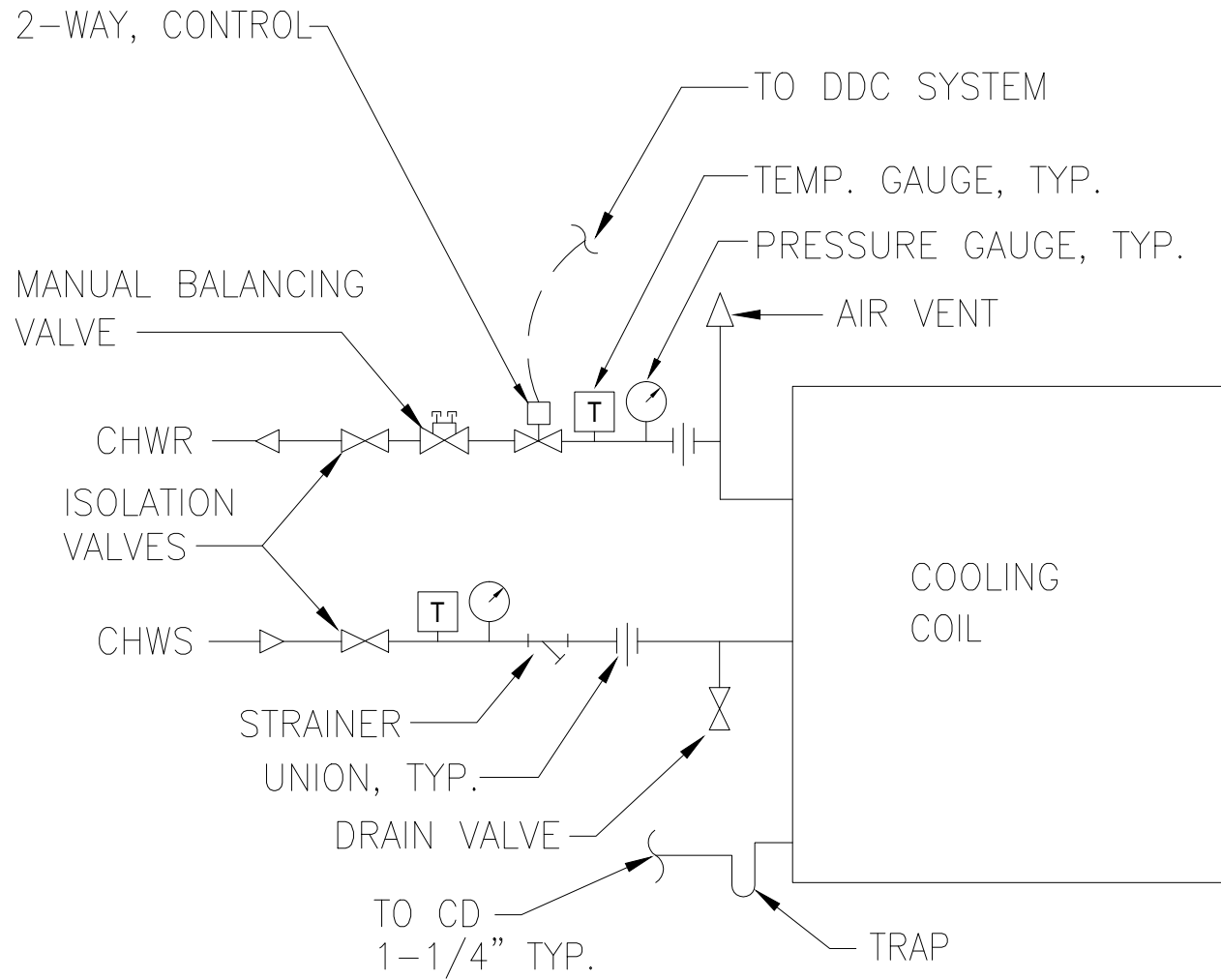


CATEGORY	POINT NO.	DDC SYSTEM POINTS DESCRIPTION	ANALOG				BINARY				SYSTEM FEATURES														NOTES							
			INPUT		OUTPUT	INPUT		OUTPUT	ALARMS							PROGRAMS																
			TEMPERATURE	PRESSURE	RH	GPM	PERCENT	CFM	SET POINT ADJ.	STATUS ON/OFF (ΔP)	FILTER STATUS (ΔP)	STATUS	START/STOP	ALARM CONTACT STATUS	OPEN/CLOSE	OFF-ON	OPEN/CLOSE	HIGH ANALOG	LOW ANALOG	HIGH BINARY	LOW BINARY	FLOW FAIL	EQUIP. FAIL/COMM.	DIAGNOSTIC/PANEL ALARM		SENSOR FAIL	TIME SCHEDULING	DEMAND LIMITING	OPT. START/STOP	RESET	DDC	SET POINT ADJ.
1.		EXISTING AIR CONDITIONING SYSTEM																														
		EXISTING AIR HANDLING UNIT (TYP.)																														
		SUPPLY AIR	X	X																		X										
		RETURN AIR	X		X																											
		OUTSIDE AIR/MIXED AIR	X	X																												
		FILTER								X																						
		SMOKE DETECTOR										X																				
		MAIN COIL CONTROL VALVE				X			X																							
		AHU FAN								X																						
	DUCT PRESSURE		X													X																
2.		EXISTING EXHAUST FAN							X						X						X			X								
3.		EXISTING BOOSTER PUMP		X		X	X			X										X	X		X									
4.		NEW AIR CONDITIONING SYSTEM																														
		NEW VFD ON EXISTING AIR HANDLING UNIT (TYP.)				X				X	X										X			X						X		
5.																																
		NEW FAN COIL UNIT								X											X			X								
		SUPPLY AIR	X	X	X																											
		RETURN AIR	X		X																											
		OUTSIDE AIR/MIXED AIR	X	X																												
		FILTER								X																						
		MAIN COIL CONTROL VALVE				X			X																							
		FCU FAN								X																						
	DUCT PRESSURE		X													X																
6.		NEW EXHAUST FAN (TYP.)							X						X						X			X								
7.		NEW VAV BOX (TYP.)	X			X															X			X			X	X	X			
8.		NEW FM-200 VENT DUCT DAMPER													X																	

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DDC POINTS LIST-TYPICAL AHU'S, AND EXHAUST FANS

SCALE: NTS

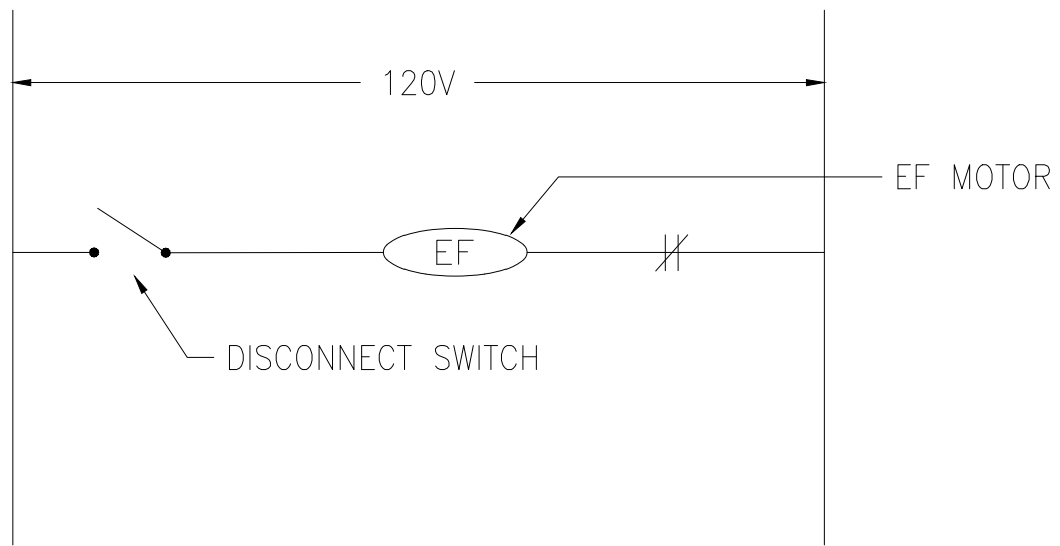


NOTE: PROVIDE DIFFERENTIAL PRESSURE SENSOR ACROSS COIL AT MOST REMOTE AHU (AHU-C1)

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AHU COOLING COIL CONTROL
DIAGRAM (FOR REFERENCE ONLY)

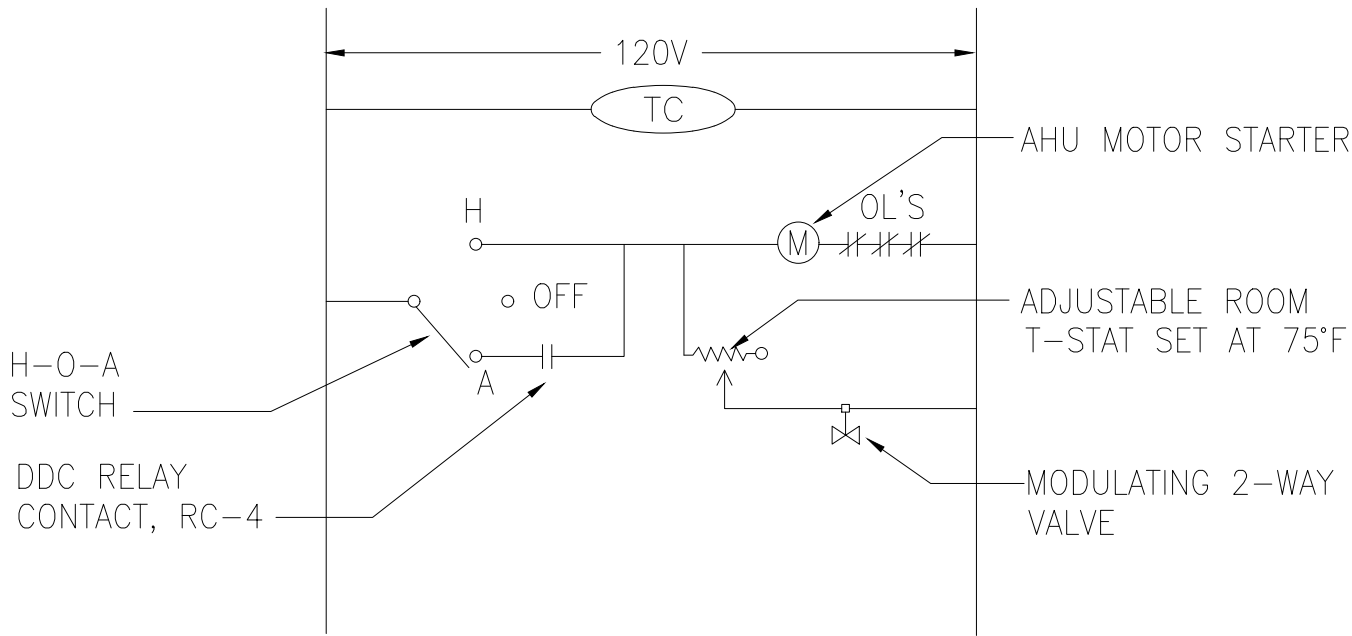
SCALE: NTS



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EXISTING AND NEW EXHAUST
FAN CONTROL DIAGRAM

SCALE: NTS



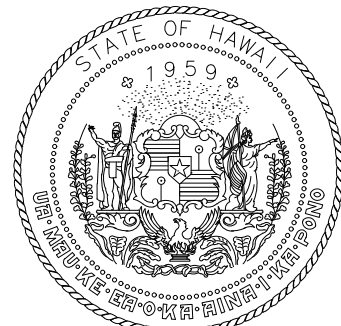
TYPICAL AIR HANDLING UNIT SEQUENCE OF OPERATION:

- AHU'S SHALL BE ENERGIZED TO OPERATE VIA A RELAY FROM THE DDC SYSTEM.
- WHEN ENERGIZED, THE AHU FAN MOTOR SHALL OPERATE CONTINUOUSLY, AND THE MODULATING SA T-STAT SHALL MODULATE THE CHW MIXING VALVE TO MAINTAIN 55°F LEAVING SA TEMPERATURE.
- THE AHU CONTROLS SHALL MODULATE TO MAINTAIN A 75°F SPACE TEMPERATURE.

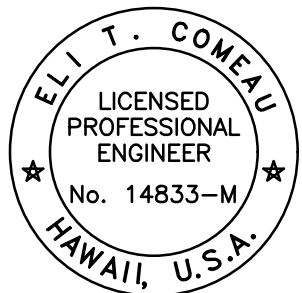
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TYPICAL AHU CONTROL DIAGRAM

SCALE: NTS



Airports Division
DEPARTMENT OF TRANSPORTATION
STATE OF HAWAII



Eli T. Comeau
04/30/2024
Licensed Expiration Date

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DSGN.	DRWN.	CHKD.	APPD.

NO.	DATE	REVISIONS
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DATE

PROJECT TITLE :

NEW PASS AND ID OFFICE

AT
DANIEL K. INOUE INTERNATIONAL AIRPORT
HONOLULU, OAHU, HAWAII

PROJECT NO.:

CO1322-63

SHEET TITLE:

MECHANICAL
SCHEMATIC

DATE :

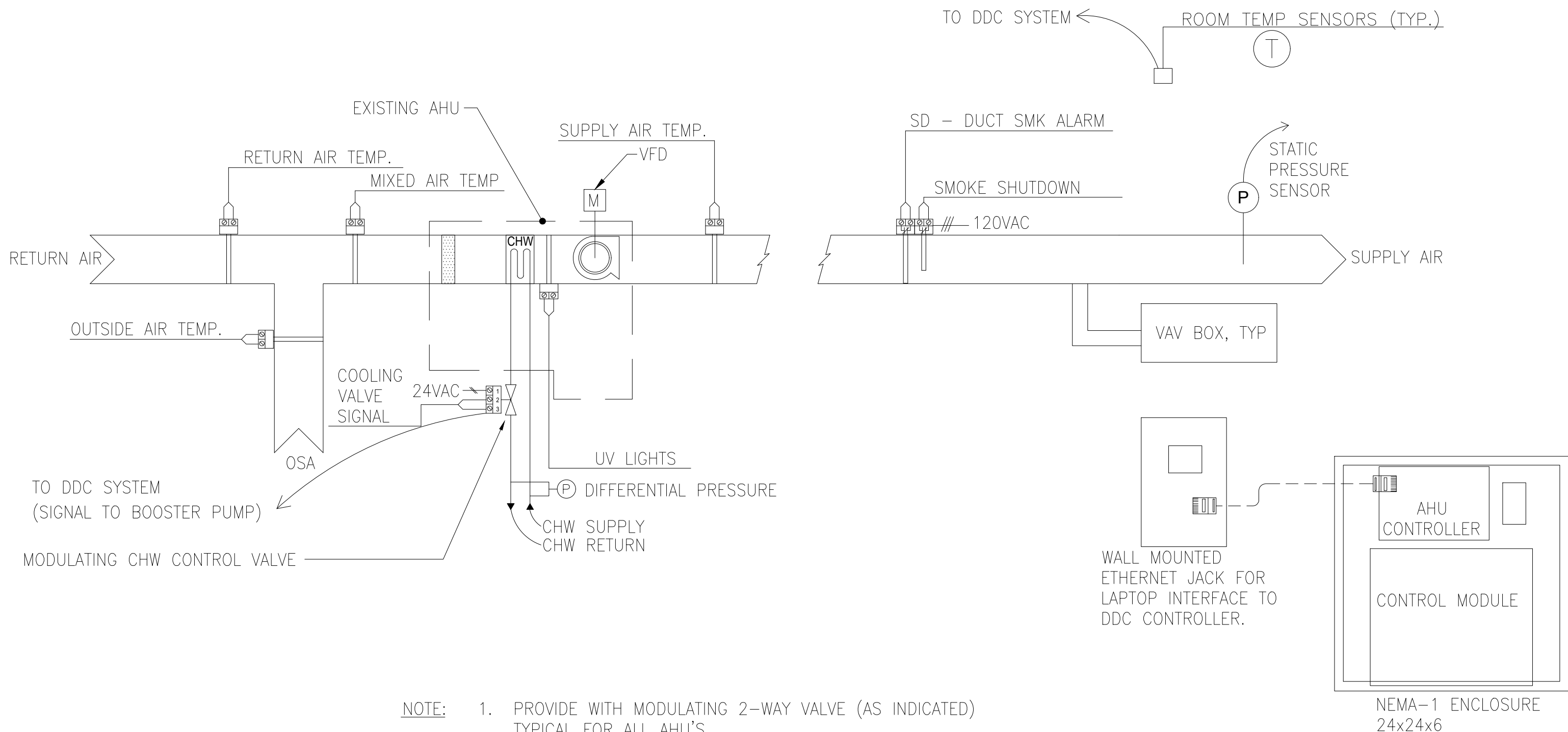
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- NOTE:
1. PROVIDE WITH MODULATING 2-WAY VALVE (AS INDICATED) TYPICAL FOR ALL AHU'S
 2. SEE AHU PIPING & CONTROL DIAGRAMS FOR ADD. REQUIREMENTS.

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STANDARD AHU SCHEMATIC DIAGRAM

SCALE: NTS

NEW SINGLE ZONE SEQUENCE OF OPERATION:

THE SPACES ARE SERVED BY THE DESIGNATED AHU'S AS INDICATED. THE EXISTING AIR HANDLING UNITS WILL OPERATE WITH A VARIABLE AIR VOLUME, VARIABLE CHILLED WATER FLOW SYSTEM. THE EXISTING SYSTEM WILL INCLUDE TWO WAY VALVES, AND CONNECT ALL OF THESE COMPONENTS INTO THE EXISTING DIRECT DIGITAL CONTROL SYSTEM. THESE COMPONENTS WHEN WORKING TOGETHER SHALL PROVIDE COMFORTABLE AIR CONDITIONING WHILE CONTROLLING HUMIDITY TO ACCEPTABLE LEVELS. THE EXISTING SYSTEM SHALL BE CONNECTED TO THE MAIN DIRECT DIGITAL CONTROL SYSTEM THAT SERVES THE ENTIRE AIRPORT.

THE AHU SHALL BE TURNED ON AND OFF VIA THE DDC SYSTEM WHEN THE H-O-A SWITCH IS PLACED IN THE "AUTO" MODE. THE UNIT SHALL BE OPERATED MANUALLY WHEN THE H-O-A SWITCH IS PLACED IN THE "HAND" MODE. WHEN THE AHU IS TURNED ON AND WHEN THE H-O-A SWITCH IS IN THE "AUTO" MODE, THE AHU AND ITS CORRESPONDING TERMINAL UNITS SHALL OPERATE ON THE TIME SCHEDULE PROGRAMMED INTO THE DDC SYSTEM. AT START-UP, THE DDC SYSTEM SHALL OPEN THE CHILLED WATER FLOW CONTROL VALVE TO ALLOW FLOW THROUGH THE COOLING COIL. THE VFD SHALL BE PROGRAMMED TO SOFT START THE MOTOR AT START-UP TO PREVENT OVER-PRESSURIZATION OF THE DUCTWORK. THE CHILLED WATER CONTROL VALVE SHALL MODULATE TO MAINTAIN THE SUPPLY AIR TEMPERATURE AT 55°F. THE PRESSURE IN THE SUPPLY DUCT SHALL BE MEASURED BY THE STATIC PRESSURE SENSOR AT THE END OF THE MAIN DUCT RUN AND THE SIGNAL SHALL BE RELAYED TO THE VARIABLE FREQUENCY DRIVE PANEL. THE PANEL SHALL ADJUST THE FREQUENCY OF THE POWER SUPPLIED TO THE MOTOR TO INCREASE OR DECREASE ITS SPEED TO MAINTAIN THE DUCT STATIC PRESSURE OF 1" WATER. THE REQUIRED SET POINT SHALL BE ADJUSTED AFTER RECEIVING INPUT FROM THE BALANCING CONTRACTOR.

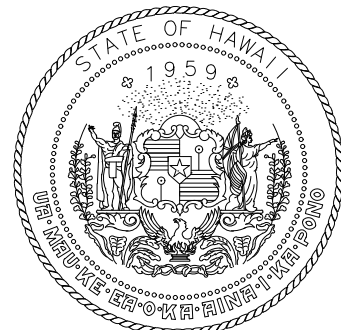
EACH SUPPLY AIR TERMIANL UNIT SHALL BE INDIVIDUALLY CONTROLLED BY ITS OWN DDC VAV CONTROLLER. THE BOX SHALL BE CONNECTED TO THE DDC SYSTEM. ON A RISE IN ZONE TEMPERATURE MEASURED BY A ROOM TEMPERATURE SENSOR, THE UNIT WILL MODULATE TO OPEN THE DAMPER TO MAINTAIN THE ROOM TEMPERATURE SET POINT. AS SPACE TEMPERATURE DECREASES, THE DAMPER SHALL MODULATE DOWN TO ITS MINIMUM POSITION. THE FLOW SENSOR SHALL MODULATE THE DAMPER TO MAINTAIN THE PROPER AIR FLOW TO THE BOX WHICH CORRESPONDS TO THE ROOM TEMPERATURE REQUIREMENTS REGARDLESS OF FLUCTUATIONS IN UPSTREAM SUPPLY DUCT PRESSURE. EACH VAV BOX SHALL CLOSE TO ITS MINIMUM POSITION DURING UNOCCUPIED HOURS.

IN GENERAL, A 55 F SUPPLY AIR TEMPERATURE HAS BEEN AN AVERAGE OPERATING PARAMETER THAT EXPERIENCE HAS SHOWN WILL MITIGATE HUMIDITY AND ROOM COMFORT TEMPERATURE LEVELS FOR MOST CONDITIONS IN HAWAII. THE CONTROL SEQUENCE WILL USE THIS AS A STARTING POINT HOWEVER, THIS VALUE CAN BE CHANGED VIA THE NEW DDC SYSTEM DOWN TO A TEMPERATURE OF APPROXIMATELY 50 F SHOULD IT BE REQUIRED.

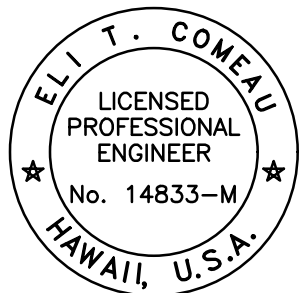
THE TWO WAY VALVES WILL BE CONTROLLED BY A TEMPERATURE SENSOR THAT WILL MAINTAIN A SUPPLY AIR TEMPERATURE OF 55 F. AS THE COOLING LOAD IN THE SPACE INCREASES, THE RETURN AIR TEMPERATURE WILL RISE AND THE COOLING COIL WILL NOT BE ABLE TO PROVIDE 55 F. AS THE SUPPLY AIR TEMPERATURE RISES ABOVE 55 F, THE TEMPERATURE SENSOR WILL SIGNAL THE TWO WAY VALVE CONTROLLER TO OPEN TO ALLOW MORE CHILLED WATER INTO THE COIL TO COOL THE INCREASED AIRFLOW. AS THE SUPPLY AIR TEMPERATURE FALLS TO 55 F DUE TO THE INCREASED CHILLED WATER FLOW, THE TEMPERATURE SENSOR WILL DETERMINE THAT THE SUPPLY AIR TEMPERATURE IS BEING MET AND WILL STOP THE TWO WAY VALVE FROM INCREASING FLOW. A SIGNAL FROM THE DIFFERENTIAL PRESSURE SENSOR AT AHU-C1 SHALL BE SENT TO THE BOOSTER PUMP VFD TO MODULATE THE FLOW THROUGH THE DDC SYSTEM TO MAINTAIN 7 PSI DIFFERENTIAL PRESSURE.

UPON DETECTION OF SMOKE BY THE DUCT SMOKE DETECTOR, A SIGNAL SHALL AUTOMATICALLY BE SENT TO SHUT DOWN THE UNIT. SMOKE DETECTOR SHALL BE HARDWIRED TO THE AHU, AND SHALL NOT REQUIRE A SIGNAL FROM THE DDC TO SHUTDOWN. DUCT SMOKE DETECTORS SHALL ALSO SEND SIGNAL TO FIRE ALARM PANEL.

THE DDC CONTROL SYSTEM WILL ALLOW MODIFICATIONS TO THE PROGRAMMING AS THE NEED REQUIRES. THE DDC SYSTEM SHOULD BE COMPATIBLE WITH THE EXISTING DDC SYSTEM THAT SERVES THE ENTIRE AIRPORT. ALL NEW FAN COIL UNIT, VAV BOXES, AND EXHAUST FANS SHALL BE CONNECTED BACK TO THE EXISTING DDC SYSTEM SERVING THE AIRPORT.



Airports Division
DEPARTMENT OF TRANSPORTATION
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