CRITICAL ENVIRONMENT DIFFUSER

TAG	LOCATION	NOMINAL SIZE	SYSTEM TOTAL CFM	PERIMETER AIR CURTAIN							CENTER DIFFUSER							NOTES:
				DIM(FT)	CFM	# OF SLOTS	# OF INLETS	INLET SIZE	CFM/FT	INLET LOCATION	MANUF & MODEL	QTY	W x L (IN)	CFM / DIFFUSER	INLET DIA (IN)	TOTAL CFM	THROW TO 30 FPM	MANUF & MODEL	
CED-1	OR #21	8'X8'	2500	8X8	1600	2	2	36X8	25	4,8	TITUS STERITEC-SS	4	48X24	225	8	900	8	TITUS, TLF-SS	*

NOTES:

TERMINAL BOX (TB) SCHEDULE

TAG	INLET SIZE (IN)	OUTLET SIZE (IN)	CFM MAX.	CFM MIN.	INLET STATIC PRESSURE MIN.	APD MAX.	HOT WATER HEATING COIL					TYPICAL UNIT MFG & MODEL NO.	NOTES:
							MBH	EAT °F	LAT °F	GPM @ 180°F EWT	ROWS		
TB-13	10	14X12-1/2"	1000	500	0.06	0.5	33.0	55	85	3.3	2	ENVIROTEC SDR-SA-WC-12	*
TB-15	14	20X17-1/2	2500	2500	0.06	0.5	82.5	55	85	8.3	2	ENVIROTEC SDR-SA-WC-14	*
TB-32	8	12X10	500	150	0.01	0.22	16.5	55	85	1.7	2	ENVIROTEC SDR-SA-WC-8	*
TB-34	8	12X10	400	100	0.01	0.15	13.2	55	85	1.3	2	ENVIROTEC SDR-SA-WC-8	*

NOTES:

HUMIDIFIER DISPERSION PANEL SCHEDULE

TAG	SERVICE	OUTPUT PPH	INPUT PSIG	DUCT DIMENSIONS		CFM	ABSORPTION DIST. (IN.)	TUBE O.C.	MAX VEL FPM	TYPICAL UNIT MFG & MODEL NO.	NOTES:
				W (IN.)	H (IN.)						
H-3	OR #21	54	5	20	18	2500	25	3"	2000	DRISTEEM ULTRASORB LH	*

NOTES:

EXISTING TERMINAL BOX (TB) SCHEDULE

TAG	INLET SIZE (IN)	OUTLET SIZE (IN)	CFM MAX.	CFM MIN.	HOT WATER HEATING COIL					TYPICAL UNIT MFG & MODEL NO.	NOTES:
					MBH	EAT °F	LAT °F	GPM @ 180°F EWT	WPD FT. HD		
TB-14	6	10X6	230	230	7.5	55	85	0.8	0.3	N/A	1
TB-17	12	16X15	1520	1520	61.6	55	85	6.2	10.6	N/A	1
TB-18	6	10X6	300	300	9.7	55	85	1.0	0.4	N/A	1
TB-19	12	16X15	1685	1685	54.6	55	85	5.5	8.4	N/A	1
TB-33	6	10X6	285	285	6.2	55	75	0.6	0.3	N/A	1
TB-35	4	10X6	155	40	0.9	55	75	0.1	0.1	N/A	1
TB-36	10	22X10	630	630	20.4	55	85	2.0	1.2	N/A	1
TB-37	4	10X6	150	150	3.2	55	75	0.3	0.1	N/A	1
TB-39	8	14X10	625	625	13.5	55	75	1.4	1.3	N/A	1
TB-40	6	10X6	190	190	4.1	55	75	0.4	0.1	N/A	1
TB-42	8	14X10	525	130	2.8	55	75	0.3	0.2	N/A	1
TB-43	10	14X12-1/2	1000	250	8.1	55	85	0.8	0.6	N/A	1
TB-44	10	14X12-1/2	1000	250	8.1	55	85	0.8	0.6	N/A	1
TB-45	10	14X12-1/2	1000	250	8.1	55	85	0.8	0.6	N/A	1
TB-46	10	22X10	910	230	5.0	55	75	0.5	0.05	N/A	1
TB-47	8	14X10	460	115	2.5	55	75	0.3	0.2	N/A	1
TB-52	6	10X6	265	265	5.7	55	75	0.6	0.17	N/A	1

NOTES: 1. EXISTING TERMINAL BOX TO REMAIN, CONTRACTOR SHALL PROVIDE ALL NEW CONTROL HARDWARE. CALIBRATE AND BALANCE TO PREFORMANCE INDICATED. TIE-IN TO EXISTING HONEYWELL FRONT END SYSTEM.

REGISTER, DIFFUSER & GRILL SCHEDULE - GENERAL

TAG	CFM	NECK SIZE (DIA)	TYPE	ΔP	MAX NC	TYPICAL UNIT MFG & MODEL NO.	NOTES
S-1	<130	9x9 (6)	LOUVERED DIRECTIONAL DIFFUSER	0.08	15	TITUS DP 24x24 LAY-IN MODULE	1, 2
S-2	130-280	9x9 (8)	LOUVERED DIRECTIONAL DIFFUSER	0.10	20	TITUS TDCA 24x24 LAY-IN MODULE	1, 2
S-3	280-490	12x12 (10)	LOUVERED DIRECTIONAL DIFFUSER	0.13	21	TITUS TDCA 24x24 LAY-IN MODULE	1, 2
S-4	491-620	15X15	LOUVERED DIRECTIONAL DIFFUSER	0.10	25	TITUS TDCA 24X24 LAY-IN MODULE	1, 2
R-1	<140	6	PERFORATED RETURN GRILLE	0.18	18	TITUS PAR 24x24 LAY-IN MODULE	1
R-2	140-240	8	PERFORATED RETURN GRILLE	0.19	25	TITUS PAR 24x24 LAY-IN MODULE	1
R-3	241-380	10	PERFORATED RETURN GRILLE	0.18	30	TITUS PAR 24x24 LAY-IN MODULE	1
R-4	381-650	14	PERFORATED RETURN GRILLE	0.18	31	TITUS PAR 24x24 LAY-IN MODULE	1
R-5	651-950	16	PERFORATED RETURN GRILLE	0.17	32	TITUS PAR 24x24 LAY-IN MODULE	1
R-6	959-2000	22X22	PERFORATED RETURN GRILLE	0.12	27	TITUS PAR 24x24 LAY-IN MODULE	1
R-7	651-1200	18X18	SIDEWALL RETURN GRILLE	0.05	10	TITUS 355R SURFACE MOUNT	1
E-1	<80	6X6	LOUVERED EXHAUST GRILLE	0.05	20	TITUS 355RL SURFACE MOUNT	1,3
E-2	80-150	8x8	LOUVERED EXHAUST GRILLE	0.08	20	TITUS 355RL SURFACE MOUNT	1,3
E-3	150-240	10x10	LOUVERED EXHAUST GRILLE	0.15	25	TITUS 355RL SURFACE MOUNT	1,3
E-4	241-500	12X12	LOUVERED EXHAUST GRILLE	0.15	25	TITUS 355RL SURFACE MOUNT	1,3
E-5	401-850	16	PERFORATED EXHAUST GRILLE	0.16	28	TITUS PAR LAY-IN MODULE	1

KEYED NOTES:
1. ALUMINUM CONSTRUCTION.
2. 4-WAY PATTERN TYPICAL.
3. 45° DEFLECTION.

AUTOMATIC TEMPERATURE CONTROLS

GENERAL SCOPE OF THE CONTROL WORK

1. THE TEMPERATURE CONTROL WORK ON THE PROJECT SHALL BE AN EXTENSION OF THE EXISTING HONEYWELL DDC SYSTEM.
2. PROVIDE NEW CONTROLS INCLUDING CONTROL VALVES, DAMPER ACTUATORS, AND SPACE TEMPERATURE SENSORS ON ALL NEW AND EXISTING VAV (TB) TERMINAL BOXES ON AHU–64 AIR HANDLING SYSTEM ON BEAN BUILDING, SECOND FLOOR.
3. PROVIDE NEW CONTROLS INCLUDING CONTROL VALVES, DAMPER ACTUATORS, SPACE TEMPERATURE SENSORS, HUMIDITY, AND PRESSURE INDICATING SENSORS ON ALL OPERATING ROOMS (OR'S #21, 22 AND 23)
4. PROVIDE TEMPERATURE SENSORS, HUMIDITY SENSORS, AND PRESSURE SENSORS WHERE INDICATED OR AS REQUIRED TO MEET THE SEQUENCES.

GENERAL SYSTEM STARTUP:

1. THE MECHANICAL AND PLUMBING SYSTEMS, INCLUDING THE HUMIDIFIERS, VAV TERMINALS, AND TERMINAL EQUIPMENT, SHALL BE CYCLED THROUGH THE ACTION OF THE DDC SYSTEM AS DESCRIBED HEREIN. SUBMIT PROPOSED SEQUENCE OF OPERATION, POINTS LIST AND SCHEMATIC DIAGRAM FOR EQUIPMENT NOT INCLUDED IN THOSE SEQUENCE OF OPERATIONS.

SEQUENCES OF OPERATION

VAV BOX W/ HOT WATER REHEAT AND/OR HOT WATER RADIATION:

1. GENERAL ZONE CONTROL:
   DEDICATED, SINGLE SENSOR ZONES SHALL BE CONTROLLED FROM SENSORS AS SHOWN ON THE "M" DRAWINGS. ZONE SENSORS SHALL HAVE THE CAPABILITY OF EITHER AN AVERAGE SENSOR INPUT OR ANY ONE INDIVIDUAL SENSOR INPUT. PROGRAMMING SHALL BE FULL AVERAGED INPUT. THE VARIABLE VOLUME TERMINAL BOX (TB) IS CONTROLLED INDEPENDENT OF SYSTEM PRESSURE FLUCTUATIONS.
2. OCCUPIED ZONE CONTROL:
   THE VAV IS CONTROLLED BETWEEN MAXIMUM AND MINIMUM SUPPLY AIR VOLUME SETTINGS. THE CONTROLLER MONITORS THE ROOM TEMPERATURE SENSOR AND AIR VELOCITY SENSOR AND MODULATES THE SUPPLY AIR DAMPER IN SEQUENCE WITH THE REHEAT VALVE, AND RADIATION VALVE TO MAINTAIN THE ROOM TEMPERATURE AT SETPOINT.
3. HEATING MODE:
   THE ZONE HEATING MODE IS DEFINED AS ANY SENSED TEMPERATURE LESS THAN 1 DEGREE BELOW SETPOINT. IN HEATING MODE, THE FINNED TUBE RADIATION WILL MODULE BASED ON THE OUTSIDE AIR REHEAT SCHEDULE. THE VAV TERMINAL SHALL MODULATE TO MINIMUM ABND THE REHEAT VALVES SHALL MODULATE TO MAINTAIN SPACE SETPOINT.
4. COOLING MODE: THE ZONE COOLING MODE IS DEFINED AS ANY SENSED TEMPERATURE GREATER THAN 1 DEGREE ABOVE SETPOINT. IN COOLING MODE, THE RADIATION SHALL BE DE–ENERGIZED TO PROVIDE NO HEAT TO THE SPACE. THE VAVA TERMINAL AND REHEAT VALVE SHALL MODULATE TO MAINTAIN SPACE SETPOINT.
5. UNOCCUPIED ZONE CONTROL:
   THE TERMINAL UNITS SHALL BE CONTROLLED SAME AS OCCUPIED MODE IN EITHER HEATING OR COOLING MODE USING THE NIGHT SETPOINT. THE UNOCCUPIED TIMES IN THESE ZONES SHALL BE SCHEDULED THROUGH THE BUILDING AUTOMATION SYSTEM. THE ZONE MAY RESET TO THE OCCUPIED MODE FOR A PREDETERMINED TIME PERIOD UPON A SIGNAL FROM THE CONTROL SYSTEM.

HUMIDITY CONTROL (H–3 (OR#21), H–4(E), OR#22, AND H–5(E) OR#23):

1. WHEN THE RESPECTIVE AIR HANDLING UNIT IS OPERATING, THE ZONE HUMIDIFIER VALVES MODULATE TO MAINTAIN THE SPACE HUMIDITY SETPOINT.
2. HUMIDIFIER VALVE MODULATES CLOSED IF SUPPLY AIR HUMIDITY LEVELS EXCEED SETPOINT.
3. A DUCT MOUNTED HIGH LIMIT HUMIDISTAT LOCATED 15 FT DOWNSTREAM OF THE HUMIDIFIER PANEL SHALL CLOSE THE VALVE.
4. AN AIRFLOW PROVING SWITCH SHALL PREVENT THE HUMIDIFIER STEAM VALVE FROM OPENING IF AIR IS NOT MOVING IN THE DUCT.

OPERATING ROOM SPACE PRESSURE CONTROL:

1. THE OPERATING ROOMS REQUIRE A SPECIFIC AIR PRESSURE RELATIONSHIP RELATIVE TO ADJACENT SPACES OF 0.01 INCH W.C. POSITIVE PRESSURE. THESE SPACES HAVE BEEN PROVIDED WITH RETURN AIR AIRFLOW MONITORING AND CONTROL DAMPER STATIONS. THESE ROOMS SHALL HAVE PRESSURE SENSORS LOCATED APPROPRIATELY TO MONITOR AIR PRESSURE IN RELATION TO GENERAL PATIENT SPACES. THESE SENSORS SHALL HAVE AIR PRESSURE READOUTS AND ALARM THROUGH THE BAS WHEN RELATIONSHIPS ARE INCORRECT. SENSORS SHALL ALSO BE PROVIDED WITH DOOR INTERLOCKS ON ALL DOORS TO DELAY ALARM CONDITION WHEN DOOR IS OPENED (ADJ.).
2. THE SUPPLY AIR TERMINAL BOXES IN THE OPERATING ROOMS (OR'S) #21, 22, AND 23, SHALL SUPPLY A CONSTANT VOLUME OF AIR INDEPENDENT OF SYSTEM PRESSURE FLUCTUATIONS. THE REHEAT COIL SHALL CYCLE TO MAINTAIN THE ROOM SETPOINT.
3. THE RETURN AIR DAMPERS IN THE OPERATING ROOMS (OR'S) #21–23 SHOULD POSITIVELY PRESSURIZE THE OR'S. THE RETURN AIR DAMPER SHALL MODULATE TO MAINTAIN A SPACE PRESSURE OF 0.02 INCH W.C. POSITIVE PRESSURE (ADJUSTABLE).

REV.	DESCRIPTION	DATE
0	ISSUED FOR CONSTRUCTION	9-12-08

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9-12-08

CURRENT ISSUE STATUS:

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SCHEDULES AND SEQUENCE OF OPERATIONS
SHEET TITLE:

SCALE:	NOT TO SCALE	DATE:	9-12-08
PROJECT MANAGER:	CDP	GRAPHIC SCALE:	0" 1"
JOB CAP/DRAWN:	BGG		
A/E OF RECORD:	KME	SHEET No.	M-601
SMRT CAD FILE:	M-601-08098		
PROJECT No.	08098		