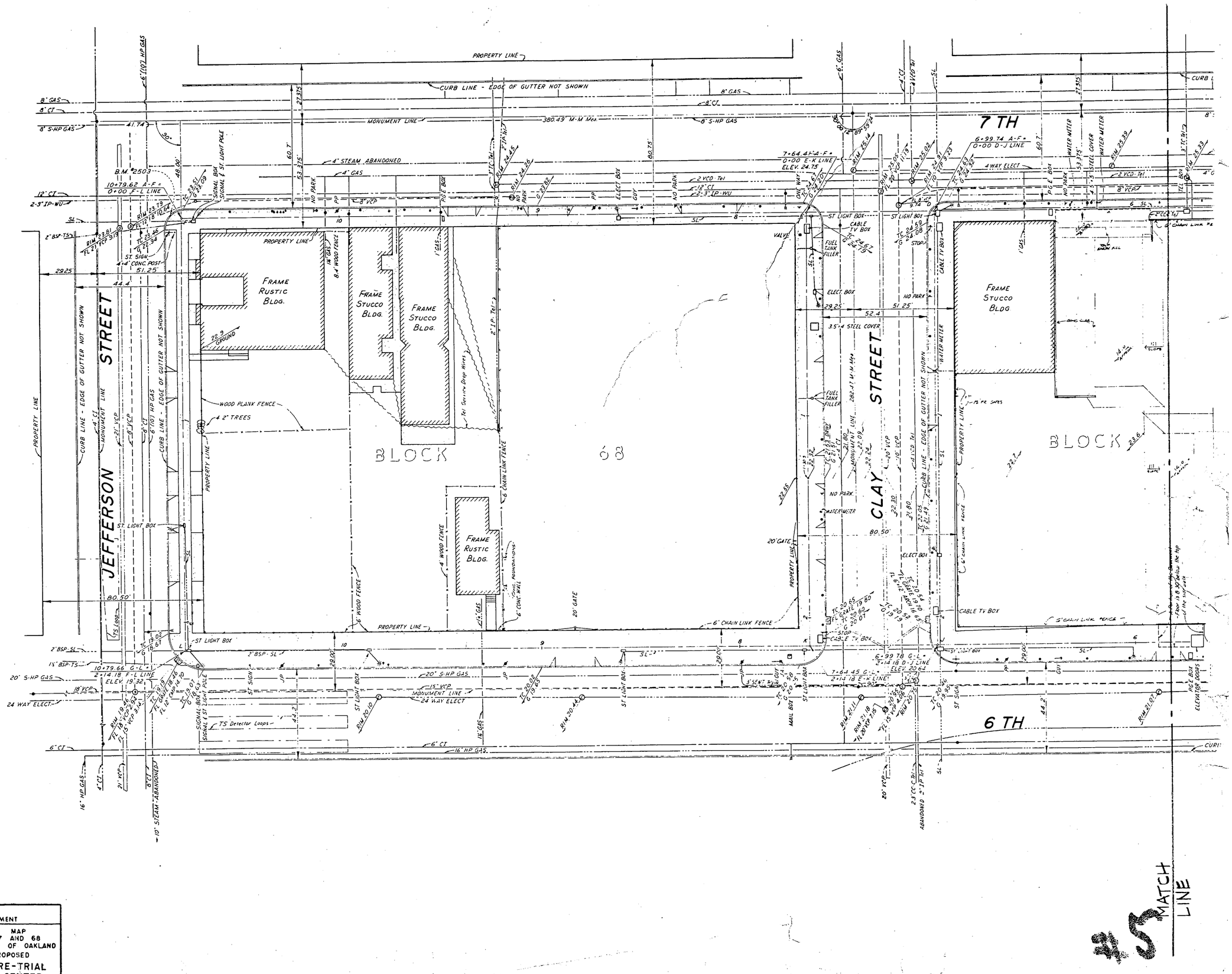
B.M. #2503 CITY OF OAKLAND F.B. BL 49 Pg 18
A CUT SQUARE IN WID POINT OF RETURN AT SOUTHEAST CORNER OF 7TH STREET AND JEFFERSON STREET.

ELEVATION 23.48 CITY OF OAKLAND DATUM.

NOTE

ALL PIPE LINES AND OTHER UNDERGROUND FACILITIES MAY NOT BE SHOWN. LOCATIONS OF ALL UNDERGROUND FACILITIES AND UTILITIES ARE APPROXIMATE ONLY AND HAVE BEEN TAKEN FROM THE RECORDS FURNISHED BY THOSE AGENCIES HAVING CONTROL THEREOF.

NOTE:
THIS SURVEY IS FURNISHED BY THE OWNER.
THE ARCHITECT ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OR COMPLETENESS OF INFORMATION ON THIS SURVEY.



COUNTY OF ALAMEDA
PUBLIC WORKS AGENCY — ROAD DEPARTMENT

DRAWN BY	DESIGN BY:
EEO	

APPROVAL RECOMMENDED
APPROVED
APPROVED

TOPOGRAPHIC MAP OF BLOCKS 67 AND 68 KELLSBERGER'S MAP OF OAKLAND FOR THE PROPOSED OAKLAND PRE-TRIAL DETENTION CENTER