Invitation for Bids

Maluhia Cooling Tower Replacement
26M-0201

The Hawaii Health Systems Corporation (HHSC) Oahu Region is requesting bids from qualified companies for the replacement of the cooling tower at Maluhia located at 1027 Hala Drive, Honolulu, Hawaii 96817

The IFB may be obtained electronically from the following website:
http://maluhia.hhsc.org/procurement/notices/

A site visit is scheduled for February 12, 2026 at 10:30 a.m. All interested companies shall meet in the Maluhia parking lot entrance area. The deadline for submission of written/emailed questions pertaining to the IFB is February 19, 2026.

All bids must be received by HHSC by March 5, 2026, 2:00 p.m. Hawaii Standard Time. All bids shall be sent digitally to oahucip@hhsc.org. E-mail bids not received by deadline will be disqualified for consideration. No exceptions will be made even if network provider or software (e.g. MS Outlook) delays delivery. Please note that large files (>10MB) may experience network delivery issues.

Addenda to the IFB will be posted on the website listed above.

For any inquiries, please contact Michael Nakada, at (808) 733-7951 or by email at mnakada@hhsc.org.

Leahi Hospital
3675 Kilauea Ave.
Honolulu, HI 96816

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SECTION 1
ADMINISTRATION

1.0 INTRODUCTION

This Invitation for Bid (hereinafter "IFB") is issued by the Hawaii Health Systems Corporation (hereinafter "HHSC"), a public body corporate and politic and an instrumentality and agency of the State of Hawaii. All procedures and processes will be in accordance with HHSC Oahu Region policy and procedures.

In order for HHSC to accept Bidder's response in a timely manner, please thoroughly read this IFB and follow instructions as presented.

1.1 IFB TIMETABLE AS FOLLOWS

The timetable as presented represents HHSC's best estimated schedule. If an activity of the timetable, such as "Closing Date for Receipt of Bids" is delayed, the rest of the timetable dates may be modified. BIDDER will be advised, by addendum to the IFB, of any such modifications to the timetable. Contract start date will be subject to the issuance of a Notice to Proceed.

ACTIVITY		SCHEDULED DATES
1.	IFB Public Announcement	February 5, 2026
2.	Pre-Bid Orientation Maluhia parking lot entrance 10:30 a.m.	February 12, 2026
3.	Closing Date for Receipt of Questions	February 19, 2026
4.	**Closing Date for Receipt of Bids 2:00 p.m.**	**March 5, 2026**
5.	Contractor Selection/Award Notification (on/about)	March 9, 2026
6.	Contract Execution (on/about)	March 23, 2026

1.2 AUTHORITY

This IFB is issued following the provisions of Chapter 323F, Hawaii Revised Statutes (HRS), and its administrative rules. All BIDDERS are charged with presumptive knowledge of all requirements of the cited authorities. Submission of a valid executed bid by any BIDDER shall constitute admission of such knowledge on the part of such BIDDER.

1.2.1 IFB ORGANIZATION

This IFB is organized into four sections:

SECTION 1: ADMINISTRATIVE
Provides information regarding administrative requirements.

SECTION 2: SCOPE OF SERVICES
Provides a detailed description of goods and/or services to be provided and delineates HHSC and CONTRACTOR responsibilities.

SECTION 3: BID FORMS AND GENERAL CONDITIONS
Describes the required format and content for submission of the bid.

SECTION 4: BID EVALUATION AND AWARD
Describes how bids will be evaluation and procedures for selection and award of contract.

1.3 HEAD OF PURCHASING AGENCY (HOPA)

The HOPA for HHSC, or designee, is authorized to execute any and all Agreements (Contracts), resulting from this IFB.

The HOPA for this IFB is:

Sean Sanada
Regional Chief Executive Officer
Hawaii Health Systems Corporation

1.4 DESIGNATED OFFICIALS

The officials identified in the following paragraphs have been designated by the HOPA as HHSC's procurement officials responsible for execution of this IFB, award of Agreement and coordination of CONTRACTOR's satisfactory completion of contract requirements.

1.4.1 ISSUING OFFICER

The Issuing Officer is responsible for administrating/facilitating all requirements of the IFB solicitation process and is the **sole point of contact** for BIDDER from date of public announcement of the IFB until the selection of the successful BIDDER. The Issuing Officer will also be responsible for contractual actions throughout the term of the contract. For purposes of this IFB, the designated Issuing Officer is:

Michael Nakada
HHSC Oahu Region
e-mail: mnakada@hhsc.org
phone: (808) 733-7951

1.5.1 CHARTER

HHSC is a public body corporate and politic and an instrumentality and agency of the State of Hawaii. HHSC is administratively attached to the Department of Health, State of Hawaii and was created by the legislature with passage of Act 262, Session Laws of the State of Hawaii 1996. Act 262 affirms the State's commitment to provide quality health care for the people in the State of Hawaii, including those served by small rural facilities.

1.5.2 STRUCTURE AND SERVICES

HHSC is organized into four operational regions and provides a broad range of healthcare services including acute, long term, rural and ambulatory health care services. As the fourth largest public health system in the country, HHSC is the largest provider of healthcare in the Islands, other than on Oahu. This solicitation is for the Oahu Region.

1.5.3 MISSION

The mission of HHSC is to provide and enhance accessible, comprehensive health care services that are quality-driven, customer-focused and cost-effective.

1.6 FACILITY INFORMATION

Detailed information pertaining to HHSC facilities is located at http://www.hhsc.org.

1.7 SUBMISSION OF QUESTIONS

Questions must be submitted in writing via electronic mail, facsimile or post mail to the Issuing Officer no later than the "Closing Date for Receipt of Questions", identified in paragraph 1.1 in order to generate an official answer. All written questions will receive an official written response from HHSC and become addenda to the IFB.

IMPORTANT

BIDDER may request changes and/or propose alternate language to the HHSC General and Special Terms and Conditions (https://www.hhsc.org/procurement/) during this phase only. All requests will be presented to the HHSC Legal Department for review. No requests to change the HHSC General or Special Terms and Conditions will be entertained after the bids have been submitted or during the contracting process. All written questions and/or approved changes will receive an official written response from HHSC and shall be recorded as addenda to the IFB.

HHSC reserves the right to reject or deny any request(s) made by BIDDER.

Responses by HHSC shall be due to the BIDDER prior to notice of award.

Impromptu, un-written questions are permitted and verbal answers will be provided during pre-bid conferences and other occasions, but are only intended as general direction and will not represent the official HHSC position. The only official position of HHSC is that which is stated in writing and issued in the IFB as addenda thereto.

No other means of communication, whether oral or written, shall be construed as a formal or official response/statement and may not be relied upon.

SEND QUESTIONS TO:

Michael Nakada, Issuing Officer
e-mail: mnakada@hhsc.org

1.8 SOLICITATION REVIEW

BIDDER should carefully review this solicitation for defects and questionable or objectionable matter. Comments concerning defects and questionable or objectionable matter, **excluding requests to revise the General or Special Conditions**, must be made in writing and should be received by the Issuing Officer, no later than the "Closing Date for Receipt of Bids" as identified in Section 1.1. This will allow issuance of any necessary amendments to the IFB. It will also assist in preventing the opening of bids upon which award may not be made due to a defective solicitation package.

1.9 IFB AMENDMENTS

HHSC reserves the right to amend the IFB any time prior to the deadline date of the IFB. IFB Amendments will be in the form of addenda.

1.10 CANCELLATION OF IFB

The IFB may be canceled when it is determined to be in the best interests of HHSC.

1.11 PROTESTS

Any protest shall be submitted in writing to the HOPA as noted below.

A protest based upon the content of the solicitation shall be submitted in writing within five (5) working days **after** the aggrieved individual/business knows or should have known of the facts giving rise thereto; provided further that the protest shall not be considered unless it is submitted in writing prior to and not later than the "Closing Date for Receipt of Bid" identified in section 1.1.

A protest of an award or proposed award shall be submitted within five (5) working days after the posting of award of the contract. The notice of award, if any, resulting from this solicitation shall be posted at the following website: http://maluhia.hhsc.org/procurement/notices/

Any and all protests shall be submitted in writing to the HOPA, as follows:

Sean Sanada
Hawaii Health Systems Corporation
Oahu Region
3675 Kilauea Avenue
Honolulu, Hawaii 96816

1.12 PERFORMANCE AND PAYMENT BOND

Performance and payment bonds shall be required for contracts $25,000 and higher. At the time of the execution of the contract, the successful Bidder shall file good and sufficient performance and payment bonds, each in an amount equal to one hundred percent (100%) of the amount of the contract price unless otherwise stated in the solicitation of bids.

1.13 SPECIALTY CONTRACTOR'S LICENSE

A. Contractor shall be solely responsible to ensure that all specialty licenses required to perform the Work are covered by the Contractor and/or its subcontractor(s).

1.14 WORKING HOURS

A. Regular working hours for this project shall take place between the hours of 8:00 AM to 4:30 PM Monday through Friday, excluding State Holidays, unless otherwise noted or restricted.

B. The Contractor may be given approval to work beyond the regular hours including Saturdays, Sundays, State Holidays, night work, or after hours under the provisions of the GENERAL CONDITIONS.

1.15 SPECIAL PROCEDURES DURING BIDDING

A. All bids shall be submitted to the Issuing Officer.

B. All questions regarding the IFB shall be submitted, in writing, to the Issuing Officer, who shall review the questions and issue any responses via Addendum. Only information received by Addendum shall be binding.

C. Any visitation to the site to examine the scope of work shall be requested through the HHSC Representative. Disruption of facility operations shall not be permitted.

SECTION 2
SCOPE OF SERVICES

2.0 INTRODUCTION

MALUHIA COOLING TOWER REPLACEMENT

Work for this project shall include, but is not limited to the replacement of the cooling tower at Maluhia, and miscellaneous work as indicated on the drawings.

2.1 CONTRACT PERIOD

The work shall be completed within **220** consecutive calendar days from the Notice to Proceed (NTP).

2.2 SCOPE OF SERVICES

A. The CONTRACTOR shall complete the work specified in the specifications and drawings in APPENDIX C.

B. Qualifications. The CONTRACTOR shall have:

1. A current and valid license to perform the scope of work.
2. Have been in business for the past three (3) consecutive years.
3. A permanent, on-island office location in conducting business which is accessible to telephone calls. An answering service is not acceptable.

C. HOSPITAL shall provide:

Technical Representatives who shall have the authority to oversee the successful completion of contract requirements, including monitoring, coordinating and assessing CONTRACTOR performance; placing requests for services; and, approving completed work/services with verification of same for CONTRACTOR's invoices. Technical Representatives will also serve as points of contact for "technical" matters throughout the term of the contract.

SECTION 3
Bid Forms and General Conditions

General Instructions for Completing Forms

- *Bids shall be submitted in the prescribed format outlined in this IFB*
- *No supplemental literature, brochures or other unsolicited information should be included in the bid packet.*
- *A written response is required for each item unless indicated otherwise.*

3.0 Bid Form

The bid form must be completed and submitted to HHSC by the required due date and time, and in the form prescribed by the HHSC. Facsimile transmissions shall not be accepted.

Interested bidders shall submit their bid under the interested bidder's exact legal name that is registered with the Department of Commerce and Consumer Affairs and shall indicate this exact legal name in the appropriate space on page 1 of the bid form. Failure to do so may delay proper execution of the Contract.

Interested bidders shall certify its ability to provide services on March 23, 2026 or upon execution of the Contract agreement by both parties. The Hospital reserves the right to apply liquidated damages for the delay in Contract execution on the part of the Contractor.

The interested bidder's authorized signature shall certify bid documents. If the Bid Form on Appendix A is unsigned the bid shall be automatically rejected.

The option to extend the Contract shall be at the sole discretion of the Hospital and determined to be in the best interests of the State.

3.1 Bid Security

All lump sum bids of $25,000 and higher, or lump sum base bids including alternates of $25,000 and higher shall require a bid security.

a. The bid security shall be in an amount equal to at least five percent (5%) of the lump sum bid or lump sum base bid including alternates or in an amount required by the terms of the federal funding, where applicable.

3.2 General Conditions

The State of Hawaii INTERIM GENERAL CONDITIONS, dated August 1999, and AMENDMENTS shall be read by the Contractor as they form a part of the Agreement to be entered into between the Contractor and HHSC. The Interim General Conditions are not physically included in these specifications, but are included by reference. Copies of the INTERIM GENERAL CONDITIONS may be obtained from the Division of Public works, Department of Accounting and General Services, State of Hawaii at the following website: http://hawaii.gov/pwd/construction_bids/Members/qc/gen_cond_constr

The State of Hawaii General Conditions are hereby amended as follows:

a. The following terms specified in Section 1 are hereby defined:

i) Bidder shall have the same definition as Contractor.

ii) Comptroller shall be the Chief Financial Officer at HHSC or his authorized representative.

iii) Department shall be HHSC or its designee.

iv) Engineer shall be the person so designated by HHSC.

v) State shall be HHSC or its designee.

b. Section 1.20 and 1.25 replace "State of Hawaii" with "State".

c. The last two sentences of the third paragraph of Section 2.1.1.2, in the Interim General Conditions is deleted and is replaced with the following:

" If the notice is faxed, the time of receipt by the CEO's fax machine shall be official. The submittal of intention to bid via fax is acceptable only to this office."

d. Section 2.1.2.1: second sentence is hereby deleted in its entirety.

e. Last sentence of paragraph 2.1.2.3 of the Interim General Conditions is amended to read as follows:

"Failure to submit either the required tax clearance certificate or Bid Form will be sufficient grounds for HHSC to refuse to receive or consider the prospective bidder's proposal."

f. The addresses specified in Section 2.6.1 of the Interim General Conditions shall be changed to Leahi Hospital 3675 Kilauea Avenue Honolulu Hawaii 96816.

g. Sections 2.10 through 2.11 are hereby deleted in their entirety.

h. Paragraph 3.8.1 of the Interim General Conditions is amended to read as follows:

“The contract shall be signed and forwarded to HHSC (Contracts Office), by the successful bidder all within three (3) days of receipt of the contract. The performance and payment bonds shall be received by HHSC (Contracts Office) within ten (10) calendar days after the bidders is awarded the contract. No proposal or contract shall be considered binding until the contract has been fully and properly executed by all parties thereto.”

i. In paragraph 3.9.2 of the Interim General Conditions, “ten (10) calendar days after such award or within such further time as the Comptroller may allow” shall be replaced with, “the time allowed in the previous section.”

j. Section 4.1: the words “accepted bid” is deleted from the first sentence.

k. Section 4.9.3: the words “submission of bids” is replaced with the words “execution of this contract”.

l. Section 5.5: the last sentence is hereby deleted in its entirety and replaced with the following:

"In the event of conflict among the Contract Documents, the order of precedence is listed in paragraph 5 of this contract and is further detailed in the following subparagraphs:"

m. Sections 5.5.1 and 5.5.2 are hereby deleted in their entirety.

n. Section 5.8.1: "twenty-four (24)" is hereby changed to "three (3)".

o. Section 5.11 is hereby deleted in its entirety.

p. Section 5.12.4 is hereby deleted in its entirety.

q. Section 7.3.7.4, subparagraphs a and b: Replace "If the project falls within the State University System, The University of Hawaii" with "HHSC."

r. Section 7.4.1 is hereby deleted in its entirety and replaced with the following:

"The Contractor shall prepare, process, obtain, and pay for all permits necessary for the proper execution of the work."

s. Section 7.7.2 is amended to read as follows: "The wage rate schedule is attached to this contract."

t. Sections 7.14.2, 7.19.2, and 7.19.4: delete "Departments and Agencies and their" and insert "directors" between "officers" and "representatives".

u. Section 7.14.4 is hereby added and reads as follows:

"Contractor warrants that it and none of its employees, agents or subcontractors performing services or providing goods pursuant to this Agreement are excluded from participation in federal health care programs, as defined in the Social Security Act (section 1128 and 1128A), and other federal laws and regulations relating to health care. HHSC reserves the right to verify that the above warranty is true and to immediately cancel this Agreement in the event it is violated."

v. Section 7.15 delete "and its Departments and Agencies".

w. Section 7.21.8.6 — Delete the word "bad" before the words "weather day conditions."

x. Section 7.35.1: the last word "earlier" is changed to "later".

3. CORPORATE COMPLIANCE PROGRAM. A description of the Corporate Compliance Program of HHSC is posted on the HHSC Internet (www.hhsc.org). The CONTRACTOR, by signing this contract, acknowledges that it has read said description, and that the CONTRACTOR knows of the fact and substance of the Corporate Compliance Program, which governs operations at all facilities of the HHSC. The CONTRACTOR understands and agrees that employees, agents, and contractors performing any services at any of the HHSC facilities shall be fully subject to such Corporate Compliance Program, as may be amended from time to time, as well as all federal program requirements and applicable policies and procedures of HHSC and its facilities. The Corporate Compliance Program requires periodic training, including an orientation program, of all people who provide financial, business office, personnel, coding, medical records information systems and clinical services in the facility. The CONTRACTOR agrees to cause its employees, agents, and contractors who provide any services at any financial, business office, personnel, coding, medical records information systems and clinical services at any of the HHSC facilities to participate in the orientation and training programs.

4. CONFIDENTIAL INFORMATION. It is acknowledged and agreed that all of the trade secrets, business plans, marketing plans, know how, data, contracts, documents, scientific and medical concepts, billing records, personnel records, medical records of any kind, and referral resources for existing or future services, products, operations, management, business, pricing, financial status, valuations, business plans, goals, strategies, objectives and agreements of HHSC and any of its facilities, affiliates or subsidiaries, and all patient information, in any form, whether written, verbal, or electronic, are confidential ("Confidential Information"); provided, however, that Confidential Information, with the exception of patient information, shall not include information that is in the public domain.

5. CONTRACTOR EXCLUSION FROM FEDERAL PROGRAMS. CONTRACTOR warrants that it and none of its employees, agents or subcontractors performing services or providing goods pursuant to this Agreement are excluded from participation in federal health care programs, as defined in the Social Security Act (section 1128 and 1128A), and other federal laws and regulations relating to health care. HHSC reserves the right to verify that the above warranty is true and to immediately cancel this Agreement in the event it is violated.

6. CAMPAIGN CONTRIBUTIONS BY STATE AND COUNTY CONTRACTORS.
CONTRACTORs are hereby notified of the applicability of Section 11-205.5, HRS, which states that campaign contributions are prohibited from specified State or county government contractors during the term of the contract if the contractors are paid with funds appropriated by a legislative body. For more information, please consult with the Campaign Spending Commission, or visit its website, www.hawaii.govicampaign.

(END OF SECTION)

SECTION 4
BID EVALUATION AND AWARD

4.0 Bid Evaluation

Each bid offer will be reviewed for exact conformity of the requirements in the IFB, known as a responsible bid. Information provided in/with the bid offer will be used to determine whether the interested bidder has the technical and financial capacity to deliver the goods or services, known as a responsive bid.

4.1 Method of Award

A. The contract will be awarded to the lowest responsive and responsible Bidder whose bid (including any alternates which may be selected) meets the requirements and criteria set forth in the solicitation documents.

B. In the event the total lump sum bid of all bidders exceeds the project control budget, HHSC reserves the right to make an award to the apparent Low Bidder if additional funds are available or by reducing the scope of work through negotiation.

4.2 Contract Execution

Upon receipt of the Contract document, the CONTRACTOR shall have ten (10) business days to execute and return the Contract to the Issuing Officer. Explicit execution instructions will accompany the Contract. A copy of the fully executed Contract will be provided the CONTRACTOR within seven (7) business days of Contract execution.

Award of Contract may be withdrawn if the CONTRACTOR is unable to meet Contract execution requirements.

(END OF SECTION)

APPENDIX A

SAMPLE
BID TRANSMITTAL COVER LETTER

Dear Mr. Nakada,

(Name of Business) proposes to provide any and all goods and services as set forth in the "Invitation for Bid" for Maluhia Cooling Tower Replacement IFB No. 26M-0201, for which fees/costs have been set. The fees/costs offered herein shall apply from XXX, 2026 to XXX, 2026.

It is understood and agreed that (Name of Business) have read HHSC's Scope of Services described in the IFB and that this bid is made in accordance with the provisions of such Scope of Services. By signing this bid, (Name of Business) guarantee and certify that all items included in this bid meet or exceed any and all such Scope of Services. (Name of Business) agree, if awarded the contract, to provide the goods and services set forth in the IFB; and comply with all terms and conditions indicated in the IFB; and at the fees/costs set forth in this bid. The following individual(s) may be contacted regarding this bid:_____

_____

Other information:

Address:		Federal Tax ID #:	
Phone No.:		Hawaii GET ID #:	
E-mail address:			

(Name of Business) is a: ☐ Sole Proprietor ☐ Partnership ☐ Corporation ☐ Joint Venture Other (Specify)_____

State of Incorporation is: (Specify)_____

Year of Business started: _____

The exact legal name of the business under which the contract, if awarded, shall be executed is:_____

_____

(Authorized Bidder's Signature, Printed Name/Title; Corporate Seal or Notarized)

APPENDIX B

IFB No. 26M-0201
Maluhia Cooling Tower Replacement

BID FORM

After carefully examining the bid documents, drawings and specifications identified above, the Bidder proposes to furnish at its own expense all necessary labor, materials, tools and equipment to complete the work according to the true intent and meaning of the drawings and specifications, all for the Lump Sum Base Bid of:

_____DOLLARS ($_____)

(Schedule of Values must be submitted with the Bid).

Respectfully Submitted:

_____ _____
Signature / Printed Name Date

_____
Title

OTHER CONDITIONS

1. Bidder agrees to liquidated damages as specified.

2. By submitting this proposal, the Bidder is declaring that its firm has not been assisted or represented on this matter by an individual who has, in a County capacity, been involved in the subject matter of this contract in the past two years;

3. Anti-collusion certification. In accordance with HAR 3-122-192, by submitting this proposal, the Bidder is declaring that the price submitted is independently arrived at without collusion.

4. Certification for Safety and Health Program for bids in excess of $100,000. In accordance with HRS 396-18, the Bidder certifies that its organization will have a written safety and health plan for this project that will be available and implemented by the Notice to Proceed date of this project. Details of the requirements of this plan may be obtained from the Department of Labor and Industrial Relations, Occupational Safety and Health Division (HIOSH); and

5. Upon the acceptance of the proposal by the HHSC, the Bidder must enter into and execute a contract for the same and furnish a Performance and Payment bond, as required by law.

RECEIPT OF ADDENDA
Receipt of the following addenda issued by HHSC is acknowledged by the date (s) of receipt indicated below:

Addendum No. 1 _____ Addendum No. 3 _____
Date
Addendum No. 2 _____ Addendum No. 4_____

It is understood that failure to receive any such addendum shall not relieve the Bidder from any obligation under this Proposal as submitted.

ALL JOINT CONTRACTORS OR SUBCONTRACTORS TO BE ENGAGED ON THIS PROJECT

The Bidder certifies that the following is a complete listing of all joint contractors or subcontractors covered under Chapter 444, Hawaii Revised Statutes, who will be engaged by the Bidder on this project to perform the nature and scope of work indicated and understands that failure to comply with this requirement may be just cause for rejection of the bid.

The Bidder further understands that only those joint contractors or subcontractors listed shall be allowed to perform work on this project and that all other work necessary shall be performed by the Bidder with his own employees. If no joint contractor or subcontractor is listed, it shall be construed that all of the work shall be performed by the Bidder with its own employees.

The Bidder must be sure that it has and that the subcontractor(s) listed in the proposal have all the necessary specialty licenses needed to perform the work for this project. The Bidder shall be solely responsible for assuring that all the specialty licenses required to perform the work are covered in its bid.

The Bidder shall include the license number of the joint contractors or subcontractors listed below. Failure to provide the correct names and license numbers as registered with the Contractor's Licensing Board may cause rejection of the bid submitted.

Complete Firm Name Joint Contractor or Subcontractor for Lump Sum Base Bid	License Number	Nature and Scope of Work to be Performed

Enclosed herewith:

1. Surety Bond (*1))
2. Legal Tender (*2))
3. Cashier's Check (*3))
4. Certified Check (*3))

(Cross Out Those Not Applicable)

in the amount of:

_____ DOLLARS ($_____).

as required by law.

Respectfully submitted,

_____
Name of Company, Joint Venture or Partnership

_____
License

By _____
Signature (*4)

Title _____

Date: _____

(CORPORATE SEAL)
(*5)

NOTES:

1. Surety bond underwritten by a company licensed to issue bonds in this State;

2. Legal tender; or

3. A cashier's or a certified check accepted by, and payable on demand to the HHSC by a bank, a savings institution, or credit union insured by the Federal Deposit Insurance Corporation.

   a. These instruments may be utilized only to a maximum of $100,000.

   b. If the required security or bond amount totals over $100,000, more than one instrument not exceeding $100,000 each and issued by different financial institutions shall be accepted.

4. Please attach to this page evidence of the authority of this officer to submit bids on behalf of the Company, and also the names and residence addresses of all officers of the Company.

5. Fill in all blank spaces with information asked for or bid may be invalidated. PROPOSAL MUST BE INTACT. MISSING PAGES MAY INVALIDATE YOUR BID.

END OF BID FORM

APPENDIX C

S P E C I F I C A T I O N S

FOR

FURNISHING LABOR AND MATERIALS

REQUIRED FOR

MALUHIA
COOLING TOWER REPLACEMENT

1027 HALA DRIVE
HONOLULU, OAHU, HAWAII

TMK: 01-06-009:004

FOR THE

HAWAII HEALTH SYSTEMS CORPORATION (HHSC)

STATE OF HAWAII

MECHANICAL ENGINEER: MECHANICAL ENTERPRISES, INC.
ENVIROMENTAL: ENVIROQUEST INC.
ELECTRICAL ENGINEER: ELECTECH HI, INC.

DECEMBER 2025

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DIVISION 0 – BIDDING AND CONTRACT REQUIREMENTS

SECTION 00210 - INSTRUCTIONS TO BIDDERS

Part 1 - GENERAL

1.01 GENERAL

A. Only Bidders with the required contractor's license(s) are eligible to submit a Bid.

B. Bidders (Contractors) shall be incorporated or organized under the laws of the State or be registered to do business in the State as a separate branch or division that is capable of fully performing under the contract. The following definitions are used in the solicitation documents.

1. Hawaii Business §3-1222-112 HAR: A bidder who is registered and incorporated or organized under the laws of the State is a "Hawaii Business" and eligible for an award.

2. Compliant non-Hawaii Business §3-122-112 HAR: A bidder not incorporated or organized under the laws of the State, but is registered to do business in the State and complies with or is exempt from the requirements of §3-122-112 HAR, is a "Compliant Non-Hawaii Business" and eligible for an award.

3. Non-compliant Bidder: If a bidder is a non-Hawaii business and is not registered with the DCCA Business Registration Division (BREG) or cannot comply with §3-122-112 HAR, then the bidder in non-compliant and is ineligible for an award.

C. Prospective Bidders shall submit their "Intention to Bid".

D. Bidders shall submit the "Sealed Bid Form", bid bond (if required), tax clearances, Hawaii business certificates, and any other documents required by the bidding documents.

E. The GENERAL REQUIREMENTS set forth additional terms and conditions for the bid and award process. The GENERAL REQUIREMENTS will be part of the contract documents by which HHSC and the bidder (prospective contractor) will be bound. Bidders are directed to the GENERAL REQUIREMENTS for contract and statutory requirements and for Bidding and Execution of the Contract Requirements. Bidders are also directed to "Section 00800 – Special Conditions" of these specifications for definitions and modifications to the GENERAL REQUIREMENTS.

1.02 OFFEROR(S) or BIDDER(S)

A. The terms "Offeror" and "Bidder" are synonymous when used in this Section 00210 and other solicitation documents.

1.03 ADDENDA, CLARIFICATIONS

A. Addenda: The HHSC may periodically issue an addendum that may increase or decrease the scope of work or contract time, provisions or conditions. HHSC will make the addenda available online on the facility website. Bidders are responsible for the information contained in the addenda or bid clarification whether or not the Bidder receives the addenda or clarification.

B. Bidders discovering an ambiguity, inconsistency or error when examining the bidding documents or the site and local conditions or bidders with questions or clarification requests shall send their written requests (email or fax notification are acceptable) to the Contract Manager. Bidders shall comply with the following procedures:

1. Identify each request with the Project Name.

2. Indicate the appropriate section number, paragraph, drawing and detail number, schedule or other identifier.

3. The request should be brief, concise, but complete enough to properly evaluate and determine the merits or non-merits of the question or request.

C. Bidders shall make any requests for clarifications no later than fourteen (14) calendar days prior to the submission date for sealed bids. Refer to the “Notice to Bidders” for submission date.

D. HHSC will respond to important requests or clarifications by way of addenda. HHSC may not address or respond to all bidders inquiries, if the HHSC determines the request is unimportant or not required to disseminate to all Bidders.

1.04 SEALED BID FORM (BID FORM)

A. Bidder shall fill out the “Sealed Bid Form” completely. Write in ink or type. Besides the following paragraphs with instructions, there are supplemental Bidder’s Instructions within the text of the “Sealed Bid Form” and bidders shall comply with the instructions. Do not alter the “Sealed Bid Form”, and maintain the form intact.

B. RECYCLED PRODUCT PREFERENCE is not applicable to this project.

C. OTHER CONDITIONS: Bidder acknowledges and agrees to the provisions and certifications stated in this article.

D. RECEIPT OF ADDENDA: Bidder shall fill in the appropriate dates any addenda were received.

E. LISTING JOINT CONTRACTORS OR SUBCONTRACTORS:

1. Bidder shall complete the "Joint Contractors or Subcontractors List." It is the sole responsibility of the bidder to review the requirements of this project and determine the appropriate specialty contractor's licenses that are required to complete the project. Failure of the bidder to provide the correct names, license numbers, specialty class number, classification description and to indicate that the specialty contractor is required for this project, may cause the bid to be rejected.

2. Bidder agrees the completed listing of joint contractors or subcontractors is required for the project and that the bidder, together with the listed joint contractors and subcontractors, have all the specialty contractor's licenses to complete the work.

3. Based on the Hawaii Supreme Court's January 28, 2002 decision in Okada Trucking Co., Ltd. v. Board of Water Supply, et al., 97 Hawaii 450 (2002), the bidder as a general contractor ('A' or 'B' license) is prohibited from undertaking any work solely or as part of a larger project, which would require the bidder ('A' or 'B' general contractor) to act as a specialty ('C' license) contractor in any area in which the bidder ('A' or 'B' general contractor) has no specialty contractor's license. Although the 'A' and 'B' contractor may still bid on and act as the "Prime Contractor" on an 'A' or 'B' project (*See, HRS §444-7 for the definitions of an "A" and "B" project*), respectively, the 'A' and 'B' contractor may only perform work in the areas in which they have the appropriate contractor's license. The bidder ('A' or 'B' general contractor) must have the appropriate 'C' specialty contractor's licenses either obtained on its own, or obtained automatically under HAR §16-77-32.

4. General Engineering 'A' Contractors automatically have these 'C' specialty contractor's licenses: C-3, C-9, C-10, C-17, C-24, C-31a, C-32, C-35, C-37a, C-37b, C-38, C-43, C-56, C-57a, C-57b, and C-61.

5. General Building 'B' Contractors automatically have these 'C' specialty contractor's licenses: C-5, C-6, C-10, C-12, C-24, C-25, C-31a, C-42a, and C-42b.

6. The table that lists the specialty contractor' classifications in the bid form is from the Department of Commerce and Consumer Affairs' (DCCA) website www.state.hi.us/dcca/har/index.html. Bidders shall provide the appropriate classifications numbers and descriptions for any specialty contractors that are not included in the bid form and bidders are directed to the DCCA web site for the latest updated list.

7. Instructions to complete the Joint Contractors or Subcontractors List:

a. Determine the specialty contractor classification(s) required for this project and provide the complete firm name and license number of the joint contractor or subcontractor in the respective columns. If the bidder is a general contractor and providing the work of the required specialty contractor classification, fill in the bidder's (general contractor's) license number and name.

b. List only one joint contractor or subcontractor per required specialty contractor's classification.

c. For projects with alternate(s), fill out the respective "Joint Contractors or Subcontractors List for the Alternate(s)." Bidder shall determine the specialty contractor's classification and description required for the respective alternate. Bidders shall fill in the complete class number, class description, firm name and license number of the respective joint contractor or subcontractor. The bidder shall not include any joint contractor or subcontractor previously listed for the base bid.

F. COST AND TIME: Bidder shall completely fill out the article and enter the cost for the Project Bid Price, and Alternates when provided. Bidder shall tabulate the Project Bid Price, and Alternates when provided, and the Bidders shall then enter the Total Lump Sum Bid Price. **BE SURE TO ENTER THE TOTAL LUMP SUM BID PRICE IN WORDS AND NUMERALS**. Refer to Bidder's Instructions located within the article.

1. If provided, bidder shall fill in total costs for each alternate.

2. The bidder is directed to the construction time information paragraph "B" for the list of contract times and dates which may include: contract duration, project start date, jobsite start date, jobsite completion, contract completion date and construction time for alternates. Bidder shall refer to "Section 01100" of these specifications for additional construction time information, as applicable.

G. SIGNATORY PAGE: Bidder shall completely fill out article (page). Bidder shall indicate if it is a "Hawaii Business" or a "Compliant Non-Hawaii Business." Also, bidder shall refer to Bidder's Instructions located within the article.

1.05 EVALUATION CRITERIA

A. EVALUTATING BIDS: The lowest responsive, responsible bid is determined by the following procedures:

1. The total lump sum bid price is adjusted to reflect the applicable preferences.

    a. For projects with alternates, the total lump sum base bid price and alternates will be adjusted to reflect the applicable preferences.

2. Project control budget is established prior to the submission of bids.

1.06 METHOD OF AWARD

A. The contract will be awarded to the lowest responsive and responsible Bidder whose bid (including any alternates which may be selected) meets the requirements and criteria set forth in the solicitation documents.

B. In the event the total lump sum bid of all bidders exceeds the project control budget, HHSC reserves the right to make an award to the apparent Low Bidder if additional funds are available or by reducing the scope of work through negotiation.

1.07 OTHER CONDITIONS FOR AWARD

A. The Chief Procurement Officer may reject any or all bids and waive any defects if the Chief Procurement Officer believes the rejection or waiver is in the best interest of HHSC.

B. The Chief Procurement Officer may hold all bids up to 60 calendar days from the date bids were opened. Unless otherwise required by law, bids may not be withdrawn without penalty.

C. The award of the contract is conditioned upon funds made available for the project (or projects if applicable)

1.08 COMPLIANCE WITH §3-122-112 HAR:

A. As a condition for award of the contract and as proof of compliance with the requirements of 103D-310(c) HRS, the bidder shall meet the “Hawaii Business” or “Compliant non-Hawaii Business” requirements and shall provide the following documents:

1. Department of Taxation (DOTAX) and the IRS tax clearance certificates.

2. Department of Labor (DLIR) certificate of compliance.

3. Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG) certificate of good standing.

a. A Hawaii business that is a sole proprietorship is not required to register with the BREG and therefore not required to submit the DCCA, BREG "Certificate of Good Standing."

B. The apparent three low bidders shall furnish the required documents to HHSC within seven calendar days from the bid opening date. If a valid certificate is not submitted on a timely basis for award of a contract, a bidder otherwise responsive and responsible may not receive the award. Bidder is responsible to apply for and submit the documents by the required deadlines.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 REQUIRED DOCUMENTATION FOR HAWAII BUSINESS OR COMPLIANT NON-HAWAII BUSINESS (§3-122-112 HAR)

A. TAX CLEARANCE REQUIREMENTS (HRS Chapter 237): Bidder shall obtain a tax clearance certificate from the Hawaii State Department of Taxation (DOTAX) and the Internal Revenue Service (IRS). The certificate is ~~are~~ valid for six months from the most recently approved stamp date on the certificate; the certificate must be valid on the date received by HHSC.

1. DOTAX *TAX CLEARANCE APPLICATION* Form A-6 (Rev 2003) is available at DOTAX and IRS (State of Hawaii) offices or DOTAX website, and by mail or fax.

   a. DOTAX website: http://www.state.hi.us/tax/alphalist.html#a

   b. DOTAX forms by fax/mail: (808) 587-7572 or 1-800-222-7572

2. Mail, fax or submit in person completed tax clearance application forms to the Department of Taxation, Taxpayer Services Branch or to the address listed on the application. Facsimile numbers are:

   a. DOTAX: (808) 587-1488

   b. IRS: (808) 539-1573

3. DOTAX will return the form to the bidder. The bidder is reminded that it is responsible to submit the applications for the tax clearance directly to DOTAX or IRS and not to HHSC.

B. DLIR CERTIFICATE of COMPLIANCE (HRS Chapter 383 - Unemployment Insurance, Chapter 386 - Workers' Compensation, Chapter 392 - Temporary Disability Insurance, and 393 – Prepaid Health Care): Bidder shall obtain a certificate of compliance from the Hawaii State Department of Labor and Industrial Relations (DLIR). The certificate is valid for six months from the date of issue; certificates must be valid on the date received by HHSC.

1. DLIR *APPLICATION FOR CERTIFICATE OF COMPLIANCE WITH SECTION 3-122-112 HAR*, Form LIR#27 is available at DLIR website or at the neighbor island DLIR District Office.

   a. DLIR website: http://www.dlir.state.hi.us/LIR#27

2. Mail, fax or submit in person completed application form to the Department of Labor and Industrial Relations, Administrative Services Office at the address listed on the application.

3. DLIR will return the form to the bidder. The bidder is reminded that it is responsible to submit the application for the certificate directly to DLIR and not to HHSC.

C. DCCA CERTIFICATE OF GOOD STANDING: Bidder shall obtain a certificate of good standing issued by the Department of Commerce and Consumer Affairs (DCCA), Business Registration Division (BREG). The certificate of good standing is valid for six months from the date of issue; certificates must be valid on the date received by HHSC.

1. DCCA *CERTIFICATE OF GOOD STANDING* is available from the business registrations website or by telephone. Bidders are advised there are costs associated with registering and obtaining the certificate.

   a. DCCA form website: http//www.BusinessRegistrations.com

   b. DCCA telephone: (808) 586-2727, M - F 7:45 to 4:30 HST

2. Submit the application per DCCA's requirements.

3. DCCA will return the form to the bidder. The bidder is reminded that it is responsible to submit the application for the certificate directly to DCCA and not to HHSC.

END OF SECTION

SECTION 00800 - SPECIAL PROVISIONS

PART 1 - GENERAL

1.01 SUBSTITUTION REQUESTS

A. Written substitution requests must be submitted with your Invitation for Bid (IFB) in accordance with IFG Section 3. All substitutions will be reviewed and approved in accordance with the GTC.

B. Substitution requests by FAX are not acceptable.

1.02 PROJECT CONTACT PERSON

A. HHSC Representative

NAME:	Mr. Ron Kurasaki
POSITION OR TITLE:	CIP Coordinator
TELEPHONE NUMBER:	(808) 497-9350
Email:	rkurasaki@hhsc.org

B. Project Coordinator

NAME:	Mr. Ross Tanaka
POSITION OR TITLE:	MEI Consultant, Vice President
TELEPHONE NUMBER:	(808) 591-9038
Email:	rtanaka@meihawaii.com

NAME:	Mr. Brendan Cha
POSITION OR TITLE:	MEI Consultant
TELEPHONE NUMBER:	(808) 275-4470
Email:	bcha@meihawaii.com

1.03 OFFEROR'S RESPONSIBILITY FOR EXAMINING PLANS, SPECIFICATIONS AND SITE OF WORK

A. Offerors herewith refers to sub-contractors, suppliers, manufacturer's representatives as well as contractors.

1.04 LIQUIDATED DAMAGES

A. The time of completion for the Work shall be within 220 consecutive calendar days from the official commencement date of the Notice to Proceed (NTP).

B. In accordance with the General Conditions, upon failure to complete Work or any portion of the Work within the time or times fixed in the contract or extension thereof, the Contractor shall pay liquidated damages to the Department in the amount of $500.00 per calendar day of delay.

C. In accordance with the General Conditions, PROJECT ACCEPTANCE DATE, for failure to correct punch list deficiencies, within the time or times fixed in the contract or extension thereof, the Contractor shall pay liquidated

damages to the HHSC, in the amount equal to ten percent (10%) of the liquidated damages per calendar day of delay.

D. In accordance with the General Conditions FINAL SETTLEMENT OF THE CONTRACT, for failure to submit closing documents within the time or times fixed in the contract or extension thereof, it is agreed that the Bidder shall pay liquidated damages to HHSC in the amount equal to five percent (5%) of the liquidated damages per calendar day of delay.

1.05 SPECIALTY CONTRACTOR'S LICENSE

A. Contractor shall be solely responsible to assure that all the specialty licenses required to perform the Work are covered by the Contractor or its subcontractor(s).

1.06 WORKING HOURS

A. The regular working hours for this project is from 8:00 AM to 4:30 PM Monday through Friday, excluding State Holidays, unless otherwise noted or restricted under "Section 01100". The Working Hours provisions of specification "Section 01100" shall govern over this article 1.06.

B. The Contractor may be given approval to work beyond the regular hours including Saturdays, Sundays, State Holidays, night work, or after hours under the provisions of the GENERAL REQUIREMENTS, "Overtime And Night Work Section" and under specification "Section 01100".

1.07 SPECIAL PROCEDURES DURING BIDDING

A. Bid documents will be available online only.

B. All bids shall be submitted to the HHSC Representative.

C. All questions regarding the plans and specifications shall be submitted, in writing, to the HHSC Representative and Consultant. The HHSC Representative and Consultant will review the questions and issue any responses via Addendum. Only information received by Addendum shall be binding.

D. All questions regarding the proposal or contractual requirements shall be submitted, in writing, to the HHSC Representative. The HHSC Representative will review the questions and issue any responses via Addendum. Only information received by Addendum shall be binding.

E. Any visitation to the site to examine the scope of work shall be requested through the HHSC Representative. Disruption of facility operations shall not be permitted.

1.08 PROCEDURES DURING CONSTRUCTION

A. Upon issuance of the Notice to Proceed, the Contractor shall submit a work schedule for review and discussion. The work schedule shall be updated on a weekly or bi-weekly basis as directed by the HHSC Representative.

B. On a weekly or bi-weekly basis, the Contractor shall conduct a progress meeting with the HHSC Representative. The meeting will discuss the progress of the construction, discussion of problems, and review of outstanding issues. The Contractor shall conduct the meeting and prepare the meeting notes and minutes and distribute to all parties.

C. During the construction, submittals and RFIs shall be submitted to the HHSC Representative with copy to the Consultant for review and action. To expedite the review, the Contractor may make submittals via email.

D. Periodic requests for payment shall be submitted to the HHSC Representative for review and confirmation. Upon approval by the HHSC Representative, the requests for payment will be forwarded to the Contracts Officer for processing.

E. Upon substantial completion of the project, the Contractor shall submit in writing to the HHSC Representative a request for a pre-final inspection. The Contractor shall have completed their own inspection and completed all noted discrepancies. Include with the request for the pre-final inspection a list of all outstanding work not completed or corrected.

F. Upon conducting a pre-final inspection, the Consultant shall prepare a punchlist of noted discrepancies for the Contractor's remedial action. Additional items observed and noted by the HHSC Representative during the inspection shall also be included in the punchlist. A final inspection will be performed upon completion of all punchlist items.

1.09 PROJECT RESTRICTIONS

A. The Contractor is informed that the facilities will be fully occupied and work shall be performed in close coordination with the HHSC representative. Work shall be phased and may be limited to one area at a time. If work will require the relocation of clients from the work area, time shall be allocated for HHSC to conduct this relocation. Scheduling of the work shall be closely monitored and work performed to minimize the disruption to the remaining areas of the facility. All work schedules shall be approved by HHSC Representative prior to starting.

B. Staging and storage of materials on-site is limited and shall be coordinated with the HHSC Representative. Contractor may be required to store materials off-site at his own expense.

C. Parking on-site is limited and may be restricted to only active delivery of materials and equipment. Coordinate with the HHSC Representative. If on-site parking not be available, the Contractor shall park off-site.

D. The above restrictions shall be considered in the work of this project and shall be included in the Contractor's cost. No additional compensation shall be made for not considering these restrictions.

PART 2 - MATERIALS (Not Used)

PART 3 - EXECUTION

3.01 FINAL PAYMENT REQUIREMENTS

A. In addition to the requirements in the GENERAL REQUIREMENTS "Final Payment" section, the contractor shall submit"

1. Tax clearance certificate from DOTAX and IRS, current within two months of the issuance date; and

2. An originally signed Certificate of Compliance for Final Payment (SPO Form - 22, modified), affirming that the contractor remained in compliance with all laws as required by (§3-122-112 HAR). A contractor making a false affirmation shall be suspended and may be debarred pursuant to section 103D-702 HRS.

END OF SECTION

SECTION 01019 - GENERAL PROJECT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY OF WORK

A. Perform operations and furnish equipment, tools, materials, related items and labor necessary to execute, complete and deliver the Work as required by the Contract Documents.

1.02 DIVISION OF WORK

A. The Division and Sections into which these specifications are divided shall not be considered an accurate or complete segregation of work by trades. This also applies to work specified within each section

B. Where devices, or items, or parts thereof are referred to in the singular, it is intended that such reference shall apply to as many such devices, items or parts as are required to properly complete the Work.

C. Specifications and Drawings are prepared in abbreviated form and include incomplete sentences. Omission of words or phrases such as “the Contractor shall”, “as shown on the drawings”, “a”, “an”, and “the” are intentional. Omitted words and phrases shall be provided by inference to form complete sentences

D. Specifying of interface and coordination in the various Specification Sections is provided for information and convenience only. Such requirements in the various Sections shall complement the requirements of this Section.

1.03 NOTIFICATION

A. Contact the Engineer and HHSC Representative at least five (5) working days prior to starting any onsite work.

1.04 SAFETY REQUIREMENTS

A. The Hawaii Occupational Safety and Health Law, Chapter 396, Hawaii Revised Statutes, effective May 16, 1972, as amended, is applicable and made a part of the Contract. Carefully read and strictly comply with its requirements.

B. Protect the facility personnel, students, and the public whenever power driven equipment is used. Ensure adequate safety precautions are used when operating any power driven equipment.

1.05 PERFORMANCE AND COORDINATION

A. Contractor shall be in charge of the Work and the Project Contract Limits, as well as the directing and scheduling of all work. Contractor shall include

general supervision, management and control of the Work of this project, and in addition to other areas more specifically noted throughout the Specifications. Final responsibility for performance, interface, and completion of the Work and the Project shall be the Contractor's.

B. Jobsite Administration shall be the responsibility of the Contractor. Provide a competent superintendent on the job and provide an adequate staff to execute the Work. In addition, all workers shall dress neatly and conduct themselves properly at all times. Loud abusive behavior, sexual harassment and misconduct will not be tolerated. Workers found in violation of the above shall be removed from the job site as directed by the HHSC Technical Representative.

C. The HHSC and/or Hospital will hold the Contractor liable for all the acts of Subcontractors and shall deal only with the Prime Contractor in matters pertaining to other trades employed on the job.

D. Coordination: Provide project interface and coordination to properly and accurately bring together the several parts, components, systems, and assemblies as required to complete the Work.

1. Provide interface and coordination of all trades, crafts and subcontracts. Ensure and make correct and accurate connections of abutting, adjoining, overlapping, and related work. Provide anchors, fasteners, accessories, appurtenances, and incidental items needed to complete the Work, fully, and correctly in accordance with the Contract Documents.

2. Provide additional structural components, bracing, blocking, miscellaneous metal, backing, anchors, fasteners, and installation accessories required to properly anchor, fasten, or attach material, equipment, hardware, systems and assemblies to the structure.

3. Provide caulking, sealing, and flashing as required to waterproof the building complete and as required to insulate the building thermally and acoustically. Include sealing, flashing, and related work as required to prevent moisture intrusion, air infiltration, and light leakage.

4. Materials, equipment, component parts, accessories, incidental items, connections, and services required to complete the Work which is not provided by subcontractors shall be provided by the Contractor.

1.06 COOPERATION WITH OTHER CONTRACTORS

A. The Hospital reserves the right at any time to contract for or otherwise perform other or additional work within the Project Contract Limits. The Contractor of this project shall to the extent ordered by the HHSC Representative, conduct its work so as not to interfere with or hinder the

progress or completion of the work performed by the Hospital or other contractors.

1.07 SUBMITTALS

A. Furnish required submittals specified in this Section and in the Technical Sections. Submittals include one or more of the following: shop drawings, color samples, material samples, technical data, material safety data information, schedules of materials, schedules of operations, guarantees, certifications, operating and maintenance manuals, and field posted as-built drawings.

B. Record Drawings: Field Posted As-Built Drawings, the intent of which is to record the actual in-place construction so that any future renovations or tie-ins can be anticipated accurately, shall be prepared and submitted by the Contractor. To accomplish this, the following procedure shall be followed by the Contractor:

1. A full-size set of field posted as-built drawings shall be maintained at the job site. All deviations from alignments, elevations and dimensions which are stipulated on the drawings and authorizations given by the HHSC Technical Representative to deviate from the drawings shall be clearly and accurately recorded by the Contractor on this set of record drawings.

2. Changes shall be recorded immediately after they are constructed in place to assure they are not forgotten. Record the changes in red pencil and where applicable, refer to the authorizing document or Change Order. The field posted as-built drawings shall be made available to the Engineer and HHSC Technical Representative at any time so that its clarity and accuracy can be monitored.

3. The words “FIELD POSTED AS-BUILT” shall be labeled on the title sheet and certified by the Contractor as to accuracy and completeness as shown below:

FIELD POSTED AS-BUILT

Certified By: _____Date:_____
Contractor (Include name and company)

4. The words “FIELD POSTED AS-BUILT” shall be labeled on all sheets in the margin space to the right of the sheet number written from the bottom upward.

5. The Index to Drawings shall be revised with the label “FIELD POSTED AS-BUILT” for each sheet. The index shall conclude with the following note: “A COMPLETE SET CONTAINS ____ SHEETS” with the total number of sheets comprising the set to be placed in the blank.

6. Any “FIELD POSTED AS-BUILT” drawing which the Engineer determines does not accurately record the deviation may be corrected by the Architect and the Contractor shall be charged for the services.

7. Submit the set of “FIELD POSTED AS-BUILT” drawings to the Engineer and notify the HHSC Technical Representative no later than five (5) calendar days prior to the date of final inspection.

8. “AS-BUILT” drawings will be prepared by the design consultant using the “FIELD POSTED AS-BUILT”. Both sets of drawings will be sent to the Contractor for review and approval. The Contractor shall retain the “FIELD POSTED AS-BUILT” drawings for records, sign the “AS-BUILT” set of drawings, indicating approval, and return the drawings in a timely manner to the Engineer and notify the HHSC Representative.

1.08 CONSTRUCTION SCHEDULE:

A. The Construction Schedule completion date will be approved prior to award. The daily activities of the Construction Schedule will be reviewed within fifteen (15) calendar days after the Notice to Proceed or upon earlier written instruction by HHSC.

B. The schedule shall be related to the entire project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the work. If requested by the Engineer or HHSC Representative, the Contractor shall participate in a preliminary meeting to discuss the proposed schedule and requirements prior to submission of the schedule.

C. Contractor shall prosecute the work according to the Schedule. The Engineer and HHSC Representative shall rely on the reviewed Contractor’s Schedule and regular updates for planning and coordination. The HHSC Representative’s review of the Contractor’s Construction Schedule does not relieve the Contractor of its obligation to complete the work within the allotted contract time. Nor does the review grant, reject or in any other way act on the Contractor’s request for adjustment(s)to complete remaining contract work, or for claims of additional compensation. Such requests shall be processed in accordance with other relevant provisions of the contract.

D. If the Engineer issues a Field Order or Change Order or requires Force Account Work that affects the sequence or duration of work activities noted on the construction progress schedule, the Contractor shall promptly update the schedule. This shall be accomplished by adding, deleting or revising the work activities noted, or changing the logic in the schedule to show the Contractor’s plan for incorporating the change into the flow of work. All Change Orders and Time Extension requests that affect the construction schedule shall be evaluated based on their impact on the approved Construction Schedule.

1.09 MEETINGS

A. Contractor shall meet with the hospital's representative, weekly or other interval as determined, to discuss the progress of the Work.

B. For each meeting, Contractor shall take meeting minutes and provide a list stating all items, work or material, which may cause a delay or have an impact on the project's contractual dates. The list shall be inclusive of items requiring action from all responsible parties such as outstanding submittal status, request for information (clarification), force account work, change order, and change proposals. The format of this list shall be at the Contractor's discretion, subject to the Engineer's approval. Submit the list to all parties for discussions as a meeting agenda. Contractor shall provide a plan of corrective action for any item, which is delayed or expected to be delayed, where that item impacts the contractual dates.

1.10 PROJECT AND SITE CONDITIONS

A. Project Contract Limits (Contract Zone Limits) shown on the drawings indicate only in general the limits of the work involved. Perform necessary and incidental work, which may fall outside of these demarcation lines. Confine construction activities within the Project Contract Limits and do not spread equipment and materials indiscriminately about the area.

1.11 SANITARY FACILITIES

A. The Contractor shall be allowed to utilize on-site restrooms as directed by the Architect and/or HHSC Representative. The Contractor shall maintain the facility in clean and sanitary condition at all time. Failure to do so, may require the Contractor to provide portable temporary toilet facilities for the contractor's use.

1.12 CONSTRUCTION AIDS

A. Provide construction aids and equipment required by construction personnel and to facilitate execution of the Work including: scaffolds, ladders, ramps, platforms, railings, and other such facilities and equipment.

PART 2 - MATERIALS

2.01 QUALITY

A. Materials, items, equipment and fixtures specified in the various Divisions and Sections shall be new unless otherwise specified.

2.02 STORAGE AND HANDLING

A. Contractor shall supervise jobsite delivery and handling, and assign storage space for materials, items, equipment and fixtures of all trades. Contractor and installer are responsible for delivery, unloading, unpacking,

handling, storage, distribution, installation and protection of its materials at the jobsite.

B. Except as otherwise required by these specifications or by the Hospital, determine and comply with manufacturer(s) recommendation(s) on product handling, storage and protection.

C. Deliver products to the jobsite in manufacturer's original containers, with labels intact and legible. Maintain packaged material with seals unbroken and labels intact until time of use. Promptly remove damaged materials and unusable items from the jobsite, and promptly replace with material meeting the specified requirements, at no additional cost to the Hospital.

D. The Architect may reject as non-complying such material and products that do not bear identification satisfactory to the Architect as to manufacturer, grade, quality, and other pertinent information.

PART 3 - EXECUTION

3.01 EXAMINING THE SITE

A. Contractor and Subcontractors are expected to visit the site and make due allowances for difficulties and contingencies to be encountered. Compare contract documents with work in place. Become familiar, with existing conditions, the conditions to be encountered in performing the Work, and the requirements of the drawings and specifications.

B. Verify construction dimensions and elevations indicated on the drawings before any construction begins. Any discrepancy shall be immediately brought to the attention of the Engineer, and any change shall be made in accordance with the Architect's instruction. Contractor shall not be entitled to extra payment if it fails to report the discrepancies before proceeding with any work whether within the area affected or not.

E. Obtain all field measurements required for the accurate fabrication and installation of the Work included in this Contract. Exact measurements are the Contractor's responsibility.

F. Furnish or obtain templates, patterns, and setting instructions as required for the installation of all Work. All dimensions shall be verified in the field.

G. The Contractor shall accept the site in the condition which exists at the time access is granted to begin the Work.

1. Verify existing conditions and dimensions shown and other dimensions not indicated but necessary to accomplish the Work.

2. Locate general reference points and take action to prevent their destruction. Lay out work and be responsible for lines, elevations and measurements and the work executed. Exercise precautions

to verify figures and conditions shown on drawings before layout of work.

3. Before starting the Work, the Contractor and each Subcontractor, shall verify governing dimensions and shall examine adjoining work on which the Contractor's work is in any way dependent. No additional compensation will be allowed on account of differences between actual measurements and dimensions shown. Submit differences discovered during the verification work to the Engineer for interpretations before proceeding with the associated work.

3.03 UTILITY SERVICE

A. Electricity - Make arrangements with the facilities for temporary use of electricity for construction use.

B. Telephone - Make arrangements with the utility companies for temporary telephone service for construction use or utilize cellular phone service.

C. Water - Make arrangements for temporary water use with the facilities.

3.04 ENVIRONMENTAL

A. General Contractor shall oversee that proper environmental conditions are met regarding temperature, humidity, lighting and ventilation.

3.05 PREPARATION AND PROTECTION

A. Protection of Property: Continually maintain adequate protection of the Work from damage and protect all property, including but not limited to buildings, equipment, furniture, grounds, vegetation, material, utility systems located at and adjoining the job site. Repair, replace or pay the expense to repair damages resulting from Contractor's fault or negligence.

B. Before starting work to be applied to previously erected constructions, make a thorough and complete investigation of such recipient surfaces and determine their suitability to receive required additional construction and finishes. Contractor, at its expense, shall make whatever repairs and conditioning required to properly prepare such surfaces. Contractor shall coordinate the work to provide a suitable surfaces to receive following work.

C. Commencement of work by any trade will be construed as acceptance of existing conditions and surfaces as being satisfactory for application of subsequent work, and full responsibility for finished results and assumption of warranty obligations under the Contract.

D. Protect existing work in a manner to prevent damage including interior work from damage by vandals or the elements. Provide temporary protection. Use curtains, barricades, or other appropriate methods. Take positive measures to prevent breakage of glass and damage to plastic, aluminum and other finishes.

E. Repairs and Replacements: In event of damage, promptly make replacements and repairs to the approval of the Engineer and/or HHSC Representative and at no additional cost to the Hospital. Additional time required to secure replacements and to make repairs will not be considered to justify an extension in the Contract Time or completion.

3.06 BARRICADE

A. Erect temporary construction barricade(s) to prevent unauthorized persons from entering the project area and to the extent required by the Engineer and/or HHSC Representative.

B. Maintain temporary construction barricade(s) throughout the duration of the Work. During the course of the project, the Engineer and/or HHSC Representative may require additional barricades be provided for the safety of the public. Contractor shall erect the additional barricade(s) at its own expense.

3.07 INSTALLATION

A. Materials, items, fixtures required by the various Divisions and Sections of the Specifications shall be installed in accordance with Contract Documents, by workers specially trained and skilled in performance of the particular type of work, to meet guarantee and regulatory agency requirements. Should the drawings or specifications be void of installation requirements, install the materials, items, fixtures in accordance with the manufacturer's current specifications, recommendations, instructions and directions, and/or best construction industry standards.

3.08 CUTTING AND PATCHING

A. General Contractor shall oversee cutting and patching of concrete, masonry, structural members and other materials where indicated on drawings and as job conditions require. Unless noted elsewhere in the Drawings and Specifications, no cutting or patching of existing or new structural members will be permitted without previously notifying the HHSC Technical Representative.

B. Patching materials and workmanship shall be of equal quality to that indicated on the drawings, specified for new work, and/or to match the construction of item to be patched.

3.09 CLEAN-UP

A. Rubbish and debris resulting from work of the various Divisions and Sections of the specifications shall be collected and disposed of by the Contractor at legal disposal areas away from the project site. Clean up and remove from premises all debris accumulated from operations from time to time and as directed by the Engineer and/or HHSC Representative. Permission to provide on-site trash containers shall be granted by the Hospital and shall be placed where directed by the Architect and/or HHSC Representative.

END OF SECTION

SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: The work shall generally consist of demolition, air conditioning work, electrical work, drywall work, and painting as indicated on the drawings and specified herein.

1. Project Location: Maluhia, 1027 Hala Drive., Honolulu, Hawaii.

B. Perform operations and furnish equipment, tools, materials, related items and labor necessary to execute, complete and deliver the Work as required by the Contract Documents.

C. The Division and Sections into which these specifications are divided shall not be considered an accurate or complete segregation of work by trades. This also applies to work specified within each section

D. Contractor shall not alter the Drawings and Specification. If an error or discrepancy is found, notify the HHSC Representative.

E. Specifying of interface and coordination in the various specification sections is provided for information and convenience only. These requirements in the various sections shall complement the requirements of this Section.

F. Scope of work includes the replacement of cooling tower 1, condenser water pump 1, chilled water pump 2, and associated electrical work as required to accommodate the cooling tower replacement. The base bid includes the roof, and chiller room.

1.02 SPECIFICATION FORMATS AND CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:

1. Abbreviated Language: Language used in the Specifications and other Contract Documents is abbreviated and include incomplete sentences. Omission of words or phrases such as “the Contractor shall”, “as shown on the drawings”, “a”, “an”, and “the” are intentional. Omitted words and phrases shall be provided by inference to form complete sentences. Words and meanings shall be interpreted as appropriate. Words implied, but not stated, shall be inferred, as the sense requires. Singular words shall be interpreted as plural, and plural words shall be interpreted as singular where applicable as the context of the Contract Documents indicates. Where devices, or items, or parts thereof

are referred to in the singular, it is intended that such reference shall apply to as many such devices, items or parts as are required to properly complete the Work.

2. Imperative mood and streamlined language are generally used in the Specifications. Requirements expressed in the imperative mood are to be performed by Contractor. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.

   a. The words “shall,” “shall be,” or “shall comply with,” depending on the context, are implied where a colon (:) is used within a sentence or phrase.

3. Abbreviations and Acronyms for Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale Research’s “Encyclopedia of Associations” or in Columbia Books’ “National Trade & Professional Associations of the U.S.”

B. Definitions

1. Directed: Terms such as “directed,” “requested,” “authorized,” “selected,” “approved,” “required,” and “permitted” mean directed by Contracting Officer, requested by Contracting Officer, and similar phrases.

2. Indicated: The term “indicated” refers to graphic representations, notes, or schedules on drawings or to other paragraphs or schedules in specifications and similar requirements in the Contract Documents. Terms such as “shown,” “noted,” “scheduled,” and “specified” are used to help the user locate the reference.

3. Furnish: The term “furnish” means to supply and deliver to project site, ready for unloading, unpacking, assembly, installation, and similar operations.

4. Install: The term “install” describes operations at project site including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

5. Provide: The terms “provide” or “provides” means to furnish and install, complete and ready for the intended use.

6. Installer: An installer is the contractor or another entity engaged by contractor as an employee, subcontractor, or sub-

subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

7. Submit: Terms such as “submit,” “furnish,” “provide,” and “prepare” and similar phrases in the context of a submittal, means to submit to the Contracting Officer.

C. Industry Standards

1. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

2. Publication Dates: Comply with standards in effect as of date of the Contract Documents, unless otherwise indicated.

3. Conflicting Requirements: 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 Contracting Officer for a decision before proceeding.

1.04 WORK SEQUENCE

A. This work will be conducted in a single construction phase..

1.05 USE OF PREMISES AND WORK RESTRICTIONS

A. General: Contractor shall have full use of construction zone for construction operations, including restricted use of project site, during construction period. Contractor’s use of premises is limited only by State’s right to perform work or to retain other contractors on portions of the project site.

B. Contractor’s use of premises is restricted as follows:

1. Construction Times and Schedule:

a. The Contractor shall coordinate the work schedule with the Architect and/or HHSC Representative. An advanced notice of 15 calendar days shall be provided prior to the start of work. Work can be scheduled for weekdays (8:00 AM to 4:30 PM) with advanced notice by the Contractor.

b. The normal operational hours are 8:00 AM to 4:30 PM, Monday through Friday.

c. Unless restricted elsewhere in these specifications, the Contractor may not perform work outside of normal daily operation hours. Weekend or holiday work may be permitted with the approval of the Engineer and/or HHSC Representative. Any weekend or holiday work shall require a 15 calendar day advanced notice.

d. Work performed during normal operating hours shall not impede public traffic or office personnel. An alternate route around the work areas may be required.

2. Site Access and Parking:

a. Arrange all on-site parking and access with the Engineer and/or HHSC Representative.

b. Subject to availability, the Engineer and/or HHSC Representative will designate other on-site areas that may be used by the Contractor other than assigned stalls. Restore any property damaged by construction activities at the completion of the project.

3. Sanitation and Utilities:

a. Contractor may use designated restrooms, however, shall maintain the facilities in clean condition at all times. Coordinate with the HHSC Representative.

b. Arrange all temporary electricity and water service with the HHSC Representative. There will be no charges for reasonable electricity and water service.

c. Should interruption of any utility services be required, outages shall be coordinated with the HHSC Representative. A minimum five (5) working days notice shall be provided. Contractor is forewarned that the HHSC Representative may require outages to be done at specific times to minimize disruptions to the facility operations.

4. Other Conditions:

a. Noise and other disrupting activities normally resulting from construction operations are detrimental to the conduct of normal activities in adjacent locations surrounding the project area. Accordingly, exercise every precaution to keep noise levels to a minimum. Internal combustion engines and compressors shall be equipped with mufflers to reduce noise to a minimum.

b. Use or application of materials with offensive odors should be avoided and may be restricted from use on this project.

1.06 WORK UNDER OTHER CONTRACTS

A. Separate Contract: The HHSC may execute a separate contract for certain construction at the facility that was not known at the time Offers were submitted.

B. Cooperate fully with separate contractors so work on those contracts may be carried out smoothly, without interfering with or delaying work under this Contract.

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END SECTION

SECTION 01140 – WORK RESTRICTIONS

PART 1 – GENERAL

1.01 SUMMARY

A. This section includes work restrictions on the Contractor's operations, and construction as required to maintain the facility's operation during the construction period.

B. CONSTRUCTION PROVISIONS

1. Rules and Regulations: Consult with the Engineer and HHSC Representative at the pre-construction conference and become familiar with the rules and regulations of the facility.

2. Contractor's Operations: Confine all construction operations to the immediate vicinity of the construction activity. Store building materials, equipment, tools and incidentals in an enclosed area as directed by the HHSC Representative. Take precautions and prevent access to power equipment, tools, etc., by other than authorized construction personnel. Perform operations to insure the safety of the occupants of the buildings at all times.

3. Perform operations to minimize inconvenience or disturbance upon the personnel and residents.

4. Protection of occupants: Special consideration must be made by the Contractor at all times to safely protect the occupants and facility personnel from any and all injuries that may be caused as a result of the work performed under this contract.

5. Caution: The Contractor shall caution his personnel on the job that any association with the occupants be avoided as much as possible, that when spoken to by occupants, normal courtesy shall be maintained at all times.

7. None of the foregoing regulations shall be construed as a restriction on the legal prosecution of the work.

1.02 SEQUENCING OF WORK

A. The Contractor shall schedule his work in general consideration for the on-going operation of the hospital. All work shall be coordinated with the HHSC Representative.

B. Stoppage of work for the duration of CMS and State Survey audits shall not incur additional costs to the HHSC.

C. All work shall be coordinated and scheduled with the hospital and/or HHSC Representative. In general, the Contractor will be restricted to work areas as coordinated with the HHSC Representative.

END OF SECTION

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

Where indicated in these specifications, provide submittals to the Engineer for review.

1.02 PROCEDURES

A. Unless otherwise specified, deliver submittals to the Engineer with copy of transmittal to the Contracts Manager.

B. Transmit all items using form which identifies Project, Contractor, Subcontractor, and major supplier. Identify pertinent drawing sheet, detail number, and specification section number, as appropriate. Identify deviations from Contract Documents. Provide space for the Architect or his Consultant's review stamp.

C. Upon completion of review by the Engineer, the Engineer will return submittals to the Contractor with copy to the Contracts Manager and HHSC Representative.

1.03 SCHEDULE OF WORK

A. Coordinate Schedule with Work Sequence specified in Section 01140.

1.04 SHOP DRAWINGS AND SAMPLE SUBMITTALS

A. All submittals shall be made in accordance with the following unless otherwise specified. Minimum sheet size is 8-1/2" x 11". Maximum sheet size is same size as the Contract Drawings. Drawings shall be presented in a clear and thorough manner. Details shall be identified by reference to sheet, schedule, and detail shown on Contract Drawings.

B. Mark each copy to identify applicable products, and other data. Supplement manufacturer's standard data to provide information unique to the work. Include manufacturer's installation instructions when required by the specification.

1. The Contractor shall review, stamp with his approval and submit with reasonable promptness and in orderly sequence so as to cause no delay in work of any other Subcontractor, all shop drawings, and product data required by these specifications.

2. Properly identify shop drawings and samples as specified. At the time of submission, the Contractor shall inform the HHSC Technical Representative in writing of any deviation in the shop drawings or submittals from requirements of the Contract Documents.

3. By approving and submitting the shop drawings and submittals the Contractor thereby represents that he has determined and verified all field measurements, field criteria, materials, catalog numbers and similar data, or will do so, and that he has checked and coordinated each shop drawing and sample with the requirements of these specifications.

4. Six (6) copies of the Shop Drawings and submittals shall be submitted for review. Upon review, the Engineer will retain three (3) copies and return the balance to the Contractor.

5. The Engineer will review the shop drawings and submittals with reasonable promptness so as to cause no delay but only for conformance with the design concept of the Project and with the information given in the Contract Documents. The Engineer's review of a separate item shall not indicate approval of an assembly in which the item functions.

6. The Contractor shall make any corrections required by the Engineer and shall resubmit the required number of corrected copies of shop drawings or submittals for review. The Contractor shall direct specific attention in writing or on resubmitted shop drawings to revisions other than the corrections requested by the Engineer on previous submissions.

7. The Engineer's review of shop drawings or submittals shall not relieve the Contractor of responsibilities for any deviation from the requirements of the Contract Documents unless the Contractor has informed the Hospital in writing of such deviation, at time of submission, and the HHSC Representative has given written approval to the specific deviation; nor shall the Engineer's review relieve the Contractor from responsibility for errors or omissions in the shop drawings or samples.

8. No portion of the work requiring a shop drawing or sample submission shall be commenced until the submission has been reviewed by the Engineer. All such portions of the work shall be in accordance with reviewed shop drawings and samples.

C. Samples: Submit full range of manufacturer's standard textures, colors, and patterns for the Hospital's selection. Submit samples as specified in the respective Specification sections and as noted above. Samples shall illustrate functional characteristics of the Product, with integral parts and attachment devices. Coordinate submittal of different categories for interfacing work. Include identification on each sample, giving full information.

1.05 BIDDER'S SPECIAL RESPONSIBILITY FOR COORDINATING CONTRACTURAL WORK AND SUBMITTALS:

A. The General Contractor shall be responsible for the coordination of all contractual work and submittals.

B. The General Contractor shall have a rubber stamp made up in the following format:

Contractor's Name

PROJECT: _____

_____

PROJECT NO.: _____

THIS SUBMITTAL HAS BEEN CHECKED BY THIS GENERAL CONTRACTOR. IT IS CERTIFIED CORRECT, COMPLETE, AND IN COMPLIANCE WITH CONTRACT DRAWINGS AND SPECIFICATIONS. ALL AFFECTED CONTRACTORS AND SUPPLIERS ARE AWARE OF, AND WILL INTEGRATE THIS SUBMITTAL INTO THEIR OWN WORK.

DATE RECEIVED _____
SPECIFICATION SECTION # _____
SPECIFICATION PARAGRAPH # _____
DRAWING _____
SUBCONTRACTOR _____
SUPPLIER _____
MANUFACTURER _____

CERTIFIED BY: _____

C. This stamp, "filled-in", should appear on the title sheet of each shop drawing, on a cover sheet of submittals in an 8-1/2" x 11" format, or on one face of a cardstock tag (min. 3" x 6") tied to each sample. The tag on the samples should state what the sample is, so that if the tag is accidentally separated from the sample, they can be matched up again. The back of this tag will be used by the Engineer for his receipt, review, and log stamp and for any comments that relate to the sample.

D. All submittals for material and shop drawings listed in the contract documents, shall be required and shall be first reviewed and certified by the General Contractor, then reviewed and approved by the Engineer prior to any ordering of materials and equipment. Submittals that have not been reviewed by the General Contractor shall be returned for review.

1.06 MANUFACTURER'S CERTIFICATES

Submit certificates, warranties, operating and maintenance instructions in accordance with requirements of each specification section. Submit in triplicate.

1.07 MSDS

MSDS shall be submitted prior to the pre-construction meeting. The Contractor shall submit MSDS log and reference each MSDS to its specification Section number and product system.

PART 2 – PRODUCTS

(Not used.)

PART 3 – EXECUTION

(Not used.)

END OF SECTION

SECTION 01577 - POLLUTION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. Includes site and environmental control requirements.

1.02 TRASH, REFUSE DISPOSAL

A. Burning of debris and/or waste materials on the project site is prohibited.

B. Do not bury debris and/or waste material on the project site, unless specifically allowed elsewhere in these specifications as backfill material.

C. Haul unusable debris and waste material to an appropriate off-site dump area. During loading operations, water down or provide other measures to prevent dust or other airborne contaminants.

D. Vacuum, wet mop, or damp sweep when cleaning rubbish and fines which can become airborne from floors or other paved areas. Do not dry sweep.

E. Use enclosed chutes and/or containers to conveying debris from above the ground floor level.

F. Clean-up shall include the collection of all waste paper and wrapping materials, cans, bottles, construction waste materials and other objectionable materials, and removal as required. Frequency of clean-up shall coincide with rubbish producing events. The Contractor shall be responsible for all clean-up cost.

1.03 DUST

A. Prevent dust from becoming airborne at all times including non-working hours, weekends and holidays in conformance with the State Department of Health, Administrative Rules, Title 11, Chapter 60 - Air Pollution Control.

B. Contractor is responsible for and shall determine the method of dust control. Subject to the Contractor’s choice, the use of water or “environmentally friendly chemicals” may be used over surfaces which create airborne dust.

C. Construct or erect dust control barriers as required to retain dust within the project site area.

D. Contractor is responsible for all damage claims resulting from failure to control airborne dust during all times that the site is under the Contractor's control.

1.04 NOISE

A. Keep noise within acceptable levels at all times in conformance with the State Department of Health, Administrative Rules, Title 11, Chapter 46 - Community Noise Control. Contractor shall obtain and pay for the Community Noise Permit from the State Department of Health when the construction equipment or other devices emit noise at levels exceeding the allowable limits.

B. To reduce loud disruptive noise levels, ensure mufflers and other devises are provided on equipment, internal combustion engines and compressors. Maintain equipment to reduce noise to acceptable levels.

C. Starting-up of construction equipment meeting allowable noise limits shall not be done prior to 8:00 a.m. without prior approval of the HHSC Representative. Equipment exceeding allowable noise levels shall not be started-up prior to 8:00 a.m.

1.05 EROSION

A. During interim grading operations, the grade shall be maintained so as to preclude any damage to adjoining property from water and eroding soil.

B. Install temporary berms, cut-off ditches and other provisions as required construction methods and operations. Should there be a question if the temporary measures are insufficient to prevent erosion, the HHSC Representative shall make the final determination.

C. Construct and maintain drainage outlets and silting basins as required to minimize erosion and pollution of waterways during construction.

1.06 OTHERS

A. Wherever trucks and/or vehicles leave the site and enter surrounding paved streets, Contractor shall prevent any material from being carried onto the pavement. Waste water shall not be discharged into existing streams, waterways, or drainage systems such as gutters and catch basins unless treated to comply with the State Department of Health water pollution regulations. The Contractor shall construct a vehicle wash-down area, within the project site, to remove all mud, gravel, etc., before leaving the site.

B. Trucks hauling debris shall be covered as required by PUC Regulation. Trucks hauling fine materials shall be covered.

C. No dumping of waste concrete will be permitted at the job-site.

D. Except for rinsing of the hopper and delivery chute, and for wheel washing where required, concrete trucks shall not be cleaned on the job-site.

E. Except in an emergency, such as a mechanical breakdown, all vehicle fueling and maintenance shall be done in a designated area. A temporary berm shall be constructed around the area when runoff can cause a problem.

F. If allowed in this Contract, spray painting shall be done by the “airless spray” process only. All other types of spray painting shall not be permitted.

1.07 SUSPENSION OF WORK

A. Violations of any of the above requirements or any other pollution control requirements which may be specified in the Specifications shall be cause for suspension of the work creating such violation.

B. Reference the General Conditions Construction, dated 3/17/06 for the suspension procedures.

C. The Engineer and/or HHSC Representative may also suspend any operations which creates a pollution problems even if the problem does not violate the provisions of this Section. In this instance, the work is considered a Change and subject to the provisions of the contract.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

SECTION 01715 - EXISTING CONDITIONS - ASBESTOS / LEAD / HAZARDOUS MATERIAL SURVEY

PART 1 - GENERAL

1.01 SUMMARY

A. This section includes the results of Maluhia survey for Asbestos and Lead is provided for the Contractor's information.

B. Related Sections include the following:

1. SECTION 13281 - ASBESTOS ABATEMENT for requirements of all work which disturbs materials with asbestos containing materials.

2. SECTION 13282 - LEAD PAINT CONTROL MEASURES for requirements of all work which disturbs materials with lead or paint with lead.

3. SECTION 13288 - ASBESTOS TESTING AND MONITORING for asbestos air monitoring requirements.

4. SECTION 13289 - LEAD TESTING AND MONITORING for lead air monitoring requirements.

1.02 ASBESTOS

A. The structure to be renovated or modified under this contract were surveyed for the presence of asbestos containing materials (ACM). A copy of the initial survey report, as well as any subsequent supplemental survey report if performed, is included in this Section.

1. The report is included, even when no ACM was found, for the Contractor's information. Review the attached report for the basis on which the negative ACM finding was made. The Contractor may perform further surveys at its own expense, if ACM not shown in the report is suspected in the areas of the building in which work will be performed. If ACM is found, notify the HHSC Representative immediately. The HHSC Representative will reimburse the Contractor for reasonable costs for the testing cost if ACM is found.

2. If there is ACM outside of the areas in which work will be performed, this ACM shall not be disturbed in any way.

B. If applicable, notify employees, subcontractors, and all other persons engaged on the project of the presence of asbestos in the existing buildings in accordance with the State of Hawaii: Occupational Safety and Health Administration and 29 CFR 1926.1101, Asbestos.

C. In the event that work is required in any building or buildings on the site other than the one designated within this project scope, request copies of the asbestos survey report for such building from the HHSC Representative. Based on the information contained in the additional survey, notify affected personnel.

1.03 LEAD-IN PAINT

A. The structure or structures to be renovated or modified under this contract were surveyed for the presence of lead-based paint (LBP). A copy of the survey report is included in this Section.

B. Lead-based paint (LBP) is not present in the existing building at the job site. However, inform employees, Subcontractors, and all other persons engaged in the project that materials painted with lead (PWL), paint having lead concentration below the EPA guidelines, are present in the existing building. Conduct work in accordance with the requirements of Occupational Safety and Health Administration 29 CFR 1926.62 Lead.

C. Review the attached lead testing data which identify locations PWL was found. Lead testing was for design purposes only and the results do not satisfy any of the requirements of OSHA 29 CFR 1926.62 Lead.

D. The Contractor shall follow all applicable rules and regulations pertaining to the handling, removal and disposal of materials painted with lead.

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION

3.01 SURVEY (Attached)

A. Limited Hazardous Material Survey Report for Asbestos and Lead, Maluhia – Cooling Tower Replacement, 31 pages, dated August 2025, prepared by EnviroQuest, Inc.

END OF SECTION

EnviroQuest

SERVICES

HAZMAT Inspections

Remediation Design

Asbestos Management

Lead Management

Lead Risk Assessment

Industrial Hygiene

Indoor Air Quality

Mold Assessment

Environmental Site Assessments

Subsurface Investigation

Water Sampling

Asbestos Training

Lead Training

OSHA Training

OSHA Compliance

LIMITED HAZARDOUS MATERIAL SURVEY REPORT FOR ASBESTOS AND LEAD

MALUHIA COOLING
TOWER REPLACEMENT
HONOLULU, HAWAII

EnviroQuest Project: 304501

August 2025

Prepared for:

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Industrial Hygienist

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APPENDICES

1 INTRODUCTION

A limited hazardous material survey was conducted on August 12 and 19, 2025, at the Maluhia in Honolulu, Hawaii.

The purpose of the activities under this project was to perform sampling for asbestos-containing materials (ACM) and lead-based paint (LBP) that may be disturbed during the cooling tower replacement work.

1.1 SITE LOCATION

The listed areas were included in our inspection:

- Sub-Basement
  - Equipment Room
- Roof
  - Cooling Tower 1

2 ASBESTOS

Twenty-one samples were collected from suspect asbestos-containing materials.

2.1 METHODOLOGY

A visual inspection for suspect ACM and homogeneous areas (areas that have uniform color, texture, and appearance) was conducted. Suspect materials were divided into three Environmental Protection Agency (EPA) categories:

- Surfacing Materials (sprayed or troweled-on materials)
- Thermal Systems Insulations (materials generally applied to various mechanical systems)
- Miscellaneous Materials (any materials which do not fit in the above categories

Sampling methodology generally followed the procedures presented in EPA 40 CFR 763 *Asbestos* Subpart E *Asbestos Containing Materials in Schools* and Hawaii Department of Health (HDOH), Hawaii Administrative Rules (HAR) Titles 11-501 *Asbestos Requirements* and 11-502 *Asbestos Containing Materials in Schools*.

While sampling locations were selected randomly to represent homogenous materials, sampling was confined to materials which were readily accessible and did not involve the destruction of physical barriers.

2.2 RESULTS

Samples were submitted to Hawaii Analytical Laboratory, LLC. (HAL) in Honolulu, Hawaii, a National Voluntary Laboratory Accreditation Program (NVLAP) accredited laboratory. The samples were analyzed by EPA method 40 CFR 763, Appendix E to Subpart E *Interim Method of the Determination of Asbestos in Bulk Insulation Samples* and EPA Method 600/R-93-116 *Method for Determination of Asbestos in Bulk Building Materials.* HAL is also registered to provide asbestos laboratory services in Hawaii under HDOH 11-504 *Asbestos Abatement Certification Program.*

Based on the laboratory analytical results, asbestos was identified in three of the 21 samples. All three of the samples were determined to be asbestos-containing materials (ACM), materials containing more than 1% asbestos. In accordance with the National Emission Standard for Hazardous Air Pollutants (NESHAP) requirements, samples consisting of distinct layers of materials were analyzed and reported separately by the laboratory. NESHAP also states that if asbestos is identified in amounts less than 10%, the owner or operator of the building must elect to assume the amount to be greater than 1% and treat the material as asbestos-containing material or request verification of the amount by point counting. No samples were point counted for this report.

A summary of the data is presented in Table 1. Refer to the accompanying appendices for laboratory analytical results and photographs.

3 LEAD

Eight paint film samples were collected from painted or coated surfaces.

3.1 METHODOLOGY

A visual inspection for painted or coated building surfaces was conducted. Sampling methodology generally followed the procedures presented in the U.S. Department of Housing and Urban Development's document *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing,* EPA 40 CFR 745 *Lead-Based Paint Poisoning Prevention in Certain Residential Structures,* and ASTM E1729 *Standard Practice for Field Collection of Dried Paint Samples for Subsequent Lead Determination.*

3.2 RESULTS

Samples were submitted to HAL, an American Industrial Hygiene Association (AIHA) accredited laboratory with a specific accreditation for lead analysis under the AIHA Environmental Lead Laboratory Accreditation Program. The lead paint film samples were analyzed by NIOSH Method 7082m *Lead by FAAS.*

Based on the laboratory analytical results, none of the samples exceeded the EPA guidelines for lead in paint. EPA defines LBP as *paint or other surface coatings that contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight.* However, lead at concentrations below the EPA guidelines were detected in four of the eight samples. For the purpose of this report, this paint is identified as paint with lead (PWL), containing lead concentrations greater than the laboratory analytical detection limit but less than 0.5% lead by weight.

A summary of the data is presented in Table 2. Refer to the accompanying appendices for laboratory analytical results and photographs.

4 SUMMARY

4.1 ASBESTOS

The listed material was identified as asbestos-containing material.

Material	Homogeneous Location	Condition[1]
White wrap with adhesive over black wrap and white foam insulation	Sub-Basement, Equipment Room, CHWP#2	G

1. Good (G); Damaged (D) <10% distributed or 25% localized; Significant Damage (SD), >10% distributed or 25% localized

All removal must be completed by a certified asbestos abatement contractor under controlled conditions in accordance with EPA and Hawaii Department of Health (HDOH) regulations. Work should also be monitored by an independent industrial hygiene professional.

4.2 LEAD

Lead-based paints were not identified in this inspection. However, PWL was identified, see Table 2 for details.

Prior to the disturbance of any PWL, the Contractor's employees disturbing the paint must be informed that it contains lead. Any work disturbing this paint must be conducted in accordance with 29 CFR 1926.62 *Lead*.

If lead paint debris is generated during any disturbance activity, a composite sample should be collected for *Toxicity Characteristic Leaching Procedure* (TCLP) lead analysis for waste disposal characterization. EPA 40 CFR 261 *Identification and Listing of Hazardous Waste* allows a maximum lead concentration of 5.0 mg/L. TCLP results exceeding this threshold requires disposal as hazardous waste. Note that painted metal components are exempt from TCLP testing if recycled.

5 LIMITATIONS

The information set forth is based solely on the agreed upon scope of services, on personal observation, laboratory data, and information provided by Mechanical Enterprises, Inc.

Although this inspection provides information on the relative presence or absence of asbestos-containing materials and lead paints, it should not be construed as a final statement that all hazardous materials have been identified.

Given the often obscure and elusive nature of hazardous materials, it is never possible to absolutely dismiss the possibility of additional hazardous materials. EnviroQuest, Inc. expressly disclaims any and all liability, representations, expressed or implied, contained in, or for omission from this report, or any other written or oral communication which might be interpreted as establishing the total extent of all liability present at the subject property.

Our services have been performed with usual thoroughness and competence of the consulting profession, in accordance with the standard of professional services at this time. No other warranty or representation, either expressed or implied is included or intended.

Any question regarding our work and this report, the presentation of the information, and the interpretation of the data are welcome and should be referred to the undersigned. EQI greatly appreciates this opportunity to assist you with your industrial hygiene needs. We look forward to working with you again in the future.

TABLE 1: ASBESTOS SAMPLE SUMMARY

Homogenous Material	% Asbestos[1]	ACM (Y/N)	Sampling Location	Sample ID	Friable (Y/N)	Condition[2]	Photo No.
Red flange gasket	ND	N	Sub-Basement, Equipment Room, CWP#1	304501-01A	N	Good	1
	ND	N	Sub-Basement, Equipment Room, CWP#1	304501-01B	N	Good	
	ND	N	Sub-Basement, Equipment Room, CWP#1	304501-01C	N	Good	
Green flange gasket	ND	N	Sub-Basement, Equipment Room, CWP#1	304501-02A	N	Good	2
	ND	N	Sub-Basement, Equipment Room, CWP#1	304501-02B	N	Good	
	ND	N	Sub-Basement, Equipment Room, CWP#1	304501-02C	N	Good	
Gray CMU grout	ND	N	Sub-Basement, Equipment Room, wall	304501-03A	N	Good	3
	ND	N	Sub-Basement, Equipment Room, wall	304501-03B	N	Good	
	ND	N	Sub-Basement, Equipment Room, wall	304501-03C	N	Good	
Black sealant	ND	N	Roof, Cooling Tower 1, I-beams	304501-04A	N	Good	4
	ND	N	Roof, Cooling Tower 1, I-beams	304501-04B	N	Good	
	ND	N	Roof, Cooling Tower 1, I-beams	304501-04C	N	Good	
Black tar pipe coating	ND	N	Roof, Cooling Tower 1, pipe	304501-05A	N	Good	5
	ND	N	Roof, Cooling Tower 1, pipe	304501-05B	N	Good	
	ND	N	Roof, Cooling Tower 1, pipe	304501-05C	N	Good	
White wrap with adhesive over silver foil and yellow fiberglass insulation	ND	N	Sub-Basement, Equipment Room, CHWP#2	304501-06A	Y	Good	6
	ND	N	Sub-Basement, Equipment Room, CHWP#2	304501-06B	Y	Good	
	ND	N	Sub-Basement, Equipment Room, CHWP#2	304501-06C	Y	Good	
White wrap with adhesive over black wrap and white foam insulation	15% Amosite 5% Chrysotile	Y	Sub-Basement, Equipment Room, CHWP#2	304501-07A	Y	Good	7
	15% Amosite 8% Chrysotile	Y	Sub-Basement, Equipment Room, CHWP#2	304501-07B	Y	Good	
	< 1% Amosite 6% Chrysotile	Y	Sub-Basement, Equipment Room, CHWP#2	304501-07C	Y	Good	

1. ACM=>1% asbestos content
2. Good (G); Damaged (D) <10% distributed or 25% localized; Significant Damage (SD), >10% distributed or 25% localized

TABLE 2: LEAD SAMPLE SUMMARY

Paint Color	Int/Ext	LBP[1] (Y/N)	PWL[2] (Y/N)	Paint Sample Location	Sample ID	Results (wt %)	Condition[3,4]	Photo No.
Yellow over brown	Int	N	Y	Sub-Basement, Equipment Room, metal pipe	304501-01P	0.051	Fair	8
Blue over gray	Int	N	N	Sub-Basement, Equipment Room, metal pipe/pump	304501-02P	< 0.0045	Fair	9
Gray	Ext	N	N	Roof, Cooling Tower 1, metal I-beam	304501-03P	< 0.004	Intact	10
Off-white	Ext	N	N	Roof, Cooling Tower 1, metal control panel box	304501-04P	< 0.004	Intact	11
Green	Ext	N	Y	Roof, Cooling Tower 1, concrete wall	304501-05P	0.18	Intact	12
Light gray	Int	N	N	Sub-Basement, Equipment Room, metal panel box	304501-06P	< 0.004	Intact	13
Gray	Int	N	Y	Sub-Basement, Equipment Room, metal control panel	304501-07P	0.11	Intact	14
Orange over tan	Int	N	Y	Sub-Basement, Equipment Room, metal pipe	304501-08P	0.075	Intact	15

1. LBP = >0.5% lead by weight
2. PWL = >laboratory detection limit but <0.5% lead by weight
3. Exterior: Intact – Entire surface is intact; Fair - ≤ 10ft²; Poor - >10 ft²
4. Interior: Intact – Entire surface is intact; Fair - ≤ 2ft² or ≤ 10%; Poor - >2 ft² or >10%

EnviroQuest

APPENDIX A

REFERENCE PHOTOGRAPHS

REFERENCE PHOTOGRAPHS

EnviroQuest

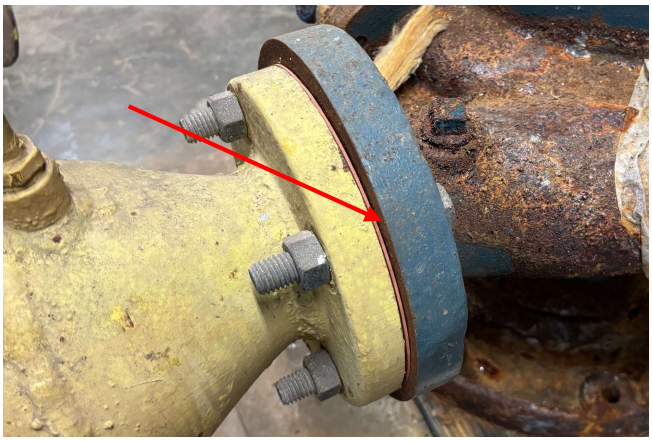

Photo 1: Sub-Basement, Equipment Room.

Non asbestos containing red flange gasket.

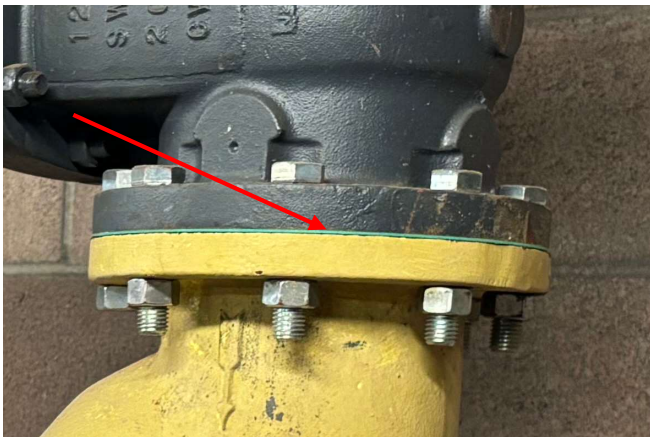

Photo 2: Sub-Basement, Equipment Room.

Non asbestos containing green flange gasket.

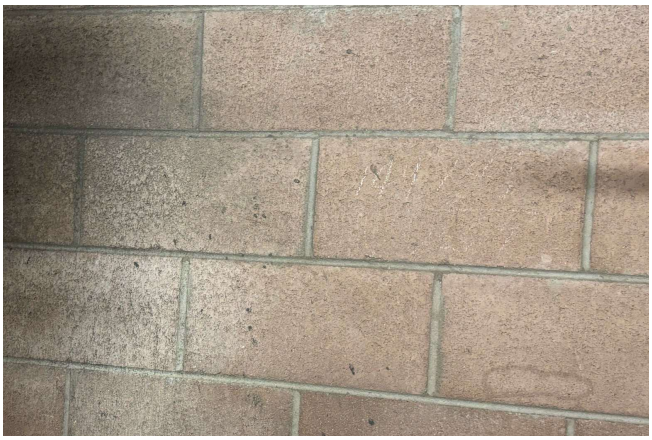

Photo 3: Sub-Basement, Equipment Room.

Non asbestos containing gray CMU grout.

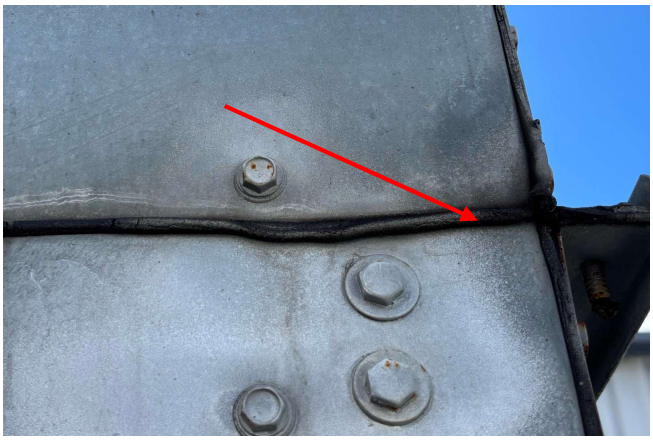

Photo 4: Roof, Cooling Tower 1.

Non asbestos containing black sealant.

Photo 5: Roof, Cooling Tower 1.

Non asbestos containing black tar pipe coating.

Photo 6: Sub-Basement, Equipment Room.

Non asbestos containing white wrap with adhesive over silver foil and yellow fiberglass insulation.

Photo 7: Sub-Basement, Equipment Room.

Asbestos containing white wrap with adhesive over black wrap and white foam insulation.

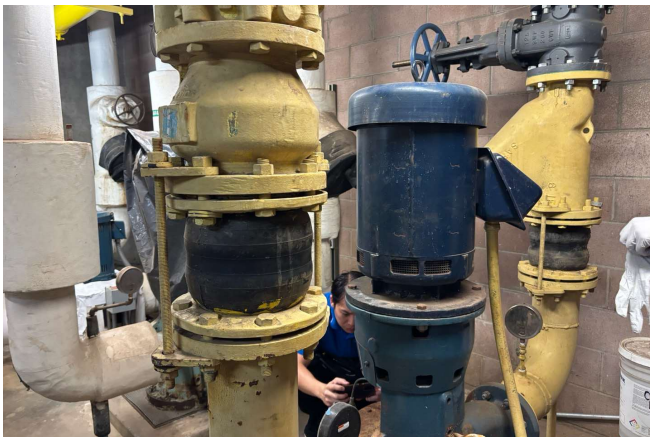

Photo 8: Sub-Basement, Equipment Room.

Yellow over brown paint with lead on metal pipe.

Photo 9: Sub-Basement, Equipment Room.

Non lead containing blue over gray painted metal pipe/pump.

Photo 10: Roof, Cooling Tower 1.

Non lead containing gray painted metal I-beam.

Photo 11: Roof, Cooling Tower 1.

Non lead containing off-white painted metal control panel box.

Photo 12: Roof, Cooling Tower 1.

Green paint with lead on concrete wall.

Photo 13: Sub-Basement, Equipment Room.

Non lead containing light gray painted metal panel box.

Photo 14: Sub-Basement, Equipment Room.

Gray paint with lead on metal control panel.

Photo 15: Sub-Basement, Equipment Room.

Orange over tan paint with lead on metal pipe.

EnviroQuest

APPENDIX B

LABORATORY ANALYTICAL REPORTS

Hawaii Analytical Laboratory
ANALYTICAL REPORT

Monday, August 18, 2025

EnviroQuest, Inc.
98-029 Hekaha Street, Suite 21
Aiea HI 96701

Phone Number: (808)486-5881
Facsimile: (808) 486-5889
Email: eqi@enviroquestinc.com

Lab Job No: 202507244
Date Submitted: 8/13/2025
Your Project: 304501, Maluhia Cooling Tower, 8/12/25

Bulk Asbestos Determination

Lab Sple No.	Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202552813	**304501-01A**		NONE DETECTED		Cellulose (undulose) + synthetic fibers (undulose)	**2**	Calcite + other	8/13/2025
Layer	Red gasket							
Comments								
202552814	**304501-01B**		NONE DETECTED		Cellulose (undulose) + synthetic fibers (undulose)	**2**	Calcite + other	8/13/2025
Layer	Red gasket							
Comments								
202552815	**304501-01C**		NONE DETECTED		Cellulose (undulose) + synthetic fibers (undulose)	**2**	Calcite + other	8/13/2025
Layer	Red gasket							
Comments								
202552816	**304501-02A**		NONE DETECTED		Wollastonite (+/- optical sign)	**10**	Calcite + other	8/13/2025
Layer	Green gasket							
Comments								
202552817	**304501-02B**		NONE DETECTED		None detected		Calcite + other	8/13/2025
Layer	Gray sealant							
Comments								

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98-029 Hekaha Street, Suite 21
Aiea HI 96701

Phone Number: (808)486-5881
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Lab Job No: 202507244
Date Submitted: 8/13/2025
Your Project: 304501, Maluhia Cooling Tower, 8/12/25

Bulk Asbestos Determination

Lab Sple No.	Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202552817	**304501-02B**		NONE DETECTED		Wollastonite (+/- optical sign)	**10**	Calcite + other	8/13/2025
Layer	Green gasket							
Comments								
202552818	**304501-02C**		NONE DETECTED		None detected		Calcite + other	8/13/2025
Layer	Gray sealant							
Comments								
202552818	**304501-02C**		NONE DETECTED		Wollastonite (+/- optical sign)	**10**	Calcite + other	8/13/2025
Layer	Green gasket							
Comments								
202552819	**304501-03A**		NONE DETECTED		None detected		Calcite + aggregate + other	8/13/2025
Layer	Gray concrete							
Comments								
202552820	**304501-03B**		NONE DETECTED		None detected		Calcite + aggregate + other	8/13/2025
Layer	Gray concrete							
Comments								
202552821	**304501-03C**		NONE DETECTED		None detected		Calcite + aggregate + other	8/13/2025
Layer	Gray concrete							
Comments								
202552822	**304501-04A**		NONE DETECTED		None detected		Calcite + other	8/13/2025
Layer	Black sealant							
Comments								
202552823	**304501-04B**		NONE DETECTED		None detected		Calcite + other	8/13/2025
Layer	Black sealant							
Comments								

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Your Project: 304501, Maluhia Cooling Tower, 8/12/25

Bulk Asbestos Determination

Lab Sple No.	Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202552824	**304501-04C**		NONE DETECTED		None detected		Calcite + other	8/13/2025
Layer	Black sealant							
Comments								
202552825	**304501-05A**		NONE DETECTED		None detected		Tar + paint	8/13/2025
Layer	Black tar / white paint							
Comments								
202552826	**304501-05B**		NONE DETECTED		None detected		Tar + paint	8/13/2025
Layer	Black tar / white paint							
Comments								
202552827	**304501-05C**		NONE DETECTED		None detected		Tar	8/13/2025
Layer	Black tar							
Comments								
202552827	**304501-05C**		NONE DETECTED		None detected		Other + paint	8/13/2025
Layer	Colorless coating / white paint							
Comments								

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Lab Job No: 202507244
Date Submitted: 8/13/2025
Your Project: 304501, Maluhia Cooling Tower, 8/12/25

General Comments
The bulk sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures outlined in the United States Environmental Protection Agency's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" (EPA-600/M4-82-020, Dec. 1982) and / or "Method for Determination of Asbestos in bulk Building Materials" (EPA-600/R-93-116, July 1993). The analysis of each bulk sample relates only to the material examined, and may or may not represent the overall composition of its original source. Floor tile and other resinously bound materials, when analyzed by the EPA methods referenced above may yield false negative results because of limitations in separating closely bound fibers and in detecting fibers of small length and diameter. Gravimetric treatment, which HAL does not offer, may also be appropriate for certain NOB (non-friable organically bound) materials. Unless specifically requested by clients, NOB samples can be subcontracted to a NVLAP accredited lab, or else, they will be analyzed by HAL using regular PLM technique. In addition, alternative methods of identification, including Transmission Electron Microscopy (TEM) may or may not be applicable. We utilize calibrated visual area estimation on a routine basis and do not conduct point counting unless specifically requested to do so. Estimated error for the visual determinations presented are 75% relative (<1 to 10%), 65% relative (11 to 19%), 50% relative (20 to 34%); 40% relative (35 to 50%), 35% relative (51 to 60%), and 25% relative (>60% v/v). We will not separate layers which in our opinion are not readily discernable. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report must not be used by the client to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government. Unless otherwise indicated, the sample condition at the time of receipt was acceptable.

Results and Symbols Definitions
> This testing result is greater than the numerical value listed.
< This testing result is less than the numerical value listed.
None Detected = asbestos was not observed in the sample. If trace amount of asbestos was detected below our quantifiable limits of 1.0%, <1% (trace) would be indicated and the asbestos type listed. Point counting, where applicable, are recommended to improve accuracy.

Eva Skogsberg
Laboratory Manager

EnviroQuest

202507244

PLM DATA SHEET

PROJECT NAME: Malvhia Cooling Tower

PAGE: 1 of 2

DATE: 8/12/25

LOCATION:

PROJECT NO.: 304501

Material Description: Red flange gasket — Friable / Non-friable

Sample No.	Location	
304501-01A	SUB basement, ~~CWP #2~~, equipment room CWP#1	202552813
-01B		202552814
-01C		202552815

CONDITION: % Damaged: % Localized: % Distributed: Total Material Quantity:

Surfacing Material		*TSI*		*Misc.*	
☐ Sig. Damage	% Crumbling -	☐ Sig. Damage	% Gouge/Punct -	☐ Sig. Damage	% Crumbling -
☐ Damaged	% Delaminating -	☐ Damaged	% Crushed -	☐ Damaged	% Delaminating -
☐ Good Cond.	% H_2O/Gouges -	☐ Good Cond.	% H_2O Stains -	☐ Good Cond.	% H_2O/Gouges-

Contact Potential	☐ High	☐ Moderate	☐ Low
Vibration Potential	☐ High	☐ Moderate	☐ Low
Air Erosion	☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING	☐ Significant Damage	☐ Damage	☐ Minimal Damage

Material Description: Green flange gasket — Friable / Non-friable

Sample No.	Location	
304501-02A	SUB basement, ~~CWP #2~~, equipment room CWP#1	202552816
-02B		202552817
-02C		202552818

CONDITION: % Damaged: % Localized: % Distributed: Total Material Quantity:

Surfacing Material		*TSI*		*Misc.*	
☐ Sig. Damage	% Crumbling -	☐ Sig. Damage	% Gouge/Punct -	☐ Sig. Damage	% Crumbling -
☐ Damaged	% Delaminating -	☐ Damaged	% Crushed -	☐ Damaged	% Delaminating -
☐ Good Cond.	% H_2O/Gouges -	☐ Good Cond.	% H_2O Stains -	☐ Good Cond.	% H_2O/Gouges-

Contact Potential	☐ High	☐ Moderate	☐ Low
Vibration Potential	☐ High	☐ Moderate	☐ Low
Air Erosion	☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING	☐ Significant Damage	☐ Damage	☐ Minimal Damage

Sampled By: Kristen Kaneshiro

DOH Cert No: Landon Awada

Relinquished By/Date/Time: KK 2025-08-12

Received By/Date/Time: Savannah Newman Savannah Newman

Relinquished By/Date/Time:

Received By/Date/Time: 08-13-25 A09:33 RCVD

Samples picked up at EQI office by Hawaii Analytical Laboratory

TURNAROUND TIME: ☐ < 12 Hours ☐ 24 Hours ☒ 3 Days ☐ 5 Days ☐ _____

Surfacing	<1,000 ft² = 3 Samples	1,000 – 5,000 ft² = 5 Samples	>5,000 ft² = 7 Samples
TSI	Minimum of 3 Samples UNLESS....	<6 In. or ft² = 1 Sample	Minimum of 2 Samples *(Cement/plaster valves, elbows & 'T')*
Misc. Non-Friable	Minimum of 2 Samples (*AHERA*)	Minimum of 3 Samples (*Hawaii*)	
Misc. Friable	Minimum of 2 Samples		

Surfacing	Sig. Damage = *> 10% Dist. or 25% Local*	Damaged = *< 10% Dist. or 25% Local*	*Good = Very Limited Damage*
TSI	Sig. Damage = *>10% Missing Jacket OR >10% Dist. or 25% Local*	Damaged = *< 10% Missing Jacket OR < 10% Dist. or 25% Local*	Good = *Very Limited Damage*
Misc	Sig. Damage = *> 10% Dist. or 25% Local*	Damaged = *< 10% Dist. or 25% Local*	*Good = Very Limited Damage*

98-029 HEKAHA STREET, SUITE 21 AIEA, HAWAII 96701 PHONE: (808) 486-5881
6-15-17 KAMITSURUMA, MINAMI-KU, SAGAMIHARA-SHI, KANAGAWA-KEN 252-0302 PHONE: (042) 851-5675

EnviroQuest

202507244

PLM DATA SHEET

PROJECT NAME: _____ PAGE: 2 of 2

DATE: _____

Material Description: Gray CMU grout — Friable / Non-friable

Sample No.	Location	
304501-03A	SUH basement, wall	202552819
-03B		202552820
-03C		202552821

CONDITION: % Damaged: % Localized: % Distributed: Total Material Quantity:

Surfacing Material		TSI		Misc.	
☐ Sig. Damage	% Crumbling -	☐ Sig. Damage	% Gouge/Punct -	☐ Sig. Damage	% Crumbling -
☐ Damaged	% Delaminating -	☐ Damaged	% Crushed -	☐ Damaged	% Delaminating -
☐ Good Cond.	% H_2O/Gouges -	☐ Good Cond.	% H_2O Stains -	☐ Good Cond.	% H_2O/Gouges-

Contact Potential	☐ High	☐ Moderate	☐ Low
Vibration Potential	☐ High	☐ Moderate	☐ Low
Air Erosion	☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING	☐ Significant Damage	☐ Damage	☐ Minimal Damage

Material Description: Black sealant — Friable / Non-friable

Sample No.	Location	
304501-04A	Roof, Cooling Tower 1	202552822
-04B		202552823
-04C		202552824
	Note: All along seams	

CONDITION: % Damaged: % Localized: % Distributed: Total Material Quantity:

Surfacing Material		TSI		Misc.	
☐ Sig. Damage	% Crumbling -	☐ Sig. Damage	% Gouge/Punct -	☐ Sig. Damage	% Crumbling -
☐ Damaged	% Delaminating -	☐ Damaged	% Crushed -	☐ Damaged	% Delaminating -
☐ Good Cond.	% H_2O/Gouges -	☐ Good Cond.	% H_2O Stains -	☐ Good Cond.	% H_2O/Gouges-

Contact Potential	☐ High	☐ Moderate	☐ Low
Vibration Potential	☐ High	☐ Moderate	☐ Low
Air Erosion	☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING	☐ Significant Damage	☐ Damage	☐ Minimal Damage

Material Description: Black tar pipe coating — Friable / Non-friable

Sample No.	Location	
304501-05A	Roof CT1	202552825
-05B		202552826
-05C		202552827

CONDITION: % Damaged: % Localized: % Distributed: Total Material Quantity:

Surfacing Material		TSI		Misc.	
☐ Sig. Damage	% Crumbling -	☐ Sig. Damage	% Gouge/Punct -	☐ Sig. Damage	% Crumbling -
☐ Damaged	% Delaminating -	☐ Damaged	% Crushed -	☐ Damaged	% Delaminating -
☐ Good Cond.	% H_2O/Gouges -	☐ Good Cond.	% H_2O Stains -	☐ Good Cond.	% H_2O/Gouges-

Contact Potential	☐ High	☐ Moderate	☐ Low
Vibration Potential	☐ High	☐ Moderate	☐ Low
Air Erosion	☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING	☐ Significant Damage	☐ Damage	☐ Minimal Damage

Hawaii Analytical Laboratory

98-029 HEKAHA STREET, SUITE 21 AIEA, HAWAII 96701 PHONE: (808) 486-5881

6-15-17 KAMITSURUMA, MINAMI-KU, SAGAMIHARA-SHI, KANAGAWA-KEN 252-0302 PHONE: (042) 851-5675

Hawaii Analytical Laboratory
ANALYTICAL REPORT

25 August 2025 issued amended report to replace report. Project number was updated per client request.

EnviroQuest, Inc.
98-029 Hekaha Street, Suite 21
Aiea HI 96701

Phone Number: (808)486-5881
Facsimile: (808) 486-5889
Email: eqi@enviroquestinc.com

Lab Job No: 202507468
Date Submitted: 8/20/2025
Your Project: 304501, Maluhia Cooling Tower, 8/19/25

Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202555179	**304501-06A**		NONE DETECTED		Fibrous glass (amorphous) + cellulose (undulose)	**30**	Aluminum + other	8/21/2025
Layer	Silver wrap / white paper							
Comments								
202555179	**304501-06A**		NONE DETECTED		Fibrous glass (amorphous)	> **99**	None detected	8/21/2025
Layer	Yellow insulation							
Comments								
202555180	**304501-06B**		NONE DETECTED		Fibrous glass (amorphous) + cellulose (undulose)	**30**	Aluminum + other	8/21/2025
Layer	Silver wrap / white paper							
Comments								
202555180	**304501-06B**		NONE DETECTED		Fibrous glass (amorphous)	> **99**	None detected	8/21/2025
Layer	Yellow insulation							
Comments								
202555181	**304501-06C**		NONE DETECTED		Fibrous glass (amorphous) + cellulose (undulose)	**30**	Aluminum + other	8/21/2025
Layer	Silver wrap / white paper							
Comments								

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98-029 Hekaha Street, Suite 21
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Email: eqi@enviroquestinc.com

Lab Job No: 202507468
Date Submitted: 8/20/2025
Your Project: 304501, Maluhia Cooling Tower, 8/19/25

Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202555181	**304501-06C**		NONE DETECTED		Fibrous glass (amorphous)	> **99**	None detected	8/21/2025
Layer	Yellow insulation							
Comments								
202555182	**304501-07A**		NONE DETECTED		Fibrous glass (amorphous) + cellulose (undulose)	**30**	Aluminum + other	8/21/2025
Layer	Silver wrap / white paper							
Comments								
202555182	**304501-07A**	**Yes**	Amosite	**15**	None detected		Binder + tar + other	8/21/2025
Layer	Tan insulation / black mastic		Chrysotile	**5**				
Comments								
202555182	**304501-07A**		NONE DETECTED		None detected		Calcite + other	8/21/2025
Layer	Tan material							
Comments								
202555182	**304501-07A**		NONE DETECTED		None detected		Foam	8/21/2025
Layer	White foam insulation							
Comments								
202555183	**304501-07B**		NONE DETECTED		Fibrous glass (amorphous)	**20**	Aluminum + other	8/21/2025
Layer	Silver wrap							
Comments								
202555183	**304501-07B**	**Yes**	Amosite	**15**	None detected		Binder + other	8/21/2025
Layer	Tan insulation							
Comments								
202555183	**304501-07B**	**Yes**	Chrysotile	**8**	Synthetic fiber (undulose)	**40**	Tar	8/21/2025
Layer	White cloth / black mastic							
Comments								

Hawaii Analytical Laboratory is a NIST NVLAP accredited laboratory (NVLAP Lab Code 200655-0) and is accredited in accordance with the recognized ISO/ IEC 17025:2017. Controlled doc.: Asbestos Report, rev. 5 – 20241127

25 August 2025 issued amended report to replace report. Project number was updated per client request.

EnviroQuest, Inc.
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Phone Number: (808)486-5881
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Lab Job No: 202507468
Date Submitted: 8/20/2025
Your Project: 304501, Maluhia Cooling Tower, 8/19/25

Bulk Asbestos Determination

Sample No.	Your Sample ID / Description	Asbestos Present?	Type	%v/v	Other Fibrous	%v/v	Matrix	Date Analyzed
202555183	**304501-07B**		NONE DETECTED		Wollastonite (+/- optical sign)	**5**	Binder + other	8/21/2025
Layer	White coat							
Comments								
202555183	**304501-07B**		NONE DETECTED		None detected		Foam	8/21/2025
Layer	White foam insulation							
Comments								
202555184	**304501-07C**		NONE DETECTED		Fibrous glass (amorphous)	**20**	Aluminum + other	8/21/2025
Layer	Silver wrap							
Comments								
202555184	**304501-07C**	**Yes**	Chrysotile	**6**	Synthetic fiber (undulose)	**40**	Binder + tar + other	8/21/2025
Layer	White cloth/black mastic/tan insulation(limited)		Amosite	< **1**				
Comments								
202555184	**304501-07C**		NONE DETECTED		Wollastonite (+/- optical sign)	**5**	Binder + other	8/21/2025
Layer	White coat							
Comments								
202555184	**304501-07C**		NONE DETECTED		None detected		Foam	8/21/2025
Layer	White foam insulation							
Comments								

Hawaii Analytical Laboratory is a NIST NVLAP accredited laboratory (NVLAP Lab Code 200655-0) and is accredited in accordance with the recognized ISO/ IEC 17025:2017. Controlled doc.: Asbestos Report, rev. 5 – 20241127

25 August 2025 issued amended report to replace report. Project number was updated per client request.

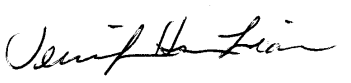
EnviroQuest, Inc.
98-029 Hekaha Street, Suite 21
Aiea HI 96701

Phone Number: (808)486-5881
Facsimile: (808) 486-5889
Email: eqi@enviroquestinc.com

Lab Job No: 202507468
Date Submitted: 8/20/2025
Your Project: 304501, Maluhia Cooling Tower, 8/19/25

General Comments
The bulk sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures outlined in the United States Environmental Protection Agency's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" (EPA-600/M4-82-020, Dec. 1982) and / or "Method for Determination of Asbestos in bulk Building Materials" (EPA-600/R-93-116, July 1993). The analysis of each bulk sample relates only to the material examined, and may or may not represent the overall composition of its original source. Floor tile and other resinously bound materials, when analyzed by the EPA methods referenced above may yield false negative results because of limitations in separating closely bound fibers and in detecting fibers of small length and diameter. Gravimetric treatment, which HAL does not offer, may also be appropriate for certain NOB (non-friable organically bound) materials. Unless specifically requested by clients, NOB samples can be subcontracted to a NVLAP accredited lab, or else, they will be analyzed by HAL using regular PLM technique. In addition, alternative methods of identification, including Transmission Electron Microscopy (TEM) may or may not be applicable. We utilize calibrated visual area estimation on a routine basis and do not conduct point counting unless specifically requested to do so. Estimated error for the visual determinations presented are 75% relative (<1 to 10%), 65% relative (11 to 19%), 50% relative (20 to 34%); 40% relative (35 to 50%), 35% relative (51 to 60%), and 25% relative (>60% v/v). We will not separate layers which in our opinion are not readily discernable. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report must not be used by the client to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government. Unless otherwise indicated, the sample condition at the time of receipt was acceptable.

Results and Symbols Definitions
> This testing result is greater than the numerical value listed.
< This testing result is less than the numerical value listed.
None Detected = asbestos was not observed in the sample. If trace amount of asbestos was detected below our quantifiable limits of 1.0%, <1% (trace) would be indicated and the asbestos type listed. Point counting, where applicable, are recommended to improve accuracy.



Jennifer Hsu Liao
Laboratory Manager

EnviroQuest

202507468

PLM DATA SHEET

PROJECT NAME: Makakilo Cooling Tower

LOCATION:

PAGE: 1 of 1

DATE: 8/19/25

PROJECT NO.: ~~304543~~ 304501 * updated per client request. jh 8/25/25

Material Description: white wrap w/adhesive over silver foil & yellow fiberglass insulation — Friable / Non-friable

Sample No.	Location	
* ~~304543~~ 304501 -06A	TSI, sub basement, ~~CWP #2~~ CHWP#2	202555179
-06B		202555180
-06C		202555181

CONDITION: % Damaged: % Localized: % Distributed: Total Material Quantity:

Surfacing Material		TSI		Misc.	
☐ Sig. Damage	% Crumbling -	☐ Sig. Damage	% Gouge/Punct -	☐ Sig. Damage	% Crumbling -
☐ Damaged	% Delaminating -	☐ Damaged	% Crushed -	☐ Damaged	% Delaminating -
☐ Good Cond.	% H_2O/Gouges -	☐ Good Cond.	% H_2O Stains -	☐ Good Cond.	% H_2O/Gouges-

Contact Potential	☐ High	☐ Moderate	☐ Low
Vibration Potential	☐ High	☐ Moderate	☐ Low
Air Erosion	☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING	☐ Significant Damage	☐ Damage	☐ Minimal Damage

Material Description: white wrap w/adhesive over black wrap & white foam insulation — Friable / Non-friable

Sample No.	Location	
304543-07A	TSI, sub basement, ~~CWP #2~~ CHWP#2	202555182
-07B		202555183
-07C		202555184

CONDITION: % Damaged: % Localized: % Distributed: Total Material Quantity:

Surfacing Material		TSI		Misc.	
☐ Sig. Damage	% Crumbling -	☐ Sig. Damage	% Gouge/Punct -	☐ Sig. Damage	% Crumbling -
☐ Damaged	% Delaminating -	☐ Damaged	% Crushed -	☐ Damaged	% Delaminating -
☐ Good Cond.	% H_2O/Gouges -	☐ Good Cond.	% H_2O Stains -	☐ Good Cond.	% H_2O/Gouges-

Contact Potential	☐ High	☐ Moderate	☐ Low
Vibration Potential	☐ High	☐ Moderate	☐ Low
Air Erosion	☐ High	☐ Moderate	☐ Low
OVERALL POTENTIAL RATING	☐ Significant Damage	☐ Damage	☐ Minimal Damage

Sampled By: Caelan Calegan DOH Cert No: Kristen Kanemitsu	Relinquished By/Date/Time: 2025-08-19	Relinquished By/Date/Time:
Delivered to Lab By:	Received By/Date/Time: Savannah Newman	Received By/Date/Time: 08-20-25A10:04 RCVD

Samples picked up at EQI office by Hawaii Analytical Laboratory

TURNAROUND TIME: ☐ ~~<12 Hours~~ ☐ 24 Hours ☒ 3 Days ☐ 5 Days ☐ _____

Surfacing	<1,000 ft² = 3 Samples	1,000 – 5,000 ft² = 5 Samples	>5,000 ft² = 7 Samples
TSI	Minimum of 3 Samples UNLESS....	<6 In. or ft² = 1 Sample	Minimum of 2 Samples *(Cement/plaster valves, elbows & 'T')*
Misc. Non-Friable	Minimum of 2 Samples (*AHERA*)	Minimum of 3 Samples (*Hawaii*)	
Misc. Friable	Minimum of 2 Samples		

Surfacing	Sig. Damage = *> 10% Dist. or 25% Local*	Damaged = *< 10% Dist. or 25% Local*	*Good = Very Limited Damage*
TSI	Sig. Damage = *>10% Missing Jacket OR >10% Dist. or 25% Local*	Damaged = *< 10% Missing Jacket OR < 10% Dist. or 25% Local*	Good = *Very Limited Damage*
Misc	Sig. Damage = *> 10% Dist. or 25% Local*	Damaged = *< 10% Dist. or 25% Local*	*Good = Very Limited Damage*

Hawaii Analytical Laboratory
ANALYTICAL REPORT

Friday, August 15, 2025

EnviroQuest, Inc.
98-029 Hekaha Street, Suite 21
Aiea HI 96701

Phone Number: (808)486-5881
Email: eqi@enviroquestinc.com

Lab Job No: 202507242
Total Analyzed: 5
Date Collected: 8/12/2025
Date Submitted: 8/13/2025
Project Name: 304501, Maluhia Cooling Tower

Total Lead (paint chips)

NIOSH Method: 7082m LEAD by FAAS

Lab Sple No.	Sample ID / Description	Results	Units	Date Analyzed
202552803	304501-01P	0.051	wt %	8/14/2025
202552804	304501-02P	< 0.0045	wt %	8/14/2025
202552805	304501-03P	< 0.004	wt %	8/14/2025
202552806	304501-04P	< 0.004	wt %	8/14/2025
202552807	304501-05P	0.18	wt %	8/14/2025

All Quality Control data are acceptable unless otherwise noted.

EnviroQuest, Inc.
98-029 Hekaha Street, Suite 21
Aiea HI 96701

Phone Number: (808)486-5881
Email: eqi@enviroquestinc.com

Lab Job No: 202507242
Total Analyzed: 5
Date Collected: 8/12/2025
Date Submitted: 8/13/2025
Project Name: 304501, Maluhia Cooling Tower

General Comments
The sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures associated with the "analytical method" referenced above. The analysis of sample relates only to the sample analyzed, and may or may not be representative of the original source of the material submitted for our analysis. All analysts participate in interlaboratory quality control testing to continuously document profiency. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report should not be construed as an endorsement for a product or a service by the AIHA LAP, LLC or any affiliated organizations. Sample and associated sampling / collection data (e.g. air volume or surface area) is reported as provided by client. TWA values have been calculated based on information supplied by the client that the laboratory has not independently verified. Results have not been corrected for blank determinations unless noted in remarks. Unless otherwise indicated the sample condition at the time of receipt was acceptable. Measurement of uncertainty for lead in paint, dust, airborne particulates, and soil taken from and around buildings and related structures is available upon request. MRL for lead air is 5ug; MRL for lead wipe is 5ug; MRL for lead paint or soil is 40 mg/kg for a 0.25g

Results and Symbols Definitions
> This testing result is greater than the numerical value listed.
< This testing result is less than the numerical value listed.
# = Analytical methods marked with an "#" are not within our AIHA LAP, LLC Scope of Accreditation.
MRL = Method Reporting Limit

Jennifer Hsu Liao
Laboratory Manager

EnviroQuest

202507242

Pb SAMPLE FORM

PROJECT NAME: Maluhia Cooling Tower

LOCATION:

PAGE: 1 of 1

DATE: 8/12/25

PROJECT NO.: 304501

TURNAROUND TIME		MEDIA		COMMENTS
☐ <12 HRS ☐ 24 HRS	☒ 3 DAYS ☐ OTHER	☐ BULK ☐ SOIL	☐ WIPE ☒ OTHER Total Pb	

SAMPLE NO	INT	EXT	FLR	ROOM	COMPONENT	SUBSTRATE	COLOR	CONDITION
304501 - 01P	X	~~X~~	SB	~~sub basement~~ equip room	piping	Metal	yellow/ brown	chipping
							202552803	
- 02P	X		SB	~~sub basement~~ equip room	piping	Metal	Blue/ Gray	chipping
							202552804	
- 03P		X	R	ROOF - CT1	support frame	Metal	Gray	intact
							202552805	
- 04P		X	R	ROOF - CT1	control/ panel box	Metal	Off-white	intact
							202552806	
- 05P		X	R	ROOF - CT1	wall	concrete	Green	intact
							202552807	

SAMPLED BY	RELINQUISHED BY	DATE & TIME	RECEIVED BY	DATE & TIME
Kristen Kaneshiro Landon Awada		2025-08-12	Savannah Newman 08-13-25 A09:34	RCVD

SUBSTRATE: B = BRICK; C = CONCRETE; D = DRYWALL; M = METAL; P = PLASTER; W = WOOD
CONDITION: INTACT; PEELING, CHIPPING, CHALKING, FLAKING, OR DETERIORATED PAINT

Samples picked up at EQI office by Hawaii Analytical Laboratory

1829 KALIHI STREET, SUITE 21 AIEA, HAWAII 96701 PHONE: (808) 486-5881
6-15-17 KAMITSURUMA, MINAMI-KU, SAGAMIHARA-SHI, KANAGAWA-KEN 252-0302 PHONE: (042) 851-5675

Hawaii Analytical Laboratory
ANALYTICAL REPORT

25 August 2025 issued amended report to replace report. Project number was updated per client request.

EnviroQuest, Inc.
98-029 Hekaha Street, Suite 21
Aiea HI 96701

Phone Number: (808)486-5881
Email: eqi@enviroquestinc.com

Lab Job No: 202507470 Rev 1
Total Analyzed: 3
Date Collected: 8/19/2025
Date Submitted: 8/20/2025
Project Name: 304501, Maluhia Cooling Tower

Total Lead (paint chips)

NIOSH Method: 7082m LEAD by FAAS

Lab Sple No.	Sample ID / Description	Results	Units	Date Analyzed
202555190	304501-06P	< 0.004	wt %	8/20/2025
202555191	304501-07P	0.11	wt %	8/20/2025
202555192	304501-08P	0.075	wt %	8/20/2025

All Quality Control data are acceptable unless otherwise noted.

EnviroQuest, Inc.
98-029 Hekaha Street, Suite 21
Aiea HI 96701

Phone Number: (808)486-5881
Email: eqi@enviroquestinc.com

Lab Job No: 202507470 Rev 1
Total Analyzed: 3
Date Collected: 8/19/2025
Date Submitted: 8/20/2025
Project Name: 304501, Maluhia Cooling Tower

General Comments
The sample[s] analysis subject of this analytical report were conducted in general accordance with the procedures associated with the "analytical method" referenced above. The analysis of sample relates only to the sample analyzed, and may or may not be representative of the original source of the material submitted for our analysis. All analysts participate in interlaboratory quality control testing to continuously document profiency. This report is not to be duplicated except in full without the expressed written permission of Hawaii Analytical Laboratory. This report should not be construed as an endorsement for a product or a service by the AIHA LAP, LLC or any affiliated organizations. Sample and associated sampling / collection data (e.g. air volume or surface area) is reported as provided by client. TWA values have been calculated based on information supplied by the client that the laboratory has not independently verified. Results have not been corrected for blank determinations unless noted in remarks. Unless otherwise indicated the sample condition at the time of receipt was acceptable. Measurement of uncertainty for lead in paint, dust, airborne particulates, and soil taken from and around buildings and related structures is available upon request. MRL for lead air is 5ug; MRL for lead wipe is 5ug; MRL for lead paint or soil is 40 mg/kg for a 0.25g

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Jennifer Hsu Liao
Laboratory Manager

EnviroQuest

202507470

Pb SAMPLE FORM

PROJECT NAME: Maluhia Cooling Tower

PAGE: 1 of 1

DATE: 8/19/25

LOCATION:

PROJECT NO.: ~~304543~~ 304501 *updated per client request. jh 8/25/25

TURNAROUND TIME		MEDIA		COMMENTS
☐ <12 HRS	☒ 3 DAYS	☐ BULK	☐ WIPE	
☐ 24 HRS	☐ OTHER	☐ SOIL	☒ OTHER Total Lead	

SAMPLE NO	INT	EXT	FLR	ROOM	COMPONENT	SUBSTRATE	COLOR	CONDITION
* ~~304543~~ - 06P 304501	X		SB	Equip. room	Panel box	Metal	Light gray	Intact
						202555190		
- 07P	X		SB	Equip. room	Control panel	Metal	Gray	Intact
						202555191		
- 08P	X		SB	Equip. room	Piping	Metal	orange/ tan	Intact
						202555192		

SAMPLED BY	RELINQUISHED BY	DATE & TIME	RECEIVED BY	DATE & TIME
Caelan Gilescott Kirsten Kaneshiro		2025-08-19	Savannah Newman Savannah Newman	08-20-25 A10:03 RCVD

SUBSTRATE: B = BRICK; C = CONCRETE; D = DRYWALL; M = METAL; P = PLASTER; W = WOOD
CONDITION: INTACT; PEELING, CHIPPING, CHALKING, FLAKING, OR DETERIORATED PAINT

98-029 HEKAHA STREET, SUITE 21 AIEA, HAWAII 96701 PHONE: (808) 486-5881
6-15-17 KAMIMIZUMA, MINAMI-KU, SAGAMIHARA-SHI, KANAGAWA-KEN 252-0302 PHONE: (042) 851-5675

Samples picked up at EQI office by Hawaii Analytical Laboratory

DIVISION 2 - SITE WORK

SECTION 02055 - SELECTIVE DEMOLITION AND REMOVAL

PART I - GENERAL

1.01 GENERAL REQUIREMENTS: Furnish all labor, materials, tools and equipment necessary to complete all removal work and surface preparation work as specified herein.

1.02 SPECIAL REQUIREMENTS:

A. The Contractor shall visit the site, examine the areas and note all existing conditions and extent of work involved for the complete removal and surface preparation work required.

B. The Contractor shall comply with pollution control regulations and safety code. See POLLUTION CONTROL Section 01577 also.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Damaged surfaces or items shall be patched by the Contractor with materials which are equal or better in quality.

PART 3 - EXECUTION

3.01 GENERAL

A. All work shall be executed in an orderly and careful manner with due consideration for the remaining parts of the building.

B. Existing utility lines, etc, on/or in the building shall be protected from damage. Removal of same where required to facilitate renovation work shall be permitted, however, same shall be reinstalled to original location and condition.

3.02 REMOVAL WORK

A. Remove existing Cooling Tower 1, Condenser Water Pump 2, Chilled Water Pump 1, associated controls, VFDs, mounts, and associated accessories. Provide new Chilled water piping, Condenser water piping, Drain piping, insulation, makeup water piping, etc. and associated piping required for a complete system.

B. All dismantled materials having no salvage value as determined by the HHSC Representative shall become the property of the Contractor and shall be completely removed and hauled away from the premises. Contractor shall recycle all materials to be disposed off to the greatest extent possible.

3.03 SURFACE PREPARATION WORK

A. All surfaces to receive manufactured finishes shall be inspected by the manufacturer's representative as approved for installation of new materials. Should the manufacturer's representative find discrepancies in the preparation work, all such discrepancies shall be corrected at no additional cost to the project.

B. Contractor shall repair any damage occurring during the progress of the work.

3.04 PATCHWORK: All areas or surfaces damaged as a result of removal work shall be patched to match existing adjacent surfaces and/or areas to the satisfaction of the HHSC Representative.

3.05 TEMPORARY BARRICADES

A. The Contractor shall provide, erect and maintain safety barricades around the project areas during the execution of work under this contract including work done by other sections. At the discretion and approval of the HHSC Representative, alternative means to provide safety around the project area are acceptable.

B. Barricades shall be constructed from durable materials to provide necessary protection and security of the project area.

C. The barricades shall remain until final acceptance of the project or until the hazardous condition no longer remains and approval is given by the HHSC Representative for their removal.

3.06 CLEAN-UP

A. From time to time, as directed by the HHSC Representative, and at the completion of the removal work, remove from the site all rubbish, debris, fines, etc., accumulated from this work and leave the area neat and clean to the satisfaction of the HHSC Representative.

B. After the completion of the repair work and before the final acceptance of the project, the Contractor shall clean all areas of all rubbish, debris, fines, etc.

END OF SECTION

SECTION 13281 - ASBESTOS ABATEMENT

PART 1 - GENERAL

1.01 SUMMARY

A. In performing the handling of building components with asbestos, all possible safeguards, precautions and protective measures shall be utilized to prevent exposure of any individual to asbestos fibers.

1.02 DESCRIPTION OF WORK

A. Furnish all labor, materials, equipment, and services, necessary to carry out the safe removal and disposal of asbestos-containing material in compliance with these specifications, EPA, OSHA, State of Hawaii regulations, and any other applicable Federal and State regulations. Whenever there is a conflict or overlap of the above references, the most stringent shall apply. The asbestos work at the Maluhia shall generally include:

1. Chiller Room: Removal and disposal of the white wrap with adhesive over black wrap and white foam insulation as identified in the Hazardous Material Survey Report and/or Project Drawings. The insulation shall be completely removed to metal pipe substrate.

2. All work is to be completed when project areas are vacant.

3. Contractor to coordinate all work with the HHSC Representative, General Contractor and the Qualified Consultant. Contractor is responsible to satisfy himself as to the total extent of all work, including to but not limited to the quantity, location, thickness, layers, accessibility, etc. of all material prior to commencement of any work.

B. In general, the principal items of the asbestos removal work shall be as follows:

1. Worker Protection

2. Decontamination Enclosure System

3. Preparation of Work Area

4. Removal of asbestos-containing materials

5. Removal of protective sheeting

6. Disposal

C. Cleaning shall include areas within and immediately around the work area affected by the abatement work and all areas contaminated by the Contractor's work.

D. The asbestos abatement work shall include removal of all asbestos-containing materials within the work area as specified herein and noted on the drawing.

E. Contractor shall comply with all regulations pertaining to asbestos removal. If there is a conflict with the specifications, the more stringent requirement shall apply.

1.03 COORDINATION WITH OTHER SECTIONS: Prior to commencement of work, an annotated description of all existing damaged and missing items shall be submitted to the HHSC Representative. It will be the Contractor's responsibility to repair and/or replace to the HHSC Representative's satisfaction all items identified as damaged and/or missing that cannot be proven to have been in this condition prior to the commencement of this project.

1.04 SUBMITTALS PRIOR TO WORK

A. Final payment will not be made until copies of all submittals have been furnished to and accepted by the HHSC Representative. Submit one electronic copy of the submittal package, no later than 10 consecutive working days from award notice, which will include the items listed below.

B. Notices: As early as possible but prior to commencement of work, as regulated by each agency and before commencement of any on-site project activity, send a courtesy 10-day notice in accordance with 40 CFR Part 61.145 of Subpart M of the proposed asbestos abatement work with copies to the HHSC Representative and to the following agencies:

1. The Administrator of the Environmental Protection Agency (EPA) Regional Office having jurisdiction over the project.

2. State of Hawaii, Department of Health, "Notification of Demolition and Renovation" form. Send to: State of Department of Health, Indoor and Radiological Health Branch, 99-945 Halawa Valley Street, Aiea, Hawaii 96701.

C. Permits & Licenses: Copies of all permits, licenses (C-19) and arrangements for removal, transportation and disposal of asbestos-containing materials and waste water.

D. Insurance: Proof of insurance for Workman's Compensation and General Liability which covers asbestos, lead, and pollution.

E. Manufacturer's Data: Copies of manufacturer's specifications, installation instructions and field test procedures for each material and all equipment related to asbestos handling and abatement and include other data as

may be required to show compliance with these specifications and proposed uses.

F. Samples: Samples of the following items for approval prior to ordering materials:

1. Surfactant: copies of manufacturer's literature including all laboratory data, mixing and application instructions.

2. Tapes and Adhesives: copies of manufacturer's literature including all laboratory data.

3. Warning Labels and Signs: copies of examples of all required signage.

4. Protective Clothing: copies of manufacturer's literature on all protective clothing and one sample of each item which will be returned to the Contractor.

5. Respirator Equipment: copies of manufacturer's literature on all respirator equipment and one sample of each item which will be returned to the Contractor.

6. Asbestos Encapsulant(s): copies of manufacturer's literature including all laboratory data, application instructions.

G. Work Plan: Submit a project Work Plan for the asbestos-containing material disturbance work written and signed by the Contractor's State of Hawaii, Department of Health certified Asbestos Project Designer. The Contractor shall also provide detailed information concerning:

1. Preparation of the work area.

2. Personal protective equipment including respiratory protection and protective clothing.

3. Decontamination procedures for the personnel who may be exposed to asbestos.

4. Handling and disposal methods and procedures to be used.

5. Required air monitoring procedures and sampling protocols.

6. Procedures for final cleanup.

7. A sequence of work and performance schedule in coordination with other trades.

8. Emergency procedures.

H. Shop Drawings: Submit shop drawings for the following items as a minimum:

1. Descriptions of any equipment to be employed not discussed in this section.
2. Security provisions, if any, in and around the project area.
3. Outline of work procedures to be employed.
4. Location of construction barriers.
5. Location of waste dumpster.
6. Staging of the work, the sequence.
7. Entrances and exits to the work place.
8. Location and construction of worker decontamination units.

I. Documentation for Instruction: Submit documentation that each and every individual, including foremen, supervisors, and other company personnel or agents and any other individual who may be exposed to airborne asbestos fibers, who may be responsible for any aspect of abatement activities, or who is allowed or permitted to enter areas where such exposure may occur, has currently attended and passed the Abatement Worker and/or Abatement Contractor/Supervisor course, whichever is relevant to that worker's responsibilities as specified in 40 CFR Part 763, "Asbestos Materials in Schools". These courses shall be EPA-approved or approved by a State Accreditation Program in the most current listing of the Federal Register. No worker shall be allowed on site if they are found to have either an expired accreditation certificate or does not comply with the requirements set forth in 40 CFR Part 763 on training. All workers shall be certified for asbestos related work in accordance with Department of Health, Chapter 11-504, Hawaii Administrative Rules, *Asbestos Abatement Certification Program*. The Contractor shall be responsible for keeping the documentation up to date and subsequent submittals to the HHSC Representative before any additional employee or individual, not currently on the list, is allowed within the project site. Submit completed and signed "Employee Acknowledgment of Instruction and Release" forms. A sample "Employee Acknowledgment of Instruction and Release" form is provided at the end of this section.

J. Documentation from Physician: Submit documentation from a physician that all employees or agents who may be exposed to airborne asbestos have been provided with an opportunity to be medically monitored to determine whether they are physically capable of working while wearing the respirator required without suffering adverse health effects. In addition, document that all individuals permitted within the project site have received medical monitoring or had such monitoring made available to them as required in OSHA 29 CFR 1926.1101. The Contractor must be aware of and provide information to the examining physician about

unusual conditions in the workplace environment (e.g. high temperatures, humidity, chemical contaminants) that may impact on the employee's ability to perform work activities. The Contractor shall keep and make available to all affected individuals a record and the results of such examinations.

K. HEPA Vacuums: Submit manufacturer's certification that vacuums conform to ANSI Z9.2-79, Fundamentals Governing the Design and Operation of Local Exhaust Systems as applicable to this project.

L. Rental Equipment: When rental equipment is to be used in abatement areas or to transport asbestos contaminated waste, a written notification concerning intended use of the rental equipment must be provided to the rental agency with a copy submitted to the HHSC Representative.

M. Emergency Planning Procedures: Contractor shall submit for review and acceptance by the HHSC Representative, an emergency plan prior to abatement initiation.

1. Emergency procedures shall be in written form and prominently posted adjacent to the Worker Protection Notices specified hereinafter. Everyone prior to entering the work area must read and sign these procedures to acknowledge receipt of emergency exits and emergency procedures.

2. Emergency planning shall include notification of police, fire, and emergency medical personnel of planned abatement activities work schedule, and layout of the work area, particularly barriers that may affect response capabilities.

3. Emergency planning shall include considerations of fire, explosion, toxic atmospheres, electrical hazards, slips, trips and falls, and heat related injury. Written procedures shall be developed, and employee training procedures shall be provided in Contractor’s plan.

1.05 SUBMITTAL AFTER WORK IS COMPLETED

A. At the completion of the work, a final report shall be prepared by the Contractor for acceptance by the HHSC Representative. One electronic copy of the report shall be submitted and shall include the items listed below.

1. The project name, Abatement Contractor, Abatement Contractor license number, notification form to the Hawaii Department of Health and EPA, work duration, material removed, respiratory protection employed, asbestos waste manifest, total quantity of waste, employee exposure air sample results, and results of the most current PAT round results for the laboratory or laboratories conducting the employee exposure air sample analysis.

2. Certification of the Abatement Contractor's employees.

3. Visitor/Worker Entry Log: The daily log of all personnel including the Contractor's employees and agents who enter the work area while asbestos abatement operations are in progress, until final clearance is received that the work area is asbestos free. The log shall contain the listed information as a minimum and shall be certified by the Qualified Consultant.

   a. Date of visit/worker entry

   b. Visitor/Worker's name, employer, business address and telephone number

   c. Time of entry and exit from work area

   d. Purpose of visit

   e. Type of protective clothing and respirator worn

   f. Certificate of release signed and filed with the contractor

4. A statement signed by the Asbestos Abatement Contractor that all asbestos abatement and disposal was completed in compliance with this specification, Federal and State regulations, and the approved Work Plan.

1.06 PRODUCT HANDLING: Deliver materials to the site in original packages, containers or bags fully identified with manufacturer's name, brand and lot number. Store materials in a dry well-ventilated space, under cover, off the ground and away from surfaces subject to dampness or condensation as approved by the HHSC Representative. Material that becomes contaminated with asbestos shall be disposed of in accordance with applicable regulations. Replacement materials shall be stored outside the contaminated work area until abatement is completed.

1.07 PROTECTION

A. Site Security: The work area is to be restricted only to authorized, trained, and protected personnel. These may include the Contractor's employees, employee's of subcontractors, the HHSC Representative, State and local inspectors and any other designated individuals. A list of authorized personnel shall be established prior to job start.

   1. Entry to the work area by unauthorized individuals shall not be permitted without the express approval of the HHSC Representative and any such entry shall be reported immediately to the HHSC Representative by the Contractor.

   2. A Visitor/Worker Entry Log shall be maintained.

3. The Contractor shall have control, subject to approval of the HHSC Representative of security in the work area and in proximity of Contractor's equipment and materials.

B. Site Protection and Safety: As a minimum follow the requirements of EPA, HIOSH (State of Hawaii), OSHA and NIOSH. Take all necessary precaution to ensure there is no asbestos contamination to those areas not included in the work schedule.

C. Protective Covering: The Contractor shall provide and install protective covering on an "as required" or "upon request" by the Qualified Consultant. Protective covering shall be clean plastic sheets minimum thickness of 6-mil.

D. Safeguarding of Property: The Contractor shall take whatever steps necessary to safeguard his work and also the property of the State and other individuals in the vicinity of his work area during the execution of this Contract. He shall be responsible for and make good on any and all damages by his employees' negligence. Do not load structure with weight that will endanger the structure.

E. Completed Work: The Contractor shall provide all necessary protection for surfaces encapsulated under this section.

1.08 ABBREVIATIONS

A. ANSI: American National Standards Institute, Inc.

B. CFR: Code of Federal Regulations

C. HIOSH: Division of Occupational Safety and Health, Department of Labor and Industrial Relations, State of Hawaii

D. EPA: U.S. Environmental Protection Agency

E. NESHAP: National Emission Standards for Hazardous Air pollutants

F. NIOSH: National Institute for Occupation Safety and Health

G. OSHA: Occupational Safety and Health Administration

1.09 GENERAL REQUIREMENTS

A. Contractor shall examine and have at all times in his possession at his office (one copy) and in view at each job site office (one copy) a current issue of the following publications:

1. State of Hawaii, Department of Health, Title 11, Chapter 501-1, Asbestos Requirements

2. State of Hawaii, Department of Health, Title 11, Chapter 501-2, Asbestos Containing Materials in Schools

3. State of Hawaii, Department of Health, Title 11, Chapter 501-4, Asbestos Abatement Certification Program

4. Title 29, Code of Federal Regulations, Section 1910.134 - General Industry Standard for Respiratory Protection, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor

5. Title 29, Code of Federal Regulations, Section 1926.1101 - Asbestos, Construction Industry, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor

6. Title 29, Code of Federal Regulations, Section 1910.2 - Access to Employee Exposure and Medical Records, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor

7. Title 29, Code of Federal Regulations, Section 1910.1200 - Hazard Communication, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor

8. Title 40, Code of Federal Regulations, Part 61, Subparts A and M (Revised Subpart B), National Emission of Standards for Hazardous Air Pollutants, U.S. Environmental Protection Agency (EPA)

9. Guidance for Controlling Asbestos-Containing Materials in Buildings, EPA 560/5-85-024 (Purple Book), U.S. Environmental Protection Agency (EPA)

10. Title 34, Code of Federal Regulations, Part 231, Appendix C, Procedures For Containing and Removing Building Materials Containing Asbestos, U.S. Environmental Protection Agency (EPA)

11. Title 29, Code of Federal Regulations, Section 1910.145 Specifications for Accident Prevention, Signs and Tags, Occupational Safety and Health Administration (OSHA), U.S. Department of Labor

12. ANSI Z88.2-80 Practice for Respiratory Protection

13. EPA, Final Response to the Asbestos Hazard Emergency Response Act (AHERA), 40 CFR, Part 763, Subpart E

B. The Contractor shall comply with the above requirements and any applicable State and City & County regulations. Where conflict or any inconsistency among requirements or with this specification exists, the more stringent requirements shall apply. Ignorance of the above requirements and any applicable State and City & County regulations

resulting in additional cost to the Contractor shall be solely the Contractor's responsibility.

C. All regulations shall govern over these specifications, except that any more stringent specification or specification providing greater protection against asbestos exposure, injury, loss or liability, shall control to the extent permitted by regulation. Any question regarding conflict or inconsistency between specification and/or regulations should be directed to the HHSC Technical Representative.

D. Whenever approval of the HHSC Representative is required prior to proceeding with other work, the following shall be complied with:

1. The Contractor shall allow the HHSC Representative 72 hours from notification to respond to the request for inspection.

2. The Contractor shall designate one person (either a foreman or superintendent) who will be authorized to request for inspections. The name of the designated person shall be submitted in writing to the HHSC Representative prior to commencing with the work. Request from any other person will not be considered an official request.

1.10 DEFINITIONS

A. Abatement: Procedure to control fiber release from asbestos-containing building materials.

1. Removal: All herein specified procedures necessary to remove asbestos-containing materials at an approved site in an acceptable manner.

2. Post-Removal Surface Encapsulation: Procedures necessary to coat surfaces from which asbestos-containing materials have been removed where designated on the drawings to control any residual fiber release.

B. Air Monitoring: The process of measuring the fiber content of a specific, known, volume of air in a stated period of time.

C. Amended Water: Water to which a surfactant has been added to reduce water surface tension and thereby provide a more rapid penetration.

D. Authorized Visitor: The HHSC Representative, the Qualified Consultant, his representatives, air monitoring personnel, or a representative of any regulatory or other agency having jurisdiction over the project.

E. Holding Area: A secure area used for the storage of double-bagged asbestos containing material before removal from the project site to an approved disposal site.

F. Fixed Object: A unit of equipment or furniture in the work area which cannot be removed from the work area without dismantling.

G. Friable Asbestos: Asbestos containing material which can be crumbled to dust, when dry, under hand pressure.

H. HEPA Filter: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of asbestos fibers greater than 0.3 micron in length.

I. HEPA Vacuum Equipment: Vacuuming equipment that utilizes a HEPA filter.

J. Surfactant: A chemical wetting agent added to water to improve penetration, thus reducing the quantity of water required for a given operation or area.

K. Post-Removal Encapsulation: A liquid material which can be applied to surfaces from which asbestos-containing material has been removed to control the possible release of residual fibers, either by creating a membrane over the surface (bridging encapsulant) or by penetrating into the material and binding its components (penetrating encapsulant). Selected product shall be compatible with the existing finishes including wood, metal, and plastic.

L. Qualified Consultant: Consultant hired by the HHSC who will perform air monitoring and inspection during abatement work and shall have the authority to initiate engineering controls. The Qualified Consultant will be accredited as a State of Hawaii Department of Health accredited Asbestos Project Monitor.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Plastic Sheeting: Minimum thickness is 6-mil polyethylene film.

B. Plastic Bags: Minimum thickness 6-mil polyethylene film labeled as specified hereinafter.

C. Tapes: Tape shall be capable of sealing joints of adjacent sheets of polyethylene and for attaching polyethylene sheets to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including the use of amended water. Silver cloth duct tape, minimum 2 inches wide; red or NATO orange tape, minimum 2 inches wide for exit arrows; and double-faced foam tapes, by Nashua, 3-M, Arno, or approved equal.

D. Adhesives: Adhesives shall be capable of sealing joints of adjacent sheets of polyethylene and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of

adhering under both dry and wet conditions, including use of amended water.

E. Warning Labels and Signs: As required by OSHA regulations 29 CFR 1926.1101. Permanent signage for access panels and areas with encapsulated asbestos-containing materials shall be as specified hereinafter. Signage shall be as approved by the HHSC Representative.

F. Protective Clothing: As specified hereinafter. The Contractor shall have all the required sets of coveralls required for this project on island prior to the start of work. There will be no time extension for the unavailability of coveralls or related equipment.

G. Post-Removal Encapsulation: The encapsulant shall be applied to surfaces from which asbestos-containing material has been removed to control the possible release of residual fibers, either by creating a membrane over the surface (bridging encapsulant) or by penetrating in to the material and binding its components (penetrating encapsulant) and shall be compatible with the existing finishes including wood, metal, and plastic.

H. Other Materials: Provide all other materials, such as, but not limited to lumber, plywood, nails, fasteners, metal studs, hardware, foam sealants, and caulking which may be required to properly prepare and complete this project.

2.02 TOOLS AND EQUIPMENT

A. General: Provide and fabricate suitable tools for the asbestos abatement procedures.

B. Water Sprayer: Airless or a pressure sprayer for amended water application as applicable.

C. Air Purification Equipment: HEPA filtration systems.

D. Paint/Encapsulant Sprayer: Airless type.

E. Other tools and equipment as necessary.

2.03 PERSONNEL PROTECTION REQUIREMENTS

A. The Contractor acknowledges he alone is responsible for instruction and for enforcing personnel protection requirements and that these specifications provide only a minimum acceptable standard.

B. Provide workers with sufficient sets of disposable protective full body clothing consisting of material impenetrable by asbestos fibers and of the proper size for each individual to accommodate movement without tearing. Such clothing shall consist of full body coveralls, footwear, gloves and headgear. Provide hard hats as required by applicable safety

regulations. Disposable clothing shall not be allowed to accumulate and shall be disposed of as asbestos contaminated waste. Protective clothing shall be worn by all personnel within the work area from the start of the removal and post-removal encapsulation work until the work area has received its final clearance.

C. Insulated non-skid rubber boots or an approved equal shall be required for all individuals entering the work area. Protective full body clothing without elastic at sleeves and legs shall require separate elastic or taped protection to seal the opening. Visitors shall be provided full body protective clothing.

D. No visitors shall be allowed in work areas, except as authorized by the HHSC Representative. Visitors must supply their own respiratory protection and show proof training in accordance with DOH 11-501 to 504. Provide authorized visitors with suitable disposable protective full body clothing consisting of material impenetrable by asbestos fibers and of the proper size for each individual to accommodate movement without tearing. Such clothing shall consist of full body coveralls, footwear, gloves and headgear including hard hat when required and insulated rubber boots or equal. The Contractor shall include in his Bid the expense of a total of four changes of clothing per day for each day of asbestos abatement work for visitor's use. The quantity shall accumulate and may be used at any time during asbestos abatement work at the discretion of the HHSC Representative.

E. All electrical systems used for asbestos abatement operations shall as a minimum be protected with "Ground Fault Circuit Interrupters" selected and installed in strict accordance with the manufacturer's instructions, the National Electric Code and all other pertinent codes.

F. Additional safety equipment (e.g. hardhats meeting the requirements of ANSI Z-89.1-2009, eye protection meeting the requirements of ANSI Z87.1-2015, safety shoes meeting the requirements of ANSI Z41.1-1991, disposable PVC gloves), as necessary, shall be provided to all workers and authorized visitors.

PART 3 - EXECUTION

3.01 SEPARATION OF WORK AREAS FROM NON-WORK AREAS

A. Penetrations: Windows and doors and any other openings to the work area, shall be sealed with 2 layers of 6-mil poly sheeting and secured with duct tape.

B. Emergency Exits: Designate and maintain emergency and fire exits from the work area in accordance with local codes and regulations. Provide knockout/cut away panels in the barriers in the direction of emergency egress. Properly mark the knockout/cut away panels, seal them airtight, and on a continuing basis instruct workers and authorized personnel as to their locations. Post a diagram in each Clean Room and Equipment

Room locating the emergency exits. In case of fire while doing work in the work areas, emergency exit procedures have priority over normal work exiting procedures.

C. Inspection: The Contractor shall inspect all barriers at least twice a day (once prior to the start of each day's abatement operations and following the day's abatement operations). Document the inspections and observations in a daily project log.

D. Emergency Exits: Designate and maintain emergency and fire exits from the work area in accordance with local codes and regulations.

3.02 DECONTAMINATION ENCLOSURE SYSTEMS

A. General: The Contractor shall construct the decontamination enclosure system or use portable units acceptable to the Qualified Consultant and as identified in the approved asbestos abatement work plan.

B. Worker Protection Notice: Post the following notice in each Clean Room and Equipment Room:

1. Workers and authorized personnel, in order to enter the work area, shall:

a. Remove all clothing, unless it is to remain in the Equipment room for eventual disposal.

b. Don the appropriate respiratory protection, follow all training procedures and manufacturer's instructions. Check the equipment for proper operation before proceeding any further.

c. Don protective clothing (full body coveralls, gloves, boots, headgear etc.) after donning respirator.

2. All workers and authorized personnel, in order to leave the work area, shall:

a. Remove gross (visible) contamination from themselves and their equipment. HEPA vacuum off dust in the work area.

b. Enter the Equipment Area and, keeping your respirator in place, remove all protective clothing, including full body coveralls, gloves, boots, and headgear. Place contaminated clothing in the bag(s) provided.

c. Proceed to the Clean Area. Get dressed and return respirator to its proper place.

d. No smoking, eating, drinking shall be allowed inside the work area or the decontamination area.

3.03 COMMUNICATIONS: Provide a communications system suitable to monitor all activities within the work area and to readily transfer messages from one location to another.

3.04 WORK AREA PREPARATION

A. Work by the Asbestos Abatement Contractor:

1. Step 1:

a. Posting of Danger Signs: Post danger signs in and around the work area to comply with 29 CFR 1926.1101 and all other Federal, State and local requirements. Signs shall be posted at a distance sufficiently far enough away from the work area to permit a person to read the sign and take the necessary protective measures to avoid exposure.

b. Critical Seals (barriers): Seal all interior penetration and/or openings within the regulated work areas with plastic sheeting. Plastic sheeting is to remain in place for the duration of the asbestos abatement or until specified by the Qualified Consultant.

c. Install another barrier or isolation method which prevents the migration of airborne asbestos and debris from the regulated work area.

d. Inspect the Building Openings: At the beginning of each work day, the Contractor shall inspect and ensure that all doors, windows and other openings of affected building(s) and all surrounding buildings are closed and locked (as applicable).

2. Step 2:

a. Provide Decontamination Units where appropriate: Personnel Decontamination Unit(s) specified hereinafter shall be required.

b. Precleaning/Wet-wiping:

1) Pre-clean fixed object within the work area, first using HEPA vacuum equipment and then wet cleaning methods as appropriate and separately enclose with minimum 6-mil plastic sheeting sealed with tape. Fixed objects shall include, but not be limited to, exposed electrical conduits and all other permanently fixed items.

3. Step 3:

a. Plasticizing: Objects which may be contaminated during abatement or difficult to clean shall be taped and sealed in a minimum of 6-mil polyethylene plastic sheeting. A minimum of 2 layers of 6-mil polyethylene plastic sheeting shall be used for preparation of critical barriers and containments.

b. When sealing (plasticizing), plastic sheet shall be protected against damages by sharp edges, projections, etc. Provide 2" squares of duct tape at all sharp projections prior to applying plastic sheet to prevent puncture and tearing.

c. NOTE: Combining lower mil thickness sheets to total the minimum mil thickness is not acceptable.

4. Step 4: After the sealing and temporary facility work is completed, notify the Qualified Consultant and get his approval prior to proceeding with abatement.

3.05 REMOVAL OF ACM

A. Thoroughly wet the materials with amended water before starting the removal.

B. The asbestos-containing material shall be removed in small sections. Before beginning the next section, the material shall be packed while still moist into sealable 6-mil double polyethylene bags and sealed airtight. No removed material, whether bagged or unbagged, shall be allowed to dry, fall to the ground, be crumbled into small pieces, pulverized, or made friable.

C. Prevent contamination spreading to the surrounding public area. A fine spray of the amended water shall be applied in small sections to reduce fiber release preceding the removal of the asbestos-containing material. Spray the asbestos-containing material repeatedly during the removal operations to maintain a wet condition and to minimize asbestos fiber dispersion. The Qualified Consultant shall have the authority to stop all work due to improper removal techniques.

D. It shall be the responsibility of the Contractor to verify the thickness of the material and satisfy himself as to the total work and/or effort to remove said material.

E. Contractor to coordinate all work with the HHSC Representative, General Contractor and Qualified Consultant.

F. The Contractor is prohibited from using methods of removal that create excessive amounts of dust and debris.

G. Mechanical means of removal will not be allowed for insulation removal work.

3.06 EQUIPMENT CLEANING: All contaminated equipment and tools used for removal work shall be washed and cleaned in the work area prior to removing them from the work area. No washing of contaminated equipment and tools will be allowed outside the work area.

3.07 ASBESTOS-CONTAINING WASTE HANDLING

A. Collect and bag all asbestos debris and any other contaminated debris found in the work area. Clean the visible residual by HEPA vacuuming.

B. Clean fixed object within the work area, using HEPA vacuum equipment. Fixed objects shall include, but not be limited to pipes, wiring and all other permanently fixed items. Do not use methods that raise dust, such as dry sweeping or vacuuming with equipment not equipped with HEPA filters. Do not use HEPA vacuum equipment on wet surfaces.

C. Debris shall be bagged and sealed in 6-mil plastic bags immediately after removal. All gross debris created by the removal process shall be bagged and sealed at the end of each removal day.

D. The bags containing the asbestos waste material shall be checked for evidence of waste material attached to the outside of the bags. If dirty, the bags shall be washed down in the work area. The bags are then moved to the Holding bin. Bags and containers shall be marked with OSHA label prescribed by the Hawaii OSHA regulations referenced in these specification. Label shall state, "DANGER – CONTAINS ASBESTOS FIBERS – AVOID CREATING DUST – CANCER AND LUNG DISEASE HAZARD." Additionally, label bags in accordance with OSHA 40 CFR 61.150; or EPA 40 CFR 763 if more restrictive. Labeling shall include the name of the waste generator and the site where the waste was generated.

E. Asbestos contaminated waste with sharp edges (e.g. nails, screws, metal lath, etc.) will tear the polyethylene bags and sheeting and therefore shall be placed in drums or enclosed with cardboard and double wrapped and sealed with plastic.

F. During the removal process, if plastic sheeting tears, or the duct tape loosens from the surface, the Abatement Contractor shall immediately stop work, cleanup loose asbestos-containing materials and then reseal the surface by taping over the torn or loosened surface, before commencing again.

G. Protect the plastic sheeting against tearing caused by sharp projection, corners, edges, etc., of all equipment being used in the removal process. However, if the plastic sheeting tears, the Abatement Contractor shall follow repair procedure specified above.

H. Any housing or penetration concealing asbestos-containing materials shall be removed and protected to provide access to the materials. Replacement or reattachment of these shall be in a manner such that function and appearance is equal or exceeds the original condition.

3.08 CLEANING AND CLEARANCE OF THE WORK AREA

A. Should the Contractor fail to commence work to clean-up and make the work area asbestos free within one working day after the clean-up thereof has been requested by the HHSC Representative, and thereafter to expeditiously complete the said clean-up, HHSC Representative may without further notice and without termination of contract, have the clean-up done and deduct the cost thereof from the contract.

B. Visual Clearance of Removal Work Areas: Remove all visible accumulation of asbestos-containing materials and debris by HEPA vacuums, sponging, and wet-wiping. The work areas shall be totally visibly clean and remaining material encapsulated. The Contractor, in the presence of the Qualified Consultant, shall make a complete visual inspection of the work area to ensure dust-free conditions.

C. Once the Qualified Consultant verifies that the work areas are essentially clean of visible asbestos-containing debris, the Qualified Consultant will collect a minimum of two post abatement PCM air clearance samples from the work area. The turnaround time of all PCM air samples will be 12 hours from the time of collection.

D. Should the Contractor fail to achieve the clearance level lower than 0.01 f/cc, Contractor will re-clean the area at no additional cost to the HHSC Representative and all additional fees to perform the sampling and analysis by the Qualified Consultant shall be paid for by the Contractor.

E. After achieving a clearance level lower 0.01 f/cc, the work area will be cleaned of all remaining containment enclosure sheeting. Clean and repair damage caused by temporary installations or use of temporary facilities. Restore existing facilities to their original condition or better, as approved by the HHSC Representative. Signage applicable to job site safety and the performance of the remaining portions of the work shall remain as applicable.

3.09 DISPOSAL OF ASBESTOS-CONTAINING MATERIAL

A. The Contractor shall conduct any additional testing as required by the Waimanalo Gulch Landfill. PCB testing of the asbestos black mastic on the pipe wrap is required by the Waimanalo Landfill.

B. As the work progresses and asbestos-containing waste is generated, the Contractor shall transport all waste generated on a pre-scheduled day to the State of Hawaii, Department of Health's authorized disposal site, or as specifically approved by the HHSC Technical Representative to delay a

disposal operation. Transport all waste to the predesignated disposal site in accordance with EPA regulations and specific landfill requirements.

C. Contaminated material shall be double bagged in bags with OSHA label prescribed by the HIOSH regulations referenced in these specifications. Label shall state, "DANGER – CONTAINS ASBESTOS FIBERS – AVOID CREATING DUST – CANCER AND LUNG DISEASE HAZARD." Additionally, label bags in accordance with OSHA requirement 29 CFR 1926.1101 or EPA 40 CFR 61.150 if more restrictive. Labeling shall include the name of the waste generator and the site where the waste was generated.

D. Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of the waste so that the signs are visible. The marking must be displayed in such a manner and location that a person can easily read the legend. Refer to 40 CFR Part 61.149 for lettering size, fonts and wording of sign requirements. For all loading and unloading activities, the sign referred to in 40 CFR Part 61.150 (b) (3) shall be displayed prominently.

E. Vehicles used for transporting waste to the disposal sites shall have a completely enclosed, lockable storage compartment. Storage compartments shall be plasticized and sealed with a minimum of one layer of 6 mil polyethylene sheeting on the sides and top and two layers of 6 mil polyethylene on the floor (bed). Waste materials, except those with sharp edges (metal lath, screws, nails, metal suspension system, etc.), properly double bagged may be transported to the disposal site without being placed in drums if the transporting vehicle is prepared as specified above in addition to any more stringent requirements by HIOSH. The compartments shall be thoroughly wet-cleaned and/or HEPA vacuumed following the disposal of each load at the disposal sites at an approved location with electrical power as required. At the conclusion of the asbestos abatement, or before transport vehicles are used for other purposes, the polyethylene sheeting shall be properly removed and disposed of as contaminated waste. After this has been accomplished, compartments shall once again be wet-cleaned and HEPA vacuumed in order to eliminate all debris.

F. At the landfill, upon delivery of the waste for disposal, the Contractor shall notify the Scale Attendant and Landfill Spotter that the waste to be disposed of is asbestos material.

G. Workers unloading bags at the disposal sites shall be dressed in full body protective clothing and dual cartridge respirators.

H. Waste disposal manifest forms shall be properly completed to assure custody and disposal of all asbestos-containing material and asbestos contaminated waste at approved disposal sites. Forms shall be kept on file as directed by the HHSC Representative with copies submitted to the Qualified Consultant the next working day after each trip.

1. NOTE: IT IS THE CONTRACTOR'S RESPONSIBILITY TO ASSURE THAT ANY LANDFILL USED FOR DISPOSAL OF ASBESTOS-CONTAINING OR ASBESTOS CONTAMINATED WASTE IS APPROVED FOR THAT PURPOSE.

I. Bags must be placed in the hole for burial. Dumping of bags from the containers will not be allowed. However, if a bag is torn and if acceptable by the landfill, the entire container may be buried.

J. The Contractor shall pay the waste disposal charge, and any special handling charges at the landfills. All expenses for landfills shall be the complete responsibility of the Contractor. The bagged material shall be loaded in drums except as noted previously and transported to a landfill authorized by the State Department of Health to accept material containing asbestos. In the event the bag is torn, the tear shall be immediately mended with duct tape and the bag placed into another bag and sealed, and the wrapped material covered with another wrap and sealed. The Contractor shall make all prior arrangements with the landfill.

3.10 LOCK DOWN: Prior to removal of the plastic barriers and final visual inspection, a compatible post removal (lockdown) encapsulant shall then be spray applied to all exposed pipe surfaces where asbestos has been removed.

Asbestos Notification of Demolition & Renovation
(Ref. HAR Chapter 11-501)

SEND TO: **STATE DEPARTMENT OF HEALTH**
INDOOR AND RADIOLOGICAL HEALTH BRANCH
99-945 HALAWA VALLEY STREET
AIEA, HAWAII 96701
Phone (808) 586-5800 Fax (808) 586-5811

I.	**Type of notification:** O=original R=revised C=cancelled		
II.	**Type of operation:** D=Demolition R=Renovation OD=Ordered Demolition ER=Emergency Renovation		
III.	**Facility information**		
	Owner name:		
	Address:		
	City:	State:	Zip code:
	Contact person:		Telephone #:
	Removal contractor:		License #:
	Address:		
	City:	State:	Zip code:
	Contact person:		Telephone #:
	Other operator:		
	Address:		
	City:	State:	Zip code:
	Contact person:		Telephone #:
IV.	**Is asbestos present (y/n):** Inspector's name:	Certification #:	State of certification:
V.	**Facility description (Include building number, floor and room number)**		
	Building name:		
	Address:		
	City:	State:	Zip code:
	Location(s) on site:		
	Building size (sq. ft.):	# Floors:	Age:
	Present use:	Prior use:	
Official Use Only			
Postmark Date:	**Received by:**	**State Record Number:**	

VI. Procedure used to detect the presence of asbestos Laboratory name: Analytical method:			
VII. Specify the nature of the asbestos material (TSI, surfacing, VAT, miscellaneous):			
Amount of asbestos, including: 1. RACM to be removed 2. CAT I left in place, and 3. CAT II left in place	RACM to be removed	Nonfriable ACM (not) to be removed	
		Category I	Category II
Pipes (linear ft.)			
Surfacing (square ft.)			
Facility components (cu. ft.)			
Scheduled asbestos abatement dates Start (mm/dd/yy): Finish (mm/dd/yy) Circle workdays and times: weekdays: daytime nighttime weekends: daytime nighttime			
Scheduled renovation/demolition dates Start (mm/dd/yy): Finish (mm/dd/yy) Circle workdays and times: weekdays: daytime nighttime weekends: daytime nighttime			
Description of the planned renovation/demolition work and methods to be used:			
Description of the work practices and engineering controls to be used to prevent emissions of asbestos from the work-site: Project designer name: Certification #: State:			
XII. Waste transporter #1			
Name:			
Address:			
City:	State:	Zip code:	
Contact Person:	Telephone:		
Waste transporter #2			
Name:			
Address:			
City:	State:	Zip code:	
Contact Person:	Telephone:		
XIII. Waste disposal site			
Facility Name:	Telephone:		
Address:			
City:	State:	Zip code:	

XIV. For demolition ordered by a government agency, please identify	
Name:	Title:
Authority (Agency):	
Date of order (mm/dd/yy):	Date ordered to begin (mm/dd/yy):
XV. For emergency renovations (Please call 808-586-5800 for additional instructions)	
Date and time of emergency Date (mm/dd/yy): Time: (a.m./p.m.)	
Description of sudden, unexpected event and the damage caused:	
Explanation of how the event caused an unsafe condition or would cause equipment damage or an unreasonable financial burden:	
Person contacted for approval at the Indoor and Radiological Health Branch: Name: Date (mm/dd/yy): Time: (a.m./p.m.)	
XVI. Description of procedures to be followed in the event that unexpected asbestos is found or previously nonfriable asbestos material becomes crumbled, pulverized or reduced to powder:	
XVII. I certify that an individual trained in the provisions of Hawaii administrative rules chapter 11-501, and certified as a contractor/supervisor, will be on-site during the entire renovation and/or demolition and evidence that the required training has been accomplished for this and all workers will be available at the work-site. Signature of owner/operator Date (mm/dd/yy):	
XVIII. I certify that the information on this notification is correct. Signature of owner/operator Date (mm/dd/yy):	
XIX. Additional Comments:	

VISITOR/WORKER ENTRY LOG
(Sample)

DATE

PROJECT

ALL PERSONNEL MUST SIGN-IN AND SIGN-OUT EVERY TIME THEY ENTER/EXIT THE WORK AREA. PLEASE PRINT CLEARLY. ATTACH EMPLOYEE RELEASE FORM FOR ALL VISITORS.

NAME	EMPLOYER Name, *Address, *Phone	TIME IN	TIME OUT	*PURPOSE OF VISIT	**TYPE OF PPE ISSUED

*NOT required of Contractor's employees

** Type of PPE (Personal Protective Equipment) Issued to include list of protective clothing worn and type of respirator used (Type "C", half-face dual cartridge, etc.

EMPLOYEE ACKNOWLEDGMENT OF INSTRUCTION AND RELEASE FORM
(sample)

Employee Name:

Employee Address:

Employee Telephone No.:

DOH Asbestos Certification Number:

Classification of Worker:

Have you had in the past, or present, any respiratory problems?

Yes No

Have you worked in the past with asbestos or fiberglass type materials?

Yes No

The project you will be working on involves the use of asbestos and the removal of the asbestos from the building. Asbestos is considered a health hazard.

The company is supplying all necessary safety clothing and working conditions required and necessary for your protection from asbestos hazard.

You shall be instructed a commencement of the job on the required use of safety equipment, clothing, working conditions and procedures. These must be rigidly adhered to. Smoking is not permitted in the work areas. Disregarding of safety instructions shall result in instant dismissal.

I acknowledge that safety instructions have been given to me by the company at my work commencement and I am thoroughly conversant with them and have answered the above questions truthfully.

Signed:
Employee

Date:

ASBESTOS DISPOSAL FORM
(sample)

Date:

Owner or Operator of Landfill

Name

Address

City State Zip

Phone:

Name of Landfill

Name

Address

City State Zip

Phone:

Hauler

Approximate Volume of Asbestos Received

Type of Container Asbestos in

Asbestos Container Labeled? YES NO

I certify that the above statements are true and that the landfill has been approved for the disposal of asbestos. The delivered material will be covered within 6 inches (15 cm.) of non-asbestos material within 24 hours.

signed
Landfill Owner-Operator

END OF SECTION

SECTION 13282 - LEAD PAINT CONTROL MEASURES

PART 1 - GENERAL

1.01 SUMMARY

A. In performing the handling of building components with lead paint, all possible safeguards, precautions and protective measures shall be utilized to prevent exposure of any individual to lead particulates.

1.02 DESCRIPTION OF WORK:

A. Furnish all labor, materials and equipment necessary to carry out the safe removal, clean-up, proper handling, transportation and disposal of existing paint with lead and building components with lead paint with all applicable laws and regulations concerning lead, including all incidental and pertinent operations. The lead work shall generally include:

1. Incidental disturbance of lead paint during the renovation activities as identified in the Inspection Report.

2. Selective demolition, removal and disposal of building components coated with lead paint as identified in the Inspection Report.

3. Spot removal and disposal of intact paint with lead to allow for the safe new work and/or renovation/demolition work as identified in the Inspection Report.

4. The Contracator shall assume any untested paint to contain lead.

B. The Contractor shall inform his employees, Subcontractors and all other persons performing work in this project, that painted surfaces within the project areas of the building contain lead. The Contractor, his employees, Subcontractors, etc. shall initiate and maintain all programs necessary to execute the work in accordance with the contract documents, federal, state and local laws, codes, rules and regulations.

C. The Contractor shall be responsible for ensuring that all work generating lead paint containing debris conforms to the following applicable federal, state and local laws, codes, rules and regulations.

1. Occupational Safety and Health Administration (OSHA); Hawaii Occupational Safety and Health (HIOSH) standards and rules.

2. Environmental Protection Agency (EPA), Toxic Substance Control Act (TSCA), 40 CFR Part 745, Lead, Requirements for Lead-Containing Paint Activities in Target Housing and Child Occupied Facilities.

3. Environmental Protection Agency (EPA), Resource Conservation and Recovery Act (RCRA) of 1976, amended in 1980 and 1984.

D. The Contractor shall be responsible for initiating and maintaining all safety precautions and programs necessary to keep the work place safe for his employees and Subcontractors; and ready for safe use of the work area and building by the building's occupants.

1.03 COORDINATION WITH OTHER SECTIONS: The Contractor shall coordinate all of his lead disturbance activities with the HHSC Representative, General Contractor and the Qualified Consultant.

1.04 CONTRACTOR RESPONSIBILITIES: The Contractor acknowledges that he alone is responsible for the instruction and for enforcing personnel protection requirements and that these specifications provide only a minimum acceptable standard. Contractor shall comply with all requirements of 29 CFR 1926.62. The Contractor shall also be responsible for complying with all applicable EPA regulations in regards to lead-containing materials.

A. Respirators: Use appropriate respirators and filters which meet all requirements of OSHA 29 CFR 1926.62.

B. Protective Clothing: Use appropriate personal protective clothing (disposable suits, eye protection, gloves, etc.) as required by OSHA 29 CFR 1926.62.

1.05 GENERAL REQUIREMENTS

A. The work specified herein shall include the handling of components painted or coated with lead paint, transportation and disposal procedures as required of lead containing materials by persons with at least training in accordance with OSHA 29 CFR 1926.62. This work must be performed in compliance with all applicable federal, state, and local regulations and be performed by workers who are capable of and willing to perform the work of this contract.

B. Applicable Standards and Guidelines: All work under this contract, and any other trade work conducted with the project, shall be done in strict accordance with all applicable federal, state and local regulations, standards and codes governing lead paint removal, transportation and disposal of lead materials.

1. The most recent edition of any relevant regulation, standard, document or code shall be in effect.

C. Specific Statutory and Regulatory Requirements:

1. Title 29, Code of Federal Regulations, section 1926.62, entitled "Lead Exposure in Construction; Interim Final Rule".

2. Title 29 Code of Federal Regulations Part 1910.134, Respiratory Protection.

3. Federal Register: Vol. 54, No. 131; Tuesday, July 11, 1989. Department of Labor, Occupational Safety and Health Administration; 29 CFR Parts 1910, 1915, 1917, and 1918; Occupational Exposure to Lead; Statement of Reasons; Final Rule.

4. Title 40 Code of Federal Regulations Part 61, National Emissions Standards for Hazardous Air Pollutants.

5. Title 40 Code of Federal Regulations Part 745, Lead; Requirements for Lead-Based Paint Activities in Target Housing and Child Occupied Facilities; Final Rule.

6. Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing.

1.06 DEFINITIONS

A. Action Level (AL): Employee exposure averaged over an 8-hour period, without regard to the use of respirators, to a particular airborne concentration. OSHA requirements become effective at this level. Lead: 30 micrograms per cubic meter of air.

B. Air Monitoring: The process of measuring the content of a specific, known, volume of air in a stated period of time. For this project, NIOSH 7082 method for lead monitoring.

C. Authorized Visitor: The HSSC Representative, Contractor hired Qualified Consultant, their representatives, air monitoring personnel, or a representative of any regulatory or other agency having jurisdiction over the project.

D. Competent Person: One who is qualified to identify existing and predictable lead hazards in the surroundings or working conditions and who has authorization to take prompt corrective measures to eliminate them.

E. Contaminated Area: An area where unwanted toxic or harmful substances exists.

F. HEPA Filter: A High Efficiency Particulate Air (HEPA) filter capable of trapping and retaining 99.97% of particulates greater than 0.3 micron in length.

G. Lead: Metallic lead, all inorganic lead compounds, and inorganic lead soaps. Excluded are all other organic lead compounds.

H. Permissible Exposure Limit (PEL): The employer shall ensure that no employee is exposed to concentrations greater than the PEL as determined from an 8-hour time weighted average. Lead: 50 micrograms per cubic meter.

I. Personal Monitoring: Contractor's sampling of lead in air concentrations within the breathing zone of an employee to determine the 8-hour time weighted average. The samples shall be representative of the employee's work tasks. The breathing zone shall be considered an area within 12 inches of the nose or mouth of an employee.

J. Qualified Consultant: Consultant hired by the HHSC Representative who will perform air monitoring and inspection during removal work and shall have the authority to initiate engineering controls. The Qualified Consultant will be accredited as a State of Hawaii Department of Health accredited Lead Supervisor.

1.07 ABBREVIATIONS

A. CFR - Code of Federal Regulations

B. HIOSH - Department of Occupational Safety and Health, Department of Labor and Industrial Relations, State of Hawaii

C. EPA - U.S. Environmental Protection Agency

D. NIOSH - National Institute for Occupational Safety and Health

E. OSHA - Occupational Safety and Health Administration

F. NESHAP - National Emissions Standards for Hazardous Air Pollutants

G. LP - Lead Paint

H. PWL - Paint with Lead

I. TCLP - Toxicity Characteristic Leaching Procedure

1.08 SUBMITTALS PRIOR TO WORK: Final payment will not be made until copies of all submittals have been furnished to and accepted by the HHSC Representative. Submit a completed and compiled electronic submittal package no later than 10 work days from the notice of award unless otherwise specified in this section. The submittal package will include the items listed below.

A. Detailed Work Plan: The Contractor shall submit a project work plan for the lead paint disturbance work. The Plan shall be prepared by the State of Hawaii accredited lead supervisor. The Contractor shall also provide detailed information concerning:

1. Preparation of the work area.

2. Personal protective equipment including respiratory protection and protective clothing.

3. Employees who will participate in the project: include documentation of experience, documented proof of lead removal training based on 29 CFR 1926.62 and/or the proposed EPA Model Accreditation for Lead-Based Paint Removal Work Training, in addition to any current EPA regulatory requirements, and assigned responsibilities during the project.

4. Decontamination procedures for the personnel who may be exposed to lead paint.

5. Lead paint treatment, handling and disposal methods and procedures to be used.

6. Required air monitoring procedures and sampling protocols.

7. Procedures for final cleanup.

8. A sequence of work and performance schedule in coordination with other trades.

9. Emergency procedures.

B. Shop Drawings: Submit shop drawings for the following items as a minimum:

1. Descriptions of any equipment to be employed not discussed in this section.

2. Security provisions, if any, in and around the project area.

3. Outline of work procedures to be employed.

4. Location of the waste storage area.

5. Staging of the work, including the sequence.

6. Entrances and exits to the work place.

7. Location and construction of worker decontamination units.

C. Notices: The Contractor shall obtain a Generator's EPA Identification number (if necessary) for the lead-containing waste material generated from the project that is determined to be hazardous.

D. Insurance: Proof of insurance for Workman’s Compensation and General Liability which covers asbestos, lead, and pollution.

E. Manufacturer's Data: Copies of manufacturer's specifications, installation instructions and field test procedures for each material and all equipment related to lead handling and abatement and include other data as may be required to show compliance with these specifications and proposed uses.

F. Documentation for Instructions:

1. Submit documentation satisfactory to the HHSC Representative that the Contractor's employees, including foremen, supervisors, and any other company personnel or agents who will be exposed to airborne lead dust or who shall be responsible for any aspects of the lead paint removal work activities, have received training in accordance with this specification, 29 CFR 1926.62, (OSHA Lead Awareness or the EPA Model Accreditation for Lead-based Paint Removal Work Training) and any current EPA regulatory requirements.

2. Submit to the HHSC Representative a written respiratory protection program meeting the requirements of 29 CFR 1910.134 documentation that all employees using respirators have received training, and documentation of respirator fit-testing for all Contractor employees and agents who will enter the work area wearing negative pressure respirators. The Contractor shall be solely responsible for his employee's personal protection.

G. Documentation From Physician: Before exposure to lead dust or fumes, the Contractor shall provide workers with a comprehensive medical examination as required by 29 CFR 1926.62, or whichever is stricter. This examination will not be required if adequate records show the employees have been examined as required by the aforementioned regulations within the last year.

H. Respirators: Submit document NIOSH approvals for all respiratory protective devices used on site. Include manufacturer certification of HEPA filtration capabilities for all cartridges and filters.

I. Emergency Planning Procedures:

1. The Contractor shall submit an emergency evacuation plan for the Contrating Officer’s acceptance prior to the commencement of work. This plan shall include consideration of fire explosion, toxic atmospheres, electrical hazards, slips, trips and falls, confined spaces and heat related injury. In non-life-threatening situations, the injured or incapacitated employee shall decontaminate following normal procedures, with assistance from co-workers if necessary, before exiting the work area to obtain proper medical treatment. In life threatening situations, worker decontamination shall take least priority after measures to stabilize the injured worker, remove the injured worker from the work area, and secure proper medical treatment.

2. Emergency Response and Evacuation: The Contractor shall provide and document training in emergency response and evacuation procedures to all workers entering the work area.

J. Waste Disposal and Landfill Requirements: Contractor shall separate lead paint chips and debris from non-hazardous waste materials such as used plastics, disposable tools, etc. Contractor shall clean all bulk lead-containing debris and waste from non-hazardous plastic, tools, suits, etc. prior to disposal.

1. If Toxic Characteristic Leaching Procedure (TCLP) test results of the containers of waste material are below the EPA limit the lead-containing waste materials (paint chips, contaminated materials, etc.) shall be disposed of at a landfill approved for such purposes. The Contractor shall submit to the HHSC Representative, documentation that the lead-containing waste material removed from the work area has been accepted by the landfill Owner.

2. If the TCLP test results are above the EPA limit or if materials are identified as hazardous waste, the lead-containing waste materials shall be disposed of at an EPA approved facility capable of accepting such hazardous waste.

3. The Contractor shall submit to the HHSC Representative documentation that disposal of the lead-containing waste material at the selected landfill is approved by the State of Hawaii, or the EPA approved mainland facility for hazardous lead-containing waste material.

1.09 SUBMITTAL AFTER WORK IS COMPLETED: At the completion of the work, one complete and compiled electronic final report shall be prepared by the Contractor for acceptance by the HHSC Representative. The report shall be submitted and shall include the items listed below.

A. The project name, Contractor, EPA waste generator number, work duration, material removed, respiratory protection employed, waste manifest signed by the Contractor, waste transporter, and ladnfill operator, and total quantity of waste, TCLP lead reports, employee exposure air sample results, and results of the most current PAT round results for the laboratory conducting the employee exposure air sample analysis.

B. Certification of the Contractor's employees.

C. Visitor/Worker Entry Log: The daily log of all personnel including the Contractor's employees and agents who enter the work area while lead removal operations are in progress, until final clearance is received from the Competent Person. The log shall contain the listed information as a minimum and shall be certified by the Competent Person.

1. Date of visit/worker entry

2. Visitor/Worker's name, employer, business address and telephone number

3. Time of entry and exit from work area

4. Purpose of visit

5. Type of protective clothing and respirator worn

6. Certificate of release signed and filed with the Contractor

D. Clearance certifications received from the Competent Person.

E. Certification Statement: A statement signed by Contractor that all lead work and disposal was completed in compliance with this specification, Federal and State regulations, and the approved Work Plan.

PART 2 – PRODUCTS

2.01 TOOLS AND EQUIPMENT

A. General: Provide and fabricate suitable tools for the lead-containing paint disturbance procedures.

B. Air Purification Equipment: HEPA filtration systems.

C. Other tools and equipment as necessary.

2.02 PERSONNEL PROTECTION REQUIREMENTS

A. The Contractor acknowledges he alone is responsible for instruction and for enforcing personnel protection requirements and that these specifications provide only a minimum acceptable standard.

B. Provide workers with sufficient sets of disposable protective full body clothing consisting of material impenetrable by lead-containing paint chips and of the proper size for each individual to accommodate movement without tearing. Such clothing shall consist of full body coveralls, footwear, gloves and headgear. Provide hard hats as required by applicable safety regulations. Disposable clothing shall not be allowed to accumulate and shall be disposed of as lead contaminated waste. Protective clothing shall be worn by all personnel within the work area from the start of the removal to final visual clearance.

C. Insulated non-skid rubber boots or an accepted equivalent shall be required for all individuals entering the work area. Protective full body clothing without elastic at sleeves and legs shall require separate elastic or taped protection to seal the opening. Visitors shall be provided full body protective clothing.

D. All electrical systems used for lead-containing paint disturbance operations shall as a minimum be protected with "Ground Fault Circuit Interrupters" selected and installed in strict accordance with the manufacturer's instructions, the National Electric Code and all other pertinent codes.

E. Additional safety equipment (e.g. hardhats meeting the requirements of ANSI Z-89.1-2014, eye protection meeting the requirements of ANSI Z87.1-2020, safety shoes meeting the requirements of ASTM F2413-18, disposable PVC gloves), as necessary, shall be provided to all workers and authorized visitors.

PART 3 - EXECUTION

3.01 POTENTIAL LEAD HAZARD

A. The disturbance or dislocation of painted with lead materials may cause lead-containing dust to be released into the atmosphere, thereby creating a potential health hazard to the workers and the general public. Apprise all workers, supervisory personnel, subcontractors, consultants, authorized visitors, occupants and neighbors who will be at or near the job site of the seriousness of the hazard and of proper work and protective procedures which must be followed.

B. Where in the performance of the work, workers, supervisory personnel, subcontractors, or consultants who may encounter, disturb, or otherwise function in the immediate vicinity of any identified lead-containing materials, take appropriate continuous measures as necessary to protect all workers and the general public from the potential hazard of exposure to respirable airborne lead dust. Such measures shall include the procedures and methods described in the regulations of applicable federal, state and local agencies.

3.02 WORK AREA PREPARATION:

A. Protect occupants and surrounding area from possible contamination: Inform occupants of the removal work involving lead.

B. Treatment of Surfaces: During disturbance work, acceptable industry standard dust control methods shall be used to control dust (such as wetting items to be disturbed, by misting; provide dust screens; remove items in large, whole pieces; avoid crushing and pulverizing removal methods; encapsulate material prior to disturbace; use amended water; and containerize wet waste material). Prevent contamination spreading to the surrounding public and residential area.

C. Install 6-mil poly sheeting on all ground surfaces below all potential paint dirsturbance areas. The sheeting shall extend a minimum of 10 feet out from below the materials being removed.

D. Paint Removal: If cutting of any lead coated materials is required, remove the paint first, using manual methods, to the extent necessary to allow for the cutting of the material. Cuts shall not be performed through painted materials.

E. Barriers: Standard barriers such as construction warning tape, fencing, etc. shall be used to prevent the general public from accessing the work site. Seal any penetrations to the affected work area with 6 mil polyethylene plastic sheeting and duct tape.

F. NESHAP Compliance: Compliance with the requirements of EPA's NESHAP regulation is required for this project. Proper notification of the renovation of the building to the Department of Health shall be the Contractor's responsibility.

G. Ensure that all personnel working on site during the removal work are properly trained and protected as required by law.

3.03 CLEANUP AND TESTING

A. Post-work visual clearance will be conducted by the Qualified Consultant.

B. All non-hazardous waste shall be removed from the site by the completion of the project. The Contractor, in the presence of the Qualified Consultant, shall collect representative samples of the waste stream for TCLP lead analysis. All hazardous waste shall be removed from the site to an EPA approved disposal facility within 90 days of the removal work.

C. Clean Up and Testing: Wet clean and HEPA vacuum clean surfaces and surrounding ground within the lead control area daily. Do not allow lead painted/coated debris, paint chips, and dust to accumulate. Restrict the spread of dust and debris. Keep waste from being distributed over the general area. Do not dry sweep or use compressed air to clean the area. When the removal operation has been completed, the area will be cleaned of all visible lead paint contamination by vacuuming with a HEPA filtered vacuum cleaner followed by wet mopping where applicable. The Qualified Consultant will visually inspect the affected surfaces for residual lead paint chips and accumulated dust. The Contractor shall reclean areas showing dust or residual paint chips. If recleaning is required, the process will be repeated until the visual clearance is given by the Qualified Consultant. Do not remove the lead control area or roped-off perimeter and warning signs prior to the receipt of the Qualified Consultant's lead clearance certification.

3.04 TRANSPORTATION AND DISPOSAL

A. Disposal of Hazardous Waste and Non-Hazardous Waste: Contractor shall separate potentially non-hazardous waste material (i.e. plastic sheeting, disposable protective suits, etc.) from hazardous waste material prior to testing. All other debris, scraps, waste materials, rubbish and trash contaminated with lead paint and contaminated dust from the

immediate work area and place in UN approved (49 CFR 178) and appropriately labeled containers and store on site for TCLP lead testing. The Contractor shall be responsible for collecting and paying of all TCLP testing.

1. Local waste landfill facilities do not accept any RCRA hazardous waste. All hazardous waste must be disposed of at an EPA approved mainland U.S. RCRA hazardous waste disposal facility. Hazardous waste must be disposed of within 90 days of the waste being created.

2. Non-hazardous lead waste and debris may be disposed of at the local waste landfill facility that is State approved to accept such waste.

    a. Notify non-hazardous Waste Landfill Operator: The Contractor shall advise the Non-hazardous Waste landfill operator, at least twenty-four (24) hours prior to transportation, of the material to be delivered.

    b. Provide the non-hazardous Waste Landfill Operator with applicable TCLP results which indicate that the waste material is non-hazardous.

B. Disposal of Non-Hazardous Painted Construction Debris (TCLP for Lead Not Exceeding EPA Limits): Remove non-hazardous lead waste including, debris, scraps, waste materials, rubbish, and trash from the site and disposed of at a landfill approved for disposal.

C. The Contractor shall submit disposal manifest and receipts showing acceptance of all waste material by the approved waste disposal site to the Qualified Consultant. The shipping papers shall include a chain-of-custody form and include names and addresses of the Facility Owner, the Contractor, and the Landfill Operator and information on the type and number of waste containers.

3.05 CLEARANCE CRITERIA:

A. Visual clearance of the work area will be performed by the Qualified Consultant. Any additional clearance inspection initiated by the Contractor or required due to failure of the first set of clearance inspection, shall be at the Contractor's expense.

3.06 TESTING AND AIR MONITORING

A. The Qualified Consultant shall have the authority to instigate engineering controls during the project.

B. Testing, daily area (environmental) air monitoring and final clearance inspections shall be provided by the Qualified Consultant, for the purpose of:

1. Verifying compliance with the specifications and the applicable regulations listed in this Section.

2. Ensuring that the documentation required by these specifications and by law is collected and reported to the HHSC Representative.

3. Instigating engineering control during the project.

3.07 CONTRACTOR RESPONSIBILITIES

A. The Contractor shall be responsible for all TCLP lead testing and alaysis.

B. The Contractor shall be responsible for his employees' personnel protection, personal air monitoring and necessary records as required by OSHA, Hawaii State Law and all other applicable laws and as required in these specifications. The Contractor shall provide all required documentation to the government. Contractor shall collect daily personal air samples on at least 25% of the personnel performing removal work with the most exposure for the duration of the project.

3.08 MONITORING RESULTS

A. Airborne lead levels in areas adjacent to the work area or in any part of the work site impacted by the removal activities shall not exceed 30 micrograms per cubic meter of air.

B. If the above ambient concentrations and/or the PELs are exceeded, the Contractor shall cease all work immediately in any work area causing or contributing to such a condition. The Contractor shall take remedial action (e.g. misting with more water, encapsulation, provide dust screens, etc.) to reduce concentrations to acceptable levels.

C. The Contractor is solely responsible for monitoring his personnel in compliance with all OSHA and HIOSH requirements.

END OF SECTION

SECTION 13288 – ASBESTOS TESTING AND MONITORING

PART 1 - GENERAL

1.01 SUMMARY

A. In performing this project, all possible safeguards, precautions, and protective measures should be utilized to prevent exposure of any individual to asbestos.

1. These specifications are based upon procedures and standards derived from U.S. regulatory agencies (EPA, OSHA, NIOSH) and the Hawaii State Department of Health as well as from industry and sound industrial hygiene practice. They must be followed to ensure that no measurable amounts of contaminants are released to the uncontrolled work and public areas.

B. Testing, daily area air monitoring and visual inspections shall be provided by the Qualified Consultant hired by HHSC Representative for the purpose of:

1. Verifying compliance with the specifications and the applicable regulations listed in SECTION 13281 – ASBESTOS ABATEMENT.

2. Ensuring that the HHSC Representative legally required documentation is collected.

3. Providing engineering control during the project.

1.02 DEFINITIONS

A. ACM: Asbestos containing materials.

B. Building Representative(s): The person or persons designated by the users of the building to act on their behalf.

C. Contractor: The Construction firm engaged to remove and dispose of the asbestos containing materials.

D. Qualified Consultant: Consultant hired by HHSC Representative who will perform air monitoring and inspection during abatement work and shall have the authority to initiate engineering controls. The Qualified Consultant will be accredited as a State of Hawaii Department of Health accredited Asbestos Project Monitor.

E. Engineering Controls: Measures other than respiratory and other personal protection or administrative controls that are implemented at the worksite to contain, control, and/or otherwise reduce exposure to asbestos. The

measures include process and product substitution, isolation, and ventilation.

F. Project Designer: The person or firm, certified by the DOH, State of Hawaii, who prepared the plans and specifications to remove and dispose of the asbestos-containing materials.

G. Project Manager: The HHSC representative responsible for administering the construction contract and ensuring that the work of the Contractor is conducted according to the contract documents and in compliance with applicable laws, regulations, ordinance, etc.

H. Project Monitor: A member of the construction management team who enters the work area to set up the air monitoring device and then collects the various air samples to be sent to the laboratory for analysis.

1.03 COORDINATION WITH OTHER SECTIONS: Coordinate with the HHSC Representative Consultant/Project Monitor for the testing and monitoring requirements included in Section 13281 – ASBESTOS ABATEMENT and all applicable Federal, State, and local regulations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor shall be responsible for providing the daily personal air monitoring and necessary records for all the Contractor's employees for the duration of the project as required by OSHA (29 CFR 1926.1101), and all other applicable laws.

B. The Contractor shall obtain the OSHA required reports for personnel air monitoring as part of the contract.

C. The Contractor shall be responsible for daily personal air samples that shall be collected on at least 25% of the Contractor's personnel performing removal work on similar tasks and for the duration of the project. Submit within 5 working days to HHSC.

D. The Contractor is solely responsible for protecting his workers, other personnel, and the public from any of his work activities at the work site regardless of the testing and monitoring conducted by the HHSC Representative.

E. Monitoring information developed by the Qualified Consultants activities while under contract with the HHSC Representative shall be for the use of the HHSC Representative. The information will be available and offered to the Contractor when developed, but not thereafter, and shall not waive the Contractor's obligations stated elsewhere in this section.

F. Air monitoring and testing which becomes necessary to follow up on the work by the Contractor which is rejected as not conforming to the requirements shall be the responsibility of the HHSC Representative. However, the full cost of such additional monitoring and testing shall be borne by the Contractor and shall be deducted from the final contract payment.

G. Personal air monitoring that becomes part of the Consultant's scope of work shall be accommodated by the Contractor.

3.02 AIR MONITORING AND INSPECTIONAL SERVICES

A. Duties of the Qualified Consultant:

1. Photographic Record of Project: Record the asbestos abatement project with representative photos to the HHSC Representative. All photos shall become the property of HHSC and are to be accompanied by a detailed log.

2. Project Log: Maintain daily field reports detailing all key activities during abatement and make a submittal of summary project activities to the project designer and the HHSC Representative. Incorporate the contents of the daily field reports with other project data into a final project report.

3. Visual Inspection of all Containment Areas: Perform regular inspection of all containment areas. Conduct inspections during the actual work performance of the Contractor to document the work practices employed by the Contractor and conduct visual clearances to verify that all materials scheduled for abatement were removed and the area was properly cleaned. Submit clearances to the HHSC Representative.

B. Air Monitoring: The Qualified Consultant shall perform the following activities associated with this portion of the project:

1. On-site environmental air monitoring as required by EPA, HDOH, OSHA, HIOSH, and the project specifications.

2. Laboratory analysis by the most current NIOSH 7082 or OSHA method.

3. Monitoring of decontamination procedures at site entry/exit.

4. Monitoring of containment maintenance by visual and instrumental inspection.

5. Interface with project inspectors, building representatives, representatives of regulatory agencies, and project designers during site visits.

6. Ensure that proper respiratory protection is utilized by all persons at the project site.

7. Relay to the HHSC Representative any discrepancies in Contractor's action with provisions of project specifications.

8. Act quickly in case of emergencies with appropriate response.

3.03 SAMPLING DESIGN: The following is a typical sampling design per containment area during the actual construction. The number of samples and volume quantities may vary, depending on each project's specification.

A. Work Area Samples: Low volume samples of 480 liters each shall be taken at the asbestos work area. If monitoring inside and outside the abatement work area shows airborne concentrations have reached the predetermined specified action level and/or TWA, the Qualified Consultant shall stop all work, notify the HHSC Representative immediately, have the Contractor correct the condition(s) causing the increase and ensure that the Contractor obtains the HHSC Representative's approval prior to restarting the removal work. At minimum, one sample will be collected from the center of the work area, one sample upwind of the work area and two samples downwind of the work area.

B. Final Clearance Samples: Visual inspections will be conducted at the completion of the asbestos work. Asbestos air clearance samples shall be collected for all interior work.

3.04 LABORATORY ANALYSIS: All personal air samples collected by the Contractor shall be analyzed by an AIHA certified laboratory for the analysis being requested. All laboratories shall be registered with the Hawaii Department of Health. Results shall be provided to HSSC within three days of sample collection.

3.05 DAILY TESTING RECORDS: At the conclusion of every day's testing the HHSC Representative's Qualified Consultant/Project Monitor shall provide copies of all testing and monitoring records to HHSC.

END OF SECTION

SECTION 13289 - LEAD TESTING AND MONITORING

PART 1 - GENERAL

1.01 SUMMARY

A. In performing this project, all possible safeguards, precautions, and protective measures should be utilized to prevent exposure of any individual to lead.

1. These specifications are based upon procedures and standards derived from U.S. regulatory agencies (EPA, OSHA, NIOSH) and the Hawaii State Department of Health as well as from industry and sound industrial hygiene practice. They must be followed to ensure that no measurable amounts of contaminants are released to the uncontrolled work and public areas.

B. Testing, daily area air monitoring and visual inspections shall be provided by the Qualified Consultant hired by the HHSC Representative for the purpose of:

1. Verifying compliance with the specifications and the applicable regulations listed in SECTION 13282 - LEAD PAINT CONTROL MEASURES.

2. Ensuring that the HHSC Representative legally required documentation is collected.

3. Providing engineering control during the project.

1.02 DEFINITIONS

A. Action Level (AL): Employee exposure, without regard to the use of respirators, to an airborne concentration of lead of thirty micrograms per cubic meter of air (30 $\mu g/m^3$) calculated as an 8-hour time-weighted average (TWA).

B. Building Representative: The person or persons designated by the users of the building to act on their behalf.

C. Contractor: The Construction firm engaged to remove and dispose of the materials painted/coated with lead.

D. Qualified Consultant: Consultant hired by the HHSC Representative who will perform air monitoring and inspection during abatement work and shall have the authority to initiate engineering controls. The Qualified Consultant will be accredited as a State of Hawaii Department of Health accredited Lead Supervisor.

E. Engineering Controls: Measures other than respiratory and other personal protection or administrative controls that are implemented at the worksite to contain, control, and/or otherwise reduce exposure to lead-contaminated dust and debris. The measures include process and product substitution, isolation, and ventilation.

F. Project Designer: The person or firm, certified by the DOH, State of Hawaii, who prepared the plans and specifications to remove and dispose of the lead-containing materials.

G. Project Manager: The HHSC representative responsible for administering the construction contract and ensuring that the work of the Contractor is conducted according to the contract documents and in compliance with applicable laws, regulations, ordinance, etc.

H. Project Monitor: A member of the construction management team who enters the work area to set up the air monitoring device and then collects the various air samples to be sent to the laboratory for analysis.

1.03 COORDINATION WITH OTHER SECTIONS

Coordinate with the HHSC Representative's Consultant/Project Monitor for the testing and monitoring requirements included in Section 13282 - LEAD PAINT CONTROL MEASURES and all applicable Federal, State, and local regulations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 CONTRACTOR'S RESPONSIBILITIES

A. The Contractor shall be responsible for providing the daily personal air monitoring and necessary records for all the Contractor's employees for the duration of the project as required by OSHA (29 CFR 1926.62), and all other applicable laws.

B. The Contractor shall obtain the OSHA required reports for personnel air monitoring as part of the contract.

C. The Contractor shall be responsible for daily personal air samples that shall be collected on at least 25% of the Contractor's personnel performing removal work on similar tasks and for the duration of the project. Submit within 5 working days to the HHSC Representative.

D. The Contractor is solely responsible for protecting his workers, other personnel, and the public from any of his work activities at the work site regardless of the testing and monitoring conducted by the HHSC Representative.

E. Monitoring information developed by the Qualified Consultant's activities while under contract with the HHSC Representative shall be for the use of the HHSC Representative. The information will be available and offered to the Contractor when developed, but not thereafter, and shall not waive the Contractor's obligations stated elsewhere in this section.

F. Air monitoring and testing which becomes necessary to follow up on the work by the Contractor which is rejected as not conforming to the requirements shall be the responsibility of the HHSC Representative. However, the full cost of such additional monitoring and testing shall be borne by the Contractor and shall be deducted from the final contract payment.

G. Personal air monitoring that becomes part of the Consultant's scope of work shall be accommodated by the Contractor.

H. Prior to disposal of lead contaminated wastewater, one wastewater (as applicable) sample shall be collected by the Contractor, to determine whether it can be disposed of as non-hazardous waste or with an EPA approved hazardous waste disposal facility as hazardous waste. Contractor shall obtain and submit to the HHSC Representative a permit to conduct such disposal into the sanitary sewer system prior to disposal. Disposal of all wastewater suspected of being contaminated with lead in the storm drain system is prohibited. Wastewater, no matter what its lead content, shall not be dumped on the ground. Contractor is ultimately responsible for and shall include in his bid the cost to properly dispose of all waste, hazardous or non-hazardous. Submit a copy of the permit to the HHSC Representative.

I. Perform lead Toxic Characteristic Leaching Procedure (TCLP) metals testing on all solid waste debris contaminated with lead (except for painted scrap metal), in accordance with 40 CFR Part 261 "Identification and Listing of Hazardous Waste". Painted metal debris shall be separated from the rest of the lead-contaminated waste and disposed of as scrap metal at a metal recycler (when disposed of as scrap metal, TCLP testing is not required). The TCLP testing shall be used to determine whether waste is hazardous or non-hazardous prior to disposal. Dispose of lead-contaminated debris as hazardous waste if the waste is determined to be hazardous by the TCLP testing. If the TCLP testing indicates that the waste is non- hazardous, the Contractor shall dispose of the waste as non-hazardous, construction waste.

3.02 AIR MONITORING AND INSPECTIONAL SERVICES

A. Duties of the Qualified Consultant:

1. Photographic Record of Project: Record the lead abatement project with representative photos to the HHSC Representative. All photos shall become the property of the HHSC Representative and are to be accompanied by a detailed log.

2. Project Log: Maintain daily field reports detailing all key activities during abatement and make a submittal of summary project activities to the project designer and the HHSC Representative's Project Manager. Incorporate the contents of the daily field reports with other project data into a final project report.

3. Visual Inspection of all Containment Areas: Perform regular inspection of all containment areas. Conduct inspections during the actual work performance of the Contractor to document the work practices employed by the Contractor and conduct visual clearances to verify that all materials scheduled for abatement were removed and the area was properly cleaned. Submit clearances to the HHSC Representative.

B. Air Monitoring: The HHSC Qualified Consultant shall perform the following activities associated with this portion of the project:

1. Laboratory on-site personnel air monitoring (if not provided by the Contractor) as required by OSHA and HIOSH, and the project specifications.

2. Laboratory analysis for lead-in-air using NIOSH 7082 or OSHA method.

3. Monitoring of decontamination procedures at site entry/exit.

4. Monitoring of containment maintenance by visual and instrumental inspection.

5. Interface with project inspectors, building representatives, representatives of regulatory agencies, and project designers during site visits.

6. Ensure that proper respiratory protection is utilized by all persons at the project site.

7. Relay to the HHSC Representative's Project Manager any discrepancies in Contractor's action with provisions of project specifications.

8. Act quickly in case of emergencies with appropriate response.

3.03 LABORATORY ANALYSIS

All personal air samples collected by the Contractor shall be analyzed by an AIHA certified laboratory for the analysis being requested. All laboratories shall be registered with the Hawaii Department of Health.

3.04 DAILY TESTING RECORDS

At the conclusion of every day's testing the HHSC Representative's Qualified Consultant/Project Monitor shall provide copies of all testing and monitoring records to HHSC.

END OF SECTION

DIVISION 15 - MECHANICAL

SECTION 15050 - GENERAL MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL PROJECT REQUIREMENTS

As specified in Section 01019.

1.02 DESCRIPTION OF WORK

A. These general mechanical requirements govern work specified under all sections of DIVISION 15 - MECHANICAL.

B. The Contractor shall furnish all labor, materials, tools and equipment and perform all work and services necessary for a complete and properly operated mechanical work, equipment and systems, as shown on drawings and as specified, in accordance with provisions of the Contract Documents and completely coordinated with work of all other trades.

C. The Contractor shall completely examine the Contract Documents and shall report to HHSC Representative any error, inconsistency or omission he discovers.

D. Furnish and install all supplementary or miscellaneous items, details, appurtenances and devices incidental to or necessary for a sound, secure and complete mechanical system where work required is not specifically indicated.

E. Drawings and specifications shall be taken together. Provide work specified and not indicated or work indicated and not specified as though mentioned in both.

F. The Contractor shall warrant that all materials and equipment furnished under this Contract will be new and that all work will be in good quality, free from faults and defects and in conformance with contract documents for a guaranteed period of one year after 30 days of trouble free operation. The Contractor shall be advised that HHSC Representative shall have the right for beneficial use of all new equipment prior to project acceptance. It shall be the Contractor's responsibility to obtain extended warranties for use of all new equipment provided by the Contractor prior to project acceptance at no additional cost to HHSC. American made products shall be used. Refer to section 3.10: Warranty.

G. The Contractor shall maintain at the site one copy of all Drawings, Specifications, Addenda, approved Shop Drawings, Change Orders and other modifications, in good order and marked to record all changes made during construction. These shall be made available to HHSC Representative.

H. The Contractor at all times shall keep the premises free from accumulation of waste materials or rubbish caused by his operations. At the completion of the work, he shall remove all his waste materials and rubbish from and about the project as well as all his tools, construction equipment, machinery and surplus materials and shall clean all new equipment and accessories.

I. The Contractor shall give HHSC Representative timely notice of its readiness for testing any work including the data arranged so HHSC Representative may observe such testing. The Contractor shall bear all cost of such tests.

J. HHSC Representative shall have the right to accept or reject material, equipment, and/or workmanship and determine when the Contractor has complied with the contract documents.

K. The mechanical contractor shall be responsible for all coordination for their sub-contractors. All issues arising from their subcontractors shall be addressed through the mechanical contractor. The mechanical contractor shall provide experienced personnel who have obtained substantial technical and coordination knowledge from recent similar size projects.

1.03 INSPECTION OF SITE

The Contractor shall visit the site and examine the conditions affecting his work before submitting his proposal. The submission of the proposal shall be considered evidence that the Contractor has visited the site and no extra payments will be allowed to the Contractor on account of extra work made necessary by his failure to visit the site.

1.04 SUBMITTALS

A. Submit in accordance with Section 01300 - SUBMITTALS.

B. Substitution Requests: Comply with the requirements of Section 01019 - GENERAL PROJECT REQUIREMENTS.

C. Shop Drawings: Drawings shall be a minimum of 24 inches by 36 inches in size, except as specified otherwise. The drawings shall include floor plans, sectional view, wiring and piping diagrams and installation details of equipment; and equipment spaces identifying and indicating proposed location, layout and arrangement of items of equipment, control panels, accessories, piping, ductwork, locations and sizes of openings penetrating through walls, floors, roofs and structural members, access panels to valves

and items requiring maintenance or inspection, and other items that must be shown to assure a coordinate installation. Drawings shall be coordinated with the architectural reflected ceiling plans and shall include but not limited to air devices, lights, speakers, and ceiling grid locations. Control and power and wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and interconnection between each item of equipment. Drawings shall indicate adequate clearance for operation, maintenance and replacement of operating equipment devices. If equipment is disapproved, Drawings shall be reviewed to show acceptable equipment and be resubmitted. Contractor shall coordinate all flashing requirements with other trades water proofing work to assure a watertight installation.

1. Review, stamp with approval and submit Shop Drawings required by the Contract Documents or subsequently by HHSC Representative as covered by modifications. At the time of submission, inform HHSC Representative in writing of any deviation in the Shop Drawings from the requirements of the Contract Documents. By approving and submitting Shop Drawings, the Contractor certifies that he has determined and verified field measurements, field construction criteria, materials, catalog numbers and similar data and that he has checked and coordinated each Shop Drawing with the requirements of the work and of the Contract Documents and that equipment and related items fits in the allotted space and complete coordination between contractors involved. Contractor shall coordinate their Shop Drawings with other trades Shop Drawings to assure a complete coordination has been done.

    a. Coordinate all mechanical work with finish work.

    b. The Mechanical Contractor shall provide Shop Drawings for all their work. Prior to submitting the shop drawings for review, the key or prime Contractor shall coordinate all subcontractors; work on the Shop Drawings; certify that all related work have been reviewed. Submit complete (not partial) certified Shop Drawings for HHSC Representative and A/E review.

2. Submitting reproductions of Bid Documents shall not be construed to be Shop Drawings and will not be acceptable and will be returned without review. Direct tracing of the Bid Drawings shall be construed to be reproduction of the Bid Documents.

3. Certify that this shop drawings equipment and material shown is in compliance with the Drawings and specifications and can be installed in the allocated spaces without interference to other related work and access spaces.

4. Additional related work caused by the product changes, installation and operational requirements shall be the Contractor's responsibility at no additional cost to HHSC Representative.

D. Manufacturer's Data: Submittals for each manufactured item shall be manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves and catalog cuts.

E. Standards of Compliance: When materials or equipment must conform to the standards of organizations such as the American National Standard Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA), and Underwriters Laboratories (UL), proof of such conformance shall be submitted to HHSC Representative for approval. If an organization uses a label or listing to indicate compliance with a particular standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual sections. In lieu of the label or listing, the Contractor shall submit a certificate from an independent testing organization, which is competent to perform acceptable test and is approved by HHSC Representative. The certificate shall state that the item has been tested in accordance with the specified organization's test methods and that the item conforms to the specified organization's standard. For materials and equipment whose compliance with organizational standards of specifications is not regulated by an organization using its own listing from the manufacturer shall be submitted for approval. The certificate shall identify the manufacturer, the product and the referenced standard and shall simply state that the manufacturer certifies that the product conforms to all requirements of the project specification and of the referenced standards listed.

F. Certified Test Reports: Before delivery of materials and equipment, certified copies of all test reports specified in the individual sections shall be submitted for approval.

G. Certificate of Conformance or Compliance: Submit certification from the manufacturer attesting that materials and equipment to be furnished for this project comply with the requirements of this specification and of the reference publications. Pre-printed certifications will not be acceptable; certifications shall be in the original. The certification shall not contain statements that could be interpreted to imply that the product does not meet all requirements specified, such as "as good as"; "achieve the same end use and result as materials formulated in accordance with the referenced publication", "equal or exceed the service and performance of the specified material". The certification shall simply state that the product conforms to the requirements specified. Mechanical Contractor shall coordinate all equipment interface requirements prior to submitting certificates

H. Schedule of Work: In conjunction with the shop drawing submittal, submit 8 sets of a construction schedule indicating dates, times, and description of work. Submit with enough detail to evaluate outage periods and interference with building operations.

I. Field Posted "As-Built" Drawings: Comply with the requirements of Section 01300 - SUBMITTALS. Record changes from the Contract Drawings for material and equipment. A set of prints showing layout as installed shall be kept up to date at the job site. Submit record Drawings for review prior to final inspection. Upon completion of work, a complete set of reproducible record drawings shall be submitted to HHSC Representative before the project will be accepted as complete.

1. Submit sequence of operations with written instructions related to the As-Built Drawings.

2. Submit a consolidated set of Drawings for all Building Automated Systems, controls and related power wiring. Correlation of identification for hardware and items shall be indicated on the As-Built Drawings. Include all wiring color and labeling for all control and power circuits and their associated panel and circuit designation.

J. Balancing Report and Maintenance Manuals: After installation, the new system shall be tested, balanced and adjusted. Submit 8 copies of the balancing report and operating and maintenance manuals for approval before final inspection.

1.05 LAWS, REGULATIONS AND CODES

A. All work shall be in accordance with government laws, ordinances, rules and regulations and orders.

B. The following shall govern where applicable: 2018 International Building Code (IBC) with the City and County of Honolulu amendments, 2021 National Fire Protection Agency (NFPA) Code with the City and County of Honolulu amendments, 2021 Uniform Plumbing Code (UPC) with the City and County of Honolulu amendments, 2018 Internation Energy Conservation Code (IECC) with the City and County of Honolulu amendments the Electrical Code of the City and County of Honolulu, State of Hawaii Department of Health Regulations, U.S. Department of Health and Human Services, Applicable National Fire Protection Association Standards, OSHA, American with Disabilities Act Accessibility Guidelines (ADAAG), Rules and Regulations and all other codes and standards referenced in these specifications. Where requirements differ in these codes and standards, the more stringent shall apply.

C. All mechanical work shall conform to Honolulu City & County Ordinance 09-30; Energy Code.

1.06 PERMITS AND INSPECTIONS

A. Permits: The Mechanical Contractor shall pay for all necessary permits required by any public authority having jurisdiction.

B. Inspections: The Mechanical Contractor shall apply and pay for all necessary inspections required by any public authority having jurisdiction.

1.07 DISCREPANCIES

A. The Drawings and Specifications are intended to be cooperative. Any materials, equipment, or system related to this section and exhibited on the Architectural, Structural, Electrical or Mechanical Drawings but not mentioned in the Specifications are to be executed to the intent and meaning thereof, as if it were both mentioned in the Specifications and set forth on the Drawings.

B. In case of differences between the Drawings and Specifications, the Specifications shall govern first, and then the Drawings. Large-scale details shall take precedence over small scale Drawings as to the shape and details of construction. Specifications shall govern as to materials.

C. Drawings and Specifications are intended to be fully cooperative and to agree, but should any discrepancy or apparent difference occur between Drawings and Specifications or should error occur in the work of others affecting the work, the Contractors shall notify HHSC Representative at once. If the Contractor proceeds with the work affected without instructions from HHSC Representative, he shall make good any resultant damage or defect. All interpretations of Drawings and Specifications shall be clarified by HHSC Representative.

1.08 TRADE NAME

Mentioning of a trade name in the plans and specifications indicates that the manufacturer is acceptable to HHSC Representative. However, certain specified construction and details may not be regularly included in the manufacturer's catalogued product. The Mechanical Contractor shall provide the material or equipment complete as specified.

1.09 WORKMANSHIP AND MATERIALS

A. Workmanship shall be of the best quality and none but competent mechanical workers skilled in their trades and thoroughly familiar with the work involved shall be employed. The Contractor shall furnish the services of an experienced superintendent, who will be constantly in charge of the erection of the work, until completed and accepted.

B. Unless otherwise hereinafter specified, each article of its kind shall be the standard product of a single manufacturer.

C. Whenever the words “or approved equal” or other words of similar intent or meaning are used, implying that judgement is to be exercised, it is understood that it is the judgement of HHSC Representative that is referred to.

D. HHSC Representative shall have the right to accept or reject material, equipment and/or workmanship and determine when the Contractor has complied with the requirements herein specified.

E. All manufactured materials shall be delivered and stored in their original containers. Equipment shall be clearly marked or stamped with the manufacturer’s name and rating. Equipment and materials shall be carefully handled, properly stored, and adequately protected to prevent damage before and during installation, in accordance with the manufacturer’s recommendations and as approved by HHSC Representative. Damaged or defective items, in the opinion of HHSC Representative, shall be replaced. References to standards are intended to be the latest revision of the standard specified.

1.10 MANUFACTURER’S RECOMMENDATIONS

Equipment installed under this Division of the Specifications shall be installed according to manufacturer’s recommendations, unless otherwise shown on the drawings or herein specified. Where installation procedures or any part thereof are required to be in accordance with the recommendations of the manufacturer of the material being installed, printed copies of these recommendations shall be furnished to HHSC Representative, prior to installation. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can be cause for rejection of the material.

1.11 CONTINUITY OF SERVICES, PHASING

A. It is intended that interruption of utilities be kept to a minimum. Notice of service interruptions shall be submitted to HHSC Representative for approval at least two weeks before intended date of service interruptions. Exact date and time of interruption allowed shall be determined by HHSC Representative. Provide temporary valves, connections, piping, etc., as necessary to assure this continuity of service; they shall be furnished under this section without additional charge to HHSC Representative and shall be removed when no longer necessary.

B. The Contractor shall submit to HHSC Representative a copy of his work schedule indicating the date and area to be affected by his work.

C. Execute work using such methods, techniques, connections and tie-ins that will cause least interference with, and interruptions of, existing utilities and services. Keep roads clear of materials, debris, etc., to maximum extent

possible. Schedule all arrangement for work which will cause interference or interruptions, in advance with HHSC Representative, all other affected trades and authorities having jurisdiction.

D. Examine site and become familiar with existing local conditions affecting work.

E. Examine all Drawings and Specifications, including electrical, and become familiar with the types and systems of construction to be used. Determine how such types and systems will affect the installation of mechanical work.

F. Investigate, determine and verify locations of any overhead utilities on or near site. Determine how such types and systems will affect the installation of mechanical work.

1.12 OPENINGS, CUTTING AND REPAIRING

A. The Mechanical Contractor shall cooperate with the work to be done under other sections in providing information as to openings required in walls and slabs for all piping including sleeves where required.

B. Below ground concrete jackets, drilling or cutting required for the performance of work under this Section shall be the responsibility of Contractor and the cost there shall be borne by the Contractor.

C. Any drilling or cutting required for the performance of work under this Section shall be the responsibility of the Contractor and the cost there shall be borne by him.

D. Holes in Concrete: The Mechanical Contractor shall pay all costs for cutting holes. All holes through existing concrete shall be either core drilled or saw cut. All holes required shall have the approval of HHSC Representative prior to cutting and drilling.

E. It shall be the responsibility of the Contractor to ascertain that all openings are properly located. Openings shall be coordinated with the structural drawings, Engineers and the Contractor. Provide sleeves and fire rated material through walls, slabs and beams as required by code.

1.13 ELECTRICAL WORK

A. All power wiring, including final hook-up to all mechanical equipment will be provided under the Electrical Division of this Specification. Control and building automated devices requiring control and related power wiring shall be provided by the Licensed Controls Contractor and to be wired by their licensed Electrical Contractor. The Mechanical Contractor shall not segregate or delineate the controls wiring including related power from the Licensed Controls Contractor.

B. Electrical work under Electrical Division is based on the electrical rating of equipment indicated on the Mechanical Drawings. Additional electrical work caused by any deviation under the Mechanical Division shall be paid for by the Mechanical Contractor.

C. All control wirings are included under mechanical work and shall be in accordance with DIVISION 16 - ELECTRICAL, except where specified otherwise in DIVISION 15 - MECHANICAL.

C. The Mechanical Contractor shall furnish all starters for installation by the Electrical Contractor. The Mechanical Contractor shall turn over these items to the Electrical Contractor at the site after receipt of notice from the Electrical Contractor that he is ready to install said items

1.14 ACCESS PANELS

Access panels in ceilings and walls required for access to valves, controls, fire and volume dampers; sensors, smoke detectors, control power J-Box, transformer and safety switches; thermostats, controllers, filters and other maintainable and code required accessible equipment, shall be provided by this Contractor. The access panels shall be equal to the walls, floor and ceiling fire rating and painted to match. Contractor shall coordinate exact locations and sizes of access panels to insure that proper access to all items may be obtained. Provide 24” x 24” minimum sized access panels for all items located at inaccessible ceilings.

1.15 PAINTING

Contractor shall paint all exposed work specified in DIVISION 15; equipment piping, ducts, supports and conduits. Paint shall match adjacent wall or ceiling; verify with HHSC Representative exact type, color, prime and number of coats of paint required. Provide molding; paint to match wall finish for thermostats located on concrete walls.

1.16 CONTROLS AND OPERATING MECHANISMS

All mechanical controls and operating mechanisms (thermostat, switches, actuators, levers, etc.) shall be operable with one hand and shall not require tight grasping, pinching, or twisting of the wrist. The force required to activate controls shall be no greater than 5 lbf. The controls and operating mechanisms (levers) shall be mounted 44-inches maximum center-lined of pivot point above finish floor.

1.17 PIPE SLEEVES, ESCUTCHEONS

Furnish and set sleeves to accommodate pipes passing through foundations, walls, floors, beams, partitions; provide chrome plated escutcheons at exposed finished surfaces pierced by pipes. Provide proper sealant and fire proofing at penetrations; secure escutcheon to structure. Provide type 316 stainless steel wire mesh for all pipe penetrations through concrete floor slab on grade. Install per manufacturer's recommendation and provide manufacturer's warranty. Termi-Mesh Hawaii or approved equal.

1.18 VALVES

Contractor shall provide as part of their submittal the CV and related pressure rating for all valves specified in DIVISION 15 – MECHANICAL.

Size valves for 4-feet maximum pressure loss at system design flow rate or equal to upstream pipe size of valve location.

1.19 UNDERGROUND PIPING AND CONDUIT

All piping and conduits routed below the building floor slab shall be located below the basaltic barrier; penetration through the basaltic barrier shall be plumb vertically and properly installed.

PART 2 - PRODUCTS

2.01 MATERIALS

A. As specified in all sections of DIVISION 15 - MECHANICAL.

B. Materials and equipment shall be cataloged products of manufacturers regularly engaged in production of such materials or equipment and shall be manufacturer's latest design that complies with the specification requirements. Materials and equipment shall duplicate items that have been in satisfactory commercial or industrial use at least 2 years prior to bid opening. Where two or more items of the same class of equipment are required, these items shall be products of a single manufacturer; however, the component parts of the items need not be the products of the same manufacturer. Each item of equipment shall have the manufacturer's name,

address, model number, and serial number on the nameplate. Name of the distributing agent will not be acceptable.

PART 3 - EXECUTION

3.01 PIPING IDENTIFICATION

A. Identification of new pipelines shall be by means of colored, waterproof, all temperature, self-adhering labels and directional arrows.

B. All exposed pipes whether insulated or not shall be identified. Labels may be omitted from piping where the use is obvious, due to its connection to equipment and where the appearance would be objectionable in finished rooms, as approved by direction.

C. Identification labels shall be placed as follows:

1. Near each valve and branch connection.

2. Wherever piping merges or disappears from view from the floor of the room in which it is installed.

3. Labels shall not be more than 50 feet apart.

4. Direction of flows for all piping.

3.02 VALVE INDEX

The Mechanical Contractor shall provide brass or plastic tags on all valves with letters stamped or engraved thereon, designating service of each valve.

3.03 FIELD TEST

The Mechanical Contractor shall perform all tests of the installed work and shall provide all services, labor, equipment, materials and instruments needed for the tests. During pressure tests, all items in the system to be tested, not designed for test pressure shall be removed or isolated from the system and shall be reconnected or unblocked after tests are completed. Should operating tests require the presence of manufacturers' representatives, the Mechanical Contractor shall cooperate with them and shall place at their disposal all assistance, materials, and services required to perform such test. The Mechanical Contractor shall certify in writing that all work has passed all required tests.

3.04 OPERATION AND MAINTENANCE MANUAL

Furnish an operation and maintenance manual for each item of equipment. Furnish eight copies of the manual bound in hardback binders or an approved equivalent. Furnish one complete manual prior to the time that equipment tests are performed and furnish the remaining manuals before the contract is completed. Inscribe the following identification on the cover: the words OPERATION AND MAINTENANCE MANUAL, the name and location of the equipment or the building, the name of the Contractor and the contract number. The manual shall include the names, addresses and telephone numbers of each subcontractor installing equipment and of the local representatives for each item of equipment. The manual shall have a table of contents and be assembled to conform to the table of contents with the tab sheets placed before instructions covering the subject. The instructions shall be legible and easily read, with large sheets of drawings folded in. The manual shall include: wiring and control diagrams with data to explain detailed operation and control of each item of equipment; a control sequence describing start-up, operation, and shut-down; description of the function of each principle item of equipment; the procedure for starting; the procedure for operating; shut-down instructions; installation instructions; maintenance instructions; lubrication schedule including type, grade, temperature range and frequency; safety precautions, diagrams and illustrations; test procedures; performance data; and parts list. The parts lists for equipment shall indicate the sources of supply, recommended spare parts and the service organization that is reasonably convenient to the project site. The manual shall be complete in all respects for equipment, controls, accessories and associated appurtenances provided. Provide a schedule for all valves, equipment, flow meters, etc. including size, location, manufacturer, model number, etc. Labeling shall correspond with the as-built drawings. The schedule information shall also be provided on computer disk for HHSC Representative.

3.05 POSTED OPERATING INSTRUCTION

Furnish approved operating instructions for each principal item of equipment for the use of the operation and maintenance personnel. The operating instructions shall include wiring diagrams, control diagrams and control sequence for each principal item of equipment. Operating instructions shall be printed or engraved and shall be framed under glass or in approved laminated plastic and posted where directed by HHSC Representative. Operating instructions shall be attached to or posted adjacent to each principal item of equipment including start up, procedure in the event of equipment failure and other items of instruction as recommended by the manufacturer of each item of equipment. Operating instructions exposed to the weather shall be made of weather-resisting materials or shall be suitably enclosed to be weather protected. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

3.06 INSTRUCTION TO HHSC PERSONNEL

Furnish the services of competent instructors who will give full instruction to the designated personnel in the adjustment, operation and maintenance, including pertinent safety requirements, of the equipment or system specified. Each instructor shall be thoroughly familiar with all parts of the installation and shall be trained in operating theory as well as practical operation and maintenance work. Instruction shall be given during the first regular workweek after the equipment or system has been accepted and turned over to HHSC Representative for regular operation. Instructions shall be provided for all shifts. The number of hours of instruction furnished shall be in no case less than 4 hours for air conditioning and controls. Approximately half of the time shall be used for classroom instruction. All other time shall be used for instruction with the equipment or system. When significant changes or modifications in the equipment or system are made under the term of the Contract, additional instruction shall be provided to acquaint the operating personnel with the changes or modifications.

3.07 SAFETY REQUIREMENTS

Belts, pulleys, chains, gears, couplings, projecting setscrews, keys and other rotating parts located so that any person can come in close proximity shall be fully enclosed or properly guarded. High temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be properly guarded or covered with insulation of a type as specified. Items such as catwalks, ladders and guardrails shall be provided where required for safe operation and maintenance of equipment. All safety requirements shall be provided in accordance to O.S.H.A. Standard.

3.08 QUALITY ASSURANCE

The Mechanical Contractor shall have a local Hawaii office, staffed with factory trained engineers fully capable of providing instruction, routine maintenance and emergency maintenance service on all system components. The Mechanical Contractor shall have a three year experience record in the installation of air conditioning systems similar in scope and performance to that specified herein, and shall be prepared to provide evidence of this history as condition of acceptance and approval.

3.09 FINAL INSPECTION

Final inspection shall be requested by the Mechanical Contractor only after submittal of all required certificates. No final inspection will be made until all moving parts of equipment are properly guarded, all controls and safety devices tested and operative, all painting required is done and the site cleaned up.

3.10 WARRANTY

All air conditioning and ventilation systems, controls and energy management systems shall be provided with a one (1) year warranty. Warranty shall start only after 30 days of trouble-free operation after system acceptance. The Contractor shall inform HHSC Representative of the start of the warranty period within 5 working days following the 30 days of trouble-free operation. The warranty and maintenance service contract dates shall be valid only when the Contractor receives written notification from HHSC Representative.

END OF SECTION

SECTION 15650 - AIR CONDITIONING AND VENTILATION

PART 1 - GENERAL

1.01 GENERAL PROJECT REQUIREMENTS

As specified in Section 01019.

1.02 DESCRIPTION OF WORK

A. Air Conditioning Manufacturing Representative and Service Capabilities:

1. Furnish the services of a Hawaii-based manufacture's representative who is factory authorized and trained to perform the services specified. The manufacturer's representative shall furnish recommendations and shall be on site to provide assistance on the following matters.

a. Technical direction of the erection including disassembly and re-assembly, if required alignment, and testing.

b. Starting equipment and furnish instruction as to its proper care, operation, and maintenance.

2. Maintenance service contractor shall have a local office, staffed with competent and qualified manufacturer's factory trained and certified field service personnel and stocked with full inventory of replacement repair parts, to perform specified service and maintenance tasks on all equipment in accordance with the One-Year Maintenance Service Contract and terms and conditions of all equipment manufacture's warranties and recommendations. Field service personnel shall be fully capable of providing technical assistance instruction, routine maintenance and emergency maintenance service on all system equipment components.

B. This section covers the furnishing, fabrication, delivery and installation of the air conditioning and ventilation system complete, including but not limited to the following:

1. Cooling Tower

2. Condenser Water Pump

3. Chiller Water Pump

4. Chilled Water Piping

5. Drain line Piping

6. Condenser Water Piping

7. Chilled Water Piping Insulation.

6. Adjusting, balancing and testing.

7. Painting and finishing.

8. Operating and maintenance instructions.

9. Manufacturer's literature, shop drawings and record drawings.

1.03 RELATED WORK SPECIFIED IN OTHER SECTIONS

All power wiring including disconnects and wiring to all motors specified in Section 16010– GENERAL ELECTRICAL PROVISIONS.

1.04 CODES, STANDARDS, REGULATIONS

A. Installation of all work in this Section shall be made in accordance with State Department of Health Regulations, National Fire Protection Association, and the Uniform Building Code.

B. All applicable codes, regulations and ordinances of public bodies having jurisdiction are considered a part of these specifications; all work installed and materials provided must comply with the current edition of such codes, regulations and ordinances.

C. Present to HHSC Representative certificates of inspection and approval from proper authorities.

1.05 CONTRACT DRAWINGS

A. Contract drawings are essentially diagrammatic, indicating general layout and approximate locations toward establishing the scope for uniform estimating basis for all bidders. They are not intended to be detailed construction working drawings. Equipment, ductwork and piping arrangements shall fit into space allotted and shall allow adequate clearances for servicing and maintenance. Reasonable modifications to indicated locations and arrangement to suit job conditions shall not constitute basis for requesting additional funds from HHSC Representative.

B. Capacities of all equipment and materials shall be not less than those indicated.

C. Nameplate: Each major component of equipment shall have the manufacturer's name, address, and catalog number on a plate securely attached to the item of equipment.

D. Verification of Dimensions: The Contractor shall be responsible for the coordination and proper relation of this work to the building structure and to the work of all trades. The Contractor shall visit the premises and thoroughly familiarize himself with all details of the work and working conditions, to verify all dimensions in the field, and to advise HHSC Representative of any discrepancy before performing any work.

1.06 SUBMITTALS

A. Submit in accordance with Section 01300 – SUBMITTALS.

B. See Section 15050 “GENERAL MECHANICAL REQUIREMENTS” for submittal requirements.

1.07 SUBSTITUTION OF MATERIAL

A. Request for substitutions, complete with catalog data, shall be furnished to HHSC Representative as required by GENERAL CONDITIONS.

B. Design is based on equipment as described in drawings and by Equipment Schedule. Any changes in foundations, bases, connections, piping, controls, electrical equipment, specified and required by approved substitutions shall be made by Contractor at no additional cost to HHSC Representative.

C. Equipment submitted for use on project must have been used in Hawaii for 2 years prior to bid and shall be of same type, capacity and configuration.

1.08 OMISSIONS

It is the intent of the plans and specifications to provide a complete installation. Should there be omissions, the Contractor shall call the attention of HHSC Representative to such omissions in sixteen (16) days advance of the date of bid opening so that the necessary corrections can be made.

1.09 GUARANTEE AND CERTIFICATE

Contractor and Installer shall guarantee and certify in writing all work in this section for a period of one year after 30 days of trouble-free operation from date of project acceptance by HHSC Representative. Should any equipment or material fail due to faulty workmanship or materials within this period, replace or repair that item at no cost to HHSC Representative. Replacement of lost refrigerant and correction of undue noise or vibration is included in this guarantee. Contractor shall be responsible for all damages to any part of the premises during equipment installation work under this section.

A. The entire mechanical installation described hereinafter shall be guaranteed as a complete working unit for a period of one year. In the event of failure due to faulty materials and workmanship during this period, all said failures shall be corrected to the satisfaction of HHSC Representative at no additional cost to HHSC Representative for labor and material.

B. The one-year guarantee shall start at the end of thirty (30) consecutive days of trouble-free operation after acceptance by HHSC Representative. Guarantee and maintenance service contract periods to run concurrently (same start and end dates).

1.10 SPARE-PARTS DATA

After approval of materials and equipment and one month prior to the date of beneficial occupancy, the Contractor shall furnish a complete list of parts and supplies, with current source of supply.

1.11 OPERATING AND MAINTENANCE INSTRUCTIONS

Furnish operating and maintenance manual as described in Section 15050 “GENERAL MECHANICAL REQUIREMENTS”. The manual shall include, but shall not be limited to the following:

A. Table of Contents and list of equipment including I.D. and quantity. (If standard manufacturer catalog is used, highlight, use arrows, etc., to indicate what is appropriate to project and x-out, delete what is not.

B. System layout showing piping, valves, and controls.

C. Wiring and control diagrams, with data to explain the detailed operation and control of each component.

D. A control sequence describing start-up, operation and shutdown.

E. Operating and maintenance instructions for each piece of equipment, including lubrication instructions.

F. Manufacturer’s bulletins, cuts, and descriptive data.

G. Parts list and recommended spare parts.

PART 2 - PRODUCTS

2.01 MATERIALS

All materials shall be new, of equal or better quality of materials specified, and approved by HHSC Representative. For ease of maintenance and parts replacement, select equipment from a single manufacturer as much as possible. Substitutions require pre-bid approval in accordance with the GENERAL REQUREMENTS.

2.02 PIPES AND FITING

A. Chilled Water and Condenser Water Piping and Accessories:

1. Pipe: Piping larger than 2” shall be black steel, Schedule 40, ASTM A53. Piping 2” and smaller shall be copper tubing, hard drawn, Type L, ASTM B88. Black steel, Schedule 40, ASTM A53 piping is an acceptable substitute for chilled water piping 4” and smaller.

2. Fittings, Steel Pipe: Fittings, Steel Pipe: Threaded for 2” and smaller, malleable iron, 125-pound class, ASME B16.3. Fittings shall be suitable for 125 psi cold water service. Grooved mechanical joints shall be a system including coupling housing, gasket, fasteners, all furnished by the same manufacturer. Fittings and coupling housing shall be malleable iron conforming to ASTM A47, ductile iron conforming to ASTM A 536, or steel conforming to ASTM A 106.

3. Drain Line Piping: Service weight cast-iron, “no-hub” cast iron with stainless steel bands and fittings, CISPI 301.

4. Make Up Water Line: Above ground shall be Type “L” seamless rigid copper tubing conforming to ASTM B88.

5. Fittings, Copper Tubing: Cast brass or wrought copper, solder joint type, AMSE B16.22 and ASTM B75. Solder shall be Type 95/5 tin-antimony, ASTM B32.

6. Piping sleeves through walls and floors shall be steel pipe or 18-gauge galvanized metal. Piping through sleeves of fire rated walls or plenum chambers shall be caulked tight with fiberglass material. Sleeves installed through drilled holes through concrete shall be grouted and finished on both sides. Exterior sleeves shall be caulked watertight.

7. Pipe Hangers: Steel Clevis hanger with adjustable hanger rod; 3/8-inch for pipe 2-inches and smaller, 1/2-inch for pipe 2-1/2 inches through 3-1/2 inches and 5/8-inch for pipe 4-inches and larger. Under no circumstances shall piping be supported from ductwork, equipment or electrical. In addition, supports for copper pipe shall be plastic coated.

2.03 PIPE, FITTINGS AND VALVES

A. Valves 2-inches and smaller shall be bronze body, with threaded connections for black steel pipe and soldered connections for copper tubing. Valves 2-1/2 and 3-inches shall be either bronze or cast iron with threaded, soldered, or flanged ends as required. Valves 4-inches and larger shall be iron body bronze mounted with flanged ends. Valves shall be designed for 125 psi or 150-psi service and 250 degrees F.

1. Butterfly valves shall be cast iron body, lug type, bubble-tight shut off, 150-pound class. Valves shall have corrosion resistant steel stems and corrosion resistant or bronze discs with molded elastomer seats. Operators shall be manual throttling handles with minimum seven locking positions.

2. Bronze Globe valves and check valves shall conform to MSS SP-80. Check valves shall be cast iron body silent check type, wafer style, spring actuated, bronze trim, 125-pound class.

3. Cast-iron gate valves shall conform to MSS SP-70.

B. Strainers: Bronze body Y-pattern type with model, stainless steel, or brass screen and blow-off connection fitted with a bronze hose bibb.

C. Flexible Connections: Flexible Corrugated hose & brad 200 series stainless steel with carbon steel flange or approved equal.

D. Condenser Water Pump Pressure Gauges: Bronze bourdon tube, 4-1/2-inch round face, scale 0-160 lbs. with bronze gauge cocks.

E. Chilled Water Pump Pressure Gauges: Bronze bourdon tube, 4-1/2-inch round face, scale 0-200 lbs. with bronze gauge cocks.

F. Air Vent Valves: Automatic type, cast iron body with corrosion resistant steel float, linkage, and removable seat. Provide at all high points.

G. Dielectric Unions: Provide dielectric unions between ferrous and non-ferrous piping.

H. Suction Diffusers: Plate flanges with reducing elbow, carbon steel flange, corrugated hose & braid stainless steel 300 series, SDF Vanes 300 series stainless steel.

2.04 INSULATION

A. Insulation, adhesives, coatings and accessories shall have surface burning characteristics as determined by ASTM E84, NFPA 255 and UL 723, not to exceed 25 for flame spread and 50 for smoke developed.

1. Chilled Water Piping:

a. Cellular Glass: ASTM C552, Type II, Class 1 or 2, performed.

b. Flexible Unicellular: ASTM C534, Type 1.

c. Polystyrene: Closed cell type, for outdoor use only.

2.05 EQUIPMENT

A. Capacities and characteristics of equipment are indicated on the drawings. See electrical drawing for all voltage and phase requirements of all equipment furnished under this work. Provide combination magnetic across-the-line starter, control voltage transformer and circuit breaker for each motor of mechanical equipment unless the equipment is factory-wired to a single power connection or unless otherwise indicated hereinafter. Provide disconnect switch for all mechanical equipment. All steel surfaces shall be hot-dipped galvanized. All steel exposed to weather shall be hot-dipped galvanized and shall have an additional two coats of zinc rich rust-proof paint. Provide vibration isolators as indicated hereinafter. All motors shall be high efficiency type. All motors with variable speed drives shall have undervoltage, overvoltage, phase failure, phase reversal with automatic reset. All motors used with variable frequency drives shall be rated for variable speed usage.

All equipment to be considered for this bid purposes must be of a manufacturer that has locally stocked spare parts, representative, and support of a service organization reasonably convenient to the site of installation which has serviced manufacturer’s units of comparable type, size and capacity as those specified. The manufacture must have other units of comparable type, size and capacity installed and operating satisfactorily in the State of Hawaii for a minimum of two years prior to bid opening. The contractor shall provide a list of locations in Hawaii with addresses and telephone numbers when requested by the Contracting Officer. All equipment with local manufacturer’s representation shall be purchased through the local distributor.

1. Cooling tower: Evapco Model AT 19-218 or approved equal. All panels including the fan housing and supports shall be constructed of Type 316 Stainless Steel. Provide cooling tower with tapered discharge hood. Fans shall be forward curved centrifugal of epoxy coated steel construction. Fan motor shall be premium efficiency type and shall be compatible with a variable frequency drive (VFD). Fans shall be factory installed, and statically and dynamically balanced for vibration free operation. The complete drive system, including the electric motor, belts, bearing, fans, and drives shall be completely enclosed in a protective housing which covers the drive system and provides sound reduction. Water distribution system spray nozzle shall be precision molded ABS with large orifice threaded into branch piping with internal sludge ring to eliminate clogging. Spray header and branches shall be schedule 40 Polyvinyl Chloride (PVC) for corrosion resistance. Protective stainless steel screen shall be provided over air inlet. Fan screens shall be removable for fan motor and drive access at grade. Circular access door shall be located above the basin to allow for easy access to pan interior. VFD and controls shall be compatible with chiller plant controls. Cooling tower capacity shall be certified by Cooling Technology Institute (CTI).

2. Chilled Water Pump: Split coupled in-line centrifugal pump with flange support. Rated for 250 degrees F maximum, 175 PSI maximum. Provide with stainless steel shaft, 304 Stainless steel impeller. Provide with factory furnished VFD or equivalent with 5% line reactor, manual bypass, minimum NEMA 1 enclosure for chilled water pumps. Chilled water pump shall be Bell & Gossett series E-80SC or approved equal.

3. Condenser Water Pump: Split coupled in-line centrifugal pump with flange support. Rated for 250 degrees F maximum, 175 PSI maximum. Provide with stainless steel shaft, 304 Stainless steel impeller. Provide with factory furnished soft starter or equivalent with 5% line reactor, manual bypass, minimum NEMA 1 enclosure for chilled water pumps. Chilled water pump shall be Bell & Gossett series E-80SC or approved equal.

2.06 VIBRATION ISOLATOR

Comply with BOCA, SMACNA, and ANSI guidelines for isolation of mechanical equipment and ductwork. All isolators shall be hot dipped galvanized with stainless steel fasteners.

A. Spring Hanger Isolator: Consist of rigid steel fram containing minimum 1-1/4” thick neoprene elements at top and steel spring in a steel washer reinforced neoprene cup on the bottom. Mason 30N or approved equal.

A. Spring mounted restrained isolator (Cooling Tower): Spring Vibration Isolators (Cooling Tower): Select vibration isolation devices so that rated deflection is 2.0 inches. Equipment flexibly mounted on vibration isolators must have a bumper restraint or snubber in each horizontal direction and vertical restraints must be provided where required to resist overturning. Isolator housing and restraints must be constructed of ductile materials. A viscoelastic pad or similar material of appropriate thickness must be used between the bumper and components to limit the impact load. Restraints must be designed to resist the calculated horizontal lateral and vertical forces.

1. Spring vibration isolators must be seismically rated, restrained isolators for equipment subject to load variations and large external forces. The seismically rated housing must be sized to meet or exceed the force requirements applicable to the project and meet the required isolation criteria. Spring vibration isolator manufacturer's will be a member of VISCMA. Design force, Fp, must be doubled for vibration isolators with an air gap greater than 0.25 inches as specified in ASCE 7-16, Chapter 13. House springs must not be used for seismic restraint applications because they cannot resist uplift. Provide weather -resistant coating on all exposed metals components. Mason Industries SLR 100 series or approved equal.

B. Provide seismic anchor bolts for use with isolators.

C. Neoprene Pad: 0.1" deflection neoprene pad. Mason Super W or approved equal

PART 3 - EXECUTION

3.01 COOPERATION WITH OTHER TRADES AND CONFLICT IN WORK

A. Contractor shall examine all drawings of proposed work and coordinate his work with other trades. Work conflicts shall be brought to the attention of HHSC Representative and work rearranged or modified in accordance with his decision.

B. If changes in indicated locations or arrangements of work are required, they shall be made by Contractor without additional charge to HHSC Representative.

3.02 EQUIPMENT INSTALLATION

Necessary supports shall be provided for equipment, appurtenances and pipe, as required. These include frames or supports for air conditioners, and other similar type items requiring supports.

3.03 INSULATION

A. General: Install insulation, vapor barrier and jacketing per manufacturer's recommendations.

B. All insulation shall be tightly butted and free of voids and gaps. Vapor barrier shall be continuous. Paint ASJ to match existing.

C. Staples, rivets, screws and other fasteners capable of penetrating the vapor barrier shall not be used.

D. Insulated pipe exposed to weather shall be protected by an aluminum jacket and flashing sealant. Jacket shall have side and end laps at least 2 inches wide with the cut edge of the side lap turned under one inch to provide a smooth edge. Place laps to shed water. Seal lapped joints, insulation terminations and protrusions with flashing sealant. Secure jacket in place with aluminum or stainless-steel bands on 9 inch centers. Where pipes penetrate walls, continue insulation and the metal jacket through the penetration to a point 2 inches beyond the interior surface of the walls. Paint to match existing.

E. Use high compressive strength insulation and insulation shields on bottom sections of pipe at supports.

3.04 PIPE SUPPORT, HANGER AND INSERTS

A. Install hangers and supports for all piping to provide for expansion and contraction, prevent vibration and maintain required grading by proper adjustment.

B. Drain piping shall slope not less than 1/4" per foot of horizontal run unless otherwise noted.

C. Field verify and refer to structural drawings for type of construction from which piping and/or equipment is to be suspended/supported.

D. Drilled in Threaded Inserts: Where supports in beams and joists are required after concrete has been poured, Phillips "Redhead" Drilled-In Threaded Inserts, shall be provided, installed in accordance with manufacturer's recommendations.

E. Support horizontal overhead pipes with clevis hangers, adjustable turnbuckle, rods, inserts, clamps, on suspension suitable for type of building construction. Trapeze hangers may be used where multiple pipes are grouped. Pipe hangers and supports shall conform to MSS SP 58 except as indicated otherwise.

F. Support vertical pipes at base of the pipe on every floor and at 10 feet intervals maximum.

G. Grind and smooth all sharp metal edges including struts and fabricated metal supports. Install end caps on the ends of all struts.

H. Provide additional hanger pipe supports at the concentrated loads in piping between supports, such as for valves. Maximum of 3-feet apart at valves.

I. Anchor piping in building with approved clamps or adjustable hangers spaced in accordance with the Plumbing Code. Straps for copper tubing shall be copper or brass or copper plated. Where copper contacts ferrous material, wrap with two layers of plastic tape

J. Provide dielectric unions where copper piping is connected to ferrous pipe.

3.05 PROTECTION

Provide planking, plastic sheeting, or other protective covering as required to prevent damage during construction to existing building elements and equipment. Be prepared to immediately repair any damage that does occur during any operations, so as to avoid damage to building or contents or interruption of the hospital operations.

3.06 VIBRATION ISOLATION

Vibration transmission from all reciprocating and/or rotating equipment such as compressor and centrifugal fan shall be effectively isolated, by use of vibration mountings or hangers. Mounting and hanger sizes shall be determined by the manufacturer to assure adequate deflection and vibration isolation, and shall be installed in accordance with manufacturer's recommendations to provide not less than 90 percent isolation efficiency.

3.07 CLEANING AND ADJUSTING

Condensate drain line shall be leak tested. No leaks are allowed at any joints. Equipment shall be wiped clean, with all traces of oil, dust, dirt, or paint spots removed. Temporary filters shall be provided for all fans that are operated during construction and after all construction dirt has been removed from the building, new filters shall be installed. Bearings shall be properly lubricated with oil or grease as recommended by the manufacturer. Belts shall be tightened to proper tension. All control valves and other miscellaneous equipment requiring adjustment shall be adjusted to setting indicated or directed. Fans shall be adjusted to the speed indicated by the manufacturer to meet specified conditions.

3.08 TESTING AND BALANCING AIR DISTRIBUTION SYSTEMS

A. TAB Field Work: Test, adjust, and balance the listed HVAC systems to the state of operation indicated on and specified in the contract design documents. Air systems and water systems shall be proportionately

balanced and reported in the certified TAB report. Provide instruments and consumables required to accomplish the TAB work. Conduct TAB work on the listed HVAC and industrial ventilation systems in conformance with the AABC MN-1, or NEBB TABES, and NEBB CMSV, except as modified by this section:

1. Maintenance and calibration of instruments.

2. Accuracy of measurements.

3. Preliminary procedures: Use the approved pre-field engineering report, including Records of Existing Conditions, as instructions and procedures for accomplishing TAB field work. Test ports required for testing by the TAB engineer shall be located in the field by the TAB engineer during TAB fieldwork. It shall be the responsibility of the Sheetmetal contractor to provide and install test ports as required by the TAB supervisor.

5. Water distribution systems TAB work: Chilled water systems including pumps, coils, system balance valves and flow measuring devices. Condenser Water systems including pumps, coils, system balance, and flow measuring devices.

B. Data From TAB Field Work: After completion of the TAB work, prepare a pre-final TAB report using the reporting forms approved in the pre-field engineering report. Data required by those approved data report forms shall be furnished by the TAB team. Except as approved otherwise in writing by the Engineer, the TAB work and the TAB report shall be considered incomplete until the TAB work is accomplished to within the accuracy range specified in the paragraph entitled “Workmanship” of this section. Prepare the report neatly and legibly; the pre-final TAB report shall be the final TAB report minus the TAB supervisor’s review and certification. Obtain, at the contract site, the TAB supervisor’s review and certification of the TAB report. Verbally notify the Engineer’s TAB representative that the field check of the certified TAB Report data can commence; give this verbal notice 48 hours in advance of when the field checking shall commence. Do not schedule field check of the certified TAB report until the specified workmanship requirements have been met or written approval of the deviations from the requirements have been received from the Engineer.

C. Quality Assurance for TAB Field Work:

1. Field Check: Test shall be made to demonstrate that capacities and general performance of air and water systems comply with the contract requirements.

a. Recheck: During field check, the Contractor shall recheck, in the presence of the Engineer, random selections of data (water, air quantities, air motion, sound level readings) recorded in the certified report.

b. Areas of Recheck: Points and areas of recheck shall be selected by the Engineer.

c. Procedures: Measurement and test procedures shall be the same as approved for work for forming basis of the certified report.

d. Recheck Selections: Selections for recheck will not exceed 25 percent of the total number of reported data entries tabulated in the report.

e. Re-Tests: If random tests reveal a measured quantity which is out-of-tolerance, the report is subject to disapproval at the Engineers discretion. In the event the report is disapproved, all systems shall be readjusted and tested, new data recorded, new certified reports submitted, and a new field check conducted at no additional cost to the State.

2. Approval Prerequisite: Compliance with the field checking requirements of this section is a prerequisite to the final approval of the certified TAB report submitted.

A. Marking of Settings: Permanently mark the settings of HVAC adjustment devices including valves, splitters, and dampers so that adjustment can be restored if disturbed at any time. The permanent markings shall indicate the settings on the adjustment devices which result in the data reported on the submitted certified TAB report.

B. Marking of Test Ports: The TAB team shall permanently and legibly mark and identify the location points of the duct test ports. If the ducts have exterior insulation, these markings shall be made on the exterior side of the duct insulation. The location of test ports shall be shown on the as-built mechanical drawings with dimensions given where the test port is covered by exterior insulation.

3.10 FIELD INSTRUCTIONS

Upon completion of the work and at a time designated, the services of one or more qualified personnel shall be provided by the contractor for a period of not less than indicated in Section 15050 – GENERAL MECHANICAL REQUIREMENTS, to instruct the representative of HHSC Representative and Campus Center personnel in the operation of the air conditioning system and the maintenance and troubleshooting training. These field instructions shall cover all the items contained in the bound instructions. Provide posted operating instruction in the mechanical rooms. Instructions to include startup, running operations, shutdowns, safety shutdown devices and responses to alarms. Data to include one-line diagrams of the entire integrated system.

3.11 ONE YEAR MAINTENANCE SERVICE CONTRACT

A. In addition to the Guarantee on materials and workmanship, the Contractor shall submit 7 copies of the Maintenance Service Contract, countersigned by the General Contractor that will validate said Guarantee. The Guarantee and maintenance service shall extend for a period of one year commencing after 30 consecutive days of trouble-free operation after the Project Acceptance Date or the air conditioning equipment acceptance date, if earlier than the Project Acceptance Date, and shall include all labor, materials, equipment and parts necessary to service the complete system, in accordance with the attached Schedule of Maintenance Service so as to assure proper operation and function of the system. All costs for the periodic maintenance, including emergency calls, shall be borne by the Contractor. This maintenance period and the Guaranty period shall run concurrently (same start and end dates). The maintenance of the equipment shall start within one month of equipment start-up and continue until the end of the Project Maintenance Service Contact period.

B. However, should the Contractor default on the Maintenance Service Contract and must restart or complete the service, then the warranty period shall also be extended to match the revised maintenance service period.

C. Trouble-free operation is defined as the non-disabling condition or a non-recurring failure or disruption.

1. The system shall be free of all discrepancies, contamination and debris that require correction in excess to those described for the monthly service that is included in the Schedule of Maintenance.

2. The system is maintaining operational conditions and other parameters as measured during acceptance tests.

D. The installer shall include a listing of the following items along with the Maintenance Service Contract

1. Name of the servicing Contractor.

2. Air conditioning system acceptance date.

3. Service contract expiration date.

4. Monthly inspection schedule for maintenance period.

5. Itemized listing of the equipment covered under the service contract, including a description of the equipment identified, its model and serial number(s), and manufacturer’s name(s), and the quantity of each size and type of equipment.

E. The Maintenance Service Contract shall be submitted along with the Operations and Maintenance Manual on/or before the Project Acceptance Date. Submit to the DOE Facilities Maintenance Branch and Harbors Facility representative a Service Maintenance Report, using the form found at the end of this section:

1. 1 copy: Contractor

2. 2 copies: HHSC Representative

F. Schedule of Maintenance Services: Periodic maintenance shall conform to the following schedule, with at least the following basic services:

1. Cooling Tower

a. Monthly Service

1) Clean debris in basin.

2) Lubricate and oil all fan and motor bearings.

3) Check all drives for wear; adjust belt tension. Replace belts and sheaves as required.

4) Operate equipment to check for proper operation, unusual noise and vibration; adjust or repair all equipment and controls as required; clean up all equipment.

5) Certify performance of monthly maintenance service, correct and report all discrepancies.

b. Annual Service

1) Adjust alignment of bearings and sheaves; lubricate fan and motor bearings. Replace worn or noisy bearings.

2) Clean basin and fill of dirt accumulation using high pressure air/water, steam or chemical coil cleaner solution.

3) Clean fan wheels and interior/exterior of equipment housing.

4) Secure all loose housing, seal leaks and touch-up paint after cleaning all rust.

5) Certify performance of annual maintenance service and correct and report all discrepancies.

3. Pumps

a. Monthly Service

1) Check for noise, vibration and overheating.

2) Check alignment, clearance and rotation.

3) Tighten loose fitting nuts and bolts.

4) Check suction and discharge pressure gauge reading.

5) Clean pump strainer.

6) Check coupling inserts for wear and replace if worn.

7) Check operation of variable frequency drives. Clean contacts, check for loose connections.

8) Certify performance of monthly maintenance service and correct and report all discrepancies.

b. Quarterly Service

1) Check motor temperature, voltage, and motor amperage.

2) Check for proper setting of all operating controls.

3) Check all contacts and clean or replace if required.

4) Check all control mechanisms for proper working order.

5) Certify performance of quarterly maintenance service and correct and report all discrepancies

4. Controls

a. Monthly

1) Check for proper settings of operating controls and sensors.

2) Check switches and contacts and clean or replace if required.

3) Check all mechanisms for proper working order.

4) Check and calibrate all control and sensor devices.

5) Check control modules operation and set points.

6. Equipment and Supports

a. The Contractor shall exercise all equipment shut-off valves annually for proper operation and tightness.

b. Wire brush, prime and paint rust from pipe, equipment and support surface to prevent further rusting.

c. Certify that all discrepancies are reported and corrected.

3.12 VALVE TAG AND VALVE LOCATION LOG

A. Provide identification tags on all valves. Contractor to provide a complete log of all valves to include: valve number, valve type, valve size, valve service and location.

3.13 WORK SCHEDULE

A. All maintenance work shall be performed between the hours of 7:30 a.m. and 4:00 p.m., on normal working days, Monday through Friday.

3.14 TROUBLE CALLS

A. Emergency service and repairs required between regular service calls shall be rendered within 24 hours after the Contractor is notified, non-work days excluded.

B. The Contractor shall call DOTH Maintenance the next working day after being notified of the problem and report the status of repairs.

3.15 MAINTENANCE REPORT/CHECKLIST

A. The Contractor shall prepare and maintain a maintenance service report/checklist which shall include the following:

1. Date maintenance service was performed.

2. The name of the mechanic who performed said maintenance.

3. The type and cost (labor, materials, parts, and equipment) of repair work performed on the unit, if any.

4. Documents and other data pertaining to the maintenance performed.

B. It will be the responsibility of the Contractor to maintain the report/checklist by recording the above noted data after each scheduled maintenance and emergency repair, and have the checklist available for inspection at the building site. The report shall be sufficiently detailed to properly reflect the past maintenance history of the equipment.

C. Reports shall be certified by a representative of the facility being served and shall be submitted to DOTH Maintenance monthly or at the completion of the service trouble call.

3.16 CLEANUP AND WORK PRACTICES

A. The Contractor shall keep the job site free of debris, litter, discarded parts, etc. and shall clean all oil drippings during the daily progress of work. The Contractor shall remove all tools, parts, and equipment from the service areas upon completion of the work.

B. The Contractor shall exercise caution during the progress of his maintenance and repair work to prevent damage to the ceilings, roofing, and other building structure. The Contractor shall restore all damages caused by his negligence to its original condition at his own expense.

END OF SECTION

DIVISION 16 - ELECTRICAL

SECTION 16010 - ELECTRICAL WORK

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish all labor and materials required to complete all electrical work as indicated on the drawings and/or specified herein. In general, the following work is included:

1. Power wiring for air conditioning system including furnishing of disconnects and mounting of motor starters furnished by air conditioning contractor.

2. Modify existing Motor Control Center as required.

3. Submittal of shop drawings.

4. Preparation of "as-built" drawings.

B. The term "wiring" shall include raceways, outlets, conductors, fixtures, devices, and panelboards.

C. Wiring and connecting all electrical equipment supplied for installation and use in this contract and not specifically listed as work by others.

1.02 RULES, STANDARDS AND PERMITS

A. The entire work shall comply with applicable laws of the local electric bureau, the Standards of NEMA and ANSI and National Electrical Safety Code, and the regulations of the local utility companies.

B. The Contractor shall obtain and pay for the electrical permits required, and shall give notice for inspections as the work progresses. Upon completion, he shall deliver certificates of completion and inspection to the Contracting Officer.

1.03 DRAWINGS

A. These specifications are accompanied by floor plans of the building, and diagrammatic electrical layouts showing the approximate location of the outlets, switches, devices and other equipment.

B. The wiring layouts and schedules show the approximate locations of all outlets, switch control, service runs and other electrical apparatus. These locations are approximate and before installing Contractor shall study adjacent architectural details and make installation in most logical manner. Any device may be relocated within 10'-0" before installation at the direction of the HHSC Representative, whose decision shall be final.

C. Contractor shall maintain in his field office one set of electrical drawings for the sole purpose of recording changes and field deviations as they occur. Each change with explanatory notes shall be entered before the close of the work day, and shall be initialed by the representative of the Contracting Officer.

D. Above reference to deviations shall not be construed to allow deviations without prior approval. Upon completion of the electrical work, the Contractor shall transfer all changes posted on the field set to a set of transparencies to be furnished by the Contracting Officer. The final set shall be certified to show "as-built" conditions and both sets delivered to the Contracting Officer. This is mandatory.

1.04 SUBMITTALS

A. Submit in accordance with SECTION 01300 - SUBMITTAL PROCEDURES.

B. Submit for approval six (6) copies of shop drawings or catalog cuts of following equipment and resubmit until approval is received before placing order:

1. Any other special or built-to-order equipment.

1.05 GUARANTEE

A. Installation shall be complete in every detail and ready for use. Any item supplied by Contractor developing defects within one (1) year of final acceptance by the HHSC Representative, shall be replaced by such materials, apparatus or parts including installation labor to make such defective portion of complete system conform to true intent and meaning of Drawings and Specifications, at no additional charge to the HHSC.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Materials and equipment shall be new and those listed by Underwriters' Laboratories shall bear "UL" label of approval. Brand names, manufacturer's names and catalog numbers indicate standards of design and quality required. Substitute materials may be used if qualified by written permission from the Contracting Officer. List of substitute materials together with qualifying data shall be submitted for approval.

Failure to obtain approval of substitute materials prior to bidding shall mean that materials as specified shall be provided.
Example

Item	Manufacturer and Catalog No. Specified	Substitute Manufacturer and Catalog Number
Cable	Joe Doe - No. 3020	King - No. 2200

Qualifying data shall include cuts, shop drawings, and specifications to show equality with material specified herein and in drawings.

B. Raceways:

1. Rigid Steel, zinc-coated, 3/4 inch minimum diameter, except as noted. Other sizes to conform to NEC Chapter 9, Table 3A, based on RHW wires.

2. Electric metallic tubing (EMT) galvanized round bore with compression connectors, 3/4-inch minimum diameter, other sizes to conform to NEC Chapter 9, Table 3A, based on RHW wires.

3. Flexible conduit - galvanized steel, neoprene jacketed for wet locations.

C. Conductors shall be delivered to site in original factory packages or reels. Conductors shall be copper, #12 AWG minimum.

1. Exterior locations - Type RHW - USE, or cross-linked polyethylene Style USE.

2. Interior locations - Branch circuits, Type RHW, TW, THW or THWN.

3. In gutters and feeders - #6 AWG and larger. Type THW or XHHW.

D. Boxes:

1. Outlet and small junction boxes shall be zinc-coated pressed steel of ample size. Light outlets shall be fitted with no-bolt type fixture studs as necessary for fixture support. Utility boxes ("Handy", Type OA, etc.) shall not be used. Minimum size of outlet boxes, 4" square of octagon.

2. Large junction boxes and covers shall be zinc-coated. Screws for cover shall be brass.

3. Exposed boxes and weather exposed boxes – NEMA 4X 316 stainless steel, all with threaded hubs for conduits.

E. Existing Motor Control Center (MCC) – The existing MCC shall be modified as required to accommodate new breakers for new pumps. Motor starters for pumps shall be coordinated with the Mechanical Contractor.

F. Hardware, Supports, Backing, Etc.: Provide all hardware, supports, backing and other accessories necessary to install electrical equipment. Wood materials to be termite resistant. Ferrous material shall be galvanized for corrosion protection. Non-ferrous materials shall be brass or bronze.

PART 3 - EXECUTION

3.01 CONSTRUCTION METHODS

A. Workmanship shall be subject to the approval of the Contracting Officer, who shall be afforded every facility to determine the skill and competency of labor.

B. Outlet locations are shown approximately only. The Contractor shall check architectural drawings and details and center or space the outlets to obtain neat symmetrical appearance. Provided change is ordered before outlets are installed, there shall be no additional cost to the HHSC for reasonable change of outlet locations.

C. Building wiring shall be in concealed raceways, except as shown. Interior conduit for future extension shall be terminated in couplings set flush with finish surface and closed by means of recessed pipe plugs. Provide expansion fittings in conduit runs at all building expansion joints. Electrical metallic tubing may be used only in dry ceilings and walls. Electrical metallic tubing may not be used in exposed locations or embedded in concrete slabs. Provide all necessary foundations, supports and backing for enclosures, conduit, and equipment. Fixture support shall be capable of 300-pound loading, and shall be made to building structure.

D. Perform all cutting, drilling and patching necessary for installation of conduit and equipment. Repair any surface damaged or marred during the installation. Cutting, repairs and finish shall be subject to the approval of the HHSC Representative.

E. Minimum wire size for branch circuit shall be #12 AWG. Larger sizes may be used as necessary.

F. Homeruns shall mean that portion of a branch circuit from outlet nearest panel, to the panel.

G. Crimp or pressure-connect all splices #10 AWG or smaller. Leave no sharp points that can pierce taping. Use no-solder pressure connectors for #8 AWG and larger. Use highest grade insulating and friction tape, applied in accordance with best practice of trade. Connections of light fixture wires to building wires may be made with approved wire-nuts.

H. Form wires neatly in all enclosures. Cable together and lace with waxed strings branch circuit conductors at panelboards.

I. Lubricants used for wire-pulling in all areas except as noted, shall be such that lubricant will not damage conductor insulation or sheathing. For neoprene jacketed and plastic-sheathed conductors, use powdered soapstone.

J. Where ducts pass through structural wall, provide openings with minimum of 1" mastic fill between duct envelope and structure to eliminate transfer of stresses from one to another. Through each duct, pull a test mandrel 10" long and 1/4" less than nominal size of duct. Clean duct with compressed air on "mouse". Provide duct "combs", or supports for all multiple duct runs.

K. All exposed risers shall be rigid steel conduit. Plug risers during construction with approved wood plugs or sealing bushings. Swab all conduits dry before pulling wires.

L. Conduit runs under floor slab to be heavily coated with 2 coats of asphaltum paint and shall be encased in 3 inches of concrete.

M. Attach conduit to concrete and masonry with expansion anchors. Attach to wood by means of wood or lag screws.

N. Set all enclosures plumb and exactly flush with finish surface.

O. All cable splices shall be made in accordance with manufacturer's instructions. In underground locations, all splices shall be cast type using thermo-setting epoxy resin insulation.

P. Balance feeder loading on all three phases as closely as practicable. Furnish necessary test equipment and make all tests necessary to check for unspecified grounding, shorts and wrong connections. Correct faulty conditions, if any. Attach to the inside surface of panel door a card indicating recorded load of each phase.

Q. Except as indicated in this section, the subcontractor shall be responsible for the proper wiring of the electrical equipment pertaining to this project whether furnished by him or by others and shall install and connect

whatever control equipment which may be furnished to him by the equipment contractor or the State. He shall also furnish whatever raceways, disconnect switches, motor starters, boxes, fittings, wires and devices that he may need for proper and adequate installation of such electrical equipment.

R. Label all service equipment. Signs by competent craftsmen. Letters to be 1" high minimum, black paint. Panels: Label designation, as directed. Tag all empty conduits in terminal cabinets and boxes giving destination. Use fiber disc tags in bushing.

S. Provide typewritten circuit directory for each panelboard modified by this project. Update labelling on existing MCC as required.

T. Grounding:

1. Provide grounding for entire electric installation as indicated and specified herein. Following are included as requiring grounding:

   a. Electric service, its equipment and enclosures. Conduits, other conductor enclosures and panelboards.

   b. Neutral or identified conductor of interior wiring system.

   c. Non-current carrying metal parts of fixed equipment, such as, motors, starter and controller cabinets, lighting fixtures, etc.

2. Grounding Electrodes:

   a. Where underground water piping is available, and connection can be made to it at a point which will be accessible for future inspection, it shall serve as grounding electrode. Make connection to such water piping inside buildings, on street side of main shut-off valve.

   b. Where such water piping is not available, use copper clad ground rods. Resistance to ground shall be 10 ohms maximum. Ground rods shall be 5/8" x 8' minimum. Bond ground rods with #1/0 bare copper wires.

3. Manner of Grounding: Sizes and types of ground conductors, ground clamps, bonding jumpers, conduit, fittings, also methods of securing same to obtain electric continuity and effective grounding, when not indicated: as per NEC Article 250.

4. Install ground wire in all conduits. Size in accordance with NEC.

U. Finishing:

1. Patch, repair and restore all structural and architectural elements cut or drilled for installation of electrical system. Drilling, cutting, patching, repairing and restoring shall be subject to approval of the HHSC Representative.

2. Attach electrical equipment to wood by wood screws, and attach to concrete by embedded or expansion inserts and bolts. Use powdered-driven charge with approval only. Close unused knock-outs on boxes or enclosures with metal cap. Powder actuated fasteners shall not be used on precast concrete. Do not use powder activated fasteners to attach enclosures and boxes to the building.

3.02 TESTING AND COMPLETION

A. Final inspection of electrical work will be made by the HHSC Representative.

B. Test all wiring and systems for proper operation. Measure insulation resistance of all wires #4 and larger, using Biddle Co. 500 volt megger. Record readings and submit four (4) copies to the Contracting Officer. Measure ground resistance at service and furnish four (4) copies of readings to the HHSC Representative. All test shall be made in the presence of the HHSC Representative.

3.03 OUTAGES

A. Outages will not be permitted unless absolutely necessary. Outages will be scheduled to suit the schedule of the Hospital. Contractor shall request for outages in writing at least three weeks prior to desired outages and shall state desired length of outage. Request for outage shall be submitted to the HHSC Representative, who shall not conduct an outage until written approval is obtained from the Hospital Administrator. All desired outages shall be kept to a minimum and the outage time shall be kept as short in duration as possible. At the beginning of the project, contractor shall submit a tentative schedule of outages to the HHSC Representative. Tentative schedule shall indicate approximate date of outage, duration of outage and purpose of the outage. Contractor shall provide temporary power and connections if necessary at no additional expense to the HHSC.

END OF SECTION

MALUHIA HOSPITAL COOLING TOWER REPLACEMENT

HHSC MALUHIA
1027 HALA DR.
HONOLULU, HAWAII 96817
T. M.K. 1 - 6 - 009 : 004

INDEX OF DRAWINGS

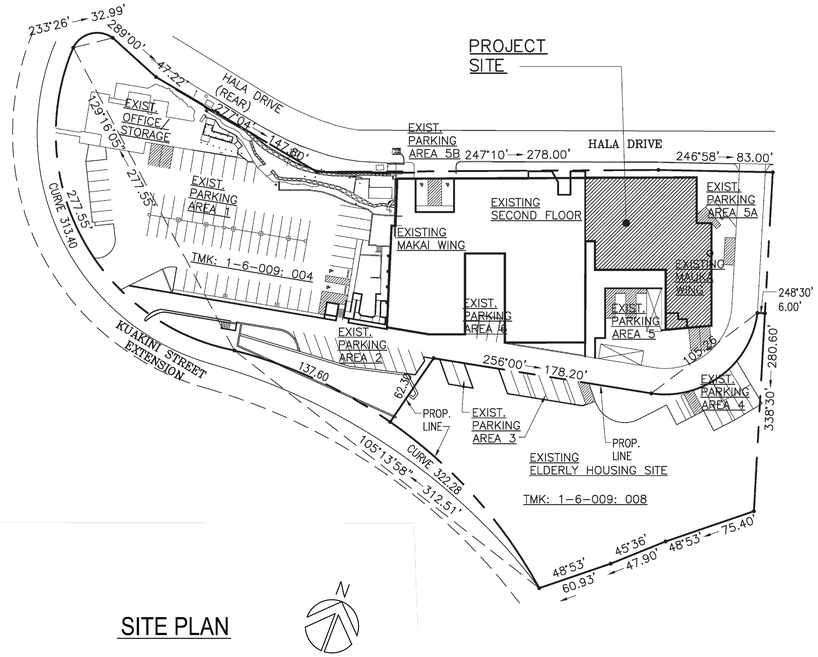
NO. OF SHEETS	SHEET NO.	DRAWINGS DESCRIPTION	NO. OF SHEETS	SHEET NO.	DRAWINGS DESCRIPTION	NO. OF SHEETS	SHEET NO.	DRAWINGS DESCRIPTION	NO. OF SHEETS	SHEET NO.	DRAWINGS DESCRIPTION
1	T001	TITLE SHEET, GENERAL NOTES, LOCATION MAP, INDEX OF DRAWINGS AND SITE PLAN	9	E000	ELECTRICAL SYMBOLS, DEMOLITION NOTES, BUILDING ENERGY CODE						
			10	E001	OVERALL SUB-BASEMENT ELECTRICAL PLAN						
2	M001	MECHANICAL GENERAL NOTES	11	E002	OVERALL ROOF ELECTRICAL PLAN						
3	M002	OVERALL SUBBASEMENT FLOOR PLAN	12	E100	PARTIAL SUB-BASEMENT ELECTRICAL PLAN – DEMOLITION AND NEW WORK						
4	M003	OVERALL ROOF FLOOR PLAN	13	E101	PARTIAL ROOF ELECTRICAL PLANS – DEMOLITION AND NEW WORK						
5	M101	SUBBASEMENT MECHANICAL PLAN	14	E200	SINGLE LINE DIAGRAMS – DEMOLITION AND NEW WORK						
6	M102	ROOF MECHANICAL PLAN									
7	M201	CHILLER DIAGRAM									
8	M301	MECHANICAL SCHEDULE									

GENERAL NOTES

1. VERIFY ALL DIMENSIONS AND ACTUAL CONDITIONS ON SITE PRIOR TO THE SUBMITTAL OF ANY BIDS, OR INITIATION OF ANY WORK. IMMEDIATELY NOTIFY THE CONTRACTING OFFICER OF ANY DISCREPANCIES INCLUDING CLEARANCES, DIMENSIONS, AND ELEVATIONS PRIOR TO ANY ADDITIONAL WORK.
2. CAUTION SHALL BE EXERCISED SO THAT NO EXISTING AREAS TO REMAIN SHALL BE DAMAGED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY/ALL CORRECTIVE WORK REQUIRED TO RESTORE DAMAGE TO THE SITE, LANDSCAPING OR STRUCTURE TO THE ORIGINAL CONDITION.
3. ALL USABLE DEBRIS AND WASTE SHALL BE HAULED AWAY TO AN APPROPRIATE OFF-SITE DUMP AREA. DURING LOADING OPERATIONS, DEBRIS AND WASTE MATERIALS SHALL BE WATERED DOWN TO ALLAY DUST.
4. ALL ITEMS OF WORK SHOWN ARE NEW UNLESS NOTES AS EXISTING.
5. ALL DIMENSIONS ARE ROUNDED UP TO THE NEAREST INCH FOR SIMPLICITY AND CONSISTENCY. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO COMMENCING WITH WORK. DISCREPANCIES SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF ARCHITECT IN WRITING. UNLESS OTHERWISE INDICATED, DIMENSIONS ARE FACE TO FINISH.
6. OBVIOUS CONDITIONS WHICH EXIST ON THE SITE OR WORK THAT IS NECESSARY TO INSTALL PART OF THE WORK OF OTHER TRADES, ASSEMBLIES, ETC. SHALL BE ACCEPTED AS PART OF THE WORK EVEN THOUGH THEY MAY NOT BE CLEARLY INDICATED ON THE DRAWINGS AND/OR DESCRIBED HEREIN, OR MAY VARY THEREFROM.
7. THIS PROJECT SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE LATEST APPROVED EDITIONS OF THE INTERNATIONAL BUILDING CODE, THE UNIFORM PLUMBING CODE, THE NATIONAL ELECTRICAL CODE, THE NATIONAL FIRE PROTECTION ASSOCIATION LIFE SAFETY CODE, AND AMERICANS WITH DISABILITIES ACT ARCHITECTURAL GUIDELINES & THE LATEST CITY & COUNTY OF HONOLULU / STATE OF HAWAII AMENDMENTS & ORDINANCES & "FIRE SAFETY DURING CONSTRUCTION, ALTERATION OR DEMOLITION SHALL BE CONFORMED IN ACCORDANCE WITH 1997 UFC, ARTICLE 87".
8. INSTALL SEALANT AT ALL WEATHER JOINTS, WHETHER SHOWN OR NOT ON THE DRAWINGS. PROVIDE A WATERTIGHT INSTALLATION AND PROVIDE FINISHED SURFACES.
9. THE CONTRACTOR MUST SUPPLY ALL REQUIRED SUBMITTALS TO THE HHSC REPRESENTATIVE/ENGINEER FOR REVIEW AND APPROVAL PRIOR TO THE START OF WORK ON THE SITE.
10. THE CONTRACTOR AND SUBCONTRACTORS AND SUPPLIERS MUST COMPLETE THE WORK HEREIN WITHIN THE TIME FRAME SPECIFIED BY THE CONTRACT. IT IS VERY IMPORTANT THAT THE WORK IS DONE EFFICIENTLY AND BE OF THE HIGHEST QUALITY.

LOCATION MAP

SITE PLAN



SITE PLAN

Mechanical Enterprises, Inc.
Mechanical & Fire Protection Engineers
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Phone: (808) 591-9038
Fax: (808) 596-7356

ROSS R. TANAKA
LICENSED PROFESSIONAL ENGINEER
No. 9301-M
HAWAII, U.S.A.

This work was prepared by me or under my supervision and construction of this project will be under my observation.

Expiration Date: 4-30-26

REVISIONS

NO	DESCRIPTION	DATE

MALUHIA HOSPITAL COOLING TOWER REPLACEMENT

1027 HALA DRIVE HONOLULU, HI 96817

TMK: 1-6-009004

TITLE SHEET, GENERAL NOTES, LOCATION MAP, INDEX OF DRAWINGS AND SITE PLAN

Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
MEI	RRT	MEI

Drawing Number

T001

Sheet No 1 of 14

GENERAL NOTES:

1. CONFORM TO ALL REQUIREMENTS OF THE BUILDING, PLUMBING, AND ELECTRICAL CODES OF THE CITY & COUNTY OF HONOLULU, STATE OF HAWAII HEALTH REGULATIONS, FIRE DEPARTMENT REGULATIONS, MANUFACTURER'S RECOMMENDATIONS AND OTHER APPLICABLE REGULATIONS.
2. EXAMINE ALL PROJECT PLANS AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AND THE EXTENT OF REMOVAL, RELOCATION AND/OR NEW WORK PRIOR TO BIDDING. NOTIFY AND COORDINATE WITH THE ENGINEER FOR ANY MAJOR DEVIATIONS OR DISCREPANCIES DISCOVERED IN THE PLANS AND SPECIFICATIONS DUE TO UNFORESEEN OR VARYING FIELD CONDITIONS.
3. INSTALLATION SHALL BE GUARANTEED TO BE FREE FROM DEFECTS FOR ONE YEAR FROM FINAL DATE OF ACCEPTANCE OF THE PROJECT AS A WHOLE.
4. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS PRIOR TO BID AND CONSTRUCTION
5. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING LINE SIZES, CONDITIONS, AND INVERTS PRIOR TO BID AND CONSTRUCTION.
6. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO COVER THE COMPLETE INSTALLATION OF SYSTEMS TO FUNCTION AS DESCRIBED AND SPECIFIED. THE OMISSION OF REFERENCE TO ANY NECESSARY ITEM OF LABOR OR MATERIAL SHALL NOT RELIEVE THE CONTRACTOR FROM PROVIDING SUCH LABOR AND MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
7. PAY FOR ALL PERMITS AND APPLICATIONS.
8. CAULK ALL PENETRATIONS WATERTIGHT. PROVIDE ALL CUTTING, PATCHING, AND RESTORING OF EXISTING SURFACES TO MATCH ORIGINAL SURFACE FINISHES. SPOT PAINT TO MATCH EXISTING SURFACES/COLOR.
9. PREPARE SIX (6) SETS OF SHOP DRAWINGS SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK. NO REPRODUCTIONS OF ANY KIND OF THE CONTRACT DOCUMENTS SHALL BE ACCEPTABLE AS SHOP DRAWINGS. PROVIDE ONE SET OF REPRODUCIBLE AS-BUILT DRAWINGS SHOWING THE ACTUAL INSTALLED CONDITIONS AND SUBMIT TO THE OWNERS UPON COMPLETION OF WORK.
10. ALL EQUIPMENT AND FIXTURES SHALL BE CAPABLE OF FITTING INTO THE SPACES ALLOTTED WHILE MEETING THE MANUFACTURER'S RECOMMENDED ACCESS REQUIREMENTS. REVIEW ALL SPACES WHERE EQUIPMENT AND FIXTURES ARE TO BE INSTALLED PRIOR TO ORDERING OF ITEMS AND NOTIFY THE HHS REPRESENTATIVE/ENGINEER OF ANY INADEQUATE CLEARANCES OR CONDITIONS THAT WILL PREVENT THE PROPER INSTALLATION, MAINTENANCE,AND OPERATION OF THE EQUIPMENT AND FIXTURES.
11. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW EVERY EXACT DETAIL OF PIPING AND DUCTWORK. PROVIDE OFFSETS AS NECESSARY TO AVOID LOCAL OBSTRUCTIONS OR INTERFERENCES WITH OTHER TRADES. REVIEW ALL PIPING AND DUCT RUNS PRIOR TO FABRICATION AND IMMEDIATELY NOTIFY THE HHSC REPRESENTATIVE/ENGINEER OF ANY INTERFERENCES AND/OR LACK OF ADEQUATE CLEARANCES.
12. SHOULD PROJECT CONDITIONS REQUIRE REARRANGEMENT OF WORK, MARK SUCH CHANGES ON THE AS-BUILT DRAWINGS. IF THESE CHANGES REQUIRE ALTERNATE METHODS TO THOSE APPROVED BY THE CONTRACT DOCUMENTS, SUBMIT SHOP DRAWINGS SHOWING THE PROPOSED ALTERNATE METHODS TO THE HHSC REPRESENTATIVE/ENGINEER FOR REVIEW/APPROVAL PRIOR TO PROCEEDING WITH WORK.
13. COORDINATE ALL WORK WHICH WILL AFFECT AREAS WITH BUILDING SUPERVISOR. SCHEDULE OFF-HOUR WORK WHEN REQUIRED TO MINIMIZE DISRUPTIONS.
14. COORDINATE ALL SWITCH, THERMOSTAT, FIRE EXTINGUISHER, ETC. LOCATIONS WITH USER/ENGINEER PRIOR TO INSTALLATION TO AVOID INTERFERENCES WITH PAINTING, BULLETIN BOARDS, FURNITURE, ETC. ANY ITEM NOT PROPERLY COORDINATED SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER.
15. ALL STEEL SHALL BE HOT DIPPED GALVANIZED. GALVANIZED STEEL EXPOSED TO WEATHER SHALL HAVE WEATHER PROOF PAINT TO MATCH SURFACES. PROVIDE TWO EXTRA COATS OF EPOXY PAINT.
16. ALL ELECTRICAL AND CONTROL WIRING SHALL BE IN CONDUIT. PROVIDE GALVANIZED STEEL PIPE CONDUIT FOR EXPOSED TO WEATHER CONDUIT.
17. ALL DUCT DIMENSIONS SHOWN ARE NET DIMENSIONS.
18. PROVIDE DUCTWORK REDUCER FITTINGS AT AIR DEVICE CONNECTIONS AS REQUIRED.
19. PROVIDE OPPOSED BLADE VOLUME DAMPERS AND STAINLESS STEEL BIRDSCREENS FOR ALL OUTSIDE AIR DUCTS.
20. ALL SWITCHES, TIMECLOCKS, THERMOSTATS, AND CONTROL ITEMS SHALL BE ADA ACCESSIBLE AND SHALL BE MOUNTED AT 44" AFF AS PER ADA REQUIREMENTS OR ACCORDING TO OWNER'S INSTRUCTIONS.
21. PROVIDE REBALANCING DURING ONE YEAR GUARANTEE PERIOD TO SATISFY USER'S REQUIREMENTS. CONTRACTOR SHALL PROVIDE TEST AND BALANCING REPORTS.
22. COORDINATE ALL WORK WITH OTHER TRADES TO AVOID INTERFERENCES AND DELAYS.
23. EXISTING PLUMBING/STORM DRAIN/CONDUITS SHALL BE REHUNG/REROUTED AS REQUIRED TO ACCOMMODATE NEW HVAC EQUIPMENT AND DUCTWORK. VERIFY ALL WASTE AND WATER INVERTS, LOCATIONS, SIZES, AND CONDITIONS OF PIPING.
24. ALL HVAC DUCTWORK SHALL HAVE EITHER TURNING VANES OR RADIUS ELBOWS AT EACH BEND OR ELBOW WHETHER SHOWN ON THE DRAWINGS OR NOT.
25. SEISMICALLY BRACE ALL EQUIPMENT, PIPING, AND DUCTWORK IN ACCORDANCE WITH THE CURRENT BUILDING CODE AND THERE RESPECTIVE SEISMIC ZONE LOCATIONS.
26. TONE AND LOCATE ALL UTILITY LINES OR OTHER INTERFERENCES IN AREAS OF PROPOSED TRENCH WORK PRIOR TO START OF EXCAVATION. REPAIR OR PAY FOR ALL DAMAGES TO EXISTING UTILITIES.
27. PROVIDE DIELECTRIC UNIONS OR SEPARATIONS AT ALL DISSIMILAR METALS. PROVIDE UNIONS AFTER ALL SHUTOFF VALVES
28. PROVIDE ACCESS PANELS FOR ALL ITEMS UNDER THIS SECTION REQUIRING SERVICING, INSPECTION, MAINTENANCE, AND ADJUSTMENT.
29. PROVIDE ESCUTCHEON PLATES AT ALL EXPOSED WALL PENETRATIONS IN FINISHED AREAS, EXTERIOR WALL, ETC.
30. ALL PENETRATIONS THRU EXISTING WALLS, FOUNDATIONS, AND FLOOR SLABS SHALL REUSE THE EXISTING PENETRATIONS WITHOUT MODIFICATION TO THE EXISTING PENETRATION.
31. ALL PENETRATIONS THRU RATED WALLS AND CEILINGS SHALL BE EQUIPPED WITH APPROVED FIRE STOPPING AND OR FIRE & SMOKE DAMPERS.
32. DRAWING FILES WILL NOT BE AVAILABLE TO CONTRACTORS FOR SHOP DRAWINGS OR ANY OTHER PURPOSE.
33. PROVIDE VOLUME DAMPERS ON DUCTWORK BRANCH LINES WHETHER SHOWN ON THE DRAWINGS OR NOT.

CITY AND COUNTY OF HONOLULU
REVISED ORDINANCES OF HONOLULU 1990
CHAPTER 32

TO THE BEST OF MY KNOWLEDGE, THIS PROJECT'S DESIGN SUBSTANTIALLY CONFORMS TO THE BUILDING ENERGY CONSERVATION CODE FOR:

_____ BUILDING COMPONENT SYSTEMS
_____ ELECTRICAL COMPONENT SYSTEMS
✓ MECHANICAL COMPONENT SYSTEMS

SIGNATURE: Ross R. Tanaka
NAME: ROSS R. TANAKA
TITLE: VICE PRESIDENT
PE #: 9301-M
DATE: 12/08/2025

ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-M HAWAII, U.S.A.
EXP. 4-30-2026

THE AIR CONDITIONING AND VENTILATION SYSTEM SHALL COMPLY WITH TITLE 11, ADMINISTRATIVE RULES, DEPARTMENT OF HEALTH, CHAPTER 39, AIR CONDITIONING AND VENTILATION REQUIREMENTS.

BWS NOTE:

1. NO IRRIGATIONS WORK INVOLVED AS PART OF THIS PROJECT.
2. THE AC WORK ON THIS PLAN DOES NOT AFFECT THE WATER DEMAND.
3. THE EXISTING FIRE METER IS ADEQUATE TO SERVICE THE AUTOMATIC FIRE SPRINKLER SYSTEM.
4. NO PLUMBING WORK INVOLVED AS PART OF THIS PROJECT.

MECHANICAL LEGEND

SYMBOL	ABBRV	DESCRIPTION
— CD —	CD	CONDENSATE DRAIN
·	CFM	CUBIC FEET PER MINUTE
·	CHWR	CHILLED WATER RETURN
	CHWS	CHILLED WATER SUPPLY
ø	DIA	DIAMETER
	DN	DOWN
	DT	DUCT
	EA	EACH
☒	EAR	EXHAUST AIR REGISTER
	EF	EXHAUST FAN
	EXH	EXHAUST
	(E) or EXST	EXISTING
	FCU	FAN COIL UNIT
	(N)	NEW
	NTS	NOT TO SCALE
	(R)	REMOVE
	(RE)	RELOCATE
	OA	OUTSIDE AIR
	POC	POINT OF CONNECTION
	POR	POINT OF REMOVAL
	RA	RETURN AIR
⧄	RAR	RETURN AIR REGISTER
	SA	SUPPLY AIR
☒	SAD	SUPPLY AIR DIFFUSER
	SAR	SUPPLY AIR REGISTER
Ⓣ	T-STAT	THERMOSTAT
	TR	TRANSFER GRILLE
	TYP	TYPICAL
⊣□⊢	VD	VOLUME DAMPER
	W/	WITH

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ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-M HAWAII, U.S.A.

This work was prepared by me or under my supervision and construction of this project will be under my observation.

Expiration Date: 4-30-26

REVISIONS

NO	DESCRIPTION	DATE

MALUHIA HOSPITAL COOLING TOWER REPLACEMENT
1027 HALA DRIVE HONOLULU, HI 96817
TMK: 1-6-009:004

MECHANICAL GENERAL NOTES

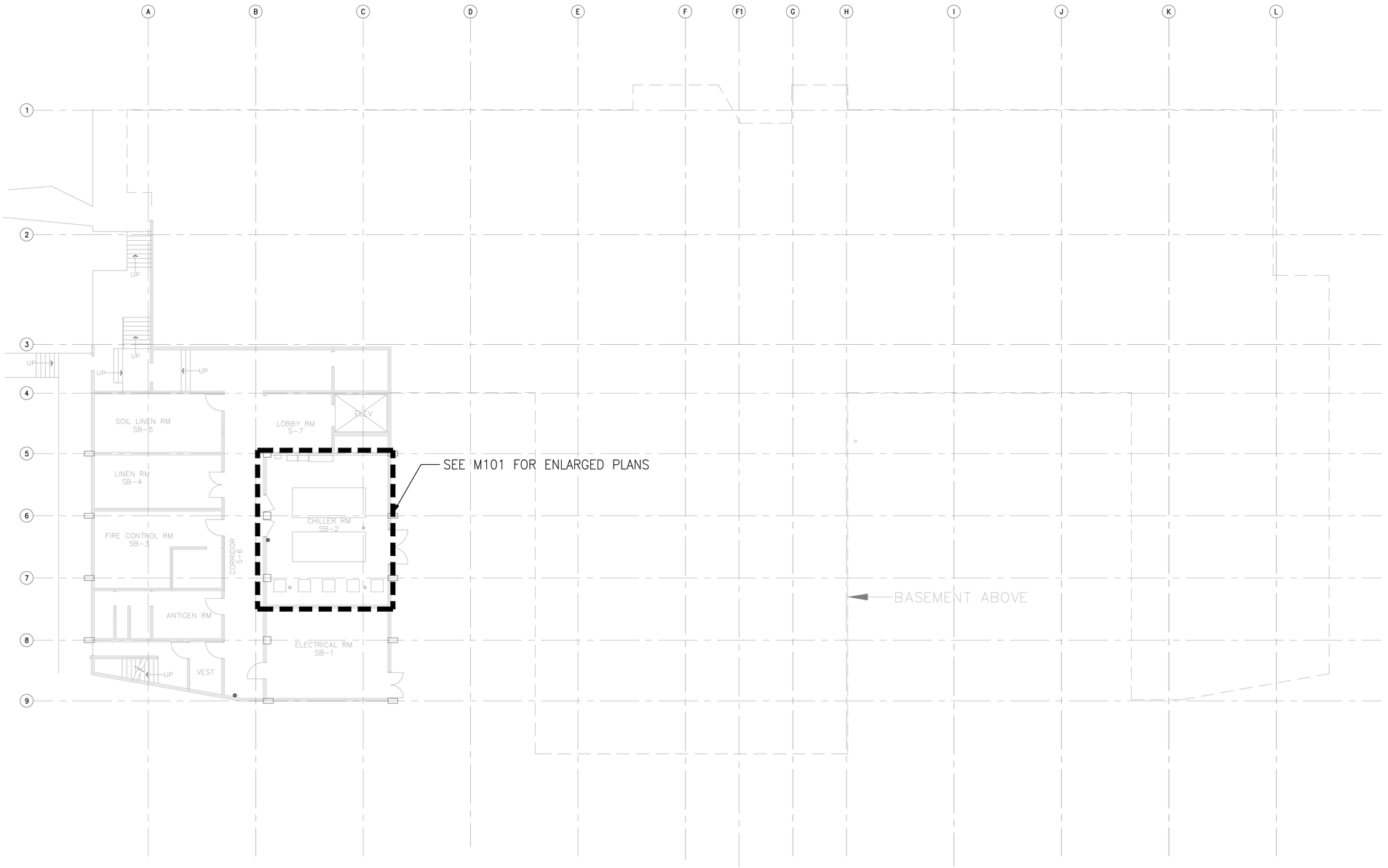
Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
MEI	RRT	MEI

Drawing Number

M001

Sheet No 2 of 14



1 OVERALL SUBBASEMENT FLOOR PLAN
SCALE: 3/32" = 1' - 0"

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ROSS R. TANAKA
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Expiration Date: 4-30-26

REVISIONS		
NO	DATE	DESCRIPTION

MALUHIA HOSPITAL COOLING TOWER REPLACEMENT

1027 HALA DRIVE HONOLULU, HI 96817

TMK: 1-6-009:004

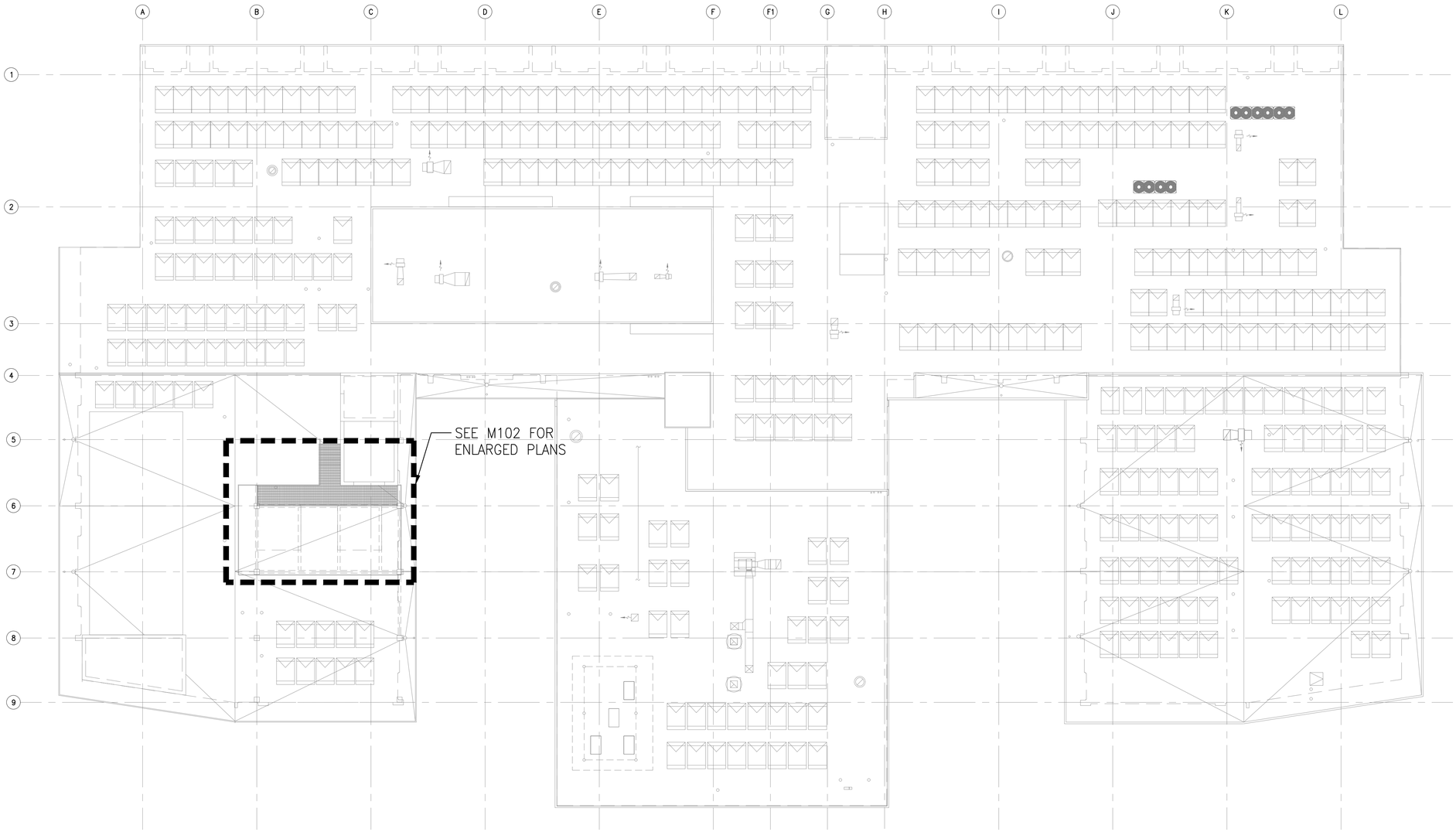
OVERALL SUBBASEMENT FLOOR PLAN

Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
MEI	RRT	MEI

Drawing Number

M002



1 OVERALL ROOF FLOOR PLAN
SCALE: 3/32" = 1' - 0"

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Expiration Date: 4-30-26

REVISIONS		
NO	DATE	DESCRIPTION

MALUHIA HOSPITAL COOLING TOWER REPLACEMENT

1027 HALA DRIVE HONOLULU, HI 96817

TMK: 1-6-009:004

OVERALL ROOF FLOOR PLAN

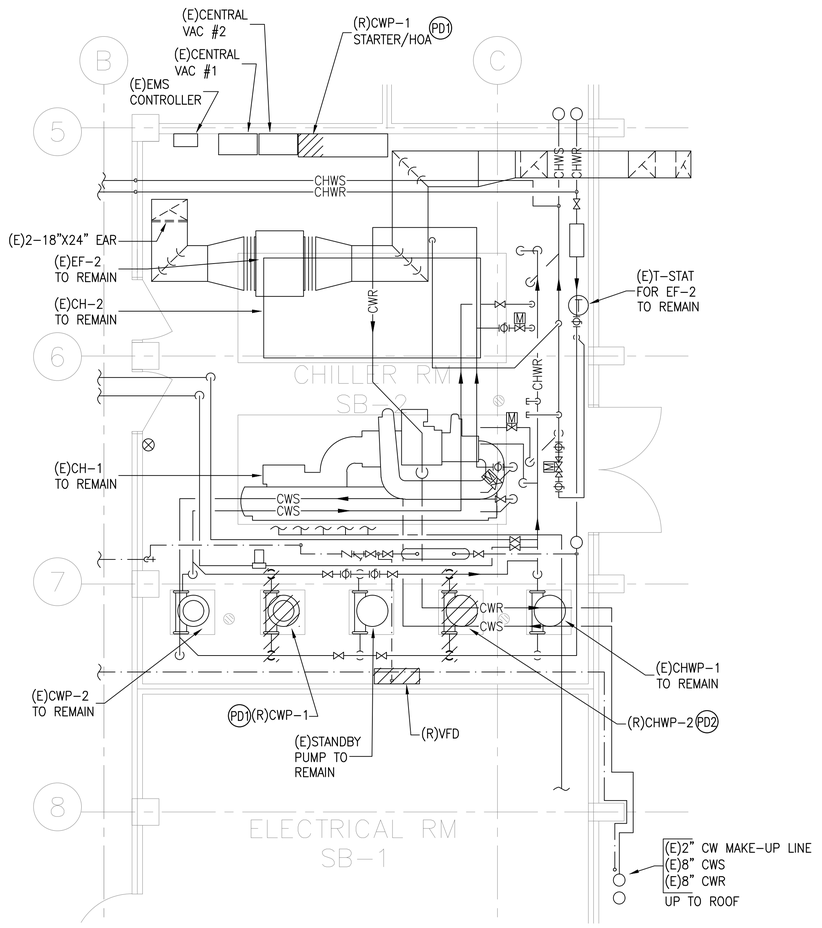
Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
MEI	RRT	MEI

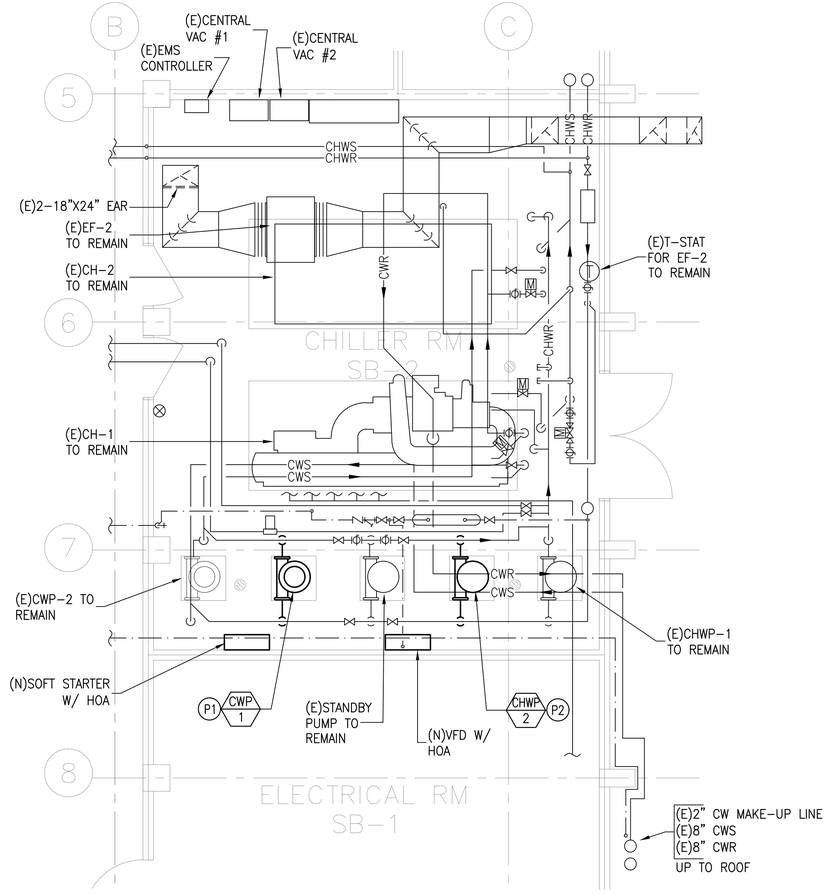
Drawing Number

M003

Sheet No 4 of 14



1 SUB-BASEMENT MECHANICAL DEMOLITION PLAN
SCALE: 1/4" = 1' - 0"



2 SUB-BASEMENT NEW MECHANICAL PLAN
SCALE: 1/4" = 1' - 0"

MECHANICAL DEMOLITION NOTE

(PD1) REMOVE EXISTING CONDENSER WATER PUMP COMPLETE. INCLUDING BUT NOT LIMITED TO STRAINER, MOUNTS, ISOLATION PADS, FLEX CONNECTORS, CHECK VALVE, BUTTERFLY VALVE, STARTER/HOA, ETC. AND ASSOCIATED ACCESSORIES. EXISTING 6" CONDENSER WATER PIPING TO REMAIN FOR NEW POC AS SHOWN ON NEW MECHANICAL FLOOR PLAN. CONTRACTOR TO FIELD VERIFY.

(PD2) REMOVE EXISTING CHILLED WATER PUMP COMPLETE. INCLUDING BUT NOT LIMITED TO STRAINER, MOUNTS, ISOLATION PADS, FLEX CONNECTORS, CHECK VALVE, BUTTERFLY VALVE, VFD W/HOA, ETC. AND ASSOCIATED ACCESSORIES. EXISTING 6" CHILLED WATER PIPING TO REMAIN FOR NEW POC AS SHOWN ON NEW MECHANICAL FLOOR PLAN. CONTRACTOR TO FIELD VERIFY.

NEW MECHANICAL NOTE

(P1) PROVIDE NEW CONDENSER WATER PUMP COMPLETE. INCLUDING BUT NOT LIMITED TO STRAINER, MOUNTS, NEOPRENE ISOLATION PADS, FLEX CONNECTORS, CHECK VALVE, BUTTERFLY VALVE, SOFT STARTER/HOA, SUCTION DIFFUSER ETC. AND ASSOCIATED ACCESSORIES. EXISTING 6" CONDENSER WATER PIPING TO REMAIN FOR NEW POC AS SHOWN ON NEW MECHANICAL FLOOR PLAN. CONTRACTOR TO FIELD VERIFY.

(P2) PROVIDE NEW CHILLED WATER PUMP COMPLETE. INCLUDING BUT NOT LIMITED TO STRAINER, MOUNTS, NEOPRENE ISOLATION PADS, FLEX CONNECTORS, CHECK VALVE, BUTTERFLY VALVE, VFD W/HOA, ETC. AND ASSOCIATED ACCESSORIES. EXISTING 6" CHILLED WATER PIPING TO REMAIN FOR NEW POC AS SHOWN ON NEW MECHANICAL FLOOR PLAN. CONTRACTOR TO FIELD VERIFY.

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Mechanical & Fire Protection Engineers
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ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-M HAWAII, U.S.A.

This work was prepared by me or under my supervision and construction of this project will be under my observation.

Expiration Date: 4-30-26

REVISIONS	NO	DATE	DESCRIPTION

MALUHIA HOSPITAL COOLING TOWER REPLACEMENT
1027 HALA DRIVE HONOLULU, HI 96817
TMK: 1-6-009:004

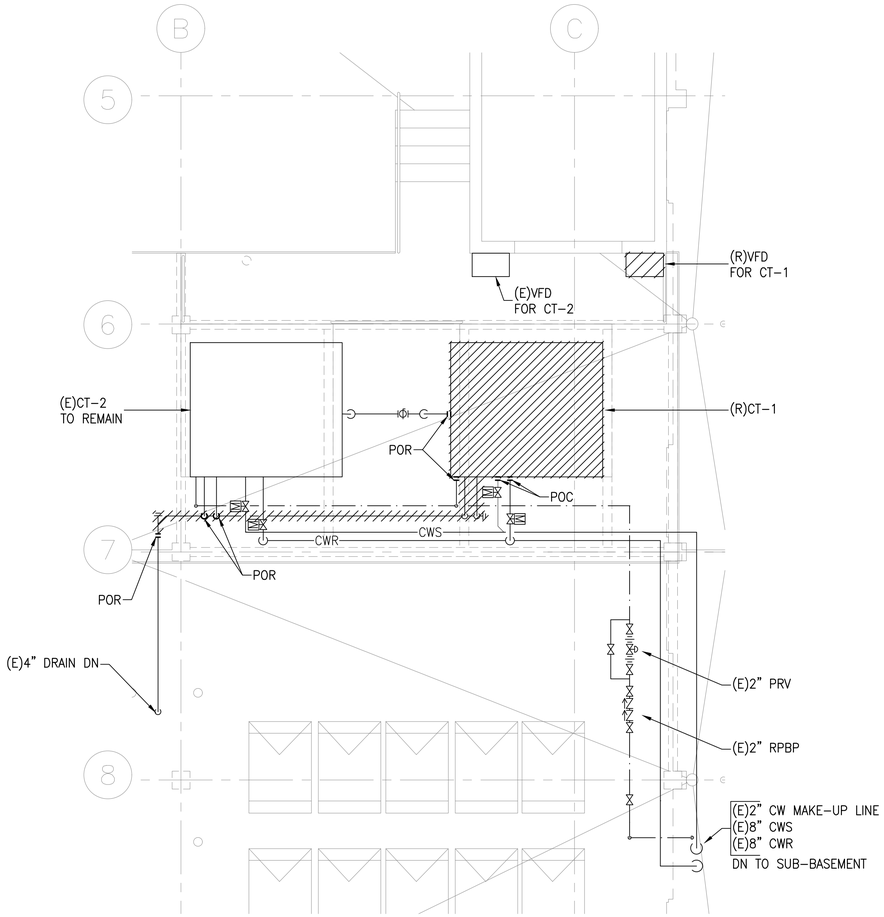
SUB-BASEMENT MECHANICAL PLANS

Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
MEI	RRT	MEI

Drawing Number
M101

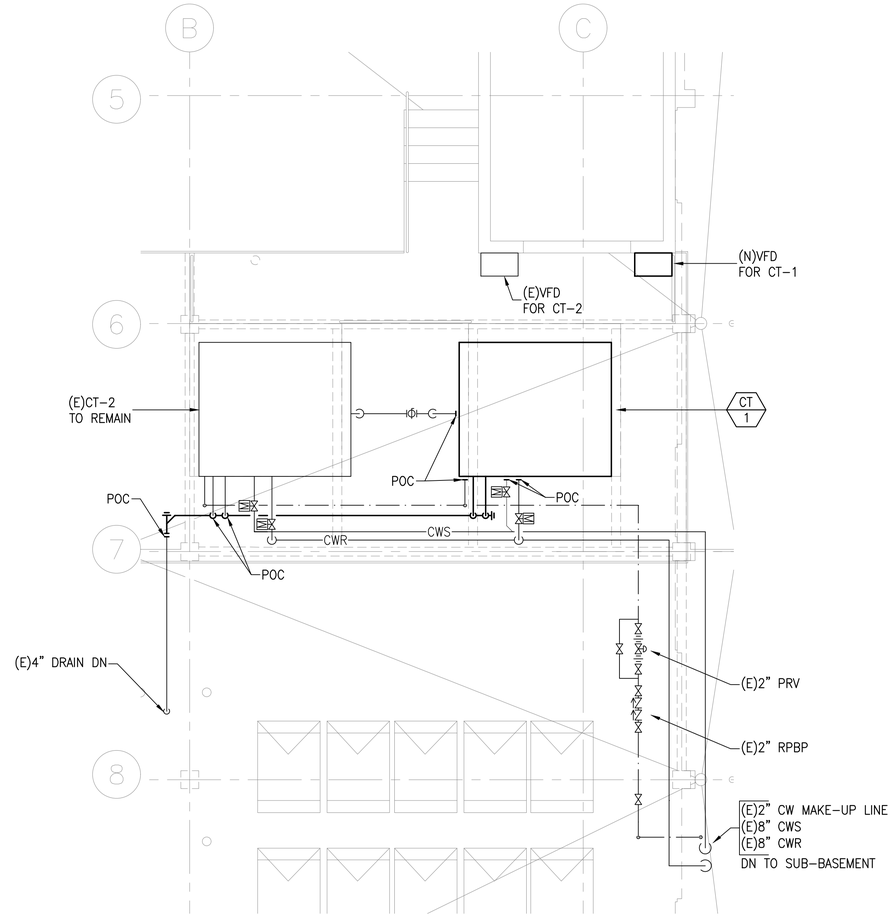
Sheet No 5 of 14



1 ROOF MECHANICAL DEMOLITION PLAN
SCALE: 1/4" = 1' - 0"

MECHANICAL DEMOLITION NOTE

(MD1) REMOVE EXISTING COOLING TOWER COMPLETE INCLUDING BUT NOT LIMITED TO VFD, ASSOCIATED CONTROLS, CONDENSER WATER PIPING UP TO POR, MAKEUP WATER PIPING UP TO POR, WIRING, SPRING VIBRATION ISOLATORS, HOLD DOWN BOLTS, ETC. AND ACCESSORIES. PATCH/REPAIR EXISTING CONCRETE PAD AS REQUIRED. CONTRACTOR TO FIELD VERIFY.



2 ROOF NEW MECHANICAL PLAN
SCALE: 1/4" = 1' - 0"

NEW MECHANICAL NOTE

(M1) PROVIDE NEW COOLING TOWER COMPLETE INCLUDING ASSOCIATED CONTROLS, CONDENSER WATER PIPING, MAKEUP WATER PIPING, EQUALIZER PIPE, WIRING AND ACCESSORIES. PROVIDE WITH HOUSED SPRING VIBRATION ISOLATORS ON EXISTING CONCRETE PAD. PROVIDE WITH HOLD DOWN LUGS TO ANCHOR COOLING TOWER. PROVIDE NEW DDC COMPATIBLE CONTROLLER TO OPERATE IN STANDALONE MODE. CONTRACTOR TO FIELD VERIFY.

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1027 HALA DRIVE HONOLULU, HI 96817
TMK: 1-6-009:004

ROOF MECHANICAL PLANS

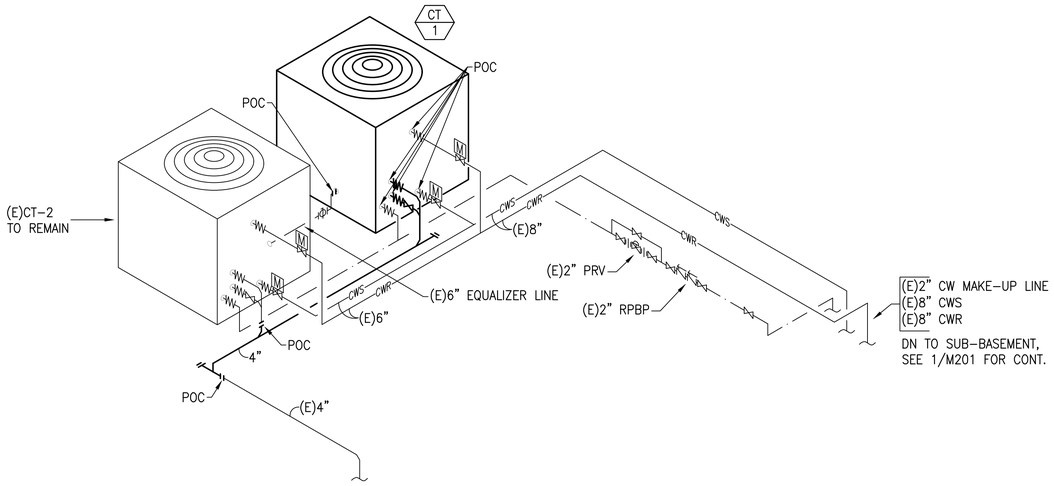
Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
MEI	RRT	MEI

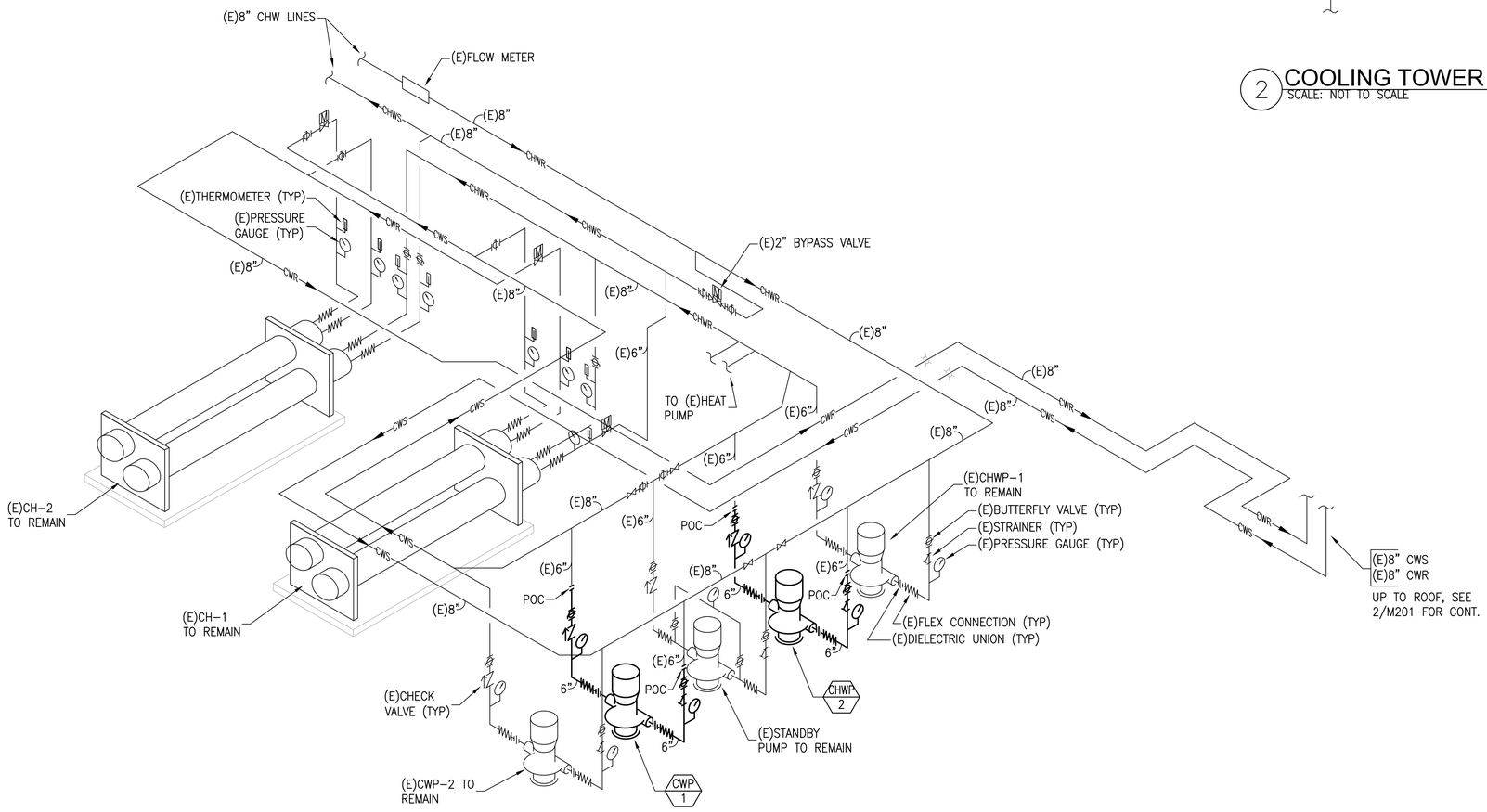
Drawing Number

M102

Sheet No 6 of 14



2 COOLING TOWER PIPING DIAGRAM
SCALE: NOT TO SCALE ROOF



1 CHILLER PLANT DIAGRAM
SCALE: NOT TO SCALE SUB-BASEMENT

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REVISIONS		
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MALUHIA HOSPITAL COOLING TOWER REPLACEMENT
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TMK: 1-6-009:004

CHILLER PLANT DIAGRAM

Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
MEI	RRT	MEI

Drawing Number
M201

Sheet No 7 of 14

MECHANICAL EQUIPMENT SCHEDULE

PROVIDE MAGNETIC STARTER/DISCONNECTS WITH AUTOMATIC RESET FOR ALL UNITS. PROVIDE NEMA-4X STARTER ENCLOSURE FOR ALL OUTDOOR EQUIPMENT. ALL OUTDOOR EQUIPMENT SHALL HAVE POLYSILOXANE COATING PROTECTION ON INSIDE AND OUTSIDE OF HOUSING. COILS(CONDENSER) SHALL HAVE BLYGOLD POLUAL COATING. PROVIDE HORIZONTALLY AND VERTICALLY RESTRAINED SPRING ISOLATORS WITH NEOPRENE DIPPED SPRINGS AND GALV. HOUSINGS ON ALL EQUIPMENT. PROVIDE PLASTIC COATED CABLE SWAY BRACING ALL SUSPENDED EQUIPMENT. PROVIDE FLEXIBLE DUCT CONNECTIONS AT ALL EQUIPMENT. PROVIDE S.S. BIRDSCREEN AT ALL NEW OA INTAKES.

COOLING TOWER SCHEDULE

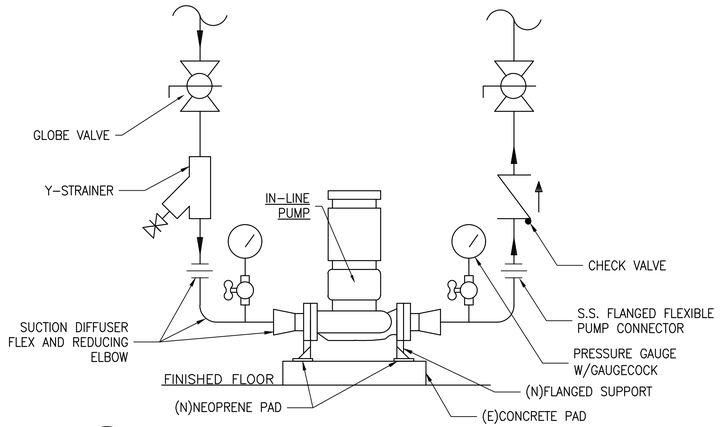
UNIT	MANUFACTURER/ MODEL	TYPE	TOTAL HEAT REJECTION (MBH)	GPM	EWT/LWT	NO. OF FANS	NO. OF FAN MOTORS	FAN MOTOR HP	AIR FLOW (CFM)	WATER INLET P.D. (PSI)	EVAP. WATER RATE (GPM)	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL Hz	OPR WT (LBS)	REMARKS
CT 1	EVAPCO At 19-218	INDUCED DRAFT CROSSFLOW	2,250	450	95/85	1	1	10	39,200	2.8	3.6	460	3	60	6,490	PROVIDE WITH VFD COMPATIBLE PREMIUM EFFICIENCY INVERTER DUTY MOTOR, VIBRATION ISOLATORS, TAPERED DISCHARGE HOOD, EQUALIZER PORTS, STAINLESS STEEL BASIN, CASING AND FRAMING. ALUMINUM FAN BLADES. PROVIDE HOA CONTROLS IN NEMA 4X WEATHERPROOF ENCLOSURE WITH VARIABLE FREQUENCY DRIVE SERVING FAN WITH LINEAR REACTOR. CONTROLS SHALL CONNECT TO ASSOCIATED CHILLER. CONTRACTOR TO FIELD VERIFY PUMP, COOLING TOWER AND CHILLER CONTROLS.

CONDENSER WATER PUMP SCHEDULE

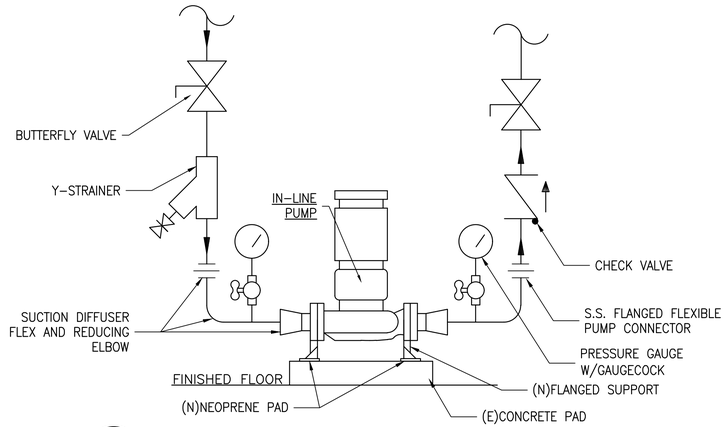
UNIT NO	MANUFACTURER & MODEL OR APPROVED EQUAL	SERVICE	TYPE	GPM	TOTAL DYNAMIC HEAD FT	IMPELLER DIA. (INCHES)	SUCT SIZE INCHES	DISCH SIZE INCHES	MIN EFF PERCENT	RPM	HP	VOLTS	ø	REMARKS
CWP 1	BELL & GOSSETT E-80SC 4X4X7B	CONDENSER WATER LOOP	IN-LINE CENTRIFUGAL	450	160	6.75	4.0	4.0	72.7%	3,550	30	460	3	PROVIDE WITH SOFT STARTER WITH WALL MOUNTED SUPPORTS AND NEOPRENE PADS FOR PUMP MOUNTS. PROVIDE NEMA PREMIUM EFFICIENCY MOTOR. PROVIDE CONTROLS AND INTERFACE WITH STANDALONE CHILLER CONTROLS. CONTRACTOR TO FIELD VERIFY PUMP, COOLING TOWER AND CHILLER CONTROLS.

CHILLED WATER PUMP SCHEDULE

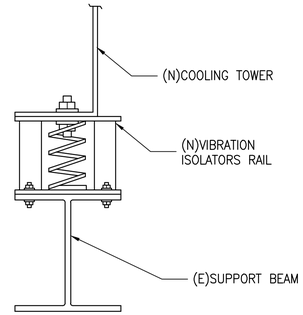
UNIT NO	MANUFACTURER & MODEL OR APPROVED EQUAL	SERVICE	TYPE	GPM	TOTAL DYNAMIC HEAD FT	SUCT SIZE INCHES	DISCH SIZE INCHES	MIN EFF PERCENT	RPM	HP	VOLTS	ø	REMARKS
CHWP 2	BELL & GOSSETT E-80SC 4X4X9.5B	CHW PRIMARY LOOP	IN-LINE CENTRIFUGAL	360	85	4.0	4.0	75	1800	15	460	3	PROVIDE WITH VFD WITH LINEAR REACTOR WITH WALL MOUNTED SUPPORTS AND NEOPRENE PAD FOR PUMP MOUNTS. PROVIDE INVERTER DUTY NEMA PREMIUM EFFICIENCY MOTOR. PROVIDE CONTROLS AND INTERFACE WITH NEW STANDALONE CHILLER CONTROLS. CONTRACTOR TO FIELD VERIFY PUMP, COOLING TOWER AND CHILLER CONTROLS.



1 M301 VERTICAL IN-LINE PUMP DETAIL
NOT TO SCALE — CONDENSER WATER



2 M301 VERTICAL IN-LINE PUMP DETAIL
NOT TO SCALE — CHILLED WATER



3 M301 COOLING TOWER SUPPORT (REFERENCE ONLY)
NOT TO SCALE

COOLING TOWER FAN CYCLING SEQUENCE

CT - 1			CT - 2		
85	87	90	90	93	95
LOW SPEED		HIGH SPEED	LOW SPEED		HIGH SPEED

NOTE:
1. PROVIDE MANUAL ALTERNATING CONTROL FOR CT-1
2. CT IS CONTROLLED BY EXISTING CHILLER ON-BOARD CONTROLLER.
3. CONTRACTOR SHALL FIELD VERIFY CONTROL.

4 M301 COOLING TOWER SEQUENCE
NOT TO SCALE

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ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-M HAWAII, U.S.A.

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Expiration Date: 4-30-26

REVISIONS

NO	DATE	DESCRIPTION

MALUHIA HOSPITAL COOLING TOWER REPLACEMENT
1027 HALA DRIVE HONOLULU, HI 96817
TMK: 1-6-009:004

MECHANICAL SCHEDULE AND DETAILS

Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
MEI	RRT	MEI

Drawing Number
M301

CITY AND COUNTY OF HONOLULU
REVISED ORDINANCES OF HONOLULU 2021
CHAPTER 16B

To the best of my knowledge, this project's design substantially conforms to the Building Energy Conservation Code for:

_____ Building Component System
__X__ Electrical Component System
_____ Mechanical Component System

Signature: Jason Yogi Date: DECEMBER 2025
Name: Jason Yogi, P.E.
Title: Principal
License No.: 9062-E

DEMOLITION NOTES

1. EXISTING PLANS DO NOT INDICATE COMPLETE EXISTING WIRING CONDITIONS. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO START OF WORK.
2. BEFORE ANY WIRING IS CUT, CONTRACTOR SHALL VERIFY USAGE OF WIRING TO BE CUT TO ASSURE THAT SERVICES REQUIRED ARE NOT DISCONTINUED. PROVIDE ADDITIONAL WIRING DEVICES AND OTHER ACCESSORIES TO ENSURE CONTINUITY OF SERVICE TO OTHER PARTS OF INSTALLATION.
3. REMOVE ALL EXISTING WIRING NOT TO REMAIN IN SERVICE.
4. REMOVE ALL CONDUITS NO LONGER REQUIRED.
5. PHASE WORK TO ASSURE CONTINUITY OF ELECTRICAL, TELEPHONE AND SIGNAL SERVICES TO PARTS OF FACILITIES THAT WILL REMAIN IN USE.
6. REMOVE ALL EXISTING EQUIPMENT INDICATED TO BE REMOVED OR NO LONGER REQUIRED. BLANK OUTLETS AND PLUG ALL HOLES IN BOXES AND CABINETS.
7. ABANDON CONDUITS BELOW GRADE NO LONGER REQUIRED. PULL OUT ALL WIRES IN ABANDONED CONDUITS.

ELECTRICAL SYMBOLS

- EXISTING LARGE JUNCTION BOX
- EXISTING MOTOR OUTLET TO BE REMOVED
- (M) MOTOR OUTLET
- EXISTING MOTOR CONTROLLER TO BE REMOVED
- MOTOR CONTROLLER
- WIRING IN EXISTING RACEWAY
- WIRING IN EXISTING RACEWAY TO BE REMOVED
- WIRING IN EXPOSED RACEWAY
- WIRING IN FLEXIBLE RACEWAY

NOTES:
1. ANY CIRCUIT WITH NO FURTHER DESIGNATION INDICATES A TWO WIRE CIRCUIT. CIRCUITS WITH ADDITIONAL WIRES ARE INDICATED AS FOLLOWS: -//-, 3 WIRES: -///-, 4 WIRES, ETC.
2. GROUND WIRE PER NATIONAL ELECTRICAL CODE INDICATED AS FOLLOWS; —⟨— .
3. ALL EXPOSED CONDUIT AND BOXES SHALL BE PAINTED TO MATCH ADJACENT WALL OR CEILING SURROUNDING.

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1027 HALA DRIVE HONOLULU, HI 96817
TMK: 1-6-009:004

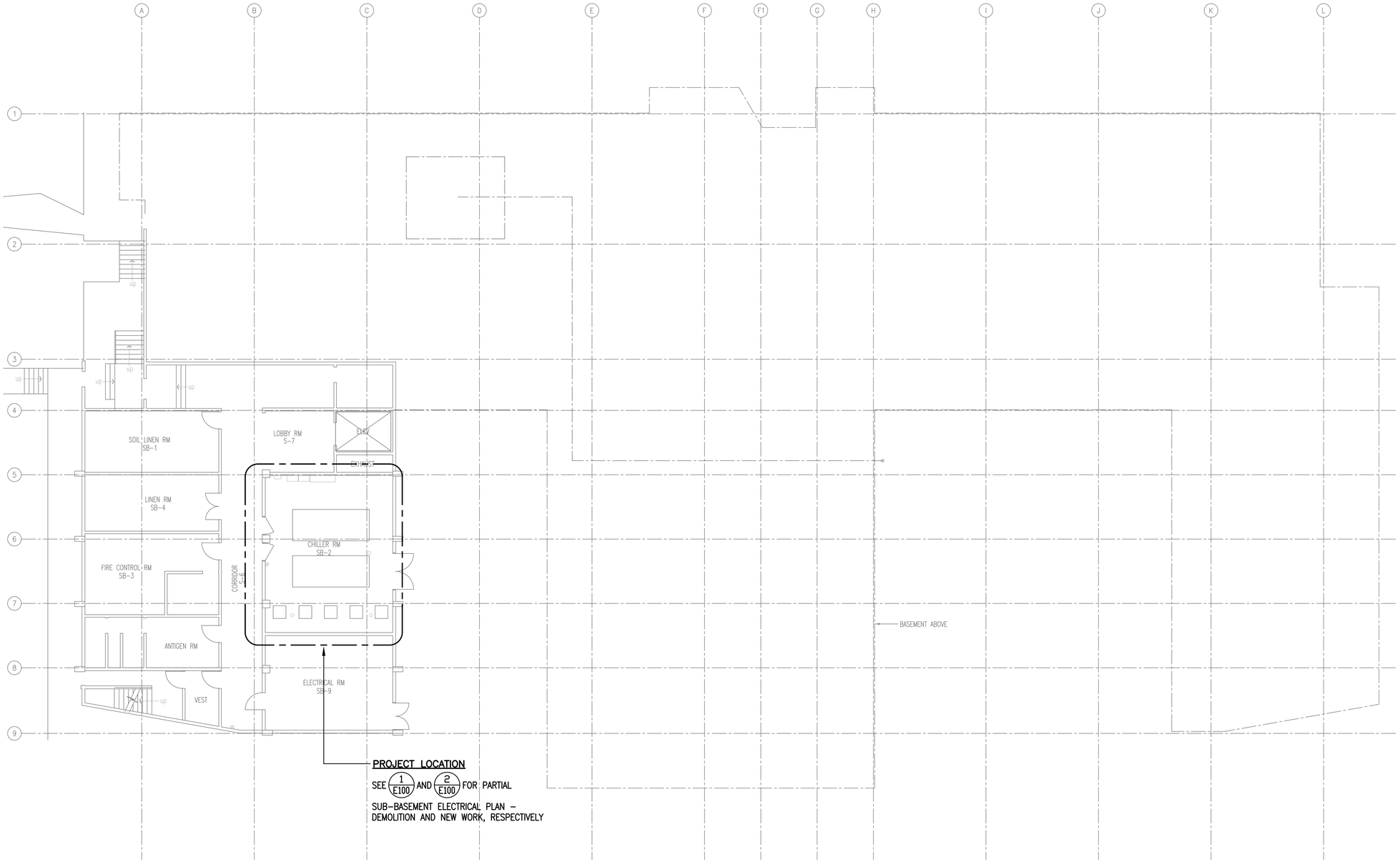
ELECTRICAL SYMBOLS, DEMOLITION NOTES, BUILDING ENERGY CODE

Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
JM	JY	JY

Drawing Number
E000

Sheet No 9 of 14



1 OVERALL SUB-BASEMENT ELECTRICAL PLAN

SCALE : 1" = 10' - 0"

0 10' 20' 30'

GRAPHIC SCALE : 1" = 10'-0"

Mechanical Enterprises, Inc.

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JASON YOGI
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No. 9062-E
HAWAII, U.S.A.

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MALUHIA HOSPITAL COOLING TOWER REPLACEMENT

1027 HALA DRIVE HONOLULU, HI 96817

TMK: 1-6-009:004

OVERALL SUB-BASEMENT ELECTRICAL PLAN

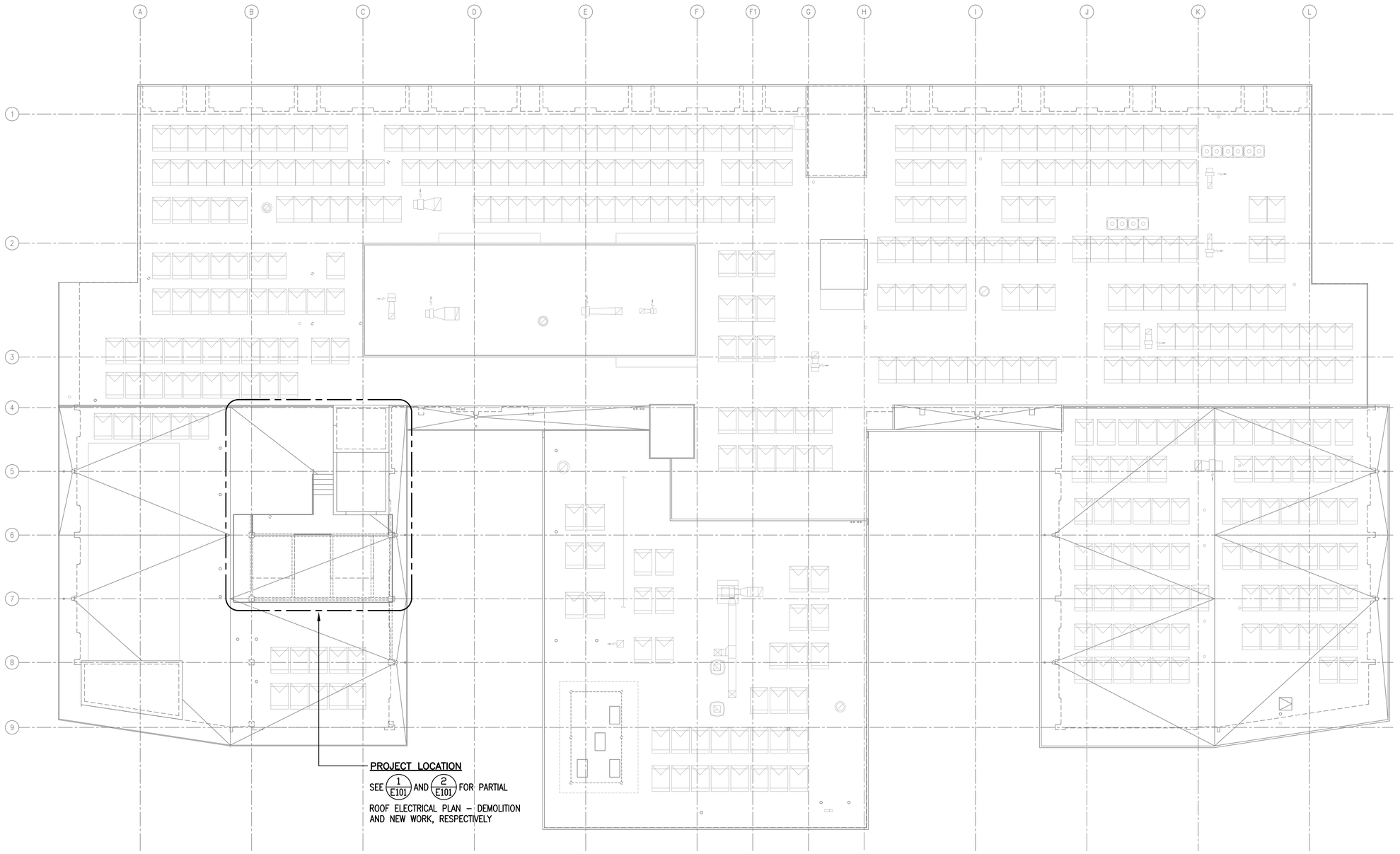
Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
JM	JY	JY

Drawing Number

E001

Sheet No 10 of 14



1 OVERALL ROOF ELECTRICAL PLAN
SCALE : 1" = 10'-0"

0 10' 20' 30'
GRAPHIC SCALE : 1" = 10'-0"

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OVERALL ROOF ELECTRICAL PLAN

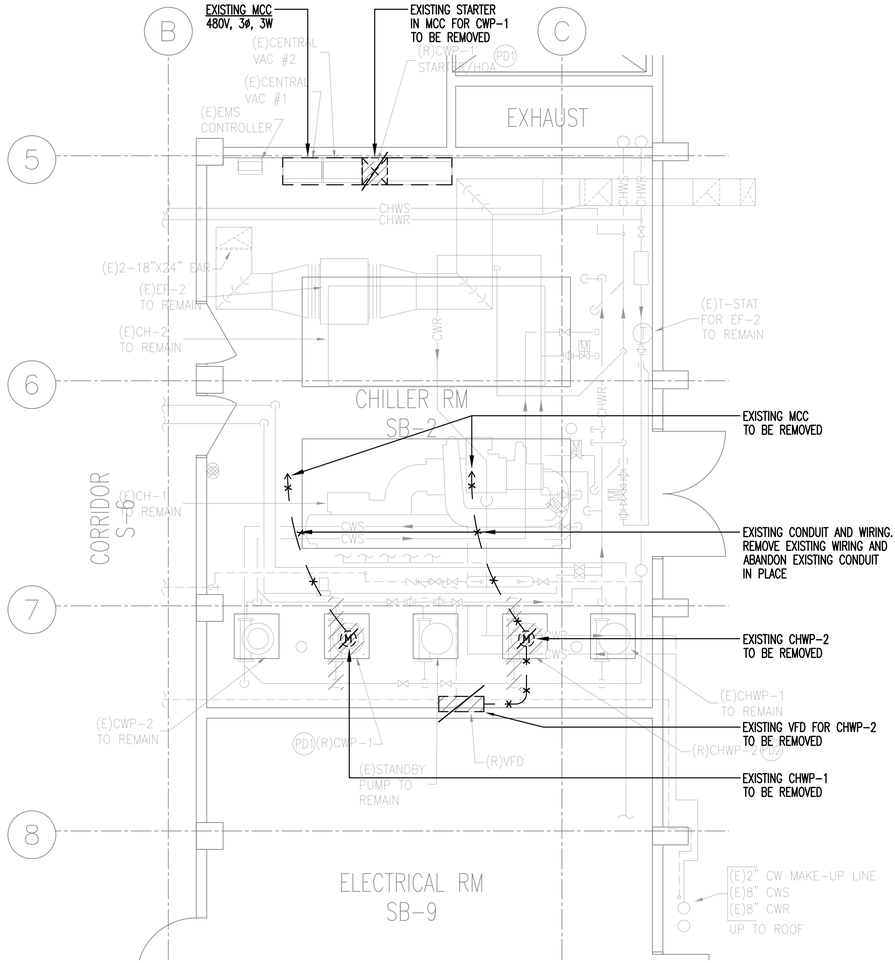
Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
JM	JY	JY

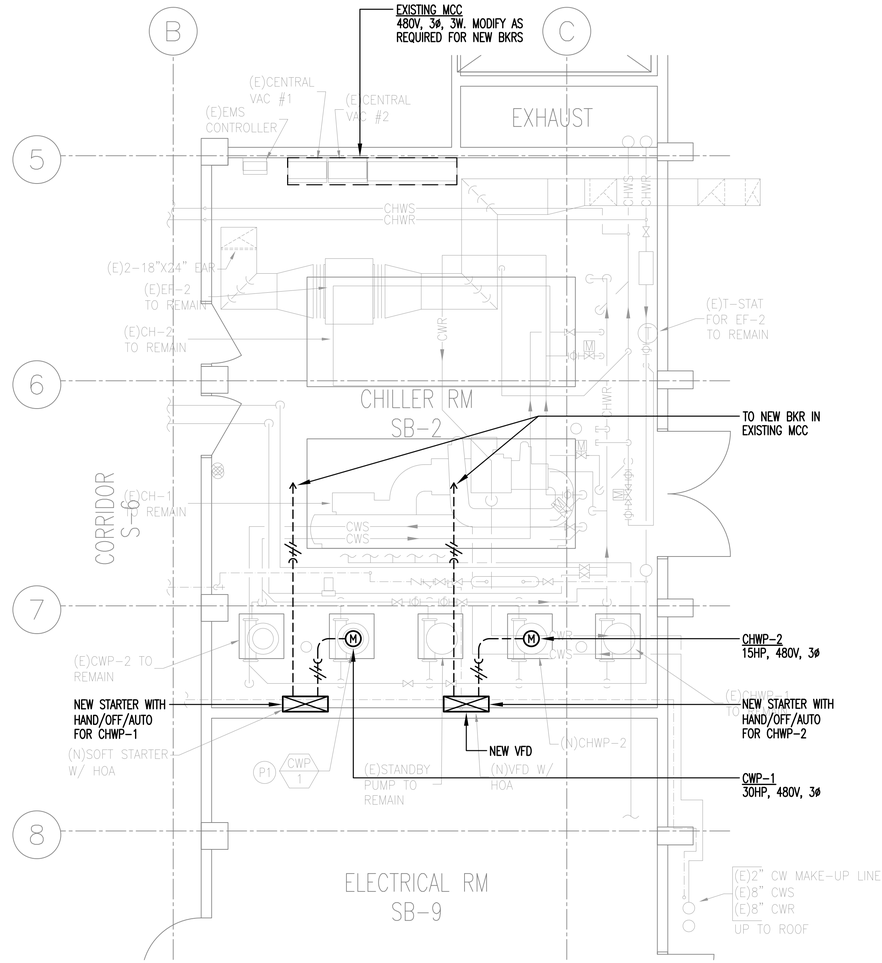
Drawing Number

E002

Sheet No 11 of 14



1 PARTIAL SUB-BASEMENT ELECTRICAL DEMOLITION PLAN
SCALE : 1/4" = 1'-0"



NOTES:
1. COORDINATE ALL WORK WITH MECHANICAL CONTRACTOR.

2 PARTIAL SUB-BASEMENT ELECTRICAL PLAN - NEW WORK
SCALE : 1/4" = 1'-0"

GRAPHIC SCALE : 1/4" = 1'-0"

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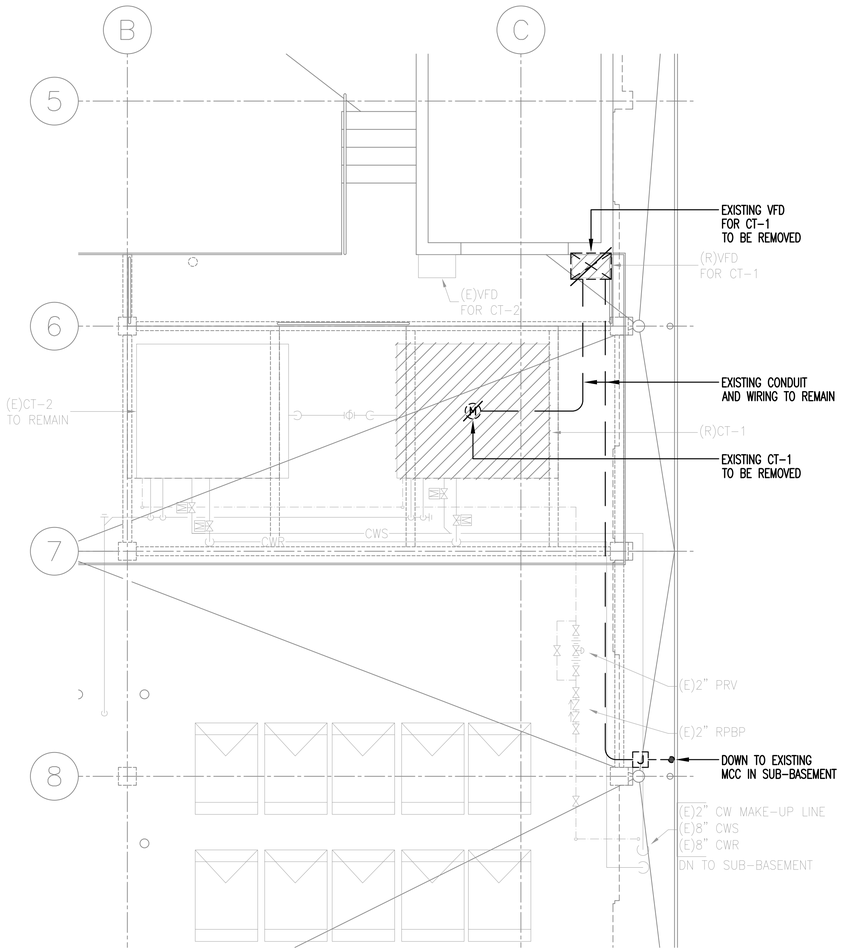
PARTIAL SUB-BASEMENT ELECTRICAL PLANS - DEMOLITION AND NEW WORK

Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
JM	JY	JY

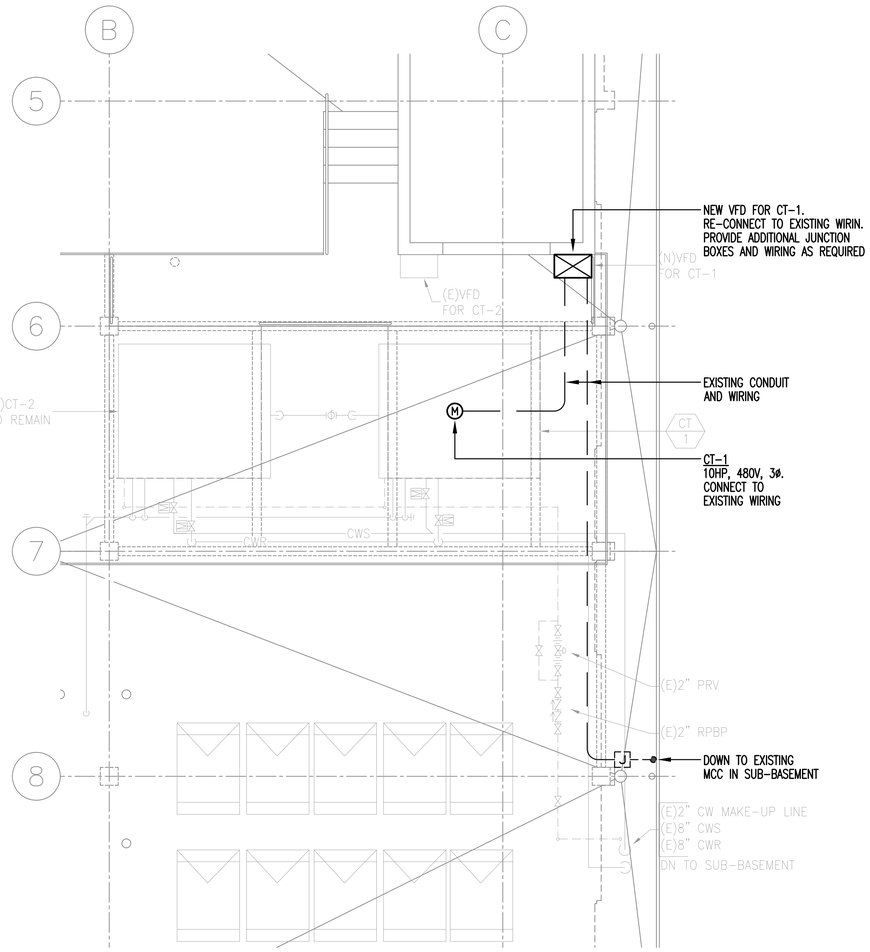
Drawing Number
E100

Sheet No 12 of 14



NOTES:
1. COORDINATE ALL REMOVAL WORK WITH MECHANICAL CONTRACTOR.

1 PARTIAL ROOF ELECTRICAL DEMOLITION PLAN
SCALE : 1/4" = 1'-0"



NOTES:
1. COORDINATE ALL WORK WITH MECHANICAL CONTRACTOR.

2 PARTIAL ROOF ELECTRICAL PLAN - NEW WORK
SCALE : 1/4" = 1'-0"

GRAPHIC SCALE : 1/4" = 1'-0"
0 4' 8' 12'

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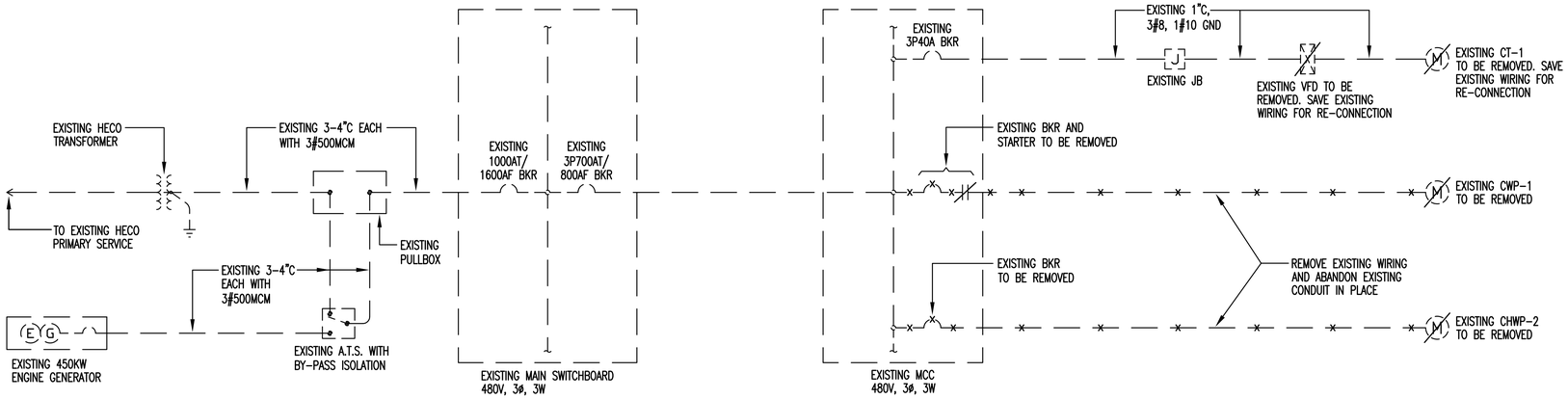
PARTIAL ROOF ELECTRICAL PLANS – DEMOLITION AND NEW WORK

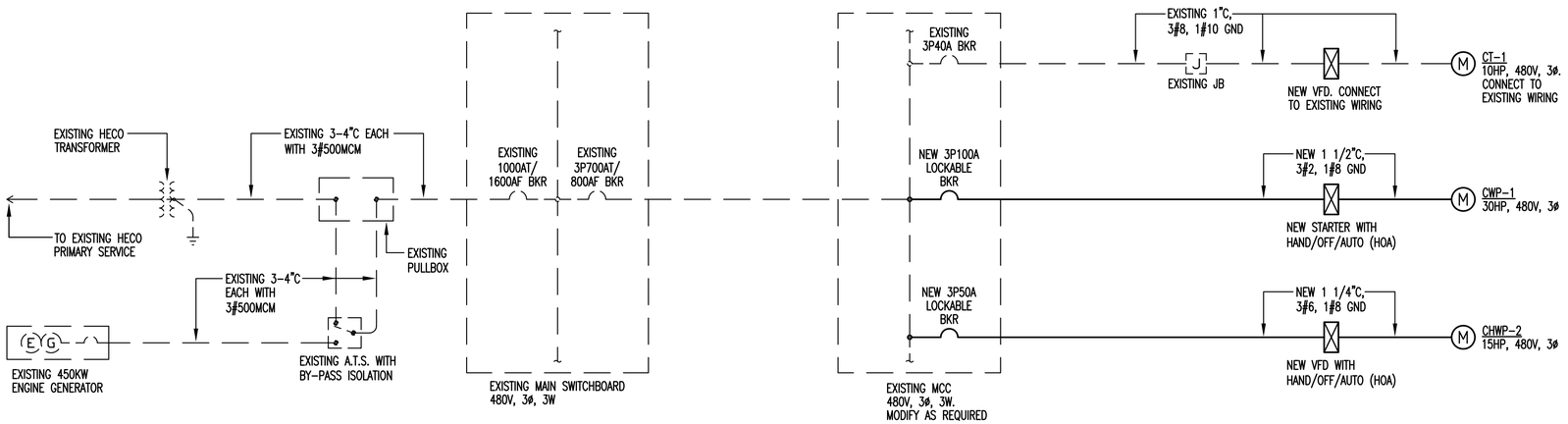
Project Number	Date
2025.053	DECEMBER 2025

Drawn	Checked	Designed
JM	JY	JY

Drawing Number
E101



1 SINGLE LINE DIAGRAM - DEMOLITION WORK
NOT TO SCALE



2 SINGLE LINE DIAGRAM - NEW WORK
NOT TO SCALE

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SINGLE LINE DIAGRAMS - DEMOLITION AND NEW WORK

Project Number	Date
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Drawn	Checked	Designed
JM	JY	JY

Drawing Number
E200

Sheet No 14 of 14