DESCRIPTION

B 5-22-96 CLP //W. AA SUM BID ADDENDUM *2

A 4-19-96 CLP ME AA TOM FINAL DESIGN REVIEW & BID

NO. DATE BY CHKD ENGR PROJ DESCRIPTION

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- 1. FOR LEGEND, ABBREVIATIONS AND GENERAL NOTES SEE SHEETS WA-H-001 AND WA-H-002.
- 2. SMOKE DETECTORS WILL BE HARD WIRED TO THE SUPPLY FANS SF-01 & SF-02 MOTOR STARTER TO STOP FANS WHEN SMOKE DETECTED IN THE RETURN AIR STREAM, ALSO SMOKE DETECTORS WILL BE SOFTWARE CONNECTED TO DDC CONTROL PANEL AND THE FACILITY CONTROL ROOM.
- CONTROL SYSTEM SHALL BE STAND ALONE TYPE AND CONNECTED TO THE MAIN CONTROL AND MONITORING SYSTEM AT THE FACILITY CONTROL ROOM IN THE CORNER STATION BUILDING.
- 4. VACUUM EOUIPMENT ROOM WILL BE PROVIDED WITH FOUR TEMPERATURE SENSORS TO CONTROL THE RESPECTIVE DUCT HEATER. SYSTEM MAY AVERAGE THE READING OF THE FOUR ROOM TEMPERATURE SENSORS OR SELECT ANY SENSOR TO CONTROL THE DUCT HEATER.

SEQUENCE OF OPERATION:

- I. CHILLED WATER PLANT:
- UPON A SIGNAL FROM THE CENTRAL CONTROL SYSTEM THE PACKAGED CONTROLS PROVIDED WITH THE WATER CHILLER WILL PERFORM THE FOLLOWING;
- A. THE LEAD CHILLED WATER PUMP (WP-01) WILL START TO ESTABLISH STEADY WATER FLOW THROUGH THE SYSTEM.
- B. UPON PROOF OF ESTABLISHED WATER FLOW THE LEAD CHILLER (CH-OI) WILL START TO MAINTAIN THE LEAVING CHILLED WATER TEMPERATURE SETPOINT (42°F).
- C. THE PACKAGED DOC CONTROLS ON THE WATER CHILLER WILL CYCLE THE REFRIGERATION COMPRESSORS IN SEQUENCE TO MATCH THE SYSTEM
- D. WHEN THE THERMAL LOAD DROPS BELOW THE MINIMUM OPERATING CAPACITY OF THE WATER CHILLER, THE PACKAGED CONTROL WILL ACTIVATE THE HOT GAS BYPASS CYCLE.
- E. PACKAGED CONTROLS WILL RUN SELF DIAGNOSTICS TEST BEFORE STARTING THE REFRIGERATION COMPRESSORS TO PROVE THAT ALL OPERATING CONDITIONS ARE WITHIN THE NORMAL LIMITS.
- F. PACKAGED CONTROLS WILL CONTINUOUSLY MONITOR THE CHILLER
 OPERATION AND REPORT ANY OPERATIONAL OR SAFETY ALARMS TO THE
 OPERATOR COMPUTER IN THE FACILITY CONTROL ROOM. PACKAGED
 CONTROLS WILL AUTOMATICALLY STOP THE MALFUNCTIONING WATER CHILLER
 AND START THE STANDRY CHILLER
- G. CENTRAL CONTROL SYSTEM WILL ALTERNATE THE LEAD AND STANDBY WATER CHILLERS TO MAINTAIN EQUAL OPERATING PERIODS ON BOTH WATER
- II. AIR HANDLING SYSTEM:
- UPON A SIGNAL FROM THE CENTRAL CONTROL SYSTEM THE LEAD SUPPLY AIR FAN (SF-01) WILL START TO ESTABLISH A STEADY AIR FLOW THROUGH THE SYSTEM. THE DDC CONTROLS WILL PERFORM THE FOLLWING:
- A. MODULATE THE CONTROLLABLE PITCH VANES ON THE SUPPLY AIR FANS TO MAINTAIN THE DESIRED CONSTANT AIR VOLUME FLOW RATE REGARDLESS OF THE SYSTEM STATIC PRESSURE.
- B. THE TEMPERATURE SENSORS LOCATED DOWN STREAM OF THE OUTSIDE AIR PREHEAT COLLS WILL BE USED TO CONTROL THE CAPACITY OF THE DUCT ELECTRIC HEATERS TO MAINTAIN THE OUTSIDE AIR DRY BULB TEMPERATURE AT 50°F.
- C. THE TEMPERATURE SENSOR LOCATED DOWN STREAM OF THE COOLING COIL WILL BE USED TO MODULATE THE 3-WAY CONTROL VALVE ON THE CHILLED WATER LOOP TO MAINTAIN THE LEAVING AIR DRY BULB TEMPERATURE AT THE SET POINT (50°F).
- D. THE DDC CONTROLS WILL COMPARE THE SPACE ROOM TEMPERATURE SENSORS AND MODULATE THE FACE AND BYPASS DAMPER BASED ON THE MOST DEMANDING ZONE.
- E. THE ROOM TEMPERATURE SENSORS (TOTAL 4) OF VACUUM EQUIPMENT AREA SHALL BE USED TO MODULATE THE SCR CONTROLS ON THE RESPECTIVE ELECTRIC DUCT HEATER TO MAINTAIN THE ROOM TEMPERATURE SETPOINT (72°F)
- F. THE ROOM TEMPERATURE SENSORS FOR OTHER ROOMS SHALL BE USED TO SEOUENCE THE CAPACITY CONTROL STAGES OF THEIR RESPECTIVE DUCT HEATERS TO MAINTAIN THE ROOM TEMPERATURE SET POINT.
- G. WHEN THE ROOM TEMPERATURE RISES 5 DEGREES F ABOVE THE SETPOINT,
 THE CONTROL SYSTEM SHALL REPORT AN ALARM SIGNAL TO THE FACILITY
- H. THE RELATIVE HUMIDITY SENSOR LOCATED IN VACUUM EQUIPMENT ROOM SHALL BE USED TO SEQUENCE THE CAPACITY CONTROL STAGES OF THE ELECTRIC HUMIDIFIER TO MAINTAIN THE SPACE MINIMUM RELATIVE HUMIDITY SETPOINT (30 % RH).
- I. THE SMOKE DUCT DETECTOR IN THE RETURN AIR DUCTS SHALL STOP THE SUPPLY AIR FANS WHEN SMOKE IS DETECTED IN THE RETURN AIR STREAM AND REPORT AN ALARM SIGNAL (AUDIO AND VISIUAL) AT THE FACILITY CONTROL ROOM AND LOCAL CONTROL PANEL.
 THE SPACE DIFFERENTIAL PRESSURE SENSORS SHALL BE USED TO MODULATE THE MOTORIZED CONTROL DAMPERS ON THE RETURN AIR DUCTS AND THE OUTSIDE AIR DUCTS TO MAINTAIN THE SPACE PRESSURIZATION AT THE SETPOINT.

III. EQUIPMENT START UP:

- A. ALL WATER CHILLER SHALL BE SOFT START
- B. THE SUPPLY AIR FANS SF-01 & SF-02 SHALL START AT THE MINIMUM STATIC PRESSURE AND GRADUALLY INCREASE THE SYSTEM STATIC PRESSURE TO MAINTAIN THE DESIRED AIR FLOW RATE.
- C. THE BUILDING PRESSURIZATION SENSORS FOR LVEA AND OSB (LAB AREA) SHALL MODULATE THE MOTORIZED DAMPERS LOCATED ON THE RETURN AIR & OUTSIDE AIR DAMPERS TO START AT 100% RETURN AIR AND GRADUALLY MODULATE THE DAMPERS TO MAINTAIN THE BUILDING PRESSURIZATION SETPOINT.
- IV. TOILET EXHAUST FAN:
- A. THE TOILET EXHAUST FAN WILL RUN CONTINUOUSLY.

SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	<u> </u>	INPUTS										\dashv	OUTPUTS					_	SYSTEM FEATURES																												
	-	ANALOG MEASURED CALCULATED					+		BINAI	RY				DIGI	TAL			ANA	4L <i>0G</i>		ALARMS					PROGRAMS							GENERAL														
	TEMPERATURE	PRESSURE RH			GALLONS				dNi	STATUS	FIL TER SMOKE	FREEZE	AIR FLOW MFTFR		70-230	OFF-41170-0W	OFF-HI-LO	OPEN-CLOSE	MULTI-STAGE	DAMPER POSITION	VALVE POSITION	VANE POSITION	ארא רטאואטד	HI ANALOG	HI BINARY	LOW BINARY	FROOF		TIME SCHEDII ING	DEMAND LIMITING	DUTY CYCLE	ENTHALPY OPTION	SMOKE CNT	ALARM INSTRUCT	MAINT WK ORD			COLOR GRAPHIC					SUPPLEMENTARY NOTES				
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OUTSIDE RELATIVE HUMIDITY		•																											\perp																		
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PREHEAT COIL, HC-15	•		П	Т	П		П			•			Т		T			•	•		•			•							•			•	•	,			П				***************************************			************	
AIR FILTER AF-01 (TYP 2)		•			П	Т				П		П			T									•											•				П			2	SENSO	RS	************		
AIR FILTER AF-02 (TYP 2)		•																						•											•							2	SENSO	RS			
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SUPPLY FAN SF-02			•		•					•			•	Ш	•					Ш		•		•		•			•	Ш	•		1	•	•				Ш								
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FLOOR PLANS																																															

INPUT/OUTPUT SUMMARY FOR AIR HANDLING UNIT AH-OI (TYP 4 SYSTEMS)

	INPUT/O	UTPUT SUMI	MARY FOR WA	TER CHILL	ERS CH-C	01 & CH-02	(TYP 4 SYSTEMS)		
		INPUTS		ОИТРИ	ıts	SX	STEM FEATURES		
SYSTEM, APPARATUS, OR AREA POINT DESCRIPTION	ANA! MEASURED	LOG CALCULATED	BINARY	DIGITAL	ANALOG	ALARMS	PROGRAMS	GENERAL	
	TEMPERATURE PRESSURE RH KW AIR FLOW LEVEL VIBRATIONS	GPM KWH RUN TIME EFFICIENCY WET BULB TEMP	STATUS FILTER SMOKE FREEZE AIR FLOW METER	OFF-ON OFF-AUTO-ON OFF-HI-LO OPEN-CLOSE MULTI-STAGE	DAMPER POSITION VALVE POSITION SET POINT ADJUSTMENT VANE POSITION SCR CONTROL	HI ANALOG LOW ANALOG HI BINARY LOW BINARY PROOF	TIME SCHEDULING DEMAND LIMITING DUTP CYCLE START/STOP OPTION SMOKE CNT TREND ALARM INSTRUCT MAINT WK ORD	согок скарчис	SUPPLEMENTARY NOTES
WATER CHILLER, CH-01	•		•	•					
WATER CHILLER, CH-02	•	•	•	•	•	• •			
CHILLED WATER PUMP, WP-01	•	• •	•	•		•			
CHILLED WATER PUMP, WP-02	•	• •		•		•			
CHILLED WATER RETURN TEMP							•		
CHILLED WATER SUPPLY TEMP									
CHILLED WATER BOOSTER PUMP	•			•					PUMP BY VE CONTRACTOR
CHILLED WATER FLOW DIAGRAM								•	
FLOOR PLANS								•	

CHECKED

ENGINEER

PARSONS

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MID & END STATIONS SEQUENCES OF OPERATION & I/O SUMMARY SHEET

NONE | PP150969 | 8094

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