ENGINEERING DEPARTMENT

ADDENDUM TO THE CONTRACT

for the

Gastineau Elementary School Renovation

Contract No. E11-137

ADDENDUM NO.: **ELEVEN**

CURRENT DEADLINE FOR BIDS: **January 11, 2011**

PREVIOUS ADDENDA: **TEN**

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

DATE ADDENDUM ISSUED: **January 5, 2011**

The following items of the contract are modified as herein indicated. All other items remain the same. This is a faxed addendum. A confirming copy will not be mailed to you. If this fax is incomplete, please call (907) 586-0490, and we will re-send it. 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

PROJECT MANUAL VOLUME I:

Item No. 1 SECTION 15188 – HVAC PUMPS, PART 2 – PRODUCTS, Article 2.6 BASE MOUNTED PUMPS (P-1A, P-1B), paragraph A: ***Delete*** *the following "direct connected, radially split casing, for 125 psi".* ***Replace*** *the previous with the following: "end suction design, for 175 psi"*

Item No. 2 SECTION 15188 – HVAC PUMPS, PART 2 – PRODUCTS, Article 2.6 BASE MOUNTED PUMPS (P-1A, P-1B), paragraph G: ***Add*** the following after the word Drive: "Long style coupling with "

Item No. 3 SECTION 15720 – AIR HANDLING UNITS, PART 2 – PRODUCTS, Article 2.1 AIR HANDLING UNIT (AHU-1, AHU-2, AHU-3), paragraph B Configuration :, subarticle 3, subparagraph c: ***Delete*** the following ",with face and bypass dampers"

Item No. 4 SECTION 15720 – AIR HANDLING UNITS, PART 2 – PRODUCTS, Article 2.1 AIR HANDLING UNIT (AHU-1, AHU-2, AHU-3), paragraph B Configuration, subarticle 6: ***Add*** subparagraph d as follows ",AHU-3 Maximum Dimensions: 3'-4" height (including base), 8'-4" length, 3'-5" width. See plans."

Item No. 5 SECTION 15720 – AIR HANDLING UNITS, PART 2 – PRODUCTS, Article 2.1 AIR HANDLING UNIT (AHU-1, AHU-2, AHU-3), paragraph B Configuration:, ***Add*** subarticle 16": 16. Air Monitoring Station, a. Piezometric ring type airflow monitoring system mounted at the throat of the plenum fan and a static pressure tap mounted on the face of

the inlet cone. Includes differential pressure transducer and digital display mounted on the casing of air handling units. Provide on AHU-1 SF and RF."

Item No. 6 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 1 – GENERAL, Article 1.1. OVERVIEW, paragraph A:, ***Delete*** and ***replace*** the entire paragraph with the following:"

"Furnish all labor, materials, equipment, and service necessary for a renovation and replacement of the HVAC control system for the Gastineau Elementary School Renovation. Work includes a complete replacement of the pneumatic, electric, and DDC control system with a new totally native BACnet-based system, including an operator's workstation. All building 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 workstations and controllers, including unitary controllers, shall be native BACnet devices."

Item No. 7 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 1 – GENERAL, Article 1.2. QUALITY ASSURANCE, paragraph A:, ***Delete*** the first sentence of the paragraph that reads: "The direct digital control system addition for this project shall be SIEBE Environmental Control system."

Item No. 8 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 1 – GENERAL, Article 1.2. QUALITY ASSURANCE, paragraph C, ***Delete*** the third and fourth sentences of the paragraph that reads: "Barber-Coleman/ Siebe Environmental Controls products are used as basis of the design. Exceptions to the specifications will qualify the bid as unacceptable."

Item No. 9 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 1 – GENERAL, Article 1.3. SYSTEM , paragraph A, sub paragraph 2:, ***Delete*** and ***replace*** second sentence of paragraph that reads: "Except as shown otherwise, existing control systems serving existing fan units, VU-4, RF-4, VU-5, RF-5, and VU-6 systems shall remain and be integrated into the new DDC system." Replacement: "Existing fan systems controls for VU-4, RF-4, VU-5, RF-5, and VU-6 shall be replaced hereunder as shown as intended. Provide power connections and relays as required."

Item No. 10 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 1 – GENERAL, Article 1.3. SYSTEM , paragraph A, sub paragraph 5:, ***Delete*** entire paragraph.

Item No. 11 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 1 – GENERAL, Article 1.3. SYSTEM , paragraph A, sub paragraph 6:, ***Delete*** entire paragraph.

Item No. 12 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 1 – GENERAL, Article 1.3. SYSTEM , paragraph A, sub paragraph 8:, ***Delete*** and ***replace*** with from first sentence the following ." for GCM and Microzone controllers" with "for Mechanical Systems Controllers and Global Digital Controllers."

Item No. 13 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 1 – GENERAL, Article 1.5. ACCEPTABLE MANUFACTURERS, ***Delete*** entire section and ***replace*** with the following: "1.5 ACCEPTABLE MANUFACTURERS; A. SIEBE ENVIROMENTAL CONTROLS (INVENSYS), B. SIEMENS, C. ALERTON, D. DELTA CONTROLS.

Item No. 14 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 2 – PRODUCTS, Article 2.1 BUILDING AUTOMATIC SYSTEM (BAS) COMMUNICATIONS, paragraph A. ***Add*** sentence to the end of paragraph that reads as follows: "BACNet communication protocol required."

Item No. 15 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 2 – PRODUCTS, Article 2.1 BUILDING AUTOMATIC SYSTEM (BAS) COMMUNICATIONS, ***Add*** paragraph and sub paragraphs G to read as follows:

"G. BAS supplier shall provide web-based access to the system as part of standard installation. User shall be able to access all displays of real-time data that are part of the BAS via a standard Web browser. Web browser shall tie into the network via owner-supplied Ethernet network connection. Web-page host shall be a separate device that resides on the BAS BACnet network, but is not the BAS server for the control system. BAS server must be a separate computer from the Web-page host device to ensure data and system integrity. The web-page software shall not require a per user licensing fee or annual fees. The web-page host must be able to support on average 50 simultaneous users with the ability to expand the system to accommodate an unlimited number of users.

1. Web-page host shall include two Ethernet network connections. One network connection shall be dedicated to BAS BACnet network and shall be used to gather real-time data from all the BACnet devices that form the BAS. This network shall communicate via BACnet, allowing the Web-page host to gather data directly from units on the local LAN or from other projects connected over a WAN. This network shall also provide the connection to the BAS server for Web page generation.

2. The second Ethernet connection shall provide the physical connection to the Internet or an IP-based WAN. It shall be the port that is used for the browser to receive Web pages and data from the Web-page host.. The Web-page host shall act as a physical barrier between the BAS network and the WAN or Internet connection that allows the browser to receive web pages and data. The two separate network connections provide for a physical barrier to prevent raw BACnet traffic being exposed on the IP network.

3. The Web-page host shall provide for complete isolation of the IP and BACnet networks by not routing networking packets between the two networks."

Item No. 16 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 3 – EXECUTION, Article 3.4, COORDINATION. ***Add*** paragraph D that reads as follows: "D. The manufacturer shall provide full time, on site, experienced project manager for this work, responsible for direct supervision of the design, installation, start up and commissioning of the BAS system."

Item No. 17 SECTION 15926 – BUILDING AUTOMATION SYSTEM AND AUTOMATIC CONTROLS, PART 3 – EXECUTION, Article 3.9 SEQUENCE OF OPERATIONS, ***Add*** the following:

"T. The following sequence of operations is for existing ventilation units that have pneumatic actuators on control valves and dampers, and DDC controls. These unit are to remain operational with new control points per the following control sequences:

1. The following applies to the Existing VU-4 and VU-5 Mixing dampers; mixing dampers to operate cooperatively with the outside air dampers and exhaust dampers open when the recirculating air damper is closed. Dampers to position to the full recirculating position when the fan is off.

2. Existing VU-4 AND RF-4 FAN SYSTEM (MIXED USE ROOMS AROUND GYM): Switch: Existing Magnetic starter with three position switch on the cover, located on the mounting board. In the AUTO position the fan operates at the command of the night low limit control, and as programmed by the energy management control system. In the HAND position the fan operates on the OCCUPIED cycle of the energy management control system. In both positions the fan operates at the command of the non-freeze control and fire alarm controls.

    a. Normal Occupied Schedule: Initially set schedule to operate VU unit from 8:00 am until 3:30 pm Monday through Friday.
    b. UNOCCUPIED cycle: Night low limit thermostat, located in Gymnasium 159 set at 60F, with 4F differential, to cycle the fan to maintain room temperature. Mixed air dampers position to the full recirculating position.
    c. Supply air temperature: Averaging bulb duct sensor in the discharge of the fan to modulate two way automatic valve, AV-4 to maintain 65F supply air temperature. Supply air temperature discharge to be set by the supply air reset schedule according to PID loop control. PID loop shall reset the supply air discharge set point between 60F and 100F as required to maintain room temperature set point. Automatic valve to close on and outside air temperature above 65F OSA.
    d. Minimum OSA: 860 CFM
    e. Booster coils: Controlled by room sensor. Room sensor for BC-4A to modulate AV-4A. Room sensor for BC-4B to modulate AV-4B. Room sensor for BC-4C to modulate AV-4C. Controls for BC-4C in Rally Room. Replace three way valves and actuator with two way valves and DDC actuators.
    f. Low-limit control: Averaging bulb duct sensor on the discharge face of the heating coil HC-4 to stop the fan below 40F. Fan automatically reset on temperature rise above set point. Alarm is o be sent to the BAS for confirmation.

    g. Fire alarm control: Relay furnished hereunder, connected to the fire alarm circuit from the building fire alarm panel, to stop VU-4 during the alarm cycle.
    h. Existing Smoke sensor: Smoke sensors located in the supply air and return air furnished and installed under the ELECTRICAL division. Coordination for location with other mechanical equipment included hereunder.
    i. RF-4: Located in Fan Room 201. Existing Magnetic starter with three-position switch on the cover, located on the mounting board. In the AUTO position the fan operates whenever VU-4 operates. In the HAND position the fan operates.

3. Existing VU-5 AND RF-5 FAN SYSTEM (GYMNASIUM): Switch: Existing Magnetic starter with three position switch on the cover, located on the mounting board. In the HAND and AUTO positions the fan operates in the OCCUPIED cycle of the control system. In both positions the fan operates at the command of the non-freeze control and fire alarm controls.

    a. Schedule of Operations:
        1). Normal Occupied Schedule: Initially set schedule to operate VU unit from 8:00 am until 3:30 pm Monday through Friday.
        2). Ventilation Override: VU-5 and RF-5 shall modulate outdoor air damper as required to maintain acceptable CO2 levels:
            a). Gym Return Duct
            b). Gym

3). Unoccupied Mode: VU-5, RF-5 system shall remain OFF in Unoccupied mode unless activated by Override Switch or Night Setback Mode.

4). Night Setback Mode: VU-5 and RF-5 shall activate in Night Setback Mode if Gym space temperature drops below 60F. VU-5 and RF-5 operates with OAD, EAD fully closed and RAD in the open position until minimum space temperature rises above 68F.

b. Minimum OSA: 1,970 CFM.

c. Supply air temperature: Averaging bulb duct sensor in the discharge of the fan to modulate two way automatic valve AV-5 to maintain 65F supply air temperature. Supply air temperature discharge to be set by the supply air reset schedule according to PID loop control. PID loop shall reset the supply air discharge set point between 60F and 100F as required to maintain room temperature set point. Automatic valve to close on and outside air temperature above 65F OSA.

d. Mixed Air Temperature: Carbon dioxide sensor located in the return air duct to modulate the outside air damper, the recirculating air damper, and exhaust air damper to maintain 800 ppm. The BAS system shall default to an averaging bulb mixed air temperature set at 60F upon failure of carbon dioxide sensor. An additional carbon dioxide sensor in the mixed air duct to send an analog signal to the BAS. Damper to modulate cooperatively, with the outside air damper OAD and the exhaust air damper EAD closed when the recirculating damper RAD is open. Dampers to position to the full recirculating position during the Night Setback Mode and when the system is not operating. Mixed air dampers shall not modulate lower than a 38F mixed air temperature during carbon dioxide sensor control operation.

e. Low-limit control: Averaging bulb duct sensor on the discharge face of the heating coil HC-5 to stop the fan below 40F. Fan automatically reset on temperature rise above set point. Alarm is o be sent to the BAS for confirmation.

f. Fire alarm control: Relay furnished hereunder, connected to the fire alarm circuit from the building fire alarm panel, to stop VU-5 during the alarm cycle.

g. Existing Smoke sensor: Smoke sensors located in the supply air and return air furnished and installed under the ELECTRICAL division. Coordination for location with other mechanical equipment included hereunder.

U. If alternate for modification of VU-6 is not accepted. The following existing controls sequence shall be provided per Base Bid Work, modification of controls consists of change out of pneumatic contrls and existing DDC equipment for fully BACNet compatible DDC type.

1. VU-6 FAN SYSTEM (LIBRARY/COMPUTER ROOM): Switches: Existing Magnetic starter with three-position switch, located on the mounting board in the Upper Mechanical Room. In the AUTO position the fan operates in the OCCUPIED cycle of the energy management control system. In the HAND position the unit operates. In both positions the fan is at the control of the non-freeze control and the fire alarm panel.
   a. Mixed air temperature: Averaging bulb duct thermostat in the mixed air to modulate the outside air damper, the return air damper, and the exhaust air damper to maintain 55F mixed air temperature. If mechanical cooling is required by the room thermostats. The mixed air temperature will reset to 52F and the outside air damper is to position to minimum Outside air position. Dampers to

operate cooperatively, with the outside and exhaust air dampers closed when the return air damper is open. Dampers to position to the full recirculating positions when unit is not operating.

b. Minimum OSA required: 1,100 CFM.

c. Room temperature control: Room sensor to control the heating and cooling in series, with dead area between.

   1). Heating cycle: Room thermostats to reset the respective duct thermostat in the supply air to control automatic valve to supply 100F air at 66F room temperature, 68F air at 68F supply air, and modulate to 55F at 74F room temperature. Replace three way valve and actuator with two way valves and DDC actuator.

   2). Cooling cycle: Energized when any of the three room thermostats are 4F above setpoint. Mixed air temperature control, set at 52F, when mechanical cooling is required. Mixed air temperature control to operate refrigerant solenoid valve to maintain set point.

d. Existing Booster coils: Controlled by the respective room sensor. Room sensor to modulate the respective automatic valve as stated in room temperature control above. Replace three way valve and actuator with two way valves and DDC actuator.

e. Heating-cooling interlocks: Compressor/condenser unit electrically interlocked to operate only when the outside air temperature is above 55F and only when the VU-6 is operating. Cooling cycle not to operate during the unoccupied cycle.

f. Unoccupied cycle: Low limit reset on all thermostats to maintain a minimum of 60F by cycling the fan. Mixed air dampers to position to full recirculating position.

g. Low-limit control: Averaging bulb duct sensor on the discharge face of of VU-6 to stop the fan and open heat coil valve to full heating below 40F. Fan automatically reset on temperature rise above set point. Alarm is o be sent to the BAS for confirmation.

h Fire alarm control: Relay connection furnished hereunder, connected to the fire alarm circuit, to stop VU-6 during the alarm cycle.

i. Existing Smoke sensors: Furnished and installed under the ELECTRICAL division."

PROJECT MANUAL VOLUME III:

Item No. 18 DRAWING TITLED M0.2 – SCHEDULES

1. **Change** HEATING EQUIPMENT SCHEDULE, BURNER #1 ROW,
   a. SIZE CAPACITY COLUM:N **Delete** 4.0 GPH and **Replace** with 9.40 GPH on High Fire, 6.8 GPH on Lo.:
   b. DESIGN MANUFACTURER COLUMN: **Delete** Gordon Piatt and **Replace** with Beckett Model # CF-2300
   c. FEATURES AND ACCESSORIES COLUMN: **Delete** paragraph in its entirety and **Replace** with the following: "Low fire start. Lo-Hi-Lo firing. ¾ HP, 120V. Provide interconnection for combustion air damper."
2. **Change** HEATING EQUIPMENT SCHEDULE, BURNER #2 ROW,
   a. SIZE CAPACITY COLUM:N **Delete** 4.0 GPH and **Replace** with 9.40 GPH on High Fire, 6.8 GPH on Lo Fire :
   b. DESIGN MANUFACTURER COLUMN: **Delete** Gordon Piatt and **Replace** with Beckett Model # CF-2300.

c. FEATURES AND ACCESSORIES COLUMN: **Delete** paragraph in its entirety and **Replace** with the following: "Low fire start. Lo-Hi-Lo firing. ¾ HP, 120V. Provide interconnection for combustion air damper."

3. ***Change*** *PUMP SCHEDULE, P-1A & P-1B ROW IN FEATURES COLUMN:*
   a. **Add** after the words between BASE MOUNTED PUMP and STAINLESS, the followings ",LONG STYLE FLEXIBLE COUPLING FOR VARIABLE FREQUENCY DRIVE."

Item No. 19 DRAWING TITLED M1.31 – DEMOLITION PLAN DUCTWORK AREA A & B.

1. **Add** two control panel boxes in Fan Room 9. Locate on plan east wall at the end of the door swing. Each box to be 6 inches by 24 inches.
2. **Add** Construction Note 2 in a box to Construction Notes to read as follows: "Remove Siebe Network 8000 Microzone and related appurtenances."
3. **Add** leader note pointing to boxes to read as follows: "X in a hex Control Network 8000 Modules. Construction note 2."

Item No. 20 DRAWING TITLED M1.51 – DEMOLITION ENLARGED PLAN BOILER RM & FAN RM 200

1. SUB DRAWING 2 FAN ROOM 200 - LOWER: **Change** E in a hex at leader notes which read "DDC Microzone" and "DDC Panel" at southeast corner of Fan Room 200 to X in a hex.
2. SUB DRAWING 3 BOILER ROOM 130. **Add** leader note pointing to four small boxes on South wall in the southwest corner. Leader note to read as follows: "X in a hex control panels."

Item No. 21 DRAWING TITLED M1.52 – DEMOLITION ENLARGED PLAN LIBRARY FAN ROOM

1. **Add** two control panel boxes in Fan Room. Locate on plan south wall to the west of rectangular duct elbow. Each box to be 6 inches by 24 inches.
2. **Add** construction note 3 in a box to Construction Notes to read as follows: "Remove Siebe Network 8000 Microzone and related appurtenances. Construction Note 3."
3. **Add** leader note pointing to boxes to read as follows: "X in a hex Control Network 8000 Modules. Construction note 3."

Item No. 22 DRAWING TITLED M5.1 – ENLARGED PLANS FAN RMS 201 & 201A LOWER & UPPER

1. SUB DRAWING 2 ENLARGED PLAN – FAN ROOMS 201 &201A LOWER; **Remove E in hex** from leader notes that read "E in a hex DDC MICROZONES" and "DDC Panel" at southeast corner of room. Intent is to install new controllers in this location.

Item No. 23 DRAWING TITLED M5.3 – ENLARGED PLANS BOILER RM 152 LOWER & UPPER

1. **Delete** four boxes and associated leader note in the southwest corner of the room that reads as follows: Control panels.

Intent is to install new controllers in the boiler room in location shown and remove all old controllers.

Item No. 24 DRAWING TITLED M5.4 – ENLARGED PLANS FAN ROOM 202 (LIBRARY)

1. **Add** two control panel boxes in Fan Room. Located on plan south wall to the west of rectangular duct elbow. Each box to be 6 inches by 24 inches.

2. **Add** leader note pointing at two boxes on plan south wall to the west of rectangular duct elbow that reads as follows:
   a. "DDC Controllers"

Intent is to install new controllers in this location.

Item No. 25 DRAWING TITLED M8.3- EXISTING SYSTEMS CONTROLS-DEMOLITION

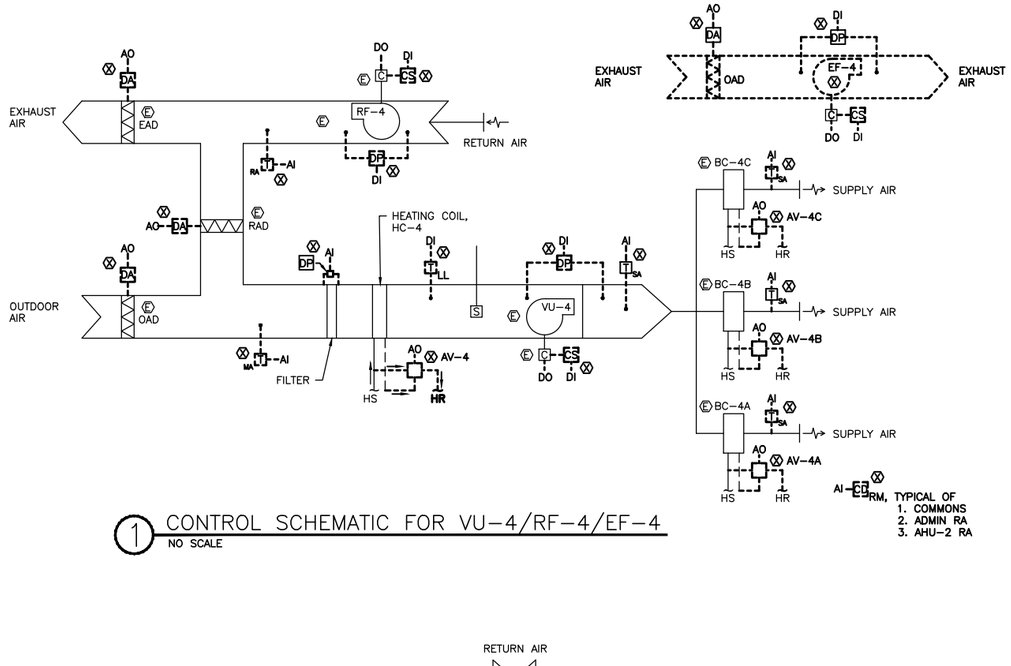
1. **Add** entire sheet. This plans shows demolition of existing control points on VU-4, VU-5, and VU-6 systems.

Item No. 26 DRAWING TITLED M8.4- EXISTING SYSTEMS CONTROLS

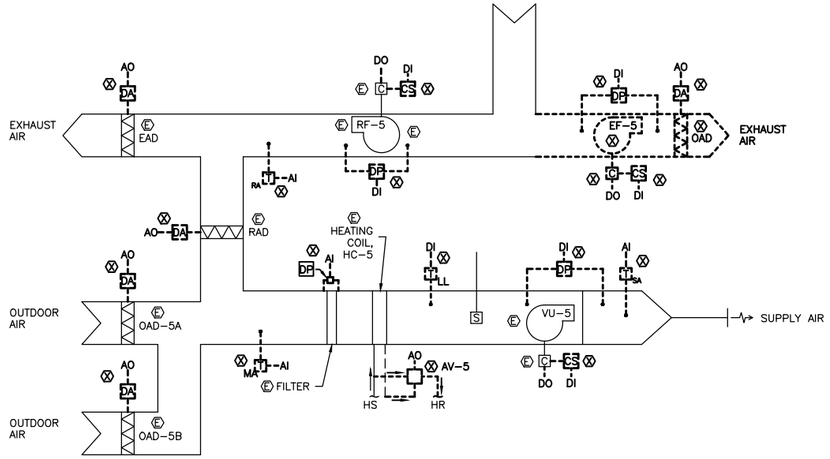
1. **Add** entire sheet. This plans shows the new work associated with controls points for existing fan systems VU-4, VU-5, and VU-6.

By: _____
Jennifer Mannix,
Contract Administrator

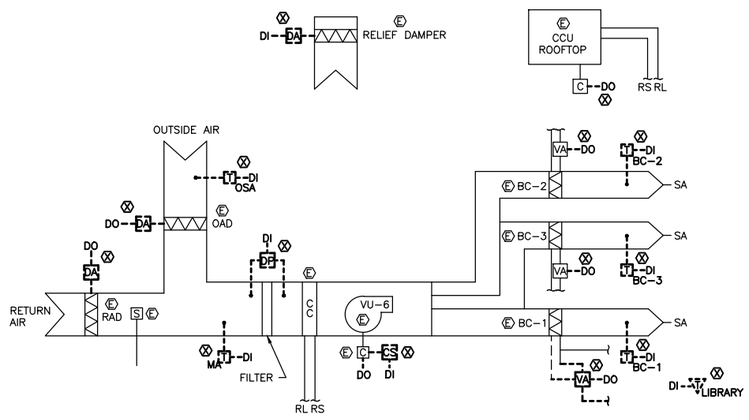
Total number of pages contained within this Addendum: 8 plus 2 drawings



1 CONTROL SCHEMATIC FOR VU-4/RF-4/EF-4
NO SCALE



2 CONTROL SCHEMATIC FOR VU-5/RF-5/EF-5
NO SCALE



3 CONTROL SCHEMATIC FOR VU-6
NO SCALE

GENERAL NOTES:

1. SEE GENERAL NOTES AND SYMBOLS ON SHEET M8.1 APPLY TO THIS SHEET.

SHEET NOTES:

1. SCOPE OF DEMOLITION WORK: REMOVE ALL SIEBE GLOBAL CONTROL MODULES, MICROZONES CONTROL ELECTRICAL PANELS, CONTROL COMPONENTS, AND SIEBE NETWORK 8000 COMPONENTS IN EXISTING FAN SYSTEMS. COORDINATE WITH WORK SHOWN ON SHEET M8.4. INTENT IS TO REPLACE ALL CONTROLS ON EXISTING FAN SYSTEMS WITH BACNET COMPATIBLE CONTROLS AND COMPONENTS.
2. REMOVE AND REPLACE ALL PNEUMATIC AND DIGITAL CONTROLLERS AND SENSORS WITH DDC TYPE COMPONENTS. COMPONENTS CONSIST OF BUT ARE NOT LIMITED TO DAMPER ACTUATORS, CONTROL VALVES & ACTUATORS, TEMPERATURE SENSORS, DIFFERENTIAL PRESSURE SENSORS, CURRENT SENSORS, RELAYS, LOW LIMIT, MIXED AIR, AND SUPPLY AIR THERMOSTATS. REMOVE AND REPLACE ALL ROOM THERMOSTATS FOR VU-4, VU-5, AND VU-6 SYSTEM. REMOVE ALL CONTROL WIRING, SUPPORTS, JUNCTION BOXES, AND RELATED TRIM.
3. ROOM LOCATIONS FOR CONTROL PANELS, GCM, AND SIEBE NETWORK 8000 COMPONENTS REMOVAL ARE AS FOLLOWS: FAN 9, BOILER 139, LIBRARY FAN ROOM, JANITOR 32E, FAN 32B, AND FAN ROOM 200.

STATE OF ALASKA
49th
DOUGLAS H. MURRAY
ME 7870
REGISTERED PROFESSIONAL ENGINEER
ISSUE DATE: 1-4-2011

NorthWind Architects LLC
119A 2ND ST.
JUNEAU, AK 99801
PH #907.586.6150
FX #907.586.6181
WWW.NORTHWINDARCH.COM

MURRAY & ASSOCIATES, P. C.
CONSULTING ENGINEERS
P O BOX 21081 TEL: 907 780-6151
JUNEAU, ALASKA 99802 FAX: 907 780-6182

GASTINEAU ELEMENTARY SCHOOL
RENOVATION
CBJ Contract No. E11-137
JUNEAU, ALASKA

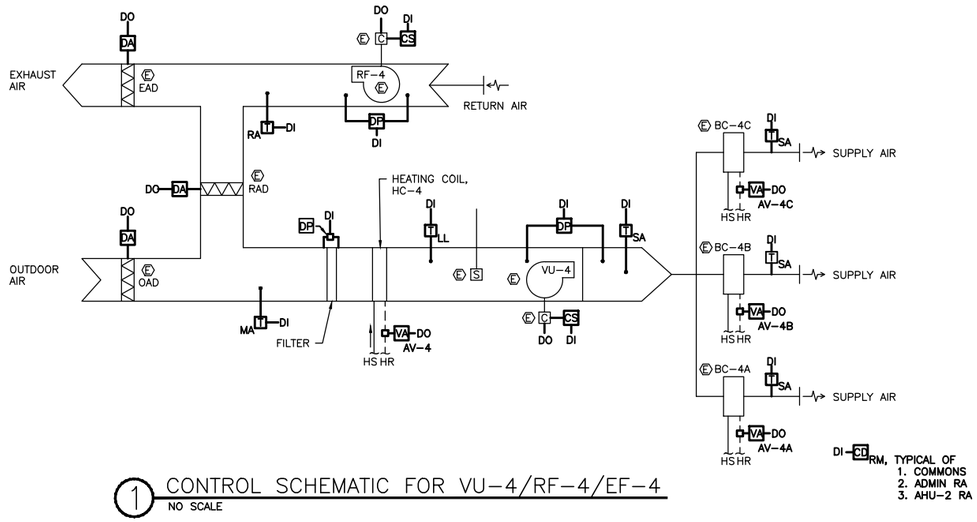
SHEET TITLE:
EXISTING SYSTEMS CONTROLS - DEMOLITION

DATE: NOV 15, 2010
REVISION: ....
CHECKED BY: DM
DRAWN: KB, LH

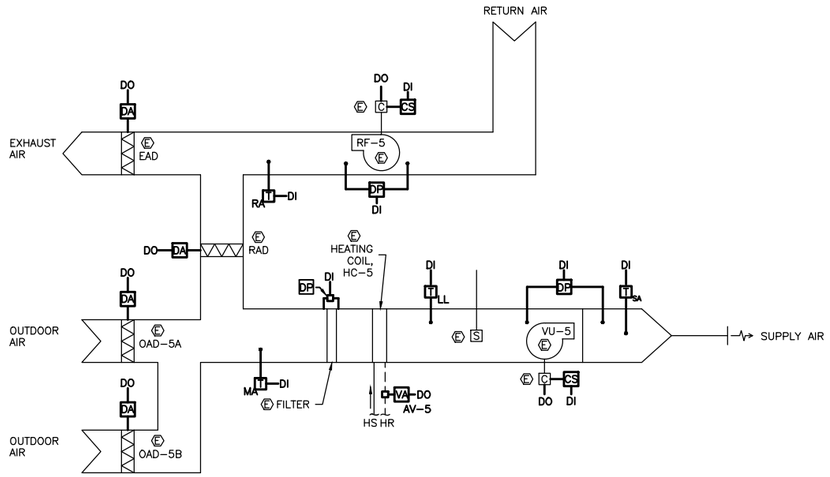
SHEET #
M8.3

ADDENDUM

© NorthWind Architects, LLC
NWA-0935 GASTINEAU



1 CONTROL SCHEMATIC FOR VU-4/RF-4/EF-4
NO SCALE



2 CONTROL SCHEMATIC FOR VU-5/RF-5/EF-5
NO SCALE

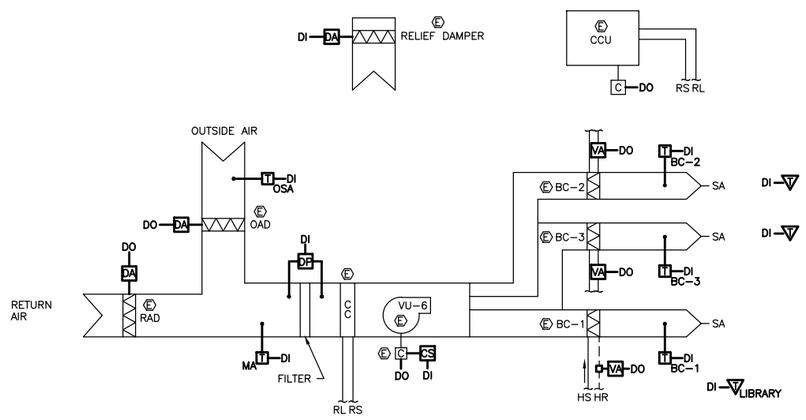
GENERAL NOTES:

1. SEE GENERAL NOTES AND SYMBOLS ON SHEET M8.1 APPLY TO THIS SHEET.

SHEET NOTES:

1. SCOPE OF WORK: INSTALL BACNET COMPATIBLE GCM, CONTROL COMPONENTS, AND CONTROL PANELS. INSTALL DDC COMPONENTS ON EXISTING FAN UNIT TO REMAIN. COMPONENTS CONSIST OF DAMPER AND VALVE ACTUATORS, ALL SENSORS, THERMOSTATS, AND RELATED APPURTENANCES. INTENT IS TO REPLACE ALL CONTROLS ON EXISTING FAN SYSTEMS WITH BACNET COMPATIBLE CONTROLS.

2. ROOM LOCATIONS FOR INSTALLATION ON NEW CONTROL PANELS AND GCM'S ARE AS FOLLOWS: BOILER ROOM 152, FAN 201, FAN ROOM 203, FAN ROOM 202, & JANITOR 150 NEAR LOCATION OF CONTROL COMPUTER.



3 CONTROL SCHEMATIC FOR VU-6
NO SCALE

STATE OF ALASKA
49th
DOUGLAS H. MURRAY
ME 7870
REGISTERED PROFESSIONAL ENGINEER
ISSUE DATE: 1-4-2011

NorthWind Architects LLC
119A 2ND ST.
JUNEAU, AK 99801
PH #907.586.6150
FX #907.586.6181
WWW.NORTHWINDARCH.COM

MURRAY & ASSOCIATES, P. C.
CONSULTING ENGINEERS
P O BOX 21081 TEL: 907 780-6151
JUNEAU, ALASKA 99802 FAX: 907 780-6182

GASTINEAU ELEMENTARY SCHOOL
RENOVATION
CBJ Contract No. E11-137
JUNEAU, ALASKA

SHEET TITLE:
EXISTING SYSTEMS CONTROLS

DATE: NOV 15, 2010
REVISION: ....
CHECKED BY: DM
DRAWN: KB, LH

SHEET #
M8.4

ADDENDUM

© NorthWind Architects, LLC
NWA-0935 GASTINEAU