

## ADDENDUM #3

April 16, 2026

### UNCC Grigg Hall controls replacement SCO# 24-27749-01A

The following Addendum clarifies, revises, and takes precedence over information previously published.

**Contractor Qualifications:** All contractors must meet the requirements for prior experience as noted in the specifications. Contractors must be able to demonstrate acceptable history of work, and examples of projects completed with similar scope. Refer to 014000, 230100, and 230923.

#### **AHU-1 Damper Actuators:**

For replacement of damper actuators on AHU-1, it has been noted that the control diagram on sheet M5-1 does not exactly correlate with the AHU-1 plan on sheet M4-3. Please refer to the following clarification:

- Dampers D 1-1-1, and D 1-1-2 on sheet M4-3 correspond to OAD-1-1, and OAD-1-2 on sheet M5.1. Notes on drawings M4-3 have been updated to reflect that there are currently four pneumatic actuators serving the two outdoor air dampers.
- Dampers D 1-3-1, and D 1-3-2 on sheet M4-2 correspond to relief air damper 'READ' shown on sheet M5.1. This is in fact two dampers rather than a single damper/actuator.
- Damper D 1-2 on sheet M4-3 corresponds to return air damper 'RAD' on sheet M5-1. Drawing M4-3 has been updated to reflect this actuators location above RF-1 unit casing.
- Include in your bid replacement of RF-1-1, and RF-1-2 as shown on sheet M5.1, these correspond to additional dampers not originally show that have been added to sheet M4-3 in this addendum. These dampers are labeled as D 1-2-1, and D 1-2-2, and the actuators are located inside the unit casing of RF-1.

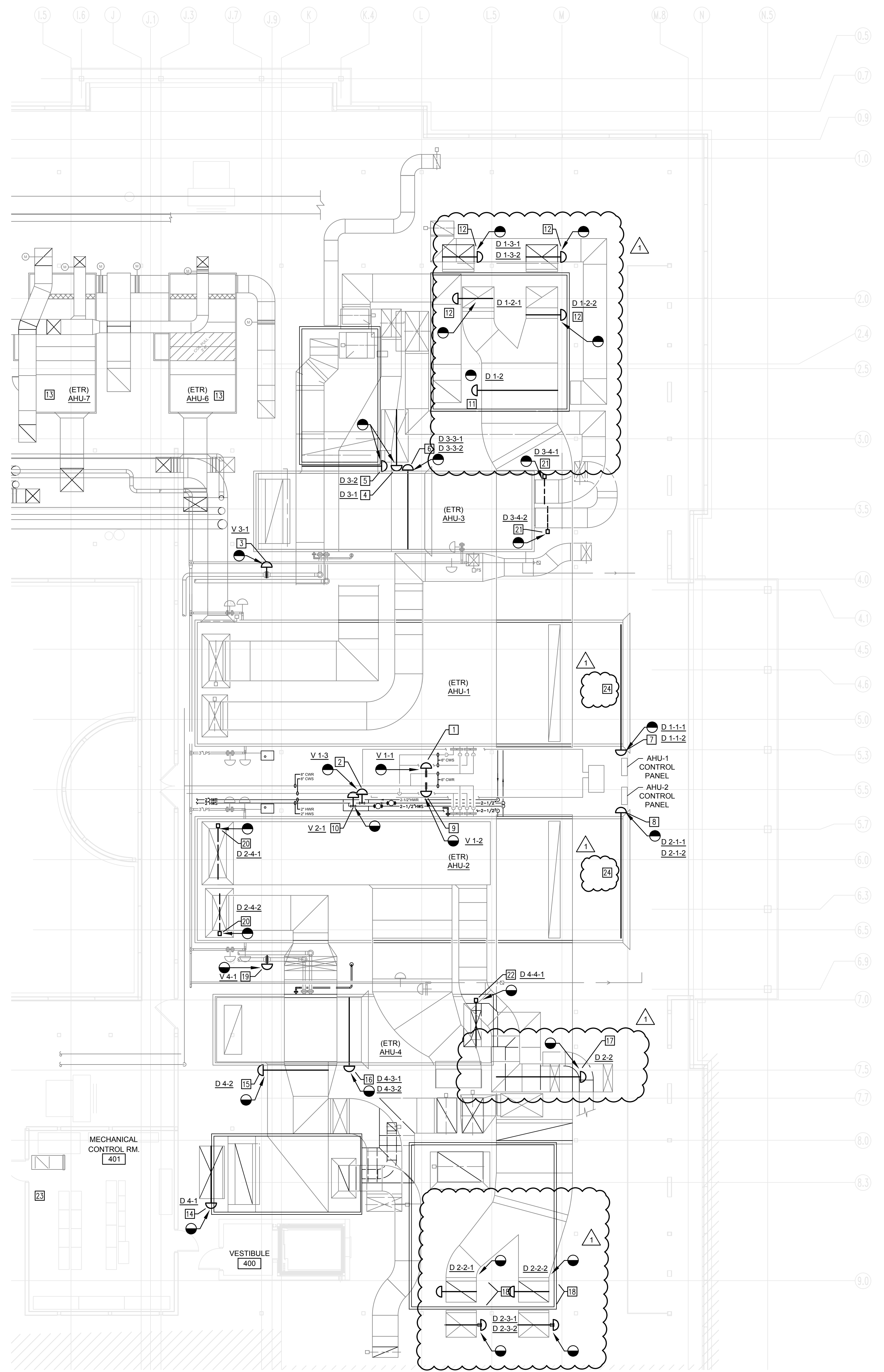
#### **AHU-2 Damper Actuators:**

For replacement of damper actuators on AHU-2, it has been noted that the control diagram on sheet M5-1 does not exactly correlate with the AHU-2 plan on sheet M4-3. Please refer to the following clarification:

- Dampers D 2-1-1, and D 2-1-2 on sheet M4-3 correspond to OAD-1-1, and OAD-1-2 on sheet M5.1. Notes on drawings M4-3 have been updated to reflect that there are currently four pneumatic actuators serving the two outdoor air dampers.
- Dampers D 1-3-1, and D 1-3-2 on sheet M4-2 correspond to relief air damper 'READ' shown on sheet M5.1. This is in fact two dampers rather than a single damper/actuator.
- Damper D 2-2 on sheet M4-3 corresponds to return air damper 'RAD' on sheet M5-1. The location of this actuator has been updated on sheet M4-3.

- Include in your bid replacement of RF-1-1, and RF-1-2 as shown on sheet M5.1, these correspond to additional dampers not originally show that have been added to sheet M4-3 in this addendum. These dampers are labeled as D 2-2-1, and D 2-2-2, and the actuators are located inside the unit casing of RF-2.

**END OF ADDENDUM #3**



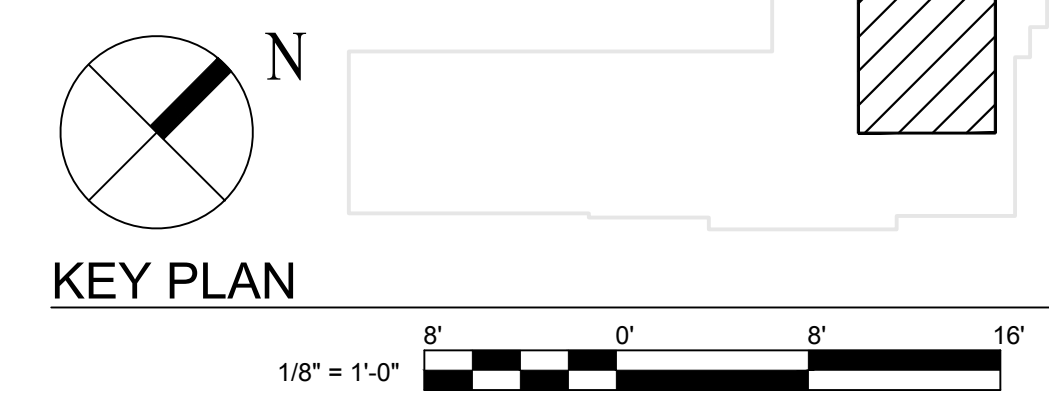
1 MECHANICAL - PARTIAL ROOF PLAN - AHU-1 TO AHU-4  
SCALE: 1/8" = 1'-0"

**GENERAL NEW WORK NOTES**

- EXISTING CONDITIONS, EQUIPMENT, MATERIALS, LOCATIONS, AND SIZES ARE SHOWN FOR REFERENCE ONLY. M.C. MUST VERIFY EXISTING CONDITIONS PRIOR TO DUCT FABRICATION AND INSTALLATION OF NEW EQUIPMENT. M.C. MUST NOTIFY ENGINEER OF ANY DISCREPANCIES IN WRITING PRIOR TO STARTING WORK.
- M.C. IS RESPONSIBLE TO VERIFY ALL EXISTING SIZES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO DUCT FABRICATION/INSTALLATION.
- MAINTAIN MANUFACTURER'S RECOMMENDED SERVICE CLEARANCES ON ALL MECHANICAL EQUIPMENT. ALL EQUIPMENT MUST BE ACCESSIBLE FOR MAINTENANCE.
- FOR ALL EXISTING DAMPER ACTUATORS REMOVED PROVIDE NEW DDC MOTORIZED ACTUATOR. REPLACE ACTUATOR AND ALL ASSOCIATED SENSORS AND DEVICES REQUIRED FOR PROPER OPERATION. PROVIDE NEW CONTROLS AND POWER WIRING. THE CONTROLS BACK TO NEW DDC CONTROL PANEL. PROVIDE NEW DDC CONTROL PROGRAMMING TO MAINTAIN EXISTING DAMPER SEQUENCE OF OPERATION.
- FOR ALL EXISTING VALVE ACTUATORS REMOVED PROVIDE NEW DDC MOTORIZED ACTUATOR. REPLACE ACTUATOR AND ALL ASSOCIATED SENSORS AND DEVICES REQUIRED FOR PROPER OPERATION. PROVIDE NEW CONTROLS AND POWER WIRING. THE CONTROLS BACK TO NEW DDC CONTROL PANEL. PROVIDE NEW DDC CONTROL PROGRAMMING TO MAINTAIN EXISTING DAMPER SEQUENCE OF OPERATION.

**KEYED NOTES**

- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON CHILLED WATER VALVE V 1-1 SERVING AHU-1. PROVIDE NEW DDC VALVE ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON EXISTING HOT WATER VALVE V 1-3 SERVING AHU-1. PROVIDE NEW DDC VALVE ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON CHILLED WATER VALVE V 3-1 SERVING AHU-3. PROVIDE NEW DDC VALVE ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON RELIEF AIR DAMPER D 3-1 SERVING AHU-3. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON RETURN AIR DAMPER D 3-2 SERVING AHU-3. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON OUTDOOR AIR DAMPER D 3-3-1 AND D 3-3-2 SERVING AHU-3. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON OUTDOOR AIR DAMPER D 1-1-1 AND D 1-1-2 SERVING AHU-1. THE DAMPER HAS TWO EXISTING PNEUMATIC ACTUATORS. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET THAT MATCH THE OPERATION OF THE EXISTING CONTROLLERS.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON OUTDOOR AIR DAMPER D 2-1-1 AND D 2-1-2 SERVING AHU-2. THE DAMPER HAS TWO EXISTING PNEUMATIC ACTUATORS. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET THAT MATCH THE OPERATION OF THE EXISTING CONTROLLERS.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON CHILLED WATER VALVE V 1-2 SERVING AHU-2. PROVIDE NEW DDC VALVE ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON EXISTING HOT WATER VALVE V 2-1 SERVING AHU-2. PROVIDE NEW DDC VALVE ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON RETURN AIR DAMPER D 1-2 SERVING AHU-1. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON RELIEF AIR DAMPER D 1-3-1 AND D 1-3-2 AND RETURN AIR DAMPERS D 1-2-1 AND D 1-2-2 SERVING AHU-1. PROVIDE NEW DDC DAMPER ACTUATORS PER GENERAL NOTES ON THIS SHEET. RELIEF DAMPERS ARE LOCATED IN WEATHER HOODS. RETURN DAMPERS ARE INSIDE THE FAN CASING.
- UPGRADE THE EXISTING EQUIPMENT GAS CONTROLLERS. ALL CONTROL SEQUENCES AND POINTS MUST REMAIN THE SAME IN THE GAS. REFER TO THE SPECIFICATIONS FOR THE NEW CONTROLLER REQUIREMENTS. REFER TO SHEET M4.1 FOR ADDITIONAL INFORMATION.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON RELIEF AIR DAMPER D 4-1 SERVING AHU-4. AND PROVIDE NEW MOTORIZED ACTUATOR. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON RETURN AIR DAMPER D 4-2 SERVING AHU-4. AND PROVIDE NEW MOTORIZED ACTUATOR. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATORS ON OUTDOOR AIR DAMPER D 4-3-1 AND D 4-3-2 SERVING AHU-4. AND PROVIDE TWO NEW MOTORIZED ACTUATORS. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON RETURN AIR DAMPER D 2-2 SERVING AHU-2. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON RELIEF AIR DAMPER D 2-3-1 AND D 2-3-2 AND RETURN AIR DAMPERS D 2-2-1 AND D 2-2-2 SERVING AHU-2. RELIEF DAMPERS ARE INSIDE WEATHER HOODS. RETURN DAMPERS ARE INSIDE FAN CASING. PROVIDE NEW DDC DAMPER ACTUATORS PER GENERAL NOTES ON THIS SHEET.
- DEMOLISH EXISTING PNEUMATIC ACTUATOR ON CHILLED WATER VALVE V 4-1 SERVING AHU-4. PROVIDE NEW DDC VALVE ACTUATOR PER GENERAL NOTES ON THIS SHEET.
- ALTERNATE 1: DEMOLISH EXISTING PNEUMATIC ACTUATOR ON SMOKE ISOLATION DAMPERS D 2-4-1 AND D 2-4-2 AT SUPPLY AIR DUCTS SERVING AHU-2. PROVIDE NEW DDC DAMPER ACTUATORS PER GENERAL NOTES ON THIS SHEET. REFER TO EXISTING CONTROL SEQUENCE ON SHEET M5.1. COORDINATE WITH COMMISSIONING AGENT TO ENSURE SPECIAL INSPECTIONS AND TESTING ARE PROVIDED IN ACCORDANCE WITH NCBC 1704.3 AND 1705.18.
- ALTERNATE 1: DEMOLISH EXISTING PNEUMATIC ACTUATOR ON SMOKE ISOLATION DAMPERS D 3-4-1 AND D 3-4-2 AT SUPPLY AIR DUCTS SERVING AHU-3. PROVIDE NEW DDC DAMPER ACTUATORS PER GENERAL NOTES ON THIS SHEET. REFER TO EXISTING CONTROL SEQUENCE ON SHEET M5.2. COORDINATE WITH COMMISSIONING AGENT TO ENSURE SPECIAL INSPECTIONS AND TESTING ARE PROVIDED IN ACCORDANCE WITH NCBC 1704.3 AND 1705.18.
- ALTERNATE 1: DEMOLISH EXISTING PNEUMATIC ACTUATOR ON SMOKE ISOLATION DAMPER D 4-4-1 AT SUPPLY AIR DUCT SERVING AHU-4. PROVIDE NEW DDC DAMPER ACTUATOR PER GENERAL NOTES ON THIS SHEET. REFER TO EXISTING CONTROL SEQUENCE ON SHEET M5.2. COORDINATE WITH COMMISSIONING AGENT TO ENSURE SPECIAL INSPECTIONS AND TESTING ARE PROVIDED IN ACCORDANCE WITH NCBC 1704.3 AND 1705.18.
- REFER TO ELECTRICAL SHEET E3.4 FOR NEW POWER CIRCUITS AVAILABLE IN ELECTRICAL ROOM 401. CIRCUITS ARE AVAILABLE AS NEEDED FOR NEW 24V TRANSFORMERS TO POWER NEW DAMPER ACTUATORS.
- THERE ARE A TOTAL OF FOUR EXISTING PNEUMATIC ACTUATORS SERVING TWO SECTIONS OF OUTDOOR AIR DAMPER. ONE CONTROLS FOR MINIMUM OUTDOOR AIR CONDITION, THE OTHER FOR MAXIMUM OUTDOOR AIRFLOW. USE OF A SINGLE DDC ACTUATOR PER DAMPER SECTION, FOR A TOTAL OF TWO DDC ACTUATORS, IS ACCEPTABLE.



413 DALTON AVE. SUITE A  
CHARLOTTE, NC 28206  
NC License # F-1553  
AME Project # 25044

Seals

Project

UNIVERSITY OF NORTH CAROLINA - CHARLOTTE

GRIGG HALL  
HVAC CONTROLS  
SCO #24-27749-01A

Issues / Revisions

Rev. No.	Date	Description
1	4/16/2026	BID ADDENDUM #3

Drawing Title

**MECHANICAL  
PARTIAL ROOF  
PLAN -  
AHU-1 TO AHU-4**

Drawing Info

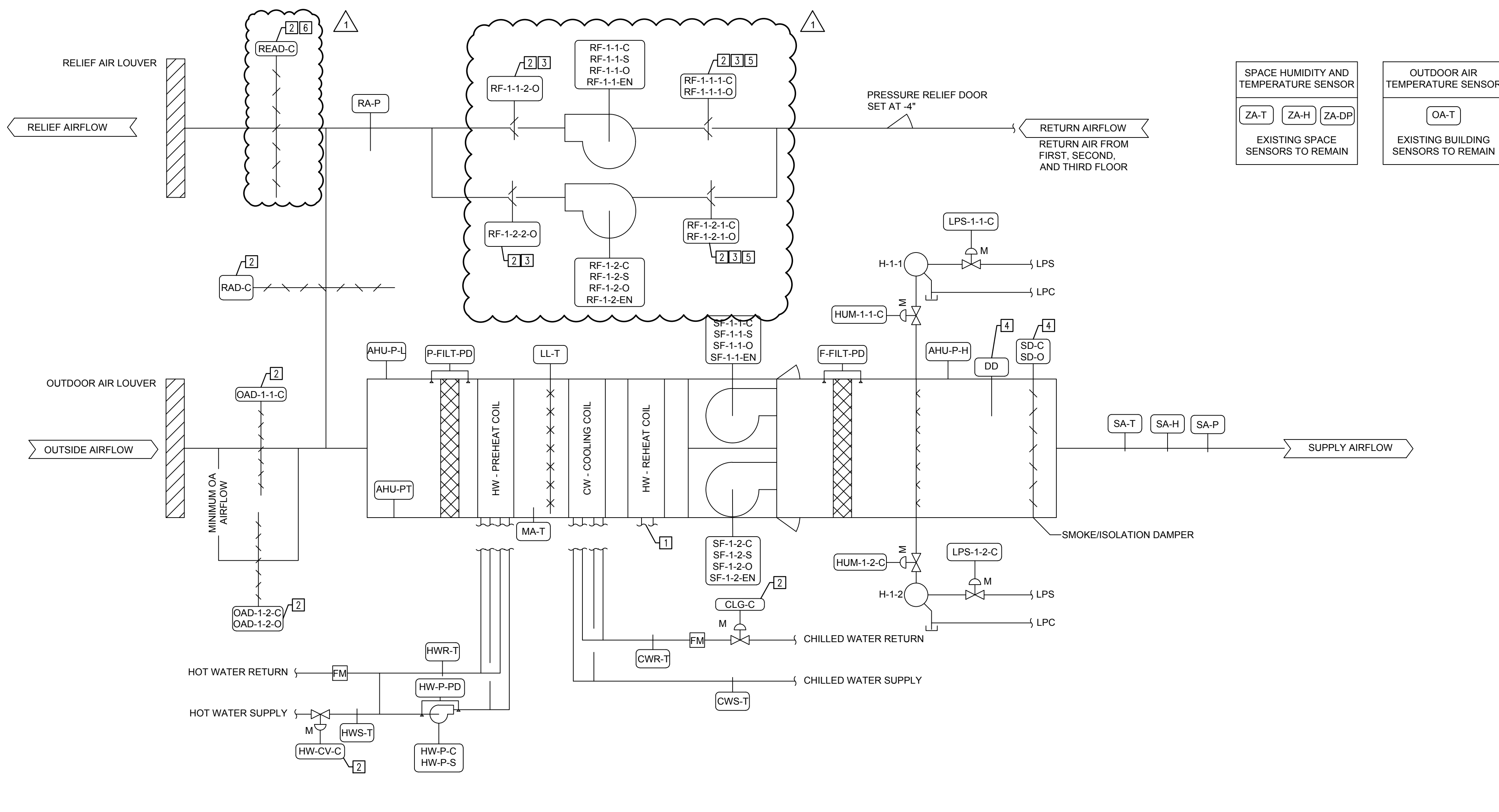
Checked by FFR  
Drawn by MSL  
Scale AS SHOWN  
Job No. 25044  
Date 03-19-2026

100% FOR CONSTRUCTION

Drawing No. **M4.3**

4/14/2026 1:05:02 PM W:\2025 Projects\25044 UNC Grigg HVAC Controls Replacement\25044\_M4-3\_Mechanical - Fourth Floor - AREA C.dwg Michael Lawler

**AIR HANDLING UNIT AHU-1, AHU-2  
CONTROL DIAGRAM AND SEQUENCE OF OPERATION**



**GENERAL CONTROL NOTES:**  
THE SEQUENCE OUTLINED BELOW IS THE EXISTING SEQUENCE AS OUTLINED IN THE EXISTING RECORD DRAWINGS DATED 03/23/2004. THE INTENT IS TO PRESERVE THE EXISTING SEQUENCE OF OPERATION FOR REINSTATEMENT WITH THE INSTALLATION OF THE NEW CONTROL DEVICES FOR THE STATED AIR HANDLING SYSTEM.

BEFORE STARTING ANY DEMOLITION, THE CONTRACTOR MUST VERIFY THAT THE CONTROL POINTS SHOWN ON THE DRAWINGS MATCH WHAT IS INSTALLED IN THE FIELD, AND MUST EXTRACT THE EXISTING CONTROL SEQUENCES AND PROVIDE AS A SUBMITTAL TO THE UNIVERSITY ENGINEERING TEAM FOR EVALUATION AND APPROVAL. THE UNIVERSITY ENGINEERS SHALL REVIEW THE CONTROL SEQUENCES SUBMITTED FROM THE CONTRACTOR TO VERIFY THAT THE SEQUENCES DEMATCH CURRENT OPERATION.

ANY CONTROL POINTS AND ALARMS ASSOCIATED WITH THE COMPRESSED AIR SYSTEM SHALL BE DEMOLISHED AND REMOVED FROM THE BAS IF THEY ARE NO LONGER BEING UTILIZED.

**AHU START-UP / SHUT-DOWN CONTROL:**  
THE AIR HANDLING UNIT SHALL RUN CONTINUOUSLY.

ONCE THE UNIT IS COMMANDED TO RUN, WITH THE SUPPLY FAN DAMPERS, THE RETURN FAN DAMPERS, AND THE SMOKE ISOLATION DAMPERS PROVED OPENED, THE BAS SHALL ENERGIZE THE RETURN FANS IN PARALLEL. SHORTLY AFTER THE RETURN FANS ARE ENERGIZED THE SUPPLY FANS WILL BE INITIATED TO RUN IN PARALLEL. THE SUPPLY FAN AND RETURN FAN WILL EACH HAVE CURRENT SWITCHES WHICH WILL MONITOR THE STATUS OF THE FANS.

THE SUPPLY FAN WILL BE MODULATED TO MAINTAIN THE SUPPLY STATIC PRESSURE SETPOINT OF 1.5" W.C. (ADJ.) AS MEASURED BY SA-P. THE RETURN FAN WILL BE MODULATED TO MAINTAIN THE RETURN STATIC PRESSURE SETPOINT OF 0.2" W.C. (ADJ.) AS MEASURED BY RA-P.

**AHU TEMPERATURE AND HUMIDITY CONTROL:**  
WHEN THE AHU SYSTEM IS NOT RUNNING THE DDC CONTROL SYSTEM SHALL CLOSE THE AHU CHILLED WATER VALVE.

THE BAS MUST MODULATE THE COOLING COIL VALVE AS NECESSARY TO MAINTAIN A SUPPLY AIR TEMPERATURE OF 55° (ADJ.) WHEN PLACED INTO MANUAL MODE. ONCE THE UNIT IS PLACED INTO AUTO MODE, THE UNITS WILL RESET THE SUPPLY AIR TEMPERATURE BETWEEN THE HIGH AND LOW LIMITS OF 55° (ADJ.) AND 60° (ADJ.) BASED ON THE COOLING REQUEST FROM THE VAV UNITS. A VAV UNIT IS CONSIDERED TO BE REQUESTING COOLING IF ITS COOLING SIGNAL IS GREATER THAN 50%. EACH VAV UNIT HAS AN 'EXCLUDE' POINT IN THE BAS, WHICH WHEN SET TO 'TRUE' EXCLUDES THAT UNIT FROM THE DAT RESET CALCULATION. THE AHU DAT SETPOINT RESET IS BASED ON THE NUMBER OF COOLING REQUESTS FROM THE VAV UNITS. IF THE NUMBER OF COOLING REQUESTS IS GREATER THAN 5 (ADJ.) THEN THE DAT SETPOINT IS INDEXED DOWN BY 0.5 DEG F EVERY 10 MINUTES (ADJ.) UNTIL THE NUMBER OF VAV COOLING REQUESTS EQUALS 5 (ADJ.). IF THE NUMBER OF COOLING REQUESTS IS LESS THAN 5 (ADJ.) THEN THE DAT SETPOINT IS INDEXED UP 0.5 DEG F EVERY TEN MINUTES UNTIL THE NUMBER OF COOLING REQUESTS EQUALS 5 (ADJ.). THE VALVE WILL BE LOCKED IN THE CLOSED POSITION WHENEVER THE OUTSIDE AIR TEMPERATURE IS BELOW 50° (ADJ.) OR THE SUPPLY FAN IS NOT OPERATING. WHEN THE OUTSIDE AIR DRY-BULB TEMPERATURE DROPS BELOW 70° (ADJ.) THE UNIT WILL ENTER INTO ECONOMIZER MODE. DURING ECONOMIZER MODE THE OUTSIDE AIR DAMPER WILL BE ALLOWED TO OPEN FULLY BEFORE ALLOWING THE COOLING COIL VALVE TO OPEN.

THE TEMPERATURE SENSOR (MA-T) LOCATED AFTER THE PRE-HEAT COIL WILL MONITOR THE POST HOT WATER COIL TEMPERATURE. WHEN THE TEMPERATURE AFTER THE PRE-HEAT COIL DROPS BELOW 52° (ADJ.) THE BAS CONTROLLER WILL MODULATE THE HOT WATER VALVE OPEN. UPON AN INCREASE IN POST HOT WATER TEMPERATURE ABOVE THE SETPOINT THE PRE-HEAT VALVE WILL BE MODULATED CLOSED.

THE HOT WATER CIRCULATION PUMP ASSOCIATED WITH THE UNIT WILL BE ENERGIZED WHEN THE SECONDARY HOT WATER PUMPS ARE IN OPERATION ACCORDING TO THE HOT WATER SEQUENCE. THE PUMP WILL BE STARTED WHEN THE POST COIL TEMPERATURE DROPS BELOW 52° (ADJ.) TO TRY AND INCREASE POST COIL TEMPERATURE ABOVE SETPOINT. ONCE ENERGIZED THE CIRCULATION PUMPS WILL OPERATE FOR AT LEAST 15 MINS (ADJ.).

HUMIDIFIERS WILL BE DISABLED WHEN THE SUPPLY FAN IS NOT IN OPERATION OR THE COOLING COIL VALVE IS OPEN. A FLOW SWITCH INTERLOCKED WITH THE HUMIDIFIERS WILL ALLOW THEM TO OPERATE ONCE AIR FLOW IS PROVEN. THE HUMIDIFIER VALVES WILL MODULATE AS NEEDED TO MAINTAIN THE SPACE HUMIDITY SETPOINT OF 35% R.H. (ADJ.). A SUPPLY AIR HUMIDITY SENSOR LOCATED AT LEAST 6 FT AWAY FROM THE HUMIDIFIERS WILL LIMIT THE SUPPLY AIR HUMIDITY TO 90%. A TEMPERATURE SWITCH (TS ON BINARY OUTPUT B06) IN THE STEAM CONDENSATE LINE WILL DISABLE THE CONTROL OF THE HUMIDIFIERS AS THE TEMPERATURE REACHES 205° F (NOT ADJUSTABLE). A TWO POSITION CONTROL VALVE (LPS-3-C) WILL OPEN WHEN THE SUPPLY FAN IS IN OPERATION AND THE COOLING COIL VALVE IS CLOSED.

THE REHEAT COIL TERTIARY PUMP AND REHEAT CONTROL VALVE SEQUENCE SHALL REMAIN AS INSTALLED.

**MINIMUM OUTSIDE AIR DAMPER:**  
THE 'MINIMUM' OUTSIDE AIR DAMPER OPERATES TO MAINTAIN MINIMUM VENTILATION, AND SHALL BE COMMANDED OPEN WHEN THE BAS INDICATES THAT THE BUILDING IS OCCUPIED, AND SHALL BE CLOSED WHEN THE BUILDING IS UNOCCUPIED.

**OUTSIDE AIR DAMPER:**  
DURING ECONOMIZER MODE THE 'MAXIMUM' OUTSIDE AIR DAMPER WILL OPEN AS NECESSARY TO MAINTAIN A MIXED AIR TEMPERATURE OF 52° (ADJ.). UPON RECEIVING A MIXED AIR TEMPERATURE BELOW 50° THE BAS WILL BEGIN TO LIMIT THE OUTSIDE AIR DAMPER POSITION IN ORDER TO PREVENT THE FREEZE/STAT FROM TRIPPING. BY THE TIME THE TEMPERATURE REACHES 40° THE OUTSIDE AIR DAMPER WILL BE FULLY CLOSED. IF THE UNIT IS NOT IN ECONOMIZER MODE THE OUTSIDE AIR DAMPER WILL RETURN TO MINIMUM POSITION OPEN (15% ADJ.) UNLESS REQUESTED TO OPEN DUE TO A HIGH CARBON DIOXIDE LEVEL. DURING A FIRE ALARM CONDITION THE OUTSIDE AIR DAMPER WILL OPEN. REFER TO SMOKE PURGE SEQUENCE BELOW FOR MORE INFORMATION. THE ECONOMIZER MODE IS CAPABLE OF BEING ENABLED REMOTELY VIA THE UNCC GLOBAL ECONOMIZER SIGNAL VIA THE BAS.

A CARBON DIOXIDE SENSOR LOCATED IN THE RETURN DUCT WILL MONITOR THE CO<sub>2</sub> LEVEL COMING FROM THE SPACE. THE OUTSIDE AIR DAMPER WILL BE MODULATED TO MAINTAIN THE CO<sub>2</sub> SETPOINT OF 1000 PPM (ADJ.). UPON A FALL IN CO<sub>2</sub> LEVEL BELOW THE SETPOINT FOR 15 MINUTES (ADJ.) THE SYSTEM WILL RESUME NORMAL OCCUPIED MODE OF OPERATION. A SOFTWARE ALARM WILL OCCUR WHENEVER THE CO<sub>2</sub> LEVEL RISES ABOVE 1100 PPM (ADJ.).

**RELIEF AIR DAMPER:**  
THE RELIEF DAMPER WILL MODULATE IN ORDER TO MAINTAIN A SPACE DIFFERENTIAL PRESSURE OF 0.2" W.C. (ADJ.). IF THE SPACE DIFFERENTIAL PRESSURE EXCEEDS THE PRESSURE SETPOINT THE RELIEF DAMPER WILL BE MODULATED OPEN. THE DAMPER WILL BE MODULATED CLOSED UPON A DROP IN SPACE DIFFERENTIAL PRESSURE. DURING A FIRE ALARM CONDITION THE RELIEF DAMPER WILL CLOSE (SEE SMOKE PURGE SEQUENCE BELOW).

**RETURN AIR DAMPER:**  
A STATIC PRESSURE SENSOR (AHU-PT) LOCATED IN THE MIXING BOX WILL CONTROL THE RETURN AIR DAMPER POSITION. THE RETURN AIR DAMPER WILL MODULATE AS NECESSARY TO MAINTAIN THE MIXED AIR TEMPERATURE SETPOINT OF 0.2" W.C. (ADJ.). UPON A RISE IN MIXED AIR STATIC PRESSURE ABOVE THE SETPOINT THE RETURN AIR DAMPER WILL MODULATE CLOSED. UPON A DECREASE IN MIXED AIR STATIC PRESSURE BELOW THE SETPOINT THE RETURN DAMPER WILL MODULATE OPEN. DURING A FIRE ALARM CONDITION THE RETURN DAMPER WILL CLOSE (SEE SMOKE PURGE SEQUENCE BELOW).

**EMERGENCY POWER OPERATING MODE:**  
THE EMERGENCY MOTOR CONTROL CENTER (EMCC-1) LOCATED IN THE MOTOR CONTROL ROOM #01 WILL BE RESPONSIBLE FOR PROVIDING EMERGENCY BACKUP POWER FOR CONTINUED OPERATION OF CRITICAL EQUIPMENT. A CONTACT CLOSURE OF THE AUTOMATIC TRANSFER SWITCH (ATS) WILL SIGNIFY THE START OF THE EMERGENCY OPERATING MODE. THE BAS WILL MONITOR THE ATS CONTACT CLOSURE. THE BAS WILL ALSO MONITOR A CONTACT CLOSURE WHICH WILL VERIFY THE OPERATION OF THE EMERGENCY GENERATOR. ONCE EMERGENCY POWER MODE BEGINS ALL BAS CONTROL PANELS AND THE AIR COMPRESSOR WILL BE ENERGIZED. DURING EMERGENCY POWER OPERATING MODE THE BAS WILL ENERGIZE EQUIPMENT IN THE FOLLOWING SEQUENTIAL ORDER WITH A 10 SECOND (ADJ.) DELAY BETWEEN THE START OF EACH PIECE OF EQUIPMENT: EXHAUST FAN EF-19-1 AND EF-19-2 (ALONG WITH ISOLATION DAMPER), AHU-3 AND AHU-4 SUPPLY FANS, AND EXHAUST FANS EF-3 THROUGH EF-18 (ALONG WITH ISOLATION DAMPER). ALL OTHER EQUIPMENT DURING EMERGENCY POWER MODE WILL REMAIN DE-ENERGIZED. THE BAS WILL PRODUCE AN ALARM WHENEVER ONE OF THE TRANSFER SWITCHES IS IN EMERGENCY MODE WHILE THE OTHER SWITCH IS IN THE NORMAL POSITION. ONCE THE BUILDING RETURNS TO NORMAL MODE, THE EQUIPMENT WILL START-UP IN THE SEQUENTIAL ORDER LISTED ABOVE. THE EQUIPMENT WHICH IS NOT LISTED WILL ENERGIZE THEREAFTER.

**SMOKE PURGE CONTROL:** ALL SMOKE CONTROL SYSTEMS RECEIVING NEW ACTUATORS MUST BE COMMISSIONED TO VERIFY PROPER OPERATION OF THE SMOKE CONTROL SYSTEM PER NCBC 909.3.

UPON RECEIVING A PURGE COMMAND FROM EITHER THE FIRE ALARM CONTROL PANEL OR DUCT MOUNTED SMOKE DETECTOR, AHU-1 & 2 WILL BE AUTOMATICALLY PLACED INTO SMOKE PURGE MODE. ALL PIECES OF EQUIPMENT REFERENCED IN SMOKE PURGE MODE WILL BE ENERGIZED VIA RELAY LOGIC. THERE IS NO DDC (PROGRAMMING) INVOLVED IN THE PROCESS DESCRIBED WITHIN THIS PARAGRAPH. DURING SMOKE PURGE MODE AHU-1 & 2 SUPPLY FANS WILL BE OVERRIDDEN TO THE 'ON' POSITION. WHILE THE RETURN FANS ARE DISABLED, ONCE THE SUPPLY FANS ARE ENABLED A RELAY CONTACT WILL BE MADE WHICH WILL SEND THE VFD TO A PRESET SPEED SIGNAL (PRESET SPEED SIGNAL SHALL BE SET TO PROVIDE 30,000 CFM OF AIR DOWN THE DUCT). THE SMOKE ISOLATION DAMPERS AND THE OUTSIDE AIR DAMPER WILL BOTH OPEN, AND THE RELIEF AND RETURN DAMPERS WILL CLOSE. DOWNSTREAM OF THE AHU-2 NORMALLY OPEN, 2-POSITION DAMPERS (DM3 & 33) (NEAR THE ATRIUM) WILL BE OPENED TO SUPPLY AIR TO THE FIRST FLOOR ATRIUM AND TWO NORMALLY CLOSED, 2-POSITION DAMPERS (DM32 & 34) WHICH NORMALLY SUPPLY AIR TO THE AIR TERMINAL UNITS WILL CLOSE. BOTH EXHAUST FANS EF-19-1 & EF-19-2 WILL BE INTERLOCKED TO START AFTER THEIR ASSOCIATED ISOLATION DAMPERS HAVE OPENED.

**AHU MISCELLANEOUS ALARMS:**  
TWO FREEZE/STATS, LOCATED IN FRONT OF THE COOLING COILS, WILL BE INTERLOCKED WITH THE SUPPLY AND RETURN FAN MOTORS AND WILL SHUT-DOWN THE UNIT UPON RECEIVING A TEMPERATURE BELOW 38°F (MANUALLY ADJ.). THE OUTSIDE AIR DAMPER WILL CLOSE IF EITHER OF THE FREEZE/STATS ARE OVERRIDDEN (VIA RELAY LOGIC) AND THE OUTSIDE AIR DAMPER WILL BE OPENED 100% WITH THE SUPPLY FAN RUNNING AT ITS PRESET SPEED IN ORDER TO TRY AND PREVENT FREEZING THE CHILLED WATER COIL. THE VALVE WILL OPEN FULLY AND THE OPERATIONAL ROOM PUMPS WILL BE ENABLED ONCE A FREEZE/STAT HAS TRIPPED. THE FREEZE/STATS WILL REQUIRE MANUAL RESET IF TRIPPED.

A SMOKE DETECTOR LOCATED IN THE SUPPLY DUCT WHICH WILL BE INTERLOCKED TO THE RETURN FAN WILL DISABLE THE FAN UPON RECEIVING A SMOKE OR FIRE ALARM.

A DIFFERENTIAL PRESSURE (P-FILT-PD) ACROSS THE FILTER BANK WILL ALARM WHEN THE PRESSURE DROP ACROSS THE FILTER EXCEEDS 1.0" W.C. (ADJ.).

A CURRENT SWITCH WILL MONITOR PUMP STATUS. AN ALARM (MANUAL RESET) WILL BE INITIATED IF PUMP COMMAND AND STATUS DO NOT MATCH.

THE SUPPLY AND RETURN FAN WILL EACH HAVE CURRENT SWITCHES WHICH WILL MONITOR THE STATUS OF THE FANS. UPON FAILURE TO RECEIVE STATUS AFTER COMMANDED TO RUN, A SOFTWARE ALARM WILL BE INITIATED.

POINT	DESCRIPTION	UNITS	RANGE	I/O TYPE			SETTINGS	HOA	CONFIG. TYPE	M&C	TEND	ALARM
				AI	AO	BO						
HW-P-S	TERTIARY HHW PUMP STATUS	OFF ON			X		N		V	Y		
HW-P-C	TERTIARY HHW PUMP COMMAND	OFF ON					N		V	Y		
HW-P-PD	TERTIARY HHW PUMP PRESSURE DIFFERENTIAL	FT WC	0 - 40	X			N		V	Y		
HW-F	HEATING HOT WATER FLOW RATE	GPM			X		N		V	Y		
HW-CV-C	HEATING OUTPUT - VALVE COMMAND	%	0 - 100	X			N	OC	V	Y		
HWS-T	HEATING HOT WATER SUPPLY TEMPERATURE	DEG F	0 - 200	X			N		V	Y		
HWR-T	HEATING HOT WATER RETURN TEMPERATURE	DEG F	0 - 200	X			N		V	Y		
CW-F	CHILLED WATER FLOW RATE	GPM			X		N		V	Y		
CLG-C	CHILLED WATER SUPPLY TEMPERATURE	DEG F	0 - 200	X			N	OC	V	Y		
CWS-T	CHILLED WATER SUPPLY TEMPERATURE	DEG F	0 - 200	X			N		V	Y		
CWR-T	CHILLED WATER RETURN TEMPERATURE	DEG F	0 - 200	X			N		V	Y		
SA-P	SUPPLY AIR STATIC PRESSURE	INCH WC	0 - 5	X			N		V	Y		
SA-T	SUPPLY AIR TEMPERATURE	DEG F	0 - 100	X			N		V	Y		
SA-H	SUPPLY AIR HUMIDITY	%	0 - 100	X			N		V	Y		
SAT-SP	SUPPLY AIR TEMPERATURE SETPOINT	DEG F	46 - 55	X		55 F	N	OC	V	Y		
SAP-SP	SUPPLY AIR PRESSURE SETPOINT	INCH WC	1.0 - 3.0	X		2.5	N	OC	V	Y		
SAD-1-1-C	SUPPLY AIR DAMPER OUTPUT - COMMAND	OFF ON			X		N		V	Y		
SAD-1-1-O	SUPPLY AIR DAMPER OUTPUT - POSITION	OFF ON			X		N		V	Y		
SAD-1-2-C	SUPPLY AIR DAMPER OUTPUT - COMMAND	OFF ON			X		N	OC	V	Y		
SAD-1-2-O	SUPPLY AIR DAMPER OUTPUT - POSITION	OFF ON			X		N		V	Y		
SA-FS	SUPPLY AIR FLOW SWITCH	OFF ON			X		N		V	Y		
F-FILT-PD	FINAL FILTER PRESSURE DIFFERENTIAL	INCH WC	0 - 2	X			N		V	Y		
P-FILT-PD	PRE-FILTER PRESSURE DIFFERENTIAL	INCH WC	0 - 2	X			N		V	Y		
SF-1-1-S	SUPPLY FAN STATUS	OFF ON			X		N		V	Y		
SF-1-1-C	SUPPLY FAN VFD SPEED - COMMAND	%	0 - 100	X			N	OC	V	Y		
SF-1-1-O	SUPPLY FAN VFD SPEED - OUTPUT	%	0 - 100	X			N		V	Y		
SF-1-1-EN	SUPPLY FAN ENABLE	OFF ON			X		N	OC	V	Y		
SF-1-2-S	SUPPLY FAN STATUS	OFF ON			X		N		V	Y		
SF-1-2-C	SUPPLY FAN VFD SPEED - COMMAND	%	0 - 100	X			N	OC	V	Y		
SF-1-2-O	SUPPLY FAN VFD SPEED - OUTPUT	%	0 - 100	X			N		V	Y		
SF-1-2-EN	SUPPLY FAN ENABLE	OFF ON			X		N	OC	V	Y		
OAD-1-1-C	OUTSIDE AIR DAMPER OUTPUT - COMMAND	OFF ON	0 - 100	X			N	OC	V	Y		
OAD-1-1-O	OUTSIDE AIR DAMPER OUTPUT - POSITION	OFF ON			X		N		V	Y		
OAD-1-2-C	OUTSIDE AIR DAMPER OUTPUT - COMMAND	OFF ON	0 - 100	X			N	OC	V	Y		
OAD-1-2-O	OUTSIDE AIR DAMPER OUTPUT - POSITION	OFF ON			X		N		V	Y		
OA-T	OUTDOOR AIR TEMPERATURE	DEG F	0 - 120	X			N		V	Y		
OA-H	OUTDOOR AIR HUMIDITY	% RH	0 - 100	X			N		V	Y		
AHU-PT	AIR HANDLING UNIT PRESSURE TRANSMITTER	INCH WC	0 - 2	X			N		V	Y		
READ-C	RELIEF AIR DAMPER OUTPUT - COMMAND	OFF ON	0 - 100	X			N	OC	V	Y		
RAD-1-1-O	RETURN AIR DAMPER OUTPUT - POSITION	OFF ON			X		N		V	Y		
RAD-1-1-C	RETURN AIR DAMPER OUTPUT - COMMAND	OFF ON			X		N		V	Y		
RAD-1-2-C	RETURN AIR DAMPER OUTPUT - COMMAND	OFF ON			X		N	OC	V	Y		
RAD-1-2-O	RETURN AIR DAMPER OUTPUT - POSITION	OFF ON			X		N		V	Y		
RAD-1-2-C	RETURN AIR DAMPER OUTPUT - COMMAND	OFF ON			X		N	OC	V	Y		
RF-1-1-S	RETURN FAN STATUS	OFF ON			X		N		V	Y		
RF-1-1-C	RETURN FAN VFD SPEED - COMMAND	%	0 - 100	X			N	OC	V	Y		
RF-1-1-O	RETURN FAN VFD SPEED - OUTPUT	%	0 - 100	X			N		V	Y		
RF-1-1-EN	RETURN FAN ENABLE	OFF ON			X		N	OC	V	Y		
RF-1-2-S	RETURN FAN STATUS	OFF ON			X		N		V	Y		
RF-1-2-C	RETURN FAN VFD SPEED - COMMAND	%	0 - 100	X			N	OC	V	Y		
RF-1-2-O	RETURN FAN VFD SPEED - OUTPUT	%	0 - 100	X			N		V	Y		
RF-1-2-EN	RETURN FAN ENABLE	OFF ON			X		N	OC	V	Y		
RA-P	RETURN AIR STATIC PRESSURE	INCH WC	0 - 5	X			N		V	Y		
RA-SP	RETURN AIR PRESSURE SETPOINT	INCH WC	1.0 - 3.0	X		2.5	N	OC	V	Y		
ZA-T	ZONE AIR TEMPERATURE	DEG F	0 - 100	X			N		V	Y		
ZA-H	ZONE AIR HUMIDITY	%	0 - 100	X			N		V	Y		
ZA-DP	ZONE AIR DIFFERENTIAL PRESSURE	IN WC	0 - 2	X			N		V	Y		
MA-T	MIXED AIR TEMPERATURE	DEG F	0 - 100	X			N		V	Y		
HUM-1-1-C	HUMIDIFIER OUTPUT - VALVE COMMAND	%	0 - 100	X			N	OC	V	Y		
HUM-1-2-C	HUMIDIFIER OUTPUT - VALVE COMMAND	%	0 - 100	X			N	OC	V	Y		
LPS-1-1-C	LOW PRESSURE STEAM - VALVE COMMAND	%	0 - 100	X			N	OC	V	Y		
LPS-1-2-C	LOW PRESSURE STEAM - VALVE COMMAND	%	0 - 100	X			N	OC	V	Y		
ESS	EMERGENCY SHUTDOWN	OFF ON			X		N	OC	V	Y		
ALM-SA-H	HIGH SUPPLY AIR HUMIDITY	ALM			X		N	H	V	Y	SA-H > 50%	
ALM-RA-T	HIGH RETURN AIR TEMPERATURE	ALM			X		N	H	V	Y	RA-T > 78 F	
ALM-SA-P	HIGH SUPPLY AIR STATIC PRESSURE	ALM			X		N	OC	V	Y	SA-P > 3.0	
ALM-SA-T	HIGH SUPPLY AIR TEMPERATURE	ALM			X		N	OC	V	Y	SA-T > 56 F	
ALM-LT	LOW REHEAT COIL AIR TEMPERATURE	ALM			X		N	OC	V	Y	MA-T < 40 F	
ALM-FILT	FILTER CHANGE REQUIRED	ALM			X		N	OC	V	Y	FILT-PD > 1.5"	
ALM-SF-S	SUPPLY FAN FAILURE	ALM			X		N	H	V	Y	SF-S & SF-C	
ALM-SF-R	RETURN FAN FAILURE	ALM			X		N	H	V	Y	RF-S & RF-C	
ALM-DD	SUPPLY AIR SMOKE DETECTOR	ALM			X		N	H	V	Y		
ALM-AHU-P-L	AIR HANDLING UNIT LOW PRESSURE	ALM			X		N	H	V	Y	< 2" W.C	
ALM-AHU-P-H	AIR HANDLING UNIT HIGH PRESSURE	ALM			X		N	H	V	Y	> 3.5" W.C	

**POINT SCHEDULE LEGEND:**  
 \* V = VIEWABLE, VO = VIEWABLE AND OPERATOR ADJUSTABLE \* Y = YES, N = NO  
 H = HARDWARE CONFIGURABLE, OC = OPERATOR CONFIGURABLE \* <> = CONTRACTOR DEFINED VALUE

**KEYED NOTES**

- REHEAT COIL ON AIR HANDLING UNIT HAS A TERTIARY PUMP AND EXISTING DDC VALVE. ALL POINTS AND SEQUENCES FOR THE REHEAT COIL ARE TO REMAIN AS THEY ARE AT THE START OF THE PROJECT.
- REPLACE THE EXISTING PNEUMATIC ACTUATOR WITH A DDC ACTUATOR, AND THE NEW ACTUATOR IN TO THE BAS. BEFORE DEMOLITION OF EXISTING ACTUATOR, VERIFY ALL CONTROL POINTS AND SIGNAL TYPES ASSOCIATED WITH THE EXISTING ACTUATOR. THE NEW DDC ACTUATOR MUST HAVE THE SAME POINTS, SIGNAL TYPES, AND OPERATING SPEED AS THE DEMOLISHED PNEUMATIC ACTUATOR. REMOVE ALL APPURTENANCES ASSOCIATED WITH THE DDC CONTROL VALVE TO PERFORM THE SEQUENCE OF OPERATION. CAP AND SEAL ANY EXISTING TO REMAIN PNEUMATIC AIR LINES TO MAINTAIN THAT SYSTEM FOR USE BY OTHER EXISTING TO REMAIN PNEUMATIC CONTROL DEVICES.
- INTERLOCK THE DAMPERS UPSTREAM AND DOWNSTREAM OF THE RETURN FAN TO OPEN AND CLOSE AT THE SAME TIME.
- BID ALTERNATE 1 - PROVIDE NEW MOTORIZED ACTUATOR TO REPLACE EXISTING PNEUMATIC ACTUATOR FOR SMOKE ISOLATION DAMPER. MAINTAIN EXISTING CONTROL POINTS FOR THE FIRE ALARM SYSTEM. THE CONTROL POINT FOR THE SMOKE DAMPER MUST BE RELAYED BACK TO THE BAS. REFER TO EXISTING SEQUENCE OF OPERATION ON THIS SHEET. THIS ALTERNATE APPLIES TO AHU-2 ONLY. THE SMOKE ISOLATION DAMPERS ON AHU-1 HAVE BEEN REPLACED IN A PREVIOUS PROJECT. REFER TO SHEET M4.3 FOR ADDITIONAL INFORMATION.
- EXISTING CONTROL SEQUENCES INDICATE THAT CONTROL DAMPERS EXIST AT THE INLETS TO RETURN FANS RF-1 AND RF-2. IF THERE ARE NO INLET CONTROL DAMPERS FOR RETURN AIR FANS, NOTIFY THE UNCC PM AND ENGINEER OF RECORD.
- A SINGLE COMMAND SIGNAL IS PROVIDED FOR RELIEF AIR DAMPERS AT RETURN FAN RF-1 AND RF-2, BUT THERE ARE TWO PHYSICAL DAMPERS WITH ACTUATORS. EACH RETURN AIR FAN CASING CONTAINS TWO PHYSICAL FANS, EACH WITH A SINGLE RELIEF DAMPER. DAMPERS ARE SHOWN ON ROOF PLAN M4-3.

UNIVERSITY OF NORTH CAROLINA  
**CHARLOTTE**

413 DALTON AVE. SUITE A  
CHARLOTTE, NC 28226  
NC License # F-1553  
AME Project # 23044

Seals

Project

Issues / Revisions

Rev. No.	Date	Description
1	4/16/2026	BID ADDENDUM #3

Drawing Title

Drawing Info

Checked by: FFR  
 Drawn by: MSL  
 Scale: AS SHOWN  
 Job No.: 25044  
 Date: 03-19-2026

MECHANICAL  
CONTROLS  
AHU-1 AND AHU-2

100% FOR CONSTRUCTION

M5.1