

Invitation for Bids

**Maluhia – Air Conditioning Replacement for 2nd Floor
21M-0007**

The Hawaii Health Systems Corporation (HHSC) Oahu Region is requesting bids from qualified companies for the replacement of the 2nd floor air conditioning at Maluhia located at 1027 Hala Dr., Honolulu, HI 96817.

The IFB may be obtained electronically from the following website:

<http://maluhia.hhsc.org/procurement/notices/>

Due to COVID-19, a pre-bid orientation will not be scheduled. The deadline for submission of written/mailed questions pertaining to the IFB is April 5, 2022.

All bids must be received by HHSC by April 19, 2022, 2:00 p.m. Hawaii Standard Time. Due to COVID-19, all bids shall be sent digitally to skawai@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 Scott Kawai, Oahu Region Contracts Department, at (808) 832-3025 or by email at skawai@hhsc.org.

Maluhia
1027 Hala Dr.
Honolulu, Hawaii 96817

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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	March 22, 2022
2.	No Pre-Bid Orientation due to COVID-19	N/A
3.	Closing Date for Receipt of Questions	April 5, 2022
4.	Closing Date for Receipt of Bids 2:00 p.m.	April 19, 2022
5.	Contractor Selection/Award Notification (on/about)	April 20, 2022
6.	Contract Start Date (on/about)	May 11, 2022

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:

Derek Akiyoshi
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:

Scott Kawai
Director of Contracts and Project Management
e-mail: skawai@hhsc.org
phone: (808) 832-3025

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 Maluhia on the island of Oahu.

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 attached HHSC General and Special Terms and Conditions 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:

Scott Kawai, Issuing Officer
e-mail: skawai@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, Scott Kawai, 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:

Derek Akiyoshi
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. Bid documents will be available upon request from the office of the Chief Executive Officer, at Leahi Hospital, 3675 Kilauea Avenue, Honolulu, HI, 96816.
- B. All bids shall be submitted to the Issuing Officer.
- C. 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.
- 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.

SECTION 2
SCOPE OF SERVICES

2.0 INTRODUCTION

MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR

Work for this project shall include, but is not limited to, the following:

- Secure all necessary permits and licenses required for the project prior to its commencement.
- Provide all necessary BMPs.
- Demolition, air conditioning work, electrical work, drywall work, and painting.
- Miscellaneous work as indicated in the drawings.
- Clean site and remove temporary BMPs.

2.1 CONTRACT PERIOD

The work shall be completed within 360 consecutive calendar days.

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 PROPOSAL 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 Proposal

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 May 11, 2022 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 be an original signature in ink. If the Bid Form on Appendix A is unsigned or the affixed signature is a facsimile or a photocopy, 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, that are not accompanied by bid security are non-responsive.

- 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 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 Maluhia or his authorized representative.
 - iii) Department shall be Maluhia or its designee.
 - iv) Engineer shall be the person so designated by Maluhia.
 - v) State shall be Maluhia 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 4 will be sufficient grounds for Maluhia 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 Maluhia 1027 Hala Drive Honolulu Hawaii 96817.
- 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 Maluhia (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 Maluhia (Contracts Office) within ten (10) calendar days after the bidders is awarded the contract. No proposal or contract shall be considered binding upon the State 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 “Maluhia.”
- 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. Maluhia 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. Leahi Hospital 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.gov/campaign.

(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.
- C. The option to extend the Contract will be at the sole discretion of the HHSC. Nothing in this IFB shall be construed or interpreted to mean that the Hospital is obligated to exercise the 12-month option period. The Contract may be extended, without the necessity of rebidding, at the same rates as proposed in the original bid, unless price adjustments are made and agreed upon by HHSC.

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)

SAMPLE BID TRANSMITTAL COVER LETTER

Dear Mr. Kawai,

(Name of Business) proposes to provide any and all goods and services as set forth in the “Invitation for Bid” for Maluhia Air Conditioning Replacement for 2nd Floor IFB No. 21M-0007, for which fees/costs have been set. The fees/costs offered herein shall apply from XXX, 2022 to XXX, 2024.

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)

PROPOSAL
FOR
FURNISHING LABOR AND MATERIALS
REQUIRED FOR
MALUHIA
AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR

TAX MAP KEY: 01-06-09:04

HONOLULU, OAHU, HAWAII

FOR THE
HAWAII HEALTH SYSTEMS CORPORATION
STATE OF HAWAII

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 Bid of:

_____ DOLLARS (\$_____).

BASE BID

1. Remove and dispose of air conditioning, provide new air conditioning, electrical work, drywall work, and painting. \$_____

TOTAL BASE BID (item 1) \$_____

SCHEDULE AND COMPLETION OF WORK

The Bidder agrees to commence and complete all work under this contract as follows:

PART 1

Upon receipt of the Letter of Award with written instructions from the Engineer, proceed with preparatory work including processing submittals, obtaining approvals, and permits, or other work as approved by the Engineer. No work will be allowed at the jobsite. No ordering of materials will be allowed until;

- (a) the date stipulated in the Letter of Notice to Proceed, or
- (b) upon earlier written notice from the Engineer, or
- (c) upon receipt of the executed contract for the project.

PART II

The Contractor shall fully complete all work under this contract within 360 consecutive calendar days from the date stipulated in the Letter of Notice to Proceed.

EVALUATION CRITERIA

Evaluating Bids: The lowest responsive, responsible bid is determined by the following procedures:

- 1) Project control budget is established at \$800,000.
- 2) The project will be evaluated based on the lowest bid price.

METHOD OF AWARD

The contract will be awarded to the lowest responsive and responsible Bidder whose bid meet the requirements and criteria set forth in the solicitation documents and as determined by the HHSC.

In the event that the total lump sum base bid for of all bidders exceed the project control budget, HHSC shall reserve the right to make an award to the apparent Low Bidder and seek additional funds and increase the project control budget or reduce the scope of work through negotiation to meet the project control budget.

OTHER CONDITIONS FOR AWARD

HHSC reserves the right to reject any and/or all bids and waive any defects when, in its opinion, such rejection or waiver will be for the best interest of HHSC;

The award of the contract shall be conditioned upon funds being made available for these projects and further upon the right of the HHSC to hold all bids received for a period of sixty (60) days from the date of the opening thereof, unless otherwise required by law, during which time no bid may be withdrawn;

Any agreement arising out of this offer is subject to approval of HHSC as to form, and to all further approvals, including the approval of the Administrator, required by statute, regulation, rule, order, or other directive.

OTHER CONDITIONS

1. Bidder agrees to pay liquidated damages to the HHSC to be 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 HHSC 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. These bonds shall conform to the provisions of Sections 103D-324 and 325, Hawaii Revised Statutes and any law applicable thereto.

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

Addendum No. 1 _____	Addendum No. 5 _____
Date	
Addendum No. 2 _____	Addendum No. 6 _____
Addendum No. 3 _____	Addendum No. 7 _____
Addendum No. 4 _____	Addendum No. 8 _____

It is understood that failure to receive any such addendum shall not relieve the Contractor 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 pursuant to Section 103D-302, Hawaii Revised Statutes 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 <u>Lump Sum Base Bid</u>	<u>License Number</u>	<u>Nature and Scope of Work to be Performed</u>
--	---------------------------	---

Complete Firm Name
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 No.

By _____
Signature (*4)

Title_____

Date_____

Address_____

Telephone No._____

(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 PROPOSAL

APPENDIX C

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

FOR

FURNISHING LABOR AND MATERIALS

REQUIRED FOR

**MALUHIA
AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR**

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.
ARCHITECT: CKM ARCHITECTS LLC.
ELECTRICAL ENGINEER: ITANO & ASSOCIATES, INC.

FEBRUARY 2022

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PROPOSAL
FOR
FURNISHING LABOR AND MATERIALS
REQUIRED FOR
MALUHIA
AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR

TAX MAP KEY: 01-06-09:04

HONOLULU, OAHU, HAWAII

FOR THE
HAWAII HEALTH SYSTEMS CORPORATION
STATE OF HAWAII

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 Bid of:

_____ DOLLARS (\$_____).

BASE BID

1. Remove and dispose of air conditioning, provide new air conditioning, electrical work, drywall work, and painting. \$_____

TOTAL BASE BID (item 1) \$_____

SCHEDULE AND COMPLETION OF WORK

The Bidder agrees to commence and complete all work under this contract as follows:

PART 1

Upon receipt of the Letter of Award with written instructions from the Engineer, proceed with preparatory work including processing submittals, obtaining approvals, and permits, or other work as approved by the Engineer. No work will be allowed at the jobsite. No ordering of materials will be allowed until;

- (a) the date stipulated in the Letter of Notice to Proceed, or
- (b) upon earlier written notice from the Engineer, or
- (c) upon receipt of the executed contract for the project.

PART II

The Contractor shall fully complete all work under this contract within 360 consecutive calendar days from the date stipulated in the Letter of Notice to Proceed.

EVALUATION CRITERIA

Evaluating Bids: The lowest responsive, responsible bid is determined by the following procedures:

- 1) Project control budget is established at \$800,000.
- 2) The project will be evaluated based on the lowest bid price.

METHOD OF AWARD

The contract will be awarded to the lowest responsive and responsible Bidder whose bid meet the requirements and criteria set forth in the solicitation documents and as determined by the HHSC.

In the event that the total lump sum base bid for of all bidders exceed the project control budget, HHSC shall reserve the right to make an award to the apparent Low Bidder and seek additional funds and increase the project control budget or reduce the scope of work through negotiation to meet the project control budget.

OTHER CONDITIONS FOR AWARD

HHSC reserves the right to reject any and/or all bids and waive any defects when, in its opinion, such rejection or waiver will be for the best interest of HHSC;

The award of the contract shall be conditioned upon funds being made available for these projects and further upon the right of the HHSC to hold all bids received for a period of sixty (60) days from the date of the opening thereof, unless otherwise required by law, during which time no bid may be withdrawn;

Any agreement arising out of this offer is subject to approval of HHSC as to form, and to all further approvals, including the approval of the Administrator, required by statute, regulation, rule, order, or other directive.

OTHER CONDITIONS

1. Bidder agrees to pay liquidated damages to the HHSC to be 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 HHSC 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. These bonds shall conform to the provisions of Sections 103D-324 and 325, Hawaii Revised Statutes and any law applicable thereto.

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

Addendum No. 1 _____	Addendum No. 5 _____
Date	
Addendum No. 2 _____	Addendum No. 6 _____
Addendum No. 3 _____	Addendum No. 7 _____
Addendum No. 4 _____	Addendum No. 8 _____

It is understood that failure to receive any such addendum shall not relieve the Contractor 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 pursuant to Section 103D-302, Hawaii Revised Statutes 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 <u>Lump Sum Base Bid</u>	<u>License Number</u>	<u>Nature and Scope of Work to be Performed</u>
--	---------------------------	---

Complete Firm Name
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 No.

By _____
Signature (*4)

Title_____

Date_____

Address_____

Telephone No._____

(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 PROPOSAL

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 is 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. The 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 and HHSC Project Number.
 - 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 INSTRUCTION TO BIDDERS

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 – For access to the site.

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

- B. Project Coordinator - For questions and clarifications during bidding and Requests for Substitutions.

NAME: Mr. Ross Tanaka
POSITION OR TITLE: Vice President
TELEPHONE NUMBER: (808) 275-4391
Email: RTanaka@meihawaii.com

- C. Procurement Agency – For questions regarding proposal and contract requirements.

NAME: Mr. Scott Kawai
POSITION OR TITLE: Contracts Manager
TELEPHONE NUMBER: (808) 832-3025
Email: SKawai@hhsc.org

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 360 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 \$250.00 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".

1.06 SPECIAL PROCEDURES DURING BIDDING

- A. Bid documents will be available online and from the Contracts Manager's office, at Maluhia, 1027 Hala Drive, Honolulu, HI, 96817.
- B. All bids shall be submitted to the Contracts Manager.
- C. All questions regarding the plans and specifications shall be submitted, in writing, to the Engineer. The Engineer 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 Contracts Manager. The Contracts Manager 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.

1.07 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 Architect.
- B. On a weekly or bi-weekly basis, the Contractor shall conduct a progress meeting with the Hospital and Architect. 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 Engineer 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 Engineer for review and confirmation. Approved requests for payment will be forwarded to the Contracts Officer for processing of payment.
- E. Upon substantial completion of the project, the Contractor shall submit in writing to the Architect 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 Engineer shall prepare a punchlist of noted discrepancies for the Contractor's remedial action. A final inspection will be performed upon completion of all punchlist items.

1.08 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 the Hospital 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 prior to starting.
- B. Staging and storage of materials on-site is limited and shall not be allowed unless coordinated and approved 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 will 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.

1.09 COVID-19 REQUIREMENTS AND PROTOCOLS

- A. All CONTRACTOR personnel entering the facilities shall be fully vaccinated. The CONTRACTOR shall comply with all Federal, State, County, HHSC, and facility COVID-19 rules, regulations, and requirements. All CONTRACTOR personnel entering the facility shall be vaccinated in accordance to CMS, CDC, and HHSC Oahu Region guidelines. Failure to do so may result in CONTRACTOR personnel being prohibited from entering facility. All costs incurred due to non-compliance shall be the responsibility of the CONTRACTOR.

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 Architect.
- 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 second floor AC system replacement and associated architectural/electrical work as required to accommodate the AC work. Scope of work includes but not limited to demolition of the existing HVAC system on the Mauka Wing of the second floor, chilled water piping work to connect FCU's in the dayroom Aux, Dayroom, central corridor and Linen room to the existing main chilled water piping in the Makai Wing, installation of new VRF systems and outside air system for the Mauka Wing, and test and balance of the HAVC systems. Refer to T-2 for more information.

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. Refer to Title sheet T-2 for Sequence of Construction.

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 devices 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

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 equipment, ductwork and chilled water piping etc. as indicated on the drawings and/or specified herein.
 - B. All dismantled materials having no salvage value as determined by the Architect or 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 damages 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 Architect.
- 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 Architect and/or 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 Architect and/or HHSC Representative for their removal.
- 3.06 CLEAN-UP
- A. From time to time, as directed by the Architect and/or 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 Architect and/or 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 07620 – SHEET METAL FLASHING AND TRIM

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

As specified in Section 01019.

1.02 DESCRIPTION OF WORK

- A. The extent of each type of sheet metal work is indicated on the drawings. Types of work specified in this section include but are not limited to, the following:

1. Metal flashing thru roof

1.03 SUBMITTALS

Shop drawings: Submit shop drawings with reference made to detail numbers on the contract drawings to the Architect for approval. No fabrication will be permitted before approval is secured.

1.04 STORAGE AND CLING

All materials shall be stored in such a manner as to afford adequate protection. Damaged materials shall not be used and shall be removed from the site.

1.05 WARRANTY: The contractor shall provide:

- A. Written warranty that workmanship and materials free from defects for 2 years.
- B. Following types of work shall be adjusted as defective work: Leaking, failure to stay in place, undue expansion, lifting, deformation, loosening, and separation of seams.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. All other exposed flashing and counterflashing, 20 gage zinc-coated steel, ASTM A 525, G90 hot-dip galvanized.
- B. Solder shall be 50% virgin lead and 50% pure block tin, conforming to ASTM B 32.
- C. Flux shall be non-corrosive resin type.

PART 3 – EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

- A. Surface to which sheet metal is to be applied shall be even, smooth, sound, thoroughly clean and dry, and free from defects that might affect the application. Report any unsatisfactory surfaces to the Architect. In the absence of such a report, the Contractor shall be held responsible for the finished product.
- B. All accessories or other items essential for the completeness of the sheet metal installation, though not specifically indicated on the drawings or specified, shall be provided. All such items unless otherwise indicated on the drawings or specified, shall be of the same kind of materials as the item to be applied. Nails, screws and bolts shall be of the type best suited for the purpose intended and shall be of a composition that is compatible with the metal to which it will contact.
- C. Except as otherwise indicated on the drawings or specified, the workmanship of sheet metal work, method of forming joints, anchoring, cleating, provisions for expansion, etc., shall conform to the standards, details and recommendations of the Sheet Metal and Air Conditioning Contractors National Association's "Architectural Sheet Metal Manual", and shall be subject to the approval of the Architect.
- D. All sheet metal work shall be watertight and wind-tight in compliance with the purpose intended for the items indicated on the drawings or specified herein.
- E. Lead flashing for all pipes passing through the roof shall extend 12" beyond the pipe in all directions and shall be carried to the top of pipe with at least 1" return inside of pipe.
- F. Protection from Contact with Dissimilar Materials: Sheet metal surfaces in contact with dissimilar metal shall be painted with heavy-bodied bituminous paint, or shall be separated by means of moisture-proof building felts.

3.02 PROTECTION

Protect all sheet metal work until final acceptance of the building.

3.03 CLEAN-UP

At completion of the work, clean up and remove all rubbish and debris from the premises which resulted from this work.

END OF SECTION

SECTION 07920 – SEALANTS AND CAULKING

PART 1 – GENERAL

1.01 GENERAL CONDITIONS

The revised general provisions and special provisions preceding these specifications shall govern this section of the work.

1.02 DESCRIPTION OF WORK

Completely close with sealant all joints indicated, specified to be sealed or as required by field conditions to provide a watertight condition.

1.03 SUBMITTALS

- A. **Manufacturer's Data:** Submit copies of manufacturer's product data and specifications for type of sealant required, to the Architect for approval.
- B. **Color Samples:** Three (3) sets of color finish samples of sealants.

1.04 JOB CONDITIONS

- A. Examine joint surfaces and backing, and their anchorage to the structure, and conditions under which joint sealer work is to be performed, and notify Contractor in writing of conditions detrimental to proper completion of the work and performance of sealers. Do not proceed with joint sealer work until unsatisfactory conditions have been corrected in a manner acceptable to Installer.
- B. **Weather Conditions:** Do not proceed with installation of sealants under adverse weather conditions. Proceed with the work only when forecasted weather conditions are favorable for proper cure and development of high early bond strength.

1.05 PRODUCT HANDLING

Delivery: Deliver caulking compounds and sealants to the jobsite in sealed containers labeled to show the designated name, formula, or specification number, lot number, color, date of manufacture, shelf life, curing time, manufacturer's directions, and name of manufacturer.

1.06 GAURANTEE

- A. **Sealant Guarantee:** Submit two (2) executed copies of a written guarantee signed and countersigned by the installer and Contractor, guaranteeing the sealant materials and workmanship for a period of two (2) years, against leakage, hardening, cracking, crumbling, melting, shrinkage, running, or staining of adjacent surfaces.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. **Sealant Backer Rod:** Compressible rod stock of polyethylene foam, polyethylene-jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable, non-absorptive materials as recommended for compatibility with sealant by the sealant manufacturer to control the joint depth for sealant placement, to break bond of sealant at bottom of joint, to form optimum shape of sealant bead on backside, and to provide a highly compressible backer which will minimize the possibility of sealant extrusion when joint is compressed.
- B. **Bond-Preventive Materials:** One of the following as best suited for the application.
 - 1. Polyethylene tape, pressure-sensitive adhesive. The adhesive is required only to hold tape to the construction materials.
 - 2. Aluminum foil: Military specification MIL-A-148E
 - 3. Wax Paper: Fed. Spec. UU-P-270F
- C. **Masking Tape:** Fed. Spec. UU-T-100D
- D. **Rope Yarn:** Fed. Spec. HH-P-117, Type I
- E. **Primer for sealants:** Nonstaining, as recommended by the sealant manufacturer.
- F. **Exterior Sealant:** One-component polysulfide or polyurethane base sealant, conforming to Fed. Spec. TI-S-230C, Type I or Type II as applicable. Tremco, "Lasto-Meric", Pecora "Synthacalk", Sonneborn "Sonoloastic", "Sika-Flex 1A", Woodmont "Chem-Caulk" 100, or an approved equal. Color shall be as selected by Architect.
- G. **Interior Sealant:** SIKAFLEX 420, acrylic latex by DAP or approved equal.

PART 3 – EXECUTION

3.01 SURFACE PREPARATION

- A. **Bond-Preventative materials for Sealants:** Install on the bottom of the joint cavity and other surfaces indicated to prevent the sealant from adhering. Carefully apply so as to avoid contamination adjoining surfaces or breaking bond with surface other than those required.

3.02 APPLICATION

- A. **Sealants:** Depth of sealant in joint shall not exceed width, up to ½" thickness. Apply in strict accordance with sealant manufacturer's instructions, including joint usage.
1. **Primer:** Use on concrete, masonry units, wood, and other porous surfaces in accordance with instructions furnished with the sealant. Apply only on surfaces to which the sealant must bond to provide a good weatherproofed seal.
 2. **Paper masking tape:** Place on the finish surface on one or both sides of a joint cavity to protect adjacent finish surfaces from compound smears. Remove masking tape within 10 minutes after joint has been filled and tooled.
 3. **Joints:** Fill solidly and smoothly, without sags, wrinkles, or thin edges. Tool slightly concave after sealant is installed. When tooling white or light-color sealant, use dry or water-wet tool. Remove excess material.

3.03 CLEANING

Clean surfaces adjoining the caulked and sealed joints of smears or other soiling resulting from the caulking and sealing application.

END OF SECTION

SECTION 09250 – GYPSUM BOARD

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

As specified in Section 01019.

1.02 DESCRIPTION OF WORK

- A. **Work:** Complete drywall work including ceiling and soffits, as indicated on drawings and/or specified herein.
- B. **Related work:** Wood studs, blocking and miscellaneous backings as necessary in ROUGH CARPENTRY section.

PART 2 – PRODUCTS

2.01 MATERIALS

All materials specified herein are products of United States Gypsum Co. unless otherwise noted. Obtain all drywall system components and material from a single manufacturer.

- A. **Gypsum Wallboard panels:**
 - 1. Sheetrock SW panels, 5/8" thick, standard and Firecode (Type X) and 1/2" thick, standard.
 - 2. **W/R Panels:** Sheetrock brand, W/R, 1/2" thick at fiberglass tub/shower Wainscot.
- B. **Fasteners:** USG brand Screws, Type W.
- C. **Tape and Joint Compound:** Perf-A-Tape Reinforcement, Durabond Joint Component-Taping.
- D. **W/R Joint Compound:** USG Sheetrock Brand W/R Compound.
- E. **Resilient Channel:** USG RC-1.
- F. **Clips:** "Prest-On."
- G. **Corner Bead:** B-1-W galvanized metal corner bead. Beadex manufactured or approved equal.

PART 3 – EXECUTION

3.01 INSTALLATION OF DRYWALL

- A. In strict accordance with the specifications of USC System Folder SA-924 and SA-927, and the latest edition of the USG "Gypsum Construction Handbook."
- B. In full compliance with requirements of Uniform Building Code (UBC) Tables, International Conference of Building Officials (ICBO) Reports, and Underwriter's Laboratory (UL) Tests for rated walls.
- C. "Prest-on" clips to be installed in strict accordance with manufacturer's written instructions.
- D. Proceeding with this work will indicate acceptance of sub-surface conditions as being suitable for this work.

W/R panel application a W/R joint compound per USG Form No. WB-034.

- E. **Textured Finish:** Machine spray; knock down finish at bathroom and kitchen ceilings.

END OF SECTION

SECTION 09510 – ACOUSTICAL CEILINGS

PART 1 – GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Suspension Systems
 - 2. Acoustical ceilings
- B. Related sections
 - 1. Division 15 – Mechanical
 - 2. Division 16 – Electrical

1.02 SUBMITTALS

- A. Meet the applicable requirements of Section 01300.
 - 1. Shop drawings.
 - 2. Samples: One 12" x 12" sample of each type of acoustical ceiling material and one sample each of main runner and cross tee.

1.03 QUALITY ASSURANCE

Use adequate numbers of skilled workman thoroughly trained and experienced in the necessary crafts.

PART 2 – PRODUCTS

2.01 CEILING SUSPENSION SYSTEM

- A. Chicago Metallic Corp., Donn Corp., Flange-klamp, or approval equal. Minimum gage grid members; aluminum .024". Provide matching wall angle and shadow moldings as indicated.
- B. Exposed Grid
 - 1. Type I: – 2' x 4'
 - 2. Type II: – 2' x 4'

2.02 SUSPENSION ACCESSORIES

- A. **Inserts for concrete decks:** Mechanical fastening points sufficient to carry 25 pounds each.

- B. **Suspension wire:** No. 12 gage or larger galvanized annealed iron wire.
- C. **Attachments and accessories:** Necessary fasteners, attachments and accessories for complete installation.

2.03 ACOUSTICAL PANELS

- A. **Type I:** Nominal 24" x 48" x 5/8" minimum mineral fiber lay-in panels, STC 40-44, NRC .50-.60, light reflectance LR1 (over 75%), flame spread 0-25, square edge, factory applied white vinyl latex paint finish. USG Auratone Fissured, Armstrong Fissured Minaboard, or approved equal.
- B. **Type II:** At Contractor's option, provide one of the following:
 - 1. **Metal pan:** Nominal 24" x 48" perforated .032" gage aluminum lay-in panels for exposed grid, baked white enamel finish. Fiberglass acoustical pad sealed in PVC, 1-1/2" thick, 3/4 lb. density, NRC .85. Simplex or approved equal. Surface burning characteristics: Class 25.
 - 2. **Metal faced panels:** Nominal 24" x 48" x 5/8" aluminum clad non-combustible mineral lay-in ceiling board, white baked enamel finish, NRC .55-.65, Capaul "Acousti-Clad", Simplex "Pirosone", Conwed "Metal Faced Perforated", random pattern, or approved equal. Surface burning characteristics: Class 25.
 - 3. **Mineral fiber panels:** Nominal 24" x 48" x 5/8" square edge lay-in panels. STC 40-44, NRC .55-.65, light reflectance over 75%, flamespread Class 25. Armstrong "Armashield", or approved equal. Surface burning characteristics: Class 25.

PART 3 – EXECUTION

3.01 INSPECTION

Examine the substrates and conditions under which work of this section will be performed. Do not proceed until unsatisfactory conditions detrimental to timely and proper completion of the work have been corrected.

3.02 INSTALLATION AND WORKMANSHIP

- A. Install mechanical suspension system and acoustical units in strict accordance with the manufacturer's directions.
- B. Refer to electrical drawings for the quantities and locations of lighting fixtures, recessed loud speakers and other fixtures, and to mechanical drawings for the quantities and locations of air supply and return diffusers, grilles, registers and sprinkler heads, which will be installed in the ceiling, and which will replace or pierce the acoustical units.

- C. Use wall moldings of proper strength to support the acoustical tiles without any visible deflection. Install wall and trim moldings at walls, partitions and column faces level and true to line, with neat and close-fitting spliced and mitered joints. Attach moldings rigidly and adequately to the surfaces on which they occur at a maximum of 2 ft. on center. Keep acoustical panels under tension by wall springs.

- D. **Exposed grid suspension system:** Install level and true to line, with neat and close-fitting joints between spliced members and intersecting members. Grid to be square, ends and cross tees tightly butted, and faces in the same plane. Neatly and accurately cut and place acoustical panels to fit snugly into the main and cross tees, with no space between the bottom of the acoustical panels and grid system, and without gaps or panel edges showing in the finished installation.

3.03 CLEAN-UP

Upon completion of this work, remove debris and excess materials. Clean adjacent surfaces of any evidence of this work, clean or replace dirty or damaged materials, and leave the work clean and perfect.

END OF SECTION

SECTION 09900 - PAINTING

PART 1 – GENERAL

1.01 GENERAL REQUIREMENTS

As specified in Section 01019.

1.02 DESCRIPTION OF WORK

- A. Complete all preparation, painting, staining and finishing throughout.
- B. **Related work:** Shop primed and factory prefinished items covered under pertinent Sections.
- C. **Surfaces Not to be Painted:** No painting is required on aluminum, stainless steel, concrete slabs, factory finished items, plastics and glass. No painting of concealed plumbing and electrical conduits will be required.

1.03 SUBMITTALS

- A. Paint scheduled of materials and treatment.
- B. **Colors and Samples**
 - 1. Architect will furnish complete Color schedule using Spectra-Tone system, Glidden, or equal.
 - 2. Prepare preliminary color samples approximately 24" x 24" for each color and type of paint specified on surfaces to receive them.
 - 3. After acceptance of color samples, paint test areas of approximately 10 sq. ft. on surfaces and in areas to receive each color selected.
 - 4. Secure final approval of color before proceeding.
 - 5. Resubmit if not approved.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. **Manufacturer**
 - 1. Treatment schedule is based on specific products of SpectraTone, unless otherwise noted.
 - 2. Schedule is intended as guide to designate desired quality and standard of materials.
 - 3. **Fungus and Algae Control:** A standard commercial mildewcide shall be added to all paints and finishes during the manufacturing process for the particular paint. The fungicide shall be incorporated into the paint in a quantity so that the paint meets the fungus resistance test specified in Fed.

Spec. TT-P-19 or Fed. Spec. TT-P-29, for exterior and interior paints respectively.

4. Equal products of Sinclair, Ameritone, Decratrend, Sherwin Williams, Old Colony, Dupont, Valspar, Cabots, Fuller, Devoe, Dutch Boy, Glidden, Pittsburgh, Cuprinal and Olympic may be used subject to approval of schedule of materials and treatment as required in submittal paragraph.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Protect equipment, structure, finish hardware and completed work with suitable covering.
- B. Verify that all surfaces are properly prepared, dry and clean before starting work.
- C. Proceeding with this work will indicate acceptance of surface as being suitable.
- D. **Finish Woodwork:** Fill joints, cracks, nail holes, similar defects, with plastic wood or putty as best suited for condition and color tinted to match natural finish. Sand smooth.
- E. **Ferrous Metal:** Remove grease, oil, rust, scale and dirt.
- F. Fine sand between succeeding coats of all enamel and wherever scheduled.
- G. Remove cover plates, light fixtures and other similar items in contact with surfaces to receive paint.

3.02 APPLICATION

- A. Performed by skilled craftsmen, spread evenly without sags or runs.
- B. **Doors:** Finish all edges, including tops and bottoms. Fill edges of exposed plywood doors and panels.
- C. **Unpainted Apparatus and Equipment and Their Supports:** One coat rust inhibiting primer and two coats semi-gloss enamel.
- D. **Factory Primed Material (Metal):** Two coats semi-gloss enamel.
- E. **Exposed Conduits, Piping, Fittings, Boxes:** One coat galvanized iron primer and two coats of finish to match adjacent surface.
- F. Exterior Painting
 1. Apply first coat within 5 days after siding is installed.

2. Apply second coat within 5 days after simulated acoustical spray and texturing has been completed.
 3. Trim the exterior within 5 days after the second coat.
 4. Touch-up the exterior after grading and sidewalks are complete; at least 3 days before turnover.
- G. Seal all edges of Simpson Weather Beater doors in strict accordance with the manufacturer's written instructions.

3.03 TREATMENT SCHEDULE:

A. EXTERIOR

Hardboard Siding	1 coat exterior primer on unprimed surface only
Soffits:	1 coat acrylic house paint on non prefinished siding
Hardboard Siding	Acrylic house paint
Touchup:	
Wood Front Door:	1 coat exterior primer
(top & bottom edges to be painted also)	1 coat trim enamel (semi-gloss)
Simpson Weather Beater Doors:	1 coat latex primer
	1 coat latex semi-gloss (above materials per door manufacturers recommendation)
Wood Trims:	2 coats acrylic house paint
Ferrous Metals:	1 coat metal primer over shop coat
	1 coat trim enamel
Galvanized Metals:	1 coat galv. Primer over shop coat
	1 coat trim enamel
Stair Handrail/trim:	1 coat exterior primer
	1 coat trim enamel
Cement Wash on CMU:	2 coats "Spectratex" #701 by Spectra Tone or approved equal

B. INTERIOR

F-1 Wood:	1 coat alkyd undercoat
	1 coat Spectra Tone special off-white enamel

F-2 Drywall (Typ.): 1 coat Mason's Super Flat wall

F-3 Drywall & Ceiling 1 coat PVA sealer
(Kitchen and Baths) 1 coat Spectra Tone special off-white #39 (Semi gloss)

F-4 Ferrous Metals: 1 coat metal primer over shop coat
1 coat trim enamel

F-5 Galvanized
Metals: 1 coat galv. primer over shop coat
1 coat trim enamel

3.04 CLEANING

- A. Do not allow accumulation of empty containers and other excess items.
- B. Remove spills and splashes from adjacent surfaces, wash surfaces to original undamaged condition.
- C. Reinstall all items removed for painting.

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 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 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.

- 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 timely notice of its readiness for testing any work including the data arranged so HHSC may observe such testing. The Contractor shall bear all cost of such tests.
- J. HHSC 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 as covered by modifications. At the time of submission, inform HHSC 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 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.
- 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 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. 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 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: the Building Code of the City and County of Honolulu, the Fire Code of the City and County of Honolulu, 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 at once. If the Contractor proceeds with the work affected without instructions from HHSC, he shall make good any resultant damage or defect. All interpretations of Drawings and Specifications shall be clarified by HHSC.

1.08 TRADE NAME

Mentioning of a trade name in the plans and specifications indicates that the manufacturer is acceptable to HHSC. 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 that is referred to.
- D. HHSC 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. Damaged or defective items, in the opinion of HHSC, 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, 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 for approval at least two weeks before intended date of service interruptions. Exact date and time of interruption allowed shall be determined by HHSC. 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 and shall be removed when no longer necessary.
- B. The Contractor shall submit to HHSC 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, 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 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.
- D. 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 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-foot 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.

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. 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 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 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.

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 manufacturer'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 manufacturer'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. Air Cooled Condensing Unit (Variable Refrigerant Flow)
2. Fan Coil Unit (VRF)
3. Outside Air Fan
4. Ductwork and accessories.
5. Refrigerant Piping and Accessories
6. Refrigerant and Condensate 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 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.
- 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 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 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.
- 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 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. 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. 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 at no additional cost to HHSC 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. 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. 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 REQUIREMENTS.

- A. Ductwork and Accessories:
 - 1. General Sheet Metal Ductwork: Galvanized steel sheets, ASTM A527. Construction, gauges, and reinforcement shall comply with SMACNA HVAC Duct Construction Standards.
 - 2. Fittings: Vaned elbows, take-offs, branch connections, transitions, volume dampers, and flexible connections shall comply with SMACNA

standards. Dampers shall be opposed blade type with locking quadrant. Provide turning vanes in all elbows and where indicated.

3. Supports: Galvanized steel straps or hanger rods in accordance with SMACNA Duct Construction Standards.
4. Flexible Connections: Neoprene coated glass fabric weighing approximately 30 ounces per square yard.
5. Birdscreens: Two by two mesh, 0.063 inch diameter aluminum wire or .031 inch diameter stainless steel wire, with frame.
6. Volume Dampers: Volume dampers shall be installed where shown and as required for air balancing. Dampers shall be two gauges heavier than the duct in which they are installed and shall be reinforced to prevent vibration and noise
7. Duct Insulation: 2-inches thick, 1-psf density, fiberglass duct wrap with flame spread rating not to exceed 25 and smoke development rating not to exceed 50. Provide vapor barrier. Duct wrap shall include top of ceiling supply diffusers and all flex connections at air handling equipment.

2.02 FAN COIL UNIT

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 larger than 1 horsepower shall have an efficiency rating equal than or higher than ratings for HELCO Electric Rebates.

<u>Isolation Equipment</u>	<u>Minimum Static Description*</u>	<u>Deflection</u>
FCU	Rubber-in-shear with steel spring isolator	1"

* Isolator mounting shall be in accordance with manufacturer's dimensioned drawings. Isolators shall be sized specified static deflection from manufacturer's published loading information at each mounting point, based on operating weight.

A. Air Cooled Condensing Unit (VRF): Hermetic inverter driven scroll

compressor with accumulator, charging valve, crankcase heater, timer circuit, internal vibration isolation and thermal overload protection. Non-ferrous copper condenser coil with lanced or corrugated plate fins. Direct drive, variable speed, propeller type condenser fan with permanently lubricated, totally enclosed and inherently protected motor. Factory applied Blue Fin corrosion protection coating on condenser fins and tubes. Galvanized steel unit casing, bonderized and finished with a powder coated baked enamel.

- B. Fan Coil Unit (VRF): Ceiling suspended high/medium static ducted, direct expansion coil, direct drive fan, and filter box with MERV 13 rating filters as required. Capacity and characteristics of units shall be as indicated on drawings. Unit to be equipped with digital thermostat controls with on-off/timeclock features and locking covers. Provide GPS Ionization system with in-line on-off switch, programmable auto-cleaning cycle. Provide control voltage transformers and relays as required.
- C. Ceiling Cassette Fan Coil Unit (VRF): Ceiling recessed one-way cassette, direct expansion coil, direct drive fan, washable filter, and condensate drain pump as required. Capacity and characteristics of units shall be as indicated on drawings. Unit to be equipped with digital thermostat controls with on-off/timeclock features and locking covers. Provide GPS Ionization system with in-line on-off switch. Provide control voltage transformers and relays as required.
- C. Ceiling Cassette Fan Coil Unit (VRF): Ceiling recessed four-way cassette, direct expansion coil, direct drive fan, washable filter, four-way grille with individually adjustable vanes, and condensate drain pump. Capacity and characteristics of units shall be as indicated on drawings. Unit to be equipped with digital thermostat controls with on-off/timeclock features and locking covers. Provide GPS Ionization system with in-line on-off switch. Provide control voltage transformers and relays as required.
- D. Inline Cabinet Fan: Direct drive, inline centrifugal cabinet fan. Fan performance shall be in accordance with AMCA test procedures. Fan shall be equipped with integral, spring loaded backdraft damper (exhaust applications), unit mounted solid state speed controller and interlocked with lights with time delay as indicated on plans. Provide HEGA carbon cloth filtration for outside air applications. See plans for capacity and characteristics.

2.03 AUTOMATIC CONTROL SYSTEM

- A. Electric type actuators: Provide all necessary accessories as required for a complete operable system.
- B. Duct Smoke Detectors: Duct smoke detectors shall be addressable, photoelectric type and shall be interlocked with and shall annunciate the building fire alarm system and shall shut-off the fan.
- C. Control Panels: All controllers, relays, switches, etc. for equipment located

within equipment rooms shall be mounted in enclosed control panels with hinged locking doors. All control devices for equipment located exposed to weather shall be mounted inside NEMA 4X enclosures. Location of each panel is to be convenient for adjustment service. Nameplate shall be provided under each panel mounted control device describing the function of service. All electrical devices within the panel shall be pre-wired to terminal strips with all inter-device wiring within panel completed prior to installation of system.

- D. Electric control wiring, wiring connections and conduit required for installation of temperature control system as herein specified, shall be provided by temperature control contractor unless specifically shown on the drawings or called for in the specifications to be by the Electrical Contractor. All wiring shall comply with local and the National Electrical Codes. Provide control wiring for electric power of variable air box dampers and controls. All wiring shall be in conduit. Conduit exposed to weather shall be galvanized steel pipe conduit. No EMT is allowed outside building. Coordinate with Electrical Contractor, requirement and location of power connections for control voltage transformers where applicable at no extra cost to the HHSC.
- E. Access Panels: Provide access panels for all mechanical equipment requiring adjustment, servicing and routine maintenance. Access panels shall be 12"x12" minimum size in walls and partitions, 24"x24" minimum size in ceilings. Provide fire rated access panels matching wall and/or ceiling fire rating where required.

2.04 AIR COOLED CONDENSING UNIT

- A. Air cooled condensing unit shall be rated in accordance with AHRI 210/240. Unit shall be direct expansion, single-zone air cooled condensing unit. Unit shall be sized based on the Contractor's cooling load calculations. Unit shall be completely factory assembled, piped and wired and run tested at the factory. Unit shall have variable speed driven compressor(s) with plate fin condenser coil, condenser propeller fans and motors, controls and holding charge of R-410A. Refrigeration circuit shall include high efficiency oil separator and accumulator with refrigerant level sensors and controls. Unit shall be furnished with the following safety devices: high pressure safety switch, overcurrent protection, crankcase heater and DC bus protection.
- B. Unit Casing: Unit shall be constructed of galvanized steel panels, bonderized and finished. Unit shall have removable panels that allow access to all major components and controls.
- C. Condenser Fans and Motors:
 - 1. Condenser fans shall be direct driven, variable speed, propeller-type, discharging air horizontally.
 - 2. Condenser fan discharge openings shall be furnished with coated fan safety guards.

3. Fans shall be statically and dynamically balanced.
4. Motors shall have inherent protection, permanently lubricated bearings and multi-speed operation of the inverter type.
5. Fan and motor shafts shall be corrosion resistant.

D. Compressor:

1. Inverter scroll compressor shall be variable speed.
2. Compressors shall be hermetically sealed.
3. A crankcase heater shall be factory mounted on the compressor.
4. Compressor shall be equipped with an internal thermal overload.
5. Each compressor shall be mounted on vibration isolators.

E. Condenser Coil:

1. Coils shall be copper tubes mechanically bonded to aluminum plate fins.
2. Coils shall be factory pressure and leak tested.
3. Coil shall be protected with an integral metal guard.

F. Control: Condensing unit shall be completely factory wired with necessary controls and contactor pressure lugs or terminal block for power wiring.

1. The system shall automatically restart operation after a power failure without the loss of settings.
2. Unit shall incorporate an auto-charging feature and a refrigerant charge check function.

G. Coatings: Unit shall be coated in accordance with paragraph entitled "CORROSION PROTECTION" below.

H. Printed Circuit Board: Printed circuit board shall be sealed with Dow Corning SE9187L silicone sealant or accepted equivalent to prevent corrosion or short circuits from vermin intrusion. All work shall be performed in a manner that will maintain all existing warranties.

2.05 AIR DISTRIBUTION DEVICES

- A. Supply Register: Adjustable, double blade type, front blades horizontal, rear blades vertical, 3/4 inch blade spacing with aluminum opposed blade volume control damper. Aluminum construction with off-white baked enamel finish. Titus or accepted equivalent.

- B. Return Register: Fixed blade type, 45 degree angle, 3/4 inch blade spacing with aluminum opposed blade volume control damper. Aluminum construction with off-white baked enamel finish. Titus or accepted equivalent

2.06 CORROSION PROTECTION

A. Finned Tube Heat Exchanger:

1. Condenser finned tube coils shall be protected with a protective coating. Surface metal preparation shall include degreasing and etching or phosphatizing by immersion.
2. The coating shall withstand and show no sign of attack after 4,000 hours of salt spray test (ASTM B117) and acidic salt spray test (ASTM G85).
3. The coating shall be Aluminum Polyurethane similar to Blygold "PoluAl XT" and shall be applied by a manufacturer qualified applicator. Applicator shall provide a minimum, limited, 3-year warranty on parts and labor. HVAC equipment manufacturer applied coatings will be considered in lieu of Blygold provided the manufacturer applied coatings meet or exceed the performance specified above.

B. Cabinet and Exterior Surfaces:

1. Unit cabinet shall be coated with epoxy or polysiloxane similar to Ameron PSX 700 Engineered Siloxane. Surface metal preparation shall include degreasing and etching. HVAC equipment manufacturer applied coatings will be considered in lieu of PSX 700 provided the manufacturer applied coatings meet or exceed the PSX 700's performance.
2. The coating shall be applied to all interior and exterior surfaces until a total of 6-8 mils D.F.T. is achieved. Coating shall be applied in strict accordance with the coating manufacturer's recommendations.
3. After the coating has totally cured, the equipment shall be assembled using care not to damage the coating during assembly. Fasteners shall be stainless steel with bonderized rubber washers attached. Any touch up required shall be performed in accordance with the manufacturer's recommendations.

- C. Applicator: The coating shall be performed by a manufacturer qualified and experienced applicator. All damaged coatings shall be repaired by manufacturer qualified and experienced applicators. The name and associated qualifications of individual(s) who will perform coating repairs shall be submitted for all coatings.

2.07 REFRIGERANT PIPING AND ACCESSORIES

- A. Material and dimensional requirements for field assembled refrigerant piping, valves, fittings, and accessories shall conform to ASHRAE 15 and ASME B31.5, except as hereinafter specified. Refrigerant piping shall be cleaned, dehydrated, and sealed when delivered. Refrigerant piping shall be seamless copper tubing, hard drawn, Type ACR, conforming to ASTM B280, except that tubing with outside diameters of 1/4 inch and 3/8 inch shall have nominal wall thickness of not less than 0.030 inch and 0.032 inch respectively. Soft annealed copper tubing conforming to ASTM B280 may be used where flare connections to equipment are required only in nominal sizes less than one inch.
- B. Fittings for copper tubing shall conform to ASME B16.22. Refrigerant flared tube fittings shall conform to ASME B16.26.
- C. Brazing filler material for refrigerant piping shall conform to AWS A5.8.
- D. Design, manufacture, and test specifically for service in all respects including materials. Internal parts shall be removable for inspection or replacement without the necessity of applying heat or breaking pipe connections. Legibly and permanently indicate direction of flow on the valve body.
- E. Globe and angle refrigerant valves shall be forged brass or bronze alloy with packed stem and seal cap. Packless type valves with hand wheels and forged brass or bronze alloy bodies with brazing ends may be used in sizes up to and including 7/8 inch OD. Bonnets shall be replaceable with the valve in place. All refrigerant valves shall be backseating type to allow repacking under pressure.
- F. Condensate Piping: ASTM B306 copper DWV pipe with cast bronze or wrought copper fittings.

2.09 VIBRATION ISOLATORS

- A. Floor mounted vibration isolators shall be ribbed neoprene pad type. Anchor bolts shall be equipped with resilient washers to avoid short-circuiting the neoprene base pad.
- B. Ceiling mounted vibration isolators shall be spring vibration isolators control hanger with hanger rods.
- C. Outdoor spring isolators shall be hot dipped galvanized.

2.10 PIPING AND EQUIPMENT INSULATION

- A. All material shall be applied in accordance with manufacturer's recommendations by skilled mechanics. Vapor-proof cover and insulation shall have a maximum flame spread rating of 25 and a maximum smoke development rating of 50 in conformance with NFPA 255.

- B. Condensate Indirect Drains from Cooling Coils, Refrigerant Suction Piping and Refrigerant Liquid Piping: One-inch thick flexible thermoplastic closed cell insulation with ASJ. Install insulation through fire rated pipe penetrations per manufacturer's recommendations.
- C. Aluminum Jacketing: Aluminum sheet metal jacket, minimum 0.016 inch thick, fabricated neatly and secured to insulation with 1/2 inch aluminum bands and wing seals.
- D. Valves and Fittings: Shall have covering equivalent to the piping. Extend insulation through guides and saddles

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 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.

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 WORKMANSHIP AND FABRICATION

Ductwork:

1. Fabricate all ductwork and related work to highest industry standards and recommendations of ASHRAE.
2. Duct dimensions shown are required net inside dimensions; no allowance for duct wrap has been made. Duct wrap shall not condense. Finish and seal all insulation. (No raw insulation allowed).
3. Sides and tops of ductwork shall be cross-broken. Long seams shall be Pittsburgh lock groove, hammered flat or double seamed. Ducts shall also have supplemental stiffening as required to prevent drumming and to provide structurally sound assembly. Seal ducts air tight with approved duct sealer.
4. Duct turns in all square elbows shall be accomplished by using pre-fabricated turning vanes such as Tuttle & Bailey "Ducturn" or other approved equal. Double thickness turning vanes in ducts deeper than 16-inches may be used in lieu of "Ducturn" provided prior approval of

design is given by HHSC.

5. Flexible connections shall be neoprene fiberglass type with one-inch Armaflex type insulation over flexible connections at inlet and outlet of air conditioning equipment.
6. Ducts shall be supported at joints every 6 feet or less with steel hanger straps one inch wide and made of material not lighter than 18 gauge riveted to seams unless indicated otherwise. Bolts or sheet metal screws may be used to fasten straps to ductwork provided prior approval is given by HHSC.

3.04 REFRIGERANT PIPING

- A. Install piping to conserve building space and not interfere with use of space. Route piping in orderly manner, with piping parallel to building structure, and maintain gradient. Group piping whenever practical at common elevations and locations. Slope piping one percent in direction of oil return.
- B. Provide non-conducting dielectric connections when joining dissimilar metals.
- C. Install piping to allow for expansion and contraction without stressing pipes, joints, or connected equipment. Provide clearance for installation and access to valves and fittings.
- D. Install flexible connectors parallel to compressor shaft.
- E. Pressure test system with dry nitrogen to manufacturer's maximum recommended test pressure (approximately 500 psig). Perform final tests at 27 inches vacuum and to manufacturer's maximum recommended test pressure (approximately 500 psig) using electronic leak detector. Test to no leakage.
- F. Utilize flexible connectors at or near equipment where piping configuration does not absorb vibration.
- G. Slope condensate piping a minimum of 2 percent towards drain.

3.05 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.

3.06 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. Field verify and refer to structural drawings for type of construction from which piping and/or equipment is to be suspended/supported.
- C. 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.
- D. 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.
- E. Support vertical pipes at base of the pipe on every floor and at 10 feet intervals maximum.
- F. Grind and smooth all sharp metal edges including struts and fabricated metal supports. Install end caps on the ends of all struts.
- G. Provide additional hanger pipe supports at the concentrated loads in piping between supports, such as for valves. Maximum of 3-feet apart at valves.

3.07 PIPE SLEEVES

- A. Provide where pipe passes through walls and partitions. Secure sleeves in proper position and location during construction. Provide sleeves of sufficient length to pass through entire thickness of walls and partitions. Provide not less than 0.25 inch space between exterior of pipe or pipe insulation and interior of sleeve. Firmly pack space with an approved fire stop material in rated walls and partitions, and install in accordance with the manufacturer's recommendations. Space between pipe and sleeves (both ends) shall be sealed in accordance with SECTION 07920 – SEALANTS.
- B. Sleeves in masonry and concrete walls shall be ASTM A53, Schedule 40 or Standard Weight, hot-dip galvanized steel pipe.

- C. Sleeves in partitions and other than masonry and concrete walls shall be hot-dip galvanized steel sheet having a nominal weight of not less than 0.90 ounces per square foot.
- D. No cutting or drilling of any structural members will be permitted without the approval of the Design-Build Contractor.

3.08 PROTECTION

- A. 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 University operations.

3.09 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.

3.10 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.

3.11 TESTING AND BALANCING AIR DISTRIBUTION SYSTEMS

- A. The Contractor shall obtain the services of an independent test and balance agency that specializes in and whose business is the testing and balancing of air conditioning systems. All final reports shall be signed by the individual performing the test and submitted to the test HHSC.
- B. Testing and balancing shall be performed in complete accordance with AABC National Standards for Field Measurement & Instrumentation, Form Number 81266, Volume One, section applicable to air balancing or NEBB, Procedural Standards for Testing, Adjusting, Balancing of Environmental Systems.
- C. Instruments used for testing and balancing of air must have been calibrated

within a period of six months and checked for accuracy prior to start of work.

- D. Eight copies of the complete test report shall be submitted to HHSC prior to final acceptance of the project.
- E. Balancing:
 - 1. Duct systems shall be balanced as follows: System (or air moving device) to not less than 95 percent of design CFM.
 - 2. Test Data: The Contractor shall provide HHSC with typewritten schedules of readings taken during the balancing and testing operations indicating the required or specified reading, the first reading taken, and final balanced reading for the following items:
 - a. Air outlets and inlets: Size, velocity, and air quantity in cfm.
 - b. Main ducts: Size, velocity in fpm, and air quantity in cfm.
 - c. Control settings: On-site settings for all automatic controls including thermostats, safety controls, and other similar items shall be provided in the form of a type tabulated list indicating type of control, location, setting, and function.

3.12 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 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.

3.13 ONE YEAR MAINTENANCE SERVICE CONTRACT

- A. In addition to the Guarantee on materials and workmanship, the Contractor shall submit eight (8) 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).

Trouble-free operation is defined as a non-disabling condition or a non-recurring failure or disruption and the following:

1. The system shall be free of all discrepancies, contamination and debris which require correction in excess to those described for the monthly service which is included in the Schedule of Maintenance.
 2. The system is maintaining operational conditions and other parameters as measured during acceptance tests.
- B. 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 the 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).
- C. The Maintenance Service Contract shall be submitted along with the Operations and Maintenance Manual on/or before the Project Acceptance Date.
- D. Maintenance Log: Keep a separate log, recording all maintenance calls to the project, including at least the following information:
- Name of person making service call.
 - Date of call, time in and out from project.
 - Nature of call; if emergency, who contacted service company.
 - Equipment gauge and temperature readings, ambient temperature.
 - Maintenance checklist.
- E. In addition, submit written reports of maintenance or trouble calls performed within 7 days to HHSC. Submit reports on the attached form or facsimile.
- F. Trouble Calls: Emergency service and repairs required between regular service calls shall be rendered within 24 hours, including holidays in the event of equipment becoming inoperative resulting in the loss of cooling. Respond to emergency calls within 4 hours of notification.

3.14 OPERATION AND MAINTENANCE MANUAL

Maintenance Schedule: Periodic maintenance shall conform to the following schedule, with at least the following services:

A. FAN COIL UNIT

Monthly Service

1. Clean and clear all drip pans and flush all related condensate drain lines with nitrogen. (Contractor may be liable for water damage due to clogged drains). Install pan tablets if necessary to control algae.
2. Change all disposable air filters at least once a month; use Farr 30/30 or equal.
3. Wash permanent type filters with an approved detergent and spray coat with an approved filter treatment solution. Replace deteriorated permanent type filters which cannot be cleaned.
4. Lubricate and oil all fan and motor bearings and connections of dampers and vanes.
5. Check all drives for wear; adjust belt tension. Replace belt as required.
6. Operate equipment to check for proper operation, unusual noise and vibration; adjust or repair all equipment and controls as required; clean-up all equipment.
7. Check time clock for proper operation and time settings.
8. Certify performance of monthly service and that all discrepancies are reported and corrected.

Annual Service

1. Adjust alignment of bearings and sheaves; lubricate fan and motor bearings. Replace worn or noisy bearings or sheaves.
2. Clean all cooling coils of dirt accumulation using nitrogen, high pressure air/water, steam, or chemical coil cleaner solution.
3. Check pressure and temperature differential across cooling coils and log readings. Clean strainers, check vents and drain lines on cooling coils.
4. Clean supply and return air grilles, registers and diffusers and fresh air intake grilles and dampers and repair or replace deteriorated birdscreens.
5. Clean and adjust water valve; clean all fan wheels and interior and exterior of equipment housings.
6. Secure all loose housing, seal leaks and touch-up paint after cleaning

all rust.

7. Check and calibrate all pneumatic and/or electric temperature controls.
8. Certify performance of annual service and correct and report all discrepancies.

B. OUTSIDE AIR FANS

Monthly Service

1. Check motor controlled and backdraft dampers for proper operation; lubricate linkage for free movement.
2. Lubricate fan motors and bearings.
3. Check belt/drive wear and tension; adjust or replace as needed.
4. Check sheaves for wear, replace as needed.
5. Check fan collar, bearings and shaft for wear, repair or replace as needed.
6. Replace air filters where installed; remove and wash intake grille.
7. Certify performance of quarterly fan maintenance service and correct and report all discrepancies.

Semi-Annual Service

1. Check and clean fan wheels and housings of dust, dirt and grease.
2. Remove and wash all intake grilles and dampers and repair or replace deteriorated bird screens.
3. Certify performance of semi-annual fan maintenance service and correct and report all discrepancies.

C. TEMPERATURE CONTROLS

Quarterly Service

1. Check control devices for proper operation, sticking stems, calibration, repair/replace weak or broken springs.
2. Check automatic dampers for tightness in closing, bent blades and defective linkage; lubricate connections for free movement and repair as required.
3. Adjust thermostat to maintain 75F room temperature.
4. Certify performance of quarterly maintenance service and that all discrepancies are reported and corrected.

D. AIR COOLED CONDENSING UNIT

Monthly Service

1. Perform the tasks of Fan Coil Unit.

2. Check compressor oil level and refrigerant sight glass; add oil as needed and change filter/drier if moisture indicated.
3. Check refrigerant system for leaks, unusual noise and vibration and record suction, discharge and oil pressures in maintenance log book and correct all deficiencies.

Annual Service

1. Perform the tasks of Fan Coil Unit
2. Check compressor coupling alignment; lubricate or replace noisy bearings.
3. Clean condenser coils with compressed air, nitrogen, water, steam or chemical coil cleaning solution.
4. Test compressor crankcase oil and replace if contaminated or submit oil test results. Clean or replace strainer and oil filter (open compressor)
5. Test and check system response at various cooling load conditions for proper operation, record settings, adjust as required. Re-calibrate all safeties, capacity and temperature controls to proper settings.
6. Check and clean all unit housings (inside and outside and components), seal leaks and remove rust from exterior components and touch-up paint.
7. Megger compressor motor and submit report and recommendation; check starter, relays, and control contacts and electrical connections for tightness and clean as required.

END OF SECTION

DIVISION 16 – ELECTRICAL

SECTION 16010 - GENERAL ELECTRICAL PROVISIONS

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

- A. The General Instructions to Bidders, the General Conditions of Construction Contracts, and Special Provisions preceding these specifications shall govern this section of the work.

1.02 INTENT OF SPECIFICATIONS AND DRAWINGS

- A. Abbreviated Form: Specifications and Drawings are prepared in abbreviated form and includes incomplete sentences. Omission of words or phrases such as "the Contractor shall", "as shown on the drawings", "a" and "the" are intentional. Omitted words and phrases shall be provided by inference to form complete sentences.
- B. Specifications and Drawings: Specifications and drawings complement each other and what is specified, scheduled or mentioned by one shall be binding as if called for by both.

1.03 DEFINITIONS

- A. Provide: "furnish and install, test and deliver to the HHSC in operating and ready to use condition".
- B. Wiring: "Provide all raceways, junction boxes, conductors, devices, protection equipment, installation of motor controller furnished (by others) when required, etc., including testing for a complete, operative and ready to use electrical system".
- C. Equal: "Material, equipment or system, including all necessary labor, modifications and accessories satisfying the requirements of the contract documents to provide features or have operating characteristics equal or better than that specified".
- D. Complete: "Furnish installation that is operative, tested, ready for use and which satisfies the intent of the contract documents, including all necessary accessories and modifications".
- E. Contractor: "General Contractor responsible for all work shall assign work to Subcontractors. Except where noted, work of this section shall be assigned to the Electrical Subcontractor".

1.04 SUMMARY

- A. Electrical Work: Provide all articles, materials, equipment operators, systems and services specified herein or on the Drawings or as normally required by accepted industry standard practices, including all labor taxes, fees, insurance, warranties and incidentals required to complete all electrical work.
- B. In general, the following work is included:
 - 1. All electrical work, excluding control work (control wiring specified under DIVISION 15 – MECHANICAL) associated with the replacement of the air conditioning equipment.
 - 2. Provide power and lighting systems, including branch circuits, outlets, circuit breakers, devices and wiring.
 - 3. Relocation of existing ceiling mounted electrical items, including, but not limited to luminaires, outlets, telephone, communication, television, fire alarm devices associated with the replacement of the existing ceiling system to accommodate the replacement of the air conditioning equipment.
 - a. In general, “relocation” constitutes the removal of existing electrical devices mounted from or attached to the existing ceiling and reinstalling from or to new ceiling system.
 - b. Prior to removing or relocating any existing electrical device, contractor shall evaluate existing device to verify that it is in proper working condition. Any existing device found not to be in proper working condition shall be reported to HHSC prior to working on the device.
 - 4. Provide wiring and connection for all equipment, including pumps, fans, etc., complete. Furnish disconnect switches for all motorized equipment unless disconnects are provided by others.
 - 7. Provide power wiring and disconnects for air conditioning equipment and mounting of starters furnished by others.
 - 8. Provide power wiring and connection to HHSC furnished equipment indicated on the Contract Documents, including Architectural and Mechanical documents.
- C. Wiring and connecting of all electrical equipment supplied for installation and use in this contract and not specifically listed as work by others.
- D. Furnishing of "Contractor Submittals" and "As Built" Drawings.
- E. Coordinate utility work with Hawaiian Electric Company, Hawaiian Telcom and Spectrum Hawaii.

- F. Coordinate work with other trades to avoid omissions and overlapping of responsibilities.
- G. Coordinate relocation of existing systems, including but not limited to fire alarm, telephone, paging, nurse call, medical monitoring and control, security, with HHSC.
- H. Obtain and pay for all fees, permits, licenses, assessments and inspections required for this work.

1.05 RELATED WORK SPECIFIED IN OTHER SECTIONS

- A. Materials and methods specified under Section 16050 - BASIC ELECTRICAL MATERIALS AND METHODS.
- B. Electric service and metering existing by Hawaiian Electric Company.
- C. Telephone wiring and instruments as furnished by Hawaiian Telcom.
- D. Cable television wiring and terminations by Spectrum Hawaii.
- E. Connect all electrical equipment furnished or provided under other sections of these Specifications or the HHSC.

1.06 QUALITY ASSURANCE

- A. Government and Utility Requirements: Comply with all requirements of the State of Hawaii, City and County of Honolulu and utility company rules and regulations.
- B. Accompanying Plans: Specifications are accompanied by architectural plans of the building, site plans and diagrammatic electrical plans showing locations on luminaires, outlets, feeder runs, devices and other electrical equipment. Locations are approximate and before installation, Contractor shall study adjacent construction details and make installation in the most logical manner. Prior to installation and at the direction of the HHSC, relocate any device within 10'-0 of the location presently shown without added cost to the HHSC.
- C. Prior to the start of rough-in work: Verify existing field conditions. Verify all dimensions and sizes of equipment at the job site. Circuits and raceway routes are diagrammatic and may be altered in any logical manner. However, all changes from the contract documents shall be subject to review and acceptance of the HHSC and shall be indicated on the Field Posted "As Built" Drawings.

- D. Materials and Equipment:
1. Materials and equipment shall conform to requirements of applicable technical sections; publications specified therein and shall be as shown on the drawings. Materials and equipment shall be new and shall be the product of the manufacturers regularly engaged in the manufacturer of such products.
 2. All items shall essentially duplicate materials and equipment that have been in satisfactory use at least two years prior to bid opening and shall be supported by service organization that is reasonably convenient to the site of installation.
- E. Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The contractor shall insure that all materials and equipment incorporated in the project are asbestos-free.
- F. List of Materials and Equipment: Refer to "Submittals" paragraph for required documentation lists. These lists shall included manufacturer's names and material or equipment identification such as styles, types, or catalog numbers to permit ready and complete identification.
1. Where items are specified by manufacturer's name or catalog number, substitutions require written permission by HHSC prior to bidding. Brand names, manufacturer's names and catalog numbers indicate standard of design and quality required. List of substitute materials together with qualifying data shall be submitted for review at least twelve (12) working days before bid date. Failure to submit for review substitute materials prior to bidding shall mean that materials, as specified, will be provided. Substitute items submitted and rejected shall not be resubmitted in any modified form.
 2. Samples of proposed substitute items may be required and shall be submitted by the contractor at his expense as soon as possible after they are requested.
 3. Items requiring shop drawings shall be included in the list of materials and equipment, identified by manufacturer's name and type, and accompanied by complete descriptive data, electrical and physical characteristics of the equipment and manufacturer's bulletins.
 4. Burden of proof of equality of proposed substitutions will be the responsibility of the Contractor. Submittals shall be sufficiently detailed to permit evaluation of the proposed items. Inadequacy of submittal will be sufficient cause to reject a proposed substitution.
 5. All prospective bidders must submit descriptive information on proposed material for pre-bidding acceptance where an item is detailed but no manufacturer is named.

- G. Compliance with the Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA): The Contractors and Suppliers shall confirm that all types of material and equipment used and locations (shown or not shown) on contract drawings comply with the Americans with Disabilities Act (ADA), the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and the Architectural Barriers Act (ABA), prior to submitting shop drawings and starting related work. The Contractor shall include the services of an Accessibilities Consultant to review submittals and contract drawings to insure ADA and ABA compliance before submitting to HHSC. HHSC will assist in the in the review of submittals for ADA and ABA compliance; however, the Contractor shall be responsible for certifying ADA and ABA compliance

1.07 DEPARTURES

- A. Departures resulting from substitution of materials or system shall be accompanied by appropriate changes in all affected work of every trade. Such changes shall be at no increase in the contract amount and shall be the responsibility of the Subcontractor or supplier responsible for the departures. Changes proposed by the Contractor shall be based on a system approach and shall be allowed if implemented without decrease in quality in performance or operations, increase in utility costs, or adverse affect on the available physical space to install the equipment. Such departures shall be submitted and noted in shop drawings for review and acceptance by HHSC. Departures initiated by other trades, requiring changes in the electrical system as well as other systems, shall be accompanied by appropriate changes to all affected work of every trade, at no increase in contract amount, by the trade responsible for the departure.
- B. Responsibilities: The General Contractor shall be responsible to coordinate, approve, and select systems that do not impose unaccounted for impact on the electrical work. It shall be understood that after the award of the contract, all departures having electrical impact, unless otherwise noted, have been reviewed and approved by the General Contractor. Therefore all appropriate changes to the electrical system required to accommodate the departures shall be at not additional cost to HHSC.

1.08 SUBMITTALS

- A. Catalog Data Sheets: Submit catalog data sheets in accordance with the Section 01300 - SUBMITTALS. Only electronic versions of electrical submittal will be reviewed. Non-electronic versions of submittals will be returned to the Contractor without being reviewed. Any delay caused by submitting non-electronic versions of the submittal shall be the responsibility of the Contractor.

Catalog data sheets shall be submitted for equipment not completely identifiable by information contained in the list of materials and equipment, especially for the following equipment:

1. Circuit breakers and safety switches.
 2. Electrical apparatus.
 3. Cabinets and junction boxes.
 4. Wiring devices.
 5. Panelboards.
- B. Shop Drawings: Shop drawings shall be submitted for equipment, where specifically required or specified in individual sections. Shop drawings shall be sufficiently comprehensive and detailed to permit evaluations; otherwise it may be rejected, and shall include as applicable the following:
1. Identification of each equipment and component.
 2. Dimension outlines of all enclosures.
 3. Dimension drawings of components such as switchboard and panelboards.
 4. Layouts and general arrangement of equipment.
 5. Operating and electrical characteristics including interrupting ratings and impedances.
- C. Certificate of Compliance: Where required by section specifying the equipment, the Contractor shall submit six copies of certificates of compliance in accordance with the requirements of the General Provisions. The certificates shall include but not be limited to factory test reports.
- D. Installation, Operation and Maintenance Data: Six hard copies and one electronic version of installation, operation and maintenance data shall be submitted for equipment specified to require such data. The data shall be in the form of manuals and shall present instruction for operating, maintenance, repair, recommended inspection points and periods for inspection in a practical, complete and comprehensive manner. The information shall be arranged in a logical, orderly sequence, including a general description of the equipment and significant technical characteristics. Test, adjustment and calibration information shall be furnished and identified to specific equipment. The installation, operation and maintenance data shall be as required by Section 13000 – SUBMITTALS.
- E. Acceptance Requirements: Acceptance for material and equipment will be based on manufacturer's published data. Where materials or equipment are specified to be constructed and tested, or both, in accordance with the standards of the National Electrical Manufacturers Association (NEMA) or the American National Standard Institute (ANSI) the Contractor shall submit proof that the items furnished under this section of the specifications conform to such

requirements. A certification or published catalog specification data statement to the effect that the time is in accordance with the referenced NEMA standard by a company listed as a member company of NEMA for the section whose standards cover the item under construction, will be acceptable as sufficient evidence that the item conforms to the requirements of the National Electrical Manufacturers Association. A manufacturer's statement indicating complete compliance of each item with the applicable NEMA, ANSI or other commercial standard specified shall be submitted and will be acceptable proof of compliance. Conformance with the agency requirements does not relieve the item from complying with any other requirements of the specifications.

F. Nameplates:

1. General: In addition to standard manufacturer's nameplate, corrosion resistant nameplates shall be provided for each circuit breaker, safety switch, junction box, cabinet, panelboard, and each major piece of equipment. Nameplates shall designate the function of the equipment for which they are used. The designation shall be submitted for review and acceptance with the shop drawings.
2. Material and Lettering: 1/16" thick laminated plastic, black-white-black. Nameplate lettering shall be 1/4" high upper case.
3. Fastening: Nameplates shall be fastened by means of non-ferrous metal screws.
4. Hand lettering or stick on embossed marking tape is not acceptable.

G. Factory Tests and Inspection:

1. The equipment furnished shall be inspected mechanically and electrically, and all manufacturers' routine factory tests shall be performed to verify conformance with the specified requirements. The test equipment and test methods shall conform to the requirements of standards specified. The contract price shall include cost of performing all tests, and no additional compensation will be allowed therefore.
2. The Contractor shall furnish at time of equipment delivery, six certified copies of all test results.

H. Equipment Guarantees:

1. Installation shall be complete in every detail and ready for use. Any item supplied by the Contractor developing defects within one (1) year after final acceptance by HHSC shall be replaced by materials, apparatus or parts including installation labor to make such defective portion of complete system conforms to the true intent and meaning of the drawings and specifications, without additional cost to HHSC.

2. The Contractor shall guarantee all equipment specified from the date such equipment is accepted by HHSC, against defects in materials, design, performance and workmanship. Guarantees shall be supported by manufacturer's written warranties and shall be signed by an official of the manufacturer's organization. Replacement parts shall be delivered or repairs shall be made promptly upon receipt of notice of failure under normal and proper use and maintenance. All costs of replacement and repair shall be borne by the Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS

- A. All materials shall be new, except as specifically noted, and shall bear the label of Underwriters' Laboratories, Inc., wherever standards have been established and label service is normally and regularly furnished by the agency.
- B. American made products shall be used unless approved by HHSC.

PART 3 - EXECUTION

3.01 MATERIALS AND EQUIPMENT FURNISHED BY THE CONTRACTOR

- A. The electrical installation shall be complete and operable and shall conform to the requirements of contract drawings. The Contractor shall provide all electrical equipment and materials, wiring, supports, and such additional parts as are necessary to make the installation complete. All Contractor furnished materials and equipment are subject to review and acceptance by HHSC.

3.02 PROTECTION DURING STORAGE

- A. All materials and equipment shall be stored in a safe manner; weather and fire protection shall be maintained and all materials shall be stored above the ground of floor level to avoid damage by moisture.

3.03 PROTECTION OF WORK IN PROGRESS

- A. All electrical materials and equipment shall be completely protected during installation. Equipment shall be securely protected against physical or chemical damage. In areas exposed to weather, materials unused at the end of each day's work shall be stored in weather-protected locations. Damage to materials or equipment due to Contractor's neglect shall be repaired or replaced by and at the expense of the Contractor.

3.04 PROGRESS OF WORK AND COORDINATION

- A. The Contractor shall prepare a schedule giving sequence of electrical work. The electrical work shall be coordinated with the work of other Contractors and

other trades. The schedule shall be submitted prior to beginning installation and shall be subject to review and acceptance by HHSC.

3.05 RULES

- A. The entire electrical installation shall conform to the applicable rules and regulations of the state Model fire Code of the State of Hawaii, Hawaiian Telcom, Hawaiian Electric Company, requirements of the National Electrical Code and other City standards and publications specified in the technical sections.

3.06 COORDINATION

- A. The contract drawings indicate the extent and general location and arrangement of equipment, conduit and wiring. Lighting fixtures, outlets and electrical equipment shall be located so as to avoid interference with architectural, mechanical or structural features. Any device or equipment may be relocated within 10'-0" of the location shown on the drawings before installation is initiated and without increase in contract amount.

3.07 EXISTING SYSTEMS AND EQUIPMENT

- A. Prior to working on or interfacing with any system, the Contractor shall arrange with HHSC for a verification of working order of the existing system or equipment to assure that all components of the existing system are in proper working order.
- B. Should any defect or malfunction be discovered during the verification, the Contractor shall report the deficiency to the HHSC for remedial action. No new work on or interface with the existing system or equipment shall be done until the defect is corrected and the existing system or equipment is restored to operation and so demonstrated by the responsible maintenance agency or contractor.
- C. Unless the Contractor takes and/or complies with the above actions, the Contractor shall be held responsible for the defects and deficiencies and will be expected to restore the existing and /modified systems or equipment to fully operational condition, including expected or normal operating parameters and functions of the system or equipment. If HHSC accepts, in writing, the existing defects and deficiencies the Contractor may proceed with his work as directed by HHSC. All existing defects and deficiencies shall be documented and confirmed by HHSC in writing.

3.08 WORKMANSHIP

- A. All materials and equipment shall be installed in accordance with printed recommendations of the manufacturer, and shall conform to the requirements of the contract drawings. The installation shall be accomplished by workers skilled in this type of work.

3.09 TESTS

- A. Field Tests: After the installation is completed, and at such time HHSC may direct, the Contractor shall conduct field tests for acceptance by HHSC. When the tests are specified to be performed under supervision of the equipment manufacturer, the Contractor shall cooperate with HHSC during tests and shall place at his disposal all assistance, materials and services required to perform such tests. The tests shall be performed in the presence of HHSC. The Contractor shall furnish all necessary electric power, equipment, instruments, wiring and personnel required for the tests.

- B. Operating Tests: The equipment and systems shall be demonstrated to operate in accordance with the requirements of the technical sections in which the equipment or systems are specified.

END OF SECTION

SECTION 16050 - BASIC ELECTRICAL MATERIALS AND METHODS

PART 1 - GENERAL

1.01 GENERAL CONDITIONS

- A. The General Instructions to Bidders, the General Conditions of Construction Contracts, and Special Provisions preceding these specifications shall govern this section of the work.
- B. The Interior General Electrical Provisions, Section 16010 shall also apply. In general, this section describes quality assurance, submittals, testing and guarantees. Special conditions modifying these items, when required, shall be included hereinafter.

PART 2 - PRODUCTS

2.01 RACEWAYS

- A. Galvanized Rigid Conduit (GRC): Hot dipped galvanized inside and out, rigid steel, round bore electrical conduit and for use with threaded fittings. Electro-galvanized conduit is not acceptable. Joints threaded using standard taper thread. All rigid steel conduit terminations shall be provided with an insulated bushing and two locknuts at threaded hubs. When not indicated, size shall be in accordance with the NEC, but not less than 1/2" diameter for power wiring and 3/4" diameter for telephone, data, fire alarm, cable television and security wiring.
- B. Electrical Metallic Tubing (EMT): Hot dipped galvanized inside and out, rigid steel, trade size for use with crimp, compression or set screw connectors. When not indicated, size shall be in accordance with the NEC, but not less than 1/2" diameter for power wiring and 3/4" diameter for telephone, data, fire alarm, cable television and security wiring.
- C. Flexible Conduit: Flexible steel, zinc coated. American Brass "Sealite Flexible" Type "UA" or equal acceptable to HHSC with Appleton "STB" or "STN" fittings as required or equal acceptable to HHSC. For damp and wet locations, factory-covered with high density polyethylene for use with factory approved fittings.
- D. Plastic Conduit: Polyvinyl chloride (PVC) plastic, schedule 40, 3/4" minimum. Use only direct buried or concrete encased below grade unless otherwise indicated.
- E. Gutters, Pullboxes and Enclosures: Unless otherwise indicated enclosures shall be NEMA 1 for indoor use. For enclosures exposed to the environment, or damp or wet locations, NEMA 4X (stainless steel).

F. Outlet Boxes:

1. Concealed boxes shall be pressed down NEC gauge steel, galvanized 4-11/16" square x 1-1/2" deep minimum.
2. Extension or raised rings for pressed boxes shall be pressed from NEC gauge steel and galvanized.
3. Exposed boxes and weather exposed recessed boxes shall be cast metal type, prime painted, enamel finished with threaded hubs for conduit connections.

G. Devices and Cover Plates:

1. Plates for interior flush construction shall be one piece, smooth plastic with suitable hole for device; color as selected by HHSC.
2. Plates for exposed and weather exposed boxes shall be gray, plastic with neoprene gasket for sealing against entry of water or moisture into the box. Switch plates provided with neoprene cover over handle or rain-tight lever mechanism. Receptacle plates shall be provided with stainless steel spring-loaded gasketed weatherproof lid. Provide "In-Use" type weatherproof covers over receptacles in exterior and wet locations.

H. Conductors:

1. Conductors and cables shall be copper, Class B compressed, 600 volts, No. 12 AWG minimum. Conductors and cables shall have impressed description showing NEC type insulation, manufacturer's name, AWG size and voltage ratings. Conductors No. 10 and smaller shall be solid. Conductors No. 8 and larger shall be stranded. Unless specified or indicated otherwise, or required to be otherwise by NFPA 70, all power and lighting wires shall be NEC Type THWN or XHHW, except that grounding wire may be NEC Type TW.
2. Color code: Black - phase "A"; red - phase "B"; blue - phase "C"; white - neutral; green - ground. Color coding shall be maintained throughout entire wiring system. Use other colors when more wires than above listed are contained in one raceway. Deviations from color coding shall be as acceptable to HHSC.

- I. Metal-Clad Cable: Metal-Clad cables shall be Health Care Facility (HCF) MC All Purpose (MCAP) type shall comply with NEC Article 517.13(A) and (B). 600 volts, No. 12 AWG, minimum, THNN/THWN insulation with equipment grounding conductor. Smooth or corrugated metal armor sheath. 6-feet maximum length.

J. Wiring Devices:

1. Switches: "Designer style", hospital grade (green dot); single pole or double pole, 3 or 4 way as indicated; non-mercury quiet type, 20 ampere,

120/277 volts. UL labeled AC type, silvered contacts. Color as selected by HHSC.

2. Duplex convenience receptacle: "Designer style", tamper resistant, hospital grade (green dot), NEMA 5-20R; duplex, 20 ampere, 125 volts, 3 wire, grounding type in plastic body. Color as selected by HHSC.
 3. Ground fault protected receptacle "Designer style", tamper resistant, hospital grade (green dot); NEMA 5-20R, duplex, 20 ampere, 125 volts, 3 wire, grounding type with L.E.D. indicator lamp and "TEST" and "RESET" buttons and L.E.D. indicator lamp. Color as selected by HHSC.
- K. Disconnect Switches: Heavy duty fusible or non-fusible safety switches. Horsepower rated when used as motor disconnect. Enclosed in NEMA 1 enclosures for dry, indoor locations and NEMA 3R, unless 4X (stainless steel) enclosures are indicated on the drawings, for exterior locations. Enclosures shall provisions for padlocking.
- L. Panelboards: Copper or aluminum bus. Type and rating as noted with circuit breaker complement as scheduled. Multiple-pole circuit breakers shall be the common trip type having a single operating handle. Enclosure shall be NEMA 1 for dry, indoor locations and NEMA 3R, unless 4X (stainless steel) enclosures are indicated on the drawings, for outdoor locations. Panelboards shall be equipped with hinged door, latch, lock and two keys, typed circuit directory in metal frame with complete circuit assignments. 4" minimum side gutters and 5" minimum top and bottom gutters.
- M. Transformer: General purpose dry type with ratings as indicated. 600 volts class. 80° C rise. Six 2-1/2% taps: two (2) above and four (4) below normal. Drip proof enclosure.
- N. Hardware, Supports, Backing, etc.: Provide all hardware, supports backing and other accessories necessary to install electrical equipment. Wood material shall be termite treated. Iron and steel materials shall be galvanized for corrosion protection and non-ferrous materials shall be brass or bronze. All wood screws shall be brass or galvanized steel.
- O. Ground Rods: Copper clad, 3/4" X 10' long.
- P. Insulating Tape: Manufactured in accordance with ASTM D 1000-76, IPCEA-U Bond Test and UL Specifications AW-1 and GP-1.

PART 3 - EXECUTION

3.01 CONSTRUCTION METHODS

- A. Compliance: Comply with local ordinances and regulations of the State of Hawaii and the City and County of Honolulu. Workmanship shall be subject to review by HHSC. HHSC shall be afforded every opportunity to determine the skill and competency of the workmanship. Concealed work reopened at

random during formal site visits without additional costs to HHSC.

- B. Conformance: Construction shall conform to construction practices as recommended by American Electricians Handbook by Croft (latest edition), National Electrical Code, National Electrical Safety Code, State Model Fire Code of the State of Hawaii, Hawaiian Electric Company, Hawaiian Telcom, Spectrum Hawaii and other City and State standards and publications and applicable instructions of manufacturers of equipment and material supplied for project.
- C. General Installation: Construction criteria shall conform to NEC Article 517.11.
- D. Wiring Methods: Wiring methods shall comply with NEC Articles 517.12 and 517.13.
- E. Raceways:
 - 1. Size of raceway shall be as indicated on the drawings. When not indicated, size shall be in accordance with the NEC, but not less than 3/4" diameter for power wiring, telephone, data, fire alarm, cable television, communications and medical monitoring and control systems and security wiring.
 - 2. All raceways in damp or wet locations and in hazardous locations shall be galvanized rigid steel conduit. Galvanized rigid steel conduits shall be used in ground level concrete slabs and walls, in masonry walls, underground or below slab-on grade. All exposed raceways less than 10 feet above floor where subject to physical damage shall be galvanized rigid steel conduit. Electrical metallic tubing may be used in dry locations and where not subject to physical damage.
 - 3. Cut raceways square and ream inner edges. Butt together evenly in couplings. Cutting wheel type pipe cutters shall not be used for cutting raceways.
 - 4. Make bends and offsets with hickey or conduit bending machine. Do not use vise or pipe tee. Bends made so that interior cross-sectional area will not be reduced. Radius of curve of inner edge of field bend not less than ten times the internal diameter of raceway. Use running threads not permitted. Where conduits cannot be joined by standard threaded couplings, use watertight conduit unions acceptable to HHSC.
 - 5. Cap raceways during construction with plastic or galvanized metal- capped bushings to prevent entrance of debris or moisture. Swab all raceways out and dry before wires or cables are pulled in.
 - 6. Mount raceway free from other piping, valves or other mechanical equipment and ductwork.
 - 7. Fish wires, cords, strings, conductors or the like shall not be placed or

inserted in the raceway system during the installation of raceways.

8. Install insulating bushings and two locknuts on each end of every run of conduit at enclosures and boxes. Provide grounding bushings as required to ground receptacles and connect raceways to service ground, per NEC Article 250.
 9. Project adequate number of conduit threads through box for bushings.
 10. Run exposed raceways parallel with, or at right angles to structural or architectural elements.
 11. Securely fasten metal raceways with galvanized pipe straps with screws or bolts and spaced not more than 7 feet apart or with beam clamps or single or ganged pipe hangers, acceptable to HHSC, spaced not more than 5 feet apart, as conditions require. For raceways 1-1/2" in diameter or smaller, use 1 or 2-hole galvanized pipe straps or clamps. For raceways larger than 1-1/2" in diameter, use galvanized wrought iron one-hole clamps. Raceway runs with two 90-degree bends or equivalent, 100 feet maximum without pullbox. Raceways shall be supported from building structure and shall not be supported from suspended ceiling system or mechanical systems.
 13. Install plastic conduits in accordance with manufacturer's recommendations. Use plastic raceways only in locations indicated on the drawings and approved, in writing, by HHSC. Install green grounding conductor per the National Electrical Code.
- F. Outlet Boxes: Provide outlet boxes to suit conditions encountered. Provide outlet boxes in spaces with extension or raised rings of such depth that metal will be flush with surrounding surfaces of opening. When two or more devices are installed at a single location, mount in gang box under single device plate.
- G. Conductors:
1. Conductor fill in raceways shall conform to NEC Chapter 9, Table 3A (based on Type RHW conductors).
 2. Conductor Pulling: Mechanical means of pulling shall be torque-limiting type and shall not be used for #2 AWG and smaller conductors. Pulling tension shall not exceed wire manufacturer's recommendations. Where necessary, powdered soapstone may be used as a lubricant for installing conductors through raceways. Other means of lubricating conductors shall be as acceptable to HHSC.
 3. Form wires neatly in enclosures and boxes.
 4. Splices:
 - a. Splice in accordance with NEC Article 110. Splice conductors #10

AWG and smaller with wirenuts or Scotchlok connectors or with tool-applied compression type connector, "Buchanan" or equal. The manufacturer's recommended tooling shall be used for installation.

- b. Splice conductors #8 AWG and larger shall be spliced with high pressure compression (indent) copper sleeve connectors, "T and B" Method or equal.
- c. Do not use bolt-on connectors.
- d. Reinsulate and weatherproof splices. Reinsulate splices according to manufacturer's instructions and recommendations. Splice insulation shall be 200% in thickness of original conductor insulation and of the same electrical and mechanical characteristics.

H. MC Cables:

1. Installation shall comply with NEC Article 517.13(A) and (B).
2. Maximum Length: 6-feet.
3. MC Cables shall not be used to "daisy-chain" luminaires, equipment or outlets.

I. Grounding:

1. Motors, metallic enclosures, raceways and electrical equipment shall be grounded according to the requirements National Electrical Code, Article 250.
2. Ground connection to equipment, raceways, motors, grounding type receptacles and other metallic parts directly exposed to underground electric conductors by continuous metal raceways or no. 14 AWG, minimum, copper, NEC type TW, green.
3. All grounding conductors shall be run together with circuit conductors.
4. Size all ground conductors per NEC Article 250.
5. Install ground conductor in all non-metallic raceways.

J. Equipment and Motor Connections:

1. Make power connections to motors on equipment with short section of flexible raceway. Provide liquid-tight flexible connections to motors at exterior locations.
2. Provide and install power wiring for medical equipment, including all electrical apparatus required. Verify all apparatus and wiring requirements with equipment supplier.

3.02 FINISHING

- A. Repairing: Patch, repair and restore all structural and architectural elements cut, drilled or damaged for the installation of electrical system. Drilling, cutting, patching, repairing and restoring shall be subject to review and acceptance by HHSC.
- B. Attachment: Attach electrical equipment to wood with wood screws and attach to concrete by embedded or expansion inserts and bolts. Use powder-driven charge with prior approval only. Powder-driven fasteners shall not be used on precast concrete structures.
- C. Knockouts: Close unused knockouts on all enclosures with metal caps.
- D. Painting: Wipe clean all exposed raceways and enclosures. Prime painting and finishing of unfinished raceways and enclosures shall conform to Painting Section(s).
- E. Factory Finishes: Factory finished enclosures shall not be painted.
- F. Nameplates: Panelboards, transformers, disconnect switches and enclosed circuit breakers shall be identified with black-white-black laminated plastic nameplate engraved with identification designation and ratings.
- G. Circuit Assignment: Connect circuits to circuit assignments shown on the drawings. Provide neatly type written circuit directory for all panelboards.
- H. Restoration: All areas damaged or disturbed by electrical work shall be restored to as close to its original condition and shall be subject to approval of HHSC.

3.03 INSPECTIONS AND TESTING

- A. Testing: Testing of all electrical devices and apparatus as specified in Section 16010 - INTERIOR GENERAL ELECTRICAL PROVISIONS and Section 16050 - INTERIOR BASIC ELECTRICAL MATERIALS AND METHODS.
- B. Utility Inspection: Installation of utility ducts, metering equipment and telephone cabinets shall be subject to inspection and acceptance by the utility companies.

END OF SECTION

MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR HHSC MALUHIA 1027 HALA DR. HONOLULU, HAWAII 96817 T.M.K. 1 - 6 - 009 : 004

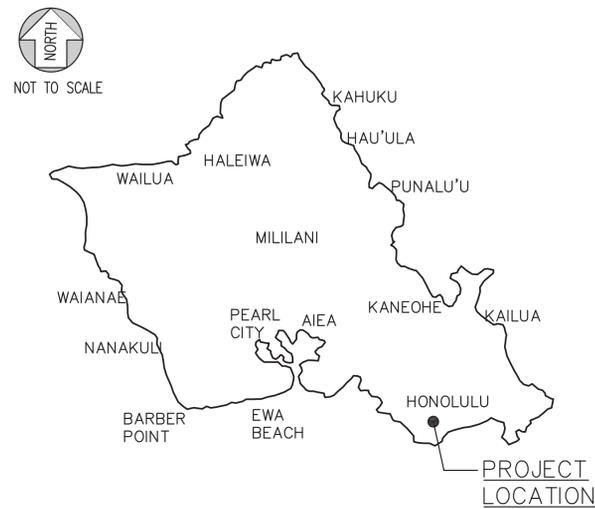
INDEX TO DRAWINGS

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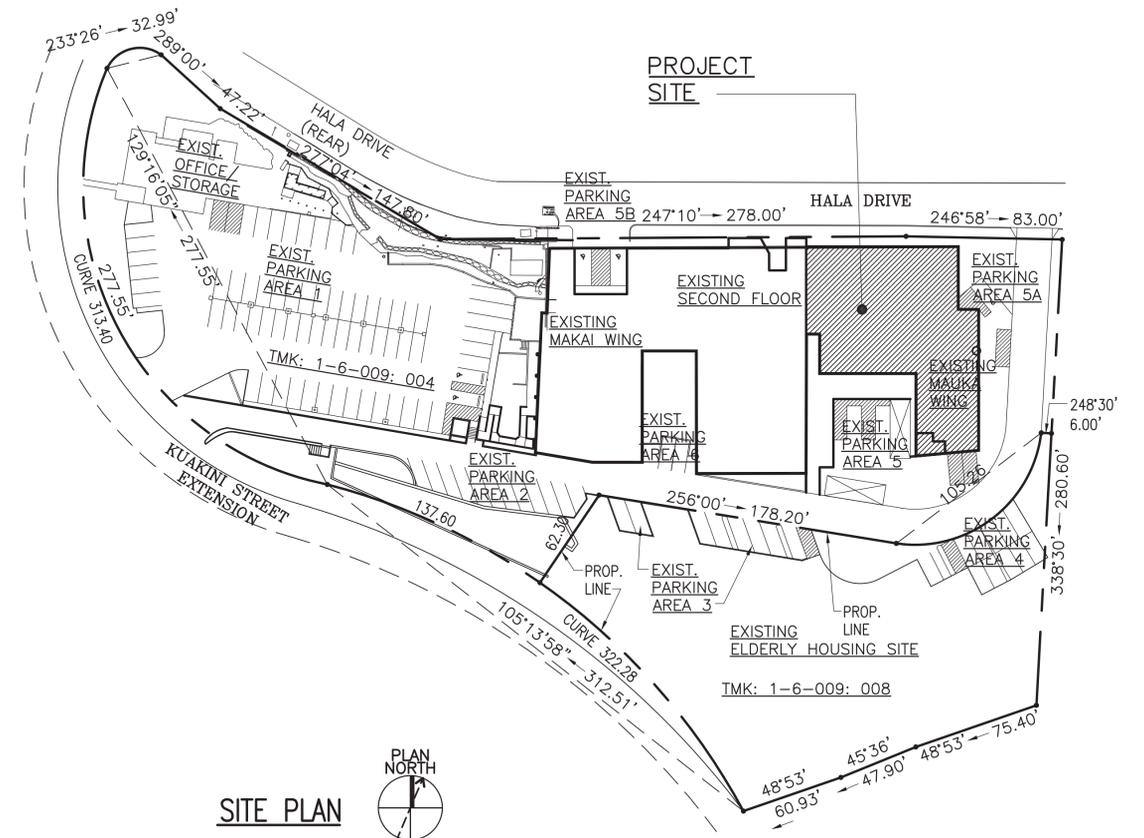
GENERAL NOTES

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 NOTED 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 OF 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 ARCHITECT 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



NO. DATE ISSUE

This work was prepared by me or under my supervision and construction of this project will be under my observation.
Charles K. Miyamura
EXP 4-30-22



MECHANICAL ENTERPRISES, INC.
CONSULTING MECHANICAL ENGINEERS
1314 South King Street, Honolulu, Hawaii 96814
Phone: (808) 591-9038 Fax: (808) 596-7356



MALUHIA AIR CONDITIONING
REPLACEMENT FOR 2ND FLOOR
HHSC MALUHIA
ADDRESS: 1027 HALA DRIVE
HONOLULU, HAWAII 96817 T.M.K. 1-6-009:004

TITLE SHEET
Designed MEI
Drawn CKM
Checked RRT
Date FEB, 2022
Job No.
Sheet
T-1
Of 1 Sheets



1 OVERALL 2ND FLOOR PLAN
T-2 SCALE: 3/32" = 1'-0"

SUGGESTED SEQUENCE OF CONSTRUCTION

THE PHASING OF THE WORK SHALL BE DONE TO MINIMIZE THE DISRUPTION TO THE BUILDING OPERATIONS. THIS PHASING SCHEME IS ONLY A SUGGESTION AND DOES NOT INCLUDE ALL PHASES OR DETAILS OF THE CONSTRUCTION WORK REQUIRED. THE CONTRACTOR IS ENCOURAGED TO IMPROVE UPON THIS SCHEDULE IF IT WILL FURTHER MINIMIZE THE DISRUPTIONS AND DOWN TIME OF THE AC SYSTEM. CHANGES TO THE SCHEDULE SHALL BE SUBMITTED TO THE HHSC FOR APPROVAL. CONTRACTOR SHALL COORDINATE WITH HHSC TO DISCUSS THE PHASING PLAN TO ENSURE THAT THE PLAN IS WORKABLE. THE CONTRACTOR SHALL PRESENT THEIR PHASING PLAN AND CONSTRUCTION SCHEDULE TO THE HHSC FOR EVALUATION.

A. PHASING NOTE

- 1) THE INTENT OF THE PHASING PLAN IS TO HAVE HALF OF THE SECOND FLOOR INCLUDING THE DAYROOM IN OPERATION WHILE REST OF THE FLOOR IS UNDER CONSTRUCTION.
- 2) HHSC SHALL DETERMINE THE ORDER OF PHASING OUTLINED BELOW. (ALTERNATIVE: THE CONTRACTOR SHALL DEVELOP A SCHEDULE, WITH APPROVAL BY HHSC, UNDER THE CONDITION THAT THE HHSC MAY DICTATE ORDER OF PHASING).
- 3) ALL WORK AND ACCESSORIES SHALL BE INCLUDED BY ALL ASSOCIATED TRADES, EVEN IF NOT DESCRIBED, TO PROVIDE A COMPLETE SYSTEM AS INDICATED ON THE CONTRACT DRAWINGS.
- 4) THE CONTRACTOR SHALL COORDINATE THE SHUTDOWN OF THE BUILDING AC SYSTEM WITH HHSC.

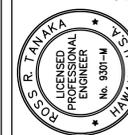
B. SEQUENCE OF WORK

THE FOLLOWING IS A SUGGESTED SEQUENCE OF WORK.

- 1) PRIOR TO ANY DEMOLITION WORK, CONTRACTOR SHALL FIELD VERIFY THE LOCATION AND CONDITION OF THE EXISTING CHILLED WATER VALVES AT THE RISERS ON THE MAUKA AND MAKAI SIDE OF SECOND FLOOR.
- 2) CHILLED WATER PIPING WORK IN DAYROOM AREA:
 - a) CLOSE THE CHILLED WATER VALVE V-1 ON THE 2ND FLOOR MAUKA SIDE.
 - b) CUT THE CHILLED WATER BRANCH LINE SERVING THE DAYROOM FCU'S AT THE POC AS SHOWN ON M-3.
 - c) SCHEDULE WITH MALUHIA TO CLOSE THE CHILLED WATER VALVE V-2 ON 2ND FLOOR MAKAI SIDE. CONTRACTOR SHALL MINIMIZE THE DOWN TIME OF AC SYSTEM.
 - d) PROVIDE AND INSTALL NEW CHILLED WATER PIPING AND CONNECT THE DAYROOM FCU'S TO THE EXISTING CHILLED WATER MAIN LINE IN THE CORRIDOR OF THE MAKAI SIDE. POINT OF CONNECTION IS BETWEEN DOOR OF ROOM 203 AND ROOM 204 (SEE M-3). CONTRACTOR SHALL FIELD VERIFY AND FIND THE BEST POINT OF CONNECTION.
 - e) OPEN CHILLED WATER VALVE V-2. TEST AND BALANCE THE FCU'S IN THE DAYROOM AND MAKE SURE FCU'S ARE IN NORMAL OPERATIONAL CONDITION.
- 3) CUT AND REMOVE THE CHILLED WATER PIPING ON 2ND FLOOR MAUKA SIDE. DEMOLISH EXISTING AC SYSTEM ON MAUKA SIDE AND INSTALLATION OF NEW AC.

NO. DATE ISSUE

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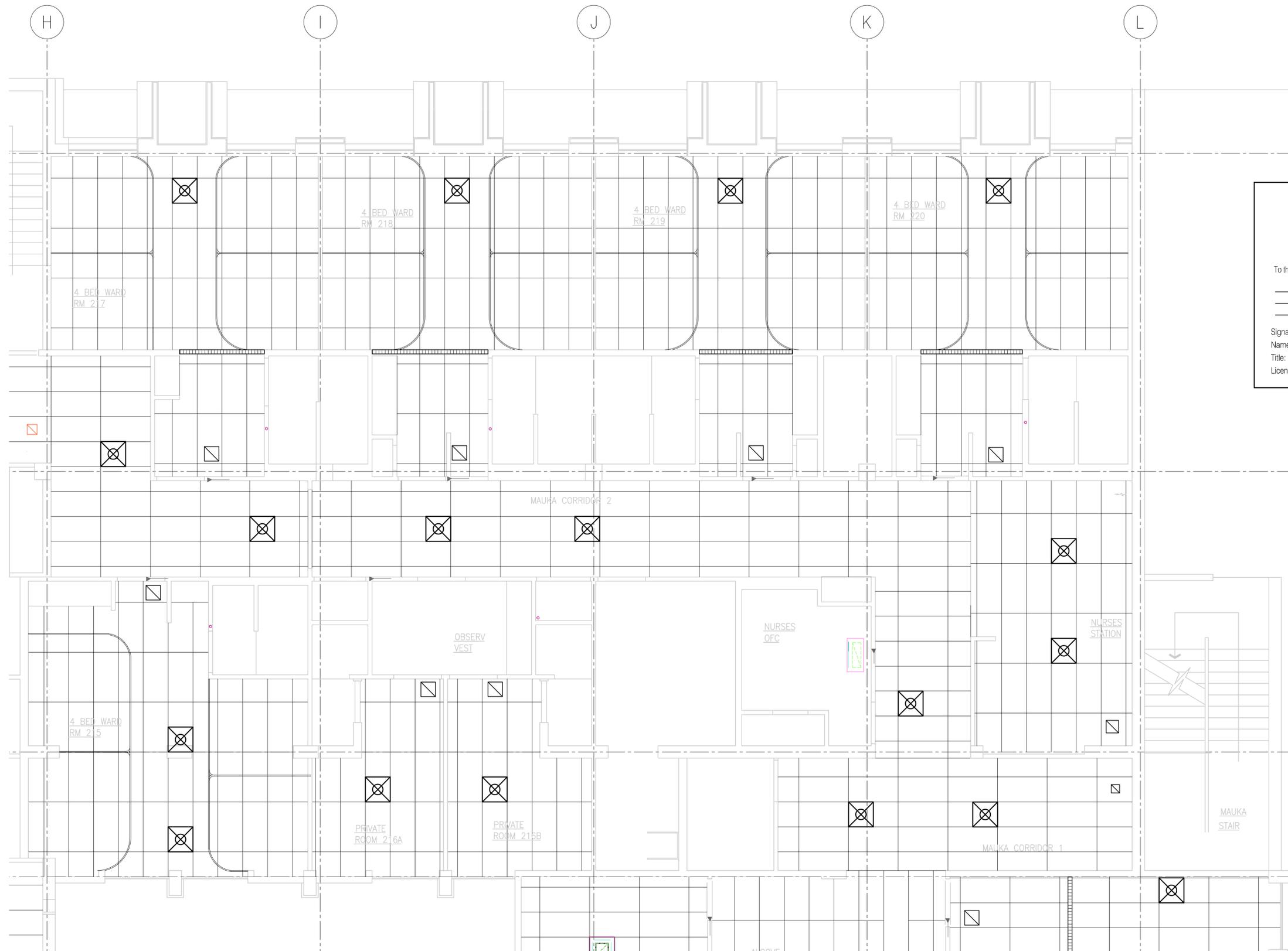


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MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR HHSC MALUHIA
 ADDRESS: 1027 HALA DRIVE HONOLULU, HAWAII 96817 TMMK: 1-6-009-004
OVERALL 2ND FLOOR PLAN AND SEQUENCE OF CONSTRUCTION

Designed	MEI
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Checked	RRT
Date	FEB., 2022
Job No.	2020.045
Sheet	T-2
Of	Sheets

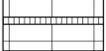
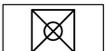


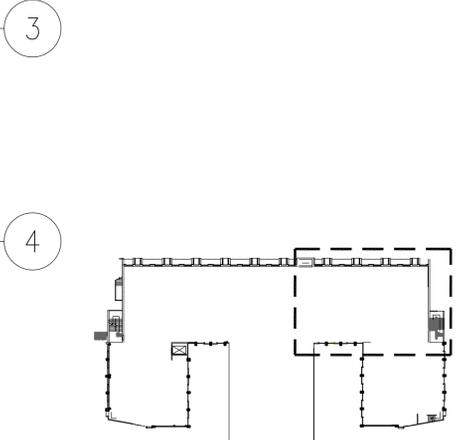
**CITY AND COUNTY OF HONOLULU
 ENERGY CONSERVATION CODE
 2015 IECC WITH HAWAII REVISED STATUTES (HRS)
 CHAPTER 3-181.1**

To the best of my knowledge, this project's design substantially conforms to the Energy Code for:

Building Component Systems
 Electrical Component Systems
 Mechanical Component Systems

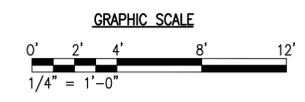
Signature: *Curtis K. Miyamura* Date: NOV. 2020
 Name: CURTIS KIYOSHI KWAI MING MIYAMURA
 Title: ARCHITECT
 License No.: A 6268

- LEGEND**
-  EXISTING CEILING PANELS TO REMAIN
 -  NEW METAL STUDS WITH TYPE 'X' GUY BD, SEE DETAIL 1/A-4
 -  SUPPLY AIR REGESTERS
 -  FAN COIL UNIT
 -  RETURN AIR REGESTERS

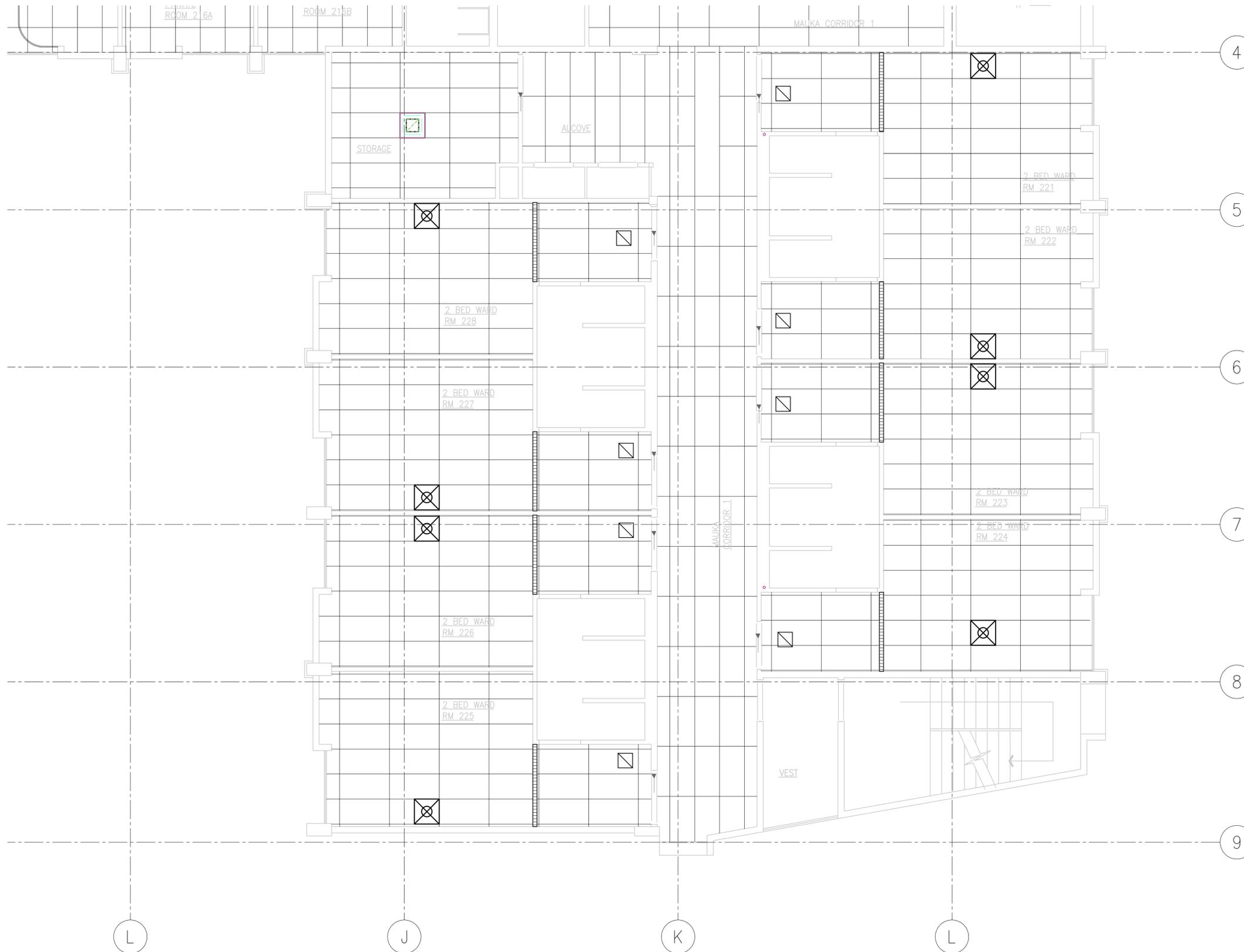


- NOTES**
- EXISTING CEILING MOUNTED FIXTURES SHALL BE REMOVED AND RE-INSTALLED AS REQUIRED.

EXISTING SECOND FLOOR REFLECTED CEILING PLAN
 SCALE: 3/32" = 1'-0"



NO.	DATE	ISSUE
		
MECHANICAL ENTERPRISES, INC. CONSULTING MECHANICAL ENGINEERS 1314 South King Street, Honolulu, Hawaii 96814 Phone: (808) 591-9038 Fax: (808) 596-7356		
		
MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR HHSC MALUHIA ADDRESS: 1027 HALA DRIVE HONOLULU, HAWAII 96817 T.M.C. 1-6-005-004		
EXISTING 2ND FLR REFLECTED CEILING PLAN		
Designed	MEI	
Drawn	CKM	
Checked	RRT	
Date		
Job No.		
Sheet	A-1	
Of	2 Sheets	

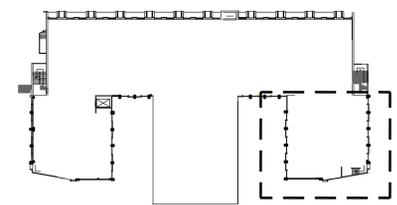


EXISTING SECOND FLOOR REFLECTED CEILING PLAN
 SCALE: 3/32" = 1'-0"

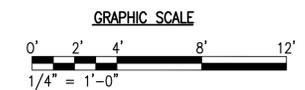


- NOTES**
- EXISTING CEILING MOUNTED FIXTURES SHALL BE REMOVED AND RE-INSTALLED AS REQUIRED.

- LEGEND**
- EXISTING CEILING PANELS TO REMAIN
 - NEW METAL STUDS WITH TYPE 'X' GUY BD, SEE DETAIL 1/A-4
 - SUPPLY AIR REGESTERS
 - FAN COIL UNIT
 - RETURN AIR REGESTERS

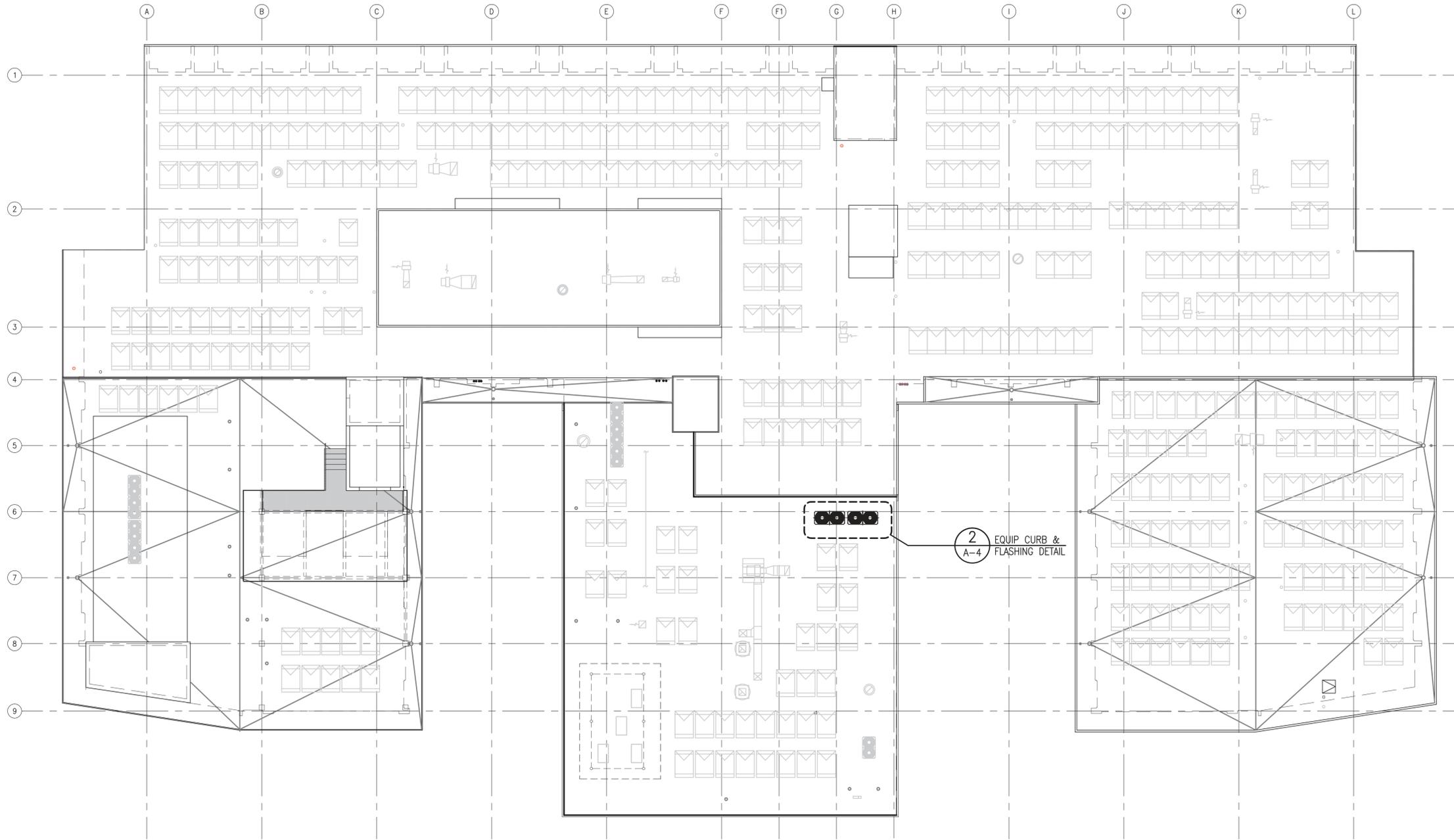


KEY PLAN

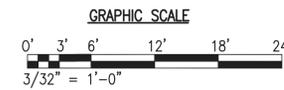


NO.	DATE	ISSUE	
<p>MECHANICAL ENTERPRISES, INC. CONSULTING MECHANICAL ENGINEERS 1314 South King Street, Honolulu, Hawaii 96814 Phone: (808) 591-9038 Fax: (808) 596-7356</p>			
<p>MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR HHSC MALUHIA ADDRESS: 1027 HALA DRIVE HONOLULU, HAWAII 96817 T.M.C. 15-0005.004</p>			
<p>EXISTING 2ND FLR REFLECTED CEILING PLAN</p>			
Designed	MEI		
Drawn	CKM		
Checked	RRT		
Date			
Job No.			
Sheet			
<p>A-2</p>			
<p>Of 3 Sheets</p>			

Date Plotted: Tue, 17 Nov 2020 - 5:19pm
 File Name: \\PROJ\AP\projects\m\New folder\Steven\Arch\A03_rpl.dwg



EXISTING ROOF PLAN
 SCALE: 3/32" = 1'-0"



NO. DATE ISSUE

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Carole K. Miyamura
 EXP 4-30-22



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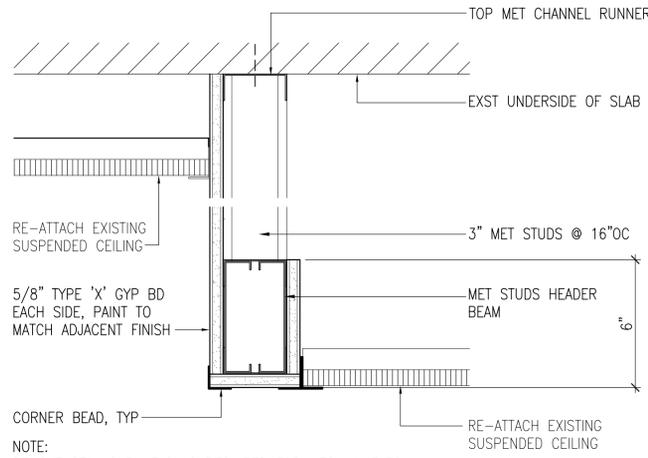


MALUHIA AIR CONDITIONING
 REPLACEMENT FOR 2ND FLOOR
 HHSC MALUHIA
 ADDRESS: 1027 HALA DRIVE
 HONOLULU, HAWAII 96817 T.M.C. 1-6-005-004

EXISTING ROOF PLAN

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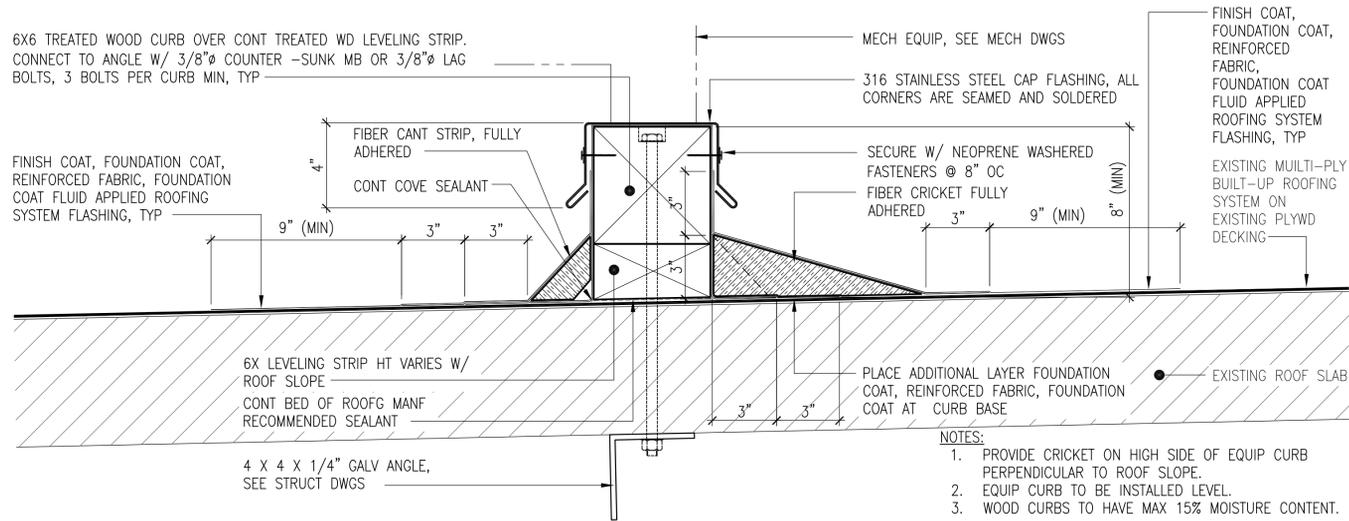
A-3
 Of 4 Sheets



NOTE:
REMOVE CEILING PANELS AS REQUIRED FOR MECH & ELEC
WORK AND RE-INSTALL IF TILE IS IN GOOD COND. IF NOT
REPLACE WITH NEW TILES.

1 GYP BD HEADER DETAIL

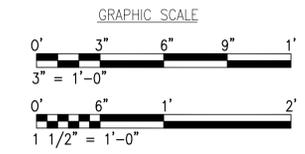
A-3 SCALE: 3" = 1'-0"



- NOTES:
1. PROVIDE CRICKET ON HIGH SIDE OF EQUIP CURB PERPENDICULAR TO ROOF SLOPE.
 2. EQUIP CURB TO BE INSTALLED LEVEL.
 3. WOOD CURBS TO HAVE MAX 15% MOISTURE CONTENT.

2 EQUIPMENT CURD & FLASHING DETAIL

A-3 SCALE: 3" = 1'-0"



NO. DATE ISSUE

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Charles K. Miganawa
EXP 4-30-22



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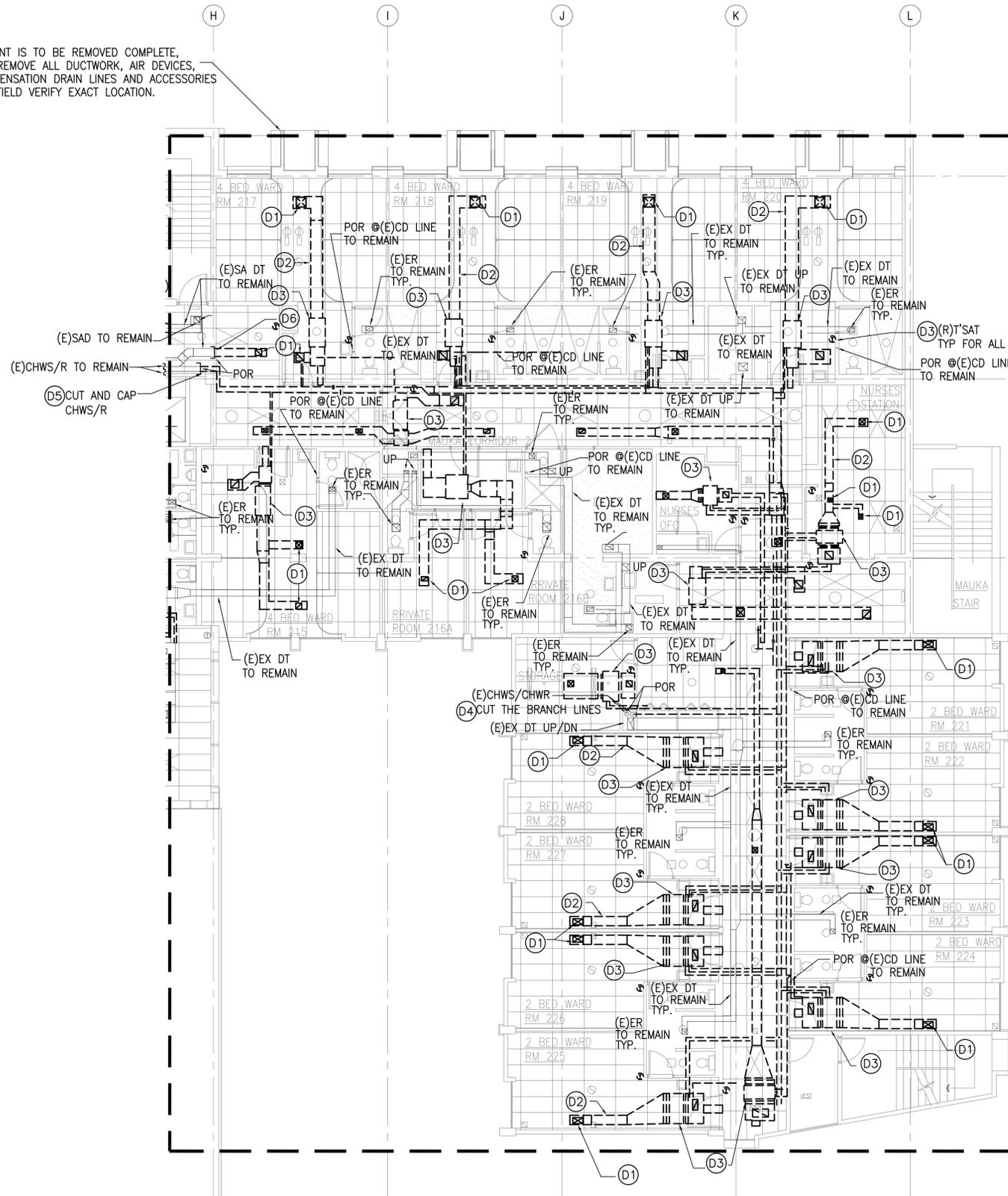
MALUHIA AIR CONDITIONING
REPLACEMENT FOR 2ND FLOOR
HHSC MALUHIA
ADDRESS: 1027 HALA DRIVE
HONOLULU, HAWAII 96817 T.M.K. 1-6-0005-004

MISCELLANEOUS DETAILS

Designed	MEI
Drawn	CKM
Checked	RRT
Date	
Job No.	
Sheet	

A-4
Of 5 Sheets

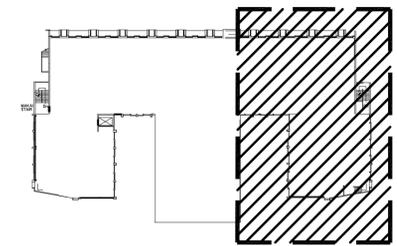
EXIST'G MECHANICAL EQUIPMENT IS TO BE REMOVED COMPLETE, UNLESS OTHERWISE STATED. REMOVE ALL DUCTWORK, AIR DEVICES, CHILLED WATER PIPING, CONDENSATION DRAIN LINES AND ACCESSORIES COMPLETE. CONTRACTOR TO FIELD VERIFY EXACT LOCATION.



MECHANICAL DEMOLITION NOTES:

CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS BEFORE START OF WORK.

- (D1) COMPLETELY REMOVE EXISTING AC AIR DEVICE COMPLETE AS INDICATED INCLUDING ALL ASSOCIATED AC DUCTWORK, FITTINGS AND ACCESSORIES. PATCH/REPAIR AS REQUIRED.
- (D2) REMOVE EXISTING DUCTWORK COMPLETE AND ASSOCIATED AIR DEVICES, FITTINGS AND ACCESSORIES AS REQUIRED. PATCH/REPAIR TO MATCH EXIST'G. CONTRACTOR TO FIELD VERIFY.
- (D3) REMOVE EXIST'G FAN COIL UNIT AND ALL DUCTWORK CONNECTED COMPLETELY. REMOVE ALL ASSOCIATED CONDENSATE DRAIN LINES. REMOVE CHILLED WATER LINE COMPLETE. REMOVE ALL ACCESSORIES COMPLETELY. REMOVE EXIST'G THERMOSTAT & CONTROL PANEL. PATCH/REPAIR TO MATCH EXIST'G. CONTRACTOR TO FIELD VERIFY.
- (D4) CUT THE BRANCH LINE AT MAIN CHILLED WATER RISERS. REMOVE ALL ACCESSORIES COMPLETELY. PATCH/REPAIR TO MATCH EXIST'G. CONTRACTOR TO FIELD VERIFY.
- (D5) CUT AND CAP THE CHILLED WATER LINES AT POR. REMOVE CHILLED WATER LINES AS SHOWN. PATCH/REPAIR TO MATCH EXIST'G. CONTRACTOR TO FIELD VERIFY.
- (D6) CUT AND CAP EXIST'G DUCTWORK AT POR. REMOVE DUCTWORK AS SHOWN. PATCH/REPAIR TO MATCH EXIST'G. CONTRACTOR TO FIELD VERIFY.



KEY PLAN

1 PARTIAL MECHANICAL DEMOLITION PLAN-2ND FLOOR
 M-2 SCALE: 1/8" = 1'-0"

NO. DATE ISSUE

This work was prepared by me or under my supervision and construction of this project will be under my observation.
 R. S. TANIKA
 EXP 4-30-22

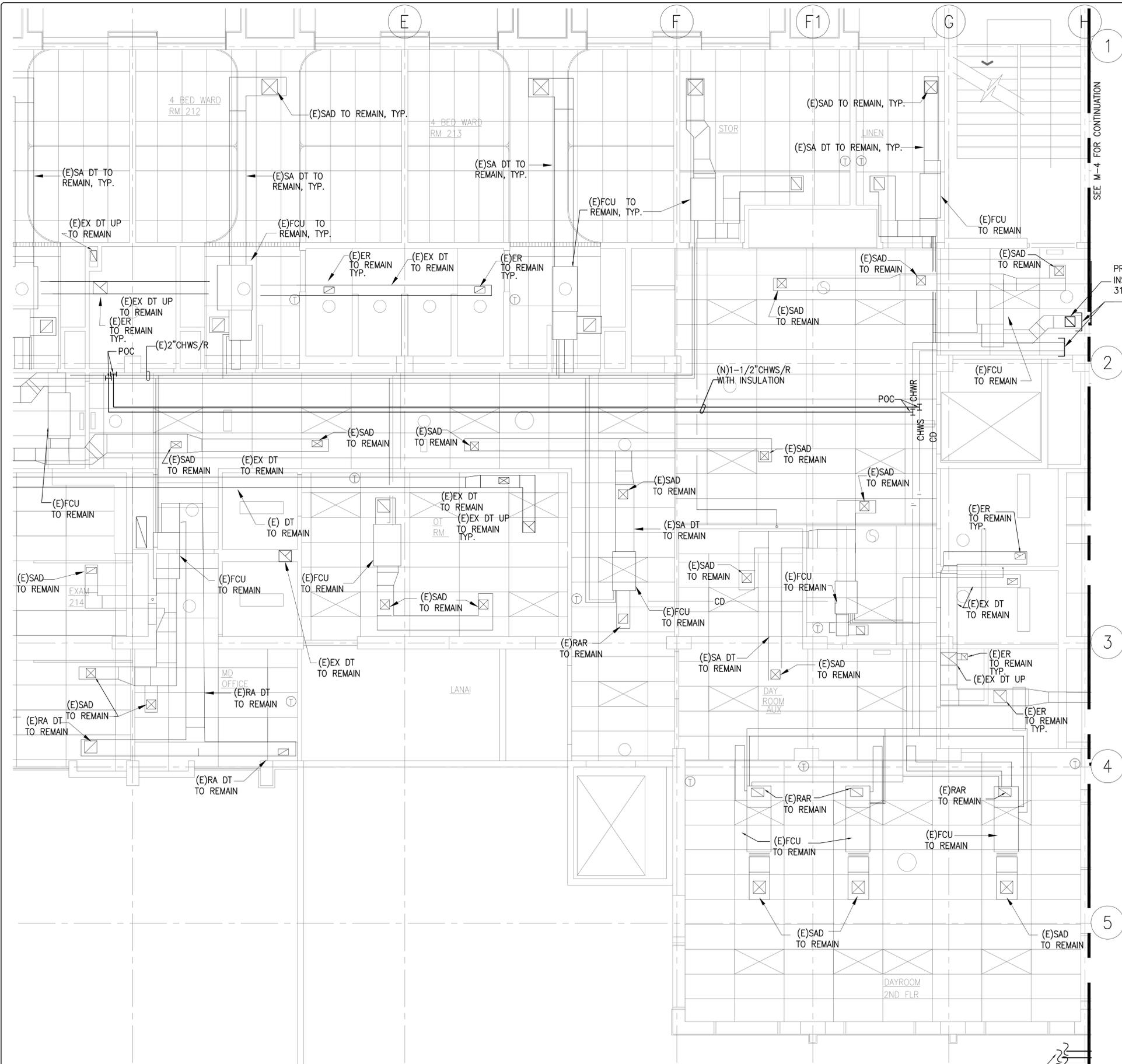


MECHANICAL ENTERPRISES, INC.
CONSULTING MECHANICAL ENGINEERS
 501 Sumner St Ste 503, Honolulu, Hawaii 96817
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MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
 HHSC MALUHIA
 ADDRESS: 1027 HALA DRIVE
 HONOLULU, HAWAII 96817 T.M.K. 1-6-009-004
PARTIAL MECHANICAL DEMOLITION PLAN-2ND FLOOR

Designed	MEI
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Checked	RRT
Date	FEB., 2022
Job No.	2020.045
Sheet	M-2
Of	Sheets



SEE M-4 FOR CONTINUATION

PROVIDE AND INSTALL 12X12"RAR 310 RA CAP

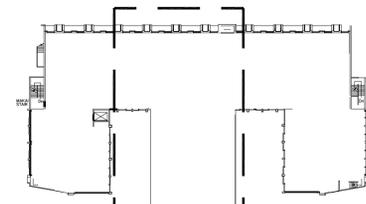
(N)1-1/2"CHWS/R WITH INSULATION

POC CHWS CD

MECHANICAL NEW WORK NOTES:

CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITION: ANY BEAM, COLUMN ETC. PRIOR TO WORK.

REF LINES, SEE ROOF PLAN FOR CONT'



KEY PLAN

1
M-3

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

NO. DATE ISSUE

This work was prepared by me or under my supervision and construction of this project will be under my observation.
R. J. [Signature]
EXP 4-30-22

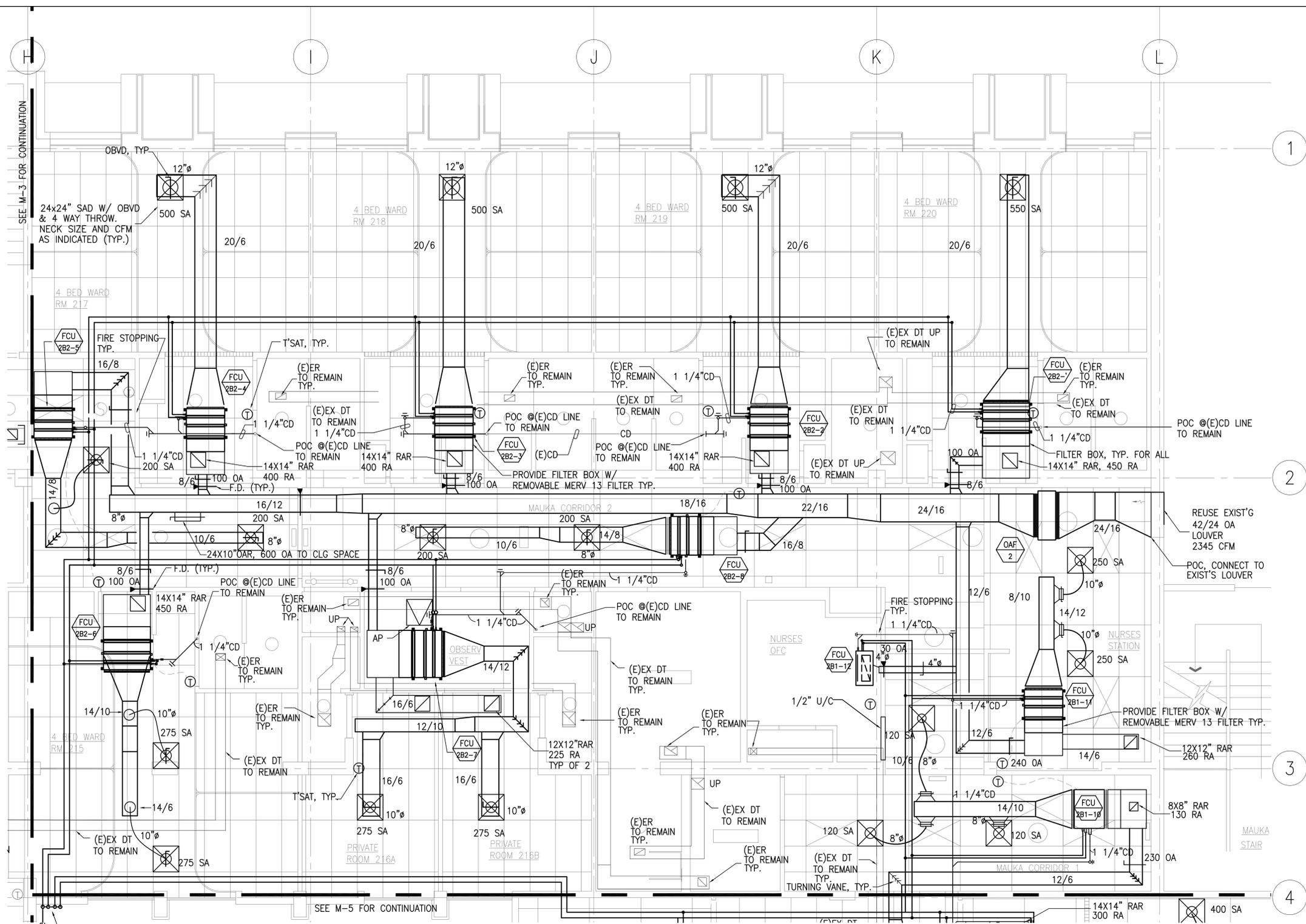


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MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
HHSC MALUHIA
ADDRESS: 1027 HALA DRIVE
HONOLULU, HAWAII 96817 TMMK: 1-6-009-004
PARTIAL MECHANICAL FLOOR PLAN-2ND FLOOR

Designed	MEI
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Date	FEB., 2022
Job No.	2020.045
Sheet	M-3
Of	Sheets



SEE M-3 FOR CONTINUATION

SEE M-5 FOR CONTINUATION

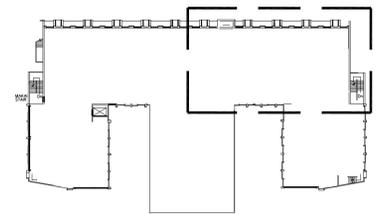
ROUTE REF LINES UP TO 2ND FLR CLG

SEE ROOF PLAN M-6 FOR CONT.

MECHANICAL NEW WORK NOTES:

CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITION: ANY BEAM, COLUMN ETC. PRIOR TO WORK.

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



KEY PLAN

NO. DATE ISSUE

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 EXP 4-30-22



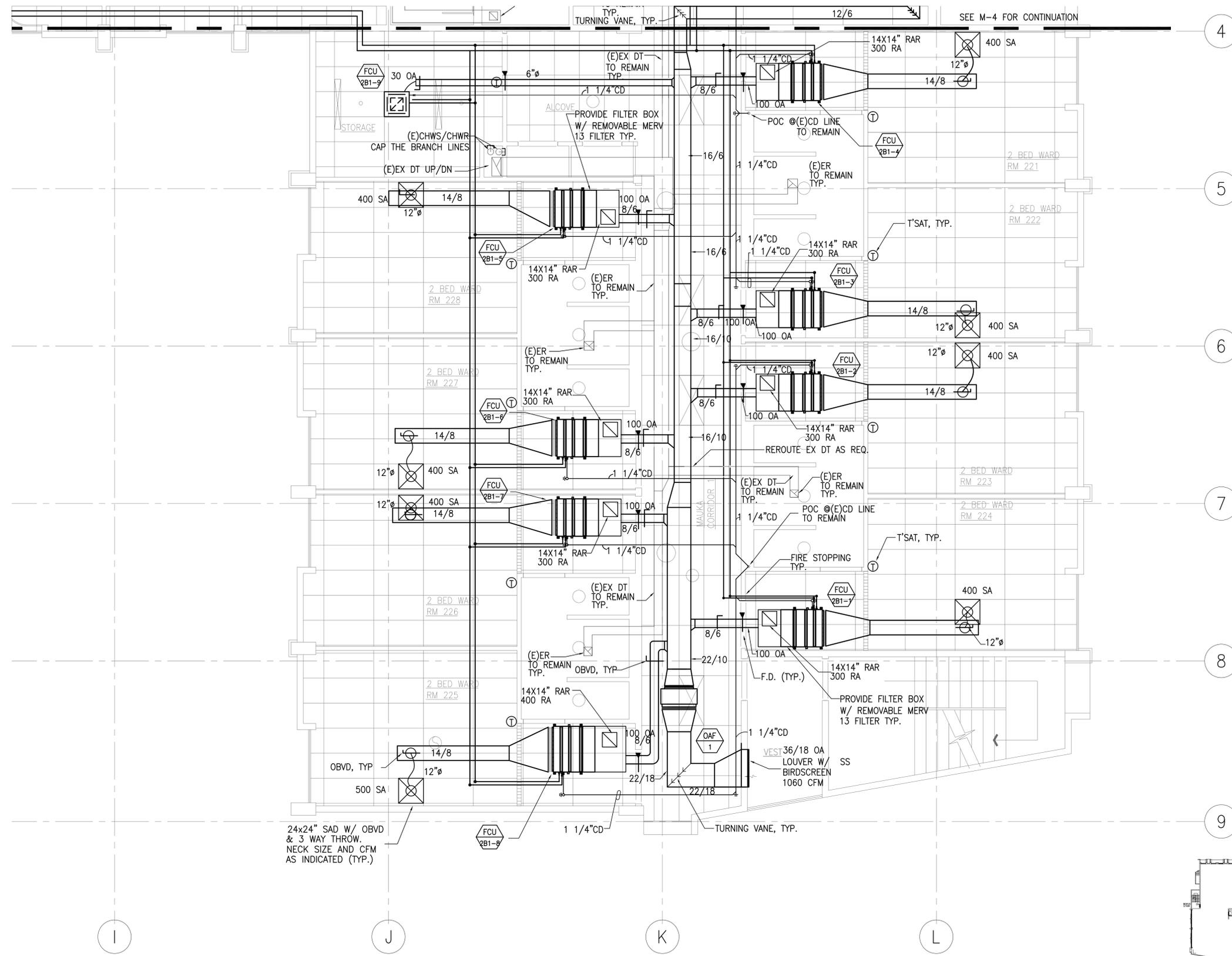
MECHANICAL ENTERPRISES, INC.
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MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
 HHSC MALUHIA
 ADDRESS: 1027 HALA DRIVE
 HONOLULU, HAWAII 96817 TMMK: 1-6-009-004
PARTIAL MECHANICAL FLOOR PLAN-2ND FLOOR

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Date	FEB., 2022
Job No.	2020.045
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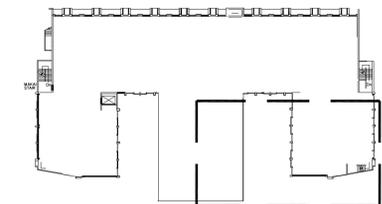
M-4
 Of Sheets



MECHANICAL NEW WORK NOTES:

CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITION: ANY BEAM, COLUMN ETC. PRIOR TO WORK.

1 PARTIAL MECHANICAL FLOOR PLAN-2ND FLOOR
 M-5 SCALE: 1/4" = 1'-0"



KEY PLAN

NO. DATE ISSUE

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 EXP 4-30-22

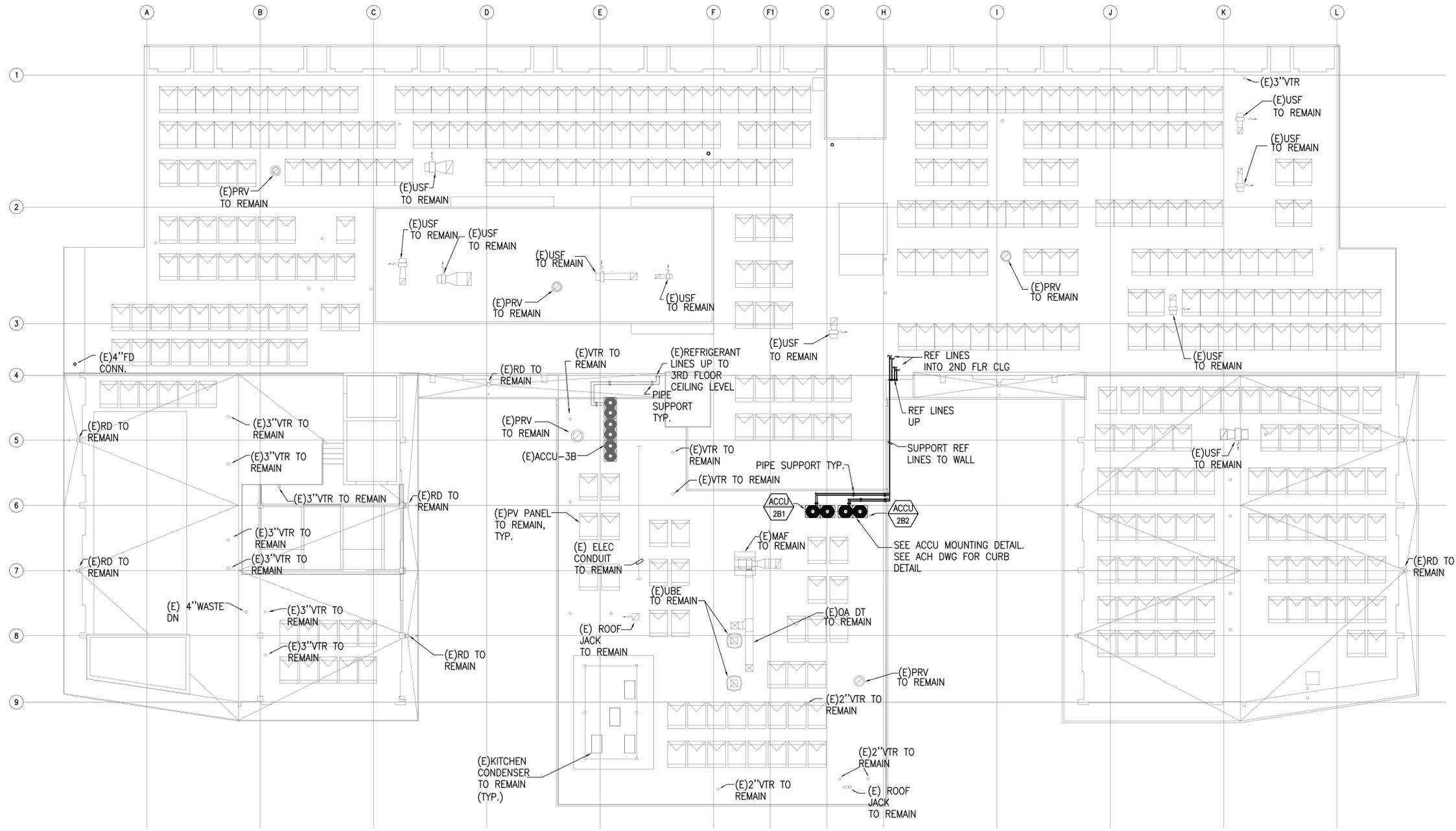


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MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
 HHSC MALUHIA
 ADDRESS: 1027 HALA DRIVE
 HONOLULU, HAWAII 96817 T.M.K. 1-6-009-004
PARTIAL MECHANICAL FLOOR PLAN-2ND FLOOR

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Job No.	2020.045
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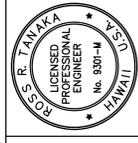
NOTE:

FOR ANY WORK ON THE ROOF WHICH AFFECTS ROOFING WARRANTY SHALL BE COORDINATED WITH THE ROOFING CONTRACTOR PROVIDING ROOFING WARRANTY.

1
M-6
MECHANICAL ROOF PLAN
SCALE: 3/32" = 1'-0"

NO. DATE ISSUE

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R. J. [Signature]
EXP 4-30-22



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MALUHIA AIR CONDITIONING
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ADDRESS: 1027 HALA DRIVE
HONOLULU, HAWAII 96817 TMK: 1-6-009-004
MECHANICAL ROOF PLAN

Designed	MEI
Drawn	MEI
Checked	RRT
Date	FEB., 2022
Job No.	2020.045
Sheet	M-6
Of	Sheets

VRF SPLIT-SYSTEM AIR CONDITIONING UNIT SCHEDULE

INDOOR UNITS																			
UNIT NO.	MANUFACTURER AND MODEL	LOCATION	TYPE	SUPPLY AIR, CFM	OUTSIDE AIR, CFM	ESP (IN WG)	TOTAL CAPACITY (BTUH)	ENT AIR TEMP		ELECTRICAL				REFRIG LINES*		COND DRAIN	MAX SOUND LEVEL (dBA)	OPR WT (LBS)	REMARKS
								db (°F)	wb (°F)	V	Ø	Hz	AMPS	LIQ	GAS				
FCU 2B1-7	mitsubishi PEFY-P15NMAU-E3.MX	ROOM224 2BD WARD	MEDIUM STATIC DUCT	400	100	0.4	15,000	80	67	208	1	60	0.67	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B1-7	mitsubishi PEFY-P15NMAU-E	ROOM223 2BD WARD	MEDIUM STATIC DUCT	400	100	0.4	15,000	80	67	208	1	60	0.67	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B1-7	mitsubishi PEFY-P15NMAU-E	ROOM222 2BD WARD	MEDIUM STATIC DUCT	400	100	0.4	15,000	80	67	208	1	60	0.67	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B1-7	mitsubishi PEFY-P15NMAU-E	ROOM221 2BD WARD	MEDIUM STATIC DUCT	400	100	0.4	15,000	80	67	208	1	60	0.67	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B1-7	mitsubishi PEFY-P15NMAU-E	ROOM228 2BD WARD	MEDIUM STATIC DUCT	400	100	0.4	15,000	80	67	208	1	60	0.67	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B1-7	mitsubishi PEFY-P15NMAU-E	ROOM227 2BD WARD	MEDIUM STATIC DUCT	400	100	0.4	15,000	80	67	208	1	60	0.67	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B1-7	mitsubishi PEFY-P15NMAU-E	ROOM226 2BD WARD	MEDIUM STATIC DUCT	400	100	0.4	15,000	80	67	208	1	60	0.67	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B1-7	mitsubishi PEFY-P18NMAU-E	ROOM225 2BD WARD	MEDIUM STATIC DUCT	500	100	0.5	18,000	80	67	208	1	60	0.77	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B1-7	mitsubishi PLY-P08NCMU-E	STORAGE	4-WAY CASSETTE	390	30	-	8,000	80	67	208	1	60	0.23	1/4"	1/2"	1-1/4"	34	37	PROVIDE GPS IONIZATION MODEL IRIB 36 WITH 35 MILLION IONS/CC/SEC/FT. 110/1/60
FCU 2B1-7	mitsubishi PEFY-P12NMAU-E	MAUKA CORRIDOR 1	MEDIUM STATIC DUCT	360	140	0.4	12,000	80	67	208	1	60	0.66	1/4"	1/2"	1-1/4"	34	51	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B1-7	mitsubishi PEFY-P18NMAU-E	NURSE STATION	MEDIUM STATIC DUCT	500	240	0.5	18,000	80	67	208	1	60	0.77	1/4"	1/2"	1-1/4"	34	34	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B1-7	mitsubishi PMFY-P06NBMU-E	LOCK RM	1-WAY CASSETTE	230	30	-	6,000	80	67	208	1	60	0.2	1/4"	1/2"	1-1/4"	35	31	PROVIDE GPS IONIZATION MODEL IRIB-18 WITH 35 MILLION IONS/CC/SEC/FT. 110/1/60
*CONTRACTOR SHALL CONFIRM REFRIGERANT PIPE SIZES WITH MANUFACTURER PRIOR TO PROCUREMENT.															MITSUBISHI, DAIKIN, LG OR APPROVED EQUAL. PROVIDE INTEGRAL 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 POLIUAL COATING. PROVIDE HORIZONTALLY AND VERTICALLY RESTRAINED SPRING ISOLATORS WITH NEOPRENE DIPPED SPRINGS AND GALV. HOUSINGS ON ALL EQUIPMENT. PROVIDE 1/2" RUBBER PAD FOR ACCU, AND SPRING ISOLATORS FOR FCU. PROVIDE PLASTIC COATED CABLE SWAY BRACING ALL SUSPENDED EQUIPMENT. PROVIDE FLEXIBLE DUCT CONNECTIONS AT ALL EQUIPMENT. PROVIDE S.S. BIRDSCREEN AT ALL NEW & EXISTING OA INTAKES. PROVIDE PHASE FAILURE/PHASE REVERSAL/OVER VOLTAGE/UNDER VOLTAGE ELECTRICAL PROTECTION. PROVIDE CONTROL VOLTAGE TRANSFORMERS. PROVIDE SILICONE PROTECTION TO ALL CIRCUIT BOARDS TO PREVENT SHORT CIRCUITING CAUSED BY GECKO ETC. PROVIDE GPS IONIZATION AT FCU'S. PROVIDE FILTER BOX FOR ALL DUCTED FCU'S.				
OUTDOOR UNIT																			
UNIT NO.	MANUFACTURER AND MODEL	LOCATION	TYPE	REFRIG	NOMINAL CAPACITY (TONS)	TOTAL CAPACITY (BTUH)	AMBIENT AIR TEMP (°F)	MIN EER	ELECTRICAL				OPR WT (LBS)						
									V	Ø	Hz	AMPS							
ACCU 2B1	mitsubishi PUHY-EP168TNU-A	ROOF	VARIABLE REFRIG FLOW	R-410a	14	168,000	95	-	208	3	60	56	757						

VRF SPLIT-SYSTEM AIR CONDITIONING UNIT SCHEDULE

INDOOR UNITS																			
UNIT NO.	MANUFACTURER AND MODEL	LOCATION	TYPE	SUPPLY AIR, CFM	OUTSIDE AIR, CFM	ESP (IN WG)	TOTAL CAPACITY (BTUH)	ENT AIR TEMP		ELECTRICAL				REFRIG LINES*		COND DRAIN	MAX SOUND LEVEL (dBA)	OPR WT (LBS)	REMARKS
								db (°F)	wb (°F)	V	Ø	Hz	AMPS	LIQ	GAS				
FCU 2B2-7	mitsubishi PEFY-P24NMAU-E	ROOM220 4BD WARD	MEDIUM STATIC DUCT	550	100	0.5	24,000	80	67	208	1	60	1.04	3/8"	5/8"	1-1/4"	36	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B2-7	mitsubishi PEFY-P18NMAU-E	ROOM219 4BD WARD	MEDIUM STATIC DUCT	500	100	0.5	18,000	80	67	208	1	60	0.77	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B2-7	mitsubishi PEFY-P18NMAU-E	ROOM218 4BD WARD	MEDIUM STATIC DUCT	500	100	0.5	18,000	80	67	208	1	60	0.77	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B2-7	mitsubishi PEFY-P18NMAU-E	ROOM217 4BD WARD	MEDIUM STATIC DUCT	500	100	0.5	18,000	80	67	208	1	60	0.77	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B2-7	mitsubishi PEFY-P15NMAU-E	MAUKA CORRIDOR 2	MEDIUM STATIC DUCT	400	400	0.4	15,000	80	67	208	1	60	0.67	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B2-7	mitsubishi PEFY-P24NMAU-E	ROOM215 4BD WARD	MEDIUM STATIC DUCT	550	100	0.5	24,000	80	67	208	1	60	1.04	3/8"	5/8"	1-1/4"	36	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B2-7	mitsubishi PEFY-P24NMAU-E	PRIVATE ROOM 216A & 216B	MEDIUM STATIC DUCT	550	100	0.5	24,000	80	67	208	1	60	1.04	3/8"	5/8"	1-1/4"	36	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
FCU 2B2-7	mitsubishi PEFY-P15NMAU-E	MAUKA CORRIDOR 2	MEDIUM STATIC DUCT	400	400	0.4	15,000	80	67	208	1	60	0.67	1/4"	1/2"	1-1/4"	34	58	PROVIDE GPS IONIZATION MODEL GPS-CI-2 AND DEDICATED POWER SUPPLY TRANSFORMER PS-2. PROVIDE MANUFACTURER FILTER BOX WITH MERV 13 FILTERS
*CONTRACTOR SHALL CONFIRM REFRIGERANT PIPE SIZES WITH MANUFACTURER PRIOR TO PROCUREMENT.															MITSUBISHI, DAIKIN, LG OR APPROVED EQUAL. PROVIDE INTEGRAL 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 POLIUAL COATING. PROVIDE HORIZONTALLY AND VERTICALLY RESTRAINED SPRING ISOLATORS WITH NEOPRENE DIPPED SPRINGS AND GALV. HOUSINGS ON ALL EQUIPMENT. PROVIDE 1/2" RUBBER PAD FOR ACCU, AND SPRING ISOLATORS FOR FCU. PROVIDE PLASTIC COATED CABLE SWAY BRACING ALL SUSPENDED EQUIPMENT. PROVIDE FLEXIBLE DUCT CONNECTIONS AT ALL EQUIPMENT. PROVIDE S.S. BIRDSCREEN AT ALL NEW & EXISTING OA INTAKES. PROVIDE PHASE FAILURE/PHASE REVERSAL/OVER VOLTAGE/UNDER VOLTAGE ELECTRICAL PROTECTION. PROVIDE CONTROL VOLTAGE TRANSFORMERS. PROVIDE SILICONE PROTECTION TO ALL CIRCUIT BOARDS TO PREVENT SHORT CIRCUITING CAUSED BY GECKO ETC. PROVIDE GPS IONIZATION AT FCU'S. PROVIDE FILTER BOX FOR ALL DUCTED FCU'S.				
OUTDOOR UNIT																			
UNIT NO.	MANUFACTURER AND MODEL	LOCATION	TYPE	REFRIG	NOMINAL CAPACITY (TONS)	TOTAL CAPACITY (BTUH)	AMBIENT AIR TEMP (°F)	MIN EER	ELECTRICAL				OPR WT (LBS)						
									V	Ø	Hz	AMPS							
ACCU 2B2	mitsubishi PUHY-EP168TNU-A	ROOF	VARIABLE REFRIG FLOW	R-410a	14	168,000	95	-	208	3	60	56	757						

OUTSIDE AIR FAN SCHEDULE

PROVIDE WITH BACKDRAFT DAMPERS AND OBVD'S. PROVIDE WITH UNIT MOUNTED SPEED CONTROLLER. PROVIDE WITH ISOLATOR KIT.

UNIT	AREA SERVED	TYPE	CFM	ESP (INCH WG)	ELECTRICAL				MAX SONE	MAKE & MODEL OR APPROVED EQUAL	REMARKS
					POWER	V	PH	HZ			
DAF 1	FCU 2B1-1~2B1-10	INLINE FAN	1060	0.62	550 W	115	1	60	3.5	GREENHECK CSP- A1750	INTERLOCK OAF'S W/ VRF SYSTEM AS REQUIRED. PROVIDE SPEED CONTROL.
DAF 2	FCU 2B2-1~2B2-8 FCU 2B1-11 & 2B1-12	INLINE FAN	2345	0.8	1330 W	115	1	60	3.5	GREENHECK CSP- A3600	INTERLOCK OAF'S W/ VRF SYSTEM AS REQUIRED. PROVIDE SPEED CONTROL.

IONIZATION DEVICE

MAKE & MODEL OR APPROVED EQUAL	FCU SERVED	QUANTITY	ION OUTPUT	W INPUT	VOLTAGE	REMARKS
GLOBAL PLASMA SOLUTIONS GPS-CI-2	FCU-2B1-1~8 FCU-2B1-10~11 FCU-2B2-1~8	18	> 160 MILLION +/- IONS PER CC PER SEC	8	24V AC/DC	CARBON FIBER BRUSHES, LED OPERATION STATUS, INTEGRAL BAS ALARM CONTACTS, MOUNTING TABS, POSITIVE AND NEGATIVE ION OUTPUT, 110-240V STEP-DOWN POWER SUPPLY.
GLOBAL PLASMA SOLUTIONS GPS-IRIB 36	FCU-2B1-9	1	> 35 MILLIONS +/- IONS PER CC PER FOOT PER SEC	5	110 TO 240 VAC	
GLOBAL PLASMA SOLUTIONS GPS-IRIB-18	FCU-2B1-12	1	> 35 MILLIONS +/- IONS PER CC PER FOOT PER SEC	5	110 TO 240 VAC	

NO. DATE ISSUE

This work was prepared by me or under my supervision and construction of this project will be under my observation.



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 501 Summer St Ste 503, Honolulu, Hawaii 96817
 Phone: (808) 591-9038 Fax: (808) 596-7356



MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
 HHSC MALUHIA
 ADDRESS: 1027 HALA DRIVE
 HONOLULU, HAWAII 96817 TMMK: 1-6-009-004

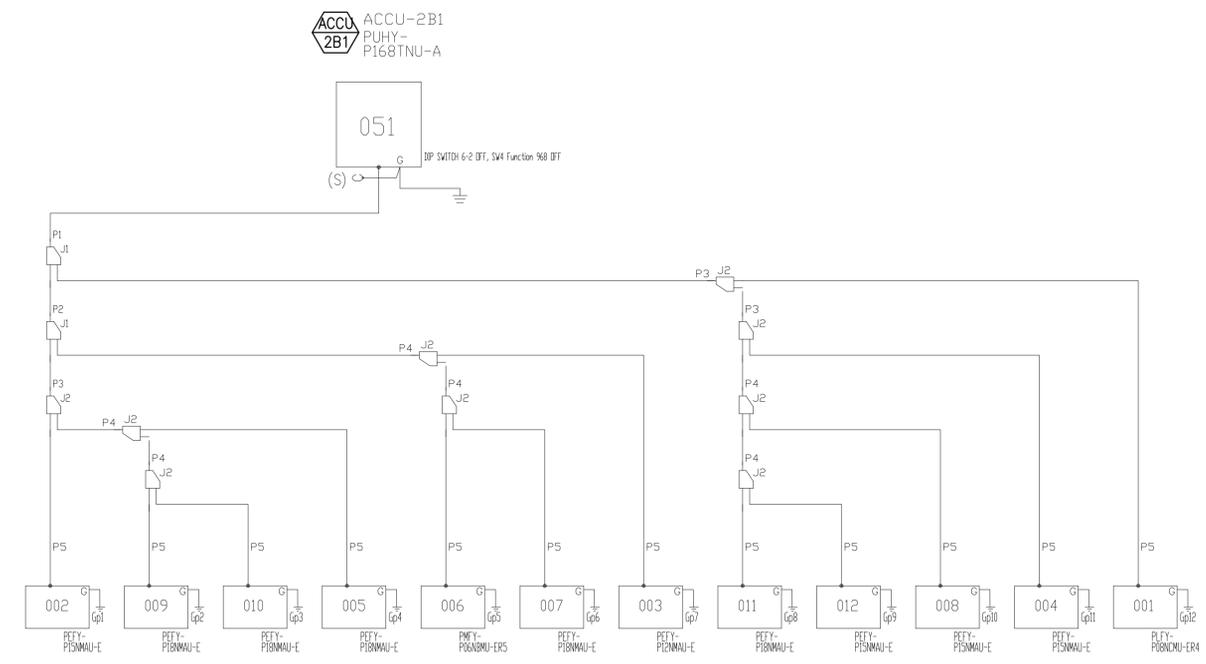
Designed MEI
 Drawn MEI
 Checked RRT
 Date FEB., 2022
 Job No. 2020.045
 Sheet
M-7
 Of Sheets

Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.
 1.25mm²(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).

DIAGRAM DISPLAY	SYMBOL	LEGEND DESCRIPTION
—	—	POWER WIRE
—	—	CONTROL WIRE
—	—	REF. PIPE

PIPING AND CONTROLS	
SYMBOL	BRANCH PIPE MODEL NAME
J1	CMY-Y102LS-G2
J2	CMY-Y102SS-G2
SYMBOL LIQUID PIPE/GAS PIPE SIZE	
P1	5/8 / 1-1/8
P2	3/8 / 1/8
P3	3/8 / 3/4
P4	3/8 / 5/8
P5	1/4 / 1/2
SYMBOL	MODEL NUMBER
MA	PAR-31MAA

NOTE: CONTRACTOR SHALL CONFIRM REFRIGERANT PIPE SIZES WITH MANUFACTURER PRIOR TO PROCUREMENT.



ROOM 221, ROOM 224, ROOM 223, ROOM 222, NURSE OFC, NURSE STATION, NURSE CORRIDOR 1, ROOM 225, ROOM 226, ROOM 227, ROOM 228, STORAGE, FCU-2B1-4, FCU-2B1-1, FCU-2B1-2, FCU-2B1-3, FCU-2B1-2, FCU-2B1-1, FCU-2B1-1, FCU-2B1-8, FCU-2B1-7, FCU-2B1-6, FCU-2B1-5, FCU-2B1-9,

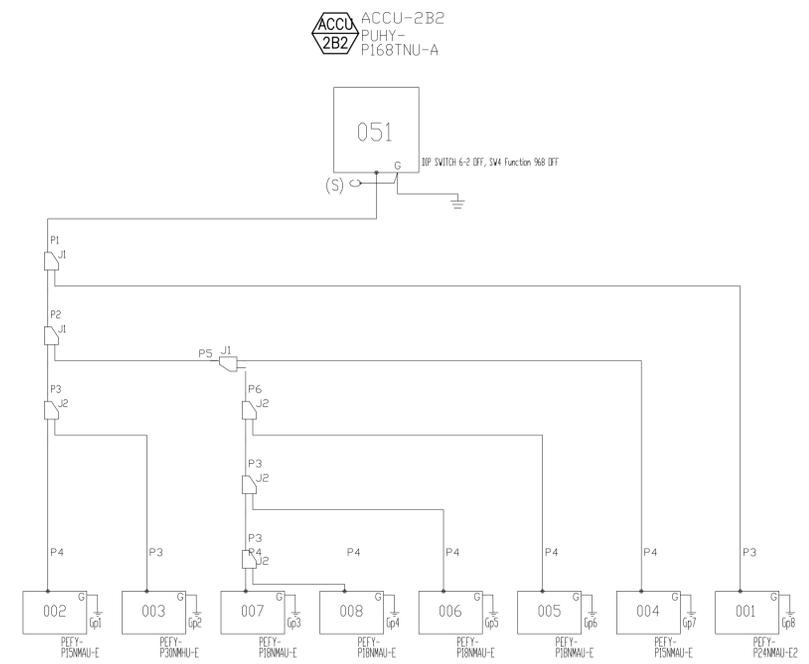
1 VRF SCHEMATIC DIAGRAM
 M-8 NOT TO SCALE ACCU-2B1

Additional refrigerant charge is needed depending on the size and length of extended piping. Please refer the amount of pre-charge and the formula of calculation which is mentioned on the data book.
 1.25mm²(16 AWG) : 1.25mm²(16 AWG) or more. 0.75mm²(20 AWG) : between 0.5mm²(24 AWG) and 0.75mm²(20 AWG).

DIAGRAM DISPLAY	SYMBOL	LEGEND DESCRIPTION
—	—	POWER WIRE
—	—	CONTROL WIRE
—	—	REF. PIPE

PIPING AND CONTROLS	
SYMBOL	BRANCH PIPE MODEL NAME
J1	CMY-Y102LS-G2
J2	CMY-Y102SS-G2
SYMBOL LIQUID PIPE/GAS PIPE SIZE	
P1	5/8 / 1-1/8
P2	1/2 / 1-1/8
P3	3/8 / 5/8
P4	1/4 / 1/2
P5	3/8 / 7/8
P6	3/8 / 3/4
SYMBOL	MODEL NUMBER
MA	PAR-31MAA

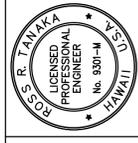
NOTE: CONTRACTOR SHALL CONFIRM REFRIGERANT PIPE SIZES WITH MANUFACTURER PRIOR TO PROCUREMENT.



FCU-2B2-8 FCU-2B2-7 FCU-2B2-1, FCU-2B2-2 FCU-2B2-3 FCU-2B2-4 FCU-2B2-5 FCU-2B2-6

2 VRF SCHEMATIC DIAGRAM
 M-8 NOT TO SCALE ACCU-2B2

This work was prepared by me or under my supervision and construction of this project will be under my observation.
 R. S. R. TANKA
 EXP 4-30-22



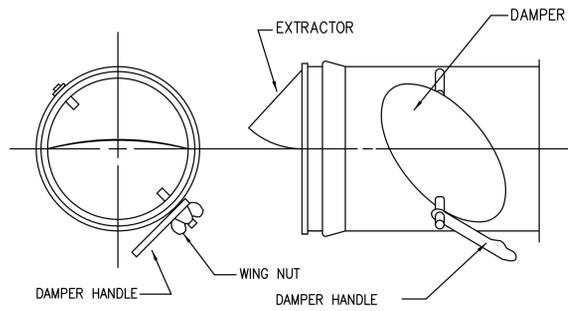
MECHANICAL ENTERPRISES, INC.
CONSULTING MECHANICAL ENGINEERS
 501 Summer St Ste 503, Honolulu, Hawaii 96817
 Phone: (808) 591-9038 Fax: (808) 596-7356



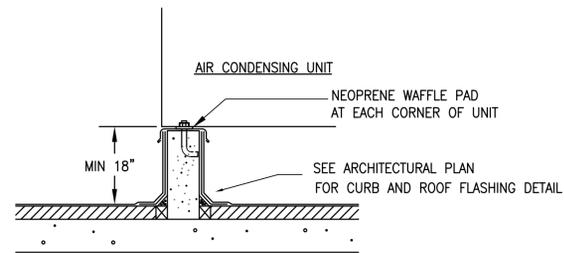
MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
 HHSC MALUHIA
 ADDRESS: 1027 HALA DRIVE
 HONOLULU, HAWAII 96817 TMIK: 1-6-009:004

VRF SCHEMATIC DIAGRAM

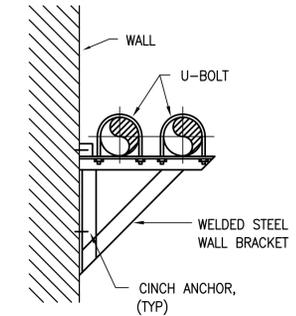
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Checked	RRT
Date	FEB., 2022
Job No.	2020.045
Sheet	M-8
Of	Sheets



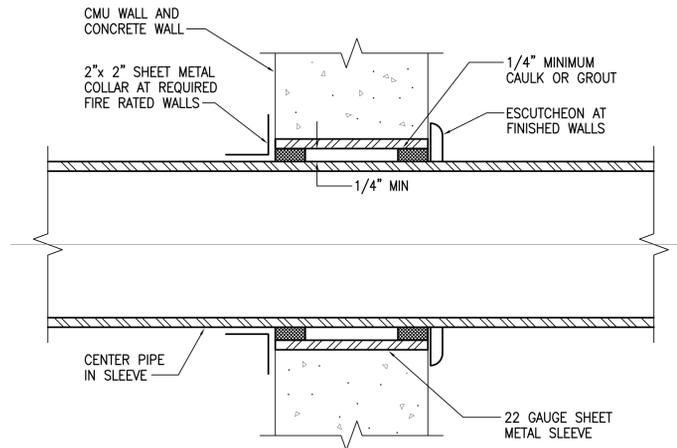
SPIN TAP FITTING DETAIL
NOT TO SCALE



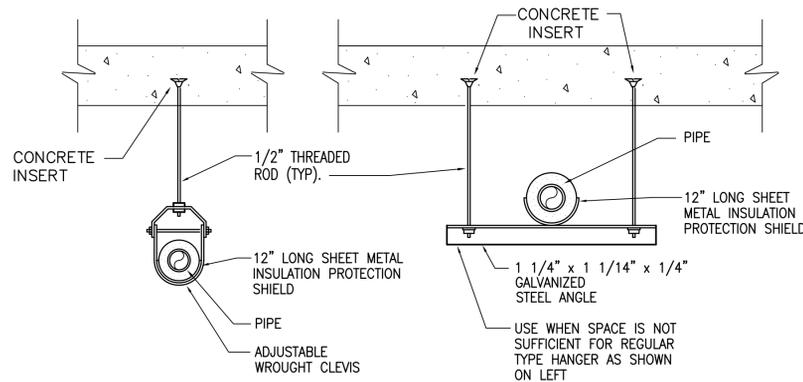
TYPICAL AIR CONDITIONING UNIT MOUNTING DETAIL
NOT TO SCALE



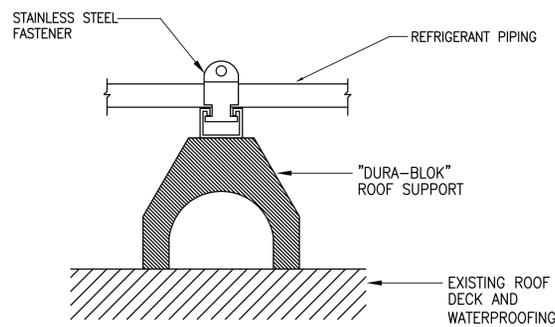
TYPICAL PIPE SUPPORT DETAILS
NTS



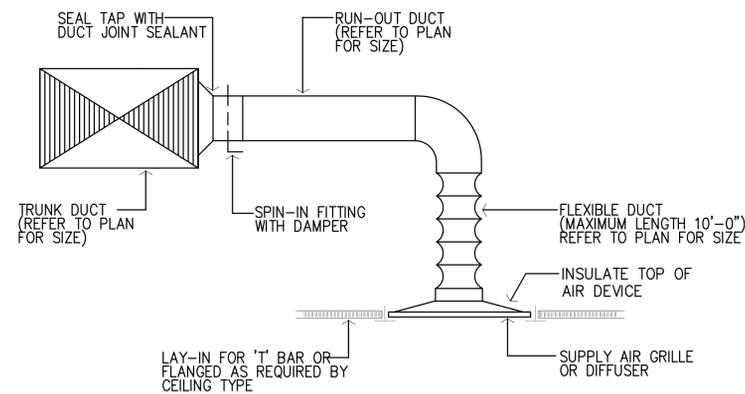
PIPE THRU CONCRETE WALL DETAIL
NOT TO SCALE



PIPE HANGING DETAIL
NOT TO SCALE



PIPE SUPPORT ON ROOF
NOT TO SCALE



SPINTAP & CLG. DIFFUSER CONNECTION DETAIL
NOT TO SCALE

NO. DATE ISSUE

This work was prepared by me or under my supervision and construction of this project will be under my observation.
R. T. TAMAKA
EXP 4-30-22



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MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
HHSC MALUHIA
ADDRESS: 1027 HALA DRIVE
HONOLULU, HAWAII 96817 TMK: 1-6-009:004

DETAILS

Designed	MEI
Drawn	MEI
Checked	RRT
Date	FEB., 2022
Job No.	2020.045
Sheet	M-9
Of	Sheets

CONTINUITY OF SERVICES AND PHASING

- INTERRUPTIONS OF EXISTING UTILITIES SHALL BE KEPT TO A MINIMUM. NOTICE OF SERVICE INTERRUPTIONS SHALL BE SUBMITTED, IN WRITING, TO HHSC FOR APPROVAL AT LEAST TWO WEEKS BEFORE INTENDED DATE OF SERVICE INTERRUPTIONS EXACT DATE, TIME AND DURATION OF INTERRUPTIONS ALLOWED SHALL BE DETERMINED BY HHSC.
- BECAUSE OF THE CRITICAL NATURE OF THE OPERATIONS OF THE FACILITY DISRUPTIONS, INTERRUPTIONS AND OUTGAGES MAY NOT BE POSSIBLE OR ALLOWED DURING THE DESIRED DATE, TIME AND DURATION. SCHEDULE ALL WORK NOT TO DISRUPT, INTERRUPT OR INTERFERE WITH THE OPERATION AND MISSION OF THE FACILITY.
- PROVIDE TEMPORARY ELECTRICAL EQUIPMENT AND WIRING, AS NECESSARY, TO ASSURE THE CONTINUITY OF UTILITY SERVICE. TEMPORARY EQUIPMENT AND WIRING SHALL BE PROVIDED AT NO ADDITIONAL COST TO HHSC. TEMPORARY EQUIPMENT AND WIRING SHALL BE REMOVE WHEN NO LONGER NECESSARY.
- SUBMIT TO HHSC A COPY OF TEMPORARY WORK SCHEDULE INDICATING DATE, TIME, DURATION AND AREAS TO BE AFFECTED BY THE TEMPORARY INTERRUPTION OF UTILITY SERVICES.
- COORDINATE WORK WITH OTHER TRADES TO MINIMIZE INTERRUPTIONS OF EXISTING UTILITIES AND SERVICES.
- SCHEDULE AND COORDINATE WORK AND DISRUPTION OF SERVICES WITH HHSC, OTHER TRADES AND AUTHORITY HAVING JURISDICTION.

ELECTRICAL SYMBOL LIST		
NEW	EXISTING	DESCRIPTION
		INTERIOR ELECTRICAL SYMBOLS
		LIGHT FIXTURE, FLUORESCENT, CEILING SURFACE MOUNTED OR RECESSED; REFER TO LUMINAIRE SCHEDULE
		LIGHT FIXTURE, EXISTING; DISCONNECT AND REMOVE OR RELOCATE
		LIGHT FIXTURE, FLUORESCENT, CEILING SURFACE MOUNTED OR RECESSED. RELOCATED OR REINSTALLED IN NEW CEILING
		LIGHT FIXTURE; SURFACE MOUNTED OR RECESSED DOWNLIGHT
		EXIT SIGN; CEILING MOUNTED
		RECEPTACLE, DUPLEX, 20A, 125V, GROUNDING TYPE NEMA 5-20R
		RECEPTACLE, DUPLEX, 20A, 125V, GROUND FAULT INTERRUPTER TYPE, SELF-CONTAINED, NEMA 5-20R
		JUNCTION BOX, SMALL, CEILING MOUNTED
		JUNCTION BOX, SMALL, WALL, MOUNTED
		JUNCTION BOX, SIZE AS NOTED, CEILING MOUNTED
		JUNCTION BOX, SIZE AS NOTED, WALL MOUNTED
		LIGHT SWITCH, 1P20A, 120/277V, CONTROLLING OUTLETS "b"
		LIGHT SWITCH, THREE-WAY, 20A, 120/277V
		PANELBOARD
		SAFETY SWITCH
		THERMAL OVERLOAD MOTOR RATED SWITCH
		MOTOR CONTROLLER (STARTER); FURNISHED BY MECHANICAL CONTRACTOR (DIVISION 15), INSTALLED BY ELECTRICAL CONTRACTOR (DIVISION 16)
		EQUIPMENT CONNECTION
		MOTOR CONNECTION
		WIRING IN RACEWAY, CONCEALED IN CEILING OR WALL.
		WIRING IN RACEWAY, CONCEALED UNDERFLOOR OR BELOW GRADE
		WIRING IN RACEWAY, EXPOSED
		WIRING IN FLEXIBLE METAL RACEWAY
		ARROW, HOMERUN TO PANEL "c", CIRCUIT 1

NO. DATE ISSUE

This work was prepared by me or under my supervision and construction of this project will be under my observation.

Darrel Itano

EXP 4-30-22

DARREL I. ITANO
LICENSED PROFESSIONAL ENGINEER
No. 4367-E
HAWAII

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501 Summer St Ste 503, Honolulu, Hawaii 96817
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ABBREVIATIONS

A	AMPS/AMPERES	FA	FIRE ALARM	MIN	MINIMUM	SS	STAINLESS STEEL
AIC	AMPERE INTERRUPTING CAPACITY	FIN	FINISH	MISC	MISCELLANEOUS	SW	SWITCH
APPROX	APPROXIMATELY	FLR	FLOOR	MTD	MOUNTED	SYS	SYSTEM
ARCH	ARCHITECT	FT	FOOT/FEET	MTG	MOUNTING		
A/C	AIR CONDITIONER			MT	MOUNT		
		GALV	GALVANIZED			TS	TRIGGER START
		GFI	GROUND FAULT INTERRUPTER			TEL	TELEPHONE
BC	BARE COPPER	GND	GROUND	NEC	NATIONAL ELECTRICAL CODE	TYP	TYPICAL
BKR	BREAKER	GOVT	GOVERNMENT	NEMA	NATIONAL ELECTRICAL MANUFACTURER ASSOCIATION		
BLDG	BUILDING	GRS	GALVANIZED RIGID STEEL	NL	NIGHT LIGHT	UL	UNDERWRITER'S LABORATORY
		GRD	GRADE				
CL	CENTER LINE	GYP	GYPSUM				
C	CONDUIT						
CAB	CABINET	HECO	HAWAIIAN ELECTRIC COMPANY	OC	ON CENTER	V	VOLTS/VOLTAGE
CHWP	CHILLED WATER PIPE	HI	HAWAII	OH	OVERHEAD	VERT	VERTICAL
CKT	CIRCUIT	HP	HORSEPOWER			VFY	VERIFY
CLR	CLEAR	HT	HEIGHT				
CLG	CEILING	HTCOM	HAWAIIAN TELCOM	%	PERCENT		
COMM	COMMUNICATION			PFB	PROVISION FOR FUTURE BREAKER	W/	WITH
C&C	CITY AND COUNTY	HVAC	HEATING VENTILATION & AIR CONDITIONING	PH	PHASE	WP	WEATHERPROOF
				PNL	PANEL		
		IN	INCH/INCHES	PS	PROGRAMMED START		
DIA	DIAMETER	INCAND	INCANDESCENT	PVC	POLYVINYL CHLORIDE	XFMR	TRANSFORMER
DIAG	DIAGRAM						
DN	DOWN						
		JB	JUNCTION BOX	RECEP	RECEPTACLE		
				RM	ROOM		
				RS	RAPID START		
EF	EXHAUST FAN	KVA	KILO VOLT AMPERES			1P	SINGLE POLE
ELEC	ELECTRICAL	KW	KILO WATT			2P	TWO POLE
EMT	ELECTRICAL METALLIC TUBING			SCHED	SCHEDULE	3P	THREE POLE
ENCL	ENCLOSED/ENCLOSURE	LTS	LIGHTS	SHT	SHEET	3W	THREE WIRE
ENGR	ENGINEER			SPECS	SPECIFICATIONS	4W	FOUR WIRE
EQUIP	EQUIPMENT	MAX	MAXIMUM				
EXIST'G	EXISTING	MECH	MECHANICAL				

DEMOLITION NOTES

- EXISTING UTILITIES AND EQUIPMENT SHOWN ON THESE DRAWINGS HAVE BEEN OBTAINED FROM A LIMITED AMOUNT OF FIELD INVESTIGATION AND AVAILABLE SOURCES AT THE TIME THESE DOCUMENTS WERE PREPARED. THE ACCURACY AND COMPLETENESS OF THIS INFORMATION IS NOT GUARANTEED. CONTRACTOR SHALL VERIFY EXISTING CONDITIONS PRIOR TO THE START OF WORK AND SHALL PROVIDE ALL LABOR AND MATERIALS REQUIRED TO COMPLETE THE INTENT OF THIS PROJECT.
 - BEFORE ANY WIRING IS CUT, CONTRACTOR SHALL VERIFY USAGE OF WIRING TO BE CUT TO ASSURE THAT REQUIRED SERVICES ARE NOT DISCONTINUED. ANY REQUIRED SERVICES DISCONNECTED BY THE CONTRACTOR SHALL BE RESTORED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE HOSPITAL OR THE STATE.
 - REMOVE ALL EXISTING LUMINAIRES, OUTLETS AND WIRING NOT TO REMAIN IN SERVICE.
 - DISCONNECT AND REMOVE ALL RACEWAYS, INCLUDING CONDUCTORS, NOT EMBEDDED IN CONCRETE OR CONCEALED WITHIN EXISTING WALLS TO REMAIN. ABANDON RACEWAYS EMBEDDED IN CONCRETE OR CONCEALED WITHIN EXISTING WALLS TO REMAIN. REMOVE CONDUCTORS FROM ABANDONED RACEWAYS.
 - PHASE ALL WORK TO ASSURE CONTINUITY OF ALL ELECTRICAL SERVICES, INCLUDING MECHANICAL CONTROLS, COMMUNICATIONS AND SECURITY SYSTEMS TO PARTS OF THE FACILITY TO REMAIN IN SERVICE.
 - REMOVE ALL DEVICES AND EQUIPMENT INDICATED TO BE REMOVED OR NO LONGER REQUIRED. PLUG ALL HOLES IN ENCLOSURES, BOXES AND CABINETS TO REMAIN.
 - RETURN ALL REMOVED EQUIPMENT AND MATERIALS, AS DETERMINED BY THE ARCHITECT TO A SITE WITHIN THE BUILDING AS DIRECTED BY THE ARCHITECT. PROPERLY DISPOSE OF ALL UNWANTED MATERIALS.
 - ANY OUTAGES OF ELECTRICAL SERVICES TO ANY PART OF THE FACILITY OR THE BUILDING SHALL BE REQUESTED, IN WRITING, AT LEAST 10 WORKING DAYS PRIOR TO THE DATE OF THE DESIRED OUTAGE. WRITTEN REQUEST TO THE ARCHITECT SHALL INCLUDE THE FOLLOWING INFORMATION: SERVICE TO BE INTERRUPTED, DATE, TIME, DURATION OF THE OUTAGE AND THE REASON FOR THE DESIRED OUTAGE.
- OUTAGES WILL BE GRANTED AT THE SOLE CONVENIENCE OF THE HOSPITAL AND SHALL BE COORDINATED AND APPROVED, IN WRITING, BY THE HOSPITAL ENGINEER AND THE STATE.

NOTE: NO LIGHTING WORK

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: *Darrel Itano* Date: 02.26.2022

Name: Darrel Itano

Title: President, Itano & Associates, Inc.

License No.: 4367-E

MALUHIA AIR CONDITIONING
REPLACEMENT FOR 2ND FLOOR
HHSC MALUHIA
ADDRESS: 1027 HALA DRIVE
HONOLULU, HAWAII 96817 TIK: 1-6-009:004

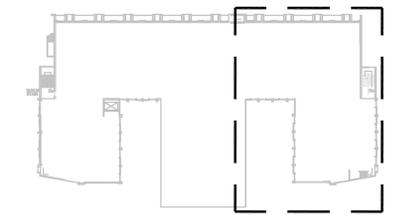
DESIGNED: MEI
DRAWN: MEI
CHECKED: RRT
DATE: FEB., 2022
JOB NO.: 2020.045
SHEET: E-1.0
OF SHEETS

ELECTRICAL SYMBOLS: ELECTRICAL DEMOLITION NOTES
ABBREVIATIONS, ENERGY BUDGET



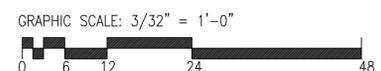
AREA OF WORK
SEE SHEET E-3.0 (DEMOLITION ELECTRICAL)
SEE SHEET E-4.0 (NEW ELECTRICAL)

AREA OF WORK
SEE SHEET E-3.0 (DEMOLITION ELECTRICAL)
SEE SHEET E-5.0 (NEW ELECTRICAL)



KEY PLAN

1
E-2.0 PARTIAL ELECTRICAL OVERALL PLAN-2ND FLOOR
SCALE: 3/32" = 1'-0"



NO. DATE ISSUE

This work was prepared by me or under my supervision and construction of this project will be under my observation.
David T. Tavares
EXP 4-30-22



MECHANICAL ENTERPRISES, INC.
CONSULTING MECHANICAL ENGINEERS
501 Summer St Ste 503, Honolulu, Hawaii 96817
Phone: (808) 591-9038 Fax: (808) 596-7556



MALUHIA AIR CONDITIONING
REPLACEMENT FOR 2ND FLOOR
HHSC MALUHIA
ADDRESS: 1027 HALA DRIVE
HONOLULU, HAWAII 96817 T/M/K: 1-6-009:004
PARTIAL ELECTRICAL OVERALL PLAN-2ND FLOOR

Designed	MEI
Drawn	MEI
Checked	RRT
Date	FEB., 2022
Job No.	2020.045
Sheet	E-2.0
Of	Sheets

This work was prepared by me or under my supervision and construction of this project will be under my observation.
Neema Datta
 EXP 4-30-22



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MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
 HHSC MALUHIA
 ADDRESS: 1027 HALA DRIVE
 HONOLULU, HAWAII 96817 T.M.K. 1-6-009:004
 PARTIAL ELECTRICAL DEMOLITION PLAN-2ND FLOOR

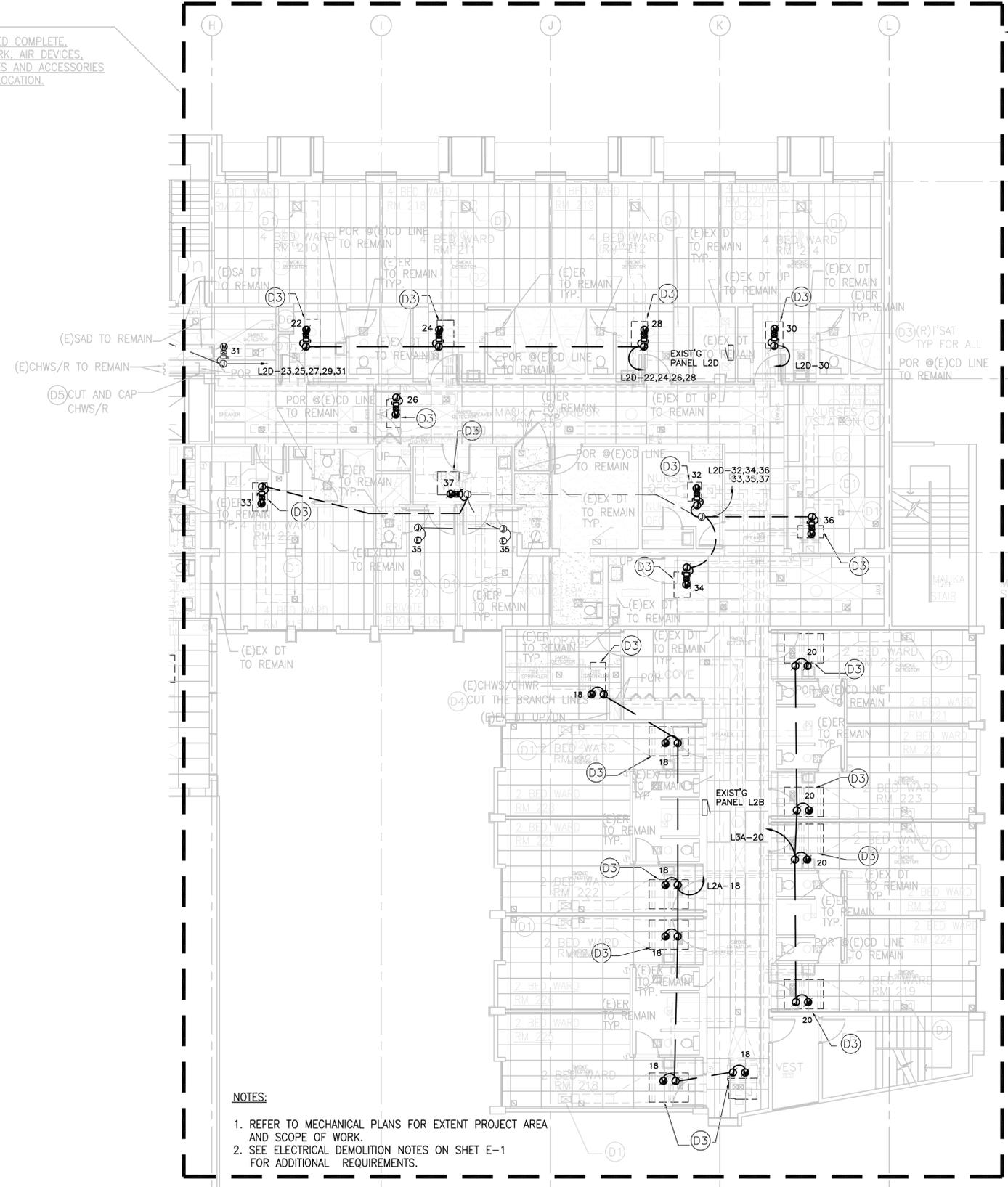
Designed	MEI
Drawn	MEI
Checked	RRT
Date	FEB., 2022
Job No.	2020.045
Sheet	E-3.0
Of	Sheets

MECHANICAL NOTE:
 EXIST'G MECHANICAL EQUIPMENT IS TO BE REMOVED COMPLETE, UNLESS OTHERWISE STATED. REMOVE ALL DUCTWORK, AIR DEVICES, CHILLED WATER PIPING, CONDENSATION DRAIN LINES AND ACCESSORIES COMPLETE. CONTRACTOR TO FIELD VERIFY EXACT LOCATION.

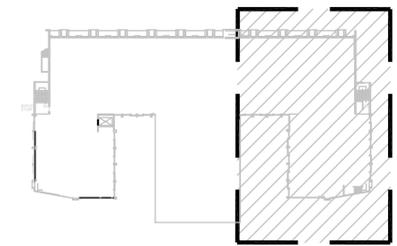
MECHANICAL DEMOLITION NOTES:

- CONTRACTOR TO FIELD VERIFY ALL EXIST CONDITIONS BEFORE START OF WORK.
- (D1) COMPLETELY REMOVE EXISTING AC AIR DEVICE COMPLETE AS INDICATED INCLUDING ALL ASSOCIATED AC DUCTWORK, FITTINGS AND ACCESSORIES. PATCH/REPAIR AS REQUIRED.
 - (D2) COMPLETELY REMOVE EXISTING DUCTWORK COMPLETE INCLUDING ALL ASSOCIATED FITTINGS AND ACCESSORIES. PATCH/REPAIR AS REQUIRED. CONTRACTOR TO FIELD VERIFY.
 - (D3) REMOVE EXIST'G FAN COIL UNIT AND ALL DUCTWORK CONNECTED COMPLETELY. REMOVE ALL ASSOCIATED CONDENSATE DRAIN LINES. REMOVE CHILLED WATER LINE COMPLETE. REMOVE ALL ACCESSORIES COMPLETELY. REMOVE EXIST'G THERMOSTAT & CONTROL PANEL. PATCH/REPAIR TO MATCH EXIST'G. CONTRACTOR TO FIELD VERIFY.
 - (D4) CUT THE BRANCH LINE AT MAIN CHILLED WATER RISERS. REMOVE ALL ACCESSORIES COMPLETELY. PATCH/REPAIR TO MATCH EXIST'G. CONTRACTOR TO FIELD VERIFY.
 - (D5) CUT AND CAP THE CHILLED WATER LINES AT POR. REMOVE CHILLED WATER LIENS UP TO POR. PATCH/REPAIR TO MATCH EXIST'G. CONTRACTOR TO FIELD VERIFY.
 - (D6) CUT AND CAP EXIST'G DUCTWORK AT POR. REMOVE DUCTWORK UP TO POR. PATCH/REPAIR TO MATCH EXIST'G. CONTRACTOR TO FIELD VERIFY.

EXISTING CEILINGS WITHIN CONSTRUCTION AREA TO ARE TO BE REMOVED/REPLACED TO ACCOMMODATE REPLACEMENT OF AIR CONDITIONING EQUIPMENT AND APPURTENANCES; ALL EXISTING ELECTRICAL SYSTEMS, EQUIPMENT AND DEVICES SHALL BE REMOVED, RELOCATED OR TEMPORARILY SUPPORTED TO ACCOMMODATE REMOVAL OF EXISTING CEILINGS; REINSTALL ALL EXISTING ELECTRICAL SYSTEMS, EQUIPMENT AND DEVICES AFTER NEW CEILING IS INSTALLED. VERIFY EXISTING CONDITIONS AND RECONNECT RELOCATED SYSTEMS, EQUIPMENT AND DEVICES TO EXISTING EXISTING CIRCUITS TO MATCH EXISTING CONDITIONS.

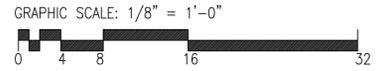


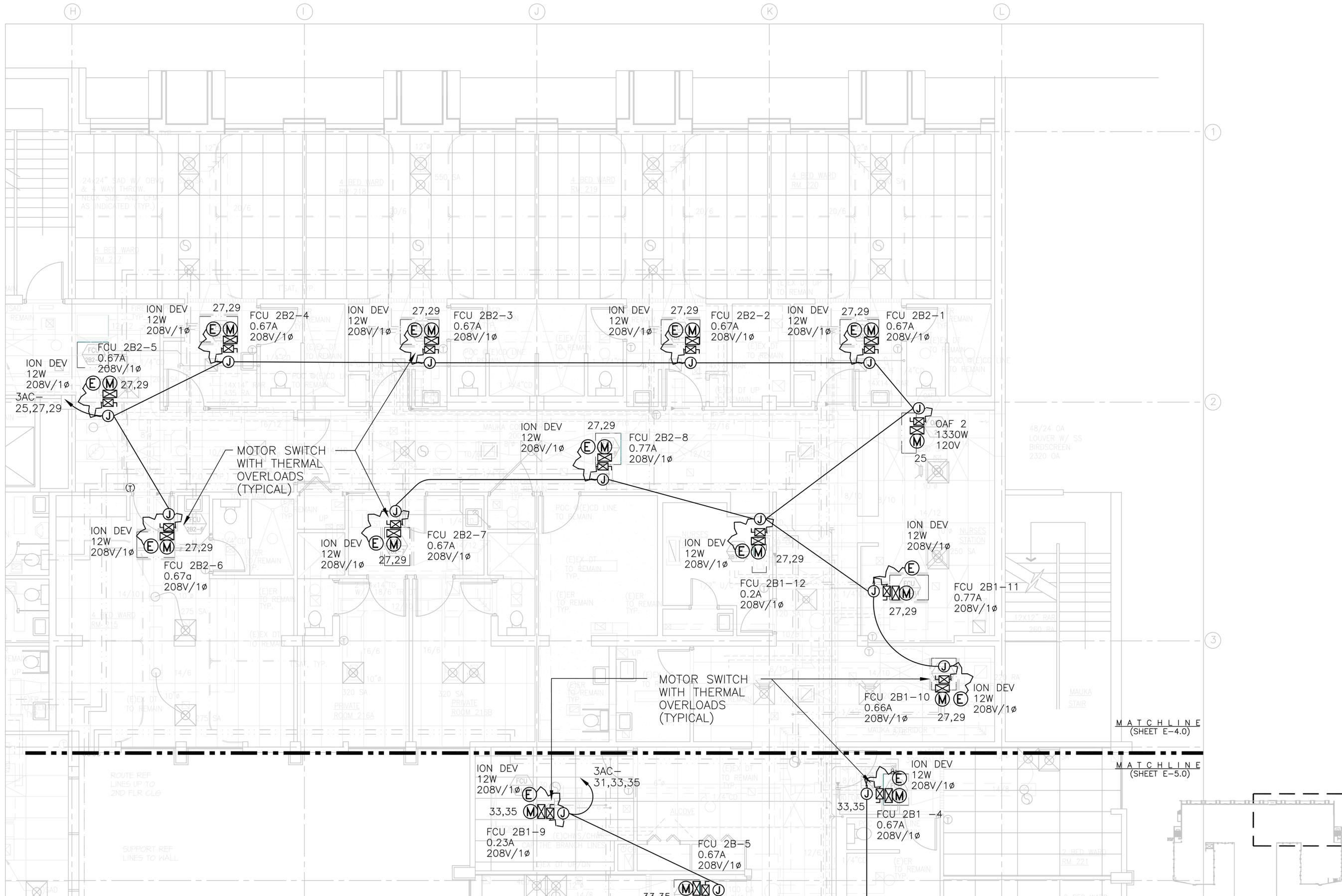
- NOTES:**
- REFER TO MECHANICAL PLANS FOR EXTENT PROJECT AREA AND SCOPE OF WORK.
 - SEE ELECTRICAL DEMOLITION NOTES ON SHET E-1 FOR ADDITIONAL REQUIREMENTS.



KEY PLAN

1 PARTIAL ELECTRICAL DEMOLITION PLAN-2ND FLOOR
 SCALE: 1/8" = 1'-0"





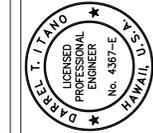
PARTIAL ELECTRICAL PLAN (NEW) - 2ND FLOOR

SCALE: 1/4" = 1'-0"

KEY PLAN

NO. DATE ISSUE

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David T. Tanno
 EXP 4-30-22

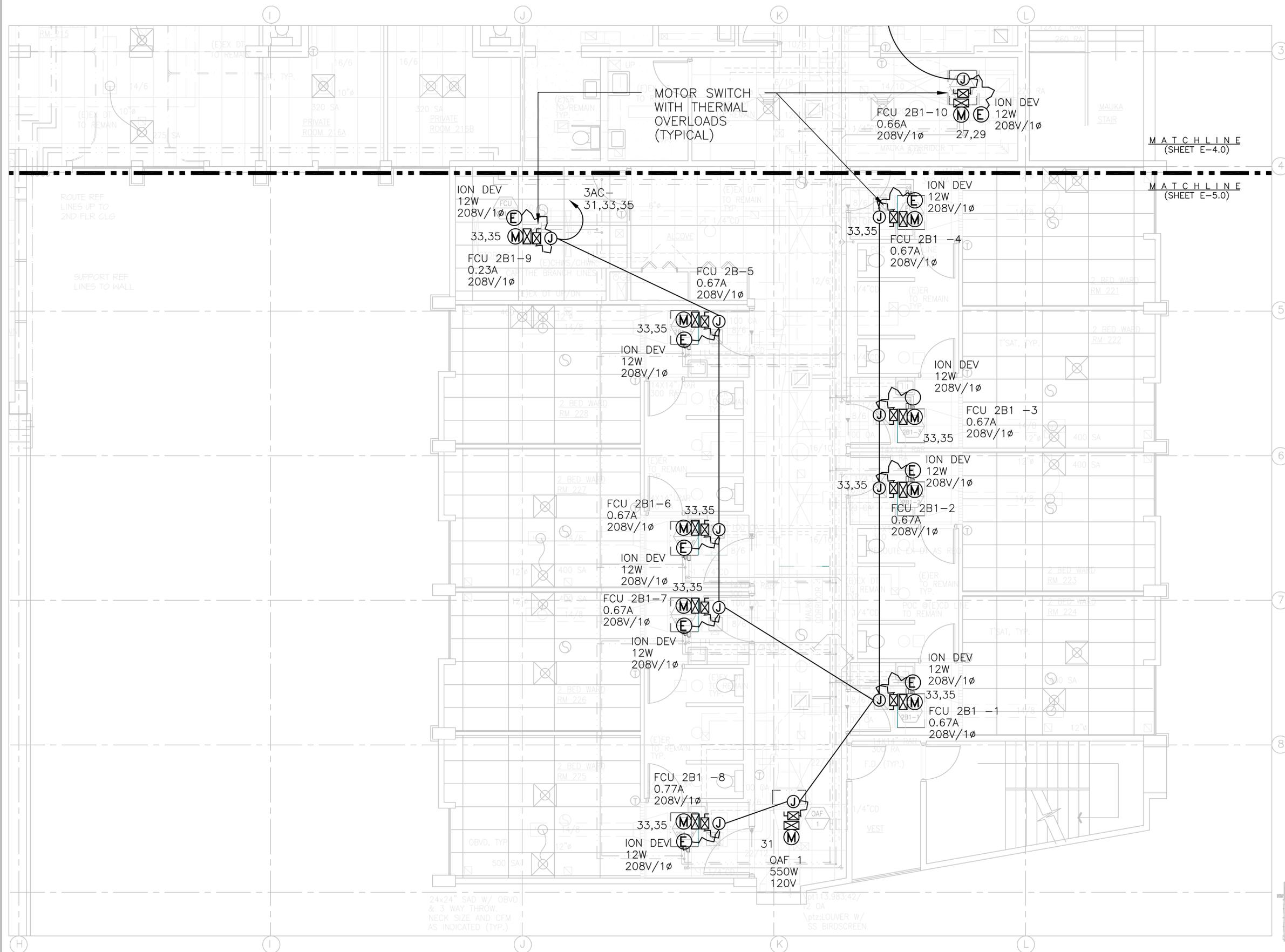


MECHANICAL ENTERPRISES, INC.
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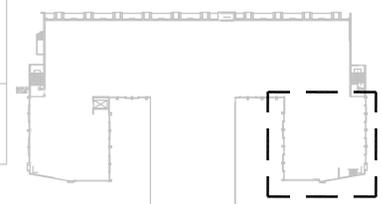


MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
 HHSC MALUHIA
 ADDRESS: 1027 HALA DRIVE
 HONOLULU, HAWAII 96817 TMK: 1-6-009:004
 PARTIAL ELECTRICAL PLAN (NEW) - 2ND FLOOR

Designed	MEI
Drawn	MEI
Checked	RRT
Date	FEB., 2022
Job No.	2020.045
Sheet	E-4.0
Of	Sheets

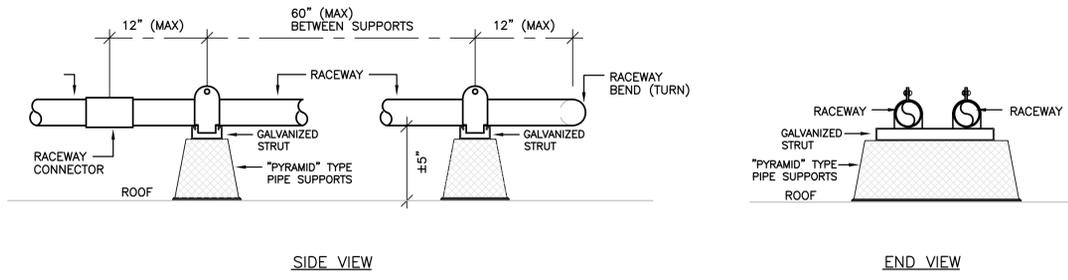


1 PARTIAL ELECTRICAL PLAN (NEW) - 2ND FLOOR
 E-5.0 SCALE: 1/4" = 1'-0"

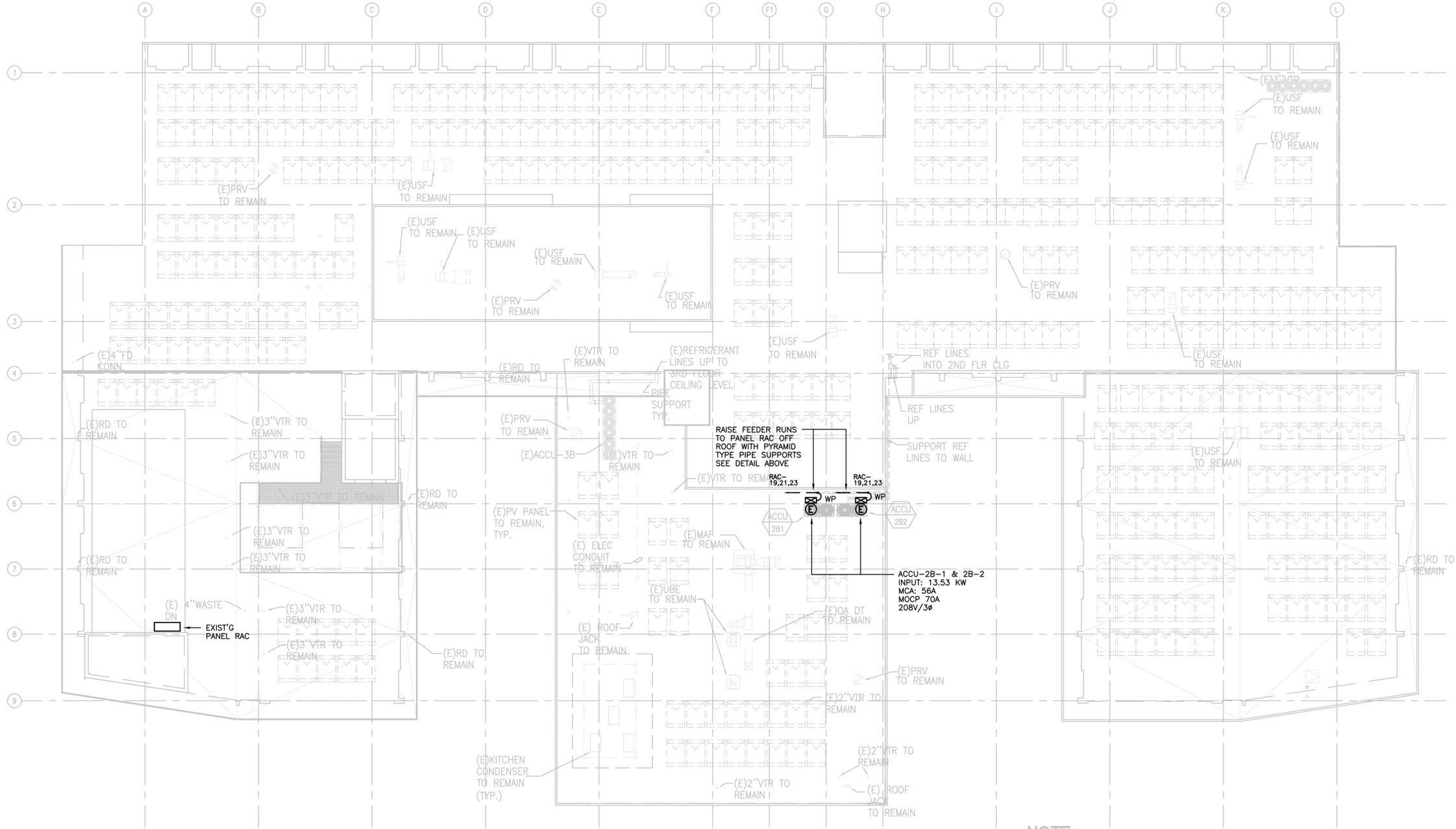


KEY PLAN

NO.	DATE	ISSUE
This work was prepared by me or under my supervision and construction of this project will be under my observation.		
MECHANICAL ENTERPRISES, INC. CONSULTING MECHANICAL ENGINEERS 501 Summer St Ste 503, Honolulu, Hawaii 96817 Phone: (808) 591-9038 Fax: (808) 596-7556		
MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR HHSC MALUHIA ADDRESS: 1027 HALA DRIVE HONOLULU, HAWAII 96817 TMK: 1-6-009:004		
PARTIAL ELECTRICAL PLAN (NEW) - 2ND FLOOR		
Designed	MEI	
Drawn	MEI	
Checked	RRT	
Date	FEB., 2022	
Job No.	2020.045	
Sheet	E-5.0	
Of	Sheets	

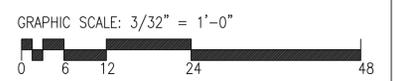


2 RACEWAY SUPPORT DETAIL
SCALE: NONE



NOTE:
FOR ANY WORK ON THE ROOF WHICH AFFECTS ROOFING WARRANTY SHALL BE COORDINATED WITH THE ROOFING CONTRACTOR PROVIDING ROOFING WARRANTY.

1 ELECTRICAL ROOF PLAN
SCALE: 3/32" = 1'-0"



NO. DATE ISSUE

This work was prepared by me or under my supervision and construction of this project will be under my observation.

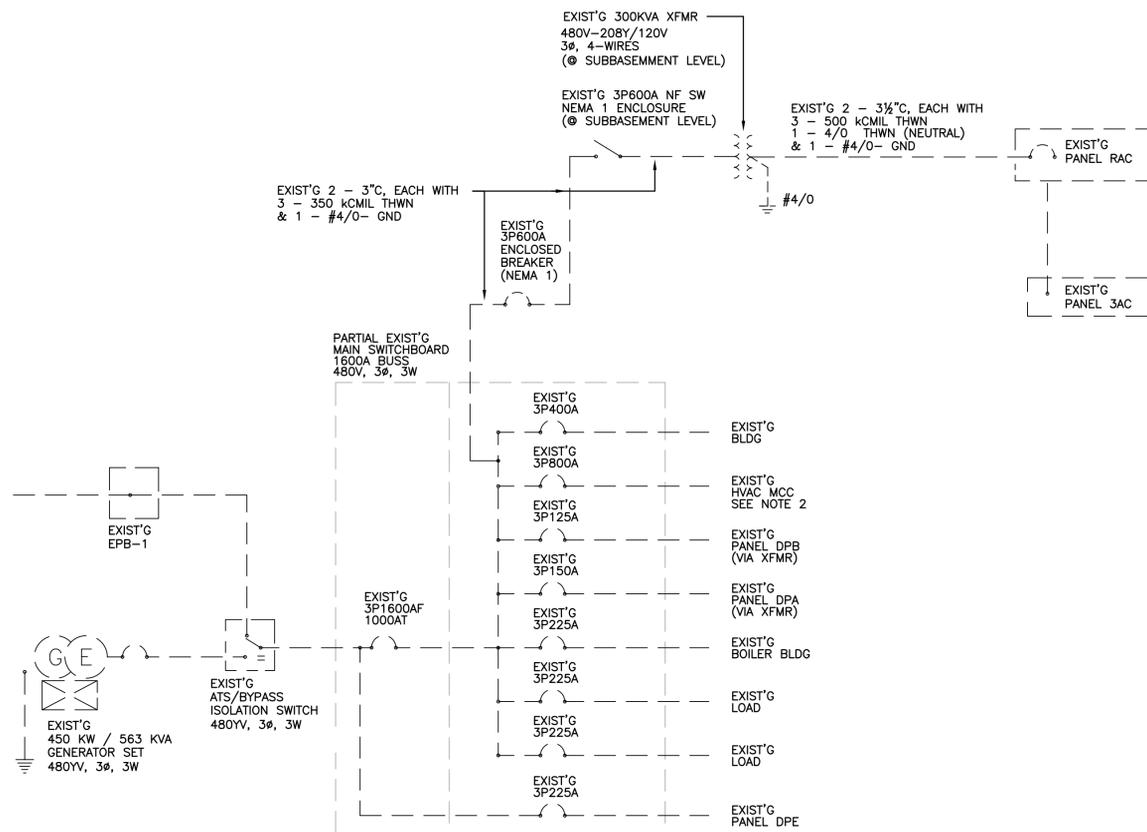
DAVID T. TAYLOR
LICENSED PROFESSIONAL ENGINEER
No. 4367-E
HAWAII

MECHANICAL ENTERPRISES, INC.
CONSULTING MECHANICAL ENGINEERS
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MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
HHSC MALUHIA
ADDRESS: 1027 HALA DRIVE
HONOLULU, HAWAII 96817 TMMK: 1-6-009:004

ELECTRICAL ROOF PLAN, ELECTRICAL DETAIL

Designed	MEI
Drawn	MEI
Checked	RRT
Date	FEB., 2022
Job No.	2020.045
Sheet	E-6.0
Of	Sheets



- NOTES:
1. VERIFY EXISTING CONDITIONS.
 2. EXISTING CHILLER (POWERED FROM EXIST'G MCC) TO BE SHUT-DOWN AFTER NEW HVC SYSTEM IS OPERATIONAL.

NO NEW WORK;
PROVIDED FOR INFORMATION ONLY.

1 SINGLE LINE DIAGRAM
E-6.0 SCALE: NONE

PANEL 3AC [EXISTING]												
208Y/120 VOLTS 3 PHASE 4 WIRE												
INDUSTRIAL BOLTED 10 KAIC, MIN. BREAKERS												
<input checked="" type="checkbox"/> GROUND KIT <input type="checkbox"/> FLUSH MOUNTING <input checked="" type="checkbox"/> SURFACE												
225A BUS												
225A MAIN LUGS ONLY NOTE: ALL BREAKER EXISTING UNLESS NOTED												
CKT	LOAD	BKR	WIRE SIZE	A	B	C	WIRE SIZE	BKR	LOAD	CKT		
1	SPARE	20A						20A	SPARE	2		
3	SPARE	20A						20A	SPARE	4		
5	SPARE	20A						20A	SPARE	6		
7	OAF 3-3 [EXISTING]	20A	E	1.3				20A	SPARE	8		
9	FCU 3B [EXISTING]	2 P 20A	E		1.1			2 P 20A	SPARE	10		
11		20A	E			1.1		20A	SPARE	12		
13	OAF 3-4 [EXISTING]	20A	E	0.5				20A	SPARE	14		
15	FCU 3B [EXISTING]	2 P 20A	E			1.1		2 P 20A	SPARE	16		
17		20A	E				1.1	20A	SPARE	18		
19	SPARE	20A						20A	SPARE	20		
21	SPARE	2 P 20A						2 P 20A	SPARE	22		
23	SPARE	20A						20A	SPARE	24		
25	OAF-2 (2ND FLOOR)	20A	12	1.3	0.5			20A	SPARE	26		
27	FCU 2B2 (2ND FLOOR)	2 P 20A	12			1.1		2 P 20A	SPARE	28		
29		20A	12				1.1	20A	SPARE	30		
31	OAF-1 (2ND FLOOR)	20A	12	0.5				1 P	P F B	32		
33	FCU 2B1 (2ND FLOOR)	2 P 20A	12			1.1		1 P	P F B	34		
35		20A	12				1.1	1 P	P F B	36		
37	SPARE	20A						1 P	P F B	38		
39	SPARE	2 P 20A						1 P	P F B	40		
41	SPARE	20A						1 P	P F B	42		
TOTAL KVA/PHASE				4.1	4.4	4.4	CONN LOAD		12.9			
							DEM FAC		0.9			
							DEM LOAD		11.6			

E = EXISTING LOAD (WIRING)

PANEL RAC (SECTION 1) [EXISTING]												
208Y/120 VOLTS 3 PHASE 4 WIRE												
TWO SECTION INDUSTRIAL BOLTED 10 KAIC, MIN. BREAKERS												
<input checked="" type="checkbox"/> GROUND KIT <input type="checkbox"/> FLUSH MOUNTING <input checked="" type="checkbox"/> SURFACE												
1000A BUS												
1000A MAIN LUGS ONLY NOTE: ALL BREAKERS EXISTING UNLESS NOTED												
CKT	LOAD	BKR	WIRE SIZE	A	B	C	WIRE SIZE	BKR	LOAD	CKT		
1			4	4.5				4		2		
3	ACCU-2B1	3 P 70A (1)	4	4.5	4.5			4	3 P 70A (1)	ACCU-2B2	4	
5			4	4.5	4.5			4		6		
7			E	5.4						8		
9	ACCU-3B-1 [EXISTING]	3 P 50A	E		5.4			3 P 50A	SPARE	10		
11			E			5.4				12		
13			E	5.4						14		
15	ACCU-3B-2 [EXISTING]	3 P 50A	E		5.4			3 P 50A	SPARE	16		
17			E			5.4				18		
19			E	5.4						20		
21	ACCU-3B-3 [EXISTING]	3 P 50A	E		5.4			3 P 50A	SPARE	22		
23			E			5.4				24		
25										26		
27	P F B	3 P						3 P	P F B	28		
29										30		
TOTAL KVA/PHASE (SECTION 1 ONLY)				25.2	25.2	25.2	CONN LOAD		75.6			
							DEM FAC		0.8			
							DEM LOAD		60.5			

E = EXISTING LOAD (WIRING)
(1) = REPLACE EXISTING BREAKER WITH NEW

PANEL RAC (SECTION 2) [EXISTING]												
208Y/120 VOLTS 3 PHASE 4 WIRE												
TWO SECTION INDUSTRIAL BOLTED 10 KAIC, MIN. BREAKERS												
<input checked="" type="checkbox"/> GROUND KIT <input type="checkbox"/> FLUSH MOUNTING <input checked="" type="checkbox"/> SURFACE												
1000A BUS												
3P1000A MAIN BREAKER NOTE: ALL BREAKERS EXISTING UNLESS NOTED												
CKT	LOAD	BKR	WIRE SIZE	A	B	C	WIRE SIZE	BKR	LOAD	CKT		
31										32		
33	SPARE	3 P 50A						3 P 50A	SPARE	34		
35										36		
37										38		
39	SPARE	3 P 50A						3 P 50A	SPARE	40		
41										42		
43										44		
45	SPARE	3 P 50A						3 P 50A	SPARE	46		
47										48		
49				4.1				E		50		
51	P F B	3 P			4.4			E	3 P 100A	PANEL 3AC [EXISTING]	52	
53						4.4		E		54		
55										56		
57	P F B	3 P						3 P	P F B	58		
59										60		
TOTAL KVA/PHASE (SECTIONS 1 & 2)				29.3	29.6	29.6	CONN LOAD		88.5			
							DEM FAC		0.8			
							DEM LOAD		70.8			

E = EXISTING LOAD (WIRING)

NO. DATE ISSUE

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MALUHIA AIR CONDITIONING REPLACEMENT FOR 2ND FLOOR
HHSC MALUHIA
ADDRESS: 1027 HALA DRIVE
HONOLULU, HAWAII 96817 TMMK: 1-6-009:004
SINGLELINE DIAGRAM, PANEL SCHEDULES

Designed MEI
Drawn MEI
Checked RRT
Date FEB., 2022
Job No. 2020.045
Sheet

E-7.0
Of Sheets