Invitation for Bids

Leahi Hospital Young Building Sub-Basement Food Service Operations Phase 2
26L-0414

The Hawaii Health Systems Corporation (HHSC) Oahu Region is requesting bids from qualified companies for the replacement of the exhaust fans in the Young Building at Leahi Hospital located at 3675 Kilauea Ave., Honolulu, HI 96816.

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

A site visit is scheduled for April 29, 2026 at 10:30 a.m. All interested companies shall meet in the Leahi Hospital Parking Lot entrance area. The deadline for submission of written/emailed questions pertaining to the IFB is May 6, 2026.

All bids must be received by HHSC by May 20, 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	April 22, 2026
2.	Pre-Bid Orientation Leahi Hospital parking lot entrance 10:30 a.m.	April 29, 2026
3.	Closing Date for Receipt of Questions	May 6, 2026
4.	**Closing Date for Receipt of Bids 2:00 p.m.**	**May 20, 2026**
5.	Contractor Selection/Award Notification (on/about)	May 25, 2026
6.	Contract Start Date (on/about)	June 1, 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://leahi.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

LEAHI HOSPITAL YOUNG BUILDING SUB-BASEMENT FOOD SERVICE OPERATIONS PHASE 2

Work for this project shall include, but is not limited to renovating the sub-basement area in the Young Building at Leahi Hospital for food service operations, and miscellaneous work as indicated on the drawings. Project is estimated at $5M - $6M.

2.1 CONTRACT PERIOD

The work shall be completed within **360** 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 June 1, 2026 or upon execution of the Contract agreement by both parties. The Hospital reserves the right to apply liquidated damages for the delay in Contract execution on the part of the Contractor.

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

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

3.1 Bid Security

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

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

3.2 General Conditions

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

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

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

i) Bidder shall have the same definition as Contractor.

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

iii) Department shall be HHSC or its designee.

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

v) State shall be HHSC or its designee.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

o. Section 5.11 is hereby deleted in its entirety.

p. Section 5.12.4 is hereby deleted in its entirety.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

(END OF SECTION)

SECTION 4
BID EVALUATION AND AWARD

4.0 Bid Evaluation

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

4.1 Method of Award

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

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

4.2 Contract Execution

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

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

(END OF SECTION)

APPENDIX A

SAMPLE
BID TRANSMITTAL COVER LETTER

Dear Mr. Nakada,

(Name of Business) proposes to provide any and all goods and services as set forth in the "Invitation for Bid" for Leahi Hospital Young Building Sub-Basement Food Service Operations Phase 2 IFB No. 26L-0414, for which fees/costs have been set. The fees/costs offered herein shall apply from June, 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. 26L-0414
Leahi Hospital Young Building Food Service Operations Phase 2

BID FORM

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

_____DOLLARS ($_____)

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

Respectfully Submitted:

_____ _____
Signature / Printed Name Date

_____
Title

OTHER CONDITIONS

1. Bidder agrees to liquidated damages as specified.

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

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

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

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

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

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

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

ALL JOINT CONTRACTORS OR SUBCONTRACTORS TO BE ENGAGED ON THIS PROJECT

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

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

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

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

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

Enclosed herewith:

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

(Cross Out Those Not Applicable)

in the amount of:

_____ DOLLARS ($_____).

as required by law.

Respectfully submitted,

_____
Name of Company, Joint Venture or Partnership

_____
License

By _____
Signature (*4)

Title _____

Date: _____

(CORPORATE SEAL)
(*5)

NOTES:

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

2. Legal tender; or

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

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

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

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

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

END OF BID FORM

APPENDIX C

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

FOR

FURNISHING LABOR AND MATERIALS

REQUIRED FOR

LEAHI HOSPITAL

YOUNG BUILDING
SUB-BASEMENT – FOOD SERVICE OPERATIONS
PHASE 2

3675 KILAUEA AVE.
HONOLULU, OAHU, HAWAII

TMK: 03-03-031:001

FOR THE

HAWAII HEALTH SYSTEMS CORPORATION (HHSC)

STATE OF HAWAII

ARCHITECT: PACIFIC ARCHITECTS, INC.
CIVIL: KIM & SHIROMA ENGINEERS, INC.
STRUCTURAL: KAI HAWAII, INC.
MECHANICAL: MECHANICAL ENTERPRISES, INC.
ELECTRICAL: BOWER + KUBOTA
FOOD SERVICE CONSULTANT: MIZO & ASSOCIATES, INC.
ENVIRONMENTAL: ENVIROQUEST, INC.

APRIL 2026

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SECTION 00210 - INSTRUCTIONS TO BIDDERS

Part 1 - GENERAL

1.01 GENERAL

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

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

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

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

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

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

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

E. The GENERAL 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" of these specifications for additional construction time information, as applicable.

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

1.05 EVALUATION CRITERIA

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

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

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

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

1.06 METHOD OF AWARD

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

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

1.07 OTHER CONDITIONS FOR AWARD

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

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

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

1.08 COMPLIANCE WITH §3-122-112 HAR:

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

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

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

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

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

Standing."

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

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

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

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

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

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

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

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

   a. DOTAX: (808) 587-1488

   b. IRS: (808) 539-1573

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

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

be valid on the date received by HHSC.

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

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

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

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

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

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

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

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

2. Submit the application per DCCA's requirements.

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

END INSTRUCTION TO BIDDERS

SECTION 00800 - SPECIAL PROVISIONS

PART 1 - GENERAL

1.01 SUBSTITUTION REQUESTS

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

B. Substitution requests by FAX are not acceptable.

1.02 PROJECT CONTACT PERSON

A. HHSC Representative – For access to the site.

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

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

NAME:	Mr. Clifford Murakami
POSITION OR TITLE:	Project Architect
TELEPHONE NUMBER:	(808) 949-1601
Email:	cmurakami@pacarchitects.com

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

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

1.04 LIQUIDATED DAMAGES

A. The time of completion for the Work shall be within 360 consecutive calendar days from the official commencement date of the Notice to Proceed (NTP).

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

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

D. In accordance with the General Conditions FINAL SETTLEMENT OF THE CONTRACT, for failure to submit closing documents within the time or times

fixed in the contract or extension thereof, it is agreed that the Bidder shall pay liquidated damages to HHSC in the amount equal to five percent (5%) of the liquidated damages per calendar day of delay.

1.05 SPECIALTY CONTRACTOR'S LICENSE

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

1.06 WORKING HOURS

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

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

1.07 **COVID-19 REQUIREMENTS AND PROTOCOL**

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

1.08 SPECIAL PROCEDURES DURING BIDDING

A. Bid documents will be available online and from the HHSC Representative's office, 3675 Kilauea Avenue, Honolulu, HI 96816.

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

C. All questions regarding the plans and specifications shall be submitted, in writing, to the Architect. The Architect 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.

1.09 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 the Hospital and Architect. The meeting will discuss the progress of the construction, discussion of problems, and review of outstanding issues. The Contractor shall conduct the meeting and prepare the meeting notes and minutes and distribute to all parties.

C. During the construction, submittals and RFIs shall be submitted to the Architect 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 Architect 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 Architect 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.

1.10 PROJECT RESTRICTIONS

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

B. Staging and storage of materials on-site is limited and shall not be allowed unless coordinated and approved with the HHSC representative. Contractor may be required to store materials off-site at his own expense.

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

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

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

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 Architect and HHSC Representative at least five (5) working days prior to starting any onsite work.

1.04 SAFETY REQUIREMENTS

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

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

1.05 PERFORMANCE AND COORDINATION

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

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

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

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

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

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

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

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

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

1.06 COOPERATION WITH OTHER CONTRACTORS

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

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

1.07 SUBMITTALS

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

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

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

2. Changes shall be recorded immediately after they are constructed in place to assure they are not forgotten. Record the changes in red pencil and where applicable, refer to the authorizing document or Change Order. The field posted as-built drawings shall be made available to the Architect 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 Architect determines does not accurately record the deviation may be corrected by the Architect and the Contractor shall be charged for the services.

7. Submit the set of “FIELD POSTED AS-BUILT” drawings to the Architect 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 Architect 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 Architect 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 Architect 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 Architect issues a Field Order or Change Order or requires Force Account Work that affects the sequence or duration of work activities noted on the construction progress schedule, the Contractor shall promptly update the schedule. This shall be accomplished by adding, deleting or revising the work activities noted, or changing the logic in the schedule to show the Contractor’s plan for incorporating the change into the flow of work. All Change Orders and Time Extension requests that

affect the construction schedule shall be evaluated based on their impact on the approved Construction Schedule.

1.09 MEETINGS

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

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

1.10 PROJECT AND SITE CONDITIONS

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

1.11 SANITARY FACILITIES

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

1.12 CONSTRUCTION AIDS

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

PART 2 - MATERIALS

2.01 QUALITY

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

2.02 STORAGE AND HANDLING

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

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

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

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

PART 3 - EXECUTION

3.01 EXAMINING THE SITE

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

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

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

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

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

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

2. Locate general reference points and take action to prevent their destruction. Lay out work and be responsible for lines, elevations and measurements and the work executed. Exercise precautions to verify figures and conditions shown on drawings before layout of work.

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

3.03 UTILITY SERVICE

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

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

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

3.04 ENVIRONMENTAL

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

3.05 PREPARATION AND PROTECTION

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

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

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

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

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

3.06 BARRICADE

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

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

3.07 INSTALLATION

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

3.08 CUTTING AND PATCHING

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

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

3.09 CLEAN-UP

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

END OF SECTION

SECTION 01100 - SUMMARY

PART 1 - GENERAL

1.01 WORK COVERED BY CONTRACT DOCUMENTS

A. Project Identification: The work shall generally consist of demolition of interior walls, doors, plumbing fixtures, lighting, floor slab, and miscellaneous work as indicated on the drawings and specified herein.

1. Project Location: Leahi Hospital, 3675 Kilauea Ave., Honolulu, Hawaii.

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

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

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

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

1.02 SPECIFICATION FORMATS AND CONVENTIONS

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

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

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

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

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

B. Definitions

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

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

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

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

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

6. Installer: An installer is the contractor or another entity engaged by contractor as an employee, subcontractor, or sub-subcontractor, to perform a particular construction operation, including installation, erection, application, and similar operations.

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

C. Industry Standards

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

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

3. Conflicting Requirements: If compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels, comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to Contracting Officer for a decision before proceeding.

1.04 WORK SEQUENCE

A. The Work will be conducted in a single construction phase.

1.05 USE OF PREMISES AND WORK RESTRICTIONS

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

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

1. Construction Times and Schedule:

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

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

c. Unless restricted elsewhere in these specifications, the Contractor may not perform work outside of normal daily operation hours. Weekend or holiday work may be

permitted with the approval of the Architect and/or HHSC Representative. Any weekend or holiday work shall require a 15 calendar day advanced notice.

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

2. Site Access and Parking:

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

b. Permanent use of the loading area is prohibited.

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

3. Sanitation and Utilities:

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

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

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

4. Other Conditions:

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

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

1.06 WORK UNDER OTHER CONTRACTS

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

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

PART 2 - PRODUCTS (Not Used)

PART 3 – EXECUTION (Not Used)

END SECTION

SECTION 01140 – WORK RESTRICTIONS

PART 1 – GENERAL

1.01 SUMMARY

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

B. CONSTRUCTION PROVISIONS

1. Rules and Regulations: Consult with the Architect 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 Architect or HHSC Representative. Take precautions and prevent access to power equipment, tools, etc., by other than authorized construction personnel. Perform operations to insure the safety of the occupants of the buildings at all times.

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

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

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

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

1.02 SEQUENCING OF WORK

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

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

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

END OF SECTION

SECTION 01300 - SUBMITTALS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

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

1.02 PROCEDURES

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

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

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

1.03 SCHEDULE OF WORK

A. Coordinate Schedule with Work Sequence specified in Section 01014.

1.04 SHOP DRAWINGS AND SAMPLE SUBMITTALS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Contractor's Name

PROJECT: _____

_____

PROJECT NO.: _____

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

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

CERTIFIED BY: _____

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

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

1.06 MANUFACTURER'S CERTIFICATES

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

1.07 MSDS

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

PART 2 – PRODUCTS

(Not used.)

PART 3 – EXECUTION

(Not used.)

END OF SECTION

SECTION 01577 - POLLUTION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. Includes site and environmental control requirements.

1.02 TRASH, REFUSE DISPOSAL

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

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

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

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

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

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

1.03 DUST

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

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

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

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

1.04 NOISE

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

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

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

1.05 EROSION

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

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

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

1.06 OTHERS

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

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

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

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

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

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

1.07 SUSPENSION OF WORK

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

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

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

PART 2 - PRODUCTS (Not used)

PART 3 - EXECUTION (Not used)

END OF SECTION

DIVISION 2 – SITE WORK

SECTION 02050 - SITE DEMOLITION

PART 1 - GENERAL

1.01 SUMMARY

A. The work to be performed under this section shall include the furnishing of all labor, tools and equipment necessary to perform all demolition and removal work indicated on the drawings or required for the reception of the new construction.

B. Related Sections include the following:

1. Clearing and grubbing are specified in SECTION 02100 - SITE PREPARATION.

2. Earthwork, including excavation, filling, backfilling, rough and finish grading, is specified in SECTION 02210 - EARTHWORK.

1.02 CONDITION AT SITE

A. The Contractor shall visit the site, examine and note all existing conditions and extent of work involved for the completion of the demolition and removal work.

B. Obvious conditions of the existing premise on the date of bid opening shall be accepted as part of the work, even though they may not be indicated on the drawings or may vary there from.

1.03 PERMITS, NOTICES, ETC.

A. The Contractor shall procure and pay for all necessary permits or certificates that may be required in connection with this work.

PART 2 – MATERIALS (NOT USED)

PART 3 - EXECUTION

3.01 EXECUTION OF WORK

A. All work shall be executed in an orderly and careful manner, with proper safety precautions being observed at all times. Provide warning signs, lights, barricades, etc., as required or as directed by HHSC Technical Representative.

B. Removed material having no salvage value, as determined by the HHSC Technical Representative, shall become the property of the Contractor and shall be removed daily from the premises. Removed material with salvage value, as determined by the HHSC Technical Representative, shall be stored where directed. Remove carefully and do not damage any existing related parts which are to be reused in this project.

C. All voids created by the removal of plants, concrete slabs, footings, etc., shall be filled and compacted in accordance with the requirements of SECTION 02210 - EARTHWORK.

3.02 CONTRACT ZONE LIMITS

A. The Contract Zone Limits shown on the drawings indicate only in general the limits of the work involved. The Contractor is also expected to confine all of his construction activities within the Contract Zone Limits and not to spread his equipment and materials indiscriminately about the area.

3.03 BARRICADE

A. Erect temporary barricade to prevent people from entering into project area to extent as approved by the Architect and/or HHSC Technical Representative. This work shall be accomplished at no extra cost to HHSC and/or Hospital.

3.04 DEMOLITION AND REMOVAL

A. Demolish, remove and clear area of obstacles, obstructions and objectionable material such as existing concrete walks and slabs, A.C. pavements, for the proper execution and completion of the work.

3.05 DEBRIS CONTROL

A. All debris existing or accumulated from the demolition shall be completely and promptly removed from the site by the Contractor in a manner that will prevent spillage on streets or adjacent areas to the satisfaction of the HHSC Technical Representative. Burning or burying of debris on the site will not be permitted. Local regulations regarding hauling and disposal shall be complied with.

3.06 DUST CONTROL

A. Dust shall be kept within acceptable levels at all times including non-working hours, weekends and holidays in conformance with Chapter 60 - Air Pollution Control, as amended, of the State Department of Health Administrative Rules.

B. The method of dust control and all costs incurred therefore shall be the responsibility of the Contractor.

END OF SECTION

SECTION 02055 - SELECTIVE DEMOLITION AND REMOVAL

PART I - GENERAL

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

1.02 SPECIAL REQUIREMENTS:

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

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

C. The project has been tested for hazardous materials including asbestos containing materials and lead-based paints.

PART 2 - PRODUCTS

2.01 MATERIALS:

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

PART 3 - EXECUTION

3.01 GENERAL

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

3.02 REMOVAL WORK

A. Remove interior walls, doors, plumbing fixtures, lighting, concrete floor slab, etc. as indicated on the drawings and/or specified herein.

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

3.03 SURFACE PREPARATION WORK

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

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

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

3.05 TEMPORARY BARRICADES

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

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

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

3.06 CLEAN-UP

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

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

END OF SECTION

SECTION 02100 - SITE PREPARATION

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish all equipment, tools, labor and materials necessary to clear the premises of all obstacles and obstructions, install protective barriers and warning signs, establish limits of work, and other preparatory site work for the proper reception, construction, execution and completion of the other work included in this contract.

1.02 CONDITIONS AT SITE

A. Visit the site. Examine the existing construction; note all conditions as to character and extent of work involved.

1.03 EXTENT OF WORK

A. Areas of improvements as indicated on the drawings. Protect areas outside of work areas.

1.04 CONTRACT ZONE LIMITS

A. The Contract Zone Limits shown in the drawings indicate only in general the limits of the work involved. The Contractor, however, is required to perform any and all necessary and incidental work which may fall outside of these demarcation lines. The Contractor is also expected to confine all of his construction activities within the Contract Zone Limits and not to spread his equipment and materials indiscriminately about the area.

1.05 EXECUTION OF WORK

A. Execute work in an orderly and careful manner with due consideration for any and all surrounding areas which are to remain.

B. Protect existing facilities.

1.06 PATCHWORK

A. All areas or surfaces damaged as a result of alterations or new work shall be repaired to match existing adjacent surfaces and/or areas.

1.07 PROTECTIVE BARRIERS AND WARNING SIGNS

A. The Contractor shall confine his work to within the project areas, and shall keep other areas opened, unless specifically directed by the HHSC Representative. The Contractor shall provide and maintain protective barriers and whatever warning signs necessary to caution the public or as directed by the HHSC Representative. The cost of providing and

maintaining the protective barriers and warning signs shall be considered incidental to the cost of the project, and no extra compensation shall be made to the Contractor.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Maintenance of Traffic: The Contractor shall conduct operations with minimum interference to streets, driveways, sidewalks, passageways, etc. When necessary, the Contractor shall provide and erect barriers, etc., with special attention to protection of personnel.

B. Protection: Throughout the progress of the work protection shall be provided for all property and equipment, and temporary barricades shall be provided as necessary. Work shall be done in accordance with the safety provisions of the Manual of Accident Prevention in Construction, published by the Associated General Contractors of America, and the State of Hawaii's Occupational Safety and Health Standards, Rules and Regulations.

C. Fires: No burning of debris of any kind will be allowed.

D. Reference Points: Bench marks, etc., shall be carefully maintained, but if disturbed or destroyed, shall be replaced as directed, at the Contractor's expense.

E. Disposal: All materials resultant from operations under this Section shall become the property of the Contractor and shall be removed from the site. Loads of materials shall be trimmed to prevent droppings during transportation.

3.02 CLEARING AND GRUBBING

A. The Contractor shall clear the premises of all obstacles and obstructions, the removal of which will be necessary for the proper reception, construction, execution and completion of other work included in this contract.

B. The Contractor shall protect from injury and damage all surrounding trees, plants, etc., and shall leave all in as good as condition as at present. Any damage to existing improvement shall be repaired or replaced by the Contractor to the satisfaction of the HHSC Representative.

3.03 CLEAN UP OF PREMISES

A. Clean up and remove all debris accumulated from building operations from time-to-time as directed. Upon completion of the construction work and before final acceptance of the contract work, remove all surplus materials, equipment, scaffoldings, etc., and leave entire job site raked clean and neat to the satisfaction of the HHSC Representative.

END OF SECTION

SECTION 02110 - CLEARING

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, tools, equipment and services necessary to accomplish all clearing and grubbing work indicated on or required by the drawings to facilitate construction of the proposed work. Work shall include but shall not be limited to the following:

1. Clearing and grubbing.

2. Site Demolition.

3. Dust control.

B. Related sections include the following:

1. Clearing and grubbing are specified in SECTION 02100 – SITE PREPARATION.

2. Earthwork, including excavation, filling, backfilling, rough and finish grading, is specified in SECTION 02210 – EARTHWORK.

1.02 GENERAL

A. The Contractor shall obtain and pay for necessary permits prior to commencement of work.

B. It shall be the responsibility of the Contractor to examine the project site and determine for himself the existing conditions.

C. Obvious conditions of the site existing on the date of the bid opening shall be as part of the work, even though they may not be clearly indicated on the drawings and/or described herein or may vary there from.

D. All debris of any kind accumulated from work under this Section shall be disposed at offsite locations. The Contractor shall be required to make all necessary arrangements relative to the proposed place of disposal, and shall file with the Architect and/or HHSC Representative a written consent by the Owner of the property where the debris will be disposed. No additional payment will be made for the hauling of the debris or disposal fees.

E. Burning of any debris on site will not be permitted.

1.03 EXISTING UTILITIES

A. Location of existing facilities, drainage system, sanitary sewer system, water system, irrigation system, and electrical/telephone systems shown are

approximate only and are not guaranteed. The Contractor shall verify, in the field, the location of all existing utilities and sprinkler heads. The Contractor shall be fully responsible for any and all damages, injuries, deaths, expenses, etc., to property, personnel, and the public resulting from accidents to or from existing facilities and/or utilities.

B. Should existing utilities not shown on the plans be encountered in the field during the operation, the Contractor shall promptly notify the Architect and/or HHSC Representative for instructions. Failure to do so will make the Contractor liable for any and all damages arising from his operations. Upon the instructions of the Architect and/or HHSC Representative, the Contractor may be required to relocate or adjust the existing utilities.

1.04 DUST CONTROL

A. Use all means necessary to prevent spread of dust during performance of the work of this section. Thoroughly moisten all surfaces as required to prevent dust being a nuisance to the public, neighbors, and concurrent performance of other work on the site.

1.05 PROTECTION

A. Adequate precautions shall be taken before commencing and during the course of the work to insure the protection of life, limb, and property.

B. During all site-clearing operations, water shall be applied to the work areas and haul roads at sufficiently frequent intervals to prevent the generation of airborne dust.

C. The Contractor shall protect from damage all trees, plants, grass, walks, etc., scheduled to remain. Any damages shall be repaired or replaced by the Contractor to the satisfaction of the Architect and/or HHSC Representative.

D. The Contractor shall conduct operations with minimum interference to streets, driveways, sidewalks, etc.

E. When necessary, the Contractor shall provide, erect, and maintain lights, barriers, etc., as required by traffic and safety regulations with special attention to protection of the general public.

1.06 VERIFICATION OF EXISTING GRADES AND IMPROVEMENTS

A. The drawings do not purport to show all objects existing on the site. Before commencing the work of this Section, verify with the Architect and/or HHSC Representative all objects to be and all objects to be preserved.

B. Existing grades, inverts, and improvements shall be verified by the Contractor before any work is done. Any discrepancy shall be immediately brought to the attention of the Architect and/or HHSC Representative and changes shall be made in accordance with his instructions. Starting of clearing and grubbing shall be construed to mean that Contractor agrees that the existing grades, inverts,

and improvements are essentially correct as shown. No extra compensation will be allowed the Contractor if existing grades, inverts, and improvements are in error after his verification thereof and if he fails to report the discrepancies before proceeding with any work.

1.07 ON-SITE CONFERENCE

A. Do no work until after on-site conference with the Architect and/or HHSC Representative is held to verify site conditions.

PART 2 – PRODUCTS NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

A. Clear and dispose of all materials, pavements, fences, walls and other objectionable material within the areas shown on the Drawings. Remove any obstructions interfering with the proposed work and dispose of debris.

B. Grub the areas as shown in the drawings or as defined in SECTION 02210 - EARTHWORK. The work shall include the removal of all objectionable materials at or below the ground surface not prescribed under Clearing.

C. The Contractor shall be responsible for the protection of existing utility lines, sprinkler heads and cables under and across the grubbing areas whether or not shown on the plans and which are not to be removed or disturbed.

D. All areas or surfaces damaged as result of removal work shall be patched to match existing adjacent surfaces and/or areas.

3.02 SITE DEMOLITION

A. Remove concrete swale and building structures as designated in the plans and dispose of the materials as specified in Par. 1.03.

B. All swales and curbs shall be vertically sawcut prior to demolition and removal. If the existing curb or pavement that is to remain is damaged during the demolition work, another neat sawcut shall be made and the damaged pavement removed.

3.03 CLEAN UP

A. Clean up and remove all debris accumulated from building operations daily or when as directed by the Architect and/or HHSC Representative. Upon completion of the construction work and before final acceptance of work, remove all surplus materials, equipment, etc., and leave entire job site clean and neat.

END OF SECTION

SECTION 02210 - EARTHWORK

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, tools, and equipment necessary for excavation, filling, backfilling, rough and finish grading, and related items necessary to complete all work shown on the Drawings and/or specified herein.

B. Related Sections include the following:

1. SECTION 02100 - SITE PREPARATION.

2. Concrete work, electrical work, and plumbing work are specified in their respective sections.

1.02 ORDINANCES AND PERMITS

A. The Contractor shall comply with all applicable ordinances and regulations and obtain the required permits. All grading work shall comply with Chapter 18A, Articles 1, 2, 3, and 4, of the Revised Ordinances of the City and County of Honolulu, 2021, as amended and as specified herein.

B. The Contractor shall comply with the provisions of Chapter 11-55 Water Pollution Control and Chapter 11-54 Water Quality Standards of the Hawaii Administrative Rules, Department of Health, HHSC of Hawaii.

1.03 SUBMITTALS

A. Submit in accordance with SECTION 01300 - SUBMITTALS.

B. Certificates: The Contractor shall furnish to the Architect and/or HHSC Representative affidavits and descriptive literature including installation instructions from the manufacturers of geotextiles furnished and installed under this section, together with certifications stating that such materials delivered to the project conform to the requirements of this specification.

C. Soils Inspection and Testing and Special Certifications:

1. Testing of the fill material for conformance to the project specifications and monitoring of all backfill, including testing for compaction, shall be the responsibility of the Contractor. The subgrade preparation and the placement and compacting of yard and structural fill shall be tested by an independent licensed Soils Engineer or testing agency with a licensed Engineer under the supervision of the Contractor. The slab subgrade shall be tested prior to placement of the structural fill and cushion material. All test results shall be submitted to the Architect and/or HHSC Representative for record purposes. All costs for soils inspection and testing during construction shall be borne by the Contractor.

2. Testing shall be made throughout the area in accordance with these specifications for each compacted layer, including the subgrade, structural fill, and the backfill of trenches within the building area. All test results must be approved by the Contractor's Soils Engineer or testing agency before the Contractor can proceed with placing of additional layers of fill or the placing of topsoil, cushion fill or base course.

3. Should imported fill be utilized on this project, the material shall be approved by the Contractor's Soils Consultant as conforming to these specifications. A letter from the Soils Consultant approving the imported material shall be submitted to the Architect and/or HHSC Representative prior to delivery of the material to the job site.

D. Field-Posted As-Built Drawings: Submit Field Posted as-built drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Yard Fill:

1. Imported yard fill materials shall be non-expansive soil, free from debris, perishable or combustible materials, sod, and stones larger than 3 inches in maximum dimension and shall have a plasticity index not greater than 20. The material shall have sufficient fines (between 10 and 60 percent particles passing the No. 200 sieve) to prevent the occurrence of voids in the compacted mass. The material shall have a California Bearing Ratio (CBR) value of 12 or greater and a swell of 1 percent or less when tested in accordance with ASTM D 1883. Any rock shall be well distributed in earth or other fine material with all voids filled and shall not be placed within 2 feet of the finished grade.

2. In the event that insufficient amount of yard fill is delivered from earthwork operations, the Contractor shall import the necessary materials without any additional cost to the HHSC and/or Hospital. Such imported materials shall be subject to approval of the Architect and/or HHSC Representative and shall meet the requirements as specified for the materials.

3. The onsite clayey silt may be reused as backfill and in compacted fills provided all rock fragments larger than 3 inches in maximum dimension are removed and are free of deleterious materials..

B. Structural Fill:

1. Structural fill material shall be non-expansive select granular material, such as crushed coral or basalt. The material shall be well-graded with a 3-inch maximum particle size and between 10 and 30 percent passing the No. 200 sieve. The fill material shall be free from clumps of soil, organic debris, adobe or other deleterious matter.

2. The plasticity index for the fine portion of soil shall be less than 15. The CBR value shall not be less than 20 and CBR expansion value shall not

be more than 1.0 percent when tested in accordance with ASTM D1883. Recycled asphalt pavement shall not be used for structural fill under the building.

C. Cushion Fill Under Concrete Slabs: Cushion fill under concrete slabs shall be No. 67 aggregate. For interior slabs a vapor retarder shall be provided between the slab and cushion fill as described under CONCRETE, SECTION 03300 - CAST-IN-PLACE CONCRETE.

D. Cushion Material for Pipelines: Cushion material for water lines shall be S4C and for sewer and drain lines shall be 3B Fine aggregate.

E. Topsoil: The Contractor shall deposit and spread a uniform 6-inch layer of screened topsoil around buildings and unpaved graded or grubbed areas. The topsoil shall pass a 1/2-inch screen and shall be lightly compacted to the finish elevations shown on the Drawings. All objectionable material shall be removed from the soil before placement. Approved existing soils may be used as topsoil. The onsite material shall be excavated and stockpiled for use as topsoil. If there is insufficient onsite topsoil material, the Contractor shall import sufficient topsoil to meet the project requirements. Imported topsoil shall be friable soil of loamy character, free of refuse, weeds, nematodes or other deleterious extraneous matter. Imported topsoil must be approved by the Architect and/or HHSC Representative before delivery to the site.

F. Geotextile Fabrics

1. General Requirements: Geotextile fabrics shall consist of long chain polymeric filaments composed of polypropylene, polyethylene or polymide. The fabric may be woven or non-woven. The fabric shall be inert to chemicals found in the soil and shall meet the minimum physical property requirements listed below.

2. Geotextile fabrics for temporary silt fencing shall meet the following requirements:

Roll Width	3 feet
Tensile Strength (ASTM D-4632)	100 lb.
Mullen Burst Strength (ASTM D-3786)	275 psi.
Puncture Strength (ASTM D-4833)	60 lb.
Trapezoidal Tear (ASTM D-4533)	50 lb.
Permittivity (ASTM D-4491)	15 gal/min/sf
Grab Elongation (ASTM D-4632)	15%
Apparent Opening Size (ASTM D-4751)	U.S. Sieve No. 20/30

3. Geotextile fabrics for weep holes and subdrains shall meet the following requirements:

Tensile Strength (ASTM D-4632)	90 lb.
Mullen Burst Strength (ASTM D-3786)	185 psi.
Puncture Strength (ASTM D-3787)	55 lb.
Permittivity (ASTM D-4491)	150 gal/min/sf
Grab Elongation (ASTM D-4632	50%
Apparent Opening Size (ASTM D-4751)	U.S. Sieve No. 70

4. The geotextile shall be furnished in a protective wrapping which shall protect the fabric from damage during shipping, handling and exposure to sunlight. The geotextile fabric shall be stored in a dry condition.

G. Compost Filter Socks

1. The compost filter sock shall utilize an outer layer of filtration mesh and an inner layer of containment netting and shall have a nominal diameter of twelve (12) inches. The layers shall collectively enclose the compost filtration media.

2. The compost media used in the filter sock shall meet local, State of Hawaii and Federal quality requirements and shall be installed onsite using a commercial pneumatic bark blower.

PART 3 - EXECUTION

3.01 GENERAL

A. No excavation or filling shall be undertaken until the area has been cleared and grubbed.

B. Usable surface soil material shall be stripped from the site and stockpiled for use as topsoil.

C. Install temporary silt fence or compost filter sock where shown on the drawing or ordered by the Architect and/or HHSC Representative. Remove silt fence or compost filter sock upon completion of grading and landscaping.

D. All excavation shall be protected and guarded against danger to life, limb and property.

E. Shoring, cribbing and lagging, as required to safely preserve the excavations and earth banks from damages resulting from the work, shall be provided and installed by the Contractor.

F. Precautions:

1. The Contractor shall at all times control the grading around building areas so that the ground is adequately sloped to prevent any water from flowing

into building areas and open trench excavations. All excavations shall be kept free from standing water.

2. Lowering or raising of water table in areas where ground settlement or other detrimental effects may be induced is expressly prohibited. In such areas, the excavated spaces shall be sealed prior to the pumping of water or other approved means employed by the Contractor. The Contractor shall be responsible for disposal of the pumped liquids. Water from dewatering and other construction operations shall not be discharged directly into natural drainageways. The method of discharge shall comply with Department of Health Regulations.

3. Water shall not be conducted onto adjacent building areas.

G. Caution shall be exercised in all excavation work adjacent to existing trees which are to remain. All exposed fibrous and branch type roots shall be carefully pruned or saw-cut to the extent required for excavation work. Every effort shall be taken to preserve the existing trees and to minimize damage to said trees.

H. Best Management Practice:

1. The Contractor shall use the best management practices to reduce the amount of soil erosion resulting from the grading work.

2. The work areas and haul roads, including roadways leading to the project site, shall be continuously watered to prevent the generation of dust. Granular materials shall be spread over all unpaved haul routes.

3. All truck tires shall be free of mud before leaving the job site and entering a public roadway. The Contractor will clean all roads and the project's parking area of mud and dirt resulting from his operations at no additional cost to the HHSC and/or Hospital.

I. Laying Out:

1. The laying out of base lines, establishment of grades and staking out the entire work shall be done by a surveyor or a civil engineer licensed in the State of Hawaii, at the Contractor's expense. The Contractor shall be solely responsible for their accuracy. The Contractor shall erect and maintain substantial batterboards showing construction of lines and levels.

2. Should any discrepancies be discovered in the dimensions given in the plans, the Contractor shall immediately notify the Architect and/or HHSC Representative before proceeding any further with the work, otherwise he will be held responsible for any costs involved in correction of construction placed due to such discrepancies. The Contractor shall be responsible for re-establishing property corners or survey control points which are destroyed by his operations.

3.02 EXCAVATION

A. General Requirements:

1. Excavation shall be done so as to obtain the elevations called for on Drawings, allowing for fill, grading, topsoil and drainage away from buildings. Provide new swales as indicated.

2. The Contractor shall check plumbing, mechanical and electrical drawings for excavation of electrical trenches and plumbing lines.

3. Usable Materials as approved by the Architect and/or HHSC Representative shall be stockpiled (for later use as fill material) in a location designated by the Architect and/or HHSC Representative. The onsite materials may be reused as backfill and in compacted fills provided all rock fragments larger than 3 inches in maximum dimension are removed and are free of deleterious materials.

4. Non-usable Material such as mud, soft material, and expansive soils and excess materials shall become the property of the Contractor and shall be disposed of outside the project boundary limits at locations that have been approved by the City and County of Honolulu.

5. Blasting as a means of excavation shall not be permitted.

6. Unsuitable subgrade soil, as determined by the Architect and/or HHSC Representative, shall be excavated and removed by the Contractor.

B. Structural Excavation:

1. The clayey silt under the new building shall be scarified to a depth of 8 inches below the foundations, moisture conditioned to at least 2 percent above optimum moisture content and recompacted to a minimum of 90 percent compaction as determined by ASTM D1557. The removal and re-compaction of the clayey silt shall extend laterally a minimum of 18 inches beyond the edge of the foundations or extend to the edge of the concrete walkway surrounding the building slab. The excavation shall allow for at least 4 inches of cushion material, 12 inches of compacted structural fill under all concrete building slabs-on-grade.

2. Excavation for footings and foundation shall have level beds, with stepped levels where necessary; localized soft spots shall be over-excavated and removed and the resulting void backfilled with approved structural fill properly compacted in accordance with these specifications.

3. Trenching for foundation footings and grade beams shall be made to the depth and dimensions called for on the Drawings. Bottom of trenches shall be level, solid and free from loose material. All foundations and footings must be carried to the depth shown on the plans. Over-excavation shall be corrected as specified, for which no extra compensation will be allowed.

4. Any rock or hardpan encountered during excavation shall be broken out to a minimum depth of 4 inches below the bottom of the foundations.

5. When suitable bearing for foundations is not encountered at the elevation indicated on Drawings, the Contractor shall immediately notify the Architect and/or HHSC Representative and shall not proceed any further until the necessary instructions for resumption of work have been received. The resulting increase or decrease in contract price through change order because of whatever change in quantity of excavated material for foundation shall be based on the net increase or decrease of the excavated material from the specified (or computed) original amount.

C. Trench Excavation:

1. The Contractor shall do all necessary trench excavation to the depth required by the plans, including the excavation for pipe cushion. The excavation shall be unclassified and shall be performed regardless of the material encountered.

2. The minimum width of the trench at the top of the pipe, when placed, shall be a width which will permit the proper construction of joints and compaction of backfill around the pipe. The sides of the trench shall be vertical, unless otherwise approved by the Architect and/or HHSC Representative. The maximum allowable width of the trench from the bottom of the excavation to a height of 12 inches above the pipe shall not exceed 12 inches on each side of the pipe when placed, unless otherwise approved by the Architect.

3. When unsuitable material is encountered at the excavation, the Contractor shall be responsible for hauling and disposing of the material. The hauling and disposing shall be considered as incidental to the excavation work and no direct payment will be made. The Architect and/or HHSC Representative shall determine if the excavation material is unsuitable.

4. The Contractor shall properly sheet and brace all trenches and excavations to render it safe and secure from possible slides. Trench excavations shall comply with the applicable OSHA requirements. Sheeting and bracing of trenches shall be considered as incidental to the excavation work and no direct payment will be made.

5. All trenches shall be kept free from water during the installation, testing and backfilling of pipe. Discharge from dewatering operations shall not be drained directly onto any roadway or into any drainage system. The Contractor shall obtain the NOI (Notice of Intent) permit from the State of Hawaii, Department of Health for any dewatering activities.

6. All open trenches shall be covered or barricaded during non-working hours. Traffic bearing covers shall be provided where applicable.

7. All excavated material shall be piled or stored so that it does not obstruct vehicular traffic or pedestrian walkways.

8. Trench excavation and backfill within County right-of-way shall comply with the appropriate sections of the DWS Water system Standards and the Hawaii Standard Specifications for Road and Bridge Construction.

3.03 FILL AND BACKFILL

A. General Requirements:

1. Filling operations shall be performed so as to bring the entire project area to the finished grades shown on the Drawings, allowing for topsoil, concrete slab, or A.C. paving and base course.

2. At the time of compaction, the moisture content of fill and backfill material shall be such that the relative compactions specified can be obtained with the compacting equipment being used. General fill materials shall be moisture-conditioned to the optimum moisture, placed in level lifts not exceeding 8 inches in loose thickness, and compacted to a minimum of 90 percent relative compaction. The onsite clayey silt may be reused as fill. Compaction of fill and backfill materials within 3 feet of the finished asphalt pavement or concrete slab/walkway shall be increased to a minimum 95 per compaction as determined by ASTM D1557. At all times, it shall be the responsibility of the Contractor to employ such means as may be necessary to obtain a uniform optimum moisture content, throughout the material being compacted.

3. Soft or loose soils that do not readily compact should be excavated and replaced with compacted structural fill.

4. Trenches within the building area shall be backfilled with structural fill and compacted to 95 percent of maximum density as determined by ASTM D1557.

5. In non-building areas with soil material, the exposed soil material should be scarified to a depth of 6 inches and recompacted to a minimum of 90 percent compaction, as determined by ASTM D1557, prior to placement of the fill.

B. Yard Fill: Yard fill in areas where no concrete pavement or A.C. pavement is to be constructed shall be placed in layers, 8 inches or less in compacted thickness, and compacted to 90 percent of maximum density as determined by the ASTM D1557 procedure. Areas adjacent to concrete walkway edges should be backfilled tightly against the edges of the walkways with low expansion, relatively impervious soils.

C. Structural Fill for Building and Pavement Areas: Granular structural fill shall be placed in 8-inch loose lifts and compacted to at least 95 percent compaction as determined by ASTM D1557.

D. Trench Backfill:

1. Bottom of Excavation to Midpoint of Pipe: All trenches and excavations shall be backfilled within a reasonable time after the pipes are installed. The backfill material from the bottom of the excavation to the midpoint of the pipe shall be pipe cushion material. The backfill shall be placed in loose layers not to exceed 6 inches in depth along each side of the pipe and shall be compacted. Special care shall be taken to secure thorough compaction under the haunches and at the sides of the pipe and to insure that the backfill material is in continuous and uniform contact with the pipe. Backfilling shall be done in a manner which avoids causing any movement of the pipe sections.

2. Midpoint of Pipe to top of pipe cushion material (height varies - see plans):

    a. The backfill material shall be pipe cushion material.

    b. The backfill shall be placed in loose layers not to exceed 6 inches in depth along each side of the pipe and compacted with hand or pneumatic tampers. The backfill shall be brought up evenly on each side of the pipe to an elevation of 6 inches over the top of the pipe, or such elevation as directed by the Architect and/or HHSC Representative. Backfilling shall be done in a manner that avoids causing any movement of the pipe sections.

3. From top of cushion material to Surface: Backfill from top of pipe cushion material to finished grade shall be select non-expansive material which contains less than 50 percent rock or hard lumps of earth. The greatest dimensions of rock or earth lumps permitted shall be 3 inches. Adobe, expansive soils or other unsuitable or deleterious materials shall not be used for backfill. The onsite clayey silt may be reused as trench backfill. The material should be placed in horizontal lifts restricted to eight inches in loose thickness, moisture conditioned to about 2 percent above optimum moisture, and compacted to a minimum 90 per compaction as determined by ASTM D1557. For roadway areas, the upper 3 feet of the trench backfill below the pavement finished grade shall be compacted to 95 percent of its maximum density and shall meet the requirements of the roadway pavement structure. Compaction testing shall be performed per 100 lineal feet and per lift of trench backfill.

END OF SECTION

SECTION 02361 - TERMITE CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. This Section includes the following for termite control:

1. Chemical Soil treatment.

1.02 DEFINITIONS

A. EPA: Environmental Protection Agency.

B. PCO: Pest control operator.

1.03 SYSTEM DESCRIPTIONS

A. Chemical Soil Treatment: System consists of application of termiticide chemicals to exposed soil and to voids in construction where insects may gain entry to the building.

1.04 SUBMITTALS

A. Submit in accordance with SECTION 01300 – SUBMITTALS.

B. Product Data:

1. Treatments.

2. Application instructions.

3. Copies of the EPA-registered labels for all chemicals.

C. Product Certificates: Signed by manufacturers of termite control products certifying that treatments furnished comply with requirements.

D. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

E. Soil Treatment Application Report: After application of termiticide is completed, submit report for the State's record information, including the following as applicable:

1. Date and time of application.

2. Moisture content of soil before application.

3. Brand name and manufacturer of termiticide.

4. Quantity of undiluted termiticide used.

5. Dilutions, methods, volumes, and rates of application used.

6. Areas of application.

7. Water source for application.

F. Warranties: Copies of special warranties specified in this Section.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: A PCO who is licensed by the Hawaii State Pest Control Board in Branch #3 and certified as a commercial applicator under the Hawaii Pesticide Law by the Hawaii State Department of Agriculture in category 7b and who is:

1. Chemical Soil Treatment: An experienced installer who has completed termite control treatment similar to that indicated for this Project and whose work has a record of successful in-service performance.

B. Regulatory Requirements: Formulate and apply termiticides, and label with a Federal registration number, to comply with EPA regulations and authorities having jurisdiction.

1.06 PROJECT CONDITIONS

A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated. Do not treat soil while precipitation is occurring. Comply with EPA-Registered Label requirements and requirements of authorities having jurisdiction.

1.07 COORDINATION

A. Coordinate termite control treatment application or installation with excavating, filling, and grading and concreting operations.

1. Treat soil under footings, grade beams, and ground-supported slabs, before construction.

1.08 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive the HHSC and/or Hospital of other rights. The HHSC and/or Hospital may have under other provisions of the Contract Documents and

shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Warranty: Written warranty, signed by applicator and Contractor certifying that termite control work will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

1. Warranty Period: Three (3) years from date of Substantial Completion. The Surety shall not be held liable beyond two (2) years from the project acceptance date.

2. All necessary repairs of damages resulting from subterranean termite infestation within a period of one (1) year from the date of project acceptance will be made at the Contractor's own expense up to a total cost of $5,000.00; and

3. If subterranean termite infestation should occur through the treated area within the three (3) year guarantee period, the soil shall be re-treated as described in paragraph 1.08 B.4. below, *or,* other methods, including but not limited to, installation of a monitored bait station system to reduce infestation shall be installed without cost to the HHSC and/or Hospital.

4. Minimum retreatment under special warranty.

a. All corrective treatments shall be performed to at least 10 feet around each visible subterranean termite activity.

b. Drill one hole per block along one course above adjacent grade of hollow tile walls which extend below grade, and treat at a rate consistent with the pesticide label.

c. Remove carpets from areas being treated.

d. Drill and treat through all interior concrete floors, along both sides of all partitions and walls, and all cracks and expansion joints according to label directions. Drill holes through concrete slab shall be 1/2 inch or 9/16 inch diameter and spaced not more than 18 inches apart.

e. Drill one hole at each plumbing or utility penetration through ground floor slab and treat according to label instructions.

f. Patch drill holes with cement/concrete to full depth of slab thickness and refinish walls/floors as necessary to prevent any backflow and to restore original appearance.

g. Re-install carpets as applicable / necessary. Installation shall be done by a competent commercial carpet installer.

h. Replace any finish/finish materials which are contaminated by spilled chemicals.

I, The above-ground areas infested with subterranean termites shall be treated as appropriate with a proven, effective insecticide to eliminate those termites.

1.09 MAINTENANCE SERVICE

A. Continuing Service: Provide a proposal for continuing service, including monitoring, inspection, and retreatment for occurrences of termite activity, from applicator to Architect and/or HHSC Representative, in the form of a standard yearly (or other period) continuing service agreement, starting on the date of Substantial Completion. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.01 CHEMICAL SOIL TREATMENT

A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in a soluble or emulsible, concentrated formulation that dilutes with water or foaming agent, and formulated to prevent termite infestation. Use only soil treatment solutions that are not harmful to plants. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.

B. Chemicals shall be aqueous solutions of Type I repellent termiticides such as Prelude, Dragnet SFR, Demon TC, or Prevail FT or the Type II non-repellent termiticide Premise 75. The chemicals shall be used in accordance with the labels and provisions related to the use of those pesticides as adopted by the Hawaii Pesticide Law, Chapter 149A, HRS, and the Federal Insecticide, Fungicide and Rodenticide Act.

1. Type II non-repellent termiticides such as Dursban TC shall not be used.

C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AgrEvo Environmental Health, Inc.; a Company of Hoechst and Schering, Berlin.

2. American Cyanamid Co.; Agricultural Products Group; Specialty Products Department.

3. Bayer Corp.; Garden & Professional Care.

4. DowElanco.

5. FMC Corp.; Pest Control Specialties.

6. Zeneca Professional Products.

7. Other approved manufacturers.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of the soil, interfaces with earthwork, slab and foundation work, landscaping, and other conditions affecting performance of termite control. Proceed with application only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparing substrate. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil and around foundations.

B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended by termiticide manufacturer.

1. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

3.03 APPLICATION, GENERAL

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

B. Notify the Architect and/or HHSC Representative at least one (1) day before application of chemicals.

3.04 APPLYING CHEMICAL SOIL TREATMENT

A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute the treatment evenly.

1. A totalizing meter shall be provided to determine application rates and to indicate the total volume of pesticide applied in U.S. gallons. The meter shall be no more than five feet from the applicator at all times.

2. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.

a. Whenever possible, the solution shall be applied not more than 24 hours before the pouring of concrete over the affected area.

b. Where a treated area that is not scheduled to be covered with a vapor retarder moisture barrier in the finished construction (e.g. lanai area) cannot be covered with a poured concrete slab the same day, the area shall be protected with a waterproofing covering such as polyethylene sheeting.

3. Foundations: Adjacent soil including soil along entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footers, piers, and chimney bases; and along entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.

a. Treatment shall include the provision of vertical barriers as stated on the product label.

4. Crawlspaces: Soil under and adjacent to foundations as previously indicated. Treat adjacent areas including around entrance platform, porches, and equipment bases. Apply overall treatment only where attached concrete platform and porches are on fill or ground.

5. Masonry: Treat voids.

6. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.

B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.

C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

D. Post warning signs in areas of application.

E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

END OF SECTION

SECTION 02362 - SOIL TREATMENT FOR VEGETATION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

A. This work shall consist of spraying weed killer on the prepared roadway subgrade prior to the installation of the base course and where called for on the plans and on existing growth prior to application of asphalt in the case of resurfacing jobs.

1.02 SUBMITTALS

A. Submit in accordance with SECTION 01300 – SUBMITTALS.

B. Prior to the start of work, the Contractor shall submit to the Architect and/or HHSC Representative the material Product Data and Material Safety Data Sheets for the material proposed for use.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Weed Killer shall be "Avenger", "Scythe", Burnout II, or an approved equal for under asphalt application on new or rebuilt pavement, and for application to existing weeds for resurfacing jobs.

PART 3 - EXECUTION

3.01 APPLICATION

A. The under pavement weed killer shall be mixed and uniformly spread using calibrated application equipment at the maximum rates permitted for “under asphalt” use and in strict accordance with the manufacturer’s label. Base course material shall be installed as soon as possible after applying the weed killer to preclude loss of germination inhibiting action.

B. In treatment of existing growth on resurfacing jobs, the weed killer shall be mixed and uniformly sprayed in strict accordance with the manufacturer’s label.

C. Nut grass shall be retreated two (2) days after initial application and again if growth still exists.

D. The Contractor shall notify the Architect and/or HHSC Representative 24 hours before application of weed killer.

END OF SECTION

SECTION 02444 - CHAIN LINK FENCING AND GATE

PART 1 – GENERAL

1.01 SUMMARY

A. Provide all equipment, materials, tools, labor, etc., as required to fabricate and install chain link fencing and gates, and miscellaneous fabrications, complete, as indicated on the drawings and as specified herein.

1.02 SU:BMITTALS

A. Provide shop drawings showing layout and fabrication details.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Chain Link Fabric for perimeter fencing and gates shall be 9 gauge, 2-1/2-inch mesh unless otherwise shown or specified, be galvanized after fabrication and conform to ASTM A392, Class 1. The hot-dipped galvanized fabric shall contain not less than 1.2 ounces per sq. ft. of uncoated wire surface as determined by stripping test ASTM A90 and under the PREECE Test (ASTM A239), shall withstand 6 or more 1-minute dips before reaching the end point. All fabric shall be free from barbs, icicles or other hazardous projections resulting from galvanizing.

B. Tie Wire shall be 9 gauge soft annealed galvanized steel wire for attaching chain link fabric.

C. Tension Bar shall be 1/4" thick by 3/4" wide mild galvanized steel bar for attachment of the fabric to the gate frame.

D. Tension Band, Brace Band and Clamps shall be formed from galvanized steel bands at least 12 gauge thick by 3/4" wide.

E. Posts, Rails, Braces and Gate frames shall be the standard weight, hot-dipped galvanized, welded and seamless steel pipes conforming to ASTM A53. The zinc coating for all steel pipes shall conform to the requirements of ASTM A525. All welds for special fabrications shall be ground and smooth and prime coated with zinc-rich primer.

F. Gate structure shall be fabricated as a single unit with fully welded joints, ground and sanded smooth and primed with zinc-rich primer. Gate hardware shall include male and female strap hinges, three (3) per gate, and heavy malleable fork latch. Provide with padlocks. All hardware shall be galvanized steel and all open ends capped.

G. Padlock shall be Sargent 63-6300 758-2-C with cylinder keyed to the Facilityl's Sargent master keying system. Provide 1 each for each gate shown on the plans.

Padlocks of other manufacturers meeting or exceeding the quality of the Sargent padlocks are acceptable provided they can accept the cylinder keyed to the school's master.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. General: Chain-link enclosure and gates shall be fabricated and erected in the best and highest quality standards of the industry. All frame work shall be fully welded at joints. All corners shall be mitered and all open ends capped and welded. The gates and hardware shall provide intended freedom of operation. Welding shall be done in accordance with latest AWS standards. However, no splicing of posts, rails or braces shall be accepted. All welds shall be ground smooth, sanded, primed and coated to match galvanized pipe.

B. Chain Link Fabric shall be fastened on the side of the posts as designated and shall be mounted on the posts so that the bottom of the fabric will be 1" above the slab. The fabric shall be stretched taut and securely fastened to the posts. Ends of wire ties shall be bent back so as not be a hazard. Between posts, the top and bottom edge of the fabric shall be fastened to the top and bottom rail with tie wire. Tension bars extending the full height of the fence and tension bar bands shall be used for fastening fabric to end, corner, pull and gate posts. Bolted tension bar bands shall be placed at top and bottom of tension bars and spaced at 12-inch intervals. Fastenings to line posts shall be made with tie wire at 12" intervals.

C. Gates shall be of size specified in plans.. The corners of gate frames shall be mitered and welded. Welds shall be ground smooth. Frames shall be galvanized after fabrication. Fabric specified for the fence shall be attached to the sides of the gate frame with full-height tension bars and tension bar bands at top, bottom and 12 inches + o.c. along tension bars with tie wires shall be placed along the top and bottom of the gate at corners and 6 inches + o.c. in between. Install heavy malleable fork latch and padlocks. Gates shall be able to be secured in the full open position against the adjacent fencing. Furnish hold backs with required pipe supports as detailed.

   Fabricate sliding gates with all rails, rollers, guides, etc. for complete operation and functions as indicated.

D. Install all hardware with all nuts on exterior with excess bolts cut neat to the nut and tack welded and coated with zinc rich primer. All ties shall be neatly installed with no sharp ends and ends facing away from the court.

END OF SECTION

SECTION 02528 - CONCRETE WALKS

PART 1 - GENERAL

1.01 SUMMARY

A. The work covered by this section consists of furnishing all labor, materials, equipment tools and incidentals necessary to construct cast-in-place concrete curbs and walks.

1.02 CONSTRUCTION STANDARDS

A. The following construction standards, with certain modifications as hereinafter specified, are hereby incorporated into and made a part of these specifications by reference and shall be applicable to all work performed by the Contractor under this section.

1. Specific sections of the "State Standard Specifications for Road and Bridge Construction", 2005, (hereinafter referred to as "State Standard Specifications"), with deletion of subsections relating to measurement and payment in all sections incorporated herein and further modifications to such sections as hereinafter provided.

1.03 SUBMITTALS

A. Submit in accordance with SECTION 01300 – SUBMITTALS.

B. Field-Posted As-Built Drawings: Submit Field Posted as-built drawings.

C. The Contractor shall have the following documents available for the use of the State's inspector at the job site:

1. State Standard Specifications.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Forms:

1. As specified in Section 634 of the DPW Standard Specifications.

2. Either steel or wood, of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use forms that are straight and free of distortion and defects, extending the full depth of concrete. Use flexible spring steel forms or laminated boards to form radius bends as required.

3. Coat forms with form release agent that will not discolor or deface the surface of the concrete.

B. Concrete Materials: 4,000 psi with a maximum water/cement ratio of 0.50, as specified in Section 634 of the DPW Standard Specifications.

C. Premolded Joint Filler: ASTM D-1752, Type I.

D. Silicone Joint Sealer: ASTM C 920, Type S, Class 25, Use T.

E. Engineered Synthetic Fiber Reinforcement shall be 100% virgin copolymer/polypropylene twisted bundle non-fibrillated monofilament and fibrillated network fibers containing no reprocessed olefin materials. Fibers shall have a specific gravity of 0.91, and specifically manufactured to an optimum gradation and length for use as concrete secondary reinforcement. Fiber reinforced concrete shall meet the requirements of ASTM C-1116, Type III, Synthetic Fiber-Reinforced Concrete or Shotcrete. Minimum fiber length shall be 2.25 inch.

1. Engineered Synthetic Fiber Reinforcement shall be added to all concrete walkways, curb ramps and driveways. The fiber reinforcement shall be added at the batch plant at a rate of 5.0 pounds per cubic yard for walkways, curb ramps and driveways. The fiber reinforcement shall be added at the batch plant at a rate of 7.5 pounds per cubic yard for concrete pavements.

PART 3 - EXECUTION

3.01 FORM CONSTRUCTION

A. Set forms to the required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of the Work, and so that forms can remain in place at least 24 hours after concrete placement.

B. Check completed formwork for grade and alignment to the following tolerances:

1. Top of form units. Not more than 1/16" in 10'.

2. Vertical Face: Longitudinal axis, not more than 1/8" in 20'.

C. Clean forms after each use, and coat with form release agent as often as required to ensure separation form concrete without damage.

3.02 STANDARD SPECIFICATIONS

A. All work shall be done in accordance with SECTION 634 – PORTLAND CEMENT CONCRETE SIDEWALK of the State Standard Specifications.

END OF SECTION

SECTION 02720 - SANITARY SEWER SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish all labor, materials, equipment and tools to install and to construct exterior sanitary sewer piping, connections, cleanouts and other appurtenances.

B. Related Sections include the following:

1. Sewer pipe and fittings used within the buildings are specified in DIVISION 15 - MECHANICAL.

1.02 CONSTRUCTION STANDARDS

A. The following construction standards, with certain modifications as hereinafter specified, are hereby incorporated into and made a part of these specifications by reference and shall be applicable to all work performed by the Contractor under this section.

1. Specific sections of the "Wastewater System Design Standards, City and County of Honolulu", July 2017 (hereinafter referred to as "DPW Standard Specifications"), with deletion of subsections relating to Measurement and Payment in all Sections incorporated herein and further modifications to such sections as hereinafter provided.

2. The City and County' of Honolulu "Standard Details for Public Works Construction, Department of Public Works, September 1984" (hereinafter referred to as "DPW Standard Details") and the "Wastewater System Standard Details, July 2017".

3. City and County of Honolulu Plumbing Code.

B. The Contractor shall have the following documents available for the use of the State's inspector at the jobsite:

1. Standard Specifications

2. Standard Details

1.03 SUBMITTALS

A. Submit in accordance with SECTION 01300 – SUBMITTALS.

B. Certificates: The Contractor shall furnish to the Architect and/or HHSC Representative affidavits and descriptive literature from the manufacturers of pipe and fittings and cleanouts furnished and installed under this section certifying that such materials delivered to the project conform to the requirements of this specification.

C. Field Posted As-Built Drawings: Submit Field Posted as-built drawings.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Sanitary Sewer Pipes and Fittings:

1. Exterior sewer 4 inches in diameter and larger pipes shall be polyvinyl chloride (PVC) PSM SDR 26 pipe conforming to ASTM D-3034. Joints shall be water-tight.

2. Banded rubber couplings shall be used to connect to the building sewer. The coupling shall be suitable for sanitary sewer use and shall fit the outside diameter of the pipes being connected. The clamping bands around the coupling shall be stainless steel.

B. Warning and Identification Tape: Warning tape shall be polyethylene plastic tape, acid and alkali resistant, approximately 3 inches wide, minimum 0.003 inch thick, with a strength of 1500 psi lengthwise and 1250 psi crosswise, maximum elongation of 350%, colored blue for waterlines, with warning and identification of service imprinted in bold black lettering continuously over the entire length of the tape. Warning and identification to read "CAUTION, BURIED [type of utility service] LINE BELOW" or similar wording. The tape color and printing shall be permanent and unaffected by moisture.

PART 3 - EXECUTION

3.01 LOCATION OF UTILITY LINES

A. The Contractor shall be responsible for precisely laying out the various sewer lines shown on the Drawings.

B. Prior to the actual work of constructing the sewers, the Contractor shall tone, excavate and expose all utility facilities which will be crossed by the new sewers and verify their elevations with respect to the new sewer grades. Elevations for inverts of existing sewers shall be verified at all points of connection with existing sewers.

C. Should the actual elevation of any existing utility show a possible discrepancy that may affect the alignment and grade of the new sewer, the Contractor shall immediately notify the Architect and/or HHSC Representative of his findings and shall not proceed with the sewer construction until authorized to do so by the Architect and/or HHSC Representative.

D. In performing all work the Contractor shall exercise due care and caution necessary to avoid any damage to, and impairment in the use of, any existing utility line. Any damage to existing lines resulting from the Contractor's operations shall be immediately repaired and restored as approved by the Architect and/or HHSC Representative at the Contractor's expense.

3.02 TRENCH EXCAVATION AND BACKFILL

A. Trench excavation and backfill shall be done in accordance with SECTION 02210 - EARTHWORK.

3.03 INSTALLATION

A. Installation of sewer pipes to the required line and grade and construction of the appurtenant structures shall be in accordance with the Drawings, the "DPW Standard Details", and the "Standard Specifications" as hereinbefore amended with respect to measurement and payment.

B. Laying and Installing Pipe:

1. After the trench has been excavated to a depth of 6 inches below the pipe barrel, the trench bottom shall be brought up to grade by backfilling with cushion material.

2. The Contractor shall provide the necessary mason's line and supports to insure installation of the pipe to line and grade. The Contractor's facilities for lowering the pipe into the trench shall be such that neither the pipe nor the trench will be damaged or disturbed. The pipe invert shall be a smooth and uniform line over the length of pipe between drainage structures.

3. The pipe shall be laid upgrade and shall rest firmly on the prepared bedding or cushion material so that its entire length will have full bearing. No blocking of any kind will be permitted. No pipe shall be laid directly on solid rock or on boulders. Ledge rock or boulders shall be removed to provide the specified bedding thickness.

4. Install pipe as specified in the Standard Specifications.

3.04 RESTORE PAVEMENTS AND OTHER IMPROVEMENTS

A. All curbs, gutters, walkways, and other miscellaneous improvements removed or damaged by the work shall be reconstructed.

3.05 FINAL INSPECTION

A. At the time of final inspection of the work performed under the contract, the sewers covered by this section shall be complete in every respect and operating as designed. All surplus materials of every character resulting from the work of this section shall have been removed. Sanitary sewers shall be free from dirt rocks, sand, silt, debris or other obstructions. Any defects discovered in the sewers subsequent to this inspection shall be corrected prior to final acceptance.

END OF SECTION

SECTION 02920 - LAWNS AND GRASS

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish labor, materials, equipment and tools for grass planting as specified herein. Grass shall be planted in areas indicated on the plans and as listed below:

1. Existing grassed areas that are damaged by construction operations and irrigation system installation;

2. Areas that are dug up for utility trenches;

3. Areas from which existing structures are to be removed;

4. Areas within "Contract Zone Limits" that are graded and covered with screened soil except areas designated for other plants; and

5. Other areas within "Contract Zone Limits" that are indicated on the plans to be graded, whether with the addition of screened soil or not, such as slopes of banks, etc.

1.02 SUBMITTALS

A. Submit in accordance with SECTION 01300 – SUBMITTALS.

B. Warranty: Submit warranty as noted under item entitled “WARRANTY” herein below.

1.03 WARRANTY

A. Grassing Warranty shall coincide with the maintenance period or until acceptance. Replant bare areas that may occur during the maintenance period. Furnish plant and maintain re-grassed areas as specified for original planting.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Grass shall be that locally known as Bermuda Grass (Cynodon dactylon). At the option of the Contractor, grass planting may be by seeds (plain seeding or by hydro-mulching) or by sprigs.

1. Grass seeds shall be fresh, hulled, and meet the following requirements:

Pure seed	98.0% minimum
Crop seed	0.5% maximum
Weed	0.5% maximum
Inert material	1.9% maximum
Germination	90.0% minimum

2. Grass seeds shall be delivered to the site in unopened, sealed containers, labeled with the brand name and percent purity. Labeling shall indicate that the seeds passed a certified germination test no more than 12 months prior to use.

B. Fertilizer shall be pelleted and shall consist of the following percentages by weight of active ingredients:

1. For First Application:

Nitrogen	16%
Phosphate	16%
Potash	16%

2. For Second Application:

Nitrogen	16%
Phosphate	16%
Potash	16%

C. Mulch Materials:

1. Mulch shall be specially processed fiber containing no growth or germination inhibiting factors. It shall be such that after addition and agitation in the hydraulic equipment with seed, fertilizer, water and other additives not detrimental to plant growth, the fibers shall become a homogeneous slurry. When hydraulically sprayed on the soil, the fibers shall form a blotter-like ground cover that readily absorbs water and allows infiltration to the underlying soil.

2. Stabilizing and water retaining agent for hydro-mulching option only shall be "Verdyol Super", "Ecology Control M-Binder" or approved equal.

D. Water shall be potable.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. Planting: The Contractor shall notify the Architect and/or HHSC Representative one day before planting of grass.

1. Immediately prior to planting operations, planting areas shall be cleared of weeds, debris, rocks over one inch in diameter and clumps of earth that will not break up.

2. Option by Grass Seeding: If grass seeds are used, the following procedure shall be used (NOTE: Contractor should exercise caution in seeding slopes where seed may be washed away):

    a. The grass seeds shall be broadcast uniformly by hand or by sowing equipment at the rate of 100 lbs. per acre. Half the seeds shall be sown with the sower moving in one direction and the remainder shall be sown at right angles to the first direction.

    b. The surface shall then be raked to a smooth even plane while the seeds are simultaneously worked into the soil to a depth of about 1/2-inch.

    c. The surface shall then be smoothed and compacted by means of a culti-packer, roller or other similar equipment weighing 60 to 90 lbs. per lineal foot of roller.

    d. The planted area shall then be watered sufficiently to provide water penetration to a depth of at least 2 inches and shall then be kept moist until roots are established.

3. Option by Hydro-Mulching of Grass Seed: This work shall consist of furnishing and applying hulled Bermuda seed, fertilizer, mulch and stabilizing and water retaining agent by hydro-mulching.

    a. The seeds shall be applied at the rate of 2 lbs. per 1,000 square feet minimum. Mulch shall be applied at a rate of 30 lbs. per 1,000 square feet minimum. Stabilizing and water retaining agent shall be applied at the rate of 2 lbs. per 1,000 square feet for "Verdyol Super" or “Ecology Control M-Binder". In every application, complete and uniform coverage of the soil shall be attained.

    b. First application of fertilizer shall be included with mulch and seed.

    c. The hydro-mulch equipment shall be capable of mixing the necessary ingredients to a uniform mixture and to apply the slurry to provide uniform coverage. Seed, fertilizer, mulch mix and stabilizing water retaining agent shall be applied in one operation by hydraulic equipment made specifically for this use. The equipment shall have a built-in agitation system with an operating capacity sufficient to keep the mix in uniform distribution until pumped from the tank. Distribution and discharge lines shall be large enough to prevent stoppage and shall be equipped with hydraulic discharge spray nozzles that provide a uniform distribution of the slurry.

    d. Areas inaccessible to hydro-mulching application shall be seeded

or hand sprigged and fertilized by approved hand methods.

e. Water shall be applied immediately following mulching and the planting area shall then be kept moist until roots are established.

B. Application of Fertilizer: The Contractor shall notify the Architect and/or HHSC Representative one day before application of fertilizer.

1. Fertilizer shall be distributed uniformly over the planted area.

2. Spread fertilizer over lawn areas at the rate of 10 pounds per 1,000 square feet; once, 30 days after start of maintenance period and again, every 30 days thereafter until completion of maintenance period.

3. Promptly wash off any fertilizer that adheres to foliage. Irrigate planting areas following fertilizer application. Promptly sweep off any fertilizer that falls on pavement, wood or metal surfaces to prevent staining.

C. Maintenance

1. General: The Contractor shall be responsible for the proper care of the grassed areas. Maintenance shall include watering, weeding, mowing, repairing, topdressing, re-grassing and protection, and shall be required until the entire project is accepted, but in any event for a period of not less than 90 days after planting of grass.

2. Watering: After planting of seeds or grass sprigs or mulching, the ground shall be watered as deemed necessary by the Contractor to establish a healthy growth. Watering shall be done in a manner that will prevent erosion due to the application of excessive quantities of water, and the watering equipment shall be of a type that will prevent damage to the finished surface.

3. Weeding: Weeds shall be uprooted and removed completely and in no case shall they be allowed to grow and propagate more seeds. Large holes caused by weeding shall be filled with screened soil and raked level.

4. Mowing: Grass shall be mowed to a height of 1 inch whenever the height of grass becomes 1-1/2 inches.

5. Repairing and Re-grassing: When any portion of the surface becomes gullied or otherwise damaged and grass has failed to grow, such areas shall be repaired with screened soil and replanted with grass. Any areas of one foot square or more in which grass has failed to grow after 30 days of maintenance shall be re-grassed.

6. Top-dress and roll lawn areas as necessary to obtain smooth and level lawn surface.

7. Protection: The grassed areas shall be protected against traffic so that the grass establishes a healthy growth. Grassed areas damaged by traffic shall be replanted.

3.02 ACCEPTANCE OF GRASSING

A. At the time of acceptance, the grass shall be well established and shall be given a final weeding and a final mowing to a height of 1 inch. If the maintenance period has expired before acceptance of the entire project, the Contractor shall continue to maintain the grass until acceptance of the entire project. If the maintenance period should extend beyond acceptance of the entire project, the Contractor shall continue to maintain the grass until the end of the specified period of time required for maintenance.

B. At the end of the maintenance period, should there appear areas where grass has failed to grow, such areas shall be replanted with grass, re-fertilized and maintained beyond the maintenance period until a healthy growth is established. Acceptance of lawn areas at conclusion of maintenance period shall be conditioned upon 99% coverage of the overall area. Individual bare spots shall not exceed 2 square feet in area. Maintenance period for planting shall be extended at no additional cost if grass planting does not meet this requirement.

END OF SECTION

DIVISION 3 - CONCRETE

SECTION 03300 - CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mix design, placement procedures, and finishes.

1.02 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume.

1.03 SUBMITTALS

A. Design Mixes: For each concrete mix. Include alternate mix designs when characteristics of materials, project conditions, weather, test results, or other circumstances warrant adjustments.
   1. Indicate amounts of mix water to be withheld for later addition at Project site.

B. Material Certificates: Signed by manufacturers certifying that each of the following items complies with requirements:
   1. Vapor retarders.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products complying with ASTM C 94 requirements for production facilities and equipment.

B. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.
   1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

C. Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, each aggregate from one source, and each admixture from the same manufacturer.

D. ACI Publications: Comply with the following, unless more stringent provisions are indicated and maintain a copy at the field office.
   1. ACI 301, “Specification for Structural Concrete.”
   2. ACI 117, “Specifications for Tolerances for Concrete Construction and Materials.”
   3. ACI 347R “Guide to Formwork for Concrete”

1.05 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle steel reinforcement to prevent bending and damage.

PART 2 - PRODUCTS

2.01 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Comply with ACI 347R. Provide new or good finish form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
   1. Plywood, metal, or other ACI 347R approved panel materials.

   2. Exterior-grade plywood panels, suitable for concrete forms, complying with DOC PS 1, and as follows:
      a. High-density overlay, Class 1, or better.
      b. Medium-density overlay, Class 1, or better, mill-release agent treated and edge sealed.
      c. Structural 1, B-B, or better, mill oiled and edge sealed.
      d. B-B (Concrete Form), Class 1, or better, mill oiled and edge sealed.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

C. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces. Form oils or waxes shall not be used for concrete surfaces intended to be painted.
   1. Formulate form-release agent with rust inhibitor for steel form-facing materials.

2.02 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed, unless otherwise noted on the drawings.

2.03 REINFORCEMENT ACCESSORIES

A. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place that will not puncture the vapor retarder. Use plastic straps or brightly colored tie wires to secure reinforcing. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete or fiber-reinforced concrete of greater compressive strength than concrete, and as follows:
   1. For concrete surfaces exposed to view where legs of wire bar supports contact forms, use CRSI Class 1 plastic-protected or CRSI Class 2 stainless-steel bar supports. Refer to paragraph 3.05 for chair support spacing.

B. Joint Dowel Bars: Plain-steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.

2.04 CONCRETE MATERIALS

A. Portland Cement: ASTM C 150, Type I.

B. Pozzolans:

   1. Blended Hydraulic Cement: ASTM C595M.

C. Normal-Weight Aggregate: ASTM C 33, uniformly graded, and as follows:
   1. Class: Moderate weathering region, but not less than 3M.

2. Aggregate Size: No. 67 (3/4 inch to No. 4).

D. Water: Potable and complying with ASTM C 94 or non potable meeting ASTM C-94 Acceptance Criteria for Questionable Water Supply. Use only potable water for job site mixing.

2.05 ADMIXTURES

A. General: Admixtures certified by manufacturer to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material and to be compatible with other admixtures and cementitious materials. Do not use admixtures containing calcium chloride.

B. Water-Reducing Admixture: ASTM C 494, Type A.

C. High-Range, Water-Reducing Admixture: ASTM C 494, Type F.

D. Water-Reducing and Retarding Admixture: ASTM C 494, Type D.

2.06 CURING MATERIALS AND EVAPORATION RETARDERS

A. Evaporation Retarder: Waterborne, monomolecular film forming, manufactured for application to fresh concrete 9 oz./sq. yd. dry.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Clear, Solvent-Borne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B.

E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, 18 to 22 percent solids.

F. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

G. Clear, Waterborne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

2.07 REPAIR MATERIALS

A. Repair Topping: Traffic-bearing, cement-based, polymer-modified, self-leveling product that can be applied in thicknesses from 1/4 inch. Products shall contain no added gypsum.
   1. Cement Binder: ASTM C 150, portland cement or hydraulic or blended hydraulic cement as defined in ASTM C 219.

   2. Primer: Product of topping manufacturer recommended for substrate, conditions, and application.

   3. Aggregate: Well-graded, washed gravel, 1/8 to 1/4 inch or coarse sand as recommended by topping manufacturer.

4. Compressive Strength: Not less than 5500 psi (39 MPa) at 28 days when tested according to ASTM C 109/C 109M.

2.08 CONCRETE MIXES

A. Prepare design mixes for each type and strength of concrete determined by either laboratory trial mix or field test data bases, as follows:
   1. Proportion normal-weight concrete according to ACI 211.1 and ACI 301.

B. Minimum Compressive Strength:
   1. Footings: 3,000 psi
   2. Slab-on-grade: 3,000 psi
   3. Walls: 4,000 psi
   4. Other: 3,000 psi

C. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:
   1. Fly Ash: 25 percent.

   2. Combined Fly Ash and Pozzolan: 25 percent.

   3. Ground Granulated Blast-Furnace Slag: 50 percent.

   4. Combined Fly Ash or Pozzolan and Ground Granulated Blast-Furnace Slag: 50 percent portland cement minimum, with fly ash or pozzolan not exceeding 25 percent.

   5. Silica Fume: 10 percent.

   6. Combined Fly Ash, Pozzolans, and Silica Fume: 35 percent with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

   7. Combined Fly Ash or Pozzolans, Ground Granulated Blast-Furnace Slag, and Silica Fume: 50 percent portland cement minimum, with fly ash or pozzolans not exceeding 25 percent and silica fume not exceeding 10 percent.

D. Maximum Water-Cementitious Materials Ratio: 0.45 for concrete required to have low permeability, interior slabs with vapor sensitive floor coverings. 0.50 for other concrete.

E. Do not add air entrainment to concrete of trowel-finished interior floors and suspended slabs. Do not allow entrapped air content to exceed 3 percent.

F. Limit water-soluble, chloride-ion content in hardened concrete per ACI 318 Chapter 4 for corrosion protection of reinforcing steel.

G. Admixtures: Use admixtures according to manufacturer's written instructions.
   1. Use water-reducing admixture or high-range water-reducing admixture (superplasticizer) in concrete, as required, for placement and workability.

   2. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.

   3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a water-cementitious materials ratio below 0.50.

2.09 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.10 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94, and ASTM C 1116 and furnish batch ticket information. Batch ticket information shall include design mix reference, water that can be added at the jobsite, and admixtures. For transit mixing, complete not less than 70 revolutions of the drum at the manufacturer's rated mixing speed. Discharge concrete into its final position within 90 minutes after introduction of batch water to the cement. If a retarder admixture is used, the discharge time limit of 90 minutes may be increased by the time specified for retardation by the admixture manufacturer or the concrete supplier. Mix concrete a minimum of one minute at mixing speed immediately prior to discharge.

PART 3 - EXECUTION

3.01 FORMWORK

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301, to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until concrete structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.

C. Limit concrete surface irregularities, designated by ACI 347R as abrupt or gradual, as follows:
   1. Class C, 1/2 inch.

D. Construct forms to prevent loss of concrete mortar.

E. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces steeper than 1.5 horizontal to 1 vertical. Kerf wood inserts for forming keyways, reglets, recesses, and the like, for easy removal.
   1. Do not use rust-stained steel form-facing material.

F. Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and slopes in finished concrete surfaces. Provide and secure units to support screed strips; use strike-off templates or compacting-type screeds. Maintain the integrity of the vapor retarder membrane.

G. Provide temporary openings for cleanouts and inspection ports where interior area of formwork is inaccessible. Close openings with panels tightly fitted to forms and securely braced to prevent loss of concrete mortar. Locate temporary openings in forms at inconspicuous locations.

H. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work. Determine sizes and locations from trades providing such items.

I. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

J. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

K. Coat contact surfaces of forms with form-release agent, according to manufacturer's written instructions, before placing reinforcement.

3.02 EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use Setting Drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
   1. Install anchor bolts, accurately located, to elevations required.

   2. Install inserts, hangers, metal ties, nailing strips, blocking, grounds and other fastening devices needed for attachment of other work.

B. Locate electrical or mechanical conduits and fittings so that the strength of the concrete member is not impaired. “Conduits” include pipes, ducts, and electrical conduits. Unless required otherwise on the Drawings, conform to the following:
   1. Concrete Slabs on Grade: Do not embedded conduits within the thickness of any concrete slab on grade. Place conduits in the subgrade below the concrete slabs, but not within the thickness of the basaltic termite barrier.

C. Obtain Contracting Officer’s approval to install conduit or pipe penetrations that may unduly impair the strength of the structural member (for example, multiple pipe penetrations near the face of a column).

3.03 REMOVING AND REUSING FORMS

A. General: Formwork that does not support weight of concrete may be removed after cumulatively curing at not less than 50 deg F(10 deg C) for 24 hours after placing concrete provided concrete is hard enough to not be damaged by form-removal operations and provided curing and protection operations are maintained. The 24 hour period may be reduced to 12 hours in compliance with ACI 347R with prior approval from the Contracting Officer.

B. Clean and repair surfaces of forms to be reused in the Work. Split, frayed, delaminated, or otherwise damaged form-facing material will not be acceptable for exposed surfaces. Apply new form-release agent.

C. When forms are reused, clean surfaces, remove fins and laitance, and tighten to close joints. Align and secure joints to avoid offsets. Do not use patched forms for exposed concrete surfaces unless approved by Contracting Officer.

3.04 STEEL REINFORCEMENT

A. General: Comply with CRSI’s “Manual of Standard Practice” for placing reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, and other foreign materials.

C. Accurately position, support, and secure reinforcement against displacement. Locate and support reinforcement with bar supports to maintain minimum concrete cover. Do not tack weld crossing reinforcing bars.
   1. Shop or field-weld reinforcement according to AWS D1.4, where indicated.

2. Support slab reinforcing bars as follows:

BAR SIZE	MAXIMUM DISTANCE BETWEEN SUPPORTS
#3	2 feet
#4	3 feet
#5	4 feet
#3 at 15" E.W.	4'-6" o.c. each way

3.05 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

3.06 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections have been performed. Provide one day notification to Contracting Officer for each scheduled pour.

B. Before placing concrete, water may be added at Project site, subject to limitations of ACI 301. Up to two gallons of water per cubic yard of concrete may be added at the jobsite provided the approved design mix accommodates the additional water.
   1. Do not add water to concrete after adding high-range water-reducing admixtures to mix.

C. Convey concrete from mixer to the place of final deposit rapidly by methods that prevent segregation or loss of ingredients and will insure the required quality of concrete. Use conveying equipment, conveyors, hoppers, baffles, chutes, pumps that are sized and designed to prevent cold joints from occurring and prevent segregation in discharged concrete. Clean conveying equipment before each placement.

D. Deposit concrete continuously or in layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as specified. Deposit concrete to avoid segregation.

E. Deposit concrete in forms in horizontal layers with proper consolidation into previous layers and in a manner to avoid inclined construction joints. Place each layer while preceding layer is still plastic, to avoid cold joints. For high wall pours (above 12 feet), Contractor must show its experience and demonstrate its proficiency before the Contracting Officer will permit pours in excess of 12 feet.
   1. Consolidate placed concrete with mechanical vibrating equipment. Use equipment and procedures for consolidating concrete recommended by ACI 309R.

   2. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations no farther than the visible effectiveness of the vibrator. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to lose plasticity. At each insertion, limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing mix constituents to segregate.

3. Make construction joints only where located on Drawings unless otherwise approved by the Contracting Officer. Plan pours to continuously place concrete from one construction joint to another.

F. Deposit and consolidate concrete for floors and slabs in a continuous operation, within limits of construction joints, until placement of a panel or section is complete.
   1. Consolidate concrete during placement operations so concrete is thoroughly worked around reinforcement and other embedded items and into corners.

   2. Maintain reinforcement in position on chairs during concrete placement.

   3. Screed slab surfaces with a straightedge and strike off to correct elevations.

   4. Slope surfaces uniformly to drains where required.

   5. Begin initial floating using bull floats or darbies to form a uniform and open-textured surface plane, free of humps or hollows, before excess moisture or bleed-water appears on the surface. Do not further disturb slab surfaces before starting finishing operations.

3.07 CONCRETE SLABS ON GRADE

A. For exterior areas, unless specified elsewhere, place concrete floor slabs directly over granular fill and reinforce slabs with synthetic fibers. Provide isolation and contraction joints where detailed and, at intersections, corners and at abutments. Place contraction joints not more than 40 feet apart, unless detailed otherwise.
   1. Finish concrete true to grade, section and cross slope for sloped or crowned walks at 1.5% (1% minimum and 2% maximum). Round edges to 1/8" radius except saw-cut joints. Finish steps in connection with walks with same finish as walks.

3.08 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defective areas repaired and patched. Remove fins and other projections exceeding ACI 347R limits for class of surface specified.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defective areas. Remove fins and other projections exceeding 1/8 inch in height.
   1. Apply to concrete surfaces exposed to public view or to be covered with a coating or covering material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, or painting.

   2. Do not apply rubbed finish to smooth-formed finish.

C. Rubbed Finish: Apply the following to smooth-formed finished concrete:
   1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.

   2. Grout-Cleaned Finish (Burlap): Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix one part portland cement to one and one-half parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Scrub grout into voids and remove

excess grout. When grout whitens, rub surface with clean burlap and keep surface damp for at least 36 hours.

3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix one part portland cement and one part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches so color of dry grout will match adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

4. Cementitious Coating (Cement Wash): Prepare, apply and cure the coating per manufacturer's requirements. Apply in 1/16-inch thick coats not to exceed 1/8-inch.
   a. Cementitious coatings are finished coatings and not to be used as patching or repair materials. Cement-sand-water mix are not cementitious coatings as defined under paragraph 2.09F. Under no circumstances will products containing gypsum plaster be allowed as a cementitious coating.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.09 FINISHING FLOORS AND SLABS

A. General: Comply with recommendations in ACI 302.1R for screeding, restraightening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.

B. Scratch Finish: While still plastic, texture concrete surface that has been screeded and bull-floated or darbied. Use stiff brushes, brooms, or rakes.
   1. Apply scratch finish to surfaces indicated and to surfaces to receive concrete floor topping or mortar setting beds for ceramic or quarry tile, portland cement terrazzo, and other bonded cementitious floor finishes.

C. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraightening until surface is left with a uniform, smooth, granular texture.
   1. Apply float finish to surfaces indicated, to surfaces to receive trowel finish, and to floor and slab surfaces to be covered with fluid-applied or sheet waterproofing, built-up or membrane roofing, or sand-bed terrazzo.

D. Trowel Finish: After applying float finish, apply first trowel finish and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
   1. Apply a trowel finish to surfaces indicated and to floor and slab surfaces exposed to view or to be covered with resilient flooring, carpet, ceramic or quarry tile set over a cleavage membrane, paint, or another thin film-finish coating system.

   2. Finish and measure surface so gap at any point between concrete surface and an unleveled freestanding 10-foot-long straightedge, resting on two high spots and placed anywhere on the surface, does not exceed the following:
      a. 1/8 inch.

E. Broom Finish: Apply a broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated.
   1. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route. Coordinate required final finish with Contracting Officer before application.

F. Slip-Resistive Aggregate Finish: Before final floating, apply slip-resistive aggregate finish where indicated and to concrete stair treads, platforms, and ramps. Apply according to manufacturer's written instructions and as follows:
   1. Uniformly spread 25 lb/100 sq. ft. of dampened slip-resistive aggregate over surface in one or two applications. Tamp aggregate flush with surface, but do not force below surface.

   2. After broadcasting and tamping, apply float finish.

   3. After curing, lightly work surface with a steel wire brush or an abrasive stone, and water to expose slip-resistive aggregate.

G. Unpigmented Mineral Dry-Shake Floor Hardener Finish: After initial floating, apply mineral dry-shake materials to surfaces according to manufacturer's written instructions and as follows:
   1. Uniformly apply mineral dry-shake materials at a rate of 100 lb/100 sq. ft., unless greater amount is recommended by manufacturer.

   2. Uniformly distribute approximately two-thirds of mineral dry-shake materials over surface by hand or with mechanical spreader, and embed by power floating. Follow power floating with a second mineral dry-shake application, uniformly distributing remainder of material, and embed by power floating.

   3. After final floating, apply a trowel finish. Cure concrete with curing compound recommended by dry-shake material manufacturer and apply immediately after final finishing.

H. Color Finish (Pigmented Mineral Dry-Shake Floor Hardener): Prior to color application, manufacturer's representative shall instruct finisher on application and curing requirements of Color Floor Hardener and be present during application. After initial floating, apply mineral dry-shake materials to surfaces according to manufacturer's written instructions and as follows:
   1. Uniformly apply mineral dry-shake materials at a rate of 100 lb/100 sq. ft., unless greater amount is recommended by manufacturer. Do not cast material into standing water.

   2. Uniformly distribute approximately two-thirds of mineral dry-shake materials over surface by hand or with mechanical spreader, and embed by power floating. Follow power floating with a second mineral dry-shake application at right angles to first application, uniformly distributing remainder of material, and embed by power floating.

   3. After final floating, apply a trowel finish. Take care not to over trowel and "burn" the surface. Cure concrete with curing compound recommended by dry-shake material manufacturer and apply immediately after final finishing.

3.10 MISCELLANEOUS CONCRETE ITEMS

A. Filling In: Fill in holes and openings left in concrete structures, unless otherwise indicated, after work of other trades is in place. Mix, place, and cure concrete, as

specified, to blend with in-place construction. Provide other miscellaneous concrete filling indicated or required to complete Work.

3.11 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and with recommendations in ACI 305R for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing by one or a combination of the curing methods listed in paragraph 3.12.D.

D. Unformed Surfaces: Begin curing immediately after finishing concrete. Cure unformed surfaces, including floors and slabs, concrete floor toppings, and other surfaces, by one or a combination of the following methods:
   1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
      a. Water.
      b. Continuous water-fog spray.
      c. Absorptive cover, water saturated, and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.

   2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
      a. Moist cure or use moisture-retaining covers to cure concrete surfaces to receive floor coverings.
      b. Moist cure or use moisture-retaining covers to cure concrete surfaces to receive penetrating liquid floor treatments.
      c. Cure concrete surfaces to receive floor coverings with either a moisture-retaining cover or a curing compound that the manufacturer recommends for use with floor coverings.

   3. Curing Compound: Apply uniformly in continuous operation by spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

   4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application where recommended by the manufacturer. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

3.12 JOINT FILLING

A. Prepare, clean, and install joint filler according to manufacturer's written instructions. Defer joint filling as long as possible. Do not fill joints until construction traffic has permanently ceased.

B. Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joint clean and dry.

C. Install semirigid epoxy joint filler full depth in saw-cut joints and at least 2 inches deep in formed joints. Overfill joint and trim joint filler flush with top of joint after hardening.

3.13 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas. Remove and replace concrete that cannot be repaired and patched to Contracting Officer's approval.

B. Patching Mortar: Mix dry-pack patching mortar, consisting of one part portland cement to two and one-half parts fine aggregate passing a No. 16(1.2-mm) sieve, using only enough water for handling and placing.

C. Repairing Formed Surfaces: Surface defects include color and texture irregularities, cracks, spalls, air bubbles, honeycombs, rock pockets, fins and other projections on the surface, and stains and other discolorations that cannot be removed by cleaning.
   1. Immediately after form removal, cut out honeycombs, rock pockets, and voids more than 1/2 inch in any dimension in solid concrete but not less than 1 inch in depth. Make edges of cuts perpendicular to concrete surface. Clean, dampen with water, and brush-coat holes and voids with bonding agent. Fill and compact with patching mortar before bonding agent has dried. Fill form-tie voids with patching mortar or cone plugs secured in place with bonding agent.

   2. Repair defects on surfaces exposed to view by blending white portland cement and standard portland cement so that, when dry, patching mortar will match surrounding color. Patch a test area at inconspicuous locations to verify mixture and color match before proceeding with patching. Compact mortar in place and strike off slightly higher than surrounding surface.

   3. Repair defects on concealed formed surfaces that affect concrete's durability and structural performance as determined by Contracting Officer

D. Repairing Unformed Surfaces: Test unformed surfaces, such as floors and slabs, for finish and verify surface tolerances specified for each surface. Correct low and high areas. Test surfaces sloped to drain for trueness of slope and smoothness; use a sloped template.
   1. Repair finished surfaces containing defects. Surface defects include spalls, popouts, honeycombs, rock pockets, crazing and cracks in excess of 0.01 inch wide or that penetrate to reinforcement or completely through unreinforced sections regardless of width, and other objectionable conditions.

   2. After concrete has cured at least 14 days, correct high areas by grinding.

   3. Correct localized low areas during or immediately after completing surface finishing operations by cutting out low areas and replacing with patching mortar. Finish repaired areas to blend into adjacent concrete.

   4. Correct other low areas scheduled to receive floor coverings with a repair underlayment. Prepare, mix, and apply repair underlayment and primer according to

manufacturer’s written instructions to produce a smooth, uniform, plane, and level surface. Feather edges to match adjacent floor elevations.

5. Correct other low areas scheduled to remain exposed with a repair topping. Cut out low areas to ensure a minimum repair topping depth of 1/4-inch to match adjacent floor elevations. Prepare, mix, and apply repair topping and primer according to manufacturer's written instructions to produce a smooth, uniform, plane, and level surface.

6. Repair defective areas, except random cracks and single holes 1-inch or less in diameter, by cutting out and replacing with fresh concrete. Remove defective areas with clean, square cuts and expose steel reinforcement with at least 3/4-inch clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding agent. Mix patching concrete of same materials and mix as original concrete except without coarse aggregate. Place, compact, and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.

7. Repair random cracks and single holes 1-inch or less in diameter with patching mortar. Groove top of cracks and cut out holes to sound concrete and clean off dust, dirt, and loose particles. Dampen cleaned concrete surfaces and apply bonding agent. Place patching mortar before bonding agent has dried. Compact patching mortar and finish to match adjacent concrete. Keep patched area continuously moist for at least 72 hours.

E. Perform structural repairs of concrete, subject to Contracting Officer’s approval, using epoxy adhesive and patching mortar.

F. Repair materials and installation not specified above may be used, subject to Contracting Officer’s approval.

END OF SECTION

DIVISION 5 - METALS

SECTION 05120 - STRUCTURAL STEEL

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes structural steel, including placement procedures, connections and finishes.

1.02 REFERENCES

A. American Institute of Steel Construction (AISC) Publications:
   1. Code of Standard Practice for Steel Buildings and Bridges, latest edition.
   2. Manual of Steel Construction, 9th Edition.
   3. Specification for the Design, Fabrication and Erection of Structural Steel for Buildings, latest edition.
   4. Specifications for Assembly of Structural Joints using High Strength Bolts.

B. American Welding Society (AWS) Publication:
   1. D1.1-82 Structural Welding Code, Steel.

C. Structural Steel Painting Council (SSPC).

1.03 SUBMITTALS

A. Shop Drawings: Submit complete shop drawings of all structural steel work to the Engineer for review and approval prior to fabrication. Detail members and connections. Include complete information necessary for the fabrication and erection of the component parts of the structure, including the location, type, and size of all bolts and welds. Include all welds by standard welding symbols of the AWS.

B. Certified welders certificates for welders, welding operators and tackers.

1.04 DELIVERY AND STORAGE

Handle, ship, and store material in a manner that will prevent distortion or other damage. Store material in a clean, properly drained location out of contact with the ground. Replace all damaged material with new material or repair the damaged material in an approved manner.

PART 2 - PRODUCTS

2.01 MATERIALS

A. W-Shapes: ASTM A 992/A 992M

B. Plates, Angles, Rods and Bars: ASTM A 36

C. Hollow Structural Steel Sections: ASTM A 500, Grade B.

D. Bolts and Nuts: ASTM A 307, Grade A, galvanized in accordance with ATSM 153.

E. Shear Connectors: ASTM A 108, Grades 1015 through 1020, headed-stud type, cold-finished carbon steel; AWS D1.1/D1.1M, Type B.

F. Welding Electrodes and Rods: AWS Code D1.1, E70XX.

G. Non-Shrink Grout: Non-metallic, non-corrosive, non-staining product containing selected silica sands, Portland cement, shrinkage compensating agents, plasticizing and water reducing agents, complying with ASTM C 1107. The minimum compressive strength at 28-days shall be 8000 psi.

H. Headed Anchor Rods: ASTM F 1554, Grade 36

I. Cold Galvanizing Compound for field touch-up: Compatible with galvanizing.

2.02 GALVANIZING

A. Hot-Dip Galvanized Finish: Apply zinc coating by the hot-dip process to structural steel according to ASTM A 123/A 123M.
   1. Galvanize all nuts, bolts, misc. plates, and shear connectors attached to structural steel.

PART 3 - EXECUTION

3.01 SURFACE CONDITIONS

Examine areas and conditions where work will be installed. Arrange for correction of conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 FABRICATION

A. Fabricate in accordance with the applicable provisions of the Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings as set forth in Part 5 of the AISC "Manual of Steel Construction".

B. Welding of Structural Steel Work: AWS D1.1 for structural steel and AWS D1.3 for sheet steel.

C. Cleaning: Prepare surfaces in accordance with SSPC 1 and blast clean surfaces in accordance with Steel Structures Painting Council, Surface Preparation Specification No. 6 (SP6) Commercial Blast Cleaning. Ensure that the surfaces, when assembled, are free from rust, grease, dirt, and other foreign matter.

D. Priming: Prime all ferrous metal work with one coat of primer. The primer paint shall contain no lead, mercury, cadmium and chromates. Apply primer paint in accordance with the manufacturer's instructions and at a rate to provide a dry film thickness of not less than 2.0 mils. Do not paint surfaces to be welded or high-strength bolted with slip-critical type connections.

E. Match Marking: Match mark members and component parts of structures prior to erection to ensure proper position of final erection. Painted assembly markings shall be remote from any surface to be welded.

3.03 ERECTION

A. Erect steel in accordance with the AISC "Manual of Steel Construction", except as modified herein. Insofar as possible, fit and shop-assemble work ready for erection. Make jointing and intersections accurately in true planes, tightly fitted. Fabricate and erect all work square, plumb, straight, and true. Provide all supporting and anchoring means as required for proper installation.

B. Fabrication Errors: Where parts cannot be assembled or fitted properly as a result of

errors in fabrication or of deformation due to handling or transportation, report such condition immediately to the Engineer and obtain approval therefrom for the methods of correction before proceeding with making any corrections. Do not heat heat-treated parts for straightening. Drain steel work properly; fill pockets in structures exposed to the weather with an approved waterproof material.

C. Connections: Provide anchor bolts and other connections between the structural steel and foundations properly and build them into connection work. Temporarily bolt up the work as erection proceeds, to maintain steel in proper position for field bolting and welding as required to take care of all dead loads, wind and erection stresses. Do not high strength bolt or weld until work is properly aligned, plumbed and leveled. When calibrated wrenches are used for tightening bolts, calibrate them at least once each working day using not less than three typical bolts of each diameter. Do not use impact torque wrenches to tighten anchor bolts set in concrete.

D. Base Plates and Bearing Plates: Provide base plates for columns and bearing plates for beams, girders, and similar members. Provide base plates and bearing plates with full bearing after the supported members have been plumbed and properly positioned. Grout the area under the plate solidly with a non-shrinking type of grouting mortar. Grout in accordance with of the manufacturer's recommendations.

E. Tolerances: In accordance with the "Code of Standard Practice" of the AISC.

F. Temporary Welds and Run-Off Plates and Backing Strips: Shall be removed, unless otherwise indicated or approved.

G. Corners, Edges, Welds and other Rough Portions: File or grind corners, edges, welds and other rough portions and make smooth. Repair damaged zinc and prime coats. Apply prime coat to connections, previously unprimed areas and abraded areas.

3.04 FIELD TOUCH-UP

A. Remove weld splatters, loose weld slag and other deleterious material with wire brush and other methods. Apply paint conforming to ASTM A 780 to welded and abraded galvanized areas, in conformance with manufacturer's instructions.

B. Abraded, burned or otherwise damaged shop coats shall be touched and/or refinished with the applicable shop coating noted above. After installation, paint connections and other areas where shop coat was omitted.

C. Paint shall be applied with a hand brush, thoroughly worked into all joints, corners and open spaces and well brushed over the surfaces. The paint shall not be applied to wet or damp surfaces and shall be dry when the material is loaded for delivery to the work.

3.05 CORROSION PROTECTION

A. Where metals are incompatible to other materials, the contact areas of these materials shall be back coated before erection with an approved bituminous paint or other insulation coating as recommended by the fabricator.

B. After erection, all work shall be adequately protected against damage from grindings, polishing, cement or other harmful materials.

3.06 TESTS AND INSPECTIONS

A. Visual Inspection of Welding: Visually inspect welding while the operators are making the welds and again after the work is completed. After the welding is completed, hand or power wire brush welds, and thoroughly clean them before inspecting again. Inspect welds with magnifiers under strong, adequate light for surface cracking, porosity, and

slag inclusions; excessive roughness; unfilled craters; gas pockets; undercuts; overlaps; size; and insufficient throat and concavity. Inspect the preparation of groove welds for adequate throat opening and for snug positioning of back-up bars. Visual inspections shall be a Contractor responsibility.

B. Nondestructive Evaluation of Welds: Test welds, as specified in the drawings, in accordance with the weld quality and standards of acceptance in AWS D1.1. Cost of tests shall be paid for by the Contractor.

C. Correction of Defective Welds: Weld areas containing defects exceeding the standards of acceptance in AWS D1.1 shall be corrected in accordance with AWS D1.1, Section 3.7. Additional inspection of the repaired areas shall be required.

END OF SECTION

SECTION 05310 - STEEL DECK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. Roof deck.

1.3 SUBMITTALS

A. Product Data: For each type of deck, accessory, and product indicated.

B. Shop Drawings: Show layout and types of deck panels, anchorage details, reinforcing channels, pans, cut deck openings, special jointing, accessories, and attachments to other construction.

C. Product Certificates: For each type of steel deck, signed by product manufacturer.

D. Welding certificates.

E. Field quality-control test and inspection reports.

F. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that each of the following complies with requirements:

1. Power-actuated mechanical fasteners.

G. Research/Evaluation Reports: For steel deck.

1.4 QUALITY ASSURANCE

A. Testing Agency Qualifications: An independent agency qualified according to ASTM E 329 for testing indicated.

B. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code - Sheet Steel."

C. AISI Specifications: Comply with calculated structural characteristics of steel deck according to AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members."

1.5 DELIVERY, STORAGE, AND HANDLING

A. Protect steel deck from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Stack steel deck on platforms or pallets and slope to provide drainage. Protect with a waterproof covering and ventilate to avoid condensation.

1. Protect and ventilate acoustical cellular roof deck with factory-installed insulation to maintain insulation free of moisture.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Steel Deck:

a. ASC Profiles, Inc.
b. Canam Steel Corp.;The Canam Manac Group.
c. Consolidated Systems, Inc.
d. DACS, Inc.
e. D-Mac Industries Inc.
f. Epic Metals Corporation.
g. Marlyn Steel Decks, Inc.
h. New Millennium Building Systems, LLC.
i. Nucor Corp.; Vulcraft Division.
j. Roof Deck, Inc.
k. United Steel Deck, Inc.
l. Valley Joist; Division of EBSCO Industries, Inc.
m. Verco Manufacturing Co.
n. Wheeling Corrugating Company; Div. of Wheeling-Pittsburgh Steel Corporation.

2.2 ROOF DECK

A. Steel Roof Deck: Fabricate panels, without top-flange stiffening grooves, to comply with "SDI Specifications and Commentary for Steel Roof Deck," in SDI Publication No. 30, and with the following:

1. Prime-Painted Steel Sheet: ASTM A 1008/A 1008M, Structural Steel (SS), Grade 33 minimum, shop primed with manufacturer's standard baked-on, rust-inhibitive primer.

    a. Color: Manufacturer's standard.

2. Galvanized Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating.

3. Galvanized and Shop-Primed Steel Sheet: ASTM A 653/A 653M, Structural Steel (SS), Grade 33, G60 zinc coating; cleaned, pretreated, and primed with manufacturer's standard baked-on, rust-inhibitive primer.

    a. Color: Manufacturer's standard

4. Deck Profile: As indicated

5. Profile Depth: As indicated

6. Span Condition: As indicated.

7. Side Laps: Overlapped or interlocking seam at Contractor's option.

2.3 ACCESSORIES

A. General: Provide manufacturer's standard accessory materials for deck that comply with requirements indicated.

B. Mechanical Fasteners: Corrosion-resistant, low-velocity, power-actuated or pneumatically driven carbon-steel fasteners; or self-drilling, self-threading screws.

C. Side-Lap Fasteners: Corrosion-resistant, hexagonal washer head; self-drilling, carbon-steel screws, No. 10 minimum diameter.

D. Flexible Closure Strips: Vulcanized, closed-cell, synthetic rubber.

E. Miscellaneous Sheet Metal Deck Accessories: Steel sheet, minimum yield strength of 33,000 psi, not less than 0.0359-inch design uncoated thickness, of same material and finish as deck; of profile indicated or required for application.

F. Column Closures, End Closures, Z-Closures, and Cover Plates: Steel sheet, of same material, finish, and thickness as deck, unless otherwise indicated.

G. Piercing Hanger Tabs: Piercing steel sheet hanger attachment devices for use with floor deck.

H. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035, with dry film containing a minimum of 94 percent zinc dust by weight.

I. Repair Paint: Manufacturer's standard rust-inhibitive primer of same color as primer.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine supporting frame and field conditions for compliance with requirements for installation tolerances and other conditions affecting performance.

3.2 INSTALLATION, GENERAL

A. Install deck panels and accessories according to applicable specifications and commentary in SDI Publication No. 30, manufacturer's written instructions, and requirements in this Section.

B. Install temporary shoring before placing deck panels, if required to meet deflection limitations.

C. Locate deck bundles to prevent overloading of supporting members.

D. Place deck panels on supporting frame and adjust to final position with ends accurately aligned and bearing on supporting frame before being permanently fastened. Do not stretch or contract side-lap interlocks.

1. Align cellular deck panels over full length of cell runs and align cells at ends of abutting panels.

E. Place deck panels flat and square and fasten to supporting frame without warp or deflection.

F. Cut and neatly fit deck panels and accessories around openings and other work projecting through or adjacent to deck.

G. Provide additional reinforcement and closure pieces at openings as required for strength, continuity of deck, and support of other work.

H. Comply with AWS requirements and procedures for manual shielded metal arc welding, appearance and quality of welds, and methods used for correcting welding work.

I. Mechanical fasteners may be used in lieu of welding to fasten deck. Locate mechanical fasteners and install according to deck manufacturer's written instructions.

3.3 ROOF-DECK INSTALLATION

A. Fasten roof-deck panels to steel supporting members by arc spot (puddle) welds of the surface diameter indicated or arc seam welds with an equal perimeter that is not less than 1-1/2 inches long, and as follows:

1. Weld Diameter: 5/8 inch , nominal.

2. Weld Spacing: Weld edge and interior ribs of deck units with a minimum of two welds per deck unit at each support. Space welds 18 inches (450 mm) apart, maximum] [12 inches (305 mm) apart in the field of roof and 6 inches (150 mm) apart in roof corners and perimeter, based on roof-area definitions in FMG Loss Prevention Data Sheet 1-28] [as indicated].

3. Weld Washers: Install weld washers at each weld location.

B. Side-Lap and Perimeter Edge Fastening: Fasten side laps and perimeter edges of panels between supports, at intervals not exceeding the lesser of 1/2 of the span or 18 inches, and as follows:

1. Mechanically fasten with self-drilling, No. 10 diameter or larger, carbon-steel screws.
2. Mechanically clinch or button punch.

3. Fasten with a minimum of 1-1/2-inch long welds.

C. End Bearing: Install deck ends over supporting frame with a minimum end bearing of 1-1/2 inches, with end joints as follows:

1. End Joints: Lapped 2 inches minimum

D. Miscellaneous Roof-Deck Accessories: Install ridge and valley plates, finish strips, end closures, and reinforcing channels according to deck manufacturer's written instructions. Weld or mechanically fasten to substrate to provide a complete deck installation.

1. Weld cover plates at changes in direction of roof-deck panels, unless otherwise indicated.

E. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

3.4 FIELD QUALITY CONTROL

A. Testing Agency: Engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Field welds will be subject to inspection.

C. Testing agency will report inspection results promptly and in writing to Contractor and Architect.

D. Remove and replace work that does not comply with specified requirements.

E. Additional inspecting, at Contractor's expense, will be performed to determine compliance of corrected work with specified requirements.

3.5 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on both surfaces of deck with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Repair Painting: Wire brush and clean rust spots, welds, and abraded areas on both surfaces of prime-painted deck immediately after installation, and apply repair paint.

1. Apply repair paint, of same color as adjacent shop-primed deck, to bottom surfaces of deck exposed to view.

C. Provide final protection and maintain conditions to ensure that steel deck is without damage or deterioration at time of Substantial Completion.

END OF SECTION 05310

SECTION 05400 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

1.01 SUMMARY
A. Section includes exterior roof purlins.

1.02 DEFINITIONS
A. Minimum Uncoated Steel Thickness: Minimum uncoated thickness of cold-formed framing delivered to the Project site shall be not less than 95 percent of the thickness used in the cold-formed framing design. Lesser thicknesses shall be permitted at bends due to cold forming.

B. Producer: Entity that produces steel sheet coil fabricated into cold-formed members.

1.03 PERFORMANCE REQUIREMENTS
A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated.
   1. Design Loads: As indicated.

   2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
      a. Roof Purlins: Vertical deflection of 1/240 of the span.

   3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F (67 deg C).

1.04 SUBMITTALS
A. Product Data: For each type of cold-formed metal framing product and accessory indicated.

B. Mill certificates signed by steel sheet producer indicating steel sheet complies with requirements.

C. Product Test Reports: From a qualified testing agency indicating that each of the following complies with requirements, based on comprehensive testing of current products:

   1. Mechanical fasteners.

   2. Miscellaneous structural clips and accessories.

D. Research/Evaluation Reports: Evidence of cold-formed metal farming's compliance with building code in effect for Project, from a model code organization acceptable to authorities having jurisdiction.

E. Shop Drawings: Show location, pitch, span, camber, configuration, and spacing for roof framing members required; sizes and stress grades of members; splice details; type, size, material, finish, design values, orientation, and location of metal connector plates; and bearing details.

1.05 QUALITY ASSURANCE
A. Installer Qualifications: An experienced installer who has completed cold-formed metal framing similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

B. Mill certificates signed by steel sheet producer indicating steel sheet complies with requirements, including uncoated steel thickness, yield strength, tensile strength, total elongation, chemical requirements, and galvanized-coating thickness.

C. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated, as documented according to ASTM E 548.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect cold-formed metal framing from corrosion, deformation, and other damage during delivery, storage, and handling.

B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide cold-formed metal framing by one of the following:
   1. California Metal Systems, Inc.
   2. Clark Steel Framing Industries.
   3. Dietrich Industries, Inc.
   4. Studco of Hawaii, Inc.

2.02 MATERIALS

A. Steel Sheet: ASTM A 653/A 653M, structural steel, zinc coated, of grade and coating as follows:
   1. Grade: 33 (230) for minimum uncoated steel thickness of 0.0428 inch (1.09 mm) and less; 50 (340) for minimum uncoated steel thickness of 0.0538 inch (1.37 mm) and greater.
   2. Coating: G90 (Z275).

2.03 ROOF FRAMING

A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, unpunched, complying with ASTM C 955.

2.04 FRAMING ACCESSORIES

A. Fabricate steel-framing accessories of the same material and finish used for framing members, with a minimum yield strength of 33,000 psi (230 MPa).

2.05 ANCHORS, CLIPS, AND FASTENERS

A. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123.

B. Mechanical Fasteners: Corrosion-resistant-coated, self-drilling, self-threading steel drill screws.
   1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

2.06 MISCELLANEOUS MATERIALS

A. Galvanizing Repair Paint: SSPC-Paint 20 or DOD-P-21035.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine supporting substrates and abutting structural framing for compliance with requirements for installation tolerances and other conditions affecting performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION, GENERAL

A. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.

B. Install cold-formed metal framing according to ASTM C 1007, unless more stringent requirements are indicated.

C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
   1. Bolt members at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch (1.6 mm).

D. Install cold-formed metal framing and accessories square and true to line, and with connections securely fastened, according to manufacturer's written recommendations and requirements in this Section.
   1. Cut framing members by sawing or shearing; do not torch cut.

   2. Fasten metal roofing to cold-formed metal framing members with screws, as standard with fabricator. Wire tying of framing members is not permitted.
      a. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.

E. Install framing members in one-piece lengths, unless splice connections are indicated for track or tension members.

F. Erection Tolerances: Install cold-formed metal framing accurately and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet (1:960) and as follows:
   1. Space individual framing members no more than plus or minus 1/8 inch (3 mm) from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

3.03 ROOF MEMBER INSTALLATION

A. Install roof framing members according to Shop Drawings and requirements in this Section.

B. Roof Member Spacing: As indicated.

C. Do not alter, cut, or remove framing members.

D. Erect roof framing members parallel to each other, align, and accurately position at spacings indicated.

E. Erect roof structure without damaging framing members or connections.

3.04 FIELD QUALITY CONTROL

A. Remove and replace Work that does not comply with specified requirements.

3.05 REPAIRS AND PROTECTION

A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with two coats of galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.

B. Touchup Painting: Wire brush, clean, and paint scarred areas, welds, and rust spots on fabricated and installed prime-painted, cold-formed metal framing. Paint framing surfaces with same type of shop paint used on adjacent surfaces.

C. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, which ensure cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION

SECTION 06200 - CARPENTRY

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

As specified in Section 01010.

1.02 SUMMARY

A. Provide all finish carpentry work, complete, including, but not limited to, the following items.

1. All finish carpentry work, blocking, etc.

2. Millwork.

3. Exterior trims, fascias, etc.

4. Concealed wood nailers, blocking, etc.

5. Rough hardware

6. Install finish hardware and any other items specified to be installed under this section but furnished under other sections of these specifications.

B. All lumber shall be treated as specified in Section 06311 - PRESERVATIVE TREATED LUMBER.

C. All finished millwork and casework shall be painted and back-primed as specified in Section 09901 – PAINTING.

1.03 QUALITY ASSURANCE

A. Grading Marks: Factory mark each piece of lumber and plywood with type, grade, mill, and grading agency identification. Certificate of inspection and grading by a recognized agency may be submitted with each shipment in lieu of factory marking, at Contractor's option.

1.04 SUBMITTALS

A. Shop Drawings: Submit shop drawings to University showing location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components. Submit shop drawings for the following:

1. Millwork

1.05 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

B. Do not deliver finish carpentry materials, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

PART 2 - PRODUCTS

2.01 MATERIALS

A. General:

1. Nominal sizes are indicated, except as shown by detailed dimensions. Provide dressed or worked and dressed lumber, as applicable, manufactured to the actual sizes as required by PS 20 or to actual sizes and pattern as shown, unless otherwise indicated.

2. Moisture Content of Softwood Lumber: Provide kiln-dried lumber having a moisture content from time of manufacture until time of installation not greater than values required by the applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

3. Moisture content of HardwoodLumber: Provide kiln-dried lumber having a moisture content from time of manufacture until time of installation within a range of 8% to 13% for individual pieces, and an average of 11% for the entire lot.

B. Interior Finish Carpentry (including millwork):

1. Wood Trim: Surfaced S4S, clear, Douglas Fir, 'B' or better, or similar species, for opaque finish, in sizes as indicated on the drawings..

C. Exterior Trims, Fascias, etc.:

1. Surfaced S4S, clear, Douglas Fir, B or better, or similar species, for opaque finish, in sizes as indicated on the drawings.

D. Plywood Floor Decking:

1. 3/4" thick, treated, APA High Density Overlay (HDO) with skid-resistant screen grid surface.

E. Solid Wood Trim: Douglas Fir, B or better for opaque finish.

F. Casework: Fabricate utilizing 3/4" thick medium density fiberboard (MDF) with plastic laminate exposed faces and edges and white melamine interior finish. Doors shall be laminated on the interior with plastic laminate cabinet liner.

G. Plastic Laminate: Unless noted otherwise, sheet plastic shall be .049" ± thick plastic laminate, General Purpose Grade.

1. Sheet plastics shall be standard finish, solid color grade, high pressure plastic laminate. Sheet plastic shall be in colors as scheduled or selected by the University from the manufacturer's catalogs or sample colors.

2. Backing sheet shall be high pressure laminate, minimum thickness of .020" for unsupported areas exceeding 4 s.f. Core shall be not less than 3/4".

3. Adhesives shall be waterproof as recommended by manufacturer for substrate material. Installation shall be in strict accordance with the manufacturer's written directions.

4. Sheet plastic shall be as manufactured by Formica, Micarta, Wilson Art, or an approved equal.

E. Exterior Wood Guardrails:

1. Posts, Rails and Pickets: Douglas Fir, generally clear, vertical grain, 'C' or Better, S4S, selected for straightness, minimal warping, no wanes or checks, minimal tight knots.

2. Welded wire mesh: 2" x 4" nom. grid, 16 ga., hot-dip galvanized welded wire mesh.

F. Rough Carpentry for Nailers, Blocking, Etc.:

1. Concealed Lumber: Douglas Fir "Construction Grade", S4S, selected for straightness and minimal warping.

F. Miscellaneous Materials:

1. Damproofing: Apply a continuous strip of 40 pound asphalt saturated felt under wood members bearing on concrete or masonry and 15 pounds in other non-bearing concrete areas.

2. Fasteners and Anchorages: Provide nails, screws and other anchoring devices of the proper type, size, material and finish for application indicated to provide secure attachment and concealed where possible.

a. Provide all fasteners and anchorages with a hot-dipped zinc coating (ASTM A 153).

2.02 WOOD PRODUCT QUALITY STANDARDS

A. Softwood Lumber Standards: Comply with PS 20 and with applicable grading rules of the respective grading and inspection agency for the species and product indicated.

B. Plywood Standards: Comply with PS 1 for softwood plywood; PS 51 for hardwood plywood.

C. Hardwood Lumber Standards: Comply with National Hardwood Lumber Association (NHLA) rules.

2.03 WOOD TREATMENT FOR MILLWORK AND CASEWORK

A. Preservative Treatment: Following basic fabrication, provide a dip treatment of finish carpentry items in accordance with Section 06311. Apply brush coat on surfaces cut after treatment. Allow preservative treatment to fully cure prior to application of any finishes or adhesives.

2.04 FABRICATION

A. Millwork shall be fabricated at the mill in accordance with detailed drawings, in as large units as practicable for shipment and introduction into permanent position in an orderly arrangement for neat and rigid field assembly. All units when erected in place shall be straight, square, plumb, level and free from damage and tool marks; all units shall be belt-sanded at mill and hand-sanded smooth immediately following installation in place. All joints shall be made up with waterproof glue. Nails and screws shall be placed in concealed surfaces to the maximum extent possible.

B. Wood casework with opaque or clear finish shall be as follows:

1. Cabinet Construction: 3/4" MDF throughout unless noted otherwise. Flush overlay type construction; plastic laminate exterior finishes. Conform with AWI Custom grade construction standards.

2. Cabinet Doors and Exposed Cabinet Sides: 3/4" MDF with plastic laminate exterior face and edges. Interior of doors shall be plastic laminate. Interiors of cabinets shall be white melamine finish.

3. Shelves shall be 3/4" MDF with hardwood edges banded all sides.

4. Drawers shall 3/4" MDF faced with plastic laminate. Drawer boxes shall be 5/8" melamine, white, sides and 1/4" melamine, white, bottom.

C. Plastic laminate finished countertops shall be as follows:

1. Exposed Surfaces: Provide high pressure laminate in grades indicated for the following types of surfaces:

a. Horizontal and Vertical Surfaces: GP-50 (0.049" nominal thickness).

PART 3 - EXECUTION

3.01 INSTALLATION

A. Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate work with minimum of joints or optimum jointing arrangements, or which are of defective manufacture with respect to surfaces, sizes or patterns.

B. Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level countertops; and with 1/16" maximum offset in flush adjoining 1/8" maximum offsets in revealed adjoining surfaces.

C. Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

D. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum lengths of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners, to product tight fitting joints with full surface contact through-out length of joint. Use scarf joints for end-to-end joints.

1. Make exterior joints water-resistant by careful fitting.

E. Anchor finish carpentry work to anchorage devices or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners as required, use fine finishing nail for exposed nailings, countersunk and filled flush with finished surface.

3.02 ADJUSTMENT, CLEANING, FINISHING AND PROTECTION

A. Clean hardware, lubricate and make final adjustments for complete and proper operation.

B. Protection: Installer of architectural casework shall advise Contractor of procedures required to protect architectural casework during remainder of construction period to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION

SECTION 06311 - PRESERVATIVE TREATED LUMBER

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Furnish preservative treated lumber for all lumber materials specified in Section 06200 CARPENTRY or as shown on the drawings.

1.02 SUBMITTALS

A. A Certificate of Treatment shall be issued to the HHSC showing compliance with these specifications, both as to kiln drying and type of treatment performed, including dip treatment.

B. The Contractor shall submit a written certification to the University that all wood used and left in place on this job was treated in accordance with these specifications and that all cuts and penetrations made subsequent to the treatment were coated with preservatives in compliance with Sub-section 3.04.

1.03 GUARANTY

A. The Contractor shall submit to the HHSC a written guaranty that he will replace all treated wood which is attacked by subterranean termites within a period of two years from the date of project acceptance up to a total cost of $5,000.00 as verified through a cost breakdown in accordance with the General Conditions or is attacked by dry wood termites or deteriorates due to dry rot within the first five years of the project acceptance date. The Surety shall not be held liable beyond two (2) years of the project acceptance date.

PART 2 - PRODUCTS

2.01 GENERAL

A. All wood treated with oil-borne preservatives shall be kiln-dried before treatment to an average moisture content of 12% to 15% per AWPA standards.

B. All wood treated with water-borne preservatives (with the exception of Hi-Bor (SBX) treated wood) shall be air dried or kiln-dried before treatment to an average moisture content of 28% or less per AWPA standards. Wood having a moisture content higher than 28% is acceptable when treating with Hi-Bor (SBX).

C. All wood shall be treated as noted below except all-heart redwood.

D. Lumber shall be milled to finish size and shape prior to treating, and it shall be treated before assembly. Plywood may be treated in regular panel sizes.

2.02 MATERIALS

A. Water-Borne-Preservatives shall be Wolman CCA, Osmose CCA, Supatimber CCA or Chemonite ACZA or Hi-Bor SBX in accordance with American Wood Preservers Association (AWPA) Standard P5 - Standards for Waterborne Preservatives. Preservatives shall be EPA registered.

B. Water-Borne Preservatives used to coat end cuts and penetrations within CCA or ACZA treated wood shall be Wolman (R) Treat 00, W (R) Clear or Osmose Special K-33 Preservative. Preservatives shall be EPA registered.

C. Water-Borne Preservatives used to coat end cuts and penetrations in HI-BOR (SBX) treated wood shall be Clear-Bor F.T. or an equivalent solution of 10% inorganic boron. The end coating solution must be approved and labeled by the Environmental Protection Agency and must be accepted by the State of Hawaii, Department of Agriculture Pesticide Division for this purpose. The treatment solution shall have a colorant added which will tint the wood surface to indicate treatment.

D. Oil-Borne-Preservatives shall be TRIB II (0.50% by weight chlorpyrifos, 0.75% by weight 3-iodo-2-propynyl butyl carbamate [IPBC]), or DAP Inc. "Premium Woodlife" (for dip treatment only), manufactured to the manufacturer's quality control and EPA registered. The solvent used in formulating the preservative solution shall meet the requirements of AWPA hydrocarbon solvent Type C, Standard P9, Paragraph 3.1.

PART 3 - EXECUTION

3.01 WOOD PRESERVATION WITH WATER-BORNE PRESERVATIVES

A. Unless otherwise stipulated, all lumber and plywood shall be pressure treated.

B. Lumber and plywood, except as stipulated in Paragraphs 3.02 and 3.03 below, shall be treated with Wolman CCA, Osmose CCA or Supatimber CCA in accordance with American Wood Preservers Bureau Standards AWPB APPROVED (Hawaii Use only) or with Chemonite ACZA in accordance with American Wood Preservers Bureau Standards AWPB LP-2 or Hi-Bor (SBX), using the full cell pressure method in conformance with AWPA Standard C1-93. Lumber and plywood treated with Hi-Bor (SBX) shall attain the following penetration and retention requirements:

1. Lumber:

a. Penetration requirement for lumber under 5 inch nominal thickness: 0.40 inch in heartwood and 100% in sapwood.

b. Penetration requirement for lumber 5 inch nominal thickness and over: 0.50 inch in heartwood and 100% in sapwood.

c. Retention requirement for lumber shall be a minimum of 1.25% (by weight) or 0.35 pounds per cu. ft. in an assay zone of 0.0 - 0.6 inches.

2. Plywood:

a. Penetration requirement for plywood shall be identical to that noted in AWPA C9-90.

b. Retention requirement for plywood shall be a minimum of 1.25% (by weight) or 0.35 pounds per cu. ft. through the full thickness.

C. All 1" and 2" lumber and all plywood shall be dried to a moisture content of 19% or less after treatment. All treated lumber shall be fully cured and dried prior to application of finish coating or adhesives.

3.02 WOOD PRESERVATION BY PRESSURE TREATMENT WITH OIL-BORNE PRESERVATIVES

A. Exposed lumber 1-1/2" (net thickness) and over that will be unpainted or receive a clear finish shall be unincised and pressure treated in accordance with the process specifications noted in the latest edition of AWPA Standard C-1, C-2 and C-9.

B. Treated wood shall attain the following net retention requirements:

1. TRIB II: 0.0175 lbs. of Chlorpyrifos per cu. ft. of wood, 0.035 lbs of 3-Iodo-2 propynyl butyl carbamate per cu. ft. of wood.

3.03 WOOD PRESERVATION BY DIP TREATMENT

A. All finish lumber under 1-1/2" net thickness (except hardwood flooring); doors; finish plywood; and mill work items, such as for cabinet work, shelving and similar wood work that will be exposed to view in the finished work shall be immersion treated for a minimum period of 15 minutes in any of the preservatives listed in Section 2.02 E. Oil-Borne Preservatives above in accordance with the requirements of the National Wood, Window and Door Association (NWWDA) Industry Standard I.S. 4-81 or in a solution of 1 quart chlorpyrifos in 55 gallons of a 0.50% IPBC solution.

B. Doors shall be treated after manufacture.

3.04 INSTALLATION

A. Wherever it is necessary to end cut or penetrate into (such as by drilling or notching) treated wood on the job, all such cuts and penetrations shall be treated in accordance with AWPA Standard M4-84 using two heavy brush coats of a treating solution as noted in the following schedule. Exception: Cuts and penetrations made in Hi-Bor (SBX) treated wood 2 inches or less in nominal thickness need not be field treated.

INITIAL WOOD TREATMENT	FIELD TREATMENT
Wolman CCA	Wolman (R) Treat 00
Osmose CCA	Osmose Special K-33 Preservative
Supatimber CCA	Wolman (R) Treat 00 or Osmose Special K-33 Preservative
Chemonite ACZA	Wolman (R) Treat 00
TRIB II	Wolman (R) Clear
Hi-Bor (SBX)	Clear-Bor F.T. (with colorant added)

B. Hi-Bor (SBX) treated wood shall not be used in areas exposed to direct precipitation (e.g. exposed decking, trellises, fencing, etc.) unless painted or covered with a finishing material.

END OF SECTION

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

SECTION 07110 - MEMBRANE WATERPROOFING

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish all labor and materials to install below grade membrane waterproofing system complete as indicated on the drawings and/or specified herein.

1.02 GENERAL REQUIREMENTS

A. The Contractor shall be an approved applicator of the manufacturer whose membrane waterproofing system he proposes to apply. He shall be completely familiar with the products, equipment and the specified requirements and methods needed for the proper installation of the membrane waterproofing system.

B. The Contractor shall notify the local authorized representative of the manufacturer whose waterproofing system he proposes to use of his intent and shall arrange for the latter to attend a pre-construction meeting and to inspect the surfaces before application, at the actual start of application, at least once weekly during application and at job completion.

1.03 SUBMITTALS

A. The Contractor shall submit the following per Section 01300 – SUBMITTALS for approval:

1. Prior to the start of work, a signed certificate from the membrane waterproofing manufacturer stating that the Contractor is an approved applicator of his assemblies.

2. Manufacturer's material specifications, application instructions and Material Safety Data Sheets for the membrane waterproofing system and materials which he proposes to use.

3. Guaranty as noted under Section 1.04.

1.04 GUARANTY

A. The Contractor shall execute to the State a 2-year written guaranty that the installation will be watertight and that any leaks which develop during that period which are not due to improper use or willful damage will be repaired at no cost to the State. This extended guaranty shall supersede the conditions of the General Conditions.

B. The Manufacturer of the waterproofing system shall provide to the State a 20-year, material and labor warranty that the waterproofing system, as installed by the Contractor shall remain watertight for the duration of the warranty period.

1.05 PRODUCT HANDLING

A. Delivery of Materials: All materials shall be delivered to the site in the original unbroken manufacturer's wrapping material and containers with the original labels thereon intact.

B. Storage of Materials at Job Site:

1. Materials shall be stored in accordance with the manufacturer's recommendations.

2. Materials which absorb moisture shall be kept under waterproof cover. Wet materials shall not be permitted to be used on the job and shall be removed promptly from the site.

C. Cautions and Warnings:

1. Materials containing solvents shall be stored in a dry cool area with proper fire and safety precautions.

2. Vapors from bonding adhesives, lap cements, membrane material products, etc., may be harmful if breathed in. They may also be flammable. The Contractor shall consult container labels and Material Safety Data Sheets for specific information and shall employ the necessary safety precautions needed for the products being used.

1.06 TESTING

A. Membrane waterproofing system shall be subject to compliance testing by the Manufacturer’s Technical Representative and Officer-in-Charge to ensure proper thickness of application.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Fluid Applied Membrane System (Cold-Applied for below grade):

1. Material: 2-Part, cold spray-applied, VOC free, fully self-adhered and self-terminating, monolithic waterproofing membrane, having the following physical properties:

a.	Elongation:	ASTM D412	2124%
b.	Tensile Strength:	ASTM D412	363 psi
c.	Fire:	FM 4470	Class 1
d.	Water Vapor Transmission:	ASTM E96BW	0.01 perm-inches
e.	Thickness:	80 mil min.	

2. Products of the following manufacturers are acceptable provided they meet the materials and construction specified:

   a. Neptune Coatings Corp.: WetSuit

   b. Triton Incorporated: Trito Flex

B. Surface primers, sealants, flashings, reinforcing sheets, adhesives, asphalts, welding agents, etc. shall be as recommended by the membrane manufacturer for the specific project installation and shall be compatible with the substrate and membrane waterproofing with which it is in contact.

D. Protective layer for membrane waterproofing applied on vertical surfaces below grade shall be of inert material, compatible with the waterproofing membrane over which it is overlaid and acceptable to the membrane manufacturer,

and/or

E. Composite drainage sheet, pre-manufactured sheet drainage panel with a geotextile facing. A three-dimensional, non-biodegradable, non-perforated, molded plastic core with a non-woven, needle-punched, geotextile facing, factory-attached to one side, and a plastic film adhered to the other side to prevent the drainage core from die cutting into the waterproofing. Drainage sheet shall be as manufactured and/or as approved by the membrane waterproofing manufacturer.

PART 3 - EXECUTION

3.01 INSPECTION OF SURFACES

A. Before the work is started, the Membrane Waterproofing Installer, together with the Contractor, Contracting Officer and Manufacturer's Technical Representative, shall examine the surfaces onto which membrane waterproofing is to be applied. Should any condition be found unsuitable, no work shall be done until the unsatisfactory condition has been corrected and is acceptable to the Membrane Waterproofing Installer. Proceeding with the work will imply acceptance of the conditions by the Membrane Waterproofing Installer.

B. Materials used to patch substrate defects shall be compatible with the substrate and the membrane waterproofing.

3.02 INSTALLATION

A. The procedures and details for the application of waterproofing membranes, especially such items as the patching of substrate defects; surface cleaning and preparation; surface priming; installation of bond breakers at joints; installation of inorganic cant strips at vertical and horizontal corners; mixing of components; number of membrane layers or coats; embedment of reinforcing sheets; details at edges, corners, laps, penetrations and discontinuities; sealing and/or fastening of the top edge of the membrane placed on vertical surfaces; protection of the

membrane; repair of damage; etc., shall be in strict accordance with the manufacturer's printed instructions and recommendations.

B. Adjoining surfaces which are not to receive waterproofing shall be protected to prevent spillage of liquid materials outside of the membrane area.

C. A protective layer as specified in Sub-paragraph 2.01 F. above shall be provided over membranes on vertical and horizontal surfaces below grade.

D. Care shall be taken to protect under-tile/stone membranes from puncture or damage at all times until flooring has been set.

E. Repair of any damage to the membrane waterproofing shall be in strict accordance with the manufacturer's recommendations.

3.03 CLEAN-UP

A. The installer shall take care to keep surfaces that will be exposed clean. At the completion of work, he shall clean all surfaces onto which waterproofing materials have been dropped, spattered, or brushed and repair damages or defects for which he is responsible. He shall also remove and properly dispose of leftover materials and debris.

END OF SECTION

SECTION 07232 - BATT INSULATION

PART 1 - GENERAL

1.01 SUMMARY

Furnish and install batt insulation and liner, as indicated on drawings and/or as specified herein.

1.02 SUBMITTALS

A. Manufacturer's certificates of conformance.

B. Manufacturer's descriptive data.

1.03 QUALITY CONTROL

The personnel performing the installation shall have been trained and instructed on the proper installation of the liner and insulation by the manufacturer. All work shall be complete.

1.04 DELIVERY AND STORAGE

Deliver materials to the site in the original sealed wrapping bearing manufacturer's name and brand designation, specification number, type, grade, R-value, and class. Store and handle to protect materials from damage. Do not allow insulation materials to become wet or soiled. Comply with manufacturer's recommendations for handling, storage, and protection during installation.

1.05 WARRANTY

Provide manufacturer’s standard warranty for all materials. Contractor shall warrant installation for 1-year from date of substantial completion.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Batt Insulation (Underside of Roof): ASTM C-665, Type I, ASTM E119, ASTM E136, unfaced fiberglass sound attenuation batt insulation, having a flame spread surface burning characteristic and smoke developed rating of 10, as tested per ASTM E84. Insulation shall be approximately 7" thick, R-30.

PART 3- EXECUTION

3.01 PREPARATION OF SURFACES:

Surfaces shall be clean, dry, and free of any projections.

3.02 INSTALLATION:

Install to underside of roofing, per manufacturer’s instructions and recommendations. Install batt insulation to friction fit between purlins. Installation of metal roofing the top. Coordinate installation of roofing, insulation to assure insulation is protected from inclement weather at all times.

END OF SECTION

SECTION 07410 - PERFORMED METAL ROOFING

PART 1 - GENERAL

1.01 SUMMARY

A. Provide all labor, materials, equipment, tools, etc. for installation of preformed metal roofing as indicated on the drawings and/or specified herein.

1.02 COORDINATION WITH OTHER SECTIONS

A. Coordinate installation of metal edging, gutters, counterflashing, etc. with FLASHING AND SHEET METAL Section.

1.03 GENERAL REQUIREMENTS

A. The Roofing Contractor shall be an approved installer of the manufacturer whose roofing system he proposes to install and his men shall have been instructed by that manufacturer (or their representative or independent roofing auditor/inspector) in the proper installation of his system.

B. The Roofing Manufacturer's Representative and their independent roofing auditor/inspector (where applicable) shall be competent, thoroughly trained and experienced in the work and shall be completely familiar with the products, equipment and the specified requirements and methods needed for the proper installation of the roofing system and flashings.

C. The Contractor, Roofer and authorized Roofing Manufacturer's Representative and/or their independent roofing auditor/inspector shall attend a pre-construction conference to review preparation and installation procedures for the roofing system and coordinating and scheduling required with related work. They shall also inspect the roof installation at the following times:

1. At the start of the roofing installation.

2. Minimum of two times during the roofing installation.

3. At job completion.

(Note: It shall be the responsibility of the Contractor to notify the Roofer, Manufacturer's Representative or their independent roofing auditor/inspector (where applicable) and the Contracting Officer of his schedule of operations. Parties shall be notified at least 5 days in advance to enable their attendance.

1.04 DRAWINGS

A. Should the Manufacturer's warranty requirements necessitate different drawings and details exceeding the requirements of those shown or specified, provide shop drawings and field adjustments at no cost to the HHSC.

1.05 SUBMITTALS

A. The Contractor shall submit the following to the Contracting Officer:

1. Prior to the start of any work, a signed certificate from the proposed roofing manufacturer showing that the roofer is a trained and authorized applicator of his roofing system.

2. Detailed roofing inspection reports by the Manufacturer's representative or their independent auditor/inspector (twice during the roof application and one at job completion).

3. Manufacturer's product literature.

4. Shop drawings showing roofing installation and fabrication details.

5. Warranties and Guaranties as noted under Section 1.06.

6. Sample material and color selection charts.

7. Design Wind Loads: Submit roof system manufacturer's minimum design wind load calculations according to ASCE 7, Method 2 for components and cladding.

8. Submit letter from roof system manufacturer stating the requirements for wind uplift resistance for this project as per local building code and certifying the roof system will comply with stated requirements.

1.06 WARRANTIES AND GUARANTIES

A. The Contractor shall furnish to the Contracting Officer the following:

1. A written guaranty on the roofing system for a 2-year period after the Project Acceptance Date. The guaranty shall provide the following at no cost to the HHSC.

a. Repair of roofing and flashings as necessary to seal leaks which are attributable to faulty materials and/or workmanship;

b. Repair and replacement of damage to the building and/or its finishes, equipment and/or furniture when occasioned by such leaks; and

c. Inspection of the roofing and flashings together with the Contracting Officer or his designated representative, on or about the 1st and 2nd anniversaries of the Project Acceptance Date, and repair or replacement or roofing and/or flashing as necessary to correct and deficiencies in workmanship or materials. Such repairs pr replacement of roofing and/or flashings shall be done in a manner which will preserve the integrity of the roofing membrane.

2. A 10-year roof system warranty and flashing endorsement from the roofing manufacturer. The warranty shall cover both material and workmanship and shall provide that in the event of failure due to normal weathering and wind conditions during the remainder of the warranty period (the 3rd through 10th years after the Project Acceptance Date), the roofing system manufacturer will make repairs as necessary to maintain the roof in a watertight condition at no cost to the State. The warranty shall also state the manufacturers acceptance and certification that the roof has been installed in accordance with the manufacturer's instructions and that the owners personnel have been properly instructed in its maintenance.

3. A signed certificate from the proposed roofing manufacturer naming their representative and their independent roofing auditor/inspector (where applicable) and showing that he is authorized to act on and make commitments in their behalf.

4. 5 complete sets of the following information for the roofing system he proposes to use. Submittals shall be marked-up as necessary to clearly identify the item being submitted and its conformance to the requirements of these specifications.

    a. Manufacturer's material product data.

    b. Detailed installation drawings and specifications for the proposed roofing system. Locations of all vents, mechanical equipment, etc.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Metal roofing system shall be pre-formed, standing seam, 22 gauge galvanized sheet steel, conforming with ASTM A-792 AZ-50, secured by hidden clips which allow for expansion and contraction. Panel seams shall be interlocking, 1-1/2" to 2" high and spaced 12" o.c. Panels shall be continuous from ridge or hip to eave or valley or transition without joints.

B. Metal roofing panels shall be coated with 1.0 mil fluoropolymer or fluoroceram coating system on the exterior side with 1.0 mil polyester off-white backer. Color shall be as selected by the Contracting Officer from manufacturer’s full range of standard colors.

C. Metal edge flashing and wall flashing shall be furnished under Section 07660 - FLASHING AND SHEET METAL, and shall be finished same as for metal roofing.

D. Closures shall be standard manufactured closed cell neoprene, as required.

E. Exposed fasteners shall be self-tapping stainless steel screws with combination metal and neoprene washers with hex head and sealing washer painted to match metal roofing color. Concealed fasteners shall be as recommended by the manufacturer.

F. Components: Provide as required for a complete roofing/flashing system, including trim, copings, flashing, closure strips, etc.

G. Cut edge treatment: Provide a manufacturer approved clear polymer sealer to all cut edges through the metal panels, unless prefinished or coated by the manufacturer.

H. Manufacturer: Subject to compliance with the specified requirements, the following metal roofing products are acceptable for use on this project. The products of other manufacturers are acceptable provided they meet or exceed the material and construction requirements specified herein and are prequalified as required by the General Conditions for requests for substitutions and accepted by written addendum.
   1. Custom Lock 2A as manufactured by HPM Custom Metal Roofing.

   2. MAC 200 as manufactured by Kloeckner Metals.

   3. Una Clad UC as manufactured by Elevate.

   4. Tite-Loc as manufactured by Pac-Clad.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. Work shall be performed by skilled workmen in conformance with approved commercial practice and/or manufacturer's instructions to and recommendations to insure weather tightness.

B. Insert closure strip where indicated on drawings. Apply a bead of adhesive sealant to all sides of closure before installation per roofing manufacturer's recommendations.

C. Coordinate installation of metal roofing with gutters and downspouts, specified in Section 07600-FLASHING AND SHEET METAL.

D. Manufacturers technical representative shall conduct inspection of roofing installation to ensure compliance with these specifications and conformance with manufacturers installation instructions. Upon completion of the roof system installation, the manufacturer's representative shall provide written certification to the Contracting Officer that roofing has been installed in accordance with manufacturer's instructions and is free of defects in material and workmanship.

3.02 CLEAN-UP

Roofing shall be swept clean of metal filings at the end of each day to prevent rusting and discoloration of roofing. Touch-up paint shall not be used without the expressed permission of the Contracting Officer or Manufacturer.

END OF SECTION

SECTION 07600 - FLASHING AND SHEET METAL

PART 1 - GENERAL

1.01 SUMMARY

A. Provide all labor, materials, equipment, tools, etc. for installation of flashing and sheet metal work as indicated on the drawings and/or specified herein.

1.02 COORDINATION WITH OTHER SECTIONS

Coordinate installation of sheet metal work with Section 07410: PREFORMED METAL ROOFING.

1.03 SUBMITTALS:

A. Shop Drawings
:
Submit shop drawings to the Contracting Officer for approval prior to fabrication. Indicate on the shop drawings thickness, dimensions, fastenings, and anchoring methods, expansion joints and other provisions necessary to provide for thermal expansion and contraction.

B. Manufacturer's Specifications:

Submit manufacturer's technical specifications to the Contracting Officer for approval for items which are factory fabricated.

1.04 QUALITY ASSURANCE:

Workmanship shall conform to the quality, procedures and the methods recommended by the National Association of Sheet Metal Contractors and/or Sheet Metal and Air Conditioning Contractors National Association, Inc. (SMACNA).

1.05 GUARANTEE:

A. The Contractor shall issue a written guarantee to the HHSC that all work executed under this Section shall be free from defects of materials and workmanship for a period of two (2) years from final acceptance of the building. The following types of failure will be adjudged as defective work:

1. Leaking, failure to stay in place, undue expansion, lifting, deformation, loosening, splitting of seams.

2. The guarantee shall provide the following at no additional cost to the HHSC:
   a. Repair of flashing as necessary to seal leaks which are attributable to faulty materials and/or workmanship.

   b. Repair and replacement of damage to the building and/or its finishes, equipment and/or furniture when occasioned by such leaks, and

   c. Inspection of the flashings together with the Contracting Officer or his designated representative, on or about the 1st and 2nd anniversaries of the Project.

B. The guarantee shall be signed jointly by the Sheet Metal Subcontractor and the General Contractor.

1.06 STORAGE AND HANDLING

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

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Asbestos Prohibition: No asbestos containing materials shall be used under this section. The contractor shall insure that all materials incorporated in the project are asbestos-free.

B. Exposed flashing, and metal edging for metal roofing: 22 gauge galvanized sheet steel, of same material and finish to match preformed metal roofing.

C. Exposed flashing for metal siding: 24 gauge aluminum zinc alloy-coated sheet steel, of same material and finish to match preformed metal siding, conforming to ASTM A 792, AZ-50.

D. Plastic cement shall conform to F.S. SS-C-153, Type I.

E. Fasteners shall be manufacturer's non-corrosive type, Series 304 or 316 stainless steel, with self sealing neoprene gasketed heads.

F. Stainless steel wire cloth strainers shall be series 304 or 316, No. 9 stainless steel wire for downspout connector head covers at gutters, formed as shown, and removable.

G. Finish: Shop and field paint all surfaces as specified in painting section 09901.

H. Gutters and Hangers: 24 gauge type 304 stainless steel, 2B finish. Fabricate in minimum 8’ sections. Hangers shall be 1/8” x 1-1/2” wide stainless steel, to match gutters. Fabricate and install per SMACNA standards.

I. Downspouts: Schedule 40 polyvinylchloride (PVC). Hangers shall be 24 gauge type 304 stainless steel, with stainless steel anchors as indicated on drawings. Fabricate and install per SMACNA standards.

J Flashing Tape: Shall be self-sticking rubberized asphalt with and aluminum foil facing for application with vent flashings to seal pipe penetrations and/or where indicated on the drawings.

2.02 PREFABRICATED PIPE FLASHING

A. Provide prefabricated pipe flashing system for pipe penetrations through metal roofing, consisting of molded EPDM, compounded with Carbon Black and other additives for maximum weatherability, resistant to ozone and ultra violet light.

B. Products and Manufacturers: Provide one of the following products or an approved equal:
   1. "Master Flash" by Mac Steel Service Centers America

   2. "Dektite" by John Deks, Ltd. (UK).

C. Fasteners: Self-drilling series type 304 or 316 stainless steel as provided by flashing manufacturer, for securing flashing ring to metal roofing.

PART 3 - EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. Surface to which sheet metal is to be applied shall be even, smooth, sound, thoroughly clean and dry, and free from defects that might affect the application. Report any unsatisfactory surfaces to the Engineer. In the absence of such a report, the Contractor shall be held responsible for the finished product.

B. All accessories or other items essential for the completeness of the sheet metal installation, though not specifically indicated on the drawings or specified, shall be provided. All such items unless otherwise indicated on the drawings or specified, shall be of the same material as the item to be applied. Nails, screws and bolts shall be of the type best suited for the purpose intended and shall be of a composition that is compatible with the metal to which it will contact.

C. Except as otherwise indicated on the drawing or specified, the workmanship of sheet metal work, method of forming joints, anchoring, cleating, provisions for expansion, etc., shall conform to the standard details and recommendations of the Sheet Metal and Air Conditioning Contractors National Association's "Architectural Sheet Metal Manual", and shall be subject to the approval of the Contracting Officer.

D. All sheet metal work shall be watertight and wind-tight in compliance with the purpose intended for the items indicated on the drawings or specified herein.

E. Cleating: Continuous cleats for sheet metal work shall be provided where required. Cleats shall be of the same material and weight as the metal being installed.

F. Protection from Contact of Dissimilar Materials: Sheet metal surfaces in contact with dissimilar metal shall be painted with heavy-bodied bituminous paint, or shall be separated by means of moisture-proof building felts. Dissimilar metals shall be non-compatible materials that when placed in contact with each other will cause a corrosive chemical reaction.

G. Prefabricated Pipe Flashing: Install prefabricated pipe flashing in accordance with manufacturer's printed instructions.

1. Trim pipe opening to 20% smaller than pipe diameter.

2. Install pipe flashing and seal at aluminum base and metal roofing with urethane sealant.

3. Form aluminum base to fit metal roofing profile and secure with self-drilling type fasteners.

4. Painting of flashing will be accomplished under Section 09901 - PAINTING. Paint aluminum base to match roof.

3.02 PROTECTION:

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

3.03 CLEANUP:

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

END OF SECTION

SECTION 07900 – SEALANTS

PART 1 – GENERAL

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

1.02 GENERAL PROVISIONS

Except as otherwise indicated, sealants shall be provided to establish and maintain airtight, and weatherproof continuous seals on a permanent basis within recognized limitations of wear and aging for each application and type of sealant material. Provide at all joint locations where weather penetration is possible, where a weather-tight installation is required, and where indicated or required to finish the installation of two or more adjoining materials.

1.03 SUBMITTALS

A. Certificates of Compliance: Submit certificates from the manufacturers attesting that materials meet the specified requirements.

B. Manufacturers' Descriptive Data: Submit complete descriptive data for each type of material. Clearly mark data to indicate the type the Contractor intends to provide. Data shall state conformance to specified requirements. Data for sealant and calking shall include application instructions, shelf life, mixing instructions for multicomponent sealants, and recommended cleaning solvents.

C. Colors: Submit one sample of each color for each sealant and caulking type to verify that products match the adjacent finish colors. Where colors are not indicated, submit not less than 6 different samples of manufacturers' standard colors for selection.

1.04 DELIVERY AND STORAGE

Deliver materials to the job site in the manufacturers' external shipping containers, unopened, with brand names, date of manufacture, color, and material designation clearly marked thereon. Containers of elastomeric sealant shall be labeled as to type, class, grade, and use. Carefully handle and store all materials to prevent inclusion of foreign materials.

1.05 WARRANTY

The Contractor shall execute to the HHSC a 2-year written warranty after the Project Acceptance Date that the installation will be watertight and that any leaks which develop during that period which are not due to improper use or willful damage will be repaired at no cost to the HHSC. The guaranty shall provide the following at no cost to the HHSC:

a. Repair of sealants as necessary to seal leaks which are attributable to

faulty materials and/or workmanship.

b. Repair or replacement of damage to the building and/or its finishes, equipment and/or furniture when occasioned by such leaks.

PART 2 – PRODUCTS

2.01 MATERIALS

Products shall conform to the reference documents listed for each use. Color of sealant and calking shall match adjacent surface color unless specified otherwise. For ASTM C 920 sealants, use a sealant that has been tested on the type(s) of substrate to which it will be applied.

A. Interior Sealants: ASTM C 920, Type S or M, Grade NS, Class 12.5, Use NT. For use to seal general building construction joints, windows, doors, etc.

B. Exterior Sealants: For joints in vertical surfaces, provide ASTM C 290, Type S or M, Grade NS, Class 25, Use NT. For joints in horizontal surfaces, provide ASTM C 920, Type S or M, Grade P, Class 25, Use T. For use to seal general building construction joints, windows, doors, etc.

C. Floor Joint Sealant: ASTM C 920, Type S or M, Grade P, Class 25, Use T. Color of sealant shall be as selected.

D. Sanitary Sealant: ASTM C920, Type S, Grade NS, Class 25, Use NT, G and A. For use around plumbing fixtures and areas of high moisture. Single component acetoxy silicone sealant.

E. Primer for Sealants: Provide non-staining, quick-drying type and consistency recommended by the sealant manufacturer for the particular application.

F. Bond Breakers: Provide type and consistency recommended by the sealant manufacturer for the particular application.

G. Backstops: Provide glass fiber roving or neoprene, butyl, polyurethane, or polyethylene foams free from oil or other staining elements as recommended by the sealant manufacturer. Backstop material shall be compatible with the sealant. Do not use oakum and other types of absorptive materials as backstops.

H. Cleaning Solvents: Provide types recommended by the sealant manufacturer.

PART 3 – EXECUTION

3.01 SURFACE PREPARATION

Surfaces shall be clean, dry to the touch, and free from moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion. Where adequate grooves have not been provided, clean out grooves to a depth of ½ inch without damage to the adjoining work. No grinding shall be required on metal surfaces.

3.02 SEALANT PREPARATION

Do not modify the sealant by addition of liquids, solvents, or powders. Mix multicomponent elastomeric sealants in accordance with manufacturer's printed instructions.

3.03 APPLICATION

A. Elastomeric Sealant Installation Standard: Comply with the requirements of ASTM C 962 for the use of joint sealants as applicable to the materials, applications, and conditions required.

B. Backstops: Install backstops dry and free from tears or holes. Tightly pack the back or bottom of joint cavities with backstop materials to provide a joint of the depth as recommended by the sealant manufacturer.

C. Primer: Immediately prior to application of the sealant, clean out all loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in concrete masonry units, wood, and other porous surfaces in accordance with compound manufacturer's instructions. Do not apply primer to exposed finish surfaces.

D. Bond Breaker: Provide bond breakers to the back or bottom of joint cavities, as recommended by the sealant manufacturer for each type of joint and sealant used to prevent sealant from adhering to these surfaces. Carefully apply the bond breaker to avoid contamination of adjoining surfaces or breaking bond with surfaces other than those covered by the bond breaker.

E. Sealants: Provide sealant compatible with the material to which it is applied. Do not use a compound that has exceeded it shelf life or has become too jelled to be discharged in a continuous flow from the gun. Apply the compound in accordance with the manufacturer's instructions with a gun having a nozzle that fits the joint width. Force sealant into joints to fill the joints solidly without pockets. Sealants shall be uniformly smooth and free from wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints, apply sealant, and tool smooth as specified.

3.04 PROTECTION AND CLEANING

A. Protection: Protect areas adjacent to joints from compound smears. Masking tape may be used for this purpose if removed 5 to 10 minutes

after the joint is filled.

B. Cleaning: Immediately scrape off fresh compound that has been smeared on masonry and rub clean with a solvent as recommended by the compound manufacturer. Upon completion of compound application, remove all remaining smears and stains resulting therefrom and leave the work in a clean and neat condition.

END OF SECTION

DIVISION 7 - THERMAL AND MOISTURE PROTECTION

SECTION 07840 - FIRESTOPPING

PART 1 - GENERAL

1.01 SUMMARY

A. Provide firestopping as indicated and as specified herein.

1.02 REFERENCES

A. The latest publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

B. ASTM International (ASTM)

ASTM E 84 - Surface Burning Characteristics of Building Materials

ASTM E 814 - Fire Tests of Through-Penetration Fire Stops

C. National Fire Protection Association (NFPA)

NFPA 70 - National Electrical Code

1.03 GENERAL REQUIREMENTS

A. Provide firestopping materials to form an effective barrier against the spread of flame, smoke and gases, and to maintain the integrity of the fire-rated construction. Firestopping shall be provided in the following locations:
   1. Conduit penetrations through walls and slabs.

1.04 SUBMITTALS

A. Product Data: Submit complete descriptive data for each type of material. Clearly mark data to indicate the type the Contractor intends to provide. Data shall state conformance to specified requirements. Data for fireproofing materials shall include application instructions, shelf life, mixing instructions for multi-component sealants, and recommended cleaning solvents.

B. Shop Drawings: Shop drawings shall include typical details, installation instructions and locations.

C. Certificates: Submit certificates from the manufacturers attesting that materials meet the specified requirements. The fire-test data will include a certification by a nationally recognized testing authority or by other supporting evidence.

1.05 STORAGE AND DELIVERY

A. Materials shall be delivered in the original unopened packages or containers showing name of the manufacturer and the brand name. Materials shall be stored off the ground and shall be protected from damage and exposure to elements. Damaged or deteriorated materials shall be removed from the site.

PART 2 - PRODUCTS

2.01 FIRESTOPPING MATERIALS

A. Manufacturer's silicone sealant and accessory materials to meet the fire-resistant ratings of the assemblies penetrated and complying with ASTM E 814. Provide sealant formulated for use as part of a through penetration fire-stop system for filling openings around conduit penetrations complying with the following minimum requirements:

1. Flame Spread Index: Twenty-five or less when tested in accordance with ASTM E 84.

2. Smoke Density Index: Fifty or less when tested in accordance with ASTM E 84.

3. Nontoxicity: Nontoxic to human beings at all stages of application and during fire conditions.

4. Fire Resistance Rating:
   a. Materials used to seal penetrations in fire-rated assemblies shall be capable of preventing the passage of flame and hot gases, thereby retaining the fire-rating of the floor slabs or fire-rated wall.

   b. Materials used to seal openings between floor slabs and curtain walls shall be capable of preventing the passage of flame and hot gases, thereby retaining the fire-rating of the floor slabs or fire-rated wall.

   c. Material shall not require a rise in temperature to install or activate seal.

5. Paintable: Material shall be water based and paintable.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Fire stopping shall be installed at all wall and slab penetrations in accordance with manufacturer's written instruction and fire test report.

B. Electrical Cables or Conduits: Firestopping at penetrations of electrical conduits shall also comply with the requirements of NFPA No. 70.

END OF SECTION

DIVISION 8 - DOORS AND WINDOWS

SECTION 08100 - METAL DOORS AND FRAMES

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Work of this section includes the following:

1. Metal door and door frames.

2. UL labeled fire rated metal doors and door frames where required.

B. Related work in other sections includes the following:

1. Section 08710 - Finish Hardware.

2. Section 09901 - Painting.

1.02 QUALITY ASSURANCE

A. Standards: Comply with the Steel Door Institute "Recommended Specifications for Standard Steel Doors and Frames" (SDI-100).

B. Labeled Door Certification: Fire-rated doors must have Underwriters' Laboratories (UL) labels affixed to the assembly. Provide fire-rated doors where indicated on the door schedule.

1.03 SUBMITTALS

A. Shop Drawings: Submit shop drawings to the University for approval, and receive approval before starting of fabrication. Shop drawings shall include thickness of metal, details of fabrication, profiles of frames and moldings, connections to other work, fastenings, anchors and SDI erection details.

1.04 PRODUCT HANDLING

Store doors and frames at the site in an upright position on wood sills or on floors in a manner which will prevent rust and injury.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Hollow Metal Doors and Metal Frames: First quality cold rolled or hot rolled pickled galvanized steel of the following minimum thickness, U.S. Standard Gauge:

1. Metal Frames: 16 gauge for application, UL labeled for fire-rated assemblies.

2. Flush Doors: Extra Heavy Duty Type III, 16 gauge, UL labeled for fire-rated assemblies.

2.02 FABRICATION

A. General Requirements: All hollow metal shapes formed, rolled and formed, or cold drawn, with contours and arises as true and sharp as can be produced in the thickness of metal required.

1. Finish work strong and rigid, neat in appearance, and free from objectionable defects. Plain surfaces - smooth and free from warp or buckle. Molded members - clean cut, straight and true. Miters - well formed and in true alignment. Fastenings - concealed where applicable. Reinforce at corners as required to prevent sagging.

2. Locate cut outs accurately and make to fit the hardware.

B. Hollow Metal Doors: No crimped surfaces or exposed joints in doors will be permitted. Provide fully welded flush tops for all exterior doors.

C. Hollow Metal Frames: Combination stop and frame channel section, rabbet for doors, unless otherwise indicated. Furnish with integral sidelight frames as shown on schedule.

1. Weld construction joints of frames full depth and width of equivalent splice plates on unexposed faces of frames, or weld miters of frames. Smooth exposed surfaces of welded joints. Fit butted or mitered joints within 1/64" on the face of trim; other joints within 1/32". Weld where practicable, in preference to the use of rivets, screws, or bolts.

2. Supply the proper fastenings and/or anchors to secure frames in each type of structural framing encountered. Install minimum one each floor anchor (each jamb) and minimum three jamb anchors.

3. Supply each frame with at least 2 rubber door silencers.

4. Ship frames separately with removable spreaders, nested in pairs and bound tightly together, or knocked down (unassembled for interior frames only).

D. Finish: Zinc coat, bonderize, and prime coat all metal doors and frames at the factory. Primer shall conform to the requirements prohibiting hazardous materials as specified in Section 09901 - Painting.

C. Vision Panels: Provide full surround galvanized welded steel vision panel frames with 1/4" thick clear safety glass set in continuous neoprene glazing gasket. Glazing shall be ASTM C 1048, Kind FT (fully tempered) and shall also conform to the requirements of ANSI Z97.1 to qualify as a safety glazing material.

D. Door Louvers: Provide sightproof stationary louvers where required, constructed of inverted V-shaped or Y-shaped blades formed of 24 gauge galvanized cold-rolled steel set into 20 gauge galvanized steel frame.

2.03 HARDWARE

A. Drill and tap for locks, strikes, hinges, and concealed hardware at the factory. Drill and tap for other hardware at the job, where its exact location can be established during installation.

1. Provide reinforcing plates in doors and frames for locks, strikes, door closers, flush bolts, and hinges, except for hinges welded to frames. Offset reinforcement so surfaces of hardware will finish flush with surfaces of doors and frames. Fasten hinges to reinforcement with flat head machine screws or to the back surface of metal bucks by spot or projection welding. Conceal reinforcing, extending it past hardware enough to develop the strength of the frames, weld in place, and tap for hardware fastenings as specified above.

2. Strikes will be furnished by the hardware manufacturer.

3. Where locations of hardware are not indicated on the drawings, the following requirements apply:

a. Door levers: Center 37-1/2" above the floor.

PART 3 - EXECUTION

3.01 INSPECTION

Examine areas and conditions under which this work will be installed. Arrange to correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Position and anchor hollow metal frames in compliance with SDI-105 "Recommended Erection Instructions for Steel Frames", and as indicated on approved shop drawings.

B. Door Installation: Fit hollow metal doors accurately in frames, within clearances specified in SDI-100.

3.03 ADJUST AND CLEAN

A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

B. Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION

SECTION 08335 - PUSH-UP COUNTER DOOR

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

A. Furnish all labor, materials, equipment and tools necessary to provide push-up counter door as indicated on the drawings and as specified herein.

1.02 SUBMITTALS:

A. Submit six (6) sets of manufacturer's data and shop drawings showing sizes, fabrication and installation details to the Engineer for his review and approval.

1.03 PRODUCT HANDLING:

A. Use all means necessary to protect materials from damage before, during and after installation.

B. In the event of damage, immediately make all repairs and replacements necessary to the approval and at no additional cost to the HHSC.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The Product specified below is manufactured by The Cookson Company to establish the minimal material, quality and performance requirements. Products of other manufacturers meeting or exceeding the quality and performance characteristics of the specified products are acceptable provided that they have been pre-qualified and approved by the Architect or HHSC Representative.

B. Push-Up Counter Door: Shall be type CD8-2 all aluminum, manually operated push-up counter door with the following features:

1. Counter door shall include all curtains, bottom bars, guides, brackets, hoods, operating mechanisms and any special features.

2. Counter doors shall be designed to a standard maximum of 25 cycles per day and an overall maximum of 50,000 operating cycles for the life of the door.

Door curtain shall be constructed of interconnected .050 extruded aluminum 1-5/16” high by 3/8” deep slats. Curtain shall receive a 204-R1 clear anodized finish.

3. The bottom bar shall be constructed of tubular extruded aluminum measuring 1-5/16” deep by 2-1/4” high with a double vinyl astragal

on the bottom edge. The bottom bar shall receive a 204-R1 clear anodized finish.

4. The guides shall be constructed of extruded aluminum and measure 1-3/4" square. Each side of the channel portion capturing the curtain shall contain wool pile weatherstripping. The guides shall receive a 204-R1 clear anodized finish.

5. The brackets shall be constructed of 3/16" thick die cast aluminum.

6. The barrel shall be constructed of steel tubing of not less that 4" diameter. Oil tempered torsion springs shall be capable of correctly counter balancing the weight of the curtain. The barrel shall be designed to limit the maximum deflection to .03" per foot of opening width. The barrel shall receive one (1) coat of bronze rust-inhibiting prime paint.

7. The hood shall be fabricated from .040 aluminum and shall be formed to fit the square brackets. The hood shall receive a 204-R1 clear anodized finish.

8. Counter doors shall be open and closed with a maximum of 30 pounds of effort using finger lifts in the bottom bar.

9. Counter doors shall be secured by means of a concealed sliding bolt deadlock in the bottom bare operated by a thumb-turn.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install counter door after the majority of the construction work has been completed to avoid unnecessary damage.

B. Install in strict accordance with manufacturer's instructions and recommendations by an authorized installer certified by the manufacturer.

C. Assure proper and smooth operation of doors.

3.02 CLEAN-UP:

Remove and dispose of all debris and clean all surfaces per manufacturer's recommendations and instructions.

END OF SECTION

DIVISION 8 – DOORS AND WINDOWS

SECTION 08520 - ALUMINUM WINDOWS

PART 1 - GENERAL

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

1.02 QUALITY ASSURANCE

A. Qualifications of manufacturers: Use products produced by manufacturers regularly engaged in manufacture of aluminum projected windows of this type for a minimum of 5 years.

B. Qualification of workmen thoroughly trained and experienced in the necessary crafts and methods needed for proper performance of the work of this Section.

C. Performance:

1. AAMA Certified: AAMA/NWWDA, 101/I.S.2-08, "C" Commercial.

2. AAMA/WDMA 101/I.S.2/A440-08; ASTM E 283, Air .10 cfm/sf.; ASTM E 331.ASTM 547, Water 12.0 psf.

1.03 SUBMITTALS

A. Shop Drawings: Submit shop drawings for the Architect's review and do not fabricate prior to acceptance. Include calculations and certification on shop drawings stating that assemblies conform to local code requirements including wind loads and are designed to withstand all anticipated thermal expansion and contraction movements.

B. Tests: Test reports by independent testing laboratory verifying specified performance.

C. Samples: Submit samples of finishes including hardware to the Architect for acceptance.

1.04 PRODUCT HANDLING

A. Protection: Protect the materials of this section before, during and after installation. Protect the installed work and materials of all other trades.

B. Replacement: In the event of damage, immediately make all repairs and replacements necessary.

1.05 WARRANTY

A. Contractor shall warrant the installation to be installed securely per manufacturer's instructions and recommendations and shall remain weather-tight for a period of 2-years from the date of project acceptance.

B. Manufacturer's Warranty: Manufacturer agrees to repair or replace aluminum windows that fail in materials or workmanship within the specified warranty period.

1. Failures include, but are not limited to the following:

a. Failure to meet performance requirements.

b. Structural failures include excessive deflection, water leakage, condensation, and air infiltration.

c. Faulty operation of movable sash.

d. Deterioration of materials and finishes beyond normal weathering.

e. Failure of insulating glass.

2. Warranty Period:

a. Window: 10-years from date of project acceptance.

b. Glazing Units: 10-years from date of project acceptance.

c. Aluminum Finish: 10-years from date of project acceptance.

d. The surety shall not be held liable beyond 2-years from the date of project acceptance.

PART 2- PRODUCTS

2.01 MATERIALS

A. The products specified below are manufactured by EFCO to establish the minimal material, quality and performance requirements. The products of the other manufacturers are acceptable provided they meet or exceed the requirements of the specified product.

B. Fixed/Casement Windows: Projecting windows shall be Series 2700, dual glazed, combination fixed/outward projecting, w/ screens.

C. Sliding Windows: Sliding windows shall be Series 3550, dual glazed, high performance sliding windows, w/ screens.

D. Screens: Furnish windows manufacturer's standard aluminum roll-formed screen frame and glass fiber screen cloth. Frame color shall match window.

E. Finish: All windows shall be dark bronze anodized finish.

F. Glazing:

1. Glazing shall be Solarban 70XL solar control low-E tempered safety glazing, each face of dual glazing. 1/4” tempered safety Solar ban 70 on Cllr + 1/2” AS + 1/4" tempered safety Cllr.

2. Fixed spandrel transom or panels, where indicated, shall be 1” aluminum clad panels over high density tempered hardboard with Kynar finish. Color shall be selected by the Architect from manufacturer’s full line of standard color selections.

PART 3 - EXECUTION

3.01 SURFACE CONDITION

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

3.02 INSTALLATION

A. Install windows as indicated on the drawings, square, plumb, and in true alignment. Surfaces shall be free from dents, buckles, dimples, or other defects.

B. Anchor frames and other items securely to continuous construction to result in a rigid installation and in accord with required safety factors. Where anchorage involves other work, provide setting drawings for proper installation.

C. Install hardware and adjust for proper operation. Seal metal to metal joints to prevent the entrance of water except at joints where frame members are designed to drain water to the exterior.

D. At juncture between frames and adjacent materials, seal entire perimeter on both sides. Use sealant and backing material as specified in Section 07900 SEALANTS.

E. Protection of Contact Surfaces: Protect dissimilar metals or with compatible materials such as concrete and other cementitious materials by painting contact surface with bituminous paint before installation or isolate with non-absorptive tape or gasket.

F. Expansion and Contraction: Install aluminum work so as to avoid objectionable distortion or overstress of parts and fastenings resulting from thermal expansion and contraction.

G. Glazing: Determine glass size and edge clearances by measuring actual openings. Set glass on glazing blocks to equally support full glass height and prevent any give or fracture.

3.03 PROTECTION

A. After erection adequately protect by masking with light motor oil, Vaseline or other accepted covering on all exposed parts of the work and finish, protecting against damage from grinding and polishing machines and/or plaster, lime, cement, acid or other harmful substances.

3.04 CLEANING

A. After completion of all other work in the vicinity of the aluminum window frames, remove all masking, oil, Vaseline and other covering used to protect the work and thoroughly clean the aluminum surfaces with soap and plain water or a petroleum product such as white gasoline, kerosene or distillant. Do not use abrasive cleaning agents.

END OF SECTION

SECTION 08710 - FINISH HARDWARE

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

As specified in Section 01010.

1.02 DESCRIPTION OF WORK

A. Provide all labor, materials, equipment, tools, etc. for installation of finish hardware as indicated on the drawings and/or specified herein.

1.03 GENERAL PROVISIONS

A. Furnish and deliver to the building site, all finish hardware required for all doors, etc., complete as indicated on the drawings and as specified herein.

B. It is the intent of these specifications to cover in general the class and character of all finish hardware required.

C. The hardware list specified hereinafter has been made for the convenience of the Contractor and covers in general the necessary hardware for doors, casework, etc., but all other doors, etc., shown on the plan and not covered by the general characterization shall be fitted with appropriate hardware of the same standards as the hardware described throughout these specifications. Contractor shall furnish hardware schedule as hereinafter specified.

D. Suppliers proposing substitutes of equivalent products of other than manufacturers named hereinafter shall submit schedules listing products and manufacture specified and product and manufacturer of proposed substitute.

E. The existing facility master key system that this project will be keyed to is Sargent. This project shall be keyed to the existing master system. Products which are not locally stocked or which must be special ordered are not acceptable.

1.04 SUBMITTALS

A. Schedule: Furnish six (6) copies of the schedule of hardware in compliance with specifications and drawings. List each opening and hardware to be applied. State keying, material, finish and manufacturer's number for each item. Required types are listed.

B. Manufacturer's Data: Submit manufacturer's descriptive literature along with schedule for information only.

1.05 DELIVERY

A. Examine the plans, specifications, and details in order to check all items so they will be suitable and of perfect fit and delivered where and when required.

B. All Hardware shall be delivered at the site, packed separately with all trimmings, screws, etc., for the particular door, all properly labeled and numbered so that they can be checked with the hardware list which shall be furnished with the goods when delivered.

C. Upon delivery of the finishing hardware to the job site by the hardware supplier, the General Contractor shall have a responsible person check in the material at the place for storage. The hardware shall be protected from damage at all times, both prior to and after installation.

1.06 REPRESENTATIVE

Provide services of a competent hardware specialist who is familiar with installation and operation of all finishing hardware items furnished.

PART 2 - PRODUCTS

2.01 MATERIALS

Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

2.02 GENERAL CHARACTER

A. All hardware shall be of the best quality in construction, design and finish, and free from any defects. Any defective pieces shall be replaced by the Contractor at his own expense.

B. Hardware shall be of the manufacture, type, weight, function and quality as shown by factory numbers on the hardware schedule. The products of other manufacturers are acceptable provided they meet or exceed the quality and finish of the products specified herein.

C. Locksets: Mortise locksets shall be the product of a single manufacturer. Cylinders shall be removable and keyed to the school's existing master system. All locks shall be classified as Grade I, "Heavy Duty" with six-pin tumblers.

D. Hinges: Continuous as specified.

E. Finish: Except as otherwise indicated, finish of hardware shall be 626.

F. ADA Compliance: All hardware for doors indicated on the drawings shall conform to the requirements of the 2010 ADA Standards, paragraph 404.2.7 and 309.4.

2.03 KEYING

Locks shall have four (4) keys each. Locks for the same rooms shall be keyed alike. All locks shall be master keyed to the existing facility's keying system. During period of construction, all locks shall be operated by a special master key. Regular day and master keys are to be retained by the Contractor so they cannot be obtained or duplicated by unauthorized persons. All keys shall be stamped "DO NOT DUPLICATE" at the point of manufacture. The special construction master key shall become inoperative when regular keys are turned over to the Contracting Officer. Proper certification of factory assembly of all locks and cylinders as well as factory master keying shall be furnished by the Contractor prior to final acceptance of this portion of the work. Certificate shall then be given to the Contracting Officer. Provide ten (10) construction master keys, six (6) grand master keys, and six (6) master keys per set.

2.04 FASTENINGS

A. Furnish necessary screws, bolts, and other fastenings for proper application of hardware. Fastenings shall be of suitable size and type of securing hardware for heavy use. Fastenings must harmonize with the hardware as to material and finish .

B. Furnish necessary expansion shields, toggle bolts, machine or wood screws or other suitable approved anchoring devices where hardware is to be installed on concrete, masonry or other type of backing.

2.05 TEMPLATES

Templates as may be required to be furnished the Contractor within seven days after receipt of an order and approved hardware schedule.

2.06 TOOLS AND INSTRUCTIONS

All tools and maintenance or installation instruction packed with the closers and locksets shall be given to the State of Hawaii when the project is complete.

PART 3 - EXECUTION

3.01 PRE-INSTALLATION MEETING

Prior to the start of installation of the finish hardware, the Contractor, hardware installer, hardware supplier and/or manufacturer's representative, and the Architect, shall have a pre-installation meeting to review the hardware installation instructions and installation conditions.

3.02 HARDWARE SUPPLIER'S INSPECTION

Before final inspection of the work under this contract and acceptance of the project by the facility, the supplier of hardware and other items specified in this Section shall visit the site and carefully inspect all parts for conformance to this specification, adequacy for intended use, proper functioning, appearance, finish

and successful operation, assuming joint responsibility with the General Contractor.

3.03 KEYING OPERATION AND ORIENTATION

The General Contractor and/or hardware supplier shall together with the Arcitect and/or representative(s) from the facility, conduct an orientation of the operation of all hardware and locks

3.04 HARDWARE SCHEDULE

Furnish the following hardware groups in the amounts indicated on the drawings or required for a complete and proper installation.

Abbreviations:

PEM Pemko Manufacturing Co.
ROC Rockwood Manufacturring Co.
SAR Sargent Manufacturing Co.
TRI Trimco Hardware

HARDWARE SCHEDULE

HW-001
(D/1)

6 EA.	HINGE	TA2314 4.5 X 4.5 US26D-NRP	MCK
1 EA.	LOCKSET	8225 FEL US26D	SAR
1 EA	CYLINDER	(Key to Facility's Master)	SAR
2 EA	STOP/HOLDER	599H X US26D	SAR
2 EA	FLUSH BOLT	3917 626	TRI
1 EA	D.P. STRIKE	3911 626	TRI
2 EA	ARMOR PLATE	KA050 X 36" HIGH, SS	TRI

HW-002
(D/3, D/6, D/7, D/8)

3 EA.	HINGE	TA2314 4.5 X 4.5 US26D	MCK
1 EA.	LOCKSET	8225 FEL US26D	SAR
1 EA.	CYLINDER	(Key to Facility's Master)	SAR
1 EA	WALL OR FLR STOP	406/441H 626 (AS REQUIRED)	ROC

HW-003
(D/9, D/10, D/11)

3 EA.	HINGE	TA2314 4.5 X 4.5 US26D	MCK
1 EA.	LOCKSET W/ IND	50-8225 FEL US26D	SAR
1 EA.	CYLINDER	(Key to Facility's Master)	SAR
1 EA.	CLOSER	351 P9 EN	SAR
1 EA.	STOP	406H 626	ROC

HW-004
(D/12)

3 EA.	HINGE	TA2314 4.5 X 4.5 US26D	MCK
1 EA.	LOCKSET	8225 FEL US26D	SAR
1 EA.	CYLINDER	(Key to Facility's Master)	SAR
1 EA.	STOP/HOLDER	599H X US26D	SAR

HW-005
(D/13, D/15)

3 EA.	HINGE	TA2314 4.5 X 4.5 US26D	MCK
1 EA.	LOCKSET	8225 FEL US26D	SAR
1 EA.	CYLINDER	(Key to Facility's Master)	SAR
1 EA.	CLOSER	351 P9 EN	SAR
1 EA.	WALL OR FLR STOP	406/441H 626 (AS REQUIRED)	ROC

HW-006
(D/14, D/16)

6 EA.	HINGE	TA2314 4.5 X 4.5 US26D	MCK
1 EA.	LOCKSET	8225 FEL US26D	SAR
1 EA.	CYLINDER	(Key to Facility's Master)	SAR
2 EA.	STOP/HOLDER	599H X US26D	SAR
2 EA.	FLUSH BOLTS	3917 626	TRI
1 EA.	D.P. STRIKE	3911 626	TRI
2 EA.	ARMOR PLATE	KA050 X 36" HIGH SS	TRI
2 EA.	WALL OR FLR STOP	406/441H 626 (AS REQUIRED)	ROC

HW-007
(D/2)

6 EA	DBL ACTING HINGE	1001 6" US26D	MCK
2 EA	FLUSH BOLTS	3917 626	TRI
2 EA	D.P. STRIKE	3911 626	TRI
2 EA	WALL OR FLR STOP	406/441H 626 (AS REQUIRED)	ROC
4 EA	ARMOR PLATE	KA050 X 36" HIGH SS	TRI
4 EA	PUSH PLATE	1001-9 4" X 16" SS	TRI

HW-008
(D/4)

3 EA	DBL ACTING HINGE	1001 6" US26D	MCK
2 EA	WALL OR FLR STOP	406/441H 626 (AS REQUIRED)	ROC
2 EA	ARMOR PLATE	KA050 X 36" HIGH SS	TRI
2 EA	PUSH PLATE	1001-9 4" X 16" SS	TRI

END OF SECTION

DIVISION 9 – FINISHES

SECTION 09250 - GYPSUM WALLBOARD

PART 1 - GENERAL

1.01 SUMMARY

A. Provide all labor, materials, equipment, tools, etc. for installation of gypsum wallboard and accessories as indicated on the drawings and/or specified herein.

1.02 GENERAL REQUIREMENTS

A. Complete all gypsum wallboard installation work as indicated on the drawings and as specified herein. Work shall include, but not be limited to, the following:

1. Gypsum wallboard on metal framing and/or metal ceiling support systems.

2. Wallboard accessories.

1.03 QUALITY ASSURANCE

A. Industry Standard: Comply with applicable requirements of GA-216 "Application and Finishing of Gypsum Board" by the Gypsum Association, except where more detailed or more stringent requirements are indicated including the recommendation of the manufacturer.

B. Submittal: Furnish erection and installation specifications, conforming to Industry Standards for Contracting Officer’s review.

1.04 PRODUCT HANDLING

Deliver gypsum wallboard materials in sealed containers and bundles, fully identified with manufacturer's name, brand, type and grade; store in a dry well ventilated space, protected from the weather, under cover and off the ground.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Gypsum Wallboard: Shall be 5/8", type "X", fire resistive board with recessed edges, complying with the "Standard Specifications for Gypsum Wallboard" ASTM Designation C35 latest edition.

B. Water Resistant Gypsum Wallboard: Shall be 5/8", type "X", W/R, fire and water resistant type with recessed edges, complying with the "Standard Specifications for Gypsum Wallboard", ASTM C630, for installation at all areas susceptible to high moisture, such as Toilets, Janitor, etc.

C. Wallboard Fasteners: Gypsum wallboard shall be secured to wood and/or metal framing and furring with industry standard zinc coated bugle head self-drilling, self-tapping Type W or S drywall screws, or appropriate fastener as the situation may require.

D. Reinforced Tape and Cement: Materials for treating joints and nail heads shall be as manufactured or recommended by the manufacturer of the wallboard used.

E. Wallboard Accessories:

1. Metal Corner Reinforcement: All-metal heavy-gauge, 1" x 1", approximate weight 114 lbs./MLF

2. Metal Trim: U-shaped all-metal channel in 1/2" and 5/8" sizes, as required; approximate weight 108 lbs./MLF.

3. All accessories shall be hot-dipped galvanized.

G. Joint Treatment Materials: ASTM C 475; type recommended by manufacturer for the application indicated, except as otherwise noted.

1. Perforated tape, and joint and topping compound, or "all-purpose" compound.

H. Metal Studs and Runners:

Metal studs and runners shall be 20 or 25 gauge, hot-dipped galvanized steel, conforming to ASTM A525 and ASTM C754. Gauge of stud shall be governed by height of partitions and manufacturer's design criteria. Size of studs are as indicated on the drawings or as recommended by industry standards for application. Provide bracing, blocking, etc., as required.

J. Ceiling Support Materials and Systems:

1. General: Size ceiling support components to comply with ASTM C754 unless indicated otherwise.

2. Direct Suspension Systems: Manufacturer's standard hot-dipped galvanized steel system of interlocking furring runners, furring tees, wall angles, and accessories designed for concealed support of gypsum drywall ceilings; of proper type for use intended.

a. System Manufacturer: Equal to one of the following:
Chicago Metallic Corp.
Armstrong
Donn USG Interiors.

PART 3 - EXECUTION

3.01 INSTALLATION

A. General: Comply with ANSI A42.4 as applicable to the type of substrate and drywall support system indicated; and comply with the Gypsum Association GA-203 for installation of furring members.

B. Gypsum Wallboard, General:

1. Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'-0" in alternate courses of board.

2. Install wall/partition boards vertically to avoid end-butt joints wherever possible.

3. 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" open space between boards. Do not force into place.

4. Locate either edge or end joints over supports, except in horizontal applications 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.

5. Attach gypsum and cement fiber board to framing and blocking as required for additional support at openings and cutouts.

6. Space fasteners in gypsum and cement fiber boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

C. Methods of Gypsum Wallboard Application:

1. Single-Layer Application: On partitions/walls apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.

2. Single-Layer Fastening Method: Apply gypsum boards to supports as follows:

a. Fasten with screws, spaced not to exceed 6" centers.

3. Multiple-Layer Application: Where multiple board installation are called for, install first layer as indicated for single-layer application. The next layer shall be installed with the board running in opposite directions and all joints staggered. Board joints for the second layer shall not align with the joints of the first layer. Install fasteners for the appropriate thickness of the bards, fasten the same as for single-layer application.

D. 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, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.

2. Install metal corner beads at external corners of drywall work.

3. Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed, and except where plastic trim is indicated. 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 of L-type trim. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

4. Install J-type semi-finishing trim where indicated.

E. Installation of Drywall Finishing:

1. General: Apply treatment at gypsum board joints (both directions), flanges of trim accessories, penetrations, fastener heads, surface defects and elsewhere as required to prepare work for decoration. Prefill open joints and rounded or beveled edges, using type of compound recommended by manufacturer.
   a. Apply joint tape at joints between gypsum boards, except where a trim accessory is indicated.

   b. Apply joint compound in 3 coats (not including prefill of openings in base), and sand between last 2 coats and after last coat.

   c. Provide type 5 gypsum finish per Gypsum Association finishes.

3.02 CLEANING AND REPAIRING

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.

END OF SECTION

SECTION 09510 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.01 SUMMARY

Provide acoustical ceiling tiles and suspension grid systems complete, as indicated on the drawings and/or specified herein.

1.02 SUBMITTALS

Samples of all types of acoustical tiles, suspension system, adhesives, fastening devices, and all required appurtenances, together with manufacturer's specifications for all items including installation standards, shall be submitted to the Architect for approval. Tiles shall not be ordered or installed without this approval.

1.03 GUARANTEE

The Acoustical Contractor shall execute to the State, a one (1) year written warranty from the time of acceptance of the project as a whole, countersigned and guaranteed by the General Contractor covering all materials and workmanship, and on written demand by the HHSC within that period, shall correct or replace any defective material or workmanship at his own expense.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The following acoustical ceilings are manufactured by Armstrong to establish minimal acceptable qualities. Products of equal or better quality and finish as manufactured by Celotex and/or USG Interiors are acceptable. The products of other manufacturers are also acceptable provided they meet or exceed the material and construction requirements specified herein.

B. Tiles (All areas)

1. Pattern: “Ultima”, #1910 ceilings.

2. Flame Spread Rating: Class A (Flame spread 25 or under) UL labeled.

3. Light Reflectance Coefficient: LR 0.89

4. Grade: Minimum NRC: 0.70
CAC: Min. 35.0

5. Size: 24" x 48" Lay-in

6. Thickness: 3/4"

7. Edges: Square-cut

8. Mounting: Lay-in system, 15/16" exposed tee.

9. Finish: White

10. Manufacturer: Armstrong, or an approved equal.

C. Suspension System

1. Lay-in system shall consist of exposed grid of main runner and cross tees.

a. Main runner and cross tees shall be as recommended by the manufacturer of the suspended system, conforming to the structural classification ASTM C 635. Main runners and cross tees shall be cold rolled steel, hot-dipped galvanized and finished in white baked enamel.

b. Angle mounting shall be as recommended by the manufacturer of suspended system, matching carrier and cross tee in metal and finish.

c. Wall moldings and trims shall be shapes as indicated on the drawings, of steel with baked-on vinyl enamel finish (white), to match suspension system. Wall moldings and trim shall be treated and protected against corrosion and rust.

PART 3 - EXECUTION

3.01 INSPECTION AND PREPARATION WORK

A. Surfaces to receive acoustical units shall be dry, level, and free from irregularities. The Acoustical Contractor shall be responsible for the examination and acceptance of all surfaces and conditions affecting the installation of his work. Start of his work shall constitute acceptance of all conditions. Unsatisfactory conditions shall be reported to the Contractor so that corrective measures can be taken.

B. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid the use of less-than-half width units at borders, and comply with reflected ceiling plans wherever possible.

3.02 INSTALLATION

A. General: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire resistance rating requirements as indicated, and industry standards applicable to the work. Installation shall comply with the Recommended Standards for Seismic Restraint of Direct-Hung Suspended Ceiling Assemblies, by the Ceilings & Interior System Construction Association (CISCA).

B. Arrange acoustical units and orient directionally-patterned units as indicated.

C. Install suspension systems to comply with ASTM C 636, with hangers supported only from building structural members as indicated. Locate hangers near each end and spaced as required, but not less than 4'-0"

along each carrying channel or direct-hung runners, unless otherwise indicated.

1. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws or other devices which are secure and appropriate for the substrate, and which will not deteriorate or fail with age or elevated temperatures.

D. Install edge moldings of the type indicated at edges of each acoustical ceiling area, and at locations where edge of units would otherwise be exposed after completion of the work.

1. Secure moldings to building construction by fastening with screw-anchors into the substrate, through holes drilled in vertical leg. Space holes not more than 3" from each end and not more than 16" o.c. along each molding.

2. Level moldings with ceiling suspension system, to a level tolerance of 1/8" in 12'-0".

3. Miter corners of moldings accurately to provide hair-line joints, securely connected to prevent dislocation.

E. Cope exposed flanges of intersecting suspension system members, so that flange faces will be flush (cope flange of member supported by other member).

F. Install lay-in tile panels in coordination with suspension system, with edges concealed by support of suspension members.

1. Install edge trim moldings where indicated and as needed to conceal edges of acoustical panels which would otherwise be exposed to view after completion of the work. Anchor with fasteners or, if not possible, secure with permanent adhesive.

2. Install retention hold-down clips at all panels adjacent to exterior window walls and doors, and as recommended by the manufacturer to prevent panel up-lift.

3.03 CLEANING AND REJECTION

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

B. The following defects shall also be cause for rejection or replacement at the Contractor's expense:

1. Uneven joints or unaligned surfaces.

2. Soiled tiles not cleaned to original condition.

3. Fractures, cracks or corner chips.

4. Color variation.

5. Loose or fallen tiles.

6. Structurally unsound suspended system.

7. Damaged suspended system.

8. Warping, buckling, or sagging of acoustic board.

END OF SECTION

SECTION 09665 - RESILIENT TILE FLOOR - LVT

PART 1 - GENERAL

1.01 SUMMARY

A. Provide LVTresilient tile flooring and base where indicated on the drawings and/or as specified herein.

1.02 SUBMITTALS

A. Samples of floor tiles shall be submitted to the Contracting Officer for color and/or pattern selection.

B. Manufacturer's product literature and installation instructions.

1.03 RECEIPT OF DELIVERY

A. Submit to the Contracting Officer a receipt of delivery that spare floor tiles specified in 2.01, D, below, has been turned over to the Contracting Officer.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Luxury vinyl tile shall be asbestos free, 18 in. x 18 in. x 1/8" thick, conforming to ASTM F1700-04, Class III, type A or B solid vinyl floor tile, 100% recyclable post-use, with 20 mil wearlayer, and 30-year Commercial wear limited warranty. Vinyl tile shall also have passed the following material tests:

1.	Chemical Resistance	ASTM F925
2.	Dimensional Stability	ASTM F2199
3.	Flexibility	ASTM F137
4.	Resistance to Heat	ASTM F1514
5.	Resistance to Light	ASTMF1515
6.	Smoke Density	ASTM E662-06
7.	Static Load Limit	ASTM F970
8.	Thickness	ASTM F386

B. Cove base shall be vinyl or rubber, 4 in. high, top-set type, 1/8" thick, with a smooth exposed surface and textured bonding surface on its unexposed face, or as required to match existing resilient base. The rubber or vinyl material shall be free from offensive odor and its color shall be uniform throughout the thickness of the base. Color shall be as selected by the Contracting Officer

C. Adhesives shall be water-resistant type, as recommended by the manufacturer for the specific materials used. Do not use adhesive not intended for its purpose.

D. Spare Floor Tiles: Furnish approximately 10%, new, in unopened cartons, spare vinyl composition floor tiles as specified in 2.01, A, above. At the end of the project, turn over spare floor tiles to the Contracting Officer.

PART 3 - EXECUTION

3.01 DELIVERY AND STORAGE

A. Materials shall be delivered to the jobsite in original unopened containers marked with grade and manufacturer's brand name. Handle and store materials carefully.

3.02 EXAMINATION OF SUBFLOORS

A. The Installer shall examine the subfloors where the flooring materials will be installed for compliance with the flooring manufacturer's requirements. Installation shall not proceed until unsatisfactory conditions have been corrected. Proceeding with installation will indicate acceptance of the subfloor condition by the Installer and the Installer shall take full responsibility of the installation performance of the flooring materials.

3.03 PREPARATION OF SUBFLOORS

A. General: Comply with the flooring material manufacturer's installation instructions for the preparation of subfloors to receive resilient flooring. Bond and moisture tests, if required, shall be performed by the Installer at no additional costs to the State. Tests, if required, shall be scheduled with the Contracting Officer, and reports of test results shall be copied to the Contracting Officer.

B. Unless otherwise required by the flooring manufacturer, the subfloor shall be broomed, wet mopped and scrubbed until it is free from dust, dirt, grease, wax, or other foreign material. It shall also be scraped to make the surface smooth and level.

C. If flooring adhesive or floor tile is laid on defective subfloors, such tile shall be removed, the subfloor defects corrected. Replacement and reinstallation of adhesives and floor tiles shall be at no additional cost to the State.

3.04 PROJECT CONDITIONS

A. Flooring materials and the spaces to receive flooring materials shall be conditioned in accordance with the flooring manufacturer's recommendation and instructions.

B. Provide adequate ventilation to remove moisture and fumes from the areas where floor tiles are being installed.

3.05 INSTALLATION OF MATERIALS

A. Installation shall not begin until the work of other trades, including painting, has been completed.

B. All work shall be done by experienced tradesmen in strict accordance with recommended specifications of the respective manufacturer. Where not contrary to manufacturer's recommendations, adhesive shall be applied with a notched trowel in a thin and even coat. Tiles shall be laid with tight joints in true alignment both ways. They shall be cut to fit accurately at joining with other materials and at vertical surfaces. The underside of the tiles shall be heated if necessary to obtain satisfactory bond to the subfloor.

C. Tiles shall be laid symmetrically about the center lines of the space in both directions, starting at the center and working toward the sides so that border tiles shall not be less than half the width of the field tiles. Grain shall be reversed in alternate tiles.

D. Install cove base, per manufacturer’s written instruction and/or industry standards.

E. Where tile terminates to an existing flooring or other than vertical surface, provide a resilient transition strip or manufacture recommended trim. Transition strip or trim shall be ADA compliant.

3.06 CLEANING AND PROTECTION

A. Spots of adhesive shall be removed immediately as work progresses. Floor shall not be washed or cleaned until the adhesive has completely set, and in no case until after the minimum length of time recommended by the manufacturer has elapsed. The flooring shall be cleaned as recommended by the manufacturer. Flooding of the floor is not permitted.

B. Schedule instructional session on the maintenance of the flooring not more than one (1) week prior to beneficial occupancy by facility personnel and/or as directed by the Contracting Officer and with the observation of the DOE School Service representative. Limit floor traffic on cleaned floors until final acceptance and turn-over to the HHSC. The Contractor shall contact the facility representative to schedule the instructional session for maintenance.

END OF SECTION

SECTION 09723 – NON-SLIP FLOOR COATING AND WALL COATING

PART 1 - GENERAL

1.01 SUMMARY

A. The Contractor shall furnish all labor, materials, and equipment necessary to perform all high performance coating work, complete, as indicated on the drawings and/or specified herein.

1.02 GENERAL REQUIREMENTS

A. Provide high performance non-slip polyurea floor coating system and polyaparic top coat with integral cove base and wall coating where indicated on the drawings and specified herein.

B. The Contractor and Technical Representative shall attend a pre-construction conference held by the Contracting Officer to review detailing, preparation and installation and scheduling required with the related work.

C. The Contractor and Technical Representative shall inspect and approve the coating work at the following minimal times:

1. Prior to the start of the application of the base coat to assure the suitability of prepared and repaired substrates.

2. After the installation of the base coat.

3. At the installation of the aggregates.

4. After the installation of the finish coat.

All inspections shall be reported in writing by the Technical Representative to the Contracting Officer within 5 working days. Failure by the Manufacturer or by its Technical Representative to make inspections or provide reports shall be understood to mean that the Manufacturer approves of the installation and the warranty shall be valid.

It shall be the responsibility of the Contractor to notify the Technical Representative and the Contracting Officer of these scheduled times at least 5 working days in advance to enable their attendance.

D. Non-slip floor coating shall comply with Section 302.1 of the 2010 ADA Standards for Accessible Design.

1.03 SUBMITTALS

A. Submit in accordance with Section 01330 – SUBMITTALS.

B. A signed certificate from the Manufacturer stating that the Contractor is an approved installer of the Manufacturer's non-slip polyurea floor Coating System and polyasparic top coating system and that each member of the installation

crew has been trained in the system's proper installation and is certified by the Manufacturer's Technical Representative. The names of the certified installers shall be submitted to the Contracting Officer and only employees that are certified installers shall be allowed on the project. Should any installer listed change, any replacement shall be trained and certified by the Manufacturer's Technical Representative.

C. A signed certificate from the Manufacturer designating its Technical Representative for the project and attesting that this person is both qualified and authorized to act on its behalf in regards to design, inspection and approvals of the non-slip polyurea floor Coating System and polyasparic top coat to meet the requirements for its warranty.

D. A signed certificate from the Manufacturer or its Technical Representative stating that the plans and specifications for the project have been reviewed and fully comply with the Manufacturer's design standards and meet the requirements for warranty of the non-slip polyurea floor coating system and polyasparic top coat for the specified period.

E. Manufacturer's Data: Submittals shall be marked-up as necessary to clearly identify the item being submitted and its conformance to the requirements of these specifications.
   1. Provide data for material description, physical properties, recommended storage conditions, shelf life, precautions, and joint and crack sealant, with temperature range for application of non-slip polyurea floor coating system and polyasparic top coat.

   2. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.

   3. Manufacturer's data indicating the minimum spreading rate in square feet/gallon for Basecoat, and Topcoats, including aggregate application. It shall indicate the number of applications for each respective coat.

F. Samples: Submit 4 sets of color samples of coating system intended for use. Include non-slip aggregate and clear finish coat. Sample will be used for approval of color as well as texture.

G. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

H. Material Safety Data Sheet (MSDS): Submit MSDS for each material.

I. Provide manufacturer's sample warranty.

1.04 GUARANTEE

A. The polyurea coating materials and polyasparic top coat and workmanship involved in the application shall be jointly and separately guaranteed for a period of 2 years from date of acceptance, on a single document, by the manufacturer and the coating applicator. The guarantee shall insure the performance of the

non-slip polyurea floor coating system against delamination and color retention, at no cost to the State.

B. The Surety shall not be held liable beyond two-years from the project acceptance date.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: See 1.03, B above.

B. Contractor, applicator, manufacturer's representative and the Contracting Officer shall inspect all surfaces and approve such surfaces for application of the coatings.

C. All non-slip polyurea floor coating and polyasparic top coat materials used in the aggregate-filled polyurea coating system and wall coating shall be manufactured by a single manufacturer to ensure compatibility and proper bonding.

1.06 DELIVERY OF MATERIALS

Deliver all materials in the original unbroken manufacturer's packages or containers, with the original labels and brand names on the package and stored in a dry location.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The non-slip polyurea floor coating system and polyasparic top coat shall be based on an application, as manufactured by Rust-Oleum Corporation. The products listed below are to establish minimum material quality desired for this project. Products or materials not listed, however, required by the manufacturer to meet the requirements of the high performance polyurea coating system and polyasparic top coat shall be included in the work of this project. Products of other manufacturers having equal or better material performance are acceptable subject to compliance with the requirements specified herein.

B. Polyurea high performance concrete coating system for floors.

1. Base Coat: Seal-Krete HP Polyurea, 10 – 12 mils DFT per coat, and having the following minimum performance characteristics:

a. Tensile Strength (ASTM D412)	3,600
b. Elongation (ASTM D412)	198
c. Physical Properties	
1) Resin Type	Polyurea
2) Solids by Volume	98%
3) VOC	<10 g/l (calculated applied VOC)

2. Non-slip Aggregate: Decorative flooring aggregates, 40-S Grade, 40 mesh, spherical colored quartz manufactures by Toginol, Inc. or as approved by the coating manufacturer. Aggregates shall be colored quartz, uniformly sized, in standard colors.

3. Finish Coats: Two (2) coats minimum of Seal-Krete HP PolyShell 7000, applied at 8 – 10 mils DFT per coat, and having the following minimum performance characteristics:

a. Tensile Strength (ASTM D412)	6,000
b. Compressive Strength (ASTM D695)	9,400
c. Elongation (ASTM D412)	100
d. Hardness, Shore D (ASTM D2240)	78
e. Gloss (ASTM D523) @ 60 degrees	90+
f. Abrasion Resistance (ASTM D4060 CS-17 Wheel, 1,000 g load, 500 cycles	28
g. Physical Properties	
1) Resin Type	Polyaspartic Polyurea
2) Solids by Volume	80%
3) VOC	<10 g/l (calculated applies VOC)

C. Polyasparic high performance top coat for walls shall be the same as installed for the floor, except shall be tinted. Color to be selected by the Contracting Officer. Apply at 4 – 5 mils DFT per coat.

E. Crack repairs, construction joints – Rust-Oleum Insta Patch (Fast Set) or manufacturer approved equal.

F. Spall repairs – Rust-Oleum Turbokrete Concrete or manufacturer approved equal.

PART 3 - EXECUTION

3.01 EXAMINATION

A. Verification of Conditions

1. Inspect surfaces to receive non-slip polyurea floor coating system and polyasparic top coat with the manufacturer's technical representative. Review requirements for prep work and application of coating system. Correct all unsatisfactory conditions to acceptable standards and requirements of the technical representative.

2. Conduct calcium chloride moisture vapor emission testing according to the recommendations of the manufacturer. If test reading is above recommended levels, consult the manufacturer before proceeding.

3. Prior to start of any coating work, the Contractor shall test all floor drains for proper drainage and operation. At the completion of the project, the Contractor shall retest all drains to assure proper operations. The Contractor shall be responsible for the condition of the drains during the coating work and shall correct any drainage conditions that occur from the work of this project.

4. Application of any material shall signify that surfaces have been inspected and are satisfactory.

3.02 SURFACE PREPARATION

A. All surfaces to receive new non-slip coating system shall be properly cleaned and surface prepped as recommended by the coating manufacturer's representative. Any concrete or surfaces accepting new coatings that have damages, the damages shall be repaired as recommended by the coating's manufacturer. The manufacturer's representative shall inspect the surface prep work prior to application of the non-slip coating system.

B. Cleaning: Surfaces contaminated with oil or grease shall be vigorously scrubbed with power broom and strong non-sudsing detergent or as recommended by the manufacturer. Thoroughly wash, rinse, and dry.

C. Remove all existing adhesive back sand-paper non-skid pads or other applied materials from concrete surface.

D. Provide abraded concrete surface profile CSP-2 by diamond grinding or mechanical preparation.

E. Cracks and joints shall be chased using a v-shaped diamond crack chasing blade on a hand held grinder. The crack should be opened to a minimum of ¼ inch wide. Any oil or grease that may have seeped into a crack and contaminated the edge of the concrete must be removed by grinding if washing is not sufficient. Fill all cracks, holes and joints utilizing Rust-Oleum CS Insta Patch (Fast Set) prior to application of flooring system.

G. Loose spalls, delaminated, chinks, or cracked concrete shall be removed to a solid substrate by chipping hammer and patched utilizing Rust-Oleum Turbokrete Concrete Patching Compound, or approved patching material recommended by the manufacturer prior to application of floor coating system.

H. Damaged, loose, or missing ceramic tile base to accept new coating system. Remove damaged ceramic tiles and patch to flush with existing ceramic tiles. Utilize Rust-Oleum Turbokete Concrete Patching Compound, or approved patching material recommended by the manufacturer. After patching has been completed, degloss surface of tile by diamond grinding and clean prior to application of high performance coating system.

I. Surface conditions shall be clean and dry prior to coating.

3.03 APPLICATION

A. Allow sufficient time for the installation of the flooring system. At no time shall the speed of project completion be allowed to detrimentally affect the application.

B. Provide sufficient light, power, heat and working conditions to permit proper application of materials. Substrate temperature shall be at a minimum of 50°F during application and for 48 hours thereafter.

C. Install non-slip polyurea floor coating system in strict accordance with manufacturer's instructions and recommendations and as directed by the manufacturer's technical representative.

D. Install coved base in comparable thickness as floor coating. Cove shall be as indicated on the drawings. Cove base shall be reasonably smooth and uniform in appearance to provide easily cleaned surface.

E. Termination of coating system at other than fixed vertical surfaces shall be to a neat straight line utilizing duct tape. Remove tape before coating sets. Finish clear top coat shall lap edge of coating approximately 1/2 inch.

F. Apply tinted polyasparic top coat for vertical wall surfaces to lap base cove and terminate as indicated to a neat straight line utilizing duct tape. Remove tape before coating sets.

3.04 FIELD QUALITY CONTROL

Installer and/or manufacturer's representative shall monitor the thickness of the system as the work progresses. Areas found not to meet the required thickness shall receive additional material until specified thickness is attained.

3.05 PROTECTION

Completed coating shall be properly and adequately protected from damage during the construction period. Plywood, planks, or other approved method of protection shall be provided for traffic or for storage of materials by other trades.

3.06 CLEAN UP

Upon completion of work, remove all excess material and equipment, leave surface clean and in satisfactory condition acceptable to the Contracting Officer.

3.07 INSTRUCTIONAL SESSION

The Contractor and manufacturer's technical representative shall provide to the School staff and other interested parties, an instructional session on the maintenance and cleaning of the flooring. The session shall be scheduled and performed prior to the project acceptance date. The manufacturer's representative shall recommend cleaning procedures and materials, however, shall not recommend proprietary products or equipment. All cleaning materials and equipment shall be readily available from local suppliers. For the instructional session, provide recommended rough surface mops, etc., and recommended cleaners and turn-over to staff for initial use.

END SECTION

DIVISON 9 - FINISHES

SECTION 09901 - PAINTING

PART 1 - GENERAL

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

1.02 GENERAL PROVISIONS

A. Airless Spraying: Airless spray painting shall not be permitted on this project. All application shall be by brush or roller.

B. Application: The Contractor shall strictly conform with all Manufacturer's written instructions and recommendations for all material application.

C. Right of Rejection: The HHSC Representative shall have the right to reject all work which is not in compliance with the plans and specifications. Rejected work shall be redone at no cost to the Hospital.

D. All materials shall have low or no volatile organic compounds (VOC). The HHSC Representative reserves the right to stop all and any application work and the use of materials emitting offensive odors.

1.03 SUBMITTALS

Submit in accordance with SECTION 01300 – SUBMITTALS.

A. Schedule of Finishes

1. 4 sets of proposed painting finish schedule shall be submitted to the HHSC for approval. The schedule shall indicate the wet film thickness (mils) at which the proposed paints/coatings will be applied that are necessary to achieve the final dry film thickness indicated on the Schedule of Finishes under Section 2.02.

2. Schedule of finishes shall indicate which products are intended for airless spray application, if any.

B. Color Samples

1. 3 sets, 8.5” x 11”, of each color finish sample shall be submitted to the HHSC for approval.

2. After the color finish sample has been approved, one set of color finish samples painted onto 8-1/2" x 11" cardboard shall be submitted to the HHSC Representative. The cardboard shall be divided into 4 horizontal strips and painted as follows:

a. Prime 3 strips starting from the bottom.

b. 1st coat bottom 2 strips.

c. 2nd coat bottom strip.

C. Schedule of Operations: Before work on the project is commenced, 6 complete sets of a work schedule showing his sequence of operations and dates shall be submitted by the Contractor to the HHSC Representative.

D. Guaranty: 3 copies of a written guarantee shall be submitted to the HHSC Representative.

1.04 GUARANTY

A. The Contractor shall guarantee that the work performed under this section conforms to the contract requirements and is free of any defect of material or workmanship performed by the Contractor. Such guarantee shall continue for a period of 2 years from the date of project acceptance during which period the Contractor shall remedy at his own expense any such failure to conform or any such defect.

C. The University shall notify the Contractor in writing within a reasonable time after discovery of any failure or defect.

D. Should the Contractor fail to remedy any failure or defect described in Paragraph A above within 10 working days after receipt of notice thereof, the HHSC Representative shall have the right to repair or otherwise remedy such failure or damage at the Contractor's expense.

1.05 SPECIAL REQUIREMENTS

A. Codes

1. The Contractor shall comply with the State OSHL (Occupational Safety and Health Law) and all pollution control regulations of the State Department of Health.

B. Protection

1. Persons

a. The Contractor shall take all necessary precautions to protect occupants, staff and public from injury.

b. The Contractor shall provide, erect and maintain safety barricades around scaffolds, hoists and wherever Contractor's operations create hazardous conditions in

order to properly protect the students, faculty, staff and public.

2. Completed Work: The Contractor shall provide all necessary protection for wet paint surfaces.

3. Protective Covering: The Contractor shall provide and install protective covering over furniture, equipment, floor and other areas that are not scheduled for treatment. Protective covering shall be clean sanitary drop cloth or plastic sheets. Paint applied to surfaces not scheduled for treatment shall be completely removed and surfaces shall be returned to original condition.

4. Safeguarding of Property: The Contractor shall take whatever steps may be necessary to safeguard his work and also the property of the University and other individuals in the vicinity of his work area during the execution of this Contract. He shall be responsible for and make good on any and all damages and for losses to work or property caused by his or his employee's negligence.

   Should surface preparation work include power-washing of the existing surface, the Contractor shall take all necessary precautions to control water run-off. Failure to take this precaution shall be grounds to stop the work of the project until a satisfactory solution is provided. Costs for this action shall be borne by the Contractor.

5. Fire Safety: The Contractor shall direct his employees not to smoke in the vicinity and exercise precautions against fire at all times. Waste rags, plastic (polyester sheets), empty cans, etc. shall be removed from the site at the end of each day.

C. Storage Area for Materials: No paint material, empty cans and paint brushes and rollers may be stored in buildings, but shall be stored in separate storage facilities away from the buildings. The Contractor may furnish a job site storage facility. Such facility shall comply with requirements of the local Fire Department. The storage area shall be kept clean and facility shall be locked when not in use or when no visual supervision is possible.

D. Sequence of Operations: The sequence of operations shall divide the surfaces into work areas and present a schedule for:

1. Surface preparation and spot prime.

2. Prime coat.

3. First finish coat.

4. Second finish coat.

E. Protection, Removal, Trimming of Landscaping: The Contractor shall coordinate with the University on the location of scaffolding, platforms, etc., within the landscaping surrounding the buildings. The Contractor shall be responsible for all trimming and removal or relocation of landscaping as necessary. The Contractor shall be responsible for protection of all landscaping to remain.

1.06 AREAS TO BE PAINTED

A. Surfaces to be Painted

1. Exterior:

a. All new exposed fabrications not prefinished, new mechanical piping, new electrical conduits, and touch-up of existing surfaces for the work of this project. Note: New copper or stainless steel fabrications need not be painted.

2. All questions regarding the extent of work shall be addressed to the HHSC Representative for clarification. The Contractor's bid shall assume, that unless noted otherwise, all questionable surfaces shall be assumed to be painted unless directed by the HHSC Representative otherwise.

B. Work Incidental to Painting

1. Other items as noted in the drawings or herein specified.

PART 2 - PRODUCTS

2.01 MATERIALS

The Contractor shall be responsible for furnishing to the University quantities of each paint material required. The paint materials will generally meet the following requirements.

A. Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The Contractor shall ensure that all materials and equipment incorporated in the project are asbestos-free.

B. Lead Prohibition: All paints shall be lead-free.

C. Mercury Prohibition: All paint shall be mercury- free.

D. Chromate Prohibition: All paint shall be free of zinc-chromate and/or strontium-chromate.

E. Cadmium Prohibition: All paint shall be cadmium free.

F. All materials shall be low or no VOC and shall not produce offensive odors unless otherwise specified. Should offensive odors be produced, the contractor shall immediately stop and cease to use such product until an acceptable ventilation system can be provided by the contractor to remove such offensive odors. Provide ventilation in conformance with manufacturer's recommendations. If a ventilation system is required, the cost of such measures shall be borne by the contractor.

G. Paints shall be as manufactured by PPG Paints, Benjamin Moore, Sherwin Williams, or pre-approved equal.

H. Thinning of paint shall be done using material recommended by the manufacturer. Mix proprietary products according to manufacturer's printed specifications. Compound thinner, mineral oil, kerosene, refined linseed oil, or gasoline shall not be used for thinning.

I. Except for metal primers all paint shall contain the maximum amount of mildewcide per gallon of paint permitted by the mildewcide manufacturer without adversely affecting the quality of the paint.

2.02 SCHEDULE OF FINISHES

A. The Schedule of Finishes is made for the convenience of the Contractor and indicates the types and quality of finishes to be applied to the surfaces.

B. Any existing painted surface not specifically noted in the finish schedule shall be finished to match adjoining work.

C. Additional paint materials not included in the Schedule of Finishes, however, required for the conditions of the site, shall be provided by the Contractor for a complete paint/repaint project.

SCHEDULE OF FINISHES

Interior and Exterior System:

A. Ferrous Metal and Copper: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.
   1. Latex Finish: Two finish coats over a rust-inhibitive primer.
      a. Primer: Exterior ferrous-metal primer. MPI #79.

      b. Finish Coat: Exterior latex paint. MPI #11.

      c. Finish Coat Gloss Level: semi-gloss.

B. Zinc-Coated Metal: Provide the following finish systems over exterior zinc-coated metal surfaces:

1. Latex Finish: Two finish coats over a galvanized metal primer.
   a. Primer: Exterior galvanized metal primer. MPI #135.

   b. Finish Coat: Exterior latex paint. MPI #11.

   c. Finish Coat Gloss Level: semi-gloss.

C. PVC: Provide the following finish systems over PVC surfaces.
1. Waterborne Light Industrial Coating MPI EXT 6.8C-G5
   a. Pretreatment: Solvent clean in accordance to SPC SP1

   b. Primer: MPI #17 Gripper Primer VOC < 100 g/L

   c. Intermediate (MPI #11) Exterior Semi-Gloss Paint

   d. Topcoat (MPI #11) Exterior Semi-Gloss Paint

D. Concrete: Provide the following finish systems over exterior concrete metal surfaces:
1. Latex Finish: Two finish coats over a concrete primer.
   a. Primer: Primer/Sealer. MPI #06.

   b. Finish Coat: Exterior latex paint. MPI #11.

   c. Finish Coat Gloss Level: semi-gloss.

E. Concrete Masonry Units: Provide the following finish systems over concrete masonry surfaces:
1. Latex Finish: Two finish coats over a galvanized metal primer.
   a. Primer: Interior/Exterior block filler. MPI #04.

   b. Finish Coat: Exterior latex paint. MPI #11.

   c. Finish Coat Gloss Level: semi-gloss.

F. Gypsum Wallboard:
1. Latex Finish: Two finish coats of a primer.
   a. Primer: Interior Primer/Sealer MPI #50.

   b. Finish Coats: Interior acrylic enamel MPI #54.

   c. Finish Coat Gloss Level: semi-gloss.
      interior gypsum wallboard:

PART 3 - EXECUTION

3.01 WORKMANSHIP

A. Apply all materials in strict accordance with the manufacturer's printed instructions with paint evenly spread and well applied with no drops, runs, or sags. Do not apply paint on wet or damp surfaces nor until preceding coat of paint is thoroughly dry, and in the case of woodwork, well sanded. Particular attention shall be made to sanding between finish coats. All finishes are intended to thoroughly cover in the number of coats listed, using the quality of paint specified. If paints are thinned, apply sufficient additional coats as required to provide full and complete coverage, with no shadows, spots, streaks, voids, color bleed-through, or other defects.

B. Identification of coatings: Each coat shall be tinted a slightly different shade from the preceding coat so that it can be readily identified. Finish coat shall match approved sample for each portion of work.

C. All 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.

D. All mixing shall be done outside the building.

E. All waste materials shall not be left in or near the building but shall be stored in proper metal containers.

F. Take all necessary precautions to prevent or minimize dust from surface preparation work from becoming airborne and spreading beyond the immediate work area. If directed by the University provide a dust barricade around the work area at no additional cost to the University.

3.02 PREPARATION OF SURFACES

A. The painting contractor shall be wholly responsible for the finish of his work and shall not commence any part of it until surfaces are in proper condition. If painting contractor considers any surfaces unsuitable for proper finish of his work, he shall notify the General Contractor of this fact and he shall not apply any material until the unsuitable surfaces have been made satisfactory. Major defects shall be restored by the proper trades. In general, follow paint manufacturer's directions for surface preparation for the paint to be applied.

C. All surfaces:

1. All surfaces shall be free of all contaminants, including oils, greases dirt, grime, loose paint, chalk, imbedded contaminants, rust, mildew and/or any surface contaminants that will impede the proper adhesion and appearance of the finishes to be applied.

2. Remove surface “chalk” by a soap and water scrubbing. Rinse thoroughly.

3. Existing surfaces, where touch-up is required, to which new paint is to be applied shall be tightly bonded to the subsurface.

4. Remove all mildew by scrubbing with a commercial mildew wash formulated for this purpose such as Jomax or pre-approved equal. Apply per manufacturer's written instructions and adhere to all cautions. Allow 15 – 20 minutes dwell time before rinsing. If necessary, scrub surfaces to remove mildew and dirt. Work from the top to bottom. Thoroughly rinse with clean, fresh water and allow surfaces to dry thoroughly before proceeding. Repeat above process if necessary to insure removal of all milder contamination.

C. Scuff-sand glossy surfaces scheduled for painting to insure proper adhesion.

D. Unprimed galvanized metal shall be washed with a solution of chemical phosphoric metal etch and allowed to dry.

E. All metal surfaces shall be made clean and free of any defects or condition that may produce unsatisfactory finish.

3.03 PAINT APPLICATION

A. General : All materials shall be applied in accordance with the manufacturer's specifications and the finished surfaces shall be free from runs, sags, drops, ridges, waves, laps, streaks, brush marks and variations in color, texture and finish (glossy or dull). The coverage shall be complete and each coat shall be so applied as to produce a film of uniform thickness. No paint materials shall be applied until the preceding coat is thoroughly dry and approved.

B. Application: Application shall be by brush or roller only. Paint coating shall be dressed down in one direction.

C. Colors: Each coat shall be tinted a different shade from the preceding coat. Colors shall generally match the existing building colors or as selected by the HHSC Represenatative.

3.05 PROTECTION OF PROPERTY

The Contractor shall be responsible for condition of work area in his charge. He shall protect adjacent work and materials from soiling or damage as well as his own. The storage and handling of paints and thinners shall be in accordance with the safety provisions and codes covering such handling and storage.

3.06 INSPECTION

All areas shall be provided for inspection of the work by the University at any time. Any work not conforming to these specifications shall be cleaned off, and repainted at the expense of the Contractor.

3.07 MISCELLANEOUS

A. Clean-up

1. During the progress of the work, all debris, empty crates, waste, drippings, etc. shall be removed by the Contractor and the grounds about the areas to be painted shall be left clean and orderly at the end of each work day.

2. Upon completion of the work, staging, scaffolding, containers and all other debris shall be removed from the site. All paint, shellac, oil, or stains splashed or spilled upon adjacent surfaces not requiring treatment (hardware, fixture, floor, glass) shall be removed and the entire job left clean and acceptable.

END OF SECTION

DIVISION 10 - SPECIALTIES

SECTION 10161 - TOILET PARTITIONS

PART 1 - GENERAL

1.01 SUMMARY

A. Provide labor, materials, equipment, tools, etc., as required to install toilet partitions, complete, where indicated on the drawings and specified herein.

1.02 WORK-DESCRIPTION

Work under this section shall include but not be limited to the following:

A. Floor and wall anchored, overhead braced solid plastic toilet compartments.

B. This project is to provide conformance with the Americans with Disabilities Act Accessibility Guidelines (ADAAG) and is not intended to replace all toilet stall partitions.

1.03 REFERENCES

The publications listed below form a part of this specification:

A. The Americans With Disabilities Act Accessibility Guidelines (ADAAG).

B. American Society for Testing and Materials (ASTM) E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

1.04 GENERAL REQUIREMENTS

A. The contractor shall verify all dimensions prior to fabricating.

B. Toilet compartments which are accessible to the physically handicapped shall be in conformance with the criteria noted in ADAAG 4.17.

1.05 SUBMITTALS

The contractor shall submit the following to the Contracting Officer:

A. 4 sets of finish and material samples, matching existing, for review and approval.

B. 6 sets of the proposed (selected) manufacturer's current brochures, specifications and shop drawings showing construction and all installation details. Drawings shall indicate the elevations of partitions, hardware, fittings, mounting brackets, proposed method of anchoring, and other related items and installation details.

C. Manufacturer's certificate attesting that his materials meet or exceed the specified requirements.

1.06 PRODUCT HANDLING

A. Materials shall be delivered to the job-site in their original sealed containers bearing the name of the manufacturer and brand designation.

B. Items shall be delivered and stored in a manner that ensures they will be protected against damage.

PART 2 - PRODUCTS

2.01 MATERIALS AND CONSTRUCTION

A. General: Compartments shall be of the type, material, finish, etc., as specified and/or indicated on the drawings. Color shall be selected by the Contracting Officer from manufacturer's full line of standard colors.

C. Doors:

1. Doors shall be of High-Density Polyetylene (HDPE) plastic with a minimum thickness of 1".

2. Unless otherwise noted on the drawings, a minimum clear door opening width of 32" shall be provided at the door leading to a handicap accessible toilet stall. This clear width shall be measured between the edge of the door bumper/keeper and the face of the door when opened 90 degrees.

D. Pilasters and Panels:

1. Pilasters shall be of High-Density Polyetylene (HDPE) plastic with a minimum thickness of 1".

E. Hardware and Fittings:

1. Doors and pilasters shall be furnished with the necessary hardware and fittings to provide a complete installation. They shall be pre-cut to facilitate erection and minimize field errors.

2. Materials: Hardware and fittings shall be either satin-finish stainless steel, anodized extruded aluminum or chrome plated brass. Non-ferrous alloys such as Zamac castings shall not be used.

3. Overhead Brace: Continuous, clear anodized, heavy duty, extruded aluminum (6463-T5 alloy) head rail with anti-grip profile and integral reinforcing channel.

4. Door hinges: Shall be fabricated from heavy-duty extruded aluminum (6463-T5 alloy) with a bright dip anodized finish, with wrap around flanges, surface mounted and through bolted to doors and pilasters with stainless steel, torx head sex bolts.

5. Latches: The latch shall be of a shape which is easy to grasp with one hand and which does not require tight grasping, tight pinching or twisting of the wrist to operate and shall be operable by a person on the outside in the event of an emergency. Mechanisms such as slide bolts with a projecting handle on the inside of the stall which can be opened by a person on the outside reaching over the door with a stick are acceptable. Latches and housing shall be fabricated of heavy-duty extruded aluminum (6463-T5 alloy) with bright dip anodized finish.

6. Door Pulls: Handicap accessible toilet stall and shower stall doors shall be furnished with a grab bar/door pull, 18" long, mounted horizontally on the inside face of the door adjacent to the hinge to facilitate closing of the door upon entry.

7. Coat Hook/Door Bumper: Furnish one each per standard in-swinging stall door at 48" above finished floor.

8. Shoe: Where required, pilasters shall have a trim cover or shoe of Type 302 or 304 stainless steel, chrome plated brass or anodized extruded aluminum at the floor.

9. Hardware mounting heights: The highest part of any handle, pull, grab bar, latch or operating mechanism shall be at 34 inches max. above the finished floor.

10. Fasteners: Hardware and fittings shall be institutional type and fastened with theft-proof stainless steel screws and/or sex bolts. Compartments shall be pre-cut for all hardware and fittings to facilitate erection and minimize field errors.

11. Brackets: Shall be Type 304, 16 gauge satin stainless steel.

PART 3 - EXECUTION

3.01 INSPECTION

A. The Installer together with the Contractor and Contracting Officer shall examine the areas and conditions under which toilet compartments are to be installed. Should any condition be found unsuitable, no work shall be performed until the unsatisfactory conditions have been corrected and are acceptable to the Installer. Proceeding with the work will imply acceptance of the conditions by the Installer.

3.02 INSTALLATION

A. Compartments shall be erected in strict accordance with the manufacturer's instructions.

B. All parts shall be securely screwed and/or bolted tight, well-anchored, true to line, level and plumb, with doors and hardware placed at the proper heights and in proper operating condition.

C. The following uniform clearances shall be provided:

1. 1/2" max. between the stiles/pilasters and partitions.

2. 1" max. between stiles/pilasters/partitions and walls.

3. 3/16" max. between stiles/pilasters and doors.

D. Anchorage to concrete or to masonry at grouted cells shall be bolts with lead or steel expansion shields. Anchorage to masonry at ungrouted cells or to gypsum board walls shall be with toggle bolts.

E. Coordinate with the General Contractor for all necessary blocking and/or backing within construction that compartments will be anchored to.

F. Perform all necessary adjustments for the proper swing and latch of the doors.

3.03 PROTECTION AND CLEANING

A. Protect the work of other trades against damage, injury or soiling.

B. After installation, clean exposed surfaces with cleaners recommended and approved by the manufacturer and protect from damage.

C. Adjust hardware and lubricate moving parts as necessary to ensure smooth operation.

D. Repair and restore adjacent surfaces that are marred or damaged as a result of the installation of doors and pilasters to their original condition. Leave adjacent surfaces in a neat and clean condition.

END OF SECTION

SECTION 10500 - LOCKERS

PART 1 – GENERAL

1.01 SUMMARY

Furnish and install solid plastic lockers and bench, complete, as indicated on the drawings and/or as specified herein.

1.02 SUBMITTALS

A. Shop Drawings: Furnish to the Contracting Officer shop drawings and manufacturer's literature as required for his review and acceptance. All installations in conformity with approved and/or corrected drawings. No items shall be fabricated or installed without the acceptance of the shop drawings or literature.

B. Samples: Submit to the Engineer for acceptance and selection, samples of color. Acceptance must be obtained before ordering or fabrication.

1.03 WARRANTY

A. Locker manufacturer must warrant the lockers and bench for a period of 10 years from date of acceptance for all defects in material and workmanship excluding finish.

PART 2 - PRODUCTS

2.01 MATERIALS

A. The following lockers are as manufactured by Santana Plastic Products to establish minimal acceptable qualities. Products of equal or better quality, finish, color, design and construction, of other manufacturers will be reviewed by the Contracting Officer for acceptability.

2.02 LOCKERS

A. Lockers: Triple tier, solid plastic lockers. Each locker shall be 12" wide x 12" deep x 24" high. Installation shall be in arrangements as indicated on drawings. All modules shall be provided with sloping tops. Furnish with fillers and corners.

B. Features: These specifications shall be regarded as minimum standards in construction, material thickness.
   1. Doors and door frames shall be constructed of solid plastic polymer resin, 1/2” thick, with cross routed vent holes.

   2. Hinges shall be continuous, integrated into the full length of the door and locker frame, made entirely from plastic with full length type 304 stainless steel knuckle pins.

3. Coat hooks shall be type 304 stainless steel attached with theft resistant stainless steel screws. Provide three per opening.

4. Lockers shall be fabricated square, rigid, and without warp, with faces flat and free of dents, scratched or chips.

5. Solid plastic locker components shall be dovetailed to provide a solid and secure joint that slides together for assembly.

6. Lockers shall be fabricated to receive user furnished padlocks. Where indicated on the drawings, provide ADA accessible latching devices and pulls complying with ADAAG 4.13.9.

7. Number plates shall be manufacturer's standard embossed number plates with numerals not less than 3/8" high, fastened with stainless steel theft resistant screws. Numbering shall be as indicated on the drawings or as directed by the Contracting Officer.

8. Filler panels and sloping tops shall be fabricated of 1/2" thick solid plastic, and finished to match locker units.

9. Color of locker units shall be as selected by the facility from standard manufacturer's colors.

PART 3 – EXECUTION

3.01 INSTALLATION

A. All lockers shall be securely anchored to wall and base with approved stainless steel fasteners, such as lag screws, or toggle bolts. Wood screws or nails are not acceptable. Fastening shall be applied through suitable reinforcing plates in the two side modules of each grouping of lockers. All modules shall be connected together in each group of lockers to act as a single module. Free standing lockers shall be securely anchored to the base. Brackets and fasteners shall be installed as required to prevent overturning.

3.02 CLEAN-UP

A. At the completion of his work, the Contractor shall clean up and remove from the premises, all rubbish, debris and unused materials. He shall also clean and protect lockers until the acceptance of the project.

END OF SECTION

SECTION 10990 - MISCELLANEOUS SPECIALTIES

PART 1 - GENERAL

1.01 SUMMARY

Provide miscellaneous specialties complete, where indicated on the drawings and/or specified herein.

1.02 GENERAL REQUIREMENTS

Provide all items of building specialties as shown on the drawings, including, but not limited to, the following:

1. Toilet accessories.
2. Room signs.
3. Fire extinguisher, miscellaneous signs.
4. Fire extinguisher and cabinet.
5. Miscellaneous Furnishings

1.03 SUBMITTALS

A. Manufacturer's Data: Submit manufacturer's descriptive literature and specifications to the Engineer for approval.

B. Submit six (6) sets of signage schedule, including locations, mounting heights and details, and scaled layout drawings including overall sign dimensions.

C. Submit six (6) sets of toilet accessories schedule including locations, mounting heights and details.

D. Submit six (6) sets of bird netting shop drawings indicating installation details and accessories.

PART 2 - PRODUCTS

2.01 TOILET ACCESSORIES

A. The following specified items are as manufactured by Bobrick Washroom Equipment Inc. and Bradley Corporation to establish minimum acceptable quality. Mount all toilet accessories per ADA chapter 308, Reach Ranges, 603.3 Mirrors, 604 Water Closets and Toilet Compartments.

The products of other manufacturers are acceptable provided they meet or exceed the material and construction requirements specified herein.

1. Toilet Paper Holder: Double roll, Bobrick Model B-2740, Bradley Model 5241.

2. Grab Bars: Concealed mounting, Bobrick Model B-5806 Series, Bradley Model 8320 Series.

3. Mirror with Stainless Steel Frame: Bobrick Model B-290 Series, Bradley Model 780 Series, size: 18" x 36"

4. Soap Dispenser: Bobrick Model B-822, Bradley Model 6324-68.

5. Paper Towel Dispenser (Restrooms): Bobrick Model B-362, Bradley Model 244.

6. Paper Towel Dispenser (Other Areas): Bobrick Model B-262, Bradley Model 250-15.

7. Mop Holder: Bobrick Model B-223 X 24, Bradley Model 9953.

8. Toilet Seat Cover Dispenser: Bobrick Model 4221, Bradley Model 583.

9. Robe Hooks:

2.02 ROOM SIGNS

Room name signs shall be non-ferrous, stamped cast aluminum plates, approximately 3/16" thick, 2" high, with raised, smooth satin finish letters, characters and braille without borders, or, fiberglass, non-corrosive, 3-ply laminate, approximately 3/16" to 1/4" thick, 2" high, with raised, smooth finish letters, characters and braille without borders. Background to be weatherproof enamel baked-on with crackled or other acceptable finish, or, non-glare, fiberglass core color. Characters shall have the following features:

1. Depth: Raised characters and Braille shall be 1/32 inch minimum above their background.

2. Case: Characters shall be uppercase.

3. Style: Characters shall be sans serif. Characters shall not be italic, oblique, scrip, highly decorative, or of other unusual forms.

4. Character Proportions: Characters shall be selected from fonts where the width of the uppercase letter “O” is 55 percent minimum and 110 percent maximum of the height of the uppercase “I”.

5. Character Height: Character height measured vertically from the baseline of the character shall be 5/8 inch minimum and 2 inches maximum based on the height of the uppercase letter “I”.

6. Stroke Thickness: Stroke thickness of the uppercase letter “I” shall be 15 percent maximum of the height of the character.

7. Character Spacing: Character spacing shall be measured between the two closest points of adjacent raised characters within a message, excluding work spaces. Where characters have rectangular cross sections, spacing

between individual raised characters shall be 1/8 inch minimum and 4 times the raised character stroke width maximum. Where characters have other cross sections, spacing between individual raised characters shall be 1/16 inch minimum and 4 times the raised character stroke width maximum at the base of the cross sections, and 1/8 inch minimum and 4 times the raised character stroke width maximum at the top of the cross sections. Characters shall be separated from raised borders and decorative elements 3/8 inch minimum.

8. Line Spacing: Spacing between the baselines of separate lines of raised characters within the a message shall be 135 percent minimum and 170 percent maximum of the raised character height.

9. Braille: Braille shall be contracted (Grade 2). Braille dots shall have a domed or rounded shape.

10. Provide special clear message slots, as indicated on the drawings, with clear top and provisions to allow the insertions of 1/16 inch maximum thickness message strips to be furnished by the users.

11. Exit signs shall be similar to room signs without clear message slots, having raised text and Grade 2 Braille.

12. All signs shall conform with the 2010 ADA Standards for Accessible Design 703, Signs. Colors shall be as selected by the Contracting Officer.

2.03 FIRE EXTINGUISHER AND FIRE PULL STATION SIGNS

Fire extinguisher and fire pull station sign plates shall be 7-1/2" high x 13" wide each face, similar to room sign plates except that the letters shall be on a red background. Fiberglass plates shall be mounted to minimum .063” aluminum backing painted with white enamel.

2.04 INTERNATIONAL SYMBOL OF ACCESSIBILITY (ISA) AND PICTOGRAM SIGNS

ISA signs and pictogram signs shall be similar to room signs, without clear message slots, and except that the ISA and pictogram portion of the signs shall be 6" x 6" with proportionate raised handicap symbol. Conform with the ADA/ABA AG, Section 703.4 and 703.6.

2.05 BUILDING SIGN

Building sign shall be the same type as room signs except that they shall be as indicated on the sign schedule and no borders. Letter finish and background color shall be same as room signs.

2.06 MISCELLANEOUS SIGNS

Where indicated on the drawings, provide miscellaneous signs with informational text. Signs shall be made of .063” aluminum with white enamel background and black letters. Both faces shall be painted.

2.07 FIRE EXTINGUISHER AND CABINET

Fire extinguisher and cabinets: Provide minimum 2A10BC fire extinguisher with semi-recessed cabinets, where indicated on the plans. Mount at ADA compliant reach height, chapter 308 Reach Ranges.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Install specialty items in strict accordance with manufacturer's printed instructions and/or approved shop drawings.

END OF SECTION

SECTION 11400 - FOOD SERVICE EQUIPMENT

PART 1 - GENERAL

1.01 SUMMARY OF WORK

A. This Section includes the following for food service equipment:

1. Materials for fabricated and buy-out equipment.

2. Specifications for fabricated and buy-out equipment.

1.02 DESCRIPTION OF WORK

A. Furnish labor, materials, tools, plant, equipment, transportation to perform all operations necessary for and reasonable incidental to properly execute and complete all "Food Service Equipment" work whether specifically mentioned or not; all as indicated, specified herein and/or implied thereby to carry out the apparent intent thereof.

1.03 COORDINATION WITH OTHER SECTIONS

A. All electrical work related to the Food Service Equipment including but not limited to service connections, switches and final connections to the fixtures, shall be in complete compliance with DIVISION 16 - ELECTRICAL.

B. All mechanical work related to the Food Service Equipment including but not limited to all water, fittings and waste including all piping, shut-off valves, water pressure reducing valves is required; final connections to the fixtures, except duct extensions as specified in individual items shall be in complete compliance with DIVISION 15 - MECHANICAL.

1.04 SUBMITTALS

A. Submit in accordance with SECTION 01330 - SUBMITTAL PROCEDURES.

B. Materials List: Within 21 calendar days of receiving Contracting Officer's Notice to Proceed, submit list of products and items proposed to be provided under this Section.

C. Manufacturer's Literature: Submit 6 copies of manufacturer's technical literature before installation of specific work where called for herein. All items to be furnished shall be clearly indicated in the literature. All installation shall be in conformity with approved and/or corrected submittals. "No ordering, fabrication, work or installation shall be started without processing of the submittals."

1. Each individual cover sheet shall indicate the Item No., quantity required and the model number. Add the following information where applicable; electrical characteristics, (such as voltage,

cycle, phase and cord and plug) if mounted; list any attachments or specialties if specified; and state body finish.

2. Each of the bound brochure submittal shall be complete accounting for all specified buy-out items. Loose sheets or "piece meal" brochure submittals are not permissible. If a catalog sheet is not obtainable for a specific buy-out item, insert a "filler sheet" with all of the required information in typewritten form.

D. Shop Drawings: Submit 6 copies of shop drawings for all items of work included in this contract.

1. The detail drawings shall be submitted with 3/4-inch scale elevations and 1- 1/2-inch scale vertical cross sections.

2. The drawings shall show all dimensions, all details and methods of construction, materials, gauges, installation and the relation to adjoining and related work requiring cutting or close fittings.

3. The drawings shall show all reinforcements, anchorage and other work required for complete installation of all fixtures. Show all information required for fabrication and installation of the work. Adjust details where necessary to suit field conditions.

4. The reproduction of original contract drawings is “not acceptable” for use of shop drawings and rough-in submittals. The original contract documents are provided for the convenience of the Architect, Engineers, General Contractor and/or Sub-Contractors. Shop drawings shall be provided “For Construction” and shall indicate all requirements related to and/or required by the equipment that will be installed.

5. Prepare and submit 1/4-inch scale equipment plan, dimensioned roughing-in and raised concrete base drawings, including kitchen items listed as "N.I.C.". Also, visit the site to verify all equipment roughing-in requirements.

6. Special Note: Manufacturer’s literature and shop drawings must be submitted together. “Piece meal” submittal is not acceptable.

a. Manufacturer’s literature and shop drawings shall be noted and/or stamped “For Construction”.

b. Consultants’ review of the manufacturer’s literature and shop drawings does not relieve the Kitchen Equipment Contractor of their responsibility to ensure that all required equipment roughing-in work are indicated and provided along with their responsibility to coordinate the required work between “Trades” (General Contractor and Sub-Contractors).

E. Operating and Maintenance Manuals: Three bound copies of operating and maintenance manuals shall be furnished to the State before final acceptance of the installation.

F. Guarantee: Submit warranty as noted under item entitled “GUARANTEE” hereinbelow.

1.05 CODES

A. All work and materials shall be in full accordance with the U.S. Public Health Service, National Board of Fire Commissions Safety Orders and Regulations of the governing Fire Marshall.

B. All regulations, local building, safety (ADA) and health codes in this jurisdiction shall govern. No extra charge will be paid for furnishing items required by the regulations but not specified or shown on the drawings.

1. Rulings and interpretations of the local enforcing agencies shall be onsidered a part of the regulations.

2. Whenever the drawings and specifications require larger sizes or higher standards than are required by the regulations, the drawings and specifications shall govern. Whenever the drawings and specifications set requirements that violate the regulations, the regulations shall govern.

C. All equipment shall conform to Standards of National Sanitation Foundation, Ann Arbor, Michigan.

D. All electric operated or heated equipment shall conform to the standards of the National Electric Manufacturer's Association and of the Underwriter's Laboratories, Inc., of the local city Electric Testing Station.

1.06 MANUFACTURER'S DIRECTIONS

A. Manufacturer's directions shall be verified, followed and installed in all cases where the manufacturers of articles used in this contract. Furnish directions covering points not show in the drawings and specifications.

1.07 QUALITY ASSURANCE

A. To establish quality and type, specifications are based on products manufactured by a specific manufacturer who has a proven performance acceptability in past projects. Similar products of other manufacturers will be considered, provided they meet design criteria and specifications and when submitted for substitution approval as specified in the bidding documents.

1. All suppliers offering substitutes for equipment specified shall be responsible for payment for all additional charges for changes in electrical, plumbing or general contract work required to

accommodate substitution.

2. Equipment supplier shall also supply diagrams and drawings of changes required to General Contractor immediately after award of contract.

3. When substitute items have different space requirements or roughing-in dimensions from items specified, Contractor shall be responsible for fitting them into the available space.

4. All substitution requests shall be provided with a written cross-comparison of features for the specified equipment and the requested substitute equipment. The comparison shall include similar and different features, specifications, sizing, ratings and options for such equipment.

5. All substitution requests must be submitted to the Consultant 10 working days prior to the bid submittal for acceptance and/or rejection. All equipment substituted in bids that have not been submitted for approval will not be accepted. No substitution requests will be reviewed and/or accepted after bids have been submitted.

1.08 QUALIFICATION OF KITCHEN EQUIPMENT CONTRACTOR

A. The Kitchen Equipment Contractor shall have a satisfactory record of planning, fabricating, coordinating and installing custom metal and food service equipment. Contractor shall have an adequate office, and shop facilities for large scale production.

B. The Kitchen Equipment Contractor shall be a recognized dealer in standard manufactured or “buy-out” equipment.

C. Bidders and installers are required to have a current State of Hawaii Contractor’s license, a sheetmetal license C-44 and institutional equipment license C-25.

1. Journeyman installers shall have completed an apprenticeship program and have a minimum of five years of field experience.

2. Welders shall have completed qualification tests by a certified testing laboratory.

D. If bidder is dealer only, bidder shall provide in writing at the time of bidding, the name, address, qualification and license numbers of the fabricator and installing Contractor to be used for the project.

1. Submit letter from equipment manufacturer that the installing Contractor is a “Factory Authorized Installer”.

2. Submit copy of and/or list licenser numbers in submittal to indicate compliance to paragraph “C.” above.

E. A qualified foreman or supervisor shall be assigned to the project and shall be on site daily during Food Service related construction/installation to counsel and coordinate with other disciplines regarding connection and installation. Supervisor/foreman will also coordinate delivery schedule with the general Contractor to insure adequate openings in the building to receive equipment.

1. Submit name of qualified foreman in submittals to indicate compliance.

2. RFI’s shall be submitted in a “proposed solution” form for review.

1.09 GUARANTEE

A. New equipment under this contract of the specifications shall be guaranteed for a period of one year from the date of Project Acceptance thereof, against defective materials, design and workmanship. Upon receipt of notice of failure of any part of the guaranteed equipment during the guarantee period, the affected part or parts shall be replaced promptly and at the expense of the Food Service Equipment Contractor. Until the time that the replacement equipment is installed, the State shall have full use of the defective equipment. This guarantee shall include installation start-up and one year guarantee free service for all self-contained refrigeration equipment furnished under this contract, with evidence of manufacturer's one year guarantee on the entire cabinet. Provide name, address and telephone number of the servicing agency.

B. Manufacturer’s Warranty for Refrigeration Sealed Compressor Motor Assembly: Provide an additional 4 years “parts only” warranty.

C. Surety shall not be held liable beyond 2 years from Project Acceptance date.

PART 2 - PRODUCTS

2.01 MANUFACTURER'S LABEL

All equipment shall have the manufacturer's name, trade name, model number, Underwriters Laboratories, Inc. label (electric energized equipment), American Gas Association certification (gas energized equipment) and NSF label distinctly mounted in a conspicuous place.

2.02 MATERIAL REQUIREMENTS

A. Materials used in the construction of all items shall be in accordance with the specified manufacturer's product.

B. All materials shall be new, first class of their respective kinds, suitable for

the purpose specified. Materials shall be free from rust, scale and/or other imperfections affecting appearance or serviceability.

2.03 MATERIALS

A. Fabricated and Buy-out Items:

1. All materials shall be new, or first grade; no seconds will be acceptable. Gauges herein specified shall be minimum and established after polishing. Materials shall be of matching appearance and quality workmanship.

2. Stainless steel shall be U.S. Standard gauges, as specified or as required by the drawings, 18-8 Type 304 No. 4 finish. Finished abrasion marks shall run longitudinally.

3. Steel tops, panels and other surfaces 18 gauge or heavier, shall be welded into one integral unit. All seams and joints shall be shop welded where possible. Welds shall be finished as specified in the paragraph above and shall be ground smooth and polished to match the adjacent or contiguous surface. Splices shall be smooth finish and even to adjoining surfaces. No apex where S/S sheets are joined. Welds shall be pounded or bumped flat to be even with contiguous surface. Valleys at welds are not acceptable. Tops, panes and surfaces shall be level; bowing is not acceptable.

4. Galvanized Steel: Standard brand of commercial quality steel omplying with ASTM A 653/A 653M, “Standard Specification for Steel Sheet, Zinc-Coated or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process".

5. Coating: Unless specified otherwise, 1.25 Commercial as defined by Toole One-Weight of Coating of ASTM A 653/ASTM A653M, “Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by Hot-Dip Process”.

6. Framework of galvanized steel shall be of welded construction. All welds shall be smooth and where zinc coating has been burned off, restore coating with All State #321 Galvanized Powder (30 percent Zinc, 40 percent Lead and Flux), manufactured by All State Welding Alloys, 249 Ferris Avenue, White Plains, New York, or others as approved.

7. Steel Pipe: Galvanized, rust resistant coating for threads.

8. Steel Structural Sections: Complying with ASTM A 36/A 36M, “Standard Specification for Carbon Structural Steel”.

9. Soldering Stainless: Not permitted for surfaces which may come in contact with food; use welded joints.

10. Concealed fasteners where possible; cap exposed bolts, nuts and pipe ends.

11. Fasteners, locknuts and lockwashers shall be non-corrosive, adequate for purpose.

12. All equipment legs and cross-railings shall be 1-5/8 inch, 16-gauge stainless steel tubing unless otherwise noted. All welds at cross-rails shall be ground smooth. Each leg shall be fitted with a bullet type foot and cylinder type gusset described hereinafter.

    a. Bullet foot shall be Klein Hardware Model No. 222-SS-1R or approved equal, 18-8, 304 stainless steel; exterior dimension not less than 1-1/2 inch diameter tapered at bottom to 1-inch diameter fitted with 5/8-inch diameter threaded cold rolled stud with not less than 2-inch minimum vertical adjustment; fitted inside foot welded to bottom of foot for rigidity; fitted with 1-1/2 inch diameter x 3/4-inch threaded busing and plug welded to legs.

    b. Cylinder gusset shall be Klein Hardware Model No. 1020-0206-1283 or approved equal, 18-8, 304 stainless steel; gusset to fit 1-5/8 inch O.D. stainless steel tubing; shall have allen screw for staple fastening and adjustment; not less than 3-inch diameter at top and 3-3/4 inches long; outer shell 16-gauge stainless steel reinforced with 12-gauge mild steel insert, welded to exterior shell. Top of gusset shall be completely welded to underside of framing or sinks.

    c. Cabinet base leg shall be Klein Hardware Model No. 1072-0641-1755 or approved equal, 18-8, 304 stainless steel. Leg shall be 6-inches high including foot with a full 1-3/4 inch adjustment. Leg shall be formed into a tapered tubular shape with hex-shaped adjustable foot insert; fitted with mild steel 3-1/2 inch square mounting plate, welded to top; fitted with 3/4- inch threaded cold rolled steel stud.

    d. On metal top tables, the gussets shall be welded to 14-gauge hat sections. Bracing shall be welded to underside of tops.

13. Fabricated sink compartments shall have fully coved vertical and horizontal interior corners. Where one or more sink compartments are adjacent, partitions shall be double thickness continuously welded at top. Fronts of multiple compartment sinks shall be continuous on the exterior. Front face of skirt shall have no indentation or outline of sink bowls. Bottoms of each compartment shall be creased to insure complete drainage to waste opening.

14. Sinks shall be 16-gauge or heavier polished stainless steel,

installed as an integral unit. Sinks shall be similar to those as manufactured by Legion Stainless Steel Sink Corp., Long Island City, New York, or approved equal.

15. Fabricated and buy-out sinks shall be furnished with rotary wastes without overflows, Atlantic Brass Works, Inc., Fisher Manufacturing Co., or approved equal.

16. Polish out sleeve marks where sink meets drainboard to match contiguous surface. There should be no borders around top of sink bowl.

17. All metal tops shall be one-piece welded construction, reinforced on the underside with hat sections or channels welded in place, not more than 30- inches center to center. Attach channels with welded studs; silicone is not acceptable.

    a. All raised rolls shall be 1-1/2 inch diameter, except as detailed contrary, with corners bullnosed, ground and polished.

    b. All tops with raised rolled rim construction, such as pot sink drainboards shall be reinforced on underside with 14-gauge stainless steel fully enclosed hat sections.

    c. Field joints shall be welded, ground smooth and polished to match contiguous surfaces. Gouges or rough grinding is not acceptable.

18. All drainboard surfaces on prep tables and pot sinks shall be pitched toward sinks and/or scrapping troughs.

19. The underside of all metal tops shall be coated with a minimum of 1/8-inch thick approved hard-drying, sound-deadening mastic material, 3M or similar. The mastic applied must dry smoothly and shall have a brushed finish with no sharp edges.

20. All pot sinks, drainboards, work tops, splash backs and turned up edges shall have radius bends on all inside horizontal and vertical corners at intersections.

    a. All shelves with turned up edges such as undershelves, elevated shelves, etc., shall have radius bends on all inside horizontal corners at intersections.

    b. Rounded and coved corners or radius bends shall be 1/2-inch radius or larger, unless specified otherwise on individual items.

21. Shelves in tables with open leg bases shall be notched a full 90 degrees with radius to match leg and welded completely to leg.

2.04 HEATING EQUIPMENT

A. All electric heating equipment shall be complete and of materials, size or rating as specified within the equipment items or drawings. All equipment installed shall be readily cleanable or easily removable for cleaning.

2.05 SWITCHES AND CONTROLS

A. Supply on each motor-driven appliance or electrical heating unit a control switch and starter in accord with Underwriter's Label. All other line switches, safety cut-outs, control panels, fuse boxes, controls, fittings and connections shall be furnished and installed in complete compliance with DIVISION 16 - ELECTRICAL, except where specified otherwise.

B. All integral wiring for fabricated equipment items, including all electrical devices, wiring controls, switches, etc., built into or forming an integral part of these items shall be furnished and installed by the Food Service Contractor in his factory or at the site with all items complete to a junction box for final connection by the Electrical Contractor.

C. All equipment with cord and plug shall be provided with adequate length to allow for proper connection to outlet. The cord shall be strapped, bracketed and concealed to the underside of counter and prevented from hanging on the floor.

2.06 CONNECTION TERMINALS

A. Equipment shall be complete with connection terminals as standardized by equipment manufacturers, except where otherwise specified for other Contractors to make plumbing, electrical, and ventilation connections.

B. Provide and install properly sized indirect waste lines for equipment and extend to floor sink. All waste lines shall be of copper tubing with soldered fittings where required. Exposed lines shall be insulated with tape to prevent sweating.

2.07 EQUIPMENT DETAILED SPECIFICATIONS

A. General: All equipment items specified as "School Furnished, School Installed" or “Existing/Reset” shall be coordinated for installation as part of this contract.

B. List of Equipment:

1. Item No. 1 – Refrigeration System (1 Required)

a. Description: Airdyne Outdoor Air-cooled Multi-Pak Model No. MP-6, 208/3. Condenser shall be coated to minimize salt air corrosion. They include but are not limited to items listed below.

1) Furnish and install compressor unit, coated condenser to minimize salt air corrosion, refrigerant piping, cold storage room evaporator, all control valves, etc.

2) Provide cold storage room liquid line solenoid and thermostat.

3) Caulk and seal all sleeves and wall penetrations after refrigeration and evaporator drainlines have been installed.

4) Furnish and install drainlines with traps for cold storage room evaporators and extend to floor sink position. Exposed lines shall be insulated with tape to prevent sweating.

b. Work Not Included Under this Item:

1) All electrical services, wiring, final equipment connections and installation of temperature warning equipment and room thermostats.

2) Wall sleeves and/or plates for refrigeration line entries to cold storage room areas.

3) Disconnects.

c. Manufacturer's Directions: Manufacturer's directions shall be verified, followed and installed in all cases where the manufacturers of articles used in this contract. Furnish directions covering points not shown in the drawings and specifications.

d. Regulations:

1) All work and materials shall be in full accordance with the latest rules of the National Board of Fire Underwriters, any local or State Ordinances, State Industrial Accident Commissions safety orders, and the regulations of the State Fire Marshall and with any prevailing rules and regulations pertaining to adequate protection and/or guarding of any moving parts or otherwise hazardous locations.

2) Whenever the drawings and specifications require larger sizes or higher standards then are required by the regulations, the drawings and specifications shall govern.

3) Whenever the drawings and specification set

requirements which violate the regulations the regulations shall govern.

4) No extra charge will be paid for furnishing items required by the regulations but not specified or shown on the drawings.

e. Materials:

1) All materials and machines used on this project shall be new.

2) Names of brands used are to establish a standard. Other brands may be used if deemed equivalent and so approved.

3) When substitute items have different space requirements or roughing-in dimensions from the items specified, the Contractor shall be responsible for fitting them into the available space.

f. Permits, Fees and Inspections:

1) Permits, fees and inspections shall be arranged and paid for by the Contractor, if required by local ordinances. The Contractor must present properly signed certificates of final inspection before the work will be accepted.

g. Coil and Cooling Units:

1) Units shall be of direct expansion type of such size and design to effect required temperatures, humidity and to suit the application intended. They shall be furnished and installed in accord with the Refrigeration Schedule.

2) Finned and/or blower coils shall be fabricated of minimum 1/2-inch copper tubing with copper or aluminum fins mechanically or hydraulically bonded to the tubes; all return bends shall be PHOD-copper welded and tested to 250 PSI air pressure, dehydrated and sealed by the manufacturer.

3) Blower coil evaporators specified for cold storage rooms shall be supported by means of hangers, hot dipped galvanized after fabrication, attached to the underside of compartment ceiling insulation before construction insulation is erected, whenever possible.

4) Blower coils with fan or blower and motor for voltage shown as a complete unit shall be Underwriters' Laboratories, Inc. approved. Motors wired for 120 volts, 60 cycle, shall have built-in thermal overload protection.

5) Defrosting of all coils above 35 degrees F. box temperatures shall be automatic by proper sizing of the coils and compressors for an off-cycle on the refrigeration compressor. All applications for temperatures 35 degrees or lower, shall be provided with automatic defrost timer or manual defrost as specified.

h. Heat Interchanger:

1) All evaporators shall be provided with heat interchangers as manufactured by Heat-X-Changer Co., or equal, with a capacity to match the condensing units.

i. Valves and Accessories:

1) All valves shall be of standard weight and manufacture suitable for the service and purpose intended and shall be subject to approval.

2) Refrigerant evaporator shut-off valves in the refrigerant piping shall be Henry, or equal, ball valves for line sizes 5/8 in O.D. and larger and packless diaphragm type for smaller sizes. All valves shall be placed at each inlet and each outlet of evaporators in systems with multiple evaporators.

3) Expansion valves shall be Sporlan, or equal, and shall be provided by this Contractor and placed in the refrigerant liquid line at the point where the line enters the evaporator, except when the valve is so furnished with the evaporator by others.

4) A filter drier shall be provided in the liquid lines located in machine area. Filter driers shall be as manufactured by Sporlan Valve Company. Systems with compressor horsepower up to and including 3 H.P. shall be the Catch All Type.

5) Solenoid valves shall be Sporlan, or equal, sized to operate at a maximum of 2 lbs. pressure drop across the valve for the capacity required. Solenoids shall be full refrigerant line size using silver solder connections where possible. A liquid line solenoid

shall be used with temperature controller for each walk-in box or field assembled equipment.

6) Each liquid line sight glass shall be Sporlan Manufacturing Company or approved equal. See all Moisture and Liquid indicator.

7) Each suction pressure regulator shall be Alco, or equal, and shall match the capacity of the equipment it controls.

8) Each system shall consist of the main liquid line shut-off valve, a sight glass, an evaporator liquid line shut-off valve, filter drier, a solenoid valve in walk-in compartment, an expansion valve, evaporator, heat exchanger, suction line shut-off valve and condensing unit with standard valving. Suction line shut-off valve to be "Controlmatics" refrigeration ball valve with reinforced Teflon seats.

j. Temperature Control:

1) Temperature control shall be compartment thermostat for cold storage room compartments and otherwise by pressure switch for each individual system. Thermostat shall be line voltage to operate line voltage liquid solenoid.

2) Each walk-in refrigerator, above or below freezing shall be controlled by an electric thermostat, Penn Type 219 without external range adjustment, or equal.

3)

Temperature Range	Thermostat For Liquid Line Solenoid		Thermostat For Warning Bell Cut-In
	Cut-In	Cut-Out	
35 deg to 40 deg F.	37 deg F.	34 deg F.	47 deg F.
-5 deg to 0 deg F.	-3 deg F.	-6 deg F.	7 deg F.

k. Piping:

1) Copper tubing for use in refrigerant piping shall conform to ASTM standard specifications for copper refrigerant tubing, serial designation B-88. All pipe shall be type "L" hard or soft copper tubing as specified. Tubing shall be cut with pipe cutter and not hack saws. After cutting, the tubing shall be sized with a sizing tool. Refrigerant piping shall be exposed to view as required by the American

Standard Safety Code for Mechanical Refrigeration.

2) For exposed areas or accessible furred ceiling spaces, hard copper tubing shall be installed to avoid damage to activities in this area; otherwise tubing shall be run in pipe or conduit, furnished and installed by this Contractor.

3) Suction lines shall be sized to give minimum pressure drop from evaporator to machine of 2 lbs. for high temperature system and of 1 lb. for freezer system and shall allow gas velocities of not less than 750 FPM in horizontal runs and 1500 FPM in vertical risers. Liquid lines shall be sized to give maximum pressure drop of 3 lbs. from receiver to evaporator.

4) Tubing runs shall be graded to prevent trapping of oil.

5) All refrigerant piping shall be properly secured with "Unistrut" clamps located to conform to proper refrigerant piping practice

I. Insulation:

1) Refrigerant suction lines outside of refrigerated compartments, not run in conduit, shall be insulated back to compressors with Armstrong Armaflex foamed plastic insulation, or equal, verified and applied in accord with direction of the manufacturer. Minimum thickness shall be 3/4-inch for commercial temperature and 1-inch for low temperature.

2) Installation to be done by a Certified Armaflex Installer.

3) Refrigerant lines exposed to weather shall be insulated with cellular ASTM C 552 will all service vapor barrier type external jacket factory fabricated preformed pipe. Insulation thickness shall be 2 inches. Insulate fittings, valves, etc., with pre-molded or pre-cut insulation segments, same thickness as adjoining pipe. Provide aluminum jacket on all pipe insulation exposed to weather 0.020-inch thick. Adhesive, sealants, and compounds shall be suitable for intended service. Insulation, adhesive, vapor barrier material, and accessories shall be non-combustible and shall have maximum flame spread rating of 25 and smoke developed rating of 50.

m. Joints and Connections:

1) Copper tubing joints in piping lines shall be made with Handy & Harmon "Sil-Fos" brazing alloy "Phozon 15-inch, or equal. Melting point shall be between 1185-1300 degrees F. Silver content not less than 15%.

2) Copper to brass joints for piping and fittings shall be made with Handy & Harmon "Easy-Flow 45-inch brazing alloy, "Silvaloy 45-inch, "Mueller 122", or equal. Melting point shall be between 1125-1145 degrees F. Silver content not less than 45%.

3) All surfaces to be joined must be thoroughly cleaned. When soldering stop valves or solenoid valves, wrap valves with moist fabric to absorb excessive heat. Stop valves shall be partly open. When soldering expansion valves or suction pressure regulating valve, remove power assembly if necessary to prevent damage by excessive heat.

n. Testing and Dehydrating:

1) Pressurize system with nitrogen and trace amount of HCFC-22 to 150 P.S.I., test for leaks after which all systems shall be subjected to a vacuum of 500 microns for a period of 24 hours. For insulated lines, testing shall be done before installation is installed.

o. Charging the System:

1) Provide refrigerant and oil, charge all systems and run an operation check of three days duration.

2) Note: Oil shall be compatible for refrigerant used in system.

p. Instruction and Diagrams:

1) Provide any required instruction to the Plumbing and Electrical Contractors for hook-up of machines or other items.

2) Provide to the State an "as-built" diagram of the piping systems for use by his plant engineer.

3) Provide all required instruction for operation and maintenance of machines and other items of equipment.

q. Equipment Refrigeration Schedule:

1) Condensing unit shall be Airdyne Outdoor Air-cooled Multi-Pak Model No. MP-6, 208/3 or approved equal.

2) Size remote package compressor assembly as required and per manufacturer's recommendation.

3) Verify field conditions and run insulated lines from compressor location as required within hung ceiling space to coil connections.

4) Provide liquid line solenoid, thermostat, drier, strainer and expansion valve.

r. Acceptable Equals: Cold Zone, Kairak or approved equal.

2. Item No. 2 – Cold Storage Room (1 Assembly Required)

a. Description: RMI, Compton California, 3-compartnent walk-in cooler and freezer. They include but are not limited to items listed below.

1) Provide modular panel cold storage rooms as specified accessories in accordance with plans and specifications. Provide necessary labor, material, equipment and tools for complete installation.

2) Cutting of equipment holes for alarm system, switches, splice box, etc., which are not shown on the Contract Drawings but which are required for this installation.

3) Recessed electrical boxes, conduit within the panels, warning bell, silencer relay, splice boxes, light switches and temperature alarm system.

4) Interior Finished Ceiling Height: 8-feet 0-inch.
Exterior Finished Ceiling Height: 8-feet 4-inch.

b. Work Not Included Under this Item:

1) Mounting light fixtures, including wiring and conduit from splice box.

2) Sealing utility penetrations made by other contractors.

3) Wiring, conduit and final connections to the door heater cable and temperature alarm system.

4) Vaporproof coil switch.

5) Drainlines from coil to drain positions. (Work shall be furnished and installed by the kitchen equipment contractor.)

a) Where aluminum comes in contact with metals other than stainless steel, zinc or other compatible metals, aluminum surfaces shall be kept from direct contact by separating with heavy bodies bituminous paint or mastic tape of plastic membrane.

b) Where aluminum surfaces require construction protection from such materials as lime, mortar, concrete or plaster, factory shall apply two sprayed coats of water-white methacrylate lacquer having minimum thickness of .0005.

c. Materials:

1) Urethane Foam Insulation: HFC-245fa filled, over 91% closed cell content, nominal density of 2.2 pounds per cubic foot +0.1 CF -0.

2) Dimension Stability: No change from -20 degrees F. to +160 degrees F.

3) Flammability: Less than 25 flame spread and less than 450 smoke density when tested in accordance with UL-723 (ASTM E84) and UBC Section 1712.

4) Classification: Class A, (0-25) flame spread in accord with UBC STD 42-1 based on UL-723 which is similar to ASTM E84 the Steiner Tunnel Test); and Class "A" Interior Finish in accordance with NFPA 101, Section 6-2 and NFPA 255.

5) Thermal Conductivity: (K-factor) shall not exceed 0.149 BTU per hour per square foot per degree F. per inch thickness as tested in accordance with ASTM C518 at 75 degree F. mean temperature.

d. Panels (Wall, corner, tee and ceiling):

1) Modular panels shall be 100% foamed in place, 4-inch thick urethane insulation core, without any wood or metal frame members.

2) Interior and Exterior Die Formed Sheet Metal Panels; fully adhered to urethane core.

3) Perimeter of Sheet Metal Facings: Flanged 1/2-inch to 3/4-inch.

4) Corner panels shall be matching one-piece construction, including 1/2-inch radius at all inside vertical corners.

5) Partition panels shall be matching construction and fascia. Intersection of wall and partition panels shall be accomplished with "T" shaped panels, matching corner panel construction.

6) Panel joints shall be sealed with double bubble PVC gasket at interior and exterior panel edges, maintaining continuity.

7) Lateral alignment of adjoining panels shall be provided for by continuous urethane tongue and groove mating edges.

8) Panels shall be rigidly coupled by steel cam action locks, foamed in place, maximum 4-feet 0-inch centers. Section lock ports shall be finished with PVC snap-in buttons. Where floor is depressed or floorless, wall panels shall be anchored to building floor with concealed galvanized steel floor track. Wall panels shall be sealed to building floor with continuous bead of sealant.

9) Maximum deflection of ceiling panels shall not exceed 1/240 of the clear span under uniform loading or 20 pounds per square foot. If ceiling spans require a support system, the Contractor shall submit details and structural calculations demonstrating conformance with specified requirements.

10) Indoor roof panel support system shall use hanger wire network attached to manufacturers hanger brackets, designed to engage with female lock pins imbedded within roof panel foam core.

e. Panel Fascia:

1) Interior and exposed exterior face of wall and ceiling panels shall be clad with flat stainless steel sheets, 20 gauge, Type 304, No. 4 finish.

2) Exterior unexposed face of wall and ceiling panels shall be clad with 0.32-inch mill finish aluminum.

3) Where aluminum surfaces require construction protection from such materials as lime mortar, concrete or plaster, factory shall apply 2 sprayed coats of water-white methacrylate lacquer having minimum thickness of 0.0005-inch.

f. "FD" Floor (Depressed):

1) Asphalt emulsion to be applied to clean, smooth concrete depressed subfloor. Coordinate depth of depression with General Contractor.

2) Vapor barrier of foil-coated Kraft waterproof paper, Fortifiber "PolyFoil Barrier" or equal (0.01 perm as determined by ASTM E96-80).

3) Floor insulation in two or more layers, joints staggered, or foam board equal to U-value (or R-value) of wall insulation and compressive strength and perm rating of 20 psi/2.0 perm-inch urethane thickness 4 inches.

4) Vapor permeable separation of organic 15-pound felt protective slip sheet for applying over insulation with joints lapped 6 inches and flashed up height of base.

g. Door (Refrigerator & Freezer):

1) Door size shall be 3-feet 0-inch x 6-feet 6-inch, hinged as shown on plan.

2) Door shall be similar to Econocold H-30 type, or approved equal, flush fitting type, insulated with 4-inch core same as specified under materials.

3) Interior door jamb guards shall be 3/16-inch aluminum tread plate 48 inches high.

4) Front, back and edges of door shall be faced with 20 gauge stainless steel, Type 304, No. 4 finish. Corners of door pans heliarc welded ground and polished.

5) Door casing shall be raised 3/4-inch and 4 inches wide, at sides and head, clad with 18 gauge stainless steel, Type 304, No. 4 finish.

6) The ambient side of H-30 door perimeter and frame, including threshold, shall each be provided with dual

120 volt, 240 watt each, electric resistance heating elements, including thermostatic controls, factory wired to "GS" splice box located above door at interior face or wall panel.

7) Gaskets shall be extruded polyvinyl chloride with corners vulcanized and continuous magnetic core at sides and head of door.

8) Interior door cart bumper bar shall be 1/4-inch x 2-inch aluminum channel 3-feet 0-inch A.F.F.

9) Sill wiper shall be adjustable neoprene secured by removable stainless steel retainer strip and stainless steel fasteners.

10) Threshold shall be removable 1/8-inch thick stainless steel plate.

11) Three hinges, each door, shall be nylon cam, stainless steel pin, zinc die cast, polished chrome finish.

12) Lock set shall be Kason 58C latch and roller strike assembly with #487 inside release push handle. Exposed surfaces shall be chrome plated, cylinders keyed alike.

13) Door Closer: Yale #PA 1405; hydraulic rack & pinion door closer, automatic hold open. Three coat aluminum finish with lacquer final coat.

14) Hardware shall be mounted with reinforced steel taping plates and machine screws.

15) Cooler and Freezer door vision panel shall be 15 inches X 20 inches hermetically sealed multi-pane unit including electrically conducting transparent tin coating on interior face of ambient pane, connected to main door circuit.

16) Kickplate, front and back faces shall be 16 gauge, Type 304, No. 4 finish, stainless steel, 3-feet 0-inch high x full width of each door.

17) PVC low temperature strip curtains, transparent, 8 inches wide,0.080-inch thick, at cold storage door openings to ambient temperature.

h. Light Fixture and Switches:

1) Quantity of light fixtures shall be as indicated on the Food Service Equipment Electrical Plan.

2) Kason Model No. 1806LED000 vapor-proof LED light fixture with GU-24 socket, unbreakable Lexan globe and 11.5 LED lamp including #P-4310A flush junction box and galvanized nipple, terminated at exterior face of roof panels.

3) Factory install ad wire interior and exterior companion, three-way AC press switch switches, adjacent door latch, mounted in "FS" boxes.

4) Gray Hypalon, weatherproof press switch plates.

5) Pilot light, unbreakable red plastic lens, embedded in Hypalon plate.

   a) Interior pilot - constant burning.

   b) Exterior pilot - indicating.

6) Rigid conduit and wiring run within insulated wall panel. Terminate in vapor tight splice box mounted on inside of wall of compartment near ceiling.

7) Provide 1-1/4 inch diameter hole in ceiling panel through which Electrical Contractor can make power connections.

8) Conduit and wiring within wall panels, including boxes, light fixtures, switches and cover plates, shall be furnished as part of this section.

i. Digital Thermometer and Alarm:

1) Combined into one solid state computer at each room with audio alarm, silencer button, trouble light and digital read out. MODULARM 75LC Multi-Monitor or equal. Interior compartment unit must be mounted at the ambient entrance.

j. Freezer Door Fan Switch:

1) Each freezer door shall be equipped with a door operated switch designed to shut-off freezer coil fan motor when door is open.

2) Switch shall be built into door jamb and factory wired to splice box.

3) Electric connection and conduit between splice box

and fan motor(s) shall be by the Electrical section.

k. Vacuum Pressure Relief Vent:

1) Factory mount in head section, above each freezer door and connect to 120V splice box, electrically heated, screened aluminum vent, designed to automatically equalize room.

l. Coil Supports:

1) Furnish to the mechanical refrigeration contractor sufficient quantity of 1/2-inch diameter nylon, threaded rods, stainless steel nuts and washers to accommodate support of refrigeration coils.

m. Utility Penetrations:

1) Provide penetrations at cold storage room wall and ceiling panels required to accommodate electrical and refrigeration lines.

2) Note: Oil shall be compatible for refrigerant used in system.

n. Escutcheon Plates:

1) Furnish sufficient quantity of 5-inch diameter stainless steel escutcheon blanks as required by each trade to seal utility penetrations including drainlines.

2) Each trade shall be responsible for cutting hole in blanks and sealing of respective penetrations.

o. Trim:

1) All joints that do not exceed 2 inches between refrigerator face, building walls and ceiling shall be trimmed with matching angles and moulding.

2) Matching trim shall be perforated or grille type for air-circulation and vermin control. Verify type with Contracting Officer.

p. Closure Panel:

1) Space between suspended ceiling and top of cold storage room shall be enclosed with matching sheet metal panels.

q. "EYS":

1) Provide "EYS" seal offs at all electrical penetrations.

r. Acceptable Equals: American Panel, Custom Coolers or approved equal.

3. Item No. 3 - Cold Storage Room Shelving (33 Required)

a. Description: Metro Super Erecta NK3 (green) with tier of four (4) shelves mounted on 1-inch O.D. 74-inch high metroseal posts with adjustable bullet feet.

b. Shelving shall be equally spaced with bottom of shelf 12-inch above finished floor. 18-inch deep x length as indicated on drawings.

c. Acceptable Equals: Cambro, Eagle or approved equal.

4. Item No. 4 – S/S Work Table with Overshelves (1 Required)

a. Description: BSI Model No. WT, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet.

2) 16 gauge s/s overshelves with s/s back enclosure on s/s brackets on posts mounted securely on 14 gauge s/s anchor supports.

3) 16 gauge s/s undershelf arranged on plan and detail.

e. Acceptable Equals: Elkay, Keas Stainless or approved equal.

5. Item No. 5 – S/S Work Table with Sinks & Overshelves (1 Required)

a. Description: BSI Model No. WTS, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet. S/S crossrails front to back welded to legs under sinks. 16 gauge s/s undershelf welded to legs as arranged on plan and details

2) 16 gauge s/s overshelves with s/s back enclosure on

s/s brackets on posts mounted securely on 14 gauge s/s anchor supports.

3) S/S rotary wastes w/ water lever support bracket and Chicago Faucets Model No. 445-L12ABCP, 12-inch splash-mounted faucets with aerator and ADA handles.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

6. Item No. 6 – 3 Compartment Prep Sinks with Overshelves (1 Required)

a. Description: BSI Model No. 3S, fabricate and install as detailed and arranged on plan and detailed and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet.

2) S/S rotary wastes w/ water lever support bracket and Chicago Faucets Model No. 445-L12ABCP, 12-inch splash-mounted faucets with aerator and ADA handles.

3) 16 gauge s/s undershelves welded to 1-5/8 inch O.D. s/s legs.

4) 16 gauge s/s overshelves mounted on 14 gauge s/s brackets anchored securely to wall

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

7. Item No. 7 – Refrigerator, Reach-In, 2 – Door (1 Required)

a. Description: Utility Model No. R-60-SS-2S-D, self-contained, 120/1, 60-inch wide x 34-1/2 inch deep x 84-inch high, s/s interior and exterior, cord & plug with:

1) Full height doors hinged as indicated on plan.

2) 6-inch high stainless steel legs.

3) Five year compressor warranty and one year service/labor warranty.

b. Acceptable Equals: True, Continental Refrigerator or approved equal.

8. Item No. 8 – Refrigerator, Reach-In, 2 – Door (1 Required)

a. Description: Utility Model No. R-50-SS-2S-D, self-contained, 120/1, 50-inch wide x 34.5-inch deep x 84-inch high, s/s interior and exterior, cord & plug with:

1) Full height doors hinged as indicated on plan.

2) 6-inch high stainless steel legs.

3) Five year compressor warranty and one year service/labor warranty.

b. Acceptable Equals: True, Continental Refrigerator or approved equal.

9. Item No. 9 – S/S Work Table with Overshelves (1 Required)

a. Description: BSI Model No. WT, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet.

2) 16 gauge s/s overshelves with s/s back enclosure and utensil hooks on s/s brackets on posts mounted securely on 14 gauge s/s anchor supports.

3) 16 gauge s/s undershelf as arranged on plan and detail.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

10. Item No. 10 - Mixer – 40 Qt. (1 Required)

a. Description: Hobart Model No. HL400-1STD, 1.5 hp, 208/3.

1) Unit shall be bolted securely to floor.

2) 40 qt. bowl truck, s/s bowl, manual bowl lift, bowl guard, beater, whip and dough hook.

3) 3 fixed speed, gear-driven transmission & 20 minute timer.

4) #12 taper hub attachment hub & manual bowl lift.

5) One year service, parts and labor warranty.

b. Acceptable Equals: Approved equal.

11. Item No. 11 – S/S Work Table with Sink & Overshelves (1 Required)

a. Description: BSI Model No. WTS, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet. 16 gauge s/s undershelf welded to legs as arranged on plan and details. Field weld and polish joint to Item No. 12.

2) 16 gauge s/s overshelves with s/s back enclosure on s/s brackets on posts mounted securely on 14 gauge s/s anchor supports.

3) S/S rotary waste w/ water lever support bracket and Chicago Faucets Model No. 445-L12ABCP,12-inch splash-mounted faucets with aerator and ADA handles.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

12. Item No. 12 – S/S Work Table with Sink & Overshelves (1 Required)

a. Description: BSI Model No. WTS, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet with 16 gauge s/s undershelf welded to legs.

2) 16 gauge s/s overshelves with s/s back enclosure on s/s brackets on posts mounted securely on 14 gauge s/s anchor supports.

3) S/S rotary waste w/ water lever support bracket and Chicago Faucets Model No. 445-L12ABCP, 12-inch splash-mounted faucets with aerator and ADA handles.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

13. Item No. 13 - Mixer – 80 Qt. (1 Required)

    a. Description: Hobart Model No. HL800-1STD, 3 hp, 208/3.

        1) Unit shall be bolted securely to floor.

        2) 80 qt. bowl truck, s/s bowl, manual bowl lift, bowl guard, beater, whip and dough hook.

        3) 4 fixed speed plus stir speed, gear-driven transmission and 20 minute smart timer.

        4) #12 taper hub attachment hub & manual bowl lift.

        5) One year service, parts and labor warranty.

    b. Acceptable Equals: Approved equal.

14. Item No. 14 - Ingredient Bins (5 Required)

    a. Description: Rubbermaid Model No. FG360288WHT, mobile, slant top.

        1) 3-1/2 cu. ft., 15-1/2-inch wide x 29-1/2 inch deeo x 28-inch high.

        2) 3-inch extra wide casters, front fixed and rear swivel.

        3) White base with clear lid.

    b. Acceptable Equals: Cambro or approved equal.

15. Item No. 15 – S/S Work Table with Sink (1 Required)

    a. Description: BSI Model No.WTS, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

        1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet. S/S crossrails front to back welded to legs under sinks.

        2) S/S rotary waste w/ water lever support bracket and Chicago Faucets Model No. 772-ABCP, 6-inch deck-mounted faucets with aerator and ADA handles.

    b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

16. Item No. 16 – S/S Work Table with Sink (1 Required)

    a. Description: BSI Model No. WTS, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

        1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet. 16 gauge s/s undershelf welded to legs.

        2) S/S rotary waste w/ water lever support bracket and Chicago Faucets Model No. 445-L12ABCP, 12-inch splash-mounted faucets with aerator and ADA handles.

    b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

17. Item No. 17 – Ceiling Mounted S.S Pot Rack (1 Required)

    a. Description: BSI Model No. WT, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

        1) Ceiling hung, triple bar design, 1/4-inch x 2-inch.

        2) (18) s/s double pot hooks

        3) Securely mounted to the ceiling.

        4) Verify location & mounting height with kitchen manager.

    b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

18. Item No. 18 – S/S Work Table with Sink & Overshelf (1 Required)

    a. Description: BSI Model No. WTS, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

        1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet. 16 gauge s/s undershelf welded to legs

        2) 16 gauge s/s overshelf with s/s back enclosure on s/s brackets on posts mounted securely on 14 gauge s/s anchor supports.

3) S/S rotary waste w/ water lever support bracket and Chicago Faucets Model No. 445-L12ABCP, 12-inch splash-mounted faucets with aerator and ADA handles.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

19. Item No. 19 - 24" Wide Heavy Duty Charbroiler with Cabinet (1 Required)

a. Description: Montague Model No. UF-24C, Gas, with:

1) 45,000 BTU/hr.

2) Ceramic briquettes.

3) Stainless steel cabinet base with 6-inch high s/s legs

4) 1-inch rear gas connection, cap & s/s cover manifolds.

5) Gas shut-off valve.

6) Dormont 16100KITCF2S48 with 2 each Model No.075SE elbows, quick-disconnect gas hose assembly with restraining device.

7) Gas type: LPG. Verify gas type before ordering.

b. Acceptable Equals: Imperial, Southbend or approved equal.

20. Item No. 20 – Food Blender (1 Required)

a. Description: Vitamix Model No. 005202-1192, 120/1 with:

1) 1.5 gallon clear polycarbonate container with lid.

2) (1) 64 oz. clear BPA free Tritan container with lid.

b. Acceptable Equals: approved equal.

21. Item No. 21 – 48-Inch Wide Heavy Duty Griddle with Cabinet Base (1 Required)

a. Description: Montague Model No. 2/C4-8T, Gas, with:

1) 90,000 BTU/hr.

2) 3/4-inch thick griddle plate.

3) Stainless steel cabinet base with 6-inch high s/s legs

4) Model No. SHS-48, single height backguard with single high shelf.

5) 1-inch rear gas connection, cap & s/s cover manifolds.

6) Gas shut-off valve.

7) Dormont 16100KITCF2S48 with 2 each Model No.075SE elbows, quick-disconnect gas hose assembly with restraining device.

8) Gas type: LPG. Verify gas type before ordering.

b. Acceptable Equals: Imperial, Southbend or approved equal.

22. Item No. 21 – 36-Inch Wide Heavy Duty 6-Burner Range with Oven (1 Required)

a. Description: Montague Model No. 136-5, Gas, with:

1) 220,000 BTU/hr.

2) (6) 12-inch 30,000 BTU/hr. burners.

3) 40,000 BTU/hr. standard oven with 6-inch high s/s legs, stainless steel front and sides.

4) Model No. SHS-36, single height backguard with single high shelf.

5) 1-inch rear gas connection, cap & s/s cover manifolds.

6) Gas shut-off valve.

7) Dormont 16100KITCF2S48 with 2 each Model No.075SE elbows, quick-disconnect gas hose assembly with restraining device.

8) Gas type: LPG. Verify gas type before ordering.

b. Acceptable Equals: Imperial, Southbend or approved equal.

23. Item No. 23 – 30 Gal. Tilting Braising Pan, Gas (1 Required)

a. Description: Market Forge Model No. 30P-STGL, Gas, 93,000 BTU/hr., 120V/1, power tilt, 9.5-inch deep pan, spring assisted cover, casters with:

1) Model No. MS-DF - Double pantry faucets.

2) Model No. MS-SDO-1 - Pull out sliding sink drain drawer with splash shield.

3) Model No. MS-PC & SPI-30 - Pan support & pan holder insert.

4) 2 each Model No. 98-4216 - Water Hose Kit, 68-inch line with quick disconnect, 3/8-inch NPT.

4) 3/4-inch gas connection.

5) Gas shut-off valve.

6) Dormont 1675KITCF2S48 with 2 each Model No.075SE elbows, quick-disconnect gas hose assembly with restraining device.

7) Gas type: LPG. Verify gas type before ordering.

b. Acceptable Equals: Imperial, Southbend or approved equal.

24. Item No. 24 – S/S Floor Trough with Grating (1 Required)

a. Description: IMC Teddy Model No. ASFT-1824-PFG-ADA, Anti-Splash, 14 gauge 304 stainless steel construction with:

1) 18-inch long x 24-inch wide x 6-inch deep

2) 6-1/2-inch waste outlet with perforated waste basket strainer with pull-out handle, chain, & 4-inch OD tailpiece

3) ADA protruded fiberglass grating.

b. Acceptable Equals: Made To Drain or approved equal.

25. Item No. 25 – Convection Steamer, Double Stacked (2 Required)

a. Description: Cleveland Model No. (2) 22CGT66.1, gas operated steamer, 120/1 with:

1) (2) 6 full size pan capacity compartments with stacking stand.

2) (2) 5 foot FDA approved hose threaded style water connection kit.

3) Single point water connection.

4) Factory selected water filter.

5) Gas type: Verify gas type before ordering.

b. Acceptable equal: Groen, Market Forge or approved equal.

26. Item No. 26 – Exhaust Hood, Type 1 (1 Assembly Required)

a. Description: Gaylord Model No. ELX-GBDAV-BB-AV-144, Type 1 Exhaust Hood & PBW-14 Make-Up Air Plenum with:

1) Size: As indicated on plans.

2) S/S trim to ceiling, sides of hood (s) as required.

3) S/S bottom filler.

4) S/S exposed surfaces.

5) LED light fixtures.

6) Model No. DCV-AV-LA-E1M1-HS4-DC-ST-TR - DCV control cabinet.

7) Ansul-R-102-AS-3T-M fire protection pre-piping.

b. Acceptable equal: Caddy Corporation Kitchen Ventilation Systems, Ventmaster or approved equal.

27. Item No. 27 – S/S Wall Flashing (1 Required)

a. Description: Fabricate and install as detailed and as arranged on plan and as specified in paragraph 2.03.

1) 20 gauge s/s wall flashing full length of both sides of cooking walls. Flashing shall extend down from the bottom edge of the hood at the full height wall, top edge of low wall and extend down to the top edge of the base tile. Provide s/s channel edging at ends of wall and s/s top capping at the low walls. Flashing shall be creased 12 inches on centers.

b. Acceptable Equals: BSI, IMC Teddy, or approved equal.

28. Item No. 28 - Spare Number (Not Used)

29. Item No. 29 – Hood Fire Suppression System (1 Required)

a. Description: Ansul Model No. R-102-ASE-2T.

1) Ansul Fire System factory pre-piped chemical lines including duct, plenum and appliance drop with all nozzles installed per cooking equipment arrangement. Kitchen contractor shall coordinate with Gaylord. All exposed chemical piping chrome plated or s/s. Includes factory pre-piped detection lines with surface mounted detector brackets, tank(s), chemical, detector cable, fusible links with linkage, gas valve per fire system with a maximum size of 2-1/2 inch and manual reset relay.

2) Installation of system shall be by the Kitchen Equipment Contractor's certified factory installers.

3) Locate in position as indicated on plan with bottom of tank at 78-inches above finished floor.

4) All interconnecting piping shall be run in ceiling space and any exposed lines shall be chrome-plated or S/S.

5) System shall conform to NFPA 17A, 96 and UL 300.

6) Mechanical gas shut-off valve with micro switch relays for electric equipment shut-off and relay to building alarm system. Kitchen Equipment Contractor shall coordinate with electrician and plumber.

7) Kitchen Equipment Contractor shall provide complete system installation including permit and certification.

b. Acceptable equal: Approved equal.

30. Item No. 30 - Spare Number (Not Used)

31. Item No. 31 – Refrigerator, Reach-In, 2 – Door (1 Required)

a. Description: Utility Model No. R-50-SS-2S-D, self-contained, 120/1, 50-inch wide x 34.5-inch deep x 84-inch high, s/s interior and exterior, cord & plug with:

1) Full height doors hinged as indicated on plan.

2) 6-inch high stainless steel legs.

3) Five year compressor warranty and one year service/labor warranty.

b. Acceptable Equals: True, Continental Refrigerator or approved equal.

32. Item No. 32 – Refrigerator, Reach-In, 3 – Door (1 Required)

a. Description: Utility Model No. R-75-SS-3S-D, self-contained, 120/1, 75-inch wide x 34.5-inch deep x 84-inch high, s/s interior and exterior, cord & plug with:

1) Full height doors hinged as indicated on plan.

2) 6-inch high stainless steel legs.

3) Five year compressor warranty and one year service/labor warranty.

b. Acceptable Equals: True, Continental Refrigerator or approved equal.

33. Item No. 33 – 50 Lb. Fryer, Gas (1 Required)

a. Description: Frymaster Model No. MJ150, Gas, 122,000 BTU/hr., 50 lb. oil capacity open pot fryer with:

1) 3/4” gas connection

2) (2) twin basket

3) Gas shut-off valve.

4) Dormont Model No. 1675KITCF2S48 with 2 each Model No.075SE elbows, quick-disconnect gas hose assembly with restraining device.

5) Gas type: Verify gas type before ordering.

b. Acceptable Equals: Imperial, Southbend or approved equal.

34. Item No. 34 – Convection Oven, Double Deck (2 Required)

a. Description: Montague Model No. 2-115A, 120/1, cord and plug, 85,000 BTU/hr. per deck with:

1) S/S front and sides.

2) Snap action thermostat control.

3) Set of 4 casters with 5” wheels.

6) Gas shut-off valve.

7) Dormont 16100KITCF2S48 with 2 each Model No.075SE elbows quick-disconnect gas hose assembly with restraining device.

8) Gas type: Verify gas type before ordering.

b. Acceptable equal: Imperial, Southbend or approved equal.

35. Item No. 35 - Spare Number (Not Used)

36. Item No. 36 – 25 Gallon Kettle, Gas (1 Required)

a. Description: Cleveland Model No. KGL-25T self-contained, 2/3 steam jacket, gas operated, 90,000 BTU/hr. 3/4-inch gas connection, 120/1 with:

1) 2-inch tangent draw-off valve with strainer.

2) Hot & cold water faucet with (2) 3/4-inch 6-foot long water hoses 1/2-inch NPT male x 3/4-inch garden hose male.

3) Spring assisted cover.

5) Kettle accessory kit.

6) Drain cup assembly Model No. TD-DC.

7) Pan Carrier

7) 3/4” gas connection.

8) Gas shut-off valve.

9) Dormont Model No. 1675KITCF2S48 with 2 each Model No.075SE elbows, quick-disconnect gas hose assembly with restraining device.

10) Gas type: LPG. Verify gas type before ordering.

b. Acceptable equal: Groen, Market Forge or approved equal.

37. Item No. 37 – S/S Floor Trough with Grating (1 Required)

a. Description: IMC Teddy Model No. ASFT-2424-PFG-ADA, Anti-Splash, 14 gauge 304 stainless steel construction with:

1) 24-inch long x 24-inch wide x 6-inch deep

2) 6-1/2-inch waste outlet with perforated waste basket strainer with pull-out handle, chain, & 4-inch OD tailpiece

3) ADA protruded fiberglass grating.

b. Acceptable Equals: Made To Drain or approved equal.

38. Item No. 38 – 40 Gallon Kettle, Gas (1 Required)

a. Description: Cleveland Model No. KGL-40-TSH self-contained, short height, gas operated, 140,000 BTU/hr. 3/4-inch gas connection, 120/1 with:

1) 2-inch tangent draw-off valve.

2) Hot & cold water faucet with (2) 3/4-inch 6-foot long water hoses 1/2-inch NPT male x 3/4-inch garden hose male.

3) Spring assisted cover.

4) Pan carrier.

5) Kettle accessory kit.

6) Drain cup assembly Model No. TD-DC.

7) 3/4” gas connection.

8) Gas shut-off valve.

9) Dormont Model No. 1675KITCF2S48 with 2 each Model No.075SE elbows, quick-disconnect gas hose assembly with restraining device.

10) Gas type: LPG. Verify gas type before ordering.

b. Acceptable equal: Groen, Market Forge or approved equal.

39. Item No. 39 – S/S Floor Trough with Grating (1 Required)

a. Description: IMC Teddy Model No. ASFT-3036-PFG-ADA, Anti-Splash, 14 gauge 304 stainless steel construction with:

1) 30-inch long x 36-inch wide x 6-inch deep

2) 6-1/2-inch waste outlet with perforated waste basket strainer with pull-out handle, chain, & 4-inch OD tailpiece

3) ADA protruded fiberglass grating.

b. Acceptable Equals: Made To Drain or approved equal.

40. Item No. 40 - Spare Number (Not Used)

41. Item No. 41 – S/S Work Table (1 Required)

a. Description: BSI Model No. WT, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet.

2) 16 gauge s/s undershelf as arranged on plan and detail.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

42. Item No. 42 – Microwave Oven (N.I.C. – Future)

43. Item No. 43 – Vertical Cutter Mixer (1 Required)

a. Description: Robot Coupe Model No. BLIXER2, 120/1 wtth:

1) Stainless steel bowl with handle & fine serrated “S” blade assembly.

2) Pulse switch, single speed 3450 RPM, 1 HP, cord & plug.

b. Acceptable Equals: Electrolux Professional or approved equal.

44. Item No. 44 – Food Processor (1 Required)

a. Description: Robot Coupe Model No. R2UDICE, Combination Food Processor, 120/1 wtth:

1) 3-liter Stainless steel bowl with handle & vegetable prep attachment.

2) "S" blade, 2mm grating disc, 4mm slicing disc, 10mm dicing kit

2) Pulse switch, single speed 1725 RPM, 2 HP, cord & plug.

b. Acceptable Equals: Electrolux Professional or approved equal.

45. Item No. 45 – S/S Work Table with Sink & Undershelf (1 Required)

a. Description: BSI Model No. WTS, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet. 16 gauge s/s undershelf welded to legs.

2) S/S rotary waste w/ water lever support bracket and Chicago Faucets Model No. 445-L12ABCP, 12-inch

splash-mounted faucets with aerator and ADA handles.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

46. Item No. 46 – Ceiling Mounted S.S Pot Rack (1 Required)

a. Description: BSI Model No. WT, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) Ceiling hung, triple bar design, 1/4-inch x 2-inch.

2) (18) s/s double pot hooks

3) Securely mounted to the ceiling.

4) Verify location & mounting height with kitchen manager.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

47. Item No. 47 – 50 Cup Rice Cooker, Gas (2 Required)

    a. Description: Rinnai Model No. RER55AS(N)or(S), gas wtth:

        1) Aluminum cook pot with lift-off cover.

        2) Piezo pilot ignition.

        3) Flame failure safety device.

        4) Verify gas type before ordering

    b. Acceptable Equals: approved equal.

48. Item No. 48 - Spare Number (Not Used)

49. Item No. 49 – Desk – See Architectural Section (N.I.C.)

50. Item No. 50 - Spare Number (Not Used)

51. Item No. 51 – Pot & Pan Racks (5 Required)

    a. Description: Metro Model No. PR48ES with:

        1) 4-tier S/S embossed shelves.

        2) 4 each polyurethane casters, two locking.

    b. Acceptable equal: Approved equal.

52. Item No. 52 – Pot & Pan Racks (3 Required)

    a. Description: Metro Model No. PR60ES with:

        1) 4-tier S/S embossed shelves.

        2) 4 each polyurethane casters, two locking.

    b. Acceptable equal: Approved equal.

53. Item No. 53 – Security Storage Shelving (3 Required)

    a. Description: Metro Model No. SEC66EC, mobile, locking with:

        1) 2 each Model No. A3060NC 30-inch x 60-inch shelves.

        2) 4 each stem casters, two locking.

b. Acceptable equal: Approved equal.

54. Item No. 54 - Spare Number (Not Used)

55. Item No. 55 – S/S Hose Reel, Wall Mounted (1 Required)

a. Description: T&S Brass Model No. B-7142-U01WS8BC, 50-feet stainless steel open hose reel with:

1) S/S reel rinse control box assembly with bottom inlets. Mixing valve with Cerama cartridges, control valve, vacuum breaker and s/s swing bracket

2) Mounted 5-feet to bottom of the spray valve.

b. Acceptable equal: Approved equal.

56. Item No. 56 – S/S Floor Trough with Grating (1 Required)

a. Description: IMC Teddy Model No. FT-1260-PFG-ADA, 14 gauge 304 stainless steel construction with:

1) 60-inch long x 12-inch wide x 4-inch deep

2) 6-1/2-inch waste outlet with perforated waste basket strainer with pull-out handle, chain, & 4-inch OD tailpiece

3) ADA protruded fiberglass grating.

b. Acceptable Equals: Made To Drain or approved equal.

57. Item No. 57 – S/S Pot Sinks with Scrap Sink & Pre-Rinse Spray (1 Required)

a. Description: BSI Model No. 3PS, fabricate and install as detailed and arranged on plan and details and as specified in item entitled “MATERIALS” hereinabove.

1) 14-gauge stainless steel top.

2) Stainless steel adjustable feet, crossrails and 16-gauge stainless steel undershelf.

3) S/S rotary wastes w/ water lever support bracket and Chicago Faucets Model No. 445-L9ABCP, 9-inch splash-mounted faucets with aerator and ADA handles.

4) Scrap compartment sink shall be furnished with two 16-gauge stainless perforated scrap basket with

handles. Scrap basket shall fit within sink with top level with drainboard and shall rest on 1/2-inch diameter x 1/2-inch long stainless steel pins welded to the sides of sink.

5) Chicago Faucets Model No. 923-613L12XKCAB or approved equal with wall brackets anchored securely to wall.

6) One all welded removable stainless steel grating, constructed of 1/4-inch x 1-inch wide stainless steel. Grating shall fit within sink with top level with drainboard and shall rest on 1/4-inch diameter x 1/4-inch long stainless steel pins welded to the sides of sink.

7) 16-gauge stainless steel overshelf with utensil hooks mounted on 14 gauge s/s brackets anchored securely to wall.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

58. Item No. 58 – Ice Machine with Ice Storage Bin (1 RequiredI)

a. Description: Hoshizaki Model No. KMD-860MAJ, crescent cube-style, 30-inch wide, stainless steel finish 665 lbs. production capacity at 90-degree air/70-degree water, 208/1.

1) Model No. BD-500 ice bin, 30-inch wide stainless steel finish, 500 lbs. ice storage capacity.

2) Model No. H9620-52 water filter system with pre-filter.

3) Model No. HS-5607 scoop holder kit.

4) 6-inch stainless steel legs.

b. Acceptable Equals: Scotsman, Manitowoc or approved equal.

59. Item No. 59 – S/S Floor Trough with Grating (1 Required)

a. Description: IMC Teddy Model No. FT-1830-PFG-ADA, 14 gauge 304 stainless steel construction with:

1) 30-inch long x 18-inch wide x 4-inch deep

2) 6-1/2-inch waste outlet with perforated waste basket

strainer with pull-out handle, chain, & 4-inch OD tailpiece

3) ADA protruded fiberglass grating.

b. Acceptable Equals: Made To Drain or approved equal.

60. Item No. 60 – Booster Heater, Gas (1 Required)

a. Description: Hatco Model No. PMG, 120/1, with:

1) S/S body & base

1) S/S stainless steel legs.

2) Airlock Interlock Switch

3) Back pressure relief valve.

b. Acceptable Equals: Hubbell or approved equal.

61. Item No. 61 – Mobile Bun Pan Rack (11 Required)

a. Description: Dinex Model No. DXP841S, with:

1) Aluminum construction.

2) Side loading rack, closed-side.

3) 41 each 18-inch x 26-inch trays capacity.

4) 1-1/3-inch side spacing.

5) 5-inch heavy duty casters.

b. Acceptable Equals: Piper Products or approved equal.

62. Item No. 62 – Mobile Dome Storage Rack (1 Required)

a. Description: Dinex Model No. DXIRDSD9100 with:

1) 1-inch square stainless steel tubing frame construction.

2) Welded tray slides.

3) 5-inch diameter swivel casters.

b. Acceptable Equals: Piper Products or approved equal.

63. Item No. 63 – S/S Hose Reel (1 Reqjuired)

a. Description: T&S Brass Model No. B-7142-U01WS8BC with:

1) 50-foot stainless steel open hose reel with s/s surface cabinet with bottom outlets. Wall Mounted.

2) Mixing valve with Cerama cartridges, control valve, vacuum breaker and s/s swung backet.

b. Acceptable Equals: Fisher, Component Hardware or approved equal.

64. Item No. 64 – Clean Dishtable with Double Overshelves (1 Required)

a. Description: BSI Model CDT, fabricate and install as detailed and arranged on plan and detailed and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet. 16 gauge s/s undershelf welded to legs

2) Wall mounted 16 gauge s/s overshelves on 14 gauge s/s brackets.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

65. Item No. 65 – Conveyor Dish Machine with Blower Dryer, Gas Tank Heat (1 Required)

a. Description: Hobart Model No. CL54-BAS GAS, 208/3, High Temperature Sanitizing with:

1) 245 racks per hour.

2) Right to left operation

3) Single point electrical connection.

4) Vent fan control.

5) Extended s/s vent hood.

6) 4-inch x 6-inch x 4” high s/s mini-vent hood for gas tank heat. Mounted 18” above the flue exit at the rear of the dishwasher and connected to pant leg duct work. The volume of the flue exhaust in the mini-vent hood shall not exceed 200 CFM. Verify

size required with manufacturer.

6) Factory disconnect 48 kW booster heater.

7) Energy saver mode.

8) Table limit switch. Verify length of cable required prior to ordering.

9) Drain water tempering kit.

10) Water hammer arrester.

11) Wifi connectivity and SmartConnect app and cloud for monitoring machine status.

12) Model No. CL54eN Blower Dryer, 2 H.P. blower, 10 kw electric heat, 208/3.

b. Acceptable Equals: Stero or approved equal.

66. Item No. 59 – S/S Floor Trough with Grating (1 Required)

a. Description: IMC Teddy Model No. FT-1284-PFG-ADA, 14 gauge 304 stainless steel construction with:

1) 12-inch long x 84-inch wide x 4-inch deep

2) 6-1/2-inch waste outlet with perforated waste basket strainer with pull-out handle, chain, & 4-inch OD tailpiece

3) ADA protruded fiberglass grating.

b. Acceptable Equals: Made To Drain or approved equal.

67. Item No. 64 – Soiled Dishtable with Scrap Sink & Spray Rinse (1 Required)

a. Description: BSI Model SDT, fabricate and install as detailed and arranged on plan and detailed and as specified in paragraph 2.03.

1) 14 gauge s/s top & scrap sink mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet. 16 gauge s/s undershelf and 1-5/8-inch s/s crossrails welded to legs.

2) 2 each 44-inch long wall mounted 16 gauge s/s slant rack shelf on 14 gauge s/s brackets.

3) Scrap compartment sink shall be furnished with two 16-gauge stainless perforated scrap basket with handles. Scrap basket shall fit within sink with top level with drainboard and shall rest on 1/2-inch diameter x 1/2-inch long stainless steel pins welded to the sides of sink.

4) One all welded removable stainless steel grating, constructed of 1/4-inch x 1-inch wide stainless steel. Grating shall fit within sink with top level with drainboard and shall rest on 1/4-inch diameter x 1/4-inch long stainless steel pins welded to the sides of sink.

5) Chicago Faucets Model No. 923-613L12XKCAB or approved equal with wall brackets anchored securely to wall.

6) 2 each 8" diameter s/s trash chute.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

68. Item No. 68 – Tray Delivery Carts (3 Required)

a. Description: Caddy Model No. TD-630-D with:

1) 3 compartments with doors, non-insulated.

2) 30 trays capacity, formed tray slides with 2-inch clearance.

3) Stainless steel push handle, card holder, polymer construction, stainless steel top, back & back.

4) Full perimeter non-marking bumper, 6-inch diameter polyurethane swivel casters. 2 swivel & 2 rigid.

b. Acceptable Equals: Piper Products or approved equal.

69. Item No. 69 – S/S Utility Carts (8 Required)

a. Description: Lakeside Model No. 949 with:

1) Stainless steel construction, 3-tier, 42-inch W x 25-7/8-inch D x 37-3/8-inch H, 1000 lb. capacity.

2) 24-inch x 36-inch 14-gauge shelves with reinforced edges.

3) 1-inch O.D. tube push handle with bumpers & 2 each

6-inch bumpers riveted to front legs.

4) 2 each 5-inch swivel casters & 2 each 8-inch fixed casters with non-marking polyurethane wheels.

b. Acceptable Equals: Vollrath or approved equal.

70. Item No. 70 – Trash Receptacle (8 Required)

a. Description: Rubbermaid Model No. FG263200GRAY with:

1) 32-gallon gray container, 22-inch round x 27-1/4-inch high

2) Dolly, 18-1/4-inch diameter x 6-5/8-inch high, heavy duty 3-inch casters, 250 lb. capacity.

b. Acceptable Equals: Vollrath or approved equal.

71. Item No. 71 – Slimline 3-Compt. Hot Food Wells (2 Required)

a. Description: Dinex Model No. DXP3HFSL, 3 wells, mobile 208/1, cord & plug with:

1) 22-inch L x 19-inch W x 36-inch high

2) Stainless steel open base with undershelf, 14 gauge s/s top, 20 gauge s/s end & front panels.

3) 5-inch swivel casters, 2 with brakes.

4) Manifold drains to master valve.

5) Model No. DXPBG15 single sided protector guard, 74-inch wide.

b. Acceptable Equals: Piper Products or approved equal.

72. Item No. 72 – Slimline 2-Compt. Hot Food Wells (1 Required)

a. Description: Dinex Model No. DXP2HFSL, 3 wells, mobile 208/1, cord & plug with:

1) 22-inch L x 19-inch W x 36-inch high.

2) Stainless steel open base with undershelf, 14 gauge s/s top, 20 gauge s/s end & front panels.

3) 5-inch swivel casters, 2 with brakes.

4) Manifold drains to master valve.

5) Model No. DXPBG13 single sided protector guard, 46-inch wide.

b. Acceptable Equals: Piper Products or approved equal.

73. Item No. 73 – Mobile Tray Dispenser (1 Required)

a. Description: Piper Products Model No. PT/1520MO with:

1) Stainless steel construction, 3-tier, 42-inch W x 25-7/8-inch D x 37-3/8-inch H, 1000 lb. capacity.

2) 24-inch x 36-inch 14-gauge shelves with reinforced edges.

3) 1-inch O.D. tube push handle with bumpers & 2 each 6-inch bumpers riveted to front legs.

4) 2 each 5-inch swivel casters & 2 each 8-inch fixed casters with non-marking polyurethane wheels.

b. Acceptable Equals: Vollrath or approved equal.

74. Item No. 74 – Mobile Tray Dispenser | Cabinet Style (1 Required)

a. Description: Lakeside No. 996 with:

1) Open base, stainless steel construction.

2) Single self-leveling tray platform for 15-inch x 20-inch trays. Verify tray size before ordering.

b. Acceptable Equals: Dinex or approved equal.

75. Item No. 75 – Tray Starter Station (1 Required)

a. Description: Alluserv Model No. SS60SS with:

1) 60-inch wide stainless steel 18 gauge tubing, pan rack and top shelf.

2) 4 each 5-inch diameter swivel casters, 2 with brakes.

b. Acceptable Equals: Piper Products, Lakeside or approved equal.

76. Item No. 76 – Air Curtain Refrigerator (4 Required)

a. Description: Dinex Model No. DXPACR15RSD, 120/1, cord & plug with:

1) Stainless steel exterior and interior construction, one section, bottom mount self-contained refrigeration.

2) Stainless steel tray slide accommodates 15 each 18-inch x 26-inch or 30 each 14-inch x 18-inch trays.

3) LED display, right hinged sliding stainless steel door, rear-mounted tubular push handle with donut bumper, and non-marking bumpers.

3) 4 each 5-inch swivel casters with brakes.

b. Acceptable Equals: Approved equal.

77. Item No. 77 – Mobile Heated Cabinet | Non-Insulated (2 Required)

a. Description: Vulcan Model No. VHFA18-QS-PLATINUM, 120/1, cord and plug with:

1) 20 gauge stainless steel cabinet, 18 each 18-inch x 26-inch or 36 each 12-inch x 20-inch pan capacity.

2) Full size glass door with field reversible hinges, door latch mechanism, and gaskets.

3) 2 each 1000 watt metal sheathed heating elements.

4) Set if 5-inch swivel casters, 2 each swivel with brakes and 2 each rigid.

b. Acceptable Equals: Vollrath or approved equal.

78. Item No. 78 – S/S Beverage Counter with Sink & Drip Trough (1 Required)

a. Description: BSI Model No. WTS, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet. 16 gauge s/s undershelves & s/s cabinet doors.

2) S/S rotary waste w/ water lever support bracket and Chicago Faucets Model No. 772-ABCP, deck-mounted faucets with aerator and ADA handles.

3) 16 gauge s/s welded -in trough, 60-inch long x 4.75-inch wide with removable grate with 1" MPT drain.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

79. Item No. 79 – Tray Make-Up Conveyor, 17-Foot Long (1 Required)

a. Description: Piper Products Model No. FABRIC-17, 120V/1 with:

1) Single fabric belt, stainless steel belt pan, variable speed drive motor.

2) 17-foot long raceway with s/s breaker panel.

3) 3 each 208V/1 mounted outlets, verify amp draw.

4) 1 each 120V1 mounted outlet, 5.5 amps.

5) Casters with locks.

b. Acceptable Equals: Dinex or approved equal.

80. Item No. 80 – Mobile Heated Plate Dispenser (1 Required)

a. Description: Dinex Model No. DXPIDPH4E1012, 120V/1 with:

1) Enclosed tubular frame.

2) Four self-leveling dish dispensing tubes.

3) 1800 watts, cord & plug.

b. Acceptable Equals: Lakeside, Piper or approved equal.

81. Item No. 81 – Coffee Urn (1 Required)

a. Description: Bunn Model No. 20500.0000 U3, 120V/208/1 with:

1) Twin 3 gallon reservoirs, automatic, 5825 watts.

2) Hot water faucet.

3) 16.3 gallons per hour.

4) Water filter model no. 56000.0025 System, WEQ-25(2)2L.

b. Acceptable Equals: Curtis or approved equal.

82. Item No. 82 – Coffee Brewer | Thermal Server (1 Required)

a. Description: Bunn Model No. 35900.0010, BrewWise Dual GPR DBC, 120/208V/1 with:

1) 18.9 gallons per hour.

2) Four self-leveling dish dispensing tubes.

3) 1800 watts, cord & plug.

5) Water filter model no. 56000.0008 System, WEQ-10(1.5)5L QC

b. Acceptable Equals: Curtis or approved equal.

83. Item No. 83 – Ice and Water Dispenser (1 Required)

a. Description: Hoshizaki Model No. DCM-271BAH-OS, Opti-Serve Ice Maker/Water Dispenser, self-contained, air-cooled, counter model, 120V/1, cord & plug with:

1) Cubelet style ice.

2) 196 lbs. production @ 90 deg. air / 70 deg. water.

6) 10 lbs. built-in storage capacity.

7) Touchless LED Sensor.

8) 4” legs.

9) Water filter model no. H9320-54

b. Acceptable Equals: Manitowoc or approved equal.

84. Item No. 84 - Spare Number (Not Used)

85. Item No. 85 – Freezer, Reach-In, 2 – Door (1 Required)

a. Description: Utility Model No. R-60-SS-2S-D, self-contained, 120/1, 60-inch wide x 34.5-inch deep x 86-inch high, s/s interior and exterior, cord & plug with:

1) Full height doors hinged as indicated on plan.

2) 6-inch high stainless steel legs.

3) Five year compressor warranty and one year service/labor warranty.

b. Acceptable Equals: True, Continental Refrigerator or approved equal.

86. Item No. 86 – S/S Beverage Counter with Sink & Dbl. Overshelves (1 Required)

a. Description: BSI Model No. WTS, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet. 16 gauge s/s undershelves & s/s cabinet doors.

2) S/S rotary waste w/ water lever support bracket and Chicago Faucets Model No. 772-ABCP, 6-inch

deck-mounted faucets with aerator and ADA handles.

3) 16 gauge s/s welded -in trough, 60-inch long x 4.75-inch wide with removable grate with 1" MPT drain.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

87. Item No. 87 – Conveyor Toaster (Future – N.I.C.)

a. Description: Hatco Model No. ITQ-1000-1C, conveyor toaster, single conveyor, 208V/1, cord & plug with:

1) 17 pieces per min. capacity.

2) Programmable controls.

b. Acceptable Equals: Approved equal.

88. Item No. 88 – Tray Sealer (1 Required)

a. Description: Pathway Solutions Inc. Model No. VS300R, heat seal machine, 120V/1, cord & plug with:

1) 8-10 trays per min. capacity.

2) Heat seals trays to a maximum 10-inch long x 8-inch wide x 4-1/2-inch depth.

b. Acceptable Equals: Approved equal.

89. Item No. 89 – Mobile S/S Work Table with Undershelf (1 Required)

a. Description: BSI Model No. WT, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 14 gauge s/s top mounted on 1-5/8 inch O.D. s/s legs with s/s adjustable bullet feet.

2) 16 gauge s/s overshelves with s/s back enclosure on s/s brackets on posts mounted securely on 14 gauge s/s anchor supports.

3) 16 gauge s/s undershelf arranged on plan and detail.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

90. Item No. 90 – S/S Utility Chase

a. Description: BSI Model No. WT, fabricate and install as detailed and arranged on plan and detail and as specified in paragraph 2.03.

1) 16-inch x 6-inch x 18-inch high mounted on 6-inch high curb.

2) 16 gauge stainless steel construction.

b. Acceptable Equals: Elkay, Keas Stainless or approved equal.

PART 3 – EXECUTION

3.01 INSTALLATION AND WORKMANSHIP

A. Verify field dimensions, conditions before fabricating equipment.

B. Examine related work and surfaces before starting the work of this section. Report defective conditions to the Contracting Officer in writing, conditions which will prevent the proper provisions of this work. Beginning the work of this section without reporting unsuitable conditions constitutes acceptance of conditions. Any required repair replacement and removal of this work caused by unsuitable conditions shall become a part of the work of this section without additional cost to the State.

C. Errors and Omissions: In order to discover and resolve any conflicts or

lack of definition which might create construction problems, the Contractor shall require the Sub-Contractors to submit a written report to the Contractor within 10 days after award of sub-contract for the work covered by this section. This report shall include the following statement.

1. "We have examined the drawings and specifications for work included in our sub-contract and for related work. Except for the items described in Part 2 Products, we have discovered no errors, omission, impractical details or conflicts between our work and that of other trades, or conditions which would require deviations from the drawings and specifications."

2. List items for which clarifications are necessary. If none, so state.

3. Compliance with this requirement does not make Contractor or Sub-Contractor responsible for such errors, omissions or discrepancies, but merely gives the opportunity to have such items corrected promptly.

4. This report shall be sent to the Contracting Officer with copy to the Food Facilities Consultant.

D. Coordinating this work with the work with other sections.

E. Work required for the support and accommodation of related work.

F. Cutting of equipment holes for pipe, drains, electric outlets, etc., required for this installation. This work shall be performed in a neat, orderly manner using proper equipment which does not unnecessarily impair the structure or appearance in exposed locations.

G. Repair of all damage to the building resulting from the work of this section. Repair work shall be performed by the Contractor responsible for the work which becomes damaged. Repair work shall meet the Contracting Officer's approval. All costs for repair shall be paid by the Contractor for the work of this section.

H. All debris, crates or packages shall be removed.

I. Mechanically fasten all non-portable equipment to building and to adjacent equipment.

J. Furnish protective covers and wrappings until building finishes are completed.

K. Trimming and Sealing Equipment:

1. All spaces between all fixed items and walls, ceiling, floor shall be completely sealed with stainless steel trim strips, welding, soldering, mastic or epoxy sealant. Mastic is not permissible in joints or seams which are more than 3/16-inch.

2. All hollow sections shall be sealed.

3. All exposed ends of splash backs and exposed backs of shelves shall be capped with S/S, welded, ground and polished smooth.

4. Where applicable, ends of all fixtures, splash backs, shelves, etc., shall be finished flush to walls or adjoining fixtures.

5. Duct: Verify size and position off all duct connections required for hoods in this contract with the Ventilation Contractor before fabrication. Provide stainless steel formed duct collars at exposed ceiling duct connections.

L. Installation, Workmanship and Final Acceptance of Work: Work performed by the Contractor shall meet the Contracting Officer's and Consultant's approval.

3.02 TESTING, INSPECTION AND DEMONSTRATION

A. After installation, all equipment shall be inspected and tested under operating conditions unless otherwise specified. If inspection or tests show defects, such defects shall be corrected and inspection and tests shall be repeated.

B. A satisfactory test of the range hood fire extinguishing system shall be performed in the presence of the Fire Chief prior to any cooking.

C. Maintenance Instructions and Demonstration: Contractor shall provide a service representative to demonstrate usage of equipment and instruct maintenance employees to lubricate and service contract equipment.

3.03 CLEAN-UP

A. All food service equipment and fixtures shall be cleaned and ready for operation when the structure is turned over to the State.

END OF SECTION

SECTION 13851 - ADDRESSABLE FIRE ALARM SYSTEM

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish all labor and materials required to complete all fire alarm work indicated on the drawings and/or as specified.

1.02 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. SECTION 07840 - FIRESTOPPING: Firestopping requirements.

B. SECTION 09901 - PAINTING: Painting of all conduits, raceways, ducts, cabinets, junction boxes, etc.

C. SECTION 16400 - ELECTRICAL WORK: All power wiring including wiring to disconnect switches and breakers and wiring to all equipment.

1.03 PAYMENT PROCEDURES

A. Permits, Tests and Inspections: Apply, secure and pay for all required permits, fees, licenses, tests, inspections and royalties necessary to accomplish the work. Schedule and coordinate required tests and inspections.

1.04 SCOPE

A. System Description: This work includes designing and providing a new, complete, addressable fire alarm system as described herein and on the contract drawings for the Sub-Basement of the Young Building at Leahi Hospital. The system shall include all wiring, raceways, pull boxes, terminal cabinets, outlet and mounting boxes, control equipment, alarm, and supervisory signal initiating devices, alarm notification appliances, and all other accessories and miscellaneous items required for a complete operating system even though each item is not specifically mentioned or described. The system layout on the drawings is conceptual. A single main fire alarm control panel be provided with fire alarm extender panels on each floor. Each panel shall be powered from dedicated circuit breakers that are labeled and lockable in the closed position. Equipment, materials, installation, workmanship, inspection, and testing shall be in strict accordance with the required and advisory provisions of NFPA 72 except as modified herein.

B. After acceptance of the new system by the HHSC, all existing equipment not connected to the new system shall be removed, all unused exposed conduit shall be removed, and all damaged surfaces shall be restored. Contact the Contracting Officer to determine if any of the existing equipment shall be salvaged. The material shall be properly disposed of by the Contractor.

1.05 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

1. Code of Federal Regulations (CFR)

a.	47 CFR 90	Private Land Mobile Radio Service
b.	29 CFR 1910.36	Occupational Safety and Health Standards, Subpart E - Means of
c.	29 CFR 1910.37	Occupational Safety and Health Standards, Subpart E, Means of Egress, General

2. American Society of Mechanical Engineers (ANSI/ASME)

a.	ASME/ANSI A17.1	(1993) Safety Code for Elevators

3. Factory Mutual Engineering and Research Corporation (FM)

a.	FM P7825	Approval Guide (updated online)

4. National Electrical Manufacturers Association (NEMA)

a.	NEMA ICS 1	(1993) Industrial Control and Systems

5. National Fire Protection Association (NFPA)

a.	NFPA 1	(2021) Uniform Fire Code
b.	NFPA 70	(2020) National Electrical Code
c.	NFPA 72	(2019) National Fire Alarm Code
d.	NFPA 90A	(2021) Installation of Air Conditioning and Ventilating System
e.	NFPA 101	(2021) Life Safety Code

6. Underwriters Laboratories Inc. (UL)

a.	UL 464	(1990) Audible Signal Appliances
b.	UL 864	(1991; R 1994, Bul. 1995)

		Control Units for Fire-Protective Signaling Systems
c.	UL 1449	(1985; Errata 1986, Bul. 1993, 1994, and 1995) Transient Voltage Surge Suppressors
d.	UL FPED	Fire Protection Equipment Directory updated online)

7. American Electricians Handbook by Croft (latest edition), McGraw-Hill

8. Practical Electrical Wiring by Herbert P. Richter and W. Creighton Schwan, McGraw-Hill

9. Copper Development, Inc.'s "Copper Building Wire Handbook"

10. National Electrical Safety Code

11. Local ordinances and regulations of the County

12. International Municipal Signal Association Inc. Specification No. 19 1 1991, polyethylene insulated, polyvinyl chloride jacket signal cable; and

13. Applicable instructions of the manufacturer for equipment and materials supplied for the project.

1.06 SUBMITTALS

A. Submit under provisions of SECTION 01330 - SUBMITTALS. Partial submittals will not be acceptable. Submit for approval one (1) complete sets of submittals as described below in electrical format, Portable Document Format (PDF). Annotate descriptive data to show the specific model, type, and size of each item the Contractor proposes to furnish. Do not commence work until the design of the system and the various components have been approved. The Contracting Officer will review and approve all submittals. Before work is commenced the shop drawings must be approved.

1. Manufacturer's Catalog Data:

a. Fire alarm control panel with emergency voice/alarm communications (FACP with EVAC)

b. Manual fire alarm stations

c. Batteries and battery charger (within FACP)

d. Photoelectric smoke sensors

e. Addressable interface devices

f. Audiovisual notification appliances

h. Amplifiers

2. Shop (Working) Drawings:

a. Point-To-Point Wiring Diagrams: Drawings shall be job-specific. "Typical" or "generic" drawings are not acceptable. The diagrams shall include but not be limited to the following:

1) Locations of All System's Elements: Indicate all devices, junction boxes, handholes, and pass-through devices and entities where the cables and conductors can be accessed by personnel. Indicate the number of devices provided.

2) Also indicate the locations of all cable and conductor terminations and intermediate connections showing where they pass through without terminations/connections from and to equipment panels and/or devices.

3) Labeling of All Elements: All devices junction boxes, etc. shall be labeled by functional designations, locations and numbers such as building alphabet, room function and room number, and handhole number.

4) Fire Alarm Wiring and Color Codes: All cable and conductor color codes, the wire marking system and marker designation as specified herein shall be shown.

b. Equipment and/or Modular Systems Wiring Diagram: Wiring diagrams showing all equipment (control panel and annunciator in separate panel) modules, components and key internal cabinet wiring that should be accessed for tests and maintenance. Drawings shall include but not be limited to the following:

1) Equipment Modules and Components: The equipment modules and components layout (relative locations in proportion to the modules, components and cabinet/enclosure sizes) including the fire alarm control panel(s), battery cabinets, etc. The drawings shall also show the arrangement of modules, components, wiring and expansion space

within the FACP cabinet.

2) Input and Output Circuits Labeling: Label the input and output circuits by circuit designations specified herein.

3) Internal - External Circuits Interface Information: Only information that interfaces with external circuits and internal equipment wiring need be shown. All external wiring and circuits shall be shown in the riser diagram and the Contractor furnished Point-To-Point Wiring Diagrams.

Changes in or deletion of the modular system wiring diagrams shall not require changes to the riser diagrams and the Contractor furnished Point-To-Point Wiring Diagrams and vice versa except for the panel deletion or change.

c. Provide a complete description of the system sequence of operation for all initiating, notification, and control devices via a sequence of operation matrix diagram.

d. Provide a complete list of devices addresses and corresponding messages.

3. Design Data:

a. Standby battery capacity calculations shall list the type of devices and modules, quantities, unit amperage draw for standby and alarm conditions, total amperage draw and battery amp/hour rating. Include this information on the shop drawings.

b. Provide detailed voltage drop calculations for all notification appliance circuits and releasing device circuits. Include this information on the shop drawings.

c. Provide data on each circuit to indicate that there is at least 25 percent spare capacity for notification appliances, and 25 percent spare capacity for initiating devices.

d. Amplifier power calculations shall list the types and quantities of speakers, circuits, loads, and equipment power consumptions. All amplifiers shall be sized for service at 75 percent of their rated capacity for future expansion as necessary.

4. Guaranty.

5. Operations and Maintenance Manual: Provide five (5) bound copies of the Operations and Maintenance Manuals in three (3)

hole binders with hard covers. The manuals shall be submitted to the Contracting Officer a minimum of two (2) weeks prior to the final test. Provide 1 compact disk with the electronic version of the manual(s). Include a copy of the Contracting Officer's approval of Contractor's submittal. Submit manual for approval by Contracting Officer prior to submitting the electronic copy and hard copies. Submittal shall be approved by the Contracting Officer and the Consultant.

a. The manual may be provided in several volumes if so approved by the Contracting Officer.

b. All drawings shall be folded to letter size by individual sheets so they can be retained in the manual.

c. The manual shall contain the following:

1) Manufacturer's Printed Equipment/System Operations and Maintenance Manual, and Devices Brochures:

a) Start-up, operating, preventative maintenance, adjustment and troubleshooting procedures, and parts list.

b) System Control Diagrams.

c) Internal equipment wiring diagrams.

d) List of equipment and devices and quantities.

2) Manufacturer's Representatives: The names, addresses and phone numbers of the fire alarm system manufacturer, the nearest manufacturer's representative, and the nearest supplier of the manufacturer's equipment and parts.

3) Fire Alarm System Test Results: Provide completed test data sheets with the recorded measured data obtained during pre-final testing in the designated spaces and a printout of the equipment program. The test plan shall be developed in accordance with NFPA 72, Chapter 7. Submit the following information.

a) NFPA 72 Inspection and Testing and Record of Completion

b) Audibility readings.

c) Standard attendance signature sheets.

6. As-Built Drawings: Submit in accordance with SECTION 01330 - SUBMITTAL PROCEDURES. Drawings shall provide a detailed description of system operation during alarm, supervisory, and trouble modes and shall include a complete list of all system addresses including input/output logic. Upon completion and before final acceptance of the work, submit complete set of as built drawings of the system for record purposes. Drawings shall include all components and circuit diagrams complete with conductor color codes and a listing of initiating devices. Submit 24 by 36 inch with title block similar to full size contract drawings. Submittal shall be in electronic format, Portable Document Format (PDF).

1.07 QUALITY ASSURANCE

A. Qualification of Installer and Fire Alarm Supplier: Installation shall be accomplished by an electrical contractor (C-13) or an Electronic systems contractor (C-15) with a minimum of five years experience in the installation of fire alarm systems in the State of Hawaii. However, a C-13 contractor must provide the power connection to the system. The services of a technician provided by the control equipment manufacturer shall be provided to supervise installation, adjustments, and tests of the system. Prior to installation, submit data for approval by the Contracting Officer showing that the Contractor has successfully installed addressable interior fire alarm systems of the same type as specified herein, or that the Contractor has a firm contractual agreement with a subcontractor having such required experience. Include the names and locations of at least two installations where the Contractor, or the subcontractor referred to above, has installed such systems. Indicate the type and design of each system and certify that each system has performed satisfactorily in the manner intended for a period of not less than 18 months. Submit names and phone numbers of points of contact at each site.

B. Qualifications of System Technician: Installation drawings, shop drawings, and "as-built" drawings shall be prepared by, or under the supervision of, a qualified technician. Qualified technician shall be an individual who is experienced with the types of work specified herein, and is currently certified by the National Institute for Certification in Engineering Technologies (NICET) as an engineering technician with minimum Level-III certification in Fire Alarm Systems program. Contractor shall submit data showing the name and certification of the technician at or prior to submittal of drawings.

C. Regulatory Requirements: Devices and equipment for fire alarm service shall be listed by Underwriters Laboratories, Inc. or approved by the Factory Mutual System or listed by other nationally recognized testing laboratories.

D. Requirements for Fire Protection Service: Equipment and material shall have been tested by Underwriters Laboratories, Inc. and listed in UL FPED or approved by Factory Mutual and listed in FM P7825. Where the

terms "listed" or "approved" appear in this specification, they shall mean listed in UL FPED or FM P7825. The omission of these terms under the description of any item of equipment described shall not be construed as waiving this requirement.

E. Standard Products: Materials and equipment shall be standard new products of a manufacturer regularly engaged in the manufacture of such products and shall essentially duplicate items that have been in satisfactory use for at least one year prior to bid opening. Select material from one manufacturer, where possible, and not a combination of manufacturers, for any particular classification of materials.

F. Modification of References: In NFPA publications referred to herein, consider advisory provisions to be mandatory, as though the word "shall" had been substituted for "should" wherever it appears; interpret reference to "authority having jurisdiction" to mean the County Building and Fire Departments.

1.08 GUARANTY AND CERTIFICATE

A. The Contractor shall guaranty and certify in writing all work in this section for period of two (2) years. Any repair due to defective equipment, material or workmanship within this period, shall be repaired or replaced at no cost to the State.

B. The two (2) year guaranty shall start at the end of thirty (30) consecutive days of trouble free operation after certification by the Fire Department and acceptance by the State whichever date is the latest. Provide copy of DAGS 30 day trouble free operation form, approved by the Contracting Officer, as part of the closing documents.

1.09 MAINTENANCE

A. During the fire alarm system's two (2) year guaranty period, the Contractor shall supply complete maintenance and testing services for the entire fire alarm system in accordance with the manufacturer's instructions and NFPA 72. Functional test of initiating devices and notification devices shall be done in one complete test per year. Reports prepared on Contractor-furnished standardized forms similar to the form in NFPA 72 shall be submitted to the Contracting Officer each time a test and/or maintenance action occurs.

B. During the two (2) year guaranty period, the Contractor shall, upon the receipt of notice from the State's representative, promptly make all repairs which include but not limited to defective material, workmanship or equipment. The Contractor shall respond to such notices within 12 hours after receipt of notice.

The local representative or supplier shall have direct access to replacement parts and a fire alarm repairman, either on his own staff or in a manufacturer's service center, to ensure the system can be restored to normal operation within two (2) days of system failure. All costs including

air-fare, car rental, travel time, etc. shall be borne by the Contractor.

It is understood that the State will undertake repairs if, following two (2) working days after receipt of such notice, the Contractor fails to make or undertake the repairs with due diligence. The expense in connection therewith shall be charged to the Contractor.

PART 2 - PRODUCTS

2.01 MANUFACTURER QUALIFICATIONS

A. All components of each new system shall be furnished by a single manufacturer, shall be of current design and shall be in regular and recurrent production. Provide design, materials and devices for a protected premises fire alarm system, complete, conforming to NFPA 72, except as otherwise or additionally specified herein.

2.02 SYSTEM DESIGN

A. System Operation: System shall be a complete, supervised, addressable fire alarm system conforming to NFPA 72. The system shall operate in the alarm mode upon actuation of any alarm initiating device. The system shall remain in the alarm mode until all initiating device(s) are reset and the fire alarm control panel is manually reset and restored to normal. The system shall provide the following functions and operating features:

1. The fire alarm control panel (FACP) and fire alarm control units, if used, shall provide power, annunciation, supervision and control for the system.

2. Provide Class B, initiating device circuits.

3. Provide Class B, signaling line circuits.

4. Provide Class B, notification appliance circuits.

5. Provide electrical supervision of the primary power (AC) supply, presence of the battery, battery voltage, and placement of system modules within the control panel, and any extender panel(s).

6. Provide an audible and visual trouble signal to activate upon a single break or open condition, or ground fault which prevents the required operation of the system. The trouble signal shall also operate upon loss of primary power (AC) supply, absence of a battery supply, low battery voltage, or removal of alarm or supervisory panel modules. Provide a trouble alarm silence feature which will silence the audible trouble signal, without affecting the visual indicator. After the system returns to normal operating conditions, the trouble signal shall again sound until the trouble is acknowledged. A smoke sensor in the process of being verified for the actual presence of smoke shall not initiate a trouble condition.

7. Provide a notification appliance silencing switch which, when activated, will cause the notification appliances to cease operating, but not affect the liquid crystal display. This switch shall be overridden upon activation of a subsequent alarm.

8. Provide alarm verification capability for smoke sensors.

9. Provide program capability via switches in a locked portion of the FACP to bypass the automatic notification appliance circuits, elevator recall, and door release features. Operation of a switch shall indicate a trouble condition on the FACP display.

10. All alarm, supervisory, or trouble signals shall be automatically transmitted other networked panels.

11. Alarm functions shall override trouble or supervisory functions. Supervisory functions shall override trouble functions.

12. The system shall be capable of operating, supervising, and/or monitoring both addressable and non-addressable alarm and supervisory devices.

13. The system shall sustain the maximum system capacity on the number of addressable devices, which may be in alarm simultaneously.

14. Where the fire alarm is responsible for initiating an action in another emergency control device or system, such as an elevator system, the addressable fire alarm relay shall be within 3 feet of the emergency control device.

15. An alarm signal shall automatically initiate the following functions:

    a. Transmission of an alarm signal to the other networked panels.

    b. Visual indication of the device operated on the fire alarm control panel (FACP). Indication on the LED display shall be by floor, zone or circuit, and type of device.

    c. Continuous actuation of all alarm notification appliances, except those in elevator cabs.

    d. Release of doors held open by electromagnetic devices.

16. Operation of the smoke sensors in the elevator machine room, elevator hoistway, and elevator lobby, except for the designated level, shall initiate elevator recall to the primary level. Operation of the smoke sensors in the designated level elevator lobby shall

recall the elevator to an alternate level.

17. A trouble condition shall automatically initiate the following functions:

    a. Transmission of a trouble signal to other networked panels.

    b. Visual indication of the system trouble on the FACP.

B. Overvoltage and Surge Protection: Provide a factory approved surge suppressor at power inputs to control panels and power extender panels, conforming to UL 1449. Suppressor shall be hybrid MOV type providing a maximum clamping voltage of 500 volts and a 150 joule minimum energy dissipation capacity.

C. Fire Alarm Control Panel with Emergency Voice/Alarm Communications with EVAC (FACP): Provide a complete control panel fully enclosed in a lockable steel enclosure as specified herein. All operations required for testing or for normal care and maintenance of the systems shall be performed from the front of the enclosure. If more than a single unit is required at a location to form a complete control panel, the unit enclosures shall match exactly. Each control unit shall provide power, supervision, control and logic for the entire system, utilizing solid state, modular components, internally mounted and arranged for easy access. Each control unit shall be suitable for operation on a 120 volt, 60 hertz, normal building power supply. Provide each panel with supervisory functions for power failure, internal component placement, and operation. Visual indication of alarm, supervisory or trouble initiation on the fire alarm control panel shall be by liquid crystal display with a 6 line 80 character display capable of displaying text and custom graphics at a minimum.

1. Cabinet: Install control panel components in cabinets large enough to accommodate all components and also to allow ample gutter space for interconnection of all panels as well as all field wiring. The enclosure shall be identified by an engraved laminated phenolic resin nameplate. Lettering on the nameplate shall say "Fire Alarm Control Panel" and shall not be less than 0.75 inch high. Provide prominent rigid plastic or metal identification plates for all lamps, circuits, meters, fuses and switches. The cabinet shall be provided in a sturdy steel housing, complete with backbox, hinged steel door with cylinder lock, and flush mounting provisions. The cabinet shall be painted beige.

2. Control Panel Modules: Provide power and control modules to perform all functions of the FACP. Provide audible signals to indicate any alarm, supervisory or trouble condition. The alarm signals shall be different from the trouble signal. Connect all circuit conductors entering or leaving the panel to screw-type terminals with each terminal marked for identification.

3. Silencing Switches: Provide an alarm silence switch at the FACP which will silence the audible signal but not affect the visual alarm indicator. Provide trouble and supervisory silencing switch which will silence the audible trouble and supervisory signal, but not extinguish the visual indicator. This switch shall be overridden upon activation of a subsequent alarm.

4. Fire Alarm Message: A fire alarm shall activate notification appliance circuits. Textual audible appliances shall produce a temporal three tone followed by a voice message which is repeated until the control panel is reset. Automatic messages shall be broadcast through speakers on appropriate floors, but not in stairs or elevator cabs. A live voice message shall override the automatic audible output through use of a microphone input at the control panel. When using the microphone, live messages shall be broadcast through speakers in stairs, in elevator cabs, and throughout a selected floor or floors. The system shall be capable of operating all speakers at the same time. Messages shall utilize a female voice and shall be as follows:

    a. Temporal three tone, "May I have your attention, please. May I have your attention, please. A fire has been reported which may affect your floor. Please walk to the nearest exit and evacuate the building. Do not use the elevators."

5. Memory: The control panel shall have the ability to store a minimum of two hundred (200) events in a log stored in a battery-protected memory.

6. Service Mode: The FACP shall have a service mode to permit the arming and disarming of individual detection or output devices as well as manually operating output devices. Status of these devices shall be displayed upon command or printed on a printer. FACP shall remain 100 percent operational and capable of responding to an alarm condition while in the routine maintenance mode. The FACP shall automatically return to the normal mode after a predetermined time (1 hour) in the event the panel remains unattended in the service mode.

7. Field Programmability: Provide control units and control panels that are fully field programmable for control, initiation, notification, supervisory and trouble functions of both input and output. The system program configuration shall be menu driven. All system changes shall be password protected.

8. Input/Output Modifications: The FACP shall contain features which allow the bypassing of input devices from the system or the modification of system outputs. These control features shall consist of a panel mounted keypad. Any bypass or modification to the system shall indicate a trouble condition on the FACP and the remote annunciator.

9. Resetting: Provide the necessary controls to prevent the resetting of any alarm, supervisory, or trouble signal while the alarm, supervisory or trouble condition on the system still exists.

10. Walk Test: The FACP shall have a walk test feature. When using this feature, operation of initiating devices shall result in limited system outputs, so that the notification appliances operate for only a few seconds and the event is indicated on the system printer, but no other outputs occur.

11. Each panel shall contain Alarm and trouble form C relays. Minimum eight (8) Notification Appliance Circuits (NACS). Include minimum 6 amps power for NACS. Each panel shall contain two (2) 250 point addressable card(s). Panels that have 99 point addressable cards shall install multiple addressable cards to achieve 500 points.

12. Amplifiers: Any amplifiers, message storage, and all other hardware necessary for a complete, operational textual audible circuit conforming to NFPA 72 shall be housed in a remote fire alarm control unit, terminal cabinet, or in the fire alarm control panel. The system shall automatically operate and control all building fire alarm speakers except those installed in the stairs and within elevator cabs. The speakers in the stairs and elevator cabs shall operate only when the microphone is used to deliver live messages.

    a. Backup amplifier: Provide backup amplifier sufficient to take the place of the largest amplifier in the system.

    b. Inputs: Each system shall be equipped with pre-recorded messages and panel mounted microphone. Microphone inputs shall be of the low impedance, balanced line type. Both microphone and system messages shall be operation on any amplifier.

    c. Outputs: All audio circuits shall be synchronized.

    d. Protection Circuits: Each amplifier shall be constantly supervised for any condition which could render the amplifier inoperable at its maximum output. Failure of any component shall cause automatic transfer to a designated backup amplifier, illumination of a visual "amplifier trouble" indicator on the control panel, appropriate logging of the condition on the system printer and other actions for trouble conditions as specified.

13. The FACP (with EVAC) shall be Simplex 4100ES Voice series (with enhanced screen), General Electric (Edwards) EST4 Voice series, Siemens Cerberus PRO series, or approved equal.

D. Electric Power:

1. Primary Power: Provide primary power for the FACP from the normal AC service to the building where shown on the drawings. Make the 120 VAC service connection for the FACP at the location indicated. Provide a red and white engraved plastic sign permanently affixed to the FACP identifying the power service location, panel, and breaker.

2. Emergency Power Supply: Provide for system operation in the event of primary power source failure. Transfer from normal to auxiliary (secondary) power or restoration from auxiliary to normal power shall be automatic and shall not cause transmission of a false alarm.

   a. Batteries: Provide rechargeable, maintenance-free, lead-acid gelled electrolyte sealed batteries as the source for emergency power to the FACP. Batteries shall contain suspended electrolyte. House batteries within the control panel or in a separate battery cabinet. Batteries shall be marked with the month and year of manufacture.

   b. Capacity: Provide the batteries with sufficient capacity to operate the system under supervisory and trouble conditions, including audible trouble signal devices for 24 hours and audible and visual signal devices under alarm conditions for an additional 15 minutes.

   c. Battery Charger: Provide a solid state, fully automatic, variable charging rate battery charger. The charger shall be capable of providing 150 percent of the connected system load and shall maintain the batteries at full charge. In the event the batteries are fully discharged the charger shall recharge them back to full charge within 48 hours. Provide pilot light to indicate when batteries are manually placed on a high rate of charge as part of the unit assembly if a high rate switch is provided.

E. Addressable Interface Devices: The addressable monitor device shall provide an addressable input interface to the FACP for monitoring normally-open or normally-closed contact devices such as waterflow switches, fire pump monitoring, independent smoke detection systems, etc. The addressable control device shall provide an addressable output interface for control to the FACP for control of elevator recall, door releasing, solenoid activation, etc.

1. Addressable Monitor Modules: Addressable Monitor Module shall be provided to connect supervised conventional initiating device or zone of supervised conventional initiating devices, including but not limited to water flow and alarm pressure switches, valve tamper switches, low pressure switches, manual release stations, and heat detectors, and other such devices. Monitor module shall

mount in a 4 inch square, 2-1/8 inch deep electrical box and shall be capable of Class B supervised wiring to the initiating device. Monitor module shall contain an integral LED that flashes each time the monitor module is polled.

2. Addressable Control Modules: Addressable Control Module shall be provided to connect supervised conventional notification device or zone of notification devices that require an external power supply, such as audio-visual alarms.. The control module shall be capable of operating as a relay (dry contact Form C), to control auxiliary functions. The module shall be mounted in a 4 inch square, 2-1/8 inch deep electrical box and shall be capable of Class B supervised wiring to the indicating or control device. Module shall contain an integral LED that flashes each time the module is polled.

3. Isolation Modules: Provide isolation modules to isolate wire-to-wire short circuits on a loop and limit the number of other modules or detectors that are incapacitated by the short circuit fault. Place isolator modules at signaling line circuit T-taps where the T-tap will contain more than 5 addressable devices, and located such that not more than 30 addressable devices are connected between isolation modules. If a wire-to-wire short occurs, the module shall automatically open the circuit. On repair of the short, the module shall automatically reconnect the isolated section of the signaling line circuit. The module shall mount in a 4 inch square, 2-1/8 inch deep electrical box. Module shall contain an integral LED that flashes each time the module is polled and illuminates steadily to indicate that a short has been detected and isolated.

F. Smoke Sensors:

1. Photoelectric Smoke Sensor: Provide addressable photoelectric smoke sensors as follows:

a. Provide analog photoelectric smoke sensors utilizing the photoelectric light scattering principle for operation. Smoke sensors shall be listed for use with the fire alarm control panel.

b. All components shall be rust and corrosion resistant. Vibration shall have no effect on the sensor's operation. Protect the sensor chamber with a fine mesh metallic screen which prevents the entrance of insects or air born materials. The screen shall not inhibit the movement of smoke particles into the chamber.

c. Provide twist lock bases for the sensors. The sensors shall maintain contact with their bases without the use of springs. Provide companion mounting base with fixed wiring terminals. Terminate field wiring on the fixed terminals.

d. Sensors shall be equipped with screw terminals for each conductor.

e. The sensor address shall identify the particular unit, its location within the system, and its sensitivity setting. Sensors shall be of the low voltage type rated for use on a 24 VDC system.

f. Sensors shall include alarm LED which flashes under normal conditions, indicating that the sensor is operational and in regular communication with the control panel. LED to be placed into steady illumination by the control panel when the sensor is in alarm. Provide an output connection for an external remote alarm LED.

g. Simplex No. 4098-9754 with 4098-9792 base. Siemens Cerberus PRO OH921 with DB-11 Base, General Electric (Edwards) No. SIGA-PHS approved equal.

G. Manual Stations:

1. Addressable Manual Pull Stations:
Provide addressable, non-coded, single-action type initiating stations with mechanical tool-less reset feature. Switch shall be normally open. Break-glass-front stations and pull-lever, break-glass-rod type are not acceptable. Locate stations as indicated.

Housings shall be painted red and labeled FIRE ALARM using permanently affixed, engraved, red and white plastic identification signs. Identification signs shall be affixed to the face of the housing cover; letters shall be a minimum of 0.75 inch high.

Stations shall be surface wall mounted on factory manufactured surface back box with the same base size as the manual station or to suit protective enclosure. Surface mounted boxes shall be of the same color as the manual station.

Keys to reset stations and the FACP shall be keyed alike.

The station shall not utilize break-glass windows or glass rods. When the station is operated, the handle shall lock in a protruding manner to facilitate quick visual identification of the activated station.

Provide each station with screw-type terminals of proper number and type to perform functions required.

Simplex No. 4099-9001. Siemens Cerberus PRO HMS-S, General Electric (Edwards) No. SIGA-278 approved equal.

H. Notification Appliances: (Conventional devices, Addressable devices not allowed)

1. Speakers:

    a. Matching multi-tap transformer with taps at 0.25 W, 0.5 W, 1 W, and 2 W at 25 VRMS.

    b. Frequency Response: 400 Hz to 4000 Hz.

    c. Provide with screw type terminals for separate in/out wiring for each leg of the associated signal circuit. Terminals shall be designed to accept the size of conductors used in this project without modification.

    d. The minimum sound output rating shall be 84 dBA at 10 feet as determined by the reverberant room test; data on peak output as determined in an anechoic chamber is not suitable. The maximum sound output shall be 120 dBA at the minimum hearing distance from the speaker.

    e. Speakers shall provide a sound level at least 15 dBA above the average ambient sound level or 5 dbA above the maximum sound level having a duration of at least 60 seconds, whichever is greater, measured 5 ft. above the floor in the occupiable area.

    f. Speaker shall be surface wall mounted on factory manufactured red surface back box with the same base size as the audible alarm device. Surface mounted boxes shall be of the same color as the audible alarm device.

    g. Simplex No. 4902-9716, General Electric (Edwards) No. G4RF-S2, Siemens No. SE-R Series, or approved equal

2. Visual Alarms:

    a. Provide 24 VDC xenon type strobe with red housing.

    b. The strobe color shall be clear for unfiltered white light.

    c. The maximum pulse duration shall be two-tenths of one second (0.2 sec.) with a maximum duty cycle of 40 percent. The pulse duration is defined as the time interval between initial and final points of 10 percent maximum signal.

    d. The intensity shall be minimum of 15, 30, 75,110 and 115 candela. As indicated on drawings.

    e. The flash rate shall be a minimum of 1 Hz and a maximum of 3 Hz.

f. Provide with tamper resistant lens and polarized in/out wiring.

g. Provide with screw type terminals for separate in/out wiring for each leg of the associated signal circuit. Terminals shall be designed to accept the size of conductors used in this project without modification.

h. Flash output shall be synchronized for spaces with more than two strobes (e.g. cafeteria dining area, corridors, large rooms, etc.).

i. Visual alarm device shall be surface wall mounted on factory manufactured red surface back box with the same base size as the visual alarm device. Surface mounted boxes shall be of the same color as the visual alarm device.

j. Combination type devices shall be allowed.

k. All visuals mounted outside must have a weatherproof outdoor rating, with a matching weatherproof gasketed back box.

l. Simplex No. 4906-9101. Siemens Cerberus PRO ZR-MC-R, General Electric (Edwards) No. G1RF-VM approved equal.

3. Connections: Provide screw terminals for each notification appliance. Terminals shall be designed to accept the size conductors used in the project without modification.

I. Fire Alarm Power Extender Panels: Fire alarm power extender panel shall comply with the applicable requirements of UL 864. Panel shall be modular, installed in a surface mounted steel cabinet with hinged door and cylinder lock. The extender panel(s) shall have necessary components and equipment required to provide a minimum of four (4) supervised, Class B, notification appliance circuits. Each appliance circuit shall be rated for 1.5 amperes at 24 volts DC. An alarm signal from the FACP will initiate the notification appliance circuits to extend the alarm. Primary power for the panel shall be 3 amperes at 120 volts AC. Standby power shall be same as FACP and charger shall be housed integrally within the cabinet.

J. System Wiring: Provide wiring materials under this section as specified in SECTION 16400 - ELECTRICAL WORK with the additions and modifications specified herein.

1. Wiring Within Cabinets, Enclosures, Boxes, Etc.: Provide wiring installed in a neat and workmanlike manner and installed parallel with or at right angles to the sides and back of any box, enclosure or cabinet. All conductors which are terminated, spliced, or

otherwise interrupted in any enclosure, cabinet, mounting or junction box shall be connected to terminal blocks. Mark each terminal in accordance with the wiring diagrams of the system. Make all connections with approved pressure type terminal blocks, which are securely mounted.

2. Above Grade Alarm Wiring: Conductors shall be Type THHN/THWN. Type TW is not permitted. Signaling line circuits and initiating device circuit field wiring shall be twisted pair No. 18 to No. 12 AWG, depending on distance and per manufacturer's recommendations. Visual alarm signal and audible appliance circuits shall be single solid copper No. 14 AWG size conductors at a minimum. Speaker circuits shall be solid copper No. 16 AWG size conductors at a minimum. Wire size shall be sufficient to prevent voltage drop problems. Power wiring, operating at 120 VAC minimum, shall be No. 12 AWG solid copper having similar insulation. Provide wiring in electrical metallic tubing in dry locations not enclosed in concrete or where not subject to mechanical damage. Provide rigid conduit in all other locations. Conceal conduit in finished areas of new construction and wherever practicable in existing construction. The use of flexible conduit not exceeding a 6 foot length shall be permitted in initiating device circuits. The minimum conduit size shall be 0.75 inch. Shielded wiring shall be utilized where recommended by the manufacturer. For shielded wiring, the shield shall be grounded at only one point, which shall be in or adjacent to the FACP. T-taps are permitted in Class B circuits with interconnections occurring on terminal strips. The completion of those circuits from the terminal cabinets to the appropriate system shall be provided under the appropriate Division.

3. Conductor Terminations: Labeling of any circuit at terminal blocks in terminal cabinets, FACP, and remote fire alarm control units shall be provided at each conductor connection. Each conductor or cable shall have a shrink-wrap label to provide a unique and specific designation. Each terminal cabinet, FACP and remote fire alarm control unit shall contain a laminated drawing which indicates each conductor, its label, circuit and terminal. The laminated drawing shall be neat, using a minimum 12 point font size for lettering, and be mounted within each cabinet, panel or unit so that it does not interfere with the wiring or terminals. Maintain existing color code scheme where connecting to existing equipment.

4. Frame for Operating Instructions: The frame material shall be welded stainless steel, with clear UV resistant plex-glass. Instructions shall be typewritten.

5. Cable Markers:

a. Rectangular, commercially available polyethylene cable tags with prepunched holes at each corner for the attachment with self-locking ties.

b. Minimum 0.035-inch thick.

c. Average Tensile Strength: 4500 pounds p.s.i.

d. Non-corrosive, non-conductive, resistant to acids, alkalis, organic solvents, salt water and distortion-resistant in temperatures up to 300 degrees F.

e. White or yellow and machine printed with the phrase "Fire Alarm Cable - Buildings A to E" in black block letters 1/8" or larger in vertical height. Handwritten markers are not acceptable.

1) The preprinting shall be permanent and shall not fade or dissolve.

2) The tags shall be suitable for marking with black permanent markers. There shall also be space available for additional notes (for maintenance / service contractor use only).

6. Cable and Conductor Ties: One-piece, self-locking nylon ties having a minimum loop tensile strength of 175 pounds and resistance to the same conditions as cable marker.

K. Framed Building Map: Map showing panels and the location of initiating devices shall be printed on a white background. The frame material shall be black painted wood or welded stainless steel, with clear UV resistant plexi-glass. Instructions shall be typewritten. Map shall be done by computer. Hand lettering and drafting not acceptable.

L. Nameplates: Provide metallic and/or phenolic noncorrosive and non-heat sensitive nameplates for:

1. Fire Alarm Control Panel: The nameplates shall be factory installed, securely mounted inside the fire alarm panel with machine screws or glue and shall also be accessible and visible. Information on the nameplates shall be 1/8" or larger lettering stamped or engraved with the following:

a. Manufacturer's name and address.

b. Model Number.

c. Serial Number.

d. Date of Manufacture.

e. Manufacturer's drawing number (if available).

2. Subpanels and Modules: The nameplates shall be securely mounted on the Subpanels and/or module with machine screws or glue and include the following information:

a. Subpanel and/or module model and/or type number.

b. Catalog number.

M. Corrosion and Fungus Protection: Metallic equipment shall be coated with a rust inhibiting treatment and standard finish per the manufacturer's standard. Components shall be protected against corrosion and fungus (e.g. circuit boards shall be epoxy coated).

N. Surge Protection: All electrical circuits supplying power to the system components (i.e. fire alarm control panel) shall be equipped with surge protectors, 40 kA maximum surge current, U.L. 1449 and U.L. 1283 listed.

PART 3 - EXECUTION

3.01 EXAMINATION OF THE DRAWINGS AND SPECIFICATIONS

A. Confirm and coordinate voltages and requirements of equipment furnished by other trades which will be connected to the fire alarm system, such as sensors and dampers. Include the above information on the field-post as-built drawings.

3.02 EXAMINATION OF EXISTING SITE CONDITIONS

A. Cabinets, panels, annunciators, outlets, pull stations, audio / visual devices and other equipment and devices shall be installed in the locations and heights shown on the drawings and/or as specified herein.

1. The location of the equipment and devices shown on the plans are approximate. Before installing, the Contractor shall study adjacent construction, verify all dimensions and sizes of equipment at the job site and perform installation in what he considers the most logical manner.

2. Any changes from the locations shown on the drawings must be approved by the Contracting Officer and shown on the "field-posted as-built" drawings.

3. Any device may be relocated within 10'-0" before installation at the direction of the Contracting Officer without additional charge to the State.

B. The Contractor shall determine the location of existing cables and record their route on the field-posted as-built drawings.

3.03 INSTALLATION

A. Protect dissimilar metals with approved fittings and treatment.

B. Coat steel conduits installed underground with an approved asphaltic paint or plastic coating, or wrap with a shingled layer of a pressure sensitive plastic tape, half-lapped. Do not use aluminum in contact with the earth.

C. All metallic conduits and boxes shall be grounded with a green wire ground conductor.

D. Equipment Installation: Equipment, materials, installation, workmanship, inspection, and testing shall be in accordance with NFPA 70, NFPA 72, and as modified herein.

1. FACP: Locate the FACP where indicated on the drawings. Semi-flush mount the enclosure with the top of the cabinet 4 feet above the finished floor. All conductor terminations shall be labeled and a drawing containing all conductors, their labels, their circuits and their interconnection shall be permanently mounted in the FACP.

2. Manual Stations: Locate manual stations where shown on the drawings. Mount stations so that the center of the operating handles are 45 inches above the finished floor.

3. Notification Appliance Devices: Locate notification appliance devices where shown on the drawings. Mount visual notification on walls between 80 and 96 inches above the finished floor or 6 inches below the ceiling whichever is lower. Mount audible notification on walls 90 inches measured to the top of the device.

4. Smoke Sensors: Locate sensors as shown on the drawings on a 4 inch mounting box. Sensors located on the ceiling shall be installed not less than 4 inches from a side wall to the near edge. Those located on the wall shall have the top of the sensor at least 4 inches below the ceiling, but not more than 12 inches below the ceiling. In the case of solid joist construction, the sensors shall be mounted on the bottom of the joists. On smooth ceilings, sensors shall be installed not over 25 feet apart in any direction. Closer spacing shall be used when recommended by the sensor manufacturer or required by NFPA 72. In raised floor spaces, the smoke sensors shall be installed to protect 225 square feet per smoke sensor with a maximum spacing of 15 feet. Install smoke sensors no closer than 3 feet from air handling supply outlets.

E. Cables and Conductors:

1. Above Grade Conductor Installation:

a. Conductors shall not be installed in the same conduits, ducts, junction boxes, etc. with non-fire alarm circuits. 120

volt AC fire alarm circuit conductors shall not be contained within the same multi-conductor cable nor installed with cables and other conductors in the same conduits, ducts, enclosures, junction boxes, etc. with 24 volt DC fire alarm circuits.

b. Conductors shall be installed in continuous lengths. Splices shall be made in above ground junction boxes by terminating wires with terminal blocks.

c. Cable pulling tensions shall not exceed manufacturers' recommended pulling tensions.

d. Wire-nut connectors: Not permitted.

2. Conductor Color Code: Conductors shall be provided with insulation color coded as follows:

a. Power Branch Circuit Conductors: Red (+), White (-) for 120 VAC. Black (+), Red (-), and White (neutral) for 240 VAC.

b. Initiating Device Circuit: Red (+), Black (-).

c. Audible Notification Appliance Circuit: Blue (+), Orange (-).

d. Visual Notification Appliance Circuit: Brown (+), Yellow (-).

e. Sensor Power Supply or separate annunciator wiring color code: Violet (+), Black (-).

f. Tie Circuit:

1) Red (+), Black (-) if used as an initiating circuit.

2) Blue (+), White (-) if used as a signaling circuit.

g. Door Holder Circuit (DHC): Pink, Pink.

h. Multi-conductor cable green, white, and gray colors shall not be used.

F. Cable and Conductor Terminations and Dress. The following requirements shall apply to terminal cabinets, junction and outlet boxes larger than 12" x 12":

1. Electric equipment shall be installed in a neat and workmanlike manner in accordance with NEC 373 7, Space in Enclosures.

2. Cable conductors or individual conductors shall be bundled, dressed and held together with cable straps, ties or lace and fanned in a manner that equipment terminals are visible and

accessible, and allow the connections to be removed and reconnected without moving a large number of wires.

a. Conductors to screw type connectors shall be terminated with wire lugs or with approved cable termination connectors compatible with the specific termination.

b. A minimum of 6 inch excess length shall be provided for conductors from the bundles to the connectors using a vibration loop as described by NEC 300-14.

c. Conductors shall be labeled as specified herein.

3. Cross-connected conductor pairs in junction and device outlet boxes or cabinets will not require bundling and cable straps, ties or lace but shall be neatly installed with a minimum of 6 inches of excess length so conductors can be easily traced between terminals. Label all conductors as specified herein.

4. Cabinets, junction boxes, outlet boxes, other boxes, shall have sufficient space to accommodate all conductors installed in them without crowding.

5. Completed work shall be uncrowded and uncluttered and shall allow accessibility without cutting and/or removing of any straps, ties, laces, cables, components, devices, brackets, modules, equipment and like items.

6. Cables shall be secured to junction boxes, equipment cabinet backboards, console members or to other system components using cable clamps and wraps. Provide cable support posts as required to facilitate system installation.

G. Cable and Conductor Identification System

1. Conductor Markers:

a. Provide markers at ends of each conductor connected to the control panels and terminal cabinets at each building.

b. Attach markers a minimum of four (4) inches from the ends of conductors in a manner that will not permit accidental detachment.

2. Signaling Line Circuits: Signaling line circuits shall be labeled by circuit number as shown on the drawings. Conductors shall be labeled in the fire alarm panel(s), the building's main fire alarm junction box and termination cabinet.

3. Audible and Visual Notification Circuits: Notification circuits shall be labeled by signaling circuit number as shown on the drawings.

Conductors shall be labeled in the fire alarm panel(s), the building's main fire alarm termination cabinet.

H. Framed Building Map: Framed building maps shall be permanently mounted adjacent to the main fire alarm control panel.

I. Fire Alarm Documents Cabinet: The fire alarm documents cabinet shall be permanently mounted adjacent to the main new fire alarm control panel.

J. Field Touch-up Painting: Touch-up painted surfaces and fire alarm system components damaged during installation to match the existing or specified paint and color.

K. Disconnection and Removal of Existing System: Fire alarm control panels and fire alarm devices not connected to the new system shall be disconnected and removed. Contact the Contracting Officer to determine if any of the existing equipment shall be salvaged.

1. The existing fire alarm and smoke detection system shall remain in operation at all times during the installation and commissioning of the new system. The Contractor shall take precautions to avoid any accidental activation of the existing fire alarm system. When making modifications to the existing systems, the Contractor shall minimize the time the existing system is out of service. Prior to any impairment of the existing system the Contractor shall notify the State and County Fire Department The Contractor shall comply with 29 CFR 1910.36. No impairment shall exceed 8 hours. The Contractor shall establish a fire watch to monitor the impaired area until the entire fire alarm system is returned to full operation. The Contractor shall schedule outages 30 days in advance. Once this new system is online and accepted by the State, remove the old system. As new equipment is installed label it "NOT IN SERVICE". Upon acceptance, remove labels.

2. Disconnect and remove the existing fire alarm systems where indicated and in the specification.

L. Firestopping: Provide UL listed firestopping for all holes at conduit penetrations through floor slabs, fire rated walls, partitions with fire rated doors, corridor walls, and vertical service shafts in accordance with SECTION 07840 – FIRESTOPPING.

3.04 TESTING

A. Testing of the New Fire Alarm System:

1. After completion of the fire alarm system's installation, turn on and leave the system on for a minimum of three (3) consecutive weeks to demonstrate that the new work done by the Contractor operates, meets the requirements of the specifications and does not affect the operation of the entire fire alarm system.

2. Upon successful completion of the three (3) week operational period, arrange with the Contracting Officer for a pre-final fire alarm system test and inspection. The test and inspection shall demonstrate that all the Contractor installed fire alarm system equipment, devices cables and conductors are operating acceptably and have been installed in accordance with this specification.

   Accordingly, the test demonstrates that the system is ready for a final test of the overall fire alarm system.

   Representatives at the pre-final test shall include the Contractor, fire alarm system manufacturer's representative, user, the user's facility maintenance agency personnel, F.A. system design consultant, and the Contracting Officer. Representatives at the Final test shall include all the foregoing representatives and the County Fire Department Inspector.

3. Preliminary Test Results: Include the control panel and initiating and indicating devices, a unique identifier for each device with an indication of test results, and signature of the factory-trained technician of the control panel manufacturer and equipment installer. With reports on preliminary tests, include a hard copy of printer output information from preliminary testing, i.e. download historical file so that all test data is available for State review.

   a. Tests:

      1) Dielectric Strength and Insulation Resistance Tests: Test the dielectric strength and the insulation resistance of the system interconnecting wiring by means of an instrument capable of generating 500 volts dc and equipped to indicate leakage current in 1000 megohms. For the purpose of this test, the instrument shall be connected between each conductor on the line and between each conductor and ground at the control panel end of the line, with the other extremity open circuited and all series-connected devices in place. The system shall withstand the test without breakdown and shall indicate a resistance of not less than 500,000 ohms, the measurement being taken after an electrification of not more than 1.0 minute with a dc potential of not less than 100 volts nor more than 550 volts. The tests shall be witnessed by the State Inspector and test results recorded for use at the final acceptance test.

      2) Loop Resistance Tests: Measure and record the resistance of each circuit with each pair of conductors in the circuit short-circuited at the

farthest point from the circuit origin. The tests shall be witnessed by the Inspector and test results recorded for use at the final acceptance test. Loop Resistance Tests: Measure and record the resistance of each circuit with each pair of conductors in the circuit short-circuited at the farthest point from the circuit origin. The tests shall be witnessed by the Inspector and test results recorded for use at the final acceptance test.

3) Ground Resistance Tests: Measure the resistance of each connection to ground. Ground resistance shall not exceed 5 ohms. The tests shall be witnessed by the Inspector and test results recorded for use at the final acceptance test.

4) Smoke Sensor Tests: Prior to formal inspection and tests, clean and perform sensitivity tests on each smoke sensor. Clean the smoke sensors in accordance with the manufacturer's recommended procedures.

5) Preliminary Testing: Conduct preliminary tests to ensure that all devices and circuits are functioning properly. Tests shall meet the requirements of paragraph entitled "Minimum System Tests" of this section. After preliminary testing is complete, provide a letter certifying that the installation is complete and fully operable to the State a minimum of 7 calendar days before the formal acceptance test date required in the paragraph below. Without the submission of this report, the final acceptance test is automatically canceled.

b. Formal Acceptance Testing: Notify the State in writing when the system is ready for final acceptance testing. Submit request for test at least 15 calendar days prior to the test date. A final acceptance test will not be scheduled until the O&M Manuals are submitted and the following are provided at the job site:

1) Marked-up red line drawings of the system as actually installed

2) Dielectric strength and insulation resistance test results

3) Loop resistance test results

4) Complete program printout including all input/output addresses

5) An electronic copy of the entire software program for the system

6) A list of passwords permitting access by designated State employees to all levels of the software programs(s).

The final tests shall be witnessed by the County Fire Department or the Authority Having Jurisdiction (AHJ). At this time, any and all required tests shall be repeated according to the AHJ. Following acceptance of the system, as-built drawings and Operation and Maintenance (O&M) Manuals shall be submitted for review and acceptance. In existing buildings, the transfer of devices from the existing system to the new system and the permission to begin demolition of the old fire alarm system will not be permitted until the as-built drawings and O&M Manuals are received.

c. Minimum System Tests: Test the system in accordance with the procedures outlined in NFPA 72, Chapter 14. The required tests are as follows:

1) Verify the absence of unwanted voltages between circuit conductors and ground. The tests shall be accomplished at the preliminary test with results available at the final system test.

2) Verify that the control unit is in the normal condition as detailed in the manufacturer's operating and maintenance manual.

3) Test each initiating and indicating device and circuit for proper operation and response at the control unit.

4) Test the system for all specified functions in accordance with the contract drawings and specifications and the manufacturer's operating and maintenance manual.

5) Test both primary power and secondary power. Verify, by test, the secondary power system is capable of operating the system for the time period and in the manner specified.

6) Determine that the system is operable under trouble conditions as specified.

7) Visually inspect all wiring.

8) Test the battery charger and batteries.

9) Verify that all software control and data files have been entered or programmed into the FACP. Hard copy records and two identical diskette copies of the software and data files shall be provided to the Contracting Officer.

10) Verify that red-line drawings are accurate.

11) Measure the current in circuits to assure there is the calculated spare capacity for the circuits.

12) Measure voltage readings for circuits to assure that voltage drop is not excessive.

13) Disconnect the verification feature for smoke sensors during tests to minimize the amount of smoke or test gas needed to activate the sensor.

14) Measure the voltage drop at the most remote appliance on each notification appliance circuit.

4. Audio Tests:

a. Provide test equipment and conduct audio test for the fire alarm system in and around the building and in areas where new audio alarm devices have been installed.

b. Audio measurements shall be made in all rooms with the doors in the open and closed position.

c. An audio test plan and proposed test equipment shall be submitted for review and approval with the test plans submittal in accordance with NFPA 72, Chapter 7.

d. The measured data shall be recorded on data sheets provided by the Contractor and shall be part of the test plan submission and records.

e. At the request of the Contracting Officer, the Contractor shall provide proof of instrument calibration and date of calibration.

f. Contractor shall be responsible for notifying the AHJ and Fire Department of formal acceptance testing.

5. Contractor shall be responsible for notifying the AHJ and Fire Department of formal acceptance testing.

6. In addition to satisfactory acceptance tests of the Contractor's new work, the entire fire alarm system must be accepted and certified

by the County Fire Department or AHJ before commencement of the specified two-year system warranty period with full maintenance responsibility.

7. The tests must demonstrate that the entire facility fire alarm system is operating in order to receive the Fire Department Certification.

8. If requested by the Contracting Officer, isolate the contract work from the overall system and demonstrate that the contract work does not affect the operation of the overall fire alarm system and shall repeat tests at no additional cost to the State.

B. Concealed Work: Concealed work re-opened and re-closed at random during the formal inspection as requested by the Contracting Officer shall be done at no additional cost to the State.

C. Testing Tools and Equipment: The Contractor shall provide the tools and equipment, including handheld radios, etc. necessary to accomplish the testing.

3.05 TRAINING

A. Conduct training and instruction for the operating and maintenance staff, as designated by the Contracting Officer, on the operation of the fire alarm panel and system.

B. The training session shall be conducted during normal business hours, and shall last as long as necessary to properly instruct the staff, but not less than 1-hour. A minimum of two (2) staff members shall be included in the training.

C. Instruction shall include hands-on training in routine operations and queries (reading of normal status and trouble status) of the fire alarm system.

D. Training shall be provided for the new fire alarm system and additional circuits and devices.

E. Instruction shall include operations and query of system status, etc.; and hands-on training in the procedures and process for operations and obtaining system status, trouble and other functional information to determine when to call for repairs and how to report the type of trouble encountered.

F. Provide all fire alarm system software passwords to the Contracting Officer and Building Manager.

END OF SECTION

DIVISION 15 - MECHANICAL

SECTION 15000 - MECHANICAL GENERAL REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

A. This Section shall apply to all phases of work indicated in contract drawings, or required to provide for a complete installation of mechanical systems included in this project.

1.02 GENERAL DESCRIPTION

A. This section applies to all Sections of DIVISION 15 - MECHANICAL, of this project specification, unless specified otherwise in the individual sections.

B. Electrical Requirements: Provide electrical components of mechanical equipment and systems such as motors, controllers, contactors, starters, and disconnects under DIVISION 15 - MECHANICAL, as specified herein, and as necessary for complete and operable systems. Provide interconnecting wiring for components of packaged equipment as an integral part of the equipment. Interconnecting power wiring and conduit for field erected equipment shall be as specified in DIVISION 16 - ELECTRICAL. Control wiring rated at 120 volts or less and conduit shall be as specified in DIVISION 15 - MECHANICAL. Extended voltage range motors will not be permitted. Motor control equipment forming part of motor control centers, assemblies, or other power sources to mechanical equipment shall conform to DIVISION 16 - ELECTRICAL.

1.03 GENERAL REQUIREMENTS

A. Provide all work described by the drawings and specifications, including work specified and not indicated, and work indicated and not specified.

B. Completely examine the drawings and specifications and report to the Contracting Officer any error, inconsistency, omission, or error in the work of others affecting the mechanical work. If the Contractor proceeds with the work affected without instructions from the Contracting Officer, he shall correct or pay for any resultant damage or defect.

C. Provide all supplementary or miscellaneous items, details, appurtenances and devices incidental to or necessary for a complete operating system where work required is not specifically indicated or specified.

D. Maintain at the job site one copy of all drawings, specifications, addenda, approved shop drawings, change orders, and other modification, in good order and marked to record all changes made during construction. These documents shall be made available to the Contracting Officer.

E. The Contractor shall schedule a date and time with the Contracting Officer, a minimum of 7 days in advance, for all testing.

F. Reference to standards and publications are intended to be the latest

revision of the standard or publication. 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 Contracting Officer.

G. The words “or approved equal”, or other words of similar intent or meaning, means that the equipment or material to be substituted is subject to review by the Contracting Officer and must be acceptable to the Contracting Officer.

1.04 QUALITY ASSURANCE

A. County, City, State, Federal and Industry Regulations: Comply with the City & County of Honolulu building, fire and plumbing codes; State of Hawaii Department of Health and Department of Labor and Industrial Relations Regulations; U.S. Occupational Safety and Health Act; U.S. Environmental Protections Agency Regulations; National Fire Protection Association Codes; and other laws, codes and regulations, and ordinances and manufacturer’s recommendations and requirements, when applicable and as referenced in these specifications. The Contractor shall schedule and pay for all inspections required by any government agency.

B. Permits: Obtain all permits and pay all fees required by the applicable government agencies.

C. Warranty: Warrant all equipment and material furnished, and workmanship of the mechanical systems for a period of one year starting only after 30 consecutive days of trouble free operation after system acceptance. Submit the manufacturer’s warranty documents for all equipment furnished to the State. The warranty shall cover all labor and material required to correct, replace, or repair any defective item at no cost to the State.

D. Material and Equipment Qualifications: Provide materials and equipment that are standard products of manufacturers regularly engaged in the manufacture of such products, which are of a similar material, design and workmanship. Standard products shall have been in satisfactory commercial or industrial use for 2 years prior to award of this contract. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturer’s catalogs, or brochures during the 2-year period. Air conditioning equipment to be considered for bid purposes must be a manufacturer that has locally stocked spare parts, representative, and support of a service organization reasonably convenient to the site of installation which has serviced manufacturer’s unit of comparable type, size and capacity installed and operating satisfactorily in the State of Hawaii for a minimum of two years prior to bid opening. The Contractor shall provide a list of locations in Hawaii with addresses and telephone number when requested by the Contracting Officer. All equipment with local manufacturer’s representation shall be purchased thru the local factory authorized distributor. Preference should be given to products

made or manufactured in the United States of America.

E. Alternative Qualifications: Products having less than a two-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.

F. Service Support: The equipment items shall be supported by service organizations. Submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

G. Manufacturer's Nameplate: 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 distributing agent will not be acceptable.

1.05 SUBMITTALS

A. Submit in accordance with Section 01330 – SUBMITTAL PROCEDURES.

1. Submit 6 copies of each required submittal to the Contracting Officer. 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 paragraph reference, applicable industry, and technical society reference standards, years of satisfactory service, and other information necessary to establish contract compliance of each item the Contractor proposes to be provided. Photographs of existing installations and date submitted in lieu of catalog data are not acceptable and will be returned without review. Partial submittals are not acceptable and will be returned without review.

2. At the time the submittals are submitted, the Contractor shall inform the Contracting Officer, in writing, of any deviation in the shop drawings and other submittals from the requirements of the contract documents.

3. Manufacturer's Catalog Data: 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.

4. Shop Drawings:

a. Submit drawings a minimum 24 by 36 inches in size, using a minimum scale of 1/8 inch per foot. Include floor plans, section views, wiring diagrams, and installation details of equipment; and equipment spaces identifying and indicating proposed location, layout and arrangement of items of equipment, control panels, accessories, piping,

ductwork, and other items that must be shown to ensure a coordinated installation. Indicate locations of items requiring maintenance or inspection. 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 equipment devices.

b. Provide a written certification with the shop drawing submittal stating that the Contractor has determined and verified all field measurements, sizes and obstructions, and that he has coordinated the shop drawings with the field conditions and the work of other trades.

5. Manufacturer's Instructions: Where installation procedures or part of installation procedures are required to be in accordance with the manufacturer's instructions, submit printed copies of those instructions prior to installation. Installation of the item shall not proceed until the manufacturer's instructions are received. Failure to submit can be cause for rejection of the equipment or material.

6. Certificates of Compliance: Submit a certificate of compliance from the manufacturer for approval for products, finishes, and equipment as specified in the technical sections whose compliance with organizational standards or specifications is not regulated by an organization using its own listing or label as proof of compliance. The certificate shall identify the manufacturer, the products, equipment, or materials and the referenced standard and shall simply state that the manufacturer certifies that the product conforms to the requirements specified.

7. Reference Standards Compliance: Where equipment or materials are specified to conform to industry and technical society reference standards of organizations such as the American National Standards Institute (ANSI), American Society for Testing and Materials (ASTM), National Electrical Manufacturers Association (NEMA), American Society of Mechanical Engineers (ASME), American Gas Association (AGA), American Refrigeration Institute (ARI), and Underwriters Laboratories (UL), submit proof of such conformance. If an organization uses a label or listing to indicate compliance with a particular reference standard, the label or listing will be acceptable evidence, unless otherwise specified in the individual sections.

8. Independent Testing Organization Certificate: In lieu of the label or listing, submit a certificate from an independent testing organization, competent to perform testing and approved by the Contracting Officer. 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.

9. Operation and Maintenance Manuals: Submit operation and

maintenance manuals (5 sets) for each system and principal item of equipment.

10. Operating Instructions: Submit text of posted operating instructions for each system and principal item of equipment as specified in the technical sections.

11. Submit as-built drawings to the Contracting Officer prior to final inspection.

1.06 DELIVERY, STORAGE AND HANDLING

A. Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.

1.07 POSTED OPERATING INSTRUCTIONS

A. Provide for each system and principal item of equipment as specified in the technical sections for the use of the operation and maintenance personnel. Include the following in the operating instructions.

B. System Descriptive Information: Wiring diagrams, control diagrams, piping diagrams, control sequence and operating points for each principal system and item of equipment. Post instructions where indicated.

C. Equipment Instructions: Attach to or post adjacent to each principal item of equipment and include directions under glass.

D. Start up, proper adjustment, operating, lubrication and shutdown procedures.

E. Safety precautions, procedure in the event of equipment failure.

F. Other areas as recommended by the manufacturer of each system of item of equipment.

G. Print or engrave, and frame under glass or in an approved laminated plastic. Operating instructions exposed to weather shall be made of weatherproof materials or provided with a weatherproof enclosure. Operating instructions shall not fade when exposed to sunlight and shall be secured to prevent easy removal.

1.08 SAFETY REQUIREMENTS

A. Equipment Safety: Fully enclose or properly guard, in accordance with DOSH regulations, belts, pulleys, chains, gears, couplings, projecting setscrews, keys, rotating parts, and other power transmission apparatus, located where persons can come in close proximity thereto. Points of operation, in going nip points, and machinery producing flying chips and sparks shall be guarded in accordance with the applicable portions of DOSH regulations. Provide positive means of locking out equipment so that the equipment cannot be accidentally started during maintenance

procedures. 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 the type specified. Ensure that access openings leading to equipment are large enough to carry through routine maintenance items such as filters and tools.

B. Warning Sign: Provide a permanent placard or sign at the entrance to confined spaces contained in the equipment. The sign shall warn personnel not to enter the space until the atmosphere inside has been tested and systems have been de-energized.

1.08 INSTRUCTIONS TO PERSONNEL

A. Furnish the services of competent instructors to give full instruction to the designated personnel in the adjustment, operation, and maintenance, including pertinent safety requirements, of each specified equipment or system. 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 to the State for regular operation. The number of man days (8 hours per day) of instruction furnished shall be as specified in the individual sections. When more than 4 man days of instruction are specified, use approximately half of the time for classroom instruction. Use other time for instruction with the equipment or system. When significant changes or modifications in the equipment or system are made under the terms of the contract, provide additional instruction to acquaint the operating personnel with the changes or modifications.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

A. All materials and equipment shall be new and free from defects. Unless otherwise specified, each equipment or material of its kind shall be the standard product of a single manufacturer. All mechanical equipment, fans, pumps and compressor motors shall be sized to not overload anywhere on the operating curve. Safety factor shall be a minimum of 1.15.

B. All materials and equipment shall be selected and installed so that adequate clearance for maintenance and servicing is provided. Installation and clearance requirements shall meet manufacturer's recommendations.

PART 3 - EXECUTION

3.01 FACTORY PAINTING OF EQUIPMENT

A. Factory applied painting of equipment shall be as specified herein, and provided under each section. Manufacturer’s standard factory painted systems may be provided subject to certification that the factory painting system applied will withstand 125 hours in a salt spray fog test, except that equipment located outdoors shall withstand 500 hours in a salt spray

fog test. Salt spray fog test shall be in accordance with ASTM B117. Immediately after completion of the test, the paint shall show no signs of blistering, wrinkling or cracking; no loss of adhesion; and the specimen shall show no signs of rust creepage beyond 0.125 inch on either side of the scratch mark. The film thickness of the factory painted system applied to the equipment shall be not less than the film thickness used on the test specimen. If manufacturer's standard factory painting system is being proposed for use in lieu of the shop painting systems, submit certifications that the manufacturer's standard factory painting system conforms to the heat resistance requirement in addition to other certifications.

3.02 FIELD PAINTING

A. Conform to Section 09913 - EXTERIOR PAINTING and Section 09923 - INTERIOR PAINTING. Provide labels/signs for all piping including refrigerant piping, chilled water, condenser water, condensate drain lines.

B. The following items furnished under this section are to be painted and identified under Section 09913 - EXTERIOR PAINTING and Section 09923 - INTERIOR PAINTING. Do not paint over name plates or other identifying labels.

1. Paint exposed black iron work including pipe, fittings, iron body valves, pipe hangers, etc., with two coats of zinc rich paint.

2. Stencil all exposed piping with painted black letters indicating the service and with an arrow indicating the direction of flow. Stencil where pipes enter and leave each area and at not over 30 ft. intervals within an area. Paint color band at stencils; yellow for fuel and green for water systems. Width of color band, size of legend letters, and position of legend shall conform to the requirements of ANSI A13.1, Scheme for the Identification of Piping Systems.

3.03 MANUFACTURER'S RECOMMENDATIONS

A. Equipment installed under this Division of the Specifications shall be installed according to the manufacturer's recommendations, unless otherwise indicated or specified otherwise.

3.04 OPENINGS, CUTTING AND PATCHING

A. The Contractor shall be responsible for the cutting, drilling and patching of walls, partitions, floors, roofs, ceilings and other building structures, required for the installation of piping, ductwork, conduits and other material equipment. This work may be subcontracted to other Contractors, or arranged to be performed by the General Contractor.

B. Holes through existing concrete and existing masonry shall be sawcut or core drilled. Holes through new concrete and masonry shall be provided with sleeves. Holes through other building materials shall be sawcut or core drilled and provided with sleeves.

3.05 PIPING INSTALLATION

A. Conform to the requirements of the Uniform Plumbing Code and all manufacturer's recommendations. Inspect all pipes inside and outside. Remove interior obstructions and ream out pipe ends. Tool markings on polished fittings are not acceptable. Cut pipe accurately so that it can be worked into place without springing or forcing. Install pipes parallel to the wall of the structure and plumb. Make changes in direction with fittings. Bushings are not permitted. Pull-tees are not permitted. Install valves with stems above horizontal. Provide proper support and adequate provisions for expansion, contraction, slope and anchorage. Provide dielectric unions or separation at all dissimilar metals. Wrap pipe or tubing with 1/4-inch thick felt, secured with tape, where they contact other materials. Have piping treated, inspected and approved before it is furred in, buried or otherwise hidden. Provide standard weight galvanized steel pipe sleeves for all pipes passing through structure, sufficiently large to provide 1/4-inch clearance around pipe. Caulk watertight around pipes passing through sleeves. Wrap pipe with polyethylene tape where it passes through sleeve and when it contacts concrete or masonry. Grout with fire proof material around all pipe penetrations through slabs and walls full length of penetrations. Provide chrome plated brass escutcheons, set tight on the pipe and to the wall where pipes are exposed in finished areas. Provide clamping collar or membrane flange where pipe or drains penetrate waterproof membrane. Perform all welding using qualified welders in accordance with American National Standards Institutes Code B31.1 and American Welding Society Standard B3.0. Soil for bedding and backfill shall be tested for soil resistivity. If soil resistivity is less than 20,000 ohms-cm, provide cathodic protection of underground steel (including gas) and copper lines. Coordinate all pipe openings in prestressed tri-tee concrete flooring. Trenching/backfilling in accordance with the Plumbing Code. Support underground piping on firm soil along its entire length. Where rocks are encountered, have trench excavated to a minimum over, depth of four inches and backfilled with granular moist earth, thoroughly tamped. Materials used for backfilling over piping shall be granular earth, free from debris and stones. The Contracting Officer may reject any materials which he considers unsuitable for fill. Clay and adobe type soil is not allowed. Provide a minimum of two feet of cover for all pipes. Where sewer and water lines are laid in the same trench, place water line on solid shelf with bottom of water line twelve inches above top of sewer. Where sewer and water lines cross, encase sewer in four inch thick concrete envelope.

3.06 FIELD TESTS

A. The Contractor shall provide all labor, material, equipment, and instruments needed for the tests. During pressure test, all items in the system to be tested, which are not designed for the test pressure shall be removed or isolated from the system, and shall be reconnected or unblocked after the tests are completed. If operating tests require the supervision of the manufacturer’s representative, the Contractor shall assist the representative by providing any labor, material, or equipment needed by the representative.

3.07 CLEANUP AND CLEANING

A. The Contractor 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 the project site as well as his tools, construction equipment, and surplus materials. Clean all new equipment and materials prior to final inspection.

END OF SECTION

SECTION 15300 - AUTOMATIC FIRE SPRINKLER SYSTEM

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

A. Modify existing wet pipe automatic fire sprinkler for designated areas as shown on plans, as required by code and authority having jurisdiction. Sprinkler system layout, as shown on drawings is intended only to describe general scope of work required and is not to be construed as being complete workable design in accordance with all applicable NFPA Codes and Regulations. Final design and providing of sprinkler system meeting all applicable codes and regulations, shall be sole responsibility of the Contractor. Electrical work, to be included under this Section, is limited to provide all labor and materials required for providing complete working local supervisory system, including circuitry between panels, alarms detectors, etc. Prior to fabrication and installation, obtain approval from the City and County of Honolulu Fire Department, and designated Fire Sprinkler Special Inspector.

1.02 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. All electrical power, wiring, conduit, etc., flow switch and other equipment required under this section shall be provided under Division 16 – Electrical.

1.03 QUALITY ASSURANCE

A. Comply with local ordinances, requirements of local authorities, applicable regulations of National Board of Fire Underwriters, regulations of Building Department, and all other applicable regulatory bodies.

B. Obtain and pay for all fees, permits, licenses, assessments, and inspections required for this work.

C. Unless specified under the General Requirements of the approved Construction contract, substitutions of another manufacturer's product for equipment specified hereinafter and for items with "or equal" or approved substitute.

D. Latest edition of Standards for Installation of the Fire Protection System shall be as followed. Where these specifications vary from said standards, more rigid requirements shall apply.

1. National Fire Protection Association (NFPA) Standards: NFPA13 - Standard for the Installation of Sprinkler Systems

1.04 SUBMITTALS

A. Unless specified under General Requirements, submit eight (8) sets of shop drawings and eight (8) copies of each submittal required hereinafter. Consolidate all shop drawings into one complete submittal if at all possible. Provide complete submittals wherever possible. Consolidate all equipment

into one submittal where possible. Consolidate all fixtures and trim into one submittal.

1. Equipment Submittal: Before beginning work, submit for review manufacturer's certified literature showing ratings and dimensions of equipment and of a list indicating all materials and items that are of a different manufacturer or model than those specified. Include equipment wiring diagrams.

2. Shop Drawings: After review of equipment, submit for review dimensioned installation shop drawings to scale showing details where space requirement presents problems; proposed departures from the Contract Documents due to field conditions, requirements for concrete work, access panels, inserts in slabs, and openings in structure.

3. As-Built Drawings: Record changes from the contract drawings of all concealed piping, ductwork and equipment. Indicate location of isolating valves, dampers, and items requiring maintenance or inspection. Submit as-built drawings for review prior to final inspection.

4. Certificates: The Officer in Charge will have the right to require a written certificate, dated and signed by a responsible employee 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. Whenever a regulatory agency performs in sections or tests of any portion of the work, a certificate shall be furnished by the Contractor that the inspection or test was satisfactorily passed.

1.05 COORDINATION

A. Coordinate with various trades. Where items must fit spaces previously constructed, verify measurements at site. Coordinate with other work to ensure that all required inserts, sleeves, and attachments are properly set and that adequate provision is made for installing this work.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Furnish new equipment, material, 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.

1.07 WARRANTY

A. Contractor shall warrant all work. Should any equipment or material fail within this period, replace or repair at no cost to the Client for material and/or services, if due to faulty workmanship or quality of material furnished.

B. Defective or Improper Work: Remove any work or materials not acceptable to the Officer in Charge and replace by approved materials or work, without additional cost to the Client.

C. Be responsible for all damage caused by leaks in piping or equipment for guarantee period. Any leaks or piping system failure due to any cause of location, workmanship, or quality of material that cause damage will be responsibility of Contractor.

1.08 DESIGN

A. Design of wet pipe sprinkler system shall be by hydraulic calculation and shall conform to NFPA 13 and to requirements as specified hereinafter.

1.09 WORKMANSHIP

A. All materials and equipment shall be installed in accordance with NFPA 13 to conform to contract documents. System shall be installed by an experienced individual or installer that regularly engages in installation of fire protection sprinkler systems in accordance with NFPA Standards. Officer in Charge may reject any proposed installer who cannot show evidence of such qualifications. Officer in Charge's approval will not relieve Contractor from his responsibilities to perform all work in accordance with specifications and contract terms.

1.10 INSTRUCTIONS

A. Contractor shall provide necessary (as required by NFPA Standard No. 13) information concerning care, operation, and maintenance of system.

PART 2 - PRODUCTS

2.01 MANUFACTURER

A. All fire suppression equipment shall be selected from "List of Inspected Fire Protection Equipment and Material", published annually by UL and shall bear UL approved stamp or label. All materials shall be new and of the best quality available in their respective kinds, free from all defects and shall be of the make and types specified or approved substitute.

2.02 PIPE AND FITTINGS(WET SYSTEM)

A. Sprinkler system below ground shall be ductile iron pipe, above ground shall be black steel pipe, Schedule 40, ASTM A795. All exposed aboveground piping shall be galvanized steel pipe and fitting, ASTM A795.

B. Fittings for ductile iron pipe, of same class and coating as pipe; mechanical joint cast iron fittings, or approved. Fittings for steel pipe shall be black cast-iron, screwed, suitable for 175 psi wwp – Grinnell Co., Crane Co., Stockham Pipe Fittings Co., or approved equal. At the Contractor's option, fittings shall be grooved-pipe fittings, with grooved pipe couplings, Vitaulic or approved equal. Fittings for copper tubing shall either be wrought

copper, ANSI B31.1 with 95-5 solder, or “T-drill fittings” with B-Cup 3 brazing.

2.03 SPRINKLER HEADS

A. Sprinkler heads shall be 1/2 inch, automatic, closed type, of temperature rating as indicated or as required in NFPA Standard No. 13. Temperature rating of heads shall be selected such that the temperature rating is at least 50 degrees Fahrenheit above the highest ambient temperature to be encountered. Sprinkler heads in unfinished areas shall be upright or inverted type, as appropriate to the location of installation, with standard factory finish. Sprinkler heads in spaces with finished ceilings shall be concealed type heads with factory painted covers selected to match the ceiling, refer to architect drawings for color scheme. Provide UL and FM approved sprinkler heads for the application described.

1. Furnish 10 extra sprinklers of each type packed in suitable containers; and two special sprinkler wrenches and four proper types of sprinkler stoppers. Provide where directed two approved metal cabinets with hinged door, lock and two keys for storing extra sprinkler and wrenches.

2.04 WATER-FLOW ALARM(WET SYSTEM)

A. Provide water-flow alarm valve, complete with electric alarm switch, alarm retarding device; local, water motor alarm gong weatherproof type; valves, pressure gauges, fittings; install complete as per manufacturer’s printed installation directions.

2.05 SUPPORT

A. Support sprinkler system piping form building structure by means of hangers, inserts, other supports, as per requirements in NFPA Standard No. 13 and as indicated on drawings. Provide earthquake bracing in accordance with IBC 1613.1 and NFPA Standard No. 13, sec. 9.3.

2.06 PIPE SLEEVES

A. Pipe Sleeves: Furnish and set cast iron (below grade) or Schedule 40 steel pipe sleeves to accommodate pipes passing through foundations, walls, floors, partitions. Extend sleeves above finished floor and pack space between pipe and sleeve as recommended by NFPA Standard No. 13.

2.07 GAUGES

A. Gauges shall be 3-1/2” dial type.

2.08 VALVES

A. Flanged gate valves shall be O.S.&Y. type, iron body, brass trim, 250 lbs. working pressure. Flanged check valves shall be iron body, brass seat and disc, clearway swinging type, with drip connections, 250 lbs. working

pressure. Valves used in conjunction with valve supervisory devices shall have items notched or otherwise modified to suit supervisory device. Valve located in pit shall be equipped with indicator post with valve position locking device.

2.09 PRESSURE SWITCH

A. Switch with circuit opener or closer for automatic transmittal of alarm over facility fire alarm system shall be provided and shall be connected into fire alarm system. Alarm actuation device shall be of mechanical diaphragm controlled water flow type without retard feature, which instantly recycles when pressure is released on diaphragm.

2.10 SPRINKLER WATER FLOW DETECTOR

A. Vane-type water flow detector shall be installed in main to each sprinkler zone as indicated on drawings. Detector shall have minimum of 2 contacts. Detector shall incorporate retard element to prevent false signals and be installed in accordance with manufacturer's recommendations. Local electric audible alarm, activated by detector circuit, shall also be provided by Sprinkler Contractor.

2.11 TAMPER SWITCHES

A. Furnish and install 2-pole tamper switches on each floor at control valves and where required by NFPA Standard No. 13. All wiring, conduits, and related items, from tamper switches to fire alarm system to be provided.

2.12 ESCUTCHEON PLATES

A. Sprinkler piping passing through floors, walls, and ceilings shall be provided with approved type, one piece or split type plates. Plates where pipe passes through finished ceiling shall match color of surrounding surfaces. Other plates shall be of steel or cast iron, with aluminum finish. Plates shall be securely anchored in place with set screws or other approved positive means.

2.13 FIRE EXTINGUISHER

A. Manufacturer: UL listed and FM approved models by Potter-Roemer, Crocker, JL Industries, or approved equal.

B. Fire Extinguisher(FE-1): 10 lb. multi-purpose dry chemical fire extinguisher with minimum UL rating of 4A:80B:C.

C. Fire Extinguisher(FE-2): 2.5 lb. kitchen use wet chemical fire extinguisher with minimum UL rating of 2A:K.

PART 3 - EXECUTION

3.01 GENERAL

A. Do not scale plans. Check all measurements at building and adjust work to fit space allotted. Close cooperation between all trades will be required. Any work done without regard for work of other trades shall be moved, if necessary, at option of the Officer in Charge, without cost to the Client, to permit proper installation of other work.

B. When work is not in progress, open ends of pipe and fittings shall be securely closed so that no trench water, earth, or other substances can enter pipe or fittings.

C. Responsibility for care and protection of equipment and work rests with Contractor until it has been tested and accepted by the Officer in Charge.

3.02 CUTTING AND PATCHING

A. Place sleeves for piping penetrating through poured concrete or masonry construction prior to pouring of concrete or construction of masonry. Fill void between pipe and floor or wall with grout.

B. Do not cut any openings in any structural member until location has been approved by the Officer in Charge.

C. Cutting of holes in hardened concrete is not permitted except by special permission of the Officer in Charge, which will be on an individual basis and shall require use of small hand tools, diamond drills, or other controlled means of the Officer in Charge's discretion.

D. Cutting of reinforcing bars is not permitted.

E. If necessary to cut holes in slabs or concrete walls, first relocate holes to clear beams, joists, columns, etc. Cut holes neat and clean using diamond core drill or small chipping gun. Leave all reinforcing bars intact; enlarge holes if necessary.

F. If necessary to cut holes in masonry walls, carefully remove minimum amount of masonry.

G. Install sheet metal or black iron pipe sleeves through holes cut in slabs, concrete walls or masonry walls. In concrete slab walls, install sleeves to clear reinforcing bars and tightly pack concrete around sleeve for full thickness of walls. In masonry walls, rest or re-grout all loose masonry units; pack cement grout tight and solid around sleeves for full thickness of wall.

H. Annular space between pipe and sleeve shall be completely sealed with grout.

3.03 FITTINGS

A. Fittings for aboveground piping shall be of type specifically approved for use in sprinkler system. Bushings shall be used only where standard fittings of required size are not available. Use of bushings is further restricted to requirements of NFPA Standard No. 13.

3.04 REDUCERS

A. Reduction in pipe sizes shall be made with one-piece reducing fittings. Bushings will not be acceptable, except that when standard fittings of proper size are not available. Where used, face bushings shall be installed with outer face flush with face of fitting opening being reduced. Bushings shall not be used in elbow fittings in more than one outlet of a tee, in more than two outlets of a cross, or where reduction in size is less than 1/2".

3.05 PIPE SUPPORTS AND HANGERS

A. Recommend methods and requirements for supporting of hanging pipe, as set forth in NFPA Standard No. 13 shall be mandatory.

B. Install hangers and supports for all pipe work to provide for expansion and contraction, to prevent vibration, and maintain required grading by proper adjustment.

C. Refer to structural drawings for type of construction from which piping and/or equipment is to be suspended. Drilling from bottom or pre-stressed tee is not permitted. Drill one side of T-stem or bottom of T-flanges.

D. Drilled-in-Threaded Inserts: Where support in beams and joists are required after concrete has been poured, Phillips "Redhead" Drilled-in-Threaded Inserts shall be provided and installed in accordance with recommendation of manufacturer.

E. Install concrete reaction blocks for underground pipe and angle/plate reaction supports for aboveground piping at main and cross main tees and elbows.

3.06 CORROSION PROTECTION

A. Provide dielectric unions and dielectric flanges between dissimilar metals. Provide neoprene pads between pipe and pipe hangers of dissimilar metals.

3.07 SPRINKLER HEADS

A. Sprinkler heads shall be spaced so as to provide the required discharge density and coverage, and in no case shall the spacing exceed the NFPA requirements for proper hazard occupancy. Pendant heads, where required, shall be installed as shown in NFPA Standard No. 13.

3.08 DRAIN AND TEST CONNECTIONS

A. Install horizontal piping graded to low points in manner to make it possible to test and empty entire system. Provide valves and piping of sizes and in locations as indicated or as required by NFPA Standard No. 13.

B. Extend drain valve discharge pipes to points indicated or the nearest drain line. Terminate pipes so that discharge will be visible.

C. Provide flushing connections at end of cross mains, consisting of capped nipple same diameter as pipe but not larger than 2 inches.

3.09 WATER SUPPLY

A. Static pressure and availability shall be verified with Board of Water Supply.

3.10 DISTRIBUTION OF WATER

A. Distribution shall be essentially uniform throughout area in which it is assumed sprinkler heads will open.

3.11 PIPE SLEEVES AND ESCUTCHEONS

A. Furnish and set sleeves to accommodate pipes passing thru foundations, walls, floors, partitions. Provide escutcheons at exposed finished surfaces pierced by pipes.

B. Extend sleeves above finished floor and pack space between pipe and sleeve as recommended in NFPA Standard No. 13.

C. Firestops shall be installed as recommended by the manufacturer.

3.12 INSPECTIONS AND TESTS

A. Furnish Officer in Charge with results of all tests conducted under this section.

B. Water System: When the roughing-in is completed and/or the system completed, the entire fire protection water piping system shall be tested at a hydrostatic pressure of not less than 200 pounds per square inch gauge, and proved tight at this pressure for not less than two (2) hours in order to permit inspection of all joints. Where a portion of the water piping system is to be concealed before completion, this portion shall be tested separately as specified for the entire system.

C. Air Test: In buildings that are occupied or the interior areas have been completed, the Contractor shall conduct a test with air pressure of at least 40 psi allowed to stand for at least 24 hours. The standard water test shall be conducted after the Contractor is satisfied that the air test shows no leaks in the system.

D. Alarm Test: Simulate alarm conditions to verify proper operation of all alarms and trouble signals. Reset alarms and signals as required.

E. Defective Work: If inspection or test shows defects, such defective work or material shall be replaced or repaired as necessary and inspection and test repeated. Repairs to piping shall be made with new materials. No caulking of screwed joints or holes will be acceptable.

F. Cleaning and Adjusting: Equipment, pipes, valves, and fittings, shall be cleaned of grease, metal cuttings, and sludge that may have accumulated from operation of the system during the test. Any stoppage, discoloration, or other damage to the finish, furnishings, or parts of the building, due to the Contractor's failure to properly clean the piping system, shall be repaired by the Contractor without additional cost to the Client. The system shall be flushed as required by the NFPA.

G. Disinfection: The complete system shall be disinfected as set forth in the AWWA Standard C601 for "Underground Water Systems". A certificate shall be furnished to the Officer in Charge evidencing proper performance of water line disinfection.

3.13 SPECIAL CONDITIONS

A. Conformance with provisions of the enforcing edition of the International Building Code, as amended, is hereby made a part of this Section of specifications.

3.14 CLEAN UP

A. Debris shall not be allowed 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 job site and leave the location of this work broom-cleaned in an acceptable manner as approved by the Officer in Charge.

3.15 MEASUREMENT AND PAYMENT

A. Payment for work required under this section shall be included with the related lump sum bid item and inclusive of furnishing materials, labor, tools, equipment and other services and testing to complete the work-in-place.

END OF SECTION

SECTION 15400 - PLUMBING

PART 1 - GENERAL

1.01 SUMMARY

A. Plumbing work to include the removal/demolition of existing plumbing fixtures (including associated plumbing line, supports, accessories, etc.) as indicated in plans and specifications.

1.02 SUBMITTALS

A. Submit in accordance with Section 01330 - SUBMITTAL PROCEDURES.

B. Equipment Submittal: Before beginning work, submit for review certified literature showing dimensions of equipment, a list indicating manufacturer and model of fixtures and trim, and a list indicating all materials and items that are of a different manufacturer or model than those specified.

C. Shop Drawings: After review of equipment, submit for review dimensioned installation shop drawings to scale showing details where space requirements present problems, proposed departures from the Contract Documents due to field conditions, and requirements for the concrete work, access panels, inserts in slabs, and openings in structure.

D. As-Built Drawings: Record changes from the contract drawings of all concealed piping. Indicate location of isolating valves and items requiring maintenance or inspection. Dimension underground piping from a visible point on structure. Indicate invert and slope of drainage piping at sufficient location so that the invert can be calculated for any point in the system. Submit field posted as-built drawings for review as required by Section 01770 - CLOSEOUT PROCEDURES.

E. Certificates: 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 the work, a certificate shall be furnished by the Contractor that the inspection or test was satisfactorily passed.

F. Warranty: Submit warranty as noted under item entitled “WARRANTY” below.

1.03 QUALITY ASSURANCE

A. Comply with all the requirements of the City and County of Honolulu, State of Hawaii.

B. Obtain and pay for all fees, permits, licenses, assessments, connection charges and inspections required for this work.

C. Products of the following manufacturers are acceptable.

D. Comply with the recommendations and requirements of the Codes and Standards listed hereinafter in addition to detailed requirements of this specification. In the event of conflicting requirements, this specification shall prevail.

1. American Society for Testing and Materials (ASTM) Publications:

A74	Cast Iron Soil Pipe and Fittings
B53	Pipe, Steel, Black and Hot-Dipped Zinc Coated Welded and Seamless
B88	Seamless Copper Water Tube
B306	Copper Drainage Tube (DWV)
C564	Rubber Gaskets for Cast Iron Soil Pipe and Fittings

2. American National Standards Institute Publications (ANSI):

B16.18	Cast Copper Alloy Solder-Joint Pressure Fittings
B16.22	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
B16.23	Cast Copper Alloy Solder Joint Drainage Fittings-DWV
B16.26	Cast Copper Alloy Fittings for Flared Copper Tubes
C1	National Electrical Code
C2	National Electrical Safety Code
AL 29-4C1	Stainless Steel Vent Pipe

3. Cast-Iron Soil Pipe Institute Publication (CISPI):

Standard No. 301	Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications
Standard No. 310	Couplings Joint for Use in Connection with Hubless Cast Iron Soil Pipe and Fitting
Pamphlet	Installation Suggestions for “No Hub” Pipe 100 Fittings

1.04 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Furnish new equipment, fixtures, materials and accessories bearing the manufacturer's identification. Coordinate deliveries to avoid interference or construction delays. Protect products during delivery, storage, installation, and the remainder of the construction period after installation.

1.05 WARRANTY

A. All work in this Section shall be guaranteed by the Contractor for a period of one year from the date of project acceptance as a whole. Should any existing plumbing risers or materials from the upper floor fail within this period, this Contractor shall be responsible for all damage to any part of the premises caused by the failure and shall repair or replace the defects at no cost to the Hospital.

PART 2 - PRODUCTS

2.01 PIPE AND FITTINGS

A. Sanitary Waste and Vent Pipes, Below Grade: Service weight cast-iron soil pipe, ASTM A74, with dual tight gaskets, or no-hub cast-iron soil pipe conforming to CISPI 301 with MG couplings.

B. Below grade piping within building in sizes 6-inches and smaller may be hubless cast iron sanitary system with MG mechanical cast iron couplings or accepted equivalent, conforming to Cast Iron Soil Pipe Institute's Standard 301-72. Stainless steel couplings are unacceptable. Each assembled coupling shall bear the following clearly identifiable markings: the manufacturer, the size, and the letters UPC, indicating conformance with the Uniform Plumbing Code. Install couplings per manufacturer's written instructions and tighten nuts or bolts heads alternately and gradually to manufacturer's specifications using an accurate torque wrench.

C. Sanitary Waste and Vent Pipes, Above Grade: Above grade cast iron soil, waste and vent piping in enclosed pipe shafts, concealed ceiling spaces, or enclosed under floor spaces may be No-Hub systems, Tyler No-Hub pipe and fittings or equal, conform to Cast Iron Soil Pipe Institute Standard 301-82 with Cast Iron Soil Pipe Institute Standard 310 coupling joint.

D. Water Pipes, Below Grade: Type "K" seamless rigid copper tubing conforming to ASTM B88 with wrought copper solder type fittings conforming to ANSI B16.22 or ANSI B16.18. Joints shall be brazed with a silver alloy filler metal. Submit 5 copies of certificates stating that solder and fluxes used are lead-free.

E. Water Pipes, Above Grade: Above ground piping shall be Type "L" seamless rigid copper tubing conforming to ASTM B88 with wrought copper or cast copper alloy solder type fittings conforming to ANSI B16.22

or ANSI B16.18. Solder shall be 95-5 tin-antimony. Submit 5 copies of certificates stating that solder and fluxes used are lead-free.

F. Gas Piping, Above Grade: Aboveground piping shall be Schedule 40 seamless galvanized steel pipe ASTM A 53 with screwed fittings. Underground piping shall be polyethylene pipe (rated for gas usage, SDR11) with heat fusion joints. Installation shall be in accordance with gas service provider and Plumbing Code.

2.02 VALVES

A. Ball Valves, 1/2-inch and larger: Bronze construction, 2-piece body, 600-psi WOG, full-port, insulated quarter-turn handle, double O-ring stem seals, blowout-proof stem, PTFE seats.

B. Check Valves: bronze body, swing type, renewable disc, screwed cap and ends, 125 psi SWP.

C. Strainer: Y-strainers for lines 2-inches and smaller, bronze body, 20 mesh stainless steel screen, screwed ends, hose end valve, 300 psi WOG.

D. Unions: Provide unions at all equipment and accessory locations and at screwed valves. Provide dielectric unions at lines of dissimilar metals. EPCO Model FX or accepted equivalent.

E. Motorized Shut Off Valve: ASCO 040 or approved equal Gas Safety Shut Off Solenoid Valves, natural gas, 2-way – 2/2 normally closed, aluminum body material, 150 psig, and indoor operating environment.

F. Gas Pressure Regulators: ANSI Z21.80 compliant, ANSI Z21.18 certified line pressure regulator, see drawings for gas line pressures. Provide with vent line limiting device, overpressure protection device as required. Maxitrol model 325 or equal.

2.03 PLUMBING SYSTEM SPECIALTIES

A. All drains and floor cleanouts with flashing flange and strainers maximum 1/4" openings, tops shall be matching nickel/bronze cleanout covers.

B. Floor Cleanout: Smith 4048-U, Josam 56020-22-15, Zurn ZN-1400-T-IC, or approved equal. Provide clamp device when installed in floor with waterproofing membrane. Provide nickel bronze cleanout covers.

C. Cleanout: Josam 58480 series, coated cast iron, spigot connection, bronze threaded plug.

D. P-traps installed below floor: Deep-seal P-trap.

E. Plumbing Vent Caps: J.R. Smith 1748 vandal proof cast iron with galvanized finish. Use on all vent thru roof pipe terminations.

F. Cleanout to Grade, (COTG): Zurn Z1400 series, Smith 4237 series or approved equal. Adjustable floor cleanout, Dura-Coated cast iron body with gas and watertight ABS tapered thread plug and round scoriated cast iron heavy-duty secured top.

2.04 PIPING INSULATION

A. All insulation material applied to the exterior surface of metal pipes shall have flame spread of not more than 25 and a smoke development rating of not more than 50 when tested as a composite installation, including insulation, facing material, tapes, and adhesives as normally applied.

B. Hot water and hot water recirculation pipe insulation shall AP Armaflex insulation, Armacell or substitute. Closed cell structure, built-in vapor retarder. Provide air drying contact adhesive for joining seams and butt joints of the Armaflex insulation. Insulation thickness: 1-inch minimum. Installation in accordance with manufacturer's latest recommendations. Seal all joints with insulation manufacturer's approved adhesive.

C. On pipe insulation exposed to weather or subject to damage, apply 1 mil embossed aluminum jacket with 2-inch overlap at longitudinal and circumferential joints, secured in place with 3/4 inch x 0.015 gauge aluminum on 18 inch centers. Apply humped aluminum ells or fabricated 16 mil aluminum to fittings and band in place.

2.05 PLUMBING FIXTURES

A. Provide chrome plated all brass faucets, flush valves, angle stops, tube risers, chrome plated P-traps, escutcheons and cover plates. Provide connecting fittings, china bolt caps, wall support brackets as required. Furnish masonry and concrete contractor with wall sleeves and inserts required for fixture installation. All valves bronze and brass with chrome plating. All sinks and lavatories shall have 1.5 gpm cold water flow restrictors. All water closets shall be maximum 1.28 gallons per flush. All urinals shall be maximum 1.0 gallons per flush. Provide access panels as required for servicing of flush valves, valves, etc. Mount accessible flush valve on wider side of stall. Provide brass closet bolts, nuts, washer, plastic bolt caps, escutcheon plates and water closet flange/seal for all water closets. Toilet seats shall be white, open front, elongated type. P-trap guard, offset drain guard and angle stop covers shall be white in color. P-trap guard shall be Tru-bro E-Z fit or equal. All sinks shall have cleanouts on traps.

1. Accessible Lavatory (ALAV): Kohler K-2007 Kingston lavatory, 21-1/4” by 18-1/8”, white vitreous china, wall mount, one 1-1/4” diameter holes, 4-inch centers, front overflow and backsplash. Provide Smith 0700E concealed arm carrier with wall bracket and floor support. Kohler K-7131-A-CP offset drain with perforated grate and 1-1/4-inch tailpiece. Provide concealed arm floor mounted support. Provide with Delta single hole mount faucet with slow close cartridge and water efficient aerators, model 87T111. Faucet is made of heavy duty cast brass with polished Chrome-

plated finish. Faucet requires 1 faucet holes. Faucet requires 1 faucet hole. Install in accordance with ADAAG 2010 section 606 requirements.

2. Mop Sink (MS): Fiat Products TSB3000 series with stainless steel caps on all curbs, 24” by 24”, 12” depth with 6” drop front, one piece, precast terrazzo, surface shall be ground and polished with air holes or pit grouted and excess removed, standard stainless steel cast drain body, stainless steel strainer #1453BB. Provide wall mounted wall mounted 8” body, adjustable arms 7-5/8” – 8-3/8” hot and cold water sink faucet, Chicago Faucet model 897-CP.

3. Hand Sink (HS): Elkay Stainless Steel 16-3/4" x 15-1/2" x 13", Single Bowl Wall Hung Handwash Sink Kit, model CHS1716LRSC. Sink is manufactured from 20 gauge 304 Stainless Steel with a Buffed Satin finish, Center drain placement. Provide side splashed. Provide Elkay Scrub/Handwash 8" Centerset Wall Mount Faucet with 8" Gooseneck Spout 2" Lever Handles 1/2in Offset Inlets, model LK940GN08L2H. Faucet has a flow rate of 1.5 GPM, and is made of Chrome-plated Brass material, with a Quarter Turn Ceramic Disc valve. Faucet requires 2 faucet holes. Provide P-trap guard, offset drain guard, and angle stop cover.

4. Accessible Water Closet (AWC): Kohler model K-96057-SS “Highcliff Ultra”, vitreous china, 16-5/8” high bowl, 1.28 gallon per flush, maximum waste removal, 10” x 7” water surface size, 2-1/8” fully glazed trapway, elongated bowl, floor mounted, white. Provide Kohler K-4650-SA “Lustra” commercial elongated toilet seat with antimicrobial agent and self-sustaining check hinge, elongated, open-front toilet seat, self-sustaining hinge resists rotation to prevent slamming with check hinge functionality. Provide Sloan model Royal 111-1.28 or approved equal with royal exposed manual water closet flushometer, single flush, 1.28 gallon per flush, polished chrome finish, and fixture connection top spud. Valve operating pressure shall between 15 to 80 psi. Install in accordance with ADAAG 2010 section 604 requirements.

5. Accessible Urinal (AUR): Kohler K-4991-ET Bardon high-efficiency urinal, white vitreous china, 0.5 gallon per flush, wall hung with 3/4-inch top spud, 2-inch outlet spud, siphon jet, floor-mounted wall hanger support, and 14-inch extended rim. Install Accessible Urinal in accordance with ADAAG Section 605. Sloan Royal 186-0.5, 0.5 gpf, polished chrome finish, fixture connection top spud, single flush, Sloan exposed manual urinal flushometer with ADAAG 605. 3/4-inch I.P.S. screwdriver angled stop with vandal resistant stop cap, vacuum breaker with flush connection, spud coupling and spud flange for 3/4-inch top spud.

6. Accessible Shower (ASH): Ceramic tile shower floor and walls, laticrete hydroban waterproofing system. Provide Laticrete Hydroban drain with drain grate, 2” I.P.S. drain outlet, 5” x 5” stainless steel grate/strainer. Provide Kohler K-TS15601-4

"Coralais" shower mixing valve faucet, assembly less (without) tub spout, ADA-compliant single lever handle, Kohler K-8304-KS concealed type pressure balancing valve with screwdriver stops, anti-scalding mixing valve, with all metal construction & polished chrome finish. Shower spray shall deliver water that is 120 F maximum. Provide with Kohler K-22178-G "Purist" ADA hand-held shower with with a non-positive shut-off, 1.75-gpm multifunction handshower, 60" metal hose, vacuum breaker, wall elbow, and 30" slide bar with adjustable height hand shower mount. Slide bar shall be installed so as not to obstruct use of shower stall grab bars. Install in accordance with ADAAG 2010 section 608 requirements. Provide with Kohler K-22172 "Purist Stillness" wall-mount supply elbow with check valve.

7. Hose Bibb (HB): Exterior: Chicago No. 998 rough chrome sill faucet with integral vacuum breaker, 3/4" hose thread outlet, lock shield cap, with loose key tee handle and 1/2" I.P.S. female inlet. Chicago No. 1771 built-in chrome plated straightway loose key shutoff valve with 1/2" I.P.S. female inlet and outlet and wall flange.

8. Floor Drains (FD): Zurn Z415 cast iron drain with flashing collar and 5" type B adjustable nickel bronze round strainer head with secured square hole heel proof grate maximum 1/4" grate openings, approved trap primer connection and no hub outlet.

9. Trap Primer (TP): Precision plumbing products model PFTPR500 "Prime-Rite" trap primer valve, 5PSI minimum pressure drop, removable operating parts, integral vacuum breaker and union connections. Smith 2699-2, Josam 88250-91, Wade W-2400-T, or Zurn Z-1022 all bronze primer valve with removable operating parts, integral vacuum breaker and union connections.

10. Water Saver Trap Primer: Zurn Z1021 Water Saver Trap Primer, chrome-plated polished cast brass body with cleanout, 17-guage polished chrome wall arm, ground joint elbow with 1-1/2" NPT outlet.

11. Floor Sink (FS): Zurn Z1900 Sani-Flor Receptor 12" x 12" x 6" deep cast iron body and square, light-duty grate with 1/2" slotted openings, white acid resisting porcelain enamel interior and top, complete with white ABS anti-splash interior bottom dome strainer.

B. Maintenance Tools: Provide 2 sets of maintenance tools per building, including range adjustment tool, strap wrench, and hex wrench provided by the factory.

2.06 EQUIPMENT

A. Requirement of the manufacturer's equipment that is a component of a system provided under this work is included with the system's specification hereinafter. Capabilities and characteristics of the equipment are indicated on the drawings. See drawings for plumbing equipment schedules for

voltage and phase requirements of all equipment furnished under this work.

B. Grease Interceptor (GI-1): Constructed of reinforced precast concrete in the capacity and configuration indicated on the drawings, model HJ2000G or approved equal. It shall be have two chambers with baffle access manholes with traffic cast iron frame, gasketed cover and sampling box. Sample box with pipe connectors, model EV200-H or approved equal. Interior and exterior surfaces shall be coated with coats of bituminous damp proof material. Unit shall be I.A.P.M.O. certified, UPC approved, and meet current City and County of Honolulu rules and regulations.

2.07 MISCELLANEOUS MATERIALS

A. Nipples: Nipples shall be the same material as the piping in which installed.

B. Unions: Unions shall be brass or bronze, either threaded or with solder joint ends, for use in copper tubing.

C. Wall and Ceiling Escutcheons Plates: Provide split hinged, locked type, or one-piece escutcheon plates of pressed steel with heavy coating of copper, nickel or chromium.

D. Solder: 95-5 tin antimony or 10% silver solder.

E. Supports:

1. Sanitary Pipe Hanger: Specialty Products “Hang ‘Em II" Pipe. Hangers.

2. Copper Tube Clamp: Specialty Products “Flexi-Fin" Pipe Clamps.

3. Plastic Pipe Straps: Specialty Products “Plastic Hanger Strap".

F. Piping Isolators: Standard commercial products, consisting of metal-clad hair felt manufactured specifically for isolating pipe from hangers.

G. Fire Stopping: Provide materials classified by U.L. to provide Fire Barrier equal to time rating of construction being penetrated. Provide asbestos-free materials that comply with applicable modes and have been tested in accordance with U.L. 1479 or ASTME814.3M, Linkseal, Proset, or approved equal.

H. Dielectric Fittings: Dielectric union with galvanized or plated steel female pipe threaded end and copper solder joint end. Union shall have a water-impervious insulation barrier capable of limiting galvanic current to one percent of the short circuit current in a corresponding bimetallic joint and, when dry, shall also be able to withstand a 600-volt breakdown test.

PART 3 - EXECUTION

3.01 PREPARATION

A. Visit the worksite and become fully aware of all existing conditions. Investigate the Contract Documents and make proper provisions to avoid interference or construction delays. Determine the exact route of each pipe. Make offsets and changes in direction required to maintain proper head room and pitch or to accommodate the structure and the work of other trades. Furnish other trades with information to properly locate and size openings in the structure required for this work. Furnish anchor bolts, sleeves, inserts, and supports required for this work.

3.02 INSTALLATION AND REQUIREMENTS

A. Perform work using personnel skilled in the trade involved. Provide competent supervision. Furnish new equipment, fixtures, materials, and accessories bearing the manufacturer's identification and conforming to recognized commercial standards. Provide all extra materials and labor for a complete operable system at no extra cost to the School. Installation shall be in accordance with manufacturer's recommendations.

3.03 PIPING INSTALLATION

A. Conform to the requirements of the Uniform Plumbing code. Inspect all piping inside and outside. Remove interior obstructions and ream out pipe ends. Tool markings on polished fittings are not acceptable. Cut pipe accurately so that it can be worked into place without springing or forcing. Install pipes parallel to the wall of the structure and plumb. Make changes in direction with fittings. Bushings are not permitted. Install valves with stems above horizontal. Provide proper support and adequate provisions for expansion, contraction, slope, and anchorage. Provide dielectric unions where copper tubing connects to steel pipe. Wrap pipe or tubing with 1/4-inch thick felt and secure with tape where it contacts other materials. Have piping tested, inspected, and approved before it is furred in, buried, or otherwise hidden. Provide standard weight galvanized steel pipe sleeves where water pipes pass through structure, sufficiently large to provide 1/4-inch clearance around pipe. Caulk watertight around pipes passing through sleeves. Wrap pipe with polyethylene tape where it passes through sleeve and where it contacts concrete or masonry. Grout with fireproof material around all pipe penetrations through slabs and walls for full length of penetrations. Provide chrome-plate brass escutcheons, set tight on the pipe and to the wall where pipes are exposed in finished areas. Provide clamping collar to membrane flange where pipe or drains penetrate waterproof membrane. Perform all welding using qualified welders in accordance with American National Standards Institute's Code B31.1 and American Welding Society Standard B3.0.

3.04 PIPING SYSTEM SUPPORTS

A. Pipe Supports: Support underground piping on firm soil along its entire length. Where rocks are encountered, have trench excavated to minimum overdepth of 4-inches and backfilled with granular moist earth, thoroughly tamped. Materials used for backfilling over piping shall be granular earth,

free from debris and stones. The Contracting Officer's representative may reject any materials which he considers unsuitable for fill. Provide a minimum of one foot of cover for all pipes. Support steel and copper pipe at maximum spacing of 6-feet for pipes 1-1/2-inches and smaller, 10-feet for pipes 2-inches through 4-inches.

3.05 DRAINAGE, WASTE AND PIPE SYSTEMS

A. Slope drain lines at 1/4-inches per foot unless otherwise indicated. On roof vents and where other drains occur above the ground floor, provide clamping device with drain. Provide a 4-pound lead flashing sheet extending 8-inches out around drain body and secure with clamp device. On vents through roof, extend vent flashing 8-inches out all around base of vent, extend collar up vent and turn in at top. Install hubless cast-iron and neoprene gasketed no-hub coupling below grade. MG stainless steel clamps and cast-iron no-hub couplings shall be installed in accordance with manufacturer's written instructions. Cleanout to grade shall be encased in concrete, flush with finished grade.

3.06 WATER PIPING SYSTEM

A. Secure each water line where it penetrates partitions to serve fixtures, hose bibs, and similar items. Wrap all lines passing through concrete with polyethylene tape. Install unions or flanges at all valves, equipment, and system specialties. Set hose bibs 18-inches above finished grade unless otherwise indicated. Install dielectric unions at connections of copper and ferrous pipes.

B. Provide water hammer arrester on all cold water lines serving fixtures using flush valves sized in accordance with the PDI Standards WH201 for the total number of fixture units connected to the branch line. Install arrester between last 2 fixtures served or as shown. Provide access panel for concealed arresters.

C. Provide all hose bibbs with non-adjustable vacuum breakers and square head cock.

3.07 STANDARDIZED PIPE IDENTIFICATION SYSTEM

A. Use an arrow marker with each pipe content marker, the arrow shall always point away from the pipe marker and in the direction of the flow.

B. If flow can be in both directions, use a double headed arrow marker.

C. Apply pipe marker and arrow marker at every point of pipe entry or exit where line goes through wall.

D. Apply pipe marker and arrow marker on each riser and "T" joint.

E. Apply pipe marker and arrow marker every 20-feet on long continuous lines.

F. Apply markers on the 2 lower quarters of the pipe and where view is unobstructed.

G. Arrow markers shall be 4-inches long minimum, and pipe content marker lettering shall be block-style lettering, all caps, with size minimum 1-1/2-inches in height. All identifications shall be contrasting color against the background, i.e. black lettering against white pipe insulation.

3.08 TESTING AND ADJUSTING

A. All work shall be completely installed and tested as required by this Section and the applicable plumbing ordinances, and proven leak tight before inspection is required. Providing all required equipment and labor to make the test and repeating the tests to the satisfaction of those making the inspection is within the scope of this Section of the specifications. Any work concealed without the required test and approval shall be uncovered and tested at the Contractor's expense.

B. Procedure:

1. Soil, Waste and Vent Piping: Filled with water to the highest point in each system, and left filled for 8 hours with no noticeable change in water level; after approval, remove the test plugs and flush the line.

2. Water Piping: At 150 psi and left for an 8 hour period without loss of pressure; and left under line pressure for the balance of the construction period.

3. Plumbing Fixtures: Filled with water and checked for leaks and/or retarded flow.

4. All Valves: Adjusted and balanced to provide for the proper operation of the various systems. After disinfecting, strainer screens shall be removed, cleaned, and reinstalled.

3.09 DISINFECTING

A. All domestic cold and hot water lines shall be thoroughly flushed and drained after installation. Sterilization shall be accomplished by opening taps at the end of all branches and slowly filling the system adding liquid chlorine, or hypochlorite solution, to the water until water flowing from all branches indicates not less than 50 P.P.M. residual chlorine; the system shall be allowed to stand for not less than 8 hours, with all valves opened and closed several times during this period; then drained and thoroughly flushed until all traces of chlorine are eliminated (less than 0.2 P.P.M.). Certificate shall be submitted to the Contracting Officer. The Contractor shall be responsible for the proper disposal of chlorinated water to safeguard public health and environment in accordance with applicable Department of Health requirements.

3.10 FIELD QUALITY CONTROL

A. Test plumbing systems in accordance with the Uniform Plumbing Code. Perform tests in the presence of, and to the satisfaction of inspectors having jurisdiction over the work. Ask for final inspection by the Engineer after tests, adjustments and balancing has been performed.

1. Test drainage systems in accordance with Section 318 of the Plumbing Code.

2. Hydrostatically test the domestic water piping system at 100 psi for 2 hours. Inspect the entire system while under pressure and correct all deficiencies.

3. Test equipment to demonstrate its operation and compliance with the specification.

3.11 SPARE-PARTS

A. After approval of materials and equipment and 2 months prior to the project acceptance date, the Contractor shall furnish a complete list of parts and supplies with current source of supply.

3.12 TESTING AND INSPECTION

A. Contractor shall furnish all equipment for tests and any required retests and pay for all cost of repairing any damage resulting from such tests. Contractor shall adjust systems until they are approved. Tests shall be performed in the presence of, and to the satisfaction of, an inspector of the official agency involved.

B. Sanitary and water piping shall be tested in accordance with the Plumbing Code. Sanitary drains shall be tested with a minimum of 10 feet of water for 15 minutes. Water piping shall be tested. Valves shall be rated for at least 200 psi working pressure.

C. Defective Work: If inspection of tests show defects, such defective work or material shall be replaced and inspection and tests repeated. Repairs to piping shall be made with new material. No caulking of screwed joints or holes will be accepted. Installation shall be repaired by skilled mechanics of the trade involved at no extra expense to the State.

D. Protection to Fixtures, Materials and Equipment: 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, adjusted and operated.

E. Chlorination: Domestic water lines shall be sterilized with chlorine before acceptance of work. Sterilize water system for 24 hours with 100 ppm chlorine introduced into the lines in an approved manner. Dosage of chlorine shall not be less than 50 ppm. After a contact period of not less

than eight (8) hours, the system shall be flushed with clean water until the residual chlorine content is not greater than 0.2 ppm. All valves in the lines being sterilized shall be opened and closed several times during the contact period. A certificate shall be furnished to the Engineer evidencing proper performance of sterilizations.

3.13 PIPE PENETRATION

A. Where pipes penetrate fire rated walls and floors, the space between the pipe and pipe sleeve shall be sealed with fireproof sealant.

B. Installation shall be in accordance with manufacturers' instructions.

3.14 CLEANING AND ADJUSTING

A. At the completion of the work, all parts of the installation shall be thoroughly cleaned. Equipment, fixtures, pipe valves, and fittings shall be cleaned of grease and metal cuttings, and sludge that may have accumulated by operation of the system for testing. Any stoppage or discoloration or other damage to parts of the building, its finish, or furnishing, due to the Contractors failure to properly clean the piping system shall be repaired by the Contractor without cost to the State. Touch up with matching paint all damaged factory finishes.

END OF SECTION

SECTION 15800 - AIR CONDITIONING AND VENTILATION

PART 1 - GENERAL

1.01 SUMMARY

A. This section shall apply to all phases of work indicated in contract drawings, or required to provide for a complete installation of mechanical systems included in this project.

1.02 DESCRIPTION OF WORK

A. This section covers the furnishings, fabrication, delivery and installation of the air conditioning system complete, including but not limited to the following:

1. DX Split System Air Conditioning Units.
2. VRF Split System Air Conditioning Units.
3. Multi Split System Air Conditioning Units.
4. Modulating Dampers.
5. Sheetmetal and flex duct.
6. Air filters.
7. Condensate drain and refrigerant piping.
8. Corrosion Coating.
9. Controls.
10. Adjusting, balancing and testing.
11. Operating and maintenance instructions.
12. Manufacturer’s literature, shop drawings and record drawings.
13. Exhaust fan.
14. Supply fan.
15. Air devices.
16. Insulation.

1.03 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. All power wiring including disconnects and wiring to all motor specified in Division 16 - Electrical.

1.04 QUALITY ASSURANCE

A. Comply with all the requirements of the County of Honolulu and State of Hawaii.

B. Obtain and pay for all fees, permits, licenses, assessments, and inspections required for this work.

C. Substitutions of another manufacturer's product specified hereinafter and for items with "acceptable equal" after the brand name requires approval. Substitutions are not allowed prior to award.

D. All applicable codes, regulations and ordinances of public bodies having jurisdiction and considered a part of these specifications; all work installed and materials provided must comply with the current edition of such codes, regulations and ordinances.

1.05 SUBMITTALS

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

B. Equipment Submittals: Before beginning work, submit for review manufacturer's certified literature showing ratings and dimensions of equipment and of a list indicating all materials and items that are of a different manufacturer or model than those specified. Include equipment wiring diagrams.

1. Submittals Shall Include the Following Items:

a. DX split system.

b. VRF split system.

c. Multi split system.

d. Exhaust fans and supply fan with sound data.

e. Insulation.

f. Air devices, flex duct and duct accessories with sound data.

g. Control wiring, devices and diagrams.

h. Corrosion protection.

i. Adjusting, balancing and testing.

j. Operating and maintenance instructions.

k. Manufacturer's literature, shop drawings and record drawings.

l. Condensate drain and refrigerant piping.

m. Modulating damper.

2. Submittals Shall Include the Following as a Minimum:

a. System design information sheet.

b. Description of system operation.

c. Electrical power and control wiring diagram.

d. Catalog information on control components.

e. Fan performance

C. Shop Drawings: After review of equipment, submit for review dimensioned installation shop drawings to scale showing details where space requirement prevents problems; proposed departures from the Contract Documents due to field conditions, requirements for concrete work, access panels, inserts in slabs, and openings in structure.

D. As-Built Drawings: Record changes from the contract drawings of all concealed piping, ductwork and equipment. Indicate location of isolating valves, dampers, and items requiring maintenance or inspection. Submit As-Built Drawings for review prior to final inspection.

E. Certificates: The Contracting Officer will have the right to require a written certificate, dated and signed by a responsible employee 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. Whenever a regulatory agency performs in sections or tests of any portion of the work, a certificate shall be furnished by the Contractor that the inspection or test was satisfactorily passed.

F. Mechanical Equipment List: Submit the mechanical equipment list for all Contractor furnished pieces of mechanical equipment, using the form found at the end of this section. Contractor to submit the completed form (with all new air conditioning equipment listed) upon completion or final acceptance of the project.

G. Testing and Balancing Report: After installation, the new system shall be tested, balanced and adjusted. Submit 4 copies of the testing and balancing report to the Contracting Officer for review and approval prior to the final acceptance of the project.

H. Guarantee: Submit Guarantee as noted under item entitled “GUARANTEE” hereinbelow.

I. Maintenance Service Contract: Submit Maintenance Service Contract as noted under the item entitled “ONE YEAR MAINTENANCE SERVICE CONTRACT” hereinbelow.

1.06 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Furnish new equipment, material, 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.

1.07 OMISSIONS

A. It is the intent of the plans and specifications to provide a complete installation. Should there be omissions, the Contractor shall call the attention of the Contracting Officer to such omissions in 14 days advance of the date of bid opening so the necessary corrections can be made.

1.08 GUARANTEE

A. Contractor and installer shall guarantee and certify in writing all work in this section for a period of one year after 30 days of trouble-free operation from the date of project acceptance by the Contracting Officer. Replacement of lost refrigerant and correction of undue noise or vibration is included on the guarantee. Contractor shall be responsible for all damages to any part of the premises during equipment installation work under this section. Normal maintenance requirements are not included in this guarantee. Should any equipment or material fail due to the faulty workmanship or materials within this period replace or repair that item at no cost to the State.

PART 2 - PRODUCTS

2.01 EQUIPMENT

A. Capacities and characteristics of equipment are indicated on the drawings. See electrical drawing for all voltage and phase requirements of all equipment furnished under this work. Provide combination magnetic across-the-line starter, control voltage transformer and circuit breaker for each motor of mechanical equipment unless the equipment is factory-wired to a single power connection or unless otherwise indicated hereinafter. Exterior starters shall be NEMA 4X waterproof type enclosure. Provide disconnect switch for all mechanical equipment. All steel surfaces shall be hot-dipped galvanized. All steel exposed to weather shall be hot-dipped galvanized and shall have an additional two coats of zinc rich rust-proof paint. Provide vibration isolators as indicated hereinafter.

B. Centrifugal Exhaust Fan(EF-1, EF-2, EF-3, and EF-4): Exhaust fan shall be ceiling type, centrifugal wheel, galvanized steel fan casing with integral backdraft damper and register. Energy star rated. Panasonic FV series or approved equal.

C. Inline Exhaust Fan (EF-5): Greenheck SQ model or approved equal. Inline exhaust fans shall be of the direct drive type. The fan wheel shall be constructed of aluminum and backward inclined centrifugal wheel. Motors are permanently lubricated, heavy duty ball bearing type to match with the fan load and pre-wired to the specific voltage and phase. Provide Vari Green HOA controller to interlock to the dish machine. Housing cabinet shall be constructed of galvanized steel with structural steel housing supports. Inlet and discharge collars shall provide easy slip fit duct connection. Damper shall be gravity type to balance for minimal resistance to flow.

D. DX Split System:

1. 33x33 Four-Way Ceiling Cassette Style Fan Coil Unit (FCU/2-1): The ceiling-recessed indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function, an emergency operation function, a test run switch, and the ability to adjust airflow patterns for different ceiling heights. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory. The unit shall be suitable for use in plenums in accordance with UL1995 ed 4. Unit shall be Mitsubishi Electric or approved equal.

2. Air Cooled Condensing Unit (ACCU/2-1): HVAC outdoor unit shall be a variable speed inverter-driven compressor, direct expansion (DX), Heat Pump engineered system. The VRF system shall consist of a single frame outdoor unit, interconnecting piping, multiple indoor units (ducted, non-ducted or mixed combinations), onboard, self-contained, stand-alone communication and controls. The outdoor unit shall be of galvanized steel with a weather and corrosion resistant enamel finish. Direct drive, variable speed, axial flow fan. The motor shall be variable speed, direct current, with permanently lubricated bearings. The coil shall be aluminum fins mechanically bonded to copper tubing. The aluminum fin shall have factory applied corrosion resistant Blue Fin coating and be tested per ASTM B-117 standard. The heat pump system will be available in 208/230V, 60Hz, 1 phase. Provide kWh meter for energy monitoring and connection to pulse input controller. Unit shall be Mitsubishi Electric or approved equal. Provide with mounting stand system manufactured of 11-gauge square steel tubing with thermally fused polyester powder coat finish that meets ASTM D3451-06 standards. Provide in compliance with ASCE 7 overturning safety requirements. Provide complete with galvanized mounting hardware.

3. Controls: Provide Mitsubishi PAR-41MAAU or approved equal for ceiling cassette fan coil unit.

E. Supply Air Fan (SF-1, SF-2, SF-3, and SF-4): Panasonic WhisperFresh series or approved equal. Circular inline duct fans with Pick-A-Flow™ speed selector, ECM motor with SmartFlow technology, and built-in humidity and temperature settings.

F. VRF Split System:

1. Ceiling Concealed Ducted Air Handler Style Fan Coil Unit (FCU/4-1, FCU/4-2, and FCU/4-3): The ceiling concealed indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, ducted smoke detector, 3-minute time delay mechanism, and an auto restart

function. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory. The unit shall be suitable for use in air handling spaces in accordance with Section 18.2 of UL 1995 4th Edition, be tested in accordance with ANSI/ASHRAE 193 and have less than 2% air leakage at maximum airflow setting.

2. Air Cooled Condensing Unit (ACCU/4-1, ACCU/4-2, and ACCU/4-3): Variable Refrigerant Flow (VRF) HVAC outdoor unit shall be a variable capacity, direct expansion (DX), multi-zone units, Heat Pump engineered system. The VRF system shall consist of a single frame outdoor unit, interconnecting piping, multiple indoor units (ducted, non-ducted or mixed combinations), onboard, self-contained, stand-alone communication and controls. The outdoor unit shall be of galvanized steel with a weather and corrosion resistant enamel finish. Direct drive, variable speed, axial flow fan. The motor shall be variable speed, direct current, with permanently lubricated bearings. The coil shall be aluminum fins mechanically bonded to copper tubing. The heat pump system will be available in 208/230V, 60Hz, 3 phase. Provide kWh meter for energy monitoring and connection to pulse input controller. Unit shall be Mitsubishi City Multi or approved equal. Provide with mounting stand system manufactured of 11-gauge square steel tubing with thermally fused polyester powder coat finish that meets ASTM D3451-06 standards. Provide in compliance with ASCE 7 overturning safety requirements. Provide complete with galvanized mounting hardware.

3. Controls: Provide Mitsubishi PAR-41MAAU or approved equal for ceiling concealed ducted fan coil unit.

G. Multi Split System:

1. 22x22 Four-Way Ceiling Cassette Style Fan Coil Unit (FCU/1-1, FCU/1-2, FCU/1-3, and FCU/1-4): The ceiling-recessed indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, an auto restart function, an emergency operation function, a test run switch, and the ability to adjust airflow patterns for different ceiling heights. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory. The unit shall be suitable for use in plenums in accordance with UL1995 ed 4. Unit shall be Mitsubishi Electric or approved equal.

2. Multi-Position Air Handler Style Fan Coil Unit (FCU/3-1): The multi-position indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, 3-minute time delay mechanism, and an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory. The unit shall be suitable for

use in air handling spaces in accordance with Section 18.2 of UL 1995 4th Edition, be tested in accordance with ANSI/ASHRAE 193 and have less than 2% air leakage at maximum airflow setting.

3. Ceiling Concealed Ducted Air Handler Style Fan Coil Unit (FCU/3-2): The ceiling concealed indoor unit shall be factory assembled, wired and run tested. Contained within the unit shall be all factory wiring, piping, electronic modulating linear expansion device, control circuit board and fan motor. The unit shall have a self-diagnostic function, ducted smoke detector, 3-minute time delay mechanism, and an auto restart function. Indoor unit and refrigerant pipes shall be charged with dehydrated air before shipment from the factory. The unit shall be suitable for use in air handling spaces in accordance with Section 18.2 of UL 1995 4th Edition, be tested in accordance with ANSI/ASHRAE 193 and have less than 2% air leakage at maximum airflow setting.

4. Air Cooled Condensing Unit (ACCU/2-1 and ACCU/3-1): Single-phase or three-phase outdoor unit with variable refrigerant flow (VRF) zoning technology, inverter-driven (variable speed) compressor, uses CITY MULTI indoor units and Controls Network. Direct drive, variable speed, horizontal discharge propeller type condenser fan with permanently lubricated, totally enclosed and inherently protected motor. Galvanized steel unit casing, bonderized and finished with a powder coated baked enamel. Silicone coat the backside of all Air Conditioning boards (power, control noise filter, etc.) to prevent electrical short circuit caused mainly by geckos. Coating shall cover the entire backside of the board and shall be applied at least three (3) coatings. Seal the gaps between and around the board's perimeter with foam insulation to prevent gecko entry and future damages." If possible, include the replacement of damage boards in the equipment's one-year warranty. Provide mechanical equipment access per FDB Policy and Procedure 13.17 Mechanical Equipment Access attached.

5. Controls: Provide Mitsubishi PAR-41MAAU or approved equal for fan coil unit.

H. Air Curtain Fan (ACF-1, ACF-2, and ACF-3): MARS STD2 series or approved equal. Motor shall be totally enclosed air over (TEAO) cooled motor with sealed lifetime pre-lubricated ball bearings, motor starter and thermal overload protection. Fan shall be forward curved centrifugal type, double width, and double inlet design, directly driven to an electric motor. Provide resilient isolation dampening mountings between motor frame and motor mounting pan. Housing shall be self-contained one-piece type with sufficient strength for mounting from pre-punched mounting holes at both ends to adjacent walls or ceiling without intermediate support. Air Curtain shall be unheated with12-3/4 inches deep by 10-5/8 inches high (including discharge nozzle) by width of unit. Provide 18- and 20-gauge electro or hot dipped galvanized steel sheet housing conforming to ASTM A 879 and/or ASTM A 653. Provide air inlet grille, outside mount, integral discharge nozzle specified, corrosion resistant polyurethane powder coated finish for sheet metal housings to match adjacent surface, and associated door switch to match door function.

I. Kitchen Exhaust Fan (KEF-1): Twin City Fan BCVR series or approved equal. Fan shall be UL 762 listed for the exhaust of grease-laden air. Fans shall bear a permanently attached nameplate displaying model and serial number of the unit for future identification. Fan housings shall be heavy gauge, continuously welded construction, and weather or outdoor rated. Housings with lock seams or partially welded construction are not acceptable. Housings shall be suitably braced to prevent vibration or pulsation. Housings shall have tapered spun, aerodynamically designed inlet cones or shrouds providing stable flow and high rigidity. Housings shall be of the rotatable design, convertible to eight standard discharge configurations. Provide loose VFD controls to interlock with DCV panel. Backward inclined wheels shall be single thickness plate type designed for maximum efficiency and quiet operation and shall be of the non-overloading type. Class II wheels shall be constructed of heavy gauge steel with welded (not riveted) blades. All wheels shall be statically and dynamically balanced. Shafts shall be AISI 1040 or 1045 hot rolled steel, accurately turned, ground, polished, and ring gauged for accuracy. Shafts shall be sized for the first critical speed of at least 1.43 times the maximum speed. Bearings shall be heavy duty, grease lubricated, anti-friction ball, self-aligning, pillow block type and selected for a minimum average bearing life (AFBMA L-50) in excess of 200,000 hours at the maximum fan RPM. Motor sheaves shall be cast iron, and supplied as either variable pitch or fixed pitch. BCVU2 drives and belts shall be rated for a minimum of 120% of the required motor HP. The entire fan assembly, excluding the shaft, shall be thoroughly degreased and deburred before application of a rust-preventative primer. After the fan is completely assembled, a finish coat of paint shall be applied to the entire assembly. The fan shaft shall be coated with a petroleum-based rust protectant. Aluminum components shall be unpainted.

J. Make-up Air Fan (MAF-1): York XTO series or approved equal. Casing shall have 2-inch thickness, exterior coating of Champagne Urethane for 3500 hours, standard gauge of G-90 galvanized for exterior casing 20 gauge 304 stainless for interior, and 2-inch foam for insulation thickness. Base shall be 6-inch formed steel with 3500 hour coating of champagne urethane. Bloor shall be 20 gauge 304 stainless steel and aluminum tread plate. Provide manufacturer roof curb, VFD controls to interlock with DCV, filter rack, built-in backdraft damper, and intake hood with birdscreen. Fan wheel shall be SWSI type. Fan blade shall be airfoil. Fan wheel material shall be aluminum. Fan drive shall be direct drive.

K. Wall Cap: Wall cap shall be of aluminum construction and provided with spring loaded backdraft damper and bird screen. Paint wall cap to match siding color. Broan model 641, 647, 885AL or approved equal. See architectural for flashing details.

2.02 CONTROLS

A. Fan Coil Unit Thermostats: Space thermostats shall have adjustable set points. All thermostats shall have key locking, clear plastic tamperproof covers which do not affect their performance. Setback temperature control will raise the setpoint to 85 F, 10 minutes after the last occupant leaves the room. Manual On/Auto-Off is preferred. Auto-Off is to be programmable.

Setback temperature shall be: 75 F Occupied; 85 F Unoccupied; M-F 7:00 AM – 4:00 PM.

B. Time-Clocks: All time clocks shall be 7-day programmable, 24-hour with 10-hour capacitance backup with manual bypass. The time clock/ controls system shall be programmable and operational without an auxiliary computer.

C. Wiring and Accessories: Provide all required interconnecting wiring to complete the system. All control wiring shall be routed in rigid metal conduits. Paint new metal conduits and accessories when installed exposed in occupied rooms. Provide transformers as required. Electrical work shall comply with local codes and the electrical section of this specification.

D. 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. Provide voltage-phase protection and restart relay devices to protect equipment and to restart after power outage problem.

2.03 SPECIAL WIRING

A. All control circuits extending to remote control devices, thermostats, etc., will be 120 volts maximum.

B. Any wiring not shown and required for air conditioning to properly connect equipment, including connections to special safety control or apparatus not shown, shall be included under this section.

2.04 DUCTWORK

A. All supply and transfer ductwork shall be galvanized metal installed of gauges and with bracing and joints all in accordance with latest edition of ASHRAE Guide and SMACNA Duct Construction Standards.

B. All bathroom exhaust ductwork shall be 304 stainless steel installed of gauges and with bracing and joints all in accordance with latest edition of ASHRAE Guide and SMACNA Duct Construction Standards.

C. The thickness of the sheetmetal and size and spacing of the stiffeners used shall be in accordance with the requirements for the latest edition of the ASHRAE Guide and Data Book. Connections to plenum shall be airtight.

D. Provide hinged, gasketed, tool-less access panel for filter assembly, fan, and A/C unit mixed air plenum for coil cleaning access.

E. Turning Vanes and Extractors: Factory-fabricated and factory-or-field-assembled units consisting of curved double thickness turning vanes for uniform air distribution and change of direction with minimum turbulence and pressure loss. Fabrication shall be in accordance with applicable SMACNA Publications.

F. Flexible connections: Neoprene coated glass fabric weighing

approximately 30 ounces per square yard.

G. Supports: Galvanized steel straps or hanger rods in accordance with SMACNA Duct Construction Standards.

H. Birdscreens: Two by two mesh, 0.063-inch diameter aluminum wire or .031-inch diameter stainless steel wire, with frame.

I. Flexible Ducts: Polyester core with galvanized wire helix and 1-1/2 inch thick, 3/4 lb. density fiberglass insulation with flame resistant vapor barrier, UL approved. Flexible ducts not to exceed 6 feet in length and must be supported to maintain laminar flow. Flexible ducts tied in with medium pressure system shall be rated and constructed for medium pressure applications.

J. Silicone Sealant: Single component, ready to use, gun grade, silicone elastomer. Sealant shall be listed by independent test agency such as UL, FM or OPL and be tested to and pass the criteria of ASTME814 Through-Penetration Fire Test Standard and ASTME1966 Fire Test Joint Standard, 3M 1000N/S Silicone Sealants.

K. Duct Penetrations through Walls: Pack annular space between duct and wall with a fire seal of asbestos rope, mineral wool, or similar non-combustible material. Seal with silicone sealant or caulking.

L. Air Filters: Disposable type, 2" thick conforming to Underwriter's Laboratories (UL) Publication 900, Class 1 or Class 2, filter efficiency shall be 30% based atmospheric dust spot efficiency based on ASHRAE test method 52-92.

M. 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.

N. Kitchen Grease Exhaust Duct: Ductwork shall be welded stainless steel with joints and seams ground smooths. Entire system shall be in accordance with NFPA 96. Provide 2 layers of 1-1/2” FireMaster duct wrap on grease ducts per code requirements.

2.05 PIPING

A. Refrigerant Piping:

1. Material and dimensional requirements for field assembled ACR refrigerant piping, valves, fittings, and accessories shall conform to ANSI B9.1 and ANSI B31.5, except as hereinafter specified. Refrigerant piping shall be hard drawn seamless copper tubing.

2. Fittings, Copper Tubing: Cast brass or wrought copper, brazed joint type, ANSI B16.18 OR B16.22.

3. Solder shall be silver brazing, BCuP-5 15% silver, above 1100 degrees F melting point.

4. Pipe hangers and supports shall conform to MSS SP-69 and MSS SP-58 except as indicated otherwise.

B. Condensate Drain: Condensate drain piping shall be Schedule 40 PVC pipe and drainage pattern fitting with solvent welded joints. Provide seal trap at connections to unit. Provide cleanout at every change in direction of the condensate piping.

2.06 REFRIGERANT AND CONDENSATE PIPING INSULATION

A. General: Insulation, adhesives, coatings, and accessories shall have surface burning characteristics as determined by ASTM E84 and UL 723, not to exceed 25 for flame spread and 50 for smoke developed.

B. Exterior, aboveground: Self-sealing, pre-formed, high density closed cell polyolefin. Thickness to be selected from manufacturer's literature based upon pipe temperature and ambient condition.

C. Interior: Armaflex closed-cell elastomeric insulation. Thickness to be selected from manufacturer's literature based upon pipe temperature and ambient condition. When thickness required exceeds 2", multiple layer insulation shall be furnished.

D. Exterior insulation and interior exposed up to 7 feet above the floor shall be additionally wrapped with sheet aluminum 0.016-inch thick, fabricated neatly and secured to insulation with ½" aluminum bands and wing seals.

2.07 VIBRATION ISOLATION

A. Unless otherwise noted on drawings or schedule, all mechanical equipment shall be mounted on vibration isolators to prevent transmission of vibration and mechanically transmitted sound to building structure. Vibration isolator shall be selected in accordance with weight distribution to produce reasonably uniform deflection. Deflection shall be minimum of 1-inch for air handling units and air-cooled condensing units. Isolator frames shall be galvanized with spring neoprene coated.

2.08 VOLUME DAMPERS

A. Manual volume dampers shall be installed where shown and as required for air balancing. Dampers shall be opposed blade type, galvanized or aluminum, with flanged frame for duct mounting, two gauges heavier than the duct in which they are installed. Provide hat channel standouts for use with duct wrap insulation and locking quadrants.

B. Backdraft Damper: Provide spring-loaded backdraft damper, galvanized steel.

C. Motorized Damper Actuator: Zinc-coated metal proportional damper actuator mounted directly to damper shaft, complete with crank arm, mounting brackets, linkages, etc. Actuator shall spring return failsafe.

2.09 PIPE HANGERS AND SUPPORTS

A. All hangers, supports, bolts, nuts, washers, and accessories shall be galvanized unless otherwise specified.

B. Drilled-in Threaded Inserts: Where supports in beams and joists are required after concrete has been poured, Philips “Redhead” Drilled-In Threaded Inserts shall be provided, installed in accordance with manufacturer’s recommendations.

C. Provide adjustable hangers, saddles, inserts, brackets, rolls, clamps, supplementary steel, etc., as required for proper support of all pipe lines. Hangers shall be designed to allow for expansion and contraction of pipe lines and shall be of adequate size to permit covering to run continuously through hangers. Piping at coils shall be supported independently so that no weight will be supported by the equipment. Coordinate location of hangers with light fixtures as shown on electrical drawings. Hangers provided under other sections shall not be used for support of piping or equipment provided under this section unless permission is granted in writing by the Contracting Officer. Hangers shall be of manufacture and type specified, or equivalent products. Manufactured by B-Line, PHD, Superstrut or approved equal.

D. Pipe support spacing and hanger rod size shall conform to the following table:

Pipe Size	Spacing	Pipe Support Pipe Size	Rod Diameter
All size	Not over 6'-0"	Up to 2"	3/8"

E. Supplementary Steel: Provide all necessary supplemental structural steel for proper support or attachment of hangers. Steel shall be hot dipped galvanized.

F. Single Hangers: Support single pipe runs as follows:

1. Pipe 3-1/2” and Smaller: Split ring type hanger; Grinnell Fig. 104.

2. Trapeze type hanger shall be used to provide necessary clearances.

G. Insulation shields shall be Fig. 127 or equivalent field fabricated.

H. Pipes connected to equipment supported with vibration isolator shall be supported with spring isolators having a minimum static deflection equal to vibration isolator supporting the equipment but need not exceed 1-1/2” static deflection.

1. Pipes 1-1/2” and smaller within ten feet run from the equipment connections shall be supported with spring isolators.

2.10 PIPE HANGERS AND SUPPORTS

A. Manufacturer: Barber Colman, Titus, Metal-Aire, Kreuger, Anemostat, Airlume, Carnes or pre-approved equal.

B. Construction: Aluminum construction "off white" color for face plates, frames and grilles; except as noted.

1. Transfer Grille: Fixed blade type, 45-degree angle, 3/4-inch blade spacing with opposed blade volume control damper. OBVDs shall be aluminum.

2.11 CORROSION PROTECTION (ACCUs only)

A. Exterior Finned Tube Heat Exchangers and Condensing Unit Coils:

1. Condenser finned tube coils shall be protected with a protective coating. Surface metal preparation shall include degreasing and etching or phosphatizing by immersion.

2. The coating shall withstand and show no sign of attack after 4,000 hours of salt spray test (ASTM B117) and acidic salt spray test (ASTM G85).

3. The coating shall be Aluminum Polyurethane similar to Blygold "PoluAl XT" and shall be applied by a manufacturer qualified applicator. Applicator shall provide a minimum, limited, 3-year warranty on parts and labor. HVAC equipment manufacturer applied coatings will be considered in lieu of Blygold provided the manufacturer applied coatings meet or exceed the performance specified above.

B. Cabinet and Exterior Surfaces:

1. Unit cabinet shall be coated with epoxy or polysiloxane similar to Ameron PSX 700 Engineered Siloxane. Surface metal preparation shall include degreasing and etching. HVAC equipment manufacturer applied coatings will be considered in lieu of PSX 700 provided the manufacturer applied coatings meet or exceed the PSX 700's performance.

2. The coating shall be applied to all interior and exterior surfaces until a total of 6-8 mils D.F.T. is achieved. Coating shall be applied in strict accordance with the coating manufacturer's recommendations.

3. After the coating has totally cured, the equipment shall be assembled using care not to damage the coating during assembly. Fasteners shall be stainless steel with bonderized rubber washers attached. Any touch up required shall be performed in accordance with the manufacturer's recommendations.

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

2.12 PIPE SLEEVES

A. Provide where pipe passes through walls and partitions. Secure sleeves in proper position and location during construction. Provide sleeves of sufficient length to pass through entire thickness of walls and partitions. Provide not less than 0.25 inch space between exterior of pipe or pipe insulation and interior of sleeve. Firmly pack space with an approved fire stop material in rated walls and partitions, and install in accordance with the manufacturer's recommendations. Space between pipe and sleeves (both ends) shall be sealed in accordance with Section 07920 – Sealants.

B. Sleeves in masonry and concrete walls shall be ASTM A53, Schedule 40 or Standard Weight, hot-dip galvanized steel pipe.

C. Sleeves in partitions and other than masonry and concrete walls shall be hot-dip galvanized steel sheet having a nominal weight of not less than 0.90 ounces per square foot.

D. No cutting or drilling of any structural members will be permitted without the approval of the Design-Build Contractor.

PART 3 - EXECUTION

3.01 CORPERATION WITH OTHER TRADES AND CONFLICT IN WORK

A. Contractor shall examine all drawings of proposed work and coordinate his work with other trades. Work conflicts shall be brought to the attention of the Contracting Officer and work rearranged or modified in accordance with his decision.

B. If changes in indicated locations or arrangements of work are required, they shall be made by Contractor without additional charge to the State.

3.02 EQUIPMENT INSTALLATION

A. All equipment shall be installed as per manufacturer’s recommendations, with adequate clearances provided for servicing and as required by applicable codes.

B. Necessary supports shall be provided for equipment, appurtenances and pipe, as required. These include frames or supports for air conditioners, and other similar type items requiring supports.

3.03 WORKMANSHIP AND FABRICATION

A. Ductwork:

1. Fabricate all ductwork and related work to highest industry standards and recommendations of ASHRAE. Seal all ductwork airtight.

2. Sides and tops of ductwork shall be cross broken. Long seams shall be Pittsburgh lock groove, hammered flat or double seamed. Ducts shall also have supplemental stiffening as required to prevent drumming and to provide structurally sound assembly. Seal ducts air tight with approved duct sealer.

3. Duct turns in all square elbows shall be accomplished by using pre-fabricated turning vanes such as Tuttle & Bailey “Ducturn.” Double thickness turning vanes in ducts deeper than 16-inches may be used in lieu of “Ducturn” provided prior approval of design is given by the Contracting Officer.

4. Ducts shall be supported at joints every 6-feet or less with steel hanger straps one-inch wide and made of material not lighter than 18 gauge riveted to seams unless indicated otherwise. Bolts or sheet metal screws may be used to fasten straps to ductwork provided prior approval is given by the Contracting Officer.

3.04 VIBRATION ISOLATION

A. Vibration transmission from all reciprocating and/or rotating equipment such as compressor and centrifugal fan shall be effectively isolated, by use of vibration mountings or hangers. Mounting and hanger sizes shall be determined by the manufacturer to assure adequate deflection and vibration isolation, and shall be installed in accordance with manufacturer’s recommendations to provide not less than 90 percent isolation efficiency.

3.05 CLEANING AND ADJUSTING

A. 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. All control valves and other miscellaneous equipment requiring adjustment shall be adjusted to setting indicated or directed. Fans shall be adjusted to the speed indicated by the manufacturer to meet specified conditions. Temporary filters shall be provided for all fans that are operated during construction, and after all construction dirt has been removed from the building, new filters shall be installed.

B. Condensate drain line shall be leak tested. No leaks are allowed at any joints.

3.06 TESTING AND BALANCING SYSTEMS

A. See Section 15950 - Testing, Adjusting And Balancing for testing and balancing requirements.

3.07 FIELD INSTRUCTIONS

A. Upon completion of the work and at a time designated, the services of one or more qualified personnel shall be provided by the Contractor for a period of not less than two days to instruct the representative of the Contracting Officer and school personnel in the operation of the air conditioning system and the maintenance and troubleshooting training to State Maintenance Personnel. These field instructions shall cover all the items contained in the bound instructions.

3.08 ONE YEAR MAINTENANCE SERVICE CONTRACT

A. In addition to the Guarantee on materials and workmanship, the Contractor shall submit 8 copies of the Maintenance Service Contract, countersigned by the General Contractor that will validate said Guarantee. The Guarantee and maintenance service shall extend for a period of one year commencing after 30 consecutive days of trouble-free operation after the Project Acceptance Date or the air conditioning equipment acceptance date, if earlier than the Project Acceptance Date, and shall include all labor, materials, equipment and parts necessary to service the complete system, in accordance with the attached Schedule of Maintenance Service so as to assure proper operation and function of the system. All costs for the periodic maintenance, including emergency calls, shall be borne by the Contractor. This maintenance period and the Guaranty period shall run concurrently (same start and end dates). The maintenance of the equipment shall start within one month of equipment start-up and continue until the end of the Project Maintenance Service Contact period.

B. However, should the Contractor default on the Maintenance Service Contract and must restart or complete the service, then the warranty period shall also be extended to match the revised maintenance service period.

C. Trouble-free operation is defined as the non-disabling condition or a non-recurring failure or disruption.

1. The system shall be free of all discrepancies, contamination and debris that require correction in excess to those described for the monthly service that is included in the Schedule of Maintenance.

2. The system is maintaining operational conditions and other parameters as measured during acceptance tests.

D. The installer shall include a listing of the following items along with the Maintenance Service Contract:

1. Name of the servicing Contractor.

2. Air conditioning system acceptance date.

3. Service contract expiration date.

4. Monthly inspection schedule for maintenance period.

5. Itemized listing of the equipment covered under the service contract, including a description of the equipment identified, its model and serial number(s), and manufacturer’s name(s), and the quantity of each size and type of equipment.

E. The Maintenance Service Contract shall be submitted along with the Operations and Maintenance Manual on/or before the Project Acceptance Date.

F. Maintenance Log: Keep a separate log, recording all maintenance calls to the project, including at least the following information:

Name of person making service call.

Leahi Hospital Air Conditioning and Ventilation
Sub-Basement Food Service Operations – Phase II Project
Date of call, time in and out from project.
Nature of call; if emergency, who contacted service company.
Equipment gauge and temperature readings, ambient temperature.
Maintenance checklist.

G. In addition, submit written reports of maintenance or trouble calls performed within 7 days to HHSC. Submit reports on the attached form or facsimile.

H. Schedule of Maintenance Services: Periodic maintenance shall conform to the following schedule, with at least the following basic services:

1. Ducted Fan Coil Unit

a. Monthly Service

1) Clean and clear all drip pans and flush all related condensate drain lines with nitrogen. (Contractor may be liable for water damage due to clogged drains). Install pan tablets if necessary to control algae.

2) Change all disposable air filters at least once a mount; 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) Operate equipment to check for proper operation, unusual noise and vibration; adjust or repair all equipment and controls as required; clean-up all equipment.

6) Check time clock for proper operation and time settings.

7) Certify performance of monthly service 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 all cooling coils of dirt accumulation using nitrogen, high pressure air/water, steam, or chemical coil cleaner solution.

3) Check pressure and temperature differential across cooling coils and log readings. Clean strainers, check vents and drain lines on cooling coils.

4) Clean fresh air intake grilles and dampers and repair or replace deteriorated bird screens.

5) Clean all fan wheels and interior and exterior of equipment housings.

6) Secure all loose housing, seal leaks and touch-up paint after cleaning all rust.

7) Check and calibrate all pneumatic and/or electric temperature controls.

8) Certify performance of annual service and correct and report all discrepancies.

2. Air Cooled Condensing Unit

a. Monthly Service

1) Perform tasks of Fan Coil Unit.

2) Check compressor oil level and refrigerant sight glass; add oil as needed and change filter/drier if moisture indicated.

3) Check refrigerant system for leads, unusual noise and vibration and record suction, discharge and oil pressures in maintenance log book and correct all deficiencies.

b. Annual Service

1) Perform tasks of Fan Coil Unit.

2) Check compressor coupling alignment; lubricate or replace noisy bearings.

3) Clean condenser coils with compressed air, nitrogen, water, steam or chemical coil cleaning solution.

4) Test compressor crankcase oil and replace if contaminated or submit oil test results. Clean or replace strainer and oil filter (open compressor).

5) Test and check system response at various cooling load conditions for proper operation, record settings, adjust as required. Re-calibrate all safeties, capacity and temperature controls to proper

settings.

6) Check and clean all unit housings (inside and outside and components), seal leaks and remove rust from exterior components and touch-up paint.

7) Megger compressor motor and submit report and recommendation; check starter, relays, and control contacts and electrical connections for tightness and clean as required.

3. Supply and Exhaust Fan

a. Monthly Service

1) Check motor controlled and backdraft dampers for proper operation; lubricate linkage for free movement.

2) Lubricate fan motors and bearings.

3) Check belt wear and tension; adjust or replace as needed.

4) Check sheaves for wear, replace as needed.

5) Check fan collar, bearings and shaft for wear, repair or replace as needed.

6) Certify performance of quarterly fan maintenance service and correct and report all discrepancies.

b. Annual Service

1) Check and clean all fan wheels and housings of dust, dirt, and grease.

2) Remove and wash all dampers and repair or replace deteriorated bird screens.

3) Certify performance of semi-annual fan maintenance service and correct and report all discrepancies.

4. Ductless Fan Coil Unit

a. Monthly Service

1) Flush all related condensate drain lines with nitrogen. (Contractor may be liable for water damage due to clogged drains). Install pan tablets if necessary to control algae.

2) Change all disposable or cleanable air filters at least once a mount; 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) Operate equipment to check for proper operation, unusual noise and vibration; adjust or repair all equipment and controls as required; clean-up all equipment.

6) Check time clock for proper operation and time settings.

7) Certify performance of monthly service 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 all cooling coils of dirt accumulation using nitrogen, high pressure air/water, steam, or chemical coil cleaner solution.

3) Check pressure and temperature differential across cooling coils and log readings. Clean strainers, check vents and drain lines on cooling coils.

3.09 WORK SCHEDULE

A. All maintenance work shall be performed between the hours of 7:30 a.m. and 4:00 p.m., on normal working days, Monday through Friday.

3.10 TROUBLE CALLS

A. Emergency service and repairs required between regular service calls shall be rendered within 24 hours, including holidays in the event of equipment becoming inoperative resulting in the loss of cooling. Respond to emergency calls within 4 hours of notification.

3.11 CLEANUP AND WORK PRACTICES

A. The Contractor shall keep the job site free of debris, litter, discarded parts, etc. and shall clean all oil drippings during the daily progress of work. The Contractor shall remove all tools, parts, and equipment from the service areas upon completion of the work.

B. The Contractor shall exercise caution during the progress of his maintenance and repair work to prevent damage to the ceilings, roofing, and other building structure. The Contractor shall restore all damages caused by his negligence to its original condition at his own expense.

END OF SECTION

SECTION 15950 - TESTING, ADJUSTING AND BALANCING

PART 1 - GENERAL

1.01 SUMMARY

A. The work includes testing, adjusting, and balancing (TAB) of new air conditioning and ventilating systems including equipment, ducts.

1.02 RELATED WORK SPECIFIED IN OTHER SECTIONS

A. Mechanical work as specified in Section 15000 - General Mechanical Requirements unless specified otherwise in other sections of Division 15.

B. Air conditioning and ventilation equipment specified in Section 15800 - Air Condition And Ventilation.

1.03 SUBMITTALS

A. Submit in accordance with Section 01330 - Submittal Procedures. Also refer to Section 15000 - General Mechanical Requirements.

B. Statements: Submit the following in accordance with Section 15000 - General Mechanical Requirements.

1. Independent TAB agency personnel qualifications

2. Design review report

3. Pre-field TAB engineering report

4. Advanced notice TAB field work

5. Check out list

C. Independent TAB Agency Personnel Qualifications: For agency proposed for approval, submit information certifying that: the TAB agency is a first-tier subcontractor who is not affiliated with any other company participating in work on this contract; the work to be performed by the TAB agency shall be limited to testing, adjusting, and balancing of HVAC air and water systems to satisfy the requirements of this specification section. Submit the following, for the agency, to the Contracting Officer for approval in compliance with paragraph entitled “TAB Personnel Qualification Requirements.”

1. Independent AABC of/or NEBB certified TAB agency:

a. TAB agency: AABC registration number and expiration date of current certification; or NEBB certification number and expiration date of current certification.

b. TAB team supervisor: Name and copy of AABC or NEBB TAB supervisor certificate and expiration date of current certification.

c. TAB team field leader: Name and documented evidence that the team field leader meets the qualification requirements.

d. TAB team field technicians: Names and documented evidence that each field technician meets the qualification requirements.

e. Current certificates: Registrations and certifications shall be current, and valid for the duration of this contract. Certifications which expire prior to completion of the TAB work, shall be renewed in a timely manner so that there is no lapse in registration or certification. TAB agency or TAB team personnel without a current registration or current certification shall not perform TAB work on this contract.

f. Replacement of TAB team members: Replacement of members may occur if each new member complies with the applicable personnel qualifications and each is approved by the Contracting Officer.

D. Design Review Report: Submit typed report describing omissions and deficiencies in the HVAC and industrial ventilation system's design that would preclude the TAB team from accomplishing the TAB work requirements of this section. Provide a complete explanation including supporting documentation detailing the design deficiency. State that no deficiencies are evident if that is the case.

E. Pre-Field TAB Engineering Report: Submit report containing the following information:

1. Step-by-step TAB procedure:

a. Strategy: Describe the method of approach to the TAB fieldwork from start to finish. Include in this description a complete methodology for accomplishing each TAB fieldwork session.

b. Procedural steps: Delineate fully the intended procedural steps to be taken by the TAB field team to accomplish the required TAB work of each air distribution system and each water distribution system. Include intended procedural steps for TAB work for subsystems and system components.

2. Pre-field data: Submit AABC or NEBB or SMACNA HVACTAB data report forms with the following pre-field information filled in:

a. Design data obtained from system drawings, specifications, and approved submittals.

b. Notations detailing additional data to be obtained from the contract site by the TAB field team.

c. Designate the actual data to be measured in the TAB fieldwork.

d. Provide a list of the types of instruments, and the measuring range of each, which are anticipated to be used for measuring in the TAB fieldwork. By means of a keying scheme, specify on each TAB data report form submitted, which instruments will be used for measuring each item of TAB data. If the selection of which instrument to used, is to be made in the field, specify from which instruments the choice will be made. The instrument key number shall be placed in the blank space where the measured data would be entered.

3. Prerequisite HVAC and industrial ventilation system work checkout list: A list of inspections and work items which are to be completed by the Contractor, and submitted and approved by the Contracting Officer prior to the TAB team coming to the contract site. At a minimum, a list of the applicable inspections and work items listed in the NEBB TABES, Section III, "Preliminary TAB Procedures" under paragraphs entitled "Air Distribution System Inspection" and "Hydronic Distribution System Inspection." Also, list as prerequisite work items, the deficiencies pointed out by the TAB engineer in his design review report.

F. Advanced Notices: Submit "Advanced Notice for TAB Field Work" in writing.

G. Completed Check Out Lists: Submit "Prerequisite HVAC and Industrial Ventilation Work Checkout List" and certify in writing that each item has been checked and is operating as designed.

H. Field Test Reports: Certified TAB report.

I. Submit certified reports in the specified format including the above data. Submit Certified TAB Report in the following manner:

1. Report format: Submit the complete pre-field data forms approved in the pre-field TAB Engineering Report completed by TAB field team, reviewed and certified by the TAB supervisor. Bind the report with a waterproof front and back cover. Include a table of contents identifying by page number the location of each report. Report forms and report data shall be typewritten. Handwritten report forms or report data are not acceptable.

2. Design review report Temperatures: On each TAB report form reporting TAB work accomplished on HVAC thermal energy transfer equipment, include the indoor and outdoor dry bulb temperature range and indoor and outdoor wet bulb temperature range within which the TAB data was recorded.

3. Instruments: List the types of instruments actually used to measure the tab data. Include in the listing each instrument's unique identification number, calibration date, and calibration expiration date.

4. Certification: Include the typed name of the TAB supervisor and the dated signature of the TAB supervisor.

J. TAB submittal and Work Schedule: Compliance with the following schedule is the Contractor's responsibility.

1. TAB Field Work: At a minimum of 30 calendar days prior to start of field check, accomplish TAB fieldwork; submit certified TAB report; and conduct field check.

1.04 REFERENCES

A. Comply with the recommendations and requirements of the codes and Standards listed hereinafter in addition to detailed requirements of this specification. In the event of conflicting requirements, this specification shall prevail.

ASSOCIATED AIR BALANCE COUNCIL (AABC)

AABC MN-1	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems.

AMERICAN SOCIETY OF HEATING, REFRIGERATING, AND AIR CONDITIONING ENGINEERS, INC. (ASHRAE)

ASHRAE HA	Handbook, HVAC Applications

NATIONAL ENVIRONMENTAL BALANCING BUREAU (NEBB)

NEBB S&V	Procedure Standard for Measurement of Sound and Vibration.
NEBB TABLES	Testing, Adjusting, Balancing of Environmental Systems

SHEET METAL & AIR CONDITONING CONTRACTORS' NATIONAL ASSOCIATION, INC. (SMACNA)

SMACNA	HVAC Air Duct Leakage Test Manual
SMACNA	HVAC Systems Testing, Adjusting & Balancing

1.05 QUALITY ASSURANCE

A. Modifications of References: Accomplish work in accordance with referenced publications of AABC or NEBB except as modified by this section. In the references referred to herein, consider the advisory or recommended provisions to be mandatory, as though the word "shall" had been substituted for the words "should" or "could" or "may" wherever they appear. Interpret reference to the "authority having jurisdiction," the "Administrative Authority," or the "Design Engineer" to mean the "Contracting Officer."

B. TAB Personnel Qualification Requirements:

1. Independent AABC or NEBB Certified TAB Agency: Provide services of a TAB agency certified by AABC or NEBB to perform and manage TAB work on HVAC air and water systems. This TAB agency shall not be affiliated with any company participating in any other phase of this contract, including design, furnishing equipment or construction.

2. TAB Team Personnel: TAB team approved to accomplish work on this contract shall be full-time employees of the TAB agency. No other personnel shall do TAB work on this contract.

    a. TAB Team Supervisor: Supervisor shall be qualified by AABC or NEBB as a TAB supervisor or a TAB engineer.

    b. TAB Team Field Leader: Leader shall have satisfactorily performed full-time supervision of TAB work in the field for not less than 3 years immediately preceding this contract's bid opening date.

    c. TAB Team Field Technician: Technician shall have satisfactorily assisted a TAB team field leader in performance of TAB work in the field for not less than one year immediately preceding this contract's bid opening date.

3. Responsibilities: The Contractor shall be responsible for ensuring compliance with the requirements of this section. The following delineation of specific work responsibilities is specified to facilitate execution of the various work efforts by personnel from separate organizations. This breakdown of specific duties is specified to facilitate adherence to the schedule.

    a. Contractor:

        1) TAB personnel: Ensure that the TAB work is accomplished by a group meeting the requirements specified in paragraph entitled "TAB Personnel Qualification Requirements."

        2) Pre-TAB meeting: Attend the meeting with the TAB Supervisor, and ensure that a representative is present for the sheetmetal contractor, mechanical contractor, electrical contractor, and automatic temperature controls contractor.

        3) HVAC and industrial ventilation system documentation: Furnish one complete set of the following HVAC and industrial ventilation system-related documentation to the TAB Agency:

            a) Contract drawings and specifications

            b) Approved submittal data for equipment

            c) Construction work schedule

d) Up-to-date revisions and change orders for the previously listed items

4) Submittal and work schedules: Ensure that the schedule for submittals and work required by this section are met.

5) Coordination of supporting personnel: Provide the technical personnel, such as factory representatives or HVAC controls installer required by the TAB field team to support the TAB field measurement work. Provide equipment mechanics to operate HVAC and industrial ventilation equipment to enable TAB field team to accomplish the TAB field measurement work. Ensure these support personnel are present at the times required by the TAB team, and cause no delay in the TAB fieldwork. Conversely, ensure that the HVAC controls installer has required support form the TAB team field leader to complete the controls check out.

6) Deficiencies: Ensure that equipment defects, installation deficiencies, and design deficiencies reported by the TAB team field leader are brought to the attention of the Contracting Officer. Ensure that design deficiencies reported by the TAB field leader, or the TAB team supervisor, are transmitted to the Contracting Officer within 7 calendar days from date of receipt from the TAB agency.

7) Prerequisite HVAC and industrial ventilation work: Complete check out and debugging of HVAC and industrial ventilation equipment, ducts, and controls prior to the TAB engineer arriving at the project site to begin the TAB work. Debugging includes searching for and eliminating malfunctioning elements in the HVAC and industrial ventilation system installations, and verifying all adjustable devices are functioning as designed. Prior to the TAB field team's arrival, ensure completion of the applicable inspections and work items listed in the TAB team supervisor's pre-field engineering report. List as prerequisite work items, the deficiencies, pointed out by the TAB team supervisor in the design review report. Ensure that the TAB Agency gets a copy of the prerequisite HVAC and industrial ventilation work checklist specified in the paragraph entitled "Submittals." Do not allow the TAB team to commence TAB fieldwork until all of the following are completed:

a) HVAC system installations are fully complete.

b) HVAC prerequisite checkout work lists have been completed, submitted, and approved.

c) HVAC system filters are clean for TAB fieldwork.

d) Industrial ventilation system installations are fully complete.

e) Control systems installations are fully complete.

8) Advance notice: Furnish to the Contracting Officer with advance written notice for each event, the commencement of the fieldwork and for the commencement of the TAB fieldwork.

b. TAB Agency: Provide the services of a TAB team which complies with the requirements of paragraph entitled “TAB Personnel Qualification Requirements.”

1) TAB Team Supervisor:

a) Overall management: Supervise and manage the overall TAB team work effort, including preliminary and technical TAB procedures and TAB team fieldwork.

b) Pre-TAB meeting: Attend meeting with Contractor. Design review report: Review project specifications and accompanying drawings to verify that the air systems are designed in such a way that the TAB Team Field Leader can accomplish the work in compliance with the requirements of this section. Verify the presence and location of permanently installed test devices needed, including manual volume dampers.

c) Support required: Specify the technical support personnel required from the Contractor rather than the TAB agency; such as factory representatives for temperature controls or for complex equipment. Inform the Contractor in writing of the support personnel needed and when they are needed. Furnish the notice as soon as the need is anticipated, either with the design review report, or the pre-field engineering report or during the TAB fieldwork.

d) Pre-field engineering report: Utilizing the following HVAC and industrial ventilation-related documentation; contract drawings and specifications, approved

submittal data for equipment, up-to-date revisions and change orders; prepare this report.

e) Prerequisite HVAC and industrial ventilation work checklist: Ensure the Contractor gets a copy of this checklist at the same time as the pre-field engineering report is submitted.

f) Technical assistance for TAB work: Provide immediate technical assistant to the TAB field team for the TAB work.

g) Certified TAB report: Certify the TAB report. This certification includes the following work:

(1) Review: Review the TAB field data report. From this field report, prepare the certified TAB report.

(2) Verification: Verify adherence, by the TAB field team, to the TAB plan prescribed by the pre-field engineering report and verify adherence to the procedures specified in this section.

h) Design deficiencies: Submit in writing as soon as possible, to the Contractor and the Contracting Officer, each design deficiency reported by the TAB field team. Provide, in this submittal, a complete explanation including supporting documentation detailing the deficiency.

i) TAB field check: The TAB team supervisor shall attend and supervise TAB field check.

2) TAB Team Field Leader:

a) Field manager: Manage, in the field, the accomplishment of the work specified in PART 3 - EXECUTION.

b) Full time: Be present at the contract site when TAB field work is being performed by the TAB team; ensure day-to-day TAB team work accomplishments are in compliance with this section.

c) Prerequisite HVAC and industrial ventilation work: Do not bring the TAB team to the contract site until a copy of the prerequisite HVAC and Industrial Ventilation Checklist, with all work items certified by the Contractor

to be working as designed, reaches the office of the TAB Agency.

C. Re-TAB Meeting: Meet with the State's TAB representative and the designing engineer of the HVAC and industrial ventilation systems to develop a mutual understanding relative to the details of the TAB work requirements. Ensure that the TAB supervisor is present at this meeting. Requirements to be discussed include required submittals, work schedule, and field quality control.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 TAB PROCEDURES

A. TAB Field Work: Test, adjust, and balance the listed HVAC systems to the state of operation indicated on and specified in the contract design documents. Air systems and water systems shall be proportionately balanced and reported in the certified TAB report. Provide instruments and consumables required to accomplish the TAB work. Conduct TAB work on the listed HVAC and industrial ventilation systems in conformance with the AABC MN-1, or NEBB except as modified by this section:

1. Maintenance and calibration of instruments.

2. Accuracy of measurements.

3. Preliminary procedures: Use the approved pre-field engineering report as instructions and procedures for accomplishing TAB field work. Test ports required for testing by the TAB engineer shall be located in the field by the TAB engineer during TAB fieldwork. It shall be the responsibility of the sheetmetal contractor to provide and install test ports as required by the TAB supervisor.

4. Air distribution systems TAB work: Ventilating systems including fans, ducts, and registers.

B. Data From TAB Field Work: After completion of the TAB work, prepare a pre-final TAB report using the reporting forms approved in the pre-field engineering report. Data required by those approved data report forms shall be furnished by the TAB team. Except as approved otherwise in writing by the Contracting Officer, the TAB work and the TAB report shall be considered incomplete until the TAB work is accomplished to within the accuracy range specified in the paragraph entitled "Workmanship" of this section. Prepare the report neatly and legibly; the pre-final TAB report shall be the final TAB report minus the TAB supervisor's review and certification. Obtain, at the contract site, the TAB supervisor's review and certification of the TAB report. Verbally notify the Contracting Officer's TAB representative that the field check of the certified TAB Report data can commence; give this verbal notice 48 hours in advance of when the field checking shall commence. Do not schedule field check of the certified TAB report until the specified workmanship requirements have been met or written approval of the deviations from the requirements have been received from the Contracting Officer.

C. Quality Assurance For TAB Field Work:

1. Field Check: Test shall be made to demonstrate that capacities and general performance of air and water systems comply with the contract requirements.

    a. Recheck: During field check, the Contractor shall recheck, in the presence of the Contracting Officer, random selections of data (air quantities, air motion, sound level readings) recorded in the certified report.

    b. Areas of Recheck: Points and areas of recheck shall be selected by the Contracting Officer.

    c. Procedures: Measurement and test procedures shall be the same as approved for work for forming basis of the certified report.

    d. Recheck Selections: Selections for recheck will not exceed 25 percent of the total number of reported data entries tabulated in the report.

    e. Re-Tests: If random tests reveal a measured quantity which is out-of-tolerance, the report is subject to disapproval at the Contracting Officers discretion. In the event the report is disapproved, all systems shall be readjusted and tested, new data recorded, new certified reports submitted, and a new field check conducted at no additional cost to the State.

2. Approval Prerequisite: Compliance with the field checking requirements of this section is a prerequisite to the final approval of the certified TAB report submitted.

D. Marking of Settings: Permanently mark the settings of HVAC adjustment devices including valves, splitters, and dampers so that adjustment can be restored if disturbed at any time. The permanent markings shall indicate the settings on the adjustment devices which result in the data reported on the submitted certified TAB report.

E. Marking of Test Ports: The TAB team shall permanently and legibly mark and identify the location points of the duct test ports. If the ducts have exterior insulation, these markings shall be made on the exterior side of the duct insulation. The location of test ports shall be shown on the as-built mechanical drawings with dimensions given where the test port is covered by exterior insulation.

END OF SECTION

DIVISION 16 - ELECTRICAL

SECTION 16010 - GENERAL ELECTRICAL PROVISIONS

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS: The General Instructions to Bidders, the General Conditions of Construction Contracts, and Special Provisions preceding these specifications shall govern this section of the work.

1.02 INTENT OF SPECIFICATIONS AND DRAWINGS:

A. Abbreviated Form: Specifications and Drawings are prepared in abbreviated form and includes incomplete sentences. Omission of words or phrases such as "the Contractor shall", "as shown on the drawings", "a" and "the" are intentional. Omitted words and phrases shall be provided by inference to form complete sentences.

B. Specifications and Drawings: Specifications and drawings complement each other and what is specified, scheduled or mentioned by one shall be binding as if called for by both.

1.03 DEFINITIONS:

A. Provide: "furnish and install, test and deliver to the Hospital in operating and ready to use condition".

B. Wiring: "Provide all raceways, junction boxes, conductors, devices, protection equipment, installation of motor controller furnished (by others) when required, etc., including testing for a complete, operative and ready to use electrical system".

C. Equal: "Material, equipment or system, including all necessary labor, modifications and accessories satisfying the requirements of the contract documents to provide features or have operating characteristics equal or better than that specified".

D. Complete: "Furnish installation that is operative, tested, ready to use and which satisfies the intent of the contract documents, including all necessary accessories and modifications".

E. Contractor: "General Contractor responsible for all work shall assign work to Subcontractors. Except where noted, work of this section shall be assigned to the Electrical Subcontractor".

1.04 SUMMARY:

A. Electrical Work: Provide all articles, materials and services specified herein or on the Drawings or as normally required by accepted industry standard practices, including all labor taxes, fees, insurance, warranties and incidentals required to complete all electrical work.

B. In general, the following work is included:

1. Complete disconnecting, removal, and disposal of existing, electrical equipment, devices, wiring in sub-basement area.

2. Complete disconnecting and removal of existing light fixtures in sub-basement area. Light fixtures shall be returned to the Hospital Facilities Office.

3. Complete relocating of existing electric panel and new wiring to maintain lighting and receptacles in adjacent non-construction areas as indicated.

4. Complete new wiring to maintain fire alarm system connection to fire sprinkler riser and devices in adjacent spaces as indicated.

5. Complete new 120V and low-voltage wiring to maintain cameras as indicated.

6. Testing.

7. As-built drawings.

C. Wiring and connecting of all electrical equipment supplied for installation and use in this contract and not specifically listed as work by others.

D. Furnishing of "Contractor Submittals" and "As Built" Drawings.

E. Coordinate electrical work with Hospital Facilities Management.

F. Coordinate work with other trades to avoid omissions and overlapping of responsibilities.

G. Obtain and pay for all fees, permits, licenses, assessments and inspections required for this work.

1.05 RELATED WORK SPECIFIED IN OTHER SECTIONS:

A. Materials and methods specified under SECTION 16400 - ELECTRICAL WORK.

1.06 QUALITY ASSURANCE:

A. Government and Utility Requirements: Comply with all requirements of the State of Hawaii and City & County of Honolulu.

B. Accompanying Plans: Specifications are accompanied by architectural plans of the building, site plans and diagrammatic electrical plans showing locations of outlets, feeder runs, devices and other electrical equipment. Locations are approximate and before installation, Contractor shall study adjacent construction details and make installation in the most

logical manner. Prior to installation and at the direction of the Architect and/or HHSC Representative, relocate any device within 10'-0 of the location presently shown without added cost to the Hospital.

C. Prior to the Start of Rough-in Work: Verify all dimensions and sizes of equipment at the job site. Circuits and raceway routes are diagrammatic and may be altered in any logical manner. However, all changes from the contract documents shall be subject to review and acceptance of the Architect and/or HHSC Representative and indicated on the "As Built" Drawings.

D. Materials and Equipment: Materials and equipment shall conform to requirements of applicable technical sections, publications specified therein and shall be as shown on the drawings. Materials and equipment shall be new and shall be the product of the manufacturers regularly engaged in the manufacturer of such products. All items shall essentially duplicate materials and equipment that have been in satisfactory use at least two years prior to bid opening and shall be supported by service organization that is reasonably convenient to the site of installation.

E. Asbestos Prohibition: No asbestos containing materials or equipment shall be used under this section. The contractor shall insure that all materials and equipment incorporated in the project are asbestos-free.

F. List of Materials and Equipment: Refer to "Submittals" paragraph for required documentation lists. These lists shall included manufacturer's names and material or equipment identification such as styles, types, or catalog numbers to permit ready and complete identification. Catalog cuts or brochures shall be included for electrical apparatus.

1. Where items are specified by manufacturer's name or catalog number, substitutions require written permission by the HHSC Representative prior to bidding. Brand names, manufacturer's names and catalog numbers indicate standard of design and quality required. List of substitute materials together with qualifying data shall be submitted for review per Submittal requirements of these specifications.

2. Items requiring shop drawings shall be included in the list of materials and equipment, identified by manufacturer's name and type, and accompanied by complete descriptive data, electrical and physical characteristics of the equipment and manufacturer's bulletins.

3. Burden of proof of equality of proposed substitutions will be the responsibility of the Contractor. Submittals shall be sufficiently detailed to permit evaluation of the proposed items. Inadequacy of submittal will be sufficient cause to reject a proposed substitution.

1.07 DEPARTURES:

A. Departures resulting from substitution of materials or system shall be accompanied by appropriate changes in all affected work of every trade. Such changes shall be at no increase in the contract amount and shall be the responsibility of the Subcontractor or supplier responsible for the departures. Changes proposed by the Contractor shall be based on a system approach and shall be allowed if implemented without decrease in quality in performance or operations, increase in utility costs, or adverse affect on the available physical space to install the equipment. Such departures shall be submitted and noted in shop drawings for review and acceptance by the Architect and/or HHSC Representative. Departures initiated by other trades, requiring changes in the electrical system as well as other systems, shall be accompanied by appropriate changes to all affected work of every trade, at no increase in contract amount, by the trade responsible for the departure.

B. Responsibilities: The General Contractor shall be responsible to coordinate, approve, and select systems that do not impose unaccounted for impact on the electrical work. It shall be understood that after the award of the contract, all departures having electrical impact, unless otherwise noted, have been reviewed and approved by the General Contractor. Therefore all appropriate changes to the electrical system required to accommodate the departures shall be at no additional cost to the Hospital.

1.08 SUBMITTALS:

A. Submit in accordance with SECTION 01330 - SUBMITTAL PROCEDURES.

B. Shop Drawings: Submit drawings for equipment not completely identifiable by information contained in the list of materials and equipment.

C. Certificate of Compliance: Where required by section specifying the equipment, the Contractor shall submit six copies of certificates of compliance in accordance with the requirements of the General Provisions. The certificates shall include but not be limited to factory test reports.

D. Acceptance Requirements: Acceptance for material and equipment will be based on manufacturer's published data. Where materials or equipment are specified to be constructed and tested, or both, in accordance with the standards of the National Electrical Manufacturers Association (NEMA) or the American National Standard Institute (ANSI) the Contractor shall submit proof that the items furnished under this section of the specifications conform to such requirements. A certification or published catalog specification data statement to the effect that the time is in accordance with the referenced NEMA standard by a company listed as a member company of NEMA for the section whose standards

cover the item under construction, will be acceptable as sufficient evidence that the item conforms to the requirements of the National Electrical Manufacturers Association. A manufacturer's statement indicating complete compliance of each item with the applicable NEMA, ANSI or other commercial standard specified shall be submitted and will be acceptable proof of compliance. Conformance with the agency requirements does not relieve the item from complying with any other requirements of the specifications.

E. Equipment Guarantees: Installation shall be complete in every detail and ready for use. Any item supplied by the Contractor developing defects within one (1) year after final acceptance by the Architect and/or HHSC Representative shall be replaced by materials, apparatus or parts including installation labor to make such defective portion of complete system conform to the true intent and meaning of the drawings and specifications, without additional cost to the Hospital. The Contractor shall guarantee all equipment specified from the date such equipment is accepted by the Architect and/or HHSC Representative, against defects in materials, design, performance and workmanship. Guarantees shall be supported by manufacturer's written warranties and shall be signed by an official of the manufacturer's organization. Replacement parts shall be delivered or repairs shall be made promptly upon receipt of notice of failure under normal and proper use and maintenance. All costs of replacement and repair shall be borne by the Contractor provided that a report substantiating such defect or failure to conform to specifications is promptly given to the Contractor.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. All materials shall be new, except as specifically noted, and shall bear the label of Underwriters' Laboratories, Inc., wherever standards have been established and label service is normally and regularly furnished by the agency.

PART 3 - EXECUTION

3.01 MATERIALS AND EQUIPMENT FURNISHED BY THE CONTRACTOR:

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

3.02 PROTECTION DURING STORAGE:

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

3.03 PROTECTION OF WORK IN PROGRESS:

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

3.04 PROGRESS OF WORK AND COORDINATION:

A. The Contractor shall prepare a schedule giving sequence of electrical work. The electrical work shall be coordinated with the work of other Contractors and other trades. The schedule shall be submitted prior to beginning installation and shall be subject to review and acceptance by the Architect and/or HHSC Representative.

3.05 RULES:

A. The entire electrical installation shall conform to the applicable rules and regulations and requirements of the National Electrical Code and other City and County standards and publications specified in the technical sections.

3.06 COORDINATION:

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

3.07 WORKMANSHIP:

A. All materials and equipment shall be installed in accordance with printed recommendations of the manufacturer, and shall conform to the requirements of the contract drawings.

3.08 TESTS:

A. Field Tests: After the installation is completed, and at such time the Architect and/or HHSC Representative may direct, the Contractor shall conduct field tests for acceptance by the Architect and/or HHSC Representative. When the tests are specified to be performed under

supervision of the equipment manufacturer, the Contractor shall cooperate with the Architect and/or HHSC Representative during tests and shall place at his disposal all assistance, materials and services required to perform such tests. The tests shall be performed in the presence of the Architect and/or HHSC Representative. The Contractor shall furnish all necessary electric power instruments and personnel required for the tests.

END OF SECTION

SECTION 16400 - ELECTRICAL WORK

PART 1 - GENERAL

1.01 SUMMARY

A. Furnish all labor and materials required to complete all electrical work indicated on the drawings and/or as specified.

B. In general, the following work is included:

1. Disconnecting and removal of existing lighting, wiring devices, and wiring as shown on drawings.

2. Complete lighting system, including lighting fixtures, outlets, wiring, switches, and occupancy sensors in sub-basement area.

3. Complete power system, including new transformer, distribution panel, electrical panels and wiring for kitchen and offices in sub-basement area.

4. Complete fire alarm system for sub-basement area, and connection to Hospital's fire alarm system.

5. Complete power wiring and connection to new ventilation and air conditioning equipment in sub-basement area.

6. Complete telecom system for offices in sub-basement, including telecom equipment, raceways, outlets and cables for telephone and data systems.

7. Testing.

8. As-built drawings.

C. The term "wiring" shall include raceway, conductors, equipment, and wiring.

D. The term "provide" shall mean "furnish and install".

E. Test complete installation and correct all defects and malfunctions of material and workmanship at no additional charge to HHSC.

F. As-built drawings.

1.02 RULES AND PERMITS

A. The entire installation to be made in strict accordance with applicable provisions of 2020 edition of the National Electrical Code, Local Ordinances, and rules and regulations of the City and County of Honolulu and State of Hawaii.

B. Contractor shall obtain and pay for electrical permit as required by local rules and regulations. He shall arrange for periodic inspection by local authorities as work progresses so that certificates of completion and inspection may be turned over to the Architect or HHSC Representative as stipulated in GENERAL CONDITIONS.

1.03 GUARANTEE

A. All work and material executed under this Section shall be guaranteed to be free from defects of materials and workmanship for one (1) year from date of final acceptance of a project as a whole. All work of repair and replacement required, including other work damaged by this work's defects shall be performed without cost to HHSC.

1.04 DRAWINGS

A. Specifications are accompanied by drawings of facility and diagrammatic electrical plans showing locations of outlets, junction boxes, lighting fixtures, wiring devices, raceways and other electrical equipment. Locations are approximate. Before installing, study adjacent construction details and make installation in most logical manner. Any device or equipment may be relocated within 10'-0" before installation at direction of the Architect or HHSC Representative without additional charge to HHSC.

B. Before installing, verify all dimensions and sizes of equipment at jobsite. Circuit and conduit routing is typical and may be altered in any logical manner; however, all changes shall be approved by the Architect or HHSC Representative and shown on "field posted as-built" drawings.

C. Submit for approval six (6) sets of catalog cuts of following equipment and resubmit until approval is received before placing order:

1. Panelboards.

2. Light fixtures.

3. Electrical devices.

4. Lighting controls.

5. Fire alarm equipment and devices.

6. Telecom equipment and devices.

7. Junction and outlet boxes.

8. Raceways.

9. Wires and cables.

10. Any built-to-order equipment.

D. Drawings and catalog cuts for substitute materials shall clearly specify compliance with and/or deviation from specified material. Approval of drawings and catalog cuts shall not release Contractor from complying with the intent of specifications and drawings. Any deviations from approved drawings shall have prior approval by the Architect and/or HHSC Representative.

PART 2 - PRODUCTS

2.01 MATERIALS

A. All materials shall be new and of the best quality available in their respective kinds, free from all defects and shall conform to standards of Underwriters' Laboratories, Inc., NEMA, ANSI, ASTM, IEEE and EEI. Materials and equipment listed by Underwriters' Laboratories shall bear "UL" label of approval. Brand names, manufacturer's names, and catalog numbers indicate standards of design and quality required. Substitute materials other than those listed in each paragraph will not be solicited unless indicated with "or approved equal".

Example:

Item	Manufacturer and Catalog No. Specified	Substitute Manufacturer and Catalog Number
Cable	Joe Doe - No. 3200	King - No. 2200

Qualifying data shall include cuts, drawings, and specifications to show equality with materials specified herein and in drawings.

B. Raceways:

1. EMT: Galvanized and zinc-coated, 3/4" minimum diameter, except as noted. (Use concealed and in interior exposed locations above 8 feet)

2. Rigid Steel Conduit: Galvanized, 3/4” minimum diameter, except as noted. (Use in interior exposed locations below 8 feet and exterior locations.)

3. Flexible Conduits: Flexible steel, zinc-coated, 1/2 inch minimum, and used with factory approved fittings. In wet locations, use watertight type jacketed with polyethylene.

D. Junction Boxes: Junction boxes, unless otherwise specified, shall be NEMA 1 and NEMA 4X. NEMA 1 junction boxes shall be fabricated from galvanized steel. Prime paint and enamel finish according to NEMA specifications. NEMA 4X junction boxes shall be stainless steel and water-tight. Manufacture and install according to NEC Article 314.

E. Wires and Cables: Wires and cables shall meet the applicable requirements of ASTM and UL for the type of insulation, jacket, and conductor specified or indicated. Wires and cables manufactured more than 12 months prior to date of delivery to the site shall not be used.

1. Conductors: Conductors No. 10 AWG and smaller shall be solid or stranded, and those No. 8 AWG and larger shall be stranded. Unless indicated otherwise, conductor sizes shown are based on copper. All conductors shall be copper.

2. Minimum Conductor Size: Minimum size shall be No. 12 AWG.

3. Color Coding: All branch circuit conductors shall be color-coded. Color shall be green for grounding conductors, and white for neutrals, except where neutrals of more than one system are installed in same raceway or box, the other neutral shall be white with a colored (not green) stripe. The color of the ungrounded conductors in different voltage systems shall match existing color-coding. If not available, use the following:

   120/208V, 3-phase:

Black	Phase A
Red	Phase B
Blue	Phase C
White	Neutral
Green	Ground

4. Insulation: Unless specified or indicated otherwise, or required to be otherwise by NFPA 70, all power and lighting wires shall be 600-volt, Type THWN or XHHW, except that grounding wire may be Type TW.

5. Equipment Grounding Conductors: ASTM B 1, solid bare copper wire for sizes No. 8 AWG and smaller; ASTM B 8, Class B, stranded bare copper wire for sizes No. 6 AWG and larger.

F. Splices and Termination Components:

1. UL 486A and UL 486B, as applicable for wire connectors, and UL 510 for insulating tapes. Connectors for wires No. 10 AWG and smaller shall be insulated pressure-type in accordance with UL 486A or UL 486C (twist-on splicing connector). Provide solderless terminal lugs on stranded conductors.

G. Wiring Devices:

1. Duplex Receptacle, Heavy Duty, Industrial Grade: White phenolic molded body, duplex NEMA 5-20R, 20A, 125V, 2-pole, 3-wire, grounded, back and side wiring, U-shaped grounding slot, parallel double wipe phosphor bronze spring tensioned contacts, heavy-

duty corrosion resistant wrap-around body bridge strap with grounding screws and automatic grounding clip, back wiring holes for feed through wiring and rated engraved on body. Install in outlet box with appropriate device or cover plate. Manufacture and install according to NEC Articles No. 210 and 406. Hubbell No. 5362-W.

2. Duplex Receptacle, GFI Type: White phenolic molded body, NEMA 5-20R, 20A, 125V, 2-pole, 3-wire, grounded, side wired, U-shaped grounding slot, parallel double wipe phosphor bronze spring tensioned contacts, automatic grounding clip, solid state ground fault sensing and test circuit designed to trip open when ground current exceeds 5.0 milliamperes, resettable, and with rating engraved on body. Install in outlet box with appropriate device or cover plate. Manufacture and install according to NEC Articles No. 210 and 406. Hubbell No. GF-5362-W.

3. Weatherproof Receptacle: Provide GFI type receptacle in flush cast metal box with gasketed, extra-duty rated, cast metal weatherproof cover plate. Cover plates shall be listed for “wet locations” while in use. Receptacle shall be weather resistant, white phenolic molded body, NEMA 5-20R, 20A, 125V, 2-pole, 3-wire, grounded, side wired, U-shaped grounding slot, parallel double wipe phosphor bronze spring tensioned contacts, automatic grounding clip, solid state ground fault sensing and test circuit designed to trip open when ground current exceeds 5.0 milliamperes, resettable, and with rating engraved on body. Manufacture and install according to NEC Article Nos. 210 and 406. Hubbell No. GFR-5362-SGW. Arrow Hart, Hubbell, Bryant or approved equal.

4. Light Switch, Heavy Duty, Industrial Grade: Non-mercury, number of poles required, quiet operating, rated for 20A, 120-277 volts, one piece heavy-duty white toggle handle which makes continuous contact with spring contact arms, two piece heavy-duty body bolted to bridge strap, large binding head screws for terminating conductors silver cadmium oxide contacts, high conductivity and fatigue resistant contact arms, spring loaded cam mechanism, back and side wiring, with ground terminal, heavy-duty bridge strap. U.L. labeled, and rated for 10,000 cycles of operation. Manufacture and install according to NEC Articles No. 110 and 380. Device shall be installed in outlet box complete with device plate. Connection shall be made on side screws only. Hubbell No. 1121-W series.

5. Equal devices by Arrow Hart, Bryant, Leviton or Pass & Seymour are approved.

H. Lighting Fixtures:

1. UL1598, NEMA C82.77, and UL 8750. Provide luminaires as indicated in luminaire schedule or details on project plans. Provide luminaires complete with light sources of quantity, type, and wattage indicated. Provide all luminaires of the same type by the same manufacturer. Luminaires must be specifically designed for use with the driver or ballast and light source provided.

2. LED Luminaires: Provide luminaires complete with power supplies (drivers) and light sources. Provide information including lumen output and design life for LED luminaires. LED luminaires must also meet the following minimum requirements.

3. Luminaires must have a minimum 5 year manufacturer's warranty.

4. Luminaires must have a minimum L70 lumen maintenance value of 50,000 hours as calculated by IES TM-21, with data obtained per IES LM-80 requirements.

5. Luminaire drive current value must be identical to that provided by test data for luminaire in question.

6. Luminaires must be tested to IES LM-79 and IES LM-80 standards, with the results provided as required.

I. Drivers:

1. LED Drivers: NEMA SSL 1, UL 8750. LED drivers must be electronic, UL Class 1, constant-current type and comply with the following requirements:

2. Output power (watts) and luminous flux (lumens) as shown in luminaire schedule for each luminaire type.

3. Power Factor (PF) greater than or equal to 0.9 over the full dimming range when provided.

4. Current draw Total Harmonic Distortion (THD) of less than 20 percent.

5. Class A sound rating.

6. Operable at input voltage of 120-277 volts at 60 hertz.

7. Minimum 5 year manufacturer's warranty.

8. RoHS compliant.

9. Integral thermal protection that reduces or eliminates the output power if case temperature exceeds a value detrimental to the driver.

10. UL listed for dry or damp locations typical of interior installations.

11. Non-dimmable, or fully-dimmable using 0-10V control as indicated in luminaire schedule.

J. Circuit Breakers: Individual breakers shall be molded plastic case, with toggle operated mechanism thermal-magnetic overload trips. Interchangeable trip shall be provided when available. Toggle positions "ON", "TRIPPED", and "OFF", engraved on body or toggle. When specified for use in existing panelboard, circuit breaker shall be compatible with existing Manufacturer.

K. Hardware, Support, Backing, Etc.: Provide all hardware, supports, backing, and other accessories necessary to install electrical equipment. Wood materials shall be termite treated, iron or steel materials shall be galvanized for corrosion protection, and non-ferrous materials shall be brass or bronze. All wood screws shall be brass or galvanized steel.

L. Equipment Disconnect and Fused Switches: Heavy-duty, fusible or non-fusible safety switch. Horsepower rated when used as motor disconnect. Contacts shall be lever operated, spring loaded and enclosed in NEMA 1 enclosures for interior locations and NEMA 3R enclosures for exterior locations. When for use with fuses of current limiting type, clips shall be rejection type. Manufacture and install according to NEC Articles 240, 380, and 430. Provide 3 spare fuses of each ampere rating. Siemens, Schneider, General Electric and Eaton equals.

M. Panelboards:

1. General: Furnish and install circuit breaker lighting and appliance panelboards where shown on the drawings and as indicated in the panelboards schedule.
Panelboards shall comply with the following industry standard:

a. NEMA Standard PB-1

b. UL Standards; Cabinets and Boxes-UL 50; Panelboards-UL 67

c. National Electrical Code

Panelboards shall be labeled as suitable for use as service equipment in accordance with Article 384 of the National Electrical Code.

2. Box: The panel box shall be fabricated from galvanized or galvannealed steel. Box shall have adjustment screws to provide easy alignment. Removable end walls to be blank. Panelboard box is to have separate UL label and minimum wire bending and gutter requirements to meet the NEC and UL standards. Wiring gutters shall be completely free of any part of trim clamp to prevent damaging wire insulation.

3. Interior: All interiors shall be completely factory assembled. The design of the interior shall permit replacement of circuit breakers without disturbing adjacent units and without machine drilling or tapping. All circuit breaker connections shall be in a hole tapped by the manufacturer. Main bus shall be tin finished 55 percent conductivity aluminum. Branch bus shall be tin finished copper only. Sizing of conductor shall be in accordance with UL 67. Bus bars shall be supported by a VO rated, UL recognized, Polymeric material. Bus sequence shall start at the top left phase bus of the interior for both top and bottom fed panels. Panelboards shall be rated 200A maximum. Interiors shall be designed to permit installation of feed-through lugs without increasing the enclosure size. Main and sub-feed breakers shall be bus connected, not cabled. Interior shall be convertible from main lug to main breaker with the addition of an appropriate field-installable kit. Interior shall be changeable from top to bottom feed and vice-versa, while maintaining readability of dead-front labeling.

   Dead-front shall be provided with a flange for easy attachment of trim. Incoming cable lugs shall be grouped at one end to separate them from the load side cables. Main lugs shall be lay-in construction to facilitate connections. Neutral bussing shall have a lug for each outgoing branch requiring a neutral connection. For easy wiring and shortest cable run possible, load size neutral connection lugs to be split with each side taking 50 percent of load neutral connections. The interior shall be provided with wing nuts for securing to box without tools.

4. Trim: The panelboard trim shall be surface or flush as indicated on the drawings. It shall be fabricated from cold-rolled steel, painted with an ANSI-61 light gray finish and equipped with concealed hinges, flush lock and a holder for circuit directory card. Trim shall have 2 separate supports designed to engage the box flange to stabilize and secure the trim during installation. Trim screws to be located behind the lockable door for tamper resistance.

5. Description: The panelboards shall be for use with the following systems or as indicated on each panelboard schedule:
   208/120 volts, 3-phase, 4-wire
   480/277 volts, 3-phase, 4-wire

The interior panelboard installed enclosures shall be NEMA Type 1 construction for top or bottom cable entrance and suitable for surface mounting unless otherwise noted on panelboard schedules. Exterior installed panelboard enclosures shall be NEMA 4X stainless steel.

Short circuit rating shall be 10,000 amperes symmetrical based on the smallest rating on any circuit breaker installed in the panelboard.

Provide main lug only or main circuit breaker panelboards as shown on panelboard schedules. Also provide branch and sub-feed circuit breakers of the quantity, trip rating and number of poles as shown on schedules.

Molded case circuit breakers shall be thermal-magnetic, quick-make, quick-break, trip free. Multi-pole breakers shall be common trip. If current limiting circuit breaker mains are indicated on schedules, provide breakers with inverse time delay, instantaneous circuit protection and limit let-through I^2t to a value less than I^2t of one-half cycle wave of the symmetrical prospective current without any fusible elements. All breakers shall be equipped with anti-turn solderless, pressure type connectors. All provisions shall be located at the bottom of the panelboard and be fully bussed complete with all necessary mounting hardware less the breaker.

Provide sub-feed lugs, feed through lugs, handle blocking devices, padlocking devices, shunt trips and ground bus bars as shown on schedules.

6. Manufacturer: Siemens, Schneider, General Electric and Eaton equals.

N. Wall Occupancy Sensor Switches (Line Voltage): 800 watts at 120VAC, 1200 watts at 277 VAC, 60 Hertz. Single pole; UL listed, five year warranty; adjustable time delays (5,15 or 30 minutes); Coverage: Passive Infrared; 20' x 15'; Ultrasonic: 15' x 15'; Sensitivity Adjustment: Passive Infrared (high/low); Ultrasonic (fully variable). The wall switch shall utilize a combination of passive infrared and ultrasonic technologies to turn room lights on and off based on occupancy. Choice of automatic-on or manual-on operation with automatic-off. Device and device plate color shall be white. Wattstopper No. DW-100-W. Hubbell Building Automation No. LHMTS1-W, Lynxspring No. L12-01-009-W or pre-approved equal.

O. Ceiling Occupancy Sensor (Line Voltage): 800 watts at 120 VAC, 1200 watts at 277 VAC, 60 Hertz. Single pole; UL listed, five year warranty; adjustable time delays (5,15 or 30 minutes); 1000 square feet coverage, Sensitivity Adjustment: Passive Infrared (auto/reduced); Ultrasonic (fully variable). The sensor shall utilize a combination of passive infrared and

ultrasonic technologies to turn room lights on and off based on occupancy. Sensor shall be installed in-line with light switch. Device color shall be white. Wattstopper No. DT-355. Hubbell Building Automation No. CU15002000P (voltage), Sensorswitch No. CMR-PDT-9 approved equals.

P. Ceiling Occupancy Sensor (Low Voltage): Low-voltage, class 2 device; UL listed; five-year warranty; adjustable time delays (5,15 or 30 minutes); 1000 square feet coverage, Sensitivity Adjustment: Passive Infrared (auto/reduced); Ultrasonic (fully variable). The sensor shall utilize a combination of passive infrared and ultrasonic technologies to turn room lights on and off based on occupancy. Sensor shall utilize a low-voltage power pack. Device color shall be white. Wattstopper No. DT-305 with BZ-100 dual-voltage (120/277V) power pack. Hubbell Building Automation No. OMNI-DT-1000 with UVPP power pack, Sensorswitch No. CM-PDT-1 with PP20 dual voltage (120/277V) power pack approved equals.

Q. Wall/Ceiling Occupancy Sensor (Low Voltage): Low-voltage, class 2 device; UL listed; five-year warranty; adjustable time delays (5,15 or 30 minutes); 1000 square feet coverage, Sensitivity Adjustment: Passive Infrared (auto/reduced); Ultrasonic (fully variable). The sensor shall utilize a combination of passive infrared and ultrasonic technologies to turn room lights on and off based on occupancy. Sensor shall utilize a low-voltage power pack. Device color shall be white. Wattstopper No. DT-200 with BZ-100 dual-voltage (120/277V) power pack. Hubbell Building Automation No. LO-dT with UVPP power pack, Sensorswitch No. WV-PDT-106 with PP20 dual voltage (120/277V) power pack approved equals.

R. Wall/Ceiling Occupancy Sensor (Damp/Wet location) (Low Voltage): Low-voltage, class 2 device; UL listed; five-year warranty; adjustable time delays (5,15 or 30 minutes); 1000 square feet coverage, Sensitivity Adjustment: Passive Infrared (auto/reduced). The sensor shall utilize a passive infrared to turn room lights on and off based on occupancy. Sensor shall utilize a low-voltage power pack. Device color shall be white. Wattstopper No. CB-100 with BZ-100 dual-voltage (120/277V) power pack. Hubbell Building Automation No. LO-IRWVRP-LWO with MPO-series power pack, Sensorswitch No. WV-PDT-16-LT with PP20 dual voltage (120/277V) power pack approved equals.

S. Wall/Ceiling Occupancy Sensor (Light Management System): Low-voltage, class 2 device; UL listed, five-year warranty; adjustable time delay (1 to 30 minutes); 1000 square feet coverage (180° coverage), Sensitivity Adjustment: Passive Infrared (auto/reduced); Ultrasonic (fully variable). The sensor shall utilize a combination of passive infrared and ultrasonic technologies to turn room lights on and off based on occupancy. Sensor shall be compatible with lighting controller. Device color shall be white. Wattstopper No. LMDX-100. Hubbell Building Automation, Lutron or pre-approved equal.

T. Ceiling Occupancy Sensor (Light Management System): Low-voltage, class 2 device; UL listed, five-year warranty; adjustable time delay (1 to 30 minutes); 1000 square feet coverage (180° coverage), Sensitivity Adjustment: Passive Infrared (auto/reduced); Ultrasonic (fully variable). The sensor shall utilize a combination of passive infrared and ultrasonic technologies to turn room lights on and off based on occupancy. Sensor shall be compatible with lighting controller.
Device color shall be white. Wattstopper No. LMDC-100. Hubbell Building Automation, Lutron or pre-approved equal.

U. Wall Dimmer Switch (Light Management System): Low-voltage, class 2 device; UL listed, five-year warranty. Switch shall be compatible with lighting controller. When activated by a user, the wall switch shall hold lighting at the user-designated level until the control module is returned to automatic control. The switch shall provide a push button that enables the resumption of automatic control. The switch shall have dimmer controls for raising and lowering the lighting level. Device and device plate color shall be white. Wattstopper No. LMDM-101-W. Hubbell Building Automation No., Lutron or pre-approved equal.

V. Lighting Controller (Light Management System):

1. The lighting controller shall provide dimming control of interior lights. It shall be compatible with 0 to 10 VDC dimming ballasts.

2. The lighting control system shall be an open loop system. It shall consist of a control module with built-in power pack, an external daylight sensor, occupancy sensors and wall switches.

3. Wiring for daylight sensors shall be low voltage.

4. The lighting controller shall be capable of dimming lighting for up to three control channels utilizing a single photocell.

5. In order to ensure that lighting levels in each zone are balanced, the control module shall provide separately adjustable settings for each control channel. Each channel shall have its own adjustable dimming response, dimming fade rate, ramp rate, minimum output, maximum output, setpoint, and cutoff time.

6. The controller power input shall be universal voltage.

7. The control module shall respond to a control interlock signal from an occupancy sensor, time clock, or energy management system. When a control interlock signal is received, the module shall dim lighting in all channels of control to their minimum output.

8. The lighting controller shall be compatible with the low-voltage wall switch.

9. When activated by a user, the wall switch shall hold lighting at the user-designated level until the control module is returned to automatic control. The switch shall provide a push button that enables the resumption of automatic control. The switch shall have dimmer controls for raising and lowering the lighting level.

10. To ensure quality and reliability, control module, photocell, power pack, and wall switch shall be manufactured by an ISO 9001 certified manufacturing facility.

11. The lighting controller shall be UL listed.

12. The lighting controller, daylight sensor, occupancy sensors and wall switch shall each have a standard five-year warranty.

13. The lighting controller shall be Wattstopper No. LMRC-11X series. Hubbell Building Automation No., Lutron or pre-approved equal.

W. High Efficiency Transformers: General Purpose Transformers: Indoor or outdoor (as indicated on drawings), ventilated, high efficiency type (to meet the requirements of IECC 2018) dry-type conforming to NEMA Standards ST1. KVA rating, primary and secondary voltages, number of phases, and type of connections shall be as specified. All transformers shall be for operation on 60 hertz power supply. Insulation shall be Class H, with 150ºC temperature rise, and with ability to carry 115% of rated load for 60 minutes. Provide with 4 - 2-1/2% below normal, full capacity taps NEMA taps in primary winding. Transformer shall be quiet type with average sound levels not exceeding following:

Transformer KVA	Average Sound Level-Decibels
0 - 9	40
10 - 50	45
51 - 150	50
151 - 300	55
301 - 500	60
501 - 700	62
701 - 1000	64

Standard tests required by NEMA Standards shall be performed prior to shipment. In addition, audible sound level tests shall be made in accordance with NEMA Standard ST1. Test results shall be submitted with shop drawings.

1. Non-linear (K-factor) Transformers:
   a. Transformers shall be designed to withstand the overheating effects caused by harmonics resulting from non-linear (non-sinusoidal) loads such as office equipment using solid-state switching power supplies (i.e. computers, laser printers and copiers).

b. Copper coils' neutrals shall carry at least 200% of normal phase current.

c. Minimum efficiency designed to supply circuits with a harmonic profile equal to or less than a K factor of 13 without exceeding specified temperature rise. Transformers with K factor of 13 shall be provided, if K factor is not shown on contract drawings. Table below applies to K-13 transformers only.

Harmonic		K-13 (%)
Fundamental		100
3rd		70
5th		42
7th		5
9th		3
11th		3
13th		1
15th		0.7
17th		0.6

Manufacturer shall be Siemens, Eaton, Schneider and General Electric.

X. Telecom Outlet: Wall, 5 inch square x 2-7/8 inches outlet box, raised ring, and straps. See details on plans for device plate requirements.

PART 3 - EXECUTION

3.01 CONSTRUCTION METHODS

A. Comply with local ordinances and regulations of the City and County of Honolulu. Workmanship subject to approval of the Architect and/or HHSC Representative who shall be afforded every opportunity to determine skill and competency. Concealed work reopened at random during formal inspection by the Architect and/or HHSC Representative without additional charge to HHSC.

B. Construction shall conform to construction practices as recommended by American Electricians Handbook by Croft (latest edition), National Electrical Code, National Electrical Safety Code, and applicable instructions of manufactures of equipment and materials for this project.

3.02 JUNCTION BOXES

A. Provide outlet boxes where called for in drawings or required by Code.

3.03 RACEWAYS

A. All conduits shall be EMT and rigid steel raceway. Provide No. 14 galvanized steel pull wire or nylon cord in all empty conduits. EMT for interior and RSC for exterior.

B. Cut raceways square and ream inner edges. Butt together evenly in couplings.

C. Make bends and offsets with hickey or conduit bending machine; do not use vise or pipe tee. Make bends so that interior cross-sectional area will not be reduced. Radius of curve of inner edge of field bend not less than 10 times internal diameter of raceway. Use of running threads not permitted. Where raceways cannot be joined by standard threaded couplings, use approved watertight raceway unions.

D. Cap raceways during construction with plastic or metal-capped bushings to prevent entrance of dirt or moisture. Swab all raceways out and dry before wires or cables are pulled in.

E. Mount raceways free from other piping, valves or mechanical equipment.

F. Fish wires, cords, strings, chains, or the like shall not be placed or inserted in the conduit system during installation.

G. Install insulating bushings and two (2) locknuts on each end of every run of conduit at enclosures and boxes. Provide grounding bushings as required to grounding receptacles and connect conduits to service ground, per NEC Article 250.

H. Project adequate number of conduit threads through box for bushings.

I. Run exposed conduit or raceway parallel with, or at right angles to, structural or architectural elements.

K. Rigid steel raceway shall be used for all concrete wall and floor/ceiling penetrations.

3.04 CONDUIT FILL IN RACEWAY

A. All conduits shall be EMT and rigid steel raceway. Provide No. 14 galvanized steel pull wire or nylon cord in all empty conduits. EMT for interior and RSC for exterior.

3.05 Pull Boxes: Construct of not less than the minimum size required by NFPA 70 or code-gage aluminum or galvanized sheet steel, except where cast metal boxes are required in locations specified above. Furnish boxes with screw-fastened covers. Where several feeders pass through a common pull box, tag the feeders to indicate clearly the electrical characteristics, circuit number, and panel designation.

3.06 WIRING

A. Conductor Identification: Provide conductor identification within each enclosure where a tap, splice, or termination is made. For Conductors No. 6 and smaller, color-coding shall be by factory-applied color-impregnated insulation.

B. Splices: Make splices in accessible locations. Make splices in Conductors No. 10 AWG and smaller with an insulated pressure type connector.

3.07 WIRING PULLING

A. Mechanical means for pulling shall be torque-limiting type and not used for No. 2 AWG and smaller wires. Pulling tension shall not exceed wire manufacturer's recommendations. Where necessary, chemically neutral lubricant may be used for drawing wires through conduit. Other means of lubricating allowed with written approval of the Contracting Officer.

3.08 GROUNDING

A. Grounding and Bonding: In accordance with NFPA 70. Ground all exposed non-current carrying metallic parts of electrical equipment, metallic raceway systems, grounding conductor in nonmetallic raceways, and neutral conductor of wiring systems.

B. Grounding Conductor: Provide an insulated, green colored equipment-grounding conductor in all branch circuits. This conductor shall be separate from the electrical system neutral conductor.

3.09 CLEANING AND REPAIRING

A. During the process of work, all rubbish, waste lumber, displaced materials, etc. shall be removed as soon as possible and upon completion of work, Contractor shall remove from State's property and from all public and private property, at his own expense, all temporary structures, rubbish, and waste material resulting from his operations.

B. The Contractor shall restore all removed or damaged pavement, gutters, curbs, sidewalks, signposts, trees, and landscape damaged by his operations to their original condition or better.

3.10 FINISHING

A. Patch, repair, and restore all structural and architectural elements cut or drilled for installation of electrical system. Drilling, cutting, patching, repairing, and restoring shall be subject to approval of the Architect or HHSC Representative.

B. Attach electrical equipment to wood by wood screws, and attach to concrete by embedded or expansion inserts and bolts. Use powder-driven charge with approval only. Close unused knockouts on boxes or enclosures with metal cap.

C. Wipe clean all new exposed raceways and enclosures with rag and solvent. Prime paint and finish all new exposed raceways and enclosures to match adjoining wall finish. Factory finished enclosures shall not be painted unless called for in drawings.

D. Complete panel directories with typewriter.

E. Nameplates: Laminated plastic, black/white, engraved with 3/16 inch high commercial letters to expose white. Screw mounted. Impression type adhesive tapes not acceptable.

3.11 FIBER OPTIC CABLE TESTING

A. General:

1. All terminations shall be tested end-to-end by the Contractor using commonly accepted industry procedures and equipment. The Contractor shall conduct and provide all test equipment required.

2. Cable segments and links will be tested from both ends of the cable for each of the construction phases. (Verify that cable labeling matches at both ends).

3. The system will not be considered certified until the test operator has acknowledged that the performance of the physical layer of the system has been fully tested and is operational at the completion of the installation phase.

4. If the State or its representative discovers any errors, the Contractor, at his own expense, shall go over all similar portions of the entire job taking the necessary or directed remedial action.

5. The Contractor will be required to perform a pre-installation continuity test of all fiber optic cables on the factory reels. Cables containing any damaged strands shall not be installed. Contractor must also submit to the DOE representative the reflective index setting at 850 nanometers and 1300 nanometers for multimode and single mode for composite fiber cable according to the manufacturer's specifications.

6. The Contractor will test each and every installed fiber strand utilizing an Optical Time Domain Reflectometer (OTDR) for both distance and attenuation. The Contractor shall submit the test results no later than fifteen (15) working days after the cable test to the DOE representative with at least the following information:

a. Date of test

b. Name of test personnel

c. Fiber cable identification

d. Test wavelength

e. Direction of test

f. Overall distance

g. Attenuation in dB or dBm

7. The Contractor shall perform a bi-directional test of every fiber link for overall attenuation from end-to-end. The Contractor shall perform test utilitizing a stabilized light source and measuring the receive level with a power meter. The DOE will accept the test results when the above test have been completed and link losses are within accepted tolerances based on the manufacturer's optical transmission performance for the fiber and guaranteed maximum mated pair loss for the connectors. End-to-end attenuation shall be less than 2.6 dB.

B. Fiber Optic Cable Test Equipment:

1. Cable Tester will be NRTL certified for TIA/EIA TSB 95.

2. Cable testers will be Optical Power Meter and High Resolution Optical Time Domain Reflectometer (OTDR). The cable tester will be NRTL certified for compliance to latest TIA/EIA Standard 568 performance requirements at 850, 1300, 1310 and 1550 nm.

3. Testers will have been calibrated at least one year prior to use on this project. Contractor to provide proof to Department if requested.

4. All testing equipment (OTDR, Light Loss, Splicer etc.) will be owned by the Contractor. Contractor must prove ownership of equipment if requested.

C. Testing Procedures:

1. Perform each visual and mechanical inspection and electrical test, including optional procedures, stated in NETA ATS, Section 7.25. Certify compliance with test parameters and manufacturer's written recommendations. Test optical performance with optical power meter capable of generating light at all appropriate wavelengths.

2. Prior to testing, all connectors will be properly cleaned with an approved product manufactured specifically for this purpose.

3. Prior to beginning testing, confirm that all testing equipment is fully charged or operating on building power. If the test equipment power levels drop below 50%, recharge unit or continue testing with a different (fully charged) tester.

4. Prior to testing, the tester and light source shall be powered on for 5 minutes preceding the reference test. Reference cords shall stay attached to the tester and not removed for the duration of the test. If reference cords are removed, a new reference must be set prior to continuing the testing.

5. Initially test optical cable with a light source and power meter utilizing procedures as stated in TIA TSB-140, and ANSI/TIA-526-7 Measurement of Optical Power Loss in installed Single-Mode Fiber cable plant.

6. Measured results will be plus/minus 1 dB of submitted loss budget calculations. If loss figures are outside this range, test cable with Optical Time Domain Reflectometer (OTDR) to determine cause of variation. Correct improper splices and replace damaged cables at no charge to the Department.

7. All cables will be tested after termination using the approved cable certification tester that contains the test equipment manufacturer's most current version of firmware.

8. Test all fiber optic cable segments end-to-end from the fiber optic backbone patch panel in the Equipment Room to each fiber optic backbone patch panel in each Telecommunications Room.

9. Broken or faulty strands will not be accepted. Any cable not fully functional with all strands usable will be replaced at no cost to the Department.

10. Upon completion of testing, all connectors will be capped with a product made for that specific function by the connecting hardware manufacturer to prevent the contamination of the fiber from construction debris or other foreign objects.

D. Single-Mode Fiber Optic Cables:

1. Will be tested bi-directionally for length and attenuation at both the short and long wavelengths for Single-Mode fiber (1310 and 1550 nm). This Tier 1 testing as specified in TIA TSB-140.

2. Single-mode fibers will be dual wave length and provide attenuated wavelength of the 1310 nm and 1550 nm. 850 nm for single-mode fiber will not be acceptable under any circumstances.

E. Test Results:

1. The test results information for each link will be recorded in the memory of the field tester upon completion of the test. The tester will be capable of storing test data in either internal or external memory. The external media used will be left to the discretion of the user.

2. Test results saved by the tester will be provided electronically to the Department representative to be transferred into a Windows based database utility that allows for maintenance, inspection and archiving of these test records. A guarantee must be made that the measurement results are transferred to the PC unaltered as well as any printed reports generated from the software application.

3. Optional formats of data reporting are: comma separated variable (.csv), Portable Document File (.pdf) or compatible, plain text (.txt), or hypertext markup language (.html/.htm). Optional formats to be approved at the discretion of the Department.

4. Test results will include the following:

   a. Telecommunications Room number

   b. Location of fiber pull i.e. (Equipment Room # to Telecom Room #)

   c. Patch panel # and location

   d. Connector type

   e. Distance

   f. Wavelength tested

   g. Technician who performed the testing

F. The Department and Engineer reserve the right to observe testing and/or randomly sample completed links for conformance to project specifications.

3.11 TESTS

A. Operating Test: After installation has been completed, and at such time as the Contracting Officer may direct, Contractor shall conduct an operating test for approval. Equipment shall be demonstrated to operate in accordance with requirements of this section of specifications. Test shall be performed in the presence of the Contracting Officer. Contractor shall furnish necessary instruments and personnel required for test. Balance loading on each feeder.

B. Contractor shall perform 600 volt wiring tests to verify that no short circuits or accidental grounds exist. Insulation resistance tests shall be performed on all conductors No. 6 AWG and larger.

C. Contractor shall perform grounding testing of all new grounded installations to ensure continuity and that resistance to ground is not excessive.

3.12 TRAINING FOR AREA OF RESCUE ASSISTANCE SYSTEM

A. Conduct training and instruction for the operating and maintenance staff, as designated by the Contracting Officer, on the operation of the area of rescue assistance system.

B. The training session shall be conducted during normal business hours, and shall last as long as necessary to properly instruct the staff, but not less than 1-hour. A minimum of two (2) staff members shall be included in the meeting.

C. Instruction shall include hands-on training in routine operations of the area of rescue assistance system.

END OF SECTION

LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
PROJECT NO.:

3675 KILAUEA AVENUE HONOLULU, HAWAII 96816

T.M.K.: 03 - 02 - 031: 001

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CONSULTANTS

ARCHITECTS:	PACIFIC ARCHITECTS, INC.
CIVIL ENGINEER:	KIM & SHIROMA ENGINEERS, INC.
STRUCTURAL ENGINEER:	KAI HAWAII, INC.
MECHANICAL ENGINEER:	MECHANICAL ENTERPRISES, INC.
ELECTRICAL ENGINEER:	BOWERS & KUBOTA, INCL.
ENVIRONMENTAL ENGINEER:	ENVIROQUEST, INC.
KITCHEN CONSULTANT:	MIZO & ASSOCIATES, INC.

NOTES

GENERAL NOTES

1. THE CONTRACTOR SHALL CAREFULLY EXAMINE THE DRAWINGS AND READ THE SPECIFICATIONS AND ALL OTHER PROPOSED CONTRACT DOCUMENTS PRIOR TO SUBMITTAL OF HIS BID PROPOSAL. THE CONTRACTOR SHALL FULLY INFORM HIMSELF OF THE SCOPE OF THIS PROJECT PRIOR TO THE SUBMISSION OF HIS BID PROPOSAL AS TO ALL CONDITIONS AND LIMITATIONS UNDER WHICH THE WORK IS TO BE PERFORMED. HE SHALL INCLUDE IN HIS PROPOSAL, A SUM TO COVER ALL COSTS OF ITEMS NECESSARY TO PERFORM THE WORK AS SET FORTH IN THE PROPOSED CONTRACT DOCUMENTS. NO ALLOWANCE SHALL BE MADE TO THE CONTRACTOR DUE TO LACK OF SUCH KNOWLEDGE.
2. IF THE CONTRACTOR IS IN DOUBT AS TO THE TRUE MEANING OF ANY PART OF THE PROPOSED CONTRACT DOCUMENTS, OR FINDS DISCREPANCIES IN OR OMISSIONS FROM ANY PART OF THE PROPOSED CONTRACT DOCUMENTS, HE MAY SUBMIT TO THE ARCHITECT A REQUEST FOR INTERPRETATION THEREOF.
3. ALL WORK SHALL BE ACCOMPLISHED IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL LAWS, REGULATIONS AND STANDARDS HAVING JURISDICTION OVER THIS PROJECT.
4. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS AND CONDITIONS PRIOR TO FABRICATING AND/OR ORDERING MATERIALS.
5. ALL MATERIALS FOR THIS PROJECT SHALL BE NEW AND FREE FROM ANY AND ALL DEFECTS UNLESS SPECIFIED OTHERWISE.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL WORK AMONG THE VARIOUS TRADES AS NECESSARY TO AVOID CONFLICTS AND TO ENSURE THAT THE INSTALLATION OF ALL WORK IS IN COMPLIANCE WITH THE CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING ALL BACKING, BLOCKING, BRACKETS, ETC. AS REQUIRED FOR THE PROPER AND SECURED INSTALLATION OF ALL MATERIALS AND PRODUCTS.
8. THE CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS FOR INSTALLATION OF THEIR PRODUCTS.
9. THE CONTRACTOR SHALL NOTIFY THE ARCHITECT IMMEDIATELY UPON ENCOUNTERING OR SUSPECTING ANY ADDITIONAL HAZARDOUS MATERIALS, ETC. DURING THE COURSE OF THIS PROJECT. THE CONTRACTOR IS NOT AUTHORIZED TO HANDLE, TEST, OR REMOVE SUCH ADDITIONAL MATERIALS WITHOUT SPECIFIC AUTHORIZATION FROM THE OFFICER IN CHARGE.
10. THE CONTRACTOR WITH THE SUPERVISION OF THE ARCHITECT, SHALL INSPECT AND NOTE ALL EXISTING DAMAGES PRIOR TO THE START OF WORK. ANY NEW DAMAGES RESULTING FROM THE CONSTRUCTION SHALL BE CORRECTED AT THE CONTRACTOR'S COST.
11. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A SAFETY BARRICADE, AS NECESSARY, OR REQUIRED BY THE OWNER AND SHALL ASSURE SAFETY FOR THE PATIENTS, STAFF AND THE PUBLIC AT ALL TIMES.
12. THE CONTRACTOR SHALL REPORT ANY UNSATISFACTORY CONDITIONS AND/OR DISCREPANCIES TO THE CONTRACTING OFFICER. FAILURE TO COMPLY WITH THIS CONDITION MAY RESULT IN PLACING ANY AND ALL RESPONSIBILITY, LIABILITY AND EXPENSE TO THE CONTRACTOR.
13. FIRE SAFETY DURING CONSTRUCTION, ALTERATION OR DEMOLITION SHALL COMPLY WITH THE 2018 IBC.
14. TO THE BEST OF OUR KNOWLEDGE, THIS PROJECT CONFORMS TO ADA ACCESSIBILITY GUIDELINES.

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES : APRIL 30, 2026

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PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: TITLE SHEET, CONSULTANTS, LOCATION MAP, VICINITY MAP & NOTES

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MT CHECK CM

SHEET 000 OF SHEETS

CONSTRUCTION NOTES

1. ALL APPLICABLE CONSTRUCTION WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1986 AND STANDARD DETAILS FOR PUBLIC WORKS CONSTRUCTION, SEPTEMBER 1984, AS AMENDED, OF THE DEPARTMENT OF PUBLIC WORKS, CITY AND COUNTY OF HONOLULU AND THE COUNTIES OF KAUAI, MAUI, AND HAWAII.

2. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES TO EXISTING UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.

3. NO CONTRACTOR SHALL PERFORM ANY CONSTRUCTION OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW INTO EXISTING CITY DRAINAGE SYSTEMS, OR ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.

4. THE GENERAL CONTRACTOR/DEVELOPER/OWNER SHALL BE RESPONSIBLE FOR CONFORMANCE WITH THE APPLICABLE PROVISIONS OF THE WATER QUALITY AND WATER POLLUTION CONTROL STANDARDS CONTAINED IN HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS", AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL", AS WELL AS CHAPTER 18A OF THE REVISED ORDINANCES OF HONOLULU, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.

   THE GENERAL CONTRACTOR/DEVELOPER/OWNER OF THE PROJECT SHALL OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE(S) FOR THE FOLLOWING:

   1. STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES THAT DISTURB ONE (1) ACRES OR MORE, AND

   2. DISCHARGES OF HYDROTESTING EFFLUENT, DEWATERING EFFLUENT, AND WELL DRILLING EFFLUENT TO STATE WATERS.

   IN ACCORDANCE WITH STATE LAW, ALLL DISCHARGES RELATED TO PROJECT CONSTRUCTION OR OPERATIONS ARE REQUIRED TO COMPLY WITH STATE WATER QUALITY STANDARDS (HAWQAII ADMINSTRATIVE RULES, CHAPTER 11-54). BEST MANAGEMENT PRACTICES SHALL BE USED TO MINIMIZE OR PREVENT THE DISCHARGE OF SEDIMENT, DEBRIS, AND OTHER POLLUTANTS TO STATE WATERS. PERMIT COVERAGE IS AVAILABLE FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT HTTP://HEALTH.HAWAII.GOV/CWB. THE OWNER/DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL, STATE OF LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

5. FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING BRANCH, DEPARTMENT OF PLANNING AND PERMITTING, AT 808-768-8084 TO ARRANGE FOR INSPECTIONAL SERVICES AND SUBMIT TWO (2) SETS OF APPROVED CONSTRUCTION PLANS SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK.

6. CONFINED SPACE

   FOR ENTRY BY CITY PERSONNEL, INCLUDING INSPECTORS, INTO A PERMIT REQUIRED CONFINED SPACE AS DEFINED IN 29 CFR PART 1910.146(B), THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING:

   I. ALL SAFETY EQUIPMENT REQUIRED BY THE CONFINED SPACE REGULATIONS APPLICABLE TO ALL PARTIES OTHER THAN THE CONSTRUCTION INDUSTRY, TO INCLUDE, BUT NOT LIMITED TO, THE FOLLOWING:

      A. FULL BODY HARNESSES FOR UP TO TWO PERSONNEL.

      B. LIFELINE AND ASSOCIATED CLIPS.

      C. INGRESS/EGRESS AND FALL PROTECTION EQUIPMENT

      D. TWO-WAY RADIOS (WALKIE-TALKIES) IF OUT OF LINE-OF-SIGHT.

      E. EMERGENCY (ESCAPE) RESPIRATOR (10 MINUTE DURATION).

      F. CELLULAR TELEPHONE TO CALL FOR EMERGENCY ASSISTANCE.

      G. CONTINUOUS GAS DETECTOR (CALIBRATED) TO MEASURE OXYGEN, HYDROGEN SULFIDE, CARBON MONOXIDE AND FLAMMABLES (CAPABLE OF MONITORING AT A DISTANCE AT LEAST 20-FEET AWAY).

      H. PERSONAL MULTI-GAS DETECTOR TO BE CARRIED BY INSPECTOR.

   II. CONTINUOUS FORCED AIR VENTILATION ADEQUATE TO PROVIDE SAFE ENTRY CONDITIONS.

   III. ONE ATTENDANT/RESCUE PERSONNEL TOPSIDE (TWO, IF CONDITIONS WARRANT IT).

7. **PURSUANT TO CHAPTER 6E, HRS,** IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HONOLULU POLICE DEPARTMENT, THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES-HISTORIC PRESERVATION DIVISION (808-692-8015). IN ADDITION, FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL INFORM THE CIVIL ENGINEERING BRANCH, DEPARTMENT OF PLANNING AND PERMITTING (808-768-8084).

8. FOR PROJECTS ABUTTING STATE HIGHWAYS' RIGHTS-OF WAY, THE OWNER OR HIS AUTHORIZED REPRESENTATIVE SHALL NOTIFY THE STATE DEPARTMENT OF TRANSPORTATION, HIGHWAYS DIVISION, OAHU DISTRICT, DRAINAGE DISCHARGE UNIT AT 808-831-6793 FOR AN ASSESSMENT OF STATE HIGHWAYS PERMIT REQUIREMENTS.

9. BENCH MARK REFERRED TO C&C STREET MONUMENT AT KILAUEA AVENUE AND MAKAPUU AVENUE, ELEV= 237.51 FEET.

GRADING NOTES

1. ALL GRADING WORK SHALL BE DONE IN ACCORDANCE WITH CHAPTER 18A, ARTICLES 1, 2, 3, AND 4, AS RELATED TO GRADING, SOIL EROSION AND SEDIMENT CONTROL OF THE REVISED ORDINANCES OF HONOLULU, 2021, AS AMENDED.

2. NO CONTRACTOR SHALL PERFORM ANY GRADING OPERATION SO AS TO CAUSE FALLING ROCKS, SOIL OR DEBRIS IN ANY FORM TO FALL, SLIDE OR FLOW ONTO ADJOINING PROPERTIES, STREETS OR NATURAL WATERCOURSES. SHOULD SUCH VIOLATIONS OCCUR, THE CONTRACTOR MAY BE CITED AND THE CONTRACTOR SHALL IMMEDIATELY MAKE ALL REMEDIAL ACTIONS NECESSARY.

3. THE CONTRACTOR, AT HIS OWN EXPENSE, SHALL KEEP THE PROJECT AREA AND SURROUNDING AREA FREE FROM DUST NUISANCE. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60.1, "AIR POLLUTION CONTROL".

4. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS SEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATIONS AND DEPTHS OF THE FACILITIES AND EXERCISE PROPER CARE IN EXCAVATING IN THE AREA. WHEREVER CONNECTIONS OF NEW UTILITIES ARE SHOWN ON THE PLANS, THE CONTRACTOR SHALL EXPOSE THE EXISTING LINES AT THE PROPOSED CONNECTIONS TO VERIFY THEIR LOCATIONS AND DEPTHS PRIOR TO EXCAVATION FOR THE NEW LINES.

5. ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATERS FROM DAMAGING THE CUT FACE OF AN EXCAVATION OR THE SLOPED SURFACES OF A FILL. FURTHERMORE, ADEQUATE PROVISIONS SHALL BE MADE TO PREVENT SEDIMENT-LADEN RUNOFF FROM LEAVING THE SITE.

6. ALL SLOPES AND EXPOSED AREAS SHALL BE SODDED OR PLANTED AS SOON AS FINAL GRADES HAVE BEEN ESTABLISHED. PLANTING SHALL NOT BE DELAYED UNTIL ALL GRADING WORK HAS BEEN COMPLETED. GRADING TO FINAL GRADE SHALL BE CONTINUOUS, AND ANY AREA WITHIN WHICH WORK HAS BEEN INTERRUPTED OR DELAYED SHALL BE PLANTED.

7. FILLS ON SLOPES STEEPER THAN 5:1 SHALL BE KEYED.

8. THE CITY SHALL BE INFORMED OF THE LOCATION OF THE BORROW/DISPOSAL SITE FOR THE PROJECT WHEN THE APPLICATION FOR A GRADING PERMIT IS MADE. THE BORROW/DISPOSAL SITE MUST ALSO FULFILL THE REQUIREMENTS OF THE GRADING ORDINANCE.

9. NO GRADING WORK SHALL BE DONE ON SATURDAYS, SUNDAYS AND HOLIDAYS AT ANY TIME WITHOUT PRIOR NOTICE TO THE DIRECTOR, D.P.P., PROVIDED SUCH GRADING WORK IS ALSO IN CONFORMANCE WITH THE COMMUNITY NOISE CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 46, "COMMUNITY NOISE CONTROL".

10. THE LIMITS OF THE AREA TO BE GRADED SHALL BE FLAGGED BEFORE THE COMMENCEMENT OF THE GRADING WORK.

11. THE GENERAL CONTRACTOR/DEVELOPER/OWNER OF THE PROJECT SHALL BE RESPONSIBLE FOR ALL GRADING OPERATIONS TO BE PERFORMED IN CONFORMANCE WITH APPLICABLE PROVISIONS OF THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 54, "WATER QUALITY STANDARDS," AND TITLE 11, CHAPTER 55, "WATER POLLUTION CONTROL", AS WELL AS CHAPTER 18A OF THE REVISED ORDINANCES OF HONOLULU, AS AMENDED. BEST MANAGEMENT PRACTICES SHALL BE EMPLOYED AT ALL TIMES DURING CONSTRUCTION.

    THE GENERAL CONTRACTOR/DEVELOPER/OWNER OF THE PROJECT SHALL OBTAIN NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT COVERAGE(S) FOR THE FOLLOWING:

    1. STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITIES THAT DISTURB ONE (1) ACRE OR MORE, AND

    2. DISCHARGES OF HYDROTESTING EFFLUENT, DEWATERING EFFLUENT, AND WELL DRILLING EFFLUENT TO STATE WATERS.

    IN ACCORDANCE WITH STATE LAW, ALL DISCHARGES RELATED TO PROJECT CONSTRUCTION OR OPERATIONS ARE REQUIRED TO COMPLY WITH STATE WATER QUALITY STANDARDS (HAWAII ADMINISTRATIVE RULES, CHAPTER 11-54). BEST MANAGEMENT PRACTICES SHALL BE USED TO MINIMIZE OR PREVENT THE DISCHARGE OF SEDIMENT, DEBRIS, AND OTHER POLLUTANTS TO STATE WATERS. PERMIT COVERAGE IS AVAILABLE FROM THE DEPARTMENT OF HEALTH, CLEAN WATER BRANCH AT HTTP://HEALTH.HAWAII.GOV/CWB. THE OWNER/DEVELOPER/CONTRACTOR IS RESPONSIBLE FOR OBTAINING OTHER FEDERAL, STATE, OR LOCAL AUTHORIZATIONS AS REQUIRED BY LAW.

12. WHERE APPLICABLE AND FEASIBLE THE MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY EARTH MOVING PHASE OF THE GRADING IS INITIATED.

13. TEMPORARY EROSION CONTROLS SHALL NOT BE REMOVED BEFORE PERMANENT EROSION CONTROLS ARE IN-PLACE AND ESTABLISHED.

14. TEMPORARY EROSION CONTROL PROCEDURES SHALL BE SUBMITTED FOR APPROVAL PRIOR TO APPLICATION FOR GRADING PERMIT.

15. IF THE GRADING WORK INVOLVES CONTAMINATED SOIL, THEN ALL GRADING WORK SHALL BE DONE IN CONFORMANCE WITH APPLICABLE STATE AND FEDERAL REQUIREMENTS.

16. BUILDING PERMIT FOR RETAINING WALLS SHALL BE OBTAINED PRIOR TO COMMENCEMENT OF GRADING WORK ON SITE.

17. FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL NOTIFY THE CIVIL ENGINEERING BRANCH, D.P.P. AT 768-8084 TO ARRANGE FOR INSPECTIONAL SERVICES AND SUBMIT **TWO (2)** SETS OF APPROVED CONSTRUCTION PLANS SEVEN (7) DAYS PRIOR TO COMMENCEMENT OF CONSTRUCTION WORK. FOR CITY PROJECTS, THE CONTRACTOR SHALL COORDINATE INSPECTIONAL SERVICES WITH THE RESPONSIBLE CITY AGENCY.

18. PURSUANT TO CHAPTER 6E, HRS, IN THE EVENT ANY ARTIFACTS OR HUMAN REMAINS ARE UNCOVERED DURING CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL IMMEDIATELY SUSPEND WORK AND NOTIFY THE HONOLULU POLICE DEPARTMENT, THE STATE DEPARTMENT OF LAND AND NATURAL RESOURCES-HISTORIC PRESERVATION DIVISION (692-8015). IN ADDITION, FOR NON-CITY PROJECTS, THE CONTRACTOR SHALL INFORM THE CIVIL ENGINEERING BRANCH, D.P.P. (768-8084), AND FOR CITY PROJECT NOTIFY THE RESPONSIBLE CITY AGENCY.

19. FOR ALL PROJECTS, WHICH WILL DISTURB ONE (1) ACRE OR MORE OF LAND, THE CONTRACTOR SHALL NOT START CONSTRUCTION UNTIL A NOTICE OF GENERAL PERMIT COVERAGE (NGPC) IS RECEIVED FROM THE DEPARTMENT OF HEALTH, STATE OF HAWAII, AND HAS SATISFIED ANY OTHER APPLICABLE REQUIREMENTS OF THE NPDES PERMIT PROGRAM. ALSO, FOR NON-CITY AND OTHER NON-GOVERNMENTAL AGENCY PROJECTS, THE CONTRACTOR SHALL PROVIDE A WRITTEN COPY OF THE NGPC TO THE PERMITTING AND INSPECTION SECTION, CIVIL ENGINEERING BRANCH, D.P.P., AT LEAST SEVEN (7) CALENDAR DAYS BEFORE THE START OF THE CONSTRUCTION. FOR CITY OR OTHER GOVERNMENTAL PROJECTS, THE CONTRACTOR SHOULD PROVIDE A WRITTEN COPY OF THE NGPC TO THE APPROPRIATE CITY DEPARTMENT OR GOVERNMENTAL AGENCY PER THEIR REQUIREMENTS.

20. ALL GRADING AND CONSTRUCTION WORK SHALL IMPLEMENT MEASURES TO ENSURE THAT THE DISCHARGE OF POLLUTANTS FROM THE CONSTRUCTION SITE WILL BE REDUCED TO THE MAXIMUM EXTENT PRACTICABLE AND WILL NOT CAUSE OR CONTRIBUTE TO AN EXCEEDANCE OF WATER QUALITY STANDARDS.

21. NON-COMPLIANCE TO ANY OF THE ABOVE REQUIREMENTS SHALL MEAN IMMEDIATE SUSPENSION OF ALL WORK, AND REMEDIAL WORK SHALL COMMENCE IMMEDIATELY. ALL COSTS INCURRED SHALL BE BILLED TO THE VIOLATOR. FURTHERMORE, VIOLATORS SHALL BE SUBJECTED TO ADMINISTRATIVE, CIVIL AND/OR CRIMINAL PENALTIES.

22. BENCH MARK REFFERED TO C&C STREET MONUMENT AT KILAUEA AVENUE AND MAKAPUU AVENUE, ELEV= 237.51 FEET.

SEWER NOTES (PRIVATE)

1. ALL SEWER CONSTRUCTION SHALL BE PERFORMED IN ACORDANCE WITH THE CITY'S "STANDARD SPECIFICAITONS", SETEMBER 1986, THE DEPARTMENT OF ENVIRONMENTAL SERVICES "WASTEWATER DESIGN STANDARDS", JULY 2017, CURRENT CITY PRACTICES AND REVISED ORDINANCES OF HONOLULU, 1980, AS AMENDED.

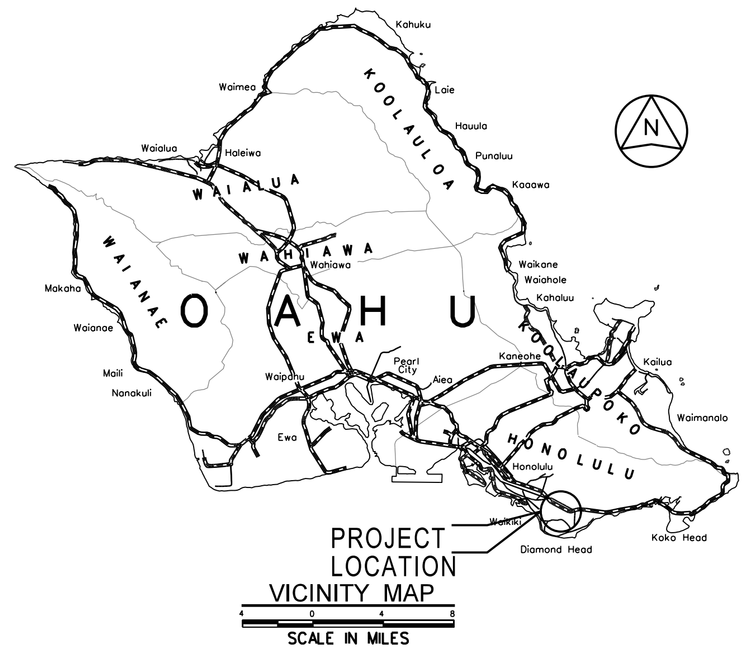
2. CRUSHED ROCK CRADLE IS PERMITTED WHERE SOIL IS STABLE. IN AREAS OF UNSTABLE SOIL, THE MAKER OF THE PLANS AND THE CONSTRUCTION ENGINEER WILL DETERMINE THE PIPE SUPPORT REQUIRED.

3. THE UNDERGROUND PIPES, CABLES OR DUCTLINES KNOWN TO EXIST BY THE ENGINEER FROM HIS RESEARCH OF RECORDS ARE INDICATED ON THE PLANS. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF THE FACILITIES, INCLUDING AND AFFECTING SEWER LINES AND EXERCISE PROPER CARE IN EXCAVATING THE AREA. THE CONTRACTOR SHALL BE RESPONSIBLE AND SHALL PAY FOR ALL DAMAGED UTILITIES.

4. BUILDING PLUMBING FACILITIES SHALL BE CONTROLLED BY SEWER LATERAL INVERTS.

5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING CONTINUOUS SEWER SERVICE TO ALL AFFECTED AREAS DURING CONSTRUCTION.

6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SEWAGE SPILLS CAUSED DURING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE STATE DEPARTMENT OF HEALTH AND UTILIZE APPROPRIATE SAMPLING AND ANALYZING PROCEDURES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PUBLIC NOTIFICATIONS AND PRESS RELEASES.



CIVIL DRAWING INDEX

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C002	EROSION, SEDIMENT CONTROL NOTES, DETAILS
C101	EROSION & SEDIMENT CONTROL PLAN
C102	SITE & UTILITY PLAN
C103	SITE DETAILS

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES: APRIL 30, 2026

CONRAD T. SHIROMA LICENSED PROFESSIONAL ENGINEER No.4324-C HAWAII, U.S.A.

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PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

CONSTRUCTION NOTES, LOCATION MAP

DATE MARCH 2024
SCALE AS SHOWN
DRAWN KSE CHECK CTS
SHEET
C001
OF SHEETS

EROSION PREVENTION/SEDIMENT CONTROL NOTES:

1. THE OWNER OF THE PROPERTY OR THEIR AUTHORIZED AGENT MUST DESIGNATE A PERSON RESPONSIBLE FOR IMPLEMENTING THE ESCP AT THE PROJECT SITE ("ESCP COORDINATOR") PRIOR TO PERMIT ISSUANCE USING THE FORM PROVIDED AS APPENDIX A TO THE RULES RELATING TO WATER QUALITY.
2. THE CONTRACTOR SHALL FOLLOW THE GUIDELINES IN THE CITY AND COUNTY OF HONOLULU'S "RULES RELATING TO WATER QUALITY". THE CONTRACTOR SHALL COMPLY WITH THE SCHEDULING REQUIREMENTS AND SHALL SUBMIT THE SCHEDULED START DATE TWO WEEKS PRIOR TO START.
3. MEASURES TO CONTROL EROSION AND OTHER POLLUTANTS SHALL BE IN PLACE BEFORE ANY CONSTRUCTION WORK IS INITIATED.
4. SLOPE PROTECTION: SLOPE PROTECTION IS REQUIRED ON AREAS WITH SLOPES GREATER THAN 15% AND ON AREAS OF MODERATE SLOPE THAT ARE PRONE TO EROSION UNLESS THEY ARE BEING ACTIVELY WORKED. USE COMPOST FILTER SOCK, HYDRAULIC MULCH OR HYDROSEED CONSISTING OF AT LEAST 5% SOIL BINDER APPLIED PER MANUFACTURERS INSTRUCTIONS, PLANTING AND/OR VEGETATION PROVINGD AT LEAST 70% SURFACE COVER FOR TEMPORARY STABILIZATION AND AT LEAST 90% SURFACE COVER FOR PERMANENT STABILIZATION.
5. TEMPORARY STABILIZATION: TEMPORARY STABILIZATION IS REQUIRED ON DISTURBED AREAS WHICH ARE AT FINAL GRADE OR WHEN THE DISTURBED AREA WILL NOT BE WORKED FOR 14 CONSECUTIVE DAYS OR MORE.
6. PERMANENT STABILIZATION: ALL DISTURBED AREAS SHALL BE PERMANENTLY STABILIZED USING VEGETATIVE COVERING, PAVEMENT, OR EQUIVALENT, PRIOR TO REMOVING EROSION AND SEDIMENT MEASURES. TRAPPED SEDIMENT AND AREAS OF DISTURBED SOIL WHICH RESULT FROM THE REMOVAL OF THE TEMPORARY MEASURES SHALL BE IMMEDIATELY AND PERMANENTLY STABILIZED.
7. PRESERVE EXISTING VEGETATION: CLEARLY MARK THE AREAS TO BE PRESERVED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING MUST BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.
8. MINIMIZE SOIL COMPACTION AREAS WHERE FINAL STABILIZATION OR INFILTRATION PRACTICES WILL BE INSTALLED SHALL BE PROTECTED FROM EXCESSIVE COMPACTION DURING CONSTRUCTION. VEHICLE AND EQUIPMENT USE SHALL BE RESTRICTED OR TECHNIQUES TO CONDITION THE SOILS TO SUPPORT VEGETATION SHALL BE IMPLEMENTED IN THE AREAS THAT HAVE BEEN COMPACTED AND ARE DESIGNATED TO REMAIN VEGETATIVE OR POST-CONSTRUCTION INFILTRATION AREAS. CLEARLY MARK THE AREAS TO BE AVOIDED WITH FLAGS OR TEMPORARY FENCING. WHERE TEMPORARY FENCING IS USED, FENCING MUST BE ADEQUATELY SUPPORTED BY POSTS AND MAINTAINED IN AN UPRIGHT POSITION.
9. PERIMETER CONTROLS: PERIMETER CONTROLS ARE REQUIRED DOWNSLOPE OF ALL DISTURBED AREAS AND STAGING AREAS. MAINTAIN DOWNSTREAM VEGETATED BUFFER AREA.
10. INLET PROTECTION
    - ALL STORM DRAIN INLETS/CATCHBASINS ONSITE AND THOSE OFFSITE WHICH MAY RECEIVE RUNOFF FROM THE SITE SHALL USE AN INLET PROTECTION DEVICE UNLESS THEY ARE DIRECTED TO A SEDIMENT BASIN.
    - SEDIMENT LEVELS MAY NOT EXCEED ONE THIRD OF THE HEIGHT OF A SEDIMENT BARRIER OR INLET PROTECTION DEVICE AT ANY POINT ALONG THE LENGTH OF THE SEDIMENT BARRIER OR THE INLET PROTECTION DEVICE.
    - SEDIMENT BARRIERS AND INLET PROTECTION DEVICES MUST BE UNCLOGGED AND CLEANED WHEN PERFORMANCE IS COMPROMISED.
    - TORN, WEATHERED OR SAGGING SEDIMENT BARRIERS OR INLET PROTECTION DEVICES MUST BE REPAIRED OR REPLACED IMMEDIATELY.
11. TRACKING CONTROL
    - MINIMIZE SEDIMENT TRACK-OUT ONTO OFF-SITE STREETS, OTHER PAVED AREAS, AND SIDEWALKS FROM VEHICLES EXITING THE CONSTRUCTION SITE BY RESTRICTING VEHICLE TRAFFIC TO PROPERLY DESIGNATED AREAS AND USING ADDITIONAL CONTROLS TO REMOVE SEDIMENT FROM VEHICLE TIRES PRIOR TO EXITING THE SITE.
    - VEHICULAR PARKING AND MOVEMENTS ON PROJECT SITES MUST BE CONFINED TO PAVED SURFACES OR PREDEFINED PARKING AREAS AND VEHICLE PATHS, WHICH SHALL BE MARKED WITH FLAGS OR BOUNDARY FENCING.
    - ALL POLLUTANTS AND MATERIALS THAT ARE DROPPED, WASHED, TRACKED, SPILLED, OR OTHERWISE DISCHARGED FROM A PROJECT SITE TO OFF-SITE STREETS, OTHER PAVED AREAS, SIDEWALKS OR THE MS4 MUST BE CLEANED USING DRY METHODS SUCH AS SWEEPING OR VACUUMING.
    - WASHING POLLUTANTS AND MATERIALS THAT ARE DISCHARGED FROM THE PROJECT SITE TO THE MS4 INTO DRAIN INLETS OR CATCH BASINS IS PROHIBITED UNLESS THE MATERIAL IS SEDIMENT AND THE INLETS ARE DIRECTED TO A SEDIMENT BASIN OR SEDIMENT TRAP.
12. BEST MANAGEMENT PRACTICES (BMPS) SHALL NOT BE REMOVED UNTIL FINAL STABILIZATION IS COMPLETE FOR THAT PHASE.
13. REFER TO CITY AND COUNTY OF HONOLULU BEST MANAGEMENT PRACTICES MANUAL - CONSTRUCTION, FOR MORE INFORMATION ON BMPS.
14. THE FOLLOWING BMPS WERE DETERMINED TO BE NOT APPLICABLE BASED ON THE SPECIFIC SITE CONDITIONS. AS CONSTRUCTION PROGRESSES, REVISIONS MAY BE NECESSARY AND WILL BE PROVIDED TO DPP INSPECTORS.
    - SEDIMENT BARRIERS: NOT APPLICABLE AS THE PROPOSED BMPS (PERIMETER CONTROL) IS SUFFICIENT TO ADDRESS ANY POTENTIAL SEDIMENT RUNOFF.
    - DIVERSION BMP'S TO DIVERT RUNNOFF FROM UPSTREAM AREAS AROUND DISTURBED AREAS OF THE SITE: THE PROPOSED WORK OCCURS ON EXISTING SLOPES LESS THAN 15%.
    - VELOCITY DISSIPATION DEVICES: THERE ARE NO OUTLETS REQUIRING VELOCITY DISSIPATION DEVICES.
    - DEWATERING OPERATIONS: GROUNDWATER IS NOT ANTICIPATED.

GOOD HOUSEKEEPING BMP'S:

1. STREET SWEEPING AND VACUUMING. ALL POLLUTANTS DISCHARGED FROM CONSTRUCTION SITE TO OFF-SITE AREAS MUST BE SWEPT OR VACUUMED EACH DAY BEFORE LEAVING THE JOB SITE.
2. MATERIALS DELIVERY, STORAGE AND USE MANAGEMENT. PREVENT, REDUCE, OR ELIMINATE THE DISCHARGE OF POLLUTANTS FROM MATERIAL DELIVERY, STORAGE, AND USE TO THE STORM WATER SYSTEM OR WATERCOURSES BY MINIMIZING THE STORAGE OF HAZARDOUS MATERIALS ONSITE, STORING MATERIALS IN A DESIGNATED AREA, INSTALLING SECONDARY CONTAINMENT. CONSTRUCTION MATERIALS, WASTE, TOXIC AND HAZARDOUS SUBSTANCES, STOCKPILES AND OTHER SOURCES OF POLLUTION SHALL NOT BE STORED IN BUFFER AREAS, NEAR AREAS OF CONCENTRATED FLOW, OR AREAS ABUTTING THE MS4, RECEIVING WATERS, OR DRAINAGE IMPROVEMENTS THAT DISCHARGE OFF-SITE. PRIMARY AND SECONDARY CONTAINMENT CONTROLS AND COVERS SHALL BE IMPLEMENTED TO THE MEP.
3. SPILL PREVENTION AND CONTROL. CREATE AND IMPLEMENT SPILL PREVENTION AND RESPONSE PLANS TO ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO THE MS4 AND RECEIVING WATERS FROM LEAKS AND SPILLS BY REDUCING THE CHANCE FOR SPILLS, ABSORBING, CONTAINING, AND CLEANING UP SPILLS AND PROPERLY DISPOSING OF SPILL MATERIALS. AT A MINIMUM, ALL PROJECTS SHALL CLEANUP ALL LEAKS AND SPILLS IMMEDIATELY.
4. HAZARDOUS MATERIALS. PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM HAZARDOUS WASTE THROUGH PROPER MATERIAL USE AND WASTE DISPOSAL. IN THE EVENT THAT HAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL IMMEDIATELY NOTIFY THE DEPARTMENT OF FACILITIES MAINTENANCE, HONOLULU FIRE DEPARTMENT, AND HONOLULU POLICE DEPARTMENT OF THE DISCHARGE BY TELEPHONE. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.
5. NONHAZARDOUS MATERIALS. IN THE EVENT THAT NONHAZARDOUS MATERIALS ARE DISCHARGED TO THE MS4, THE PROPERTY OWNER OR ESCP COORDINATOR SHALL NOTIFY THE CITY DEPARTMENT OF FACILITIES MAINTENANCE BY TELEPHONE NO LATER THAN THE NEXT BUSINESS DAY. A WRITTEN REPORT DESCRIBING THE POLLUTANTS THAT WERE DISCHARGED, THE REASONS FOR THE DISCHARGE, AND THE MEASURES THAT HAVE BEEN TAKEN OR WILL BE TAKEN TO PREVENT A REOCCURRENCE OF THE DISCHARGE SHALL BE SUBMITTED TO THE DIRECTOR NO LESS THAN 3 DAYS AFTER NOTIFICATION BY PHONE.
6. VEHICLE AND EQUIPMENT CLEANING. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT CLEANING OPERATIONS BY USING OFF-SITE FACILITIES WHEN FEASIBLE. WASHING IN DESIGNATED, CONTAINED AREAS ONLY, AND ELIMINATING DISCHARGES TO THE STORM DRAIN SYSTEM BY EVAPORATING AND/OR TREATING WASH WATER, AS APPROPRIATE OR INFILTRATING WASH WATER FOR EXTERIOR CLEANING ACTIVITIES THAT USE WATER ONLY.
7. VEHICLE AND EQUIPMENT FUELING. PREVENT FUEL SPILLS AND LEAKS BY USING OFF-SITE FACILITIES, FUELING ONLY IN DESIGNATED AREAS, ENCLOSING OR COVERING STORED FUEL, AND IMPLEMENTING SPILL CONTROLS SUCH AS SECONDARY CONTAINMENT AND ACTIVE MEASURES USING SPILL RESPONSE KITS.
8. VEHICLE AND EQUIPMENT MAINTENANCE. ELIMINATE AND MINIMIZE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM VEHICLE AND EQUIPMENT MAINTENANCE OPERATIONS BY USING OFF-SITE FACILITIES WHEN FEASIBLE, PERFORMING WORK IN DESIGNATED AREAS ONLY, USING SPILL PADS UNDER VEHICLES AND EQUIPMENT, CHECKING FOR LEAKS AND SPILLS, AND CONTAINING AND CLEANING UP SPILLS IMMEDIATELY.
9. SOLID WASTE MANAGEMENT. PREVENT OR REDUCE DISCHARGE OF POLLUTANTS TO THE LAND, GROUNDWATER, AND IN STORM WATER FROM SOLID WASTE OR CONSTRUCTION AND DEMOLITION WASTE BY PROVIDING DESIGNATED WASTE COLLECTION AREAS, COLLECT SITE TRASH DAILY, AND ENSURING THAT CONSTRUCTION WASTE IS COLLECTED, REMOVED, AND DISPOSED OF ONLY AT AUTHORIZED DISPOSAL AREAS.
10. SANITARY/SEPTIC WASTE MANAGEMENT. TEMPORARY AND PORTABLE SANITARY AND SEPTIC WASTE SYSTEMS SHALL BE MOUNTED OR STAKED IN, WELL-MAINTAINED AND SCHEDULED FOR REGULAR WASTE DISPOSAL AND SERVICING. SOURCES OF SANITARY AND/OR SEPTIC WASTE SHALL NOT BE STORED NEAR THE MS4 OR RECEIVING WATERS.
11. STOCKPILE MANAGEMENT. STOCKPILES SHALL NOT BE LOCATED IN DRAINAGE WAYS, WITHIN 50 FEET FROM AREAS OF CONCENTRATED FLOWS, AND ARE NOT ALLOWED IN THE CITY RIGHT-OF-WAY. SEDIMENT BARRIERS OR SILT FENCES SHALL BE USED AROUND THE BASE OF ALL STOCKPILES. STOCKPILES SHALL NOT EXCEED 15 FEET IN HEIGHT. STOCKPILES GREATER THAN 15 FEET IN HEIGHT SHALL REQUIRE 8 FOOT WIDE BENCHING IN ACCORDANCE WITH ROH CHAPTER 18A, ARTICLE 3. STOCKPILES MUST BE COVERED WITH PLASTIC SHEETING OR A COMPARABLE MATERIAL IF THEY WILL NOT BE ACTIVELY USED WITHIN 7 DAYS.
12. LIQUID WASTE MANAGEMENT. LIQUID WASTE SHALL BE CONTAINED IN A CONTROLLED AREA SUCH AS A HOLDING PIT, SEDIMENT BASIN, ROLL-OFF BIN, OR PORTABLE TANK OF SUFFICIENT VOLUME AND TO CONTAIN THE LIQUID WASTES GENERATED. CONTAINMENT AREAS OR DEVICES MUST BE IMPERMEABLE AND LEAK FREE AND SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS.
13. CONCRETE WASTE MANAGEMENT. PREVENT OR REDUCE THE DISCHARGE OF POLLUTANTS TO STORM WATER FROM CONCRETE WASTE BY CONDUCTING WASHOUT OFFSITE OR PERFORMING ONSITE WASHOUT IN A DESIGNATED AREA CONSTRUCTED AND MAINTAINED IN SUFFICIENT QUANTITY AND SIZE TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS. PLASTIC LINING MATERIAL SHOULD BE A MINIMUM OF 10 MILLIMETER POLYETHYLENE SHEETING AND SHOULD BE FREE OF HOLES, TEARS, OR OTHER DEFECTS THAT COMPROMISE THE IMPERMEABILITY OF THE MATERIAL. CONTAINMENT AREAS OR DEVICES SHOULD NOT BE LOCATED WHERE ACCIDENTAL RELEASE OF THE CONTAINED LIQUID CAN DISCHARGE TO WATER BODIES, CHANNELS, OR STORM DRAINS. WASHOUT FACILITIES MUST BE CLEANED, OR NEW FACILITIES MUST BE CONSTRUCTED AND READY FOR USE ONCE THE WASHOUT IS 75 PERCENT FULL. ONCE CONCRETE WASTES ARE WASHED INTO THE DESIGNATED AREA AND ALLOWED TO HARDEN, THE CONCRETE SHOULD BE BROKEN UP, REMOVED, AND DISPOSED OF AS SOLID WASTES.

GOOD HOUSEKEEPING BMP'S (CONT):

14. CONTAMINATED SOIL MANAGEMENT. AT MINIMUM CONTAIN CONTAMINATED MATERIAL SOIL BY SURROUNDING WITH IMPERMEABLE LINED BERMS OR COVER EXPOSED CONTAMINATED MATERIAL WITH PLASTIC SHEETING. CONTAMINATED SOIL SHOULD BE DISPOSED OF PROPERLY IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS.
15. DUST CONTROL. DUST FROM THE SITE SHALL NOT BE TRANSPORTED OR DISCHARGE TO OFF-SITE AREAS. THE WORK SHALL BE IN CONFORMANCE WITH THE AIR POLLUTION CONTROL STANDARDS CONTAINED IN THE HAWAII ADMINISTRATIVE RULES, TITLE 11, CHAPTER 60.1, "AIR POLLUTION CONTROL". CONTROL OF DUST SHALL BE ONE OR MORE OF THE FOLLOWING:
    - MULCHING TO A DEPTH OF NO LESS THAN ONE INCH.
    - SPRINKLING EXPOSED SOILS WITH WATER TO MAINTAIN MOISTNESS AT A DEPTH OF 2-3 INCHES DURING WORKING HOURS AND NOT TO GENERATE ANY RUNOFF
    - VERTICAL DUST BARRIERS NO LESS THAN 6 FEET IN HEIGHT, CONSTRUCTED OF MATERIALS CAPABLE OF EFFECTIVELY PREVENTING THE SPREAD OF DUST PARTICLES
    - SPRAY-ON CHEMICAL SOIL TREATMENTS (PALLIATIVES) SUCH AS ANIONIC ASPHALT EMULSION, LATEX EMULSION, RESING-WATER EMULSIONS, OR CALCIUM CHLORIDE. SPRAY-ON CHEMICAL TREATMENT MUST BE APPLIED ACCORDING TO THE MANUFACTURER'S SPECIFICATIONS.
16. BMP AND SITE MAINTENANCE. THE ESCP COORDINATOR SHALL INSPECT THE SITE ON A MONTHLY BASIS AND BEFORE AND AFTER ANY STORM GENERATING RUNOFF TO DETERMINE MAINTENANCE REQUIREMENTS AND GENERAL CONDITION OF THE INSTALLED SYSTEM. ALL MAINTENANCE RELATED TO A STORM EVENT SHOULD BE COMPLETED WITHIN 48 HOURS OF THE STORM EVENT. THE FOLLOWING MAINTENANCE TASKS SHOULD BE PERFORMED ON A REGULAR BASIS:
    - REMOVAL OF SEDIMENT FROM BARRIERS AND STORM DRAIN INLET PROTECTION DEVICES.
    - REPLACEMENT OR REPAIR OF WORN COMPOST FILTER SOCK.
    - REPLACEMENT OR REPAIR OF DAMAGED STRUCTURAL CONTROLS.
    - REPAIR OF DAMAGED SOIL STABILIZATION MEASURES.
    - INSPECT STABILIZED CONSTRUCTION ACCESS AND REMOVE AGGREGATE, SEPARATE AND DISPOSE OF SEDIMENT IF CONSTRUCTION ACCESS IS CLOGGED WITH SEDIMENT. CHECK FOR DAMGE AND REPAIR AS NEEDED.
    - STREET SWEEPING AND VACUUM TO REMOVE SEDIMENT FROM PAVEMENT AREAS.

PROJECT SEQUENCE:

1. INSTALL PERIMETER CONTROLS, DRAIN INLET PROTECTION, AND TEMPORARY FENCING FOR PROTECTED AREAS.
2. PROCEED WITH GRADING, UTILITY INSTALLATION, BUILDING CONSTRUCTION WITH LEAST POSSIBLE DISTURBANCE OF VEGETATIVE AREAS AND TEMPORARY STRUCTURES.
3. RELOCATE, RECONSTRUCT AND MAINTAIN BMPS AS NEEDED TO KEEP THEM EFFECTIVE AT ALL TIMES.
4. PROVIDE PERMANENT STABILIZATION.
5. REMOVE TEMPORARY EROSION CONTROL STRUCTURES AFTER COMPLETION OF WORK.
6. PRACTICE GOOD HOUSEKEEPING MEASURES THROUGHOUT THE DURATION OF CONSTRUCTION.
7. INSPECTIONS WILL BE PERFORMED MONTHLY.

RAIN RESPONSE PLAN:

THE FOLLOWING WILL BE PERFORMED WHEN HEAVY RAINS, TROPICAL STORM OR HURRICANE IS IMMINENT OR IS FORECASTED IN THE NEXT 48 HOURS:

1. TEMPORARY SUSPENSION OF ACTIVE GRADING AND CONSTRUCTION.
2. INSPECT ALL PERIMETER CONTROLS, AND INLET PROTECTION DEVICES, AND MAINTAIN AS NEEDED. REINSTALL ANY PERIMETER CONTROLS THAT WERE REMOVED DUE TO ACTIVE WORK IN THE AREA. IF A SEVERE STORM IS EXPECTED, REMOVE INLET PROTECTION DEVICES TO PREVENT FLOODING ON SURROUNDING STREETS.
3. COVER OR RELOCATE MATERIAL STOCKPILES AND LIQUID MATERIAL CONTAINERS TO AVOID CONTACT WITH RAINWATER.
4. PLACE SPILL PANS OR OIL-ONLY SPILL PADS UNDER CONSTRUCTION VEHICLES TO PREVENT RUNOFF FROM CONTACTING ANY SPILLED PETROLEUM PRODUCTS. PROPERLY DISPOSE OF ANY ACCUMULATED OILY WATER AFTER THE RAIN EVENT.
5. RE-INSPECT AFTER THE APPROACHING HEAVY RAINS, TROPICAL STORM OR HURRICANE AND REPLACE OR MAINTAIN BMPS AS NEEDED.

PRE-CONSTRUCTION STRUCTURAL CONTROL BMPs

- TRACKING CONTROL
- EXISTING DRAIN INLET PROTECTION
- COMPOST FILTER SOCK (PERIMETER CONTROL)

DURING CONSTRUCTION STRUCTURAL CONTROL BMPs

- TEMPORARY STABILIZATION
- BMPs FOR STOCKPILES, STAGING AREA, PROJECT TRAILERS, MATERIAL STORAGE, ETC*.

*CONTRACTOR SHALL INCLUDE THESE BMPs IN THE REVISED EROSION CONTROL PLANS, WHICH SHALL BE SUBMITTED TO THE CITY INSPECTOR FOR THEIR RECORDS.

POST CONSTRUCTION BMPs

- PERMANENT STABILIZATION (GRASSING, LANDSCAPING AND/OR PAVEMENT)

REV. NO.	DESCRIPTION	DATE

This work was prepared by me or under my supervision.
Signature
LICENSE EXPIRES: APRIL 30, 2026

CONRAD T. SHIROMA LICENSED PROFESSIONAL ENGINEER No.4324-C HAWAII, U.S.A.

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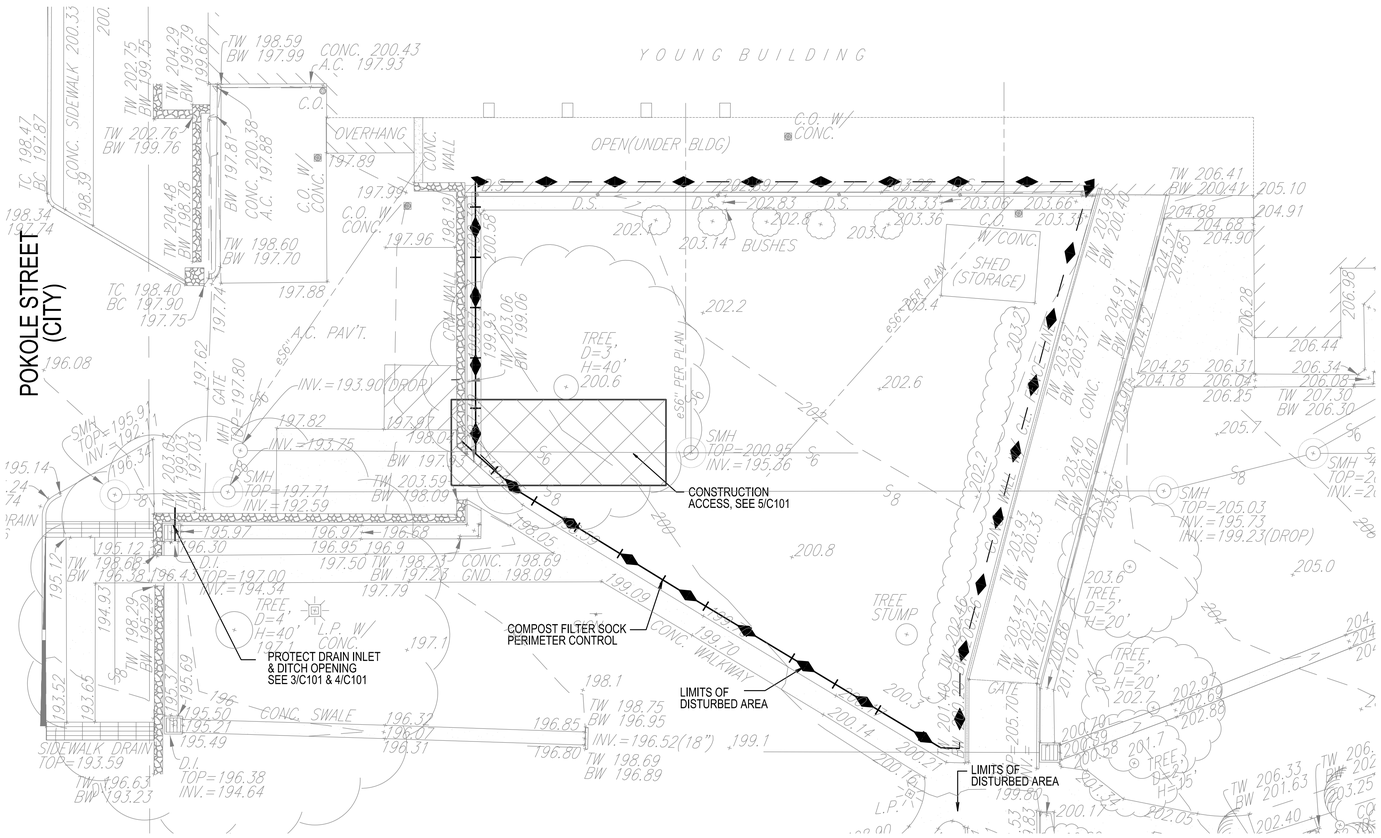
PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

EROSION & SEDIMENT CONTROL PLAN NOTES

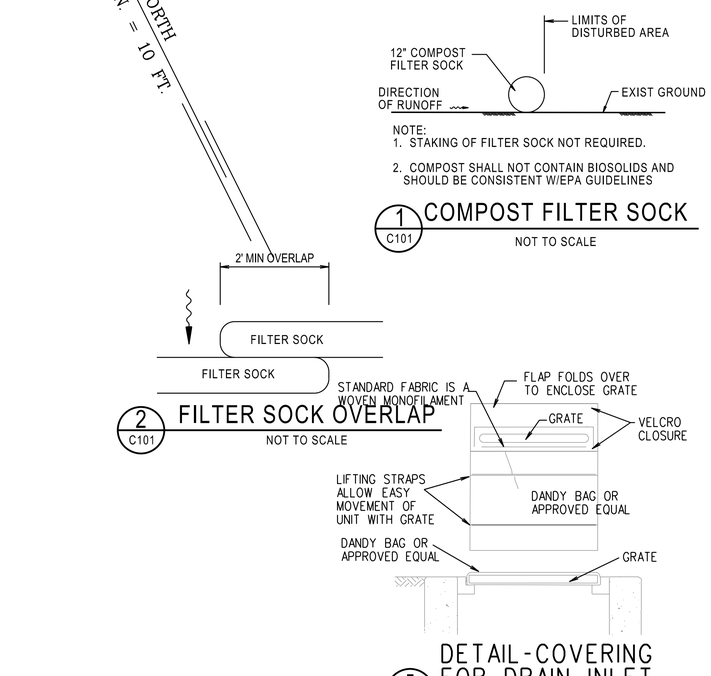
DATE MARCH 2024
SCALE AS SHOWN
DRAWN KSE CHECK CTS
SHEET C002
OF SHEETS



EROSION & SEDIMENT CONTROL PLAN

SCALE: 1"= 10' CATEGORY 1B

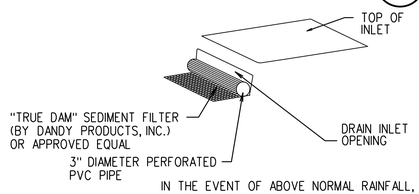
TRUE NORTH
SCALE: 1 IN. = 10 FT.



1 C101 COMPOST FILTER SOCK
NOT TO SCALE

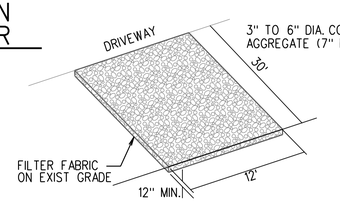
2 C101 FILTER SOCK OVERLAP
NOT TO SCALE

3 C101 DETAIL-COVERING FOR DRAIN INLET
NOT TO SCALE



IN THE EVENT OF ABOVE NORMAL RAINFALL, THE CONTRACTOR SHALL REMOVE THE SEDIMENT FILTER & REPLACE AFTER THE EVENT HAS PASSED.

4 C101 DETAIL-DRAIN INLET FILTER
NOT TO SCALE



5 C101 CONSTRUCTION ACCESS
NOT TO SCALE

LEGEND

10.4, 10.4±E	SPOT ELEVATION, EXISTING
10.10TC, BC	SPOT ELEVATION, TOP CURB, BOTTOM CURB
—+—+—	COMPOST FILTER SOCK PERIMETER CONTROL
— ◆ —	LIMITS OF DISTURBED AREA
◀- - -◀	LIMITS OF GRADING

10 5 0 10 20
(SCALE: 1"=10')

NO.	DESCRIPTION	DATE

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

CHRISTOPHER T. SHIROMA LICENSED PROFESSIONAL ENGINEER No.4324-C HAWAII, U.S.A.

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EROSION & SEDIMENT CONTROL PLAN

DATE MARCH 2024
SCALE AS SHOWN
DRAWN KSE CHECK CTS
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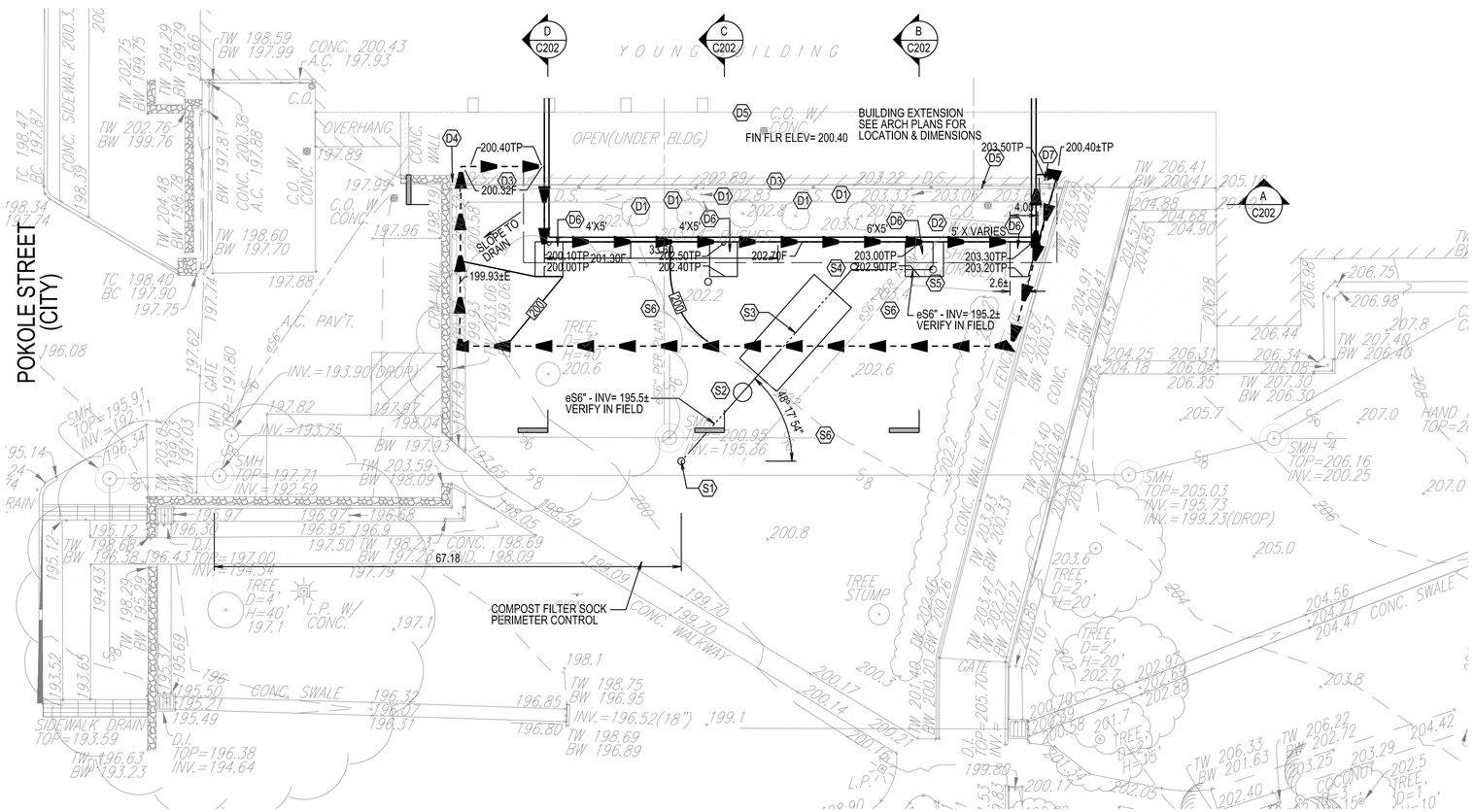
OF SHEETS



SITE & GRADING PLAN

SCALE: 1"= 10' CATEGORY 1B

TRUE NORTH
SCALE: 1 IN. = 10 FT.

D1	REMOVE BUSH
D2	DEMOLISH/REMOVE SHED
D3	DEMOLISH/REMOVE DRAINAGE SWALE
D4	DRAINAGE SWALE TO REMAIN
D5	ADJUST CLEANOUT TO NEW GRADE, SEE MECH PLANS
D6	4" THICK CONCRETE PAD UNDER SPLASH BLOCK
D7	4" THICK CONCRETE SLAB, SLOPE TO FRONT OF BLDG

S1	STA 0+00 SL 1 CONNECT TO EXIST 8" SEWER 1-8"x4" D.I. SADDLE WYE W/ SS STRAP, NUTS & BOLTS 1-4" WYE 1-CLEANOUT TO GRADE 4" PIPE - 24"± INV= 196.42 (4") INV= 194.21± (8")
S2	STA 0+13.25 CL SAMPLE MANHOLE SEE PLUMBING PLANS & SPECIFICATIONS INV= 196.68
S3	STA 0+24.70 CL 200 GAL GREASE INTERCEPTOR SEE PLUMBING PLANS & SPECIFICATIONS INV= 196.75 (OUT) INV= 197.00 (IN)
S4	STA 0+36.92 SL1 CLEANOUT TO GRADE 1-4" 1/8 BEND INV= 197.08
S5	STA 0+33.64 SL1 CONNECT TO BLDG SEWER 1-4" 1/4 BEND FOR CONT SEE MECH PLANS INV= 197.34
S6	EXISTING SEWER TO REMAIN

NOTE:

4" PVC SEWER PIPE AND FITTINGS SHALL CONFORM TO 2021 UPC TABLE 701.2 PVC, PSM, ASTM D-3034, SDR 26.

LEGEND

10.4, 10.4±E	SPOT ELEVATION, EXISTING
10.10TP	SPOT ELEVATION, FINISH TOP PAVEMENT
11.0 F	SPOT ELEVATION, FINISH GROUND
	EXISTING CONTOUR
	FINISH CONTOUR
	COMPOST FILTER SOCK PERIMETER CONTROL
	LIMITS OF GRADING

EARTHWORK SUMMARY

EXC=	25	C.Y.
EMB=	-	C.Y.
AREA TO BE GRADED=		0.03 AC
AREA DISTURBED=		0.11 AC

NOTE:
QUANTITIES SHOWN ARE FOR GRADING PERMIT PURPOSES ONLY AND DO NOT INCLUDE TRENCH OR STRUCTURAL EXCAVATION AND BACKFILL. THE CONTRACTOR SHALL VERIFY ALL EARTHWORK QUANTITIES.

10 5 0 10 20
(SCALE: 1"=10')

DATE | DESCRIPTION | REV. NO.

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Signature
LICENSE EXPIRES : APRIL 30, 2026

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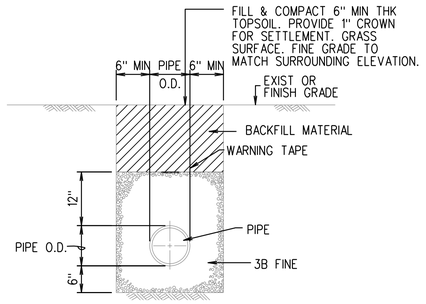
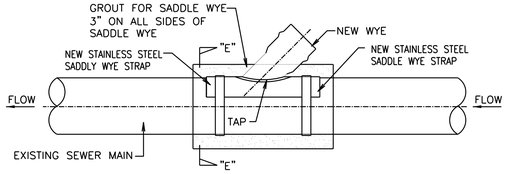
SITE & GRADING PLAN

DATE MARCH 2024
SCALE AS SHOWN
DRAWN KSE CHECK CTS
SHEET C102
OF SHEETS



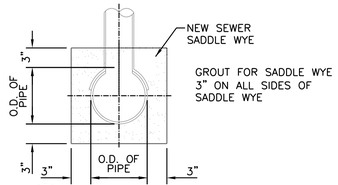
1 C103 TYPICAL TRENCH SECTIONS

SCALE: NONE



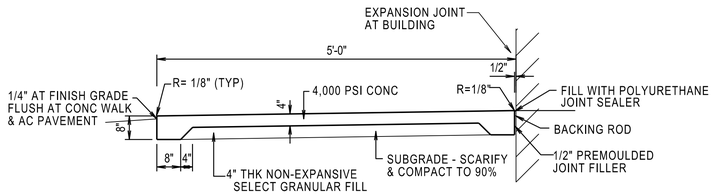
4 C103 PLAN – SADDLE WYE

NOT TO SCALE



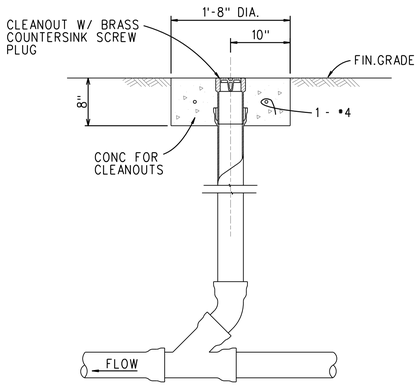
E C103 SECTION

NOT TO SCALE



2 C103 TYP SECTION - CONC APRON

SCALE" 1/2"= 1'-0"

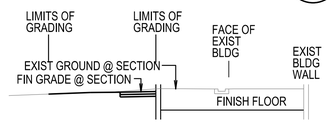


3 C103 DETAIL - CLEANOUT

NOT TO SCALE

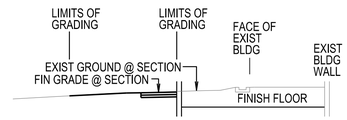
A C103 SECTION

SCALE: 1"= 10'



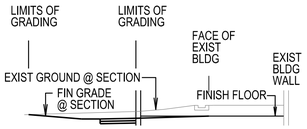
B C103 SECTION

SCALE: 1"= 10'



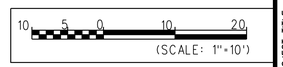
C C103 SECTION

SCALE: 1"= 10'



D C103 SECTION

SCALE: 1"= 10'



NO.	DESCRIPTION	DATE

This work was prepared by me or under my supervision or construction of this project and I am responsible for it.

Signature

LICENSE EXPIRES : APRIL 30, 2026

CONRAD T. SHIROMA LICENSED PROFESSIONAL ENGINEER No.4324-C HAWAII, U.S.A.

Pacific Architects, Inc.

2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

PROJECT TITLE

LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SITE DETAILS

DATE MARCH 2024
SCALE AS SHOWN
DRAWN KSE CHECK CTS

SHEET

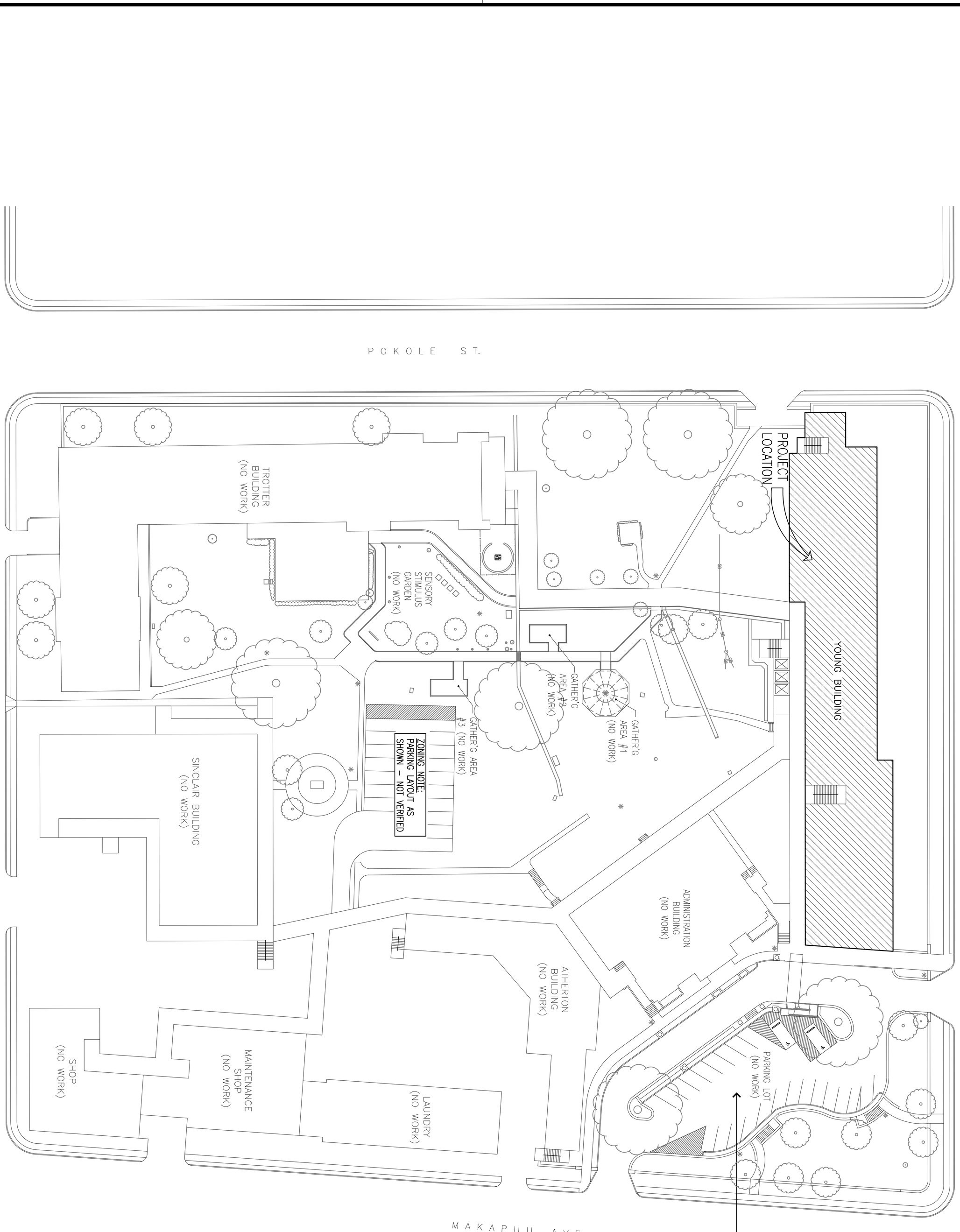
C103

OF SHEETS

A100

SITE PLAN

SCALE: 1/32" = 1'-0"



GRAPHIC SCALE:

SCALE: 1/32" = 1'-0"

0 8' 16' 32' 64' 96'

N

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: SITE PLAN

DATE: MARCH 2024
SCALE: AS SHOWN
DRAWN: MT
CHECK: CM

SHEET A100 — OF — SHEETS

Pacific Architects, Inc.
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Honolulu, Hawaii 96826
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808-942-0054

CLIFFORD K. MURAKAMI
LICENSED PROFESSIONAL ARCHITECT
NO. 6065
HAWAII, USA

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Signature

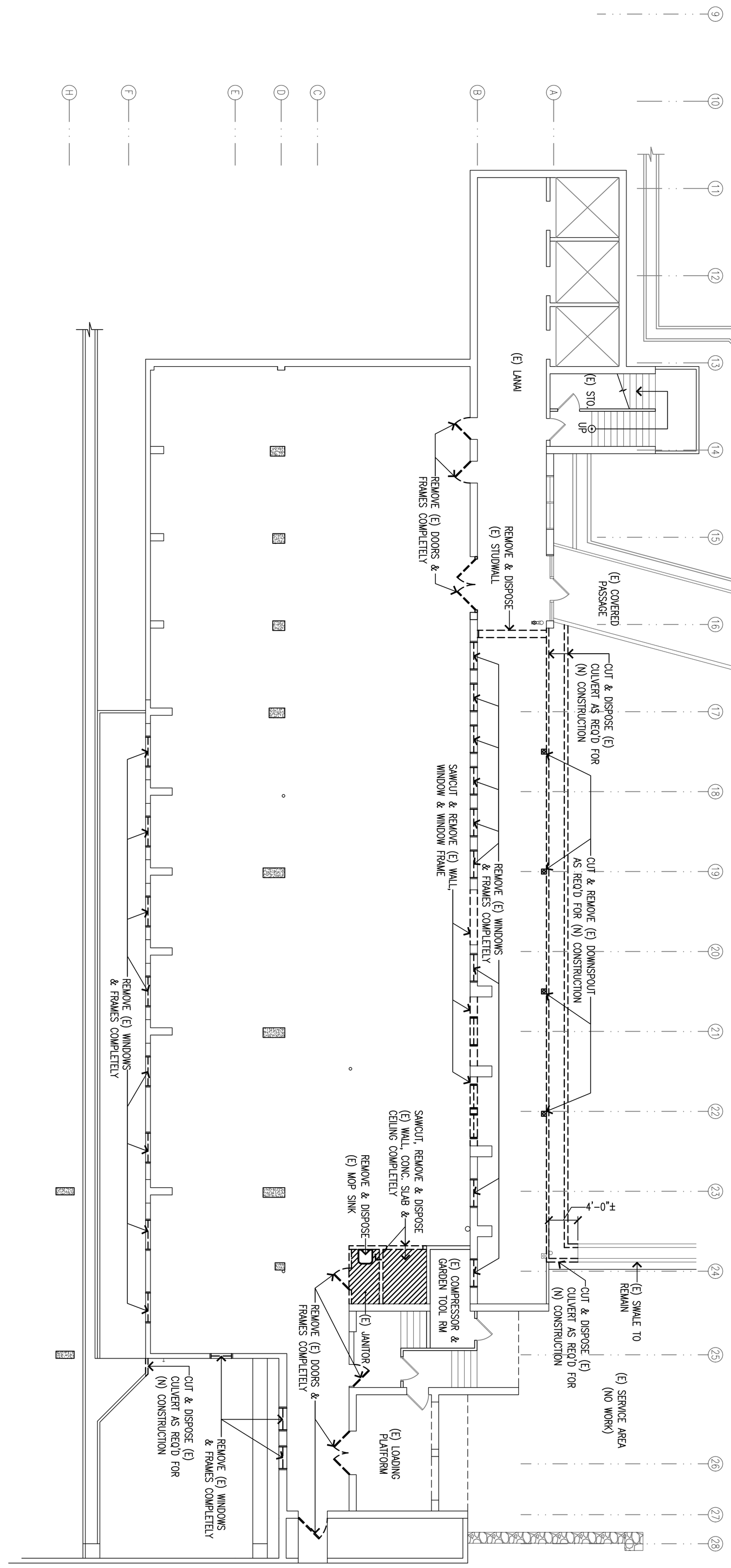
LICENSE EXPIRES : APRIL 30, 2026

REV. NO.	DESCRIPTION	DATE

A
A200

FLOOR PLAN – DEMO WORK

SCALE: 1/8" = 1'–0"



KEY TO INTERIOR ELEVS

GRAPHIC SCALE:

SCALE: 1/8" = 1'–0"

0 2' 4' 8' 16' 24'

N

SHEET	A200
	OF SHEETS
DRAWN	MT
CHECK	CM
SCALE	AS SHOWN
DATE	MARCH 2024

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: FLOOR PLAN – DEMO WORK

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HAWAII, USA

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Signature

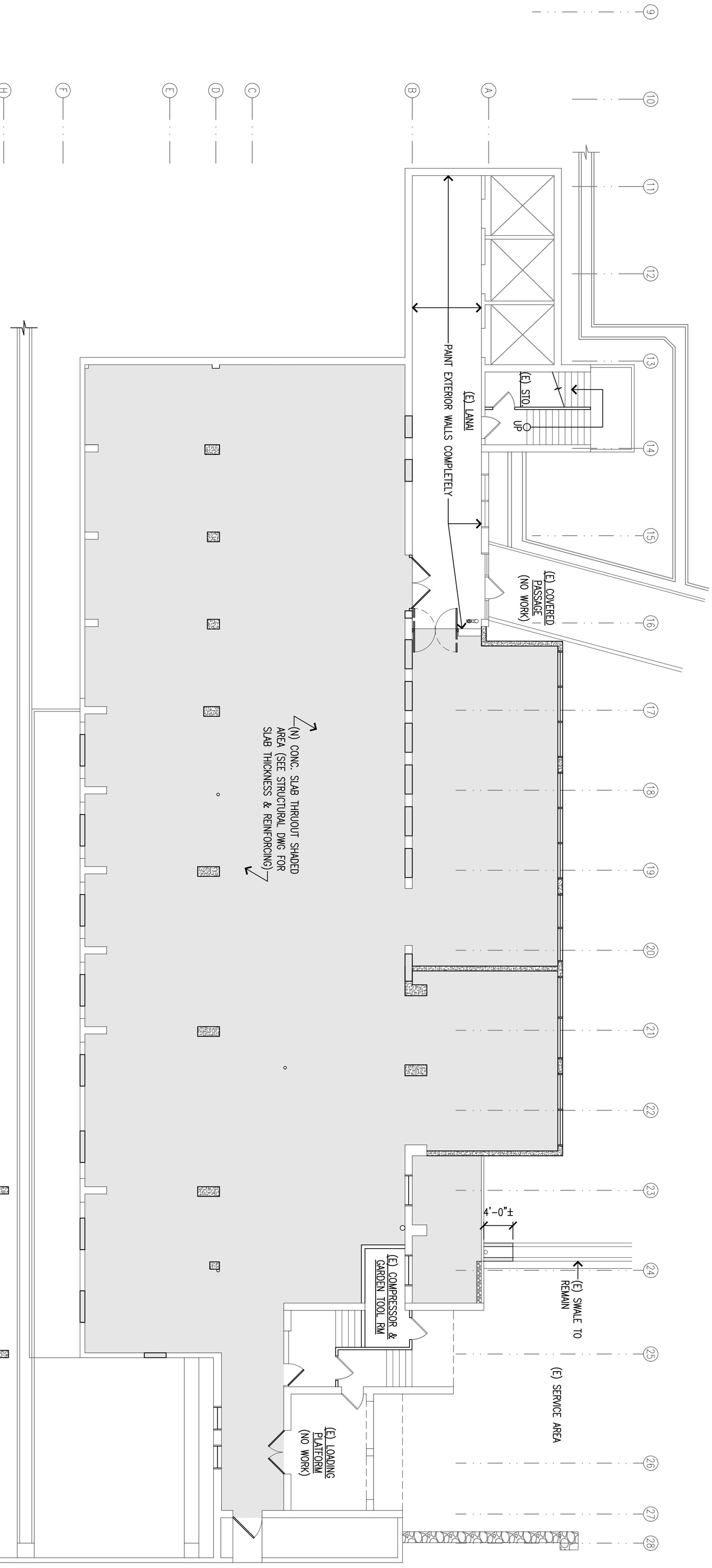
LICENSE EXPIRES : APRIL 30, 2026

REV. NO.	DESCRIPTION	DATE

A
A300

FLOOR PLAN – NEW WORK

SCALE: 1/8" = 1'-0"



KEY TO INTERIOR ELEVS

GRAPHIC SCALE:

SCALE: 1/8" = 1'-0"

0 2' 4' 8' 16' 24'

N

SHEET A300 — OF — SHEETS

DRAWN MT | CHECK CM | SCALE AS SHOWN | DATE MARCH 2024

PROJECT TITLE LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE FLOOR PLAN – NEW WORK

Pacific Architects, Inc.
2020 South King Street
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CLIFFORD K. MURAKAMI
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NO. 6065
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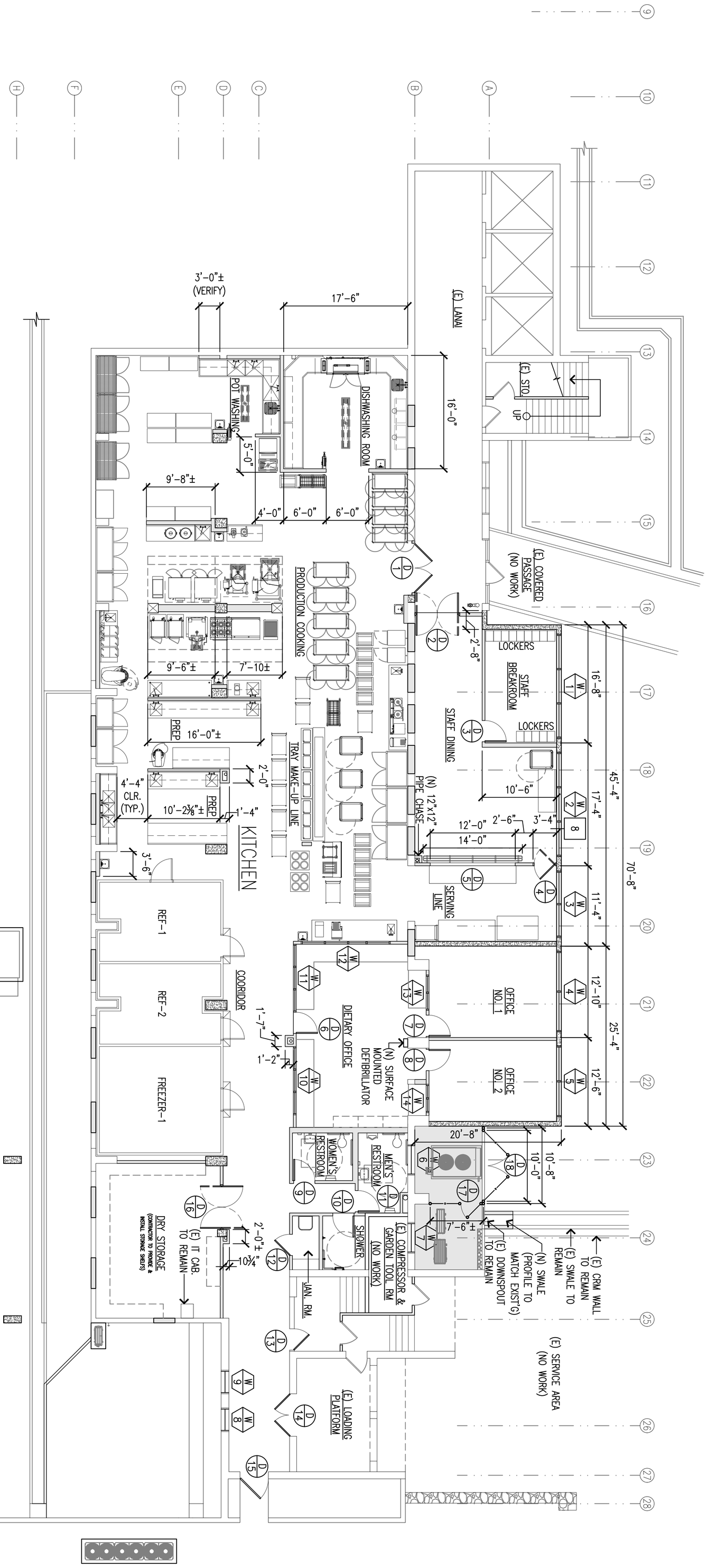
LICENSE EXPIRES : APRIL 30, 2026

REV. NO.	DESCRIPTION	DATE

A
A301

FLOOR PLAN – NEW WORK

SCALE: 1/8" = 1'-0"



LEGEND:

D — INDICATES DOOR TYPE

W — INDICATES WINDOW TYPE

KEY TO INTERIOR ELEVS

GRAPHIC SCALE:

SCALE: 1/8" = 1'-0"
0 2' 4' 8' 16' 24'

SCALE: 3/4" = 1'-0"
0 6" 1' 2' 3' 4'

N

SHEET	A301
OF	SHEETS
DRAWN	MT
CHECK	CM
SCALE	AS SHOWN
DATE	MARCH 2024

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: FLOOR PLAN – NEW WORK, INFILL WALL DETAIL

Pacific Architects, Inc.
2020 South King Street
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808-942-0054

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NO. 6065
HAWAII, USA

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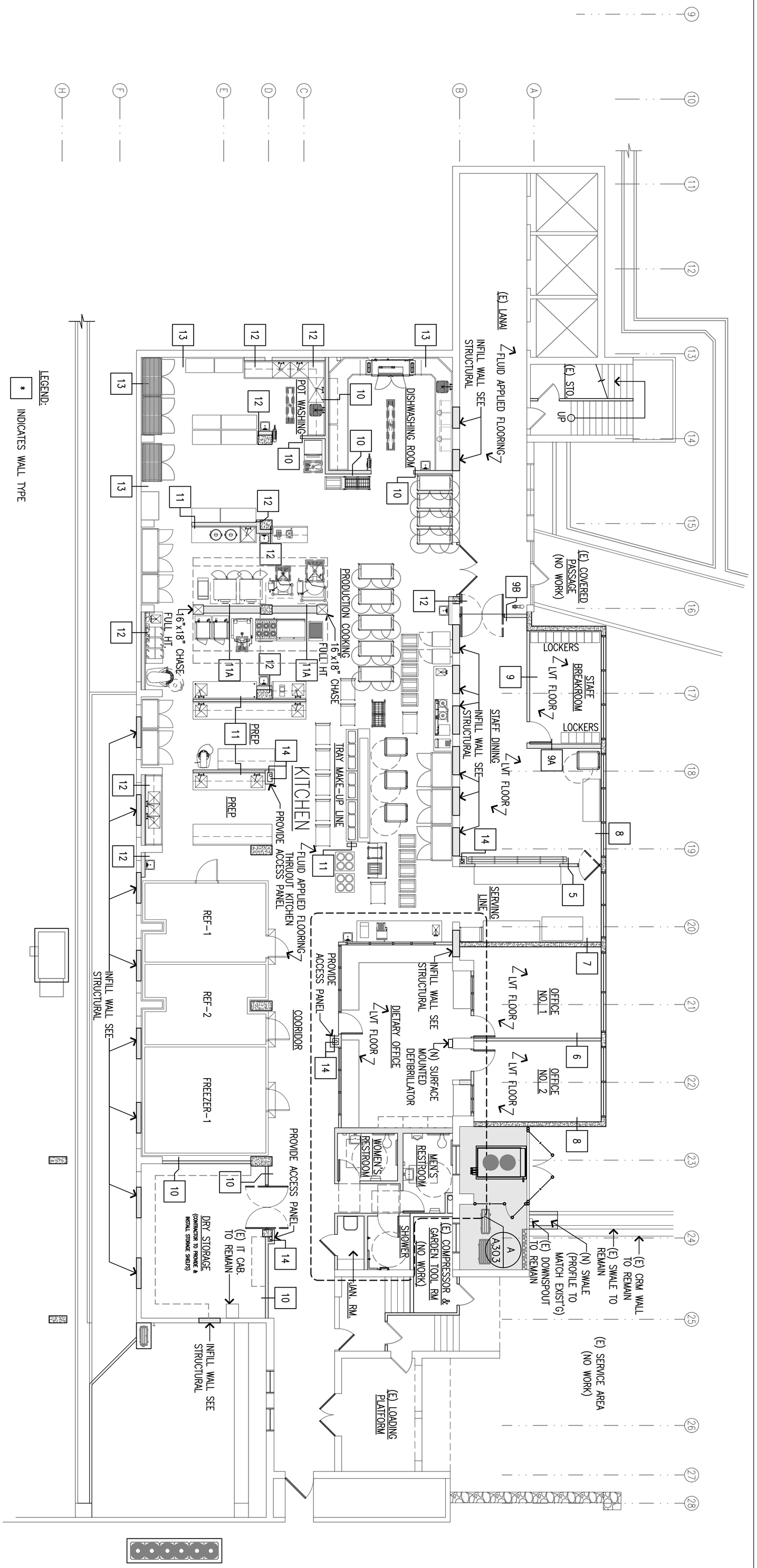
LICENSE EXPIRES : APRIL 30, 2026

REV. NO.	DESCRIPTION	DATE

A302

FLOOR PLAN – NEW WORK

SCALE: 1/8" = 1'–0"



LEGEND:

* INDICATES WALL TYPE

GRAPHIC SCALE:

SCALE: 1/8" = 1'–0"

0 2' 4' 8' 16' 24'

SCALE: 3/4" = 1'–0"

0 6" 1' 2' 3' 4'

N

SHEET	A302
OF	SHEETS
DRAWN	MT
CHECK	CM
SCALE	AS SHOWN
DATE	MARCH 2024

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: FLOOR PLAN – NEW WORK, INFILL WALL DETAIL

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

CLIFFORD K. MURAKAMI
LICENSED PROFESSIONAL ARCHITECT
NO. 6065
HAWAII, USA

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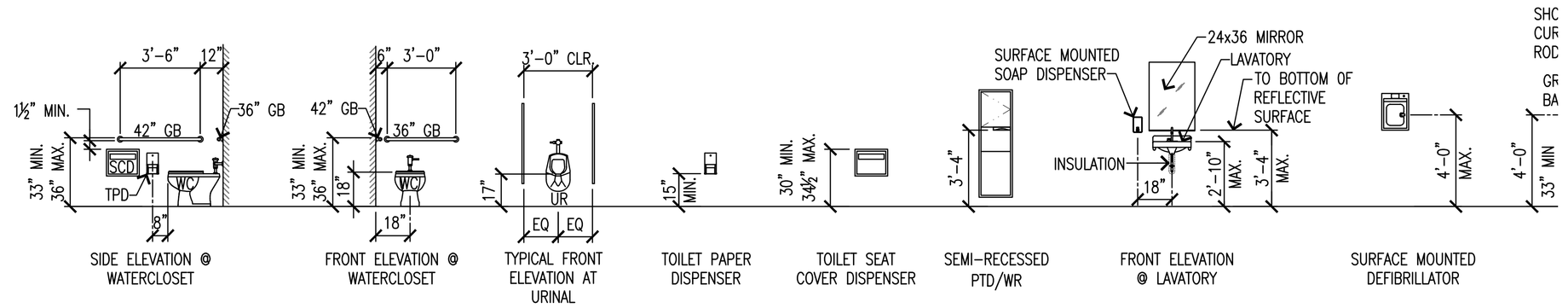
Signature

LICENSE EXPIRES : APRIL 30, 2026

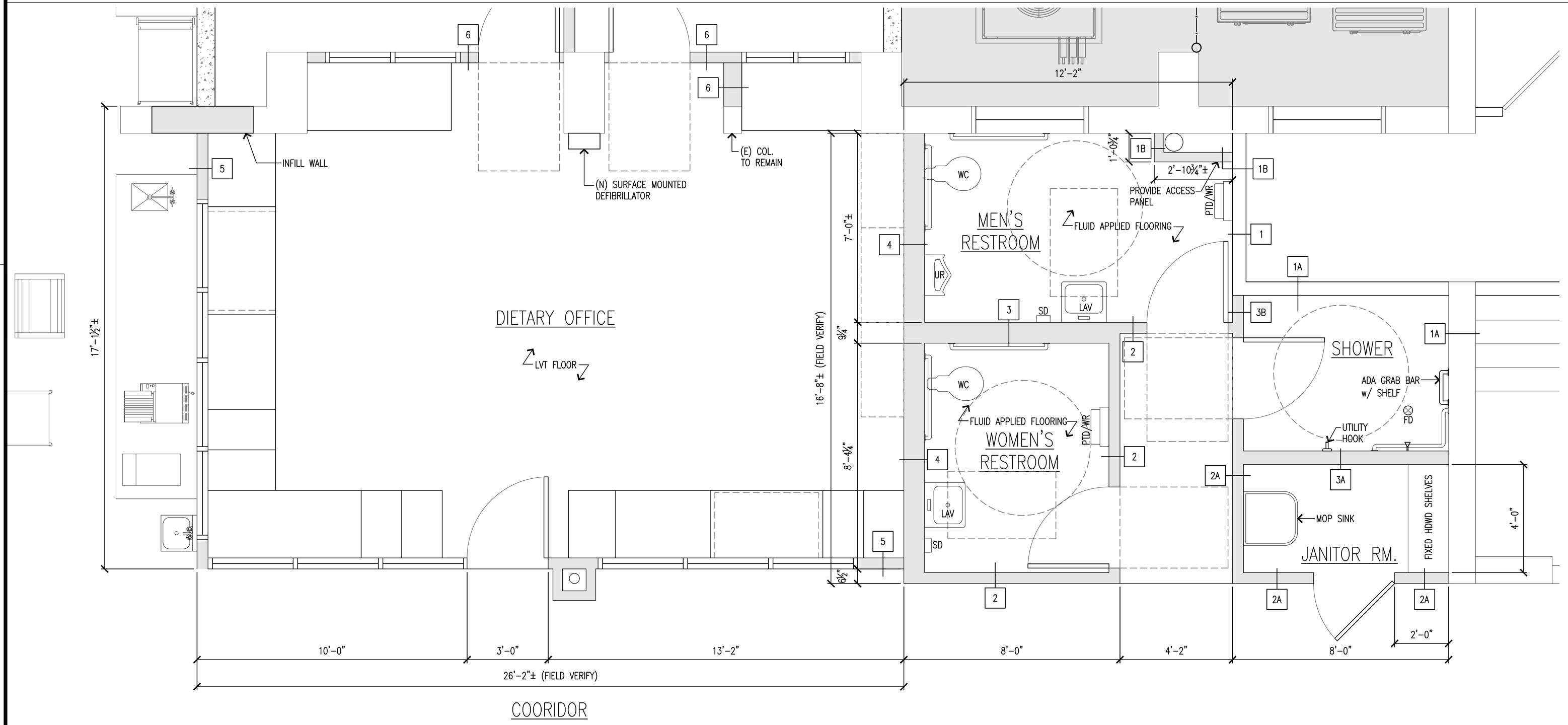
REV. NO.	DESCRIPTION	DATE



B
A-303

FIXTURE MOUNTING HEIGHTS

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



LEGEND:

[*] INDICATES WALL TYPE

A
A303

ENLARGED FLOOR PLAN – NEW WORK

SCALE: 1/2" = 1'-0"

N

A
D KEY TO INTERIOR ELEVS B
C

GRAPHIC SCALE:

0 1' 2' 4' 8' 12'
SCALE: 1/4" = 1'-0"

0 6" 1' 2' 4' 6'
SCALE: 1/2" = 1'-0"

DATE
DESCRIPTION
REV. NO.

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Signature
LICENSE EXPIRES : APRIL 30, 2026

CLIFFORD K. MURAKAMI LICENSED PROFESSIONAL ARCHITECT NO. 6065 HAWAII USA

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
ENLARGED FLOOR PLAN – NEW WORK & MOUNTING HEIGHTS

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MT CHECK CM

SHEET
A303
OF SHEETS

A
A304

REFLCTED CEILING PLAN – NEW WORK

SCALE: 1/8" = 1'–0"

GRAPHIC SCALE:

SCALE: 1/8" = 1'–0"

0 2' 4' 8' 16' 24'

N

SHEET	A304
OF	SHEETS
DRAWN	MT
CHECK	CM
SCALE	AS SHOWN
DATE	MARCH 2024

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
REFLECTED CEILING PLAN – NEW WORK

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

CLIFFORD K. MURAKAMI
LICENSED PROFESSIONAL ARCHITECT
NO. 6065
HAWAII, USA

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Signature

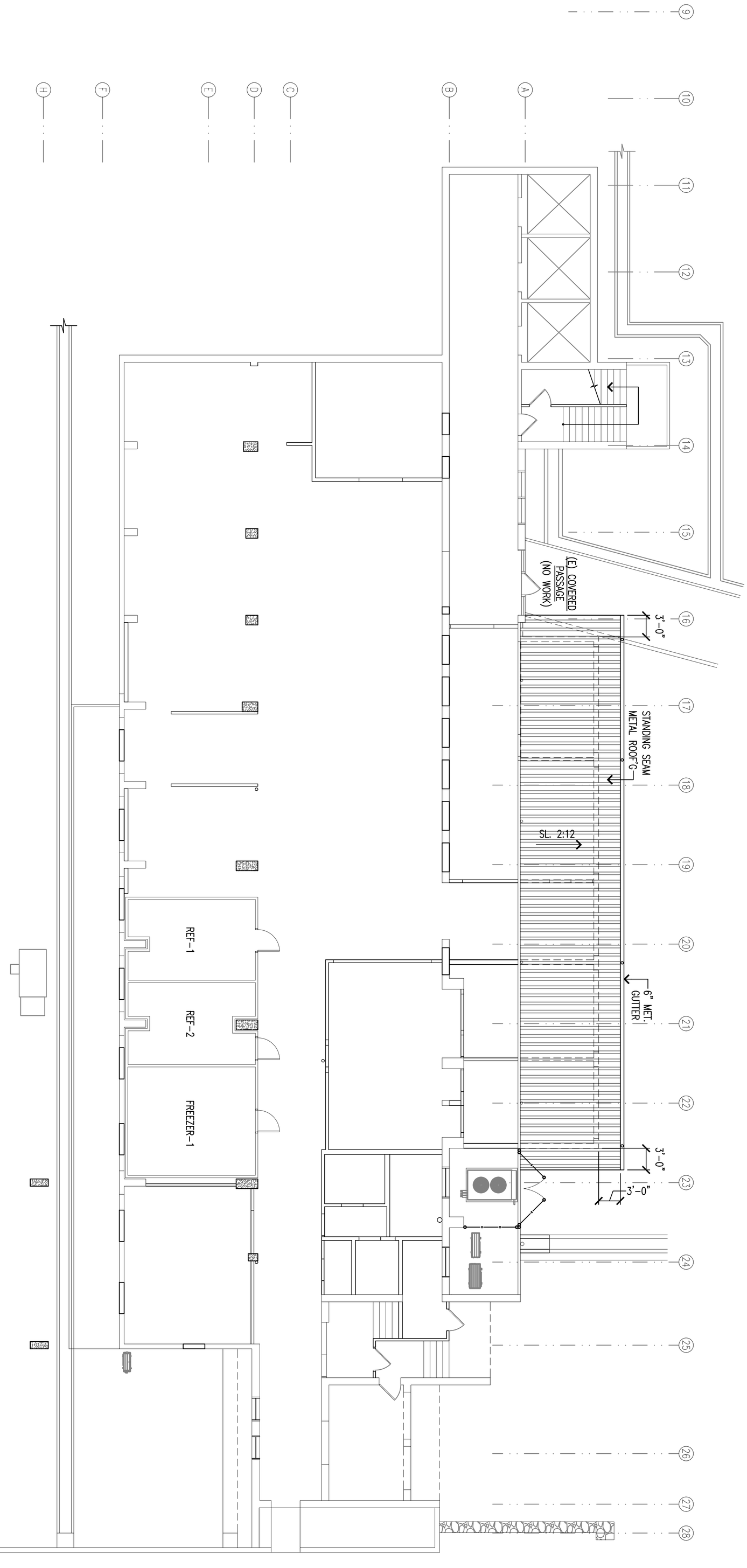
LICENSE EXPIRES : APRIL 30, 2026

REV. NO.	DESCRIPTION	DATE

A305

PARTIAL ROOF PLAN

SCALE: 1/8" = 1'-0"



GRAPHIC SCALE:

SCALE: 1/8" = 1'-0"

0 2' 4' 8' 16' 24'

N

SHEET A305 OF ___ SHEETS

DRAWN MT CHECK CM

SCALE AS SHOWN

DATE MARCH 2024

PROJECT TITLE LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE PARTIAL ROOF PLAN

Pacific Architects, Inc.
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Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

CLIFFORD K. MURAKAMI
LICENSED PROFESSIONAL ARCHITECT
NO. 6065
HAWAII, USA

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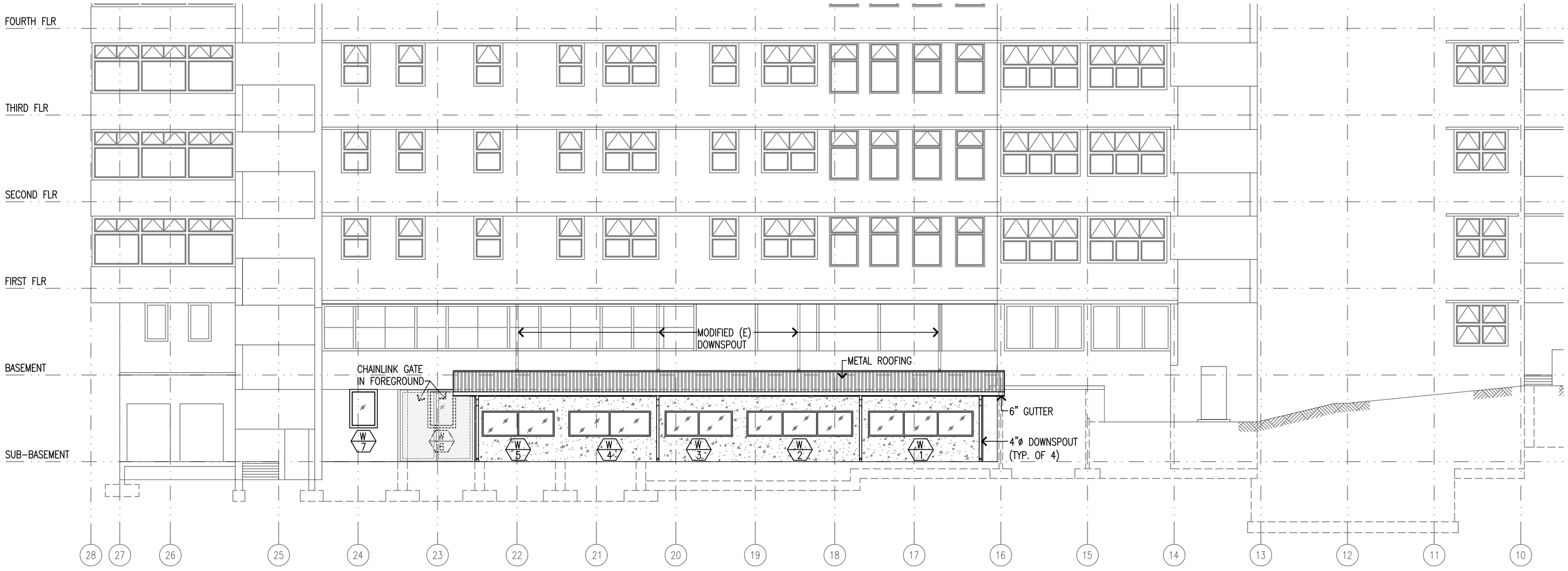
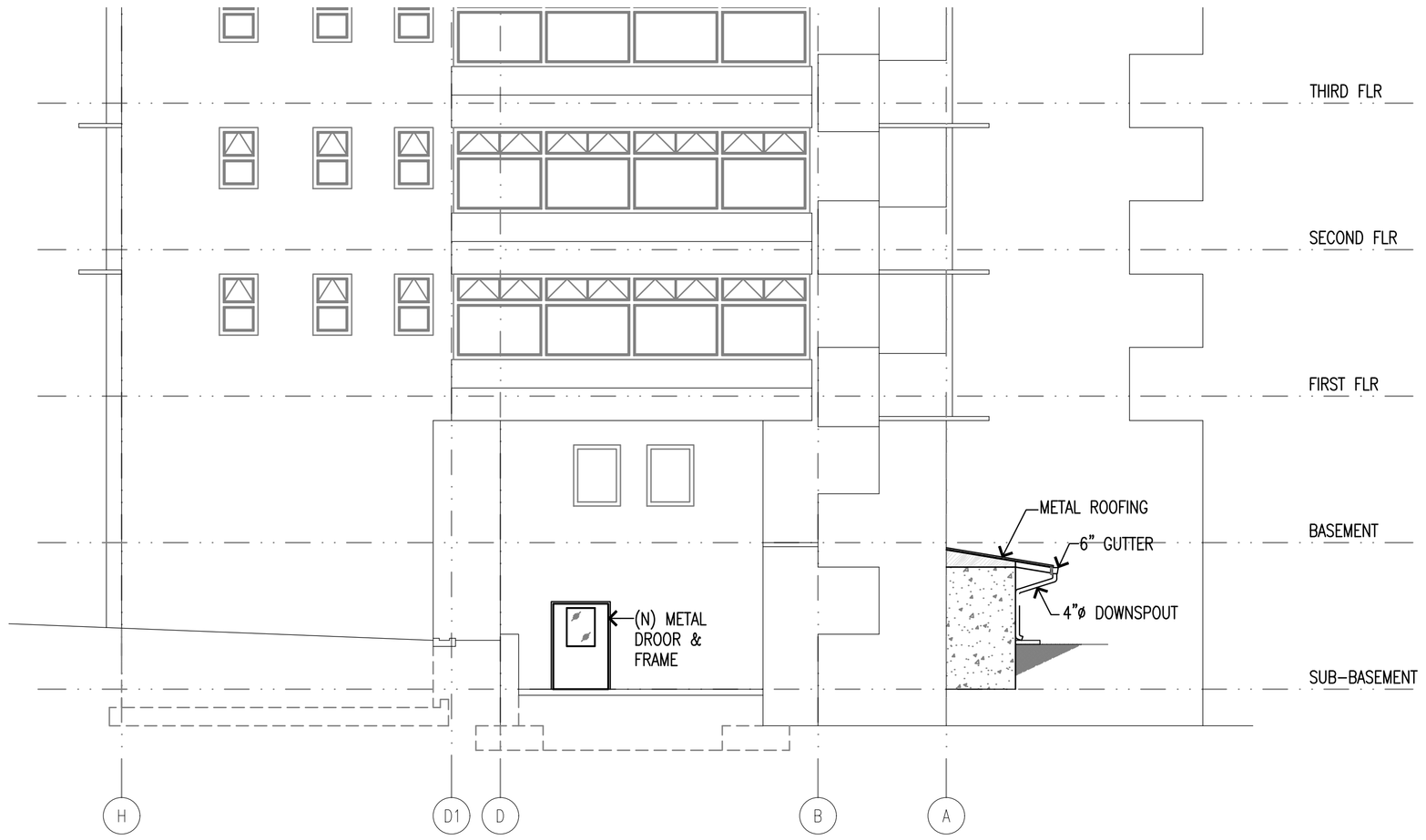
Signature

LICENSE EXPIRES : APRIL 30, 2026

REV. NO.	DESCRIPTION	DATE



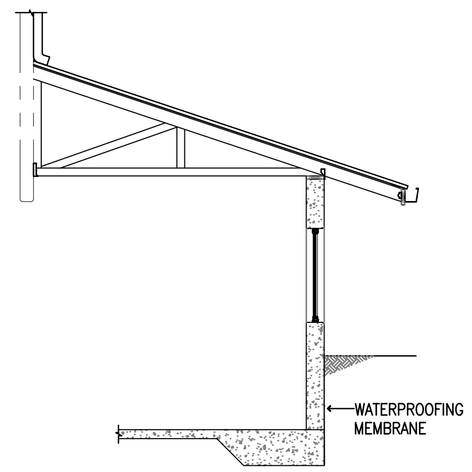
SOUTH ELEVATION



WEST ELEVATION

A / A400 PARTIAL EXTERIOR ELEVATIONS

SCALE: 1/8" = 1'-0"



B / A400 PARTIAL SECTION

SCALE: 1/8" = 1'-0"

GRAPHIC SCALE:

0 2' 4' 8' 16' 24'

SCALE: 1/8" = 1'-0"

0 2' 4' 8' 16'

SCALE: 1/8" = 1'-0"

REV. NO.	DESCRIPTION	DATE

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Signature

LICENSE EXPIRES : APRIL 30, 2026

K. MURAKAMI CLIFFORD LICENSED PROFESSIONAL ARCHITECT NO. 6065 HAWAII USA

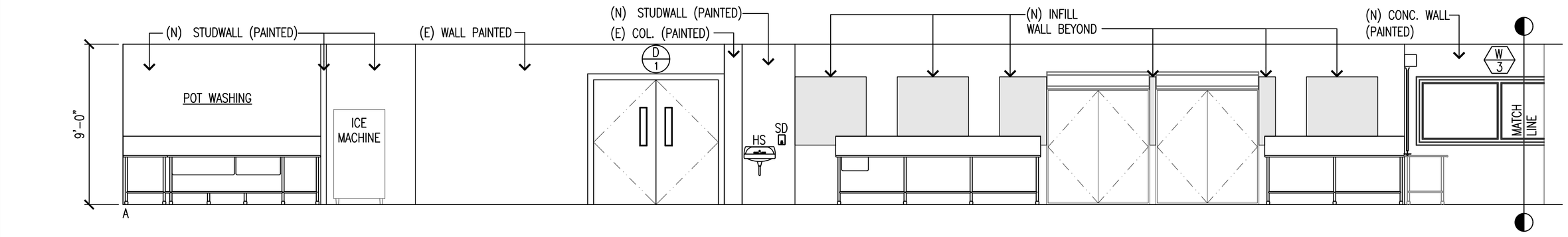
Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

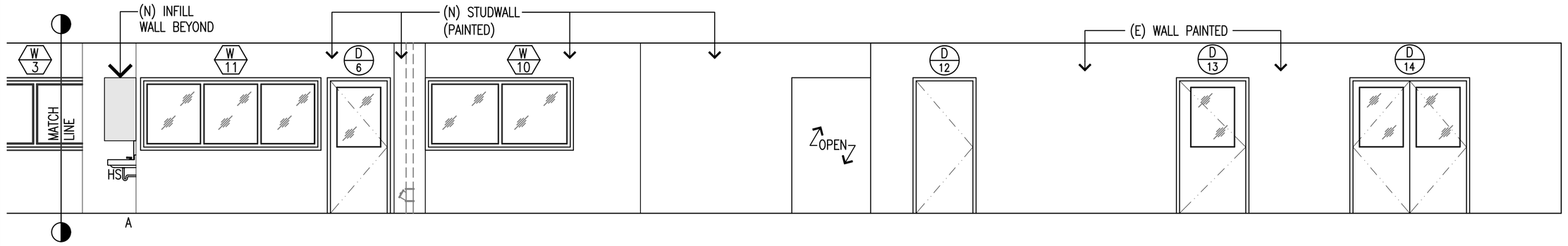
PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

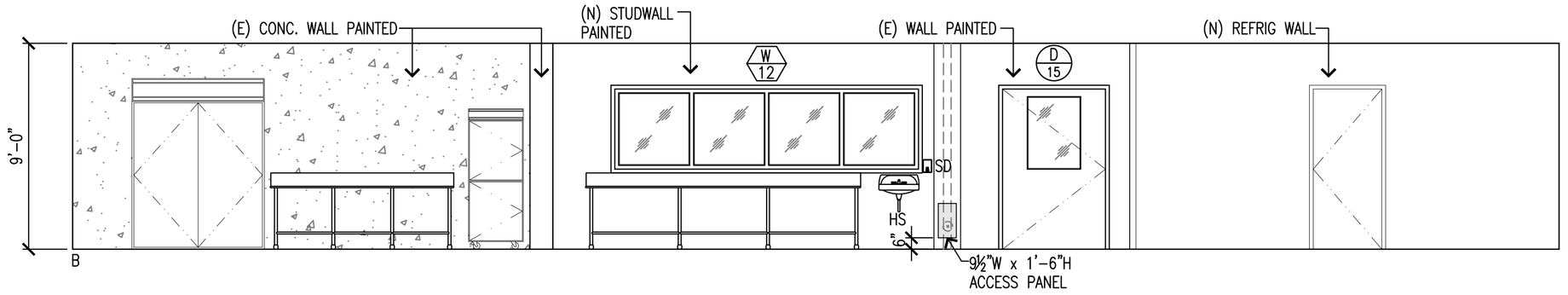
SHEET TITLE
EXTERIOR ELEVATIONS

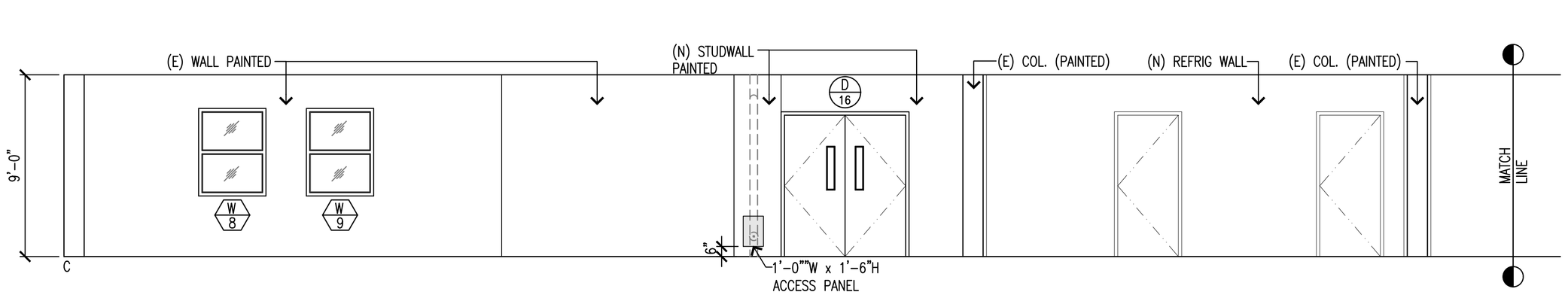
DATE MARCH 2024
SCALE AS SHOWN
DRAWN MT CHECK CM

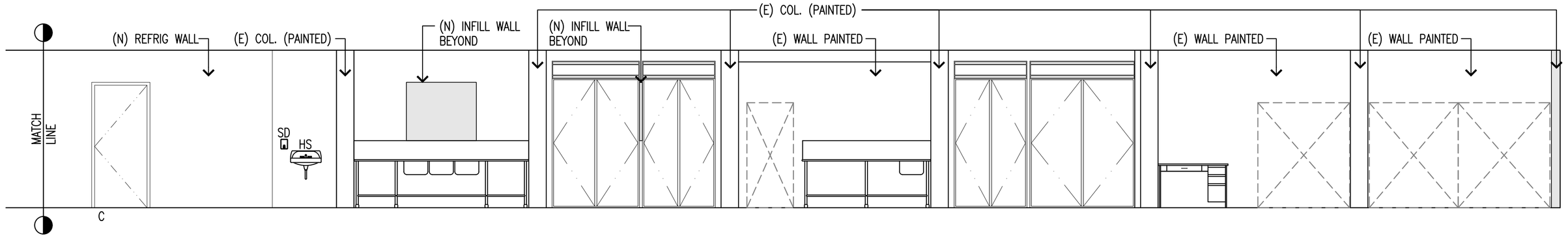
SHEET
A400
OF SHEETS

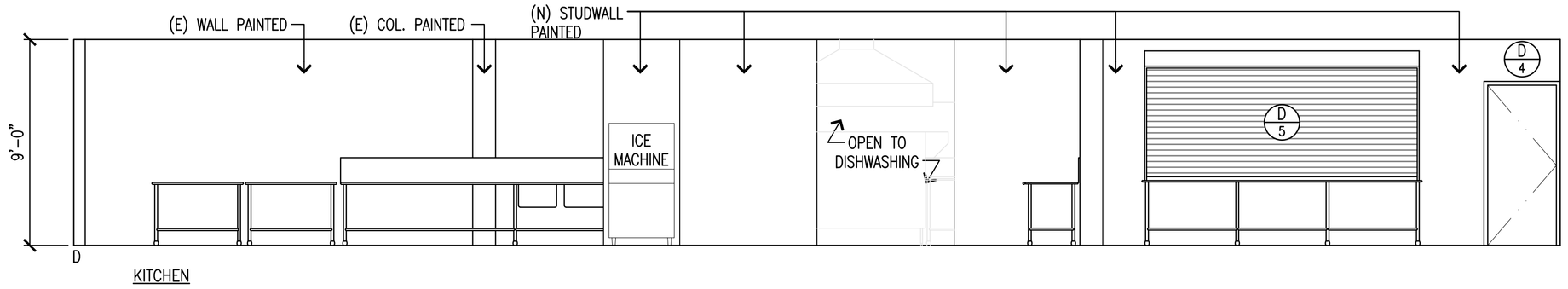












KITCHEN

A
A500

INTERIOR ELEVATIONS

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

GRAPHIC SCALE:

0 1' 2' 4' 8' 12'

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

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES : APRIL 30, 2026

CLIFFORD K. MURAKAMI LICENSED PROFESSIONAL ARCHITECT NO. 6065 HAWAII USA

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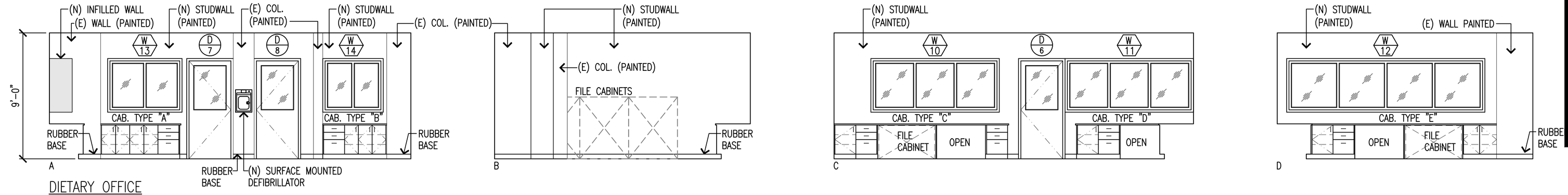
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

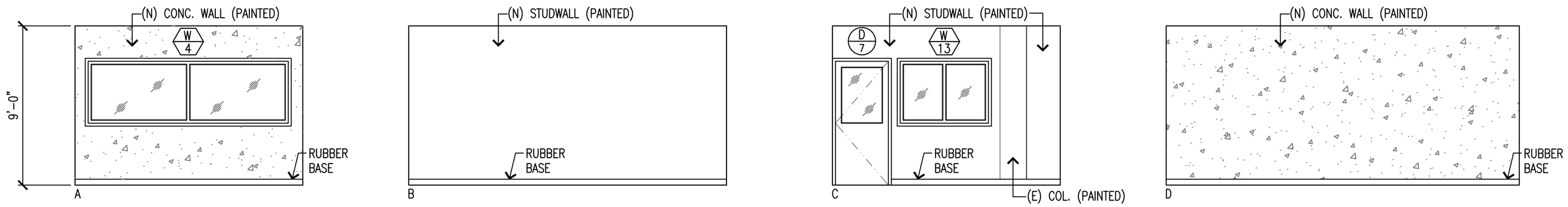
SHEET TITLE
INTERIOR ELEVATIONS

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MT CHECK CM

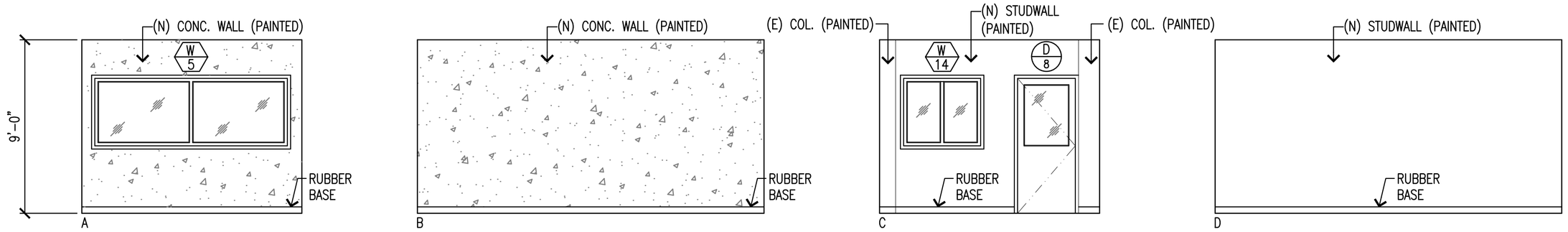
SHEET
A500
OF SHEETS



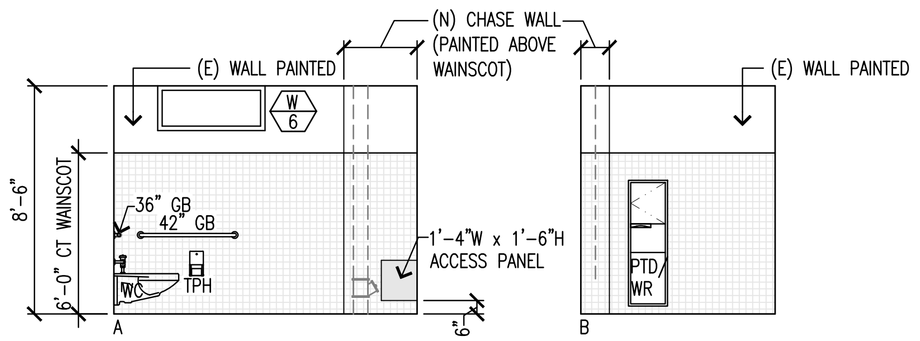
DIETARY OFFICE



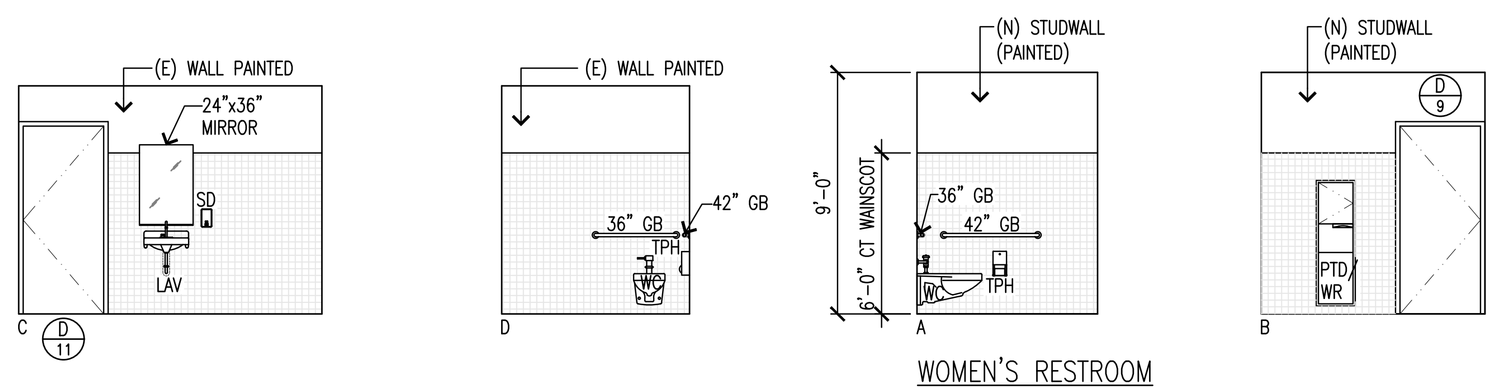
OFFICE NO. 1



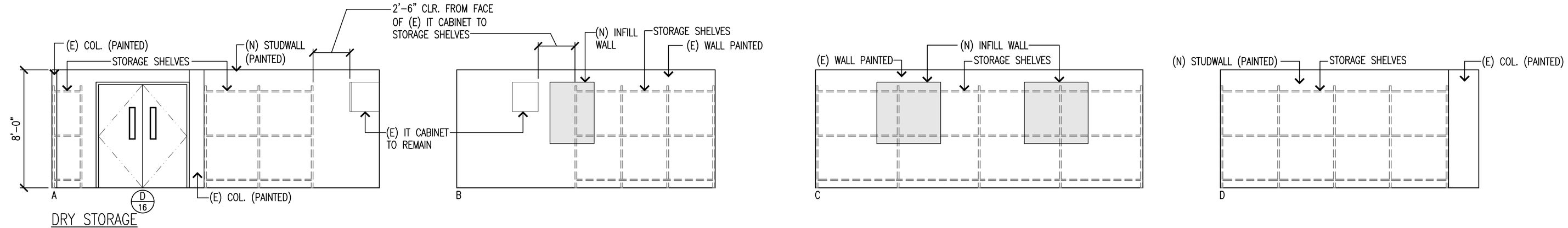
OFFICE NO. 2



MEN'S RESTROOM



WOMEN'S RESTROOM



DRY STORAGE

A501 INTERIOR ELEVATIONS

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

GRAPHIC SCALE:

0 1' 2' 4' 8' 12'

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

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES : APRIL 30, 2026

K. MURAKAMI CLIFFORD LICENSED PROFESSIONAL ARCHITECT NO. 6065 HAWAII USA

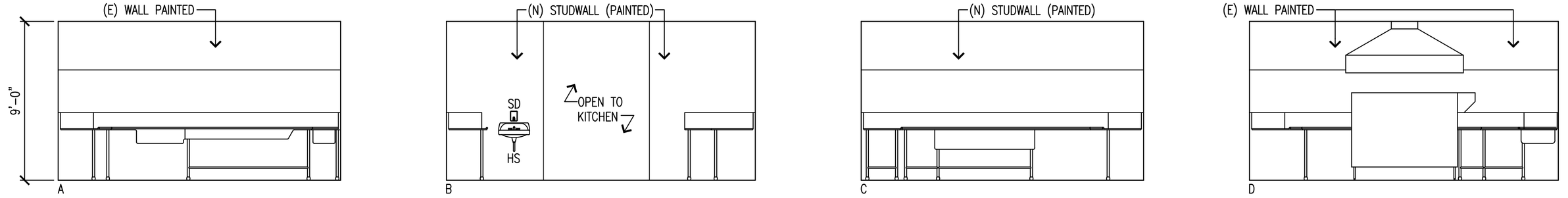
Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

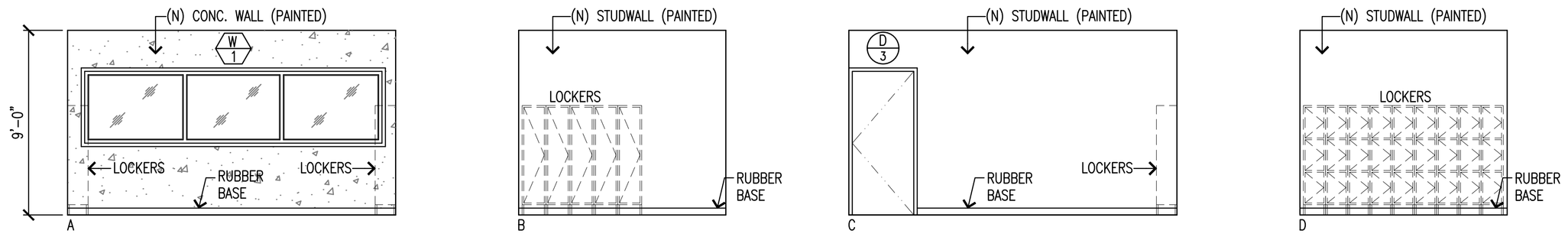
SHEET TITLE
INTERIOR ELEVATIONS

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MT CHECK CM

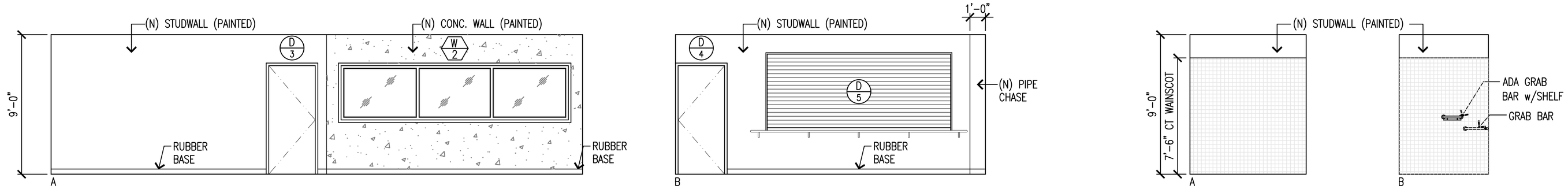
SHEET
A501
OF SHEETS

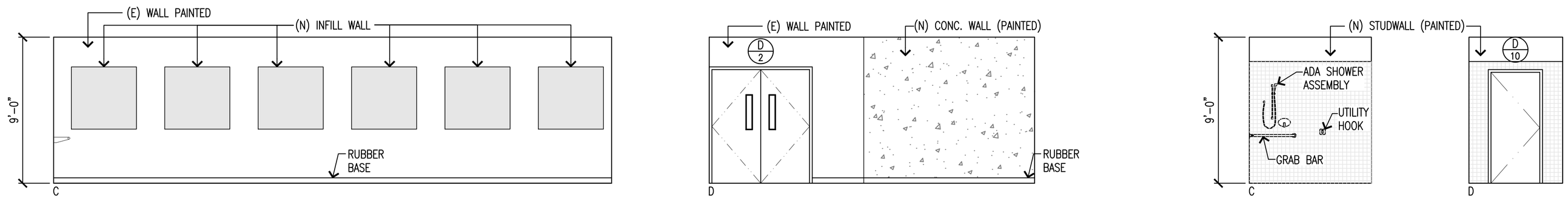


DISH WASHING



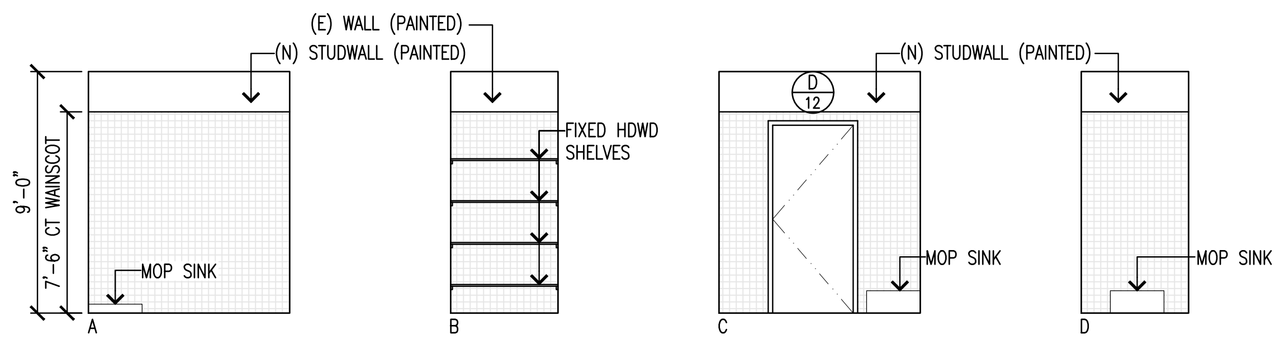
STAFF BREAKROOM





STAFF DINING AREA

SHOWER



JANITOR ROOM

A502

INTERIOR ELEVATIONS

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

GRAPHIC SCALE:

0 1' 2' 4' 8' 12'

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

REV. NO.	DESCRIPTION	DATE

This work was prepared by me or under my supervision and was constructed of this project and/or under my observation.

Signature

LICENSE EXPIRES : APRIL 30, 2026

K. MURAKAMI CLIFFORD LICENSED PROFESSIONAL ARCHITECT NO. 6065 HAWAII USA

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

PROJECT TITLE

LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE

INTERIOR ELEVATIONS

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MT CHECK CM

SHEET

A502

OF SHEETS

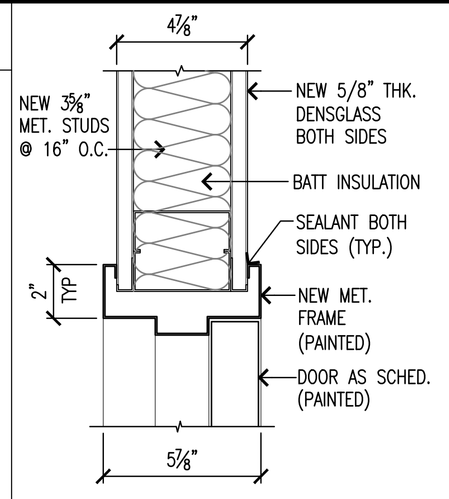
DOOR SCHEDULE

DOOR NO.	SIZE			DOOR TYPE	CONST. TYPE	FIRE RATING (B-LABEL)	HARDWARE NO.	DETAILS			REMARKS
	WIDTH	HEIGHT	THK					HEAD	JAMB	THRESHOLD	
D/1	7'-0"	7'-0"	1 ¾"	M		1½ HR	001	D/A600	D/A600 SIM.	E/A600	4" FRAME & 4" x 25" VISION PANEL
D/2	6'-0"	7'-0"	1 ¾"	M		1½ HR	007	D/A600	D/A600 SIM.	E/A600	4" x 25" VISION PANEL
D/3	3'-0"	7'-0"	1 ¾"	M		1½ HR	002	C/A600	C/A600 SIM.	E/A600	
D/4	3'-0"	7'-0"	1 ¾"	M		1½ HR	008	C/A600	C/A600 SIM.	E/A600	
D/5	12'-0"	5'-0"	1 ¾"	M		1½ HR	–	C/A600	C/A600 SIM.	–	
D/6	3'-0"	7'-0"	1 ¾"	M		1½ HR	002	F/A600	G/A600	E/A600	2'-4" x 3'-2" VISION PANEL
D/7	3'-0"	7'-0"	1 ¾"	M		1½ HR	002	C/A600	C/A600 SIM.	E/A600	2'-4" x 3'-2" VISION PANEL
D/8	3'-0"	7'-0"	1 ¾"	M		1½ HR	002	C/A600	C/A600 SIM.	E/A600	2'-4" x 3'-2" VISION PANEL
D/9	3'-0"	7'-0"	1 ¾"	M		1½ HR	003	C/A600	C/A600 SIM.	E/A600	
D/10	3'-0"	7'-0"	1 ¾"	M		1½ HR	003	C/A600	C/A600 SIM.	E/A600	
D/11	3'-0"	7'-0"	1 ¾"	M		1½ HR	003	C/A600	C/A600 SIM.	E/A600	
D/12	3'-0"	7'-0"	1 ¾"	M		1½ HR	004	C/A600	C/A600 SIM.	E/A600	
D/13	3'-8"	7'-0"	1 ¾"	M		1½ HR	005	C/A600	C/A600 SIM.	E/A600	2'-4" x 3'-2" VISION PANEL
D/14	5'-8"	7'-0"	1 ¾"	M		1½ HR	006	D/A600	D/A600 SIM.	E/A600	2'-4" x 3'-2" VISION PANEL
D/15	4'-6"	7'-0"	1 ¾"	M		1½ HR	005	D/A600	D/A600 SIM.	E/A600	2'-4" x 3'-2" VISION PANEL
D/16	6'-0"	7'-0"	1 ¾"	M		1½ HR	006	C/A600	C/A600 SIM.	E/A600	4" x 25" VISION PANEL
D/17	3'-0"	7'-0"		CL		1½ HR	006				CHAINLINK FENCE GATE
D/18	5'-0"	5'-0"		CL		1½ HR	006				DBL CHAINLINK FENCE GATE

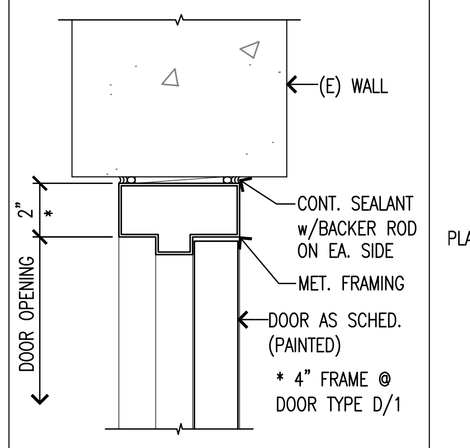
DOOR ABBREVIATIONS:

M METAL
CL CHAINLINK

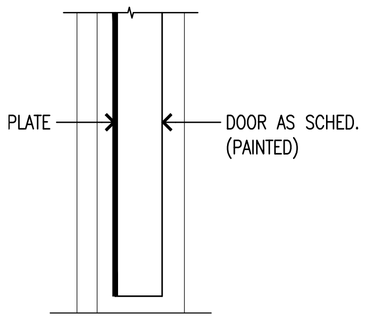
NOTE:
DOORS THAT IS TO BE INSTALLED IN AN EXISTING OPENING. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS & ROUGH OPENINGS PRIOR TO ORDERING & INSTALLING NEW DOORS & FRAMES. FOR DBL. CHAINLINK GATES FEILD VERIFY DIMENSIONS PRIOR TO MANUFACTURING THE GATES.



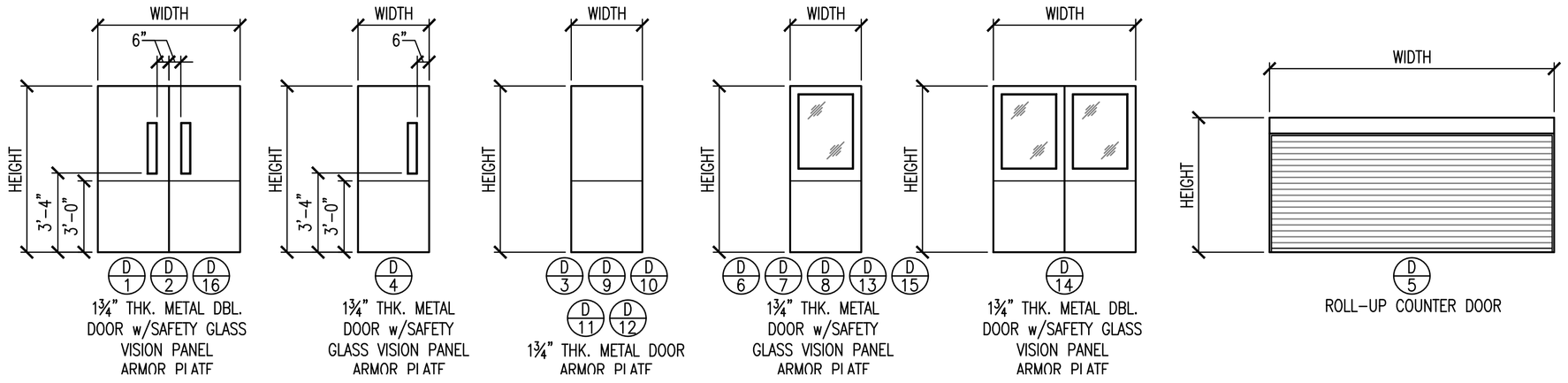
C A600 DOOR DET.
SCALE: 3" = 1'-0"



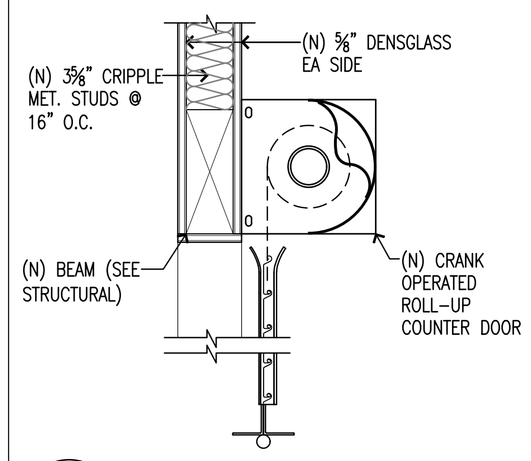
D A600 DOOR DET.
SCALE: 3" = 1'-0"



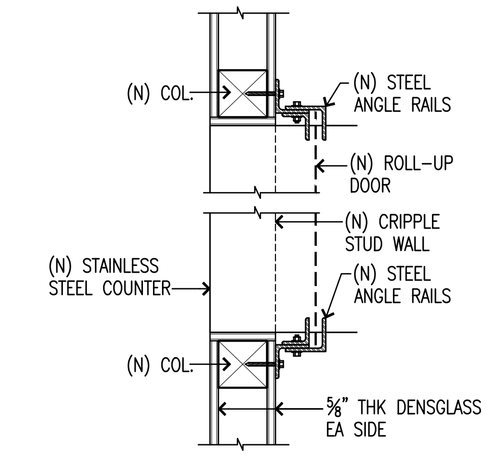
E A600 DOOR DET.
SCALE: 3" = 1'-0"



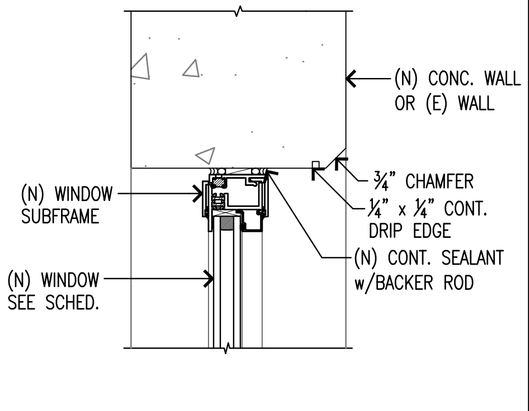
A A600 DOOR TYPES
SCALE: 1/4" = 1'-0"



F A600 ROLL-UP DOOR DET.
SCALE: 1 1/2" = 1'-0"



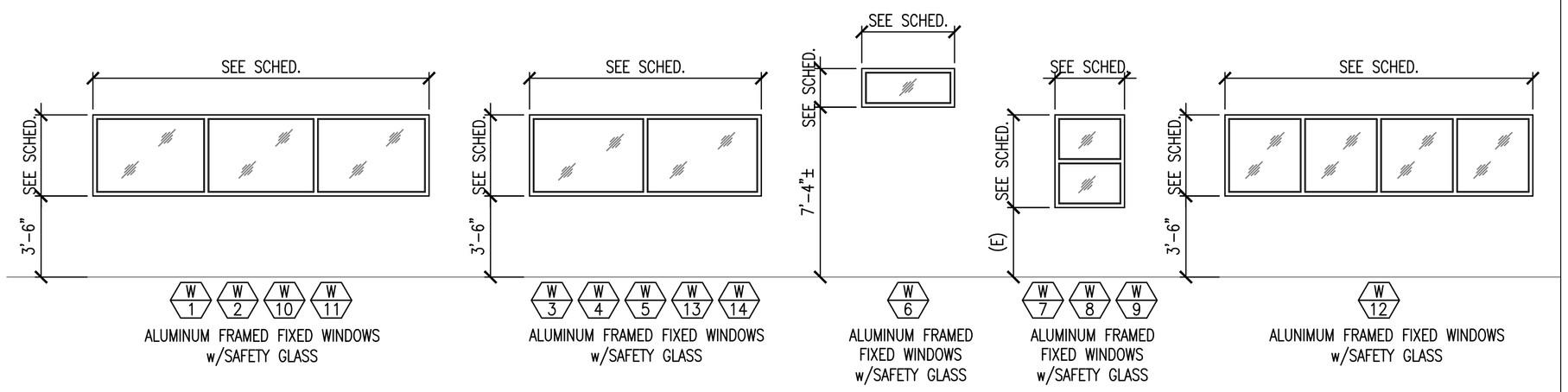
G A600 ROLL-UP DOOR DET.
SCALE: 1 1/2" = 1'-0"



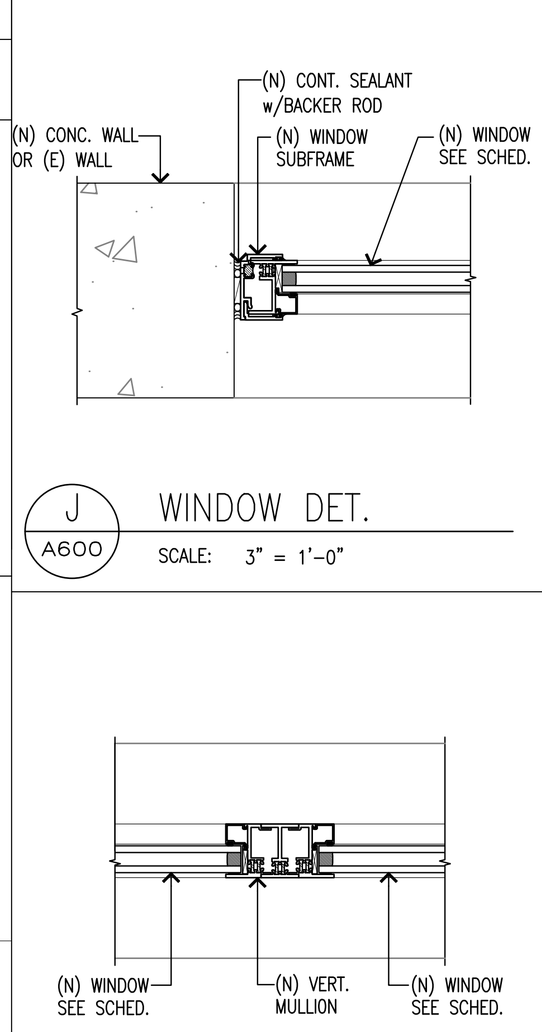
H A600 WINDOW DET.
SCALE: 3" = 1'-0"

WINDOW SCHEDULE

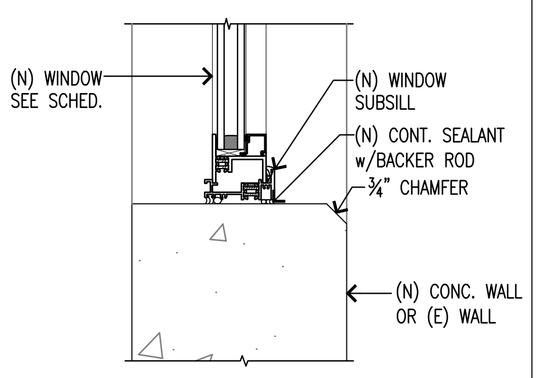
WINDOW NO.	WINDOW SIZE		TYPE	FRAME		GLAZING	DETAIL					REMARKS
	WIDTH	HEIGHT		MAT'L	FINISH		HEAD	JAMB	V MULLION	H MULLION	SILL	
W/1	14'-8"	3'-6"		ALUM	BRONZE ANODISE	TINTED	H/A600	J/A600	M/A600	–	K/A600	NOTE: WINDOWS THAT IS TO BE INSTALLED IN AN EXISTING OPENING. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS & ROUGH OPENINGS PRIOR TO ORDERING & INSTALLING NEW WINDOWS.
W/2	14'-8"	3'-6"		●	●	●	H/A600	J/A600	M/A600	–	K/A600	
W/3	9'-4"	3'-6"					H/A600	J/A600	M/A600	–	K/A600	
W/4	11'-4"	3'-6"					H/A600	J/A600	M/A600	–	K/A600	
W/5	10'-0"	3'-6"				↓	H/A600	J/A600	M/A600	–	K/A600	
W/6	4'-4"	1'-8"				FROSTED	H/A600 SIM	J/A600 SIM	–	–	K/A600 SIM	
W/7	4'-4"	4'-0"				TINTED	H/A600	J/A600	–	L/A600	K/A600	
W/8	3'-4"	4'-0"				●	H/A600	J/A600	–	L/A600	K/A600	
W/9	3'-4"	4'-0"					H/A600	J/A600	–	L/A600	K/A600	
W/10	9'-6"	3'-6"					N/A600	N/A600 SIM	M/A600	–	N/A600 SIM	
W/11	9'-6"	3'-6"					N/A600	N/A600 SIM	M/A600	–	N/A600 SIM	
W/12	13'-6"	3'-6"					N/A600	N/A600 SIM	M/A600	–	N/A600 SIM	
W/13	5'-0"	3'-6"					N/A600	N/A600 SIM	M/A600	–	N/A600 SIM	
W/14	4'-0"	3'-6"		↓	↓	↓	N/A600	N/A600 SIM	M/A600	–	N/A600 SIM	



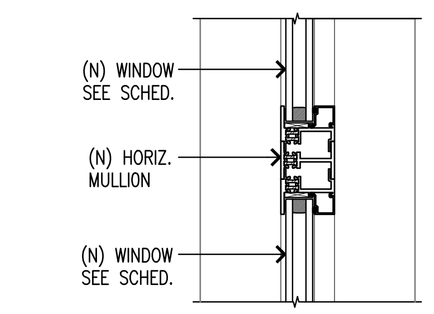
B A600 WINDOW TYPES
SCALE: 1/4" = 1'-0"



J A600 WINDOW DET.
SCALE: 3" = 1'-0"

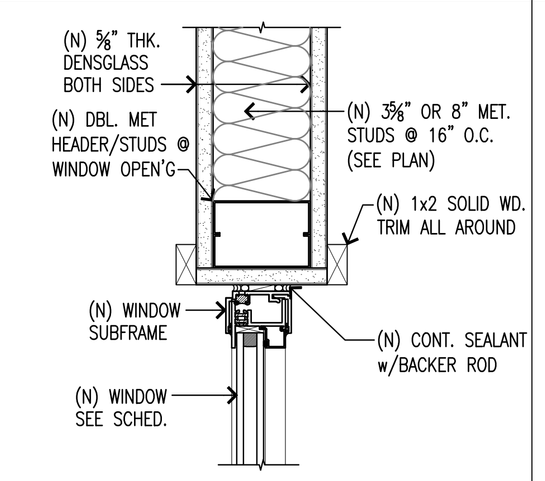


K A600 WINDOW DET.
SCALE: 3" = 1'-0"



L A600 WINDOW DET.
SCALE: 3" = 1'-0"

M A600 WINDOW DET.
SCALE: 3" = 1'-0"



N A600 WINDOW DET.
SCALE: 3" = 1'-0"

GRAPHIC SCALE:

0 1" 2" 4" 8" 12'
SCALE: 1/4" = 1'-0"

0 3" 6" 1' 2'
SCALE: 1 1/2" = 1'-0"

0 1" 2" 3" 6" 9" 1'
SCALE: 3" = 1'-0"

REV. NO.	DESCRIPTION	DATE

This work was prepared by me or under my supervision. Signature: LICENSE EXPIRES : APRIL 30, 2026

KEN K. MURAKAMI LICENSED PROFESSIONAL ARCHITECT NO. 6065 CLIFFORD USA HAWAII

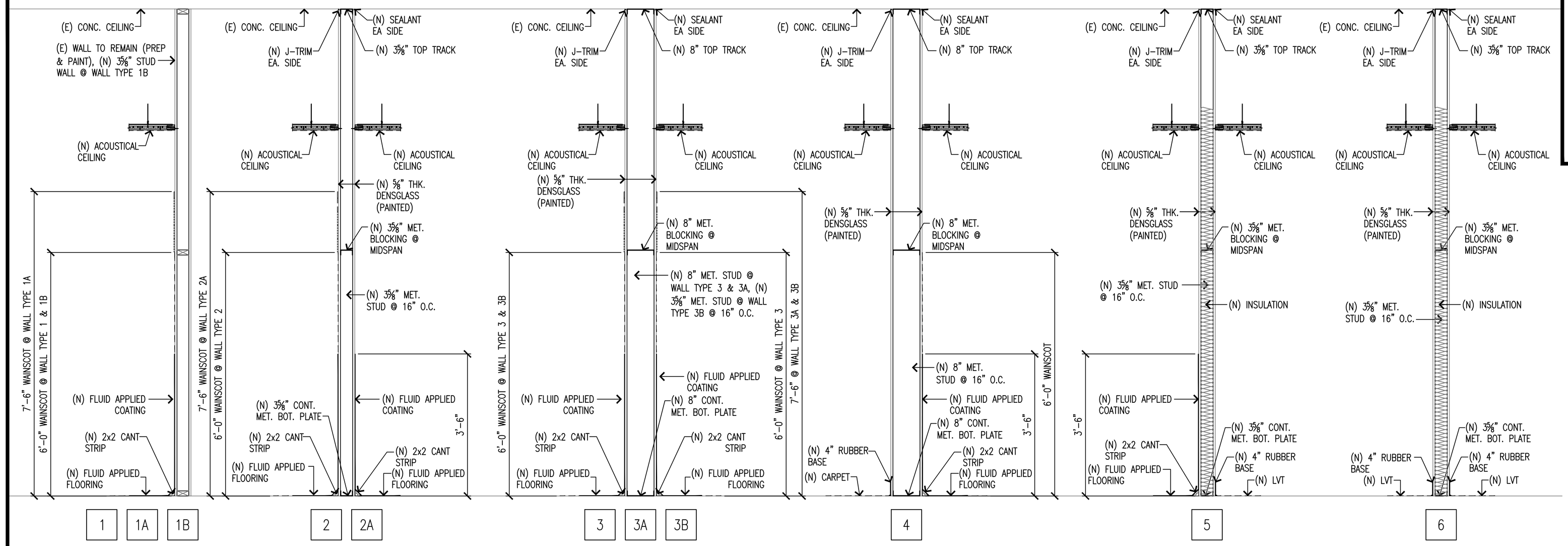
Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: DOOR & WINDOW SCHEDULE & TYPES & DETAILS

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MT CHECK CM

SHEET A600 OF SHEETS



A700 — WALL TYPES

SCALE: 3/4" = 1'-0"

GRAPHIC SCALE:

0 6" 1' 2' 3' 4'

SCALE: 3/4" = 1'-0"

REV. NO.	DESCRIPTION	DATE

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Signature

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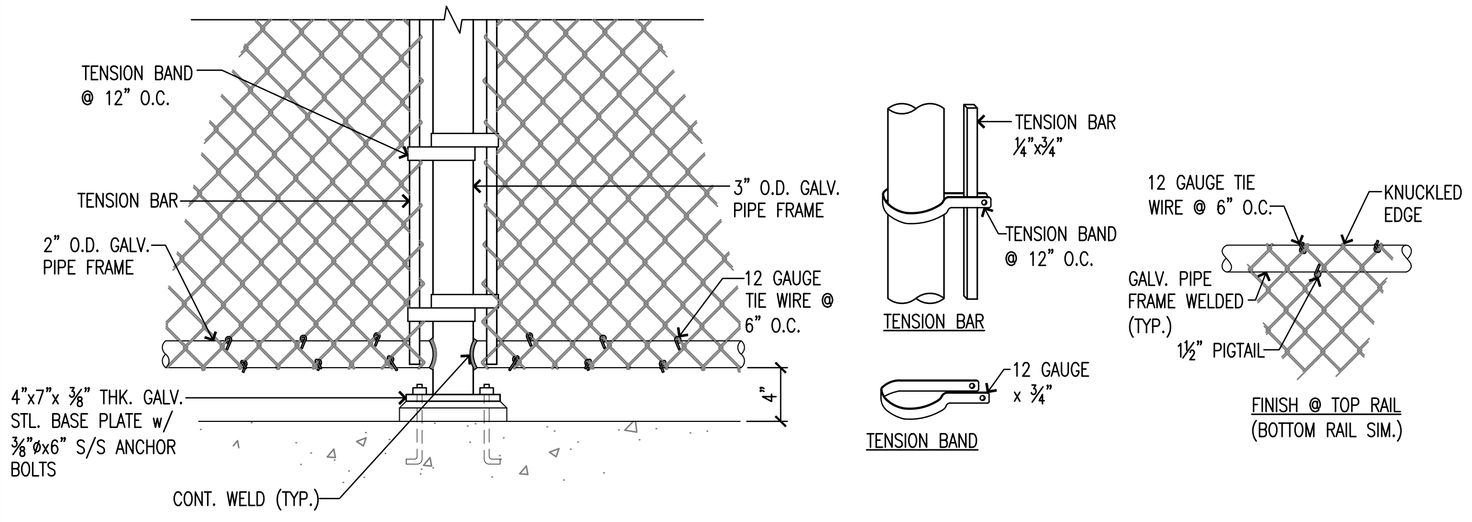
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: WALL TYPES

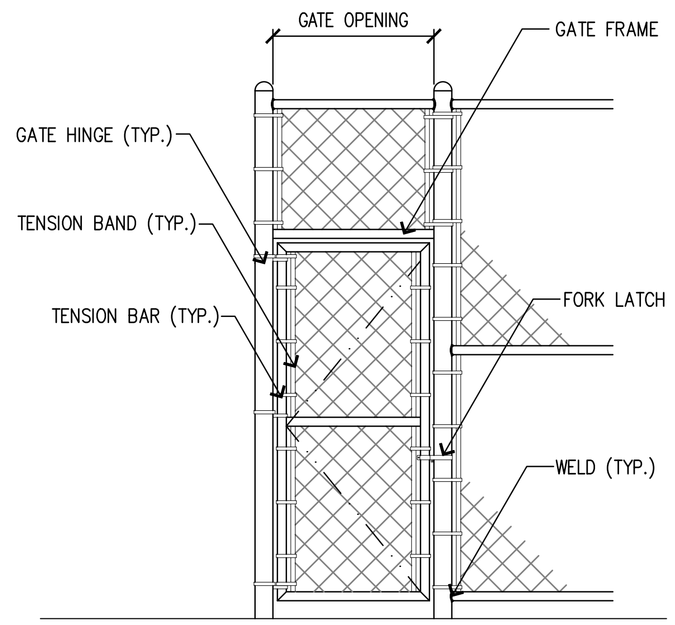
DATE MARCH 2024
SCALE AS SHOWN
DRAWN MT CHECK CM

SHEET A700 OF SHEETS



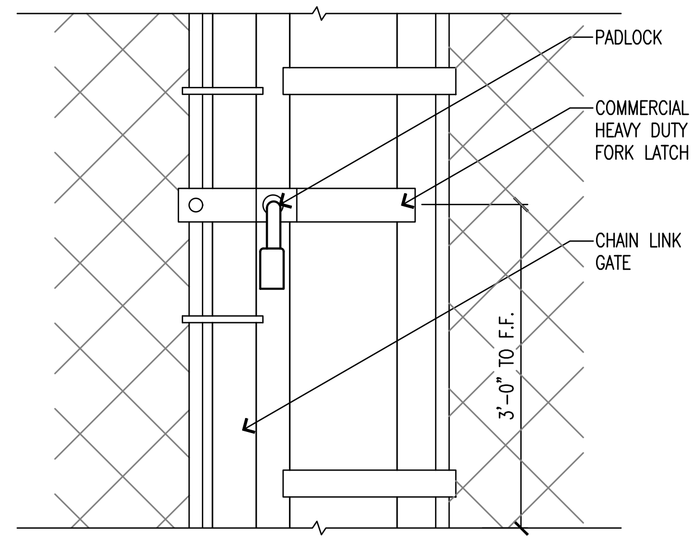
A A800 CHAINLINK FENCE DETAIL

SCALE: 1 1/2" = 1'-0"



B A800 CHAINLINK GATE DETAIL

SCALE: 1/2" = 1'-0"



C A800 CHAINLINK GATE DETAIL

SCALE: 3" = 1'-0"

GRAPHIC SCALE:

0 6" 1' 2' 4' 6'

SCALE: 1/2" = 1'-0"

0 3" 6" 1' 2'

SCALE: 1 1/2" = 1'-0"

0 1" 2" 3" 6" 9" 1'

SCALE: 3" = 1'-0"

REV. NO.	DESCRIPTION	DATE

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Signature

LICENSE EXPIRES : APRIL 30, 2026

K. MURAKAMI CLIFFORD LICENSED PROFESSIONAL ARCHITECT NO. 6955 HAWAII USA

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808-942-0054

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE DETAILS

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MT CHECK CM

SHEET A800

OF SHEETS

GENERAL:

A. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE BUILDING CODE AS STATED BELOW. HOWEVER, WHERE REFERENCE IS MADE TO PERFORMANCE CONFORMING TO OTHER STANDARDS THE MORE STRINGENT SHALL APPLY.
   1. STATE OF HAWAII: AMENDED IBC, 2018
B. THE CONTRACTOR SHALL COMPARE ALL THE CONTRACT DOCUMENTS WITH EACH OTHER AND REPORT IN WRITING TO THE CONTRACTING OFFICER ALL INCONSISTENCIES AND OMISSIONS.
C. THE CONTRACTOR SHALL TAKE FIELD MEASUREMENTS AND VERIFY FIELD CONDITIONS AND SHALL COMPARE SUCH FIELD MEASUREMENTS AND CONDITIONS WITH THE DRAWINGS BEFORE COMMENCING WORK. REPORT IN WRITING TO THE CONTRACTING OFFICER ALL INCONSISTENCIES AND OMISSIONS.
D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING THE WORK OF ALL TRADES.
E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR METHODS OF CONSTRUCTION, WORKMANSHIP AND JOB SAFETY. THE CONTRACTOR SHALL PROVIDE TEMPORARY SHORING AND BRACING AS REQUIRED FOR STABILITY OF STRUCTURAL MEMBERS AND SYSTEMS.
F. CONSTRUCTION LOADING SHALL NOT EXCEED DESIGN LIVE LOAD UNLESS SPECIAL SHORING IS PROVIDED. ALLOWABLE LOADS SHALL BE REDUCED IN AREAS WHERE THE STRUCTURE HAS NOT ATTAINED FULL DESIGN STRENGTH.
G. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTION OF THE ADJACENT PROPERTIES, STRUCTURES, STREETS AND UTILITIES DURING THE CONSTRUCTION PERIOD.
H. DETAILS NOTED AS TYPICAL ON THE STRUCTURAL DRAWINGS SHALL APPLY IN ALL CONDITIONS UNLESS SPECIFICALLY SHOWN OR NOTED.

DEMOLITION, REMOVAL AND RELOCATION WORK:

A. THE CONSTRUCTION DRAWINGS INDICATE THE GENERAL EXTENT OF REQUIRED DEMOLITION AND REMOVAL WORK. SEE ARCHITECTURAL, PLUMBING AND ELECTRICAL DRAWINGS FOR DEMOLITION DRAWINGS.
B. THE CONTRACTOR SHALL FIELD VERIFY EXISTING CONDITIONS (PRIOR TO BID) TO DETERMINE THE EXTENT OF ALL REQUIRED DEMOLITION WORK. THE REMOVAL OR DEMOLITION OF MATERIALS, ACCESSORIES, FIXTURES, ETC., SHALL BE COMPLETE AND INCLUDE ALL RELATED ITEMS TO THE EXTENT THAT FUTURE CONSTRUCTION CAN BE PERFORMED AND COMPLETED WITHOUT ADDITIONAL COST TO THE STATE.
C. ALL NECESSARY PRECAUTIONS SHALL BE TAKEN TO INSURE AGAINST DAMAGE TO EXISTING ITEMS AND FEATURES REMAINING IN PLACE.
D. THE CONTRACTOR SHALL REMOVE EXISTING ITEMS AS DEEMED NECESSARY SO THAT FUTURE WORK CAN BE PERFORMED AND ALSO, SO THAT ANY EXISTING ITEM IS NOT DAMAGED WHEN FUTURE WORK IS PERFORMED. THE CONTRACTOR SHALL ALSO INSTALL ANY OR ALL OF THE ITEMS, PATCH AND RESTORE SURROUNDING SURFACES AS REQUIRED AS PART OF THE WORK ACCEPTABLE TO THE CONTRACTING OFFICER.
E. LOCATION OF UNDERGROUND UTILITIES AND PIPES SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATIONS OF THE EXISTING UTILITIES AND SHALL BE RESPONSIBLE FOR ANY DAMAGES TO THEM. ANY PORTION OF THE EXISTING UTILITIES THAT MUST BE REMOVED OR OTHERWISE DISTURBED TO ACCOMPLISH THIS WORK CALLED FOR ON THE PLANS SHALL BE RECONSTRUCTED, REPLACED OR RESTORED TO THE ORIGINAL CONDITION AT THE CONTRACTOR'S OWN EXPENSE.

DESIGN CRITERIA:

A. FLOOR LIVE LOAD
   1. HOSPITALS
      a. OFFICES: 50 PSF
B. ROOF LIVE LOAD: 20 PSF
C. WIND DESIGN DATA
   1. BASIC WIND SPEED (3-SECOND GUST, ULTIMATE): 160 MPH
   2. EFFECTIVE NOMINAL DESIGN WIND SPEED (3-SECOND GUST, VEFF-ASD):
   3. RISK CATEGORY: IV
   4. EXPOSURE CATEGORY: C
   5. BUILDING ENCLOSURE CLASSIFICATION: PARTIALLY ENCLOSED
   6. INTERNAL PRESSURE COEFFICIENT: +0.55
   7. COMPONENTS AND CLADDING DESIGN WIND PRESSURE: VARIES, SEE TABLE
D. EARTHQUAKE DESIGN DATA:
   1. RISK CATEGORY: II
   2. IMPORTANCE FACTOR: 1.5
   3. MAPPED SPECTRAL RESPONSE ACCELERATIONS
      a. SHORT PERIOD: 0.58g
      b. 1-SEC PERIOD: 0.17g
   4. SITE CLASS: D
   5. SPECTRAL RESPONSE COEFFICIENTS
      a. SHORT PERIOD: 0.517g
      b. 1-SEC PERIOD: 0.256g
   6. DESIGN CATEGORY: D
   7. BASIC SEISMIC-FORCE-RESISTING SYSTEM: SPECIAL REINFORCED CONCRETE SHEAR WALLS
   8. DESIGN BASE SHEAR (ULTIMATE): <INSERT> KIPS
   9. SEISMIC RESPONSE COEFFICIENT: <INSERT>
   10. RESPONSE MODIFICATION FACTOR: <INSERT>
   11. ANALYSIS PROCEDURE: [EQUIVALENT LATERAL FORCE PROCEDURE]
E. SOILS
   1. SITE CLASS: D
   2. ALLOWABLE BEARING CAPACITY: <INSERT>
   3. EARTH PRESSURES
      a. ACTIVE (LEVEL BACKFILL):
         i. UNRESTRAINED: <INSERT>
         ii. RESTRAINED: <INSERT>
      b. PASSIVE: <INSERT>
   4. COEFFICIENT OF FRICTION: <INSERT>

SPECIAL INSPECTIONS:

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ENSURING THAT SPECIAL INSPECTION OF PORTIONS OF THE WORK AS REQUIRED BY THE BUILDING CODE IS MADE AT THE APPROPRIATE TIME. THE CONTRACTOR SHALL SUBMIT STATEMENT OF RESPONSIBILITY TO THE CONTRACTING OFFICER AND BUILDING DEPARTMENT PRIOR TO THE COMMENCEMENT OF WORK. THE CONTRACTOR SHALL GIVE TIMELY NOTICE OF WHEN AND WHERE INSPECTIONS ARE TO BE MADE AND PROVIDE ACCESS FOR THE INSPECTOR. FREQUENCY OF INSPECTION IS DEFINED IN THE IBC, SECTION 1705 TABLES, AS AMENDED BY THE STATE. THE CONTRACTOR SHALL CORRECT DEFECTIVE WORK AT NO ADDITIONAL COST TO THE STATE AND PAY FOR RE-INSPECTION AS REQUIRED.
B. SPECIAL INSPECTORS SHALL KEEP RECORDS OF INSPECTIONS. REPORTS SHALL INDICATE THAT WORK INSPECTED WAS DONE IN CONFORMANCE WITH APPROVED CONSTRUCTION DOCUMENTS. THE INSPECTOR SHALL SUBMIT A FINAL SIGNED REPORT TO THE CONTRACTING OFFICER AND LICENSED ARCHITECT OR ENGINEER WHO IN TURN SHALL SUBMIT A WRITTEN STATEMENT TO THE CITY CERTIFYING RECEIPT OF THE FINAL INSPECTION LETTER AND DOCUMENTING THAT THERE ARE NO KNOWN UNRESOLVED CODE REQUIREMENTS.
C. THE FOLLOWING TYPE OF WORK LISTED IN THE IBC, SECTION 1705, AS AMENDED BY THE STATE, REQUIRES SPECIAL INSPECTION:
   1. INSPECTION OF FABRICATOR/SHOP UNLESS WORK IS DONE BY A REGISTERED AND APPROVED FABRICATOR SHOP.
      a. STRUCTURAL STEEL
   2. STEEL CONSTRUCTION
      a. WELDING
   3. CONCRETE CONSTRUCTION
      a. EXCEPTIONS: INSPECTIONS NOT REQUIRED FOR CONCRETE POURS FOR
         i. CONCRETE FOOTINGS SUPPORTING BUILDINGS THREE STORIES OR LESS IN HEIGHT THAT ARE FULL SUPPORTED ON EARTH OR ROCK (DESIGNED f'c=2,500 PSI), INSPECTION OF REINFORCING IS REQUIRED
         ii. NON STRUCTURAL SLABS SUPPORT DIRECTLY ON GROUND.
      b. PLACEMENT OF REINFORCING STEEL INCLUDING PRESTRESSING TENDONS (INCLUDING STRESSING OF TENDONS)
      c. REINFORCING STEEL WELDING.
      d. BOLTS TO BE INSTALLED IN CONCRETE PRIOR TO AND DURING PLACEMENT OF CONCRETE.
      e. PLACEMENT OF CONCRETE AND SHOTCRETE
      f. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE AND TECHNIQUES.
      g. PRESTRESSED CONCRETE (UNLESS DONE BY APPROVED FABRICATOR) AND ERECTION OF PRECAST CONCRETE MEMBERS. POST INSTALLED
      h. POST INSTALLED CONCRETE BOLTS.

FOUNDATION:

A. FOUNDATION DESIGN IS BASED ON THE FOLLOWING GEOTECHNICAL INVESTIGATION REPORT.
   1. <INSERT>
B. CONTRACTOR SHALL PROVIDE FOR DE-WATERING OF EXCAVATION FROM SURFACE WATER, GROUND WATER OR SEEPAGE.
C. EXCAVATIONS FOR ANY PURPOSE SHALL NOT REMOVE LATERAL SUPPORT FROM ANY FOOTING OR FOUNDATION WITHOUT FIRST UNDERPINNING OR PROTECTING THE FOOTING OR FOUNDATION AGAINST SETTLEMENT OR LATERAL TRANSLATION.
D. FOOTINGS SHALL BEAR ON UNDISTURBED IN-SITU FIRM SOILS. BOTTOM OF FOOTINGS SHALL BE COMPACTED TO PROVIDE A RELATIVELY FIRM AND SMOOTH BEARING SURFACE PRIOR TO PLACEMENT OF REINFORCING STEEL AND CONCRETE. IF SOFT AND/OR LOOSE MATERIALS ARE ENCOUNTERED AT THE BOTTOM OF FOOTING EXCAVATIONS, THEY SHALL BE OVER-EXCAVATED TO EXPOSE THE UNDERLYING FIRM MATERIALS. THE OVER-EXCAVATION SHALL BE BACKFILLED WITH SELECT GRANULAR MATERIAL COMPACTED TO A MINIMUM OF 95% RELATIVE COMPACTION OR THE FOOTING BOTTOM MAY BE EXTENDED DOWN TO THE UNDERLYING COMPETENT MATERIAL.
E. UNLESS NOTED OTHERWISE, THE MINIMUM DEPTH OF FOOTINGS BELOW THE UNDISTURBED GROUND SURFACE SHALL BE 12 INCHES.
F. EXCAVATIONS FOR FOUNDATIONS SHALL BE MONITORED AND APPROVED BY THE GEOTECHNICAL ENGINEER PRIOR TO PLACEMENT OF CONCRETE AND REINFORCING STEEL TO CONFIRM FOUNDATION BEARING CONDITIONS AND REQUIRED EMBEDMENT DEPTHS. GEOTECHNICAL ENGINEER SHALL SUBMIT LETTER OF COMPLIANCE TO THE CONTRACTING OFFICER.
G. CONTRACTOR SHALL BRACE OR PROTECT ALL WALLS BELOW GRADE FROM LATERAL LOADS UNTIL ATTACHING FLOORS ARE COMPLETELY IN PLACE AND HAVE ATTAINED THEIR FULL DESIGN STRENGTH.
H. UNLESS NOTED OTHERWISE, WALLS OR PORTIONS THEREOF THAT RETAIN EARTH, AND ENCLOSE INTERIOR SPACES AND FLOORS BELOW GRADE SHALL BE WATERPROOFED AND DAMPPROOFED.
I. JOINTS IN WALLS AND FLOOR, JOINTS BETWEEN THE WALL AND FLOOR AND PENETRATIONS IN THE WALL AND FLOOR SHALL BE MADE WATERTIGHT UTILIZING APPROVED METHODS AND MATERIALS.

CONCRETE:

A. CONCRETE CONSTRUCTION SHALL CONFORM TO AMERICAN CONCRETE INSTITUTE ACI 318
B. CONCRETE SHALL BE REGULAR WEIGHT HARD ROCK CONCRETE AND SHALL HAVE THE FOLLOWING MINIMUM 28 DAY COMPRESSIVE STRENGTHS:
   1. FOOTINGS: 3,000 PSI
   2. SLAB-ON-GRADE: 3,000 PSI
   3. WALLS: 4,000 PSI
   4. ALL OTHER CONCRETE: 3,000 PSI
C. CONCRETE DELIVERY TICKETS SHALL RECORD ALL FREE WATER IN THE MIX: AT BATCHING BY PLANT, FOR CONSISTENCY BY DRIVER, AND ANY ADDITIONAL REQUEST BY CONTRACTOR IF PERMITTED BY THE MIX DESIGN.
D. WATER USED IN MIXING CONCRETE SHALL BE CLEAN AND FREE FROM INJURIOUS AMOUNTS OF OILS, ACIDS, ALKALIS, SALTS, ORGANIC MATERIALS OR OTHER SUBSTANCES THAT ARE DELETERIOUS TO CONCRETE OR STEEL REINFORCEMENT.
E. FREQUENCY OF CONDUCTING STRENGTH TESTS SHALL BE AS FOLLOWS:
   1. SAMPLES FOR STRENGTH OF EACH CLASS OF CONCRETE PLACED EACH DAY SHALL BE TAKEN NOT LESS THAN ONCE A DAY, NOR LESS THAN ONCE FOR EACH 150 CUBIC YARDS OF CONCRETE, NOR LESS THAN ONCE FOR EACH 5,000 SQUARE FEET OF SURFACE AREA FOR SLABS OR WALLS.
   2. IF THE TOTAL VOLUME OF CONCRETE IS SUCH THAT THE FREQUENCY OF TESTING WOULD PROVIDE LESS THAN FIVE STRENGTH TESTS FOR A GIVEN CLASS OF CONCRETE, TESTS SHALL BE MADE FROM AT LEAST FIVE RANDOMLY SELECTED BATCHES OR FROM EACH BATCH IF FEWER THAN FIVE BATCHES ARE USED.
F. ALL INSERTS, ANCHOR BOLTS, PLATES, AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE HOT-DIPPED GALVANIZED ACCORDING TO ASTM A153 UNLESS OTHERWISE NOTED.
G. REINFORCING BARS, ANCHOR BOLTS, INSERTS, AND OTHER ITEMS TO BE CAST IN THE CONCRETE SHALL BE SECURED IN POSITION PRIOR TO PLACEMENT OF CONCRETE.
H. CONDUITS, PIPES, AND SLEEVES PASSING THROUGH A SLAB OR FOOTING AND NOT CONFORMING TO TYPICAL DETAILS SHALL BE LOCATED AND SUBMITTED TO THE CONTRACTING OFFICER FOR APPROVAL.
I. CONDUITS, PIPES, AND SLEEVES EMBEDDED WITHIN A WALL (OTHER THAN THOSE MERELY PASSING THROUGH) SHALL SATISFY THE FOLLOWING:
   1. NO LARGER IN OUTSIDE DIMENSIONS THAN 1/3 THE OVERALL THICKNESS OF WALL IN WHICH THEY ARE EMBEDDED.
J. SEE ARCHITECTURAL DRAWINGS FOR CHAMFERS, EDGE RADII, DRIPS, REGLETS, FINISHES AND OTHER NON-STRUCTURAL ITEMS NOT SHOWN OR SPECIFIED ON THE STRUCTURAL DRAWINGS.
K. NON-SHRINK GROUT SHALL BE A PREMIXED NON-METALLIC FORMULA, CAPABLE OF DEVELOPING A MINIMUM COMPRESSIVE STRENGTH OF 3,000 PSI IN 1 DAY AND 5,000 PSI IN 28 DAYS.
J. LEAVE FORMWORK FOR BEAM SOFFITS, JOISTS, SLABS, AND OTHER STRUCTURAL ELEMENTS THAT SUPPORT WEIGHT OF CONCRETE IN PLACE UNTIL CONCRETE HAS ACHIEVED ITS 28 DAY DESIGN COMPRESSIVE STRENGTH.
K. MEASURE FLOOR AND SLAB FLATNESS AND LEVELNESS ACCORDING TO ASTM E1155 WITHIN 24 HOURS OF FINISHING.

CONCRETE ANCHOR ADHESIVE:

A. CONCRETE ANCHOR ADHESIVE SHALL BE HILTI HIT-RE 500-V3 (ESR 3814); DEWALT PURE 110+ (ESR 3298); SIMPSON SET-3G (ESR 3047), OR APPROVED EQUAL.
B. CARBON STEEL THREADED RODS SHALL CONFORM TO ASTM A36/307 GRADE C AND BE FURNISHED WITH A MINIMUM 0.0002 INCH THICK ZINC ELECTROPLATED COATING COMPLYING WITH ASTM B633, SC1, OR A MINIUMUM0.0021 INCH THICK MECHANICALLY DEPOSITED ZINC COATING COMPLYING WITH ASTM B695, CLASS 65, OR STAINLESS STEEL THREADED RODS, TYPE 316 COMPLYING WITH ASTM F593. STEEL GRADES AND MATERIAL TYPES OF THE WASHERS AND NUTS SHALL BE MATCHED TO THE THREADED ROD.
C. INSTALL ONLY WHERE INDICATED ON DRAWINGS. SUBSTITUTION FOR EMBEDDED ANCHORS IS ALLOWED ONLY WHERE INDICATED OR WHEN APPROVED BY CONTRACTING OFFICER.
D. LOCATE ANY EXISTING REINFORCING STEEL PRIOR TO DRILLING HOLES AND RELOCATE HOLE SLIGHTLY AS REQUIRED.
E. INSTALL IN ACCORDANCE WITH MANUFACTURER'S PUBLISHED INSTALLATION INSTRUCTIONS.
F. SPECIAL INSPECTION SHALL BE PROVIDED.

REINFORCING STEEL:

A. REINFORCING STEEL SHALL BE DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.
B. CLEAR CONCRETE COVER FOR REINFORCING BARS SHALL BE AS FOLLOWS, UNLESS OTHERWISE NOTED:
   1. CONCRETE CAST AGAINST AND PERMANENTLY EXPOSED TO EARTH: 3".
   2. CONCRETE FORMED AND EXPOSED TO EARTH OR WEATHER:
      a. NO. 6 THROUGH NO. 18 BAR: 2"
      b. NO. 5 BAR, W31 OR D31 WIRE, AND SMALLER: 1.5"
   3. CONCRETE NOT EXPOSED TO WEATHER OR IN CONTACT WITH GROUND:
      a. WALLS:
         i. NO. 11 BAR AND SMALLER: 0.75"
C. CLEAR DISTANCE BETWEEN THE SURFACE OF A BAR AND ANY SURFACE OF A MASONRY UNIT SHALL BE NOT LESS THAN 1/2 INCH, UNLESS OTHERWISE NOTED.
D. REINFORCING STEEL SHALL BE SPLICED WHERE INDICATED ON PLANS. PROVIDE LAP SPLICE LENGTH PER TYPICAL DETAILS AND SCHEDULE, UNLESS OTHERWISE NOTED.
E. LAP EDGES AND ENDS OF ADJOINING SHEETS OF WELDED WIRE REINFORCEMENT AT LEAST ONE MESH SPACING. OFFSET LAPS OF ADJOINING SHEET WIDTHS TO PREVENT CONTINUOUS LAPS IN EITHER DIRECTION.
F. MECHANICAL SPLICE CONNECTORS SHALL DEVELOP IN TENSION 125 PERCENT OF THE SPECIFIED MINIMUM YIELD STRENGTH OF REINFORCING BARS.
G. STANDARD HOOKS ON REINFORCING BARS USED SHALL COMPLY WITH ACI 318, SECTION 25.3.1.
H. MINIMUM REINFORCEMENT BEND DIAMETERS SHALL COMPLY WITH ACI 318, SECTION 25.3.2.

STRUCTURAL STEEL:

A. FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL OF STEEL CONSTRUCTION, FIFTEENTH EDITION.
B. STRUCTURAL STEEL SHALL CONFORM TO ASTM A36 UNLESS OTHERWISE NOTED.
C. STEEL WIDE FLANGE AND CHANNEL SECTIONS SHALL CONFORM TO ASTM A992.
D. ANGLE SHAPES SHALL CONFORM TO ASTM A572, GRADE 50.
E. PLATES AND BARS SHALL CONFORM TO ASTM A36.
F. BOLTS SHALL CONFORM TO ASTM A307, GRADE A UNLESS OTHERWISE NOTED.
G. HIGH-STRENGTH BOLTS SHALL CONFORM TO ASTM F3125, GRADE A325, TYPE N. INSTALLATION SHALL BE ASSURED BY ANY OF THE FOLLOWING METHODS.
   1. TURN OF NUT METHOD
   2. DIRECT TENSION INDICATOR
   3. CALIBRATED WRENCH
   4. ALTERNATIVE DESIGN BOLT
H. WELDS AND WELDING PROCEDURES SHALL CONFORM TO THE STRUCTURAL WELDING CODE AWS D1.1 OF THE AMERICAN WELDING SOCIETY.
I. WELDING SHALL BE PERFORMED BY WELDERS PREQUALIFIED FOR WELDING PROCEDURES TO BE USED.
J. WELDING ELECTRODES SHALL BE E70XX.
K. ALL STEEL SHALL BE PRIME PAINTED IN THE SHOP.
L. EXPOSED STEEL SHALL BE HOT-DIPPED GALVANIZED ACCORDING TO ASTM A123.
M. ALL ANCHOR BOLTS, PLATES, AND OTHER ITEMS TO BE CAST IN CONCRETE SHALL BE HOT-DIPPED GALVANIZED ACCORDING TO ASTM A153 UNLESS OTHERWISE NOTED.

STEEL DECK:

A. STEEL DECK AND ACCESSORIES SHALL BE FORMED FROM GALVANIZED STEEL SHEETS CONFORMING TO ASTM A653, STRUCTURAL STEEL (SS), GRADE 33, MINIMUM YIELD 38 KSI, G60 ZINC COATING.
B. STEEL DECK SHALL BE OF THE PROFILE DEPTH AND THICKNESS AS INIDCATED ON THE DRAWINGS.
C. STEEL DECK SHALL HAVE A MINIMUM END BEARING OF 2 INCHES END JOINTS SHALL BE LAPPED 2 INCHES MINIMUM.
D. NONCOMPOSITE STEEL DECKS MAY BE EITHER LAPPED OR BUTTED AT CONTRACTOR'S OPTION.
E. STEEL DECK SHALL BE TRIPLE SPAN CONTINUOUS WHERE POSSIBLE. DO NOT LOCATE SINGLE SPANS AT EDGES OR CORNERS.
F. WELDED ATTACHMENT OF STEEL DECK UNITS TO THE SUPPORTING MEMBERS SHALL CONFORM TO AWS D1.3. WELDING OF STEEL DECK SHALL BE PERFORMED BY CERTIFIED LIGHT GAGE STEEL WELDERS.
G. ARC SPOT OR ARC SEAM (PUDDLE) WELDS SHALL HAVE AN EFFECTIVE FUSION AREA TO SUPPORTING MEMBERS, EQUIVALENT TO AT LEAST 3/8 INCH BY 1 INCH LONG OR ½ INCH DIAMETER AND IN NO CASE SHALL ANY WELD SPACING EXCEED 3 FEET. IF STUD WELDS ARE WELDED THROUGH STEEL DECK TO STRUCTURAL STEEL, STUD WELDS CAN REPLACE ARC SPOT WELDS.
H. THE MINIMUM DEPTH OF CONCRETE SHALL BE 2 INCHES OVER THE TOP FLANGE AND IS TO BE REINFORCED WITH A MINIMUM OF 6X6 W1.4XW1.4 WELDED WIRE FABRIC AND PLACED NEAR THE CENTER OF THE FILL OVER THE TOP FLANGE.

COLD-FORMED STEEL FRAMING:

A. COLD-FORMED METAL FRAMING SHALL COMPLY WITH AISI'S "NORTH AMERICAN SPECIFICATION FOR THE DESIGN OF COLD-FORMED STEEL STRUCTURAL MEMBERS" AND ITS "NORTH AMERICAN STANDARD FOR COLD FORMED STEEL FRAMING – GENERAL PROVISIONS"
B. COLD-FORMED STEEL MEMBERS AND ACCESSORIES SHALL BE OF THE TYPE AND THICKNESS CALLED FOR ON THE DRAWINGS. MEMBER DESIGNATIONS ARE PER STEEL STUD MANUFACTURER'S ASSOCIATION.
C. ALL MEMBERS 54, 68 OR 97 MILS THICK SHALL MEET THE REQUIREMENTS OF ASTM A1003 GRADE ST50H AND HAVE A MINIMUM G60 COATING. ALL MEMBERS 33 OR 43 MILS THICK SHALL MEET THE REQUIREMENTS OF ASTM A1003 GRADE ST33H AND HAVE A MINIMUM G60 COATING.
D. CUT FRAMING MEMBERS BY SAWING OR SHEARING. DO NOT TORCH CUT.
E. PREFABRICATED FRAMING HARDWARE SHALL BE SIMPSON STRONG TIE GALVANIZED OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
F. PLACE A LAYER OF 30# ROOFING FELT BETWEEN ALL COLD-FORMED METAL MEMBERS AND CONCRETE OR MASONRY SURFACES.
G. HOLES IN WALL STUDS AND OTHER STRUCTURAL MEMBERS SHALL NOT EXCEED 1.5 INCHES IN WIDTH OR 4 INCHES IN LENGTH. HOLES SHALL BE PERMITTED ONLY ALONG THE CENTERLINE OF THE WEB OF THE FRAMING MEMBER. HOLES SHALL NOT BE LESS THAN 24 INCHES CENTER TO CENTER AND SHALL NOT BE LOCATED MORE THAN 10 INCHES FROM EDGE OF HOLE TO END OF MEMBER.
H. SCREWS SHALL BE INSTALLED WITH A MINIMUM EDGE DISTANCE AND CENTER-TO-CENTER SPACING OF 1/2 INCH, SHALL BE SELF TAPPING AND SHALL CONFORM TO SAE J 78. SCREWS SHALL EXTEND THROUGH THE STEEL A MINIMUM OF THREE EXPOSED THREADS. ALL SELF-DRILLING TAPPING SCREWS CONFORMING TO SAE J 78 SHALL HAVE A TYPE II COATING IN ACCORDANCE WITH ASTM B633.
I. STEEL FRAMED WALLS SHALL BE ANCHORED TO FOUNDATIONS OR FLOORS IN ACCORDANCE WITH TABLE R603.3.1 OR FIGURE R603.3.1(1).
J. STEEL FRAMED WALLS SHALL BE FASTENED IN ACCORDANCE WITH TABLE R603.3.2(1).
K. STUD WEB HOLES CLOSER THAN 10 INCHES FROM THE EDGE OF THE HOLE TO THE EDGE OF THE MEMBER SHALL BE PATCHED WITH A SOLID PLATE, C-SECTION OR TRACK SECTION. THE PATCH SHALL BE OF A MINIMUM THICKNESS AS THE STUD MEMBER AND SHALL EXTEND AT LEAST 1 INCH BEYOND ALL EDGES OF THE HOLE. THE PATCH SHALL BE FASTENED TO THE WEB WITH NO. 8 SCREWS SPACED NO GREATER THAN 1 INCH CENTER TO CENTER ALONG THE EDGES OF THE PATCH, WITH A MINIMUM EDGE DISTANCE OF 1/2 INCH.
L. STEEL STUDS AND OTHER STRUCTURAL MEMBERS SHALL NOT BE SPLICED.

DELEGATED DESIGN NOTES

A. STRUCTURAL SYSTEMS WHICH HAVE BEEN DESIGNATED AS VENDOR-DESIGNED OR DESIGN BUILD COMPONENTS PER THE DRAWINGS AND/OR PROJECT SPECIFICATION ARE DELEGATED DESIGN SUBMITTAL COMPONENTS WHICH HAVE NOT BEEN PERMITTED UNDER BASE BUILDING APPLICATIONS. THE CONTRACTOR IS REQUIRED TO SUBMIT DOCUMENTS, STAMPED AND SIGNED BY A DESIGN PROFESSIONAL LICENSED IN THE STATE OF HAWAII, FOR ALL SUCH COMPONENTS FOR REVIEW. DELEGATED DESIGN SUBMITTAL ITEMS SHALL NOT BE INSTALLED UNTIL THE SUBMITTAL DOCUMENTS HAVE BEEN REVIEWED BY THE ARCHITECT. ALLOW MINIMUM 10 WORKING DAYS FOR SUBMITTAL REVIEW BY STRUCTURAL ENGINEER OF RECORD; ADDITIONAL DAYS MAY BE REQUIRED BY ARCHITECT.
B. THE COMPONENT DESIGNER SHALL BE RESPONSIBLE FOR THAT COMPONENT'S CONFORMANCE TO THE CODE AND ALL DESIGN CRITERIA INDICATED ON THE STRUCTURAL AND ARCHITECTURAL DRAWINGS, AND ALL NECESSARY CONNECTIONS NOT SPECIFICALLY SHOWN IN THE STRUCTURAL OR ARCHITECTURAL DRAWINGS.
C. DRAWINGS AND CALCULATIONS SUBMITTED TO THE ARCHITECT AND ENGINEER SHALL BE STAMPED AND SIGNED BY THE DESIGN PROFESSIONAL LICENSED IN THE STATE OF HAWAII AND SHALL INCLUDE THE FOLLOWING. SUBMITTALS NOT MEETING THESE REQUIREMENTS WILL NOT BE REVIEWED.
   1. DRAWINGS WHICH INDICATE THE MAGNITUDE, DIRECTION, AND LOCATION OF ALL LOADS IMPOSED TO THE PRIMARY STRUCTURE, AND ANY FACTORS OR COMBINATIONS THAT APPLY.
   2. DESIGN CALCULATIONS DEMONSTRATING CONFORMANCE TO THE APPLICABLE CODE REQUIREMENTS AND DESIGN CRITERIA, AND WHICH CLEARLY INDICATE A COMPLETE LOAD PATH FOR BOTH VERTICAL AND LATERAL LOADS TO THE PRIMARY STRUCTURE.
D. DELEGATED DESIGN STRUCTURAL SUBMITTAL COMPONENTS INCLUDE, BUT ARE NOT LIMITED TO THE FOLLOWING:
   1. INTERIOR METAL STUDS SYSTEMS AND PARTITION INCLUDING SUSPENDED CEILINGS AND SOFFITS
   2. FOR NON-STRUCTRUAL ELEMENTS REFER TO ARCHITECTUAL, MECHANICAL, ELECTRICAL, PLUMBING AND OTHER DISCIPLINES DRAWINGS AND SPECIFICATIONS. NON-STRUCTURAL ELEMENTS ARE ITEMS SUCH AS THE FOLLOWING
      a. SUPPORT OF MECHANICAL, ELECTRICAL, AND PLUMBING EQUIPMENT AND OTHER BUILDING SERVICES COMPONENTS
      b. WINDOW AND DOOR GLAZING, FRAMES, AND CONNECTIONS

REV. NO.	DESCRIPTION	DATE

EXPIRATION DATE OF THIS LICENSE: 4/30/2026
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND TO THE BEST OF MY KNOWLEDGE WILL BE UNDER MY OBSERVATION

STRUCTURAL & FORENSIC ENGINEERS

KAI HAWAII

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816 T.M.K.: 3 - 2 - 031: 001

SHEET TITLE: GENERAL NOTES

DATE 10/xx/25
SCALE AS SHOWN
DRAWN CAD CHECK EB

SHEET
S001

OF SHEETS

8/25/2025 11:31:47 AM
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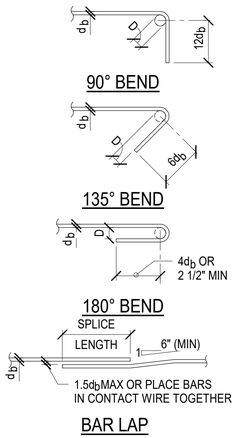
C:\Users\rachel.DocumentsRevit 2023 User Files\KAI_2683-20_Leahi Hospital_S23_rachelKPA1M.rvt

MINIMUM SPLICE AND DEVELOPMENT LENGTHS										
BAR SIZE	CONCRETE STRENGTH = 3,000 PSI					CONCRETE STRENGTH = 4,000 PSI				
	LAP SPLICE (l_s)		DEVELOPMENT (l_d)			LAP SPLICE (l_s)		DEVELOPMENT (l_d)		
	TOP BARS	OTHER BARS	STRAIGHT		WITH STANDARD HOOK	TOP BARS	OTHER BARS	STRAIGHT		WITH STANDARD HOOK
			TOP BARS	OTHER BARS				TOP BARS	OTHER BARS	
#3	28"	22"	22"	18"	6"	26"	20"	20"	16"	6"
#4	38"	30"	30"	22"	8"	34"	26"	26"	20"	8"
#5	48"	36"	36"	28"	10"	42"	32"	32"	24"	10"
#6	56"	44"	44"	34"	12"	50"	38"	38"	30"	12"
#7	82"	64"	64"	48"	14"	72"	54"	54"	42"	14"
#8	94"	72"	72"	56"	16"	82"	62"	62"	48"	16"
#9	106"	82"	82"	62"	19"	92"	70"	70"	54"	19"
#10	118"	92"	92"	70"	22"	102"	80"	80"	62"	22"
#11	132"	102"	102"	78"	24"	114"	88"	88"	68"	24"

NOTES:
1. IF CONCRETE COVER IS NOT GREATER THAN THE DIAMETER OF THE BAR OR THE CENTER-TO-CENTER SPACING IS NOT GREATER THAN 3 BAR DIAMETERS THEN VALUES SHALL BE INCREASED BY 50%.
2. "TOP BARS" ARE HORIZONTAL BARS WITH 12" OR MORE OF CONCRETE CAST BELOW.

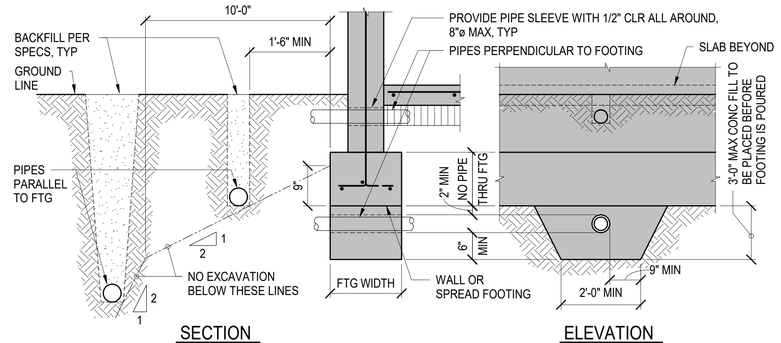


BAR LAP

D = $6d_b$ FOR #8 AND SMALLER
D = $8d_b$ FOR #9 TO #11

1 S002 TYPICAL REBAR SPLICE AND DEVELOPMENT LENGTH SCHEDULE

NOT TO SCALE

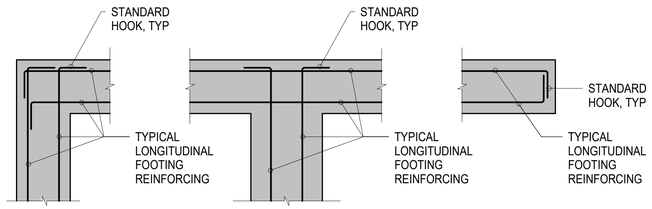


SECTION ELEVATION

NOTES:
1. FOR PIPES PERPENDICULAR TO FOOTING AT MORE THAN 3'-0" BELOW BOTTOM OF FOOTING, TRENCH SHALL BE BACKFILLED WITH COMPACTED FILL PER SPECIFICATIONS.
2. CONTRACTOR SHALL DETERMINE EXACT DEPTH AND LOCATION OF PIPES PRIOR TO EXCAVATION FOR FOOTINGS. FOOTING SHALL BE LOWERED AS REQUIRED.

2 S002 TYPICAL PIPE AT FOOTING DETAIL

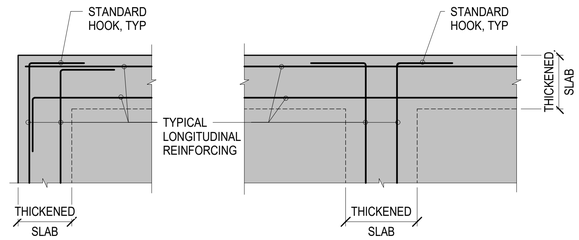
NOT TO SCALE



PLAN AT CORNER PLAN AT INTERSECTION PLAN AT END

3 S002 TYPICAL WALL FOOTING REINFORCING DETAIL

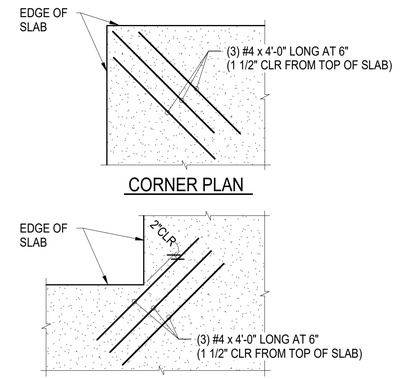
NOT TO SCALE



PLAN AT CORNER PLAN AT INTERSECTION

4 S002 TYPICAL THICKENED SLAB REINFORCING DETAIL

NOT TO SCALE

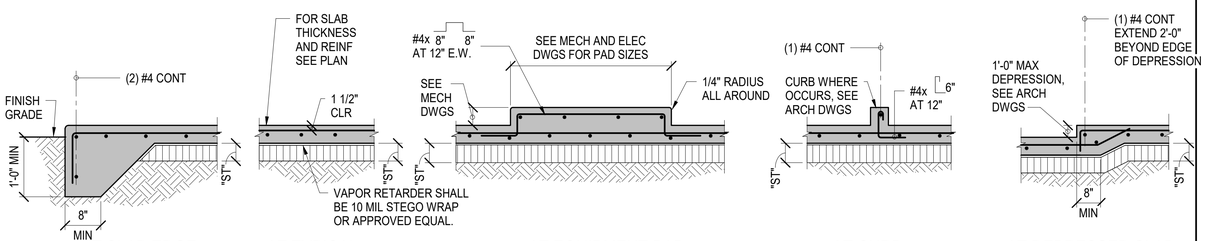


CORNER PLAN

INSIDE CORNER PLAN

5 S002 TYPICAL SLAB CORNER REINFORCING DETAIL

NOT TO SCALE



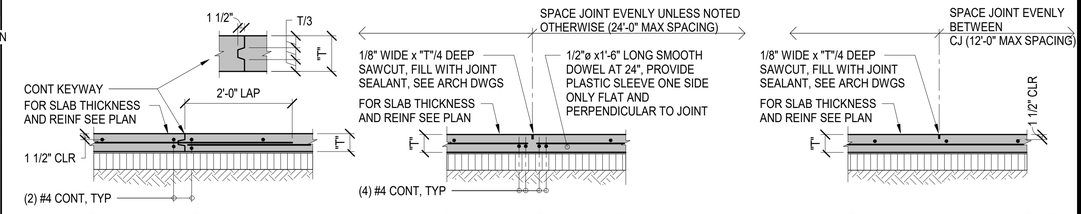
A AT SLAB EDGE B AT TYPICAL C AT EQUIPMENT PAD D AT CURB E AT DEPRESSED SLAB

SUBGRADE SCHEUDLE				
MARK	"ST"	MATERIAL	VAPOR RETARDER	REMARKS
SB-1	4"	3B FINE	YES	TYPICAL UNLESS NOTED OTHERWISE
SB-2	4"	3B FINE	NO	AT LANAIS AND WALKWAYS

SLAB-ON-GRADE NOTES:
1. THICKNESS OF SLAB-ON-GRADE SHOWN IS MINIMUM AND SHALL BE MAINTAINED AT ALL SLOPED AND DEPRESSED AREAS.
2. FOR FLOOR ELEVATIONS, DEPRESSED SLABS LOCATIONS, SLOPES TO DRAIN, AND EQUIPMENT PAD AND CURB LOCATIONS SEE ARCHITECTURAL, ELECTRICAL AND MECHANICAL DRAWINGS.

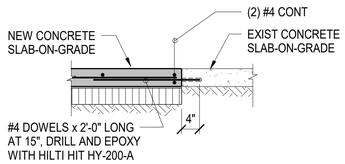
6 S002 TYPICAL SLAB-ON-GRADE DETAILS

NOT TO SCALE



CONSTRUCTION JOINT - (CJ-1) CONTROL JOINT - (CJ-2) TYPICAL SAWCUT JOINT - (CJ-3)
(PROVIDE PERPENDICULAR TO CJ-1 AND CJ-2)

NOTES:
1. SAW CUTTING SHALL OCCUR AS SOON AS CONCRETE SURFACE IS FIRM ENOUGH TO NOT BE TORN BY CUTTING BLADE AND BEFORE SHRINKAGE CRACKING OCCURS, BUT NO LATER THAN 12 HOURS AFTER CONCRETE HAS BEEN POURED.
2. SUBMIT JOINTING PLANS FOR REVIEW.



AT NEW SLAB TO EXIST SLAB

7 S002 TYPICAL SLAB JOINT DETAILS

NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

TIMOTHY G.S. OSHII LICENSED PROFESSIONAL ENGINEER No. 16073-S STATE OF HAWAII

EXPIRATION DATE OF THIS LICENSE: 4/30/2026
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION SHALL BE OBSERVED OR WILL BE UNDER MY OBSERVATION

STRUCTURAL & FORENSIC ENGINEERS

KAI HAWAII

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816 T.M.K.: 3 - 2 - 031: 001

SHEET TITLE: TYPICAL DETAILS

DATE	10/xx/25
SCALE	AS SHOWN
DRAWN	CAD
CHECK	EB

SHEET S002

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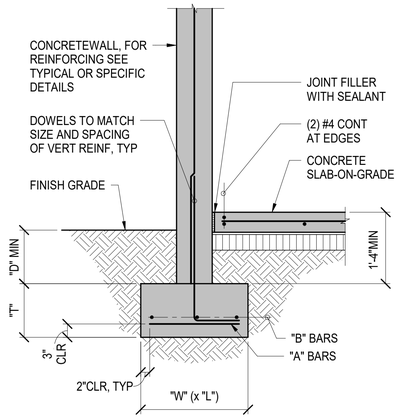
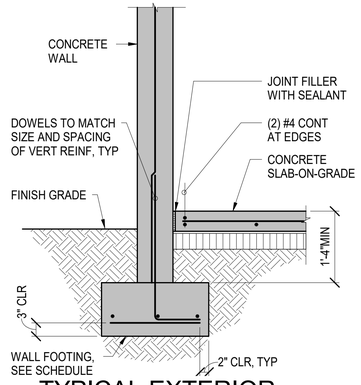
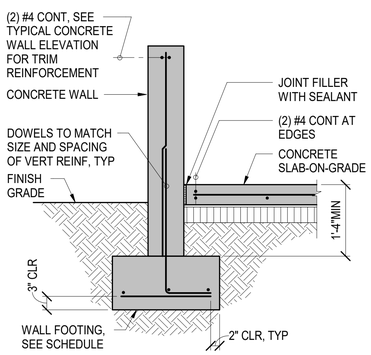


WALL FOOTING SCHEDULE							
MARK	WALL FOOTING SIZE			FOOTING REBAR		EMBEDMENT	REMARKS
	"W"	"L"	"T"	"A" BARS	"B" BARS	"D"	
WF-1	3'-6"	CONT	15"	#5 AT 9"	(5) #4	1'-0"	
WF-2	2'-0"	CONT	12"	#4 AT 9"	(3) #4	1'-0"	

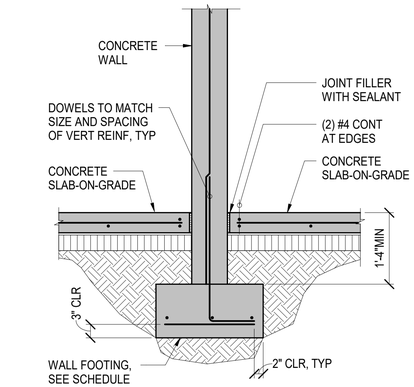
1 S101 WALL FOOTING SCHEDULE
NOT TO SCALE



2 S101 TYPICAL EXTERIOR WALL SECTION
NOT TO SCALE



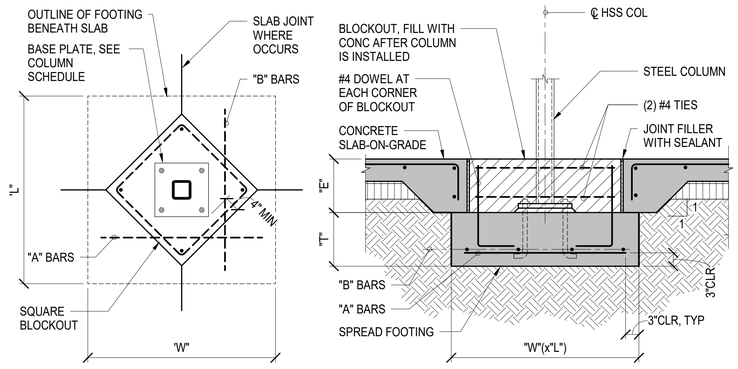
4 S101 EXTERIOR WALL SECTION AT WINDOW
NOT TO SCALE



5 S101 TYPICAL INTERIOR WALL SECTION
NOT TO SCALE

SPREAD FOOTING SCHEDULE						
MARK	"W"	"L"	"T"	"D"	"A" BARS	"B" BARS
F-2	2'-0"	2'-0"	1'-0"	1'-0"	(3) #4	(3) #4

NOTES:
1. BLOCKOUT SHALL BE POURED SEPARATELY FROM CONCRETE SLAB.



INTERIOR SPREAD FOOTING DETAIL

3 S101 TYPICAL SPREAD FOOTING SCHEDULE
NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

TIMOTHY G.S. OSOTH II
LICENSED PROFESSIONAL ENGINEER
No. 16073-S
USA
EXPIRATION DATE OF THIS LICENSE: 4/30/2026
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STRUCTURAL & FORENSIC ENGINEERS
KAI HAWAII

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816 T.M.K.: 3 - 2 - 031: 001
SHEET TITLE: TYPICAL FOUNDATION DETAILS

DATE 10/xx/25
SCALE AS SHOWN
DRAWN CAD CHECK EB
SHEET
S101
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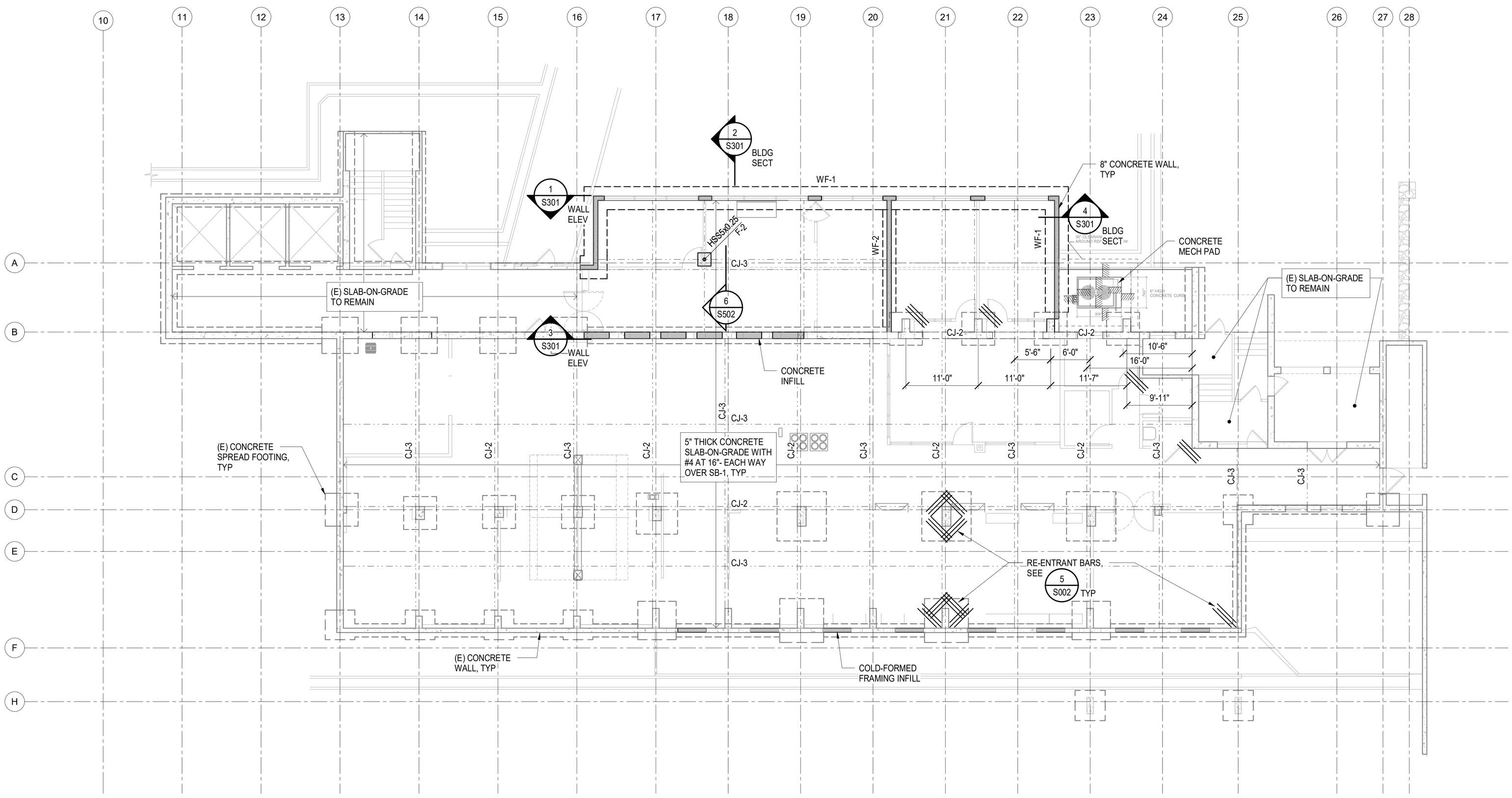

1 S201 SUB-BASEMENT FOUNDATION PLAN

SCALE: 1/8" = 1'-0"

8' 6' 4' 2' 0 8' 16'

1/8" = 1'-0"

REV. NO.	DESCRIPTION	DATE

TIMOTHY G.S. GOSHI
LICENSED PROFESSIONAL ENGINEER
No. 16073-S
HAWAII, U.S.A.

EXPIRATION DATE OF THIS LICENSE 4/30/2026
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STRUCTURAL & FORENSIC ENGINEERS

KAI HAWAII

PROJECT TITLE
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3675 KILAUEA AV., HONOLULU, HAWAII 96816 T.M.K.: 3 - 2 - 031: 001

SHEET TITLE
SUB BASEMENT FOUNDATION PLAN

DATE	10/xx/25
SCALE	AS SHOWN
DRAWN	CAD
CHECK	EB

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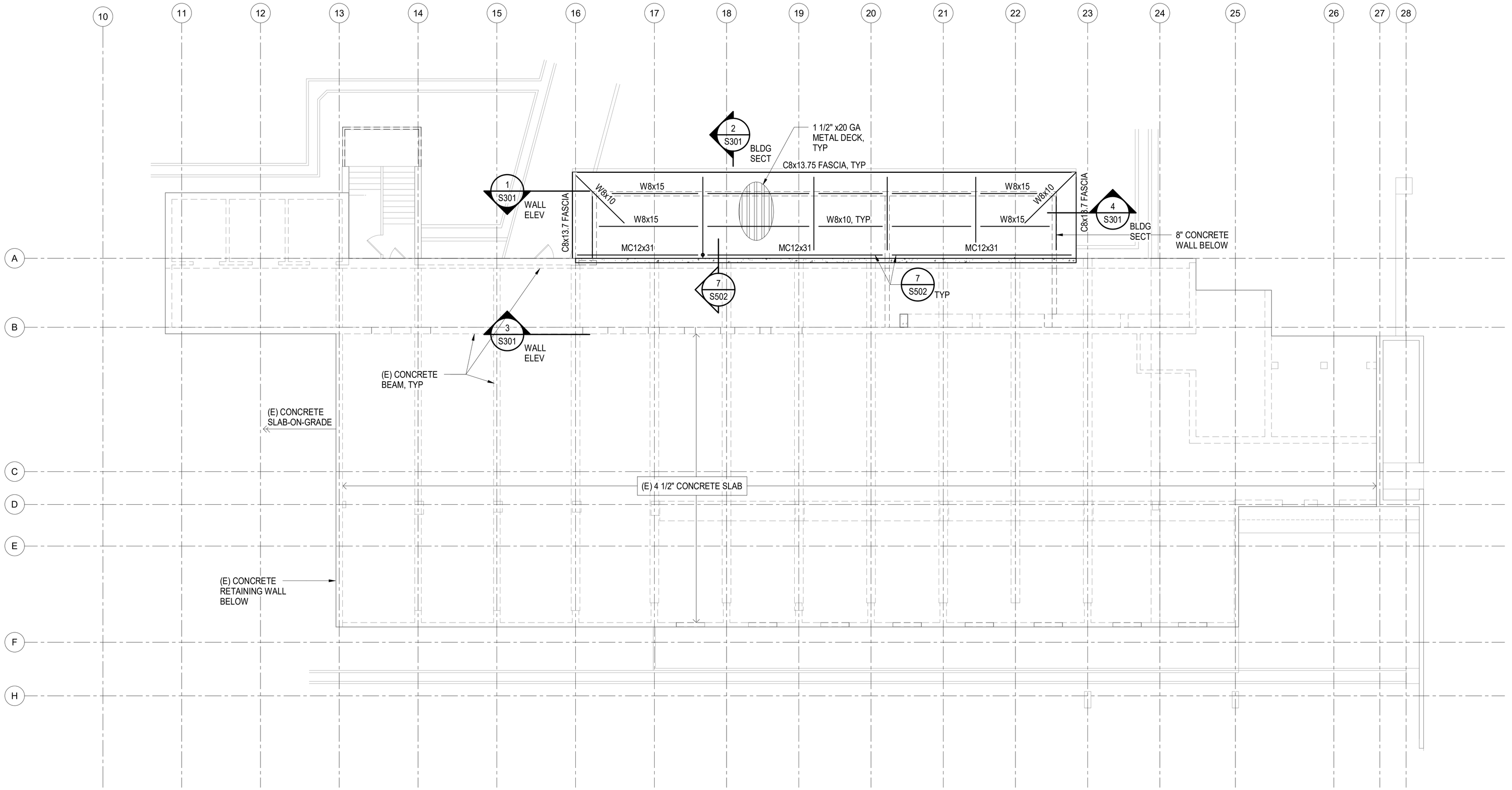

1 S202 PARTIAL BASEMENT FRAMING PLAN

SCALE: 1/8" = 1'-0"

8' 6' 4' 2' 0 8' 16'

1/8" = 1'-0"

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REV. NO.	DESCRIPTION	DATE

TIMOTHY G.S. GOO III
LICENSED PROFESSIONAL ENGINEER
No. 16073-S
HAWAII, U.S.A.

EXPIRATION DATE OF THIS LICENSE 4/30/2026
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STRUCTURAL & FORENSIC ENGINEERS

KAI HAWAII

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816 T.M.K.: 3 - 2 - 031: 001

SHEET TITLE
PARTIAL BASEMENT FRAMING PLAN

DATE	10xx25
SCALE	AS SHOWN
DRAWN	CAD
CHECK	EB

SHEET
S202

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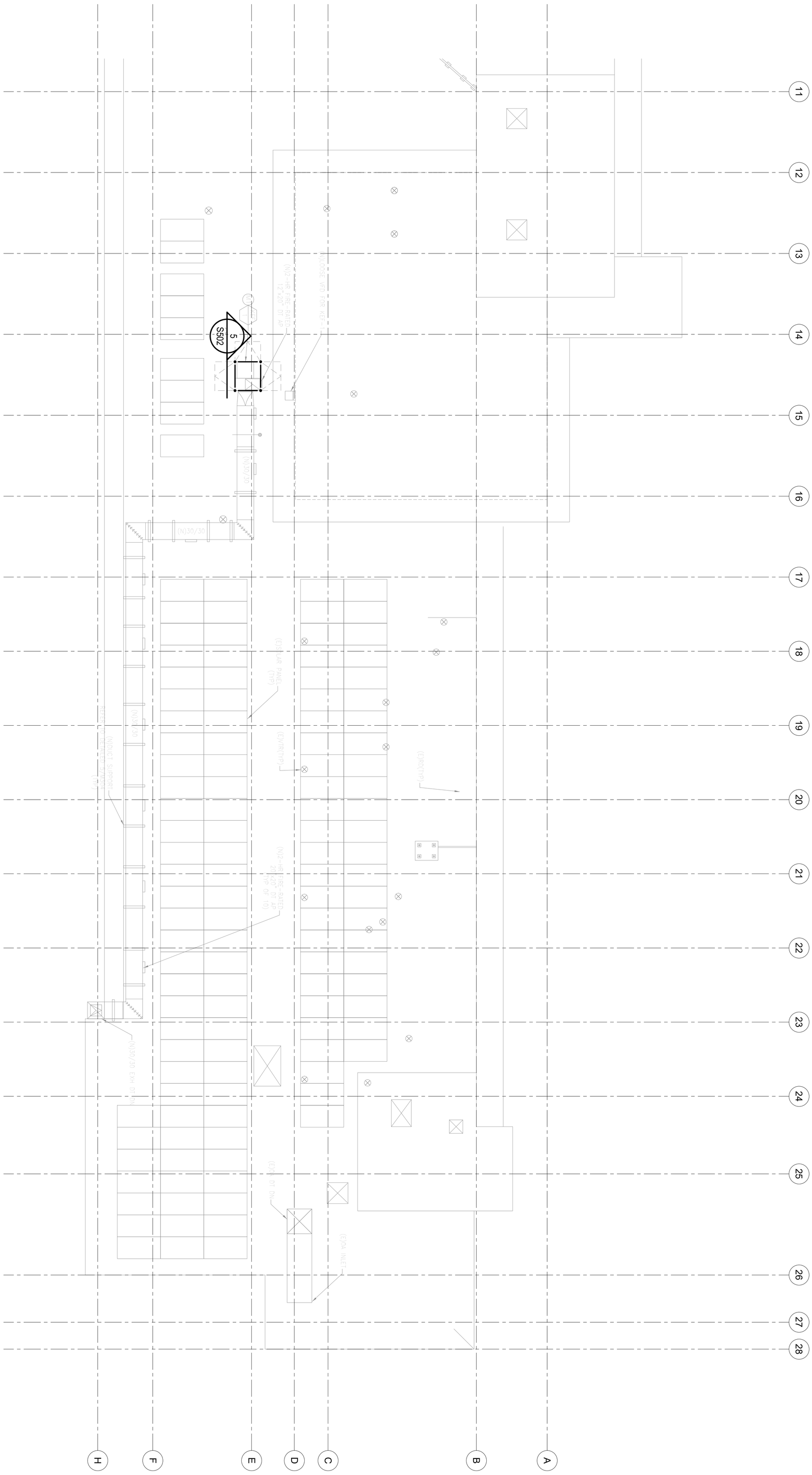
1 / S203

PARTIAL ROOF FRAMING PLAN

SCALE: 1/8" = 1'-0"



1/8" = 1'-0"

SHEET S203 — OF — SHEETS

DRAWN CAD
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SCALE AS SHOWN
DATE 10/xx/25

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816 T.M.K.: 3 - 2 - 031: 001

SHEET TITLE
ROOF FRAMING PLAN

KAI HAWAII
STRUCTURAL & FORENSIC ENGINEERS

TIMOTHY G.S. GOSHI
LICENSED PROFESSIONAL ENGINEER
No. 16073-S
HAWAII, U.S.A.

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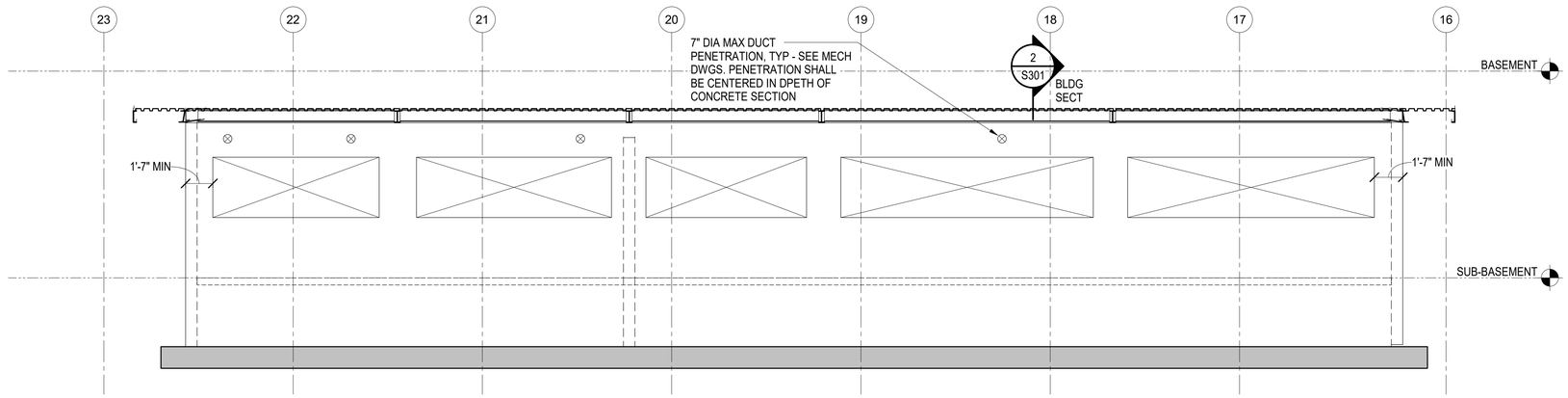
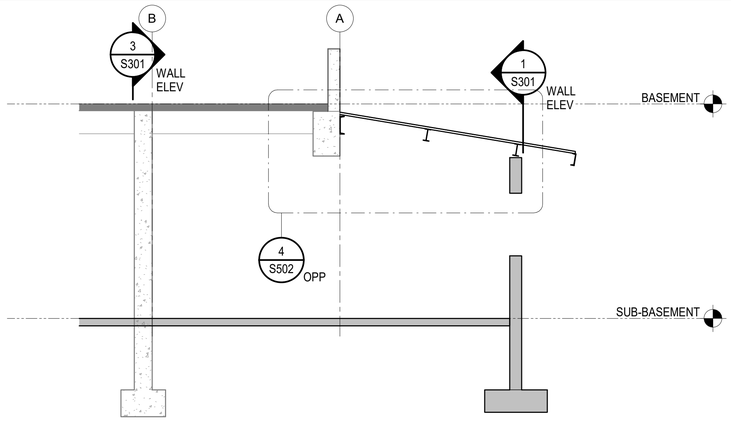


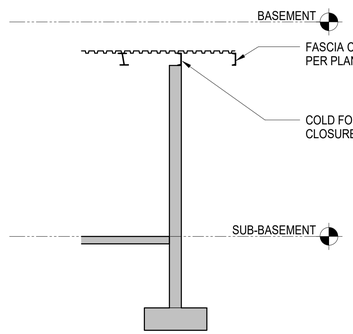
1 S301 **WALL ELEVATION**

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



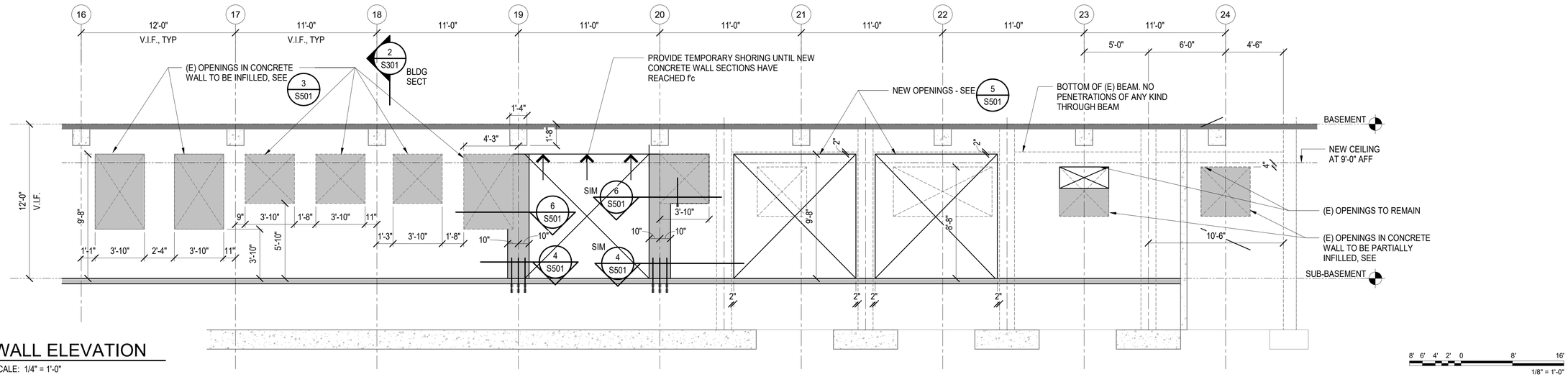
2 S301 **BUILDING SECTION**

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



4 S301 **BUILDING SECTION**

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



3 S301 **WALL ELEVATION**

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

REV. NO.	DESCRIPTION	DATE

EXPIRATION DATE OF THIS LICENSE: 4/30/2026
I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION WILL BE OBSERVED BY ME OR UNDER MY OBSERVATION

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STRUCTURAL & FORENSIC ENGINEERS

KAI HAWAII

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816 T.M.K.: 3 - 2 - 031: 001

SHEET TITLE: WALL ELEVATION AND BUILDING SECTION

DATE	10/xx/25
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DRAWN	CAD
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SHEET

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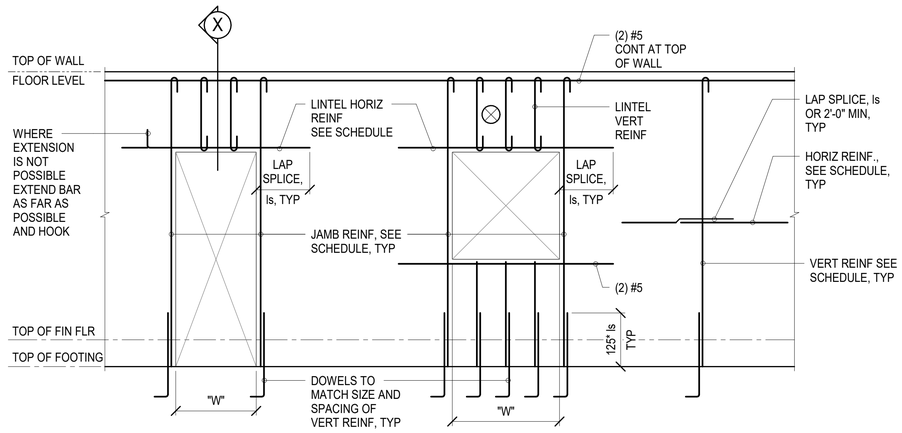
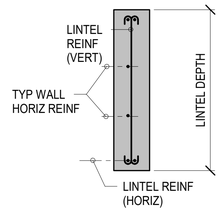
OPENING SCHEDULE				
OPENING WIDTH	REINFORCING			
	JAMB	LINTEL HORIZ	LINTEL VERT	REMARKS
W ≤ 10'-0"	(2) #5	(2) #4 TOP AND BOTTOM	#4 AT 12"	
10'-0" < W ≤ 15'-0"	(2) #5	(2) #5 TOP AND BOTTOM	#4 AT 12"	

CONCRETE WALL REINFORCING SCHEDULE			
WALL THICKNESS (INCHES)	BAR SIZE AND SPACING		
	HORIZ	VERT	REMARKS
8"	#4 AT 10"	#5 AT 12"	



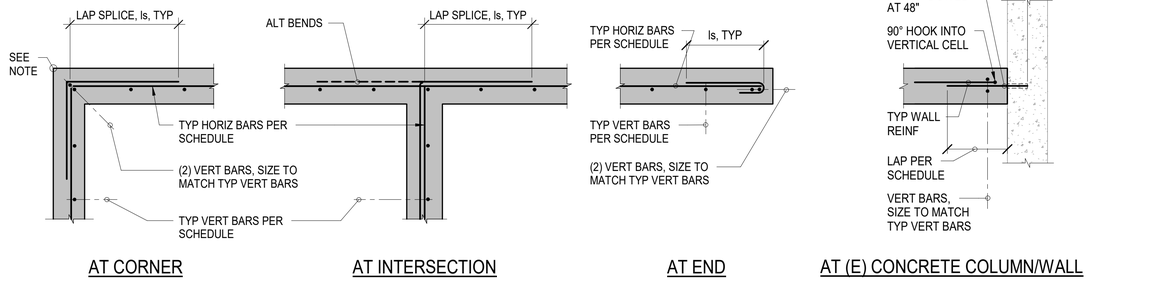
TYPICAL REINFORCING



X SECTION

1 S501 TYPICAL CONCRETE WALL ELEVATION

NOT TO SCALE

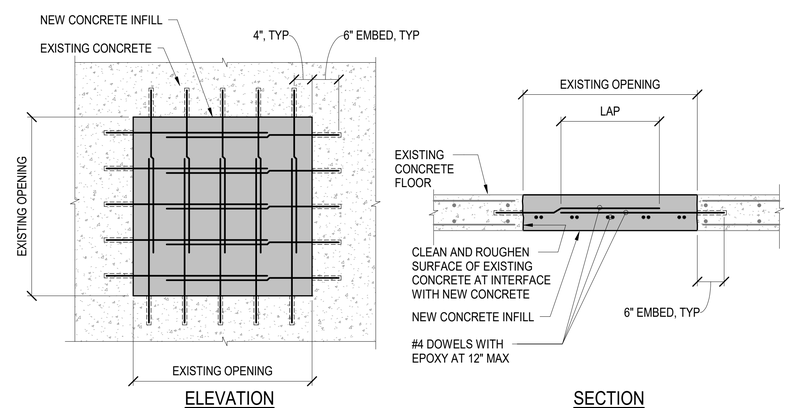


AT CORNER AT INTERSECTION AT END AT (E) CONCRETE COLUMN/WALL

AT SINGLE LAYER REINFORCEMENT

2 S501 TYPICAL CONCRETE WALL HORIZ REINF DETAILS

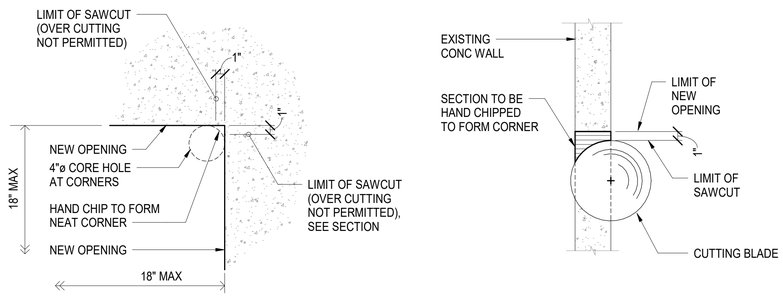
NOT TO SCALE



ELEVATION SECTION

3 S501 TYPICAL NEW INFILL IN EXISTING CONCRETE WALL / FLOOR DETAIL

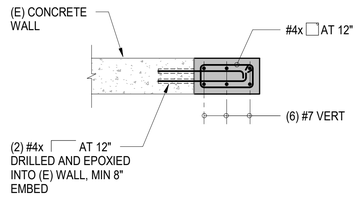
NOT TO SCALE



PLAN SECTION

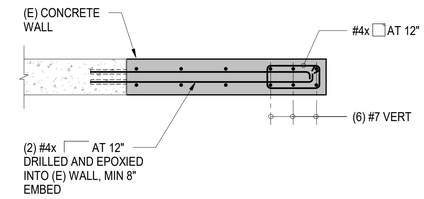
5 S501 TYPICAL NEW OPENING IN EXISTING CONCRETE WALL/FLOOR DETAIL

NOT TO SCALE



4 S501 SECTION

NOT TO SCALE



6 S501 SECTION

NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

THOMAS G.S. OSHII LICENSED PROFESSIONAL ENGINEER No. 16073-S HAWAII, U.S.A.

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STRUCTURAL & FORENSIC ENGINEERS

KAI HAWAII

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816 T.M.K.: 3 - 2 - 031: 001

SHEET TITLE: TYP DETAILS - CONCRETE

DATE	10/xx/25	
SCALE	AS SHOWN	
DRAWN	CAD	CHECK EB

SHEET S501

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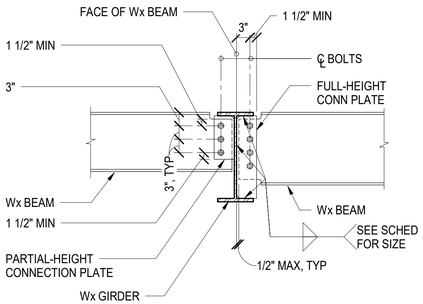
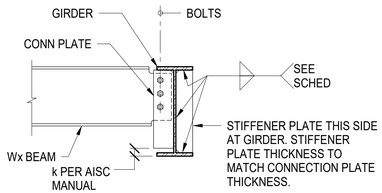
BEAM-TO-BEAM CONNECTION SCHEDULE			
BEAM SIZE	A325N BOLTS	CONN PLATE THICKNESS	WELD SIZE
C8x, W8x	(2) 3/4"ø	1/4"	1/4"



NOTES:
1. PROVIDE PARTIAL-HEIGHT CONNECTION PLATE WHERE BEAM DEPTH IS MORE THAN 8" LESS THAN GIRDER DEPTH, U.N.O.
2. PROVIDE FULL-DEPTH STIFFENER PLATE ON OPPOSITE SIDE AT ONE-SIDED BEAM CONNECTION.
3. EDGE DISTANCES AND BOLT SPACING SHALL MEET THE REQUIREMENTS OF AISC SPECIFICATIONS.

1 TYPICAL BEAM-TO-BEAM NON-MOMENT CONNECTION DETAIL

S502 — NOT TO SCALE



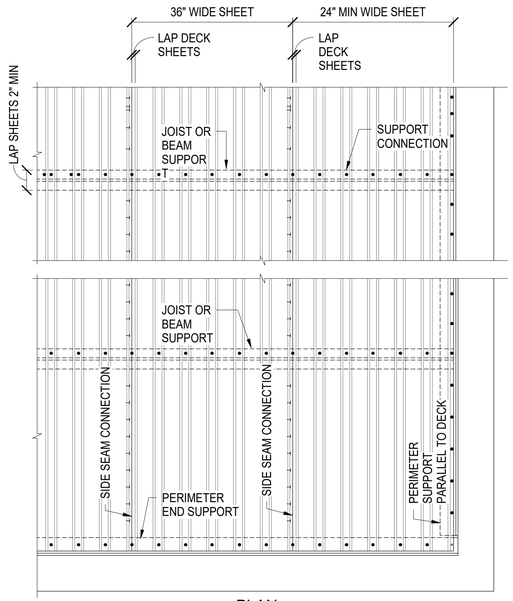
ELEVATION

NOTES:
1. ONE-SIDED CONNECTION OCCURS WHERE OPPOSITE BEAMS ARE OFFSET BY 12" OR MORE.
2. FOR BALANCE OF INFORMATION, SEE TYPICAL BEAM-TO-BEAM NON-MOMENT CONNECTION DETAIL.

2 TYPICAL ONE-SIDED BEAM NON-MOMENT CONNECTION DETAIL

S502 — NOT TO SCALE

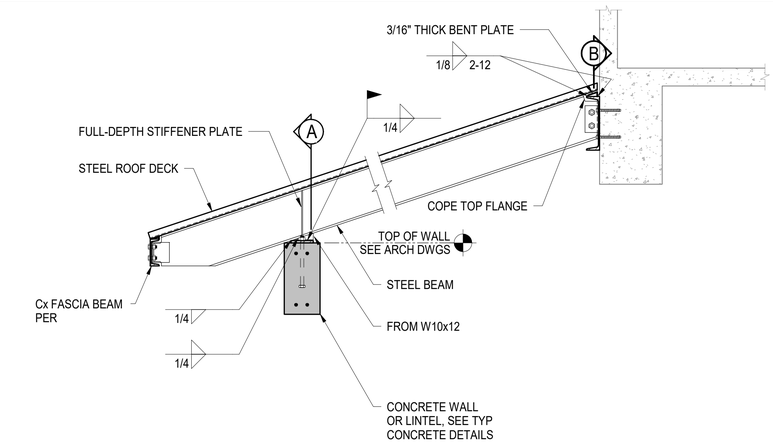
METAL DECK SCHEDULE					
LOCATION	TYPE	DECK FASTENING			REMARKS
		AT SUPPORT PER 36" SHEET WIDTH	SIDE SEAM CONNECTOR	AT SUPPORT OR MEMBER PARALLEL TO DECK	
ROOF	1 1/2"x20 GAGE	(4) NO. 12 SELF-DRILLING SCREWS	NO. 12 SELF-DRILLING SCREWS AT 36"	NO. 12 SELF-DRILLING SCREWS AT 12"	1 1/2" TOTAL THICKNESS



PLAN

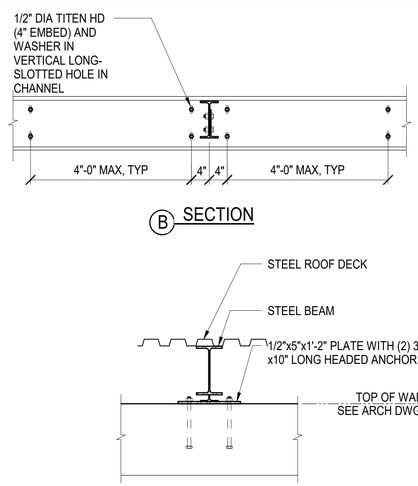
3 TYPICAL ROOF DECK DETAIL

S502 — NOT TO SCALE

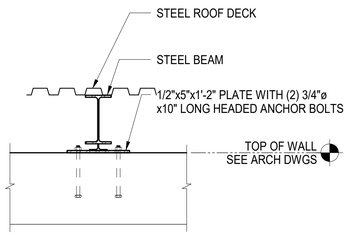


4 SECTION AT BEAM

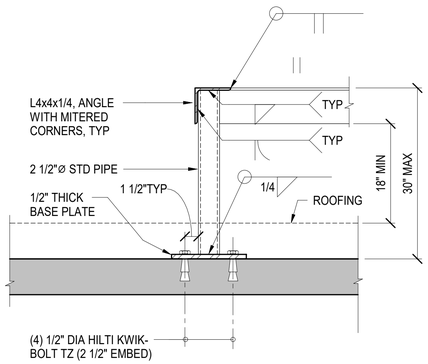
S502 — NOT TO SCALE



B SECTION

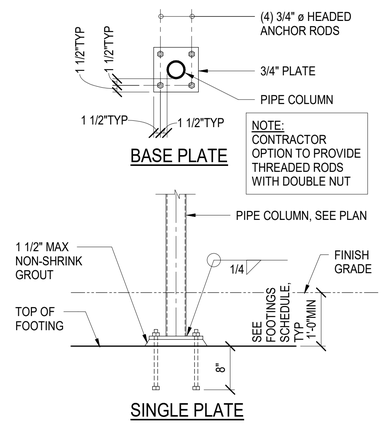


A SECTION



5 TYPICAL ROOF MECHANICAL EQUIPMENT FRAME DETAIL

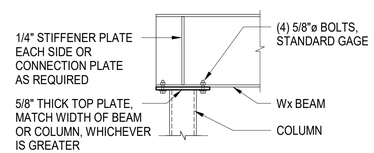
S502 — NOT TO SCALE



SINGLE PLATE

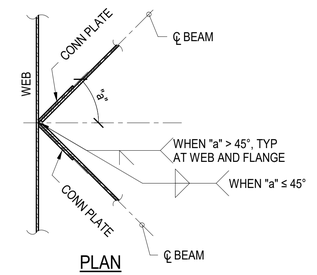
6 HSS COLUMN BASE PLATE DETAIL

S502 — NOT TO SCALE



7 WF BEAM TO HSS COLUMN

S502 — NOT TO SCALE

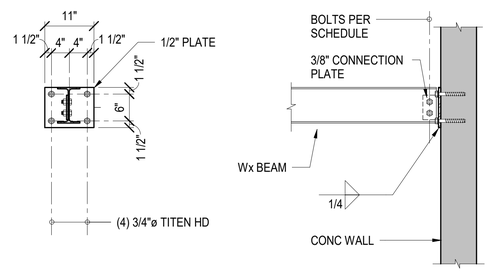


PLAN

NOTE:
SEE SCHEDULE FOR CONNECTION PLATE SIZE AND OTHER WELD REQUIREMENTS.

8 TYPICAL SKEWED CONN PLATE DETAIL

S502 — NOT TO SCALE



9 TYPICAL CONNECTION DETAIL AT CONCRETE WALL OR BEAM

S502 — NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

TIMOTHY G.S. GOO III — LICENSED PROFESSIONAL ENGINEER — No. 16073-S — HAWAII, U.S.A.

EXPIRATION DATE OF THIS LICENSE: 4/30/2026
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED ENGINEER, TO ALTER THIS DOCUMENT IN ANY WAY. ALTERATIONS MUST BE DONE BY THE LICENSEE THAT PREPARED THIS DOCUMENT OR UNDER HIS OR HER SUPERVISION AND CONSENT. ALTERATIONS MUST BE IDENTIFIED AND A DESCRIPTION OF THE ALTERATION MUST BE INCLUDED. THE LICENSEE'S SEAL AND SIGNATURE WILL BE UNDER MY OBSERVATION

KAI HAWAII — STRUCTURAL & FORENSIC ENGINEERS

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816 T.M.K.: 3 - 2 - 031: 001

SHEET TITLE: TYPICAL ROOF DECK DETAIL

DATE	10xx25
SCALE	AS SHOWN
DRAWN	CAD
CHECK	EB

SHEET
S502
OF SHEETS

8/25/2025 11:31:51 AM
\\kaihares\current Projects\2651\27002683.20 Leahi Hospital - Young Building, Food Service Addition and Renovation\050 Drawings\Structural\Revit 2023\KAI_2683-20_Leahi Hospital_S23.rvt
C:\Users\revited\Documents\Revit 2023 User Files\KAI_2683-20_Leahi Hospital_S23_cchesick7AYM.rvt

GENERAL NOTES:

1. CONFORM TO ALL REQUIREMENTS OF THE 2018 IBC, 2021 UPC, 2018 IECC, AND 2021 NFPA 1 CODES OF THE CITY AND COUNTY OF HONOLULU, STATE OF HAWAII HEALTH REGULATIONS, FIRE DEPARTMENT REGULATIONS, MANUFACTURER'S RECOMMENDATIONS AND OTHER APPLICABLE REGULATIONS.
2. EXAMINE ALL PROJECT PLANS AND BECOME FAMILIAR WITH ALL EXISTING CONDITIONS AND THE EXTENT OF REMOVAL, RELOCATION AND/OR NEW WORK PRIOR TO BIDDING. NOTIFY AND COORDINATE WITH THE ENGINEER FOR ANY MAJOR DEVIATIONS OR DISCREPANCIES DISCOVERED IN THE PLANS AND SPECIFICATIONS DUE TO UNFORESEEN OR VARYING FIELD CONDITIONS.
3. INSTALLATION SHALL BE GUARANTEED TO BE FREE FROM DEFECTS FOR ONE YEAR FROM FINAL DATE OF ACCEPTANCE OF THE PROJECT AS A WHOLE.
4. CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS PRIOR TO BID AND CONSTRUCTION
5. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING LINE SIZES, CONDITIONS, AND INVERTS PRIOR TO BID AND CONSTRUCTION.
6. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO COVER THE COMPLETE INSTALLATION OF SYSTEMS TO FUNCTION AS DESCRIBED AND SPECIFIED. THE OMISSION OF REFERENCE TO ANY NECESSARY ITEM OF LABOR OR MATERIAL SHALL NOT RELIEVE THE CONTRACTOR FROM PROVIDING SUCH LABOR AND MATERIAL AT NO ADDITIONAL COST TO THE OWNER.
7. PAY FOR ALL PERMITS AND APPLICATIONS.
8. CAULK ALL PENETRATIONS WATERTIGHT. PROVIDE ALL CUTTING, PATCHING, AND RESTORING OF EXISTING SURFACES TO MATCH ORIGINAL SURFACE FINISHES. REPAIR ANY DAMAGE TO EXISTING CONSTRUCTION RESULTING FROM THE INSTALLATION OF MECHANICAL ITEMS. THE AREAS REPAIRED SHALL MATCH THE EXISTING ADJACENT SURFACES IN TEXTURE AND COLOR.
9. PREPARE SIX (6) SETS OF SHOP DRAWINGS SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO THE START OF WORK. NO REPRODUCTIONS OF ANY KIND OF THE CONTRACT DOCUMENTS SHALL BE ACCEPTABLE AS SHOP DRAWINGS. PROVIDE ONE SET OF REPRODUCIBLE AS-BUILT DRAWINGS SHOWING THE ACTUAL INSTALLED CONDITIONS AND SUBMIT TO THE OWNERS UPON COMPLETION OF WORK.
10. ALL EQUIPMENT AND FIXTURES SHALL BE CAPABLE OF FITTING INTO THE SPACES ALLOTTED WHILE MEETING THE MANUFACTURER'S RECOMMENDED ACCESS REQUIREMENTS. REVIEW ALL SPACES WHERE EQUIPMENT AND FIXTURES ARE TO BE INSTALLED PRIOR TO ORDERING OF ITEMS AND NOTIFY THE ARCHITECT/ENGINEER OF ANY INADEQUATE CLEARANCES OR CONDITIONS THAT WILL PREVENT THE PROPER INSTALLATION, MAINTENANCE,AND OPERATION OF THE EQUIPMENT AND FIXTURES.
11. DRAWINGS ARE DIAGRAMMATIC IN NATURE AND DO NOT SHOW EVERY EXACT DETAIL OF PIPING AND DUCTWORK. PROVIDE OFFSETS AS NECESSARY TO AVOID LOCAL OBSTRUCTIONS OR INTERFERENCES WITH OTHER TRADES. REVIEW ALL PIPING AND DUCT RUNS PRIOR TO FABRICATION AND IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER OF ANY INTERFERENCES AND/OR LACK OF ADEQUATE CLEARANCES.
12. SHOULD PROJECT CONDITIONS REQUIRE REARRANGEMENT OF WORK, MARK SUCH CHANGES ON THE AS-BUILT DRAWINGS. IF THESE CHANGES REQUIRE ALTERNATE METHODS TO THOSE APPROVED BY THE CONTRACT DOCUMENTS, SUBMIT SHOP DRAWINGS SHOWING THE PROPOSED ALTERNATE METHODS TO THE ARCHITECT/ENGINEER FOR REVIEW/APPROVAL PRIOR TO PROCEEDING WITH WORK.
13. COORDINATE ALL WORK WHICH WILL AFFECT AREAS WITH BUILDING SUPERVISOR. SCHEDULE OFF-HOUR WORK WHEN REQUIRED TO MINIMIZE DISRUPTIONS.
14. COORDINATE ALL SWITCH, THERMOSTAT, ETC. LOCATIONS WITH USER/ENGINEER PRIOR TO INSTALLATION TO AVOID INTERFERENCES WITH PAINTING, BULLETIN BOARDS, FURNITURE, ETC. ANY ITEM NOT PROPERLY COORDINATED SHALL BE RELOCATED AT NO ADDITIONAL COST TO THE OWNER.
15. ALL STEEL SHALL BE HOT DIPPED GALVANIZED. GALVANIZED STEEL EXPOSED TO WEATHER SHALL HAVE WEATHER PROOF PAINT TO MATCH SURFACES. PROVIDE TWO EXTRA COATS OF EPOXY PAINT.
16. ALL ELECTRICAL AND CONTROL WIRING SHALL BE IN CONDUIT. PROVIDE GALVANIZED STEEL PIPE CONDUIT FOR EXPOSED TO WEATHER CONDUIT.
17. ALL DUCT DIMENSIONS SHOWN ARE NET DIMENSIONS.
18. PROVIDE DUCTWORK REDUCER FITTINGS AT AIR DEVICE CONNECTIONS AS REQUIRED.
19. PROVIDE OPPOSED BLADE VOLUME DAMPERS AND STAINLESS STEEL BIRDSCREENS FOR ALL OUTSIDE AIR DUCTS.
20. ALL SWITCHES, TIMECLOCKS, THERMOSTATS, AND CONTROL ITEMS SHALL BE ADA ACCESSIBLE AND SHALL BE MOUNTED AT 44" AFF AS PER ADA REQUIREMENTS OR ACCORDING TO OWNER'S INSTRUCTIONS.
21. PROVIDE REBALANCING DURING ONE YEAR GUARANTEE PERIOD TO SATISFY USER'S REQUIREMENTS. CONTRACTOR SHALL PROVIDE TEST AND BALANCING REPORTS.
22. COORDINATE ALL WORK WITH OTHER TRADES TO AVOID INTERFERENCES AND DELAYS.
23. EXISTING PLUMBING/STORM DRAIN/CONDUITS SHALL BE REHUNG/REROUTED AS REQUIRED TO ACCOMMODATE NEW HVAC EQUIPMENT AND DUCTWORK. VERIFY ALL WASTE AND WATER INVERTS, LOCATIONS, SIZES, AND CONDITIONS OF PIPING.
24. ALL HVAC DUCTWORK SHALL HAVE EITHER TURNING VANES OR RADIUS ELBOWS AT EACH BEND OR ELBOW WHETHER SHOWN ON THE DRAWINGS OR NOT.
25. SEISMICALLY BRACE ALL EQUIPMENT, PIPING, AND DUCTWORK IN ACCORDANCE WITH THE CURRENT BUILDING CODE AND THERE RESPECTIVE SEISMIC ZONE LOCATIONS.
26. PROVIDE ACCESS PANELS FOR ALL ITEMS UNDER THIS SECTION REQUIRING SERVICING, INSPECTION, MAINTENANCE, AND ADJUSTMENT.
27. PROVIDE ESCUTCHEON PLATES AT ALL EXPOSED WALL PENETRATIONS IN FINISHED AREAS, EXTERIOR WALL, ETC.
28. AFTER CONNECTION OF NEW FIXTURES TO WASTE, CLEANOUT/SNAKE EXISTING LINES FOR PROPER OPERATION.
29. ALL PENETRATIONS THRU EXISTING WALLS, FOUNDATIONS, AND FLOOR SLABS SHALL BE IN TOTAL COMPLIANCE WITH ARCHITECTURAL/STRUCTURAL PROCEDURES AND DRAWINGS.
30. ALL PENETRATIONS THRU RATED WALLS AND CEILINGS SHALL BE EQUIPPED WITH APPROVED FIRE STOPPING AND OR FIRE & SMOKE DAMPERS.
31. DRAWING FILES WILL NOT BE AVAILABLE TO CONTRACTORS FOR SHOP DRAWINGS OR ANY OTHER PURPOSE.
32. PROVIDE ISOLATION VALVES ON PIPING BRANCH LINES AND VOLUME DAMPERS ON DUCTWORK BRANCH LINES WHETHER SHOWN ON THE DRAWINGS OR NOT.
33. CONTRACTOR SHALL SCHEDULE, TAG, AND LABEL ALL VALVES AND PIPING. ALL PIPING SHALL ALSO BE LABELED WITH DIRECTION OF FLOW.
34. ALL EXTERIOR NUTS, BOLTS, AND SCREWS, WASHERS, FASTENERS, SUPPORTS STRAPS, UNISTRUTS, ANGLES, CHANNELS, ETC. SHALL BE TYP 304 STAINLESS STEEL.
35. CONTRACTOR SHALL SCHEDULE, TAG, AND LABEL ALL VALVES AND PIPING. ALL PIPING SHALL ALSO BE LABELED WITH DIRECTION OF FLOW.
36. PROVIDE DIELECTRIC UNIONS OR SEPARATIONS AT ALL DISSIMILAR METALS. PROVIDE UNIONS AFTER ALL SHUTOFF VALVES.

CITY AND COUNTY OF HONOLULU
REVISED ORDINANCES OF HONOLULU 2021
CHAPTER 16B

TO THE BEST OF MY KNOWLEDGE, THIS PROJECT'S DESIGN SUBSTANTIALLY CONFORMS TO THE BUILDING ENERGY CONSERVATION CODE FOR:

_____ BUILDING COMPONENT SYSTEMS
_____ ELECTRICAL COMPONENT SYSTEMS
✓ MECHANICAL COMPONENT SYSTEMS

SIGNATURE: _____
NAME: ROSS R. TANAKA
TITLE: VICE PRESIDENT
PE #: 9301-M
DATE: 03/26/2025

ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-M HAWAII, U.S.A.
EXP. 4-30-2028

BWS FIXTURE UNIT COUNT

NEW

FIXTURE	QTY	F.U. EACH	SUBTOTAL F.U.
ACCESSIBLE WATER CLOSET (FLUSH VALVE)	2	3.4	6.8
ACCESSIBLE URINAL	1	1.7	1.7
ACCESSIBLE LAVATORY	2	0.6	1.2
HAND SINK	7	1.0	7.0
SINK	13	1.6	20.8
3-COMP SK (2-FAUCET)	1	3.2	3.2
2-COMP SK (2-FAUCET)	1	3.2	3.2
MOP SINK	1	2.0	2.0
HOSE BIBB (ADD)	2	1.0	2.0
CONVEYOR DISH MACHINE	1	3.0	3.0
ACCESSIBLE SHOWER	1	1.6	1.6
ICE AND WATER DISPENSER	1	1.0	1.0
ICE MAKER	1	1.0	1.0
COFFEE URN	1	1.0	1.0
COFFEE BREWER	1	1.0	1.0
TRAP PRIMER	7	0.6	4.2
30 GALLON TILTING SKILLET FAUCET	1	3.0	3.0
CONVECTION STEAMER	2	6.0	12.0
25 GALLON TILTING KETTLE FAUCET	1	3.0	3.0
40 GALLON TILTING KETTLE FAUCET	1	3.0	3.0
HOSE REEL	2	3.0	6.0
TOTAL			87.7 F.U. 64.0 GPM 2560 GPD

BWS FLOW REQUIREMENT

METER NUMBER (M/N): 05154013
PREMISE ID #: 2667015291

A. PROPOSED DOMESTIC:	87.7 F.U.	64.0 GPM	2560 GPD
B. PROPOSED IRRIGATION:	0 F.U.	0 GPM	0 GPD
C. OTHER:	0 F.U.	0 GPM	0 GPD
D. TOTAL PROPOSED:	87.7 F.U.	64.0 GPM	2560 GPD
E. DEMOLITION:	35.4 F.U.	44.0 GPM	1760 GPD
F. NET CHANGE:	52.3 F.U.	52.0 GPM	2080 GPD
G. EXISTING TO REMAIN:	1390 F.U.	260.0 GPM	7800 GPD
H. GRAND TOTAL:	1477.7 F.U.	270.0 GPM	8100 GPD

NOTES:
1. NO IRRIGATION WORK WAS INVOLVED AS APART OF THIS PROJECT.
2. A/C WORK WILL NOT AFFECT WATER DEMAND.
3. THE EXISTING FIRE METER (METER NUMBER 2378653) IS ADEQUATE TO SERVICE THE AUTOMATIC FIRE SPRINKLER SYSTEM; INCLUSIVE OF THIS PROJECT'S SCOPE OF WORK.

DEPARTMENT OF HEALTH NOTE:
INTERIOR RENOVATION TO BE PERFORMED. EXISTING HVAC EQUIPMENT TO REMAIN.

EXISTING OCCUPANCY TO REMAIN THE SAME AND THE EXISTING OUTSIDE AIR QUANTITY IS ADEQUATE FOR THE SPACE.

MECHANICAL LEGEND

SYMBOL	ABBRV.	DESCRIPTION
GENERAL		
	AFF	ABOVE FINISHED FLOOR
	CLG	CEILING
	CONT	CONTINUE
	DEMO	DEMOLITION
	ø	DIAMETER
	DN	DOWN
	DWGS	DRAWINGS
(E)	EXST	EXISTING (TO REMAIN)
(N)		NEW
	NTS	NOT TO SCALE
	POC	POINT OF CONNECTION
	POR	POINT OF REMOVAL
(RE)		RELOCATE
(R)		REMOVE
	S.S.	STAINLESS STEEL
	TYP	TYPICAL
	W/	WITH
PLUMBING		
	ALAV	ACCESSIBLE LAVATORY
	AUR	ACCESSIBLE URINAL
	AWC	ACCESSIBLE WATER CLOSET
	AP	ACCESS PANEL
	ASH	ACCESSIBLE SHOWER
	BV	BALANCE VALVE
	BFG	BELOW FINISH GRADE
	CO	CLEANOUT
	COTG	CLEANOUT TO GRADE
	CW	COLD WATER
	FW	FILTERED WATER
	FCO	FLOOR CLEANOUT
	FD	FLOOR DRAIN
	FS	FLOOR SINK
	GPD	GALLONS PER DAY
	GPF	GALLONS PER FLUSH
	GPM	GALLONS PER MINUTE
	GI	GREASE INTERCEPTOR
GW	GW	GREASE WASTE
	HS	HAND SINK
	HB	HOSE BIBB
	HW	HOT WATER
	HWR	HOT WATER RETURN
	INV	INVERTED
	LAV	LAVATORY
LPG	LPG	LOW PRESSURE GAS
MPG	MPG	MEDIUM PRESSURE GAS
	MS	MOP SINK
	PRV	PRESSURE REDUCING VALVE
	RD	ROOF DRAIN
	S	SANITARY
	SS	SERVICE SINK
	SK	SINK
	SOV	SHUT OFF VALVE
	ST	STORAGE TANK
		STUBOUT
	TMV	THERMOSTATIC MIXING VALVE
	TP	TRAP PRIMER
	TD	TRENCH DRAIN
	V	VENT
	VTR	VENT TO ROOF
	WCO	WALL CLEANOUT
	WM	WASHING MACHINE
	WC	WATER CLOSET
	WHA	WATER HAMMER ARRESTOR

SYMBOL	ABBRV.	DESCRIPTION
HVAC		
	ACCU	AIR COOLED CONDENSER UNIT
	ACF	AIR CURTAIN FAN
		BACKDRAFT DAMPER
CD	CD	CONDENSATE
	CFM	CUBIC FEET PER MINUTE
	DCV	DEMAND CONTROL VENTILATION
	DT	DUCT
S	DSD	DUCT SMOKE DETECTOR
	EXH	EXHAUST
	EA	EXHAUST AIR
	EF	EXHAUST FAN
	FCU	FAN COIL UNIT
		FLEX DUCTWORK
	HD	HOOD
	KEF	KITCHEN EXHAUST FAN
	MAF	MAKE-UP AIR FAN
M		MOTORIZED DAMPER
	NK	NECK
	OBVD	OPPOSED BLADE VOLUME DAMPER
	OA	OUTSIDE AIR
	OAD	OUTSIDE AIR DIFFUSER
	RAR	RETURN AIR REGISTER
RL	RL	REFRIGERANT LIQUID
RS	RS	REFRIGERANT SUCTION
	SC	SERVICE CLEARANCE
		SPINTAB
	SA	SUPPLY AIR
	SAD	SUPPLY AIR DIFFUSER
	SF	SUPPLY FAN
	TSTAT	THERMOSTAT
	TG	TRANSFER GRILLE
	TV	TURNING VANE
FIRE PROTECTION		
		CONCEALED PENDANT TYPE FIRE SPRINKLER HEAD
	FS	FIRE SPRINKLER
	FE	FIRE EXTINGUISHER
		FREEZER PENDANT TYPE FIRE SPRINKLER HEAD
OS&Y	OS&Y	OUTSIDE STEM AND YOKE
		UPRIGHT TYPE FIRE SPRINKLER HEAD
	FH	FIRE HOSE
	FDC	FIRE DEPARTMENT CONNECTION

FIXTURE UNIT COUNT

DEMO

FIXTURE	QTY	F.U. EACH	SUBTOTAL F.U.
WATER CLOSET (VALVE)	4	3.4	13.6
LAVATORY	3	0.6	1.8
SINK	1	1.6	1.6
SERVICE SINK	2	2.0	4.0
HOSE BIBB (ADDITIONAL)	1	1.0	1.0
WASHING MACHINE	4	2.0	8.0
SHOWER	3	1.6	4.8
DRINKING FOUNTAIN	1	0.6	0.6
TOTAL			35.4 F.U. 44.0 GPM 1760 GPD

REV. NO.	DESCRIPTION	DATE

This work was prepared by me or under my supervision and was constructed of this project and to be under my observation.
Signature
LICENSE EXPIRES : APR. 30, 2028

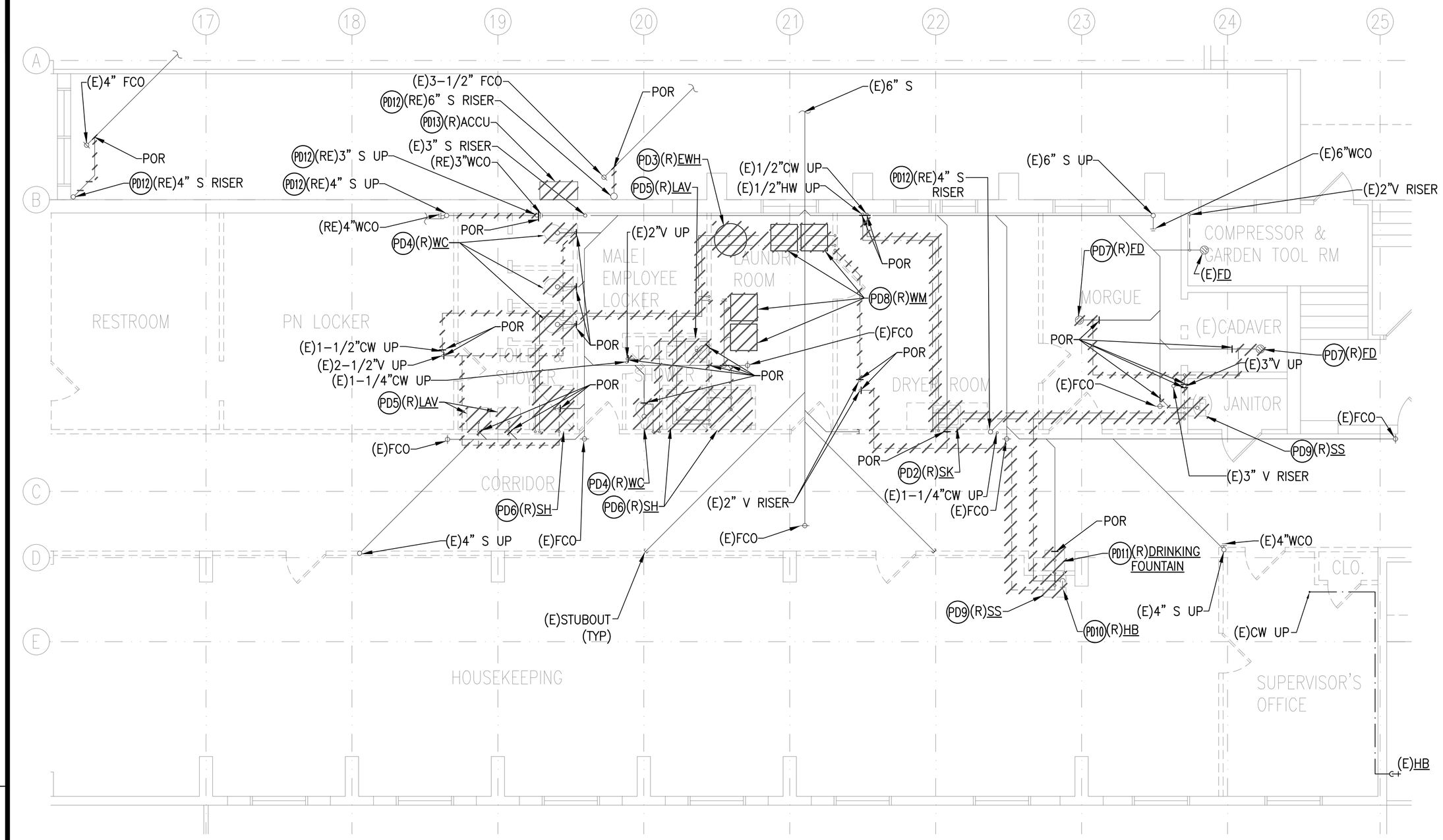
ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-M HAWAII, U.S.A.

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 - 2 - 031: 001

SHEET TITLE: GENERAL NOTES AND MECHANICAL LEGEND

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT
SHEET
M000
OF ? SHEETS



1 M100 PARTIAL PLUMBING DEMOLITION PLAN
SCALE: 3/16" = 1'-0" SUB-BASEMENT LEVEL

2 M100 PARTIAL PLUMBING DEMOLITION PLAN
SCALE: 3/16" = 1'-0" BASEMENT LEVEL

PLUMBING DEMOLITION NOTES:

PD1 HAWAII GAS SHALL REMOVE GAS METER COMPLETELY WITH ASSOCIATED PIPING, PRV ASSEMBLY, AND ACCESSORIES AS REQUIRED. HAWAII GAS SHALL REMOVE EXISTING GAS LINE FROM GAS METER TO THE STREET MAIN GAS LINE. HAWAII GAS WILL PROVIDE UPGRADED SERVICE GAS LINE AND GAS METER. CONTRACTOR SHALL REMOVE EXISTING PRV ASSEMBLY, PIPING AND ASSOCIATED ACCESSORIES FROM GAS METER TO POR AS SHOWN. CONTRACTOR SHALL COORDINATE NEW PLUMBING WORK WITH HAWAII GAS AS REQUIRED. SEE NEW PLUMBING WORK NOTES. PATCH/REPAIR WALL/FLOOR AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

PD2 EXISTING STAINLESS STEEL COUNTERTOP WITH INTEGRAL SINK TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED CW/HW/S/V PIPING. CUT/CAP PIPING BELOW FLOOR/WITHIN WALL AS REQUIRED. PATCH/REPAIR TO MATCH EXISTING/MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

PD3 EXISTING EWH TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED CW/HW PIPING AND VALVE AS REQUIRED. REMOVE EXISTING T&P RELIEF PIPING. PATCH/REPAIR TO MATCH EXISTING/MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

PD4 EXISTING FLUSH VALVE WC TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED CW/S/V PIPING. CUT/CAP PIPING BELOW FLOOR/WITHIN WALL AS REQUIRED. PATCH/REPAIR TO MATCH EXISTING/MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

PD5 EXISTING LAV TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED CW/HW/S/V PIPING. CUT/CAP PIPING BELOW FLOOR/WITHIN WALL AS REQUIRED. PATCH/REPAIR TO MATCH EXISTING/MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

PD6 EXISTING SH TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED CW/HW/S/V PIPING. CUT/CAP PIPING BELOW FLOOR/WITHIN WALL AS REQUIRED. PATCH/REPAIR TO MATCH EXISTING/MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

PD7 EXISTING FD TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED S PIPING. CUT/CAP PIPING BELOW FLOOR/WITHIN WALL AS REQUIRED. PATCH/REPAIR TO MATCH EXISTING/MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

PD8 EXISTING WASHING MACHINE TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED CW/HW/S/V PIPING. CUT/CAP PIPING BELOW FLOOR/WITHIN WALL AS REQUIRED. PATCH/REPAIR TO MATCH EXISTING/MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

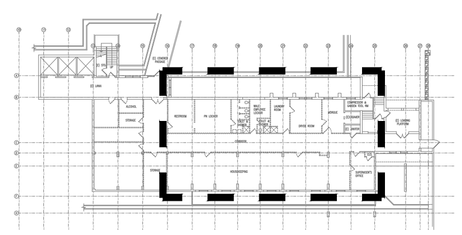
PD9 EXISTING SERVICE SINK TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED CW/S/V PIPING. CUT/CAP PIPING BELOW FLOOR/WITHIN WALL AS REQUIRED. PATCH/REPAIR TO MATCH EXISTING/MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

PD10 EXISTING HB TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED CW PIPING AND VALVE. CUT/CAP PIPING BELOW FLOOR/WITHIN WALL AS REQUIRED. CONTRACTOR TO FIELD VERIFY.

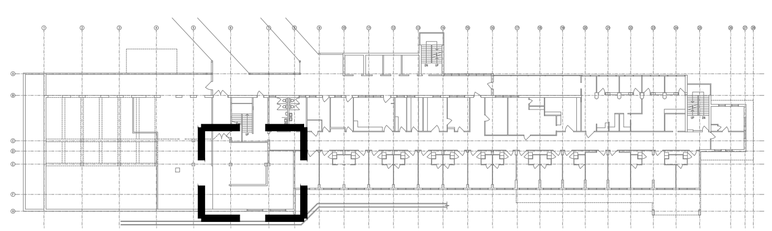
PD11 EXISTING DRINKING FOUNTAIN TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED CW/S/V PIPING AND VALVE. CUT/CAP PIPING BELOW FLOOR/WITHIN WALL AS REQUIRED. PATCH/REPAIR TO MATCH EXISTING/MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

PD12 RELOCATE EXISTING SANITARY RISER AS SHOWN. REPLACE AND MODIFIED ASSOCIATED SANITARY BRANCH PIPING AND CONNECT TO EXISTING AS REQUIRED. CONTRACTOR SHALL COORDINATE WITH FACILITY PERSONNEL BEFORE RELOCATING EXISTING SANITARY RISER TO MAKE SURE SANITARY RISER SERVING THE UPPER FLOORS IS NOT OPERATIONAL DURING THE RELOCATION PROCESS. SEE NEW PLUMBING WORK NOTES. CUT/CAP SANITARY PIPING FROM EXISTING SANITARY RISER TO POR AS SHOWN. PATCH/REPAIR TO MATCH EXISTING. CONTRACTOR TO FIELD VERIFY.

PD13 EXISTING ACCU TO BE REMOVED COMPLETELY INCLUDING ASSOCIATED REFRIGERANT PIPING, ELECTRICAL CONDUIT, FCU, AND ACCESSORIES AS REQUIRED. PATCH/REPAIR TO MATCH EXISTING/MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.



3 M100 KEYPLAN
SCALE: NOT TO SCALE SUB-BASEMENT LEVEL



4 M100 KEYPLAN
SCALE: NOT TO SCALE BASEMENT LEVEL

0' 2'-8" 5'-4" 8' 10'-8" 13'-4" 16'
SCALE: 3/16" = 1'

REV. NO.	DESCRIPTION	DATE

This work was prepared by me or under my direct supervision and I am duly licensed to practice as a professional engineer in the State of Hawaii.
Signature
LICENSE EXPIRES: APRIL 30, 2025

ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-H HAWAII, U.S.A.

Pacific Architects, Inc.
2020 South King Street
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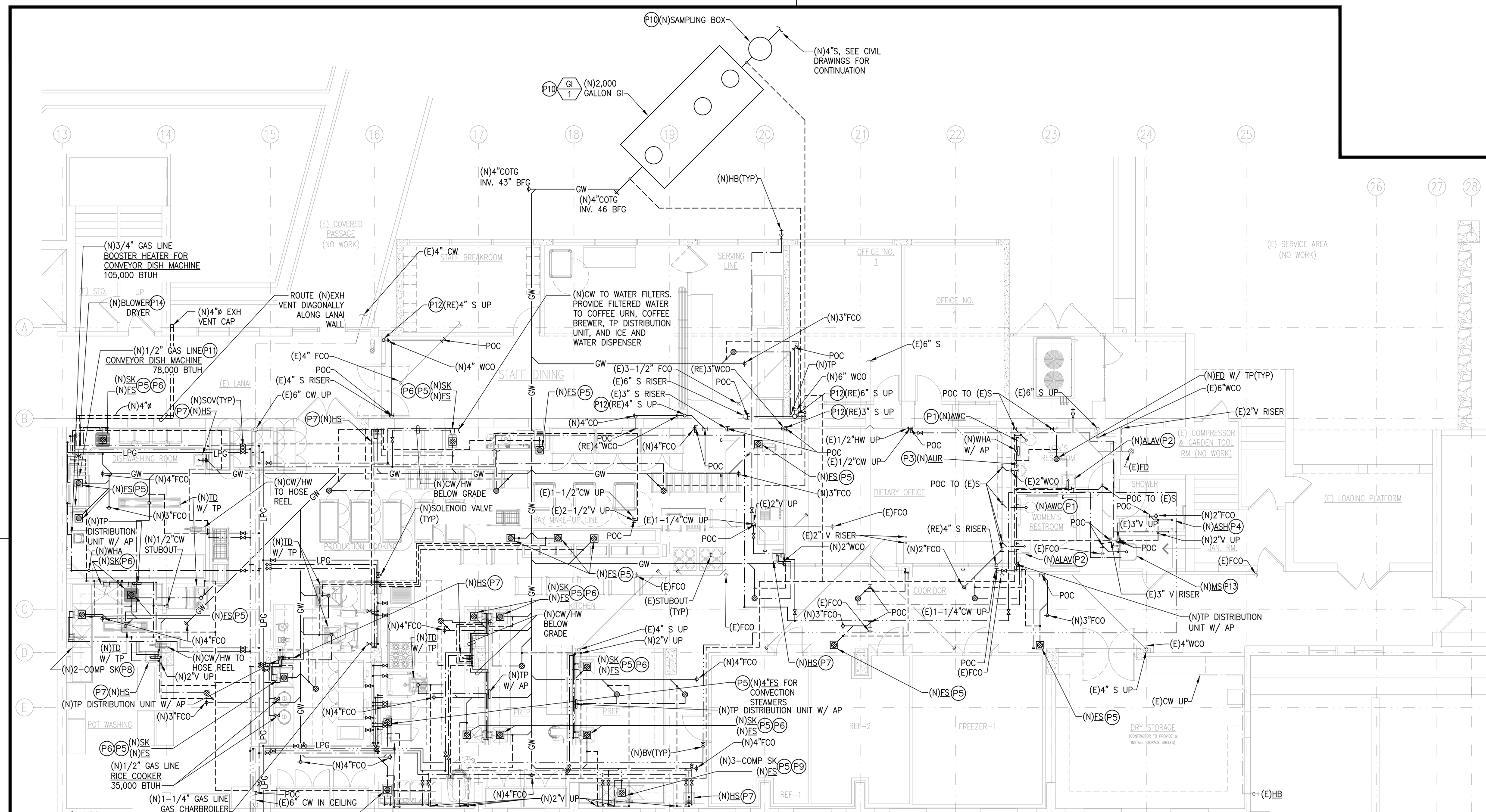
808-949-1601 fax
808-942-0054

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 - 2 - 031: 001

SHEET TITLE
PARTIAL PLUMBING DEMOLITION PLAN

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

SHEET
M100
OF ? SHEETS



SEE 1/M102 FOR CONTINUATION NEW MEDIUM PRESSURE GAS, HW, AND HWR LINE.

NOTES:

1. ROUTE PIPING ABOVE OR AROUND MECHANICAL EQUIPMENT AND REQUIRED SERVICE CLEARANCES AS REQUIRED FOR SERVICING OR REPLACEMENT OF MECHANICAL EQUIPMENT.
2. PROVIDE 9BD BACKFLOW PREVENTERS AT ALL FILTERED WATER CONNECTIONS TO EQUIPMENT.
3. PROVIDE TMV TO 3–COMP SK, 2–COMP SK, SK, AND HS HW CONNECTION. SET HW TEMPERATURE TO 110 DEGREES FAHRENHEIT.

NEW PLUMBING NOTES:

P1 PROVIDE NEW ACCESSIBLE WATER CLOSET COMPLETE. PROVIDE NEW CW/S/V PIPING AS REQUIRED TO CONNECT TO EXISTING PIPING. PROVIDE FLUSH VALVE AND ASSOCIATE ACCESSORIES AS REQUIRED FOR INSTALLATION. INSTALL PER ADAAG SECTION 604 GUIDELINES. PATCH/REPAIR WALL/FLOOR AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P2 PROVIDE NEW ACCESSIBLE LAVATORY COMPLETE. PROVIDE NEW CW/HW/S/V PIPING AS REQUIRED TO CONNECT TO EXISTING PIPING. PROVIDE P–TRAP, SUPPLY STOPS, SUPPLY PIPING, HW INSULATION PER IECC TABLE C403.11.3, AND ASSOCIATE ACCESSORIES AS REQUIRED FOR NEW INSTALLATION. INSTALL PER ADAAG SECTION 606 GUIDELINES. PATCH/REPAIR WALL AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P3 PROVIDE NEW ACCESSIBLE URINAL COMPLETE. PROVIDE NEW CW/S/V PIPING AS REQUIRED TO CONNECT TO EXISTING PIPING. PROVIDE FLOOR MOUNTED WALL CARRIER, AUTOMATIC FLUSH VALVE, AND ASSOCIATE ACCESSORIES AS REQUIRED FOR INSTALLATION. INSTALL PER ADAAG SECTION 605 GUIDELINES. PATCH/REPAIR WALL AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P4 PROVIDE NEW ACCESSIBLE SHOWER COMPLETE. PROVIDE NEW CW/HW/S/V PIPING AS REQUIRED TO CONNECT TO EXISTING PIPING. PROVIDE NEW SHOWER HEAD, TRIM KIT, SHOWER DRAIN, HW INSULATION PER IECC TABLE C403.11.3, AND ASSOCAITE ACCESSORIES AS REQUIRED. INSTALL PER ADAAG SECTION 608 GUIDELINES. PATCH/REPAIR WALL/FLOOR AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P5 PROVIDE NEW FLOOR SINK COMPLETE. PROVIDE NEW WASTE AND VENT PIPING AS SHOWN ON PLAN. PATCH/REPAIR FLOOR/WALL AS REQUIRED TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P6 PROVIDE NEW NEW WATER PIPING AND INDIRECT SANITARY PIPING TO FLOOR SINK AS SHOWN ON PLANS FOR NEW SK. PROVIDE HW INSULATION PER IECC TABLE C403.11.3 AS REQUIRED. SEE KITCHEN EQUIPMENT SCHEDULE FOR SK MODEL AND ACCESSORIES. PATCH/REPAIR WALL AS REQUIRED TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P7 PROVIDE NEW HAND SINK COMPLETE. PROVIDE NEW CW/HW/S/V PIPING AS REQUIRED TO CONNECT TO EXISTING PIPING. PROVIDE P–TRAP, SUPPLY STOPS, SUPPLY PIPING, HW INSULATION PER IECC TABLE C403.11.3, AND ASSOCIATE ACCESSORIES AS REQUIRED FOR NEW INSTALLATION. PATCH/REPAIR WALL AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P8 PROVIDE NEW NEW WATER PIPING AND INDIRECT SANITARY PIPING TO FLOOR SINK AS SHOWN ON PLANS FOR NEW 2–COMP SK. PROVIDE HW INSULATION PER IECC TABLE C403.11.3 AS REQURIED. SEE KITCHEN EQUIPMENT SCHEDULE FOR 2–COMP SK MODEL AND ACCESSORIES. PATCH/REPAIR WALL AS REQUIRED TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P9 PROVIDE NEW NEW WATER PIPING AND INDIRECT SANITARY PIPING TO FLOOR SINK AS SHOWN ON PLANS FOR NEW 3–COMP SK. PROVIDE HW INSULATION PER IECC TABLE C403.11.3 AS REQURIED. SEE KITCHEN EQUIPMENT SCHEDULE FOR 3–COMP SK MODEL AND ACCESSORIES. PATCH/REPAIR WALL AS REQUIRED TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P10 PROVIDE NEW 2,000 GALLON GREASE INTERCEPTOR AND SAMPLING BOX COMPLETE. PROVIDE GREASE INTERCEPTOR AND SAMPLING BOX WITH TRAFFIC RATED COVERS, VENT AND SANITARY PIPING AS REQUIRED. CONTRACTOR TO FIELD VERIFY.

P11 PROVIDE CW AND 110°F MIN. HW PIPING TO CONNECT TO CONVEYOR DISH MACHINE. PROVIDE INDIRECT SANITARY PIPING TO FLOOR SINK, WHA, SUPPLY TUBING, AND ESCUTCHEONS. PATCH/REPAIR WALL AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P12 RELOCATE AND REINSTALL PART OF THE EXISTING SANITARY RISER AS SHOWN. CUT/CONNECT NEW SANITARY PIPING TO POC AS INDICATED. MODIFIED EXISTING SANITARY PIPING AS REQUIRED. CONTRACTOR SHALL COORDINATE WITH THE BUILDING MANAGER WHEN RELOCATING PART OF THE SANITARY RISER. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING. CONTRACTOR TO FIELD VERIFY.

P13 PROVIDE NEW MOP COMPLETE. PROVIDE NEW CW/HW/S/V PIPING AS REQUIRED TO CONNECT TO EXISTING PIPING. PROVIDE P–TRAP, SUPPLY PIPING, HW INSULATION PER IECC TABLE C403.11.3, AND ASSOCIATE ACCESSORIES AS REQUIRED FOR NEW INSTALLATION. PATCH/REPAIR WALL AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

P14 PROVIDE INDIRECT SANITARY PIPING TO FLOOR SINK FROM BLOWER DRYER. PATCH/REPAIR WALL AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

1 M101 NEW PLUMBING PLAN

SCALE: 3/16" = 1'–0" SUB–BASEMENT LEVEL

0' 2'–8" 5'–4" 8' 10'–8" 13'–4" 16'

SCALE: 3/16" = 1'

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES : APR. 30, 2025

ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301–H HAWAII, U.S.A.

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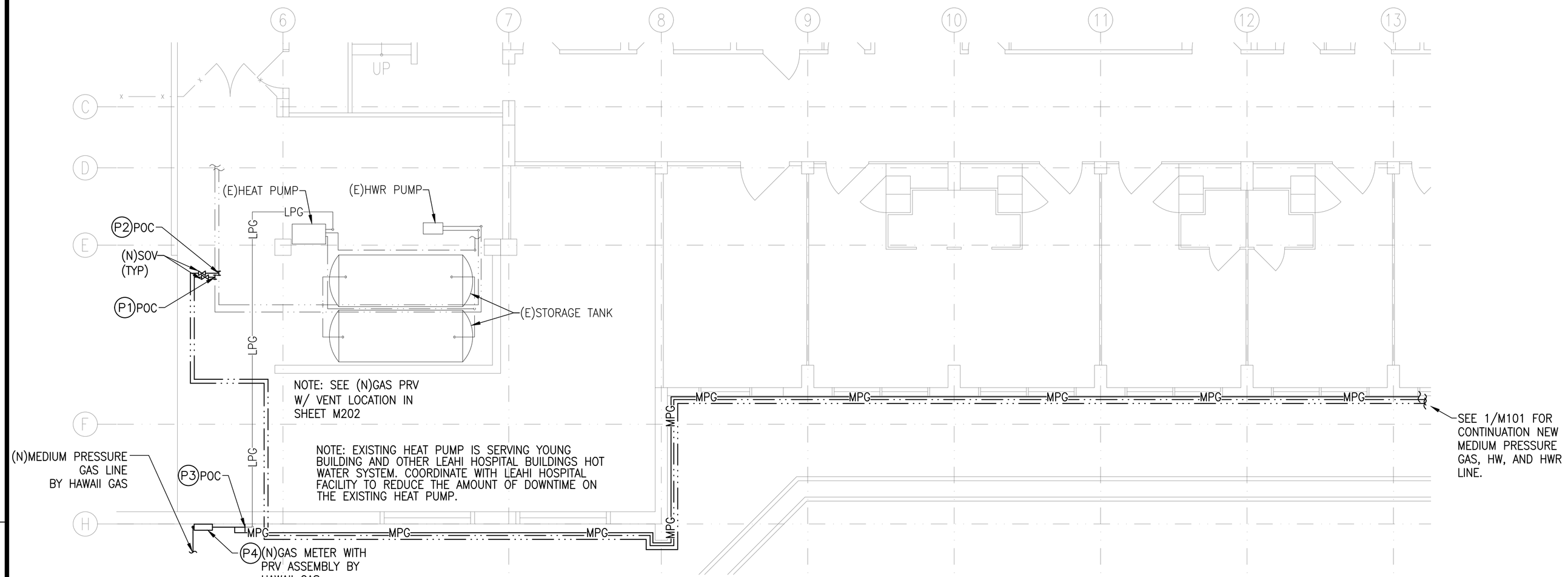
808-942-0054

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: NEW PLUMBING PLAN

DATE: MARCH 2024
SCALE: AS SHOWN
DRAWN: MEI CHECK: RRT

SHEET M101 OF ? SHEETS



1 / M102 NEW PARTIAL PLUMBING PLAN

SCALE: 3/16" = 1'-0" BASEMENT LEVEL

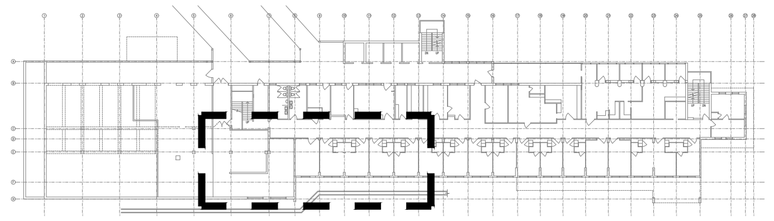
NEW PLUMBING NOTES:

(P1) CUT/CONNECT NEW HW PIPING TO EXISTING HW PIPING AS INDICATED. MODIFIED EXISTING HW PIPING AS REQUIRED. PROVIDE HW INSULATION IN ACCORDANCE IECC TABLE C403.11.3. PATCH/REPAIR WALL/FLOOR AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

(P2) CUT/CONNECT NEW HWR PIPING TO EXISTING HWR PIPING AS INDICATED. MODIFIED EXISTING HWR PIPING AS REQUIRED. PROVIDE HWR INSULATION IN ACCORDANCE IECC TABLE C403.11.3. PATCH/REPAIR WALL/FLOOR AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

(P3) CUT/CONNECT NEW LOW PRESSURE GAS PIPING TO EXISTING GAS PIPING AS INDICATED. MODIFIED EXISTING GAS PIPING AS REQUIRED. PATCH/REPAIR WALL/FLOOR AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

(P4) HAWAII GAS PROVIDE NEW GAS METER COMPLETELY. HAWAII GAS PROVIDE UPGRADED GAS SERVICE LINE AND ASSOCIATED ACCESSORIES FROM THE STREET TO GAS METER. CONTRACTOR SHALL COORDINATE NEW PLUMBING WORK WITH HAWAII GAS AS REQUIRED. CONTRACTOR SHALL PROVIDE AND INSTALL NEW ASSOCIATED PIPING, PRV ASSEMBLY, AND ACCESSORIES FROM NEW GAS METER TO SUB-BASEMENT KITCHEN AS REQUIRED. MODIFIED EXISTING GAS PIPING AS REQUIRED. PATCH/REPAIR WALL/FLOOR AS REQUIRED TO MATCH ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.



2 / M102 KEYPLAN

SCALE: NOT TO SCALE BASEMENT LEVEL

0' 2'-8" 5'-4" 8' 10'-8" 13'-4" 16'

SCALE: 3/16" = 1'

REV. NO.	DESCRIPTION	DATE

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Signature

LICENSE EXPIRES: APRIL 30, 2025

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Honolulu, Hawaii 96826
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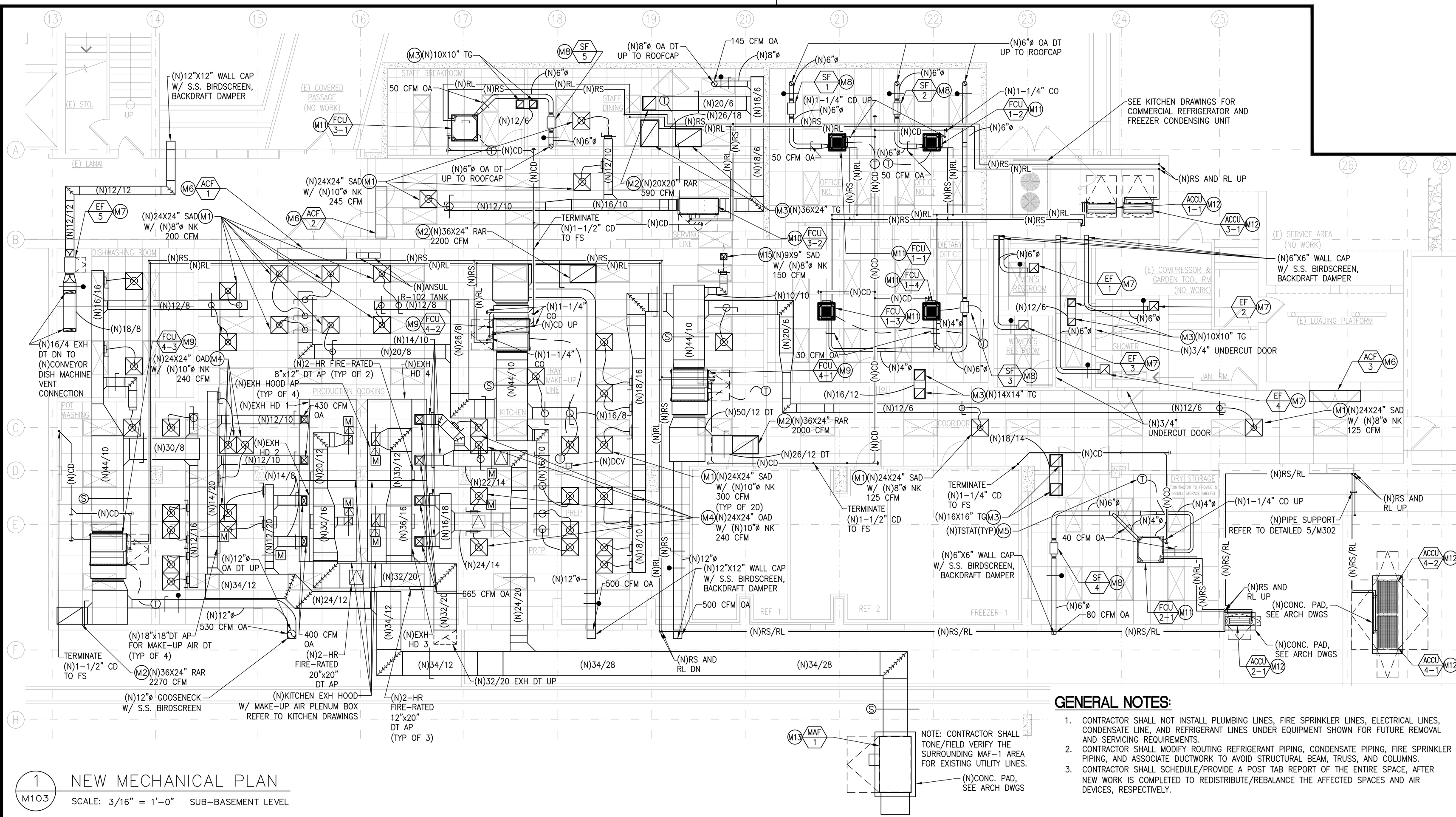
PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 - 2 - 031: 001

SHEET TITLE
NEW PARTIAL PLUMBING PLAN

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

SHEET
M102
OF ? SHEETS



1 M103 NEW MECHANICAL PLAN

SCALE: 3/16" = 1'-0" SUB-BASEMENT LEVEL

GENERAL NOTES:

1. CONTRACTOR SHALL NOT INSTALL PLUMBING LINES, FIRE SPRINKLER LINES, ELECTRICAL LINES, CONDENSATE LINE, AND REFRIGERANT LINES UNDER EQUIPMENT SHOWN FOR FUTURE REMOVAL AND SERVICING REQUIREMENTS.
2. CONTRACTOR SHALL MODIFY ROUTING REFRIGERANT PIPING, CONDENSATE PIPING, FIRE SPRINKLER PIPING, AND ASSOCIATE DUCTWORK TO AVOID STRUCTURAL BEAM, TRUSS, AND COLUMNS.
3. CONTRACTOR SHALL SCHEDULE/PROVIDE A POST TAB REPORT OF THE ENTIRE SPACE, AFTER NEW WORK IS COMPLETED TO REDISTRIBUTE/REBALANCE THE AFFECTED SPACES AND AIR DEVICES, RESPECTIVELY.

MECHANICAL NEW WORK NOTES:

(M1) PROVIDE AND INSTALL NEW SAD WITH 4-WAY THROW AND VOLUME DAMPER AT LOCATION SHOWN. PROVIDE NEW SUPPLY DUCTWORK, INSULATION, AND CFM AS INDICATED. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M2) PROVIDE AND INSTALL NEW RAR AND VOLUME DAMPER AT LOCATION SHOWN. PROVIDE NEW RETURN DUCTWORK, INSULATION, AND CFM AS INDICATED. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M3) PROVIDE AND INSTALL NEW TG AT LOCATION SHOWN. PROVIDE NEW TRANSFER AIR DUCTWORK AND ASSOCIATED ACCESSORIES AS REQUIRED. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M4) PROVIDE AND INSTALL NEW OAD AND VOLUME DAMPER AT LOCATION SHOWN. PROVIDE NEW OUTSIDE AIR DUCTWORK AND CFM AS INDICATED. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M5) PROVIDE NEW TSTAT WITH CONTROL WIRING AND CONDUIT TO CORRESPONDING FCU. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M6) PROVIDE AND INSTALL NEW AIR CURTAIN FAN AT LOCATION SHOWN. PROVIDE ELECTRICAL CONDUIT, DOOR SWITCH FOR EACH DOOR, AND ASSOCIATED ACCESSORIES AS REQUIRED. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M7) PROVIDE AND INSTALL NEW EXHAUST FAN AT LOCATION SHOWN. PROVIDE EXHAUST DUCTWORK, GRAVITY DAMPER, AND WALL CAP WITH BIRDSCREEN AS SHOWN. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M8) PROVIDE AND INSTALL NEW SUPPLY FAN AT LOCATION SHOWN. PROVIDE SUPPLY DUCTWORK, GRAVITY DAMPER, AND WALL CAP WITH BIRDSCREEN AS SHOWN. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M9) PROVIDE AND INSTALL NEW FAN COIL UNIT AND ASSOCIATED DUCTWORK, REFRIGERANT PIPING, CONDENSATE PIPING, VOLUME DAMPER, GRAVITY DAMPER, ELECTRICAL CONNECTION, TSTAT, AUXILIARY DRAIN PAN, DUCT SMOKE DETECTOR, ETC. AS REQUIRED. ROUTE REFRIGERANT PIPING IN CEILING SPACE TO THE OUTDOOR CONDENSING UNIT AS SHOWN. ROUTE CONDENSATE LINE TO THE EXTERIOR OR FS AS SHOWN. PROVIDE FILTER BANK ON FCU RETURN WITH MERV 8 FILTER AS REQUIRED. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M10) PROVIDE AND INSTALL NEW FAN COIL UNIT AND ASSOCIATED DUCTWORK, REFRIGERANT PIPING, CONDENSATE PIPING, VOLUME DAMPER, GRAVITY DAMPER, ELECTRICAL CONNECTION, TSTAT, AUXILIARY DRAIN PAN, ETC. AS REQUIRED. ROUTE REFRIGERANT PIPING IN CEILING SPACE TO THE OUTDOOR CONDENSING UNIT AS SHOWN. ROUTE CONDENSATE LINE TO THE EXTERIOR AS SHOWN. PROVIDE FILTER BANK ON FCU RETURN WITH MERV 8 FILTER AS REQUIRED. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M11) PROVIDE AND INSTALL NEW FAN COIL UNIT AND ASSOCIATED DUCTWORK, REFRIGERANT PIPING, CONDENSATE PIPING, VOLUME DAMPER, ELECTRICAL CONNECTION, TSTAT, ETC. AS REQUIRED. ROUTE REFRIGERANT PIPING IN CEILING SPACE TO THE OUTDOOR CONDENSING UNIT AS SHOWN. ROUTE CONDENSATE LINE TO THE EXTERIOR AS SHOWN. PROVIDE FILTER BANK ON FCU RETURN WITH MERV 8 FILTER AS REQUIRED. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M12) PROVIDE AND INSTALL NEW ACCU COMPLETE WITH NEOPRENE ISOLATOR AND ASSOCIATED ACCESSORIES AS REQUIRED. PROVIDE NEW REFRIGERANT PIPING AND SERVICE CLEARANCE AS SHOWN. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M13) PROVIDE AND INSTALL NEW KITCHEN MAKEUP AIR FAN ON ROOF COMPLETELY, INCLUDING VFD CONTROLS, DUCTWORK, ROOF CURB, DUCT SMOKE DETECTOR WITH OUTDOOR ENCLOSURE, EXTENDED WEATHERHOOD WITH SUPPORT, S.S. BIRDSCREEN, BACKDRAFT DAMPER, AND ASSOCIATED ACCESSORIES AS REQUIRED TO CONNECT TO NEW KITCHEN EXHAUST HOOD MAKEUP AIR PLENUM AND OAD. INTERLOCK CONTROLS WITH DCV. INSTALL MAKEUP AIR FAN IN ACCORDANCE WITH NFPA 96 REQUIREMENTS. FIELD ADJUST MAKE-UP AIR DUCTWORK ELEVATION AS REQUIRED. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M14) PROVIDE AND INSTALL NEW SAD WITH 3-WAY AND VOLUME DAMPER AT LOCATION SHOWN. PROVIDE NEW SUPPLY DUCTWORK, INSULATION, AND CFM AS INDICATED. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

(M15) PROVIDE AND INSTALL NEW SAD WITH 1-WAY AND VOLUME DAMPER AT LOCATION SHOWN. PROVIDE NEW SUPPLY DUCTWORK, INSULATION, AND CFM AS INDICATED. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

0' 2'-8" 5'-4" 8' 10'-8" 13'-4" 16'

SCALE: 3/16" = 1'

DATE | DESCRIPTION | REV. NO.

This work was prepared by me or under my supervision and I am responsible for the construction of this project and accept the limitations of liability established by law and contract.

Signature

LICENSE EXPIRES: APRIL 30, 2025

ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-H HAWAII, U.S.A.

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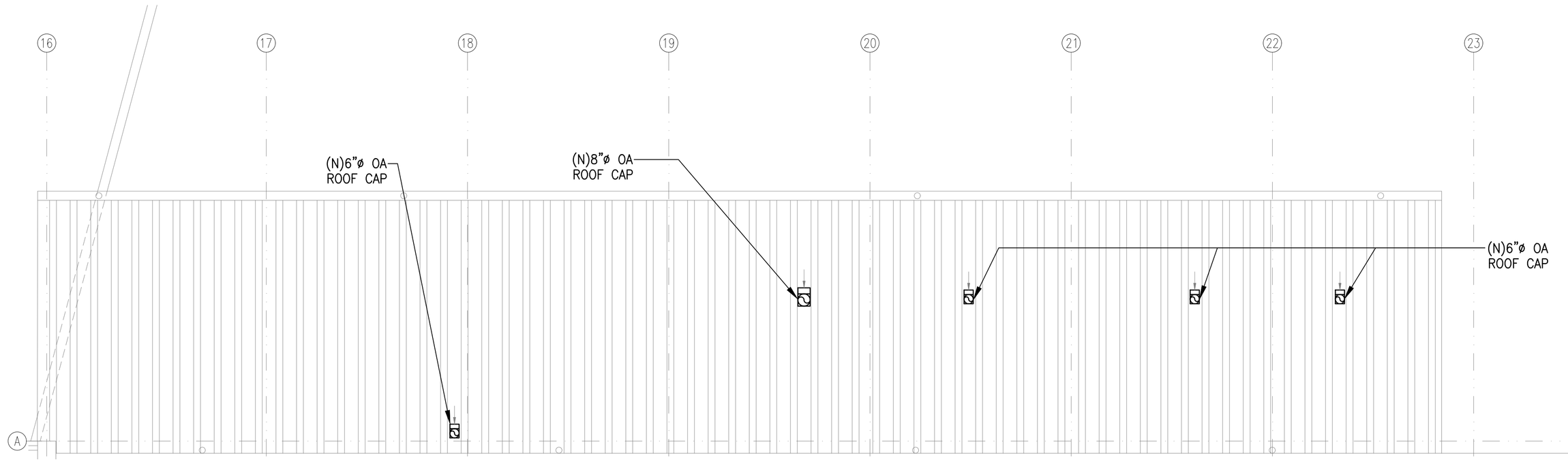
808-949-1601 fax
808-942-0054

PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 - 2 - 031: 001

SHEET TITLE: NEW MECHANICAL PLAN

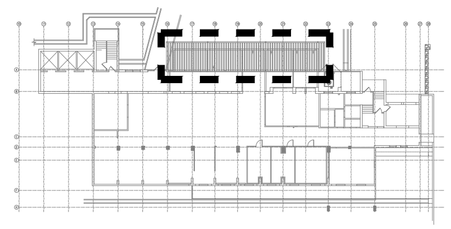
DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

SHEET M103 OF ? SHEETS



1 M104 NEW MECHANICAL ROOF PLAN

SCALE: 1/4" = 1'-0" SUB-BASEMENT LEVEL



2 M104 KEYPLAN

SCALE: NOT TO SCALE SUB-BASEMENT LEVEL

0' 2'-8" 5'-4" 8' 10'-8" 13'-4" 16'

SCALE: 3/16" = 1'

REV. NO.	DESCRIPTION	DATE

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Signature

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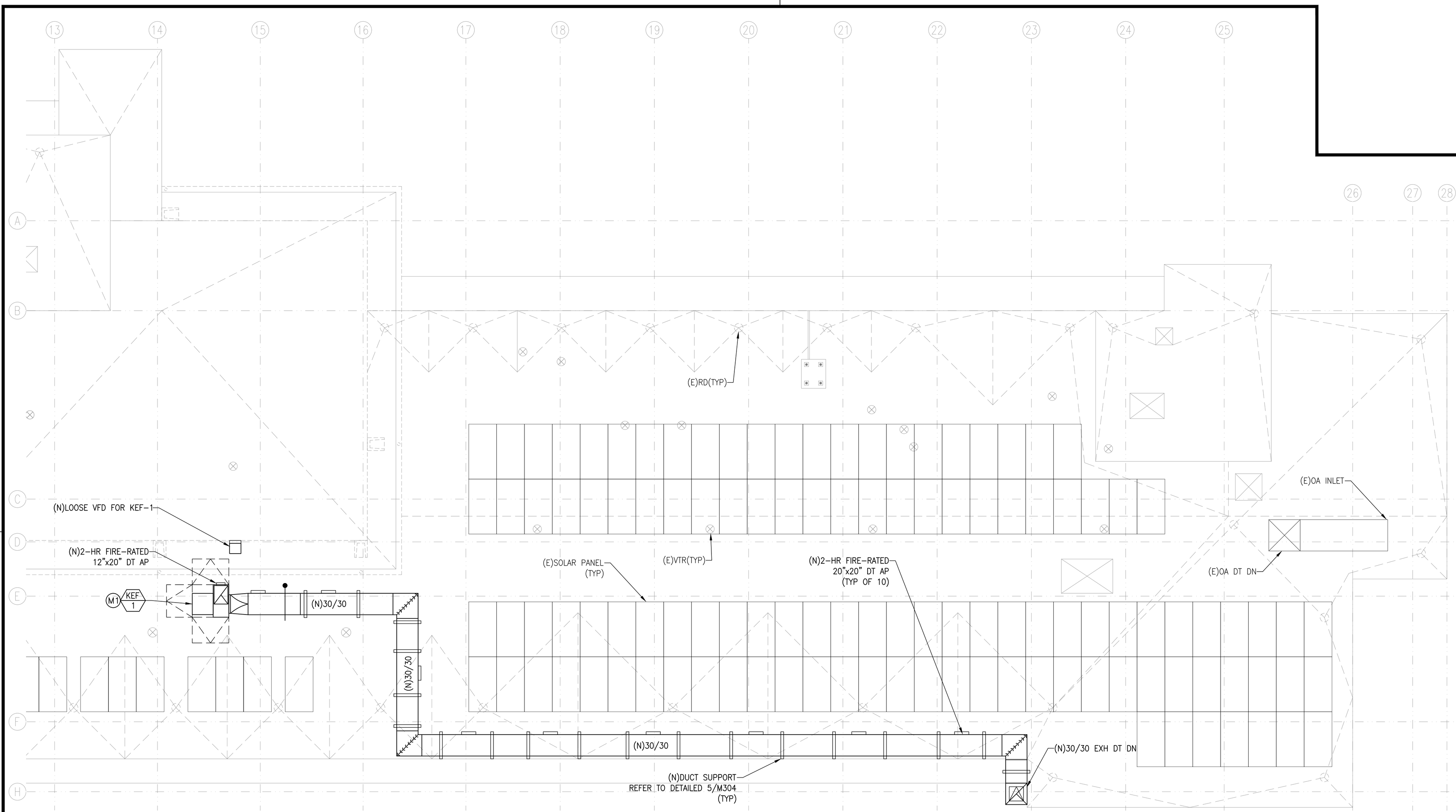
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE NEW MECHANICAL ROOF PLAN

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

SHEET M104
OF 7 SHEETS



GENERAL NOTES:

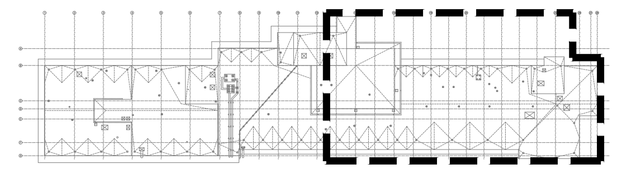
1. CONTRACTOR SHALL SCHEDULE/PROVIDE A POST TAB REPORT OF THE ENTIRE SPACE, AFTER NEW WORK IS COMPLETED TO REDISTRIBUTE/REBALANCE THE AFFECTED SPACES AND AIR DEVICES, RESPECTIVELY.

MECHANICAL NEW WORK NOTES:

(M1) PROVIDE AND INSTALL NEW KITCHEN GREASE EXHAUST FAN ON ROOF COMPLETELY INCLUDING LOOSE VFD CONTROLS, S.S. DUCTWORK, ROOF STAND, DUCT ACCESS PANEL, AND ASSOCIATED ACCESSORIES AS REQUIRED TO CONNECT TO NEW KITCHEN GREASE EXHAUST HOOD. INTERLOCK CONTROLS TO DCV AS REQUIRED. PROVIDE LOOSE VFD WITH OUTDOOR ENCLOSURE AND S.S. UNISTRUT SUPPORT FRAME AS RQUIRED. INSTALL LOOSE VFD AT LEAST 18" ABOVE EXISTING ROOF SURFACE AS REQUIRED. INSTALL EXHAUST FAN IN ACCORDANCE WITH NFPA 96 REQUIREMENTS. CONTRACTOR TO FIELD VERIFY. PATCH/REPAIR TO MATCH EXISTING/ADJACENT SURFACE.

1 / M105 NEW MECHANICAL ROOF PLAN

SCALE: 3/16" = 1'-0"



2 / M105 KEY PLAN

SCALE: NOT TO SCALE

0' 2'-8" 5'-4" 8' 10'-8" 13'-4" 16'

SCALE: 3/16" = 1'

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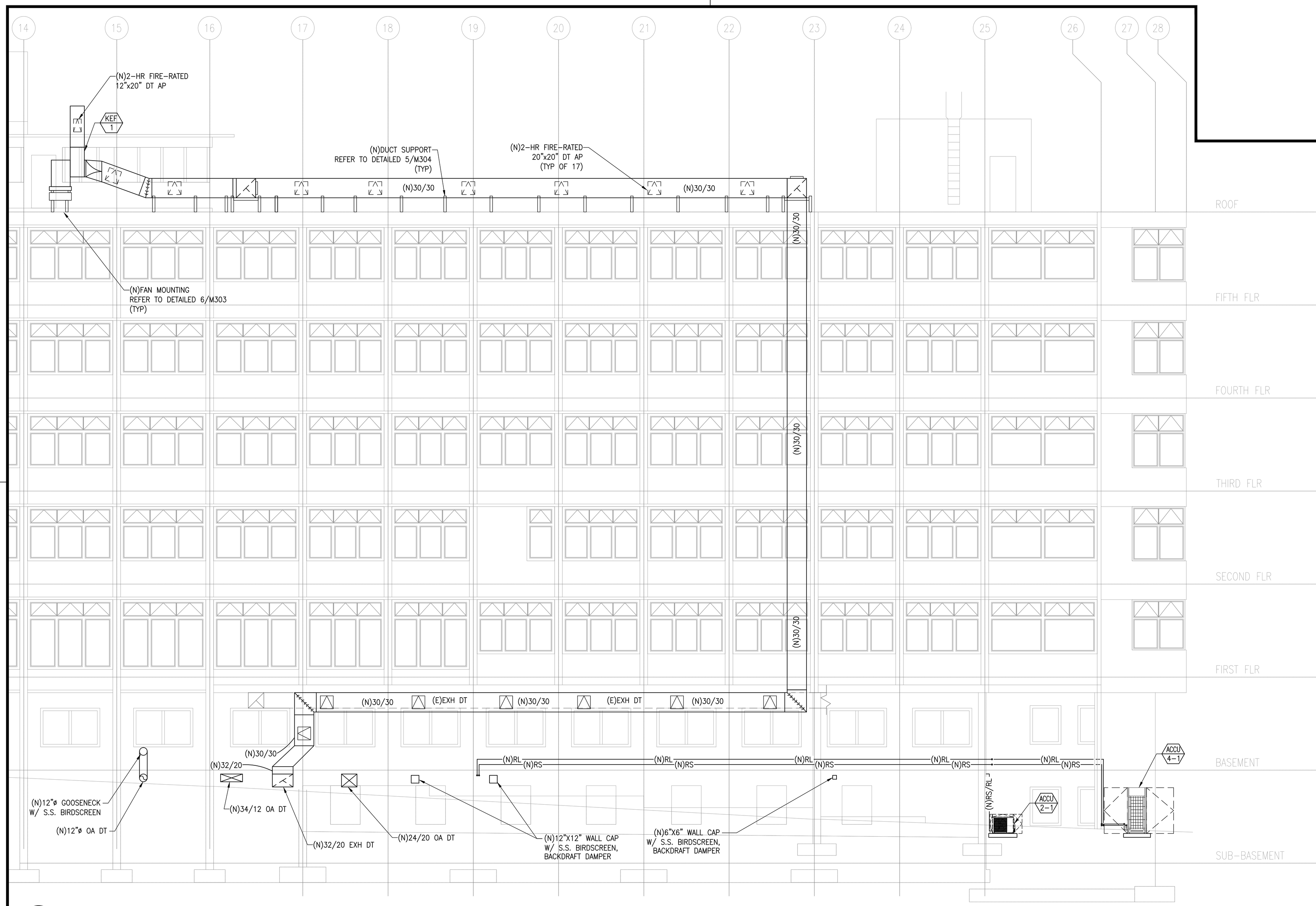
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
NEW MECHANICAL ROOF PLAN

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

SHEET
M105
OF ? SHEETS



1
M106

NEW MECHANICAL EXTERIOR PLAN

SCALE: 3/16" = 1'-0"

0' 2'-8" 5'-4" 8' 10'-8" 13'-4" 16'

SCALE: 3/16" = 1'

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES: APRIL 30, 2025

ROSS R. TANAKA
LICENSED PROFESSIONAL ENGINEER
No. 9301-H
HAWAII, U.S.A.

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2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

PROJECT TITLE
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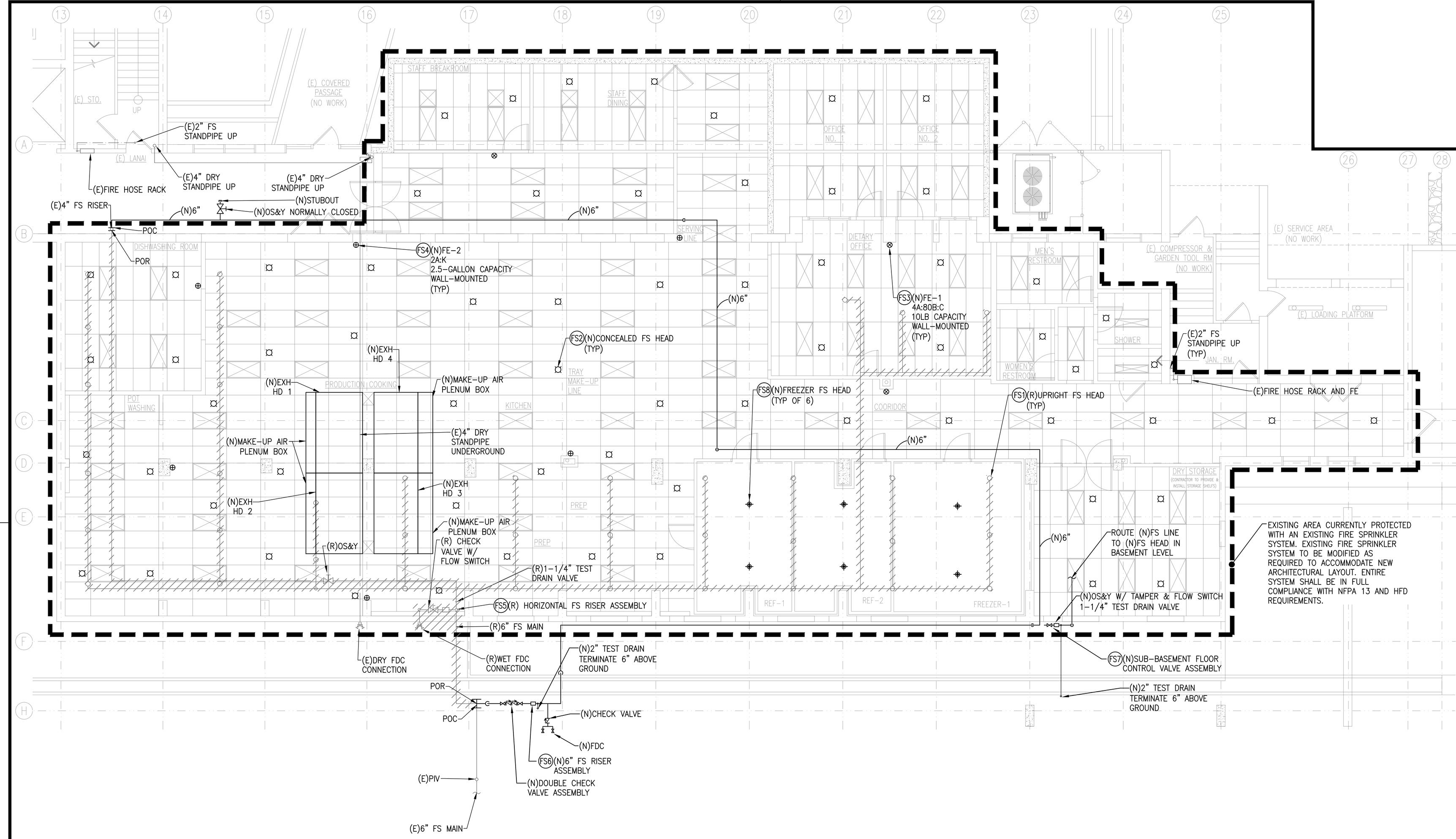
T.M.K.: 3 - 2 - 031: 001

SHEET TITLE
NEW MECHANICAL EXTERIOR PLAN

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

SHEET
M106
OF ? SHEETS



FIRE SPRINKLER NEW WORK NOTES:

FS1 REMOVE EXISTING UPRIGHT FIRE SPRINKLER HEAD. CUT AND CAP EXISTING FIRE SPRINKLER PIPING AS REQUIRED. PATCH/REPAIR CEILING TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

FS2 PROVIDE NEW CONCEALED TYPE FS HEAD AT LOCATION SHOWN. MODIFY EXISTING FIRE SPRINKLER PIPING AS REQUIRED. PATCH/REPAIR CEILING TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

FS3 PROVIDE AND INSTALL FE RATED 4A:80B:C, 10LB CAPACITY AT NEW LOCATION SHOWN. INSTALL IN ACCORDANCE WITH NFPA 10 AND HFD REQUIREMENTS. PATCH/REPAIR TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

FS4 PROVIDE AND INSTALL FE RATED 2A:K, 2.5-GALLON CAPACITY AT NEW LOCATION SHOWN. INSTALL IN ACCORDANCE WITH NFPA 10 AND HFD REQUIREMENTS. PATCH/REPAIR TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

FS5 REMOVE EXISTING FIRE SPRINKLER ASSEMBLY COMPLETE INCLUDING FDC, FS PIPING, TEST DRAIN VALVE, CHECK VALVE, FLOW SWITCH, AND ASSOCIATED ACCESSORIES. CUT AND CAP EXISTING FIRE SPRINKLER PIPING AS REQUIRED. REMOVE EXISTING 6" FS MAIN FROM EXISTING FS RISER TO EXISTING DC METER AS REQUIRED. PATCH/REPAIR CEILING TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

FS6 PROVIDE NEW 6" FIRE SPRINKLER RISER ASSEMBLY AT LOCATION SHOWN. PROVIDE NEW 6" FS PIPING, FDC, CHECK VALVE, TAMPER VALVE, OS&Y GATE VALVE, AND ASSOCIATED ACCESSORIES. MODIFY EXISTING FIRE SPRINKLER PIPING AS REQUIRED. PATCH/REPAIR CEILING TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

FS7 PROVIDE NEW 4" FLOOR CONTROL VALVE ASSEMBLY AT LOCATION SHOWN. PROVIDE NEW 4" FS PIPING, CHECK VALVE, FLOW SWITCH, TAMPER VALVE, OS&Y GATE VALVE, AND ASSOCIATED ACCESSORIES. ROUTE NEW FS PIPING TO NEW FS HEAD IN SUB-BASEMENT LEVEL AS REQUIRED. TERMINATE DRAIN LINE 6" ABOVE GRADE AS REQUIRED. PATCH/REPAIR CEILING TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

FS8 PROVIDE NEW FREEZER TYPE FS HEAD AT LOCATION SHOWN. PROVIDE INSULATION, DRY FS PIPE WITHIN THE REFRIGERATOR AND FREEZER SPACE AND ASSOCIATED ACCESSORIES. MODIFY EXISTING FIRE SPRINKLER PIPING AS REQUIRED. PATCH/REPAIR CEILING TO MATCH EXISTING ADJACENT SURFACE. CONTRACTOR TO FIELD VERIFY.

1 / M107 NEW FIRE SPRINKLER PLAN

SCALE: 3/16" = 1'-0" SUB-BASEMENT LEVEL

0' 2'-8" 5'-4" 8' 10'-8" 13'-4" 16'

SCALE: 3/16" = 1'

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Signature

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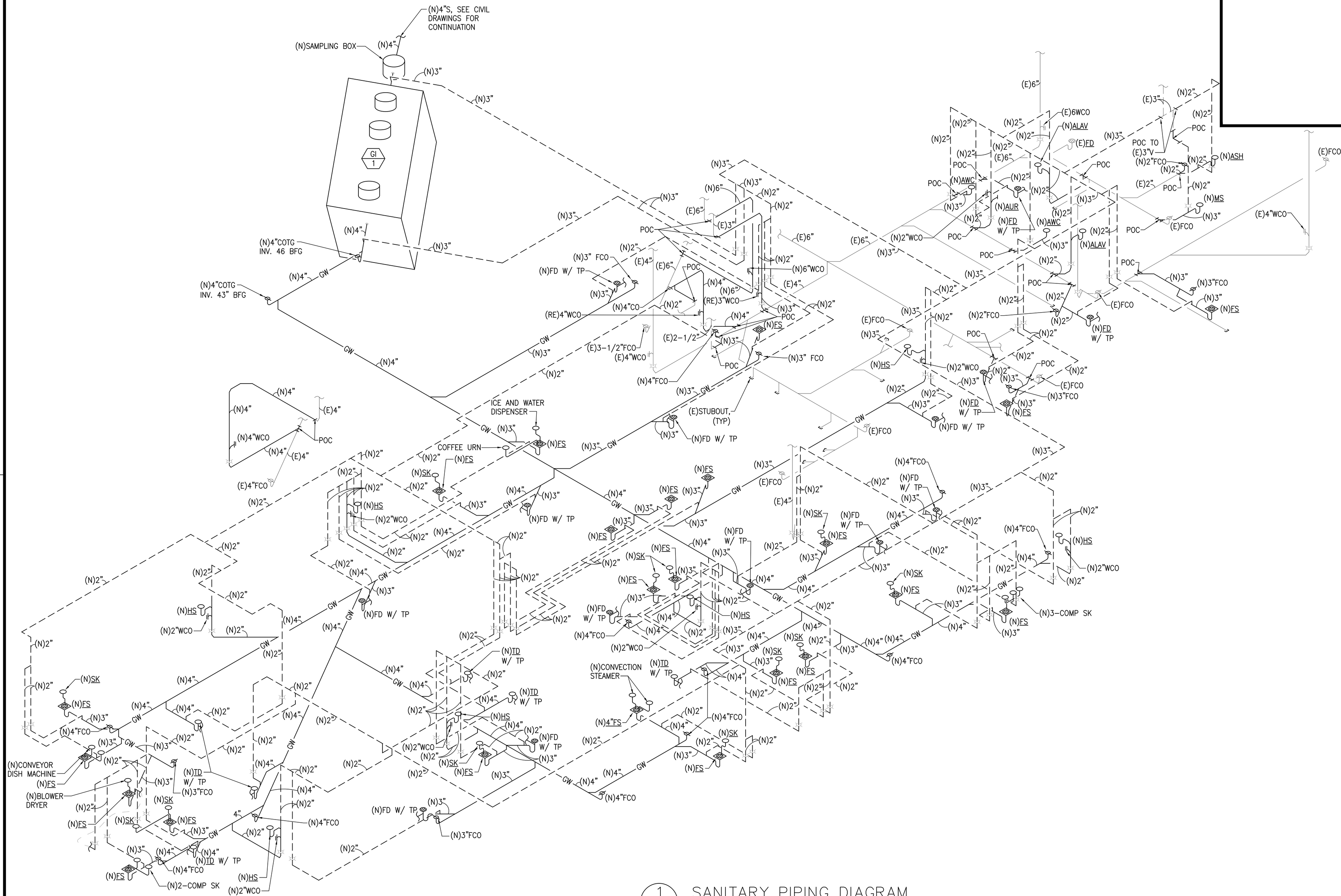
T.M.K.: 3 - 2 - 031: 001

SHEET TITLE: NEW FIRE SPRINKLER PLAN

DATE: MARCH 2024
SCALE: AS SHOWN
DRAWN: MEI CHECK: RRT

SHEET M107 OF 7 SHEETS



1 M200 SANITARY PIPING DIAGRAM

SCALE: NOT TO SCALE

DATE	DESCRIPTION	REV. NO.

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Signature

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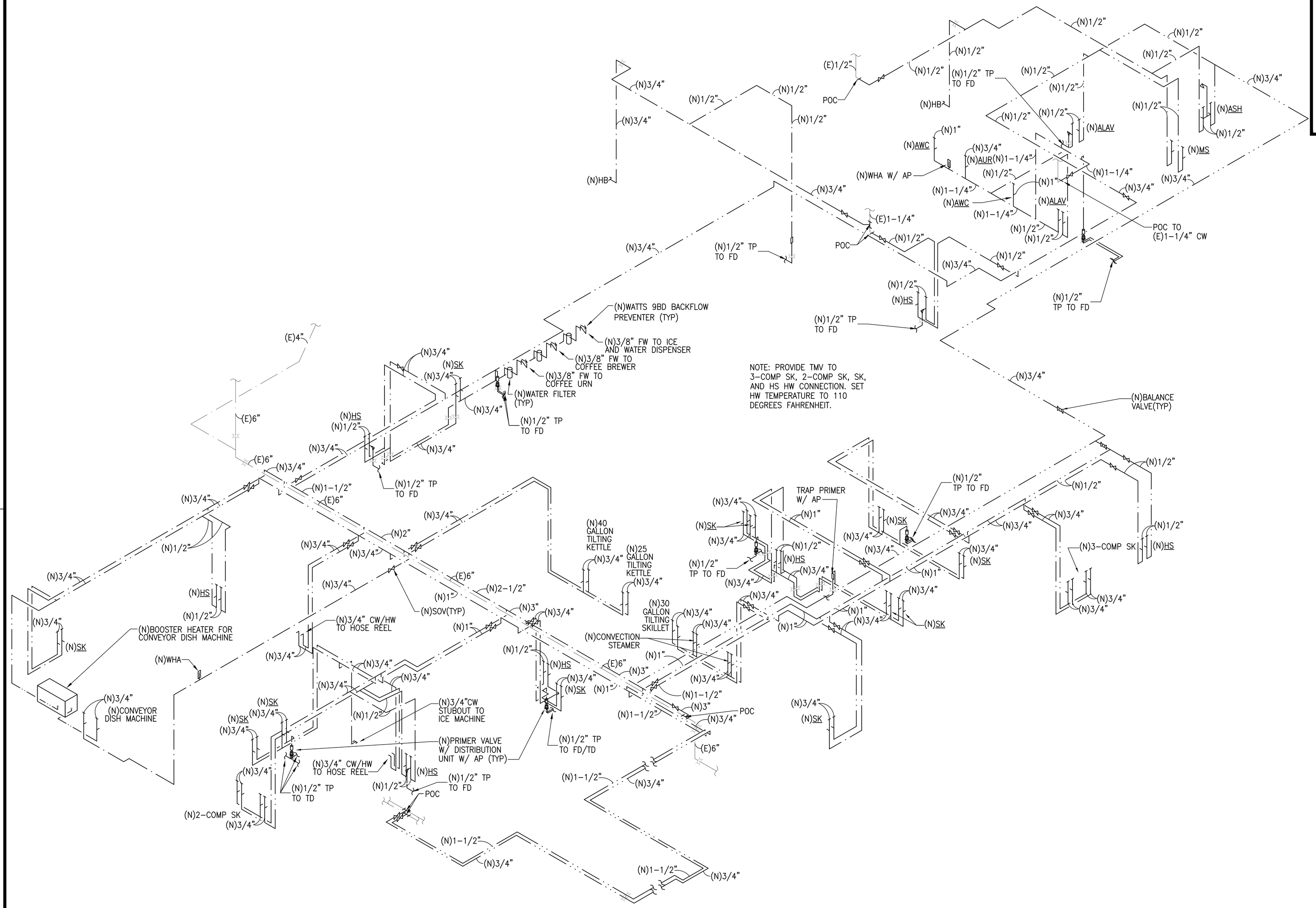
SHEET TITLE: SANITARY PIPING DIAGRAM

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

SHEET M200
OF ? SHEETS



1 M201 WATER PIPING DIAGRAM

SCALE: NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

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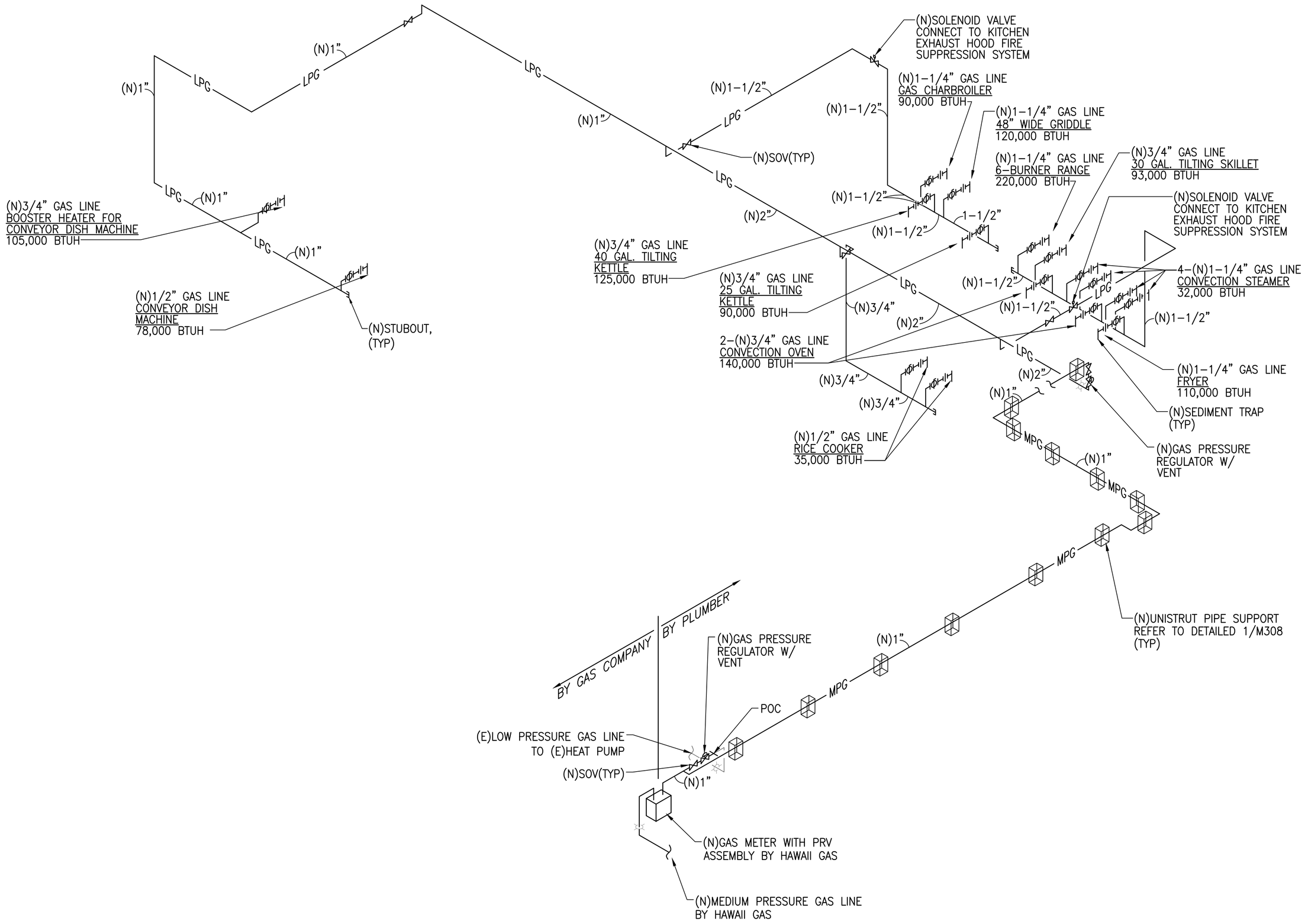
SHEET TITLE
WATER PIPING DIAGRAM

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT
SHEET
M201
OF ? SHEETS



1 / M202 GAS PIPING DIAGRAM

SCALE: NOT TO SCALE

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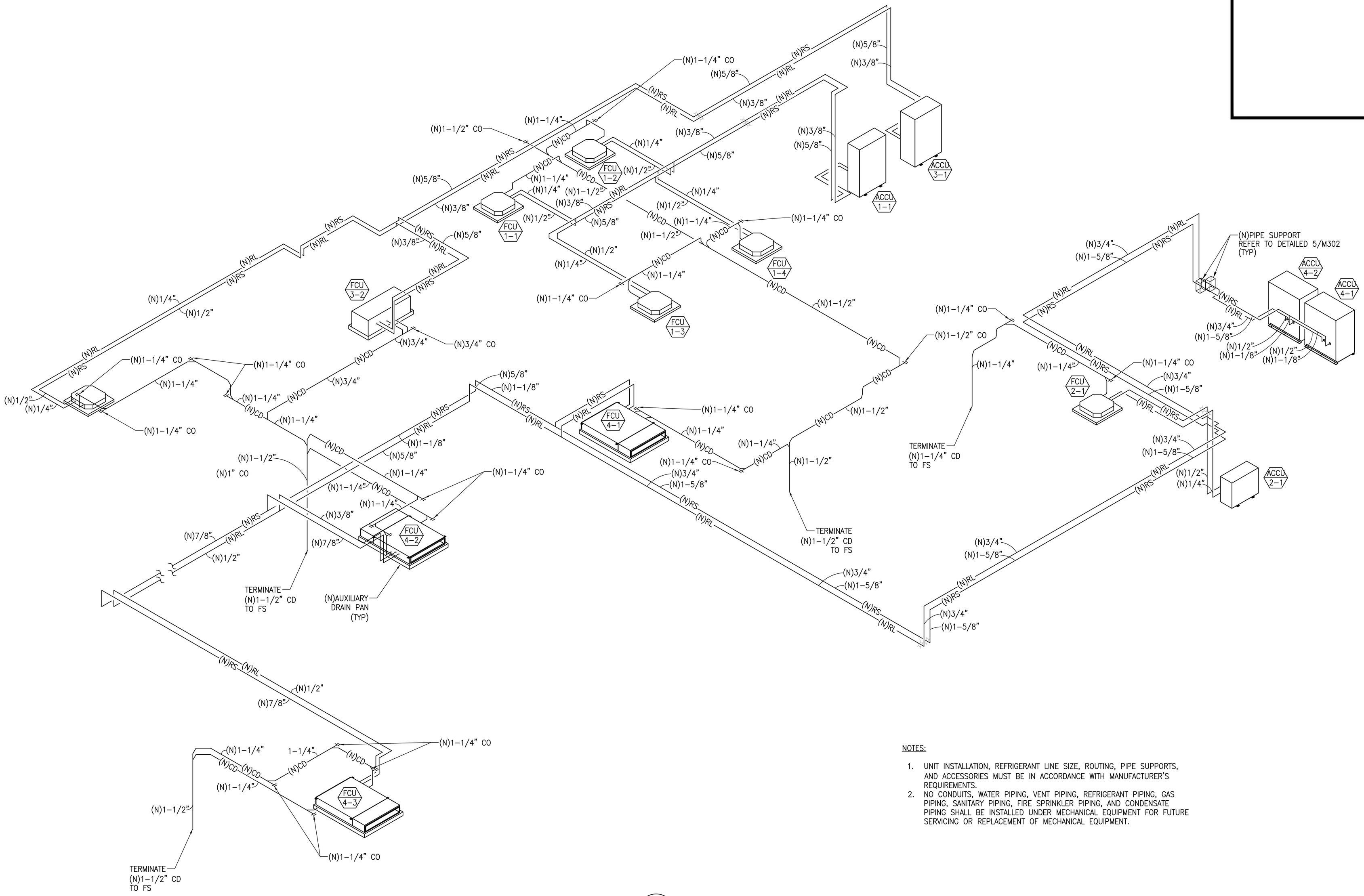
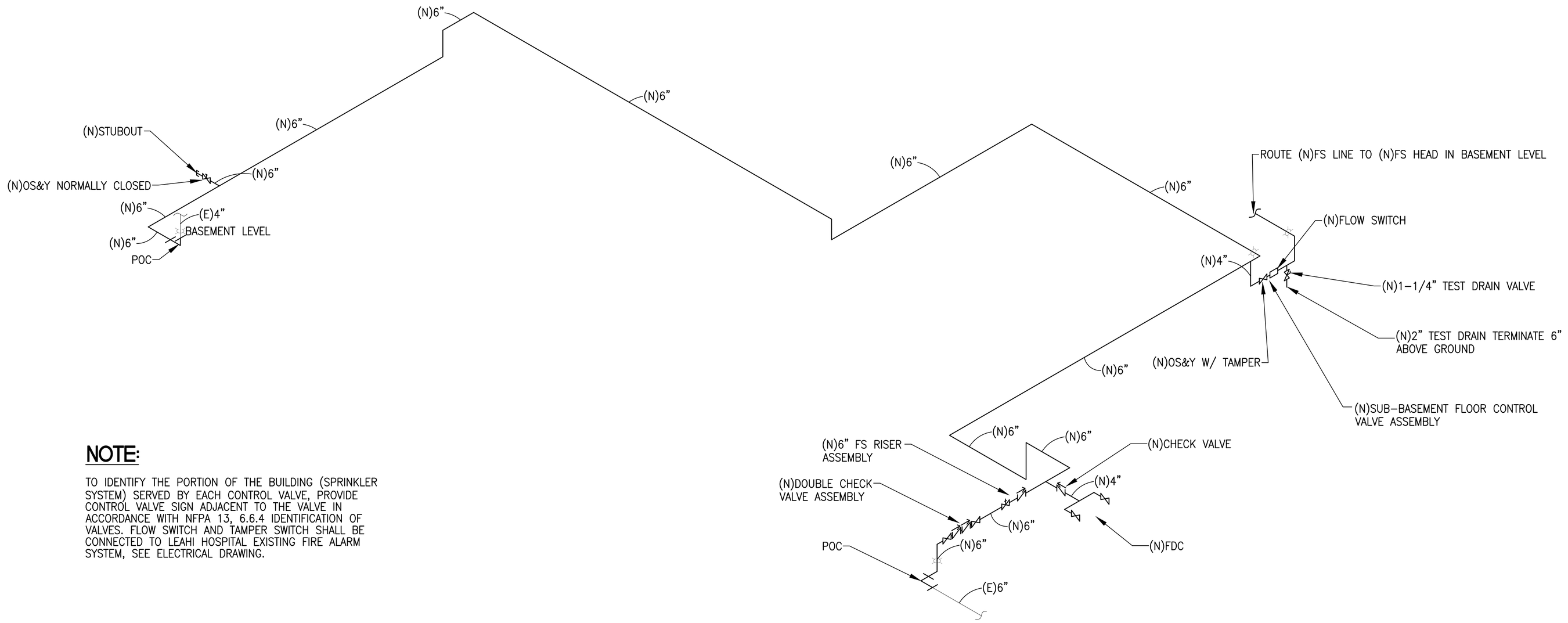
SHEET TITLE
GAS PIPING DIAGRAM

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

SHEET
M202
OF ? SHEETS


(N)1-1/4" CO
(N)5/8"
(N)RS
(N)RL
(N)3/8"
(N)5/8"
(N)1-1/4"
(N)1-1/2" CO
(N)CD
(N)1/4"
FCU 1-2
(N)1/2"
(N)1-1/2"
(N)3/8"
(N)5/8"
ACCU 3-1
ACCU 1-1
FCU 1-1
(N)1-1/4" CO
FCU 1-4
FCU 1-3
FCU 3-2
(N)3/4" CO
(N)1-1/4" CO
(N)1-1/2"
(N)1/4"
(N)1-1/2" CO
(N)1-1/4"
(N)1-1/2"
(N)1" CO
(N)1-1/8"
FCU 4-1
(N)1-1/4" CO
(N)3/4"
(N)1-5/8"
(N)7/8"
FCU 4-2
TERMINATE (N)1-1/2" CD TO FS
(N)AUXILIARY DRAIN PAN (TYP)
(N)1-1/4" CO
(N)1-1/2" CO
(N)1-1/4"
(N)1-1/2"
TERMINATE (N)1-1/4" CD TO FS
(N)PIPE SUPPORT REFER TO DETAILED 5/M302 (TYP)
ACCU 4-2
ACCU 4-1
(N)3/4"
(N)1-5/8"
(N)1/2"
(N)1-1/8"
FCU 2-1
ACCU 2-1
(N)1/4"
(N)1-1/2"
(N)1-1/4" CO
(N)1-1/4"
(N)1-1/2"
(N)1-1/4" CO
(N)1-1/4"
(N)1-1/4" CO



NOTE:

TO IDENTIFY THE PORTION OF THE BUILDING (SPRINKLER SYSTEM) SERVED BY EACH CONTROL VALVE, PROVIDE CONTROL VALVE SIGN ADJACENT TO THE VALVE IN ACCORDANCE WITH NFPA 13, 6.6.4 IDENTIFICATION OF VALVES. FLOW SWITCH AND TAMPER SWITCH SHALL BE CONNECTED TO LEAHI HOSPITAL EXISTING FIRE ALARM SYSTEM, SEE ELECTRICAL DRAWING.

1 / M204 FIRE SPRINKLER PIPING DIAGRAM

SCALE: NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

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ROSS R. TANAKA — LICENSED PROFESSIONAL ENGINEER — No. 9301-H — HAWAII, U.S.A.

Signature

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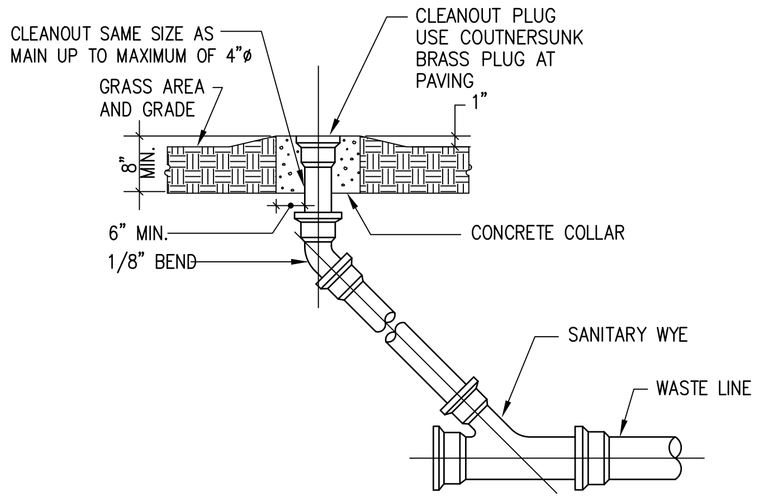
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: FIRE SPRINKLER PIPING DIAGRAM

DATE: MARCH 2024
SCALE: AS SHOWN
DRAWN: MEI | CHECK: RRT

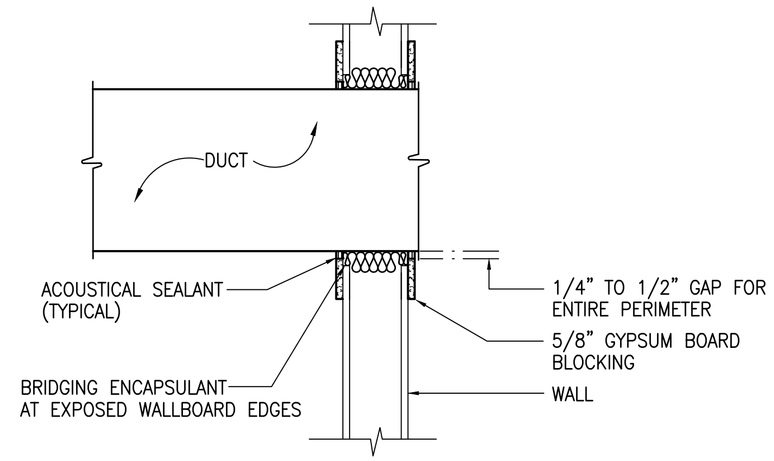
SHEET M204

OF ? SHEETS



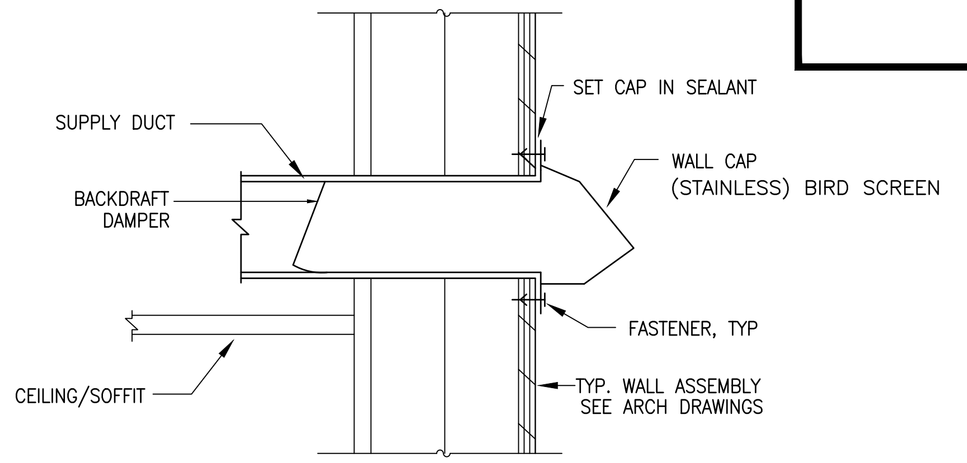
1 M300 CLEANOUT TO GRADE DETAIL

SCALE: NOT TO SCALE



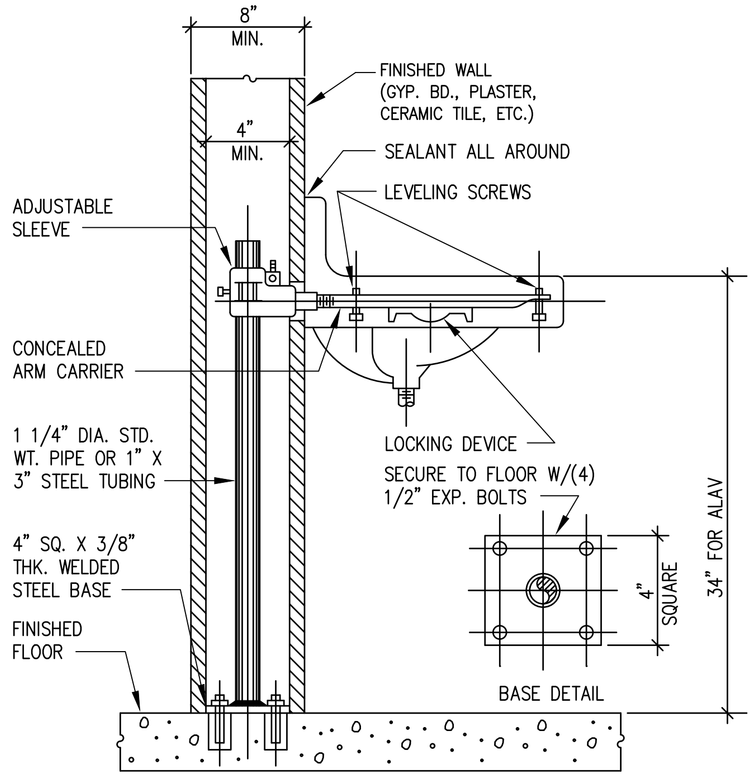
2 M300 DUCT THRU WALL DETAIL

SCALE: NOT TO SCALE



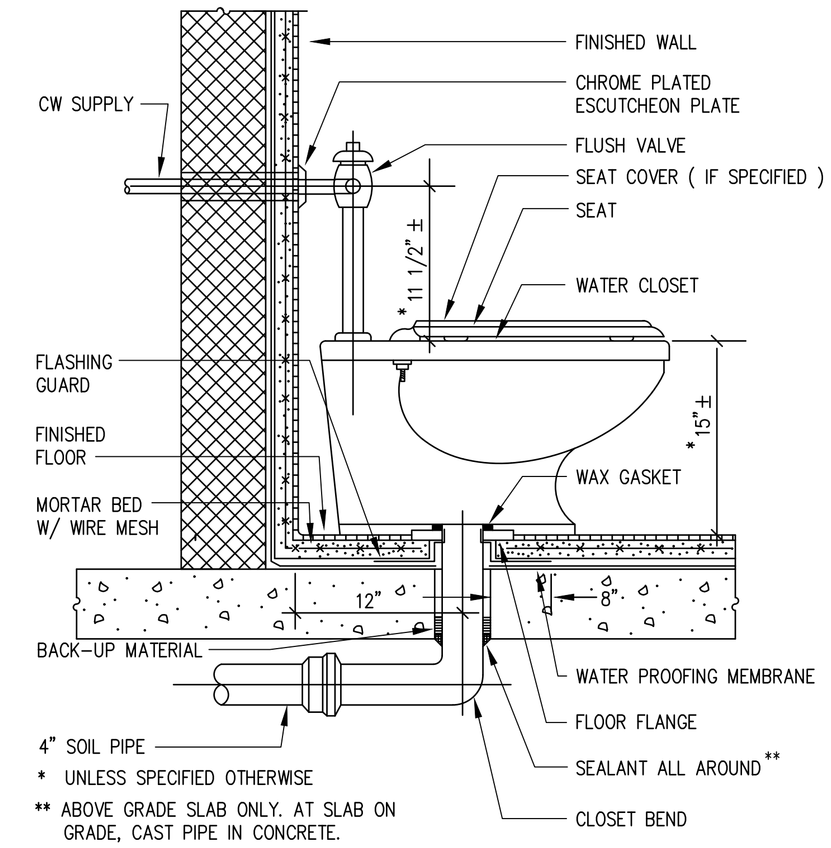
3 M300 OUTSIDE AIR WALL CAP DETAIL

SCALE: NOT TO SCALE



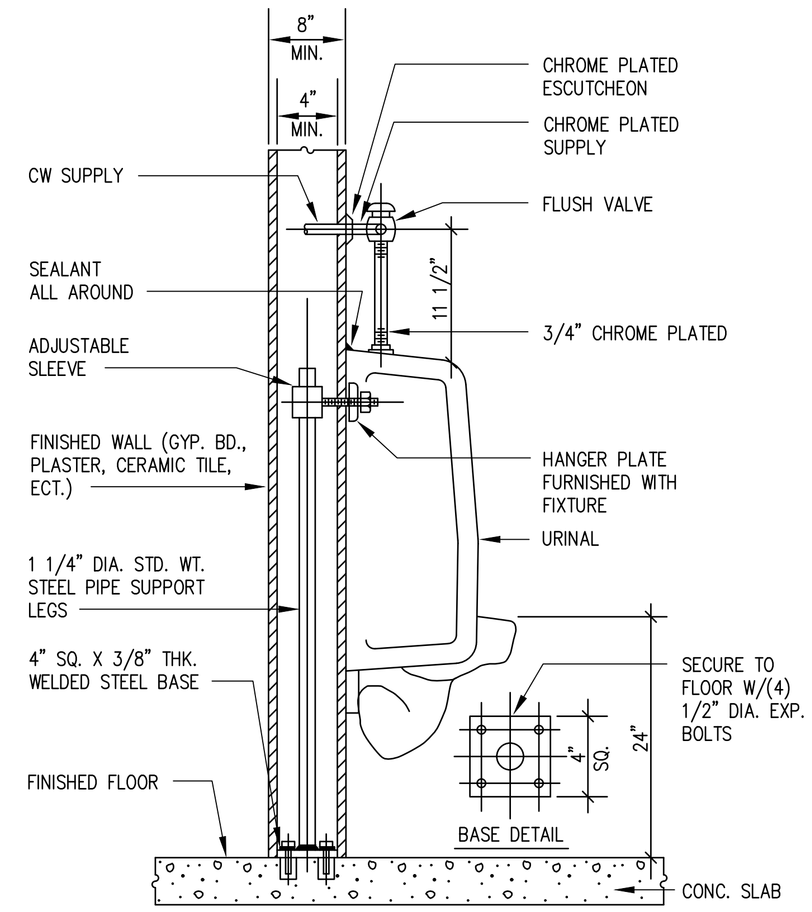
4 M300 TYPICAL LAVATORY – FLOOR SUPPORTED

SCALE: NOT TO SCALE



5 M300 WATER CLOSET – FLOOR SUPPORTED

SCALE: NOT TO SCALE



6 M300 URINAL – FLOOR SUPPORTED

SCALE: NOT TO SCALE

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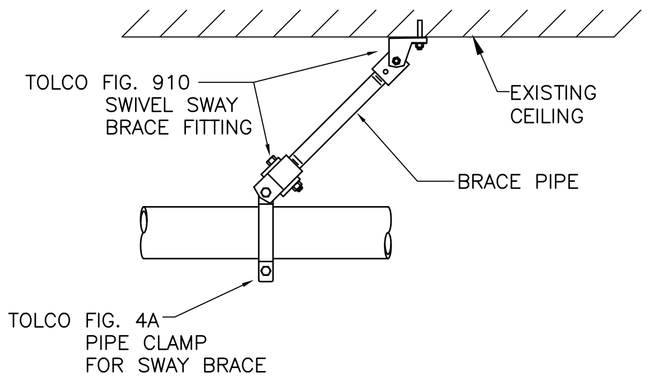
SHEET TITLE: DETAILED DRAWINGS

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

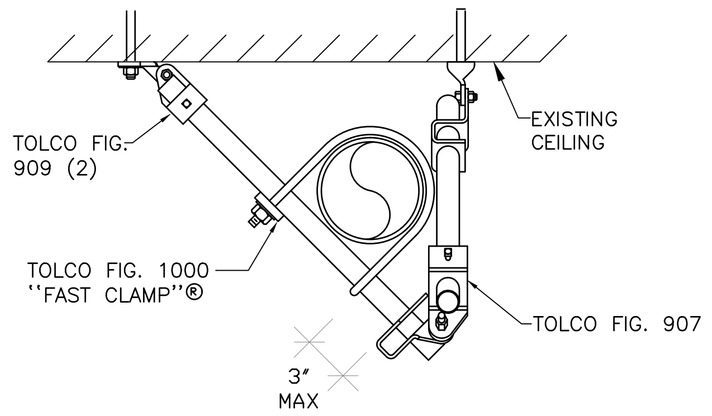
SHEET M300

OF ? SHEETS



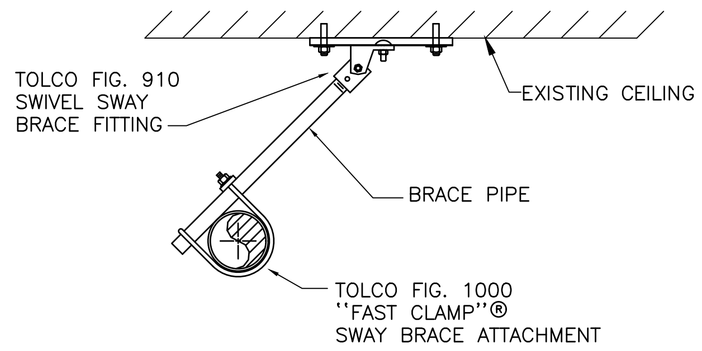
1 M301 LONGITUDINAL SWAY BRACE DETAIL

SCALE: NOT TO SCALE LONGITUDINAL EARTHQUAKE BRACE



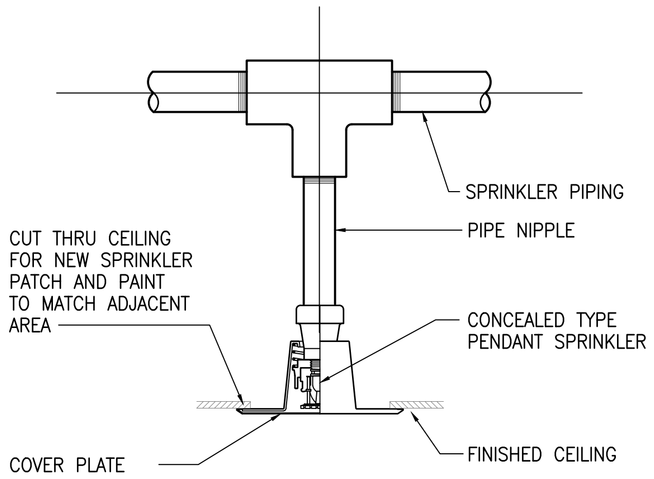
2 M301 4–WAY SWAY BRACE DETAIL

SCALE: NOT TO SCALE LATERAL/LONGITUDINAL EARTHQUAKE BRACE



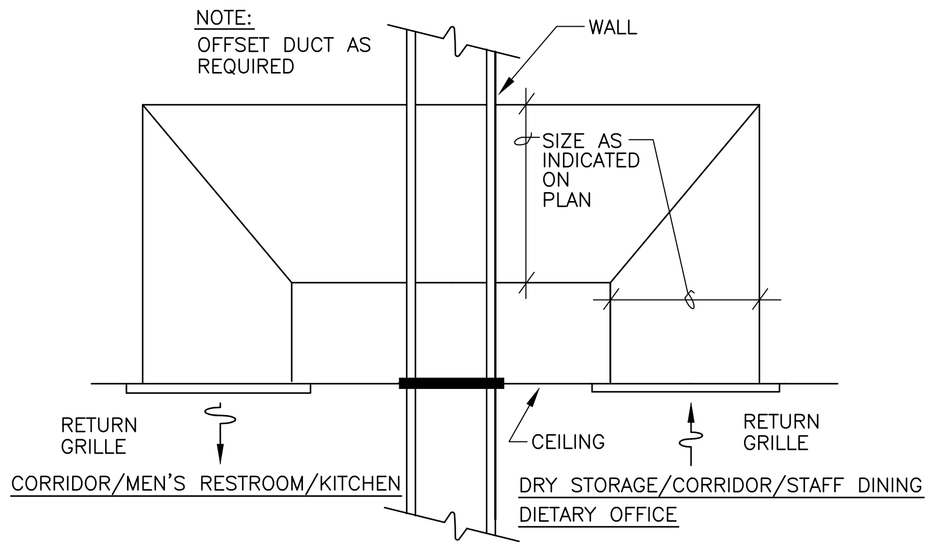
3 M301 LATERAL SWAY BRACE DETAIL

SCALE: NOT TO SCALE LATERAL EARTHQUAKE BRACE



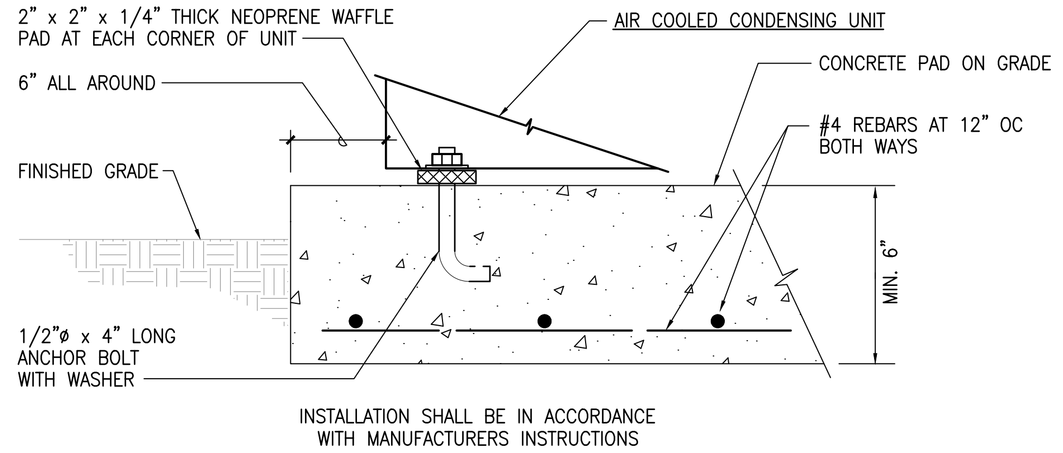
4 M301 CONCEALED HEAD PENDANT SPRINKLER DETAILS

SCALE: NOT TO SCALE



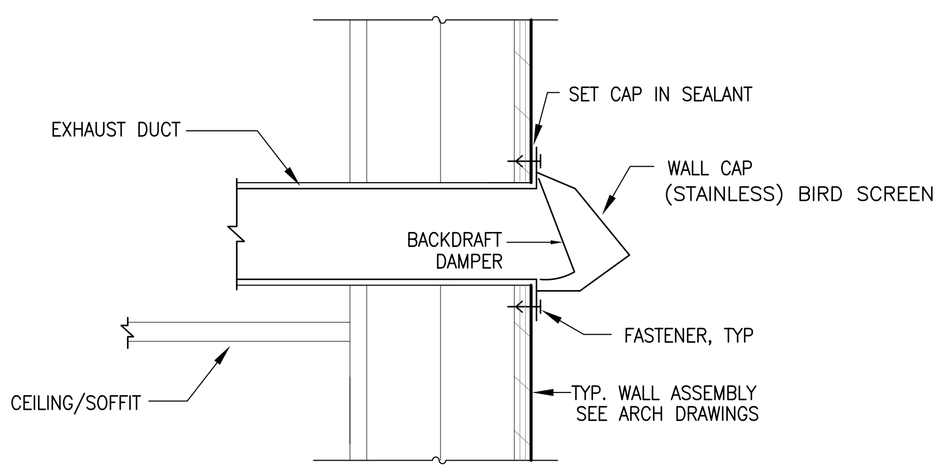
5 M301 RETURN AIR TRANSFER GRILLE DETAIL

SCALE: NOT TO SCALE



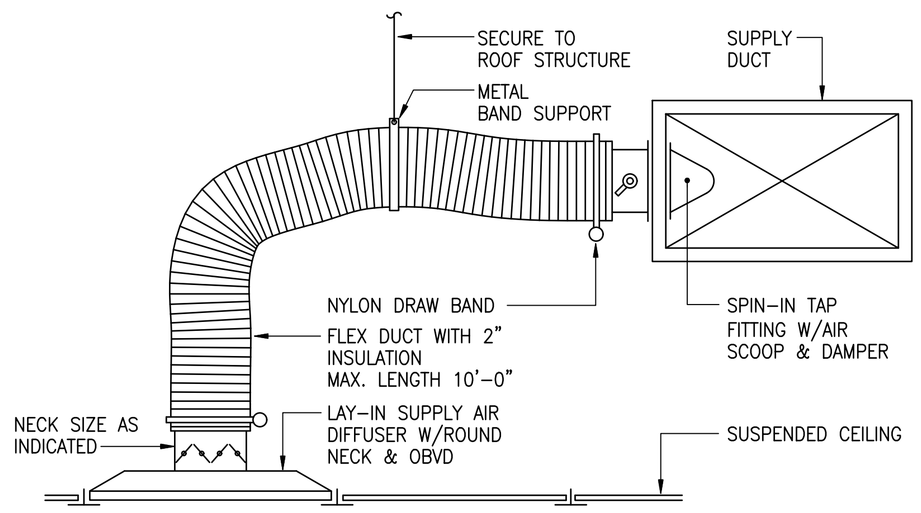
6 M301 TYPICAL AIR CONDITIONING UNIT MOUNTING DETAIL

SCALE: NOT TO SCALE



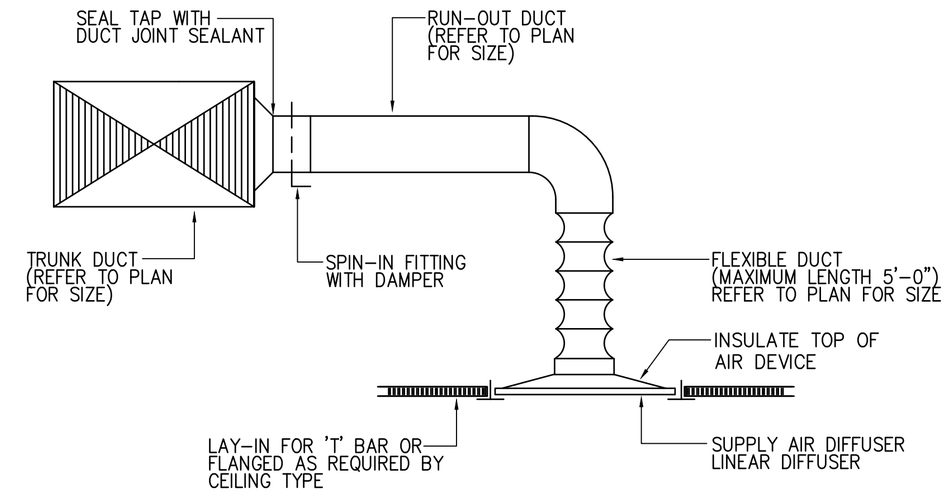
7 M301 EXHAUST WALL CAP DETAIL

SCALE: NOT TO SCALE



8 M301 SUPPLY DIFFUSER DETAIL

SCALE: NOT TO SCALE



9 M301 SPINTAP AND DIFFUSER CONNECTION DETAIL

SCALE: NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

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SHEET TITLE
DETAILED DRAWINGS

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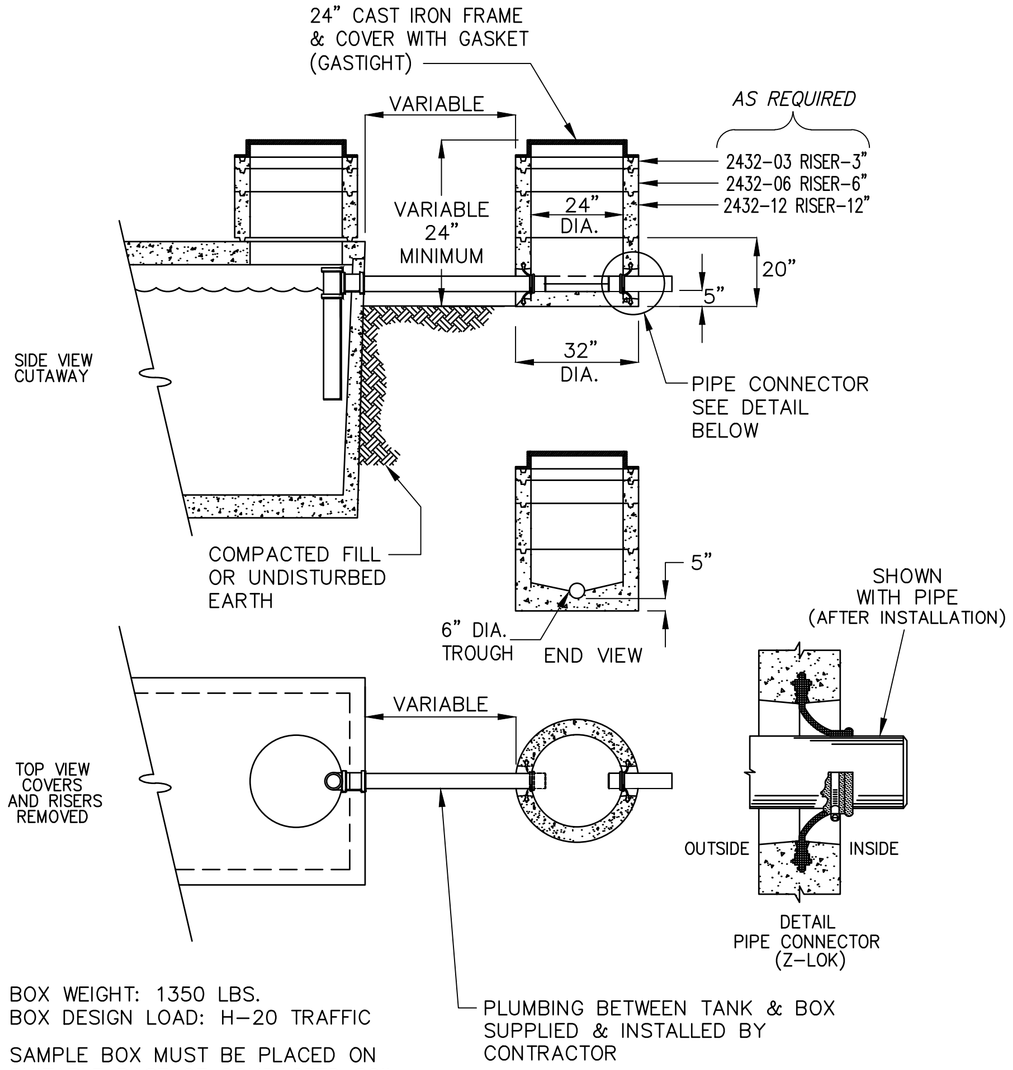
SHEET
M301
OF ? SHEETS

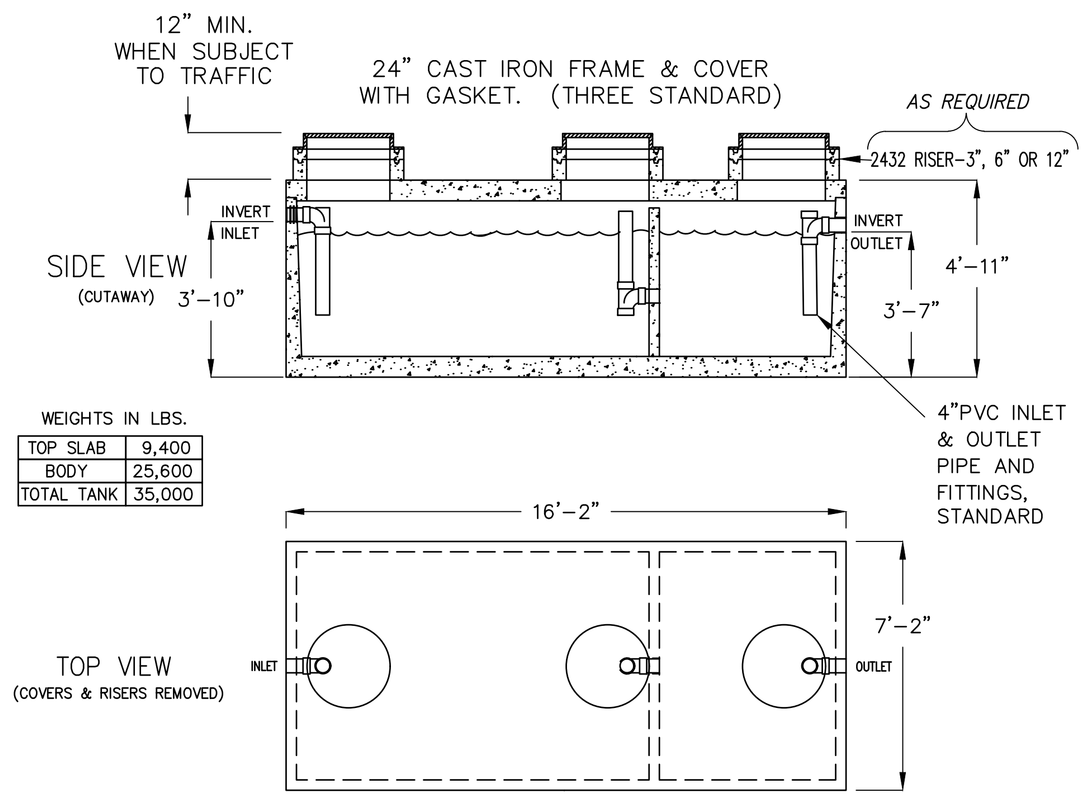


BOX WEIGHT: 1350 LBS.
BOX DESIGN LOAD: H-20 TRAFFIC

SAMPLE BOX MUST BE PLACED ON SUITABLE BASE OF COMPACTED SOIL OR UNDISTURBED EARTH IN TRAFFIC CONDITION.

1 M302 SAMPLING BOX DETAIL

SCALE: NOT TO SCALE



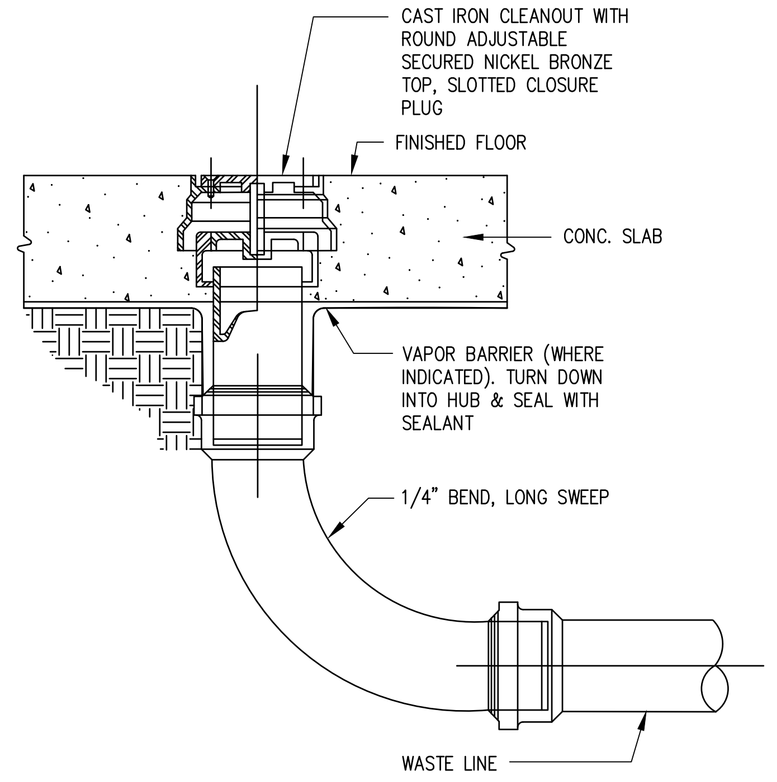
WEIGHTS IN LBS.	
TOP SLAB	9,400
BODY	25,600
TOTAL TANK	35,000

- LIQUID CAPACITY: 2000 GALLONS.
- TANK DESIGNED FOR H-20 TRAFFIC WHEEL LOAD WITH 1' TO 6' MAX. EARTH COVER AND WATER TABLE AT ONE FOOT BELOW GRADE.
- SUITABLE NATIVE SOIL OR GRANULAR SUB-BASE SHALL BE COMPACTED AND LEVELED TO HANDLE ANTICIPATED LOADS. SEE INSTALLATION PROCEDURES SHEET FOR ADDITIONAL INFO.
- EXTERIOR AND INTERIOR CONCRETE SURFACES TO BE COATED WITH AN APPROVED BITUMINOUS MATERIAL.
- FOR COMPLETE DESIGN AND PRODUCT INFORMATION CONTACT JENSEN PRECAST.

MINIMUM EXCAVATION
8'-2" x 17'-2"
x REQ'D DEPTH

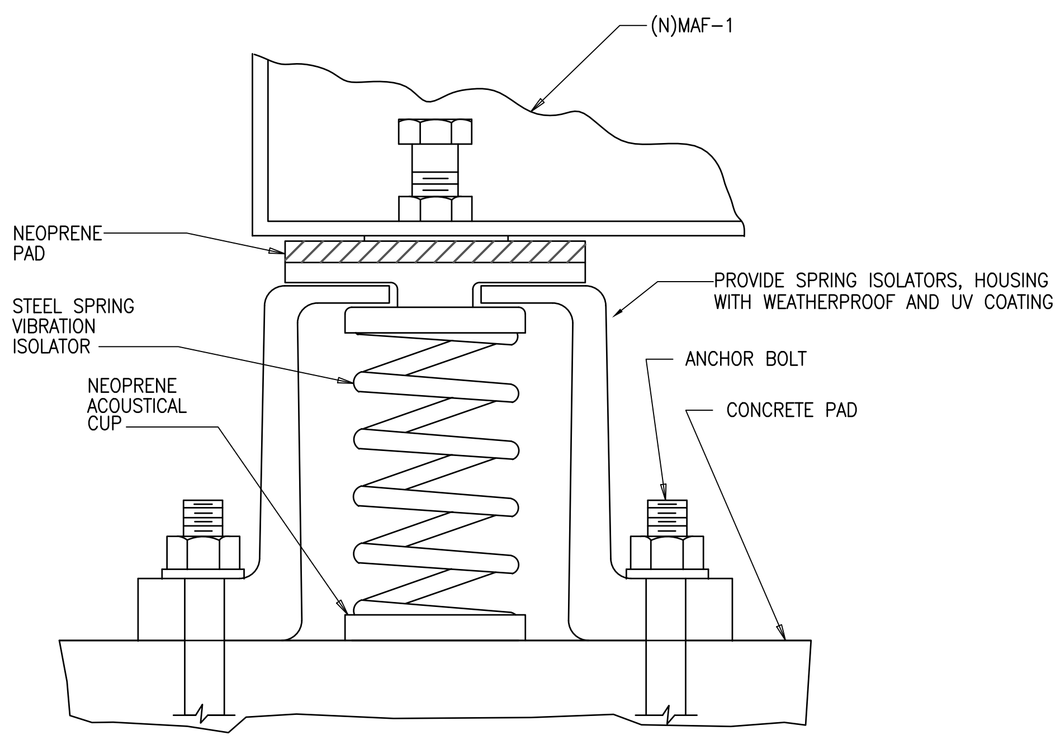
2 M302 GREASE INTERCEPTOR DETAIL

SCALE: NOT TO SCALE



3 M302 FLOOR CLEANOUT DETAIL

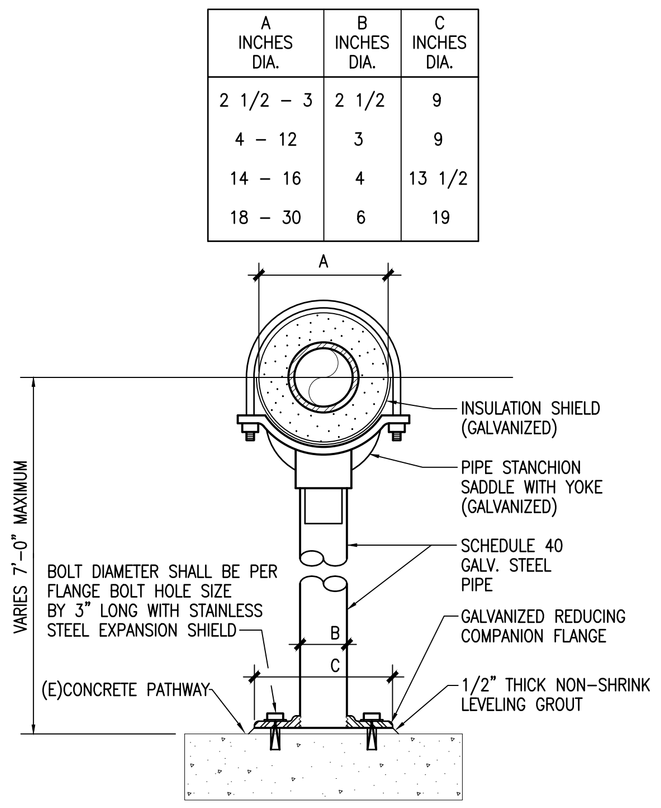
SCALE: NOT TO SCALE



4 M302 MAF MOUNTING DETAIL

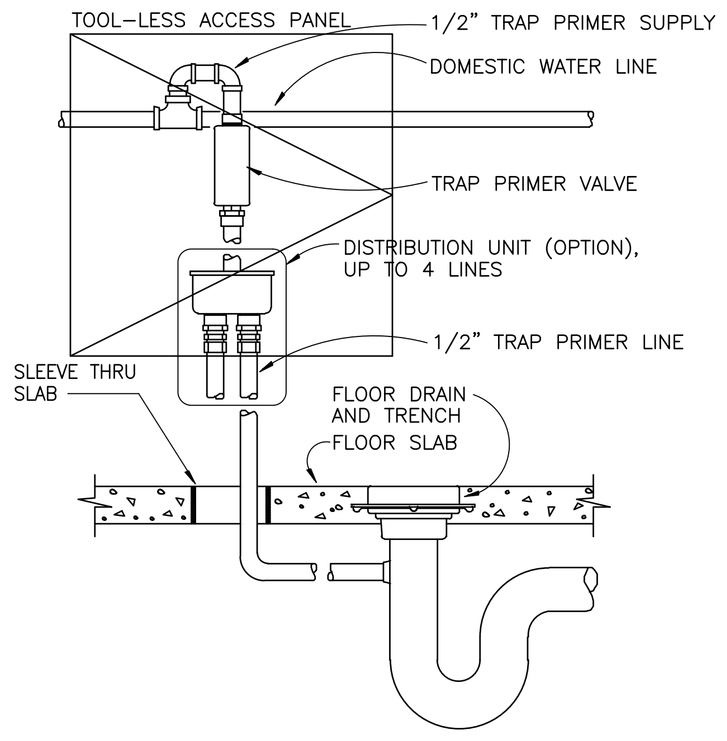
SCALE: NOT TO SCALE

A INCHES DIA.	B INCHES DIA.	C INCHES DIA.
2 1/2 – 3	2 1/2	9
4 – 12	3	9
14 – 16	4	13 1/2
18 – 30	6	19



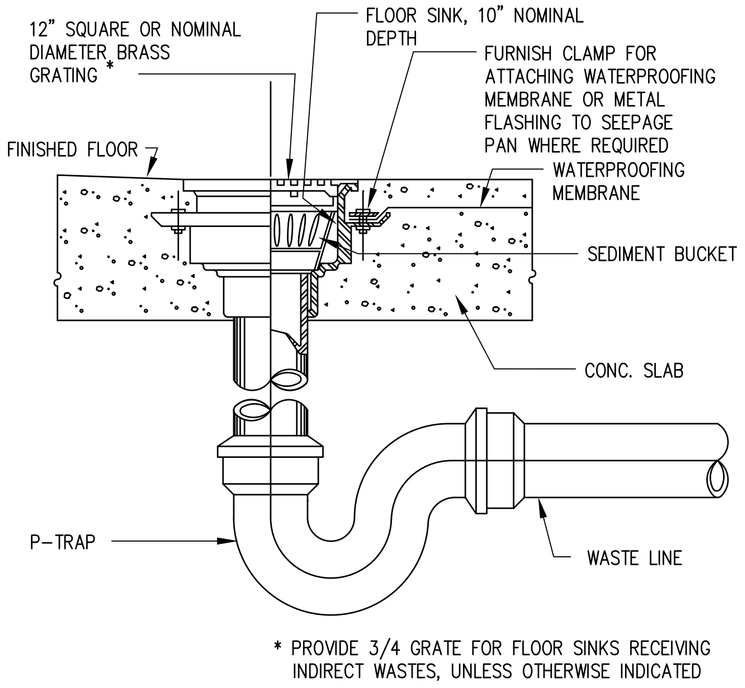
5 M302 PIPE SUPPORT DETAIL

SCALE: NOT TO SCALE



6 M302 TRAP SEAL PRIMER DETAIL

SCALE: NOT TO SCALE



* PROVIDE 3/4 GRATE FOR FLOOR SINKS RECEIVING INDIRECT WASTES, UNLESS OTHERWISE INDICATED

7 M302 FLOOR SINK DETAIL

SCALE: NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

This work was prepared by me or under my supervision. I am responsible for the construction of this project and the design under my supervision.

Signature

LICENSE EXPIRES: APRIL 30, 2025

ROSS R. TANAKA
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PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

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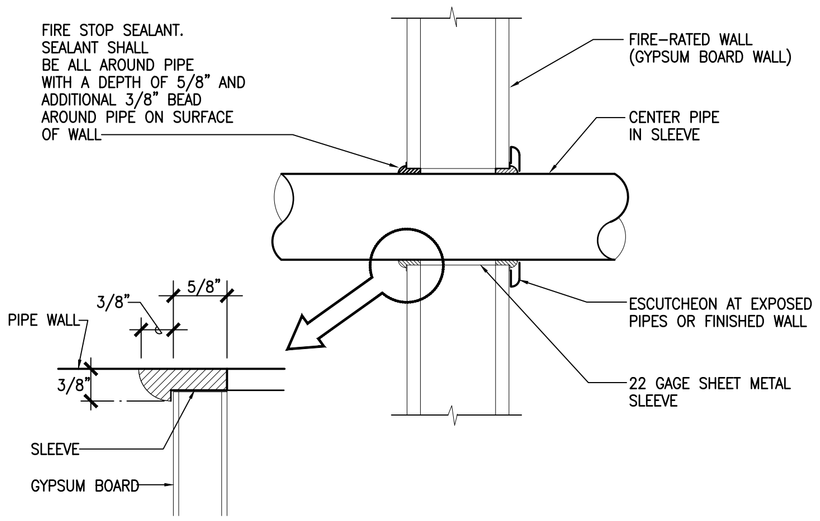
DETAILED DRAWINGS

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

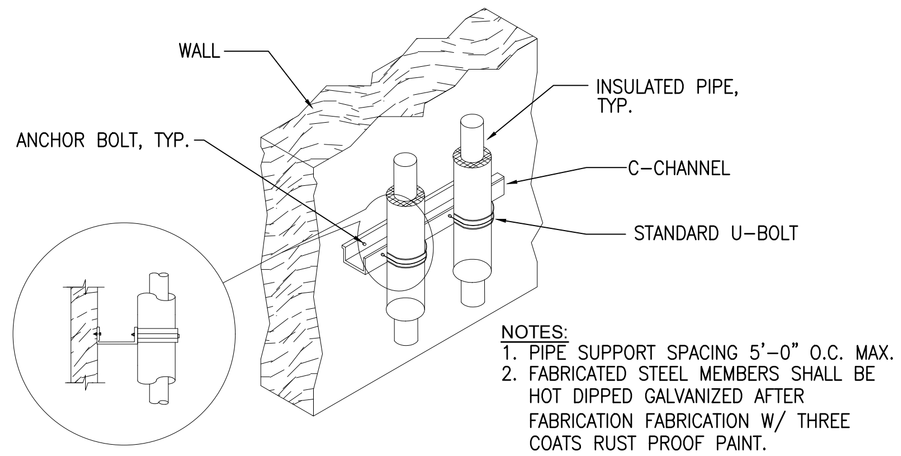
SHEET
M302
OF ? SHEETS



NOTE: APPLICABLE TO ALL INTERIOR GYP BD WALLS WITHIN UNITS AND BETWEEN UNITS.

1 M303 PIPE PENETRATION DETAIL

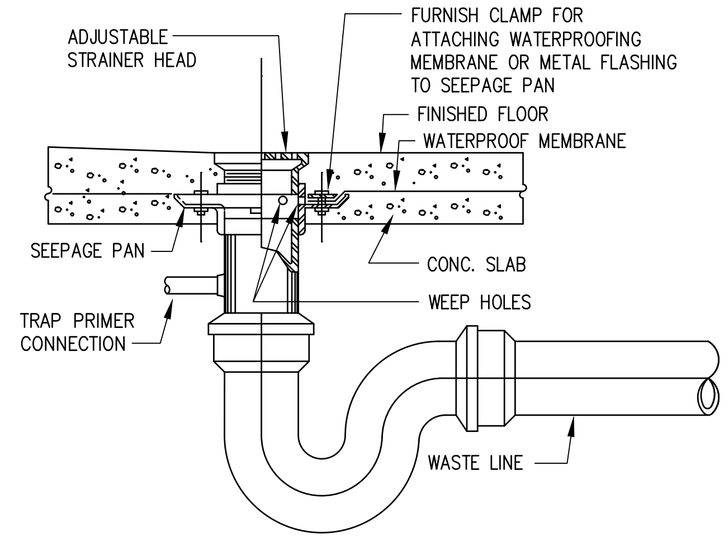
SCALE: NOT TO SCALE



NOTES:
1. PIPE SUPPORT SPACING 5'-0" O.C. MAX.
2. FABRICATED STEEL MEMBERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION FABRICATION W/ THREE COATS RUST PROOF PAINT.

2 M303 REFRIGERANT PIPE COLUMN SUPPORT DETAIL

SCALE: NOT TO SCALE



3 M303 FLOOR DRAIN DETAIL

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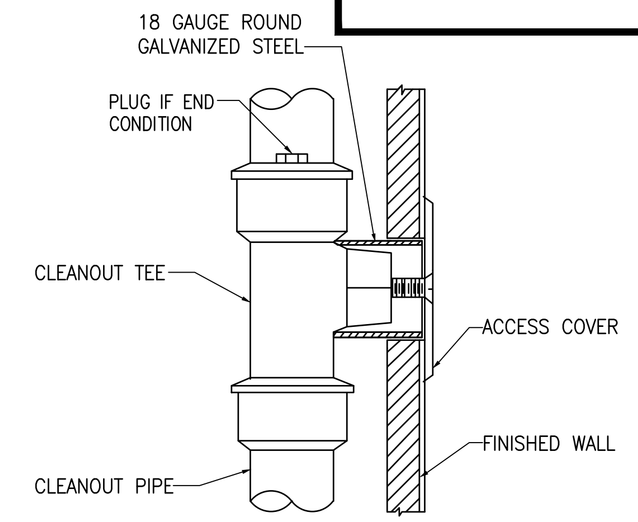

4 M303 WALL CLEANOUT DETAIL

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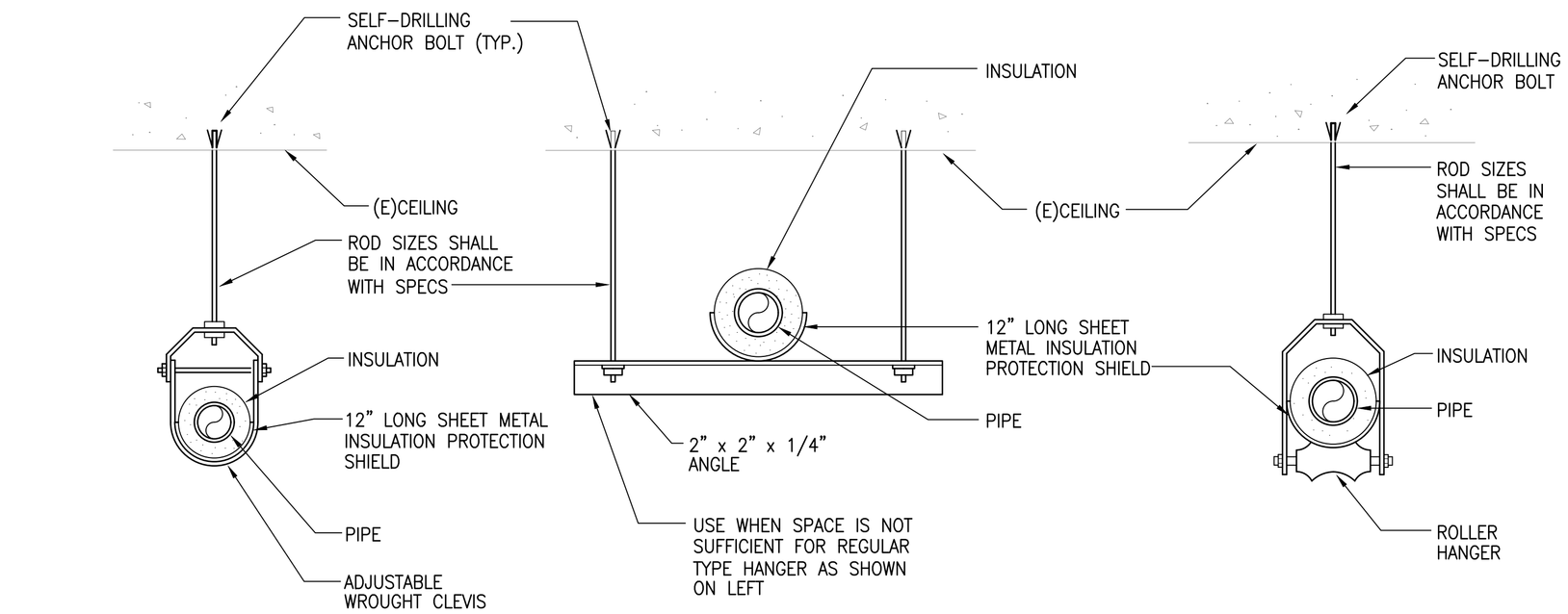


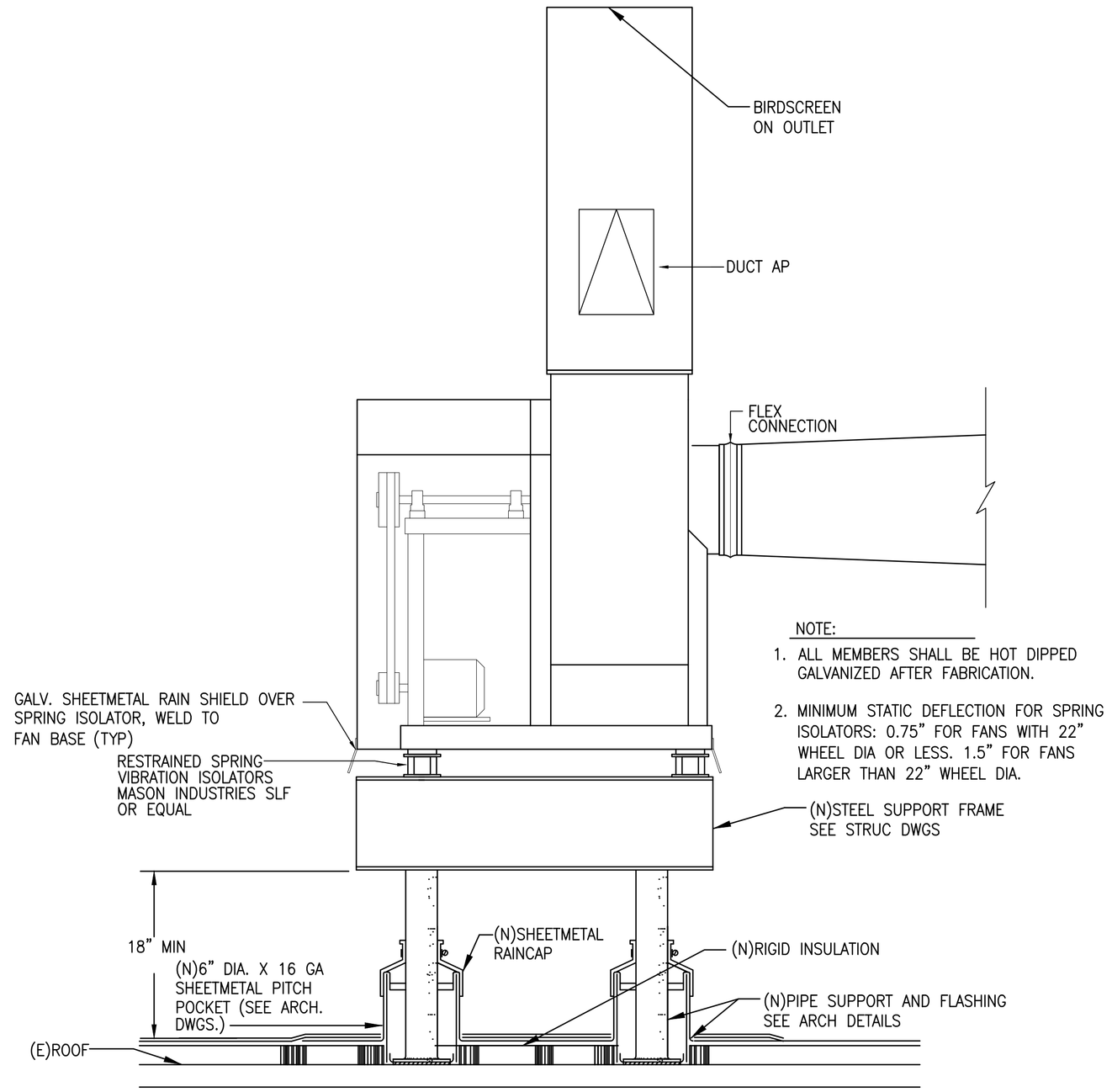
2" AND SMALLER PIPES

2-1/2" AND LARGER PIPES

NOTE: 18" LONG RIGID INSULATION SHALL BE USED AT HANGERS

5 M303 PIPE HANGER DETAIL

SCALE: NOT TO SCALE



6 M303 FAN MOUNTING DETAIL

SCALE: NOT TO SCALE KEF-1

DATE	DESCRIPTION	REV. NO.

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Signature

LICENSE EXPIRES : APR. 30, 2023

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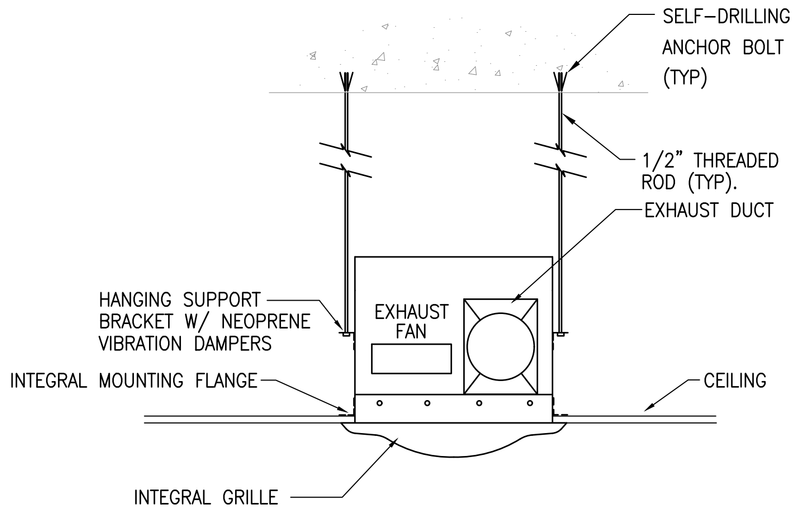
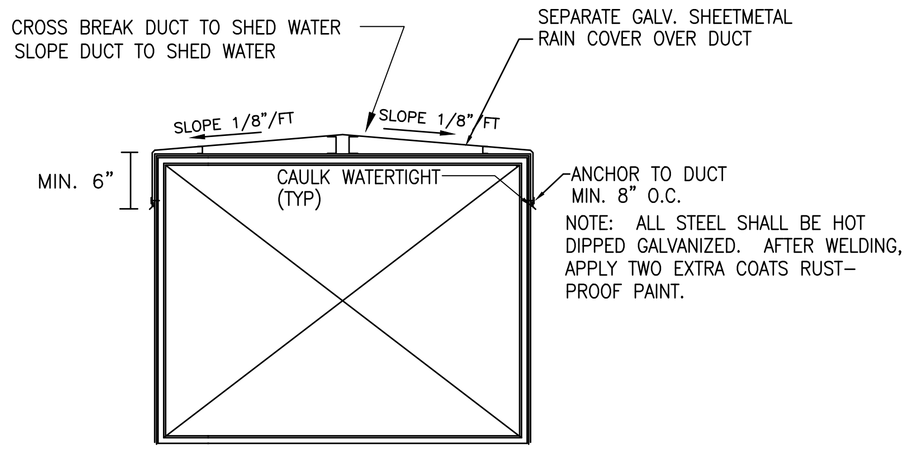
SHEET M303

OF ? SHEETS



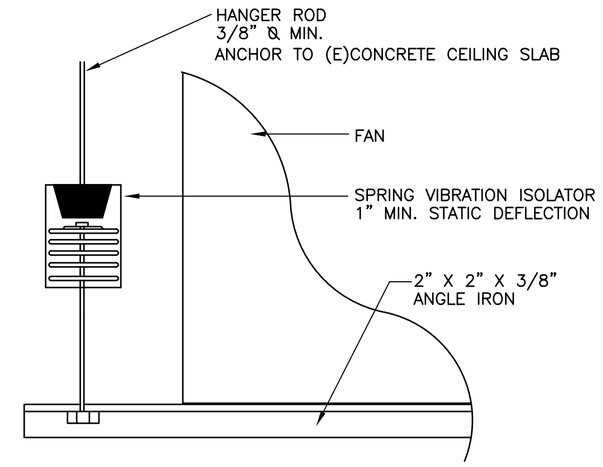
1 M304 EXHAUST FAN MOUNTING DETAIL

SCALE: NOT TO SCALE



2 M304 EXTERIOR DUCT DETAIL

SCALE: NOT TO SCALE



3 M304 FAN HANGER DETAIL

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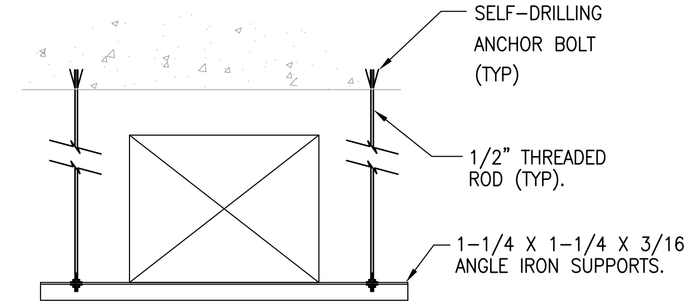

4 M304 DUCT HANGER DETAIL

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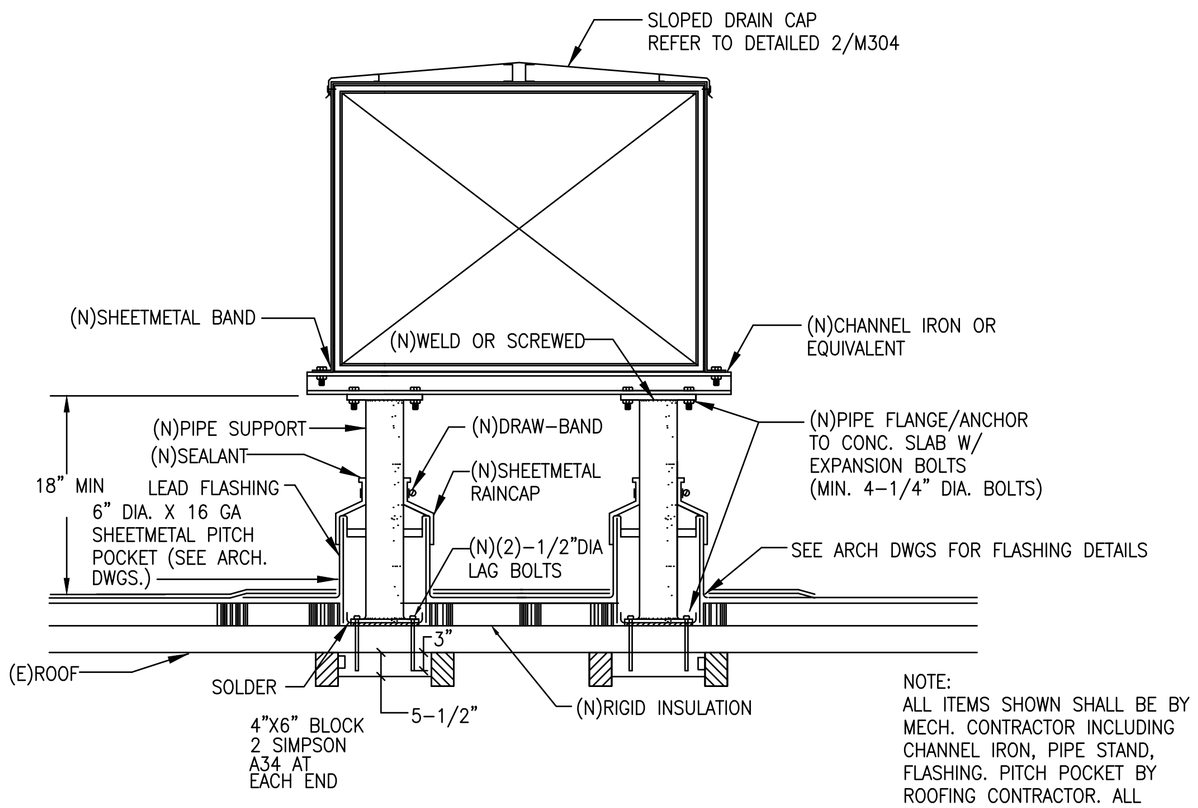
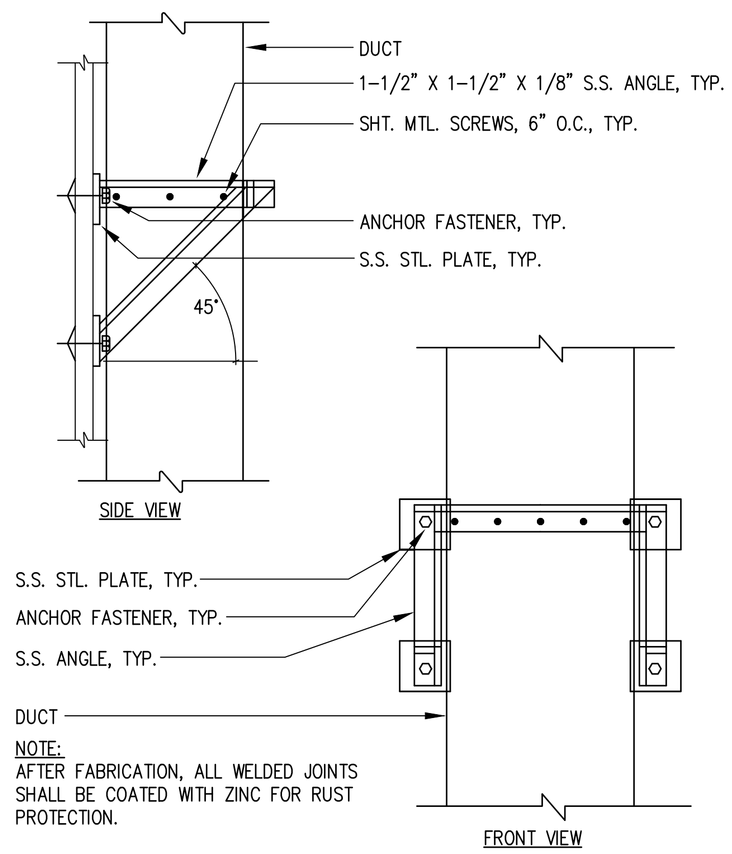


NOTE:
ALL ITEMS SHOWN SHALL BE BY MECH. CONTRACTOR INCLUDING CHANNEL IRON, PIPE STAND, FLASHING. PITCH POCKET BY ROOFING CONTRACTOR. ALL STEEL SHALL BE HOT DIPPED GALVANIZED. AFTER FABRICATION, ALL WELD AREA SHALL BE COATED WITH ZINC FOR RUST PREVENTION.

5 M304 DUCT SUPPORT ON ROOF DETAIL

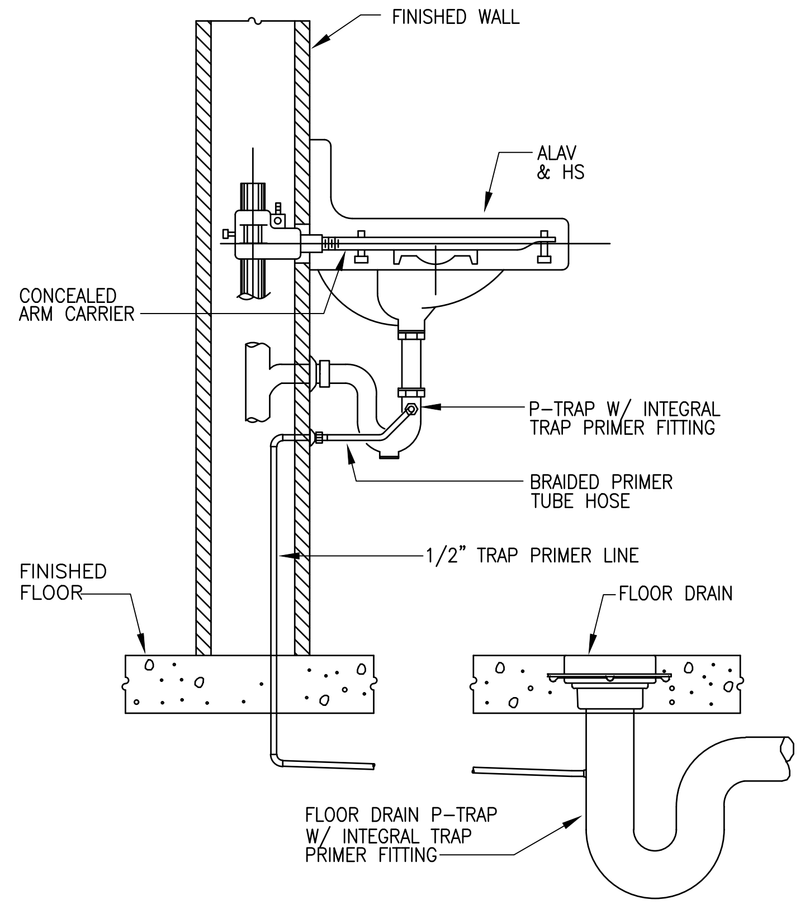
SCALE: NOT TO SCALE



NOTE:
AFTER FABRICATION, ALL WELDED JOINTS SHALL BE COATED WITH ZINC FOR RUST PROTECTION.

6 M304 VERTICAL DUCT SUPPORT DETAIL

SCALE: NOT TO SCALE



7 M304 WATER SAVER TRAP PRIMER DETAIL

SCALE: NOT TO SCALE

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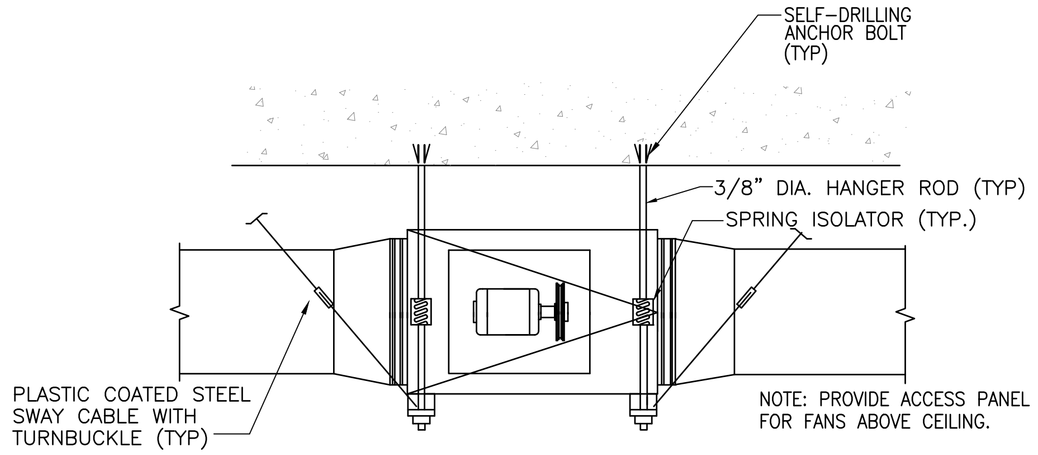
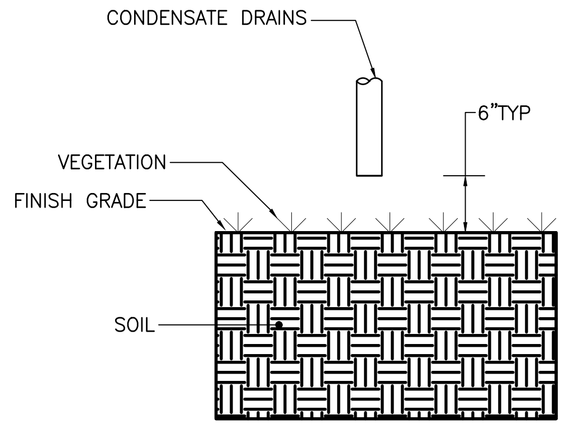


1 M305 TYPICAL INLINE EXHAUST FAN/OUTSIDE AIR FAN MOUNTING DETAIL

SCALE: NOT TO SCALE



2 M305 CONDENSATE TERMINATION DETAIL

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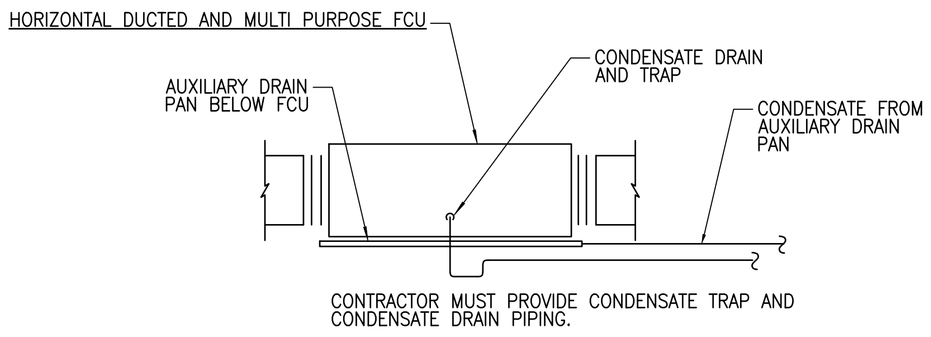

3 M305 CONDENSATE PIPING CONNECTION DETAIL

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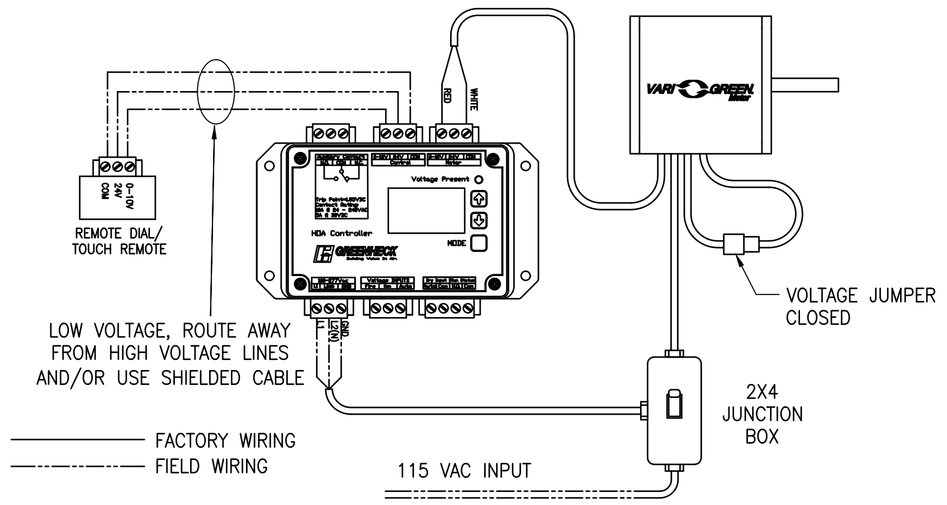


4 M305 CONVEYOR DISH MACHINE EXHAUST FAN WIRING DIAGRAM

SCALE: NOT TO SCALE

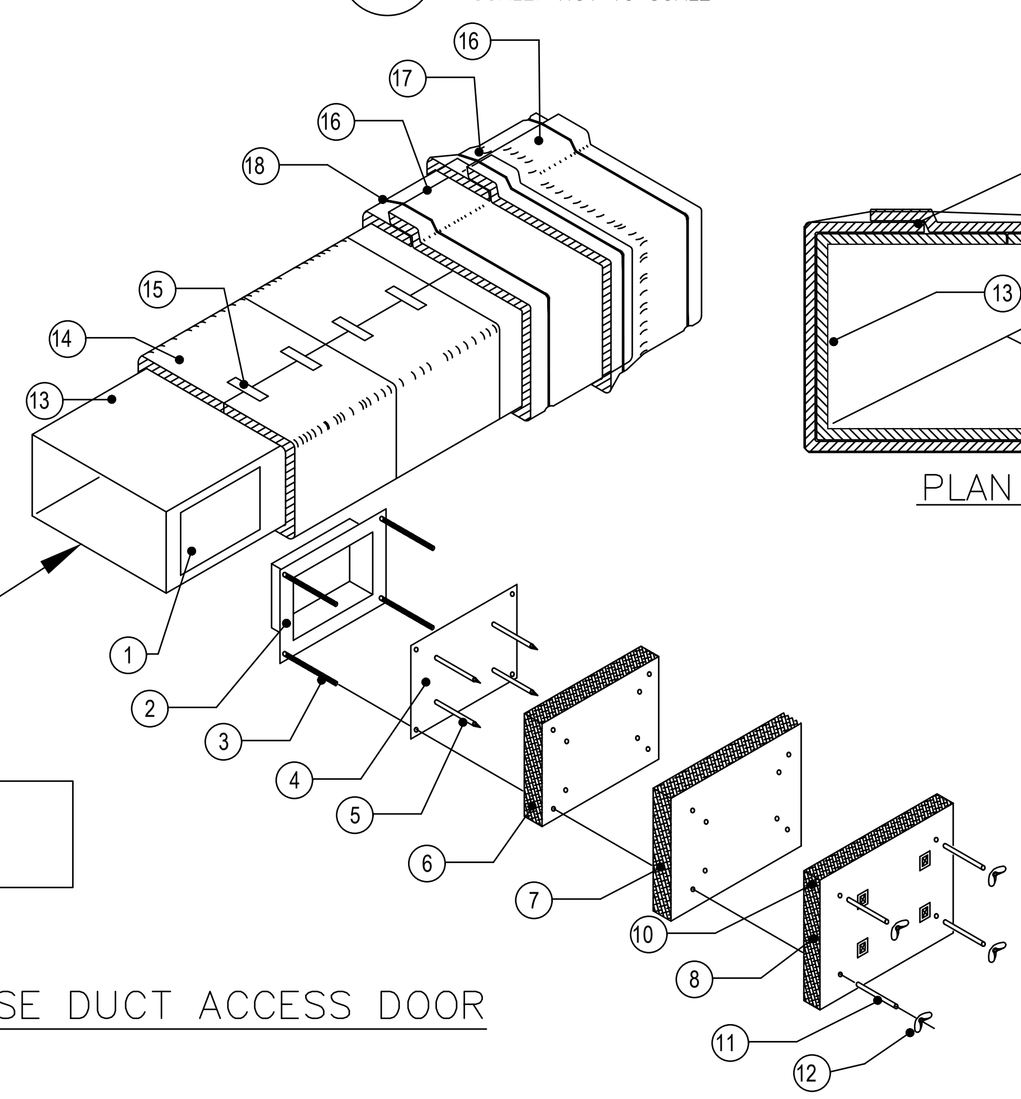
EF-5

LEGEND	
1	DOOR HOLE
2	ACCESS FRAME WELDED TO DUCT
3	1/4" DIA. ALL THREAD RODS
4	ACCESS COVER; 18 GA.
5	INSULATION PINS; WELDED
6	1 3M FIRE BARRIER 615 PLUS
7	1 3M FIRE BARRIER 615 PLUS 1" OVERLAP
8	1 3M FIRE BARRIER 615 PLUS 1" OVERLAP
9	SPEED CLIPS
10	ALUMINUM TAPE EDGES
11	SPOOL PIECES FOR THREADED RODS
12	1/4" DIA. WING NUTS
13	18 GA. SHEET METAL DUCT (FULLY WELDED WATER TIGHT)
14	1ST LAYER 3M FIRE BARRIER DUCT WRAP 615 PLUS LONGITUDINAL JOINT BUTT OR MIN. 3" OVERLAP ON INNER LAYER, MIN. 3" OVERLAP ON OUTER LAYER
15	3/4" (19mm) WIDE FILAMENT TAPE
16	2ND LAYER 3M FIRE BARRIER DUCT WRAP 615 PLUS OR APPROVED EQUIVALENT
17	3" MINIMUM PERIMETER OVERLAP – TYP.
18	STEEL BANDING 1/2" WIDE MIN. TYP. FOR PERMANENT FASTENING

NOTES:
1. BANDING MATERIAL, 3/4" WIDE, MINIMUM 0.015" THICK, CARBON STEEL FOR CONSTRUCTION REQUIREMENTS OF ZERO CLEARANCE TO COMBUSTIBLES OR 1 HR. RATINGS. STAINLESS STEEL BANDING IS USED FOR 2 HR. REQUIREMENTS.
2. 3M FIRE BARRIER DUCT WRAP 615+, 1–1/2" THICK, 24" OR 48" WIDE, 300" STANDARD LENGTH (2 LAYERS) 6 LBS PER CUBIC FT TO BE UTILIZED.
3. HOLD INTERIOR WRAP OF INSULATION USING 1" WIDE FILAMENT TAPE (NO. 898) MANUFACTURED BY 3M COMPANY.
4. SEAL CUT EDGES OF BLANKET WITH ALUMINUM FOIL TAPE.

FULLY WELDED GREASE RATED EXHAUST DUCT. SEE SIZE ON PLAN.
RISER SHALL BE LIGHT INSPECTED LAYING ON FLOOR.
FULLY PREPARE FOR SCHEDULED INSPECTION.
HVAC CONTRACTOR SHALL VERIFY TEST PRIOR TO SCHEDULE.

NOTE: ACCESS DOOR NOT REQUIRED UNLESS OFFSET.



5 M305 TYPICAL GREASE DUCT ACCESS DOOR

SCALE: NOT TO SCALE

GREASE EXHAUST DUCT ACCESS DOOR NOTES:

OPENINGS SHALL BE PROVIDED AT THE SIDES OR AT THE TOP OF THE DUCT, WHICHEVER IS MORE ACCESSIBLE, AND AT CHANGES OF DIRECTION. [NFPA 96:7.3.1]

ON HORIZONTAL DUCTS, AT LEAST ONE 508MM BY 508MM (20 IN. BY 20 IN.) OPENING SHALL BE PROVIDED FOR PERSONAL ENTRY. [NFPA 96:7.4.1.1]

WHERE AN OPENING OF THIS SIZE IS NOT POSSIBLE, OPENINGS LARGE ENOUGH TO PERMIT THOROUGH CLEANING SHALL BE PROVIDED AT 3.7M (12 FT) INTERVALS. [NFPA 96:7.4.1.2]

ON VERTICAL DUCTWORK WHERE PERSONNEL ENTRY IS POSSIBLE, ACCESS SHALL BE PROVIDED AT THE TOP OF THE VERTICAL RISER TO ACCOMMODATE DESCENT. [NFPA 96:7.4.2.1]

WHERE PERSONNEL ENTRY IS NOT POSSIBLE, ADEQUATE ACCESS FOR CLEANING SHALL BE PROVIDED ON EACH FLOOR. [NFPA 96:7.4.2.2]

A SIGN SHALL BE PLACED ON ALL ACCESS PANELS STATING THE FOLLOWING: ACCESS PANEL – DO NOT OBSTRUCT. [NFPA 96:7.1.7]

REV. NO.	DESCRIPTION	DATE

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Signature

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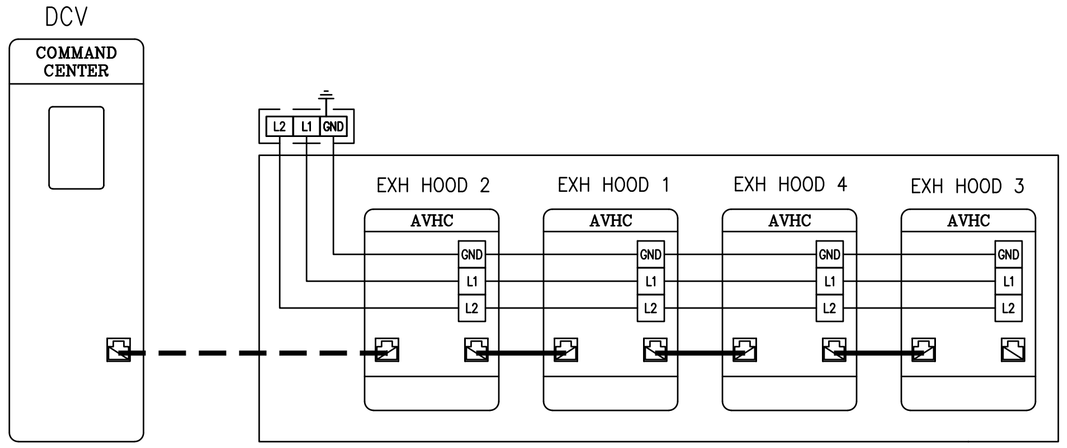


DCV CONTROL CABINET WIRING NOTES

(AV-1) (2) 120V WIRES AND GROUND FROM DCV CONTROL CABINET TO NON-SHUNTED SUPPLY VOLTAGE SERVICE BY ELECTRICAL CONTRACTOR.

(AV-2) (1) CAT 5 CABLE FROM DCV CONTROL CABINET TO 1ST HOOD AVHC BY ELECTRICAL CONTRACTOR.

(AV-3) (2) WIRES FROM DCV CONTROL CABINET TO FIRE SUPPRESSION SYSTEM MICRO SWITCHES BY ELECTRICAL CONTRACTOR.

(AV-4) (6) WIRE LOW VOLTAGE CABLE FROM DCV CONTROL CABINET TO EACH VFD BY ELECTRICAL CONTRACTOR.

VFD SPECIFICATION

HARDWARE (MINIMUM VFD REQUIREMENTS)

1. WORKS WITH A 4-20 MA OR 2-10 V ANALOG INPUT.
2. PRODUCES A 24 VDC OR EQUIVALENT COMMON TO BE USED FOR REMOTE DRY CONTACT SWITCHING OF THE VFD(S). INDEPENDENT POWER SUPPLY ALSO ACCEPTED.
3. DRIVE TO MOTOR DISTANCE IS LESS THAN THE MAXIMUM SPECIFIED BY THE DRIVE MANUFACTURER.
4. DRIVE IS TO BE SIZED APPROPRIATELY FOR MOTOR RATED FLA, AND VOLTAGE INPUTS.

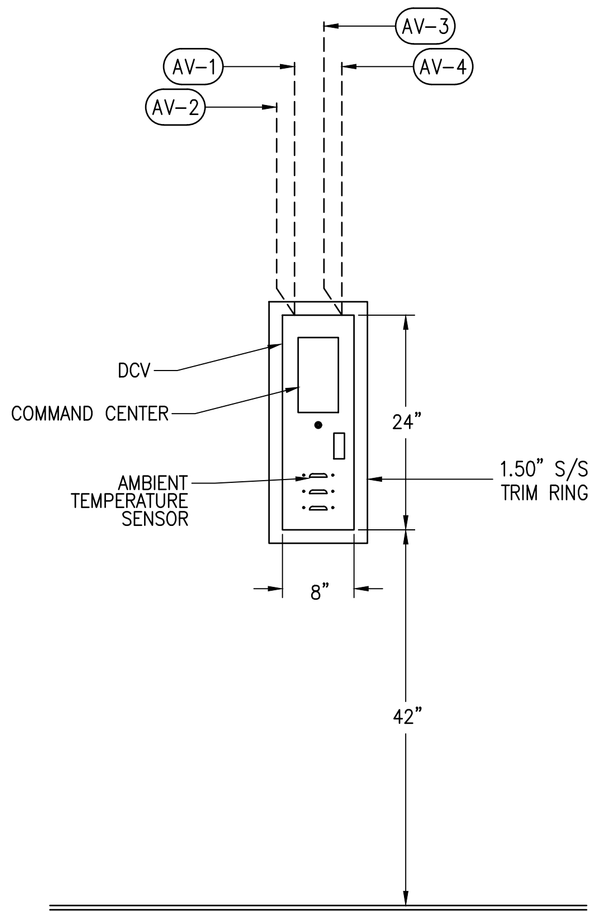
DRIVE INPUTS FROM DCV COMMAND CENTER

AS NOTED ON SUBMITTAL DRAWINGS UP TO FOUR VFDS MAY BE CONTROLLED THROUGH TERMINALS LABELED WITH AN ALPHANUMERIC, WHERE THE NUMBER CORRESPONDS TO A DISTINCT VFD (SEE TABLE 1). THE SYMBOL "#"IS SUBSTITUTED FOR THE NUMBER IN THE FOLLOWING.

1. TERMINAL C# ACCEPTS A NOMINAL +24 VDC COMMON SIGNAL FROM AN EXHAUST FAN VFD.
2. TERMINAL S# OUTPUTS SIGNAL PROVIDED BY THE COMMON VOLTAGE (AT C#) TO COMMAND THE EXHAUST FAN VFD TO RUN.
3. TERMINAL RH# OUTPUTS SIGNAL PROVIDED BY THE COMMON VOLTAGE.
   a. C# IS THE DEFAULT COMMON FOR RH#.
   b. HC# IS AN ALTERNATE COMMON FOR RH#. IT IS TO BE USED WHEN THE VFD COMMAND POINTS FOR RUN AND RUN HIGH DO NOT SHARE A COMMON. THE TERMINAL JUMPER BETWEEN C# AND HC# MUST BE REMOVED TO SEPARATE THE VOLTAGE SOURCES.
4. TERMINALS DS# AND AC# PROVIDE THE SPEED SIGNAL TO THE EXHAUST FAN VFD
   a. DS# IS A 4-20 MA SIGNAL (OPTIONAL 2-10 V)
   b. AC# IS THE ANALOG COMMON

PROGRAM SPECIFICATION

1. VFDS TO OPERATE WITH ANALOG 4-20MA INPUT. 4 MA REPRESENTS 0 HZ AND 20 MA REPRESENTS THE MAXIMUM MOTOR SPEED, TYPICALLY 60 HZ (2-10V IS OPTIONAL).
2. VFDS TO START (RECEIVE RUN COMMAND) BY EXTERNAL CONTACT CLOSURE PROVIDED BY GAYLORD ON C# AND S#. CONTACT CLOSURE WILL TAKE THE UNLOADED SYSTEM TO MINIMUM FAN SPEED (DEFAULT 30 HZ).
3. VFD CONSTANTS FOR THE MOTOR CONTROLLED TO BE DETERMINED AND ADDED, EX: THERMAL OVERLOAD, RATE VOLTAGE, ETC.
4. SET ACCELERATION TIME TO 8 SECONDS OR 7.5 HZ/SECOND.
5. SET DECELERATION TIME TO 48 SECONDS OR 1.25 HZ/SECOND. - SLOW DECELERATION PREVENTS INSTABILITY IN THE SYSTEM.
6. SETUP EACH VFD FOR A "RUN HIGH" COMMAND FROM RH# THAT WILL RAMP THE DRIVE TO 100% OR 60 HZ. THIS FUNCTION IS ESSENTIAL FOR PROPER RESPONSE TO A FIRE PROTECTION SYSTEM DISCHARGE.
7. SET THE MODULATION RANGE FOR EACH VFD. THE AIRVANTAGE SYSTEM WILL MANAGE THE TURNDOWN OVER A 0-60 HZ RANGE.
   a. SET THE VFD BIAS 4 MA = 0 HZ.
   b. SET THE VFD GAIN 20 MA = 60 HZ



DCV CONTROL CABINET ELEVATION

DEPTH OF CABINET: 7"

DCV CONTROL CABINET INSTALLATION NOTES

DCV CONTROL CABINET MUST BE LOCATED WITHIN 50 FEET OF AND IN THE SAME KITCHEN AS THE HOODS IT WILL CONTROL.

DCV CONTROL CABINET MUST BE LOCATED AT LEAST 2 FEET HORIZONTALLY FROM COOKING EQUIPMENT AND HEAT GENERATING APPLIANCES.

DCV CABINET CONTROLS THE FOLLOWING HOODS:

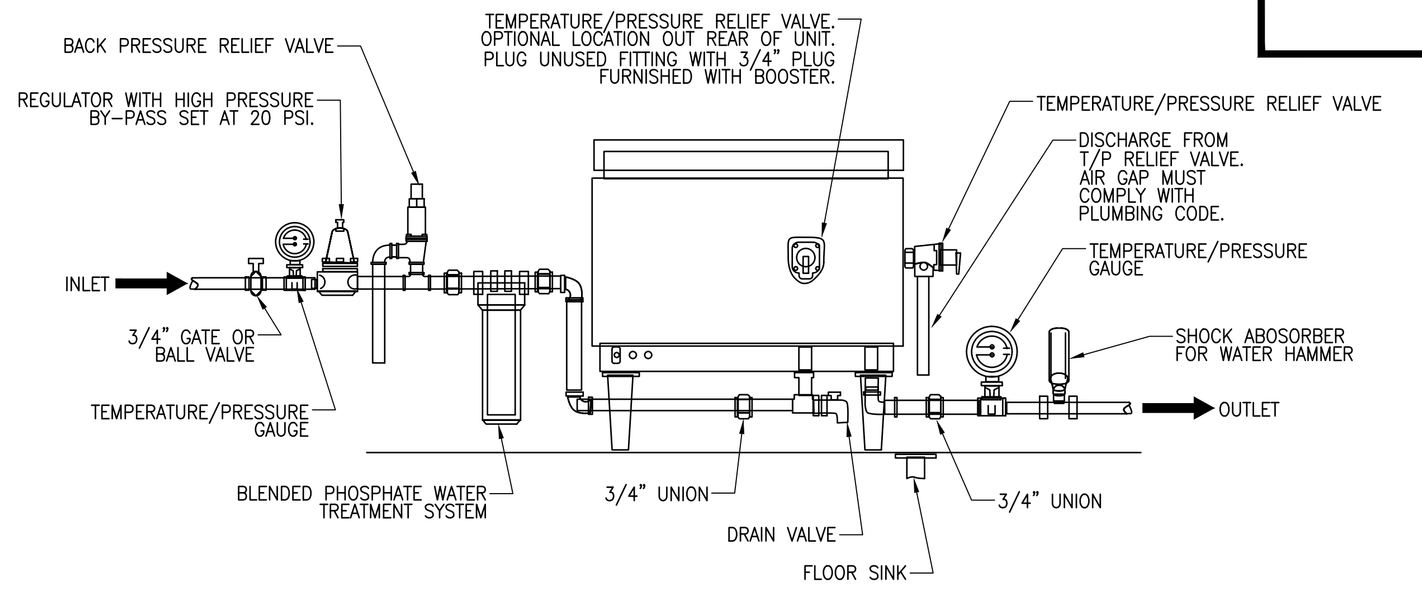
ITEM#: EXH HOOD 1	ITEM#: EXH HOOD 3
ITEM#: EXH HOOD 2	ITEM#: EXH HOOD 4

DCV			
OUTPUT NUMBER	OUTPUT LABEL	OUTPUT TYPE	MIRROR (1, 2, 3, OR 4 SUPPLY (% OF EXHAUST)
1		DISABLED	
2	KEF-1	EXHAUST	
3	MAF-1	SUPPLY	100
4		DISABLED	

DCV				
HOOD NO.	EXH CFM	EXHAUST FAN	SUP CFM	MAKEUP AIR FAN
2	1340	KEF-1	1280	MAF-1
1	1450	KEF-1	1340	MAF-1
4	2220	KEF-1	1810	MAF-1
3	2220	KEF-1	1810	MAF-1

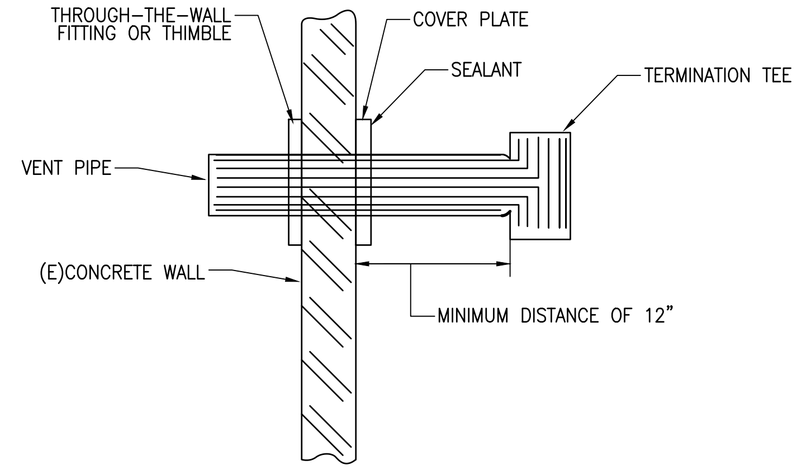
1 M306 TYPICAL DCV WIRING DIAGRAM

SCALE: NOT TO SCALE



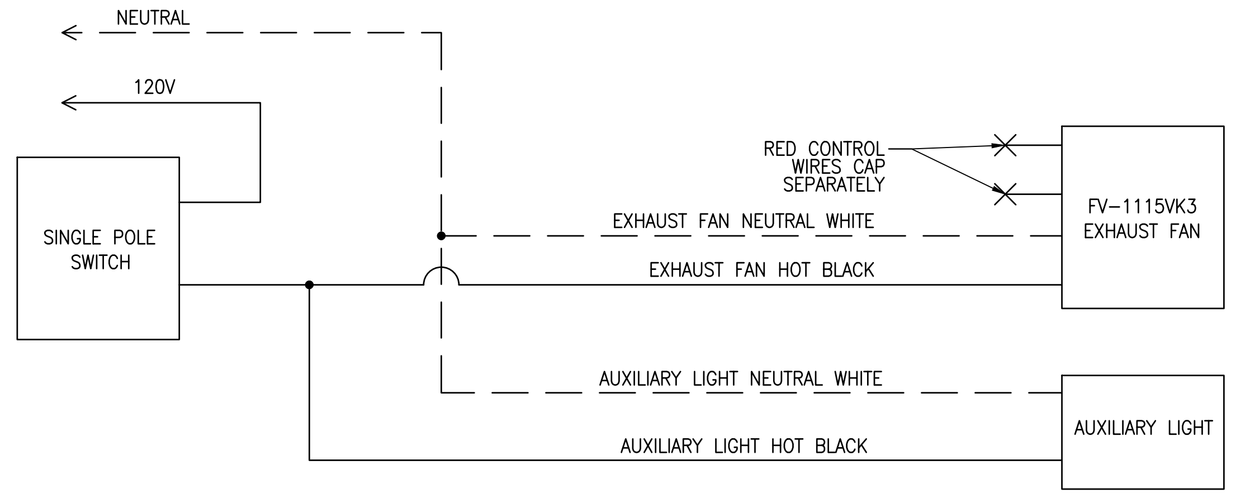
2 M306 GAS BOOSTER WATER HEATER PIPING DETAIL

SCALE: NOT TO SCALE



3 M306 GAS BOOSTER WATER HEATER VENT TERMINATION DETAIL

SCALE: NOT TO SCALE



4 M306 BATHROOM AND JANITOR EXHAUST FAN WIRING DIAGRAM

SCALE: NOT TO SCALE

EF-1, EF-2, EF-3, AND EF-4

REV. NO.	DESCRIPTION	DATE

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

Signature

ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-H HAWAII, U.S.A.

LICENSE EXPIRES: APRIL 30, 2025

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PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 - 2 - 031: 001

SHEET TITLE: DETAILED DRAWINGS

DATE: MARCH 2024
SCALE: AS SHOWN
DRAWN: MEI CHECK: RRT

SHEET M306

OF ? SHEETS

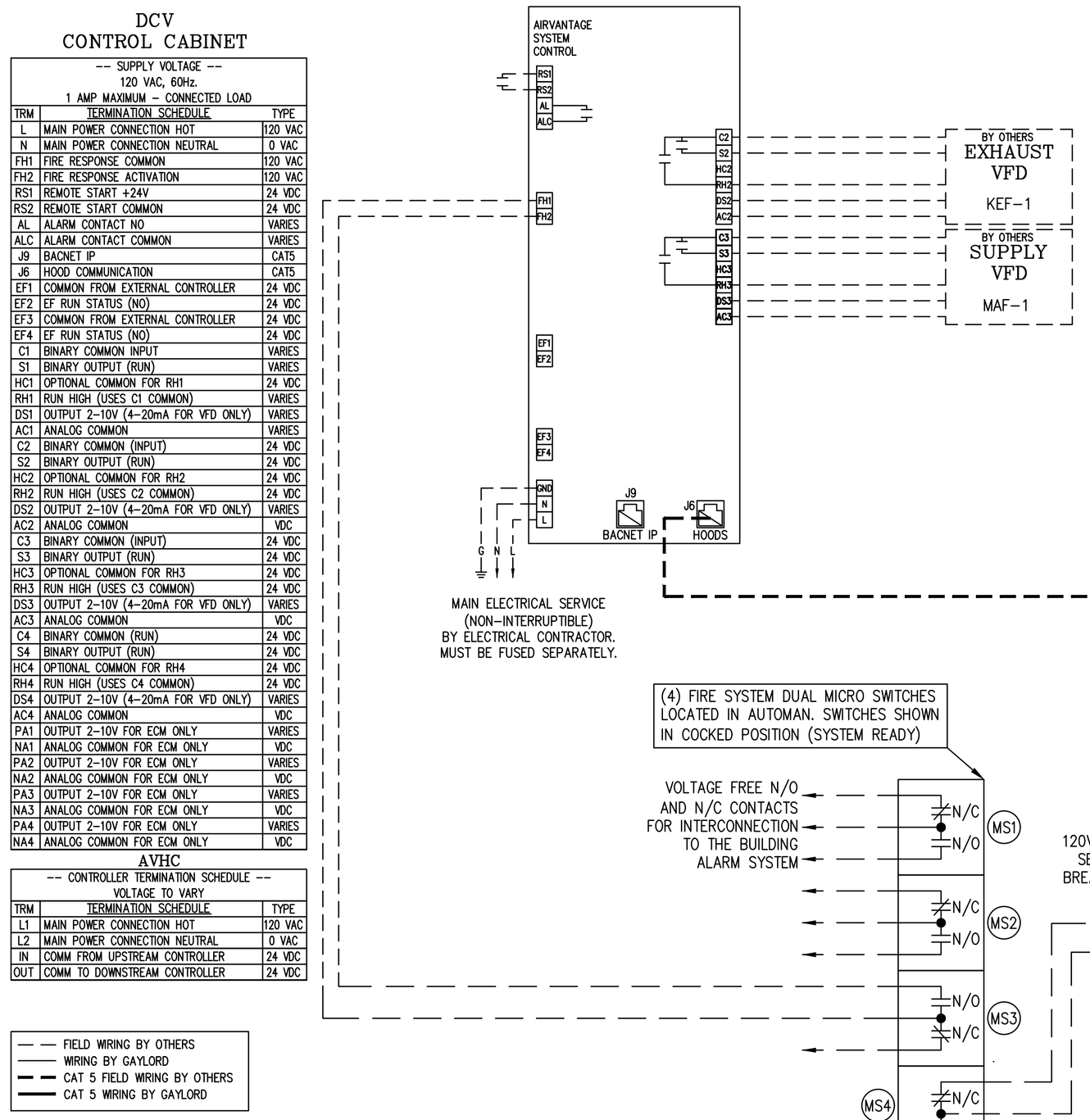
DCV CONTROL CABINET

-- SUPPLY VOLTAGE -- 120 VAC, 60Hz. 1 AMP MAXIMUM – CONNECTED LOAD		
TRM	TERMINATION SCHEDULE	TYPE
L	MAIN POWER CONNECTION HOT	120 VAC
N	MAIN POWER CONNECTION NEUTRAL	0 VAC
FH1	FIRE RESPONSE COMMON	120 VAC
FH2	FIRE RESPONSE ACTIVATION	120 VAC
RS1	REMOTE START +24V	24 VDC
RS2	REMOTE START COMMON	24 VDC
AL	ALARM CONTACT NO	VARIES
ALC	ALARM CONTACT COMMON	VARIES
J9	BACNET IP	CAT5
J6	HOOD COMMUNICATION	CAT5
EF1	COMMON FROM EXTERNAL CONTROLLER	24 VDC
EF2	EF RUN STATUS (NO)	24 VDC
EF3	COMMON FROM EXTERNAL CONTROLLER	24 VDC
EF4	EF RUN STATUS (NO)	24 VDC
C1	BINARY COMMON INPUT	VARIES
S1	BINARY OUTPUT (RUN)	VARIES
HC1	OPTIONAL COMMON FOR RH1	24 VDC
RH1	RUN HIGH (USES C1 COMMON)	VARIES
DS1	OUTPUT 2–10V (4–20mA FOR VFD ONLY)	VARIES
AC1	ANALOG COMMON	VARIES
C2	BINARY COMMON (INPUT)	24 VDC
S2	BINARY OUTPUT (RUN)	24 VDC
HC2	OPTIONAL COMMON FOR RH2	24 VDC
RH2	RUN HIGH (USES C2 COMMON)	24 VDC
DS2	OUTPUT 2–10V (4–20mA FOR VFD ONLY)	VARIES
AC2	ANALOG COMMON	VDC
C3	BINARY COMMON (INPUT)	24 VDC
S3	BINARY OUTPUT (RUN)	24 VDC
HC3	OPTIONAL COMMON FOR RH3	24 VDC
RH3	RUN HIGH (USES C3 COMMON)	24 VDC
DS3	OUTPUT 2–10V (4–20mA FOR VFD ONLY)	VARIES
AC3	ANALOG COMMON	VDC
C4	BINARY COMMON (RUN)	24 VDC
S4	BINARY OUTPUT (RUN)	24 VDC
HC4	OPTIONAL COMMON FOR RH4	24 VDC
RH4	RUN HIGH (USES C4 COMMON)	24 VDC
DS4	OUTPUT 2–10V (4–20mA FOR VFD ONLY)	VARIES
AC4	ANALOG COMMON	VDC
PA1	OUTPUT 2–10V FOR ECM ONLY	VARIES
NA1	ANALOG COMMON FOR ECM ONLY	VDC
PA2	OUTPUT 2–10V FOR ECM ONLY	VARIES
NA2	ANALOG COMMON FOR ECM ONLY	VDC
PA3	OUTPUT 2–10V FOR ECM ONLY	VARIES
NA3	ANALOG COMMON FOR ECM ONLY	VDC
PA4	OUTPUT 2–10V FOR ECM ONLY	VARIES
NA4	ANALOG COMMON FOR ECM ONLY	VDC

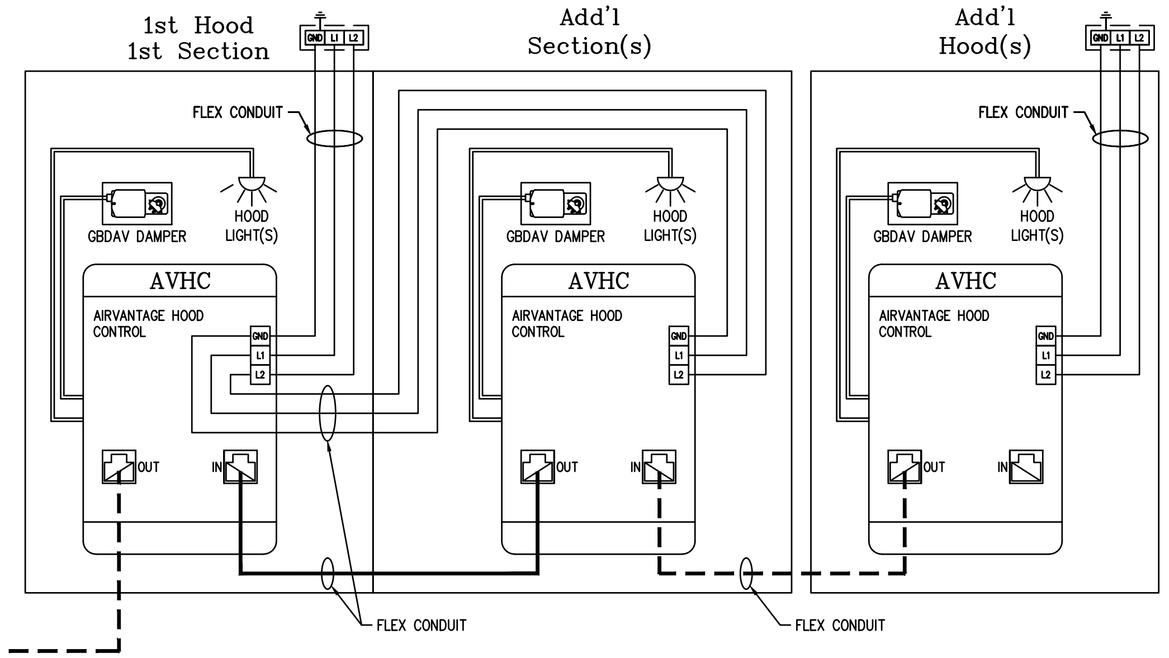
AVHC

-- CONTROLLER TERMINATION SCHEDULE -- VOLTAGE TO VARY		
TRM	TERMINATION SCHEDULE	TYPE
L1	MAIN POWER CONNECTION HOT	120 VAC
L2	MAIN POWER CONNECTION NEUTRAL	0 VAC
IN	COMM FROM UPSTREAM CONTROLLER	24 VDC
OUT	COMM TO DOWNSTREAM CONTROLLER	24 VDC

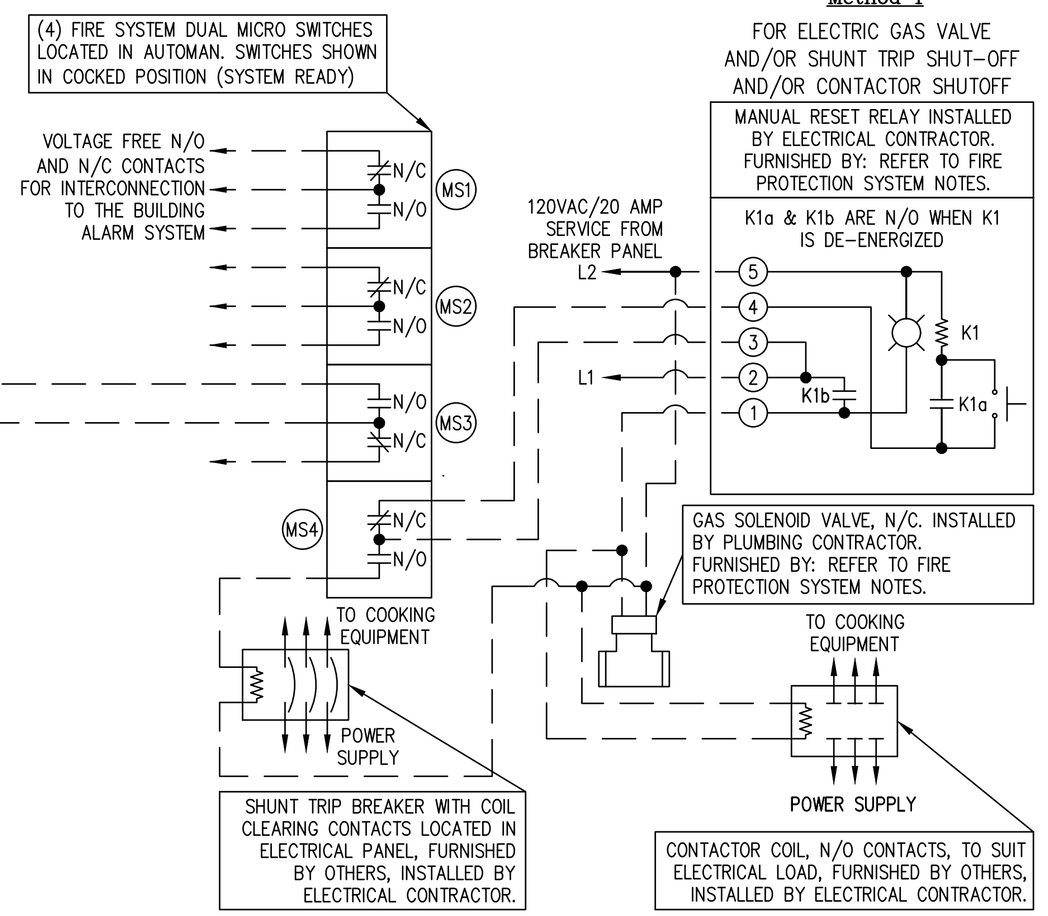
— — FIELD WIRING BY OTHERS
——— WIRING BY GAYLORD
– – – CAT 5 FIELD WIRING BY OTHERS
——— CAT 5 WIRING BY GAYLORD

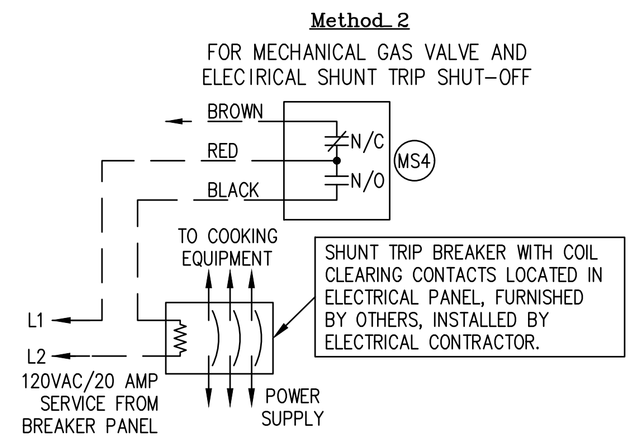


MAIN ELECTRICAL SERVICE (NON-INTERRUPTIBLE) BY ELECTRICAL CONTRACTOR. MUST BE FUSED SEPARATELY.



REFER TO HOOD DRAWINGS FOR REQUIRED INTERCONNECTIONS





VFD SPECIFICATION

HARDWARE (MINIMUM VFD REQUIREMENTS)

1. WORKS WITH A 4–20 MA OR 2–10 V ANALOG INPUT.
2. PRODUCES A 24 VDC OR EQUIVALENT COMMON TO BE USED FOR REMOTE DRY CONTACT SWITCHING OF THE VFD(S). INDEPENDENT POWER SUPPLY ALSO ACCEPTED.
3. DRIVE TO MOTOR DISTANCE IS LESS THAN THE MAXIMUM SPECIFIED BY THE DRIVE MANUFACTURER.
4. DRIVE IS TO BE SIZED APPROPRIATELY FOR MOTOR RATED FLA, AND VOLTAGE INPUTS.

DRIVE INPUTS FROM DCV COMMAND CENTER

AS NOTED ON SUBMITTAL DRAWINGS UP TO FOUR VFDS MAY BE CONTROLLED THROUGH TERMINALS LABELED WITH AN ALPHANUMERIC, WHERE THE NUMBER CORRESPONDS TO A DISTINCT VFD (SEE TABLE 1). THE SYMBOL "#"IS SUBSTITUTED FOR THE NUMBER IN THE FOLLOWING.

1. TERMINAL C# ACCEPTS A NOMINAL +24 VDC COMMON SIGNAL FROM AN EXHAUST FAN VFD.
2. TERMINAL S# OUTPUTS SIGNAL PROVIDED BY THE COMMON VOLTAGE (AT C#) TO COMMAND THE EXHAUST FAN VFD TO RUN.
3. TERMINAL RH# OUTPUTS SIGNAL PROVIDED BY THE COMMON VOLTAGE.
   a. C# IS THE DEFAULT COMMON FOR RH#.
   b. HC# IS AN ALTERNATE COMMON FOR RH#. IT IS TO BE USED WHEN THE VFD COMMAND POINTS FOR RUN AND RUN HIGH DO NOT SHARE A COMMON. THE TERMINAL JUMPER BETWEEN C# AND HC# MUST BE REMOVED TO SEPARATE THE VOLTAGE SOURCES.
4. TERMINALS DS# AND AC# PROVIDE THE SPEED SIGNAL TO THE EXHAUST FAN VFD
   a. DS# IS A 4–20 MA SIGNAL (OPTIONAL 2–10 V)
   b. AC# IS THE ANALOG COMMON

PROGRAM SPECIFICATION

1. VFDS TO OPERATE WITH ANALOG 4–20MA INPUT. 4 MA REPRESENTS 0 HZ AND 20 MA REPRESENTS THE MAXIMUM MOTOR SPEED, TYPICALLY 60 HZ (2–10V IS OPTIONAL).
2. VFDS TO START (RECEIVE RUN COMMAND) BY EXTERNAL CONTACT CLOSURE PROVIDED BY GAYLORD ON C# AND S#. CONTACT CLOSURE WILL TAKE THE UNLOADED SYSTEM TO MINIMUM FAN SPEED (DEFAULT 30 HZ).
3. VFD CONSTANTS FOR THE MOTOR CONTROLLED TO BE DETERMINED AND ADDED, EX: THERMAL OVERLOAD, RATE VOLTAGE, ETC.
4. SET ACCELERATION TIME TO 8 SECONDS OR 7.5 HZ/SECOND.
5. SET DECELERATION TIME TO 48 SECONDS OR 1.25 HZ/SECOND. – SLOW DECELERATION PREVENTS INSTABILITY IN THE SYSTEM.
6. SETUP EACH VFD FOR A "RUN HIGH" COMMAND FROM RH# THAT WILL RAMP THE DRIVE TO 100% OR 60 HZ. THIS FUNCTION IS ESSENTIAL FOR PROPER RESPONSE TO A FIRE PROTECTION SYSTEM DISCHARGE.
7. SET THE MODULATION RANGE FOR EACH VFD. THE AIRVANTAGE SYSTEM WILL MANAGE THE TURNDOWN OVER A 0–60 HZ RANGE.
   a. SET THE VFD BIAS 4 MA = 0 HZ.
   b. SET THE VFD GAIN 20 MA = 60 HZ

DCV			
OUTPUT NUMBER	OUTPUT LABEL	OUTPUT TYPE	MIRROR (1, 2, 3, OR 4 SUPPLY (% OF EXHAUST)
1		DISABLED	
2	KEF–1	EXHAUST	
3	MAF–1	SUPPLY	100
4		DISABLED	

DCV CABINET CONTROLS THE FOLLOWING HOODS:

ITEM#: EXH HOOD 1	ITEM#: EXH HOOD 3
ITEM#: EXH HOOD 2	ITEM#: EXH HOOD 4

1 / M307 TYPICAL HOOD FIRE SUPPRESSION SYSTEM WIRING DIAGRAM

SCALE: NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

This work was prepared by me or under my supervision and was under my observation.

Signature

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SHEET M307 OF ? SHEETS

FIRE SPRINKLER GENERAL NOTES:

1. PROVIDE COMPLETE FIRE SPRINKLER COVERAGE IN ACCORDANCE WITH 2016 NFPA 13 AND THE FOLLOWING CRITERIA:
   CLASSIFICATION OF OCCUPANCY: ORDINARY HAZARD GROUP 1
   OCCUPANCY: B
   TYPE OF CONSTRUCTION: TYPE I–A, SPRINKLED (EXISTING)
2. THE ENTIRE INSTALLATION SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE BUILDING CODE OF THE CITY & COUNTY OF HONOLULU, STATE DEPARTMENT OF HEALTH REGULATIONS, UNIFORM PLUMBING CODE, UNIFORM FIRE CODE, NATIONAL ELECTRICAL CODE, HAWAII STATE MODEL ENERGY CODE, AND ALL OTHER AGENCIES HAVING JURISDICTION.
3. 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 ENGINEER OF ANY INADEQUATE CLEARANCES OR CONDITIONS THAT WILL PREVENT THE PROPER INSTALLATION, MAINTENANCE, AND OPERATION OF THE EQUIPMENT.
4. OBTAIN APPROVAL FROM THE ARCHITECT BEFORE MAKING ANY PENETRATIONS THROUGH STRUCTURAL MEMBERS, WALLS, AND SLABS.
5. REPAIR ANY DAMAGE TO EXISTING CONSTRUCTION RESULTING FROM THE INSTALLATION OF FIRE SPRINKLER ITEMS. THE AREAS REPAIRED SHALL MATCH THE ADJACENT SURFACES IN TEXTURE AND COLOR.
6. 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 CHAPTER 16 OF 2021 NFPA 1.
7. THESE FIRE SPRINKLER PLANS ARE SUBMITTED FOR CONDITIONAL APPROVAL OF THE FIRE AND BUILDING DEPARTMENTS AND THE HAWAII INSURANCE RATING BUREAU. TWO (2) SETS OF COMPLETE WORKING PLANS AND HYDRAULIC CALCULATIONS (IF NECESSARY), STAMPED AND SIGNED BY A HAWAII LICENSED REGISTERED MECHANICAL OR FIRE PROTECTION ENGINEER, SHALL BE SUBMITTED, AS APPLICABLE, TO THE FIRE PROTECTION SPECIAL INSPECTOR (FPSI) FOR CODE COMPLIANCE REVIEW. ONE (1) SET WITH THE FPSI APPROVAL STAMP SHALL BE SUBMITTED TO THE DPP BUILDING DIVISION ALONG WITH THE FPSI FINAL REPORT/LETTER PRIOR TO CLOSING OF THE BUILDING PERMIT.
8. 50.4.4.1 FIRE EXTINGUISHING EQUIPMENT SHALL INCLUDE BOTH AUTOMATIC FIRE–EXTINGUISHING SYSTEMS AS PRIMARY PROTECTION AND PORTABLE FIRE EXTINGUISHERS AS SECONDARY BACKUP. 2021 NFPA 1, CHAPTER 50.
9. THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO COVER THE COMPLETE INSTALLATION OF SYSTEMS TO FUNCTION AS DESCRIBED AND SPECIFIED. THE OMISSION OF REFERENCE TO ANY NECESSARY ITEM OF LABOR OR MATERIAL SHALL NOT RELIEVE THE CONTRACTOR FROM PROVIDING SUCH LABOR AND MATERIAL.

AUTOMATIC FIRE SPRINKLER SYSTEM NOTES:

1. PROVIDE COMPLETE FIRE SPRINKLER COVERAGE IN ACCORDANCE WITH NFPA 13, 2019 EDITION.
2. HANGERS FOR FIRE SPRINKLER PIPING SHALL BE IN ACCORDANCE TO NFPA 13.
3. FIRE SAFETY DURING CONSTRUCTION, ALTERATION OR DEMOLITION SHALL BE IN ACCORDANCE WITH CHAPTER 16 OF NFPA 1, 2021.
4. FIRESTOP ALL PIPE AND CONDUIT PENETRATIONS THROUGH FIRE RATED WALLS.
5. ALL DEVICES AND EQUIPMENT SHALL BE UL LISTED AND FM APPROVED.
6. ALL SPRINKLERS SHALL BE APPROVED QUICK RESPONSE TYPE.
7. PIPE AND FITTINGS SHALL COMPLY WITH NFPA 13, EXCEPT THAT ALL PIPING SHALL BE HARD DRAWN COPPER WITH SILVER CONTENT. SOLDER OR BRAZED FITTINGS, OR CARBON STEEL WITH CORROSION–RESISTANT COATINGS. PROVIDE HOT DIPPED GALVANIZED PIPE AND FITTINGS ON ALL STEEL PIPING INCLUDING THE RISER.
8. PIPING SHALL BE PROVIDED WITH EARTHQUAKE PROTECTION IN ACCORDANCE WITH NFPA 13.
9. PROVIDE INSPECTION AND HYDROSTATIC TESTS IN ACCORDANCE WITH NFPA 13 CHAPTER 28. PRIOR TO HYDROSTATIC TESTS THE CONTRACTOR SHALL PERFORM AN AIR PRESSURE TEST TO LOCATE POTENTIAL LEAKAGE POINTS. INSPECTION AND TESTS SHALL BE CERTIFIED IN ACCORDANCE WITH HONOLULU FIRE DEPARTMENT REQUIREMENTS. CONTRACTOR SHALL TAG SYSTEM AND SUBMIT TEST REPORT IN ACCORDANCE TO HFD REQUIREMENTS. SPECIAL INSPECTIONS FOR AUTOMATIC FIRE SPRINKLER SYSTEM SHALL BE PROVIDED IN ACCORDANCE WITH HONOLULU BUILDING CODE AMENDMENTS TO SECTION 1705.19.
10. SPARE SPRINKLERS SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 13, 16.2.7.

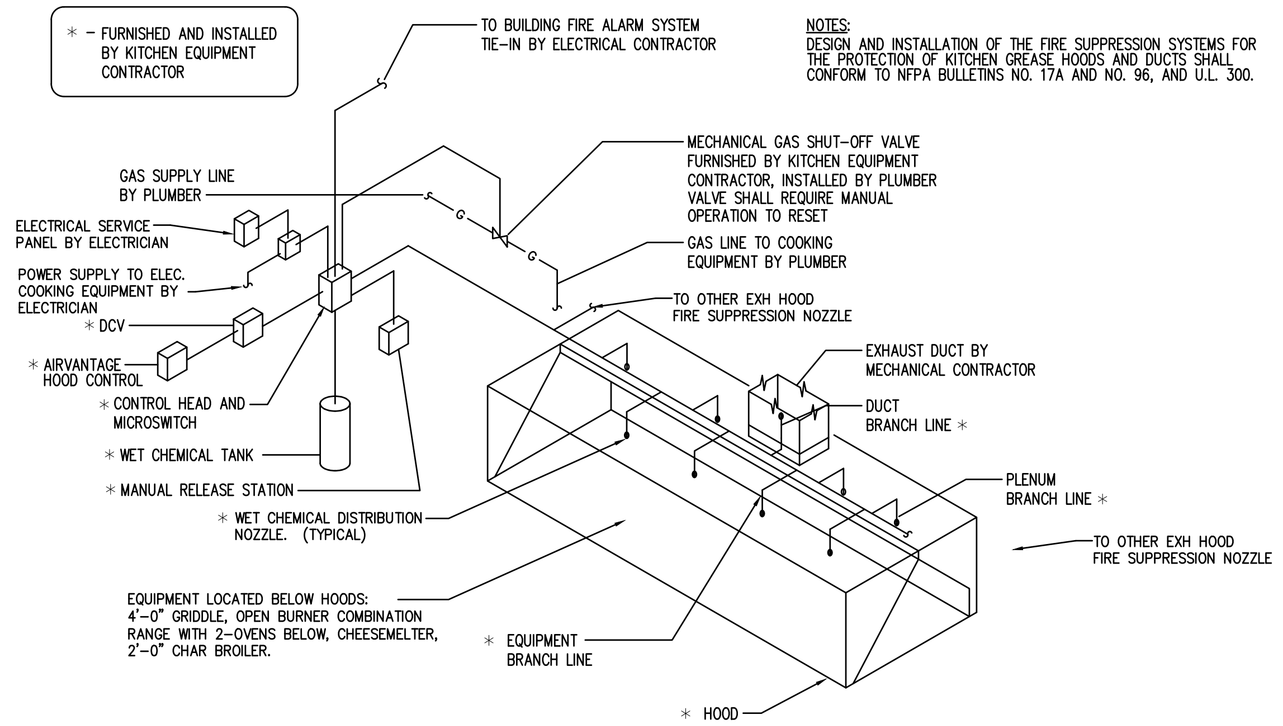
    16.2.7.1 A SUPPLY OF SPARE SPRINKLERS (NEVER FEWER THAN SIX) SHALL BE MAINTAINED ON THE PREMISES SO THAT ANY SPRINKLERS THAT HAVE OPERATED OR BEEN DAMAGED IN ANY WAY CAN BE PROMPTLY REPLACED.

    16.2.7.3 THE SPRINKLERS SHALL BE KEPT IN A CABINET LOCATED WHERE THE TEMPERATURE IN WHICH THEY ARE SUBJECTED WILL AT NO TIME EXCEED 100°F (38°C).

    16.2.7.5 THE STOCK OF SPARE SPRINKLERS SHALL INCLUDE ALL TYPES AND RATINGS INSTALLED AND SHALL BE AS FOLLOWS:

    1. FOR PROTECTED FACILITIES HAVING UNDER 300 SPRINKLERS – NO FEWER THAN 6 SPRINKLERS.
    2. FOR PROTECTED FACILITIES HAVING 300–1000 SPRINKLERS – NO FEWER THAN 12 SPRINKLERS.
    3. FOR PROTECTED FACILITIES HAVING OVER 1000 SPRINKLERS – NO FEWER THAN 24 SPRINKLERS.

    16.2.7.6 A SPECIAL SPRINKLER WRENCH SHALL BE PROVIDED AND KEPT IN THE CABINET TO BE USED IN THE REMOVAL AND INSTALLATION OF SPRINKLERS. ONE SPRINKLER WRENCH SHALL BE PROVIDED FOR EACH TYPE OF SPRINKLER INSTALLED.



FIRE–EXTINGUISHING EQUIPMENT NOTES:

50.4.3 GENERAL REQUIREMENTS

50.4.3.1 FIRE–EXTINGUISHING EQUIPMENT FOR THE PROTECTION OF GREASE REMOVAL DEVICES, HOOD EXHAUST PLENUMS, AND EXHAUST DUCT SYSTEMS SHALL BE PROVIDED. [96:10.1.1]

50.4.3.2* COOKING EQUIPMENT THAT PRODUCES GREASE–LADEN VAPORS AND THAT MIGHT BE A SOURCE OF IGNITION OF GREASE IN THE HOOD, GREASE REMOVAL DEVICE, OR DUCT SHALL BE PROTECTED BY FIRE EXTINGUISHING EQUIPMENT. [96:10.1.2]

50.4.4 TYPES OF EQUIPMENT.

50.4.4.1 FIRE–EXTINGUISHING EQUIPMENT SHALL INCLUDE BOTH AUTOMATIC FIRE–EXTINGUISHING SYSTEMS AS PRIMARY PROTECTION AND PORTABLE FIRE EXTINGUISHERS AS SECONDARY BACKUP. [96:10.2.1]

50.4.4.2 A PLACECARD IDENTIFYING THE USE OF THE EXTINGUISHER AS SECONDARY BACKUP MEANS TO THE AUTOMATIC FIRE–EXTINGUISHING SYSTEM SHALL BE CONSPICUOUSLY PLACED NEAR EACH PORTABLE FIRE EXTINGUISHER INTENDED TO BE USED FOR PROTECTION IN THE COOKING AREA. [96:10.2.2]

50.4.4.2.1 THE LANGUAGE AND WORDING FOR THE PLACECARD SHALL BE APPROVED BY THE AHJ. [96:10.2.2.1]

50.4.4.3* AUTOMATIC FIRE–EXTINGUISHING SYSTEMS SHALL COMPLY WITH UL 300, STANDARD FOR FIRE TESTING OF FIRE–EXTINGUISHING SYSTEMS FOR THE PROTECTION OF RESTAURANT COOKING AREAS, OTHER EQUIVALENT STANDARDS AND SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS OF THE LISTING. [96:10.2.3]

50.4.4.3.1 IN EXISTING DRY OR WET CHEMICAL SYSTEMS NOT IN COMPLIANCE WITH UL 300, THE FIRE–EXTINGUISHING SYSTEM SHALL BE MADE TO COMPLY WITH 50.4.4.3. (1) THE COOKING MEDIUM IS CHANGED FROM ANIMAL OILS AND FATS TO VEGETABLE OILS, (2) THE POSITIONING OF THE COOKING EQUIPMENT IS CHANGED, (3) COOKING EQUIPMENT IS REPLACED, (4) THE EQUIPMENT IS NO LONGER SUPPORTED BY THE MANUFACTURER. [96:10.2.3.1]

50.4.4.4 GREASE REMOVAL DEVICES, HOOD EXHAUST PLENUMS, EXHAUST DUCTS, AND COOKING EQUIPMENT THAT ARE NOT ADDRESSED IN UL 300 OR OTHER EQUIVALENT TEST STANDARDS SHALL BE PROTECTED WITH AN AUTOMATIC FIRE–EXTINGUISHING SYSTEM(S) IN ACCORDANCE WITH THE APPLICABLE NFPA STANDARD(S) AND ALL LOCAL BUILDING AND FIRE CODES AND SHALL BE APPROVED BY THE AHJ. [96:10.2.4]

50.4.4.5 AUTOMATIC FIRE–EXTINGUISHING EQUIPMENT PROVIDED AS PART OF LISTED RECIRCULATING SYSTEMS SHALL COMPLY WITH UL 710B. [96:10.2.5]

50.4.4.6 AUTOMATIC FIRE–EXTINGUISHING SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH THE TERMS OF THEIR LISTING, THE MANUFACTURER'S INSTRUCTIONS, AND THE FOLLOWING STANDARDS WHERE APPLICABLE. (1) NFPA 12, (2)NFPA 13, (3)NFPA 17, (4)NFPA 17A [96:10.2.6]

50.4.7.1.1 AT LEAST ONE MANUAL ACTUATION DEVICE SHALL BE LOCATED IN A MEANS OF EGRESS OR AT A LOCATION ACCEPTABLE TO THE AHJ. [96:10.5.1.1]

HOOD NOTES:

50.1.1 THE DESIGN, INSTALLATION, OPERATION, INSPECTION, AND MAINTENANCE OF ALL PUBLIC AND PRIVATE COMMERCIAL COOKING EQUIPMENT AND MOBILE AND TEMPORARY COOKING OPERATIONS SHALL COMPLY WITH THIS CHAPTER AND NFPA 96, STANDARD FOR VENTILATION CONTROL AND FIRE PROTECTION OF COMMERCIAL COOKING OPERATIONS.

50.2.2 CLEARANCE.

50.2.2.1 WHERE ENCLOSURES ARE NOT REQUIRED, HOODS, GREASE REMOVAL DEVICES, EXHAUST FANS, AND DUCTS SHALL HAVE A CLEARANCE OF AT LEAST 18 IN. (457 MM) TO COMBUSTIBLE MATERIAL, 3 IN. (76 MM) TO LIMITED COMBUSTIBLE MATERIAL, AND 0 IN. (0 MM) TO NONCOMBUSTIBLE MATERIAL. [96:4.2.1]

50.2.2.2 WHERE A HOOD, DUCT, OR GREASE REMOVAL DEVICE IS LISTED FOR CLEARANCES LESS THAN THOSE REQUIRED IN 50.2.2.1, THE LISTING REQUIREMENTS SHALL BE PERMITTED. [96:4.2.2]

CLEARANCE REDUCTION. [96:4.2.3]

WHERE A CLEARANCE REDUCTION SYSTEM CONSISTING OF 0.013 IN. (0.33 MM) (28–GAUGE) SHEET METAL SPACED OUT 1 IN. (25 MM) ON NONCOMBUSTIBLE SPACERS IS PROVIDED, THERE SHALL BE A MINIMUM OF 9 IN. (229 MM) CLEARANCE TO COMBUSTIBLE MATERIAL. [96:4.2.3.1]

WHERE A CLEARANCE REDUCTION SYSTEM CONSISTING OF 0.027 IN. (0.69 MM) (22–GAUGE) SHEET METAL ON 1 IN. (25 MM) MINERAL WOOL BATTS OR CERAMIC FIBER BLANKET REINFORCED WITH WIRE MESH OR EQUIVALENT SPACED OUT 1 IN. (25 MM) ON NONCOMBUSTIBLE SPACERS IS PROVIDED, THERE SHALL BE A MINIMUM OF 3 IN. (76 MM) CLEARANCE TO COMBUSTIBLE MATERIAL. [96:4.2.3.2]

ZERO CLEARANCE TO LIMITED–COMBUSTIBLE MATERIALS SHALL BE PERMITTED WHERE PROTECTED BY METAL LATH AND PLASTER, CERAMIC TILE, QUARRY TILE, OTHER NONCOMBUSTIBLE MATERIALS OR ASSEMBLY OF NONCOMBUSTIBLE MATERIALS THAT ARE LISTED FOR THE PURPOSE OF REDUCING CLEARANCE, OR MATERIALS AND PRODUCTS THAT ARE LISTED FOR THE PURPOSE OF REDUCING CLEARANCE. [96:4.2.3.4]

1 / M308 HOOD FIRE PROTECTION DETAIL

SCALE: NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

This work was prepared by me or under my supervision and construction of this project is/are under my observation.

Signature

LICENSE EXPIRES : APR. 30, 2025

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SHEET M308

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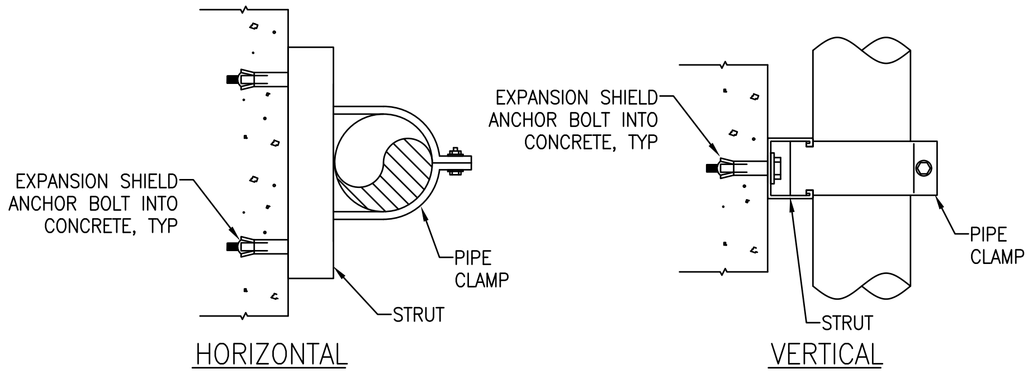
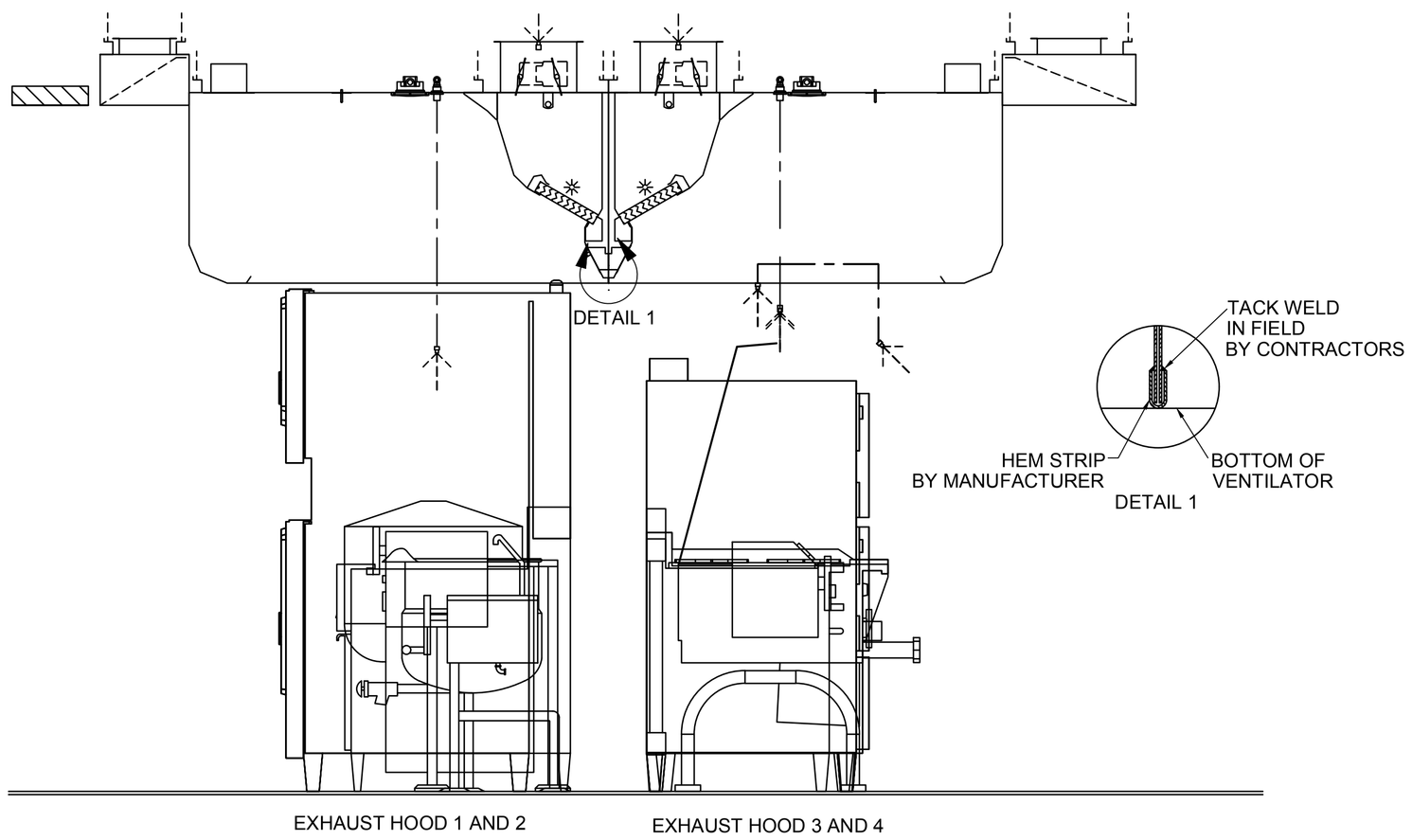


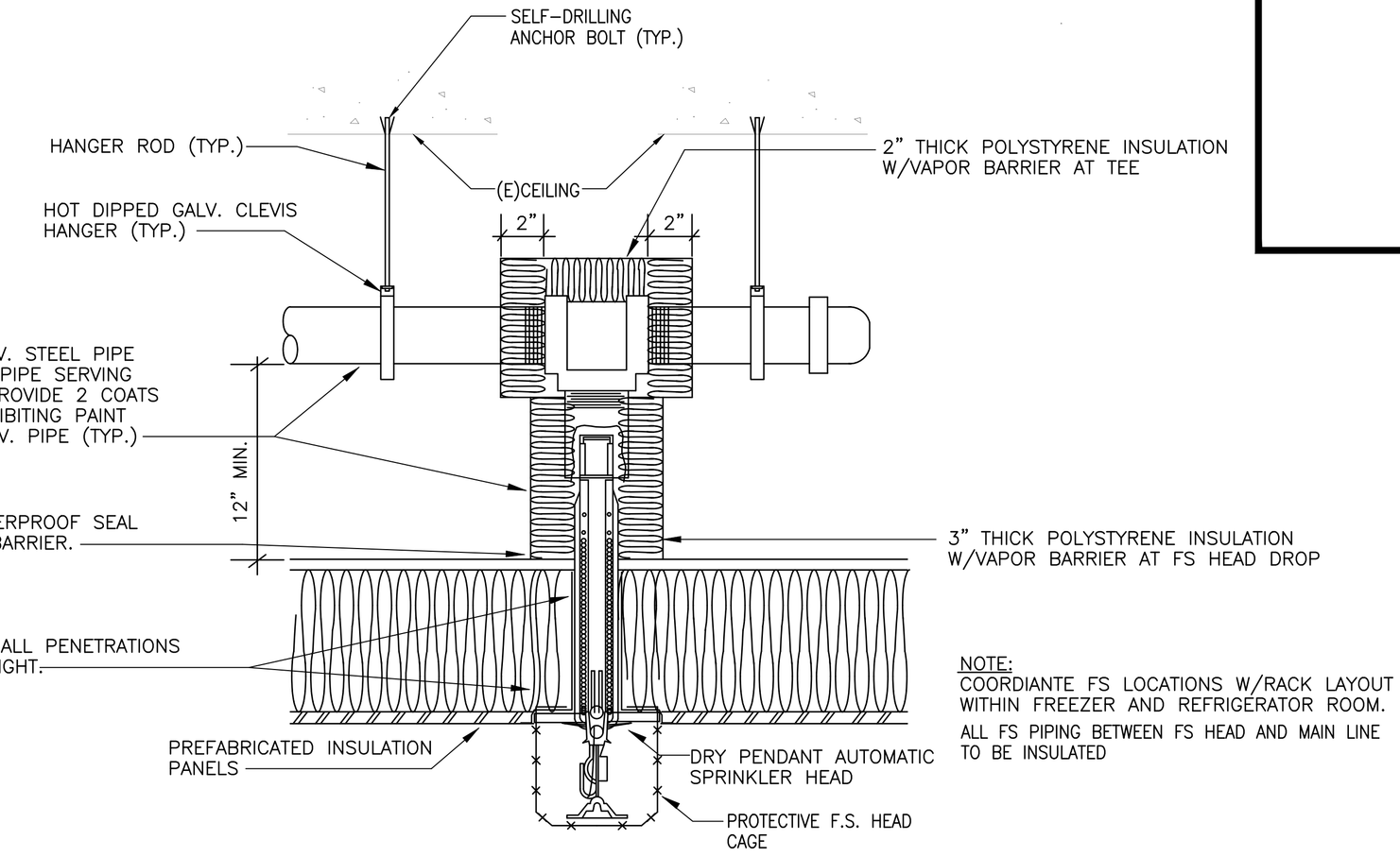
1 M309 SIDEWALL PIPE SUPPORT DETAIL

SCALE: NOT TO SCALE



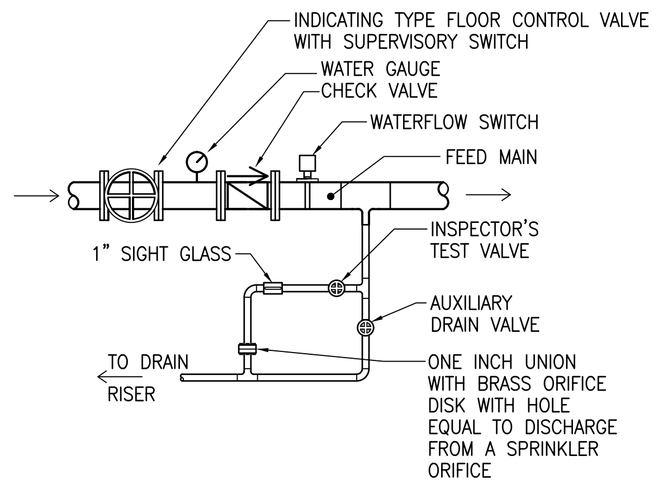
2 M309 KITCHEN EXHAUST HOOD SECTION

SCALE: NOT TO SCALE



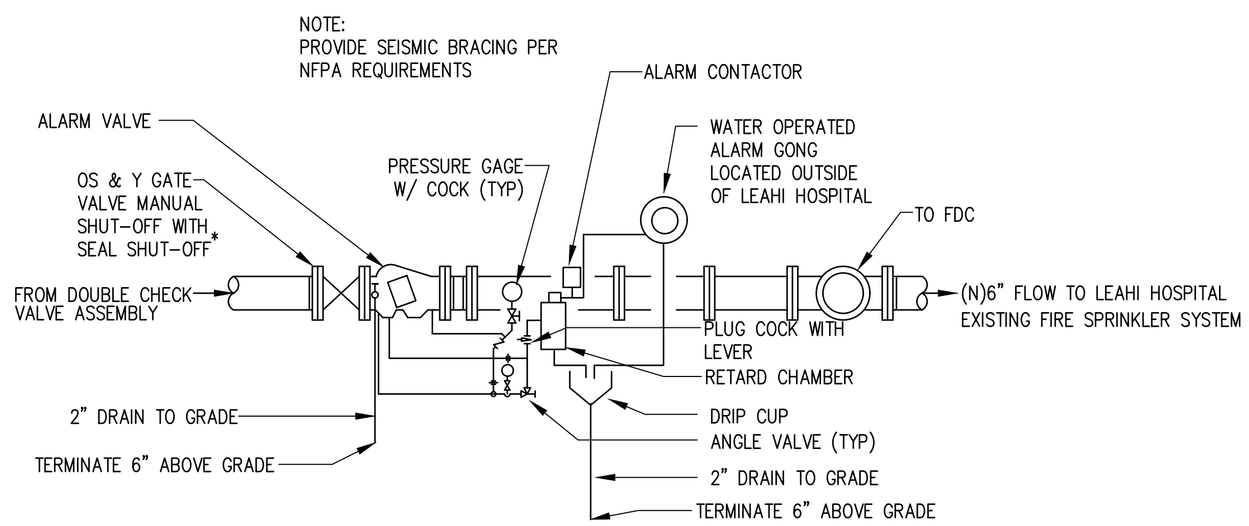
3 M309 FREEZER TYPE FIRE SPRINKLER HEAD DETAIL

SCALE: NOT TO SCALE (SIMILAR FOR REFRIGERATOR)



4 M309 FLOOR CONTROL VALVE ASSEMBLY DETAIL

SCALE: NOT TO SCALE



5 M309 FIRE SPRINKLER RISER DIAGRAM

SCALE: NOT TO SCALE

SEQUENCE OF OPERATION

MULTI SPLIT-SYSTEM A2L REFRIGERANT LEAK SEQUENCE OF OPERATION

1) REFRIGERANT LEAK IS DETECTED AT FCU.
2) IF THE ACCU IS IN HEATING MODE, THEN ACCU WILL SWITCH TO COOLING MODE.
3) LIQUID-SIDE SHUT-OFF VALVE AT ACCU WILL CLOSE.
4) ALL FCUs ON THE SAME MULTI SPLIT-SYSTEM WILL AUTOMATICALLY OPERATE IN FAN ONLY AT HIGH FAN SPEED.
5) ACCU WILL PERFORM A PUMP DOWN FOR REFRIGERANT RECOVERY.
6) GAS-SIDE SHUT-OFF VALVE AT ACCU WILL CLOSE WHEN PUMP DOWN SEQUENCE ENDS.
7) ACCU COMPRESSOR WILL STOP.

NOTE: PROVIDE PROPOSED MANUFACTURER SEQUENCE OF OPERATION WHEN USING EQUIPMENT WITH A2L REFRIGERANT.

DO NOT SHUT OFF THE FCU AND ACCU DURING THIS SEQUENCE OF OPERATION. ALLOW PUMP DOWN SEQUENCE TO COMPLETE AND ONLY SHUT OFF THE SYSTEM WHEN THE ACCU FAN HAS STOPPED, OR STATE OTHERWISE BY MANUFACTURER.

KEF-1 AND MAF-1 SEQUENCE OF OPERATION

1) KEF-1 AND MAF-1 SHALL TURN ON-OFF BASED ON THE KITCHEN COOKING OPERATION.
2) DCV SHALL BE INTERLOCKED WITH KEF-1, MAF-1, MAKE-UP AIR MOTORIZED DAMPER, AND KITCHEN EXHAUST HOOD MOTORIZED DAMPER.
3) MAF-1 SHALL TURN OFF AND MAKE-UP AIR MOTORIZED DAMPER SHALL BE CLOSE WHEN KITCHEN EXHAUST HOOD FIRE SUPPRESSION SYSTEM IS ACTIVATED.
4) KEF-1 SHALL RUN FULL SPEED AND KITCHEN EXHAUST HOOD MOTORIZED DAMPER SHALL BE FULLY OPEN WHEN KITCHEN EXHAUST HOOD FIRE SUPPRESSION SYSTEM IS ACTIVATED.

FAN COIL UNIT SEQUENCE OF OPERATION

1) ALL FCU'S SHALL TURN ON-OFF WHEN THE UNIT IS ACTIVATED. MINIMUM SETPOINT OF ALL THERMOSTAT SHALL BE SET AT 75 DEGREES FAHRENHEIT.
2) THE OUTSIDE AIR FAN SHALL RUN CONTINUOUSLY WHEN THE UNIT IS ACTIVATED. THE FOLLOWING OUTSIDE AIR FAN SHALL BE INTERLOCKED WITH THE FAN COIL UNIT THEY SERVE.
   A) SF-1 SHALL BE INTERLOCKED WITH FCU-1-1.
   B) SF-2 SHALL BE INTERLOCKED WITH FCU-1-2.
   C) SF-3 SHALL BE INTERLOCKED WITH FCU-1-3 AND FCU-1-4.
   D) SF-4 SHALL BE INTERLOCKED WITH FCU-2-1.
   E) SF-5 SHALL BE INTERLOCKED WITH FCU-3-1.

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES: APRIL 30, 2025

ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-H HAWAII, U.S.A.

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PROJECT TITLE: LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: DETAILED DRAWINGS

DATE: MARCH 2024
SCALE: AS SHOWN
DRAWN: MEI CHECK: RRT

SHEET M309

OF ? SHEETS

MECHANICAL SCHEDULE NOTE

PROVIDE INTEGRAL MAGNETIC STARTER/DISCONNECTS WITH AUTOMATIC RESET FOR ALL UNITS. PROVIDE NEMA-4X STARTER ENCLOSURE FOR ALL OUTDOOR EQUIPMENT. ALL OUTDOOR EQUIPMENT SHALL HAVE POLYSILOXANE COATING PROTECTION ON INSIDE AND OUTSIDE OF HOUSING. COILS(CONDENSER) SHALL HAVE BLYGOLD POLUAL COATING. PROVIDE HORIZONTALLY AND VERTICALLY RESTRAINED SPRING ISOLATORS WITH NEOPRENE DIPPED SPRINGS AND GALV. HOUSINGS ON ALL EQUIPMENT. PROVIDE PLASTIC COATED CABLE SWAY BRACING ALL SUSPENDED EQUIPMENT. PROVIDE FLEXIBLE DUCT CONNECTIONS AT ALL EQUIPMENT. PROVIDE S.S. BIRDSCREEN AT ALL NEW OA INTAKES. PROVIDE PHASE FAILURE/PHASE REVERSAL/OVER VOLTAGE/UNDER VOLTAGE ELECTRICAL PROTECTION. PROVIDE CONTROL VOLTAGE TRANSFORMERS. A COATING SHALL BE APPLIED OVER THE AC PC BOARD THAT ACTS AS A LAYER OF INSULATION BETWEEN THE GECKOS/PEST AND THE HIGH VOLTAGE ELECTRONICS.

SUPPLY FAN SCHEDULE

UNIT	MANUFACTURER AND MODEL OR APPROVED EQUAL	AREA SERVED	TYPE	CFM	ESP (IN WG)	FAN RPM	ELECTRICAL				MAX SONE	REMARKS
							V	ø	Hz	WATTS		
SF 1	PANASONIC FV-15NLS1H	OFFICE NO. 1	INLINE	50	0.3	–	120	1	60	10.0	–	PROVIDE ISOLATION MOUNTS & DISCONNECT. PROVIDE W/ INTERNAL MERV 13 FILTER. INTERLOCK W/ FCU/1-1.
SF 2	PANASONIC FV-15NLS1H	OFFICE NO. 2	INLINE	50	0.3	–	120	1	60	10.0	–	PROVIDE ISOLATION MOUNTS & DISCONNECT. PROVIDE W/ INTERNAL MERV 13 FILTER. INTERLOCK W/ FCU/1-2.
SF 3	PANASONIC FV-15NLS1H	DIETARY OFFICE	INLINE	60	0.4	–	120	1	60	14.0	–	PROVIDE ISOLATION MOUNTS & DISCONNECT. PROVIDE W/ INTERNAL MERV 13 FILTER. INTERLOCK W/ FCU/1-3 AND FCU/1-4.
SF 4	PANASONIC FV-15NLS1H	DRY STORAGE	INLINE	80	0.3	–	120	1	60	14.0	–	PROVIDE ISOLATION MOUNTS & DISCONNECT. PROVIDE W/ INTERNAL MERV 13 FILTER. INTERLOCK W/ FCU/2-1.
SF 5	PANASONIC FV-15NLS1H	STAFF BREAKROOM	INLINE	50	0.3	–	120	1	60	10.0	–	PROVIDE ISOLATION MOUNTS & DISCONNECT. PROVIDE W/ INTERNAL MERV 13 FILTER. INTERLOCK W/ FCU/3-1.

EXHAUST FAN SCHEDULE

UNIT	MANUFACTURER AND MODEL OR APPROVED EQUAL	AREA SERVED	TYPE	CFM	ESP (IN WG)	FAN RPM	ELECTRICAL				MAX SONE	REMARKS
							V	ø	Hz	WATTS		
EF 1	PANASONIC FV-1115VK3	MEN'S RESTROOM	CEILING	150	0.25	915	120	1	60	18.0	0.7	PROVIDE ISOLATION MOUNTS & DISCONNECT. INTERLOCK W/ LIGHT SWITCH.
EF 2	PANASONIC FV-0511VK3	SHOWER	CEILING	50	0.25	935	120	1	60	7.0	0.4	PROVIDE ISOLATION MOUNTS & DISCONNECT. INTERLOCK W/ LIGHT SWITCH.
EF 3	PANASONIC FV-0511VK3	WOMEN'S RESTROOM	CEILING	80	0.25	910	120	1	60	9.2	0.3	PROVIDE ISOLATION MOUNTS & DISCONNECT. INTERLOCK W/ LIGHT SWITCH.
EF 4	PANASONIC FV-0511VK3	JANITOR	CEILING	50	0.25	935	120	1	60	7.0	0.4	PROVIDE ISOLATION MOUNTS & DISCONNECT. INTERLOCK W/ LIGHT SWITCH.
EF 5	GREENHECK SQ-98-VG	DISHWASHING ROOM	INLINE	600	0.6	1866	115	1	60	1 HP	16.5	PROVIDE ISOLATION MOUNTS, DISCONNECT, AND VARIGREEN MOTOR WITH HOA CONTROLLER. INTERLOCK W/ NEW CONVEYOR DISH MACHINE. CONNECT EXHAUST DUCTWORK TO THE NEW CONVEYOR DISH MACHINE VENT. BALANCE UNLOAD SIDE DAMPER TO 400 CFM AND LOAD SIDE DAMPER TO 200 CFM.

AIR CURTAIN FAN SCHEDULE

UNIT	MANUFACTURER AND MODEL OR APPROVED EQUAL	LOCATION	DOOR WIDTH (INCHES)	DOOR HEIGHT (FEET)	ELECTRICAL				SOUND LEVEL (dBA)	NET WT. (LBS)	REMARKS
					V	ø	Hz	HP			
ACF 1	MARS STD296-2UA-OB	KITCHEN	96	7	115	1	60	TWO X 1/2	68	135	PROVIDE UNHEATED AIR CURTAIN WITH REMOTE MANUAL MOTOR STARTERS AND WEATHER RESISTANT ENCLOSURE. PROVIDE WITH DOOR SWITCH FOR EACH ASSOCIATED DOOR. AIR CURTAIN OPERATES ONLY WHEN DOOR IS OPEN.
ACF 2	MARS STD272-2UA-OB	STAFF DINING	72	7	115	1	60	TWO X 1/2	68	120	
ACF 3	MARS STD272-2UA-OB	CORRIDOR	72	7	115	1	60	TWO X 1/2	68	120	

KITCHEN MAKE-UP FAN SCHEDULE

UNIT	MANUFACTURER AND MODEL OR APPROVED EQUAL	AREA SERVED	TYPE	CFM	TSP (IN WG)	FAN RPM	ELECTRICAL							SOUND LEVEL (dBA)	WEIGHT (LB)	REMARKS
							V	ø	Hz	HP	FLA	MCA	MOP			
MAF 1	YORK XTO-48X45	KITCHEN	DIRECT DRIVE	6240	2.65	1891	208	3	60	5.0	14	17.5	30	85	1517	PROVIDE DISCONNECT, BASE RAIL, NEOPRENE PAD, VIBRATION ISOLATORS, VFD CONTROLS, MERV 8 FILTER, AND DUCT SMOKE DETECTOR WITH OUTDOOR ENCLOSURE. VFD CONTROLS INTERLOCK W/ DCV PANEL.

MULTI SPLIT-SYSTEM AIR CONDITIONING UNIT SCHEDULE - OFFICE SPACE

INDOOR UNITS

UNIT NO.	MANUFACTURER AND MODEL OR APPROVED EQUAL	AREA SERVED	TYPE	MAX SUPPLY AIR, CFM	DESIGN SUPPLY AIR, CFM	OUTSIDE AIR, CFM	TOTAL CAPACITY (BTUH)	ENT AIR TEMP		ELECTRICAL					REFRIG LINES*		COND DRAIN	MAX SOUND LEVEL (dBA)	OPR WT (LBS)	REMARKS
								db (°F)	wb (°F)	V	ø	Hz	MCA	MOCP	LIQ	GAS				
FCU 1-1	MITSUBISHI PLFY-L08NFMU-A	OFFICE NO.1	CEILING CASSETTE	315	300	50	8,000	80	67	208	1	60	0.36	15	1/4"	1/2"	1-1/4"	–	29	PROVIDE WITH DISCONNECT. FOR SPACE ABOVE REFRIGERANT LIMIT, INDOOR FCU SHALL BE PROVIDED WITH LEAK DETECTOR MODEL MAC-100RS-E OR APPROVED EQUAL. ROUTE CONDENSATE PIPE FROM INTEGRAL LIFT PUMP OUTLET. PROVIDE FILTER BOX WITH MERV 8 FILTER BANK. PROVIDE TSTAT CONTROLLER, MODEL PAR-41MAAU OR APPROVED EQUAL.
FCU 1-2	MITSUBISHI PLFY-L08NFMU-A	OFFICE NO.2	CEILING CASSETTE	315	310	50	8,000	80	67	208	1	60	0.36	15	1/4"	1/2"	1-1/4"	–	29	
FCU 1-3	MITSUBISHI PLFY-L08NFMU-A	DIETARY OFFICE	CEILING CASSETTE	315	275	30	8,000	80	67	208	1	60	0.36	15	1/4"	1/2"	1-1/4"	–	29	
FCU 1-4	MITSUBISHI PLFY-L08NFMU-A	DIETARY OFFICE	CEILING CASSETTE	315	275	30	8,000	80	67	208	1	60	0.36	15	1/4"	1/2"	1-1/4"	–	29	

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

OUTDOOR UNIT

UNIT NO.	MANUFACTURER AND MODEL OR APPROVED EQUAL	LOCATION	TYPE	REFRIG	NOMINAL CAPACITY (TONS)	TOTAL CAPACITY (BTUH)	AMBIENT AIR TEMP (°F)	ELECTRICAL					EER	OPR WT (LBS)	TOTAL SYSTEM REFRIGERANT CHARGE (LB)	REMARKS
								V	ø	Hz	MCA	MOCP				
ACCU 1-1	MITSUBISHI MXZ-SM36NL	OUTSIDE	VARIABLE REFRIG FLOW	R454B	3.0	32,000	95	208	1	60	36	64	14.1	250	15.65	"INVERTER" DRIVEN COMPRESSOR; PROVIDE NEOPRENE PAD, INTEGRAL STARTER AND DISCONNECT, FACTORY APPLIED CORROSION INHIBITOR COATING ON CONDENSER COIL AND CASING.

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES: APRIL 30, 2025

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T.M.K.: 3 – 2 – 031: 001

SHEET TITLE: MECHANICAL SCHEDULE

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DRAWN: MEI CHECK: RRT

SHEET M400 OF ? SHEETS

MECHANICAL SCHEDULE NOTE

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DX SPLIT-SYSTEM AIR CONDITIONING UNIT SCHEDULE - DRY STORAGE

INDOOR UNITS

UNIT NO.	MANUFACTURER AND MODEL OR APPROVED EQUAL	AREA SERVED	TYPE	MAX SUPPLY AIR, CFM	DESIGN SUPPLY AIR, CFM	OUTSIDE AIR, CFM	TOTAL CAPACITY (BTUH)	ENT AIR TEMP db (°F)	ENT AIR TEMP wb (°F)	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL Hz	ELECTRICAL MCA	ELECTRICAL MOCP	REFRIG LINES* LIQ	REFRIG LINES* GAS	COND DRAIN	MAX SOUND LEVEL (dBA)	OPR WT (LBS)	REMARKS
FCU 2-1	MITSUBISHI PLA-AE18NL	DRY STORAGE	CEILING CASSETTE	600	540	80	18,000	80	67	208	1	60	–	–	1/4"	1/2"	1-1/4"	32	46	PROVIDE WITH DISCONNECT AND MULT-FUNCTION CASEMENT. ROUTE CONDENSATE PIPE FROM INTEGRAL LIFT PUMP OUTLET. PROVIDE FILTER BOX WITH MERV 8 FILTER BANK. PROVIDE TSTAT CONTROLLER, MODEL PAR-41MAAU OR APPROVED EQUAL.

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

OUTDOOR UNIT

UNIT NO.	MANUFACTURER AND MODEL OR APPROVED EQUAL	LOCATION	TYPE	REFRIG	NOMINAL CAPACITY (TONS)	TOTAL CAPACITY (BTUH)	AMBIENT AIR TEMP (°F)	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL Hz	ELECTRICAL MCA	ELECTRICAL MOCP	EER	OPR WT (LBS)	TOTAL SYSTEM REFRIGERANT CHARGE (LB)	REMARKS
ACCU 2-1	MITSUBISHI PUZ-AK18NL	OUTSIDE	VARIABLE REFRIG FLOW	R454B	1.5	18,000	95	208	1	60	16	27	13.7	99	4.41	"INVERTER" DRIVEN COMPRESSOR; PROVIDE NEOPRENE PAD, INTEGRAL STARTER AND DISCONNECT, FACTORY APPLIED CORROSION INHIBITOR COATING ON CONDENSER COIL AND CASING.

MULTI SPLIT-SYSTEM AIR CONDITIONING UNIT SCHEDULE - STAFF DINING + BREAKROOM

INDOOR UNITS

UNIT NO.	MANUFACTURER AND MODEL OR APPROVED EQUAL	AREA SERVED	TYPE	MAX SUPPLY AIR, CFM	DESIGN SUPPLY AIR, CFM	OUTSIDE AIR, CFM	TOTAL CAPACITY (BTUH)	ENT AIR TEMP db (°F)	ENT AIR TEMP wb (°F)	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL Hz	ELECTRICAL MCA	ELECTRICAL MOCP	REFRIG LINES* LIQ	REFRIG LINES* GAS	COND DRAIN	MAX SOUND LEVEL (dBA)	OPR WT (LBS)	REMARKS
FCU 3-1	MITSUBISHI PLFY-M12NFMU-A	STAFF BREAKROOM	CEILING CASSETTE	335	280	50	12,000	80	67	208	1	60	0.29	15	1/4"	1/2"	1-1/4"	34	31	PROVIDE WITH DISCONNECT. FOR SPACE ABOVE REFRIGERANT LIMIT, INDOOR FCU SHALL BE PROVIDED WITH LEAK DETECTOR MODEL MAC-100RS-E OR APPROVED EQUAL. ROUTE CONDENSATE PIPE FROM INTEGRAL LIFT PUMP OUTLET. PROVIDE FILTER BOX WITH MERV 8 FILTER BANK. PROVIDE TSTAT CONTROLLER, MODEL PAR-41MAAU OR APPROVED EQUAL.
FCU 3-2	MITSUBISHI PVFY-L24NAMU-A	STAFF DINING	MULTI PURPOSE	735	735	145	24,000	80	67	208	1	60	3	15	3/8"	5/8"	3/4"	38	133	PROVIDE WITH DISCONNECT, DUCTWORK, OPPOSED VOLUME DAMPER, GRAVITY DAMPER, AND AUXILIARY DRAIN PAN. PROVIDE FILTER BOX WITH MERV 8 FILTER BANK. PROVIDE TSTAT CONTROLLER, MODEL PAR-41MAAU OR APPROVED EQUAL.

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

OUTDOOR UNIT

UNIT NO.	MANUFACTURER AND MODEL OR APPROVED EQUAL	LOCATION	TYPE	REFRIG	NOMINAL CAPACITY (TONS)	TOTAL CAPACITY (BTUH)	AMBIENT AIR TEMP (°F)	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL Hz	ELECTRICAL MCA	ELECTRICAL MOCP	EER	OPR WT (LBS)	TOTAL SYSTEM REFRIGERANT CHARGE (LB)	REMARKS
ACCU 3-1	MITSUBISHI MXZ-SM36NLHZ	OUTSIDE	VARIABLE REFRIG FLOW	R454B	3.0	36,000	95	208	1	60	45	80	20.35	309	21.82	"INVERTER" DRIVEN COMPRESSOR; PROVIDE NEOPRENE PAD, INTEGRAL STARTER AND DISCONNECT, FACTORY APPLIED CORROSION INHIBITOR COATING ON CONDENSER COIL AND CASING.

VRF SPLIT-SYSTEM AIR CONDITIONING UNIT SCHEDULE - KITCHEN

INDOOR UNITS

UNIT NO.	MANUFACTURER AND MODEL OR APPROVED EQUAL	AREA SERVED	TYPE	MAX SUPPLY AIR, CFM	DESIGN SUPPLY AIR, CFM	OUTSIDE AIR, CFM	TOTAL CAPACITY (BTUH)	ENT AIR TEMP db (°F)	ENT AIR TEMP wb (°F)	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL Hz	ELECTRICAL MCA	ELECTRICAL MOCP	REFRIG LINES* LIQ	REFRIG LINES* GAS	COND DRAIN	MAX SOUND LEVEL (dBA)	OPR WT (LBS)	REMARKS
FCU 4-1	MITSUBISHI PEFY-M96NMHU-A	KITCHEN AND CORRIDOR	DUCTED	2966	2500	500	96,000	80	67	208	1	60	9.02	15	3/8"	7/8"	1-1/4"	49	218	PROVIDE WITH DISCONNECT, DUCT SMOKE DETECTOR, DUCTWORK, OPPOSED VOLUME DAMPER, GRAVITY DAMPER, AND AUXILIARY DRAIN PAN. ROUTE CONDENSATE PIPE FROM INTEGRAL LIFT PUMP OUTLET. PROVIDE FILTER BOX WITH MERV 8 FILTER BANK. PROVIDE TSTAT CONTROLLER, MODEL PAR-41MAAU OR APPROVED EQUAL.
FCU 4-2	MITSUBISHI PEFY-M96NMHU-A	KITCHEN	DUCTED	2966	2700	500	96,000	80	67	208	1	60	9.02	15	3/8"	7/8"	1-1/4"	49	218	
FCU 4-3	MITSUBISHI PEFY-M96NMHU-A	KITCHEN	DUCTED	2966	2800	530	96,000	80	67	208	1	60	9.02	15	3/8"	7/8"	1-1/4"	49	218	

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

OUTDOOR UNIT

UNIT NO.	MANUFACTURER AND MODEL OR APPROVED EQUAL	LOCATION	TYPE	REFRIG	NOMINAL CAPACITY (TONS)	TOTAL CAPACITY (BTUH)	AMBIENT AIR TEMP (°F)	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL Hz	ELECTRICAL MCA	ELECTRICAL MOCP	EER	OPR WT (LBS)	TOTAL SYSTEM REFRIGERANT CHARGE (LB)	REMARKS
ACCU 4-1	MITSUBISHI PUHY-EM168TXU-A	OUTSIDE	VARIABLE REFRIG FLOW	R32	14.0	168,000	95	208	3	60	60	100	11.9	708	86.64	"INVERTER" DRIVEN COMPRESSOR; PROVIDE NEOPRENE PAD, INTEGRAL STARTER AND DISCONNECT, FACTORY APPLIED CORROSION INHIBITOR COATING ON CONDENSER COIL AND CASING.
ACCU 4-2	MITSUBISHI PUHY-EM168TXU-A	OUTSIDE	VARIABLE REFRIG FLOW	R32	14.0	168,000	95	208	3	60	60	100	11.9	708		

KITCHEN EXHAUST FAN SCHEDULE

UNIT	MANUFACTURER AND MODEL OR APPROVED EQUAL	AREA SERVED	TYPE	CFM	ESP (IN WG)	FAN RPM	CLASS TYPE	ELECTRICAL V	ELECTRICAL ø	ELECTRICAL Hz	ELECTRICAL HP	MAX SONE	WEIGHT (LB)	REMARKS
KEF 1	TWIN CITY FAN BCVR-245	KITCHEN	BELT DRIVE	7230	3.5	1389	II	208	3	60	10	33	785	PROVIDE UL 762 RATED GREASE EXHAUST FAN. PROVIDE ISOLATION MOUNTS, DISCONNECT, FACTORY ROOF STAND, LOOSE VFD CONTROL WITH OUTDOOR RATED ENCLOSURE AND S.S UNISTRUT SUPPORT FRAME, AND GREASE CONTAINER. LOOSE VFD CONTROL INTERLOCK W/ DCV PANEL. PUT KEF IN CW UBD FORMATION.

GREASE INTERCEPTOR SCHEDULE

UNIT	MAKE & MODEL OR APPROVED EQUAL	AREA SERVED	CAPACITY (GAL)	INLET/OUTLET SIZE	DIMENSIONS L	DIMENSIONS W	DIMENSIONS H	REMARKS
GI 1	JENSEN PRECAST HJ2000G	KITCHEN	2000	4"	16'-2"	7'-2"	4'-11"	PROVIDE TRAFFIC RATED GREASE INTERCEPTOR WITH SAMPLE BOX MODEL EV200-H OR APPROVED EQUAL.

REV. NO.	DESCRIPTION	DATE

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Signature

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SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
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T.M.K.: 3 - 2 - 031: 001

SHEET TITLE: MECHANICAL SCHEDULE

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SHEET M401
OF ? SHEETS

KITCHEN EXHAUST HOOD (FOR REFERENCE ONLY)

HOOD NO.	MANUFACTURER AND MODEL OR APPROVED EQUAL	DIMENSION			S.P. TEST PORT (IN WG)	TYPE	DUCT COLLAR S.P. (IN WG)	DESIGN EXHAUST AIR, CFM	DUCT COLLAR DIMENSION		APPLIANCE DUTY	HOOD CONSTRUCTION	HOOD CONFIGURATION	APPROX WEIGHT (LBS)	REMARKS
		LENGTH (IN)	DEPTH (IN)	HEIGHT (IN)					LENGTH (IN)	DEPTH (IN)					
1	GAYLORD ELX	114	66	38	0.21	1	0.695	1450	12	12	MEDIUM	18 GAGE STAINLESS STEEL AND TYPE 300 SERIES	DOUBLE ISLAND CANOPY	997	PLEASE SEE KITCHEN SPECIFICATION.
2	GAYLORD ELX	114	66	38	0.186	1	0.664	1340	11	12	MEDIUM	18 GAGE STAINLESS STEEL AND TYPE 300 SERIES	DOUBLE ISLAND CANOPY	997	
3	GAYLORD ELX	114	62	38	0.425	1	0.979	2200	18	12	MEDIUM	18 GAGE STAINLESS STEEL AND TYPE 300 SERIES	DOUBLE ISLAND CANOPY	997	
4	GAYLORD ELX	114	62	38	0.425	1	0.979	2200	18	12	MEDIUM	18 GAGE STAINLESS STEEL AND TYPE 300 SERIES	DOUBLE ISLAND CANOPY	997	

PERFORATED SUPPLY PLENUM (FOR REFERENCE ONLY)

HOOD NO.	MANUFACTURER AND MODEL OR APPROVED EQUAL	DIMENSION			S.P. TEST PORT (IN WG)	QUANTITY	DUCT COLLAR S.P. (IN WG)	DESIGN SUPPLY AIR (EACH), CFM	DUCT COLLAR DIMENSION		APPROX WEIGHT (LBS)	REMARKS
		LENGTH (IN)	DEPTH (IN)	HEIGHT (IN)					LENGTH (IN)	DEPTH (IN)		
1	GAYLORD PBW	114	14	11	–	2	0.11	430	9	8	143	PLEASE SEE KITCHEN SPECIFICATION.
2	GAYLORD PBW	114	13	11	–	2	0.11	400	12	6	143	
3	GAYLORD PBW	114	21	11	–	2	0.11	665	11	10	143	
4	GAYLORD PBW	114	21	11	–	2	0.11	665	11	10	143	

GREASE INTERCEPTOR SIZING CALCS

KITCHEN SPACE

ITEM #	PLUMBING FIXTURES	QTY	DFU	TOTAL	JUSTIFICATION OF DFU
1	2" FLOOR SINK SERVING DISH WASHER	1	4	4	TABLE 702.1(1): MAX DFU FOR 2" TRAP
2	HAND SINK	7	4	28	TABLE 702.1: NO FOOD WASTE SINK
3	2" FLOOR SINK SERVING KITCHEN SINK	13	4	52	TABLE 702.1: COMMERCIAL WITH FOOD WASTE SINK
4	TRENCH DRAIN	5	8	40	TABLE 702.1(1): MAX DFU FOR 4" TRAP
5	2" FLOOR SINK SERVING 2–COMPARTMENT SINK	1	4	4	TABLE 702.1: COMMERCIAL WITH FOOD WASTE SINK
6	2" FLOOR SINK SERVING 3–COMPARTMENT SINK	1	4	4	TABLE 702.1: COMMERCIAL WITH FOOD WASTE SINK
7	2" FLOOR SINK SERVING CONDENSATE DRAIN	1	1	1	TABLE 702.2(b): INTERMITTENT FLOW UP TO 7–1/2 GPM
8	2" FLOOR SINK (EMERGENCY)	12	0	0	TABLE 702.1: FLOOR DRAIN, EMERGENCY
9	2" FLOOR DRAIN (EMERGENCY)	4	0	0	TABLE 702.1: FLOOR DRAIN, EMERGENCY

TOTAL DRAINAGE FIXTURE UNITS (DFU): 133 1740–GAL GREASE INTERCEPTOR

* DRAINAGE FIXTURE UNITS (DFU) AS DETERMINED BY UNIFORM PLUMBING CODE, 2021 EDITION.
** THE NEW GREASE INTERCEPTOR SHALL BE INSTALLED SUCH THAT IT IS EASILY ACCESSIBLE FOR INSPECTION, CLEANING & REMOVAL OF FOG & SOLID MATERIAL IN ACCORDANCE WITH THE CURRENT CITY AND COUNTY OF HONOLULU RULES AND REGULATIONS.

NOTE: DFU AS DETERMINED BY UNIFORM PLUMBING CODE, 2006 ED.

FORMULA

V (MIN) = F X R X S

WHERE

V(MIN) = MINIMUM GREASE INTERCEPTOR OPERATING VOLUME, GALLONS
F = FLOW RATE (MAXIMUM), GALLONS PER MINUTE
= (0.7 X DFU), IF DFU LESS THAN OR EQUAL 40
= (0.2 X DFU) + 20, IF DFU GREATER THAN 40
= (0.2 X 133) + 20 = 46.6
R = RETENTION RATE = 30 MINUTES
S = STORAGE FACTOR = 25 PERCENT =1.25
V (MIN) = 46.6 X 30 X 1.25 = 1747.5 GALLONS

USE A MINIMUM 1747.5 GALLON CAPACITY GREASE INTERCEPTOR

AIR BALANCE SCHEDULE

Mark	SUPPLY AIR	RETURN AIR	OUTSIDE AIR	EXHAUST AIR	BUILDING POSITIVE PRESSURE
FCU-1-1	300	250	50		
FCU-1-2	310	260	50		
FCU-1-3	315	285	30		
FCU-1-4	315	285	30		
FCU-2-1	540	460	80		
FCU-3-1	280	230	50		
FCU-3-2	735	590	145		
FCU-4-1	2500	2000	500		
FCU-4-2	2700	2200	500		
FCU-4-3	2800	2270	530		
MAF-1	6240		6240		
EF-1				150	
EF-2				50	
EF-3				80	
EF-4				50	
EF-5				600	
KEF-1				7230	
	17035	8830	8205	8160	45

A2L REFRIGERANT (R454B) LIMIT CALCULATION

CODE REFERENCE: 2024 ASHRAE 15 SECTION 7.6.1

SPACE NAME	ROOM AREA	HEIGHT	SPACE VOLUME	LOWER FLAMMABILITY LIMIT	Occupancy Adjustment	Allowable Charge	Sensor Required
	SF	(FT)	(FT)^3	LBS/(FT)^3	Factor	(LBS)	
Dietary Office	456	9	4104	0.0191	1	39.19	No
Office No. 1	236.2	9	2125.8	0.0191	1	20.30	No
Office No. 2	205.9	9	1853.1	0.0191	1	17.70	No
Dry Storage	382	8	3056	0.0191	1	29.18	No
Staff Breakroom	162.2	9	1459.8	0.0191	1	13.94	N/A
Staff Dining	499.19	9	4492.71	0.0191	1	42.91	N/A
Kitchen and Cooridor	4329.73	9	38967.57	0.0191	1	372.14	N/A

NOTES:
1. TOTAL REFRIGERANT CHARGE (LBS) IN A CIRCUIT SHALL NOT EXCEED ALLOWABLE CHARGE (LBS) FOR THE SPACE.
2. CONTRACTOR SHALL INSTALL AUTOMATIC SOV WITH REFRIGERANT DETECTOR FOR SPACE ABOVE ALLOWABLE CHARGE.
3. ALL REFRIGERANT PIPING SHALL BE ROUTED IN THE ATTIC SPACE OR FLOOR ASSEMBLY.
4. CONTRACTOR SHALL NOT ROUTE REFRIGERANT PIPING IN SPACES LESS THAN 100 SF.
5. PROVIDE SPACE FCU WITH REFRIGERANT LEAK DETECTOR, MODEL MAC–100RS–E OR APPROVED EQUAL, IF THE TOTAL REFRIGERANT CHARGE SURPASS THE SPACE ALLOWABLE CHARGE, SEE MECHANICAL SCHEDULE OF CORRESPONDING SYSTEM TOTAL REFRIGERANT CHARGE.
6. A2L REFRIGERANT LIMIT CALCULATION IS BASED ON REFRIGERANT SYSTEM USING R454B REFRIGERANT.

A2L REFRIGERANT (R32) LIMIT CALCULATION

CODE REFERENCE: 2024 ASHRAE 15 SECTION 7.6.1

SPACE NAME	ROOM AREA	HEIGHT	SPACE VOLUME	LOWER FLAMMABILITY LIMIT	Occupancy Adjustment	Allowable Charge	Sensor Required
	SF	(FT)	(FT)^3	LBS/(FT)^3	Factor	(LBS)	
Dietary Office	456	9	4104	0.0185	1	37.96	No
Office No. 1	236.2	9	2125.8	0.0185	1	19.66	No
Office No. 2	205.9	9	1853.1	0.0185	1	17.14	No
Dry Storage	382	8	3056	0.0185	1	28.27	No
Staff Breakroom	162.2	9	1459.8	0.0185	1	13.50	N/A
Staff Dining	499.19	9	4492.71	0.0185	1	41.56	N/A
Kitchen and Cooridor	4329.73	9	38967.57	0.0185	1	360.45	N/A

NOTES:
1. TOTAL REFRIGERANT CHARGE (LBS) IN A CIRCUIT SHALL NOT EXCEED ALLOWABLE CHARGE (LBS) FOR THE SPACE.
2. CONTRACTOR SHALL INSTALL AUTOMATIC SOV WITH REFRIGERANT DETECTOR FOR SPACE ABOVE ALLOWABLE CHARGE.
3. ALL REFRIGERANT PIPING SHALL BE ROUTED IN THE ATTIC SPACE OR FLOOR ASSEMBLY.
4. CONTRACTOR SHALL NOT ROUTE REFRIGERANT PIPING IN SPACES LESS THAN 100 SF.
5. PROVIDE SPACE FCU WITH REFRIGERANT LEAK DETECTOR, MODEL MAC–100RS–E OR APPROVED EQUAL, IF THE TOTAL REFRIGERANT CHARGE SURPASS THE SPACE ALLOWABLE CHARGE, SEE MECHANICAL SCHEDULE OF CORRESPONDING SYSTEM TOTAL REFRIGERANT CHARGE.
6. A2L REFRIGERANT LIMIT CALCULATION IS BASED ON REFRIGERANT SYSTEM USING R32 REFRIGERANT.

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES : APR. 30, 2026

ROSS R. TANAKA LICENSED PROFESSIONAL ENGINEER No. 9301-H HAWAII, U.S.A.

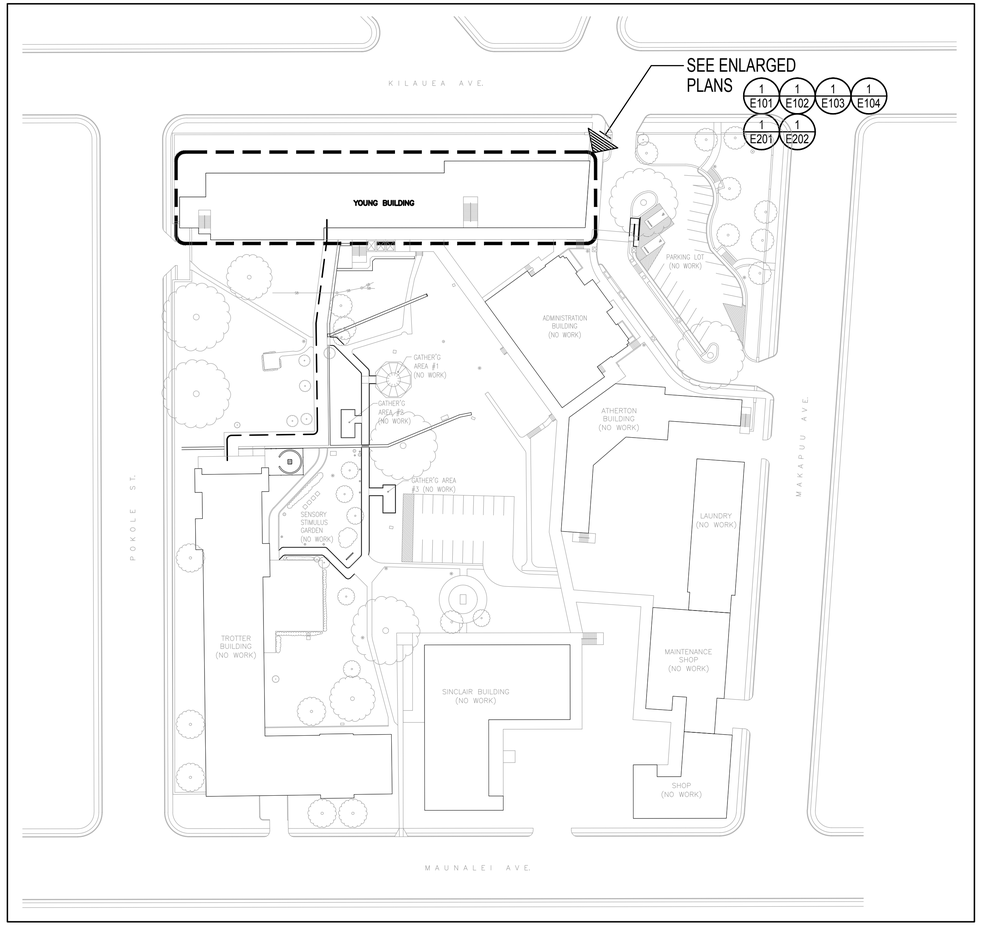
Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
MECHANICAL SCHEDULE

DATE MARCH 2024
SCALE AS SHOWN
DRAWN MEI CHECK RRT

SHEET
M402
OF ? SHEETS



1 / E001 SITE ELECTRICAL PLAN

SCALE: 1" = 60'

CITY AND COUNTY OF HONOLULU
REVISED ORDINANCES OF HONOLULU 2021
CHAPTER 16B

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

	Building Component Systems
X	Electrical Component Systems
	Mechanical Component Systems

Signature: _____ Date: 03-30-26
Name: BRIAN ITOZAKI
Title: ELECTRICAL ENGINEER
License No.: 9058-E

MOUNTING HEIGHT SCHEDULE

DEVICE ON PLAN	MOUNTING HEIGHT	REFERENCE POINT					REMARKS
		FLOOR	CEILING	TO	CL	TOP	
$ $D $3	45"	•				•	MOUNTING HEIGHT SHALL BE TO TOP OF OPERABLE PART.
	18" *	•				BOTTOM	MOUNTING HEIGHT SHALL BE TO BOTTOM OF PLATE.
	18" *	•				BOTTOM	MOUNTING HEIGHT SHALL BE TO BOTTOM OF PLATE.
	18" *	•				BOTTOM	MOUNTING HEIGHT SHALL BE TO BOTTOM OF PLATE.
	18" *	•				BOTTOM	MOUNTING HEIGHT SHALL BE TO BOTTOM OF PLATE.
F	45"	•				•	MOUNTING HEIGHT SHALL BE TO TOP OF OPERABLE PART.
F	90"	•				BOTTOM	
	5'-6"	•				•	

* SPECIAL MOUNTING HEIGHTS INDICATED ON PLAN.

ELECTRICAL SYMBOL LIST

EXISTING	NEW	DESCRIPTION
		LIGHT, CEILING RECESSED MOUNTED.
		LIGHT, CEILING SURFACE MOUNTED.
		LIGHT, CEILING RECESSED MOUNTED, WITH EMERGENCY BATTERY PACK.
		LIGHT, CEILING SURFACE MOUNTED, WITH EMERGENCY BATTERY PACK.
		LIGHT, LED, WALL SURFACE MOUNTED, WITH EMERGENCY BATTERY PACK.
		LIGHT, WALL MOUNTED.
		LIGHT, ROUND, CEILING RECESSED MOUNTED, WITH EMERGENCY BATTERY PACK.
		EMERGENCY LIGHT, CEILING MOUNTED.
		EMERGENCY LIGHT, WALL MOUNTED.
		EXIT SIGN, SINGLE FACE, WALL SURFACE MOUNTED.
		EXIT SIGN, SINGLE FACE, CEILING SURFACE MOUNTED.
		EXIT SIGN, DOUBLE FACE W/ARROWS ON SIGN FACE, CEILING SURFACE MOUNTED.
		EXIT SIGN, DOUBLE FACE W/ARROWS ON SIGN FACE, WALL SURFACE MOUNTED.
	$	SWITCH, FLUSH TUMBLER, WALL MOUNTED.
	$3	SWITCH, 3-WAY, WALL MOUNTED.
	$4	SWITCH, 4-WAY, WALL MOUNTED.
	$D	SWITCH, DIMMER, WALL MOUNTED.
	$M	MOTOR DISCONNECT, H.P. RATED.
	$PL	SWITCH, FLUSH TUMBLER WITH PILOT LIGHT, WALL MOUNTED.
	$WP	SWITCH, FLUSH TUMBLER WITH WEATHERPROOF COVER, WALL MOUNTED.
	OS	OCCUPANCY SENSOR, CEILING MOUNTED.
		OCCUPANCY SENSOR, DIRECTIONAL, WALL MOUNTED.
	$LV	LOW-VOLTAGE SWITCH, WALL MOUNTED.
	$2P	SWITCH, 2-POLE, WALL MOUNTED.
	$3P	SWITCH, 3-POLE, WALL MOUNTED.
"a"	"a"	INDICATES FIXTURE OR DEVICE CONTROLLED BY SW. "a", OTHER LETTERS SIMILAR.
J	J	OUTLET/JUNCTION BOX, CEILING MOUNTED, 2-GANG BOX, UNLESS OTHERWISE SPECIFIED.
J	J	OUTLET/JUNCTION BOX, WALL MOUNTED, 2-GANG BOX, UNLESS OTHERWISE SPECIFIED.
	J	JUNCTION BOX, WALL MOUNTED, 2-GANG BOX, UNLESS OTHERWISE SPECIFIED.
	J C	OUTLET/JUNCTION BOX, CEILING MOUNTED, 2-GANG BOX, UNLESS OTHERWISE SPECIFIED.
	J	OUTLET/JUNCTION BOX, FLOOR MOUNTED, 2-GANG BOX, UNLESS OTHERWISE SPECIFIED.
		RECEPTACLE, DUPLEX, WALL MOUNTED, 20A, 125V, NEMA 5-20.
		RECEPTACLE, DUPLEX, G.F.I. TYPE, WALL MTD., 20A, 125V, NEMA 5-20.
		RECEPTACLE, SINGLE, WALL MOUNTED, 20A, 125V, NEMA 5-20.
		RECEPTACLE, SINGLE, WALL MOUNTED, 20A, 250V, NEMA 6-20.
		RECEPTACLE, SINGLE, WALL MOUNTED, 30A, 250V, NEMA 6-30.
		RECEPTACLE, SINGLE, WALL MOUNTED, 20A, 125/250V, NEMA 14-20, LOCKING TYPE.
		TELEPHONE OUTLET, WALL MOUNTED.
		TEL./DATA OUTLET, WALL MOUNTED.
E	E	EQUIPMENT CONNECTION.
F	F	FIRE ALARM MANUAL PULL STATION, WALL MTD.
	F	FIRE ALARM SPEAKER/STROBE, WALL MTD.
F		FIRE ALARM HORN/STROBE, WALL MTD.
F		FIRE ALARM STROBE, WALL MTD.
	F	FIRE ALARM SPEAKER/STROBE, CEILING MTD.
SD	SD	SMOKE DETECTOR, CEILING SURFACE MTD.
TS		FIRE SPRINKLER SUPERVISORY TAMPER SWITCH CONNECTION.
PS		FIRE SPRINKLER PRESSURE SWITCH CONNECTION.
		EQUIPMENT DISCONNECT SWITCH, HORSEPOWER RATED.
		MOTOR STARTER, FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR.
		ELECTRIC PANEL.
— e —		RACEWAY, CONCEALED, NUMBER OF HASHMARKS INDICATE NUMBER OF WIRES WITHIN. NO HASHMARKS INDICATES TWO WIRES WITHIN.
		RACEWAY, CONCEALED ABOVE FINISH FLOOR, NUMBER OF HASHMARKS INDICATE NUMBER OF WIRES WITHIN. NO HASHMARKS INDICATES TWO WIRES WITHIN.
		RACEWAY, CONCEALED BELOW FINISH FLOOR, NUMBER OF HASHMARKS INDICATE NUMBER OF WIRES WITHIN. NO HASHMARKS INDICATES TWO WIRES WITHIN.
– – e – –		EXPOSED RACEWAY.
		FLEXIBLE RACEWAY.
— e —		ARROW, HOMERUN TO PANEL OR CABINET, NUMBER OF HASHMARKS INDICATE NUMBER OF WIRES WITHIN. NO HASHMARKS INDICATES TWO WIRES WITHIN.
— f —	— F —	FIRE ALARM RACEWAY, CONCEALED.
– – f – –	– – F – –	FIRE ALARM RACEWAY, EXPOSED.
2	2	ELECTRICAL NOTE INDICATOR.
	A 2	DUCT SECTION INDICATOR.
	A 50	FIXTURE INDICATOR, UPPER HALF: FIXTURE TYPE. LOWER HALF: WATTS.
	A E-001	DETAIL INDICATOR, UPPER HALF: DETAIL NUMBER. LOWER HALF: SHEET NUMBER, DETAIL LOCATION.

DATE | DESCRIPTION | REV. NO.

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

Signature:

LICENSE EXPIRES : APRIL 30, 2028

BRIAN T. ITOZAKI LICENSED PROFESSIONAL ENGINEER No. 9058-E HAWAII, U.S.A.

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PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
ELECTRICAL SITE PLAN, GENERAL ELECTRICAL NOTES, ELECTRICAL SYMBOL LIST

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC | CHECK BI
SHEET E001
OF SHEETS

380.147

GENERAL ELECTRICAL NOTES:

1. ELECTRICAL CONTRACTOR SHALL VISIT THE JOB SITE AND FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS PRIOR TO BIDDING. BID SUBMISSION SHALL BE CONSIDERED AS CONFIRMATION THAT THE CONTRACTOR HAS VISITED THE SITE AND HAS RESOLVED ALL DISCREPANCIES AND QUESTIONS REGARDING THE WORK. NO EXTRA PAYMENT WILL BE GIVEN FOR WORK MADE NECESSARY BY THE CONTRACTOR'S FAILURE TO VISIT THE SITE.
2. ALL RACEWAYS AND OUTLETS SHALL BE CONCEALED UNLESS OTHERWISE NOTED.
3. CONDUIT SIZES INDICATED ON THE DRAWINGS ARE NOT NECESSARILY BASED ON THE MINIMUM SIZE ALLOWED BY THE NATIONAL ELECTRICAL CODE AND MAY BE PURPOSELY OVERSIZED FOR FUTURE CONDUCTORS OR TO AVOID CONDUIT HEATING. CONDUIT SIZES NOT CALLED OUT ON THE DRAWINGS SHALL BE SIZED BY THE CONTRACTOR, BASED ON THE ACTUAL NUMBER OF CONDUCTORS TO BE INSTALLED, USING THE NATIONAL ELECTRICAL CODE AS A GUIDE. IN NO CASE SHALL CONDUIT SIZES BE SMALLER THAN 3/4" DIAMETER.
4. ALL WIRING SHALL INCLUDE AN INSULATED GREEN GROUNDING CONDUCTOR SIZED PER TABLE 250.122 OF THE NATIONAL ELECTRICAL CODE. THIS CONDUCTOR SHALL BE CARRIED IN ALL RACEWAYS INCLUDING THOSE INSTALLED FOR SWITCH LEGS AND SHALL BE ATTACHED TO THE DEVICE, LIGHT FIXTURE, OR EQUIPMENT HOUSING USING A SUITABLE GROUNDING LUG.
5. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL JUNCTION AND PULL BOXES REQUIRED FOR THE INSTALLATION OF ELECTRICAL DEVICES AND EQUIPMENT, WHETHER OR NOT SPECIFICALLY INDICATED ON THE PLANS. SIZING OF THESE BOXES SHALL BE PER THE NATIONAL ELECTRICAL CODE.
6. ALL PENETRATIONS THROUGH FIRE RATED WALLS AND SLABS SHALL BE SEALED TO MAINTAIN THE INTEGRITY OF THE FIRE RATING USING A U.L. LISTED FIRE STOPPING SYSTEM.
7. THE CONTRACTOR SHALL OBTAIN APPROVAL FROM THE CONTRACTING OFFICER BEFORE MAKING ANY PENETRATIONS THROUGH STRUCTURAL MEMBERS OR FIRE RATED WALLS AND SLABS.
8. PROJECT CONDITIONS MAY REQUIRE REARRANGEMENT OF ELECTRICAL WORK, THE CONTRACTOR SHALL MAKE CHANGES ON THE AS-BUILT DRAWINGS AND SUBMIT TO THE CONTRACTING OFFICER. WHERE CHANGES REQUIRE ALTERNATE METHODS TO THOSE SPECIFIED IN THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL SUBMIT DRAWINGS SHOWING THE PROPOSED METHOD FOR APPROVAL. THE CONTRACTOR SHALL NOT PROCEED UNTIL APPROVAL IS OBTAINED FROM THE CONTRACTING OFFICER.
9. EXISTING CONDITION SHOWN ON DRAWINGS ARE TAKEN FROM PAST DESIGN DRAWINGS AND VISUAL FIELD INVESTIGATION. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS SHOWN. DEVIATIONS SHALL BE SHOWN ON AS-BUILT DRAWINGS.
10. THE CONTRACTOR SHALL PAINT ALL NEW EXPOSED RACEWAYS (INCLUDING SURFACE METAL RACEWAYS) AND BOXES TO MATCH SURROUNDING FINISH, UNLESS OTHERWISE APPROVED OR DIRECTED.
11. THE CONTRACTOR SHALL COORDINATE HIS WORK WITH ALL OTHER TRADES.
12. REFINISH AND PATCH TO MATCH ALL EXISTING WALL AND CEILING SURFACES DAMAGED OR SCRATCHED BY ELECTRICAL REMOVAL AND INSTALLATION WORK. NEW TOUCH-UP PAINT WORK SHALL BLEND INTO AND MATCH EXISTING FINISH.
13. ALL NEW WIRES SHALL BE # 12 AWG, UNLESS OTHERWISE NOTED.
14. ALL MATERIAL, EQUIPMENT, AND WIRING LOCATED OUTDOORS SHALL BE RATED FOR WET LOCATIONS.
15. AVOID CORING OR DRILLING THROUGH RE-BARS WHEN PENETRATING THROUGH EXISTING CONCRETE WALL, CEILING OR FLOOR. ALL EXTERIOR WALL PENETRATIONS SHALL BE WATERTIGHT.
16. EXPOSED RACEWAYS SHALL NOT CROSS OVER EACH OTHER AT LOW POINT ON WALL. CROSSOVERS, WHEN REQUIRED, SHALL BE DONE HIGH ON WALL NEAR JUNCTION BOXES.
17. ALL FEEDER WIRING SHALL INCLUDE AN INSULATED GREEN GROUNDING CONDUCTOR SIZED PER TABLE 250.122 OF THE NATIONAL ELECTRICAL CODE. THIS CONDUCTOR SHALL BE CARRIED IN ALL RACEWAYS AND SHALL BE ATTACHED TO THE PANEL GROUND BUS.
18. PROVIDE NYLON PULLSTRINGS IN ALL TELECOM RACEWAYS.
19. THE EXISTING FIRE ALARM SYSTEM SHALL NOT BE SHUT DOWN WHILE WORK IS IN PROGRESS, UNLESS OTHERWISE APPROVED BY THE CONTRACTING OFFICER AND/OR A DESIGNATED HONOLULU FIRE DEPARTMENT AUTHORITY.
20. THE CONTRACTOR SHALL VERIFY WITH ARCHITECT EXACT COUNTER HEIGHTS, EQUIPMENT LOCATIONS AND FURNITURE LAYOUTS PRIOR TO ROUGH IN OF ALL OUTLETS FOR POWER AND COMMUNICATIONS DEVICES.
21. THE CONTRACTOR SHALL LABEL EACH RECEPTACLE WITH PANEL NAME AND CIRCUIT NUMBER. USE ADHESIVE LABELS - BLACK LETTERING ON CLEAR BACKGROUND.
22. REROUTE RACEWAYS AND RELOCATE JUNCTION BOXES IN CEILINGS AS REQUIRED TO AVOID CONFLICTS WITH MECHANICAL DUCTS.
23. ALL NEW RACEWAYS IN CEILING SPACE SHALL BE PROPERLY SUPPORTED WITH STEEL CHANNEL SUPPORTS. NEW STEEL CHANNEL SUPPORTS SHALL BE KEPT AS HIGH AS POSSIBLE TO AVOID CONFLICT WITH AIR CONDITIONING DUCTWORK.
24. CONTRACTOR SHALL VERIFY MECHANICAL EQUIPMENT RATINGS WITH MECHANICAL CONTRACTOR PRIOR TO ORDERING ELECTRICAL EQUIPMENT. CONTRACTOR SHALL RESIZE CIRCUIT BREAKERS ACCORDING TO EQUIPMENT MANUFACTURER'S RECOMMENDATIONS AND RESIZE WIRES AT NO ADDITIONAL COST TO THE STATE. ALL CHANGES SHALL BE SHOWN ON "AS-BUILT" DRAWINGS.
25. ALL MULTIWIRE BRANCH CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 210.4. ALL CIRCUITS SHALL HAVE INDIVIDUAL NEUTRALS.
26. ALL NEW LIGHT FIXTURES SHALL BE SUPPORTED FROM CONCRETE SLAB WITH TWO 12 GAGE WIRES ATTACHED AT OPPOSING CORNERS OF THE LIGHT FIXTURE PER IBC SECTION 1621.
27. CONTRACTOR SHALL PROVIDE ACCESS TO ALL OUTLET BOXES MOUNTED ABOVE GYPBOARD CEILINGS. ACCESS SHALL EITHER BE BY REMOVAL OF LIGHT FIXTURE OR BY PROVIDING CEILING ACCESS PANEL(S). COORDINATE WITH MECHANICAL AND GENERAL CONTRACTORS.
28. WIRING FOR U.V. LIGHTS IN AIR HANDLING UNITS SHALL MEET N.E.C. 300.22.
29. THE TERM "WIRING" SHALL INCLUDE RACEWAY, CONDUCTORS, EQUIPMENT, AND WIRING.
30. THE TERM "PROVIDE" SHALL MEAN "FURNISH AND INSTALL".
31. ALL EXTERIOR RACEWAYS SHALL BE GALVANIZED RIGID STEEL..
32. ELECTRICAL CONTRACTOR SHALL PROVIDE ALL REQUIRED WIRING AND CONNECTIONS FOR ALL MECHANICAL EQUIPMENT, WHETHER OR NOT SHOWN ON THE ELECTRICAL DRAWINGS. WIRING SHALL INCLUDE DISCONNECT SWITCHES, MOTOR DISCONNECTS, OUTLET BOXES, CIRCUIT BREAKERS, RACEWAYS, WIRES, ETC. FOR A COMPLETE MECHANICAL SYSTEM. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION OF MECHANICAL CONTRACTOR FURNISHED MOTOR STARTERS, VARIABLE FREQUENCY DRIVES, DUCT SMOKE DETECTORS, AND OTHER MECHANICAL EQUIPMENT REQUIRING ELECTRICAL CONNECTIONS.
33. MOTOR DISCONNECT SWITCHES SHALL BE RATED "SUITABLE AS MOTOR DISCONNECT" PER N.E.C.

INTERNATIONAL BUILDING CODE NOTES

1. 907.5.2.1.1 AVERAGE SOUND PRESSURE. THE AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL PROVIDE A SOUND LEVEL PRESSURE LEVEL OF 15 DECIBELS (dBA) ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dBA ABOVE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, IN EVERY OCCUPIABLE SPACE WITHIN THE BUILDING.
2. 907.5.2.1.2 MAXIMUM SOUND PRESSURE. THE MAXIMUM SOUND PRESSURE LEVEL FOR AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL BE 110 dBA AT THE MINIMUM HEARING DISTANCE FROM THE AUDIBLE APPLIANCE. WHERE THE AVERAGE AMBIENT NOISE IS GREATER THAN 95 dBA, VISIBLE ALARM NOTIFICATION APPLIANCES SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 72 AND AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL NOT BE REQUIRED.
3. 907.5.2.2 EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS. EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS REQUIRED BY THIS CODE SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH NFPA 72. THE OPERATION OF ANY AUTOMATIC FIRE DETECTOR, SPRINKLER WATERFLOW DEVICE OR MANUAL FIRE ALARM BOX SHALL AUTOMATICALLY SOUND AN ALERT TONE FOLLOWED BY VOICE INSTRUCTIONS GIVING APPROVED INFORMATION AND DIRECTIONS FOR A GENERAL OR STAGED EVACUATION IN ACCORDANCE WITH THE BUILDING'S FIRE SAFETY AND EVACUATION IN ACCORDANCE WITH THE BUILDING'S FIRE SAFETY AND EVACUATION PLANS REQUIRED BY SECTION 404 OF THE INTERNATIONAL FIRE CODE. IN HIGH-RISE BUILDINGS, THE SYSTEM SHALL OPERATE ON THE MINIMUM OF THE ALARMING FLOOR, THE FLOOR ABOVE AND THE FLOOR BELOW. SPEAKERS SHALL BE PROVIDED THROUGHOUT THE BUILDING BY PAGING ZONES. AT A MINIMUM, PAGING ZONES SHALL BE PROVIDED AS FOLLOWS:
   (1) ELEVATOR GROUPS.
   (2) EXIT STAIRWAYS.
   (3) EACH FLOOR.
   (4) AREAS OF REFUGE AS DEFINED IN SECTION 1002.1.
   EXCEPTION: IN GROUP I-1 AND I-2 OCCUPANCIES, THE ALARM SHALL SOUND IN A CONSTANTLY ATTENDED AREA AND A GENERAL OCCUPANT NOTIFICATION SHALL BE BROADCAST OVER THE OVERHEAD PAGE.
4. 907.5.2.2.1 MANUAL OVERRIDE. A MANUAL OVERRIDE FOR EMERGENCY VOICE COMMUNICATION SHALL BE PROVIDED ON A SELECTIVE AND ALL-CALL BASIS FOR ALL PAGING ZONES.
5. 907.5.2.2.2 LIVE VOICE MESSAGES. THE EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM SHALL ALSO HAVE THE CAPABILITY TO BROADCAST LIVE VOICE MESSSAGES BY PAGING ZONES ON A SELECTIVE AND ALL-CALL BASIS.
6. 907.5.2.2.3 ALTERNATE USES. THE EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM SHALL BE ALLOWED TO BE USED FOR OTHER ANNOUNCEMENTS, PROVIDED THE MANUAL FIRE ALARM USE TAKES PRECEDENCE OVER ANY OTHER USE.
7. 907.5.2.2.4 EMERGENCY VOICE/ALARM COMMUNICATION CAPTIONS. WHERE STADIUMS, ARENAS AND GRANDSTANDS ARE REQUIRED TO CAPTION AUDIBLE PUBLIC ANNOUNCEMENTS IN ACCORDANCE WITH SECTION 1108.2.7.2, THE EMERGENCY/VOICE COMMUNICATION SYSTEM SHALL ALSO BE CAPTIONED. PRERECORDED OR LIVE EMERGENCY CAPTIONS SHALL BE FROM AN APPROVED LOCATION CONSTANTLY ATTENDED BY PERSONNEL TRAINED TO RESPOND TO AN EMERGENCY.
8. 907.5.2.2.5 EMERGENCY POWER. EMERGENCY VOICE/ALARM COMMUNICATIONS SYSTEMS SHALL BE PROVIDED WITH AN APPROVED EMERGENCY POWER SOURCE.
9. 907.7.2 A RECORD OF COMPLETION IN ACCORDANCE WITH NFPA 72 VERIFYING THAT THE SYSTEM HAS BEEN INSTALLED AND TESTED IN ACCORDANCE WITH THE APPR0VED PLANS AND SPECIFICATIONS SHALL BE PROVIDED.
   THE RECORD OF COMPLETION, APPROVED FIRE ALARM SHOP DRAWINGS AND SPECIFICATIONS MUST BE PROVIDED TO THE BUILDING AND FIRE OFFICIALS PRIOR TO FINAL INSPECTIONS OR PRIOR TO FINAL OCCUPANCY.

   THE RECORD OF COMPLETION MUST BE PROVIDED BY:
   (1) AN ELECTRICAL ENGINEER LICENSED IN THE STAT OF HAWAII.
   (2) AN INDIVIDUAL CERTIFIED BY THE INTERNATIONAL CODE COUNCIL AS A COMMERCIAL FIRE ALARM INSPECTOR OR FIRE INSPECTOR II, OR BY THE NATIONAL FIRE PROTECTION ASSOCIATION AS A CERTIFIED FIRE INSPECTOR.
   (3) PERSONNEL WHO ARE FACTORY TRAINED AND CERTIFIED FOR FIRE SYSTEM DESIGN AN EMERGENCY COMMUNICATIONS SYSTEM DESIGN OF THE SPECIFIC TYPE AND BRAND OF THE INSTALLED SYSTEM.

NO.	DESCRIPTION	DATE

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

Signature:

LICENSE EXPIRES : APRIL 30, 2028

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PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
GENERAL ELECTRICAL NOTES

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC | CHECK BI

SHEET
E002
OF SHEETS

380.147

FIRE ALARM SYSTEM NOTES:

1. DASHED LINES (— — —) INDICATE EXISTING RACEWAY/ENCLOSURE WITH EXISTING WIRES AND NEW CABLES AS INDICATED.
2. SOLID LINES (———) INDICATE NEW RACEWAY/ENCLOSURE WITH NEW WIRES/CABLES.
3. CONTRACTOR SHALL VERIFY NEW WIRING PROVIDED WITH FIRE ALARM SYSTEM EQUIPMENT SUPPLIER.
4. PROVIDE CONDUIT SIZED PER NATIONAL ELECTRICAL CODE (N.E.C.) MINIMUM SIZE SHALL BE 3/4" DIA. UNLESS NOTED OTHERWISE.
5. REFER TO N.E.C. ARTICLE 336 FOR REQUIREMENTS OF TYPE TC CABLE AND N.E.C. ARTICLE 760.179 FOR REQUIREMENTS OF TYPE FPL WIRES.
6. SOLID COPPER WIRES SHALL BE USED FOR BUILDING FIRE ALARM WIRING.
7. CABLES SHALL BE MANUFACTURED BY AMERICAN INSULATED WIRE CORP., WEST PENN WIRE, KENNER INC., OR APPROVED EQUAL.
8. CONTRACTOR SHALL PROVIDE SIZE IN OHMS & RATINGS IN WATTS FOR ALL "END-OF-LINE" RESISTORS ON FINAL "AS-BUILT" DRAWINGS.
9. PROVIDE WIRE NUT CONNECTIONS FOR ALL DEVICES WITH PIGTAILS. ALL OTHERS SHALL BE BY SCREW OR TERMINAL CONNECTIONS.
10. ALL FIRE ALARM COMPONENTS AND APPLIANCES SHALL BE MONITORED FOR TROUBLE THROUGHOUT PROJECT.
11. TC CABLES SHALL ONLY BE USED FOR BELOW GRADE WIRING. SOLID COPPER WIRES SHALL BE USED FOR BUILDING FIRE ALARM WIRING.
12. BELOW GRADE CABLES SHALL BE RATED FOR DIRECT BURIAL USE.
13. TRANSITION BETWEEN CABLES AND WIRES SHALL OCCUR WITHIN THE FIRE ALARM JUNCTION BOX OF THE SUBJECT BUILDING.
14. PROVIDE 12" SLACK FOR TYPE TC CABLES (COILED) IN EACH BUILDING'S FIRE ALARM JUNCTION BOX.
15. CABLES LESS THAN 1,000 FEET IN LENGTH SHALL BE INSTALLED IN CONTINUOUS LENGTHS, WITHOUT SPLICES. WHERE CABLES GREATER THAN 1,000 FEET IN LENGTH ARE REQUIRED, THE INDIVIDUAL CABLE SECTIONS SHALL BE PROVIDED IN THE LONGEST POSSIBLE (UP TO 1,000 FEET) AND SPLICES SHALL BE THE WATERPROOF TYPE.
16. CONTRACTOR SHALL UPDATE FIRE ALARM CONTROL PANEL WITH NEW ZONES.
17. EXISTING FIRE ALARM SYSTEM IS HOCHIKI.

1.14 PLAN REVIEW

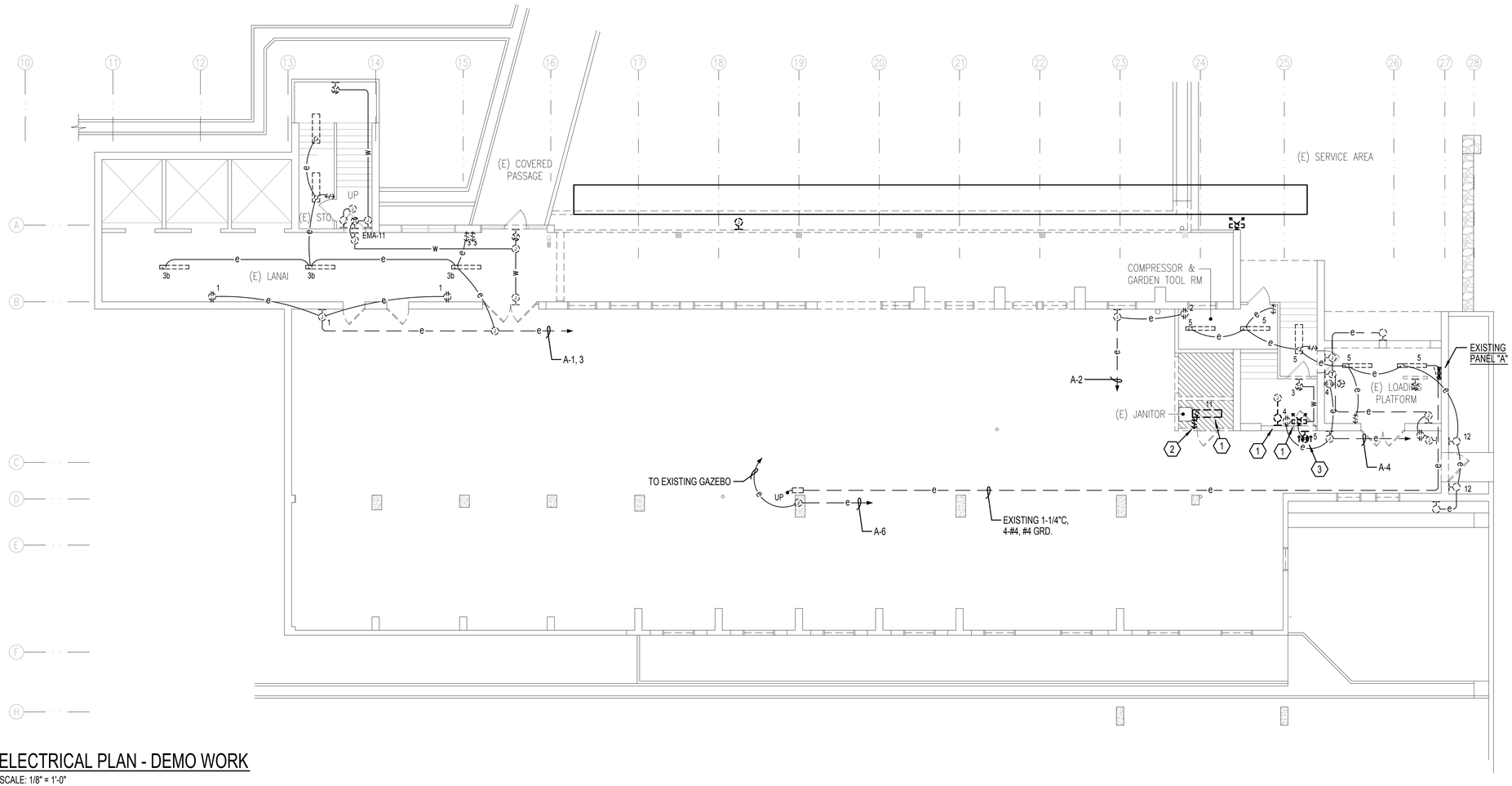
18. 1.14.1 WHERE REQUIRED BY THE AHJ FOR NEW CONSTRUCTION, MODIFICATION, OR REHABILITATION, CONSTRUCTION DOCUMENTS AND SHOP DRAWINGS SHALL BE SUBMITTED, REVIEWED, AND APPROVED PRIOR TO THE START OF SUCH WORK AS PROVIDED IN SECTION 1.14.
19. 1.14.4 REVIEW AND APPROVAL BY THE AHJ SHALL NOT RELIEVE THE APPLICANT OF THE RESPONSIBILITY OF COMPLIANCE WITH THIS CODE. NFPA 1 2021, AS AMENDED.
20. 1.3.6.3 REPAIRS, RENOVATIONS, ALTERATIONS, RECONSTRUCTION, CHANGE OF OCCUPANCY, AND ADDITIONS TO BUILDINGS SHALL CONFORM TO THIS CODE, NFPA 101, AND THE BUILDING CODE. NFPA 1 2021, AS AMENDED.
21. LIABILITY
    1.9.4 THIS CODE SHALL NOT BE CONSTRUED TO RELIEVE FROM OR LESSEN THE RESPONSIBILITY OF ANY PERSON OWNING, OPERATING, OR CONTROLLING ANY BUILDING OR STRUCTURE FOR ANY DAMAGES TO PERSONS OR PROPERTY CAUSED BY DEFECTS, NOR SHALL THE CODE ENFORCEMENT AGENCY OR ITS PARENT JURISDICTION BE HELD AS ASSUMING ANY SUCH LIABILITY BY REASON OF THE INSPECTIONS AUTHORIZED BY THIS CODE OR ANY PERMITS OR CERTIFICATES ISSUED UNDER THIS CODE.

    4.5 GENERAL REQUIREMENTS
    4.5.1 AUTHORITY HAVING JURISDICTION (AHJ)
22. 4.5.1.1 THE AHJ SHALL DETERMINE WHETHER THE PROVISIONS OF THIS CODE ARE MET.
23. 4.5.1.2 WHERE IT IS EVIDENT THAT A REASONABLE DEGREE OF SAFETY IS PROVIDED, ANY REQUIREMENT SHALL BE PERMITTED TO BE MODIFIED IF ITS APPLICATION WOULD BE HAZARDOUS UNDER NORMAL OCCUPANCY CONDITIONS IN JUDGEMENT OF THE AHJ.

    10.1 FUNDAMENTAL REQUIREMENTS
24. 10.1.1 EVERY NEW AND EXISTING BUILDING OR STRUCTURE SHALL BE CONSTRUCTED, ARRANGED, EQUIPPED, MAINTAINED, AND OPERATED IN ACCORDANCE WITH THIS CODE SO AS TO PROVIDE A REASONABLE LEVEL OF LIFE SAFETY, PROPERTY PROTECTION, AND PUBLIC WELFARE FROM THE ACTUAL AND POTENTIAL HAZARDS CREATED BY FIRE, EXPLOSION, AND OTHER HAZARDOUS CONDITIONS.
25. 10.1.2 LIFE SAFETY CODE. EVERY NEW AND EXISTING BUILDING SHALL COMPLY WITH THIS CODE AND NFPA 101, LIFE SAFETY CODE.
26. 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 OR DEVICE SHALL BE PERMITTED TO BE MADE INOPERATIVE OR INACCESSIBLE. NFPA 1 2021, AS AMENDED.
27. 13.1.1 THE AHJ SHALL HAVE THE AUTHORITY TO REQUIRE THAT THE CONSTRUCTION DOCUMENTS FOR ALL FIRE PROTECTION SYSTEMS BE SUBMITTED FOR REVIEW AND APPROVAL AND A PERMIT BE ISSUED PRIOR TO THE INSTALLATION, REHABILITATION, OR MODIFICATION. FURTHER, THE AHJ SHALL HAVE THE AUTHORITY TO REQUIRE THAT FULL ACCEPTANCE TESTS OF THE SYSTEMS BE PERFORMED IN THE AHJ'S PRESENCE PRIOR TO FINAL SYSTEM CERTIFICATION. NFPA 1 2021, AS AMENDED.
28. 13.1.2 THE PROPERTY OWNER SHALL BE RESPONSIBLE FOR THE PROPER TESTING AND MAINTENANCE OF THE EQUIPMENT AND SYSTEMS.
29. 13.1.10 THE AHJ SHALL BE NOTIFIED WHEN ANY FIRE PROTECTION SYSTEM IS OUT OF SERVICE AND ON RESTORATION OF SERVICE.
30. 13.1.11 IN THE EVENT OF A FAILURE OF A FIRE PROTECTION SYSTEM OR AN EXCESSIVE NUMBER OF ACCIDENTAL ACTIVATIONS, THE AHJ SHALL BE PERMITTED TO REQUIRE AN APPROVED FIRE WATCH UNTIL THE SYSTEM IS REPAIRED.
31. 13.7.1.1 WHERE BUILDING FIRE ALARM SYSTEMS OR AUTOMATIC FIRE DETECTORS ARE REQUIRED BY OTHER SECTION OF THIS CODE, THEY SHALL BE PROVIDED AND INSTALLED IN ACCORDANCE WITH NFPA 70, NFPA 72, NATIONAL FIRE ALARM CODE, AND SECTION 13.7. NFPA 1 2021, AS AMENDED.
    72: 10.15 PROTECTION OF FIRE ALARM SYSTEM
    IN AREAS THAT ARE NOT CONTINUOUSLY OCCUPIED, AUTOMATIC SMOKE DETECTION SHALL BE PROVIDED AT THE LOCATION OF EACH FIRE ALARM CONTROL UNIT(S), NOTIFICATION APPLIANCE CIRCUIT POWER EXTENDERS, AND SUPERVISING STATION TRANSMITTING EQUIPMENT TO PROVIDE NOTIFICATION OF FIRE AT THAT LOCATION. EXCEPTION: WHERE AMBIENT CONDITIONS PROHIBIT INSTALLATION OF AUTOMATIC SMOKE DETECTION, AUTOMATIC HEAT DETECTION SHALL BE PERMITTED.
32. 13.7.1.2 BUILDING FIRE ALARM SYSTEMS. PROTECTED PREMISES FIRE ALARM SYSTEMS THAT SERVE THE GENERAL FIRE ALARM NEEDS OF A BUILDING OR BUILDINGS SHALL INCLUDE ONE OR MORE OF THE FOLLOWING SYSTEMS OR FUNCTIONS:
    (1) MANUAL FIRE ALARM SIGNAL INITIATION
    (2) AUTOMATIC FIRE ALARM AND SUPERVISORY SIGNAL INITIATION
    (3) MONITORING OF ABNORMAL CONDITIONS IN FIRE SUPPRESSION SYSTEMS
    (4) ACTIVATION OF FIRE SUPPRESSION SYSTEMS
    (5) ACTIVATION OF EMERGENCY CONTROL FUNCTIONS
    (6) ACTIVATION OF FIRE ALARM NOTIFICATION APPLIANCES
    (7) IN-BUILDING FIRE EMERGENCY VOICE/ALARM COMMUNICATIONS
    (8) GUARD'S TOUR SUPERVISORY SERVICE
    (9) PROCESS MONITORING SUPERVISORY SYSTEMS
    (10) ACTIVATION OF OFF-PREMISES SIGNALS
    (11) COMBINATION SYSTEMS (72:23.3.1.)
    NFPA 1 2021, AS AMENDED.
33. 13.7.1.3 ALL APPARATUS REQUIRING REWINDING OR RESETTING TO MAINTAIN NORMAL OPERATION SHALL BE REWOUND OR RESET AS PROMPTLY AS POSSIBLE AFTER EACH TEST AND ALARM. (72:14.5.4) NFPA 1 2021, AS AMENDED.
34. 13.7.1.4 THE PROVISIONS OF SECTION 13.7 SHALL APPLY ONLY WHERE SPECIFICALLY REQUIRED BY ANOTHER SECTION OF THIS CODE. (101:9.6.1.1). NFPA 1 2021, AS AMENDED.
35. 13.7.1.4.1 FIRE DETECTION, ALARM, AND COMMUNICATIONS SYSTEMS INSTALLED TO MAKE USE OF AN ALTERNATIVE PERMITTED BY THIS CODE SHALL BE CONSIDERED REQUIRED SYSTEMS AND SHALL MEET THE PROVISIONS OF THIS CODE APPLICABLE TO REQUIRED SYSTEMS. (101:9.6.1.2) NFPA 1 2021, AS AMENDED.
36. 13.7.1.4.2 TO ENSURE OPERATIONAL INTEGRITY, THE FIRE ALARM SYSTEM SHALL HAVE AN APPROVED MAINTENANCE AND TESTING PROGRAM COMPLYING WITH THE APPLICABLE REQUIREMENTS OF NFPA 70 AND NFPA 72 (101:9.6.1.4)
37. 13.7.1.4.3 FIRE ALARM SYSTEM IMPAIRMENT PROCEDURES SHALL COMPLY WITH NFPA 72 (101:9.6.1.5).
38. 13.7.1.4.10.5.1 AREAS NOT SUBJECT TO OCCUPANCY BY PERSONS WHO ARE HEARING IMPAIRED SHALL NOT BE REQUIRED TO COMPLY WITH THE PROVISIONS FOR VISIBLE SIGNALS. (10:9.6.3.5.1) NFPA 1 2021, AS AMENDED.
    72: 3.3.117 OCCUPIABLE AREA. THE SPACES OF A FACILITY THAT CAN BE OCCUPIED OR USED BY THE FACILITY OCCUPANTS AS PART OF THE BUILDING FUNCTION OR TO SUPPORT BUILDING OPERATIONS AND MAINTENANCE. THIS INCLUDES, BUT IS NOT LIMITED TO, STORAGE AREAS, MECHANICAL AND ELECTRICAL EQUIPMENT AREAS, WALK-IN CLOSETS OR JANITOR'S ROOMS, RESTROOMS, CONFERENCE ROOMS AND INDIVIDUAL OFFICES.
    72: 18.4.3.1 TO ENSURE THAT AUDIBLE PUBLIC MODE SIGNALS ARE CLEARLY HEARD, UNLESS OTHERWISE PERMITTED BY 18.4.3.2 THROUGH 18.4.3.5, THEY SHALL HAVE A SOUND LEVEL AT LEAST 15dB ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5dB ABOVE THE MAXIMUM SOUND LEVEL HAVING A DURATION AT LEAST 60 SECONDS, WHICHEVER IS GREATER, MEASURED 5FT. ABOVE THE FLOOR IN THE AREA REQUIRED TO BE SERVED BY THE SYSTEM USING THE A-WEIGHTED SCALE.
    72: 18.4.8.1 IF CEILING HEIGHTS ALLOW, AND UNLESS OTHERWISE PERMITTED BY 18.4.8.2 THROUGH 18.4.8.5, WALL-MOUNTED APPLIANCES SHALL BE THEIR TOPS ABOVE THE FINISHED FLOORS AT HEIGHTS OF NOT LESS THAN 90 IN. AND BELOW THE FINISHED CEILINGS AT DISTANCES OF NOT LESS THAN 6 IN.
39. 13.7.1.5.1 IMPAIRED FIRE ALARM SYSTEMS SHALL INCLUDE, BUT SHALL NOT BE LIMITED TO, REQUIRED SYSTEMS THAT ARE NOT FULLY OPERATIONAL, ARE NO LONGER MONITORED AS REQUIRED BY THE AHJ, OR ARE UNDER RENOVATION OR REPAIR.
40. 13.7.1.5.2 THE OWNER OR DESIGNATED REPRESENTATIVE SHALL IMMEDIATELY NOTIFY THE AHJ IN A APPROVED MANNER WHEN A FIRE ALARM SYSTEM IS IMPAIRED.
41. 13.7.1.5.3 THE AHJ SHALL BE AUTHORIZED TO REQUIRE STANDBY FIRE PERSONNEL OR AN APPROVED FIRE WATCH IN ACCORDANCE WITH 1.7.16 AT PREMISES IN WHICH REQUIRED FIRE ALARM SYSTEMS ARE IMPAIRED OR CLASSIFIED AS CHRONIC NUISANCE ALARM PRONE SYSTEMS.
42. 13.7.1.7.1 WHERE REQUIRED BY OTHER SECTIONS OF THIS CODE, ACTUATION OF THE FIRE ALARM SYSTEM SHALL OCCUR BY ANY OR ALL OF THE FOLLOWING MEANS OF INITIATION, BUT SHALL NOT BE LIMITED TO SUCH MEANS:
    MANUAL FIRE ALARM INITIATION
    AUTOMATIC DETECTION
    EXTINGUISHING SYSTEM OPERATION
    (101.9.6.2.1) NFPA 1 2021, AS AMENDED.
43. 13.7.1.7.2 MANUAL FIRE ALARM BOXES SHALL BE USED ONLY FOR FIRE-PROTECTIVE SIGNALING PURPOSES. COMBINATION FIRE ALARM AND GUARD'S TOUR STATIONS SHALL BE PERMITTED. (101:9.6.2.2) NFPA 1 2021, AS AMENDED.
44. 13.7.1.7.3 A MANUAL FIRE ALARM BOX SHALL BE PROVIDED AS FOLLOWS, UNLESS MODIFIED BY ANOTHER SECTION OF THIS CODE:
    (1) FOR NEW ALARM SYSTEMS INSTALLATIONS, THE MANUAL FIRE ALARM BOX SHALL BE LOCATED WITHIN 60 IN. (1525 MM) OF EXIT DOORWAYS.
    (2) FOR EXISTING ALARM SYSTEM INSTALLATIONS, THE MANUAL FIRE BOX EITHER SHALL BE PROVIDED IN THE NATURAL EXIT ACCESS PATH NEAR EACH REQUIRED EXIT OR WITHIN 60 IN. (1525 MM) OF EXIT DOORWAYS. (101:9.6.2.3)
    NFPA 1 2021, AS AMENDED.
45. 13.7.1.7.4 MANUAL FIRE ALARM BOXES SHALL BE MOUNTED ON BOTH SIDES OF GROUPED OPENINGS OVER 40 FT. (12.2 M) IN WIDTH, AND WITHIN 60 IN. (1525 MM) OF EACH SIDE OF THE OPENING. (101:9.6.2.4) NFPA 1 2021, AS AMENDED.
46. 13.7.1.7.5 ADDITIONAL MANUAL FIRE ALARM BOXES SHALL BE LOCATED SO THAT, ON ANY GIVEN FLOOR IN ANY PART OF THE BUILDING, NO HORIZONTAL DISTANCE ON THAT FLOOR EXCEEDING 200 FT. (61 M) SHALL NEED TO BE TRAVERSED TO REACH A MANUAL FIRE ALARM BOX. (101:9.6.2.5) NFPA 1 2021, AS AMENDED.
47. 13.7.1.7.6 FOR FIRE ALARM SYSTEMS USING AUTOMATIC FIRE DETECTION OR WATER-FLOW DETECTION DEVICES TO INITIATE THE FIRE ALARM SYSTEM IN ACCORDANCE WITH CHAPTERS 11 THROUGH 43 OF NFPA 101, NOT LESS THAN ONE MANUAL FIRE ALARM BOX, LOCATED AS REQUIRED BY THE AHJ, SHALL BE PROVIDED TO INITIATE A FIRE ALARM SIGNAL. (101:9.6.2.6) NFPA 1 2021 AS AMENDED.
    A. 13.7.1.7.6 THE MANUAL FIRE ALARM BOX REQUIRED BY 13.7.1.7.6 IS INTENDED TO PROVIDE A MEANS TO MANUALLY ACTIVATE THE FIRE ALARM SYSTEM WHEN THE AUTOMATIC FIRE DETECTION SYSTEM OR WATER FLOW DEVICES ARE OUT OF SERVICE DUE TO MAINTENANCE OR TESTING, OR WHERE HUMAN DISCOVERY OF THE FIRE PRECEDES AUTOMATIC SPRINKLER SYSTEM OR AUTOMATIC DETECTION SYSTEM ACTIVATION. WHERE THE FIRE ALARM SYSTEM IS CONNECTED TO A MONITORING FACILITY, THE MANUAL FIRE ALARM BOX REQUIRED BY 13.7.1.7.6 SHOULD BE CONNECTED TO A SEPARATE CIRCUIT THAT IS NOT PLACED "ON TEST" WHEN THE DETECTION OR SPRINKLER SYSTEM IS PLACED "ON TEST". THE MANUAL FIRE ALARM BOX SHOULD BE LOCATED IN AN AREA THAT IS ACCESSIBLE TO OCCUPANTS OF THE BUILDING AND SHOULD NOT BE LOCKED. (101:9.6.2.6)
48. 13.7.1.7.7 MANUAL FIRE ALARM BOXES SHALL BE ACCESSIBLE, UNOBSTRUCTED, AND VISIBLE. (101:9.6.2.7) NFPA 1 2021, AS AMENDED.
49. 13.7.1.7.8 WHERE A SPRINKLER SYSTEM PROVIDES AUTOMATIC DETECTION AND ALARM SYSTEM INITIATION, IT SHALL BE PROVIDED WITH AN APPROVED ALARM INITIATION DEVICE THAT OPERATES WHEN THE FLOW OF WATER IS EQUAL TO OR GREATER THAN THAT FROM A SINGLE AUTOMATIC SPRINKLER. (101:9.6.2.8) NFPA 1 2021, AS AMENDED.
50. 13.7.1.7.9 WHERE A TOTAL (COMPLETE) COVERAGE SMOKE DETECTION SYSTEM IS REQUIRED BY ANOTHER SECTION OF THIS CODE, AUTOMATIC DETECTION OF SMOKE IN ACCORDANCE WITH NFPA 72 SHALL BE PROVIDED IN ALL OCCUPIABLE AREAS IN ENVIRONMENTS THAT ARE SUITABLE FOR PROPER SMOKE DETECTOR OPERATION. (101:9.6.2.9) NFPA 1 2021, AS AMENDED.
51. 13.7.1.9.5 UNLESS OTHERWISE PROVIDED IN 13.7.1.9.5.1 THROUGH 13.7.1.9.5.8, NOTIFICATION SIGNALS FOR OCCUPANTS TO EVACUATE SHALL BE BY AUDIBLE AND VISIBLE SIGNALS IN ACCORDANCE WITH NFPA 72 AND ICC/ANSI A117.1, AMERICAN NATIONAL STANDARD FOR ACCESSIBLE AND USABLE BUILDINGS AND FACILITIES, OR OTHER MEANS OF NOTIFICATION ACCEPTABLE TO THE AHJ. (101:9.6.3.5) NFPA 1 2021, AS AMENDED.
52. 72: 18.5.4.3.2 VISIBLE NOTIFICATION APPLIANCES SHALL BE INSTALLED IN ACCORDANCE WITH TABLE 18.5.4.3.1 (a), USING ONE OF THE FOLLOWING:
    (1) A SINGLE VISIBLE NOTIFICATION APPLIANCE.
    (2) TWO VISIBLE NOTIFICATION APPLIANCE.
    (3) TWO GROUPS OF VISIBLE NOTIFICATION APPLIANCES, WHERE VISUAL APPLIANCES OF EACH GROUP ARE SYNCHRONIZED, IN THE SAME ROOM OR ADJACENT SPACE WITHIN THE FIELD OF VIEW.
    (4) MORE THAN TWO VISIBLE NOTIFICATION APPLIANCES IN THE SAME ROOM OR ADJACENT SPACE WITHIN THE FIELD OF VIEW THAT FLASH IN SYNCHRONIZATION.
53. 13.7.1.9.7 AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL BE OF SUCH CHARACTER AND SO DISTRIBUTED AS TO BE EFFECTIVELY HEARD ABOVE THE AVERAGE AMBIENT SOUND LEVEL THAT EXISTS UNDER NORMAL CONDITIONS OF OCCUPANCY. (101:9.6.3.7) NFPA 1 2021, AS AMENDED.
54. 13.7.1.9.8 AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL PRODUCE SIGNALS THAT ARE DISTINCTIVE FROM AUDIBLE SIGNALS USED FOR OTHER PURPOSES IN A GIVEN BUILDING. (101:9.6.3.8) NFPA 1 2021, AS AMENDED.
55. 13.7.1.9.9 AUTOMATICALLY TRANSMITTED OR LIVE VOICE EVACUATION OR RELOCATION INSTRUCTIONS SHALL BE PERMITTED TO BE USED TO NOTIFY OCCUPANTS AND SHALL COMPLY WITH EITHER 13.7.1.9.9.1 OR 13.7.1.9.9.2. (101:9.6.3.9) NFPA 1 2021, AS AMENDED. NFPA 1 2021, AS AMENDED.
56. 13.7.1.9.9.1 AUTOMATICALLY TRANSMITTED OR LIVE VOICE EVACUATION OR RELOCATION INSTRUCTIONS SHALL BE IN ACCORDANCE WITH NFPA 72. (101:9.6.3.9.1) NFPA 1 2021, AS AMENDED.
57. 13.7.3.1.1.3 ALL DEVICES AND APPLIANCES THAT RECEIVE THEIR POWER FROM THE INITIATING DEVICE CIRCUIT OR SIGNALING LINE CIRCUIT OF A CONTROL UNIT SHALL BE LISTED FOR USE WITH THE CONTROL UNIT. (72:10.3.3) NFPA 1 2021, AS AMENDED.
58. 13.7.3.2.1 APPROVAL AND ACCEPTANCE. THE AHJ SHALL BE NOTIFIED PRIOR TO INSTALLATION OR ALTERATION OF EQUIPMENT OR WIRING. (72:10.19.2) NFPA 1 2021, AS AMENDED.
59. 13.7.3.2.3.2 BEFORE REQUESTING FINAL APPROVAL OF THE INSTALLATION, IF REQUIRED BY THE AHJ, THE INSTALLING CONTRACTOR SHALL FURNISH A WRITTEN STATEMENT STATING THAT THE SYSTEM HAS BEEN INSTALLED IN ACCORDANCE WITH APPROVED PLANS AND TESTED IN ACCORDANCE WITH THE MANUFACTURER'S PUBLISHED INSTRUCTIONS AND THE APPROPRIATE NFPA REQUIREMENTS. (72:7.5.2) NFPA 1 2021, AS AMENDED.
60. 13.7.3.2.3.6.1 THE RECORD OF COMPLETIONS FORMS, FIGURE 13.7.3.2.5.2(a) THROUGH FIGURE 13.7.3.2.5.2(f), OR AN ALTERNATIVE DOCUMENT THAT CONTAINS ONLY THE ELEMENTS OF FIGURE 13.7.3.2.5.2(a) THROUGH FIGURE 13.7.3.2.3.5.2(f) APPLICABLE TO THE INSTALLED SYSTEM (72:7.5.6.1)
61. 13.7.3.2.3.6.2 THE RECORD OF COMPLETION DOCUMENTATION SHALL BE COMPLETED BY THE INSTALLING CONTRACTOR AND SUBMITTED TO THE ENFORCING AUTHORITY AND THE OWNER AT THE CONCLUSION OF THE JOB. THE RECORD OF COMPLETION DOCUMENTATION SHALL BE PERMITTED TO BE PART OF THE WRITTEN STATEMENT REQUIRED IN 13.7.3.2.3.2 AND PART OF THE DOCUMENTS THAT SUPPORT THE REQUIREMENTS OF 13.7.3.2.3.8. WHEN MORE THAN ON CONTRACTOR HAS BEEN RESPONSIBLE FOR THE INSTALLATION, EACH CONTRACTOR SHALL COMPLETE THE PORTIONS OF THE DOCUMENTATION FOR WHICH THAT CONTRACTOR HAS RESPONSIBILITY. (72:7.5.6.2)
62. 13.7.3.2.3.6.3 THE PREPARATION OF THE RECORD OF COMPLETION DOCUMENTATION SHALL BE THE RESPONSIBILITY OF THE QUALIFIED AND EXPERIENCED PERSON IN ACCORDANCE WITH 10.5.2 OF NFPA 72. (72:7.5.6.3)
63. 13.7.3.2.3.6.4 THE RECORD OF COMPLETION DOCUMENTATION SHALL BE UPDATED TO REFLECT ALL SYSTEM ADDITIONS OF MODIFICATIONS. (72:7.5.6.4)
64. 13.7.3.3.4 MANUALLY ACTUATED ALARM-INITIATING DEVICES SHALL BE MOUNTED ON A BACKGROUND OF CONTRASTING COLOR. (72:17.14.4)
65. 13.7.3.3.5 THE OPERABLE PART OF A MANUALLY ACTUATED ALARM-INITIATING DEVICE SHALL NOT BE LESS THAN 42 IN. (1.07 M) AND NOT MORE THAN 48 IN. (1.22 M). (72:17.14.5)
66. 13.7.3.3.8.4 MANUAL FIRE ALARM BOXES SHALL BE LOCATED WITHIN 5 FT. (1.5 M) OF EACH EXIT DOORWAY ON EACH FLOOR. (72:17.14.8.4)
67. 13.7.3.3.8.5 ADDITIONAL MANUAL FIRE ALARM BOXES SHALL BE PROVIDED SO THAT THE TRAVEL DISTANCE TO THE NEAREST MANUAL FIRE ALARM BOX WILL NOT EXCEED 200 FT. (61 M), MEASURED HORIZONTALLY ON THE SAME FLOOR (72:17.14.8.5)
68. 13.7.3.3.8.6 MANUAL FIRE ALARM BOXES SHALL BE MOUNTED ON BOTH SIDES OF GROUPED OPENINGS OVER 40 FT. (12.2 M) IN WIDTH, AND WITHIN 5 FT. (1.5 M) OF EACH SIDE OF THE GROUPED OPENING. (72:17.14.8.6)
69. 16.1.1 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 THIS CHAPTER. NFPA 1 2021, AS AMENDED.
70. 16.4.4.1 WHERE THE BUILDING IS PROTECTED BY FIRE PROTECTION SYSTEMS, SUCH SYSTEMS SHALL BE MAINTAINED OPERATIONAL AT ALL TIMES DURING ALTERATION.
71. 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. NFPA 1 2021, AS AMENDED.
72. 16.4.4.3 WHEN IT IS NECESSARY TO SHUT DOWN THE SYSTEM, THE AUTHORITY HAVING JURISDICTION (AHJ) SHALL HAVE THE AUTHORITY TO REQUIRE ALTERNATE MEASURES OF PROTECTION UNTIL THE SYSTEM IS RETURNED TO SERVICE. NFPA 1 2021, AS AMENDED.
73. 16.4.4.4 THE FIRE DEPARTMENT SHALL BE NOTIFIED WHEN THE SYSTEM IS SHUT DOWN AND WHEN THE SYSTEM IS RETURNED TO SERVICE. NFPA 1 2021, AS AMENDED.
74. FIRE ALARM SYSTEM DESIGN, INSTALLATION, TESTING AND MAINTENANCE SHALL BE IN ACCORDANCE WITH NFPA 72, NATIONAL FIRE ALARM CODE, NFPA 1, 9 AND NFPA 101.
75. SEC. 18-5.2 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 WORK AT ALL TIMES DURING THE WORK AUTHORIZED THEREBY IS IN PROGRESS. (SEC. 18-5.2 R.O. 1978 (1983 ED.), AM. ORD. 93-59)
76. FAS INITIATION, NOTIFICATION AND PROTECTION SHALL BE PROVIDED PER 13.7.1.1. WHERE INSTALLATION DEVIATES FROM THE APPROVED PLANS, REVISED DRAWINGS ARE TO BE SUBMITTED FOR REVIEW AND APPROVAL.
77. A FIRE WATCH SHALL BE REQUIRED AS SPECIFIED IN SECTIONS 16.5.4, 34.6.3.3, 13.7.1.5.3, 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 2021, AS AMENDED.
78. FIRE ALARM SIGNALLING DEVICES SHALL COMPLY WITH ADAAG 215.1 AND 702.1
79. ALL REFERENCES TO NFPA 72 REFER TO 2016 EDITION.
80. WE FORMALLY STATE THAT THE FIRE ALARM DESIGN SHOWN ON THE SUBJECT DRAWINGS BASED ON NFPA 72, 2016 EDITION AND THAT IT DOES PROVIDE GREATER ACCESSIBILITY THAN THE 1999 OR 2002 EDITIONS. WE ALSO FORMALLY STATE THAT NFPA 72 PROVIDES GREATER ACCESSIBILITY THAN ADAAG 702.1.
81. ENSURE FIRE ALARM SYSTEM AUDIBILITY AND VISIBILITY IS ADEQUATE THROUGH ALL OCCUPIABLE AREAS AND SPACES. THIS WILL BE THOROUGHLY CHECKED AT TIME OF FIRE ALARM ACCEPTANCE TESTING.
82. ALL REFERENCES TO NFPA 1 2021 REFER TO NFPA 1 2021, STATE OF HAWAII HRS CHAPTER 132, CITY AND COUNTY OF HONOLULU CHAPTER 20 ROH.
83. FIRE CODE "NFPA 1 2021, STATE OF HAWAII HRS CHAPTER 132, CITY AND COUNTY OF HONOLULU CHAPTER 20 ROH."

INTERNATIONAL BUILDING CODE NOTES

1. 907.5.2.1.1 AVERAGE SOUND PRESSURE. THE AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL PROVIDE A SOUND LEVEL PRESSURE LEVEL OF 15 DECIBELS (dBA) ABOVE THE AVERAGE AMBIENT SOUND LEVEL OR 5 dBA ABOVE MAXIMUM SOUND LEVEL HAVING A DURATION OF AT LEAST 60 SECONDS, WHICHEVER IS GREATER, IN EVERY OCCUPIABLE SPACE WITHIN THE BUILDING.
2. 907.5.2.1.2 MAXIMUM SOUND PRESSURE. THE MAXIMUM SOUND PRESSURE LEVEL FOR AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL BE 110 dBA AT THE MINIMUM HEARING DISTANCE FROM THE AUDIBLE APPLIANCE. WHERE THE AVERAGE AMBIENT NOISE IS GREATER THAN 95 dBA, VISIBLE ALARM NOTIFICATION APPLIANCES SHALL BE PROVIDED IN ACCORDANCE WITH NFPA 72 AND AUDIBLE ALARM NOTIFICATION APPLIANCES SHALL NOT BE REQUIRED.
3. 907.5.2.2 EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS.
    EMERGENCY VOICE/ALARM COMMUNICATION SYSTEMS REQUIRED BY THIS CODE SHALL BE DESIGNED AND INSTALLED IN ACCORDANCE WITH NFPA 72. THE OPERATION OF ANY AUTOMATIC FIRE DETECTOR, SPRINKLER WATERFLOW DEVICE OR MANUAL FIRE ALARM BOX SHALL AUTOMATICALLY SOUND AN ALERT TONE FOLLOWED BY VOICE INSTRUCTIONS GIVING APPROVED INFORMATION AND DIRECTIONS FOR A GENERAL OR STAGED EVACUATION IN ACCORDANCE WITH THE BUILDING'S FIRE SAFETY AND EVACUATION IN ACCORDANCE WITH THE BUILDING'S FIRE SAFETY AND EVACUATION PLANS REQUIRED BY SECTION 404 OF THE INTERNATIONAL FIRE CODE. IN HIGH-RISE BUILDINGS, THE SYSTEM SHALL OPERATE ON THE MINIMUM OF THE ALARMING FLOOR, THE FLOOR ABOVE AND THE FLOOR BELOW. SPEAKERS SHALL BE PROVIDED THROUGHOUT THE BUILDING BY PAGING ZONES. AT A MINIMUM, PAGING ZONES SHALL BE PROVIDED AS FOLLOWS:
    (1) ELEVATOR GROUPS.
    (2) EXIT STAIRWAYS.
    (3) EACH FLOOR.
    (4) AREAS OF REFUGE AS DEFINED IN SECTION 1002.1.
    EXCEPTION: IN GROUP I-1 AND I-2 OCCUPANCIES, THE ALARM SHALL SOUND IN A CONSTANTLY ATTENDED AREA AND A GENERAL OCCUPANT NOTIFICATION SHALL BE BROADCAST OVER THE OVERHEAD PAGE.
4. 907.5.2.2.1 MANUAL OVERRIDE. A MANUAL OVERRIDE FOR EMERGENCY VOICE COMMUNICATION SHALL BE PROVIDED ON A SELECTIVE AND ALL-CALL BASIS FOR ALL PAGING ZONES.
5. 907.5.2.2.2 LIVE VOICE MESSAGES. THE EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM SHALL ALSO HAVE THE CAPABILITY TO BROADCAST LIVE VOICE MESSSAGES BY PAGING ZONES ON A SELECTIVE AND ALL-CALL BASIS.
6. 907.5.2.2.3 ALTERNATE USES. THE EMERGENCY VOICE/ALARM COMMUNICATION SYSTEM SHALL BE ALLOWED TO BE USED FOR OTHER ANNOUNCEMENTS, PROVIDED THE MANUAL FIRE ALARM USE TAKES PRECEDENCE OVER ANY OTHER USE.
7. 907.5.2.2.4 EMERGENCY VOICE/ALARM COMMUNICATION CAPTIONS. WHERE STADIUMS, ARENAS AND GRANDSTANDS ARE REQUIRED TO CAPTION AUDIBLE PUBLIC ANNOUNCEMENTS IN ACCORDANCE WITH SECTION 1108.2.7.2, THE EMERGENCY/VOICE COMMUNICATION SYSTEM SHALL ALSO BE CAPTIONED. PRERECORDED OR LIVE EMERGENCY CAPTIONS SHALL BE FROM AN APPROVED LOCATION CONSTANTLY ATT



1 / E101 ELECTRICAL PLAN - DEMO WORK

SCALE: 1/8" = 1'-0"

ELECTRICAL NOTES: EXISTING/REMOVAL WORK

1. DISCONNECT AND REMOVE EXISTING LIGHT FIXTURE AND WIRING.
2. DISCONNECT AND REMOVE EXISTING SWITCH, OUTLET BOX AND WIRING IN WALL TO BE DEMOLISHED.
3. DISCONNECT AND REMOVE EXISTING EXIT SIGN AND WIRING.

DATE | DESCRIPTION | REV. NO.

This work was prepared by me or under my supervision of construction of this project and I am duly registered under the laws of the State of Hawaii.

Signature

LICENSE EXPIRES: APRIL 30, 2028

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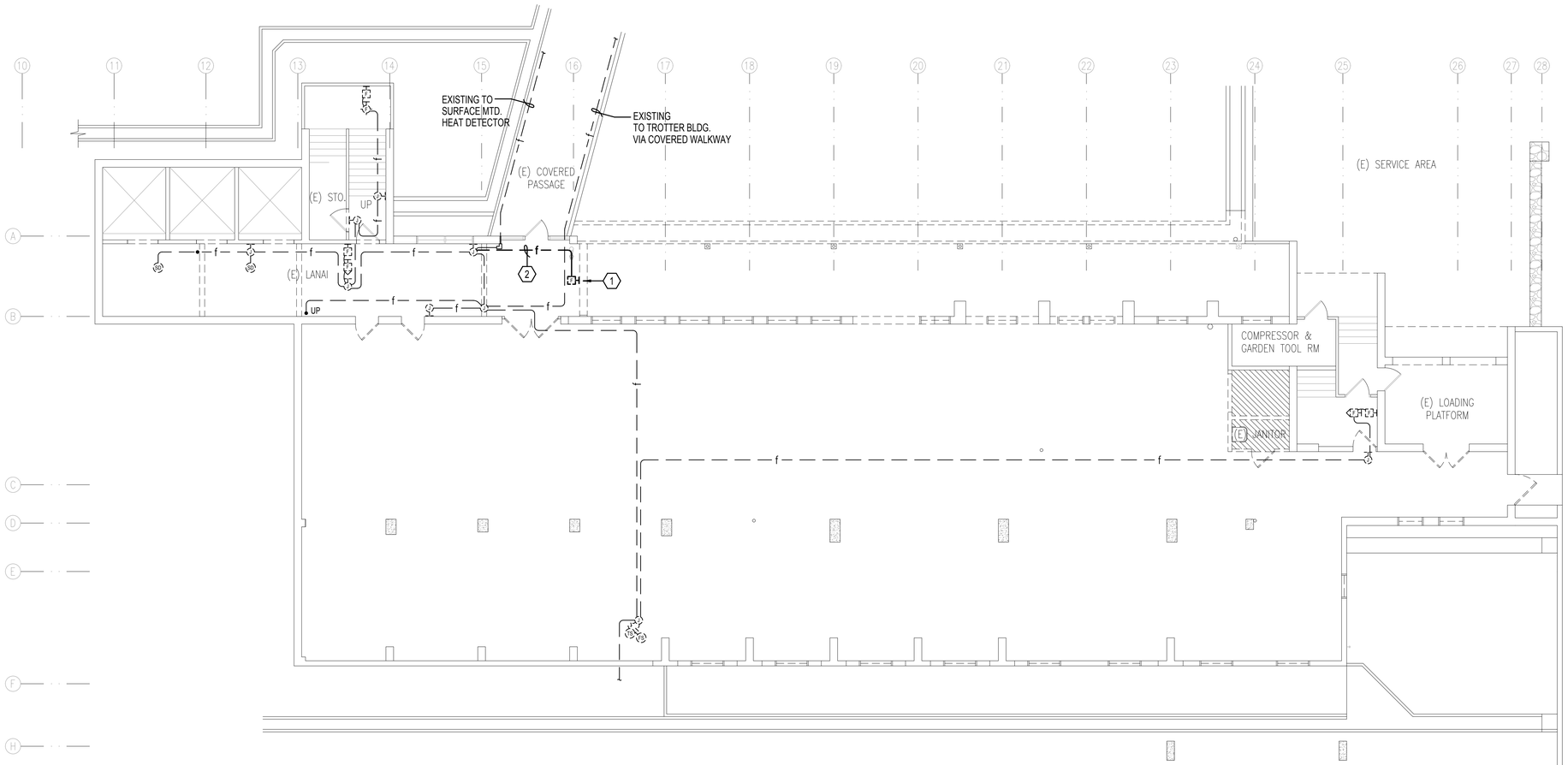
PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
ELECTRICAL PLAN - DEMO WORK

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC | CHECK BI
SHEET E101 OF SHEETS

380.147



1 E102 FIRE ALARM PLAN - DEMO WORK
SCALE: 1/8" = 1'-0"

ELECTRICAL NOTES: EXISTING/REMOVAL WORK

1. DISCONNECT, REMOVE AND DISCONNECT EXISTING MANUAL PULLSTATION AND OUTLET BOX. SEE NEW WORK FOR NEW LOCATION.
2. REMOVE EXISTING RACEWAY AND WIRES.

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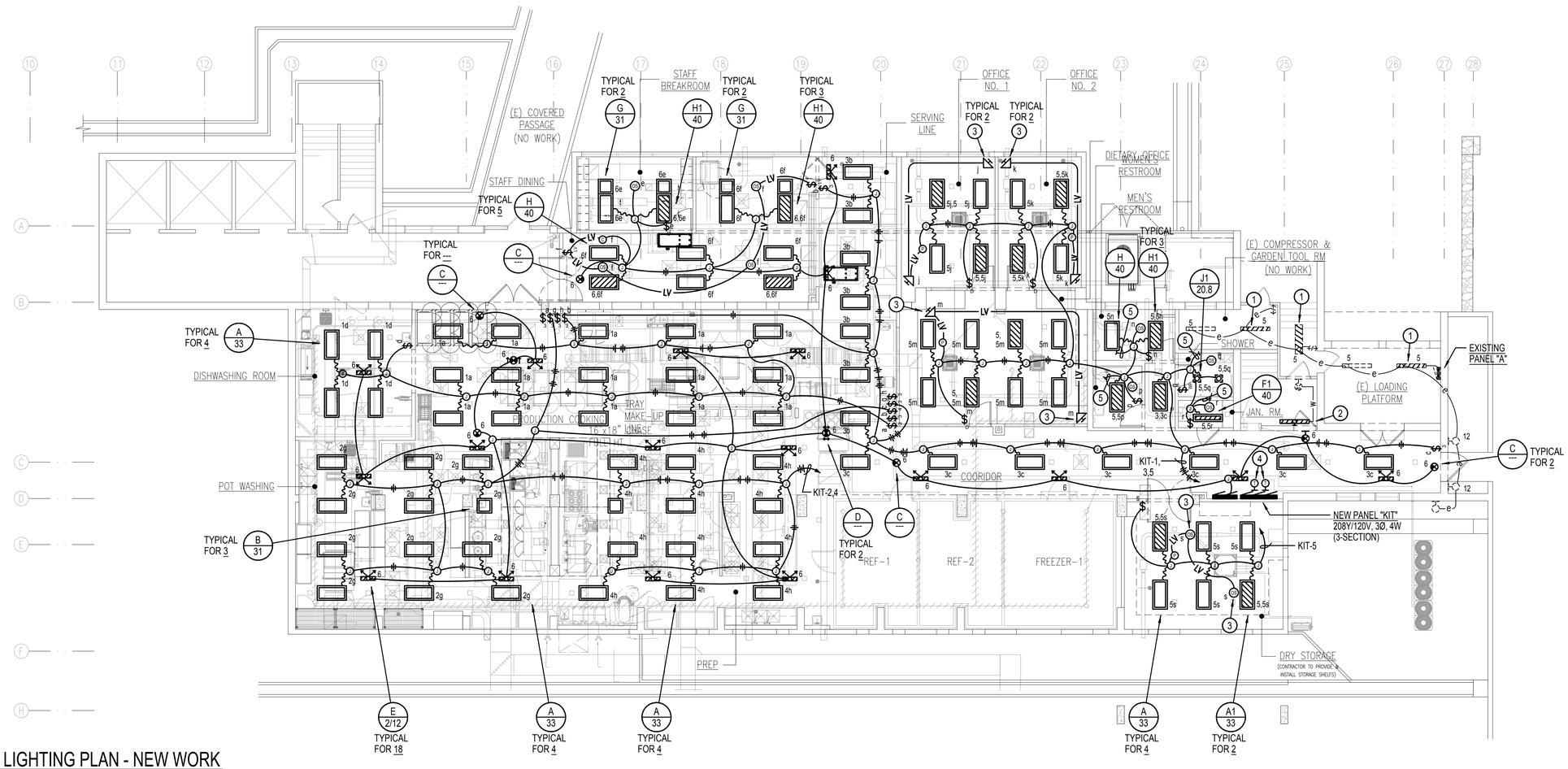

1 / E201 LIGHTING PLAN - NEW WORK

SCALE: 1/8" = 1'-0"

ELECTRICAL NOTES: NEW WORK

1. PROVIDE NEW EMERGENCY BATTERY PACK IN EXISTING FLUORESCENT LIGHT FIXTURE. CONNECT TO UN-SWITCHED LIGHTING CIRCUIT FROM NEAREST SOURCE.
2. CONNECT NEW LIGHT FIXTURE TO EXISTING STAIRWELL LIGHTING CIRCUIT. EXTEND UN-SWITCHED LIGHTING CIRCUIT.
3. WIRE OCCUPANCY SENSORS FOR TANDEM OPERATION. ACTIVATION OF ANY OCCUPANCY SENSOR IN THE AREA SHALL KEEP ALL LIGHTS IN ROOM/AREA ON. PROVIDE POWER PACK AND ADDITIONAL WIRES AS REQUIRED. VERIFY WIRING WITH EQUIPMENT SUPPLIER.
4. PROVIDE LIGHTING TIMER SWITCH FOR LIGHTING CIRCUIT. UNIT SHALL BE CAPABLE OF BEING MOUNTED IN 1-GANG OUTLET BOX AND BE ADJUSTABLE FROM 1 MINUTE TO 24 HOURS. TIMER SHALL FLICKER LIGHTS TO WARN OF TIME OUT. INTERMATIC # EI400C.
5. TO ADJACENT EXHAUST FAN. SEE MECHANICAL ELECTRICAL PLAN: 1/E201.

DATE

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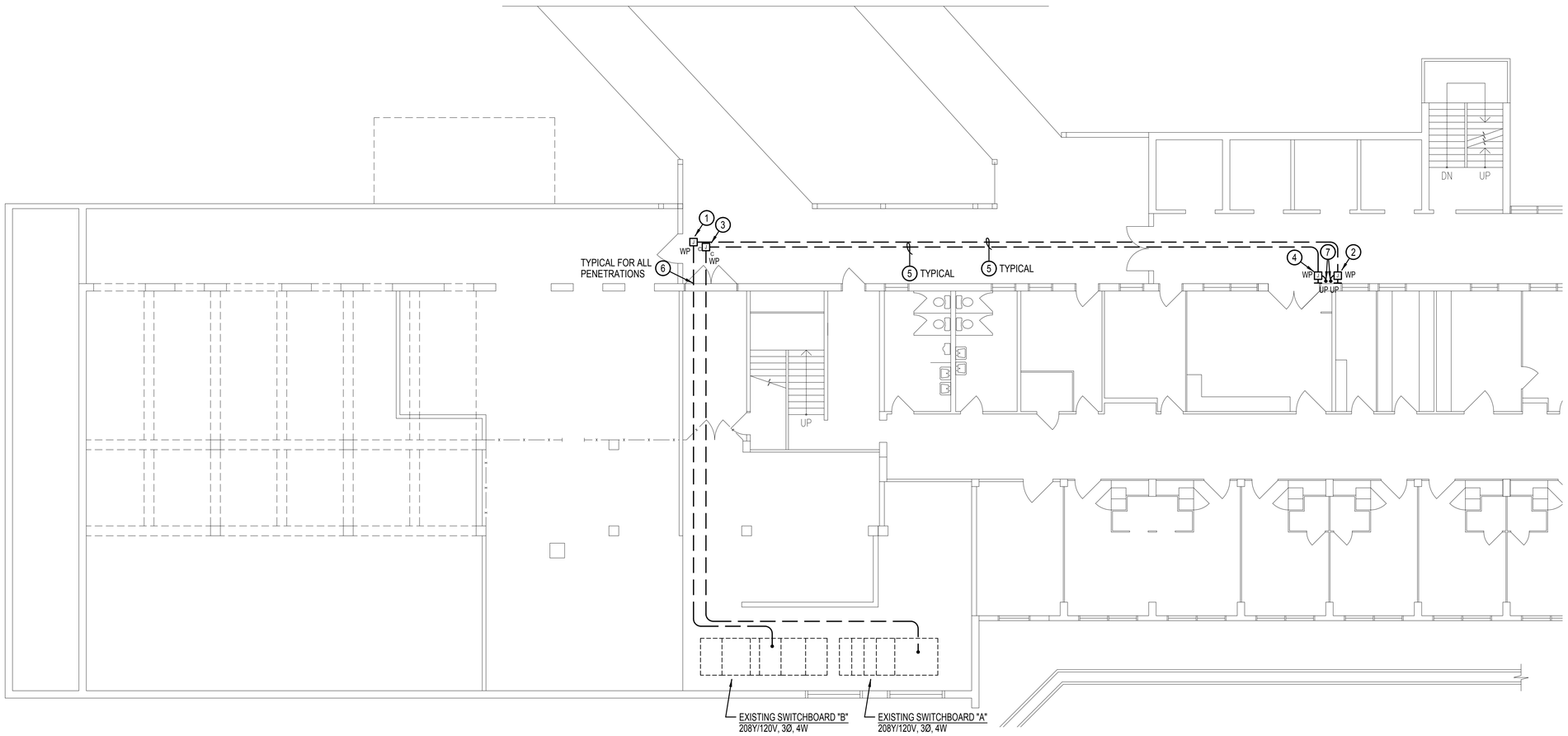
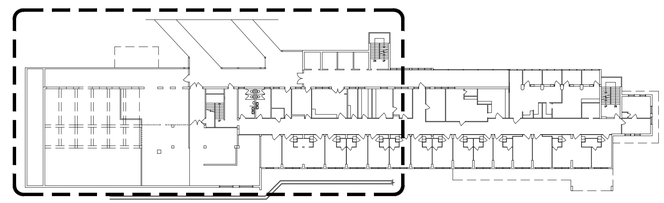


1 / E301 BASEMENT ELECTRICAL PLAN - NEW WORK

SCALE: 1/8" = 1'-0"

ELECTRICAL NOTES: EXISTING/NEW WORK

1. PROVIDE NEW 24"SQ. x 10"D. JUNCTION BOX, NEMA 3R. HANG OR MOUNT FROM CEILING. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
2. PROVIDE NEW 24"SQ. x 10"D. JUNCTION BOX, NEMA 3R. MOUNT HIGH ON WALL. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
3. PROVIDE NEW 18"SQ. x 10"D. JUNCTION BOX, NEMA 3R. MOUNT IN CEILING SPACE. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
4. PROVIDE NEW 18"SQ. x 10"D. JUNCTION BOX, NEMA 3R. MOUNT HIGH ON WALL. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
5. SUSPEND NEW RACEWAY FROM CEILING. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
6. DRILL THROUGH EXISTING WALL TO INSTALL NEW RACEWAY. PATCH TO MATCH EXISTING CONDITION. SEAL OPENING WITH FIRE SEALANT. PROVIDE WATERTIGHT SEAL AT EXTERIOR WALLS.
7. CORE EXISTING FLOOR SLAB TO INSTALL NEW RACEWAY. PATCH TO MATCH EXISTING CONDITION. SEAL OPENING WITH FIRE SEALANT. PROVIDE WATERTIGHT SEAL AT EXTERIOR WALLS.



KEY PLAN - BASEMENT

N.T.S.

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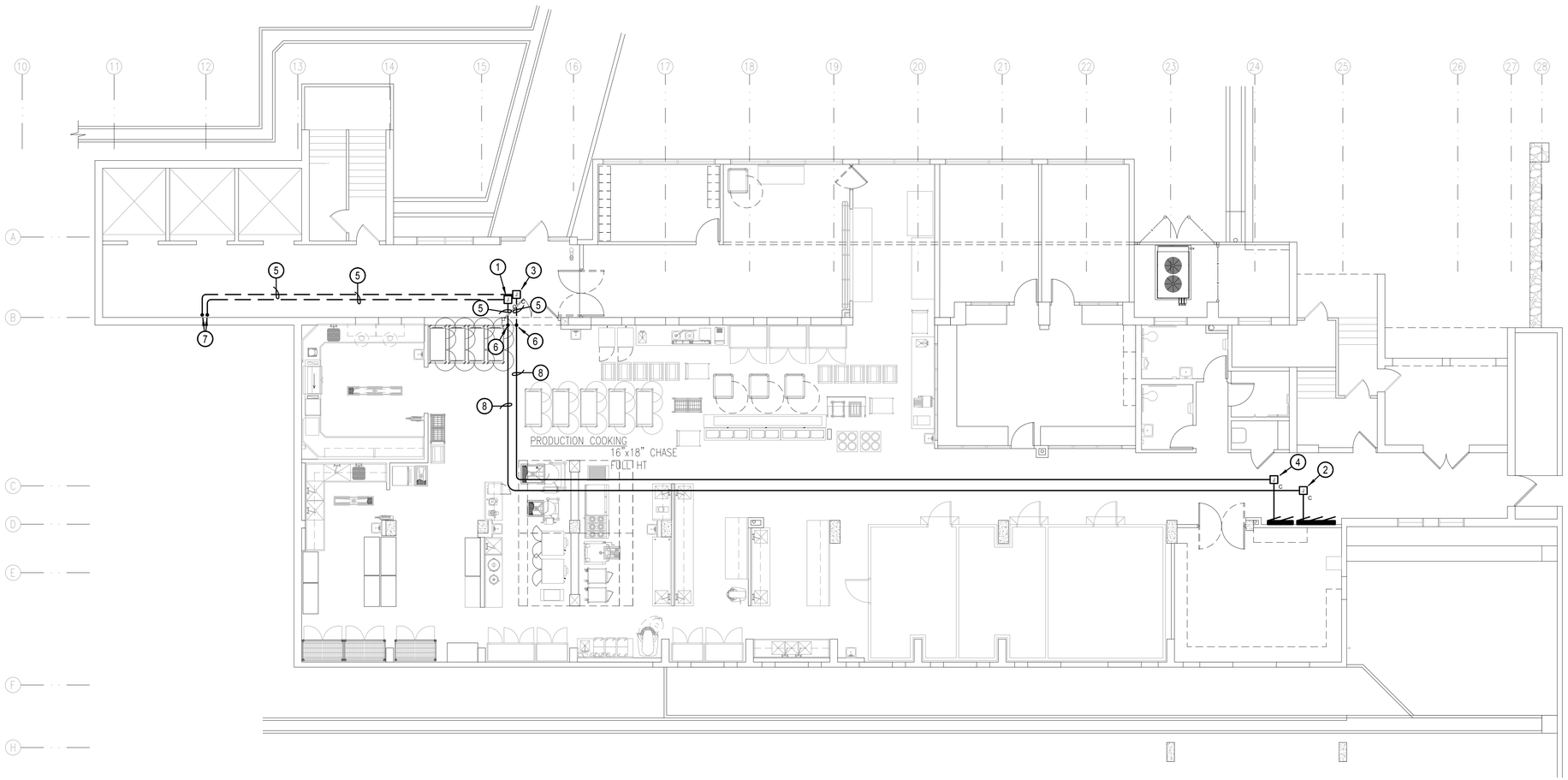

1 E302 SUB-BASEMENT ELECTRICAL PLAN - NEW WORK
SCALE: 1/8" = 1'-0"

ELECTRICAL NOTES: EXISTING/NEW WORK

1. PROVIDE NEW 24"SQ. x 10"D. JUNCTION BOX, NEMA 3R. HANG OR MOUNT FROM CEILING. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
2. PROVIDE NEW 24"SQ. x 10"D. JUNCTION BOX, NEMA 1. MOUNT IN CEILING SPACE. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
3. PROVIDE NEW 18"SQ. x 10"D. JUNCTION BOX, NEMA 3R. HANG OR MOUNT FROM CEILING. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
4. PROVIDE NEW 18"SQ. X 10"D. JUNCTION BOX, NEMA 1. MOUNT IN CEILING SPACE. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
5. SUSPEND NEW RACEWAY FROM CEILING. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
6. DRILL THROUGH EXISTING WALL TO INSTALL NEW RACEWAY. PATCH TO MATCH EXISTING CONDITION. SEAL OPENING WITH FIRE SEALANT. PROVIDE WATERTIGHT SEAL AT EXTERIOR WALLS.
7. CORE EXISTING FLOOR SLAB TO INSTALL NEW RACEWAY. PATCH TO MATCH EXISTING CONDITION. SEAL OPENING WITH FIRE SEALANT. PROVIDE WATERTIGHT SEAL AT EXTERIOR WALLS.
8. ROUTE NEW CONCEALED WIRING IN CEILING SPACE. PROVIDE HANGERS AND SUPPORTS PER N.E.C.

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LICKIE DORES : APRIL 30, 2028

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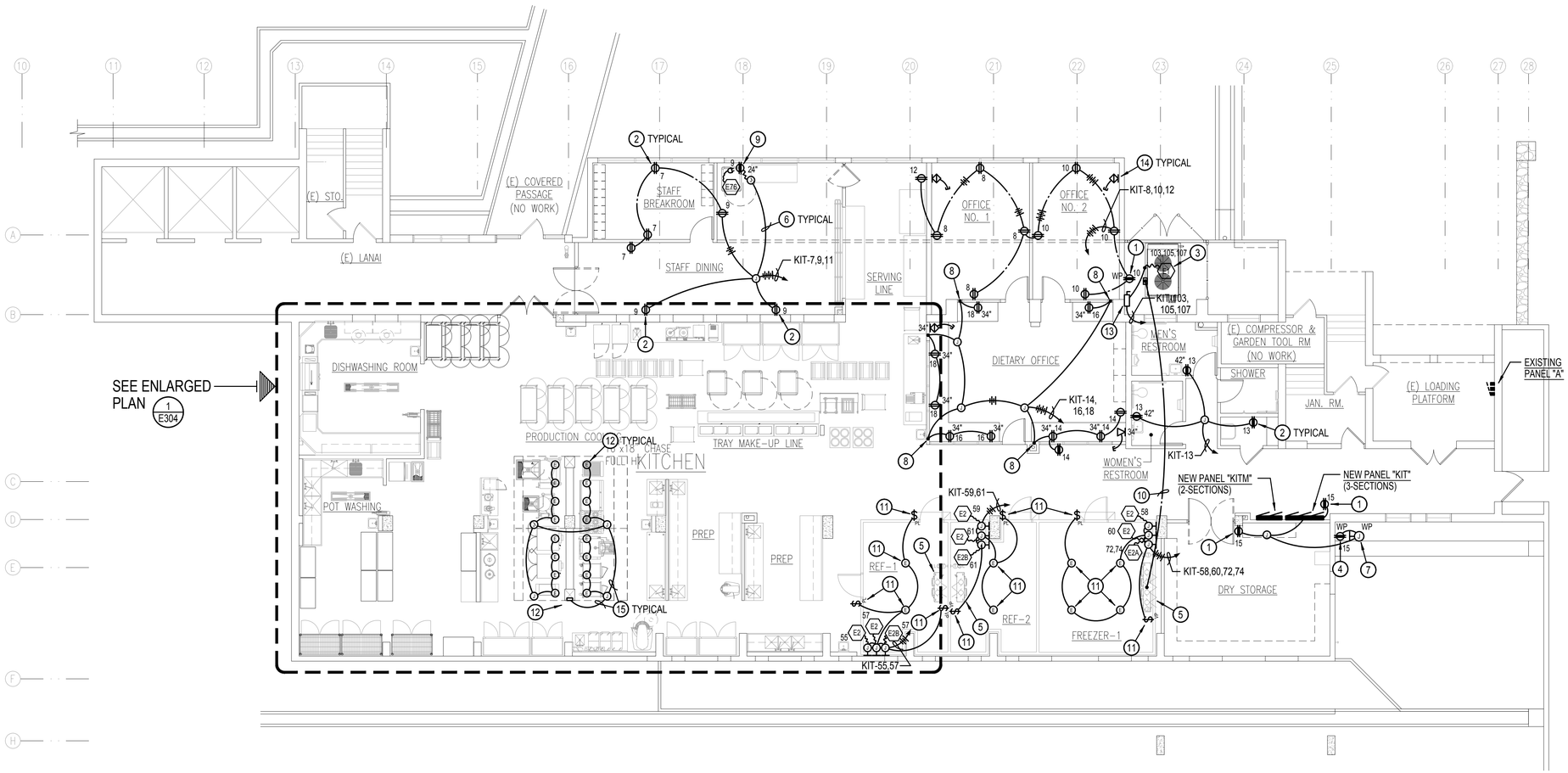

1/E303 ELECTRICAL PLAN - NEW WORK

SCALE: 1/8" = 1'-0"

ELECTRICAL NOTES: EXISTING/REMOVAL WORK

1. PROVIDE NEW CAST OUTLET BOX, GFCI TYPE RECEPTACLE AND EXPOSED WIRING.
2. PROVIDE NEW FLUSH OUTLET BOX, RECEPTACLE AND CONCEALED WIRING.
3. PROVIDE ELECTRICAL CONNECTION TO EQUIPMENT WITH LIQUID-TIGHT FLEXIBLE CONDUIT.
4. PROVIDE NEW CAST METAL OUTLET BOX, WEATHER-RESISTANT GFCI TYPE RECEPTACLE, EXTRA-DUTY RATED, CAST METAL, WEATHERPROOF WHILE-IN-USE TYPE COVER AND EXPOSED WIRING.
5. PROVIDE CONTROL RACEWAY AND WIRES AS REQUIRED BY EQUIPMENT SUPPLIER.
6. ROUTE NEW RACEWAY CONCEALED IN CEILING SPACE. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
7. PROVIDE NEW WALL SURFACE MOUNTED CAST OUTLET BOX WITH GASKETED BLANK DEVICE PLATE. MOUNT HIGH ON WALL.
8. ROUTE NEW CONCEALED WIRING IN WALL UP TO CEILING.
9. PROVIDE NEW CEILING SUSPENDED RECEPTACLE. RECEPTACLE HEIGHT SHALL BE 5'-6" A.F.F. SEE DETAIL: 1/E803.
10. 1" PVC CONDUIT WITH 5 WIRES TO REFRIG. SYSTEM CONTROL PANEL FOR DEFROST CONTROLS. COLOR CODE WIRES:
    - 1 - COMMON
    - 2 - HEATER
    - 1 - FAN COIL
    - 1 - TERMINATION

    VERIFY EXACT LOCATION AND TERMINATION POINTS WITH KITCHEN EQUIPMENT SUPPLIER.
11. PROVIDE ALL ELECTRICAL WIRING TO CONNECT LIGHTS, SWITCHES, DOOR HEATERS, ETC. TO 120V POWER CONNECTION, WHETHER SHOWN OR NOT. SEE INSTALLATION DETAILS ON KITCHEN DRAWINGS.
12. INSTALL OWNER PROVIDED LIGHT FIXTURE IN NEW HOOD. PROVIDE ALL ELECTRICAL WIRING TO CONNECT LIGHTS AND DCV CONTROL CABINET TO 120V POWER CONNECTION.
13. PROVIDE NEW 3P100A, NEMA 4X, STAINLESS STEEL NON-FUSIBLE DISCONNECT SWITCH. MOUNT ON WALL @ 5'-6" A.F.F. TO TOP.
14. PROVIDE NEW FLUSH TELECOM OUTLET WITH 1" C CONCEALED RACEWAY (WITH PULLSTRING) IN WALL. STUB 6" INTO CEILING SPACE WITH INSULATED END BUSHING.
15. PROVIDE ALL 120V AND LOW-VOLTAGE CONTROL WIRING BETWEEN LIGHTS, AVHC UNITS, DCV CONTROL CABINET, EXHAUST FAN AND MAKEUP AIR FAN.

NOTE:
FOR FOOD SERVICE EQUIPMENT SCHEDULE, SEE SHEET: E305

REV. NO.	DESCRIPTION	DATE

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Signature

LICENSE EXPIRES: APRIL 30, 2028

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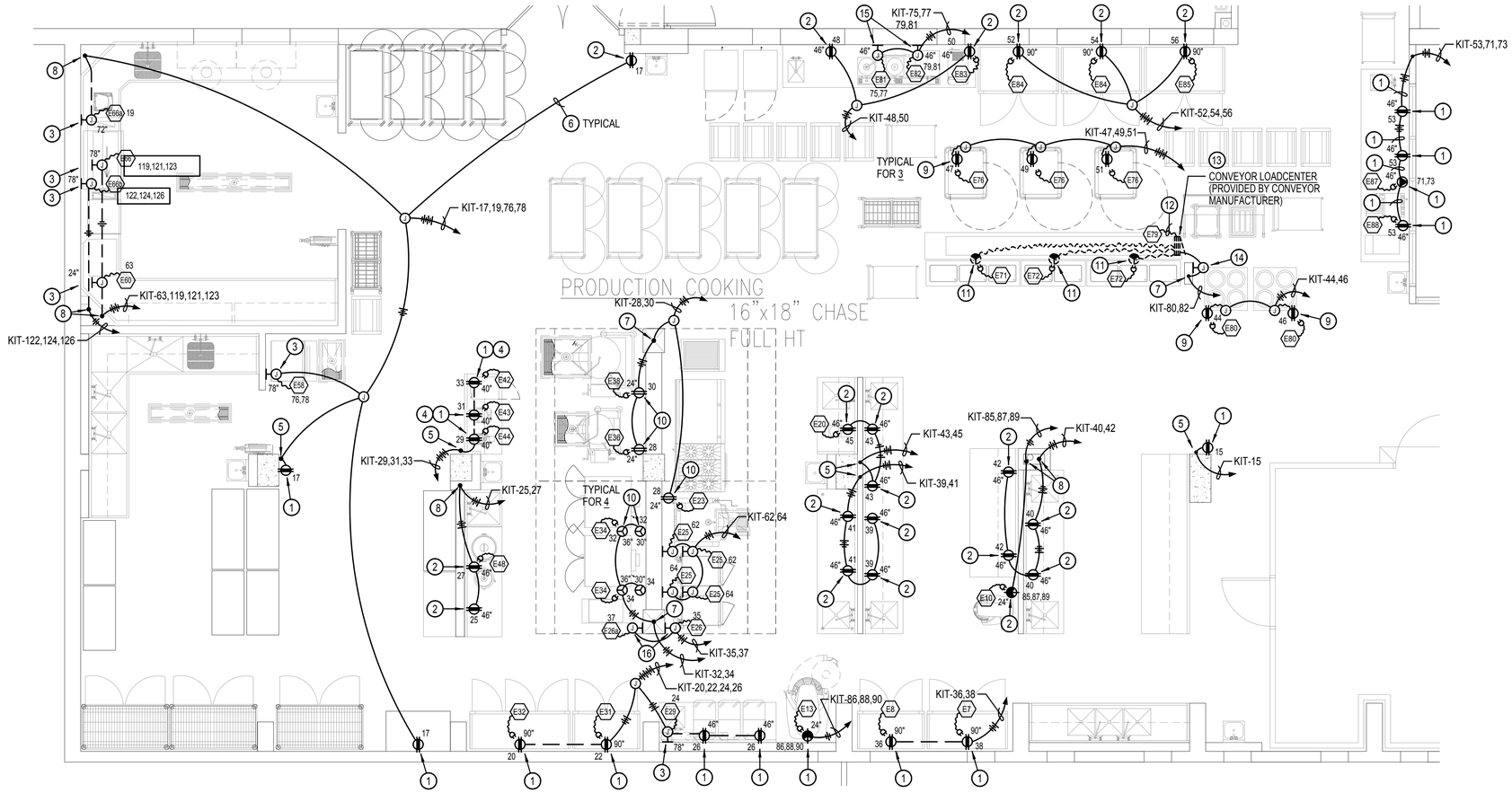

1/E304 ENLARGED ELECTRICAL PLAN - NEW WORK

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

ELECTRICAL NOTES: EXISTING/REMOVAL WORK

1. PROVIDE NEW CAST OUTLET BOX, GFCI TYPE RECEPTACLE AND EXPOSED WIRING.
2. PROVIDE NEW FLUSH OUTLET BOX, GFCI TYPE RECEPTACLE AND CONCEALED WIRING.
3. PROVIDE NEW CAST METAL BOX WITH GASKETED DEVICE PLATE AND ELECTRICAL CONNECTION TO EQUIPMENT WITH LIQUID-TIGHT FLEXIBLE CONDUIT.
4. MOUNT NEW GFCI TYPE RECEPTACLE IN BACKSPLASH. VERIFY LOCATION AND HEIGHT WITH KITCHEN CONSULTANT.
5. ROUTE NEW EXPOSED RACEWAY UP WALL/COLUMN.
6. ROUTE NEW RACEWAY CONCEALED IN CEILING SPACE. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
7. ROUTE NEW CONCEALED WIRING IN CHASE UP TO CEILING.
8. ROUTE NEW CONCEALED WIRING IN WALL UP TO CEILING.
9. PROVIDE NEW CEILING SUSPENDED RECEPTACLE. RECEPTACLE HEIGHT SHALL BE 5'-6" A.F.F. SEE DETAIL: 1/E803.
10. PROVIDE NEW FLUSH OUTLET BOX, RECEPTACLE AND CONCEALED WIRING.
11. NEMA 6-20R RECEPTACLE BUILT INTO CONVEYOR "ELECTRIC RACEWAY". PROVIDED BY CONVEYOR MANUFACTURER WITH CONNECTION TO CONVEYOR LOADCENTER 1P20A CIRCUIT BREAKER.
12. PROVIDE CONVEYOR MOTOR POWER CONNECTION TO CONVEYOR LOADCENTER PER MANUFACTURER REQUIREMENTS.
13. PROVIDE POWER CONNECTION TO CONVEYOR LOADCENTER. VERIFY LOCATION WITH EQUIPMENT SUPPLIER.
14. PROVIDE NEW FLUSH MOUNTED 2-GANG OUTLET BOX WITH BLANK DEVICE PLATE. PROVIDE 3/4" LIQUID-TIGHT FLEXIBLE RACEWAY AND 3-#6, #8 GRD. WITH 90° CONDUIT FITTING CONNECTION TO DEVICE PLATE FOR LOADCENTER POWER CONNECTION.
15. PROVIDE NEW FLUSH MOUNTED 2-GANG OUTLET BOX WITH BLANK DEVICE PLATE. PROVIDE 3/4" LIQUID-TIGHT FLEXIBLE RACEWAY AND 2-#8, #10 GRD. WITH 90° CONDUIT FITTING CONNECTION TO DEVICE PLATE FOR EQUIPMENT POWER CONNECTION.
16. PROVIDE NEW FLUSH OUTLET BOX WITH BLANK DEVICE PLATE, CONCEALED WIRING AND CONNECTION TO EQUIPMENT.

NOTE:
FOR FOOD SERVICE EQUIPMENT SCHEDULE, SEE SHEET: E305

REV. NO.	DESCRIPTION	DATE

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FOODSERVICE EQUIPMENT SCHEDULE

ITEM NO.	DESCRIPTION	AMPS	VOLTS	PHASE	CKT. BKR. CONN.	REMARKS
E1	REFRIGERATION SYSTEM, REMOTE	56.5A	208	3	3P80A DISC. SW.	
E2/2A	WALK-IN FREEZER	(2) 15A / (1) 20.3A	120 208	1	HARDWIRE	E2: 1 - ELECTRICAL CONNECTIONS TO LIGHTS / TEMPERATURE ALARM 1 - DOOR DEFROST / HEATER CABLES / DRAIN LINE HEATERS E2A: 20.3A/208/1 ELECTRICAL CONNECTIONS TO FREEZER EVAP. COIL.
E2/2B	WALK-IN REFRIGERATOR - 1	(2) 15A / (1) 1.8A	120 120	1	HARDWIRE	E2: 1 - ELECTRICAL CONNECTIONS TO LIGHTS / TEMPERATURE ALARM 1 - DOOR DEFROST / HEATER CABLES / DRAIN LINE HEATERS E2B: 1.8A/120/1 ELECTRICAL CONNECTIONS TO COOLER EVAP. COIL.
E2/2B	WALK-IN REFRIGERATOR - 2	(2) 15A / (1) 1.8A	120 120	1	1P20A RECEP.	E2: 1 - ELECTRICAL CONNECTIONS TO LIGHTS / TEMPERATURE ALARM 1 - DOOR DEFROST / HEATER CABLES / DRAIN LINE HEATERS E2B: 1.8A/120/1 ELECTRICAL CONNECTIONS TO COOLER EVAP. COIL.
E7	2-DR. REACH-IN REFRIGERATOR	12.9A	120	1	1P20A RECEP.	
E8	2- DR. REACH-IN FREEZER	12.3A	120	1	1P20A RECEP.	
E10	40 QT. MIXER	5.6A	208	3	3P20A RECEP.	NEMA L15-20R
E13	80 QT. MIXER	12A	208	3	3P20A RECEP.	NEMA L15-20R
E20	FOOD BLENDER	15A	120	1	1P20A RECEP.	
E23	30 GAL. TILTING SKILLET, GAS	3A	120	1	1P20A RECEP.	
E25	CONVECTION STEAMER, DBL. STACKED	4A	120	1	1P20A J.BOX	PROVIDE LOCKOUT ON CIRCUIT BREAKER
E26	ISLAND EXHAUST HOOD WITH MAKE-UP AIR PLENUM BOX	8A	120	1	1P20A J.BOX	PROVIDE 3-GANG OUTLET BOX @ 114" A.F.F. TO CENTER WITH 1"C AND CONTROL WIRING FROM HOOD LIGHT SWITCH TO HOOD TEMP SENSOR WITHIN HOOD TO EXHAUST FAN. VERIFY WIRING REQUIREMENTS WITH HOOD SUPPLIER. PROVIDE ALL WIRING FOR COMPLETE SYSTEM.
E26a	EXHAUST HOOD DCV CONTROL CABINET	1A	120	1	1P20A J.BOX	PROVIDE POWER AND CONTROL CONNECTIONS TO DVC CABINET WITH FLEXIBLE RACEWAYS. PROVIDE #12 WIRES WITH GROUND FOR POWER AND CAT 5 CABLES FOR CONTROLS OF EACH OF THE FOUR (4) HOODS. VERIFY WIRING REQUIREMENTS WITH HOOD SUPPLIER. PROVIDE ALL WIRING FOR COMPLETE SYSTEM.
E29	HOOD FIRE SUPPRESSION SYSTEM	4A	120	1	1P20A J.BOX	
E31	2-DR. REACH-IN REFRIGERATOR	11.1A	120	1	1P20A RECEP.	
E32	3-DR. REACH-IN REFRIGERATOR	14.6A	120	1	1P20A RECEP.	

FOODSERVICE EQUIPMENT SCHEDULE

ITEM NO.	DESCRIPTION	AMPS	VOLTS	PHASE	CKT. BKR. CONN.	REMARKS
E34	CONVECTION OVEN, DBL. STACKED, GAS	7.2A	120	1	1P20A RECEP.	
E36	25 GAL. TILTING KETTLE, GAS	5A	120	1	1P20A RECEP.	
E38	40 GAL. TILTING KETTLE, GAS	10A	120	1	1P20A RECEP.	
E42	MICROWAVE OVEN	16.8A	120	1	1P20A RECEP.	DEDICATED CIRCUIT
E43	VERTICAL CUTTER MIXER	10A	120	1	1P20A RECEP.	DEDICATED CIRCUIT
E44	FOOD PROCESSOR	7A	120	1	1P20A RECEP.	DEDICATED CIRCUIT
E48	20 CUP RICE COOKER | ELECTRIC	12.9A	120	1	1P20A RECEP.	
E58	ICE MACHINE WITH STORAGE BIN	9.9A	208	1	2P20A J.BOX	PROVIDE LOCKOUT ON CIRCUIT BREAKER
E60	BOOSTER HEATER (GAS) FOR DISHWASHER	3.0A	120	1	1P15A J.BOX	
E66	CONVEYOR DISH MACHINE WITH (E66b) HEATED BLOWER DRYER	20A 34.2A	208	3	3P20A J.BOX 3P45A J.BOX	PROVIDE LOCKOUT ON CIRCUIT BREAKER
E66a	CHEMICAL DISPENSER FOR DISH MACHINE	8A	120	1	1P20A J.BOX	
E71	SLIMLINE 3-COMPT. HOT FOOD WELLS	14.4A	208	1	2P20A RECEP.	NEMA 6-20R MOUNTED IN SIDE OF CONVEYOR "ELECTRIC RACEWAY"
E72	SLIMLINE 2-COMPT. HOT FOOD WELLS	9.6A	208	1	2P15A RECEP.	NEMA 6-15R MOUNTED IN SIDE OF CONVEYOR "ELECTRIC RACEWAY"
E76	AIR CURTAIN REFRIGERATOR	16A	120	1	1P20A RECEP.	DROP CORD OUTLET AT 5'-6" A.F.F. / NO RIGID CONDUIT
E77	MOBILE HEATED CABINET	16.7A	120	1	1P20A RECEP.	
E79	16'-0" LONG TRAY MAKE-UP CONVEYOR	41.3A	120/208	1	2P50A J.BOX	120/208V LOADCENTER WITH ELECTRIC RACEWAY
E80	MOBILE HEATED PLATE DISPENSER	15A	120	1	1P20A J.BOX	DROP CORD OUTLET AT 5'-6" A.F.F. / NO RIGID CONDUIT
E81	COFFEE URN	28A	120/208	1	2P40A J.BOX	
E82	COFFEE BREWER | THERMAL SERVER	25.4A	120/208	1	2P40A J.BOX	
E83	ICE AND WATER DISPENSER	8.5A	120	1	1P20A RECEP.	
E84	2-DR. REFRIGERATOR	12.9A	120	1	1P20A RECEP.	
E85	2-DR. FREEZER	17.1A	120	1	1P20A RECEP.	
E87	CONVEYOR TOASTER	15.5A	208	1	2P30A RECEP.	NEMA 6-30R (VERIFY PLUG/RECEP. WITH SUPPLIER)
E88	TRAY SEALER	3.3A	120	1	1P20A RECEP.	

DATE:

REV. NO. | DESCRIPTION | DATE

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Signature:

LICENSE EXPIRES : APRIL 30, 2028

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PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
FOODSERVICE EQUIPMENT SCHEDULE

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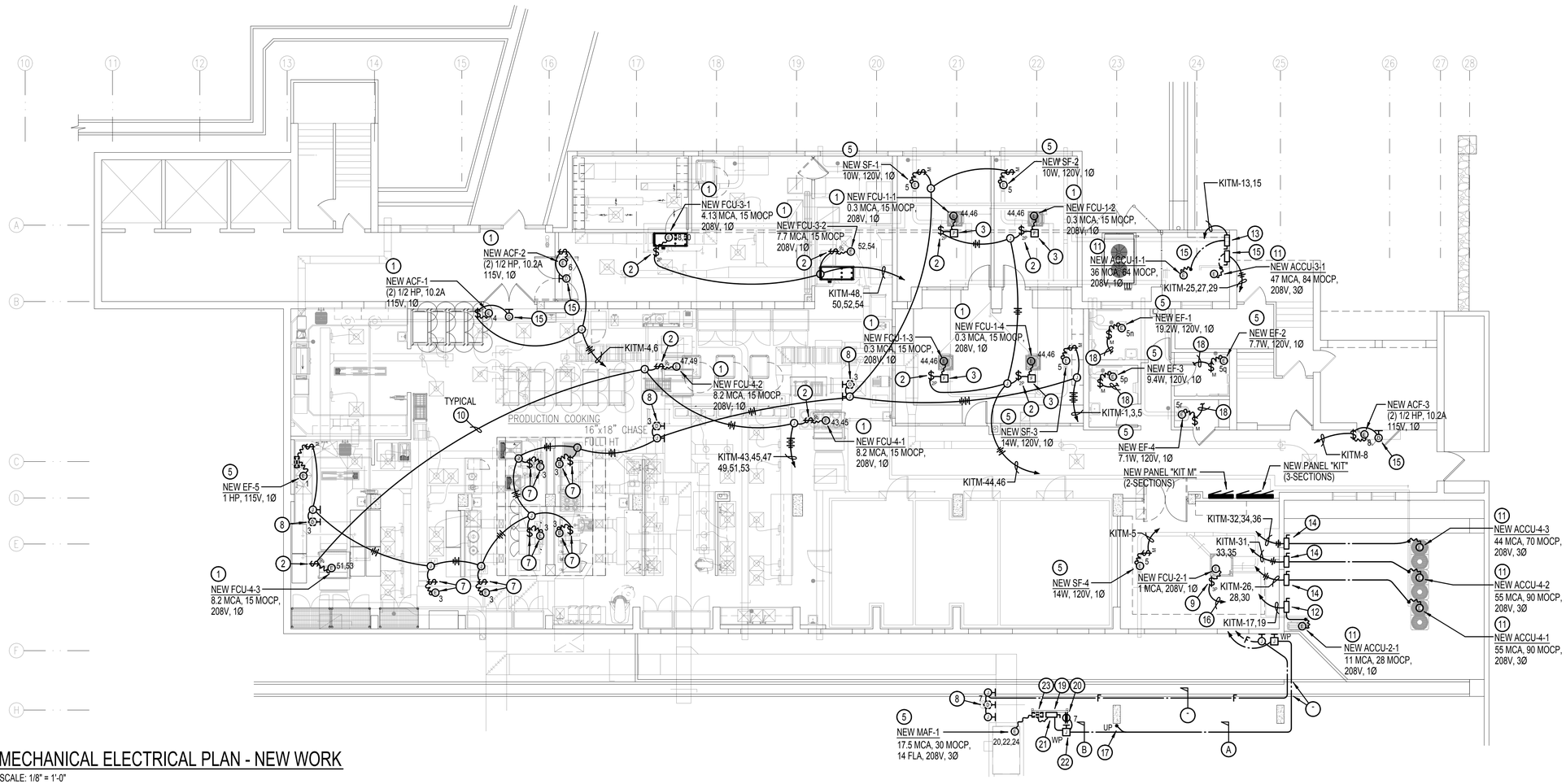
380.147



1/E401 MECHANICAL ELECTRICAL PLAN - NEW WORK

SCALE: 1/8" = 1'-0"

ELECTRICAL NOTES: EXISTING/REMOVAL WORK

1. PROVIDE ELECTRICAL CONNECTION TO EQUIPMENT WITH FLEXIBLE CONDUIT.
2. PROVIDE OUTLET BOX, 2-POLE SWITCH AND FLEXIBLE RACEWAY CONNECTION TO EQUIPMENT. MOUNT ON NEW STEEL CHANNEL SUPPORT IN CEILING.
3. PROVIDE 2-GANG OUTLET BOX WITH BLANK DEVICE PLATE. PROVIDE WITH 2-POLE FUSE HOLDER AND 1A FUSES. WIRE IN-LINE WITH CIRCUIT. MOUNT IN CEILING NEXT TO SWITCH.
4. PROVIDE 2-GANG OUTLET BOX WITH BLANK DEVICE PLATE. PROVIDE WITH 2-POLE FUSE HOLDER AND 8A FUSES. WIRE IN-LINE WITH CIRCUIT. MOUNT IN CEILING NEXT TO SWITCH.
5. PROVIDE MANUAL CONTROL MOTOR SWITCH AND POWER CONNECTION TO ELECTRICAL EQUIPMENT WITH FLEXIBLE CONDUIT.
6. PROVIDE 2-GANG OUTLET BOX WITH BLANK DEVICE PLATE. PROVIDE WITH 2-POLE FUSE HOLDER AND 2A FUSES. WIRE IN-LINE WITH CIRCUIT. MOUNT IN CEILING NEXT TO SWITCH.
7. PROVIDE NEW OUTLET BOX, SWITCH AND FLEXIBLE CONDUIT CONNECTION TO EQUIPMENT. MOUNT ON NEW STEEL CHANNEL SUPPORTS IN CEILING.
8. PROVIDE 120V POWER CONNECTION AND FIRE ALARM SYSTEM CONNECTION TO MECH. CONTR. PROVIDED DUCT SMOKE DETECTOR.
9. PROVIDE NEW 3-POLE MANUAL MOTOR CONTROL SWITCH AND WIRING TO EQUIPMENT. SEE NOTE ON THIS SHEET REGARDING MANUAL MOTOR CONTROL SWITCH REQUIREMENTS. MOUNT ON NEW STEEL CHANNEL SUPPORT IN CEILING.
10. ROUTE NEW CONCEALED WIRING IN CEILING SPACE. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
11. PROVIDE ELECTRICAL CONNECTION TO EQUIPMENT WITH LIQUID-TIGHT FLEXIBLE CONDUIT.
12. PROVIDE NEW 2P30A, NEMA 4X, STAINLESS STEEL NON-FUSIBLE DISCONNECT SWITCH. MOUNT ON WALL @ 5'-6" A.F.F. TO TOP.
13. PROVIDE NEW 2P30A, NEMA 4X, STAINLESS STEEL NON-FUSIBLE DISCONNECT SWITCH. MOUNT ON WALL @ 5'-6" A.F.F. TO TOP.
12. PROVIDE NEW 2P60A, NEMA 4X, STAINLESS STEEL NON-FUSIBLE DISCONNECT SWITCH. MOUNT ON WALL @ 5'-6" A.F.F. TO TOP.
14. PROVIDE NEW 3P100A, NEMA 4X, STAINLESS STEEL NON-FUSIBLE DISCONNECT SWITCH. MOUNT ON WALL @ 5'-6" A.F.F. TO TOP.
15. MOUNT MECHANICAL CONTRACTOR FURNISHED DOOR SWITCH(ES). PROVIDE WIRING AS REQUIRED BY MANUFACTURER.
16. PROVIDE INTERUNIT WIRE HARNESS FROM FCU TO OUTDOOR UNIT. VERIFY WIRING WITH EQUIPMENT SUPPLIER. PROVIDE RACEWAY AND WIRES AS
17. ROUTE NEW EXPOSED RACEWAY ON SIDE OF BEAM.
18. TO ADJACENT OUTLET BOX. SEE LIGHTING PLAN: 1/E201. INTERCONNECT EXHAUST FAN WITH LIGHTS.
19. PROVIDE NEW STEEL CHANNEL H-FRAME. SEE ARCH PLANS FOR MOUNTING DETAIL.
20. PROVIDE NEW CAST METAL OUTLET BOX, WEATHER-RESISTANT GFCI TYPE RECEPTACLE, EXTRA-DUTY RATED, CAST METAL, WEATHERPROOF WHILE-IN-USE TYPE COVER AND EXPOSED WIRING. MOUNT ON VERTICAL STEEL CHANNEL SUPPORTS.
21. PROVIDE NEW 3P30A, NEMA 4X, STAINLESS STEEL NON-FUSIBLE DISCONNECT SWITCH. PROVIDE VERTICAL STEEL CHANNEL SUPPORTS.
22. PROVIDE NEW 6"SQ. x 4"D. (NEMA 4X - STAINLESS STEEL) JUNCTION BOX.
23. INSTALL MOTOR STARTER FURNISHED BY MECH. CONTRACTOR.

NOTE:

MANUAL MOTOR CONTROL SWITCH SHALL BE 2-POLE OR 3-POLE AS REQUIRED. SWITCH SHALL BE RATED AS SUITABLE FOR USE AS A MOTOR DISCONNECT. INDOOR SWITCHES SHALL BE INSTALLED FLUSH IN A SURFACE METAL RACEWAY OUTLET BOX OR SWITCH MANUFACTURER PROVIDED NEMA 1 ENCLOSURE. OUTDOOR BOXES SHALL BE CAST METAL OR MANUFACTURER PROVIDED NEMA 3R ENCLOSURE. PRESSED STEEL BOXES SHALL NOT BE USED IN ANY LOCATION.
PASS & SEYMOUR # 780XMD SERIES,
LEVITON # MS30X-DS SERIES AND
HUBBELL # HBL78XXD SERIES EQUAL.

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Signature

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3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
MECHANICAL ELECTRICAL PLAN – NEW WORK

DATE MARCH 2026
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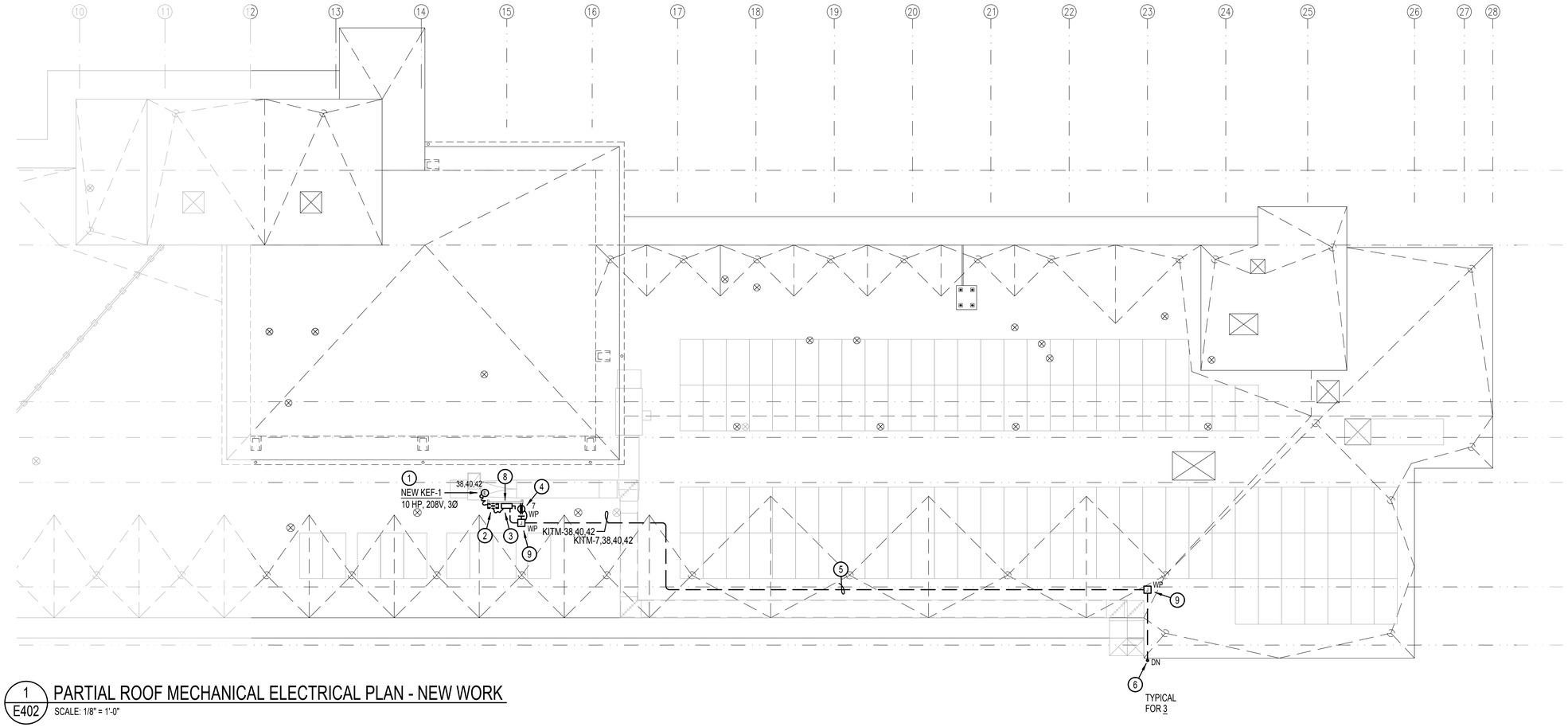

1 / E402 PARTIAL ROOF MECHANICAL ELECTRICAL PLAN - NEW WORK

SCALE: 1/8" = 1'-0"

ELECTRICAL NOTES: EXISTING/NEW WORK

1. PROVIDE ELECTRICAL CONNECTION TO EQUIPMENT WITH LIQUID-TIGHT FLEXIBLE CONDUIT.
2. INSTALL MOTOR STARTER FURNISHED BY MECH. CONTRACTOR.
3. PROVIDE NEW 3P60A, NEMA 4X, STAINLESS STEEL NON-FUSIBLE DISCONNECT SWITCH. PROVIDE VERTICAL STEEL CHANNEL SUPPORTS.
4. PROVIDE NEW CAST METAL OUTLET BOX, WEATHER-RESISTANT GFCI TYPE RECEPTACLE, EXTRA-DUTY RATED, CAST METAL, WEATHERPROOF WHILE-IN-USE TYPE COVER AND EXPOSED WIRING. MOUNT ON VERTICAL STEEL CHANNEL SUPPORTS.
5. MOUNT NEW EXPOSED GALVANIZED RIGID STEEL RACEWAY ON RACEWAY SUPPORTS. PROVIDE SUPPORTS AT 5'-0" O.C. SEE DETAIL: 2/E803.
6. ROUTE NEW EXPOSED RACEWAY DOWN SIDE OF BUILDING.
7. PROVIDE NEW 3P30A, NEMA 4X, STAINLESS STEEL NON-FUSIBLE DISCONNECT SWITCH. PROVIDE VERTICAL STEEL CHANNEL SUPPORTS.
8. PROVIDE NEW STEEL CHANNEL H-FRAME. SEE ARCH PLANS FOR MOUNTING DETAIL.
9. PROVIDE NEW 6"SQ. x 4"D. (NEMA 4X - STAINLESS STEEL) JUNCTION BOX.

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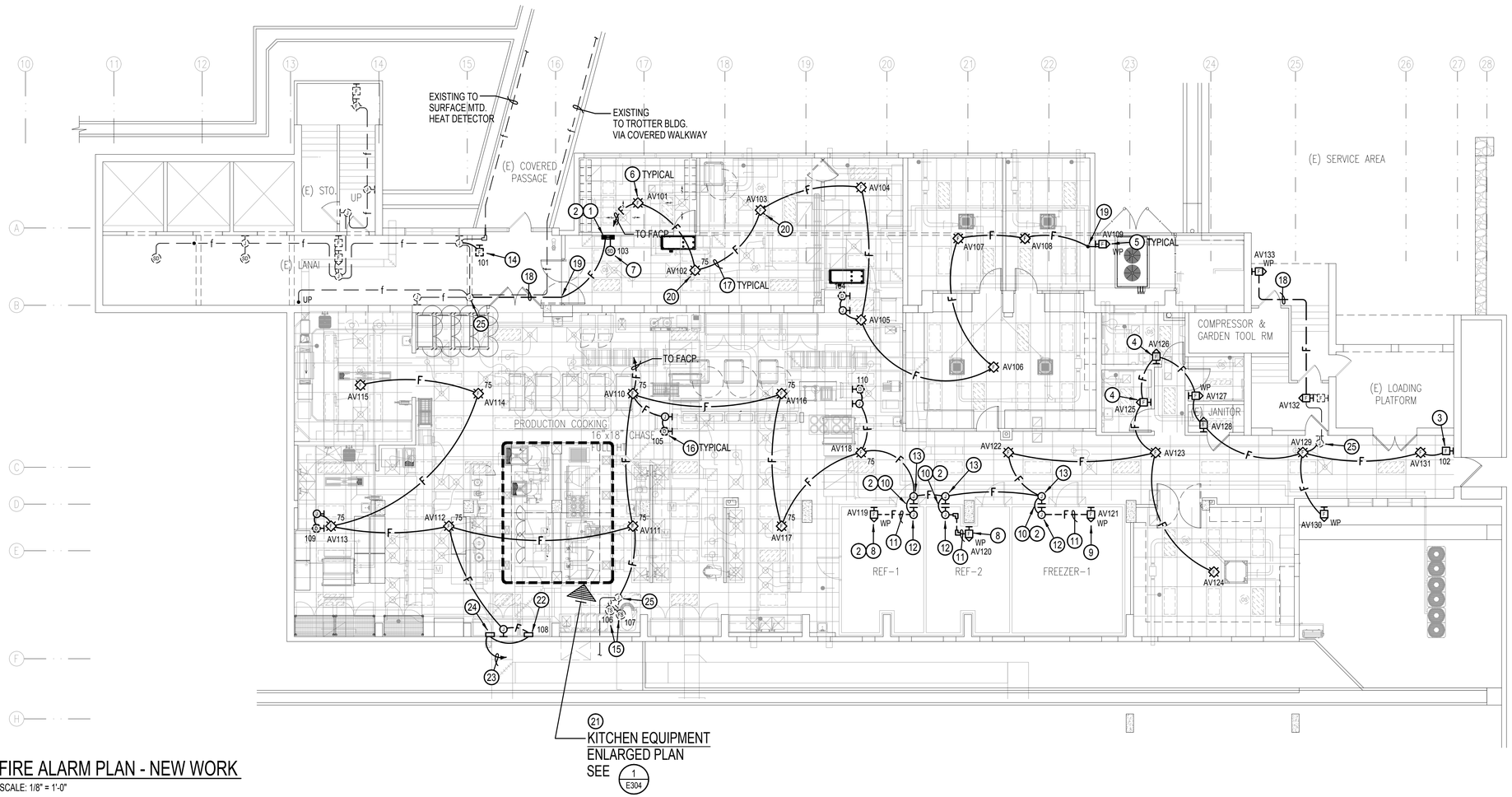

1/E501 FIRE ALARM PLAN - NEW WORK
SCALE: 1/8" = 1'-0"

ELECTRICAL NOTES: EXISTING/NEW WORK

1. PROVIDE NEW FIRE ALARM CONTROL PANEL (FACP) WITH VOICE EVAC. AND BATTERY BACKUP. PROVIDE TRANSIENT VOLTAGE SURGE SUPPRESSOR (TVSS). FACP SHALL BE COMPATIBLE TO EXISTING HOCHIKI SYSTEM. MOUNT PANEL ON WALL @ 5'-6" A.F.F. TO TOP.
2. PROVIDE ENGRAVED LABEL AT THE FIRE ALARM CONTROL PANEL INDICATING "THIS FIRE ALARM CONTROL PANEL IS FED FROM THE FIRE ALARM CIRCUIT LOCATED IN CORRIDOR IN FRONT OF DRY STORAGE".
3. PROVIDE NEW SURFACE MOUNTED FIRE ALARM MANUAL PULL STATION. SEE DETAIL: 1/E803.
4. PROVIDE NEW SURFACE MOUNTED FIRE ALARM SPEAKER & STROBE AND EXPOSED WIRING. SEE DETAIL: 2/E803.
5. PROVIDE NEW SURFACE MOUNTED WEATHERPROOF FIRE ALARM SPEAKER & STROBE AND EXPOSED WIRING. SEE DETAIL: 3/E803.
6. PROVIDE NEW CEILING MOUNTED FIRE ALARM SPEAKER & STROBE AND CONCEALED WIRING. MOUNT ON NEW FLUSH MOUNTED OUTLET BOX. PROVIDE MANUFACTURER FURNISHED SKIRT ADAPTER. SEE DETAIL: 4/E803.
7. PROVIDE NEW FLUSH OUTLET BOX, SMOKE DETECTOR AND WIRING.
8. PROVIDE NEW WET LOCATION RATED FIRE ALARM SPEAKER & STROBE DEVICE MOUNTED ON WEATHERPROOF BACKBOX. DEVICE SHALL HAVE OPERATIONAL TEMPERATURE RANGE ALLOWING FOR USE IN WALK-IN REFRIGERATOR.
9. PROVIDE NEW WET LOCATION RATED FIRE ALARM SPEAKER & STROBE DEVICE MOUNTED ON WEATHERPROOF BACKBOX. DEVICE SHALL HAVE OPERATIONAL TEMPERATURE RANGE ALLOWING FOR USE IN WALK-IN FREEZER.
10. DRILL THROUGH REFRIGERATOR/FREEZER WALL TO INSTALL NEW FIRE ALARM WIRING. PATCH TO MATCH EXISTING CONDITION. PROVIDE MOISTURE SEALS AT PENETRATION LOCATION.
11. PROVIDE PVC RACEWAY WITH WIRES. SEAL ON BOTH ENDS WITH MOISTURE RESISTANT SEALING GUM. PRESSTITE PERMAGUM OR APPROVED EQUAL.
12. PROVIDE PVC OUTLET BOX WITH 1/4" WEEP HOLE IN BOTTOM. PROVIDE WITH GASKETED COVER.
13. PROVIDE PVC OUTLET BOX WITH WITH GASKETED COVER.
14. INSTALL RELOCATED FIRE ALARM PULL STATION. PROVIDE NEW EXPOSED RACEWAY AND WIRES. EXTEND EXISTING INITIATING CIRCUIT TO PULL STATION.
15. PROVIDE FIRE ALARM CONNECTION TO FIRE SPRINKLER PRESSURE SWITCH AND TAMPER SWITCH WITH FLEXIBLE RACEWAY AND WIRES. VERIFY EXACT LOCATION WITH MECH. CONTRACTOR. PROVIDE ADDRESSABLE MODULES FOR MONITORING OF ALARM AND TROUBLE CONDITIONS.
16. CONNECT NEW FIRE ALARM WIRES TO MECHANICAL FURNISHED DUCT SMOKE DETECTOR. PROVIDE ADDRESSABLE MODULES IN OUTLET BOX AND ADDITIONAL WIRING AND OUTLET BOXES AS REQUIRED.
17. ROUTE NEW WIRING IN CEILING SPACE. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
18. MOUNT NEW RACEWAY HIGH ON WALL / CEILING. PROVIDE HANGERS AND SUPPORTS PER N.E.C.
19. DRILL THROUGH EXISTING WALL TO INSTALL NEW RACEWAY. PATCH TO MATCH EXISTING CONDITION. SEAL OPENING WITH FIRE SEALANT. PROVIDE WATERTIGHT SEAL AT EXTERIOR WALLS.
20. PROVIDE TUNE-DOWN RELAY IN FIRE ALARM CONTROL PANEL TO ALLOW THIS SPEAKER TO BE MUTED WHEN NEARBY MICROPHONE IS IN USE TO PREVENT AUDIO FEEDBACK.
21. PROVIDE EMERGENCY SHUTOFF TO KITCHEN EQUIPMENT IN THIS AREA. SEE DETAIL: 1/E502.
22. PROVIDE FIRE ALARM CONNECTION TO NEW HOOD FIRE SUPPRESSION SYSTEM CONTROLLER. PROVIDE ADDRESSABLE MODULE IN OUTLET BOX NEXT TO CONTROLLER.
23. PROVIDE HOMERUN RACEWAY(S) IN CEILING SPACE TO ELECTRICAL PANELS. SEE DETAIL: 1/E502.
24. PROVIDE NEW CONTACTOR CABINET. MOUNT HIGH ON WALL WITH MOMENTARY CONTACT PUSHBUTTON BELOW 45" A.F.F. TO CENTER.
25. CONNECT NEW RACEWAY TO EXISTING FIRE ALARM JUNCTION BOX.

DATE | DESCRIPTION | REV. NO.

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Signature

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3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
FIRE ALARM PLAN – NEW WORK

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SHEET E501 OF SHEETS

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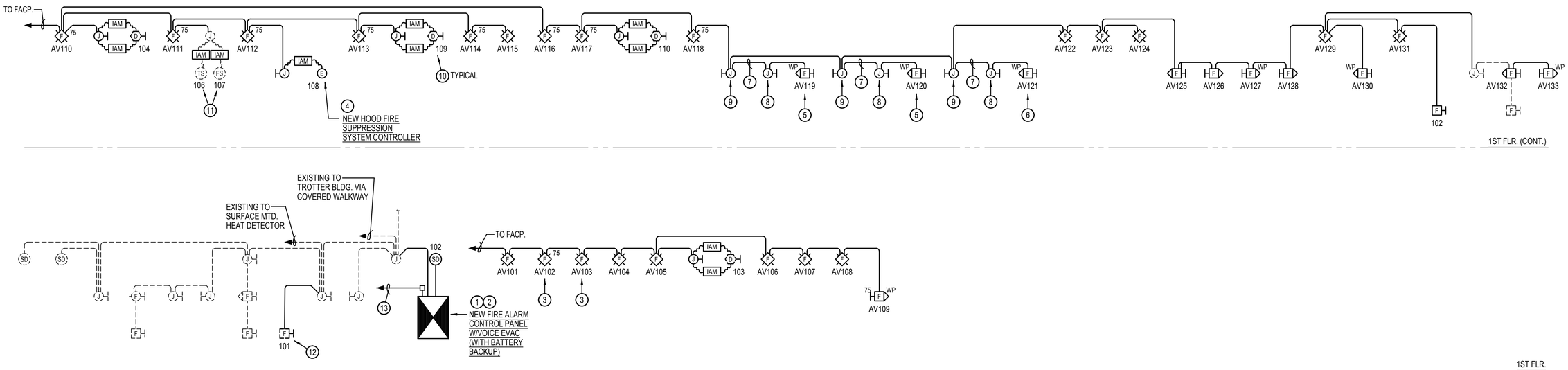

1 / E502 FIRE ALARM RISER DIAGRAM

SCALE: NOT TO SCALE

ELECTRICAL NOTES: EXISTING/NEW WORK

1. PROVIDE NEW FIRE ALARM CONTROL PANEL (FACP) WITH VOICE EVAC. AND BATTERY BACKUP. PROVIDE TRANSIENT VOLTAGE SURGE SUPPRESSOR (TVSS). FACP SHALL BE COMPATIBLE TO EXISTING HOCHIKI SYSTEM. MOUNT PANEL ON WALL @ 5'-6" A.F.F. TO TOP.
2. PROVIDE ENGRAVED LABEL AT THE FIRE ALARM CONTROL PANEL INDICATING "THIS FIRE ALARM CONTROL PANEL IS FED FROM THE FIRE ALARM CIRCUIT LOCATED IN THE CORRIDOR IN FRONT OF DRY STORAGE".
3. PROVIDE TUNE-DOWN RELAY IN FIRE ALARM CONTROL PANEL TO ALLOW THIS SPEAKER TO BE MUTED WHEN NEARBY MICROPHONE IS IN USE TO PREVENT AUDIO FEEDBACK.
4. PROVIDE FIRE ALARM CONNECTION TO NEW HOOD FIRE SUPPRESSION SYSTEM CONTROLLER. PROVIDE ADDRESSABLE MODULE IN OUTLET BOX NEXT TO CONTROLLER.
5. PROVIDE NEW WET LOCATION RATED FIRE ALARM SPEAKER & STROBE DEVICE MOUNTED ON WEATHERPROOF BACKBOX. DEVICE SHALL HAVE OPERATIONAL TEMPERATURE RANGE ALLOWING FOR USE IN WALK-IN REFRIGERATOR.
6. PROVIDE NEW WET LOCATION RATED FIRE ALARM SPEAKER & STROBE DEVICE MOUNTED ON WEATHERPROOF BACKBOX. DEVICE SHALL HAVE OPERATIONAL TEMPERATURE RANGE ALLOWING FOR USE IN WALK-IN FREEZER.
7. PROVIDE PVC RACEWAY WITH WIRES. SEAL ON BOTH ENDS WITH MOISTURE RESISTANT SEALING GUM. PRESSTITE PERMAGUM OR APPROVED EQUAL.
8. PROVIDE PVC OUTLET BOX WITH 1/4" WEEP HOLE IN BOTTOM. PROVIDE WITH GASKETED COVER.
9. PROVIDE PVC OUTLET BOX WITH WITH GASKETED COVER.
10. CONNECT NEW FIRE ALARM WIRES TO MECHANICAL FURNISHED DUCT SMOKE DETECTOR. PROVIDE ADDRESSABLE MODULES IN OUTLET BOX AND ADDITIONAL WIRING AND OUTLET BOXES AS REQUIRED.
11. PROVIDE FIRE ALARM CONNECTION TO FIRE SPRINKLER PRESSURE SWITCH AND TAMPER SWITCH WITH FLEXIBLE RACEWAY AND WIRES. VERIFY EXACT LOCATION WITH MECH. CONTRACTOR. PROVIDE ADDRESSABLE MODULES FOR MONITORING OF ALARM AND TROUBLE CONDITIONS.
12. INSTALL RELOCATED FIRE ALARM PULL STATION. PROVIDE NEW EXPOSED RACEWAY AND WIRES. EXTEND EXISTING INITIATING CIRCUIT TO PULL STATION.
13. NEW 3/4"C, 2-#12, #12 GRD. TO PANEL "KIT" CKT. #125.

FIRE ALARM LEGEND

F	FIRE ALARM MANUAL PULL STATION.
F	FIRE ALARM SPEAKER & STROBE, INDICATES 15 CANDELA RATING.
F 75	FIRE ALARM SPEAKER & STROBE, NUMBER INDICATES CANDELA RATING.
F WP	FIRE ALARM SPEAKER & STROBE, WEATHERPROOF.
	FIRE ALARM CEILING MTD. SPEAKER & STROBE, INDICATES 15 CANDELA RATING.
75	FIRE ALARM CEILING MTD. SPEAKER & STROBE, NUMBER INDICATES CANDELA RATING.
SD	FIRE ALARM SMOKE DETECTOR.
IAM	FIRE ALARM INDIVIDUAL ADDRESSABLE MODULE.
D	DUCT SMOKE DETECTOR. FURNISHED BY MECH. CONTRACTOR.
F	EXISTING FIRE ALARM MANUAL PULL STATION.
F	EXISTING FIRE ALARM SPEAKER & STROBE.
F	EXISTING FIRE ALARM STROBE.
TS	EXISTING FIRE SPRINKLER SUPERVISORY TAMPER SWITCH CONNECTION.
FS	EXISTING FIRE SPRINKLER FLOW SWITCH CONNECTION.

NOTE:

CIRCUIT BREAKERS FEEDING FIRE ALARM EQUIPMENT SHALL HAVE PROVISIONS FOR LOCKING THE CIRCUIT BREAKER IN THE "CLOSED" POSITION. RED COLORED ID PLATE INDICATING "FIRE ALARM CIRCUIT" SHALL BE LOCATED ADJACENT TO THE CIRCUIT BREAKER.

NO.	DESCRIPTION	DATE

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Signature

LICENSE EXPIRES: APRIL 30, 2028

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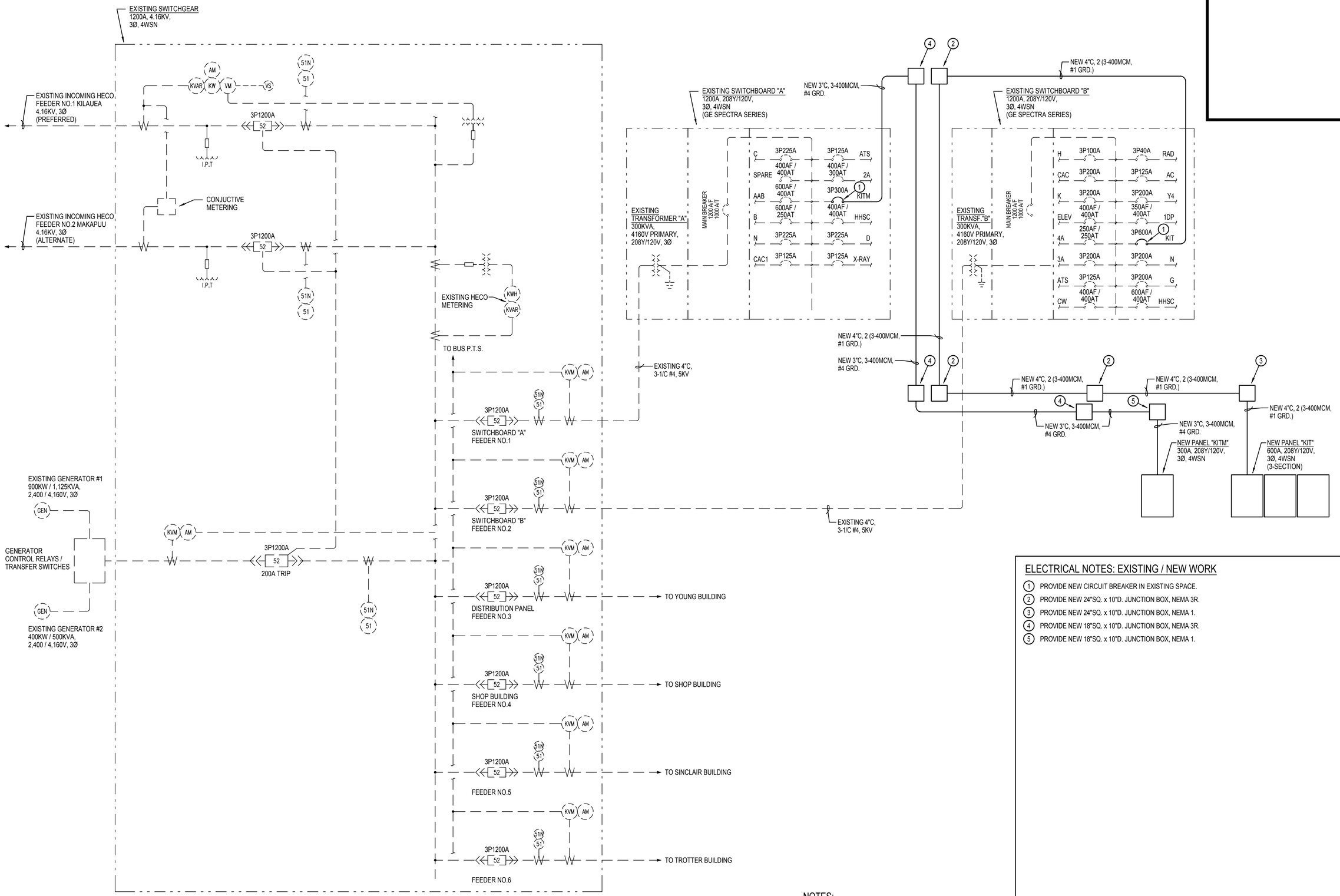
SHEET E502 OF SHEETS

380.147



1 E301 ONE LINE DIAGRAM - EXISTING/REMOVAL WORK
NOT TO SCALE

NOTES:

1. DASHED LINES (— — —) INDICATE EXISTING CONDITION.
2. DASHED LINES W/X's (✕ ✕ ✕) INDICATE REMOVAL WORK.

ELECTRICAL NOTES: EXISTING / NEW WORK

1. PROVIDE NEW CIRCUIT BREAKER IN EXISTING SPACE.
2. PROVIDE NEW 24"SQ. x 10"D. JUNCTION BOX, NEMA 3R.
3. PROVIDE NEW 24"SQ. x 10"D. JUNCTION BOX, NEMA 1.
4. PROVIDE NEW 18"SQ. x 10"D. JUNCTION BOX, NEMA 3R.
5. PROVIDE NEW 18"SQ. x 10"D. JUNCTION BOX, NEMA 1.

DATE
DESCRIPTION
REV. NO.

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

Signature
LICENSE EXPIRES : APRIL 30, 2028

BRIAN T. ITOZAKI LICENSED PROFESSIONAL ENGINEER No. 9058-E U.S.A. HAWAII

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
ONE LINE DIAGRAM – NEW WORK

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC CHECK BI
SHEET
E601
OF SHEETS

380.147

Project: Leahi Hospital - Young Building, Sub-Basement Food Service Operations - Phase II
Date: 3/30/2026
Prepared By: Bowers + Kubota Consulting

Short Circuit Analysis

Description	Available Short Current at Beginning of Fault	XFMR KVA	XFMR Primary Voltage	Line to Line Voltage	XFMR Impedance (%)	Conductors Per Phase	Single Conductors or Cable (S or C)	AL or CU	Conductor Length (LF)	Conductor AWG or kcmil	Magnetic Conduit? (Y or N)	Available Short Circuit Current	kAIC Rating	Working Distance (inches)	Arc-In-Box Incident Energy (cal/cm^2) **	Flash Protection Boundary (Inches)
Existing Transformer "A"		300	4160	208	5.74							14,507				0
XFMR to Main Swbd "A"	14,507			208		4	S	CU	20	350	N	14,132	Exist	18	0.91	15
Main Swbd "A" to Panel "KITM"	14,132			208		1	S	CU	360	400	N	5,151	22k	18	0.35	8
														18		
Existing Transformer "B"		300	4160	208	5.74							14,507		18	0.00	0
XFMR to Main Swbd "B"	14,507			208		4	S	CU	20	350	N	14,132	Exist	18	0.00	0
Main Swbd "B" to Panel "KIT"	14,132			208		2	S	CU	350	400	N	7,649	22k	18	0.00	0

** Refer to NFPA 70E Table 130.7 to select appropriate PPE based on incident energy clculated and shown on this table. Calculations are estimates, and were based on typical breaker clearing times of their respective sizes and an assumed 18 inch working space. Updated calclations should be done by the manufacturer based on Contractor provided equipment with correct time curve values.

PROTECTIVE EQUIPMENT	PROTECTIVE CLOTHING	MIN ARC RATING
- Hard hat - Safety Glasses or Safety Goggles (SR) - Hearing protection (ear canal inserts) - Heavy duty leather gloves* - Leather work shoes	- Arc rated long sleeve shirt and pants or arc rated coverall - Arc rated face shield or arc flash suit hood - Arc rated jacket, parka, rainwear or hard hat liner	4 cal/cm^2
- Hard hat - Safety Glasses or Safety Goggles (SR) - Hearing protection (ear canal inserts) - Heavy duty leather gloves* - Leather work shoes	- Arc rated long sleeve shirt and pants or arc rated coverall - Arc rated face shield or arc flash suit hood - Arc rated jacket, parka, rainwear or hard hat liner	8 cal/cm^2
- Hard hat - Safety Glasses or Safety Goggles (SR) - Hearing protection (ear canal inserts) - Heavy duty leather gloves* - Leather work shoes	- Arc rated long sleeve shirt - Arc rated pants - Arc rated coveralls - Arc rated arc flash suit jacket - Arc rated arc flash suit pants - Arc rated arc flash suit hood - Arc rated gloves - Arc rated jacket, parka, rainwear or hard hat liner	25 cal/cm^2
- Hard hat - Safety Glasses or Safety Goggles (SR) - Hearing protection (ear canal inserts) - Heavy duty leather gloves* - Leather work shoes	- Arc rated long sleeve shirt - Arc rated pants - Arc rated coveralls - Arc rated arc flash suit jacket - Arc rated arc flash suit pants - Arc rated arc flash suit hood - Arc rated gloves - Arc rated jacket, parka, rainwear or hard hat liner	40 cal/cm^2

Contractor shall refer to NFPA 70E for complete PPE Requirements

Feeder Calculations - Panel "KITM"			
220.50 Motor Load	Qty	VA/Qty	
Motor Loads			
ACF-1	1	2346	2346 VA
ACF-2	1	2346	2346 VA
ACF-3	1	2346	2346 VA
ACCU-1-1	1	7488	7488 VA
ACCU-2-1	1	2288	2288 VA
ACCU-3-1	1	16920	16920 VA
ACCU-4-1	1	19800	19800 VA
ACCU-4-2	1	19800	19800 VA
ACCU-4-3	1	15840	15840 VA
EF-1	1	19.2	19.2 VA
EF-2	1	7.7	7.7 VA
EF-3	1	9.4	9.4 VA
EF-4	1	7.1	7.1 VA
EF-5	1	1840	1840 VA
FCU-1-1	1	62.4	62.4 VA
FCU-1-2	1	62.4	62.4 VA
FCU-1-3	1	62.4	62.4 VA
FCU-1-4	1	62.4	62.4 VA
FCU-2-1	1	208	208 VA
FCU-3-1	1	859	859 VA
FCU-3-2	1	859	859 VA
FCU-4-1	1	1706	1706 VA
FCU-4-2	1	1706	1706 VA
FCU-4-3	1	1706	1706 VA
SF-1	1	10	10 VA
SF-2	1	10	10 VA
SF-3	1	14	14 VA
SF-4	1	14	14 VA

25% of Largest Motor Load				
ACCU-4-1	25%	1	19800	4950 VA
		Motor Subtotal		**103349** VA
Total Load				**103349** VA
At 208V, 3PH, 4W				**287** A
Optional Calculations				
N/A				0 VA
				0 VA
TOTAL BUILDING LOAD				**103349** VA
At 208V, 3PH, 4W				**287** A
Conductor chosen at 75° C ampacity		**4-400MCM x 1 set =**		**335 A Max**

DATE
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Signature
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SUB-BASEMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
ELECTRICAL CALCULATIONS I

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC CHECK BI

SHEET
E602
OF SHEETS

380.147

Feeder Calculations - Panel "KIT"

220.42 General Lighting	VA per SF	SF	Qty	VA/Qty	
New Classrom Building					
Table 220.12 (Hospitals)	2	8478	1	16956	16956 VA
Demand Factor (Table 220.42)					
"Hospitals" @ 40% for first 50,000VA					6782 VA
@20% for over 50,000VA					**6782** VA

220.44 Receptacle Load			Qty	VA/Qty	
220.14(I) Receptacle Outlets					
New Classrom Building					
15A or 20A 125V general-use receptacle outlet			33	180	5940 VA
Single device w/4 or more receptacles (quad)			10	90	900 VA
					6840 VA
Table 220.44 Demand Factor					
First 10kVA @100%					6840 VA
Remainder over 10kVA @50%					0 VA
					6840 VA

220.14 (A) Specific Appliances or Loads	Qty	VA/Qty	
30 Gallon Tilting Skillet, Gas	1	360	360 VA
Convection Steamer, Dbl. Stacked, Gas	4	480	1920 VA
DVC Control Cabinet	1	120	120 VA
Hood Fire Suppression System	1	480	480 VA
Convection Oven, Dbl. Stacked, Gas	4	864	3456 VA
25 Gallon Tilting Kettle, Gas	1	600	600 VA
40 Gallon Tilting Kettle, Gas	1	1200	1200 VA
Microwave Oven	1	2016	2016 VA
20 Cup Rice Cooker	1	1548	1548 VA
Slimline 3-Compt. Hot Food Wells	1	2995.2	2995.2 VA
Slimline 2-Compt. Hot Food Wells	2	1996.8	3993.6 VA
Chemical Dispenser for Dish Machine	1	960	960 VA
Coffee Urn	1	5824	5824 VA
Coffee Brewer	1	5283.2	5283.2 VA
Conveyer Dish Machine	1	7200	7200 VA
Heated Blower Dryer	1	12312	12312 VA
Booster Heater	1	360	360 VA
Fire Alarm Control Panel	1	100	100 VA
Gas Shut Off Valve	1	100	100 VA
Subtotal			**50828** VA

220.50 Motor Load		Qty	VA/Qty	
Motor Loads				
Refrigeration System, Remote		1	20340	20340 VA
Walk-In Freezer		1	4222.4	4222.4 VA
Walk-In Refrigerator - 1		1	1800	1800 VA
Walk-In Refrigerator - 2		1	1800	1800 VA
2 Door Reach-In Refrigerator		1	1548	1548 VA
2 Door Reach-In Freezer		1	1476	1476 VA
40 Quart Mixer		1	2016	2016 VA
80 Quart Mixer		1	4320	4320 VA
Food Blender		1	1800	1800 VA
Island Exhaust Hood Make-Up Air Fan		1	960	960 VA
2 Door Reach-In Refrigerator		1	1332	1332 VA
3 Door Reach-In Refrigerator		1	1752	1752 VA
Vertical Cutter Mixer		1	1200	1200 VA
Food Processor		1	840	840 VA
Ice Machine		1	2059.2	2059.2 VA
Air curtain Refrigerator		1	1920	1920 VA
Mobile Heated Cabinet		1	2004	2004 VA
Make-Up Conveyor		1	1800	1800 VA
Mobile Heated Plate Dispenser		2	1800	3600 VA
Ice and Water Dispenser		1	1020	1020 VA
2 Door Refrigerator		2	1548	3096 VA
2 Door Freezer		1	2052	2052 VA
Conveyor Toaster		1	3224	3224 VA
Tray Sealer		1	396	396 VA
25% of Largest Motor Load				
Refrigeration System, Remote	25%	1	5085	1271.25 VA
		Motor Subtotal		**67849** VA

Total Load	**170855** VA
At 208V, 3PH, 4W	**475** A

Optional Calculations	
N/A	
	0 VA
	0 VA
TOTAL BUILDING LOAD	**170855** VA
At 208V, 3PH, 4W	**475** A

Conductor chosen at 75° C ampacity — **4-400MCM x 2 set =** **670 A Max**

DATE | DESCRIPTION | REV. NO.

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Signature

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T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
ELECTRICAL CALCULATIONS II

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC | CHECK BI

SHEET
E603
OF SHEETS

380.147

NEW PANEL "KIT" SCHEDULE

(2 SECTIONS)

208Y/120 VOLTS, 3 PHASES, 4 WSN
BREAKER MIN. A.I.C. 10,000
SURFACE MTG. 600A MAIN BKR.

	CKT. NO.	USE	CIRCUIT BREAKER POLES	CIRCUIT BREAKER AMPS	CONNECTED LOAD (KVA) A	CONNECTED LOAD (KVA) B	CONNECTED LOAD (KVA) C	WIRE SIZE
SECTION I	1	LIGHTS	1	20	1.3			12
	2	LIGHTS	1	20	0.8			10
	3	LIGHTS	1	20		1.4		12
	4	LIGHTS	1	20		0.8		10
	5	LIGHTS	1	20			1.2	12
	6	LIGHTS, EM LTG.	1	20			0.5	12
	7	RECEP.	1	20	0.8			12
	8	RECEP.	1	20	0.8			10
	9	RECEP.	1	20		0.8		12
	10	RECEP.	1	20		0.8		10
	11	RECEP.	1	20			0.8	12
	12	RECEP.	1	20			0.8	10
	13	RECEP.	1	20	0.8			12
	14	RECEP.	1	20	0.8			10
	15	RECEP.	1	20		0.8		12
	16	RECEP.	1	20		0.8		10
	17	RECEP.	1	20			0.8	12
	18	RECEP.	1	20			0.8	10
***	19	CHEMICAL DISPENSER FOR DISH MACHINE	1	20	1.0			12
	20	RECEP. - 3-DR. REACH-IN REFRIGERATOR	1	20	1.8			10
	21	GAS SHUT OFF VALVE	1	20		0.1		12
	22	RECEP. - 2-DR. REACH-IN REFRIGERATOR	1	20		1.3		12
	23	RECEP.	1	20			0.8	12
	24	HOOD FIRE SUPPRESSION SYSTEM	1	20			0.5	10
	25	RECEP.	1	20	0.8			12
	26	RECEP.	1	20	0.8			10
	27	RECEP. - 20 CUP RICE COOKER	1	20		1.5		12
**	28	RECEP. - 25 GAL. TILTING KETTLE, 37 GAL TILTING SKILLET	1	20		0.6		10
	29	RECEP. - FOOD PROCESSOR	1	20			0.8	12
**	30	RECEP. - 40 GAL. TILTING KETTLE	1	20			1.2	12
	31	RECEP. - VERTICAL CUTTER MIXER	1	20	1.2			12
**	32	RECEP. - CONVECTION OVENS (LEFT)	1	20	1.7			12
	33	RECEP. - MICROWAVE OVEN	1	20		2.0		12
**	34	RECEP. - CONVECTION OVENS (RIGHT)	1	20		1.7		12
***	35	EXHAUST HOOD LIGHTS & SENSORS	1	20			1.0	12
	36	RECEP. - 2-DR. REACH-IN FREEZER	1	20			1.5	12
	37	EXHAUST HOOD DCV CONTROL CABINET	1	20	0.1			12
	38	RECEP. - 2-DR. REACH-IN REFRIGERATOR	1	20	1.5			12
	39	RECEP.	1	20		0.8		12
	40	RECEP.	1	20		0.8		12
	41	RECEP.	1	20			0.8	12
	42	RECEP.	1	20			0.8	12
SECTION II	43	RECEP.	1	20	0.8			12
	44	RECEP. - MOBILE HEATED PLATE DISPENSER	1	20	1.8			12
	45	RECEP. - FOOD BLENDER	1	20		1.8		12
	46	RECEP. - MOBILE HEATED PLATE DISPENSER	1	20		1.8		12
	47	RECEP. - AIR CURTAIN FRIDGE	1	20			1.9	12
	48	RECEP.	1	20			0.8	12
	49	RECEP. - AIR CURTAIN FRIDGE	1	20	1.9			12
	50	RECEP. - ICE AND WATER DISPENSER	1	20	1.0			12
	51	RECEP. - AIR CURTAIN FRIDGE	1	20		1.9		12
	52	RECEP. - 2-DR. REFRIGERATOR	1	20		1.5		12
	53	RECEP.	1	20			0.8	12
	54	RECEP. - 2-DR. REFRIGERATOR	1	20			1.5	12
	55	WALK-IN REF. #1	1	20	1.6			12
	56	RECEP. - 2-DR. FREEZER	1	20	2.1			12
	57	WALK-IN REF. #1	1	20		1.6		12
	58	WALK-IN FREEZER	1	20		1.6		12
	59	WALK-IN REF. #2	1	20			1.6	12
	60	WALK-IN FREEZER	1	20			1.6	12
	61	WALK-IN REF. #2	1	20	1.6			12
**	62	CONVECTION STEAMERS	1	20	0.9			12
	63	BOOSTER HEATER (GAS) FOR DISHWASHER	1	15		0.4		12
**	64	CONVECTION STEAMERS	1	20		0.9		12
	65	SPARE	1	20			---	---
	66	SPARE	1	20			---	---
	67	SPARE	1	20	---			---
	68	SPARE	1	20	---			---
	69	SPARE	1	20		---		---
	70	SPARE	1	20		---		---
	71	CONVEYOR TOASTER	2	30			1.6	10
	72	WALK-IN FREEZER EVAP. COIL	2	30			2.1	10
	73	CONVEYOR TOASTER	---	30	1.6			10
	74	WALK-IN FREEZER EVAP. COIL	---	30	2.1			10
	75	COFFEE URN	2	40		2.9		8
***	76	ICE MACHINE	2	20		1.0		12
	77	COFFEE URN	---	40			2.9	8
***	78	ICE MACHINE	---	20			1.0	12
	79	COFFEE BREWER	2	40	2.7			8
	80	CONVEYOR LOADCENTER	2	50	4.3			6
	81	COFFEE BREWER	---	40		2.7		8
	82	CONVEYOR LOADCENTER	---	50		4.3		6
	83	PFB	1	---			---	---
	84	PFB	1	---			---	---
SECTION III	85	40 QT. MIXER	3	20	0.7			12
	86	80 QT. MIXER	3	20	1.5			12
	87	40 QT. MIXER	---	20		0.7		12
	88	80 QT. MIXER	---	20		1.5		12
	89	40 QT. MIXER	---	20			0.7	12
	90	80 QT. MIXER	---	20			1.5	12
	91	PFB	---	---	---			---
	92	PFB	---	---	---			---
	93	PFB	---	---		---		---
	94	PFB	---	---		---		---
	95	PFB	---	---			---	---
	96	PFB	---	---			---	---
	97	PFB	---	---	---			---
	98	PFB	---	---	---			---
	99	PFB	---	---		---		---
	100	PFB	---	---		---		---
	101	PFB	---	---			---	---
	102	PFB	---	---			---	---
	103	REFRIG. SYSTEM	3	60	5.4			6
	104	PFB	---	---	---			---
	105	REFRIG. SYSTEM	---	60		5.4		6
	106	PFB	---	---		---		---
	107	REFRIG. SYSTEM	---	60			5.4	6
	108	PFB	---	---			---	---
	109	PFB	---	---	---			---
	110	PFB	---	---	---			---
	111	PFB	---	---		---		---
	112	PFB	---	---		---		---
	113	PFB	---	---			---	---
	114	PFB	---	---			---	---
	115	PFB	---	---	---			---
	116	PFB	---	---	---			---
	117	PFB	---	---		---		---
	118	PFB	---	---		---		---
	119	CONVEYOR DISH MACHINE	3	20			2.4	12
	120	PFB	---	---			---	---
	121	CONVEYOR DISH MACHINE	---	20	2.4			12
**	122	HEATED BLOWER DRYER	3	45	4.1			3/0
	123	CONVEYOR DISH MACHINE	---	20		2.4		12
**	124	HEATED BLOWER DRYER	---	45		4.1		3/0
*	125	FIRE ALARM CONTROL PANEL	1	20			0.5	12
***	126	HEATED BLOWER DRYER	---	45			4.1	3/0
		TOTAL LOAD/ PHASE			50.7	51.6	43	
		TOTAL LOAD			145.3 KVA			
		DEMAND FACTOR			0.8			
		DEMAND LOAD			116.2 KVA			

PFB - PROVISION FOR FUTURE BREAKER.
* SEE FIRE ALARM CIRCUIT BREAKER NOTE ON THIS SHEET.

** PROVIDE GFCI TYPE CIRCUIT BREAKER.
*** PROVIDE PROVISION TO LOCK CIRCUIT BREAKER IN THE "OFF" POSITION.

NOTE:

CIRCUIT BREAKERS FEEDING FIRE ALARM EQUIPMENT SHALL HAVE PROVISIONS FOR LOCKING THE CIRCUIT BREAKER IN THE "CLOSED" POSITION. RED COLORED ID PLATE INDICATING "FIRE ALARM CIRCUIT" SHALL BE LOCATED ADJACENT TO CIRCUIT BREAKER.

DATE
DESCRIPTION
REV. NO.

This work was prepared by me or under my supervision and shall be under my observation.
Signature
LICENSE EXPIRES : APRIL 30, 2028

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SHEET TITLE
PANEL SCHEDULE I

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC CHECK BI
SHEET
E701
OF SHEETS

380.147

NEW PANEL "KIT M" SCHEDULE

(2 SECTIONS)

208Y/120 VOLTS, 3 PHASES, 4 WSN
BREAKER MIN. A.I.C. 10,000
SURFACE MTG. 300A MAIN BKR.

SECTION I

CKT. NO.	USE	CIRCUIT BREAKER POLES	CIRCUIT BREAKER AMPS	CONNECTED LOAD (KVA) A	CONNECTED LOAD (KVA) B	CONNECTED LOAD (KVA) C	WIRE SIZE
1	EF-5	1	30	1.9			12
2	SPARE	1	20	---			---
3	DUCT SMOKE DETECTOR, MOUNTED DAMPERS	1	20		0.2		12
4	ACF-1	1	20		1.2		12
5	SF-1, SF-2, SF-3, SF-4	1	20			0.1	12
6	ACF-2	1	20			1.2	12
7	RECEP. (ON ROOF)	1	20	0.8			12
8	ACF-3	1	20	1.2			12
9	SPARE	1	20		---		---
10	SPARE	1	20		---		---
11	SPARE	1	20			---	---
12	SPARE	1	20			---	---
13	ACCU 1-1	2	40	3.0			12
14	SPARE	1	20	---			---
15	ACCU 1-1	---	40		3.0		12
16	SPARE	1	20		---		---
17	ACCU 2-1	2	15			0.9	12
18	SPARE	1	20			---	---
19	ACCU 2-1	---	15	0.9			12
20	MAF-1	3	30	1.7			10
21	SPARE	1	20		---		---
22	MAF-1	---	30		1.7		10
23	SPARE	1	20			---	---
24	MAF-1	---	30			1.7	10
25	ACCU 3-1	3	20	4.5			6
26	ACCU 4-1	3	20	5.3			6
27	ACCU 3-1	---	20		4.5		6
28	ACCU 4-1	---	20		5.3		6
29	ACCU 3-1	---	20			4.5	6
30	ACCU 4-1	---	20			5.3	6
31	ACCU 4-2	3	20	5.3			6
32	ACCU 4-3	3	20	4.2			6
33	ACCU 4-2	---	20		5.3		6
34	ACCU 4-3	---	20		4.2		6
35	ACCU 4-2	---	20			5.3	6
36	ACCU 4-3	---	20			4.2	6
37	PFB	1	---	---			---
38	KEF-1	3	60	3.7			6
39	PFB	1	---		---		---
40	KEF-1	---	60		3.7		6
41	PFB	1	---			---	---
42	KEF-1	---	60			3.7	6

SECTION II

CKT. NO.	USE	CIRCUIT BREAKER POLES	CIRCUIT BREAKER AMPS	CONNECTED LOAD (KVA) A	CONNECTED LOAD (KVA) B	CONNECTED LOAD (KVA) C	WIRE SIZE
43	FCU 4-1	2	15	0.7			12
44	FCU'S 1-1, 1-2, 1-3, 1-4	2	15	0.1			12
45	FCU 4-1	---	15		0.7		12
46	FCU'S 1-1, 1-2, 1-3, 1-4	---	15		0.1		12
47	FCU 4-2	2	15			0.7	12
48	FCU'S 3-1	2	15			0.5	12
49	FCU 4-2	---	15	0.7			12
50	FCU'S 3-1	---	15	0.5			12
51	FCU 4-3	2	15		0.7		12
52	FCU 3-2	2	15		0.5		12
53	FCU 4-3	---	15			0.7	12
54	FCU 3-2	---	15			0.5	12
55	PFB	1	---	---			---
56	PFB	1	---	---			---
57	PFB	1	---		---		---
58	PFB	1	---		---		---
59	PFB	1	---			---	---
60	PFB	1	---			---	---
61	PFB	1	---	---			---
62	PFB	1	---	---			---
63	PFB	1	---		---		---
64	PFB	1	---		---		---
65	PFB	1	---			---	---
66	PFB	1	---			---	---
67	PFB	1	---	---			---
68	PFB	1	---	---			---
69	PFB	1	---		---		---
70	PFB	1	---		---		---
71	PFB	1	---			---	---
72	PFB	1	---			---	---
73	PFB	1	---	---			---
74	PFB	1	---	---			---
75	PFB	1	---		---		---
76	PFB	1	---		---		---
77	PFB	1	---			---	---
78	PFB	1	---			---	---
79	PFB	1	---	---			---
80	PFB	1	---	---			---
81	PFB	1	---		---		---
82	PFB	1	---		---		---
83	PFB	1	---			---	---
84	PFB	1	---			---	---

	A	B	C
TOTAL LOAD/ PHASE	35.1	30.6	29.3
TOTAL LOAD	95.0 KVA		
DEMAND FACTOR	0.8		
DEMAND LOAD	76.0 KVA		

PFB - PROVISION FOR FUTURE BREAKER.

REV. NO.	DESCRIPTION	DATE

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

Signature:

LICENSE EXPIRES : APRIL 30, 2028

BRENT T. ITOZAKI
LICENSED PROFESSIONAL ENGINEER
No. 9058-E
HAWAII, U.S.A.

Pacific Architects, Inc.
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808-949-1601 fax
808-942-0054

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

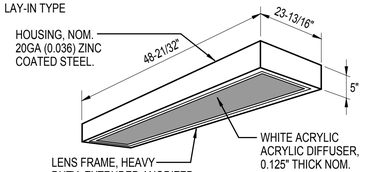
SHEET TITLE
PANEL SCHEDULE II

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC CHECK BI

SHEET
E702
OF SHEETS

380.147

LAY-IN TYPE



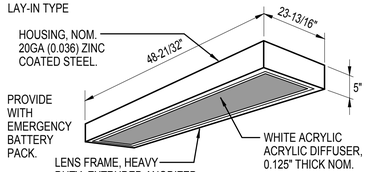
DRIVER:
120/277V, ELECTRONIC
DIMMABLE LED DRIVER

LAMP:
33 WATT LED
4000°K COLOR TEMP.
3,800 LUMENS

MANUFACTURER:
PARAMOUNT
PMG2-2G0-UNV-4K-83CRI-38L-S5-L5
LIGHTOLIER, METALUX,
LITHONIA OR APPROVED
EQUAL.

FIXTURE TYPE "A"

LAY-IN TYPE



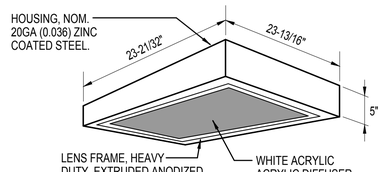
DRIVER:
120/277V, ELECTRONIC
DIMMABLE LED DRIVER

LAMP:
33 WATT LED, 83 CRI
4000°K COLOR TEMP.
3,800 LUMENS

MANUFACTURER:
PARAMOUNT
PMG2-2G0-UNV-4K-83CRI-38L-S5-L5-BBU
LIGHTOLIER, METALUX,
LITHONIA OR APPROVED
EQUAL.

FIXTURE TYPE "A1"

LAY-IN TYPE



DRIVER:
120/277V, ELECTRONIC
DIMMABLE LED DRIVER

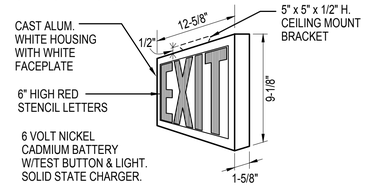
LAMP:
31 WATT LED, 83 CRI
4000°K COLOR TEMP.
3,500 LUMENS

MANUFACTURER:
PARAMOUNT
PMG2-2G0-UNV-4K-83CRI-35L-S5-L5
LIGHTOLIER, METALUX,
LITHONIA OR APPROVED
EQUAL.

FIXTURE TYPE "B"

SINGLE FACE, UNIVERSAL ARROWS.

CEILING SURFACE, STEM, BACK OR WALL MOUNTED.



LAMP:
120/277V, LIGHT EMITTING DIODE

MANUFACTURER:
DUAL-LITE
SE-S-R-W-E
EMERGI-LITE, SURE-LITE,
LITHONIA EQUAL.

FIXTURE TYPE "C"

DOUBLE FACE, UNIVERSAL ARROWS.

CEILING SURFACE, STEM, BACK OR WALL MOUNTED.

LAMP:
120/277V, LIGHT EMITTING DIODE

MANUFACTURER:
DUAL-LITE
SE-D-R-W-E
EMERGI-LITE, SURE-LITE,
LITHONIA EQUAL.

FIXTURE TYPE "D"

POLYVINYL CHLORIDE WHITE HOUSING WITH CLEAR U.V. RESISTANT POLYCARBONATE COVER

PROVIDE WITH MAINTENANCE FREE 12 VOLT LEAD CALCIUM BATTERY AND UNIVERSAL ARROWS. SOLID STATE CHARGER.

U.L. LISTED FOR WET & DAMP LOCATION.

LIGHT SOURCE:
2-12 WATT MR16 LED

VOLTAGE:
120/277 VOLTS

MANUFACTURER:
EMERGI-LITE
#W12SV24M-2MK-DA
SURE-LITE, LITHONIA
OR APPROVED EQUAL.

FIXTURE TYPE "E"

CEILING SURFACE MOUNTED

PROVIDE WITH EMERGENCY BATTERY PACK

DRIVER:
120/277V, ELECTRONIC
LED DRIVER, DIMMABLE 0-10V

LIGHT SOURCE:
40 WATT, LED, 6084/5035/3980
SWITCHABLE LUMENS
(FIELD SET TO 5035 LUMENS)
4000°K COLOR TEMP.

MANUFACTURER:
COLUMBIA
CFP14-55/41/3440
SRPSMK-14-PLD10M
(SURFACE MOUNT KIT)
LIGHTOLIER, METALUX,
DAY-BRITE, LITHONIA OR
APPROVED EQUAL.

FIXTURE TYPE "F1"

CEILING SURFACE MOUNTED

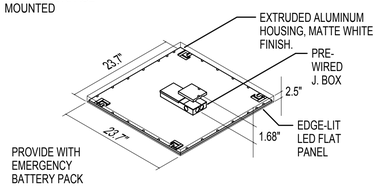
DRIVER:
120/277V, ELECTRONIC
LED DRIVER, DIMMABLE 0-10V

LIGHT SOURCE:
30 WATT, LED, 5001/3905/3382
SWITCHABLE LUMENS
(FIELD SET TO 3905 LUMENS)
4000°K COLOR TEMP.

MANUFACTURER:
COLUMBIA
CFP22-40/33/2840
SRPSMK-22
(SURFACE MOUNT KIT)
LIGHTOLIER, METALUX,
DAY-BRITE, LITHONIA OR
APPROVED EQUAL.

FIXTURE TYPE "G"

CEILING SURFACE MOUNTED



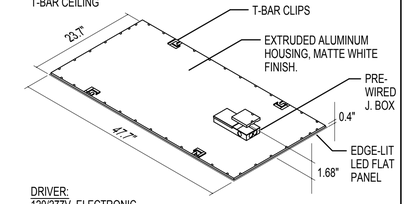
DRIVER:
120/277V, ELECTRONIC
LED DRIVER, DIMMABLE 0-10V

LIGHT SOURCE:
30 WATT, LED, 5001/3905/3382
SWITCHABLE LUMENS
(FIELD SET TO 3905 LUMENS)
4000°K COLOR TEMP.

MANUFACTURER:
COLUMBIA
CFP22-40/33/2840-PLD10M
SRPSMK-22
(SURFACE MOUNT KIT)
LIGHTOLIER, METALUX,
DAY-BRITE, LITHONIA OR
APPROVED EQUAL.

FIXTURE TYPE "G1"

RECESSED IN T-BAR CEILING



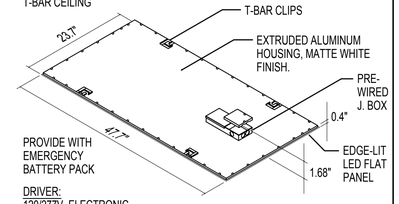
DRIVER:
120/277V, ELECTRONIC
LED DRIVER, DIMMABLE 0-10V

LIGHT SOURCE:
40 WATT, LED, 6143/5030/3945
SWITCHABLE LUMENS
(FIELD SET TO 5030 LUMENS)
4000°K COLOR TEMP.

MANUFACTURER:
COLUMBIA
CFP24-55/41/3440
LIGHTOLIER, METALUX,
DAY-BRITE, LITHONIA OR
APPROVED EQUAL.

FIXTURE TYPE "H"

RECESSED IN T-BAR CEILING



DRIVER:
120/277V, ELECTRONIC
LED DRIVER, DIMMABLE 0-10V

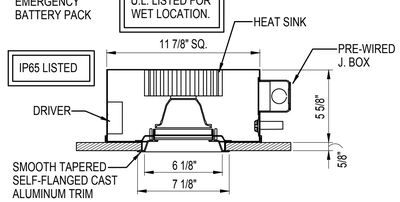
LIGHT SOURCE:
40 WATT, LED, 6143/5030/3945
SWITCHABLE LUMENS
(FIELD SET TO 5030 LUMENS)
4000°K COLOR TEMP.

MANUFACTURER:
COLUMBIA
CFP24-55/41/3440-PLD10M
LIGHTOLIER, METALUX,
DAY-BRITE, LITHONIA OR
APPROVED EQUAL.

FIXTURE TYPE "H1"

PROVIDE WITH EMERGENCY BATTERY PACK

U.L. LISTED FOR WET LOCATION.



DRIVER:
120/277V, ELECTRONIC
LED DRIVER, DIMMABLE 0-10V

LIGHT SOURCE:
20.8 WATT, 2044 LUMENS
4000°K COLOR TEMP.

MANUFACTURER:
KIRLIN
LRC-06IPD-2000L-120-RWF- MFL-40K-EM
PRESCOLITE LITEISTRY SERIES,
INTENSE GRAVITY WITH LENS
OR APPROVED EQUAL.

FIXTURE TYPE "J1"

NOTE!!!

ALL EXIT SIGNS SHALL MEET REQUIREMENTS OF ADAAG 703.5.

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES : APRIL 30, 2028

BRIAN T. ITOZAKI
LICENSED PROFESSIONAL ENGINEER
No. 9058-E
HAWAII, U.S.A.

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601 fax
808-942-0054

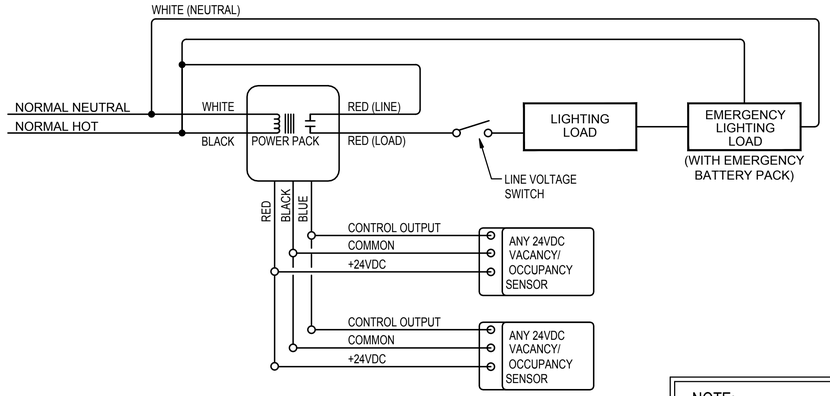
PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
LIGHTING DETAILS

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC CHECK BI

SHEET
E801
OF SHEETS

380.147

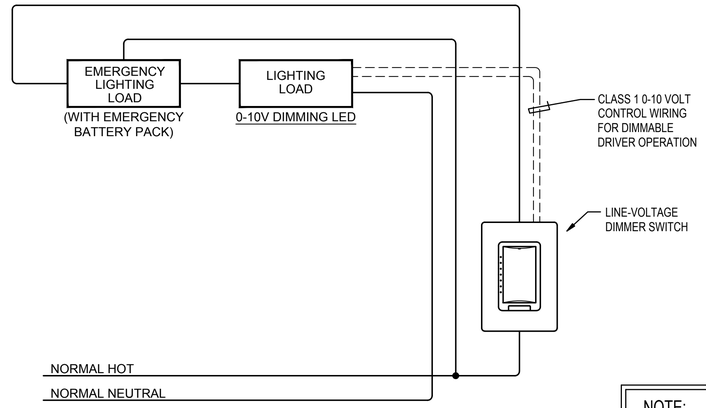


1 / E802 LINE-VOLTAGE SYSTEM WIRING DIAGRAM I

NOT TO SCALE

NOTE:

DIAGRAM APPLICABLE TO ROOMS:
BLDG. D: D109, D111
BLDG. F: F109, F111, F112, F113



2 / E802 LINE-VOLTAGE SYSTEM WIRING DIAGRAM II

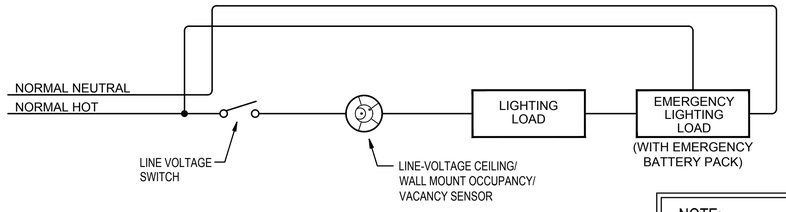
NOT TO SCALE

NOTE:

DIAGRAM APPLICABLE TO ROOMS:
BLDG. A: A107, A108
BLDG. D: D102
BLDG. F: F104, F107
BLDG. G: G106

NOTE:

CONTRACTOR SHALL PROVIDE ADDITIONAL SPLITTERS AND ALL REQUIRED WIRING FOR A COMPLETE SYSTEM.



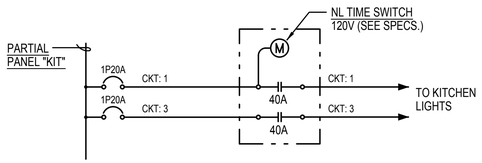
3 / E802 LINE-VOLTAGE SYSTEM WIRING DIAGRAM III

NOT TO SCALE

NOTE:

DIAGRAM APPLICABLE TO ROOMS:

BLDG. D: D101, D103, D105, D107, D110
BLDG. F: F102, F103, F106, F108, F110
BLDG. G: G102, G103, G104
BLDG. H: H101



"ON" - "OFF" SCHEDULE

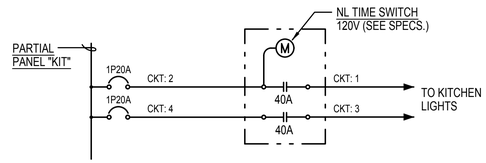
"OFF"	"ON"
NL - 12:00 AM	4:00AM

Time Switch Specification

Time Switch: Fully automatic, motor driven movement, 120/277 volt, 2 circuit type. Unit shall be 7 days, have 10 hour reserve power; be capable of being set for seven different day types per week; have automatic holiday "shut off" feature; have an override switch; 20 amperes, 125 volts contacts, and enclosed in NEMA 1 steel enclosure. Intermatic #ET2715C.

4 / E802 DUAL CIRCUIT NIGHT LIGHT DIAGRAM I

NOT TO SCALE



"ON" - "OFF" SCHEDULE

"OFF"	"ON"
NL - 12:00 AM	4:00AM

Time Switch Specification

Time Switch: Fully automatic, motor driven movement, 120/277 volt, 2 circuit type. Unit shall be 7 days, have 10 hour reserve power; be capable of being set for seven different day types per week; have automatic holiday "shut off" feature; have an override switch; 20 amperes, 125 volts contacts, and enclosed in NEMA 1 steel enclosure. Intermatic #ET2715C.

5 / E802 DUAL CIRCUIT NIGHT LIGHT DIAGRAM I

NOT TO SCALE

REV. NO.	DESCRIPTION	DATE

This work was prepared by me or under my supervision for the construction of this project and I am duly licensed.

Signature:

LICENSE EXPIRES : APRIL 30, 2028

BRENT ITOZAKI
LICENSED PROFESSIONAL ENGINEER
No. 9058-E
HAWAII, U.S.A.

Pacific Architects, Inc.
2020 South King Street
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808-949-1601 fax
808-942-0054

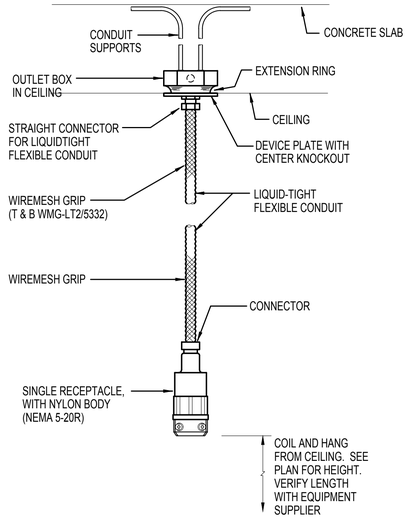
PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
LIGHTING CONTROL DIAGRAMS

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC CHECK BI

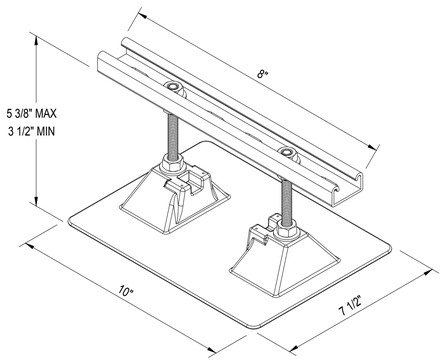
SHEET
E802
OF SHEETS

380.147



1 / E803 DETAIL - SUSPENDED RECEPTACLE

NOT TO SCALE



PRODUCT SPECIFICATIONS:

MODEL: TYPE 8-BASE STRUT-5 W/ CHANNEL OR "PRE-APPROVED EQUAL".

MANUFACTURER: MIRO INDUSTRIES, INC. OR "PRE-APPROVED EQUAL".

BASES: HIGH DENSITY POLYCARBONATE PLASTICS & OTHER ADDITIVES FOR UV PROTECTION.

HEIGHT: ADJUSTABLE.

HDG OR STAINLESS THREADED RODS, NUTS, AND WASHERS.

INSTALLATION:

1. ALL PORTABLE PIPE SUPPORT SYSTEM ARE PRE-ASSEMBLED (NO FIELD ASSEMBLY).
2. SWEEP OFF LOOSE GRAVEL, IF GRAVEL EXISTS.
3. CONSULT MANUFACTURER OF EXISTING OR NEW ROOFING SYSTEM AS TO TYPE OF ISOLATION PADS REQUIRED FOR THE ROOFING SYSTEM AND INSTALL.
4. AFTER PADS ARE INSTALLED, PLACE BASES ON PADS.
5. WITH ALL PIPE SUPPORTS IN PLACE, START AT BEGINNING OF THE SYSTEM AND ADJUST EACH CHANNEL TO ACHIEVE A BALANCED SYSTEM.

2 / E803 DETAIL - RACEWAY SUPPORT

NOT TO SCALE

NO.	DATE	DESCRIPTION

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

Signature

LICENSE EXPIRES : APRIL 30, 2028

BRENT ITOZAKI LICENSED PROFESSIONAL ENGINEER No. 9058-E HAWAII, U.S.A.

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PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
SUB-BASMENT FOOD SERVICE OPERATIONS - PHASE II
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
MISCELLANEOUS ELECTRICAL DETAILS

DATE MARCH 2026
SCALE AS SHOWN
DRAWN AC CHECK BI

SHEET
E803
OF SHEETS

380.147

MECHANICAL NOTES:

1. PRIOR TO START OF THEIR WORK MECHANICAL CONTRACTOR (PLUMBER) SHALL BE RESPONSIBLE TO COORDINATE WORK REQUIRED BY THEIR TRADE WITH THE KITCHEN EQUIPMENT CONTRACTOR TO AVOID CONFLICTS WITH KITCHEN EQUIPMENT, DISCREPANCIES, ERRORS AND OMMISSIONS. THE "K" DRAWINGS ARE PROVIDED TO INDICATE GENERAL LOCATIONS OF EQUIPMENT OUTLETS/CONNECTION POINTS. FOR EQUIPMENT REQUIREMENTS REFER TO THE ACTUAL DIMENSIONED "FOR CONSTRUCTION" ROUGHING-IN DRAWINGS PROVIDED BY THE KTICHEN EQUIPMENT CONTRACTOR.

   THE "K" DRAWINGS ARE PROVIDED FOR THE CONVENIENCE OF THE ARCHITECT, ENGINEERS, GENERAL CONTRACTOR AND OR SUB-CONTRACTORS. WORK INDICATED ON THESE DRAWINGS DO NOT REFLECT COMPLIANCE TO BUILDING CODES, ORDINANCES, REGULATIONS AND CONSTRUCTION METHODS. FOR SUCH DRAWINGS REFER TO THE ARCHITECT AND/OR ENGINEERS' DESIGN DRAWINGS, THEREFORE IT DOES NOT RELIEVE THE MECHANICAL CONTRACTOR OR THEIR RESPONSIBILITY TO ASSURE SUCH.

   ANY CONFLICTS, DISCREPANCIES, ERRORS & OMMISSIONS SHALL BE SUBMITTED IN WRITING PRIOR TO CONSTRUCTION OR BECOME THE SOLE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR (PLUMBER).

2. ALL EQUIPMENT SHALL BE FULLY CONNECTED. PLUMBER TO FURNISH FINAL CONNECTIONS AND ALL TOOLS, MATERIALS AND ACCESSORIES AS REQUIRED WHETHER INDICATED OR NOT FOR COMPLETE INSTALLATION.
   a. FINAL CONNECTION TO EQUIPMENT SHALL BE A FLEX CONNECTION, NOT SOFT COPPER. SEE MECH. DWGS.
   b. FLEX CONNECTIONS SHALL BE CONCEALED AND MOUNTED TO UNDERSIDE OF EQUIPMENT WHERE APPLICABLE.
   c. INTERCONNECTING PIPING SHALL BE HARD/RIGID COPPER.

3. PLUMBER SHALL FURNISH AND INSTALL ALL REQUIRED TRAPS AND SHUT-OFF VALVES. SHUT-OFF VALVES SHALL BE ACCESSIBLE.

4. GREASE TRAPS ARE TO BE PROVIDED WHERE REQUIRED AND SHALL BE LOCATED BELOW OR SET FLUSH WITH FLOOR. VERIFY BUILDING CODE REQUIREMENTS FOR FLOOR DRAINS.

5. PLUMBER SHALL FURNISH AND INSTALL STOPS ON ALL HOT AND COLD WATER LINES AT EQUIPMENT, IN AN ACCESSIBLE POSITION.

6. GENERAL WATER PRESSURE IN KITCHEN AREA NOT TO EXCEED 60 LBS. PLUMBER SHALL FURNISH AND INSTALL REDUCING VALVES AS REQUIRED.

7. PLUMBER SHALL FURNISH AND INSTALL PROPERLY SIZED INDIRECT WASTE LINES FOR STANDARD AND FABRICATED ITEMS OF KITCHEN EQUIPMENT AND EXTEND TO FLOOR SINKS. ALL WASTE LINES SHALL BE OF COPPER TUBING WITH SOLDERED FITTINGS WHERE REQUIRED. EXPOSED LINES SHALL BE INSULATED WITH TAPE TO PREVENT SWEATING ESPECIALLY FOR ICE BINS, REFRIGERATORS, WALK-INS, ETC.

8. THE KITCHEN EQUIPMENT CONTRACTOR WILL PROVIDE ALL EQUIP-MENT TRIM INCLUDING FAUCETS AND SINK WASTES, ALL TO BE INSTALLED BY THE PLUMBER.

9. ALL HOT AND COLD WATER SERVICE LINES TO FIXTURES SHALL BE SHALL BE INSULATED BY PLUMBER, ESPECIALLY EXPOSED HW LINES.

10. ALL HORIZONTAL PIPING LINES CONNECTED TO EQUIPMENT SHALL BE RUN AT THE HIGHEST POSSIBLE ELEVATION AND NOT LESS THAN 6" ABOVE FLOOR. ALL PIPING ROUGHING-IN LINES SHALL BE STUBBED AND RUN IN WALLS, NO EXCEPTIONS.

11. MECHANICAL REQUIREMENTS ARE INDICATED FOR INDIVIDUAL EQUIPMENT ITEMS. COMBINING OF LINES FOR SIMPLIFICATION OF INSTALLATION IS ACCEPTABLE.

12. IT IS THE INTENTION OF THE "K" DRAWINGS TO SHOW UTILITY REQUIREMENTS AND GENERAL LOCATIONS ONLY. PLUMBER SHALL NOT USE THIS OUTLET PLAN FOR ACTUAL ROUGHING-IN. FOR FINAL ROUGHING-IN LOCATIONS REFER TO THE ACTUAL "FOR CONSTRUCTION" DIMENSIONED DRAWINGS PROVIDED BY THE KITCHEN EQUIPMENT CONTRACTOR.

    THE KITCHEN EQUIPMENT CONTRACTOR SHALL BE RESPONSIBLE TO INDICATE ALL EQUIPMENT REQUIREMENTS ON THE ACTUAL ROUGHING-IN DRAWINGS RELATED TO AND/OR REQUIRED BY THE EQUIPMENT THAT WILL BE INSTALLED.

    ANY ROUGHING-IN AND/OR ENGINEERING CHANGES REQUIRED BY THE ACTUAL EQUIPMENT TO BE INSTALLED AND/OR ROUGHING-IN DISCREPANCIES SHALL BE SUBMITTED IN WRITING OR BECOME THE SOLE RESPONSIBILITY OF THE KITCHEN EQUIPMENT CONTRACTOR.

    REVIEW OF THE "FOR CONSTRUCTION" ROUGHING-IN DRAWINGS/ BROCHURE SUBMITTAL DOES NOT RELIEVE THE KITCHEN EQUIPMENT CONTRACTOR OF THEIR RESPONSIBILITY TO ENSURE THAT ALL REQUIRED EQUIPMENT ROUGHING-INS ARE INDICATED & PROVIDED ALONG WITH COORDINATION OF WORK BETWEEN TRADES.

13. ALL "K" DRAWING MECHANICAL DETAILS ARE INDICATED FOR REFERENCE AND CONVENIENCE OF THE ARCHITECT, G.C. AND/OR SUBCONTRACTORS. REFER TO CORRESPONDING RELATED SECTIONS FOR EXACT REQUIREMENTS.

ELECTRICAL :

1. PRIOR TO START OF THEIR WORK MECHANICAL CONTRACTOR (PLUMBER) SHALL BE RESPONSIBLE TO COORDINATE WORK REQUIRED BY THEIR TRADE WITH THE KITCHEN EQUIPMENT CONTRACTOR TO AVOID CONFLICTS WITH KITCHEN EQUIPMENT, DISCREPANCIES, ERRORS AND OMMISSIONS. THE "K" DRAWINGS ARE PROVIDED TO INDICATE GENERAL LOCATIONS OF EQUIPMENT OUTLETS/CONNECTION POINTS. FOR EQUIPMENT REQUIREMENTS REFER TO THE ACTUAL DIMENSIONED "FOR CONSTRUCTION" ROUGHING-IN DRAWINGS PROVIDED BY THE KTICHEN EQUIPMENT CONTRACTOR.

   THE "K" DRAWINGS ARE PROVIDED FOR THE CONVENIENCE OF THE ARCHITECT, ENGINEERS, GENERAL CONTRACTOR AND OR SUB-CONTRACTORS. WORK INDICATED ON THESE DRAWINGS DO NOT REFLECT COMPLIANCE TO BUILDING CODES, ORDINANCES, REGULATIONS AND CONSTRUCTION METHODS. FOR SUCH DRAWINGS REFER TO THE ARCHITECT AND/OR ENGINEERS' DESIGN DRAWINGS, THEREFORE IT DOES NOT RELIEVE THE MECHANICAL CONTRACTOR OR THEIR RESPONSIBILITY TO ASSURE SUCH.

   ANY CONFLICTS, DISCREPANCIES, ERRORS & OMMISSIONS SHALL BE SUBMITTED IN WRITING PRIOR TO CONSTRUCTION OR BECOME THE SOLE RESPONSIBILITY OF THE MECHANICAL CONTRACTOR (PLUMBER).

2. ALL EQUIPMENT AND RECEPTACLES ARE TO BE FULLY CONNECTED. ELECTRICIAN TO FURNISH FINAL CONNECTIONS AND ALL TOOLS, MATERIALS AND ACCESSORIES AS REQUIRED WHETHER INDICATED OR NOT FOR A COMPLETE INSTALLATION.

3. THE KITCHEN EQUIPMENT CONTRACTOR WILL FURNISH AND INSTALL HOOD LIGHT FIXTURES, WITH LAMPS WIRED COMPLETE WITHIN HOOD TO ONE JUNCTION BOX, FOR FINAL CONNECTION BY ELECTRICIAN.

4. ELECTRICIAN SHALL PROVIDE ALL CONDUITS, JUNCTION BOXES, CONVENIENCE OUTLETS (MOUNTED HORIZONTALLY), SWITCHES, STAINLESS STEEL COVER PLATES AND PULL BOXES NOT BUILT INTO EQUIPMENT OR FABRICATED FIXTURES.
   ALL ROUGH-INS SHALL BE CONCEALED WHEREVER POSSIBLE.
   a. ADDITIONAL CONDUIT AND CONTROL WIRING FOR TELEPHONES,
   b. COMPUTERS, POS UNIT REQUIREMENTS, AND CASH REGISTERS SHALL BE LOCATED BY THE ELECTRICAL ENGINEER. FLEX CONNECTIONS SHALL BE MOUNTED TO UNDERSIDE OF
   c. EQUIPMENT WHERE APPLICABLE.

5. ELECTRICIAN SHALL PROVIDE LOCKING HASPS AT BREAKER PANELS IN LIEU OF DISCONNECT SWITCHES FOR EQUIPMENT REQUIRING DISCONNECTS. REFER TO ELECTRICAL DRAWINGS.

6. ELECTRICIAN SHALL FURNISH AND INSTALL ALL INTERCONNECTING CONDUITS, CONDUITS, CONTROL WIRING, MICRO SWITCHES AND/OR CONTACTORS BETWEEN THE HOOD AND FIRE SUPPRESSION SYSTEM.

7. CONDUIT ROUGHING-IN SHALL BE STUBBED IN WALLS, NO EXCEPTIONS.

8. ELECTRICAL REQUIREMENTS ARE INDICATED FOR INDIVIDUAL EQUIPMENT ITEMS. COMBINING OF LINES FOR SIMPLIFICATION IS ACCEPTABLE.

9. IT IS THE INTENTION OF THE "K" DRAWINGS TO SHOW UTILITY REQUIREMENTS AND GENERAL LOCATIONS ONLY. ELECTRICIAN SHALL NOT USE THIS OUTLET PLAN FOR ACTUAL ROUGHING-IN. FOR FINAL ROUGHING-IN LOCATIONS REFER TO THE ACTUAL "FOR CONSTRUCTION" DIMENSTIONED DRAWINGS PROVIDED BY THE KITCHEN EQUIPMENT CONTRACTOR.

   THE KITCHEN EQUIPMENT CONTRACTOR SHALL BE RESPONSIBLE TO INDICATE ALL EQUIPMENT REQUIREMENTS ON THIER ACTUAL "FOR CONSTRUCTION" ROUGHING-IN DRAWINGS RELATED TO AND/OR REQUIRED BY THE EQUIPMENT THAT WILL BE INSTALLED.

   ANY ROUGHING-IN AND/OR ENGINEERING CHANGES REQUIRED BY THE ACTUAL EQUIPMENT TO BE INSTALLED AND/OR ROUGHING-IN DISCREPANCIES SHALL BE SUBMITTED IN WRITING OR BECOME THE SOLE RESPONSIBILITY OF THE KITCHEN EQUIPMENT CONTRACTOR.

   REVIEW OF THE "FOR CONSTRUCTION" ROUGHING-IN DRAWINGS/ BROCHURE SUBMITTAL DOES NOT RELIEVE THE KITCHEN EQUIPMENT CONTRACTOR OF THEIR RESPONSIBILITY TO ENSURE THAT ALL REQUIRED EQUIPMENT ROUGHING-INS ARE INDICATED & PROVIDED ALONG WITH COORDINATION OF WORK BETWEEN CONSTRUCTION TRADES.

10. ALL "K" DRAWING ELECTRICAL DETAILS ARE INDICATED FOR REFERENCE AND CONVENIENCE OF THE ARCHITECT, ENGINEER, G.C. AND/OR SUB-CONTRACTORS. REFER TO CORRESPONDING RELATED SECTIONS FOR EXACT REQUIREMENTS.

GENERAL CONTRACTOR (G.C.) NOTES:

1. THE "K" DRAWINGS ARE PROVIDED FOR THE CONVENIENCE OF THE ARCHITECT, ENGINEERS, GENERAL CONTRACTOR AND/OR SUB-CONTRACTORS. WORK INDICATED ON THESE DRAWINGS DO NOT REFLECT COMPLIANCE TO BUILDING CODES, ORDINANCES, REGULATIONS AND CONSTRUCTION METHODS. FOR SUCH DRAWINGS REFER TO THE ARCHITECT AND/OR ENGINEERS' DESIGN DRAWINGS. IT IS THE GENERAL CONTRACTOR'S RESPONSIBILITY TO ASSURE AS NOTED ABOVE.

2. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WORK REQUIRED BY ALL OTHER TRADES WITH THE KITCHEN EQUIPMENT CONTRACTOR PRIOR TO THE START OF WORK TO AVOID CONFLICTS, DISCREPANCIES, ERRORS AND OMMISSIONS. THE "K" DRAWINGS ARE PROVIDED TO INDICATE GENERAL LOCATIONS OF EQUIPMENT OUTLETS/ CONNECTION POINTS. FOR EQUIPMENT REQUIREMENTS REFER TO THE ACTUAL DIMENSIONED "FOR CONSTRUCTION" ROUGHING-IN DRAWINGS PROVIDED BY THE KITCHEN EQUIPMENT CONTRACTOR.

3. ANY CONFLICTS, DISCREPANCIES, ERRORS & OMISSIONS SHALL BE SUBMITTED IN WRITING PRIOR TO CONSTRUCTION OR BECOME THE SOLE RESPONSIBILITY OF GENERAL CONTRACTOR (G.C.).

4. GENERAL CONTRACTOR SHALL BE RESPONSIBLE TO COORDINATE WITH THE KITCHEN EQUIPMENT CONTRACTOR, BUILDING CONSTRUCTION SCHEDULE ALONG WITH KITCHEN EQUIPMENT INSTALLATION SCHEDULE TO PROVIDE PROPER ACCESS FOR EQUIPMENT DELIVERY AND INSTALLATION. FOR EXAMPLE: COORDINATING CONSTRUCTION OF WALL SECTIONS OR DOOR OPENINGS, ETC.

5. ALL DIMENSIONS SHOWN ON THIS PLAN ARE INDICATED TO BE TAKEN FROM FINISHED SURFACES AND INCLUDE ANY TILE, FURRING, ETC. CONTRACTOR SHALL MAKE ALLOWANCES SUCH THAT WHEN FINISHED MATERIAL IS APPLIED TO VERTICAL AND HORIZONTAL SURFACES THE FINAL DIMENSION CONFORMS TO THIS PLAN.

6. GENERAL CONTRACTOR SHALL FURNISH AND INSTALL CHANNEL FRAMING OR "Z" BAR IN POSITION AS SHOWN ON THE BUILDING WORK PLAN FOR INSTALLATION OF HOOD HANGERS BY KITCHEN EQUIPMENT CONTRACTOR. REFER TO STRUCTURAL ENGINEERS DRAWINGS FOR EXACT REQUIREMENTS FOR SUPPORT FRAMING. KITCHEN EQUIPMENT CONTRACTOR SHALL COORDINATE EXACT LOCATIONS WITH G.C.

7. ALL WALLS IN CONTACT WITH OR WITHIN 6 INCHES OF COOKING EQUIPMENT, RANGES FRYERS, BROILERS, OVENS, STEAMERS, ETC. SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE HEATPROOF MATERIALS. VERIFY FIRE MARSHALL'S SPECIAL RULINGS. REFER TO ARCHITECTURAL DWGS FOR EXACT REQUIREMENTS.

8. GENERAL CONTRACTOR SHALL PROVIDE WALL REINFORCEMENT OR BACKING PLATES AS REQUIRED FOR INSTALLATION OF BRACKETS TO SUPPORT WALL MOUNTED EQUIPMENT FURNISHED AND INSTALLED BY KITCHEN EQUIPMENT CONTRACTOR.

9. GENERAL CONTRACTOR SHALL COORDINATE REFRIGERATION LINE RUNS WITH OTHER TRADES TO INSURE NON-INTERFERENCE WITH OTHER TRADES' LINE RUNS. REFER TO SHEET X-XXX FOR REFRIGERATION LINE RUNS.

10. IT IS THE INTENTION OF THE "K" DRAWINGS TO SHOW GENERAL REQUIREMENTS AND LOCATIONS ONLY. GENERAL CONTRACTOR SHALL NOT USE THIS PLAN FOR ACTUAL ROUGHING-IN. FOR FINAL ROUGHING-IN LOCATIONS SEE "FOR CONSTRUCTION" DIMENSIONED DRAWINGS PROVIDED BY THE KITCHEN EQUIPMENT CONTRACTOR.

11. THE KITCHEN EQUIPMENT CONTRACTOR SHALL BE RESPONSIBLE TO INDICATE ALL EQUIPMENT REQUIREMENTS ON THIER ACTUAL "FOR CONSTRUCTION" ROUGHING-IN DRAWINGS RELATED TO AND/OR REQUIRED BY THE EQUIPMENT THAT WILL BE INSTALLED.

12. ANY ROUGHING-IN AND/OR ENGINEERING CHANGES REQUIRED BY THE ACTUAL EQUIPMENT TO BE INSTALLED AND/OR ROUGHING-IN DISCREPANCIES SHALL BE SUBMITTED IN WRITING OR BECOME THE SOLE RESPONSIBILITY OF THE KITCHEN EQUIPMENT CONTRACTOR.

13. REVIEW OF THE "FOR CONSTRUCTION" ROUGHING-IN DRAWINGS/ BROCHURE SUBMITTAL DOES NOT RELIEVE THE KITCHEN EQUIPMENT CONTRACTOR OF THEIR RESPONSIBILITY TO ENSURE THAT ALL REQUIRED EQUIPMENT ROUGHING-INS ARE INDICATED & PROVIDED ALONG WITH COORDINATION OF THEIR WORK BETWEEN TRADES.

14. ALL "K" DRAWING BUILDING WORK DETAILS ARE INDICATED FOR REFERENCE AND CONVENIENCE OF THE ARCHITECT, CONTRACTOR AND/OR SUBCONTRACTORS. REFER TO CORRESPONDING RELATED SECTIONS FOR EXACT REQUIREMENTS AND CONSTRUCTION METHODS.

KITCHEN EQUIPMENT CONTRACTOR (K.E.C.) NOTE:

WORK SHALL CONSIST OF FURNISHING ALL LABOR, TOOLS, MATERIALS, ETC., REQUIRED FOR A COMPLETE INSTALLATION WHETHER INDICATED ON DRAWINGS OR NOT. IT IS THE KITCHEN EQUIPMENT CONTRACTOR'S RESPONSIBILITY TO EXAMINE ALL PLANS, SPECIFICATIONS AND JOBSITE CONDITIONS AND NOTIFY THE CONSULTANT IN WRITING OF ANY DISCRE-PANCIES, AMBIGUITIES, ERRORS AND OMISSIONS. ANY OF THE ABOVE NOT BROUGHT TO THE ATTENTION OF THE CONSULTANT SHALL BECOME THE SOLE RESPONSIBILITY OF THE KITCHEN EQUIPMENT CONTRACTOR. THE KITCHEN EQUIPMENT CONTRACTOR SHALL COORDINATE ALL REQUIRED WORK WITH THE GENERAL CONTRACTOR INCLUSIVE OF KAMEHAMEHA SCHOOLS EXISTING/RESET EQUIPMENT.

GENERAL NOTE:
PROPRIETARY PRODUCT REFERENCES ARE INTENDED TO INDICATE BASIS OF DESIGN ONLY AND NOT INTENDED TO PROHIBIT USE OF ACCEPTED EQUIVALENT OR BETTER PRODUCTS.

MECHANICAL & PLUMBING SYMBOLS

- FLOOR SINK WITH HALF GRATING
- FLOOR DRAIN
- HOT WATER OR COLD WATER - AS NOTED ON PLAN
- WASTE
- FUEL GAS - SIZE AND B.T.U. AS NOTED ON PLAN
- EXHAUST DUCT OR CEILING REGISTER - AS NOTED ON PLAN
- MAKE-UP AIR PLENUM

ELECTRICAL SYMBOLS

- SINGLE CONVENIENCE OUTLET
- DUPLEX CONVENIENCE OUTLET
- CEILING DROP CORD
- JUNCTION BOX
- JUNCTION BOX - WALL MOUNTED
- VAPORPROOF LIGHT
- SWITCH
- SWITCH WITH PILOT LIGHT
- SWITCH
- WATERPROOF CONDUIT STUB
- CONDUIT STUB FOR REFRIGERATION, ETC.
- THERMOSTAT
- LIQUID LINE SOLENOID
- ELECTRICAL MOTOR

BUILDING WORK SYMBOLS

- FLOOR DEPRESSION
- ROUGH SLAB (RAMP)
- NON-COMBUSTIBLE, HEATPROOF WALL
- RLC REFRIGERANT LINE CONNECTION
- ELECTRICAL MOTOR - REFRIG. SYSTEM LOCATION
- CHANNEL IRON FOR HOOD SUPPORT

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES : APRIL 30, 2026

MITSUNAGA * USA * DWIGHT I. LAWA * LICENSED PROFESSIONAL ARCHITECT NO. 4467

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601
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PROJECT TITLE

LEAHI HOSPITAL - YOUNG BUILDING
NEW DIETARY KITCHEN
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE

SUB-BASEMENT
FOOD SERVICE EQUIPMENT NOTES & LEGENDS

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY CHECK IM
SHEET

K001

OF 2 SHEETS

FOODSERVICE EQUIPMENT SCHEDULE

ITEM NO.	QTY.	DESCRIPTION	REMARKS	I	II
1	1	REFRIGERATION SYSTEM, REMOTE	AIR-COOLED | 2HP / 2 HP / 3.5 HP	X	
2	1 ASSEMBLY	WALK-IN COLD STORAGE ROOMS	8'-0" INT HT. | 8-INCH DEPRESSED INSULATED FLOOR | S/S EXT & INT	X	
3	33	WALK-IN STORAGE SHELVING | EPOXY WIRE	4 SHELVES | SIZE: 1'-6" WIDE X 74 ½ " HIGH POSTS	X	
4	1	S/S WORKTABLE WITH DBL. OVERSHELVES	10'-11" L X 36" D X 34" WORK HT. WITH TABLE MTD.131" LONG X 14" D DBL. OVERSHELVES | S/S UNDERSHELF	X	
5	1	S/S WORKTABLE WITH SINKS & DBL. OVERSHELVES	9'-11" L X 30" D X 34" WORK HT. WITH 2 EA. 20" X 20" X 10" D SINKS & TABLE MTD. 9'-11" LONG X 14" D DBL. OVERSHELVES | S/S UNDERSHELF	X	
6	1	3-COMPT. PREP SINKS	10'-0" L X 30" D X 34" WORK HT. WITH 3 EA. 20" X 20" X 15" D SINKS & TABLE MTD. 9'-8" LONG X 14" D DBL. OVERSHELVES | S/S UNDERSHELF	X	
7	1	2 DR. REACH-IN REFRIGERATOR	120V / 1PH	X	
8	1	2 DR. REACH-IN REFRIGERATOR	120V / 1PH	X	
9	1	S/S WORKTABLE WITH DBL. OVERSHELVES	8'-0" L X 36" D X 34" WORK HT. WITH TABLE MTD. 8'-0" LONG X 14" D DBL. OVERSHELVES | S/S UNDERSHELF	X	
10	1	40 QT MIXER	-	X	
11	1	S/S WORKTABLE WITH SINK & DBL. OVERSHELVES	8'-0" L X 30" D X 34" WORK HT. WITH 1 EA. 20" X 20" X 10" D SINK & TABLE MTD. 8'-0" LONG X 14" D DBL. OVERSHELVES | S/S UNDERSHELF	X	
12	1	S/S WORKTABLE WITH SINK & DBL. OVERSHELVES	8'-0" L X 30" D X 34" WORK HT. WITH 1 EA. 20" X 20" X 10" D SINK & TABLE MTD. 8'-0" LONG X 14" D DBL. OVERSHELVES | S/S UNDERSHELF	X	
13	1	80 QT MIXER	-	X	
14	5	INGREDIENT BIN	-	X	
15	1	S/S WORKTABLE WITH SINK	7'-3" L X 30" D X 34" WORK HT. WITH 1 EA. 14" X 16" X 10" D SINK | S/S CROSSBAR LEG BASE	X	
16	1	S/S WORKTABLE WITH SINK	8'-9" L X 30" D X 34" WORK HT. WITH 1 EA. 20" X 20" X 10" D SINK & TABLE | S/S UNDERSHELF	X	
17	1	CEILING MOUNTED S/S POT RACK	8'-0 L X 1'-10" D	X	
18	1	S/S WORKTABLE WITH SINK	5'-1" L X 30" D X 34" WORK HT. WITH 1 EA. 20" X 20" X 10" D SINK & TABLE | TABLE MTD. 14" D SINGLE OVERSHELF | S/S UNDERSHELF	X	
19	1	24" WIDE GAS CHARBROILER WITH CABINET BASE	4'-0" LONG GAS HOSE WITH QUICK-DISCONNECT	X	
20	1	FOOD BLENDER	120V / 1 PH	X	
21	1	48" WIDE GRIDDLE WITH CABINET BASE	THERMOSTATIC CONTROLLED | 4'-0" LONG GAS HOSE WITH QUICK-DISCONNECT	X	
22	1	6-BURNER RANGE WITH OVEN	4'-0" LONG GAS HOSE WITH QUICK-DISCONNECT	X	
23	1	30 GAL. TILTING SKILLET, GAS	4'-0" LONG GAS HOSE WITH QUICK-DISCONNECT	X	
24	1	FLOOR TROUGH WITH GRATING	18" X 24" | NON-SLIP | ADA | ANTI-SPLASH	X	
25	2	CONVECTION STEAMER, DBL. STACKED	208V / 3PH | PROVIDE WATER FILTERS	X	
26	1 ASSEMBLY	ISLAND EXHAUST HOOD W/ MAKE-UP AIR PLENUM BOX	TYPE I | 120V / 1PH FOR HOOD LIGHTS	X	
27	1	S/S WALL FLASHING	LOW WALL S/S CAP	X	
28	-	SPARE NUMBER (NOT USED)	-	-	-
29	1	HOOD FIRE SUPPRESSION SYSTEM	INSTALL PER UFC-600-01, NFPA 17A (2017), NFPA 96 (2017) AND OTHER FIRE CODE REQUIREMENTS	X	
30	-	SPARE NUMBER (NOT USED)	-	-	-
31	1	2-DR. REACH-IN REFRIGERATOR	120V / 1PH	X	
32	1	3-DR. REACH-IN REFRIGERATOR	120V / 1PH	X	
33	1	50 LB. FRYER, GAS	4'-0" LONG GAS HOSE WITH QUICK-DISCONNECT	X	
34	2	CONVECTION OVEN, DBL. STACKED, GAS	120V / 1PH I 4'-0" LONG GAS HOSE WITH QUICK-DISCONNECT	X	
35	-	SPARE NUMBER (NOT USED)	-	-	-
36	1	25 GAL. TILTING KETTLE, GAS	120V / 1PH I 4'-0" LONG GAS HOSE WITH QUICK-DISCONNECT	X	
37	1	FLOOR TROUGH WITH GRATING	24" X 24" I NON-SLIP I ADA I ANTI-SPLASH	X	
38	1	40 GAL. TILTING KETTLE, GAS	120V / 1PH I 4'-0" LONG GAS HOSE WITH QUICK-DISCONNECT	X	
39	1	FLOOR TROUGH WITH GRATING	NON-SLIP I ADA I ANTI-SPLASH	X	
40	-	SPARE NUMBER (NOT USED)	-	-	-
41	1	S/S WORKTABLE WITH SINGLE OVERSHELF	5'-0" L X 30" D X 34" WORK HT. | TABLE MTD. 14" D SINGLE OVERSHELF | S/S UNDERSHELF	X	
42	1	MICROWAVE OVEN - (FUTURE)	-	-	-
43	1	VERTICAL CUTTER MIXER	120V / 1PH	X	
44	1	FOOD PROCESSOR	120V / 1PH	X	
45	1	S/S WORKTABLE WITH SINK & UNDERSHELF	9'-0" L X 30" D X 34" WORK HT. WITH 1 EA. 24" X 24" X 12" D SINK & TABLE | S/S UNDERSHELF	X	
46	1	CEILING MOUNTED S/S POT RACK	8'-0 X 1'-10"	X	
47	2	50 CUP RICE COOKER I GAS	3"-0" LONG GAS HOSE	X	
48	-	SPARE NUMBER (NOT USED)	-	-	-
49	1	DESK | SEE ARCHITECTURAL DWGS.	24" X 48"	X	
50	-	SPARE NUMBER (NOT USED)	-	-	-
51	5	POT & PAN RACK | SS	4'-0" WIDE X 2'- 0" LONG X 1'-2" DEEP SINKS	X	
52	3	POT & PAN RACK | SS	5'-0" WIDE X 2'- 0" LONG X 1'-2" DEEP SINKS	X	
53	3	SECURITY STORAGE SHELVING	2 - INTERMEDIATE SHELVES | SIZE: 2'-9-1/2" WIDE X5'- 5" LONG | CASTERS	X	
54	-	SPARE NUMBER (NOT USED)	-	-	-
55	1	SS HOSE REEL | WALL MOUNTED +5'-0" TO BOTTOM OF SPRAY VALVE	REEL RINSE CONTROL BOX ASSEMBLY	X	
56	1	FLOOR TROUGH WITH GRATING	12" X 60" X 4" DEEP | NON-SLIP FIBERGLASS | ADA	X	
57	1	S/S POT SINKS WITH SCRAP SINK & SPRAY RINSE	11'-6" L X 10'-7"W X 30" D X 34"H L-SHAPED | 1 EA. 42" L X 26-1/2" W X 15" D SINK & 2 EA. 30" L X 26-1/2" W X 15" D SINKS WITH WALL MTD. 14" D POT SHELF WITH HOOKS 1 EA. 123" L & 1 EA. 120" L | 20" X 20" SCRAP SINK WITH SCRAP BASKET & PRE-RINSE SPRAY ASSEMBLY	X	
58	1	ICE MACHINE WITH STORAGE BIN	208V / 1PH | 665 LB. ICE CAPACITY & 500 LB. ICE STORAGE CAPACITY | PROVIDE WATER FILTER SIZED PER CAPACITY.	X	
59	1	FLOOR TROUGH WITH GRATING	18" X 30" X 4" DEEP | NON-SLIP FIBERGLASS | ADA	X	
60	1	BOOSTER HEATER (GAS) FOR DISHWASHER	120V / 1PH | FORCED DRAFT SYSTEM WITH 4" ROUND VENT PIPE ADAPTER	X	
61	11	MOBILE BUN PAN RACK	-	X	
62	1	MOBILE DOME STORAGE RACK	-	X	
63	1	SS HOSE REEL | WALL MOUNTED +5'-0" TO BOTTOM OF SPRAY VALVE	REEL RINSE CONTROL BOX ASSEMBLY	X	
64	1	CLEAN DISHTABLE | DOUBLE OVERSHELVES	16'-0"L X 6-1" W X 30" D X 34" H L-SHAPED | WALL MTD. DOUBLE OVERSHELVES 77" L X 14" D	X	
65	1	CONVEYOR DISH MACHINE GAS TANK HEAT WITH HEATED BLOWER DRYER	(2) 208V /3PH | VENT COWELS | EXHAUST DUCT PANT LEG EXTENDED TO CEILING. | VENT FAN CONTROL | WATER SOFTENING SYSTEM	X	
66	1	FLOOR TROUGH WITH GRATING	12" X 84" X 4" DEEP | NON-SLIP | ADA	X	
67	1	SOILED DISHTABLE WITH SCRAP SINK & SPRAY RINSE	16'-0"L X 6-1" W X 30" D X 34" H L-SHAPED | 2 EA. 44" L OVERHEAD SLANTED RACK SHELVES | 2 EA. 8" DIA. ROUND SCRAP CHUTE CUT-OUT	X	
68	3	TRAY DELIVERY CARTS	-	X	
69	8	S/S UTILITY CARTS	-	X	
70	8	TRASH RECEPTACLE	32 GALLON | 21" DIAMETER | GREY | DOLLY	X	
71	2	SLIMLINE 3-COMPT. HOT FOOD WELLS	208V / 1PH	X	
72	1	SLIMLINE 2-COMPT. HOT FOOD WELLS	208V / 1PH	X	
73	1	MOBILE TRAY DISPENSER	VERIFY TRAY SIZE BEFORE ORDERING.	X	
74	1	MOBILE TRAY DISPENSER | CABINET STYLE	15" X 20" TRAY SIZE (VERIFY)	X	
75	1	TRAY STARTER STATION	-	X	
76	4	AIR CURTAIN REFRIGERATOR	120V / 1PH	X	
77	2	MOBILE HEATED CABINET | NON-INSULATED	120V / 1PH	X	
78	1	S/S BEVERAGE COUNTER WITH SINK & DRIP TROUGH	144" L X 34" D X 34" WORK HT | 12" L X 16" W X 10" D SINK | 60" L X 4" D S/S DRIP TROUGH | 1" D BACKSPLASH	X	
79	1	17'-0" LONG TRAY MAKE-UP CONVEYOR | FABRIC BELT	120V / 208v / 1PH. | LOCKING CASTERS	X	
80	1	MOBILE HEATED PLATE DISPENSER	120V / 1PH	X	
81	1	COFFEE URN	120V / 208V / 1PH | WATER FILTER	X	
82	1	COFFEE BREWER | THERMAL SERVER	120V / 208V / 1PH | WATER FILTER	X	
83	1	ICE AND WATER DISPENSER	120V / 1PH | WATER FILTER	X	
84	-	SPARE NUMBER (NOT USED)	-	-	-
85	1	2-DR. FREEZER	120V / 1PH	X	
86	1	S/S WORK COUNTER WITH SINK & DBL. OVERSHELVES	144" L X 34" D X 34" WORK HT | 12" L X 16" W X 10" D SINK | 1" D BACKSPLASH	X	
87	1	CONVEYOR TOASTER - (FUTURE - N.I.C.)	208V / 1PH	-	-
88	1	TRAY SEALER	120V / 1PH	X	
89	1	MOBILE S/S WORKTABLE WITH UNDERSHELF	-	X	
90	1	16" x 6" CURB MOUNTED S/S UTILITY CHASE	18" CHASE HEIGHT ON 6" HIGH CURB	X	

LOGISTICAL CLASS: I - CONTRACTOR FURNISHED CONTRACTOR INSTALLED (CFCI) | II - GOVERNMENT FURNISHED GOVERNMENT INSTALLED (GFGI)

DATE

DESCRIPTION

REV. NO.

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

Signature

LICENSE EXPIRES : APRIL 30, 2026

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601
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PROJECT TITLE

LEAHI HOSPITAL - YOUNG BUILDING
NEW DIETARY KITCHEN
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE

SUB-BASEMENT
FOOD SERVICE EQUIPMENT SCHEDULE

DATE SEPTEMBER 9, 2024

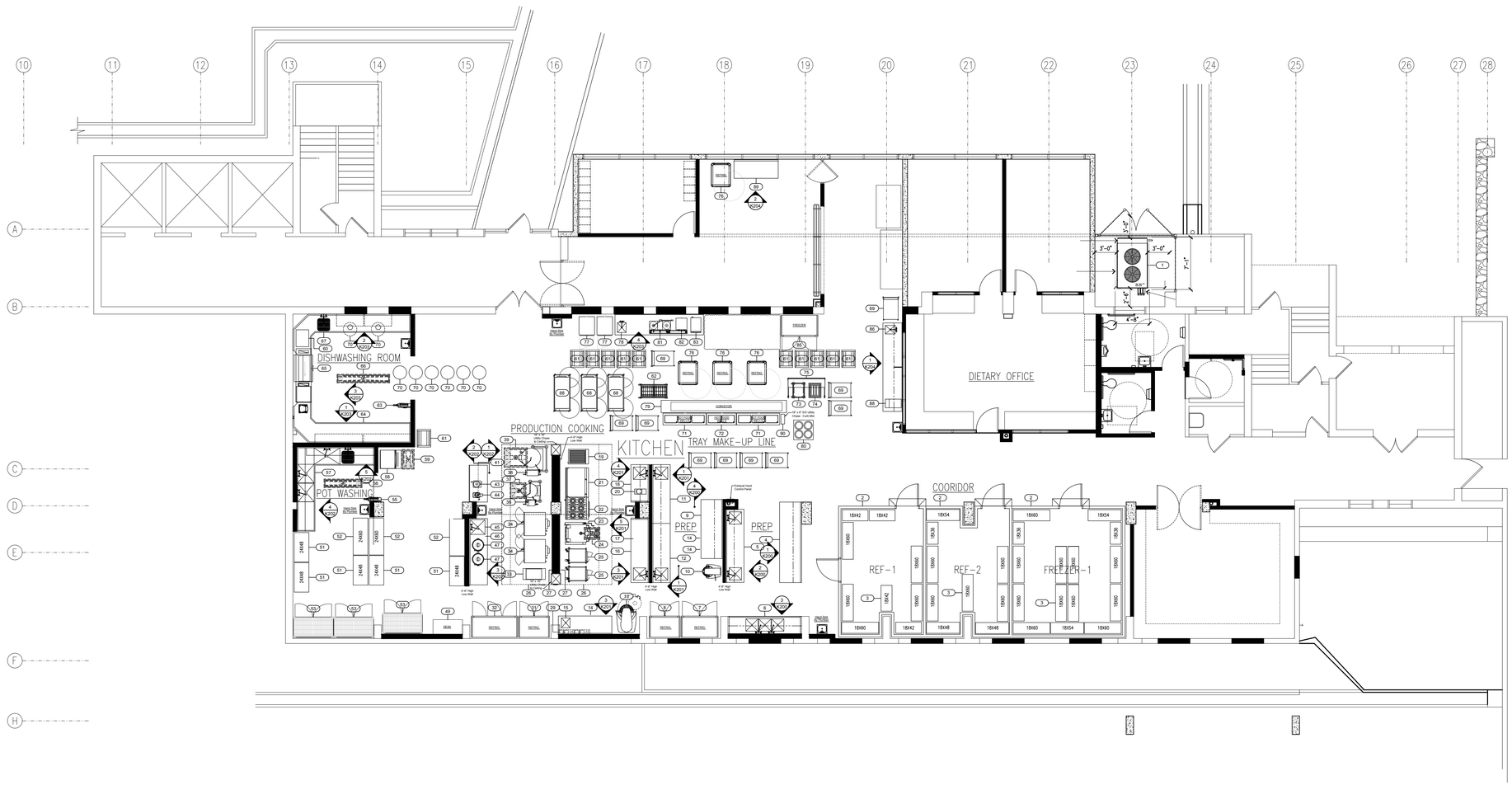
SCALE AS SHOWN

DRAWN RY | CHECK IM

SHEET

K100

OF ? SHEETS



1 / K101 SUB-BASEMENT
OVERALL F00D SERVICE EQUIPMENT PLAN

SCALE: 1/8" = 1'-0"

NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES : APRIL 30, 2020

DWIGHT K. MITSUNAGA
LICENSED PROFESSIONAL ARCHITECT
NO. 4467
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PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
NEW DIETARY KITCHEN
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
SUB-BASEMENT
OVERALL FOOD SERVICE EQUIPMENT PLAN

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY CHECK M

SHEET
K101
OF 7 SHEETS

13 14 15 16 17 18 19 20 21 22 23

DISHWASHING ROOM

POT WASHING

PRODUCTION COOKING

KITCHEN

TRAY MAKE-UP LINE

DIETARY OFFICE

COORIDOR

PREP

PREP

FREEZER

REFRIG.

CONVEYOR

HOT FOOD WELLS

Exhaust Hood Control Panel

16" x 6" S/S Utility Chase - Curb Mtd.

16" x 18" Utility Chase to Ceiling

4'-6" High Low Wall

Hand Sink By Plumber

DESK

REF-1

REF-2

FREEZER-1

18X42 18X54 18X60 18X48 18X36 24X48 24X60

3'-0" 3'-0" 3'-0" 7'-1" 88" 2'-6" 4'-8"

1 K102

SUB-BASEMENT
F00D SERVICE EQUIPMENT PLAN

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

DATE | DESCRIPTION | REV. NO.

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Signature

LICENSE EXPIRES : APRIL 30, 2020

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T.M.K.: 3 – 2 – 031: 001

SHEET TITLE

SUB-BASEMENT
FOOD SERVICE EQUIPMENT PLAN

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY CHECK IM
SHEET
K102
OF ? SHEETS

FOOD SERVICE EQUIPMENT ELECTRICAL SCHEDULE

ITEM NO.	DESCRIPTION	AMPS	VOLTS	PHASE	CONN. HT.	REMARKS
E1	REFRIGERATION SYSTEM, REMOTE	45.3	208	3	STUB UP +4"	MINIMUM AMPACITY: 35.8 AMPS
E2 / 2A	WALK -IN FREEZER	2 - 15.0 / 1 - 20.3	120 208	1	+102"	E2: 1 - ELECTRICAL CONNECTIONS TO LIGHTS / TEMPERATURE ALARM 1 - DOOR DEFROST / HEATER CABLES / DRAIN LINE HEATERS E2A: 20.3A/208/1 ELECTRICAL CONNECTIONS TO FREEZER EVAP. COIL.
E2 / 2B	WALK -IN REFRIGERATOR - 1	2 - 15.0 / 1 - 1.8	120	1	+102"	E2: 1 - ELECTRICAL CONNECTIONS TO LIGHTS / TEMPERATURE ALARM 1 - DOOR DEFROST / HEATER CABLES / DRAIN LINE HEATERS E2B: 1.8A/120/1 ELECTRICAL CONNECTIONS TO COOLER EVAP. COIL.
E2 / 2C	WALK -IN REFRIGERATOR - 2	2 - 15.0 / 1 - 1.8	120	1	+102"	E2: 1 - ELECTRICAL CONNECTIONS TO LIGHTS / TEMPERATURE ALARM 1 - DOOR DEFROST / HEATER CABLES / DRAIN LINE HEATERS E2C: 1.8A/120/1 ELECTRICAL CONNECTIONS TO COOLER EVAP. COIL.
E5	S/S WORKTABLE WITH SINK & DBL. OVERSHELVES	2 - 15.0	120	1	+46"	CONVENIENCE OUTLETS
E7	2-DR. REACH-IN REFRIGERATOR	12.9	120	1	+90"	NEMA 5-20P
E8	2- DR. REACH-IN FREEZER	17.1	120	1	+90"	NEMA 5-20P
E9	S/S WORKTABLE WITH DBL. OVERSHELVES	2 - 15.0	120	1	+46"	CONVENIENCE OUTLETS
E10	40 QT. MIXER	5.6	208	3	+24"	NEMA L15-20P | PROVIDE CORD & PLUG | ELECTRICIAN SHALL PROVIDE S/S COVER PLATE FOR OUTLET
E11	S/S WORKTABLE WITH SINK & DBL. OVERSHELVES	2 - 15.0	120	1	+46"	CONVENIENCE OUTLETS
E12	S/S WORKTABLE WITH SINK & DBL. OVERSHELVES	2 - 15.0	120	1	+46"	CONVENIENCE OUTLETS
E13	80 QT. MIXER	12.0	208	3	+24"	NEMA L15-20P | PROVIDE CORD & PLUG | ELECTRICIAN SHALL PROVIDE S/S COVER PLATE FOR OUTLET
E15	S/S WORKTABLE WITH SINK	2 - 15.0	120	1	+46"	CONVENIENCE OUTLETS
E16	S/S WORKTABLE WITH SINK	2 - 15.0	120	1	+46"	CONVENIENCE OUTLETS
E20	FOOD BLENDER	15.0	120	1	+46"	4.2 PEAK OUTPUT HP | CORD & PLUG
E23	30 GAL. TILTING SKILLET, GAS	3.0	120	1	+30"	NEMA 5-15P | CORD & PLUG
E25	CONVECTION STEAMER, DBL. STACKED, GAS	4 - 4.0	120	1	+30"/+36"	ONE CONNECTION PER UNIT
E26	ISLAND EXHAUST HOOD WITH MAKE-UP AIR PLENUM BOX	8.0	120	1	+114"	3-GANG BOX BY ELECTRICIAN FOR HOOD LIGHT & FAN SWITCHES / 1" Ø CONDUIT WITH CONTROL WIRING BY ELECTRICIAN FROM HOOD LIGHT SWITCH TO HOOD TEMP SENSOR WITHIN HOOD TO EXHAUST FAN
E26a	EXHAUST HOOD DCV CONTROL CABINET	15.0	120	1	+46"	DEDICATED CIRCUIT FOR HOOD LIGHTS & AVHC SENSOR. CONNECTION TO DCV CABINET WITH FLEX CONDUIT & CAT 5 CABLE CONNECTIONS TO EACH HOOD BY ELECTRICAL CONTRACTOR. | HOOD MANUFACTURER'S CERTIFIED REPRESENTATIVE SHALL COORDINATE ALL WORK REQUIRED BETWEEN TRADES FOR A COMPLETE INSTALLATION.
E29	HOOD FIRE SUPPRESSION SYSTEM	15.0	120	1	+78"	PER NFPA 17A, 96 & UL300
E31	2-DR. REACH-IN REFRIGERATOR	11.1	120	1	+90"	NEMA 5-20P
E32	3-DR. REACH-IN REFRIGERATOR	14.6	120	1	+90"	NEMA 5-20P
E34	CONVECTION OVEN, DBL. STACKED, GAS	4 - 7.2	120	1	+30" | +36"	NEMA 5-15P | CORD & PLUG
E36	25 GAL. TILTING KETTLE, GAS	8.0	120	1	+36"	NEMA 5-15P | CORD & PLUG

ITEM NO.	DESCRIPTION	AMPS	VOLTS	PHASE	CONN. HT.	REMARKS
E38	40 GAL. TILTING KETTLE, GAS	10.0	120	1	+24"	NEMA 5-15P | CORD & PLUG
E42	MICROWAVE OVEN - FUTURE	16.8	120	1	+40	NEMA 5-20-P | CORD & PLUG | DEDICATED OUTLE | SPLASH MOUNTED
E43	VERTICAL CUTTER MIXER	10.0	120	1	+40"	NEMA 5-15P | CORD & PLUG | DEDICATED OUTLE | SPLASH MOUNTED
E44	FOOD PROCESSOR	7.0	120	1	+40"	NEMA 5-15P | CORD & PLUG | DEDICATED OUTLE | SPLASH MOUNTED
E45	S/S WORKTABLE WITH SINK & UNDERSHELF	15.0	120	1	+46"	CONVENIENCE OUTLETS
-	SPARE NUMER - NOT USED	-	-	-	-	-
E49	DESK - BY OTHERS	-	-	-	-	REFER TO ARCHITECTURAL DRAWINGS FOR REQUIREMENTS
E58	ICE MACHINE WITH STORAGE BIN	9.9	208	1	+78"	20A MIN. CIRCUIT / MAX. FUSE SIZE
E60	BOOSTER HEATER (GAS) FOR DISHWASHER	3.0	120	1	+24"	-
E66	CONVEYOR DISH MACHINE WITH (E66b) HEATED BLOWER DRYER	20 34.2	(2) 208	3	+78"	SINGLE POINT DISH MACHINE 20A ELECTRICAL CONNECTION | FACTORY MOUNTED CIRCUIT BREAKERS | E66b - 208V / 3 PH / 34.2 AMP CONN. | FACTORY SHALL DISCONNECT INTERNAL ELECTRIC BOOSTER HEATER
E66a	CHEMICAL DISPENSER FOR DISH MACHINE	8.0	120	1	+72"	-
E71	SLIMLINE 3-COMPT. HOT FOOD WELLS	2 - 14.4	208	1	+14"	NEMA 6-20P | CORD & PLUG | CONNECTION TO TRAY CONVEYOR LOAD CENTER
E72	SLIMLINE 2-COMPT. HOT FOOD WELLS	9.6	208	1	+14"	NEMA 6-20P | CORD & PLUG | CONNECTION TO TRAY CONVEYOR LOAD CENTER
E76	AIR CURTAIN REFRIGERATOR	4 - 16.0	120	1	3 - (*) 1 - +24"	NEMA 5-20P | CORD & PLUG | (*) - CEILING MOUNTED DROP CORDS
E77	MOBILE HEATED CABINET	2 - 16.7	120	1	+24"	NEMA 5-20P | CORD & PLUG
E78	S/S BEVERAGE COUNTER WITH SINK & DRIP TROUGH	15.0	120	1	+46"	CONVENIENCE OUTLET
E79	17'-0" LONG TRAY MAKE-UP CONVEYOR	50.0	120 / 208	1	(**)	(**) - PEDESTAL MOUNTED S/S CHASE TO FOR ELECTRICAL CONNECTION TO CONVEYOR LOAD CENTER FOR CONVEYOR DRIVE MOTOR: 120V/1PH., 5.5AMPS | (3) 208V/1PH. RECEPTACLES MOUNTED ON THE RACEWAY FOR THE ITEM NO. E71 & E72 - HOT FOOD TABLES.
E80	MOBILE HEATED PLATE DISPENSER	15.0	120	1	(*)	NEMA 5-15P | CORD & PLUG | 1800 WATTS | (*) - CEILING MOUNTED DROP CORDS
E81	COFFEE URN	28.0	120 / 208	1	+46"	5800 WATTS
E82	COFFEE BREWER | THERMAL SERVER	25.4 - 29.0	120 / 208	1	+46"	5158 - 6800 WATTS
E83	ICE AND WATER DISPENSER	8.5	120	1	+46"	NEMA 5-15P | CORD & PLUG
-	-	-	-	-	-	-
E85	2-DR. FREEZER	17.1	120	1	+90"	NEMA 5-20P | CORD & PLUG
E86	S/S WORK COUNTER WITH SINK & DBL. OVERSHELVES	2 - 15.0	120	1	+46"	CONVENIENCE OUTLETS
E87	CONVEYOR TOASTER - (FUTURE)	17.9	208	1	+46"	NEMA 6-30P | CORD & PLUG
E88	TRAY SEALER	10.0	120	1	+46"	NEMA 5-15P | CORD & PLUG

REV. NO.	DESCRIPTION	DATE

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T.M.K.: 3 – 2 – 031: 001

SHEET TITLE

SUB-BASEMENT
FOOD SERVICE EQUIPMENT ELECTRICAL SCHEDULE

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY CHECK IM

SHEET

K103

OF ? SHEETS

13 14 15 16 17 18 19 20 21 22 23

DISHWASHING ROOM
Hand Sink By Plumber
E60
E66a
E66
E66b
E58
POT WASHING
Hand Sink By Plumber
24X48
24X60
24X60
24X48
24X48
24X48

PRODUCTION COOKING
KITCHEN
TRAY MAKE-UP LINE
Hand Sink By Plumber
E78 E81 E82 E83
REFRIG.
REFRIG.
FREEZER
E85
E76 E76 E76
REFRIG. REFRIG. REFRIG.
E79
E71 E72 E71 (**)
E80
E42 E38 E43 E44 E36 E34 E45
E23 E25 E25 E26
E20 E11 E16 E11 E12 E16
PREP
E9 E12 E10
E26a
E5 E5
PREP
E49
DESK
E32 E31
REFRIG. REFRIG.
E29 E15 E15 E18
E8 E7
REFRIG. REFRIG.

REFRIG.
E76
Hand Sink By Plumber
E86 E86 E87 E88
DIETARY OFFICE
E1

COORIDOR
LED LIGHT FIXTURES
REF-1
REF-2
FREEZER-1
VP+60
E2 E2B E2 E2A E2 E2
E2C E2
18X42 18X42 18X60 18X60 18X42 18X48 18X48 18X60 18X54 18X60

1 K104 SUB-BASEMENT
F00D SERVICE EQUIPMENT ELECTRICAL PLAN
SCALE: 1/8" = 1'-0"

REV. NO.	DESCRIPTION	DATE

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FOOD SERVICE EQUIPMENT ELECTRICAL PLAN

DATE SEPTEMBER 9, 2024
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SHEET
K104
OF ? SHEETS

FOOD SERVICE EQUIPMENT MECHANICAL SCHEDULE

ITEM NO.	DESCRIPTION	HW	CW	CONN. HT.	WASTE	INDIRECT	CONN HT	GAS MBTU	CONN. HT.	CFM	REMARKS
M2	WALK-IN COLD STORAGE ROOMS	-	-	-	(2) FS	●	-	-	-	-	1 ⅛" Ø INSULATED COPPER DRAINLINE FROM COILS TO F.S. BY K.E.C.
M5	S/S WORKTABLE WITH SINKS & DBL. OVERSHELVES	(2) 3/4"	(2) 3/4"	+14"	(2) FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M6	3-COMPT. PREP SINKS	(2) 3/4"	(2) 3/4"	+14"	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M11	S/S WORKTABLE WITH SINKS & DBL. OVERSHELVES	3/4"	3/4"	+14"	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M12	S/S WORKTABLE WITH SINKS & DBL. OVERSHELVES	3/4"	3/4"	+14"	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M15	S/S WORKTABLE WITH SINKS	3/4"	3/4"	+14"	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M16	S/S WORKTABLE WITH SINKS	3/4"	3/4"	+14"	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M18	S/S WORKTABLE WITH SINKS	3/4"	3/4"	+14"	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M19	24" WIDE GAS CHARBROILER WITH CABINET BASE	-	-	-	-	-	-	90	+24"	-	1" REAR GAS CONNECTION WITH QUICK-DISCONNECT ASSEMBLY BY K.E.C.
M21	48" WIDE GRIDDLE, THERMOSTATIC CONTROLLED	-	-	-	-	-	-	120	+24"	-	1" REAR GAS CONNECTION WITH QUICK-DISCONNECT ASSEMBLY BY K.E.C.
M22	6-BURNER RANGE WITH OVEN	-	-	-	-	-	-	220	+24"	-	1" REAR GAS CONNECTION WITH QUICK-DISCONNECT ASSEMBLY BY K.E.C.
M23	30 GAL. TILTING SKILLET, GAS	3/4"	3/4"	+14"	-	-	-	93	+24"	-	3/4" REAR GAS CONNECTION WITH QUICK-DISCONNECT ASSEMBLY BY K.E.C.
M24	FLOOR TROUGH WITH GRATING	-	-	-	FD	-	-	-	--	-	6-1/2" OD WASTE OUTLET WITH 4" OD TAILPIECE
M25	CONVECTION STEAMER, DBL. STACKED, GAS	-	(4) 3/4"	+14"	FS	●	-	(4) 32	+24"	-	1-1/4" GAS QUICK-DISCONNECT ASSEMBLY BY K.E.C. | 1-1/2" DRAIN CONNECTION EXTENDED TO FLOOR SINK
M26	EXHAUST HOOD	-	-	-	-	-	-	-	-	7218	1 - 12" X 12" EXHAUST DUCT AT 1447 CFM EACH / S.P: 0.695" W.G. 1 - 11" X 12" EXHAUST DUCT AT 1339 CFM EACH / S.P: 0.695" W.G. 2 - 18" X 12" EXHAUST DUCT AT 2216 CFM EACH / S.P: 0.979" W.G.
M26A	EXHAUST HOOD MAKE-UP AIR PLENUM BOX	-	-	-	-	-	-	-	-	4332	2 - 9" X 8" SUPPLY DUCT AT 434 CFM EACH / S.P.: 0.110" W.G. 2 - 9" X 8" SUPPLY DUCT AT 402 CFM EACH / S.P.: 0.110" W.G. 4 - 11" X 10" SUPPLY DUCT AT 665 CFM EACH / S.P.: 0.110" W.G.
M33	50 LB. FRYER, GAS	-	-	-	-	-	-	110	+24"	-	1" REAR GAS CONNECTION WITH QUICK-DISCONNECT ASSEMBLY BY K.E.C.
M34	CONVECTION OVEN, DBL. STACKED, GAS	-	-	-	-	-	-	(2) 140	+24"	-	(2) 1" REAR GAS CONNECTION WITH QUICK-DISCONNECT ASSEMBLY BY K.E.C. | 1" NPT MANIFOLD ASSEMBLY FOR SINGLE GAS CONN.
M36	25 GAL. TILTING KETTLE, GAS	3/4"	3/4"	+14"	-	-	-	90	+24"	-	3/4" GAS CONNECTION | 1" NPT MANIFOLD ASSEMBLY FOR SINGLE GAS CONN. INDIRECT WASTE LINE TO FLOOR TROUGH BY PLUMBER.
M37	FLOOR TROUGH WITH GRATING	-	-	-	FD	-	-	-	--	-	6-1/2" OD WASTE OUTLET WITH 4" OD TAILPIECE
M38	40 GAL. TILTING KETTLE, GAS	3/4"	3/4"	+14"	-	-	-	125	+24"	-	3/4" GAS CONNECTION | 1" NPT MANIFOLD ASSEMBLY FOR SINGLE GAS CONN. INDIRECT WASTE LINE TO FLOOR TROUGH BY PLUMBER.

FOOD SERVICE EQUIPMENT MECHANICAL SCHEDULE

ITEM NO.	DESCRIPTION	HW	CW	CONN. HT.	WASTE	INDIRECT	CONN HT	GAS MBTU	CONN. HT.	CFM	REMARKS
M39	FLOOR TROUGH WITH GRATING	-	-	-	FD	-	-	-	--	-	6-1/2" OD WASTE OUTLET WITH 4" OD TAILPIECE
M45	S/S WORKTABLE WITH SINK & UNDERSHELF	3/4"	3/4"	+14"	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M47	50 CUP RICE COOKER I GAS	`	-	-	-	-	-	70	+46"	-	(2) 1/2" REAR GAS CONNECTION @ 35 MBTU EACH I QUICK-DISCONNECT ASSEMBLY BY K.E.C.
M55	SS HOSE REEL | WALL MOUNTED	3/4"	3/4"	+36"	-	-	-	-	-	-	(VERIFY) BOTTOM OF CONTROL PANEL IS 44" ABOVE FINISHED FLOOR
M56	FLOOR TROUGH WITH GRATING	-	-	-	FD	-	-	-	--	-	6-1/2" OD WASTE OUTLET WITH 4" OD TAILPIECE
M57	S/S POT SINKS WITH SCRAP SINK & SPRAY RINSE	4 - 3/4"	4 - 3/4"	+14"	FS	●	-	-	-	-	FLOOR SINK SHALL BE SIZED SO SINKS CAN BE DRAINED SIMULTANEOUSLY AND DOES NOT OVERFLOW AND/OR BACK-UP / INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER.
M58	ICE MACHINE WITH STORAGE BIN	-	3/4"	+108"	-	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER | PROVIDE WATER FILTER.
M59	FLOOR TROUGH WITH GRATING	-	-	-	FD	-	-	-	--	-	6-1/2" OD WASTE OUTLET WITH 4" OD TAILPIECE
M60	BOOSTER HEATER (GAS) FOR DISHWASHER	-	3/4"	14"	FD	-	-	105	18"	(*)	3/4" NPT GAS CONNECTION | 140° INCOMING HOT WATER 3/4" NPT CONN. | OUTGOING WATER CONN. TO DISH MACHINE FINAL RINSE | (*) - 4" ROUND FORCED DRAFT SYSTEM EXHAUST FLUE
M63	SS HOSE REEL | WALL MOUNTED	3/4"	3/4"	+36"	-	-	-	-	-	-	(VERIFY) BOTTOM OF CONTROL PANEL IS 44" ABOVE FINISHED FLOOR
M65	CONVEYOR DISH MACHINE WITH HEATED BLOWER DRYER & WATER SOFTENER	3/4"	3/4"	+14"	(2) FS	●	-	78	+18"	600	120° MIN. HW CONN. FOR TANK HEAT | 1/2" FPT GAS CONNECTION | PEAK RATE OF DRAINFLOW 38 GPM | FLOOR SINK SHALL BE SIZED SO DISHWASHER CAN BE DRAINED WITHOUT OVERFLOWING | HW CONN. TO WATER SOFTENER | "T" CW TO DETERGENT DISPENSER AT +66" | 4" X16" VENT STACK WITH DAMPER. LOAD END 200 CFM & UNLOAD END 400 CFM. | 1" FPT DRAIN CONN. TO BLOWER DRYER TANK
M66	FLOOR TROUGH WITH GRATING	-	-	-	FD	-	-	-	--	-	6-1/2" OD WASTE OUTLET WITH 4" OD TAILPIECE
M67	SOILED DISHTABLE WITH SCRAP SINK & SPRAY RINSE	3/4"	3/4"	+14"	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M71	SLIMLINE 3-COMPT. HOT FOOD WELLS	-	-	-	(2) FS	●	-	-	-	-	INDIRECT WASTE LINES TO FLOOR SINK BY PLUMBER
M72	SLIMLINE 2-COMPT. HOT FOOD WELLS	-	-	-	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M78	S/S BEVERAGE COUNTER WITH SINK & DRIP TROUGH	3/4"	3/4"	+14"	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER
M81	COFFEE URN	-	3/4"	+14"	FS	●	-	-	-	-	PROVIDE A HOLE WITH GROMMET ON COUNTERTOP FOR THE WATER SUPPLY. | PROVIDE FLEXIBLE WATER HOSE CONNECTION & WATER FILTER.
M82	COFFEE BREWER | THERMAL SERVER	-	3/4"	+14"	-	-	-	-	-	-	PROVIDE A HOLE WITH GROMMET ON COUNTERTOP FOR THE WATER SUPPLY. | PROVIDE FLEXIBLE WATER HOSE CONNECTION & WATER FILTER.
M83	ICE AND WATER DISPENSER	-	3/4"	+14"	FS	●	-	-	-	-	PROVIDE A HOLE WITH GROMMET ON COUNTERTOP FOR THE WATER SUPPLY. | PROVIDE FLEXIBLE WATER HOSE CONN. & WATER FILTER. | INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER.
M86	S/S WORK COUNTER WITH SINK & DBL. OVERSHELVES	3/4"	3/4"	+14"	FS	●	-	-	-	-	INDIRECT WASTE LINE TO FLOOR SINK BY PLUMBER

REV. NO.	DESCRIPTION	DATE

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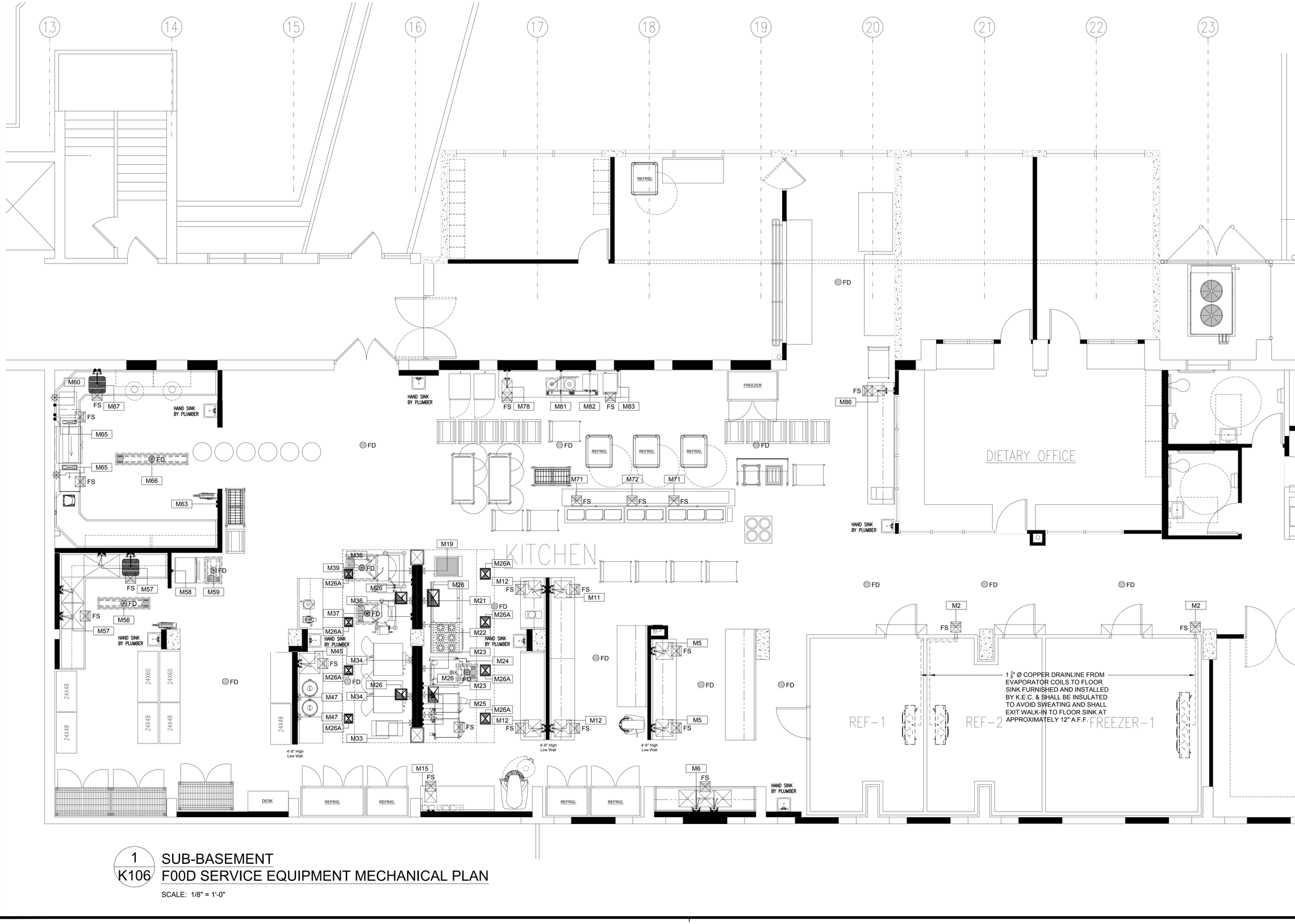
SUB-BASEMENT
FOOD SERVICE EQUIPMENT MECHANICAL SCHEDULE

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY CHECK IM
SHEET

K105

OF ? SHEETS



1
K106

SUB-BASEMENT
F00D SERVICE EQUIPMENT MECHANICAL PLAN

SCALE: 1/8" = 1'-0"

REV. NO.	DESCRIPTION	DATE

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

Signature

LICENSE EXPIRES : APRIL 30, 2020

DWIGHT MITSUNAGA
LICENSED PROFESSIONAL ARCHITECT
NO. 4467
HAWAII USA

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601
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PROJECT TITLE

LEAHI HOSPITAL - YOUNG BUILDING
NEW DIETARY KITCHEN
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

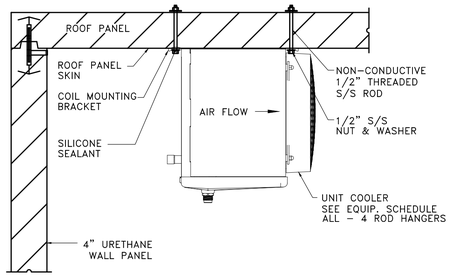
SHEET TITLE

SUB-BASEMENT
FOOD SERVICE EQUIPMENT MECHANICAL PLAN

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY CHECK IM
SHEET

K106

OF ? SHEETS



2 / K107 TYPICAL EVAPORATOR COIL ANCHORAGE DETAIL

SCALE: N.T.S.

WALL HEIGHTS:
(*) FULL HEIGHT PIPE CHASE WALL / 16" LONG X 18" WIDE / AS DIMENSIONED ON PLAN.
(**) 4'-6" HIGH LOW WALL / 4" & 7" WIDE / LENGTH AS DIMENSIONED ON PLAN.
(***) 4'-6" HIGH LOW WALL / 12" WIDE / 16'-0" LONG. REFER TO DWG. K301 / DETAIL 1.

MAINTAIN AISLE DIMENSIONS BETWEEN EQUIPMENT:
PLUMBING, GAS & ELECTRICAL LINES AND CONNECTIONS TO EQUIPMENT SHALL BE RUN WITH 4" AND12" WALL, "NO EXCEPTIONS".
REFER TO ARCHITECTURAL DRAWINGS FOR EXACT WALL REQUIREMENTS.

G.C. NOTES:

1. GENERAL CONTRACTOR (G.C.) SHALL PROVIDE 8" LEVEL FLOOR DEPRESSION FREE OF PROJECTING AGGREGATE FOR WALK-IN COLD STORAGE ROOMS TO EFFECT A 1/2" RAMP AT ENTRANCE DOOR. PROVIDE TILE, SETTING BED AND FINISHED FLOOR BASES AS INDICATED. CONCRETE FILL SHALL BE REINFORCED WITH 10 GA. WELDED MESH, 6" ON CENTERS BOTH WAYS. REFER TO ARCHITECTURAL / STRUCTURAL DRAWINGS FOR EXACT REQUIREMENTS.
2. 1⅛" COPPER DRAINLINE FROM EVAPORATOR COILS TO FLOOR SINK LOCATIONS, SHALL BE FURNISHED AND INSTALLED BY THE KITCHEN EQUIPMENT CONTRACTOR (K.E.C.), SHALL BE INSULATED TO AVOID SWEATING AND SHALL EXIT WALK-INS TO FLOOR SINK APPROX. 12" A.F.F.
3. ALL WALLS IN CONTACT WITH OR WITHIN 6" OF RANGES, CHAR BROILER, CONVECTION-OVEN, FRYER, TILTING SKILLET, STEAMER & KETTLES SHALL BE CONSTRUCTED OF NON-COMBUSTIBLE HEATPROOF MATERIAL. VERIFYFIRE MARSHALL'S SPECIAL RULINGS. REFER TO ARCHITECTURAL DRAWINGS FOR EXACT REQUIREMENTS.
4. GENERAL CONTRACTOR SHALL FURNISH AND INSTALL CHANNEL FRAMING OR "Z" BAR IN POSITION AS INDICATED ON THIS BUILDING WORK FOR INSTALLATION OF HOOD HANGER RODS BY THE KITCHEN EQUIPMENT CONTRACTOR / COORDINATE LOCATIONS OF CHANNEL FRAMING WITH K.E.C. REFER TO STRUCTURAL DRAWINGS FOR EXACT REQUIREMENTS FOR SUPPORT FRAMING
5. GENERAL CONTRACTOR SHALL PROVIDE LEVEL FLOOR AT ALL EQUIPMENT LOCATIONS FOR LEVELED INSTALLATION OF COOKING EQUIPMENT. FLOOR CAN BE SLOPED TO FLOOR DRAIN FROM EXTERIOR EDGE OF EQUIPMENT / COORDINATE WITH KITCHEN EQUIPMENT CONTRACTOR.
6. G.C. SHALL DEPRESS AREA 4"-6" BELOW FINISHED FLOOR LINE FOR ITEM NO.24, 37, 39, 56, 59, & 66. REFER TO STRUCTURAL DWGS FOR EXACT. REQUIREMENTS. COORDINATE WITH KITCHEN EQUIPMENT CONTRACTOR.
7. GENERAL CONTRACTOR SHALL PROVIDE WALL AND/OR FLOOR SLEEVES FOR ALL OPENINGS REQUIRED TO INSTALL INSULATED REFRIGERATION LINES. COORDINATE LOCATION AND SIZE WITH REFRIGERATION CONTRACTOR.

REFRIGERATION CONTRACTOR NOTE: (INSULATION REQUIREMENTS)

REFRIGERATION CONTRACTOR SHALL INSULATE LINES WITH ARMAFLEX INSULATION SIZED AS REQUIRED TO AVOID SWEATING. VERIFY OUTDOOR & INDOOR REQUIREMENTS WITH MANUFACTURER BEFORE START OF INSTALLATION. INSTALLATION INSTALLER SHALL BE A "CERTIFIED" ARMAFLEX INSTALLER.

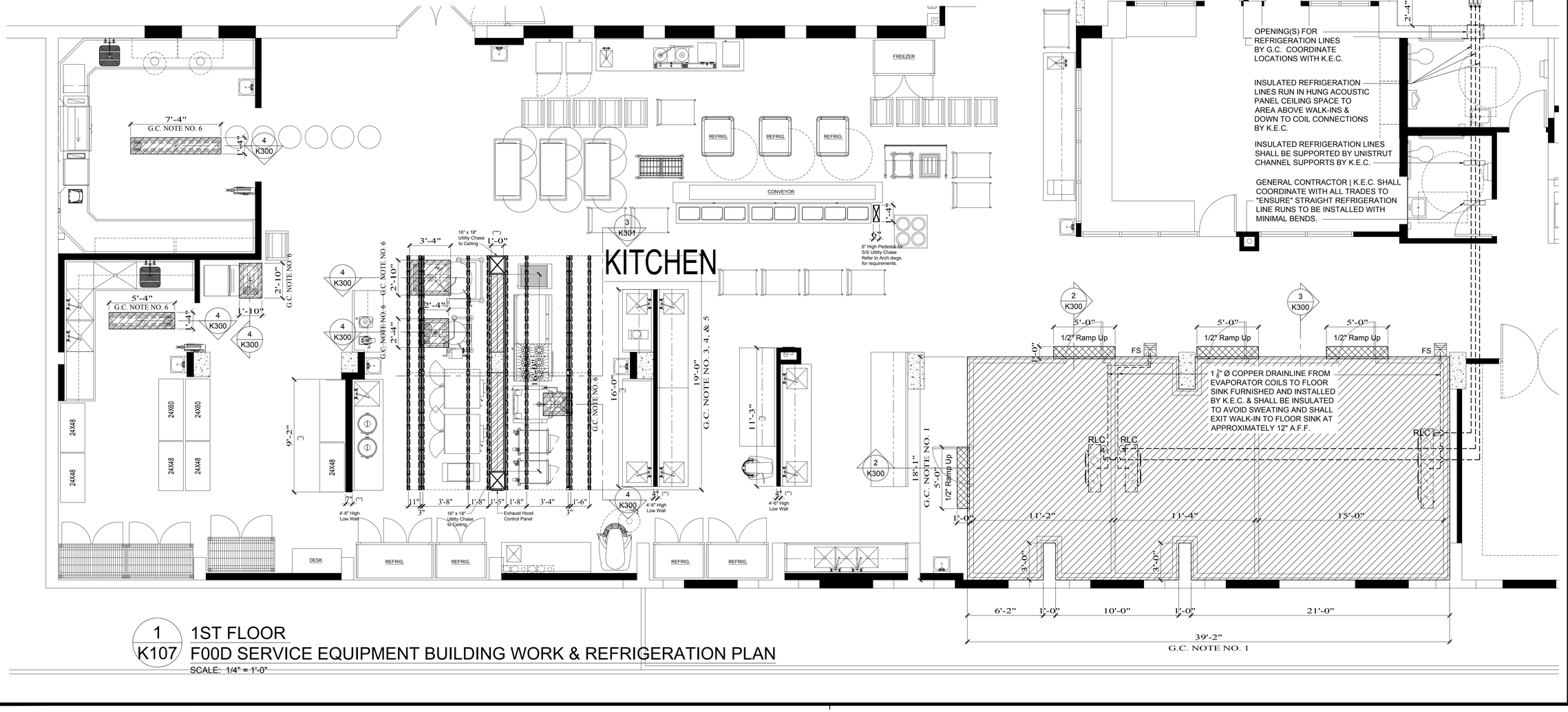
EXTERIOR INSULATION: PROVIDE CELLULAR GLASS INSULATION WITH S/S JACKET OR S/S TUBING. THE INSULATION SHALL BE APPLIED OVER CLEAN & DRY PIPING. S/S JACKET OR TUBING SHALL EXTEND 6" BEYOND PORTION OF ROOF OPENING. REFRIGERATION LINE RUNS ON ROOF SHALL BE SUPPORTED AND BRACKETED WITH UNISTRUTS.

INTERIOR INSULATION: REFRIGERANT SUCTION LINES SHALL BE INSULATED WITH ARMSTRONG ARMAFLEX FOAMED PLASTIC INSULATION TO AVOID SWEATING AND SIZED IN ACCORDANCE WITH THE MANUFACTURER BEFORE INSTALLATION. INSULATION SHALL BE DONE BY A "CERTIFIED" ARMAFLEX INSTALLER. RUN LINES WITHIN CEILING SPACE TO AREA ABOVE WALK-INS AND DOWN TO CONNECTION POINTS. REFRIGERATION LINE RUNS SHALL BE SUPPORTED AND BRACKETED WITH WALL MOUNTED UNISTRUTS. COORDINATE INSTALLATION WITH ALL TRADES TO "ENSURE" STRAIGHT LINE RUNS WITH MINIMAL BENDS.

GENERAL CONTRACTOR (G.C.) SHALL COORDINATE INSULATION LINE RUNS WITH REFRIGERATION CONTRACTOR AND ALL OTHER TRADES TO "ENSURE" A STRAIGHT LINE RUN WITH A MINIMUM OF LINE BENDS.

SYMBOLS:

- FLOOR DEPRESSION
- ROUGH SLAB (RAMP)
- NON-COMBUSTIBLE, HEATPROOF WALL
- RLC REFRIGERANT LINE CONNECTION
- ELECTRICAL MOTOR - REFRIGERATION SYSTEM LOCATION



1 / K107 1ST FLOOR F00D SERVICE EQUIPMENT BUILDING WORK & REFRIGERATION PLAN

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

REV. NO.	DESCRIPTION	DATE

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Signature
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MITSUNAGA * DWIGHT * LICENSED PROFESSIONAL ARCHITECT NO. 4467 * HAWAII USA *

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SUB-BASEMENT
FOOD SERVICE EQUIPMENT BUILDING WORK & REFRIGERATION PLAN

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
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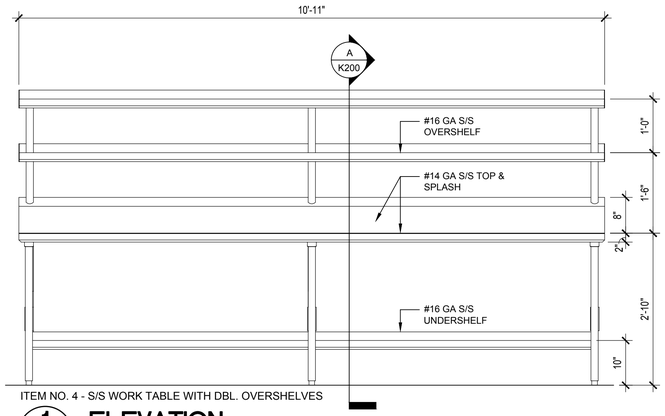
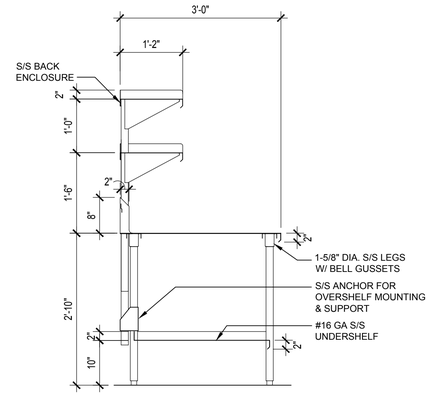
SHEET
K107
OF ? SHEETS

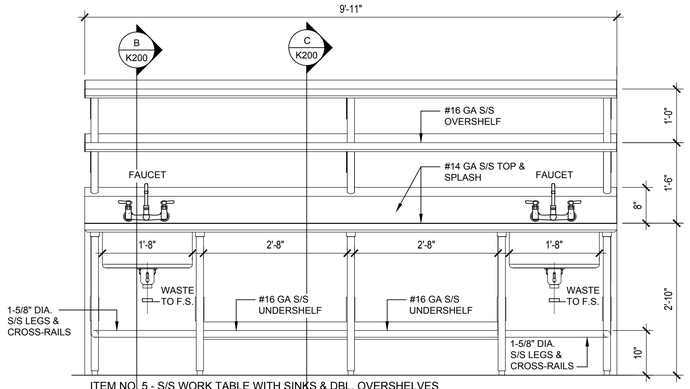


ITEM NO. 4 - S/S WORK TABLE WITH DBL. OVERSHELVES

1 K200 **ELEVATION**
SC: 3/4" = 1'-0"

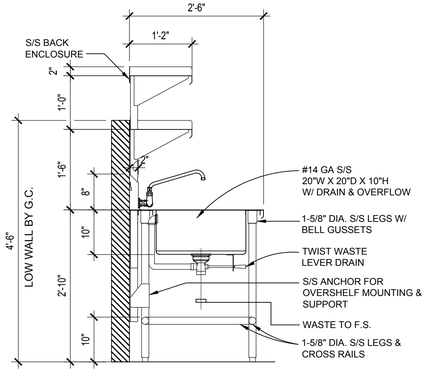


A **SECTION**
SC: 3/4" = 1'-0"



ITEM NO. 5 - S/S WORK TABLE WITH SINKS & DBL. OVERSHELVES

2 K200 **ELEVATION**
SC: 3/4" = 1'-0"



B **SECTION**
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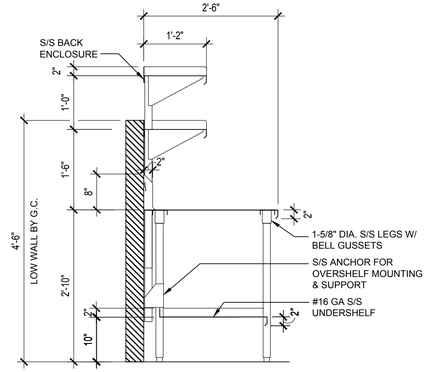
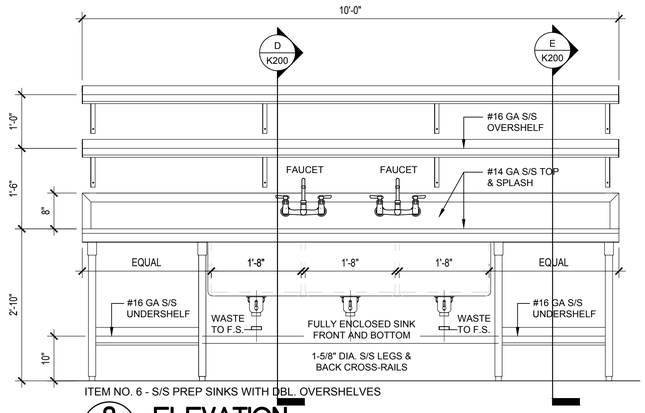


C **SECTION**
SC: 3/4" = 1'-0"



ITEM NO. 6 - S/S PREP SINKS WITH DBL. OVERSHELVES

3 K200 **ELEVATION**
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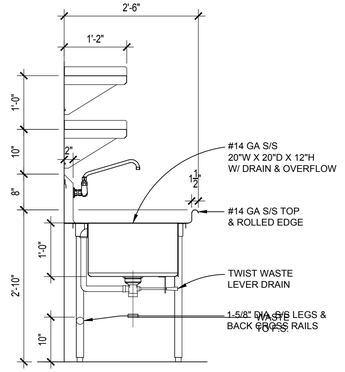
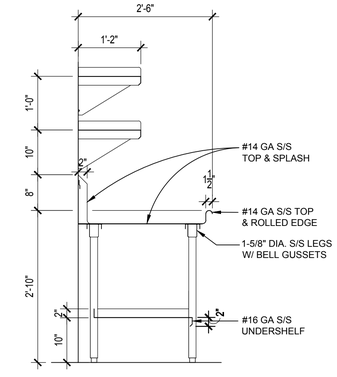
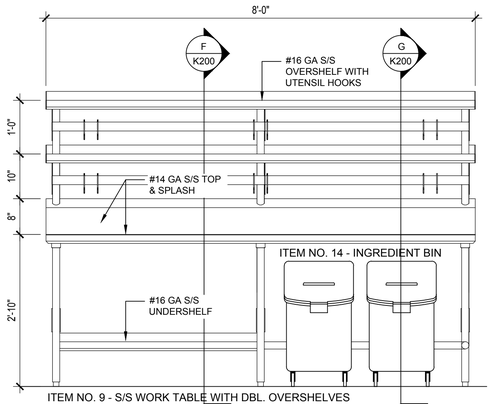


D **SECTION**
SC: 3/4" = 1'-0"

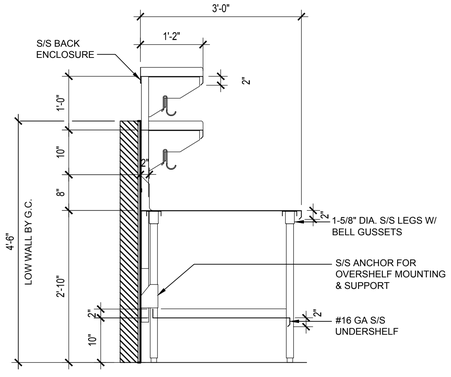


E **SECTION**
SC: 3/4" = 1'-0"

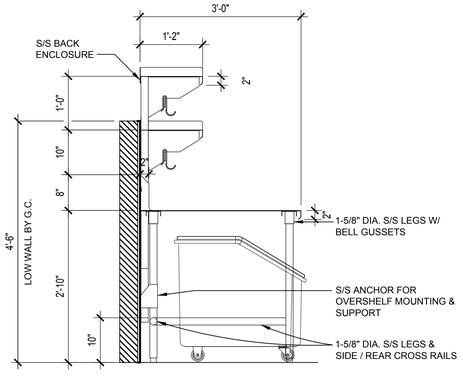


ITEM NO. 9 - S/S WORK TABLE WITH DBL. OVERSHELVES

4 K200 **ELEVATION**
SC: 3/4" = 1'-0"



F **SECTION**
SC: 3/4" = 1'-0"



G **SECTION**
SC: 3/4" = 1'-0"

NO.	DESCRIPTION	DATE

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Signature
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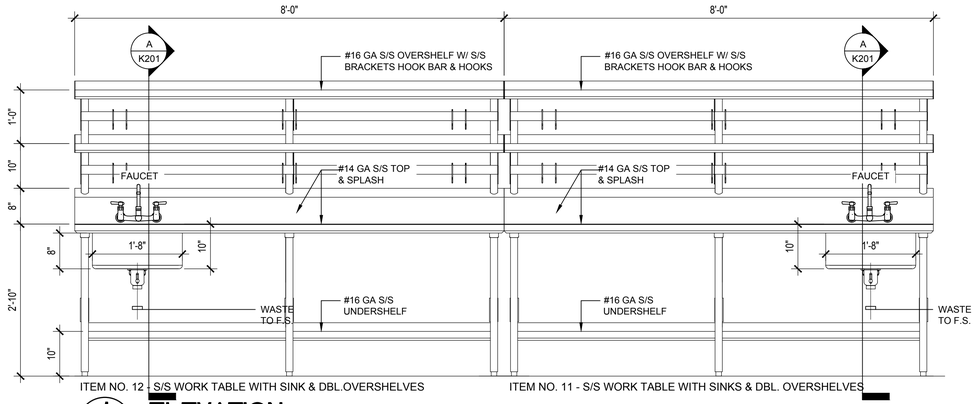
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
SUB-BASEMENT
FOOD SERVICE EQUIPMENT ELEVATIONS & SECTIONS

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY CHECK IM

SHEET
K200

OF ? SHEETS

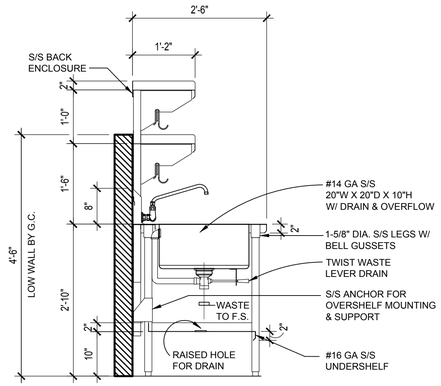


ITEM NO. 12 - S/S WORK TABLE WITH SINK & DBL.OVERSHELVES

ITEM NO. 11 - S/S WORK TABLE WITH SINKS & DBL. OVERSHELVES

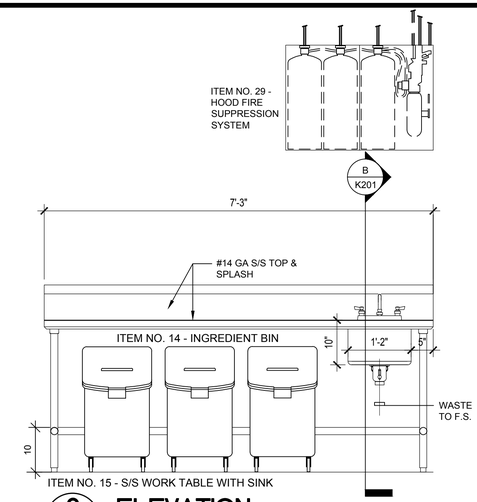
1 K201 **ELEVATION**

SC: 3/4" = 1'-0"



A **SECTION**

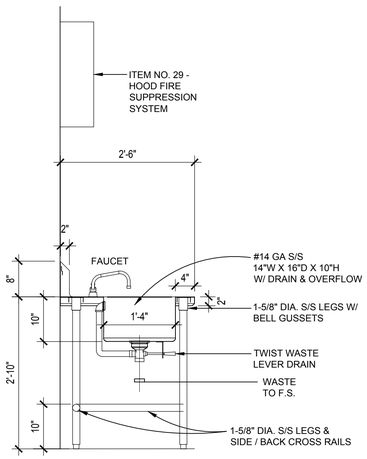
SC: 3/4" = 1'-0"



ITEM NO. 15 - S/S WORK TABLE WITH SINK

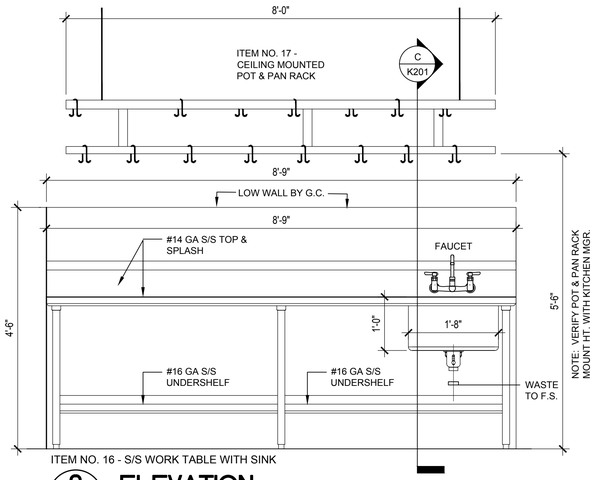
2 K201 **ELEVATION**

SC: 3/4" = 1'-0"



B **SECTION**

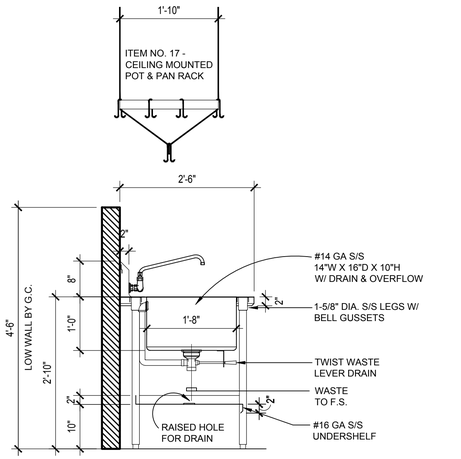
SC: 3/4" = 1'-0"



ITEM NO. 16 - S/S WORK TABLE WITH SINK

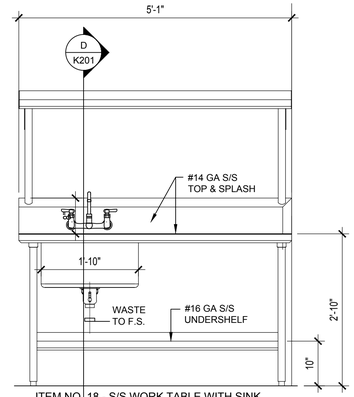
3 K201 **ELEVATION**

SC: 3/4" = 1'-0"



C **SECTION**

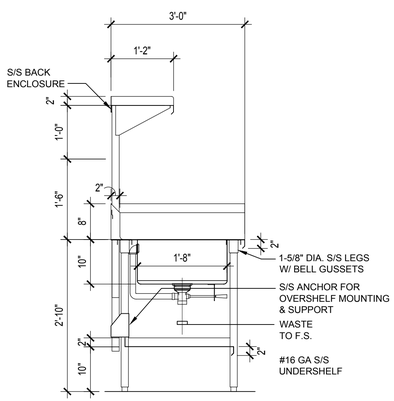
SC: 3/4" = 1'-0"



ITEM NO. 18 - S/S WORK TABLE WITH SINK

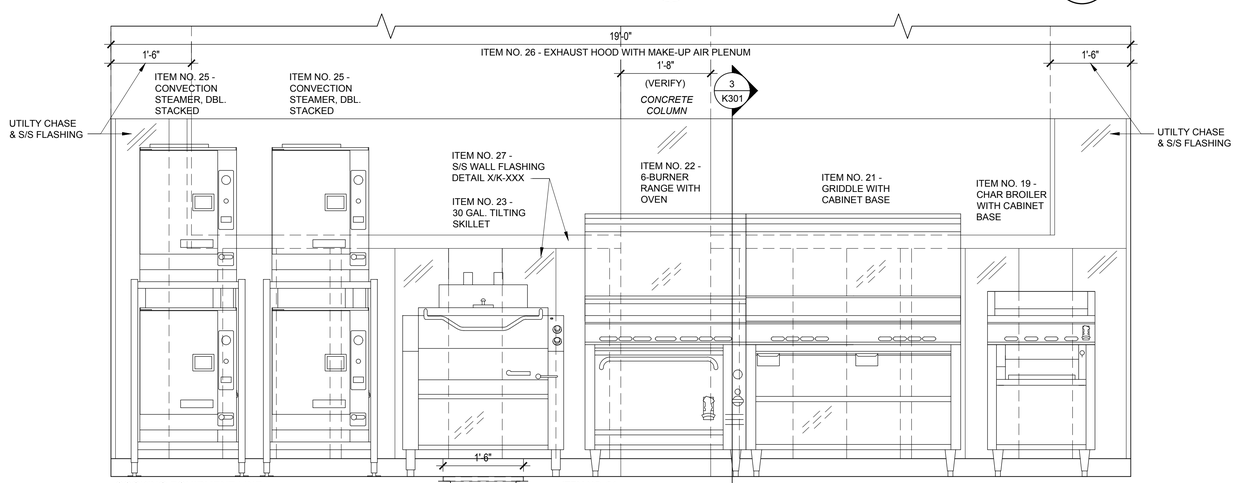
4 K201 **ELEVATION**

SC: 3/4" = 1'-0"



D **SECTION**

SC: 3/4" = 1'-0"



COOKING EQUIPMENT LINE

5 K201 **ELEVATION**

SC: 3/4" = 1'-0"

DATE

DESCRIPTION

REV. NO.

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Signature

LICENSE EXPIRES : APRIL 30, 2020

K. MITSUNAGA * USA * DWIGHT HAWAII LICENSED PROFESSIONAL ARCHITECT NO. 4467

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SHEET TITLE

SUB-BASEMENT
FOOD SERVICE EQUIPMENT ELEVATIONS & SECTIONS

DATE SEPTEMBER 9, 2024

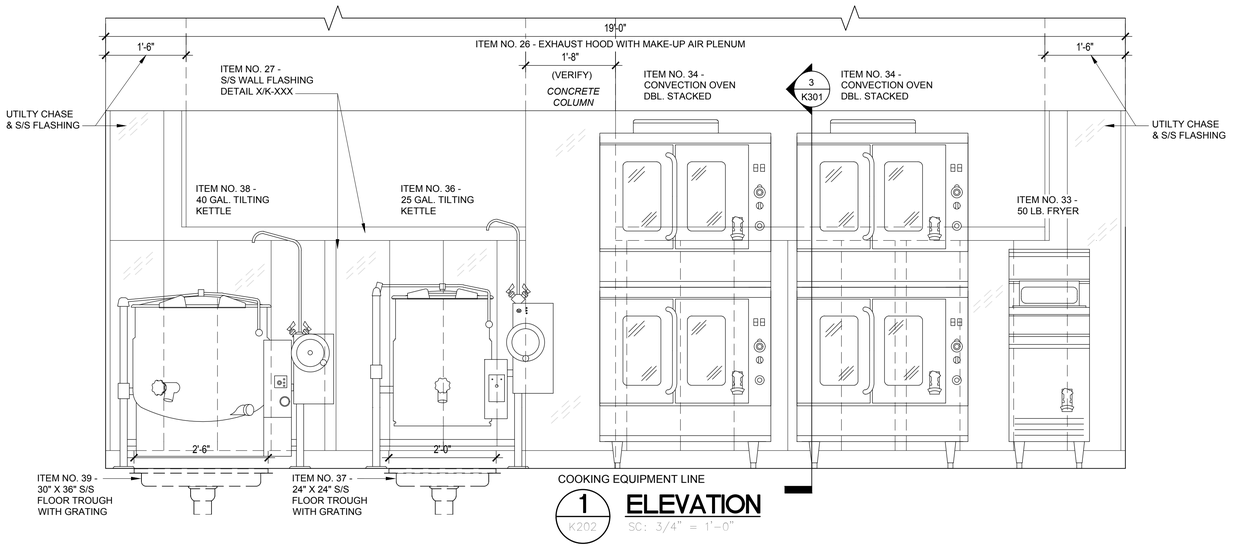
SCALE AS SHOWN

DRAWN RY CHECK IM

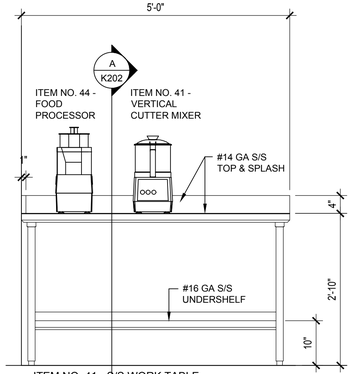
SHEET

K201

OF 2 SHEETS

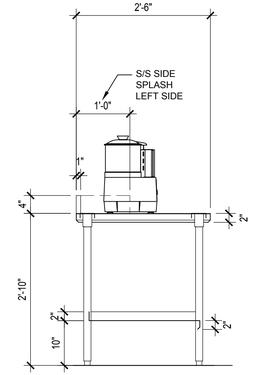


1 K202 **ELEVATION**
SC: 3/4" = 1'-0"

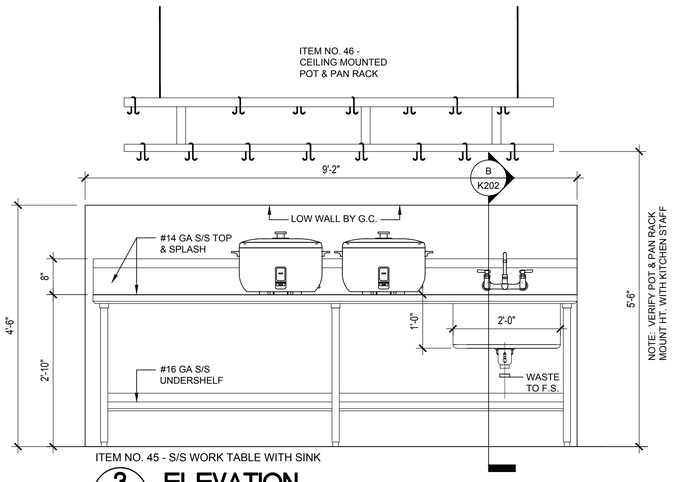


ITEM NO. 41 - S/S WORK TABLE

2 K202 **ELEVATION**
SC: 3/4" = 1'-0"

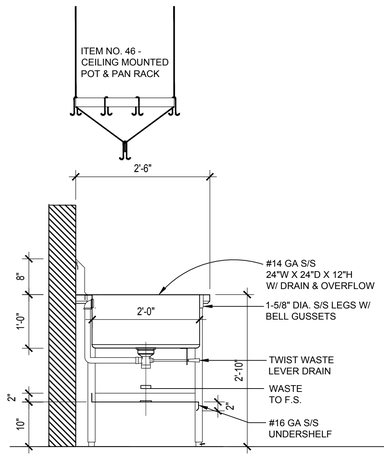


A **SECTION**
SC: 3/4" = 1'-0"

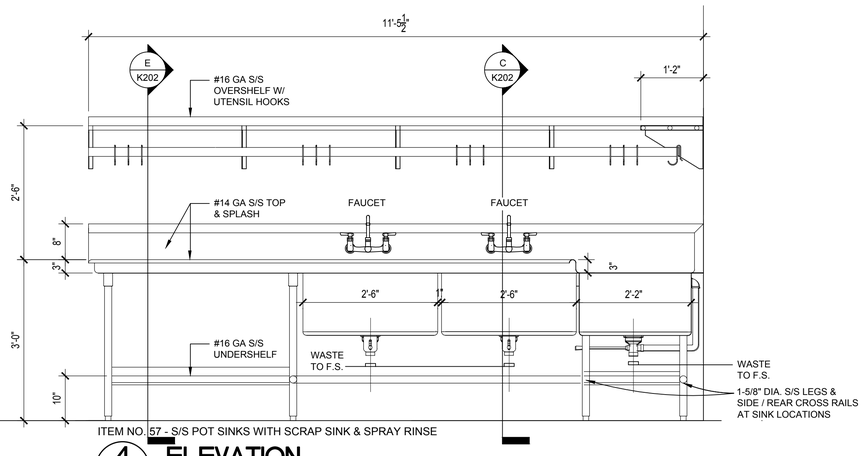


ITEM NO. 45 - S/S WORK TABLE WITH SINK

3 K202 **ELEVATION**

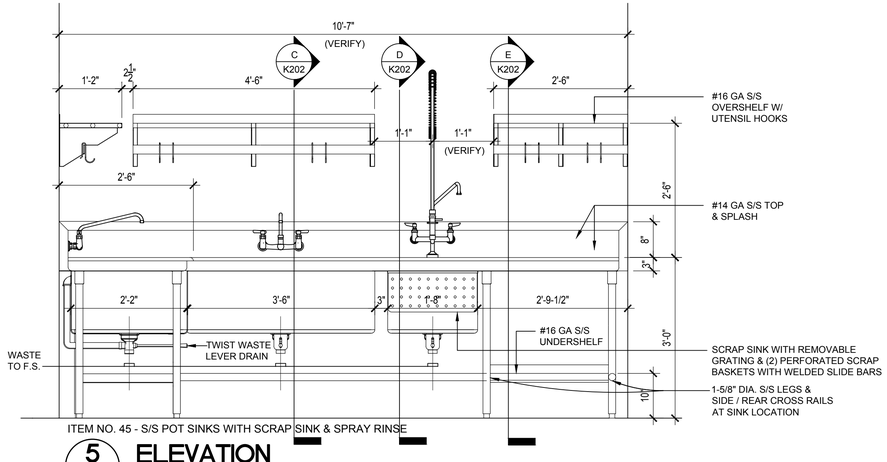


B **SECTION**
SC: 3/4" = 1'-0"



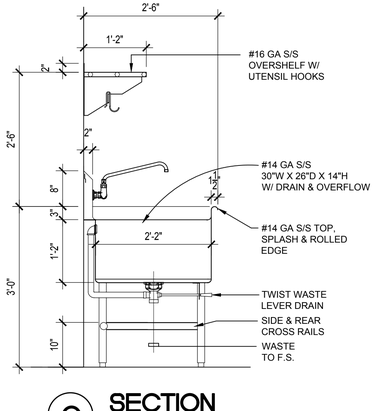
ITEM NO. 57 - S/S POT SINKS WITH SCRAP SINK & SPRAY RINSE

4 K202 **ELEVATION**

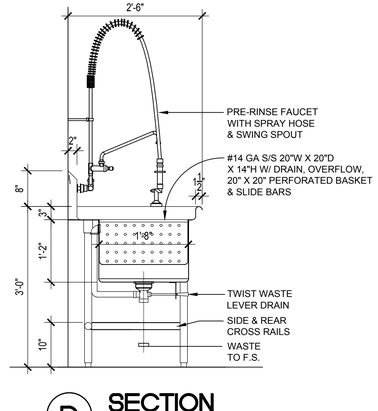


ITEM NO. 45 - S/S POT SINKS WITH SCRAP SINK & SPRAY RINSE

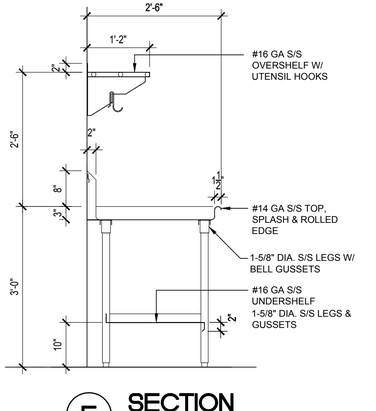
5 K202 **ELEVATION**



C **SECTION**
SC: 3/4" = 1'-0"



D **SECTION**
SC: 3/4" = 1'-0"



E **SECTION**
SC: 3/4" = 1'-0"

DATE | DESCRIPTION | REV. NO.

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

Signature
LICENSE EXPIRES : APRIL 30, 2020

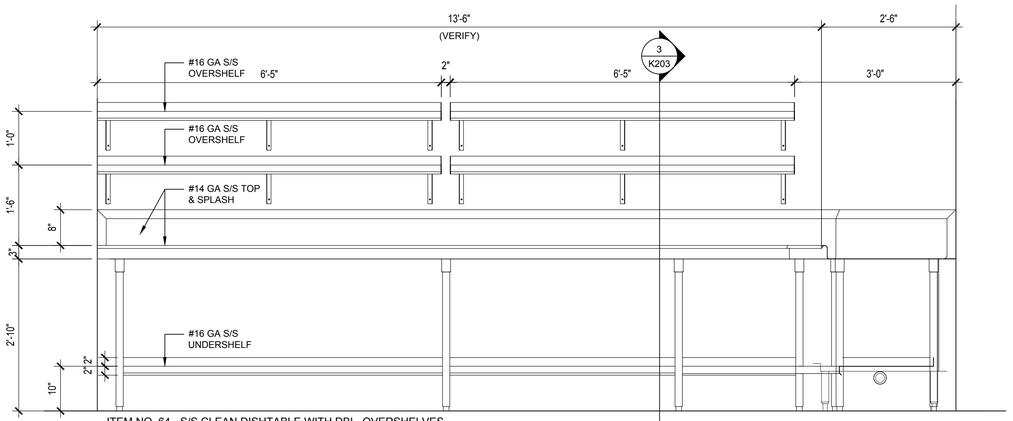
K. MITSUNAGA * USA * HAWAII * DWIGHT * LICENSED PROFESSIONAL ARCHITECT NO. 4467

Pacific Architects, Inc.
2020 South King Street
Honolulu, Hawaii 96826
808-949-1601
fax 808-942-0054

PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
NEW DIETARY KITCHEN
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
SUB-BASEMENT
FOOD SERVICE EQUIPMENT ELEVATIONS & SECTIONS

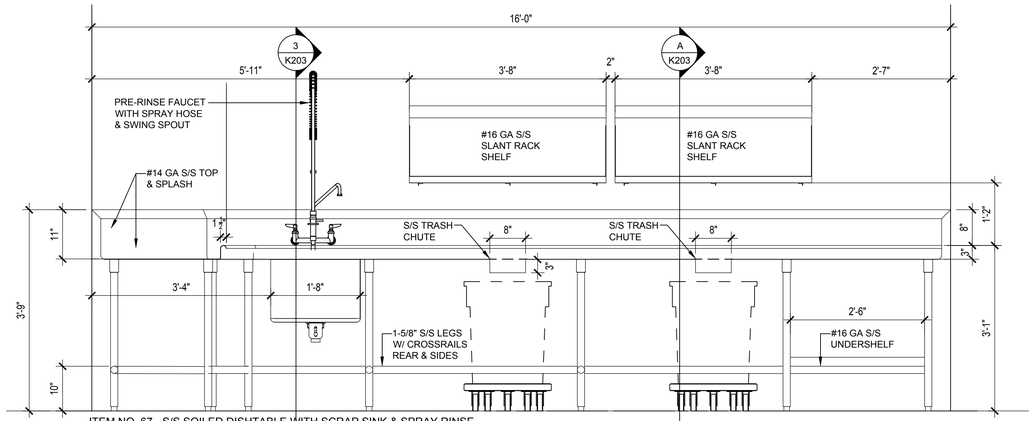
DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY CHECK IM
SHEET
K202
OF ? SHEETS



ITEM NO. 64 - S/S CLEAN DISHTABLE WITH DBL. OVERSHELVES

1 K203 ELEVATION

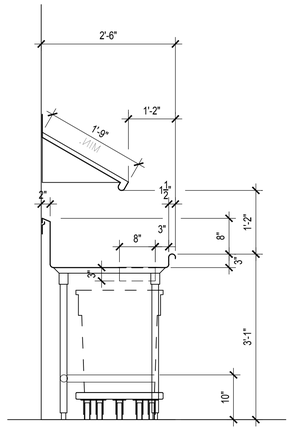
SC: 3/4" = 1'-0"



ITEM NO. 67 - S/S SOILED DISHTABLE WITH SCRAP SINK & SPRAY RINSE

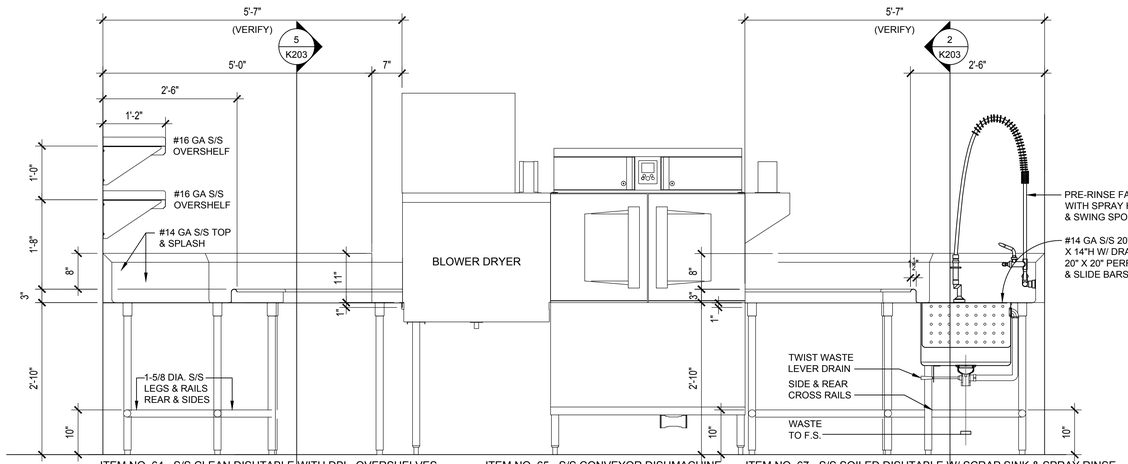
2 K203 ELEVATION

SC: 3/4" = 1'-0"



A SECTION

SC: 3/4" = 1'-0"



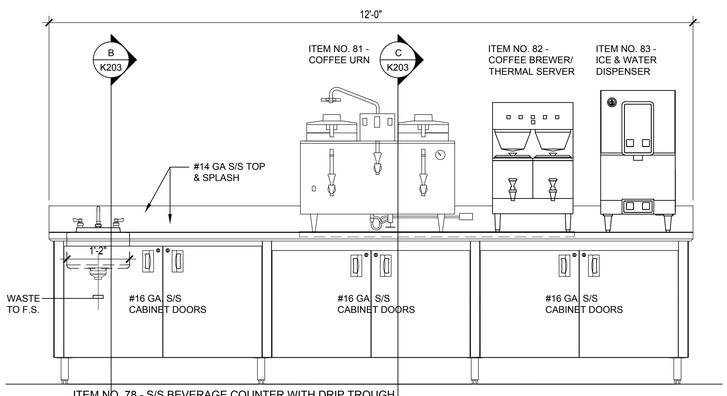
ITEM NO. 64 - S/S CLEAN DISHTABLE WITH DBL. OVERSHELVES

ITEM NO. 65 - S/S CONVEYOR DISHMACHINE

ITEM NO. 67 - S/S SOILED DISHTABLE W/ SCRAP SINK & SPRAY RINSE

3 K203 ELEVATION

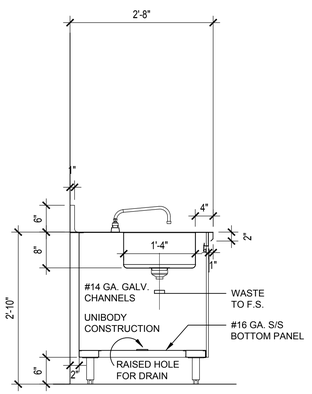
SC: 3/4" = 1'-0"



ITEM NO. 78 - S/S BEVERAGE COUNTER WITH DRIP TROUGH

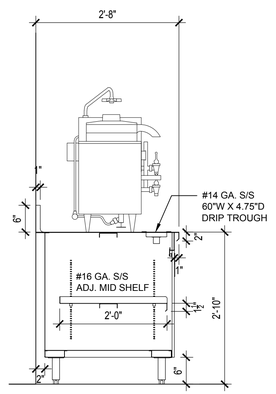
4 K203 ELEVATION

SC: 3/4" = 1'-0"



B SECTION

SC: 3/4" = 1'-0"



C SECTION

SC: 3/4" = 1'-0"

DATE

DESCRIPTION

REV. NO.

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Signature

LICENSE EXPIRES : APRIL 30, 2020

DWIGHT K. MITSUNAGA
LICENSED PROFESSIONAL ARCHITECT
NO. 4467
HAWAII USA

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PROJECT TITLE

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T.M.K.: 3 – 2 – 031: 001

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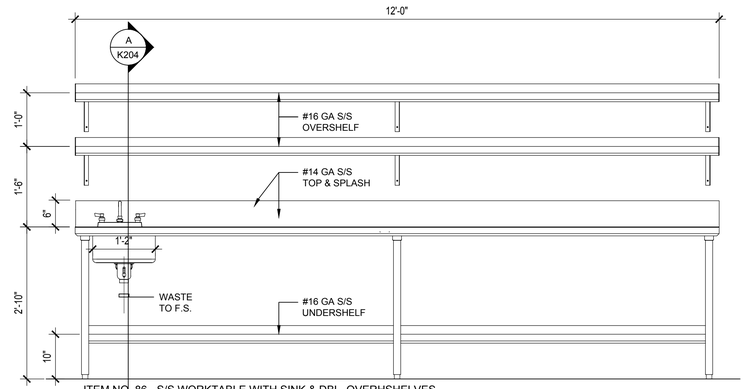
SUB-BASEMENT
FOOD SERVICE EQUIPMENT ELEVATIONS & SECTIONS

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY CHECK IM

SHEET

K203

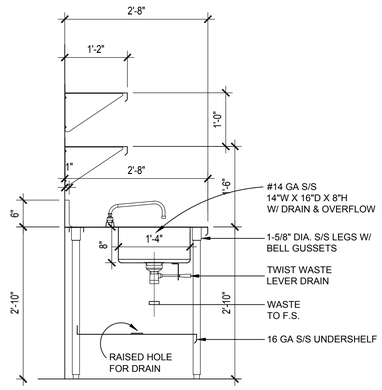
OF ? SHEETS



ITEM NO. 86 - S/S WORKTABLE WITH SINK & DBL. OVERHSHELVES

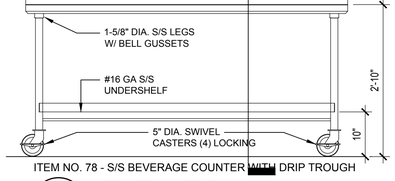
1 K204 **ELEVATION**

SC: 3/4" = 1'-0"



A **SECTION**

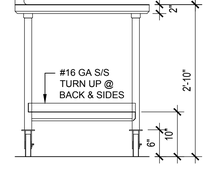
SC: 3/4" = 1'-0"



ITEM NO. 78 - S/S BEVERAGE COUNTER WITH DRIP TROUGH

2 K204 **ELEVATION**

SC: 3/4" = 1'-0"



B **SECTION**

SC: 3/4" = 1'-0"

REV. NO.	DESCRIPTION	DATE

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Signature

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PROJECT TITLE

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NEW DIETARY KITCHEN
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SHEET TITLE

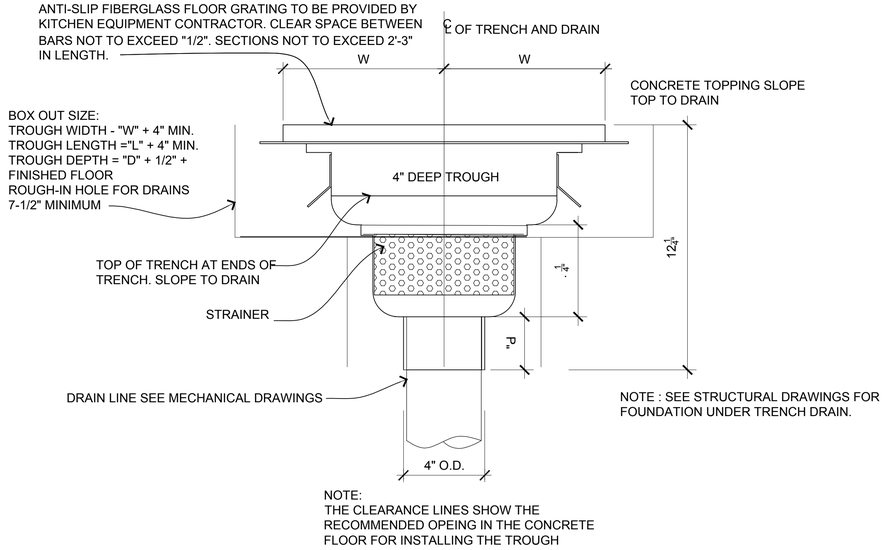
SUB-BASEMENT
FOOD SERVICE EQUIPMENT ELEVATIONS & SECTIONS

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY | CHECK IM

SHEET

K204

____ OF _?_ SHEETS

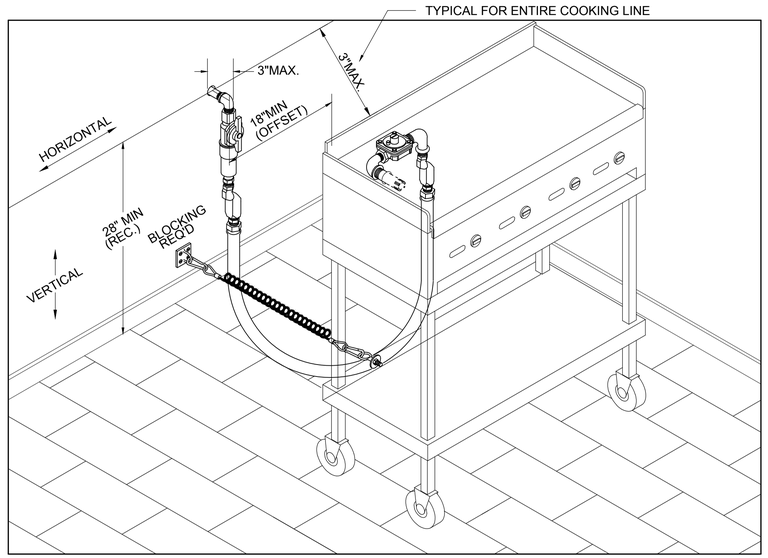


4 / K300

"REFERENCE ONLY" - SECTION THRU FLOOR TROUGH BY G.C.

SCALE: N.T.S.

REFER TO ARCHITECTURAL/STRUCTURAL DRAWINGS FOR EXACT TROUGH DEPRESSION REQUIREMENTS.
G.C. SHALL COORDINATE WITH ARCHITECT FOR DEPRESSION REQUIREMENTS.
COORDINATE WITH K.E.C. EXACT LOCATION OF TROUGH.



5 / K300

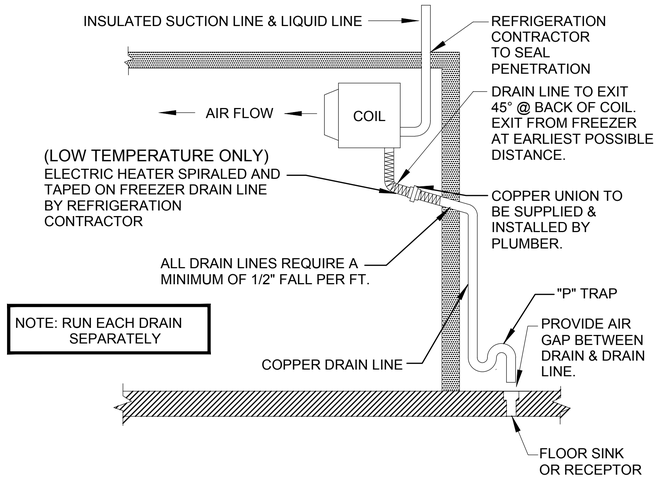
GAS QUICK - DISCONNECT HOSE ASSEMBLY DETAIL

SCALE: N.T.S.

QUICK DISCONNECT and RESTRAINING DEVICE DIAGRAM

NOT TO SCALE

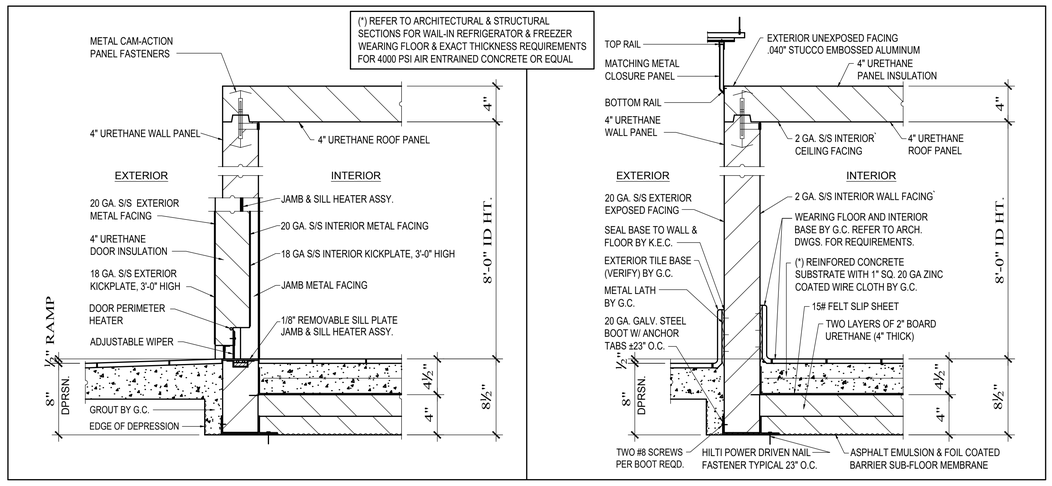
NOTE: INSTALLATION DETAILS IS FOR REFERENCE ONLY. FINAL INSTALLATION IS THE PLUMBERS RESPONSIBILITY.` PLUMBER MUST VERIFY THE SIZE OF THE GAS CONNECTOR TO MATCH EQUIPMENT SUPPLY INLET AND EQUIPMENT MANUFACTURER'S RECOMMENDED BTU'S FOR PEAK PERFORMANCE.COORDINATE GAS OUTLET LOCATIONS W/ K.E.C. PRIOR TO ROUGHINGIN.COORDINATE GAS OUTLET` LOCATIONS W/ K.E.C. PRIOR TO ROUGHING-IN.



1 / K300

CONDESATE DRAIN LINE (TYPICAL)

SCALE: N.T.S.



2 / K300

SECTION @ DOOR

SCALE: N.T.S.

3 / K300

SECTION @ WALL

SCALE: N.T.S.

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SHEET TITLE

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FOOD SERVICE EQUIPMENT BUILDING WORK DETAILS

DATE SEPTEMBER 9, 2024
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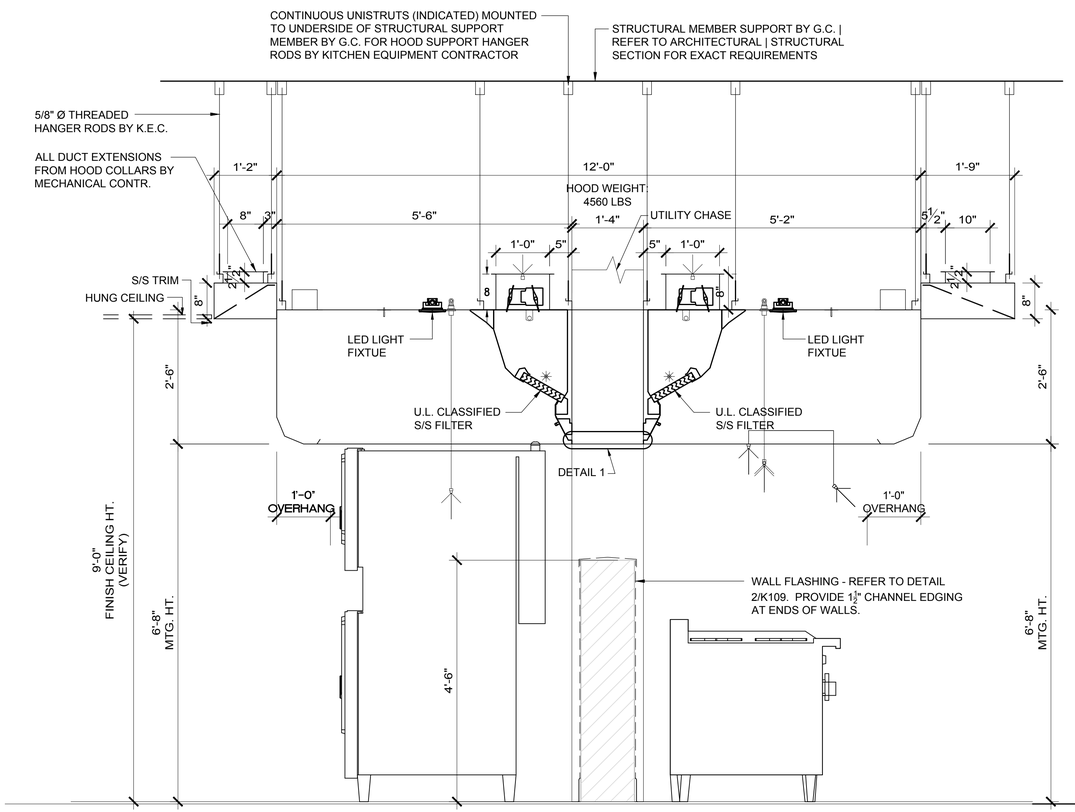
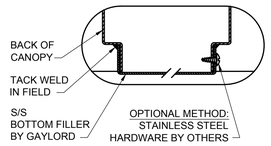
DRAWN RY CHECK IM
SHEET

K300

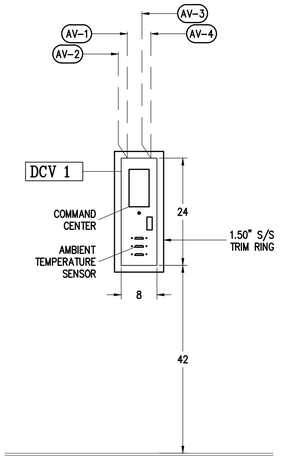
OF ? SHEETS



3 K301 **SECTION THRU HOOD ITEM NO. 26**
3/4" = 1'-0"



DETAIL 1
S/S BOTTOM FILLER BY GAYLORD INSTALLED BY OTHERS



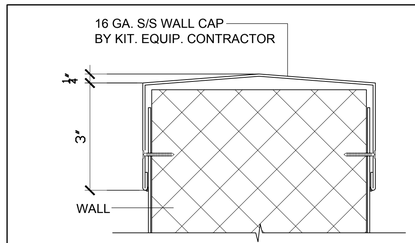
DCV CONTROL CABINET ELEVATION
DEPTH OF CABINET: 7"

DCV CONTROL CABINET INSTALLATION NOTES

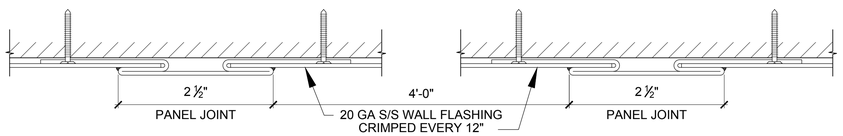
DCV CONTROL CABINET MUST BE LOCATED WITHIN 50 FEET OF AND IN THE SAME KITCHEN AS THE HOODS IT WILL CONTROL.

DCV CONTROL CABINET MUST BE LOCATED AT LEAST 2 FEET HORIZONTALLY FROM COOKING EQUIPMENT AND HEAT GENERATING APPLIANCES.

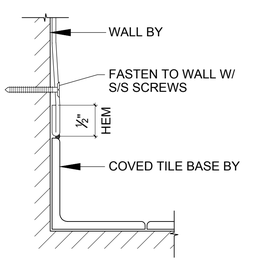
4 K301 **DCV CONTROL CABINET**
3/4" = 1'-0"



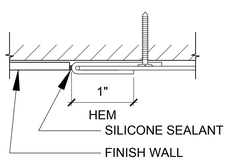
WALL CAP DETAIL



FLASHING BETWEEN PANEL JOINTS



SECTION AT BASE



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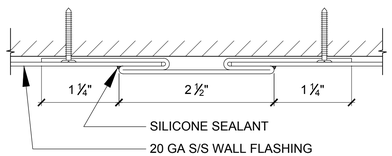


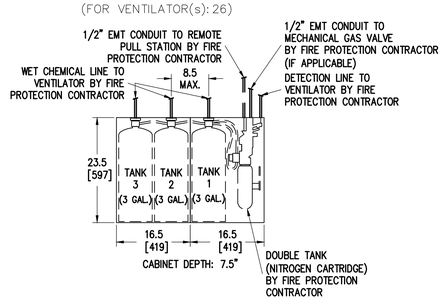
PANEL JOINT

CHANNEL EDGING AND WALL CAP SHALL HAVE MITERED JOINTS FULLY WELDED & GROUND SMOOTH. EDGING SHALL BE FULLY WELDED & GROUND SMOOTH.

1 K301 **WALL FLASHING DETAIL**
3/4" = 1'-0"

GENERAL NOTE:
PROPRIETARY PRODUCT REFERENCES ARE INTENDED TO INDICATE BASIS OF DESIGN ONLY AND NOT INTENDED TO PROHIBIT USE OF ACCEPTED EQUIVALENT OR BETTER PRODUCTS.

TYPICAL ANSUL R-102 TANK SCHEMATIC
(MECHANICAL AUTOMAN)
(FOR VENTILATOR(s): 26)



2 K301 **FIRE SUPPRESSION SYSTEM**
3/4" = 1'-0"

NO.	DESCRIPTION	DATE

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SHEET TITLE
SUB-BASEMENT
FOOD SERVICE EQUIPMENT HOOD & WALL FLASHING DETAILS

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
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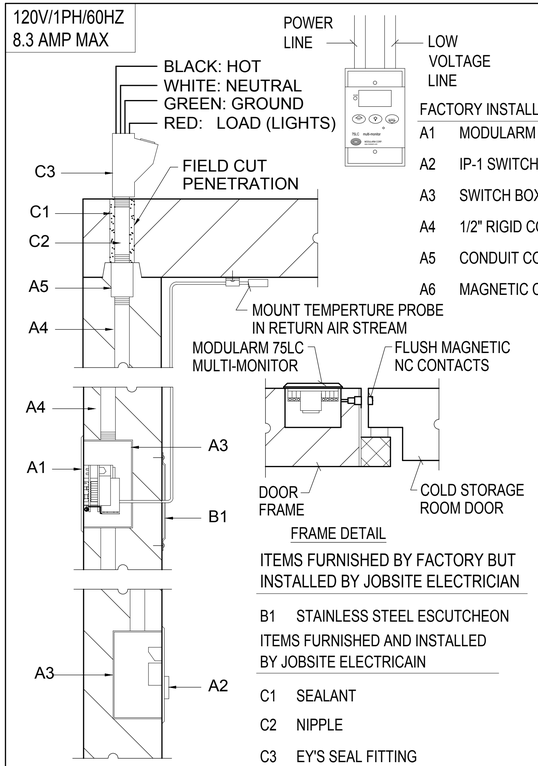
SHEET
K301
OF ? SHEETS

120V/1PH/60HZ
8.3 AMP MAX



FRAME DETAIL

FACTORY INSTALLED ITEMS

A1	MODULARM 75LC multi-monitor
A2	IP-1 SWITCH
A3	SWITCH BOX
A4	1/2" RIGID CONDUIT
A5	CONDUIT COUPLER
A6	MAGNETIC CONTACT (N/C)

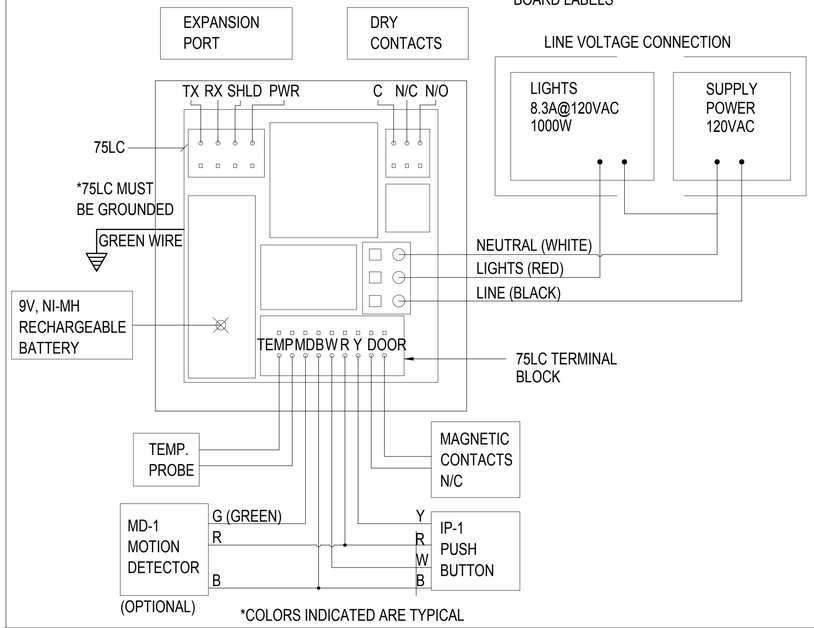
ITEMS FURNISHED BY FACTORY BUT INSTALLED BY JOBSITE ELECTRICIAN

B1	STAINLESS STEEL ESCUTCHEON

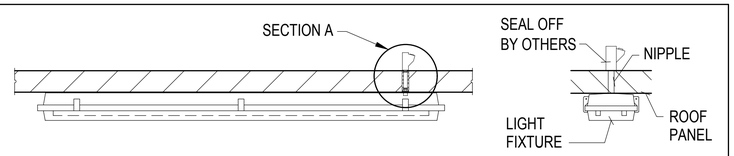
ITEMS FURNISHED AND INSTALLED BY JOBSITE ELECTRICAIN

C1	SEALANT
C2	NIPPLE
C3	EY'S SEAL FITTING

PLEASE FOLLOW THE WIRE PLACEMENT AS INDICATED BY THE BOARD LABELS



WIRING DIAGRAM



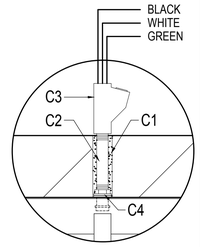
NSF C UL US

SIDE VIEW

END VIEW

LED LIGHT FIXTURE FEATURES:

LED TECHNOLOGY ASSURES SUSTAINABLE ENERGY SAVINGS OVER THE LIFE OF FIXTURE. 4'-0" VAPORPROOF FIXURE IS SUPPLIED W/LOW ENERGY LED LAMPS, WHICH FIXTURE ONLY ACCEPTS TO ASSURE SUSTAINABLE ENERGY SAVINGS. OPTIMUM DESIGN 67 LUMEN/WATT PROVIDES MAXIMUM LIGHT OUTPUT WITH LONGEST LIFE FOR LOWEST COST OF OWNERSHIP. SPECIFICALLY DESIGNED FOR WET AND LOW TEMPERATURE ENVIROMENTS. OPERATING TEMPERATURE RANGE FROM -40°F TO 110°F. MEETS IP-65. MERCURY-FREE LAMPS ARE UL LISTED FOR WET LOCATIONS WHICH CREATES A SAFER ENVIROMENT.



SECTION A

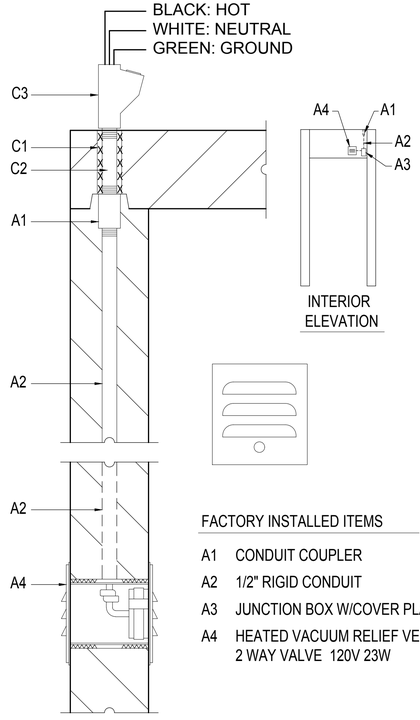
ELECTRICAL SPECIFICATIONS:

* UNBREAKABLE POLYCARBONATE ENCLOSURE
* RATED 50,000 HR LIFE
* SUITABLE FOR WET LOCATIONS
* LAMPS ARE cULus LISTED
* RoHS COMPLIANT
* 2-LAMP, 36W TOTAL, 120VAC, 0.31 AMPS
* 2,400 LUMENS TOTAL OUTPUT
* 67 LUMENS/WATT - EXCEEDS FEDERAL ENERGY ACT REQUIREMENT
* BRIGHT 5000K COLOR TEMPERATURE

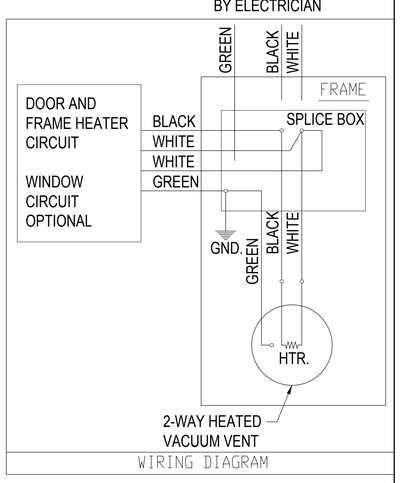
ITEMS FURNISHED AND INSTALLED BY ELECTRICAIN

C1	SEALANT
C2	NIPPLE (PVC-SCHEDULE 80 CONDUIT)
C3	"EY" SEAL OFF
C4	GASKETED CONNECTOR

120V 1Ø 60HZ
36 WATTS



120 VOLT POWER BY ELECTRICIAN



WIRING DIAGRAM

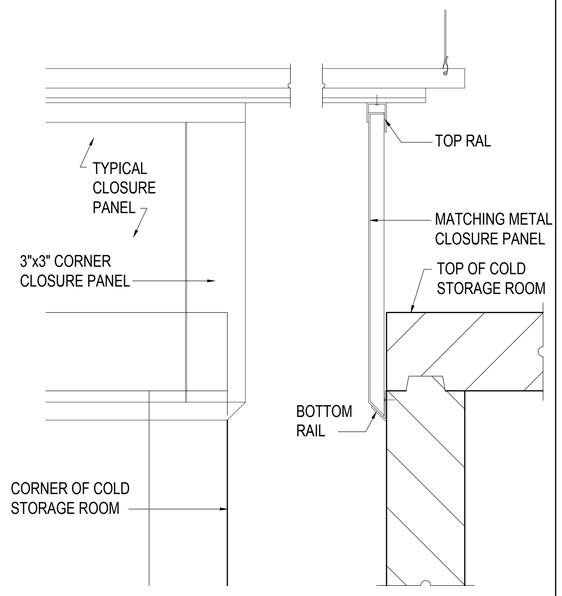
FACTORY INSTALLED ITEMS

A1	CONDUIT COUPLER
A2	1/2" RIGID CONDUIT
A3	JUNCTION BOX W/COVER PLATE
A4	HEATED VACUUM RELIEF VENT 2 WAY VALVE 120V 23W

ITEMS FURNISHED AND INSTALLED BY JOBSITE ELECTRICIAN

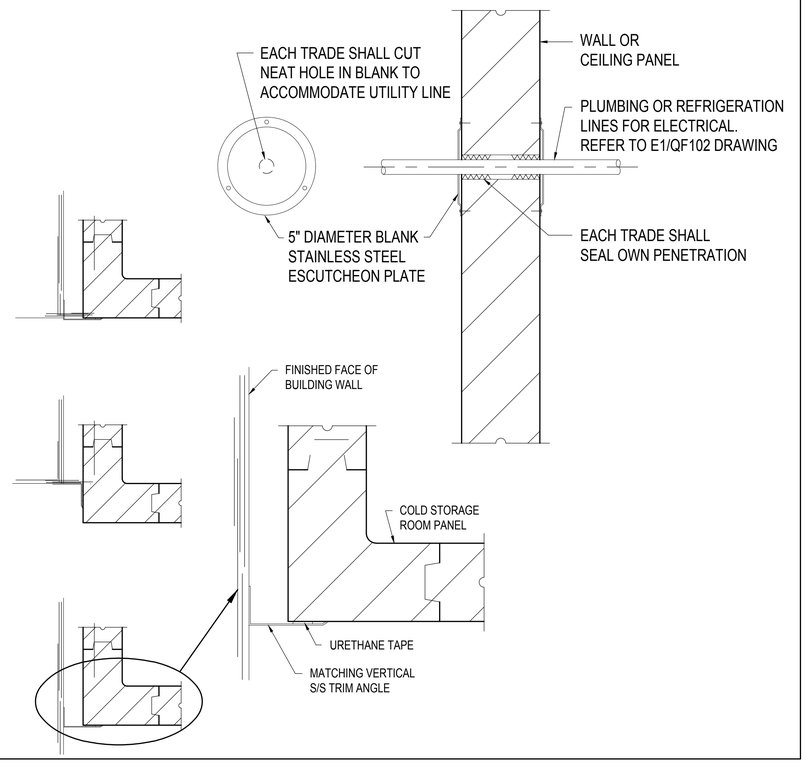
C1	SEALANT
C2	NIPPLE
C3	"EY" SEAL FITTING

120V/1PH/60HZ
23 WATTS



FRONT ELEVATION

SECTION



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Signature
LICENSE EXPIRES : APRIL 30, 2020

MITSUNAGA * USA * DWIGHT I. LICENSED PROFESSIONAL ARCHITECT NO. 4467 HAWAII

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2020 South King Street
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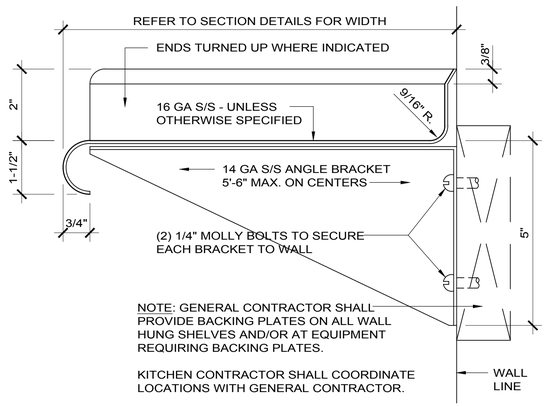
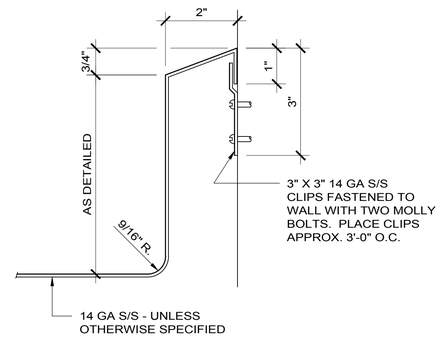
PROJECT TITLE
LEAHI HOSPITAL - YOUNG BUILDING
NEW DIETARY KITCHEN
3675 KILAUEA AV., HONOLULU, HAWAII 96816
T.M.K.: 3 – 2 – 031: 001

SHEET TITLE
SUB-BASEMENT
FOOD SERVICE EQUIPMENT BUILDING WALK-IN DETAILS

DATE SEPTEMBER 9, 2024
SCALE AS SHOWN
DRAWN RY CHECK IM
SHEET
K302
OF 2 SHEETS



A K303 **WALL SHELF DETAIL**
NOT TO SCALE



B K303 **BACKSPLASH DETAIL**
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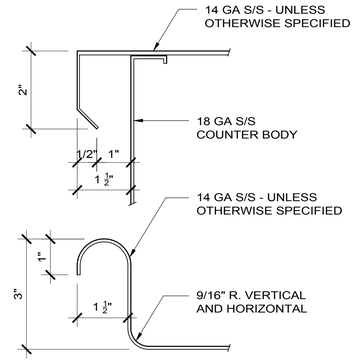

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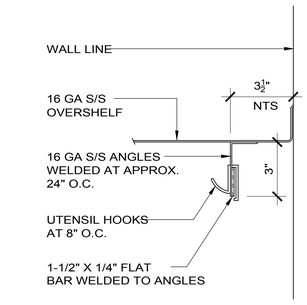

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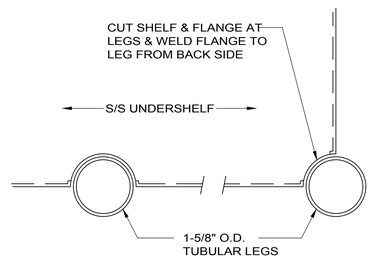

E K303 **PIPE LEG UNDERSHELF**
NOT TO SCALE

NO.	DESCRIPTION	DATE

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

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T.M.K.: 3 – 2 – 031: 001

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SUB-BASEMENT
FOOD SERVICE EQUIPMENT S/S FABRICATION TYPICAL DETAILS

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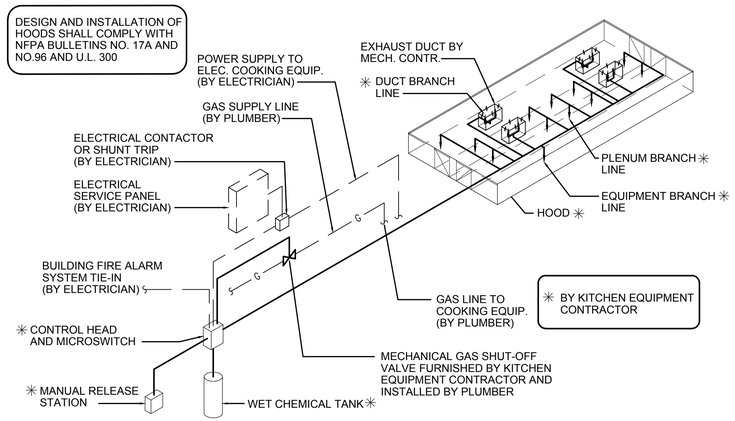
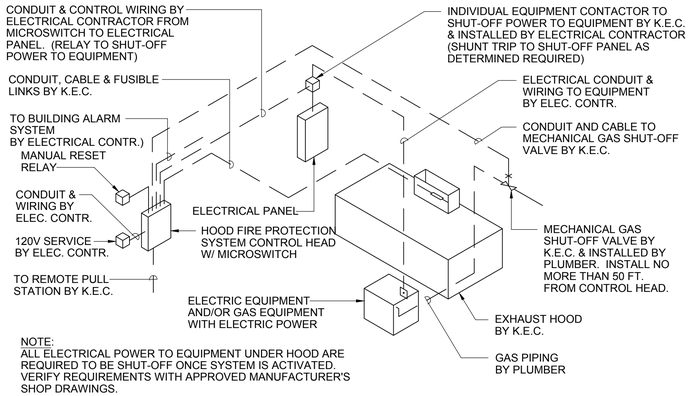


1 K304 HOOD FIRE EXTINGUISHING SYSTEM DIAGRAM

NOT TO SCALE



2 K304 HOOD SUPPRESSION SYSTEM WIRING DIAGRAM

NOT TO SCALE

NOTES:

1. DESIGN AND INSTALLATION OF THE FIRE SUPPRESSION SYSTEM FOR THE PROTECTION OF KITCHEN GREASE HOODS AND DUCTS SHALL CONFORM TO NFPA BULLETINS NO.17A AND NO.96, AND U.L. 300
2. HOOD ACCEPTANCE TEST (PUFF TEST) SHALL BE PERFORMED IN THE PRESENCE OF FIRE INSPECTOR PRIOR TO USE OF FOOD SERVICE EQUIPMENT LOCATED BELOW HOOD(S). CALL FIRE INSPECTOR @ 523-4186
3. FOOD SERVICE EQUIPMENT CONTRACTOR SHALL PROVIDE COMPLETE SHOP DRAWINGS AND BROCHURES FOR HOOD FIRE EXTINGUISHING SYSTEMS, INCLUDING CROSS SECTIONAL DETAILS OF COOKING APPLIANCES, INDICATING EXTINGUISHING HEAD PLACEMENT OVER EACH APPLIANCE.
4. FOOD SERVICE EQUIPMENT CONTRACTOR SHALL COORDINATE WORK BETWEEN MECHANICAL AND ELECTRICAL CONTRACTORS AND BE PRESENT DURING THE TESTING OF EXHAUST SYSTEMS.

ELECTRICAL CONTACTORS OR SHUNT TRIP SHALL BE FURNISHED AND INSTALLED BY ELECTRICIAN FOR THE EQUIPMENT LOCATED BELOW HOODS:

ITEM NO. 23 - TILTING SKILLET
ITEM NO. 25 - CONVECTION STEAMER
ITEM NO. 34 - CONVECTION OVEN
ITEM NO. 87 - COMBI-OVEN
ITEM NO. 38 - 40 GAL TILTING KETTLE

ITEMS AS REQUIRED THAT ARE NOT LISTED OR INDICATED

FIRE CODE NOTES:

1. FIRE SAFETY NOTE - 2006 NFPA 1:
   50.1.1 THE DESIGN, INSTALLATION, OPERATION, INSPECTION, AND MAINTENANCE OF ALL PUBLIC AND PRIVATE COMMERCIAL COOKING EQUIPMENT SHALL COMPLY WITH THIS CHAPTER AND NFPA 96, STANDARD FOR VENTILATION CONTROL AND FIRE PROTECTION OF COMMERCIAL COOKING OPERATIONS.

2. GENERAL REQUIREMENTS - 2006 NFPA 1, CHAPTER 50:
   50.2.1.1 COOKING EQUIPMENT USED IN PROCESSES PRODUCING SMOKE OR GREASE-LADEN VAPORS SHALL BE EQUIPPED WITH AN EXHAUST SYSTEM THAT COMPLIES WITH ALL THE EQUIPMENT AND PERFORMANCE REQUIREMENTS OF THIS CHAPTER.

   50.4.3.2* COOKING EQUIPMENT THAT PRODUCES GREASE-LADEN VAPORS AND THAT MIGHT BE A SOURCE OF IGNITION OF GREASE IN THE HOOD, GREASE REMOVAL DEVICE, OR DUCT SHALL BE PROTECTED BY FIRE EXTINGUISHING EQUIPMENT.

   50.4.4.1 FIRE-EXTINGUISHING EQUIPMENT SHALL INCLUDE BOTH AUTOMATIC FIRE-EXTINGUISHING SYSTEMS AS PRIMARY PROTECTION AND PORTABLE FIRE EXTINGUISHERS AS SECONDARY BACK UP.

3. FIRE EXTINGUISHERS - 2006 NFPA 1, CHAPTER 13:
   50.4.12.1 PORTABLE FIRE-EXTINGUISHING SHALL BE INSTALLED IN KITCHEN COOKING AREAS IN ACCORDANCE WITH NFPA 10 AND SHALL BE SPECIFICALLY LISTED FOR SUCH USE.

   13.6.5.3 CLASS K FIRE EXTINGUISHERS FOR COOKING FIRES. FIRE EXTINGUISHERS PROVIDED FOR PROTECTION OF COOKING APPLIANCES THAT USE COMBUSTIBLE MEDIA (VEGETABLE OR ANIMAL OILS AND FATS) SHALL BE LISTED AND LABELED FOR CLASS K FIRES. CLASS K FIRE EXTINGUISHERS MANUFACTURED AFTER JANUARY 1, 2002, SHALL NOT BE EQUIPPED WITH "EXTENDED WAND-TYPE" DISCHARGE DEVICES.

   13.6.5.3.1 EXISTING DRY CHEMICAL EXTINGUISHERS WITHOUT A CLASS K LISTING THAT WERE INSTALLED FOR PROTECTION OF CLASS K HAZARDS SHALL BE REPLACED WITH AN EXTINGUISHER HAVING CLASS K LISTING WHEN THE DRY CHEMICAL EXTINGUISHERS BECOME DUE FOR EITHER A 6-YEAR MAINTENANCE OR HYDROSTATIC TEST.

   5.3.1 A SODIUM BICARBONATE OR POTASSIUM BICARBONATE DRY-CHEMICAL-TYPE PORTABLE FIRE EXTINGUISHER HAVING A MINIMUM RATING OF 40-B SHALL BE INSTALLED WITHIN 30 FEET OF COMMERCIAL FOOD HEAT-PROCESSING EQUIPMENT, AS MEASURED ALONG AN UNOBSTRUCTED PATH OF TRAVEL.

4. SIMULTANEOUS OPERATION:
   50.4.5.1 FIXED PIPE EXTINGUISHING SYSTEMS IN A SINGLE HAZARD AREA SHALL BE ARRANGED FOR SIMULTANEOUS AUTOMATIC OPERATION UPON ACTUATION OF ANYONE OF THE SYSTEMS.

   50.4.5.2 SIMULTANEOUS OPERATION SHALL NOT BE REQUIRED WHERE FIXED PIPE EXTINGUISHING SYSTEM IS AN AUTOMATIC SPRINKLER SYSTEM.

   50.4.5.3 SIMULTANEOUS OPERATION SHALL NOT BE REQUIRED WHERE DRY OR WET CHEMICAL SYSTEM SHALL BE PERMITTED TO BE USED TO PROTECT COMMON EXHAUST DUCTWORK BY ONE OF THE METHODS SPECIFIED IN NFPA 17 OR NFPA 17A.

5. FUEL SHUTOFF - 2006 NFPA 1, CHAPTER 50:
   50.4.6.1 UPON ACTIVATION OF ANY FIRE-EXTINGUISHING SYSTEM FOR A COOKING OPERATION, ALL SOURCES OF FUEL AND ELECTRIC POWER THAT PRODUCE HEAT TO ALL EQUIPMENT REQUIRING PROTECTION BY THAT SYSTEM SHALL AUTOMATICALLY SHUT OFF.

   50.4.6.3 ANY GAS APPLIANCE NOT REQUIRING PROTECTION, BUT LOCATED UNDER THE SAME VENTILATING EQUIPMENT, SHALL ALSO AUTOMATICALLY SHUT OFF UPON ACTIVATION OF ANY EXTINGUISHING SYSTEM.

   50.4.6.4 SHUTOFF DEVICES SHALL REQUIRE MANUAL RESET.

6. MANUAL ACTIVATION - 2006 NFPA 1, CHAPTER 50:
   50.4.7.1 A READILY ACCESSIBLE MEANS FOR MANUAL ACTIVATION SHALL BE LOCATED BETWEEN 42 IN. AND 48 IN. ABOVE THE FLOOR, BE ACCESSIBLE IN THE EVENT OF A FIRE, BE LOCATED IN A PATH OF EGRESS, AND CLEARLY IDENTIFY THE HAZARD PROTECTED.

   50.4.7.2 THE AUTOMATIC AND MANUAL MEANS OF SYSTEM ACTIVATION EXTERNAL TO THE CONTROL HEAD OR RELEASING DEVICE SHALL BE SEPARATE AND INDEPENDENT OF EACH OTHER SO THAT FAILURE OF ONE WILL NOT IMPAIR THE OPERATION OF THE OTHER.

   50.4.7.5 THE MEANS FOR MANUAL ACTIVATION SHALL BE MECHANICAL OR RELY ON ELECTRICAL POWER FOR THE ACTIVATION IN ACCORDANCE WITH 50.4.7.6.

   50.4.7.6 ELECTRICAL POWER SHALL BE PERMITTED TO BE USED FOR MANUAL ACTIVATION IF A STANDBY POWER SUPPLY IS PROVIDED IN ACCORDANCE WITH 50.4.9.

   50.5.1.4 INSTRUCTIONS FOR MANUALLY OPERATING THE FIRE EXTINGUISHING SYSTEM SHALL BE POSTED CONSPICUOUSLY IN THE KITCHEN AND SHALL BE REVIEWED WITH EMPLOYEES BY MANAGEMENT.

7. SYSTEM ANNUNCIATION - 2006 NFPA 1, CHAPTER 50:
   50.4.8.1 UPON ACTIVATION OF AN AUTOMATIC FIRE-EXTINGUISHING SYSTEM, AN AUDIBLE ALARM OR VISUAL INDICATOR SHALL BE PROVIDED TO SHOW THAT THE SYSTEM HAS ACTIVATED.

   50.4.8.2 WHERE A FIRE ALARM SIGNALING SYSTEM IS SERVING THE OCCUPANCY WHERE THE EXTINGUISHING SYSTEM IS LOCATED, THE ACTIVATION OF THE EXTINGUISHING SYSTEM IS LOCATED, THE ACTIVATION OF THE AUTOMATIC FIRE-EXTINGUISHING SYSTEM SHALL ACTIVATE THE FIRE ALARM SIGNALING SYSTEM.

   50.5.1.4 INSTRUCTIONS FOR MANUALLY OPERATING THE FIRE-EXTINGUISHING SYSTEM SHALL BE POSTED CONSPICUOUSLY IN THE KITCHEN AND SHALL BE REVIEWED WITH EMPLOYEES BY THE MANAGEMENT.

8. COOKING EQUIPMENT - 2006 NFPA 1, CHAPTER 50:
   50.6.1.2.4 ALL DEEP FAT FRYERS SHALL BE INSTALLED WITH AT LEAST A 16 IN. SPACE BETWEEN THE FRYER AND SURFACE FLAMES FROM ADJACENT COOKING EQUIPMENT.

   50.6.1.2.5 WHERE A STEEL OR TEMPERED GLASS BAFFLE PLATE IS INSTALLED AT A MINIMUM 8 IN. IN HEIGHT BETWEEN THE FRYER AND SURFACE FLAMES OF THE ADJACENT APPLIANCE, THE REQUIREMENT FOR A 16 IN. SPACE SHALL NOT APPLY.

   50.6.1.2.5.1 IF THE FRYER AND THE SURFACE FLAMES ARE AT DIFFERENT HORIZONTAL PLANES, THE MINIMUM HEIGHT 8 IN. SHALL BE MEASURED FROM THE HIGHER OF THE TWO.

   50.6.2 DEEP FAT FRYERS SHALL BE EQUIPPED WITH A SEPARATE HIGH-LIMIT CONTROL IN ADDITION TO THE ADJUSTABLE OPERATING CONTROL (THERMOSTAT) TO SHUT OFF FUEL OR ENERGY WHEN THE FAT TEMPERATURE REACHED 475 DEGREES F. (246 DEG C) AT 1 INCH (25.4 mm) BELOW THE SURFACE.

9. SYSTEM SUPERVISION - 2006 NFPA 1, CHAPTER 50:
   50.4.9.1 WHERE ELECTRICAL POWER IS REQUIRED TO OPERATE THE AUTOMATIC FIRE-EXTINGUISHING SYSTEM, IT SHALL BE MONITORED BY A SUPERVISORY ALARM, WITH A STANDBY POWER SUPPLY PROVIDED.

   50.4.9.2 SYSTEM SUPERVISION SHALL NOT BE REQUIRED WHERE AN AUTOMATIC FIRE-EXTINGUISHING SYSTEM INCLUDES AUTOMATIC MECHANICAL DETECTION AND ACTUATION AS A BACKUP DETECTION SYSTEM.

   50.4.9.3 SYSTEM SUPERVISION SHALL NOT BE REQUIRED WHERE A FIRE-EXTINGUISHING SYSTEM IS INTERCONNECTED OR INTERLOCKED WITH THE COOKING EQUIPMENT POWER SOURCE SO THAT IF THE FIRE-EXTINGUISHING SYSTEM BECOMES INOPERABLE DUE TO POWER FAILURE, ALL SOURCES OF FUEL OR ELECTRIC POWER THAT HOOD SHALL AUTOMATICALLY SHUT OFF.

   50.4.9.4 SYSTEM SUPERVISION SHALL NOT BE REQUIRED WHERE AN AUTOMATIC FIRE-EXTINGUISHING SYSTEM INCLUDES AUTOMATIC MECHANICAL DETECTION AND ACTUATION, IS ELECTRICALLY CONNECTED TO A LISTED FIRE-ACTUATED WATER-WASH SYSTEM FOR SIMULTANEOUS OPERATION OF BOTH SYSTEMS.

10. ACCEPTANCE TESTING:
    13.1.1 THE AHJ SHALL HAVE THE AUTHORITY TO REQUIRE THAT CONTRUCTION DOCUMENTS FOR ALL FIRE PROTECTION SYSTEMS BE SUBMITTED FOR REVIEW AND APPROVAL AND A PERMIT BE ISSUED PRIOR TO THE INSTALLATION, REHABILITATION, OR MODIFICATION. FURTHER, THE AHJ SHALL HAVE THE AUTHORITY TO REQUIRE THAT FULL ACCEPTANCE TESTS OF THE SYSTEMS BE PERFORMED IN THE PRIOR TO FINAL SYSTEM CERTIFICATION.
    FIRE ALARM SYSTEMS; FIRE HYDRANT SYSTEMS; FIRE-EXTINGUISHING SYSTEMS; STANDPIPES; AND OTHER FIRE-PROTECTION SYSTEMS AND APPURTENANCES REQUIRED BY THIS CODE SHALL BE APPROVED BY THE AHJ AS TO INSTALLATION AND LOCATION AND SHALL BE SUBJECT TO ACCEPTANCE TEST REQUIRED BY THE APPROPRIATE COUNTY AGENCY.

HOOD SUPPRESSION NOTES:

1. AUTOMATIC POWER, FUEL AND VENTILATION SHUTOFF:
   AUTOMATIC FIRE EXTINGUISHING SYSTEMS SHALL BE INTERCONNECTED TO THE FUEL OR CURRENT SUPPLY FOR COOKING EQUIPMENT. THE INTERCONNECTION SHALL BE ARRANGED TO AUTOMATICALLY SHUT OFF ALL COOKING EQUIPMENT AND ELECTRICAL RECEPTACLES WHICH ARE LOCATED UNDER THE HOOD WHEN THE SYSTEM IS ACTIVATED SHUTOFF VALVES OR SWITCHES SHALL BE OF THE TYPES THAT REQUIRE MANUAL OPERATION TO RESET, UFC 1997, SECTION 1006.2.4.1

2. MANUAL ACTIVATION DEVICE:
   A READILY ACCESSIBLE MANUAL ACTIVATION DEVICE INSTALLED AT AN APPROVED LOCATION SHALL BE PROVIDED FOR DRY CHEMICAL, WET CHEMICAL AND CARBON DIOXIDE SYSTEMS. THE ACTIVATION DEVICE IS ALLOWED TO BE MECHANICALLY OR ELECTRICALLY OPERATED. IF ELECTRICAL POWER IS USED, THE SYSTEM SHALL BE CONNECTED TO A STANDBY POWER SYSTEM AND A VISUAL MEANS SHALL BE PROVIDED TO SHOW THAT THE EXTINGUISHING SYSTEM IS ENERGIZED. INSTRUCTIONS FOR OPERATION THE FIRE-EXTINGUISHING SYSTEM SHALL BE POSTED ADJACENT TO MANUAL ACTIVATION DEVICES. UFC 1997, 1006.2.6

3. FIRE EXTINGUISHERS:
   A SODIUM BICARBONATE OR POTASSIUM BICARBONATE DRY-CHEMICAL-TYPE PORTABLE FIRE EXTINGUISHER HAVING A MINIMUM RATING OF 40-B SHALL BE INSTALLED WITHIN 30 FEET OF COMMERCIAL FOOD HEAT-PROCESSING EQUIPMENT, AS MEASURED ALONG AN UNOBSTRUCTED PATH OF TRAVEL. IN ACCORDANCE WITH UFC STANDARD 10-1. UFC 1997, 1006.2.7

4. CARBON DIOXIDE SYSTEMS:
   COMMERICAL-TUYPE COOKING EQUIPMENT PROTECTED BY AN AUTOMATIC CARBON DIOXIDE EXTINGUISHING SYSTEM SHALL BE ARRANGED TO SHUT OFF THE VENTILATION SYSTEM UPON ACTIVATION. UFC 1997., 1006.2.4.2

5. FIRE ALARM:
   A SIGNAL SHALL BE PROVIDED TO SHOW THAT THE SYSTEM HAS OPERATED, THAT PERSONNEL RESPONSE IS NEEDED, AND THAT THE SYSTEM IS IN NEED OF RECHARGE. THE EXTINGUISHING SYSTEM SHALL BE CONNECTED TO THE FIRE ALARM SYSTEM. IF PROVIDED, IN ACCORDANCE WITH THE REQUIREMENTS OF NFPA 72 NATIONAL FIRE ALARM CODE, SO THAT THE ACTUATION OF THE EXTINGUISHING SYSTEM WILL SOUND THE FIRE ALARM AS WELL AS PROVIDE THE FUNCTION OF THE EXTINGUISHING SYSTEM. NFPA 17A, 2004 EDITION, SECTION 3-2.4.5.

6. DEEP FAT FRYER SET BACK:
   ALL DEEP FAT FRYERS SHALL BE INSTALLED WITH AT LEAST A 16 INCH (406.4mm) SPACE BETWEEN THE FRYER AND SURFACE FLAMES FROM ADJACENT COOKING EQUIPMENT. UFC 1997. SECTION 1003.2.2.1 AS AMENDED.

7. AIR ACCEPTANCE TEST:
   PRIOR TO THE COMMENCEMENT OF THE INITIAL COOKING OPERATIONS, A SATISFACTORY AIR ACCEPTANCE TEST OF THE SYSTEM SHALL BE MADE TO ACCORDANCE WITH THE MANUFACTURE'S INSTRUCTIONS. THE ACCEPTANCE TEST MAY BE WITNESSED BY THE CHIEF. UFC 1997, SECTION 1006.2.2.2 AS AMENDED.

REV. NO.	DESCRIPTION	DATE

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

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OF 7 SHEETS