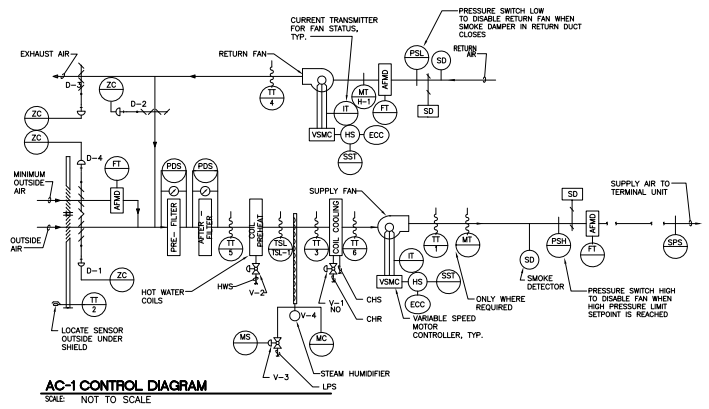


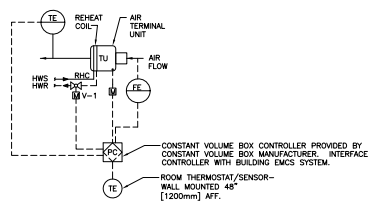
A THREE INCHES = ONE FOOT
 B ONE AND ONE-HALF INCHES = ONE FOOT
 C ONE INCH = ONE FOOT
 D THREE-QUARTERS INCH = ONE FOOT
 E ONE-HALF INCH = ONE FOOT
 F THREE-EIGHTHS INCH = ONE FOOT
 G ONE-FOURTH INCH = ONE FOOT



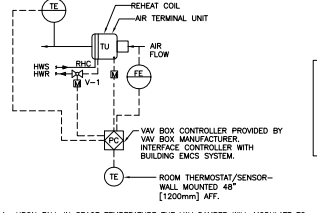
AC-1 CONTROL DIAGRAM
SCALE: NOT TO SCALE

SEQUENCE OF CONTROL - AC-1

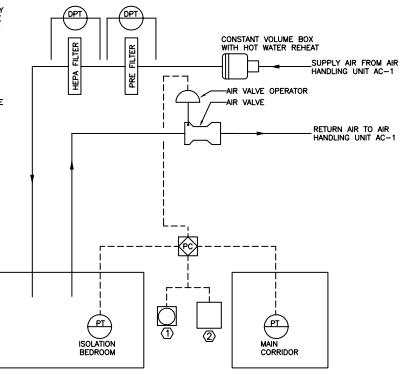
- GENERAL:**
- UNIT IS NORMALLY STARTED AND STOPPED REMOTELY AT THE ECC. H-O-A SWITCH SHALL BE KEPT IN THE "AUTO" POSITION. "HAND" AND "OFF" POSITIONS SHALL BE USED ONLY FOR MAINTENANCE. WHEN THE UNIT IS "OFF" D-1, D-3, SHALL BE FULLY CLOSED. WHEN THE UNIT IS "ON" D-1, SD-1 AND SD-2 SHALL BE FULLY OPEN. D-2 AND D-3 SHALL MODULATE IN ACCORDANCE WITH THE FOLLOWING SEQUENCE:
- TEMPERATURE CONTROL:**
- SUPPLY AIR TEMPERATURE, SENSED BY TT-1, SHALL BE MAINTAINED AT SETPOINT VIA DIGITAL CONTROL PANEL BY MODULATING V-1 OR D-2 AND D-3 OR V-2 IN SEQUENCE.
 - WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS ABOVE 75°F (ADJ.) (23.9°C), THE DIGITAL CONTROL PANEL SHALL PREVENT THE MODULATION OF D-2 AND D-3 AND SHALL ASSUME THE MINIMUM OUTSIDE AIR POSITION (D-2 FULLY OPENED AND D-3 FULLY CLOSED). THE DIGITAL CONTROL PANEL SHALL MODULATE V-1 TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.
 - WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS BETWEEN 65°F (18.3°C) AND THE SUPPLY AIR TEMPERATURE SENSED BY TT-1, DAMPER D-2 SHALL FULLY CLOSE AND D1 AND V3 SHALL BE FULLY OPEN (MAXIMUM OUTSIDE AIR POSITION). THE DIGITAL CONTROL PANEL SHALL MODULATE V-1 TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.
 - WHEN THE TEMPERATURE OF THE OUTSIDE AIR, SENSED BY TT-2, IS BELOW THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1, DAMPERS D1, D-2 AND D-3 SHALL MODULATE TO MAINTAIN THE SCHEDULED SUPPLY AIR TEMPERATURE. IF D-2 IS OPEN AND D-3 IS CLOSED TO MINIMUM OUTSIDE AIR, V-2 SHALL MODULATE OPEN TO MAINTAIN THE SUPPLY AIR TEMPERATURE, SENSED BY TT-1.
- AIR FLOW CONTROL:**
- THE SUPPLY AIR FLOW SHALL BE CONTROLLED BY THE DIGITAL CONTROL PANEL MODULATING THE SUPPLY FAN VARIABLE SPEED MOTOR CONTROLLER TO MAINTAIN 1.0 (20mm) OF DUCT STATIC PRESSURE (FIELD ADJUSTABLE), SENSED BY SPS-1. RESET STATIC PRESSURE BASED ON ACTUAL BUILDING LOAD BY PULLING ALL ATVS.
 - THE DIGITAL CONTROL PANEL, USING TOTAL SUPPLY AIR AND RETURN AIR FLOW SIGNALS, SHALL RESET THE RETURN AIR FAN FLOW TO MAINTAIN A CONSTANT AIR FLOW DIFFERENCE BETWEEN THE SUPPLY AIR AND THE RETURN AIR EQUAL TO MINIMUM OUTSIDE AIR.
 - USING HIGH PRESSURE SENSOR SPS-2 LOCATED AT THE SUPPLY FAN DISCHARGE, SHALL PREVENT THE SUPPLY FAN FROM DEVELOPING OVER 3" (75mm) OF STATIC PRESSURE (FIELD ADJUSTABLE). IF STATIC PRESSURE AT SPS-2 EXCEEDS 3" (75mm) THE SUPPLY AIR FAN SHALL STOP. SPS-2 SHALL BE HARDWIRED TO THE SUPPLY FAN VSMC AND UNIT SHALL BE SHUTDOWN IN HAND/AUTO OR BYPASS MODE. SPS-2 WILL REQUIRE MANUAL RESET AT THE DEVICE.



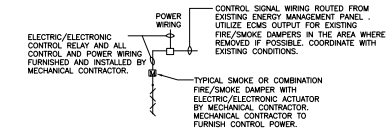
CONSTANT VOLUME BOX CONTROL
SCALE: NOT TO SCALE



VAV BOX CONTROL
SCALE: NOT TO SCALE



ISOLATION ROOM CONTROL
SCALE: NOT TO SCALE



TYPICAL SMOKE DAMPER DETAIL
SCALE: NOT TO SCALE

JOB BUILDING:	POINT LEGEND	SYSTEM OUTPUTS			SYSTEM INPUTS			SYSTEM SOFTWARE/CONTROL		PAGE:
		BINARY	ANALOG	FMS	BINARY	ANALOG	ALARM PROCESSING	APPLICATION/FUNCTION		
SYSTEM: VAV AIR HANDLER AC-1										
SYSTEM COMPONENT:										
Return Air Humidity	AI-1	RAH								
Return Air Flow (cfm)	AI-2	RAF								
Mixed Air Temperature	AI-3	MAT								
Pre-Heat Temperature	AI-5	PHT								
Cooling Coil Temperature	AI-6	CCT								
Discharge Air Temperature	AI-7	DAT								
Discharge Static Pressure	AI-8	DASP								
Discharge Air Humidity	AI-9	DAH								
Supply Air Flow (cfm)	AI-10	SAP								
STATIC PRESSURE HIGH LIMIT	BI-5	SPS-2								
RETURN LOW PRESSURE	BI-1	RLP								
RETURN FAN STATUS	BI-2	RF-SFS								
SUPPLY FAN STATUS	BI-3	SF-SFS								
MIXED AIR LOW LIMIT	BI-4	TSL-1								
HUMIDITY HIGH LIMIT	BI-6	HHL								
SUPPLY FAN VSMC ALARM	BI-7	RF-ALA								
RETURN FAN VSMC ALARM	BI-8	RF-ALA								
RETURN FAN VSMC	AD-2	SF-SFD								
SUPPLY FAN VSMC	AD-3	SAD								
OUTSIDE AIR DAMPER	AD-4	OAD								
RETURN AIR DAMPER	AD-5	RAD								
EXHAUST AIR DAMPER	AD-6	EAD								
MINIMUM OUTSIDE AIR DAMPER	AD-7	MOAD								
PRE-HEAT VALVE V-2	AD-8	PH-V1								
COILING VALVE V-1	AD-9	CCV-V1								
STEAM HUMIDIFIER VALVE V-4	AD-10	THM-V4								
RETURN FAN START/STOP	BO-1	RF-SST								
SUPPLY FAN START/STOP	BO-2	SF-SST								
STEAM ISOLATION VALVE V-3	BO-3	HSM-ISO-V3								

AC-1 POINTS LIST
SCALE: NOT TO SCALE

JOB BUILDING:	POINT LEGEND	SYSTEM OUTPUTS			SYSTEM INPUTS			SYSTEM SOFTWARE/CONTROL		PAGE:
		BINARY	ANALOG	FMS	BINARY	ANALOG	ALARM PROCESSING	APPLICATION/FUNCTION		
SYSTEM: VAV CONSTANT VOLUME BOX										
SYSTEM COMPONENT:										
SPACE TEMPERATURE	AI-1	ST								
BOX DAMPER POSITION	AD-1	DPS								
RE-HEAT COIL VALVE POSITION	AD-2	RVP								

VAV AND CONSTANT VOLUME BOX POINTS LIST
SCALE: NOT TO SCALE

- HUMIDITY CONTROL:**
- WHEN THE DIGITAL CONTROL PANEL IS NOT CALLING FOR HUMIDITY, SENSED BY RETURN AIR HUMIDITY V-1, 2-WAY "ON-OFF" CONTROL VALVE V-3 SHALL REMAIN CLOSED. WHEN THE DIGITAL CONTROL PANEL IS CALLING FOR HUMIDITY, V-3 SHALL REMAIN OPEN.
 - RETURN AIR HUMIDITY SHALL BE MAINTAINED AT SETPOINT OF 35% RH (ADJ) VIA DIGITAL CONTROL PANEL BY MODULATING THE HUMIDIFIER CONTROL VALVE V-4 TO MAINTAIN THE DESIRED HUMIDITY. THE DCP SHALL OVERRIDE THIS CONTROL TO MAINTAIN HUMIDITY OF ROOM AS SENSED BY H-2. DCP SHALL CLOSE VALVE V-3 WHENEVER THE SUPPLY FAN IS OFF. VALVE V-4 SHALL BE INTERLOCKED WITH A TEMPERATURE SWITCH TO KEEP THE HUMIDIFIER OFF UNTIL CONDENSATE TEMPERATURE APPROACHES STEAM TEMPERATURE.
- BREEZE PROTECTION:**
- IF THE AIR TEMPERATURE AS SENSED BY TT-3 FALLS BELOW 49°F (7°C), AN ALARM SIGNAL SHALL INDICATE AT THE DCP AND ECC. IF THE TEMPERATURE FALLS BELOW 40°F (4.4°C), AS SENSED BY THE TSL, THE SUPPLY AND RETURN FANS SHALL SHUT DOWN AND A CRITICAL ALARM SHALL INDICATE AT THE DIGITAL CONTROL PANEL AND ECC. TSL SHALL BE HARDWIRED TO THE SUPPLY FAN LIFT AND UNIT SHALL BE SHUTDOWN IN HAND, AUTO OR BYPASS MODE. TSL WILL REQUIRE MANUAL RESET AT THE DEVICE.
- AUTOMATIC SHUTDOWN/RESTART:**
- WHEN SMOKE IS DETECTED BY DUCT SMOKE DETECTOR, SD, THE SUPPLY AND RETURN FANS SHALL SHUT OFF AND AN ALARM SIGNAL SHALL BE TRANSMITTED TO THE FIRE ALARM SYSTEM. ALL SMOKE DAMPERS IN THE SUPPLY AND RETURN DUCTS SHALL CLOSE.
 - EXHAUST FANS SERVING AREA OF THE SUPPLY FAN SHALL CONTINUE TO RUN. SUPPLY AND RETURN FANS SHALL RESTART AND SMOKE DAMPERS SHALL OPEN WHEN FIRE ALARM CIRCUIT IS RESET.
- EMERGENCY CONSTANT SPEED OPERATION:**
- UPON FAILURE OF THE VSMC THE SUPPLY AND RETURN FANS SHALL BE STARTED/STOPPED MANUALLY AT THE DIGITAL CONTROL PANEL OR AT THE ECC THROUGH THE BY-PASS STARTER. FANS SHALL THEN BE OPERATED AT CONSTANT SPEED.

AIR VALVES SHALL MODULATE TO MAINTAIN A POSITIVE AIR PRESSURE (0.01 INCH WATER COLUMN [2.5 PASCAL]) BETWEEN THE PATIENT ISOLATION BEDROOM AND THE ANTEROOM AND THE ANTEROOM AND THE CORRIDOR.

ROOM DISPLAY SHALL INDICATE DIFFERENTIAL PRESSURE (ADJUSTABLE) BETWEEN THE ISOLATION PATIENT BEDROOM AND THE CORRIDOR.

WHEN DIFFERENTIAL PRESSURE BETWEEN ISOLATION PATIENT BEDROOM AND CORRIDOR EXCEEDS PRESET LIMIT (ADJUSTABLE) THE ALARM SHALL BE INITIATED.

- ELECTRICAL SIGNAL TO BE TAKEN TO WITHIN 15' OF DAMPER ACTUATOR.
- REFER TO FLOOR PLAN FOR LOCATIONS SMOKE OR COMBINATION FIRE/SMOKE DAMPERS.
- UTILIZE EXISTING CONTROL SIGNAL POINT/WIRING WHERE POSSIBLE (FURNISH PNEUMATIC TO ELECTRIC RELAYS WHERE REQUIRED).

GENERAL NOTES - THIS SHEET

- FOR GENERAL NOTES AND LEGEND SEE SHEET MOD1.
- CONNECT NEW CONTROLS TO EXISTING MAIN EMCS. NEW CONTROLS SYSTEM TO BE FULLY COMPATIBLE WITH EXISTING CONTROL/LOGIC SYSTEM. CONTRACTOR TO FURNISH AND INSTALL ALL INTERFACE MODULES, EQUIPMENT AND DEVICES, AS REQUIRED FOR COMPATIBILITY.
- CONTRACTOR TO PROVIDE AND INSTALL GRAPHICS FOR NEW EQUIPMENT UTILIZING UPDATES/EXISTING SOFTWARE PACKAGE (SIMILAR TO EXISTING) OR NEW SOFTWARE PACKAGE AS REQUIRED.
- CONTRACTOR TO BE INTO EXISTING SYSTEM AND OPERATOR'S TERMINAL IN THE EXISTING ECC. NEW GRAPHICS TO MATCH EXISTING TO SHOW AHU OPERATION (STATUS OF EQUIPMENT, TEMPERATURE, MONITORING, ALARMS, ETC. AS REQUIRED).
- ALL NEW CONTROL DEVICE ACTIVATION (VALVE AND DAMPER OPERATORS, ETC.) TO BE ELECTRIC. PNEUMATIC SYSTEMS ARE NOT TO BE PROVIDED UNDER THIS CONTRACT.
- CONTRACTOR TO PROVIDE AND INSTALL ALL CONTROL AND POWER WIRING/CONDUITS FOR NEW CONTROLS DEVICES. POWER FOR NEW DEVICES TO BE PROVIDED FROM EMERGENCY SOURCES COORDINATE REQUIREMENTS WITH ELECTRICAL CONTRACTOR.
- CONTRACTOR TO PROVIDE AND INSTALL ALL TRANSFORMERS AS REQUIRED.
- CHILLED WATER CONTROL VALVES ARE TO BE 3-WAY TYPE.
- HOT WATER VALVES FOR AIR HANDLING UNIT COILS ARE TO BE 3-WAY TYPE.
- PROGRAMMING/SEQUENCING OF ALL SMOKE DAMPER'S OPERATION TO BE PROVIDED BY THE MECHANICAL CONTRACTOR AND TO BE VIA THE EMCS. SEQUENCE TO BE AS SHOWN AND SPECIFIED AND AS REQUIRED BY NFPA ELECTRICAL CONTRACTOR TO FURNISH ALL SIGNAL WIRING AND REQUIRED PROGRAMMING/INTERFACE FROM MAIN FIRE ALARM PANEL (AS REQUIRED) SO THAT EMCS HAS NECESSARY INFORMATION IN ORDER TO ACTIVATE VARIOUS SAFETY SEQUENCES AS DETAILED IN THE SPECIFICATIONS AND AS OTHERWISE REQUIRED (TO MATCH EXISTING WHERE APPLICABLE). SUCH INFORMATION REQUIRED BY THE EMCS FROM THE FIRE ALARM PANEL TO INCLUDE, BUT NOT LIMITED TO: ZONE UNDER ALARM, SPECIFIC DEVICE (IE. FULL DETECTOR, ETC) AND ZONE ACTIVATED, MANUAL ACTIVATION OF DEVICES), ETC.

KEY NOTES

- REQUIRE AUDIO/VISUAL ALARMS WITH ANNUNCIATION AT NURSES STATION. COORDINATE LOCATION WITH OWNER. ALARMS TO BE LABELED WITH ENGRAVED NAME PLATE.
- ROOM DISPLAY WITH KEY PAD. DISPLAY TO BE MOUNTED IN CORRIDOR.

BID SET - 100% CONSTRUCTION DOCUMENTS

100% SUBMITTAL
BID SET - CONSTRUCTION DOCUMENTS
DATE: DECEMBER, 21 2012

FULLY SPRINKLERED

BY	REVISIONS	DATE



CONFIDENTIAL THESE DRAWINGS MUST BE RETURNED TO FACILITIES MANAGEMENT SERVICE, PROJECT SECTION, UPON COMPLETION, OR FINAL USE BY THE CONTRACTOR FOR BOOKING PURPOSES.

ASBESTOS WARNING: ASBESTOS CONTAINING BUILDING MATERIALS (ACBM) ARE PRESENT THROUGHOUT THE FACILITY. IF CONTRACTORS FIND ACBM, OR SUSPECT FINDING ACBM, THEY SHALL IMMEDIATELY STOP WORK AND CONTACT THE PROJECT COPI.

SCALING NOTES: FULL SIZE V.A. "T" SHEETS (SCALE AS INDICATED) AND HALF SIZE V.A. "D" SHEETS (Ø OF THE SCALE INDICATED LETTER SIZE DRAWINGS ARE NOT TO SCALE).

GENERAL NOTE: CONTRACTORS AND ARCHITECT/ENGINEERING FIRMS ARE RESPONSIBLE FOR THE FIELD VERIFICATION OF ALL EXISTING CONDITIONS.

Project Title
RENOVATE WARD 5 EAST

Drawing Title	Date
FIFTH FLOOR - WARD EAST MECHANICAL CONTROLS	12/21/12
Project No.	637-11-119
Building Number	47
Checked	TMF
Drawn	GMH
Location	ASHEVILLE, NC

DRAWING NO.	M108
Dwg	54 OF 78

