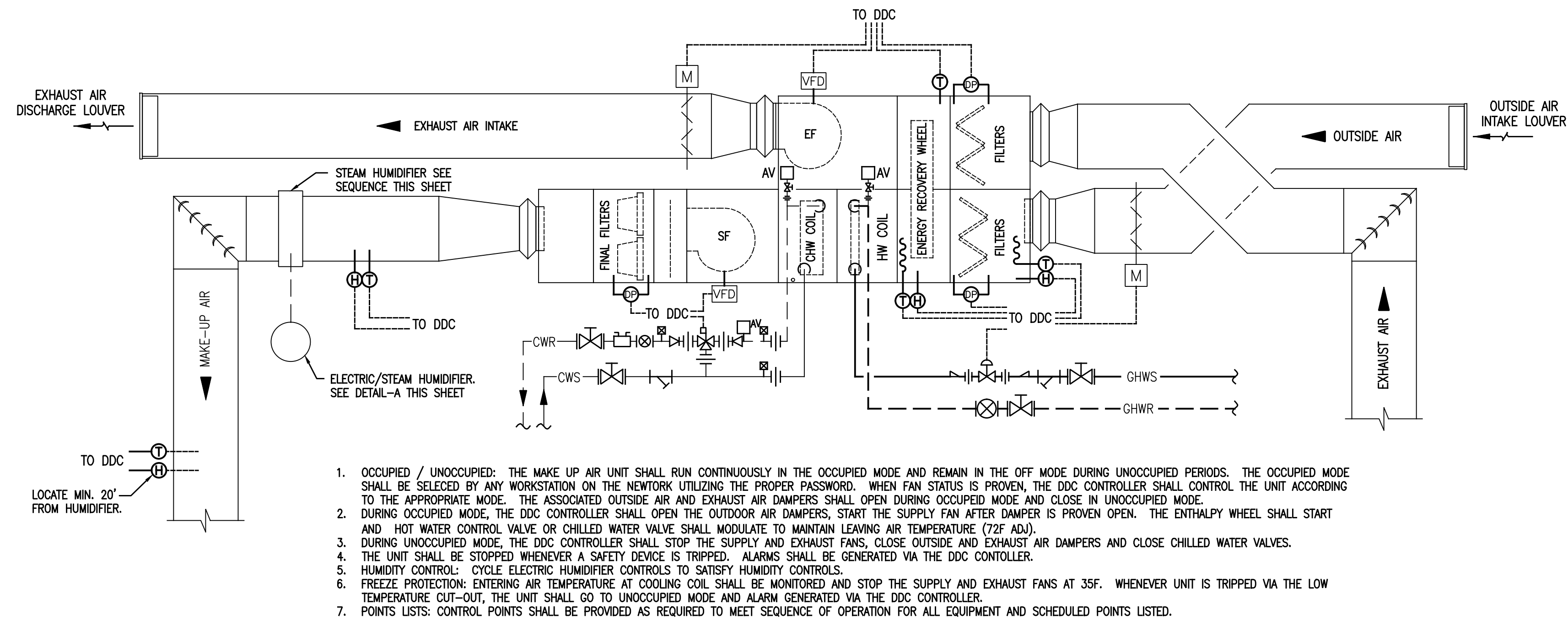
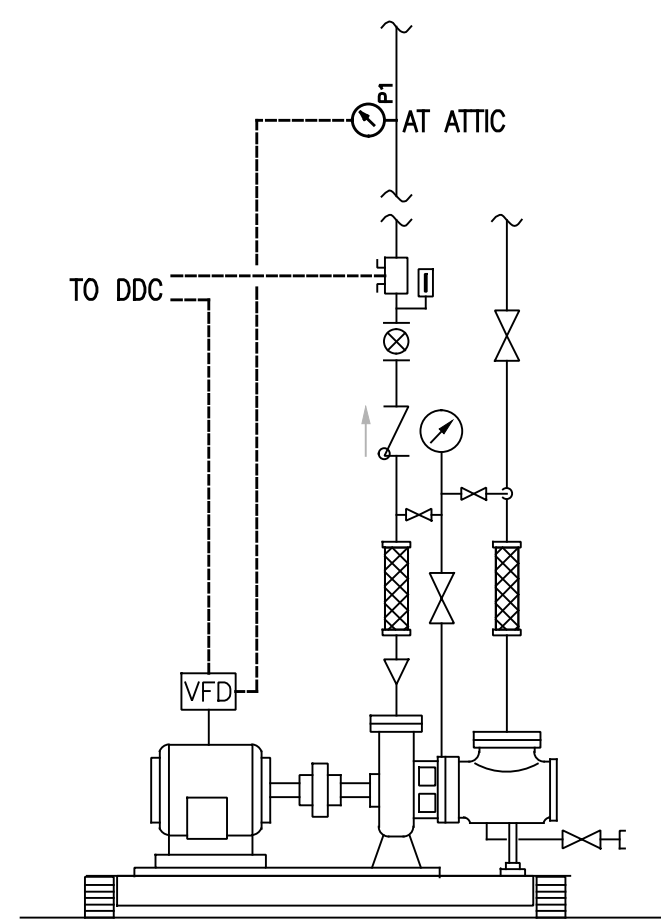


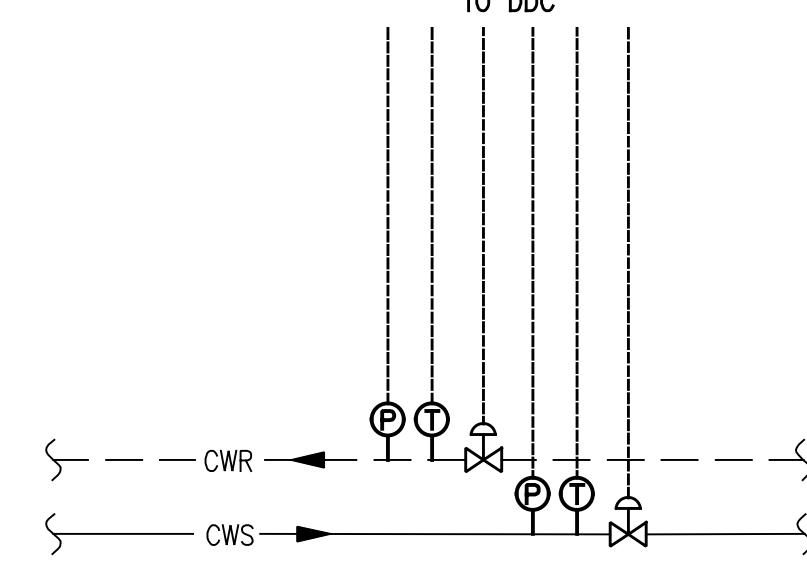
INPUT / OUTPUT SUMMARY TABLE																			
PROJECT VA MEDICAL CENTER HVAC REPLACEMENT	OUTPUT		HARDWARE								SOFTWARE				ENERGY MANAGEMENT SYSTEM FUNCTIONS				
	BINARY		BINARY				ANALOG				BINARY		ANALOG						
	CONTROL RELAY	CONTACTOR HOA SWITCH 4-20 mA or 0-10 VDC MODULE	AUXILIARY CONTACT	KW	CONTACT CLOSURE	CURRENT SENSOR	TEMPERATURE	RELATIVE HUMIDITY	PRESSURE	POSITION FLOW (CFM / GPM)	ENTHALPY FREQUENCY - Hz	EQUIPMENT STATUS	MAINTENANCE	CRITICAL ALARM	HIGH LIMIT	LOW LIMIT	RUN TIME	AUTO RESET	MANUAL RESET
POINT DESCRIPTION																			
PUMPS - TYPICAL																			
HOT WATER PUMPS - VFD	X	X		X	X					X	X	X	X	X	X	X	X	X	X
CHILLED WATER PUMPS - VFD	X	X		X	X					X	X	X	X	X	X	X	X	X	X
CHW ATTIC PRESSURE	X								X										X
HW ATTIC PRESSURE	X		X						X										X
MAKE UP AIR UNITS-TYPICAL																			
FILTER -P - OUTSIDE AIR		X			X				X			X	X	X	X	X		X	
FILTER -P - RETURN AIR		X			X				X			X	X	X	X	X		X	
FINAL FILTERS		X			X				X			X	X	X	X	X		X	
OUTDOOR AIR							X	X		X					X		X		X
ENTHALPY WHEEL - ENTERING							X	X							X		X		X
ENTHALPY WHEEL - LEAVING							X								X		X		X
DISCHARGE AIR							X	X							X	X	X	X	X
OUTSIDE AIR DAMPER	X	X								X		X	X	X			X	X	X
EXHAUST DAMPER	X	X								X		X	X	X			X	X	X
OVERRIDE					X												X		X
SUPPLY FAN - VFD	X		X	X							X	X	X			X	X		X
EXHAUST FAN -VFD	X	X	X	X		X					X	X	X			X	X		X
HUMIDIFIER - ENTERING							X	X							X	X		X	X
HUMIDIFIER - LEAVING							X	X							X	X		X	X
HUMIDIFIER VALVE	X		X						X									X	X
CHILLED WATER COIL - LEAVING AIR							X								X	X		X	X
CHILLED WATER VALVE	X		X							X					X	X		X	X
GLYCOL HEATING WATER COIL - LVG AIR							X								X	X		X	X
GLYCOL HEATING WATER VALVE	X		X						X									X	X
FAN COIL UNITS - TYPICAL																			
SPACE CONDITIONS					X		X								X	X		X	X
OVERRIDE	X				X										X		X		X
CONDENSATE OVERFLOW	X														X				X
BUILDING STATUS																			
GND FLR NORTH CHWS							X	X									X		X
GND FLR NORTH CHWR							X	X									X		X
GND FLR NORTH HWS							X	X									X		X
GND FLOOR NORTH HWR							X	X									X		X
GND FLR SOUTH CHWS							X	X									X		X
GND FLR SOUTH CHWR							X	X									X		X
GND FLR SOUTH HWS							X	X									X		X
GND FLOOR SOUTH HWR							X	X									X		X
GND FLOOR NORTH TEMP INDICATOR					X		X	X				X	X		X	X	X		X
GND FLOOR CENTER TEMP INDICATOR					X		X	X				X	X		X	X	X		X
GND FLOOR SOUTH TEMP INDICATOR					X		X	X				X	X		X	X	X		X
GND FLOOR DATA ROOM					X		X	X				X	X		X	X	X		X
1ST FLOOR																			
1ST FLR NORTH CHWS							X	X									X		X
1ST FLR NORTH CHWR							X	X									X		X
1ST FLR NORTH HWS							X	X									X		X
1ST FLOOR NORTH HWR							X	X									X		X
1ST FLR SOUTH CHWS							X	X									X		X
1ST FLR SOUTH CHWR							X	X									X		X
1ST FLR SOUTH HWS							X	X									X		X
1ST FLOOR SOUTH HWR							X	X									X		X
1ST FLOOR NORTH TEMP INDICATOR					X		X	X				X	X		X	X	X		X
1ST FLOOR CENTER TEMP INDICATOR					X		X	X				X	X		X	X	X		X
1ST FLOOR SOUTH TEMP INDICATOR					X		X	X				X	X		X	X	X		X
1ST FLOOR DATA ROOM					X		X	X				X	X		X	X	X		X
2ND FLOOR																			
2ND FLR NORTH CHWS							X	X									X		X
2ND FLR NORTH CHWR							X	X									X		X
2ND FLR NORTH HWS							X	X									X		X
2ND FLOOR NORTH HWR							X	X									X		X
2ND FLR SOUTH CHWS							X	X									X		X
2ND FLR SOUTH CHWR							X	X									X		X
2ND FLR SOUTH HWS							X	X									X		X
2ND FLOOR SOUTH HWR							X	X									X		X
2ND FLOOR NORTH TEMP INDICATOR					X		X	X				X	X		X	X	X		X
2ND FLOOR CENTER TEMP INDICATOR					X		X	X				X	X		X	X	X		X
2ND FLOOR SOUTH TEMP INDICATOR					X		X	X				X	X		X	X	X		X
2ND FLOOR DATA ROOM					X		X	X				X	X		X	X	X		X
ATTIC																			
ATTIC NORTH CHWS							X	X									X		X
ATTIC NORTH CHWR							X	X									X		X
ATTIC SOUTH CHWS							X	X									X		X
ATTIC SOUTH CHWR							X	X									X		X
CENTRAL PLANT FACILITIES																			
CHILLED WATER - TO BUILDING							X								X	X		X	
SUPPLY VALVE	X		X						X	X								X	X
CHILLED WATER - FROM BUILDING							X								X	X		X	
RETURN VALVE	X		X						X									X	X



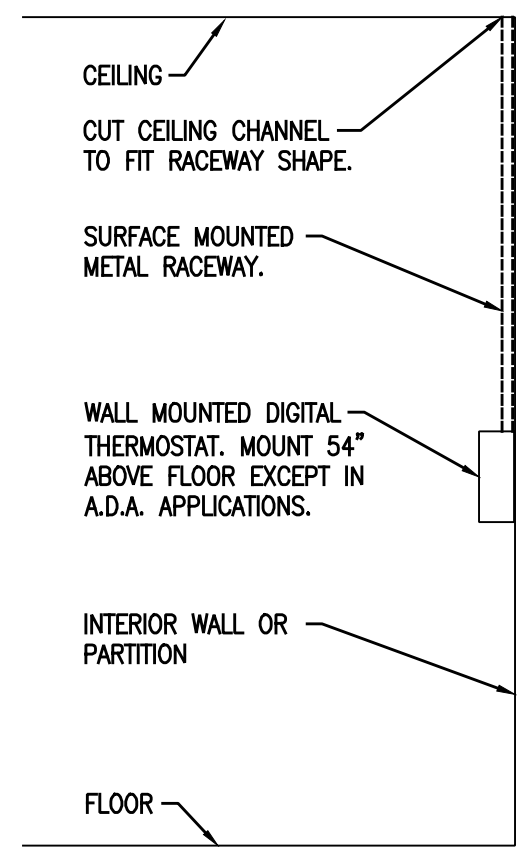
(C) TYPICAL MAKE UP AIR UNIT
NOT TO SCALE



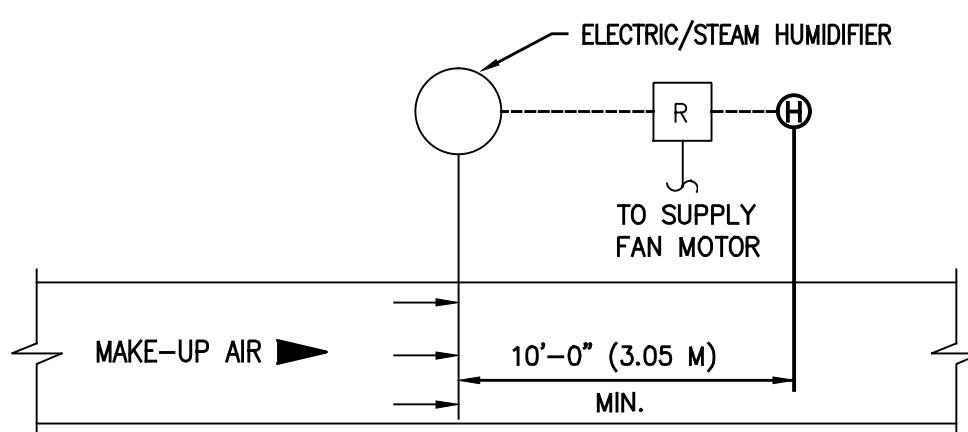
(D) TYPICAL BASE MOUNTED PUMP
NOT TO SCALE



(E) CHW / CENTRAL PLANT CONNECTION
NOT TO SCALE

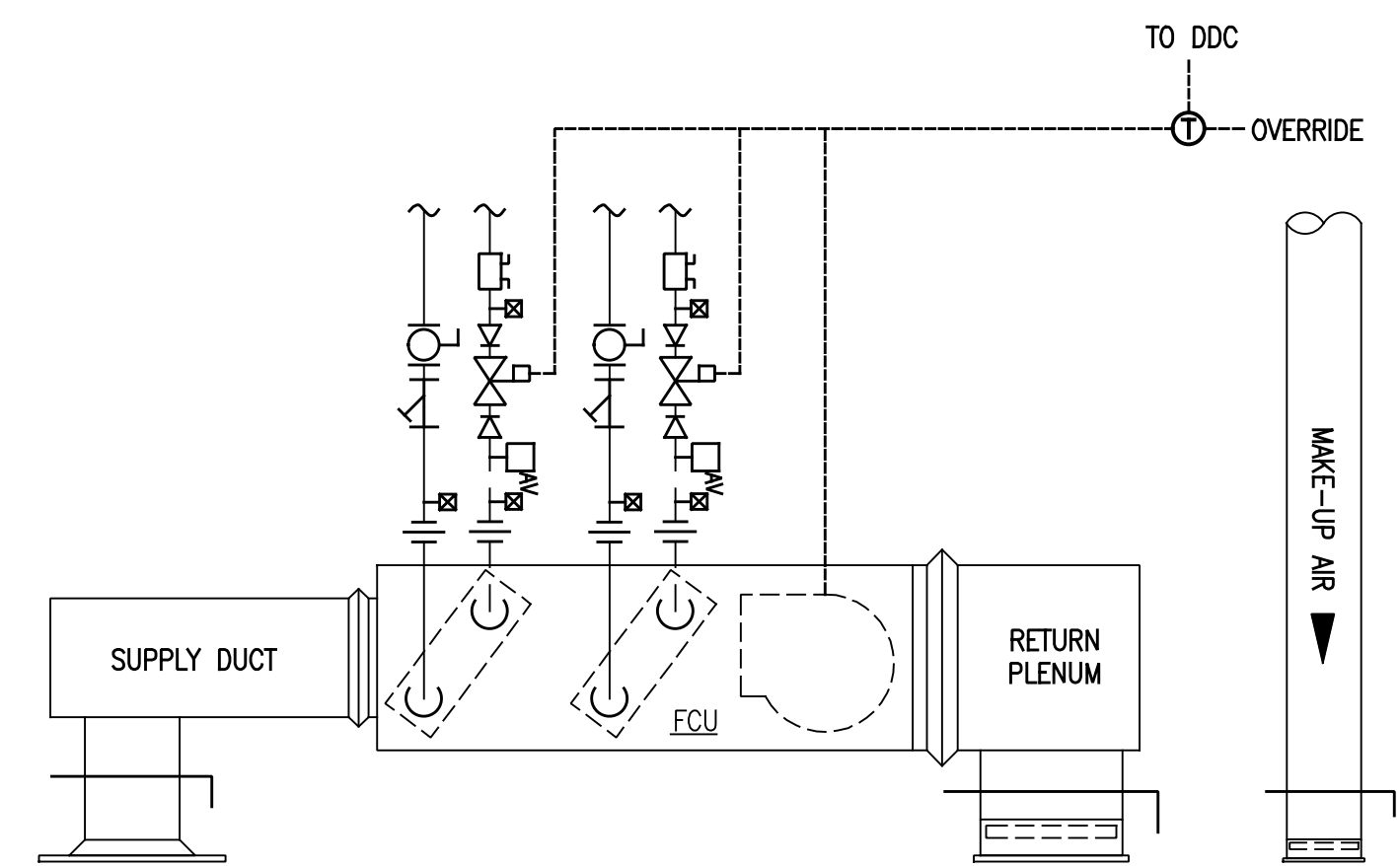


(F) WALL MOUNTED THERMOSTAT
NOT TO SCALE



- WHEN DUCT HUMIDISTAT H-1 IS NOT CALLING FOR HUMIDITY ON-OFF ELECTRIC HUMIDIFIER SHALL REMAIN OFF. WHEN H-1 IS CALLING FOR HUMIDITY ELECTRIC HUMIDIFIER SHALL OPERATE.
- DUCT HUMIDISTAT, H-1, SHALL MODULATE ELECTRIC HUMIDIFIER TO MAINTAIN THE DESIRED RELATIVE HUMIDITY SUBJECT TO ITS MODULATING TYPE HIGH LIMIT DUCT HUMIDISTAT, H-2, SET AT 80% RELATIVE HUMIDITY.

(A) TYPICAL ELECTRIC-STEAM HUMIDIFIER
NOT TO SCALE



- THE FAN COIL UNITS SHALL BE ENABLED / DISABLED BY THE BMS. THEY SHALL START BEFORE THEIR RESPECTIVE MAKE UP AIR UNIT AS EARLY AS NECESSARY TO BRING THE SPACE TO THE OCCUPIED SET POINTS BY THE START OF THE BUILDING OCCUPIED PERIOD. THE FAN COIL FAN SHALL RUN THROUGHOUT THE OCCUPIED PERIOD.
- FAN SPEED SHALL BE ADJUSTABLE FROM THE ROOM THERMOSTAT AND PROVIDE THREE FAN SPEEDS.
- WHEN DEPRESSED THE ZONE OVERRIDE SWITCH SHALL ENABLE THE FAN COIL UNIT AND ASSOCIATED MAKE UP AIR UNIT FOR A PERIOD OF TWO HOURS (ADJUSTABLE). THE TEMPERATURE CONTROLS CONTRACTOR SHALL COORDINATE ALL CONTROLS AND SEQUENCE WITH UNIT MANUFACTURER.
- WHEN THE FAN COIL UNIT IS ENABLED BY THE BMS, THE FAN SHALL RUN AND THE HOT OR CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN ROOM SET POINT. SET POINTS SHALL BE FULLY ADJUSTABLE FROM THE BMS AND WITHIN A PRESET ADJUSTABLE RANGE (72-75 COOLING, 67-70 HEATING) AT THE WALL MOUNTED THERMOSTAT.
- IF SPACE TEMPERATURE DURING AN UNOCCUPIED PERIOD FALLS BELOW OR RISES ABOVE THE NIGHT SETBACK TEMPERATURE (80F HEATING, 80F COOLING ADJ), THE BMS SHALL START THE FAN COIL UNIT ALONG WITH THE RESPECTIVE PUMP AS REQUIRED. THE FAN COIL UNIT SHALL RUN UNTIL THE ROOM TEMPERATURE IS 3 DEGREES (ADJ) ABOVE/BELOW THE NIGHT SETBACK TEMPERATURE.

(B) TYPICAL HEATING AND COOLING FAN COIL UNIT
NOT TO SCALE

CONSULTANTS: 		ARCHITECT/ENGINEERS: CMW inc. 400 E. Vine, Ste 400, Lexington, KY 40507 859.254.6623 Fax 859.259.1877		Drawing Title BUILDING - 29 SEQUENCE OF OPERATION		Project Title REPLACE HVAC B-29		Project Number 596-09-105		Office of Construction and Facilities Management	
Revisions: 		2/8/12		Review For Design Concept Only <i>[Signature]</i> CONTR-DESIGN-B-29 02-2012		Location VA MEDICAL CENTER, LEX., KY		Building Number B-29 (LD)		Drawing Number MHP-503	
Date February 08, 2012		Checked NCM		Drawn GI		Date February 08, 2012		Checked NCM		Drawn GI	
Thursday, February 09, 2012 12:32:40 PM		VA FORM 08-6231		BID DOCUMENTS		Department of Veterans Affairs		Dwg. 40 of 61			