ENGINEERING DEPARTMENT

ADDENDUM TO THE CONTRACT

for the

Bartlett Regional Hospital Server Room
Cooling System Replacement

Contract No. E12-149

ADDENDUM NO.: **TWO**

CURRENT DEADLINE FOR BIDS:
January 20, 2012

PREVIOUS ADDENDA: **ONE**

ISSUED BY: City and Borough of Juneau
ENGINEERING DEPARTMENT
155 South Seward Street
Juneau, Alaska 99801

DATE ADDENDUM ISSUED: **January 13, 2012**

The following items of the contract are modified as herein indicated. All other items remain the same. A confirming copy will not be mailed to you. This addendum has been issued and is posted online. Please refer to the CBJ Engineering Contracts Division webpage at:
http://www.juneau.org/engineering_ftp/contracts/Contracts.php

SPECIFICATIONS:

Item No. 1 Section 230923 – Direct-Digital Control System for HVAC. ***Delete*** in its entirety and ***replace*** with the attached Section 230923, labeled Addendum No. 2.

Item No. 2 Section 00800 – Supplementary General Conditions. SGC 6.5, Concerning Subcontractors, Suppliers, and Others. ***Delete*** all reference of 40%, and ***replace*** with 25%.

DRAWINGS:

Item No. 3 Sheet MD101 - A duplicate was inadvertently included in the printed bid documents. Please ***delete*** the second copy.

Item No. 4 Sheet MD102 - Partial Demo. Floor Plan Level 2 Ductwork. This drawing was inadvertently omitted from the printed bid documents, but it was posted online as part of the original set of bid documents. ***Delete*** and ***replace*** with the attached Drawing, MD102, labeled Addendum No. 2.

Item No. 5 Sheet M201 – Partial Floor Plan Level 2 Piping. ***Add*** the following Sheet Note No. 1.

"1. Contractor is to install and start up AC-3/CCU-3, AC-4/CCU-4 and HUM-5 prior to removal of existing water cooling unit. Intention is to have continuous cooling and humidification of the server room."

Item No. 6 Sheet M302 – Partial Floor Plan Level 2 Ductwork. Sheet Note 2. ***Delete*** and ***replace*** with the following:

"2. Contractor is to install and start up AC-3/CCU-3, AC-4/CCU-4, and HUM-5 prior to removal of existing water cooling unit. Intention is to have continuous cooling and humidification of the server room."

By: _____

Jennifer Mannix,
Contract Administrator

Date: January 13, 2012

Total number of pages contained within this Addendum: 12 total.

SECTION 230923 - DIRECT-DIGITAL CONTROL SYSTEM FOR HVAC

NOTE: Items with bold strikethrough or in italics have been modified by Addendum.

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Control equipment.

1.2 RELATED REQUIREMENTS

A. Section 262726 – Wiring Devices: Electrical characteristics and wiring connections.

B. Drawings and General provisions of the Contract, including General, Supplementary Conditions, and all Division Specifications Section, apply to this section.

1.3 REFERENCE STANDARDS

A. NFPA 70 - National Electrical Code; National Fire Protection Association; 2008.

1.4 SYSTEM DESCRIPTION

A. Furnish all labor, materials, equipment, and service necessary for a complete and operating HVAC control system for the Bartlett Regional Hospital Server Room Cooling System Replacement areas Direct Digital Control (DDC) Building Automation System (BAS). ~~***This project involves the installation and extension of an existing SEIBE direct digital control (DDC) system for the remodeled areas of the Bartlett Regional Hospital HVAC systems.***~~ ***Work involves integration of new control with existing SEIBE DDC system and graphic package.*** This specification describes the primary products and performance of the digital control system. Associated sequence of operation descriptions and schematic control diagrams detail the scope of work for this project. ~~***The direct digital control equipment for this project shall be comprised of SIEBE (Barber-Colman) Network 8000 controllers and associated devices.***~~ The Owners existing "Signal" graphical software will be used for the additional graphic screens associated with this project***. All new controllers, application controllers, and all input/output devices shall communicate using the protocols and network standards as defined by ANSI/ASHRAE Standard 135-2008, BACNet. All controllers, including unitary controllers, shall be native BACNet devices.***

B. Controls verified and modified for steam humidifier on existing VAV-1-205 box and monitoring of the temperature in the Server Room from an existing thermostat and new thermostat.

C. Provide control systems consisting of thermostats indicating devices, interface equipment and

other apparatus and accessories required to operate mechanical systems, and to perform functions specified.

D. Include installation and calibration, supervision, adjustments, and fine tuning necessary for complete and fully operational system.

1.5 SUBMITTALS

A. See Section 013300 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data for each system component and software module.

C. Shop Drawings:

1. Indicate trunk cable schematic showing programmable control unit locations, and trunk data conductors.
2. List connected data points, including connected control unit and input device.
3. Indicate system graphics indicating monitored systems, data (connected and calculated) point addresses, and operator notations. Provide demonstration diskette containing graphics.
4. Show system configuration with peripheral devices, batteries, power supplies, diagrams, modems, and interconnections.
5. Indicate description and sequence of operation of operating, user, and application software.

D. Manufacturer's Instructions: Indicate manufacturer's installation instructions for all manufactured components.

E. Project Record Documents: Record actual locations of control components, including control units, thermostats, and sensors.

1. Revise shop drawings to reflect actual installation and operating sequences.
2. Include submittals data in final "Record Documents" form.

F. Operation and Maintenance Data:

1. Operation and maintenance manuals shall be submitted for review and approval before the Final Inspection and OWNER training.
2. The operation and maintenance manuals shall include the following information:

a. Include interconnection wiring diagrams complete field installed systems with identified and numbered, system components and devices.
b. A user’s guide to operate the building management system. The guide shall include the following: logs on procedure; viewing system information; viewing and acknowledging alarms; changing set points; printing a trend or report; overriding a point. Include keyboard illustrations and step-by-step procedures indexed for each operator function.

c. Manufacturers data for all control components and maintenance information for all control components requiring period maintenance. Include inspection period, cleaning methods, cleaning materials recommended, and calibration tolerances.
d. Complete system "As-Built" Control drawings and including layout drawings.
e. Complete software "As-Built" diagrams.

G. Warranty: Submit manufacturer's warranty and ensure forms have been filled out in City and Borough of Juneau s name and registered with manufacturer.

1.6 QUALITY ASSURANCE

A. The direct digital control system for this project shall be furnished and installed by the factory authorized Control Contractor in Alaska. Contractor shall have a minimum of three years experience with Control components, systems, and graphic programming. The control Subcontractor shall maintain an office in Juneau or Anchorage with repair parts and maintenance personnel to ensure prompt response to an emergency call during the warranty period. The contractor shall maintain a complete sales, engineering, installation, and service organization.

B. Perform work in accordance with NFPA 70.

C. The control Subcontractor shall hold a license to design and install control systems for that Manufacturer.

D. All work described in this section shall be installed, wired, circuit tested, and calibrated by factory trained electricians and mechanics qualified for this work and in the regular employment of the temperature control system manufacturer or its exclusive factory authorized installing contracting field office (representative). The installing office shall have a minimum of five years of installation experience with the manufacturer and shall provide documentation in submittal package verifying longevity of the installing company's relationship with the manufacture. Installation shall not be subcontracted. Supervision, calibration and checkout of the system shall be by the employees of the local exclusive factory authorized temperature control contracting field office (branch or representative). The employees of the installing office shall be factory trained with training certification documentation provided in submittal package.

E. All materials and equipment used shall be standard components, of regular manufacture for this application. All systems and components shall have been thoroughly tested and proven in actual use. ~~***Scibe Environmental Control products are used as the basis of the design.***~~ Exceptions to the specification will qualify the bid as unacceptable.

F. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

G. Installer Qualifications: Company specializing in performing the work of this section with minimum 3 years experience approved by manufacturer.

H. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc., as suitable for the purpose specified and indicated.

I. Scope of Work:

1. This specification describes the primary products and performance of the automatic control system. Sequences of operation and the schematic control diagrams shown on Drawings M501 detail the scope of work for this project.
2. ~~***The automatic control system shall be comprised of Siebe (Barber-Colman) control equipment.***~~ The BAS system shall be fully compatible with the existing Bartlett Regional Hospital Direct Digital Control system. The DDC system shall provide stand-alone DDC control for all designated equipment described in the sequence of operation and show on the control schematics. The distributed DDC equipment shall be networked to Global Digital Controllers located in the Bartlett Regional Hospital Mechanical Areas and connected to the existing central operators station (Host) to provide a complete facility management system.
3. Modem communication shall be available for backup of a problem arises with the communication bus. The existing central operators station (Host) computer with existing "Signal" graphical software will be used for displaying the additional graphic screens associated with this project.
4. The BAS shall be connected to GDC and the Host computer for remote monitoring, control, and data trending.
5. Work shall be done in sequential phases, coordinate work with CONTRACTOR.

1.7 WARRANTY

A. See Section 017700 - Closeout Procedures, for additional warranty requirements.

B. A warranty period of one year shall commence upon acceptance of the system by the OWNER. The warranty shall consist of providing parts and labor as required to repair and replace parts of the control system that prove to be faulty due to defective materials or improper installation practices or troubleshooting control sequences that are not operating as specified. Included is reprogramming of the system software to include changes in the point descriptions as requested by the OWNER. The warranty excludes normal routine maintenance.

C. Provide five year manufacturer's warranty for field programmable micro-processor based units.

1.8 MAINTENANCE SERVICE

A. Provide service and maintenance of energy management and control systems for one years from Date of Substantial Completion.

B. Provide complete service of systems, including call backs in addition to normal service calls to inspect, calibrate, and adjust controls, and submit written reports.

1.9 COORDINATION

A. Equipment: Control Subcontractor shall supply control equipment for installation by equipment suppliers and Mechanical Subcontractor where required. This includes all control equipment installed in piping systems such as thermostat wells and automatic valves. Control Subcontractor shall also coordinate locations of control equipment, including, but not limited to, thermostats, dampers and valve actuators, thermostat bulbs and averaging elements.

B. During the adjustment of the mechanical systems, air and water, the BAS Subcontractor shall provide a trained technician on-site to help the Adjustment Contractor with their balancing procedures including any software required to interface with the control sequence. Responsibility for coordination of the times is included under the automatic controls.

1.10 TRAINING

A. After substantial completion and prior to final completion of the installation, operating personnel of the Bartlett Regional Hospital Maintenance shall be instructed on site in the sequence of operation and maintenance of the system hardware and software by the Subcontract's qualified representative. A minimum 2 hours of training is to be provided. Coordinate with OWNER to determine the nature of training to be provided.

B. Subcontractor is to provide minimum of 7 days notice to the Bartlett Regional Hospital Maintenance Director prior to training and warranty visits.

1.11 EXTRA MATERIALS

A. See Section 016000 - Product Requirements, for additional provisions.

PART 2 - PRODUCTS

~~***2.1 MANUFACTURERS***~~

~~***A. Siebe Invensys Environmental Controls Network 8000.***~~

2.1. MANUFACTURERS

A. Seibe Enviromental Controls

B. Siemens

C. Alerton

D. Delta Controls

2.2 CONTROL PANELS

A. Utilize cabinet type for each system under automatic control with relays and controls viewable from LCD screens.

B. NEMA 250, general purpose utility enclosures with enameled finished face panel.

C. Provide common keying for all panels.

D. Use spare spaces in existing panel. Only install new panel if required.

2.3 SENSING AND CONTROL OUTPUT REQUIREMENTS

A. Sensing: All sensing inputs shall be provided via industry standard signals. Temperature, humidity, differential pressure signals, and other signal inputs shall be one of the following types: 0-20 mA; 4-20 mA; 0-5 VDC; 0-12 VDC; 1000 ohm platinum (at O C, 2.62 ohms/ºC); 1000 ohm Balco (2.2 ohms/ºF); 10 k ohm Thermistor (at 25ºC/77ºF). All signal inputs shall be compatible with the controllers used and with the requirements for readout of variables in true scaled engineering units as specified.

B. Control Outputs:

1. The control panel shall internally provide test points for the circuits driving the equipment contactor, for the purpose of troubleshooting the 120 VAC circuit to the contactor. All such relays shall be of modular construction that can be easily and quickly replaced on an individual basis if the module were to be damaged.
2. Modulating outputs shall be industry standard 0-5 VDC, or 0-12 VDC with definable output spans to adapt to industry available control products. Milliamp outputs of 0-20 mA or 4-20 mA are also acceptable. Drive open/Drive closed type modulating outputs are acceptable for selected terminal unit control.

2.3 SENSORS

A. General:

1. Provide sensors with specified output type for remote sensing of temperature. Suitable for medium where used, system conditions, and ambient temperature.
2. Provide two wire temperature sensors.

B. Space Temperature:

1. Thermostats: Provide thermostats equal to the thermostats provided for CV controllers. Thermostats shall have unoccupied override capability and occupant setpoint adjustment with visual indication of thermostat in override status.

2.4 WIRING

A. Includes all control wiring to complete the system and provide control arrangements specified or shown on the drawings. Power or interlock wiring shall be run in separate conduits from sensor and communications wiring.

1. Low-voltage Control Wiring (12-24v): Protected in exposed locations including, but not limited to, mechanical rooms and storage rooms. Plenum rated cable installed in ceiling plenums above ceilings. Motor disconnect switch shall also disconnect control circuit. Indicating lights wired from the motor terminals or from the last controlling device to the motor to show actual operation. All low voltage control wiring 18 AWG minimum.
2. 110-volt and larger Control Wiring: 12 AWG minimum if directly operating a motor, and 14 AWG minimum if controlling relays and holding coils.

B. Control Power: Control Power will be provided under the Electrical Division. The power will be available in J-boxes located in the Mechanical and Fan Rooms. Provide the electrical connection between all automatic control equipment and the control power J-boxes.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

B. Verify that conditioned power supply is available to the control units and to the operator work station. Verify that field end devices, wiring, and pneumatic tubing is installed prior to installation proceeding.

3.2 WIRING AND RACEWAYS

A. General:

1. Provide wiring, conduits and raceway complying with the National Electrical Code, Division 16, State and Local Codes and Ordinances. See electrical drawings for hazardous (classified) locations.
2. Existing control conduit and junction boxes may be used by the CONTRACTOR.
3. Low voltage wiring to the perimeter heat automatic valves shall be installed in conduit where stud walls are not available to conceal wiring. Where surface mount raceways are installed by the electrical Subcontractor for low voltage data wiring, the low voltage control wiring may be installed within. Coordinate with Electrical for locations.
4. Use EMT, metal duct, IMC, rigid conduit, surface metal raceways, or totally enclosed metal through with flexible metal tubing as required by Division 16.
5. Provide wire with copper stranded conductors. Provide color or number coded jackets.
6. Provide 20 gauge minimum foil-shielded cable rated 100 VDC at 80 C. for input/output

wiring.

7. Provide communications network wiring meeting the gauge, impedance, capacitance, resistance and shielding requirements specified by the manufacturer of the connected devices.
8. Plenum rated cable is acceptable in concealed, accessible areas such as suspended ceilings.
9. Install wiring in a neat an orderly manner generally running piping and wiring along building lines.
10. Seal conduit penetrations at rated walls with fire-stopping installed in accordance with fire-stopping manufacturers UL listed installation requirements.
11. Wire all electrical controls and switches furnished under this section of the Specifications.
12. Support and conceal wiring in finished areas.
13. Support control wiring per electrical specifications.

3.3 INSTALLATION

A. Install control units and other hardware in position on permanent walls ***in location*** not subject to excessive vibration.

B. Install software in control units and in operator work station. Implement all features of programs to specified requirements and appropriate to sequence of operation.

C. Provide conduit and electrical wiring in accordance with Section 26 2726. Electrical material and installation shall be in accordance with appropriate requirements of Division 26.

3.4 COORDINATION

A. Coordinate this work with the work of other trades, and make arrangements for the complete and proper accomplishment of all related work. Coordinate required control interlocks with HVAC manufacturers or local representatives as necessary.

B. Mechanical Subcontractor Responsibilities: Installs automatic valves and separable wells that are supplied by the Temperature Control Subcontractor.

3.5 TESTING AND ADJUSTING

A. Upon completion of the control installation, start up the system, perform necessary testing, and adjust the system to ensure proper operation.

B. Coordinate the final adjustments and “fine tuning” of control functions and devices so the mechanical systems and the control systems operate and respond as an integrated comfortable and energy efficient component of this facility.

3.6 ACCEPTANCE TESTING

A. Point Verification:

1. To verify end-to-end operation of the system, the Subcontractor shall provide a hard copy of an All Points Summary Listing to the Owner of each part or system to be placed in warranty by the Owner. For CHS systems, the Subcontractor shall additionally provide a print screen of the process display showing real time dynamic point information for all points on the subsystem(s) to be accepted.
2. Sequence Verification:
3. The Contractor shall notify the Owner of systems which perform all specified sequences. The ARCHITECT shall verify all sequences of operation and place the system into warranty acceptance test.

3.7 WARRANTY ACCESS

A. The Owner shall grant to the Subcontractor, reasonable access to the Bas system during the warranty period.

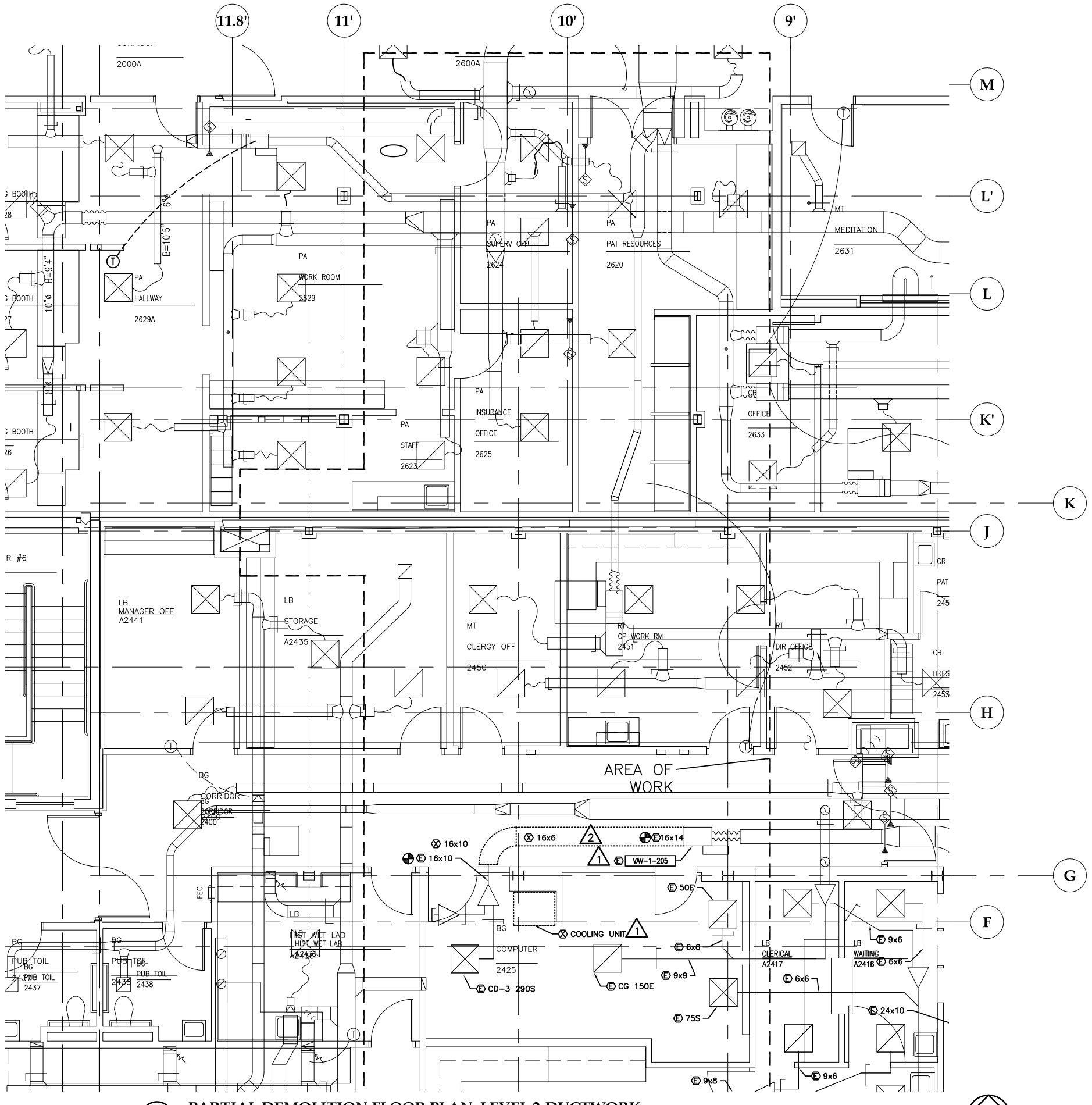
B. Access to the entire facility control system by the Subcontractor to provide service and diagnostic support.

C. Access by the owner from off-site for similar purposes and for remote operation, monitoring, and adjustment of facility functions.

3.8 SEQUENCE OF OPERATIONS

A. See Sheets M501 for Sequence of Operations and points list

END OF SECTION 230923



1 PARTIAL DEMOLITION FLOOR PLAN: LEVEL 2-DUCTWORK

SCALE: 0 2' 4' 8'

SHEET NOTES:

1. MAJORITY OF SHEET IS TO SHOW DUCTWORK THAT WILL BE ENCOUNTERED DURING ROUTING OF RL AND RS PIPING TO ROOF MOUNTED CONDENSER UNITS. ONLY MINOR MODIFICATION OF DUCTWORK FOR STEAM HUMIDIFIER INSTALLATION IS ANTICIPATED.

ADDENDUM #2

DEMOLITION NOTES:

1. DEMOLITION OF THE EXISTING LIEBERT 3 TON WATER COOLED AIR CONDITIONING UNIT TO OCCUR AFTER INSTALLATION AND START-UP OF AC-3/CCU-3 AND AC-4/CCU-4. INTENTION IS TO HAVE THE SERVER ROOM SPACE CONTINUOUSLY COOLED AND HUMIDIFIED DURING THE PROJECT. CONTRACTOR TO REMOVE LIEBERT 3 TON WATER COOLED AIR CONDITIONING UNIT ONLY AFTER TWO OF THE NEW AC/CCU AND STEAM HUMIDIFIER ARE INSTALLED AND STARTED IN FULLY CONTROLLED OPERATION. DECOMMISSIONING OF COOLING UNIT INCLUDES PROPER DISPOSAL OF REFRIGERANT, AND COOLING UNIT.
2. REMOVE DUCTWORK FOR INSTALLATION OF HUM-5. COORDINATE WITH WORK ON SHEET M302, M401, AND M501.

Addendum No. 2

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STATE OF ALASKA — REGISTERED — 4911 — DOUGLAS H. MURRAY — ME 7870 — MECHANICAL ENGINEER PROFESSIONAL
ISSUE DATE: 12-27-2011

City & Borough of Juneau
Bartlett Regional Hospital
Server Room Cooling System Replacement
CBJ Contract No. E12-149
Juneau, Alaska

CONSTRUCTION DOCUMENTS

REVISIONS
2 01/13/2012
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SHEET TITLE
PARTIAL DEMO. FLOOR PLAN LEVEL 2 DUCTWORK

DATE: December 1, 2011
FILE:

MD102