Invitation for Bids

Maluhia Replace Air Conditioning Basement Floor
26M-0317

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

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

A site visit is scheduled for March 31, 2026 at 10:30 a.m. All interested companies shall meet in the Maluhia parking lot entrance area. The deadline for submission of written/emailed questions pertaining to the IFB is April 7, 2026.

All bids must be received by HHSC by April 21, 2026, 2:00 p.m. Hawaii Standard Time. All bids shall be sent digitally to oahucip@hhsc.org. E-mail bids not received by deadline will be disqualified for consideration. No exceptions will be made even if network provider or software (e.g. MS Outlook) delays delivery. Please note that large files (>10MB) may experience network delivery issues.

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

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

Leahi Hospital
3675 Kilauea Ave.
Honolulu, HI 96816

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SECTION 1
ADMINISTRATION

1.0 INTRODUCTION

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

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

1.1 IFB TIMETABLE AS FOLLOWS

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

ACTIVITY		SCHEDULED DATES
1.	IFB Public Announcement	March 24, 2026
2.	Pre-Bid Orientation Maluhia parking lot entrance 10:30 a.m.	March 31, 2026
3.	Closing Date for Receipt of Questions	April 7, 2026
4.	**Closing Date for Receipt of Bids 2:00 p.m.**	**April 21, 2026**
5.	Contractor Selection/Award Notification (on/about)	April 28, 2026
6.	Contract Start Date (on/about)	May 5, 2026

1.2 AUTHORITY

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

1.2.1 IFB ORGANIZATION

This IFB is organized into four sections:

SECTION 1: ADMINISTRATIVE
Provides information regarding administrative requirements.

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

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

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

1.3 HEAD OF PURCHASING AGENCY (HOPA)

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

The HOPA for this IFB is:

Sean Sanada
Regional Chief Executive Officer
Hawaii Health Systems Corporation

1.4 DESIGNATED OFFICIALS

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

1.4.1 ISSUING OFFICER

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

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

1.5.1 CHARTER

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

1.5.2 STRUCTURE AND SERVICES

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

1.5.3 MISSION

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

1.6 FACILITY INFORMATION

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

1.7 SUBMISSION OF QUESTIONS

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

IMPORTANT

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

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

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

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

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

SEND QUESTIONS TO:

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

1.8 SOLICITATION REVIEW

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

1.9 IFB AMENDMENTS

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

1.10 CANCELLATION OF IFB

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

1.11 PROTESTS

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

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

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

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

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

1.12 PERFORMANCE AND PAYMENT BOND

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

1.13 SPECIALTY CONTRACTOR'S LICENSE

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

1.14 WORKING HOURS

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

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

1.15 SPECIAL PROCEDURES DURING BIDDING

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

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

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

SECTION 2
SCOPE OF SERVICES

2.0 INTRODUCTION

MALUHIA REPLACE AIR CONDITIONING BASEMENT FLOOR

Work for this project shall include, but is not limited to the replacement of the air conditioning system in the basement floor at Maluhia, and miscellaneous work as indicated on the drawings.

2.1 CONTRACT PERIOD

The work shall be completed within **220** consecutive calendar days from the Notice to Proceed (NTP). Failure to complete the work within the time shall result in liquidated damages of $500.00 per calendar day of delay.

2.2 SCOPE OF SERVICES

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

B. Qualifications. The CONTRACTOR shall have:

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

C. HOSPITAL shall provide:

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

SECTION 3
Bid Forms and General Conditions

General Instructions for Completing Forms

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

3.0 Bid Form

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

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

Interested bidders shall certify its ability to provide services on May 5, 2026 or upon execution of the Contract agreement by both parties. The Hospital reserves the right to apply liquidated damages for the delay in Contract execution on the part of the Contractor.

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

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

3.1 Bid Security

All lump sum bids of $25,000 and higher, or lump sum base bids including alternates of $25,000 and higher, 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 State of Hawaii General Conditions are hereby amended as follows:

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

i) Bidder shall have the same definition as Contractor.

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

iii) Department shall be HHSC or its designee.

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

v) State shall be HHSC or its designee.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

o. Section 5.11 is hereby deleted in its entirety.

p. Section 5.12.4 is hereby deleted in its entirety.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(END OF SECTION)

SECTION 4
BID EVALUATION AND AWARD

4.0 Bid Evaluation

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

4.1 Method of Award

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

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

4.2 Contract Execution

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

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

(END OF SECTION)

APPENDIX A

SAMPLE
BID TRANSMITTAL COVER LETTER

Dear Mr. Nakada,

(Name of Business) proposes to provide any and all goods and services as set forth in the "Invitation for Bid" for Maluhia Replace Air Conditioning Basement Floor IFB No. 26M-0317, for which fees/costs have been set. The fees/costs offered herein shall apply from May, 2026 to December, 2026.

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

_____

Other information:

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

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

State of Incorporation is: (Specify)_____

Year of Business started: _____

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

_____

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

APPENDIX B

IFB No. 26M-0317
Maluhia Replace Air Conditioning Basement Floor

BID FORM

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

_____DOLLARS ($_____)

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

Respectfully Submitted:

_____ _____
Signature / Printed Name Date

_____
Title

OTHER CONDITIONS

1. Bidder agrees to liquidated damages as specified.

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

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

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

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

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

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

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

ALL JOINT CONTRACTORS OR SUBCONTRACTORS TO BE ENGAGED ON THIS PROJECT

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

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

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

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

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

Enclosed herewith:

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

(Cross Out Those Not Applicable)

in the amount of:

_____ DOLLARS ($_____).

as required by law.

Respectfully submitted,

_____
Name of Company, Joint Venture or Partnership

_____
License

By _____
Signature (*4)

Title _____

Date: _____

(CORPORATE SEAL)
(*5)

NOTES:

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

2. Legal tender; or

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

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

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

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

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

END OF BID FORM

APPENDIX C

MALUHIA
Replace Air Conditioning, Basement
Honolulu, Hawaii
TMK No. 1-6-009:004

PREPARED FOR:
Hawaii Health Systems Corporation
Maluhia
1027 Hala Drive
Honolulu, HI 96817

TECHNICAL SPECIFICATIONS

BID SET SUBMITTAL

March 2026

Prepared By:

INSYNERGY ENGINEERING INC
1001 Bishop Street, Suite 2500 • Honolulu, Hawaii 96813
Tel: 808 521-3773

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PART 1 - GENERAL

1.01 GENERAL:

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

B. Bidders (Contractors) shall be incorporated or organized under the laws of the State or be registered to do business in the State as a separate branch or division that is capable of fully performing under the contract. The following definitions are used in the solicitation documents.
   1. Hawaii Business §3-1222-112 HAR: A bidder who is registered and incorporated or organized under the laws of the State is a "Hawaii Business" and eligible for an award.
   2. Compliant non-Hawaii Business §3-122-112 HAR: A bidder not incorporated or organized under the laws of the State, but is registered to do business in the State and complies with or is exempt from the requirements of §3-122-112 HAR, is a "Compliant Non-Hawaii Business" and eligible for an award.
   3. Non-compliant Bidder: If a bidder is a non-Hawaii business and is not registered with the DCCA Business Registration Division (BREG) or cannot comply with §3-122-112 HAR, then the bidder in non-compliant and is ineligible for an award.

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

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

E. The GENERAL CONDITIONS set forth additional terms and conditions for the bid and award process. The GENERAL CONDITIONS will be part of the contract documents by which HHSC and the bidder (prospective contractor) will be bound. Bidders are directed to the GENERAL CONDITIONS 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 CONDITIONS.

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 - Summary of Work" 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 valid for six months from the most recently approved stamp date on the certificate; the certificate must be valid on the date received by HHSC.

1. DOTAX *TAX CLEARANCE APPLICATION* Form A-6 (Rev 2003) is available at DOTAX and IRS (State of Hawaii) offices or DOTAX website, and by mail or fax.
   a. DOTAX website: http://www.state.hi.us/tax/alphalist.html#a
   b. DOTAX forms by fax/mail: (808) 587-7572 or 1-800-222-7572
2. Mail, fax or submit in person completed tax clearance application forms to the Department of Taxation, Taxpayer Services Branch or to the address listed on the application. Facsimile numbers are:
   a. DOTAX: (808) 587-1488
   b. IRS: (808) 539-1573
3. DOTAX will return the form to the bidder. The bidder is reminded that it is responsible to submit the applications for the tax clearance directly to DOTAX or IRS and not to HHSC.

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

1. DLIR *APPLICATION FOR CERTIFICATE OF COMPLIANCE WITH SECTION 3-122-112 HAR*, Form LIR#27 is available at DLIR website or at the neighbor island DLIR District Office.
   a. DLIR website: http://www.dlir.state.hi.us/LIR#27
2. Mail, fax or submit in person completed application form to the Department of Labor and Industrial Relations, Administrative Services Office at the address listed on the application.
3. DLIR will return the form to the bidder. The bidder is reminded that it is responsible to submit the application for the certificate directly to DLIR and not to HHSC.

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

1. DCCA *CERTIFICATE OF GOOD STANDING* is available from the business registrations website or by telephone. Bidders are advised there are costs associated with registering and obtaining the certificate.
   a. DCCA form website: http//www.BusinessRegistrations.com
   b. DCCA telephone: (808) 586-2727, M - F 7:45 to 4:30 HST
2. Submit the application per DCCA's requirements.
3. DCCA will return the form to the bidder. The bidder is reminded that it is responsible to submit the application for the certificate directly to DCCA and not to HHSC.

END OF SECTION

SECTION 00800 - SPECIAL PROVISIONS

PART 1 - GENERAL

1.01 SUBSTITUTION REQUESTS:

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

B. Substitution requests by FAX are not acceptable.

1.02 PROJECT CONTACT PERSON:

A. HHSC Representative - 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:	Ms. Chris Li
POSITION OR TITLE:	Project Engineer
TELEPHONE NUMBER:	(808) 521-3773
Email:	cli@insynergyeng.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 220 consecutive calendar days from the official commencement date of the Notice to Proceed (NTP).

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

C. In accordance with the General Conditions, PROJECT ACCEPTANCE DATE, for failure to correct punch list deficiencies, within the time or times fixed in the contract or extension thereof, the Contractor shall pay liquidated damages to the HHSC, in the amount equal to ten percent (10%) of the liquidated damages per calendar day of delay.

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

1.05 SPECIALTY CONTRACTOR'S LICENSE:

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

1.06 WORKING HOURS:

A. The regular working hours for this project is from 8:00 AM to 4:30 PM Monday through Friday, excluding State Holidays, unless otherwise noted or restricted under "Section 01100 - Summary of Work". The Working Hours provisions of specification "Section 01100 - Summary of Work" 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 Conditions, OVERTIME AND NIGHT WORK SECTION and under specification "Section 01100 - Summary of Work".

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 up-dated 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 Maluhia and Engineer. 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 Maluhia 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.

PART 2 - MATERIALS (Not Used)

PART 3 - EXECUTION

3.01 FINAL PAYMENT REQUIREMENTS:

A. In addition to the requirements in the GENERAL CONDITIONS "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

DIVISION 1 - GENERAL REQUIREMENTS

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 Maluhia 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. Maluhia 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 Maluhia 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 Engineer 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 Maluhia'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 Maluhia, 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 Maluhia.

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.

C. 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.

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

E. 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.

3.02 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.

3.03 ENVIRONMENTAL:

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

3.04 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 Maluhia. Additional time required to secure replacements and to make repairs will not be considered to justify an extension in the Contract Time or completion.

3.05 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.

3.06 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.

3.07 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.

3.08 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 Maluhia and shall be placed where directed by the Architect and/or HHSC Representative.

END OF SECTION

SECTION 01100 - SUMMARY OF WORK

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Contract description.

B. Contractor use of premises.

C. Owner furnished/Owner installed products.

D. Owner furnished/contractor installed products.

E. Occupancy.

1.02 CONTRACT DESCRIPTION:

A. Description: Upgrade the existing chilled water source heat pump system for the Maluhia:
1. Provide a new chilled water source heat pump next to the existing chilled water source heat pump which will remain as back-up.
2. Provide new chilled water and hot water circulating pumps for the new heat pump.
3. Upgrade the existing chilled water source heat pump by replacing one of the refrigerant compressors which is failing and replace its chilled water and hot water circulating pumps.
4. Upgrade the existing control system to incorporate the new additional equipment.
5. Provide additional breakers and branch circuiting from the existing distribution panel to power the new heat pump and circulating pumps.

B. Contract Documents Identification: These are identified as: *Maluhia Replace Air Conditioning, Basement Floor.*

C. Contractor shall complete the attached Bid Breakdown with Contractor's Proposal (Bid Breakdown is at the beginning of the specifications).

D. Related Provisions: The following applies to all the Work.
1. Conditions of the Contract.
2. Contract Drawings.
3. Division 1 Specification Sections.
4. As applicable to each Entity, the appropriate Specification Sections and related Specification Sections of other Installers as necessary for the proper coordination of Work.
5. Modifications to the Contract, if any.

E. Special Submittals: In addition to other documentation as may be required by the Contract Documents, submit following as a condition for securing the Contract for the Work.
   1. List of Primary Contractors: List of primary Subcontractors (Installers) for each work as specified in each Division 2 through Division 16 Sections. Include company name, primary contact, telephone number, fax number, and e-mail address.
   2. List of Primary Products: List of primary products bid for each Division 2 through Division 16 Sections. Include manufacturer name and specific product name or names.
   3. Certification: Installer certification that specified requirements are in accordance with the Manufacturer requirements as specified in “Section 01600 - Product Requirements” prior to signing the Contractor for the Work.

1.03 CONTRACTOR USE OF PREMISES:

A. Limit use of premises to allow for continued occupancy.

B. Emergency Building Exits During Construction: Must remain open and unblocked at all times. Maintain access for staff, patients, and public.

C. Construction Operations: Limited to areas noted on Drawings.

D. Staging and Parking:
   1. Staging area and limited contractor employee parking will be made available on site.
   2. Repair and clean pavements and restore landscaping in staging areas at the completion of construction operations.

E. Time Restrictions for Performing Work:
   1. General: 9:00 am to 5:00 pm. Coordinate w/ Owner, work necessary outside these normal operating hours. Submit written notice a minimum three days in advance.

F. Cooperate with Maluhia to minimize conflict and to facilitate Maluhia's operations. Coordinate operations with Maluhia's Technical Representative (HTR).

G. Access to adjacent floors must be approved in advance by Maluhia. Submit written notice not less than seven days in advance of intended work on adjacent floors.

H. Do not close or obstruct roadways without first consulting with the Owner. Conduct operations with minimum interference to public or private roadways.

I. Maintain vital services with the minimum of interruption. Outages and interruptions must be approved in advance by Maluhia. Submit written notices of outages and interruptions not less than seven days in advance.

J. Contractor's personnel:
1. Do not allow personnel to park off site.
2. Contractor's personnel may use Maluhia's cafeteria.
3. Smoking is not permitted anywhere on Maluhia's property. Consumption of food and beverages will not be permitted on the premises except in designated areas.
4. Playing of radios will not be permitted.
5. Shall be properly attired for work. (No tank tops, cut-off jeans, slippers, etc.)
6. Shall conduct themselves with decorum and courtesy toward staff, patients, and public.
7. Shall not use loud and offensive language.

K. Construction Zone Accessibility Requirements:
1. General: Hawaii Revised Statutes (HRS)103-50 requires this project to conform to the requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG).
2. Ensure accessible routes to emergency entrances and exits to and from accessible parking public pedestrian routes during the construction period as required by ADAAG 4.1.1(4).
3. Temporary buildings and facilities that are not of permanent construction but are extensively used or are essential for public use for a period of time shall be accessible.
4. Provide temporary safe pedestrian passageways around a construction site.
a. Areas that are used only as work areas shall be designed and constructed so that individuals with disabilities can approach, enter, and exit the areas.
b. These guidelines do not require that any areas used only as work areas be constructed to permit maneuvering within the work area or be constructed or equipped (i.e., with racks or shelves) to be accessible.

1.04 MALUHIA OCCUPANCY:

A. Maluhia will remain operational during entire period of construction for the conduct of normal operations.

B. The Contractor is to coordinate the work and details within each phase, to minimize disruption to Maluhia's Technical Representative’s operation. Proper notification of disruption due to noise and other factors is required.

C. Provide dust and noise barriers where specified under other portions of the contract documents. Follow infection control procedures during

construction, i.e. Policy #125-54 as attached. Walk off mats at site entrance shall be changed as needed. HEPA filtration units are to be utilized 24 hours per day throughout the construction process. Complete Interim Life Safety Measures check sheet daily. Portable dust barriers shall be utilized for AC replacement work.

D. Schedule the Work, and cooperate with Maluhia to minimize conflict with, and to facilitate Maluhia's operations. Take extreme care and caution with work involving dust, noise, and odor.

1.05 QUALITY ASSURANCE:

A. Other Contract Related Documents: If required by Contractor to determine accurate information for the Project, review such other documents in possession of Maluhia and the Project Consultants that have a bearing on the Contractor’s Work; examples as follows:
   1. Available documents of existing facilities.

B. Authority Related: Comply with the following:
   1. Regulations: All laws, ordinance, rules, and regulations, by any governmental authority, which in any manner apply to or affect those employed in the Work, the materials used in the Work, and the conduct of the Work. Comply with all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the Work and which are or have the affect of law.
   2. Disabled Persons:
      a. ADAAG or UFAS compliance: Applicable requirements or where both is used, comply with the stricter of the requirements applicable to each work.
      b. Tolerance: Due to actual variations in work tolerances, ensure that each work meets the minimum or maximum dimensions as required by the applicable standard.
      c. Authority Changes: Where Authority directs changes in the Work, immediately notify consultants, prior to execution of such changes, to ensure such changes are not in conflict with any original approvals made by Authorities.

C. Community Related:
   1. Intent: Owners operation is public sensitive and Contractor shall take necessary precautions in his operations as not to upset or aggravate the public, e.g. polluting operations, other nuisance conditions, and operations which can endanger people, illegal activities, unbecoming conduct, etc.
   2. Resolving Contentious Issues: It is the Contractor’s responsibility to resolve any contentious issues amenably, fairly, and expeditiously. If a situation occurs, notify the Consultants immediately and keep Consultants informed of methods and results of ongoing negotiations in resolving any issues. Not under any circumstances

is Contractor to place Owner in precarious situation that could place owner in a tenuous conflict with any of the public, without the Owner's knowledge. Contractor is ultimately and solely responsible for his actions and resulting outcomes; regardless of Owner's knowledge of any ongoing contentious events and shall hold Owner harmless from such issues should they result in any litigation.

D. The Work:
   1. Industry Standards: Industry standards apply to the Work whether indicated or not. When not indicated, the industry accepted quality applicable to the class (grade) of work intended shall apply.
   2. Completeness of Work: Provide necessary work normally provided for the quality of work indicated to ensure the Work is complete and fully functional for each use.

E. Project Manual:
   1. Language: Imperative language is intended and specified requirements are to be executed.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 TIMES FOR CONDUCTING WORK:

A. Daily: In accordance with any Owner's standard published policies for Contractor's conducting work on premises. Secure standards and comply with requirements; unless Owner otherwise agrees to in writing at time of signing Contract for the Work.

B. Weekends: As approved at time of signing Contract for the Work; otherwise as approved by Owner.

C. Other Time Restrictions:
   1. General: Refer to "Operational Restrictions" paragraphs herein and "Section 01500 - Temporary Facilities and Quality Controls".
   2. Polluting Operations: Verify time restrictions on polluting operations, e.g. dust, noise, or any other that may be restricted by Owner and include impacts into Contract for the Work.
   3. Special Events: Verify any Owner known and potential scheduled events that would interrupt Contractor's operations and include impacts into Contract for the Work.

3.02 OPERATIONAL RESTRICTIONS:

A. General: Refer to “Section 01500 - Temporary Facilities and Quality Controls”.

B. Physical Limits: Limit Primary Work to immediate Project Site. Work required on property outside of Project Site, to be done in accordance with the Authorities.

C. Personal Conduct, General: Owner’s work is public sensitive and Contractor and entities under Contract to him shall respect this and refrain from any conduct that would compromise the Owner. Public sensitive issues include, but are not necessary limited to, following.
   1. Outside Site/Work Envelope: Any operations that could negatively affect surrounding community adjacent to Site, e.g. noise, pollution, illegal activities, etc.
   2. Within Site and Work Areas:
      a. Archeological or historical related funds.
      b. General: Any conduct that could negatively affect it’s employees and public, e.g. disrespectful and unacceptable language, use of inappropriate alcohol usage at inappropriate times, illegal activities, smoking in non- smoking areas, etc.
      c. Radios: Not allowed; except two-way communication radios.
      d. Meals: Eaten only in Owner approved areas.
      e. Building Areas: Any restricted public and non-public areas on property and within any building structures.

D. Other Owner Conditions for Performing Work: Work is to be scheduled around the Owner’s ongoing operations. Prior to Bid verify following and include impacts into Contract for the Work.
   1. Verification of Owner’s responsibilities with regard to condition in which each space and surface will be turned over to Contractor and verification of exact degree of preparation work required by Contractor.
   2. Verification of extent of each work to be painted and conditions of acceptability.
   3. The degree to which Contractor is required to remove or move equipment, furnishings, and other work.
   4. Sequence, timing, and extent of areas to be made available to Contractor to complete the required work.
   5. Limits and restrictions placed on use of each work area.
   6. Methods of moving material and equipment around, within, to and from staging and delivery areas to each work area.
   7. Methods for conducting the work due to Contractor’s operations which are restrictive to Owner’s ongoing operations.
   8. Degree and duration in which equipment and materials may be left in place.
   9. Available parking.

10. Available services, such as for power and water.
11. Available facilities, such as restrooms.
12. Available staging areas.
13. Availability of elevators for the Work.
14. Conditions under which Owner's available facilities and services are provided.
15. Restrictions on generation of noise.
16. Security required.
17. Safety precautions and amount of protections required.
18. Degree of cleanliness and orderliness expected in Work areas.
19. Special activities of Owner occurring during course of Work and which could impact Contractor's ongoing Work.
20. Verification of all Owner work impacting Work of this Contract, if any.
21. Verify salvageable work, if any, required by Owner and conditions of delivery to Owner.
22. Other Owner requirements.

END OF SECTION

SECTION 01120 - ALTERATION PROJECT PROCEDURES

PART 1 - PRODUCTS

1.01 SALVAGED MATERIALS:

A. Salvage sufficient quantities of cut or removed material to replace damaged work of existing construction, when material is not readily obtainable on current market.

B. Incorporate salvaged or used material only as indicated or with permission of Maluhia.

1.02 PRODUCTS FOR PATCHING AND EXTENDING WORK:

A. New Materials: Match existing products and work for patching and extending work.

B. Type and Quality of Existing Products: Determine by inspection and testing products where necessary, referring to existing Work as a standard.

PART 2 - EXECUTION

2.01 EXAMINATION:

A. Verify that demolition is complete, and areas are ready for installation of new Work.

B. Beginning of restoration Work means acceptance of existing conditions.

2.02 PREPARATION:

A. Cut, move, or remove items as necessary for access to alterations and renovation Work. Replace and restore at completion.

B. Remove unsuitable material not marked for salvage, such as rotted wood, corroded metals, and deteriorated masonry and concrete. Replace materials as specified for finished Work.

C. Remove debris and abandoned items from area and from concealed spaces.

D. Prepare surface and remove surface finishes to provide for proper installation of new work and finishes.

E. Close openings in exterior surfaces to protect existing work and salvage items from weather and extremes of temperature and humidity. Insulate duct work and piping to prevent condensation in exposed areas.

F. Do not demolish, chip, or penetrate existing structural members without the expressed approval of the Engineer.

G. Perform cutting and removal work to remove minimum necessary, and in a manner to avoid damage to adjacent work and provide proper surfaces to receive installation of repair and new Work.

2.03 INSTALLATION:

A. Coordinate work of alterations and renovations to expedite completion and to accommodate Owner occupancy.

B. Project areas and Finishes: Complete in all respects including operational mechanical and electrical work.

C. Remove, cut, and patch Work in a manner to minimize damage and to provide a means of restoring Products and finishes to original or specified condition as appropriate.

D. Refinish visible existing surfaces to remain in renovated rooms and spaces, to specified condition for each material, with a neat transition to adjacent finishes.

E. In addition to specified replacement of equipment and fixtures, restore existing plumbing, ventilation, air conditioning, and electrical systems to full operational condition.

2.04 TRANSITIONS:

A. Where new Work abuts or aligns with existing, perform a smooth and even transition. Patched Work to match existing adjacent Work in texture and appearance.

B. Cut finish surfaces such as masonry, tile, plaster, or metals by methods to terminate surfaces in a straight line at a natural point of division.

C. When finished surfaces are cut so that a smooth transition with new Work is possible, terminate existing surface along a straight line at a natural line of division. Provide trim appropriate to finished surface subject to approval of Maluhia’s Representative.

2.05 ADJUSTMENTS:

A. Where removal of partitions or walls results in adjacent spaces becoming one, rework floors, walls and ceilings to a smooth plane without breaks, steps or bulkheads.

B. Where a change of plane 1/4 inch or more occurs, submit recommendation for providing a smooth transition for Maluhia's Representative review.

C. Trim existing doors as necessary to clear new floor finish. Refinish trim as required.

D. At penetrations of fire-rated wall, ceiling, or floor construction, completely seal voids with fire rated, fire resistant material, full thickness of the construction element.

2.06 REPAIR OF DAMAGED SURFACES:

A. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.

B. Repair substrate prior to patching finish.

2.07 FINISHES:

A. Finish surfaces as specified in individual Product Sections.

B. Finish patches to product uniform finish and texture over entire area. When finish cannot be matched, refinish entire surface to nearest intersections.

2.08 CLEANING:

A. In addition to cleaning as specified in these specifications. Broom-clean owner-occupied areas daily.

B. Clean spillage, over-spray, and dust in Owner-occupied areas immediately.

PART 3 - EXECUTION (Not Used)

END OF 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.
6. 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 Maluhia. 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 Maluhia and/or HHSC Representative. In general, the Contractor will be restricted to work areas as coordinated with the HHSC Representative.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01210 - ALTERNATES

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Alternates.

B. Related Sections:
1. Division 1 Sections.
2. As indicated in scheduled Alternate descriptions.

1.02 DEFINITIONS:

A. Alternate
1. General Definition: A lump sum amount proposed by Bidders and stated on the Bid Form for certain construction activities defined in the Bidding Requirements that may be added to or deducted from Base Bid amount if the Owner decides to accept a corresponding change in either the amount of the construction to be completed, or in the products, materials, equipment, systems or installation methods described in Contract Documents.
2. Proposed Cost: Each proposed amount for an Alternate to be complete and include entire Bidder's cost for the alternate work. No other adjustments to the Contract Sum will be allowed after signing of Contract for the Work.
3. Work Included: Each proposal for an Alternate to represent all work, e.g., materials and its related workmanship, required to incorporate the work in place. In addition to other work, proposed work for each alternate to include work and coordination required to modify adjacent work at time each alternate required.
4. Owner Action: Owner reserves the right to take action or no action on any Alternate during course of Contract Period. Each proposal to be non retractable and held without change during the Contract Period, except added costs may be negotiated when submitted written documentation is provided that clearly show that added time affects Progress Schedule or added scope of Work for any Alternate has changed by time of Owner acceptance and reasonably affected Contractor's cost to do the work. Any requested added costs are to be for added work and shall not change the cost of any work as proposed by the original proposal.

1.03 SUBMITTALS:

A. Intent: Submit Change Order Proposals: Submit proposals for work required by Project Consultant's to fully evaluate compliance with Project requirements, e.g., written detailed cost breakdowns, related product

data, published drawings, specifications, tested, performances, and samples.

B. Progress Schedule: Incorporate into first Progress Schedule required for submittal.
   1. Time for Owner's Decision: Indicate latest time when Owner's decision for each Alternate must be made to ensure that each Alternate, if accepted does not increase cost proposed for each Alternate and does not affect Contract Progress Schedule.
   2. Notifications: Notify Project Consultants and parties affected by Alternates as to status of Alternates during course of Work to ensure proper and timely coordination.
   3. Addendum: Relative to allowances in form of Change Order proposals. Itemize in detail, quantities and unit prices of materials, products, and assemblies required, in addition to any other reasonable Contractor's costs for review by Consultants. The proposed work shall be complete assessed to address all changes as a result of the work, and shall not result in additional changes.

1.04 QUALITY ASSURANCE:

A. Submittals: Prior to purchase and fabrication of any materials, provide Consultants requested submittals and secure successful review for all design considerations.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 ADMINISTRATION:

A. Prior to signing Contract for the Work: Meet with the Owner and Consultants and clearly define scope of work included in each Alternate and conditions for administration of Alternate work. Incorporated changes to scope of Contract, if required.

B. After Signing Contract for the Work: Upon written notification from Owner of acceptance of any Alternate, institute procedures in accordance with the Contract for changes to the Work

3.02 INSTALLATION OF ALTERNATE WORK:

A. General: Coordinate adjacent Work and install products in accordance with successfully Consultants reviewed submittals and each Manufacturer's Project specific requirements.

3.03 SCHEDULE:

A. Alternate No. 1
   1. Alternate Type: Additive
   2. Include in Base Contact: Not applicable.
   3. Alternate: Cos to add item(s) as indicated on Drawings.

END OF SECTION

SECTION 01290 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Applications for payment.

B. Related Sections:
1. Division 1 Sections.
2. “Section 01330 - Submittal Procedures”.
3. “Section 01320 - Construction Progress Documentation”.

1.02 SUBMITTALS

A. Application for Payment Documents: Submit following.
1. Application for Payment documents.
2. Schedule for Values documents.
3. Supporting documentation.

B. Number of Submittal Sets: Refer to “Section 01330 - Submittal Procedures”.

C. Quality Assurance Submittals: Refer to “Quality Assurance” paragraphs herein.

1.03 QUALITY ASSURANCE:

A. Content and Format Approval: Adjust format to satisfaction of Consultants.

B. Accuracy, Completeness, Coordination of Scheduled Values: Each scheduled item in Schedule of Values and Applications for Payment document submittals to be accurate, complete, and fully coordinated between documents, including cost information.

C. First Submittal of Schedule of Values: Submit prior to signing of Contract for the Work. Intent: Submit Change Order Proposals: Submit proposals for work required by Project Consultant’s to fully evaluate compliance with Project requirements, e.g., written detailed cost breakdowns, related product data, published drawings, specifications, tested, performances, and samples.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 APPLICATION FOR PAYMENT-GENERAL:

A. Submittal Time:
1. Draft Copies: Seven (7) calendar days before the date scheduled for submittal of the formal Application for Payment.
2. Formal Submittal: Submit corrected Application on regular dates each month; agreed to before signing Contract for the Work; otherwise Owner to determine regular scheduled dates.

B. Review Process:
1. Consultants:
a. Draft Submittal: Review draft. Forward copy to Owner. Make corrections, if required. Return to Contractor after reviews completed and advise Contractor of any actions, if any required.
b. Formal Submittal: Review. Sign and forward to Owner.
2. Owner: After satisfactory review of documents, sign and forward documents for payment. Pay Contractor. Prior to signing Contract for the Work: Meet with the Owner and Consultants and clearly define scope of work included in each Alternate and conditions for administration of Alternate work. Incorporated changes to scope of Contract, if required.

3.02 APPLICATION FOR PAYMENT - PRIMARY FORMS:

A. Documents: Execute on AIA Forms, G702 and Continuation Sheets G703. Information to be correlated with Schedule of Values.

3.03 SCHEDULE OF VALUES:

A. Breakdown-Level of Detail:
1. General: Each principal subcontract amount to broken down into sufficient detail and organized into a format as to facilitate reasonable and continued evaluation of the progress of each subcontract for duration of Project.
2. Stored Work: List separately. Distinguish work stored on-site and those stored off-site. Show insurance coverage and bonded warehousing costs.
3. Contractor’s Option: Temporary facilities and other major cost items that are not direct cost of any specific scheduled work may be shown as separate line items in the schedule of values or distributed as general overhead expense.

B. Format: In addition to any other format requirements, include following.
1. Project Identification: For each set, indicate following.
a. Contractor’s name and address.

b. Contractor's Project submittal tracking number. Put on every sheet of each submittal set.
c. Date of submittal. Put on every sheet of each submittal set.
d. Consultant's Project number, name, location.
e. Consultant's name.

2. Tabular Schedule: For each scheduled value, provide data for following items in a table under separate columns; organize similar to Project Manual Technical Specifications.
a. Generic description of the work.
b. Related Specification Section.
c. Name of Subcontractor.
d. Name of Primary Manufacturer or Fabricator.
e. Name of Supplier.
f. Amounts for each value as a percentage and actual dollar value.
g. Change Orders that have affected each value.

C. Amounts:
1. Completeness: Each scheduled value to be complete cost for that work and include proportionate values for overhead, profit, and taxes.
2. Values as Percentage: Percent of total Contract Sum; to nearest one hundredth percent.
3. Dollar Values: Round to nearest whole dollar.
4. Contract Sum Reconciliation: All scheduled values to add up to Contract Sum.

D. Schedule Updating: Update and submit for following.
1. With each Application for Payment.
2. When Change Orders result in a change in Contract Sum.

3.04 FIRST APPLICATION-CONDITIONS AFFECTING:

A. List of Subcontractors.

B. Contractor's Progress Schedule.

C. Schedule of principal products.

D. Submittal Schedule.

E. List of Contractor's staff assignments.

F. Initial Progress Report.

3.05 APPLICATION AFTER SUBSTANTIAL COMPLETION-CONDITIONS AFFECTING:

A. Submittals Due Prior to Application: Complete Closeout Submittals and Procedures.

3.06 FINAL APPLICATION-CONDITIONS AFFECTING:

A. Full completion of all work to satisfaction of The Consultants and Owner.

B. Full completion of all required Closeout submittals and procedures.

C. Proof of payment of all obligations.

D. Removal of all Contractors' work.

E. Removal of surplus materials, rubbish, and similar elements.

F. Satisfactory final cleaning of all work.

3.07 SUPPORTING DOCUMENTS:

A. Waivers of Mechanic's Lien:
1. Intent: Submit waivers of mechanic's lien from every Entity who is lawfully entitled to file a mechanic's lien arising out of the Contract and related to the Work covered by payment. Waivers to show reasonable, timely, and regular payment by Contractor to Entities completing work performed for him.
2. Form: Acceptable to Owner.
3. Information: Each waiver to include Subcontract Sum amount, total of payments made (prior to last payment), and current work, payment, and date of payment covered by waiver.

B. Other: If required by the Consultants, submit receipts or vouchers for payment of labor and materials from Entities and other documentation confirming work claimed for in each Contractor's Application for Payment.

C. Specified in Other Sections: As follows.
1. Updated Progress Schedules.

END OF SECTION

SECTION 01296 - CONTRACT CLARIFICATIONS

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Request for Information (RFI) procedures.
2. Change Orders procedures.

B. Related Sections:
1. Division 1 Sections.

1.02 SUBMITTALS:

A. General: As specified herein.

1.03 QUALITY ASSURANCE:

A. RFI Content: Make one single request per RFI. Multiple requests under a single RFI number will be rejected.

B. Basis of RFI's:
1. Contractor Responsibility: RFI's are to be used as a method to clarify the intent of Contract Documents when such intent is not readily evident. It is the responsibility of the Contractor to make a reasonable review of the Contract Documents to ensure that the requested information is not readily inferable from the Contract Documents.
2. Reimbursable Costs: Should The Consultants determine that any RFI could have been reasonably inferred from the Contract Documents, the Consultant reserve the right to deduct a fair and reasonable amount for the time and effort expended by them or their Consultants from the Contract Sum. This is not a penalty, but a fair reimbursement of a cost that the Contractor should have otherwise expended in researching the information.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 REQUEST FOR INFORMATION (RFIs):

A. Time of Submittal: As soon as issue requiring clarification arises.

B. RFI Form: Form to be provided by the Consultants.

C. Submittal: Submit following.
   1. Identification of Affected Work: Submit list of Contract drawn work and Specifications affected.
   2. Supporting Data:
      a. General: Submit applicable supporting data, drawings, and materials as required or as otherwise requested by the Consultants. Attach to RFI.
      b. Field Conditions: If required or requested by the Consultants, submit “As-Built Drawings” complying with “Section 01785 - Project Record Documents”.
   3. Solutions: Propose potential solutions

3.02 CHANGE ORDERS (MODIFICATIONS):

A. Proposal Requests:
   1. Basis: When changes are made in the Work that require an equitable adjustment to the Contract amount and/or time, submit to The Consultants a written proposal for adjustments to the Contract.
   2. Adjustment to Cost: With proposal, submit detailed itemized breakdown, including following.
      a. Material quantities and item cost.
      b. Labor costs by material item.
      c. Construction equipment cost.
      d. Workmen’s compensation and public liability insurance.
      e. Overhead.
      f. Profit.
      g. Taxes. No overhead or profit will be allowed on employment taxes.
   3. Adjustment to Time: Submit proposal with justifications.
   4. Impact on Design Intent: Submit written and graphic descriptions indicating how proposal differs from original design intent, e.g., physical differences, aesthetic differences in material quality, compliance with Code and Authority requirements, etc.

B. Change Orders: For each Proposal Request in which The Consultants has determined, and Owner has approved, that equitable adjustment is be made, a Change Order will be issued in writing.

END OF SECTION

SECTION 01310 - PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Administration requirements.
2. Coordination of Owner's work.

B. Related Sections.
1. Division 1 Sections, general.
2. "Section 01100 - Summary of Work".

1.02 SUBMITTALS:

A. General: Refer to "Execution" paragraphs herein.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 PERSONNEL DOCUMENTATION:

A. Submittals: Submit following.
1. Superintendent: Resume of experience.
2. Key Personnel and Assignments:
a. Company hierarchical organization related to Project from President and/or CEO on down.
b. Name, title, primary Project responsibility, telephone and facsimile number, and e-mail address of each personnel.

B. When Submitted: Within ten (10) working days after Notice to Proceed.

3.02 PROGRESS SCHEDULES:

A. Type: Critical Path Method (CPM) Network Analysis System.

B. Diagramming Method: Precedence Diagramming Method (PDM).

C. When Submitted:
1. First Submittal: Within 10 working days after Notice to Proceed.
2. Updates: With each Application for Payment or within six (6) working days for each Change Order affecting Contract Scope and/or Time.

D. Schedule Types Required:
   1. Summary Network Schedule: Schedule showing relationships between primary work types.
   2. Detailed Network Schedule: Detailed schedule required by Contractor for proper overall coordination of the Work.

E. Format:
   1. Media:
      a. Blueprints: 30” x 40” prints; two (2) sets.
      b. Reproducible Media: 30” x 40” xerox from which blueprints can be made; one set.
   2. Data Required: In addition, usual network information, include following.
      a. Sheet interface registration marks.
      b. Legend describing all abbreviations.
      c. Time line.
      d. Cost loading showing cost and quantities; for each activity.
      e. Manpower loading showing number of workmen; for each activity.
      f. Long lead work.
      g. Submittals to Consultants.

3.03 PROGRESS MEETINGS:

A. General: Following to apply to all meetings; unless otherwise acceptable to Consultants.
   1. Location: Job Site or as otherwise agreed to by the Parties involved.
   2. Conduct of Meeting: Contractor to preside.
   3. Attendees: Capable of making binding and legal decisions in behalf of each Entity they represent.
   4. Agenda: Develop and distribute to all attending parties one (1) working day minimum, but not less than required for proper preparation by attending parties.
   5. Minutes:
      a. Recording: Contractor to record and distribute written minutes within two (2) working days to all parties at meeting and to those impacted by meeting minutes.
      b. Addenda: Parties who wish to enter revisions or add other statements for the record may do so not later than by the end of the next OAC meeting. Contractor may revise and reissue the previous minutes or record statements to next recorded minutes with specific reference to the original statements that are impacted.

B. Contractor’s Meeting: As required for proper coordination of the Work.

C. Owner-Architect-Contractor (OAC) Meetings:
   1. When: One meeting each two working weeks on regularly scheduled day agreed to by Consultants and Contractor.
   2. Submittals:
      a. Agenda: Submit not less than two working days prior to each scheduled meeting.
      b. Minutes: Submit.

D. Preinstallation Conferences:
   1. General: Conduct as required or specified for proper coordination of the Work.
   2. Consultants Notification: Notify Consultants of scheduled preinstallation conference five (5) working days in advance of each. Consultants to attend when requested by Contractor or when specified that Consultants be present.
   3. Agenda: Include following.
      a. Coordination, including potential problems.
      b. Interface and preparation, including potential problems.
      c. Compatibility issues.
      d. Tolerances.
      e. Contact compliance, including code, fire, warranty, workmanship, personnel training, and other pertinent issues.
      f. Review of Progress Schedule, e.g., delivery, installation, etc.
      g. Housekeeping and cleaning.
      h. Safety procedures.
      i. Other issues and potential conflicts.

END OF SECTION

SECTION 01320 - CONSTRUCTION PROGRESS DOCUMENTATION

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Construction photographs.

B. Related Sections.
1. Division 1 Sections.
2. All work.

1.02 DEFINITIONS:

A. Intent for Number of Photos: The number of photographs will vary and may not be required or exceed the base line maximum specified at any given time; as may be necessary to achieve photographing intent. The general intent is to compile a historical sequence and record of ongoing construction of each primary Project system or product being installed and to show concealed services that can assist the Owner in any future addition, renovation, an ongoing maintenance of his Project. Contractor and Consultants to arrive at a general understanding of desired kinds and number of photos to be taken.

1.03 SUBMITTALS:

A. Photographs: Submit photographs as follows.
1. Weekly Submittals.
a. Number of Photos: Up to 200 photos per week.
b. Submittals: Submit two (2) sets of following.
1. Electronic Data: Record to CD-RW or DVD disks or USB Flash Drive. Disks to be identified with data and general listing of photographs.
2. Plan Drawings: Show locations of what is shown on each photograph.
c. When Submittals Required: Submit at end of each work week.
2. Closeout Submittals: Submit following.
a. Electronic Data: Record on CD-RW or DVD disks or USB Flash Drive, selected Consultants and Owner photos; selected from all photos taken during duration of Project as part of Closeout submittals. Record in historical sequence and as otherwise directed by Consultants.
b. Hardcopies: Include hardcopy printouts on photographic paper as part of Owner’s Closeout Project Manual.
c. Drawings: Plans showing locations of what is shown on each photo.

1.04 QUALITY ASSURANCE

A. Assigned Personnel: Contractor to assign dedicated personnel to take photographs on regular basis and to work with Consultants in properly documenting progress and details of installed work.

B. Camera Type: High resolution digital camera producing photographs acceptable to Consultants. Resolution of camera to be highest or very close to highest commercial (not necessarily Professional) resolution available at time Project is started. Digital camera to be capable of placing data and time minimum on each photo.

C. Electronic Data: Type of electronic data to be viewed on current Owner's computer.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 EXECUTION:

A. General: Consultants to continually work with assigned Contractor's personnel to work out general types of photographs to be taken.

B. Intent-General Types of Photos Required:
1. "Before" photographs of existing work that may be damaged as a result of Contractor's operations.
2. Photos from distance of Site and each Project work.
3. Close-up photos of each installed work to show compliance with Contract requirements.
4. Close up and distant photos of concealed services in detail as necessary to assist Owner in locating each work; whether below grade and in each structure for future addition, renovation and maintenance.
5. Photos of all critical details of all work.
6. Distance and close-up photos of non-complying work, if any.
7. Photos of any cutting and patching and restoration work, if any.
8. Photos documenting Contractor procedures for accomplishing each work.
9. Other as may be determined by Consultants during course of the Work.

END OF SECTION

SECTION 01330 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. General requirements for submittals.

B. Related Sections.
1. Division 1 Sections.

1.02 SUBMITTALS:

A. General: Refer to Contract Conditions and individual Specifications Sections.
1. Administrative Submittals.
2. Work Related Submittals.
3. Quality Assurance Submittals.
4. Closeout Submittals.

B. Submittal Schedule:
1. Type: Submit a written list of required submittals with planned date of submission and date when submittals are required to be returned to Contractor in advance of critical path and lead times required for proper procurement and fabrication of Project products.
2. Submittal Review: Consultants will review Submittal Schedule and make adjustments to submission dates to allow for reasonable review period by them. Make Consultant's indicated time adjustments to review period; unless other times are agreeable to Consultants.
3. Progress Schedule: Incorporate final Submittal Schedule successfully reviewed by Consultants into Progress Schedule.
4. Submittal Times:
a. First: Refer to "Section 01290 - Payment Procedures".
b. Subsequent: Update and resubmit each time schedule is changed. Progress Schedule is to be simultaneously updated and resubmitted in accordance with "Section 01310 - Project Management and Coordination".

1.03 QUALITY ASSURANCE:

A. Review Period: Contractor to include adequate review period for all submittals, including but not limited to following.
1. Adequate time for review by each party requiring review of submittals.

2. Adequate time necessary for delivery of submittals to each party and between parties
3. Time necessary due to resubmissions for various causes, e.g., incomplete submittals, non-compliance of submitted work, clarifications, design changes, etc.
4. Each review period to be in advance of Progress Schedule critical path and lead time dates for proper procurement, manufacturer, delivery, and installation of materials.

B. Completeness of Submittal Package: Any single submittal package which is not representative of all required submittals for each work is not acceptable. Consultant's successful review of piecemeal submittals to be considered conditional; until review of all submittals has been completed; to minimize errors in determining Contract compliance, e.g. initial selection from product data does not differ from actual Project samples.

C. Submittal Project Specificity:
1. General: Submittals to be clearly and boldly identified, e.g. Contractor inserted underlining, highlighting, bracketing, and written identifications, for all Manufacturer approved Project specific requirements; where specific submitted data is not entirely related to Project requirements. Data not properly identified may be returned for re-submittal.
2. Contract Variance: Distinguish Project data from work which vary from Contract requirements. In addition to highlight, indicate by written text "contract variance" or similar bold text that clearly defines which items vary from Contract requirements.
3. Successfully Reviewed Unmarked Data: Where Contractor submits general data that does not clearly and boldly distinguish Manufacturer approved Project specific data and where any such data has been successfully reviewed by Consultants; then the following applies.
    a. Contractor's submittal of data contains the Manufacturer approved Project specific requirements.
    b. Contractor and the specific Entity or Entities responsible for the Work indicated somewhere in any such undistinguished submittals has verified from the Manufacturer specific Project requirements and clearly understands which Manufacturer's requirements are to be implemented in order to comply with the Contract intent.

D. Consultant's Review:
1. Contractor's Responsibility: From time to time, the Consultants may include review information is provided solely to assist the Contractor as part of the review process. The Consultants makes no claim to the accuracy of information provided, nor is it to be construed as an infringement of what is the Contractor's responsibility as defined by the Conditions of the Contract. The Contractor is solely responsible

for all construction means, methods, techniques, sequences and procedures, and therefore shall be responsible for determining the accuracy of such information provided by the Consultants and for the use in the Work.

2. Review of Component vs. Complete Assembly: Consultant's review of single component of a larger assembly does not constitute his approval of the entire assembly, unless otherwise indicated.
3. Piecemeal Submittals: Do not purchase, fabricate, and manufacture any product for which Consultants has not completed successful review of all required submittals for any product. Contractor assumes risk, e.g. additional costs for compliance with Design Intent, e.g. costs for purchase, manufacture, fabrication, installation, and replacement of non-complying work, costs for Contract time impacts, etc., as a result of beginning any work where Consultant's successful review of all submittals has not been accomplished.
4. Contractor's Questionable Review: Consultants will reject submittals not reviewed by Contractor; even when stamped.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 SUBMITTAL FORMAT:

A. Submittal Sets: Number of submittals refers to submittal sets. Each submittal set includes all unique documents (not copies of) required for a particular submittal and are assembled together into a single unique and related group for submission.

B. Contractor Transmittal of Each Submittal Set: Included following minimum information.
   1. Contractor letterhead, company name, address, phone/fax numbers, with responsible person sending submittal with his printed name and signature.
   2. Installer, Supplier, and Manufacturer company name, contact persons, addresses, phone/fax numbers.
   3. Addressee information.
   4. Numbering System: Unless otherwise approved by Consultants, the following system to be used; appended to all submitted documents and not just the cover sheet.
      a. Initial Submittal: Specification Section Number followed by a sequence number, e.g. 08110-001.
      b. Resubmissions: Specification Section Number followed by an R, applicable previous sequence number to relate it back to the original initial submission and an extension number to show further sequencing, e.g. 08110-R-001.01.

5. Append applicable numbering system to all documents.
6. Date.
7. Impacted Specification Section numbers; with applicable paragraph references.
8. List of submittals.

C. Origination Transmittal: Submit copy of Entity originating submitted information to Contractor.

D. Submittal Sets: Submit not less than following to each entity; for every submittal required; unless otherwise specified.
   1. Printed, Written, or Published Data: Digital Format: Portable Document Format or PDF. Provide one (1) reproducible set submitted through email. Upon approval provide (4) sets for Owner and Consultants; consisting of not less than one (1) original publications; other sets shall be clean and clear photocopies of the originals.
   2. Drawings: For Shop Drawings and other similar drafted type work, submit following.
      a. Digital Format: Portable Document Format or PDF: Provide one (1) reproducible set submitted through email. Upon approval provide (4) sets for Owner and Consultants; consisting of not less than one (1) original publications; other sets shall be clean and clear photocopies of the originals.
      b. As-Builts: Portable Document Format or PDF: Provide one (1) reproducible set submitted through email. Upon approval provide (4) sets for Owner and Consultants; consisting of not less than one (1) original publications; other sets shall be clean and clear photocopies of the originals. Also provide AutoCAD drawing files.
   3. Samples:
      a. Type: Same materials and finishes scheduled for Project.
      b. Sizes: Not less than following sizes; unless otherwise specified or acceptable to Consultants.
         1. Board and Sheet Type Samples: Actual thickness x 8-1/2 x 11”
         2. Running Samples: Profile x 11-1/2” lengths.
         3. Other: As acceptable to the Consultants.
      c. Number of Submittal Sets: Same as required for “Printed, Written, or Published Data”.

E. Contractor’s Review Stamp: Stamp each document. Date and sign each stamp. Stamp to include text that confirms submitted documents fully reviewed by Contractor for compliance with Contract intent.

3.02 ADMINISTRATION SUBMITTALS:

A. General: Refer to individual Sections for specific requirements.

3.03 WORK RELATED SUBMITTALS:

A. Product Data: Submit all standard publications available and applicable to Project requirements, including but not limited to, generic material data, installation instructions, tested characteristics, MSDS sheets, standard detail drawings, and color charts. Where standard data not complete, submit other written recommendations necessary to assure that Project data is complete.

B. Shop Drawings:
1. Types: Include plans, elevations, sections, and details.
2. Scale: Similar to or larger than similar drawn elements on Contract Drawings.
3. References: Same as Consultants; where different than Consultant's method must set up a referencing system so Consultants can readily find relationship to his similarly drawn elements.
4. Level of Detail: As required for proper fabrication and installation of the work. Show relationship and interface to adjacent work.

C. Samples:
1. Initial Selections: May be made from charts and photographs that accurately depict products; when acceptable to Consultants. If in opinion such replications are not accurate enough, submit actual samples in full range of available characteristics.
2. Final Samples: Actual Project representative materials and finishes selected by Consultants for Project.
3. Colors, Finishes, Textures, Patterns: Where not specified, verify prior to submission of Bid; otherwise provide full range of available standards from Manufacturer for selection by Consultants.
4. Options: Where not specified, verify prior to submission of Bid; otherwise provide full range of options available from Manufacturer for selection by Consultants.

3.04 QUALITY ASSURANCE SUBMITTALS:

A. General: Refer to specific paragraphs, e.g. "Quality Assurance", "Field Quality Control" and other paragraphs, in individual Specification Sections for specific requirements.

3.05 CLOSEOUT SUBMITTALS:

A. General: Refer to paragraphs, e.g. "Submittals", "Warranty", "Maintenance", "Owners Instructions" and other paragraphs, in individual Specification Sections for specific requirements.

END OF SECTION

SECTION 01400 - QUALITY REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Quality assurance and control of installation.
2. References.
3. Inspection and testing laboratory services.
4. Special inspections.
5. Manufacturers' field services and reports.

B. Related Sections.
1. “Section 01330 - Submittal Procedures”: Submission of Manufacturers' Instructions and Certificates.
2. “Section 01600 - Product Requirements”: Requirements for material and product quality.

1.02 QUALITY ASSURANCE/CONTROL OF INSTALLATION:

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply fully with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.03 REFERENCES:

A. Conform to reference standard by date of issue current on date for receiving bids.

B. Obtain copies of standards when required by Contract Documents.

C. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.04 INSPECTION AND TESTING LABORATORY SERVICES:

A. When the individual specifications sections require it, the Contractor shall appoint, employ, and pay for services of an independent firm to perform inspection and testing. Seismic testing will need to be performed by a special inspector. Contractor to coordinate inspection, but Maluhia will pay for said inspection directly.

B. Services will be performed in accordance with requirements of governing authorities and with specified standards.

C. Reports will be submitted by the independent firm to the Engineer, in duplicate, indicating observations and results of tests and indicating compliance or non compliance with Contract Documents.

D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
   1. Notify the Project Engineer and independent firm 24 hours prior to expected time for operations requiring services.
   2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.

E. Retesting required because of non conformance to specified requirements shall be performed by the same independent firm on instructions by the Project Engineer and shall be paid by the Contractor.

1.05 SPECIAL INSPECTIONS:

A. Owner will employ Special Inspectors acceptable to Honolulu County to perform inspections on various elements of the work as required by the Building Code as locally adopted. During the course of the work under inspection, each Special Inspector will submit detailed reports relative to progress and conditions of the work including deviations from specified requirements and stipulating dates, times, and locations. Special inspector will submit a final report to the County. Contractor must cooperate fully with the Special Inspectors.

1.06 MANUFACTURERS' FIELD SERVICES AND REPORTS:

A. Submit qualifications of observer to the Owner Representative 30 days in advance of required observations. Observer subject to approval of the Project Engineer and the Owner.

B. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start up of equipment, or to test, adjust, and balance of equipment as applicable, and to initiate instructions when necessary.

C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

D. Submit two (2) copies of report written by representative, both to the Owner and to the Project Engineer listing observations and recommendations, within ten days of observation

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01420 - REFERENCES

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Use of Standards.
2. Abbreviation use and format

B. Related Sections.
1. Division 1 Sections.
2. Division 7 and 9 Sections.
3. Divisions 15 and 16 Sections.

1.02 REFERENCES:

A. Standards:
1. Requirement: Each type of work provided for this Project is required to comply with recognized Industry standards (also may be referred to as “references”) that are applicable to the class of work intended by the Contract Documents. Compliance is required whether such standards are indicated or not and whether such standards are in published form or an unwritten but accepted practice in the Industry for the class of work.
2. Use:
a. General: Where a specific standard is indicated, the most current standard is intended and this is to be interpreted as a method for conveying the design intent and its use expands on or clarifies the requirements and its use is not intended to apply to the class of work to be provided.
b. Conflict: Where several Industry standards apply to the Work, and where quality requirements of these applicable standards conflict for the class of work required, it is intended that the standard producing the higher quality work is to apply.
c. Out-of-Date: Where any specified standard is not current, one of following may be provided.
1) Provide work complying with non-current standard; except where older standards are not compliant with any Code requirements, then provide work complying with standard; but modified to extent as necessary to comply with applicable Codes.
2) Provide work complying with non-current standard; except where older standards are not compliant with any Code requirements, then provide work complying with standard; but modified to extent as necessary to comply with applicable Codes.

3) Provide work complying with current standard that is the equivalent of the non-current standard or higher quality standard which is closest equivalent.

B. Abbreviations and Acronyms:
1. Industry Related: Industry accepted abbreviations and acronyms are used throughout the Contract Documents. If any is not understood, these should be verified from the Consultants; prior to Bid.
2. Product Identification Format: Where used in Contract Documents the following format is used.
a. Format: Abbreviation of one or several letters, followed by a hyphen, followed by an identification number, e.g. WD-1 for wood type number one or WPM-1 for waterproof membrane type number one.
b. Number Sequence and Related Sections: Designations may be used between related specification sections where primary product is similar and therefore numbers are not necessarily sequential within a specific specification section, although the numbering will be sequential between all related sections where similar designations are used.

1.03 DEFINITIONS:

A. Related Sections: The listed specification sections under the “Related Sections” paragraphs indicates some of the primary related work which is impacted by the work of the specific specification section in which the list appears. It is not intended as a complete list (which in many cases would otherwise by enormous) but has been provided to assist the Contractor.

B. Exposure Definitions: Unless otherwise redefined elsewhere, the following applies.
1. Exterior Surfaces: Exposed on the outside envelope of structure or surfaces of other constructed elements and equipment which are exposed and not fully enclosed by walls, floors, roofs, windows, and doors, are to be considered as part of the exterior and surfaces occurring in such spaces are to be considered exterior surfaces. Naturally vented, but enclosed, attic or similar spaces to be included.
2. Interior Surfaces: Surfaces interior to the fully enclosed envelope of a structure or within the fully enclosed envelope of other constructed elements and equipment. These surfaces are not exposed to the “outside air”.
3. Exposed: Surfaces which are exposed to view from most vantage points, which are not concealed from view due to permanent inaccessible construction or earth, and which is not defined as semi-exposed.
4. Semi-Exposed: Surfaces not readily visible but are accessible and viewable from selected vantage points. These surfaces include

those hidden by and hidden on removable or openable doors, panels, and drawers, and surfaces or undersides of shelves, counters, desks, and toe spaces, surfaces, which are hidden by moveable equipment/furnishings, and other similar surfaces.

5. Concealed: Surfaces not exposed to view from any vantage point and which is concealed by permanent inaccessible construction, earth, and equipment/furnishings. Such concealed surfaces include those surfaces permanently concealed within walls, above ceilings, within floor construction, within shafts, and those buried underground in earth. Include within this definition, surfaces above otherwise semi-exposed accessible suspended acoustical ceilings, if any.

C. Type: Word “type” as used herein is defined to mean any characteristic, e.g. shape, size, finish, pattern, texture, color, sheen, of a product that may be different from another similar product.

D. Defect: Word “defect” as used herein is anything that would make a product less in quality than would be expected of the product at anytime from its time of manufacture to the end of its useful installed life; when normal wear and tear and abnormal impacts, e.g. Acts of God or other impacts for which the product was not designed or engineered for are taken into consideration; except to the extent such abnormal impacts may otherwise be warranted by the Manufacturer by published statements, verbal promises, and written Warrantees.

E. Wet and or both Humid Interiors:
   1. General: Refers to interior areas or rooms that are exposed to higher wet and or both humid conditions, e.g. swimming pools, steam rooms, saunas, bathrooms, showers, restrooms, commercial kitchens, locker rooms with showers or similar gang type wet fixtures, Janitor’s rooms with sinks, etc.; when compared to typical conditioned areas or rooms of a building. Open areas or rooms immediately adjacent to such areas or rooms are included; where exposed to potential effects of such conditions.
   2. Exposed Wet and or both Humid Conditions: Surfaces directly adjacent to and enclosing equipment and or both fixtures producing wet and or both humid conditions, e.g. walls and ceilings directly adjacent to a tub.
   3. Indirectly Exposed Wet and or both Humid Conditions: Surfaces part of area or room directly outside of enclosed or partially enclosed area or room producing wet and or both humid conditions, e.g. surfaces just beyond enclosure of a tub.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION

SECTION 01450 - QUALITY CONTROL

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Quality control testing and inspection requirements.

B. Related Sections.
1. Division 1 Sections.

1.02 SUBMITTALS:

A. From Testing-Inspection Service: Submit Testing-Inspection Reports directly to Consultants.

B. From Contractor: Schedule each testing-inspection required in Progress Schedules.

C. Quality Assurance Submittals: Refer to “Quality Assurance” paragraphs herein.

D. Special Inspector Qualifications.

1.03 QUALITY ASSURANCE:

A. Testing Owner Requires: In addition to any Authority required and specified testing, Owner reserves right to test and inspect any and all work of Project.

B. Securing of Testing-Inspection Services:
1. Contractor:
a. Responsibility: For Authority required and specified testing, secure a Testing-Inspection Service and pay for testing required.
b. Owner Approval: Secure Owner’s acceptance of Contractor’s selected Testing-Inspection Service, prior to signing any Contract for any required services. Submit proposed Testing-Inspection Service qualifications for review in timely manner. Do not use any Testing - Inspection Service not acceptable to Owner.
2. Other Testing: Except for Authority required and specified testing, Owner to secure his own Testing-Inspection Service and pay for any other testing he may require.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 INSPECTIONS-TESTING, GENERAL:

A. General: Comply with requirements of the General Conditions of the Contract and requirements specified herein. Use of any testing inspection service shall in no way relieve Contractor of his obligation to perform the Work in accordance with the Contract.

B. Contractor shall retain any required special inspector and special inspection requirements as required by Honolulu County Department of Planning and Permitting.

3.02 LABORATORY & INSPECTOR DUTIES:

A. Performance of Service: Perform required inspections, sampling, and testing of materials and methods of construction. Ascertain compliance with requirements of Contract Documents as measured by standards required by specifications, by Authorities, and by recognized ASTM and other acceptable Industry standards applicable to each tested work.

B. Notifications: Promptly notify Consultants of irregularities or deficiencies of the inspected and/or tested Work. Submit test reports for review.

3.03 CONTRACTOR'S RESPONSIBILITIES:

A. Contractor Notifications: Notify each Testing-Inspection Service each time required and within time period requested by Service; to allow them to properly preparation for and schedule each type testing-inspection required.

B. Cooperation: Cooperate with testing service personnel. Provide appropriate access to work where inspections, sampling and testing required. Furnish causal labor as necessary to assist access to work to be tested, to assist in obtaining and handling of samples at the site, and to otherwise facilitate the inspection and testing process.

C. Protection and Repair: Protect each work being tested-inspected from anything that would invalidate the testing-inspection results and for duration of each testing-inspection period. Upon completion of inspection, testing, and sampling, repair damaged work and restore finishes to match the adjacent finishes.

D. Contractor Arranged Tests: Contractor may arrange and pay for additional inspections, sampling, special inspection, and testing beyond the required testing from Testing-Inspection Service.

E. Non-complying Work: Where non-complying work is evidenced by Testing-Inspection Service, Contractor to comply with following.
   1. Owner's Costs Directly Attributable to Defective Work: When Owner has paid for testing, pay for all costs incurred by the Owner and the Consultants.
   2. Correction of Work: Provide all work necessary to correct defective work to comply with Contract requirements.
   3. Time Impact to Work: Request for additional time will not be considered when resulting from installation of defective work.

END OF SECTION

SECTION 01500 - TEMPORARY FACILITIES AND QUALITY CONTROLS

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Requirements for construction facilities and temporary controls.

B. Related Sections.
1. Division 1 Sections.

1.02 SUBMITTALS:

A. Reports and Permits.
1. During Progress of Work: Submit copies of reports and permits required by governing authorities.
2. Closeout Submittals: Refer to “Section 01785 - Project Record Documents”.

B. Quality Assurance Submittals: Refer to “Quality Assurance” paragraphs herein.

1.03 QUALITY ASSURANCE:

A. Standards: In addition to applicable codes and other Authority requirements, comply with applicable requirements of following.
1. ANSI A10.6.
2. ASHRAE 62.1 and 170
3. NECA, including “Temporary Electrical Facilities.
4. NFPA 70 and 241.
5. NEMA.
6. OSHA.
7. UL.

B. Use Charges: No additional cost or use charges for temporary facilities or services are chargeable to Owner, unless otherwise agreed to by Owner.

C. Use Charges:
1. Intent: Include all use charges for temporary facilities and services in Contract Sum.
2. Utilities: Arrange with Utility Companies e.g., sewer, water, power, telephone, etc., for methods necessary for use of services so it is directly chargeable to Contractor during Contract Period. Pay for services.
3. Owner Incidental Use: Allow incidental use of services (without charge) by Owner, Consultants, governing Agencies, and any of

their designated entities, agents, and personnel that require access to the Project Site.

4. Exception: Long distance telephone charges may e billed directly to Entities responsible for persons making such calls. Owner, Consultants, and governing Agencies are not responsible for any long distance calls made by any other Entity, even where such Entities responsible for such calls are under contract to any of them.

D. Permits: Secure permits required to carry out the Work.

E. Regulations:
   1. General: Comply with Authorities having jurisdiction over Project.
   2. Community Rules: Refer to “Section 01100 - Summary of Work”.
   3. Safety: Temporary work to comply with OSHA as applicable to each Trade.

F. Pollution Related Submittals:
   1. Conditions of Use: Generally any legal toxic, hazardous, or noxious operations, equipment, and materials may be used on the Project when used in strict accordance with the law, except Consultant reserves the right to deny use of any such operations, equipment, and materials where in its opinion the use of such operations, equipment and materials may negatively impact personnel or surrounding community.
   2. Submittal: Submit a list of such operations, equipment, and materials, their intended scheduled time of use, and related product data and MSDS sheets prior to expending any moneys for such operations, equipment, and materials; for approval by Consultants.
   3. Progress Schedule: Incorporate pollution related operations into Progress Schedules when directed by Consultants.
   4. Costs: Where use of any pollution creating operations, equipment, and materials are denied by Consultants and for which there are no prior approval by Consultants prior to spending any moneys for such operations, equipment, and materials, then expended costs and any additional costs which may result from implementing Consultant acceptance alternative means for accomplishing the Work in accordance with Contract requirements are to be borne solely by Contractor.

G. Owner and Consultant’s Use: Unless not possible or where unreasonable, allow general incidental use of available facilities, e.g., conference or desk space, telephones (except for long distance), sanitary facilities, etc., by Owner, the Owner Representatives, and their personnel and designated guests.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

A. Quality, Maintenance, Suitability: Used materials and equipment that are undamaged and in serviceable condition may be used. Provide appropriate maintenance schedule to ensure materials and equipment properly perform during time of service required. Provide only material and equipment suitable for the intended use.

2.02 TEMPORARY SERVICES:

A. General: Provide equipment and materials from each Utility Company connections as required for the Work.

B. Telephones: Each Entity to pay for their own telephones and services as they may require for the Work.

2.03 TEMPORARY CONSTRUCTION & SUPPORT FACILITIES:

A. General: Provide as required for the Work.

B. Field Offices-Contractor: Provide trailers or other enclosed facilities required by Contractor for his work. In addition to Contractor's facilities, provide following enclosed and furnished facilities which may be a part of Contractor's facilities.
   1. Furnished conference room for Project meetings; air conditioned and large enough to hold large meetings up to 20 people minimum.
   2. Work area for review of Project record documents; air conditioned.
   3. Dedicated storage area for approved Project samples.
   4. Dedicated shelved area for codes, standards, and references applicable to specified Project requirements; including applicable UBC Code, set of ASTM Building standards, and ACI standards.
   5. Extra supply of hardhats for visitors.

C. Sanitary Facilities: Provide facilities as required by Contractor for the Work. If portable units are provided, provide types in accordance with Health Authorities. Maintain on reasonable and regular sanitary maintenance schedule, e.g., waste removal, cleaning and supplies.

D. Temporary Controls: Provide materials, equipment, and facilities necessary to properly implement temporary controls specified herein.

E. Waste/Refuse Removal: Provide necessary equipment for waste and refuse removal from the Project site.

F. Temporary Use of Elevators: Verify temporary use of elevators for Work and included impacts in Bid; if not fully restricted, comply with following, prior to signing Contract for the Work.

PART 3 - EXECUTION

3.01 PROCEDURAL REQUIREMENTS:

A. General: Provide each temporary facility and utility ready for use at each location when it is first needed, to avoid delay in performance of the work. Provide facilities that can be properly maintained throughout their use at the Project site. Adjust service capacity of temporary services and facilities as needed throughout the progress of the Work. Do not remove until services or facilities are no longer required.

B. Inspections and Testing: Inspect and test each service before placing temporary services in use.

C. Conditions of Use: Operate temporary services and facilities in a safe and efficient manner. Do not overload temporary services or facilities, and do not permit them to interfere with the progress of the work. Do not allow unsanitary conditions, public nuisances, or hazardous conditions to develop or persist on the site.

3.02 TEMPORARY CONTROLS:

A. General:
1. Restrict the Work, e.g., deliveries, staging, other operations, materials and facilities, to immediate limits of Site; unless further restricted by other Contract requirements or unless otherwise approved by Owner.
2. Maintain temporary controls whenever required and for periods as long as necessary to control conditions for which temporary controls are required during the Contract Period.

B. Protection and Security Facilities: Provide temporary protective structures, including enclosures, supports, barricades, partitions, warning signs, warning lights, and other forms of protection as created by ongoing operations and required by working areas and conditions, including, but not necessarily limited to, the following:
1. To protect all persons and property from hazards on ongoing operations.
2. To provide security from access by unauthorized persons.
3. To protect exposed work from damage from the weather.
4. To efficiently route vehicular and pedestrian traffic around obstructing.

C. Fire Protection Requirements: If any Project areas are secured, maintain security and exist requirements in compliance with Authorities. Provide portable fire extinguishers, if required, by Authorities. Instruct all personnel on use of fire extinguishing equipment and exiting procedures prior to start of Work.

D. Construction Cleaning: Comply with requirements specified in “Section 01740 - Cleaning”.

E. Waste Disposal: Dispose of all waste material in a legal manner off site. Do not burn or bury any wastes on Project site. Do not dispose of any wastes into the storm or sanitary sewers.

F. Pollution Controls:
   1. Intent: Limit pollution and any possible resulting contamination of the site and surrounding areas to avoid creating hazardous or unreasonable nuisance conditions from the ongoing operations.
   2. Authority Requirements: Comply with applicable requirements of following. Secure permits from Authorities having jurisdiction over the Project; as required by law or provided for protection of Contractor.
      a. Federal Government.
      b. State Government, including State Department of Health and its “Public Health Regulations”.
      c. City Government.
   3. Types of Controls: Include, but not be limited to, the following.
      a. Dust Control: Use appropriate containment methods as required to limit dust contamination of any built project structures and surrounding community.
      b. Noise Control: Minimize noise produced by ongoing operations. Secure and pay for “Community Noise Permit” as required by the State of Hawaii Health Department.
      c. Light Pollution: If any, night operations are required.
      d. Air Pollution: Limit mist, smoke, vapor, gases, odorous substances, particulate matter, and other similar pollutants to acceptable levels.
      e. Chemical Control: Limit use of hazardous and toxic chemicals in strict accordance with lawful regulations and Authorities. Prevent contamination by chemicals to the environment. Prevent nuisance conditions which could arise from use of the chemicals.
      f. Hazardous Waste Disposal: Volatile, toxic, and other hazardous wastes are to be removed daily, except as otherwise allowed and accepted by Authorities having jurisdiction over the Project. Refer to “Waste Disposal” paragraphs herein for additional requirements.

G. People Controls:
   1. Owner Restrictions: Comply with Owner's restrictions for personnel doing business on Site.
   2. Contractor Controls: Provide safety measures and programs as required by law and required for protection of those on Site.

H. Vehicle Controls:
   1. Access to Site: Verify acceptance routes of access to Site.
   2. Public Road Blockage:
      a. Intent: Avoid blocking to greatest extent possible.
      b. Full Blockage: No work to fully block passage around such work for more than 5 minutes; regardless of alternate routes; unless such blockage has been approved by Authorities.
      c. Partial Blockage: Minimize length of time required.
      d. Controls: Erect temporary traffic safety devices, e.g. signs, cones, personnel directing traffic, etc. as mandated by Authorities and as required to ensure passage of public safely around ongoing operations.
   3. Site Entry: Designate specific Project Site entries. No crossing curbs and sidewalks.
   4. Speed: Maintain reasonable and safe speed limits on Site. Outside of Site, comply with Authority posted speed limits.
   5. Parking:
      a. On Site:
         1) Designate parking areas and controls.
         2) No parking on and driving over built structures, e.g., paved driveways, walks, slabs; unless no other means or paths are available and then only as acceptable to Consultants.
      b. Off Site: Parking off Site, if required, is to be done legally and in manner not to become a nuisance to surrounding community.
   6. Spillage: Vehicles to fully contain materials being transported. Where materials are dropped on public ways and properties, full and immediate removal is required.
   7. Mud Tracking: Any mud tracking onto public ways to be removed on daily basis by washing. Removal of waste water to conform to what is allowed by Authorities.
   8. Maintenance: Maintenance and fueling to be done only in Contractor designated areas. Set up safety program for use of such areas.
   9. Washing of Equipment: Hopper, chute, and wheel cleaning allowed as long as washing operations not detrimental to Site and ongoing operations.

3.03 PROCEDURAL REQUIREMENTS - UNKNOWN HISTORICAL SITES:

A. Encounter: If any, unknown Sites are encountered, stop operations around the immediate area. Erect temporary barriers to prevent other operations from further damaging and disturbing each such Site.

B. After Encounter:
   1. Notification: Immediately notify Consultants, Owner, Authorities, and Organizations to determine extent and limits of barricades to erect. Where conflict occurs between Parties determining limits of barricades, Owner will prevail in determination of barricade limits.
   2. Operations: Continue around barricade limits, unless otherwise directed by Consultants.

C. Cost Impacts: Prior to signing Contract for the Work, work out a method for cost adjustments to the Contract with the Owner based upon potential effects, e.g., scope and length of delays, degree of work stoppage, scheduling, etc., to the contract due to discovery of such unknown sites; otherwise contract Sum is assumed to include all Contractor’s costs for conducting his Work; regardless of scope and length of delays to his operations, is such discoveries are made.

3.04 INSTALLATION:

A. General: Use qualified Tradesmen for installation of temporary services and facilities. Locate temporary services and facilities where they will serve the entire Project adequately and result in minimum interference with the performance of the Work. Adjust services and facilities as required during the course of work so as to accommodate the entire work of the Project.

3.05 OPERATIONS:

A. General: Establish regular programs for personnel health, safety, fire protection, security, maintenance, and cleaning of Project site and temporary facilities.

B. Supervision: Enforce strict discipline in use of temporary services and facilities at the site. Limit availability of temporary services and facilities to essential and intended uses to minimize waste and abuse. Do not permit temporary installation to be abused or endangered. Do not allow hazardous, dangerous, or unsanitary conditions to develop or persist on the Project site.

C. Maintenance: Operate and maintain temporary services and facilities in good operating condition throughout the time of use and until removal is authorized. Protect from damage by dust, rain, and similar elements.

D. Termination and Removal: Upon completion of each activity remove all unnecessary equipment, materials, and facilities. Upon completion of work remove all equipment, materials, and facilities and remove from site in expeditious manner. Re-establish work areas to clean condition. Repair, restore, or replace any damaged work. Completely clean site of evidence of Contractor's operations.

3.06 DAMAGES:

A. General: If any damages, e.g., soiling staining, broken elements, damaged landscape, etc., result from Contractor's operations, such damages are to be restored or replaced to "as new" Contract conditions as satisfactory to Consultants. The costs of such remedies shall be borne entirely by the Contractor.

END OF SECTION

SECTION 01600 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. General requirements for products.

B. Related Sections.
1. Division 1 Sections.

1.02 DEFINITIONS:

A. Primary Products: For any given product related Specification Section, the main product of products required for the Project; which is the reason such Specification Section is written.

B. Related Products: Products required to complete each installation of a primary product.

C. Defects: Anything about any Project product that would make it less in quality than the intended Contract requirements, e.g., materials not complying with Contract requirements, manufacturing defects, installation defects, damages prior to Contract conclusion, abnormal deterioration, etc., that occur prior to end of any warrantees in effect and prior to a reasonable expected life cycle under similar installation conditions and exposures.

D. Exposures: Refer to “Section 01420 - References” for definitions of exterior”, “interior”, “exposed”, “semi-exposed”, and “concealed”; except as otherwise specified.

1.03 SYSTEM DESCRIPTION:

A. Performance:
1. General: Each product provided shall perform to the Contract requirements under the anticipated conditions of use and installation or exceed such requirements. Performance evaluation of any product to include the performance of the product by itself and its performance relative to the total assembly for which it is a part as exposed to actual installed Project environmental and use conditions.
2. Authority Requirements: Whether specified or not, each Project product to meet all Codes, laws, and other Authority applicable requirements that apply to each product. For any particular product, where specifications does not address any Project applicable

Authority requirement, include in Bid Manufacturer's Code compliant product; which is comparable to original product and that does not jeopardize original Project design intent specified for any such product. Secure Consultant's approval of product; before purchase, fabrication, and installation of such products.

1.04 SUBMITTALS

A. List of Products: As a condition to securing the Contract for the Work, submit a list of primary products to be used for the Work, prior to signing the signing of the Contract for the Work. Secure the Consultant's general approval of the listed products. List products under each related Specification number. List of Products to indicate product, Manufacturer, Installer, and Supplier.

B. Work Related Submittals:
   1. Specified: Refer to other related Sections as follows.
      a. "Section 01330 - Submittal Procedures".
      b. "Section 01785 - Project Record Documents".
      c. Individual Specification Sections applicable to each Entity.
   2. Unspecified: Including substitutions, submit any and all documentation required by Consultants in order to determine compliance with intent of Project.

C. Closeout Submittals: Refer to "Warranty" and "Maintenance" paragraphs herein.

1.05 QUALITY ASSURANCE

A. Intent of Section: Requirements specified herein are minimum quality standards that apply to all products required for Project; whether requirements are specified or not and are to be complied with unless otherwise acceptable to Consultants.

B. Manufacturer, Supplier, Fabricator, Installer Qualifications:
   1. General Qualifications: Notify Consultants where any of following qualifications cannot be met.
      a. The Manufacturer best understands the performances of Its' products relative to Project's requirements.
      b. Those working with any Project products, e.g. Installer and Fabricator, has secured proper Manufacturer training to professionally fabricate and install their products in accordance with Manufacturer's Project specific design intent.
      c. Those working with any Project products, e.g. Installer and Fabricator, has fully disclosed and secured written confirmation of specific Project requirements for each Manufacturer's product from reliable and knowledgeable

Manufacturer's Technical Representatives; prior to Bid and has incorporated such requirements into Bid.

d. Those working with any Project products, e.g. Installer and Fabricator, have an intimate knowledge of all the available characteristics and options necessary to provide a complete installation in accordance with Contract design intent.

2 Experience: Except as otherwise indicated, as follows.

a. Type: Current and continuous experience with the specific Project required products and services being provided or equivalent experience acceptable to Product Manufacturer and Consultants.

b. Number of Years: Not less than following.

1) Manufacturer: 10.
2) Supplier: 5.
3) Fabricator: 10.
4) Installer: 5.

3. Certification:

a. Requirement: Where Manufacturer has a certification or licensing program for installation of Project products, Installer to possess current certification or licensing. Certification to have been attained not less than two year prior to time that Project was Bid.

b. Submittal: Submit written documentation of such certification when specified or requested by Consultants.

4. Verification of Project Requirements:

a. Condition of the Contract: It is the responsibility of the Installer and Fabricator of each work to verify that each Manufacturer's product can meet the specified and drawn Project requirements applicable to the Work; including each Manufacturer's Project related requirements and Industry practices and standards. Verify requirements and Industry practices and standards. Verify requirements during Bidding and prior to signing the Contract for the Work by the Contractor.

b. Impact: Where Consultants and Owner has not been notified prior to the signing of the Contract for the Work by the Contractor, Entities responsible for such work, including Contractor, are required to provide work necessary to comply with specified requirements at no additional cost to Owner.

C. Fire Rated Assemblies:

1. Intent: Provide each installed assembly to exactly match each required Product Manufacturer's tested fire assembly applicable to Project fire rating condition.

2. Alteration: "Engineering Judgments" or other alterations of Manufacturer's fire tested assemblies are not allowed; unless specifically specified or acceptable to Consultants.

D. Related Products:
   1. Intent: Each related product required to complete the installation of a primary Project product and having a performance related impact on a specific Project product to be approved in writing by the Manufacturer for the primary Project product for use on the Project and for each scheduled type of use on Project; whether provided by them or not.
   2. Conflict: Where specified requirements are detrimental to performances and not acceptable to any Manufacturer, notify Consultants for resolution of such conflict; prior to purchase, fabrication, and manufacture of such products.

E. Manufacturer's Packaging and Labels:
   1. General: Keep intact and unopened until just prior to each installation. Packaging may be opened when required by Manufacturer to protect products from damages due to environmental conditions, e.g. condensation, humidity, etc., and only to extent as required by them. When required, maintain protections of products.
   2. Label Descriptions: Labels to identify Project products. Specified special performances and Authority required information to appear on labels.

1.06 WARRANTY:

A. Contractor's Project Warranty: Refer to General and Supplementary Conditions of the Contract.

B. Manufacturer's Standard Warrantees: Whether specified or not, submit standard available warrantees for primary Project products. All products to have not less than a one (1) year warranty from the Manufacturer against manufacturing defects in materials and its workmanship.

C. Installer's Warrantees: Whether specified or not, submit each Installer's one (1) year Warranty against defects occurring due to installation of materials and its workmanship; except where any required Special Warrantees extend Installer's One Year Warranty.

D. Special Warrantees: Refer to individual Specification Sections for other warranties required for Project.

1.07 MAINTENANCE:

A. Maintenance & Servicing Instructions: Whether specified or not, submit standard published user manuals and maintenance and service instructions for Project materials and equipment. These are in addition to any similar requirements specified in other Specification Sections.

PART 2 - PRODUCTS

2.01 PRODUCTS, GENERAL:

A. Primary Product: Unless otherwise specified or acceptable to Consultants, products to comply with following.
   1. Experience: Used 10 years minimum in projects of similar type, scope, under similar environmental conditions, and under the same installation (assembly) conditions.
   2. Compatibility: Compatible with related products required to complete each of its installation and compatible with each interfacing product in each assembly.
   3. Single Source Intent: For specified primary products in any particular Section, the indicated products are to be generally provided by a single Manufacturer; unless it is clear that specified requirements cannot be met by a single Manufacturer; then limit number of sources to fewest reasonably possible.

B. Related Products: Refer to “Quality Assurance” paragraphs herein.

C. Completeness: Provide all materials necessary to provide a complete and fully functional assembly to each product required for Project.

D. Finishes of Related Products: For exposed components of related products, provide same finish as required for primary product; unless otherwise specified or acceptable to Consultants.

2.02 FABRICATION:

A. Project Measurements: Establish written documentation with Contractor coordinating measurements and tolerances required to assure that fabricated work fits final intended Project outcome. Where possible verify actual field conditions prior to final fabrication of Project units affected by field conditions.

B. Manufacturing Products – Intent:
   1. General: Generally specified requirements for any product are those which can be met by standard established manufacturing practices of manufacturers producing types of products required for Project. Generally do not alter the manufacture of such products; except as specifically engineered by Manufacturer to conform their products meet required special or custom requirements to meet Contract intent.
   2. Customizations: When required, Manufacturer to have ten (10) years minimum experience engineering products for specific custom performances required for Project; unless otherwise acceptable to Consultants. Acclimation Sensitive Products: Where products are sensitive to environmental conditions, adjust manufacturing and

fabrication of products in manner that defects do not occur under final environmental conditions to which product is to be exposed.

2.03 SPECIAL REQUIREMENTS:

A. Ferrous Products – General: Whether required for exterior or interior use and unless otherwise acceptable to Consultants, comply with following.
   1. Do not install any rusted ferrous products in the Work. If rust occurs, rust to be removed completely from surfaces without destroying functionality of product or replaced with new un-rusted and Contract complying work.
   2. Ferrous fasteners when used with metals are to be used only with ferrous materials.

B. Galvanizing of Ferrous Metal Products: Even when not specified, and except where other galvanizing specified, ferrous metal products to be hot dipped galvanized as follows.
   1. Location:
      a. When part of exterior assemblies, including vented attic spaces exposed to exterior air.
      b. At interior when installed in or attached to concrete and masonry part of exterior wall or similar assemblies.
      c. When occurring in with or high humidity areas, e.g., restrooms, janitor’s closets with sinks, kitchens, swimming pools, shower areas, steam rooms, saunas, etc.
   2. Type of Galvanizing: As applicable to assembly type, comply with following.
      a. Standard: ASTM A 153, ASTM A 123, and ASTM A 653.
      b. Vent Holes: If required, fully plug flush with lead after galvanizing. Blended smooth with adjacent surfaces.

C. Stainless Steel: If any, to be products to be fabricated without ferrous contamination in accordance with NiDI requirements

PART 3 - EXECUTION

3.01 GENERAL EXECUTION REQUIREMENTS:

A. Intent: Comply with Manufacturer’s Project specific requirements as fully submitted and successfully reviewed by Consultants; which shall not be less in quality than Contract intent and applicable Industry standards.

3.02 DELIVERY, STORAGE, & HANDLING:

A. Delivery: Upon arrival of Site, immediately inspect products for defects. Replace defective products in timely manner; without affecting Project Progress Schedule.

B. Storage: Comply with each Manufacturer's Project specific requirements. Ensure storage methods do not cause defects to occur. Whether storage is on site or off site, maintain insurance covering full replacement of materials.

C. Handling: Use methods and equipment approved by each Product Manufacturer for types of handling required in Project.

D. Protection of Products:
   1. Intent: Contract requirements cannot anticipate Contractor's means and methods for shipping of ferrous products where exposure conditions can rust product. Specified requirements are intended for Owner acceptance of installed undamaged and un-deteriorated, as-manufactured products at time of Substantial Completion.
   2. Protection Responsibility: Contactor is responsible for means and methods, including interim shipping and storage, to ensure Project products are provided with adequate protections during entire procurement and installation process; so products can be installed accordance with the intent.

3.03 PROJECT SITE CONDITIONS:

A. Environmental Conditions: Do not proceed with any work under any adverse conditions that would cause defects in products.

B. Acclimation:
   1. General: Acclimation interior products prior to each installation under Manufacturer recommended environmental conditions to ensure success of each installation.
   2. Interior Products: Install when each space fully enclosed and when temperature and humidity are in strict accordance with each Product Manufacturer's requirements.

3.04 SEQUENCING & SCHEDULING:

A. Coordination: Each Installer to coordinate work with other Trades, e.g., schedules, sequence of operations, dimensions, tolerances, finish, embedded items, templates, etc., to ensure work by other Trades are constructed in manner to ensure success each of their installations.

3.05 EXAMINATION:

A. Existing Conditions: Prior to start of each work, verify existing conditions for conformance with requirements necessary to ensure success of each installation. Start of work indicates acceptance of conditions and confirms its conformance.

3.06 PREPARATION

A. Responsibility: Each Installer to verify and coordinate following responsibilities; otherwise Installer requiring preparation is required to provide required work necessary to assure success of its installation.
   1. Support Work.
   2. Substrate preparation.
   3. Tolerances.

3.07 INSTALLATION:

A. General: Refer to “General Execution Requirements” paragraph herein.

B. Finish, Color, Pattern, Texture Variation: Install products in manner to assure uniform visual appearance acceptable to the Consultants. Methods for insuring uniformity may include utilizing materials in sequence as manufactured from same lots where singular lot may be used for single contiguous area or may require the hand selection of materials between several lots for larger areas.

C. Defective Work:
   1. General: Replace defective work with complying work; unless otherwise acceptable to Consultants.
   2. Minor Defects: Very minor damage, deterioration, and other very minor defects may be restored when acceptable to the Consultants.
   3. Restoration Intent: In addition to any other requirements, restoration when allowed by Consultants shall meet following minimum criteria.
      a. After fully finished, no evidence of restoration work to be visible where on any exposed to view surfaces.
      b. Workmanship of restoration work on concealed surfaces may be less rigorous than work for exposed to view surfaces, but to be generally flush and neat.
      c. The existing defect and any restoration work is not to reduce the long term performance of the materials and components of the work in any way.
      d. The method and materials used to restore any defect to be such that it can perform as well or better than the original materials.
      e. Restoration is to be accomplished at no cost to Owner.

3.08 PROTECTION:

A. Intent: Provide protections necessary so each work is clean, without contamination, without defects, abnormal deterioration, without damage, and properly functioning at the time of Final Acceptance by the Owner.

3.09 CLEANING:

A. Intent: Refer to “Section 01740 - Cleaning”.

END OF SECTION

SECTION 01620 - PRODUCT OPTIONS

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Basis for options available for products.
2. Substitutions proposals.
3. Value engineering proposals.

B. Related Sections.
1. Division 1 Sections in general.
2. Section “01600 - Product Requirements”.

1.02 DEFINITIONS:

A. Substitution Proposal: A proposal offered by the Contractor of a product(s) to be used in lieu of the specified product(s); which is generically similar to the specified product(s) and its specified requirements.

B. Value Engineering (VE) Proposal: A proposal offered by the Contractor of a product(s) to be used in lieu of the specified product(s); which is generically different than the specified product(s) and which offers a significant advantage or advantages to the Owner relative to cost, scheduling, and/or performance; without altering the original design intent in an unacceptable way to the Consultants.

C. Products: Use of words such as “products”, “materials”, “assemblies”, “systems”, are to be used interchangeably and unless the proposal is specifically for only a single most basic (cannot be broken down any further) material unit or material component, the proposal shall mean and be measured in terms of all the materials required for each use in the Project as a final in-place assembly or system.

D. Material Composition: Where word “material composition” is used, this word is to mean the actual scientific makeup of the product with percentage of each material or chemicals going in to make up the final product being evaluated. Material Safety Data Sheets are to be provided when available. Words such as “100% acrylic” or “100% urethane” or other words to that effect are not acceptable when the product is not in fact only made up of that material alone.

E. Limitations: Where word “limitations” is used in conjunction with products being evaluated in proposals, this word is to mean “anything” which could reduce or be less than any quality or any characteristic of the product as

required for use in the Project at “any time” during its life expectancy, including its “life expectancy”; when compared to the specified product, when compared with other competitive generic products of the same type, and when compared with other competitive products that basically are designed for the same functional purpose. Examples include, but are not limited to, following.

1. Incompatibility with Other Materials: Where any contracting material is deleterious to the other, e.g. electrolysis, corrosion, contamination, chemical sensitivity, bacteria or plant growth (mildew or algae growth, etc.), or any other deleterious material effects.
2. Life Expectancy: Shorter life expectancy than specified materials.
3. Weatherability: Not as weatherproof as specified product, e.g., water leakage, air leakage, ultra-violet exposure, breathability, and hydrostatic pressure effects.
4. Structural: Strength of product compared with specified material, e.g. compressive, tensile, shear, bond, peel, and durometer hardness characteristics.
5. Durability: Resilience of product compared with specified material. Its ability to withstand physical abuse and movement, e.g., impact resistance, abrasion resistance, puncture resistance, and elongation.
6. Fire Resistance: Ability to resist fire exposures.
7. Product Characteristics: Susceptibility to defects occurring due to the characteristics unique to the product, e.g., sensitivities such as those due to material composition (shelf life, curing methods, etc.), configuration, weight, size, substrate conditions, weather conditions, assembly conditions, applications methods, etc.
8. Other Characteristics: E.g., slip resistance, acoustic properties, and resistance to catastrophic events, etc.

1.03 SUBMITTALS:

A. Substitution or VE Proposals: Submit complete, readable, and organized information, with all proposal data applicable to Project highlight marked. Information to include, but not necessarily be limited to, following.
   1. Substitution/VE Proposal Form: Copy of form has been inserted in Appendix. This is to be “fully” completed and complied with.
   2. Product Data:
      a. Published Data: Submit Primary Product Manufacturer’s complete available published product data including, but not limited to, primary product descriptions, related product descriptions, color/pattern/texture charts, specifications, drawings, laboratory tested data, fabrication/installation instructions, and list of comparable Projects in Hawaii and other similar salt air/humid environments, such as Guam, Florida, or any of the Southern States bordering the Gulf of Mexico.
   3. Comparison of Products:

a. Requirement: Submit a detailed comparison of significant generic qualities of the proposed substitution with those of the work originally specified.
b. Characteristics: List significant qualities including, but not necessarily limited to, following.
    1) Material composition.
    2) Sizes.
    3) Weight/density.
    4) Color, textures, patterns available.
    5) Qualities critical to performances.
    6) Limitations of product.
    7) How long used in locale.
    8) Availability in locale, by U.S. regions, and internationally.
    9) Market share locally, regionally, and worldwide; based upon equivalent competitive materials.
c. Format: Submit in a typewritten table format in which characteristics are compared side by side.

4. Samples: Submit samples. Provide additional samples or small scale mockups, if requested, by Consultants. Samples to be submitted in accordance with “Section 01330 - Submittal Procedures”.
5. Project Modifications: Where standard published drawings are not adequate, submit other drawings or legible to scale sketches to show each of following where applicable to Project.
    a. Where Project dimensions would be affected, indicate with some typical examples how product affects Project dimensions.
    b. Show custom modifications of product which are required for Project.
    c. Show additional work required of other Installers which is not otherwise shown.
    d. If any, penetrations are required through work, show how penetrations through work is to be accomplished, including any multiple penetrations.
6. Changes to Other Work: Submit a list of written changes to the work of other Installers that would be necessary to accommodate the proposal.
7. Cost Proposal:
    a. During Bidding Period: Do not provide.
    b. Post Bidding Period: Submit. Indicate the overall net change, if any, in the Contract Sum. Separately list cost of proposed Work, cost of changes to other Work, Contractor’s cost, cost for Consultant’s time (verified from Consultants) and other miscellaneous costs.
8. Certifications: Sign certifications indicated on form.
9. Format: Submit proposal form as provided in Appendix and other data requested.

1.04 QUALITY ASSURANCE:

A. Objective: It is up to those making the proposal to prove to the Consultants that the proposed products will meet the Project requirements. To the extent that the Proposer wishes to pursue the Work, the Consultants reserve the right to request any information and samples necessary for him to make a decision.

B. Quality of the Proposals: It is intended that the physical appearance and dimensions of the Project and the quality of the specified products required by the Contract Documents be maintained, unless otherwise specifically requested by and acceptable to Consultants. Generally, submit proposals that would result in installations of equivalent quality to that specified.

C. Conditions for Consideration of a Proposal: The Contractor's proposal will be received and considered when extensive revisions to the Contract Documents are not required, when the proposed changes are in keeping with the primary intent of the Contract Documents, when the requests are timely, fully documented and properly submitted, and when one or more of the following conditions are satisfied.
   1. Where the proposal is directly related to an "or equal" or "comparable product" clause or similar language in the Contract Documents.
   2. Where the specified product or method cannot be provided within the Contract Time. Do not submit proposals which have resulted from the Contractor's failure to pursue the work promptly or to coordinate the various activities properly.
   3. Where the specified requirements cannot receive necessary approval by a governing Authority, and the requested proposal can be approved.
   4. Where a substantial advantage is offered by Owner, in terms of cost, time, energy conservation, or other considerations of merit, after deducting additional responsibilities may include such considerations as additional compensation to the Consultants for redesign and evaluation services, the increased cost of other work by the Owner or separate contractors, and similar considerations.
   5. When the specified products or methods cannot be provided in a manner which is compatible with other materials of the work, and where the Contractor certifies that the substitution will overcome the incompatibility.
   6. When the specified products or methods cannot be properly coordinated with other materials in the work, and where the Contractor certifies that the proposed substitution can be properly coordinated.
   7. When the specified products or methods cannot receive a warranty as required by the Contract Documents and where the Contractor

certifies that the proposed substitution can be given the required warranty.

D. Factors Affecting Acceptance of Proposals:
   1. Review Intent: It is intended to give all responsible proposals a fair review, however, the Consultants and Owner reserves the right to deny acceptance of any proposal for any reason. Irresponsible use of proposal process may result in termination of the review process in its entirety by Consultants and Owner.
   2. During Bidding Period: Time period allotted to Consultants for review of submittals is short. It is critical full documentation be received and that documentation complies strictly with requirements specified in “Documentation” paragraphs herein.
   3. Post Bidding Period:
      a. Value Engineering: Only when Owner has directed Consultants that value engineering proposals be considered. Consultants will determine kinds of proposals acceptable during the review process.
      b. Post Contract: No proposals will be considered, unless significant disadvantage to Contractor or significant advantage to Owner can be shown.
   4. Documentation:
      a. Intent, Information Access: Competitors should be fully aware of the advantages and disadvantages of their products and of their competitor’s products. Should any knowledge be lacking, each competitor should be fully capable of accessing and securing accurate information. Where this is not possible, and unless the product is proprietary, these competitors should not offer proposals for this Project.
      b. Quality of Information in Proposal: The Consultants should be able to fully and accurately evaluate the difference between the specified product(s) and the proposed product(s) from each proposal. Do not submit proposals with only a minimum amount of information, as Consultants will base his opinion on the information in the proposal only and will not reconsider any proposal that has been “not accepted” for any reason, including one that is not adequately documented in the Consultant’s opinion. It is suggested that a complete and accurate “comparison chart” accompany each proposal, unless otherwise acceptable to Consultants.
      c. Reduction of Information Provided: When acceptable to the Consultants, the extent of the submittals may by reduced when approved by Consultants prior to the submission of each proposal. Generally, these will be for obvious products which are and fall into generic categories very familiar to the Consultants. Where the Consultants agree to reduce the amount of information to be provided, the Consultants reserves the right to expand the requirement again where the

Consultants feels that the proposal “objective” was not achieved.

d. Comparison of Products: In addition to the other required submittals, the “Comparison of Products” table is a key submittal to the whole proposal and is a requisite to acceptance. This submittal is not to be deleted.

E. As part of Work-Related Submittals: Submission of unspecified products or methods as part of “work-related” submittals does not constitute an acceptable or valid method for processing substitution or value engineering proposals. Successfully reviewed “work related” submittals does not indicate approval of unspecified products or methods.

F. Consultant’s Requirements: Verify prior to submission of any proposal, the Consultant’s requirements necessary to fully conform proposal to Contract requirements. Request for additional costs after acceptance of any proposals will be denied.

PART 2 - PRODUCTS

2.01 PRODUCTS THAT QUALIFY AS SUBSTITUTIONS:

A. Commercial Usage: Same as specified product or ten (10) years minimum; under similar installation and environmental conditions specified for Project.

B. Material Composition:
1. Primary performance constituents are for all intents and purposes the same or exceed requirements with regard to chemicals and materials, their quantity, and their quality; without violating applicable patents and copyrights.
2. Enhancements are acceptable; except where the enhancements become the primary reason for its performance and in such cases the product will be evaluated as a “value engineering” product.

C. Product Construction:
1. Assembly: Manufactured and assembled for all intents and purposes the same as specified product; without violating patents and copyrights.
2. Size and Configuration: Similar to specified product.

D. Performance Characteristics:
1. Critical performance measures have been tested by same kind and number of tests as specified products. Critical performance measures to be those acceptable to Consultants.
2. Tested performances are similar in results; as acceptable to Consultants.

E. Manufactured Characteristics: Available range of manufactured characteristics, e.g., color, texture, pattern, finish, sizes, configuration, customizability, etc., are not less than the specified product or will not restrict the original design intent in any way if the product is acceptable to Consultants.

F. Manufacturer Support: Not less than required for specified product, e.g., financial capability, technical support, standard and special warrantees offered, etc.

2.02 PRODUCTS THAT QUALIFY AS VALUE ENGINEERING PRODUCTS:

A. General: Those that do not qualify as “Substitutions.”

PART 3 - EXECUTION

3.01 PROPOSAL PROCESS:

A. Proposals Offered During Bidding Period:
1. Submission: In accordance with the “Instructions to Bidders” and its supplements.
2. Acceptable Proposals: Consultants to send written notification to each eligible Bidder of acceptance of the proposal with copies of the accepted proposal. Eligible Bidders may incorporate the substitutions in accordance with the accepted proposal.
3. Proposals Not Accepted: Consultants to send each proposal that are not accepted back to the Bidder who originated the proposal. Consultants to have marked the proposal “Not Accepted”. Bidder may resubmit proposal, where specified time period allowed for review of proposals is not exceeded and where resubmission is acceptable to Consultants. Refer to Consultant’s “Comments” for additional requirements suggested for compliance, if any.

B. Post Bidding Period Proposals:
1. Submission: As directed by Consultants.
2. Acceptable Proposals:
a. Preliminary Acceptance: Where marked “Acceptable, Preliminary” on form, indicates that further information may be required before a decision is made. Comply with “Comments” on form and where not indicated a complete proposal conforming to new requirements. Adjust costs is required. Use of proposed products are not allowed until “Acceptable, Final” is marked on the proposal.
b. Final Acceptance: Where marked “Acceptable, Final” on form, indicate acceptance of proposals and may become basis of Contract upon execution of forms required changes in Work.

3. Proposals Not Accepted: Where marked “Not Accepted”, resubmission may be allowed when Consultants indicate “Resubmission Acceptable” and resubmission will be denied when Consultants indicates “Resubmission Denied” on form. Where remarks are indicated under “Comments”, comply with any further requests which may be indicated.

3.02 INCORPORATION:

A. Incorporation of Proposals: Coordinate work with other affected Installers of other Work. Comply in strict accordance with accepted proposal, which should be in strict conformance Product Manufacturer’s Project specific requirements.

END OF SECTION

SECTION 01735 - CUTTING AND PATCHING

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Cutting and patching requirements.

B. Related Sections.
1. Division 1 Sections.
2. Section “01450 - Quality Control”.

1.02 DEFINITIONS:

A. “Cutting and Patching”: The phrase as used herein is defined as follows.
1. Cutting and patching includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required restoring surface to their original condition.
2. Cutting and patching is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.
3. Cutting and patching performed during the manufacture of products, or during the install fasteners and similar operations are also not considered to be “cutting and patching”.
4. “Demolition” is recognized as related but separate category of work, which may or may not require cutting and patching as defined in this Section. Cutting and patching work required by demolition to comply with requirements of this Specification Section.

1.03 SUBMITTALS:

A. Product Data: Submit Product Data on materials to be used in for patching work.

B. Quality Assurance Submittals: Refer to “Quality Assurance” paragraph herein.

1.04 QUALITY ASSURANCE:

A. Scheduled Methods: Submit methods for cutting and patching of work prior to execution of any cutting and patching work.

B. Alternate Methods: Consultants will entertain alternate methods where accomplishing original intent of cutting and patching work. Submit

recommended methods for review. Do not institute alternate methods, unless successful review is secured from Consultants.

C. Structural Work:
1. General: Do not cut and patch any work in a manner that would result in a reduction of its load-carrying capacity or of its load-deflection ratio.
2. Reinforced Concrete Structures: Do not damage any reinforcing components part of reinforced concrete structures, by drilling, coring, cutting, or other similar operations; including, but not limited for, penetrations, expansion bolts, dowels, etc. Locate reinforcing components with pachometer or other reliable detecting device prior to initiating any potentially damaging operations. Where existing reinforcing components prevent work to be accomplished, notify and secure direction from Consultants prior to conducting any operation.

D. Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, including energy performance, or that would result in increased maintenance, or decreased operational life, or decreased safety.

E. Matching of Exposed-to-View Surfaces:
1. Intent: Cutting and patching work not evident in exposed, final finished, in-place work.
2. Approvals: Consultants to approve following conditions, prior to execution of cutting and patching work.
a. Work scheduled with other concealing type finishes, cannot be fully concealed after final finishes are applied, e.g. telegraphing through paint coatings.
b. Work not scheduled with any concealing finishes cannot be blended in manner with existing surfaces so that patching is not readily evident to Consultants.
3. Mockups: Consultants approval to be achieved by mockup in existing work in areas selected by Consultants.

F. Concealed Surfaces: Concealed work may be less rigorous in finishing and final appearance but should be finished flush with adjacent surface with some attempt to smoothly transition the patching materials with adjacent surface.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. General: Except as otherwise indicated or as directed by the Consultants, use materials for patching that are identical in appearance to

existing materials (unless otherwise acceptable to Consultants), result in equal or better performance characteristics than material being patched, and attain bond strengths acceptable to Consultants.

PART 3 - EXECUTION

3.01 PERFORMANCE:

A. Personnel: Employ skilled workmen to perform cutting and patching work.

B. Cutting: Cut the work using least destructive but effective methods. In general, it is intended that finish cut surfaces to be clean, straight, and smooth. Method of cutting should minimize damage to adjacent finished surfaces.

C. Patching: Patch and blend work with adjacent surfaces to obscure evidence of work to greatest extent possible by methods approved by Consultants.

END OF SECTION

SECTION 01740 - CLEANING

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Cleaning during construction.
2. Final Project cleaning.
3. Waste control.

B. Related Sections.
1. Division 1 Sections in general.
2. “Section 01500 - Temporary Facilities and Quality Controls”.

1.02 DEFINITIONS:

A. Clean:
1. Relative to Installed Products: Products cleaned in accordance with Manufacturer’s recommended procedures, cleaning agents and equipment to remove trash, dust, dirt, stains, and mars from product and adjacent surfaces and areas. Polishing materials are included for materials typically polished.
2. Relative to General Construction Trash and Debris: Verify intent form Owner’s Construction Manager and include impacts in Bid.

1.03 SUBMITTALS:

A. Product Data: If specified or requested by Consultants, submit cleaning data.

B. Closeout Submittals: Refer to “Maintenance” paragraphs herein.

1.04 QUALITY ASSURANCE:

A. Trash Removal: Refer to “Section 01500 - Temporary Facilities and Quality Controls”.

B. General Construction Trash and Debris:
1. Responsibility: Contractor is responsible for informing all Entities prior to signing Contract for the Work, the expected level of cleanliness expected by the Construction Manager.
2. Warning Notices: If required, no more than three written warning notices will be issued by Construction Manager for removal of ignored trash and debris; depending upon degree of non-compliance, potential hazard to Project, and severity of non-complying conditions, e.g. odors, quantities, appearance, etc. When

reasonable written warning notices are unheeded, Owner at his discretion may remove any trash and debris for which reasonable written warnings have been given and costs for removal deducted from Contractor's payments.

1.05 MAINTENANCE:

A. Maintenance Instructions: For primary materials in each Specification Section 2-16, submit each Manufacturer's standard published maintenance instructions, whether specified or not. Instructions to include recommended material, equipment, schedules, and procedures.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. General: Use only cleaning materials, methods, and equipment recommended by the Manufacturer of the product to be cleaned; specifically for types of cleaning required. Materials utilized should not be detrimental to the original characteristics of the cleaned product.

PART 3 - EXECUTION

3.01 DURING CONSTRUCTION:

A. Premises: Clean premises daily.

B. Surfaces, General: Responsible parties to clean surfaces contaminated by them. Remove as quickly as needed to prevent permanent damage and to prevent any deterioration to surfaces. Seek written approval of methods for removal of contaminants from surfaces installed by others.

C. Existing Work: When work operations involves working with existing work, clean exposed, semi-exposed, and concealed components of dirt, mars, stains, etc., without damage and deterioration to such surfaces.

D. Construction Trash and Debris: Remove trash offsite daily to prevent obstructions and hazard, e.g., fire hazards, and as required to keep the Project reasonably clean and neat in appearance.

E. Hazardous Materials: Use in manner approved by Authorities. When not in use, contain in proper containers. Dispose of waste off Site in lawful manner.

3.02 AT TIME OF SUBSTANTIAL COMPLETION:

A. Schedule cleaning so that work can be inspected in clean condition at all scheduled inspections.

3.03 AT TIME OF FINAL INSPECTION:

A. Comply with same requirements of “Substantial Completion” Inspection.

END OF SECTION

SECTION 01770 - CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Administration requirements for Contract Closeout.

B. Related Sections.
1. Division 1 Sections, general.
2. “Section 01740 - Cleaning”.
3. “Section 01785 - Project Record Documents”.
4. “Section 01820 - Demonstration and Training”.

1.02 SUBMITTALS:

A. At Time of Request for Substantial Completion Inspection:
1. Request for Inspection.
2. Application for Payment.
3. Lien waivers.
4. List of incomplete Work.
5. Final adjustment of accounts for change orders.
6. Insurance change-over requirements.
7. Final Authority releases for full use of project.
8. Project Record Documents for review.
9. Owner paid for additional materials and equipment.

B. After Substantial Completion Inspection.
1. Punch list, if any.

C. At Time of Request for Final Inspection:
1. Request for Final Inspection.
2. Final Application for Payment.
3. Consent of Surety for Final Payment: AIA Document G707.
4. Final lien releases.
5. Substantial Completion Punch List: Indicate 100% completion.
6. Completed Project Record Documents.

D. Other: Refer to each Specification Section.

1.03 QUALITY ASSURANCE:

A. Number of Consultant’s Inspections.
1. Number: Consultants has scheduled only two (2) inspections each for Substantial Completion and Final Completion. Re-inspections

beyond the scheduled inspections are considered additional inspections.

2. Cost for Additional Inspections: Pay for Consultant's reasonable cost including, but not necessarily limited to, Consultant's personal time at current billing rates, costs for transportation and lodging, if required, and meals.

B. Punch List Records: Contractor to record and submit written record to Consultants. Revise as requested by Consultants.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 PREPARATION-SYSTEMS TESTING:

A. Owner Instruction: Complete systems testing and complete instructions of Owner's designated representatives prior to request for Substantial Completion inspection.

B. Special Requirement-Video Taped Sessions: Refer to "Section 01820 - Demonstration and Training".

3.02 INSPECTIONS REQUIRED:

A. Substantial Completion Inspection.

B. Final Completion Inspection.

3.03 GENERAL INSPECTION PROCEDURE:

A. Conduct inspection after successful completion of submissions and its acceptance by Consultants.

B. Contractor to record punch list items, if any.

C. Consultants to certify successful inspection or schedule additional inspections.

3.04 ADDITIONAL INSPECTIONS:

A. The Work: Completion of outstanding work is to be competed expeditiously by Contractor without interruption and will full forces. Submit schedule of completion of each work.

B. Procedure: Re-conduct inspections in accordance with “general procedure”; until successful review by Consultants achieved.

END OF SECTION

SECTION 01785 - PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Requirements for Project Record Documents.

B. Related Sections.
1. Division 1 Sections in general.
2. Section “01770 - Closeout Procedures”.

1.02 DEFINITIONS:

A. Record Documents: Contractor produced documents representing an accurate recording of the Work provided during the Contract Period; including work that varied from that indicated in the original Contract Documents. Documents include Record Contract Drawings, Record Contract Project Manuals, Record Support Date, and Operation & Maintenance Manuals.

B. Record Contract Drawings: The primary blueprint Contract set of Drawings used to construct the Project and to which drawn changed information is recorded.

C. Record Contract Project Manuals: The primary Project Manuals used to construct the Project and containing the specifications and other related written Contract date to which changed written information is recorded.

D. Record Support Data: Consultants approved, drawn written, published Manufacturer’s date and Shop Drawings, which are allowed for use as Record Documents; when standard recording methods can be shown not too be effective or not possible.

E. Operation & Maintenance Manuals: Organized manuals containing following primary data:
1 Historical data as specified herein.
2. Manufacturer’s published Product and related data of all primary products from each Specification Section; including warrantees.
3. Operation and maintenance data required for mechanical and electrical work.

F. As-Built Documents: Contractor produced Drawings, required during course of the Work, representing an accurate recording of built structures, and used where Contractor requires clarification with regard to Consultant’s intent for subsequent work affecting the drawn conditions.

This is not the “historical” definition of this word and should not be construed as such.

1.03 SUBMITTALS:

A. Record Documents:
1. Record Contract Drawings: One (1) bound record set.
2. Record Project Manuals: One (1) bound record set.
3. Support Data: One (1) bound record set, if any.
4. Operation & Maintenance Manuals: One (1) bound record set.
5. Other:
a. Record progress photos as specified in “Section 01310 - Project Management and Coordination”.
b. Final site survey as specified in Division 1.
c. Audio-video recording of Owner instruction as specified in “Section 01820 - Demonstration and Training”.

B. As-Built Documents: One (1) set; each time required.

1.04 QUALITY ASSURANCE:

A. Record Updating:
1. Up-to-Date Records: Maintain up-to-date documents, Record data within five (5) working days after installation of each specific portion of Work requiring recording, except no record data to be recorded after concealment of each work.
2. Out-of-Date Records: If the Records are not being kept reasonably up to date, the Consultants may withhold payment requests until Record Documents are satisfactorily updated.

B. Operation & Maintenance Manuals: Organization and included materials to be approved by Consultants.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.01 RECORD DOCUMENTS - GENERAL:

A. Maintenance of Documents: Maintain documents in clean, dry and undamaged condition. Use documents only as necessary to record required information. Do not use as working Construction Documents.

B. Availability: Make documents available to the Consultants upon request.

C. Time of Submission: Refer to “Section 01770 - Closeout Procedures”.

D. Labeling:
   1. Stamp: Secure rubber stamp with words, “RECORD DOCUMENTS”, in bold capital letters, approximately 1” high.
   2. Document Stamping: Stamp document in permanent red ink as follows.
      a. Contract Drawings: Each page.
      b. Manual Inserted Book Bound Information: Front cover.
      c. Manual Inserted Stapled and Inserted Individual Pages: Each page.

3.02 RECORD DOCUMENTS – RECORD CONTRACT DRAWINGS, RECORD CONTRACT PROJECT MANUALS, & RECORD SUPPORTING DOCUMENTS:

A. Information Required for Record Drawings and Project Manuals:
   1. General: Record installed work (“field conditions”) which varies significantly from the work as originally indicated on Contract Document. Record concealed work which is referenced to exposed-to-view features.
   2. Contract Drawings: Record data to scale to clean set of blueprints; dedicated only for record purposes and not for any other purpose.
   3. Specification of Project Manual: Record changes to specifications as a result of actual installations.

B. Record Supporting Documents:
   1. Option: Changes may be recorded to other documents only where the intended record date cannot be adequately recorded on Record Drawings or Record Project manual and if a supporting document significantly indicates the required information more clearly than the Drawing or Project Manual.
   2. Restriction: Minimize use of such documents and where used, such documents shall be acceptable to the Consultants, prior to its use.
   3. Recording Information: Reference such documents appropriately to the Drawing and Specifications. Draw and note changes where different than original drawn information. Such documents shall be compiled into logically organized and bound sets; in manner approved by Consultants.

C. Method of Recording: Legibly mark with erasable red pencils or other contrasting colored pencils when more than one color may more clearly delineate the recorded information. Where to Contract Drawings, record information to same scale as drawings.

3.03 RECORD DOCUMENTS – OPERATING & MAINTENANCE MANUALS:

A. Format – General:
   1. Binders: Assemble data in hard covered 3 ring, D-ring, binders with clear plastic pockets at front, back, & spine. Provide number of

binders as required for each set to comfortably house enclosed data.

2. Cover Sheet: Insert cover sheet, for front and spine, with Project and other information as required by Consultants. Data to be computer generated text and graphics. Where more than one volume submitted, indicate “volume of volumes” applicable to each volume in set provided.
3. Indexed Data: Index groups of related data. Provide type written identification on each index tab.
4. Electronic format: Provide reproducible, non-secured Portable Document Format (PDF).

B. Format - Data Groups: Group data in following broad categories and order. Data within each group to be also logically organized; as acceptable to Consultants.
   1. Table of Contents: Detailed listing of contents of each manual.
   2. Contractor’s Project Warranty: Original executed warranty, warranting all year from date certified for Substantial Completion.
   3. Contractor Document List:
      a. List of all Record Drawings.
      b. List of Sections in Record Project Manual.
      c. List of Supporting Record Data, if any.
   4. Permits: Signed copies of Authority required permits.
   5. Division 2 - 16 Specification Sections: For each Project Manual listed Specification Section, included following in manuals.
      a. Intent: Provided information on primary installed products of each information that Owner knows exactly which materials were installed in the Project.
      b. Entity Documentation: List the Manufacturer, Installer, and Supplier Company Name, Project contact, full address, phone/fax/e-mail number.
      c. Product Data: Primary published date. All need not be provided.
      d. Maintenance Data: Manufacturer’s standard published data on cleaning materials, recommended equipment, restrictions, etc., as typically published by Manufacturer for each product.
      e. Standard Warrantees: Insert all standard warrantees available from each Manufacturer; applicable to each product. Execute on behalf of Owner, if execution required by Manufacturer. Submit executed warrantees.
      f. Special Warrantees: Insert executed, special warrantees, when required for each product.
      g. User Manuals: If any, for product, insert with related literature for product.
      h. Life Safety, Tested, Engineer Requirements: Include for each product, data affecting regulatory life safety issues, e.g. fire and structural performances, and any regulatory and specified testing and engineering required for performances.
      i. Mechanical, Electrical, Electronic Equipment: Insert

Services Centers, Maintenance Contracts, user manuals, diagrams, spare parts listing, resting-balancing-adjustment report, final meter readings, start up performance reports, etc., as specified and as

3.04 AS-BUILT DOCUMENTS:

A. Submittal: Under the conditions related to in the “Quality Assurance” paragraphs herein, submit Drawings; in a legible format, showing the existing conditions that would impact the work as drawn in the Contract Documents. The Drawings shall be in AutoCAD format, unless noted. All drawings shall be clean, neat, and legible with the dimensional information provided and the depiction shown can be correlated with the drawn information in the Contract Documents.

B. Execution: The Consultants will issue such changes as necessary to conform the Work to his original intent and the Contractor shall proceed in accordance with the requirements indicated.

END OF SECTION

SECTION 01820 - DEMONSTRATION AND TRAINING

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Administration requirements for demonstration and training.

B. Related Sections.
1. Division 1 Sections, general.
2. “Section 01770 - Closeout Procedures”.

1.02 SUBMITTALS:

A. Training Materials: Submit appropriate materials for following.
1. For each Owner’s participant.
2. Dedicated set of materials as part of Closeout submittals.

B. Closeout Submittals:
1. General: Refer to “Section 01785 - Project Record Documents”.
2. System Manuals: Submit number in accordance with individual Specification Sections, but not less than two (2) complete hard copy set of published manuals and other published documents.
3. DVD Disks and USB: Submit two (2) sets of DVD disks and USB flash drive with electronic PDF and MP4 video files required for manufacturer’s demonstration and training session.

1.03 QUALITY ASSURANCE:

A. Audio-Video Recording: Audio-video recording is not required for all Owner instruction, but is required for all primary product systems; including following.
1. Mechanical related systems.
2. Any system that is software monitored or driven.
3. Other as may be specified.

B. Training Instructors: Manufacturer’s instructors to be technically trained and totally familiar with all aspects of each specific Project product or system for which training required.

C. Classrooms: Where proper training and instruction is specified or required to be performed in classroom type facilities by Manufacturer, comply with following.
1. Availability of Facilities:
a. Owner’s Facilities: Verify availability and suitability of Owner’s facilities; prior to Bid.
2. Provide the following, at a minimum.

a. Equipment: If not available at the Facility, bring in or rent appropriate equipment, e.g., audio and video equipment, projection screens, marker boards, etc.
b. Training Materials: As required for proper instruction of participants, e.g. usual published training handouts, training videos, writing pads, pens, etc.

D. Training Period:
1. Length of Training: As specified; where not specified, verify prior to Bid and include impacts in Bid; otherwise adequacy of training period to be determined by Engineer based on Owner satisfaction and at no additional cost to Owner.
2. Training Times: Arrange at Owner's convenience.

E. Recording Conditions:
1. Manufacturer's standard prerecorded training video tapes or other video formats may be an option to field video recording of instruction; when it can be shown that video instruction is specific to Owner's system and of acceptable quality to Owner. Approval to be in writing.
2. Regardless of Owner's decision, available prerecorded training video materials are to be submitted as part of Closeout Documents.

PART 2 - PRODUCTS

2.01 EQUIPMENT:

A. Video Recording Equipment:
1. Primary Recorder: DVD Camcorder; with following minimum capabilities.
a. Resolution: 640 x 480 minimum; digital video.
b. Image Format: Color; JPEG minimum.
c. Zoom: 10X minimum.
d. Audio: Dolby digital; with noise reduction technology.

B. DVD Disks: DVD-R disks.

C. Accessories: Following is optional; unless required by Manufacturer or required to ensure quality of recording session.
1. Tripod.
2. Camcorder mounted lighting.
3. Wireless microphones.
4. Additional independent lighting.

PART 3 - EXECUTION

3.01 PREPARATION:

A. General: Ensure all conditions for instruction and audio-video recording are ready.

3.02 INSTRUCTION-GENERAL:

A. Training Materials: Handout appropriate training materials before instruction begins.

B. Lessons: Ensure that each participant adequately understands instructions being given. Confirm learning of participants by either or both tests and hands on demonstration of their abilities.

C. Breaks: Instruction to include adequate breads to allow participants a break from ongoing instruction.

D. Question and Answer Period: Allow during instruction; when not considered disruptive to instruction and conclude at end of each instruction session to ensure than any outstanding questions can be answered.

3.03 PROJECT CLOSEOUT:

A. Submittals: Submit required documents as part of Closeout submittals.

3.04 FOLLOW UP:

A. Manufacturer Availability: After conclusion of each training, each Manufacturer’s Technical and Local Representatives to be readily available to help Owner’s personnel; until satisfactory understanding of operation of each system is attained.

END OF SECTION

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

SECTION 07920 - JOINT SEALANTS

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Joint sealants.
2. Joint backings and accessories.

B. Related Sections.
1. Division 1 Sections.

1.02 SUBMITTALS:

A. See “Section 01330 - Submittal Procedures” for submittal procedures.

B. Product Data: Submit manufacturer’s technical datasheets for each product to be used; include the following:
1. Physical characteristics, including movement capability, VOC content, hardness, cure time, and color availability.
2. List of backing materials approved for use with the specific product.
3. Substrates that product is known to satisfactorily adhere to and with which it is compatible.
4. Substrates the product should not be used on.
5. Substrates for which use of primer is required.
6. Sample product warranty.
7. Certification by manufacturer indicating that product complies with specification requirements.

C. Product Data for Accessory Products: Submit manufacturer’s technical data sheet for each product to be used, including physical characteristics, installation instructions, and recommended tools.

D. Preconstruction Laboratory Test Reports: Submit at least four weeks prior to start of installation.

E. Compatibility and Adhesion Test Reports: Submit compatibility and adhesion test reports from sealant manufacturer indicating the following:
1. Materials forming joint substrates and joint-sealant backing have been tested for compatibility and adhesion with joint sealants.
2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

F. Installer’s qualification statement.

G. Executed warranty.

1.03 QUALITY ASSURANCE:

A. Maintain one copy of each referenced document covering installation requirements on site.

B. Installer Qualification: Company specializing in performing the work of this section and with at least three years of documented experience.

C. Testing Agency Qualifications: Independent firm specializing in performing testing and inspections of the type specified in this section.

D. Preconstruction Laboratory Testing: Arrange for sealant manufacturer(s) to test each combination of sealant, substrate, basking, and accessories.
   1. Adhesion Testing: In accordance with ASTM C794.
   2. Compatibility Testing: In accordance with ASTM C1087.
   3. Allow sufficient time for testing to avoid delaying the work.
   4. Deliver sufficient samples to manufacturer for testing.
   5. Report manufacturer' recommended corrective measures, if any, including primers or techniques not indicated in product data submittals.
   6. Testing is not required if sealant manufacturer provides data showing previous testing, not older than 24 months, that shows satisfactory adhesion, lack of staining, and compatibility.

E. Joint Sealants Field Test for Adhesion and Cohesion to Joint Substrates: Perform field tests for each elastomeric joint sealant according to Method A, Field-Applied Sealant Joint Hand Pull Tab, in Appendix X1.1 in ASTM C1193 or Method A, Tail Procedure, in ASTM C1521, prior to installation as follows:
   1. Install joint sealants in 5-foot joint lengths. Allow sealant to fully cure before testing.
   2. Make a knife cut of the sealant across the joint and along each side of the joint approximately 3-inches long.
   3. Place a mark on the sealant tab, one-inch form the adhered joint to the tab's free end.
   4. Grasp a 2-inch piece of sealant firmly just beyond the one-inch mark and pull at a 90 degree angle.
   5. Record whether or not sealant in joint maintained adhesion to substrate.
   6. Record percentage length of sealant elongation.
   7. Sealant product acceptance shall be based on pass/fail adhesion performance.
   8. Evaluation of Field-Adhesion-Test Results: Sealants no evidencing adhesive failure from testing or noncompliance with other indicated requirements will be considered satisfactory. Remove sealants that fail to adhere to joint substrates during testing or to comply with

other requirements. Retest failed application until test results prove sealants comply with indicated requirements.

9. Perform 5 tests for the first 1,000-feet of joint length for each kind of sealant and joint substrate.
10. Perform one test for each 1,000- feet of joint length thereafter or one test per each floor per elevation.

1.04 REGULATORY REQUIREMENTS:

A. Applicable Regulations: Comply with local code and requirements of authorities having jurisdiction. Do not exceed VOC regulations as established by the State of Hawaii; including total VOC content, in grams per liter, for all system components (i.e. primers, adhesives, coatings, and similar items.)

1.05 DELIVERY, STORAGE, AND HANDLING:

A. Delivery: Deliver sealants to job site 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.

B. Storage: Carefully handle and store all materials to prevent inclusion of foreign materials. Remove from project site all damaged and deteriorated materials and materials exceeding shelf life.

C. Sealant materials shall be handled in accordance with the manufacturer's specifications and installed prior to expiration of shelf life.

1.06 WARRANTY:

A. Manufacturer Warranty: Provide 2-year manufacturer warranty for installed sealants and accessories that fail to achieve a watertight seal, exhibit loss of adhesion or cohesion, or do not cure. Complete forms in Owner's name and register with manufacturer.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. General: Provide sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by sealant manufacturer, based on testing and field experience.

B. Sealants:
1. Acoustical Sealant:
a. Exposed and Concealed Joints: Non-sag, paintable, non-staining, latex sealant complying with ASTM C834 that

effectively reduces airborne sound transmission through perimeter joints and openings in building construction as demonstrated by testing representative assemblies according to ASTM E90. Provide one of the following, or approved equal:
1. Ac-20 FTR; Pecora Corp.
2. Sheetrock Acoustical Sealant; USG.
3. Tremflex 834; Tremco.

b. Concealed Joints: non-drying, non-hardening, non-skinning, non-staining, gunnable, synthetic-rubber sealant recommended for sealing interior concealed joints to reduce airborne sound transmission. Provide one of the following, or approved equal:
1. BA-98, Pecora Corp.
2. Tremco Acoustical Sealant; Tremco.
3. Pro-Series SC-170; Ohio Sealants.

c. Joint Cleaner: Non-corrosive and non-staining type as recommended by sealant manufacturer; compatible with joint forming materials.

d. Primer for Sealants: Non-staining, as recommended by the sealant manufacturer.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Examine joint widths, 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.

3.02 PREPARATION:

A. Remove loose materials and foreign matter that could impair adhesion of sealant.

B. Clean joints, and prime as necessary, in accordance with manufacturer's instructions.

C. Perform preparation in accordance with manufacturer's instructions and ASTM C1193.

D. Mask elements and surfaces adjacent to joints from damage and disfigurement due to sealant work; be aware that sealant drips and smears may not be completely removable.

3.03 INSTALLATION:

A. Install this work in accordance with sealant manufacturer's requirements for preparation of surfaces and material installation instructions.

B. Acoustical Sealant Application Standard: Comply with recommendations of ASTM C919 for use of joint sealants in acoustical applications as applicable to materials, applications, conditions, and sound control requirements as indicated.

C. Measure joint dimensions and size joint backers to achieve width-to-depth ratio, neck dimension, and surface bond area as recommended by manufacturer, expect where specific dimensions are indicated.

D. Install bond breaker backing tape where backer rod cannot be used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags, and without getting sealant on adjacent surfaces.

F. Do not install sealant where ambient temperature is outside manufacturer's recommended temperature range or will be outside that range during the entire curing period, unless manufacturer's approval is obtained and instructions are followed.

3.04 CLEAN-UP:

A. Clean up excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approval by manufacturers of joint sealers and of products in which joints occur.

B. Do not damage adjoining surfaces or finishes.

3.05 PROTECTION:

A. Protect joint sealers during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of project acceptance. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers installation with repaired areas indistinguishable from original work.

END OF SECTION

SECTION 09250 - GYPSUM BOARD

PART 1 - GENERAL

1.01 SUMMARY:

A. Complete all gypsum wallboard work as indicated or required by the drawings and as specified herein. Work shall include but not be limited to gypsum wallboard on existing metal framing and furring.

B. Related Sections.
1. Acoustical sealants are specified in “Section 07920 - Sealants”.

1.02 SUBMITTALS:

A. Submit in accordance with “Section 01330 - Submittal Procedures”.

B. Manufacturer’s Data: Material description and manufacturer’s recommended installation procedures for each material.

C. Safety Data Sheets (SDS) or Materials Safety Data Sheets (MSDS): Submit SDS or MSDS for each material as applicable.

1.03 QUALITY ASSURANCE:

A. Industry Standard: Comply with applicable requirements of GA-216, “Application and Finishing of Gypsum Board”, GA-214, “Recommended Specification: Levels of Gypsum Board Finish”, and GA-201, “Using Gypsum Board for Walls and Ceilings”, by the Gypsum Association, except where more detailed or more stringent requirements are indicated, including the recommendations of the manufacturer.

B. Gypsum Board Terminology: Refer to ASTM C11, “Terminology Relating to Gypsum and Related Building Materials and Systems”, for definition of terms for gypsum board assemblies not defined in this Section or in referenced standards.

1.04 DELIVERY, STORAGE, AND HANDLING:

A. Deliver gypsum wallboard materials in sealed containers and bundles, fully identified with manufacturer’s name, brand, type, and grade; store in a dry wall ventilated space, protected from the weather, under cover and off the ground. Stack gypsum panels flat to prevent sagging. Joint materials shall be stored in accordance with manufacturer’s printed instructions. Damaged or deteriorated materials shall be removed from jobsite.

B. Environmental Limitations: Comply with GA-238, “Guidelines for the Prevention of Mold Growth on Gypsum Board”, and ASTM C840, Application and Finishing of Gypsum Board”, requirements or gypsum board manufacturer’s written recommendations, whichever are more stringent.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. General:
1. Provide all USA manufactured, new material free of asbestos and formaldehyde.
2. Provide panels in maximum lengths and widths available that will minimize joints and correspond with the applicable support system. all gypsum board shall achieve a score of 10 for mold resistance per ASTM D3273, “Resistance to Growth of Mold on the Surface of Interior Coatings in Environmental Chamber”.

B. Gypsum Wallboard: ASTM C1396/C1396M, “Gypsum Board”, 5/8-inch thick, tapered edge type, 48-inches wide, Type “X”.

C. Water Resistant Board: ASTM C1396/1396M, Type “WR” water-resistant backing board, 5/8-inch thick unless indicated otherwise, with tapered edges, 48-inches wide, unless indicated otherwise (for walls only).

D. Cementitious Backer Board (CBB): ANSI A118.9, “Cementitious Backer Units”, or ASTM C1325, “Fiber-Mat Reinforced Cementitious Backer Units”, glass mesh reinforced mortar backer board, nominal 5/8-inch thick, for hard tile backing. Provide tape and joint compound materials as recommended by manufacturer.

E. Wallboard Fasteners: ASTM C1002, “Steel Self-Piercing Tapping Screws for Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs”, standard bugle head self-drilling, self-tapping corrosion-resistant drywall screws. Fasteners for cementitious backer board shall have a polymer coating.

F. Reinforced Tape and Cement: ASTM C475/C475M, “Joint Compound and Joint Tape for Finishing Gypsum Board”, materials for treating joints and fastener heads shall be as manufactured or recommended by the Manufacturer of the wallboard used.

G. Wallboard Accessories: ASTM C1047, “Accessories for Gypsum Wallboard and Gypsum Veneer Base”, Vinyl Corp. Plastic Components Inc., Vinyl Tech, or approved equal.
1. Standard Corner Bead: Vinyl Corp, Corner Bead CB 125 at all outside corners of wall and soffit as indicated.

2. Casing Trim: Vinyl Corp. “L” Bead SB 50 or 58, “J” Bead MJB 50 or 58, as applicable, or as indicated.
3. Control Joint: Vinyl Corp. CJV 16.
4. Other Accessories: As indicated or necessary for complete installation.
5. All accessories shall be vinyl, PVC, or approved equal.

H. Joint Treatment Materials: ASTM C 475/C 475M; tape and compound type recommended by wallboard manufacturer for the application indicated, except as otherwise noted.
1. Interior: Use perforated tape, and joint and topping compound, or “all-purpose” compound. Use setting-type taping and setting-type sandable topping compounds at tile backing board or unit.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Examine substrates to which drywall construction attaches or abuts hollow metal frames and structural framing, with installer present, for compliance with requirements for installation tolerances, existence of mold, and other conditions affecting performance of drywall construction. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.02 INSTALLATION:

A. General: Comply with ASTM C840, “Application and Finishing of Gypsum Board”, Gypsum Association GA-216, and ASTM C754 as applicable to the type of substrate and drywall support system indicated.

B. Tolerances: Maximum variation of finish surface from true flatness shall be 1/8-inch in 10-feet in any direction unless specified otherwise.

C. Gypsum Wallboard, General:
1. Locate exposed end-butt joints as far from center of walls as possible.
2. Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16-inch open space between boards. Do not force into place.
3. Locate either edge or end joints over supports, except in horizontal application or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that both tapered edge joints abut and mill-cut or field-cut end joints abut. Do not place tapered edges against cut edges or ends. Stagger vertical

joints over different studs on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.

4. Attach gypsum panels to steel studs so leading edge or end of each panel is attached to open (unsupported) edges of studs flanges first.
5. Attach gypsum board to framing and blocking as required for additional support at openings and cutouts.
6. Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4"-inch to 3/8-inch space and trim edge with J-type semi-finishing edge trim. Seal joints with acoustical sealant. Do not fasten drywall directly to stud system runner tracks.
7. Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.
8. Cementitious Backer Board: Install cementitious backer board in accordance with ANSI A108.11, "Installation of Cementitious Backer Units", and TCNA methods specified in "Section 09310 - Ceramic Tile". Install rough side facing out for mortar installations and smooth side facing out for mastic and adhesive installations.

D. Methods of Gypsum Wallboard Application:
   1. Stagger abutting end joints of adjacent panels not less than one framing member.
   2. Install in single-layer application in accordance with ASTM C1280 and manufacturer's written instructions. Board surfaces shall be finished as required to receive finish surface.
   3. Single-Layer Application:
      a. On partitions/walls higher than 8-feet one-inch, apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.
      b. On partitions/walls 8-feet one-inch or less in height apply gypsum board horizontally (perpendicular); use maximum length sheets possible to minimize end joints.
   4. Single-Layer Fastening Method: Apply gypsum boards to supports by fastening with screws, spaced not to exceed 16-inch centers for walls.

E. Installation of Trim Accessories:
   1. General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum board to the supports. Otherwise, attach trim in accordance with manufacturer's instructions and recommendations.
   2. Install corner beads at external corners.
   3. Install edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound except where semi-finishing type is indicated. Install L-type trim where work is tightly abutted to other work and install special kerf-type where other work is kerfed to receive long leg or L-type trim. Install U-type trim where edge is

exposed, revealed, gasketed, or sealant-filled (including expansion joints).

4. Install J-type or LC-type semi-finishing trim where indicated. Install control joints where indicated or necessary or not more than 30-feet apart on walls and ceilings over 50-feet per GA-201. Use door header to ceiling or floor to ceiling in long partitions and wall furring runs. Where joint will be conspicuous, obtain acceptance prior to installation.

3.03 FINISHING OF GYPSUM BOARD:

A. General: Apply joint treatment at gypsum board joints (both directions); flanges of corner bead, edge trim, and control joints; penetrations; fastener heads, surface defects, and elsewhere in accordance with ASTM C840 and Gypsum Association GA-216 and GA-214 as required to prepare work for decoration. Prefill open joints, rounded or beveled edges, and damaged surfaces using type of compound recommended by manufacturer.

1. Apply joint tape at joints between gypsum boards, except where a trim accessory is indicated that does not require tape.
2. Apply joint compound in 3 coats (not including prefill of openings in base) and sand between last 2 coats and after last coat. Fastener heads, dents, gouges, and cut-outs shall be filled with joint compound and sanded.
3. Accessories at exposed joints, edges, corners, openings, and similar locations shall be taped, floated with joint compound, and sanded in accordance with manufacturer’s instructions and SDS to produce surfaces ready for gypsum board finishes.
4. Treatment for water-resistant gypsum wallboard shall be as recommended by the gypsum wallboard manufacturer.

B. Finish interior gypsum wallboard by applying the following levels of gypsum board finish in accordance with GA-214.

3.04 CAULKING OF PENETRATIONS:

A. Seak all joints around any penetration of gypsum board including but not limited to pipes, ducts, electrical items.

3.05 BACKING PLATES AND ANCHORS:

A. Backing plates and anchors or blocking which are to be attached to studs or furring for anchoring items and work indicated on the drawings or specified in other sections shall be installed and secured. Plates and anchors shall be welded or fastened in place in accordance with approved setting drawings.

3.06 PROTECTION:

A. Provide final protection and maintain conditions, in a manner suitable to installer, which ensures gypsum drywall construction being without damage or deterioration at time of project acceptance.

3.07 CLEANING AND REPAIRING:

A. After installation and before painting, correct surface damage and defects. Leave surface clean and smooth, satisfactory to the painter. No painting shall be done over gypsum board work until the joints are thoroughly dry. Joints and fastenings are to be invisible after painting.

B. Remove drywall materials from electrical boxes, hardware, fixtures, flooring, and similar items and surfaces not intended to receive drywall materials.

END OF SECTION

SECTION 09310 - CERAMIC TILE

PART 1 - GENERAL

1.01 SUMMARY:

A. Complete all tile, accessories, and related work as indicated or required by the drawings and as specified herein.

B. Related Work Described Elsewhere:
1. Sealants are specified under “Section 07920 - Sealants”.
2. Cementitious tile backer board is provided under “Section 09250 - Gypsum Wallboard”.

1.02 SUBMITTALS:

A. Submit in accordance with “Section 01330 - Submittal Procedures”.

B. Manufacturer's Data: Submit manufacturer's technical information and installation instructions for selected tile, grout, and sealer materials.

C. Safety Data Sheets (SDS) or Material Safety Data Sheets (MSDS): Submit SDS or MSDS for each material as applicable.

D. Samples: Submit 4 each samples of various tiles and accessories required to the Contracting Officer for acceptance and for color and pattern selection. Identify samples as to grade and manufacturer. Submit samples of selected tile in color required, not less than 12-inch square, mounted on plywood or hardboard backing, with selected colored grout.

E. Certificate: Before installation of tile, submit to the Contracting Officer the Standard Form of Master Grade Certificate signed by the Contractor and Manufacturer, stating grade and kind of tile. Deliver all packages of tile to the job in sealed cartons bearing grade seals in compliance with ANSI A137.1.

F. Warranty: Submit warranty as stipulated in item entitled "WARRANTY" hereinbelow.

G. Installation Specifications: Submit manufacturer's installation specifications.

1.03 DELIVERY, STORAGE, AND HANDLING:

A. Protect tile, mortar materials, and accessories during delivery, storage, and construction against moisture, soiling, staining, and physical damage.

B. Handle manufactured materials as recommended by the manufacturer.

1.04 WARRANTY:

A. Contractor's Warranty: The Contractor shall furnish a 2 year warranty against defects resulting from the use of defective or inferior materials, equipment, or workmanship. The warranty period shall commence from the project acceptance date.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Ceramic Wall and Floor Tiles: Standard grade, complying with ANSI A137.1. The Contractor shall submit test reports, from an independent laboratory, indicating conformance of the tile to ANSI A137.1 upon request by the Contracting Officer.
   1. Ceramic Wall Tile and Trims: Dust-pressed, white non- vitreous body, with cushion or semi-cushion edges, in bright and matte glazed finish. Size, color, and finish to match existing adjacent tiled surfaces.
   2. Trim Units: Provide all trim shapes as detailed and/or as required to match existing adjacent tiled surfaces. External corners shall be rounded convex. Internal vertical corners shall be rounded. Top of wainscot shall be rounded with full bullnose cap. Bottom of wall shall be base to match existing adjacent tiled surfaces. Provide other shapes such as curbs, beads, shoes, round out corners and square in corners, etc. to achieve a neat complete installation.

B. Setting Materials:
   1. Cement: Portland cement, ASTM C150/C150M, Type I.
   2. Sand: ASTM C144.
   3. Hydrated Lime: ASTM C206, Type S or ASTM C207, Type S.
   4. Latex-Portland Cement Mortar: ANSI A118.4, with manufacturer's standard dry polymer additive. For large format tile, provide medium bed type as recommended by the tile manufacturer.
   5. Water: Fresh, clean, and potable.

C. Grouting Materials: Colors to match existing adjacent tiled surfaces or as selected by the Contracting Officer.
   1. Epoxy Grout: ANSIA118.3.

D. Tile Cleaner: A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers.

E. Factory Blending: For tile exhibiting color variations within the ranges selected during sample submittals, blend tile in factory and package accordingly so that tile units taken from one package show the same

range in colors as those taken from other packages and match accepted samples.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Examine substrates and areas where tile will be installed for compliance with requirements for installation tolerances and other conditions affecting performance of installed tile.
   1. Verify that substrates for setting tile are firm, dry, clean, and free from oil or waxy films and curing compounds.
   2. Verify that installation of grounds, anchors, recessed frames, electrical and mechanical units of work, and similar items located in or behind tile has been completed before installing tile.
   3. Verify floors to receive tile are flat within specified tolerances of 1/4-inch in 10-feet with variations of no more than 1/16-inch in any single foot of length.
   4. Verify locations of all expansion and control joints in substrate for compliance with paragraph entitled "Expansion and Control Joints" hereinbelow.

B. Report unsatisfactory conditions to the Contractor for corrective measures; send copy of report to the Contracting Officer. Do not proceed with installation until unsatisfactory conditions have been corrected. Proceeding with tile work will imply acceptance of the substrate condition by the Ceramic Tile Contractor. Wall substrate must be plumb to within tolerances specified in “Section 09250 - Gypsum Wallboard” and in complete alignment.

3.02 PREPARATION:

A. Blending: For tile exhibiting color variations within the ranges selected during sample submittals, verify that tile has been blended in factory and packaged accordingly so that tile units taken from one package show the same range in colors as those taken from other packages and match approved samples. If not factory blended, either return to manufacturer or blend tiles at project site before installing.

B. Cleaning and Surface Preparation: Clean substrates. Prepare surfaces in strict accordance with instructions of tile setting material manufacturer and membrane manufacturer, as applicable.
   1. Clean concrete base slab to remove dust, dirt, and loose material. Acid based cleaners are not permitted.
   2. Mechanically scarify concrete substrates if necessary to completely remove curing compounds, form-release compound, paint, efflorescence, loose material, or other substances that would interfere with proper bond of tile materials.

3. Do not seal substrate unless required by manufacturer.
4. Mechanically grind and level substrate or level with self-leveling underlayment as required to meet flatness tolerance of floor tile to be set.

3.03 INSTALLATION, GENERAL:

A. ANSI Tile Installation Standard: Comply with ANSIA137.1 and parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile" that apply to type of setting and grouting materials and methods indicated.

B. TCNA Installation Guidelines: TCNA "Handbook for Ceramic, Glass, and Stone Tile Installation"; comply with TCNA installation methods indicated, most current edition.

C. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions except as otherwise shown. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.

D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish, or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile.

E. Layout:
1. Lay out work to pattern indicated so that full tile or joint is centered on each wall and no tile of less than half width need to be used. Do not interrupt pattern through openings. Lay out tile to minimize cutting and to avoid tile less than half size.
2. For heights stated in feet and inches, use courses of full tile to produce nearest attainable heights without cutting tile.
3. No staggered joints will be permitted.
4. Align joints in tile in both directions.
5. Align joints between floor and base tile.
6. File edges of cut tile smooth and even.
7. Cut and fit tile at penetrations through tile. Do not damage visible surfaces. Carefully grind edges of tile abutting built-in items. Fit tile at outlets, piping, and other penetrations so that plates, collars, or covers overlap tile.
8. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, except as otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
9. Accurately form intersections and returns.

F. Grout Joint Sizes:
   1. Glazed Wall Tile: Match existing adjacent tiled surfaces.
   2. Ensure joint width is at least 3 times the maximum variance in tile dimension.

G. Expansion and Control Joints: Locate expansion joints and other sealant-filled joints, including control, contraction, and isolation joints, where indicated during installation of setting materials, mortar beds, and tile. Do not saw cut joints after installation of tiles. Locate joints in tile surfaces directly above joints in concrete substrates. Expansion joints shall conform to TCNA Installation Method EJ171. Sealant color shall match grout color unless indicated otherwise.

H. Grout: Grouts shall comply with ANSI A108.10. Epoxy grout shall conform with ANSI A108.6.

I. Allow tiles to set a minimum of 48 hours prior to grouting. The grout shall be forced into the joints to the full depth. Take special care not to scratch glazed tile during this operation. Remove surplus grout before it has hardened and leave the face of the tile clean. Keep expansion and control joints free of grout.

3.04 WALL TILE INSTALLATION METHODS:

A. Install types of tile designated for wall application to comply with requirements indicated below for setting-bed methods, TCNA installation methods related to subsurface wall conditions, and grout types:
   1. Latex-Portland Cement Mortar: ANSI A108.5.
      a. Cementitious Backer Board: TCNA Installation Method W244C.
      b. Concrete Masonry: TCNA Installation Method W202l.
   2. Grout: Epoxy.

3.05 CLEANING AND PROTECTION:

A. Cleaning: Upon completion of placement and grouting, clean all tile surfaces so they are free of foreign matter.
   1. Remove grout residue from tile as soon as possible. Clean in accordance with applicable ANSI installation procedure.
   2. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron, and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
   3. Remove temporary protective coating by method recommended by coating manufacturer that is acceptable to tile and grout manufacturer. Trap and remove coating to prevent it from clogging drains.

B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, and otherwise defective tile work.

C. Provide final protection and maintain conditions in a manner acceptable to manufacturer and installer that ensures that tile is without damage or deterioration at time of project acceptance.
   1. When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage, and wear.
   2. Prohibit foot and wheel traffic from tiled floors for at least 7 days after grouting is completed.
   3. Protect tiled corners and external angles with board corner strips in areas used as passageways by workers.

D. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

SECTION 09510 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SUMMARY:

A. Section Includes:
1. Acoustical panels.
2. Exposed suspension systems for interior acoustical panel ceilings.

B. Related Sections.
1. Division 7 “Section 07920 - Joint Sealants” for acoustical sealant.
2. Division 9 “Section 09900 - Paints and Coatings”.

C. Products furnished, but not installed under this Section, include anchors, clips, and other ceiling attachment devices.

1.02 ADMINISTRATIVE REQUIREMENTS:

A. Sequence work to ensure acoustical ceilings are not installed until building is enclosed, sufficient heat is provided, dust generating activities have terminated, and overhead work is completed, tested, and approved.

B. Do not install acoustical units until after interior wet work is dry.

1.03 SUBMITTALS:

A. See “Section 01330 - Submittal Procedures” for submittal procedures.

B. Manufacturer’s Data: Submit manufacturer’s technical product data and installation instructions for suspension system and lay-in panels substantiating that all products comply with project requirements.

C. Shop Drawings: Indicate grid layout and related dimensioning, method of attaching hangers to structure and items penetrating finished ceilings.
1. Minimum Drawing Scale: 1/8 inch = 1 foot.

D. Product Data: provide data on suspension system components and acoustical units.

1.04 QUALITY ASSURANCE:

A. Suspension System Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

B. Acoustical Unit Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING:

A. Deliver acoustical units in the manufacturer's original unopened containers with brand name and type clearly marked. Handle materials carefully and store them under cover in dry, watertight enclosures.

B. Handle manufactured materials as recommended by the manufacturer.

1.06 FIELD CONDITIONS:

A. Maintain temperature and humidity ranges that meet product warranty requirements prior to, during, and after acoustical unit installation.

1.07 EXTRA LAY-IN PANELS:

A. The Contractor shall provide a minimum of one percent extra lay-in panels in labeled full original manufacturer's containers for each type and color used for ceilings to the facility upon completion of the project. Materials shall be in the same lot number used in the project.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

A. Source Limitations: Obtain each type of acoustical ceiling system from single manufacturer.

B. Acoustic Tiles/Panels:
1. Basis of Design: Armstrong World Industries, Inc.; Ultima: www.armstrongceilings.com/#sle.

C. Suspension Systems:
1. Basis of Design: Armstrong World Industries, Inc.; Prelude XL: www.armstrongceilings.com/#sle.

2.02 ACOUSTICAL UNITS:

A. Submit samples of each type of acoustical unit and each type of suspension grid tee section showing texture, finish, and color. Conform acoustical units to ASTM E1264, Class A, and the following requirements:
1. Units for Exposed-Grid System (ACT-01)
   a. Type: III (non-asbestos mineral fiber with painted finish).
   b. Flame Spread: Class A, 25 or less
   c. Pattern: C and E
   d. Minimum NRC: 0.80

e. Minimum: CAC 35
f. Minimum Light Reflectance Coefficient: 0.87
g. Nominal Size: 24 by 48 inch and 24 by 24 inch
h. Edge Detail: Square

2.03 SUSPENSION SYSTEM:

A. Metal Suspension System – General: Complying with ASTM C635/C635M; die cut and interlocking components, with perimeter moldings, hold down slips, stabilizer bars, clips, and splices as required.
1. Steel grid: ASTM A653/A653M, G60 coating hot-dipped galvanized, unless otherwise indicated.

B. Exposed Suspension System: Hot-dipped galvanized steel grid with cap
1. Profile: Tee;15/16 inch (24 mm) face width.
2. Finish: Baked Enamel.
3. Color: White.

2.04 ACCESSORIES:

A. Support Channels and Hangers: Galvanized steel; size and type to suit application and ceiling system flatness requirement specified.

B. Hanger Wire: 12 gauge, 0.08 inch (2mm) galvanized steel wire.

C. Hold-Down Clips: Manufacturer’s standard clips to suit application.

D. Perimeter Moldings: Same metal and finish as grid.
1. Angle Moldings: L-shaped, for mounting at same elevation as face of grid.
2. Acoustical Sealant for Perimeter Moldings: Non-hardening, non-shrinking, for use in conjunction with suspended ceiling system.

2.05 ACOUSTICAL SEALANT:

A. Conform acoustical sealant to ASTM C834, nonstaining. Provide sealants used on the interior of the building (defined as inside of the weatherproofing system) in accordance with requirements of “Section 07920 - Joint Sealants”.

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Verify existing conditions before starting work.

B. Verify that layout of hangers will not interfere with other work.

3.02 PREPARATION:

A. Install after major above-ceiling work is complete. Coordinate the location of hangers with other work.

B. Mechanical, electrical, and other work above the ceiling line shall be completed and accepted prior to start of acoustical ceiling installation.

3.03 DEFECTIVE ACOUSTICAL TILE UNITS AND SUSPENDED GRID COMPONENTS:

A. Suspended grid components and tile units with any defects noted by Owner or Architect after installation including but not limited to warps, chips, cracks, gouges, rusts, discoloration etc. will not be accepted and must be replaced.

3.04 INSTALLATION – ACOUSTICAL UNITS:

A. Install acoustical units in accordance with manufacturer's instructions.

B. Fit acoustical units in place, free from damaged edges or other defects detrimental to appearance and function.

C. Lay directional patterned units as indicated on Drawings.

D. Fit border trim neatly against abutting surfaces.

E. Install acoustical unit level, in uniform plane and free from twist, warp, and dents.

F. Cutting Acoustical Units:
1. Make field cut edges of same profile as factory edges.

G. Where round obstructions occur, provide performed closures to match perimeter molding.

H. Install hold-down clips on panels within 20 ft (6m) of an exterior door.

3.05 INSTALLATION – SUSPENSION SYSTEM:

A. Install suspension system in accordance with ASTM C636/C636M, ASTM E580/E580M, and manufacturer's instructions and as supplemented in this section.

B. Rigidly secure system, including integral mechanical and electrical components, for maximum deflection of 1:360.

C. Perimeter Molding: Install at intersection of ceiling and vertical surfaces and at junctions with other interruptions.
1. Use longest practical lengths.

D. Suspension System, Non-Seismic: Hang suspension system independent of walls, columns, ducts, pipes and conduit. Where carrying members are spliced, avoid visible displacement of face plane of adjacent members.

E. Where ducts or other equipment prevent the regular spacing of hangers, reinforce the nearest affect hangers and related carrying channels to span the extra distance.

F. Do not support components on main runners or cross runners if weight causes total dead load to exceed deflection capability.

G. Support fixture loads using supplementary hangers located within 6 inches (152 mm) of each corner, or support components independently.

H. Do not eccentrically load system or induce rotation of runners.

3.06 TOLERANCES:

A. Maximum Variation from Flat and Level Surface: 1/8 inch in 10 feet (3 mm in 3m) not cumulative.

B. Install framing members plumb and level with the horizon with maximum deflection 1/360 of the span length.

3.07 CAULKING OF PENETRATIONS:

A. Seal all joints around any penetration of an acoustical tile unit including but not limited to pipes, dusts, electrical items.

3.08 PROTECTION:

A. Provide final protection and maintain conditions, in a manner suitable to installer, which ensures installed entire suspended acoustical ceiling system is preserved without damage or deterioration at time of project acceptance.

3.09 CLEANING:

A. The Contractor shall exercise all necessary precautions to avoid damaging or soiling the units. All damaged units shall be replaced with new units by the Contractor.

B. Following defects shall be cause for rejection or replacement of tiles or panels by Contractor:
   1. Crooked or open joints.
   2. Soiled tiles or panel not cleaned to original condition.
   3. Fractures, cracks or corner chips.
   4. Color variation.
   5. Loose or fallen tiles and panels.

6. Warped tiles and panels.

END OF SECTION

SECTION 09900 - PAINTS AND COATINGS

PART 1 - GENERAL

1.01 SECTION INCLUDES:

A. Surface preparation.

B. Field application of paints.

C. Scope: Finish interior surfaces exposed to view, unless fully factory-finished and unless otherwise indicated. If a color of finish, or a surface is not specifically mentioned, Architect will select from standard products, colors and sheens available.

D. Do Not Paint or Finish the Following Items:
1. Items factory-finished unless otherwise indicated; materials and products having factory-applied primers are not considered factory finished.
2. Items indicated to receive other finishes.
3. Items indicated to remain unfinished.
4. Fire rating labels, equipment serial number and capacity labels, bar code labels, and operating parts of equipment.
5. Floors, unless specifically indicated.
6. Glass.
7. Concealed pipes, ducts, and conduits.

1.02 SUBMITTALS:

A. See “Section 01330 - Submittal Procedures” for submittal procedures.

B. Schedule of Finishes: Submit a proposed painting finish schedule for acceptance. The schedule shall indicate the wet film thickness (mils) at which the proposed paint/coatings will be applied that are necessary to achieve the final dry film thickness indicated on the schedule of finishes under item entitled “SCHEDULE OF FINISHES” hereinbelow.

C. Product Data: Provide complete list of products to be used, with the following information for each:
1. Manufacturer’s name, product name and/or catalog number, and general product category (e.g., “alkyd enamel”).
2. Cross-reference to specified paint system products to be used in project; include description of each system.

D. Samples: Submit three paper “draw down” samples, 8-1/2 by 11 inches (216 by 279 mm) in size, illustrating range of colors available for each finishing product specified.
1. Where sheen is specified, submit samples in only that sheen.

E. Maintenance Materials: Furnish the following for Owner’s use in maintenance of project.
   1. Extra Paint and Finish Material: 1 gal (4 L) of each color; from the same product run, store where directed. Package with protective coverings for storage and identify with labels describing contents. Deliver extra materials to Owner.
   2. Label each container with color in addition to the manufacturer’s label.

F. Warranty: Submit warranty as stipulated in item entitled “WARRANTY” hereinbelow.

1.03 QUALITY ASSURANCE:

A. Applicator Qualifications: Company specializing in performing the type of work specified with minimum three years experience and approved by manufacturer.

1.04 DELIVERY, STORAGE, AND HANDLING:

A. Per Sherwin-Williams’ standards and written direction and in accordance with requirements of local authorities and codes having jurisdiction of solvent-based materials, and materials used with solvent-based materials.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

C. Container Label: Include manufacturer’s name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

D. Paint Materials: Store at minimum ambient temperature of 45 degrees F (7 degrees C) and a maximum of 90 degrees F (32 degrees C), in ventilated area, and as required by manufacturer’s instruction.

1.05 FIELD CONDITIONS:

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by Sherwin-Williams for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.06 WARRANTY:

A. Contractor's Warranty:
1. Submit warranty covering labor and materials against defects resulting from the use of defective or inferior materials, equipment, or workmanship for a period of 2 years from the project acceptance date.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Basis-of-Design Manufacturer: In compliance with requirements, provide Sherwin-Williams.

B. Provide paints and finishes used in any individual system from the same manufacturer; no exceptions.

C. Primer Sealer: Same manufacturer as top coats.

2.02 PAINTS AND FINISHES - GENERAL:

A. Paints and Finishes: Ready-mixed, unless intended to be field-catalyzed paint.
1. Provide paints and finishes of a soft past consistency, capable of being readily and uniformly dispersed to a homogeneous coating, with good flow and brushing properties, and capable of drying or curing free of streaks or sages.
2. Supply each paint material in quantity required to complete entire project's work from a single production run.
3. Do not reduce, thin, or dilute paint or finishes or add materials unless such procedure is specifically described in manufacturer's product instructions.

B. Volatile Organic Compound (VOC) Content:
1. Provide paints and finishes that comply with the most stringent requirements specified in the following:
a. 40 CFR 59, Subpart D--National Volatile Organic Compound Emission Standards for Architectural Coatings.
b. Architectural coatings VOC limits of the State in which the Project is located.
2. Determination of VOC Content: Testing and calculation in accordance with 40 CFR 59, Subpart D (EPA Method 24), exclusive of colorants added to a tint base and water added at project site; or other method acceptable to authorities having jurisdiction.

C. Flammability: Comply with applicable code for surface burning characteristics.

D. Sheens: Provide the sheens specified; where sheen is not specified, sheen will be selected later by Architect from the manufacturer's full line.

E. Colors: As indicated on drawings or as selected by Architect.

2.03 SCHEDULE OF FINISHES:

A. Interior Surfaces to be Painted, Unless Otherwise Indicated: Including gypsum board, concrete, wood, plaster, and galvanized metal.

PRODUCT TYPE	**SHERWIN-WILLIAMS**
Gypsum Board/Concrete Primer	SW ProMar 200 Zero VOC Primer
Previously Painted Wood Primer	SW PrepRite Problock Latex Primer
Bare Wood Primer	SW Exterior Latex Waterbased Wood Primer
Previously Painted Galvanized Metal Primer	SW Pro Industrial ProCryl Primer
Galvanized Metal Pretreatment	SW B71Y1
Bare Galvanized Metal Primer	SW ProCryl Universal Primer
Interior Latex Eggshell Paint for Walls and Ceilings	SW ProMar 200 Zero VOC Eggshell
Interior Semi-Gloss Urethan Enamel for Metal Surfaces	SW Pro Industrial B53-1150

PART 3 - EXECUTION

3.01 EXAMINATION:

A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.

B. Test shop-applied primer for compatibility with subsequent cover materials.

C. Do not begin application of paints and finishes until substrates have been adequately prepared. Notify Architect of unsatisfactory conditions before proceeding. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

D. Proceed with work only after conditions have been corrected and approved by all parties, otherwise application of coatings will be considered as an acceptance of surface conditions.

E. Previously Painted Surfaces: Verify that existing painted surfaces do not contain lead based paints, notify Architect immediately if lead based paints are encountered.

3.02 PREPARATION:

A. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

B. Remove or mask surface appurtenances, including electrical plates, hardware, light fixture trim, escutcheons, and fittings, prior to preparing surfaces or finishing. Following completion of painting of each space or area, reinstall removed items by workmen skilled in the trades involved.

C. Puttying of nail holes, cracks, and blemishes shall be done after priming coat has become hard and dry and before second coat is applied.

D. Surfaces adjacent to areas being finished shall be protected and left clean of paints, stains, etc. Clean drop cloths shall be used until completion of job.

3.03 APPLICATION:

A. Apply products in accordance with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual". Thoroughly work coating materials into joints, crevices, and open spaces. Touch-up damaged coatings before applying subsequent coats.

B. Where adjacent sealant is to be painted, do not apply finish coats until sealant is applied.

C. Do not apply finished to surfaces that are not dry. Allow applied coats to dry before next coat is applied.

D. Apply each coat to uniform appearance in thicknesses specified by manufacturer.

E. Finishes surfaces shall be free from runs, sags, drips, ridges, waves, laps, streaks, brushmarks, and variations in color, texture, and finish (glossy or dull).

F. Interior areas shall be broom clean and dust free before and during application of coating materials.

G. Mixing shall be done outside the building.

H. Reinstall electrical cover plates, hardware, light fixture trim, escutcheons, and fittings removed prior to finishing.

3.04 MECHANICAL AND ELECTRICAL WORK:

A. Paint visible surfaces of ductwork or plenum spaces, and interior surfaces visible through grilles.

B. Paint shop primed metal surfaces of mechanical and electrical equipment with 2 finish coats of paint to match adjoining wall or ceiling surfaces. Prime unprimed bare metal surfaces with specified prime coat.

3.05 DEFECTIVE MATERIALS AND WORKMANSHIP:

A. Any defects as noted by Owner or Architect in the completed paint, coating, and stain finish work and or materials specified by this Section will not be accepted, will be provided in a list to the Contractor and must be re-done to the satisfaction of the Architect.

3.06 CLEANING:

A. Collect waste material that could constitute a fire hazard, place in closed metal containers, and remove daily from site.

3.07 PROTECTION:

A. Protect finished coatings from damage until completion of project.

B. Touch-up damaged coatings after substantial completion, following manufacturer's recommendation for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

3.08 CLOSEOUT SUBMITTALS:

A. General: Refer to paragraphs, e.g. “Submittals”, “Warranty”, “Maintenance”, “Owners Instructions” and other paragraphs, in individual Specification Sections for specific requirements.

END OF SECTION

DIVISION 15 - MECHANICAL

SECTION 15000 - GENERAL MECHANICAL REQUIREMENTS

PART 1 - GENERAL

1.01 GENERAL CONDITIONS:

A. As specified in “Division 1 - General Requirements” of this specifications.

B. These General Mechanical Requirements govern work specified under all sections of “Division 15 - Mechanical”.

1.02 GENERAL REQUIREMENTS:

A. The Contractor shall furnish all labor, materials, tools and equipment and perform all work and services necessary for a complete and properly operating mechanical work, equipment and systems, as shown in drawings and as specified in accordance with provisions of the Contract Documents and completely coordinated with work of all other trades.

B. The Contractor shall completely examine the Contract Documents and shall report to Maluhia any error, inconsistency or omission he discovers prior to submitting a bid.

C. 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.

D. Drawings and specifications shall be taken together. Provide work specified and not indicated or work indicated and not specified as though mentioned in both.

E. The Contractor shall warrant that all materials and equipment furnished under this Contract will be new and that all work will be good quality, free from faults and defects and in conformance with Contract Documents for a guaranteed period of one year.

F. 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 the Engineer at all times.

G. 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.

H. The Contractor shall give Maluhia timely notice of its readiness for testing any work including the data arranged so that the Engineer may observe such testing. The Contractor shall bear all cost of such tests.

1.03 SUBMITTALS:

A. Submit shop drawings, manufacturers' data and certificates for equipment, materials, finish and pertinent details for each system and have them approved before procurement, fabrication or delivery of the items to the job site. Partial submittals will not be acceptable and will be returned without review. Partial submittal for long lead equipment shall be accepted prior to complete submittal. Submittals shall include the manufacturer's name, trade name, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and paragraph reference, applicable industry and technical society publication references and other information necessary to establish contract compliance of each item the Contractor proposes to furnish.

B. Shop Drawings: Drawings shall be 24 inches by 36 inches in size, except as specified otherwise. Drawings shall include floor plans, sectional views, installation details of equipment; and equipment spaces identifying and indicating proposed location, layout and arrangement of items of equipment, accessories, piping and other items that must be shown to assure a coordinated installation. Drawings shall indicate adequate clearance for operation, maintenance and replacement of operating equipment devices. If equipment is disapproved, drawings shall be revised to show acceptable equipment and be resubmitted.

The Contractor shall review, stamp with his approval and submit, all Shop Drawings required by the Contract Documents or subsequently by Maluhia as covered by modifications. At the time of submission, the Contractor shall inform Maluhia 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 all field measurements and obstructions, field construction criteria, materials, catalog numbers and similar data, that he has checked and coordinated each Shop Drawing with the requirements of the work and of the Contract Documents and that all equipment fits within designated spaces.

C. Manufacturers' Data: Submittals for each manufactured item shall be manufacturers' descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves and catalog cuts. Submittals shall include equipment certification terms and conditions, applicable self-diagnostic testing and start-up procedures. Equipment submittals shall specifically indicate the specified equipment

assembly configurations with all specified standard and optional features, above and beyond general catalog products technical literature.

D. Standards Compliance: When materials or equipment must conform to the standards of organizations such as the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA) and Underwriters Laboratories (UL), American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE) proof of such conformance shall be submitted to Maluhia 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 Maluhia. 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 or specifications is not regulated by an organization using its own listing or label as proof of compliance, a certificate of compliance 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.

E. Certified Test Reports: Before delivery of materials and equipment, certified copies of all test reports specified in the individual section shall be submitted for approval. Furthermore, submit a written certificate, dated and signed by an authorized corporate officer of the Contractor who is either a full-time employee, principal, or a full-time partner delegated with the authority to bind the Contractor in all matters relating to its professional work of the Contractor, evidencing the performance of any portion of the work, or any testing; as a condition precedent to the acceptance of any work or the result of any test. Corporate credentials shall be furnished concurrently with applicable written certificates. Whenever a regulatory agency performs inspections or tests of any portion of the work, a written certificate shall be furnished by the Contractor to validate the results from the respective inspection test.

F. Certificates of Conformance or Compliance: Submit all certificates applicable to all specified equipment assemblies and parts for the Engineer's approval prior to equipment delivery and commencement of equipment on-site installation. A certification from the manufacturer attesting that materials and equipment to be furnished for this project complies with the requirements of this specification and of the referenced publications. Preprinted 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. Furthermore, submit a written certificate, dated and signed by an authorized corporate officer of the Contractor who is either a full-time employee, principal, or a full-time partner delegated with the authority to bind the Contractor in all matters relating to its professional work of the Contractor, evidencing the performance of any portion of the work, or any testing; as a condition precedent to the acceptance of any work or the result of any test. Corporate credentials shall be furnished concurrently with applicable written certificates. Whenever a regulatory agency performs inspections or tests of any portion of the work, a written certificate shall be furnished by the Contractor to validate the results from the respective inspection test.

G. Manufacturers' Certified Full Standard Product Warranty: Submit the manufacturer's certified Full Standard Product Warranty terms and conditions applicable to all specified equipment assemblies and parts for the Engineer's approval prior to equipment delivery and commencement of equipment on-site installation, as approved by the Engineer. All manufacturers' Full Standard Product Warranty certificates are to be provided to Maluhia at the time of equipment delivery and prior to the commencement of equipment on-site installation.

Warranty shall cover all costs for parts, labor, associated travel, and expenses for a period of one year from project acceptance.

H. Operation and Maintenance Manuals: Submit manuals on all equipment and the overall system upon successful completion of equipment on-site installation and start-up and prior to final inspection, as approved by the Engineer.

I. Manufacturers' factory trained and certified service personnel: Prior to the equipment on-site installation, submit to Maluhia documentation as evidence of the respective manufacturers' certification of all personnel responsible for installation, testing, and start-up of the equipment.

1.04 FIELD POSTED AS-BUILT DRAWINGS:

A. Maintain and submit for all work as specified in "Section 01019 - General Project Requirements".

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 International Building code, 2021 as amended by City and County of Honolulu, International Energy Conservation Code, 2021 as amended by the City and County of Honolulu, Uniform Plumbing Code, 20218 with local amendments, Uniform Fire code, NFPA 1 2021 with local amendments, Department of Health, Hawaii Administrative Rules, Title 11, Chapter 39, Air Conditioning and Ventilation, OSHA, and all other codes and standards referenced in these specifications. Where requirements differ in these codes and standards, the more stringent shall apply.

1.06 TRADE NAME:

A. Mentioning of a trade name in the plans and specifications indicates that the manufacturer is acceptable to Maluhia. 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.

1.07 PERMITS AND INSPECTIONS:

A. Applications for permits will be done by Maluhia. The Mechanical Contractor shall pay for all necessary permits and fees.

B. The Mechanical Contractor shall apply and pay for all necessary inspections required by any public authority having jurisdiction.

1.08 DISCREPANCIES:

A. The Drawings and Specifications are intended to be cooperative. Any materials, equipment or system related to this section and exhibited on the 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 the Engineer at once. If the Contractor proceeds with the work affected without instructions from Maluhia, he shall make good any resultant damage or defect. All interpretations of Drawings and specifications shall be clarified by Maluhia.

1.09 WORKMANSHIP AND MATERIALS:

A. Workmanship shall be of the best quality and none but competent mechanics skilled in their trades 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 judgment is to be exercised, it is understood that it is the judgment of the Engineer that is referred to.

D. The Engineer 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 the Engineer. Damaged or defective items, in the opinion of the Engineer, shall be replaced.

F. Reference to standards are intended to be the latest revision of the standard specified.

1.10 MANUFACTURER'S RECOMMENDATIONS:

A. 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 the Engineer, prior to the installation. Installation of the item will not be allowed to proceed until the recommendations are received. Failure to furnish these recommendations can cause rejection of the material.

1.11 INSPECTION OF SITE:

A. This 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. If there are any

questions or discrepancies in the design, the Contractor shall bring it to the attention of the Engineer before submitting his proposal.

1.12 CONTINUITY OF SERVICES, PHASING:

A. Examine site and become familiar with existing local conditions affecting work.

B. Examine all Drawings and Specifications (i.e. work from other trades) 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.

C. Investigate, determine and verify locations of any overhead utilities on or near the site. Determine such locations in conjunction with all public and private utility companies and with all authorities having jurisdiction.

1.13 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. Any drilling or cutting required for the performance of work under this Section shall be the responsibility of this Contractor and the cost shall be borne by him.

C. 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 the Engineer prior to cutting and drilling.

D. It shall be the responsibility of this Contractor to ascertain that all openings are properly located.

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 the manufacturer's latest design that complies with the specifications requirements. Materials and equipment shall be duplicate items that have been in satisfactory commercial or industrial use at least 2 years prior to bid opening. Where 2 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.

C. The mechanical contractor shall provide all necessary options and/or accessories to comply with the applicable equipment specification requirements. Installation of the options and/or accessories shall be in accordance with the manufacturer's requirements and the complete assembly shall be warranted by the respective equipment manufacturer.

D. The Mechanical contractor shall provide certified manufacturer's representatives and/or service technicians for any field modification to mechanical equipment. The Contractor shall ensure that any modification to the equipment will not invalidate the manufacturer's warranty.

2.02 SUBSTITUTIONS:

A. The materials, products, and equipment described in these specifications establish a standard of required function, quality, dimension, capacity, performance and appearance to be met by any proposed substitution.

B. Specific product listings in these specifications shall not preclude alternative product selections of equivalent or superior quality. Contractor may make reasonable substitutions, provided that these are submitted to the Engineer for acceptance in accordance with the SPECIAL PROVISIONS and the INTERIM GENERAL CONDITIONS. The Contractor shall be responsible for design changes to accommodate the substituted product, at no additional cost to the State.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP:

A. Provide competent and qualified manufacturer's factory trained and certified field service personnel on-site to be responsible for execution of all diagnostic testing in accordance with equipment manufacturer's installation and start-up certification requirements and warranty terms and conditions. Perform work using adequate numbers of personnel skilled in the appropriate trades, and provide adequate supervision and management of the work.

B. All workmanship shall be of the highest standard. The piping systems shall be laid out to ensure a neat, systematic and orderly arrangement of all work. Vertical piping lines shall be plumb and lines that are grouped shall be parallel and as direct as possible. Exposed pipe where indicated, shall be run parallel with walls.

3.02 PROTECTION OF MATERIALS AND EQUIPMENT:

A. Pipe openings shall be closed with caps or plugs during installation. Fixtures and equipment shall be tightly covered and protected against dirt, water, and chemical or mechanical injury. Upon completion of all work, the fixtures, materials, and equipment shall be thoroughly cleaned, repainted as required, adjusted, and operated.

3.03 CUTTING AND PATCHING:

A. The Contractor shall arrange for all cutting, fitting, and patching necessary to accommodate the plumbing work as the job progresses and such cutting and patching shall be done by that trade experienced in the particular type of work required.

3.04 PIPING IDENTIFICATION:

A. Identification of all new pipe lines shall be by means of colored, waterproof, all temperature, self-adhering labels, and directional arrow.

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.

3.05 EQUIPMENT IDENTIFICATION:

A. Identify all equipment with symbol and service conforming to that indicated on the drawings. Identification shall be on 1-1/4 inch by 3 inch laminated plastic nameplates securely fastened to the equipment. Leave manufacturer's nameplate clean, legible, and unpainted.

3.06 COORDINATION OF WORK AS SPECIFIED IN OTHER SECTIONS:

A. The Mechanical Contractor is responsible for coordination with the General Contractor to assure proper layout, size, and location of mechanical equipment. Mechanical Contractor shall ensure that power and control wiring are provided and installed.

3.07 INSPECTIONS:

A. All work and materials are subject to field observation at any and all times by the Engineer.

B. Contractor shall notify the Engineer a minimum of 2 days prior to testing any piping which must be witnessed and approved before they are covered up or enclosed. Should the Contractor fail to notify the Engineer at the times prescribed, it shall then be the Contractor's responsibility to make accessible any concealed lines, or demonstrate the acceptability of any part of the system. Any extra cost caused by the removal of such work shall be borne by the Contractor.

C. If observer finds any material or work not conforming to these Specifications, Contractor within 3 days of being notified shall remove said materials from the premises and replace with approved material, at no cost to Maluhia.

3.08 OPERATIONAL ACCEPTANCE TESTS:

A. 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 pressures, 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 and shall complete the attached Operational Performance Tests form.

3.09 POSTED OPERATING INSTRUCTION:

A. Furnish approved operating instructions for each principal item of equipment for the use of the operation and maintenance personnel. Operating instruction shall be printed or engraved and shall be framed under glass or in approved laminated plastic and posted where directed by the Engineer. 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-resistant materials or shall be suitably enclosed and weather protected. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

3.10 INSTRUCTION TO MALUHIA PERSONNEL:

A. The Contractor shall 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 work week after the equipment or system has been accepted and turned over to Maluhia for regular operation. The number of man-days (8 hours) of instruction furnished shall be as specified in other sections. When more than 4 man-days of instruction are specified, 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 systems are made under the term of the contract, additional instruction shall be provided to acquaint the operating personnel with the changes or modifications.

3.11 LOCAL TECHNICAL SUPPORT:

A. The mechanical equipment supplier shall have a Hawaii office within 500 miles of the project site, staffed with factory trained engineers fully capable of providing instruction, routine maintenance and emergency maintenance service on all system components.

B. The control system supplier shall have a Hawaii office within 500 miles of the project site, staffed with factory trained engineers fully capable of providing instruction, routine maintenance and emergency maintenance service on all system components.

3.12 SAFETY REQUIREMENTS:

A. Belts, pulleys, chains, gears, couplings, projecting setscrews, keys and other rotating parts located so that any person can come in close proximity thereto 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 herein.

Items such as catwalks, ladders and guardrails shall be provided where required for safe operation and maintenance of equipment.

3.13 CLEANUP AND REPAIRS:

A. Debris shall not be allowed to accumulate as a result of this work. Upon completion of this work, remove all debris and excess materials, tools, etc. resulting from this work from the jobsite and leave the location of this work broom-clean in a manner acceptable to the Engineer.

B. This Contractor shall clean all fixtures and equipment set by him of oil, grease, stains, etc. All plates, trim, etc. shall be polished. Traps and drains shall be clean and unobstructed.

C. All fixture piping and lines shall be thoroughly cleaned before leaving the work.

3.14 FINAL OBSERVATION:

A. Final observation shall be requested by the Mechanical Contractor only after submittal of all required certificates. No final observation will be made until all moving parts of equipment are properly guarded, all controls and safety devices tested and operative, all painting required done and the site cleaned up.

3.15 GUARANTEE:

A. The Mechanical Contractor shall guarantee the installation for a period of one year after 30 consecutive days of trouble-free operation after the date of acceptance of the project by Maluhia against any defects due to faulty materials, equipment, workmanship or installation. Upon notice of defect, the Mechanical Contractor shall correct; replace defective item at no additional cost to the State.

3.16 ONE-YEAR GUARANTEE AND MAINTENANCE SERVICE CONTRACT:

A. In addition to the Guaranty on materials and workmanship, the Installer shall submit 7 copies of the Maintenance Service Contract, countersigned by the Contractor, that will validate the Guaranty.

B. The Guarantee and maintenance service shall extend for a period of one year after 30 consecutive days of trouble-free operation after the Project Acceptance Date and shall include all labor, materials, equipment and parts necessary to service the complete system, in accordance with the subsection 3.16 E. Maintenance Schedule, 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 parameter as measured during acceptance tests.

C. The Installer shall include a listing of the following items along with the Maintenance Service Contract:
1. Names of the servicing contractor.
2. Heat Pump 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).

   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.

D. The Maintenance Service Contract shall be submitted along with the Operations and Maintenance Manual on/or before the Project Acceptance Date.
   Distribution of submittal:
   1 copy: Contractor
   1 copy: DAGS Inspection Branch Engineer Files
   2 copies: User (Maluhia)
   2 copies: User's Facility Maintenance Agency
   1 copy: DAGS, Quality Control Branch

E. Schedule of Maintenance Service: All service performed by the Contractor shall include applicable items listed but shall not be limited to the following maintenance task:
   1. AIR HANDLING UNIT/FAN COIL UNIT
      a. Monthly Service
         1) Clean and clear all drip pans and flush all related condensate drain lines with nitrogen. Install pan tablets if necessary to control algae growth. (Note: Contractor may be liable for water damage due to clogged drains.)
         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 services and that all discrepancies are reported and corrected.

b. Annual Service
   1) Adjust alignment of bearings and sheaves; lubricate fan and motor bearings. Replace worn or noisy bearings or sheaves.
   2) Clean 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 drains on chilled water coils.
   4) Clean supply and return air grilles, registers and diffusers and fresh air intake grilles and dampers and repair or replace deteriorated bird screens.
   5) Clean and adjust water valve; clean strainer (chilled water) and 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 that all discrepancies are reported and corrected.

2. TEMPERATURE CONTROLS
   a. Quarterly Service
      1) Check control devices for proper operation, sticking stems, and calibration; repair/replace weak or broken springs and all other parts.
      2) Adjust thermostat to maintain 75° F room temperature.
      3) Certify performance of quarterly maintenance service and that all discrepancies are reported and corrected.
3. PACKAGE OR SPLIT DX AIR-COOLED AIR CONDITIONER
   a. Monthly Service
      1) Perform the tasks of Item 1. AIR HANDLING UNIT/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 and maintenance log book and correct and report all deficiencies.
   b. Annual Service
      1) Perform the tasks of Item 1. AIR HANDLING UNIT/FAN COIL UNIT.
      2) Check compressor coupling alignment; lubricate or replace noisy bearings.
      3) Clean cooling and condenser coils of dirt accumulation using nitrogen, high pressure air/water, steam or chemical coil cleaner 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. Recalibrate all safeties, capacity, and temperature controls to proper settings.
6) Check and clean all unit housing (inside and outside and components), seal leaks and remove rust from exterior components and touch-up paint.
7) Megger (electrical test to measure wire insulation resistance, i.e. condition) compressor motor and submit report and recommendation; check starter, relays, and control contacts and electrical connections for tightness and clean as required.

F. Work Schedule: All maintenance work shall be performed between the hours of 9:00 a.m. to 5:00 p.m., on normal working days, Monday through Friday, excluding State Holidays

G. Trouble Calls:
1. Emergency service
2. and repairs required between regular service calls shall be rendered within 24 hours after the Contractor is notified, non-work days excluded.
3. The Contractor shall call Maluhia, phone number 497-9350 contact person Ronald Kurasaki, the next working day after being notified of the problem and report the status of repairs.

H. Maintenance Report/Checklist:
The Contractor shall prepare and maintain a maintenance service report/checklist which shall include the following:
1. Date maintenance service was performed.
2. The name of the mechanic who performed said maintenance.
3. The type and cost (labor, materials, parts and equipment) of repair work performed on the unit, if any.
4. Documents and other data pertaining to the maintenance performed.

It will be the responsibility of the Contractor to maintain the report/checklist by recording the above noted data after each scheduled maintenance and emergency repairs, and have the checklist available for inspection at the building site. The report shall be sufficiently detailed to properly reflect the past maintenance history of the equipment. See attached service maintenance report form.

Reports shall be certified by a representative of the facility being served and shall be submitted to Maluhia, attention: Ronald Kurasaki, at the completion of the service contract.

I. Cleanup and Work Practices:
   1. The Contractor shall keep the job site free of debris, litter, discarded parts, etc. and shall clean all oil drippings during the daily progress of work. The Contractor shall remove all tools, parts and equipment from the service areas upon completion of the work. The Contractor shall exercise caution during the progress of his maintenance and repair work to prevent damage to the ceilings, roofing and other building structure. The Contractor shall restore all damages, caused by his negligence, to its original condition at his own expense.

J. All costs for periodic maintenance services and for emergency calls shall be included in the lump sum bid price.

K. The Maintenance Service Contract does not include repairs resulting from vandalism, negligent use or misuse of equipment.

3.17 OPERATION AND MAINTENANCE MANUAL:

A. Submit 3 hard bound copies of the Operating and Maintenance Manual on all equipment and the system as a whole. The manual shall identify project name and number, contractor, consultant, date and all equipment provided. It shall include the equipment manufacturer's name, model and serial number, tag no., capacity, quantity of units, their location and area (room) served and shall include the manufacturer's operation and maintenance manuals including control and wiring diagrams and source of service and replacement parts. When standard manufactures' brochures are used, adequately indicate (highlight, arrow, etc.) the project related information and delete (X or cross-out) the non applicable information.

B. Distribution of submittal:

   1 copy: User

   2 copies: User's Facility Maintenance Agency

SERVICE MAINTENANCE REPORT

Date: SHEET NO.

Name of Service Personal:

Name of Facility and Location:

Date of Service Call:

Time In, Time Out at Site:

Person(s) Contacted:

Nature of Service Call - (Routine Maintenance or Emergency - Explain and Cost Break-down):

Equipment Readings and Maintenance Performed.

Remarks:

Operational Performance Tests:

Facility: Date:

A/C Equipment Description and Information:

Qty	Tag	Equipment	Manufact	Model	Capacit	Chw or	Area	Locatio
*1	AHU	Air Handling unit	Carrier	39LD1101	19 Tons	Chw	Library	Mech Rm

*Sample

Remarks:

TEST DATA:

Chillers		1	2
Chilled Water Supply Temperature	Tchws		
Chilled Water Return Temperature	Tchwr		
Chilled Water Pump Discharge Pressure	Pchwpd		
Chilled Water Pump Suction Pressure	Pchwps		
Chilled Water Pump Static pressure	Pchwpo		

Compressors	**1**		**2**		**3**	
Capacity Reduction	**RLA**	**Ref Press**	**RLA**	**Ref Press**	**RLA**	**Ref Press**
Full Load						
75%						
50%						
25%						

Air Handling Units (AHUs)		**1**	**2**	**3**	**4**	**5**
Supply Air Temperature	Tsa					
Return Air Temperature	Tra					
Differential Air Pressure	Pd					
Chilled Water Supply Temperature	Tchws					
Chilled Water Return Temperature	Tchwr					
Chilled Water Supply Pressure	Pchws					
Chilled Water Return Pressure	sPchwr					

END OF SECTION

SECTION 15650 - AIR CONDITIONING AND VENTILATION

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS:

A. As specified in “Section 01019 - General Requirements”.

1.02 SUMMARY:

A. Specifies ventilation equipment and its installation requirements.

1.03 GENERAL REQUIREMENTS:

A. Furnish ductwork, piping offsets, fittings and accessories as required to provide a complete installation. Coordinate the work of the different trades to avoid interference between piping, equipment, structural and electrical work. Provide complete, in place, all necessary offsets in piping and ductwork, and all fittings, and other components, required to install the work as indicated and specified.

B. All work shall be done in accordance with applicable ordinances and codes of the County of Honolulu and in accordance with State Department of Health regulations.

C. Work shall comply with applicable regulations of the State of Hawaii, National Fire Protection Association (NFPA) Pamphlet No. 90A, and American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 15-latest edition.

D. Contractor shall obtain all permits, licenses and certificates and pay for all fees.

E. The drawings and specifications are intended to cover the complete installation of systems to function as described. The omission of reference to any necessary item of labor or material shall not relieve the Contractor from providing such labor or material. Drawings do not attempt to show exact details of piping and ductwork. Provide offsets as necessary to avoid local obstructions or interferences with other trades.

1.04 RELATED WORK SPECIFIED IN OTHER SECTIONS:

A. “Division 07 - Thermal and Moisture Protection”

B. “Division 09 - Finishes”

C. “Division 16 - Electrical“

D. “Section 15000 - General Mechanical Requirements”

E. “Section 15901 - Testing, Adjusting, and Balancing”

1.05 COMPLIANCE WITH STANDARD AND INDUSTRY SPECIFICATIONS:

A. Comply with safety regulations of OSHA and the Department of Safety and Health (DOSH) State of Hawaii.

1.06 SUBMITTALS:

A. Refer to “Section 01330 - Submittal Procedures”.

B. Shop Drawings: Pipe layout indicating sizes, configuration, and liner materials. Include any information required to demonstrate that the system has been coordinated and functions properly as a unit on the drawings and show equipment relationship to other parts of the work, including clearances required for operation and maintenance. Direct digital controls and other controls systems.

C. Record Drawings: Contractor shall keep a record set of drawings available at the jobsite on which all changes and additions in the Mechanical Work are shown. Contractor shall furnish the Engineer with reproducible drawings of each installation showing the exact location of all items which are different from the original drawings

D. Product Data:
1. Fan Coil Unit
2. Air-Cooled Condenser
3. Controls and Control Wiring
4. Testing, Adjusting and Balancing

E. Operation and Maintenance Data: Fan Coil Unit and Air-Cooled Condenser

F. Guarantee/Warranty: Provide to the State all manufacturer guarantee certificates and warranties for all equipment.

1.07 CERTIFICATES:

A. The Contracting Officer shall have the right to require a written certificate dated and signed by a responsible employee of this Contractor, evidencing the performance of any portion of the work or any testing; as a condition precedent to the acceptance of any work or the result of any test. Whenever a regulatory agency performs inspections or tests of any portion of work, a certificate shall be furnished by the Contractor that the inspection or test was satisfactorily passed.

1.08 PRODUCT DELIVERY, STORAGE AND HANDLING:

A. Furnish new equipment, materials and accessories bearing the manufacturer's identification. Coordinate deliveries to avoid interferences or construction delays. Protect products during delivery, storage, installation and the remainder of the construction period after installation.

1.09 QUALITY ASSURANCE:

A. Substitution of another manufacturer's product for equipment specified hereinafter and for items with "acceptable equal" after the brand name requires written approval by the Contracting Officer.

B. Products of the following manufacturer's are acceptable in lieu of those specified hereinafter, subject to submittal and Shop Drawings requirements specified in "Section 15000 - General Mechanical Requirements". All additional related work caused by the product installation and operational requirements shall be the Contractor's responsibility at no additional cost to the State.
   1. Insulation: Owens-Corning, Johns-Manville, Knauf or Certainteed.

C. Comply with the recommendations and requirements of the Codes and Standards (Latest Edition) listed hereinafter in addition to detailed requirements of this specification:
   1. National Fire Protection Association (NFPA) Standards
   2. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE):
      a. Handbook, Applications Equipment.
   3. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):
      a. Seismic Restraint Manual.

1.10 HOISTING AND RIGGING REQUIREMENTS:

A. The Contractor shall retain licensed crane lift and hoisting and rigging contractors for the transport of equipment and materials. The Contractor shall ensure the life and safety of his personnel and the public is not endangered during the lifting and transport of the equipment. All such work shall be carefully coordinated with the facility to ensure protection of life and property and minimize disruption to the facility and surrounding properties. All cost necessary for the transport, hoisting, and rigging of materials and equipment shall be included in the Contractor's base bid price.

1.11 COORDINATION:

A. Contractor shall coordinate work with all trades to ensure the proper fit of equipment and materials within the spaces indicated. Due to the limited space available for equipment and material installation, particular care

must be given to coordinate equipment installation with ductwork, controls, and electrical work. Contractor will be required to correct all defective work resulting from lack of coordination of his work with other trades to the satisfaction of the Contracting Officer at no additional cost to the State.

1.12 WARRANTY:

A. All work in this Section shall be under warranty for a period of one (1) year from the date of acceptance of the work as a whole by the Engineer. Should any equipment or material fail within this period, the Contractor shall replace or repair that item at no cost for material and/or services, if such is due to faulty workmanship or quality of material furnished.

B. The Contractor shall be responsible for all damage to any part of the premises caused by failure in the equipment furnished under this section for a period of one year after the final acceptance of the project as a whole.

PART 2 - PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

A. All materials shall be new, of equal or better quality of materials specified and acceptable to the Contracting Officer. For ease of maintenance and parts replacement, select equipment from a single manufacturer.
   1. Refrigerant Piping and Accessories:
      a. Copper tubing, ASTM B280, soft-annealed where bending is required and hard drawn where no bending is required. Soft annealed shall not be used larger than 1-3/8 inches. Joints shall be brazed.
      b. Fittings: Wrought copper or forged brass sweat fittings, ANSI B16.22 and ASTM B75.
      c. Solder: Silver solder conforming to AWS A5.8. Melting point not less than 1145^{o}F.
      d. Refrigerant Shut-Off Valves: Valves shall be designed for use with the refrigerant used and shall have pressure ratings compatible with system working pressures encountered. Valves for copper tubing shall be all-brass, hand wheel operated, diaphragm packless type globe or angle valves in sizes up to and including 5/8 inch. In sizes over 5/8 inch the valves shall be brass or bronze globe or angle type, wrench operated with ground-finish stems, packed especially for refrigerant service, back-seated, and provided with seal caps.
      e. Supports: MSS-SP-58 and SP-69, types 1,5,6,7,9,10, or 11 for suspended piping. Provide turnbuckles type 13 and 15

where required for vertical adjustment. Maximum spacing shall be specified in SP-69.

f. Strainers: Brass or cast iron body, Y-pattern, cleanable, minimum 60-mesh non-corrodible screen with net free area not less than 10 times the pipe area, with pressure rating compatible with refrigerant service.

g. Solenoid Valves: The valves shall be of the 2 position, direct acting or pilot operated types, opened or closed, electrically as specified for use with liquid or gas refrigerant. The valves shall be designed for the required pressure drop and shall conform to ARI 760 and shall be listed by the Underwriters' Laboratories, Inc. for the service.

h. Thermostatic Expansion Valves: The expansion valves shall be of the diaphragm and spring loaded type with external equalizers, bulb and tubing, and external superheat adjustment with seal cap. The valve size and superheat adjustment shall be as recommended by the valve manufacturer. Valves shall be tested and rated in accordance with ANSI B60.1 and 750 for capacities up to 135,000 Btu per hour. Valves shall have brass, bronze or semi-steel bodies with stainless steel or non-corrosive non-ferrous internal parts. Valves shall have brazing connections. Thermostatic expansion valve bulb shall be stable, and non-migrating and shall be suitable for the refrigerant valve capacity and evaporator temperature and shall be as recommended by the valve manufacturer.

i. Liquid Line Driers: The liquid line drier shall be the solid desiccant type. Flow rate capacity shall be within the maximum allowable pressure drop, and safety shall conform to the requirements of ARI Standard 710. Drier body shall be of brass or steel and shall be provided with means for holding the desiccant securely in place and distributing the liquid refrigerant evenly throughout the desiccant. Driers shall be capable of withstanding a pressure of 350 psi. Driers may be of the combination drier-indicator type.

j. Moisture Indicators: The moisture indicators in the liquid line of refrigerant systems shall contain indicating material that will indicate moisture by varying degrees of color change, based on 100 degrees F and a moisture content in the range of 45 to 180 particles per million in R22 refrigerant. Indicators shall be a brass or bronze or heavily copper plated steel fitting with the indicator material located under a bulls-eye. Indicators shall be capable of withstanding a test pressure of 350 psig without damage.

k. Liquid Refrigerant Sight Glass: The sight glass shall be of the double-port see-through type with two bulls-eyes and part of the moisture indicator. Sight glass indicators shall be capable of withstanding a test pressure of 350 psig without damage.

Sight glass body shall be forged brass or bronze with fittings as specified hereinbefore for refrigerant piping.

l. Liquid Receiver: Liquid receiver shall be the vertical or horizontal type, designed, fitted and rated in conformity with ARI 495, except as modified herein. The receiver shall be constructed and tested in conformity with Section VIII of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code. Each receiver shall have a storage capacity not less than 20 percent in excess of that required for fully charged system. Each receiver shall be equipped with inlet, outlet drop pipes, drain plug, purging valve, relief valves of capacity and setting required by ANSI B9.1, and two bulls-eye liquid level sight glasses. Sight glasses shall be in same vertical plane, 90 degrees apart, perpendicular to axis of receiver.

2. Condensate Drain Piping:
   a. Pipe and Fittings: Schedule 40 PVC socket joint pipe and fittings, ASTM D1785, with solvent cement joints.
   b. Supports: As specified for refrigerant piping.
3. Ductwork and Accessories:
   a. Sheet Metal Ductwork: Galvanized steel sheets, ASTM A527. Construction, gages, and reinforcement shall comply with SMACNA HVAC Duct Construction Standards, 1985 Edition.
   b. 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.
   c. Supports: Galvanized steel straps or hanger rods in accordance with SMACNA Duct Construction Standards.
   d. Flexible Connections: Neoprene coated glass fabric weighing approximately 30 ounces per square yard.
   e. Backdraft Damper: Backdraft damper shall be factory fabricated unit with delicately balanced blades that open automatically when the fan starts and close by gravity when the fan stops. Edges of blades shall be provided with felt or rubber strips to prevent rattling and insure a tight seal.
   f. Volume Damper: Volume damper shall be factory fabricated.
4. Insulation:
   a. Insulation, adhesives, coatings and accessories shall have surface burning characteristics as determined by ATM E84, NFPA 255 and UL 723, not to exceed 25 for lame spread and 50 for smoke developed.
   b. Refrigerant Suction Piping and Condensate Drain Piping:
      1) Flexible Unicellular: ASTM C534, Type 2.
      2) Polystyrene: Closed cell type, for outdoor use only.
   c. Condensate Drain Piping: Flexible closed cell insulation, 1/2 inch thick, ASTM C534, Type 1- Tubular Grade 1, 25/50 rated, AP Armaflex SS or pre-approved equal.

5. Pipe Insulation Finishes:
   a. All Purpose Jacket: Provide factory applied all purpose jacket with integral vapor barrier. Jackets in exposed locations shall have smooth, white surface suitable for painting.
   b. Vapor Barrier Material: Fed. Spec. HH-B-100, Type 1.
   c. Aluminum Jackets: ASTM C921, Type II, 0.016 inch thick, smooth.
   d. Vinyl Lacquer: Provide two coats of vinyl lacquer finish or pre-approved equal on flexible unicellular insulation located outdoors.

2.02 EQUIPMENT:

A. The air conditioning equipment shall be designed, constructed, and rated tested in accordance with ARI or CTI. Units shall be certified and listed in their respective directory for the products that apply to them.
   1. Equipment fabricated from ferrous metals that do not have a zinc coating conforming to ASTM A386 or a duplex coating of zinc and paint shall be treated for prevention of rust with a factory coating or paint system that will withstand 125 hours in a saltspray fog test except that equipment located outdoors shall be tested for 500 hours. The saltspray fog test shall be in accordance with ASTM B117 using a 20 percent sodium chloride solution. Immediately after completion of the test, the coating shall show no signs of blistering, wrinkling or cracking, no loss of adhesion, and the specimen shall show no signs of rust creepage beyond 1/8 inch on either side of the scratch mark. The film thickness of the factory coating or paint system applied on the equipment shall be not less than film thickness used on the test specimen.
   2. Performance and Capacity Rating: Cooling capacity of unit shall meet the sensible heat requirements and total heat requirements indicated. In selecting unit size, make true allowance for "sensible to total heat ratio" to satisfy required sensible cooling capacity.

B. Fan Coil Unit (FCU): The fan coil unit shall be provided complete with evaporator fan and cooling coil in a single unit. Submit data to demonstrate that the unit will produce performance factors specified.
   1. Evaporator Fan: Fans shall conform to Air Moving and Conditioning Association (AMCA) 210, and shall be forward curved type or backward inclined centrifugal type specifically designed and suitable for the operating pressure. Fan shall be provided with adjustable motor base and mounting base with locking device to secure base in proper position. Fan shall be provided with adjustable pitch pulley. Select pulleys at approximate mid-point of the adjustable range. Fan shaft shall not pass through their first critical speed when units come up to rated RPM. Units shall have either greaseable or permanently lubricated ball or roller bearings. Fan assemblies shall be statically balanced in the fan housing and final

assembly. Fan motor shall be open type. Motor starter shall be magnetic across-the-line type with general purpose enclosure.

2. Coils: Cooling coil shall conform to ARI 410. Coils shall be fin and tube type constructed of seamless copper tubes and copper or aluminum fins mechanically bonded or soldered or helically wound to tubes. Suction head shall be seamless copper tubing or seamless or resistance welded steel tube with copper connections. Supply header shall consist of a distributor to distribute the refrigerant liquid through seamless copper tubing, equally to all circuits in the coil. Coil shall be air tested under water for leaks. After testing, the coil shall be dried to remove free moisture and capped to prevent entrance of foreign matter at the factory. Coil shall be mounted for counterflow service.
3. Filters, Filter Boxes: Provide filter boxes with either hinged access doors or removable panels. Filter boxes shall have racks for filters arranged for flat pattern. Filters efficiency shall be 30% atmospheric dust spot efficiency based on American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Test Method 52-76.
4. Refrigerant Circuits: Entire refrigerant circuit shall be dehydrated, purged, and charged with refrigerant and oil at the factory.
5. The FCU shall be provided with factory installed A2L refrigerant leak detection dissipation system.

C. Air-Cooled Condenser (ACCU): Air-cooled condenser shall be horizontal air discharge, enclosed within 20 gage steel housing with baked enamel finish and consist of coil, centrifugal fan and electric motor. The saturated refrigerant temperature shall not be over 110 degrees F. Air-cooled condenser may be used for refrigerant storages in lieu of a separate receiver, if condenser storage capacity is 20 percent in excess of fully charged system.

1. Condenser coil shall be extended-surface fin-and-tube type and shall be seamless copper or aluminum tubes with copper or aluminum fins. On condensers with all aluminum construction, aluminum alloy ASTM B210, alloy 1100, conforming to chemical requirements of ASTM B209, alloy 7072, shall be used for fins and sheets. Fins shall be soldered or mechanically bonded to tubes and installed in a metal casing. Coil shall be air tested under water for leakage. After testing, dry coils to remove free moisture and cap to prevent entrance of foreign matter. Evacuate and seal coil at factory.
2. Fans shall be centrifugal type. Fans shall be directly connected to motor shafts, or indirectly connected to motor by means of V-belt drive. Provide adjustable sheave. Fans shall be statically and dynamically balanced.
3. Motors shall conform to NEMA MG-1. Motor starters shall conform to NEMA ICS. Motors shall be totally enclosed type or open type so located with an enclosure to be fully protected from weather. Motor starters shall be magnetic across-the-line type with general-purpose

enclosure. Thermal protection shall be manual or automatic reset type.

4. Air-cooled condenser noise level shall not exceed 65 DBA sound pressure level over the octave band spectrum at a distance 5 feet from the condenser on all sides. Contractor shall submit sound measurements to the Engineer.

2.03 CONTROLS:

A. General: Controls shall be electric, electronic, or solid-state electronic, or a combination that will provide the required sequence of operation control. Schematic control diagrams shall be submitted. All control work shall be performed by an experienced and licensed controls sub-contractor, and only the following manufacturers/installers shall do the work: Johnson Controls, Honeywell, Barber-Colman, Hawaii Instrumentation and Controls.

B. Thermostats: Full proportioning or two-positioning type, as indicated. Thermostats shall respond to a change of not over 1-1/2^{o}.

1. Space thermostats shall have exposed setpoint and exposed indicator.
2. Remote thermostats shall be duct, or immersion type, as required, with set point and throttling range adjustment in a remote metal case. Sensing elements, shall be secured in the duct or pipe to respond to the overall temperature.

C. Control Relays: General purpose type, with plug in socket screw terminal connections, with 2 normally open and 2 normally closed sets of contacts unless otherwise indicated, and coil voltage as indicated.

D. Time Delay Relays: Pneumatic type, Agastat 7000 Series, or approved equal.

E. Timeclocks: Seven-day type, with independently adjustable set points at increments not greater than 15 minutes, minimum of 4 on-off cycles per day, 10 hour reserve power. Intermatic, Paragon, or equal.

F. Wiring and Accessories: Provide all required interconnecting wiring to complete the system. Provide transformers as required. Electrical work shall comply with local codes and the electrical section of this specification.

G. Motor Starters: Horsepower rated manual or magnetic starters shall be provided, as indicated. Starters shall conform to NEMA ICS and shall have thermal overload protection and other appurtenances necessary and as indicated.

2.04 CORROSION PROTECTION:

A. Coating System for Other Surfaces: Ameron PSX 700 Engineered Siloxane shall be properly modified and applied by the approved applicator until a total of 6-8 mils DFT is achieved.

B. Primers: Apply a base primer of Heresite P-700.

C. Workmanship: Application of coating materials shall be done by skilled applicators. Criteria of good workmanship desired and neat appearance of the finished surfaces are: absence of sags, runs, and unnecessary brush marks. Other criteria are: thorough mixing of coatings, limited use of thinners, uniformity of film thickness, proper drying time between coats, and protection of surfaces not to be coated.

PART 3 - EXECUTION

3.01 PREPARATION:

A. Review the Contract Documents and make proper provisions to avoid interferences or construction delays. Determine the exact route of all ductwork and piping. Make offsets and changes in shape and direction required to maintain proper head room and pitch or to accommodate the structure and the work of other trades. When changing the shape of the ductwork, provide ducts having the same friction loss as the size of the duct shown on the Contract Documents. Furnish other trades with information to properly locate and size openings in the structure required for the work under this section. Furnish anchor bolts, sleeves, inserts and supports required for the work under this section.

3.02 INSTALLATION REQUIREMENTS:

A. Perform all work using personnel skilled in the trade involved. Provide competent supervision. Furnish new equipment, materials and accessories bearing the manufacturer’s identification and conforming to the recognized commercial standards. Provide guards around exposed moving machinery parts and around high-temperature equipment and materials. When exposed to weather, provide a protective enclosure around electrical equipment, controls and other items that are not satisfactorily equipment, controls and other items that are not satisfactorily protected. No piping, electrical conduit, ceiling supports, or similar items shall be supported from air conditioning and ventilation equipment, ductwork, or ceiling. All equipment and materials shall be supported from the building structure. Necessary supports and vibration isolators shall be provided for equipment and appurtenances as required. Equipment shall be installed in accordance with manufacturer's instructions

3.03 ADJUSTING, BALANCING AND TESTING:

A. Cleaning and Adjusting: Pipes, strainers, valves and pumps shall cleaned free of scale and thoroughly flushed of all foreign matter. Temporary bypass shall be provided for all water coils to prevent flushing water from passing through coils. Strainers and valves shall be thoroughly cleaned. Inside of air-cooled condensers shall be thoroughly cleaned of all debris and blown free of all small particles of rubbish and dust. Equipment shall be wiped clean with all traces of oil, dust, dirt, or paint spots removed. Bearings shall be properly lubricated with oil or grease as recommended by the manufacturer. Belts shall be tightened to proper tension. 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.

B. Performance Tests: Testing and balancing of the systems shall be performed by an independent testing agency, by personnel who are not employees of the installing contractor. The TAB agency shall be NEBB or AABC certified and shall submit proof of valid and current certification. All TAB functions shall follow the standard procedures as mandated by their respective organizations and use their respective forms. After cleaning and testing are completed as specified, each system shall be tested as a whole to see that all items perform as integral parts of the system. Corrections and adjustments shall be made as necessary. Final tab report shall be submitted to the State for approval before the project can be approved.

C. Test Reports: Typewritten schedules of readings taken during the balancing and testing operations indicating the required or specified reading, and the final balanced reading shall be provided in a certified report.

3.04 ELECTRICAL WORK:

A. Electric motor driven equipment specified herein shall be provided complete with motors, motor starters, control wiring and controls. Electrical equipment and wiring shall be in accordance with Section 16010. Motor starters shall be provided by Mechanical Contractor complete with properly sized thermal overload protection and other appurtenances necessary for the motor control specified. Manual or automatic control and protective devices required for the operation herein specified and any control wiring required for controls and devices but not shown on the electrical plan shall be provided.

3.05 PAINTING AND FINISHING:

A. Field painting of mechanical systems shall be the responsibility of Contractor for equipment provided by him, including the supports and hangers as follows:
   1. All exposed piping, hangers and supports, and mechanical equipment installed under this specification where exposed to view shall be prime coated and also have one finish coat by Contractor providing the equipment.

B. Provide touch-up painting on equipment whose factory finish has been damaged and on all walls, ceilings and other finished surfaces affected by this work. Touch up painting shall match adjacent surfaces.

C. Clean up all areas around the work installed under this section and remove all debris, dust, and dirt caused by the work.

3.06 OPERATION AND MAINTENANCE INSTRUCTIONS:

A. Bound Instructions: Provide complete O & M manuals as specified and in the quantities specified. It shall contain the manufacturer's operating and maintenance instructions for each piece of equipment. Flysheet shall be placed before instructions covering each subject. The instruction sheets shall be approximately 8-1/2 by 11 inches, with large sheets of drawings folded in. The instructions shall include, but shall not be limited to, the following:
   1. Wiring and control diagrams, with data to explain the detailed operation and control of each component.
   2. A control sequence describing startup, operation and shutdown.
   3. Operating and maintenance instructions for each piece of equipment, including lubrication instructions.
   4. Manufacturer's bulletins, cuts and descriptive data.
   5. Parts lists and recommended spare parts.

B. Field Instructions: Upon completion of the work and at a time designated, the services of one or more project engineers shall be provided by the contractor for a period of not less than one day to instruct the State’s representative in the operation and maintenance of the system. These field instructions shall cover all the items contained in the bound instructions.

3.07 FINAL INSPECTION:

A. Final Inspection: Notify the Contracting Officer when final inspection of the installation is to be performed. Thoroughly clean all materials and equipment, remove all labels, adjust each for quiet operation and deliver in condition satisfactory to the Contracting Officer.

B. In the event defects or deficiencies are found during the final inspection, final acceptance of the work will be after such defects or deficiencies have been corrected to the satisfaction of the Contracting Officer.

END OF SECTION

SECTION 15901 - TESTING, ADJUSTING, AND BALANCING (TAB)

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS:

A. As specified in “Section 01019 - General Requirements”.

1.02 SUMMARY:

A. Procure the services of an independent contractor qualified in TAB as defined in Chapter 39 of the 2023 ASHRAE Handbook - HVAC Application. The TAB work shall include the following:
   1. Fan Coil Units.
   2. Air-Cooled Condensing Units.
   3. Electrical measurements.
   4. Controls and control components.
   5. Sound and vibration measurements.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

A. “Division 16 - Electrical”

B. “Section 15650 - Air Conditioning and Ventilation”

1.04 GENERAL REQUIREMENTS:

A. It is the intent of the plans and specifications to provide a complete test and balance on the completed air conditioning system. Should there be omissions or discrepancies in the plans and specifications such as dampers, gauges, and sensors that will inhibit the proper TAB process, the Contractor shall call the attention of the Engineer to such omissions and discrepancies in advance of the date of bid opening so that the necessary corrections can be made. Otherwise the Contractor shall furnish and install the omissions or discrepancies as if the same were specified and provided for.

B. Standards:
   1. All work shall be done in accordance with applicable ordinances and the State Building Code (2021 IBC, as adopted), the State Plumbing Code (2021 UPC, as adopted) and in accordance with State Department of Health regulations.
   2. Work shall comply with applicable regulations of the State of Hawaii Fire Code (NFPA 1, as adopted), National Fire Protection association (NFPA) Pamphlet No. 90A, and American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) Standard 111-1988.

3. Applicable standard published by the National Environmental Balancing Bureau (NEBB) and/or the Associated Air Balance Council (AABC).
4. Contractor shall obtain all permits, licenses and certificates and pay for all fees.

C. Drawings and Specifications: The drawings and specifications are intended to cover the complete installation of systems to function as described. The omission of reference to any necessary item of labor or material shall not relieve the Contractor from providing such labor or material. Drawings do not attempt to show exact details of piping and ductwork.
1. Contract Drawings: Mechanical plans are essentially diagrammatic, showing locations of ducts, and other mechanical equipment. Where locations are not dimensioned, they are approximate. Contractor shall study existing conditions and plan his work in the most logical manner.
2. Shop Drawings: As soon as practical, obtain a set of shop drawings and data submittals including the automatic control diagrams that have been reviewed by the Engineer. Refer to “Section 15650 - Air Conditioning and Ventilation” and coordinate with the Contractor to obtain all pertinent information on the mechanical systems.

1.05 SUBMITTALS:

A. Refer to “Section 01330 - Submittal Procedures” for additional requirements.

B. Within 15 days after the "Notice to Proceed", the independent air balance agency shall submit eight (8) copies of documentation to confirm compliance with the following:
1. The completion of five(s) project of similar size and scope of this project.
2. The agency is certified by the NEBB or the AABC and one or more qualified supervisor(s) as defined by the NEBB or AABC is supervising the work.
3. All instruments and equipment used by the agency is accurately calibrated in accordance with the requirements of NEBB or AABC.
4. Specimen copies of each of the report forms proposed for use on this project.

C. At least 60 days prior to starting field work, submit eight (8) copies of:
1. Shop drawings clearly showing the equipment, air devices and associated apparatus related to the report forms. Limit one entry to one line of the report form.
2. A set of report forms filled out as to the design values and the installed equipment pressure drops, the required CFM for air terminals, and design parameters to be used in the TAB process.

3. A complete list of instruments proposed to be used organized in appropriate categories, with data sheets for each. Show:
   a. Manufacturer and model number.
   b. Description and use when needed to further identify the instrument.
   c. Size or capacity range.
   d. Latest calibration date.
4. Engineer will review submittals for compliance with contract documents, and will return one set marked to indicate:
   a. Discrepancies noted between data shown and contract documents.
   b. Additional, or more accurate, instruments required.
   c. Requests for re-calibration of specific instruments.

1.06 TESTING, ADJUSTING AND BALANCING:

A. Test, adjust and balance each piece of equipment as required to assure proper operation.

B. Air and Water Systems Testing and Balancing: Upon completion of the installation and field testing, performance test and adjust the supply, return, make-up, and exhaust air systems, and chilled water systems to provide the air volume and water flow quantities indicated. Accomplish all work in accordance with the agenda and procedures specified and Associated Air Balance Council 71679 or the standards of the National Environmental Balancing Bureau. Correct air and water system performance deficiencies disclosed by the test before balancing the systems.

C. Agency Qualifications: The Contractor shall obtain the services of an approved and certified testing organization to perform the testing and balancing work as herein specified. The test and balance contractor shall be certified by AABC or NEBB.

D. Adjust systems and components thereof that perform as required by drawings and specifications. Instruments used for measurements shall be accurate and calibrated within the last 6 months. Provide last date of calibration.

E. Submit testing and balancing reports for all air and water systems in accordance with “Section 15000 - General Mechanical Requirements”.

F. Balancing:
   1. Duct systems shall be balanced as follows: System (or air moving device) to not less than 95 percent of design CFM.

1.07 CALIBRATION AND ADJUSTMENTS:

A. After completion of the installation, perform final calibrations and adjustments of the equipment provided under this contract and supply services incidental to the proper performance of the unit control panels under warranty.

1.08 ACCEPTANCE PROCEDURE:

A. Upon completion of the calibration, Contractor shall start-up the air conditioning system and perform all necessary testing and run diagnostic tests to ensure proper operation. Contractor shall be responsible for generating all software and entering all database necessary to perform the sequence of control and specified software routines. An acceptance test in the presence of the Engineer shall be performed. Provide operational acceptance tests. The tests shall be performed during a normal day of operation after the air conditioning system has been completely installed and made operable. Results of the tests shall be indicated on an Official Operational Performance Test form by NEBB or AABC and shall be part of the test and balance submittal.

1.09 GUARANTEE:

A. The Engineer at his discretion may request a recheck, or resetting of any outlet or supply air fan, as listed in test report. The testing agency shall provide technicians to assist the Engineer in making tests he may require during this period of time.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.01 JOB CONDITIONS & COORDINATION:

A. Prior to start of testing, adjusting and balancing, verify that the required "Job Conditions" are met:
   1. Systems installation is complete and in full operation.
   2. Outside conditions are within a reasonable range relative to design conditions.
   3. Lights are turned "on" when lighting is included in the cooling load.
   4. Special equipment such as computers, laboratory equipment, and electronic equipment are in full operation.

B. Coordination:
   1. Coordinate services with the work of the various trades to ensure rapid completion of the services.
   2. Promptly report to the Contractor and Engineer any deficiencies noted during performance of services to allow immediate corrective action.

END OF SECTION

DIVISION 16 - ELECTRICAL

SECTION 16011 - GENERAL ELECTRICAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section specifies the general electrical requirements for all labor, materials, equipment, and services provided under “Division 16 - Electrical”.

B. Work specified in this Division shall include, but not be limited to the following:
1. Distribution system, including switchboards, dry-type transformers, panelboards, overcurrent protection devices, and feeders.
2. Complete electrical system wiring including branch circuits, switches, and receptacles.
3. Power wiring for electrically-operated equipment and appliances.
4. Include in the bid and pay for the permits, plan review fees, inspection fees and deliver the certificate of final inspection to Engineer.
5. Testing.
6. Record drawings.

C. Related Work Described Elsewhere:
1. “Division 1 - General Requirements”.
2. “Section 09900 - Paints and Coatings”.
3. “Division 15 - Mechanical”.

1.02 WORK INCLUDED:

A. The Contractor under this Division shall provide all labor, materials, equipment, supervision and services required for the construction of the electrical systems. The finished installations shall be complete, operable and shall include all work specified herein and shown on the Drawings.

B. The work shall include complete testing of all equipment and wiring at the completion of the work and making any minor connection changes or adjustments necessary for the proper functioning of the system and equipment. All systems shall be properly adjusted and in working order at the time of final acceptance.

C. Electrical equipment and wiring system shall have sufficient capacity to accommodate all equipment, appliances and other electrical loads as specified herein and shown on the drawings and as required per National Electrical Code and other applicable codes, standards and requirements

plus spare capacity to accommodate any planned future facilities and additions and minimum 20 percent spare capacity for future growth.

D. It is the intent of these Specifications and other Contract Documents to require an installation complete in every detail. Consequently, the Contractor will be responsible for minor details or for any special construction which may be found necessary to properly furnish, install, adjust, test, and place in successful and continuous operation, the entire electrical system and the cost of same shall be included in the contract price.

1.03 REFERENCES:

A. The publications listed herein form a part of this specification to the extent referenced. The publications may be referred to in the text by the basic designation only. Unless otherwise indicated, the most recent edition of the publication with current revisions and amendments will be enforced.

B. Comply with the applicable State Code Rules and the ordinances of the County having jurisdiction over this project.

C. In the event of conflict between pertinent codes and regulations, and the requirements of the referenced standards, or those indicated in the Specifications and on the Drawings, the provisions of the more stringent shall govern.

1.04 DEFINITIONS:

A. Unless otherwise specified or indicated, electrical and electronics terms used in these specifications, and on the drawings, shall be as defined in IEEE 100.

B. The technical sections referred to herein are those specification sections that describe products, installation procedures, and equipment operations and that refer to this Section for detailed description of submittal types.

C. The technical paragraphs referred to herein are those paragraphs in PART 2 - PRODUCTS and PART 3 - EXECUTION of the technical sections that describe products, systems, installation procedures, equipment, and test methods.

1.05 SUBMITTALS:

A. Submit in accordance with “Section 01330 - Submittal Procedures”.

B. Each submittal shall be prepared with a summary sheet attached to each copy identifying all items included in the submittal. Incomplete submittals and those without summary sheets will be returned without review.

C. Manufacturer's Catalog Data:
   1. Submittals required in the sections which refer to this section shall conform to the following additional requirements. Submittals shall include the manufacturer's name, trade name, place of manufacture, catalog model or number, nameplate data, size, layout dimensions, capacity, project specification and technical paragraph reference. Submittals shall also include applicable industry and technical society publication references, and years of satisfactory service, and other information necessary to establish contract compliance of each item to be provided. Photographs of existing installations are unacceptable and will be returned without approval. Transmittal letter shall include a listing of all items by manufacturer and catalog number which are included in the submittal package and shall clearly identify the submittal with this project.
   2. Submittals for each manufactured item shall be current manufacturer's descriptive literature of cataloged products, equipment drawings, diagrams, performance and characteristic curves, and catalog cuts. Handwritten and typed modifications and other notations not part of the manufacturer's preprinted data may result in the rejection of the submittal. Should manufacturer's data require supplemental information for clarification, the supplemental information shall be submitted as specified for certificates of compliance.
   3. Where installation procedures or part of the installation procedures are required to be in accordance with manufacturer's instructions, submit printed copies of those instructions prior to installation. Installation of the item shall not proceed until manufacturer's instructions are received. Failure to submit manufacturer's instructions shall be cause for rejection of the equipment or material.
   4. Where equipment or materials are specified to conform to industry and technical society reference standards of organizations such as American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA), and Underwriters Laboratories Inc. (UL), submit proof of such compliance. The label or listing by the specified organization will be acceptable evidence of compliance.

D. Shop Drawings:
   1. Submittal drawings shall be a minimum of 11-inches by 17-inches in size using a minimum scale of 1/8-inch per foot, except as specified otherwise. Include wiring diagrams and installation details of equipment indicating proposed location, layout and arrangement, control panels, accessories, piping, ductwork, and other items that must be shown to ensure a coordinated installation. Wiring diagrams shall identify circuit terminals and indicate the internal wiring for each item of equipment and the interconnection between each item of equipment. Drawings shall indicate adequate clearance for

operation, maintenance, and replacement of operating equipment devices.

E. Posted Operating Instructions:
1. Submit text of posted operating instructions for each system and principal item of equipment as stipulated in item entitled "Posted Operating Instructions" hereinbelow.

F. Certificates:
1. Submit written certification that electrical systems are complete and operational as stipulated in item entitled "Demonstration of Complete Electrical Systems" hereinbelow.
2. Submit certificate of final inspection and acceptance as stipulated in item entitled "Inspection" hereinbelow.
3. Submit manufacturer’s certifications as required for products, materials, finishes, and equipment as specified in the technical sections. Certificates from material suppliers are not acceptable. Preprinted certifications and copies of previously submitted documents will not be acceptable. The manufacturer’s certifications shall name the appropriate products, equipment, or materials and the publication specified as controlling the quality of that item. Certification shall not contain statements to imply that the item does not meet requirements specified, such as "as good as"; "achieve the same end use and results as materials formulated in accordance with the referenced publications"; or "equal or exceed the service and performance of the specified material". Certifications shall simply state that the item conforms to the requirements specified. Certificates shall be printed on the manufacturer’s letterhead and shall be signed by the manufacturer’s official authorized to sign certificates of compliance.
4. In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing. The certificate shall state that the item has been tested in accordance with the specified organization’s test methods and that the item complies with the specified organization’s reference standard.

G. Warranty: Submit warranty as stipulated in item entitled "Warranty" hereinbelow.

H. Record Drawings: After the work is complete, Contractor shall provide record drawings showing the as-built conditions in accordance with “Section 01770 - Closeout Procedures”.

1.06 QUALITY ASSURANCE:

A. In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these

publications to the "authority having jurisdiction", or words of similar meaning, to mean the Engineer. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

B. Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where 2 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 item need not be the products of the same manufacturer unless stated in the technical section.

C. Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

D. Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

E. Equipment, materials, installation, and workmanship shall be in accordance with the mandatory and advisory provisions of NFPA 70.

1.07 PERMITS AND INSPECTION:

A. All permits required by local ordinances shall be obtained and paid for by the Contractor.

1.08 COORDINATION:

A. Refer to all project Drawings and to all Sections of the project Specifications. Coordinate and fit all work accordingly so that all electrical outlets and equipment will be properly located and readily accessible. The Drawings indicate the relation of wiring and connections and must not be scaled for exact locations. Verify all construction dimensions at the project and make changes necessary to conform to the building as constructed. Work improperly installed due to lack of construction verification shall be corrected at the Contractor's expense.

B. Work shall be scheduled to avoid delays, interferences, and unnecessary work. If any conflicts occur, necessitating departures from the Drawings

and Specifications, details of departures and reasons therefore shall be submitted immediately for consideration by the Engineer.

1.09 DELIVERY, HANDLING AND STORAGE:

A. Deliver all materials of this Division in manufacturer's original unopened packages or containers with label intact and legible.

B. Use means necessary to protect the materials of this section before, during and after installation; to protect the installed work and materials of all other trades; and to protect the original structure, work and materials of the State.

C. In the event of damage, immediately make all repairs and replacements necessary to the acceptance of the Engineer and at no additional cost to the State.

1.10 DRAWINGS AND SPECIFICATIONS:

A. Electrical system drawings are diagrammatic and symbolic. Locations of outlets, devices, raceways, apparatus, etc., shown are approximate and shall be installed with the required maintenance and code clearances and to avoid conflict with other systems and trades. Visit site and verify lineal footages required and check scales and dimensions shown on architectural drawings prior to bidding to verify locations, routing and lineal footages of electrical work required for inclusion into bid. Study the project drawings and specifications and make installation in the most logical manner for eye appeal and coordination with other systems and trades. Unless dimensioned or noted otherwise, orderly configuration and visual composition are fully intended.

B. Include additional components and wiring which are not shown or specified herein but are required for proper control and operation to provide for a complete and operable system within intent indicated on the Drawings and Specifications.

C. Study the project drawings and specifications prior to bidding and provide additional wiring including apparatus and devices for equipment furnished by others without additional cost.

D. Relocate devices, fixtures, apparatus and associated wiring including raceways, within 10 feet of the original location, without additional cost, for code compliance and to avoid conflict with other systems or trades, structures, utilities and when directed before installation.

E. Equipment ratings or wire sizes that are missing or shown in error shall be provided to have adequate capacity to serve the required and future

loads plus minimum 20 percent spare capacity and be in compliance with NEC.

F. Verify voltages and other ratings of energy conversion, transformation and electrical utilization equipment prior to placing order with factory. Input voltages of equipment shall match serving utility or system voltage available.

1.11 POSTED OPERATING INSTRUCTIONS:

A. Provide for each system and principal item of equipment as specified in the technical sections for use by operation and maintenance personnel. The operating instructions shall include the following:
1. Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.
2. Start up, proper adjustment, operating, lubrication, and shutdown procedures.
3. Safety precautions.
4. The procedure in the event of equipment failure.
5. Other items of instruction as recommended by the manufacturer of each system or item of equipment.

B. Print or engrave operating instructions and frame under glass or in approved laminated plastic. Post instructions where directed. For operating instructions exposed to the weather, provide weather-resistant materials or weatherproof enclosures. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal or peeling.

1.12 MANUFACTURER'S NAMEPLATE:

A. Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

1.13 FIELD FABRICATED NAMEPLATES:

A. ASTM D709. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device; as specified in the technical sections or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125-inch thick, white, with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one inch by 2.5-inches. Lettering shall be a minimum of 0.25-inch high normal block style.

1.14 WARNING SIGNS:

A. Provide warning signs/labels for arc flash protection in accordance with NFPA 70E and NEMA Z535.4 for switchboards, panelboards, industrial control panels, and motor control centers that are in other than dwelling occupancies and are likely to require examination, adjustment, servicing, or maintenance while energized. Provide field installed signs/labels to warn qualified persons of potential electric arc flash hazards when warning signs/labels are not provided by the manufacturer. The marking shall be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

1.15 ELECTRICAL REQUIREMENTS:

A. Electrical installation shall conform to IEEE C2, NFPA 70, and requirements specified herein.

1.16 INSTRUCTION TO PERSONNEL:

A. Where specified in the technical sections, furnish the services of competent instructors to give full instruction to designated personnel in the adjustment, operation, and maintenance of the specified systems and equipment, including pertinent safety requirements as required. Instructors 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 work week after the equipment or system has been accepted and turned over for regular operation. The number of man-days (8 hours per day) of instruction furnished shall be as specified in the individual section.

1.17 WARRANTY:

A. Contractor’s Warranty: Installation shall be complete in every detail as specified and ready for use. Unless otherwise indicated, any items supplied by Contractor developing defects of design, construction, or quality within one year of final acceptance by Engineer shall be replaced by such new materials, apparatus or parts to make such defective portion of the complete system conform to the true intent and meaning of the Drawings and Specifications at no additional cost to the State. Lamps shall be warranted for fifty percent of rated lamp life.

B. The Contractor’s Warranty shall be countersigned by the General Contractor.

PART 2 - PRODUCTS

2.01 FACTORY APPLIED FINISH:

A. Electrical equipment shall have factory-applied painting systems which shall, as a minimum, meet the requirements of NEMA 250 corrosion-resistance test and the additional requirements specified in the technical sections.

PART 3 - EXECUTION

3.01 GENERAL:

A. Install all electrical materials and equipment in accordance with manufacturer's recommendations and as accepted by the Engineer for the seismic zone classification at the project site in accordance with the applicable Building Code.

B. Cut, break, drill and patch as required, to install electrical system. Repair any surface damaged or marred by notching, drilling or any other process necessary for installation of electrical work. Patch any damaged surfaces to match the existing surface.

C. All wiring and overcurrent devices for equipment furnished by other trades are sized for a contemplated equipment size. If equipment other than contemplated and indicated on the plan is provided, the Contractor shall be responsible for providing the required wiring, switches, and overcurrent devices at no cost to the State. The Contractor shall submit the proposed revisions to the electrical design to the Engineer for acceptance.

D. The Electrical Contractor shall coordinate his work with other trades to avoid conflicts with civil, mechanical, structural, and architectural elements of this project.

3.02 JOBSITE CONDITIONS:

A. These specifications are accompanied by construction drawings including building and site plans of all trades showing locations of all feeder runs, outlets, switches, devices, and other electrical equipment. The locations are approximate and before installing, study adjacent architectural details and make installation in most logical manner. Any device may be relocated within 10 feet before installation at the direction of the Engineer without additional cost to the State.

B. Before installing, verify all dimensions and sizes of equipment.

C. Verify that electrical system may be installed in strict accordance with the original design, the Drawings and Specifications and the manufacturer's recommendations.

D. In the event of discrepancy, immediately notify the Engineer.

E. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.03 CONNECTIONS TO EQUIPMENT PROVIDED BY OTHER TRADES:

A. Electrical Contractor shall provide conduit, wiring and all electrical connections from building wiring to motors for ventilation, air conditioning, and other equipment, including all switches, motor protection devices, and controllers/starters as specified by other trades.

B. Electrical Contractor shall ascertain from other trades furnishing electrically-operated equipment, the exact size and type of all motors and other loads, the exact locations of such equipment and the proper point where electrical connections should be brought through the floors, ceiling or walls, as the case may be. Locations shown are diagrammatic only; coordination of the correct locations shall be the full responsibility of the Electrical Contractor.

C. Examine Civil, Mechanical, Architectural, Structural, and other Drawings and Specifications for information concerning electrically-operated equipment and control apparatus and diagrams.

D. Install individually mounted controllers/starters furnished for motors under other Divisions. Provide and install safety switches as necessary for each such motor in accordance with the NEC.

E. All control devices and control wiring shall be provided as described in the installation manuals of equipment and/or the Drawings and Specifications of other trades and disciplines.

3.04 FIELD APPLIED PAINTING:

A. Prime and paint all exposed raceways, boxes, fittings, support channels, mounting hardware, and accessories to match finish of adjacent surfaces. Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria. Painting shall be as specified in "Section 09900 - Paints and Coatings".

3.05 FIELD FABRICATED NAMEPLATE MOUNTING:

A. Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of 2 sheet-metal screws or 2 rivets.

3.06 DEMONSTRATION OF COMPLETE ELECTRICAL SYSTEMS:

A. Submit written certification that electrical systems are complete and operational. Submit certification with Contractor's request for final review.

B. At the time of final review of electrical work, demonstrate the operation of electrical systems. Provide labor, apparatus and equipment for systems' demonstration. The various tests shall be under the direction and supervision of the Engineer.

C. The Contractor shall provide all test equipment, materials, labor, and temporary power hook-ups to perform start-up and all tests as required, to obtain final field acceptance from the State. All tests shall be conducted in the presence of the Engineer or his representative. All test procedures shall conform to this specification and applicable standards. (ANSI, IEEE, NEMA, OSHA, NFPA, NETA, etc.)

D. The Contractor shall be responsible for all tests and test record. Testing shall be performed by and under the immediate supervision of the Contractor. Test record shall be kept for each piece of equipment. Copies shall be furnished to the Engineer for his review and/or acceptance.

E. A visual inspection of all electrical equipment, to check for foreign material, tightness or wiring and connection, proper grounding, matching nameplate charts with specification, etc., shall be made prior to actual testing.

F. After demonstration of systems, submit to the Engineer 6 sets of keys for electrical equipment locks.

3.07 INSPECTION:

A. Arrange for periodic inspection by the local authorities and deliver the certificate of final inspection to the Engineer.

END OF SECTION

SECTION 16100 - ELECTRICAL WORK

PART 1 - GENERAL

1.01 SUMMARY:

A. This Section includes, but is not limited to, electrical systems as indicated in the drawings.

B. Related Work Described Elsewhere: “Section 16011 - General Electrical Requirements” applies to this section with additions and modifications specified herein.

1.02 REFERENCES:

A. The publications listed herein form a part of this Specification to the extent referenced. The publications may be referred to in the text by the basic designation only. Unless otherwise indicated, the most recent edition of the publication with current revisions and amendments will be enforced.

B. In the event of conflict between pertinent codes, regulations, and the requirements of the referenced standards, or those indicated in the Specifications and on the Drawings, the provisions of the more stringent shall govern.

1.03 SUBMITTALS:

A. Submit in accordance with “Section 01330 - Submittal Procedures”.

B. Submit Catalog Data, Shop Drawings, and Reports for approval. Each submittal shall be prepared with a summary sheet attached to each copy identifying all items included in the submittal. Incomplete submittals and those without summary sheets will be returned without review.

C. Manufacturer’s Catalog Data:
1. Panelboards.
2. Dry transformers.
3. Overcurrent protection devices.
4. Safety switches.
5. Wiring Devices and associated Device Plates.

D. Shop Drawings:
1. Panelboards.
2. Dry transformers.

E. Reports: Submit test results for approval in report form:
1. 600 volt wiring test.
2. Transformer Tests.
3. Ground-Fault Receptacle Test.

1.04 QUALITY ASSURANCE:

A. Regulatory Requirements: In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" or "must" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction", or words of similar meaning, to mean the Engineer. Provide equipment, materials, installation, and workmanship in accordance with the mandatory and advisory provisions of NFPA 70 unless more stringent requirements are specified or indicated.

B. Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year period shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where 2 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 item need not be the products of the same manufacturer unless stated in this section.

C. Alternative Qualifications: Products having less than a 2-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6,000 hours, exclusive of the manufacturers' factory or laboratory tests, is furnished.

D. Material and Equipment Manufacturing Date: Products manufactured more than 3 years prior to date of delivery to site shall not be used, unless specified otherwise.

PART 2 - PRODUCTS

2.01 GENERAL:

A. Materials shall be new and those items listed by the Underwriters' Laboratories shall bear "UL" label of approval.

B. Brand names, manufacturer's names and catalog numbers indicate the standard of design and quality required. Acceptable manufacturers for

electrical apparatus include General Electric, ABB, Square D, Siemens-ITE, and Cutler-Hammer. All apparatus supplied shall bear the name of the approved manufacturer on its nameplates. Substitute materials may be used if pre-qualified prior to bidding by the Engineer.

C. Electrical equipment and luminaires shall be supplied through the manufacturer's designated representative by a local distributor.

D. Proof of compliance shall be furnished when shop drawings are submitted.

E. Where 2 or more similar type items are furnished, all shall be of the same manufacture, e.g., safety switches shall be of the same manufacturer unless otherwise noted.

F. Where electrical apparatus is to be installed outdoors, NEMA 3R housings shall be provided, unless noted otherwise.

2.02 RACEWAYS:

A. Rigid Steel Conduit: Rigid steel, zinc-coated inside and outside, for use with threaded fittings. ANSI C80.1, UL 6.

B. Intermediate Metal Conduit (IMC): Rigid steel, zinc- and chromate-coated inside and outside, for use with threaded fittings. UL 1242.

C. Electrical Metal Tubing (EMT): Thin-walled steel tubing, zinc-coated. UL 797, ANSI C80.3.

D. Flexible Metal Conduit: Flexible steel conduit; zinc-coated inside and outside, smooth inside walls, liquid-tight with factory fittings for liquid-tight installation. Provide bushings with bonding jumper lugs for flexible conduit in excess of 6 feet in length. UL 1, UL 360.

E. Fittings for Metal Conduit, EMT, and Flexible Metal Conduit: UL 514B. Ferrous fittings shall be cadmium- or zinc-coated in accordance with UL 514B.

F. Fittings for Rigid Metal Conduit and IMC: Threaded-type. Split couplings unacceptable.

G. Fittings for EMT: Steel compression type.

2.03 OUTLET BOXES AND COVERS:

A. Outlet and Small Junction Boxes: UL 514A, galvanized, if ferrous metal. UL 514C, if nonmetallic.
   1. Nominal 4 inches square, 2-1/8 inches deep exclusive of plaster ring, pressed steel.
   2. Mount outlet boxes flush in finished walls wherever possible.
   3. Surface mounted boxes and boxes exposed to the weather shall be cast steel, type FD, prime painted and enamel finished with neoprene gasketed covers, threaded hubs for conduit connections and stainless steel screws.

2.04 CABINETS, JUNCTION BOXES, AND PULL BOXES:

A. Volume greater than 100 cubic inches, UL 50, hot-dip, zinc-coated, if sheet steel. Where exposed to wet, damp, or corrosive environments, NEMA Type 3R.

2.05 WIRES AND CABLES:

A. Wires and cables shall meet applicable requirements of NFPA 70 and UL for type of insulation, jacket, and conductor specified or indicated. Wires and cables manufactured more than 12 months prior to date of delivery to site shall not be used.

B. Conductors:
   1. Conductors No. 8 AWG and larger diameter shall be stranded.
   2. Conductors No. 10 AWG and smaller diameter shall be solid.
   3. Conductors for remote control, alarm, and signal circuits, classes 1, 2, and 3, shall be stranded unless specifically indicated otherwise.
   4. Conductor sizes and capacities shown are based on copper, unless indicated otherwise. All conductors shall be copper.
   5. Equipment Manufacturer Requirements: When manufacturer’s equipment requires copper conductors at the terminations or requires copper conductors to be provided between components of equipment, provide copper conductors or splices, splice boxes, and other work required to satisfy manufacturer’s requirements.
   6. Minimum Conductor Sizes:
      a. Minimum size for branch circuits shall be No. 12 AWG.
      b. Class 1 remote-control and signal circuits: No. 14 AWG.
      c. Class 2 low-energy, remote-control and signal circuits: No. 16 AWG.
      d. Class 3 low-energy, remote-control, alarm and signal circuits: No. 22 AWG.

C. Color Coding: Provide for service, feeder, branch, control, and signaling circuit conductors.
   1. Color of ground and neutral conductors shall be as follows:

a. Grounding Conductors: Green.
b. Neutral Conductors: White.
c. Exception: Where neutrals of more than one system are installed in same raceway or box, other neutrals shall be white with a different colored (not green) stripe for each.

2. Color of ungrounded conductors in different voltage systems shall be as follows:
   a. 208/120 Volt, 3-Phase:
      1) Phase A - black.
      2) Phase B - red.
      3) Phase C - blue.
   b. 480/277 Volt, 3-Phase:
      1) Phase A - brown.
      2) Phase B - orange.
      3) Phase C - yellow.

D. Insulation: Unless specified or indicated otherwise or required by NFPA 70, power and lighting wires shall be 600-volt, Type THWN/THHN conforming to UL 83 or Type XHHW or RHW conforming to UL 44, except that grounding wire may be type TW conforming to UL 83; remote-control and signal circuits shall be Type TW or TF, conforming to UL 83. Where lighting fixtures require 90-degree Centigrade (C) conductors, provide only conductors with 90-degree Centigrade (C) insulation or better.

E. Bonding Conductors: ASTM B1, solid bare copper wire for sizes No. 8 AWG and smaller diameter; ASTM B8, Class B, stranded bare copper wire for sizes No. 6 AWG and larger diameter.

2.06 SPLICES AND TERMINATION COMPONENTS:

A. UL 486A-486B for wire connectors and UL 510 for insulating tapes. Connectors for No. 10 AWG and smaller diameter wires shall be insulated, pressure-type in accordance with UL 486A-486B or UL 486C (twist-on splicing connector). Provide solderless terminal lugs on stranded conductors.

2.07 DEVICE PLATES:

A. Provide UL listed, one-piece device plates for outlets to suit the devices installed.
   1. For metal outlet boxes, plates on unfinished walls shall be of zinc-coated sheet steel or cast metal having round or beveled edges.
   2. For nonmetallic boxes and fittings, other suitable plates may be provided.
   3. Plates on finished walls shall be nylon or lexan, minimum 0.03-inch wall thickness. Plates shall be same color as receptacle or toggle switch with which they are mounted.

4. Screws shall be machine-type with countersunk heads in color to match finish of plate.
5. Sectional type device plates will not be permitted.
6. Plates installed in wet locations shall be gasketed and UL listed for "wet locations".

2.08 SWITCHES:

A. Disconnect (Safety) Switches: NEMA KS 1. Provide heavy duty-type switches. Switches serving as motor-disconnect means shall be horsepower rated. Provide switches in NEMA 1 or 3R, enclosure as indicated per NEMA ICS 6.

2.09 RECEPTACLES:

A. General: UL 498, general purpose specification grade, grounding-type.
1. Ratings and configurations shall be as indicated.
2. Bodies shall be of white as per NEMA WD 1.
3. Face and body shall be thermoplastic supported on a metal mounting strap.
4. Dimensional requirements shall be per NEMA WD 6.
5. Provide screw-type, side-wired wiring terminals or of the solderless pressure type having suitable conductor-release arrangement.
6. Connect grounding pole to mounting strap.
7. The receptacle shall contain triple-wipe power contacts and double or triple-wipe ground contacts.

B. Weatherproof Receptacles: Provide weather-resistant type, UL listed for use in wet locations with integral GFCI protection. Include cast metal box with gasketed, hinged, lockable, extra duty, and weatherproof while-in-use, polycarbonate, UV resistant/stabilized cover plate.

C. Ground-Fault Circuit Interrupter Receptacles: UL 943, duplex type for mounting in standard outlet box. Device shall be capable of detecting current leak of 6 milliamperes or greater and tripping per requirements of UL 943 for Class A GFCI devices. Provide screw-type, side-wired wiring terminals or pre-wired (pigtail) leads.

2.10 PANELBOARDS:

A. Provide panelboards in accordance with the following:
1. UL 67 and UL 50 having a short-circuit current rating as indicated.
2. Panelboards for use as service disconnecting means: additionally conform to UL 869A.
3. Panelboards: Circuit breaker equipped.
4. Designed such that individual breakers can be removed without disturbing adjacent units or without loosening or removing

supplemental insulation supplied as means of obtaining clearances as required by UL.

5. "Specific breaker placement" is required in panelboards to match the breaker placement indicated in the panelboard schedule on the drawings.
6. Where "space only" or "PFB" is indicated, make provisions for future installation of breakers.
7. Directories: Indicate load served by each circuit in panelboard in accordance with the National Electrical Code requirements.
8. Directories: Indicate source of service to panelboard (e.g., Panel PA served from Panel MDP).
9. Provide new directories for existing panels modified by this project as indicated.
10. Type directories and mount in holder behind transparent protective covering.
11. Panelboards: Listed and labeled for their intended use.
12. Panelboard Nameplates: Provided in accordance with paragraph "Field Fabricated Nameplates" hereinbelow.

B. Enclosure: Provide panelboard enclosure in accordance with the following:
   1. UL 50.
   2. Cabinets Mounted Outdoors or Flush-Mounted: Hot-dipped galvanized after fabrication.
   3. Cabinets: Painted in accordance with paragraph “Field Applied Painting”.
   4. Outdoor Cabinets: NEMA 4X Stainless Steel 316 construction where indicated.
   5. Front Edges of Cabinets: Form-flanged or fitted with structural shapes welded or riveted to the sheet steel, for supporting the panelboard front.
   6. All Cabinets: Fabricated such that no part of any surface on the finished cabinet deviates from a true plane by more than 1/8-inch.
   7. Holes: Provided in the back of indoor surface-mounted cabinets, with outside spacers and inside stiffeners, for mounting the cabinets with a 1/2-inch clear space between the back of the cabinet and the wall surface.
   8. Flush Doors: Mounted on hinges that expose only the hinge roll to view when the door is closed.
   9. Each Door: Fitted with a combined catch and lock, except that doors over 24 inches long provided with a three-point latch having a knob with a T-handle, and a cylinder lock.
   10. Keys: Two provided with each lock, with all locks keyed alike.
   11. Finished-Head Cap Screws: Provided for mounting the panelboard fronts on the cabinets.

C. Panelboard Buses: Provide copper buses. Support bus bars on bases independent of circuit breakers. Main buses and back pans shall be

designed so that breakers may be changed without machining, drilling, or tapping. Provide isolated neutral bus in each panel for connection of circuit neutral conductors. Provide separate ground bus identified as equipment grounding bus per UL 67 for connecting grounding conductors; bond to steel cabinet.

D. Circuit Breakers: UL 489, thermal magnetic-type having a minimum short-circuit current rating equal to the short-circuit current rating of the panelboard in which the circuit breaker shall be mounted. Breaker terminals shall be UL listed as suitable for type of conductor provided.
   1. Multipole Breakers: Provide common trip-type with single operating handle. Breaker design shall be such that overload in one pole automatically causes all poles to open. Maintain phase sequence throughout each panel so that any 3 adjacent breaker poles are connected to Phases A, B, and C, respectively.

2.11 ENCLOSED CIRCUIT BREAKERS:

A. UL 489. Individual molded case circuit breakers with voltage and continuous current ratings, number of poles, overload trip setting, and short circuit current interrupting rating as indicated. Enclosure type as indicated. Provide solid neutral.

2.12 TRANSFORMERS:

A. Provide transformers in accordance with the following:
   1. NEMA ST 20, general purpose, dry-type, self-cooled, ventilated.
   2. Provide transformers in NEMA 1 enclosure.
   3. Taps for transformers 15 kVA and larger: Two 2.5 percent taps Full Capacity Above Nominal (FCAN) and four 2.5 percent taps Full Capacity Below Nominal (FCBN).
   4. Transformer Insulation System:
      a. 220 degrees Centigrade insulation system for transformers 15 kVA and greater, with temperature rise not exceeding 80 degrees Centigrade under full-rated load in maximum ambient of 40 degrees Centigrade.
   5. Transformer of 115 degrees Centigrade temperature rise shall be capable of carrying continuously 115 percent of nameplate kVA without exceeding insulation rating.
   6. Transformers shall be quiet type with maximum sound level at least 3 decibels less than NEMA standard level for transformer ratings indicated.

B. Specified Transformer Efficiency: Transformers, indicated and specified with: 480V primary, 80 degrees Centigrade or 115 degrees Centigrade temperature rise, KVA ratings of 37.5 to 100 KVA for single phase or 30 to 500 for three phase, energy efficient type. The transformer is not

acceptable if the calculated transformer efficiency is less than the efficiency indicated in 10 CFR 431, Subpart K.

2.13 MOTORS:

A. Provide motors in accordance with the following:
1. NEMA MG 1.
2. Hermetic-type sealed motor compressors shall also comply with UL 984.
3. Provide the size in terms of HP or kVA, or full-load current, or a combination of these characteristics, and other characteristics, of each motor as indicated or specified.
4. Determine specific motor characteristics to ensure provision of correctly sized starters and overload heaters.
5. Motors for operation on 208-volt, 3-phase circuits shall have terminal voltage rating of 200 volts, and those for operation on 480-volt, 3-phase circuits shall have terminal voltage rating of 460 volts.
6. Motors shall be designed to operate at full capacity with voltage variation of plus or minus 10 percent of motor voltage rating.
7. Unless otherwise indicated, motors rated 1 HP and above shall be continuous duty type.
8. Where fuse protection is specifically recommended by the equipment manufacturer, provide fused switches in lieu of non-fused switches indicated.

B. High Efficiency Single-Phase Motors: Single-phase fractional-horsepower alternating-current motors shall be high efficiency types corresponding to the applications listed in NEMA MG 11. In exception, for motor-driven equipment with a minimum seasonal or overall efficiency rating, such as a SEER rating, provide equipment with motor to meet the overall system rating indicated.

C. Premium Efficiency Polyphase Motors and Single-Phase Motors: Select polyphase and continuous-duty single phase motors based on high efficiency characteristics relative to typical characteristics and applications as listed in NEMA MG 10 and NEMA MG 11. In addition, continuous rated, polyphase squirrel-cage medium induction motors must meet the requirements for premium efficiency electric motors in accordance with NEMA MG 1, including the NEMA full load efficiency ratings. In exception, for motor-driven equipment with a minimum seasonal or overall efficiency rating, such as a SEER rating, provide equipment with motor to meet the overall system rating indicated.

D. Motor Sizes: Provide size for duty to be performed, not exceeding the full-load nameplate current rating when driven equipment is operated at specified capacity under most severe conditions likely to be encountered. When motor size provided differs from size indicated or specified, make adjustments to wiring, disconnect devices, and branch circuit protection to

accommodate equipment actually provided. Provide controllers for motors rated 1 HP and above with electronic phase-voltage monitors designed to protect motors from phase-loss, undervoltage, and overvoltage. Provide protection for motors from immediate restart by a time adjustable restart relay.

E. Wiring and Conduit: Provide internal wiring for components of packaged equipment as an integral part of the equipment. Provide power wiring and conduit for field-installed equipment as specified herein. Power wiring and conduit shall conform to the requirements specified herein. Control wiring shall be provided under and conform to the requirements of the section specifying the associated equipment.

2.14 MOTOR CONTROLLERS:

A. Provide motor controllers in accordance with the following:
1. UL 508, NEMA ICS 1, and NEMA ICS 2.
2. Controllers shall have thermal overload protection in each phase and shall have one spare normally open and one spare normally closed auxiliary contact.
3. Provide controllers for motors rated 1HP and above with electronic phase-voltage monitors designed to protect motors from phase-loss, undervoltage, and overvoltage.
4. Provide protection for motors from immediate restart by a time adjustable restart relay.
5. When used with pressure, float, or similar automatic-type or maintained-contact switch, controller shall have hand/off/automatic selector switch.
6. Connections to selector switch shall be such that only normal automatic regulatory control devices are bypassed when switch is in "hand" position.
7. Safety control devices, such as low- and high-pressure cutouts, high temperature cutouts, and motor overload protective devices, shall be connected in motor control circuit in "hand" and "automatic" positions.
8. Control circuit connections to hand/off/automatic selector switch or to more than one automatic regulatory control device shall be made in accordance with indicated or manufacturer’s approved wiring diagram.
9. Provide a disconnecting means, capable of being locked in the open position, for the motor that is located in sight from the motor location and the driven machinery location. As an alternative, provide a motor controller disconnect, capable of being locked in the open position, to serve as the disconnecting means for the motor if it is in sight from the motor location and the driven machinery location.
10. Overload protective devices shall provide adequate protection to motor windings; be thermal inverse-time-limit type; and include manual reset-type pushbutton on outside of motor controller case.

11. Cover of combination motor controller and manual switch or circuit breaker shall be interlocked with operating handle of switch or circuit breaker so that cover cannot be opened unless handle of switch or circuit breaker is in "off" position.

B. Provide control wiring in accordance with the following:
1. All control wire shall be stranded tinned copper switchboard wire with 600-volt flame-retardant insulation Type SIS meeting UL 44, or Type MTW meeting UL 1063, and shall pass the VW-1 flame tests included in those standards.
2. Hinge wire shall have Class K stranding.
3. Current transformer secondary leads shall be not smaller than No. 10 AWG.
4. The minimum size of control wire shall be No. 14 AWG.
5. Power wiring for 480-volt circuits and below shall be of the same type as control wiring and the minimum size shall be No. 12 AWG.
6. Special attention shall be given to wiring and terminal arrangement on the terminal blocks to permit the individual conductors of each external cable to be terminated on adjacent terminal points.

C. Control Circuits:
1. Control circuits shall have maximum voltage of 120 volts derived from control transformer in same enclosure. Transformers shall conform to UL 506, as applicable. Transformers, other than transformers in bridge circuits, shall have primaries wound for voltage available and secondaries wound for correct control circuit voltage. Size transformers so that 80 percent of rated capacity equals connected load. Provide disconnect switch on primary side. Provide fuses in each ungrounded primary feeder. One secondary lead shall be fused; other shall be grounded. Provide for automatic switchover and alarm upon failure of primary control circuit.

D. Enclosures for Motor Controllers: NEMA ICS 6.

E. Pushbutton Stations: Provide with "start/stop" momentary contacts having one normally open and one normally closed set of contacts, and red lights to indicate when motor is running. Stations shall be heavy duty, oil-tight design.

F. Pilot and Indicating Lights: Provide LED cluster lamps.

2.15 MANUAL MOTOR STARTERS (MOTOR RATED SWITCHES):

A. Single and/or double pole designed for surface mounting with overload protection.

2.16 LOCKOUT REQUIREMENTS:

A. Provide disconnecting means capable of being locked out for machines and other equipment to prevent unexpected startup or release of stored energy in accordance with 29 CFR 1910.147. Mechanical isolation of machines and other equipment shall be in accordance with requirements of “Division 15 - Mechanical”.

2.17 MANUFACTURER’S NAMEPLATE:

A. Each item of equipment shall have a nameplate bearing the manufacturer’s name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

2.18 FIELD FABRICATED NAMEPLATES:

A. Provide field fabricated nameplates in accordance with the following:
1. ASTM D709.
2. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device as specified or as indicated on the drawings.
3. Each nameplate inscription shall identify the function and, when applicable, the position.
4. Nameplates shall be melamine plastic, 0.125-inch thick, white with black center core.
5. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core.
6. Minimum size of nameplates shall be one-inch by 2.5 inches.
7. Lettering shall be a minimum of 0.25-inch-high normal block style.

2.19 WARNING SIGNS:

A. Provide warning signs for flash protection in accordance with NFPA 70E and NEMA Z535.4 for switchboards, panelboards, industrial control panels, and motor control centers that are in other than dwelling occupancies and are likely to require examination, adjustment, servicing, or maintenance while energized. Provide field installed signs to warn qualified persons of potential electric arc flash hazards when warning signs are not provided by the manufacturer. The marking shall be clearly visible to qualified persons before examination, adjustment, servicing, or maintenance of the equipment.

2.20 FIRESTOPPING MATERIALS:

A. Provide firestopping around electrical penetrations. Utilize UL-listed firestopping systems or assemblies suitable for the penetration being sealed.

2.21 FACTORY APPLIED FINISH:

A. Provide factory-applied finish on electrical equipment in accordance with the following:
   1. NEMA 250 corrosion-resistance test and the additional requirements as specified herein.
   2. Interior and exterior steel surfaces of equipment enclosures shall be thoroughly cleaned and then receive a rust-inhibitive phosphatizing or approved equivalent treatment prior to painting.
   3. Exterior surfaces shall be free from holes, seams, dents, weld marks, loose scale or other imperfections.
   4. Interior surfaces shall receive not less than one coat of corrosion-resisting paint in accordance with the manufacturer's standard practice.
   5. Exterior surfaces shall be primed, filled where necessary, and given not less than 2 coats baked enamel with semi-gloss finish.
   6. Equipment located indoors shall be ANSI Light Gray, and equipment located outdoors shall be ANSI Dark Gray.
   7. Provide manufacturer's coatings for touch-up work and as specified in item entitled "Field Applied Painting" hereinbelow.

2.22 HARDWARE, SUPPORTS, BACKING, ETC.:

A. Provide all hardware, supports, backing and other accessories necessary to install electrical equipment. Wood materials shall be treated against termites, iron or steel materials shall be galvanized for corrosion protection, and non-ferrous materials shall be brass or bronze. Provide other specialty materials where indicated.

B. Bolts, nuts, washers, and screws used for exterior use shall be high quality stainless steel or brass.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Electrical installations, including weatherproof and hazardous locations and ducts, plenums and other air-handling spaces, shall conform to requirements of NFPA 70 and IEEE C2 and to requirements specified herein.

B. Wiring Methods: Provide insulated conductors installed in rigid steel conduit, IMC, rigid nonmetallic conduit, or EMT, except where specifically indicated or specified otherwise or required by NFPA 70 to be installed otherwise. Utilize non-wax type lubricants for pulling, chemically neutral to insulation and sheath. Mechanical means for pulling to be tongue-

limiting type and not be used for #2 AWG wires and smaller. Grounding conductor shall be separate from electrical system neutral conductor. Provide insulated green equipment grounding conductor for circuit(s) installed in conduit and raceways. Minimum conduit size shall be 3/4-inch in diameter for low voltage lighting and power circuits. Conduit which penetrates fire-rated walls, fire-rated partitions, or fire-rated floors shall be firestopped.

1. Pull Wire: Install pull wires in empty conduits. Pull wire shall be plastic having minimum 200-pound force tensile strength. Leave minimum 36 inches of slack at each end of pull wire.

C. Conduit Installation: Unless indicated otherwise, conceal conduit under floor slabs and within finished walls, ceilings, and floors. Keep conduit minimum 6-inches away from parallel runs of flues and steam or hot water pipes. Install conduit parallel with or at right angles to ceilings, walls, and structural members where located above accessible ceilings and where conduit will be visible after completion of project.
   1. Restrictions Applicable to EMT:
      a. Do not install underground.
      b. Do not encase in concrete, mortar, grout, or other cementitious materials.
      c. Do not use in areas subject to severe physical damage including but not limited to equipment rooms where moving or replacing equipment could physically damage the EMT.
      d. Do not use outdoors, including under open-sided covered lanais, patios, walkways or other similar locations.
      e. Do not use exposed below 8 feet above the finished floor, except in dedicated Electrical Rooms.
   2. Restrictions Applicable to Flexible Conduit: Use only as specified in subparagraph entitled "Flexible Connections" hereinbelow.
   3. Underground Conduit: Plastic-coated rigid steel; plastic-coated steel IMC; Schedule 40 PVC. Convert nonmetallic conduit to plastic-coated rigid, or IMC, steel conduit before rising through floor slab except where the nonmetallic conduit is concealed and located within walls up to the first outlet box or conduit coupling above the finished floor. Plastic coating on metallic conduits shall extend minimum 6 inches above floor.
   4. Conduit for Circuits Rated Greater Than 600 Volts: Rigid metal conduit or IMC only.
   5. Conduit through Floor Slabs: Where conduits rise through floor slabs, curved portion of bends shall not be visible above finished slab. Where conduit rises through slab-on grade, seal all electrical penetrations to address radon mitigation and prevent infiltration of air, insects, and vermin.
   6. Stub-Ups: Provide conduits stubbed up through concrete floor for connection to free-standing equipment with adjustable top or coupling threaded inside for plugs, set flush with finished floor. Extend conductors to equipment in rigid steel conduit, except that

flexible metal conduit may be used 6 inches above floor. Where no equipment connections are made, install screwdriver-operated threaded flush plugs in conduit end.

7. Conduit Support: Support conduit by pipe straps, wall brackets, hangers, or ceiling trapeze. Fasten by wood screws to wood; by toggle bolts on hollow masonry units; by concrete inserts or expansion bolts on concrete or brick; and by machine screws, welded threaded studs, or spring-tension clamps on steel work. Threaded C-clamps may be used on rigid steel conduit only. Do not weld conduits or pipe straps to steel structures. Plastic tie-wraps are not allowed for securing or supporting of electrical conduit. Load applied to fasteners shall not exceed 1/4 proof test load. Fasteners attached to concrete ceiling shall be vibration resistant and shock-resistant. Holes cut to depth of more than 1-1/2 inches in reinforced concrete beams or to depth of more than 3/4 inch in concrete joints shall not cut main reinforcing bars. Fill unused holes. In partitions of light steel construction, use sheet metal screws. In suspended-ceiling construction, run conduit above ceiling. Do not support conduit by ceiling support system. Conduit and box systems shall be supported independently of both (a) tie wires supporting ceiling grid system, and (b) ceiling grid system into which ceiling panels are placed. Supporting means shall not be shared between electrical raceways and mechanical piping or ducts. Installation shall be coordinated with above-ceiling mechanical systems to assure maximum accessibility to all systems. Spring-steel fasteners may be used for lighting branch circuit conduit supports in suspended ceilings in dry locations. Where conduit crosses building expansion joints, provide suitable expansion fitting that maintains conduit electrical continuity by bonding jumpers or other means. For conduits greater than 2-1/2 inches inside diameter, provide supports to resist forces of 0.5 times the equipment weight in any direction and 1.5 times the equipment weight in the downward direction.
8. Directional Changes in Conduit Runs: Make changes in direction of runs with symmetrical bends or cast-metal fittings. Make field-made bends and offsets with hickey or conduit-bending machine. Do not install crushed or deformed conduits. Avoid trapped conduits. Prevent plaster, dirt, or trash from lodging in conduits, boxes, fittings, and equipment during construction. Free clogged conduits of obstructions.
9. Flexible Connections: Provide flexible steel conduit between 3-feet and 6-feet in length for recessed and semi-recessed lighting fixtures; for equipment subject to vibration, noise transmission, or movement; and for motors. Install flexible conduit to allow 20 percent slack. Minimum flexible steel conduit size shall be 1/2-inch diameter. Provide liquid-tight flexible conduit in wet and damp locations for equipment subject to vibration, noise transmission,

movement or motors. Provide separate ground conductor across flexible connections.

D. Boxes, Outlets, and Supports: Provide boxes in wiring and raceway systems wherever required for pulling of wires, making connections, and mounting of devices or fixtures. Boxes for metallic raceways shall be cast-metal, hub-type when located in wet locations, when surface mounted on outside of exterior surfaces, when surface mounted on interior walls exposed up to 8 feet above floors and walkways, and when specifically indicated. Boxes in other locations shall be sheet steel, except that nonmetallic boxes may be used with nonmetallic conduit system. Each box shall have volume required by NFPA 70 for number of conductors enclosed in box. Boxes for mounting lighting fixtures shall be minimum 4-inch square, or octagonal, except that smaller boxes may be installed as required by fixture configurations, as approved. Boxes for use in masonry-block or tile walls shall be square-cornered, tile-type, or standard boxes having square-cornered, tile-type covers. Provide gaskets for cast-metal boxes installed in wet locations and boxes installed flush with outside of exterior surfaces. Provide separate boxes for flush or recessed fixtures when required by fixture terminal operating temperature; fixtures shall be readily removable for access to boxes unless ceiling access panels are provided. Support boxes and pendants for surface-mounted fixtures on suspended ceilings independently of ceiling supports. Fasten boxes and supports with wood screws on wood, with bolts and expansion shields on concrete or brick, with toggle bolts on hollow masonry units, and with machine screws or welded studs on steel. In open overhead spaces, cast boxes threaded to raceways need not be separately supported except where used for fixture support; support sheet metal boxes directly from building structure or by bar hangers. Where bar hangers are used, attach bar to raceways on opposite sides of box, and support raceway with approved-type fastener maximum 24 inches from box. When penetrating reinforced concrete members, avoid cutting reinforcing steel.

1. Boxes: For use with raceway systems shall be a minimum 1 1/2 inches deep, except where shallower boxes required by structural conditions are approved. Boxes for other than lighting fixture outlets: minimum 4 inches square, except that 4 by 2-inch boxes may be used where only one raceway enters outlet.
2. Pull Boxes: Construct of at least minimum size required by NFPA 70 of code-gauge galvanized sheet steel or stainless steel where indicated, except where cast-metal boxes are required in locations specified herein. Provide boxes with screw-fastened covers. Where several feeders pass through common pull box, tag feeders to indicate clearly electrical characteristics, circuit number, and panel designation.

E. Mounting Heights: Mount panelboards, enclosed circuit breakers, motor controllers and disconnecting switches so height of any operating handle

at its highest position is a maximum 78 inches above finished floor. Mount receptacles 18 inches above finished floor. Mount other devices as indicated. Measure mounting heights of wiring devices and outlets to center of device or outlet, unless otherwise indicated.

F. Conductor Identification: Provide conductor identification within each enclosure where tap, splice, or termination is made. For conductors No. 6 AWG and smaller diameter, color coding shall be by factory-applied, color-impregnated insulation. For conductors No. 4 AWG and larger diameter, color coding shall be by plastic-coated, self-sticking markers; colored nylon cable ties and plates; or heat shrink-type sleeves. Identify control circuit terminations in accordance with manufacturer's recommendations.
   1. Marking Strips: Provide marking strips in accordance with the following:
      a. White or other light-colored plastic marking strips, fastened by screws to each terminal block, shall be provided for wire designations.
      b. The wire numbers shall be made with permanent ink.
      c. The marking strips shall be reversible to permit marking both sides, or 2 marking strips shall be furnished with each block.
      d. Marking strips shall accommodate the 2 sets of wire numbers.
      e. Each device to which a connection is made shall be assigned a device designation in accordance with NEMA ICS 1 and each device terminal to which a connection is made shall be marked with a distinct terminal marking corresponding to the wire designation used on the Contractor's schematic and connection diagrams.
      f. The wire (terminal point) designations used on the Contractor's wiring diagrams and printed on terminal block marking strips may be according to the Contractor's standard practice; however, additional wire and cable designations for identification of remote (external) circuits shall be provided for the Government's wire designations.
      g. Prints of the marking strips drawings submitted for approval will be so marked and returned to the Contractor for addition of the designations to the terminal strips and tracings, along with any rearrangement of points required.

G. Splices: Make splices in accessible locations. Make splices in conductors No. 10 AWG and smaller diameter with insulated, pressure-type connector. Make splices in conductors No. 8 AWG and larger diameter with solderless connector, and cover with insulation material equivalent to conductor insulation.

H. Covers and Device Plates: Install with edges in continuous contact with finished wall surfaces without use of mats or similar devices. Plaster fillings are not permitted. Install plates with alignment tolerance of 1/16

inch. Use of sectional-type device plates are not permitted. Provide gasket for plates installed in wet locations.

I. Electrical Penetrations: Openings around electrical penetrations (such as conduit penetrations or flush mounted equipment enclosures or junction boxes) through fire resistance-rated walls, partitions, floors, or ceilings shall be sealed to maintain fire resistive integrity. Use 3M CP25, Type MPP moldable putty or accepted equivalent material or assemblies to maintain fire resistive integrity for conduit penetration and flush mounted outlet boxes. Use other approved construction methods for larger enclosures.

J. Grounding and Bonding: Provide in accordance with NFPA 70. Ground exposed, non-current-carrying metallic parts of electrical equipment, metallic raceway systems, grounding conductor in metallic and nonmetallic raceways, and neutral conductor of wiring systems.

K. Equipment Connections: Provide power wiring for the connection of motors and control equipment under this section of the specification. Except as otherwise specifically noted or specified, automatic control wiring, control devices, and protective devices within the control circuitry are not included in this section of the specifications but shall be provided under the section specifying the associated equipment.

L. Seismic Bracing: Contractor shall provide seismic bracing for all electrical equipment, apparatus, and raceways. Bracing shall, as a minimum, comply with the County Building Code.

M. Repair of Existing Work: Repair of existing work, demolition, and modification of existing electrical distribution systems shall be performed as follows:
   1. Workmanship: Lay out work in advance. Exercise care where cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, or other surfaces is necessary for proper installation, support, or anchorage of conduit, raceways, or other electrical work. Repair damage to buildings, piping, and equipment using skilled craftsmen of trades involved.
   2. Existing Concealed Wiring to be Removed: Existing concealed wiring to be removed shall be disconnected from its source. Remove conductors; cut conduit flush with floor, underside of floor, and through walls; and seal openings.
   3. Removal of Existing Electrical Distribution System: Removal of existing electrical distribution system equipment shall include equipment’s associated wiring, including conductors, cables, exposed conduit, surface metal raceways, boxes, and fittings, back to equipment’s power source as indicated.
   4. Continuation of Service: Maintain continuity of existing circuits of equipment to remain. Existing circuits of equipment shall remain

energized. Circuits which are to remain but were disturbed during demolition shall have circuits wiring and power restored back to original condition.

3.02 FIELD FABRICATED NAMEPLATE MOUNTING:

A. Provide number, location, and letter designation of nameplates as indicated. Fasten nameplates to the device with a minimum of 2 sheet-metal screws or 2 rivets.

3.03 WARNING SIGN MOUNTING:

A. Provide the number of signs required to be readable from each accessible side. Space the signs in accordance with NFPA 70E.

3.04 FIELD APPLIED PAINTING:

A. Paint electrical equipment as required to match finish of adjacent surfaces or to meet the indicated or specified safety criteria. Where field painting of enclosures for panelboards, load centers or the like is specified to match adjacent surfaces, to correct damage to the manufacturer's factory applied coatings, or to meet the indicated or specified safety criteria, provide manufacturer's recommended coatings and apply in accordance to manufacturer's instructions.

3.05 FIELD QUALITY CONTROL:

A. Furnish test equipment and personnel and submit written copies of test results. Give Engineer 5 working days' notice prior to each test.
   1. Devices Subject to Manual Operation: Each device subject to manual operation shall be operated at least 5 times, demonstrating satisfactory operation each time.
   2. 600-Volt Wiring Test: Test wiring rated 600 volt and less to verify that no short circuits or accidental grounds exist. Perform insulation resistance tests on wiring No. 6 AWG and larger diameter using instrument which applies voltage of approximately 500 volts to provide direct reading of resistance. Minimum resistance shall be 250,000 ohms. Submit results to the Architect.
   3. Transformer Tests: Measure primary and secondary voltages for proper tap settings.
   4. Grounding System Test: Test grounding system to ensure continuity and that resistance to ground is not excessive. Test each ground rod for resistance to ground before making connections to rod, then tie grounding system together and test for resistance to ground. Make resistance measurements in dry weather, not earlier than 48 hours after rainfall. Submit written results of each test to

Architect and indicate location of rods as well as resistance and soil conditions at time measurements were made.

END OF SECTION

APPENDIX A - HAZMAT REPORT

HAWAI'I INTERNATIONAL ENVIRONMENTAL SERVICES, INC.
A WOMAN-OWNED SMALL BUSINESS
Earth Scientists and Environmental Engineers
Hawaii Contractors License No. AC-21139
45-955 Kamehameha Hwy. #302, Kaneohe, Hawaii 96744
Office (808) 263-4787 Fax (808) 263-0860
www.hiesinc.com

25020
February 12, 2026

InSynergy Engineering, Inc.
1001 Bishop Street, Suite 2500
Honolulu, HI 96813

Via Electronic Mail: Chris Li, P.E.<cli@insynergyeng.com>

Attention:	Ms. Chris Li, Mechanical Engineer
Subject:	Letter Report -Limited Hazardous Materials Survey for A/C Replacement at Maluhia, 1027 Hala Drive, Honolulu, HI 96817.
References:	-Agreement No. FY26-0203 HHSC for Professional Services, Job No. 25169, December 2, 2025. - Plans 2026, Pipe Demo Plan, Sheet MD102 and MD103, InSynergy Engineering, January 23, 2026.

Ms. Li,

At the request of InSynergy Engineering, Inc., this letter report was prepared by Hawaii International Environmental Services, Inc., (HIES) for the Limited Hazardous Materials Survey at Maluhia, located at 1027 Hala Drive in Honolulu, Hawaii in response to planned Air Conditioning (A/C) replacement.

Sampling
On January 29 and February 1, 2026, HIES collected a total of 22 asbestos bulk samples from Maluhia Adult Day Health Center (MADHC) on the basement level of Maluhia. At the time of survey, HIES inspected the Thermal System Insulation (TSI) above the drop ceiling and walls that might be potentially disturbed during the replacement of supply and return ducts and pipes. Any issues or concerns were discussed with Insynergy's Ms. Li and resolved during the survey.

Suspect materials collected during this survey include spray-on fireproofing on concrete above drop ceiling, white and silver wrap and yellow insulation, white joint compound, and black foam with glue on pipe. Paint was not observed or tested for lead during this survey.

Sampling Results
Asbestos was not detected in the samples submitted for analysis.

Sample results are listed in Table 1 below.

Table 1
Asbestos Sampling Analytical Results
MAHDC
(January 29 and February 1, 2026)

Description	Material Type	Friable (Yes or No)	Floor	Area Location	Sample# (HA)	Type/ Asbestos (%)
Gray fluffy spray-on	M	Yes	Basement	Above Ceiling	MAL-Ins-01 MAL-Ins-02 MAL-Ins-03	ND
White wrap and, Dark/light yellow materials	TSI	Yes	Basement	Above Ceiling	MAL-Ins-04 MAL-Ins-05 MAL-Ins-06 MAL-Ins-07	ND
Stained White wrap, yellow insulation	TSI	Yes	Basement	Above Ceiling	MAL-Ins-08 MAL-Ins-09 MAL-Ins-10	ND
Silver wrap, yellow materials	TSI	Yes	Basement	Above Ceiling	MAL-Ins-11 MAL-Ins-12 MAL-Ins-13	ND
White wrap, yellow insulation	TSI	Yes	Basement	Above Ceiling	MAL-Ins-14 MAL-Ins-15 MAL-Ins-16	ND
White Jt. Compound on wall	M	Yes	Basement	Above Ceiling	MAL-Ins-17 MAL-Ins-18 MAL-Ins-19	ND
Black foam, yellow glue.	TSI	No	Basement	Above Ceiling	MAL-Ins-20 MAL-Ins-21 MAL-Ins-22	ND

ND: Non-Detect
HA: Homogeneous Area
Asbestos Type/%: the ranges of percentages are from the results of all layers.
Material Type: Surfacing (S), Thermal System Insulation (TSI), Miscellaneous (M)

The laboratory analytical reports and chain-of-custody are included in this report. Sample locations are found in Figures.

Recommendations
If materials not identified in this report are encountered and may be disturbed during renovation, additional sampling may be required.

The pipe underneath the metal casing should be inspected and tested for asbestos during the demolition of the sub-basement A/C system after the metal casing has been removed. HIES will be able to perform the survey, sampling, and assessment of the suspect ACM.

We appreciate the opportunity to assist InSynergy Engineering, Inc. Should you have any questions regarding this report, or if you would like further assistance, please contact us at (808) 263-4787.

Sincerely,

Prepared by

Russell Randall
Environmental Scientist
Asbestos Inspector
Hawaii Asbestos Number: HIASB-3127
Expiration Date: 11/27/2026
Hawaii Lead Number: PB 0618
Expiration Date: 12/10/2027

Approved by

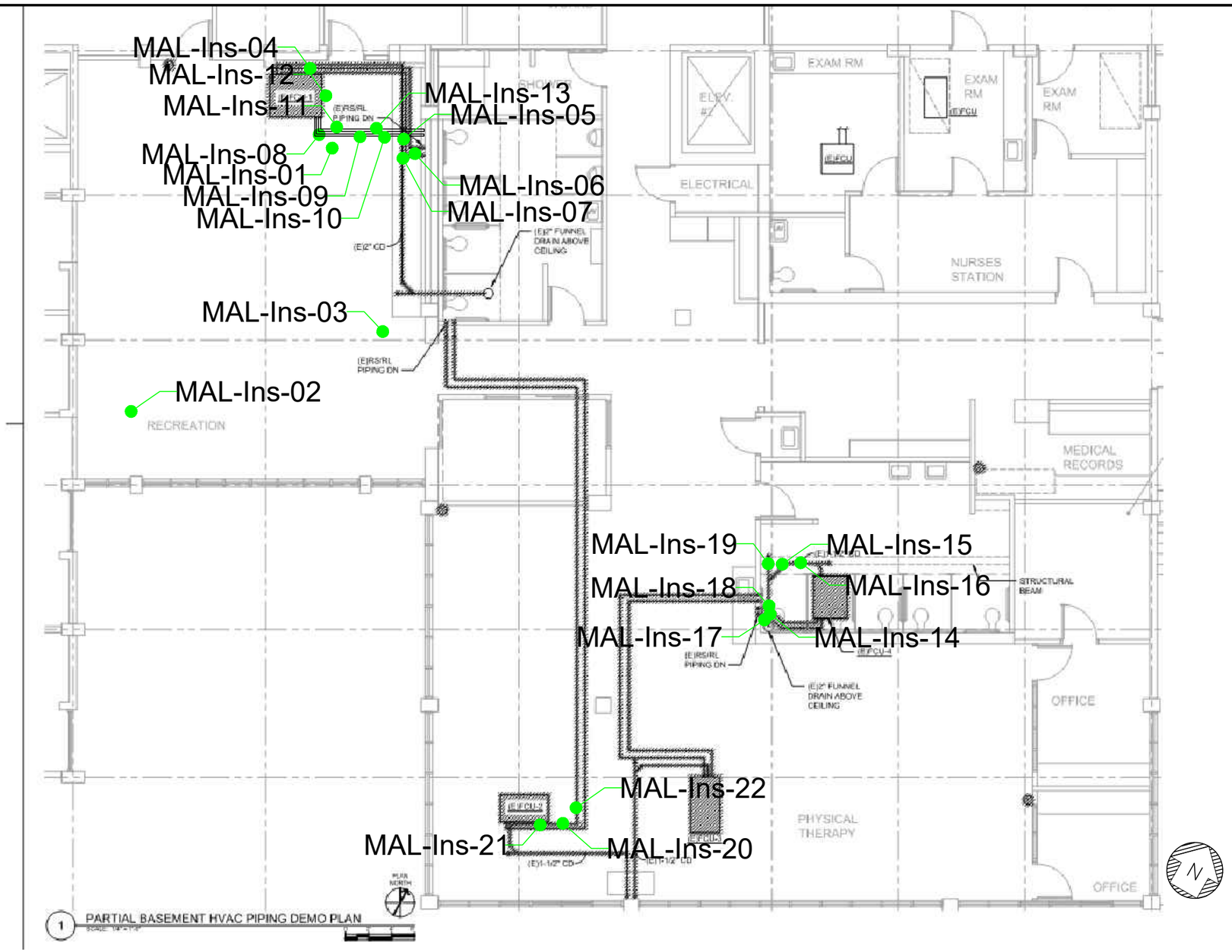
Mayumi Randall
Project Manager/Industrial Hygienist
Hawaii Asbestos Number: HIASB-0873
Expiration Date: 07/16/2026
Hawaii Lead Number: PB-0034
Expiration Date: 11/30/2027, 3/17/2027
Hawai'i International Environmental Services, Inc.

Attachment:
- Figures
- Photographic Documentation
- Laboratory Analytical Results

Figures

Positive Sample Locations

- None



Legend

- Estimated ACM Area
- Negative LBP Symbol and ID No.
- Positive LBP Symbol and ID No.
- Negative ACM symbol and ID No.
- Positive ACM symbol and ID No.

MALUHIA HOSPITAL
BASEMENT FLOOR – CEILING & TSI
ASBESTOS AND LEAD SAMPLE LOCATION MAP

HIES

	INSYNERGY
	LIMITED HAZARDOUS MATERIALS SURVEY
	DESCRIPTION
DRAWN BY: RR	DATE: 2/2/26
CHECKED BY: MR	DATE: 2/3/26
	DATE:
HAWAII HEALTH SYSTEMS CORPORATION HAZ MAT ASSESSMENT	
1027 HALA DRIVE, HONOLULU, HI 96817	
MALUHIA	
PROJECT NUMBER: 25020	DRAWING NUMBER:
SEQ NO.: BFLR	
DATE: 1/29-2/1/2026	SHEET: ___ OF ___

Photographic Documentation

Photo 01: Sample ID: MAL-Ins-01 Spray-on gray Fluffy Materials, Above Drop Ceiling, Recreation Room.

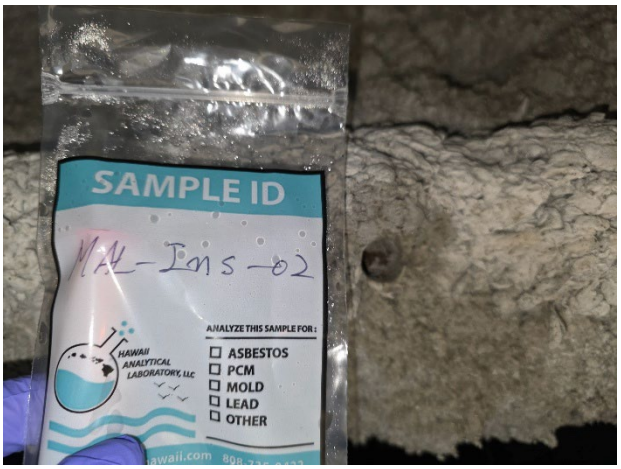


Photo 02: Sample ID: MAL-Ins-02 Spray-on gray Fluffy Materials, Above Drop Ceiling. Recreation Room.

Photo 03: Sample ID: MAL-Ins-03 Spray-on gray Fluffy Materials, Above Drop Ceiling. Recreation Room.

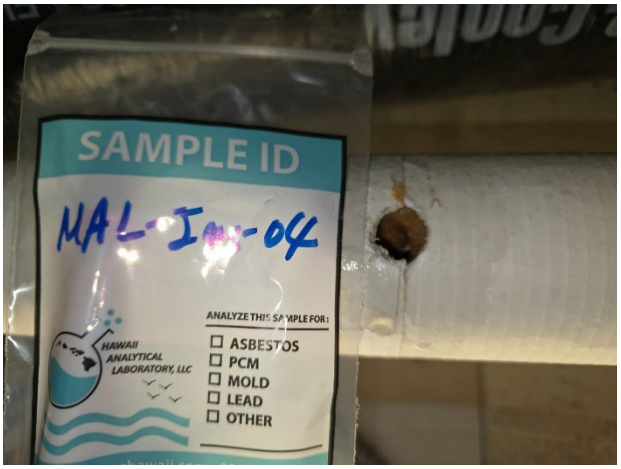


Photo 04: Sample ID: MAL-Ins-04 White wrap and dark yellow insulation, Above Drop Ceiling. Recreation Room.

HIES	**Photographic Documentation**	**Plate No: 1**
	MADHC - Basement Limited Hazardous Material Sampling	Project: 25020
	HHSC Maluhia 1027 Hala Drive, Honolulu, HI	Jan 29 & Feb 01, 2026

Photo 05: Sample ID: MAL-Ins-05 White wrap and light yellow insulation, Above Drop Ceiling. Recreation Room.

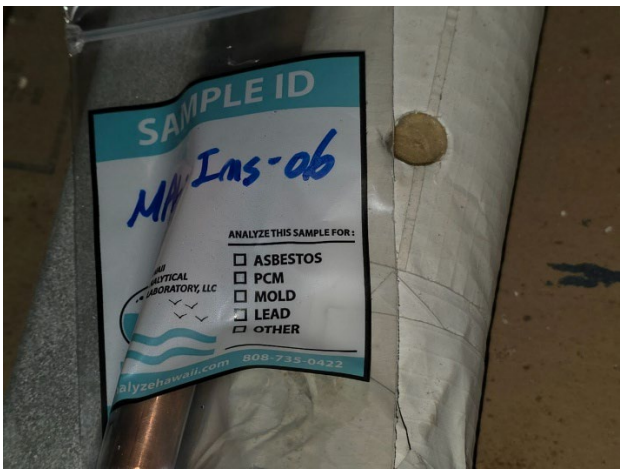


Photo 06: Sample ID: MAL-Ins-06 White wrap and light yellow insulation, Above Drop Ceiling. Recreation Room.

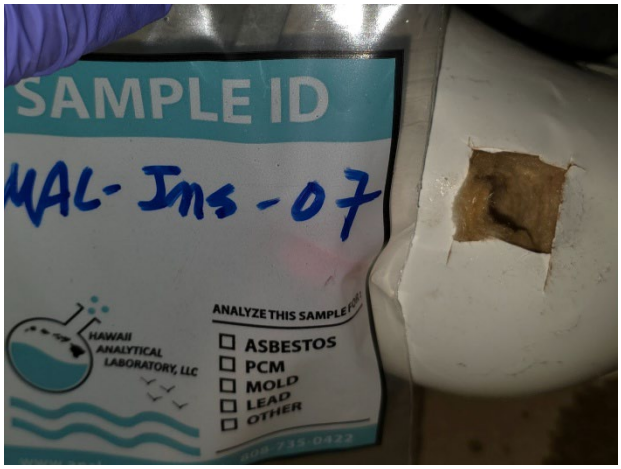


Photo 07: Sample ID: MAL-Ins-07 White wrap and light yellow insulation, Above Drop Ceiling. Recreation Room.

Photo 08: Sample ID: MAL-Ins-08 Stained white wrap and yellow insulation, Above Drop Ceiling. Recreation Room.

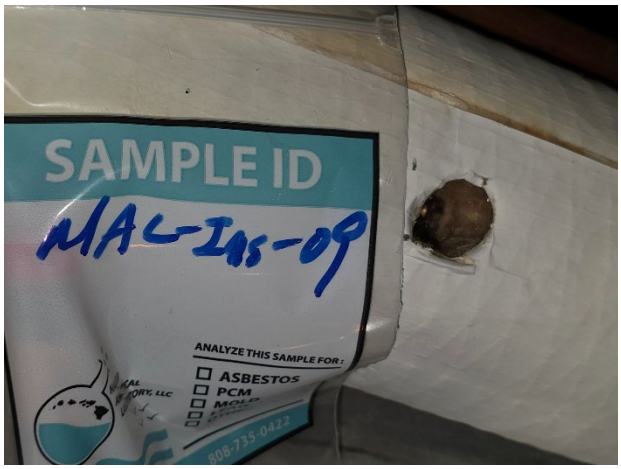


Photo 09: Sample ID: MAL-Ins-09 Stained white wrap and yellow insulation, Above Drop Ceiling. Recreation Room.

Photo 10: Sample ID: MAL-Ins-10 Stained white wrap and yellow insulation, Above Drop Ceiling. Recreation Room.

Photo 11: Sample ID: MAL-Ins-11 Silver wrap and yellow insulation. Above Drop Ceiling. Recreation Room.

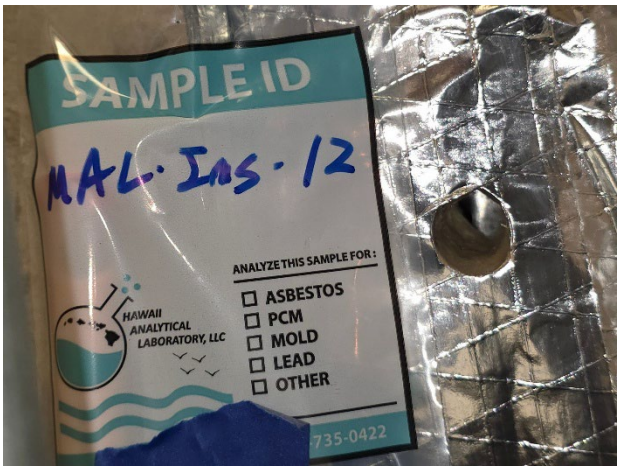


Photo 12: Sample ID: MAL-Ins-12 Silver wrap and yellow insulation. Above Drop Ceiling. Recreation Room.

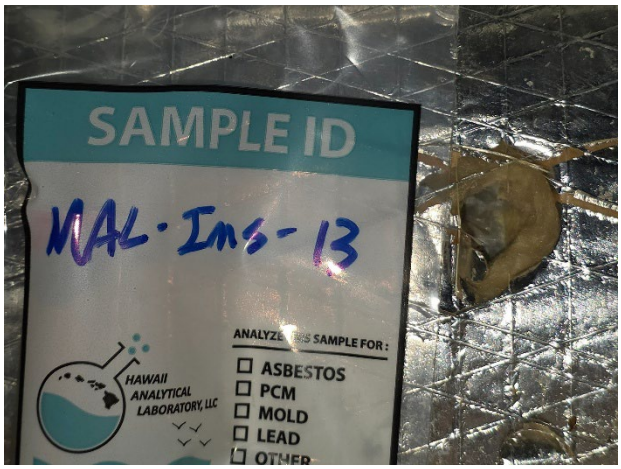


Photo 13: Sample ID: MAL-Ins-13 Silver wrap and yellow insulation. Above Drop Ceiling. Recreation Room.

Photo 14: Sample ID: MAL-Ins-14 White wrap and yellow insulation. Above Drop Ceiling. Bathroom.

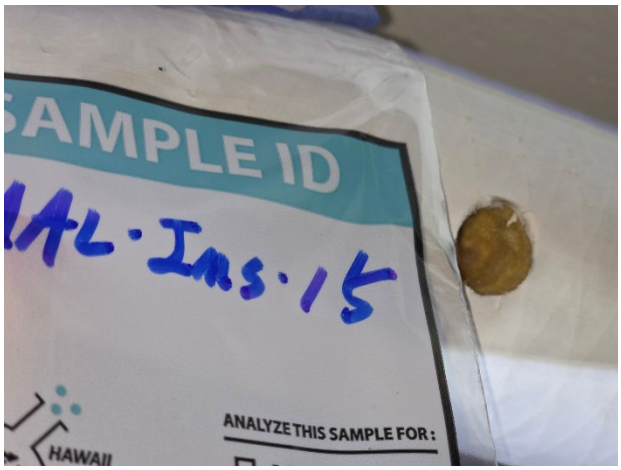


Photo 15: Sample ID: MAL-Ins-15 White wrap and yellow insulation. Above Drop Ceiling. Bathroom.

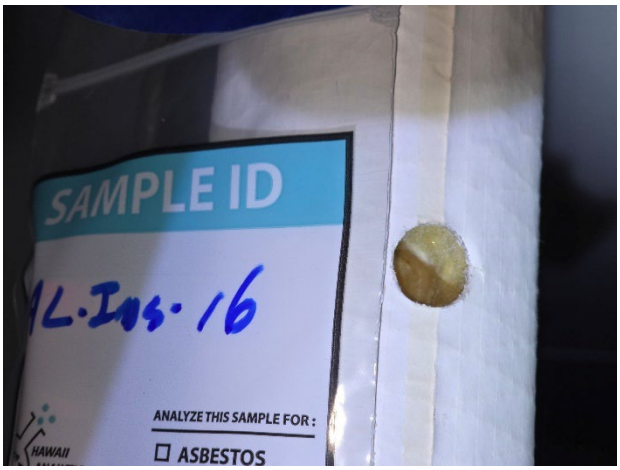


Photo 16: Sample ID: MAL-Ins-16 White wrap and yellow insulation. Above Drop Ceiling. Bathroom.

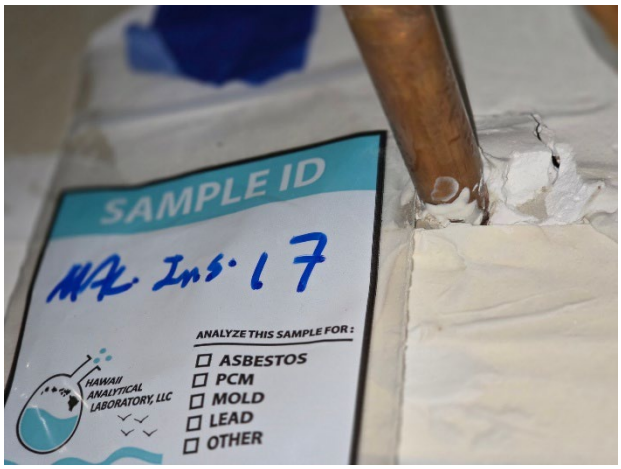


Photo 17: Sample ID: MAL-Ins-17 White joint compound. Above Drop Ceiling. Bathroom.

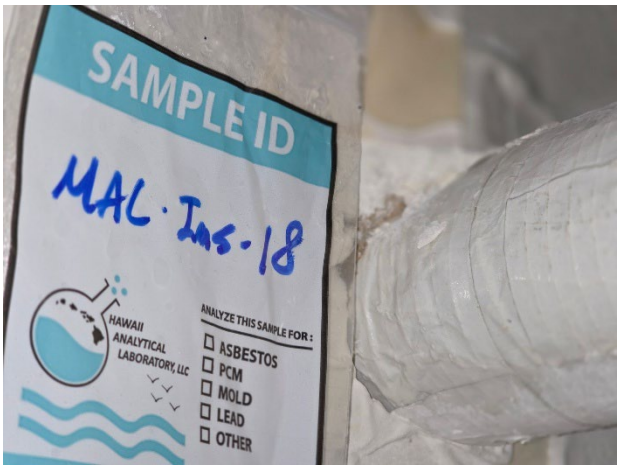


Photo 18: Sample ID: MAL-Ins-18 White joint compound. Above Drop Ceiling. Bathroom.

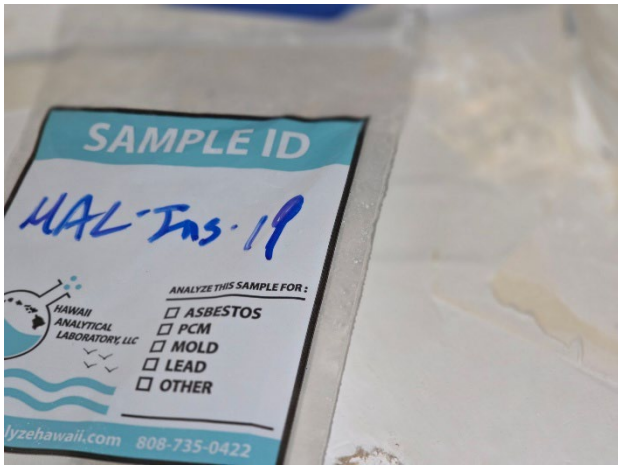


Photo 19: Sample ID: MAL-Ins-19 White joint compound. Above Drop Ceiling. Bathroom.

Photo 20: Sample ID: MAL-Ins-20 Black foam insulation and yellow glue. Above Drop Ceiling. Physical Therapy.

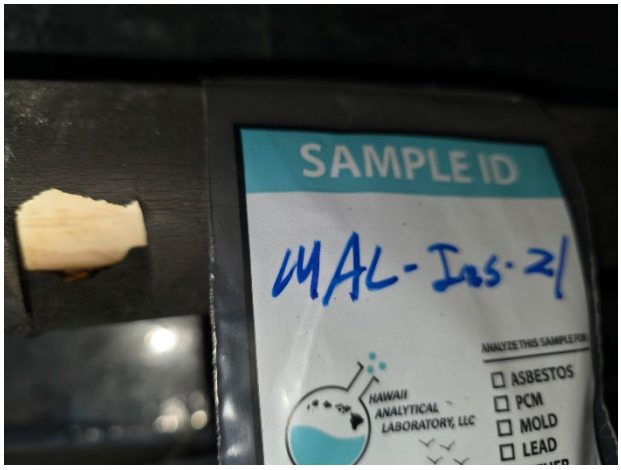


Photo 21: Sample ID: MAL-Ins-21 Black foam insulation and yellow glue. Above Drop Ceiling. Physical Therapy.

Photo 22: Sample ID: MAL-Ins-22 Black foam insulation and yellow glue. Above Drop Ceiling. Physical Therapy.

Laboratory Analytical Results

February 6, 2026

Mayumi Randall
Hawaii Intl. Env. Svcs (HIES) H
45-955 Kamehameha Hwy #302
Kaneohe, HI 96744

RE: Bulk Asbestos Fiber Analysis; NVL Batch # 2601767.00

Client Project: 25020
Location: Maluhia MADHC

Dear Ms. Randall,

Enclosed please find test results for the 22 sample(s) submitted to our laboratory for analysis on 2/3/2026.

Examination of these samples was conducted for the presence of identifiable asbestos fibers using polarized light microscopy (PLM) with dispersion staining in accordance with **U. S. EPA 40 CFR Appendix E to Subpart E of Part 763**, Interim Method for the Determination of Asbestos in Bulk Insulation Samples and **EPA 600/R-93/116**, Method for the Determination of Asbestos in Bulk Building Materials.

For samples containing more than one separable layer of materials, the report will include findings for each layer (labeled Layer 1 and Layer 2, etc. for each individual layer). The asbestos concentration in the sample is determined by calibrated visual estimation.

For those samples with asbestos concentrations between 1 and 10 percent based on visual estimation, the EPA recommends a procedure known as point counting (NESHAPS, 40 CFR Part 61). Point counting is a statistically more accurate means of quantification for samples with low concentrations of asbestos.

The detection limit for the calibrated visual estimation is <1%, 400 point counts is 0.25% and 1000 point counts is 0.1%

Samples are archived for two weeks following analysis. Samples that are not retrieved by the client are discarded after two weeks.

Thank you for using our laboratory services. Please do not hesitate to call if there is anything further we can assist you with.

Sincerely,

Akane Yoshikawa, Senior Laboratory Analyst

Testing
Lab Code: 102063-0

Enc.: Sample Results

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Hawaii Intl. Env. Svcs (HIES) H
Address: 45-955 Kamehameha Hwy #302
Kaneohe, HI 96744

Attention: Ms. Mayumi Randall
Project Location: Maluhia MADHC

Batch #: 2601767.00
Client Project #: 25020
Date Received: 2/3/2026
Samples Received: 22
Samples Analyzed: 22
Method: EPA/600/R-93/116

Lab ID: 260011719 **Client Sample #: MAL-Ins-01**
Location: Maluhia MADHC

Layer 1 of 1 **Description:** Gray fibrous sandy material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles, Glass beads & debris	Glass fibers 60%	**None Detected ND**

Lab ID: 260011720 **Client Sample #: MAL-Ins-02**
Location: Maluhia MADHC
Comments: Wet 1st layer was dried prior to analysis.

Layer 1 of 2 **Description:** Gray fibrous sandy material (outside tube)

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles, Glass beads & debris	Glass fibers 56%	**None Detected ND**
	Cellulose 2%	

Layer 2 of 2 **Description:** Gray fibrous sandy material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles, Glass beads & debris	Glass fibers 62%	**None Detected ND**

Lab ID: 260011721 **Client Sample #: MAL-Ins-03**
Location: Maluhia MADHC
Comments: Wet sample was dried prior to analysis.

Layer 1 of 1 **Description:** Gray fibrous sandy material with debris

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles, Glass beads & debris	Glass fibers 55%	**None Detected ND**
Debris, Mineral grains, Plastic	Cellulose 2%	

Lab ID: 260011722 **Client Sample #: MAL-Ins-04**
Location: Maluhia MADHC

Sampled by: Client
Analyzed by: Muhammad Yousuf **Date:** 02/06/2026
Reviewed by: Akane Yoshikawa **Date:** 02/06/2026

Akane Yoshikawa, Senior Laboratory Analyst

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Hawaii Intl. Env. Svcs (HIES) H
Address: 45-955 Kamehameha Hwy #302
Kaneohe, HI 96744

Attention: Ms. Mayumi Randall
Project Location: Maluhia MADHC

Batch #: 2601767.00
Client Project #: 25020
Date Received: 2/3/2026
Samples Received: 22
Samples Analyzed: 22
Method: EPA/600/R-93/116

Layer 1 of 3	**Description:** White adhesive with fibrous mesh,white paper and silver foil			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Fine particles, Adhesive/Binder, Metal foil	Cellulose	32%	**None Detected ND**
		Glass fibers	17%	
Layer 2 of 3	**Description:** White adhesive with fibrous mesh,white paper and silver foil			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Fine particles, Adhesive/Binder, Metal foil	Cellulose	38%	**None Detected ND**
		Glass fibers	10%	
Layer 3 of 3	**Description:** Dark yellow fibrous material			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Fine particles, Glass debris	Glass fibers	90%	**None Detected ND**
		Cellulose	<1%	

Lab ID: 260011723 **Client Sample #: MAL-Ins-05**
Location: Maluhia MADHC

Layer 1 of 3	**Description:** White adhesive with fibrous mesh,white paper and silver foil			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Fine particles, Adhesive/Binder, Metal foil	Cellulose	34%	**None Detected ND**
		Glass fibers	16%	
Layer 2 of 3	**Description:** Pink adhesive with fibrous mesh,white paper and silver foil			
	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Fine particles, Adhesive/Binder, Metal foil	Cellulose	34%	**None Detected ND**
		Glass fibers	16%	

Sampled by: Client
Analyzed by: Muhammad Yousuf **Date:** 02/06/2026
Reviewed by: Akane Yoshikawa **Date:** 02/06/2026

Akane Yoshikawa, Senior Laboratory Analyst

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Hawaii Intl. Env. Svcs (HIES) H
Address: 45-955 Kamehameha Hwy #302
Kaneohe, HI 96744

Attention: Ms. Mayumi Randall
Project Location: Maluhia MADHC

Batch #: 2601767.00
Client Project #: 25020
Date Received: 2/3/2026
Samples Received: 22
Samples Analyzed: 22
Method: EPA/600/R-93/116

Layer 3 of 3 **Description:** Multi-layered of light yellow fibrous material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Glass debris	Glass fibers 94%	**None Detected ND**

Lab ID: 260011724 **Client Sample #: MAL-Ins-06**

Location: Maluhia MADHC

Layer 1 of 3 **Description:** White adhesive with fibrous mesh,white paper and silver foil

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Adhesive/Binder, Metal foil	Cellulose 36%	**None Detected ND**
	Glass fibers 14%	

Layer 2 of 3 **Description:** Pink adhesive with fibrous mesh,white paper and silver foil

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Adhesive/Binder, Metal foil	Cellulose 32%	**None Detected ND**
	Glass fibers 17%	

Layer 3 of 3 **Description:** Multi-layered of light yellow fibrous material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Glass debris	Glass fibers 96%	**None Detected ND**

Lab ID: 260011725 **Client Sample #: MAL-Ins-07**

Location: Maluhia MADHC

Layer 1 of 2 **Description:** White rubbery material with adhesive

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Rubber/Binder, Adhesive/Binder, Fine particles	Glass fibers 7%	**None Detected ND**

Layer 2 of 2 **Description:** Multi-layered of light yellow fibrous material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Glass debris	Glass fibers 92%	**None Detected ND**

Sampled by: Client
Analyzed by: Muhammad Yousuf **Date:** 02/06/2026
Reviewed by: Akane Yoshikawa **Date:** 02/06/2026

Akane Yoshikawa, Senior Laboratory Analyst

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Hawaii Intl. Env. Svcs (HIES) H
Address: 45-955 Kamehameha Hwy #302
Kaneohe, HI 96744

Attention: Ms. Mayumi Randall
Project Location: Maluhia MADHC

Batch #: 2601767.00
Client Project #: 25020
Date Received: 2/3/2026
Samples Received: 22
Samples Analyzed: 22
Method: EPA/600/R-93/116

Lab ID: 260011726 **Client Sample #: MAL-Ins-08**

Location: Maluhia MADHC

Comments: Wet sample was dried prior to analysis.

Layer 1 of 2 **Description:** Tan adhesive with fibrous mesh,white brittle material,white/tan paper and silver foil

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Adhesive/Binder, Metal foil	Cellulose 32%	**None Detected ND**
Fine grains	Glass fibers 12%	

Layer 2 of 2 **Description:** Yellow fibrous material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Glass debris	Glass fibers 85%	**None Detected ND**
	Cellulose 4%	

Lab ID: 260011727 **Client Sample #: MAL-Ins-09**

Location: Maluhia MADHC

Layer 1 of 3 **Description:** White adhesive with fibrous mesh,white paper and silver foil

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Adhesive/Binder, Metal foil	Cellulose 34%	**None Detected ND**
	Glass fibers 18%	

Layer 2 of 3 **Description:** White adhesive with fibrous mesh,white paper and silver foil & small amount white crumbly

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Adhesive/Binder, Metal foil	Cellulose 34%	**None Detected ND**
Pumice	Glass fibers 10%	

Layer 3 of 3 **Description:** Yellow fibrous material with clear soft adhesive

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Adhesive/Binder, Glass debris	Glass fibers 67%	**None Detected ND**

Sampled by: Client
Analyzed by: Muhammad Yousuf **Date:** 02/06/2026
Reviewed by: Akane Yoshikawa **Date:** 02/06/2026

Akane Yoshikawa, Senior Laboratory Analyst

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Hawaii Intl. Env. Svcs (HIES) H
Address: 45-955 Kamehameha Hwy #302
Kaneohe, HI 96744

Attention: Ms. Mayumi Randall
Project Location: Maluhia MADHC

Batch #: 2601767.00
Client Project #: 25020
Date Received: 2/3/2026
Samples Received: 22
Samples Analyzed: 22
Method: EPA/600/R-93/116

	Fine grains	Cellulose	3%	

Lab ID: 260011728 **Client Sample #: MAL-Ins-10**

Location: Maluhia MADHC

Comments: No white wrap present.

Layer 1 of 1 **Description:** Multi-layered of yellow fibrous material

	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Fine particles, Glass debris	Glass fibers	90%	**None Detected ND**

Lab ID: 260011729 **Client Sample #: MAL-Ins-11**

Location: Maluhia MADHC

Layer 1 of 2 **Description:** Tan adhesive with fibrous mesh,tan paper and silver foil

	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Fine particles, Asphalt/Binder, Metal foil	Cellulose	24%	**None Detected ND**
		Glass fibers	16%	

Layer 2 of 2 **Description:** Multi-layered of pale yellow fibrous material

	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Fine particles, Glass debris	Glass fibers	94%	**None Detected ND**

Lab ID: 260011730 **Client Sample #: MAL-Ins-12**

Location: Maluhia MADHC

Layer 1 of 2 **Description:** Tan adhesive with fibrous mesh,tan paper and silver foil

	Non-Fibrous Materials:	Other Fibrous Materials:	%	**Asbestos Type: %**
	Fine particles, Adhesive/Binder, Metal foil	Cellulose	26%	**None Detected ND**
		Glass fibers	14%	

Sampled by: Client
Analyzed by: Muhammad Yousuf **Date:** 02/06/2026
Reviewed by: Akane Yoshikawa **Date:** 02/06/2026

Akane Yoshikawa, Senior Laboratory Analyst

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Hawaii Intl. Env. Svcs (HIES) H
Address: 45-955 Kamehameha Hwy #302
Kaneohe, HI 96744

Attention: Ms. Mayumi Randall
Project Location: Maluhia MADHC

Batch #: 2601767.00
Client Project #: 25020
Date Received: 2/3/2026
Samples Received: 22
Samples Analyzed: 22
Method: EPA/600/R-93/116

Layer 2 of 2 **Description:** Pale yellow fibrous material with thin white soft rubbery material ,adhesive & paper fibers

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Rubber/Binder, Adhesive/Binder, Fine particles	Glass fibers 60%	**None Detected ND**
Fine grains	Cellulose 7%	

Lab ID: 260011731 **Client Sample #: MAL-Ins-13**

Location: Maluhia MADHC

Layer 1 of 2 **Description:** Tan adhesive with fibrous mesh,tan paper and silver foil

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Adhesive/Binder, Metal foil	Cellulose 25%	**None Detected ND**
	Glass fibers 17%	

Layer 2 of 2 **Description:** Pale yellow fibrous material with thin white soft rubbery material ,adhesive & paper fibers

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Rubber/Binder, Adhesive/Binder, Fine particles	Glass fibers 65%	**None Detected ND**
Fine grains, Glass debris	Cellulose 4%	

Lab ID: 260011732 **Client Sample #: MAL-Ins-14**

Location: Maluhia MADHC

Layer 1 of 2 **Description:** White adhesive with fibrous mesh,white paper and silver foil

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Adhesive/Binder, Metal foil	Cellulose 28%	**None Detected ND**
	Glass fibers 17%	

Layer 2 of 2 **Description:** Multi-layered of yellow fibrous material with yellow debris

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Glass debris, Debris	Glass fibers 89%	**None Detected ND**

Sampled by: Client
Analyzed by: Muhammad Yousuf **Date:** 02/06/2026
Reviewed by: Akane Yoshikawa **Date:** 02/06/2026

Akane Yoshikawa, Senior Laboratory Analyst

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Hawaii Intl. Env. Svcs (HIES) H
Address: 45-955 Kamehameha Hwy #302
Kaneohe, HI 96744

Attention: Ms. Mayumi Randall
Project Location: Maluhia MADHC

Batch #: 2601767.00
Client Project #: 25020
Date Received: 2/3/2026
Samples Received: 22
Samples Analyzed: 22
Method: EPA/600/R-93/116

Lab ID: 260011733 **Client Sample #: MAL-Ins-15**

Location: Maluhia MADHC

Layer 1 of 3	**Description:** White adhesive with fibrous mesh,white paper and silver foil			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Fine particles, Adhesive/Binder, Metal foil	Cellulose	32%	**None Detected ND**
		Glass fibers	16%	
Layer 2 of 3	**Description:** Clear adhesive with fibrous mesh,white paper and silver foil			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Fine particles, Adhesive/Binder, Metal foil	Cellulose	36%	**None Detected ND**
		Glass fibers	7%	
Layer 3 of 3	**Description:** Multi-layered of yellow fibrous material with clear soft adhesive			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Fine particles, Adhesive/Binder, Glass debris	Glass fibers	72%	**None Detected ND**
		Cellulose	3%	

Lab ID: 260011734 **Client Sample #: MAL-Ins-16**

Location: Maluhia MADHC

Layer 1 of 3	**Description:** White adhesive with fibrous mesh,white paper and silver foil			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Fine particles, Adhesive/Binder, Metal foil	Cellulose	30%	**None Detected ND**
		Glass fibers	19%	
Layer 2 of 3	**Description:** Pink adhesive with fibrous mesh,white paper and silver foil			
	Non-Fibrous Materials:	Other Fibrous Materials:%		**Asbestos Type: %**
	Fine particles, Adhesive/Binder, Metal foil	Cellulose	37%	**None Detected ND**
		Glass fibers	9%	

Sampled by: Client
Analyzed by: Muhammad Yousuf **Date:** 02/06/2026
Reviewed by: Akane Yoshikawa **Date:** 02/06/2026

Akane Yoshikawa, Senior Laboratory Analyst

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Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Hawaii Intl. Env. Svcs (HIES) H
Address: 45-955 Kamehameha Hwy #302
Kaneohe, HI 96744

Attention: Ms. Mayumi Randall
Project Location: Maluhia MADHC

Batch #: 2601767.00
Client Project #: 25020
Date Received: 2/3/2026
Samples Received: 22
Samples Analyzed: 22
Method: EPA/600/R-93/116

Layer 3 of 3 **Description:** Multi-layered of yellow fibrous material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Glass debris	Glass fibers 92%	**None Detected ND**

Lab ID: 260011735 **Client Sample #: MAL-Ins-17**

Location: Maluhia MADHC

Layer 1 of 1 **Description:** White compacted powdery material

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Fine particles	Cellulose <1%	**None Detected ND**

Lab ID: 260011736 **Client Sample #: MAL-Ins-18**

Location: Maluhia MADHC

Comments: Wet sample was dried prior to analysis.

Layer 1 of 1 **Description:** White compacted powdery material with fibers dust

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Fine particles	Cellulose 3%	**None Detected ND**

Lab ID: 260011737 **Client Sample #: MAL-Ins-19**

Location: Maluhia MADHC

Layer 1 of 1 **Description:** White compacted powdery material with tan and white fibers dust

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Calcareous binder, Fine particles	Cellulose 5%	**None Detected ND**

Lab ID: 260011738 **Client Sample #: MAL-Ins-20**

Location: Maluhia MADHC

Layer 1 of 1 **Description:** Black soft foamy material with yellow(clear)adhesive,white plastic mesh and dust

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Fine particles, Adhesive/Binder, Foamy material	Cellulose 3%	**None Detected ND**
Plastic, Fine grains	Glass fibers 1%	

Sampled by: Client
Analyzed by: Muhammad Yousuf **Date:** 02/06/2026
Reviewed by: Akane Yoshikawa **Date:** 02/06/2026

Akane Yoshikawa, Senior Laboratory Analyst

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Bulk Asbestos Fibers Analysis

By Polarized Light Microscopy

Client: Hawaii Intl. Env. Svcs (HIES) H
Address: 45-955 Kamehameha Hwy #302
Kaneohe, HI 96744

Attention: Ms. Mayumi Randall
Project Location: Maluhia MADHC

Batch #: 2601767.00
Client Project #: 25020
Date Received: 2/3/2026
Samples Received: 22
Samples Analyzed: 22
Method: EPA/600/R-93/116

Lab ID: 260011739 **Client Sample #: MAL-Ins-21**

Location: Maluhia MADHC

Comments: No glue present.

Layer 1 of 1 **Description:** Black soft foamy material with tan dust

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles, Foamy material	Glass fibers 1%	**None Detected ND**
Fine grains		

Lab ID: 260011740 **Client Sample #: MAL-Ins-22**

Location: Maluhia MADHC

Layer 1 of 1 **Description:** Black soft foamy material with white dust

Non-Fibrous Materials:	Other Fibrous Materials:%	**Asbestos Type: %**
Binder/Filler, Fine particles, Foamy material	Glass fibers 2%	**None Detected ND**
Fine grains, Mineral grains		

Sampled by: Client
Analyzed by: Muhammad Yousuf **Date:** 02/06/2026
Reviewed by: Akane Yoshikawa **Date:** 02/06/2026

Akane Yoshikawa, Senior Laboratory Analyst

Note: If samples are not homogeneous, then subsamples of the components were analyzed separately. All bulk samples are analyzed using both EPA 600/R-93/116 and EPA 40 CFR Appendix E to Subpart E of Part 763 with the following measurement uncertainties for the reported % Asbestos (1%=0-3%, 5%=1-9%, 10%=5-15%, 20%=10-30%, 50%=40-60%). This report relates only to the items tested. If sample was not collected by NVL personnel, then the accuracy of the results is limited by the methodology and acuity of the sample collector. This report shall not be reproduced except in full, without written approval of NVL Laboratories, Inc. It shall not be used to claim product endorsement by NVLAP or any other agency of the US Government

ASBESTOS LABORATORY SERVICES

NVL

Company	Hawaii Intl. Env. Svcs (HIES) H	**NVL Batch Number**	**2601767.00**
Address	45-955 Kamehameha Hwy #302 Kaneohe, HI 96744	**TAT** 3 Days	**AH** No
		Rush TAT	
Project Manager	Ms. Mayumi Randall	**Due Date** 2/6/2026	**Time** 10:15 AM
Phone	(808) 263-4787	**Email**	mayumi@hiesinc.com
		Fax	(808) 263-0860

Project Name/Number: 25020 **Project Location:** Maluhia MADHC

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 22 Rush Samples

	Lab ID	Sample ID	Description	A/R
1	260011719	MAL-Ins-01		A
2	260011720	MAL-Ins-02		A
3	260011721	MAL-Ins-03		A
4	260011722	MAL-Ins-04		A
5	260011723	MAL-Ins-05		A
6	260011724	MAL-Ins-06		A
7	260011725	MAL-Ins-07		A
8	260011726	MAL-Ins-08		A
9	260011727	MAL-Ins-09		A
10	260011728	MAL-Ins-10		A
11	260011729	MAL-Ins-11		A
12	260011730	MAL-Ins-12		A
13	260011731	MAL-Ins-13		A
14	260011732	MAL-Ins-14		A
15	260011733	MAL-Ins-15		A
16	260011734	MAL-Ins-16		A
17	260011735	MAL-Ins-17		A
18	260011736	MAL-Ins-18		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Frank Larkin		NVL	2/3/26	1015
Analyzed by	Muhammad Yousuf		NVL	2/6/26	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 2/3/2026
Time: 11:13 AM
Entered By: Kelly AuVu

ASBESTOS LABORATORY SERVICES

Company	Hawaii Intl. Env. Svcs (HIES) H	**NVL Batch Number**	**2601767.00**
Address	45-955 Kamehameha Hwy #302 Kaneohe, HI 96744	**TAT** 3 Days	**AH** No
		Rush TAT	
Project Manager	Ms. Mayumi Randall	**Due Date** 2/6/2026	**Time** 10:15 AM
Phone	(808) 263-4787	**Email**	mayumi@hiesinc.com
		Fax	(808) 263-0860

Project Name/Number: 25020 **Project Location:** Maluhia MADHC

Subcategory PLM Bulk

Item Code ASB-02 EPA 600/R-93-116 Asbestos by PLM <bulk>

Total Number of Samples 22 Rush Samples

	Lab ID	Sample ID	Description	A/R
19	260011737	MAL-Ins-19		A
20	260011738	MAL-Ins-20		A
21	260011739	MAL-Ins-21		A
22	260011740	MAL-Ins-22		A

	Print Name	Signature	Company	Date	Time
Sampled by	Client				
Relinquished by	Federal Express				

Office Use Only	Print Name	Signature	Company	Date	Time
Received by	Frank Larkin		NVL	2/3/26	1015
Analyzed by	Muhammad Yousuf		NVL	2/6/26	
Results Called by					
☐ **Faxed** ☐ **Emailed**					

Special Instructions:

Date: 2/3/2026
Time: 11:13 AM
Entered By: Kelly AuVu

CHAIN of CUSTODY SAMPLE LOG

2601767

Client: Hawaii Intl. Env. Svcs (HIES) H
Street: 45-955 Kamehameha Hwy., Ste 302
Kaneohe, HI 96744

Project Manager: Mayumi Randall
Project Location: Maluhia MADHC

Phone: (808) 263-4787 Fax: (808) 263-0860

NVL Batch Number:
Client Job Number: 25020
Total Samples:

Turn Around Time: ☐ 1 Hr ☐ 6 Hrs ☒ 3 Days ☐ 10 Days ☐ 2 Hrs ☐ 1 Day ☐ 4 Days ☐ 4 Hrs ☐ 2 Days ☐ 5 Days
Please call for TAT less than 24 Hrs

Email address: mayumi@hiesinc.com

☐ Asbestos Air ☐ PCM (NIOSH 7400) ☐ TEM (NIOSH 7402) ☐ TEM (AHERA) ☐ TEM (EPA Level II) ☐ Other
☒ Asbestos Bulk ☒ PLM (EPA/600/R-93/116) ☐ PLM (EPA Point Count) ☐ PLM (EPA Gravimetry) ☐ TEM BULK
☐ Mold/Fungus ☐ Mold Air ☐ Mold Bulk ☐ Rotameter Calibration

METALS
☐ Total Metals ☐ TCLP ☐ Cr 6

Det. Limit
☐ FAA (ppm) ☐ ICP (ppm) ☐ GFAA (ppb) ☐ CVAA (ppb)

Matrix
☐ Air Filter ☐ Drinking water ☐ Dust/wipe (Area) ☐ Soil ☐ Paint Chips in % ☐ Paint Chips in cm2 ☐ Waste Water ☐ Other

RCRA Metals
☐ All 8
☐ Arsenic (As) ☐ Barium (Ba) ☐ Cadmium (Cd) ☐ Chromium (Cr) ☐ Lead (Pb) ☐ Mercury (Hg) ☐ Selenium (Se) ☐ Silver (Ag)

Other Metals
☐ All 3 ☐ Copper (Cu) ☐ Nickel (Ni) ☐ Zinc (Zn)

☐ Other Types of Analysis ☐ Fiberglass ☐ Silica ☐ Nuisance Dust ☐ Respirable Dust ☐ Other (Specify)

Condition of Package: ☐ Good ☐ Damaged (no spillage) ☐ Severe damage (spillage)

Seq. #	Lab ID	Client Sample Number	Comment (e.g Sample are, Sample Volume, etc)	A/R
1		MAL-Ins - 01	Gray Fluffy Materials	
2		MAL-Ins - 02	Gray Fluffy Materials	
3		MAL-Ins - 03	Gray Fluffy Materials	
4		MAL-Ins - 04	Dark yellow TSI	
5		MAL-Ins - 05	Light yellow TSI	
6		MAL-Ins - 06	Light yellow TSI	
7		MAL-Ins - 07	Light yellow TSI	
8		MAL-Ins - 08	White wrap TSI	
9		MAL-Ins - 09	White wrap TSI	
10		MAL-Ins - 10	White wrap TSI	
11		MAL-Ins - 11	Silver wrap/yellow TSI	
12		MAL-Ins - 12	Silver wrap/yellow TSI	
13		MAL-Ins - 13	Silver wrap/yellow TSI	
14		MAL-Ins - 14	White wrap TSI	
15		MAL-Ins - 15	White wrap TSI	

	Print Below	Sign Below	Company	Date	Time
Sampled by	M Randall		HIES	2/1/26	1000
Relinquished by	M Randall		"	2/2/26	1200
Received by	Frank Lachia		NVL	2/3/26	105 FL
Analyzed by					
Results Called by					
Results Faxed by					

Special Instructions: Unless requested in writing, all samples will be disposed of two (2) weeks after analysis.

CHAIN of CUSTODY SAMPLE LOG

2601767

Client: Hawaii Intl. Env. Svcs (HIES) H
Street: 45-955 Kamehameha Hwy., Ste 302
Kaneohe, HI 96744

NVL Batch Number:
Client Job Number: 25020
Total Samples:
Turn Around Time: ☐ 1 Hr ☐ 6 Hrs ☒ 3 Days ☐ 10 Days ☐ 2 Hrs ☐ 1 Day ☐ 4 Days ☐ 4 Hrs ☐ 2 Days ☐ 5 Days
Please call for TAT less than 24 Hrs

Project Manager: Mayumi Randall
Project Location: Maluhia MADHC

Email address: mayumi@hiesinc.com

Phone: (808) 263-4787 Fax: (808) 263-0860

☐ Asbestos Air ☐ PCM (NIOSH 7400) ☐ TEM (NIOSH 7402) ☐ TEM (AHERA) ☐ TEM (EPA Level II) ☐ Other
☒ Asbestos Bulk ☒ PLM (EPA/600/R-93/116) ☐ PLM (EPA Point Count) ☐ PLM (EPA Gravimetry) ☐ TEM BULK
☐ Mold/Fungus ☐ Mold Air ☐ Mold Bulk ☐ Rotameter Calibration

METALS
☐ Total Metals
☐ TCLP
☐ Cr 6

Det. Limit
☐ FAA (ppm)
☐ ICP (ppm)
☐ GFAA (ppb)
☐ CVAA (ppb)

Matrix
☐ Air Filter
☐ Drinking water
☐ Dust/wipe (Area)
☐ Soil
☐ Paint Chips in %
☐ Paint Chips in cm2
☐ Waste Water
☐ Other

RCRA Metals
☐ All 8
☐ Arsenic (As)
☐ Barium (Ba)
☐ Cadmium (Cd)
☐ Chromium (Cr)
☐ Lead (Pb)
☐ Mercury (Hg)
☐ Selenium (Se)
☐ Silver (Ag)

Other Metals
☐ All 3
☐ Copper (Cu)
☐ Nickel (Ni)
☐ Zinc (Zn)

☐ Other Types of Analysis ☐ Fiberglass ☐ Nuisance Dust ☐ Other (Specify)
☐ Silica ☐ Respirable Dust

Condition of Package: ☐ Good ☐ Damaged (no spillage) ☐ Severe damage (spillage)

Seq. #	Lab ID	Client Sample Number	Comment (e.g Sample are, Sample Volume, etc)	A/R
1		MAL-Ins - 16	White wrap TSI	
2		MAL-Ins - 17	White Joint compound	
3		MAL-Ins - 18	White Joint compound	
4		MAL-Ins - 19	White Joint compound	
5		MAL-Ins - 20	Black form, yellow glue	
6		MAL-Ins - 21	Black form, yellow glue	
7		MAL-Ins - 22	Black form, yellow glue	
8				
9				
10				
11				
12				
13				
14				
15				

	Print Below	Sign Below	Company	Date	Time
Sampled by	M Randall		HLES	2/1/26	1000
Relinquished by	M Randall		"	2/2/26	1200
Received by	Frank Larkin		NVL	2/3/26	1015 FL
Analyzed by					
Results Called by					
Results Faxed by					

Special Instructions: Unless requested in writing, all samples will be disposed of two (2) weeks after analysis.

MALUHIA
REPLACE AIR CONDITIONING, BASEMENT FLOOR

1027 HALA DRIVE, HONOLULU, HAWAII 96817

PROJECT NO. 25-169
T.M.K.: 1-6-009:004
PREPARED BY MECHANICAL / ELECTRICAL ENGINEER: INSYNERGY ENGINEERING, INC.
ARCHITECT: INK ARCHITECTS, LLC

INDEX OF DRAWINGS

SHT. NO.	DWG. NO.	DESCRIPTION
1	001	TITLE SHEET
2	G-100	EGRESS PATH DURING CONSTRUCTION PLAN
3	A-100	ARCHITECTURAL GENERAL NOTES
4	AD101	DEMOLITION PARTIAL BASEMENT REFLECTED CEILING PLAN
5	A-101	PARTIAL BASEMENT REFLECTED CEILING PLAN
6	A-102	PARTIAL BASEMENT FLOOR PLAN
7	A-801	MISCELLANEOUS DETAILS
8	M-001	MECHANICAL GENERAL NOTES AND LEGEND
9	MD101	PARTIAL BASEMENT HVAC DEMO PLAN
10	MD102	PARTIAL SUB-BASEMENT MECHANICAL DEMO PLAN
11	MD103	PARTIAL BASEMENT HVAC PIPING DEMO PLAN
12	M-101	PARTIAL BASEMENT HVAC PLAN
13	M-102	PARTIAL SUB-BASEMENT MECHANICAL PLAN
14	M-103	PARTIAL BASEMENT HVAC PIPING PLAN
15	M-401	MECHANICAL CONTROLS
16	M-501	MECHANICAL DETAILS
17	M-601	MECHANICAL SCHEDULES
18	E-001	ELECTRICAL GENERAL NOTES
19	E-002	ELECTRICAL LEGEND AND SYMBOLS LIST
20	E-101	OVERALL BASEMENT PLAN
21	E-102	OVERALL SUB-BASEMENT PLAN
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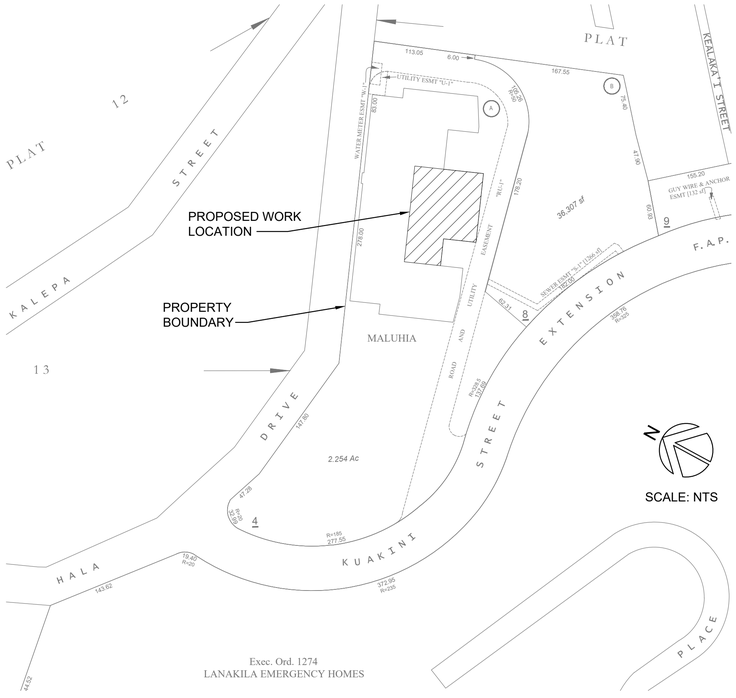
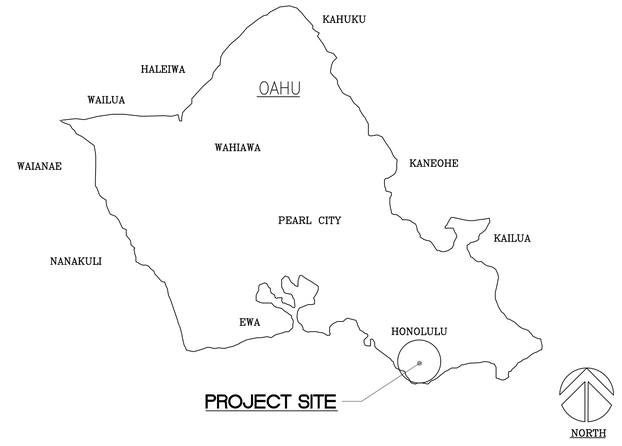
23	ED102	PARTIAL BASEMENT POWER DEMOLITION PLAN
24	ED103	PARTIAL SUB-BASEMENT POWER DEMOLITION PLAN
25	E-103	PARTIAL BASEMENT LIGHTING PLAN
26	E-104	PARTIAL BASEMENT ELECTRICAL PLAN
27	E-105	PARTIAL SUB-BASEMENT ELECTRICAL PLAN
28	E-601	ELECTRICAL ONE-LINE DIAGRAM

PLOT PLAN

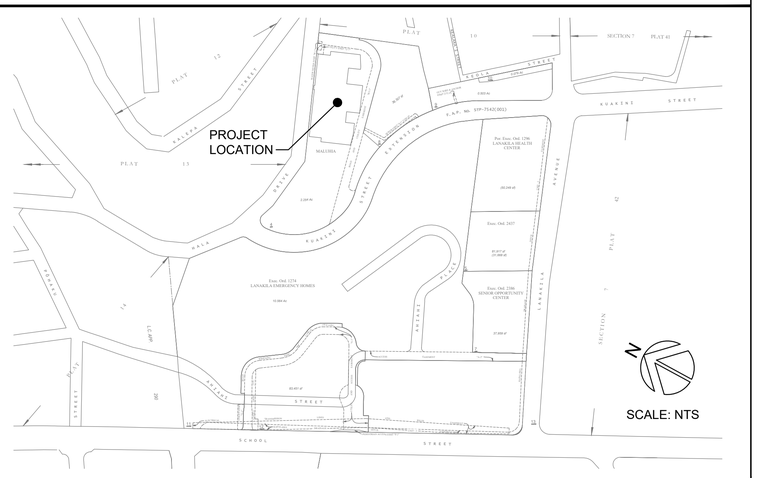


Exec. Ord. 1274
LANAKILA EMERGENCY HOMES

ISLAND MAP



TAX MAP KEY



PROJECT COMMERCIAL BUILDING CODE INFORMATION:

TYPE OF OCCUPANCY GROUP: B

TYPE OF CONSTRUCTION: IIB

STRUCTURE CODE: OFFICE BUILDING

TOTAL NUMBER OF BUILDING STORY HEIGHT: 4 STORIES
THIS PROJECT UNIT FLOOR LEVEL: BASEMENT
EXISTING TOTAL FLOOR AREA (SF): 75,981
NEW FLOOR AREA (SF) OF THIS PROJECT: 0

SPECIAL INSPECTIONS ("YES" OR "NO"): NO

CALLED INSPECTION ("YES" OR "NO"): NO

REVISIONS	BY

This work was prepared by me or under my supervision and construction shall not commence until be under my observation.

JOEL P. YUEN — LICENSED PROFESSIONAL ENGINEER — No. 5805-M — HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2028

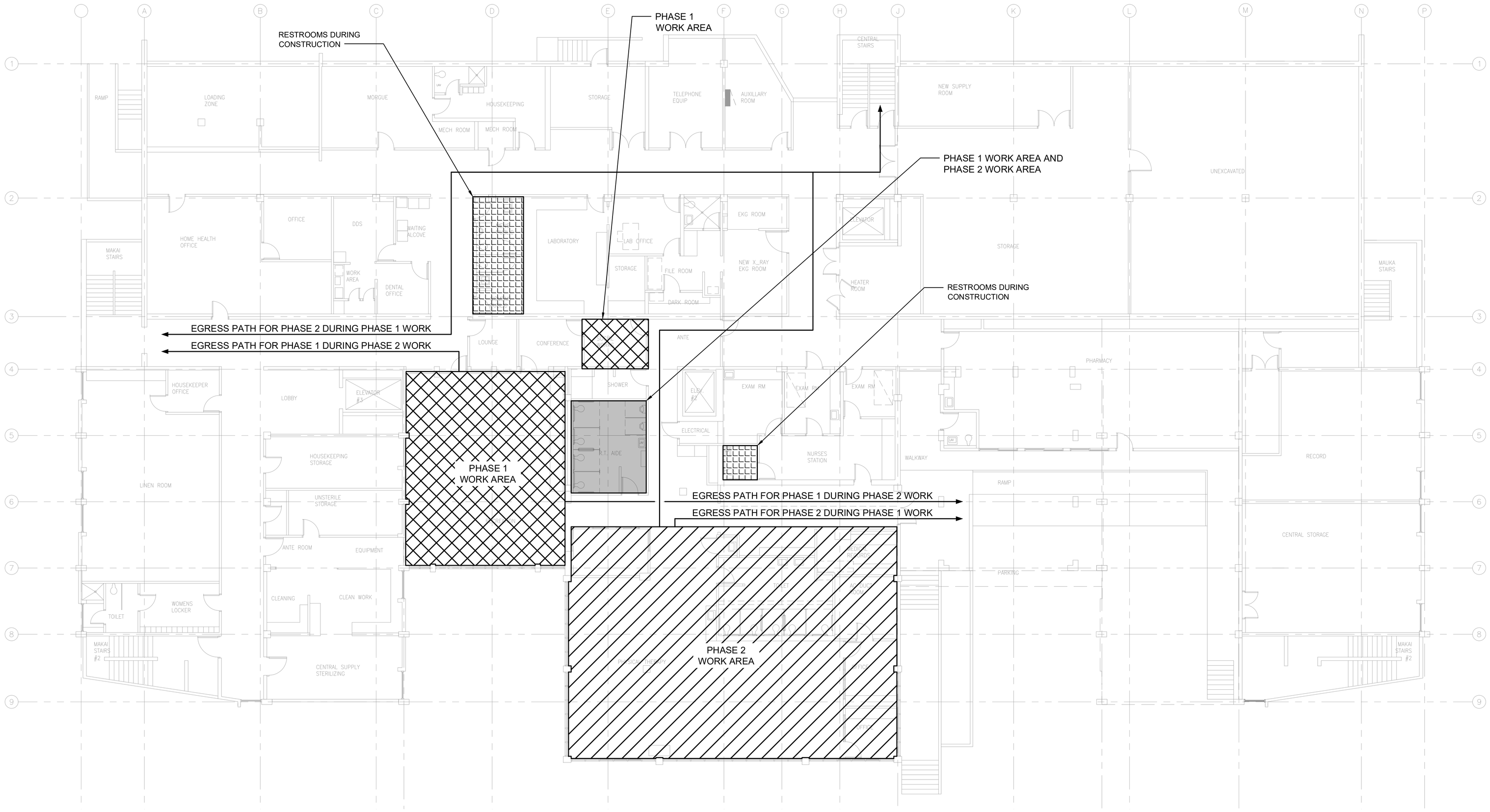
INSYNERGY ENGINEERING LLC
MECHANICAL ▪ ELECTRICAL ▪ FIRE PROTECTION
828 Fort Street Mall Suite 500, Honolulu, Hawaii 96813
Phone: (808) 521-3773 Fax: (808) 521-3993

MALUHIA REPLACE AIR CONDITIONING, BASEMENT FLOOR
1027 HALA DRIVE, HONOLULU, HI 96817
TMK: 1-6-009:004

TITLE SHEET

Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	001

Of 1 Sheets 28



1 EGRESS PATH DURING CONSTRUCTION PLAN
SCALE: 1" = 10'

PLAN NORTH

0 10' 20'

REVISIONS	BY

This work was prepared by me or under my supervision and I will be under my observation.

JOEL P. YUEN * LICENSED PROFESSIONAL ENGINEER * No. 5805-M * HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2028

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MALUHIA REPLACE AIR CONDITIONING, BASEMENT FLOOR
1027 HALA DRIVE, HONOLULU, HI 96817
TMK: 1-6-009:004

EGRESS PATH DURING CONSTRUCTION PLAN

Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	G-100

Of 2 Sheets 28

ARCHITECTURAL GENERAL NOTES

THE FOLLOWING UNDERLINED TERMS AS USED HEREIN SHALL BE DEFINED AS:

- THE OWNER: HHSC
- THE OWNER'S REPRESENTATIVE: HHSC REPRESENTATIVE
- THE ARCHITECT: INK ARCH LLC

1. LAWS AND ORDINANCES: AS USED HEREIN SHALL MEAN ALL COUNTY, STATE, AND NATIONAL CODES, ORDINANCES, STANDARDS, RULES, AND REGULATIONS OF ANY NATURE WHICH ARE PERTINENT TO, OR REGULATORY OVER, THE WORK COVERED BY THE CONTRACT DOCUMENTS OF THIS PROJECT. ALL CONTRACTORS SHALL COMPLY FULLY WITH ALL APPLICABLE LAWS AND ORDINANCES. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT BUILDING CODE AND THE LATEST STATE OF HAWAII AMENDMENTS OR THE RESPECTIVE CITY AND/OR COUNTY AMENDMENTS BY EACH AGENCY HAVING JURISDICTION OF THE PROJECT.

2. CONFLICT: IN THE CASE OF ANY CONFLICT WHEREIN THE METHODS, OR STANDARDS OF INSTALLATION, OR THE SPECIFIED MATERIALS ARE NOT IN COMPLIANCE WITH THE REQUIREMENTS OF THE LAWS OR ORDINANCES, THE LAWS OR ORDINANCES SHALL GOVERN. IN THE CASE OF A DISCREPANCY IN THE DRAWINGS OR SPECIFICATIONS, BUT NOT DIRECTLY RELATED TO THE PROVISIONS, CODES, OR ORDINANCES, THE CONTRACTOR SHALL 1) PROVIDE THE BETTER QUALITY, OR GREATER QUANTITY OF WORK, OR 2) COMPLY WITH THE MORE STRINGENT REQUIREMENT IN ACCORDANCE WITH THE ARCHITECT'S INTERPRETATION, OR 3) REQUEST IN WRITING ADDITIONAL CLARIFICATION OR INFORMATION. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE OF ALL CONFLICTS IN WRITING.

3. CONDITIONS OF THE WORK: THE INFORMATION INDICATED ON THE DRAWINGS IS BASED ON LIMITED FIELD INVESTIGATION AND ON THE AVAILABLE RESOURCES AT THE TIME OF DOCUMENT PREPARATION. AS A RESULT, THE ACCURACY AND COMPLETENESS OF THE INFORMATION IS NOT GUARANTEED ON DATE OF COMMENCEMENT OF CONSTRUCTION. THEREFORE, THE CONTRACTOR SHALL VERIFY THE DIMENSIONS SHOWN ON THE DRAWINGS WITH ACTUAL FIELD MEASUREMENTS, EXAMINE THE JOB SITE, VERIFY ALL FIELD CONDITIONS AND PERTINENT DIMENSIONS PRIOR TO PREPARING LAYOUTS, SUBMITTALS, SHOP DRAWINGS, AND/OR ORDERING ANY MATERIAL, AND PROVIDE THE LABOR AND MATERIALS REQUIRED TO COMPLETE THE REQUIRED WORK.

4. WORKMANSHIP: ALL WORK SHALL BE PERFORMED IN A PROFESSIONAL MANNER. WORKMANSHIP SHALL BE REPRESENTATIVE OF THE BEST HAWAII INDUSTRY STANDARD OF THE RESPECTIVE TRADES. THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE IN WRITING PRIOR TO THE COMMENCEMENT OF WORK, IF THERE ARE ANY DIMENSIONAL DISCREPANCIES, OR IF THERE ARE ANY CONDITIONS THAT EXIST WHICH MAY PREVENT THE CONTRACTOR'S WORKMANSHIP AND PERFORMANCE OF WORK PER CONTRACT DOCUMENTS, AND/OR OF ANY AND ALL ADDITIONAL WORK THAT MAY BE REQUIRED AS A RESULT OF THE OBSERVED CONDITIONS.

5. OMISSIONS: OMISSIONS OF DRAWINGS, OR SPECIFICATIONS, OR THE OMISSIONS OF DETAILS OF WORK WHICH ARE MANIFESTLY NECESSARY TO CARRY OUT THE INTENT OF THE DRAWINGS AND SPECIFICATIONS, AND/OR WHICH ARE PER HAWAII INDUSTRY STANDARD CUSTOMARILY PERFORMED, SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMING SUCH OMITTED, OR INCORRECTLY DESCRIBED DETAILS OF THE WORK, BUT SHALL BE PERFORMED AS IF FULLY AND CORRECTLY SET FORTH AND DESCRIBED IN THE DRAWINGS AND SPECIFICATIONS. THE CONTRACTOR UPON DISCOVERY OF OMISSION SHALL IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE VERBALLY OF SUCH OMISSIONS AND PROVIDE A WRITTEN STATEMENT OF THE OMISSIONS WITHIN (2) WORKING DAYS OF VERBAL NOTIFICATION.

6. INTENT OF THE DRAWINGS: THE DRAWINGS ARE INTENDED TO DEFINE AND ESTABLISH THE PHYSICAL REQUIREMENTS OF THE PROJECT, I.E., THE DESIGN, LOCATIONS AND DIMENSIONS OF THE WORK, BASED ON RECOGNIZED STANDARDS EVEN IF NOT ACTUALLY SHOWN, BUT REASONABLY INFERRED. THE CONTRACTOR SHALL REVIEW AND VERIFY THE INFORMATION ON ALL DRAWINGS WITHIN A REASONABLE TIME BEFORE PERFORMING ANY WORK AND UPON DISCOVERY OF ANY OMISSION AND/OR CONFLICT IMMEDIATELY NOTIFY THE OWNER'S REPRESENTATIVE IN WRITING OF ANY OMISSIONS, CONFLICTS AND DISCREPANCIES. THE CONTRACTOR SHALL COORDINATE THE WORK OF ALL SUBCONTRACTORS/TRADES TO ACHIEVE THE DESIGN INTENT AND SPECIFIED REQUIREMENTS AND IS RESPONSIBLE TO COMPLETE ANY AND ALL WORK ASSOCIATED WITH SUCH COORDINATION.

7. COMPLETION OF THE WORK: THE CONTRACTOR SHALL IN THE EXECUTION OF WORK BY ALL TRADES, PERFORM ANY AND ALL CUTTING, PATCHING, REPAIRING, RESTORING AND THE LIKE NECESSARY TO COMPLETE THE WORK. THE CONTRACTOR SHALL RESTORE ANY DAMAGED OR AFFECTED SURFACES RESULTING FROM THE WORK OF THIS CONTRACT TO THEIR ORIGINAL CONDITION AND FINISH TO THE SATISFACTION OF THE OWNER. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES OF CONSTRUCTION, INCLUDING, BUT NOT LIMITED TO SAFETY PRECAUTIONS, FASTENERS, ANCHORAGES, ETC. UNLESS NOTED OTHERWISE.

8. PERMITS: THE CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS REQUIRED.

9. DIMENSIONS: UNLESS OTHERWISE NOTED IN THE CONSTRUCTION DOCUMENTS, ALL DIMENSIONS ARE TAKEN TO THE FACE OF FINISH CONSTRUCTION. WRITTEN DIMENSIONS PREVAIL. DO NOT SCALE DRAWINGS UNLESS GRAPHIC SCALE IS PROVIDED ON THE SPECIFIC DRAWING. SHOULD DIMENSIONAL DISCREPANCIES BE FOUND, CONTACT THE OWNER'S REPRESENTATIVE IMMEDIATELY FOR CLARIFICATION PRIOR TO PROCEEDING WITH THE WORK.

10. CLEAN UP: THE CONTRACTOR SHALL CLEAN AND REMOVE ALL TRASH, DIRT, DEBRIS, AND SPILLAGE ARISING FROM THE WORK AREA DAILY TO THE SATISFACTION OF THE OWNER AND THE ARCHITECT, INCLUDING BUT NOT LIMITED TO: CLEANING OF DIRT, PUTTY, PAINT, OVERSPRAY, DUST, ETC. FROM FLOORS, WORK AREAS, COUNTER TOPS, DOOR AND WINDOW FACES AND FRAMES.

11. SAFE OPERATIONS: THE CONTRACTOR SHALL ENSURE THAT ANY AND ALL CONSTRUCTION ACTIVITIES DO NOT IMPACT OR INTERFERE WITH NORMAL OR SAFE OPERATIONS AT THE PROJECT SITE. THE CONTRACTOR SHALL TAKE ALL SAFETY PRECAUTIONS NECESSARY TO PROTECT THE BUILDING OCCUPANTS AND THE PUBLIC THROUGHOUT THE DURATION OF THIS PROJECT.

12. PREVENT DAMAGE: THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT DAMAGE TO EXISTING AND COMPLETED STRUCTURES/LANDSCAPING/SITE IMPROVEMENTS OF THIS PROJECTS AS WELL AS ON ADJACENT PROPERTY(IES) TO THAT OF THIS CONTRACTED WORK. THE CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR LABOR/MATERIAL COSTS OF ANY DAMAGES TO ANY CONSTRUCTED WORK AND/OR EXISTING STRUCTURES/LANDSCAPING/SITE IMPROVEMENTS CAUSED BY HIS OPERATIONS.

13. DO NOT BLOCK EXITS: THE CONTRACTOR SHALL NOT BLOCK OR OBSTRUCT ANY FIRE LANES AND FIRE EXIT WAYS DURING THE EXECUTION OF WORK THROUGHOUT THIS PROJECT DURING THE CONSTRUCTION CONTRACT PERIOD.

14. SOUND AND NOISE CONTROL: THE CONTRACTOR SHALL NOTIFY AND COORDINATE WITH THE OWNER'S REPRESENTATIVE ALL WORK THAT WILL GENERATE EXCESSIVE NOISE WHICH MAY DISRUPT NORMAL OPERATING ACTIVITIES.

15. MATERIAL DISPOSAL: UNLESS NOTED IN THE DRAWINGS OR SPECIFICATIONS, MATERIALS RESULTING FROM THE DEMOLITION WORK SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE AND LOCAL LAWS, RULES AND REGULATIONS OR AS SPECIFIED.

16. DEFINITIONS:
    a) "FURNISH" MEANS "FURNISH ONLY". MATERIALS OR ITEMS TO BE FURNISHED SHALL BE NEW AND CONSIGNED TO THE CONTRACTOR AND DELIVERED TO THE SITE.
    b) "INSTALL" MEANS "INSTALL ONLY" FURNISHED MATERIALS OR ITEMS. SUCH MATERIALS OR ITEMS SHALL BE RECEIVED AT THE SITE, UNLOADED, STORED, PROTECTED, AND INSTALLED IN PLACE, INCLUDING FINAL CONNECTION, UNLESS SUCH WORK IS SPECIFICALLY EXCLUDED.
    c) "PROVIDE" MEANS "FURNISH AND INSTALL" COMPLETE, IN PLACE AND READY FOR USE, INCLUDING FINAL CONNECTIONS. ALL WORK SHOWN IN THE DRAWINGS SHALL BE UNDERSTOOD AS "PROVIDE" WHETHER NOTES INDICATING "PROVIDE" ARE INDICATED OR NOT.
    d) WORDS "CONTRACTOR SHALL" ARE IMPLIED AND SHALL BE SO UNDERSTOOD WHEREVER A DIRECTION IS STATED IN IMPERATIVE MOOD AND DIRECTION "PROVIDE" IS USED.
    e) UNLESS SPECIFICALLY STATED AS "EXISTING", ALL MATERIALS SHALL BE NEW IN ALL CASES WHEN MATERIAL NOTES ARE ADDED TO DRAWINGS. USES OF "FURNISH" AND "PROVIDE" AUTOMATICALLY MEAN "NEW" UNLESS SPECIFICALLY STATED AS "EXISTING".

19. PRE-CONSTRUCTION ASSESSMENT: BEFORE STARTING ANY WORK ON ANY EXISTING CONSTRUCTION THE CONTRACTOR SHALL MAKE A THOROUGH AND COMPLETE INVESTIGATION OF ANY RECIPIENT SURFACES AND DETERMINE THEIR SUITABILITY TO RECEIVE REQUIRED ADDITIONAL CONSTRUCTION AND FINISHES. THE CONTRACTOR SHALL MAKE WHATEVER REPAIRS AND CONDITIONING REQUIRED TO PROPERLY PREPARE SUCH SURFACES.

20. SUBCONTRACTORS: THE USE OF UNLICENSED CONTRACTORS IS STRICTLY PROHIBITED. THE CONTRACTOR IS RESPONSIBLE TO THE OWNER FOR ACTIONS OF THE CONTRACTOR'S EMPLOYEES, SUBCONTRACTORS AND THEIR AGENTS AND EMPLOYEES, AND OTHER PERSONS PERFORMING ANY PORTIONS OF WORK UNDER CONTRACT WITH THE CONTRACTOR.

21. HAZARDOUS MATERIALS: HAZARDOUS MATERIAL ABATEMENT MEASURES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AS INDICATED IN THE DRAWINGS AND/OR SPECIFICATIONS. BURNING OF ANY DEBRIS IS NOT PERMITTED. EXPLOSIVES ARE NOT ALLOWED.

22. MECHANICAL AND ELECTRICAL ITEMS: ALL NEW EXPOSED MECHANICAL AND ELECTRICAL PIPING, CONDUITS, DUCTWORK, SUPPORTS AND RELATED FITTINGS, AND FASTENERS ARE TO BE PAINTED THE SAME COLOR/SHEEN AS THE COLOR/SHEEN OF THE SURFACE IT IS ATTACHED TO UNLESS OTHERWISE NOTED.

23. PAINTING: PAINT ALL NEW WORK THAT IS COMPLETED AND LEFT EXPOSED TO VIEW, UNLESS OTHERWISE NOTED. PAINT PRODUCT(S) SHALL BE COMPATIBLE TO THE SUBSTRATE OR SURFACE IT IS APPLIED TO AND SHALL RECEIVE THE PROPER SURFACE PREPARATION AND COATINGS AS RECOMMENDED BY THE PAINT MANUFACTURER. THE CONTRACTOR SHALL CONFIRM WITH THE ARCHITECT ALL FINISH PAINT COLOR AND SHEEN SELECTION(S).

24. "EXISTING" VERSUS "NEW" WORK : ALL BUILDING, AND DETAIL COMPONENTS, SHOWN ON THESE DRAWINGS SHALL BE UNDERSTOOD AS "NEW" UNLESS PREFIXED BY THE WORD "EXISTING". IN THE EVENT THE CONTRACTOR DISCOVERS CONFLICTING INFORMATION, THE CONTRACTOR SHALL IMMEDIATELY SUBMIT IN WRITING, A FORMAL REQUEST FOR INFORMATION ("RFI") TO THE ARCHITECT FOR A RESOLUTION TO THE RFI.

REVISIONS	BY

This work was prepared by me or under my supervision and I certify that to the best of my knowledge it conforms to code. It will be under my observation.

SCOTT R.J. HARADA ★ LICENSED PROFESSIONAL ARCHITECT No. 14637 ★ U.S.A. HAWAII

EXPIRATION DATE 04/30/2026

INK ARCH LLC
650 Iwilei Road, Suite 288
Honolulu, Hawaii 96817
Phone: 808.536.1174
Fax: 808.536.1569
E-mail: ink@inkarch.com

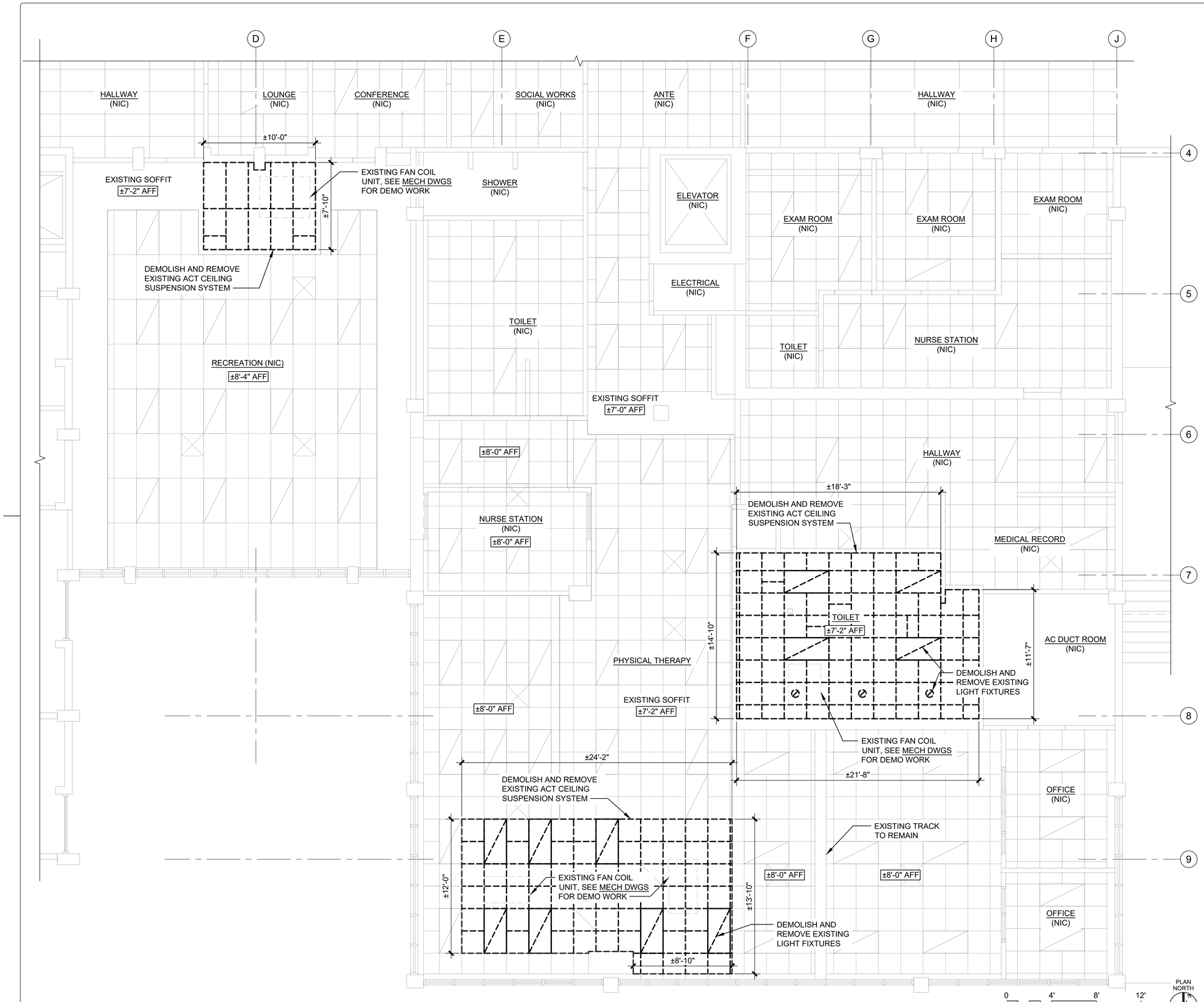
INK ARCHITECTS

MALUHIA REPLACE AIR CONDITIONING, BASEMENT FLOOR
1027 HALA DRIVE, HONOLULU, HI 96817
TMK: 1-6-009:004

ARCHITECTURAL GENERAL NOTES

Designed	MM
Drawn	KY
Checked	EA
Date	03-20-26
Job No.	25-169
Sheet	A-100

Of 3 Sheets 28



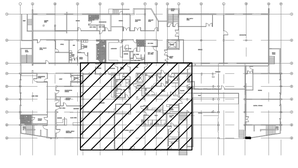
1 AD101 DEMOLITION PARTIAL BASEMENT REFLECTED CEILING PLAN

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

LEGEND

- DEMO/ REMOVE EXISTING ACT CEILING AND GRID
- DEMO/ REMOVE EXISTING CEILING LIGHT FIXTURE
- EXISTING WALL PARTITION
- EXISTING COLUMN
- EXISTING ACT CEILING AND GRID
- EXISTING CEILING LIGHT FIXTURE
- EXISTING MECH EQUIPMENT

KEY PLAN



REVISIONS	BY

This work was prepared by me or under my supervision and constitutes my professional work. It will be under my observation.

SCOTT R.J. HARADA LICENSED PROFESSIONAL ARCHITECT No. 14637 HAWAII, U.S.A.

EXPIRATION DATE 04/30/2026

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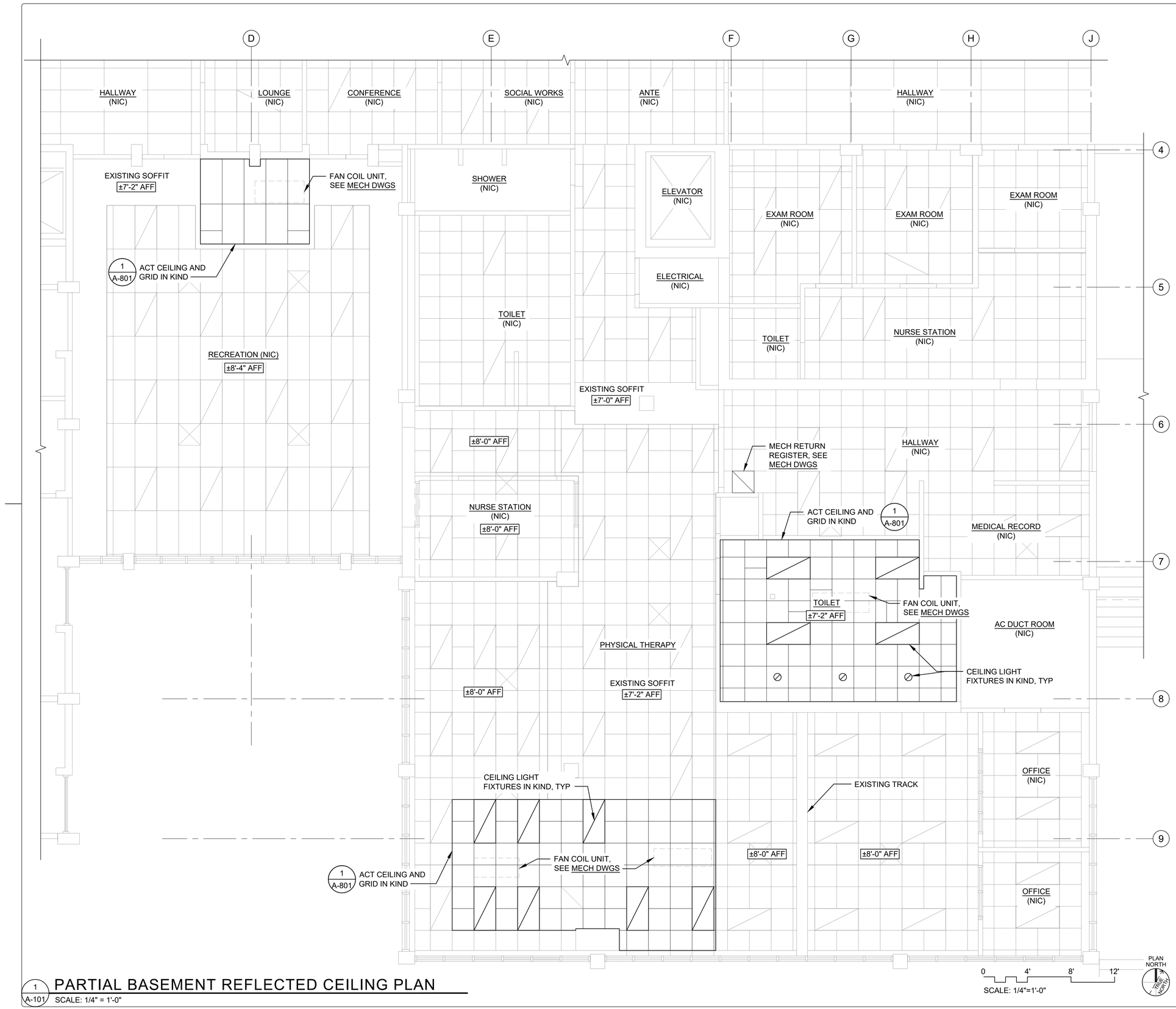
INK ARCHITECTS

MALUHIA REPLACE AIR CONDITIONING, BASEMENT FLOOR
1027 HALA DRIVE, HONOLULU, HI 96817
TMK: 1-6-009:004

DEMOLITION PARTIAL BASEMENT REFLECTED CEILING PLAN

Designed	MM
Drawn	KY
Checked	EA
Date	03-20-26
Job No.	25-169
Sheet	AD101

Of 4 Sheets 28



1 A-101 PARTIAL BASEMENT REFLECTED CEILING PLAN

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

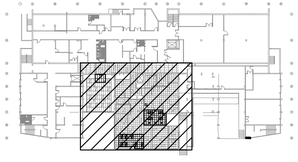
GENERAL SHEET NOTES

1. REPAINT EXISTING WALLS AND SOFFIT SURFACES WHERE GRID SYSTEM IS REMOVED AND REINSTALLED. PAINT COLORS TO MATCH ADJACENT EXISTING WALLS AND SOFFIT.
2. PAINT ALL NEW EXPOSED NEW CONDUITS. PAINT COLORS TO MATCH ADJACENT EXISTING WALLS AND SOFFIT.

LEGEND

- ACT CEILING AND GRID
- CEILING LIGHT FIXTURE
- MECH EQUIPMENT
- EXISTING WALL PARTITION
- EXISTING COLUMN
- EXISTING ACT CEILING AND GRID
- EXISTING CEILING LIGHT FIXTURE
- EXISTING MECH EQUIPMENT

KEY PLAN



REVISIONS	BY

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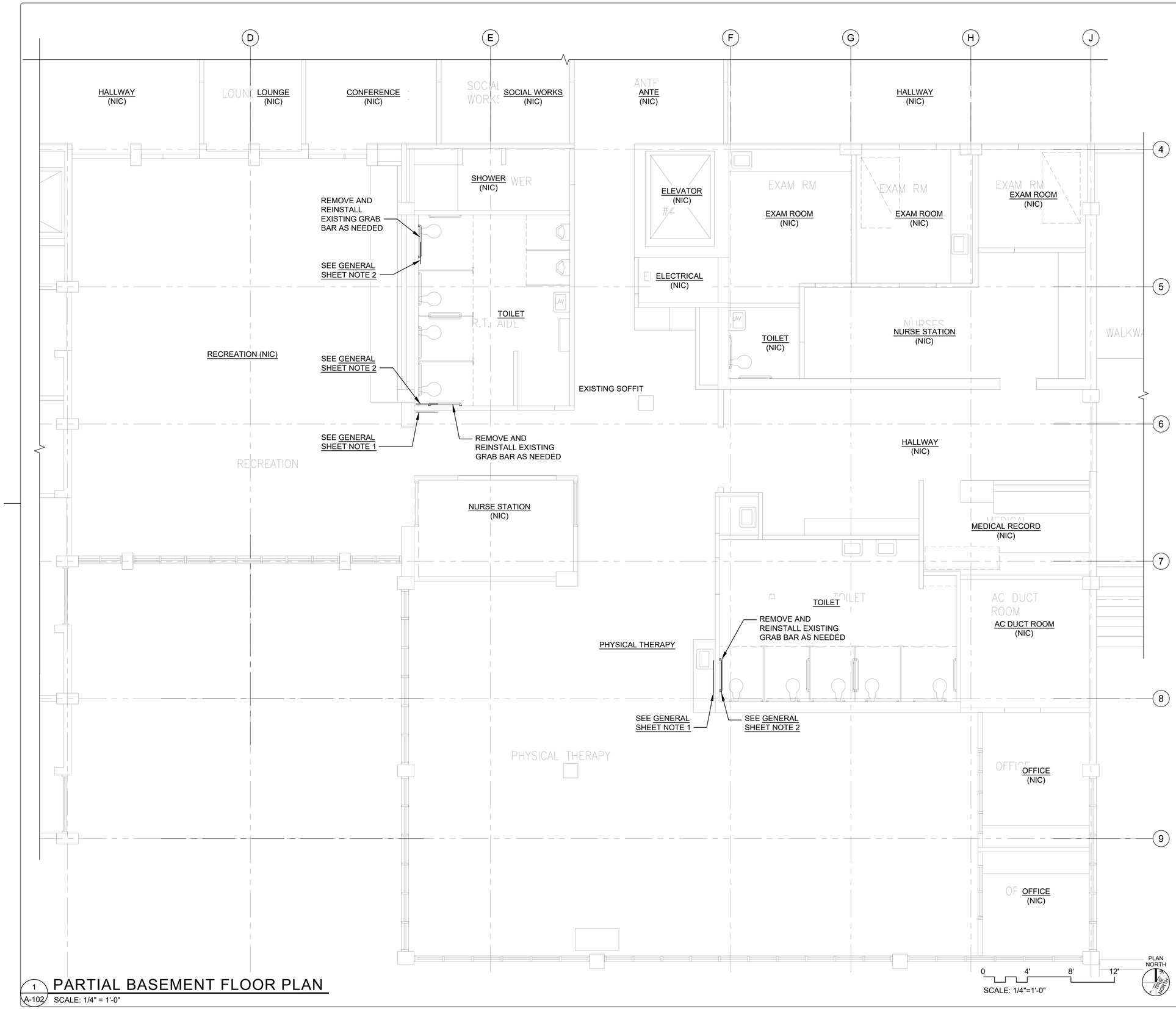
PARTIAL BASEMENT REFLECTED CEILING PLAN

Designed	MM
Drawn	KY
Checked	EA
Date	03-20-26
Job No.	25-169
Sheet	A-101

Of 5 Sheets 28



1 A-102 PARTIAL BASEMENT FLOOR PLAN

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

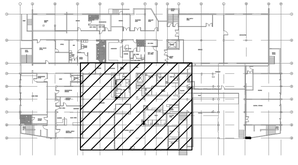
GENERAL SHEET NOTES

1. REMOVE PORTION OF EXISTING GYP BOARD AS REQUIRED TO FACILITATE MECHANICAL WORK. PATCH AND REPAIR EXISTING GYP BOARD WALL WITH GYP BOARD PATCHING MATERIAL TO PROVIDE A FLUSH SURFACE MATCHING THE ADJACENT WALL FINISH. PAINT SURFACE TO MATCH EXISTING ADJACENT SURFACE. SEE SPECS FOR MORE INFORMATION.
2. REMOVE EXISTING TILE AND SUBSTRATE AS REQUIRED TO FACILITATE MECHANICAL WORK. REMOVE TILE ONLY AT GROUT LINE, DO NOT CUT OR DAMAGE TILES TO REMAIN. PATCH WALL SURFACE WITH CERAMIC TILE ON THINSET ON CEMENTITIOUS BACKER BOARD, SEE SPECS FOR MORE INFORMATION. FINISH SURFACE AND GROUT LINES SHALL ALIGN WITH EXISTING ADJACENT TILED SURFACES.

LEGEND

- EXISTING WALL PARTITION
- EXISTING COLUMN
- PORTION OF WALL SURFACE TO BE REMOVED TO FACILITATE MECHANICAL WORK, SEE MECHANICAL DRAWINGS

KEY PLAN



REVISIONS	BY

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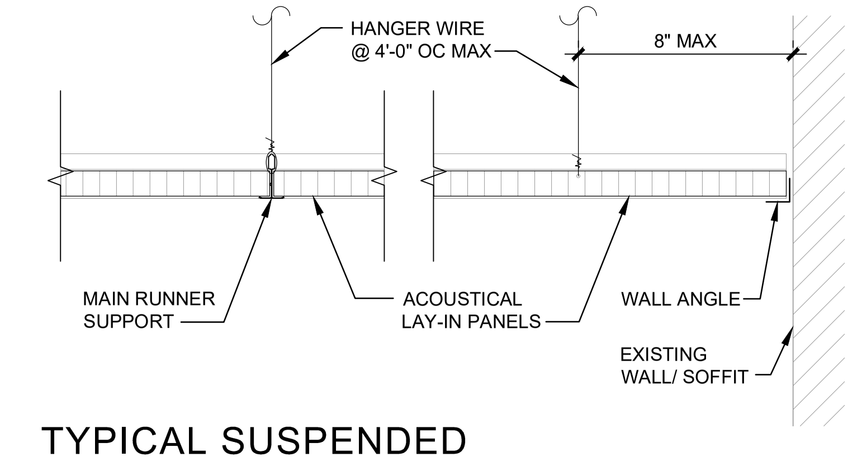
PARTIAL BASEMENT FLOOR PLAN

Designed	MM
Drawn	KY
Checked	EA
Date	03-20-26
Job No.	25-169
Sheet	A-102

Of 6 Sheets 28



TYPICAL SUSPENDED ACOUSTICAL CEILING

1 A-801 SCALE: 3" = 1'-0"

0 3" 6" 9" 1'

SCALE: 3"=1'-0"

REVISIONS	BY

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MISCELLANEOUS DETAILS

Designed	MM
Drawn	KY
Checked	EA
Date	03-20-26
Job No.	25-169
Sheet	A-801

Of 7 Sheets 28

MECHANICAL LEGEND

SYMBOL	ABBRV.	DESCRIPTION
	ACCU	AIR COOLED CONDENSING UNIT
	BHP	BRAKE HORSEPOWER
BD		BACKDRAFT DAMPER
— CD —	CD	CONDENSATE
	CFM	CUBIC FEET PER MINUTE
	CONC	CONCRETE
	DBA	DECIBEL
Ø	DIA	DIAMETER
	DEMO	DEMOLITION
	DN	DOWN
	DWG	DRAWING
	DB	DRY BULB
	EAG	EXHAUST AIR GRILLE
	EER	ENERGY EFFICIENCY RATIO
	(E)	EXISTING
	E.S.P.	EXTERNAL STATIC PRESSURE
	FCU	FAN COIL UNIT
	FT	FEET
	HZ	HERTZ (CYCLES PER SECOND)
	HP	HORSE POWER
	IN	INCHES
	KW	KILOWATT
		MANUAL DAMPER
M		MOTORIZED DAMPER
	MAX	MAXIMUM
	MOCP	MAXIMUM OVERCURRENT PROTECTION DEVICE
	MIN	MINIMUM
	MCA	MINIMUM CURRENT AMPACITY
	(N)	NEW
	NO.	NUMBER
	NTS	NOT TO SCALE
	OA	OUTSIDE AIR
	OAD	OUTSIDE AIR DIFFUSER
	PH	PHASE
	RAR	RETURN AIR REGISTER
— RL/RS —	RL/RS	REFRIGERANT LIQUID/ REFRIGERANT SUCTION
	RPM	REVOLUTIONS PER MINUTE
SD		SMOKE DETECTOR
	SHT	SHEET
	SA	SUPPLY AIR
	SK	SINK
	SYM.	SYMBOL
	TEMP	TEMPERATURE
T		THERMOSTAT
	TYP	TYPICAL
	V	VOLT
	WAC	WINDOW AC
	WB	WET BULB

GENERAL NOTES:

1. EXAMINE THE PROJECT SITE AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AND THE EXTENT OF REMOVAL, RELOCATION, RECONNECTION AND/OR NEW WORK PRIOR TO BIDDING. NOTIFY AND COORDINATE WITH ENGINEER FOR ANY MAJOR DEVIATIONS DUE TO TO UNFORESEEN OR VARYING FIELD CONDITIONS. BID SUBMISSION SHALL BE CONSIDERED AS EVIDENCE THAT THE SUBCONTRACTOR HAS VISITED THE SITE AND HAS RESOLVED ALL DISCREPANCIES AND QUESTIONS AND NO EXTRA PAYMENT WILL BE AUTHORIZED FOR WORK MADE NECESSARY BY THE SUBCONTRACTOR'S FAILURE TO DO SO.
2. THE ENTIRE INSTALLATION SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE BUILDING CODE OF THE CITY AND COUNTY OF HONOLULU, STATE DEPARTMENT OF HEALTH REGULATIONS, 2021 UNIFORM PLUMBING CODE, UNIFORM FIRE CODE, NATIONAL FIRE PROTECTION AGENCY 1 2024, NATIONAL ELECTRICAL CODE, ASME PRESSURE PIPING CODE, HAWAII STATE MODEL ENERGY CODE, AND ALL OTHER AGENCIES HAVING JURISDICTION.
3. THE DRAWING AND SPECIFICATION ARE INTENDED TO COVER THE COMPLETED INSTALLATION OF SYSTEMS TO FUNCTION AS DESCRIBED AND SPECIFIED. THE OMISSION OF REFERENCE TO ANY NECESSARY ITEM OF LABOR OR MATERIAL SHALL NOT RELIEVE THE CONTRACTOR FROM PROVIDING SUCH LABOR AND MATERIAL FOR COMPLETE AND SATISFACTORY OPERATING SYSTEMS.
4. ALL EQUIPMENT SHALL BE CAPABLE OF FITTING INTO THE SPACES ALLOCATED WHILE MEETING THE MANUFACTURER'S RECOMMENDED ACCESS REQUIREMENTS. REVIEW ALL SPACES WHERE EQUIPMENT IS TO BE INSTALLED PRIOR TO ORDERING OF EQUIPMENT AND NOTIFY THE CONTRACTING OFFICER OF ANY INADEQUATE CLEARANCES OR CONDITIONS THAT WILL PREVENT THE PROPER INSTALLATION, MAINTENANCE, AND OPERATION OF THE EQUIPMENT.
5. PROVIDE SHOP DRAWING FOR THE LAYOUT OF EQUIPMENT, PIPING, AND DUCTWORK SHOWING COORDINATION OF ALL WORK WITH ALL OTHER TRADES, INCLUDING PLUMBING, FIRE SPRINKLER, FIRE ALARM, CONTROLS, ELECTRICAL, AND COMMUNICATION SYSTEMS. COORDINATION DRAWING SHALL OVERLAY HVAC, PLUMBING, FIRE SPRINKLER, ELECTRICAL, AND FIRE ALARM SYSTEMS, AND ALL CONFLICTS BETWEEN TRADES SHALL BE NOTED AND RESOLVED.
6. VERIFY AND COORDINATE ALL ROOF, WALL, AND FLOOR PENETRATIONS PRIOR TO THE START OF CONSTRUCTION.
7. OBTAIN APPROVAL FROM THE ENGINEER BEFORE MAKING ANY PENETRATIONS THROUGH STRUCTURAL MEMBERS, WALLS, AND SLABS.
8. DRAWINGS DO NOT ATTEMPT TO SHOW EXACT DETAILS OF PIPING AND DUCTWORK. PROVIDE OFFSETS AS NECESSARY TO AVOID LOCAL OBSTRUCTIONS OR INTERFERENCE WITH OTHER TRADES. REVIEW ALL PIPING AND DUCT RUN PRIOR TO FABRICATION AND IMMEDIATELY NOTIFY THE ENGINEER OF ANY INTERFERENCE AND/OR LACK OF ADEQUATE CLEARANCES.
9. SHOULD PROJECT CONDITIONS REQUIRE REARRANGEMENT OF WORK, MARK SUCH AS CHANGES ON THE AS-BUILT DRAWINGS. IF THESE CHANGES REQUIRE ALTERNATE METHODS TO THOSE APPROVED BY THE CONTRACT DOCUMENTS, SUBMIT SHOP DRAWINGS SHOWING THE PROPOSED ALTERNATE METHODS TO THE ENGINEER FOR REVIEW. DO NOT PROCEED UNTIL REVIEWED.
10. PROPERLY FIRESTOP ALL PENETRATIONS THROUGH FIRE RATED WALLS, FLOORS, OR PARTITIONS WITH A UL APPROVED SYSTEM APPROPRIATE FOR PENETRATION TYPE AND FIRE RATING. FIRESTOP ALL PENETRATIONS BETWEEN FLOORS.
11. SEISMICALLY BRACE ALL EQUIPMENT, PIPING, AND DUCTWORK IN ACCORDANCE WITH THE CURRENT CITY AND COUNTY OF HONOLULU BUILDING CODE FOR THE SEISMIC ZONE 2A.
12. ROUTE ALL CONTROL AND MOTOR STARTER WIRING IN CONDUIT. ANY CONDUIT SHALL BE APPROVED PRIOR TO INSTALLATION.
13. PROVIDE BALANCING DAMPERS AT ALL BRANCHED DUCTWORK.
14. CONTRACTOR SHALL RESTORE ALL EXISTING CONSTRUCTION IMPACTED BY NEW WORK TO ITS ORIGINAL CONDITION OR BETTER. PAINT ALL NEW WORK AND ALL AREAS AFFECTED BY THE CONTRACTOR'S WORK TO MATCH ADJACENT SURFACES.
15. CONDENSATE DRAIN PIPING SHALL BE SLOPED 2% UNLESS INDICATED OTHERWISE.

CONSTRUCTION PHASING PLAN

PHASE 1:

1. ISOLATE THE PHYSICAL THERAPY ROOM, MEN'S RESTROOM, AND WOMEN'S RESTROOM FOR DUST CONTROL TO ALLOW FOR NORMAL DAYCARE OPERATION AT THE RECREATION ROOM.
2. REPLACE FCU-2 TO 4, ACCU-2 TO 4, REFRIGERANT PIPING, CONDENSATE PIPING, ALL ASSOCIATED CONTROL WIRING, AND ELECTRICAL AND ARCHITECTURAL WORK.
3. DURING CONSTRUCTION, THE MEN'S AND WOMEN'S PUBLIC RESTROOMS AND PRIVATE RESTROOM AT THE EXAM ROOM AREA SHALL BE AVAILABLE FOR OCCUPANT USE.
4. RESTORE THE PHYSICAL THERAPY ROOM AND WOMEN'S RESTROOM TO ALLOW FOR NORMAL DAYCARE OPERATION.
5. WORK IN PHASE 2 SHOULD BE COMPLETE IN TWO (2) WEEKS.

PHASE 2:

1. ISOLATE THE RECREATION ROOM AND MEN'S RESTROOM FOR DUST CONTROL TO ALLOW FOR NORMAL DAYCARE OPERATION AT THE PHYSICAL THERAPY ROOM.
2. REPLACE FCU-1, ACCU-1, REFRIGERANT PIPING, CONDENSATE PIPING, ALL ASSOCIATED CONTROL WIRING, AND ELECTRICAL AND ARCHITECTURAL WORK.
3. INSTALL ELECTRICAL CONDUIT FROM FCU-1 TO ELECTRICAL PANEL DURING NON-OCCUPIED HOURS TO AVOID BLOCKING THE EXIT CORRIDOR.
4. DURING CONSTRUCTION, THE MEN'S AND WOMEN'S PUBLIC RESTROOMS AND PRIVATE RESTROOM AT THE EXAM ROOM AREA SHALL BE AVAILABLE FOR OCCUPANT USE.
5. RESTORE THE RECREATION ROOM AND MEN'S RESTROOM TO ALLOW FOR NORMAL DAYCARE OPERATION.
6. WORK IN PHASE 1 SHOULD BE COMPLETED IN ONE (1) WEEK.

CITY AND COUNTY OF HONOLULU
REVISED ORDINANCES OF HONOLULU 2021
CHAPTER 16B

TO THE BEST OF MY KNOWLEDGE, THIS PROJECT'S DESIGN SUBSTANTIALLY CONFORMS TO THE BUILDING ENERGY CONSERVATION CODE FOR:

JOEL P. YUEN LICENSED PROFESSIONAL ENGINEER No. 5805-M HAWAII, U.S.A.

X MECHANICAL COMPONENT SYSTEMS

SIGNATURE: Joel P. Yuen DATE: 03/20/2026
NAME: JOEL P. YUEN
TITLE: MECHANICAL ENGINEER
LICENSE No.: 5805-M

REVISIONS	BY

This work was prepared by me or under my supervision and I accept responsibility for it. It will be under my observation.

JOEL P. YUEN LICENSED PROFESSIONAL ENGINEER No. 5805-M HAWAII, U.S.A.

EXPIRATION DATE: 04/30/2028

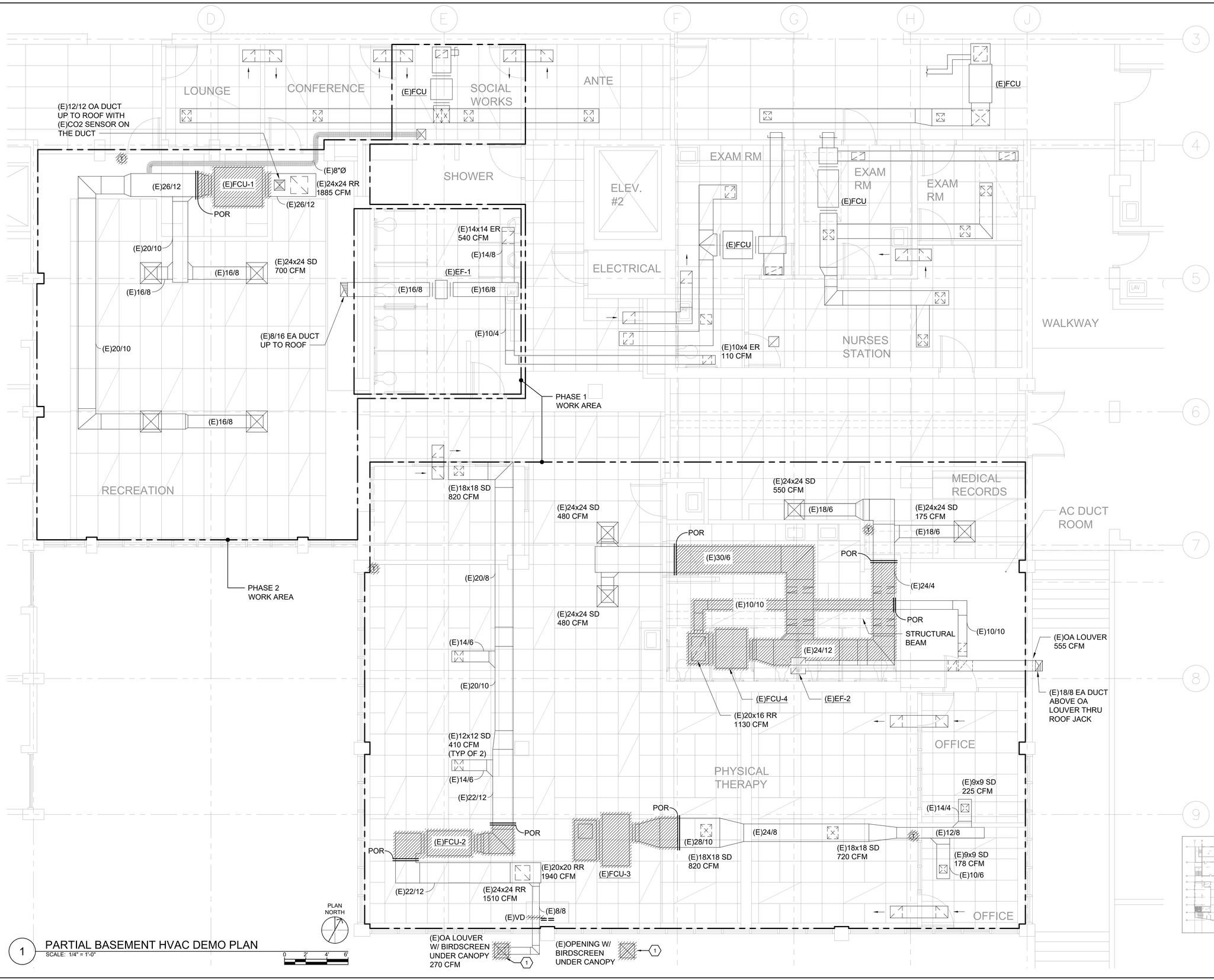
INSYNERGY ENGINEERING LLC
MECHANICAL • ELECTRICAL • FIRE PROTECTION
828 Fort Street Mall Suite 500, Honolulu, Hawaii 96813
Phone: (808) 521-3773 Fax: (808) 521-3993

MALUHIA REPLACE AIR CONDITIONING, BASEMENT FLOOR
1027 HALA DRIVE, HONOLULU, HI 96817
TMK: 1-6-009:004

MECHANICAL GENERAL NOTES AND LEGEND

Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	M-001

Of 8 Sheets 28



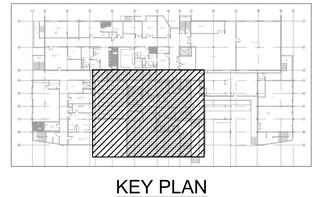
1 PARTIAL BASEMENT HVAC DEMO PLAN
SCALE: 1/4" = 1'-0"
0 2' 4' 6'

GENERAL NOTES

1. REMOVE AND REINSTALL FIRE SPRINKLER HEADS IN SAME LOCATION.

SHEET KEYNOTES

1. DEMO EXISTING BIRDSCREEN.



KEY PLAN
SCALE: NTS

REVISIONS	BY

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JOEL P. YUEN
LICENSED PROFESSIONAL ENGINEER
No. 5805-M
HAWAII, U.S.A.

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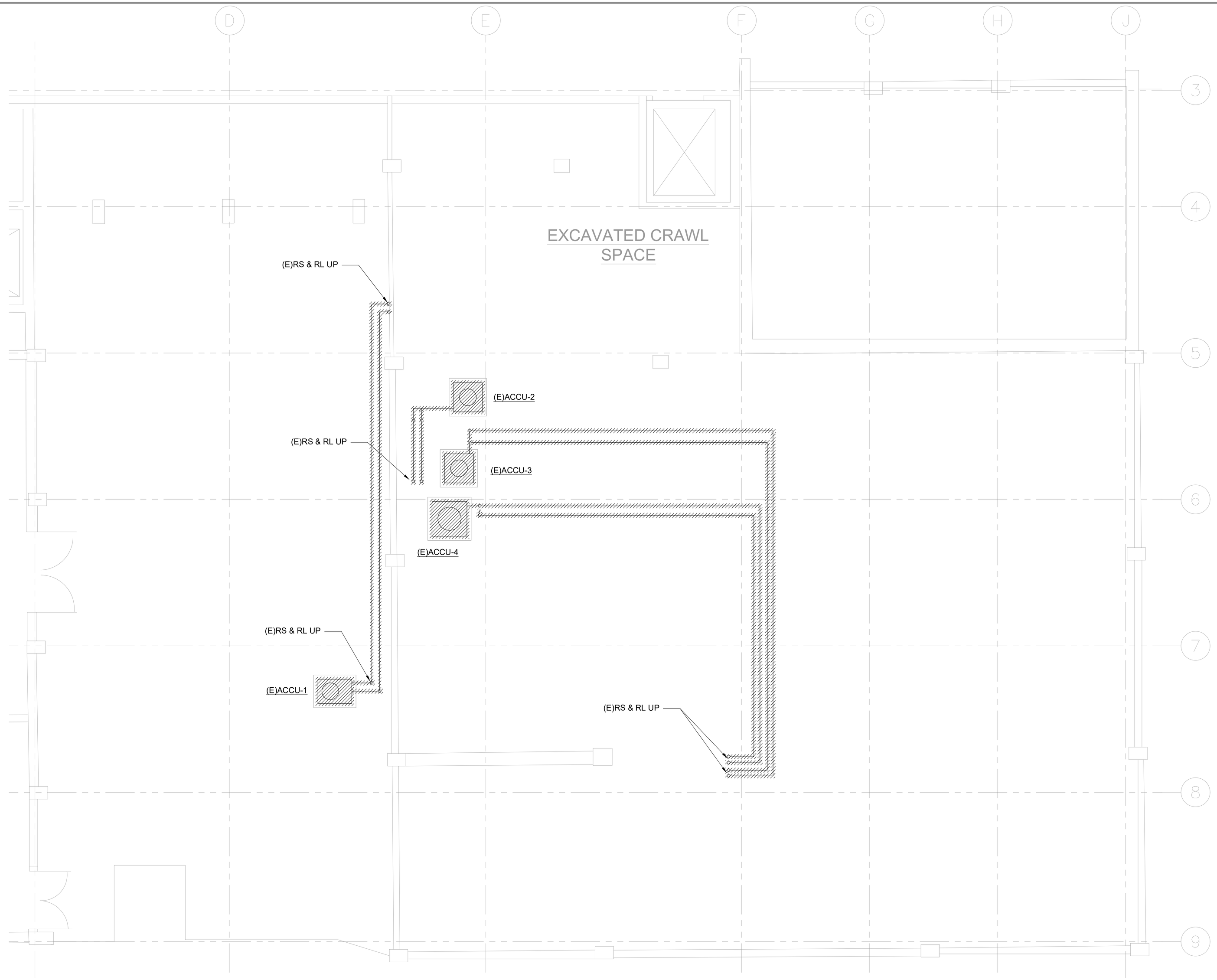
PARTIAL BASEMENT HVAC DEMO PLAN

Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	MD101

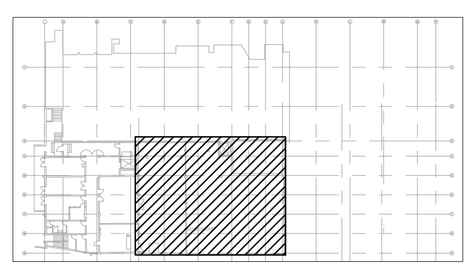
Of 9 Sheets 28



PLAN NORTH

0 2' 4' 6'

1 PARTIAL SUB-BASEMENT MECHANICAL DEMO PLAN
SCALE: 1/4" = 1'-0"



KEY PLAN
SCALE: NTS

REVISIONS	BY

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JOEL P. YUEN * LICENSED PROFESSIONAL ENGINEER No. 5805-M * HAWAII, U.S.A.

joel yuen

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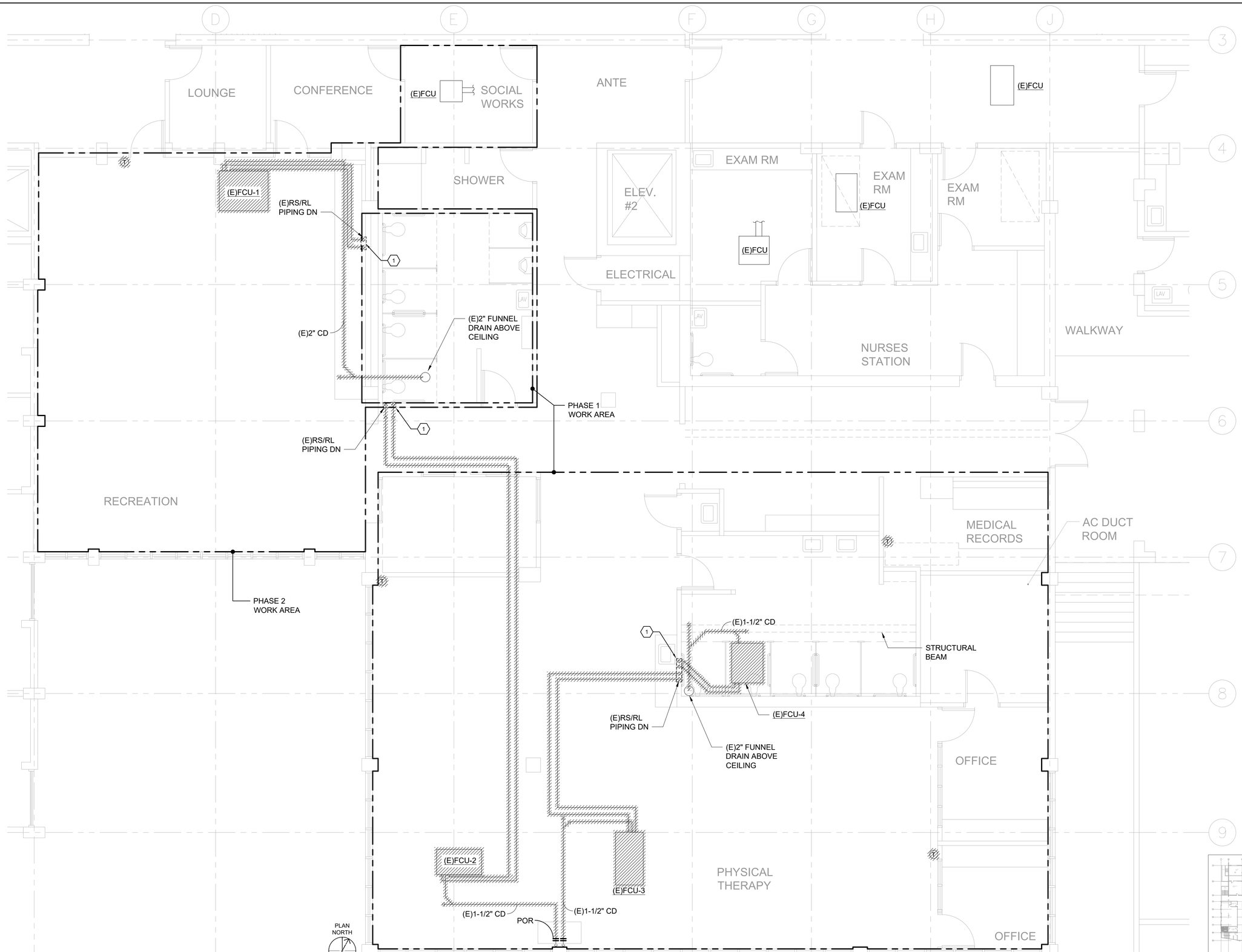
PARTIAL SUB-BASEMENT MECHANICAL DEMO PLAN

Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	MD102
Of	10 Sheets 28



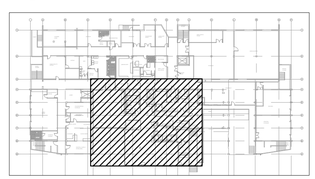
1 PARTIAL BASEMENT HVAC PIPING DEMO PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. REMOVE AND REINSTALL FIRE SPRINKLER HEADS IN SAME LOCATION.

SHEET KEYNOTES

1. REMOVE EXISTING WALL TO ACCESS REFRIGERANT PIPING.



KEY PLAN
SCALE: NTS

REVISIONS	BY

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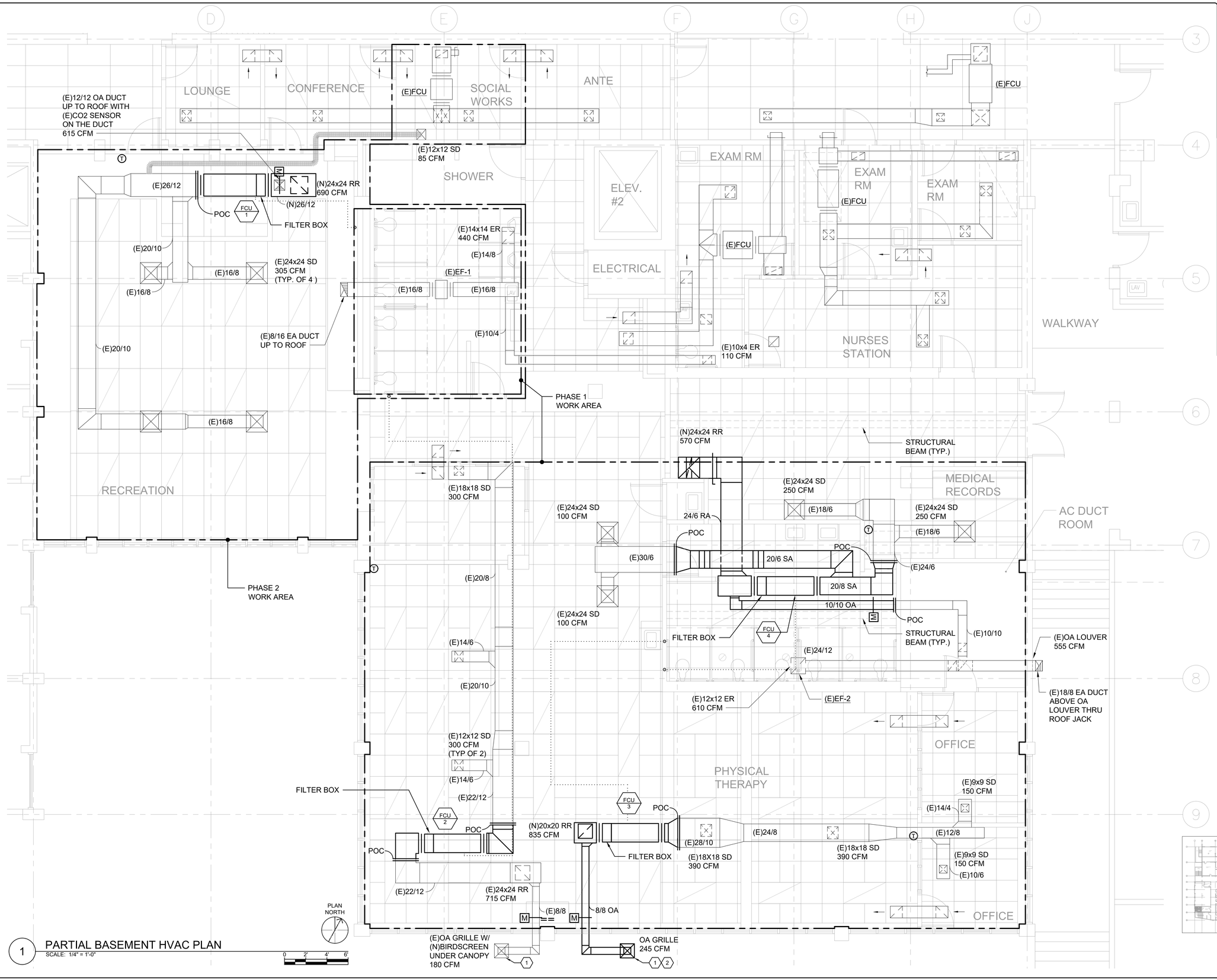
PARTIAL BASEMENT HVAC PIPING DEMO PLAN

Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	MD103

Of 11 Sheets 28



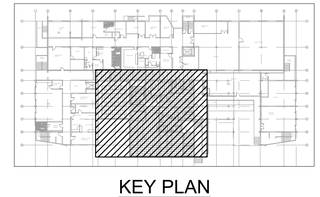
1 PARTIAL BASEMENT HVAC PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. REMOVE AND REINSTALL FIRE SPRINKLER HEADS IN SAME LOCATION.

SHEET KEYNOTES

1. PROVIDE NEW BIRDSCREEN AT CANOPY OPENING.
2. PROVIDE NEW OA LOUVER.
3. TAB EXISTING EXHAUST AIRFLOWS PRIOR TO CONSTRUCTION AND RETAB AFTER EACH PHASE. SET FOR DESIGN CFMS INDICATED IN DRAWING.



KEY PLAN
SCALE: NTS

REVISIONS	BY

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PARTIAL BASEMENT HVAC PLAN

Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
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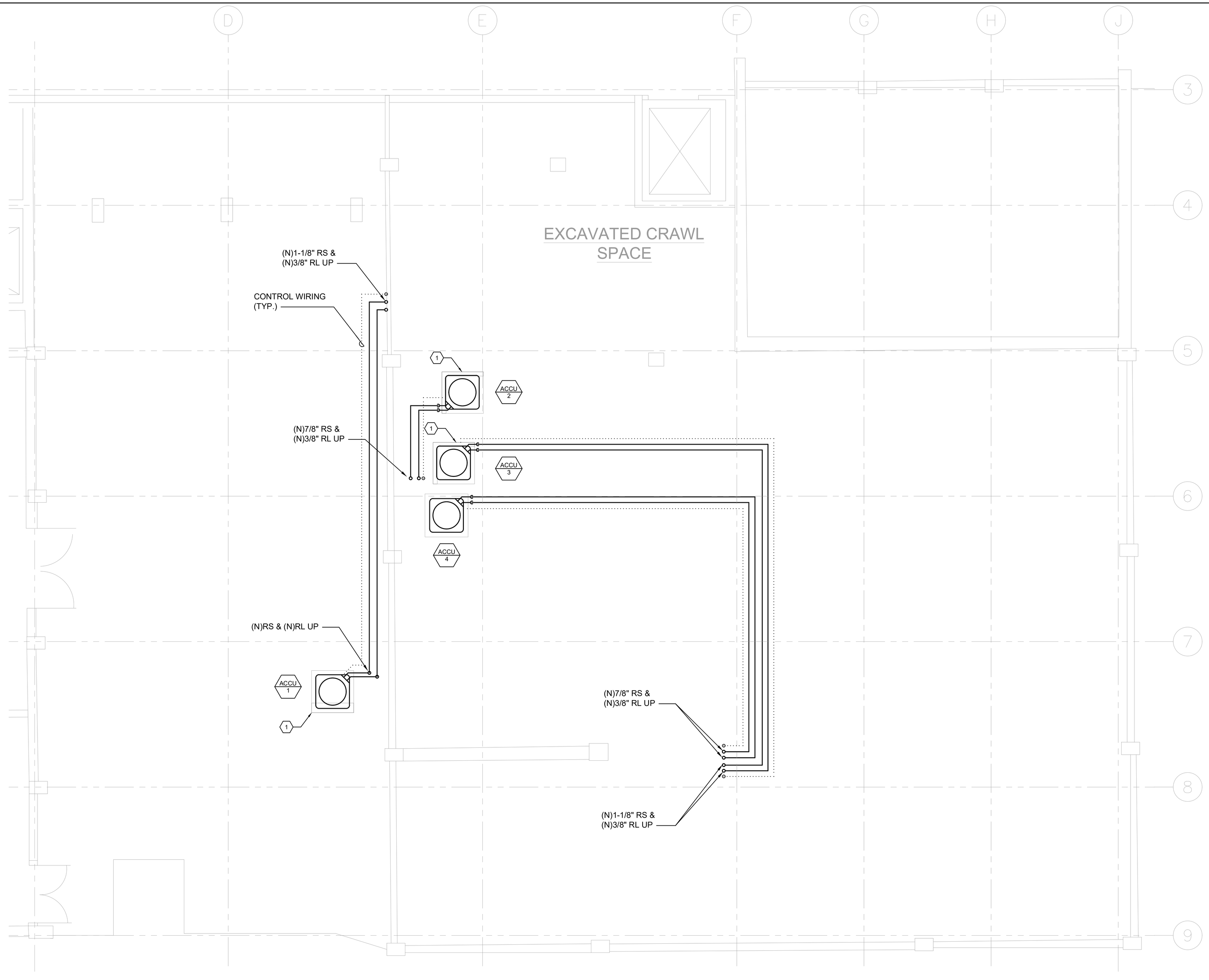
Sheet	M-101
Of	12 Sheets 28



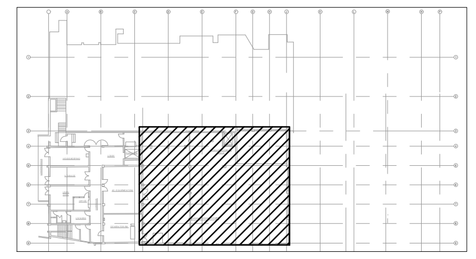
SHEET KEYNOTES

1. EXPAND THE EXISTING HOUSEKEEPING PAD AS NECESSARY.

PLAN NORTH

0 2' 4' 6'

1 PARTIAL SUB-BASEMENT MECHANICAL PLAN
SCALE: 1/4" = 1'-0"



KEY PLAN
SCALE: NTS

REVISIONS	BY

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

JOEL P. YUEN * LICENSED PROFESSIONAL ENGINEER No. 5805-M * HAWAII, U.S.A.

joel yuen

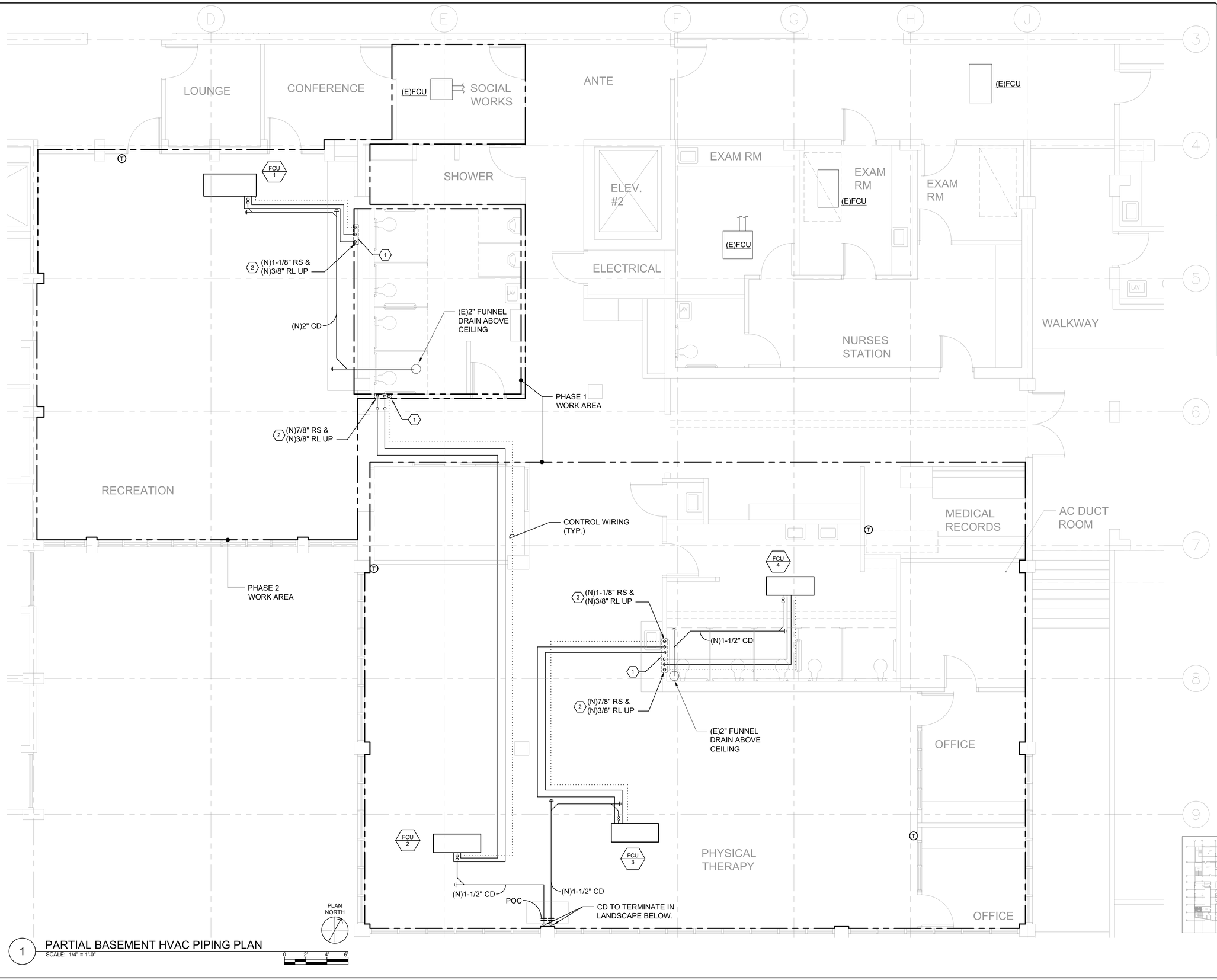
EXPIRATION DATE: 04/30/2028

INSYNERGY ENGINEERING INC
MECHANICAL • ELECTRICAL • FIRE PROTECTION
828 Fort Street Mall Suite 500, Honolulu, Hawaii 96813
Phone: (808) 521-3773 Fax: (808) 521-3993

MALUHIA REPLACE AIR CONDITIONING, BASEMENT FLOOR
1027 HALA DRIVE, HONOLULU, HI 96817
TMK: 1-6-009:004

PARTIAL SUB-BASEMENT MECHANICAL PLAN

Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	M-102
Of	13 Sheets 28



1 PARTIAL BASEMENT HVAC PIPING PLAN
SCALE: 1/4" = 1'-0"

GENERAL NOTES

1. REMOVE AND REINSTALL FIRE SPRINKLER HEADS IN SAME LOCATION.

SHEET KEYNOTES

1. PATCH EXISTING WALL AFTER NEW REFRIGERANT PIPING IS INSTALLED AND TESTED.
2. FIRESTOP REFRIGERANT LINES IN FLOOR SLAB AFTER NEW PIPING IS INSTALLED.

REVISIONS	BY

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EXPIRATION DATE: 04/30/2028

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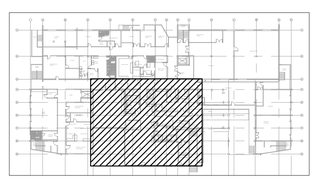
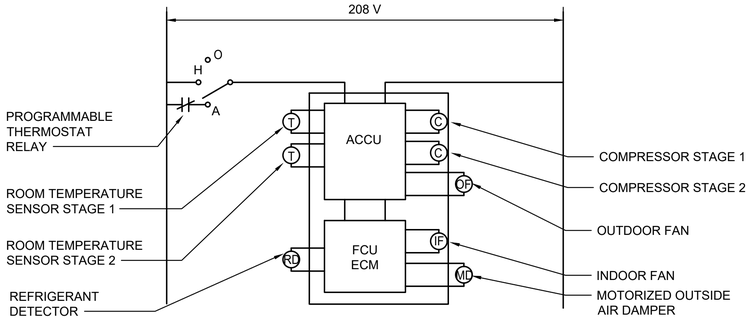
TMK: 1-6-009:004

PARTIAL BASEMENT HVAC PIPING PLAN

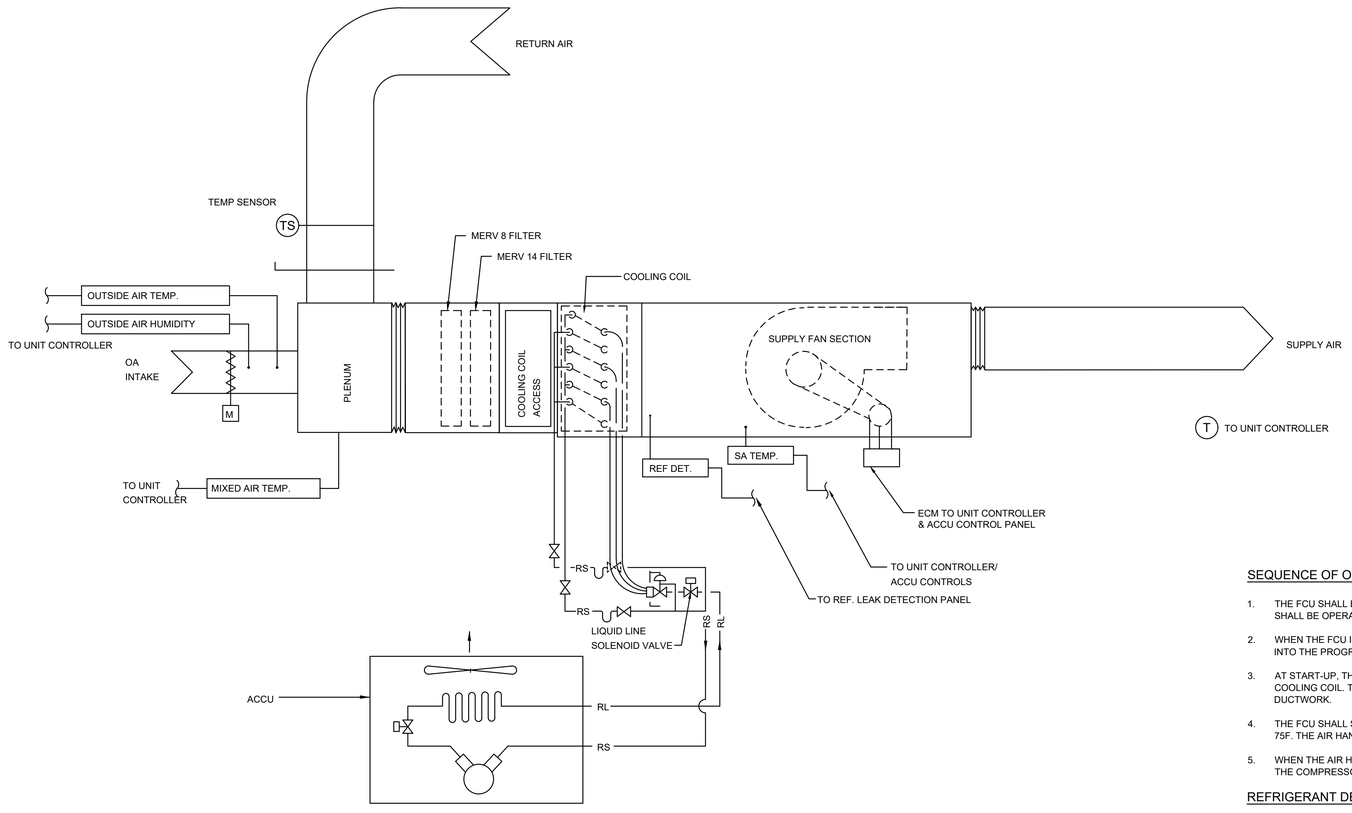
Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	M-103
Of	14 Sheets 28



KEY PLAN
SCALE: NTS



2 FAN UNIT CONTROL DIAGRAM
SCALE: NTS



1 FCU AND ACCU CONTROL SCHEMATIC
SCALE: NTS

SEQUENCE OF OPERATIONS

1. THE FCU SHALL BE TURNED ON AND OFF VIA THE PROGRAMMABLE THERMOSTAT WHEN THE H-O-A SWITCH IS PLACED IN THE "AUTO" MODE. THE UNIT SHALL BE OPERATED MANUALLY WHEN THE H-O-A SWITCH IS PLACED IN THE "HAND" MODE.
2. WHEN THE FCU IS TURNED ON AND WHEN THE H-O-A SWITCH IS IN THE "AUTO" MODE, THE FCU SHALL OPERATE ON THE TIME SCHEDULE PROGRAMMED INTO THE PROGRAMMABLE THERMOSTAT. THE OA DAMPER WILL OPEN WHEN THE FCU IS TURNED ON AND WILL CLOSE WHEN THE FCU IS TURNED OFF.
3. AT START-UP, THE FCU/ACCU MICROPROCESSOR CONTROL PANEL SHALL OPEN THE LIQUID LINE SOLENOID VALVE TO ALLOW FLOW THROUGH THE COOLING COIL. THE ECM MOTOR SHALL BE PROGRAMMED TO SOFT START THE MOTOR AT START-UP TO PREVENT OVER-PRESSURIZATION OF THE DUCTWORK.
4. THE FCU SHALL SUPPLY 55F AIR TO THE SPACE, THE AIR HANDLING UNIT ECM MOTOR SHALL VARY THE AIRFLOW TO MAINTAIN A ROOM TEMPERATURE OF 75F. THE AIR HANDLING UNIT VFD SHALL BE PROGRAMMED TO PROVIDE MINIMUM 75% OF THE TOTAL SUPPLY AIR AIRFLOW.
5. WHEN THE AIR HANDLING UNIT SUPPLY AIR AIRFLOW DROPS TO 75% OF THE TOTAL SUPPLY AIR FLOW, THE SUPPLY AIR FAN SPEED SHALL BE FIXED AND THE COMPRESSOR SHALL STEP DOWN TO MAINTAIN ROOM TEMPERATURE OF 75F. THE SUPPLY AIR TEMPERATURE TO THE SPACE MAY FLUX.

REFRIGERANT DETECTION SYSTEM SEQUENCE OF OPERATION

1. UPON DETECTION OF REFRIGERANT LEAK ABOVE THE THRESHOLD (25% OF THE LFL) THE REFRIGERANT MITIGATION SEQUENCE SHALL ACTIVATE.
2. THE MITIGATION SEQUENCE SHALL DEACTIVATE THE COMPRESSOR AND ENERGIZE THE SUPPLY FAN. THE SUPPLY FAN SHALL REMAIN RUNNING AT 66% OF THE MAXIMUM SPEED OF THE MOTOR FOR AT LEAST 5 MINUTES FROM INITIAL FAULT DETECTION AND FOR AT LEAST 5 MINUTES AFTER THE REFRIGERANT DETECTOR HAS SENSED A DROP IN THE REFRIGERANT CONCENTRATION BELOW THE THRESHOLD.

REVISIONS	BY

This work was prepared by me or under my supervision and constitutes all plans I consider will be under my observation.
JOEL P. YUEN LICENSED PROFESSIONAL ENGINEER No. 5805-M HAWAII, U.S.A.
EXPIRATION DATE: 04/30/2028

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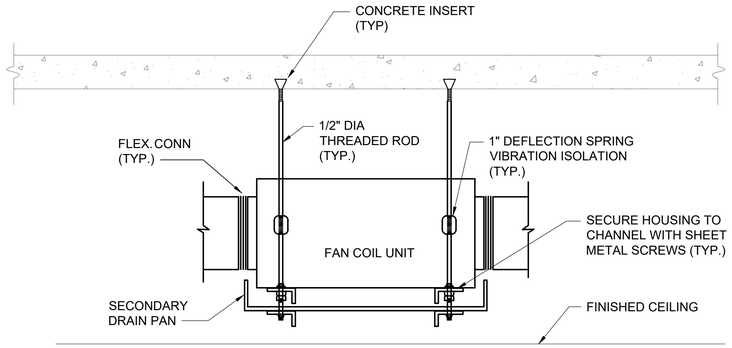
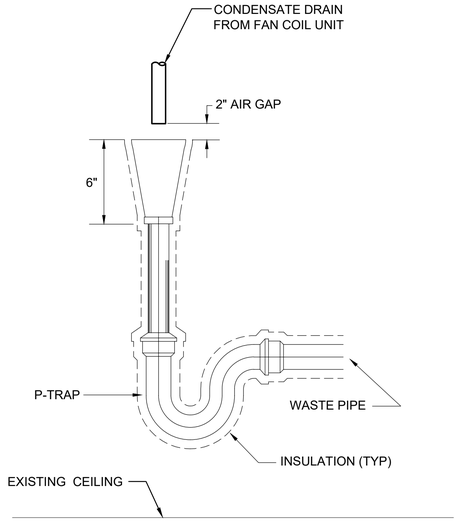
MECHANICAL CONTROLS

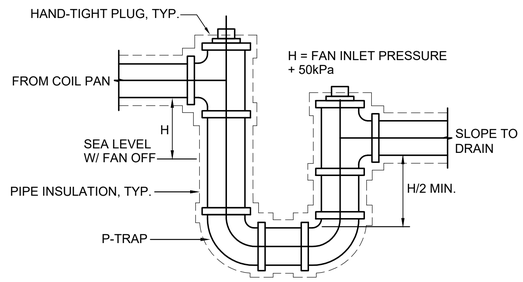
Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	M-401
Of	15 Sheets 28



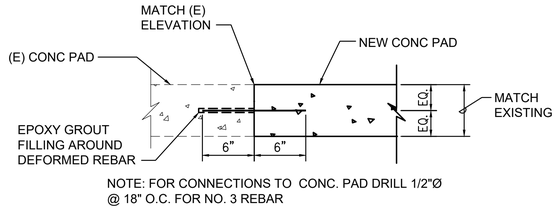
1 FAN COIL UNIT MOUNTING DETAIL WITH SEISMIC RESTRAINT (CONCRETE FLOOR FRAMING)
SCALE: NTS



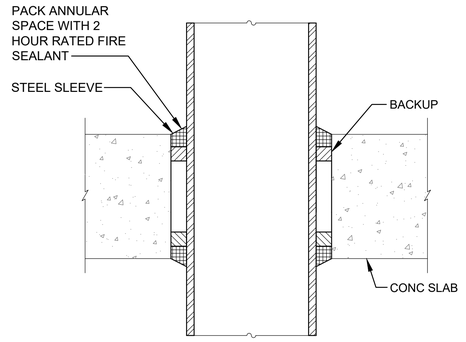
2 AIR GAP RECEPTOR
SCALE: NTS



3 FCU CONDENSATE TRAP DETAIL
SCALE: NTS



4 CONCRETE CONNECTION DETAIL
SCALE: NTS



5 PIPE THRU EXISTING FLOOR PENETRATION DETAIL
SCALE: NTS

REVISIONS	BY

This work was prepared by me or under my supervision and conforms to applicable codes and will be under my observation.
EXPIRATION DATE: 04/30/2028

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MECHANICAL DETAILS

Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	M-501
Of	16 Sheets 28

DX SPLIT AIR COOLED CONDENSING UNIT SCHEDULE

UNIT	UNIT SERVED	LOCATION	REFRIGERANT	REFRIGERANT BASE CHARGE (LBS)	CAPACITY (MBTUH)	CONDENSER FAN			COMPRESSOR			ELECTRICAL					SEER2	MAX SOUND (DBA)	WEIGHT (LBS)	REMARKS
						AMBIENT AIR TEMP (ºF)	FAN MOTOR NO.	FLA (A)	TYPE	LRA (A)	RLA (A)	MCA	MAX FUSE	V	P	HZ				
ACCU-1	FCU-1	OUTSIDE	R-454B	9.42	59.1	95	1	2.6	SCROLL	149	22.3	30.5	50	208	1	60	16.5	73	297	DESIGN BASED ON CARRIER 26TPA. PROVIDE WITH MULTIPLE STAGE COMPRESSOR (MINIMUM 2 STEP). PROVIDE CORROSION RESISTANT COATING FOR COIL AND UNIT. PROVIDE BLYGOLD COATING ON COILS, AND PSX 700 COATING FOR CABINET OR COATING ON COILS AND CABINET RATED FOR 10,000 HOUR SALT SPRAY PER ASTM B117.
ACCU-2	FCU-2	OUTSIDE	R-454B	7.25	29.8	95	1	2.6	SCROLL	90	14.6	20.9	35	208	1	60	16	69	241	DESIGN BASED ON CARRIER 26TPA. PROVIDE WITH MULTIPLE STAGE COMPRESSOR (MINIMUM 2 STEP). PROVIDE CORROSION RESISTANT COATING FOR COIL AND UNIT. PROVIDE BLYGOLD COATING ON COILS, AND PSX 700 COATING FOR CABINET OR COATING ON COILS AND CABINET RATED FOR 10,000 HOUR SALT SPRAY PER ASTM B117.
ACCU-3	FCU-3	OUTSIDE	R-454B	8.65	38.8	95	1	2.6	SCROLL	138	18.3	25.5	40	208	1	60	16	71	282	DESIGN BASED ON CARRIER 26TPA. PROVIDE WITH MULTIPLE STAGE COMPRESSOR (MINIMUM 2 STEP). PROVIDE CORROSION RESISTANT COATING FOR COIL AND UNIT. PROVIDE BLYGOLD COATING ON COILS, AND PSX 700 COATING FOR CABINET OR COATING ON COILS AND CABINET RATED FOR 10,000 HOUR SALT SPRAY PER ASTM B117.
ACCU-4	FCU-4	OUTSIDE	R-454B	7.25	27.0	95	1	2.6	SCROLL	90	14.6	20.9	35	208	1	60	16	69	241	DESIGN BASED ON CARRIER 26TPA. PROVIDE WITH MULTIPLE STAGE COMPRESSOR (MINIMUM 2 STEP). PROVIDE CORROSION RESISTANT COATING FOR COIL AND UNIT. PROVIDE BLYGOLD COATING ON COILS, AND PSX 700 COATING FOR CABINET OR COATING ON COILS AND CABINET RATED FOR 10,000 HOUR SALT SPRAY PER ASTM B117.

DX SPLIT FAN COIL UNIT SCHEDULE

UNIT	AREA SERVED	LOCATION	TYPE	REFRIGERANT	AIRFLOW			COOLING CAPACITY						ELECTRICAL							FILTER				MAX SOUND (DBA)	WEIGHT (LBS)	REMARKS
					SA (CFM)	OA (CFM)	ESP (IN W.G.)	ENT AIR		LEAV AIR TEMP		CAPACITY		UNIT FLA (A)	UNIT MCA (A)	UNIT MOCP (A)	V	P	HZ	HP	PRE-FILTER		FINAL FILTER				
								DB (ºF)	WB (ºF)	DB (ºF)	WB (ºF)	SENS (MBTUH)	TOTAL (MBTUH)								TYPE	IN.	TYPE	IN.			
FCU-1	RECREATION, SOCIAL WORKS	RECREATION	HORIZONTAL, CEILING SUSPENDED	R-454B	1,305	615	1.00	78.7	68.8	55.6	54.5	33.0	59.1	5.7	7.1	15	208	1	60	3/4	MERV 8	2	MERV 14	2	-	203	FIELD INSTALLED FILTER BOX. PROVIDE FACTORY INSTALLED REFRIGERANT LEAK DETECTION DISSIPATION SYSTEM.
FCU-2	PHYSICAL THERAPY	PHYSICAL THERAPY	HORIZONTAL, CEILING SUSPENDED	R-454B	900	185	1.00	77.8	65.0	55.9	54.3	21.1	29.8	4	5	15	208	1	60	1/2	MERV 8	2	MERV 14	2	-	146	FIELD INSTALLED FILTER BOX. PROVIDE FACTORY INSTALLED REFRIGERANT LEAK DETECTION DISSIPATION SYSTEM.
FCU-3	PHYSICAL THERAPY, OFFICE	PHYSICAL THERAPY	HORIZONTAL, CEILING SUSPENDED	R-454B	1,080	245	1.00	77.6	66.0	55.6	54.4	25.9	38.8	5.7	7.1	15	208	1	60	3/4	MERV 8	2	MERV 14	2	-	168	FIELD INSTALLED FILTER BOX. PROVIDE FACTORY INSTALLED REFRIGERANT LEAK DETECTION DISSIPATION SYSTEM.
FCU-4	PHYSICAL THERAPY, MEDICAL RECORDS	WOMENS TOILET	HORIZONTAL, CEILING SUSPENDED	R-454B	700	205	1.00	78.0	66.7	55.3	54.1	17.2	27.0	4	5	15	208	1	60	1/2	MERV 8	2	MERV 14	2	-	146	DESIGN BASED ON CARRIOER FT5A. PROVIDE FIELD INSTALLED FILTER BOX. PROVIDE FACTORY INSTALLED REFRIGERANT LEAK DETECTION DISSIPATION SYSTEM.

BUILDING ROOM AIR BALANCE TABLE

ROOM	NAME	SUPPLY AIR (CFM)	RETURN AIR (CFM)	OUTSIDE AIR (CFM)	EXHAUST AIR (CFM)	TRANSFER AIR IN (CFM)	TRANSFER AIR OUT (CFM)	BALANCE (CFM)
	RECREATION ROOM	1220	635	585	0	0	0	585
	MEN'S TOILET	0	0	0	440	0	0	-440
	TOILET	110	0	0	110	0	0	0
	WOMENS TOILET	0	0	0	610	0	0	-610
	PHYSICAL THERAPY	1880	1430	450	0	0	0	450
	OFFICE 1	150	120	30	0	0	0	30
	OFFICE 2	150	125	25	0	0	0	25
	MEDICAL RECORD	500	370	130	0	0	0	130
	SOCIAL WORKS	85	55	30	0	0	0	30
	SUMMED AIR FLOWS	3985	2735	1250	1050	0	0	200
					BUILDING PRESSURIZATION (%)			16%

REVISIONS	BY

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JOEL P. YUEN
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MECHANICAL SCHEDULES

Designed	CL
Drawn	RB
Checked	JY
Date	03-20-2026
Job No.	25-169
Sheet	M-601
Of	17 Sheets 28

CONSTRUCTION PHASING PLAN

PHASE 1:

1. DISCONNECT AND REMOVE EQUIPMENT CONNECTIONS FROM LIGHT FIXTURES AFFECTED BY REMOVAL AND REPLACEMENT OF FCU-2 TO 4.
2. DISCONNECT AND REMOVE EQUIPMENT CONNECTIONS FROM FCU-2 TO 4 AND ACCU-2 TO 4. REMOVE EXISTING ENCLOSED CIRCUIT BREAKERS FOR ACCU-2 TO 4.
3. ROUGH-IN BRANCH CIRCUITING FROM PANEL DPC FOR MOTORIZED DAMPERS.
4. ROUGH-IN BRANCH CIRCUITING FROM EXISTING WIREWAY TO NEW ENCLOSED CIRCUIT BREAKERS AND DRY-TYPE TRANSFORMERS FOR ACCU-2 TO 4. ROUGH-IN BRANCH CIRCUITING FROM DRY-TYPE TRANSFORMERS TO ACCU-2 TO 4.
5. DURING NON-OCCUPIED HOURS: CONNECT EQUIPMENT CONNECTIONS FOR NEW FCU-2 TO 4 AND ACCU-2 TO 4. RECONNECT LIGHT FIXTURES TO EXISTING BRANCH CIRCUITING.
6. WORK IN PHASE 2 SHOULD BE COMPLETE IN TWO (2) WEEKS.

PHASE 2:

1. DISCONNECT AND REMOVE EQUIPMENT CONNECTIONS FROM SMOKE DETECTOR AFFECTED BY REMOVAL AND REPLACEMENT OF FCU-1.
2. DISCONNECT AND REMOVE EQUIPMENT CONNECTIONS FROM FCU-1 AND ACCU-1. REMOVE EXISTING ENCLOSED CIRCUIT BREAKER FOR ACCU-1.
3. ROUGH-IN BRANCH CIRCUITING FROM PANEL DPC FOR MOTORIZED DAMPERS.
4. ROUGH-IN BRANCH CIRCUITING FROM EXISTING WIREWAY TO NEW ENCLOSED CIRCUIT BREAKER AND DRY-TYPE TRANSFORMER FOR ACCU-1. ROUGH-IN BRANCH CIRCUITING FROM DRY-TYPE TRANSFORMERS TO ACCU-1.
5. DURING NON-OCCUPIED HOURS: CONNECT EQUIPMENT CONNECTIONS FOR NEW FCU-1 AND ACCU-1. RECONNECT SMOKE DETECTOR TO EXISTING BRANCH CIRCUITING.
6. WORK IN PHASE 2 SHOULD BE COMPLETED IN ONE (1) WEEK.

ELECTRICAL SYMBOL LIST / MOUNTING HEIGHT SCHEDULE

MOUNTING HEIGHT FROM FLOOR TO		(SPECIAL MOUNTING HEIGHTS INDICATED ON PLAN)		
		SYMBOL		DESCRIPTION
TOP	℄	EXISTING	NEW	
	18"			RECEPTACLE, WALL MOUNTED, DUPLEX, GROUNDING TYPE, 125V, NEMA TYPE 5-20R
	18"		WP	RECEPTACLE, WALL MOUNTED, DUPLEX, GFCI TYPE, 125V, NEMA TYPE 5-20R WEATHER-RESISTANT DEVICE WITH WEATHERPROOF-WHILE-IN-USE COVER PLATE
		M	M	EQUIPMENT TERMINATION WITH FLEXIBLE CONDUIT WHIP
		M	M	MOTOR CONNECTION
60"				ENCLOSED CIRCUIT BREAKER
72"				PANELBOARD
			T H	TRANSFORMER, WALL MOUNTED
				CONCEALED CONDUIT IN CEILING OR WALLS, (HASHMARKS INDICATE 3-WIRES WITHIN, ALL OTHERS SIMILAR).
		A-1,3	A-1,3	HOMERUN ARROW TO PANELBOARD. LETTER INDICATES PANELBOARD, NUMBERS INDICATES CIRCUITS.
				EXPOSED RACEWAY, PROVIDE STRAP 8'-0" ON CENTER MAXIMUM
				POWER TRANSFORMER
				GROUND
				CIRCUIT BREAKER
				DENOTES DEMOLITION/REMOVAL
			1	KEYNOTE INDICATOR

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:

SCOTT TOMOKIYO * LICENSED PROFESSIONAL ENGINEER * No. 15968-E * HAWAII, U.S.A.

X ELECTRICAL COMPONENT SYSTEMS

SIGNATURE: Scott Tomokiyo DATE: 03/06/2026
NAME: SCOTT TOMOKIYO, P.E.
TITLE: ELECTRICAL ENGINEER
LICENSE No.: 15968-E

ELECTRICAL ABBREVIATIONS

ABBREVIATION	DEFINITION
A or AMPS	AMPERES
AC	AIR CONDITIONER
AHU	AIR HANDLING UNIT
C	CONDUIT
G or GND	GROUND
GFCI	GROUND FAULT CIRCUIT INTERRUPTER
KAIC	KILO-AMPERE INTERRUPTING CAPACITY
MCB	MAIN CIRCUIT BREAKER
MCM	THOUSAND CIRCULAR MILS
MCM	THOUSAND CIRCULAR MILS
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NTS	NOT TO SCALE
V	VOLTS
VA	VOLT-AMPERES

REVISIONS	BY

This work was prepared by me or under my supervision and construction of this work will be under my observation. Scott Tomokiyo EXPIRATION DATE 04/30/2028

SCOTT TOMOKIYO * LICENSED PROFESSIONAL ENGINEER * No. 15968-E * HAWAII, U.S.A.

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TMK: 1-6-009:004

ELECTRICAL LEGEND AND SYMBOLS LIST

Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
Sheet	E001
Of	18 Sheets 28

GENERAL ELECTRICAL NOTES

1. ALL WORK SHOWN ON THE ELECTRICAL DRAWINGS IS NEW UNLESS OTHERWISE NOTED. ALL MATERIALS SHALL BE NEW AND "LISTED" OR "LABELED" AS DEFINED BY THE NATIONAL ELECTRICAL CODE (NEC). WORK INCLUDES INSTALLATION OF ALL ELECTRICAL SYSTEMS COMPLETE AND OPERATIONAL AS LIMITED BY THE INTENT OF THE CONTRACT DOCUMENTS.
2. ALL WORK SHALL COMPLY WITH THE NATIONAL ELECTRICAL CODE (NEC), NATIONAL ELECTRICAL SAFETY CODE, AND THE CURRENT BUILDING ORDINANCES OF THE CITY AND COUNTY OF HONOLULU IN FORCE AT THE TIME OF PERMITTING. CONSTRUCTION PRACTICES SHALL CONFORM TO THE LATEST EDITION OF AMERICAN ELECTRICIANS' HANDBOOK BY CROFT AND APPLICABLE INSTRUCTIONS OF MANUFACTURERS OF EQUIPMENT AND MATERIAL SUPPLIED FOR THIS PROJECT.
3. OBTAIN AND PAY FOR BUILDING / ELECTRICAL PERMIT, ARRANGE FOR PERIODIC INSPECTION BY LOCAL AUTHORITIES, AND DELIVER CERTIFICATE OF FINAL INSPECTION TO THE ARCHITECT.
4. RETENTION OF PLANS: ONE SET OF APPROVED PLANS, SPECIFICATIONS, AND COMPUTATIONS SHALL BE RETAINED BY THE BUILDING OFFICIAL FOR A PERIOD OF NOT LESS THAN 90 DAYS FROM DATE OF COMPLETION OF THE WORK COVERED THEREIN, AND ONE SET OF APPROVED PLANS SHALL BE RETURNED TO THE APPLICANT, AND SAID SET SHALL BE KEPT ON THE SITE OF THE BUILDING OR WORK AT ALL TIMES DURING WHICH THE WORK AUTHORIZED THEREBY IS IN PROGRESS.
5. STRUCTURES UNDERGOING CONSTRUCTION, ALTERATION, OR DEMOLITION OPERATIONS, INCLUDING THOSE IN UNDERGROUND LOCATIONS, SHALL COMPLY WITH NFPA 241, STANDARD FOR SAFEGUARDING CONSTRUCTION, ALTERATION, AND DEMOLITION OPERATIONS, AND NFPA 1, AS LOCALLY AMENDED.
6. FIRE SAFETY DURING ALTERATION:
   a. NFPA 1, 16.4.4.1 WHERE THE BUILDING IS PROTECTED BY FIRE PROTECTION SYSTEMS, SUCH SYSTEMS SHALL BE MAINTAINED OPERATIONAL AT ALL TIMES DURING ALTERATION.
   b. NFPA 1, 16.4.4.2 WHERE ALTERATION REQUIRES MODIFICATION OF A PORTION OF THE FIRE PROTECTION SYSTEM, THE REMAINDER OF THE SYSTEM SHALL BE KEPT IN SERVICE AND THE FIRE DEPARTMENT SHALL BE NOTIFIED.
   c. NFPA 1, 16.4.4.3 WHEN IT IS NECESSARY TO SHUT DOWN THE SYSTEM, THE AHJ SHALL HAVE THE AUTHORITY TO REQUIRE ALTERNATE MEASURES OF PROTECTION UNTIL THE SYSTEM IS RETURNED TO SERVICE.
   d. NFPA 1, 10.7.1.1 AS NECESSARY DURING EMERGENCIES, MAINTENANCE, DRILLS, PRESCRIBED TESTING, ALTERATIONS, OR RENOVATIONS, PORTABLE OR FIXED FIRE-EXTINGUISHING SYSTEMS OR DEVICES OR ANY FIRE-WARNING SYSTEM SHALL BE PERMITTED TO BE MADE INOPERATIVE OR INACCESSIBLE. A FIRE WATCH SHALL BE REQUIRED AS SPECIFIED IN SECTIONS 13.3.3.6.5.2(4)(b), 13.7.1.5.3, 16.5.4, 34.6.3.3, 41.2.2.6, 41.2.2.7, 41.2.4, 41.3.5, 41.4.1, 34.5.4.3, AND 25.1.8 AT NO COST TO THE AHJ. NFPA 1, AS LOCALLY AMENDED.
7. THE DRAWINGS DO NOT REFLECT ALL THE EXISTING CONDITIONS THAT MAY BE ENCOUNTERED DURING CONSTRUCTION. VISIT THE PROJECT SITE AND BECOME FAMILIAR WITH THE READILY OBSERVABLE EXISTING CONDITIONS, THE EXTENT OF ANY DEMOLITION, RELOCATION, RECONNECTION, AND THE NEW WORK PRIOR TO BIDDING. REPORT ANY READILY OBSERVABLE DISCREPANCIES AND/OR DIFFERENCES BETWEEN THE EXISTING CONDITIONS AND THE CONSTRUCTION DOCUMENTS TO THE ARCHITECT. RESOLVE ALL READILY OBSERVABLE DISCREPANCIES AND QUESTIONS PRIOR TO THE START OF WORK. BID SUBMISSION SHALL BE CONSIDERED AS EVIDENCE THAT THE CONTRACTOR HAS VISITED THE SITE AND RESOLVED ALL READILY OBSERVABLE DISCREPANCIES AND QUESTIONS AND NO EXTRA PAYMENT WILL BE AUTHORIZED FOR WORK REQUIRED BY THE CONTRACTOR'S FAILURE TO DO SO.
8. COORDINATE ALL ELECTRICAL WORK WITH THE WORK OF THE OTHER TRADES AND SCHEDULE WORK TO MINIMIZE THE NUMBER AND DURATION OF ELECTRICAL OUTAGES AND IMPACT TO THE OPERATIONS IN OR ADJACENT TO THE PROJECT AREA. COORDINATE ACCESS TO THE PROJECT AREA AND SCHEDULE ALL REQUIRED SYSTEM OUTAGES WITH THE ARCHITECT.
9. VERIFY AND COORDINATE ALL PENETRATIONS WITH THE STRUCTURAL AND ARCHITECTURAL DRAWINGS PRIOR TO THE START OF CONSTRUCTION. OBTAIN APPROVAL BEFORE MAKING ANY PENETRATIONS THROUGH STRUCTURAL MEMBERS OR FIRE RATED WALLS AND CEILINGS.
10. SCAN (E.G. X-RAY, ELECTROMAGNETIC, ETC.) ALL CONCRETE WALLS OR FLOOR STRUCTURES PRIOR TO COMMENCING WITH CORING/DRILLING WORK FOR PENETRATIONS TO AVOID DAMAGING THE EXISTING REINFORCING STEEL.
11. COORDINATE AND PROVIDE ACCESS PANELS FOR ALL CONCEALED ELECTRICAL EQUIPMENT, DEVICES, BOXES, AND CONDUIT BODIES SO THAT THEY ARE ACCESSIBLE.
12. EXISTING DEVICE AND EQUIPMENT LOCATIONS, CIRCUIT ASSIGNMENTS, WIRING CONNECTIONS, AND CONDUIT RUNS INDICATED WERE DERIVED FROM AVAILABLE REFERENCE DOCUMENTS AND LIMITED FIELD INVESTIGATION. FIELD VERIFY ALL EXISTING CONDITIONS AND MAKE ANY NECESSARY ADJUSTMENTS TO SATISFY THE INTENT OF THE DRAWINGS AND SPECIFICATIONS.
13. RE-ROUTE ALL EXISTING CONDUIT, WIRING, AND CABLING TO REMAIN WITHIN THE PROJECT AREA AS NECESSARY TO FACILITATE THE REMOVAL OF EXISTING EQUIPMENT AS WELL AS THE INSTALLATION OF ALL NEW EQUIPMENT. REMOVE AND RE-INSTALL ELECTRICAL EQUIPMENT, INCLUDING LIGHTS, TO REMAIN AS REQUIRED.

GENERAL ELECTRICAL NOTES (CONTINUED)

14. WORK INCIDENTAL TO THE CONTRACT AND NECESSARY TO COMPLETE THE PROJECT, ALTHOUGH NOT SPECIFICALLY REFERRED TO IN THE CONTRACT DOCUMENTS, SHALL BE FURNISHED AND PERFORMED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE PROJECT. AN EXAMPLE OF SUCH INCIDENTAL WORK ARE OUTLET BOXES, JUNCTION BOXES, AND PULL BOXES REQUIRED FOR THE INSTALLATION OF ELECTRICAL DEVICES, LIGHTING FIXTURES, AND EQUIPMENT. ALL INCIDENTAL WORK SHALL BE FURNISHED AND INSTALLED IN ACCORDANCE WITH THE NEC.
15. ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE TO PROVIDE ALL CONDUIT AND WIRING FOR THE POWER CONNECTION TO ALL EQUIPMENT AS INDICATED IN THE DRAWINGS AND SPECIFICATIONS. ALL INCIDENTAL CONDUIT AND WIRING REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM MAY NOT BE SHOWN IN THE DRAWINGS OR SPECIFICATIONS. CONTRACTOR SHALL COORDINATE INCIDENTAL CONDUIT AND WIRING REQUIREMENTS BETWEEN ALL TRADES TO ENSURE THE INCIDENTAL CONDUIT AND WIRING IS PROVIDED AND THE AFFECTED SYSTEMS OPERATE AS INTENDED.
16. THE LOCATION OF ALL ELECTRICAL APPARATUS AND DEVICES SHOWN ON THE DRAWINGS ARE APPROXIMATE AND BEFORE INSTALLING, STUDY THE ARCHITECTURAL, STRUCTURAL, AND MECHANICAL DETAILS, THEN MAKE INSTALLATION IN THE MOST LOGICAL MANNER. CIRCUIT ROUTING IS TYPICAL AND MAY BE VARIED IN ANY MANNER. ANY PIECE OF EQUIPMENT/DEVICE MAY BE RELOCATED WITHIN 10' BEFORE INSTALLATION AT THE DIRECTION OF THE ARCHITECT WITHOUT ADDITIONAL CHARGE TO THE PROJECT.
17. SHOULD PROJECT CONDITIONS REQUIRE REARRANGEMENT OF THE PROJECT'S WORK, THE CONTRACTOR SHALL MARK SUCH CHANGES ON THE AS-BUILT DRAWINGS. IF THESE CHANGES REQUIRE AN ALTERNATE METHOD TO THOSE SPECIFIED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL SUBMIT DRAWINGS TO REFLECT THE PROPOSED ALTERNATE METHODS TO THE ARCHITECT FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL NOT PROCEED UNTIL APPROVAL IS OBTAINED. REARRANGEMENT OF WORK FOR THE PURPOSE OF COORDINATION SHALL NOT BE CONSIDERED AN ITEM FOR EXTRA COST.
18. THE EXISTING ELECTRICAL, TELECOM, FIRE ALARM, AND OTHER ELECTRICALLY-RELATED SYSTEMS IN AREAS ADJACENT TO, OUTSIDE OF, AND/OR OTHERWISE PASSING THROUGH THE PROJECT LIMITS, MUST REMAIN OPERATIONAL DURING THE CONSTRUCTION PERIOD AND POST-CONSTRUCTION. THE CONTRACTOR SHALL EXERCISE DUE CARE AND CAUTION WHEN WORKING NEAR ANY EXISTING EQUIPMENT, DEVICES, OR CABLING/CIRCUITING. PROVIDE NEW JUNCTION BOXES, CONDUITS, WIRING, AND THE LABOR REQUIRED TO FACILITATE THE REQUIRED OPERATIONAL CONTINUITY. BOXES, CONDUITS, AND WIRING SHALL BE IN ACCORDANCE WITH THE NEC. ANY DAMAGE TO THE EXISTING EQUIPMENT, DEVICES, OR CABLING/CIRCUITING RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE IMMEDIATELY REPAIRED OR OTHERWISE RESTORED TO ITS ORIGINAL WORKING CONDITION AT NO ADDITIONAL COST TO THE PROJECT.
19. THE ELECTRICAL DRAWINGS ARE BASED ON PROPOSED EQUIPMENT. VERIFY ALL SYSTEM REQUIREMENTS (ELECTRICAL, MECHANICAL, FIRE ALARM, SPECIALTY SYSTEMS, ETC.) WITH THE SELECTED SYSTEM'S MANUFACTURER OR AUTHORIZED REPRESENTATIVE PRIOR TO COMMENCING WITH ANY WORK. COORDINATE RATINGS OF OVERCURRENT PROTECTION DEVICES, DISCONNECT SWITCHES, CONDUIT, AND WIRING TO MATCH THE ACTUAL EQUIPMENT SUPPLIED FOR THE PROJECT. CORRECT ALL DISCREPANCIES SO AS TO PROVIDE A COMPLETE AND OPERATIONAL SYSTEM. RECORD CHANGES ON THE AS-BUILT DRAWINGS.
20. ALL EQUIPMENT AND APPARATUS SHALL BE CAPABLE OF FITTING IN THE SPACES SHOWN WHILE MEETING THE MANUFACTURER'S RECOMMENDED ACCESS REQUIREMENTS AND APPLICABLE CODE REQUIREMENTS. REVIEW ALL SPACES WHERE EQUIPMENT IS TO BE INSTALLED PRIOR TO ORDERING OF EQUIPMENT AND NOTIFY THE ARCHITECT OF ANY INADEQUATE CLEARANCES OR CONDITIONS THAT WILL PREVENT THE PROPER INSTALLATION, MAINTENANCE, AND OPERATION OF THE EQUIPMENT.
21. CONCEAL ALL CONDUIT WHEREVER REASONABLY POSSIBLE; EXPOSED CONDUITS ARE PERMITTED ONLY WHERE SPECIFICALLY SHOWN ON THE DRAWINGS. ALL EXPOSED CONDUITS IN FINISHED AREAS SHALL BE INSTALLED IN THE LEAST VISIBLE LOCATIONS. CARE SHALL BE TAKEN TO INSTALL CONDUIT IN THE MOST AESTHETICALLY PLEASING MANNER.
22. WHERE DEVICES, EQUIPMENT, BOXES, AND OTHER ELECTRICAL MATERIALS ARE INDICATED TO BE OF WEATHERPROOF (WP) CONSTRUCTION, THE INTERCONNECTING RACEWAYS, INCLUDING COUPLINGS AND CONNECTORS, SHALL BE LISTED FOR AND INSTALLED TO PROVIDE A COMPLETE WEATHERPROOF / WET LOCATION INSTALLATION. ALL INCIDENTAL MATERIALS REQUIRED TO COMPLETE THE INSTALLATION SHALL ALSO BE OF WEATHERPROOF / WET LOCATION LISITING.
23. WIRING DEVICES AND CONDUITS SHALL BE FLUSH MOUNTED, WHEREVER REASONABLY POSSIBLE. WHERE NEW DEVICES ARE INDICATED TO BE INSTALLED IN EXISTING WALLS, FISH THE CONDUIT DOWN INTO THE EXISTING WALL CAVITY AND KEEP DISTURBANCES TO THE EXISTING WALLS TO A MINIMUM. WHERE OBSTRUCTIONS ARE ENCOUNTERED OR CUTTING OF THE WALL TO ACCOMPLISH THE WIRING DEVICE AND CONDUIT INSTALLATION IS UNAVOIDABLE, CONSULT WITH THE ARCHITECT PRIOR TO COMMENCING ANY WORK.

GENERAL ELECTRICAL NOTES (CONTINUED)

24. PROVIDE TYPEWRITTEN CIRCUIT DIRECTORIES FOR ALL PANELS, NEW OR MODIFIED, REFLECTING THE CIRCUIT ARRANGEMENTS AS THEY WERE ACTUALLY INSTALLED.
25. AN ADHESIVE VINYL NAMEPLATE SHALL BE PROVIDED FOR ALL SWITCHES, RECEPTACLES, DISCONNECT SWITCHES, MOTOR STARTERS, AND MISCELLANEOUS DEVICES REQUIRING POWER. THE NAMEPLATE SHALL INDICATE THE PANELBOARD SERVING THE DEVICE AND THE CORRESPONDING CIRCUIT ASSIGNMENT. LETTERING SHALL BE A MINIMUM OF 1/4" HIGH. UTILIZE BROTHER "P-TOUCH" LABEL MAKER OR APPROVED SUBSTITUTE.
26. A GREEN, EQUIPMENT GROUND CONDUCTOR SIZED IN ACCORDANCE WITH THE NEC ARTICLE 250 SHALL BE INSTALLED IN ALL RACEWAYS WHETHER INDICATED ON CONTRACT DRAWINGS OR NOT. INSTALL THIS CONDUCTOR IN ALL RACEWAYS INCLUDING THOSE INSTALLED FOR SWITCH LEGS AND ATTACH TO THE DEVICE, LUMINAIRE, OR EQUIPMENT USING A SUITABLE GROUNDING LUG.
27. DO NOT USE A COMMON NEUTRAL FOR MULTIPLE BRANCH CIRCUITS INSTALLED IN A COMMON CONDUIT. PROVIDE A DEDICATED NEUTRAL FOR EACH INDIVIDUAL CIRCUIT. WHERE MULTIPLE DEDICATED NEUTRALS ARE INSTALLED IN A COMMON CONDUIT, PROVIDE COLOR CODING OF THE DIFFERENT NEUTRAL CONDUCTORS IN ACCORDANCE WITH THE NEC (WHITE, GRAY, THREE CONTINUOUS WHITE OR GRAY STRIPES, ETC.)
28. PROVIDE NYLON PULLSTRINGS IN ALL EMPTY CONDUITS UNLESS OTHERWISE INDICATED.
29. ALL SURFACE MOUNTED DEVICES SHALL BE INSTALLED UTILIZING FACTORY PAINTED SURFACE MOUNTING ACCESSORIES AND MATCHING DEVICE BOXES FOR THE MOST AESTHETICALLY PLEASING INSTALLATION.
30. PROVIDE KNOCK-OUT PLUGS FOR ALL UNUSED CONDUIT PENETRATIONS IN BOXES AND ENCLOSURES DUE TO CONDUIT REMOVAL.
31. PENETRATIONS THROUGH FIRE-RATED WALLS, CEILINGS, AND FLOORS SHALL BE SEALED TO MAINTAIN FIRE RATINGS. UTILIZE 3M CP25, PUTTY 303, OR OTHER SUITABLE UL-LISTED SEALING SYSTEM.
32. PATCH, REFINISH, AND PAINT ALL PENETRATIONS THROUGH WALLS AND SLABS TO MATCH FINISH OF ADJACENT SURFACES.
33. RESTORE/REPAIR ANY DAMAGE TO EXISTING SURFACES RESULTING FROM THE INSTALLATION OF NEW ELECTRICAL ITEMS. THE AREAS REPAIRED SHALL MATCH THE ADJACENT SURFACES IN TEXTURE, FINISH, AND COLOR.
34. PAINTING OF ELECTRICAL EQUIPMENT:
   a. INTERIOR LOCATIONS - PRIME AND PAINT ALL EXPOSED CONDUITS, BOXES, FITTINGS, SUPPORT CHANNELS, MOUNTING HARDWARE, AND ACCESSORIES WITH TWO FINISH COATS TO MATCH THE SURFACE ON WHICH THEY ARE MOUNTED OR TO MATCH THE FINISH OF THE ADJACENT SURFACES. EQUIPMENT SURFACES/COMPONENTS WITH A FACTORY-APPLIED PAINT FINISH NEED NOT BE PAINTED.
   b. EXTERIOR LOCATIONS - PRIME ALL EXPOSED CONDUITS, BOXES, FITTINGS, SUPPORT CHANNELS, MOUNTING HARDWARE, AND ACCESSORIES WITH A 2-PART EPOXY PRIMER AND FINISH WITH 2 COATS OF AN ALIPHATIC ACRYLIC URETHANE PAINT. PAINT FINISH TO MATCH THE SURFACE ON WHICH THEY ARE MOUNTED OR TO MATCH THE FINISH OF THE ADJACENT SURFACES. STAINLESS STEEL MATERIALS NEED NOT BE PAINTED.
35. FOR ALL SWITCHGEAR, SWITCHBOARDS, AND PANELBOARDS, PROVIDE A PERMANENTLY AFFIXED PLAQUE INDICATING THE SOURCE OF THE POWER SERVING THE APPARATUS IN QUESTION IN ACCORDANCE WITH THE NEC.
36. ELECTRICAL EQUIPMENT SUPPORTING HVAC EQUIPMENT INSTALLED ABOVE SUSPENDED CEILINGS SHALL COMPLY WITH THE NEC FOR WORKSPACE CLEARANCE IN AREAS OF LIMITED ACCESS.
37. ALL ELECTRIFIED UTILIZATION EQUIPMENT, CONTROL DEVICES, CONTROL CIRCUITING, AND SEPARATELY MOUNTED MOTOR STARTERS/CONTROLLERS ARE SPECIFIED AND PROVIDED UNDER THE APPLICABLE SPECIFICATION SECTIONS. ALL LINE VOLTAGE POWER TO THE ELECTRIFIED UTILIZATION EQUIPMENT SHALL BE PROVIDED UNDER THE ELECTRICAL CONTRACT DOCUMENTS.
38. FOR ELECTRIFIED UTILIZATION EQUIPMENT, COORDINATE THE MOUNTING HEIGHT OF THE ASSOCIATED JUNCTION BOX, DISCONNECT SWITCH, OR STARTER/CONTROLLER WITH THE ACTUAL EQUIPMENT SUPPLIED.
39. PROVIDE EARTHQUAKE BRACING FOR ALL ELECTRICAL EQUIPMENT, APPARATUS, AND RACEWAYS. BRACING SHALL, AS A MINIMUM, COMPLY WITH THE COUNTY BUILDING CODE.
40. ALL CONDUITS ENTERING THE BUILDING FROM THE EXTERIOR SHALL BE SEALED TO PREVENT ENTRANCE OF MOISTURE, GASES, AND RODENTS.

REVISIONS	BY

This work was prepared by me or under my supervision and to the best of my knowledge, it will be under my observation.

Scott Tomokiyo

SCOTT TOMOKIYO LICENSED PROFESSIONAL ENGINEER No. 15968-E HAWAII, U.S.A.

EXPIRATION DATE 04/30/2028

INSYNERGY ENGINEERING INC
MECHANICAL • ELECTRICAL • FIRE PROTECTION
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Phone: (808) 521-3773 Fax: (808) 521-3993

MALUHIA REPLACE AIR CONDITIONING, BASEMENT FLOOR
1027 HALA DRIVE, HONOLULU, HI 96817
TMK: 1-6-009:004

GENERAL ELECTRICAL NOTES

Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
Sheet	E002
Of	19 Sheets 28

EXISTING PANEL DPC
208Y/120V, 3Ø, 4W

FOR ENLARGED PARTIAL LIGHTING
PLAN SEE 1/ED101 AND 1/E-103
FOR ENLARGED PARTIAL ELECTRICAL
PLAN SEE 1/ED102 AND 1/E-104

RAMP
LOADING ZONE
MORGUE
HOUSEKEEPING
MECH ROOM
MECH ROOM
STORAGE
TELEPHONE EQUIP
AUXILLARY ROOM
CENTRAL STAIRS
NEW SUPPLY ROOM
UNEXCAVATED
MAKAI STAIRS
HOME HEALTH OFFICE
OFFICE
DDS
WAITING ALCOVE
WORK AREA
DENTAL OFFICE
MENS PUBLIC
WOMENS PUBLIC
LABORATORY
LAB OFFICE
STORAGE
FILE ROOM
DARK ROOM
EKG ROOM
NEW X_RAY EKG ROOM
ELEVATOR
HEATER ROOM
STORAGE
MAUKA STAIRS
LOUNGE
CONFERENCE
SOCIAL WORKS
ANTE
HOUSEKEEPER OFFICE
LOBBY
ELEVATOR #3
SHOWER
ELEV #2
ELECTRICAL
EXAM RM
EXAM RM
EXAM RM
PHARMACY
LAUNDRY
LINEN ROOM
HOUSEKEEPING STORAGE
UNSTERILE STORAGE
ANTE ROOM
EQUIPMENT
RECREATION
T.T. AIDE
NURSES STATION
WAITWAY
RAMP
RECORD
CENTRAL STORAGE
WOMENS LOCKER
TOILET
CLEANING
CLEAN WORK
MEDICAL RECORDS
TOILET
AC DUCT ROOM
PARKING
MAKAI STAIRS #2
CENTRAL SUPPLY STERILIZING
PHYSICAL THERAPY
OFFICE
OFFICE
MAKAI STAIRS #2

BASEMENT PLAN

PLAN NORTH

1 OVERALL BASEMENT ELECTRICAL PLAN
SCALE: 1" = 10'

0 10' 20'

REVISIONS	BY

This work was prepared by me or under my supervision and construction of this project will be under my observation.
Scott Tomokiyo
EXPIRATION DATE 04/30/2028

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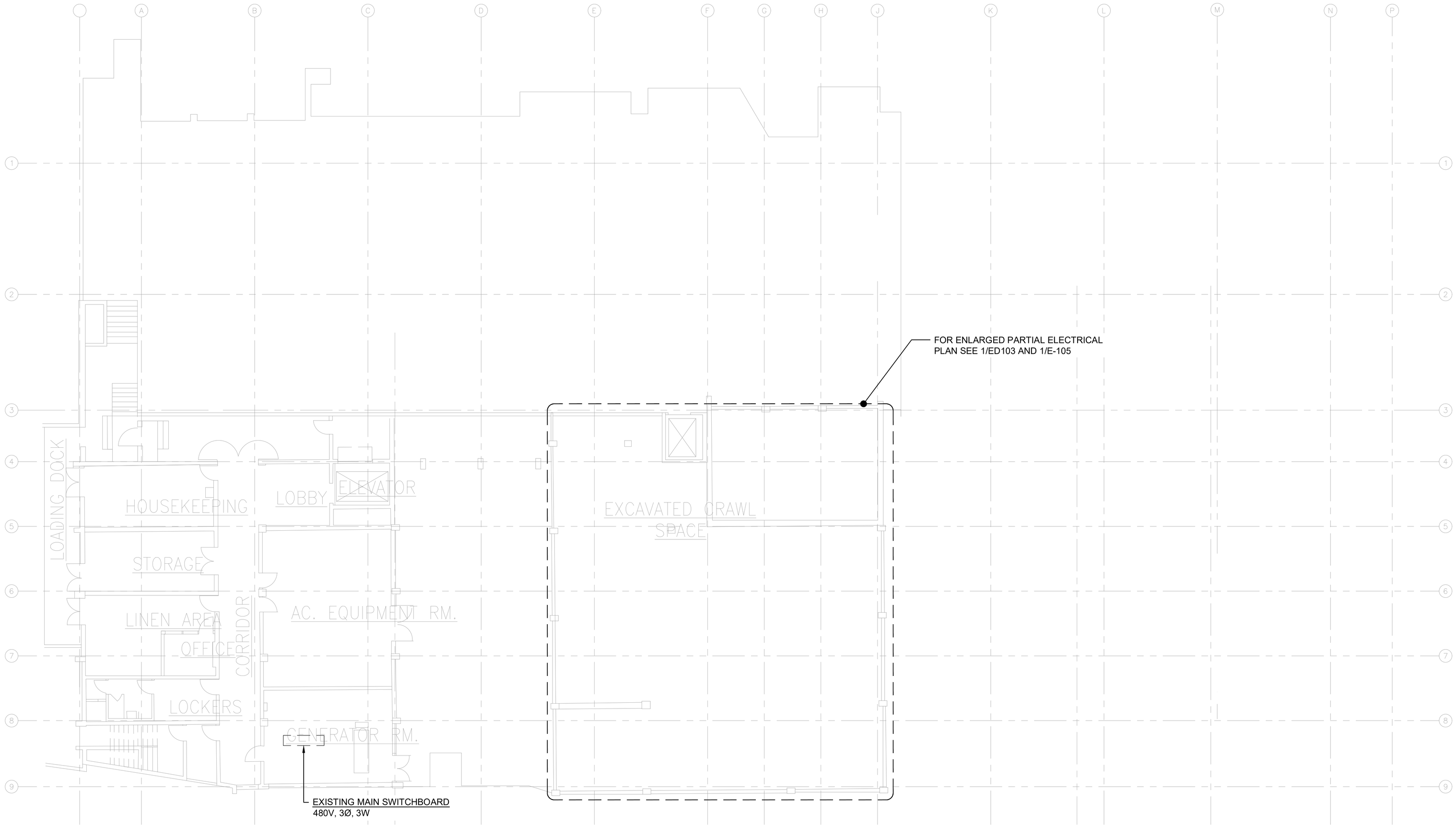
TMK: 1-6-009:004

OVERALL BASEMENT ELECTRICAL PLAN

Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
Sheet	E101
Of	20 Sheets 28



PLAN NORTH

0 10' 20'

1 OVERALL SUB-BASEMENT ELECTRICAL PLAN
SCALE: 1" = 10'

REVISIONS	BY

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Scott Tomokiyo

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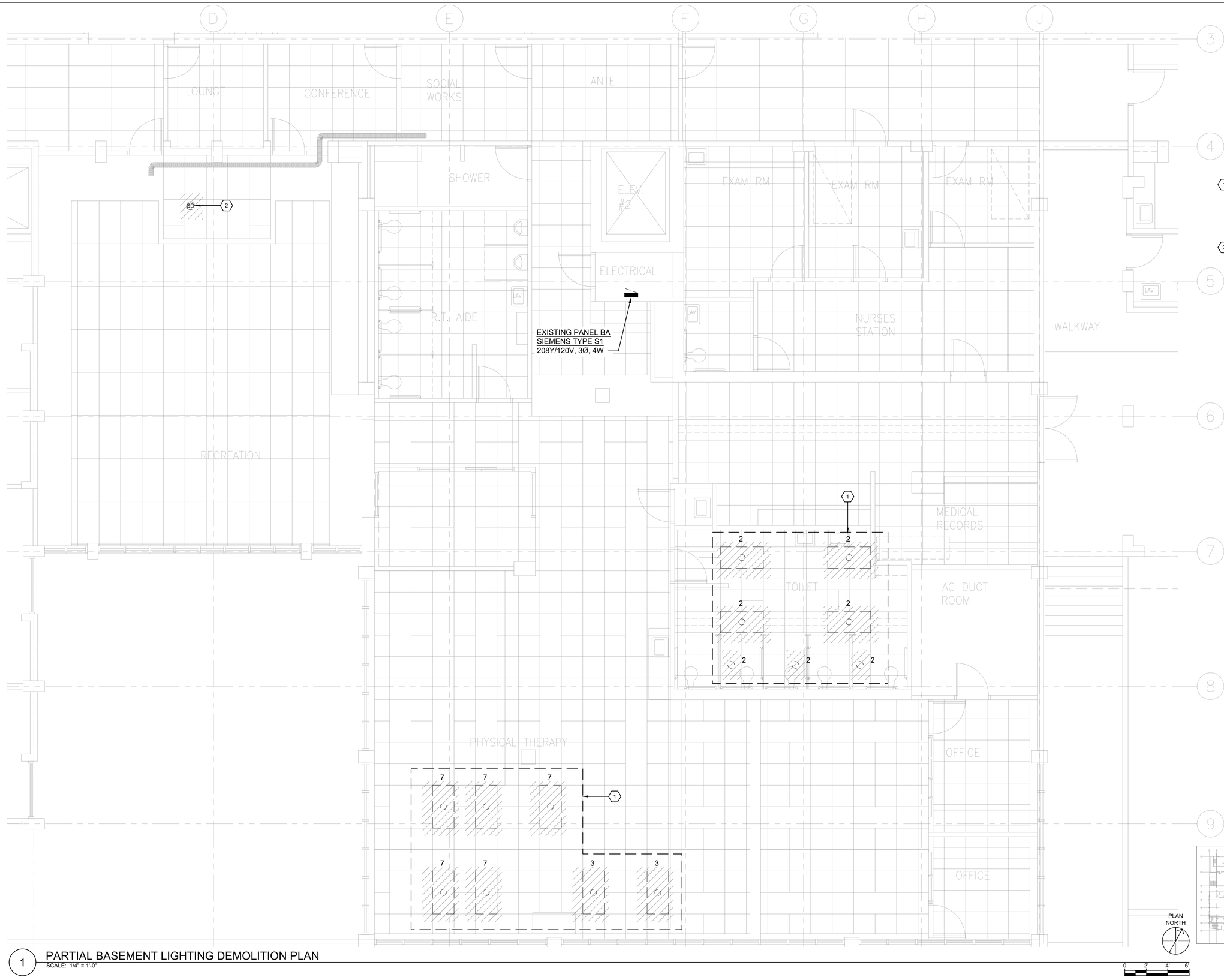
OVERALL SUB-BASEMENT ELECTRICAL PLAN

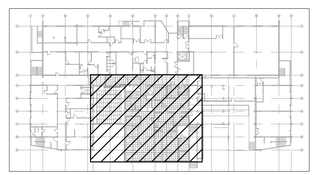
Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
Sheet	E102
Of	21 Sheets 28



1 PARTIAL BASEMENT LIGHTING DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

0 2' 4' 6'

PLAN NORTH



KEY PLAN
SCALE: NTS

SHEET KEYNOTES

1. PHASE 1: REMOVE EXISTING LIGHT FIXTURE TO FACILITATE AIR CONDITIONING REPLACEMENT WORK. MAINTAIN EXISTING BRANCH CIRCUITING BACK TO PANEL BA AND LIGHT FIXTURE FOR RE-USE.
2. PHASE 2: TRACE AND VERIFY EXISTING SMOKE DETECTOR BACK TO POWER SOURCE. REMOVE ELECTRICAL CONNECTION FROM EXISTING SMOKE DETECTOR. MAINTAIN EXISTING BRANCH CIRCUITING AND SMOKE DETECTOR FOR RE-USE. UPDATE AS-BUILT WITH PANEL NAME AND CIRCUIT NUMBER.

REVISIONS	BY

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

Scott Tomokiyo

EXPIRATION DATE 04/30/2028

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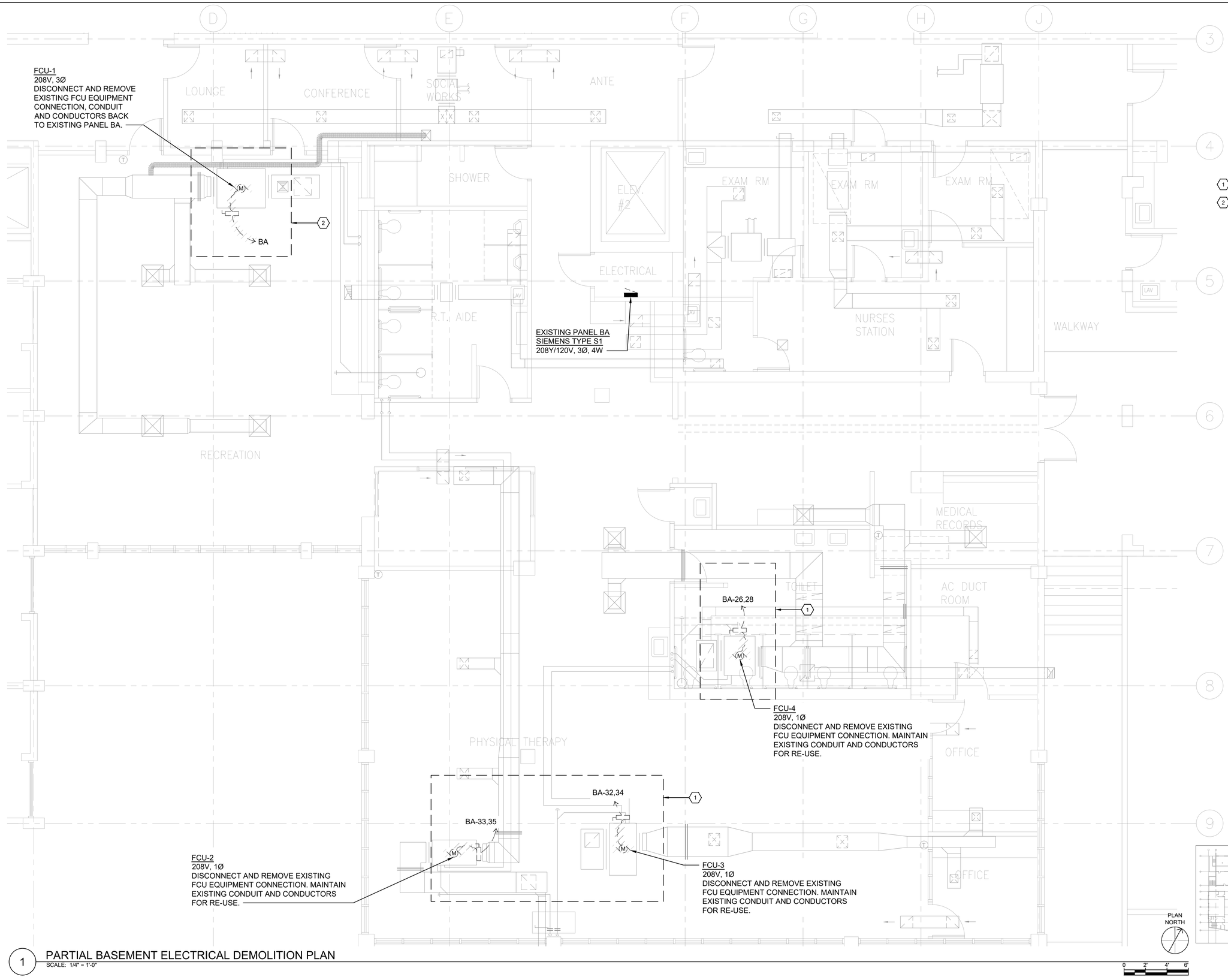
TMK: 1-6-009:004

PARTIAL BASEMENT LIGHTING DEMOLITION PLAN

Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
Sheet	ED101
Of	22 Sheets 28



SHEET KEYNOTES

1. PHASE 1
2. PHASE 2

REVISIONS	BY

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SCOTT TOMOKIYO LICENSED PROFESSIONAL ENGINEER No. 15968-E HAWAII, U.S.A.

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TMK: 1-6-009:004

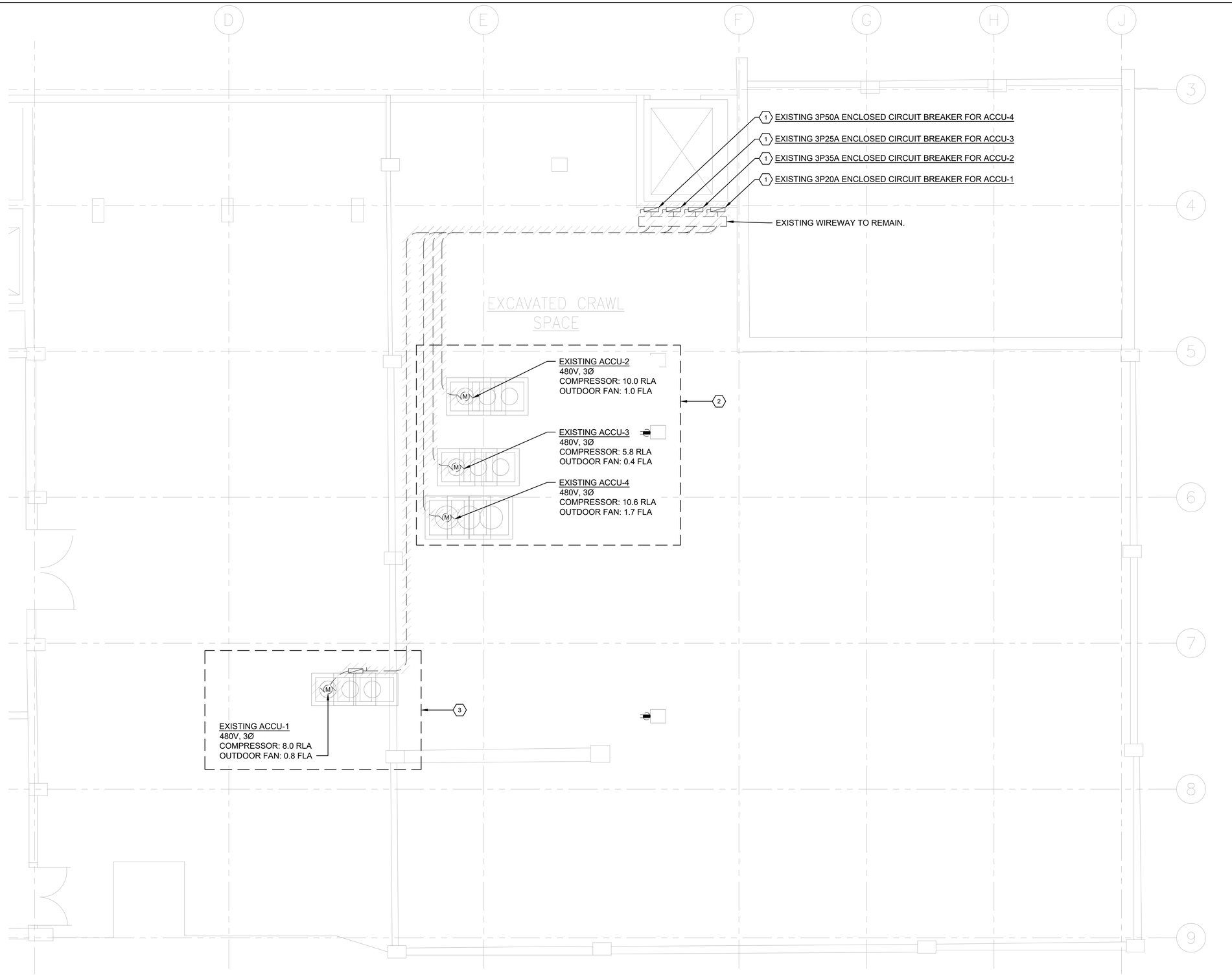
PARTIAL BASEMENT ELECTRICAL DEMOLITION PLAN

Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
Sheet	ED102

Of 23 Sheets 28

1 PARTIAL BASEMENT ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"

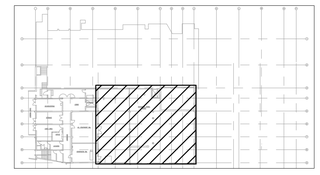
KEY PLAN
SCALE: NTS



KEY NOTES

1. REMOVE CONDUIT AND CONDUCTORS BACK TO EXISTING WIREWAY.
2. PHASE 1
3. PHASE 2

1 PARTIAL SUB-BASEMENT ELECTRICAL DEMOLITION PLAN
SCALE: 1/4" = 1'-0"



KEY PLAN
SCALE: NTS

REVISIONS	BY

This work was prepared by me or under my supervision and constructed as per code, will be under my observation.
Scott Tomokiyo
EXPIRATION DATE 04/30/2028

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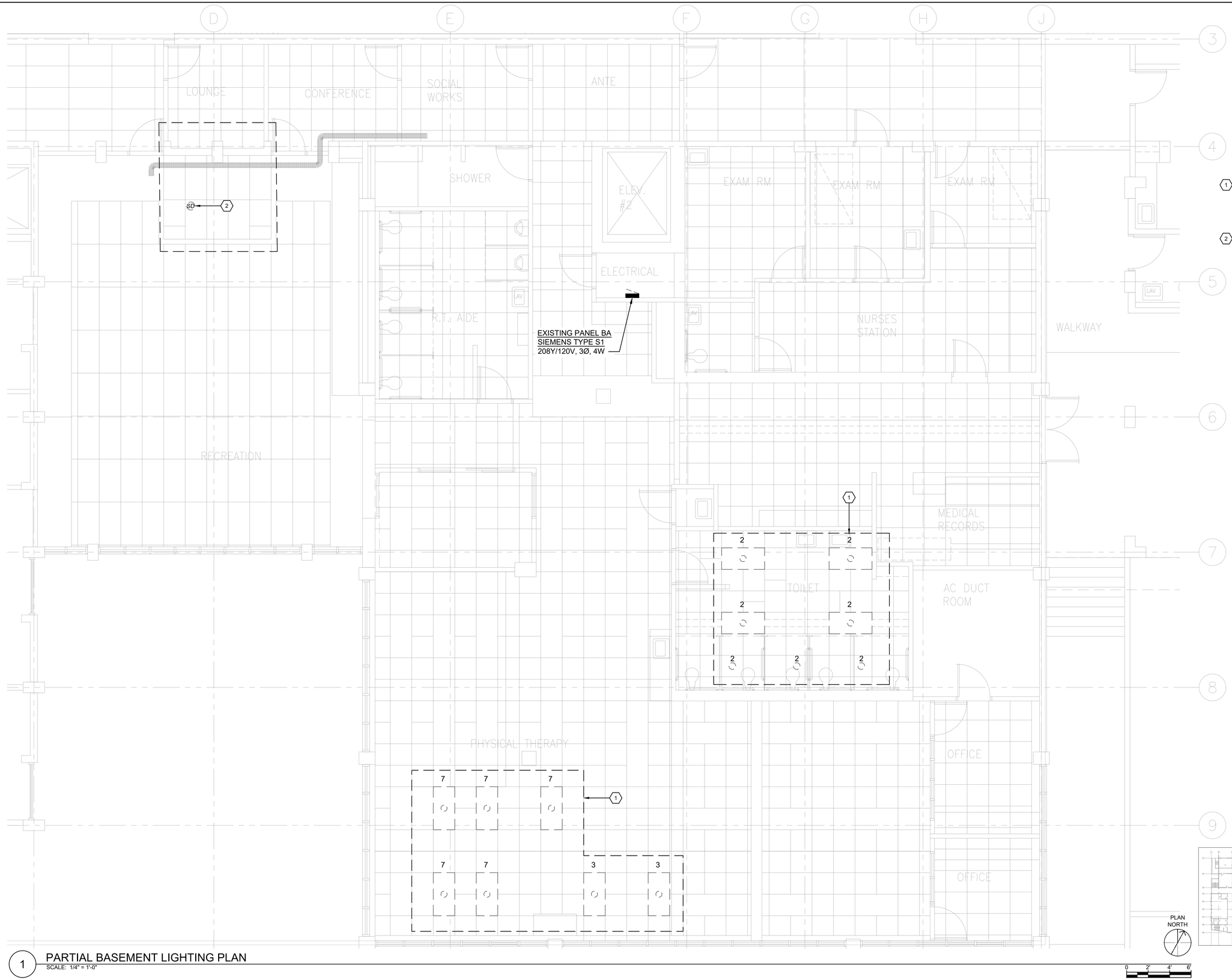
MALUHIA REPLACE AIR CONDITIONING, BASEMENT FLOOR
1027 HALA DRIVE, HONOLULU, HI 96817
TMK: 1-6-009:004

PARTIAL SUB-BASEMENT ELECTRICAL DEMOLITION PLAN

Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
Sheet	ED103

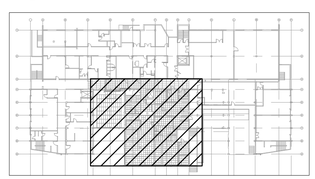
Of 24 Sheets 28



SHEET KEYNOTES

1. PHASE 1: RECONNECT EXISTING BRANCH CIRCUITING TO EXISTING LIGHT FIXTURE AFTER AIR CONDITIONING REPLACEMENT IS COMPLETE.
2. PHASE 2: RECONNECT EXISTING BRANCH CIRCUITING TO EXISTING SMOKE DETECTOR AFTER AIR CONDITIONING REPLACEMENT IS COMPLETE.

1 PARTIAL BASEMENT LIGHTING PLAN
SCALE: 1/4" = 1'-0"



KEY PLAN
SCALE: NTS

REVISIONS	BY

This work was prepared by me or under my supervision and construction shall not proceed will be under my observation.

Scott Tomokiyo

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EXPIRATION DATE 04/30/2028

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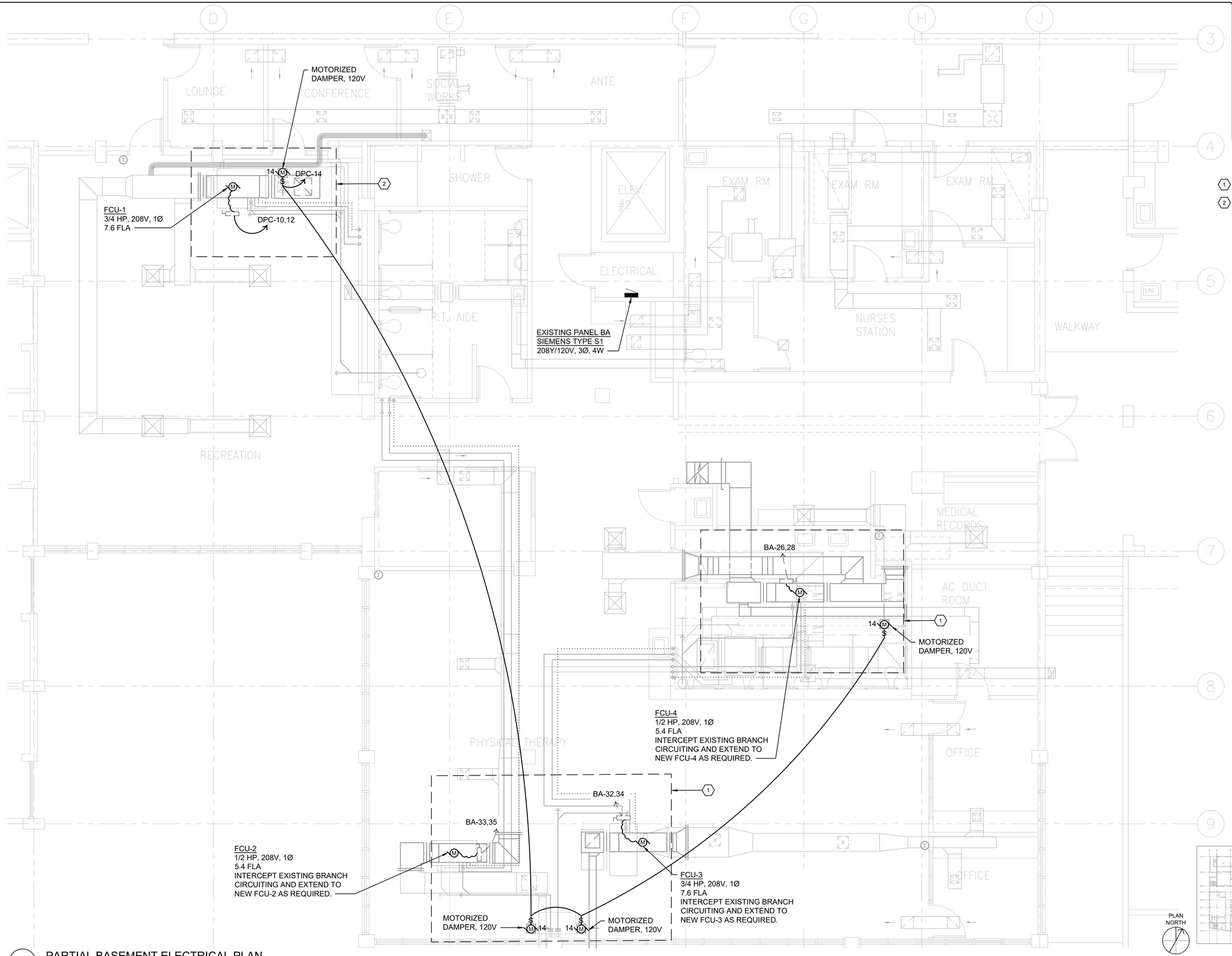
PARTIAL BASEMENT LIGHTING DEMOLITION PLAN

Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
Sheet	E103
Of	25 Sheets 28



SHEET KEYNOTES

1. PHASE 1
2. PHASE 2

1 PARTIAL BASEMENT ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"

KEY PLAN
SCALE: NTS

REVISIONS	BY

This work was prepared by me or under my supervision and construction observation will be under my observation.
Scott Tomokiyo
EXPIRATION DATE 04/30/2028

SCOTT TOMOKIYO * LICENSED PROFESSIONAL ENGINEER * No. 15968-E * HAWAII, U.S.A.

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MALUHIA REPLACE AIR CONDITIONING, BASEMENT FLOOR
1027 HALA DRIVE, HONOLULU, HI 96817
TMK: 1-6-009:004

PARTIAL BASEMENT ELECTRICAL PLAN

Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
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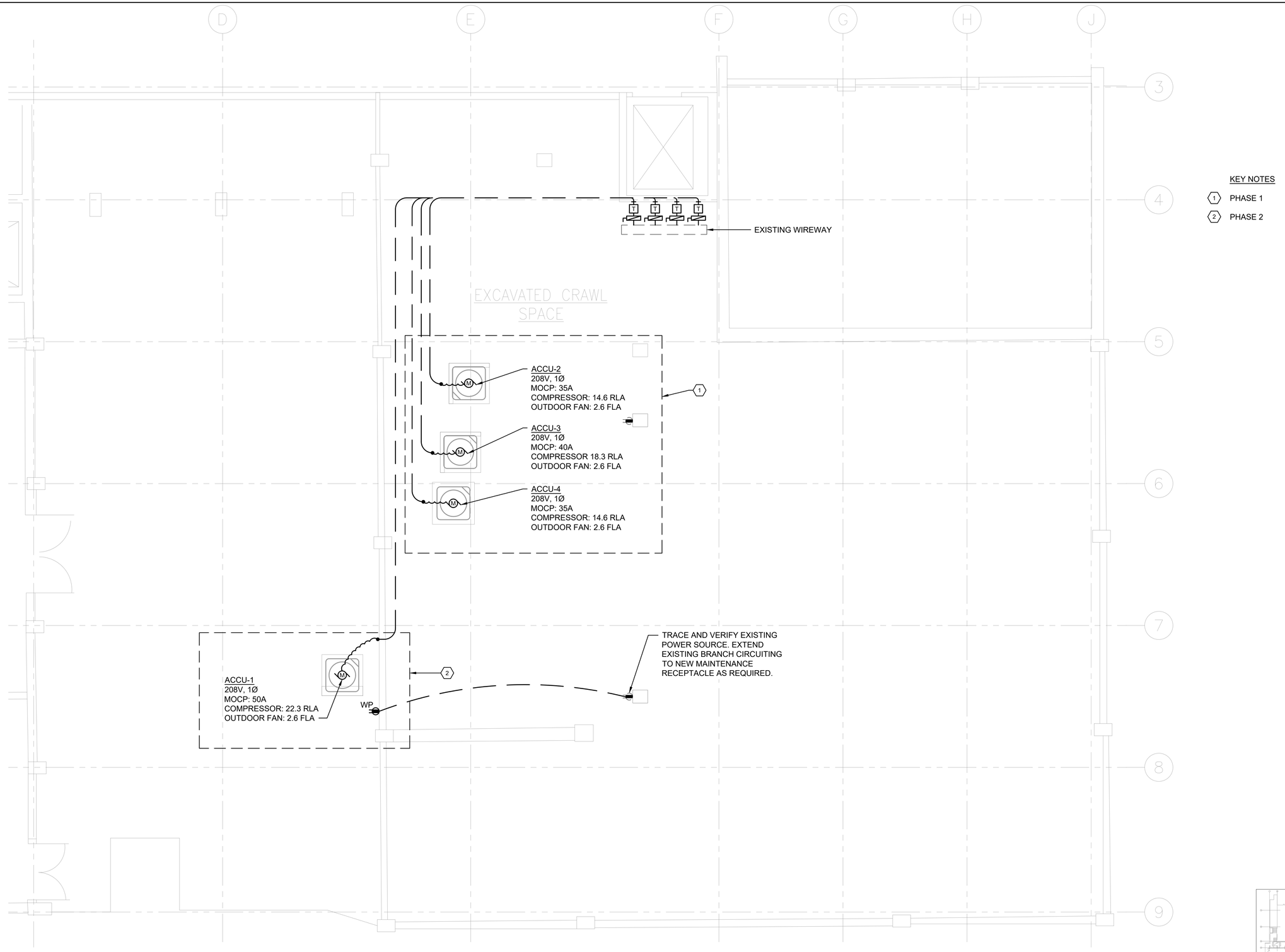


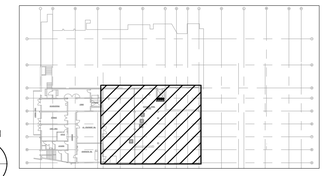
KEY NOTES

1. PHASE 1
2. PHASE 2

PLAN NORTH

0 2' 4' 6'

1 PARTIAL SUB-BASEMENT ELECTRICAL PLAN
SCALE: 1/4" = 1'-0"



KEY PLAN
SCALE: NTS

REVISIONS	BY

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Scott Tomokiyo

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PARTIAL SUB-BASEMENT ELECTRICAL PLAN

Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
Sheet	E105

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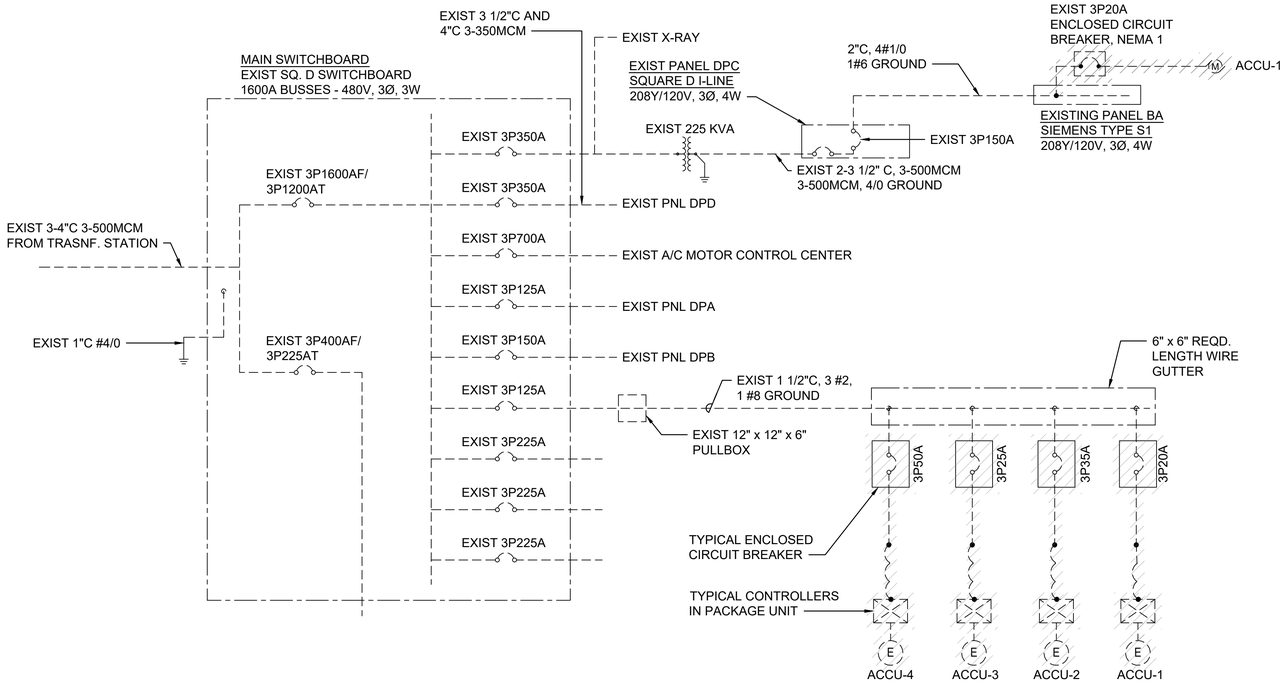
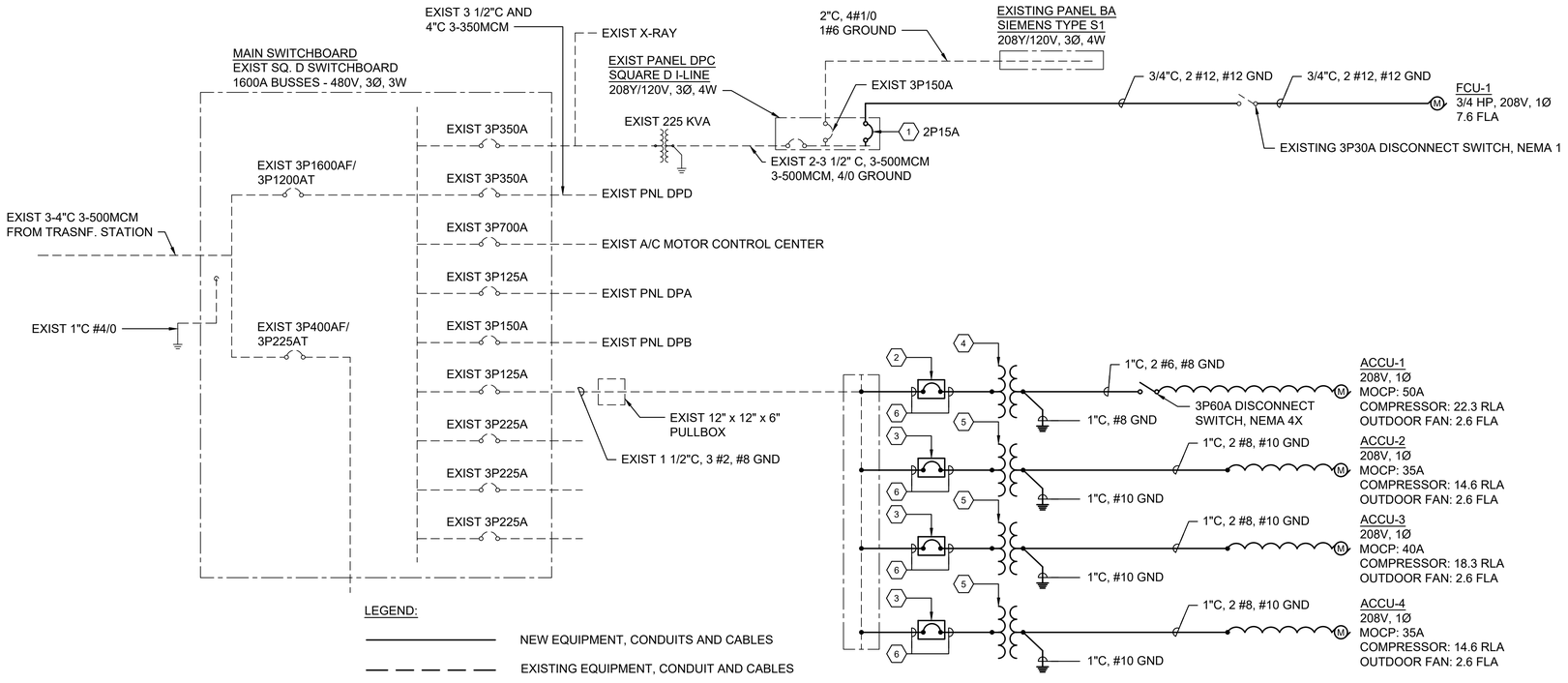


2 ELECTRICAL ONE-LINE DEMOLITION DIAGRAM
SCALE: NTS



1 ELECTRICAL ONE-LINE DIAGRAM
SCALE: NTS

KEYNOTES

1. NEW CIRCUIT BREAKER SHALL BE FULLY COMPATIBLE WITH EXISTING PANEL, INCLUDING AIC RATING.
2. 3P20A ENCLOSED CIRCUIT BREAKER, NEMA 3R
3. 3P15A ENCLOSED CIRCUIT BREAKER, NEMA 3R
4. DRY-TYPE TRANSFORMER, NEMA 3R 7.5 KVA, 480-208V, 1Ø
5. DRY-TYPE TRANSFORMER, NEMA 3R 5 KVA, 480-208V, 1Ø
6. 3/4"C, 3 #12, #12 GND

LOAD CALCULATION:

#1 EXISTING PANEL BA/DPC
EXISTING FCU-1: 2.38 KVA
EXISTING FCU-2: 1.58 KVA
EXISTING FCU-3: 1.58 KVA
EXISTING FCU-4: 1.58 KVA
EXISTING FCU TOTAL: 7.12 KVA

PROPOSED FCU-1: 1.58 KVA
PROPOSED FCU-2: 1.12 KVA
PROPOSED FCU-3: 1.58 KVA
PROPOSED FCU-4: 1.12 KVA
PROPOSED FCU TOTAL: 5.4 KVA

OVERALL LOAD OF FCU CHANGE:
7.12 KVA - 5.4 KVA = 1.72 KVA DECREASE

THE CURRENT SYSTEM CAN SUPPORT THE PROPOSED LOAD AND OVERALL LOAD SHOULD DECREASE.

#2 EXISTING SQ.D SWITCHBOARD
EXISTING ACCU-1: 7.32 KVA
EXISTING ACCU-2: 9.15 KVA
EXISTING ACCU-3: 5.15 KVA
EXISTING ACCU-4: 10.23 KVA
EXISTING ACCU TOTAL: 31.85 KVA

PROPOSED PANEL ACCU
PROPOSED ACCU-1: 5.18 KVA
PROPOSED ACCU-2: 3.58 KVA
PROPOSED ACCU-3: 4.35 KVA
PROPOSED ACCU-4: 3.58 KVA
PROPOSED ACCU TOTAL: 16.69 KVA

OVERALL LOAD OF ACCU CHANGE:
31.85 KVA - 16.69 KVA = 15.16 KVA DECREASE

THE CURRENT SYSTEM CAN SUPPORT THE PROPOSED LOAD AND OVERALL LOAD SHOULD DECREASE.

REVISIONS	BY

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Scott Tomokiyo
EXPIRATION DATE 04/30/2028

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MECHANICAL ELECTRICAL ONE-LINE DIAGRAM AND LEGEND

Designed	LT
Drawn	KR
Checked	ST
Date	03-20-2026
Job No.	25-169
Sheet	E601
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