

ROOFTOP UNIT SCHEDULE																					
MARK	DESCRIPTION	TONS	MIN. EFFICIENCY SEER OR EER/IEER	MIN # COOLING STAGES	FLOW	CFM	OA CFM (MAX/MIN)	HEATING (GAS)				COOLING 67 WB 80DB				ELECTRICAL			PHYSICAL		NOTES
								KBTU IN	KBTU OUT	KBTU SEN	KBTU TOT	VOLTS	AMPS	MAX ACR BREAKER	WEIGHT	DIMENSIONS (LXW)					
RTU-1	ROOFTOP UNIT	6	11.2 EER / 12.6 IEER	2	DOWN	2400	565/300	115	86	53	71	208/3	30	45	790	74x48	1,2,3,4,5,6				

HVAC NOTES:
 - THE HVAC CONTRACTOR IS REQUIRED TO SEND THE ELECTRICIAN COPY OF SUBMITTAL DATA, CLEARLY INDICATING THE ELECTRICAL REQUIREMENTS FOR ALL HVAC EQUIPMENT. THIS MUST BE SENT WITHIN 1 WEEK OF RECEIPT OF SUBMITTAL APPROVAL.
 1. BAS THERMOSTAT, SET TO RUN FAN CONTINUOUSLY DURING OCCUPIED HOURS.
 2. FACTORY MOUNTED DISCONNECT, SS OR RESIN-BASED DRAIN PAN, AND HAIL GUARDS.
 3. ECONOMIZER WITH SINGLE DRY BULB CONTROL, SET TO ENABLE ECONOMIZER AT 65° OAT, AND POWERED EXHAUST IF AVAILABLE/50% BAROMETRIC RELIEF DAMPER IF POWERED EXHAUST NOT AVAILABLE.
 4. RETURN DUCT SMOKE DETECTOR WIRE TO FAN STARTER TO SHUT UNIT DOWN AND SEND ALARM SIGNAL TO FIRE ALARM SYSTEM (IF PRESENT) OR TO REMOTE SOUNDER LOCATED IN OCCUPIED AREA.
 5. CO2 DETECTOR - HONEYWELL #C7232A, 24V, RETURN DUCT MOUNTED TO OPEN & CLOSE MOTORIZED OUTSIDE AIR DAMPER TO PROVIDE FRESH AIR AMOUNTS AS REQUIRED BY CO2 LEVELS. SET OA DAMPER MAX/MIN POSITION TO AMOUNTS SHOWN. OTHER UNITS SHALL BE BALANCED TO FLOWS SHOWN ON PLAN.
 6. WITH BACNET CARD.

AIR DEVICES SCHEDULE										
MARK	MFR *	MODEL *	MOUNTING	SERVICE	THROW	FACE SIZE	MATERIAL	FINISH	REMARKS	
A	PRICE	520	DUCT	SUPPLY	20'	10x6	STEEL	WHITE	AIM AT POINT APPROX 8' AFF	
B	PRICE	80	CEILING	RETURN	--	AS INDICATED	STEEL	WHITE		
C	PRICE	530	WALL	RETURN	--	AS INDICATED	STEEL	WHITE		
D	PRICE	SPD	CEILING	SUPPLY	8'	24x24	STEEL	WHITE	WITH BUTTERFLY DAMPER	

* OR APPROVED EQUAL

ENERGY RECOVERY UNIT SCHEDULE																			
MARK	DESCRIPTION	OA CFM	EX. CFM	OUTSIDE AIR SUMMER		OUTSIDE AIR WINTER		EXHAUST AIR DB		SUPPLY AIR SUMMER		SUPPLY AIR WINTER		ELECTRICAL			PHYSICAL		NOTES
				DRY BULB	WET BULB	DRY BULB	WET BULB	WINTER	SUMMER	DRY BULB	WET BULB	DRY BULB	WET BULB	VOLTS	AMPS	MAX ACR BREAKER	WEIGHT	DIMENSIONS (LXW)	
ERU-1	ENERGY RECOVERY UNIT	100	100	95	78	-1	-3	70	75	80	72	48	39	120	0.7	20-1	36	74x48	1,2

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 1. WREDED THROUGH SCHOOL'S BAS FOR OPERATION
 2. EQUAL TO RENEWARE EV90

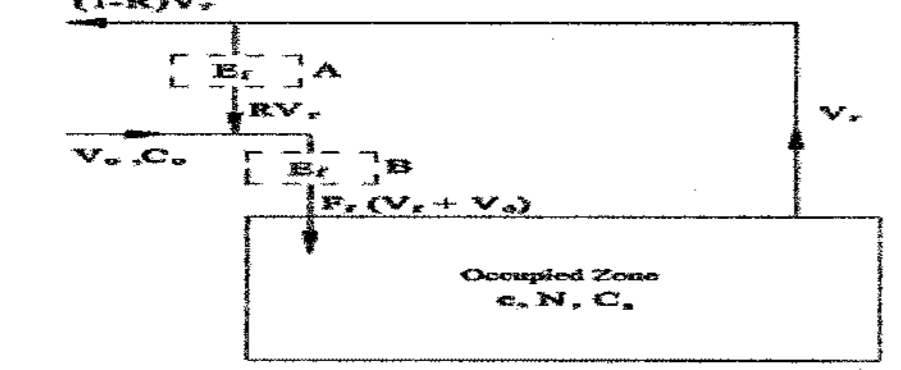
MAKE-UP AIR UNIT SCHEDULE																				
Mark	Weight (lbs)	Dalkin Model #	Unit						Cooling						Gas Heating		Remarks			
			Electrical	Efficiency	Supply Fan	EAT	LAT	Total Capacity	Sensible Capacity	Compressor	Type	Stages	Total Capacity (Btu/hr)							
MAU-1	2235	DPS012A	208/60/3	47.3	60	11.2	1850	1	95	78	54.9	54.9	151699	81076	Modulating Control with Inverter Compressors	2	Gas	Modulating 10:1 Turndown	240000	1 thru 7

NOTES:
 1. HOT GAS REHEAT
 2. FACTORY INSTALLED DISCONNECT
 3. FACTORY MOUNTED GFCI OUTLET POWERED THRU UNIT
 4. STRUCTURAL CURB DESIGNED IN ACCORDANCE WITH ASME7 (SEALED SHOP DRAWINGS WILL BE REQUIRED)
 5. IECC 2015 COMPLIANT WITH ECONOMIZER FAULT DETECTION AND NOTIFICATION
 6. HAIL GUARDS
 7. WITH BACNET CARD

Zone Tag	Facility Type	Zone Use	Zone Floor Area (square ft)	Zone Max Occupancy	Table 6.1 OA per Occupant	Table 6.1 cfm/ft ² Ra	Pz * Rp	Az * Ra	Table 6.2 Ventilation Effectiveness Ez	Outdoor Air to Zone (CFM) with Ez correction (Vbz/Ez)
F-1	General	Classrooms (AGE 9 +)	704.0	20.0	10.0	0.12	200	84	0.8	356

OA required per VRP

Zone Height (feet)	9
Desired Outside Air (Vo) IAQP	100
Supply Air (Vs)	600
Return Air (Vr)	500
Recirc. Flow Factor (R)	0.83
Ventilation Effectiveness (Ez)	0.8
Level of Physical Activity	Standing (desk work)
Filter Location	B
HVAC Flow Type	Constant
Outdoor Air Flow Type	Constant

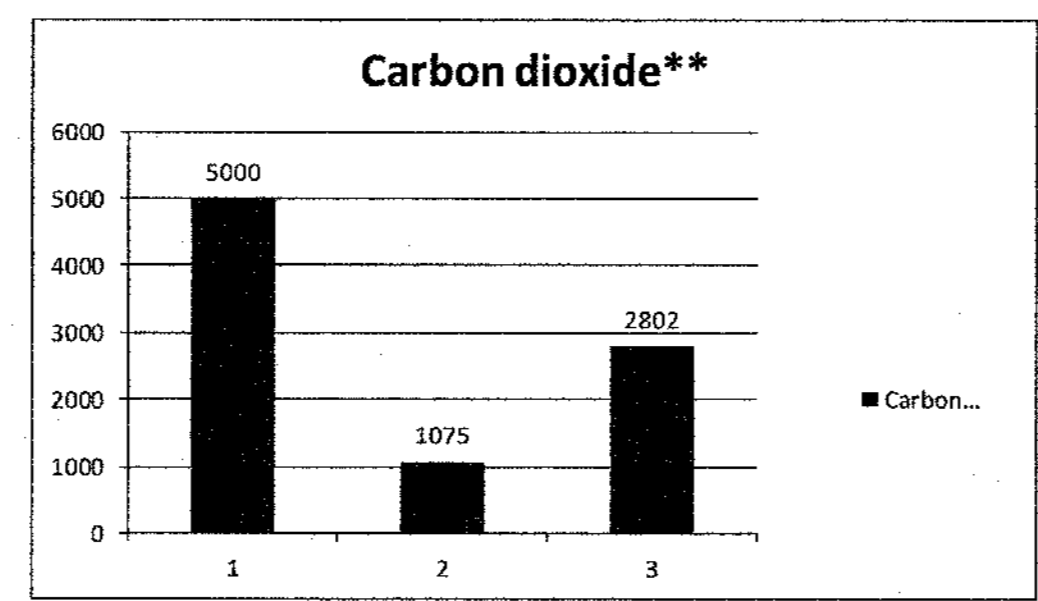


Air Changes Per Hour	5.7	VRP OA CFM per person	17.8
Outside Air Per VRP	356 CFM	IAQ OA CFM per person	5.0
Outside Air Per IAQ	100 CFM		
Outside Air Savings	256 CFM		
OA Drybulb	95.0		
OA Wetbulb	80.0		
Coil Leaving Air Drybulb	55.0		
Coil Leaving Air Wetbulb	55.0		
OA MBH Saved*	23.4		
OA Tons Saved*	2.0		

OA = Outside Air

Indoor Contaminants Generated By People	Maximum Threshold Value (PPM)**	Steady State Using the VRP* (Prescribed OA) Plasma Off	Steady State Using the IAQ Method (Reduced OA) Plasma On	Is Steady State Level Acceptable at Reduced OA Levels?
Acetaldehyde	20.0	0.0112	0.00375	Yes
Acetone	19.0	0.00172	0.00115	Yes
Ammonia	2.50	0.01681	0.02194	Yes
Benzene	0.1000	0.00252	0.00103	Yes
2-Butanone (MEK)	10.0	0.00020	0.00024	Yes
Carbon dioxide**	5000	1075	2802	Yes
Chloroform	0.2000	0.00011	0.00001	Yes
Dioxane	100.0	0.00000	0.00000	Yes
Hydrogen Sulfide	20.0	0.00000	0.00000	Yes
Methane	NA	1.68094	1.68094	Yes
Methanol	200.0	0.00000	0.00000	Yes
Methylene Chloride	50.0	0.00078	0.00077	Yes
Propane	100.0	0.00998	0.00998	Yes
Tetrachloroethane	35 mg/m ³	0.00000	0.00000	Yes
Tetrachloroethylene	2.5000	0.00037	0.00018	Yes
Toluene	2.0000	0.00533	0.00152	Yes
1,1,1-Trichloroethane	0.2000	0.00077	0.00007	Yes
Xylene	0.4000	0.00230	0.00084	Yes

All values are in PPM unless otherwise noted.



1 = ASHRAE CO2 Limit
 2 = CO2 Level at Ventilation Rate OA Flow Rate
 3 = CO2 Level at IAQ Procedure OA Flow Rate
 **Carbon dioxide has been provided for reference only for gathering demand control ventilation (DCV) setpoints. The National Research Council was commissioned by the US Navy to prove CO2 is not a contaminant of concern when using air purification to control the other contaminants of concern, as found on submarines.

Is IAQ acceptable at reduced outside air levels? **Yes**

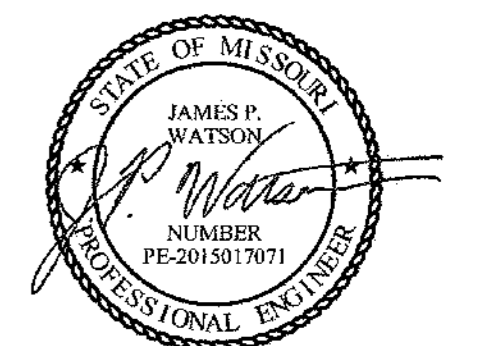
Air Purification Schedule										
Zone Tag	Flow	S/A Flow	O/A Flow	GPS Model	GPS Quantity	Pressure Drop	Voltage	Watts	Mounting Location	Notes
Existing FCU's	CV	30	50	GPS-RN	1	0.05" W.C.	24VAC	3.6	DUCT	1 to 6

1. Basis of Design: Global Plasma Solutions: Approved equals by Airgenics and BioGen subject to specification compliance
 2. Mount bi-polar ion generator where indicated on schedule
 3. If contractor substitutes basis of design with another manufacturer, contractor shall coordinate all electrical and mechanical changes
 4. Bi-polar ionization systems requiring perishable glass tubes are not acceptable
 5. All manufacturers must pass UL-867-2007 ozone chamber testing by either UL or ETL
 6. GPS-RN provided with integral BAS alarm contacts

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June 18, 2018

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	PERMIT SET	06-18-2018

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