



SEARHC-RFP-26-9

ISSUE DATE: October 19, 2026

SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM (SEARHC)

**REQUEST FOR PROPOSALS (RFP) TO
PROVIDE COMMISSIONING AGENT SERVICES FOR THE SEARHC HAINES
MEDICAL CENTER**

ISSUED BY:

**SouthEast Alaska Regional Health Consortium
Supply Chain Management
3100 Channel Drive, Suite 300
Juneau, AK 99801**

DATE AND TIME FOR RECEIPT OF PROPOSALS:

**Full Proposal:
4:00 p.m. Pacific Time November 6, 2026**

**SouthEast Alaska Regional Health Consortium
Attn: Quy Nguyen
qnguyen@searhc.org
SEARHC, Strategic Sourcing Analyst
1111 Lake Washington Boulevard N.
Renton, WA 98056-2502**

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INSTRUCTIONS TO PROPOSERS

1. Background

SEARHC is a consortium of federally-recognized tribes, incorporated as a non-profit corporation under Alaska law, and a tribal organization for purposes of Title V of the Indian Self-Determination and Education Assistance Act, Pub. L. 93-638, as amended ("ISDEAA"). SEARHC provides healthcare services in Southeast Alaska to American Indians, Alaska Natives and other eligible individuals under the Alaska Tribal Health Compact and funding agreement with the Indian Health Service ("IHS") authorized by Section 325 of Pub. L. 105-83 and Title V of the ISDEAA.

SEARHC's corporate headquarters are located at 3100 Channel Drive, Juneau, AK 99801. SEARHC operates two critical access hospital facilities, including Mt. Edgecumbe Medical Center, located at 227 Tongass Drive, Sitka, AK 99835 and Wrangell Medical Center, located at 232 Wood Street, Wrangell, AK 99929, in addition to multiple clinics and additional healthcare facilities across 27 communities throughout Southeast Alaska.

2. Solicitation

2.1. SEARHC is seeking technical and cost proposals from interested firms to serve as the Commissioning Agent (CxA) for its new Haines Medical Center (hereafter referred to as "the Project"). The selected contractor shall provide for the successful provision of the described services required to complete the Project successfully, on time, and within the Project's budget. The selected contractor is expected to perform Commissioning Services in accordance with the terms and conditions of SEARHC's contract and related documents.

2.2. Notification of Intent to Bid

2.2.1 Firms shall inform SEARHC if they do or do not intend to submit a proposal in response to this RFP by emailing the Contracting Officer, Quy Nguyen, qnguyen@searhc.org, **no later than 4:00 p.m. Alaska Time on October 26, 2026**. The email shall be clearly labeled with subject line "RFP 26-9 – INTENT TO BID". The content of the email shall contain the name of the Offeror as well as reference this RFP by name and issuance date.

2.3. Questions

2.3.1. Questions related to the content of this RFP must be submitted to Quy Nguyen, qnguyen@searhc.org no later than 4:00 p.m. Alaska Time on October 28, 2026. All emails must identify the RFP title in the subject line and indicate the relevant section number of Offeror's question.

2.3.2. Answers shall be published and distributed to all Offerors. Questions will only be answered in writing. Revisions to this RFP shall only be made through formal written addenda that will be made available to all interested Offerors. Oral and other interpretations or clarifications will be without legal effect. It is the Offeror's responsibility to ensure they are on SEARHC's list to receive all addenda. Questions will not be identified by Proposer. SEARHC reserves the right to decline to respond to any question(s).

2.3.3. If this solicitation is amended, all terms and conditions that are not amended remain unchanged. Proposers shall acknowledge receipt of any amendment to this solicitation by the date and time specified in the amendment(s).

2.4. Proposal Deadline

2.4.1 A proposal in the requested format requested and separate PDF for pricing must be emailed to Quy Nguyen, qnguyen@searhc.org, and received no later than 4:00 p.m. Alaska Time on November 6, 2026. Email submission only. No hard copy proposals are requested. Proposals received after the deadline may not be accepted.

- 2.5. Within Fourteen (14) calendar days after the Notice of Intent to Award is issued, it is expected that the selected contractor will sign SEARHC's AIA Document C103 – 2015 Standard Form of Agreement Between Owner and Consultant, and AIA Document C203 – 2017 Standard Form of Consultant's Services: Commissioning, and related Contract Documents, which are included with the RFP information as Attachment A. Offerors are expected to carefully review these attachments and advise SEARHC in their proposal if any terms and conditions in the Contract Documents are objectionable. If any provisions are objectionable, the Offeror must provide in redline format alternative terms and conditions which are acceptable side comments explaining the reasons for the proposed changes. These pages will not count against the proposal page limit. SEARHC reserves the right to reject any proposal that fails to indicate that the Offeror is willing to execute SEARHC's Agreement or fails to propose alternative terms and conditions that are acceptable to SEARHC.
- 2.6. The RFP does not require SEARHC to award a contract or pay any of the costs incurred in preparing and submitting proposals in anticipation of a contract. SEARHC reserves the right to waive irregularities and accept or reject any or all proposals.

3. Project Overview

SEARHC intends to enter into a contract for Commissioning Agent Services in accordance with requirements of this RFP. The contract period will be a term of 12 months following the project's substantial completion.

The Project consists of a new, ground-up Clinic and Critical Access Hospital in Haines, Alaska, designed to provide comprehensive healthcare services to the region. Envisioned as a modern and resilient facility, the building will encompass 63,788 square feet and serve as a vital resource for community health, wellness, and emergency care.

The Project site plan includes dedicated patient and staff parking, safe and intuitive campus circulation looping around the entire building, and multiple access points strategically connected to public roadways. Naturalized landscaping is planned throughout the property to blend the campus into its Alaskan surroundings while supporting low maintenance and long-term durability. The structure itself is primarily a single-story building to maximize operational efficiency and patient accessibility, with a small second-story administrative department and a mechanical penthouse. This layout allows clinical services, hospital functions, and support operations to be closely integrated while maintaining clear circulation and departmental organization.

The Clinic portion of the facility brings together a full spectrum of outpatient services, including Family Clinic, Dental Clinic, Physical Rehabilitation, Behavioral Health, and Optometry. Laboratory and Pharmacy services are centrally located to support efficient patient flow and coordinated care across all clinic departments and hospital functions. These services are planned to function cohesively, ensuring convenience for patients and optimized workflows for staff. The Critical Access Hospital portion of the building houses essential inpatient and emergency services. Key components include an Emergency Department, Imaging Department, Acute Care unit, and Long-Term Care facilities. A full-service Kitchen supports both patient nutrition and long-term care dining needs. Together, these departments form a complete rural hospital designed to meet daily community needs and respond effectively to urgent medical situations. Facility-wide support services are integrated throughout the building to sustain clinical and hospital operations. These include Facilities storage and services, mechanical and equipment spaces, Central Supply, Laundry services, and housekeeping services.

Project Milestones	Dates
95% Construction Documents	8/20/2026
100% Final Documents	8/31/2026
Construction	8/3/2026 – 9/30/2028
Substantial Completion	9/30/2028

4. Scope of Services:

The following is a summary of the commissioning process SEARHC intends to implement on this program. This process is as defined in the American Society of Healthcare Engineers (ASHE) Health Facility Commissioning Guidelines (Second Edition). In addition to the process defined below, the CxA will need to meet the Commissioning Requirements in the construction documents specifications included in Attachment E- Specifications Sections 019100, 220800, 230800, and 260800.

4.1 Meetings

4.1.1 Kick-off Meeting. The CxA will plan, conduct and document an early construction commissioning meeting within 60 days of contract award.

4.1.2 Commissioning Meetings

4.1.2.1 The CxA will coordinate and direct the commissioning activities in conjunction with the contractor and/or construction manager in a logical, sequential and efficient manner using consistent protocols, clear and regular communications and consultations with all necessary parties, frequently updated timelines and schedules and technical expertise. Meetings will be held as necessary to coordinate the commissioning process. At a minimum, the CxA will conduct 'milestone meetings' at the beginning of each phase of commissioning, including the following:

- Shop drawing submission
- Equipment installation
- Creation of pre-functional checklists
- Equipment start-up
- Functional performance testing
- Submission of operating and maintenance manuals
- Owner training
- Seasonal testing
- One-year warranty testing

4.1.3 Project Meetings

4.1.3.1 The CxA will review the minutes of the regular project meetings and attend selected project meetings as needed to resolve issues, concerns, and schedule.

4.1 Commissioning Plan

4.2.1 The CxA will develop a commissioning plan that encompasses the construction and occupancy and operations phases. In the construction phase the CxA will develop the initial commissioning plan, including the following:

4.2.2 A project-specific description of equipment to be commissioned.

4.2.3 A description of the rules of the CxA team, including the responsibilities of the Owner, A/E firm, contractors, and CxA.

4.2.4 The CxA will prepare project specific pre-functional checklists (PFCs) for each piece of equipment in the commissioning scope and include these in the commissioning plan. Generic PFCs or equipment start-up checklists are not acceptable.

4.2.5 The CxA will prepare project specific functional performance test (FPT) procedures that define acceptable results of the tests to be performed and include these in the commissioning plan. Generic FPTs are not acceptable.

4.3 Web Based Commissioning Field Notebook

- 4.3.1 The CxA will develop a Web Based Commissioning Field Notebook to be used and completed by the Contractor. The platform will identify and track all pertinent commissioning documentation required during installation, start-up, and checkout phases.

4.4 Reviews

4.4.1 Submittals and Shop Drawings

- 4.4.2 The CxA will review contractor submittals and shop drawings applicable to systems being commissioned to ensure compliance with the commissioning plan and commissioning specifications. The CxA will also review these documents with facility O&M personnel. The CxA will forward comments and concerns in writing to the design team and the SEARHC project team. Reviews must be concurrent with A/E review, must be conducted in a timely manner, and must not affect the construction schedule of the contractor.

4.5 O&M Manuals

- 4.5.1 The CxA will review the O&M manuals to ensure proper content and format.

4.6 Start-up Plan

- 4.6.1 The CxA will review the start-up plan to ensure operational parameters outlined in the specifications will be met. The review will include start-up training procedures for maintenance personnel who will be operating the equipment after occupancy.

4.7 HVAC Control System Programming

- 4.7.1 The CxA will review the programs before implementation to ensure proper performance of the HVAC system.

4.8 Training Program

- 4.8.1 The CxA will review training procedures for all equipment included in the commissioning plan to ensure an appropriate transition to operational sustainability by maintenance personnel. These training procedures should be specific to the unique parameters needed for the O&M staff to ensure the equipment performs at the desired. These training procedures are in addition to standard training in systems operation normally associated with turnover/takeover activities at the end of a project.

4.9 TAB Report

- 4.9.1 The CxA will review the testing, adjusting and balancing (TAB) report prepared by the contractor and prepare a written response. The CxA will also spot-check a representative sample of airflow and water flow readings as documented in the TAB report. The duration of the sampling will be two eight-hour days.

4.10 Record Drawings

- 4.10.1 The CxA will review the record drawings with O&M personnel and identify known discrepancies between these documents and as-installed conditions. The CxA will forward a list of these discrepancies to SEARHC, contractor and design team for incorporation into the record drawings.

4.11 Scheduling

- 4.11.1 The CxA will coordinate the commissioning tasks with the contractor to ensure that commissioning activities are included in their master schedule.

4.12 Pre-functional Inspection and Checklists

- 4.12.1 The CxA will execute the PFCs in phases (e.g., equipment installation, piping rough-in, electrical rough-in, feeder and load side termination for electrical systems, etc.) as the work progresses. This process is intended to document that the installation occurs in accordance with the contract documents as the work is installed rather than waiting until all installation is complete. Resolution of deficiencies is documented on subsequent site visits. All elements of equipment and systems installation and all PFCs must be complete prior to functional testing.

4.13 Equipment and Systems Start-up

- 4.13.1 The CxA will review equipment start-up procedures, witness the start-up of critical systems and review the completed start-up documentation.

4.14 Functional Performance Tests

- 4.14.1 The CxA will develop a testing plan for all equipment, systems and integrated systems. The CxA will direct execution of the functional performance tests by the responsible subcontractors. The FPTs are conducted at design full load, partial load, and emergency conditions. The tests proceed from tests of simple systems to tests of complex systems to tests of integrated systems. The CxA will invite O&M personnel to attend and witness testing. The CxA will document test results and recommend systems for acceptance.
- 4.14.2 Facilitate Pressure Testing. Per ASHE Health Facility Commissioning Guidelines requirements, pressure testing will be conducted upon isolation rooms and associated anterooms and procedure rooms.
- 4.14.3 Fire and Smoke Damper Testing. The CxA will verify that all dampers have been tested per the ASHE Health Facility Commissioning Guidelines and provide a report (as defined in those guidelines) that lists each damper number, damper location, damper location, date of inspection and damper inspection results.
- 4.14.4 Trends. The CxA will document that specified trends are implemented and operational as required by the commissioning specifications

4.15 Site Visits

- 4.15.1 For proposal purposes, please include 12 site visits. CxA will perform site visits, as necessary, to observe component and system installations.

4.16 Reports/Logs

- 4.16.1 Maintain a master issues log and separate testing record. The log will include a definition of each issue, the date is identified, a proposed corrective plan, the responsible party, the date of anticipated resolution and its current status.
- 4.16.2 Provide the Owner with written progress reports and test results with recommended actions.

4.17 Training

- 4.17.1 The CxA will monitor scheduling and execution of the training process to ensure it is conducted as specified and as planned in the training program. The CxA will also monitor recordings made of the training process to ensure their quality is acceptable and according to specifications.

4.18 Final Commissioning Report and Systems Manual

- 4.18.1 The CxA will complete the commissioning report and a systems manual for turnover/takeover at the completion of the construction phase. These documents will conform to the requirements of the Building Commissioning Association's standards or ASHRAE Guidelines

4.19 Commissioning during the Occupancy and Operational Phases

4.19.1 Testing

- 4.19.1.1 Coordinate required seasonal or deferred testing and deficiency corrections and provide final testing documentation for the commissioning record and O&M manuals.

4.19.2 Post-Occupancy Visits

- 4.19.2.1 The CxA will return to the site 10 months into the 12-month warranty period and review with facility staff the current building operation and condition of outstanding issues related to the original and seasonal commissioning. The CxA will also interview facility staff and identify their problems or concerns with operating the building as originally intended.

4.19.3 Lessons Learned Meeting

- 4.19.3.1 The CxA will schedule and lead a meeting with the Owner, contractors, designers, operators and occupants coinciding with the post-occupancy visit to identify lessons learned.

4.20 Exclusions

- 4.20.1 The CxA is not responsible for design concepts, design criteria, compliance with codes, design or general construction scheduling, cost estimating or construction management. The CxA may assist with problem solving or resolving non-conformance or deficiencies, but ultimately these responsibilities reside with the architect and the general contractor.

4.21 Systems and Assemblies to be Commissioned

Life Safety System	
Fire Alarm Control Panel and Annunciator Panel	100%
Flow Switch	100%
Fire Sprinklers	50%
Doors with Frames Fire Rating	50%
Exit Light Fixtures	100%
Emergency Lighting	50%
Smoke Detectors and Sensors	50%
Fire and Smoke Dampers	100%
Horn/Strobe Lights for Fire Alarm	25%
Manual Pull Stations	25%
Building Security and Communication System	
Nurse Call System	100%
Security System	100%
Building Automation System with Control Strategies	

Direct Digital Control (DDC) or Building Automation System (BAS)	100%
Air Handling Unit System	
Air Handling Unit including Supply and Return (or Relief) fans (including air pressure adjacency validation)	100%
Motorized Damper Controls	100%
Split Systems	100%
Exhaust Air Fans	100%
Terminal Units (or VAV boxes)	100%
Air Curtain	100%
Hydronic Unit Heaters	100%
Linea Fan Terminal Units	100%
Humidifiers	100%
HVAC System Integration	100%
Building Automation System	100%
Diffusers/Grilles (Supply, Return and Exhaust)	25%
Ductwork (Supply, Return, Exhaust)	25%
Pharmacy Cleanroom Air System	100%
Chilled and Hot water pumping system	100%
Mechanical Plumbing Systems	
Water Softener with RO and UV System	100%
Dental Vacuum Pump	100%
Dental Air Compressor	100%
Oil Fired Hydronic Heating System	100%
Electric Hydronic Heating System	100%
Snow Melt System	100%
Domestic Hot Water Heating System Including Recirculation Pumps, Laundry Booster Water Heater, and Sump Pump	100%
Chilled Water System	100%
Major Electrical Systems	
Lighting System	50%
Main Switchgear and all electrical panel boards	100%
Emergency & Standby Generators with ATS	100%
Arc Flash Hazard warning signs on electrical panels	100%
Coordination and Short Circuit Study information	100%
Regular and K-type Transformers	100%
Backflow Preventer	
Potable water, Fire Sprinkler system, Chiller, Cooling Tower, and Boiler water supply	100%
Medical Gas and Dental Vacuum System	
Oxygen System, Nitrous Oxide System, Medical Air System, Dental Air System, Dental Vacuum System, Air Compressor, Medical Gas System Equipment	100%

Fuel Oil Tank System	
Main Fuel Oil and Day Tank Systems	100%
Medical Equipment Power Supply System	
CT-Scanner and X-Ray equipment, UPS requirements to protect equipment	100%

5. Desired Qualifications

5.1 The person designated as the principal, CxA, should satisfy the following requirements:

- 5.1.1 Has acted as the principal CxA for at least three projects of similar size and complexity in the last five years.
- 5.1.2 Is experienced in the quality process.
- 5.1.3 Has extensive experience in the operation and troubleshooting of HVAC systems, energy management control systems, and lighting control systems. Extensive field experience is required. A minimum of five full years in this type of work is required.
- 5.1.4 Is knowledgeable in building operation and maintenance and O&M training.
- 5.1.5 Is knowledgeable in test and balance of both air and water systems.
- 5.1.6 Is experienced in energy-efficient equipment design and control strategy optimization.
- 5.1.7 Has direct experience in monitoring and analyzing system operation using energy management control system trending and stand-alone data logging equipment.
- 5.1.8 Has excellent verbal and written communication skills, is highly organized and able to work with both management and trade contractors.
- 5.1.9 Has a bachelor's degree in Mechanical Engineering and Professional Engineer (PE) certification.
- 5.1.10 The CxA firm will demonstrate depth of experienced personnel and capability in its team members to sustain loss of assigned personnel without compromising quality and timeliness of performance.

6. Proposal Content and Format

As a minimum, the following must be included in all responses and responses limited to 20 pages:

- 6.1 A cover letter referencing the title of the RFP that includes:
- 6.2 Statement that the signing individual has the authority to bind the Proposer to the proposal.
- 6.3 Name and contact information of the individual who is authorized to make representations and commitments for the Proposer.
- 6.4 Confirmation that all addenda have been received and considered.
- 6.5 Statement that Proposer agrees to the contract terms and conditions identified in Attachment E of this RFP or explains that it has provided specific redline edits to the contract sufficient to allow it to execute the Agreement without further negotiation. Additionally, if Proposer is selected by SEARHC, a statement from Proposer that it will enter into SEARHC's standard business associate agreement in the form attached hereto as Attachment E.

- 6.6 Statement of history and qualifications including similar project experience.
- 6.7 Provide a history of Proposer, your technical qualifications, and areas of expertise & length of time in business.
- 6.8 Details of Proposer's expertise and experience in the same or similar projects within the last 10 years. Detail Proposer's resources that can be used to ensure successful delivery.
- 6.9 Provide a list of similar projects in the past five (5) years. Include the name, address, and phone number of a person who can be contacted regarding the firm's performance on each project.
- 6.10 Proposed Scope of Services and Delivery
- 6.11 A concise narrative which addresses each of the selection criteria and the firm's approach to delivering the Scope of Services.
- 6.12 Representations and Certifications (not included in the 20 page limit)
- 6.13 Indian Preference Provisions and Representations (not included in the 20 page limit)
- 6.14 Price proposals via the attached Attachment D-Price Schedule found in this RFP (not included in the 20 page limit)
- 6.15 Statement that Offeror agrees to the contract terms and conditions identified in Attachment E of this RFP or specific redline edits to the SEARHC's Agreements sufficient to allow it to execute the Agreement without further negotiation (not included in the 20 page limit).
- 6.16 SEARHC may allow for changes to or the withdrawal of the proposal only if the request is made in writing and received prior to the deadline for receipt of proposals. No changes to or withdrawal of a submitted proposal is permitted after the deadline for receipt of proposals.
- 6.17 Offer expiration date. Proposals in response to this solicitation will be valid for at least 120 days after the closing date for receipt of offers for this RFP.

7. Scoring and Selection Process

- 7.1 Proposals will be evaluated based on the following criteria:

Selection Criterion	Maximum Points
Professionalism and Adherence to Requirements of RFP <i>Proposer demonstrates professionalism in RFP response</i>	15
Qualifications, Experience, and Accomplishments <i>Proposer demonstrates prior experience and successful outcomes conducting similar scopes of work</i>	25
Proposed Scope of Services Description and Methodology <i>Proposer demonstrates strong understanding of best practice patient access operating models and SEARHC's objectives</i>	25
Alaska Native/American Indian Preference <i>Describe the nature of any American Indian/Alaska Native ownership of the Offeror's firm, including whether the principal American Indian/Alaska Native</i>	5

<i>principal owns or controls at least 51% of the business.</i>	
Value of Cost	30
Total Possible Points	100

8. Other

- 8.1 All costs incurred in responding to this RFP are the responsibility of the Proposer and will not be reimbursed by SEARHC. Furthermore, this RFP does not obligate SEARHC to accept or contract for any services expressed or implied.
- 8.2 SEARHC reserves the right to: (1) Modify or otherwise alter any or all of the requirements in this RFP. In the event of any modifications, all Proposers will be given an equal opportunity to modify their proposals in the specific areas that are requested; (2) Reject any proposal not adhering to any and all requirements set forth in this RFP; (3) Reject any or all proposals received; and (4) Terminate this RFP at any time, without reason.
- 8.3 Offerors should be aware that the Project Overview information presented in this document is preliminary. Descriptions of the Project and proposed Scope of Services are subject to refinement and change to meet the ongoing needs of the Project.
- 8.4 SEARHC reserves the right to waive any formalities in the solicitation and selection process, and to make any selection based on any factors deemed to be in its own best interest. SEARHC reserves the right to reject any and/or all proposals which it deems to not be in its best interests and to proceed with the next highest ranked Proposer or to utilize an entirely different procurement process.
- 8.5 SEARHC reserves the right to make an award on any item for a quantity less than the quantity offered, at the unit cost or prices offered, unless the proposer specifies otherwise in the proposal.
- 8.6 All proposals and other materials submitted by the Proposer to SEARHC become the property of SEARHC. SEARHC may require, seek, and utilize all information it deems appropriate to assess the qualifications of individual Proposers. Unless otherwise clearly specified by Proposer, information in proposals submitted in response to this RFP shall be considered public information and may, at SEARHC's discretion, be released to the public at the conclusion of the evaluation, selection and contract award process. Detailed costs and price information provided will be held in confidence. Any other information related to pricing or capacity that Proposers consider confidential or proprietary and wish to remain unavailable for public disclosure should be clearly identified.
- 8.7 Any media announcements pertaining to this RFP or Program require SEARHC's prior written approval.
- 8.8 SEARHC is a consortium of Alaska Native Tribal Governments and, as such, shares the sovereign immunity of its constituent Tribes. Nothing in this RFP is a waiver of sovereign immunity.
- 8.9 This RFP does not obligate SEARHC or the selected Proposer until a contract is fully executed. The Contract will be fully executed when it is signed by an authorized representative of both parties. SEARHC shall not be responsible for work done, even in good faith, prior to execution of the Contract. If there is any conflict between the Contract and the proposal, the Contract shall control.

Attachment A: Indemnification, Medical Liability, and Other Insurance

(a) It is expressly agreed and understood that this is a non-personal services contract under which the professional services rendered by the Contractor are rendered in its capacity as an independent contractor. SEARHC may evaluate the quality of professional and administrative services provided but retains no control over professional aspects of the services rendered, including by example, the Contractor's professional judgment and the manner in which the services are performed. SEARHC be added to all the policies below as Additional Insured with a Waiver of Subrogation in favor of SEARHC excluding the Additional Insured requirement for Workers Compensation.

The Contractor shall be solely liable for and expressly agrees to indemnify and defend SEARHC with respect to any liability producing acts or omissions by it or by its employees or agents and SEARHC be named as Additional Insured with a Waiver of Subrogation in favor of SEARHC. The Contractor shall maintain during the term of this contract liability insurance issued by a responsible insurance carrier of **not less** than the following amount(s) per specialty per occurrence: \$1,000,000.00 with \$2,000,000.00 aggregate per specialty per occurrence.

(b) An apparently successful Offeror shall furnish, prior to contract award, evidence of all required insurance customary in connection with this Offeror's line of business, including, but not limited to professional, employer's liability insurance, employee dishonesty / crime coverage, worker's compensation, commercial automobile, and general liability insurance to cover any liability that may result from performance of the services described in this RFP.

(c) The insurance policies shall contain an endorsement to provide SEARHC a 30-Day notice in the event of cancellation. Insurer or Contractor(s) shall also notify SEARHC of reduction in minimum insurance limits as outlined below in Minimum Insurance Requirements. Certificates of Insurance shall be provided to and issued to SEARHC evidencing minimum insurance requirements.. If, during the performance period of the contract the Contractor changes insurance providers, the Contractor must provide evidence that SEARHC will be indemnified to the limits specified in paragraph (a) of this clause, for the entire period of the contract, either under the new policy, or a combination of old and new policies. In any case, required insurance coverage shall be continuous without interruption.

(d) The Contractor(s) and or sub-contractors, consultants, etc. shall maintain during the term of this contract liability insurance issued by a responsible insurance carrier of not less than the following amount(s) as outlined in the below Minimum insurance requirements.

Minimum limits and conditions of insurance required of each party to this agreement.

Workers Compensation Insurance – As required by law. Where applicable, coverage mandated by federal statutes (e.g. Marine and U.S.L. & H. and Jones Acts) must also be included.

Employers Liability Insurance – Not less than the following:

Each Accident	\$1,000,000
Disease – Policy Limit	\$1,000,000
Disease – Each Employee	\$1,000,000

Policy should be endorsed to add Waiver of Subrogation in favor of SEARHC

General Liability Insurance – Bodily Injury, Personal Injury and Property Damage with a combined single limit of not less than \$1 million each occurrence and \$2 million aggregate. The limits of general liability can be obtained with an excess liability policy.

The general liability insurance policy shall be written on an "occurrence" basis Commercial General Liability policy form. The policy shall be endorsed to name the SEARHC as an additional insured,

including Primary Non-Contributory, Completed Ops. And a Waiver of Subrogation in favor of SEARHC.

Automobile Liability Insurance – Bodily Injury and Property Damage coverage with a combined single limit of not less than \$1 million for each occurrence. The automobile liability policy shall include coverage for owned automobiles (where applicable) as well as non-owned and hired automobile coverage. The policy shall be endorsed to name the SEARHC as an additional insured, including Primary Non-Contributory, Completed Ops .and a Waiver of Subrogation in favor of SEARHC.

Employee Dishonesty/Crime Coverage – \$250,000 per occurrence limit including theft off premise.

Professional Liability and/or E&O Liability with minimum limits \$1M Occurrence \$2M Aggregate

Each policy of insurance as required above shall be written by an insurance company admitted in Alaska with a minimum rating by A. M. Best & Company of A- VI.

Attachment B: Alaska Native / American Indian Preference Provisions and Representations

1) DEFINITIONS

The term "Alaska Native/American Indian firm, Alaska Native/American Indian organization or enterprise" means a sole enterprise, partnership, corporation, or other type of business organization owned and controlled by one or more Alaska Natives or American Indians who are members of a tribe, Pueblo, band, group, village, or community that is recognized by the Secretary of the Interior or the Secretary of Health and Human Services, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act (85 Stat. 688).

2) ALASKA NATIVE/AMERICAN INDIAN-OWNED, CONTROLLED, AND OPERATED BUSINESS REPRESENTATION

Any firm that misrepresents itself as an Alaska Native/American Indian-preference eligible firm in order to secure the award of a contract or purchase order shall be subject to suspension, debarment and prosecution under applicable law.

(a) Representation: The proposer represents that [] it is, [] is not a 51% or more Alaska Native or American Indian-owned, controlled, and operated firm as defined herein.

ALASKA NATIVE/AMERICAN INDIAN

A person who is a member of any Tribe, or is a person recognized by the federal government as eligible for the special programs, services, or rights provided by the federal government to Alaska Natives because of their status as Alaska Natives, including any person who is a "Native" as that term is defined in the Alaska Native Claims Settlement Act, 43 U.S.C. 1601(b), or the lineal descendant of a Native.

INDIAN OWNERSHIP

The specified degree of Alaska Native/American Indian ownership must be maintained during the period covered by this contract.

3) USE OF ALASKA NATIVE/AMERICAN INDIAN BUSINESS CONCERNS

(a) As used in this clause, the term "Alaska Native/American Indian Business Concern" means Alaska Native or American Indian organizations, or Alaska Native or American Indian owned economic enterprise as defined herein.

(b) The contractor agrees to give preference to qualified Alaska Native and American Indian business concerns in the awarding of any subcontracts entered into under the contract consistent with the efficient performance of the contract. The contractor shall comply with any preference requirements regarding Alaska Native and American Indian business concerns established by the entity receiving services under the contract to the extent that such requirements are not inconsistent with the purpose and intent of this paragraph.

4) ALASKA NATIVE/AMERICAN INDIAN PREFERENCE IN TRAINING AND EMPLOYMENT

(a) The contractor shall give preference in employment for all work performed under the contract, including subcontracts there under, to qualified Alaska Natives and American Indians regardless of age, religion or sex and, to the extent feasible consistent with the efficient performance of the contract, provide employment and training opportunities to Alaska Natives and American Indians, regardless of age, religion or sex that are not fully qualified to perform under the contract. The contractor shall comply with any Indian preference requirements established by the tribe receiving services under the contract to the extent that such requirements are consistent with the purpose and intent of this paragraph.

(b) If the contractor or any of its subcontractors is unable to fill its employment openings after giving

full consideration to Alaska Natives and American Indians as required in paragraph (a) above, these employment openings may then be filled by other than Alaska Natives and American Indians under the conditions set forth in the Equal Opportunity clause of this contract.

(c) The contractor agrees to include this clause or one similar thereto in all subcontracts issued under the contract.

Attachment C: Representations and Certifications

1. TYPE OF BUSINESS ORGANIZATION

The Bidder/Proposer, by checking the applicable box, represents that:

(a) It operates as:

- ☐ a corporation incorporated under the laws of the State of _____
- ☐ an individual,
- ☐ a partnership,
- ☐ a nonprofit organization, or
- ☐ a joint venture; or

(b) If the Bidder/Proposer is a foreign entity, it operates as:

- ☐ an individual,
- ☐ a partnership,
- ☐ a nonprofit organization,
- ☐ a joint venture, or
- ☐ a corporation registered for business in the Country of _____

2. PARENT COMPANY INFORMATION

The Bidder/Proposer by checking the applicable box represents that:

☐ It is independently owned and operated and it is not owned or controlled by a parent company or parent organization.

☐ It is not independently owned and operated; it is owned or controlled by a parent company or parent organization; and the full name and address of the Bidder/Proposer's parent company or parent organization is:

☐ If not independently owned and operated, the parent company or parent organization's Taxpayer Identification Number (TIN) or Employer Identification Number (E.I. No.) is: _____

3. TAXPAYER IDENTIFICATION

(c) Definitions.

"Common parent," as used in this solicitation provision, means that corporate entity that owns or controls an affiliated group of corporations that files its Federal income tax returns on a consolidated basis, and of which the proposer is a member.

"Corporate status," as used in this solicitation provision, means a designation as to whether the proposer is a corporate entity, an unincorporated entity (e.g., sole proprietorship or partnership), or a corporation providing medical and health care services.

"Taxpayer Identification Number (TIN)," as used in this solicitation provision, means the number required by the IRS to be used by the proposer in reporting income tax and other returns.

(d) All proposers are required to submit the information required in paragraphs (c) through (e) of this solicitation provision in order to comply with reporting requirements of 26 U.S.C. 6041, 6041A, and 6050M and implementing regulations issued by the Internal Revenue Service (IRS). If the resulting contract is subject to the reporting requirements described in FAR 4.903, the failure or refusal by the proposer to furnish the information may result in a 31 percent reduction of payments otherwise due under the contract.

(e) Taxpayer Identification Number (TIN): _____

☐ TIN has been applied for.

☐ TIN is not required because:

☐ Proposer is a nonresident alien, foreign corporation, or foreign partnership that does not have income effectively connected with the conduct of a trade or business in the U.S. and does not have an office or place of business or a fiscal paying agent in the U.S.:

☐ Proposer is an agency or instrumentality of a foreign government;

☐ Proposer is an agency or instrumentality of a Federal, state, or local government;

☐ Other. State basis.

(f) Corporate Status:

☐ Corporation providing medical and health care services, or engaged in the billing and collecting of payments for such services;

☐ Other corporate entity ☐ Not a corporate entity ☐ Sole proprietorship ☐ Partnership

☐ Hospital or extended care facility described in 26 CFR 501(c)(3) that is exempt from taxation under 26 CFR 501(a).

(g) Common Parent. ☐ Proposer is not owned or controlled by a common parent as defined in paragraph (a) of this provision. Name and TIN of common parent:

Name _____

TIN _____

5. CERTIFICATION AND DISCLOSURE REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS

(This provision is applicable only if the amount of the bid exceeds \$100,000.)

(a) The definitions and prohibitions contained in the clause, at FAR 52.203-12, Limitation on Payments to Influence Certain Federal Transactions, included in this solicitation, are hereby incorporated by reference in paragraph (b) of this certification.

(b) The proposer, by signing its offer, hereby certifies to the best of his or her knowledge and belief that on or after December 23, 1989:

(1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment or modification of any Federal contract, grant, loan, or cooperative agreement;

(2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid, or will be paid, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the proposer shall complete and submit, with its offer, OMB standard form LLL, Disclosure of Lobbying Activities, to the Contracting Officer; and

(3) He or she will include the language of this certification in all subcontract awards at any tier and require that all recipients of subcontract awards in excess of \$100,000 shall certify and disclose accordingly.

(c) Submission of this certification and disclosure is a prerequisite' for making or entering into this contract imposed by section 1352, title 31, United States Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision, shall be subject to a civil penalty of not less than \$10,000, and not more than \$100,000, for each such failure.

6. PREVIOUS CONTRACTS AND COMPLIANCE REPORTS

The Contractor represents that:

- (a) It [] has [] has not participated in a previous contract or subcontract subject either to the Equal Opportunity clause of this solicitation, the clause originally contained in Section 310 of federal Executive Order No. 10925, or the clause contained in Section 201 of federal Executive Order No. 1114;
- (b) It [] has [] has not, filed all required compliance reports; and
- (c) Representations indicating submission of required compliance reports, by proposed subcontractors, will be obtained before subcontract awards.

7. CERTIFICATION OF NONSEGREGATED FACILITIES

(a) "Segregated facilities", as used in this provision, means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees, that are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin because of habit, local custom, or otherwise.

(b) By submission of this offer, the Bidder/Proposer certifies that it does not and will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not and will not permit its employees to perform their services at any location under its control where segregated facilities are maintained. The Bidder/Proposer agrees that a breach of this certification is a violation of the Equal Opportunity clause in the contract.

(c) The Bidder/Proposer further agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will:

- (1) Obtain identical certifications from proposed subcontractors before the award of subcontracts under which the subcontractor will be subject to the Equal Opportunity clause;
- (2) Retain the certifications in the files; and
- (3) Forward the following notice to the proposed subcontractors (except if the proposed subcontractors have submitted identical certifications for specific time periods).

NOTICE TO PROSPECTIVE SUBCONTRACTORS OF REQUIREMENT FOR CERTIFICATIONS OF NONSEGREGATED FACILITIES.

A Certification of Nonsegregated Facilities must be submitted before the award of a subcontract under which the subcontractor will be subject to the Equal Opportunity clause. The certification may be submitted either for each subcontract or for all subcontracts during a period (i.e., quarterly, semi-annually, or annually).

8. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, PROPOSED DEBARMENT, AND OTHER RESPONSIBILITY MATTERS

(a) The Proposer certifies, to the best of its knowledge and belief, that:

- (1) The Proposer and/or any of its Principals:

- a. Are ☐ are not ☐ presently debarred, suspended, proposed, for debarment, or declared ineligible for the award of contracts by any Federal agency;
 - b. (b) Have ☐ have not ☐, within a three-year period preceding this offer, been convicted of or had a civil judgment rendered against them for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, state, or local) contract or subcontract; violation of Federal or state antitrust statutes relating to the submission of offers; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, tax evasion, or receiving stolen property; and
 - c. Are ☐ are not ☐ presently indicted for, or otherwise criminally or civilly charged by a governmental entity with, commission of any of the offenses enumerated in subdivision (a)(1)(i)(B) of this provision.
- (2) (ii) The Proposer has ☐ has not ☐, within a three-year period preceding this offer, had one or more contracts terminated for default by any Federal agency.

(b) "Principals," for the purposes of this certification, means officers; directors; owners; partners; and, persons having primary management or supervisory responsibilities within a business entity (e.g., general manager; plant manager; head of a subsidiary, division, or business segment, and similar positions).

This Certification Concerns a Matter Within the Jurisdiction of an Agency of the United States and the Making of a False, Fictitious, or Fraudulent Certification May Render the Maker Subject to Prosecution Under Section 1001, Title 18, United States Code.

(c) The Proposer shall provide immediate written notice to the Contracting Officer if, at any time prior to contract award, the Proposer learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

(d) A certification that any of the items in paragraph (a) of this provision exists will not necessarily result in withholding of an award under this solicitation. However, the certification will be considered in connection with a determination of the Proposer's responsibility. Failure of the Proposer to furnish a certification or provide such additional information as requested by the Contracting Officer may render the Proposer non-responsible.

(e) Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render, in good faith, the certification required by paragraph (a) of this provision. The knowledge and information of a Proposer is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

(d) The certification in paragraph (a) of this provision is a material representation of fact upon which reliance was placed when making award. If it is later determined that the Proposer knowingly rendered an erroneous certification, in addition to other remedies available to the Government, the Contracting Officer may terminate the contract resulting from this solicitation for default.

9. CLEAN AIR AND WATER CERTIFICATION

The Proposer certifies that:

(a) Any facility to be used in the performance of this proposed contract is ☐ is not ☐ listed on the Environmental Protection Agency (EPA) List of Violating Facilities;

(b) The Proposer will immediately notify the Contracting Officer, before award, of the receipt of any communication from the Administrator, or a designee, of the EPA, indicating that any facility that the Proposer proposes to use for the performance of the contract is under consideration to be listed on the EPA List of Violating Facilities; and

(c) The Proposer will include a certification substantially the same as this certification, including this paragraph (c), in every nonexempt subcontract.

10. ANTI-KICKBACK PROVISIONS

(a) The Contractor assures that regarding this contract, neither the Contractor, nor any of its employees, agents, or representatives has violated the provisions of the "Anti-Kickback" Act of 1986 (41 USC 51-58) which is incorporated by reference and made a part of this contract.

(b) The Contractor warrants that neither the Contractor nor any of its representatives has been required, directly or indirectly as an express or implied condition in obtaining or carrying out this contract, to employ or retain any organization or person or to make a contribution, donation or consideration of any kind.

11. EQUAL EMPLOYMENT OPPORTUNITY AND NON-DISCRIMINATION

(a) By submitting this offer, the Bidder/Proposer agrees that after giving preference under Indian Preference Provisions of this solicitation and contract, the contractor shall not discriminate among Indians on the basis of religion, sex, or tribal affiliation.

(b) By submitting this offer, the Bidder/Proposer agrees that after giving preference under Indian Preference Provisions of this solicitation and contract to comply with all applicable State and Federal rules governing Equal Employment Opportunity and Non-Discrimination. The Bidder/Proposer agrees to include this provision in all subcontracts.

(c) The Contractor shall permit access to its books, records, and accounts by the contracting agency or the Office of Federal Contract Compliance Programs (OFCCP) for the purposes of investigation to ascertain the Contractor's compliance with the applicable rules, regulations and orders.

(d) The Contractor shall include the terms and conditions this clause in every subcontract or purchase order so that these terms and conditions will be binding upon each subcontractor or vendor.

12. CERTIFICATE OF INDEPENDENT PRICE DETERMINATION

(a) The proposer certifies that--

(1) The prices in this offer have been arrived at independently, without, for the purpose of restricting competition, any consultation, communication, or agreement with any other proposer or competitor relating to--

(a) Those prices;

(b) The intention to submit an offer, or

(c) The methods or factors used to calculate the prices offered.

(2) The prices in this offer have not been and will not be knowingly disclosed by the proposer, directly or indirectly, to any other proposer or competitor before bid opening (in the case of a sealed bid solicitation) or contract award (in the case of a negotiated solicitation) unless otherwise required by law; and

(3) No attempt has been made or will be made by the proposer to induce any other concern to submit or not to submit an offer for the purpose of restricting competition.

(b) Each signature on the offer is considered to be a certification by the signatory that the signatory--

(1) Is the person in the proposer's organization responsible for determining the prices being offered in this bid or proposal, and that the signatory has not participated and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision; or

(2) Has been authorized, in writing, to act as agent for the following principals in certifying that those principals have not participated, and will not participate in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision [insert full name of person(s) in the proposer's organization responsible for determining the prices offered in this bid or proposal, and the title of his or her position in the proposer's organization] ;

(a) As an authorized agent, does certify that the principals named in subdivision (b)(2) of this provision have not participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision; and

(b) As an agent, has not personally participated, and will not participate, in any action contrary to subparagraphs (a)(1) through (a)(3) of this provision.

(c) If the proposer deletes or modifies subparagraph (a)(2) of this provision, the proposer must furnish with its offer a signed statement setting forth in detail the circumstances of the disclosure.

13. DRUG FREE WORKPLACE

To the extent that any facilities, equipment, vessel, or vehicle to be provided under this bid/offer is to be used as a place of work by Contracting Agency employees, the Bidder/Proposer certifies that it does and will maintain such place of work as a drug free workplace in compliance with the Drug Free Workplace Act of 1988 (P.L. 100-690) subject to all the sanctions and penalties in that Act.

14. TOBACCO FREE WORKPLACE

(a) All SEARHC owned campuses are 100% tobacco free. The use of any tobacco product is prohibited in all areas.

(b) All SEARHC owned campuses are 100% tobacco free. The use of any tobacco product is prohibited in all areas.

(c) All employees (including contract employees, volunteers, and students), patients, visitors, and vendors will support the tobacco free campus policy at all SEARHC facilities.

15. COOPERATION FOR REQUIRED DETERMINATION OF RESPONSIBLE PROSPECTIVE CONTRACTOR PRIOR TO AWARD OF CONTRACT

(a) The Bidder/Proposer shall, upon request, promptly furnish SEARHC with a current certified statement of the Bidder/Proposer's financial condition and such data as SEARHC may request with respect to the Bidder/Proposer's operations. SEARHC will use this information to determine the Bidder/Proposer's financial responsibility and ability to perform under the contract.

(b) Failure of a Bidder/Proposer to comply with a request for information may be cause for rejection of the bid/offer on responsibility grounds.

(c) SEARHC may make such investigations as they deem necessary to determine the ability of the Bidder/Proposer to perform the work, and the Bidder/Proposer shall furnish to SEARHC all such information and data for this purpose as SEARHC may request. SEARHC reserves the right to reject any bid/offer if the evidence submitted by, or investigation of such Bidder/Proposer fails to satisfy SEARHC that such Bidder/Proposer is properly qualified and responsible to carry out the obligations of the contract and to complete the work contemplated therein.

16. BIDDER/PROPOSER CERTIFICATION AND REPRESENTATION SIGNATURE

By signing below, the Bidder/Proposer represents that all of its statements, certifications, and representations, and other information supplied herein are true and correct as of the date of submittal of this bid/offer.

PROPOSER: _____

ADDRESS: _____
(Type or Print Company Name and Address of Proposer)

AUTHORIZED SIGNATURE: _____

DATE: _____ / _____ / _____

Attachment D: Price Schedule

Documents which are the basis for this Price Proposal:

1. This RFP and all Exhibits
2. RFP Addenda

Construction Phase	\$ _____
Occupancy and Operational Phase	\$ _____
TOTAL PRICE PROPOSAL	\$ _____

Provide a fee breakdown of labor effort by phase. Include labor, administration, expenses and markup. For price proposal purposes, assume 12 site visits. These fee detail pages will not count against the proposal page limit.

Signature and Title

Printed Name

Company

Date

**Attachment E: AIA Document C103 – 2015 Standard Form of Agreement Between
Owner and Consultant, and AIA Document C203 – 2017 Standard Form of
Consultant's Services: Commissioning**

See attached

Attachment F: Commissioning Specifications

See attached

Attachment G: MEP Equipment Schedules

See attached

Attachment H: Architectural Drawings

See attached

DRAFT AIA® Document C103™ – 2015

Standard Form of Agreement Between Owner and Consultant without a Predefined Scope of Consultant's Services

AGREEMENT made as of the « » day of « » in the year « 2026 »

BETWEEN the Owner:

(Name, legal status, address, and other information)

« SouthEast Alaska Regional Health Consortium »« »
« 3100 Channel Drive, Suite 300 »
« Juneau, Alaska 99801 »
« »

and the Consultant:

(Name, legal status, address, and other information)

« »« »
« »
« »
« »

Consultant's discipline:

«Commissioning Agent Services »

for the following Project:

(Name, location and detailed description. Time limits for bringing claims in Section 6.1.1 are tied to completion of the "Project." The "Project" may be limited to the scope of services to be provided by the Consultant, or the Consultant may be providing services for a "Project" involving design and construction of one or more structures. Care should be taken in describing or defining the Project.)

«Haines Medical Center»

The Owner and Consultant agree as follows.

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An Additions and Deletions Report that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document does not contain a description of the Consultant's scope of Services. This document is intended to be used in conjunction with AIA Standard Form of Consultant's Services documents.

ELECTRONIC COPYING of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

TABLE OF ARTICLES

1	INITIAL INFORMATION
2	CONSULTANT'S RESPONSIBILITIES
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ARTICLE 1 INITIAL INFORMATION

§ 1.1 This Agreement is based on the Initial Information set forth in this Article 1:

(State below Initial Information, such as details of the Project's site and program; identity of the Architect, Owner's contractors and other consultants, and Consultants' subconsultants; anticipated procurement method; and other information relevant to the Consultant's Services.)

« »

§ 1.2 Unless otherwise specifically defined in this Agreement, terms in this Agreement shall have the same meaning as those in AIA Document A201™–2007, General Conditions of the Contract for Construction.

§ 1.3 The Owner's anticipated design and construction schedule:

- .1 Design phase milestones, if any:

« »

- .2 Construction Phase:

« »

- .3 Activation:

« »

- .4 Other milestone dates:

« »

§ 1.4 The Owner and Consultant may rely on the Initial Information. Both parties, however, recognize that the Initial Information may materially change and, in that event, the Owner and the Consultant shall appropriately adjust the schedule, the Consultant's services, and the Consultant's compensation.

ARTICLE 2 CONSULTANT'S RESPONSIBILITIES

§ 2.1 The Consultant shall provide the following professional services:

(Describe the scope of the Consultant's services or identify an exhibit or scope of services document setting forth the Consultant's services and incorporated into this document in Section 11.2.)

«Provide Commissioning Services for the Project as described in AIA C203 - 2017, Standard Form of Consultants Services: Commissioning»

§ 2.2 The Consultant shall perform its services consistent with the professional skill and care ordinarily provided by professionals in the same discipline practicing in the same or similar locality under the same or similar circumstances. The Consultant shall perform its services as expeditiously as is consistent with such professional skill and care and the orderly progress of the Project.

§ 2.3 The Consultant identifies the following representative who is authorized to act on behalf of the Consultant with respect to the Project.

(List name, address, and other information.)

« »
« »

§ 2.4 If required in the jurisdiction where the Project is located, the Consultant shall be licensed to perform the services described in this Agreement, or shall cause such services to be performed by appropriately licensed professionals.

§ 2.5 The Consultant shall coordinate its services with those services provided by the Owner and the Owner's other consultants. The Consultant may communicate with the Owner's other consultants for the purposes of performing its services on the Project. The Consultant shall keep the Owner reasonably informed of any such communications. The Consultant shall be entitled to rely on the accuracy and completeness of services and information furnished by the Owner and the Owner's other consultants. The Consultant shall provide prompt written notice to the Owner if the Consultant becomes aware of any error, omission, or inconsistency in such services or information.

§ 2.6 The Consultant shall keep the Owner reasonably informed of the progress of the Consultant's services.

§ 2.7 Insurance. The Consultant shall maintain the following insurance for the duration of this Agreement. If any of the requirements set forth below exceed the types and limits the Consultant normally maintains, the Owner shall reimburse the Consultant for any additional cost as set forth in Section 8.6.3.

§ 2.7.1 Commercial General Liability with policy limits of not less than «One Million » (\$«1,000,000 ») for each occurrence and «One Million » (\$«1,000,000 ») in the aggregate for bodily injury and property damage.

§ 2.7.2 Automobile Liability covering vehicles owned by the Consultant and non-owned vehicles used by the Consultant with policy limits of not less than «One Million » (\$ «1,000,000 ») per claim and «One Million » (\$ «1,000,000 ») in the aggregate for bodily injury and property damage along with any other statutorily required automobile coverage.

§ 2.7.3 The Consultant may achieve the required limits and coverage for Commercial General Liability and Automobile Liability through a combination of primary and excess liability insurance, provided such primary and excess insurance policies result in the same or greater coverage as those required under Sections 2.7.1 and 2.7.2.

§ 2.7.4 Workers' Compensation at statutory limits and Employers' Liability with a policy limit of not less than «One Million » (\$ «1,000,000 »).

§ 2.7.5 Professional Liability covering the negligent acts, errors and omissions in the performance of professional services with policy limits of not less than «One Million » (\$ «1,000,000 ») per claim and «One Million » (\$ «1,000,000 ») in the aggregate.

§ 2.7.6 The Owner shall be an additional insured on the Consultant's primary and excess insurance policies for Commercial General Liability and Automobile Liability. The additional insured coverage shall be primary and non-

contributory to any of the Owner's insurance policies. The additional insured coverage shall apply to both ongoing operations and completed operations.

§ 2.7.7 The Consultant shall provide to the Owner certificates of insurance evidencing compliance with the requirements in this Section 2.7. The certificates will show the Owner as an additional insured on the Commercial General Liability, Automobile Liability, and any excess policies.

§ 2.8 Time. The Consultant shall provide its services within the time limits established in the Consultant's Schedule, or within the Deliverable(s) Time Limit(s) set forth below. The Consultant shall immediately inform the Owner of any circumstances which may cause a delay.
(Check one or both selections below.)

- [☐] Consultant's Schedule: As soon as practicable after the date of this Agreement, the Consultant shall submit, for the Owner's approval, a schedule for the performance of the Consultant's Services. If relevant to the Consultant's Services, the schedule initially shall include anticipated dates for design phase milestones, commencement of construction, and for Substantial Completion of the Work as set forth in the Initial Information. The schedule shall include allowances for periods of time required for the Owner's review, for the performance of the Owner's consultants, and for approval of submissions by authorities having jurisdiction over the Project. Once approved by the Owner, time limits established by the schedule shall not, except for reasonable cause, be exceeded by the Consultant or Owner.
- [☐] Deliverable(s) Time Limit: The Consultant shall provide the following deliverable(s) within the time limit(s) set forth below. Unless otherwise indicated below, time shall be calculated based on calendar days from the date of this Agreement.

Deliverable(s) (Describe the deliverable(s))	Time Limits (Insert number of calendar days and, where appropriate, if time is to be measured from a separate written authorization from the Owner)

ARTICLE 3 ADDITIONAL SERVICES

§ 3.1 Additional Services may be provided after execution of this Agreement without invalidating the Agreement.

§ 3.2 The Consultant shall promptly notify the Owner upon recognizing the need to perform Additional Services. The Consultant, however, shall not proceed to provide such services until the Consultant receives the Owner's written authorization. Except for services due to the fault of the Consultant, any Additional Services provided in accordance with this Section 3.2 shall entitle the Consultant to compensation pursuant to Section 8.2.

ARTICLE 4 OWNER'S RESPONSIBILITIES

§ 4.1 Unless otherwise provided for under this Agreement, the Owner shall provide information in a timely manner regarding requirements for and limitations on the Project. Within 15 days after receipt of a written request from the Consultant, the Owner shall furnish the requested information as necessary and relevant for the Consultant to evaluate, give notice of, or enforce lien rights.

§ 4.2 The Owner identifies the following representative who is authorized to act on the Owner's behalf with respect to the Project.
(List name, address, and other information.)

§ 4.3 The Owner shall render decisions and approve the Consultant's submittals, if any, in a timely manner in order to avoid unreasonable delay in the orderly and sequential progress of the Consultant's services.

§ 4.4 The Owner shall coordinate the services of its other consultants with those services provided by the Consultant. The Owner shall provide the Consultant with a list of other consultants on the Project whose services relate to the Consultant's services. The Owner shall also, upon written request, furnish the Consultant with copies of the scope of services in contracts between the Owner and such other consultants. The Owner shall require that its other consultants maintain professional liability insurance as appropriate to the services provided.

§ 4.5 The Owner shall furnish the services of consultants other than those designated in this Agreement, or authorize the Consultant to furnish them as an Additional Service, when the Consultant requests such services and demonstrates that they are reasonably required for the Consultant to be able to perform its services.

§ 4.6 The Owner shall provide prompt written notice to the Consultant if the Owner becomes aware of any fault or defect in the Project, including errors, omissions, or inconsistencies in the Consultant's Services.

ARTICLE 5 COPYRIGHTS AND LICENSES

§ 5.1 Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Consultant and the Consultant's subconsultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials in digital or physical form.

§ 5.2 The Consultant and the Owner warrant that in transmitting Instruments of Service, or any other information, the transmitting party is the copyright owner of such information or has permission from the copyright owner to transmit such information for its use on the Project. If the Owner and Consultant intend to transmit Instruments of Service or any other information or documentation in digital form, they shall endeavor to establish necessary protocols governing such transmissions or comply with protocols established for the Project, if any.

§ 5.3 The Consultant and the Consultant's subconsultants shall be deemed the authors and owners of their respective Instruments of Service and shall retain all common law, statutory, and other reserved rights, including copyrights. Submission or distribution of Instruments of Service to meet official regulatory requirements or for similar purposes in connection with the Project is not to be construed as publication in derogation of the reserved rights of the Consultant's subconsultants.

§ 5.4 Upon execution of this Agreement, the Consultant grants to the Owner a nonexclusive license to use the Consultant's Instruments of Service solely and exclusively for purposes of designing, constructing, using, maintaining, altering and adding to the Project, provided that the Owner substantially performs its obligations, including prompt payment of all sums when due, under this Agreement. The Consultant shall obtain similar nonexclusive licenses from its subconsultants consistent with this Agreement. The license granted under this section permits the Owner to authorize the Owner's consultants and contractors to reproduce applicable portions of the Instruments of Service solely and exclusively for the purposes of designing, constructing, using, maintaining, altering and adding to the Project. If the Consultant rightfully terminates this Agreement for cause as provided in Section 7.4, the license granted in this Section 5.4 shall terminate.

§ 5.4.1 In the event the Owner uses the Instruments of Service without retaining the author of the Instruments of Service, the Owner releases the Consultant and the Consultant's subconsultants from all claims and causes of action arising from such uses. The Owner, to the extent permitted by law, further agrees to indemnify and hold harmless the Consultant and its subconsultants from all costs and expenses, including the cost of defense, related to claims and causes of action asserted by any third person or entity to the extent such costs and expenses arise from the Owner's use of the Instruments of Service under this Section 5.4.1. The terms of this Section 5.4.1 shall not apply if the Owner rightfully terminates this Agreement for cause under Section 7.4.

§ 5.5 Except for the licenses granted in this Article 5, no other license or right shall be deemed granted or implied under this Agreement. The Owner shall not assign, delegate, sublicense, pledge, or otherwise transfer any license

granted herein to another party without the prior written agreement of the Consultant. Any unauthorized use of the Instruments of Service shall be at the Owner's sole risk and without liability to the Consultant and the Consultant's subconsultants.

ARTICLE 6 CLAIMS AND DISPUTES

§ 6.1 General

§ 6.1.1 The Owner and Consultant shall commence all claims and causes of action, whether in contract, tort, or otherwise, against the other arising out of or related to this Agreement in accordance with the requirements of the method of binding dispute resolution selected in this Agreement within the period specified by applicable law, but in any case not more than 10 years after the date the Project is sufficiently complete so that the Owner can utilize it for its intended use. The Owner and Consultant waive all claims and causes of action not commenced in accordance with this Section 6.1.1. All Claims, disputes and causes of actions are expressly made subject to Section 6.5 of this Agreement.

§ 6.1.2 To the extent damages are covered by property insurance, the Owner and Consultant waive all rights against each other and against the contractors, consultants, agents, and employees of the other for damages, except such rights as they may have to the proceeds of such insurance. The Owner or the Consultant, as appropriate, shall require of the contractors, consultants, agents, and employees of any of them, similar waivers in favor of the other parties enumerated herein.

§ 6.1.3 The Consultant and Owner waive consequential damages for claims, disputes, or other matters in question arising out of or relating to this Agreement. This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination of this Agreement, except as specifically provided in Section 7.7.

§ 6.2 Informal Resolution. The Owner and the Consultant shall endeavor to resolve claims or other matters in dispute through good faith discussions between themselves, prior to invoking any other means of dispute resolution authorized under this Agreement. However, if the parties are unable to resolve such claims or other matters in dispute between themselves informally, either party may submit a claim or dispute to binding arbitration in accordance with the provisions set out in Section 6.3 of this Agreement.

§ 6.3 Binding Arbitration. If negotiation fails to resolve a claim or other matter in dispute within thirty (30) days after the parties first meet to resolve the matter informally, the matter in question shall be subject to binding arbitration, as follows:

- (a) Such arbitration shall be in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association currently in effect or other arbitration rules mutually agreed upon. The party filing a demand for arbitration must assert in the demand all claims then known to that party on which arbitration is permitted. The written demand for arbitration shall be presented or mailed to the other party to this Agreement and filed with the American Arbitration Association.
- (b) During the Term of the Agreement, a demand for arbitration shall be made within ninety (90) days after the claim or other matter in dispute has arisen and been brought to the attention of the other party in writing. In no event shall the demand for arbitration be made after the date when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.
- (c) The award rendered by the arbitrator or arbitrators shall be final and enforceable in any Alaska Superior Court having jurisdiction over the matter located in either Sitka or Juneau, Alaska, at the Owner's election. Consultant understands and agrees that any arbitration decision, award or judgment being sought against Owner is expressly made subject to the sovereign immunity limitations set forth in Section 6.5 of this Agreement and any other limitations that may apply under the federal laws and regulations governing federally recognized tribes and tribal consortia.

§ 6.4 Claim or Cause of Action Discovered Following Termination or Completion of the Term of the Agreement. Notwithstanding any limitation on the time for bringing claims or disputes under this Agreement, the Owner may pursue a claim or cause of action against the Consultant, to the extent the Consultant is legally responsible in whole or in part or to the extent arising out of Consultant's failure to perform its services in a manner satisfying the

professional standards required under this Agreement within three (3) years following the Owner's actual discovery of the facts supporting the claim or cause of action, provided however, that no claim or cause of action may be brought for any reason more than ten (10) years after the Term of this Agreement has expired. If the Owner brings a claim or cause of action under this Section 6.4, the Owner may elect to pursue the claim under the dispute resolution procedures set forth in this Agreement or through a civil action brought in any Alaska Superior Court having jurisdiction over the matter located in either Sitka or Juneau, Alaska, at the Owner's election.

§ 6.5 Limited Waiver of Sovereign Immunity.

§ 6.5.1. Sovereign Immunity. Owner is a consortium of federally recognized Alaska Native tribes providing federal health care services to Alaska Native and American Indian beneficiaries, and as such possesses sovereign immunity from suit. Nothing in this Agreement shall be construed to be a waiver of Owner's sovereign immunity, except to the limited extent necessary to permit Consultant to pursue the dispute resolution procedures authorized in this Agreement. Sovereign immunity is not waived as to any employee, Board member or agent of Owner, and Owner hereby specifically reserves and retains its sovereign immunity and all rights and privileges pertaining thereto, except to the limited extent expressly stated herein.

§ 6.5.2 Limitation on Arbitration Award. The sole remedy available as against Owner, following arbitration, shall be an award for payment of the amount of an invoice which is properly due the Consultant and unpaid. Nothing in this limited waiver of immunity shall be construed as a waiver or consent to the levy of any judgment, lien, attachment or encumbrance upon any other funds, assets, income or real property or interest in any real property belonging to Owner, whether held in trust for the benefit of Owner by the United States, as restricted fee land or in fee simple.

§ 6.5.3 Enforcement of Arbitration Award. This limited waiver of sovereign immunity shall be deemed a consent to the jurisdiction only of the Alaska Superior Court located in either Sitka or Juneau, Alaska, at the Owner's election. This limited waiver of sovereign immunity specifically does not allow for recovery of attorney's fees or pre-judgment interest and does not extend to actions for declaratory judgment or injunctive relief.

§ 6.5.4 Application to Other Agreements Between the Parties. The parties hereby acknowledge and agree that Section 6.5 of this Agreement shall also apply to any other agreements entered into by the parties during the respective terms of such agreements, and shall, whenever any application of this Agreement continues beyond the termination of this Agreement, continue to apply thereto, notwithstanding any prior termination of this Agreement.

§ 6.6 Choice of Law, Forum Selection, Entire Agreement, and Amendment. This Agreement shall be construed under the laws of the State of Alaska. This Agreement constitutes the entire agreement and understanding of the parties and replaces any prior or contemporaneous agreement, whether written or oral. The Owner and the Consultant shall not be bound by any amendment to this Agreement unless such amendment has been signed by duly authorized representatives of both parties.

§ 6.7 Consolidation or Joinder. If a claim, dispute or other matter in question arising out of or related to this Agreement between Owner and Consultant involves the work of the Consultant's consultant, subconsultant, or subcontractor (each a "Joinable Party"), the Owner may join each Joinable Party as a party to the arbitration between the Owner and the Consultant. The Consultant shall include in each contract with each such Joinable Party a specific provision whereby such Joinable Party consents to being joined in an arbitration between the Owner and the Consultant involving the work of such Joinable Party. Nothing in this Paragraph nor in the provision of such contract consenting to joinder shall create any claim, right, or cause of action in favor of the Joinable Party and against the Owner or the Consultant that does not otherwise exist.

§ 6.8 The provisions of this Article 6 shall survive the termination of this Agreement.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 If the Owner fails to make payments to the Consultant in accordance with this Agreement, such failure shall be considered substantial nonperformance and cause for termination or, at the Consultant's option, cause for suspension of performance of services under this Agreement. If the Consultant elects to suspend services, the Consultant shall give seven days' written notice to the Owner before suspending services. In the event of a suspension of services, the Consultant shall have no liability to the Owner for delay or damage caused the Owner because of such suspension of services. Before resuming services, the Consultant shall be paid all sums due prior to suspension and any expenses

incurred in the interruption and resumption of the Consultant's services. The Consultant's fees for the remaining services and the time schedules shall be equitably adjusted.

§ 7.2 If the Owner suspends the Project or the Consultant's services, the Consultant shall be compensated for services performed prior to notice of such suspension. When the Project or the Consultant's services are resumed, the Consultant shall be compensated for expenses incurred in the interruption and resumption of the Consultant's services. The Consultant's fees for the remaining services and the time schedules shall be equitably adjusted.

§ 7.3 If the Owner suspends the Project or the Consultant's services for more than 90 cumulative days for reasons other than the fault of the Consultant, the Consultant may terminate this Agreement by giving not less than seven days' written notice.

§ 7.4 Either party may terminate this Agreement upon not less than seven days' written notice should the other party fail substantially to perform in accordance with the terms of this Agreement through no fault of the party initiating the termination.

§ 7.5 The Owner may terminate this Agreement upon not less than seven days' written notice to the Consultant for the Owner's convenience and without cause.

§ 7.6 In the event of termination not the fault of the Consultant, the Consultant shall be compensated for services performed prior to termination, together with Reimbursable Expenses then due and all Termination Expenses as defined in Section 7.7.

§ 7.7 Termination Expenses are in addition to compensation for the Consultant's services and include expenses directly attributable to termination for which the Consultant is not otherwise compensated, plus an amount for the Consultant's anticipated profit on the value of the services not performed by the Consultant.

§ 7.8 The Owner's rights to use the Consultant's Instruments of Service in the event of a termination of this Agreement are set forth in Article 5 and Section 8.7.

ARTICLE 8 COMPENSATION

§ 8.1 The Owner shall compensate the Consultant for services described in Article 2 as follows:
(Insert amount of, or basis for, compensation)

§ 8.2 The Owner shall compensate the Consultant for Additional Services that may arise during the course of the Project as follows:
(Insert amount of, or basis for, compensation.)

« »

§ 8.3 The hourly billing rates for services of the Consultant and the Consultant's subconsultants, if any, are set forth below. The rates shall be adjusted in accordance with the Consultant's and Consultant's subconsultants' normal review practices.
(If applicable, attach an exhibit of hourly billing rates or insert them below.)

»

Employee or Category	Rate
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§ 8.4 Unless otherwise agreed, payments for services shall be made monthly in proportion to services performed. Payments are due and payable upon presentation of the Consultant's invoice. Amounts unpaid «Thirty » («30 ») days after the invoice date shall bear interest at the rate entered below, or in the absence thereof at the legal rate prevailing from time to time at the principal place of business of the Consultant.
(Insert rate of monthly or annual interest agreed upon.)

« » percent (« » %) « »

§ 8.5 The Owner shall not withhold amounts from the Consultant's compensation to impose a penalty or liquidated damages on the Consultant, or to offset sums requested by or paid to contractors for the cost of changes in the Work unless the Consultant agrees or has been found liable for the amounts in a binding dispute resolution proceeding.

§ 8.6 Reimbursable Expenses

§ 8.6.1 Reimbursable Expenses are in addition to compensation for the Consultant's professional services and include expenses incurred by the Consultant directly related to the Project, as follows:

- .1 Transportation and authorized out-of-town travel and subsistence;
- .2 Long distance services, dedicated data and communication services, teleconferences, Project Web sites, and extranets;
- .3 Fees paid for securing approval of authorities having jurisdiction over the Project;
- .4 Printing, reproductions, plots, standard form documents;
- .5 Postage, handling and delivery;
- .6 Expense of overtime work requiring higher than regular rates, if authorized in advance by the Owner;
- .7 Consultant's subconsultants expense of professional liability insurance dedicated exclusively to this Project, or the expense of additional insurance coverage or limits if the Owner requests such insurance in excess of that normally carried by the Consultant's subconsultants;
- .8 All taxes levied on professional services and on reimbursable expenses;
- .9 Other similar Project-related expenditures, if authorized in advance by the Owner.

§ 8.6.2 For Reimbursable Expenses the compensation shall be the expenses incurred by the Consultant plus an administrative fee of « » percent (« » %) of the expenses incurred.

§ 8.6.3 If the insurance requirements listed in Section 2.7 exceed the types and limits the Consultant normally maintains and the Consultant incurred or will incur additional costs to satisfy such requirements, the Owner shall reimburse the Consultant for such costs as set forth below:

« »

§ 8.6.4 Records of Reimbursable Expenses and services performed on the basis of hourly rates shall be available to the Owner at mutually convenient times.

§ 8.7 Compensation for Use of Consultant's Instruments of Service

If the Owner terminates the Consultant for its convenience under Section 7.5, or the Consultant terminates this Agreement under Section 7.3, the Owner shall pay a licensing fee as compensation for the Owner's continued use of the Consultant's Instruments of Service solely for purposes of completing, using and maintaining the Project as follows:

« »

ARTICLE 9 MISCELLANEOUS PROVISIONS

§ 9.1 [RESERVED].

§ 9.2 The Owner and Consultant, respectively, bind themselves, their agents, successors, assigns and legal representatives to this Agreement. Neither the Owner nor the Consultant shall assign this Agreement without the written consent of the other, except that the Owner may assign this Agreement to a lender providing financing for the Project if the lender agrees to assume the Owner's rights and obligations under this Agreement.

§ 9.3 If the Owner requests the Consultant to execute certificates, the proposed language of such certificates shall be submitted to the Consultant for review at least 14 days prior to the requested dates of execution. If the Owner requests the Consultant to execute consents reasonably required to facilitate assignment to a lender, the Consultant shall execute all such consents that are consistent with this Agreement, provided the proposed consent is submitted to the Consultant for review at least 14 days prior to execution. The Consultant shall not be required to execute certificates or consents that would require knowledge, services, or responsibilities beyond the scope of this Agreement.

§ 9.4 Nothing contained in this Agreement shall create a contractual relationship with or a cause of action in favor of a third party against either the Owner or Consultant.

§ 9.5 Unless otherwise required in this Agreement, the Consultant shall have no responsibility for the discovery, presence, handling, removal or disposal of, or exposure of persons to, hazardous materials or toxic substances in any form at the Project site.

§ 9.6 Confidential Information is information containing confidential or business proprietary information that is clearly marked as "confidential." If the Owner or Consultant transmits Confidential Information, the transmission of such Confidential Information constitutes a warranty to the party receiving such Confidential Information that the transmitting party is authorized to transmit the Confidential Information. If a party receives Confidential Information, the receiving party shall keep the Confidential Information strictly confidential and shall not disclose it to any other person or entity except as set forth in Section 9.6.1.

§ 9.6.1 A party receiving Confidential Information may disclose the Confidential Information as required by law or court order, including a subpoena or other form of compulsory legal process issued by a court or governmental entity. A party receiving Confidential Information may also disclose the Confidential Information to its employees, consultants, or contractors in order to perform services or work solely and exclusively for the Project, provided those employees, consultants, and contractors are subject to the restrictions on the disclosure and use of Confidential Information as set forth in this Agreement.

ARTICLE 10 SPECIAL TERMS AND CONDITIONS

Special terms and conditions that modify this Agreement are as follows:

« »

ARTICLE 11 SCOPE OF THE AGREEMENT

§ 11.1 This Agreement represents the entire and integrated agreement between the Owner and the Consultant and supersedes all prior negotiations, representations, or agreements, either written or oral. This Agreement may be amended only by written instrument signed by both Owner and Consultant. In the event of a conflict between the terms and conditions of this C103™–2015, Standard Form Agreement between Owner and Consultant and an attached exhibit, the terms and conditions of the C103–2015, Standard Form Agreement between Owner and Consultant shall take precedence.

§ 11.2 This Agreement is comprised of the following documents listed below:

- .1 AIA Document C103™–2015, Standard Form of Agreement Between Owner and Consultant.
- .2 AIA Document C203™–2017, Standard Form of Consultant's Services: Commissioning
- .3 « »

This Agreement entered into as of the day and year first written above.

OWNER (Signature)

« »« »

CONSULTANT (Signature)

« »« »

DRAFT AIA® Document C203™ – 2017

Standard Form of Consultant's Services: Commissioning

for the following **PROJECT**:
(Name and location or address)

«Haines Medical Center »
« »

THE OWNER:
(Name, legal status and address)

«SouthEast Alaska Regional Health Consortium»« »
«3100 Channel Drive, Suite 300
Juneau, Alaska 99801»

THE CONSULTANT:
(Name, legal status and address)

« »« »
« »

THE AGREEMENT

This Standard Form of Consultant's Services is part of the accompanying C103™-2015, Standard Form of Agreement between Owner and Consultant without a Predefined Scope of Consultant's Services dated the « » day of « » in the year «2026 ». (In words, indicate day, month and year of the accompanying C103-2015.)

TABLE OF ARTICLES

- 1 INITIAL INFORMATION
- 2 COMMISSIONING SERVICES
- 3 SUPPLEMENTAL AND ADDITIONAL SERVICES
- 4 OWNER'S RESPONSIBILITIES

ARTICLE 1 INITIAL INFORMATION

§ 1.1 The Consultant's services are based on the Initial Information set forth in this Article 1.

(For each item in this section, insert the information or a statement such as "not applicable" or "unknown at time of execution.")

§ 1.1.1 Systems and assemblies to be commissioned:

(Identify systems and assemblies to be commissioned, such as heating, cooling, refrigeration and ventilation systems and controls; lighting and day lighting controls; domestic hot water systems; renewable energy systems; or building enclosure assemblies.)

Below is a summary of the major systems to be commissioned:

ADDITIONS AND DELETIONS:
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

This document provides the Consultant's scope of services only and should be attached as an exhibit to AIA Document C103™-2015, Standard Form of Agreement Between Owner and Consultant without a Predefined Scope of Consultant's Services.

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§ 1.1.2 The Owner's commissioning goals or objectives:

(Identify the Owner's commissioning goals or objectives for the Project such as sustainability objectives or performance goals.)

«Meet all Commissioning Requirements as defined in the ASHE Health Facility Commissioning Guidelines and in the 2019 Indian Health Service A/E Guide dated July 8, 2021. »

§ 1.1.3 The Consultant shall retain the following sub-consultants:

(List name, discipline, address, and other information.)

« »

§ 1.1.4 The Owner's contractors and consultants that affect the Consultant's services:

(List name, discipline, address, and other information.)

« »

§ 1.1.5 Other Initial Information on which the Consultant's services are based:

(List below other information that will affect the Consultant's performance of its services, such as details of the Project's program, Owner's budget for the Project, or anticipated procurement method.)

§ 1.1.6 The Owner and Consultant may rely on the Initial Information. Both parties, however, recognize that the Initial Information may materially change and, in that event, the Owner and the Consultant shall appropriately adjust the Consultant's services, and the Consultant's compensation and schedule for the Consultant's services.

ARTICLE 2 COMMISSIONING SERVICES

§ 2.1 The Consultant shall not be a member, employee, or subcontractor of any entity performing design services or construction work on the Project unless the Owner gives the Consultant informed written consent.

§ 2.2 The Consultant shall manage the Commissioning Services, research applicable design criteria, attend Project meetings, communicate with members of the Project team, and report progress to the Owner.

§ 2.3 COMMISSIONING PLANNING SERVICES

§ 2.3.1 Initial Coordination Meeting

The Consultant shall facilitate an initial coordination meeting with the Owner and other participants in the Commissioning Process to discuss the Commissioning Services it will provide relative to the Project and other Project participants.

§ 2.3.2 Schedule of Commissioning Services

The Consultant shall prepare, and periodically update, a Schedule of Commissioning Services that shall identify commissioning related activities, including services furnished by the Consultant and completion and submission dates for documents provided by the Consultant. The Consultant shall coordinate the Schedule of Commissioning Services with the design and construction schedules.

§ 2.3.3 Owner's Project Requirements

§ 2.3.3.1 In conjunction with the information provided in Section 1.1.1 and 1.1.2, the Consultant shall assist the Owner and the Owner's consultants in developing the Owner's Project Requirements, or shall review the Owner's Project Requirements if provided by the Owner. At a minimum, the Owner's Project Requirements shall identify systems and assemblies to be commissioned and define the Owner's goals for each, including functional expectations, performance criteria to be met by the design, sustainable objectives to be achieved, cost considerations, and maintenance expectations. Where practical, the Owner's Project Requirements shall include measurable indicators or standards that can be used to verify that the Owner's goals have been met. The Consultant shall assist the Owner to periodically update the Owner's Project Requirements.

§ 2.3.3.2 The Owner and Consultant acknowledge that achievement of the Owner's Project Requirements depends on factors beyond the Consultant's control. Accordingly, the Consultant does not warrant or guarantee that the Project will achieve the Owner's Project Requirements

§ 2.3.4 Basis of Design Review

The Basis of Design is a document, prepared by the Owner and the Owner's consultants, that records the concepts, calculations, decisions, and product selections used to (a) meet the Owner's Project Requirements, and (b) satisfy applicable laws, codes, and regulations. Upon receipt from the Owner, the Consultant shall review the Basis of Design, and updates thereto, for conformance with the Owner's Project Requirements and provide the Owner with written comments regarding deficiencies identified.

§ 2.3.5 Commissioning Plan

The Consultant shall provide the Owner with a written Commissioning Plan that is based on the Owner's Project Requirements and the Basis of Design. The Commissioning Plan shall describe commissioning activities for the Project and identify documentation requirements of the commissioning process. The Consultant shall update the Commissioning Plan periodically as appropriate to the level of completeness of the design and the progress of construction. The Commissioning Plan shall include:

- .1 identification of the Owner's Project Requirements and the portions of the Basis of Design used as the basis of the Commissioning Plan;
- .2 a list of participants in the commissioning process, their roles and responsibilities, and protocols for participant communication and information distribution;
- .3 a list of systems and assemblies to be commissioned and performance expectations for each;
- .4 a description of commissioning activities and responsibility for each;
- .5 a summary of commissioning related documentation required by governmental authorities or entities certifying the Project.
- .6 the Schedule of Commissioning Services;
- .7 protocols for commissioning design reviews;
- .8 protocols for commissioning submittal reviews;
- .9 protocols to document changes to the Owner's Project Requirements and Basis of Design,
- .10 protocols and templates for commissioning related documentation, including the Issues Log, Construction Checklists, Functional Performance Test procedures and reports, the Systems Manual, and the operator training plan;
- .11 identification of, and protocols for, documents to be provided by the Owner's contractors, such as start-up reports, systems readiness test reports, test and balance plans and reports, and quality control test documents; and
- .12 protocols for the Consultant to report observed deficiencies that pertain to the systems and assemblies to be commissioned.

§ 2.4 DESIGN PHASE SERVICES

§ 2.4.1 Design Phase Coordination Meeting

The Consultant shall conduct and document a design phase coordination meeting with the Owner and other participants in the commissioning process to discuss and review the Owner's Project Requirements and the Commissioning Plan. Subject to Section 3.2.1.2, the Consultant shall conduct and document additional design phase coordination meetings as necessary.

§ 2.4.2 Commissioning Design Reviews

The Consultant shall periodically review the designs prepared by the Owner's consultants and contractors for the systems and assemblies to be commissioned. The Consultant's review shall be for the limited purpose of checking for conformance with information given and concepts expressed in the Owner's Project Requirements and the Basis of Design. The Consultant shall be entitled to rely upon, and shall not be responsible for, the adequacy and accuracy of the designs prepared by the Owner's consultants and contractors. The Consultant's commissioning design reviews shall be made with reasonable promptness and in accordance with the Commissioning Plan and Schedule of Commissioning Services. Upon completion of each review, the Consultant shall issue written comments and recommendations in accordance with the Commissioning Plan. At each subsequent review and after the final review, the Consultant shall document the resolution of comments from the previous reviews.

§ 2.4.3 Commissioning Specifications

The Consultant shall prepare Commissioning Specifications that define the general commissioning requirements of the Project and commissioning requirements for each system and assembly to be commissioned. The Commissioning Specifications shall include requirements for Construction Checklist development and execution, startup procedures, Functional Performance Tests and acceptance criteria, and operator training. If necessary, the Consultant shall coordinate with the Owner's other consultants to integrate commissioning related requirements into specifications provided by others.

§ 2.5 CONSTRUCTION PHASE

§ 2.5.1 Construction Phase Coordination Meeting

Prior to commencement of construction activities on systems and assemblies to be commissioned, the Consultant shall conduct and document a construction phase coordination meeting with the Owner and other participants in the commissioning process to discuss and review the Commissioning Plan and Commissioning Specifications. Subject to Section 3.2.1.3, the Consultant shall conduct and document additional commissioning phase coordination meetings as necessary during construction.

§ 2.5.2 Submittal Review

The Consultant shall review and provide written comments upon contractors' submittals that pertain to the systems and assemblies to be commissioned, but only for the limited purpose of checking for conformance with the requirements of the Commissioning Plan and Commissioning Specifications. The Consultant's action in reviewing submittals shall be taken in accordance with the approved submittal schedule, or in the absence of an approved schedule, with reasonable promptness while allowing sufficient time to permit adequate review. The Consultant's submittal review is not for the purpose of determining the accuracy and completeness of other information such as dimensions, quantities, and installation or performance of systems or assemblies, which are the contractors' responsibilities. The Consultant's review shall not constitute approval of safety precautions or any construction means, methods, techniques, sequences, or procedures.

§ 2.5.3 Construction Documentation Review

During construction, the Consultant shall review documentation related to the systems and assemblies to be commissioned such as meeting minutes, field reports, minor changes in the Work, Construction Change Directives, and Change Orders. In accordance with the Commissioning Plan, the Consultant shall report issues it identifies during its reviews that may prevent the systems and assemblies from performing in accordance with the Commissioning Plan and Commissioning Specifications.

§ 2.5.4 Issues Log

The Consultant shall consult with the Owner and other participants in the commissioning process regarding commissioning related issues that arise during the Construction Phase. The Consultant shall maintain and update an Issues Log regarding such issues and their resolution in accordance with the protocols established in the Commissioning Plan.

§ 2.5.5 Construction Checklists

The Consultant shall provide Construction Checklists for systems and assemblies to be commissioned that the Owner's contractors can use to verify that materials and components are on site, ready for installation, correctly installed, and in compliance with the Commissioning Plan and Commissioning Specifications. The Consultant shall distribute the Construction Checklists in accordance with the Commissioning Plan.

§ 2.5.6 Site Visits

Unless otherwise stated in the Commissioning Plan, the Consultant shall visit the site at intervals appropriate to the stage of construction to become generally familiar with the assembly, installation, and startup of systems and assemblies to be commissioned; however, the Consultant shall not have control over, charge of, or responsibility for the assembly, installation, and startup of such systems and assemblies. In accordance with the Commissioning Plan, the Consultant shall promptly report (1) known deviations from the Commissioning Specifications and Commissioning Plan and (2) defects and deficiencies observed by the Consultant.

§ 2.5.7 Functional Performance Tests

§ 2.5.7.1 Functional Performance Tests evaluate the function and operation of systems and assemblies to be commissioned by observation or monitoring. Prior to the commencement of Functional Performance Tests, the

Consultant shall review start-up reports, systems readiness test reports, test and balance plans and reports, and quality control test documents, for systems and assemblies to be commissioned, and report any observed deficiencies in accordance with the Commissioning Plan.

§ 2.5.7.2 The Consultant shall coordinate, observe, and document Functional Performance Tests for systems and assemblies to be commissioned, in accordance with the procedures set forth in the Commissioning Plan and Commissioning Specifications.

§ 2.5.7.3 The Consultant shall prepare written reports that summarize each Functional Performance Test. The Consultant shall document deficiencies identified during Functional Performance Tests in the Issues Log. Each deficiency shall be resolved by the appropriate party and, thereafter the Consultant shall direct, observe, and document re-testing to confirm that the deficiency has been corrected. The Consultant shall distribute the Functional Performance Test reports in accordance with the Commissioning Plan.

§ 2.6 DOCUMENTATION AND TRAINING PHASE SERVICES

§ 2.6.1 Documentation Review

The Consultant shall review operations and maintenance manuals, the Systems Manual, record documents, and warranties, for commissioned systems and assemblies, for conformance with the Commissioning Specifications. The Consultant shall report observed deficiencies in accordance with the Commissioning Plan.

§ 2.6.2 Systems Manual

Prior to the start of operator training and in accordance with the Commissioning Plan, the Consultant shall provide the Owner with a Systems Manual that describes how to operate and maintain the commissioned systems and assemblies. The Systems Manual shall consist of documents provided by the Owner's contractors and consultants, including operations and maintenance manuals, submittals, record drawings, specifications, certifications, and training documents.

§ 2.6.3 Operator Training

§ 2.6.3.1 The Consultant shall review contractor -provided information regarding operator training, and the schedule of training activities, for conformance with specification requirements for systems and assemblies to be commissioned. The Consultant shall report observed deficiencies in accordance with the Commissioning Plan.

§ 2.6.3.2 The Consultant shall maintain an operator training log for inclusion in the Commissioning Report. The operator training log will include the attendees' names, training dates, system or equipment on which training was performed, and the name, title, and contact information of the trainer.

§ 2.6.4 Commissioning Report

The Consultant shall prepare a Commissioning Report that summarizes the operation of the commissioned systems and assemblies and the Commissioning Services performed. The Commissioning Report shall include an executive summary, the Owner's Project Requirements, Basis of Design, the final Commissioning Plan, Commissioning Specifications, design review comments and resolutions, system readiness test reports, completed Construction Checklists, template Functional Performance Test procedure forms, completed Functional Performance Test reports, the Issues Log, the operator training plan and log, a description of required deferred Functional Performance Tests, and recommendations for ongoing commissioning. The Consultant shall distribute the Commissioning Report in accordance with the Commissioning Plan.

§ 2.6.5 Post Occupancy Review

The Consultant shall meet with the Owner prior to the expiration of the Owner's contractors' periods for correction of Work to review the operations and performance of the commissioned systems and assemblies, and to make recommendations to the Owner.

ARTICLE 3 SUPPLEMENTAL AND ADDITIONAL SERVICES

§ 3.1 Supplemental Services

§ 3.1.1 The Consultant shall provide the listed Supplemental Services only if specifically designated in the table below as the Consultant's responsibility. Unless otherwise specifically addressed in the Agreement, if neither the Owner nor the Consultant is designated, the parties agree that the listed Supplemental Service is not being provided for the Project.

(Designate the Consultant's Supplemental Services and the Owner's Supplemental Services required for the Project by indicating whether the Consultant or Owner shall be responsible for providing the identified Supplemental Service. Insert a description of the Supplemental Services in Section 3.1.2 below or attach the description of services as an exhibit to the Agreement.)

Supplemental Services	Responsibility (Consultant, Owner or Not Provided)
§ 3.1.1.1 Existing Facilities Surveys	
§ 3.1.1.2 Sustainable Design/Lifecycle Studies	
§ 3.1.1.3 Documentation required for Sustainability Certification	
§ 3.1.1.4 On-Site Project Representation	
§ 3.1.1.5 Additional Post-Occupancy Evaluations	
§ 3.1.1.6 Lessons Learned Workshop	
§ 3.1.1.7 Building Occupant Training	
§ 3.1.1.8 Seasonal and Deferred Functional Testing	
§ 3.1.1.9 Ongoing Commissioning	
§ 3.1.1.10 Fabricator or Manufacturer Facility Visit	
§ 3.1.1.11 Other Supplemental Services	

§ 3.1.2 Description of Supplemental Services

§ 3.1.2.1 A description of each Supplemental Service identified in Section 3.1.1 as the Consultant's responsibility is provided below.

(Describe in detail the Consultant's Supplemental Services identified in Section 3.1.1 or, if set forth in an exhibit, identify the exhibit.)

« »

§ 3.1.2.2 A description of each Supplemental Service identified in Section 3.1.1 as the Owner's responsibility is provided below.

(Describe in detail the Owner's Supplemental Services identified in Section 3.1.1 or, if set forth in an exhibit, identify the exhibit.)

« »

§ 3.2 Consultant's Additional Services

§ 3.2.1 The Consultant shall provide Commissioning Services exceeding the limits set forth below as Additional Services. When the limits below are reached, the Consultant shall notify the Owner in writing:

- .1 « » (« ») commissioning meetings
- .2 « » (« ») Design Milestone Conference for Peer Review
- .3 « » (« ») Construction Phase meetings
- .4 « » (« ») Documentation and Training Phase meetings
- .5 « » (« ») commissioning related design reviews
- .6 « » (« ») reviews of each contractor submittal
- .7 « » (« ») operator training sessions
- .8 « » (« ») reviews of readiness test reports submitted by contractors
- .9 « » (« ») site visits during construction - Commissioning
- .10 « » (« ») site visit for Milestone Review Conference (One Engineer only)
- .11 « » (« ») Functional Performance Tests of each system and assemblies to be commissioned

§ 3.2.2 If the services covered by the Agreement have not been completed by « » (« »), the Agreement through no fault of the Consultant, extension of the Consultant's services beyond that time shall be compensated as Additional Services.

ARTICLE 4 OWNER'S RESPONSIBILITIES

§ 4.1 The Owner shall identify the systems and assemblies to be commissioned and, with the Consultant's assistance, provide written Owner's Project Requirements as described in Section 2.3.3.

§ 4.2 The Owner shall provide the Consultant information necessary to perform the Commissioning Services, which may include: the Basis of Design; design drawings; construction documents; record drawings; submittals; operation and maintenance manuals; master plans; operation costs; operation budgets; and pertinent records relative to historical building data, building equipment, furnishings, and repairs.

§ 4.3 The Owner shall provide access to the property, buildings, and personnel necessary for the Consultant to provide the Commissioning Services.

SECTION 019100 – GENERAL COMMISSIONING REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

- A. This section includes the administrative and procedural requirements for commissioning. Specific commissioning responsibilities of each subcontractor are outlined in that division of the specifications.
- B. The Commissioning Authority is employed by the Owner. The Commissioning Authority is an independent and knowledgeable third party hired to verify that the building operates as intended. The Commissioning Authority is knowledgeable in the systems being tested and will test all components, equipment and systems covered under the scope of commissioning to confirm that the building operates per the Contract Documents. The Commissioning Authority will inform the Owner and the Architect of the results of commissioning and will provide recommendations for commissioned systems and final acceptance of the mechanical systems commissioned.
- C. The Commissioning Authority directs and coordinates all commissioning activities. This section describes some, but not all, of the Commissioning Authority's responsibilities.
- D. The Contractors shall be responsible for participation in the commissioning process as outlined in this section, along with references and attachments throughout the Contract Documents.
- E. General commissioning is intended to achieve the following specific objectives:
 - 1. Verify that the work is completed in accordance with the contract documents. Site visits, meetings, reviewing of documentation, and testing of components and equipment are done as part of the verification process.
 - 2. Verify that the equipment is installed per the manufacturer's recommendations and instructions. Site visits and scheduled startup observations are done as part of this verification process.
 - 3. Verify that the equipment is adequately checked out prior to startup and startup procedures are performed. Manufacture startup forms are used as part of this verification process.
 - 4. Verify that components and equipment operate as a complete system through its required modes of operation. Functional tests and trend logging are used as part of this verification process.
 - 5. Verify that the building operators understand how the mechanical and electrical systems operate. Operation and maintenance material, as-build drawings, training, and a systems manual are used to achieve this.

- F. The Owner's Facilities Staff need to be informed and given the opportunity to participate actively in the commissioning process to ensure a complete and thorough turnover of systems once the project is complete.
- G. The Commissioning Authority is not authorized to modify, add to, or revoke the requirements of the Contract Documents. A change in the work can only be made as provided in the General Conditions.

1.2 SCOPE OF COMMISSIONING

- A. The following are to be commissioned:
 - 1. Architectural Systems: None
 - 2. Mechanical HVAC Systems: Air Handling Units, Fuel Oil Tank System, Motorized Damper Controls, Variable Air Volume Boxes, Exhaust Fans, Split Systems, Air Curtain, Hydronic Unit Heaters, Baseboard Radiation Heaters, Linear Fan Terminal Units, Humidifiers, HVAC System Integration, Building Automation System.
 - 3. Mechanical Plumbing Systems: Water Softener with RO and UV System, Dental Vacuum Pump, Dental Air Compressor, Medical Gas Alarm Panels, Oil Fired Hydronic Heating System, Electric Hydronic Heating System, Snow Melt System, Domestic Hot Water Heating System Including Recirculation Pumps, Laundry Booster Water Heater, and Sump Pump.
 - 4. Electrical Systems: Generators, EMDP, ATSS, Lighting System, Medical Equipment Power Supply System, Transformers
 - 5. Electronic Safety and Security: Security System, Life Safety System
 - 6. Communications: Nurse Call System
 - 7. Renewable Energy Systems: None
- B. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.
- C. LEED Requirements: None

1.3 RELATED REQUIREMENTS

- A. Drawings and general provisions of contract documents.
- B. Division 1 specification sections applicable to related scope of work outlined above.
- C. Division 22 specification sections identify the requirements for plumbing systems relating to the installation of equipment and systems, particularly with respect to equipment and system testing, start-up and performance demonstration/observation.
- D. Division 23 specification sections identify the requirements for mechanical systems relating to the installation of equipment and systems, particularly with respect to equipment and system testing, start-up and performance demonstration/observation.

- E. Division 26 specification sections identify the requirements for electrical systems relating to the installation of equipment and systems, particularly with respect to equipment and system testing, start-up and performance demonstration/observation.

1.4 TERMS

- A. Acceptable Performance: A component or system being able to meet specified design parameters under actual load, including satisfactory documented completion of all functional performance tests, control system trending, and resolution of outstanding issues.
- B. Commissioning Authority: An independent and knowledgeable party hired to verify that the systems achieve acceptable performance. The person performing the testing of the system. This person is knowledgeable in the systems being tested.
- C. Commissioning Team: The term used to define the overall group associated with performing commissioning work, including designated representatives of the Owner, Facilities Staff, Design Professionals, Construction Team, and the Commissioning Authority.
- D. Construction Team: The term used to define the overall group responsible for performing the work required to comply with the Contract Documents, including the Construction Manager, Contractor, the Mechanical Contractor and associated subcontractors, and the Electrical Contractor and associates' subcontractors.
- E. Design Intent: The ideas and documentation behind design decisions that were made to meet the Owner's project requirements. The design intent describes the systems, components, conditions and methods to provide a fully functioning building.
- F. Functional Performance Testing: Full range of checks, tests and demonstrations carried out to determine that all components, sub-systems, systems, and interfaces between the systems function in accordance with the Contract Documents. In this context, function includes all modes and sequences of control and operation, all interlocks and conditional control responses, and all specified responses to abnormal emergency conditions.
- G. Performance Period: The time when the system is operating under normal design operating conditions while trend data and occupant feedback is being gathered.
- H. Trend Analysis: The review of system performance under normal operation using data gathered over an interval of time to verify the system is performing per design intent.

1.5 SUBMITTALS

- A. Administrative requirements for submittal procedures:

1. For each division being commissioned a complete submittal package needs to be issued by the Contractor to the Commissioning Authority. This package will be kept by the Commissioning Authority.
 2. Submittals indicated as "Draft" are intended for the use of the Commissioning Authority in preparation of System Check-off Forms and/or Functional Test requirements. Submit in electronic format (Adobe PDF preferred).
 3. As soon as possible after submittals made to Architect are approved, submit copy of approved submittal to the Commissioning Authority.
- B. Manufacturers to submit electronic copies of all manufacturer-provided instructions that are shipped with the equipment as soon as the equipment is delivered.
- C. Product Data: If submittals do not include the following, submit electronic copies as soon as possible:
1. Manufacturer's product data, cut sheets, and shop drawings.
 2. Manufacturer's installation instructions.
 3. Startup, operating, and troubleshooting procedures.
 4. Fan and pump curves.
 5. Factory test reports.
 6. Warranty information, including details of Owner's responsibilities in regard to keeping warranties in force.
- D. Contractor to supply startup plans and reports.
- E. Contractor system check-off forms, if being used.
- 1.6 DUTIES OF OWNER
- A. Assign and schedule facility operators as needed to participate in commissioning activates.
- B. Assign and schedule facility operators as needed to participate in training activates.
- 1.7 DUTIES OF DESIGNERS
- A. Provide copies of all project documentation giving contractual design changes.
- B. Provide design input for changes initiated by the commissioning process that are required to achieve the desired performance.
- C. Review the commissioning documentation and provide comments as necessary.
- D. Coordinate installation progress inspections and punch listing efforts with the Commissioning Agent

1.8 DUTIES OF CONTRACTORS

- A. Incorporate commissioning activities into the overall construction schedule and supply a systems startup plan. The systems plan should outline how the items in the schedule have been coordinated so that all the components of each system will be ready at the same time for a complete startup of each system.
- B. Coordinate participation of the Mechanical, Electrical, Controls, Security, Fire Alarm and TAB Contractors in the commissioning process as needed.
- C. Collect and provide to the Commissioning Authority specification required documentation as requested and outlined in the Web Based Commissioning Field Notebook.
- D. Review the Commissioning Field Notebook, Commissioning Plan, Project Communication Reports, and Issues Resolution Log and submit comments to the Commissioning Authority as needed.
- E. Provide equipment submittals for systems to be commissioned to the Commissioning Authority.
- F. Develop a system-by-system commissioning schedule for all equipment start up and commissioning activities. This schedule needs integrated into the Construction Progress Schedule. The schedule needs to include equipment installation, equipment start-up, building clean-up for equipment operation, testing of the environmental control point-to-point, testing and balancing, functional performance testing, and performance period into the commissioning schedule and major milestones by Subcontractors that impact the commissioning process. These items include power to equipment, gas to equipment, and system flushing of equipment.
- G. Manage, track, and complete the Web Based Commissioning Field Notebook, including commissioning related specification requirements.
- H. Verify that coordination, installation, quality control, and final testing have been completed such that installed systems and equipment comply with construction documents.
- I. Provide Commissioning Authority with controls system wiring diagrams and narrative sequences of operation in time for use in preparing the functional test procedures.
- J. Participate in any efforts to finalize sequences of operations with Owner, Designers, and Commissioning Authority.
- K. In a timely manner, address issues identified during construction that may affect the commissioning process or final system performance.
- L. Participate in commissioning meetings with the Commissioning Authority.

- M. Provide schedule of activities, forms, and other documentation to the Commissioning Authority and Owner's Representative at least two (2) weeks minimum prior to any startup or testing required by the Contract Documents.
- N. Provide preliminary TAB report, indicating all actual field values recorded, field notes, and outstanding deficiencies, to the Commissioning Authority prior to initiation of back checking of TAB work. These reports shall be incorporated on the Web Based Commissioning Field Notebook.
- O. Coordinate the required A/E, Commissioning Authority and Owner's Representative testing participation and approval procedures, after verifying that pretests have been satisfactorily conducted and final tests are ready to be performed.
- P. Provide qualified personnel for participation in site inspections, commissioning tests, including seasonal testing required and warranty end testing required after the initial commissioning.
- Q. Provide engineering and technical expertise to oversee and direct the correction of deficiencies found during the commissioning process.
- R. Note any inconsistencies or deficiencies in system operations and enforce system compliance or recommend to the Commissioning Authority, Owner's Representative and A/E modifications to system design, which will enhance system performance.
- S. In the event that a functional test fails, the cause of failure shall be determined and rectified as soon as possible, and then retested. If more than two functional tests of the same system(s) are required, all costs for additional testing may be borne by the Contractor, at the Owner's discretion.
- T. Operate equipment and systems, as required, for functional performance testing. This includes but is not limited to; manipulating the appropriate controls systems to achieve the expected response for the functional test procedure.
- U. Participate in the fine-tuning or troubleshooting of system performance if either of these measures becomes necessary.
- V. Review operation and maintenance information and as-build drawings provided by the various subcontractors and vendors for verification, organization, and distribution. Report any discrepancies to Commissioning Authority and the Owner's Representative.
- W. Submit complete operation and maintenance information, and as-built drawings in electronic form to the Commissioning Authority for review. (Adobe PDF preferred)
- X. Obtain all documentation from completed installation audit forms, startup forms, and functional performance tests and send to the Commissioning Agent for review/approval and assembly on the Web Based Commissioning Field Notebook.
- Y. Oversee and provide training for the systems specified in all specification Divisions with coordination by the Mechanical and Electrical Subcontractors.

- Z. Provide documentation of training for the systems specified.

1.9 DUTIES OF COMMISSIONING AUTHORITY

- A. Organize and lead the commissioning team.
- B. Formal communication with the Contractor will be through approved project channels. It is expected, however, that informal communication and coordination will be conducted directly with the sub-contractors. As the Owner's commissioning representative, it is expected that the Commissioning Authority will communicate directly with A/E, as may be appropriate.
- C. All communications will be directed to the Owner's Representative regarding commissioning activities, progress, issues, systems performance, and schedules.
- D. Review the Contractor submittals, and Contract Documents relative to the systems to be commissioned.
- E. Develop the commissioning plan.
- F. Develop the Web Based Commissioning Field Notebook for use by the Contractor.
- G. Organize a commissioning kickoff meeting and present the commissioning plan to the Commissioning Team.
- H. Review the commissioning schedule and systems startup plans. Provide feedback on expected durations of commissioning activities as they are included in the construction schedule.
- I. Coordinate, via the Architect, participation of the Owner's Personnel who will be involved in the maintaining of the equipment, components, and system operations so that they are able to participate in performance verification, training and any commissioning activities that the Owner requests.
- J. Develop test procedures and forms for documentation of all equipment tests, system functional tests, and cross system functional tests. Test procedures shall be in accordance with equipment manufacturer's recommendations, where applicable. Test procedures shall fully describe system configuration and operation being tested. The procedures shall be appropriately documented so that another party can repeat the test with virtually identical results.
- K. Perform construction installation inspections as installation progress, start-up activities, and verify system installation quality and readiness for testing. A site observation report will be supplied to document inconsistencies or deficiencies in system operations and system compliance.
- L. Review all Contractor completed commissioning documentation required by the Contract Documents including site observation reports, startup plans, and start-up

forms for the actual equipment and systems as installed by subcontractors, vendors, etc.

- M. Review and perform a 10 percent back-check of the preliminary TAB Report. Supply comments from review and back-check of the TAB Report.
- N. Direct, assisted and verify satisfactory completion of component, equipment, systems and inter-systems functional performance tests with the required assistance from the Contractor.
- O. Maintain the commissioning deficiency log by incorporating items documented in project communication reports from site observations, document reviews and functional testing. Document resolution of deficiencies identified through the commissioning process.
- P. Review Contractor Operations & Maintenance Manuals for commissioned equipment and systems.
- Q. Review as-build drawings provided by the various subcontractors and vendors in reference to commissioned equipment.
- R. Verify training for commissioned equipment and systems is provided to the Owner.
- S. Develop the final commissioning report.

PART 2 PRODUCTS

2.1 TEST EQUIPMENT

- A. The Contractor will provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.
- B. Calibration Tolerances: The Contractor will provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:
 - 1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 1 deg F and resolution of ± 0.5 deg F.
 - 2. Pressure Sensors: Accuracy of ± 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.
 - 3. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.
- C. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment,

tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.

- D. Independent equipment and software for monitoring flows, currents, status, pressures, etc. of equipment that is required for Functional Tests will be provided by the Contractor. The Commissioning Authority may supply equipment as needed. Any test equipment used will not become the property of the Owner unless outlined specifically in the contract documents.

PART 3 EXECUTION

3.1 COMMISSIONING PROCESS

- A. Examine joints indicated to receive acoustical joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting performance of the Work.
- B. Contract Document Review
 - 1. The Commissioning Authority will review the Contract Documents to develop the commissioning plan and the functional performance tests.
- C. Commissioning Plan
 - 1. The Commissioning Authority will develop a commissioning plan for the project. The commissioning plan is a tool through which the commissioning process is described and incorporates the Owner, Designers, Contractor and Commissioning Authority's rolls relative to the commissioning process. The commissioning plan will include the following:
 - a. Purpose of commissioning.
 - b. Detail the commissioning process.
 - c. Identify commissioning team members.
 - d. Include a commissioning team organization chart.
 - e. Define commissioning team member responsibilities.
 - f. Describe functional test procedures.
 - g. Outline systems to be commissioned.
 - h. Provide the commissioning tack time intervals to be used in the project schedule.
 - 2. Contractor is responsible for compliance with the Commissioning Plan.
- D. Contractor Submittal Review
 - 1. In preparation for development of functional test procedures, the Commissioning Authority will review Contractor submittals for commissioned equipment and systems.

2. The Commissioning Authority will review Contractor submittals for commissioned equipment and systems for conformity with the design intent and any nuances' of the equipment.

E. Web Based Commissioning Field Notebook

1. The Commissioning Authority will develop a Web Based Commissioning Field Notebook to be used and completed by the Contractor. The platform will identify and track all pertinent commissioning documentation required during the installation, start-up, and checkout phases. The platform will be maintained by the Commissioning Agent and available for the Commissioning Team. The platform provides a central location for the Subcontractors and Commissioning Authority to identify, copy, and organize all pertinent commissioning information. The Web Based Commissioning Field Notebook will contain:
 - a. Table of contents for the notebook's contents.
 - b. Commissioning plan for Contractor field reference.
 - c. Hyperlinks for each system and required commissioning document required by the contractor.
 - d. Commissioning project communication reports, deficiency logs, schedule information, or any other documentation provided by the Commissioning Authority.

F. Commissioning Kickoff Meeting

1. The commissioning plan will be presented to the Commissioning Team during a commissioning kickoff meeting. The Commissioning Team will review the plan and provide comments to the Commissioning Authority. The Commissioning Authority will incorporate appropriate comments into the plan and a updated commissioning plan will be distributed to the Commissioning Team.
2. The Commissioning Field Notebook will be presented to the Contractor during the commissioning kickoff meeting. Instruction for its use will be conveyed during the meeting.

G. Commissioning Schedule

1. Contractor to incorporate commissioning activities into the overall construction schedule. If construction is phased, commissioning activities are to be included in all phases of the schedule. The schedule defines the milestones and conditions that must be achieved before functional testing can commence. The schedule also includes the expected duration of the various tasks. The Commissioning Authority will provide the Contractor with expected durations of commissioning activities.
2. Commissioning activities to be included in the overall construction schedule include, but are not limited to:
 - a. Power to equipment complete.
 - b. Equipment installation complete.
 - c. Building clean for equipment operation.
 - d. Mechanical equipment start-up.

- e. Controls system graphics fully operational.
- f. Testing, adjusting, and balancing.
- g. Functional performance testing.
- h. Performance period.
- i. Operations & Maintenance Manual review.
- j. Owner personnel training.

H. Functional Test Procedures

1. The Commissioning Authority will develop functional test procedures for each system being commissioned, multiple systems will be included in a single test if the systems are identical or near-identical. Each system on the test will be verified only parts of the sequence of operations will be sampled after the sequence has been fully tested on one system. The functional tests outline the process for testing the building's systems. Functional tests verify the performance of equipment and confirm the adherence to the design intent.
2. Functional test procedures include, but are not limited to, the following:
 - a. Verification of testing, adjusting and balancing performance.
 - b. Verification of the performance of automatic controls in all seasonal modes.
 - c. Verification of the performance of a HVAC system.
 - d. Verification of the performance of electrical systems.
 - e. Verification of the performance of plumbing systems.
 - f. Verification of the performance of all life safety devices and systems as they interface with the HVAC systems.
 - g. Verification of the response of automated controls to alarms, fire alarm input, and power failures.
 - h. Verification of all security systems components and response.
 - i. Verification of trending capabilities of the automated controls system.
3. The Contractor will review the functional tests for completeness and that equipment is tested in all possible conditions even if not specified in Construction Documents but noted in design intent.

I. Commissioning Meetings

1. Commissioning meetings will be held periodically during the construction process to review the status of the construction and commissioning work, update and further develop construction and testing schedules, and the completion of required paperwork needed for commissioning. Attendance by the Construction Team is required for commissioning meetings.
2. Commissioning meetings will be coordinated by the Contractor. Meeting minutes will be developed and maintained by the Commissioning Authority.

J. Installation Inspections

1. During the course of construction, the Commissioning Authority will perform installation inspections for commissioned equipment and systems. Deficiencies will be noted and conveyed in project communication reports that are distributed

through the formal lines of communication. Efforts will also be made to verbally inform the appropriate Commissioning Team members.

K. Project Communication Reports

1. In addition to the commissioning deficiency log a project communication reports will be used to deliver all other commissioning activities performed by the Commissioning Authority. Project communication reports will be issued to the Owner and distributed through the formal lines of communication to the Contractor and key members of the Commissioning Team to document apparent deficiencies identified during examination of design and construction documents, daily activities on-site, installation deficiencies, and successful or unsuccessful functional testing results.

L. Functional Testing

1. Functional testing is intended to begin upon completion of a system. The Commissioning Authority will not begin the functional testing process until each system is complete and documented. If possible, testing may proceed prior to the completion of systems and/or sub-systems if expediting this work is in the best interests of the Owner. Testing prior to system completion will have a cost impact.
2. Functional testing is performed by the Contractor and witnessed by the Commissioning Authority to verify proper sequencing, operation, and performance of installed equipment and systems under realistic operating conditions. As tests are successfully completed, systems will be deemed acceptable by the Commissioning Authority.
3. The Contractor is responsible for coordinating participation of Subcontractors in functional testing.
4. Some tests may need to be performed later, after substantial completion, due to partial occupancy, equipment, seasonal requirements, design or other site conditions; performance of these tests remains the Contractor's responsibility regardless of timing.
5. For security, communication and fire alarm systems the installing contractor will be responsible for providing point-to-point documentation and functional test documentation. The Commissioning Authority will witness testing of these systems.
6. The Contractor needs to provide skilled technicians to execute starting of equipment and to execute the Functional Tests as directed by the Commissioning Authority. Ensure that they are available and present during the agreed upon schedules and for sufficient duration to complete the necessary tests, adjustments and problem-solving.
7. The Contractor needs to provide all necessary materials and system modifications required to produce the flows, pressures, temperatures, and conditions necessary to execute the test according to the specified conditions. At completion of the test, return all affected equipment and systems to their pretest condition.

8. Manual Testing: Use handheld instruments, control system readouts, or direct observation to verify performance. See part for testing equipment responsibilities.
9. Simulating Conditions: Artificially create the necessary condition for the purpose of testing the response of a system; for example apply hot air to a space sensor using a hair dryer to see the response in a VAV box.
10. Simulating Signals: Disconnect the sensor and use a signal generator to send an amperage, resistance or pressure to the transducer and control system to simulate the sensor value.
11. Over-Writing Values: Change the sensor value known to the control system in the control system to see the response of the system; for example, change the outside air temperature value from 50 degrees F to 75 degrees F to verify economizer operation.
12. Indirect Indicators: Remote indicators of a response or condition, such as a reading from a control system screen reporting a damper to be 100 percent closed, are considered indirect indicators.
13. Monitoring: Record parameters (flow, current, status, pressure, etc.) of equipment operation using data loggers or the trending capabilities of the relevant control systems; where monitoring of specific points is called for in Functional Test Procedures:
 - a. All points that are monitored by the relevant control system shall be trended by Contractor; at the Commissioning Authority's request, Contractor shall trend up to 20 percent more points than specified at no extra charge.
 - b. Other points will be monitored as needed by the Commissioning Authority using data loggers.
 - c. At the option of the Commissioning Authority, some control system monitoring may be replaced with data logger monitoring.
 - d. Provide hard copies of monitored data in columnar format with time down left column and at least 5 columns of point values on same page.
 - e. Graphical output is desirable and is required for all output if the system can produce it.
 - f. Monitoring may be used to augment manual testing.

M. Issues Resolution Log

1. As deficiencies are discovered they will be tracked using the issues resolution log. Each deficiency on the log will have an assigned number. The logged item will include the date it was discovered, the date it was resolved, the party assigned responsibility, the system affected, a description of the deficiency, a recommended solution, and what was done to address the deficiency. The log will be maintained by the Commissioning Authority.

N. Corrective Measures

1. Contractor is responsible for correction of deficiencies and retesting at no extra cost to Owner; if a deficiency is not corrected and retested immediately, the Commissioning Authority will place the deficiency in the issues resolution log.

- a. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents or does not perform properly.
- b. When the deficiency has been corrected, the Contractor needs to notify the Commissioning Authority that the item is ready to be retested; the Commissioning Authority will reschedule the test and the Contractor shall retest.
- c. Identical or Near-Identical Items: If ten percent, or three, whichever is greater, of identical or near-identical items fail to perform due to material or manufacturing defect, all items will be considered defective; provide a proposal for correction within 2 weeks after notification of defect, including provision for testing sample installations prior to replacement of all items.
- d. The Contractor will be allowed one retest by the Commissioning Authority after initial testing of the equipment. If equipment fails testing a second time the Contractor shall bear the cost of Owner and Commissioning Authority's time for any additional retesting.
- e. Contractor shall bear the cost of Owner and Commissioning Authority's time for any retesting if the test failed due to failure to execute the relevant System Check-Off Form and/or System Readiness Form correctly and any subsequent retests.

O. Performance Period

1. Upon successful completion of functional test procedures, a performance period of 15 consecutive calendar days shall commence on first day following the last performance test. This period shall be completed prior to final acceptance of the project. In the event of failure to meet standard of performance during any initiated performance period, it is not required that one 15-calendar day period expire in order for another performance period to begin.
2. If system operation demonstrates continuing compliance with specified requirements for a period of 15 consecutive calendar days from commencement date of performance period, it shall be deemed to have met the standard of performance.
3. Equipment will not be accepted by the Owner and final payment will not be made by the Owner until acceptable performance is met.
4. Contractor shall provide Commissioning Authority with trend logs of the system performance for the control variables and set points in each control process for the specified time increments requested by the Commissioning Authority.
5. Systems shall be first tested as independent building systems followed by tests of systems tied into Owner's systems. Types of Owner's systems include, but are not limited to, central plant heating and cooling, off-site security/alarm monitoring, and campus automated controls systems.
6. Upon Contractor's completion of the requirements of the commissioning plan, the successful completion of the performance period, and receipt of the required documentation, the Commissioning Authority shall provide the Owner with a statement of acceptable performance.

P. Operations & Maintenance Manual Review

1. The Contractor shall assemble Operations & Maintenance Manuals as described in other sections of these Contract Documents.
2. The Commissioning Authority will review the Operations & Maintenance Manuals of commissioned systems and equipment once they have been reviewed and accepted by the Designer.
3. The Contractor shall supply the Operations & Maintenance Manuals to the Owner prior to training. This allows operators time to review the manuals prior to training to help improve the training process and help the training to be focused on areas where clarifications are needed by the operators.

Q. Training

1. A training plan will be developed by the Contractor outlining equipment that requires training. The plan shall include who will perform the training, when the training will occur, and the required duration of the training. Once the training plan is developed the Owner will provide a list of the appropriate personnel attending the training.
2. Training sessions should cover using the Operations & Maintenance Manuals and as-built drawings assembled by the Contractor as tools for understanding and troubleshooting components, equipment and systems.
3. Detailed requirements for training and instruction are contained in other sections of these Contract Documents. The Contractor needs to document what training has taken place and those that have attended training.

R. Commissioning Report

1. Once acceptable performance is achieved, the Commissioning Authority will complete a commissioning report. The report shall include:
 - a. A commissioning activity executive summary.
 - b. The finalized commissioning plan.
 - c. The completed Commissioning Field Notebook. Which includes the system readiness forms, system check-off forms and requested commissioning related documentation.
 - d. Completed functional test procedures.
 - e. Commissioning project communication reports.
 - f. Issues resolution log.
 - g. Performance period trend log analyses.

3.2 SYSTEMS TO BE COMMISSIONED

A. Systems and equipment to be functionally tested are outlined in the Construction Documents. Examples of the kind of equipment to be tested include, but is not limited to:

1. Air-handling systems, including air handling units, heat recovery ventilators, terminal units, fans, coils, dampers, valves, motor controllers, fire alarm interface devices, and automated control components.

2. Heating water system, including boilers, boiler controllers, pumps control valves motor controllers, natural gas delivery system, air separators, expansion tanks, chemical treatment, make-up water, fire alarm interface, and automated control components.
3. Auxiliary heating and cooling equipment, including air conditioning/condensing units; unit heaters, fire alarm interface devices, and automated control components.
4. Domestic water systems, including domestic water heaters and associated pumps, expansion tanks, and automated control components.
5. Automated control system, including equipment operational sequences, point-to-point checkout, control component calibration, metering, graphics, alarming, fire alarm interface, and trending.
6. Refrigeration rack systems.
7. Lighting system controls, including switches, photocells, occupancy sensors, timers and other devices affecting lighting system operation.
8. Electrical metering system including current transformers, data acquisition system, data storage and associated controls required to monitor equipment.
9. Renewable energy systems, including wind, solar and biomass.

3.3 CALIBRATION

- A. Calibrate all field-installed temperature, relative humidity, carbon monoxide, carbon dioxide, and pressure sensors and gages, and all actuators (dampers and valves) on each piece of equipment shall be calibrated. Sensors installed in the unit at the factory with calibration certification provided need not be field calibrated. Copies of the calibration certificates will need to be placed in the commissioning field notebook for the piece of equipment the sensor is being used with.
- B. Calibrate using the methods described below; alternate methods may be used, if approved by Owner beforehand. See PART 2 for test instrument requirements. Record methods used on the relevant system check-off form or other suitable forms, documenting initial, intermediate and final results.
- C. All Sensors:
 1. Verify that sensor location is appropriate and away from potential causes of erratic operation.
 2. Verify that sensors with shielded cable are grounded only at one end.
 3. For sensor pairs that are used to determine a temperature or pressure difference, for temperature make sure they are reading within 0.2 deg F of each other, and for pressure, within tolerance equal to 2 percent of the reading of each other.
 4. Tolerances for critical applications may be tighter.
- D. Sensors Without Transmitters Standard Application:
 1. Make a reading with a calibrated test instrument within 6 inches of the site sensor.

2. Verify that the sensor reading, via the permanent thermostat, gage or building automation system, is within the tolerances in the table below of the instrument-measured value.
3. If not, install offset, calibrate, or replace sensor. If an offset is used this needs documented on the relevant system check-off form or other suitable forms.

E. Sensors With Transmitters - Standard Application.

1. Disconnect sensor.
2. Connect a signal generator in place of sensor.
3. Connect ammeter in series between transmitter and building automation system control panel.
4. Using manufacturer's resistance-temperature data, simulate minimum desired temperature.
5. Adjust transmitter potentiometer zero until 4 mA is read by the ammeter.
6. Repeat for the maximum temperature matching 20 mA to the potentiometer span or maximum and verify at the building automation system.
7. Record all values and recalibrate controller as necessary to conform with specified control ramps, reset schedules, proportional relationship, reset relationship and P/I reaction.
8. Reconnect sensor.
9. Make a reading with a calibrated test instrument within 6 inches of the site sensor.
10. Verify that the sensor reading, via the permanent thermostat, gage or building automation system, is within the tolerances in the table below of the instrument-measured value.
11. If not, replace sensor and repeat.
12. For pressure sensors, perform a similar process with a suitable signal generator.

F. Sensor Tolerances for Standard Applications: Plus/minus the following maximums:

1. Watthour, Voltage, Amperage: 1 percent of design.
2. Pressure, Air, Water, Gas: 2 percent of design.
3. Air Temperatures (Outside Air, Space Air, Duct Air): 1 deg F.
4. Relative Humidity: 4 percent of design.
5. Barometric Pressure: 0.5 inch of Hg.
6. Flow Rate, Air: 10 percent of design.
7. Flow Rate, Water: 4 percent of design.
8. AHU Wet Bulb and Dew Point: 2 deg F.

G. Critical Applications: For some applications more rigorous calibration techniques may be required for selected sensors. Describe any such methods used on an attached sheet.

H. Valve/Damper Stroke Setup and Check:

1. For all valve/damper actuator positions checked, verify the actual position against the control system readout.
2. Set pump/fan to normal operating mode.

3. Command valve/damper closed; visually verify that valve/damper is closed and adjust output zero signal as required.
 4. Command valve/damper to open; verify position is full open and adjust output signal as required.
 5. Command valve/damper to a few intermediate positions.
 6. If actual valve/damper position does not reasonably correspond, replace actuator, or add pilot positioner (for pneumatics).
- I. Isolation Valve or System Valve Leak Check: For valves not associated with coils.
1. With full pressure in the system, command valve closed.
 2. Use an ultrasonic flow meter, temperature differential, or pressure differential to detect flow or leakage.

END OF SECTION 019100

SECTION 220800 - PLUMBING COMMISSIONING

PART 1 GENERAL

1.1 SUMMARY

- A. The purpose of the section is to specify the Division 22 responsibilities and participation in the commissioning process. See Division 1, Section 019113, "General Commissioning Requirements," for Contractor-related commissioning requirements.
- B. Organization of the commissioning program is primarily the responsibility of the Commissioning Authority. Execution of the program is primarily the responsibility of the Contractor with support from the Division 22 Sub-contractor.
- C. Division 22 Contractor shall cooperate with the Commissioning Authority in the following manner:
 - 1. Allow sufficient time before final completion dates so that installation verification, start-up, test, adjust and balance, controls point-to-point checkout, and functional testing can be accomplished for all needed equipment. Tasks need to be shown on project schedule.
 - 2. Complete startup of the plumbing equipment and systems. Provide copies of completed manufactures startup forms.
 - 3. Assistance in testing, adjusting and balancing back check.
 - 4. Assemble a copy of all records of Code Authority inspections and approvals to be submitted to the Commissioning Authority.
 - 5. Providing qualified personnel to operate equipment and systems as required to assist the Commissioning Authority with functional testing to verify performance of equipment/system.
 - 6. Providing equipment, materials, and labor necessary to correct deficiencies found during the commissioning process which fulfill contract and warranty requirements. Deficiencies need to be corrected without undue delay.
 - 7. Put all plumbing systems and equipment into full operation and continue the operation of the same during each working day of commissioning.
 - 8. Provide operation and maintenance information and as-built drawings so that they can be used during functional testing and training.
 - 9. Providing training for the systems specified in Division 22 with coordination of Owner by the Contractor.

1.2 SCOPE OF COMMISSIONING

- A. The following are to be commissioned:
 - 1. Domestic Hot Water Systems, Including Circulation Pumps.
 - 2. Backflow Preventer
 - 3. Water Softener.
 - 4. Reverse Osmosis Unit, Including Tank Float.
 - 5. UV Light.
 - 6. Reverse Osmosis Circulation Pumps.
 - 7. Dental Air Compressor.
 - 8. Dental Vacuum Pump.
 - 9. Elevator Sump Pump.
- B. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.
- C. LEED Requirements: None

1.3 RELATED REQUIREMENTS

- A. Drawings and general provisions of Contract Documents.
- B. Division 1 Specification Sections applicable to related Scope of Work outlined above.
- C. Division 22 Specification Sections identify the requirements for plumbing systems relating to the installation of plumbing equipment and systems, particularly with respect to equipment and system testing, start-up and performance demonstration/observation.

1.4 TERMS

- A. Acceptable Performance: A component or system being able to meet specified design parameters under actual load, including satisfactory documented completion of all functional performance tests, control system trending, and resolution of outstanding issues.
- B. Commissioning Authority: An independent and knowledgeable party hired to verify that the systems achieve acceptable performance. The person performing the testing of the system. This person is knowledgeable in the systems being tested.
- C. Commissioning Team: The term used to define the overall group associated with performing commissioning work, including designated representatives of the Owner, Facilities Staff, Design Professionals, Construction Team, and the Commissioning Authority.

- D. Construction Team: The term used to define the overall group responsible for performing the work required to comply with the Contract Documents, including the Construction Manager, Contractor, the Mechanical Contractor and associated subcontractors, the Electrical Contractor, and associated subcontractors.
- E. Design Intent: The ideas and documentation behind design decisions that were made to meet the Owner's project requirements. The design intent describes the systems, components, conditions, and methods to provide a fully functioning building.
- F. Functional Performance Testing: Full range of checks, tests and demonstrations carried out to determine that all components, sub-systems, systems, and interfaces between the systems function in accordance with the Contract Documents. In this context, function includes all modes and sequences of control and operation, all interlocks and conditional control responses, and all specified responses to abnormal emergency conditions.

PART 2 PRODUCTS

2.1 TEST EQUIPMENT

- A. The Contractor will provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.
- B. Calibration Tolerances: The Contractor will provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:
 - 1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 1 deg F and resolution of ± 0.5 deg F.
 - 2. Pressure Sensors: Accuracy of ± 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.
 - 3. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.
- C. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.
- D. Independent equipment and software for monitoring flows, currents, status, pressures, etc. of equipment that is required for Functional Tests will be provided by the Contractor or Commissioning Authority and will not become the property of the Owner.

PART 3 EXECUTION

3.1 GENERAL

- A. The Contractor and Contractors shall be responsible for performing all procedures presented in the specification and contract drawings, unless otherwise specified. The Commissioning Agent will witness system start up and functional performance for all systems listed in this division.

3.2 WORK PRIOR TO FUNCTIONAL TESTING

- A. A commissioning plan will be developed by the Commissioning Authority and approved by the Owner's Representative.
 - 1. Division 22 is obligated to assist the Commissioning Authority in preparing the commissioning plan by providing all necessary information pertaining to the actual equipment and installation.
 - 2. If system modifications/clarifications are called for in the contractual requirements of this and related sections of work, they will be made at no additional cost to the Owner.
 - 3. If Contractor-initiated system changes have been made that alter the commissioning process, the Contractor will notify the Owner's Representative for approval.
- B. Specific responsibilities of Division 22 are as follows:
 - 1. Participate in any efforts to finalize sequences of operations with Owner, Designers, and Commissioning Authority. The schedule should allow sufficient time before final completion dates so that installation verification, start-up, test, adjust and balance, controls point-to-point checkout, and functional testing can be accomplished for all needed equipment. Tasks need to be shown on project schedule.
 - 2. Normal start-up services required to bring each system and sub-system into a fully operational state per the contract documents and related directives, clarifications, change orders, etc. This includes motor rotational check, cleaning, filling, purging, control sequences of operation, leak testing, full-load and part-load performance, etc.
 - 3. Collect and provide to the Commissioning Authority specification required documentation as requested and outlined in the Commissioning Field Notebook.
 - 4. Review the Commissioning Field Notebook, Commissioning Plan, Project Communication Reports, and Issues Resolution Log and submit comments to the Commissioning Authority as needed.
 - 5. Provide equipment submittals for systems to be commissioned to the Commissioning Authority.
 - 6. Provide Commissioning Authority with controls system wiring diagrams and narrative sequences of operation in time for use in preparing the functional test procedures.
 - 7. Participate in commissioning meetings with the Commissioning Authority.

8. Provide preliminary TAB report, indicating all actual field values recorded, field notes, and outstanding deficiencies, to the Commissioning Authority prior to initiation of back checking of TAB work. These reports shall be incorporated in the Commissioning Field Notebook. Assistance in testing, adjusting and balancing back check.
9. Provide schedule of activities, forms, and other documentation to the Commissioning Authority and Owner's Representative at least two (2) weeks minimum prior to any startup or testing required by the Contract Documents.
10. Assemble a copy of all records of Code Authority inspections and approvals to be submitted to the Commissioning Authority. Upload documentation to Web Based Commissioning Field Notebook.
11. Provide qualified personnel for participation in site inspections, commissioning tests, including seasonal testing required and warranty end testing required after the initial commissioning.
12. Provide engineering and technical expertise to oversee and direct the correction of deficiencies found during the commissioning process. This includes providing equipment, materials, and labor necessary to correct deficiencies found during the commissioning process which fulfill contract and warranty requirements. Deficiencies need to be corrected without undue delay.
13. Put all plumbing systems and equipment into full operation and continue the operation of the same during each working day of commissioning.
14. Note any inconsistencies or deficiencies in system operations and enforce system compliance or recommend to the Commissioning Authority, Owner's Representative and A/E modifications to system design, which will enhance system performance.
15. In the event that a functional test fails, the cause of failure shall be determined and rectified as soon as possible, and then retested. If more than two functional tests of the same system(s) are required, all costs for additional testing may be borne by the Contractor, at the Owner's discretion.
16. Operate equipment and systems, as required, for functional performance testing. This includes but is not limited to; manipulating the appropriate controls systems to achieve the expected response for the functional test procedure.
17. Participate in the fine-tuning or troubleshooting of system performance if either of these measures becomes necessary.
18. Review operation and maintenance information and as-build drawings provided by the various subcontractors and vendors for verification, organization, and distribution. Report any discrepancies to Commissioning Authority and the Owner's Representative.
19. Submit complete operation and maintenance information, and as-built drawings in electronic form to the Commissioning Authority for review. (Adobe PDF preferred)
20. Obtain all documentation from completed startup forms, and functional performance tests and assemble the components in the Commissioning Field Notebook and submit the completed notebook to the Commissioning Authority for review and approval.
21. Oversee and provide training for the systems specified in all specification Divisions with coordination by the Mechanical and Electrical Subcontractors.
22. Provide documentation of training for the systems specified.

- C. Factory start-up services for key equipment and systems specified in Division 22. The Division 22 Contractor shall coordinate this work with the manufacturer and the Commissioning Authority.
- D. The Contractor will not begin the functional testing until each system is completely installed and system readiness form has been approved by the Commissioning Authority.
 - 1. Functional testing is intended to begin upon completion of a system. The Commissioning Authority will not begin the functional testing process until each system is complete and documented. If possible, testing may proceed prior to the completion of systems and/or sub-systems if expediting this work is in the best interests of the Owner. Testing prior to system completion will have a cost impact. Start of functional testing before system completion will not relieve Division 22 from completing those systems as per the schedule.
 - 2. Red-lined as-built drawings shall be available during commissioning.

3.3 PARTICIPATION IN FUNCTIONAL TESTING

- A. Provide skilled technicians to start-up and debug all systems within the Division 22 work (particularly with controls equipment). These same technicians shall be made available to assist the Commissioning Authority in completing the commissioning program as it relates to each system and their technical specialty. Work schedules, time required for testing, etc., will be requested by the Commissioning Authority and coordinated by the Contractor. Contractor will ensure the qualified technician(s) are available and present during the agreed upon schedules, and of sufficient duration to complete the necessary tests, adjustments and/or problem resolutions.
 - 1. The Commissioning Authority reserves the right to judge the appropriateness and qualifications of the technicians relative to each item of equipment, system, and/or sub-system. Qualifications of technicians include expert knowledge relative to the specific equipment involved, adequate documentation and tools to service/commission the equipment, and an attitude/willingness to work with the Commissioning Authority to get the job done. A liaison or intermediary between the Commissioning Authority with a qualified factory representative does not constitute the availability of a qualified technician for purposes of this work.
- B. System problems and discrepancies may require additional technician time which shall be made available for the subsequent commissioning periods until required system performance is obtained.
- C. The objective of functional performance testing is to advance the building systems from a state of substantial completion to full dynamic operation in accordance with the specified design requirements and design intent.
- D. The Commissioning Authority shall direct system-testing protocols which, when implemented by the Contractor, will allow the Commissioning Authority to observe, evaluate, identify deficiencies, recommend modifications, tune, and document the

systems and systems' equipment performance over a range control modes of operation.

3.4 WORK TO RESOLVE DEFICIENCIES

- A. Maladjustments, misapplied equipment, and/or deficient performance under varying loads will result in a system that does not meet Acceptable Performance. Correction of work will be completed under the direction of the Owner's Representative and Architect, with input from the Contractor, Equipment Supplier, and Commissioning Authority. Whereas all members will have input and the opportunity to discuss, debate, and work out problems, the Architect/Engineer-of-Record will have final jurisdiction on the necessary work to be done to achieve performance and/or design intent.
- B. Corrective work shall be completed in a timely fashion to permit timely completion of the commissioning process.
 - 1. Experimentation to render system performance will be permitted.
 - a. If the Architect deems the experimentation work to be ineffective or untimely as it relates to the commissioning process, the Architect will notify the Owner indicating the nature of the problem, expected steps to be taken, and the deadline for completion of activities.
 - b. If deadlines pass without resolution of the problem, the Owner reserves the right to obtain supplementary services and/or equipment to resolve the problem.
 - c. Costs incurred to solve the problem in an expeditious manner will be the Contractor's responsibility.

3.5 PERFORMANCE PERIOD

- A. Upon successful completion of functional test procedures, a performance period of 15 consecutive calendar days shall commence on first day following the last performance test. This period shall be completed prior to final acceptance of the project. In event of failure to meet standard of performance during any initiated performance period, it is not required that one 15-calendar day period expire in order for another performance period to begin.
- B. If equipment or system operation demonstrates continuing compliance with specified requirements for a period of 15 consecutive calendar days from commencement date of performance period, it shall be deemed to have met the standard of performance.
- C. Equipment will not be accepted by the Owner and final payment will not be made by the Owner until acceptable performance is met.

3.6 RETESTING AND RECOMMISSIONING

- A. Contractor is responsible for correction of deficiencies and retesting at no extra cost to Owner; if a deficiency is not corrected and retested immediately, the Commissioning Authority will document the deficiency.
 - 1. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents or does not perform properly.
 - 2. When the deficiency has been corrected, the Contractor needs to notify the Commissioning Authority that the item is ready to be retested; the Commissioning Authority will reschedule the test and the Contractor shall retest.
 - 3. Identical or Near-Identical Items: If ten percent, or three, whichever is greater, of identical or near-identical items fail to perform due to material or manufacturing defect, all items will be considered defective; provide a proposal for correction within 2 weeks after notification of defect, including provision for testing sample installations prior to replacement of all items.
 - 4. The Contractor will be allowed one retest by the Commissioning Authority after initial testing of the equipment. If equipment fails testing a second time the Contractor shall bear the cost of Owner and Commissioning Authority's time for any additional retesting.
 - 5. Contractor shall bear the cost of Owner and Commissioning Authority's time for any retesting if the test failed due to failure to execute the relevant system readiness forms and/or system check-out forms correctly and any subsequent retests.

3.7 TRAINING

- A. The Division 22 Contractor will be required to participate in the training of the Owner's engineering and maintenance staff for each mechanical system and the related components. Training may be conducted in a classroom setting, with system and component documentation, and suitable classroom training aids, or in the field with the specific equipment. The type of training will be per the Owner's option.
- B. A training plan will be developed by the Contractor outlining equipment that requires training. The plan shall include who will perform the training, when the training will occur, and the required duration of the training. Once the training plan is developed the Owner will provide a list of the appropriate personnel attending the training.
- C. Training sessions should cover using the Operations & Maintenance Manuals and as-built drawings assembled by the Contractor as tools for understanding and troubleshooting components, equipment, and systems. This material needs to be supplied to the Owner a minimum of two weeks prior to training taking place to allow participants time to review the material. This helps focus training needs of the O & M staff.
- D. Detailed requirements for training and instruction are contained in other sections of these Contract Documents. The Contractor needs to document what training has taken place and those that have attended training.

3.8 MISCELLANEOUS SUPPORT

- A. Division 22 shall remove and replace covers of plumbing equipment, open access panels, etc., to permit Contractor, Architect Owner's Representative and Commissioning Authority to observe equipment and controllers provided. Furnish ladders and flashlights as necessary.

END OF SECTION 220800

SECTION 230800 - MECHANICAL COMMISSIONING

PART 1 GENERAL

1.1 SUMMARY

- A. The purpose of this section is to specify the Division 23 responsibilities and participation in the commissioning process. See Division 1, Section 019113, "General Commissioning Requirements," for Contractor-related commissioning requirements.
- B. Organization of the commissioning program is primarily the responsibility of the Commissioning Authority. Execution of the program is primarily the responsibility of the Contractor with support from the Division 23 Sub-contractor.
- C. Division 23 Contractor shall cooperate with the Commissioning Authority in the following manner:
 - 1. Allow sufficient time before final completion dates so that installation verification, start-up, test, adjust and balance, controls point-to-point checkout, and functional testing can be accomplished for all needed equipment. Tasks need to be shown on project schedule.
 - 2. Complete startup of the mechanical equipment and systems. Provide copies of completed manufactures startup forms.
 - 3. Assistance in testing, adjusting and balancing back check.
 - 4. Assemble a copy of all records of Code Authority inspections and approvals to be submitted to the Commissioning Authority.
 - 5. Providing qualified personnel to operate equipment and systems as required to assist the Commissioning Authority with functional testing to verify performance of equipment/system.
 - 6. Providing equipment, materials, and labor necessary to correct deficiencies found during the commissioning process which fulfill contract and warranty requirements. Deficiencies need to be corrected without undue delay.
 - 7. Put all heating, ventilating, and air conditioning systems and equipment into full operation, and continue the operation of the same during each working day of commissioning.
 - 8. Provide operation and maintenance information and as-built drawings so that they can be used during functional testing and training.
 - 9. Providing training for the systems specified in Division 23 with coordination of Owner by the Contractor.

1.2 SCOPE OF COMMISSIONING

- A. The following are to be commissioned:
 - 1. Air Handling Units

2. Variable Air Volume Boxes
3. Air Curtain
4. Humidifiers
5. Split Systems.
6. Unit Heater
7. Exhaust Fans
8. Fuel Oil Tank System
9. Baseboard Radiation Heaters
10. Linear Fan Terminal Units
11. Chillers
12. Oil Fired Hydronic Heating System, Including Circulation Pumps.
13. Electric Hydronic Heating System, Including Circulation Pumps.
14. Snow Melt System, Including Circulation Pumps
15. Building Automation System.

- B. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.
- C. LEED Requirements: None

1.3 RELATED REQUIREMENTS

- A. Drawings and general provisions of contract documents.
- B. Division 1 specification sections applicable to related scope of work outlined above.
- C. Division 23 specification sections identify the requirements for HVAC systems relating to the installation of mechanical equipment and systems, particularly with respect to equipment and system testing, start-up and performance demonstration/observation.

1.4 TERMS

- A. Acceptable Performance: A component or system being able to meet specified design parameters under actual load, including satisfactory documented completion of all functional performance tests, control system trending, and resolution of outstanding issues.
- B. Commissioning Authority: An independent and knowledgeable party hired to verify that the systems achieve acceptable performance. The person performing the testing of the system. This person is knowledgeable in the systems being tested.
- C. Commissioning Team: The term used to define the overall group associated with performing commissioning work, including designated representatives of the Owner, Facilities Staff, Design Professionals, Construction Team, and the Commissioning Authority.
- D. Construction Team: The term used to define the overall group responsible for performing the work required to comply with the Contract Documents, including the

Construction Manager, Contractor, the Mechanical Contractor and associated subcontractors, the Electrical Contractor, and associated subcontractors.

- E. Design Intent: The ideas and documentation behind design decisions that were made to meet the Owner's project requirements. The design intent describes the systems, components, conditions, and methods to provide a fully functioning building.
- F. Functional Performance Testing: Full range of checks, tests and demonstrations carried out to determine that all components, sub-systems, systems, and interfaces between the systems function in accordance with the Contract Documents. In this context, function includes all modes and sequences of control and operation, all interlocks and conditional control responses, and all specified responses to abnormal emergency conditions.

PART 2 PRODUCTS

2.1 TEST EQUIPMENT

- A. The Contractor will provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.
- B. Calibration Tolerances: The Contractor will provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:
 - 1. Temperature Sensors and Digital Thermometers: Certified calibration within past year to accuracy of 1 deg F and resolution of ± 0.5 deg F.
 - 2. Pressure Sensors: Accuracy of ± 2.0 percent of the value range being measured (not full range of meter), calibrated within the last year.
 - 3. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.
- C. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.
- D. Independent equipment and software for monitoring flows, currents, status, pressures, etc. of equipment that is required for Functional Tests will be provided by the Contractor or Commissioning Authority and will not become the property of the Owner.

PART 3 EXECUTION

3.1 GENERAL

- A. The Contractor and Contractors shall be responsible for performing all procedures presented in the specification and contract drawings, unless otherwise specified. The Commissioning Agent will witness system start up and functional performance for all systems listed in this division.

3.2 WORK PRIOR TO FUNCTIONAL TESTING

- A. A commissioning plan will be developed by the Commissioning Authority and approved by the Owner's Representative.
 - 1. Division 23 is obligated to assist the Commissioning Authority in preparing the commissioning plan by providing all necessary information pertaining to the actual equipment and installation.
 - 2. If system modifications/clarifications are called for in the contractual requirements of this and related sections of work, they will be made at no additional cost to the Owner.
 - 3. If Contractor-initiated system changes have been made that alter the commissioning process, the Contractor will notify the Owner's Representative for approval.
- B. Specific responsibilities of Division 23 are as follows:
 - 1. Participate in any efforts to finalize sequences of operations with Owner, Designers, and Commissioning Authority. The schedule should allow sufficient time before final completion dates so that installation verification, start-up, test, adjust and balance, controls point-to-point checkout, and functional testing can be accomplished for all needed equipment. Tasks need to be shown on project schedule.
 - 2. Normal start-up services required to bring each system and sub-system into a fully operational state per the contract documents and related directives, clarifications, change orders, etc. This includes motor rotational check, cleaning, filling, purging, control sequences of operation, leak testing, full-load and part-load performance, etc.
 - 3. Collect and provide to the Commissioning Authority specification required documentation as requested and outlined in the Commissioning Field Notebook.
 - 4. Review the Commissioning Field Notebook, Commissioning Plan, Project Communication Reports, and Issues Resolution Log and submit comments to the Commissioning Authority as needed.
 - 5. Provide equipment submittals for systems to be commissioned to the Commissioning Authority.
 - 6. Provide Commissioning Authority with controls system wiring diagrams and narrative sequences of operation in time for use in preparing the functional test procedures.
 - 7. Participate in commissioning meetings with the Commissioning Authority.

8. Provide preliminary TAB report, indicating all actual field values recorded, field notes, and outstanding deficiencies, to the Commissioning Authority prior to initiation of back checking of TAB work. These reports shall be incorporated in the Commissioning Field Notebook. Assistance in testing, adjusting and balancing back check.
9. Provide schedule of activities, forms, and other documentation to the Commissioning Authority and Owner's Representative at least two (2) weeks minimum prior to any startup or testing required by the Contract Documents.
10. Assemble a copy of all records of Code Authority inspections and approvals to be submitted to the Commissioning Authority. Upload documentation to Web Based Commissioning Field Notebook.
11. Provide qualified personnel for participation in site inspections, commissioning tests, including seasonal testing required and warranty end testing required after the initial commissioning.
12. Provide engineering and technical expertise to oversee and direct the correction of deficiencies found during the commissioning process. This includes providing equipment, materials, and labor necessary to correct deficiencies found during the commissioning process which fulfill contract and warranty requirements. Deficiencies need to be corrected without undue delay.
13. Put all heating, ventilating, and air conditioning systems and equipment into full operation, and continue the operation of the same during each working day of commissioning.
14. Note any inconsistencies or deficiencies in system operations and enforce system compliance or recommend to the Commissioning Authority, Owner's Representative and A/E modifications to system design, which will enhance system performance.
15. In the event that a functional test fails, the cause of failure shall be determined and rectified as soon as possible, and then retested. If more than two functional tests of the same system(s) are required, all costs for additional testing may be borne by the Contractor, at the Owner's discretion.
16. Operate equipment and systems, as required, for functional performance testing. This includes but is not limited to; manipulating the appropriate controls systems to achieve the expected response for the functional test procedure.
17. Participate in the fine-tuning or troubleshooting of system performance if either of these measures becomes necessary.
18. Review operation and maintenance information and as-built drawings provided by the various subcontractors and vendors for verification, organization, and distribution. Report any discrepancies to Commissioning Authority and the Owner's Representative.
19. Submit complete operation and maintenance information, and as-built drawings in electronic form to the Commissioning Authority for review. (Adobe PDF preferred)
20. Obtain all documentation from completed installation audit forms, startup forms, and functional performance tests and assemble the components in the Commissioning Field Notebook and submit the completed notebook to the Commissioning Authority for review and approval.
21. Oversee and provide training for the systems specified in all specification Divisions with coordination by the Mechanical and Electrical Subcontractors.
22. Provide documentation of training for the systems specified.

- C. Factory start-up services for key equipment and systems specified in Division 23. The Division 23 Contractor shall coordinate this work with the manufacturer and the Commissioning Authority.
- D. The Contractor will not begin the functional testing until each system is completely installed and system readiness form has been approved by the Commissioning Authority.
 - 1. Functional testing is intended to begin upon completion of a system. The Commissioning Authority will not begin the functional testing process until each system is complete and documented. If possible, testing may proceed prior to the completion of systems and/or sub-systems if expediting this work is in the best interests of the Owner. Testing prior to system completion will have a cost impact. Start of functional testing before system completion will not relieve Division 23 from completing those systems as per the schedule.
 - 2. Red-lined as-built drawings shall be available during commissioning.

3.3 PARTICIPATION IN FUNCTIONAL TESTING

- A. Provide skilled technicians to start-up and debug all systems within the Division 23 work (particularly with controls equipment). These same technicians shall be made available to assist the Commissioning Authority in completing the commissioning program as it relates to each system and their technical specialty. Work schedules, time required for testing, etc., will be requested by the Commissioning Authority and coordinated by the Contractor. Contractor will ensure the qualified technician(s) are available and present during the agreed upon schedules, and of sufficient duration to complete the necessary tests, adjustments and/or problem resolutions.
 - 1. The Commissioning Authority reserves the right to judge the appropriateness and qualifications of the technicians relative to each item of equipment, system, and/or sub-system. Qualifications of technicians include expert knowledge relative to the specific equipment involved, adequate documentation and tools to service/commission the equipment, and an attitude/willingness to work with the Commissioning Authority to get the job done. A liaison or intermediary between the Commissioning Authority with a qualified factory representative does not constitute the availability of a qualified technician for purposes of this work.
- B. System problems and discrepancies may require additional technician time which shall be made available for the subsequent commissioning periods until required system performance is obtained.
- C. The objective of functional performance testing is to advance the building systems from a state of substantial completion to full dynamic operation in accordance with the specified design requirements and design intent.
- D. The Commissioning Authority shall direct system-testing protocols which, when implemented by the Contractor, will allow the Commissioning Authority to observe, evaluate, identify deficiencies, recommend modifications, tune, and document the systems and systems' equipment performance over a range control mode of operation.

3.4 WORK TO RESOLVE DEFICIENCIES

- A. Maladjustments, misapplied equipment, and/or deficient performance under varying loads will result in a system that does not meet Acceptable Performance. Correction of work will be completed under the direction of the Owner's Representative and Architect, with input from the Contractor, Equipment Supplier, and Commissioning Authority. Whereas all members will have input and the opportunity to discuss, debate, and work out problems, the Architect/Engineer-of-Record will have final jurisdiction on the necessary work to be done to achieve performance and/or design intent.
- B. Corrective work shall be completed in a timely fashion to permit timely completion of the commissioning process.
 - 1. Experimentation to render system performance will be permitted.
 - a. If the Architect deems the experimentation work to be ineffective or untimely as it relates to the commissioning process, the Architect will notify the Owner indicating the nature of the problem, expected steps to be taken, and the deadline for completion of activities.
 - b. If deadlines pass without resolution of the problem, the Owner reserves the right to obtain supplementary services and/or equipment to resolve the problem.
 - c. Costs incurred to solve the problem in an expeditious manner will be the Contractor's responsibility.

3.5 PERFORMANCE PERIOD

- A. Upon successful completion of functional test procedures, a performance period of 15 consecutive calendar days shall commence on first day following the last performance test. This period shall be completed prior to final acceptance of the project. In event of failure to meet standard of performance during any initiated performance period, it is not required that one 15-calendar day period expire in order for another performance period to begin.
- B. If equipment or system operation demonstrates continuing compliance with specified requirements for a period of 15 consecutive calendar days from commencement date of performance period, it shall be deemed to have met the standard of performance.
- C. Equipment will not be accepted by the Owner and final payment will not be made by the Owner until acceptable performance is met.

3.6 RETESTING AND RECOMMISSIONING

- A. Contractor is responsible for correction of deficiencies and retesting at no extra cost to Owner; if a deficiency is not corrected and retested immediately, the Commissioning Authority will document the deficiency.

1. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents or does not perform properly.
2. When the deficiency has been corrected, the Contractor needs to notify the Commissioning Authority that the item is ready to be retested; the Commissioning Authority will reschedule the test and the Contractor shall retest.
3. Identical or Near-Identical Items: If ten percent, or three, whichever is greater, of identical or near-identical items fail to perform due to material or manufacturing defect, all items will be considered defective; provide a proposal for correction within 2 weeks after notification of defect, including provision for testing sample installations prior to replacement of all items.
4. The Contractor will be allowed one retest by the Commissioning Authority after initial testing of the equipment. If equipment fails testing a second time the Contractor shall bear the cost of Owner and Commissioning Authority's time for any additional retesting.
5. Contractor shall bear the cost of Owner and Commissioning Authority's time for any retesting if the test failed due to failure to execute the relevant system readiness forms and/or system check-out forms correctly and any subsequent retests.

3.7 TRAINING

- A. The Division 23 Contractor will be required to participate in the training of the Owner's engineering and maintenance staff for each mechanical system and the related components. Training may be conducted in a classroom setting, with system and component documentation, and suitable classroom training aids, or in the field with the specific equipment. The type of training will be per the Owner's option.
- B. A training plan will be developed by the Contractor outlining equipment that requires training. The plan shall include who will perform the training, when the training will occur, and the required duration of the training. Once the training plan is developed the Owner will provide a list of the appropriate personnel attending the training.
- C. Training sessions should cover using the Operations & Maintenance Manuals and as-built drawings assembled by the Contractor as tools for understanding and troubleshooting components, equipment, and systems. This material needs to be supplied to the Owner a minimum of two weeks prior to training taking place to allow participants time to review the material. This helps focus training needs of the O & M staff.
- D. Detailed requirements for training and instruction are contained in other sections of these Contract Documents. The Contractor needs to document what training has taken place and those that have attended training.

3.8 MISCELLANEOUS SUPPORT

- A. Division 23 shall remove and replace covers of mechanical equipment, open access panels, etc., to permit Contractor, Architect Owner's Representative and

Commissioning Authority to observe equipment and controllers provided. Furnish ladders and flashlights as necessary.

END OF SECTION 230800

SECTION 260800 - ELECTRICAL COMMISSIONING

PART 1 GENERAL

1.1 SUMMARY

- A. The purpose of this section is to specify the Division 26 responsibilities and participation in the commissioning process. See Division 1, Section 019113, "General Commissioning Requirements," for Contractor-related commissioning requirements.
- B. Organization of the commissioning program is primarily the responsibility of the Commissioning Authority. Execution of the program is primarily the responsibility of the Contractor with support from the Division 26 Sub-contractor.
- C. Division 26 Contractor shall cooperate with the Commissioning Authority in the following manner:
 - 1. Allow sufficient time before final completion dates so that installation verification, start-up, test, adjust and balance, controls point-to-point checkout, and functional testing can be accomplished for all needed equipment. Tasks need to be shown on project schedule.
 - 2. Complete startup of the electrical equipment and systems. Provide copies of completed manufactures startup forms.
 - 3. Assistance in testing, adjusting and balancing back check.
 - 4. Assemble a copy of all records of Code Authority inspections and approvals to be submitted to the Commissioning Authority.
 - 5. Providing qualified personnel to operate equipment and systems as required to assist the Commissioning Authority with functional testing to verify performance of equipment/system.
 - 6. Providing equipment, materials, and labor necessary to correct deficiencies found during the commissioning process which fulfill contract and warranty requirements. Deficiencies need to be corrected without undue delay.
 - 7. Put all electrical systems and equipment into full operation and continue the operation of the same during each working day of commissioning.
 - 8. Provide operation and maintenance information and as-built drawings so that they can be used during functional testing and training.
 - 9. Providing training for the systems specified in Division 26 with coordination of Owner by the Contractor.

1.2 SCOPE OF COMMISSIONING

- A. The following are to be commissioned:
 - 1. Generators to include fuel oil system operation
 - 2. ATSS

3. EMDP
 4. Lighting controls.
 5. Nurse Call System
 6. Security System
 7. Medical Equipment Power Supply System
 8. Transformers
- B. Other equipment and systems explicitly identified elsewhere in Contract Documents as requiring commissioning.
- C. LEED Requirements: None

1.3 RELATED REQUIREMENTS

- A. Drawings and general provisions of contract documents.
- B. Division 1 specification sections applicable to related scope of work outlined above.
- C. Division 26 specification sections identify the requirements for electrical systems relating to the installation of electrical equipment and systems, particularly with respect to equipment and system testing, start-up and performance demonstration/observation.

1.4 TERMS

- A. Acceptable Performance: A component or system being able to meet specified design parameters under actual load, including satisfactory documented completion of all functional performance tests, control system trending, and resolution of outstanding issues.
- B. Commissioning Authority: An independent and knowledgeable party hired to verify that the systems achieve acceptable performance. The person performing the testing of the system. This person is knowledgeable in the systems being tested.
- C. Commissioning Team: The term used to define the overall group associated with performing commissioning work, including designated representatives of the Owner, Facilities Staff, Design Professionals, Construction Team, and the Commissioning Authority.
- D. Construction Team: The term used to define the overall group responsible for performing the work required to comply with the Contract Documents, including the Construction Manager, Contractor, the Mechanical Contractor and associated subcontractors, the Electrical Contractor and associated subcontractors.
- E. Design Intent: The ideas and documentation behind design decisions that were made to meet the Owner's project requirements. The design intent describes the systems, components, conditions and methods to provide a fully functioning building.

- F. Functional Performance Testing: Full range of checks, tests and demonstrations carried out to determine that all components, sub-systems, systems, and interfaces between the systems function in accordance with the Contract Documents. In this context, function includes all modes and sequences of control and operation, all interlocks and conditional control responses, and all specified responses to abnormal emergency conditions.

PART 2 PRODUCTS

2.1 TEST EQUIPMENT

- A. The Contractor will provide all standard testing equipment required to perform startup and initial checkout and required Functional Testing; unless otherwise noted such testing equipment will NOT become the property of Owner.
- B. Calibration Tolerances: The Contractor will provide testing equipment of sufficient quality and accuracy to test and/or measure system performance with the tolerances specified. If not otherwise noted, the following minimum requirements apply:
 - 1. Watthour, Voltage, Amperage: 1 percent of design.
 - 2. Calibration: According to the manufacturer's recommended intervals and when dropped or damaged; affix calibration tags or keep certificates readily available for inspection.
- C. Equipment-Specific Tools: Where special testing equipment, tools and instruments are specific to a piece of equipment, are only available from the vendor, and are required in order to accomplish startup or Functional Testing, provide such equipment, tools, and instruments as part of the work at no extra cost to Owner; such equipment, tools, and instruments are to become the property of Owner.
- D. Independent equipment and software for monitoring flows, currents, status, pressures, etc. of equipment that is required for Functional Tests will be provided by the Contractor or Commissioning Authority and will not become the property of the Owner.

PART 3 EXECUTION

3.1 GENERAL

- A. The Contractor and Contractors shall be responsible for performing all procedures presented in the specification and contract drawings, unless otherwise specified. The Commissioning Agent will witness system start up and functional performance for all systems listed in this division.

3.2 WORK PRIOR TO FUNCTIONAL TESTING

- A. A commissioning plan will be developed by the Commissioning Authority and approved by the Owner's Representative.
 - 1. Division 26 is obligated to assist the Commissioning Authority in preparing the commissioning plan by providing all necessary information pertaining to the actual equipment and installation.
 - 2. If system modifications/clarifications are called for in the contractual requirements of this and related sections of work, they will be made at no additional cost to the Owner.
 - 3. If Contractor-initiated system changes have been made that alter the commissioning process, the Contractor will notify the Owner's Representative for approval.
- B. Specific responsibilities of Division 26 are as follows:
 - 1. Participate in any efforts to finalize sequences of operations with Owner, Designers, and Commissioning Authority. The schedule should allow sufficient time before final completion dates so that installation verification, start-up, controls point-to-point checkout, and functional testing can be accomplished for all needed equipment. Tasks need to be shown on project schedule.
 - 2. Normal start-up services required to bring each system and sub-system into a fully operational state per the contract documents and related directives, clarifications, change orders, etc. This includes phase rotation check, cleaning, grounding, control sequences of operation, continuity testing, full-load and part-load performance, etc.
 - 3. Collect and provide to the Commissioning Authority specification required documentation as requested and outlined in the Commissioning Field Notebook.
 - 4. Review the Commissioning Field Notebook, Commissioning Plan, Project Communication Reports, and Issues Resolution Log and submit comments to the Commissioning Authority as needed.
 - 5. Provide equipment submittals for systems to be commissioned to the Commissioning Authority.
 - 6. Provide Commissioning Authority with controls system wiring diagrams and narrative sequences of operation in time for use in preparing the functional test procedures.
 - 7. Participate in commissioning meetings with the Commissioning Authority.
 - 8. Provide schedule of activities, forms, and other documentation to the Commissioning Authority and Owner's Representative at least two (2) weeks minimum prior to any startup or testing required by the Contract Documents.
 - 9. Assemble a copy of all records of Code Authority inspections and approvals to be submitted to the Commissioning Authority. Upload documentation to Web Based Commissioning Field Notebook.
 - 10. Issue System Readiness form for each set of equipment to the Commissioning Authority upon completion of all component installation, start-up documentation, system work and testing requirements per specification for all Contractors.

11. Provide qualified personnel for participation in site inspections, commissioning tests, including seasonal testing required and warranty end testing required after the initial commissioning.
 12. Provide engineering and technical expertise to oversee and direct the correction of deficiencies found during the commissioning process. This includes providing equipment, materials, and labor necessary to correct deficiencies found during the commissioning process which fulfill contract and warranty requirements. Deficiencies need to be corrected without undue delay.
 13. Put all electrical systems and equipment into full operation and continue the operation of the same during each working day of commissioning.
 14. Note any inconsistencies or deficiencies in system operations and enforce system compliance or recommend to the Commissioning Authority, Owner's Representative and A/E modifications to system design, which will enhance system performance.
 15. In the event that a functional test fails, the cause of failure shall be determined and rectified as soon as possible, and then retested. If more than two functional tests of the same system(s) are required, all costs for additional testing may be borne by the Contractor, at the Owner's discretion.
 16. Operate equipment and systems, as required, for functional performance testing. This includes but is not limited to; manipulating the appropriate controls systems to achieve the expected response for the functional test procedure.
 17. Participate in the fine-tuning or troubleshooting of system performance if either of these measures becomes necessary.
 18. Review operation and maintenance information and as-built drawings provided by the various subcontractors and vendors for verification, organization, and distribution. Report any discrepancies to Commissioning Authority and the Owner's Representative.
 19. Submit complete operation and maintenance information, and as-built drawings in electronic form to the Commissioning Authority for review. (Adobe PDF preferred)
 20. Obtain all documentation from completed installation audit forms, startup forms, and functional performance tests and assemble the components in the Commissioning Field Notebook and submit the completed notebook to the Commissioning Authority for review and approval.
 21. Oversee and provide training for the systems specified in all specification Divisions with coordination by the Mechanical and Electrical Subcontractors.
 22. Provide documentation of training for the systems specified.
- C. Factory start-up services for key equipment and systems specified in Division 26. The Division 26 Contractor shall coordinate this work with the manufacturer and the Commissioning Authority.
- D. The Contractor will not begin the functional testing until each system is completely installed and system readiness form has been approved by the Commissioning Authority.
1. Functional testing is intended to begin upon completion of a system. The Commissioning Authority will not begin the functional testing process until each system is complete and documented. If possible, testing may proceed prior to

the completion of systems and/or sub-systems if expediting this work is in the best interests of the Owner. Testing prior to system completion will have a cost impact. Start of functional testing before system completion will not relieve Division 26 from completing those systems as per the schedule.

2. Red-lined as-built drawings shall be available during commissioning.

3.3 PARTICIPATION IN FUNCTIONAL TESTING

- A. Provide skilled technicians to start-up and debug all systems within the Division 26 work (particularly with controls equipment). These same technicians shall be made available to assist the Commissioning Authority in completing the commissioning program as it relates to each system and their technical specialty. Work schedules, time required for testing, etc., will be requested by the Commissioning Authority and coordinated by the Contractor. Contractor will ensure the qualified technician(s) are available and present during the agreed upon schedules, and of sufficient duration to complete the necessary tests, adjustments and/or problem resolutions.
 1. The Commissioning Authority reserves the right to judge the appropriateness and qualifications of the technicians relative to each item of equipment, system, and/or sub-system. Qualifications of technicians include expert knowledge relative to the specific equipment involved, adequate documentation and tools to service/commission the equipment, and an attitude/willingness to work with the Commissioning Authority to get the job done. A liaison or intermediary between the Commissioning Authority with a qualified factory representative does not constitute the availability of a qualified technician for purposes of this work.
- B. System problems and discrepancies may require additional technician time which shall be made available for the subsequent commissioning periods until required system performance is obtained.
- C. The objective of functional performance testing is to advance the building systems from a state of substantial completion to full dynamic operation in accordance with the specified design requirements and design intent.
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3.4 WORK TO RESOLVE DEFICIENCIES

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- B. Corrective work shall be completed in a timely fashion to permit timely completion of the commissioning process.
 - 1. Experimentation to render system performance will be permitted.
 - a. If the Architect deems the experimentation work to be ineffective or untimely as it relates to the commissioning process, the Architect will notify the Owner indicating the nature of the problem, expected steps to be taken, and the deadline for completion of activities.
 - b. If deadlines pass without resolution of the problem, the Owner reserves the right to obtain supplementary services and/or equipment to resolve the problem.
 - c. Costs incurred to solve the problem in an expeditious manner will be the Contractor's responsibility.

3.5 PERFORMANCE PERIOD

- A. Upon successful completion of functional test procedures, a performance period of 15 consecutive calendar days shall commence on first day following the last performance test. This period shall be completed prior to final acceptance of the project. In event of failure to meet standard of performance during any initiated performance period, it is not required that one 15-calendar day period expire in order for another performance period to begin.
- B. If equipment or system operation demonstrates continuing compliance with specified requirements for a period of 15 consecutive calendar days from commencement date of performance period, it shall be deemed to have met the standard of performance.
- C. Equipment will not be accepted by the Owner and final payment will not be made by the Owner until acceptable performance is met.

3.6 RETESTING AND RECOMMISSIONING

- A. Contractor is responsible for correction of deficiencies and retesting at no extra cost to Owner; if a deficiency is not corrected and retested immediately, the Commissioning Authority will document the deficiency.
 - 1. Deficiencies are any condition in the installation or function of a component, piece of equipment or system that is not in compliance with the Contract Documents or does not perform properly.
 - 2. When the deficiency has been corrected, the Contractor needs to notify the Commissioning Authority that the item is ready to be retested; the Commissioning Authority will reschedule the test and the Contractor shall retest.
 - 3. Identical or Near-Identical Items: If ten percent, or three, whichever is greater, of identical or near-identical items fail to perform due to material or manufacturing defect, all items will be considered defective; provide a proposal for correction within 2 weeks after notification of defect, including provision for testing sample installations prior to replacement of all items.

4. The Contractor will be allowed one retest by the Commissioning Authority after initial testing of the equipment. If equipment fails testing a second time the Contractor shall bear the cost of Owner and Commissioning Authority's time for any additional retesting.
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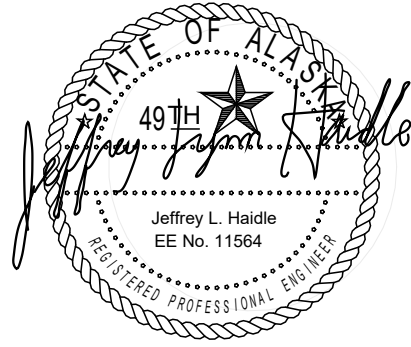
3.7 TRAINING

- A. The Division 26 Contractor will be required to participate in the training of the Owner's engineering and maintenance staff for each mechanical system and the related components. Training may be conducted in a classroom setting, with system and component documentation, and suitable classroom training aids, or in the field with the specific equipment. The type of training will be per the Owner's option.
- B. A training plan will be developed by the Contractor outlining equipment that requires training. The plan shall include who will perform the training, when the training will occur, and the required duration of the training. Once the training plan is developed the Owner will provide a list of the appropriate personnel attending the training.
- C. Training sessions should cover using the Operations & Maintenance Manuals and as-built drawings assembled by the Contractor as tools for understanding and troubleshooting components, equipment and systems. This material needs to be supplied to the Owner a minimum of two weeks prior to training taking place to allow participants time to review the material. This helps focus training needs of the O & M staff.
- D. Detailed requirements for training and instruction are contained in other sections of these Contract Documents. The Contractor needs to document what training has taken place and those that have attended training.

3.8 MISCELLANEOUS SUPPORT

- A. Division 26 shall remove and replace covers of electrical equipment, open access panels, etc., to permit Contractor, Architect Owner's Representative and Commissioning Authority to observe equipment and controllers provided. Furnish ladders and flashlights as necessary.

END OF SECTION 260800



MECHANICAL CONTROL EQUIPMENT SCHEDULE

NOTES: 1) PROVIDE TOGGLE SWITCH IN TREATMENT ROOM FOR CONTROL OF EXHAUST FAN 2) PROVIDE TOGGLE SWITCH IN TECH LAB A106 FOR CONTROL OF EXHAUST FAN 3) CONNECT TO EXTERIOR CU UNIT																				
										NF = NON-FUSIBLE F = FUSIBLE (60A2P = 60 AMP, 2 POLE FUSIBLE) COMB FVNR = COMBINATION FULL LOAD NON REVERSING					EC = ELECTRICAL CONTRACTOR TC = TEMPERATURE CONTRACTOR MC = MECHANICAL CONTRACTOR					
UNIT	ITEMS BY OTHERS						STARTER				DISCONNECT				CIRCUIT #	PANEL	CONTROL DEVICES	INSTALLED BY	FINISHED BY	NOTES
	DESCRIPTION	VOLTAGE	PHASE	FLA	MCA	VA	HP	DESCRIPTION	NEMA ENCLOSURE	NEMA SIZE	MOCPP	DESCRIPTION	NEMA ENCLOSURE	MOCPP						
AC-1	MINI SPLIT INTERIOR UNIT	208 V	1	2 A		500		TOGGLE WITH OVERLOADS	-	-	-	SEE STARTER	-	-	22.24	2E1L	TSTAT	TC	TC	3
AHU-1	AIR HANDLER	480 V	3	114 A	120A	95,066		MANUFACTURER PROVIDED VFD	-	-	-	200A3P - FUSED	3R	150A RK-5	1	2E1H	DDC	TC	TC	
AHU-2	AIR HANDLER	480 V	3	86 A		71,798		MANUFACTURER PROVIDED VFD	-	-	-	100A3P - FUSED	3R	100A RK-5	2	2E1H	DDC	TC	TC	
AHU-3	AIR HANDLER	480 V	3	5 A	6.8A	4,520.64		INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	7	2E1H	DDC	TC	TC	
ARC-1	AIR CURTAIN	480 V	3	15 A	18.9A	12,564.7		INTEGRAL TO UNIT	-	-	-	30A3P - NF	1	25A	17,19,21	1N3H	TC	TC	TC	
B-1	FUEL OIL BOILER	208 V	1	10 A	12.5A	2,080		INTEGRAL TO UNIT	-	-	-	30A2P - FUSED	1	15A RK-5	36,38	EDP1L	INTEGRAL CONTROLLER			
B-2	FUEL OIL BOILER	208 V	1	10 A	12.5A	2,080		INTEGRAL TO UNIT	-	-	-	30A2P - FUSED	1	15A RK-5	32,34	EDP1L	INTEGRAL CONTROLLER			
B-3	ELECTRIC BOILER	480 V	3	1443 A	13.75A	1,200,000	10	INTEGRAL TO UNIT	-	-	-	ENCLOSED CIRCUIT BREAKER	SEE RISER	SEE RISER	1	B3 MCB	INTEGRAL CONTROLLER			
BCP-1	BOILER PUMP	208 V	3	7 A	8.625A	2,484	1 1/2	COMB FVNR, F	1	00	15A	SEE STARTER	-	-	26,28,30	EDP1L	TC	TC	TC	
BCP-2	BOILER PUMP	208 V	3	7 A	8.625A	2,484	1 1/2	COMB FVNR, F	1	00	15A	SEE STARTER	-	-	20,22,24	EDP1L	TC	TC	TC	
BCP-3	BOILER PUMP	208 V	3	10 A	12A	3,456	3	COMB FVNR, F	1	0	20A	SEE STARTER	-	-	2,4,6	EDP1L	TC	TC	TC	
CH-1	CHILLER	480 V	3	143 A	179A	119,000		INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	3	2E1H	INTEGRAL			
CH-2	CHILLER	480 V	3	143 A	179A	119,000		INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	4	2E1H	INTEGRAL			
CU-1	MINI SPLIT EXTERIOR UNIT	208 V	1	18 A		3,860		INTEGRAL TO UNIT	-	-	-	40A2P - FUSED	3R	40A RK-5	22,24	2E1L	TSTAT	TC	TC	
CUH-1	CABINET UNIT HEATERS	120 V	1	2 A	3A	235.2		TOGGLE WITH OVERLOADS	1	-	15A	SEE STARTER	-	-	11	1N2L	TSTAT	TC	TC	
CUH-2	CABINET UNIT HEATERS	120 V	1	2 A	3A	235.2		TOGGLE WITH OVERLOADS	1	-	15A	SEE STARTER	-	-	40	1N1L	TSTAT	TC	TC	
CUH-3	CABINET UNIT HEATERS	120 V	1	2 A	3A	235.2		TOGGLE WITH OVERLOADS	1	-	15A	SEE STARTER	-	-	59	1N6L	TSTAT	TC	TC	
CUH-4	CABINET UNIT HEATERS	120 V	1	2 A	3A	235.2		TOGGLE WITH OVERLOADS	1	-	15A	SEE STARTER	-	-	35	2N1L	TSTAT	TC	TC	
CWP-1	CHILLED WATER PUMP	480 V	3	5 A	6A	3,989	3	INTEGRAL VFD W/ DISC	-	-	-	30A3P - FUSED	1	15A RK-5	7,9,11	1E1H	TC	TC	TC	
CWP-2	CHILLED WATER PUMP	480 V	3	5 A	6A	3,989	3	INTEGRAL VFD W/ DISC	-	-	-	30A3P - FUSED	1	15A RK-5	13,15,17	1E1H	TC	TC	TC	
CWP-3	CHILLED WATER PUMP	480 V	3	11 A	13.75A	9,141	7.5	INTEGRAL VFD W/ DISC	-	-	-	30A3P - FUSED	1	20A RK-5	8,10,12	1E1H	TC	TC	TC	
CWP-4	CHILLED WATER PUMP	480 V	3	11 A	13.75A	9,141	7.5	INTEGRAL VFD W/ DISC	-	-	-	30A3P - FUSED	1	20A RK-5	14,16,18	1E1H	TC	TC	TC	
DT-1	DAY TANK	120 V	1	10 A	12.5A	1,176		INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	1	EDP1L	INTEGRAL			
DVP-1	DENTAL VACUUM PUMP	208 V	1	11 A	14A	2,329		INTEGRAL TO UNIT	-	-	-	30A2P - FUSED	1	15A RK-5	23,25	EDP1L				
DWH-1	DOMESTIC WATER HEATER	480 V	3	197 A	246.3A	163,707		INTEGRAL TO UNIT	-	-	-	400A3P - FUSED	1	250A - RK5	1	EDP1H	INTEGRAL			
EF-1	EXHAUST FAN	120 V	1	10 A	12.25A	1,176	1/2	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	16	2E1L	TC	TC	TC	
EF-2	EXHAUST FAN	120 V	1	7 A	9A	864	1/3	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	2	2E1L	TC	TC	TC	
EF-3	EXHAUST FAN	120 V	1	10 A	12.25A	1,176	1/2	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	18	2E1L	TC	TC	TC	
EF-4	EXHAUST FAN	120 V	1	10 A	12.25A	1,176	1/2	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	20	2E1L	TC	TC	TC	
EF-5	EXHAUST FAN	120 V	1	7 A	9A	864	1/3	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	21	2E1L	TC	TC	TC	
EF-6	EXHAUST FAN	120 V	1	7 A	9A	864	1/3	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	5	2E1L	TC	TC	TC	
EF-7	EXHAUST FAN	120 V	1	7 A	9A	864	1/3	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	7	2E1L	TC	TC	TC	
EF-8	EXHAUST FAN	120 V	1	7 A	9A	864	1/3	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	19	2E1L	TC	TC	TC	
EF-9	EXHAUST FAN	120 V	1	6 A	7.25A	696	1/4	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	9	2E1L	TC	TC	TC	
EF-10	EXHAUST FAN	120 V	1	6 A	7.25A	696	1/4	TOGGLE WITH OVERLOADS	3R	-	15A	SEE STARTER	-	-	23	2E1L	WALL SWITCH	EC	EC	1
EF-11	EXHAUST FAN	120 V	1	10 A	12.25A	1,176	1/2	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	3	2E1L	WALL SWITCH	EC	EC	2
EH-1	ELECTRIC HUMIDIFIER	480 V	3	22 A	27.1A	18,016.1		INTEGRAL TO UNIT	-	-	-	30A3P - FUSED	1	30A RK-5	8,10,12	1N2H	HUMIDISTAT	TC	TC	
EH-2	ELECTRIC HUMIDIFIER	208 V	3	13 A	16.7A	4,809.6		INTEGRAL TO UNIT	-	-	-	30A3P - FUSED	1	20A RK-5	70,72,74	1N6L	HUMIDISTAT	TC	TC	
EH-3	ELECTRIC HUMIDIFIER	208 V	3	13 A	16.7A	4,809.6		INTEGRAL TO UNIT	-	-	-	30A3P - FUSED	1	20A RK-5	76,78,80	1N6L	HUMIDISTAT	TC	TC	
EH-4	ELECTRIC HUMIDIFIER	480 V	3	22 A	27.1A	18,016.1		INTEGRAL TO UNIT	-	-	-	30A3P - FUSED	1	30A RK-5	14,16,18	1N2H	HUMIDISTAT	TC	TC	
EH-5	ELECTRIC HUMIDIFIER	208 V	3	13 A	16.7A	4,809.8		INTEGRAL TO UNIT	-	-	-	30A3P - FUSED	1	20A RK-5	77,79,81	1N6L	HUMIDISTAT	TC	TC	
EH-6	ELECTRIC HUMIDIFIER	208 V	3	8 A	9.6A	1,597.4		TOGGLE WITH OVERLOADS	-	-	-	SEE STARTER	-	-	55,57	1N2L	HUMIDISTAT	TC	TC	
EUH-1	ELECTRIC UNIT HEATER	208 V	1	14 A	18A	3,000		INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	14,16	EDP1L	TSTAT	TC	TC	
EUH-2	ELECTRIC UNIT HEATER	208 V	1	14 A	18A	3,000		INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	13,15	EDP1L	TSTAT	TC	TC	
FOP-1	FUEL OIL PUMP	208 V	1	7 A	8.6A	1,435.2		INTEGRAL TO UNIT	-	-	-	CLASS 1 DIVISION 1, NF DISC	3R	15A	6,8	LSDP1L	IQ 1 PUMP CONTROLLER	EC	TC	
FOP-2	FUEL OIL PUMP	208 V	1	7 A	8.6A	1,435.2		INTEGRAL TO UNIT	-	-	-	CLASS 1 DIVISION 1, NF DISC	3R	15A	5,7	LSDP1L	IQ 2 PUMP CONTROLLER	EC	TC	
FOP-3	FUEL OIL PUMP	208 V	1	7 A	8.6A	1,435.2		INTEGRAL TO UNIT	-	-	-	CLASS 1 DIVISION 1, NF DISC	3R	15A	9,11	LSDP1L	IQ 3 PUMP CONTROLLER	EC	TC	
FOP-4	FUEL OIL PUMP	208 V	1	7 A	8.6A	1,435.2		INTEGRAL VSD	-	-	-	CLASS 1 DIVISION 1, NF DISC	3R	15A	10,12	LSDP1L	IQ 4 PUMP CONTROLLER	EC	TC	
GF-1	GLYCOL FEED UNIT	120 V	1	2 A	3A	180		INTEGRAL TO UNIT	-	-	-	CORD AND PLUG	-	-	45	1N1L	INTEGRAL			
GF-2	GLYCOL FEED UNIT	120 V	1	2 A	3A	180		INTEGRAL TO UNIT	-	-	-	CORD AND PLUG	-	-	65	1N2L	INTEGRAL			
GF-3	GLYCOL FEED UNIT	120 V	1	2 A	3A	180		INTEGRAL TO UNIT	-	-	-	CORD AND PLUG	-	-	13	1N3L	INTEGRAL			
GP-1	GLYCOL PUMP	480 V	3	5 A	5A	3,989		INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	5	2E1H	INTEGRAL			
GP-2	GLYCOL PUMP	480 V	3	5 A	5A	3,989		INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	6	2E1H	INTEGRAL			
HFF-1	HEPA FILTER	120 V	1	1 A	1.5A	140		TOGGLE WITH OVERLOADS	1	-	15A	SEE STARTER	-	-	19	EDP1L	INTEGRAL			
HFF-2	HEPA FILTER	120 V	1	1 A	1.5A	140		TOGGLE WITH OVERLOADS	1	-	15A	SEE STARTER	-	-	19	EDP1L	INTEGRAL			
HFF-3	HEPA FILTER	120 V	1	1 A	1.5A	140		TOGGLE WITH OVERLOADS	1	-	15A	SEE STARTER	-	-	19	EDP1L	INTEGRAL			
HFF-4	HEATING WATER PUMP	120 V	1	1 A	1.5A	140		TOGGLE WITH OVERLOADS	1	-	15A	SEE STARTER	-	-	19	EDP1L	INTEGRAL			
HWCP-1	HOT WATER CIRCULATION PUMP	120 V	1	1 A	1.8A	170		TOGGLE WITH OVERLOADS	1	-	-	SEE STARTER	-	-	8	EDP1L	CONTINUOUS			
HWCP-2	HOT WATER CIRCULATION PUMP	120 V	1	3 A	3.625A	348	1/8	TOGGLE WITH OVERLOADS	1	-	-	SEE STARTER	-	-	10	EDP1L	TC	TC	TC	
HWCP-3	ISOLATION EXHAUST FAN	120 V	1	3 A	3.625A	348	1/8	TOGGLE WITH OVERLOADS	1	-	-	SEE STARTER	-	-	12	EDP1L	TC	TC	TC	
HWP-1	HEATING WATER PUMP	480 V	3	11 A	13.75A	9,141	10	VFD WITH DISCONNECT - WIRED BY EC	1	-	25A	SEE STARTER	-	-	13,15	1E1H	TC	TC	TC	
HWP-2	HEATING WATER PUMP	480 V	3	11 A	13.75A	9,141	10	VFD WITH DISCONNECT - WIRED BY EC	1	-	25A	SEE STARTER	-	-	2,4,6	1E1H	TC	TC	TC	
IEF-1	ISOLATION EXHAUST FAN	120 V	1	10 A	12.25A	1,176	1/2	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	10	2E1L	TC	TC	TC	
IEF-2	ISOLATION EXHAUST FAN	120 V	1	10 A	12.25A	1,176	1/2	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	12	2E1L	TC	TC	TC	
IEF-3	ISOLATION EXHAUST FAN	120 V	1	10 A	12.25A	1,176	1/2	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	14	2E1L	TC	TC	TC	
KEF-1	KITCHEN EXHAUST FAN	208 V	3	7 A	10.4A	2,484	1 1/2	INTEGRAL TO UNIT	-	-	-	INTEGRAL TO UNIT	-	-	11,13,15	2E1L	TC	TC	TC	
LFT-1	LINEAR FAN TERMINAL	120 V	1	1 A	2A	100		TOGGLE WITH OVERLOADS	1	-	15A	SEE STARTER	-	-	3	1N2L	TC			

INDOOR AIR HANDLING UNIT SCHEDULE									
PLAN CODE	AHU-1				AHU-2				
MANUFACTURER	HAAKON				HAAKON				
INDOOR / OUTDOOR	INDOOR				INDOOR				
TOTAL ACFM (NOTE #1)	33,500				20,000				
MINIMUM FRESH AIR CFM	12,100				6,930				
MODEL	CUSTOM				CUSTOM				
POWER (V-PH-Hz)	460-3-60				460-3-60				
MCA (AMPS)	146				108				
MOP (AMPS)	150				110				
SHIPPING WEIGHT (LBS.)	32,480				23,480				
FAN SECTION (RETURN)									
NUMBER OF FANS / TYPE	4- FAN ARRAY, DIRECT DRIVE SWSI				4- FAN ARRAY, DIRECT DRIVE SWSI				
CFM PER FAN / TOTAL	8,375 / 33,500				5,000 / 20,000				
EXTERNAL STATIC PRESS. ("W.C.)	1.00				1.20				
TOTAL STATIC PRESS. ("W.C.)	1.30				1.50				
RPM @ ACFM & T.S.P. ("W.C.)	1170 ALL FANS / 1425 WITH ON FAN FAILED				1393 ALL FANS / 1655 WITH ONE FAN FAILED				
BRAKE HP	2.7 EACH / 10.8 TOTAL				1.8 EACH / 7.2 TOTAL				
MOTOR HP	5.0 EACH / 20 TOTAL				5.0 EACH / 20 TOTAL				
MOTOR EFF	89.5				89.5				
FAN DIA. (IN)	24.0				20.0				
PRE-FILTER SECTION									
ARRANGEMENT	UPSTREAM FACE LOAD VEE BANK				UPSTREAM FACE LOAD VEE BANK				
TYPE / THICKNESS	MERV 8 / 2" FILTER				MERV 8 / 2" FILTER				
MIN. FACE AREA (SF)	QTY 30 AT 24"x24"				QTY 15 AT 24"x24" & QTY 5 AT 24"x12"				
MID-LIFE FILTER PRESSURE DROP ("W.C.)	ALLOWANCE INCLUDED				ALLOWANCE INCLUDED				
FINAL FILTER SECTION	(IN 2ND STAGE PRE-FILTER LOCATION)				(TRUE FINAL FILTER LOCATION AFTER LAST COIL)				
ARRANGEMENT	LIFT OUT, UPSTREAM				LIFT OUT, UPSTREAM				
TYPE / THICKNESS	MERV 13 / 12" DEEP BOX FILTER				MERV 14 / 12" DEEP BOX FILTER				
MIN. FACE AREA (SF)	QTY 16 AT 24"x24", QTY 4 @ 24"x12"				QTY 9 AT 24"x24" & 3 AT 24" x 12"				
MID-LIFE FILTER PRESSURE DROP ("W.C.)	ALLOWANCE INCLUDED				ALLOWANCE INCLUDED				
COOLING / DEHUMID COIL PERFORMANCE (COOLING)									
QUANTITY / TYPE	2 / HYDRONIC (SEE GLYCOL NOTE)				2 / HYDRONIC (SEE GLYCOL NOTE)				
FACE AREA (TOTAL) (S.F.)	2 @ 48 x 118				2 @ 39 x 83				
COIL ACFM (TOTAL)	33,500				20,000				
FACE VELOCITY (FEET PER MIN.)	426				445				
#ROWS / FINS PER INCH	12 / 8				10 /10				
EWTLWT (°F)	44 / 56				44 / 56				
GPM (EACH / TOTAL)	85 / 170				50 / 100				
FLUID PRESS. DROP (FT W.C.)	11.5				11.7				
ENTERING AIR (°F DB / °F WB)	75 / 59				75 / 59				
COIL LEAVING AIR (°F DB / °F WB)	49.3 / 48.1				49.7 / 48.3				
UNIT LGV AIR (°F DB / °F WB)	52.5				52.5				
CAPACITY MBH (TOTAL/SENS)	939.5 / 939.5				554.5 / 554.5				
AIR PRESS. DROP ("W.C.)	1.56				1.63				
COOLING / DEHUMID COIL PERFORMANCE (DEHUMID)									
COIL ACFM (TOTAL)	33,500				20,000				
FACE VELOCITY (FEET PER MIN.)	426				446				
EWTLWT (°F)	40.0 / 50.0				40.0 / 50.0				
GPM (EACH / TOTAL)	126 / 252				73 / 146				
FLUID PRESS. DROP (FT W.C.)	22.1				22.89				
ENTERING AIR (°F DB / °F WB)	72.5 / 59.1				71.1 / 59.1				
COIL LEAVING AIR (°F DB / °F WB)	45.7 / 45.6				46.0 / 46.0				
UNIT LGV AIR (°F DB / °F WB)	48.7				48.7				
CAPACITY MBH (TOTAL/SENS)	1152.8 / 932.6				670.1 / 547.9				
FAN SECTION (SUPPLY)									
NUMBER OF FANS / TYPE	4- FAN FAN ARRAY, DIRECT DRIVE SWSI				4- FAN FAN ARRAY, DIRECT DRIVE SWSI				
ACFM	33,500				20,000				
EXTERNAL STATIC PRESS. ("W.C.)	1.45				1.50				
TOTAL STATIC PRESS. ("W.C.)	5.10				5.40				
RPM @ ACFM & T.S.P. ("W.C.)	1986 ALL FAN ON / 2303 WITH ONE FAN FAILED				2216 ALL FANS ON / 2365 WITH ONE FAN FAILED				
BRAKE HP	9.3 EACH / 37.2 TOTAL				6.1 EACH / 24.4 TOTAL				
MOTOR HP	15.0 EACH / 60 TOTAL				10 EACH / 40 TOTAL				
FAN DIA. (IN)	22.0				20.0				
HEATING COIL SECTION									
QTY / TYPE	2 / HYDRONIC (SEE GLYCOL NOTE)				2 / HYDRONIC (SEE GLYCOL NOTE)				
FACE AREA (INCHES)	2 @ 45 x 108				2 @ 39 x 74				
COIL ACFM (TOTAL)	22,300				13,300				
FACE VELOCITY (FEET PER MIN.)	330				332				
#ROWS / FINS PER INCH	1 / 7				1 / 10				
EWTLWT (°F)	150 / 125				150 / 125				
GPM PER COIL / TOTAL	26 / 52				23 / 46				
FLUID PRESS. DROP (FT W.C.)	9.44				8.1				
EAT/LAT (°F)	43.8 / 68.4				30.3 / 67.4				
CAPACITY (MBH)	595				543.6				
AIR PRESSURE DROP ("W.C.)	0.05 @HTG AIRFLOW				0.06 @ HTG FLOW				
OVERALL DIMS (L"xW"xH")	448 W 333 x 720				419 x 102 x 96				
SOUND POWER LEVELS									
OCTAVE BANDS (HZ)	63	125	250	500	1000	2000	4000	8000	63 125 250 500 1000 2000 4000 8000
DISCHARGE									
RETURN									
RADIATED									
ADDITIONAL NOTES:									
NOTES, BOTH UNITS									
1) ALL CFMS ARE ACTUAL @ SITE ALTITUDE, SEA LEVEL.									
2) WITH FAN BACKDRAFT DAMPERS									
3) WITH INTEGRAL BASE RAIL									
4) SMOKE DETECTION BY OTHERS.									
5) UNIT SHALL MEET SOURCE SOUND POWER LISTED									
6) PROVIDE WITH ONE EXTRA SET OF FILTERS									
7) FACTORY STARTUP									
8) UNIT SCOR 100 kA									
9) HEATING WATER MEDIA 45% PROPYLENE GLYCOL									
10) CHILLED WATER MEDIA 35% PROPYLENE GLYCOL									
11) GIVEN FAN PERFORMANCE IS WITH ALL FANS RUNNING. FULL FLOW WITH ONE FAN FAILED SHALL OPERATE WITHIN FAN SPEED AND MOTOR POWER CONSTRAINTS.									
12) E-COAT COTED HEATING AND COOLING COILS. ALUMINUM DAMPERS FOR ALL DAMPERS. RELIEF DAMPERS SHALL BE INSULATED.									
13) 316 STAINLESS INNER CASING FOR FLOORS, WALL, CEILING OF ALL SECTIONS EXCEPT RETURN AND RELIEF SECTIONS. 316 STAINLESS FILTER AND COIL RACKS & FRAMES. 316 STAINLESS DRAIN PANS. WASH DOWN CASING WITH FLOOR DRAINS IN EACH SECTION.									
14) FANS ARE SELECTED FOR N+1 REDUNDANCY. INDIVIDUAL VFD PER FAN MOTOR WITH DISCONNECT. TEFC FAN MOTORS FOR ALL MOTORS. ALL MOTORS AND VFDs WIRED FOR SINGLE POINT OF ELECTRICAL CONNECTION.									

MECHANICAL SHEET INDEX

M001	MECHANICAL SCHEDULES & LEGENDS
M002	MECHANICAL SCHEDULES & LEGENDS
M003	MECHANICAL SCHEDULES & LEGENDS
M004	MECHANICAL SCHEDULES & LEGENDS
M100	HVAC PLANS - COLORED ZONING
M101	HVAC PLANS - OVERALL 1ST FLOOR
M101.A	HVAC PLANS - 1ST FLOOR - AREA A
M101.B	HVAC PLANS - 1ST FLOOR - AREA B
M101.C	HVAC PLANS - 1ST FLOOR - AREA C
M101.D	HVAC PLANS - 1ST FLOOR - AREA D
M102	HVAC PLANS - ROOF - OVERALL
M102.R	HVAC PLANS - 2ND FLOOR - AREA B
M102.C	MECHANICAL PLANS - 2ND FLOOR - AREA C
M201	HYDRONIC PLANS - OVERALL 1ST FLOOR
M201.A	HYDRONIC PLANS - 1ST FLOOR - AREA A
M201.B	HYDRONIC PLANS - 1ST FLOOR - AREA B
M201.C	HYDRONIC PLANS - 1ST FLOOR - AREA C
M201.D	HYDRONIC PLANS - 1ST FLOOR - AREA D
M202.R	HYDRONIC PLANS - 2ND FLOOR - AREA B
M300	ENLARGED PLANS AND SECTIONS
M301	ENLARGED PLANS AND SECTIONS - 1ST FLOOR
M302	ENLARGED PLANS AND SECTIONS - PENTHOUSE
M303	ENLARGED PLANS AND SECTIONS - FUEL OIL
M400	FLOW DIAGRAMS AND DETAILS
M401	FLOW DIAGRAMS AND DETAILS
M402	FUEL OIL SYSTEM DETAILS
M403	FLOW DIAGRAMS AND DETAILS
M404	FLOW DIAGRAMS AND DETAILS
M405	FLOW DIAGRAMS AND DETAILS
M406	FLOW DIAGRAMS AND DETAILS
M407	ENGINE BASE TANK DETAILS
M408	SNOWMELT DETAILS
M500	TO DIAGRAMS
M501	TO DIAGRAMS
M502	TO DIAGRAMS
M503	TO DIAGRAMS
M504	TO DIAGRAMS

HVAC ABBREVIATIONS

%	PERCENT	LF	LINEAR FEET
ACFM	ACTUAL CFM	LWT	LEAVING WATER TEMPERATURE
AFF	ABOVE FINISHED FLOOR	MAX	MAXIMUM
AHU	AIR HANDLING UNIT	MBH	BTU PER HOUR (THOUSAND)
AMP	AMPERE (AMP, AMPS)	MC	MECHANICAL CONTRACTOR
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MIN	MINIMUM
APSD	AIR PRESSURE DROP	N/A	NOT APPLICABLE
APPROX	APPROXIMATE	NC	NORMALLY CLOSED
BHP	BRAKE HORSEPOWER, BOILER HORSEPOWER	NIC	NOT IN CONTRACT
BD	BOTTOM OF DUCT	NO	NORMALLY OPEN
BTU	BRITISH THERMAL UNIT	NO	NUMBER
CFM	CUBIC FEET PER MINUTE	NTS	NOT TO SCALE
COD	CENTER OF DUCT	OA	OUTSIDE AIR
CU FT	CUBIC FEET	OBD	OPPOSED BLADE DAMPER
CU IN	CUBIC INCH	OD	OUTSIDE DIAMETER
D	DIAMETER	PD	PRESSURE DROP
DBT	DRY-BULB TEMPERATURE	PH	PHASE (ELECTRICAL)
DIA	DIAMETER	PSI	POUNDS PER SQUARE INCH
EAT	ENTERING AIR TEMPERATURE	PSIA	PSI ABSOLUTE
EC	ELECTRICAL CONTRACTOR	PSIG	PSI GAUGE
EDR	EQUIVALENT DIRECT RADIATION	RO	RUN OUT
EWT	ENTERING WATER TEMPERATURE	RA	RETURN AIR
EXP	EXPANSION	RH	RELATIVE HUMIDITY
F	FAHRENHEIT	RPM	REVOLUTIONS PER MINUTE
FPM	FEET PER MINUTE	SA	SUPPLY AIR
FPS	FEET PER SECOND	SCFM	CFM, STANDARD CONDITIONS
FT	FOOT OR FEET	SH	SENSIBLE HEAT
GA	GAGE OR GUAGE	SP	STATIC PRESSURE
GA	GALLONS	SP VOL	SPECIFIC VOLUME
GC	GENERAL CONTRACTOR	SPEC	SPECIFICATION
GLR	GLYCOL SUPPLY	STD	STANDARD
GLS	GLYCOL RETURN	SUCT	SUCTION
GPM	GALLONS PER HOUR	T STAT	THERMOSTAT
GPD	GALLONS PER DAY	TC	TEMPERATURE CONTROL
GPH	GALLONS PER HOUR	TD	TEMPERATURE DIFFERENCE
GPM	GALLONS PER MINUTE	TEMP	TEMPERATURE
HD	HEAD	TOF	TOP OF DUCT
HGT	HEIGHT	TONS	TONS OF REFRIGERATION
HP	HORSEPOWER	V	VOLT
HZ	HZ	VAC	VACUUM
IN	INSIDE DIAMETER	VAV	VARIABLE AIR VOLUME
KW	KILOWATT	VEL	VELOCITY
KWH	KILOWATT HOUR	VFL	VARIABLE FREQUENCY DRIVE
LAT	LEAVING AIR TEMPERATURE	VOL	VOLUME
LBS	POUNDS	W	WITH
		WPD	WATER PRESSURE DROP

SMALL AIR HANDLER SCHEDULE									
PLAN CODE								AHU-3	
MANUFACTURER								VALENT	
MODEL								VX-212-CW-2-GI	
TYPE								OUTDOOR	
UNIT VOLTAGE (V-Ph-Hz)								480-3-60	
UNIT MCA / MOPD (AMPS)								6.8 / 15	
MIN OA CFM								2900	
SUPPLY FAN SECTION									
TYPE								PLENUM	
ACFM @ SITE ALTITUDE								2900	
FAN RPM								1165	
ESP (INCHES W.C.)								0.5	
MOTOR / DRIVE								DIRECT DRIVE W/ VFD	
HORSEPOWER (BRAKE / NAMEPLATE)								0.83 / 2	
RELIEF FAN SECTION									
TYPE								PLENUM	
ACFM @ SITE ALTITUDE								2900	
FAN RPM								752	
ESP (INCHES W.C.)								0.5	
MOTOR / DRIVE								DIRECT DRIVE W/ VFD	
HORSEPOWER (BRAKE / NAMEPLATE)								0.45 / 1.5	
HEATING									
SYSTEM TYPE								HEATING WATER WITH 45% PROPYLENE GLYCOL	
ACFM @ SITE ALTITUDE MAX / MIN								2900	
OUTPUT CAPACITY (MBH)								334.2	
EAT / LAT, DB (°F)								-8.0 / 98.0	
EWT / LWT (°F)								150 / 130	
FLUID FLOW (GPM)								36	
FLUID PRESS DROP (FT WG)								3.8	
COIL APD (°WC)								0.03	
COOLING									
SYSTEM TYPE								CHILLED WATER WITH 35% PROPYLENE GLYCOL	
ACFM @ SITE ALTITUDE								2900	
EWT / LWT (°F)								44 / 55	
EAT DB / WB (°F)								75.0 / 59.1	
LAT DB / WB (°F)								52.5 / 49.9	
NET CAPACITY TOTAL / SENS (MBH)								71.1 / 71.1	
COIL APD (°WC)								0.112	
PRE-FILTER SECTION									
MERV RATING								MERV 8	
TYPE								2" THICK PLEATED	
UNIT WEIGHT (LBS)								3500	
NOTES								1, 2, 3, 4, 5, 6, 7, 8	
NOTES: 1) ALL COILS COATED WITH COASTAL E-COATING PROTECTION 2) FACTORY WIRED VFD'S FOR SUPPLY AND RELIEF FANS 3) WITH PHASE LOSS / REVERSAL & BROWN OUT PROTECTION 4) SITE ELEVATION 0' ABOVE SEA LEVEL 5) WITH STAINLESS STEEL DRAIN PAN 6) WITH HINGED ACCESS DOORS 7) WITH FACTORY WIRED NON-FUSED DISCONNECT SWITCH, CONVENIENCE OUTLET, AND SERVICE LIGHTS 8) UNIT CONTROL TERMINAL STRIP ONLY FOR CONTROL BY OTHERS									

AIR CURTAIN SCHEDULE											
PLAN CODE	MFGR	MODEL	TYPE	NOMINAL LENGTH (INCH)	CFM	AVG NOZZLE VELOCITY (FPM)	MOTOR HP	HEATER KW	POWER (V-PH-HZ)	MOPC (AMPS)	REMARKS
ARC-1	BERNER	ARE12-1042E	ENVIRONMENTAL	42	1655	1625	1 @ 1/2	14	480-3-60	25	1, 2, 3
REMARKS: 1) SINGLE CIRCUIT POWERS FAN MOTOR AND HEATER 2) WITH COMFORT PLUS CONTROL PACKAGE. FANS ACTIVATED BY A DOOR OR SELECTOR SWITCH OR SENSOR, BUT MAY ALSO BE ACTIVATED BY THE THERMOSTAT IN COMFORT PLUS MODE. THREE FAN SPEEDS WHICH CAN BE SET BY REMOTE MOUNTED SWITCH (LOW, MED, HIGH, OFF, LOW HEAT, MED HEAT, HIGH HEAT. 3) WITH WALL MOUNTING PLATE											

FAN FILTER UNIT SCHEDULE									
PLAN CODE	TYPE	MFR	MODEL	NOMINAL SIZE (L" x W")	CFM	INITIAL FILTER APD (INCH W.C.)	ELECTRICAL		REMARKS
							V-Ph-Hz	MAX WATTS	
HFF-1	HEPA FAN FILTER	PRICE	FFU-RSR	24 x 48	275	NOT GIVEN	120-1-60	140	1, 2, 3, 4, 5, 6, 7
HFF-2	HEPA FAN FILTER	PRICE	FFU-RSR	24 x 48	275	NOT GIVEN	120-1-60	140	1, 2, 3, 4, 5, 6, 7
HFF-3	HEPA FAN FILTER	PRICE	FFU-RSR	24 x 48	275	NOT GIVEN	120-1-60	140	1, 2, 3, 4, 5, 6, 7
HFF-4	HEPA FAN FILTER	PRICE	FFU-RSR	24 x 48	275	NOT GIVEN	120-1-60	140	1, 2, 3, 4, 5, 6, 7
REMARKS: 1) WITH ECM MOTOR, SET FOR CONSTANT CFM PROGRAM 2) WITH HEPA FILTER 3) 304 STAINLESS STEEL FACE & FRAME, ALUMINUM PLENUM MATERIAL. 4) WITH ROOM SIDE REPLACEABLE FILTER 5) WITH ROOM SIDE REPLACEABLE MOTOR 6) WITH HEPA FILTER CHALLENGE PORT AND MANIFOLD, 1/2" MINIMUM INSIDE DIAMETER 7) WITH MERV 8 PREFILTER, SIDE ACCESS TO ALLOW DUCT CONNECTION									

MOTORIZED DAMPER SCHEDULE											
PLAN CODE	MFR	MODEL	SIZE L" x W"	BLADE TYPE / CONFIGURATION	LEAKAGE RATE (1) (CFM/SQ. FT)	CFM	LOCATION	SERVICE	FAILED POSITION	NOTES	
MD-01	RUSKIN	CD-60	6x6	AIRFOIL / OPPOSED	8	100	PHARMACY ANTE ROOM	MODULATING	IN PLACE	1	
MD-02	RUSKIN	CD-60	8x8	AIRFOIL / OPPOSED	8	250	PHARMACY COMPOUNDING	MODULATING	IN PLACE	1	
MD-03	RUSKIN	CD-60	20x12	AIRFOIL / PARALLEL	8	1650	BOILER ROOM	FRESH AIR	CLOSED	1,2	
MD-04	RUSKIN	CD-60	14x14	AIRFOIL / PARALLEL	8	1,650	BOILER ROOM	RETURN	OPEN	1	
MD-05	RUSKIN	CD-60	28x16	AIRFOIL / PARALLEL	8	1,650	BOILER ROOM	RELIEF	OPEN	1,2	
MD-06	RUSKIN	CDRS15	8" ROUND	ROUND	20	200	A155 TREATMENT RM	RETURN	OPEN	1,2,3	
MD-07	RUSKIN	CDRS15	12" ROUND	ROUND	20	600	A155 TREATMENT RM	EXHAUST	CLOSED	1,2,3	
MD-08	RUSKIN	CDRS15	10" ROUND	ROUND	20	480	A108 DENTAL WET LAB	EXHAUST	CLOSED	1,2,3	
NOTES: 1) FURNISHED BY TC 2) WITH END SWITCH 3) TWO-POSITION ACTUATOR											

FAN COIL SCHEDULE																					
PLAN CODE	MFGR	MODEL	SERVICE	FAN						COOLING COIL										WEIGHT (LBS)	NOTES
				CFM	MOTOR HP	POWER	MCA	MOCp	ESP (IN. WC)	TOTAL CAP. (MBH)	SENS. CAP. (MBH)	ROWS	GPM	MAX WPD (FT)	EWT (°F)	LWT (°F)	EAT DB / WB (°F)	LAT DB / WB (°F)	PIPE SIZE (IN)		
FC-1	JCI	FNX-18	BOILER RM	1500	QTY (2) 1/3	208 / 60 / 1	6.3	15	N/A	27.8	27.8	6	6.5	6.3	44	54	75 / 59	55.2 / 51.6	1"	337	1, 2, 3, 4
NOTES: 1) HORIZONTAL HIGH PERFORMANCE EXPOSED CABINET, WITH FRONT SUPPLY GRILLE AND BOTTOM RETURN GRILLE 2) WITH 2" PLEATED FILTERS 3) WITH DIRECT DRIVE, ECM FAN MOTORS READY TO ACCEPT ANALOG SPEED SIGNAL BY OTHERS. 4) FLUID IS 35% PROPYLENE GLYCOL.																					

FUEL OIL DAY TANK SCHEDULE														
PLAN CODE	SERVICE	MANUFACTURER	MODEL	NOMINAL GALLONS	PRIMARY TANK DIMS (LxWxH)	RUPTURE BASIN DIMS (LxWxH)	TANK FILL CONNECTION	TANK RETURN CONNECTION	TANK OVERFLOW CONNECTION	TANK OUTLET CONNECTION	TANK VENT NORMAL / EMERGENCY	OUTER TANK VENT EMERGENCY	ELECTRICAL (V-Ph-Hz)	NOTES
DT-1	BOILERS	SIMPLEX	STS200	200	30"X34"X48"	30"X42"X48"	2"	1"	2"	2 @ 0.75"	2" / 3"	3"	120 / 1 / 60	1, 2, 3, 4, 5
NOTES:														
1) PROVIDE MANUFACTURERS STANDARD TANK CONTROLLER WITH FLOAT AND NORMALLY CLOSED SOLENOID VALVE ON THE FILL PIPE														
2) TANK CONTROLLER SHALL INCLUDE POWER LIGHT, CRITICAL LOW FUEL LEVEL ALARM LIGHT, CRITICAL LOW FUEL LEVEL ALARM RELAY, AND CRITICAL HIGH FUEL LEVEL ALARM RELAY														
3) PROVIDE MANUAL BYPASS AROUND THE SOLENOID VALVE														
4) PROVIDE RETURN FUEL OIL PUMP FACTORY INSTALLED AND WIRED TO RETURN EXCESS FUEL TO THE ABOVE GROUND STORAGE TANK. PUMP CAPACITY 5 GPM, 1/3 HP, CAST IRON CONSTRUCTION														
5) PROVIDE MECHANICAL DIAL LEVEL GAUGE														

ABOVEGROUND FUEL OIL TANK SCHEDULE												
PLAN CODE	SERVICE	MANUFACTURER	MATERIAL	ARRANGEMENT	TYPE	TANK DIMENSIONS (L x DIA)	VOL (GAL)	FILL CONNECTION	SUPPLY CONNECTION	RETURN CONNECTION	VENT CONNECTION	NOTES
AST-1	GENERATORS, BOILERS	WESTEEL	STEEL	DOUBLE WALL, PROTECTED	SINGLE COMPARTMENT TANK	28' 10" x 8' 4-1/8"	10,000	4"	-	2 @ 2"	4"/ 8" 8"	1, 2, 3, 4, 5
NOTES: 1) PROVIDE TANK SADDLES WELDED TO OUTER TANK WITH SLOTTED OPENINGS FOR ANCHOR BOLTS 2) PROVIDE TANK WITH INTERSTITIAL SPACE LEAK DETECTION AND PULL STRING 3) PROVIDE PRIMARY TANK NORMAL AND EMERGENCY VENT CONNECTIONS, LOCATE VENT CAPS MINIMUM 5'-0" ABOVE TOP OF TANK 4) PROVIDE SECONDARY TANK EMERGENCY VENT CONNECTION, LOCATE VENT CAP MINIMUM 5'-0" ABOVE TOP OF TANK 5) PROVIDE MORRISON BROS (OR EQUAL) 515SD REMOTE FILL CONNECTION WITH 4 INCH CONNECTION, 15 GALLON SPILL VOLUME, INTEGRATED DRAIN SUMP WITH LOCKING BALL VALVE 6) REMOTE FILL CONNECTION SHALL BE STAINLESS STEEL CONSTRUCTION, PEDESTAL MOUNT, AND SINGLE PLATE FOR ANCHORING TO CONCRETE 7) CONTRACTOR SHALL FILL TANK WITH NUMBER 2 FUEL OIL TO MEET THE 95 PERCENT LEVEL AND TOP OFF TANK AFTER FILLING BOTH GENERATOR BELLY TANKS AND BOILER DAY TANK 8) WITH INITIAL FUEL FILL, PROVIDE BIODEC AND CETANE ADDITIVE TO PREVENT FUEL CONTAMINATION												

FUEL OIL PUMP SCHEDULE												
PLAN CODE	MFGR	MODEL	TYPE	PUMPED FLUID	GPM	HEAD (FT WC)	MOTOR			OUTLET DIAMETER (IN)	EFFICIENCY (%)	NOTES
							NAMEPLATE HP	RPM	POWER (V-Ph-Hz)			
FOP-1	RED JACKET	RED ARMOR STP	SUBMERSIBLE	NO. 2 FUEL OIL	20	81	0.75	1750	208-1-60	2	-	1,3,5,6,7
FOP-2	RED JACKET	RED ARMOR STP	SUBMERSIBLE	NO. 2 FUEL OIL	20	81	0.75	1750	208-1-60	2	-	1,3,5,6,8
FOP-3	RED JACKET	RED ARMOR STP	SUBMERSIBLE	NO. 2 FUEL OIL	20	81	0.75	1750	208-1-60	2	-	2,4,5,6,9
FOP-4	RED JACKET	RED ARMOR STP	SUBMERSIBLE	NO. 2 FUEL OIL	20	81	0.75	1750	208-1-60	2	-	2,4,5,6,10
NOTES: 1) PUMP SERVES GENERATOR FUEL OIL SYSTEM 2) PUMP SERVES BOILER FUEL OIL SYSTEM 3) SET PUMP WITH INLET 0'-4" UP FROM BOTTOM OF THE TANK 4) SET PUMP WITH INLET 4'- 2" UP FROM BOTTOM OF THE TANK 5) PROVIDE POSITIVE LINE LEAK DETECTION AFTER BELLY TANK/DAY TANK FILL IS COMPLETED 6) PROVIDE FLEXIBLE CONNECTOR, NORMALLY CLOSED SOLENOID VALVE WITH PRESSURE RELIEF, AND BALL VALVE ON OUTLET OF PUMP 7) PUMP START/STOP CONTROLLED BY LDMP AND IQ2-1 8) PUMP START/STOP CONTROLLED BY LDMP AND IQ2-2 9) PUMP START/STOP CONTROLLED BY LDMP AND IQ2-3 10) PUMP START/STOP CONTROLLED BY LDMP AND IQ2-4												

GRILLES, REGISTERS AND DIFFUSERS SCHEDULE															
PLAN CODE	MFGR	MODEL	FACE SIZE			NECK SIZE			MAX CFM	NOISE CRITERIA (NC)	TOTAL PRESSURE (IN WC)	STYLE	MATERIAL	FINISH	REMARKS
			HEIGHT	WIDTH	Ø	HEIGHT	WIDTH	Ø							
S-1	PRICE	SMCD	24	24	-	6	6	6"	125	<15	0.057	LAY-IN	STEEL	WHITE	
S-2	PRICE	SMCD	24	24	-	8	8	8"	225	<15	0.059	LAY-IN	STEEL	WHITE	
S-3	PRICE	SMCD	24	24	-	10	10	10"	375	19	0.067	LAY-IN	STEEL	WHITE	
S-4	PRICE	SMCD	24	24	-	12	12	12"	540	21	0.067	LAY-IN	STEEL	WHITE	
S-5	PRICE	SMCD	8	8	-	6	6	6"	125	<15	0.057	SURFACE	STEEL	WHITE	
S-6	PRICE	SMCD	10	10	-	8	8	8"	225	<15	0.059	SURFACE	STEEL	WHITE	
S-7	PRICE	SMCD	12	12	-	10	10	10"	375	19	0.067	SURFACE	STEEL	WHITE	
S-8	PRICE	500	14	8	-	12	6	8"	200	<15	0.05	SURFACE	STEEL	WHITE	
S-9	PRICE	SDS-75	(2) 3/4" SLOTS	-	-	48" LONG PLENUM	7"	160	21	0.086	SURFACE	STEEL	BLACK	FLUSH FIXTURE MOUNT CONCEALED MOUNTING, SDA PLENUM	
S-10	PRICE	SDS-75	(3) 3/4" SLOTS	-	-	48" LONG PLENUM	8"	220	23	0.082	SURFACE	STEEL	BLACK	FLUSH FIXTURE MOUNT CONCEALED MOUNTING, SDA PLENUM	
S-11	PRICE	SDS-150	(1) 1-1/2" SLOT	-	-	48" LONG PLENUM	6"	140	21	0.096	SURFACE	STEEL	REMARK	FLANGE FRAME MOUNTING, SDB PLENUM, COLOR SELECTED BY ARCHITECT	
S-12	TITUS	FL-30	(1) 3" SLOT	-	-	48" LONG PLENUM	12"	605	<10	0.08	SURFACE	ALUMINUM	PRIME	FLOWBAR JET THROW (JT) SLOT DIFFUSER WITH PATTERN CONTROLLER AND MFR PLENUM. BORDER STYLE 66 SIDEWALL EXPOSED FLANGE, PRIMECOAT WHITE FOR CUSTOM FIELD PAINT, PROVIDE BORDER FLANGE FOR THE LOOK OF A CONTINUOUS SLOT 9 UNITS X 4' EACH = 36' LONG	
S-13	TITUS	FL-20	(1) 2" SLOT	-	-	48" LONG PLENUM	12"	590	24	0.137	HIDDEN	ALUMINUM	BLACK	FLOWBAR JET THROW (JT) SLOT DIFFUSER WITH PATTERN CONTROLLER AND MFR PLENUM. BORDER STYLE 22 HIDDEN FLANGE FOR TAPE & SPACKLE	
S-14	PRICE	SDS-75	(2) 3/4" SLOTS	-	-	48" LONG PLENUM	7"	160	21	0.086	LAY-IN	STEEL	REMARK	T-BAR LAY-IN MOUNT, SDA PLENUM, COLOR SELECTED BY ARCHITECT	
S-15	PRICE	SDS-150	(2) 1-1/2" SLOTS	-	-	48" LONG PLENUM	8"	220	17	0.086	LAY-IN	STEEL	REMARK	T-BAR LAY-IN MOUNT, SDB PLENUM, COLOR SELECTED BY ARCHITECT	
S-16	PRICE	SDS-75	(2) 3/4" SLOTS	-	-	48" LONG PLENUM	7"	160	21	0.086	SUSPEND	STEEL	REMARK	FREELY SUSPENDED MOUNT, FACE HEIGHT TO EQUAL 6" TO MATCH CEILING WOOD PANELLING WIDTH, COLOR SELECTED BY ARCHITECT, SDA PLENUM	
S-17	PRICE	SDS-100	(2) 1" SLOTS	-	-	48" LONG PLENUM	7"	220	23	0.114	SUSPEND	STEEL	REMARK	FREELY SUSPENDED MOUNT, FACE HEIGHT TO EQUAL 6" TO MATCH CEILING WOOD PANELLING WIDTH, COLOR SELECTED BY ARCHITECT, SDB PLENUM	
S-18	PRICE	SDS-150	(2) 1-1/2" SLOTS	-	-	48" LONG PLENUM	8"	250	20	0.086	LAY-IN	STEEL	REMARK	T-BAR LAY-IN MOUNT, SDB PLENUM, COLOR SELECTED BY ARCHITECT	
E-1	PRICE	530	24	12	-	8	8	8"	175	18	0.057	LAY-IN	STEEL	WHITE	
E-2	PRICE	530	24	24	-	10	10	10"	250	18	0.048	LAY-IN	STEEL	WHITE	
E-3	PRICE	530	24	24	-	12	12	12"	400	21	0.053	LAY-IN	STEEL	WHITE	
E-4	PRICE	530	24	24	-	14	14	14	600	26	0.072	LAY-IN	STEEL	WHITE	
E-5	PRICE	530	24	24	-	18	18	18	1,000	26	0.065	LAY-IN	STEEL	WHITE	
E-6	PRICE	530	10	8	-	8	8	8"	125	19	0.064	SURFACE	STEEL	WHITE	
E-7	PRICE	530	12	12	-	10	10	-	250	18	0.048	SURFACE	STEEL	WHITE	
E-8	PRICE	530	24	24	-	14	14	14	600	26	0.072	LAY-IN	STEEL	WHITE	
E-9	PRICE	530	16	8	-	14	6	-	230	22	0.069	SURFACE	STEEL	WHITE	
E-10	PRICE	530	20	10	-	18	8	-	450	24	0.069	SURFACE	STEEL	WHITE	
R-1	PRICE	80	24	12	-	8	8	8"	230	<15	0.047	LAY-IN	STEEL	WHITE	
R-2	PRICE	80	24	24	-	10	10	10"	400	<15	0.059	LAY-IN	STEEL	WHITE	
R-3	PRICE	80	24	24	-	12	12	12"	600	15	0.059	LAY-IN	STEEL	WHITE	
R-4	PRICE	80	24	24	-	14	14	14"	800	16	0.0663	LAY-IN	STEEL	WHITE	
R-5	PRICE	80	24	24	-	16	16	16"	1,100	17	0.064	LAY-IN	STEEL	WHITE	
R-6	PRICE	80	24	24	-	20	20	20"	1,800	19	0.065	LAY-IN	STEEL	WHITE	
R-7	PRICE	80	12	10	-	10	8	8"	300	<15	0.057	SURFACE	STEEL	WHITE	
R-8	PRICE	80	16	14	-	14	12	12"	700	15	0.065	SURFACE	STEEL	WHITE	
R-9	PRICE	530	10	8	-	8	8	8"	100	<15	0.044	SURFACE	STEEL	WHITE	
R-10	PRICE	530	18	14	-	16	12	-	600	25	0.069	SURFACE	STEEL	WHITE	
R-11	PRICE	530	14	38	-	12	36	-	1,200	21	0.05	SURFACE	STEEL	WHITE	
R-12	PRICE	530	26	22	-	24	20	-	1,400	24	0.057	SURFACE	STEEL	WHITE	
R-13	PRICE	90	20	12	-	18	10	-	535	19	0.04	SURFACE	STAINLESS	WHITE	LOUVERED RETURN, 45 DEG DEFLECTION, 3/4" SPACING, BLADES ORIENTED THE SHORT WAY
R-14	PRICE	530	20	12	-	18	10	-	490	20	0.05	SURFACE	STAINLESS	WHITE	LOUVERED RETURN, 45 DEG DEFLECTION, 3/4" SPACING, BLADES ORIENTED THE SHORT WAY
T-1	PRICE	80	24	24	-	16	14	-	500	<15	0.019	LAY-IN	STEEL	WHITE	
T-2	PRICE	530	12	10	-	10	8	-	115	<15	0.018	SURFACE	STEEL	WHITE	
T-3	PRICE	80	24	12	-	8	8	8"	115	<15	0.013	LAY-IN	STEEL	WHITE	
T-4	PRICE	530	20	18	-	18	16	-	500	<15	0.017	SURFACE	STEEL	WHITE	
T-5	PRICE	80	22	20	-	20	18	-	800	<15	0.013	SURFACE	STEEL	WHITE	



VARIABLE AIR VOLUME BOX SCHEDULE AHU-1																										
PLAN CODE	AREA SERVED	MFGR	MODEL	SIZE		CFM		STATIC PRESSURE MIN. (IN WG)	NC LEVELS		HOT WATER COIL										BRANCH PIPING SIZE	NOTES				
				UNIT	OUTLET	MAX	MIN		RAD	DISCH	CFM	MBH	EAT	LAT	APD	GPM	EWT	LWT	WPD	ROWS/FP						
V-1-101	A102C DENTAL WKSTN	KRUEGER	LMHS	06	12x8	285	90	0.11	12	19	90	4.5	54	99.5	0.06	0.5	180	161.7	0.14	1-RH/10		1, 2, 3				
V-1-102	A103 CEPH ARM DENTAL	KRUEGER	LMHS	04	12x8	110	60	0.06	-	18	60	3.6	54	108.9	0.01	0.5	180	165.3	0.13	1-RH/10		1, 2, 3				
V-1-103	DENTAL OPERATORIES	KRUEGER	LMHS	04	12x8	210	130	0.24	21	30	130	5.3	54	91.7	0.04	0.5	180	158.2	0.14	1-RH/10		1, 2, 3				
V-1-104	A107 TECH LAB	KRUEGER	LMHS	06	12x8	375	150	0.18	16	21	150	6.1	54	91.7	0.09	0.8	180	164.3	0.29	1-RH/10		1, 2, 3				
V-1-105	A108 WET LAB	KRUEGER	LMHS	06	12x8	375	115	0.18	16	21	115	5	54	94.2	0.09	0.5	180	159.4	0.14	1-RH/10		1, 2, 3				
V-1-106	A110 OPERATORY	KRUEGER	LMHS	04	12x8	135	75	0.1	12	22	75	4	54	103.7	0.02	0.5	180	163.4	0.14	1-RH/10		1, 2, 3				
V-1-107	A112 CHECKOUT	KRUEGER	LMHS	04	12x8	165	50	0.14	16	26	50	5.2	54	113.2	0.02	0.5	180	166.8	0.13	1-RH/10		1, 2, 3				
V-1-108	DENTAL OPERATORIES	KRUEGER	LMHS	06	12x8	270	135	0.1	12	18	135	5.4	54	90.9	0.05	0.5	180	157.8	0.14	1-RH/10		1, 2, 3				
V-1-109	OPEN OPERATORIES	KRUEGER	LMHS	06	12x8	240	120	0.08	11	16	120	5.1	54	93.3	0.04	0.5	180	159	0.14	1-RH/10		1, 2, 3				
V-1-110	A119 MECH ROOM	KRUEGER	LMHS	12	16x15	800	800	0.2	11	-	800	43.6	54	104.2	0.18	1.5	180	120.2	0.18	3-RH/10		1, 2, 3				
V-1-111	A119A MECH CLOSET	KRUEGER	LMHS	14	20x17.5	1400	420	0.04	11	14												1, 2, 3				
V-1-112	TREATMENT ROOMS	KRUEGER	LMHS	08	12x10	380	190	0.09	12	16	190	7.7	54	91.6	0.06	0.8	180	158.8	0.33	1-RH/10		1, 2, 3				
V-1-113	A126 THERAP OFFICE	KRUEGER	LMHS	04	12x8	125	40	0.1	11	21	40	3.7	54	139.7	0.03	0.5	180	164.7	0.05	2-RH/10		1, 2, 3				
V-1-114	A127 REHAB GYM	KRUEGER	LMHS	14	20x17.5	1185	360	0.22	-	-	520	28.6	54	104.6	0.19	0.8	180	106.6	0.03	3-RH/10		1, 2, 3				
V-1-115	A129 PCC OFFICE	KRUEGER	LMHS	04	12x8	105	35	0.06	-	18	35	2.6	54	121.7	0.01	0.5	180	169.4	0.13	1-RH/10		1, 2, 3				
V-1-116	STORAGE, HALL	KRUEGER	LMHS	06	12x8	220	70	0.1	-	14	105	6.7	54	113	0.07	0.5	180	162.4	0.06	2-RH/10		1, 2, 3				
V-1-117	A134 WAITING	KRUEGER	LMHS	04	12x8	170	55	0.18	17	26	60	4.9	54	129.1	0.05	0.5	180	159.9	0.06	2-RH/10		1, 2, 3				
V-1-118	A135 RECEPTION	KRUEGER	LMHS	04	12x8	190	60	0.19	18	29	60	3.6	54	108.9	0.03	0.5	180	165.3	0.13	1-RH/10		1, 2, 3				
V-1-119	OFFICES	KRUEGER	LMHS	06	12x8	300	90	0.18	13	18	260	13.4	54	101.5	0.12	1	180	152.5	0.14	2-RH/10		1, 2, 3				
V-1-120	A141 GROUP LG CONF	KRUEGER	LMHS	06	12x8	415	125	0.21	17	22	125	5.2	54	92.5	0.1	0.5	180	156.6	0.14	1-RH/10		1, 2, 3				
V-1-121	A142 OFFICE	KRUEGER	LMHS	06	12x8	235	75	0.11	-	16	235	12.8	54	104.1	0.08	1	180	153.8	0.14	2-RH/10		1, 2, 3				
V-1-122	OFFICES	KRUEGER	LMHS	08	12x10	435	135	0.18	13	17	435	22.3	54	101.2	0.14	2	180	157.1	0.57	2-RH/10		1, 2, 3				
V-1-123	PUBLIC HALL, WAITING	KRUEGER	LMHS	08	12x10	515	300	0.23	14	18	300	14.4	54	98.1	0.18	0.8	180	140.7	0.14	2-RH/10		1, 2, 3				
V-1-124	SHARED OFFICES	KRUEGER	LMHS	08	12x10	430	130	0.18	13	17	405	20.4	54	100.3	0.14	1.5	180	152.1	0.33	2-RH/10		1, 2, 3				
V-1-125	SHARE OFF, MA WORK	KRUEGER	LMHS	08	12x10	455	140	0.19	13	18	380	19.8	54	101.9	0.15	1.5	180	152.9	0.33	2-RH/10		1, 2, 3				
V-1-126	EXAM ROOMS, CORR	KRUEGER	LMHS	08	12x10	440	220	0.11	13	18	220	8.7	54	90.3	0.07	1	180	162.2	0.56	1-RH/10		1, 2, 3				
V-1-127	A155 TREATMENT	KRUEGER	LMHS	08	12x10	200	200	0.03	-	13	200	8.3	54	92.1	0.02	1	180	163	0.56	1-RH/10		1, 2, 3				
V-1-128	EXAM ROOMS, CLN SUP	KRUEGER	LMHS	06	12x8	350	130	0.16	14	20	165	6.6	54	90.9	0.08	1	180	166.4	0.43	1-RH/10		1, 2, 3				
V-1-129	OP WAIT, PUBLIC CIRC	KRUEGER	LMHS	08	12x10	490	150	0.14	14	19	150	6.4	54	93.6	0.09	0.5	180	153.5	0.19	1-RH/10		1, 2, 3				
V-1-130	CONSULT, OFFICE	KRUEGER	LMHS	04	12x8	170	55	0.16	17	26	55	3.4	54	110.9	0.03	0.5	180	166.1	0.13	1-RH/10		1, 2, 3				
V-1-131	B124 PHARM TECH WORK	KRUEGER	LMHS	12	16x15	1400	420	0.23	17	18	420	17	54	91.2	0.15	2	180	162.6	0.51	1-RH/10		1, 2, 3				
V-1-132	RECEIVE, MED STOR	KRUEGER	LMHS	06	12x8	450	135	0.25	18	24	135	5.4	54	90.9	0.12	0.5	180	157.8	0.14	1-RH/10		1, 2, 3				
V-1-133	LOCKERS, CORR	KRUEGER	LMHS	06	12x8	225	110	0.07	-	16	110	4.9	54	95.2	0.04	0.5	180	159.8	0.14	1-RH/10		1, 2, 3				
V-1-134	B130 LACTATION	KRUEGER	LMHS	04	12x8	100	30	0.05	-	17	30	2.3	54	125.4	0.01	0.5	180	170.5	0.13	1-RH/10		1, 2, 3				
V-1-135	B138 CONSULT/UTC	KRUEGER	LMHS	06	12x8	285	60	0.11	12	19	60	3.6	54	108.9	0.06	0.5	180	165.3	0.13	1-RH/10		1, 2, 3				
V-1-136	EXAM ROOMS	KRUEGER	LMHS	06	12x8	340	120	0.15	14	20	120	5.1	54	93.3	0.08	0.5	180	159	0.14	1-RH/10		1, 2, 3				
V-1-137	CORR, MA WORK, ALCO	KRUEGER	LMHS	06	12x8	260	100	0.09	12	18	100	4.7	54	97.2	0.05	0.5	180	160.7	0.14	1-RH/10		1, 2, 3				
V-1-138	B144 MEDS	KRUEGER	LMHS	04	12x8	145	45	0.11	13	23	60	3.6	54	108.9	0.02	0.5	180	165.3	0.13	1-RH/10		1, 2, 3				
V-1-139	B145 SHARED OFFICE	KRUEGER	LMHS	04	12x8	170	55	0.16	17	26	55	3.4	54	110.9	0.03	0.5	180	166.1	0.13	1-RH/10		1, 2, 3				
V-1-140	B150 SHARED SPEC	KRUEGER	LMHS	04	12x8	170	55	0.16	17	26	55	3.4	54	110.9	0.03	0.5	180	166.1	0.13	1-RH/10		1, 2, 3				
V-1-141	B146 OPEN OFFICE	KRUEGER	LMHS	06	12x8	285	90	0.11	12	19	90	4.5	54	99.5	0.06	0.5	180	161.7	0.14	1-RH/10		1, 2, 3				
V-1-142	NUTRIT, PRS LEAD	KRUEGER	LMHS	04	12x8	180	55	0.17	18	27	55	3.4	54	110.9	0.03	0.5	180	166.1	0.13	1-RH/10		1, 2, 3				
V-1-143	B154 RECEPTION	KRUEGER	LMHS	06	12x8	300	90	0.12	13	18	90	4.5	54	99.5	0.06	0.5	180	161.7	0.14	1-RH/10		1, 2, 3				
V-1-144A	LOBBY	KRUEGER	LMHS	16	24x18	1950	800	0.18	13	12	600	30.4	54	100.8	0.13	3.5	180	162.1	0.69	1-RH/10		1, 2, 3				
V-1-144B	LOBBY	KRUEGER	LMHS	16	24x18	1950	800	0.18	13	12	600	30.4	54	100.8	0.13	3.5	180	162.1	0.69	1-RH/10		1, 2, 3				
V-1-144C	LOBBY	KRUEGER	LMHS	16	24x18	1950	800	0.18	13	12	600	30.4	54	100.8	0.13	3.5	180	162.1	0.69	1-RH/10		1, 2, 3				
V-1-144D	LOBBY	KRUEGER	LMHS	16	24x18	1950	800	0.18	13	12	600	30.4	54	100.8	0.13	3.5	180	162.1	0.69	1-RH/10		1, 2, 3				
V-1-145	C101 BLOOD DRAW	KRUEGER	LMHS	04	12x8	110	50	0.06	-	18	50	5.2	54	113.2	0.01	0.5	180	166.8	0.13	1-RH/10		1, 2, 3				
V-1-146	C103 OPEN LAB	KRUEGER	LMHS	14	20x17.5	1400	730	0.2	-	13	730	29	54	90.6	0.16	1	180	120.4	0.08	2-RH/10		1, 2, 3				
V-1-147	RECEP, HALL, LAB SUP	KRUEGER	LMHS	06	12x8	380	115	0.18	16	21	115	5	54	94.2	0.09	0.5	180	159.4	0.14	1-RH/10		1, 2, 3				
V-1-148	TEST, OP LANES	KRUEGER	LMHS	08	12x10	550	165	0.16	16	20	165	6.7	54	91.6	0.1	0.5	180	162.4	0.19	1-RH/10		1, 2, 3				
V-1-149	C112 OFFICE	KRUEGER	LMHS	04	12x8	130	45	0.1	11	22	45	3	54	115.7	0.02	0.5	180	167.6	0.13	1-RH/10		1, 2, 3				
V-1-150	STAFF CORR, BREAK	KRUEGER	LMHS	06	12x8	440	135	0.23	18	24	135	5.4	54	90.9	0.11	0.5	180	157.8	0.14	1-RH/10		1, 2, 3				
V-1-151	C114 DECON	KRUEGER	LMHS	10	14x12.5	600	500	0.16	-	13	500	17.8	54	86.8	0.13	0.8	180	131.3	0.07	2-RH/10		1, 2, 3				
V-1-153	C136 LAUNDRY	KRUEGER	LMHS	10	14x12.5	750	700	0.23	-	13	700	28.5	54	91.5	0.18	1.5	180	140.9	0.2	2-RH/10		1, 2, 3				
V-1-154	C137 OFFICE	KRUEGER	LMHS	04	12x8	120	40	0.09	-	21	120	7.2	54	109.1	0.03	0.5	180	150.								

ELECTRIC BOILER SCHEDULE										
PLAN CODE	MFGR	MODEL	FUEL	INPUT (KW)	OUTPUT (MBH)	CAPACITY CONTROL	POWER (V-PH-HZ)	MCA / MOP (AMPS)	OPERATING WEIGHT (LBS)	NOTES
B-3	SUSSMAN	EWX1200	ELECTRIC	1200	4,013	NOTE 1	480-3-30	1805 / 2000	4493	1, 2, 3, 4, 5
NOTES: 1) FORTY 30 KW ELEMENTS, WITH SCR MODULATING CONTROL ON THE LEAD STAGE 2) 100 KA SSCR 3) WITH SAFTEY RELIEF VALVE 100 PSI 4) WITH AUTO RESET PRIMARY HIGH TEMP LIMIT & MANUAL RESET SECONDARY HIGH TEMP LIMIT 5) HEATING MEDIA IS WATER										

HYDRONIC DUCT COIL SCHEDULE															
PLAN CODE	MANF	MODEL	SERVICE	SIZE (W" x H")	ACFM	EAT/LAT (°F DB)	EWTL/LWT (°F)	FLOW (GPM)	CAPACITY (MBH)	FLUID	AIR PRESS DROP (IN. W.C.)	WATER PRESS DROP (FT W.C.)	ROWS / FPI	PIPING RUNOUT SIZE (INCH)	NOTES
DC-1	TEMTROL	SWC	CAF-1 COMBUSTION AIR	32 X 24	3300	28.5	180 / 131.4	8	178.2	45 % PG	0.30	5.00	2 / 9	1-1/4"	1
NOTES: 1) ECOAT COIL FOR CORROSION RESISTANCE															

BASEBOARD HYDRONIC RADIATION SCHEDULE									
PLAN CODE	MFGR	MODEL	BTUH / LF	LENGTH	BTUHR	AVERAGE WATER TEMP (°F)	GPM	SUPPLY PIPE SIZE	NOTES
BH-1A	JAGA	STRADA TYPE 10	1000	8'-2"	8000	160	0.75	1/2"	1, 2, 3, 4, 5
BH-1B	JAGA	STRADA TYPE 10	1000	8'-2"	8000	160	0.75	1/2"	1, 2, 3, 4, 5
BH-2A	JAGA	STRADA TYPE 10	1000	6'-0"	6000	160	0.75	1/2"	1, 2, 3, 4, 5
BH-2B	JAGA	STRADA TYPE 10	1000	6'-0"	6000	160	0.75	1/2"	1, 2, 3, 4, 5
BH-3A	JAGA	STRADA TYPE 10	1000	7'-2"	7000	160	0.75	1/2"	1, 2, 3, 4, 5
BH-3B	JAGA	STRADA TYPE 10	1000	7'-2"	7000	160	0.75	1/2"	1, 2, 3, 4, 5
BH-4A	JAGA	STRADA TYPE 10	1000	7'-2"	7000	160	0.75	1/2"	1, 2, 3, 4, 5
BH-4B	JAGA	STRADA TYPE 10	1000	7'-2"	7000	160	0.75	1/2"	1, 2, 3, 4, 5
BH-5	JAGA	STRADA TYPE 10	1000	7'-5"	7500	160	0.75	1/2"	1, 2, 3, 4, 5
BH-6	VULCAN	VC3/4-433	930	5'6"	5100	170	0.50	1/2"	6, 7
NOTES: 1) NO SUBSTITUTIONS UNLESS APPROVED BY ARCHITECT 2) HEATING MEDIA IS WATER (NO GLYCOL) 3) ENCLOSED HYDRONIC CONVECTOR 4) STANDARD WHITE COLOR 5) EQUIPMENT SHALL BE RATED FOR MINIMUM 100 PSIG 6) FINNED TUBE BASEBOARD HEAT, SINGLE TIER, 3-5/8" X 4-1/4" FIN SIZE, 14" ENCLOSURE HEIGHT, 18" MOUNTING HEIGHT, SLOPE TOP ENCLOSURE 7) IN MFR STANDARD COLOR AS SELECTED BY ARCHITECT									

SNOWMELT MANIFOLD SCHEDULE													
PLAN CODE	AREA SERVED	AREA (SF)	TOTAL PANEL LOAD (MBH) (NOTE 3)	INTENSITY (BTU/SF)	FLOW RATE (GPM)	WPD (FT)	TUBE SPACING (IN)	CIRCUIT LENGTH (FT)	NUMBER OF CIRCUITS	TUBE DIA. (IN)	MANIFOLD DIA. (IN)	SUPPLY TEMP (°F)	NOTES
M-1	BEHAVIORAL HEALTH	962	243.4	220	29.0	25.0	9	250	5	3/4	2"	116	1,2,3,4,5
M-2	NORTH SIDEWALK - WEST SIDE	690	174.6	220	21.0	25.0	9	250	4	3/4	2"	116	1,2,3,4,5
M-3	MAIN CLINIC DROP OFF	1,405	355.5	220	42.0	25.0	9	250	8	3/4	2.5	116	1,2,3,4,5
M-4	ED DROP OFF	1,166	295	220	35.0	25.0	9	250	7	3/4	2.5	116	1,2,3,5
M-5	AMBULANCE BAY	925	234	220	28.0	25.0	9	250	5	3/4	2"	116	1,2,3,5
M-6	LONG TERM CARE	1,382	350	220	41.0	25.0	9	250	8	3/4	2.5	116	1,2,3,4,5
NOTES: 1) TUBING DESIGNED FOR 20°F DELTA T 2) SNOWMELT MEDIA IS 45% PROPYLENE GLYCOL 3) INCLUDES BACK AND EDGE LOSSES 4) PROVIDE RECESSED MANIFOLD BOX WITH LOCKING COVER 5) USE CUSTOM CUT COPPER MANIFOLD													

ELECTRIC HEATER SCHEDULE							
PLAN CODE	MFGR	MODEL	WATTS	NOMINAL DIMENSIONS (L x H x D)		POWER (V-PH-HZ)	NOTES
EUH-1	QMARK	HUHAA320	3,000	14" x 16" x 8"		208-1-60	3
EUH-2	QMARK	HUHAA320	3,000	14" x 16" x 8"		208-1-60	3
NOTES:							
1) ELECTRIC BASEBOARD HEATER							
2) WALL MOUNTED ELECTRIC HEATER WITH INTEGRAL FAN							
3) WITH WALL MOUNTING BRACKET, WITH DISCONNECT SWITCH, WITH INTEGRAL T-STAT. HEATER COLOR BEIGE.							
4) UNIT MOUNTED THERMOSTAT							
5) WITH INTEGRAL DISCONNECT							
6) WITH SHIPPED LOOSE LINE VOLTAGE WALL THERMOSTAT MODEL M611W FOR 120 VOLT HEATERS, M612W FOR 240 VOLT HEATERS							
7) RECESSED MOUNT OR SEMI-RECESSED DEPENDING ON PLAN NOTES							

LINEAR FAN TERMINAL UNIT SCHEDULE																	
PLAN CODE	MFGR	MODEL	MBH	NOMINAL OVERALL SIZE (IN)			EWT / LWT	EAT / LAT	GPM	HP	CFM	POWER (V/ PH / HZ)	LOCATION	PIPING R/G SIZE	MAX WPD (FT/WC)	ROW / FPI	NOTES
				L	W	H											
LFT-1	AIRFIXTURE	SOHO	19	84	8	8	180 /	68 / 125.9	1	N/A	300	24 VDC	VESTIBULE	3/4"	3.2	3 / 8	1, 2, 3, 4, 5,6,7,8
LFT-2	AIRFIXTURE	SOHO	19	84	8	8	180 /	68 / 125.9	1	N/A	300	24 VDC	VESTIBULE	3/4"	3.2	3 / 8	1, 2, 3, 4, 5,6,7,8
LFT-3	AIRFIXTURE	SOHO	19	84	8	8	180 /	68 / 125.9	1	N/A	300	24 VDC	VESTIBULE	3/4"	3.2	3 / 8	1, 2, 3, 4, 5,6,7,8
LFT-4	AIRFIXTURE	SOHO	10	62	7	4	180 /	68 / 125.9	0.5	N/A	185	24 VDC	DINING	1/2"	3 / 8	1, 2, 3, 4, 5,6,7,8	
LFT-5	AIRFIXTURE	SOHO	10	62	7	4	180 /	68 / 125.9	0.5	N/A	185	24 VDC	DINING	1/2"	3 / 8	1, 2, 3, 4, 5,6,7,8	
LFT-6	AIRFIXTURE	SOHO	10	62	7	4	180 /	68 / 125.9	0.5	N/A	185	24 VDC	DINING	1/2"	3 / 8	1, 2, 3, 4, 5,6,7,8	
LFT-7	AIRFIXTURE	SOHO	10	62	7	4	180 /	68 / 125.9	0.5	N/A	185	24 VDC	DINING	1/2"	3 / 8	1, 2, 3, 4, 5,6,7,8	
NOTES:																	
1) PROVIDE MOUNTING BRACKET TO HANG FROM CEILING																	
2) PROVIDE EXTRUDED ALUMINUM GRILLE WITH FLANGED BORDER, AND STANDARD BAR SPACING																	
3) ALUMINUM GRILLE POWDER COATED WITH FACTORY COLOR SKY WHITE SPW-019																	
4) ALTITUDE 0' ABOVE SEA LEVEL																	
5) MC TO VERIFY ACCESS SIDE																	
6) FURNISH ONE POWER HUB 120 V, 1 PHASE, 60 HZ INPUT 3.8 AMP MCA, 5 AMP MOP POWERING LFT-1,2,3 AND ANOTHER POWERING LFT-4,5,6,7																	
7) UNIT LOW VOLTAGE WIRING AND CONTROLS SHALL BE FURNISHED WITH UNIT																	
8) FLUID IS WATER																	

MULTIPURPOSE TANK SCHEDULE									
PLAN CODE	MFGR	SYSTEM	MODEL	SIZE (GALLONS)	WET WEIGHT (LBS)	DIAMETER	HEIGHT	FLANGE SIZE	NOTES
MPT-1	TACO	CHILLED WATER	MPT0500	500	5330	48"	82"	6"	1
NOTES: 1) WATER WEIGHT 4170 LBS, TOTAL OPERATING WEIGHT 5935 LBS									

HYDRONIC UNIT HEATER SCHEDULE																				
PLAN CODE	MFGR	MODEL	AREA SERVED	TYPE	CFM	MBH (CORRECTED)	EAT (°F)	LAT (°F)	GPM	EWT (°F)	LWT (°F)	WPD (FT WC)	ROWS	MOTOR (HP)	WEIGHT (LBS)	POWER			BRANCH PIPING SIZE	NOTES
																VOLT	PH	FREQ		
CUH-1	SIGMA	SFF-A-04	NORTH STAIRS	WALL	400	19.8	65.0	110.6	1.00	180.0	139.5	0.2	1	0.10	125	120	1	60	1/2	1, 3, 4, 5
CUH-2	SIGMA	SFF-A-04	PT VESTIBULE	CEILING	400	19.8	65.0	110.6	1.00	180.0	139.5	0.2	1	0.10	125	120	1	60	1/2	2, 3, 4, 5
CUH-3	SIGMA	SFF-A-08	ED WAITING VEST	CEILING	800	38.6	65.0	110	3.00	180.0	155	0.2	1	0.10	150	120	1	60	3/4	2, 3, 4, 5
CUH-4	SIGMA	SFF-A-02	NORTH STAIR 2ND	WALL	220	10.2	65.0	107.7	0.50	180.0	138	0.15	1	0.10	75	120	1	60	1/2	1, 3, 4, 5
UH-1	SIGMA	015H	A122 FIRE RISER	SUSPENDED	400	11.8	60.0	87.3	1.00	180.0	155.0	0.1	NA	0.10	25	120	1	60	1/2	3, 4, 5, 6
UH-2	SIGMA	025H	BOILER RM	SUSPENDED	590	19.6	60.0	90.6	1.50	180.0	155.0	0.3	NA	0.10	40	120	1	60	3/4	3, 4, 5, 6
UH-3	SIGMA	015H	FACILITIES	SUSPENDED	400	11.1	65.0	90.6	1.00	180.0	155.0	0.10	NA	0.10	25	120	1	60	1/2	3, 4, 5, 6
UH-4	SIGMA	030H	WAREHOUSE	SUSPENDED	520	21.3	70.0	107.7	1.75	180.0	155.0	0.70	NA	0.10	40	120	1	60	3/4	3, 4, 5, 6
UH-5	SIGMA	047H	PENTHOUSE	SUSPENDED	830	36.3	65.0	100.3	3.00	180.0	155.0	0.3	NA	0.10	48	120	1	60	3/4	3, 4, 5, 6
NOTES: 1) FULLY EXPOSED, WALL MOUNT, FRONT TOP OUTLET, FRONT BOTTOM INLET 2) FULLY RECESSED, CEILING MOUNT, WITH AIR INLET AND OUTLET INTEGRAL TO THE FACE PANEL. 3) MANUFACTURER'S STANDARD COLOR SELECTED BY ARCHITECT 4) WITH MOTOR SPEED CONTROL AND ON / OFF SWITCH 5) MC TO VERIFY PIPING AND ACCESS SIDE 6) WITH UNIT MOUNTED UNFUSED DISCONNECT SWITCH																				

OIL FIRED BOILER SCHEDULE															
PLAN CODE	MFR	MODEL	BOILER TYPE	NOMINAL RATING (BLR HP)	FUEL	MBH INPUT / OUTPUT	RELIEF VALVE PSI	BURNER DATA						WEIGHT (LBS DRY / LBS OPERATING)	NOTES
								MFR	MODEL	FUEL RATE (GPH)	CAPACITY CONTROL	MOTOR HP	POWER (V-PH-HZ)		
B-1	BURNHAM	3PW-60	SCOTCH MARINE	60	#2 FUEL OIL	2436 / 2087	60	BECKETT	CF2300	17.4	LOW/HIGH/OFF	3/4 HP	120-1-60	5,970 / 9025	1, 2, 3, 4, 5
B-2	BURNHAM	3PW-60	SCOTCH MARINE	60	#2 FUEL OIL	2436 / 2087	60	BECKETT	CF2300	17.4	LOW/HIGH/OFF	3/4 HP	120-1-60	5,970 / 9025	1, 2, 3, 4, 5
NOTES: 1) LINKAGELESS LOW / HIGH / OFF CAPACITY CONTROL 2) AIR PROVING SWITCH 3) DIRECT SPARK IGNITION OF MAIN FLAME 4) FLAME SAFEGUARD WITH UV SENSOR OR LIGHT SENSOR 5) UL & CSD-1 COMPLIANT															

1) LINKAGELESS LOW / HIGH / OFF CAPACITY CONTROL												
2) AIR PROVING SWITCH												
3) DIRECT SPARK IGNITION OF MAIN FLAME												
4) FLAME SAFEGUARD WITH UV SENSOR OR LIGHT SENSOR												
5) UL & CSD-1 COMPLIANT												

PUMP SCHEDULE													
PLAN CODE	MFGR	MODEL	TYPE	PUMPED FLUID	GPM	HEAD (FT WC)	MOTOR				IMPELLER DIAMETER (IN)	EFFICIENCY (%)	NOTES
							NAMEPLATE HP	BRAKE HP	RPM	POWER (V-Ph-Hz)			
BCP-1	TACO	KV3006D	VERTICAL INLINE	WATER	175	22	1.5	1.25	1760	208-3-60	5.75	76	1
BCP-2	TACO	KV3006D	VERTICAL INLINE	WATER	175	22	1.5	1.25	1760	208-3-60	5.75	76	1
BCP-3	TACO	KV3006D	VERTICAL INLINE	WATER	350	22	3.0	2.57	1760	208-3-60	5.8	74	1
HWP-1	TACO	FI2510C	BASE MOUNTED	WATER	350	77	10	8.72	1760	480-3-60	10	78	2, 5, 6, 8
HWP-2	TACO	FI2510C	BASE MOUNTED	WATER	350	77	10	8.72	1760	480-3-60	10	78	2, 5, 6, 8
GP-1	GRUNDFOSS	TPE3 50-240	VERTICAL INLINE	45% PROP GLYCOL	71	62	3	1.78	5900	208-3-60	2.91	63	3
GP-2	GRUNDFOSS	TPE3 50-240	VERTICAL INLINE	45% PROP GLYCOL	71	62	3	1.78	5900	208-3-60	2.91	63	3
CWP-1	GRUNDFOSS	CRE 45-1-1	VERTICAL INLINE	35% PROP GLYCOL	200	40	7.5	3.28	2821	480-3-60	5.37	64	4, 5, 7, 8
CWP-2	GRUNDFOSS	CRE 45-1-1	VERTICAL INLINE	35% PROP GLYCOL	200	40	7.5	3.28	2821	480-3-60	5.37	64	4, 5, 7, 8
CWP-3	GRUNDFOSS	CRE 45-1-1	VERTICAL INLINE	35% PROP GLYCOL	200	70	7.5	4.61	3375	480-3-60	5.32	69	4, 5, 7, 8
CWP-4	GRUNDFOSS	CRE 45-1-1	VERTICAL INLINE	35% PROP GLYCOL	200	70	7.5	4.61	3375	480-3-60	5.32	69	4, 5, 7, 8
SMP-1	TACO	KV1506D	VERTICAL INLINE	45% PROP GLYCOL	29	32	1	0.45	1760	208-3-60	5.32	54	
SMP-2	TACO	FI2007	BASE MOUNTED	45% PROP GLYCOL	119	40	3	1.68	1760	208-3-60	6.5	74	
SMP-3	TACO	KV1506D	VERTICAL INLINE	45% PROP GLYCOL	41	31	1	0.75	1760	208-3-60	5.5	62	

PLUMBING FIXTURE & CONNECTION SCHEDULE

ALL PLUMBING EQUIPMENT SHALL BE IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS AND BE OF SIZE AND TYPE INDICATED. EACH SHALL BE OF MAKE AND MODEL LISTED OR EQUAL.

			FIXTURE				TRIM			ACCESSORIES			CONNECTIONS				REMARKS	CODE
	ITEM	MFRG	MODEL	TYPE	MATERIAL	COLOR	ITEM	MFRG	MODEL	ITEM	MFRG	MODEL	COLD	HOT	WASTE	VENT		
L-1	LAVATORY	AMER. STND.	0356.421	WALL HUNG	VIT. CHINA	WHITE	FAUCET	CHICAGO FAUCET	3511-E2805AB	DRAIN	ELKAY	LKAD174	½"	½"	2"	1½"	NOTE: 2, 3, 5, 6, 11, 15, 16, 75	L-1
L-2	LAVATORY	AMER. STND.	0356.015	WALL HUNG	VIT. CHINA	WHITE	FAUCET	AMER. STND.	6540.180	DRAIN	ELKAY	LKAD174	½"	½"	2"	1½"	NOTE: 2, 3, 5, 6, 15, 16, 75	L-2
L-3	LAVATORY	BY OTHERS	-	INTEGRAL	SOLID SURFACE	WHITE	FAUCET	AMER. STND.	6540.180	DRAIN	ELKAY	LKAD174	½"	½"	2"	1½"	NOTE: 2, 3, 4, 5, 8, 15, 75	L-3
HS-1	HAND SINK	AMER. STND.	0356.015	WALL HUNG	VIT. CHINA	WHITE	FAUCET	AMER. STND.	6540.180	DRAIN	ELKAY	LKAD174	½"	½"	2"	1½"	NOTE: 2, 3, 5, 15, 16, 75	HS-1
HS-2	HAND SINK	ELKAY	EW5F130261	WALL HUNG	STAINLESS STEEL	-	REMOTE SPOUT	CHICAGO FAUCET	626-E36ABCP	DRAIN	ELKAY	LK18	½"	½"	2"	1½"	NOTE: 1, 2, 3, 5, 17, 31, 75	HS-2
							REMOTE VALVE	CHICAGO FAUCET	834-EP5LOABCP									
HS-3	HAND SINK	ELKAY	CHS17161	WALL HUNG	STAINLESS STEEL	WHITE	FACE/EYE WASH	GUARDIAN	G1798LH-L	TMV	GUARDIAN	G6020	½"	½"	-	-	NOTE: 44, 45	
							FAUCET	CHICAGO FAUCET	116.309.735 ABT	DRAIN	ELKAY	LKAD174	½"	½"	2"	1½"	NOTE: 2, 3, 5, 12, 15, 75	HS-3
S-1	SINK	BY OTHERS	-	INTEGRAL	SOLID SURFACE	-	FAUCET	AMER. STND.	6540.180	DRAIN	ELKAY	LKAD174	½"	½"	2"	1½"	NOTE: 2, 3, 5, 8, 15, 75	S-1
S-2	SINK	BY OTHERS	-	INTEGRAL	SOLID SURFACE	-	FAUCET	AMER. STND.	6540.180	DRAIN	ELKAY	LKAD174	½"	½"	2"	1½"	NOTE: 2, 3, 5, 8, 15, 75	S-2
S-3	SINK	BY OTHERS	-	INTEGRAL	SOLID SURFACE	-	FAUCET	BY OTHERS	-	DRAIN	BY OTHERS	-	½"	½"	2"	1½"	NOTE: 2, 3, 10, 18, 19, 75	S-3
S-4	SINK	ELKAY	ELUHAD191655	UNDERMOUNT	STAINLESS STEEL	-	FAUCET	DELTA	9159-LS-DST	DRAIN	ELKAY	LK18B	½"	½"	2"	1½"	NOTE: 1, 2, 3, 5, 7, 75	S-4
S-5	SINK	ELKAY	DLFR251912	DROP-IN	STAINLESS STEEL	-	FAUCET	GROHE ZEDRA	30368DC2	DRAIN	ELKAY	LK18B	½"	½"	2"	1½"	NOTE: 1, 2, 3, 5, 7, 9, 75, 82	S-5
S-6	SINK	ELKAY	LR1716	DROP-IN	STAINLESS STEEL	-	FAUCET	T&S BRASS	MPZ-8DCN-08	DRAIN	ELKAY	LK18B	½"	½"	2"	1½"	NOTE: 1, 2, 3, 5, 7, 75, 81	S-6
S-7	SINK	ELKAY	ELUHAD321655	UNDERMOUNT	STAINLESS STEEL	-	FAUCET	DELTA	9159-LS-DST	INTERCEPTOR	JR SMITH	871-TD150	½"	½"	2"	1½"	NOTE: 1, 2, 3, 5, 7, 14, 75	S-7
										DRAIN	ELKAY	LK18B	½"	½"				
S-8	SINK	ELKAY	ELUHAD321655	UNDERMOUNT	STAINLESS STEEL	-	FAUCET	GROHE K7	31380000	AIR GAP	ELKAY	LK105LS						
S-9	SINK	ELKAY	LKHSR2509R6PD	DROP-IN	STAINLESS STEEL	-	FAUCET	CHICAGO FAUCET	50-309603AB	DRAIN	ELKAY	LK18B	½"	½"	2"	1½"	NOTE: 1, 2, 3, 5, 7, 13, 14, 20, 75	S-9
S-10	SINK	ELKAY	LR1716	DROP-IN	STAINLESS STEEL	-	FAUCET	AMER. STND.	6540.180	DRAIN	ELKAY	LK18B	½"	½"	2"	1½"	NOTE: 1, 2, 3, 5, 7, 75	S-10
S-X	SINK	BY OTHERS	-	DROP-IN	STAINLESS STEEL	-	FAUCET	BY OTHERS	-	DRAIN	ELKAY	LK18B	½"	½"	2"	1½"	NOTE: 1, 2, 3, 75, 79	S-X
SB-1	SHAMPOO BOWL	ACCESSIBLE SYS.	K100	WALL/FLOOR MOUNT	SOLID SURFACE	BLACK	FAUCET	ACCESS. SYS.	650	DRAIN	ELKAY	LK174	½"	½"	2"	1½"	NOTE: 1, 2, 3, 21, 22, 75	SB-1
										HAIR TRAP	PIBBS IND.	PIB-HT10						
US-1	SINK	EL MUSTEE	17F	FLOOR/STAND	MOLDED FIBERGLASS	-	FAUCET	T&S BRASS	B-0133-ADF10-B	DRAIN	ELKAY	LK18B	½"	½"	2"	2"	NOTE: 7	US-1
SS-1	SCRUB SINK	ELKAY	EW52520FC	WALL HUNG	STAINLESS STEEL	-	REMOTE SPOUT	CHICAGO FAUCET	629-GN2FCABCP	GRID DRAIN	ELKAY	LK18B	½"	½"	2"	2"	NOTE: 1, 2, 3, 7	SS-1
							REMOTE VALVE	CHICAGO FAUCET	834-EP5LOABCP									
CS-1	CLINIC SINK	AMER. STD.	9512.999	WALL HUNG	VIT. CHINA	WHITE	FLUSH VALVE	SLOAN	DOLPHIN 117-6.5	-	-	-	1"	-	4"	2"	NOTE: 32, 33, 75	CS-1
							RIM GUARD	AMER. STD.	7832512.075	FAUCET	T&S BRASS	B-0133-ADF10-B	¾"	¾"	-	-		
MSK-1	MOP SINK	E.L. MUSTEE	63M	FLOOR MOUNT	DURASTONE	-	FAUCET	CHICAGO	445-897SRXKCCP	DRAIN STRAINER	E.L. MUSTEE	STAINLESS	¾"	¾"	3"	2"	NOTE: 23, 75	MSK-1
WC-1	WATER CLOSET	AMER. STND.	3043.001	FLOOR MOUNT	VIT. CHINA	WHITE	FLUSH VALVE	SLOAN	ROYAL 111-1.28	SEAT	CHURCH	2955SCT	1"	-	3"	2"	NOTE: 28, 29, 75	WC-1
WC-2	WATER CLOSET	AMER. STND.	3465.001	FLOOR MOUNT	VIT. CHINA	WHITE	FLUSH VALVE	SLOAN	ROYAL 111-1.28	SEAT	CHURCH	1955SCT	1"	-	3"	2"	NOTE: 28, 29, 30, 75	WC-2
SH-1	SHOWER	INPRO	PRISM	SHOWER PAN	SOLID SURFACE	-	SHOWER VALVE	DELTA	SV-1 (SEE SCHEDULE)	DRAIN	SIoux CHIEF	827B	-	-	2"	2"	NOTE: 36, 75	SH-1
SH-2	SHOWER	BY OTHERS	-	-	-	-	SHOWER VALVE	DELTA	SV-1 (SEE SCHEDULE)	DRAIN	FD-X	BY OTHERS	-	-	2"	2"	NOTE: 35, 38, 75	SH-2
SH-3	SHOWER	BEST BATH	P26333A75FTB.V3	SHOWER PAN	FIBERGLASS/ACRYLIC	WHITE	SHOWER VALVE	DELTA	SV-1 (SEE SCHEDULE)	DRAIN	BEST BATH	TRENCH	-	-	2"	2"	NOTE: 37, 64, 75	SH-3
SH-4	SHOWER	BEST BATH	LSS24038A75FTB.V3	SHOWER PAN	FIBERGLASS/ACRYLIC	WHITE	SHOWER VALVE	DELTA	SV-1 (SEE SCHEDULE)	DRAIN	BEST BATH	TRENCH	-	-	2"	2"	NOTE: 37, 64, 75	SH-4
SV-1	SHOWER VALVE	DELTA	T14259	T BALANCED	BRASS	CHROME	HANDHELD SHOWER	CHICAGO	154-ACP	-	-	-	½"	½"	-	-	NOTE: 34, 75	SV-1
BT-1	BATHING TUB	BY OTHERS	-	-	-	-	TUB FILLER	BY OTHERS	-	DRAIN	BY OTHERS	-	¾"	¾"	2"	2"	NOTE: 71, 72, 73, 74	BT-1
EW-1	ELECTRIC WATER COOLER	ELKAY	LZSTLG8W/SLK	WALL - SURFACE	STAINLESS STEEL	-	FILTER	ELKAY	51300C	-	-	-	½"	-	2"	2"	NOTE: 2, 24, 26, 27, 75	EW-1
BF-1	BOTTLE FILLER	ELKAY	EZW58K	WALL - RECESSED	STAINLESS STEEL	-	FILTER	ELKAY	EWF3000	-	-	-	½"	-	2"	2"	NOTE: 2, 25, 27, 75	BF-1
DH-1	EMERG. DRENCH HOSE	GUARDIAN	5046BP	WALL MOUNT	BRONZE	POL CHROME	THERM. MIX VALVE	GUARDIAN	G6024-1R5	-	-	-	½"	½"	-	-	NOTE: 2, 44, 45, 46	DH-1
DH-2	EMERG. DRENCH HOSE	GUARDIAN	5022BP	DECK-MOUNT	BRONZE	POL CHROME	THERM. MIX VALVE	GUARDIAN	G6020	-	-	-	½"	½"	-	-	NOTE: 2, 44, 45	DH-2
DH-X	EMERG. DRENCH HOSE	BY OTHERS	-	DECK-MOUNT	-	-	THERM. MIX VALVE	BY OTHERS	-	-	-	-	½"	½"	-	-	NOTE: 2, 45, 79	DH-X
ESS-1	EMERG. SAFETY STATION	GUARDIAN	GBF2250	RECESSED/CEILING	BRONZE	POL CHROME	THERM. MIX VALVE	GUARDIAN	G6040	-	-	-	1"	1"	2"	2"	NOTE: 45, 78	ESS-1
TMV-1	THERM. MIXING VALVE	POWERS	LFIS150VL	ELECTRONIC MIXING	LEAD-FREE BRONZE	-	-	-	-	-	-	-	1½"	1½"	-	-	NOTE: ASSE 1017 COMPLIANT, 39, 59	TMV-1
TMV-2	THERM. MIXING VALVE	WATTS	LFMMVM1-UT	THERMOSTATIC	LEAD-FREE CU ALLOY	-	-	-	-	-	-	-	¾"	¾"	-	-	NOTE: MIXER FOR SCOPE CLEANER, 59	TMV-2
TMV-3	THERM. MIXING VALVE	CASH ACME	HG135	THERMOSTATIC	LEAD-FREE BRONZE	-	-	-	-	-	-	-	¾"	¾"	-	-	NOTE: 4	TMV-3
WSB-1	WATER SUPPLY BOX	OATEY	I2K	RECESSED - WALL	PLASTIC	WHITE	FACEPLATE	OATEY	-	-	-	-	½"	-	-	-	NOTE: 40, 41	WSB-1
WSB-2	WATER SUPPLY BOX	OATEY	CENTRO II 38101	RECESSED - WALL	PLASTIC	WHITE	FACEPLATE	OATEY	-	-	-	-	¾"	¾"	-	-	NOTE: 42, 43, 71	WSB-2
WSB-3	WATER SUPPLY BOX	WATER-TITE	82938	RECESSED - WALL	PLASTIC	WHITE	FACEPLATE	WATER-TITE	-	-	-	-	½"	-	2"	1½"	NOTE: 41, 80	WSB-3
HB-1	HOSE BIBB	WOODFORD	26	MILD CLIMATE	BRONZE	CHROME	DOUBLE CHECK	WOODFORD	INTEGRAL	-	-	-	¾"	-	-	-	NOTE: 49	HB-1
WH-1	WALL HYDRANT	WOODFORD	67	FREEZELESS	BRONZE	CHROME	DOUBLE CHECK	WOODFORD	INTEGRAL	-	-	-	¾"	-	-	-	NOTE: 48	WH-1
WH-2	WALL HYDRANT	WOODFORD	HCB67	FREEZELESS	BRONZE	CHROME	DOUBLE CHECK	WOODFORD	INTEGRAL	-	-	-	¾"	¾"	-	-	NOTE: 48	WH-2
DC-1	DOUBLE CHECK	WATTS	SD-2	BEVERAGE	STAINLESS STEEL	-	-	-	-	-	-	-	½"	-	-	-	NOTE: ASSE 1032 COMPLIANT	DC-1
VB-1	VACUUM BREAKER	ZURN	460-XL	SPILL RESISTANT	LEAD-FREE BRONZE	-	-	-	-	-	-	-	1"	-	-	-	NOTE: 59, 60, 61	VB-1
BP-1A	BACKFLOW PREVENTER	WATTS	LF009M2QT	RED. PRESSURE	LEAD-FREE BRONZE	-	AIR GAP	WATTS	909AGF	-	-	-	2"	-	-	-	NOTE: CONNECT TO COMBINED SERVICE, 50, 51	BP-1A
BP-1B	BACKFLOW PREVENTER	WATTS	LF009M2QT	RED. PRESSURE	LEAD-FREE BRONZE	-	AIR GAP	WATTS	909AGF	-	-	-	2"	-	-	-	NOTE: CONNECT TO COMBINED SERVICE, 50, 51	BP-1B
BP-2	BACKFLOW PREVENTER	WATTS	LF009M2QT	RED. PRESSURE	LEAD-FREE BRONZE	-	AIR GAP	WATTS	909AGF	-	-	-	2"	-	-	-	NOTE: MOUNT CENTERLINE 60" AFF MAX, 51, 52	BP-2
BP-3	BACKFLOW PREVENTER	WATTS	LF009M2QT	RED. PRESSURE	LEAD-FREE BRONZE	-	AIR GAP	WATTS	909AGC	-	-	-	¾"	-	-	-	NOTE: MOUNT CENTERLINE 60" AFF MAX, 51, 53	BP-3
BP-4	BACKFLOW PREVENTER	WATTS	LF009M2QT	RED. PRESSURE	LEAD-FREE BRONZE	-	AIR GAP											



DOMESTIC WATER HEATER SCHEDULE

PLAN CODE	SERVICE	MFG.	MODEL	CAPACITY (GALLONS)	INPUT (KW)	RECOVERY GPH 100 °F RISE 1ST HR	RECOVERY GPH 20 °F RISE	INDIRECT HEAT EXCHANGER	MFG#MODEL	BOILER WATER SIDE				RECOVERY GPH 100 °F RISE 1ST HR	ELECT. SERVICE	TEMPERATURE RANGE	LOCATION	THERMAL EFFICIENCY, PERCENT	NOTES
										EWT (DEG F)	FLOW (GPM)	dP (PSI)	LWT (DEG F)						
DWH-1	DOMESTIC HOT WATER	PVI	DURAWATT 830	200	162	664	-	DOUBLE WALL	PVI/900	160	15	1.1	82	696	480V/3PH/197A	40-140° F	MECH A119	-	1, 3, 4, 5, 6, 7, 8, 9, 10
BWH-1	LAUNDRY BOOSTER	HUBBELL	J618T4	6	18	-	368	-	-	-	-	-	-	-	460V/3PH/22A	140-160° F	LAUNDRY C136	98	2, 3, 4, 9, 10, 11
NOTES: 1. SERVES DOMESTIC HOT WATER FOR ALL USES EXCEPT KITCHEN AND LAUNDRY. GENERATE AND STORAGE AT 140 DEG F. RECOVERY AFTER FIRST HOURS IS 328 GPH AT 100 DEG F RISE. 2. SERVES DOMESTIC HOT WATER FOR LAUNDRY. GENERATE AND STORE AT 160 DEG F. FIRST HOUR GENERATION AND SUBSEQUENT RECOVERY IS 132 GPH AT 140 DEG F RISE. 3. DIELECTRIC COUPLING REQUIRED ON COLD WATER INLET CONNECTION AND HOT WATER OUTLET CONNECTION. 4. PROVIDE 1&P RELIEF VALVE. PIPE DISCHARGE TO FLOOR DRAIN. 5. DOUBLE WALL PLATE/FRAME HEAT EXCHANGER USING HYDRONIC HEATING WATER LOOP AS PRIMARY SOURCE OF DOMESTIC HOT WATER. ELECTRIC ELEMENTS SHALL BE SET TO MAINTAIN 130 DEG F STORAGE TEMPERATURE. 6. HEAT EXCHANGER INCLUDES PIPING AND CIRCULATION PUMP AND CONTROLS TO CIRCULATE DOMESTIC WATER THROUGH THE DOMESTIC SIDE. CONTRACTOR SHALL MAKE ALL REQUIRED FIELD CONNECTIONS TO THE HEAT EXCHANGER. 7. CONNECT HYDRONIC SUPPLY AND RETURN PIPING TO THE HEAT EXCHANGER IN ACCORDANCE WITH THE MANUFACTURER INSTALLATION INSTRUCTIONS. HYDRONIC PIPING, INSTALLATION, AND INSULATION ARE INCORPORATED INTO THE DIVISION 23 SECTION OF THE PROJECT MANUAL. 8. PIPE 1&P RELIEF VALVE ON THE DOMESTIC WATER SIDE OF THE HEAT EXCHANGER TO FLOOR DRAIN. RELIEF VALVE IS IN ADDITION TO STORAGE TANK MOUNTED DEVICE. 9. UNIT SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PAD, AND SEISMICALLY RESTRAINED TO CONCRETE PAD. 10. HOUSEKEEPING PAD SHALL BE MINIMUM 4" HIGH, REINFORCED AND DOWELED INTO EXISTING CONCRETE FLOOR SLAB TO RESIST SEISMIC FORCES. REFER TO STRUCTURAL DRAWINGS FOR PAD INSTALLATION DETAILS. 11. GENERATE AND STORE AT 160 °F. SIMULTANEOUS ELEMENT OPERATION.																			

WATER SOFTENER SCHEDULE

PLAN CODE	MFG.	MODEL	RESIN TANK VOLUME, CU. FT.	RESIN TANK DIMENSIONS	CAPACITY GRAINS	FLOW RATE, GPM CONTINUOUS/PEAK	BRINE TANK POUNDS OF SALT	BRINE TANK DIMENSIONS	ELECTRICAL VOLT / PH / AMP	VALVE SIZE	REMARKS
WSF-1	CUSTOM CARE	C43-0150-15	5.0	18" x 65" H	125,000	45 / 62	840	24" X 50" H	120 / 1 / 1	1½"	1, 2, 3, 4, 5, 6, 7, 8
NOTES: 1. WATER HARDNESS OF INCOMING COLD WATER IS 5 GRAINS PER GALLON. 2. PROVIDE DUPLEX SOFTENER WITH TWO RESIN TANKS OF SAME CAPACITY AND ONE BRINE TANK. 3. PROVIDE ELECTRONIC WATER METER WITH DISPLAY TO AUTOMATICALLY REGENERATE SOFTENER BASED ON VOLUME. DISPLAY FLOW RATE, REGENERATION STATUS, AND FLOW TOTALIZATION. 4. RESIN TANK SHALL BE REINFORCED FIBERGLASS OR EPOXY COATED STEEL WITH ASME RATING. 5. BRINE TANK SHALL BE POLYETHYLENE WITH COVER. REFILL SALT AT TURN-OVER TO OWNER. 6. UNIT SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PAD, AND SEISMICALLY RESTRAINED TO CONCRETE PAD. 7. HOUSEKEEPING PAD SHALL BE MINIMUM 4" HIGH, REINFORCED AND DOWELED INTO EXISTING CONCRETE FLOOR SLAB TO RESIST SEISMIC FORCES. REFER TO STRUCTURAL DETAIL 6/S213S FOR PAD INSTALLATION DETAILS. 8. PROVIDE ELECTRONIC WATER METER TO AUTOMATICALLY REGENERATE SOFTENER BASED ON VOLUME, AND DISPLAY REMAINING CAPACITY, TIME OF DAY, OR FLOW RATED BASED ON USER SELECTION OF DISPLAY.											

REVERSE OSMOSIS UNIT SCHEDULE

PLAN CODE	MFG.	MODEL	PRODUCTION, GAL/DAY	NO. MEMBRANES AND SIZE	PERMEATE GPM	FEEDWATER GPM	% RECOVERY	PUMP HP	MAX OPERATING PRESSURE, PSI	OPERATING WEIGHT, LBS	ELECTRICAL VOLT / PH / AMP	INLET & OUTLET	REMARKS
ROS-1	CUSTOM CARE	CRO-4000	4,000	2 @ 4" x 40" L	2.78	5.00	75.0	1/2	160	135	120 / 1 / 9	3/4" / 1/2"	1, 2, 3, 4, 5, 6, 7
NOTES: 1. PROVIDE COMPLETE RO UNIT, WITH MEMBRANES, SKID, PRESSURE PUMP, CONTROL PANEL, AND ISOLATION VALVES FOR SERVICE OF MEMBRANES INDIVIDUALLY. 2. FRAME SHALL BE POWDER-COATED STEEL WITH PLASTIC ISOLATORS TO PROTECT BOTTOM OF FRAME FROM CORROSION. 3. PLASTIC HOSES ON INLET AND OUTLET OF EACH MEMBRANE. 4. PRE- AND POST FILTER GAUGES. 5. CONTROL PANEL SHALL CONTROL BOTH INTERVAL FLUSH AND PERMEATE FLUSH. 6. UNIT SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PAD, SEISMICALLY RESTRAINED TO CONCRETE PAD. 7. HOUSEKEEPING PAD SHALL BE MINIMUM 4" HIGH, REINFORCED AND DOWELED INTO EXISTING CONCRETE FLOOR SLAB TO RESIST SEISMIC FORCES. REFER TO DETAIL 3/S101.1 FOR PAD INSTALLATION DETAILS.													

CARTRIDGE WATER FILTER SCHEDULE

PLAN CODE	SERVICE	HOUSING MFG	FILTER HOUSING MODEL	DIMENSIONS DIA BY HEIGHT	INLET/OUTLET CONNECTION	ELEMENT MFG	FILTER ELEMENT MODEL	DIMENSIONS	FLOW RATE, GPM	dP, PSI	REMARKS	PLAN CODE
F-1	RO	SHELCO	4F0S2C-304-222-1.5MNPT-ML-GPA-S	10 1/2" X 30 1/2"	1 1/2" / 1 1/2"	SHELCO	WGAS 0.2-20 8 1/2 S	2.67" DIA X 20" LONG	3.2	1.2	NOTES: 1, 2, 3, 4, 5	F-1
SCHEDULE NOTES: 1. PROVIDE PVC INLET AND OUTLET ISOLATION VALVES. 2. PROVIDE INLET AND OUTLET PRESSURE GAUGES SELECTED FOR OPERATING PRESSURE RANGE. REFER TO SECTION 220519 FOR MORE INFORMATION. 3. FILTER INSTALLED AFTER ULTRAVIOLET LIGHT. 4. FILTER HOUSING HOLDS 5 FILTERS, FLOW RATE IS PER FILTER. 5. PROVIDE 4 SPARE FILTER ELEMENTS IN BAGS AND BOXED												

CARBON FILTER SCHEDULE

PLAN CODE	SERVICE	MFG.	MODEL #	HOUSING	DIMENSIONS	INLET/OUTLET CONNECTION	MEDIA VOL. CU. FT.	MAX FLOW, GPM	PRESSURE DROP, PSI	REMARKS
CF-1	RO FEED WATER	CLACK	C60942N5E01DI	FRP	9" X 42" H	3/4" / 3/4"	1.35	8	5	NOTES: 1, 2, 3, 4, 5
SCHEDULE NOTES: 1. PROVIDE ONE CARBON FILTER EXCHANGE TANK. 2. PROVIDE INLET AND OUTLET ISOLATION VALVES, WITH NORMALLY CLOSED DRAIN VALVE LOCATED BETWEEN INLET VALVE AND FILTER HOUSING FOR FILTER SERVICE. 3. PROVIDE TRANSITIONS FROM FILTER HOUSING CONNECTION SIZES TO SYSTEM WATER PIPING. 4. PROVIDE INLET AND OUTLET PRESSURE GAUGES SELECTED FOR OPERATING PRESSURE RANGE. REFER TO SECTION 220519 FOR MORE INFORMATION. 5. PROVIDE FLEXIBLE BRAIDED STAINLESS STEEL HOSE OR 125 PSI RATED BRAIDED POLYETHYLENE HOSE FOR INLET AND OUTLET WITH UNION BETWEEN ISOLATION VALVE AND HOSE.										

PRODUCT STORAGE TANK SCHEDULE

PLAN CODE	SERVICE	MFG.	MODEL	TANK DIMENSIONS	TANK VOLUME, GAL	MATERIAL	STYLE	REMARKS	PLAN CODE
TK-1	RO	NORWESCO	40281	31" X 55"	165	POLYETHYLENE	FLAT BOTTOM	NOTES: 1, 2, 3, 4, 5, 6	TK-1
SCHEDULE NOTES: 1. PROVIDE 2" DIA. TANK OUTLET CONNECTION WITH TANK FITTING, PIPE AND FITTINGS, AND BALL VALVE FOR DISTRIBUTION PUMP CONNECTION. 2. PROVIDE 3/4" DIA. TANK FILL INLET CONNECTION WITH TANK FITTING, WITH ELBOW AND BALL VALVE PROVIDE 1" DIA. 3. RETURN PIPE CONNECTION WITH TANK FITTING AND SPIRAJET HHS SPRAY NOZZLE TO WET DOWN TANK WALLS. 4. PROVIDE 16" DIA. TANK ACCESS COVER. 5. PROVIDE STERILE VENT FILTER. 6. TANK SHALL BE INSTALLED ON CONCRETE HOUSEKEEPING PAD, SEISMICALLY RESTRAINED TO CONCRETE PAD. HOUSEKEEPING PAD SHALL BE MINIMUM 4" HIGH, REINFORCED AND DOWELED INTO EXISTING CONCRETE FLOOR SLAB TO RESIST SEISMIC FORCES. REFER TO STRUCTURAL DRAWINGS FOR PAD INSTALLATION DETAILS.									

UV LIGHT STERILIZER SCHEDULE

PLAN CODE	SERVICE	MANUFACTURER	MODEL	FLOW RATE, GPM	DIMENSIONS	INLET/OUTLET CONNECTION	ELECTRICAL VOLT / PH / AMP	REMARKS
UV-1	RO WATER	VIQUA	PRO30	30	4" X 41" TALL	1½" / 1½"	120 / 1 / 2.0	NOTES: 1, 2, 3, 4, 5
SCHEDULE NOTES: 1. PROVIDE MNPT PIPE CONNECTIONS AND WALL MOUNTING BRACKETS. 2. PROVIDE INLET AND OUTLET ISOLATION VALVES FOR SERVICE. 3. PROVIDE TRANSITIONS FROM STERILIZER HOUSING CONNECTION SIZES TO SYSTEM WATER PIPING. 4. PROVIDE CONTROLLER WITH UV SENSOR MODULE AND REMOTE ALARM CONTACT MODULE. 5. PROVIDE COOLING FAN AND POWER SUPPLY FOR EXTENDED OPERATION.								

BALANCING VALVE

PLAN CODE	MFG.	MODEL NO	BODY SIZE	END CONNECTION	FLOW RATE
BV-1	CALEFFI	116441A(C)	1/2"	SOLDERED	0.5 GPM
BV-2	CALEFFI	116451A(C)	3/4"	SOLDERED	1.0 GPM
BV-3	WATTS	LFCSM-61-S	¾"	SOLDERED	1.0 GPM
BV-4	WATTS	LFCSM-61-S	2"	SOLDERED	50 GPM
BV-5	WATTS	LFCSM-61-S	1½"	SOLDERED	25 GPM

SUMP PUMP SCHEDULE

PLAN CODE	MFG.	MODEL NO	GPM	HEAD (FT)	RPM	BHP	MOTOR HP	POWER	OUTLET DIA., INCH	MECH. EFFICIENCY	REMARKS
SP-1	WEIL	1413	50	30	1750	--	1.5	208V/3PH	2	--	NOTES: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12
NOTES: 1. PUMP SERVES PUBLIC ELEVATOR. 2. PROVIDE WEIL 8153 SIMPLEX PUMP CONTROL PANEL (OR EQUAL), NEMA TYPE 1 ENCLOSURE WITH ALARM LIGHT, ALARM BUZZER, AND TWO CONTACTS FOR REMOTE MONITORING. MOUNT CENTERLINE OF PANEL 30" AFF IN SNOWMELT FROM B104A. 3. PROVIDE WEIL 8233 SIMPLEX TETHERED LEVEL CONTROL FLOATS WITH HIGH WATER ALARM FLOAT AND FLOAT TO CONTROL PUMP OPERATION. 4. TETHER PUMP "OFF" FLOAT TO STOP PUMP AT 6 INCHES ABOVE FLOOR OF PUMP SUMP. 5. TETHER PUMP "ON" FLOAT TO START PUMP AT 2 INCHES ABOVE THE FLOOR OF THE HOISTWAY PIT. 6. TETHER HIGH ALARM FLOAT TO INDICATE AN ALARM NO MORE THAN 16 INCHES ABOVE THE FLOOR OF THE HOISTWAY PIT. 7. COORDINATE HEIGHT OF HIGH ALARM FLOAT TO BE 6 INCHES BELOW THE LOWEST SWITCH INSTALLED WITH THE ELEVATOR CONTROLS. 8. PROVIDE LIBERTY PULTRUSION "ULTRAGRATE" OR EQUAL GRATING OVER PUMP SUMP. NOTCH GRATE FOR PUMP DISCHARGE TO EXTEND UP THROUGH THE GRATE. 9. GRATE TO BE REMOVABLE WITHOUT DISMANTLING PIPING. 10. PROVIDE BALL VALVE AND BALL-TYPE CHECK VALVE ON OUTLET PIPING. CONNECT TO THE PUMP OUTLET WITH FLEXIBLE CONNECTION. 11. PUMP OPERATION SHALL BE AUTOMATIC. 12. STRUCTURAL CONCRETE SUMP 24" SQUARE BY 18" DEEP.											

EXPANSION TANKS

PLAN CODE	MFG.	MODEL NO	TOTAL VOLUME	ACCEPTANCE VOLUME	PRECHARGE PRESSURE	REMARKS
DET-1	TACO	CBX130-125A	34	19	12	1, 3, 4
DET-2	TACO	CBX15-125A	4	2.5	12	2, 3, 4
NOTES: 1. SERVES DWH-1. 2. SERVES BWH-1. 3. PROVIDE ASME-RATED EXPANSION TANK. 4. PROVIDE ISOLATION BALL VALVE ON DROP DOWN FOR SERVICE.						

WATER HAMMER ARRESTOR

PLAN CODE	MFG.	MODEL	PDI SYMBOL	PIPE SIZE	REMARKS
SA-1	SIoux CHIEF	652-A	A	1½"	1
SA-2	SIoux CHIEF	653-B	B	¾"	1
SA-3	SIoux CHIEF	654-C	C	1"	1
SA-4	SIoux CHIEF	654-D	D	1"	1
SA-5	PRECISION PLBG PROD.	SS-750-316	B	¾"	1, 2
SCHEDULE NOTES: 1. ALL WATER HAMMER ARRESTORS TO INCLUDE BALL VALVE MATCHING PIPE SIZE, FOR MAINTENANCE. 2. PROVIDE STAINLESS STEEL CONSTRUCTION FOR USE IN RO WATER SYSTEM.					

CIRC. PUMP SCHEDULE

PLAN CODE	SERVICE	REFERENCE			PERFORMANCE DATA						REMARKS
		MFG.	MODEL	LOCATION	CAPACITY GPM	HEAD LOSS FT	HP	RPM	WATER TEMP SERVICE	ELEC SERVICE	
HWCP-1	DOMESTIC HOT WATER	TACO	0034e-SF2	MECH A119	5	25	140 W	4000	120°	120V / 1PH.	NOTE: 1, 2, 4, 5, 7, 8, 10
HWCP-2	DOMESTIC HOT WATER	TACO	IL-009-SF5	MECH A119	1.6	15	1/8	3250	140°	120V / 1PH.	NOTE: 1, 4, 5, 6, 11
HWCP-3	DOMESTIC HOT WATER	TACO	IL-009-SF5	MECH A119	3.0	20	1/8	3250	120°	120V / 1PH.	NOTE: 1, 4, 5, 8, 12
ROP-1	REVERSE OSMOSIS WATER	GRUNDFOS	CRNE 5-4	MECH A119	25	105	2	3478	68°	460V / 3PH.	NOTE: 1, 2, 3, 8, 9
ROP-2	REVERSE OSMOSIS WATER	GRUNDFOS	CRNE 5-4	MECH A119	25	105	2	3478	68°	460V / 3PH.	NOTE: 1, 2, 3, 8, 9

- SCHEDULE NOTES:
1. ALL WETTED PARTS IN CONTACT WITH WATER SHALL BE STAINLESS STEEL.
2. PROVIDE PUMP WITH INTEGRAL VARIABLE FREQUENCY DRIVE.
3. PUMP SHALL BE CONTROLLED BY DISCHARGE PRESSURE SENSOR MOUNTED DOWNSTREAM OF PUMP CHECK VALVE, SET TO MAINTAIN 45 PSIG DISCHARGE PRESSURE.
4. PROVIDE COMPANION FLANGE FOR INLET AND OUTLET.
5. PROVIDE THERMOSTAT STRAPPED TO HWC PIPING TO START AND STOP PUMP TO MAINTAIN RETURN WATER TEMPERATURE BETWEEN 95 AND 105 DEG F.
6. COORDINATE INSTALLATION OF CIRCULATOR WITH CONTROL CONTRACTOR. PUMP TO BE ENABLED TO OPERATE DURING OCCUPIED HOURS AND OFF DURING UNOCCUPIED HOURS.
7. PUMP SPEED SHALL BE CONTROLLED BY DISCHARGE PRESSURE SENSOR MOUNTED ON PUMP DISCHARGE FLANGE, SET TO MAINTAIN 18 FT H2O DISCHARGE PRESSURE, MINIMUM.
8. PUMP SHALL RUN CONTINUOUSLY.
9. ROP-1 AND ROP-2 INSTALLED IN PARALLEL TO ALTERNATE USAGE. COORDNATE WITH CONTROL SYSTEM CONTRACTOR FOR ROTATION CONTROL.
10. PUMP SERVES DOMESTIC HOT WATER SYSTEM FOR ALL AREAS OTHER THAN CLINIC, ADMINISTRATION, AND PUBLIC.
11. PUMP SERVES DOMESTIC HOT WATER SYSTEM FOR CLINIC SPACES.
12. PUMP SERVES BLENDED HOT WATER SYSTEM FOR ADMINISTRATION AND PUBLIC SPACES.

INTERCEPTOR SCHEDULE

ALL PLUMBING EQUIPMENT SHALL BE IN ACCORDANCE WITH APPLICABLE SPECIFICATIONS AND BE OF SIZE AND TYPE INDICATED.

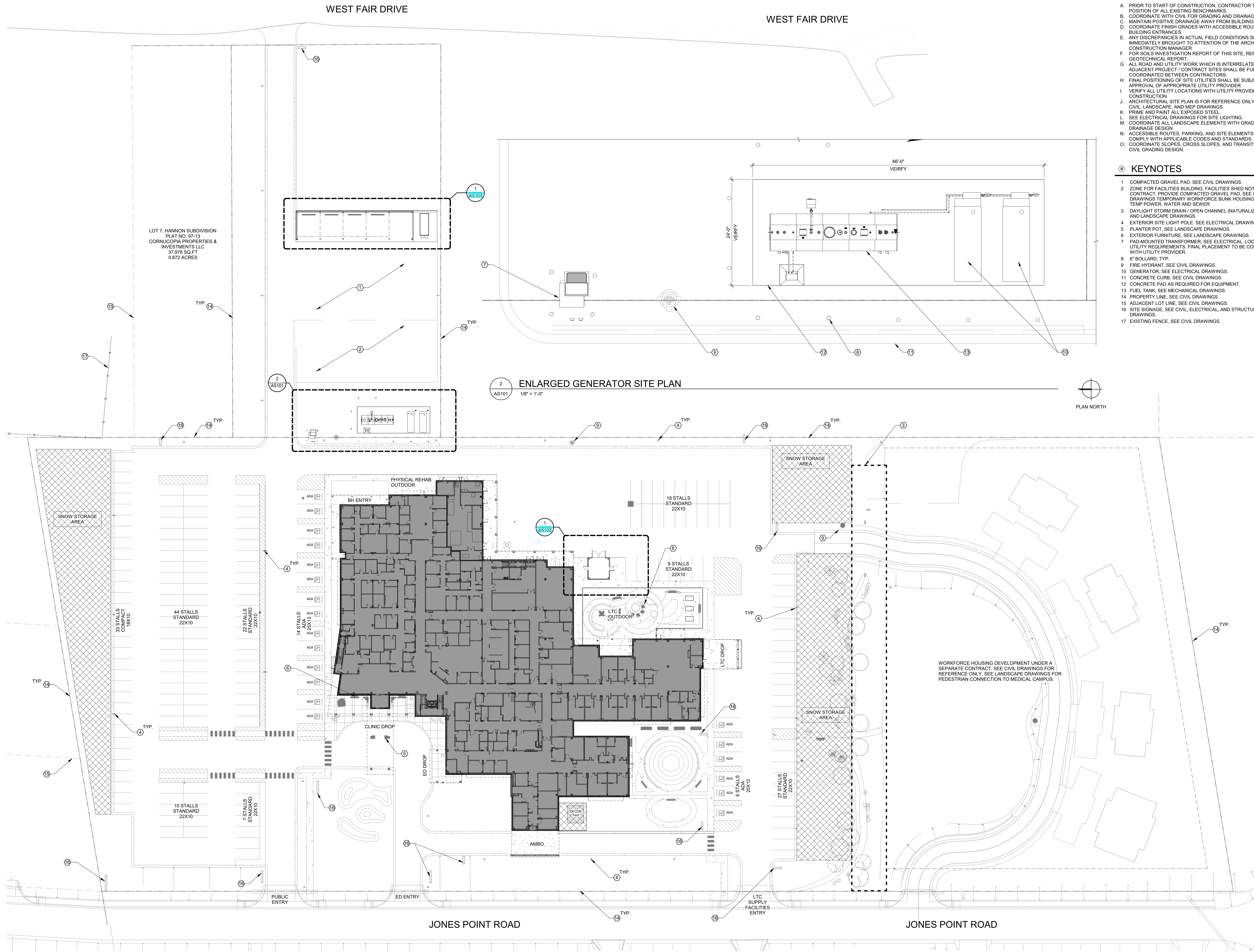
FIXTURE										CONNECTIONS		REMARKS	CODE
CODE	ITEM	MFG.	MODEL	TYPE	MATERIAL	FLOW, GPM	LIQUID CAP. GAL.	SOLIDS, LBS	SOLIDS, GAL	WASTE	VENT		
GI-1	GREASE INTERCEPTOR	SCHIER	GB-3	HYDROMECHANICAL	POLYETHYLENE	50	40	268 (GREASE)	1.9	4"	-	NOTE: 1, 2, 3, 4	GI-1
SI-1	SOLIDS INTERCEPTOR	STRIEM	PS-50-S-10097	FILTER SCREEN	POLYETHYLENE	50	57	-	29	4"	-	NOTE: 1, 2, 3, 4, 5, 6	SI-1
SCHEDULE NOTES: 1. PROVIDE MANUFACTURERS STANDARD HIGH WATER ANCHOR KIT FOR EACH END OF INTERCEPTOR. 2. PROVIDE RISER EXTENSIONS OF THE SAME MATERIAL AS THE INTERCEPTOR TO PLACE COVERS AT GRADE. 3. FILL INTERCEPTOR WITH WATER TO A DEPTH 1" BELOW THE INLET FITTING INVERT ELEVATION. 4. PROVIDE COMPOSITE COVER WITH 2000 POUND LOAD RATING. 5. PROVIDE CLOSED TOP OUTLET DIP TUBE WITH 6" WATER SEAL. 6. PROVIDE REMOVABLE FILTER SCREEN TO CAPTURE LINT.													

GENERAL NOTES

- PRIOR TO START OF CONSTRUCTION, CONTRACTOR TO VERIFY POSITION OF ALL EXISTING BENCHMARKS.
- COORDINATE WITH CIVIL FOR GRADING AND DRAINAGE ELEVATIONS.
- MAINTAIN POSITIVE DRAINAGE AWAY FROM BUILDINGS.
- COORDINATE FINISH GRADES WITH ACCESSIBLE ROUTES AND BUILDING ENTRANCES.
- ANY DISCREPANCIES IN ACTUAL FIELD CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO ATTENTION OF THE ARCHITECT OR CONSTRUCTION MANAGER.
- FOR SOIL INVESTIGATION REPORT OF THIS SITE, REFERENCE THE GEOTECHNICAL REPORT.
- ALL ROAD AND UTILITY WORK WHICH IS INTERRELATED TO WORK ON ADJACENT PROJECT / CONTRACT SITES SHALL BE FULLY COORDINATED BETWEEN CONTRACTORS.
- FINAL POSITIONING OF SITE UTILITIES SHALL BE SUBJECT TO THE APPROVAL OF APPROPRIATE UTILITY PROVIDER.
- VERIFY ALL UTILITY LOCATIONS WITH UTILITY PROVIDERS PRIOR TO CONSTRUCTION.
- ARCHITECTURAL SITE PLAN IS FOR REFERENCE ONLY. REFER TO CIVIL, LANDSCAPE, AND MEP DRAWINGS.
- PRIME AND PAINT ALL EXPOSED STEEL.
- SEE ELECTRICAL DRAWINGS FOR SITE LIGHTING.
- COORDINATE ALL LANDSCAPE ELEMENTS WITH GRADING AND DRAINAGE DESIGN.
- ACCESSIBLE ROUTES, PARKING, AND SITE ELEMENTS SHALL COMPLY WITH APPLICABLE CODES AND STANDARDS.
- COORDINATE SLOPES, CROSS SLOPES, AND TRANSITIONS WITH CIVIL GRADING DESIGN.

KEYNOTES

- COMPACTED GRAVEL PAD, SEE CIVIL DRAWINGS.
- ZONE FOR FACILITIES BUILDING, FACILITIES SHED NOT IN CONTRACT. PROVIDE COMPACTED GRAVEL PAD, SEE CIVIL DRAWINGS. TEMPORARY WORKFORCE BUNK HOUSING, PROVIDE TEMP POWER, WATER AND SEWER.
- DAYLIGHT STORM DRAIN / OPEN CHANNEL (NATURALIZED) SEE CIVIL AND LANDSCAPE DRAWINGS.
- EXTERIOR SITE LIGHT POLE, SEE ELECTRICAL DRAWINGS.
- PLANTER POT, SEE LANDSCAPE DRAWINGS.
- EXTERIOR FURNITURE, SEE LANDSCAPE DRAWINGS.
- PAD-MOUNTED TRANSFORMER, SEE ELECTRICAL LOCATION PER UTILITY REQUIREMENTS. FINAL PLACEMENT TO BE COORDINATED WITH UTILITY PROVIDER.
- 6" BOLLARD, TYP.
- FIRE HYDRANT, SEE CIVIL DRAWINGS.
- GENERATOR, SEE ELECTRICAL DRAWINGS.
- CONCRETE CURB, SEE CIVIL DRAWINGS.
- CONCRETE PAD AS REQUIRED FOR EQUIPMENT.
- FUEL TANK, SEE MECHANICAL DRAWINGS.
- PROPERTY LINE, SEE CIVIL DRAWINGS.
- ADJACENT LOT LINE, SEE CIVIL DRAWINGS.
- SITE SIGNAGE, SEE CIVIL, ELECTRICAL, AND STRUCTURAL DRAWINGS.
- EXISTING FENCE, SEE CIVIL DRAWINGS.



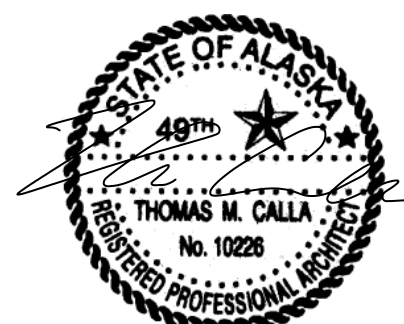
1
AS101
ARCHITECTURAL SITE PLAN
1/32" = 1'-0"



ARCHITECTURAL SITE
PLAN

AS101

SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
785 JONES POINT ROAD, HAINES AK, 99827
HAINES CLINIC AND HOSPITAL



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08.28.2026
PROJ# SEARHC_HAINCAH
DESIGNED BY JUAREZ
DRAWN BY JUAREZ
REVIEWED BY CALLA
REVISIONS

PLAN LEGEND

- WALL ASSEMBLY TYPE (SEE ASSEMBLIES SHEET)
NAME ROOM NAME AND NUMBER
WINDOW TYPE (SEE A600s)
KEYNOTE
DIRECTION OF VIEW, IF APPLICABLE
DRAWING NUMBER
SHEET WHERE DRAWN
DOOR NUMBER (SEE SHEET A601)
DIMENSION TO FACE OF FRAMING
DIMENSION TO GRID LINE
DIMENSION TO CENTER LINE

GENERAL NOTES

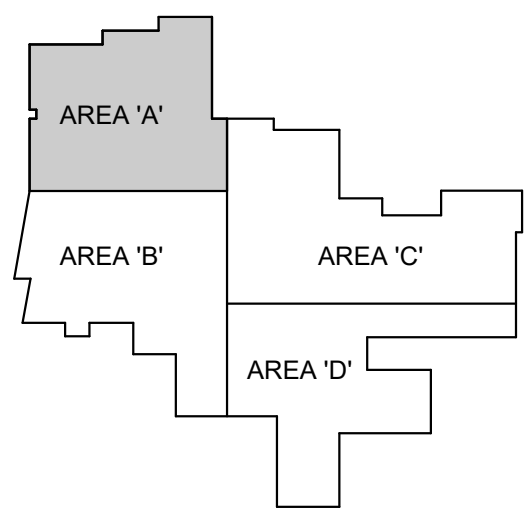
- A. SEE ENLARGED PLANS FOR ADDITIONAL INFORMATION.
B. UNLESS OTHERWISE NOTED WITH 'CLEAR', DIMENSIONS ARE TAKEN TO THE FACE OF STUD.
C. UNLESS OTHERWISE NOTED, ALL STUD WALLS HAVE A 4" STUD RETURN AT THE HINGE SIDE OF DOOR FRAMES TO PERPENDICULAR WALL.
D. COORDINATE ALL PENETRATIONS WITH RESPECTIVE TRADES AT BOTH RATED AND NON-RATED ASSEMBLIES WHICH INCLUDES SLABS, WALLS, AND CEILINGS.
E. SEE A500 SHEETS FOR ROOM FINISHES.
F. FOR WALLS NOT LABELED WITH WALL TYPE, USE WALL TYPE MOST CONSISTENT WITH SIMILAR APPLICATION, SEE STRUCTURAL DRAWINGS.
G. PROVIDE BACKING IN WALL FOR CABINETRY, SHELVING, DOOR STOPS, DOOR HARDWARE, COUNTERTOPS, WALL-MOUNTED EQUIPMENT, AND TOILET ACCESSORIES. CONTRACTOR TO COORDINATE FINAL LOCATION OF OWNER PROVIDED EQUIPMENT WITH OWNER. CONTRACTOR TO FIELD VERIFY AND COORDINATE VENDOR PROVIDED EQUIPMENT WITH VENDOR AND OWNER.
H. COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS FOR FINISH FLOOR ELEVATIONS.
I. SEE A600S FOR REFLECTED CEILING PLANS.
J. SEE CODE PLANS FOR LOCATION OF RATED WALLS TO DECK.
K. SEE ASSEMBLIES SHEET FOR WALL TYPES, WALLS TO DECK, AND RATED ASSEMBLY REQUIREMENTS.



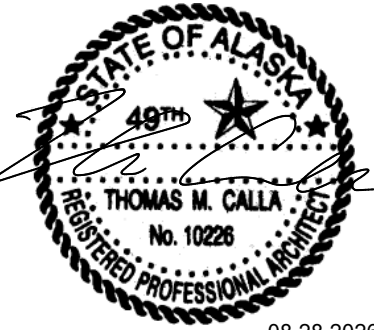
1 FIRST FLOOR DIMENSION PLAN 'AREA A'
A100-A
1/8" = 1'-0"



KEY PLAN



SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
785 JONES POINT ROAD, HAINE AK, 99827
HAINE CLINIC AND HOSPITAL



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08/28/2026
PROJ# | SEARHC_HAINCAH | L|SEARHC|SEARHC_HAINES|B|B|MC|AD|Rev
DESIGNED BY | JUAREZ
DRAWN BY | JUAREZ
REVIEWED BY | BAKER
REVISIONS

FIRST FLOOR
DIMENSION PLAN
'AREA A'

A100-A

PLAN LEGEND

- WALL ASSEMBLY TYPE (SEE ASSEMBLIES SHEET)
NAME ROOM NAME AND NUMBER
WINDOW TYPE (SEE A600s)
KEYNOTE
DIRECTION OF VIEW, IF APPLICABLE
DRAWING NUMBER
SHEET WHERE DRAWN
DOOR NUMBER (SEE SHEET A601)
DIMENSION TO FACE OF FRAMING
DIMENSION TO GRID LINE
DIMENSION TO CENTER LINE

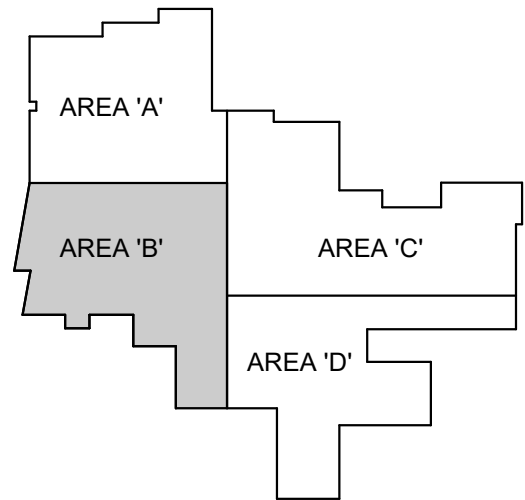
GENERAL NOTES

- A. SEE ENLARGED PLANS FOR ADDITIONAL INFORMATION.
B. UNLESS OTHERWISE NOTED WITH 'CLEAR', DIMENSIONS ARE TAKEN TO THE FACE OF STUD.
C. UNLESS OTHERWISE NOTED, ALL STUD WALLS HAVE A 4" STUD RETURN AT THE HINGE SIDE OF DOOR FRAMES TO PERPENDICULAR WALL.
D. COORDINATE ALL PENETRATIONS WITH RESPECTIVE TRADES AT BOTH RATED AND NON-RATED ASSEMBLIES WHICH INCLUDES SLABS, WALLS, AND CEILINGS.
E. SEE A600 SHEETS FOR ROOM FINISHES.
F. FOR WALLS NOT LABELED WITH WALL TYPE, USE WALL TYPE MOST CONSISTENT WITH SIMILAR APPLICATION, SEE STRUCTURAL DRAWINGS.
G. PROVIDE BACKING IN WALL FOR CABINETRY, SHELVING, DOOR STOPS, DOOR HARDWARE, COUNTERTOPS, WALL-MOUNTED EQUIPMENT, AND TOILET ACCESSORIES. CONTRACTOR TO COORDINATE FINAL LOCATION OF OWNER PROVIDED EQUIPMENT WITH OWNER. CONTRACTOR TO FIELD VERIFY AND COORDINATE VENDOR PROVIDED EQUIPMENT WITH VENDOR AND OWNER.
H. COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS FOR FINISH FLOOR ELEVATIONS.
I. SEE A600S FOR REFLECTED CEILING PLANS.
J. SEE CODE PLANS FOR LOCATION OF RATED WALLS TO DECK.
K. SEE ASSEMBLIES SHEET FOR WALL TYPES, WALLS TO DECK, AND RATED ASSEMBLY REQUIREMENTS.

KEYNOTES

1. PROVIDE WATER BOTTLE FILLER. SEE PLUMBING DRAWINGS.
2. OUTLINE OF CANOPY ABOVE.
3. ELECTRICAL PANEL. SEE ELECTRICAL DRAWINGS.
4. WALL MOUNTED TIME CLOCK. SEE ELECTRICAL DRAWINGS.
5. WALL MOUNTED MOP HOLDER, GRAINGER 1ECL5 FOR 3/4" TO 1-1/8" HANDLE DIAMETER. SEE SPECIFICATIONS FOR MORE INFORMATION.
6. WALL MOUNTED CHEMICAL DISPENSING UNIT, 3" ABOVE FINISH FLOOR, TYPICAL. SEE SPECIFICATIONS.
7. WALL MOUNTED 2'x3' WHITEBOARD (WB1). SEE FURNITURE PLANS AND VENDOR DRAWINGS.
8. PROVIDE 2 COAT HOOKS ON THIS WALL. SEE FURNITURE PLANS AND VENDOR DRAWINGS.
9. WALL MOUNTED TACK BOARDS. SEE SPECIFICATIONS.
10. WALL MOUNTED 55" TV. PROVIDE ADDITIONAL BACKING. SEE ELECTRICAL DRAWINGS.
11. PROVIDE 6 COAT HOOKS ON THIS WALL. SEE FURNITURE PLANS AND VENDOR DRAWINGS.
12. PROVIDE 3 COAT HOOKS ON THIS WALL. SEE FURNITURE PLANS AND VENDOR DRAWINGS.
13. PROVIDE 12"X12" ANTE ROOM PASSTHROUGH. SEALED FOR ROOM PRESSURIZATION.
14. RECESSED LIGHT/WALL UNIT. SEE ELECTRICAL DRAWINGS.
15. WALL MOUNTED 55" TV. PROVIDE ADDITIONAL BACKING. SEE ELECTRICAL DRAWINGS.
16. SPECIMEN PASS THROUGH IN WALL.
17. PROVIDE 1 COAT HOOK ON THIS WALL. SEE FURNITURE PLANS AND VENDOR DRAWINGS.
18. MEDICATION DROP BOX. SEE SPECIFICATIONS.
19. FIRE EXTINGUISHER CABINET. SEE CODE PLANS AND SPECIFICATIONS. SEAL AROUND EDGES WHERE CABINETS OCCUR IN SMOKE RATED WALLS.
20. SNOWMELT MANIFOLD. SEE MECHANICAL DRAWINGS.
21. PANIC BUTTON UNDERNEATH COUNTER. SEE ELECTRICAL DRAWINGS.
22. DOWNSPOUT AND WRAP. SEE ROOF DETAIL SHEETS AND PLUMBING DRAWINGS FOR MORE INFORMATION.

KEY PLAN



1 FIRST FLOOR DIMENSION PLAN 'AREA B'
A100-B 1/8" = 1'-0"



PLAN LEGEND

- WALL — ASSEMBLY TYPE (SEE ASSEMBLIES SHEET)
NAME — ASSEMBLY MODIFIER, PER TYPE
NAME — ROOM NAME AND NUMBER
X — WINDOW TYPE (SEE A600s)
X — KEYNOTE
SIM — DIRECTION OF VIEW, IF APPLICABLE
X000 — DRAWING NUMBER
X000 — SHEET WHERE DRAWN
DOOR — DOOR NUMBER (SEE SHEET A601)
DIM — DIMENSION TO FACE OF FRAMING
DIM — DIMENSION TO GRID LINE
DIM — DIMENSION TO CENTER LINE

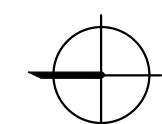
GENERAL NOTES

- A. SEE ENLARGED PLANS FOR ADDITIONAL INFORMATION.
B. UNLESS OTHERWISE NOTED WITH 'CLEAR', DIMENSIONS ARE TAKEN TO THE FACE OF STUD.
C. UNLESS OTHERWISE NOTED, ALL STUD WALLS HAVE A 4" STUD RETURN AT THE HINGE SIDE OF DOOR FRAMES TO PERPENDICULAR WALL.
D. COORDINATE ALL PENETRATIONS WITH RESPECTIVE TRADES AT BOTH RATED AND NON-RATED ASSEMBLIES WHICH INCLUDES SLABS, WALLS, AND CEILINGS.
E. SEE A500 SHEETS FOR ROOM FINISHES.
F. FOR WALLS NOT LABELED WITH WALL TYPE, USE WALL TYPE MOST CONSISTENT WITH SIMILAR APPLICATION, SEE STRUCTURAL DRAWINGS.
G. PROVIDE BACKING IN WALL FOR CABINETRY, SHELVING, DOOR STOPS, DOOR HARDWARE, COUNTERTOPS, WALL-MOUNTED EQUIPMENT, AND TOILET ACCESSORIES. CONTRACTOR TO COORDINATE FINAL LOCATION OF OWNER PROVIDED EQUIPMENT WITH OWNER. CONTRACTOR TO FIELD VERIFY AND COORDINATE VENDOR PROVIDED EQUIPMENT WITH VENDOR AND OWNER.
H. COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS FOR FINISH FLOOR ELEVATIONS.
I. SEE A600S FOR REFLECTED CEILING PLANS.
J. SEE CODE PLANS FOR LOCATION OF RATED WALLS TO DECK.
K. SEE ASSEMBLIES SHEET FOR WALL TYPES, WALLS TO DECK, AND RATED ASSEMBLY REQUIREMENTS.



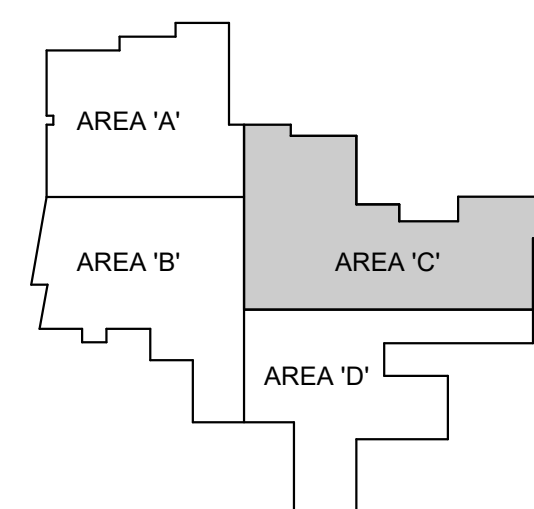
1 FIRST FLOOR DIMENSION PLAN 'AREA C'

1/8" = 1'-0"



PLAN NORTH

KEY PLAN

SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
785 JONES POINT ROAD, HAINES AK, 99827
HAINES CLINIC AND HOSPITAL

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08/28/2026
PROJ# | SEARHC_HAINCAH
DESIGNED BY | JUAREZ
DRAWN BY | JUAREZ
REVIEWED BY | BAKER
REVISIONSFIRST FLOOR
DIMENSION PLAN
'AREA C'

A100-C

PLAN LEGEND

- WALL ASSEMBLY TYPE (SEE ASSEMBLIES SHEET)
ASSEMBLY MODIFIER, PER TYPE
NAME ROOM NAME AND NUMBER
WINDOW TYPE (SEE A600s)
KEYNOTE
DIRECTION OF VIEW, IF APPLICABLE
DRAWING NUMBER
SHEET WHERE DRAWN
DOOR NUMBER (SEE SHEET A601)
DIMENSION TO FACE OF FRAMING
DIMENSION TO GRID LINE
DIMENSION TO CENTER LINE

GENERAL NOTES

- A. SEE ENLARGED PLANS FOR ADDITIONAL INFORMATION.
B. UNLESS OTHERWISE NOTED WITH 'CLEAR', DIMENSIONS ARE TAKEN TO THE FACE OF STUD.
C. UNLESS OTHERWISE NOTED, ALL STUD WALLS HAVE A 4" STUD RETURN AT THE HINGE SIDE OF DOOR FRAMES TO PERPENDICULAR WALL.
D. COORDINATE ALL PENETRATIONS WITH RESPECTIVE TRADES AT BOTH RATED AND NON-RATED ASSEMBLIES WHICH INCLUDES SLABS, WALLS, AND CEILINGS.
E. SEE A500 SHEETS FOR ROOM FINISHES.
F. FOR WALLS NOT LABELED WITH WALL TYPE, USE WALL TYPE MOST CONSISTENT WITH SIMILAR APPLICATION, SEE STRUCTURAL DRAWINGS.
G. PROVIDE BACKING IN WALL FOR CABINETRY, SHELVING, DOOR STOPS, DOOR HARDWARE, COUNTERTOPS, WALL-MOUNTED EQUIPMENT, AND TOILET ACCESSORIES. CONTRACTOR TO COORDINATE FINAL LOCATION OF OWNER PROVIDED EQUIPMENT WITH OWNER. CONTRACTOR TO FIELD VERIFY AND COORDINATE VENDOR PROVIDED EQUIPMENT WITH VENDOR AND OWNER.
H. COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS FOR FINISH FLOOR ELEVATIONS.
I. SEE A600S FOR REFLECTED CEILING PLANS.
J. SEE CODE PLANS FOR LOCATION OF RATED WALLS TO DECK.
K. SEE ASSEMBLIES SHEET FOR WALL TYPES, WALLS TO DECK, AND RATED ASSEMBLY REQUIREMENTS.

KEYNOTES

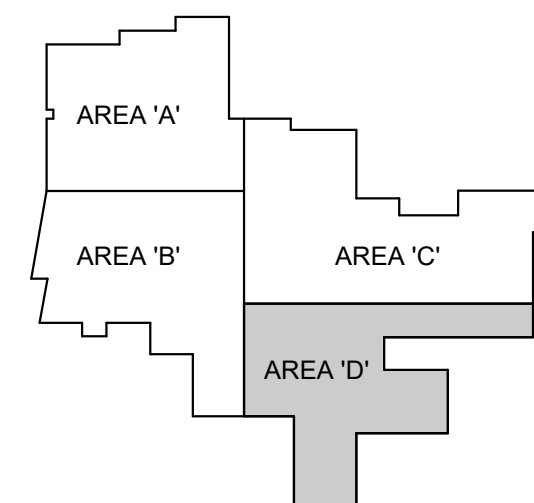
1. PROVIDE BACKING IN WALL FOR WALL MOUNTED EQUIPMENT.
2. WALL MOUNTED MOP HOLDER, GRANGER TELS FOR 3/5" TO 1-1/8" HANDLE DIAMETER. SEE SPECIFICATIONS FOR MORE INFORMATION.
3. WALL MOUNTED CHEMICAL DISPENSING UNIT, 3' ABOVE FINISH FLOOR, TYPICAL. SEE SPECIFICATIONS.
4. PROVIDE TWO COAT HOOKS ON WALL HERE, SEE FURNITURE PLANS AND VENDOR DRAWINGS.
5. WALL MOUNTED 55" TV, PROVIDE ADDITIONAL BACKING. SEE ELECTRICAL DRAWINGS.
6. PROVIDE 2 COAT HOOKS ON THIS WALL. SEE FURNITURE PLANS AND VENDOR DRAWINGS.
7. WALL MOUNTED 2x3 WHITEBOARD (WB1), SEE FURNITURE PLANS AND VENDOR DRAWINGS.
8. AED CABINET, SEE EQUIPMENT PLANS.
9. ZONE VALVE BOX, SEE PLUMBING DRAWINGS.
10. MED GAS ALARM PANEL, SEE PLUMBING DRAWINGS.
11. FIRE EXTINGUISHER CABINET, SEE CODE PLANS AND SPECIFICATIONS. SEAL AROUND EDGES WHERE CABINETS OCCUR IN SMOKE RATED WALLS.
12. WALL MOUNTED TIME CLOCK, SEE ELECTRICAL DRAWINGS.
13. DOOR, WINDOW, AND WALL ELEMENTS IN THIS ROOM REQUIRE LEAD SHIELDING. SEE WALL ASSEMBLY SHEET, DOOR SCHEDULE, WINDOW ELEVATIONS, AND SPECIFICATIONS.
14. PROVIDE FIRE RATED PLYWOOD UP TO A HEIGHT OF 8'-0" A.F.F. ON ALL WALLS IN THIS ROOM FOR WALL MOUNTED EQUIPMENT.



1 FIRST FLOOR DIMENSION PLAN 'AREA D'
1/8" = 1'-0"



KEY PLAN



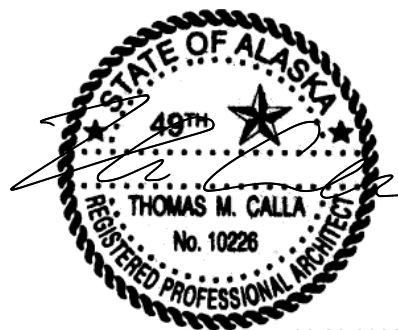
PLAN LEGEND

- WALL
1
ASSEMBLY TYPE (SEE ASSEMBLIES SHEET)
ASSEMBLY MODIFIER, PER TYPE
- NAME
[101]
ROOM NAME AND NUMBER
- X
WINDOW TYPE (SEE A600s)
- X
KEYNOTE
- 1
SIM
DIRECTION OF VIEW, IF APPLICABLE
DRAWING NUMBER
X000
SHEET WHERE DRAWN
- 1
101
DOOR NUMBER (SEE SHEET A601)
- 1
101
DIMENSION TO FACE OF FRAMING
- 1
101
DIMENSION TO GRID LINE
- 1
101
DIMENSION TO CENTER LINE

GENERAL NOTES

- A. SEE ENLARGED PLANS FOR ADDITIONAL INFORMATION.
- B. UNLESS OTHERWISE NOTED WITH 'CLEAR', DIMENSIONS ARE TAKEN TO THE FACE OF STUD.
- C. UNLESS OTHERWISE NOTED, ALL STUD WALLS HAVE A 4" STUD RETURN AT THE HINGE SIDE OF DOOR FRAMES TO PERPENDICULAR WALL.
- D. COORDINATE ALL PENETRATIONS WITH RESPECTIVE TRADES AT BOTH RATED AND NON-RATED ASSEMBLIES WHICH INCLUDES SLABS, WALLS, AND CEILINGS.
- E. SEE A500 SHEETS FOR ROOM FINISHES.
- F. FOR WALLS NOT LABELED WITH WALL TYPE, USE WALL TYPE MOST CONSISTENT WITH SIMILAR APPLICATION, SEE STRUCTURAL DRAWINGS.
- G. PROVIDE BACKING IN WALL FOR CABINETRY, SHELVING, DOOR STOPS, DOOR HARDWARE, COUNTERTOPS, WALL-MOUNTED EQUIPMENT, AND TOILET ACCESSORIES. CONTRACTOR TO COORDINATE FINAL LOCATION OF OWNER PROVIDED EQUIPMENT WITH OWNER. CONTRACTOR TO FIELD VERIFY AND COORDINATE VENDOR PROVIDED EQUIPMENT WITH VENDOR AND OWNER.
- H. COORDINATE WITH CIVIL AND STRUCTURAL DRAWINGS FOR FINISH FLOOR ELEVATIONS.
- I. SEE A600S FOR REFLECTED CEILING PLANS.
- J. SEE CODE PLANS FOR LOCATION OF RATED WALLS TO DECK.
- K. SEE ASSEMBLIES SHEET FOR WALL TYPES, WALLS TO DECK, AND RATED ASSEMBLY REQUIREMENTS.

SOUTHEAST ALASKA REGIONAL HEALTH CONSORTIUM
785 JONES POINT ROAD, HAINES AK, 99827
HAINES CLINIC AND HOSPITAL

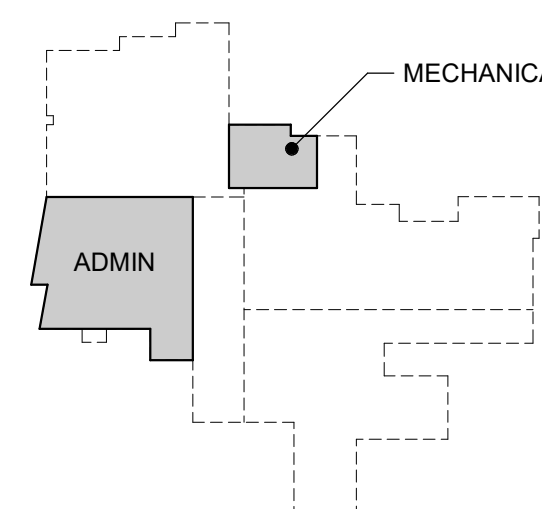


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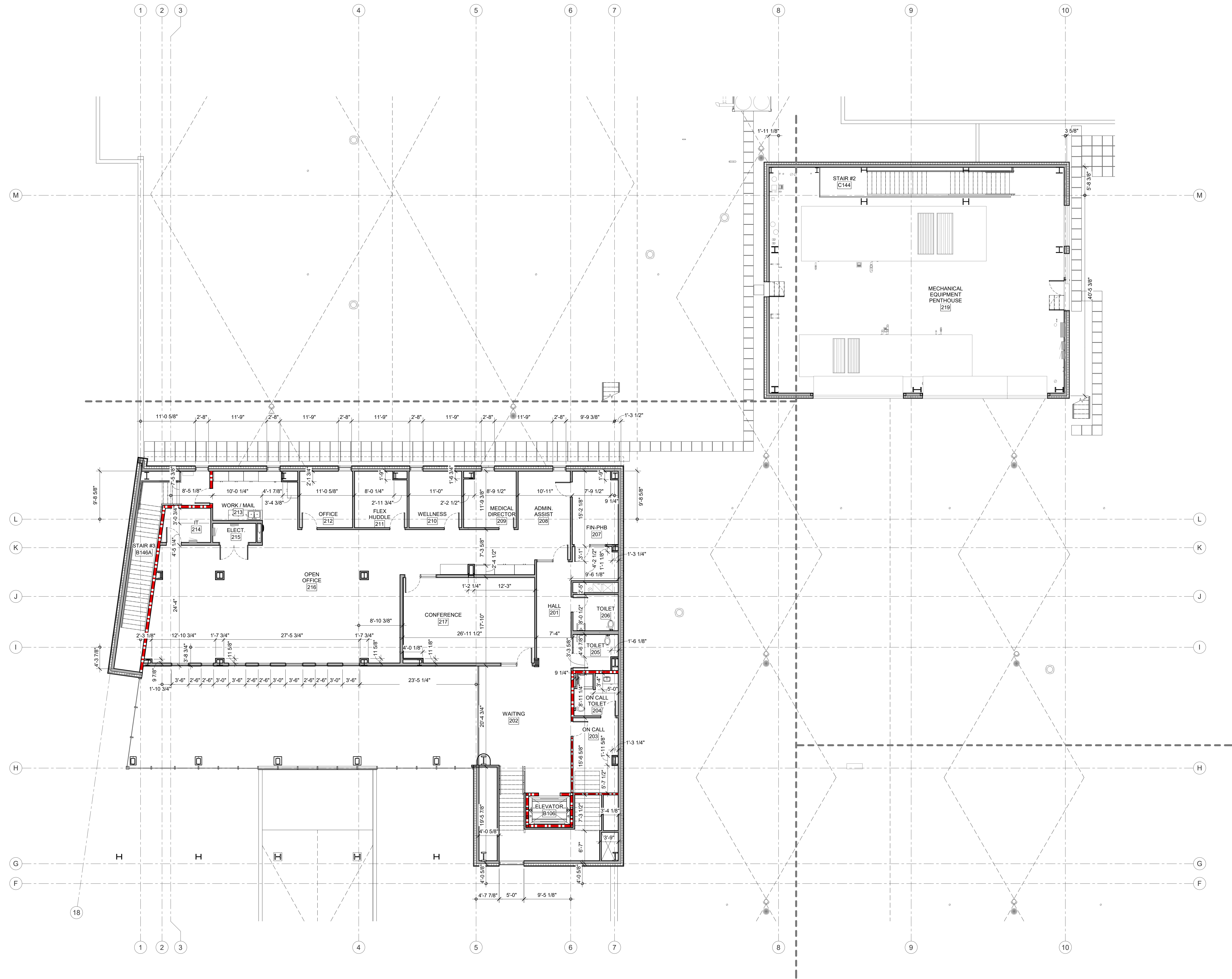
08.28.2026
PROJ# | SEARHC_HAINCAH
DESIGNED BY | JUAREZ
DRAWN BY | JUAREZ
REVIEWED BY | BAKER
REVISIONS

KEY PLAN



SECOND FLOOR
DIMENSION PLAN

A100-2



1 SECOND FLOOR PLAN DIMENSION PLAN
A100-2 1/8" = 1'-0"

