

**ATTACHMENT 1**

<b>AIR HANDLING UNIT SCHEDULE</b>			
<b>MARK</b>	<i>1-A-1</i>	<i>1-A-2</i>	<i>1-A-3</i>
<b>GENERAL DATA</b>			
<b>BUILDING NO.</b>	<i>1</i>	<i>1</i>	<i>1</i>
<b>LOCATION</b>	<i>1633</i>	<i>1689</i>	<i>1002</i>
<b>SERVES</b>	<i>1ST FLOOR OPC W</i>	<i>1ST FLOOR OPC E</i>	<i>1ST FLOOR E&amp;W</i>
<b>MANUFACTURER</b>	<i>CARRIER</i>	<i>CARRIER</i>	<i>CARRIER</i>
<b>MODEL</b>	<i>39ED19</i>	<i>39ED23</i>	<i>39ED29</i>
<b>SERIAL NO.</b>	<i>1087 T 48669</i>	<i>1087T48670</i>	<i>1087 T 48672</i>
<b>SYSTEM TYPE</b>	<i>VAV</i>	<i>VAV</i>	<i>VAV</i>
<b>SUPPLY FAN DATA</b>			
<b>FAN TYPE</b>	<i>AF</i>	<i>AF</i>	<i>AF</i>
<b>WHEEL DIA. (IN)</b>	<i>21</i>	<i>21</i>	<i>24</i>
<b>AIRFLOW (ACFM)</b>	<i>10,440</i>	<i>11,900</i>	<i>14,040</i>
<b>MIN. OUTDOOR AIRFLOW (ACFM)</b>	<i>1,800</i>	<i>2,000</i>	<i>1,760</i>
<b>FAN SPEED (RPM)</b>	<i>2204</i>	<i>2346</i>	<i>2085</i>
<b>FAN MOTOR SIZE (HP)</b>	<i>15</i>	<i>20</i>	<i>20</i>
<b>ELEC. CHAR.</b>	<i>460/3/60</i>	<i>460/3/60</i>	<i>460/3/60</i>
<b>RETURN FAN DATA</b>			
<b>MANUFACTURER</b>	<i>ACME</i>	<i>ACME</i>	<i>ACME</i>
<b>MODEL</b>	<i>QB270N</i>	<i>QB500N</i>	<i>QB330N</i>
<b>SERIAL NO.</b>	<i>PLD494201</i>	<i>PLD494202</i>	<i>PLD494203</i>
<b>FAN TYPE</b>	<i>AF-SW</i>	<i>AF-SW</i>	<i>AF-SW</i>
<b>WHEEL DIA. (IN)</b>	<i>27</i>	<i>30</i>	<i>33</i>
<b>AIRFLOW (ACFM)</b>	<i>8280</i>	<i>9500</i>	<i>11930</i>
<b>EXT. STATIC PRES. (INWC)</b>			
<b>FAN SPEED (RPM)</b>	<i>1050</i>	<i>1549</i>	<i>785</i>
<b>FAN MOTOR SIZE (HP)</b>	<i>5</i>	<i>5</i>	<i>5</i>
<b>ELEC. CHAR.</b>	<i>460/3/60</i>	<i>460/3/60</i>	<i>460/3/60</i>
<b>HEATING COIL DATA</b>			
<b>TOTAL CAP. (MBH)</b>	<i>171.4</i>	<i>163.8</i>	<i>167.6</i>
<b>AIRFLOW (ACFM) (MIN/MAX.)</b>	<i>10,440</i>	<i>11,900</i>	<i>14,040</i>
<b>ENTERING AIR TEMP. (°F)</b>	<i>35.2</i>	<i>38</i>	<i>40</i>
<b>LEAVING AIR TEMP. (°F)</b>	<i>53</i>	<i>53</i>	<i>53</i>
<b>COIL FACE VEL. (FPM)</b>	<i>550</i>	<i>550</i>	<i>550</i>
<b>WATER FLOW (GPM)</b>	<i>8.9</i>	<i>8.6</i>	<i>8.8</i>
<b>STEAM FLOW (#/HR)</b>			
<b>STEAM PRESSURE (PSIA)</b>			
<b>COOLING COIL DATA</b>			
<b>TOTAL CAPACITY (MBH)</b>	<i>325.3</i>	<i>379.8</i>	<i>453.5</i>
<b>AIRFLOW (ACFM) (MIN/MAX.)</b>	<i>10,440</i>	<i>11,900</i>	<i>14,040</i>
<b>COIL FACE VEL. (FPM)</b>	<i>550</i>	<i>550</i>	<i>550</i>
<b>ENTERING AIR TEMP. (DB/WB)</b>	<i>82.1/63</i>	<i>82/63</i>	<i>81.3/63.3</i>
<b>LEAVING AIR TEMP. (DB/WB)</b>	<i>52.1/51.3</i>	<i>51.9/51</i>	<i>51.9/51</i>
<b>WATER FLOW (GPM)</b>	<i>47</i>	<i>54</i>	<i>65</i>

# AIR HANDLING UNIT SCHEDULE

MARK	1-A-4	1-A-5	1-A-6
<b>GENERAL DATA</b>			
BUILDING NO.	1	1	1
LOCATION	2639	2639	2663
SERVES	1ST FLOOR OPC ER	2ND FLOOR OPC W	2ND FLOOR OPC E
MANUFACTURER	CARRIER	CARRIER	CARRIER
MODEL	39ED08	39ED29	39ED29
SERIAL NO.	1087 T 48673	1087 T 48675	1087 T 48667
SYSTEM TYPE	CV	VAV	VAV
<b>SUPPLY FAN DATA</b>			
FAN TYPE	AF	AF	AF
WHEEL DIA. (IN)	13	24	21
AIRFLOW (ACFM)	2,410	14,630	12,910
MIN. OUTDOOR AIRFLOW (ACFM)	620	1,910	2,860
FAN SPEED (RPM)	2831	2051	2381
FAN MOTOR SIZE (HP)	3	20	20
ELEC. CHAR.	460/3/60	460/3/60	460/3/60
<b>RETURN FAN DATA</b>			
MANUFACTURER	ACME	ACME	ACME
MODEL	QB161G	QB365N	QB300M
SERIAL NO.	PLD494204	PLD494205	PLD494206
FAN TYPE	BI	AF-SW	AF-SW
WHEEL DIA. (IN)	15	36	30
AIRFLOW (ACFM)	1670	12340	9480
EXT. STATIC PRES. (INWC)			
FAN SPEED (RPM)	1280	618	813
FAN MOTOR SIZE (HP)	0.5	5	3
ELEC. CHAR.	460/3/60	460/3/60	460/3/60
<b>HEATING COIL DATA</b>			
TOTAL CAP. (MBH)	42.3	160.4	202.3
AIRFLOW (ACFM) (MIN/MAX.)	2,410	14,630	12,910
ENTERING AIR TEMP. (°F)	34	41.1	36
LEAVING AIR TEMP. (°F)	53	53	53
COIL FACE VEL. (FPM)	550	550	550
WATER FLOW (GPM)	2.2	8.3	10.5
STEAM FLOW (#/HR)			
STEAM PRESSURE (PSIA)			
<b>COOLING COIL DATA</b>			
TOTAL CAPACITY (MBH)	69.6	461.4	392.5
AIRFLOW (ACFM) (MIN/MAX.)	2,410	14,630	12,910
COIL FACE VEL. (FPM)	550	550	550
ENTERING AIR TEMP. (DB/WB)	83.6/62.5	81.3/63.3	83/62.7
LEAVING AIR TEMP. (DB/WB)	53/51.7	52.3/51.5	52.1/51.3
WATER FLOW (GPM)	10	66	56

# AIR HANDLING UNIT SCHEDULE

MARK	1-A-7	1-A-8	1-A-9
<b>GENERAL DATA</b>			
BUILDING NO.	1	1	1
LOCATION	2600	2663	1232
SERVES	2ND FLOOR E&W	2ND FLR. OPC DEN.	CANTEEN KIT.
MANUFACTURER	CARRIER	CARRRIER	
MODEL	39ED36	39BA040A69	
SERIAL NO.	1087 T 48668	871333672	
SYSTEM TYPE	VAV	CV	CV
<b>SUPPLY FAN DATA</b>			
FAN TYPE	AF	FC	
WHEEL DIA. (IN)	24	9	13.5
AIRFLOW (ACFM)	14,900	1,780	4,300
MIN. OUTDOOR AIRFLOW (ACFM)	4,580	1,780	1,700
FAN SPEED (RPM)	2150	1532	
FAN MOTOR SIZE (HP)	25	1	5
ELEC. CHAR.	460/3/60	460/3/60	
<b>RETURN FAN DATA</b>			
MANUFACTURER	ACME		
MODEL	QB300N		
SERIAL NO.	PLD494207		
FAN TYPE	AF-SW	-	VANE AXIAL
WHEEL DIA. (IN)	30	-	14
AIRFLOW (ACFM)	9540	-	2600
EXT. STATIC PRES. (INWC)		-	1.3
FAN SPEED (RPM)	861	-	1830
FAN MOTOR SIZE (HP)	5	-	1.5
ELEC. CHAR.	460/3/60	-	208/3/60
<b>HEATING COIL DATA</b>			
TOTAL CAP. (MBH)	283.1	87.4	112
AIRFLOW (ACFM) (MIN/MAX.)	14,900	1,780	4300
ENTERING AIR TEMP. (°F)	32.9	2	41.5
LEAVING AIR TEMP. (°F)	53	55	70
COIL FACE VEL. (FPM)	550	644	610
WATER FLOW (GPM)	14.8	4.5	
STEAM FLOW (#/HR)			116
STEAM PRESSURE (PSIA)			14
<b>COOLING COIL DATA</b>			
TOTAL CAPACITY (MBH)	464.8	-	154.8
AIRFLOW (ACFM) (MIN/MAX.)	14,900	-	4,300
COIL FACE VEL. (FPM)	550	-	575
ENTERING AIR TEMP. (DB/WB)	84.4/62.1	-	86.7/65.3
LEAVING AIR TEMP. (DB/WB)	51.9/50.5	-	54.2/52.8
WATER FLOW (GPM)	67	-	31

# AIR HANDLING UNIT SCHEDULE

MARK	1-A-10	1-A-11	1-A-12
<b>GENERAL DATA</b>			
BUILDING NO.	1	1	1
LOCATION	1219	1202	2239
SERVES	CANTEEN DIN.	MORGUE	2ND FLOOR LAB
MANUFACTURER		TRANE	ENERGY LABS
MODEL		3	
SERIAL NO.			
SYSTEM TYPE	VAV	CV	VAV
<b>SUPPLY FAN DATA</b>			
FAN TYPE	SWSI	FC	
WHEEL DIA. (IN)	22	9	
AIRFLOW (ACFM)	4,670	1,300	13,000
MIN. OUTDOOR AIRFLOW (ACFM)	1,170		13,000
FAN SPEED (RPM)			1660
FAN MOTOR SIZE (HP)	7.5		25
ELEC. CHAR.		208/3/60	208/3/60
<b>RETURN FAN DATA</b>			
MANUFACTURER			
MODEL			
SERIAL NO.			
FAN TYPE	VANE AXIAL		
WHEEL DIA. (IN)	21		
AIRFLOW (ACFM)	4280		
EXT. STATIC PRES. (INWC)	0.375		
FAN SPEED (RPM)	1596		
FAN MOTOR SIZE (HP)	1.5		
ELEC. CHAR.	208/3/60		
<b>HEATING COIL DATA</b>			
TOTAL CAP. (MBH)	27.8		
AIRFLOW (ACFM) (MIN/MAX.)	4670		8700
ENTERING AIR TEMP. (°F)	53.4	7	-10
LEAVING AIR TEMP. (°F)	60	100	60
COIL FACE VEL. (FPM)	570		500
WATER FLOW (GPM)			34
STEAM FLOW (#/HR)	29		
STEAM PRESSURE (PSIA)	14	27	
<b>COOLING COIL DATA</b>			
TOTAL CAPACITY (MBH)	175.1	45.3	505.6
AIRFLOW (ACFM) (MIN/MAX.)	4,670	1,300	13,000
COIL FACE VEL. (FPM)	520		553
ENTERING AIR TEMP. (DB/WB)	82.1/63.8	94/63	94/60
LEAVING AIR TEMP. (DB/WB)	52.2/50.5	57	52
WATER FLOW (GPM)	31	9	64

# AIR HANDLING UNIT SCHEDULE

MARK	1-A-13	1-A-14	1-A-15
<b>GENERAL DATA</b>			
BUILDING NO.	1	1	1
LOCATION	GROUND	ROOF	ROOF
SERVES	3RD FLR. WARD 3	3RD FLR. KITCHEN	SPD
MANUFACTURER	MCQUAY	ENINEERED AIR	TRANE
MODEL	RPS-040B		
SERIAL NO.			
SYSTEM TYPE	VAV	MAKE-UP AIR	CV
<b>SUPPLY FAN DATA</b>			
FAN TYPE			
WHEEL DIA. (IN)			
AIRFLOW (ACFM)	14,250	9,700	6,000
MIN. OUTDOOR AIRFLOW (ACFM)		9,700	6,000
FAN SPEED (RPM)		1815	1100
FAN MOTOR SIZE (HP)	15	10	7.5
ELEC. CHAR.	208/3/60	208/3/60	208/3/60
<b>RETURN FAN DATA</b>			
MANUFACTURER			-
MODEL			-
SERIAL NO.			-
FAN TYPE			-
WHEEL DIA. (IN)			-
AIRFLOW (ACFM)	12500		-
EXT. STATIC PRES. (INWC)			-
FAN SPEED (RPM)			-
FAN MOTOR SIZE (HP)	15		-
ELEC. CHAR.	208/3/60		-
<b>HEATING COIL DATA</b>			
TOTAL CAP. (MBH)		889	200.8
AIRFLOW (ACFM) (MIN/MAX.)		9700	4375
ENTERING AIR TEMP. (°F)		-20	2
LEAVING AIR TEMP. (°F)		80	53
COIL FACE VEL. (FPM)			750
WATER FLOW (GPM)			
STEAM FLOW (#/HR)		936	212.5
STEAM PRESSURE (PSIA)		40	27
<b>COOLING COIL DATA</b>			
TOTAL CAPACITY (MBH)	379.4	90% EVAP	256
AIRFLOW (ACFM) (MIN/MAX.)	14,250		6,000
COIL FACE VEL. (FPM)	549		425
ENTERING AIR TEMP. (DB/WB)	80/63		102/68
LEAVING AIR TEMP. (DB/WB)	54.5/53.3		54.3/52.2
WATER FLOW (GPM)	76		37.4

# AIR HANDLING UNIT SCHEDULE

MARK	1-A-16	1-A-17	1-A-18
<b>GENERAL DATA</b>			
BUILDING NO.	1	1	1
LOCATION	6TH FLOOR ROOF	PENTHOUSE	2421
SERVES	WD-5	SURGERY	
MANUFACTURER	MAMMOTH	TRANE	
MODEL	CEHBR-351-S483		
SERIAL NO.	19546-01-01	K90M36671	
SYSTEM TYPE	DUAL DUCT	CV	
<b>SUPPLY FAN DATA</b>			
FAN TYPE	AF		
WHEEL DIA. (IN)	22		
AIRFLOW (ACFM)	14,750	5,000	
MIN. OUTDOOR AIRFLOW (ACFM)	3,430	5,000	
FAN SPEED (RPM)	1590	1255	
FAN MOTOR SIZE (HP)	20	5	
ELEC. CHAR.	208/3/60	208/3/60	
<b>RETURN FAN DATA</b>			
MANUFACTURER		-	
MODEL		-	
SERIAL NO.		-	
FAN TYPE	FC		
WHEEL DIA. (IN)	18		
AIRFLOW (ACFM)	9640	-	
EXT. STATIC PRES. (INWC)	1.5	-	
FAN SPEED (RPM)	815	-	
FAN MOTOR SIZE (HP)	7.5	-	
ELEC. CHAR.	208/3/60	-	
<b>HEATING COIL DATA</b>			
TOTAL CAP. (MBH)	702		
AIRFLOW (ACFM) (MIN/MAX.)	13570		
ENTERING AIR TEMP. (°F)	52.9	-20	
LEAVING AIR TEMP. (°F)	110	55	
COIL FACE VEL. (FPM)	700		
WATER FLOW (GPM)		34	
STEAM FLOW (#/HR)	730		
STEAM PRESSURE (PSIA)	42		
<b>COOLING COIL DATA</b>			
TOTAL CAPACITY (MBH)	426	220	
AIRFLOW (ACFM) (MIN/MAX.)	14,750	5,000	
COIL FACE VEL. (FPM)	480	434	
ENTERING AIR TEMP. (DB/WB)	84.2/63.5	100/61	
LEAVING AIR TEMP. (DB/WB)	54.2/52.6	49.2/41	
WATER FLOW (GPM)	63.5	33	

# AIR HANDLING UNIT SCHEDULE

MARK	1-A-19	1-A-20	1-A-21
<b>GENERAL DATA</b>			
BUILDING NO.	1	20	20
LOCATION	5TH FLR. ROOF	148	148
SERVES	4TH FLR. WEST	PATIENT ROOMS	DAY ROOM
MANUFACTURER			
MODEL			
SERIAL NO.			
SYSTEM TYPE		CV	CV
<b>SUPPLY FAN DATA</b>			
FAN TYPE		BI	BI
WHEEL DIA. (IN)		16	12
AIRFLOW (ACFM)		4,830	2,450
MIN. OUTDOOR AIRFLOW (ACFM)		2,850	950
FAN SPEED (RPM)			
FAN MOTOR SIZE (HP)		5	3
ELEC. CHAR.		208/3/60	208/3/60
<b>RETURN FAN DATA</b>			
MANUFACTURER			
MODEL			
SERIAL NO.			
FAN TYPE		IN-LINE	IN-LINE
WHEEL DIA. (IN)		13.5	12.25
AIRFLOW (ACFM)		1980	1500
EXT. STATIC PRES. (INWC)			
FAN SPEED (RPM)		1660	1700
FAN MOTOR SIZE (HP)		0.75	0.5
ELEC. CHAR.		208/3/60	208/3/60
<b>HEATING COIL DATA</b>			
TOTAL CAP. (MBH)		123.6	38.8
AIRFLOW (ACFM) (MIN/MAX.)		2850	1100
ENTERING AIR TEMP. (°F)		-3	-3
LEAVING AIR TEMP. (°F)		45	36
COIL FACE VEL. (FPM)		470	360
WATER FLOW (GPM)			
STEAM FLOW (#/HR)		128	40
STEAM PRESSURE (PSIA)		22	22
<b>COOLING COIL DATA</b>			
TOTAL CAPACITY (MBH)		142.3	69.2
AIRFLOW (ACFM) (MIN/MAX.)		4,830	2,450
COIL FACE VEL. (FPM)		500	500
ENTERING AIR TEMP. (DB/WB)		88.6/63.3	85/64.4
LEAVING AIR TEMP. (DB/WB)		56/52.4	56/54.7
WATER FLOW (GPM)		21.4	10.5

# AIR HANDLING UNIT SCHEDULE

MARK	1-A-22	1-A-23	1-A-24
<b>GENERAL DATA</b>			
BUILDING NO.	33	34	
LOCATION	100	100	
SERVES		<i>COMMUNICATIONS</i>	
MANUFACTURER			
MODEL			
SERIAL NO.			
SYSTEM TYPE			
<b>SUPPLY FAN DATA</b>			
FAN TYPE			
WHEEL DIA. (IN)			
AIRFLOW (ACFM)			
MIN. OUTDOOR AIRFLOW (ACFM)			
FAN SPEED (RPM)			
FAN MOTOR SIZE (HP)			
ELEC. CHAR.			
<b>RETURN FAN DATA</b>			
MANUFACTURER			
MODEL			
SERIAL NO.			
FAN TYPE			
WHEEL DIA. (IN)			
AIRFLOW (ACFM)			
EXT. STATIC PRES. (INWC)			
FAN SPEED (RPM)			
FAN MOTOR SIZE (HP)			
ELEC. CHAR.			
<b>HEATING COIL DATA</b>			
TOTAL CAP. (MBH)			
AIRFLOW (ACFM) (MIN/MAX.)			
ENTERING AIR TEMP. (°F)			
LEAVING AIR TEMP. (°F)			
COIL FACE VEL. (FPM)			
WATER FLOW (GPM)			
STEAM FLOW (#/HR)			
STEAM PRESSURE (PSIA)			
<b>COOLING COIL DATA</b>			
TOTAL CAPACITY (MBH)			
AIRFLOW (ACFM) (MIN/MAX.)			
COIL FACE VEL. (FPM)			
ENTERING AIR TEMP. (DB/WB)			
LEAVING AIR TEMP. (DB/WB)			
WATER FLOW (GPM)			



# AIR HANDLING UNIT SCHEDULE

MARK	1-A-25	1-A-26	1-A-27
<b>GENERAL DATA</b>			
BUILDING NO.	5	13	8
LOCATION	005 BASEMENT	ROOF	ROOF
SERVES	OFFICE		
MANUFACTURER	TRANE		
MODEL	TYPE 17		
SERIAL NO.	U79B08625		
SYSTEM TYPE	MULTIZONE		
<b>SUPPLY FAN DATA</b>			
FAN TYPE	FC		
WHEEL DIA. (IN)	2EA-13		
AIRFLOW (ACFM)	8,000		
MIN. OUTDOOR AIRFLOW (ACFM)	1,200		
FAN SPEED (RPM)			
FAN MOTOR SIZE (HP)	10		
ELEC. CHAR.	208/3/60		
<b>RETURN FAN DATA</b>			
MANUFACTURER			
MODEL			
SERIAL NO.			
FAN TYPE			
WHEEL DIA. (IN)			
AIRFLOW (ACFM)			
EXT. STATIC PRES. (INWC)			
FAN SPEED (RPM)			
FAN MOTOR SIZE (HP)			
ELEC. CHAR.			
<b>HEATING COIL DATA</b>			
TOTAL CAP. (MBH)	300		
AIRFLOW (ACFM) (MIN/MAX.)	8000		
ENTERING AIR TEMP. (°F)	60		
LEAVING AIR TEMP. (°F)	95		
COIL FACE VEL. (FPM)	1000		
WATER FLOW (GPM)			
STEAM FLOW (#/HR)	315		
STEAM PRESSURE (PSIA)	17		
<b>COOLING COIL DATA</b>			
TOTAL CAPACITY (MBH)	235		
AIRFLOW (ACFM) (MIN/MAX.)	8,000		
COIL FACE VEL. (FPM)	500		
ENTERING AIR TEMP. (DB/WB)	78/63		
LEAVING AIR TEMP. (DB/WB)	56/54		
WATER FLOW (GPM)			



<b>VA VISN 19 Retro-Cx - Grand Junction VA Medical Center</b>	
A-10	CHW pumps not running. REC: Verify operation.
A-10	Return Fan Flow Station Failed. (reading 0 cfm) REC: Troubleshoot and repair.
A-10	Unit running continuous REC: Implement start stop program for unoccupied times
A-9	Start /Stop AHU with Kitchen exhaust. REC: Verify programming
A-14	Unit running continuous. REC: Implement Occupied/Unoccupied schedules with Hood Exhaust to function when OAT is above 40°F.
A-3	Mixed air temp sensor calibration is 2.5°F high. REC: Calibrate or replace sensor.
A-1	Heating temp sensor calibration is 4.8°F high. REC: Calibrate or replace sensor.
A-4 CV-164 Room 1622	Room temp sensor calibration is 2.5°F high. REC: Calibrate or replace sensor.
A-1	Return air humidity sensor calibration is 21% low. REC: Calibrate or replace sensor.
A-1, VAV 160, Room 1600	Room temp sensor calibration is 2.9°F low. REC: Calibrate or replace sensor.
A-1 VAV 162 Room 1609	Room temp sensor calibration is 2.8°F low. REC: Calibrate or replace sensor.
A-2	HR supply temp sensor calibration is 3.5°F low. REC: Calibrate or replace sensor.
A-2	Supply air temp sensor calibration is 3.6°F low. REC: Calibrate or replace sensor.
A-2 VAV 128 Room 1692	Room temp sensor calibration is 2.4°F low. REC: Calibrate or replace sensor.
A-2 VAV 130 Room 1670	Room temp sensor calibration is 2.5°F low. REC: Calibrate or replace sensor.
A-2 VAV 139 Room 1697	Room temp sensor calibration is 3.1°F high. REC: Calibrate or replace sensor.
A-2 VAV 147 1st flr hall	Room temp sensor calibration is 3.2°F low. REC: Calibrate or replace sensor.
A-2 VAV 150 Room 1677	Room temp sensor calibration is 3.3°F low. REC: Calibrate or replace sensor.
A-10	Mixed air temp sensor is 3.5°F low. REC: Calibrate or replace sensor.
A-4 CV 166 Room 1622	Room temp sensor calibration is 2.5°F high. REC: Calibrate or replace sensor.

<b>VA VISN 19 Retro-Cx - Grand Junction VA Medical Center</b>	
Steam Convertor C1B	Insulation missing on discharge side of pump. REC: Replace insulation.
A-7	Return hum sensor calibration is 6.4% low. REC: Calibrate or replace sensor.
A-5	Supply air temp sensor calibration is 3.2°F high. REC: Calibrate or replace sensor.
A-12 VAV 124 Room 2422	Room temp sensor calibration is 3.0°F high. REC: Calibrate or replace sensor.
A-12 VAV 132 Room 2217-3	Room temp sensor calibration is 3.3°F high. REC: Calibrate or replace sensor.
A-12 VAV 133 Room 2223	Room temp sensor calibration is 3.5°F high. REC: Calibrate or replace sensor.
A-12 VAV 134 Room 2215	Room temp sensor calibration is 2.1°F high. REC: Calibrate or replace sensor.
A-12 VAV 138 Room 2217-2	Room temp sensor calibration is 2.2°F high. REC: Calibrate or replace sensor.
A-12 VAV 139 Room 2234	Room temp sensor calibration is 2.9°F high. REC: Calibrate or replace sensor.
A-12 VAV 143 Room 2227	Room temp sensor calibration is 2.1°F high. REC: Calibrate or replace sensor.
A-12 VAV 145 Room 2219	Room temp sensor calibration is 4.7°F high. REC: Calibrate or replace sensor.
A-13 VAV Room 3210	Room temp sensor calibration is 3.5°F low. REC: Calibrate or replace sensor.
A-14	Supply air temp sensor is 5.6°F low. REC: Calibrate or replace sensor.
A-15	Supply air temp sensor is 12.3°F low. REC: Calibrate or replace sensor.
A-5	Mixed air temperature sensor is failed. REC: Replace sensor.
A-5	Supply air temp sensor calibration is 3.2°F high. REC: Calibrate or replace sensor.
A-5	Supply hum sensor calibration is 13.4% high. REC: Calibrate or replace sensor.
A-6	Return air temp sensor calibration is 2.6°F high. REC: Calibrate or replace sensor.
A-5	Return air temp sensor calibration is 2.6°F high. REC: Calibrate or replace sensor.
A-6	Return humidity sensor calibration is 7.0% low. REC: Calibrate or replace sensor.
A-6 VAV 222 Room 2659	Room temp sensor calibration is 7.9°F high. REC: Calibrate or replace sensor.

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A-6 VAV 279 Room 2019	Room temp sensor calibration is 4.9°F high. REC: Calibrate or replace sensor.
A-28 VAV SS-1	Room temp sensor calibration is 3.1°F low. REC: Calibrate or replace sensor.
A-28 VAV SS-8	Room temp sensor calibration is 2.2°F low. REC: Calibrate or replace sensor.
A-9	3-way control valve on CHW return. REC: Remove bypass or close bypass and repipe as necessary to provide 2-way control valve operation
A-16	Unit is controlled by Tracer Summit. REC: Retrofit unit to JCI control for monitoring and programming to the front end.
A-1	Chilled water valve on unit is open (mech cooling) while outside air dampers are not fully open (64%) to take advantage of full free airside cooling. REC: Program modification or loop tuning.
A-3	Chilled water valve on unit is open (mech cooling) while outside air dampers are not fully open (57%) to take advantage of full free airside cooling. REC: Program modification or loop tuning.
A-4	Chilled water valve on unit is open (mech cooling) while outside air dampers are not fully open (59%) to take advantage of full free airside cooling. REC: Program modification or loop tuning.
A-5	Chilled water valve on unit is open (mech cooling) 20-60% when OAT is 40°F while outside air dampers are not fully open (23%) to take advantage of full free airside cooling. SAT loses it above 59 OAT, poor coil performance also. REC: Program modification or loop tuning.
A-9	Supply fan is at full speed (100%) while return fan is at zero speed (0%). Outside air dampers are at 100% command, Mix air temp is warm at 65°F, chw valve is at 24%, to maintain 64°F. REC: Further review of all temperature and flow components and controls. Verify if heating valve is leaking or OAD is working at all.
AHU Scheduling	All Air handlers are operating 24/7 with the exception of Dental Unit. Not all areas need constant operation, and some, even if unit was kept on, could probably benefit from temperature or pressure setbacks. REC: Put non-critical units on a time schedule to either shut down or reduce airflows and possibly reset temperatures.
4th floor West corr.	Offices have steam radiator heat on pneumatic local thermostat, and window A/C on its own thermostat. Comfort control is difficult and problematic. Replace valve tops with electronic controls as a minimum. Upgrade the HVAC in that area.
A-1	BAS control: Mixed air control is not consistent at all temperatures and not working properly. OA damper is open above 75°F OAT. REC Close OAD when OAT GT 75°F.
A-2	BAS control: Discharge air control is erratic above 45°F OAT. AHU control valves open fully very often, indicating poor efficiency and performance.

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A-2	BAS Control: Preheat valve only opens after heat recovery valve is full stroke, causing supply temperature to drop to 44°F with a 60°F set point. ON another occasion, 3/3/12, heating valve went from 30-100% 4 times in 2 hours. Valves appear to travel quickly from open to closed.
AHUs generally	BAS control: Economizer damper (OA) is open at times when OAT is greater than Return temperature, and reportedly even when OAT is 80°F. Needs correction
AHUs generally	BAS control: Economizer damper (OAD) is not fully open when the chilled water valve begins to open/is open. This generally occurs when OAT is less than 50°F, and appears to limit the OAD to about 60-80% maximum opening. More air side free cooling could be possible.
AHUs generally	Several units can't maintain supply air temperature when the OAT goes above about 74°F. CHW valves go full open and over-flow the coils, which is inefficient. Related to plugged coils. Significant issue is A-12, which drives the operation of mechanical cooling and quantities of chillers.
BAS Server	BAS Server is having difficulty storing and receiving trends and performing front end tasks. A larger and newer server is recommended.
Pneumatic system	Water in pneumatic system damages components on 1st floor especially. Some parts of 1st, 2nd, 3rd and 4th floor still have pneumatic local controls. Upgrade system
VAV terminals	In verifying the VAV terminals in Building 1, our TAB contractor reset many of the mins/max air flow values back to design settings. The values had previously been reduced significantly. REC: The remainder of VAV terminals be checked for correct settings.
A-12 VAV terminals	This area has older VAVs, not JCI VMA model. Area could use rebalancing airflow to actual heat load in area, review of (proper) temperature sensor location, and possibly upgrade VAV controllers
A-6	OA Dampers are limited below 55 OAT closes from 100 to 40%, and go full open above 55 as needed. CHW valve open above 41 deg OAT, closed below 37 OAT. REC: Reprogram control logic
A-7	OA Dampers are limited below 55 OAT and go full open above 55 as needed. REC: Reprogram control logic
A-7	OA Dampers go fully closed for long periods of time in winter season, ventilation to occupants is diminished. REC: Reprogram Control Sequence for min Vent.
A-10	OA Dampers go fully closed for a period when unit appears to keep running. Ventilation to occupants is diminished - Dining room. REC: Reprogram Control Sequence for minimum Ventilation
A-11	OA Dampers go fully closed for a period in winter when OAT goes above 69, which appears to be room temperature set point. CHW valve is still open as needed. Appears OAD is leaking air through. (Morgue) REC: Reprogram Control Sequence for Ventilation

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A-12	Lab. (100% OA unit) Chw valve open fully above 70 OAT, May 2012 on, overflowing, not making setpoint. (Expect valve to be open, but not full) DAS of 52, DAT up to 62, unit drives need for chiller at plant. Coil flushing began in April. REC: Continue to flush coils, check for leakage of heating system.
A-14	Steam heating valve and its face and bypass open and close at the same time. REC: Programming change to optimize coil valve versus face and bypass damper strategy.
A-14	100% OA unit. Steam valve was opening when OAT was between 55-60°F OAT to control to 68°F set point; space temp rose accordingly from 75 to 78°F. REC: use of deadband to avoid heating supply air above 55°F OAT.
A-28	Locker unit. Seems to have wipe (steam heat coil gain) across steam coil. REC: Verify valve closure and modify software to accommodate different sequence.
CHW Flow	There are 3 chilled water flow meters reporting to the BAS associated with our study, plant, Building 1 and Building 20. The building 1 meter is failed. REC: replace or repair meter to operating status to be able to analyze chilled water operation. REC put flow meter points prominently on graphics to monitor their status, not only the BTU Tonnage calculation.
Lower RH set point	RH set point is 25% return air, generally for the hospital. A reduction to 20% is recommended for non-critical areas. MRI and Cath labs are particular areas that need some RH in a dry climate.
AHUs running continuous	Combines 38 and 117, and adds several units. Turn off units on a schedule, and allow units to come back on during the unoccupied hours based on temperature requirements. Can include A-15 SPD, and A-3 Pharmacy, in spite of critical nature of Pharmacy.
A-3 Pharmacy	A-3 operates 24/7 and has a critical area - the pharmacy.
AHU fan speed control	AHUs now operate on a fixed supply duct static pressure setting. Over time field changes are made, airflows may have been decreased, and static pressure setpoint is not reviewed, and fan maintains a higher static pressure than needed. Recommend resetting the setpoint based on VAV terminal damper worst case.
Heating hot water pump speed	The Graphic for pumps and heat exchanger control of Pumps do not show differential set point and pump speed. It is not clear how well pump speed is being varied to maintain the lowest speed while still maintaining flow. If flow decreases significantly from heating to cooling season, lowering the setpoint can assist in energy savings. REC: BAS programming modification to review AHU valve position and reset DP setpoint for worst case.
Operating Room Occupancy Set back	As we walked through Building 1 and observed in springtime the operating room upgrades that were not a part of this study, we observed that the rooms were without occupancy sensors that would decrease airflow changes during unoccupied periods. This effort combined with lower airflow rates as a result of new VAMC ventilation standards will result in lower energy use and costs. Recommend occupancy sensors be installed provide feedback to the BAS to control HVAC levels in the ORs, if not done so already